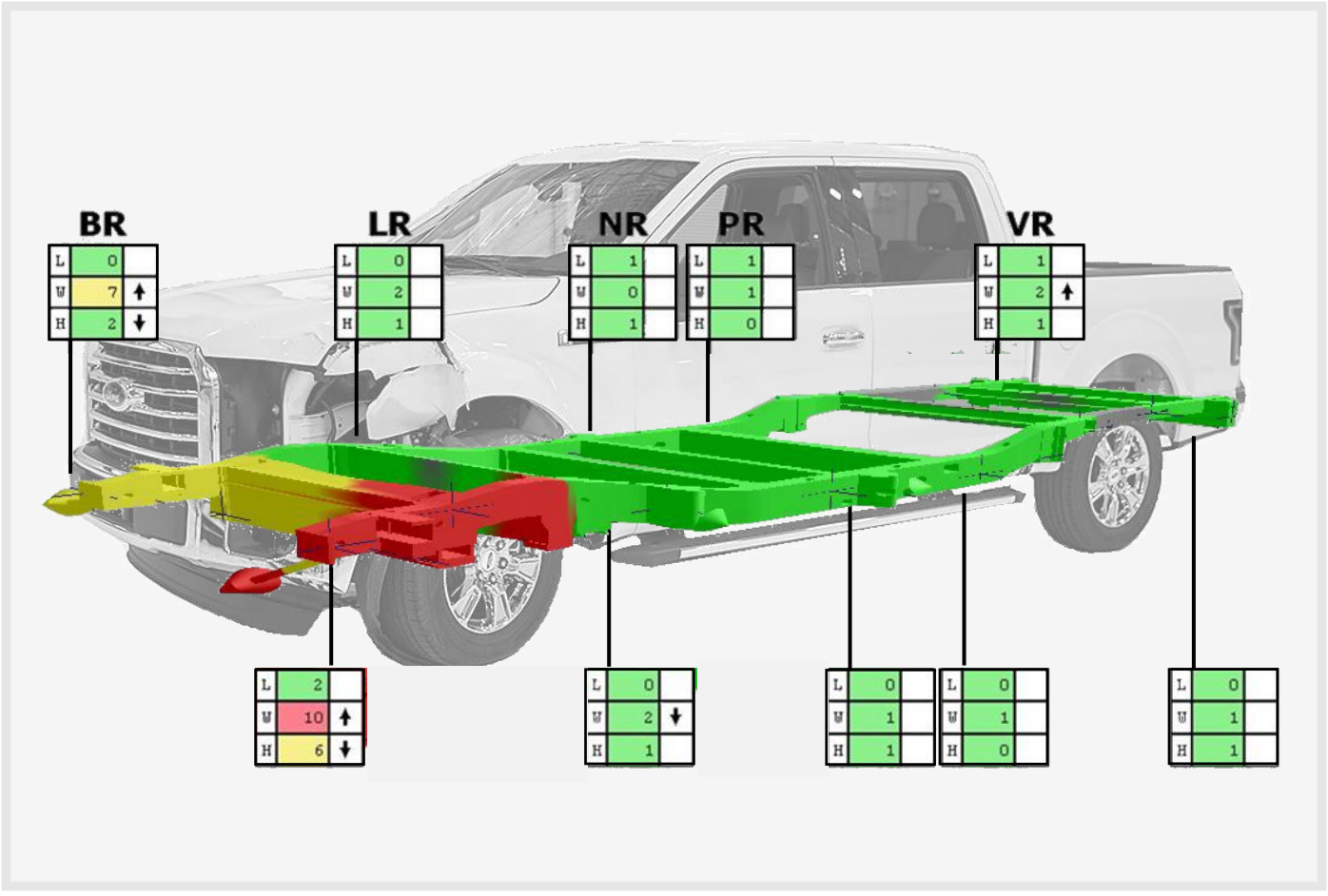
ECLIPSE PLUS

3D Laser Measuring System

User Manual



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Introduction

This manual is designed to be a comprehensive guide for the technician that covers everything from the basic functions through utilization of all the options the system has to offer. The Eclipse Plus is a state-of-the-art tool that provides precision measuring, functionality and cutting-edge graphics for submission to the insurance company and the customer. This equates into an extremely useful tool for the whole shop, through estimation, repair and delivery to the customer.

Objectives

This manual will teach the technician how to:

- Decide when, where and how to measure
- Make sound visual diagnostic evaluations
- Understand 3D measuring Principles
- Successfully set up the Eclipse3D measuring system
- Identify and capture damage in an electronic report
- Use the 3D measuring system for comparative measuring and documentation
- Use the Virtual Tram for Diamond detection
- Identify damage conditions and the order of removal
- Interpret damage reports and create an effective repair plan
- Use a 3D electronic measuring system to its fullest potential during the repair process
- Understand the importance of repair documentation
- Aid in communicating damage to various stakeholders

Why Measure?

Measuring is the only way a technician can truly verify the structural condition of any vehicle they are tasked with repairing or assessing. In fact, that's one of the main features of an electronic 3D measuring system. Aside from providing valuable information on the state of the structure of a vehicle, it enables the technician to take a snapshot of the vehicle at any given time during the repair process, before, during and after repair.

3D measurement documentation provides the technician with a powerful tool that can be used to communicate the extent of the damage to all stakeholders in the repair process. These stakeholders include the Technician, Repair Planner, Estimator, Insurance Company and the Customer.

Measuring helps create a seamless repair process by identifying the damage, monitoring the removal of damage, aiding in positioning of replacement welded and bolted on components, while providing verification of the repair and in turn ensuring reassembly goes smoothly.

It was realized in the mid 1980's how critical measurement was to restoring the vehicle to pre-accident dimensions, when inflatable restraints were installed on domestic production vehicles. Incorrect placement or positioning of the airbag sensors led to non-deployment issues causing needless injuries and fatalities. It was during this era that many mechanical 3D and the first electronic 3D systems were designed.

The Eclipse Plus enables the Technician to reference damage in 3 dimensions and assist in restoring the vehicle to pre-accident condition.

Eclipse Plus Equipment

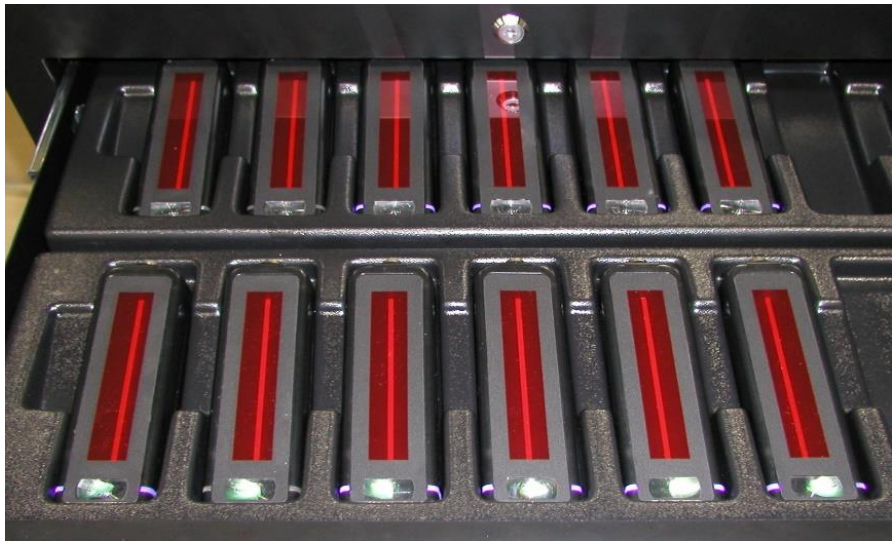
The Eclipse Plus System consists of the following items:

Cabinet Contents:

1st Drawer

12 Laser targets

- Battery powered
- Automatically charge when placed in tray



2nd Drawer

Full set of Stems

- Colour coded
- Bayonet style connectors

Full set of Magnetic Adapters

- 12 Universal rare earth magnetic adapters
- Adapters range from 4 mm to 32 mm

3rd Drawer

- Extra Stems
- Uni-fit adapters
- Upper Body measuring components
- Side Body Measuring components
- Stud and 4-8 Adapter kits

4th Drawer

Printer Drawer

- Color inkjet printer
- Cable storage

Bottom Compartment

- Laser Scanner
- Power Supply Cable for Laser

Not in Cabinet:

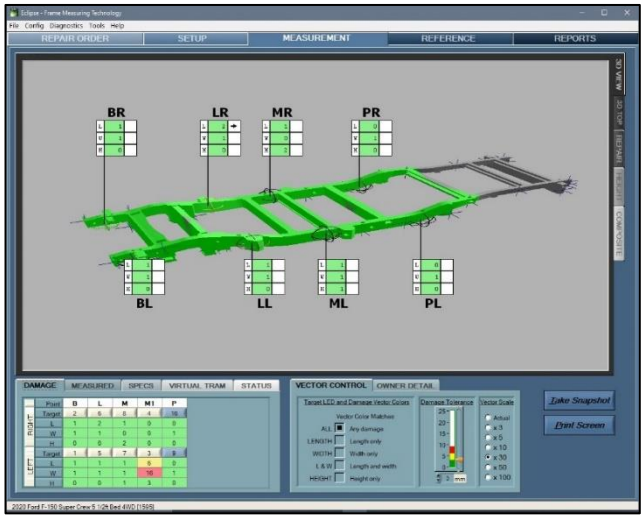
- Underhood Tram Bar
  - stored with laser tray on wall mount rack

Laser scanner tray

- Located on a supplied wall rack

Eclipse Plus Software

- 3D Data
- Specifications



The purpose of this manual is to make the technician familiar with the Eclipse Plus hardware & software. This includes the Laser scanner, Antenna, Computer, Targets, Stems and Magnetic adapters. They will also know how to perform comparative measurement techniques using the Side Body Adapter Accessory along with the use of the other various adapters.

They will also be able to:

- Start and save a Repair Order
- Assign targets to specification points
- Make an initial measurement of the torque box areas
- Make measurements in the damaged areas of the vehicle
- Save their progress through documentation
- Learn troubleshooting techniques

Start up

Set up a vehicle requiring measurement up on a lift, frame machine or frame bench.

Plug in the Eclipse system. This will apply power to the computer and start charging the laser targets. Targets require 1.5 hours for a full charge once the cabinet is plugged in and turned on.

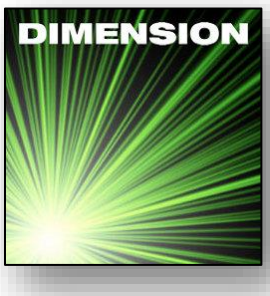
Remove the laser scanner from the Eclipse Plus cabinet. Plug in the laser scanner and start. This allows the laser to come up to a stable operating temperature in the shop. Approximately 5 minutes is acceptable.

Check whether the targets are charging. A blue LED at the base indicates the target is charging. Fully charged targets will not show the blue LED.

Make sure the antenna is plugged in. Place the antenna in a spot where it will receive signals from the targets and scanner. Choose a spot where it is not likely to be damaged.

Note: If the antenna becomes disconnected from the cable or the computer, you must exit the program, unplug and replug the antenna, then restart the program.

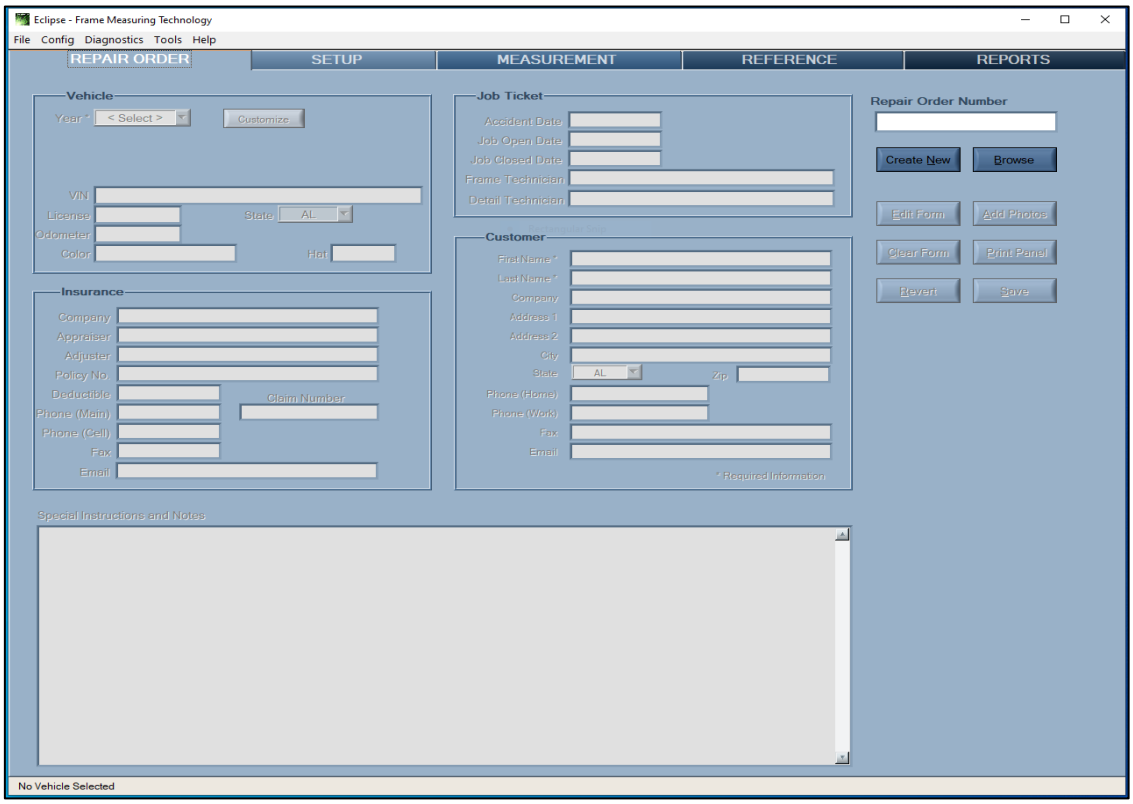
Start the Eclipse Laser Measurement Software by double clicking on the Eclipse Plus Dimension desktop icon



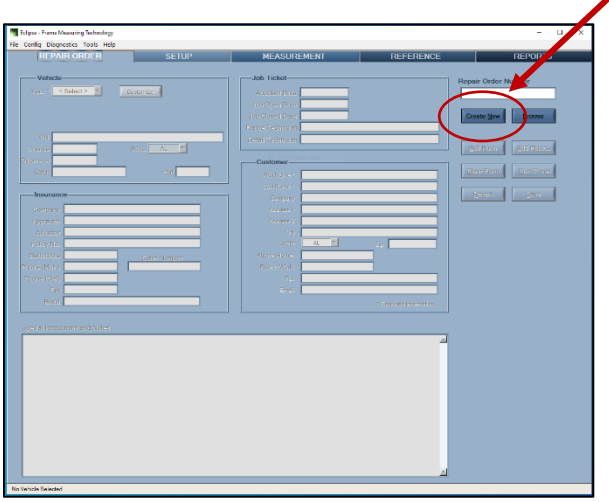
Start the Repair Order

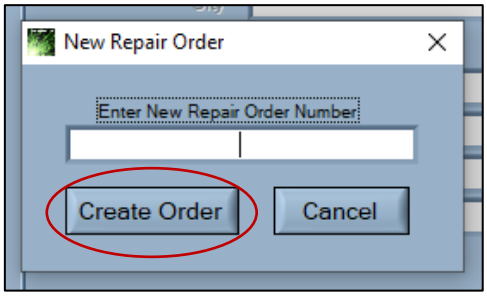
This is the screen you will see after you have started and entered the Eclipse Laser Measurement System software.

Before you can start to measure you must open a repair order. Because this is our first time, we will create a new repair order.



Start a new repair order by clicking on the **Create Order** button.

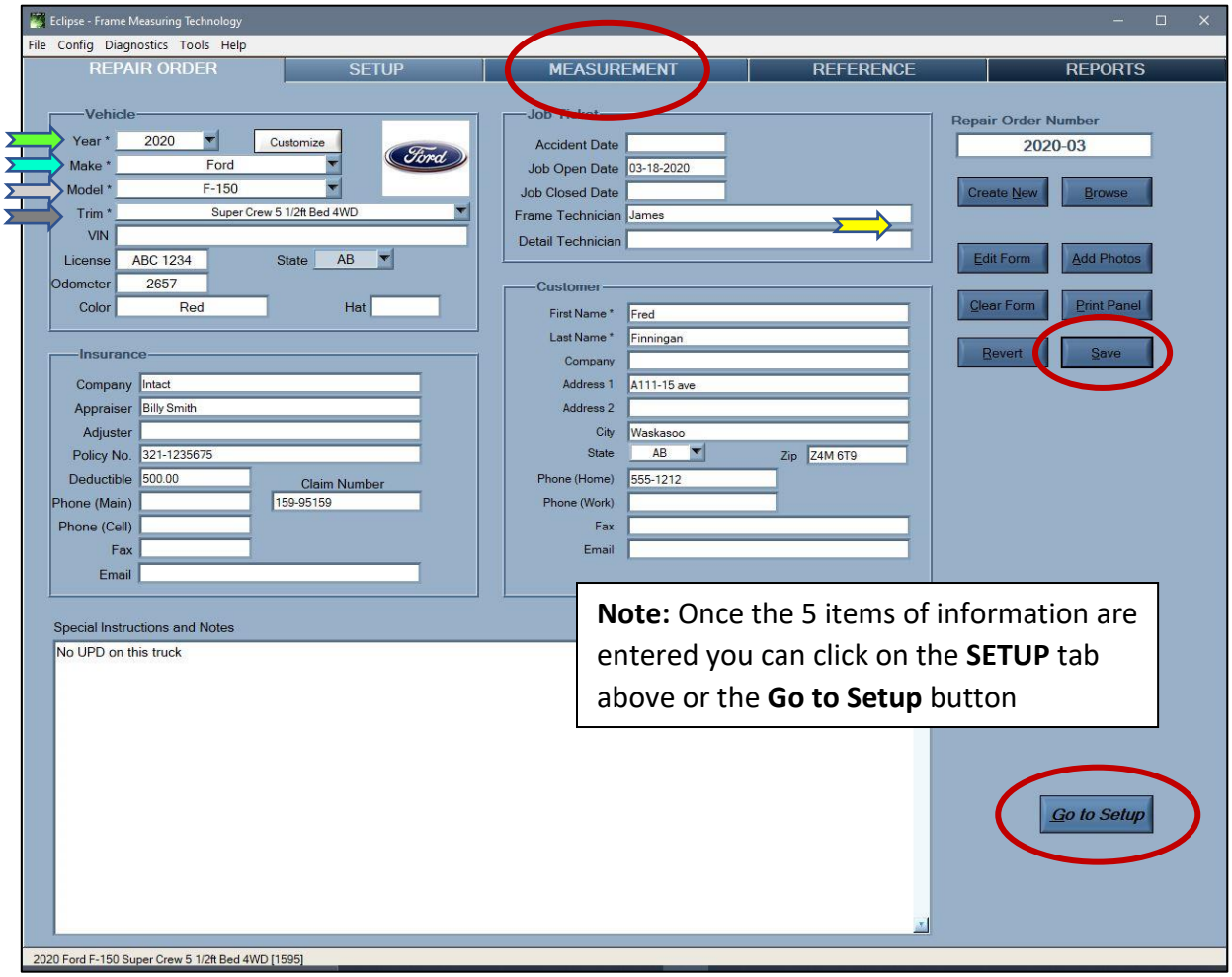




This window pops up. Enter the Repair Order number then click **Create Order**.

Now fill in the Vehicle information. You will need a minimum of 5 items including the repair order. They are:

1. Repair Order number
2. Year of vehicle
3. Make of vehicle
4. Model of vehicle
5. Trim level of vehicle



Other items are optional, but will populate into various reports such as Customers name, Technicians name, Claim number and VIN. Click on the Save button to save your progress.

Once all relevant information is entered, a button will appear in the lower right-hand corner of the window. Click on the Go to Setup button to proceed to the Setup screen.

Creating a repair order creates a file folder that will contain all the information we want to save about this repair. It keeps the vehicle data, any measurements we save, any pictures we take and save, and any other documents we load into the computer about the repair.

Eclipse Plus Setup

Before you can begin 3D laser measurements you must:

1. Set up the laser
2. Choose specification points and assign targets to those points.
3. Place targets at those specification points

Set up the Laser Scanner

The laser scanner can be located anywhere under the vehicle. The handle pocket should always face the driver's side. The laser can also be setup on a tripod with an accessory adapter plate.

The laser scanner has a built-in tilt sensor and does not need to be perfectly level. However, the sweep of the laser light beams should be roughly parallel to the plane of the underside of the vehicle.
The laser scanner communicates wirelessly with the computer and with the laser targets.

Note: While the Laser can be placed anywhere the targets can be struck by the laser, it is generally good practice to install it in the centre section of the vehicle.

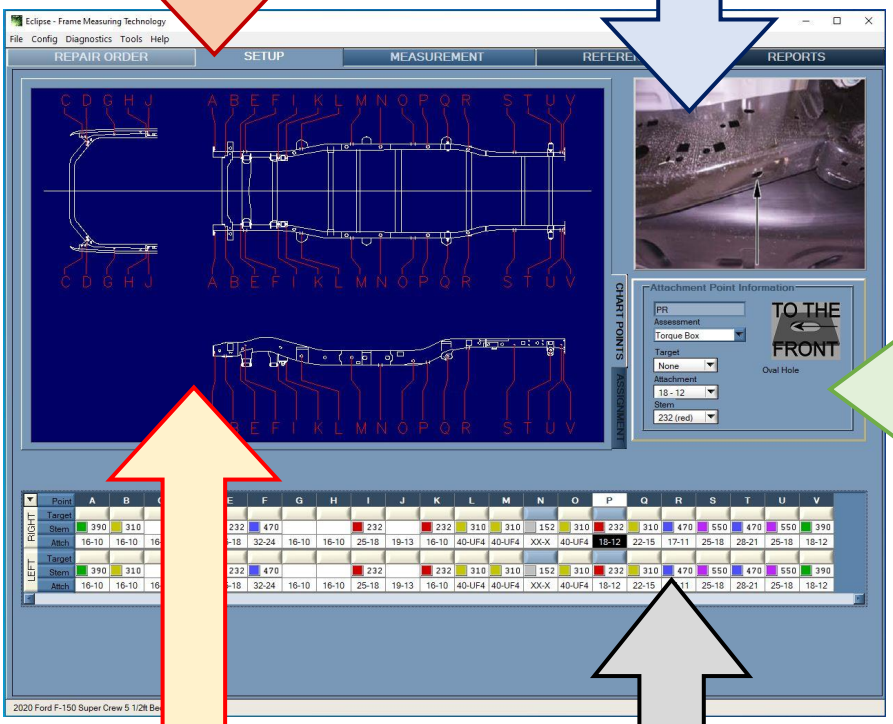
The laser can be setup on virtually any surface but is supplied with an aluminum tray that has a moveable carriage. The tray assembly can be installed on any system from a conventional Frame machine through to the Wedge Clamp system.

Screen Features

Below is a brief description of the various functions of the SETUP screen

Move through 5 different screens clicking on **Repair Order, Setup, Measurement, Reference** & **Reports** tabs.

Jpeg Viewer is an actual view of the specification point. Left click on the picture to expand and contract the image.



Attachment Point Information is found here. Changes to the point of reference such as Torque Box or type of Adapter are easily

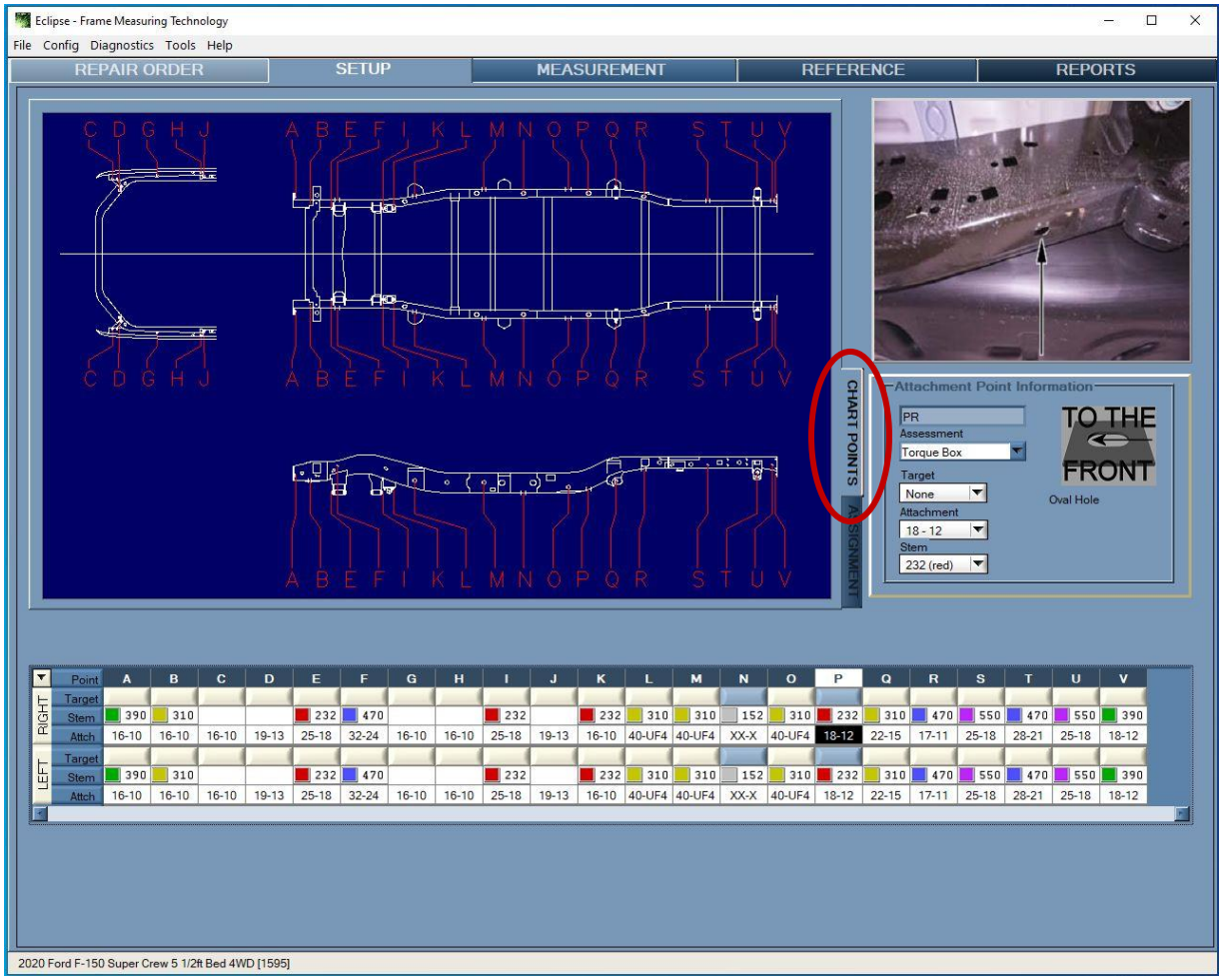
Charts Points screen is used to locate points to attach targets to. The letters on the screen correspond to the Reference table below it. It has zoom in features (scalable).

Reference Table gives you information on the attachment size and stem color for each location. Clicking on points changes information in the Jpeg Viewer and Attachment Point windows. Lettered points relate to Charts Points window

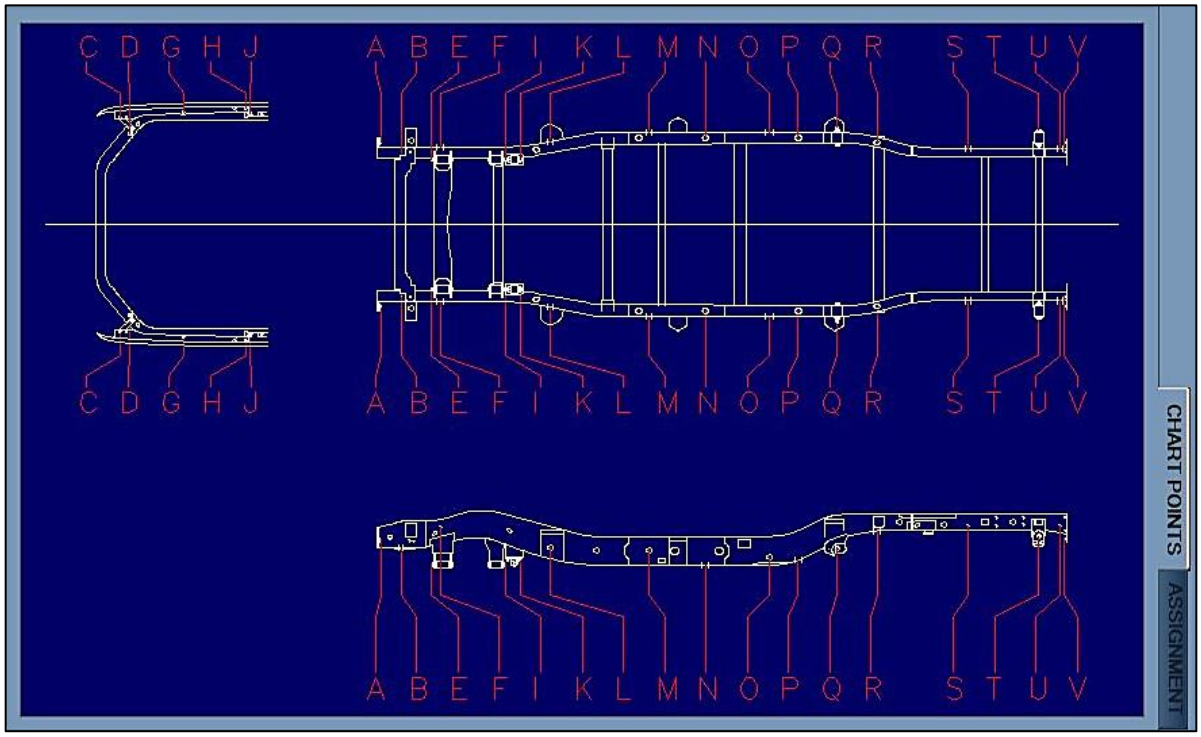
Choose torque box specification points

We are going to assign the first four targets to the torque box areas. We do this because the torque box is the most rigid part of the vehicle and the least likely to be damaged.

The Eclipse Plus Laser Measurement System needs at least four targets at undamaged specification points to develop good measurements.



The first part of the Eclipse Setup screen to look at is the Graphics Viewer. Make sure you are looking at the CHART POINTS screen and not the ASSIGNMENT screen. Click on the labeled tabs at the right of the viewer to switch between screens.



Each left and right pair of points are given a letter identifier. The Chart Points screen shows a top view of the chassis, a left side view, and a top view of the under-hood structure. The vehicle is always shown with the front of the car pointed to the left, and viewing the vehicle from the top, looking down.

Pick the torque box points

Now look at the Reference Table in the lower left portion of the screen.

	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
RIGHT	Target																						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12
LEFT	Target																						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12

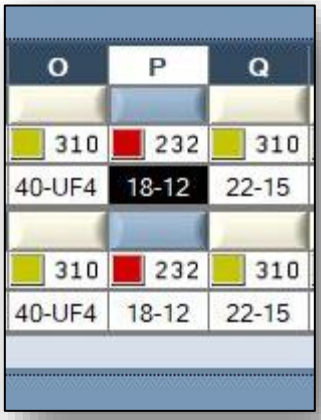
The Reference Table (above) shows the four torque box points typically used highlighted in Blue. The Letters correspond to the Chart Points screen.

Setting up Targets

We want to set up 4 targets in known undamaged areas, typically the Torque box areas. The system identifies these by highlighting them in Blue as seen in the reference table. When we choose these predetermined points, they are preset as a Torque box location. If the requested torque box is damaged or inaccessible, another location can be chosen, but we must manually set the new location as a Torque Box in the Attachment Point Information window.

4 undamaged areas are critical to establishing a sound base to measure from.

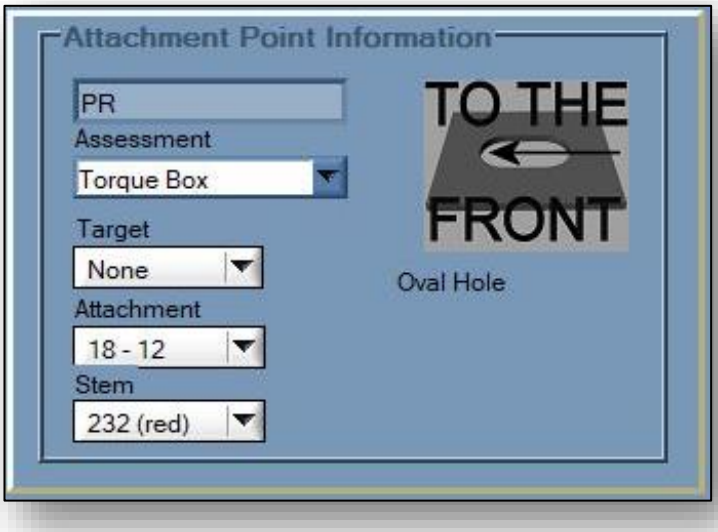
To get started, we click on the 'P' location highlighted in Blue. This is the right-hand side, and we can see that the information on the left-hand side is the same. This allows us to setup both locations left and right simultaneously.



The box becomes highlighted with a black in-fill.

The highlighted box gives us additional information about setting up the target. The small red window refers to a suggested stem, and the 18-12 tells us which adapter fits the point we selected.

Now look at the **Attachment Point Information** box. This point, PR, is assigned as a torque box point, so the Assessment drop down menu is preset correctly for us.



Note the window gives you information about placement of the adapter. In this case it's an Oval Hole.

Other locations will picture Holes, Bolt Heads, or Studs.

No other action is required in this window at this time.

Notice that once we clicked on attachment point ‘P’ in the reference table, the image in the upper right-hand corner changed to show us the mounting location of the Target.

Tip: This image can be blown up by left clicking anywhere on the picture once, and to close it, click on the image again.

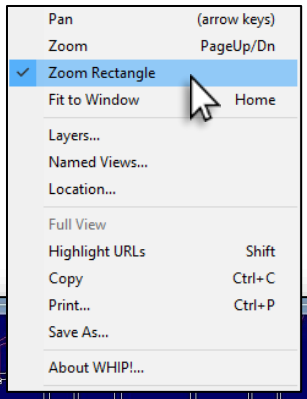
*Note that the pictures do not change left to right side selection. Only the Left side is shown unless there is a difference in location side to side.

***Note**: If there is no picture available you can zoom in by clicking and dragging inside the Attachment Points screen, then using the thumbwheel, zoom in or out.

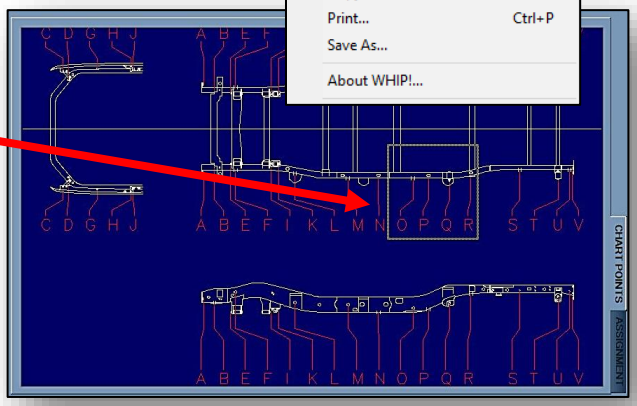
No thumbwheel? Do the following:

Right-click over the Chart Points window to bring up this set of options.

Check the **Zoom Rectangle** choice…

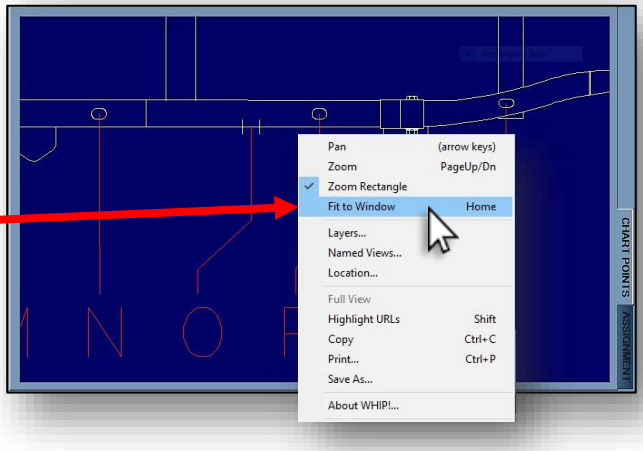


Then click and drag to create a rectangle
over the area you want to see…



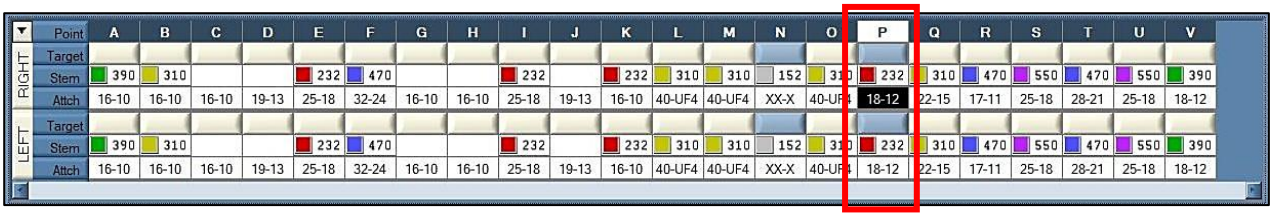
To return the display to the original view.

Right-click and select Fit to Window.



Select the Stem, Adapter and Target

As previously mentioned, information for setting up to install a target is found in the **Reference Table** as shown below.



	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
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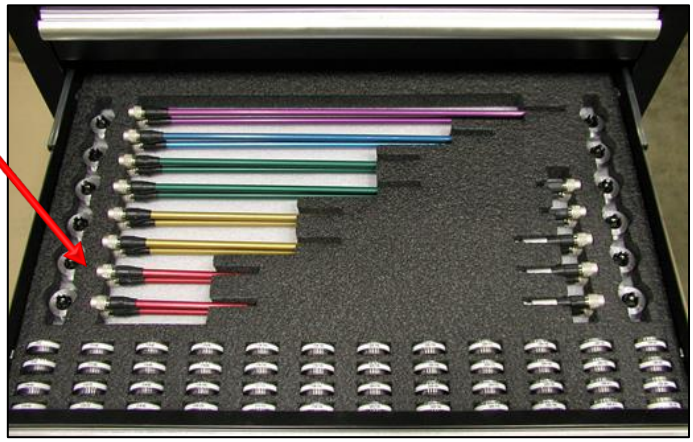
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12

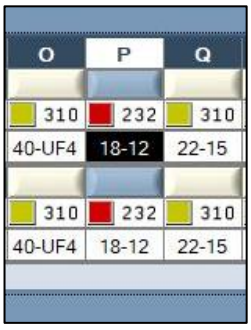
The box shows the recommended stem. Stems are color coded. Each color represents a different length. The box also shows the length in millimeters. Stems, Magnetic adapters and Centering adapters are found in the second drawer.

In position '**P**' the red box suggests we use a Red 232mm stem.

Note: *Suggested* stem is mentioned because any stem can be used and the system will automatically detect the change. This is useful depending on the distance between the underside of the vehicle to the location of the laser.



The box also shows the recommended attachment adapter. Attachment adapters can fit into holes or over bolt heads.
The label on the adapter shows the diameter of the hole first, followed by the diameter of the pocket needed to fit over a bolt head. In this example 18 – 12.

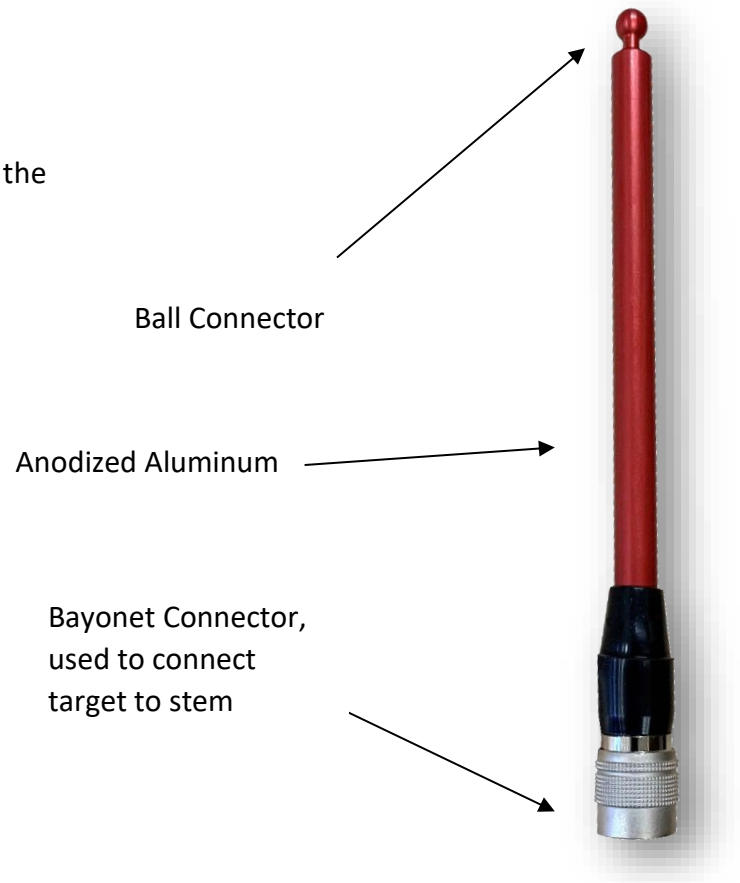


O	P	Q
310	232	310
40-UF4	18-12	22-15
310	232	310
40-UF4	18-12	22-15

Stems

Pull out the recommended stem.

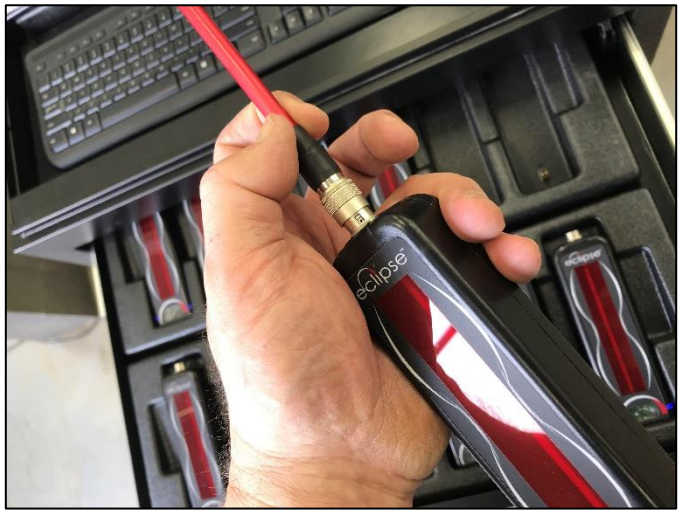
In our example the system suggests the Red 232 mm stem.



The stem length is coded by the wiring in the quick disconnect connector. You do not have to manually enter stem information.

Target Preparation

Remove a target from the cabinet and plug the stem into it. The connector is a bayonet style connector, similar to an air hose quick disconnect. Do not try to screw the stem onto the target. Rotate the stem until you feel it drop into a keyway, then using the stem, push until you feel the connector click into place.

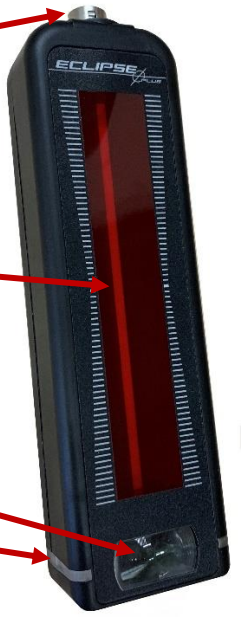


The targets communicate wirelessly to the computer. When you plug the stem into the target communication with the computer starts and the target and stem are automatically found once the target is seen by the laser. The stem length information is sent back to the computer.

Target LEDs

Here is more information about the construction of the targets.

1. Bayonet Connector for Stem
2. Detector Cell
3. IR Detector
4. Communication LED's



1 . The bayonet connector mates with the target stem. The stem length is coded by the connector wiring. When you plug a stem into a target it turns the target on.
2. The detector cell is what senses the laser light beams from the laser scanner.
3. The IR detector senses a synchronizing signal from IR LEDs around the perimeter of the laser scanner.
4. The target communicates to the computer wirelessly. The signal is picked up by the antenna plugged into the computer.

The communications LEDs serve two purposes.

First, they give visual indication of the status of the target.

Flashing:

Blue	target in the charging tray is charging
White flashing	stem plugged in; target activated; no laser or synch strike
Purple flashing	target not receiving IR synch signal
Red flashing	target not being struck by laser light beams
Green flashing	target receiving laser beams, IR synch signal, not assigned

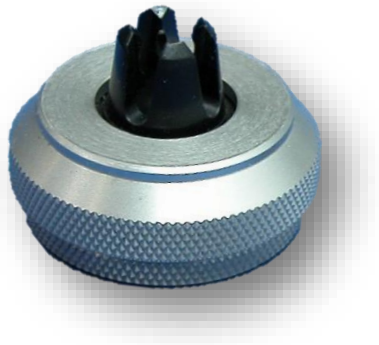
Second, they give visual indication of the measurement relative to the tolerance settings. This only happens after the targets are hung in place on the vehicle, are receiving the laser beam and the IR synch signal, the targets are assigned and you are in the **3D Measurement** screen. In Measurement Mode, they are a solid color unless they are not pointed at the laser accurately and need repositioning or there is something blocking either the Laser strike or the Synch pulse from the Laser.

Solid:

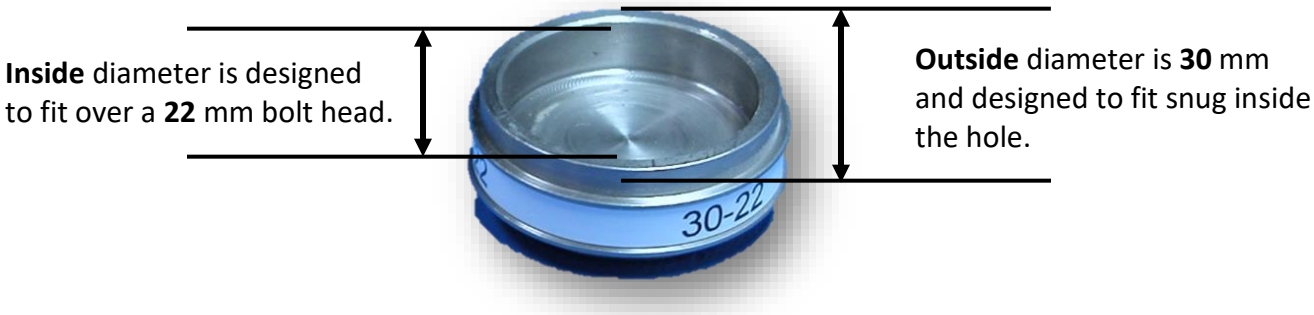
Green	Measurement within the acceptable tolerance zone	Based on your tolerance setting. 3 mm for Unibody or 5 mm for full frame vehicles.
Yellow	Measurement is between the acceptable tolerance zone and double for that zone.	Example, if setting is +/- 3mm and the measurement is between 3mm and 6mm.
Red	Measurement greater than twice the tolerance zone.	Using the example above if the measurement is greater than 6mm.

Magnetic Coupler, Bolt/Hole Adapters, and Stud Adapter information

The **Magnetic Adapter** consists of a rare earth magnet, an aluminum body and a plastic stem coupler. They are designed to work in conjunction with all the various adapters in the measuring system. They are easily serviced by twisting the top and bottom of the aluminum casing, removing the magnet and plastic ball coupler. The plastic stem coupler is replaceable should it become damaged.



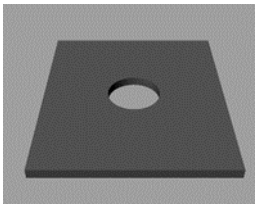
Numbered Adapters



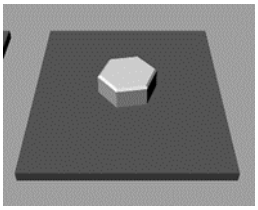
30-22 Example above

Adapters are basically centering devices, intended to find the exact center of a hole, bolt, stud, rivet or threaded hole. On the following page is a graphic example of points you will need to reference, and the type of adapter to select.

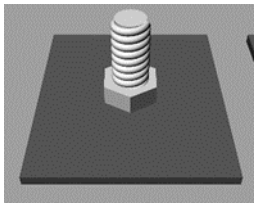
Symbols Referring to Various types of Adapters requested in the System



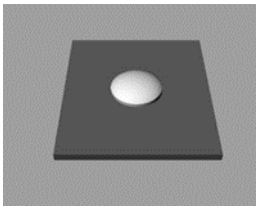
Standard - numbered adapter located in drawer 2



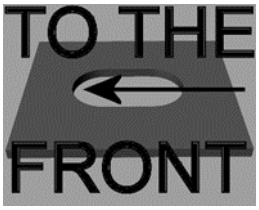
Standard - numbered adapter located in drawer 2



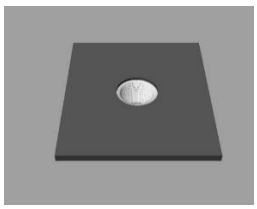
Stud – Stud Adapter kit found in drawer 3



Standard - numbered adapter located in drawer 2



Standard – numbered adapter located in drawer 2.
Adapter is <u>always</u> moved to the front of the oval/slotted hole. If the slot runs across the vehicle, slide the adapter as far outboard as possible.



4-8 Adapter kit located in drawer 3
(Threaded and small diameter holes)

Adapters included with the system eliminate target mounting challenges such as non-magnetic points, small and large holes etc. Here is information on the various adapters:

Patented Uni-fit Adapters

Patented Uni-fit adapters substitute for magnetic adapters when magnetic adapters will not stick to the vehicle frame. They are especially necessary when the vehicle frame is aluminum. They can also be used in place of a magnetic adapter when you run short of a specific size.

The patented Uni-fit has a range of hole diameters marked in millimeters on its rim.

To use the Uni-fit, pick the size that will fit. Squeeze the halves of the patented Uni-fit together and push it into the specification point hole until one of the shoulders stops at the frame surface.

You must check **Uni-fit** adapter in the **Attachment Point Information** box in Eclipse Setup. **Uni-fit** will appear in the **Attachment** box drop down window. The program will automatically compensate for the use of the patented Uni-fit instead of a magnetic adapter.

It is very important when using a Uni-Fit adapter in place of a magnetic adapter in a round hole, *or* are requested to use one as shown above, that you manually choose **Uni-fit** from the drop-down menu in the **Attachment Point Information window!** Measurements will not compute correctly otherwise. This is the only instance where you have to manually select any adapter.

Stud Adapter Kit

New Version

Previous Version

The Stud adapter kits, either version, are designed to allow the system to measure accurately to the centre of the tip of a stud. Each version requires a slightly different approach to set up.

Note: The system does not ask for this kit to be used. The technician should know to use the kit when a stud is referenced as a measurement location.

New Version

Pick the Nut from the kit that fits the stud you wish to measure. If it's a stud that has an extension to the end of the threads, choose one of the longer versions of the nuts.

Install the nut to the point where it's flush with the end of the stud to be measured.

Locate an adapter from drawer #2 that fits snug over the nut, then attach the magnet.

Attach stem and target then measure conventionally.

4-8 Adapter Kit

The 4-8 adapter kit, much like the Stud Adapter kit is not directly referenced for use in the system. When a threaded hole, smaller than 11 mm is referenced to measure from, this is the kit to use. The interchangeable studs simply thread into the adapter to allow measurement of holes or threaded nuts for 4 to 10 mm locations.

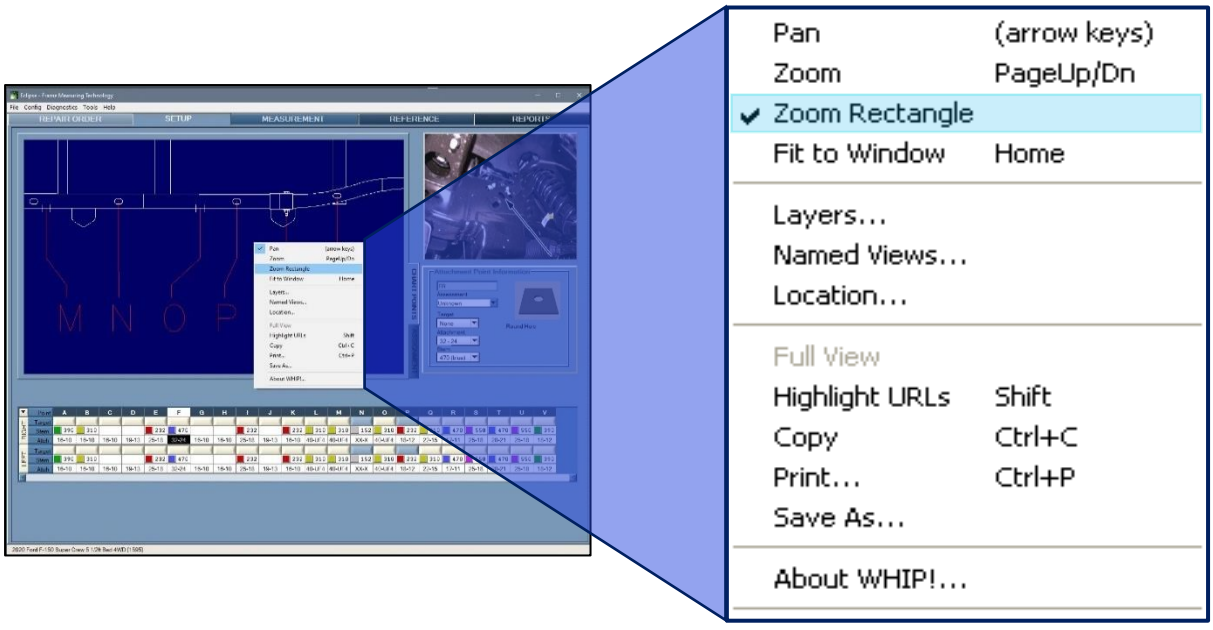
The kit is also very useful when doing comparative side body measurement when referencing symmetrical bolt holes on A, B, C pillars and other various brackets and components.

Viewing Specification Points

Look in the upper right-hand portion of the screen to see a picture of the specification point. You can click on the picture to get a full screen view. The picture will show you whether the specification point is a bolt, a stud, a hole, or a slot. Click on the enlarged picture to shrink it back to its normal size.

Reminder: If there is no picture available you can zoom in on the point in the **Chart Points** screen for better detail. **Right-click the mouse** to bring up this set of options.

Check the **Zoom Rectangle** choice. Then click and drag to create a rectangle over the area you want to see. To return the display to the original view, right-click and select **Fit to Window**.



Hang the targets on the vehicle

It is good practice to hang targets in the centre section of the vehicle first. This allows us to verify the 'foundation' of the vehicle is sound, and is a good base of reference for all other measurements. We need 4 good undamaged areas for reference, 5 to measure.

It is also good practice to assign targets using odd numbers to the left and even numbers to the right. Again, this keeps things neat and reduces the chance of confusing target and specification point assignments. It is also beneficial when re-installing targets if a job is held up and the system needs to be dismantled, and set up at a later date.

Note: It is not necessary to do this and you will develop a process that works best for you.

At the chosen specification point attach the magnetic adapter assembly. Then snap the stem and target assembly into the adapter.

Turn the red face of the target so that the sweeping laser beams hit the face. The LED display at the bottom of the target should be flashing green. If it isn't, see **Troubleshooting** below.

Troubleshooting Targets and Errors

1. The LED display at the bottom of the target is not flashing green.

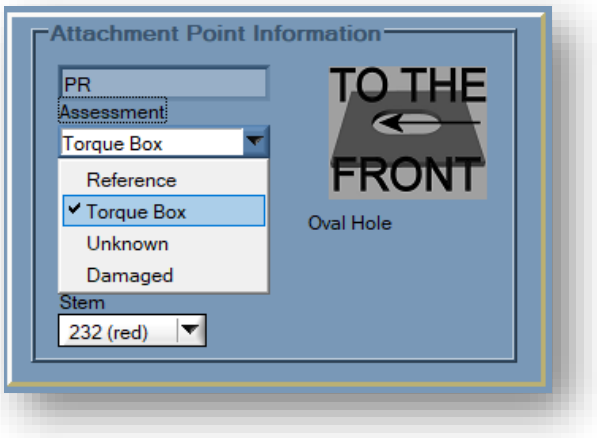
    i. The LED is flashing red. This means the laser is not striking the target face.
    ii. You should be able to see laser beams as they sweep across the target face. If they are difficult to see try holding your hand up next to the target.
    iii. Turn the target so that the laser strikes the target.
    iv. If the laser is striking above or below the target, choose a different stem and plug it into the target.
    v. The program assumes that the vehicle is set at an 11.5" clamp height with the laser scanner on the same level as the clamp bases. If this is not the case, use stem lengths that give a laser strike roughly in the middle of the target face. The program will recognize the stem lengths automatically as they are plugged into the targets.

2. The LED is flashing purple. This means that the target is not getting the sync signal from the laser scanner.
    i. Turn the target to point more directly at the laser.
    ii. Target may be too close to the laser scanner.
    iii. Try a different target.
    If a different target has the same problem, contact Eclipse Technical support at: 1-888-302-1344

Finish hanging the remaining targets to the other 3 torque box points

Repeat the steps you used for the first target.

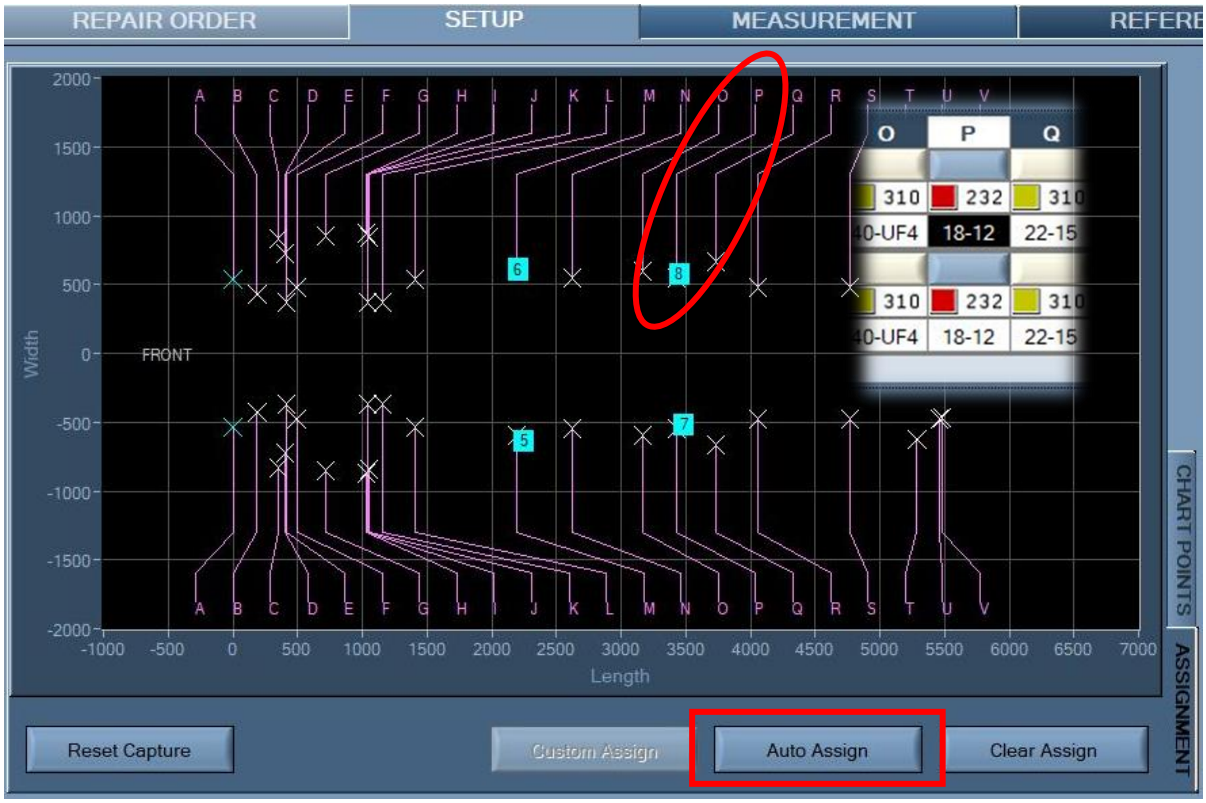
1. Select the torque box specification point you want to use from the **ECLIPSE SETUP Chart Points** screen.
2. If you cannot use the suggested Torque Box point (highlighted in Blue). Select another nearby. Click on the desired point, then change the **Assessment** to **Torque Box** in the Attachment Point Information window.



3. Check the Reference Table for the recommended stem and adapter.
4. Check the photo in the upper right-hand corner of the screen to get an idea what the specification point looks like.
5. Select the stem and adapter from the tool box
6. Select the target from the tool box.
7. Attach the stem to the target.
8. Attach the adapter to the specification point under the vehicle.
9. Snap the stem into the adapter.
10. Turn the target to face the laser and check the LED display for flashing green.

Open the Assignment Screen

Click on the **Assignment** Screen Tab found at the lower right-hand corner of the **Chart Points** screen. We should see 4 light blue boxes on the screen. We can see the #8 target is hovering close to the assigned position 'P'.



With the targets close to the selected locations, click on the Auto Assign button.

Note the 4 buttons along the bottom of the window. The 4 buttons perform different tasks as described:

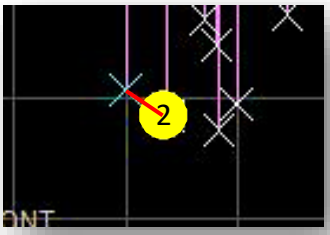
- Reset Capture: Clears all data and searches for any unfound targets. Useful when targets are repositioned to new locations. Starts from scratch.
- Custom Assign: For future features.
- Auto Assign: Searches for nearest position available and automatically assigns target.
- Clear Assign: Clears the data in the Reference Table but leaves the targets in position.

This is roughly how your screen should appear.

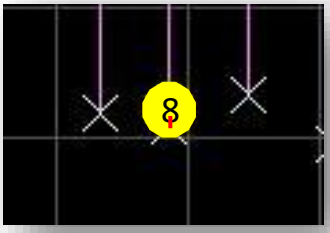
If all four targets are showing up as Green Triangles, proceed to page 31, titled **Go to Measure.**

Note: There are occasions that one or more triangles appear as a Yellow circle, sometimes with a Red line extending from them.

A Red line extending from the Yellow Circle to an X is indicating the system placed the target in the wrong location. This happens occasionally if many measuring points exist within close proximity to each other. See the next page for ways to correct the issue.



A Yellow Circle sits slightly off to the side of the measuring point.
This may indicate misalignment in that area relative to the measurement data.
Proceed to Measurement.
The misalignment will be shown in the Measurement screen.

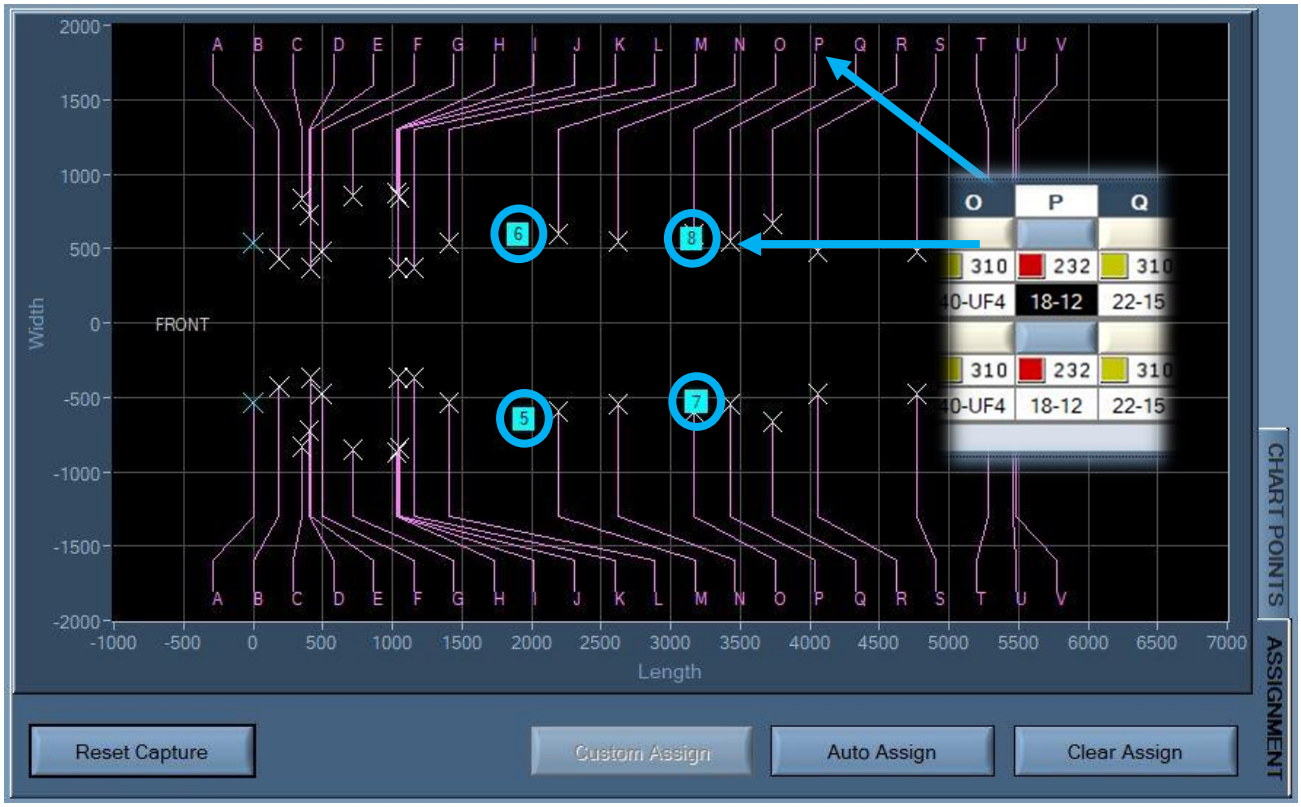


If you've encountered incorrect positioning of the targets, see the next page which explains how to manually assign the target.

On occasion, targets will not appear close enough to the chosen location to use the **Auto Assign** feature.

The graphic below shows the targets forward of where they are supposed to be…

Target 8 is hovering over position O, even though we installed the target in location P. In this case you have to manually assist the system.

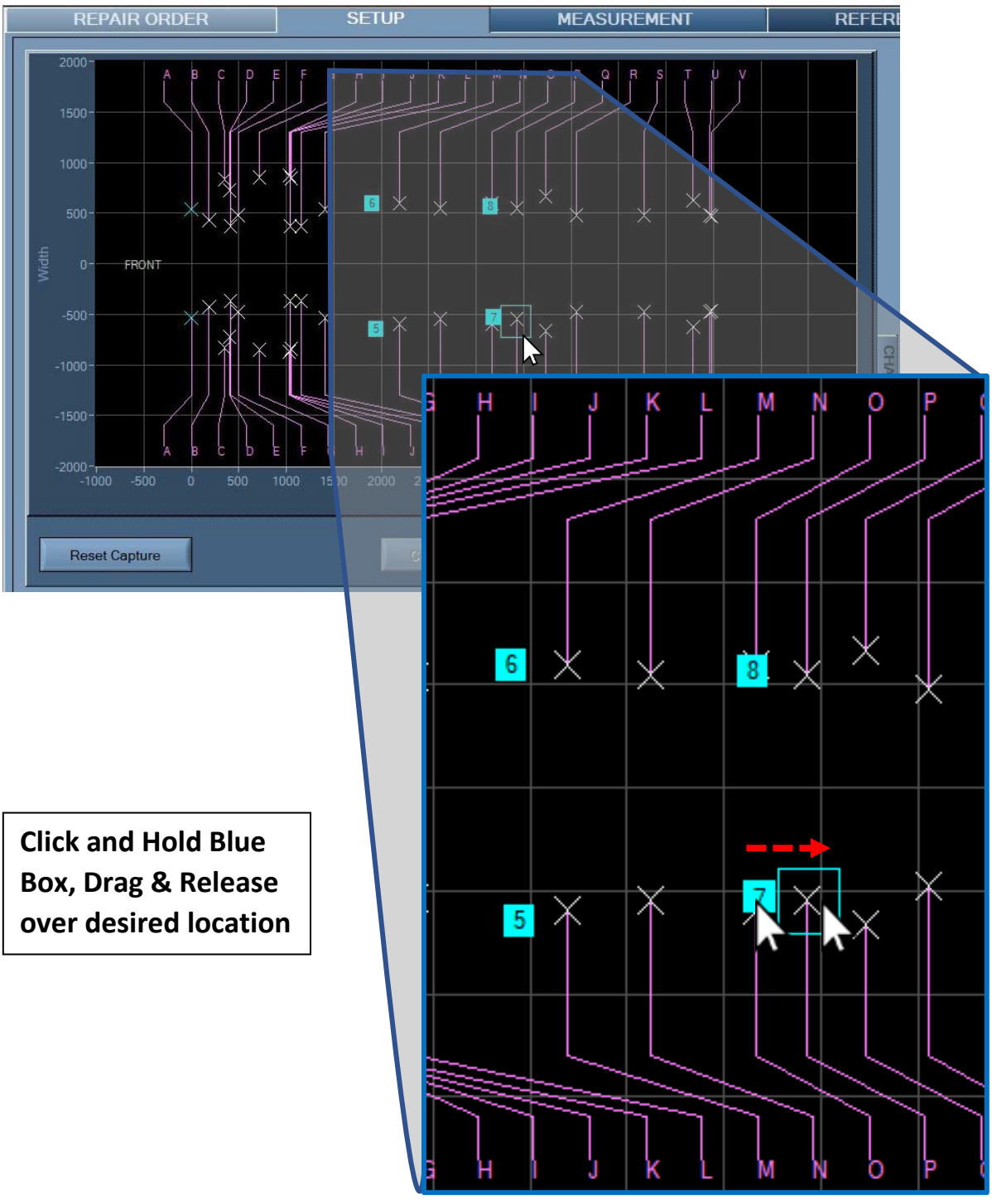


Proceed to the next page to learn the simple solution.

Drag and Drop to Assign Target Positions

Drag and drop the target onto the location (chosen lettered position). This is accomplished by a click, hold and drag operation with the mouse.

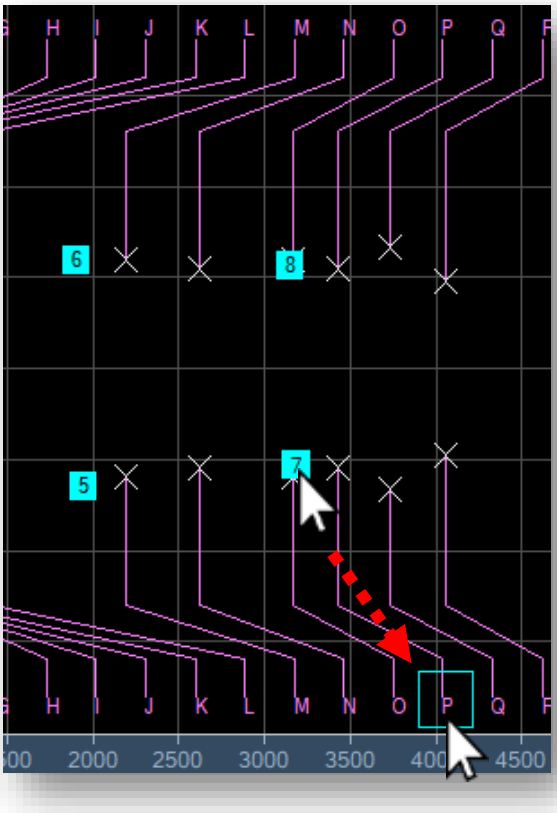
Left click and hold the Blue square of any target, then drag it onto either the letter (In this case P) or the **X** that corresponds to the letter. See below.



Click and Hold Blue Box, Drag & Release over desired location

Same principle applies when dragging to a Letter Position  as opposed to the 

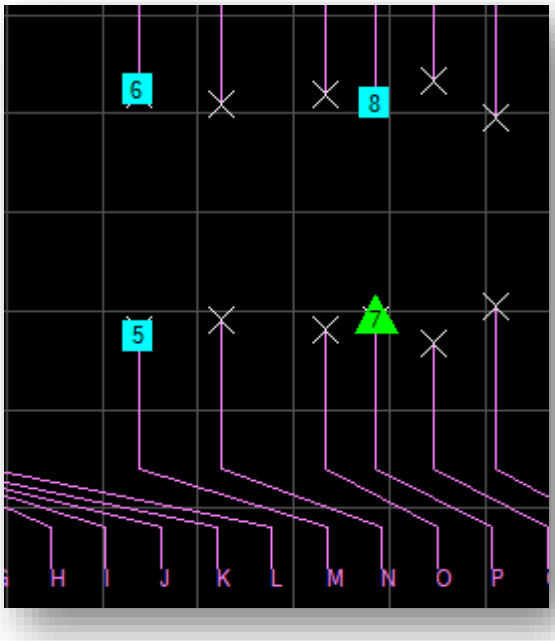
Click and Hold, Drag & Release



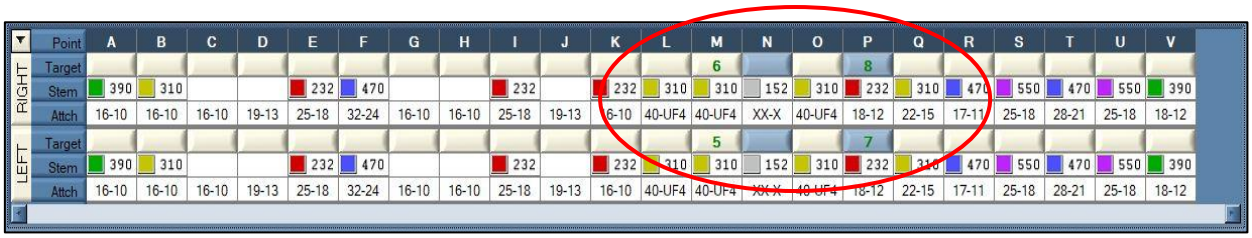
Your screen will now show a Green Triangle showing proper assignment.

Notice the other Blue boxes found their approximate locations

At this point, you can use the **Auto Assign** feature, or continue to **Manually assign** until all blue boxes are assigned.



Note: The Reference Table shows the Targets are now assigned to the locations you chose.



	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
RIGHT	Target													6			8						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12
LEFT	Target													5			7						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12

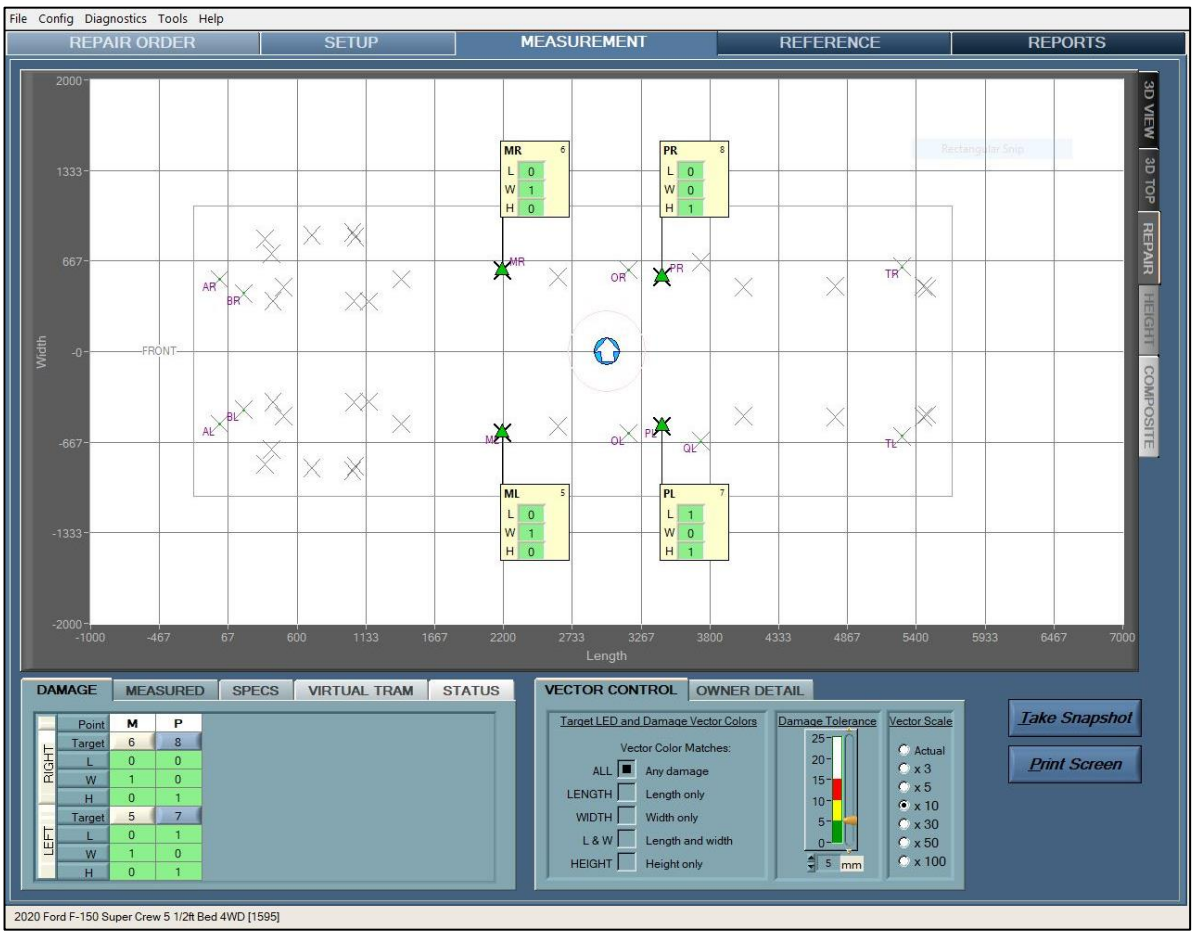
It is important at this time to make sure the Four Torque Boxes target numbers are highlighted in Green. This is a visual cue that you have the torque boxes set up correctly.

Check the Measurement of the Torque Box

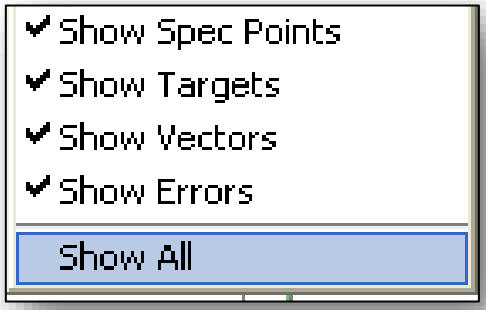
Now click the 

tab at the **top** of the window.

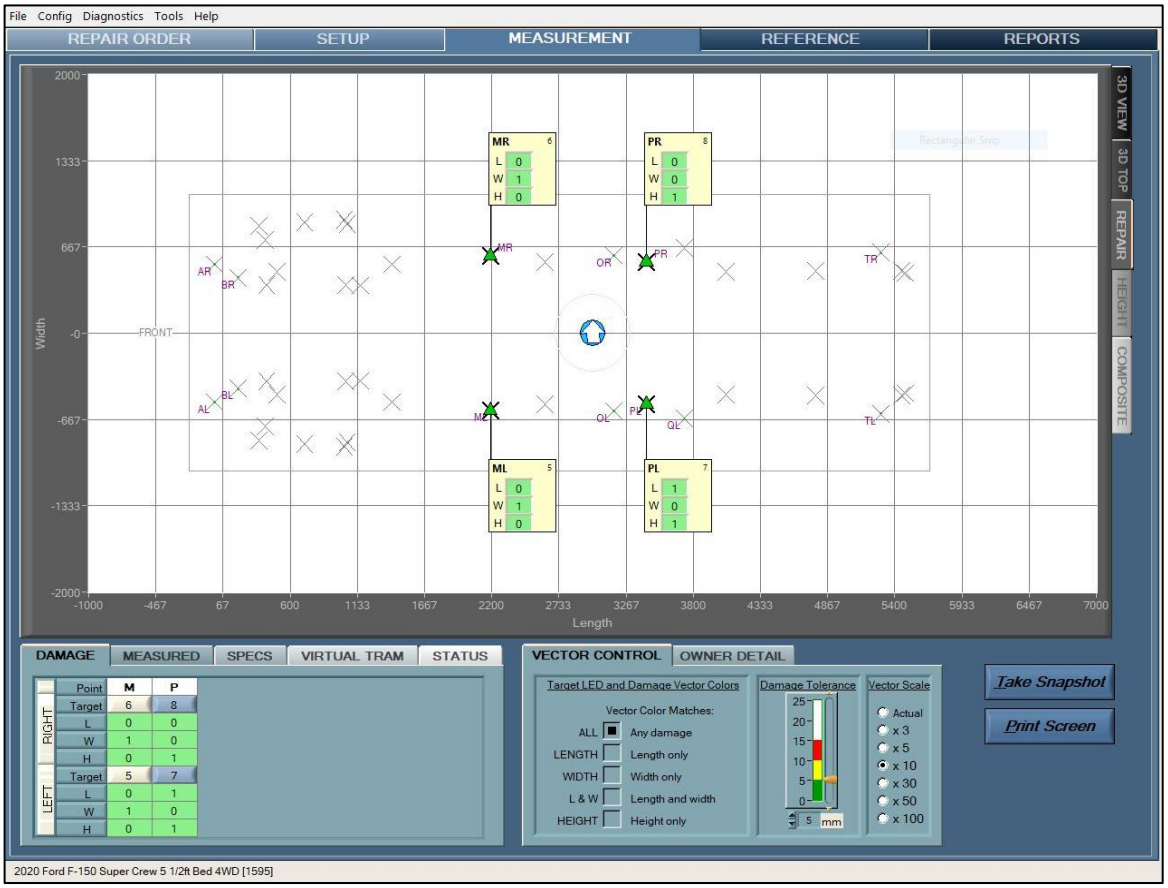
This is the 3D Measurement screen. It opens displaying the **REPAIR** screen. It shows a top down view of the specification points. We want to see that communications with the torque box targets is correct. And we want to see that the Eclipse software has calculated its positions correctly. Note the various Tabs on the upper right-hand side of the screen.



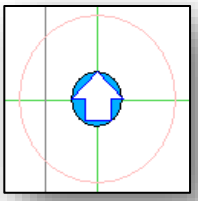
Right-click inside the 3D Measuring Repair screen.



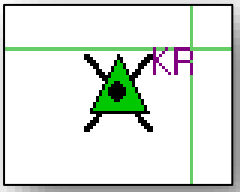
Click **Show All** to make sure that the specification points, targets, vectors, and errors are shown.



The arrow in a blue circle icon shows the location of the laser scanner.

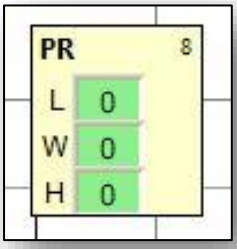


The torque box targets should be shown with a green triangle with a black dot inside. The dot indicates a torque box point. The triangle indicates that the point is accurate and being used for a base calculation.



The error flags show that the torque box has no damage in **L**ength, **W**idth, or **H**eight; which is what we expect.

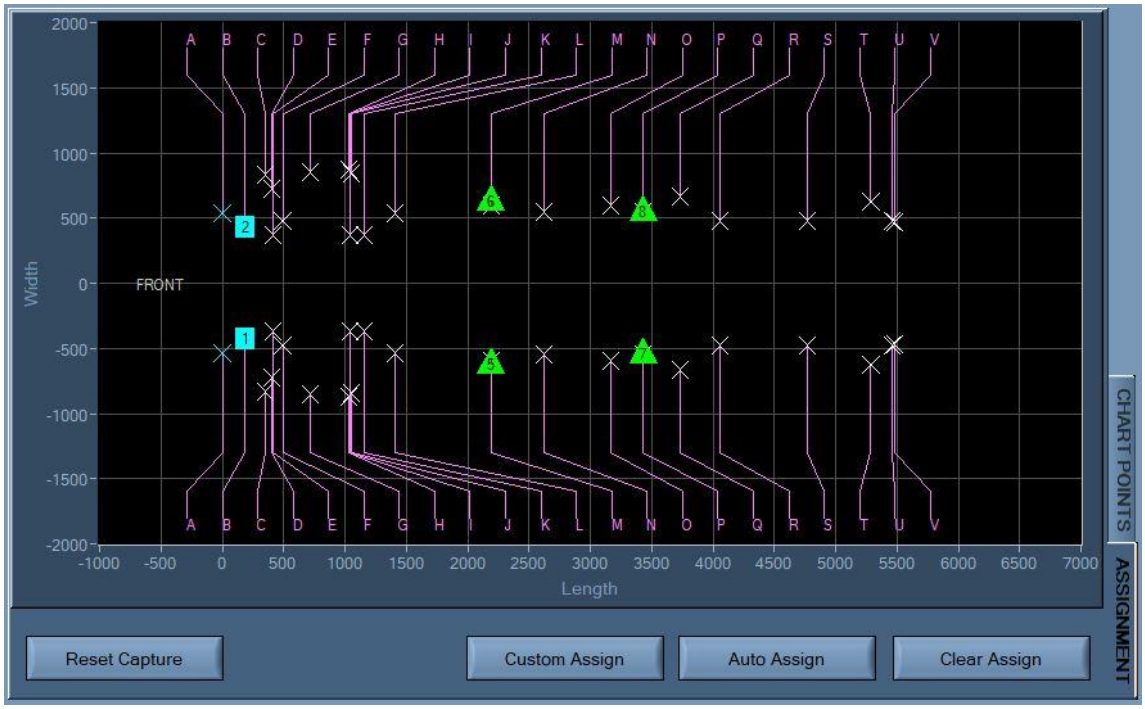
Notice in the flag, we see location information (PR) and the Target number (8).



Now switch back to the **SETUP** tab so we can add additional targets and measure the damage.

Measuring Damage

You are now going to set up to measure the damage on the structure of the vehicle. In **SETUP** select two specification points in the damaged area.



Select the stems and adapters required and hang the targets on the vehicle. In our example we've chosen points BL and BR and targets #1 and #2.

They appear on your ASSIGNMENT screen as expected, now either Drag and Drop or use Auto Assign to assign the targets.

Notice the Targets are showing a Yellow Circle. This is what we expect to see in the damaged areas.

For each target in a known area of damage, click on the Specification point or the Target, then select **Damaged** under the Assessment drop down menu.

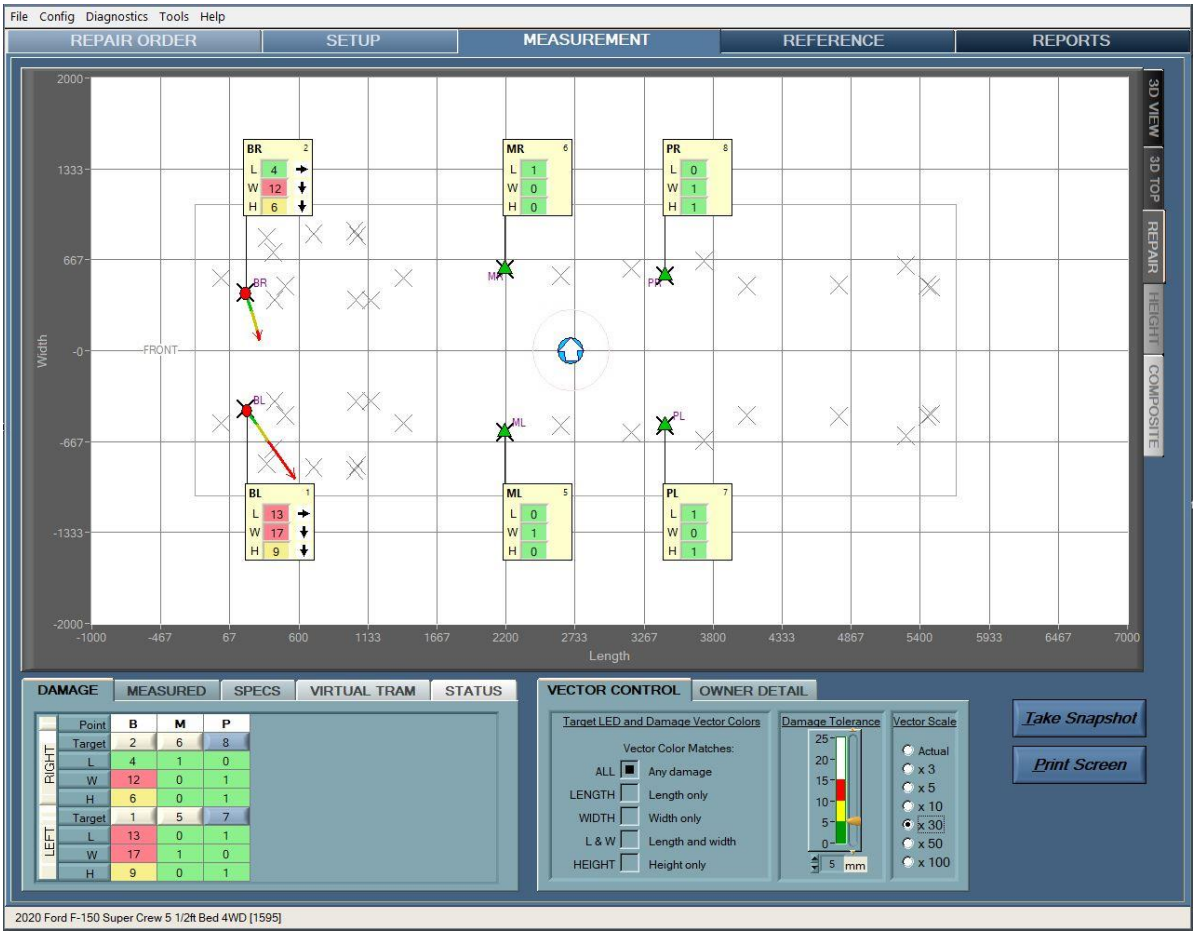
Notice the numbers 1 & 2, Left and Right in position B have turned to Red. Once again, a visual clue as to what each target is classified as.

Number colors represent the following classes:

Reference is Green, **Torque** Box is Green, **Damage** is Red and **Unknown** is Black.

This is how the system determines what is correct in the structure and trusted as reference, and what is damaged and incorrect.

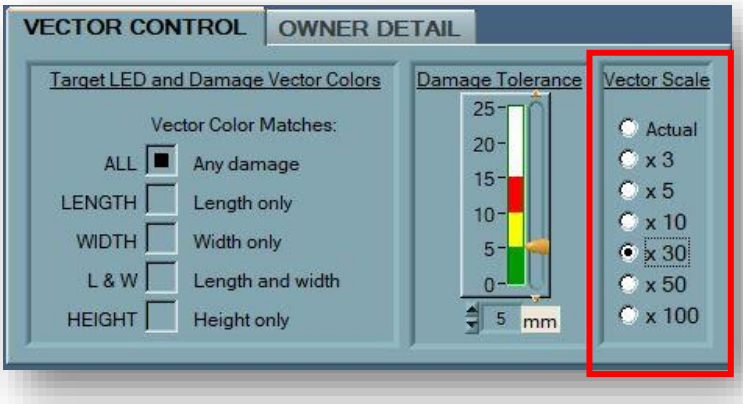
Click on the MEASUREMENT tab at the top of the window to view the measuring screens.



We are back to the Repair view. In this example point BR moved 4 mm back, 12 mm sway to the left, and 6 mm loss in height. BL shows length is short by 13 mm, sway to the left by 17 mm and a loss of height by 9 mm.

The red circles indicate specification points that are damaged. Here the color red shows that the points have moved more than 10mm. More about this when we talk about tolerances.

The arrow is a Vector that shows the sum of the length, height, and width movement. It shows you the direction of the damage. In this example the vector is magnified 30 times.

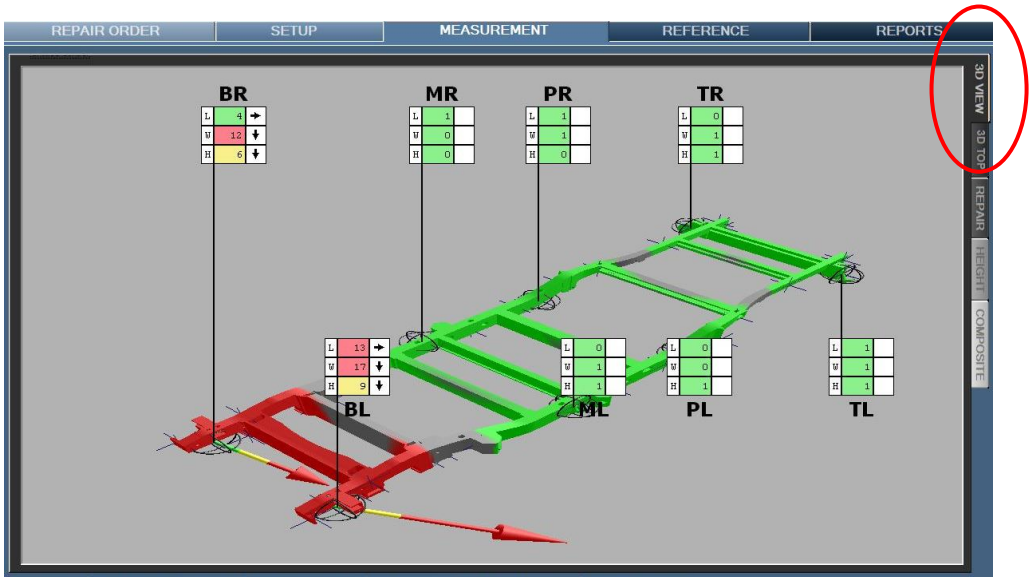


This is set by the **Vector Scale** control in the **Vector Control** window. More about this below in Vector Controls and Tolerances on page 40.

Measurement Screens

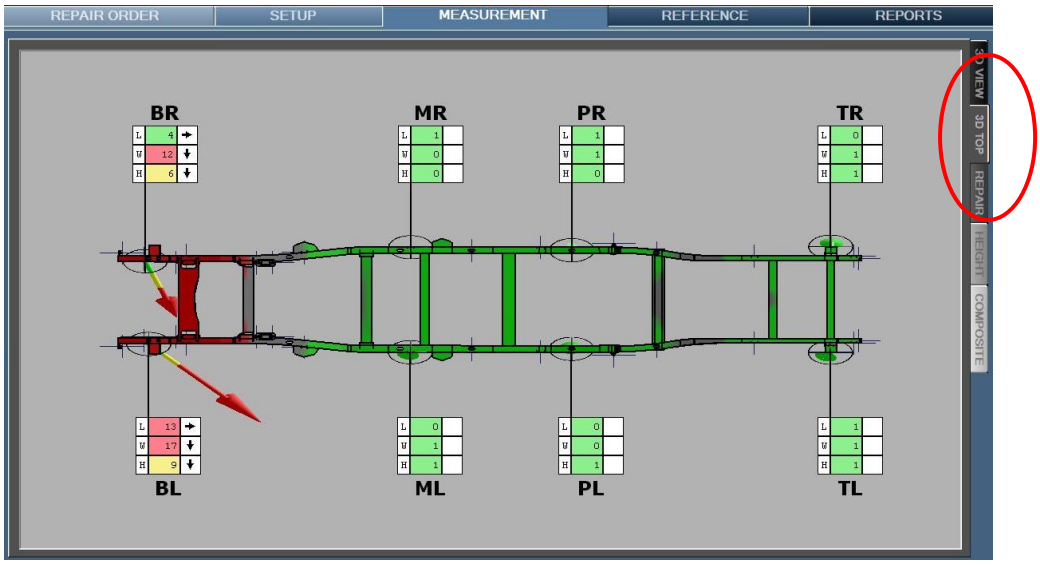
The 3D Measuring module has five graphics display screens designated by tabs on the right side of the screen. Click on the **3D View** tab.

3D View



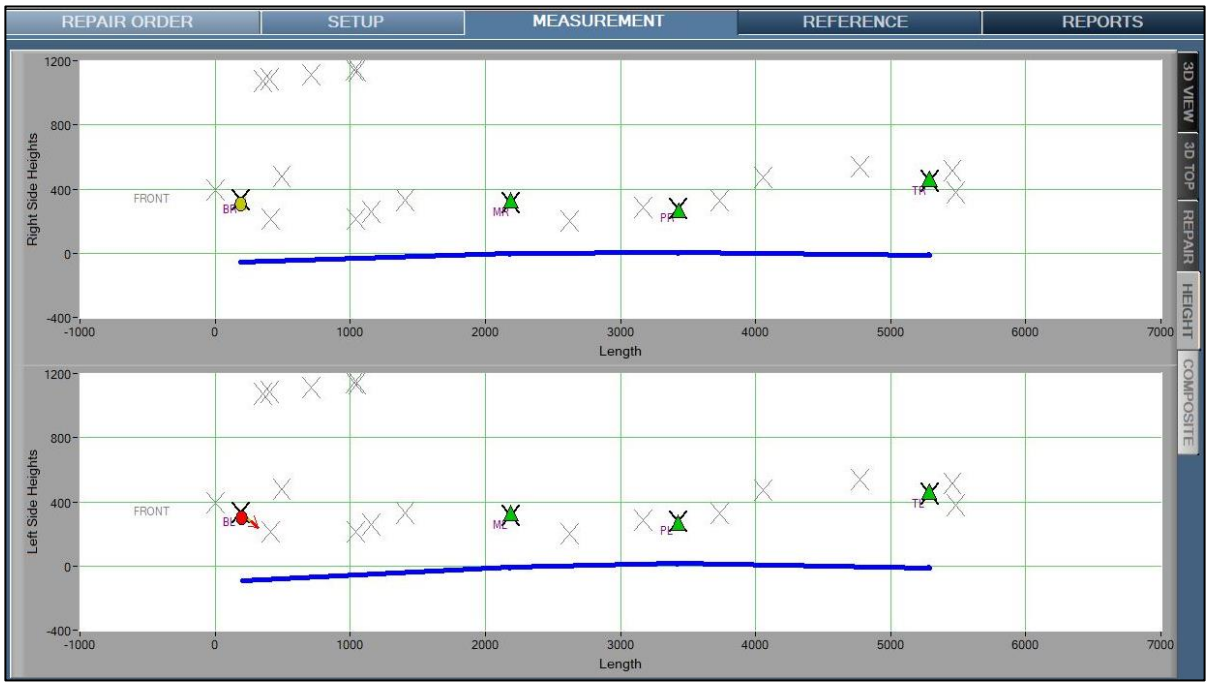
Click and drag with the mouse to tilt and rotate the 3D view. Use Shift + click to pan the 3D view. Use the mouse scroll wheel to zoom in or out of the 3D view.

Now click on the **3D TOP** tab.



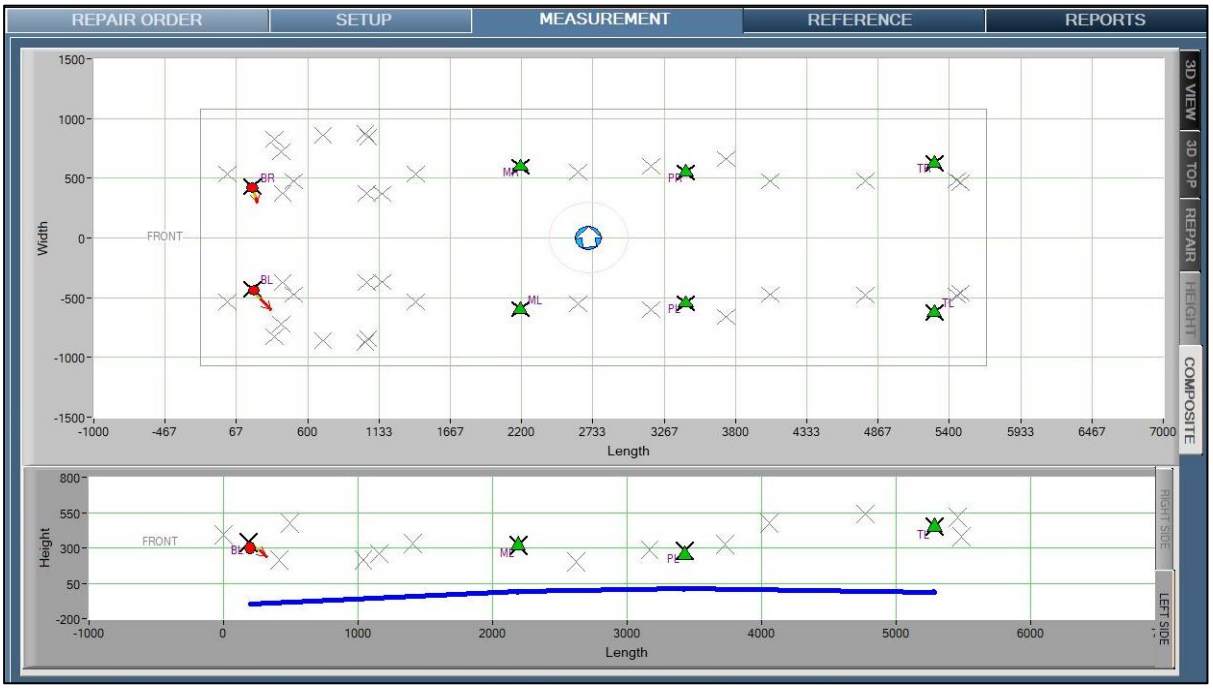
This gives a top down view of the vehicle structure.
Click and drag to pan the view. Use the mouse scroll wheel to zoom in or out.

Now click the **HEIGHT** tab.



This view is a side view looking at the left side of the vehicle. The heavy blue line will be straight if there is no sag damage. Otherwise it shows graphically that a part of the vehicle has been moved up or down.

Now click the **COMPOSITE** tab.



This view combines the **REPAIR** and **HEIGHT** views. Note that you can select either the right side or the left side with tabs on the rights side of the screen

Vector Controls and Tolerances

Vectors (arrows) are used to show the amount and direction of the damage. The vectors show how far and which way the specification points moved relative to their ideal position. To repair the damage, you must pull the specification points in a direction opposite to the vectors.

Throughout the Eclipse Laser Measurement System color is used to depict the amount of damage to the vehicle.

- Green shows undamaged areas. The specification points have not moved from their original positions.
- Yellow shows moderate damage.
- Red shows damage

The tolerances used to pick the color are set in the Damage Tolerance part of the Vector Control pane. In the example shown here 0mm to 5 mm displacement is the tolerance range for an undamaged portion of a frame. More than 5 mm to 10 mm displacement defines moderate damage. More than 10 mm to 15 mm (or more) defines damage. You can change the tolerance range in the small window at the bottom of the Vector Control pane. Or click and drag the tolerance pointer up or down the scale. The default setting is defined in **Config / Preferences / 3D Measuring**.

Note: OEM (original equipment manufacturer) describe the leeway allowed in manufacturing the vehicle. The tolerance settings in the Eclipse Laser Measuring System determine how the colors will represent the amount of damage.

In general, Unitized construction vehicles are 3 mm of tolerance, and Body over Frame vehicles are set to 5 mm of tolerance.

To make the Vector (arrow) visible in the 3D and 2D views, you can pick the scale in the Vector Scale portion of the pane. Pick a multiplier that makes the vectors longer and easy to see.

The **Target LED and Damage Vector Colors** section

The damage vector will point in a direction that is a combination of the displacement in length, width and height. It may be easier for the user to pull out the damage by breaking the 3D vector down into its length, width, and height components. This section allows you to do that. Breaking down the 3D vector into single dimension components only works in the 2D graphics windows: Repair, Height, and Composite.

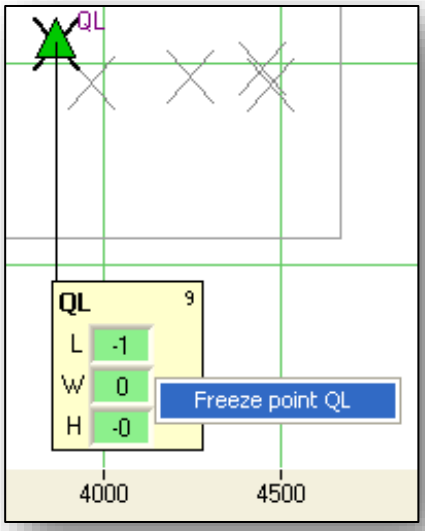
- **All** - shows the colored vector in 3D form.
- Length breaks the vector into length, width, and height. The length component is shown in red. Width and height are depicted in blue.
- **Width** - breaks the vector into length, width, and height. The width component is shown in red. Length and height are depicted in blue.
- **L & W** - show the vector in red only in the length and width plane (the horizontal plane). Height is shown in blue.
- **Height** - show the height component in red. The length and width vector (horizontal plane) are shown in blue.

Using Freeze Point to measure additional specification points

The Eclipse Laser Measurement System has 12 targets. You must have four targets in known undamaged portions of the vehicle structure. What do you do if you want to measure more than 12 specification points or capture data on multiple upper body measurement points?

You can use the **Freeze Point** utility to capture the data from one or more targets, then assign those targets to new specification points.

This may give you a better understanding of the extent of the damage. For instance, you may be able to measure a frame rail near the front of the car, freeze that point, then measure the rail closer to the undamaged torque box.



To freeze a point.

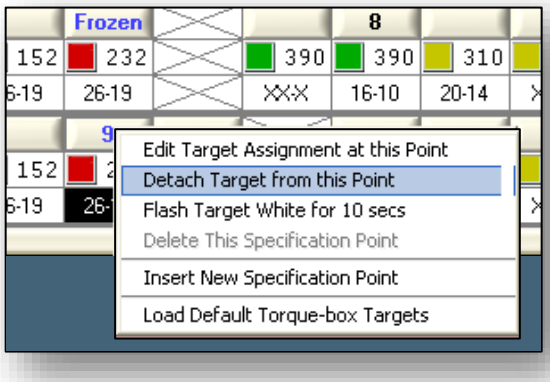
Inside the **screen**, click on the **3D View** tab. (You can do this from the 3D View, Top View, or Repair tab.)

Click on the data flag of the point you want to freeze.

Click on the **Freeze point XX** box (XX is the point name).

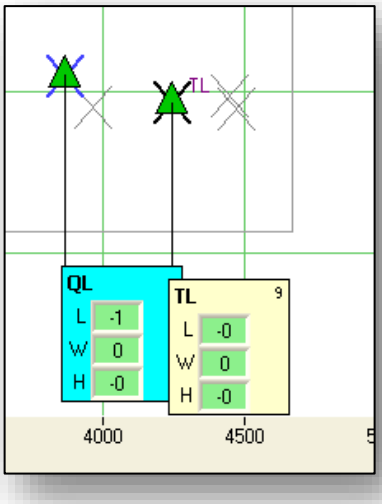
Now go to the **SETUP** screen.

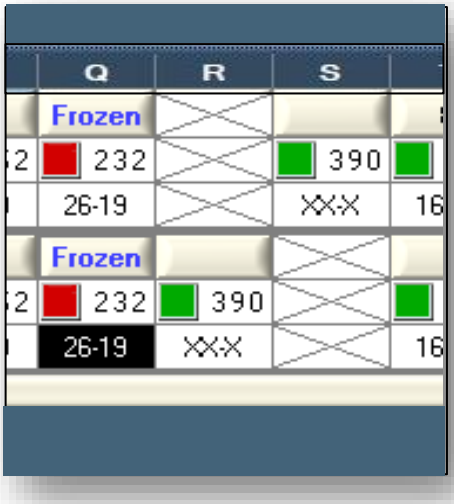
In the Targets Table right-click on the target which will be moved.
(In this example target 9)



The point will now show as frozen in the Targets Table.

You can now assign your target to a new specification point in the usual way.
Here we have assigned target 9 to point TL. The frozen QL point shows a turquoise background.





Note: Freezing a point freezes the data measured at that point.

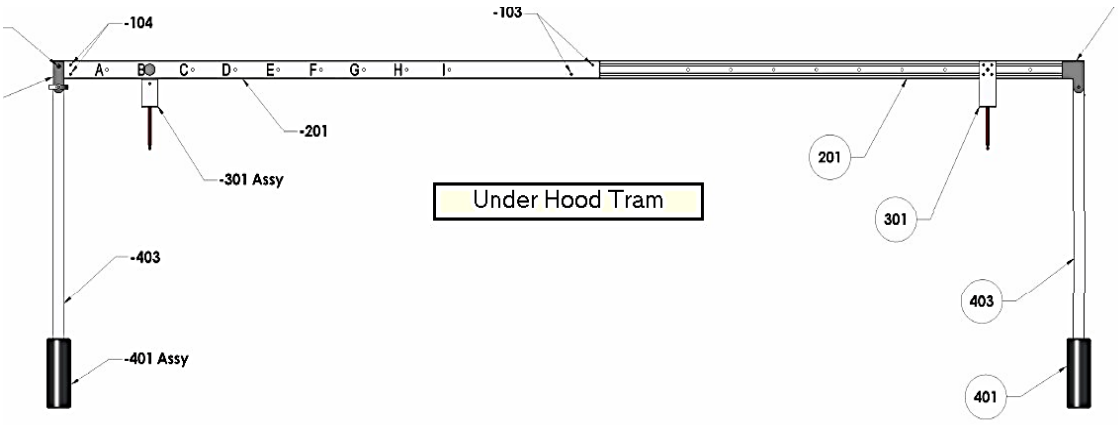
During the repair if you move the point that had its data frozen, or if you move the laser scanner, the data from the frozen point will no longer be valid. You must remeasure the point to continue to get good information.

To unfreeze a frozen point -- Click on the data flag. Then click on the **Unfreeze point** box.

Underhood Tram & More

This part of the lesson is designed to train the technician in the use of the additional tools found in the Eclipse Laser Measurement System. The under-hood tram and Side Body Adapter.
The technician will also get more detailed information about targets, vector controls, and build tolerances and how tolerances are handled in the Eclipse software. We will also introduce the technician to the Help tool built in to the system database.

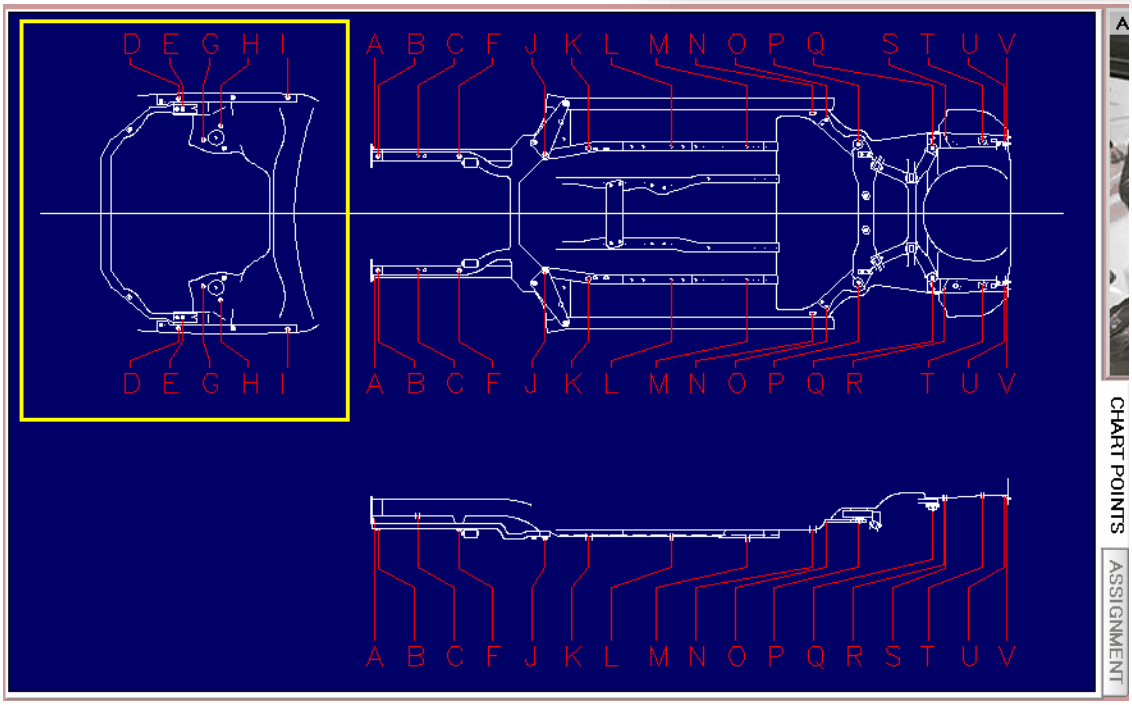
Under Hood Tram



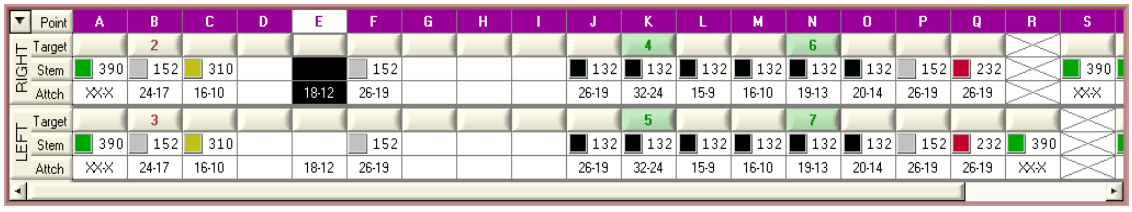
The under-hood tram allows you to measure under hood structural points like strut towers, radiator mounts, and fender mounts. The tram points sit on adapters on bolt heads or studs. Targets with target stems plug into the counterweights.

The under-hood tram hangs the targets low enough for the laser beams to strike the target faces.

To use the under-hood tram, select the specification points you want to measure. In the Setup screen select the Chart Points tab of the graphics viewer. Here you see the under hood (or upper body) structure.



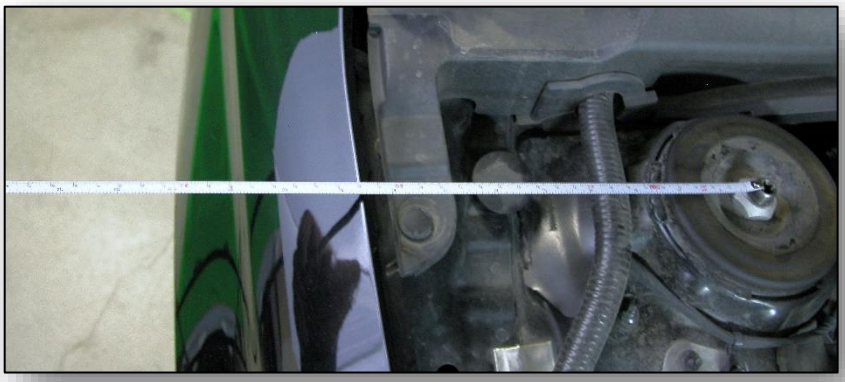
Choose the points you want in the table of specification points. Click on the button of the left or right specification point. Here we've chosen ER. Note there are no suggestions for stem color, we talk about this later in the lesson.



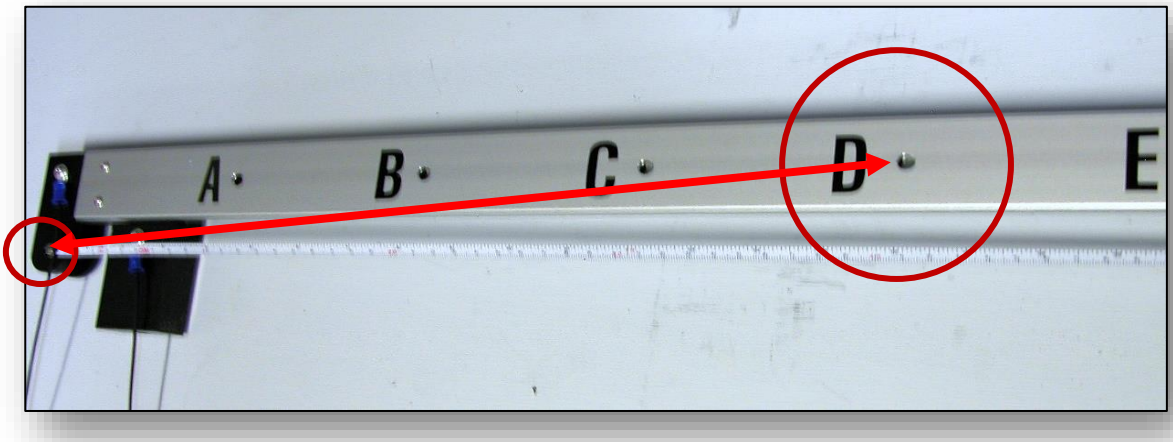
	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
RIGHT	Target		2									4			6					
	Stem	390	152	310			152				132	132	132	132	132	132	152	232		390
	Attch	XXX	24-17	16-10		18-12	26-19				26-19	32-24	15-9	16-10	19-13	20-14	26-19	26-19		XXX
LEFT	Target		3									5			7					
	Stem	390	152	310			152				132	132	132	132	132	132	152	232	390	
	Attch	XXX	24-17	16-10		18-12	26-19				26-19	32-24	15-9	16-10	19-13	20-14	26-19	26-19	XXX	

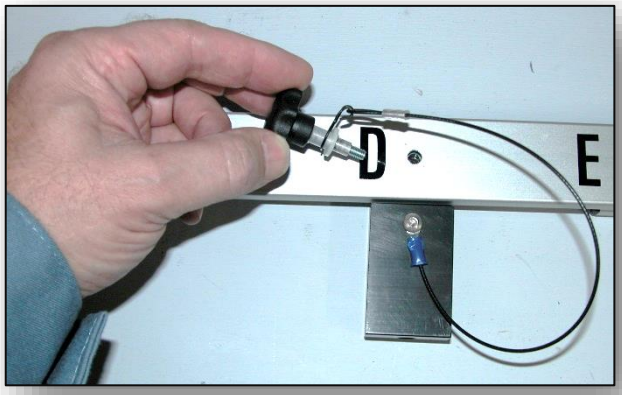
Look at the reference picture to see what the specification point looks like on the vehicle.

Using a tape measure, measure from the specification point out past the body structure approximately two inches.



Using this measurement, measure from the clevis end to the pin location nearest to the measurement. Adjust the tram block to that pin location. You can also carefully slide the tram blocks so that the counterweights clear the fenders.





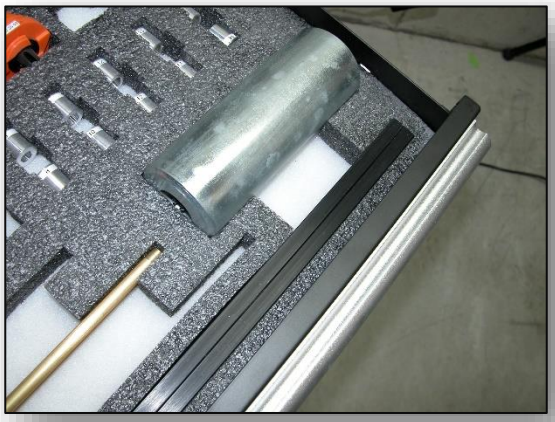
Install the threaded locating pin to secure the tram block.

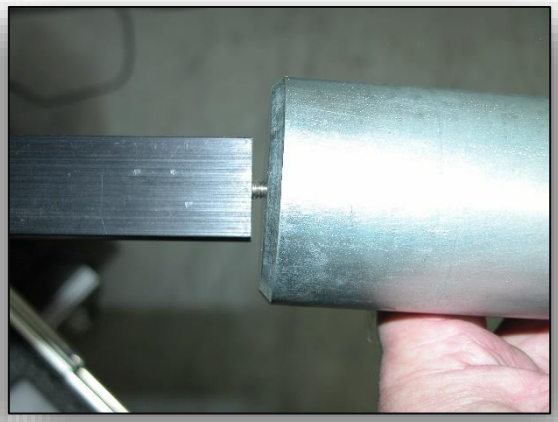
Select a pair of under hood tram adapters (small non-magnetic metal cylinders found in the third drawer of the cabinet) for a close fit over the studs or bolt heads. Set these in place on the specification points.

Note: Choose the deep version for over studs, and the shallow version for bolt heads.

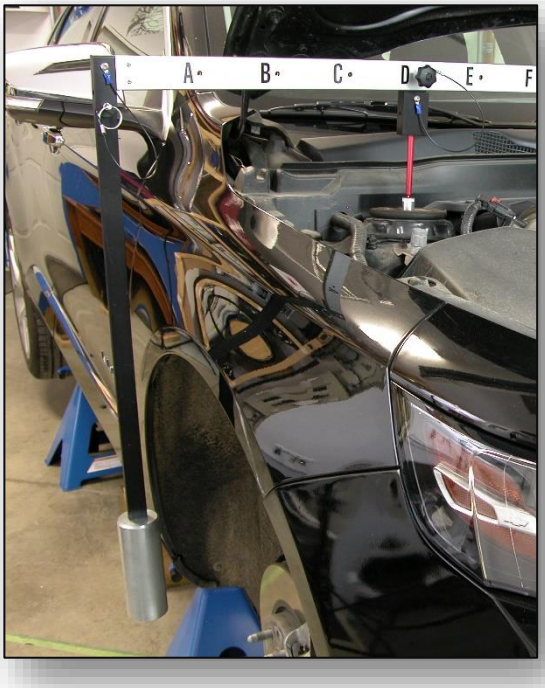
Two lengths of tram pointers are provided. The shorter pair is anodized red. The longer pair is anodized gold. Select the pair that will raise the adjustable rails above the fenders. Plug the pointers into the tram blocks.

Screw the counterweight and counterweight bars together. Then attach the counterweight assemblies to the clevis ends using the attached ball-lock pins.





Carefully set the under-hood tram in place on the adapters at the specification points. Having an assistant at this stage is very useful.

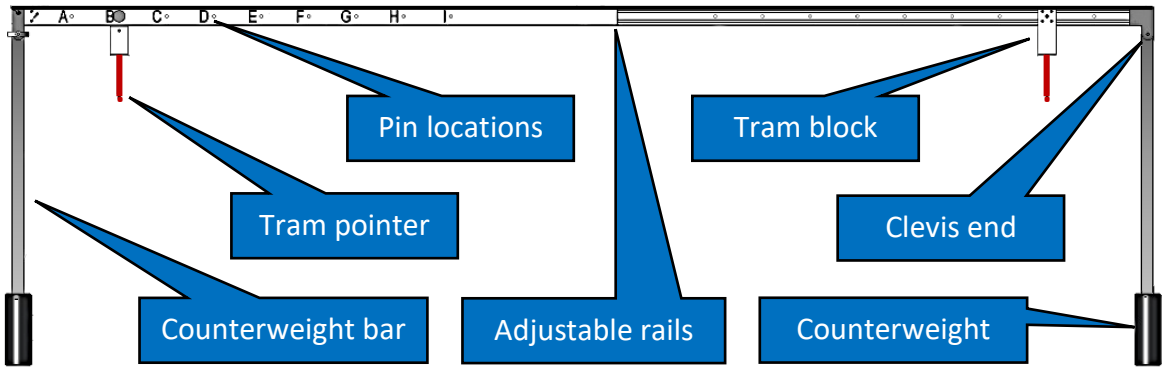


Slide the adjustable rails together or apart until the pointers fit easily into the adapters. The tram should balance on the pointers with the counterweights hanging down past, but not touching, the structure.

Note: Once Counterweights and bars are assembled, they can be stored on the wall rack with the Tram Bar

The standard target stems plug into the bottom of the counterweights. Select a pair of stems that will hang the targets where the laser beams will strike the faces.

Plug the stems into the targets and then plug the stem and target assemblies into the counterweights. This is how the setup should appear, without the targets.

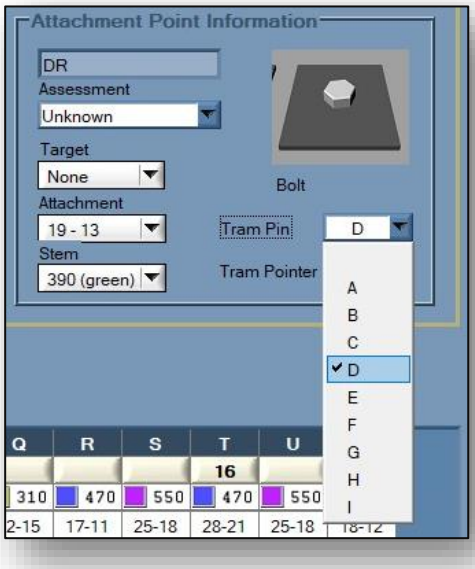


Now it's time to tell the system what we have used. Unlike under body specification points, the Eclipse software does not make suggestions for the adapters, pin locations, pointer length, or stem length.

We must tell the system what we have used.

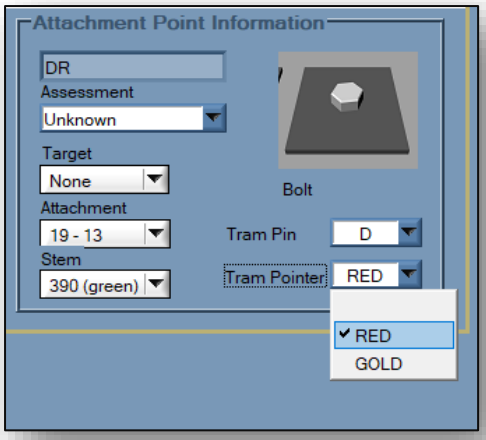
Notice in the Attachment Point Information window we now have extra selection menu's, Tram Pin and Tram Pointer. We have to enter information about our set-up.

In this case we used Position D, so we enter D into the drop-down menu.



Now enter the pointer color, either Gold or Red.

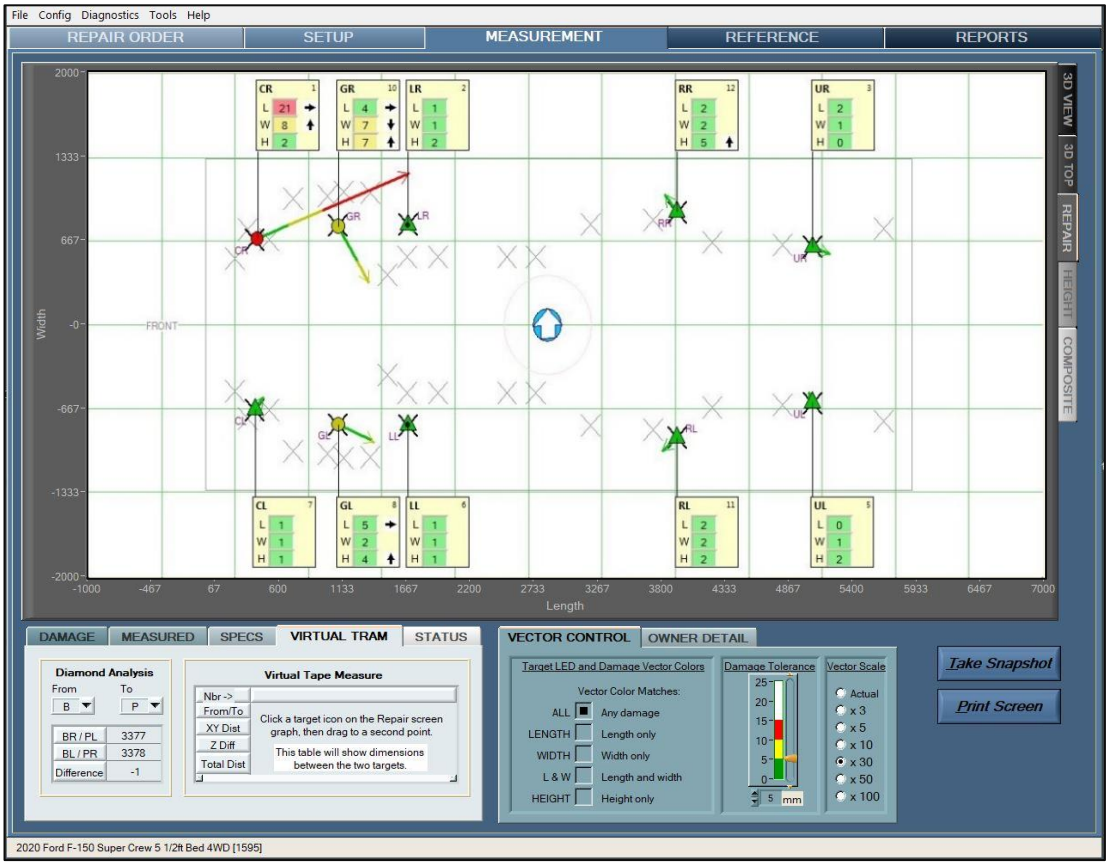
The Stem length will be transmitted to the system automatically



It is not necessary to repeat the data entry for the specification point on the other side of the car.

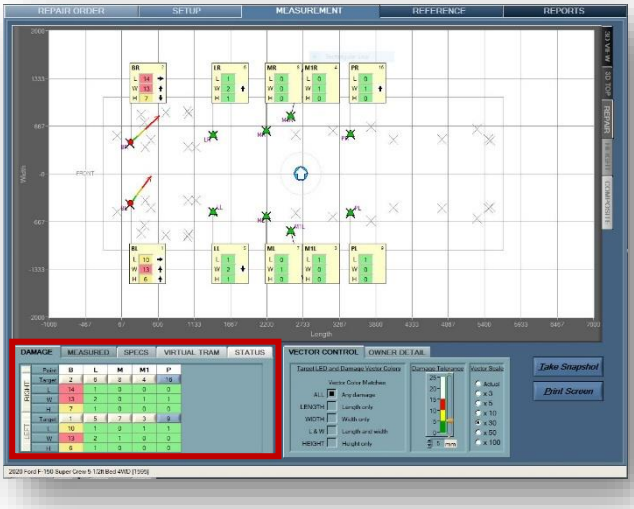
Notes:

1. Both targets on the under-hood tram must communicate with the laser. If only one target is communicating with the laser, no measurements will be displayed by the software.
2. When setting up the upper body tram bar, the vehicle must be level.



Virtual Tram

The virtual tram allows you to measure between any two targets. It also allows diamond measurements to check whether the vehicle structure is square.



Before looking at the virtual tram, we will review some other features of the numeric data box in the lower left-hand portion of the 3D MEASURING screen.

Damage

This tab shows the distance each assigned specification point is from its ideal location.

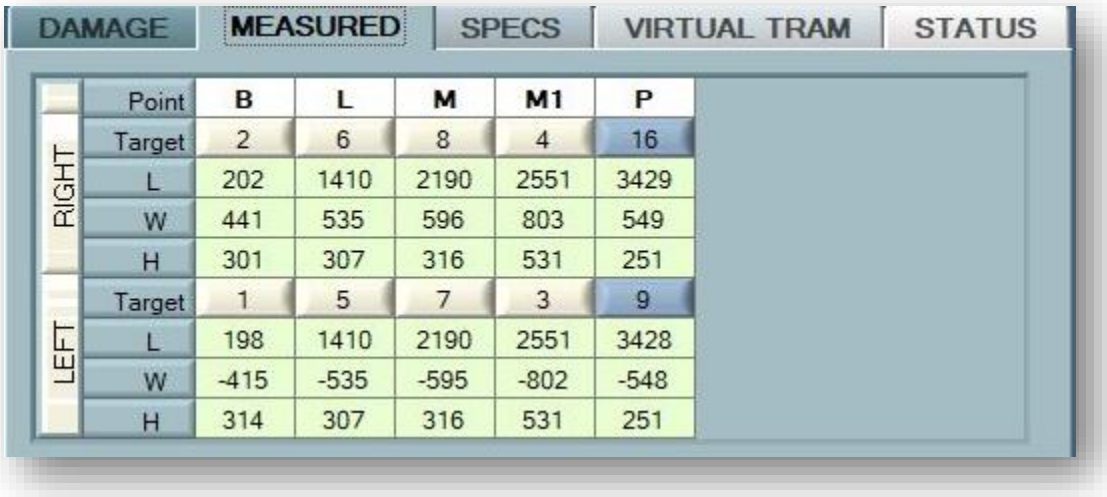
The color of the background is set in the Damage Tolerance section of the Vector Control pane.

DAMAGE | MEASURED | SPECS | VIRTUAL TRAM | STATUS

	Point	B	L	M	M1	P
RIGHT	Target	2	6	8	4	16
	L	14	1	0	0	0
	W	13	2	0	1	1
	H	7	1	0	0	0
LEFT	Target	1	5	7	3	9
	L	10	1	0	1	1
	W	13	2	1	0	0
	H	6	1	0	0	0

Measured

This tab shows the measured location of each assigned specification point.



	Point	B	L	M	M1	P
RIGHT	Target	2	6	8	4	16
	L	202	1410	2190	2551	3429
	W	441	535	596	803	549
	H	301	307	316	531	251
LEFT	Target	1	5	7	3	9
	L	198	1410	2190	2551	3428
	W	-415	-535	-595	-802	-548
	H	314	307	316	531	251

Specifications

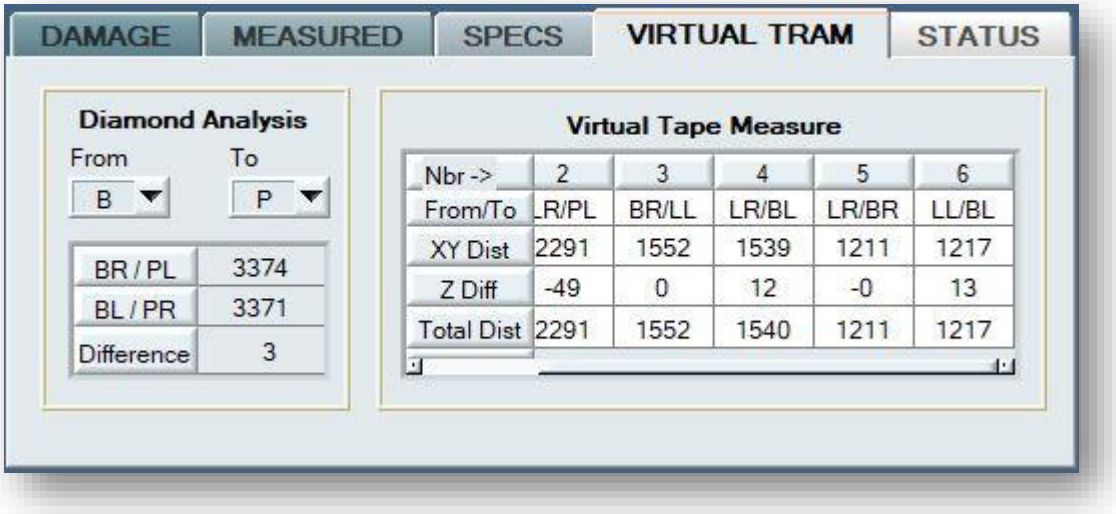
This pane shows the ideal location of each assigned specification point.

	Point	B	L	M	M1	P
RIGHT	Target	2	6	8	4	16
	L	188	1409	2190	2551	3429
	W	428	533	596	802	548
	H	336	330	316	531	280
LEFT	Target	1	5	7	3	9
	L	188	1409	2190	2551	3429
	W	-428	-533	-596	-802	-548
	H	336	330	316	531	280

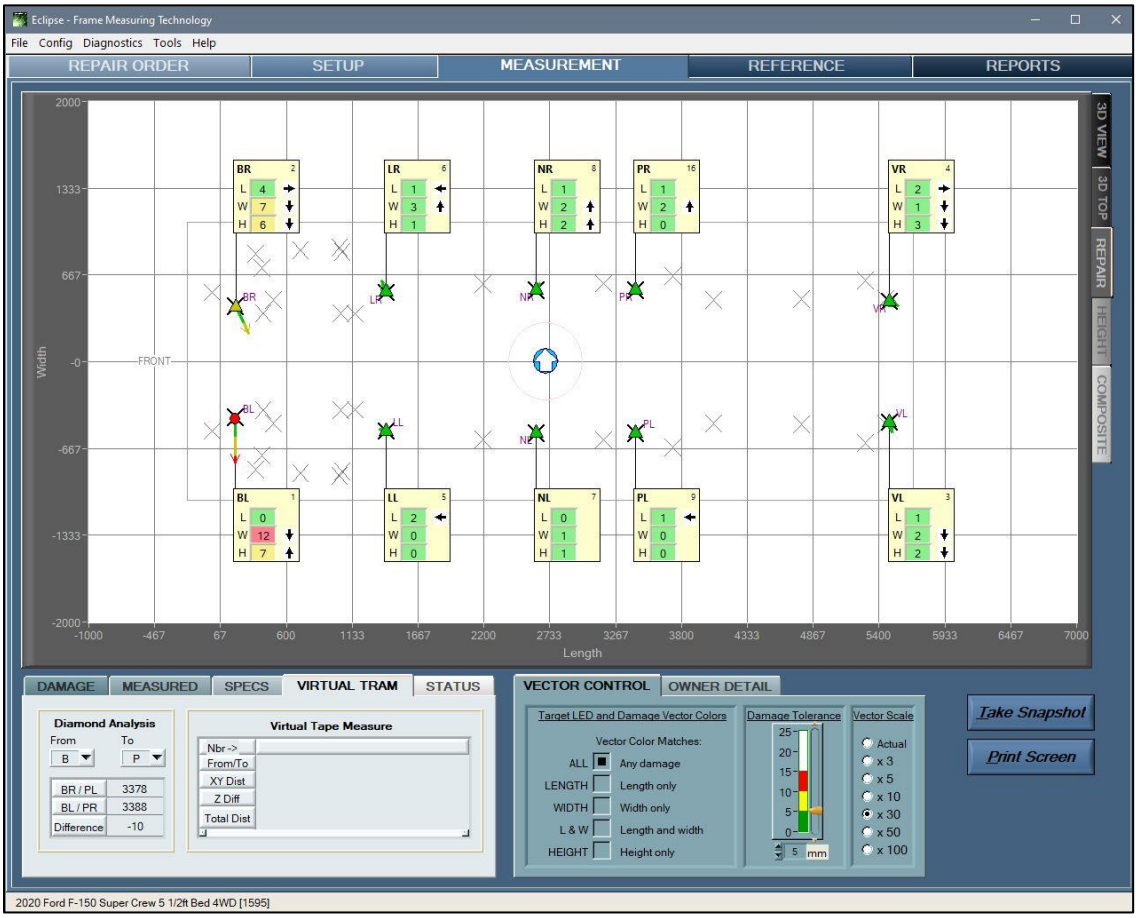
Virtual Tram

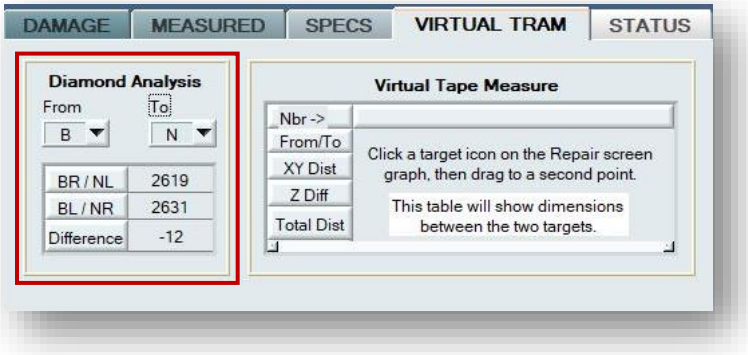
The Virtual Tram provides two methods of measuring between targets.

- Diamond Analysis - Diagonal measurements between targets to check whether sections of the chassis are square.
- Virtual Tape Measure - up to 10 point-to-point comparative measurements from any target to any other target.



Diamond and Sway Analysis





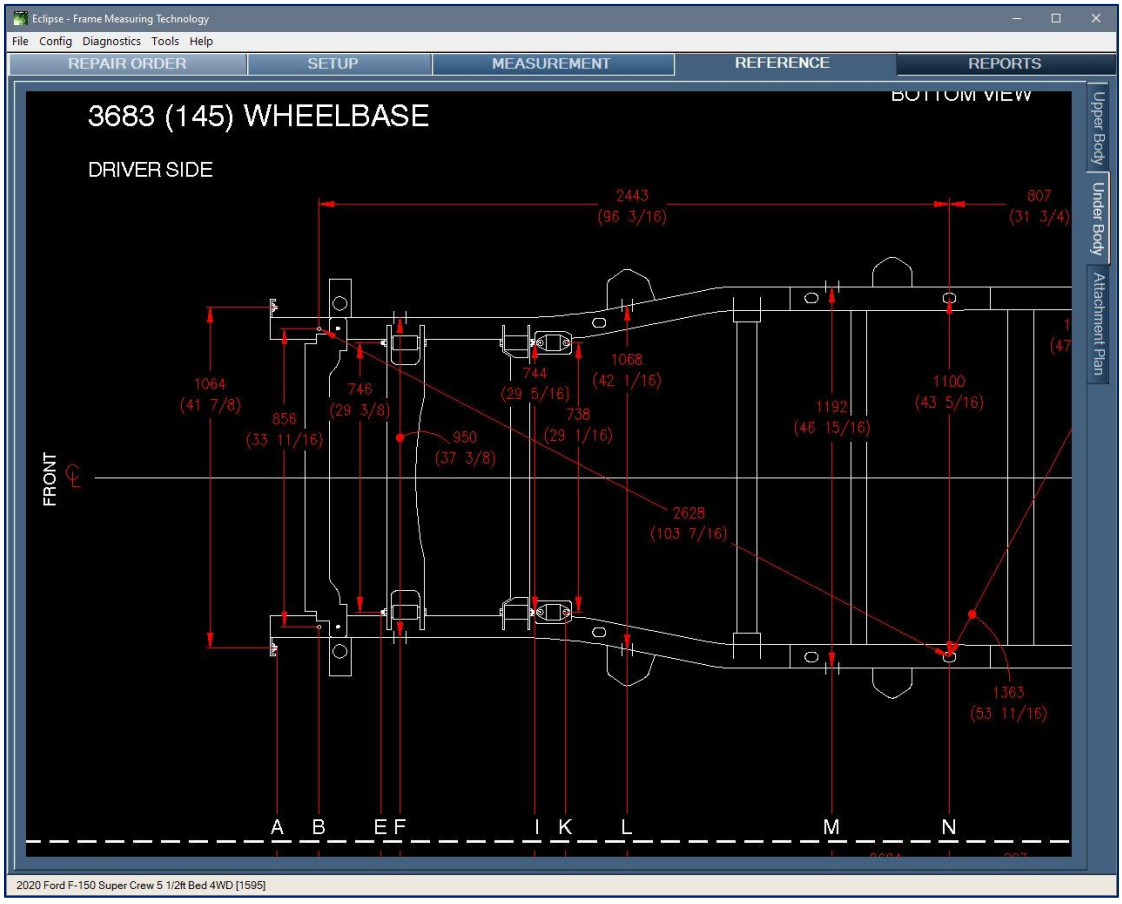
Select a pair of points to measure from using the drop-down menu. In this example we want to measure diagonally From point B To point N.

The program recognizes you want to compare those 2 points diagonally to determine Diamond or Sway in that area. We see in this example it has calculated that BR/NL is 2619 and BL/NR is 2631. The system reports an overall diagonal difference of -12. This indicates a shift in the structure to the Left.

While 3 mm is a standard tolerance for 3D or 2D L,W,H measurements, it should not be applied technically to Diagonal measurements, but rather the information used to determine damage or direction of damage in any given section.

Note: Diamond can only exist in the centre section once widths and lengths are verified as being within tolerance, and a diagonal is noted. If a diagonal difference shows in the front or rear sections this indicates a Sway condition only, not Diamond.

Now click on the **Reference** tab at the top of the page. Then select the Underbody tab at the right of the screen. Diagonal measurements will be shown. If there is a difference between the measurements shown here and what has been measured, then the chassis is not square in this region.



In this example 2628 mm is shown as the correct diagonal measurement. The difference in actual measurement show that BR/NL as -9 mm short and BR/NR as +3 mm has increased. The system calculates a shift of -12 mm overall to the front structure indicating sway to the left.

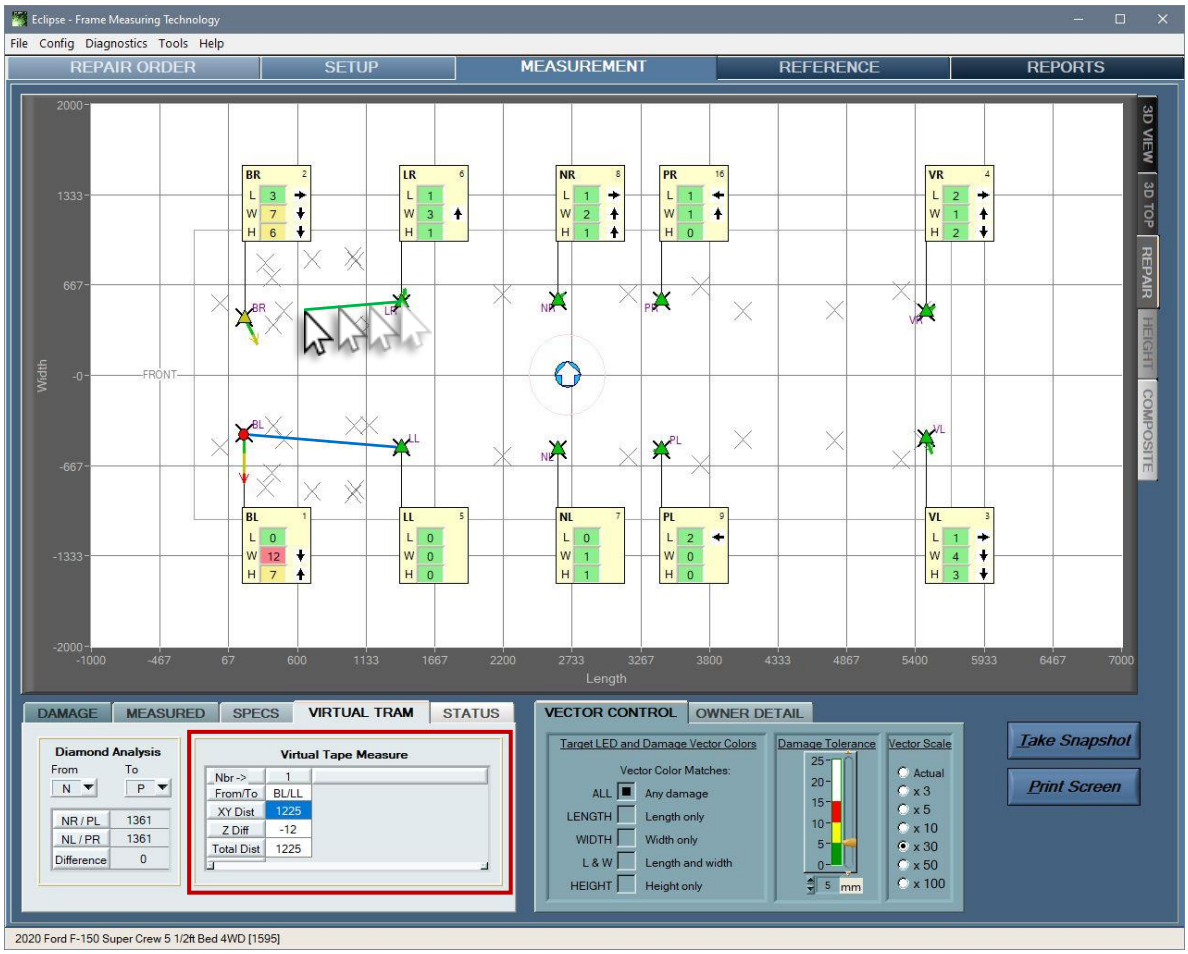
Have the Virtual Tram window open and click either *Take Snapshot* or *Print Screen* to save the damage report.

Note: Oval holes are measured to centre and targets are offset to the front of oval holes.

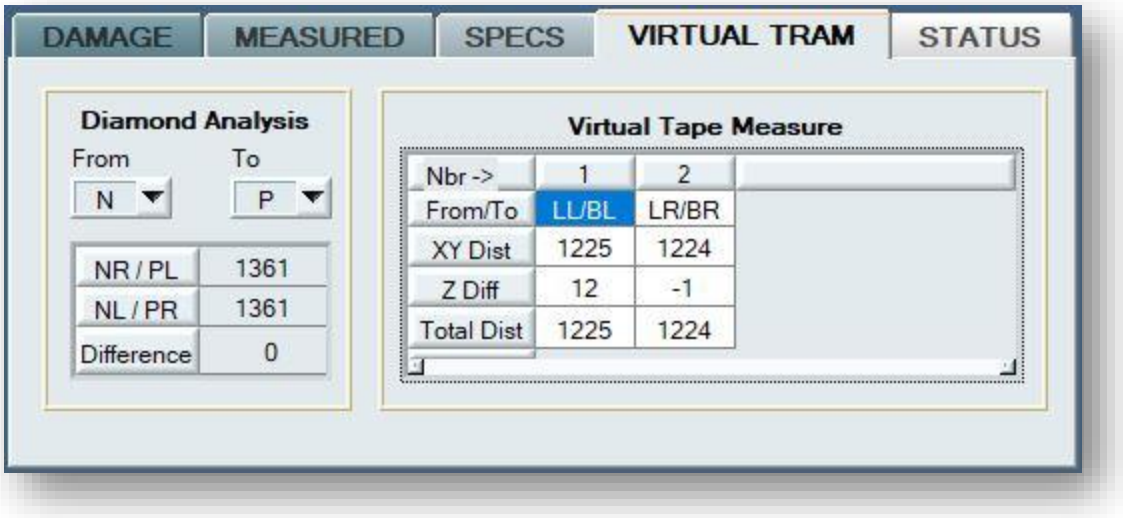
Virtual Tape Measure

You can measure from one target to another using this feature. Follow these steps:

- Click and hold (keep the left mouse button down) on the first target point.
- Drag to the second target point and release the left mouse button.

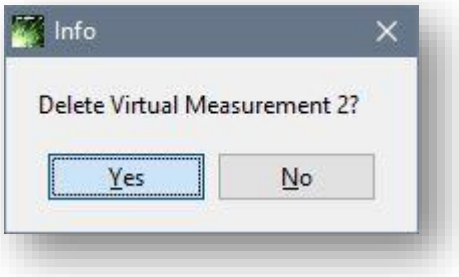


The measurement results show in the Virtual Tape Measure data box. These can be compared to the measurements in the database in **2D VIEWER**.



You can make up to 10 Virtual Tape measurements.

To delete a virtual tape measurement, **click** on the measurement in the Virtual Tape Measure box. This dialog box will open.



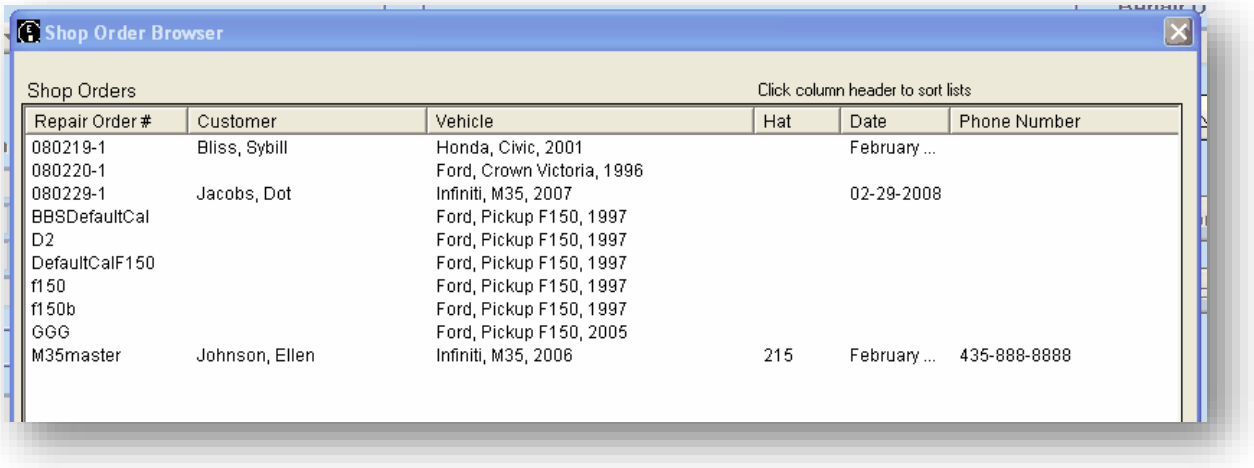
Click **Yes** to delete the measurement.

Retrieving a Repair Order

You may need to come back to a Repair Order which had been started some time before.

If you have been measuring one car and want to start on another, first click the **Save** button. Then click the **Browse** button.

If you are starting Eclipse Plus for the first time this day, just click the **Browse** button. The Shop Order Browser dialog box will open.



All of the repair orders in the Eclipse system will be listed by Repair Order number in ascending order. To help find the repair order you need, you can sort the list by any of the column headings.

- Repair Order #
- Customer
- Vehicle
- Hat
- Date
- Phone Number

Just click on the column heading.

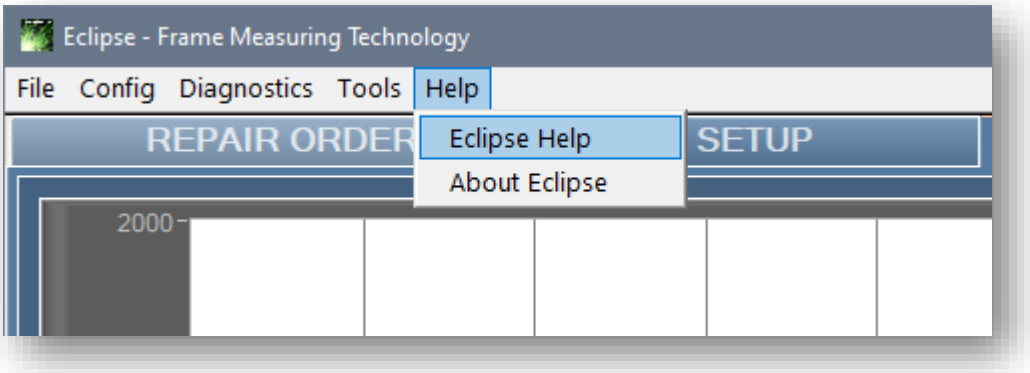
If you want to sort the list from bottom to top (descending order) click again on the column heading.

Double-click on the repair order you want to use in the Eclipse system.

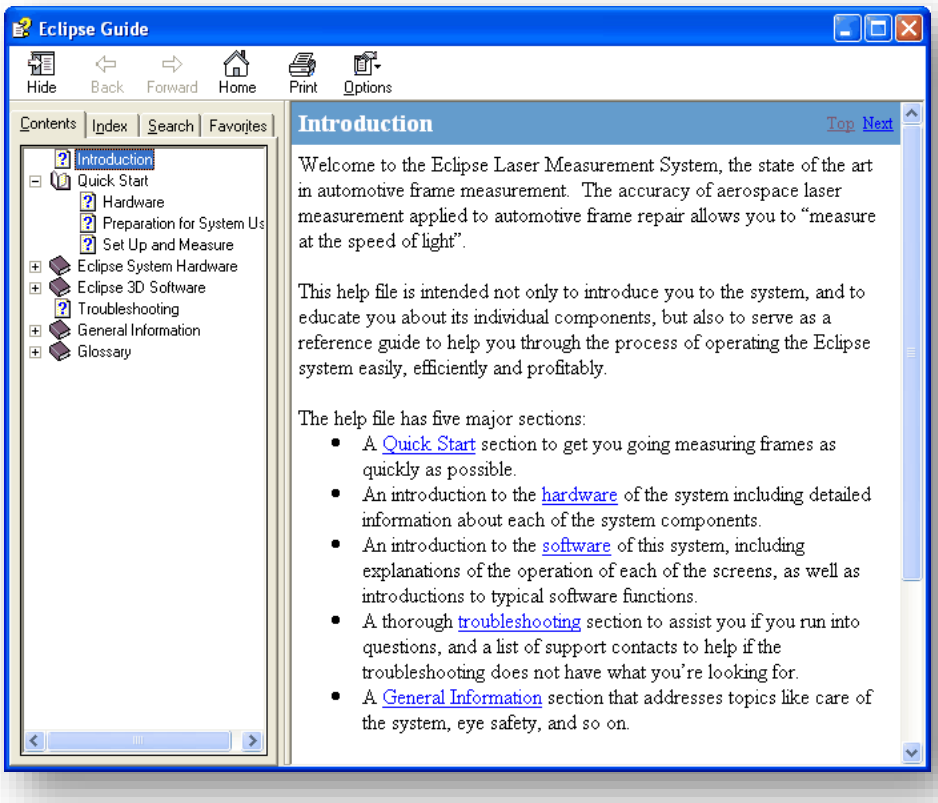
You can also retrieve the car by clicking on **File** in the tool bar. The last six cars you worked on will be displayed.

Using Help

When you have questions about the Eclipse Laser Measurement System, the first place to look for answers is the Help file. Click on **Help** in the tool bar at the top of the screen.



Eclipse Help will give you answers about Eclipse hardware and software. Click on the + sign by any topic in the **Contents** to see an expanded list of topics. Click on the **Index** tab for a list of subjects. Or click on the **Search** tab and enter keywords to look for.



Eclipse Additional Items

This lesson is designed to train the technician in the remaining advanced elements of the Eclipse Laser Measurement System.

At the end of this section the Technician will be able to:

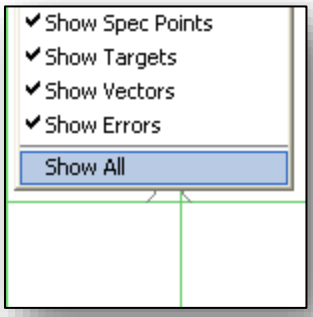
- print a screen shot for documentation
- save a screen snapshot
- add a digital photograph to a report
- create a report
- add a custom measuring point

Printing a screen shot for documentation

Today's insurance companies want documentation showing the extent of the damage before the repair and a second document showing that the repair has been completed to acceptable tolerances.

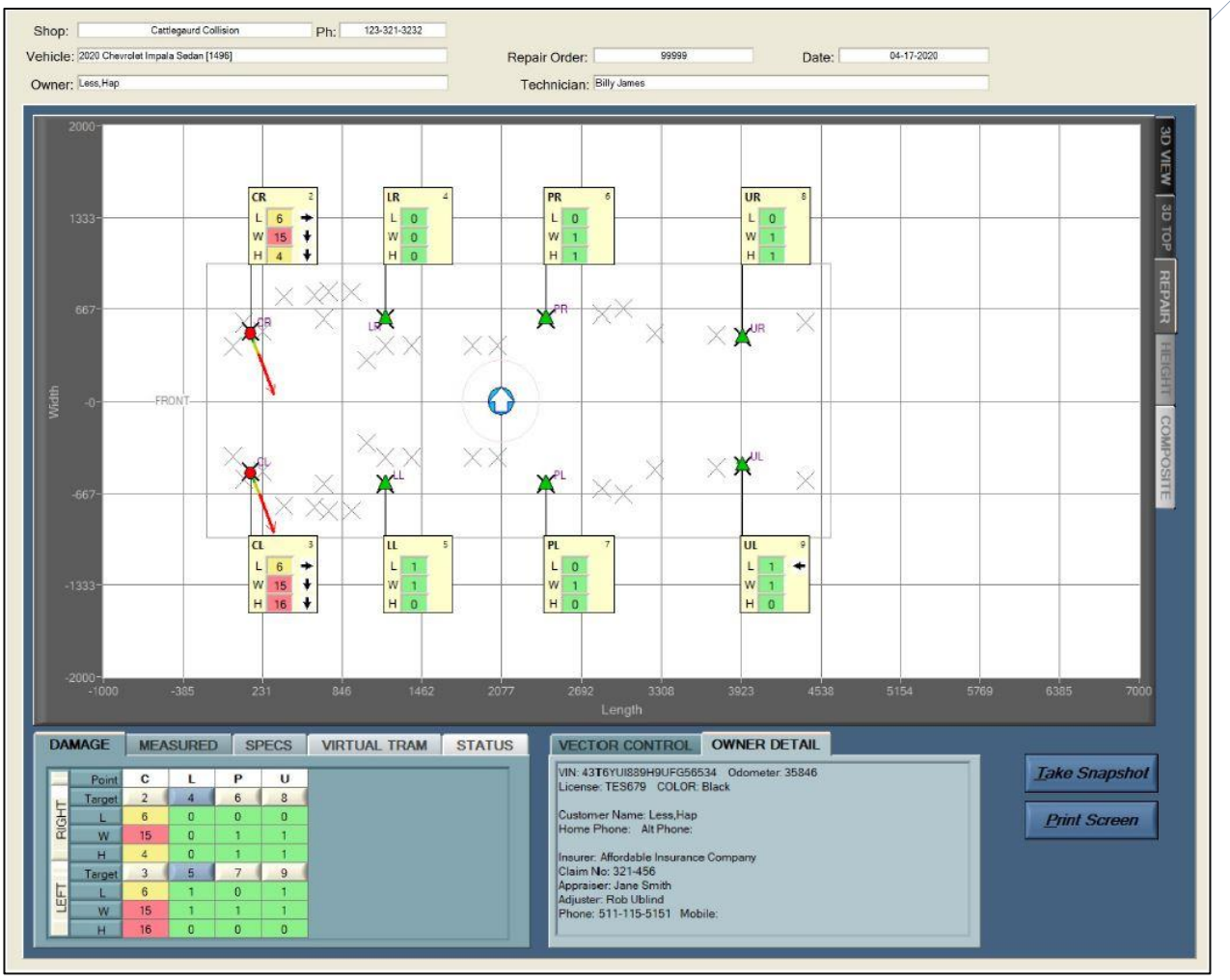
Here is a very effective way to produce a document for the adjustor or customer. In 3D Measuring click on the **Repair** tab of the graphics viewer.

Right-click anywhere in the graphics viewer, bringing up this array of choices. Select **Show All.** This will show the specification points, targets, vectors, and the errors.



Click the 

button. This will cause the screen picture to be printed.



Note that at the top of the page the shop information and Repair Order information have been printed. Also, instead of the Vector Control box being shown, the Owner Detail is shown.

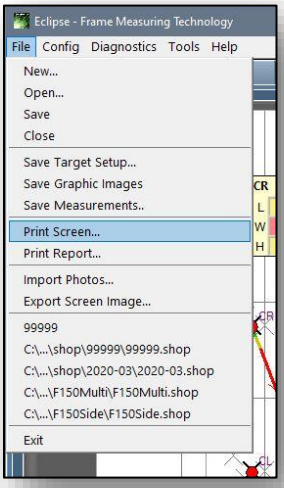
This document shows:

- The specification point layout for the vehicle
- The targets
- Damage at each target, both in color and in millimeters with a direction arrow.

  Note: This information is shown both in the graphics display and in the Damage data box in the lower left corner of the page
- Vectors (arrows) showing the direction of the damage
- Shop information and repair order number
- Customer information

Note that you can print a screen shot of any screen in the Eclipse Laser Measurement System. Click **File** in the toolbar.

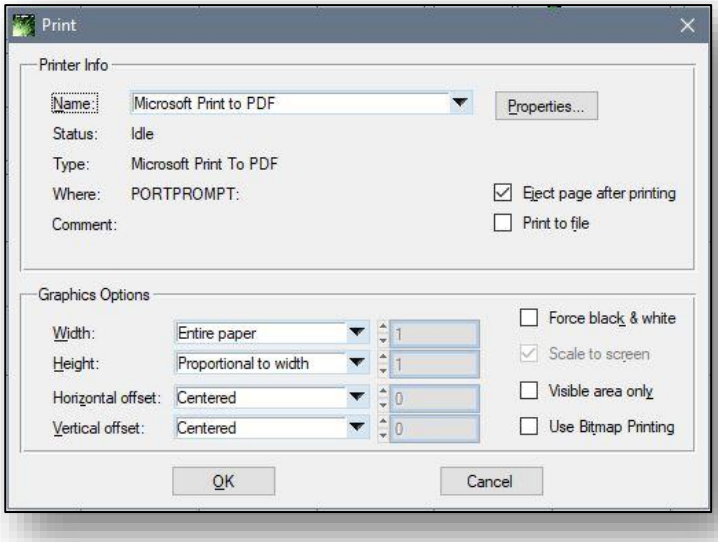
Then click **Print Screen**.



Problem:

What if you have a system and the printer is out of ink?

An alternative is to print the screen to a file. When you click the Print Screen button, the Print dialog box opens. Select the Microsoft Print to PDF from the drop-down list under Printer Info - Name. Then click OK.



This creates a .pdf file in the 'My Documents' folder that can be copied to a thumb drive, emailed, saved to a Cloud folder or a Network drive.

The file can then be opened and printed on a computer connected to a printer or attached directly to an insurance claim.

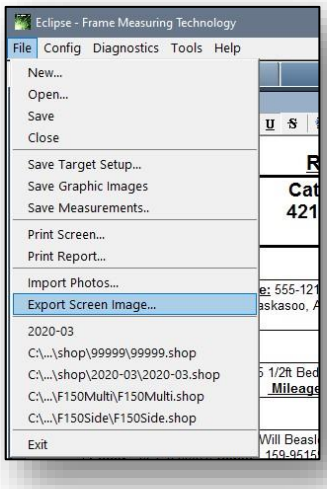
Saving a snapshot

Saving a screen image can be very useful to document measurement information before and after a repair. To save a screen image of any of the various measurement graphics before, during or post repair, Click the 

button…

The Snapshots are found in the 'Snapshot' area located in the REPORTS tab.

You can also save snapshots of other screens. For example, you might want to do this to record the target assignments in Eclipse Setup. Click on **File** in the toolbar. Then select **Export Screen Image**. Enter a file name and click **Save**.



Screen image captures are saved as .bmp images. All the screen images you save will be available in 'My Documents'.

You can also use Print Screen and save it as a .pdf in the same 'My Documents' folder

Adding a digital photo to a report

You can add digital photos to the repair order to document the extent of damage, details that are significant, or to document the repair work.

Connect the USB cable supplied with the camera (or with a memory card reader) to the USB port on the computer.
There are two methods of adding photos.

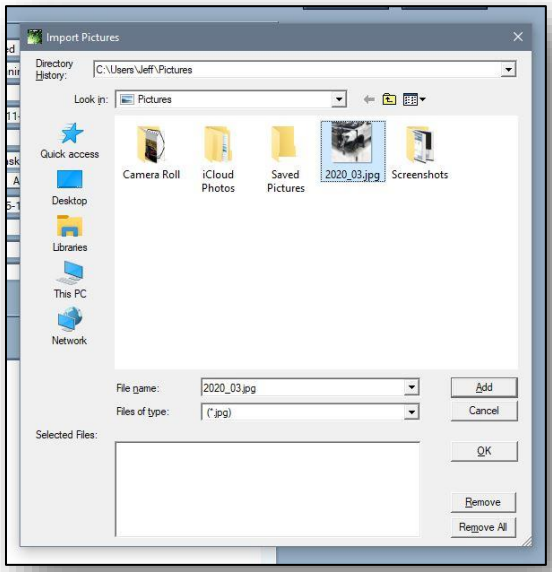
1. In the Repair Order module tab of the Eclipse Laser Measurement System. Click the 

button. The Import Pictures dialog box will open.

2. Under the File menu in the upper task bar, look for and click on **Import Photos…**

From either place you can browse to find the photos you want. The system defaults to the My Pictures folder in Windows.

Click the down arrow in the **Look in** box to find the disk drive where the picture files are stored. If this is a camera or a memory card or stick, the disk will usually be something like Removable Disk (E:). Click on the appropriate disk. This should open a list of images. Right-click on a file, then select **Preview** to see the picture.



Click **Add** to import the selected photo into the repair order.

You can select any number of photos. When you have selected all the images you want, click **OK**.

These photos will be available in the Reports section of Eclipse Laser Measurement System.

Using the 2D Viewer

Measurement specifications directly from the database are available by clicking on the **2D VIEWER** tab.

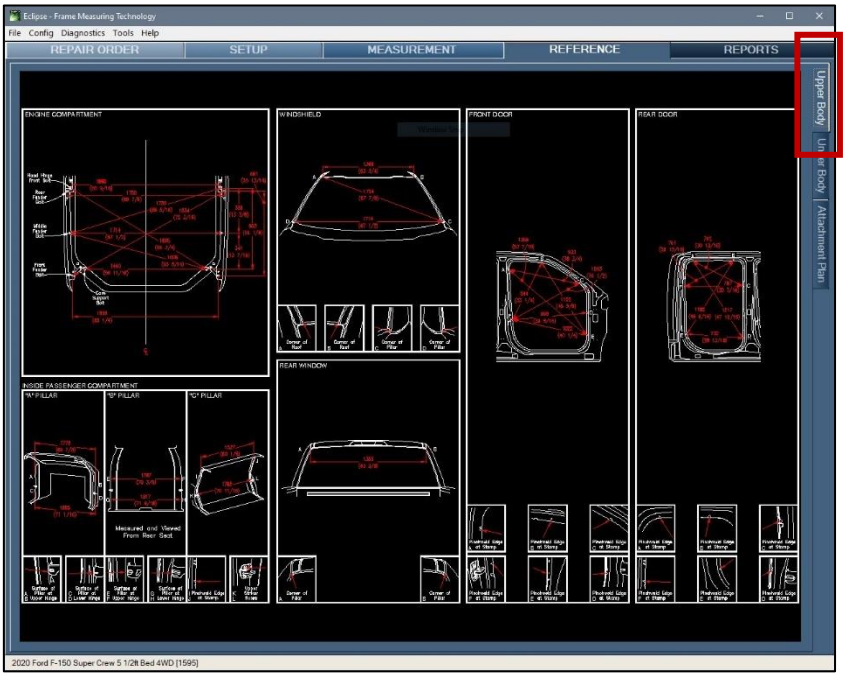
This reference is useful for damage that requires other tools than the Eclipse Laser Measurement System. It provides mechanical drawings from the database.

Under Body tab

Under-body view is shown looking up from underneath the vehicle. This is the default view in 2D Viewer. It gives under body dimensions.

Upper Body tab

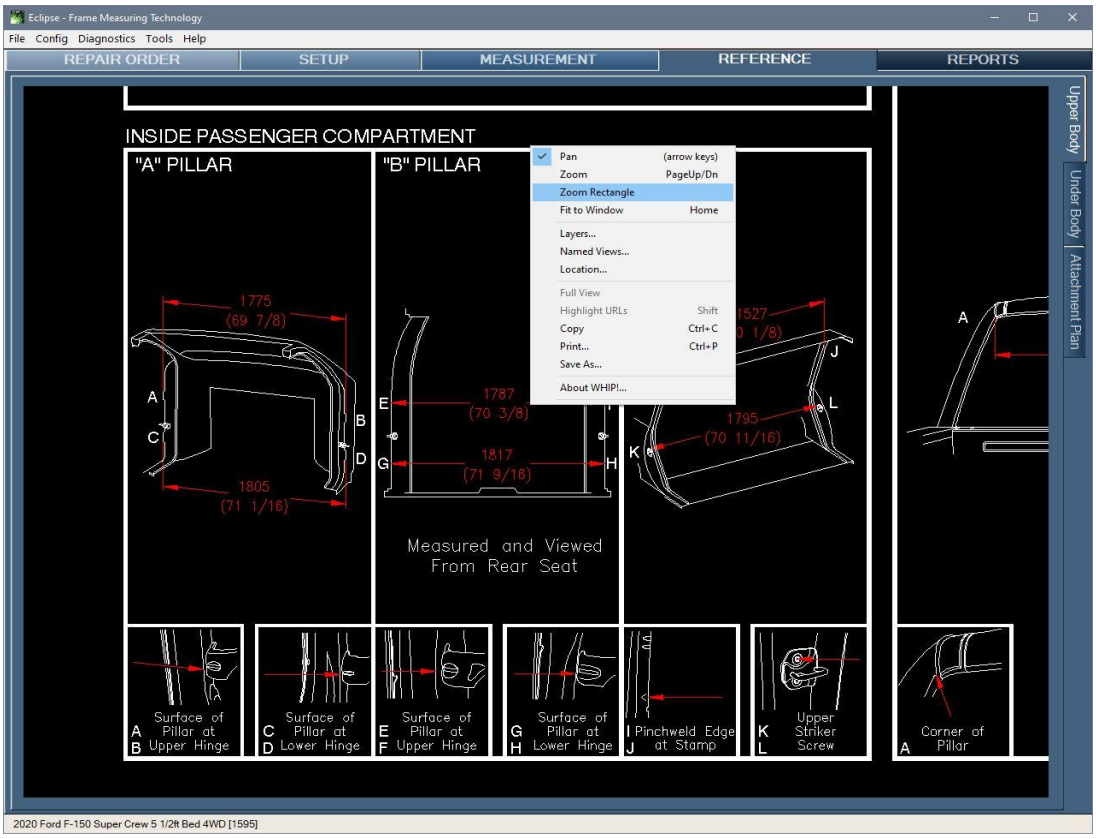
You can use this view for dimensions of window and door openings.



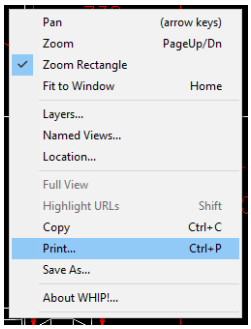
Reference Tab Viewing and Print Options

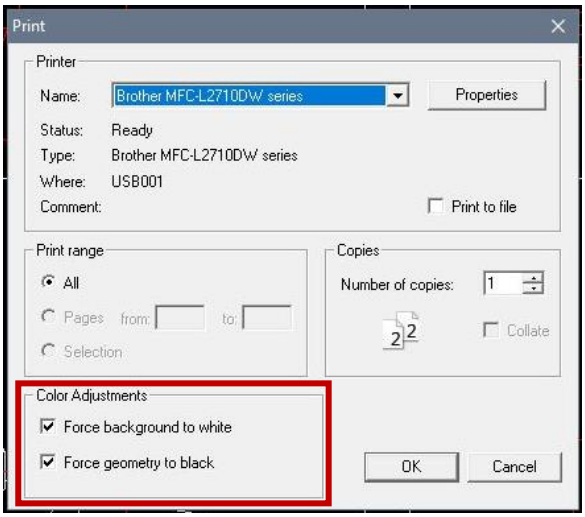
You can zoom in on any area you wish in the Reference windows and print a document.

This is accomplished by using the mouse thumbwheel and pan mode or zoom rectangle options found by right clicking the mouse in the graphics window.



Once the zoom level has been reached, the graphic can be printed or saved as a .pdf by right clicking inside the graphic window and clicking on Print.





Note the background will be forced to white, and the geometry to black for printing.
Options and additional instructions for viewing in the Reference window:

Right click and select:

To Zoom:

- Select **Zoom** and either use the mouse scroll wheel or the Page Up / Page Dn key on the keyboard.
- Select **Zoom Rectangle**, then click and drag over the area you wish to zoom in on and view full screen.

To Pan:

- Select **Pan**, then click and drag the view until you are viewing the portion of the drawing you want.

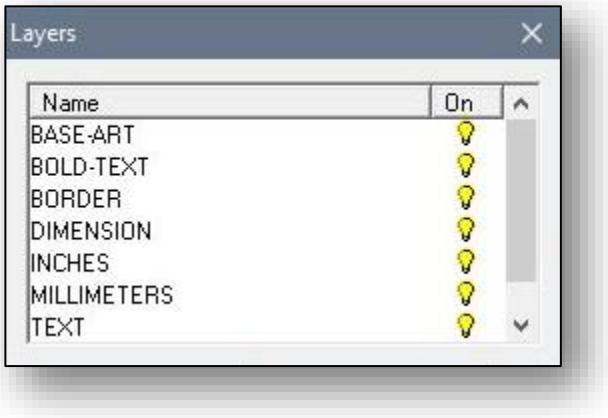
To return to default view:

- Select **Fit to Window.**

To print a copy:

- Select **Print.**

To toggle on and off the various layers of the drawings, **Right click** the mouse and select **Layers**.



Click the light bulb icon for each layer you wish to turn on and off.

Creating Custom Points for Comparative Measurement

Side Body Measuring

The Side Body Measuring Accessory Kit for the Eclipse allows the technician to comparatively measure areas on a vehicle not listed in the manufacturer's measurement database. The accessory takes advantage of the Eclipse Plus abilities to make custom 3D measuring points and compare known good areas to suspected damaged areas. This expands the Eclipse Measuring system capability to measure 360 degrees around the perimeter of the vehicle; anywhere a 6- or 8-mm fastener is located up to the belt line. Common areas include A, B or C pillars, Upper and Lower side members, Rad support, End panel, Tail lamp pockets, ADAS and associated brackets. Virtually any symmetrical point on the upper body can be comparatively measured.

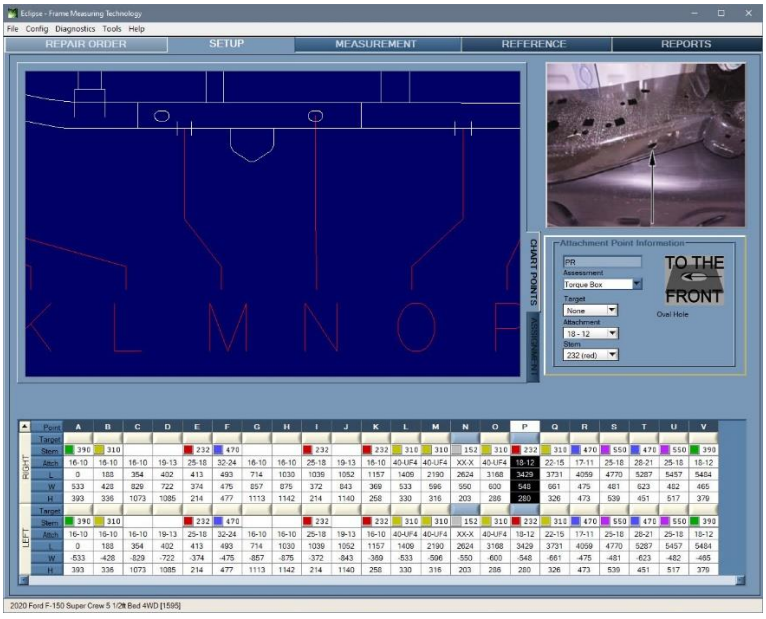
In order to use the accessory for comparative measuring, the Eclipse measuring system must be set up with a minimum 5 targets prior to adding the 2 additional Custom measuring points. These 5 areas include the traditional 4 torque boxes plus one additional target outside of the centre section before performing the following process in this manual.

It should be noted that *any* adapter in the Eclipse system may be used comparatively using this procedure on known symmetrical areas of the vehicle. The Side Body Adapter accessory allows the technician to reach previously inaccessible areas up to the belt line area, 360° around the vehicle.

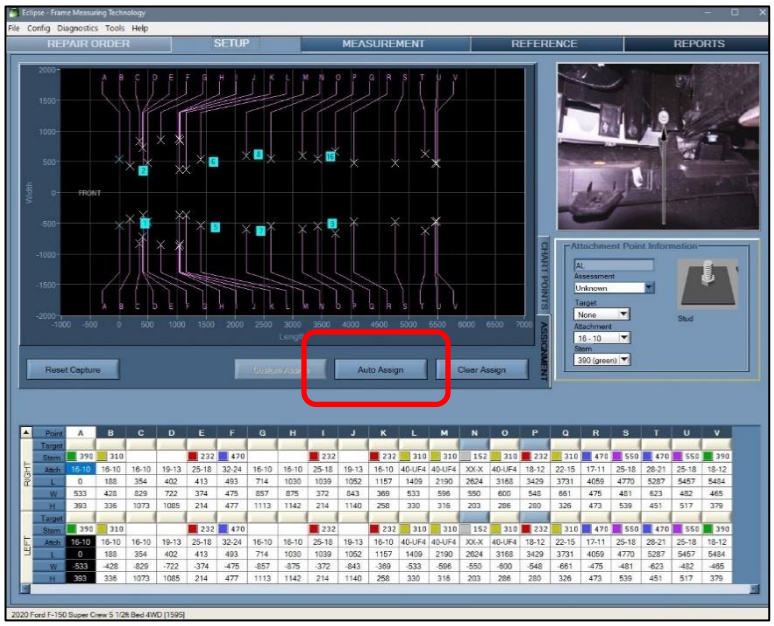
Important! When using the Side Body Adapter Kit, it is important the vehicle is level, Front to Back and Side to Side! Failure to do so will result in inaccurate measurements being displayed.

Getting Started

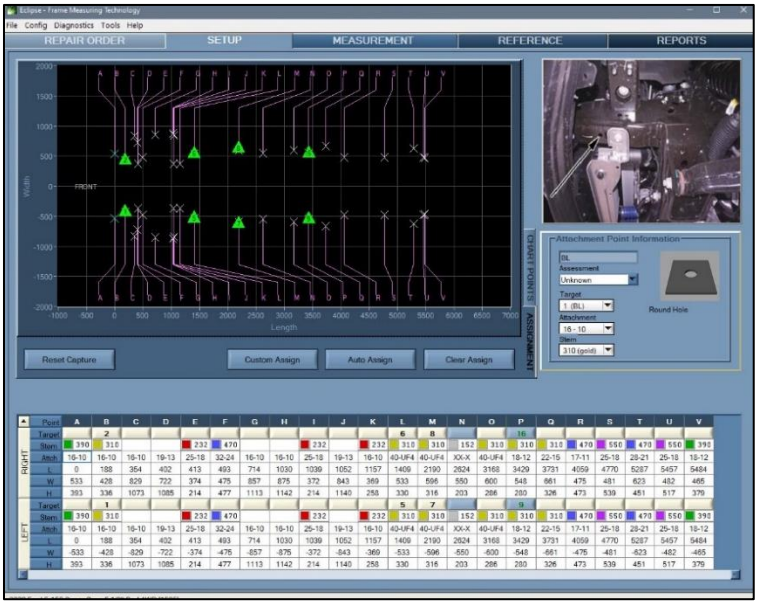
Establish your base of reference by installing targets at the 4 torque boxes + 1 additional target as a minimum before moving to the next step. In our example the complete underbody was referenced.



Hang 4 targets in torque box locations, or 4 known good locations and assign them as torque boxes.



In this example, 8 targets were hung, with 4 assigned as torque boxes, then Auto Assigned. You only require 4 targets at this stage.



Go to the Measurement screen. Check the Centre section for damage. If no damage exists, proceed to step 3.

If damage exists in the centre section it must be corrected or other undamaged areas should be chosen as Torque box locations.

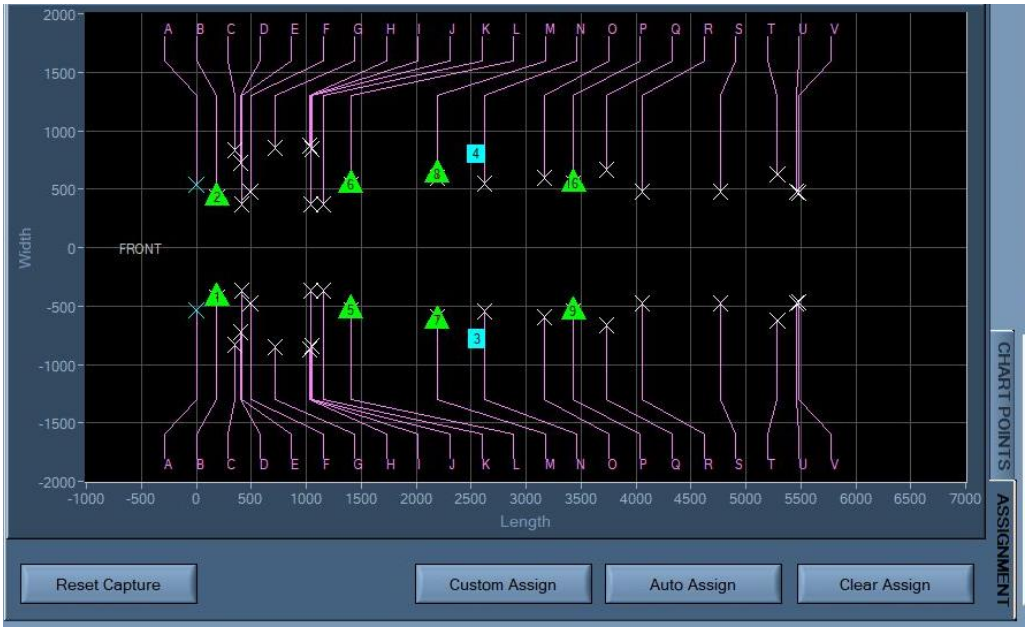
Now prepare to attach the 2 accessory adapters to the undamaged/damaged points to be measured. If there is an offset or difference in the measurement due to a part being left in place on one side, such as a hinge, add or subtract the difference using the scale on the accessory. Notice the 8mm to 6mm downsize adapter to fit smaller nuts/fasteners.

The silver extensions are used to reach upper areas on the vehicle structure such as upper fender mounts, and upper hinge mounting locations. These are used in conjunction with all other colored stems in order to get the target positioned for a good strike from the laser. They must be used in pairs.

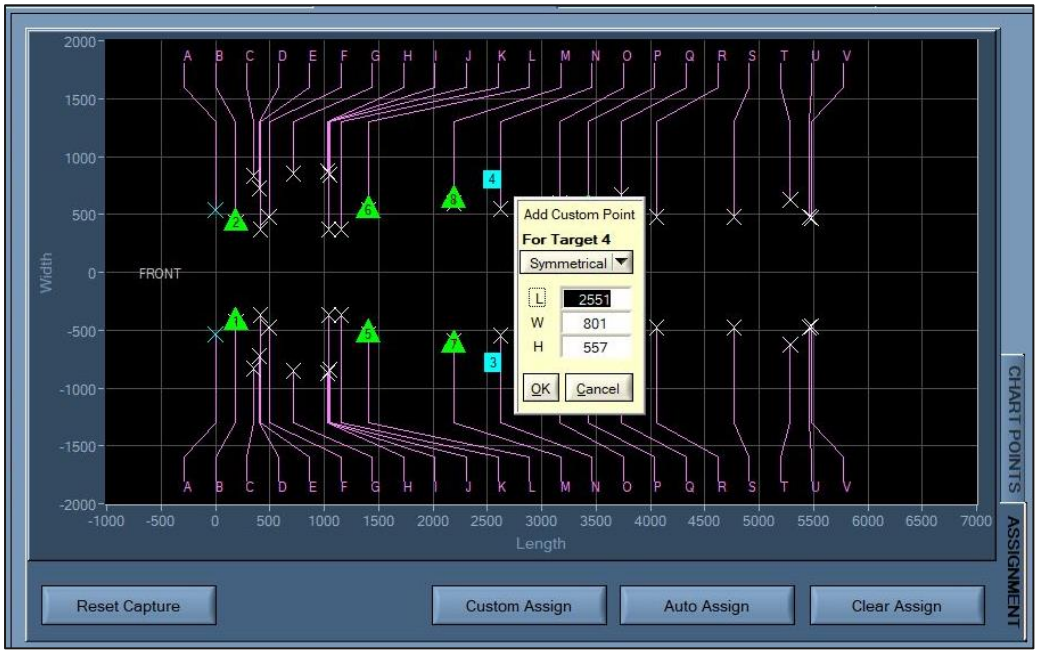
Next attach the magnetic adapter, stem and target. If required to measure upper areas on the body, use the supplied extension stem. Repeat for both sides of vehicle. The setup must be identical left and right. Aim targets to laser.

Now switch back to Eclipse Setup, then swap screens from **Chart Points** to **Assignment.**

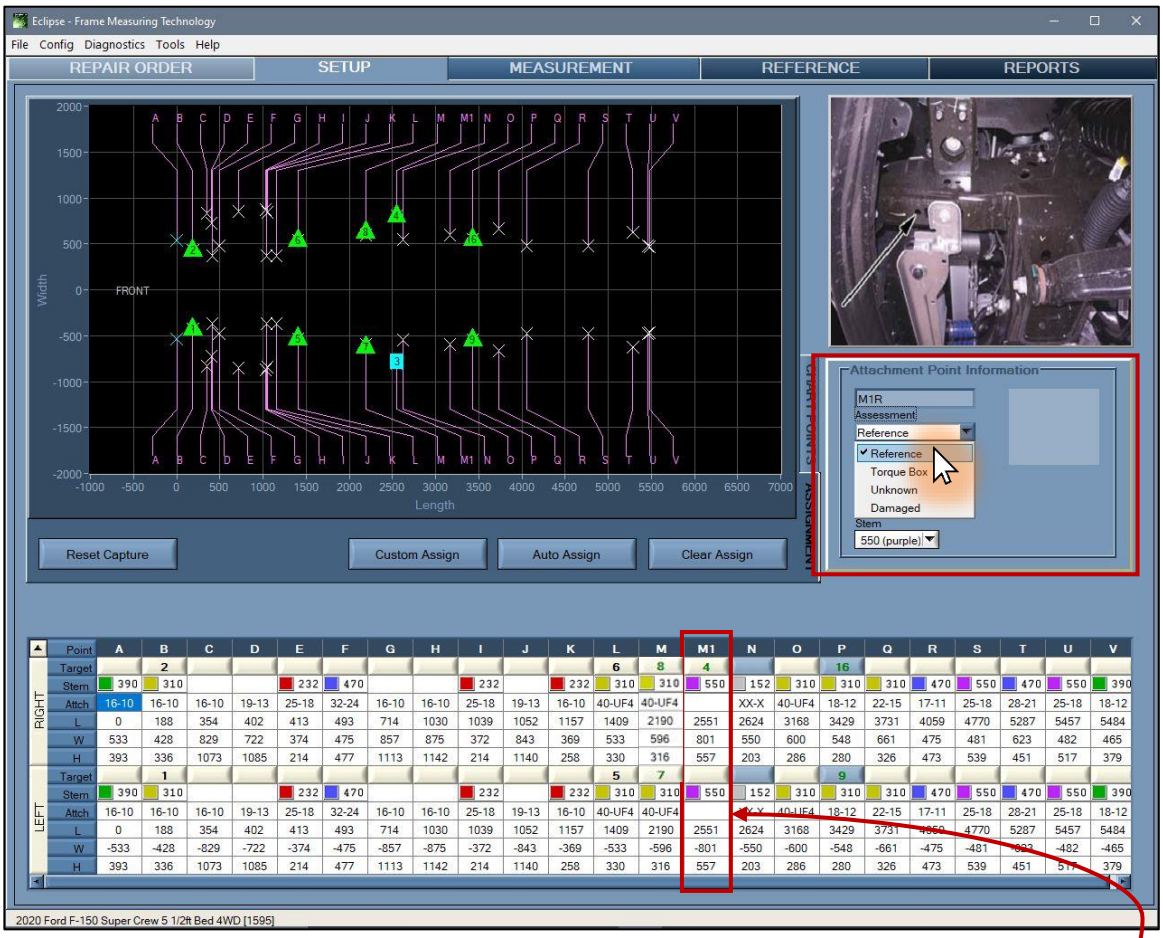
In the Assignment screen we see the system has detected the two targets, 3 and 4 we have hung on the vehicle.



Now select the undamaged side as a reference point. This will be used to determine the amount of comparative damage that exists on the damaged side of the vehicle. Right click your mouse on the target  positioned on the undamaged side. Make sure 'Symmetrical' is selected in the drop-down menu, then click OK.



Notice the Blue box [4] has changed to a Green Triangle [4]. Next, using the mouse, go to the 'Attachment Point Information' window. Click on the Assessment drop down menu and click on Reference. This qualifies the undamaged point as a trusted point to compare the damaged side to.



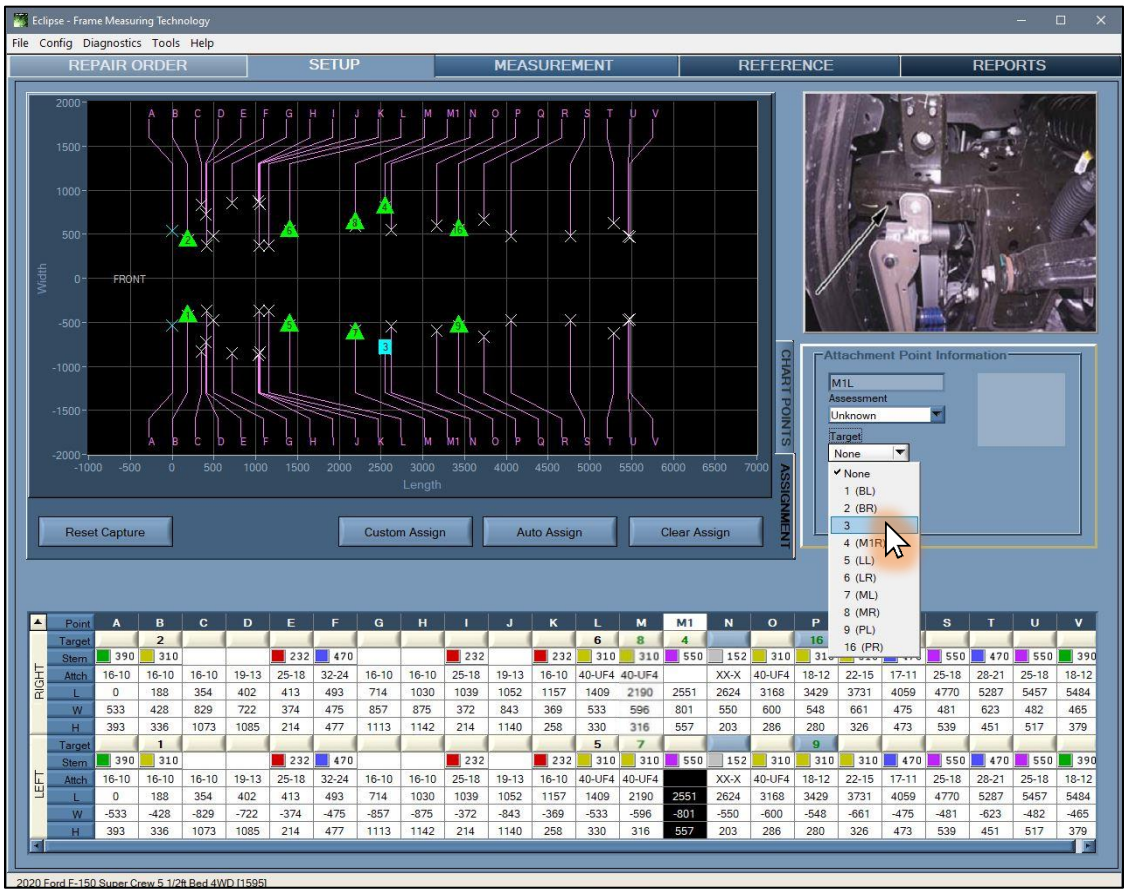
Notice that the system has created a Custom Point (M1) in the Reference Table.

Now we need to identify the *Damaged* side. There are 2 methods to achieve this.

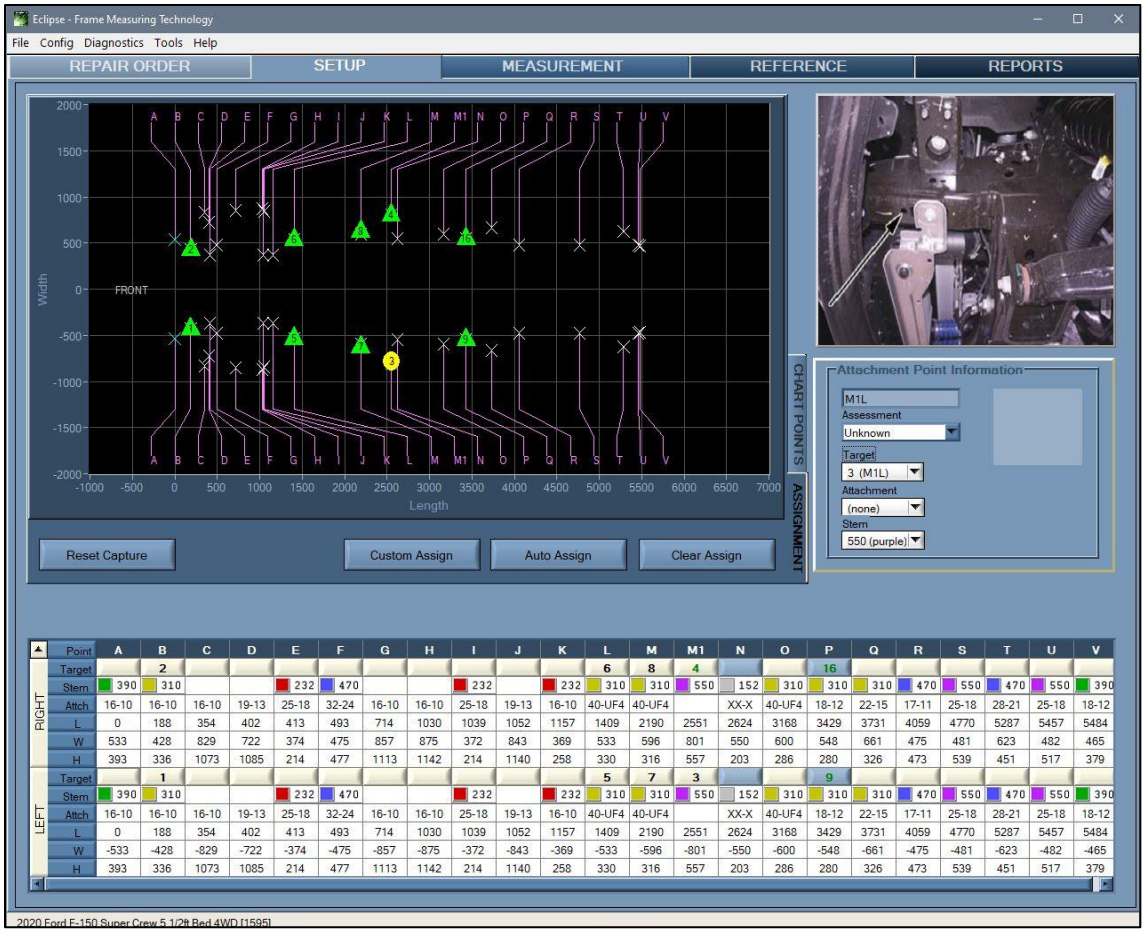
A) In the Assignment screen, click on the Blue box on the damaged side and drag it onto the newly created M1 location. No further action is required on the Damaged side. Leave the Assessment as Unknown.

OR

B) In the Reference table, click and highlight M1. Then in the Attachment Point Information window, click on the Target drop down menu and select the correct target. In this case it is target 3. Leave the Assessment as Unknown.
*Please note, the position (M1 in this example) assigned to a target will change from vehicle to vehicle depending on the location you have positioned a target. Example: A1, B1 etc.

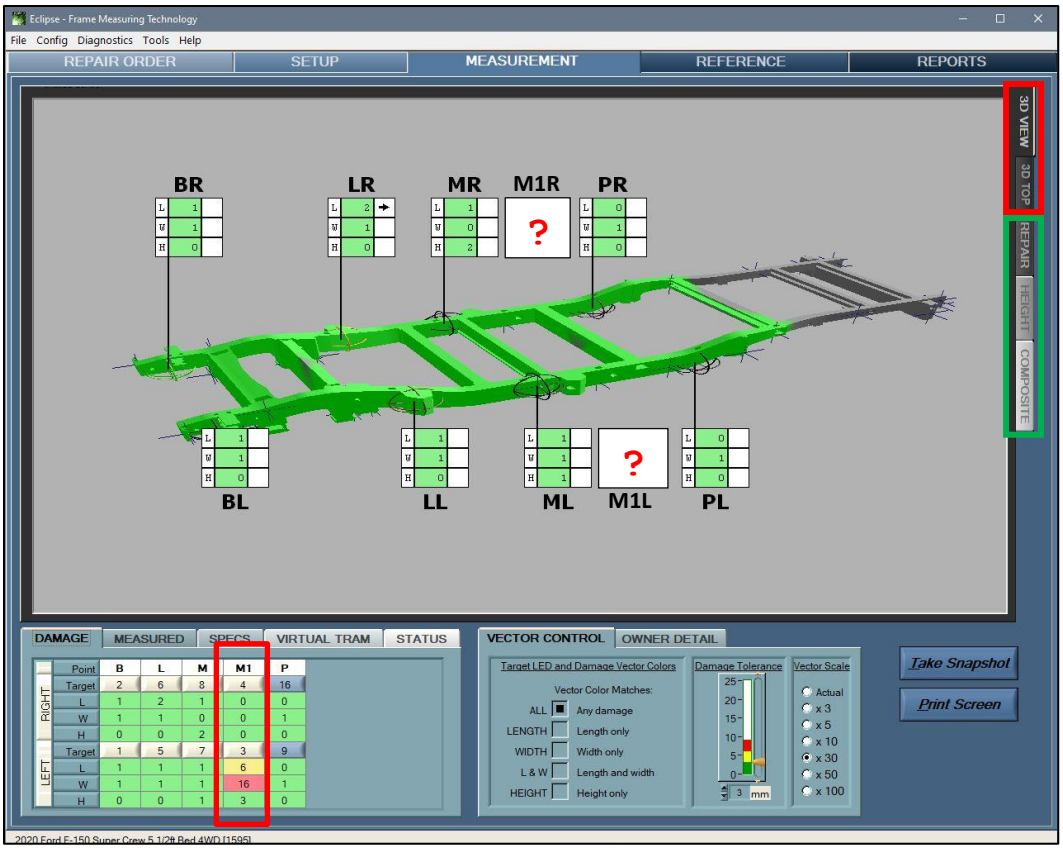


The screen now shows the Reference side as a green triangle, and the Damaged side as a yellow circle, with the corresponding target numbers, 4 and 3 in the M1 position in the reference table.



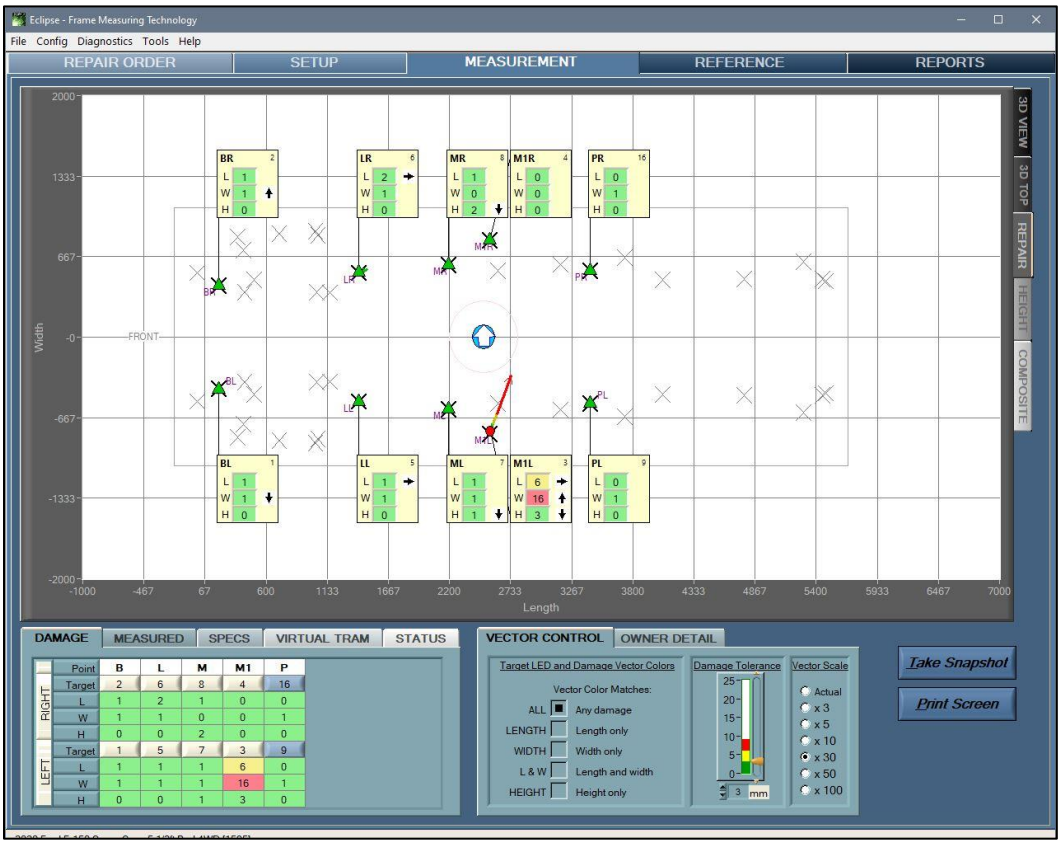
Now, click on the MEASUREMENT tab at the top of the screen.

Important: **Custom Points** do not show up in the 3D VIEW and 3D TOP screens. They are only visible in the REPAIR, HEIGHT and COMPOSITE screens.



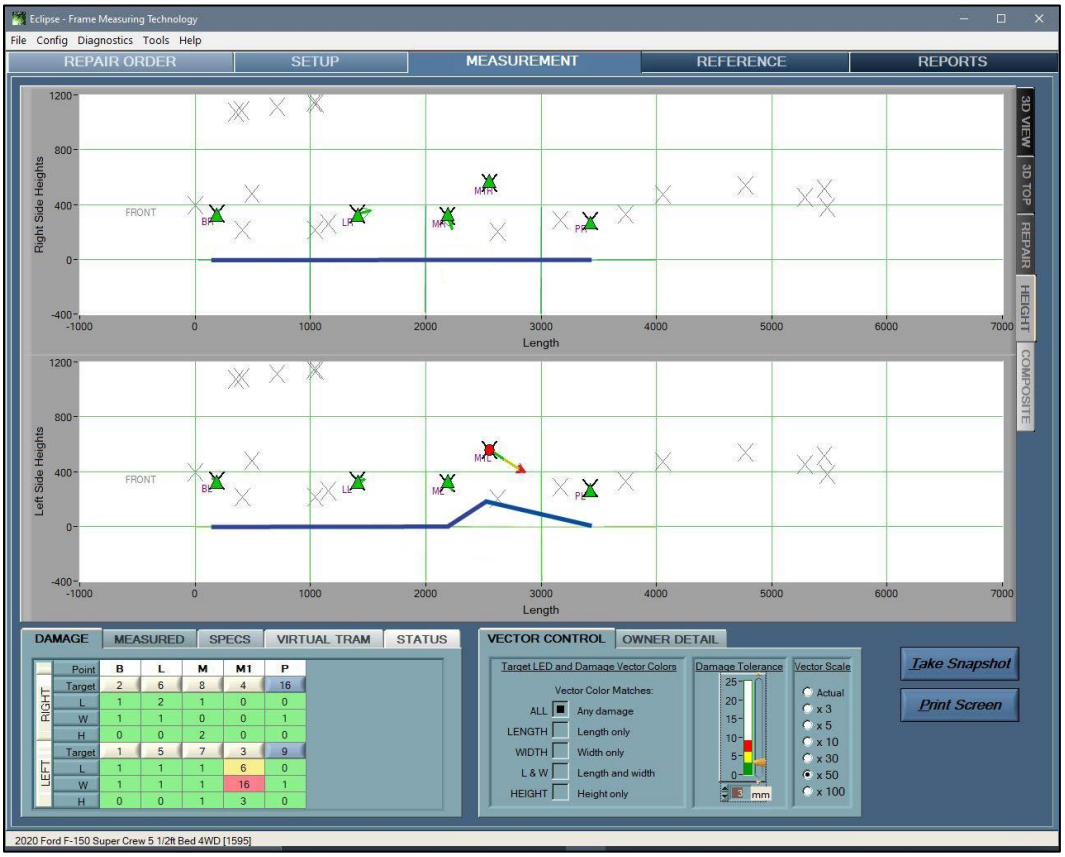
Click on the REPAIR tab on the right-hand side of the screen.

In the REPAIR screen we can see the damage.



The Technician now has the ability to show misalignment at the point of damage, and affect how it is displayed by using the Damage Tolerance and Vector Scale controls. The Custom Points he/she has created also work in conjunction with the VIRTUAL TRAM if so desired.

Clicking on the Height tab reveals Datum misalignment on the Left side at the M1L position.

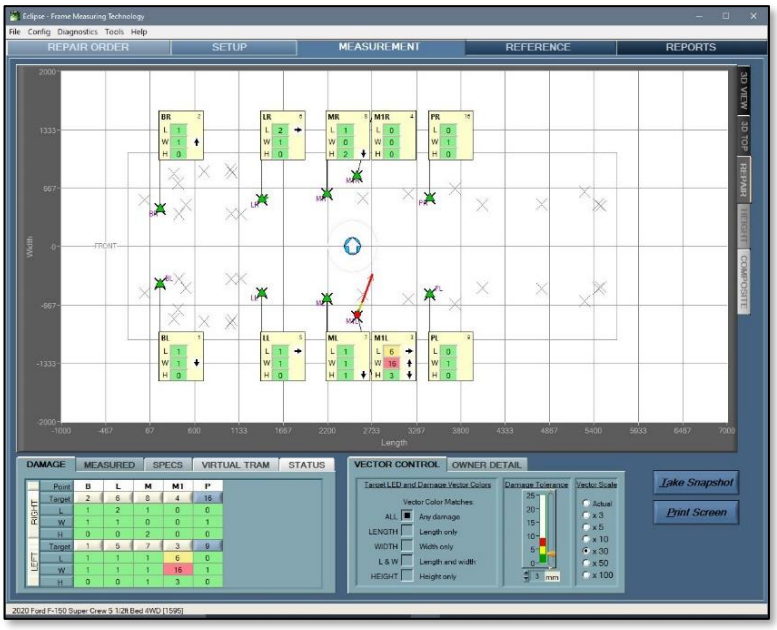


The Vector Scale is multiplying the damage 50X. This would be less dramatic with a smaller multiplier. However, this is a great visual tool for the technician while making corrections to the structure.

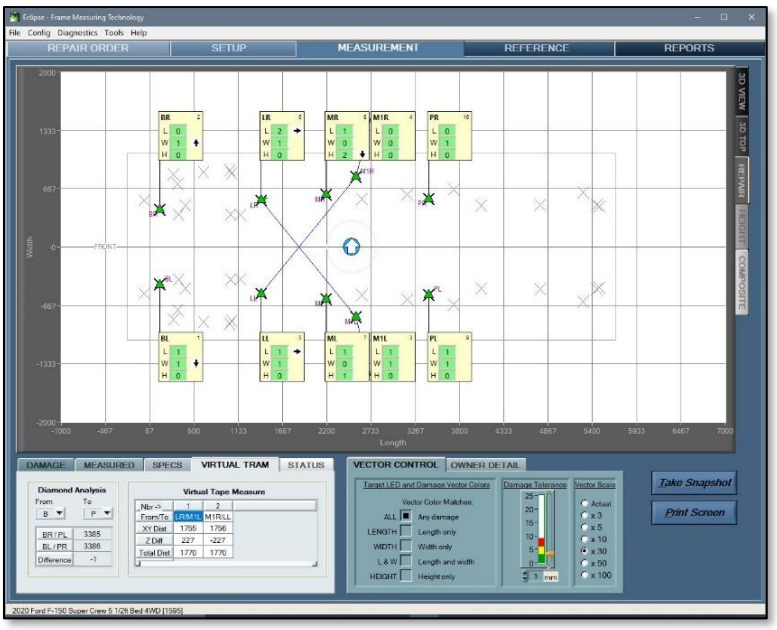
Not shown is the Composite view, which is a combination of the Repair and Height screen.

Document your progress from start to finish. Click the **Snapshot** button to save in the REPORTS tab location, or use **Print Screen** to print or save it as a .pdf document to quickly capture before, during and after shots of the repair. View your progress in the REPORTS Screen in the Snapshots location, or find your saved .pdf reports in the My Documents folder in Windows.

Before



After



Additional notes on custom points for comparative measurement…

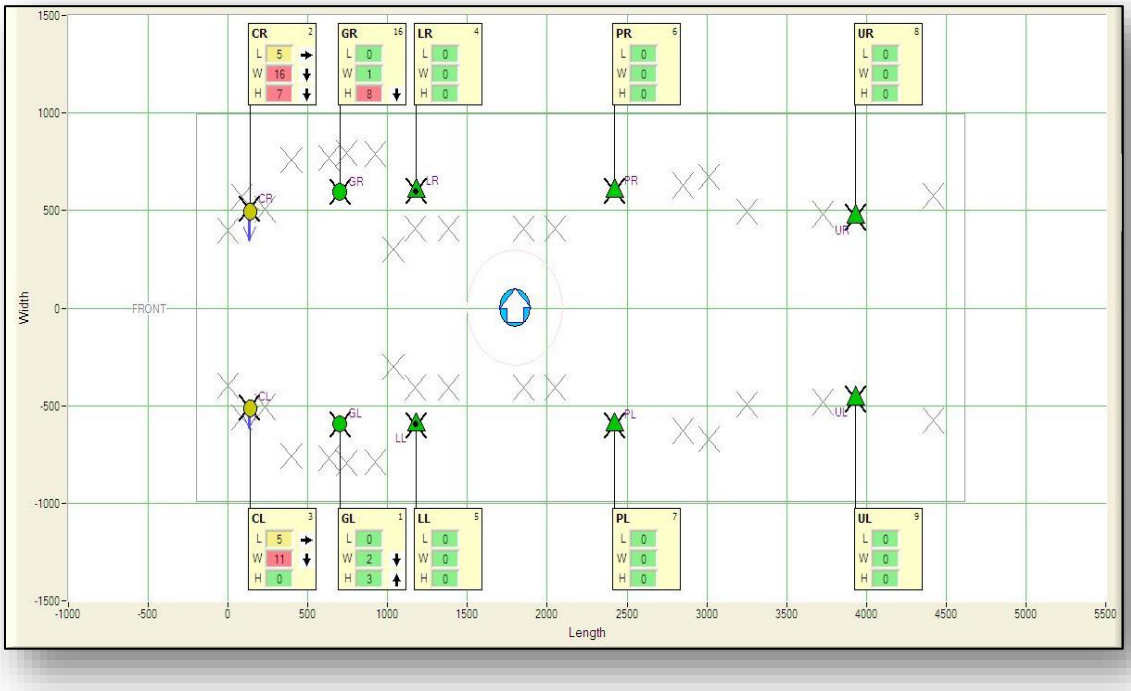
The principles applied to the use of the Side Body Attachment kit can also be transferred to the use of the Accessory Kits 4-8 & Stud Adapter.

This expands the capability of the system to measure Suspension components, Align subframes and measure countless other areas comparatively on the vehicle where no OEM Data exists. If you have an undamaged symmetrical component, you can easily compare the damaged side to the undamaged area.

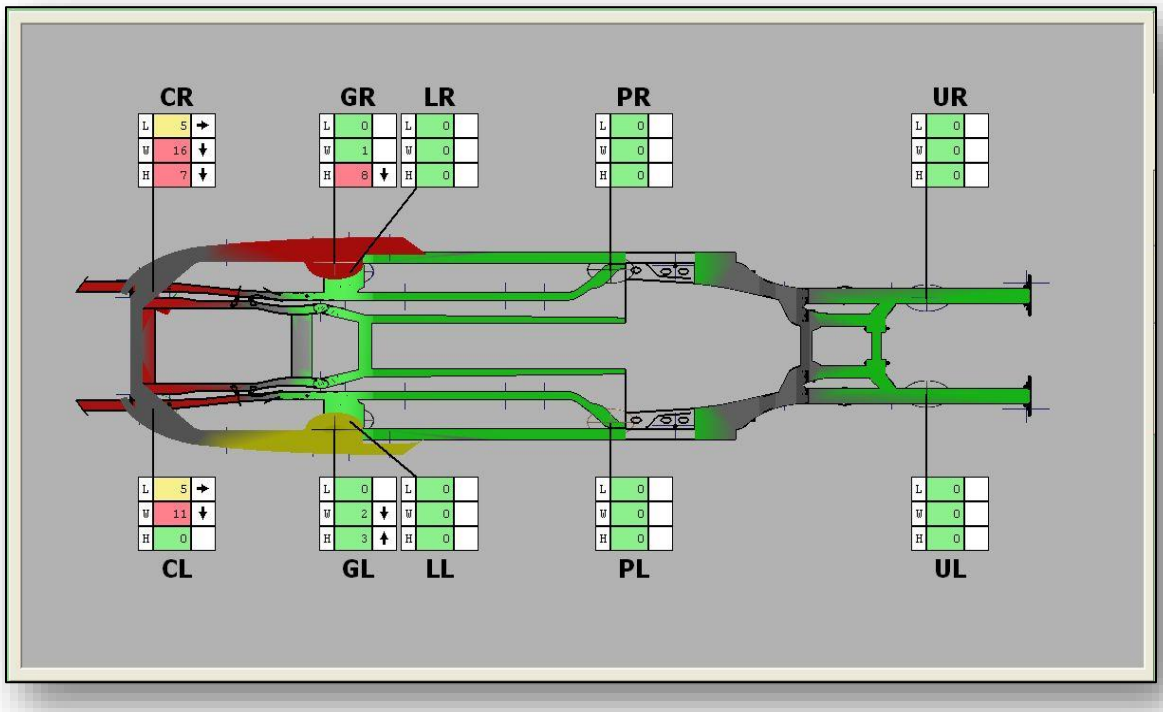
Measurement Data Use and Repair Planning

Once the technician has measured a vehicle, they need to build a plan of action with the data they have captured. The pre-damage snapshot gives us a visual tool that helps The technician understands how many pulls and various anchors he/she will have to do. Let's look at the example below and calculate a pulling strategy.

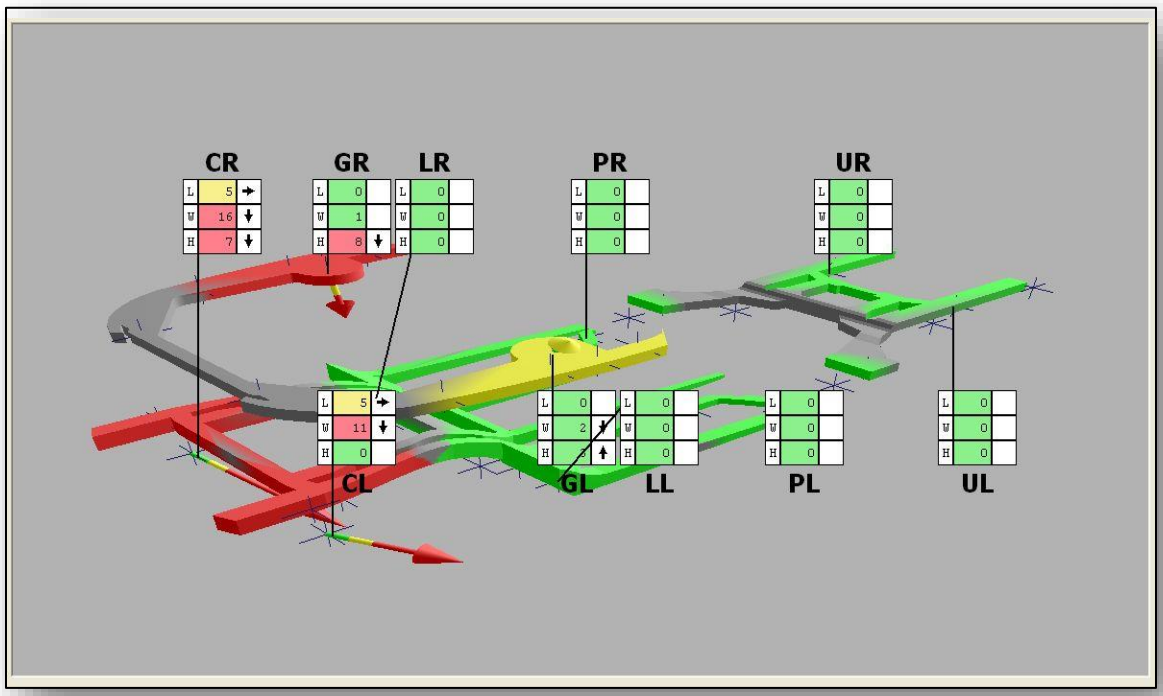
This is the **Repair Screen** view. Good for the technician, but not as easy for a review desk, estimator or customer to understand. Choose wisely when submitting your damage sheet.



This a **3D Top** view. This view is more visual and while it still identifies the same amount of damage, is a much easier way to communicate with estimators, review desks and the customer.



This is the **3D View.** This clearly shows the person viewing the document where the structure has misalignment and makes it easier to understand.



Repair Planning notes

The Data sheet shows us the following damage exists in the front structure:

- Sway to the Left
- Out of Level
- Short Rail

Now let's break down the structure and how it's affected:

- Rt Rail Swayed to the right, low on the right and short
- Rt Strut tower low on the right
- Lt rail swayed to the left and short

How many pulls are required for correction?

Is there additional anchoring required?

In effect, any undamaged areas need to be held while damaged areas require corrective force.

In this scenario the left tower may have to be held in position while the left rail is pulled to the right.

The short rail on the left may be as a result of the sway and may correct itself.

The right rail will require a pull to the right for sway, while being jacked up for height correction.

The right strut tower will require jacking up for height correction.

The terminology used above are the technician's communication piece. Without the 3D data sheet and correct phrasing, the vehicle may not be repaired correctly. Consequently, the technician & the shop will not be compensated as he/she should be.

Documenting the repair from beginning to end is critical to a successful repair, and ensures all interested parties are taken care of.

- Technicians have an accurate tool to aid in repairing the vehicle and documenting their progress, while gaining fair compensation for the repair.
- The shop has accurate before, during and after documentation that the repairs have been performed accurately.
- The Insurance company has an accurate insight into the damage sustained from the collision and is better equipped to negotiate repair times, while having proof the damage exists, and when the repairs have been completed.
- The customer has piece of mind that their vehicles structure has been restored to the manufacturer's specifications.

System Administration

This chapter contains information useful to the system administrator. This is the person in your shop who maintains the computers, software, printers, and networks. The computer supplied with the Eclipse Laser Measurement System is a standard PC running with the Microsoft Windows 10. The computer can be connected to a printer. It can also be connected to a shop network, either hardwired or wirelessly.

At the end of this lesson the system administrator will be

- able to install a database update
- create templates for reports
- able to configure the Eclipse Laser Measurement System
- able to open the diagnostic features of the system

Install database update

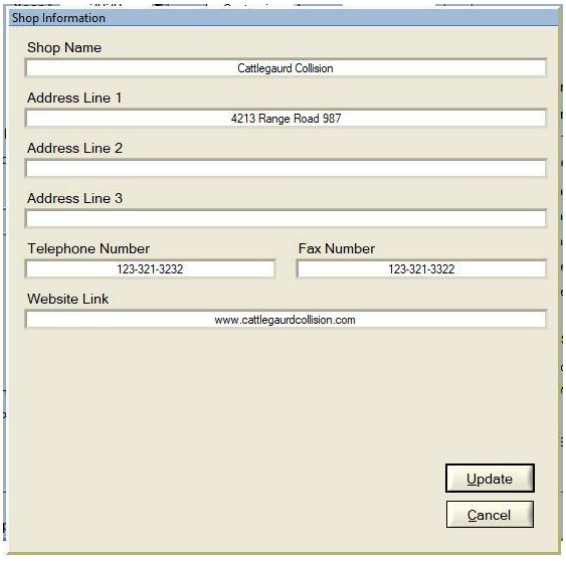
Insert the update USB Stick into the front or rear USB port. The USB stick should auto start and present you with a menu of pushbutton selections for updating software, the 3D models and specifications. Simple click on the command buttons as indicated. Follow all the "default" prompts to complete installation of the update.

Setting up reports

Before you use reports you must complete the following steps:

Enter your shop information in **Config / Shop Info.**

This records your shop name, address, and telephone information, which will be printed on the reports.



Configure the optional Estimator in **Config / Shop Setup**.

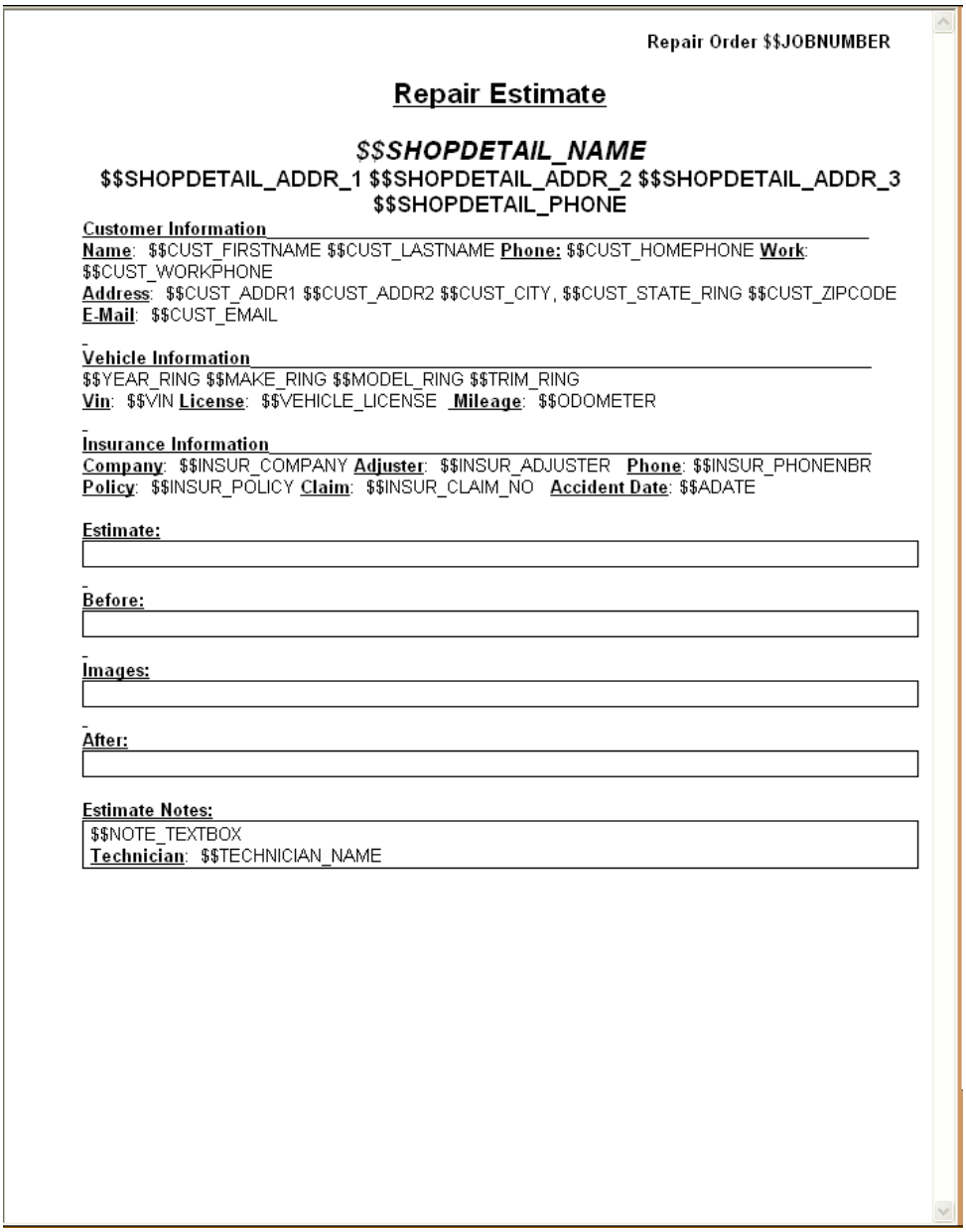
Specify whether pictures will be resized in **Config / Preferences / Reports**.

Report templates

The reports module uses template to provide a consistent format for your reports.

You can use the existing templates provided with the Reports module.

You can edit an existing template. Select the template from the **Select Template** drop-down menu or by clicking the **Load** button.



Repair Order $$JOBNUMBER

Repair Estimate

$$SHOPDETAIL_NAME

$$SHOPDETAIL_ADDR_1 $$SHOPDETAIL_ADDR_2 $$SHOPDETAIL_ADDR_3
$$SHOPDETAIL_PHONE

Customer Information
Name: $$CUST_FIRSTNAME $$CUST_LASTNAME **Phone:** $$CUST_HOMEPHONE **Work**: $$CUST_WORKPHONE
Address: $$CUST_ADDR1 $$CUST_ADDR2 $$CUST_CITY, $$CUST_STATE_RING $$CUST_ZIPCODE
E-Mail: $$CUST_EMAIL

Vehicle Information
$$YEAR_RING $$MAKE_RING $$MODEL_RING $$TRIM_RING
Vin: $$VIN **License**: $$VEHICLE_LICENSE **Mileage**: $$ODOMETER

Insurance Information
Company: $$INSUR_COMPANY **Adjuster**: $$INSUR_ADJUSTER **Phone**: $$INSUR_PHONENBR
Policy: $$INSUR_POLICY **Claim**: $$INSUR_CLAIM_NO **Accident Date**: $$ADATE

Estimate:

Before:

Images:

After:

Estimate Notes:
$$NOTE_TEXTBOX
Technician: $$TECHNICIAN_NAME

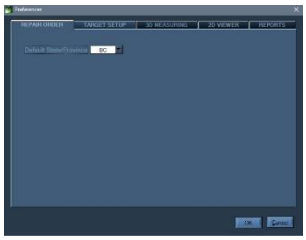
Setting up Email connections

See your system administrator for help setting up email connections.

Configuring the Eclipse system

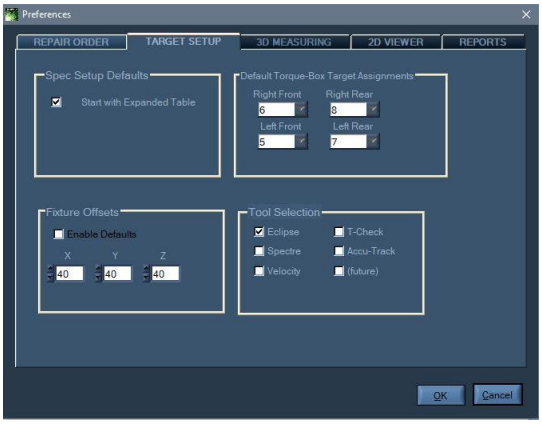
Repair Order

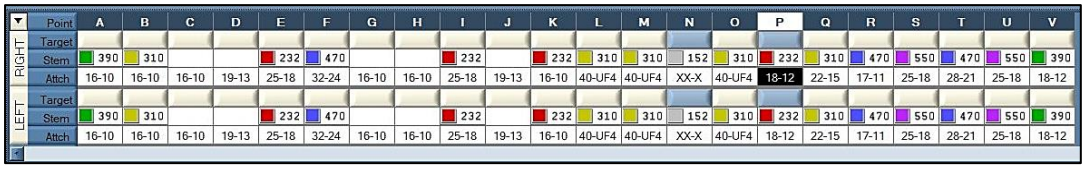
Set the default state or province. This is used to fill in the state fields in the Repair Order module. Both Vehicle and Customer state or Province fields are filled.



Eclipse Setup

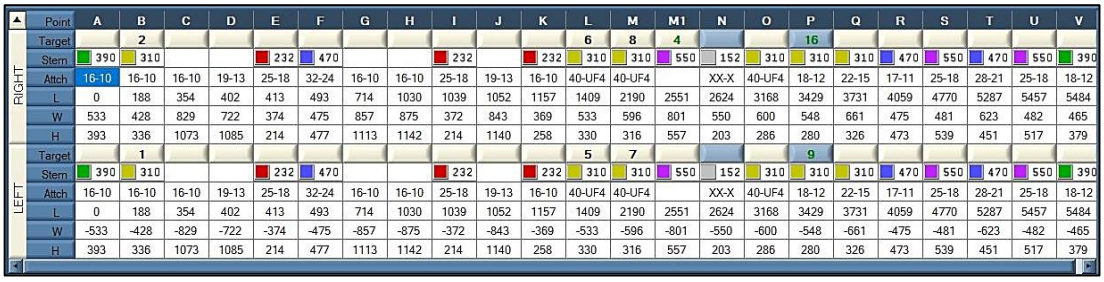
This preference only takes effect after you exit and restart the Eclipse Plus Laser Measurement Software. The default setting for the Reference Table in Eclipse Setup shows the specification point, the assigned target, the stem, and the attachment adapter.





	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
RIGHT	Target																						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12
LEFT	Target																						
	Stem	390	310			232	470			232		232	310	310	152	310	232	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4	XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12

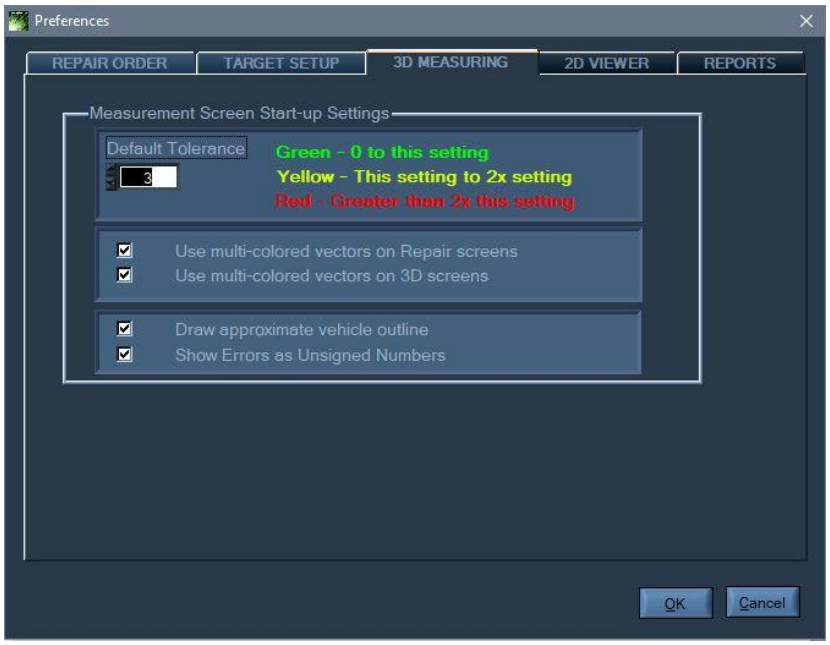
Selecting **Start with Expanded Table** will cause the table to be presented as shown below. In addition to the information shown above, the length, width, and height of the specification points will be shown.



	Point	A	B	C	D	E	F	G	H	I	J	K	L	M	M1	N	O	P	Q	R	S	T	U	V
RIGHT	Target		2										6	8	4			16						
	Stem	390	310			232	470			232		232	310	310	550	152	310	310	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4		XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12
	L	0	188	354	402	413	493	714	1030	1039	1052	1157	1409	2190	2551	2624	3168	3429	3731	4059	4770	5287	5457	5484
	W	533	428	829	722	374	475	857	875	372	843	369	533	596	801	550	600	548	661	475	481	623	482	465
	H	393	336	1073	1085	214	477	1113	1142	214	1140	258	330	316	557	203	286	280	326	473	539	451	517	379
LEFT	Target		1										5	7				9						
	Stem	390	310			232	470			232		232	310	310	550	152	310	310	310	470	550	470	550	390
	Attch	16-10	16-10	16-10	19-13	25-18	32-24	16-10	16-10	25-18	19-13	16-10	40-UF4	40-UF4		XX-X	40-UF4	18-12	22-15	17-11	25-18	28-21	25-18	18-12
	L	0	188	354	402	413	493	714	1030	1039	1052	1157	1409	2190	2551	2624	3168	3429	3731	4059	4770	5287	5457	5484
	W	-533	-428	-829	-722	-374	-475	-857	-875	-372	-843	-369	-533	-596	-801	-550	-600	-548	-661	-475	-481	-623	-482	-465
	H	393	336	1073	1085	214	477	1113	1142	214	1140	258	330	316	557	203	286	280	326	473	539	451	517	379

Default Torque box Target Assignments. Choose the targets that will be automatically assigned to the torque box specification points in Eclipse Setup.

3D Measurement



Default Tolerance - the color background of damage errors and the color of the vectors changes from green to yellow at this setting. At twice this setting the colors turn from yellow to red.

Use multi-colored vectors on Repair screens and **Use multi-colored vectors on 3D screens** - The default is to use multi-colored vectors. If you un-check this option the vectors will appear in a single color. This will not take effect until the next time you start the Eclipse Laser Measurement System software.

Draw approximate vehicle outline - the default is to draw the approximate outline. This appears in the Repair pane of 3D Measuring.

Show Errors as Unsigned Numbers - Errors are the offsets from the ideal positions of the specification points. They are shown in the Damage tab of the 3D Measuring module. If you un-check this box the offsets will be shown with negative numbers if the damage moved the specification point these directions:

- Toward the front of the car - length damage will show as a negative number
- Toward the left side of the car - width damage will show as a negative number
- Down - height damage will show as a negative number

2D Viewer

There are no user preferences for this feature.

Review Notes for the Technician

Test

1. What are the five bits of information needed when starting a repair order?

2. Where and how should the laser scanner be placed?

3. How many targets are needed in undamaged areas?

4. How many targets are needed to begin measuring damage?
   a. 3
   b. 4
   c. 5
   d. 12

5. When you first hang a target on the vehicle the LED flashes red. What is wrong?

   a. The Battery is low
   b. The target is damaged
   c. The target is indicating damage in that area
   d. The laser is not striking the target

6. You need to measure multiple points in the Underhood area, but have only 1 upper body tram bar. What can you do?

   a. Make series of custom points
   b. Use the Freeze a Point feature
   c. Use the Virtual Tram feature
   d. Use the Virtual Tape Measure feature

7. Where do you first go for help with the Eclipse Laser Measurement System?

   a. Ask the shop foreman
   b. Call a friend
   c. Use the Help drop down menu in the Eclipse software
   d. Read the manual

8. You shut down the Eclipse system overnight. How do you restart the information for the car you were working on?

9. A target is flashing green. Why?

10. A target is showing a steady blue LED. Why?

11. A target is showing a steady yellow LED. Why?

12. When do you use patented Uni-fit adapters?

a. On Aluminum vehicles
b. In large diameter holes
c. In place of a magnetic adapter that uses a hole for reference
d. All of the above

13. How does the software know you have used a patented Uni-fit?

a. It automatically detects it
b. The technician selected it in the Eclipse setup screen
c. The stems detect it automatically
d. When an aluminum vehicle is selected

14. How does the software know what stems you have used when you mounted the under-hood tram?

15. On the under-hood tram the targets hang several inches outboard of the specification points. How does the system know how far outboard the target has been placed from the specification point?

16. What is a snapshot and how do you save one?

17. What screens would be useful for saving a snapshot?

18. What screen do you use for making a virtual tram measurement?

19. How are custom points displayed on the Assignment screen?

20. Where can you find other measurement data about the vehicle?