



# Huntron Access

Automated Probing Station

## USER'S MANUAL

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***Thank you for purchasing a Huntron Access !***

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- ◆ Internet Home Page: [www.huntron.com](http://www.huntron.com)

## **HUNTRON, INC. LIMITED WARRANTY**

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These warranties shall only apply to products in ordinary use. Huntron shall have no obligation under these warranties with respect to damage caused by accident, transportation, neglect, misuse, unauthorized alterations or repair, improper installation, or operating conditions.

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# SECTION 1

## INTRODUCTION

### 1-1 What is a Huntron Access Prober?

A Huntron Access Prober is a universal test fixture for accessing test points on printed circuit assemblies. The Huntron Access provides physical access to fine pitched Printed Circuit Assemblies (PCAs). When combined with any test instrument like a Digitizing multi-meter, Oscilloscope, Signal Generator, LCR meter, Functional Tester, In-circuit Tester, Analog Signature Analyzer or any custom test instrument that uses LabVIEW Drivers, the Huntron Access allows test engineers and technicians to test and troubleshoot their difficult and elusive problems on PCAs. Using industry standard LabVIEW drivers, users can customize their test applications using National Instruments LabVIEW and LabWindows. Full control of all the working functions of the Huntron Access is available via LabVIEW and LabWindows/CVI.

The user can replace the built-in test probe with a custom probe suitable for the user's custom application. The Z-axis consisting of the Probe, Motor Electronics and Camera, can be replaced by a user specified Z-axis.

### 1-2 How does it work?

The Huntron Access Prober basically consists of three axis which move a test probe along an XY plane. Once the probe reaches an XY co-ordinate, an up or down Z movement can be initiated so that the test probe makes contact with a test point on the target printed circuit board. Each X, Y and Z stage is driven by a separate stepper motor.

The color camera installed on the Z axis displays a high resolution image of the printed circuit assembly on the PC monitor. Using Linear encoders and micro-stepping, accurate and repeatable movements can be achieved, thus allowing CAD data from other software packages to be imported. XY location of test points are then accessible, resulting in minimum user error.

## 1-3 HARDWARE FEATURES

A complete troubleshooting workstation consists of a PC, Huntron Access Prober and a Test Instrument. The Test Instrument is a Huntron Protrack or a customer defined instrument having LabVIEW drivers allowing integration.

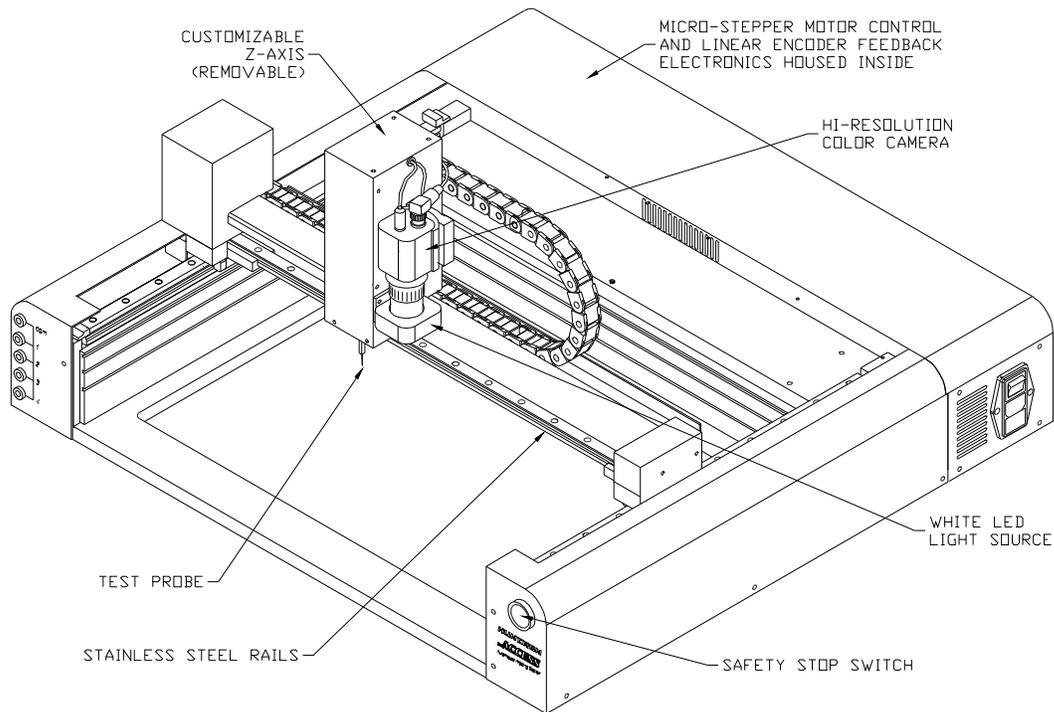
### New Hardware Features of the Huntron Access Prober

- The XYZ stages are stainless steel linear raceways providing an accurate means of moving a light load.
- Uses linear encoders for the X and Y axis which provide feedback for error correction
- The linear stages use fine pitched toothed timing belts which are driven by stepper motors.
- Micro-stepping drivers can micro-step the stepper motors to 4000 steps/revolution allowing a 0.3937 mil or 10 microns resolution. The Micro-stepping mode is automatically selected depending on the distance moved.
- A patented versatile clamping system provides an easy means of clamping the printed circuit assembly so that the moving probe can access either the solder or component side without the need for additional fixturing.
- Connection to any external tester is via two BNC connectors mounted at the back of the Prober. One BNC connector is for the Signal from the external tester, and the other is for Common to the external tester.
- The Signal BNC connector is routed to the test probe via a flexible low impedance co-axial cable.
- A camera mounted on the Z axis produces a digitized color image of an area of the printed circuit assembly on the PC monitor. A high-resolution color camera with adjustable focus and aperture is used.
- Magnetic proximity limit switches are used to define the “home” position.
- The test probe tip mounted on the Z axis is removable, allowing standard “bed-of-nails” type spring loaded probe tips to be used. Different probe tips are supplied covering conformal coating applications to fine pitched crown pointed tips.
- A Frame Grabber is used to display live images of the printed circuit assembly on the PC monitor. Digitizing test points then involves clicking on the pixels of the camera image.
- An optional Compact-PCI/PXI Frame Grabber card can also be used for PXI based computers.
- The Base Cover of the system can be removed for convenient access to components and other test points, allowing the printed circuit assembly to be powered by a customer supplied power supply.
- Custom printed circuit assembly fixtures for accessing the bottom of the printed circuit assembly can be mounted into the universal board clamping system. The Probing station can be raised higher for mounting these fixtures.

- The Spring loaded probe on the Z axis can be directly wired to any Oscilloscope probe via a optional clamping system mounted on the Z axis. Custom cables from the customer's test equipment can also be wired to connect to the probe pin.
- All flexible cables are shielded.
- An emergency STOP switch allows immediate suspension of Prober operation.
- There are 5 Common connectors accessible at the front panel which allows connection to the printed circuit assembly signal reference points.

## Software applications for the Huntron Access Prober

- Can be used with the Huntron workstation software and a Huntron Protrack model 20 for power-off troubleshooting of Printed Circuit Assemblies.
- LabVIEW drivers allow control of the machine.
- A user who is familiar with National Instruments LabVIEW can control the motion system and use the camera image for digitizing the xy location of test points.
- Using a customer defined test instrument supported by LabVIEW will allow the Prober to access test points on the printed circuit assembly.
- LabVIEW and LabWindows/CVI driver allows you to develop your own applications.



## Huntron Access Prober.

## 1-4 Huntron Access Prober Specifications.

<b>Specification</b>	<b>Access Prober P/N 99-0376-30</b>	<b>Comments</b>
Physical Dimensions	26.5" W, 24.5" D, 13" H 67.31 cm W, 62.3 cm D, 33.02 cm H	
Max. board-under-test size	19.4" W by 14" D (49.276 cm W by 35.56 cm D)	Max thickness is 100 mils (2.54mm)
Max board probing area	15.3" W by 12.9" D (38.86 cm W by 32.77 cm D)	Area of the board that the probe can reach without re-adjusting the position of the board
Max allowable component height	2.375" H (6.03 cm)	Measured from the lowest slot
# of pcb guide slots	3	
Max Z Travel	2.21" (5.61 cm)	Maximum allowable up/down movement
Linear speed	5 inches/sec (12.7 cm/SEC)	Speed in the X or Y direction
Minimum resolution	0.3937 mil (0.0003937") 10 microns.	Minimum allowable movement in the X or Y direction
Probing Accuracy	+/- 0.7874 mil (0.0007874") ( 20 microns)	Over a travel distance of 10" (25.4 cm)
Vision system	CCD 811(H) x 508(V) Color	
Light Source	White LED array w/adjustable Intensity	
Lens system	25mm Focal Length C mount with adjustable focus and aperture	
Frame Grabber	Color, PCI, PXI or Compact PCI Bus with 754 x 480 Pixels (NTSC, RS-170) maximum resolution.	Requires full height PCI slot in computer. PXI or Compact PCI bus card requires a PXI chassis or Compact PCI chassis with a 3U, 32 bit, 33 MHz slot.
Linear Encoder	Resolution 0.3937 mils (10 microns)	
Microstepping	Automatically adjusted. 4000 micro-steps per revolution	
Weight	63 lbs (28.64 kg)	Unit only
Mechanical Drive System	6 mm Wide steel reinforced Timing belt. Steel linear raceways.	
Power requirements	115VAC or 230VAC,50Hz or 60HZ ,100W Max	
Computer interfaces	RS232 and PCI or PXI/Compact PCI camera interface	PCI or PXI/Compact PCI interface is on the frame grabber.
Operating temperature	59 degrees F to 86 degrees F (+15 degrees C to +30 degrees C)	
Storage temperature	-58 degrees F to 140 degrees F (-50 degrees C to +60 degrees C )	
Humidity	0 to 50% R.H.	
Safety considerations	Front panel STOP switch for emergency stop	CE mark and ETL listed

## 1-5 SAFETY INFORMATION

### Symbols and Warnings:

The following symbols are used either in this manual or on the unit:



Protective Ground (Earth) Terminal. **Do not disconnect any protective ground wires.**



**CAUTION.** This symbol is used in the user's manual as a warning that improper installation could result in unit malfunctioning.



This symbol warns the user that this is a pinch point and that the user should not have their fingers or hands near this point while the unit is in motion. This Symbol is displayed on the unit near the spring loaded probe which is mounted

on the Z axis.



The Access Prober conforms to the following European Directives:

Low Voltage Directive 73/23/EEC

Low Voltage Directive 93/68/EEC

EMC Directive 89/336/EEC



Meets ETL Standard for Electrical Equipment for Laboratory Use: Part 1:

General Requirements (UL 61010A-1, 1<sup>st</sup> Edition, 01/30/2002) and Safety

Requirements for Electrical Equipment for Measurement, Control, and

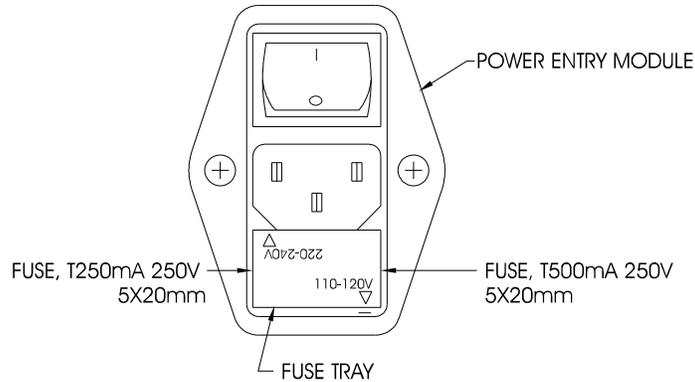
Laboratory Use, Part 1: General

Requirements (CAN/CAS C22.2 No. 1010.1-92)



### **Line Fuse Replacement:**

**Voltage Select/Line Fuse tray:** The power entry module on all Probers includes a power switch (0 = OFF, 1 = ON), power cord connector, and a removable tray which selects the line voltage and holds the line fuses.



Make sure that replacement fuses are of the type and current rating specified. If necessary, insert the specified fuse (T250mA or T500mA according to IEC 127) that matches the line voltage setting into the fuse tray.

## SAFETY STOP SWITCH.



The safety stop switch is located on the right side of the Huntron Access Prober. Depressing this stop switch will cause all motor movement in the X and Y directions to immediately stop and have their respective power turned off. If the Z axis was in the depressed position (down position), it will automatically move up to its home position, thus relieving any pressure that was put on the board-under-test. The Z motor power will still be on, thus preventing the Z axis from being further depressed due to gravity or other forces. The software will detect that the STOP switch was depressed and will not allow the user to continue operating the unit until the software is restarted which will force the unit to be

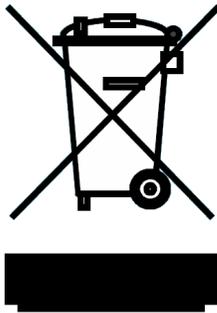
initialized.

The STOP switch can be used for the following purposes:

- 1) Stop X and Y Motor operations and turn the motor power off.
- 2) Move the Z probe up to it's home position.
- 3) Interrupt all further instruction from the computer and stop all operations.
- 4) Initialize the hardware and allow the software to force the user to start from the beginning.

The stop switch light will always be lit and will remain a green color.

## 1-6 WEEE and RoHS Status



We, at Huntron are aware of the recycling needs for Waste Electronic and Electrical Equipment (WEEE) and Restriction of certain Hazardous Substances (RoHS) and are co-operating with systems established, worldwide for the collecting and recycling of our products.

Huntron has applied the Wheeled bin recycle mark (EN50419) to our products. At the present time, most European countries are not complete in their compliance with the European WEEE legislation and they do not have collective systems fully operational and registration initiated. Further recycling information will be added to our website [www.huntron.com](http://www.huntron.com) as it becomes available.

Huntron products, being electronic test equipment, are classified as monitoring and control instruments and are presently exempt from the RoHS directives. Huntron is currently using leaded solder in the construction of our products but we are working for total compliance to RoHS to be completed by July 2006.



Recycling is important to all communities, therefore we ask our customers to be responsible in recycling. Please check your local recycling laws for further information.

# SECTION 2

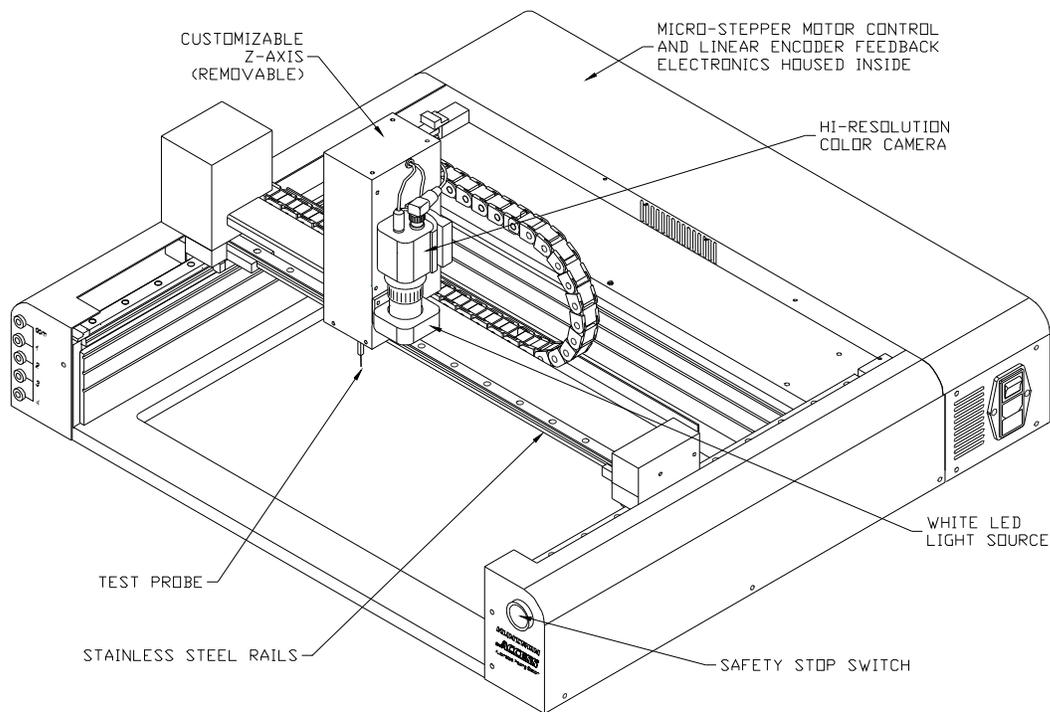
## THEORY OF OPERATION

### 2-1 INTRODUCTION

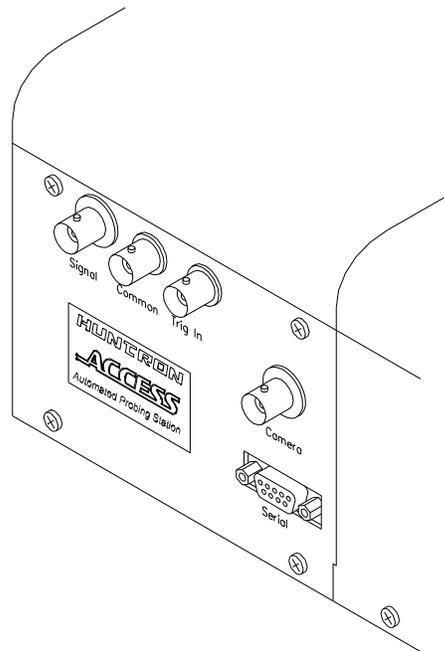
The purpose of this section is to simply explain the functional characteristics of the main components of the Prober system.

### 2-2 FUNCTIONAL OVERVIEW

The following figure shows the components of the Prober system.



The Test probe on the Z axis is directly connected to the BNC Signal connector located at the Prober back or side panel. The vision system displays an image of a small area of the printed circuit assembly on the PC monitor for setting up the XY locations of test points.



## 2-3 STEPPER MOTOR CONTROLLER

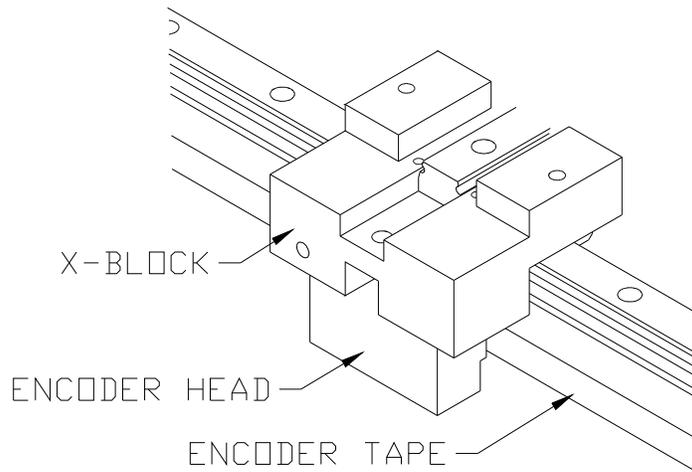
The Stepper Motor Controller receives ASCII commands from the PC via a serial RS232 connection. The controller applies direction pulses for clockwise or counter-clockwise rotation and step pulses at different frequencies to the motor driver.

## 2-4 STEPPER MOTOR DRIVERS

The purpose of the Motor Drivers is to supply sufficient and regulated current to each phase of the motor winding. . The Motor driver uses micro-stepping, dividing each motor step into fractional steps, thus allowing very small movements useful for accuracy and error correction. Each 0.9 degree step of the stepper motor can be further subdivided into 4000 micro-steps, resulting in a minimum movement of 10 microns or 0.3937 mils.

## 2-5 LINEAR ENCODER

Linear encoders are used to report to the system the exact location of the Z axis housing which holds the test probe. Optical readers mounted in each axis reads the engraved lines on a metal tape. These lines are spaced 10 microns or 0.3937 mils apart. The optical reader automatically outputs quadrature signals to the controller, thus reporting its position after every movement. The reported position is then compared to the theoretical position and corrections are made automatically by the controller and the associated software. The linear encoder serves as the most important function for maintaining accuracy of movements.

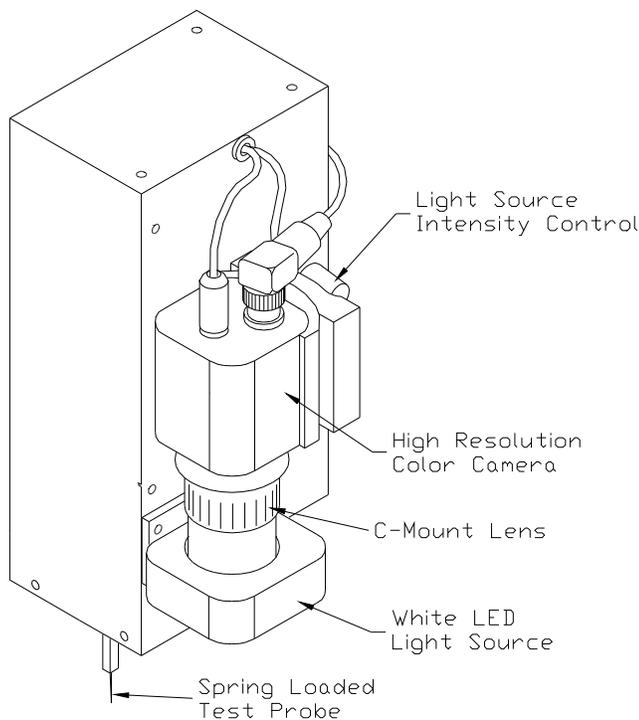


## 2-6 VISION SYSTEM

The vision systems consist of a high-resolution color analog camera mounted on the Z-axis. The color camera is capable of 480 lines of horizontal resolution in the NTSC (rs-170) format. It has automatic background compensation, which allows for digital brightness control on low or highlighting conditions. The camera uses a standard 25 mm C mount lens that has aperture and focus control. The aperture and focus adjustments can be locked into position via setscrews or knobs.

The camera output is available via a co-axial cable with a BNC connector. The output is fed into a frame grabber which is installed in the computer. Images are in full color.

A Ring light source with intensity control is mounted in front of the camera. It uses 8 super bright white LEDs, which produce, diffuse and evenly distributed white light.



# SECTION 3

## Installation: Access Prober using Huntron SDK application.

**NOTE:** Skip this section and follow section 4 if you are using the Access Prober with the Protrack model 20.

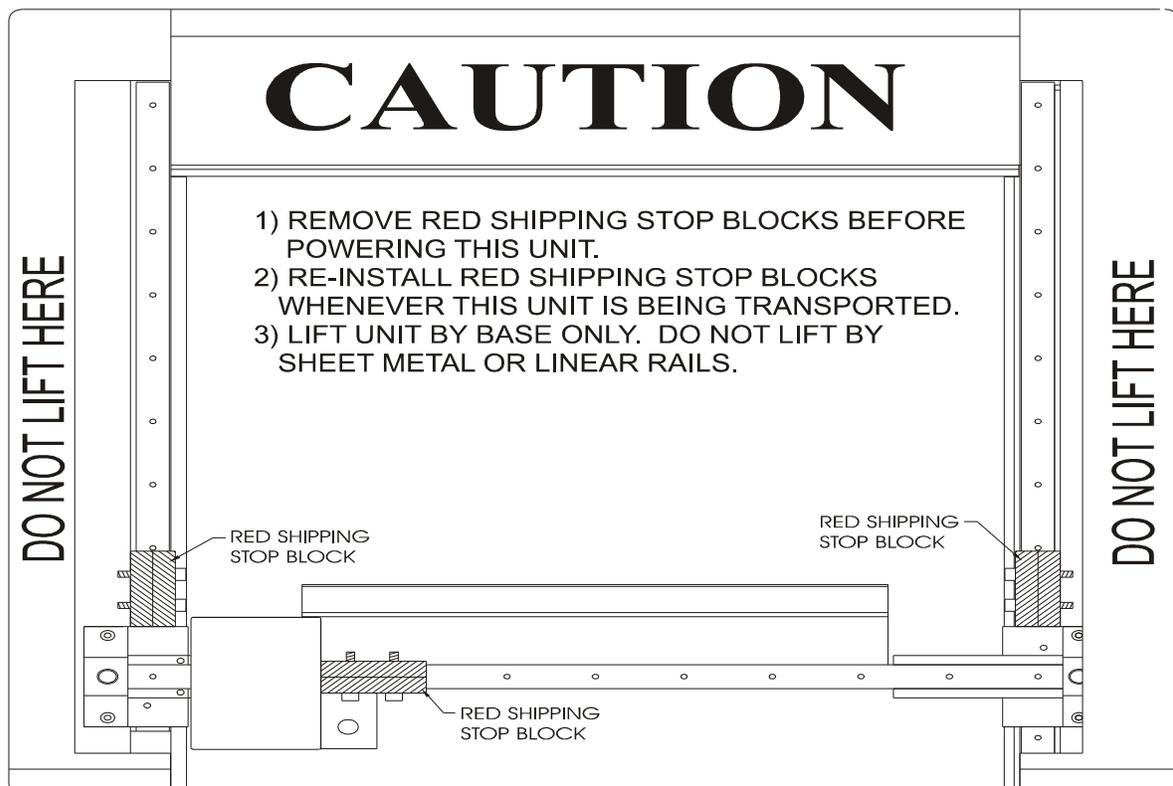
### 3-1 PC Requirements

These are the recommended minimum computer requirements:

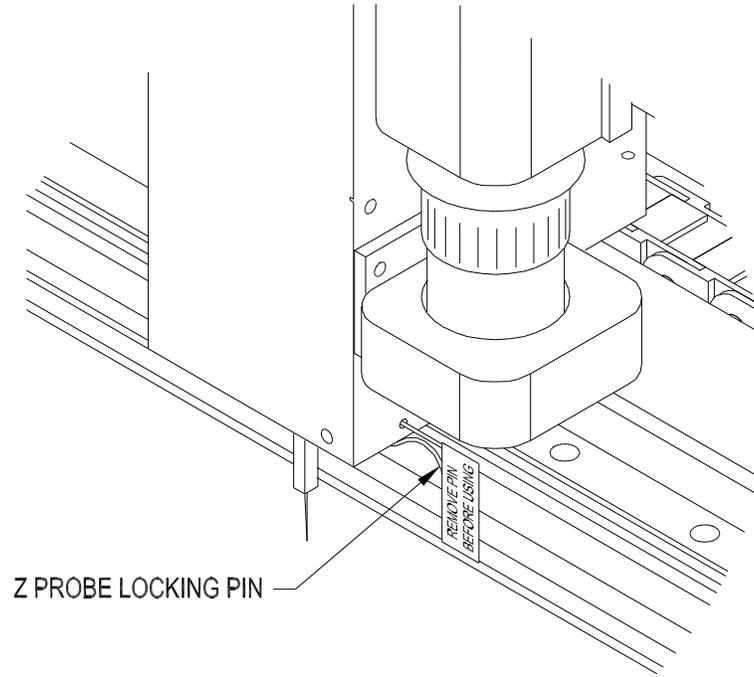
- PC with Pentium II or faster CPU.
- Microsoft Windows™ 2000 or XP.
- Windows 16 bit or greater color capable VGA graphics
- CD-ROM drive.
- VGA color monitor.
- 512 MB RAM.
- 1 Free Serial (RS232) port for communicating with the Access Prober.
- Hard disk with 1GB free space.
- 1 free full height PCI slot or Compact PCI/PXI slot for the Camera Frame Grabber card.

## 3-2 Installing the Hardware

1. Open the Prober box, **top side up** and locate the unpacking sheet.
2. Follow the unpacking steps as outlined in the unpacking sheet. Lift the unit by grabbing the base only. Do not lift the unit by grabbing the sheet metal covers or the X axis mechanism.
3. Place the Prober on a stable table or desk.
4. Remove the **Red Shipping Stoppers** using the Hex Allen tool supplied. Do not discard these blocks. You will need them again if you transport the Prober to another location



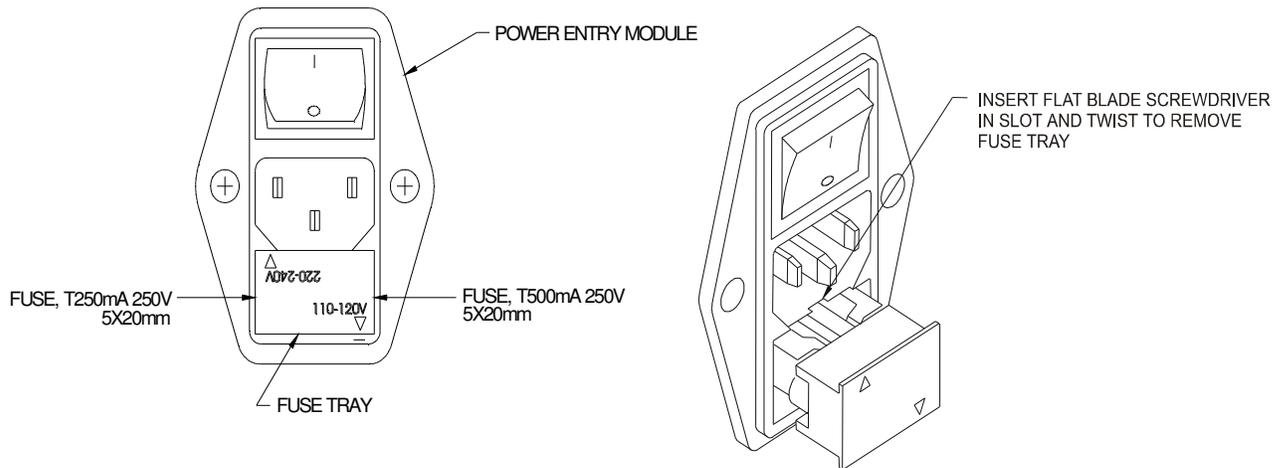
5. Remove the **Z locking pin** located near the probe tip. Do not discard this pin. You will need this pin for locking the Z probe assembly when transporting the unit.



**CAUTION: Remove Z Lock Pin before powering up this unit.**

**Note:** To reinstall the Locking Pin for repacking, push the Z probe all the way up first, then install the pin into the hole as shown above.

6. Check the **Voltage Select/Line Fuse** tray. The power entry module on all Probers includes the power switch (0 = OFF, 1 = ON), power cord connector, and a removable tray which selects the line voltage and holds the line fuses.



### 220-240VAC Voltage Selection

**NOTE:** The above voltage setting indicates **110-120V AC power (arrow pointing towards the — mark.)** If your line voltage is **220–240VAC**, you will need to change the **Voltage Select/Line Fuse Tray setting**. Remove the AC power cord. There is a slot below the AC ground terminal. Insert a flat screw driver into the slot and pull the tray out. Make sure that replacement fuses are of the type and current rating specified. If necessary, insert the specified fuse (T250mA or T500mA according to IEC 127) that matches the line voltage setting into the fuse tray. Insert the tray into the power module so that the 220-240VAC arrow points to the — mark. Insert the AC power cord and connect to a 220-240 Volt AC supply.

### 3-3 Installing the NI-IMAQ for Windows

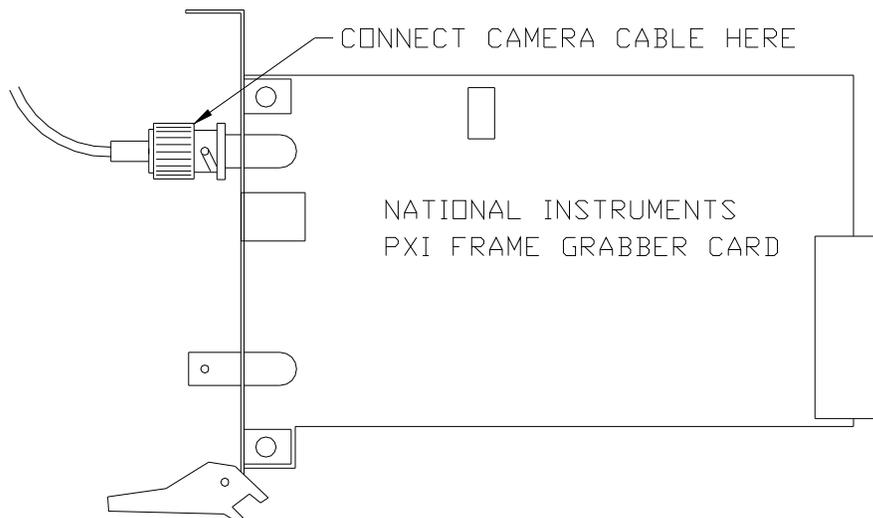
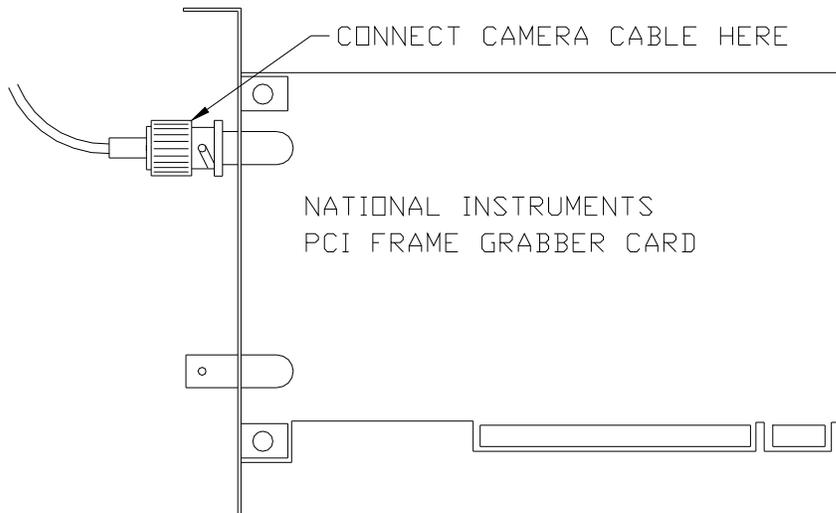
Power up the computer and install the NI-IMAQ for Windows disk included with your Frame Grabber card. Do not install the Frame Grabber card at this time. Follow the installation instructions in this CD.

### 3-4 Installing the PCI or Compact PCI/PXI Frame Grabber Card

**With the computer power turned off**, install the Frame Grabber card into the computer. There is no need to set any addresses or interrupts. Secure the camera card to the computer back panel using available screws.

### 3-5 Connecting the Access Prober Camera to the National Instruments Frame Grabber card.

A co-axial cable is supplied with the Huntron Access Prober. The National Instruments card has two formats, PCI and PXI. Connect one end of the supplied co-axial cable to the top BNC connector as shown below.



### 3-6 Connecting the Prober Serial Interface to the Computer

If your computer does not have a mouse port, you will need two serial ports, one for the Huntron Access Prober and the other for a serial mouse or trackball. If you have another type of port (USB) for the mouse, then you will need only 1 serial port for the Huntron Access Prober.

Locate the serial cable and connect the correct end to the Prober Serial port. Connect the other end to the appropriate serial port on the computer (COM1, COM2, COM3 or COM4).

### 3-7 Power-up sequence.

**Power up the computer first.** New drivers will be automatically installed. Follow the software instructions in the readme.txt file on the software CD.

### 3-8 Installing the Huntron SDK

**Install the Huntron Access Software Development Kit (SDK). Refer to the installation instructions (21-2225) included with the SDK.** Once the software installation is complete, restart the computer and the Huntron Access SDK is ready for use.

### 3-9 Powering up the Huntron Access Prober.

**Power up the Huntron Access Prober.** The green light in the stop switch housing will stay on. The Z probe assembly will automatically move upward to its Z home position. The camera light source will be on. The camera will automatically power on.

**You are now ready to use the system.**

Refer to the **Huntron Access Users Manual** for further information. This manual is located in the **Manual CD (p/n 06-5217)** in the folder “**Manuals**”. Open the file “**Access Manual.pdf**”. Installation instructions are repeated in this manual.



**CAUTION: DO NOT REMOVE BOARD-UNDER-TEST WHILE THE PROBER IS RUNNING A TEST. THE SPRING LOADED PROBE HAS A SHARP POINT AND MAY CAUSE INJURY IF THIS MACHINE IS IMPROPERLY USED.**

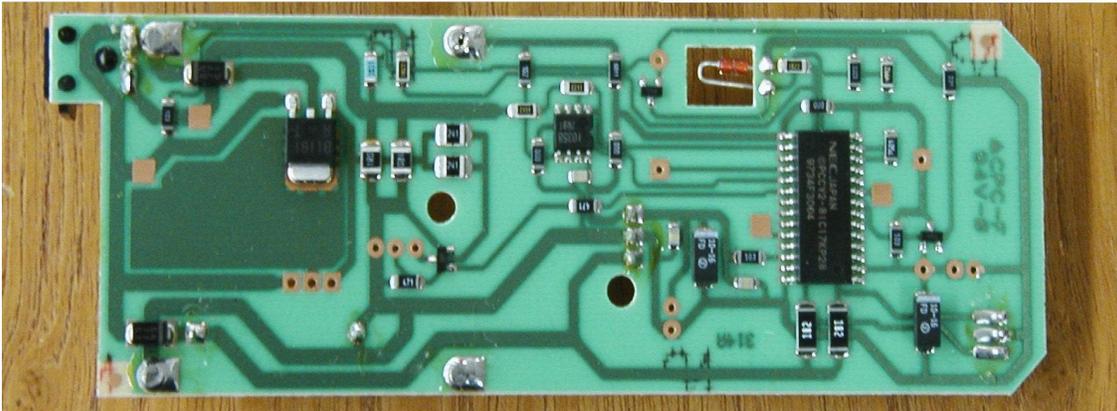
### 3-10 Testing the system using the Huntron SDK application program.

This section allows you to check the system for proper functionality by using the software features of the Huntron LabVIEW application. You will become familiar with the following features:

- **Camera Offset** - Setting the distance between the camera center and the probe point.
- **Auto Align** - Automatically find 2 pre-determined alignment points and make the necessary adjustments to compensate for different board positions.
- **XYZ movement** – How to move the camera and the probe.
- **Sequence**- How to setup sample test points using the Camera as a xyz digitizer for the xyz locations of your test points.
- **Run Sequence** – Run a test so that each test point is accessed sequentially.
- **Configuration** – Configure other instruments for use with the Access Prober.

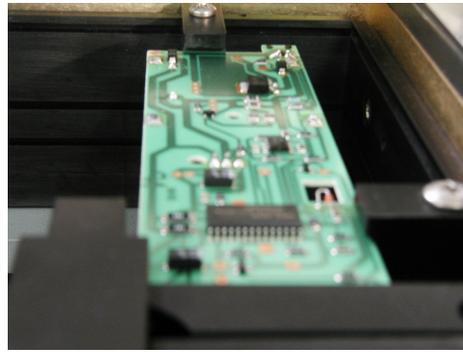
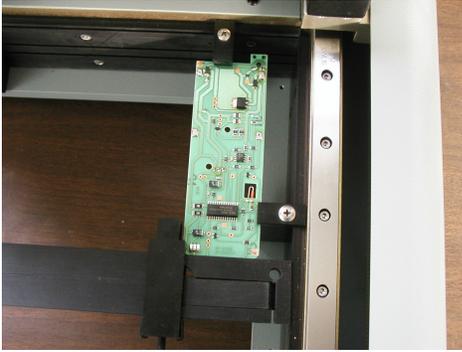
#### Sample Printed Circuit Assembly board.

You will use your own sample board. Ensure that the board has clearly visible test points that are accessible from one side. Test points could be nodes, vias, IC pins, or component pads.



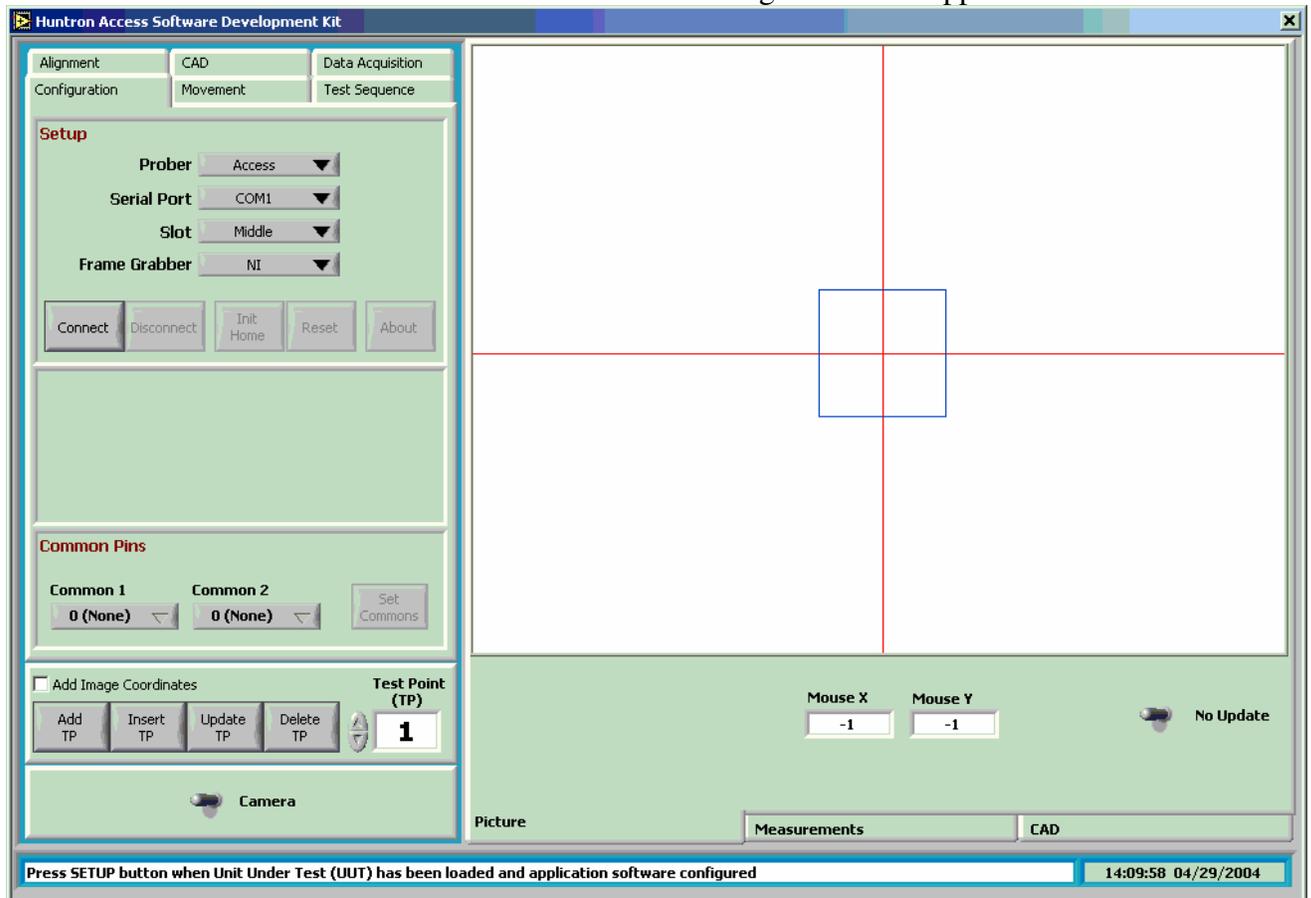
Sample test board. For illustration purposes only.

Insert sample test board into Top slot of Access Prober. Use board clamps as shown in example below.

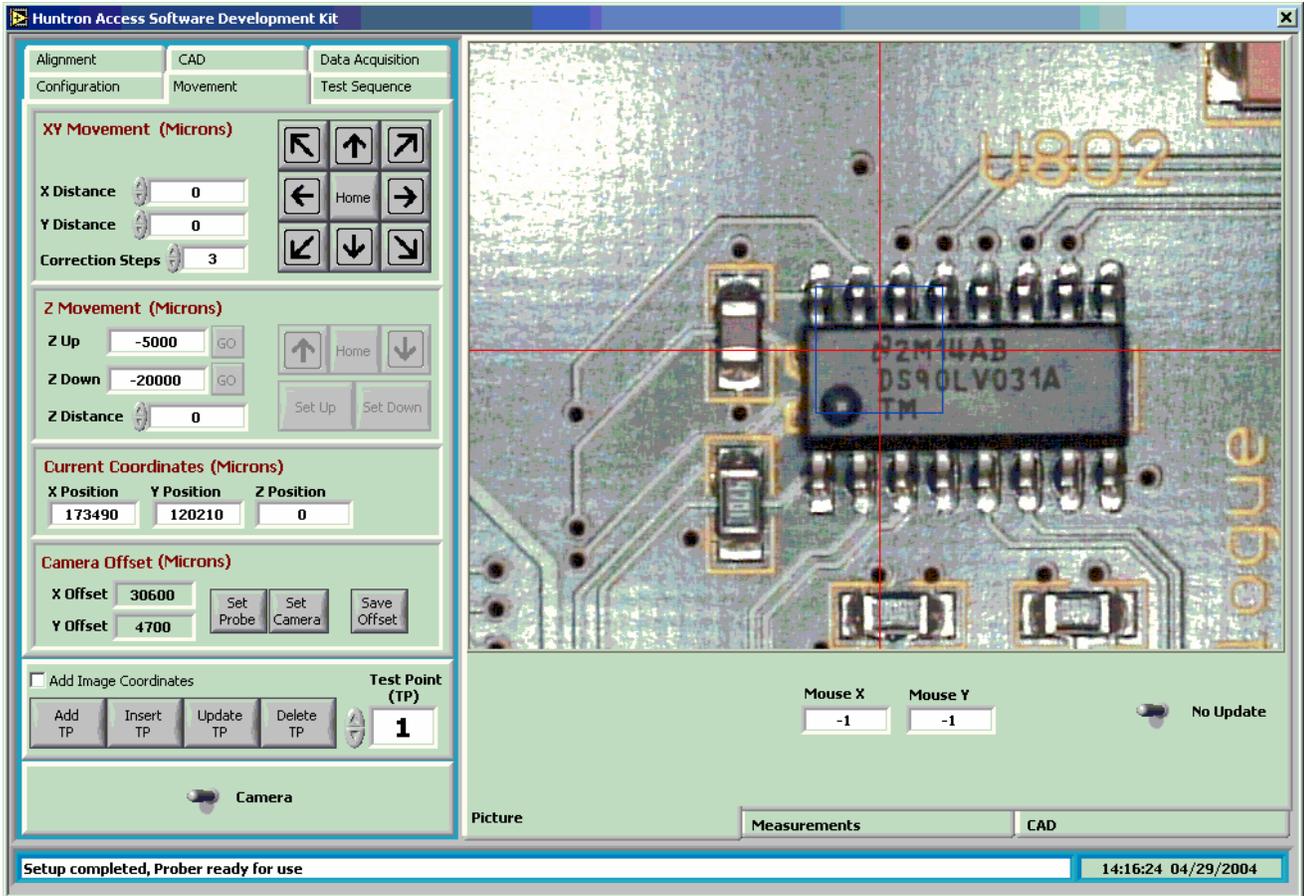


The installation of the LabVIEW software will create a desktop Icon **Huntron Access SDK**.

Double click on the icon to start the software. The following screen will appear.



- **Check the hardware configuration.** If your Access Prober is connected to COM2, change it by clicking on the dropdown arrow next to Serial Port, and select COM2. Ensure that the selected slot is **Top**. Change it if your sample board is in the middle or bottom slot.
- Click **Connect**. The Z head should move to the home position. The camera screen will be blank.
- You are now ready to do a **Camera Offset** routine.



- **The Camera Offset** routine is necessary for setting up the distance between the camera center and the probe tip. You will need to identify a small via or dot pattern on your board for a target image. You move the camera over the target image and place the probe tip on top of the target by using the movement keys that moves the probe up, down, left, right, back and forward. Follow the procedure below:
- To check whether the Camera Offset is accurate, Click the **Movement** tab. The camera image of the area below the camera will be displayed. Click on a test point on the camera image. The Camera will move to the center of that point. Click until you can see a previously chosen target point on your test board. (If you are unable to find a good clear small target you can place a small sticker that has a image of a tiny dot on your board.) To make longer movements in the X or Y direction, place the cursor in the X direction box and enter 10000 for example (10000 uM = 0.3937 inches). Then click the Direction key and the Camera will move 10000 uM in that direction.

- Click the  button. You will need to place the probe on the center of your target.

- Click the  switch. The system will switch to **Probe** mode. The probe will not move until you click the Z movement keys. First set **Z distance** to 1000 uM (0.0397 inches).

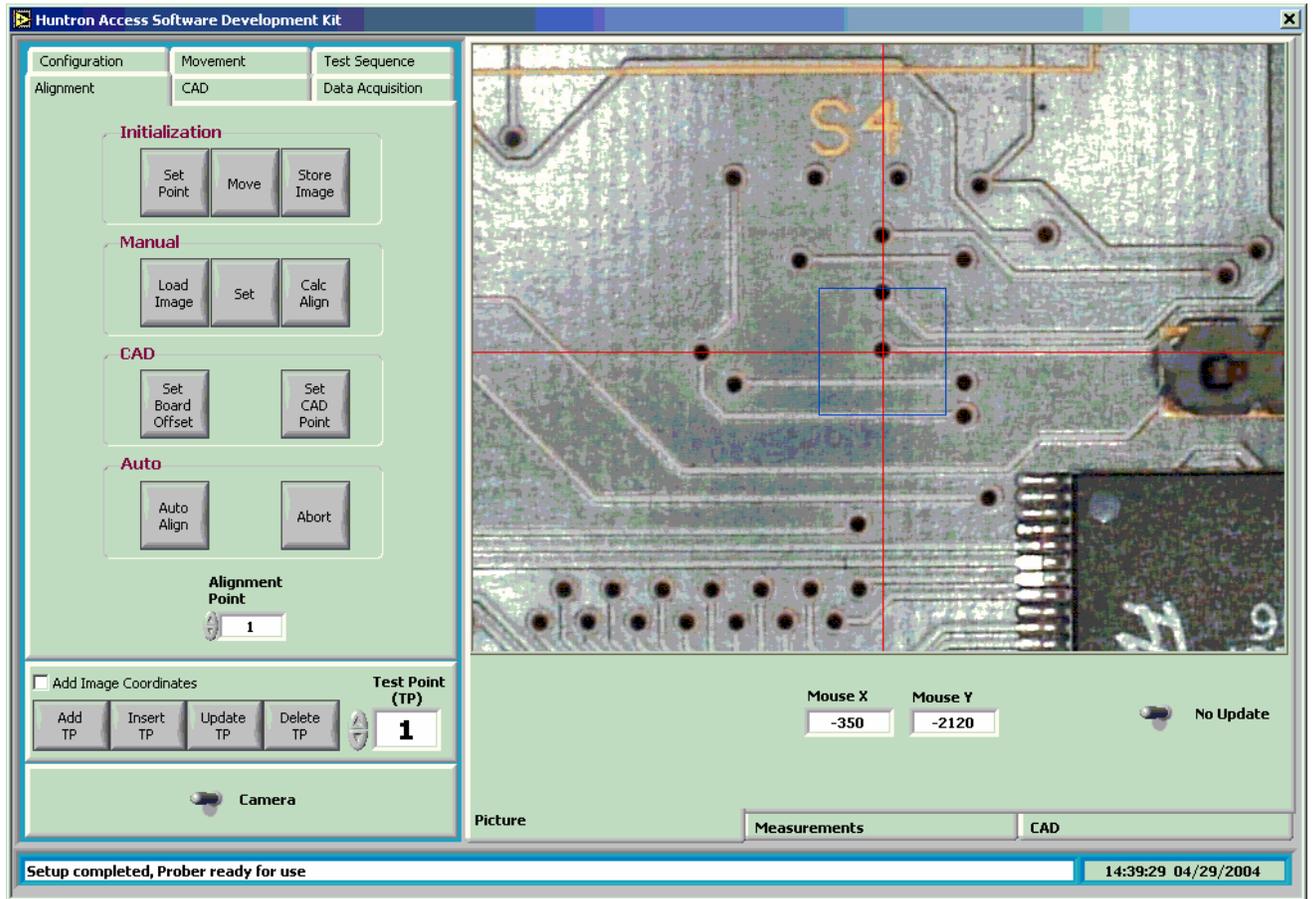
- Click the  button in the Z movement section. The probe will move down. Continue clicking until the probe makes contact with the PCB. (It may not touch the center of your target yet because the camera offset is not stored). Now click the **Set Down** Button. You have now set the Z probe down position. It is not necessary to set the UP position at this time.
- Make fine adjustments to the Camera Offset. Change the Z travel distance to smaller values for smaller movements towards your target. Use a magnifying glass to check that the probe is touching the center of the target accurately.

- Click the  button to store the Probe offset. Now you can toggle between Probe mode and Camera mode by pressing the Camera or Probe button to verify the offset.

Click  to store the offset values.

- The Camera offset routine is complete. If you have not changed probe styles, or changed which slot you are clamping the test board into, then it is not necessary to do the Camera offset routine again. However, if you set up test points using the camera and the probe does not accurately probe those points, you may have to check and change the Camera Offset.
- You are now ready to setup the Alignment points.

- **Setup the Alignment images.** Click the **Alignment** tab.



- Select two alignment points on your sample board. Use Alignment images that have high contrast. See example above. Choose the second alignment point that is far apart as possible in a diagonal direction away from the first alignment point. Any image on your sample board can be used. If the AutoAlignment procedure is unsuccessful, you may have to choose different alignment images. Different lighting conditions may result in Auto Alignment failure. You will have to experiment with different alignment points.

- Click  to store the first alignment point. Click  to store the image. Enter a file name and pick the path where the images will be stored.

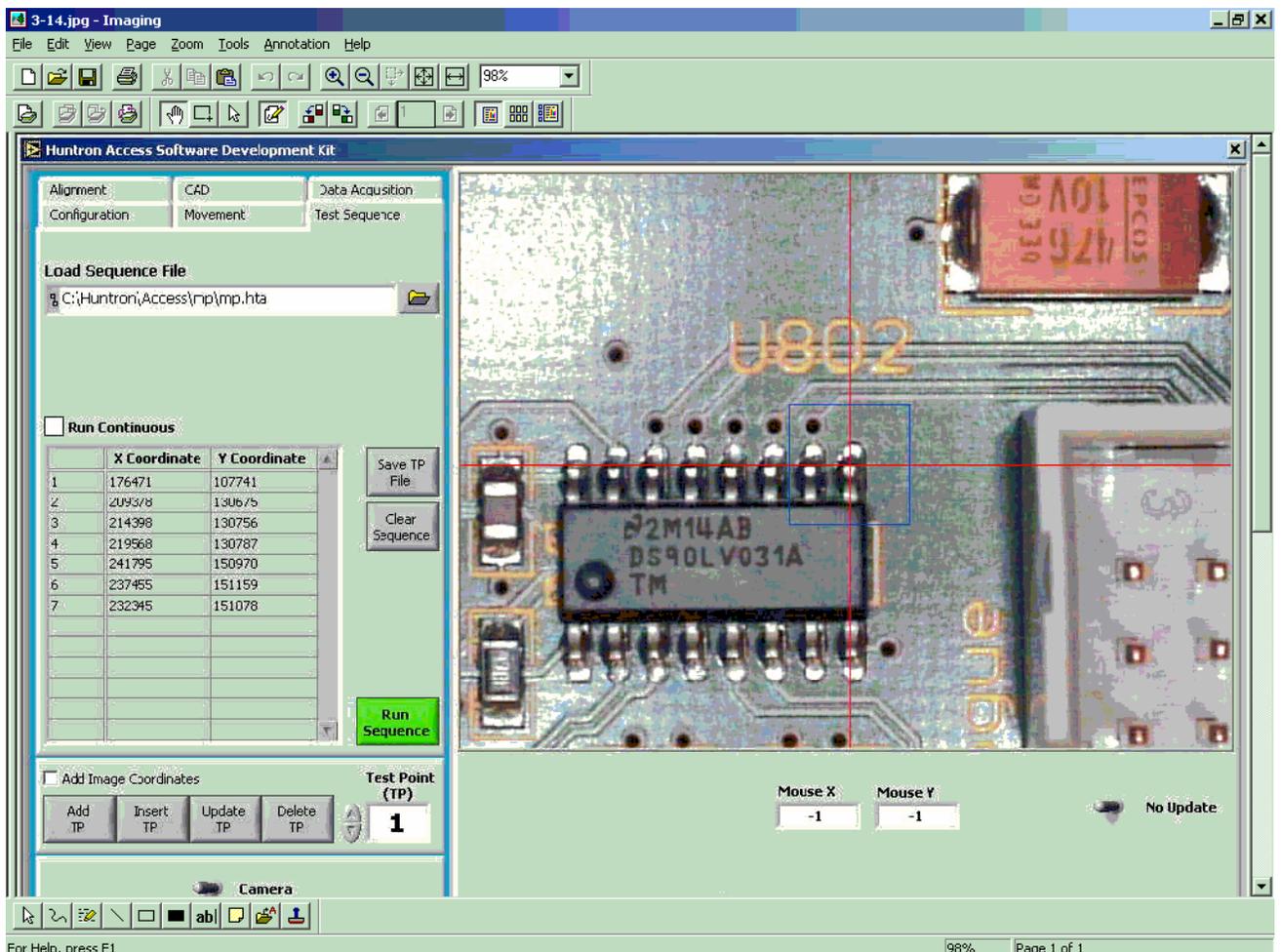
- To setup the second alignment point click the  (up arrow) for accessing the second point. Now repeat the process and click Set Point to store the xy co-ordinate of the 2<sup>nd</sup> alignment point. Click Store image to store the image.



- Check your points by clicking on the up or down arrow and click . Check that the camera returns to the center of the alignment image every time.



- Now check the alignment by clicking . The camera will automatically align with the first image and then the second. If you get an unsuccessful alignment, try again or choose a different lighting condition or different alignment points.
- You are now ready to setup a sequence of test points. Click the **Test Sequence** tab.



The Test Sequence routine allows you to setup the XY co-ordinates of a number of test points that will be automatically probed one after the other. If a Multi-meter or

Oscilloscope was configured into the PXI system, automatic measurements can be performed while the probe is in the down position. You will need to use LabVIEW to configure the test instrument and specify what measurements are to be recorded. This sample application uses a Multimeter and Oscilloscope card from National instruments for displaying the scope waveform and Multimeter measurement.

- Setup the first Test Point of the sequence. Move the camera by clicking on the camera image of the board. Move to the center of a test point or IC pin.

- Change to Probe mode by toggling  switch. The probe should move down to the test point that is at the center of the camera image.
- Toggle back to the Camera Mode.

- To add the first test point to the sequence, click .
- Now move to the next test point by clicking on the camera image of your second test point.
- Click Add TP and continue with all the other test points. You can Insert, Update or Delete a test point in the sequence. You can access a particular test

point by clicking on the up or down arrow buttons, .

- Now check your sequence in Camera mode. While the system is in Camera mode, click . The camera will move to each test point of your sequence.

- Check the sequence in Probe mode. Click  and then click



- The probe should go down to each test point sequentially. If you had a MultiMeter or Oscilloscope installed, test point waveforms and meter readings will be displayed in the measurement windows while the probe is down. (Assuming your test board is powered)



- Save your data. Click  and pick a folder path and filename to save the data.
- Now exit the Huntron Access application. Click the X in the top right hand application Window.

**Now start the system again to check your work.**

- Click the **Huntron Access SDK** Icon. Click the **Configuration** tab. Click **Setup**. The Camera moves to the rear-right corner. Click the **Alignment** tab. Click **Auto-Alignment**. Camera will try to automatically find your alignment points. Click the



**Test Sequence** tab. Click the folder Icon  next to **Load Sequence** file. Find the folder and filename where the sequence was stored. Select the file. Switch to **Probe** mode by clicking on the **Camera** button. Click **Run Sequence**. The probe should move to every test point in your sequence.



For help on other features of the Huntron Access application, click  in the Configuration window.

If you need further assistance, call the Huntron Technical Support at 1-(800)-426-9265 or (425) 743 3171.

Email: [info@huntron.com](mailto:info@huntron.com)

# SECTION 4

## Installation: Access Prober using Huntron Workstation 4.x software with Protrack Model 20 or the TrackerPXI.

**Note:** Skip this section if you do not have a Protrack model 20 and intend to use LabVIEW and other LabVIEW driven instruments with the Access Prober.

### 4-1 Installing the Access Prober using Huntron Workstation 4.0 software with the ProTrack model 20.

#### PC Requirements

The following requirements are provided to assist you in purchasing the correct computer system to use with the Huntron Workstation software. These are the recommended minimum computer requirements:

- PC with Pentium III or equivalent CPU.
- Microsoft Windows™ 2000, XP.
- CDROM drive.
- 512MB RAM
- Hard disk with at least 1 GB free space.
- Windows 16 bit color capable VGA graphics card.
- VGA color monitor.
- 1 free USB 2.0 Port for communication with the Protrack or 1 free parallel printer port for communicating with a Protrack CE version.

- 1 free serial (RS232) port for communicating with the Access Prober.
- One full height PCI slot for the color camera frame grabber card.

## 4-2 Installing the Huntron Workstation Software

**NOTE: Install the software before installing the PCI Camera card.**

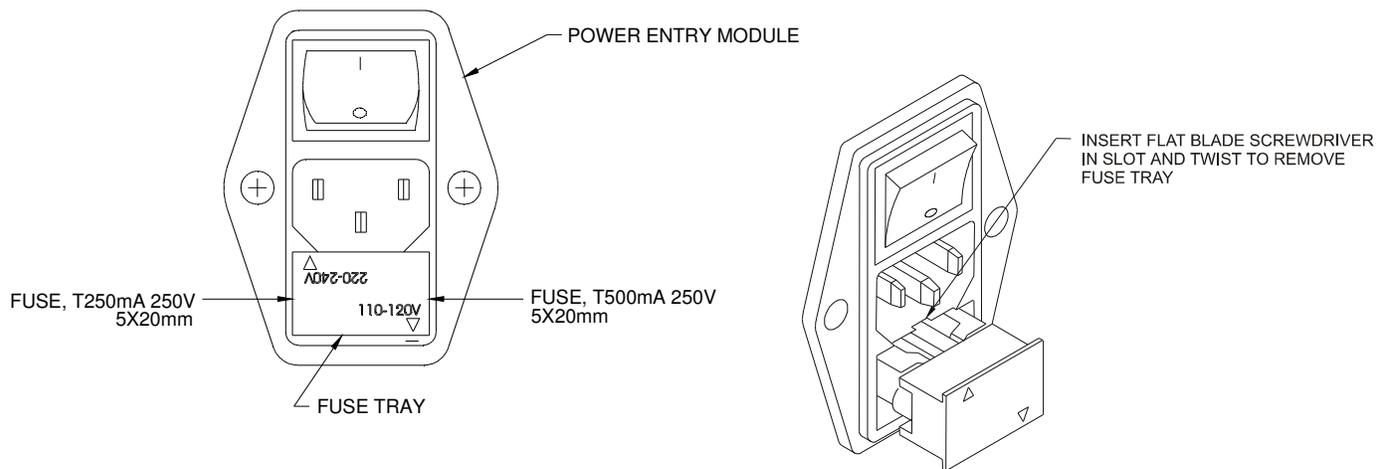
1. Power up your computer. Insert the software CD into the CDROM drive.
2. If your CD was configured for Auto-run, a menu will be displayed. Click the **Install Workstation** item. If no menu is displayed, run the **Huntron Workstation.exe** program located in the **Setup** folder on the CD.
3. A Huntron License Agreement form is displayed. If you agree, select the **“I accept the license agreement”** option. Click **Next**. The readme.txt file on the CD will be displayed. Click **Next**.
4. Enter your User information if desired. If you are allowing other users to logon and use the software, the default setting allows anyone who logs onto to this computer to use the software with full access. If you select **“Only for me”**, other users who logon to this computer with a different user name will not have access to this software.
5. The default destination folder is **C:\Program Files\Huntron Workstation**. Click **Next** if you do not want to change the default folder.
6. Click **Next** to begin installation.

Click **Finish** when the **“Huntron Workstation has been successfully installed”** window is displayed

7. **Install the NI Vision for Auto Align software.** Use your Browser’s Back button to return to the main CD menu. Select **Install NI Vision for Auto Align** (or browse the CD, locate the **Vision** folder and execute the file **vision80rte.exe**). Exit the CD software by clicking **Exit**.
8. Run the **NI License Manager** by selecting **Start, Programs, National Instruments, NI License Manager**. Click the **Activate** button on the toolbar. Follow the instructions to enter your NI license serial number. This serial number is printed on the Huntron software CD and/or is located in your NI Certificate of Ownership.
9. **Do not run the software at this point. The hardware must now be installed to complete the installation.**

## 4-3 Installing the Hardware

1. Locate the unpacking sheet that was supplied with the Prober.
2. Follow the unpacking steps as outlined in the unpacking sheet.
3. Place the Prober on a stable table or desk. The ProTrack should be positioned on the left side of the Access Prober. Place the computer monitor on either side of the Prober.
4. Remove the **Red Shipping Stoppers** using the Hex Allen tool supplied in the tool kit. Do not discard these blocks. You will need them again if you transport the Prober to another location. **Also remove the Z locking pin located near the probe tip. Do not discard this pin. You will need this pin for locking the Z probe assembly when transporting the unit.**
5. **Voltage Select/Line Fuse tray:** The power entry module on all Probers includes the power switch (0 = OFF, 1 = ON), power cord connector, and a removable tray which selects the line voltage and holds the line fuses.



### 220-240VAC Voltage Selection.

**NOTE:** The above voltage setting indicates **110-120V AC power (arrow pointing towards the — mark.)** If your line voltage is **220–240VAC**, you will need to change the **Voltage Select/Line Fuse Tray setting**. Remove the AC power cord. There is a slot below the AC ground terminal. Insert a flat screw driver into the slot and pull the tray out. Make sure that replacement fuses are of the type and current rating specified. If necessary, insert the specified fuse (T250mA or T500mA according to IEC 127) that matches the line voltage setting into the fuse tray. Insert the tray into the power module so that the 220-240VAC arrow points to the — mark. Insert the AC power cord and connect to a 220-240 Volt AC supply.

## 4-4 Installing the PCI Frame Grabber card

INSTALL CAMERA FRAME GRABBER BOARD ONLY IN UL LISTED, CSA CERTIFIED, OR TUV/VDE LICENSED PERSONAL COMPUTERS WITH ENCLOSED POWER SUPPLIES WITH SELV NON-ENERGY HAZARDOUS OUTPUTS AND USER INSTRUCTIONS DETAILING THE INSTALLATION OF CARD CAGE ACCESSORIES.

**With the computer power turned off**, install the card into the computer by positioning it over the PCI slot and pressing it firmly downward. There is no need to set any addresses or interrupts.

Secure the camera card to the computer back panel using the available screw.

## 4-5 Connecting the ProTrack to the Prober

Unpack the ProTrack as outlined in the unpacking instructions. Install the hardware as outlined in the ProTrack User's Manual. Locate the USB or Parallel IEEE 1284 cable included in the ProTrack package. Protrack CE versions have a parallel interface cable. Today, most Protracks have a USB port.

**For Protrack with USB port:** Connect the USB cable from the protrack to the USB port of the computer.

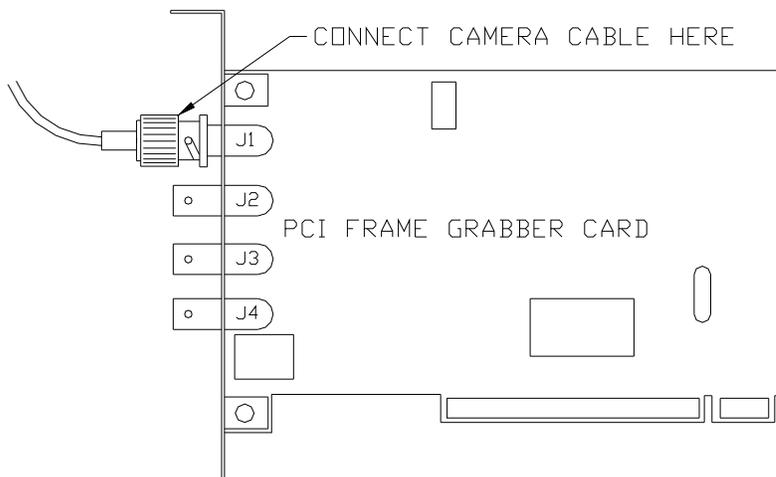
**For Protrack CE version with parallel port:** Power off the computer and connect the parallel IEEE 1284 cable from the **COMPUTER** connector on the ProTrack to the primary **Printer Port** on the Computer. Refer to the **ProTrack User Manual, Section 9, Remote Mode** for information on using a printer for reporting Protrack data. See diagram on page 4-5.

Connect the BNC cables included in the Prober package to the back panel of the ProTrack. Connect the COMMON terminal on the ProTrack to the COMMON terminal on the Prober. Connect the CHANNEL A terminal on the ProTrack to the SIGNAL terminal on the Prober. See diagram on page 4-5.

Connect the power cords to the ProTrack and the Prober.

## 4-6 Connecting the Camera Frame Grabber card to the Prober

A co-axial cable is supplied with the Access Prober. The PCI camera card has four BNC connectors allowing up to 4 cameras to be connected. Connect one end of the co-axial cable to the top BNC connector as shown. Connect the other end to the BNC port on the Prober marked "**Camera**"

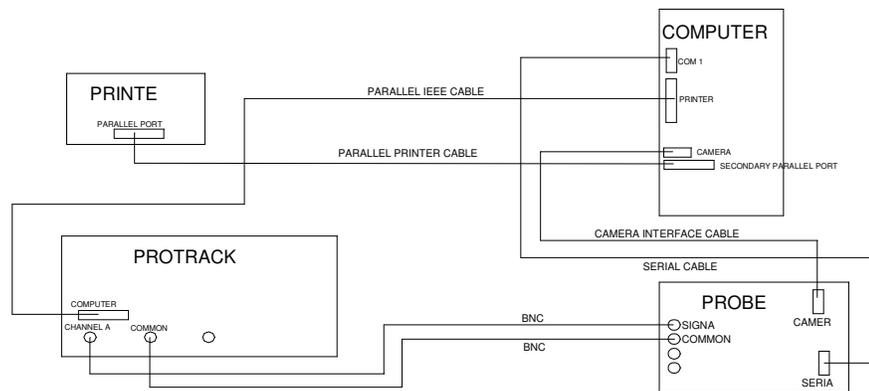


## 4-7 Connecting the Prober Serial Interface to the Computer

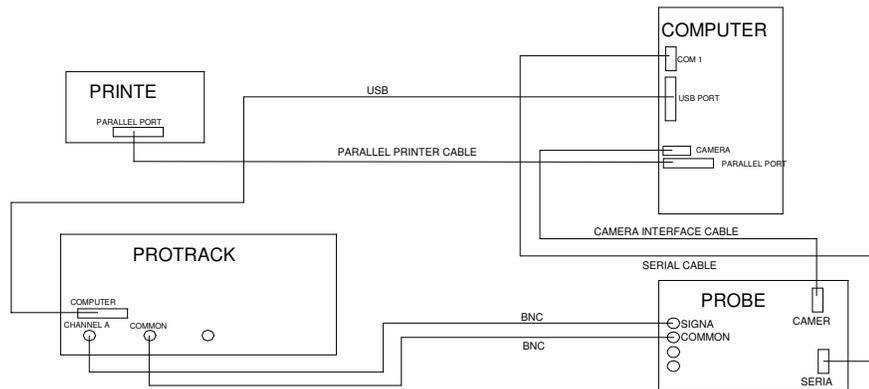
If your computer does not have a mouse port, you will need two serial ports, one for the Prober and the other for a serial mouse or trackball. If you have another type of port (USB) for the mouse, then you will need only 1 serial port for the Prober.

Locate the serial cable and connect the correct end to the Prober Serial port. Connect the other end to the appropriate serial port on the computer (COM1, COM2, COM3 or COM4). See diagram on page 4-5.

Power up the ProTrack and the Prober. The Prober front panel STOP light will switch on and a startup message is displayed on the ProTrack LCD panel.



Cable hookup for computer, Protrack with parallel port and Access Prober



Cable hookup for Computer, Protrack with USB and Access Prober

## 4-8 Installing the PCI drivers for the Color Camera

### For Windows 2000/XP

- 1) Ensure that **Huntron Workstation 4.x** CD in your CD drive. If you have installed the Huntron Workstation Software (**Section 4-2**) and then installed the PCI Frame Grabber card (**Section 4-4**), you are now ready to install the drivers.
- 2) Turn on your computer and allow Windows to boot. An **Add New Hardware** wizard prompts you to install a **“Sensoray 611 Frame Grabber”**. Click **Next**.
- 3) If the wizard prompts you to search for drivers, click **Next**. Check the CDROM drive for the search path and **uncheck all the other options**. Click **Next**.
- 4) When a message appears, indicating that the driver has not passed Windows Logo testing, click **“Continue anyway”**. Click **Finish**.
- 5) You will be prompted to install the **“Sensoray X11 Frame Grabber Component”**. Click **Next**. When a message appears indicating that the driver has not passed Windows Logo testing, click **“Continue anyway”**. Click **Finish**. Remove your Huntron Workstation CD. You are now ready to use the software.

## Starting and activating the software.



1. An icon will be created on your windows desktop. Double click this icon to start the software.
2. The Huntron Workstation Activation dialog is displayed. This software is only licensed to be used on one Protrack and Scanner and/or one Access Prober. The activation codes are generated by Huntron and are specific to the Protrack and Access hardware serial numbers. The activation codes can be e-mailed to you. **The activation codes are also printed on the software CD.** If you do not know the activation codes, call Huntron technical support (425-743 3171) and provide the serial numbers for the Protrack and the Access. Protrack serial numbers start with a **KJ**. Access serial numbers start with a **480**. From the e-mail text, copy and paste the activation codes into the correct boxes.

## 4-9 Huntron Workstation Software Tutorial

A software tutorial (**workstation tutorial.pdf**) is included in the software CD and in the default installed folder (**C:\program files\huntron workstation\documents**).

The tutorial will enable a new user to get acquainted with most of the software features. The help menu in the software will also assist you.

Whenever you need detailed information, click **Help** in the appropriate screens. The help feature is context sensitive, so you can click on the green highlighted text to get additional information on related topics.

All **user's manuals** are located in the Manual CD (06-5217) included in your package. Refer to the appropriate manual for the hardware you have.

If you need further assistance, call the Huntron Technical support at  
1-(800)-426-9265 or (425) 743 3171  
email: [info@huntron.com](mailto:info@huntron.com)



**CAUTION: DO NOT REMOVE BOARD-UNDER-TEST WHILE THE PROBER IS RUNNING A TEST. THE SPRING LOADED PROBE HAS A SHARP POINT AND MAY CAUSE INJURY IF THIS MACHINE IS IMPROPERLY USED.**

## 4-10 Installing the Access Prober using Huntron Workstation 4.x software with a TrackerPXI.

### PC Requirements

The following requirements are provided to assist you in purchasing the correct computer system to use with the Huntron Workstation software and the TrackerPXI. These are the recommended minimum computer requirements:

- PXI or CompactPCI chassis with Pentium III or equivalent CPU.
- Microsoft Windows™ 2000, XP.
- CDROM drive.
- 512MB RAM
- Hard disk with at least 1 GB free space.
- Windows 16 bit color capable VGA graphics card.
- VGA color monitor.
- 1 Free PXI or CompactPCI slot for the TrackerPXI card.
- For connecting to the Access Prober, you will also need:
  - 1 free serial (RS232) port for communicating with the Access Prober.
  - One free PXI or CompactPCI slot for the camera frame grabber card.

**NOTE: Install the software before installing the PXI cards.**

1. Power up your computer. Insert the software CD into the CDROM drive.
2. If your CD was configured for Auto-run, a menu will be displayed. Click the **Install Workstation** item. If no menu is displayed, run the **Huntron Workstation.exe** program located in the **Setup** folder on the CD.
3. A Huntron License Agreement form is displayed. If you agree, select the **“I accept the license agreement”** option. Click **Next**. The readme.txt file on the CD will be displayed. Click **Next**.
4. Enter your User information if desired. If you are allowing other users to logon and use the software, the default setting allows anyone who logs onto to this computer to use the software with full access. If you select **“Only for me”**, other users who logon to this computer with a different user name will not have access to this software.
5. The default destination folder is **C:\Program Files\Huntron Workstation**. Click **Next** if you do not want to change the default folder.
6. Click **Next** to begin installation.
7. Click **Finish** when the **“Huntron Workstation has been successfully installed”** window is displayed.
8. **Install the NI Vision for Auto Align software.** Use your Browser’s Back button to return to the main CD menu. Select **Install NI Vision for Auto Align** (or browse the CD, locate the **Vision** folder and execute the file **vision80rte.exe**). Exit the CD software by clicking **Exit**.
9. Run the **NI License Manager** by selecting **Start, Programs, National Instruments, NI License Manager**. Click the **Activate** button on the toolbar. Follow the instructions to enter your NI license serial number. This serial number is printed on the Huntron software CD and/or is located in your NI Certificate of Ownership.

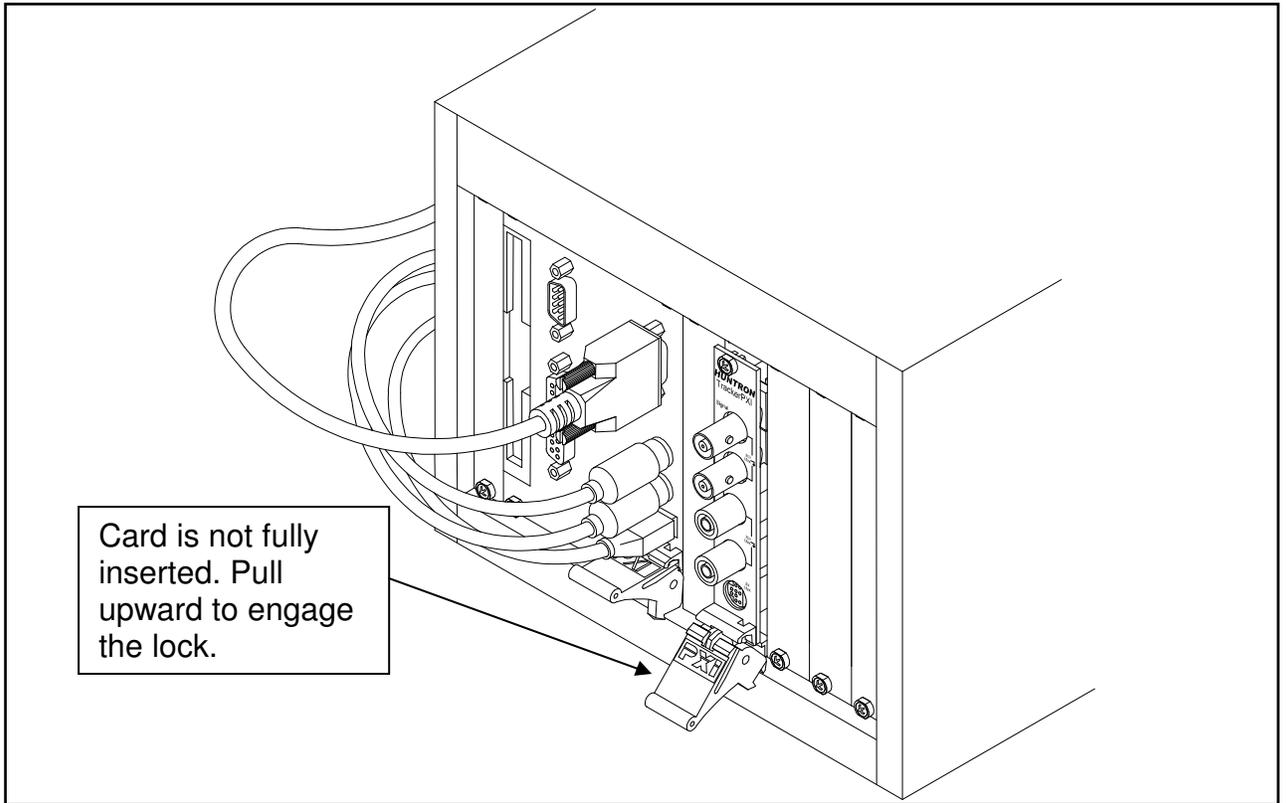
**Do not run the software at this point. The hardware must now be installed to complete the installation.**

10. Power off the computer chassis. Install the **TrackerPXI card and the Sensoray PXI Frame Grabber card** in any available 5 V peripheral slot in your PXI or CompactPCI chassis. Step 10 illustrates how to install a TrackerPXI card.

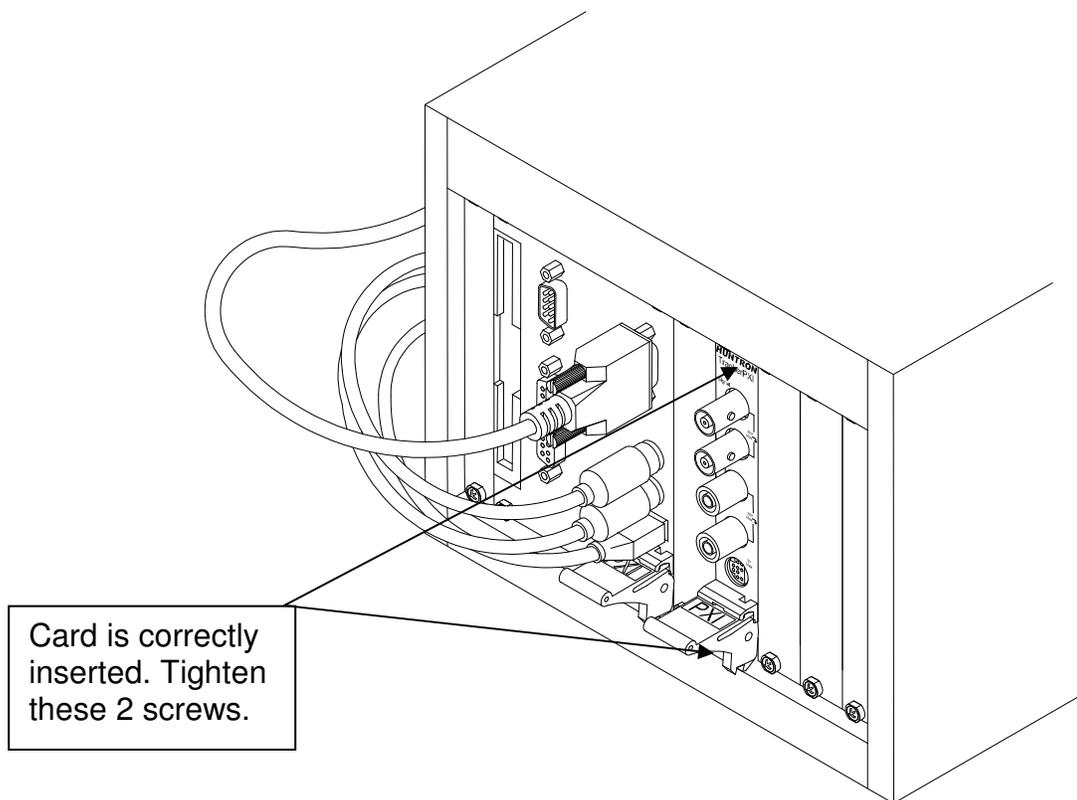
**CAUTION: To avoid static electricity from damaging the TrackerPXI, ensure that you are properly grounded when handling the card.**

Remove the filler panel of the slot that you have chosen to install the card.

Slide the TrackerPXI card in the selected slot. **Caution: Do not force the card into the slot.** The card should slide in easily and come to a stop when the card connector is about to make contact with the chassis. Hold the card injector/ejector handle and pull it upward to lock it in place. If the ejector/injector handle is difficult to pull upward, remove the card and re-insert it into the slot. Tighten the 2 screws as shown.



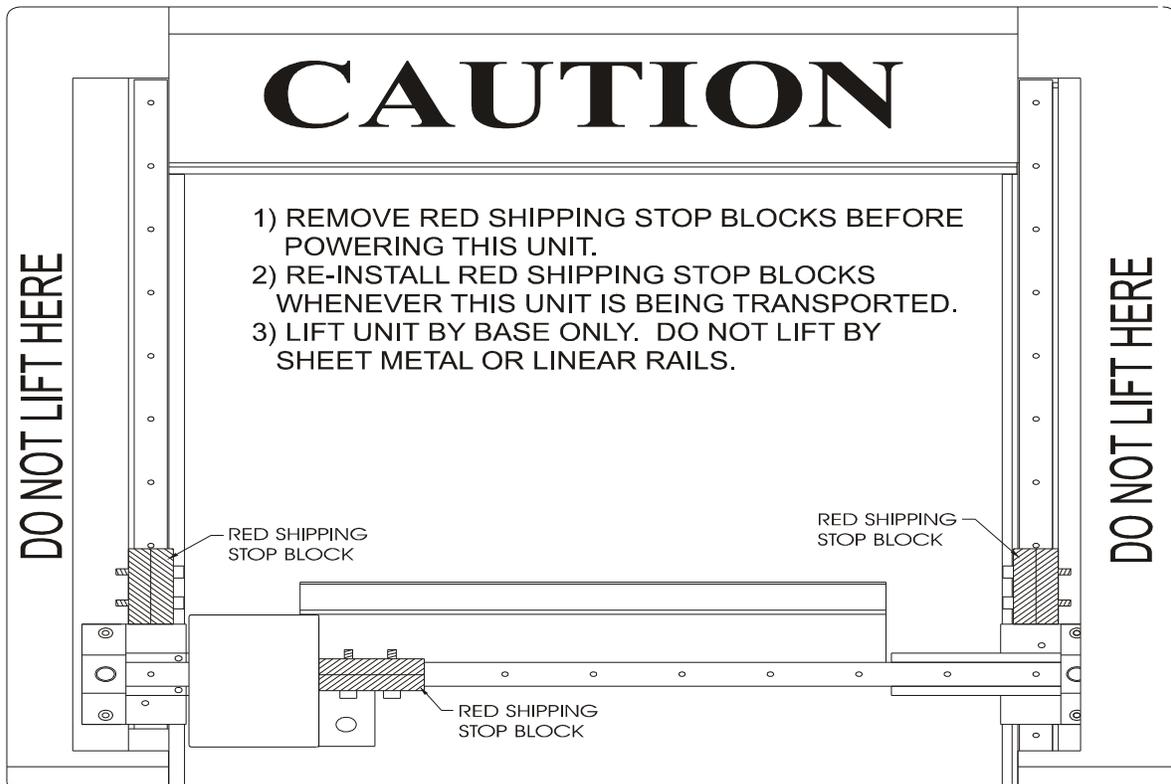
**TrackerPXI not fully inserted.**



**Tracker PXI card fully inserted and locked into position.**

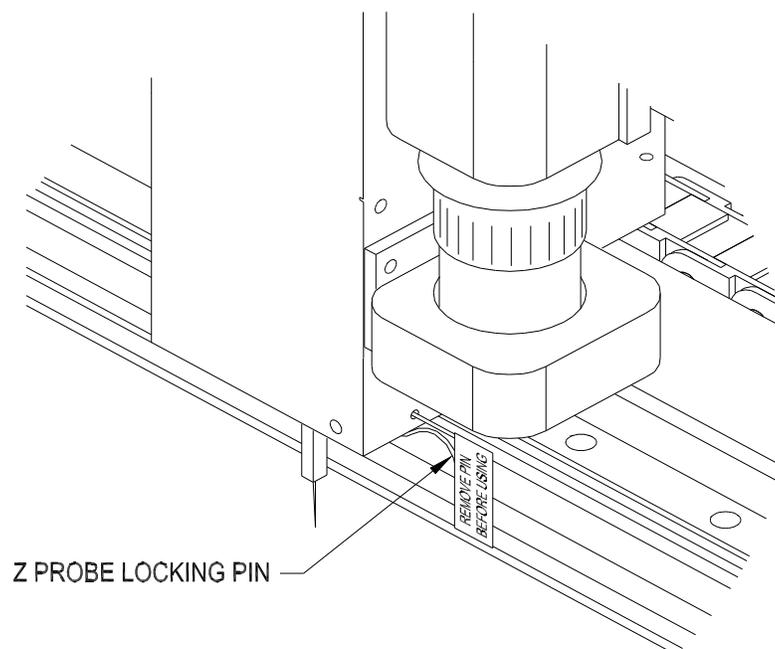
**Warning! Please ensure that all cables connected to the TrackerPXI card are no longer than 3 meters.**

- 11.** Locate the unpacking sheet that was supplied with the Prober.
- 12.** Follow the unpacking steps as outlined in the unpacking sheet. Lift the unit by grabbing the base only. Do not lift the unit by grabbing the sheet metal covers or the X axis mechanism.
- 13.** Place the Prober on a stable table or desk. The ProTrack should be positioned on the left side of the Prober. Place the computer monitor on either side of the Prober.



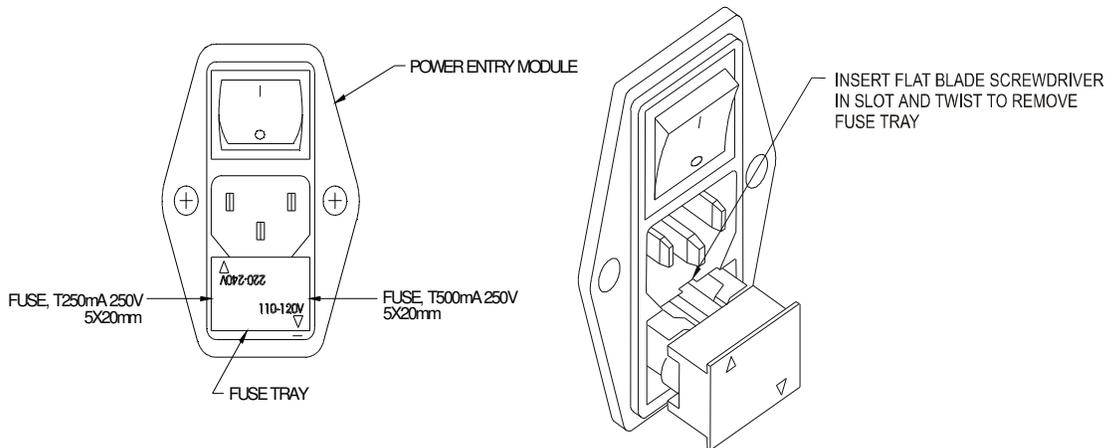
**14.** Remove the **Red Shipping Stoppers** using the supplied Hex Allen tool. Do not discard these blocks. You will need them again if you transport the Prober to another location.

**15.** Remove the **Z locking pin** located near the probe tip. Do not discard this pin. You will need this pin for locking the Z probe assembly when transporting the unit.



16. Check the **Voltage Select/Line Fuse** tray. The power entry module on all Probers includes the power switch (0 = OFF, 1 = ON), power cord connector, and a removable tray

which selects the line voltage and holds the line fuses.



### 220-240VAC Voltage Selection

**NOTE:** The above voltage setting indicates **110-120V AC power (arrow pointing towards the — mark.)** **If your line voltage is 220–240VAC, you will need to change the Voltage Select/Line Fuse Tray setting.** Remove the AC power cord. There is a slot below the AC ground terminal. Insert a flat screw driver into the slot and pull the tray out. Make sure that replacement fuses are of the type and current rating specified. If necessary, insert the specified fuse (T250mA or T500mA according to IEC 127) that matches the line voltage setting into the fuse tray. Insert the tray into the power module so that the 220-240VAC arrow points to the — mark. Insert the AC power cord and connect to a 220-240 Volt AC supply.

Connect the following cables:

- **RS232 Cable** from the **computer serial port** to the **Prober Serial port**.
- **BNC cable** from Signal on the TrackerPXI to the **Signal port** on the Prober.
- **BNC Common cable** from **Common** on the **TrackerPXI** to **Common** on the Prober.
- BNC Camera cable from V1 port on the Sensoray Frame grabber card to the **Camera port on the Prober**.
- Connect all power cords.

17. Power up the Prober. Power up the computer. Do not remove the software CD.

18. After Windows is booted, an **Add New Hardware** wizard prompts you to install a **“Sensoray Frame Grabber”**. Click **Next**.
19. If the wizard prompts you to search for drivers, click **Next**. Check the CDROM drive for the search path and **uncheck all the other options**. Click **Next**.
20. When a message appears, indicating that the driver has not passed Windows Logo testing, click **“Continue anyway”**. Click **Finish**.
21. You will be prompted to install the **“Sensoray X11 Frame Grabber Component”**. Click **Next**. When a message appears indicating that the driver has not passed Windows Logo testing, click **“Continue anyway”**. Click **Finish**.
22. You will be prompted to install the **“TrackerPXI”**. Click **Next**. When a message appears indicating that the driver has not passed Windows Logo testing, click **“Continue anyway”**. Click **Finish**.
23. Remove your Huntron Workstation CD. You are now ready to use the software.



22. An icon  will be created on your windows desktop. Double click this icon to start the software.

23. . The Huntron Workstation Activation dialog is displayed. This software is only licensed to be used on one TrackerPXI and/or one Prober. The activation codes are generated by Huntron and are specific to the TrackerPXI and hardware serial numbers. The activation codes are printed on the software CD. The activation codes can be e-mailed to you. If you do not know the activation codes, call Huntron technical support (425-743 3171) and provide the serial numbers for the TrackerPXI and the Prober . TrackerPXI serial numbers start with a **RV**. Prober serial numbers start with a **480**. From the e-mail text, copy and paste the activation codes into the correct boxes. If you have a Prober connected to the TrackerPXI, follow the calibration procedure in step 24. Ignore step 24 if you are using the TrackerPXI as a stand-alone unit.

**NOTE: The TrackerPXI is already calibrated at the factory. However, if you are connecting a TrackerPXI to a Prober, you will need to calibrate it as a complete system. If you have connected a TrackerPXI to a Prober, follow the steps below to calibrate the system.**

#### **24. TrackerPXI calibration with Prober connection.**

To access the calibration window, click **Tools, Maintenance, TrackerPXI Diagnostics**. Ensure that all cables are connected. Do **not click the Verify Hardware button**. This routine requires special hardware and test procedures.

Click the **Calibrate** button. The calibration routine will run for a few minutes. Do not power off any of the instruments at this time. This is an automatic process and does not

require any user tweaking. After a successful calibration, click the **Verify Calibration** button. If you get a “successful verification”, click **Close** to exit the Diagnostic window. If you get a “Verification Failed” message, Re-run the **Calibration** routine and run the **Verify Calibration** again. If it still fails, call Huntron Technical support.

## **25 . Follow the software tutorial.**

A software tutorial (**workstation tutorial.pdf**) is included in the software CD and in the default installed folder (**C:\program files\huntron workstation\documents**).

The tutorial will enable a new user to get acquainted with most of the software features.

The help menu in the software will also assist you.

Whenever you need detailed information, click **Help** in the appropriate screens. The help feature is context sensitive, so you can click on the green highlighted text to get additional information on related topics.

All **user’s manuals** are located in the Manual CD (06-5217) included in your package. Refer to the appropriate manual for the hardware you have.

If you need further assistance, call the Huntron Technical support at

1-(800)-426-9265 or (425) 743 3171

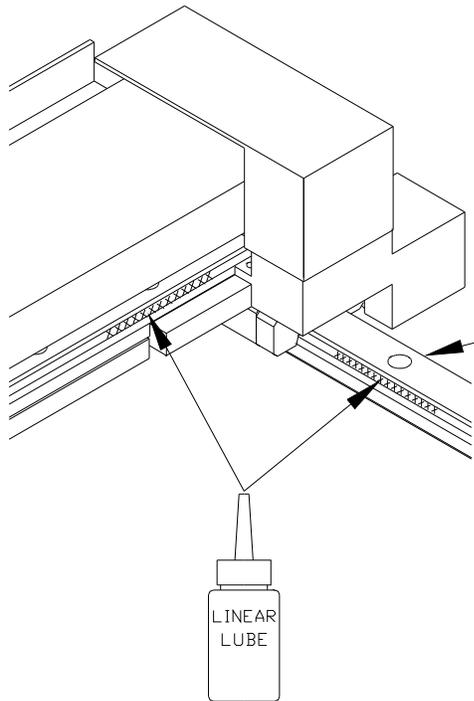
email: [info@huntron.com](mailto:info@huntron.com)

# SECTION 5

## GENERAL HARDWARE MAINTENANCE

### 5-1 RAIL LUBRICATION

The linear raceways have to be lubricated using the supplied “linear lube” which is included in your Tool kit. Do not experiment with any other lubricant. Turn the Prober power off. Apply a generous amount of lubricant along each side of the rail as shown below. Manually move the Z axis left and right and then back and forth in order to spread the lubricant along the raceways.



**We recommend lubricating the rails at least once a month.** You should wipe clean the rail surface with a lint-free cloth if excessive dust is visible prior to lubricating rails.

### 5-2 CALIBRATION REQUIREMENTS.

Under normal operating conditions, there are no other customer calibration requirements. The unit is already factory calibrated. If the unit is out of calibration which can be determined by simply digitizing a few xy test point locations and accessing those points repeatedly. The camera image should show that those test points are consistently and accurately accessed. The cross-hair on the camera image should be accurately positioned over the center of every test point previously set up.

If the unit is out of calibration, please call Huntron Technical Support for further instructions.

## 5-3 SPRING CONTACT TEST PROBES

The Prober uses a spring loaded probe for making contact with a test point. Various probe styles are available depending on the type of components tested. These probes are commonly used in bed-of-nails fixtures and are readily available from a large number of manufacturers. Since the probe fits into a specific receptacle, only specific probe sizes can be used. The receptacle is press-fitted into the probe holder. It is a widely used industry standard size, so finding probes that fit into this receptacle should not be a problem. Manufacturers of these probes and the receptacle specifications are listed at the end of this section.

### ***LIFE EXPECTANCY OF SPRING CONTACT PROBES***

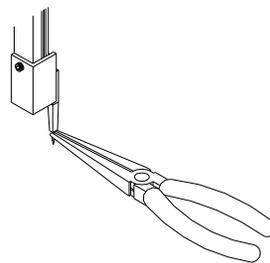
Generally, quality probes like those from Interconnect Devices Inc. (IDI) are rated at 1,000,000 cycles minimum. The life expectancy depends on proper use and maintenance of the probe. We recommend that you change the test probe once a month.

## 5-4 REPLACING THE PROBE

Use the needle nose pliers supplied with the Prober tool kit to pull the probe out of the receptacle.

**It is not necessary to remove the probe holder to do this.**

Simply grip the probe tip with the pliers and pull straight downward. The probe should come out easily.

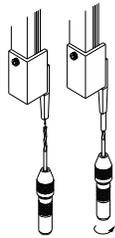


***Note: Changing the probe may cause the distance from the center of the probe to the center of the camera to change. Always perform a Camera Offset after changing the probe tip.***

## 5-5 REPLACING BROKEN PROBE TIPS

**It is not necessary to disassemble any parts for this operation.** The probe tip may break off from the probe holder in such a way that you are unable to remove the entire part with needle nose pliers.

A small drill bit is provided. Simply rotate the drill bit a few revolutions and when you feel some resistance, just pull downward. The rest of the broken tip will come out.



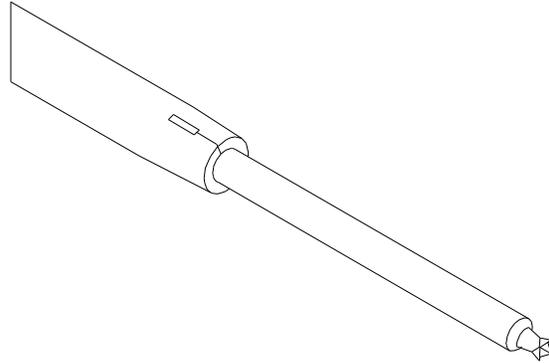
## 5-6 PROBE STYLES

A probe kit (P/N 98-0126) is supplied with the Prober. 5 of each of the following probes are included in this kit.

### ICT, 4 POINT CROWN PROBE

Use this probe for fine pitched devices. (tip diameter = 18 mils) Best pointing accuracy of any probe.

IDI part number: ICT-100-UR-5.5 or  
(ICT-S25UR-5.5DGD-S)  
(Huntron P/N 07-2112)

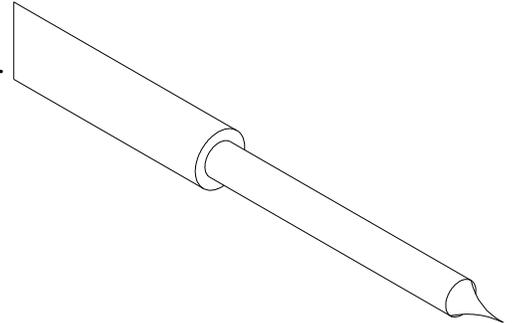


### TIP SPEAR PROBE

Used for testing contaminated boards or conformal coatings.

Fine pitch devices can also be tested with this probe.

QA Technology part number: 100-PRN2531U-S  
(Huntron P/N 07-2111)



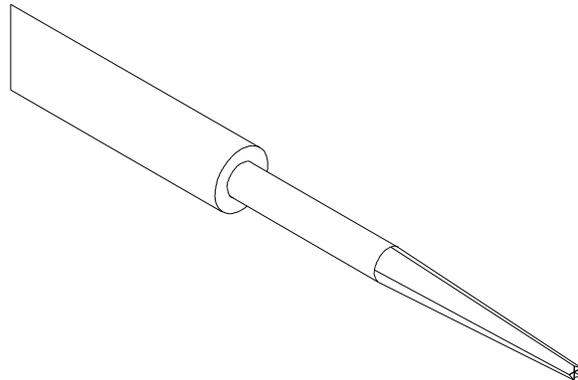
### 4 POINT TAPERED CROWN PROBE

Used to test leads, land and pads on densely populated boards.

Best for small pad or SMD testing  
(tip diameter = 11 mils).

QA Technology Inc. part number:  
100-PRP2554S

(Huntron P/N 07-2120)

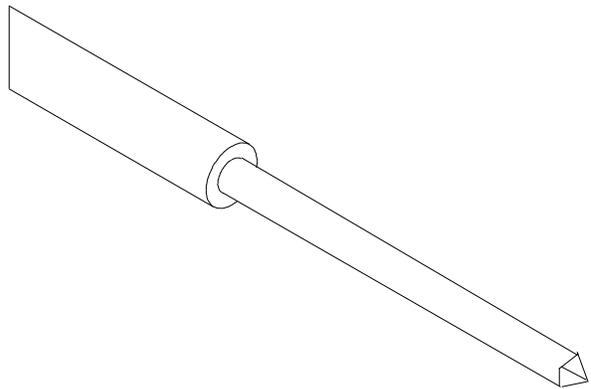


### **30 DEGREE SPEAR POINT PROBE**

Use this probe for testing land pads and plated through holes. The spear point penetrates thin layers of oxides or contaminants.

Extended length for densely packed components.

IDI part number ICTL100-M-5.7-G-S  
(or SR25B-6.3D)  
(Huntron P/N 07-2106)

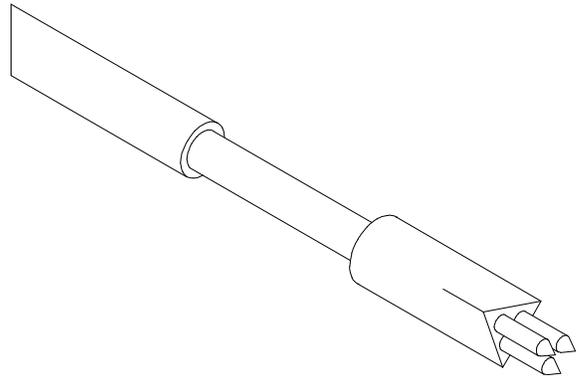


### **TRI-NEEDLE PROBE**

Used to test contaminated boards or pierce conformal coatings.

Best for 100 mils or wider spaced leads or pads.

IDI part number: S100-TN-6.7EN  
(or 25TN-6.7EN)  
(Huntron P/N 07-2108)

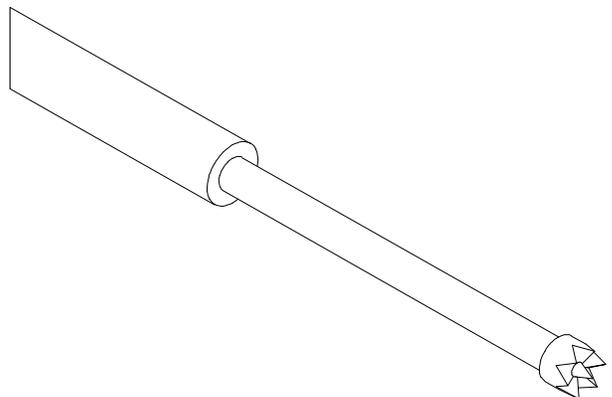


### **TULIP PROBE**

Used to test long leads, terminals and wire wrap posts.

Best for 100 mils or wider spaced leads or pads (tip diameter = 55 mils).

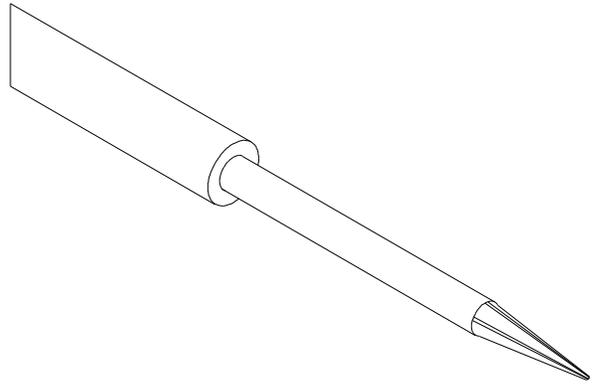
IDI part number ICTL100-VLT-5.7-G-S  
(or SR25Y-6.3D)  
(Huntron P/N 07-2113)



## **SINGLE NEEDLE FLUX PENETRATING PROBE**

Used for penetrating flux and conformal coated boards.

QA Technology part number: S100-SN-10-GS  
(Huntron P/N 07-2136)



## **5-7 SPECIFICATIONS FOR THE PROBE RECEPTACLE**

The general specifications for the probe receptacle, which is press fitted into the Prober probe holder, are as follows:

The IDI part number of this receptacle is R-25-SC or RX-100-SC (Huntron P/N 07-2109).

Receptacle Size:	25
Connection Style:	SC - solder cup
Material:	Nickel/silver, gold plated
Total Length:	1.165 inch (29.59mm)
Overall Outside Diameter:	0.066 inch (1.68mm) outside
Use Spring Probes Size:	0.054 inch (1.37mm)

## **5-8 MANUFACTURERS OF CONTACT SPRING PROBES**

Interconnect Devices, Inc. (IDI)  
5101 Richland Avenue  
Kansas City, Kansas 66106  
Phone: (913) 342-5544 FAX: (913) 342-7043

QA Technology Company, Inc  
110 Towle Farm Road,  
Hampton, NH 03842, U.S.A  
Tel: (603) 926-1193 - Fax: (603) 926-8701

\*Probe manufacturer part numbers are subject to change. To order from Huntron, please use the Huntron part number.

## 5-9 (OPTIONAL) USING THE BURN-IN/OFFSET BOARD TO CHECK FOR PROPER HARDWARE FUNCTIONS. (For use with Protrack model 20 only)

This optional board (p/n 06-3078 not shipped with the Access Prober) can be used for checking the operation of your Prober.

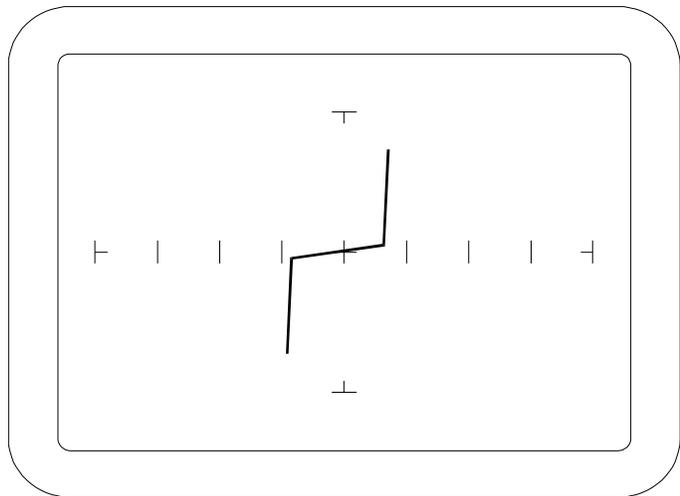
### Run the Camera Offset routine on this board.

Set up all the 50 mils spaced components (U1 to U8) on the Burn-in/offset board. Connect the Common terminal to the node marked “Common” on this board.

Each alternate pin (1,3,5 etc.) is connected to the Cathode of Diode D1. The Anode of D1 is then connected to Common. Pins (2,4,6, etc. are all connected to the Anode of Diode D2. The Cathode of D2 is connected to Common. This simple circuit enables us to find the following failure modes:

If the Prober misses the IC pins, an OPEN Signature will be displayed.

If the Prober Shorts two adjacent pins, a signature of a typical “chair” pattern will be displayed as shown here.



The Prober should complete at least 10 passes on all the pins of the 50 mils spaced components.

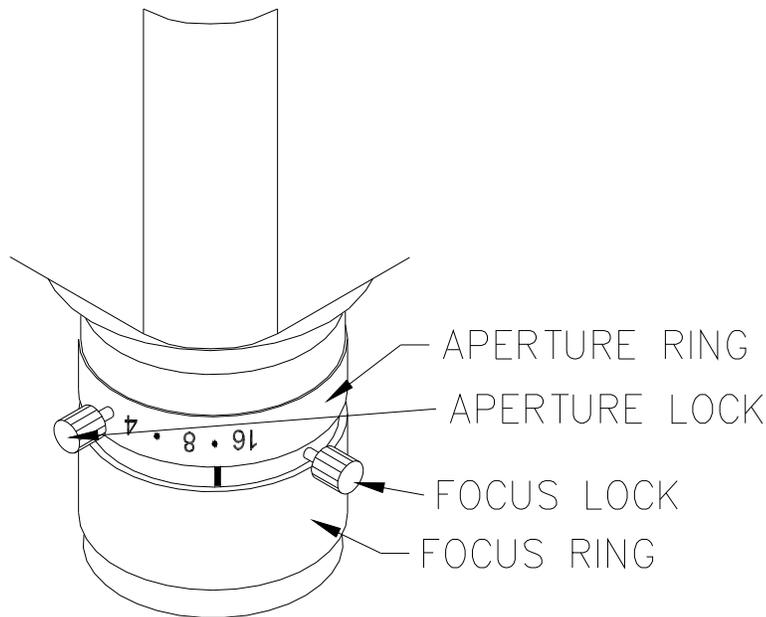
If the Prober consistently misses all pins by approximately the same distance, then your Camera offset may not be correctly setup.

If the same pins fail consistently, you may have to check if the original pins were setup correctly.

If the Prober misses pins randomly and is unable to make at least 10 passes, then call Huntron Technical Support for more troubleshooting tips.

## 5-10 Focus and aperture adjustments

The camera lens on the color camera has a separate focus and aperture adjustment ring. These adjustment rings can be locked via a locking screw. The aperture setting is factory set and will be in the locked position. The setting is shown below. If the camera image appears dark even with maximum light intensity, it may be necessary to adjust the aperture. By using a larger aperture, more light will enter the lens but the depth of field will be smaller. Components at various heights will appear unfocused. The best setting is to have the smallest aperture (F16) and some external, bright, evenly distributed light. A small florescent lamp would be sufficient as an additional external light source.



***Note: Changing the Focus or Aperture may cause the distance from the center of the probe to the center of the camera to change. Always perform a Camera Offset after making Focus or Aperture adjustments.***

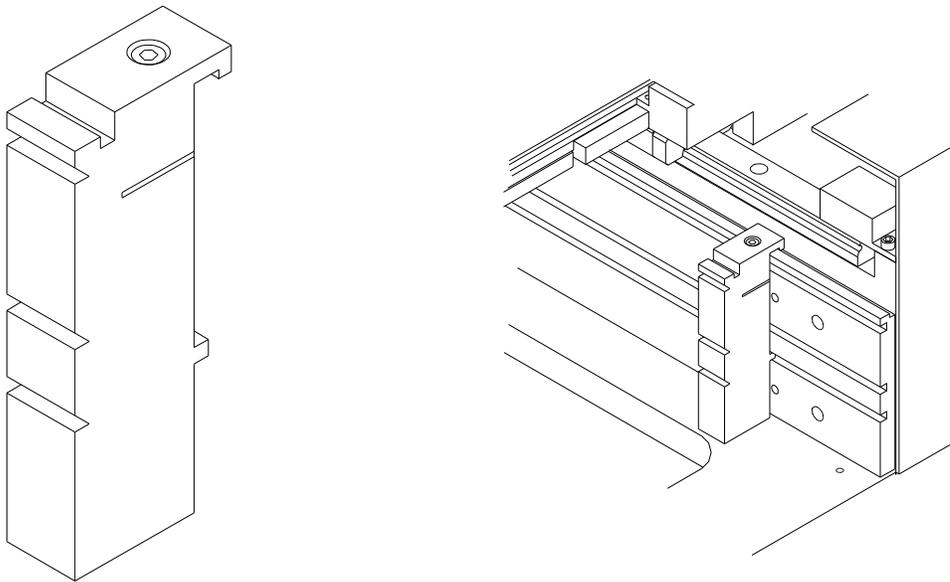
# SECTION 6

## HUNTRON ACCESS PROBER TEST BOARD SUPPORT ACCESSORIES

### PROBER TEST BOARD SUPPORT ACCESSORIES

This section describes the test board support accessories for use with a Huntron Access Prober. These accessories are used in various combinations to hold different types of boards in the Prober. The description of each accessory includes an illustration and some examples of typical uses. Huntron part numbers are shown at the end of this section.

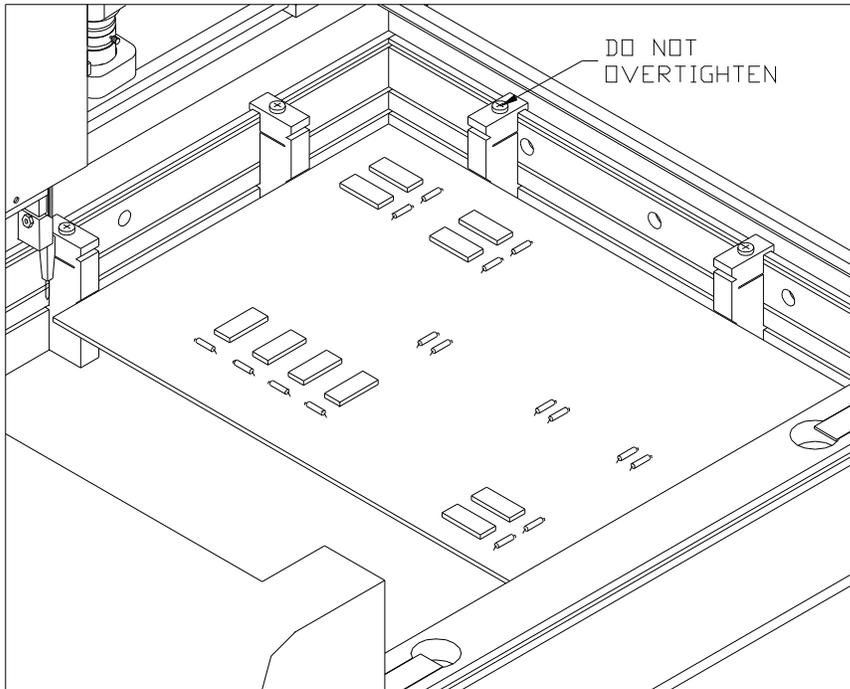
#### 6-1 BOARD SPACER



**Board Spacer p/n 98-0111**

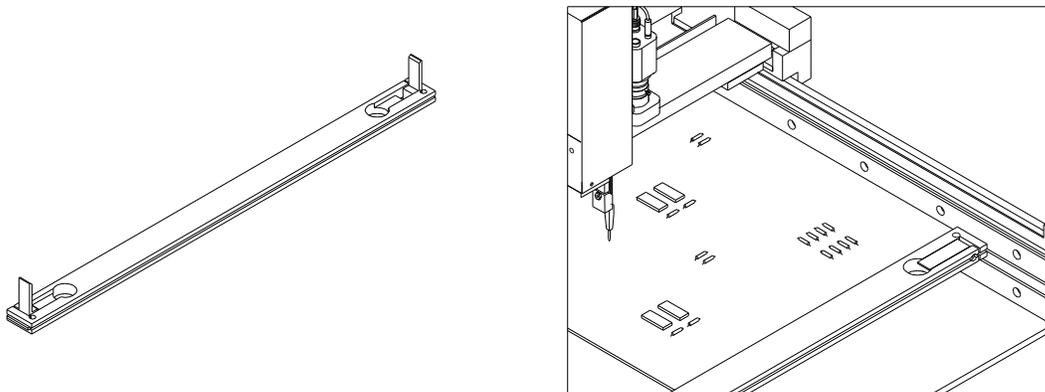
Board Spacers move the test board away from the slotted walls. The Prober can only probe components that are approximately 0.6" (15mm) away from the slotted walls of the Prober.

Board Spacers snap onto and slide along the slotted walls. They allow the probing of components on the edge of boards and the supporting of boards with protruding components. (4 board spacers are included in the Prober package)



## 6-2 CROSSBAR

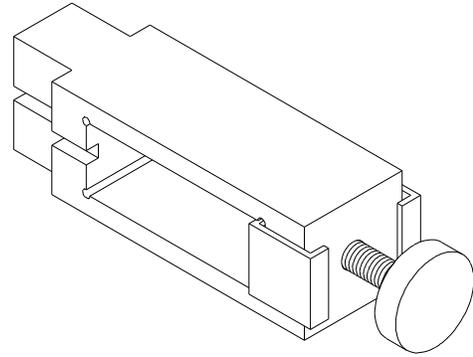
The Crossbar is normally used to hold the front side of the test board.  
 (1 Crossbar is included in the Prober package)



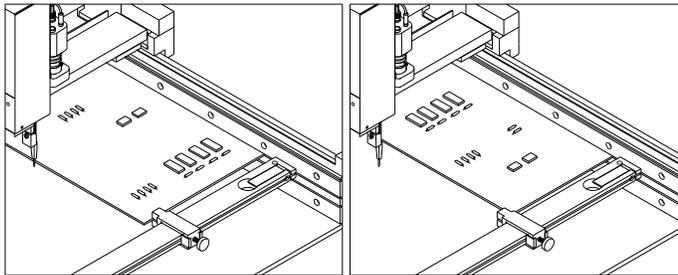
**Cross Bar w/locks p/n 98-0393**

## 6-3 SLIDE BAR

The Slide Bar mounted on a Crossbar holds the left front corner of the Printed Circuit Assembly. The front of a Slide Bar on a Crossbar can hold the test board away from the Crossbar to allow components on the front edge of the board to be reached by the probe tip. Use a Slide Bar and a Slide Bar Extension mounted on a Crossbar to hold the unsupported side of the test board. (1 Slide Bar is included in the Prober package)

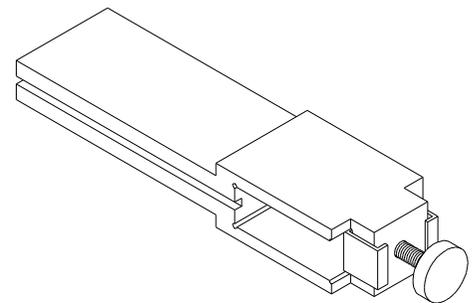


**Slide Bar P/N 98-0109**



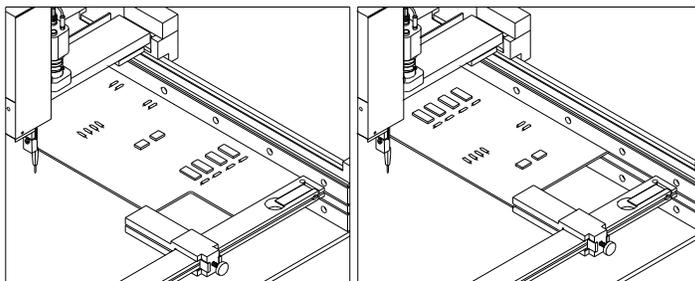
## 6-4 Slide Bar Extension

The Slide Bar Extension mounted on a Crossbar can hold the unsupported side of the test board. The Slide Bar Extension can also be configured with a Slide Bar for additional support of the side of the test board. (1 Slide Bar Extension is included in the Prober package)



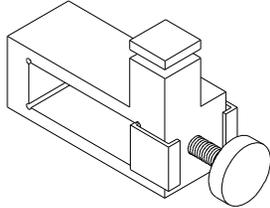
**Slide Bar Extension**

**P/N 98-0132**

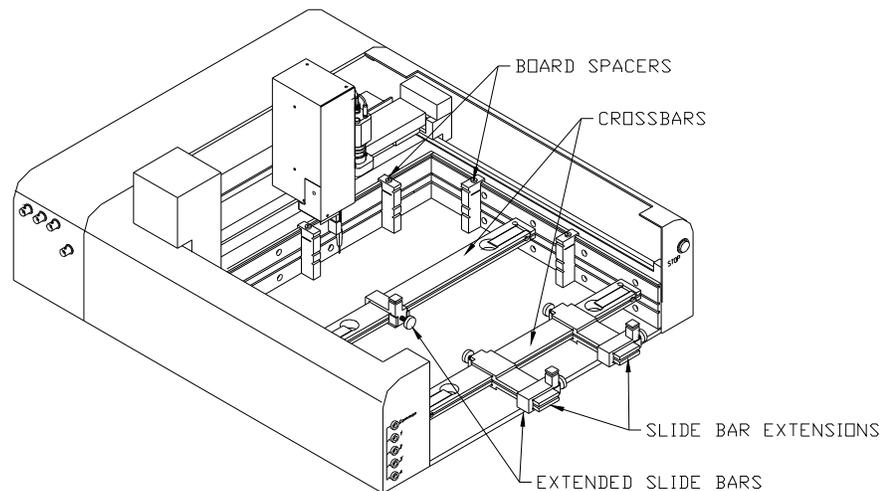


## 6-5 EXTENDED SLIDE BAR

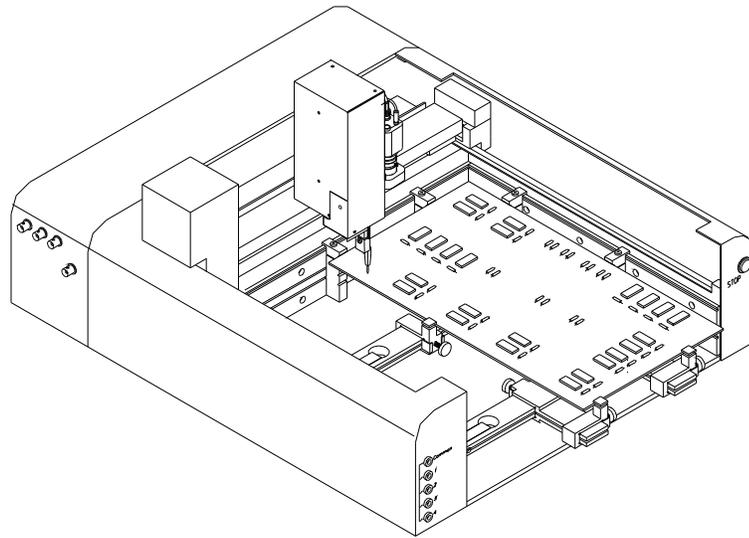
A Crossbar in the middle slot underneath the test board with an Extended Slide Bar can give support to the unsupported side of the test board. Also, a Crossbar in the middle slot is the main support for holding test boards in the top slot that protrude from the front of the Prober. In this case, use the Crossbar with two Slide Bar Extensions and two Extended Slide Bars. (1 Extended Slide Bar is included in the Prober package)



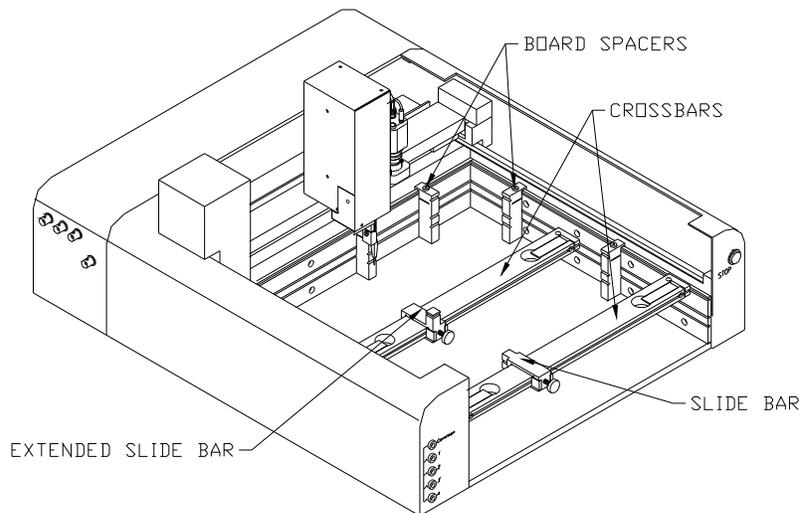
### Extended Slide Bar p/n 98-0133



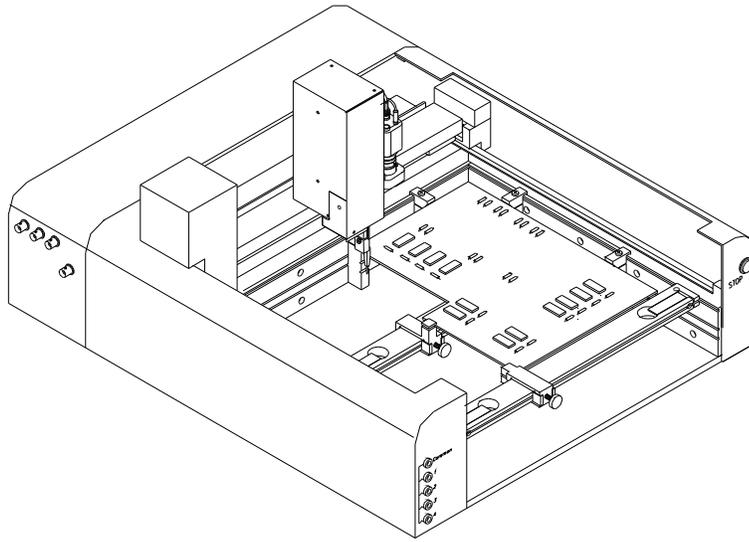
This figure shows how to mount a board that is larger than the normal clamping area. By using Slide Bar Extensions and Extended Slide Bars, the effective clamping area increases. While the clamping area will be increased, the probing area will not change. The additional Crossbar and Extended Slide Bar holds the middle of the unsupported edge of the board and prevent the board from flexing while being probed.



When using Extended Slide Bars, the board must be mounted in the top slot of the Prober. The Crossbars (which hold the Slide Bar Extensions and Extended Slide Bars) are then mounted in the middle slot.



This figure shows how to mount either an irregularly shaped board or a long and narrow board. The additional Crossbar and Extended Slide Bar hold the middle of the unsupported edge of the board and prevent the board from flexing while being probed. The Board Spacers allow the Prober to probe components that are mounted within 0.6" (15mm) of the slotted wall edge of the board.



When using the Extended Slide Bar, the board must be mounted in the top slot of the Prober. The additional Crossbar (which holds the Extended Slide Bar) is then mounted in the middle slot.

## 6-6 AUXILIARY PROBE ACCESSORY KIT

### How to use the Auxiliary Probe Accessory kit for connecting an oscilloscope to a Huntron Access Prober.

#### Introduction

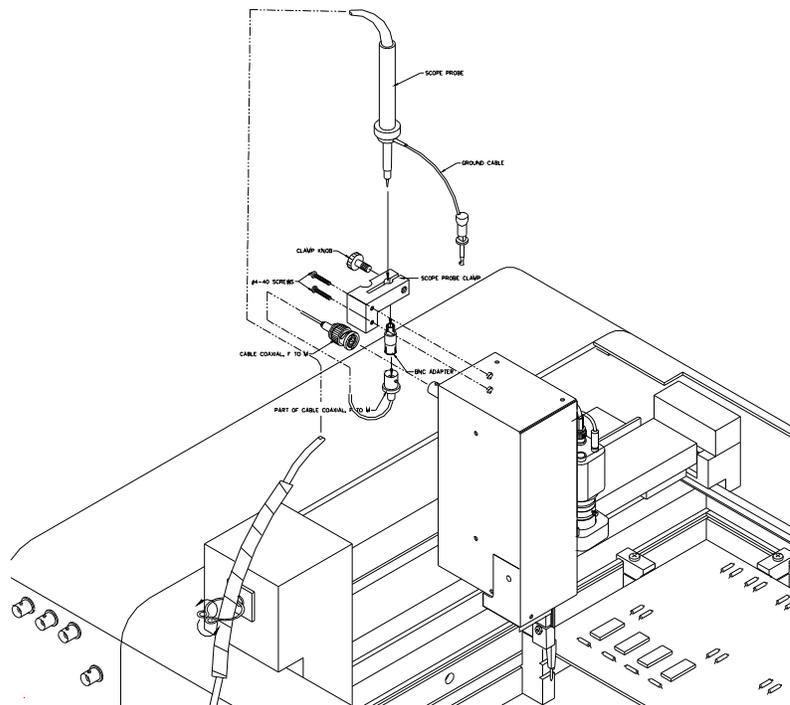
A Huntron Access Prober has a spring loaded test probe attached to the Z axis. This probe is directly connected to a flexible coaxial cable which is terminated with a BNC connector at the Prober back panel. An oscilloscope can be directly connected to the BNC connector allowing test signals to be displayed on the oscilloscope CRT. However, due to the length of the coaxial cable and the high cable capacitance, high frequency measurements (greater than 10 Mhz) may not be possible in this configuration. For typical signal analysis using a 100 MHz oscilloscope, it will be necessary to use a 10X oscilloscope probe.

This accessory kit allows the connection of an oscilloscope probe to the spring loaded test probe on the Huntron Prober. The long coaxial cable in the Prober is essentially replaced with your oscilloscope probe cable and a much shorter coaxial cable.

**The Auxiliary Probe Accessory P/N 98-0266 kit consists of the following parts:**

Description	Huntron P/N
1 Auxiliary Probe Holder	01-1239
1 Coaxial Cable Assembly, F/M	06-4147
1 BNC Adapter	07-1338
2 Screws, 4-40 x 1/2" Philips PH w/washer	07-3085
2 Cable Ties, black, 4"	07-3094
1 Thumb Screw Knob	07-3108
1 Spiral Wrap, 1/2" OD	07-3153
1 Cable Clamp, 1"	07-3207
1 Auxiliary Probe Instruction Sheet	21-2117

The Auxiliary Probe Holder is used for attaching your oscilloscope probe to the Prober Z axis. The BNC Adapter plugs into the oscilloscope probe tip. A short coaxial cable is used to connect the BNC Adapter to the Prober's spring loaded probe.

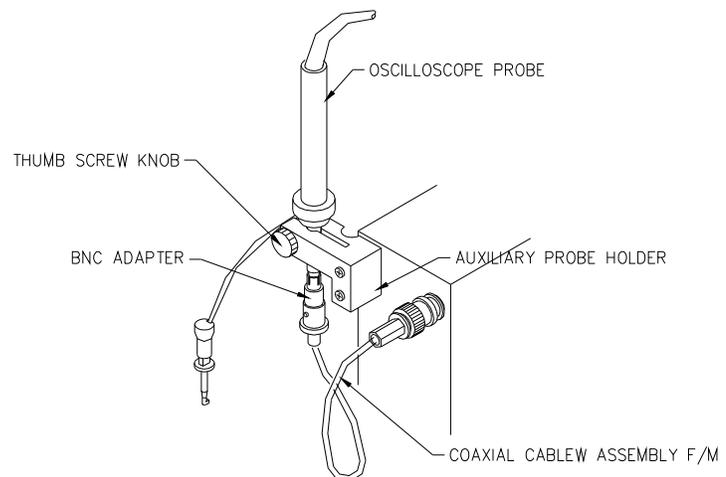


**Figure 1. Installation of the Auxiliary Probe Kit**

## **Installation of the Auxiliary Probe kit. (Refer to Figure 1)**

1. Install the Auxiliary Probe Holder using the 2 supplied screws.
2. Insert your oscilloscope probe (not supplied with this kit) into the clamp hole of the Auxiliary Probe Holder and tighten the Thumb Screw Knob. The oscilloscope probe should now be firmly attached to the Prober Z axis.
3. Plug the supplied BNC Adapter into the tip of the oscilloscope probe.
4. Now plug the female end of the supplied Coaxial Cable Assembly into the other end of the BNC Adapter.
5. Disconnect the BNC connector on the right side of the Z axis cover. This cable will not be used for this application. Use a cable tie and attach the unused cable to a convenient place.
6. Connect the other end of the Coaxial Cable Assembly to the BNC connector on the right side of the Z Axis Cover.
7. Attach the Spiral Wrap to the oscilloscope cable by twisting it so that it wraps around the cable as shown.
8. Install the adhesive backed cable clamp on the left side of the X-Motor Cover as shown. Attach the spiral wrapped oscilloscope cable to the clamp and twist the clamp teeth as shown.
9. Connect the BNC end of the oscilloscope cable to the oscilloscope.
10. Use the ground lead supplied with the oscilloscope to connect to the Ground or reference point of the printed circuit assembly.

You are now ready to use the system.



**Rear view of assembled components**

**Please use these Huntron part numbers for ordering additional accessories.**

	Huntron Access
Board Spacer	98-0111
Cross Bar w/Locks	98-0393
Slide Bar	98-0109
Slide Bar Extension	98-0132
Extended Slide Bar	98-0133
Auxiliary Probe Accessory Kit	98-0266

# SECTION 7

## APPLICATION NOTES

### 7-1 HOW TO USE THE FRONT PANEL COMMONS

The Huntron Access Prober front panel commons are marked Common, COM1, COM2, COM3 and COM4. These common terminals are used for applications requiring more than one Common connection to the printed circuit assembly. For example, you may want to setup a board so that some components are tested with respect to the Ground terminal and others with respect to Vcc or any other power supply rail. Even though no power source is applied to the printed circuit assembly, signatures may appear significantly different with respect to different Common references.

The main common terminal Common on the Huntron Access Huntron Access Prober front panel is directly connected to the common BNC jack on the Huntron Access Prober side or back panel.

**NOTE:** Even though 4 Commons are available for physical connection to the printed circuit assembly, only a combination of any 2 of those 4 Commons will get shorted to the main Common terminal. For example, connecting all the Commons to the board can allow the following test conditions:

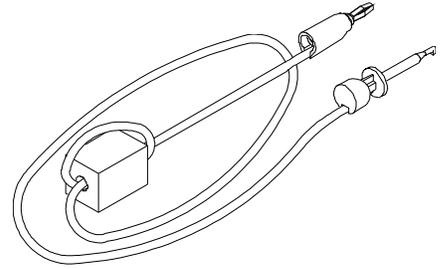
For example, component U1 can be tested relative to COM1 or COM2 or COM3 or COM4. You will have to set up 4 components, each with a different Common if you want to test it relative to all the above Commons.

Component U1 can be tested relative to COM1 and COM2. This will short COM1 and COM2 to the Common terminal. Any combination of **two** Commons can be set up in this way. This feature is useful when you want to short out the power supply rails to the Common circuit.

Component U1 could have been tested relative to COM1, and U2 relative to COM3 and COM4, and U3 relative to COM1 and COM2 etc. In each case, only two Commons are allowed to be shorted to the Common terminal.

## 7-2 USING THE COMMON CLIP CABLE WITH THE FERRITE NOISE SUPPRESSER

One of the Common cables supplied has a Ferrite suppresser looped around one end of the cable. Use this Common cable if you are testing at low voltages (below 3V). Low voltage testing is sensitive to external noise being coupled into the test system. This high frequency noise can be attenuated by using the ferrite coupled Common cable.



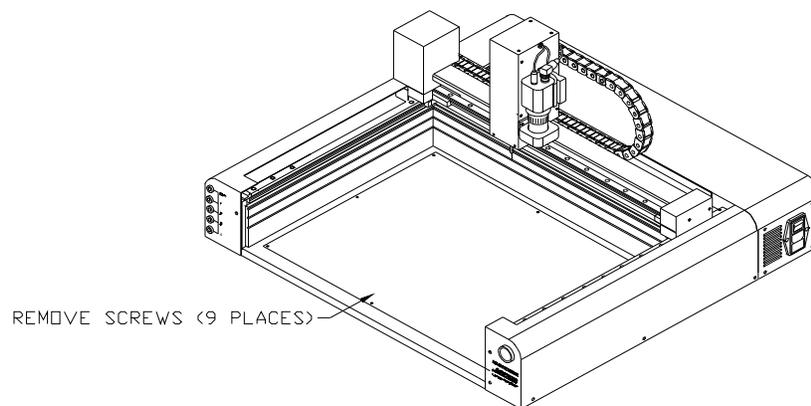
## 7-3 PROBING BOARDS WITH COMPONENTS THAT ARE MORE THAN 3 INCHES HIGH

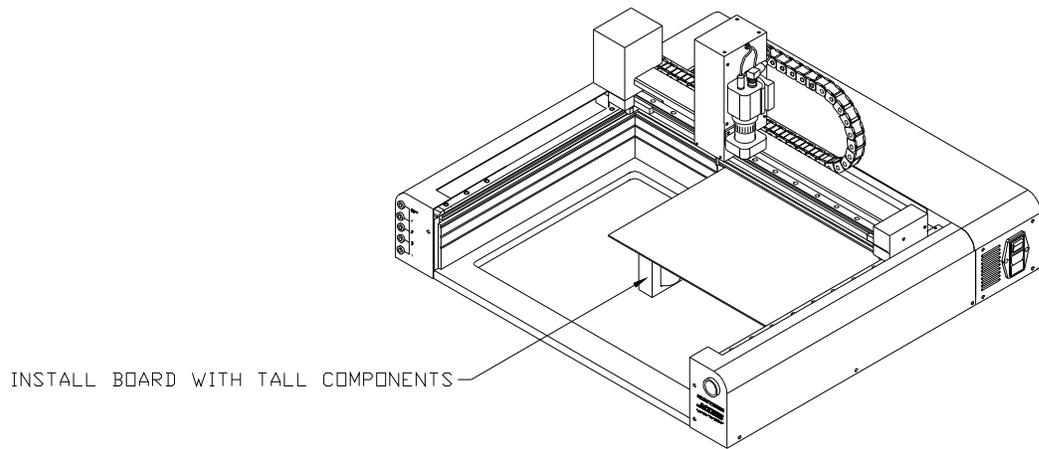
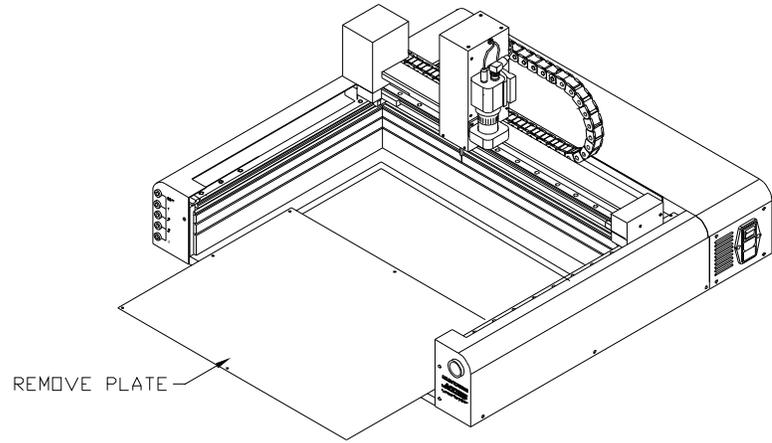
Some boards have components like capacitors, heat sinks, and transformers that are more than 3 inches high. Probing the component side of these boards is difficult due to the limited Z axis up/down travel. These boards have to be probed on the solder side. However, the component may be in the way when you try to clamp the board into the slot.

The Huntron Access Prober has an additional cutout in the base plate. This allows for additional clearance for the large components.

Remove the base cover as shown below. Mount your board so that the large components are now positioned inside the cutout.

Sometimes, the Common or Reference connections to the board-under test is difficult. The additional clearance may also make it easier to access the Common connections.





End of document.