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1 Introduction to the Eclipse Laser Measurement System

The Eclipse Laser Measurement System is a state of the art tool to measure vehicle structural damage.

- Resolution: 1mm
- Range: 10 meter range, 32 feet (+/- 16 feet from center)
- Intuitive user interface
- Easy to learn
- Easy to use
- 3D modeling to show extent of damage
- Vector aids to show direction and extent of damage

Using this tool the collision repair technician can
- quickly and accurately measure damage
- document the damage.
- monitor the repair as the frame is being pulled
- document the repair
1.1 A few words for the trainer

Let the technician "drive." If you are the one using the computer, handling the equipment, hanging targets, and so on, then what you are giving is a demonstration.

To get the most of your limited time with the technician stand back and let him operate the computer and operate the equipment. No classroom training is required to learn and use this system. Our goal is to get him up and going with the system. This can be done in the shop environment.

You will face some challenges in your training. These will include (but will not be limited to):

- Lack of familiarity with personal computers
- Trainees who are strong visual learners, but not verbal learners
- Language differences
- Educational differences

Each lesson in the training manual has four sections.

- An introduction to the lesson including what the training goals are
- The main body of the section with the detailed information
- A recap section providing a quick review of the lesson.
- A test covering the material of the lesson. This test can be administered as a written test or as a verbal interview. Feel free to add to it or modify it. The goal is to insure the technician has good knowledge of how to use the system.

Pitfall: The dictionary defines pitfall as a trap or danger for the unwary. Our use of this term is an exaggeration. But there are times and actions when using the Eclipse Laser Measurement System which could cause confusion. Throughout this manual we have tried to anticipate what could go wrong while using the Eclipse Laser Measurement System and termed those things "pitfalls." We show how to recover from and avoid these potential problems.

Your feedback to Advanced Measurement Systems on this manual and the training program is welcome. Your comments are necessary for us to improve. Please contact Robert Watts, Advanced Measurement Systems, at robertw@ams-laser.com.

1.2 Trainer's set up

The trainer needs to set some initial defaults in the Eclipse software.

Make certain the computer is on.

Start the Eclipse Laser Measurement System software.
In the tool bar at the top of the Eclipse window select **Config**. Then select **Shop set up**. Fill in the shop information including shop name, street address, city, state, and zip code. Then select **Exit**.

Select **Config**. Then select **Preferences**. 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 fields are filled.
1.3 **A few words for the technician**

We want you to be up and running and comfortable with the Eclipse Measurement System as quickly as possible. Here are some tips to increase the effectiveness of your training:

- If you are not "driving", you are not learning. Make sure the trainer lets you operate the system. This is not a demonstration. It is training.
- Questions are free. Ask lots of questions.
- Find out what the pitfalls are. What could go wrong? How do you fix it?
- Find out how to find out. When the trainer leaves, where do you go to get your questions answered? Don't let the trainer leave if you don't know the answer to this one question.

Your feedback to Advanced Measurement Systems on this manual and the training program is welcome. Your comments are necessary for us to improve. Please contact Robert Watts, Advanced Measurement Systems, at robertw@ams-laser.com.
2 Lesson 1 - Basic Measurement

This lesson is designed to train the technician in the use of the Eclipse Laser Measurement System.

The Eclipse system consists of the following items:

- 1 Laser scanner
- 12 Laser targets
- Full set Magnetic adapters
- Full set Stems
- 1 Eclipse computer
- 1 Eclipse cabinet
- 1 Eclipse software
- Full set Uni-fit adapters
- 1 Under hood tram
- 1 Laser scanner support tray
- 1 System printer
- 1 Eclipse 3D data and specifications

At the end of this lesson the technician will be
- Familiar with the Eclipse hardware
  - Laser scanner
  - Antenna
  - Computer
  - Targets
  - Stems
  - Magnetic adapters
- Able to start and save a Repair Order
- Able to assign targets to specification points
- Able to make an initial measurement of the torque box
- Able to make a measurement of the damaged area of the vehicle
2.1 Start up

- Get a vehicle needing repair up on a lift or on a frame machine or bench.

- Remove the laser scanner from the Pelican case or Eclipse cabinet. Plug in the laser scanner. This allows it to come up to a stable operating temperature in the shop.

- Plug in the Eclipse system. This will apply power to the computer and start charging the laser targets.

- 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.

Pitfalls: If the antenna becomes disconnected from the cable or the computer, you must restart the program or manually reassign to a new com port. This will reestablish the connection.

· Start the Eclipse Laser Measurement Software by double clicking on the Eclipse icon

Click the **Continue** button.
2.2 Start the repair order

Start a new 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. Click on the **Create New** button. This dialog box will open.

Enter the repair order from the paperwork for this vehicle. (Or for training enter a name like "training" or "test.") Then click on the **Create Order** button.

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.
Enter the vehicle data

Before you start to measure you must choose the vehicle data. Select the year, make, model, and trim. Click on the down arrow to see a drop down list of choices for each data field.

You must have the repair order number and vehicle year, make, model, and trim before you can start measuring.

All other information on the Repair Order screen is optional.

It is a good idea to click the **Save** button now. This insures that the data about this vehicle and this repair will be saved in the right place.

Click the **Go to Setup** button or click on the **ECLIPSE SETUP** tab at the top of the screen to go to the next module.
2.3 Eclipse setup

After you have started a Repair Order and selected your vehicle, click the Eclipse Setup tab. 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 should be located anywhere under the vehicle. The handle pocket should roughly face the driver's side.

The laser scanner has a built in tilt sensor and does not need to be exactly 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.
Choose torque box specification points
We are going to assign the first four targets to the torque box specification points. We do this because the torque box is the most rigid part of the vehicle and the least likely to be damaged. The Eclipse 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 is 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.

**Pick the torque box points**

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

The reference table shows the four torque box points typically used highlighted in green.
Assign the first target to a torque box point
In this example we are going to assign target 4 to point K RIGHT (KR).
In the Reference Table click the button for KR.

Now look at the Attachment Point Information box. This target is being assigned to a torque box point, so the appropriate box is automatically checked.
Select the stem and adapter

Look at the Attachment Point Information box.

The box shows the recommended stem.
Stems are color coded. Each color represents a different length. The box also shows the length in millimeters. In this example -- black stem 132mm.
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 the bolt head. In this example -- 32-24.
**Stem**

Pull out the recommended stem.

In this example we want the black 132mm stem (the image shows a much longer green stem).
Target
Pull out the target (in our example -- target 4) 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.

The targets communicate wirelessly to the computer. When you plug the stem into the target communication with the computer starts and this target and stem are automatically assigned to the specification point selected earlier. The stem length information is sent back to the computer. The stem length is coded by the wiring in the quick disconnect connector.
Magnetic coupler and bolt/hole adapter
Pull out the recommended magnetic coupler and bolt/hole adapter.

The adapters fit into a hole or over a bolt head. The diameters of the hole and the bolt head are marked on the rim of the adapter.

Put the magnetic couple and bolt/hole adapter together.
View the specification point

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.

Pitfall: If there is no picture available you can zoom in on the point in th Chart Points screen for better detail. Right-click 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 target on the vehicle

It is good practice to assign and hang targets one-by-one on the vehicle. This prevents possible wild readings caused by mixing up targets and assigned specification points.

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.

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 is not see Pitfalls below.

Slots and oval holes

![TO THE FRONT](image)

If the specification point is a slot or an oval hole, slide the adapter toward the front of the vehicle as far as it will go. If the slot runs across the vehicle, slide the adapter as far outboard as possible.

Pitfalls and troubleshooting

1. You get an error message saying something like "Replace target #1 with target #3?"

   This occurs if you plug a stem into a target before assigning the target number to a specification point.
   Plugging the stem into the target turns on the target and it begins communicating with the computer.
   Answer the error message "No." Then assign the target in your hand to a specification point.

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

   1. The LED is flashing red. This means the laser is not striking the target face. 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. Turn the target so that the laser strikes the target. If the laser is above or below the target, choose a different stem and plug it into the target.
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.
   Turn the target to point more directly at the laser.
   Try a different target. If a different target has the same problem, contact Eclipse technical support.
Assign the remaining targets to the other 3 torque box points and hang the targets on the vehicle

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. Enter the target number in the Target Assignment box
3. Check the Attachment Point Information box 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.
2.4 Check the measurement of the torque box

Now click on the 3D MEASURING 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 their positions correctly.

Right-click in 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 length, width, or height; which is what we expect.
Now switch back to the **ECLIPSE SETUP** tab so we can measure the damage.
2.5 Measure the damage

Now we are going to measure the damage to the structure of the vehicle. In **ECLIPSE SETUP** select two specification points in the damaged area. Proceeding one at a time, assign targets to these two points. 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 #2 and #3. For each target in a known area of damage, click on the specification point and select **Damaged** under the Condition.

Click on the **Go to Measure** button or on the 3D MEASURING tab at the top of the screen and we will look at the damage. Note that the Go to Measure button does not appear until you have at least 5 targets assigned.
We are back to the Repair view. In this example point BR moved 15 mm back, 10 mm to the right, and 6 mm up.

The red circles indicates a specification points that are likely to be 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 displacement. It shows you the direction of the movement. In this example the vector is magnified 50 times. This is set by the Vector Scale control in the Vector Control box.
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.

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.
Throughout the Eclipse Laser Measurement System color is used to depict the amount of damage to the vehicle. We will cover this in more detail in the next lesson.
2.6 Using Freeze Point to measure more specification points

The Eclipse Laser Measurement System Tool Box only comes with six targets. (The Tool Box Plus has 8 and the Complete 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 specification point?

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.

In the 3D MEASUREMENT 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 ECLIPSE 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.
Pitfalls: 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.
2.7 Recap- Basic Measurement

Here are some things to remember:

Plug in the scanner before starting.

Place the antenna in a place safe from things that would shield its signal (like metal tool box lids) and out of harms way.

Using the Eclipse Laser Measurement System follows a logical left to right pattern from Repair Order, to Eclipse Setup, to 3D Measurement.

To start a new measurement you must enter at least the following information on the Repair Order screen:

- Repair order number
- Vehicle Year
- Vehicle Make
- Vehicle Model
- Vehicle Trim

For training purposes we assigned targets and measured only the torque box first and viewed the 3D Measuring screen. We went back to Eclipse Setup and assigned more targets in the damaged area then measured again. This is not necessary for regular use of the Eclipse Laser Measurement System. Ordinarily you would assign four targets in an undamaged area (possibly the torque box) and then assign targets in the damaged areas. After assigning all the targets you go to 3D Measuring.

When assigning targets in the Eclipse Setup screen

- Assign one at a time
- Put odd numbered targets on the left and even numbered targets on the right
- Put at least 4 targets on known undamaged portions of the vehicle. Usually this will be the torque box.
- Put the targets as far apart as possible

Use the 3D Measuring screen

- to view the damage numerically
- to view the damage visually with vectors

With the Eclipse Tool Box you may need to use the Freeze Point feature to make more measurements in the damaged area.
2.8 Lesson 1 Test

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

2. Where 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?

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

6. You only have used all the targets in your Eclipse Tool Box, but you want to put 3 targets in damaged areas. How do you do it?

7. Where do you go for help with the Eclipse Laser Measurement System?
3 Lesson 2 - Under hood tram, Uni-fit adapters, & more

This 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 patented Uni-fit adapters. The technician will also get more detailed information about targets, vector controls, and build tolerances and how tolerances are handled in the Eclipse software.

At the end of this lesson the technician will
- be able to browse for and retrieve a Repair Order
- understand target LED meanings
- be familiar with
  - patented Uni-fit adapters
  - Under hood tram
- understand vector controls and tolerance settings
- how to use Help
3.1 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 button. Then click the button.

If you are starting Eclipse for the first time this day, just click the 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.
3.2 Target LEDs

Here is more information about the construction of the targets.

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.

The detector cell is what senses the laser light beams from the laser scanner.

The IR detector senses a synchronizing signal from IR LEDs around the perimeter of the laser scanner.

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.

Blue -- target in the charging tray is charging
Pink flashing -- stem plugged in; target activated; should only flash for a few seconds
Red flashing -- target not being struck by laser light beams
Purple flashing -- target not receiving IR synch signal
Green flashing -- target receiving laser beams, IR synch signal, but not assigned to specification point

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, and the Scan for Targets button has been clicked or you are in the 3D Measurement screen.

Green -- Measurement within the acceptable tolerance zone
Yellow -- Measurement between the acceptable tolerance zone and twice that zone. For example if acceptable 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.

The target status also can be seen from the Status tab of the data box in the 3D Measurement screen. Here we see that target 6 has a low battery.

![Target Status Table]

<table>
<thead>
<tr>
<th>Point</th>
<th>DAMAGE</th>
<th>MEASURED</th>
<th>SPECS</th>
<th>VIRTUAL TRAM</th>
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<td></td>
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<tr>
<td>2B</td>
<td>4K</td>
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3.3 **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 if you do not have any more of the appropriate size of magnetic adapter to fit a hole.

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

To use the patented 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 the **Use Uni-fit Adapter** box in the Attachment Point Information box in Eclipse Setup. The recommended patented Uni-fit will appear in the **Attachment Adapter** box. The program will automatically compensate for the use of the patented Uni-fit instead of a magnetic adapter.
3.4 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 first select the specification points you want to use. In Eclipse Setup 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.

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 fender 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.

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

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. 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 by, but not touching, the fenders.

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. Aim for a laser strike in the middle 75% of the face for best accuracy.

Plug the stems into the targets and then plug the stem and target assemblies into the counterweights.
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.

When we selected an under hood specification point earlier, the Eclipse software opened a new **Tram Settings** box.

Choose a target ID in the **Target Assignment** box. In this example we will choose the target that we hung for specification point ER.

In the Tram Settings box choose a **Pin Location**. Then choose the **Pointer Color** that you used.

Remember that the stem length will be transmitted to the computer automatically.

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

**Pitfalls:**
Note that 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.

Now you are ready to continue with 3D Measurement.
3.5 Vector Controls and Tolerances

Vectors 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 3mm displacement is the tolerance range for an undamaged portion of a frame. More than 3mm to 6mm displacement defines moderate damage. More than 6mm to 9mm (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.

To make the vector 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) is shown in blue.
3.6 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.
3.7 Recap - lesson 2

- Remember to click the Save button in **REPAIR ORDER** before you shut the Eclipse Laser Measurement System down or before you start to measure a new vehicle. Or click **File** and select from the list of recently measured vehicles.

To re-open a Repair Order for a vehicle measured before, click the Browse button.

- Targets are turned on by plugging a stem into the target. The LED display tells three stories.
  - When the target is in the charging tray, the LED shows the state of charging.
  - When the target has a stem plugged in, but has not been scanned for a measurement, the LED shows the state of communication. Green flashing says everything is OK.
  - When the target has been scanned for a measurement, the LED shows the amount of damage according to the tolerance settings.

- Use patented Uni-fit adapters for non-magnetic specification points or to substitute for magnetic adapters if you have run out of the appropriate size.

- The under hood tram lets you measure strut towers, radiator mounting points, and fender mounting points.
  - Use your tape measure to measure out from the specification point approximately 2 inches past the fender. Set the tram pointer block at the letter position that is closest to this measurement and far enough out that the counterweight will not touch the fender.

  Assemble and set the under hood tram up on the specification points you want to measure. Then assign the target and enter the data in **ECLIPSE SETUP**.

- Vectors allow you to visualize the displacement that occurred when the vehicle was damaged. They show the direction of the movement and the amount of movement. When you pull the damage out, you will be moving in a direction opposite to the direction of the vectors.
  - Right-click in the **3D MEASURING** graphics viewer, then select **Show vectors**.
  - Use Vector Control to determine which components of the vectors are shown, set the tolerance settings which control the colors of the vector (and the LEDs on the targets and the data backgrounds on the screen), magnify the vectors so they are easily seen on screen.

- When this training is over where do you go to get answers?
  - Click **Help** in the tool bar. Then select **Eclipse Help**.
  - If you can’t find the answer there, contact technical support.
3.8 Lesson 2 Test

1. You shut down the Eclipse system for lunch. How do you load the information for the car you were working on?

2. A target is flashing green. Why?

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

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

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

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

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

8. On the under hood tram the targets actually 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?
4 Lesson 3 - Eclipse Full System

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

At the end of this lesson the technician will be
- able to print a screen shot for documentation
- able to check the estimator configuration
- able to create estimates
- able to save a screen snapshot
- able to add a digital photograph to a report
- able to create reports
- able to add a custom measuring point
- able to use the virtual tram feature
4.1 Printing a screen shot for documentation

Today insurance companies want documentation showing the extent of the damage before the repair. And they want 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 Print Screen button. This will cause this 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
- The 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
- The vectors showing the direction of the damage
- The shop information and repair order number
- The 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**.

![Print Screen](image)

**Pitfalls:**

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

1. An alternative is to print the screen to a file.

   When you click the Print Screen button, the Print dialog box opens. Select the PDFcamp Printer from the drop down list under Printer Info - Name. Then click OK.

![Print Dialog Box](image)

This creates a .pdf file in the file folder for this repair order that can be copied to a thumb drive and then opened and printed on a computer connected to a printer.
4.2 Check the Estimator Configuration

Before you can use the Estimator you must enter your shop rates. You should also review the available choices under processes, location, and type of damage.

Click **Tools** in the tool bar. Then click **Estimator**.

**Right-click** anywhere in the Estimator dialog box. You will see this dialog box.

![Estimator Configuration](image)

To add a new process description **double click** on **<Add New>**. This dialog box will open
Type in the new process in the Edit Text box. If the shop rate for this process is different than the general shop rate, enter the Shop Rate in the appropriate box. Then click OK.

You can use this same procedure to edit any of the existing processes.

Click on any of the tabs to review the choices. Changing or adding choices is done in the same way as the process choices were changed.

Click on the General Settings tab. Then enter the general shop rate. This will be the default rate for any process that does not have its own rate set. Click OK when you are done.
4.3 Create an Estimate

To create an estimate, click Tools in the tool bar. Then click Estimator.

Create an estimate following these steps:
1. Pick a process from the drop-down menu.
2. Pick a location on the vehicle from the drop-down menu.
3. Pick a type of damage from the drop-down menu.
4. Pick a specification point. The Damage field will be filled in automatically when you click the Refresh button.
5. Double click in the Hours field and enter the number of hours you estimate for that
step of the analysis and repair. The Rate field and Total field will be filled in automatically when you click the **Refresh** button.

6. Repeat steps 1 through 5 until you have completely covered all steps of the job. The Total Hours and Estimate Total (dollars) will be filled in automatically.

Click the **Save** button to save the estimate in the file folder for this Repair Order. To start over, discarding all previous entries, click the **Erase** button. Click **Cancel** to escape without saving any changes.

To delete a line from the estimate use these steps. On the line you want to delete --

1. Pick --- from the drop-down menu under Process.
2. Pick --- from the drop-down menu under Location.
3. Pick --- from the drop-down menu under Type of Damage.
4. Pick --- from the drop-down menu under Point.
5. **Double-click** in the hours box and enter **0.00** for the rate.

The finished estimate can be printed by clicking the **Print** button. The estimate can be inserted into a report and printed for the customer or insurance company from the reports module.
4.4 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 the 3D measurement graphics before repair, start in the 3D Measuring section. Rotate, zoom, and pan the image until it shows the damaged and undamaged areas most clearly. Click the **Take Snapshot** button. This dialog box will appear:

![Image of Save Image Panel to File dialog box]

Enter a name in the File name field and click **Save**.

You can 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 **Save Screen Image**. Enter a file name and click **Save**.

![Image of Eclipse 3 Frame Measuring Technology]

Screen snapshots are saved as .bmp images.

All the screen images you save will be available in Reports.
4.5 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.

To add photos, go to the Repair Order module of the Eclipse Laser Measurement System. Click the Add Photos button. The Import Pictures dialog box will open. You can also import pictures in the Reports module. Go to the Pictures tab, then right-click in the upper right area and select Import Pictures.

You can browse from it to find the photos you want. 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.
4.6 Creating a Report

Before you can use the Reports module make sure that the module has been configured. See Setting up reports in the System Administration portion of this manual.

The Reports module gives you enhanced capabilities for creating, saving, and printing before and after repair reports for the customer and the insurance company.

Before you create a report make certain that all the information you want in the report has been loaded into the repair order. Check that you have any estimate you need, that pictures have been downloaded, and the any snapshots have been taken.

To create a report follow these steps:

- Click on the REPORTS tab at the top of the Eclipse window.
- Click on the Template tab at the right edge of the Reports dialog box.

Select a template

- Use the default template - the last template used in the program or
- Click the down arrow under Select Template, then select a template from the drop down menu or
- Select the Template tab, then select a template by clicking the Load button and choosing a template from the browser dialog box.

Here we have selected Template 6.
Lesson 3 - Eclipse Full System

Repair Estimate

$SHOPDETAIL_NAME

$SHOPDETAIL_ADDR_1 $SHOPDETAIL_ADDR_2 $SHOPDETAIL_ADDR_3

$SHOPDETAIL_PHONE

Code new information
$BILL $SHOPDETAIL_NAME $SHOPDETAIL_LAST_NAME $SHOPDETAIL_PHONE

$BILL $SHOPDETAIL_ADDRESS $SHOPDETAIL_CITY $SHOPDETAIL_ZIPCODE

Vehicle Information:

$YEAR $MAKE $MODEL $ENGINE $RNG

Insurance Information:

$INSUR_COMPANY $INSUR_ADJUST $INSUR_PHONE

Note:

Before:

Insurance:

Owner:

Customer Name:

$REPAIR_Tech

Technician $TECHNICAL_NAME

Save, Is... Load... Er...
Now click on the Generate New Report button. This will open the Create Report dialog box. Enter a file name for your report and click OK.
This will bring up the Reports **Estimate** tab dialog box.

Note that the shop information, the vehicle information, and the repair order number are filled in automatically. If you entered customer and insurance company information on the REPAIR ORDER screen, this information is filled in on the report.

**Insert an Estimate**

Click on the report form where you want to insert the estimate.

**Estimate:**

Click the on the Estimate to transfer it to the report.
<table>
<thead>
<tr>
<th>Process</th>
<th>location</th>
<th>Type of Damage</th>
<th>Point</th>
<th>Damage</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup and Analyze</td>
<td>...</td>
<td>...</td>
<td></td>
<td></td>
<td>2.0</td>
<td>75.00</td>
<td>150.00</td>
</tr>
<tr>
<td>Straighten and align</td>
<td>Lower Rails</td>
<td>Mash</td>
<td>BL</td>
<td>15mm</td>
<td>1.5</td>
<td>46.00</td>
<td>69.00</td>
</tr>
<tr>
<td>Straighten and align</td>
<td>Lower Rails</td>
<td>Mash</td>
<td>BR</td>
<td>19mm</td>
<td>1.5</td>
<td>46.00</td>
<td>69.00</td>
</tr>
<tr>
<td>Repair damage to</td>
<td>Frontal</td>
<td>Säg</td>
<td>BR</td>
<td>19mm</td>
<td>1.2</td>
<td>46.00</td>
<td>55.20</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.2</td>
<td></td>
<td>343.20</td>
</tr>
</tbody>
</table>
Add pictures - if you have imported pictures you can add them.
Click on the Pictures tab.

Click on the thumbnail image of the image you want to insert. This will open the image in a larger format in the lower right corner of the window.
Click on the report form where you want to insert the picture.

Click on the image and it will be inserted into the report.
Add screen shots -- If you created screen shots of the 3D Measuring module before the repair or after the repair, this is how to put them into the report.

Click on the Snapshots tab.

Click on the thumbnail image of the image you want to insert. This will open the image in a larger format in the lower right corner of the window.

Click on the report form where you want to insert the image.
Click on the image and it will be inserted into the report.
Save the report by clicking **Save As** (provide a name to save the file) or click **Save** to save it with the default name. If you have modified an existing report the system will prompt you with "Report has been modified, Update?" Click **Yes** to save it.
To delete an estimate, picture, or a snapshot from a report.

Right-click on the report side (the left side) on the item you want to delete. Select Cut from the menu. This will remove the item from the report only. It will still be in the file on the right side of the screen.

To completely delete a picture or a snapshot from the file folder, right-click on the thumbnail picture. Select Delete. This will completely delete the snapshot or picture from the file folder for this repair order. (Caution - it will completely delete the picture or snapshot from the computer too.)

E-mail the report, if you are connected to the Internet, by clicking the Email button.

Print the report by clicking the Print button.
4.7 **Adding a Custom Measurement Point**

You may want to measure a point or pair of points that are not specified in the database. Or the vehicle itself is not in the database.

In this case you can create custom measurement points.

For each custom point select an adapter, a stem, and a target and hang the assembly on the vehicle at the point you want to measure. If you are measuring symmetric points hang a target assembly on each side of the vehicle. In ECLIPSE SETUP make sure you are viewing the Assignment tab. Click on the **Scan For Targets** button.

Here we have hung targets 8 and 9 at points that are not defined points in the database. After scanning for targets, the new targets are highlighted with square boxes colored turquoise.

Now **right-click** on the non-damaged side first.. That brings up this target assignment dialog box.
We select **Symmetric** because we want to measure points that are the same on each side of the car. If we only wanted one point we would select **Single point**.

Now enter the identifier from the attachment tool you used to hang the target.

When you have created the custom points you need, scan for targets one more time.

The program will create new points with an added number. In this case it created P1R and P2L. You can see these points in the Specification Point data box.

In 3D MEASURING you will see the custom points only in the Repair screen as shown here.
Pitfalls:
If a custom data point moves during pulling, you must delete both custom points in the Setup module, then scan for targets and re-assign the targets as custom points.

To delete a custom point.
- Go to **Setup** and the Assignment tab.
- **Right-click** the custom point.
- Select **Delete this Specification Point**.
4.8 The 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 Table]

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

![Measured Table]

**Specifications**
This pane shows the ideal location of each assigned specification point.
Virtual Tram

The virtual tram provides two methods of measuring between targets.

- Diamond Analysis -- crossed measurements between targets to check whether the chassis is square.
- Virtual Tape Measure -- up to 10 point-to-point measurements from any target to any other target.

Diamond Analysis

Select a pair of points to measure from using the drop-down menu.

In the example the first pair of targets is BR/BL.

Then select a pair of points to measure to, again using the drop-down menu. In the example the KR/KL points have been chosen.

Each cross measurement will be shown. If there is a difference between the measurements, then the chassis is not square in this region. You must apply industry standard tolerances to
this measurement. For example a difference of 3mm may be inconsequential.

In the example the difference is 7mm.

Go to 2D View to compare these measurements against the database. We see that there is a diamond problem of 7mm. There is also a problem because the cross measurements should be 1600mm and we have measurements of 1591mm and 1584mm.
**Virtual Tape Measure**
You can measure from any target to any target 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 **right-click** on the measurement in the Virtual Tape Measure box. This dialog box will open. Click **Yes** to delete the measurement.
Delete Virtual Measurement t?

Yes  No
4.9 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 -- Note that the 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.
Attachment Plan tab -- This is the same view as shown in Eclipse Setup | Chart Points.

Right-click in any of the views to open these choices.
To Zoom
   Select Zoom or
   Use the mouse scroll wheel or
   **Page Up / Page Dn** keys or
   Select **Zoom Rectangle**. Then click and drag to create a rectangle around the area you wish to view at full screen size.

To Pan
   Select **Pan**. Then click and drag the view until you are seeing the portion of the drawing you want.

To Return to the default view
   Select **Fit to Window**.

To Print a copy of the image (this works for zoomed and panned images as well as the default image)
   Select **Print**.

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

   ![Layers dialog box]

   Click the light bulb for each layer you want to turn on or off.
4.10 Recap - Lesson 3

To create a document for the insurance company
Measure the damage.
Go to 3D Measuring and select the Repair tab.
Right click in the graphics viewer and select Show all.
Click the Print Screen button.

To create an Estimate click Tools in the tool bar. Then click Estimator.
Work from top to bottom and left to right to fill in each line of the estimate.
If you need a new process, a new location description on the vehicle, a new damage
type description, or to change the shop rates, right-click anywhere in the Estimates
dialog box. Then pick the tab you need and modify as necessary.

You can save a snapshot of any screen by clicking the Take Snapshot button. Or you can
click File in the toolbar, then click Save Screen Image.
Snapshots will be saved in the file folder for the active repair order.
They can be added to a report.
Snapshots can be used to document target assignments, database information, or 3D
measurement results.

You can import digital photos into the file folder for the active repair order.
Connect the camera or memory stick to the computer.
Go to the Repair Order screen and click the Import Pictures button.
Browse for the picture files.
Digital photos can be added to a report.

Create a report from the report tab.
Select a template.
To add an estimate, snapshot, or photo you click at the place where the item will go in
the report. Then you click on the item you want to insert. Make sure you opened the
thumbnail.

Custom measurement points can be helpful when there are not specifications from the
database.
Hang targets at the new points.
Scan for targets in Eclipse Setup.
Right-click on the new points, identified by turquoise squares, and select Symmetric
(the default choice) or Single. Then fill in the attachment information.
The virtual tram gives you a tape measure in software.  
In 3D Measuring select the Virtual Tram tab in the information box in the lower left part of the window. 
Measure diamond by selecting the specification point pairs of interest. 
Measure from point to point by clicking and holding on a target in the Repair view. 
Then drag and release at the other point of interest.

The 2D Viewer shows you all the database information for the vehicle being measured. 
The underbody view shows the vehicle from the bottom side. 
The attachments view shows the specification points just like in Eclipse Setup.
4.11  Lesson 3 Test

1. How do you create a document for the customer or insurance adjuster?

2. How do you check that the standard shop rate has been set for estimates?

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

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

5. How do you download a digital photo to Eclipse?

6. Before you generate a report what information should you have?

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

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

9. Where can you find other measurement data about the vehicle?
5 Lesson 4 - System Administration

The final lesson 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 XP Professional. 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
5.1 Install database update

Insert the update DVD. The DVD 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.
5.2 Setting up reports

Before you use reports you must complete the following steps:

Enter your shop information in Config | Shop Setup. 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.
Lesson 4 - System Administration

Repair Estimate

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

Vehicle Information
$YEAR_RNG $MAKE_RNG $MODEL_RNG $TRIM_RNG
VIN: $VIN License: $VEHICLE_LICENSE Mileage: $ODOMETER

Insurance Information
Company: $INSUR_COMPANY Adjuster: $INSUR_ADJUSTER Phone: $INSUR_PHONE
Policy: $INSUR_POLICY Claim: $INSUR_CLM_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.
5.3 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 fields are filled.

Eclipse Setup

![Eclipse Setup Preference Screen]

This preference only takes effect after you exit and restart the Eclipse 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.

![Reference Table]

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.
**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.
Reports

The default is to import the picture resized. You can also choose to keep pictures full size. You can specify the width, height, sharpness quality, and maximum file size.

Advanced

Selecting **Use Printer Selection Dialog** causes this pane to pop-up when you select Print Screen from the File menu, or if you click the Print Panel button in the Repair Order module, or if you click the Print Screen button in the 3D Measuring module.

If you do not select Use Printer Selection Dialog, printing the screen uses the default printer for your computer.
Eclipse Setup

This section allows changing system calibration values, default files directories, communication defaults, and other options. It is password protected. Only a qualified Eclipse technical support representative should modify the settings in this section.
5.4 Diagnosis of Eclipse system components

This section allows a qualified Eclipse technical support representative to observe and diagnose the performance of various parts of the Eclipse Laser Measurement System. The system administrator may be asked to use one or more of the diagnostic features if you are working with Eclipse technical support.

Communication

This window displays the real time communication with the serial port.

F1 opens the menu which has the options for
- File
- Save History
- Close File
- Close Window
- View
- Erase History

F2 freezes the display
F5 resumes the real time display.
Analysis
This window shows the results of the mathematical calculations used to transform the laser rotation and time sensing of the targets into length, width, and height data.

Scanner
This window gives real time data about the performance and factory settings of the laser scanner.
The menus give you the following options:
File
  Load INI
  Save INI
  Close
Scanner
  Read MAC
  Read Tilt & TempC
  Read Terms
Tools
  Connect (New)
  Initialize Database
  Motor On
  Motor Off
  Laser On
  Laser Off
**Target**

This window gives real-time diagnostic data about the targets. This data is in addition to the LED displays.
5.5 Recap - Lesson 4

Installing a database update is straightforward.
   When the installation is complete you may need to use Ctrl + Alt + Del to open the
   Windows Task Manager. Then select the installation task and click End Task.

Setting up reports consists of two primary tasks
   Configuring some of the defaults.
   Creating or modifying templates to suit the needs of your shop.

Configuring the Eclipse system is important for setting your shop information and the state.
   All other details can be left at the default settings.

Diagnosis of Eclipse system components should be done with the help of a qualified Eclipse
   technical support representative.

5.6 Lesson 4 test

1. What do you modify when you set up reports for the shop?

2. Where do you set the defaults for the Eclipse system?

3. Where do you enter shop data for Eclipse?

4. Who should you consult for help diagnosing problems with the Eclipse system?
5.7 Test key

Lesson 1 test key
1. What are the five bits of data needed when starting a repair order?
   - repair order number
   - vehicle year
   - vehicle make
   - vehicle model
   - vehicle trim

2. Where should the laser scanner be placed?
   - Anywhere under the vehicle, with the handle roughly aimed at the driver's side

3. How many targets are needed in undamaged areas?
   - 4

4. How many targets are needed to begin measuring damage?
   - 5 (4 in undamaged areas)

5. When you first hang a target on the vehicle the LED flashes red. What is wrong? How do you fix it?
   - The laser beams are not striking the target face.
   - Turn the target to face the laser scanner.

6. You only have 12 targets in your Eclipse System, but you want to put 3 targets in damaged areas. How do you do it?
   - Use Freeze Point. Freeze an existing torque box point. Then detach the target from that point and assign it to the new point.

7. Where do you go for help with the Eclipse Laser Measurement System?
   - First click on Help in the tool bar. Then choose Eclipse Help.
   - If you can't find the answer there call Eclipse technical support.

Lesson 2 test key
1. You shut down the Eclipse system for lunch. How do you load the information for the car you were working on?
   - Click on File to see the last seven repair orders worked on, or
   - In the REPAIR ORDER screen, click on Browse. Then select the repair order you want.

2. A target is flashing green. Why?
   - All is well. The target is hung on the vehicle. The laser is scanning the target.

3. A target is showing a steady blue LED. Why?
   - The target is charging in the charging tray in the tool box or the system cabinet.
4. A target is showing a steady yellow LED. Why?
   The target has been hung on the vehicle. It is in an area with some damage. The system
tolerance setting shows the specification point is moved outside the base tolerance setting.

5. When do you use patented Uni-fit adapters?
   When the chassis is non-magnetic (aluminum) or when you do not have a magnetic
coupler and adapter that fits the specification point.

6. How does the software know you have used a patented Uni-fit?
   You must check the Use Uni-fit adapter box in the Attachment Point Information section
of the ECLIPSE SETUP screen. You must also enter the size code in the Attachment
Adapter box.

7. How does the software know what stems you have used when you mounted the under hood
   tram?
   You must enter the settings in the Tram Settings box in the Attachment Point Information
section of the ECLIPSE SETUP screen.

8. On the under hood tram the targets actually 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?
   It is included in the tram settings.

Lesson 3 test key
1. How do you create a document for the customer or insurance adjuster?
   In 3D MEASUREMENT pick the tab (3D View, Top View, Repair, Height, Composite)
that you want. Zoom, pan, and rotate if necessary. Then click the Print Screen button.

2. How do you check that the standard shop rate has been set for estimates?
   Click Tools in the tool bar. Then click Estimate. Then right-click in the Estimate form.
   Choose general settings.

3. What is a snapshot and how do you save one?
   A snapshot is an image of the Eclipse computer screen. It can be taken at any time on any
screen. Either click the Take Snapshot button or click File and then Save Screen Image.

4. What screens would be useful for saving a snapshot?
   Eclipse Setup - to save target locations
   3D Measuring before repair to show damage
   3D Measuring after repair to show measurements in tolerance

5. How do you download a digital photo to Eclipse?
   Connect camera or memory card to the Eclipse computer with USB cable.
   Click Add Photos in the REPAIR ORDER screen or
   Click File, then Import Pictures or
In REPORTS screen, select Pictures tab. Right-click and select Import Photos. In the Import Photos browser window go to the drive that has the photos. Select the images you want and click Add.

6. Before you generate a report what information should you have?
   Customer, Insurance company, vehicle info
   Estimate
   Photos
   Snapshots

7. What screen do you use for making a virtual tram measurement?
   3D MEASUREMENT Repair

8. How are custom points displayed on the Assignment screen?
   With square turquoise boxes.

9. Where can you find other measurement data about the vehicle?
   2D VIEW

Lesson 4 test
1. What do you modify when you set up reports for the shop?
   The template.

2. Where do you set the defaults for the Eclipse system?
   On the tool bar click Config
   Then select Preferences, Shop Setup, or Eclipse Setup

3. Where do you enter shop data for Eclipse?
   Shop Setup

4. Who should you consult for help diagnosing problems with the Eclipse system?
   A qualified Eclipse technical support representative