

# **Pin Dot Design System**

## Getting Started Guide

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## **Introduction**

The PinDot Design System combines the MicroScribe hardware device with a 3D modeling software application. Combined together they provide a unique design solution for measuring data points from physical models, creation of precision CAD data utilizing 3D modeling technology, and the ability to share the resulting data with manufacturing through custom file formats.

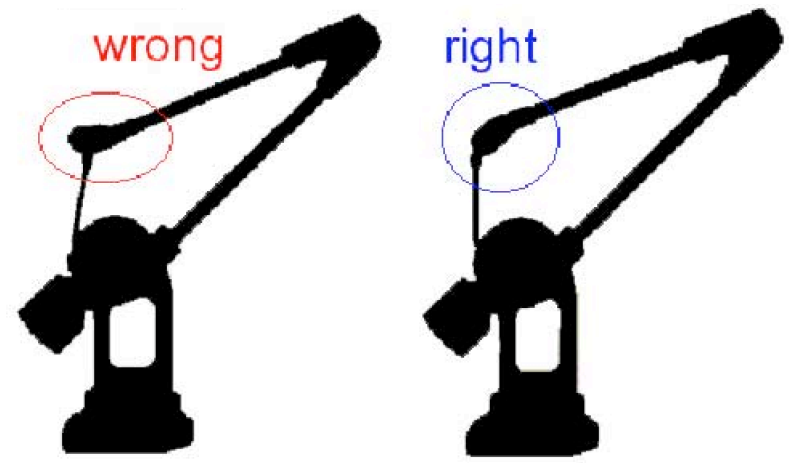
The MicroScribe technology provides a fast, reliable, and easy-to-use method for measuring 3D datasets. MicroScribe systems work with physical objects of any shape, size, and material. Just trace over the contours of a physical object and build complex models.

The PinDot modeling software application takes advantage of the MicroScribe technology. PinDot allows you to create complex 3D models for custom seating. The PinDot modeling software has been specially designed to support the Microscribe technology including provisions for tools unique to the Invacare design process including generation of LandMarks and creation of the Invacare C3D file format.

## Installation

### MicroScribe Installation

1. The MicroScribe uses a standard USB port for interfacing to the computer and software application. No additional drivers are needed, just plug in the necessary cables into the computer as described in the MicroScribe installation manual.
2. Ensure that the MicroScribe is secure on the mounting bracket and will not be bumped or accidentally moved. If the MicroScribe is moved during a digitizing session, it will not recognize that its position has changed relative to your object and subsequent entries will be misaligned.
3. Ensure that the MicroScribe arm is properly positioned in the cradle before you reset or initialize the arm.



4. Ensure the computer is turned on and that the MicroScribe itself is on. A light located at the back right corner of the device will glow when the device is on. Beneath the light is the homing button. The light will initially be red and will turn green after the unit is homed.
5. Once the MicroScribe has been mounted and homed (the green light is on), the unit is ready for use.

### PinDot Software Installation

#### System Requirements

PinDot runs on Windows computers that satisfy the following requirements:

- Pentium 4, or AMD Athlon XP
- 1 Gigabytes of RAM

- 64 MB Accelerated video card with OpenGL support
- Windows XP or Windows VISTA

The early versions of VISTA have well known problems with OpenGL drivers. If you are using VISTA, be sure to update your OpenGL drivers to the latest VISTA compatible drivers. Check with your video board manufacture for the latest drivers. If display issues still persist, turn on the XP Compatibility mode by right clicking on the PinDot application icon.

### **Software Installer**

1. The PinDot modeling software has an installer that will properly load and place the software onto your computer. Run the installer and follow the instructions accordingly. After installation, you can access the application from the programs file menu.

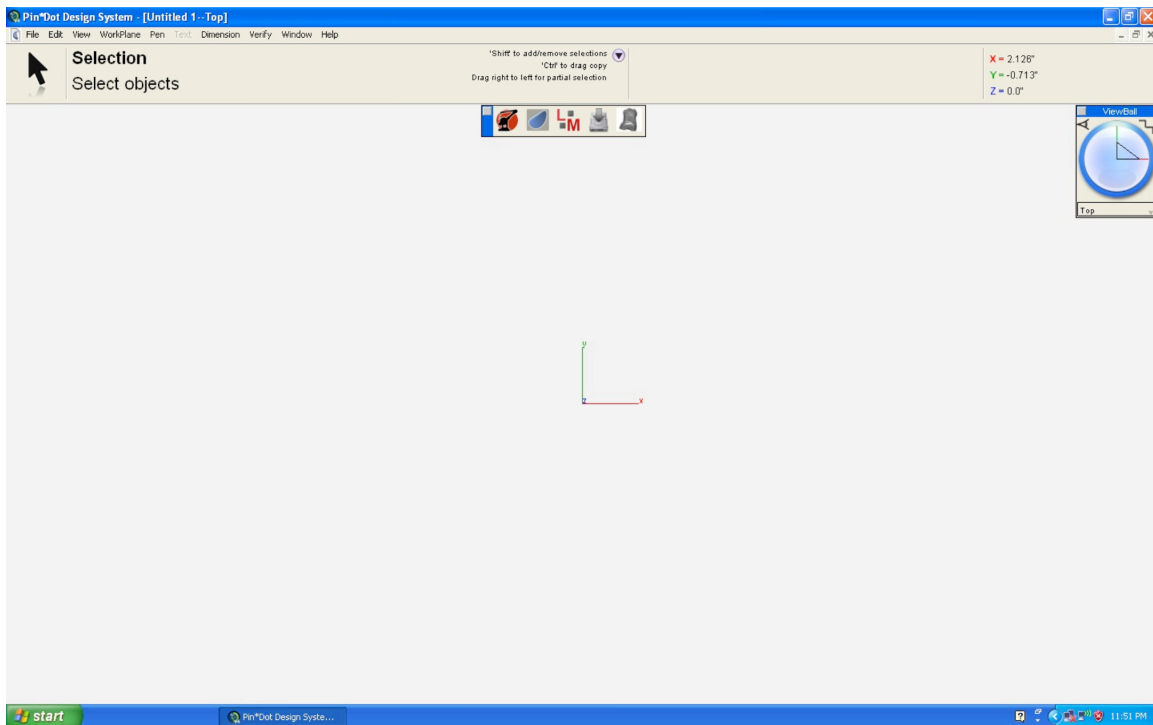
## PinDot First Look

The following section provides a first look at the PinDot software application. Please read this section to accelerate getting up to speed with the software user interface. Items discussed in this section include:

- Startup Screen
- Menu Bar
- Prompt Window
- Tool Palette
- ViewBall

### Startup Screen

The default start up screen for PinDot consists of the menu bar, primary tool palette, prompt and data entry window.



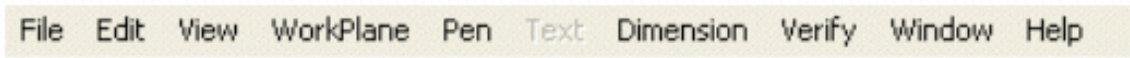
*Startup Screen*

### Menu Bar

The menu bar contains a list of pull down menus such as filing, editing, and viewing. Some of the pull down menus contain "hierarchical" sub-menus. A right pointing arrow in the menu

identifies hierarchical menus. To access a pull-down menu simply press the mouse, move it to the desired option, and release the mouse button. To access options in a hierarchical sub-menu move the mouse to the right and the sub menu will appear. Continue holding the mouse until you are over the desired sub menu option.

Menus with three dots (...) indicate that a dialog box will appear upon selection.

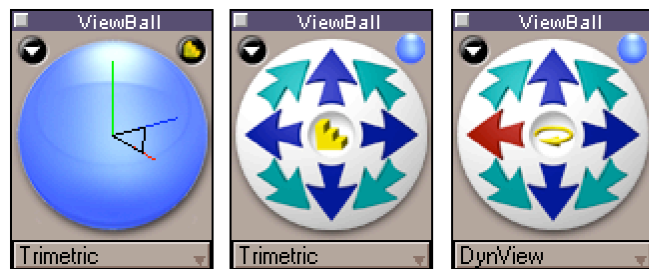


### Prompt Window

The prompt window displays a brief description of what the application is expecting you to do for the current command. For example, read the contents of the prompt window to determine whether you need to pick an object or specify a location.

### ViewBall

The ViewBall provides a means to dynamically rotate and position the current view orientation. The default ViewBall shows a sphere with the model x, y, and z axis. Pressing the mouse and dragging it within the ViewBall window rotates the current view. Hold the x, y, or z key to lock a rotation about the associated axis.



*Normal and Stepper Modes*

Clicking in the right corner of the view ball will display the stepper version of the view ball. This version rotates fixed angles. Press the downward pointing arrow to get a dialog containing additional options for the ViewBall.



**Tool Tips**

As you move the cursor over any icon, a brief description of the corresponding command is displayed within the prompt window (overlays the x, y, z display). Tools tips can be turned on or off through the preference settings in the File menu.

## Pin Dot Tool Palette

A special tool palette was created for the Pin Dot Design System. This tool palette contains the commands most frequently used. The tool palette is accessed under the menu bar Windows:MicroScribe option.



### **MicroScribe Connect**

Connect and initialize digitizer. Sets up a coordinate system to work with the software.

### **Mesh by CenterLine Planes**

Constructs a mesh from parallel planes and by scribbling on the target surface.

### **Create LandMarks**

Displays a dialog box for generating LandMarks using the Microscribe.

### **Save C3D file Toggle Display**

Saves mesh/triangle data in the C3D file format. Toggles the display from Phong, Phong with Edges, and user scribbles.



### **MicroScribe Connect**

This tool will initialize and connect the software with the MicroScribe digitizer.

### **Initializing the MicroScribe**

1. Click on the MicroScribe tool icon.
2. Use the digitizer pen to specify an origin relative to the digitized part. Put the pen in the indent on the mounting bracket marked O. Press and release the gray button.
3. Use the digitizer pen to specify a point relative to the digitized part's x-axis. Put the pen in the indent marked X and press the gray button.
4. Use the digitizer pen to specify a point relative to the digitized part's y-axis. Put the pen in the indent marked Y and press the gray button.
5. Use the digitizer pen to specify two points defining the extents of the digitized mold. PinDot will zoom the window display drawing area to fit these extents.



### **Mesh by CenterLine Planes**

Constructs a mesh from parallel planes by scribbling on the target surface.

#### **Using the Mesh by CenterLine Tool**

1. Click 2 points defining the centerline of the digitizing target.
2. Define the outer contour of the digitizer target. Press and hold the gray button on the Microscribe hand control. Move the pen around the outer contours of the target. Release to see mesh update.
3. Define interior contour by scribbling between the outer contour lines. Press and hold the gray button and move the pen in parallel strokes to the center line. Release to see mesh update. Repeat until mesh has desired resolution.

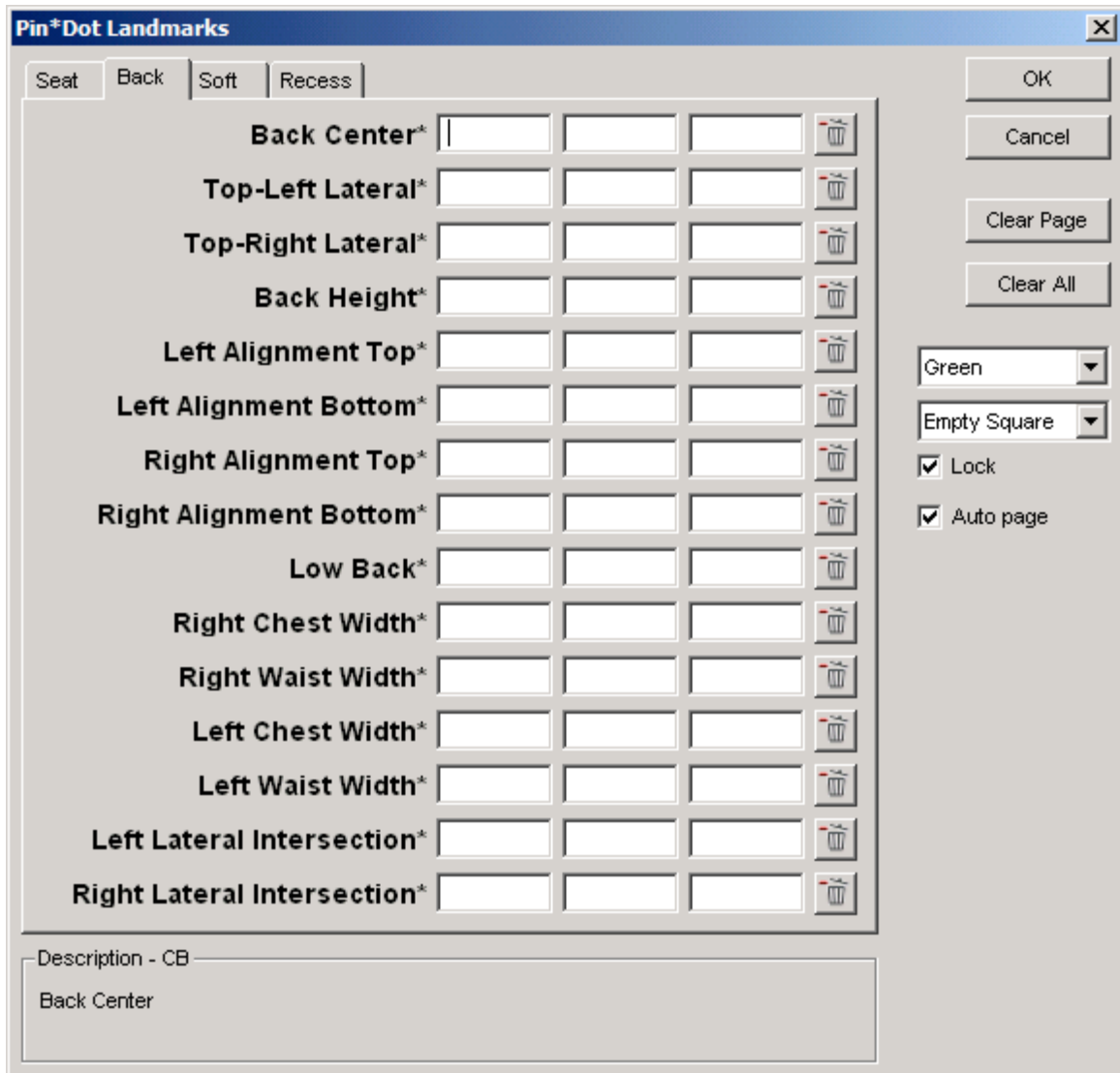


### **LandMarks**

You can access the Pin Dot Landmarks dialog box from the Microscribe toolbar. Select the icon shown above.

Each Landmark available is listed in the Pin Dot Landmarks dialog box. Each landmark input includes the Name and the XYZ coordinates. You use the MicroScribe to capture a XYZ coordinate.

Click on the name to activate entry into the XYZ field. Once you provide a XYZ value, the next field is automatically highlighted and ready for another XYZ value.



*LandMark Dialog Box*

- Ok** Click Ok to accept contents of the Landmark dialog box.
- Cancel** Click Cancel to discard all contents of the Landmark dialog box and exit back to the program.
- Clear All** Click Clear All to discard all contents of the Landmark dialog box.
- LandMark Display Color** Click to display a pull down menu containing colors for landmarks. Useful for color coding landmark display.

**LandMark Display Style**

Click to display a pull down menu containing marker styles for landmarks.

**Lock**

Locks a Landmark such that it cannot be moved except by the Landmark dialog box.

**Trash Can**

Click on the trash can icon to delete a Landmark.

**Using the LandMarks Command**

1. Check that the MicroScribe is activated.
2. Set the input focus to the landmark you want to define by clicking the mouse on the LandMark name.
3. Use the MicroScribe to capture the point. The input focus will automatically jump to the next landmark input. The current landmark's description is displayed at the bottom of the dialog in the Description XX group box. Where the XX represents the landmarks short name.
4. Repeat until all desired Landmarks are defined.

Additional command options:

Press the button next to a landmark input set to clear the coordinates.

Press the OK button to save the landmark points.

Press the Cancel button to ignore any changes made to the landmark points.

Press the Clear All button to clear the coordinates for ALL landmark inputs.

Select the color to be used for all landmark points from the color drop-list.

Select the style to be used for all landmark points from the style drop-list.

Select the Lock check box to lock all landmark points. When locked, landmark points can only be edited using the Pin Dot Landmarks dialog box.



### **Saving File**

Clicking on this tool icon will save your data in the C3D file format. Use this tool when you have completed the digitizing and ready to send the data for manufacturing.



### **Toggle Display**

This command will toggle the display of the digitized seat. You can toggle between wireframe and shaded facets.

## FAQ

### **A. You move the digitizer but the coordinates shown on screen don't seem to move accordingly.**

- Check that the MicroScribe is turned on. Note that if you started Concepts with the digitizer off you may need to restart the host application to get it to recognize the device. Or you may need to restart the computer entirely.

- Check that the Microscribe is plugged-in. See that the green light is on.  
- Unplug the MicroScribe and restart the computer. Once the computer is up and running, connect the MicroScribe and relaunch Concepts.

### **B. When using Concepts you get the following MicroScribe Connect Error: "MicroScribe cannot connect through USB port. Check connection"**

- Check that your USB cable is securely plugged into the back of the computer.

### **C. When using Concepts you get the following MicroScribe Connect Error: "MicroScribe port already used. Trying resetting."**

- Try resetting the MicroScribe. Press the home button until you see a green light.

- Quite the software application, close all software and restart the machine. Once the machine is up and running again, try running the software again.