Pointmaker® by Boeckeler®

Pointmaker® CS-64D

Chroma System
with Broadcast Video Marker

Setup Manual

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With Broadcast Video Marker

Setup Manual

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Introduction

Introduction

The Pointmaker® CS-64D Chroma System with Broadcast Video Marker (patent pending), with touch-sensitive Chroma-board®, is designed especially for broadcast and distance learning chroma-key users. The main components of the system are:

- Pointmaker® PVI™- 64 Professional Broadcast Video Marker
- Pointmaker CH-30 Touch-sensitive Chroma-board (4' x 5') (also called "Chroma-board")
- Pointmaker DT-30 Digitizing Tablet
- Remote-clear Foot Switch
- Line Driver Hardware and Cabling and Connectors

This technology allows television talent or distance learning instructors to draw directly on chroma-keyed background images.

Features

Users can increase viewer attention by directing it to details on sports, weather, traffic, news, and other video images.

The Pointmaker CS-64D Chroma System with Broadcast Video Marker as used by Paul Huttner, Chief Meteorologist for KGUN-9 TV in Tucson, AZ

Marking Tools

- 3 line thicknesses (with or without a drop shadow or outline)
- 7 colors *(with up to 3 colors displayed on screen at any one time)*
- Erase markings *(at the click of a foot pedal)*

Use the Chroma-board to mark on images, and the digitizing tablet to set preferences, or as a second marking device.

Video Options

- Program Out
- Key Out (*TTL or composite)*
- Preview and Program Choice *(to display markings on preview monitor only, or on both preview and program monitors)*
- Timing Adjustments *(to counteract video delays - in coarse (line) or fine (pixel) adjustments)*
- Playback *(redraw overlay markings one at a time, or all at once)*
- Adjustable Playback Speed *(to redraw markings slower or faster)*
- Remote Clear Option *(can free talent from having to clear markings)*

When powered down, the Pointmaker passes the video through without the markings.

What this Manual Covers

This manual focuses on specific requirements for CS-64D Chroma System broadcast use. It includes installation, calibration, and routine alignments between camera and talent.

> ***Achieving Successful Installation and Use***
>
> *This system will only satisfy your audience if the drawing actions of the talent are coordinated with the Pointmaker markings. This manual shows you how to accomplish it, so please read all instructions before implementing any step.*

There are four sections and an appendix:

Section One, Components & Suggested Locations: describes options for integrating the CS-64D into your broadcast system.

Section Two, Pre-Installation Equipment Test: covers the testing of the major components before you install them. It familiarizes you with some basic operations of the CS-64D system and verifies the proper functioning of the equipment before it is integrated. This can greatly simplify the troubleshooting of any problems that may arise.

Section Three, Installation Process: explains in detail how to successfully integrate the CS-64D system into your broadcast studio. Section 2 should be completed before proceeding with this section.

Section Four, Alignment and Customization Procedures: discusses how to ensure that the drawing motions of your talent are synchronized with the Pointmaker markings.

Appendix, 3-Step Camera Alignment for Each Use: contains three steps for quickly aligning the camera each time the CS-64D system is set up for use.

The **PVI-64 User's Manual** covers detailed instructions on how to use the video marker for drawing, pointing, and making menu selections. It is a companion manual to this one. Both manuals are needed for a complete understanding of how to operate the system.

Section One:
Components & Suggested Locations

Components & Suggested Locations

Following are the four main components of the CS-64D system and suggestions for their locations within a studio environment. A typical equipment plan is shown in the diagram on the next page.

PVI-64 Base Unit

There are many possible locations for the PVI-64 base unit, usually dependent on how it is to be integrated into your system. Here are three likely configurations:

MOST COMMON

PVI-64 Combines Background Video with Annotation on Program Out: The background video (the image you want to draw on) is looped through the PVI-64 for annotation. Then, the combined signal (background and annotation) is output through the Pointmaker Program Out connector and combined with a foreground layer (usually a camera shot of talent) using a downstream keyer.

Location/Timing: The PVI-64 may be located next to the background video source that is to be annotated (like a weather computer). Since timing can be adjusted on the weather computer, it's possible to compensate for delays without a frame synchronizer.

MOST FLEXIBLE

PVI-64 is Router Input and Output: With the PVI-64 connected as both a router destination and source, any video can be looped through the PVI-64 for annotation.

Location/Timing: The equipment or rack room may be ideal for this installation. A frame synchronizer will generally be used to compensate for delays.

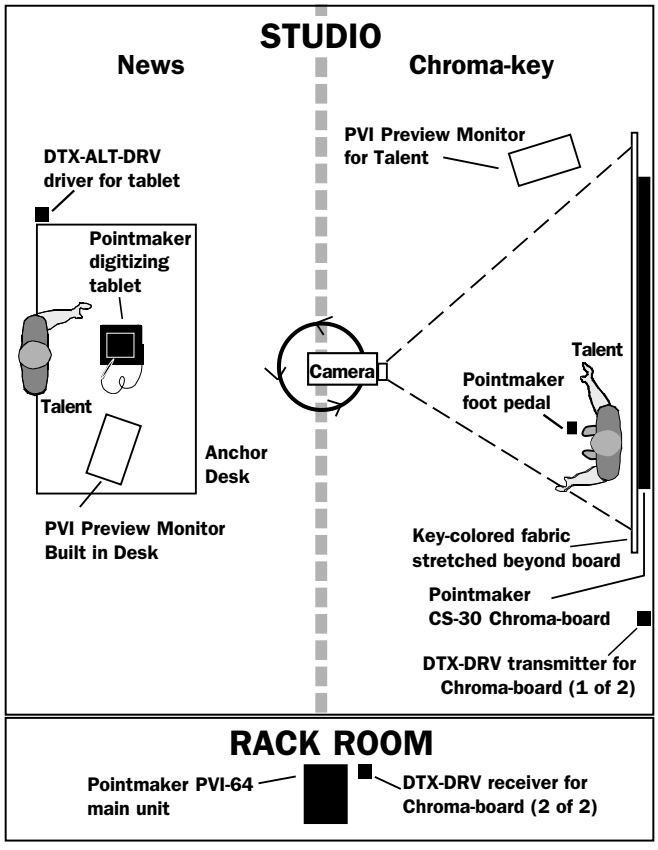
PURIST

PVI-64 Used Only for Key Out Signal:

The Pointmaker PVI-64 provides a key out of the annotation which can be layered between the background layer (the image you want to draw on) and the foreground layer (usually a camera shot of the talent).

Location/Timing: The PVI-64 may be located almost anywhere. The equipment or rack room is the recommended location, unless there is some overriding consideration. The background video is used by the Pointmaker only for the preview monitor and it passes the key out downstream. The key signal timing can be advanced or delayed within the Pointmaker. This configuration requires a keyer with two key inputs to be installed downstream from the Pointmaker.

Typical Equipment Plan View. Pointmaker CS-64D components are filled with black.



CH-30 Chroma-board

There are several considerations to make when positioning the Chroma-board.

1. **Height and Location of Talent:** When mounting the board, take the height and location of the talent into consideration. The talent should be able to reach all areas of the Chroma-board without bending down or standing on tiptoes. If you have more than one talent who will be using the Chroma-board, set the height of the board for the tallest person and use platforms to raise the shorter persons to the correct height.

2. **Draping:** We recommend covering the board with a piece of green or blue chroma-colored cloth that matches the user's key requirement.

   It is also recommended that the fabric be cut larger than the board, and that it extend far enough beyond the board on all sides so that none of the seams show on camera. It should also be stretched tight and smooth so no ripples will appear when the talent is drawing on it.

Chroma-key colored fabric draped over CH-30 Chroma-board

3. **Mounting:** Because the CH-30 is bound with a strong aluminum frame, we recommend that it be mounted on a sturdy wall. To assist with construction or mounting, specifications of the board are:

   Exterior Dimensions: 5 feet wide x 4 feet high, and approx. 1 inch in depth.

   Weight: Approx. 55 pounds; 130 pounds crated (shipped)

Surface:	The flexible front surface of the board is touch-sensitive and uses absolute positioning technology, similar to the absolute positioning used in digitizing tablets.

4. **Cable and Drivers:** In most cases, because the CH-30 will be some distance from the PVI-64 base unit, the included line driver hardware and cabling may be needed to extend the standard cables.

5. **Marking:** It is often helpful to mark the corners of the drawing area on the fabric with clear tape or tape the same color as the chroma-colored cloth.

DT-30 Digitizing Tablet

For a large percentage of the installations, the distance between the DT-30 Digitizing Tablet and the PVI-64 base unit is significant. In those cases, line driver hardware and extension cables may be necessary. Some of the most common locations where the tablet may be placed are:

- Sports desk
- News desk
- Weather desk (or Storm Center)

Remote-clear Foot Switch

The foot switch is standard with a CS-64D system. It allows the talent to clear Pointmaker markings without distracting the audience. A common location for it to be placed is on the floor in front of the CH-30 Chroma-board, positioned so that the talent can easily reach the switch while the presentation is being given.

Section Two:
Pre-Installation Equipment Test

Pre-Installation Equipment Test

Save yourself troubleshooting time by testing the major components of the CS-64D system before it is installed permanently in the studio. This procedure will familiarize you with its configuration and helps to ensure successful operation of the system once it is in place. Line drivers are not used in this test.

I. Inventory the Equipment

To make it easier to identify components and connect them properly, this manual often uses pictures with letters or numbers to label the items being referred to. First, make sure you have all the components needed for this test by referring to the list and picture below:

A - PVI-64 Pointmaker video marker

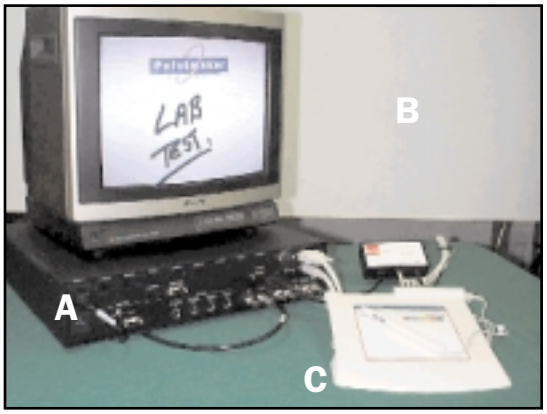
B - CH-30 Chroma-board

C - DT-30 Digitizing Tablet

- Foot Pedal Switch (not shown)

Also needed but not supplied:

- Source video signal
- Video monitor



Testing Setup

II. Connect the Chroma-board Adapters

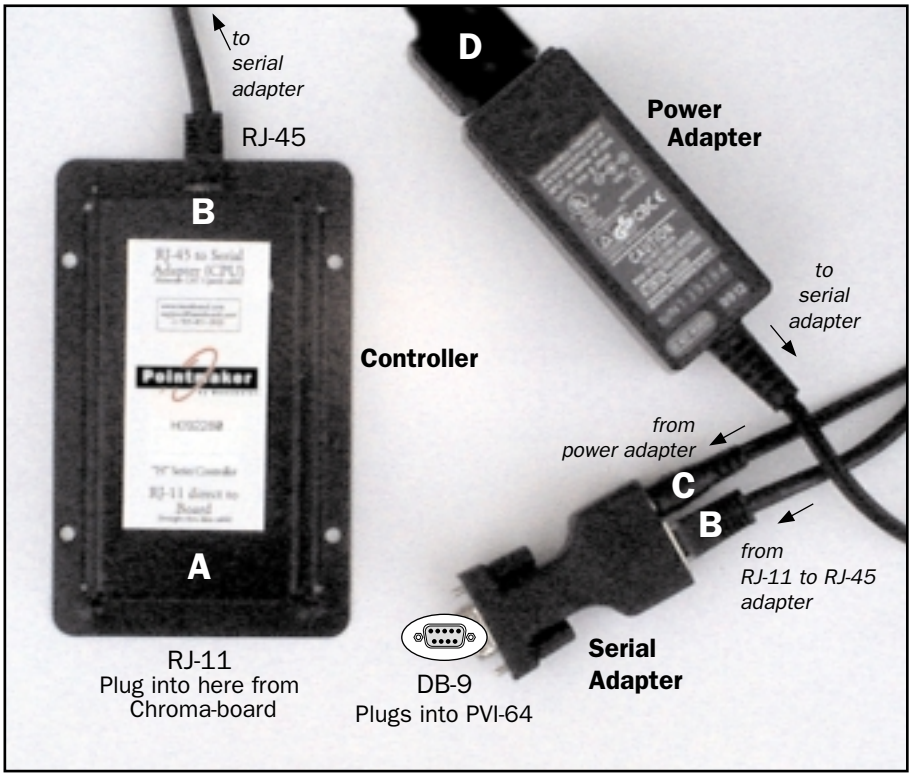
The items used in the following steps are labeled on the picture below:

A. Connect the RJ-11 ("phone-like" clip) connector, coming from the Chroma-board, into the bottom receptacle of the metal Chroma-board Controller (which may be attached to the back of the Chroma-board).

B. Connect one end of the RJ-45 (larger "phone-like" clip with 8 pins) cable into the opposite end of the metal Chroma-board Controller, and the other end of the cable into the serial adapter.

C. Plug the small cable coming from the power adapter into the serial adapter.

D. Wait to connect the power adapter to a power source using the AC power cable.



Chroma-board Adapters

III. Connect Components to the PVI-64

Important:

Power off the PVI-64 before connecting to or disconnecting from its COMM ports. Failure to do so could damage the unit.

Some items used in the following steps are labeled on the picture below:

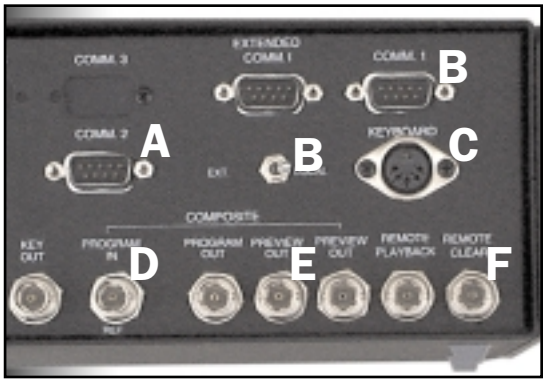
A. Connect the Chroma-board serial adapter (DB-9) to the COMM 2 port.

B. Connect the digitizing tablet serial connector (DB-9) to the COMM 1 port. The switch (below & left) should be set to LOCAL. Make sure the pen is plugged into the tablet.

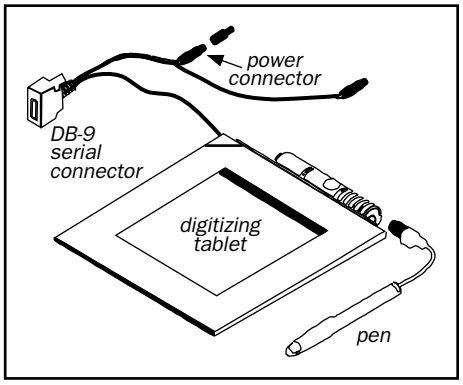
C. Plug the digitizing tablet power connector into the KEYBOARD port.

D. Connect the source video to the PROGRAM IN port (BNC).

E. Connect the monitor to the PREVIEW OUT port (BNC) and power it on. (From this point referred to as *PVI preview monitor*.)



Close-up of PVI-64 ports



Digitizing Tablet

F. Connect the foot switch to the REMOTE CLEAR port (BNC).

G. Plug in the PVI-64 using the AC power cable (not pictured).

Foot Switch

IV. Power On and Configure

A. Connect the Chroma-board power adapter to a power source and power on the PVI preview monitor and the PVI-64.

On the PVI preview monitor, a copyright message will appear, followed by the source video with a moveable pointer.

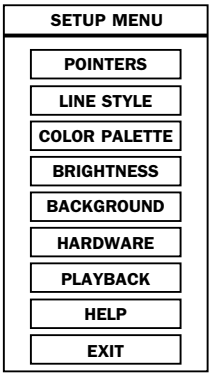
If the pointer does not appear, click the pen once on the digitizing tablet where the template reads "Pointer On/Off" to activate the pointer.

If nothing is displayed on the PVI preview monitor, review the previous connection instructions, making sure the connections are correct and the EXT./LOCAL switch is in the proper position.

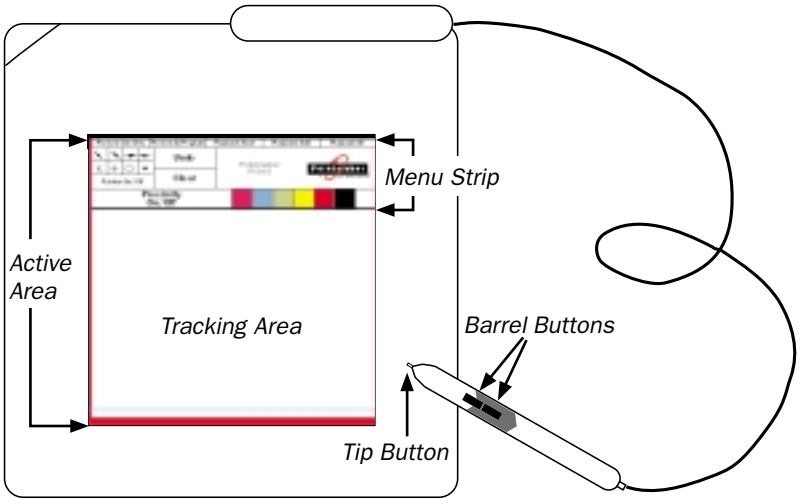
If you have tried all of these troubleshooting steps without success, contact your Pointmaker dealer for technical support.

B. Enter the Pointmaker Setup Menu.

Using the digitizing tablet and pen, first press and hold either of the barrel buttons on the side of the pen, then press the tip button against the surface of the tablet anywhere outside of the tracking area. The buttons should be pressed simultaneously for about 5 seconds. The Setup Menu will appear on the PVI preview monitor.



C. Set the COMM 2 port for use with the Chroma-board.



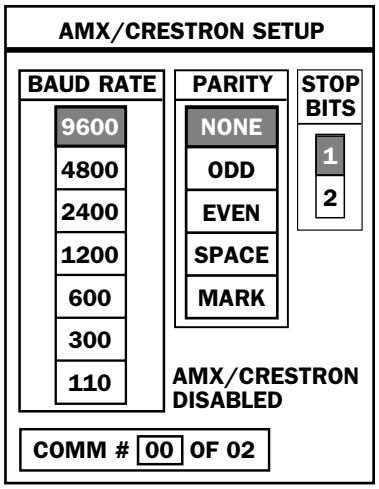
DT-30 Digitizing Tablet and Pen

1) In the Setup Menu, select HARDWARE by moving the pen over it until it highlights. Then, push the pen tip on it (you may hear a click) until it activates your selection. A Hardware sub-menu will appear.

2) In the Hardware sub-menu, click on SERIAL PORTS. A Serial Ports sub-menu will appear.

3) In the Serial Ports sub-menu, click on AMX/CRESTRON. The AMX/CRESTRON Setup window will appear.

4) At the bottom of the AMX/CRESTRON Setup window, you will likely see a factory setting of COMM 00 of 02, which is needed for the system to recognize the Chroma-board. If not, change the setting to COMM 00 of 02 by positioning the cursor over the COMM



number (surrounded by a box) and clicking the pen tip button until the number changes to 00.

5) Click on EXIT at the bottom of the Setup Menu.

You should now be able to draw using either the Chroma-board or the digitizing tablet.

V. Drawing Test

A small amount of familiarization with the drawing controls will be helpful later when the manual covers the alignment of the Chroma-board markings with the camera view.

The Chroma-board is used by the talent to generate simple line drawings and the foot switch is used to clear them. The digitizing tablet controls many other functions, such as pointing with a variety of moveable pointers, erasing one pointer or drawing at a time (UNDO), changing the marker color, and for activating the Setup Menu and its features (line thickness and line shadows, playback of drawings at a predetermined speed, brightness of markings, etc.). All functions are described more completely in the Pointmaker PVI-64 User's Manual. This section gives you enough information to continue the setup of the system.

To Draw: Press a finger firmly on the touch-sensitive surface and draw. The contact with the surface of the Chroma-board (even through the key-colored cover) generates a signal that creates a drawing.

To Clear Drawings: Depress and release the Remote Clear foot switch.

To Change Line Thickness, Color, etc.: Use the digitizing tablet to access these selections through the Setup Menu.

Once you are satisfied that the system is working properly, it is ready to be installed. The rest of this manual covers steps involved in the final installation and preparation of the system for use in the broadcast environment.

Section Three:
Installation Process

Installation Process

Pre-Installation Cable Length Considerations

Before proceeding with the permanent installation, you may need to consider:

1) the distances of each component from the PVI-64, and

2) what cables, connectors and line drivers may be necessary to maintain signal quality.

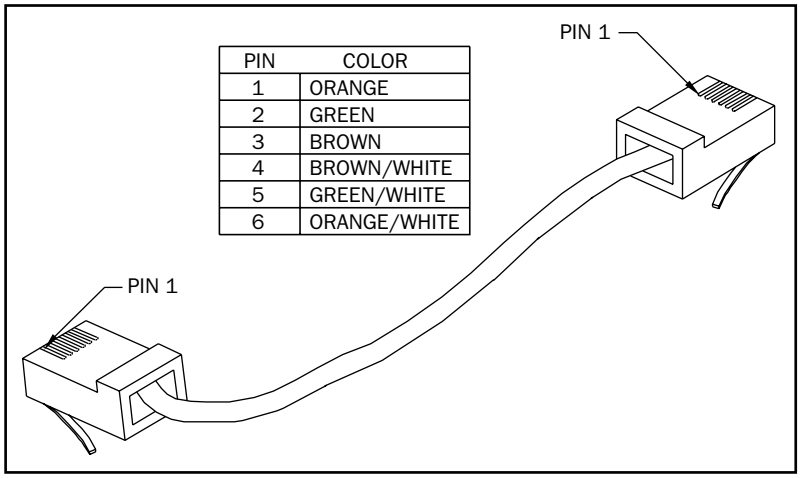
For many installations, the Chroma-board and digitizing tablet are installed at distances greater than 50 feet from the PVI-64. Once the distance approaches this 50 foot approximation, it is frequently necessary to use line drivers and extension cables to maintain the signal quality. Nevertheless, the distances at which the signal begins to degrade will vary based upon environmental factors, so it is necessary to test any configuration to determine whether the line drivers are needed.

Since this manual covers the **most common** type of installation, the following instructions describe cable configurations using the line drivers. If the cable lengths in your installation are below 50 feet, the drivers may not be necessary. In that case, contact Boeckeler Instruments at 520-745-0001 for guidance. Most installations are in the 75-125 foot range.

For those installations which need a signal boost, the cable, connectors and line drivers are included in the CS-64D package. You will only need to determine the cable lengths you require and attach the appropriate connectors. The wiring diagrams for each "straight-through" extension cable are included in the instructions that follow:

Chroma-board Extension Cable

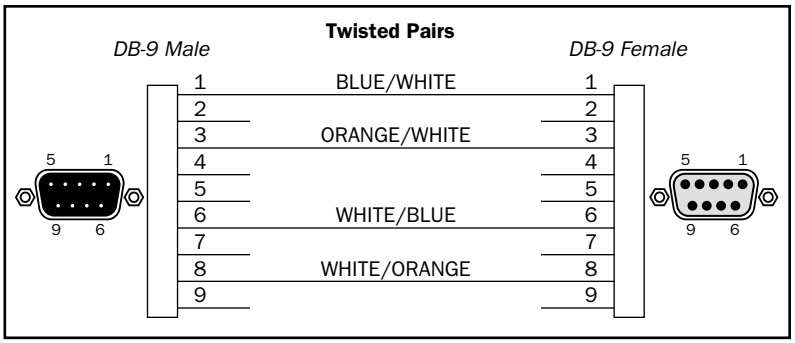
The Chroma-board extension cable *(RJ-11 straight-through)* is to be constructed from a length of the supplied CAT 3 UTP (universal twisted pair) cable, with a male RJ-11 connector attached at each end. This cable will be used with the DTX-DRV Microdrivers, which can maintain the signal up to approximately 450 feet. Because many troubleshooting calls are traced to faulty wiring of the extension cable, a two foot, factory-tested version of this cable is included for comparison testing.



Wiring Diagram for Chroma-board Extension Cable (RJ-11 straight-through)

Digitizing Tablet Extension Cable

The digitizing tablet extension cable *(DB-9 straight-through)* is to be constructed from a length of the supplied CAT 3 UTP (universal twisted pair) cable, with a male DB-9 connector attached at one end and a female DB-9 connector attached at the other. This cable will be used with the DTXALT-DRV Extension Transmitter box, which can maintain the signal quality up to approximately 1000 feet. Because many troubleshooting calls are traced to faulty wiring of the extension cable, a six foot, factory-tested version of this cable is included for comparison testing.



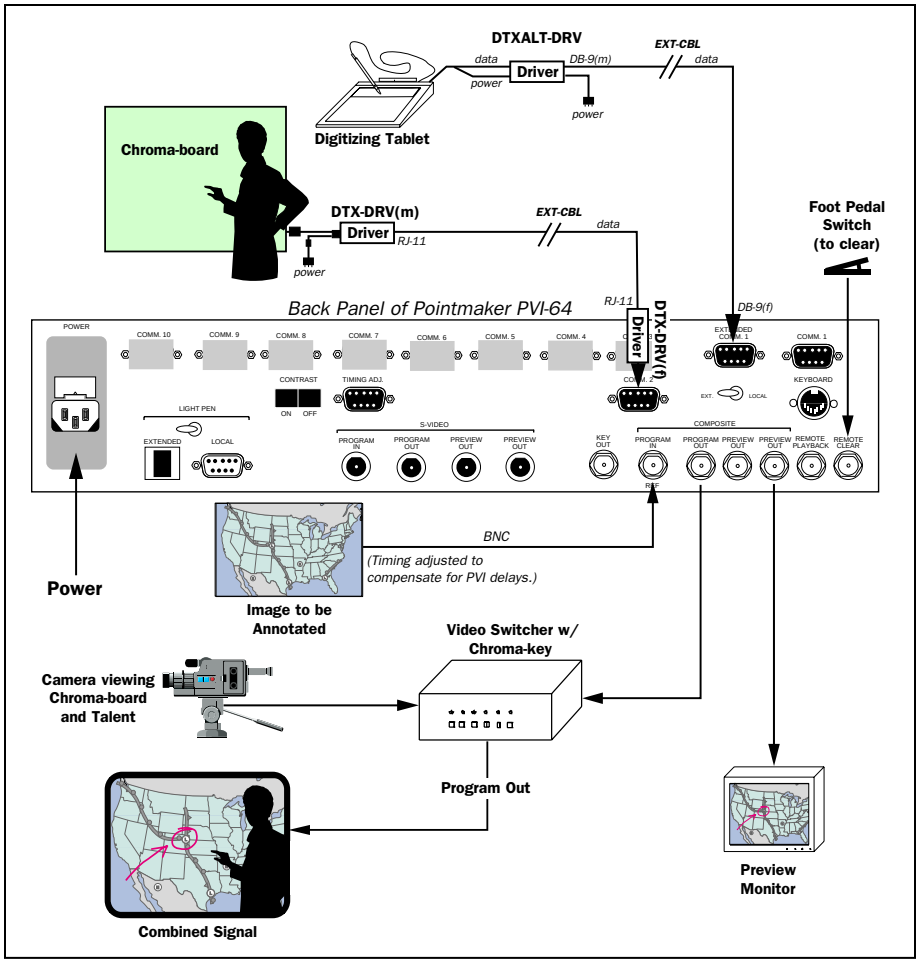
Wiring Diagram for Digitizing Tablet Extension Cable (DB-9 straight-through)

Foot Pedal Extension Cable

The foot pedal has a ten foot cable attached to it. It can be extended up to several hundred feet using coaxial cable with a BNC connector at each end (not included).

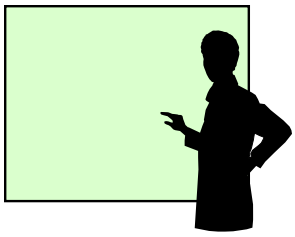
Most Common Configuration Diagram

This diagram gives a basic overview of the components and connections for the **most common** installation of the CS-64D Chroma System with Broadcast Video Marker.



Installation

These instructions cover the ***most common*** configuration (described earlier in this manual) for connecting and activating the components of the CS-64D Chroma System with Broadcast Video Marker. See the **Pointmaker PVI-64 User's Manual** for other options. Since most installations require extension cables and line drivers (see page 29), they are included in the instructions which follow.

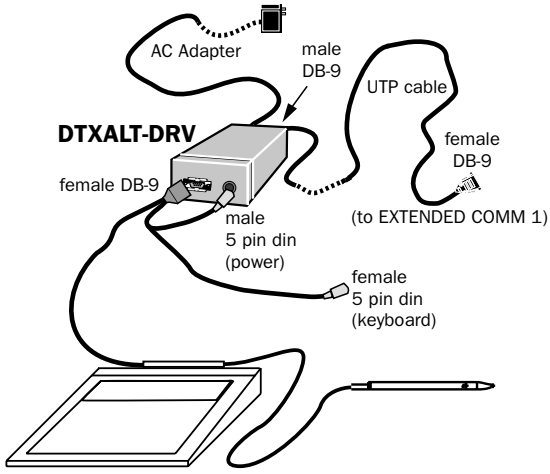


1. Hang the CH-30 Chroma-board at a height that allows for talent head room, and permits the talent to reach to the center of the board while standing inside the left or right edge of the board.

2. Connect the DT-30 Digitizing Tablet to the Pointmaker PVI-64 base unit.

   The tablet's distance from the PVI-64 requires that its signal be boosted. The EXTENDED COMM 1 port in the Pointmaker contains a receiver which works with the DTXALT-DRV Extension Transmitter box to maintain the signal quality over the length of the Digitizing Tablet Extension Cable.

   A. Connect the tablet's female DB-9 connector, and the male 5 pin din power cable into one end of the DTXALT-DRV Extension Transmitter box. (see diagram at right)



B. Using the Digitizing Tablet Extension Cable you created from the supplied cabling and connectors, plug the male DB-9 connector into the other end of the DTXALT-DRV Extension Transmitter box and the female DB-9 connector into the EXTENDED COMM 1 port on the back of the Pointmaker.

C. Make sure the EXT./LOCAL switch is set to EXT.

D. Connect the DTXALT-DRV Extension Transmitter box to an outlet using the supplied AC Adapter.

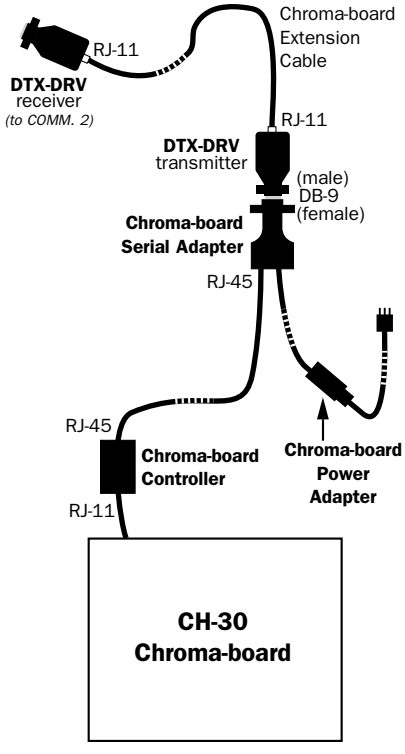
3. Connect the CH-30 Chroma-board to the Pointmaker PVI-64 base unit.

The Chroma-board's signal must also be boosted to maintain it's quality over longer distances. This is accomplished through the combination of the two DTX-DRV microdrivers and the Chroma-board Extension Cable.

A. Connect the RJ-11 ("phone-like" clip) connector, coming from the Chroma-board, into the bottom receptacle of the metal *Chroma-board Controller (see page 22)*.

B. Connect one end of the RJ-45 (larger "phone-like" clip with 8 pins) cable into the opposite end of the metal Chroma-board Controller, and the other end of the cable into the Chroma-board Serial Adapter.

C. Plug the small cable coming from the Chroma-board Power Adapter into the serial adapter.



D. Wait to connect the power adapter to a power source using the AC power cable.

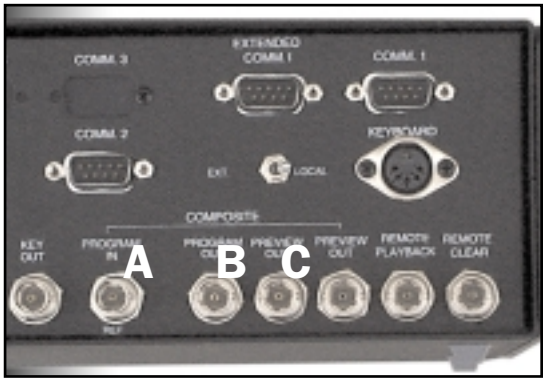
E. Using the Chroma-board Extension Cable, plug one end into the DTX-DRV transmitter (male DB-9) and the other end into the DTX-DRV receiver (female DB-9).

F. Plug the DTX-DRV transmitter (male DB-9) into the Chroma-board Serial Adapter (female DB-9) and the DTX-DRV receiver (female DB-9) into the COMM 2 port (male DB-9) on the back of the PVI-64.

4. Complete all Pointmaker PVI-64 video connections. This includes installation for video sources, displays, and other devices in stream with the Pointmaker (refer to labeled photo below).

A. Using a cable with a BNC connector, connect the video source (image to be annotated) to the PROGRAM IN port on the back of the PVI-64.

B. Using a cable with a BNC connector, connect the PROGRAM OUT port on the back of the PVI-64 to the downstream switcher or frame synchronizer.



Close-up of PVI-64 ports

C. Using a cable with a BNC connector, connect the PREVIEW OUT port on the back of the PVI-64 to a preview monitor (referred to as PVI preview monitor).

NOTE: The PVI preview monitor is needed to access the Pointmaker setup menus.

5. Connect the Remote-clear Foot Switch to the REMOTE CLEAR port on the back of the Pointmaker.

   A 10-ft. BNC cable is provided. If your setup requires a longer cable, you may extend the distance with a BNC extension cable (see page 31).

6. Plug in and power up all of the components, leaving the PVI-64 power up for last.

   On the PVI preview monitor, a copyright message will appear, followed by the source video and a moveable pointer.

   If the pointer does not appear, click the pen once on the digitizing tablet where the template reads "Pointer On/Off" to activate the pointer.

   If nothing is displayed on the PVI preview monitor, review the previous connection instructions, making sure all connections are correct and the switch is in the proper position.

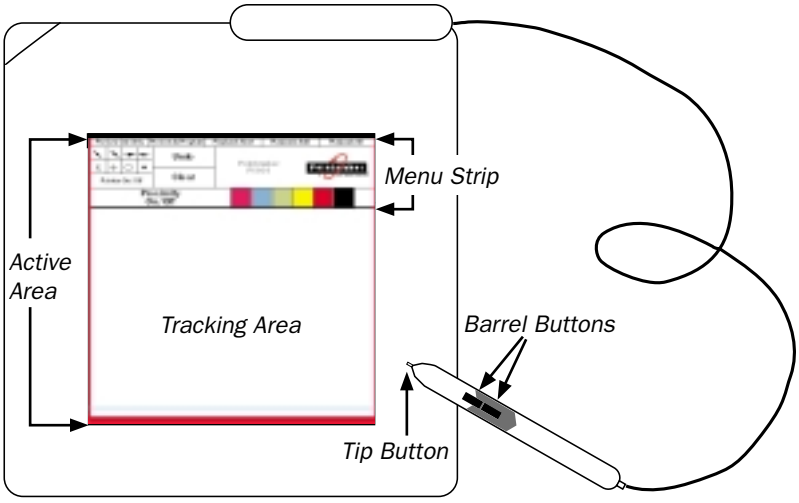
   If you are using an alternate configuration, refer to the Installation section of the Pointmaker PVI-64 User's Manual to double check all connections.

   If you have tried all of these troubleshooting steps without success, contact your Pointmaker dealer for technical support.

7. Enter the Pointmaker Setup Menu.

   Using the digitizing tablet and pen, first press and hold either of the buttons on the barrel of the pen, then press the tip button against the tracking area of the tablet so that the button and tip are simultaneously pressed for about 5 seconds.

   The Setup Menu will appear on the preview monitor.



DT-30 Digitizing Tablet and Pen

8. Set the COMM 2 port for use with the CH-30 Chroma-board.

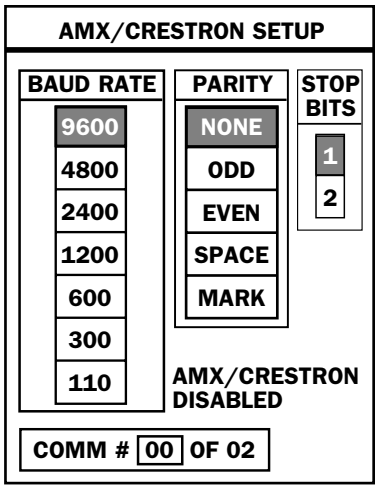
   If this process was completed during the equipment test procedures, it is not necessary to repeat it. The system will remember the new settings.

   A. In the Setup Menu, select HARDWARE by pushing the pen tip on it until you hear a click. A Hardware sub-menu will appear.

   B. In the Hardware sub-menu, click on SERIAL PORTS. A Serial Ports sub-menu will appear.

   C. In the Serial Ports sub-menu, click on AMX/CRESTRON. The AMX/CRESTRON Setup window will appear.

   D. At the bottom of the AMX/CRESTRON Setup window,



you will likely see a factory setting of COMM 00 of 02, which is needed for the system to recognize the Chroma-board. If not, change the setting to COMM 00 of 02 by positioning the cursor over the COMM number (surrounded by a box) and clicking the pen tip button until the number changes to 00.

E. Click on EXIT at the bottom of the Setup Menu.

Section Four:
Alignment & Customization Procedures

Alignment & Customization Procedures

Note: All steps in this section must be completed for the proper functioning of the CS-64D system. They ensure synchronization and positioning of the video markings.

In order for the large drawing surface of the Chroma-board to be displayed on-screen accurately, it must be properly aligned with the camera's field of view (FOV). This ensures that the talent's drawing actions on the Chroma-board are coordinated with the markings that appear on screen.

I. Place the Camera and Mark the Position

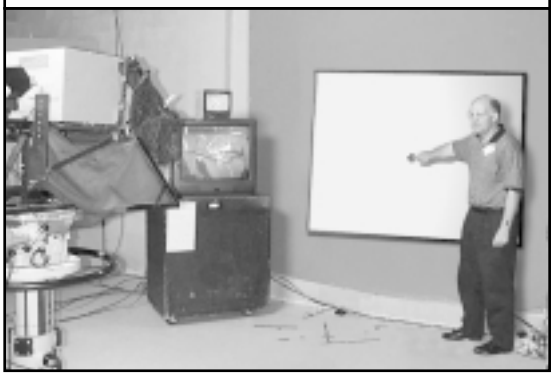
A. Measure the uncovered CH-30 Chroma-board to find the exact center and mark the center using tape. This tape can be left on the board for future positioning and calibration purposes.

B. Position the camera so that it is perpendicular to the Chroma-board with the camera lens at same height as the center mark.

C. Mark the floor location and camera pedestal height for future Chroma-board use.

D. Cover the CH-30 Chroma-board with your choice of chroma key-colored material. Then mark the corners of the board with clear or key-colored tape.

This positioning is extremely important. It may not be the most attractive angle to shoot the talent from, but it provides for the most accurate calibration.



Precisely positioning the camera perpendicular to, and centered in front of, the Pointmaker CH-30 Chroma-board.

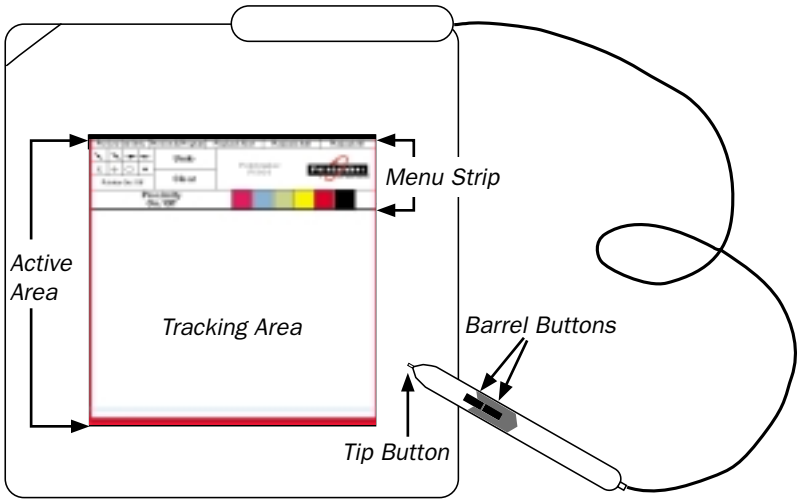
5. Set the studio's video switcher in order to chroma key the live studio shot with the Pointmaker source video.

II. Calibrate the Touch Screen

In the CS-64D configuration, the CH-30 Chroma-board functions as a touch screen. This is the first step to coordinate the PVI-64 and the Chroma-board.

A. Enter the Setup Menu.

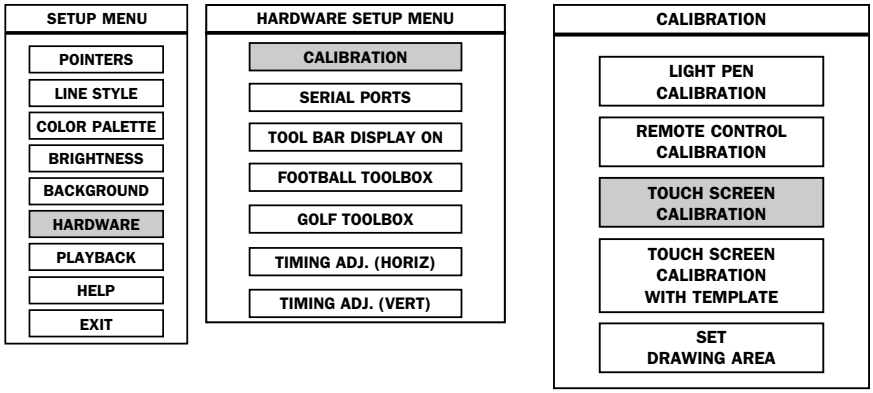
Using the digitizing tablet and pen, first press and hold either of the barrel buttons on the pen, then press the tip button against the surface of the tablet anywhere outside of the tracking area. The buttons should be pressed simultaneously for about 5 seconds. The Setup Menu will appear on the PVI preview monitor.



DT-30 Digitizing Tablet and Pen

B. Click the pen tip on the HARDWARE option.

The Hardware Setup Menu will appear on-screen alongside the Setup Menu.



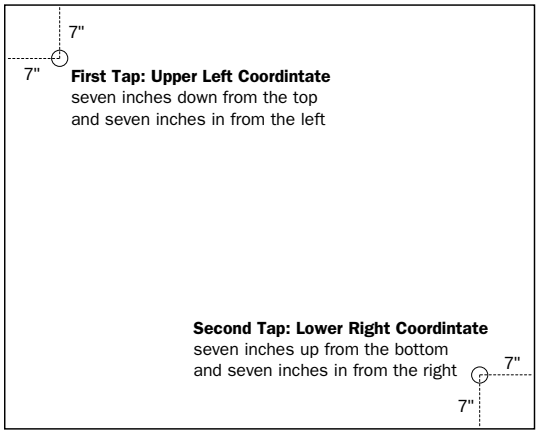
C. In the Hardware Setup Menu, select the CALIBRATION option.

The Calibration Menu will replace the Setup Menu on-screen.

D. In the Calibration Menu, select the TOUCH SCREEN CALIBRATION option.

The preview monitor will display instructions for tapping the upper left, then lower right corners of the Chroma-board.

E. Tap the upper left corner of the Chroma-board, about 7 inches in from the top and left edges.



Watch the monitor to be sure the tap registered. If it did not, tap again at a slightly different part of that corner until the tap is

registered by the Pointmaker. The blue screen on the PVI preview monitor will change to the next step once the tap is accepted.

F. Tap the bottom right corner of the Chroma-board, about 7 inches in from the bottom and right edges.

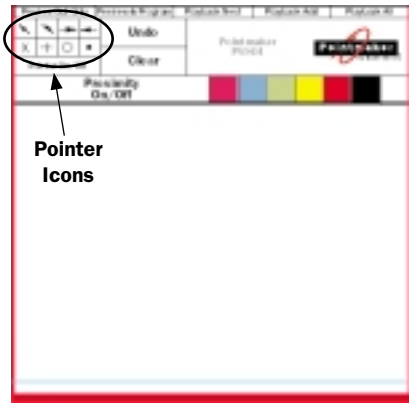
When the second tap registers, the calibration instructions will automatically disappear, and the screen will return to the Hardware Menu.

G. Exit the menu system by selecting Exit from the Setup Menu using the DT-30.

III. Set the Drawing Area and FOV (requires two people)

IMPORTANT: Before proceeding, it is essential that the camera alignment and touch screen calibration procedures in the previous section have been completed and that the camera is currently in position, and zoomed in or out to the FOV desired. It will also speed future setups to mark the FOV corners on the fabric with clear or key-colored tape.

With the settings we have made so far, the CS-64D will only draw properly if the FOV (field of view) of the camera is exactly the size of the Chroma-board. However, in most situations, the Chroma-board is only a portion of the FOV. In this case, the drawing area must be set so the markings appearing on-screen are restricted to the region occupied by the Chroma-board. Here's how to make the adjustment:

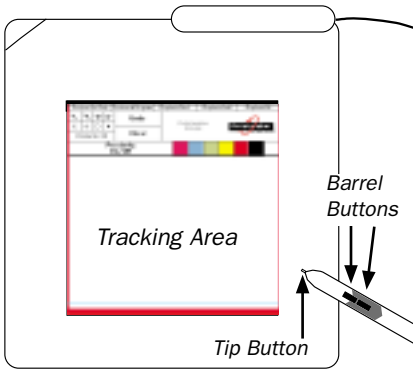


One person (called "Technician") will operate the digitizing tablet and must be able to see a monitor displaying the combined video signal. The other person (called "Talent") will be positioned near the Chroma-board.

A. Technician: Click on a pointer icon on the DT-30 digitizing tablet overlay to make sure a pointer appears in the monitor.

B. Technician: Activate the PVI-64 Setup Menu.

Using the digitizing tablet and pen, first press and hold either of the barrel buttons on the pen, then press the tip button against the surface of the tablet anywhere outside of the tracking area. The buttons should be pressed simultaneously for about 5 seconds.
The Setup Menu will appear on the PVI preview monitor.



C. Technician: Select the HARDWARE option.

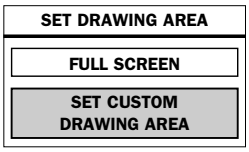
The Hardware Menu will appear on screen alongside the Setup Menu.

D. Technician: Select the CALIBRATION option.

The Calibration menu will appear on screen alongside the Setup Menu.

E. Technician: Select the SET DRAWING AREA option.

The Set Drawing Area Menu will appear.



F. Technician: Select the SET CUSTOM DRAWING AREA option.

Instructions appear on screen for setting the upper left corner of the drawing area.

G. Talent: Put your fingertip over the tape marking the true upper left corner of the Chroma-board without touching it (see image on next page). (This corner was marked using clear tape in the Camera Setup section.)

This enables the technician to gauge the camera position since the tape is invisible to the camera.

H. Technician: Looking at the monitor while gliding the pen lightly over the digitizing tablet, move the pointer on-screen to the spot where the talent is pointing (being careful not to let the tip touch the tablet).

Note: Your fingers can touch the tablet, allowing you to suspend the pen slightly without touching the pen to the tablet drawing area. This allows you to see the pointer icon move on screen until it reaches the location.

If the pen tip is activated before it is over the correct spot, click it on the tablet again to register the second coordinate, then start again, beginning with step 5.

I. Technician: Once in position, depress or click the pen tip against the tablet. If successful, the on-screen instructions will change to the next step.

This action designates the upper left corner of the drawing area.

Designating upper left corner of Chroma-board.

J. Talent: Put your fingertip over the tape marking the true lower right corner of the Chroma-board without touching it. (This corner was marked using clear tape in the Camera Setup section.)

K. Technician: Again looking at the monitor, use the pen to move to the spot where the talent is pointing without clicking the pen switch.

L. Technician: Once in position, click the pen tip against the tablet.

This action designates the lower right corner of the drawing area. The adjustment is complete. The Calibration Menu will return on-screen.

M. Technician: Exit the Calibration Menu by selecting EXIT in the Setup Menu.

IV. Align Drawing with FOV (requires talent & camera operator)

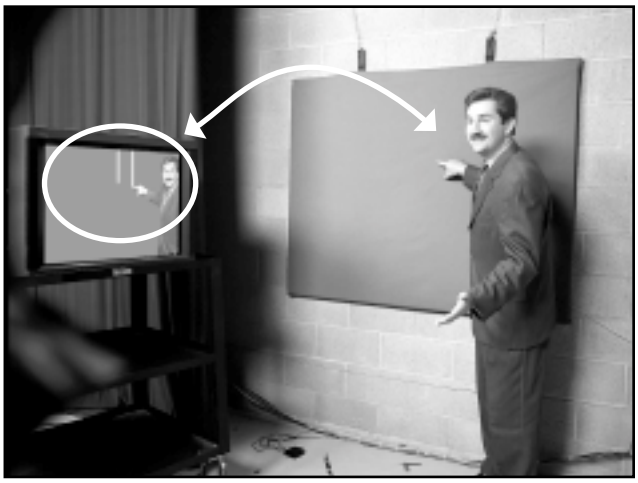
For the talent to effectively communicate using markings, the finger movement on the Chroma-board must be accurately aligned with the markings which appear on-screen. The steps in this section produce that alignment.

This is the final procedure before being broadcast ready. Success here is dependent upon the accomplishment of all the previous steps in this Alignment Procedure section. This includes proper camera positioning, calibration of the touch screen (Chroma-board), and setting the custom drawing area within the field-of-view.

Horizontal alignment:

A. Talent: Slowly draw a vertical line near the center of the board by pressing a finger on the Chroma-board and dragging it down from the top of the board (or up from the bottom). This can be repeated until the camera is properly panned into position.

B. Camera Operator: While the drawing takes place, pan the camera to align the talent's finger with the vertical lines being drawn by the Pointmaker on the preview monitor. Have the talent repeat the procedure until you are able to achieve the proper horizontal alignment.



Drawing on Chroma-board with markings displayed on preview monitor

Vertical alignment:

A. Talent: Slowly draw a horizontal line by pressing a finger on the Chroma-board and dragging it from left to right or from right to left. Repeat as necessary.

B. Camera Operator: While the drawing takes place, tilt the camera to align the talent's finger to the horizontal lines being drawn by the Pointmaker on the preview monitor. Again, have the talent repeat the procedure until the vertical alignment is correct.

This concludes the installation and setup of the CS-64D Chroma System with Broadcast Video Marking. However, any time the camera is moved from its position and then returned for use with the Chroma-board, it is necessary to quickly re-align the system. This process is greatly simplified if the camera is marked for position and field of view, as suggested earlier in this manual. To aid you in this process, the last few pages of this guide act as a quick setup guide for camera operators.

Appendix:
3-Step Camera Alignment for Each Use

3-Step Camera Alignment for Each Use

1. POSITION Camera to Preset Marks
2. FRAME Camera to FOV Marks
3. ALIGN Markings with Talent Motions

In most studios, the camera that is used with the Pointmaker® CH-30 Chroma-board is also used for other purposes. Often, this gives the camera operator only 30 to 60 seconds to reposition the camera toward the Chroma-board and make the alignments below. This quick card is provided to camera operators to assist with streamlining this process. We recommend that a few "practice" alignments be made beforehand when there is more time.

1. POSITION – Precisely reposition the camera perpendicular to, and centered in front of, the Pointmaker CH-30 Chroma-board. This camera position should have been marked on the floor, with the height of the camera marked on the camera pedestal. *Refer to Figure 1 below.*

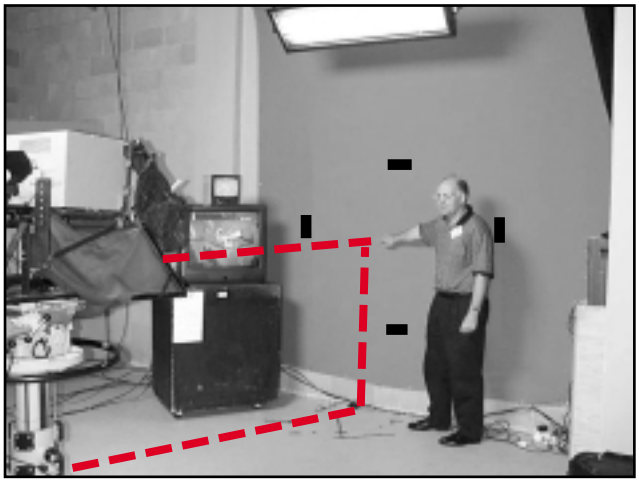


*Figure 1 – **POSITION** Precisely reposition the camera perpendicular to, and centered in front of, the Pointmaker CH-30 Chroma-board. Floor and camera pedestal should be marked.*

2. FRAME EXACTLY – Adjust the zoom of the camera to a preset FOV (field of view). Because this FOV must be repeatable, the boundaries defining the field of view should have been marked on the key-colored cloth with clear or key-colored tape. Zoom the camera so that the exact same field of view appears every time. IF THIS STEP IS NOT MADE the markings will be misaligned with the Talent's pointing motions. *Refer to Figure 2.*

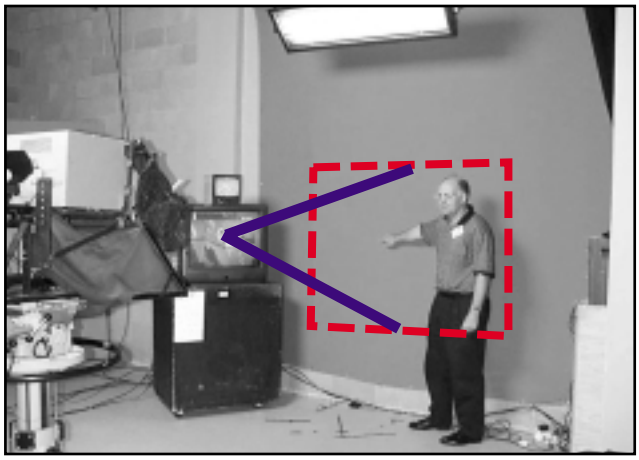


*Figure 2 – **FRAME EXACTLY** Adjust the zoom of the camera to the previously marked field of view.*

3. ALIGN MARKINGS WITH TALENT MOTIONS – Perform steps A and B below to match the on-screen markings with the Talent's drawing motions. Be sure the Pointmaker video marker is operational, and that the camera operator (or someone directing him/her) is watching a monitor displaying both the talent and the markings. *Refer to Figure 3 on next page.*

A. Horizontal Alignment:

Talent: Slowly draw a vertical line by pressing a finger on the Chroma-board and dragging it from the top of the board to the bottom (or from bottom to top).

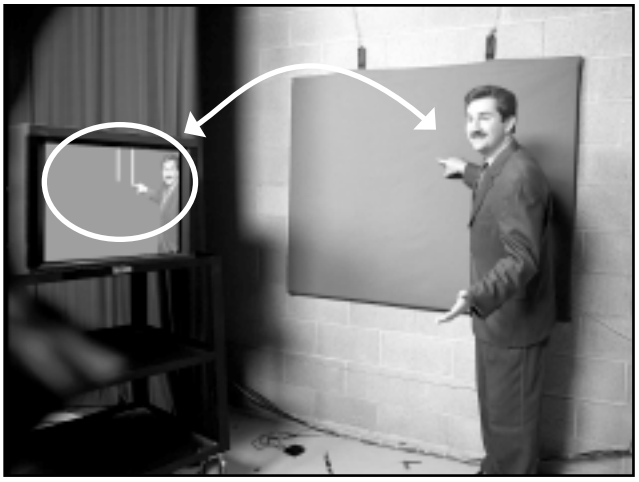


*Figure 3 – **ALIGN MARKINGS WITH TALENT MOTIONS***
Pan and tilt the camera to align horizontal and vertical markings drawn by talent.

Camera Operator: While the drawing takes place, pan the camera to align the talent's finger to the vertical line being drawn by the Pointmaker on the preview monitor.

NOTE: Repeat this procedure until an accurate horizontal alignment is achieved.

B. Vertical Alignment:

Talent: Slowly draw a horizontal line by pressing a finger on the Chroma-board and dragging it from the left edge of the board to the right edge (or from right to left).

Camera Operator: While the drawing takes place, tilt the camera to align the talent's finger to the horizontal line being drawn by the Pointmaker on the preview monitor.

NOTE: Again, repeat this procedure until an accurate vertical alignment is achieved.

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