HARRIET

QUANTEL

HARRIET

OPERATOR'S MANUAL

VOLUME 2

Operating Software V4.07

NOTICE

Quantel Limited accepts no responsibility for the accuracy of the information contained herein and reserves the right to change the contents without prior notice.

This manual is a change controlled document. Please quote the revision status of this manual when re-ordering. The revision status is determined by the content, any change in any part being reflected in the manual revision status.

THIS MANUAL IS REVISION "B"

AMENDMENT RECORD

This is a change controlled document. Each page of this document is given an issue letter (shown at the bottom of each page with the drawing number and revision date) which represents the status of the page. Revision "A" on any page indicates that the page is the original.

Any changes to any pages will raise the revision status of the document. When re-ordering, always quote the document type, the document's number and revision status along with the unit's serial number.

REV	DATE	ECO	COMMENTS	REVISED PAGES
A	11/92	E02995	V4.00 S/W	All
B	05/93	E04217	V4.07 S/W	All

This manual was written and produced by the Quantel Technical Publications Department.

ABOUT THIS MANUAL

CHAPTER 1 : TECHNICAL DATA

This chapter provides details of the system's electrical, physical, environmental, video and audio specifications.

CHAPTER 2 : PREPARATION

This chapter provides pre-installation details concerning the type of racking system required and other special installation requirements.

CHAPTER 3 : HARDWARE OPTIONS

This chapter details the installation of the various hardware options.

CHAPTER 4 : RACKING

This chapter details the rack mounting of the various system units.

CHAPTER 5 : CONNECTION

This chapter details the system's inter-connection.

CHAPTER 6 : CONFIGURATION

This chapter details the hardware and software configuration of the system and its peripherals.

CHAPTER 7 : STARTUP

This chapter details the system power up and power down procedures, and also details the various system reset methods.

NOTICES

RFI STATEMENT

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the service manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

DISCLAIMER

Quantel Limited will not accept responsibility for any damage to equipment or property, or personal injury howsoever caused where this is resultant upon the improper operation or installation of the company's product in any environment or in a manner for which it is not designed or approved by the company.

TRADE MARKS

Most of the product names mentioned in this manual are manufacturer trade marks and are used within this manual only for the purpose of identification.

Harriet, Paintbox, Cypher and Harry are trade marks of Quantel Limited.

DRAWINGS & ILLUSTRATIONS

MAINTENANCE

Maintenance and Servicing of this equipment should only be carried out by qualified service personnel.

CONVENTIONS USED

☛ **WARNINGS: Indicate danger to life and limb if the indicated statements are ignored, or the indicated procedures are not performed correctly.**

☞ **Cautions: Indicate possible damage to (or misalignment of) the equipment if the indicated statements are ignored, or the indicated procedures are not performed correctly.**

<TEXT>	Text in these brackets represents a key press on the Keyboard.
[TEXT]	Text in these brackets represents a key on the Presenter Control Panel.
+[TEXT]	Indicates that the key must be pressed and held down.
NN	This indicates a value entered on the numeric keypads.
TEXT	Text in italics represents a menu function or option.
②	Indicate stack buttons.

CONTENTS VOLUME 2

CHAPTER

TECHNICAL DATA

CHAPTER 2

PREPARATION

CHAPTER 3

HARDWARE OPTIONS

CHAPTER 4

RACKING

CHAPTER 5

CONNECTION

CHAPTER 6

CONFIGURATION

CHAPTER 7

STARTUP

CHAPTER

TECHNICAL DATA

DESCRIPTION

Introduction

Harriet offers an original concept in dynamic graphics production, enabling production of the simplest or most complex graphic creation with ease and is simply controlled using the cordless pen and tablet and viewed on the single monitor. It provides an integrated system that would conventionally utilise many varied pieces of equipment.

For example, material can be loaded directly from VTR into random access memory (RAM). It may then be retouched or rotoscoped, using any of the painting capabilities of the Harriet.

Animation facilities are provided and the results stored directly into memory. Cutouts, with soft edges or even text, can be 'flown' around with true perspective using a sophisticated effects package and multi-layered images built-up with no loss or degradation. Custom wipes and dissolves are simply additional capabilities using the built-in keyer. Finally, the finished piece is then transferred back to tape, with frame accuracy.

Conventionally, all this would require several VTRs, a painting system, a character generator, digital effects, an edit controller, a switcher or matrix, perhaps a disk recorder, a keyer and an excellent knowledge of all these devices.

In Harriet, all this is controlled, previewed and executed from a single tablet and pen work-station and the total electronics required, excluding VTR, is only 6U (two 3U units).

The system is operated using Quantel's tablet/screen menu system, providing on-screen mixing of colours and complete picture library management as well as access to the large range of other Quantel equipment that interface transparently with the Harriet.

System Components

The system consists of the following major electronic components:

Painting unit: This 3U, 19" rack unit contains the system's major electronic circuitry, the integral 520 Mbyte System disk and the unit's power supply.

Ramcorder: This 3U, 19" rack unit contains the system's video ram store circuitry and the unit's power supply.

Tablet & Pen: These in conjunction with the on-screen menu displays are the basis of the Harriet's control system. This control system (work station) provides positional coordinates and pressure information for the system.

Keyboard: This provides keyboard entry of text and library management facilities, in addition to those provided by the screen menu keyboards.

Hand unit: This provides 2D coordinate information, such as rotations and size information for the system. This unit also has four buttons dedicated to specific functions associated with picture capture and animation.

System Hardware

The system may operate as a stand-alone Tower unit or can be installed in equipment bays within an existing suites.

A STANDARD HARDWARE FEATURES

- **i** RGB/YCrCb and CCIR 601 Bit-Serial Digital Video Inputs/output
- **ii** 323 Frame (625 line) / 383 Frame (525 line) Ramcorder
- **iii** 520 Mbyte Internal Disk
- **iv** 650 Mbyte Magneto Optical Disk

B HARDWARE OPTIONS

- **i** External Coder (RGB to Coded video)
- **ii** External Decoder (Coded to RGB)
- **iii** External SCSI Disks
- **iv** Tower Mounting kit (option)
- **v** Additional Fonts

System Software

This system provides all the facilities required to produce a dynamic graphic sequence. Along with the VTR control and Animation facilities, full painting, text and library facilities are included. Quantel's third party open interface (Pictureport) is supported as standard, other networking systems are available as options.

A STANDARD SOFTWARE FEATURES

- **i** Painting, Graphics, Effects and Pasteup facilities
- **ii** Animation and Keyframe Effects facilities
- **iii** Integrated VTR Control
- **iv** Pictureport open interface

B SOFTWARE OPTIONS

- **i** Picturenet
- **ii** Picturebank
- **iii** Shared User Bus

PAINTING UNIT & RAMCORDER

Description

The Painting and Ramcorder units are 3U, 19" rack mounting unit, containing the system's major electronic circuitry, the integral System disk and the unit's power supply.

A INTEGRAL HARD DISK

The system's internal hard disk is a 520 Mbyte Winchester drive (425 Mbyte on Mark 2 and 3 Painting unit and 180 Mbyte on Mark 1 Painting unit). This is used to store the system's operating software, the text fonts, the paintbrushes as well as picture, cutout and stencil information. The internal hard disk can store over 550 full size pictures (450 on Mark 2 and 3 Painting unit and 160 on Mark 1 Painting unit) or an equivalent number of full size cutouts, stencils etc.

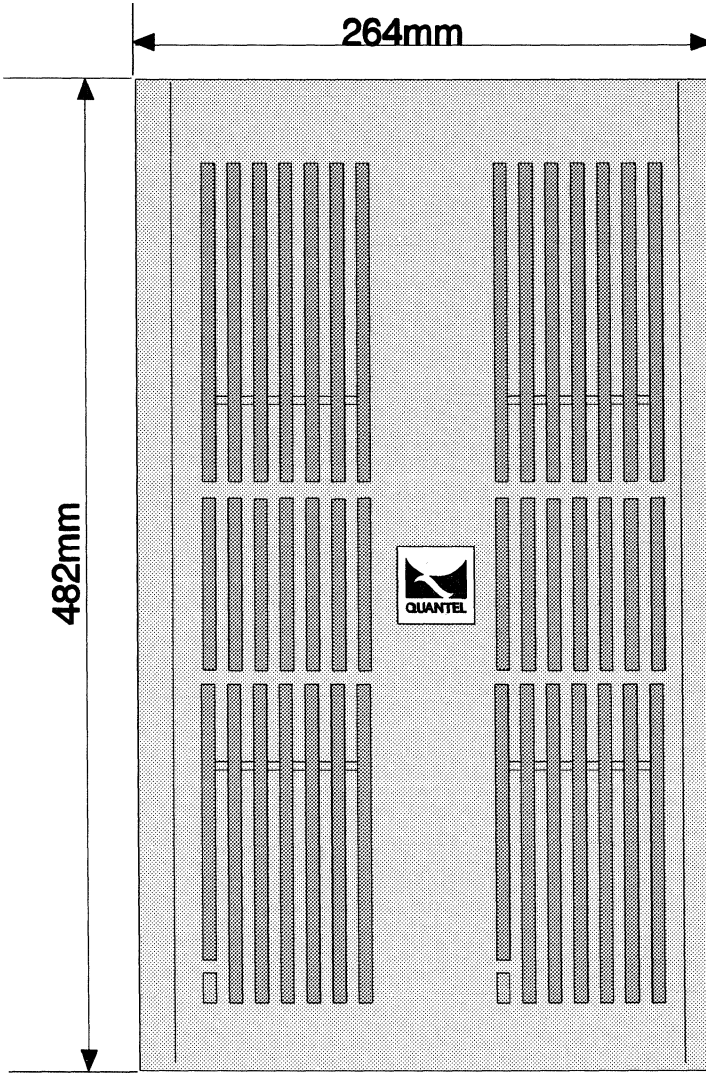
B MAINS REQUIREMENT

i 200 VA maximum

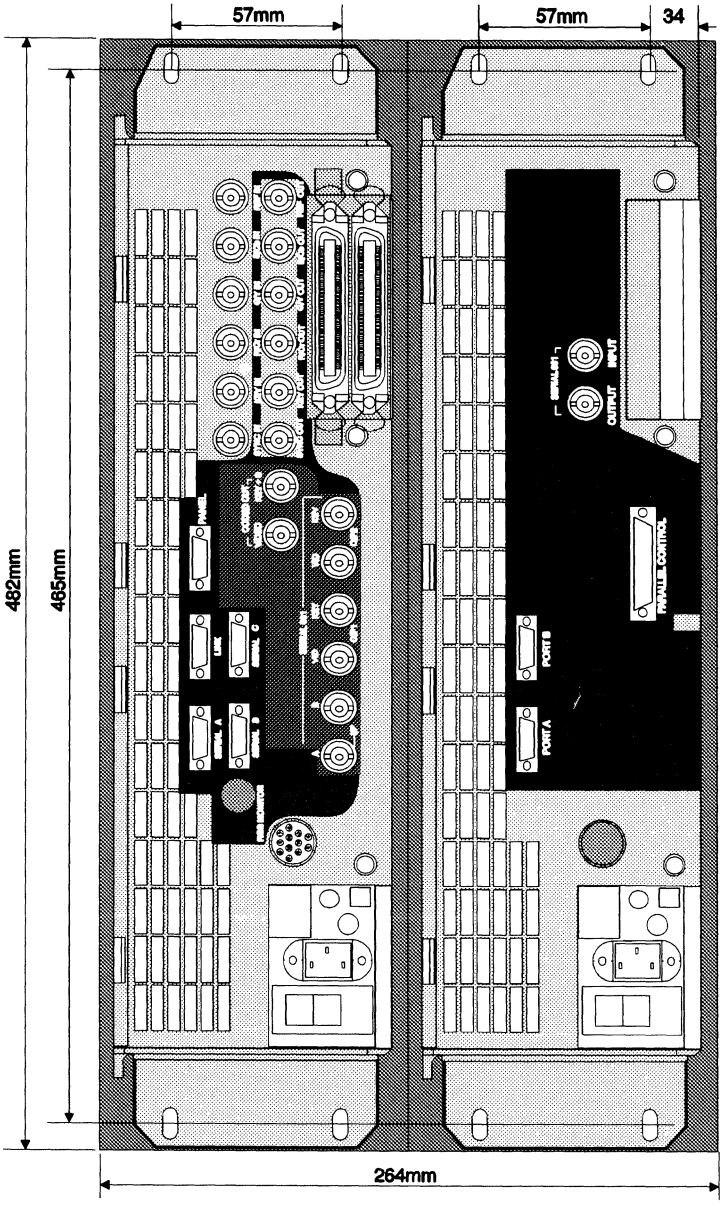
ii 240 Volts : 10%, 50Hz

iii 115 Volts : 10%, 60Hz

Rack Front Panel Details

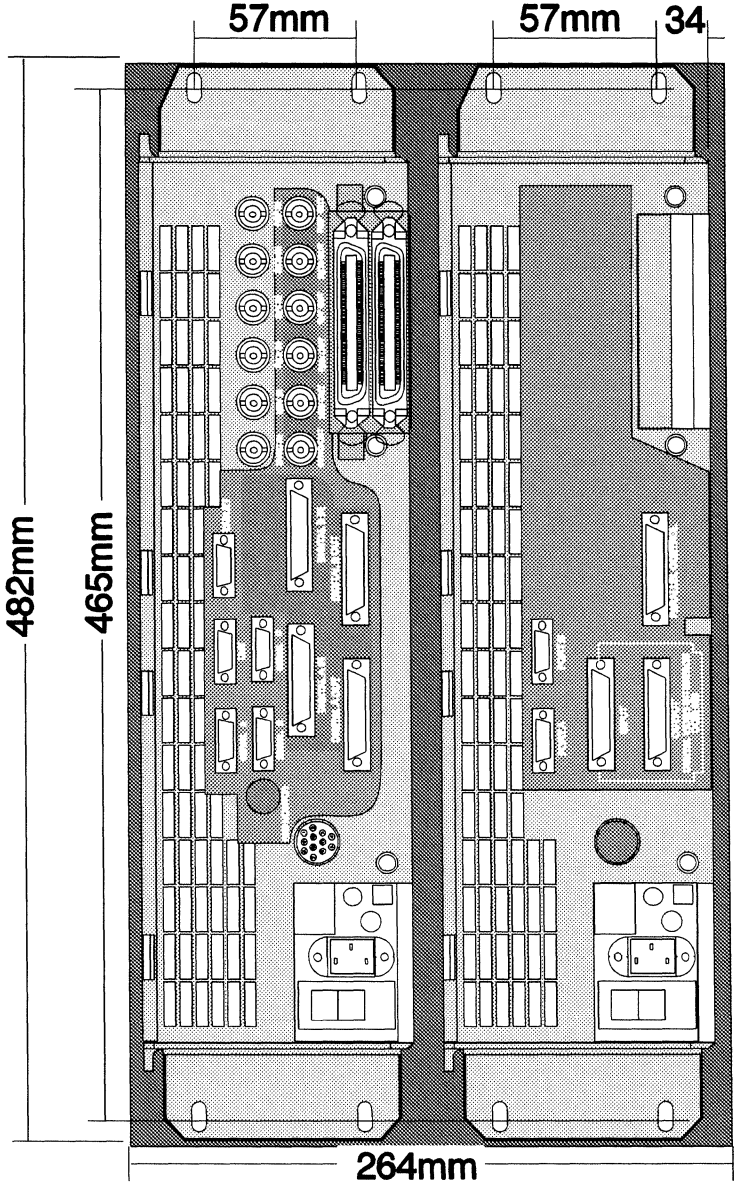


Rear Panel Details (Mark 4 Painting Unit) SERIAL 601



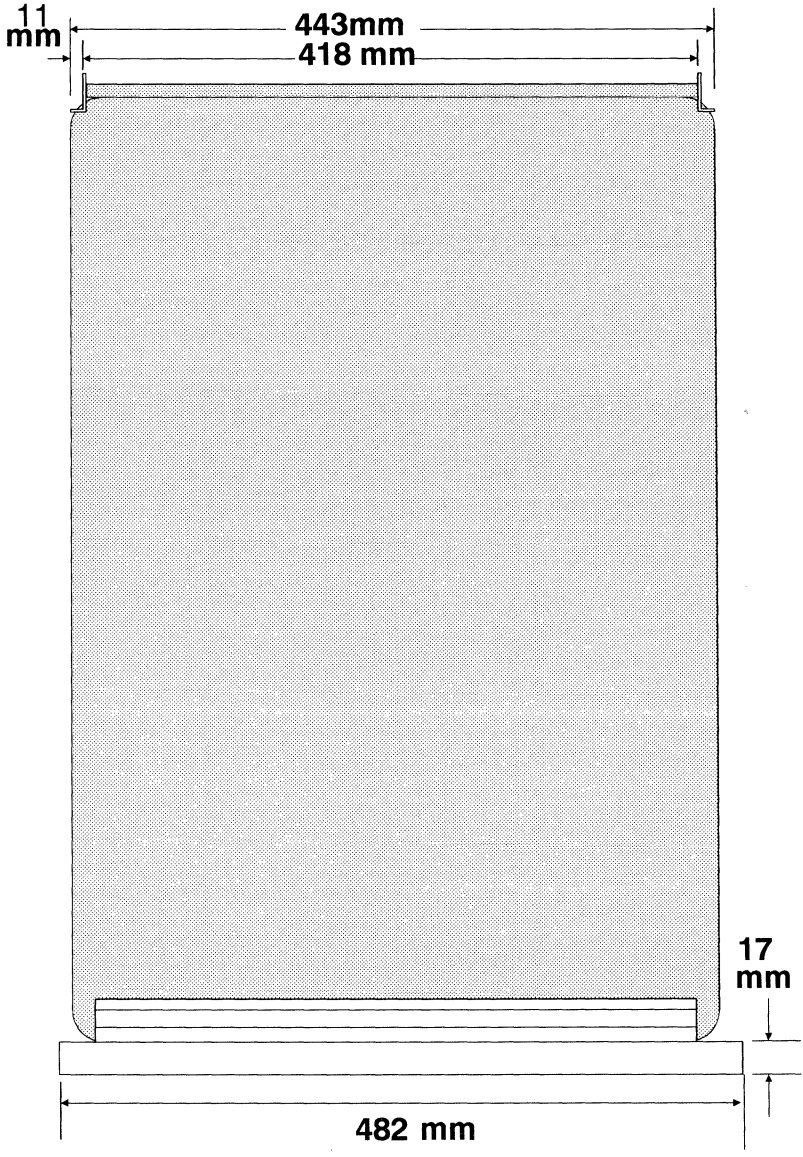
SEE PG. 14

Rear Panel Details (Mark 3 Painting Unit) PARALLEL 6D

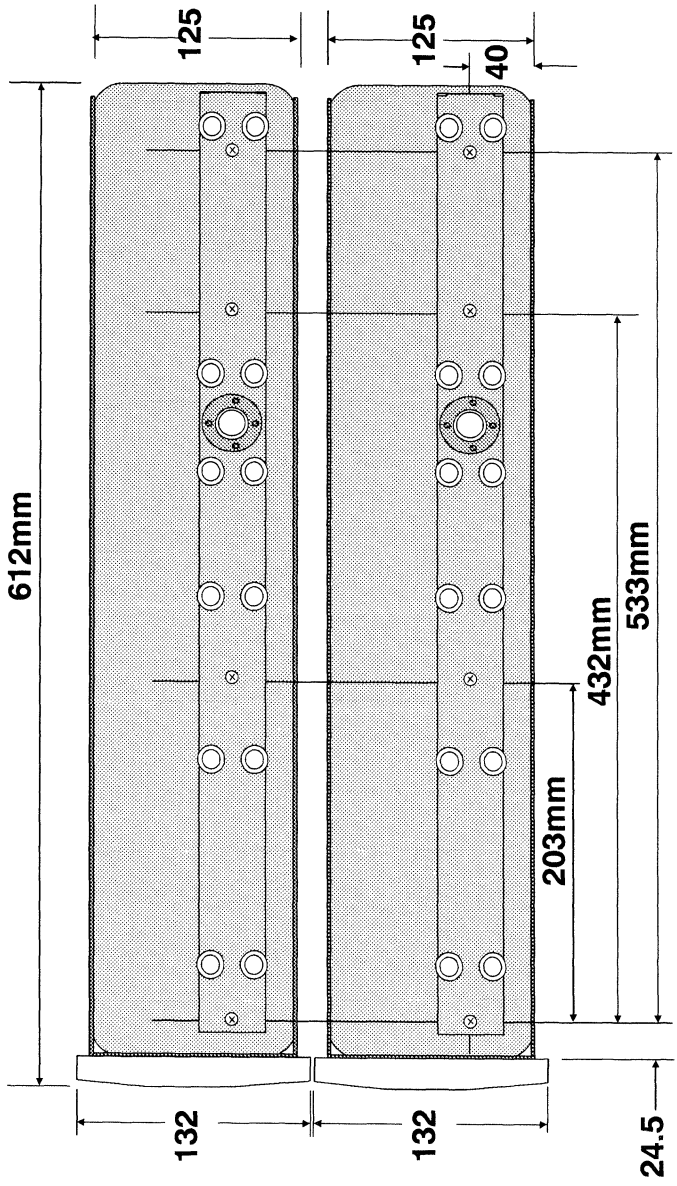


SEE PG. 15

Rack Top Panel Details



Rack Side Panel Details



Digital Coding System

A GENERAL

The digital coding system used within the system conforms to the international recommendations of CCIR for Digital video processing and communication of Digital Video (recommendations 601 and 656):

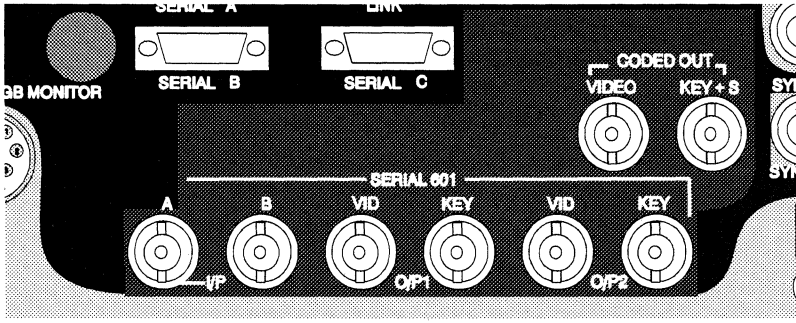
- **i** Y component digitised at 13.5MHz, 8 bits, black = 16 and white = 235
- **ii** U component digitised at 6.75MHz, 8 bits, zero = 128 and range = 224
- **iii** V component digitised at 6.75MHz, 8 bits, zero = 128 and range = 224
- **iv** Key component digitised at 13.5MHz, 8 bits, zero = 0 and range = 255

Note: that when a digital input is used as a key source the *EXPAND KEY* function can be used to convert the range from 16 - 235 to 0 - 255 so that any subseqently generated stencil does not bleed.

Bit-Serial Digital Video Connections

A GENERAL

The mark 4 Painting unit and mark 2 Ramcorder units (supplied from April 1993 onwards) provides 2 CCIR 601 digital serial digital video inputs (A and B) and 2 sets of CCIR 601 digital serial video ouputs (output 1 video and key, output 2 video and key). These connections, located on the rear of the unit as shown below, allows the system to be connected directly into bit-serial environments and to equipment conforming to CCIR Recommendation 656 Part III.



B OUTPUTS

Each line driver (O/P 1 VID and KEY, O/P 2 VID and KEY) is an unbalanced output with a source impedance of 75 Ohms.

The peak-to-peak output signal amplitude lies between 400 mV and 700 mV, when measured across a 75 Ohm resistive load directly at the output. The output DC offset with reference to the mid amplitude point of the signal lies between +1.0 V and -1.0 V.

C INPUTS

Each line receiver (I/P A and I/P B) is terminated by 75 Ohm.

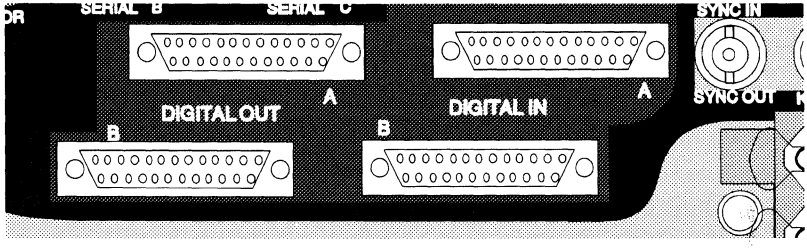
The peak-to-peak input signal amplitude must lie between 400 mV and 700 mV. The DC offset of the input signal, with reference to the mid amplitude point of the signal, must lie between +1.0 V and -1.0 V.

Bit-Parallel Digital Video Connections

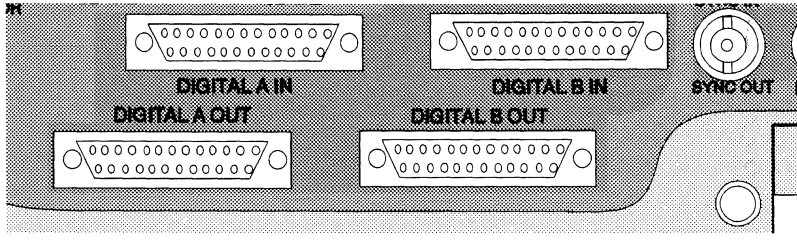
A GENERAL

The Mark 1, 2 and 3 Painting units provides 2 CCIR 656 digital video parallel inputs and 2 CCIR 656 digital video parallel outputs. These connections, located on the rear of the unit as shown below, allow the system to be connected directly into bit-parallel environments and to equipment conforming to CCIR Recommendation 656 Part III.

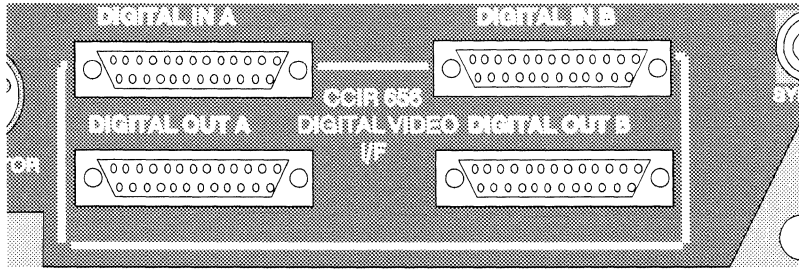
MARK 3 RACK



MARK 2 RACK



MARK 1 RACK



B CONNECTION DETAILS

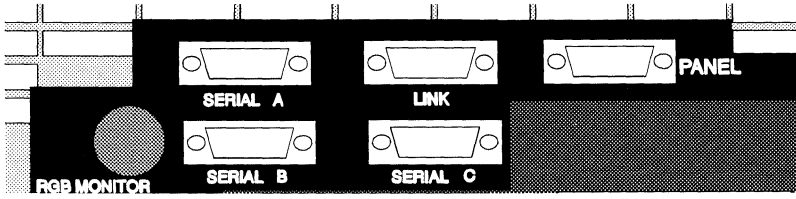
The digital Input and Output connections are CCIR 656 standard connections (25-way D-type female) as follows:

Pin	Function	Pin	Function
1	+27MHz Clock	14	- 27MHz Clock
2	System Gnd	15	System Gnd
3	+ Data 7 (MSB)	16	-Data 7 (MSB)
4	+ Data 6	17	-Data 6
5	+ Data 5	18	-Data 5
6	+ Data 4	19	- Data 4
7	+ Data 3	20	- Data 3
8	+ Data 2	21	- Data 2
9	+ Data 1	22	- Data 1
10	+ Data 0	23	-Data 0
11		24	
12		25	
13	Chassis Gnd		

Control Connections

A GENERAL

The painting unit provides 5 RS 232/422 control connections TABLET, LINK and SERIAL A, SERIAL B and SERIAL C on the rear panel.



TABLET/PANEL	This connection is designated for use by the tablet control system.
LINK	This connection is not yet implemented.
SERIAL A	This connection is computer configured for use as VTR control.
SERIAL B	This connection is computer configured for use as the printer output.
SERIAL C	This connection is computer configured for use with the Ramcorder unit.

Note that these control connections must be configured for the selected application using the full page *CONFIGURE* menu.

B EXTERNAL CONNECTION DETAILS

The connectors are 9-way D-subminiature female (DE-9S) with metric (M3) female screw-lock with the following signal connections:

*Note: These connections are for an externally connected VDU/terminal and are RS 232 19200 baud.

Note: that these connections are used when the port is configured for RS 232 operation.

SERIAL A (RS 232/422 CPU SW12)

Pin	Function	Pin	Function
1	*Chassis Gnd #	6	0V
2	Receive -	7	Receive + #
3	Transmit + #	8	Transmit -
4	*VDU Transmit	9	Chassis Ground
5	*VDU Receive		

SERIAL B (RS 232/422 CPU SW11)

Pin	Function	Pin	Function
1	Chassis Gnd #	6	0V
2	Receive -	7	Receive + #
3	Transmit + #	8	Transmit -
4		9	Chassis Ground
5			

SERIAL C (RS 232 only)

Pin	Function	Pin	Function
1	Chassis Gnd	6	0V
2		7	Receive +
3	Transmit +	8	
4		9	Chassis Ground
5			

TABLET (RS 422 only)

Pin	Function	Pin	Function
1	Chassis Gnd	6	0V
2	Receive -	7	Receive +
3	Transmit +	8	Transmit -
4	0V Transmit	9	System Reset
5	No Connection		

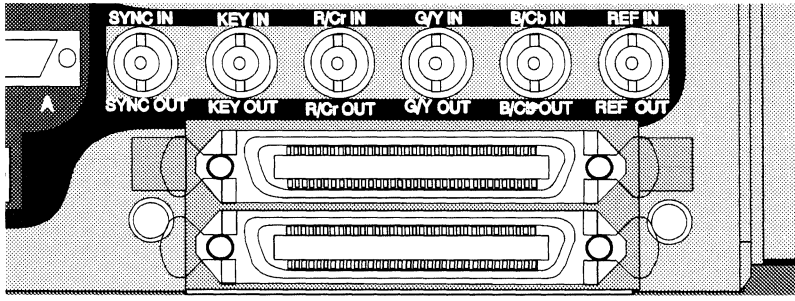
☞ **Caution: The output pins of all ports will be damaged by short circuit to 0 Volts.**

SCSI Expansion Port

A INTRODUCTION

The SCSI Expansion Port allows SCSI compatible equipment (for example disks supported by the system) to be connection externally. It also provides the system's connection to a Shared User Bus.

The lower SCSI Expansion Port (shown below) at the rear of the Mainframe allows the Magneto Optical disk and any additional expansion disk to be connected. The upper SCSI Expansion Port (option) allows the Mainframe to be connected into a Shared User Bus.



Note: Cables supplied by Quantel must be used at all times and all SCSI busses MUST BE terminated when not in use.

B SHARED USER BUS

In the Mainframe there is an internal 'Local disk' which holds the system's operating software and graphics items. This 'Local Disk' can not be accessed by any other device connected externally to the system on a Shared User Bus.

The Mainframe's internal SCSI Winchester disk is allocated address 0. Additional external SCSI disk drives connected to the system are allocated individual address numbers as follows:

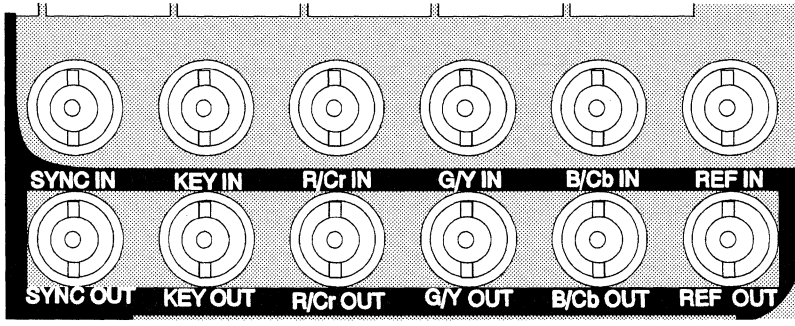
1	First External Drive (typically 3 Gbyte)
2	Second External Drive (typically 3 Gbyte)
3	Magneto Optical Drive

The SCSI address is set by configuration switches on the rear of each drive as described in the following text. At power up or reset, the system will recognise any SCSI disk that is connected and turned on.

The system's current disk configuration and status will be shown in the 'disk block' of the full page menu.

RGB / YUV Video Inputs

The system provides the following broadcast specifications inputs terminated internally by 75Ohms with return loss better than -30dB:



R/Cr IN	RED : 700mV (625/50), 714mV (525/60) (2%) Cr : +350mV -350mV
G/Y IN	GREEN : 700mV (625/50), 714mV (525/60) (2%) Y 700mV (625/50), 714mV (525/60)
B/Cb IN	BLUE : 700mV (625/50), 714mV (525/60) (2%) Cb : +350mV -350mV
Syncs Input	2 Volt negative going pulse
Key Input	700mV (625/50), 714mV (525/60) (2%)

Note: that the Red, Green and Blue inputs are clamped during line blanking period and therefore input signals must be free from disturbances during line blanking.

RGB / YUV Video Outputs

A RGB OUTPUTS

The system provides full broadcast quality component outputs for use with analogue studio applications. An RGB monitor output is also provided for use as the work station monitor.

100% saturation 700mV (625/50), 714mV (525/60) into 75 Ohms.

Frequency response flat within 0.5dB to:

5.5 MHz 625/50

5.0 MHz 525/60

Field tilt (100% Flat Field) better than 1%

Line tilt (100% Flat Field) better than 1%

2T pulse to bar amplitude better than 2%

2T K factor ringing better than 1%

B KEY OUTPUT

The system provides a Key output video signal which can be used in conjunction with a down-stream mixer/keyer to key the system's output video in a background video. This output can also be used for cutout animation applications.

Positive going linear key.

Non composite video signal.

Standard component video blanking.

Amplitude is 700mV (625/50), 714mV (525/60).

Locking References

A GENERAL

The system uses Input and Output locking references. These references are obtained from the selected video sources as described in the following text.

Note: that the system's input video sources must be synchronous with the 'System Reference'. Small static timing errors can be accepted.

B SYSTEM REFERENCE

The system's output reference is obtained from the "REF IN" - "REF OUT" high impedance 'loop through' connection (return loss better than -30dB). This signal can either be a Black & Burst video signal or a clean composite video signal.

Note: that in non broadcast installations the system can be used without a locking reference video signal and in these applications the "REF IN" connection should be terminated into 75 Ohms to prevent spurious system locking.

Note: that the system will operate without any input video source.

C INPUT LOCKING

The system's input reference is obtained from the selected input video source as follows:

RGB INPUT	The 'Input Reference' is normally obtained from the "INPUT SYNC" connection, but the system can be configured for 'syncs-on-green' operation. The "INPUT SYNC" should be a 2 Volt sync pulse signal.
CCIR 656 INPUT	The Input Reference is obtained directly from the selected CCIR 656 digital video source.

System Monitor Output

The system provides an RGB monitor output and connecting cable (2036-51-035). This output is connected directly to the work station monitor.

The connector is a Hirose RM15TPD-12P, 75 Ohm type.

Pin	Function
1	Green signal
2	Green ground
3	Red Signal
4	Red ground
5	Blue Signal
6	Blue ground
7	Syncs Signal
8	Syncs ground

Note: this output always provides RGB signals even when the system's main analogue outputs are configured for Y, Cb, Cr operation.

Ethernet Connection (Option)

The Ethernet interface option allows the Mainframe to be connected into a Picturenet/Picturebank system via a 'Thin Wire' ethernet connection. The Ethernet node provided is a 50 Ohm BNC stub, conforming to the IEEE specification 802.3. Up to 30 such nodes can be connected, via 'T-Adaptors', up to a total length of 185 metres without repeaters.

☞ **Caution: the 50 Ohm sockets can be permanently damaged by 75 Ohm plugs, therefore great care must be taken when connecting video cables.**

☞ **Caution: both ends of the Ethernet cable run must be terminated correctly.**

Cable Lengths & Characteristics

A BIT-SERIAL CABLES

The cabling, routing and connectors used must have mechanical characteristics conforming to the standard BNC type (IEC Publication 169-8) and its electrical characteristics must permit them to be used at frequencies up to 500 MHz in 75 Ohm circuits.

It is recommended that the cable chosen to connect the Mainframe should meet any relevant national standards on electro-magnetic radiation.

It should be noted that the ninth and eighteenth harmonics of the 13.5 MHz sampling frequency used by the equipment fall at the 121.5 and 243 MHz aeronautical emergency channels. Appropriate precautions must therefore be taken in the cabling and routing to ensure that no interference is caused at these frequencies.

All inter-connecting cabling, routing and equipment connected to the Mainframe must be meet the above requirements to ensure correct operation.

B CONTROL CABLES

The characteristics for each serial cable should be as follows:

- **i** Characteristic Impedance greater than 100 Ohms at 100 KHz.
- **ii** DC series loop resistance less than 0.1 Ohms per metre.
- **iii** Conductor diameter greater than 0.5mm.
- **iv** Mutual pair capacitance less than 65pf per metre.

The cable may be composed of twisted or non-twisted conductors possessing the described characteristics. Most commonly available non-loaded telephone cable meets these requirements.

A serial link with the above cable characteristics can be expected to operate over a length exceeding 300 metres. A standard 15 metre cable is supplied.

C SCSI CABLES

The total SCSI picture disk cable length must not exceed 4.5 meters excluding the cabling within the Mainframe and only the cable supplied with the equipment must be used for this purpose.

Routine Maintenance

A AIR FILTER

The air filter in the Mainframe is held behind the front panel. This needs cleaning on a regular basis to prevent the system from over heating.

The fan air filter can be removed by removing the front panel then sliding the filter from its retainers.

B SYSTEM DISK

To ensure that the system remains reliable, and to prevent possible catastrophic data loss, the following advice should be heeded:

i Always back-up pictures onto Magneto Optical disks at the end of each session.

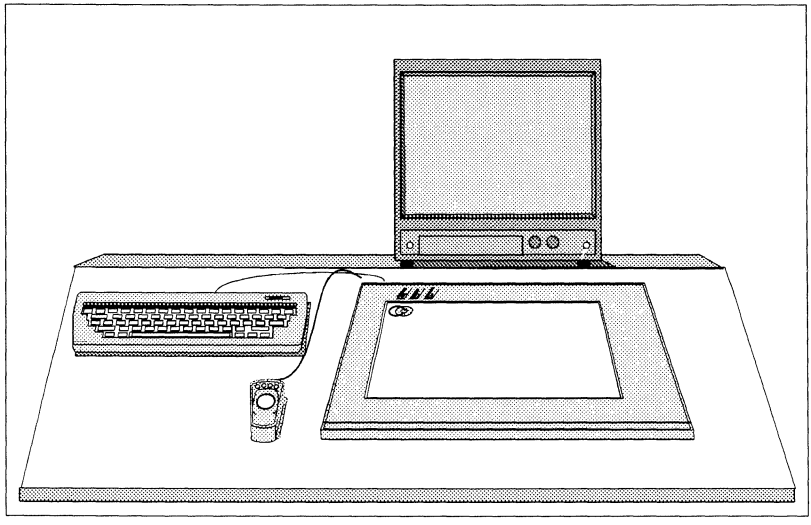
ii On a routine basis delete obsolete library entries from the system's hard disk. Note that it is always advisable to copy a file onto an archive cartridge before it is permanently deleted from the system's library.

CONTROL SYSTEM

Description

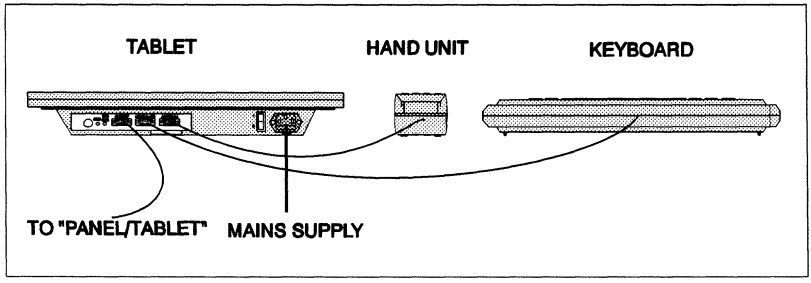
The control station for the system consists of a digitising tablet, a Pressure Sensitive Pen, a QWERTY keyboard and a Hand unit. The connection between the control system and Mainframe is via an RS 422 serial link.

The Tablet should be situated away from stray magnetic fields and electro-magnetic interference. The control system requires a monitor to display the output of the system, situated in the best position for the operator. See below for a typical control system layout.



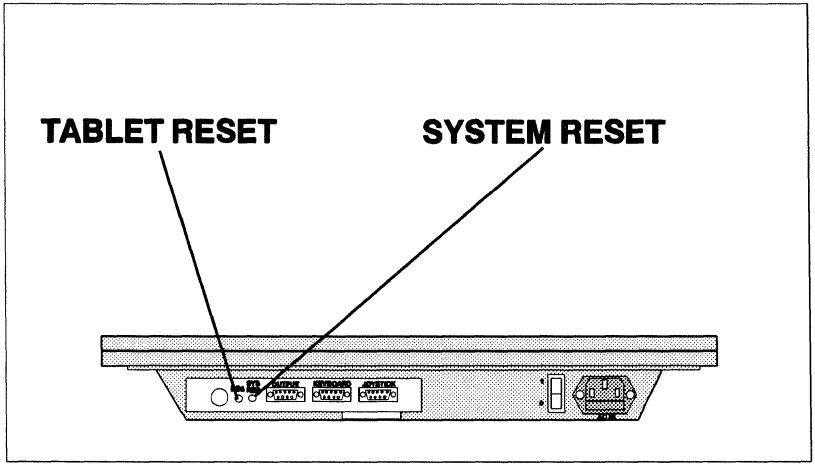
Connection

This serial link connects between the "PANEL/TABLET" 9-way D-type socket on the rear of the Mainframe and the 9-way D-type socket on the Tablet. This link can be operated with a maximum cable length of 300 Metres. The tablet and control station should be connected as shown below:



System Reset

The Control Station can be reset using the 'reset' button at the rear of the tablet. The system can be reset using the ***RECESSED*** button at the rear of the tablet. This button must be pressed twice to reset the system.



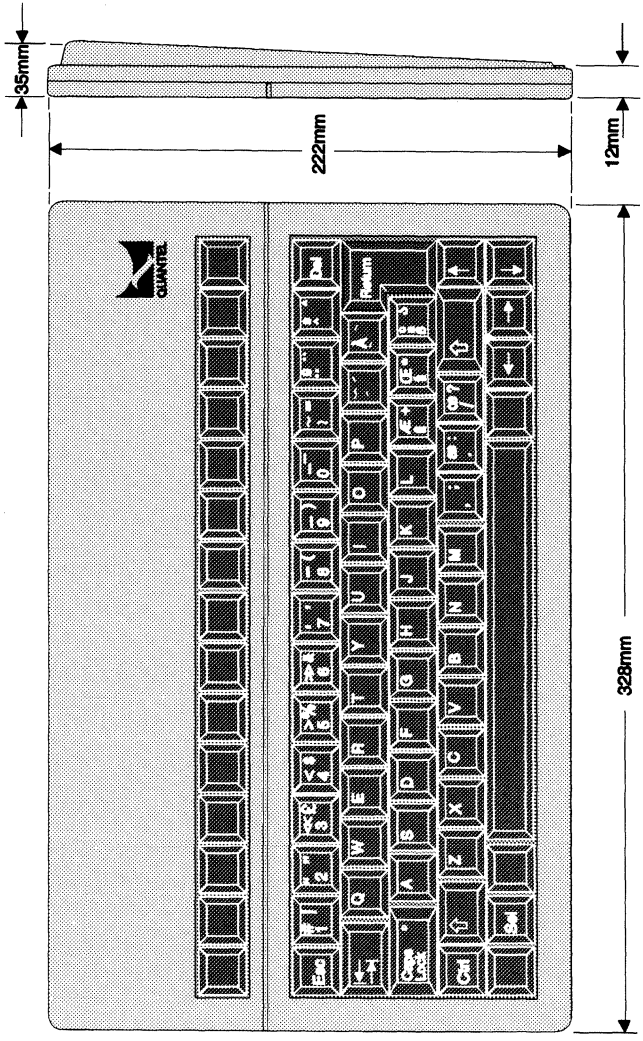
Mounting the Tablet

The Tablet can be mounted on top of the desk or flush with the desk surface. There are no fixing points to secure the Tablet to the desk top and therefore desks with steep inclines should be avoided, as the Tablet will only be held by the friction of the Tablet's feet.

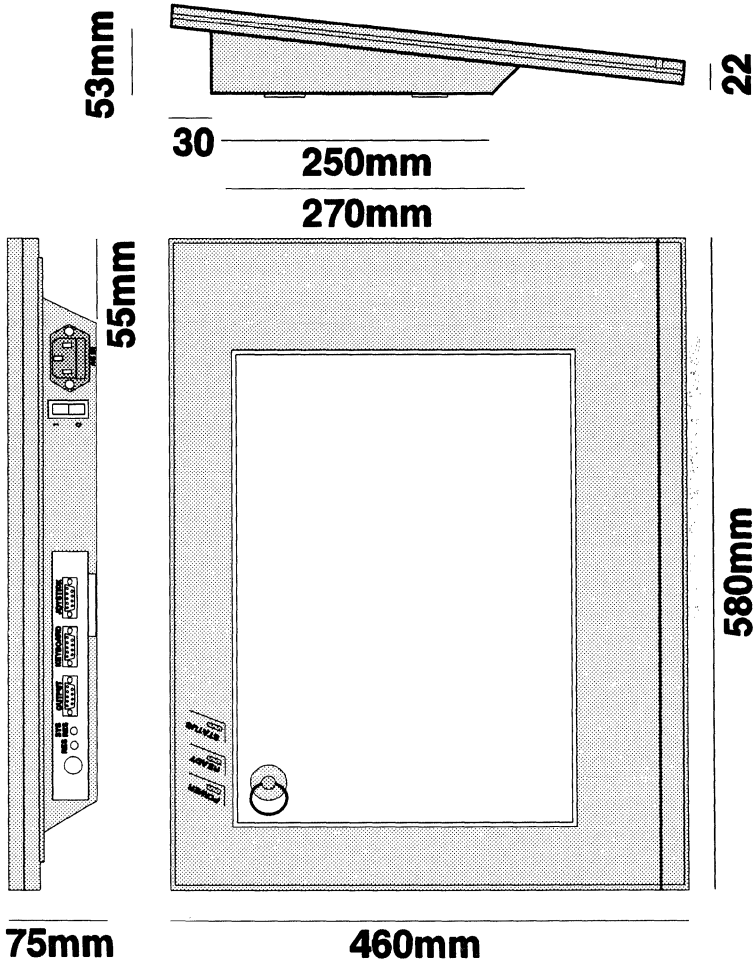
The Tablet can be mounted flush with the desk top by cutting the desk top to the shape of the Tablet and by securing the Tablet with brackets mounted to the underneath of the desk.

☞ **Caution: Do not dismantle the tablet as the delicate electronics can be easily damaged.**

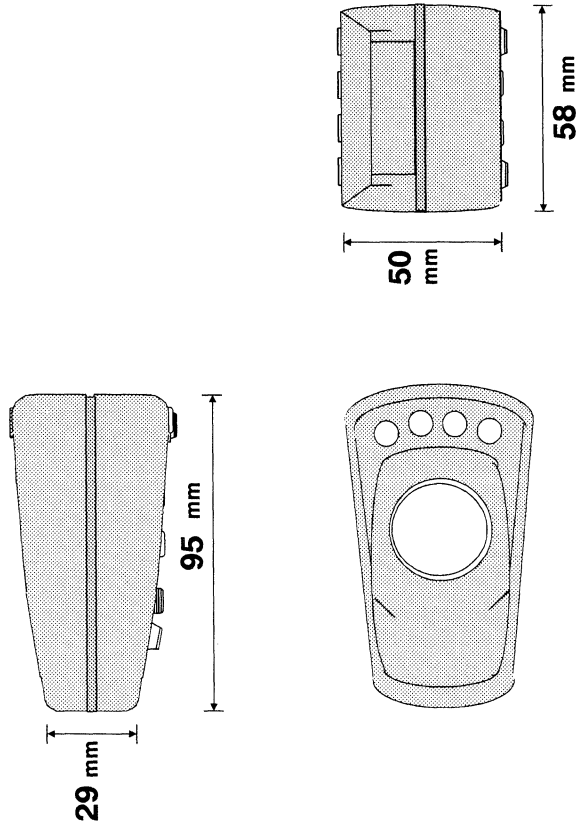
Keyboard Dimensions



Tablet Dimensions



Hand Unit Dimension



Routine Maintenance

A TABLET CARE

The tablet itself is made of an expanded foam moulding. The combination of different plastics and paints used in the production of the tablet restricts the use of cleaning agents that can be used to ones that are alcohol based.

As with any cleaning substances test that no damage is caused to the plastic and metal surfaces by applying the cleaning agent to an unobtrusive part first.

Never clean the tablet using abrasive materials.

☛ **Warning: Always isolate the tablet from the electrical supply before cleaning.**

B PEN CARE

The "pressure sensitive" pen used with the control system is a delicate device, and therefore great care must be taken to avoid damage when it is being used or when it is stored. The following guide lines should be remembered so that the full operational life of the pen can be ensured:

- **i** Do not attempt to take the pen apart, as this will permanently damage the pen.
- **ii** There are no user adjustments on the pen.
- **iii** Avoid using excessive pressure when using the pen as this will stress the pen and increase wear on the tablet surface.
- **iv** Avoid heavy tapping of the pen on the tablet or any hard surface as this will cause damage to the delicate moving parts inside the pen.
- **v** When the pen is not in use for long periods, the pen should be stored away from areas of strong light as this may cause the plastic to deteriorate and become brittle.

MAGNETO OPTICAL DISK

Description

The 650 Mbyte Magneto Optical drive is used for library item archiving purposes as well as for loading system software and fonts. The following optical cartridges may be used on the system:

SONY EDM-1DA0 Optical Disk (1024 byte/sector)

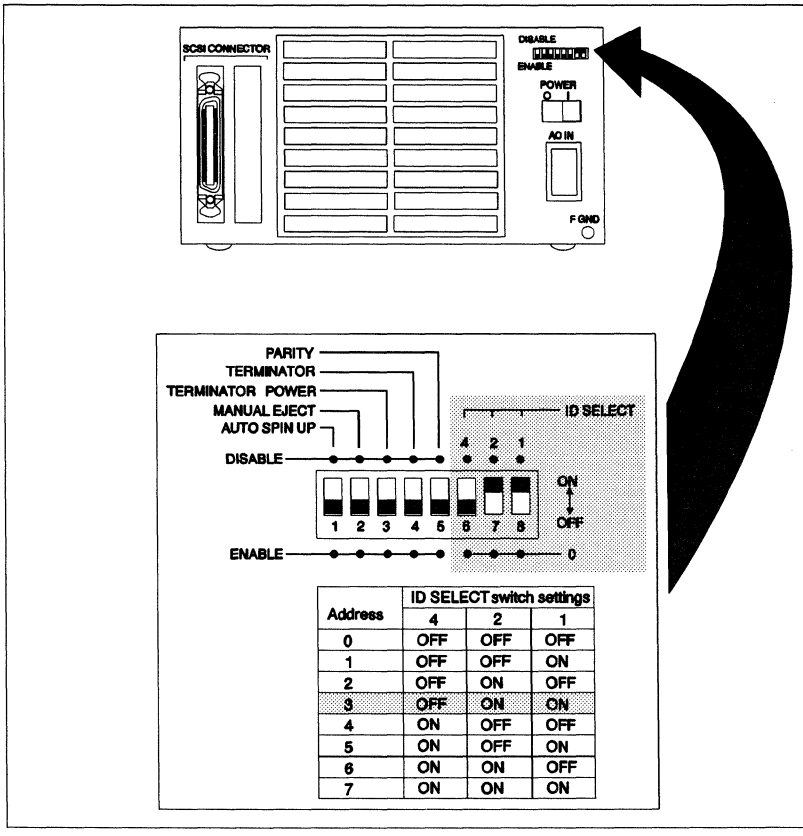
3M Rewriteable Optical Disk (1024 byte/sector)

RICOH Rewriteable Optical Disk ROD-5062T

Philips and DU PONT Optical Disk PDO 52G

Configuration

The drive is configured using a DIL switch on its rear panel. When configuring the system, this drive should be configured as SCSI address 3 as shown in the following diagram.

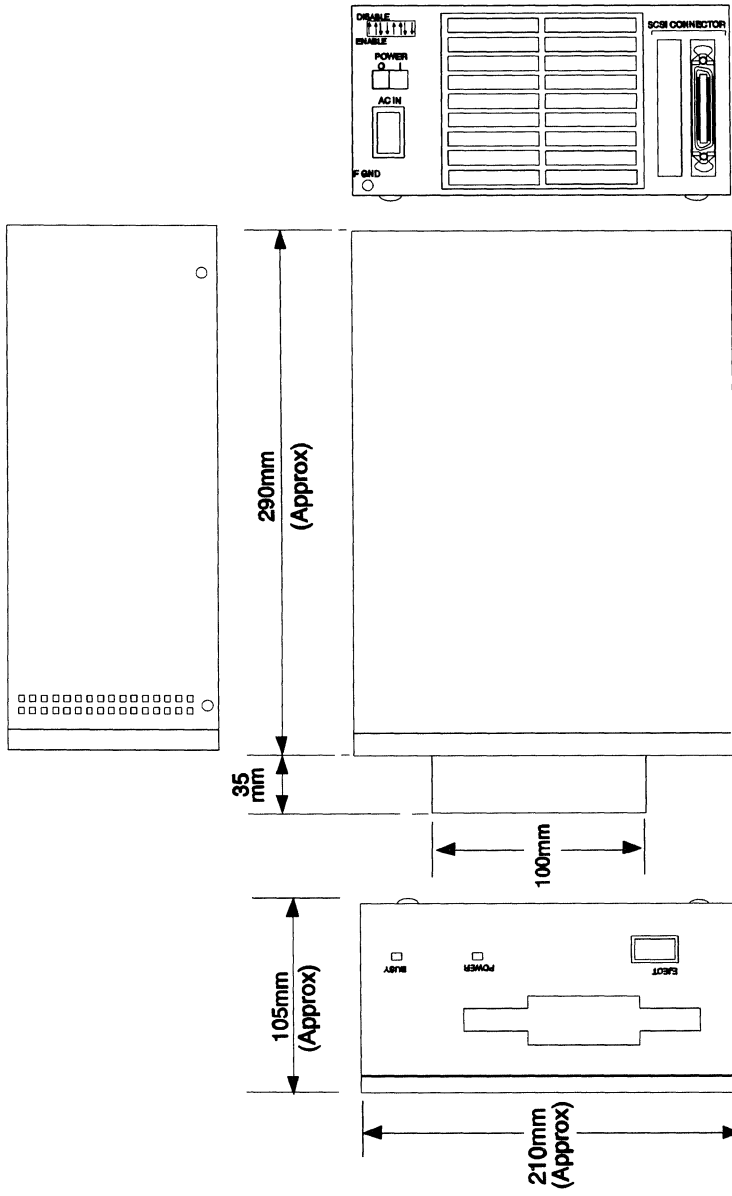


Address	ID SELECT switch settings		
	4	2	1
0	OFF	OFF	OFF
1	OFF	OFF	ON
2	OFF	ON	OFF
3	OFF	ON	ON
4	ON	OFF	OFF
5	ON	OFF	ON
6	ON	ON	OFF
7	ON	ON	ON

The termination switches at the rear of the unit are set differently when the drive is at the end of the bus and when the drive is in the middle of the bus. These settings are as follows:

Rear Switches	Drive at End of Bus	Drive in Middle of Bus
Terminator	Enable	Disable
Terminator Power	Enable	Disable

Dimensions


DISABLE
ENABLE
POWER
AC IN
F GND
SCSI CONNECTOR
290mm
(Approx)
35
mm
100mm
105mm
(Approx)
BUSY
POWER
EJECT
210mm
(Approx)

Routine Maintenance

The Magneto Optical drive and cartridge require periodic cleaning. The lens in the drive and the surface of the cartridge can pick up dust particles. The symptoms of a dirty lens or cartridge is a sudden failure of a cartridge to be read from or written to.

The lens/cartridge should be cleaned with the recommended cleaning equipment. An example is the SONY MOA-L55 lens cleaning cartridge. This cartridge, available from Quantel, comes with an Optical disk cleaning cloth.

The frequency of the cleaning depends on the environment in which the drive/cartridge is being used. The recommended cleaning frequency for the drive lens is a minimum of once a month. The recommended cleaning frequency for the cartridge is a minimum of once every six months.

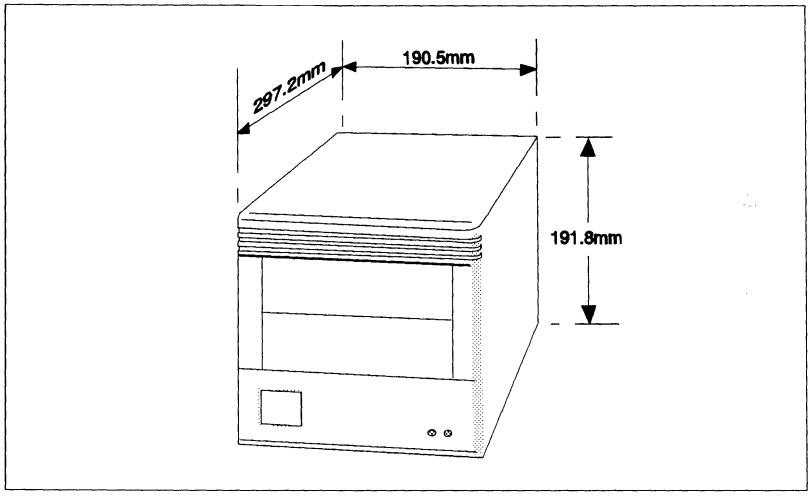
The Magneto Optical drive is a delicate computer peripheral and should be treated accordingly. The Operating Instructions booklet supplied with the drive contains a list of precautions, notably that the drive should not be installed "near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust and/or moisture".

Following these guide-lines will ensure a reliable operation of the Magneto Optical drive and cartridges.

3 GBYTE FIXED DISK

Description

The SCSI 3 Gbyte Fixed disk is a bulk storage device which is used to store on-line library items such as pictures, cutouts, stencils etc.



Configuration

The drive should be configured as the next unused SCSI address using the switch on the rear of the unit. This switch can be incremented or decremented through the possible address values using the end of a ball-point pen. Addresses 2, 4, 5 or 6 can be used (address 3 is reserved for the Magneto Optical disk drive).

The drive should be connected to the system using the cable supplied, and the unused socket on the rear of the drive should be fitted with a metal terminator.

Routine Maintenance

A FILE SECURITY

The 3 Gbyte Fixed Disk drives are very reliable devices and require minimal maintenance, but to prevent possible catastrophic data loss should the drive fail, the following advice should be heeded:

i At the end of each session, or at regular intervals, back-up pictures and other important graphics items onto Magneto Optical disks.

ii At regular intervals delete obsolete picture, cutout and stencil entries from the disk. Note that it is always advisable to copy a file onto an archive cartridge before it is permanently deleted from the system's library.

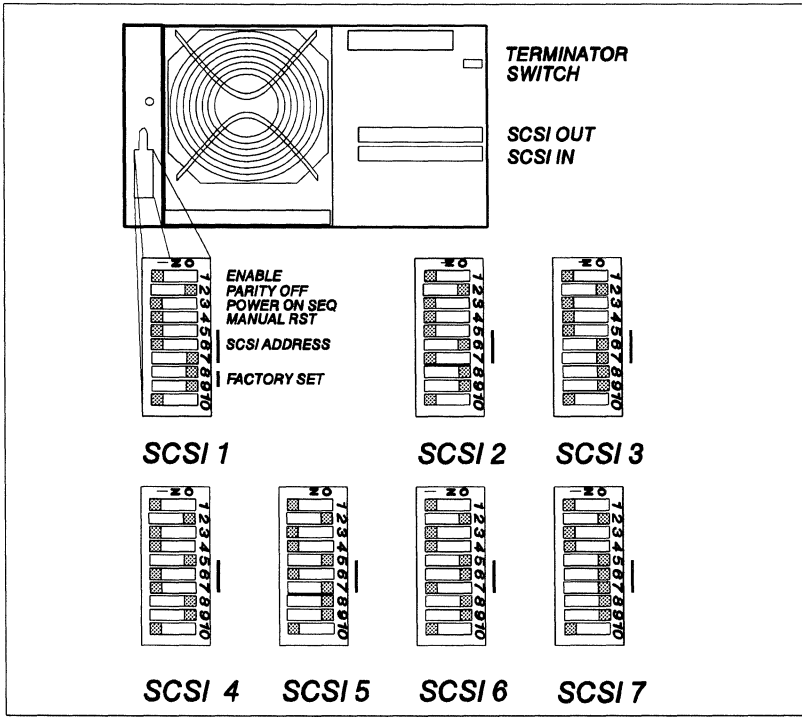
SABRE 2.2 GIGA BYTE DISK

Description

The SCSI 2.2 Giga byte disk is a bulk storage device which is used to store on-line library items such as pictures cut-outs, stencils etc.

Configuration

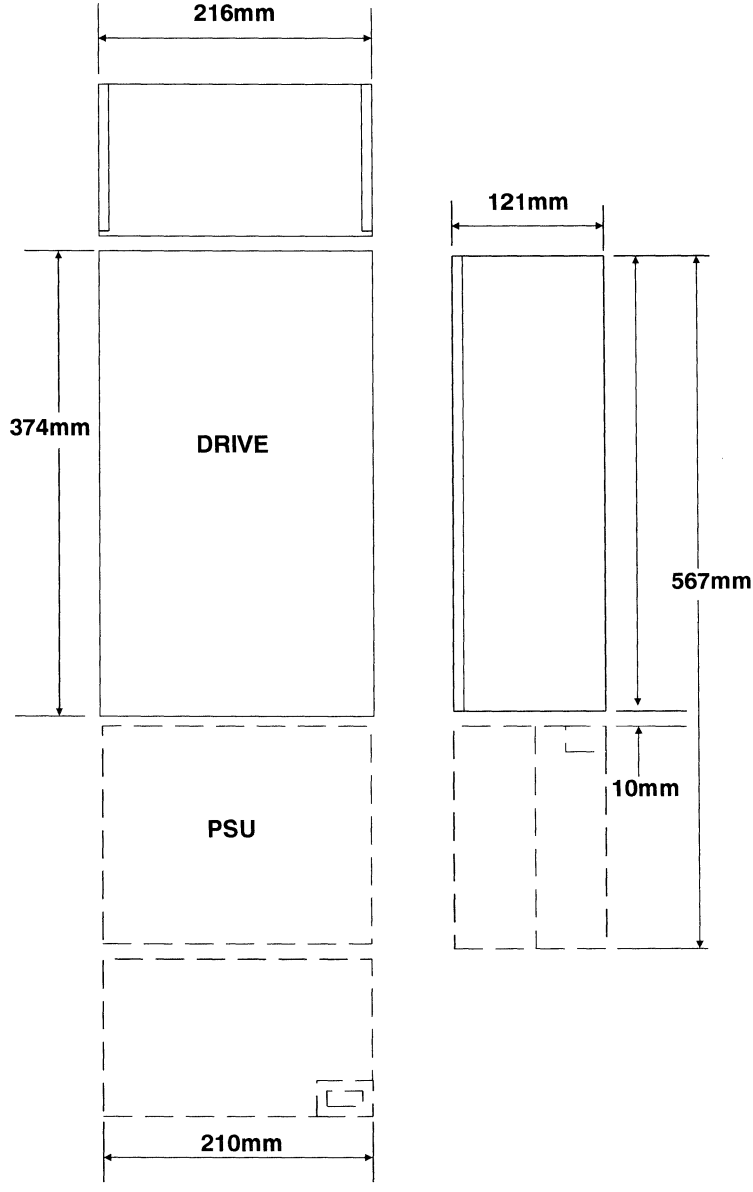
The CDC/Sabre drive should be configured as the next unused SCSI address. This is done using the 10-way DIL switch on the rear of the unit as shown in the following diagram. See the CDC/Sabre manual for racking and configuration details.



When the drive is at the end of the bus, and using the black SCSI cable, the switch 2 on the rear panel of the drive should be set to the "T" position and the metal SCSI terminator should be fitted to the upper SCSI connector.

When the drive is not at the end of the bus switch 2 on the rear of the drive should be set to the "I" position.

Dimensions



Routine Maintenance

A FILE SECURITY

The 2.2 Gbyte Sabre drives are very reliable devices and require minimal maintenance, but to prevent possible catastrophic data loss should the drive fail, the following advice should be heeded:

i Always back-up pictures onto Magneto Optical disks at the end of each session.

ii On a routine basis delete obsolete picture, cut-out and stencil entries from the disk. Note that it is always advisable to copy a file onto an archive cartridge before it is permanently deleted from the system's library.

ELECTRICAL SUPPLY

Description

☛ **WARNING: EQUIPMENT MUST BE EARTHED AT ALL TIMES !**

The unit's mains connector and mains switch/circuit breaker are situated on the rear panel. The connector is of the 3-pin, 5 Amp IEC type, which is supplied with a mating cable. This cable should be connected directly (shortest cable length) to an earthed electrical supply outlet.

American Standard:	Black White Green	Live Neutral Earth
European Standard	Brown Blue Green/Yellow	Live Neutral Earth

This product is a Class 1 apparatus (as defined in IEC 536) and its accessible conductive parts must always be connected to the protective (earthing) conductor of the supply installation by the green or green/yellow conductor of the supplied 3-core cable, to ensure continued safety of both apparatus and user. The supply installation should be protected so as to safely interrupt prospective short circuit currents at the apparatus in excess of 300A.

Mains Requirements

i 200 VA maximum

ii 240 Volts : 10%, 50Hz

iii 115 Volts : 10%, 60Hz

Note: that when the unit is configured for 115 Volt mains operation, a link is fitted on the unit's power supply module.

Electrical Supply Quality

It is recommended that the unit is connected to a "Technical Electrical Supply"; free from interference and L.F. transients etc. The electrical supply should be clean and sinusoidal, to prevent large transient currents during the peaks of the supply cycle.

ENVIRONMENT

Operating Environment

Care should be taken in the choice of installation environment to ensure reliability. The following points should be remembered when installing the system, to minimize possible failure:

- **i** Operating temperature range 10^{o} to 40^{o}C
- **ii** Humidity non-condensing 20% to 80% RH
- **iii** Avoid installations near sources of direct heat and avoid exposure to direct sunlight or any other strong direct lights. These may cause heat build up within the unit.
- **iv** Ensure that good air circulation around the rack is provided to prevent heat build up. Air holes should be given adequate clearance. Ensure that no ventilation holes on the unit are restricted, because over heating will occur.
- **v** Ensure that power and data cables are not run together and that they are tied back to avoid obstructing the air flow.
- **vi** Ensure that the ambient air temperature is kept within the range 10^{o}C - 40^{o}C. Avoid areas where large temperature changes are possible as this may unduly stress components, and may also cause condensation damage to the system's magnetic disk media.
- **vii** Avoid areas subject to vibration and areas where dust contamination is possible.
- **viii** It is recommended that the unit is connected to a "Technical Electrical Supply"; free from interference and low frequency transients etc. The electrical supply should be clean and sinusoidal, to prevent large transient currents when the unit's switch mode power supply unit is in operation.

☞ **Caution: The Integrated Circuits and other components within the system can be irreparably damaged by static fields or discharge. Therefore adequate precautions must be taken to prevent any possible damage.**

Storage & Shipping Environment

Before powering up the equipment it must be given the minimum acclimatization time in the operating environment. Powering up the equipment before it has had time to acclimatize may cause damage due to condensation.

If the equipment has just been received or removed from a climate with temperatures at or below 50°F (10°C), do not open the container until the following conditions are met, otherwise condensation could occur and damage to the equipment result. Place packing in the operating environment for the time duration indicated on the following temperature chart.

Previous Temperature	Acclimatising Time
+40°F +4°C	13 Hours
+30°F -1°C	15 Hours
+20°F -7°C	16 Hours
+10°F -12°C	17 Hours
0°F -18°C	18 Hours
-10°F -23°C	20 Hours
-20°F -29°C	22 Hours
-20°F -34°C	27 Hours

FONTS

Fonts Held on Disk

A large number of Fonts can be supplied for use with the system. They can provide a comprehensive library of fonts on the system's internal Winchester disk, available for use by the system at all times. All characters are generated digitally and stored at optimum resolution, so that at all sizes the characters are reproduced perfectly. The following type faces are supplied as standard on all systems:

80001 Bitstream Swiss 721 Bold

80003 Bitstream Swiss 721 Bold Italic

80004 Bitstream Swiss 721 Black

80172 Bitstream Dutch 801 Bold

80173 Bitstream Dutch 801 Bold Italic

80174 Bitstream Dutch 801 Extra Bold

The above fonts are installed on the system at one size (85 lines) prior to despatch and a back-up copy of all font sizes (35, 85 and 160 lines) are provided with the system on a Magneto Optical disk. This Magneto Optical disk holds approximately 400 typefaces from the Quantel video typeface library in an encrypted format, accessible using a unique Quantel supplied password for each font.

For information purposes, the fonts available on Magneto Optical disk are described in the following lists.

Monotype Fonts

Number	Font Description
10023	Calvert Light
10024	Calvert Bold
10061	Gill Sans Roman
10062	Gill Sans Italic
10063	Gill Sans Condensed
10064	Gill Sans Bold
10065	Gill Sans Bold Italic
10066	Gill Sans Bold Condensed
10139	Photina Roman
10140	Photina Italic
10148	Plantin Roman
10149	Plantin Italic
10152	Plantin Bold
10158	Rockwell Roman
10159	Rockwell Roman Italic
10160	Rockwell Bold
10161	Rockwell Bold Italic
10162	Rockwell Roman Condensed
10163	Rockwell Extra Bold
10174	Times New Roman
10175	Times New Roman Italic
10199	Bembo Semi Bold Roman
10201	Calvert Bold Condensed
10204	Joanna Italic
10205	Joanna Bold
10207	Latin 2 Extra Condensed
10208	Levenim Bold Hebrew
30175	Caxton Bold Condensed Italic

ITC Fonts

Number	Font Description
20001	American Typewriter Medium
20004	American Typewriter Medium Condensed
20005	American Typewriter Bold Condensed
20010	Avant Garde Gothic Medium
20011	Avant Garde Gothic Medium Oblique
20014	Avant Garde Gothic Bold
20015	Avant Garde Gothic Bold Oblique
20017	Avant Garde Gothic Medium Condensed
20019	Avant Garde Gothic Bold Condensed
20042	Benguiat Medium
20066	Bookman Light
20068	Bookman Medium
20069	Bookman Medium Italic
20070	Bookman Demi
20071	Bookman Demi Italic
20072	Bookman Bold
20092	Cheltenham Book
20094	Cheltenham Bold
20096	Cheltenham Ultra
20100	Cheltenham Book Condensed
20102	Cheltenham Bold Condensed
20104	Cheltenham Ultra Condensed
20124	Eras Medium
20125	Eras Demi
20144	Friz Quadrata Regular
20145	Friz Quadrata Bold
20156	Garamond Book
20157	Garamond Book Italic
20184	Kabel Bold
20233	Serif Gothic Regular
20234	Serif Gothic Bold
20238	Souvenir Light
20239	Souvenir Light Italic
20240	Souvenir Medium
20241	Souvenir Medium Italic
20244	Souvenir Bold
20245	Souvenir Bold Italic
20273	Zapf Chancery Medium

Letraset Fonts

Number	Font Description
30040	Caxton Book
30041	Caxton Book Italic
30055	Compacta Bold
30137	Revue Medium
30143	Romic Medium

MLSH Fonts

Number	Font Description
40022	Antique Olive Roman
40025	Antique Olive Black
40164	Century Bold Condensed
40193	Clarendon Bold
40251	Egyptienne Bold Condensed
40294	Franklin Gothic Condensed
40296	Franklin Gothic Extra Condensed
40301	Frutiger 55 Roman
40302	Frutiger 56 Italic
40303	Frutiger 65 Bold
40304	Frutiger 66 Bold Italic
40305	Frutiger 75 Black
40306	Frutiger 76 Black Italic
40360	Glypha 66 Bold Italic
40414	Neue Helvetica 65 Medium
40415	Neue Helvetica 66 Medium Italic
40416	Neue Helvetica 67 Medium Condensed
40417	Neue Helvetica 73 Bold Extended
40418	Neue Helvetica 75 Bold
40419	Neue Helvetica 76 Bold Italic
40420	Neue Helvetica 77 Bold Condensed
40424	Neue Helvetica 87 Heavy Condensed
40426	Neue Helvetica 95 Black
40500	Lightline Gothic
40533	News Gothic Bold
40565	Optima Medium
40567	Optima Bold

Number	Font Description
40575	Palatino Roman
40576	Palatino Italic
40577	Palatino Bold
40631	Sabon Roman
40633	Sabon Bold
40721	Trade Gothic Bold Italic 2
40724	Trade Gothic 20 Bold Condensed
40728	Trade Gothic Extended
40729	Trade Gothic Bold Extended
40748	Univers 55 Roman
40749	Univers 56 Italic
40750	Univers 65 Bold
40751	Univers 66 Bold Italic
40752	Univers 75 Black
40753	Univers 76 Black Italic
40756	Univers 49 Light Ultra Condensed
40757	Univers 57 Condensed
40758	Univers 58 Condensed Italic
40759	Univers 67 Bold Condensed
40760	Univers 68 Bold Condensed Italic
40762	Univers 63 Bold Extended
40763	Univers 73 Black Extended
40786	Univers 85 Extra Bold
40787	VAG Rounded
40788	Quartz 75 Bold
40789	Matrix Printer
40793	Neue Helvetica 95 (SL)
40794	Neue Helvetica 73 (SL)
40798	Helvetica Medium Extended
40801	Frutiger 57 Condensed
40802	Frutiger 67 Bold Condensed
40803	Frutiger 77 Black Condensed
40804	Helvetica Greek Condensed
40806	Chaim Shamen 85 Hebrew
40807	Miriam Hebrew
40809	Frank-Ruehl Light Hebrew
40810	Lotus Light One Arabic
40811	Lotus Light Two Arabic
40812	Helvetica Greek Inclined
40813	Helvetica Greek Bold
45651	Serifa 65 Bold

Neufville Fonts

Number	Font Description
45309	Futura Book
45311	Futura Medium
45312	Futura Medium Italic
45313	Futura Heavy
45314	Futura Heavy Italic
45315	Futura Bold
45316	Futura Bold Italic
45317	Futura Extra Black
45320	Futura Medium Condensed
45321	Futura Bold Condensed
45322	Futura Bold Condensed Italic

Miscellaneous Fonts

Number	Font Description
46001	Record Graph Eurostyle Bold
50000	Wagner Fette Fraktur
55002	ATF Clearface Gothic Extra Bold
60002	VGC Aquarius 5
60003	VGC Aquarius 6
60004	VGC Aquarius 7
60005	VGC Serpentine Bold
60006	VGC Serpentine Bold Italic
60007	VGC Caslon Bold Condensed
60008	VGC American Gothic
65001	SB Windsor Bold
70100	Math & Greek Pi

Bitstream Fonts

Number	Font Description
80000	Swiss 721 Roman
80001	Swiss 721 Bold
80002	Swiss 721 Italic
80003	Swiss 721 Bold Italic
80004	Swiss 721 Black
80005	Swiss 721 Thin
80006	Swiss 721 Thin Italic
80007	Swiss 721 Light
80008	Swiss 721 Light Italic
80016	Swiss 721 Bold Condensed
80018	Swiss 721 Black Condensed
80021	Swiss 721 Medium
80022	Swiss 721 Medium Italic
80023	Swiss 721 Light Extended
80027	Swiss 721 Black Extended
80050	Geometric 211 Medium
80051	Geometric 211 Medium Italic
80080	Humanist 601 Bold
80100	Swiss 742 Bold Condensed
80101	Swiss 742 Bold Condensed Italic
80120	Compacta Bold Italic
80121	Compacta Light
80130	Humanist 521 Roman
80131	Humanist 521 Italic
80132	Humanist 521 Condensed
80150	Incised 901 Bold
80151	Incised 901 Light
80160	Square 721 Bold Extended
80161	Square 721 Roman
80170	Dutch 801 Roman
80171	Dutch 801 Italic
80172	Dutch 801 Bold
80173	Dutch 801 Bold Italic
80174	Dutch 801 Extra Bold

Number	Font Description
80180	Latin 725 Medium
80181	Latin 725 Roman
80182	Latin 725 Italic
80183	Latin 725 Medium Italic
80190	Modern 721 Poster Bodoni
80191	Bauer Bodoni Roman
80200	Geometric Slabserif 712 Bold
80201	Geometric Slabserif 712 Light
80210	Geometric 706 Medium
80211	Geometric 706 Black
80900	Brush 451 Brush Script
80901	Pi Font No.1
82000	ITC Avant GG Medium Geometric 711
82001	ITC Avant GG Bold Geometric 711
82002	ITC Avant GG Ex Light Geometric 711
82020	ITC Garamond Bold Aldine 851
82021	ITC Garamond Bold Italic Aldine 851
82040	ITC Cheltenham Book Stubserif 705
82041	ITC Cheltenham Bold Stubserif 705
82060	ITC Galliard Bold Aldine 701
82080	ITC Souvenir Demi Freeform 731
82081	ITC Souvenir Light Freeform 731
82100	ITC Bookman Bold Italic Revival 711
82120	ITC Newtext Book Copperplate 421
82121	ITC Newtext Regular Copperplate 421
82122	ITC Newtext Demi Copperplate 421
82130	ITC Symbol Bold Copperplate 721
82131	ITC Symbol Italic Copperplate 721
82132	ITC Symbol Black Copperplate 721
82133	ITC Symbol Black Italic Copperplate 721
82134	ITC Symbol Book Copperplate 721
82135	ITC Symbol Book Italic Copperplate 721
82136	ITC Symbol Medium Copperplate 721
82137	ITC Symbol Medium Italic Copperplate 721

Number	Font Description
82140	ITC Kabel Bold
82172	ITC Korinna Bold
82173	ITC Korinna Kursiv Bold
82185	ITC Benguiat Bold Italic
82200	ITC Franklin Gothic Heavy
82201	ITC Franklin Gothic Book
82202	ITC Franklin Gothic Medium
82210	ITC Machine Regular
82220	ITC Bauhaus Light
82230	ITC American Typewriter Light
82240	ITC New Baskerville Roman
82250	ITC Benguiat Gothic Bold
82251	ITC Benguiat Gothic Bold Italic
82260	ITC Berkeley Oldstyle Book
82270	ITC Caslon No.224 Book
82280	ITC Century Book Condensed
82281	ITC Century Book Condensed Italic
82300	ITC Cheltenham Book Italic
82301	ITC Cheltenham Bold Italic
82310	ITC Clearface Regular
82320	ITC Fenice Regular
82330	ITC Friz Quadrata Roman
82331	ITC Friz Quadrata Bold
82340	ITC Garamond Light
82341	ITC Garamond Bold
82342	ITC Garamond Bold Italic
82343	ITC Garamond Book Condensed
82344	ITC Garamond Bold Condensed
82360	ITC Lubalin Graph Extra Light
82361	ITC Lubalin Graph Bold
82370	ITC Novarese Bold Italic
82371	ITC Novarese Medium Italic
82380	ITC Quorum Light
82381	ITC Quorum Book
82382	ITC Quorum Bold
82390	ITC Serif Gothic Light
82400	ITC Tiffany Light Italic
82401	ITC Tiffany Medium Italic
82410	ITC Zapf Chancery Light
82900	ITC Bolt Bold Square 821

Number	Font Description
83000	Aldine 721 Roman
83001	Aldine 721 Italic
83002	Aldine 721 Bold
83010	Zapf Humanist 601 Bold
83014	Zapf Humanist 601 Demi
83031	Futura Medium
83038	Futura Light
83042	Futura Bold Condensed
83070	Bodoni Modern 421 Book
83074	Bodoni Modern 421 Roman
83101	News Gothic 731 Light
83106	News Gothic 731 Demi
83120	Zapf Elliptical 711 Roman
83140	News 705 Roman
83142	News 705 Bold
83150	Century Schoolbook 702 Roman
83154	Century Schoolbook 702 Bold Condensed
83161	Swiss 911 Ext Compressed
83162	Swiss 911 Ultra Compressed
83170	Goudy Old Style Roman
83171	Goudy Old Style Italic
83211	Balloon Bold
83230	Broadway Regular
83260	Aachen Roman
83280	Geometric 231 Light
83290	Informal 011 Roman
83291	Informal 011 Black
83300	Schadow Black Condensed
83330	Onyx Regular
83340	Staccato 222 Regular
83350	Bank Gothic Light
83351	Bank Gothic Medium
83360	Bernhard Modern Bold
83361	Bernhard Modern Bold Italic
83370	Commercial Script Regular
83380	Goudy Catalogue Regular
83390	Amazone Regular

Number	Font Description
83400	Amerigo Bold
83401	Amerigo Roman
83402	Amerigo Bold Italic
83410	Belwe Light
83420	Brush 445 Regular
83430	Caslon Openface Regular
83440	Century 725 Roman
83441	Century 725 Bold
83442	Century 725 Bold Condensed
83450	Copperplate Gothic Bold
83451	Copperplate Gothic Roman
83452	Copperplate Gothic Heavy
83460	Dom Casual
83461	Dom Bold
83462	Dom Diag
83463	Dom Diag Bold
83470	English 157 Regular
83480	Folio Light
83490	Classical Garamond Roman
83510	Murray Hill Bold
83520	Parisian Regular
83530	Zurich Light
83560	Aldine 401 Roman
83570	American Text Regular
83580	Americana Roman
83581	Americana Extra Bold
83582	Americana Extra Bold Condensed
83590	Bell Centennial Sub Cap
83600	Blippo Black
83610	Caslon Old Face Roman
83620	Caxton Book
83621	Caxton Book Italic
83630	Clarendon Light
83631	Clarendon Condensed
83640	Cooper Medium
83641	Cooper Medium Italic
83670	Egyptian 710 Regular

Number	Font Description
83680	Engravers Roman Regular
83681	Engravers Roman Bold
83690	Exotic 350 Demi Bold
83700	Flareserif 821 Roman
83710	Franklin Gothic Roman
83720	Freeform 721 Bold
83721	Freeform 721 Black
83722	Freeform 721 Black Italic
83730	Freehand 471 Regular
83740	Freehand 575 Regular
83750	Italian Garamond Italic
83760	Original Garamond Roman
83770	Geometric 415 Light
83771	Geometric 415 Black
83780	Gothic 720 Light
83790	Gothic 821 Condensed
83800	Goudy Handtooled Regular
83810	Handel Gothic Regular
83820	Humanist 531 Ultra Black
83830	Humanist 777 Roman
83840	Industrial 736 Roman
83850	Kaufmann Regular
83860	Lapidary 333 Bold
83870	Latin Extra Condensed Regular
83880	Lucia Regular
83890	Lydian Bold
83891	Lydian Bold Italic
83892	Lydian Cursive Regular
83900	Maximus Regular
83910	Playbill Regular
83930	Revue Regular
83940	Romana Roman
83941	Romana Bold
83950	Stencil Regular
83960	VAG Rounded Regular
83970	University Roman Regular
83980	Swiss 921 Regular

CHAPTER 2

PREPARATION

GENERAL

Introduction

This chapter contains information relevant to the unpacking, rack mounting and inter-connection of the system for operation. PLEASE READ this chapter before installing the system, as the instructions contained have been produced to ensure that the system remains reliable.

As with any system of electronic hardware, the system must be correctly installed with the physical and environmental considerations explained in this chapter adhered to.

Quantel Ltd can take no responsibility for equipment failure due to incorrect installation.

If the equipment has just been received or removed from a climate with temperatures at or below 50°F (10°C), do not open the container until the following conditions are met, otherwise condensation could occur and damage to the equipment result. Place packing in the operating environment for the time duration indicated on the following temperature chart.

Previous Temperature	Acclimatising Time
+40°F +4°C	13 Hours
+30°F -1°C	15 Hours
+20°F -7°C	16 Hours
+10°F -12°C	17 Hours
0°F -18°C	18 Hours
-10°F -23°C	20 Hours
-20°F -29°C	22 Hours
-20°F -34°C	27 Hours

Note: other equipment supplied with the system may require acclimatising times different from those given above.

Unpacking

This section covers the unpacking and handling of equipment as it was delivered. Use the shipping list and the content guide to check that all contents are correct. Check for damage to the various units, as the shipping agents will have to be informed for insurance purposes if damage has occurred in transit.

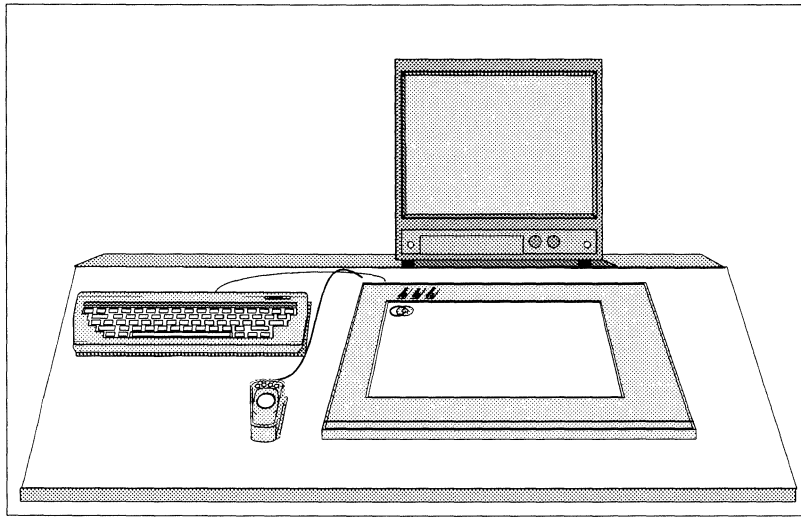
Care should be taken when unpacking the equipment, to ensure that any packing material is removed from the unit's connectors.

PHYSICAL INSTALLATION

Equipment Location

The system can either be 'Tower' mounted (standard configuration) or rack mounted. The work station Tablet is normally connected locally to the 'Tower mounted' Mainframe, but can be situated remotely up to 300 Metres from the system as the connection is via an RS 422 serial link. Note: that a 15 metre cable is supplied as standard.

The Tablet should be situated away from stray magnetic fields and electro-magnetic interference. The control system requires a monitor to display the output of the system, situated in the best position for the operator. See below for a typical control system layout.



Air Flow

A TOWER MOUNTING

The 'Tower' mounted system is cooled front to back, by air drawn through the front panel air filter through the unit's electronics to be expelled at the rear of the 'Tower'. Therefore ensure that unrestricted airflow is provide at the front and back of the tower, with all cabling tied back out of the way.

B RACK MOUNTING

The units are cooled front to back by air drawn through the front panel, across the printed circuit board and Power supply unit, to be expelled at the rear panel.

Ensure that the hot air expelled from other equipment is not drawn into the unit as this may cause overheating and subsequent damage.

CHAPTER 3

HARDWARE OPTIONS

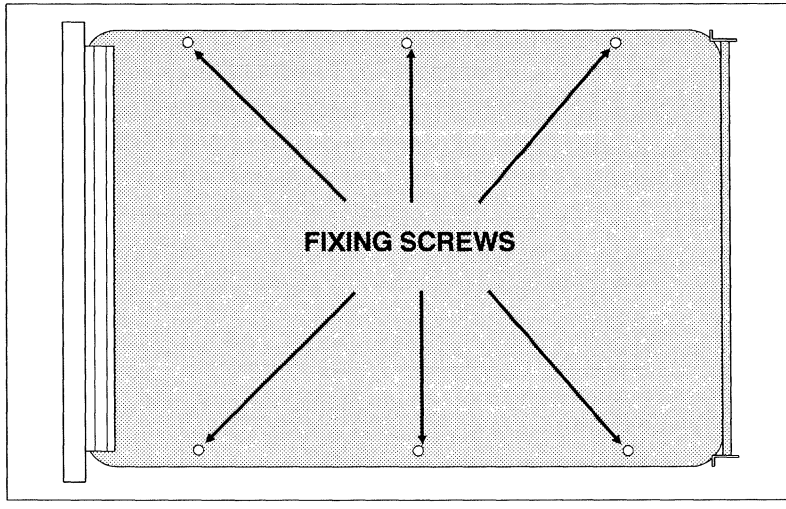
INSTALLING OPTIONS

Opening the Unit

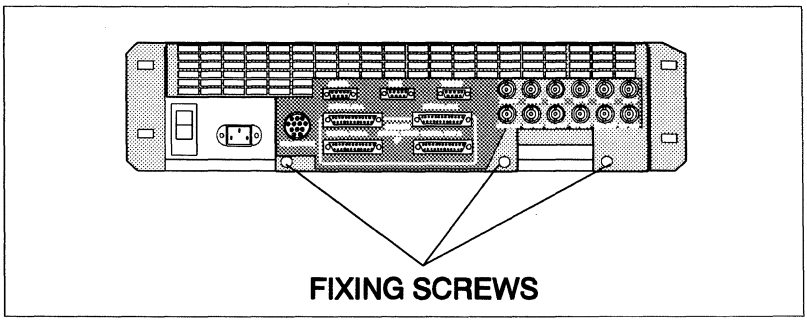
☛ **WARNING: Before attempting access to the unit, ensure that the mains electrical supply has been disconnected.**

☞ **Caution: the procedures detailed in this section should only be carried out by qualified service personnel, as damage will occur if procedures are performed incorrectly.**

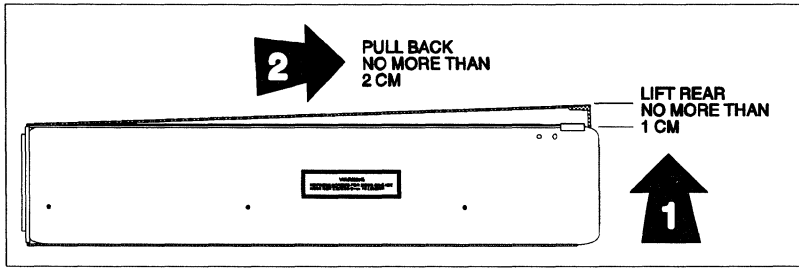
Once the unit has been taken from the tower, remove the screws from the top panel as shown in the following diagram. Keep these screws in a safe place for re-assembly.



Undo the three captive fixing screws at the rear panel as shown below:

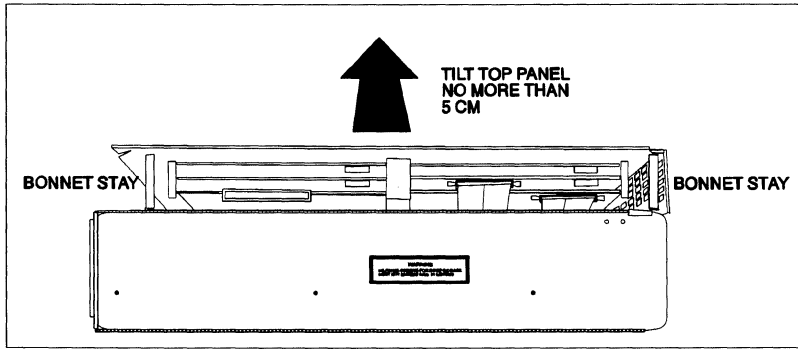


Lift the top panel at the rear by no more than 1 cm, then slide back the top panel by about 2 cm so that the front edge of the top panel is just clear of the front lip.



CAREFULLY and **SLOWLY** tilt up the edge of the top panel by approximately 5 cm until it can rest on the 'bonnet stays' as shown below.

☞ **Caution: PERMANENT DAMAGE WILL OCCUR to the printed circuit board highway and system disk if the top panel is tilted more than 5 cm!**



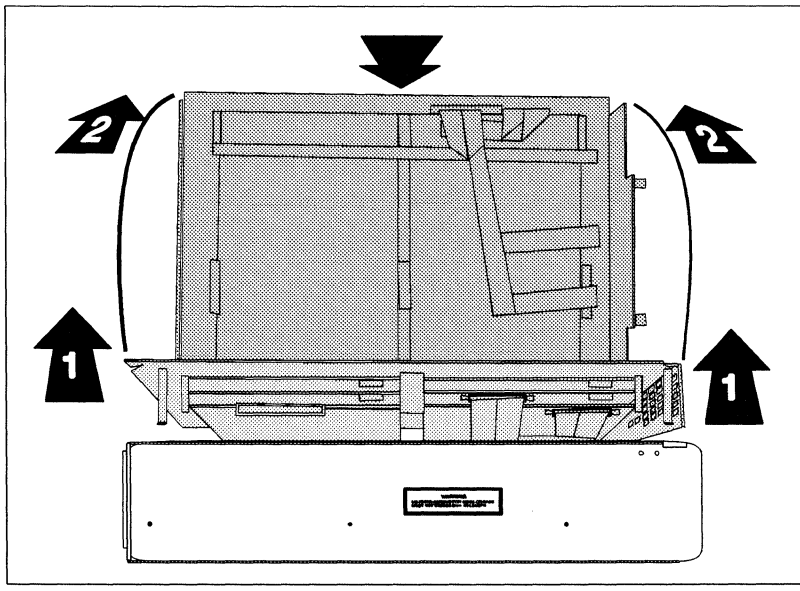
When the top panel is securely on the 'bonnet stays', the printed circuit boards and edge mounted switches can be accessed.

☞ **Caution: if any resistance is felt, at any stage, stop lifting and check for any obstruction.**

For further access, lift the whole top panel (both sides) by approximately 5 cm, then carefully rotate the top panel until the edge is vertical (90 degrees to the rest of the unit). The top panel can now be carefully lowered into the support clips.

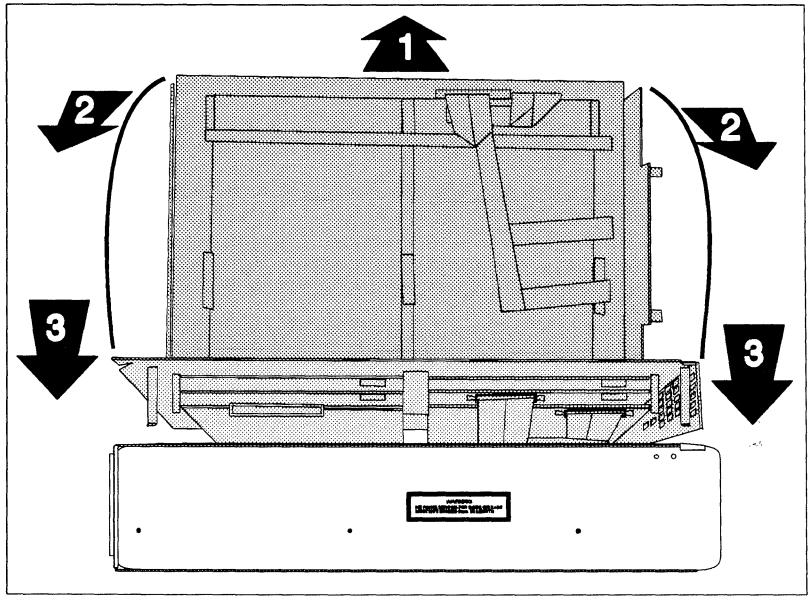
☞ **Caution: PERMANENT DAMAGE WILL OCCUR to the printed circuit board highway and system disk if the top panel is tilted more than 5 cm!**

☞ **Caution: if any resistance is felt, at any stage, stop lifting and check for any obstruction.**


2
2
1
1

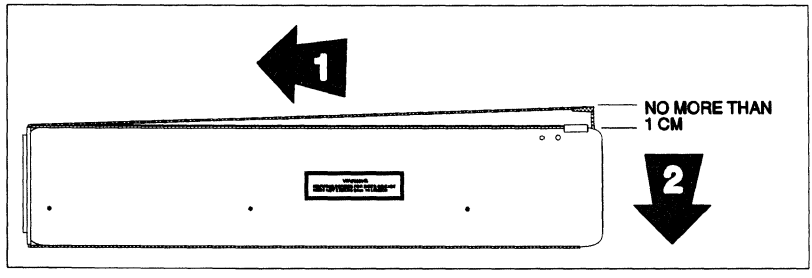
Re-assembling the Unit

Carefully lift the top panel from the support clips, rotate the top panel through 90 degrees until the top panel is resting on the bonnet stays.



☞ **Caution: if any resistance is felt, at any stage, re-lift and check for any obstruction.**

Carefully release the bonnet stays and lower the top panel. Carefully lower the front edge of the top panel under the front lip of the unit, then lower the top panel and slide into place. Secure the rear panel screws then the top panel screws and refit the unit into the tower.



GENERAL ADVICE

Static Damage

☞ **Caution: The Integrated Circuits and other components fitted on printed circuit board (PCB) can be irreparably damaged by static fields or discharge. To a certain extent, nearly all components can be damaged by static fields and static discharge. Therefore, adequate precautions must be taken to prevent any possible damage.**

Static damage is unlikely to occur when the printed circuit board (PCB) is fitted, as the PCB provides a local earth plain, but this may not protect devices should the PCB be removed from the unit.

Printed Circuit Boards & Components

A PRINTED CIRCUIT BOARDS

The Printed Circuit Boards (PCBs) containing the system's electronic circuitry are mounted within the unit, connected together via the board highway. There are two 96-way panduit connectors on each board, which fit into corresponding connectors on the highway.

These connectors have a limited insertion life and, therefore, PCBs should not be removed and inserted on a regular basis as this will affect the reliability of the connections.

Care must be taken when boards are inserted to ensure that pin damage does not occur. Ensure also that the pins are not contaminated in any way as this may cause intermittent connections.

B INTEGRATED CIRCUIT SOCKETS

The IC sockets used within the system are High-Insertion and therefore care should be taken when removing and inserting ICs or programmed devices to avoid damage to the sockets or devices. Note that the correct IC removal tool should be used at all times to avoid stressing the device.

A number of hybrid packages and modules are used within the system, and great care must be taken when removing or inserting them, to ensure their correct orientation and that the pins are not damaged.

C PCB TYPE NUMBERS

The Printed Circuit Boards (PCBs) are numbered with the board type, the PCB artwork issue letter and the Modification Status number of the PCB assembly. The information in this manual has been written for specific issues of printed circuit boards.

CHAPTER 4

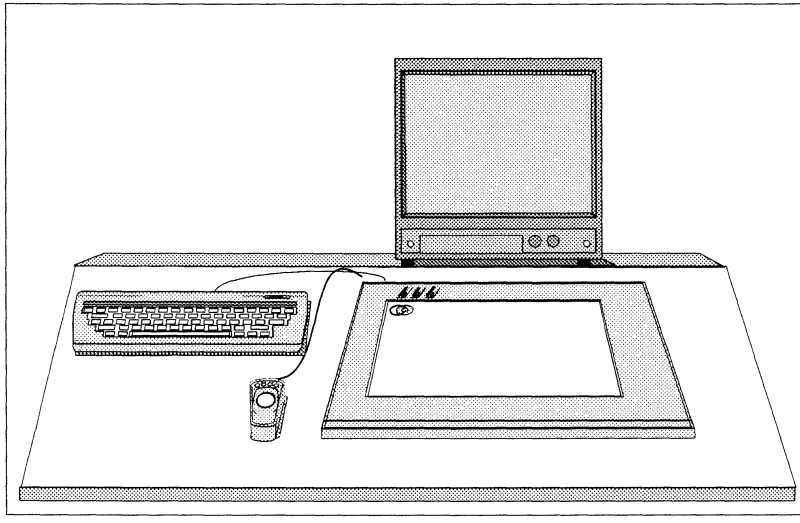
RACKING

PHYSICAL INSTALLATION

Equipment Location

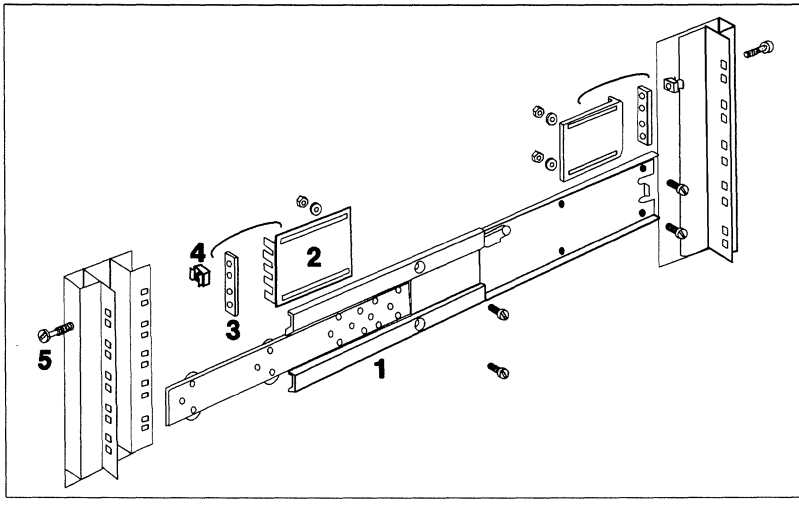
The system can either be 'Tower' mounted or rack mounted (standard configuration). The work station Tablet is normally connected locally to the 'Tower mounted' Mainframe, but can be situated remotely up to 300 Metres from the system as the connection is via an RS 422 serial link. Note: that a 15 metre cable is supplied as standard.

The Tablet should be situated away from stray magnetic fields and electro-magnetic interference. The control system requires a monitor to display the output of the system, situated in the best position for the operator. See below for a typical control system layout.



Rack Mounting the Unit

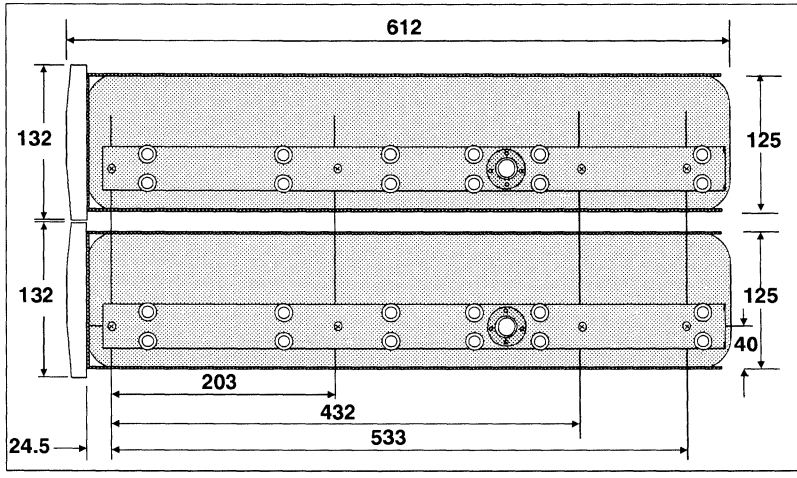
The units can be rack mounted on slides. The units are 19" (483mm) wide and can be mounted into most standard 19" cabinets. Standard rack mounts are provided on the front panel. The units should be mounted on Schroff 110 QD (or equivalent) telescopic slides provided and secured to the cabinet by the front panel using the racking kit provided:



[1] Telescopic Slides [2] Mounting Bracket [3] Threaded Strip
[4] M6 Cage nut [5] Collar screw

Mounting Inner Slides

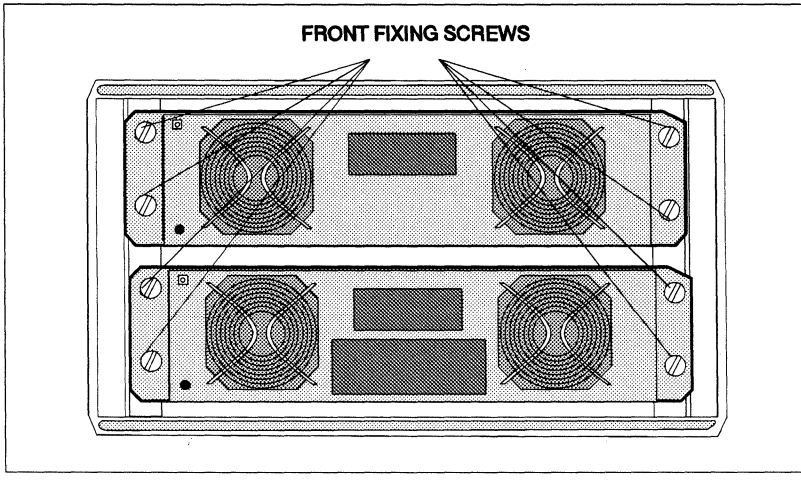
The inner slides [1] are mounted to the unit's side panels, each slide secured by 4 off M4 Pan Head screws:



Tower Mounting

For installations where the Mainframe is to be located near the operator, the tower-mounting option can be used to locate the system under a desk with the control station. The tower unit option is supplied ready-assembled so that the Mainframe can be simply slid in and secured.

Once the tower has been unpacked, lay it on its side and slide the Mainframe units (with front panels removed) into the tower through the front opening. The units should then be secured using the front fixings.

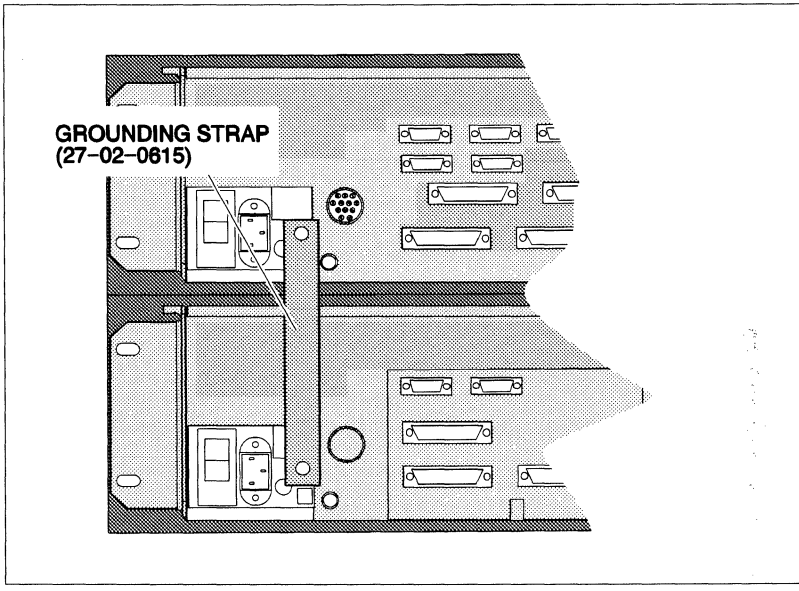


When the tower and unit are secured, the unit's front panel can be replaced, the tower's feet can be fitted and the tower can be stood up.

☞ **Caution: the Painting unit's internal Winchester disk can be shock-damaged, so care must be taken when handling the unit.**

RFI Grounding Strap

The RFI Grounding strap provided (27-02-0615) must be fitted as shown bellow to ensure that the equipment meets the FCC RFI regulations.



Work Station Installation

A GENERAL

The control station for the system consists of a digitising tablet, a Pressure Sensitive Pen, a QWERTY keyboard and a Hand unit (joy-stick). The connection between the control system and Mainframe is via an RS 422 serial link (Mainframe "PANEL" on Mark 3 rack or "TABLET" on Mark 1 and 2 racks), which allows the user to operate the system remotely from the unit if required.

B MOUNTING THE TABLET

The Tablet can be mounted on top of the desk or flush with the desk surface. There are no fixing points to secure the Tablet to the desk top and therefore desks with steep inclines should be avoided, as the Tablet will only be held by the friction of the Tablet's feet.

The Tablet can be mounted flush with the desk top by cutting the desk top to the shape of the Tablet and by securing the Tablet with brackets mounted to the underneath of the desk.

☞ **Caution: Do not dismantle the tablet as the delicate electronics can be easily damaged.**

CHAPTER 5

CONNECTION

VIDEO CONNECTIONS

Digital Video Connections

The mark 4 Painting unit provides CCIR 601 serial digital video connections and the mark 1, 2 and 3 units provide CCIR 601 parallel digital video connections. These allow the system to be interfaced directly into most digital studio environments. These digital video connections are normally used in digital studios and can be used as the system's broadcast output.

Note: that the digital video inputs and outputs are controlled using the full page *VIDEO IN / OUT* menu. See Volume 1 Chapter 8 for details.

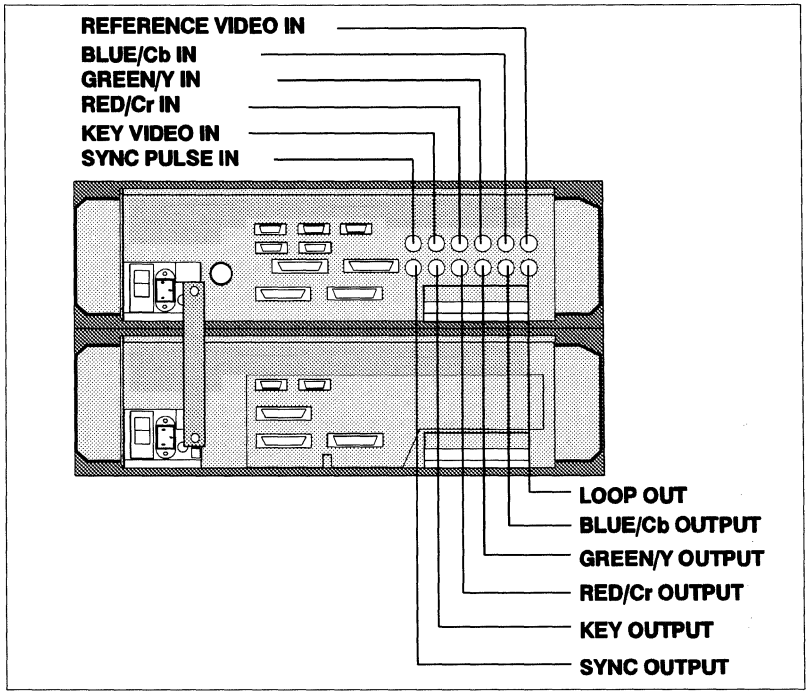
Analogue Video Connections

The Mainframe provides analogue component video connections which allow the system to be interfaced directly into most analogue component studio environments. The system's Red, Green, Blue and Syncs outputs are full broadcast specification video signals and can also be used as the system's main output.

SYNC IN	This is the system's RGB/YCrCb reference synchonising pulse input.
KEY IN	This is the system's key (stencil) input.
R/Cr IN	This is the system's Red/Cr input.
G/Y IN	This is the system's Green/Y input.
B/Cb IN	This is the system's Blue/Cb input.
REF IN	This is the system's output locking reference input.
SYNC OUT	This is the system's RGB/YCrCb reference synchonising pulse output signal.
KEY OUT	This is the system's key (stencil) output.
R/Cr OUT	This is the system's Red/Cr output.
G/Y OUT	This is the system's Green/Y output.
B/Cb OUT	This is the system's Blue/Cb output.
REF OUT	This is the system's output locking reference loop-through output.

Broadcast Analogue Studio Installations

The system provides analogue RGB/YUV component and key input and output connections. These should be connected as shown below.



The system can operate using 'syncs on green' input (see Configuration section). This is done using a configuration link. Output 'syncs on green' operation is controlled by the *VIDEO IN/OUT* menu.

The system should be locked to *output ref* and the system's *h phase* should be aligned using the Full Page *VIDEO IN/OUT* menu.

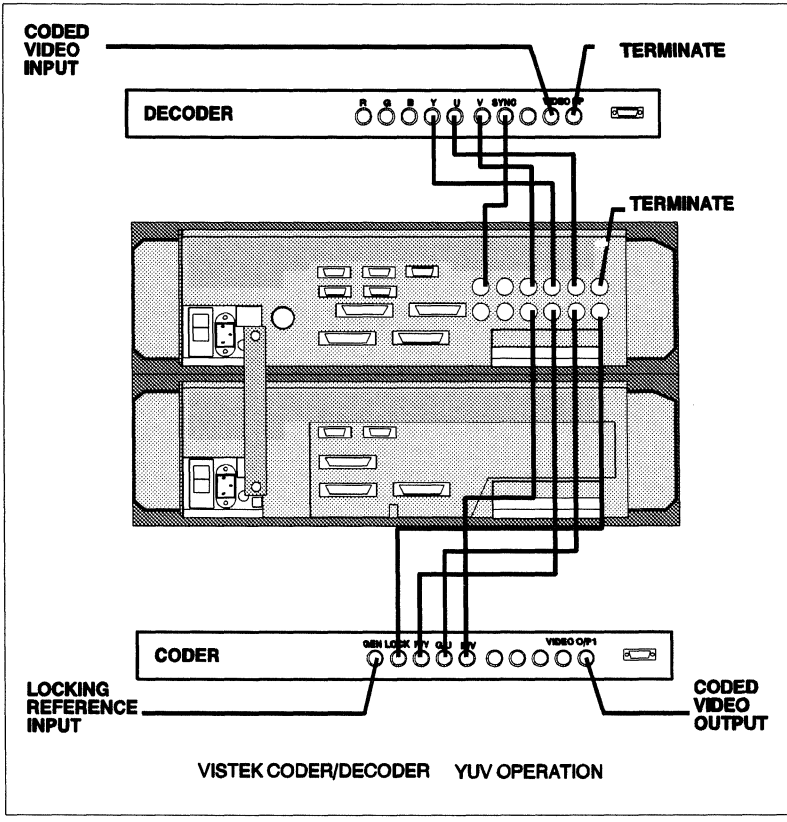
The system can be configured for RGB or YCrCb as detailed in Configuration section.

The video source should be set to YCrCb source for use with Betacam SP and the key source should be set to *ANALOGUE*.

Selection of sources is controlled by the system and therefore analogue and digital inputs/outputs can be left connected at all times.

Coder/Decoder Installations

The system provides RGB/YCrCb component video, which can be used in conjunction with Coders and Decoders of a suitable quality (approved Coders and Decoders can be supplied). These should be operated in YCrCb mode (for optimum quality):



VISTEK CODER/DECODER YUV OPERATION

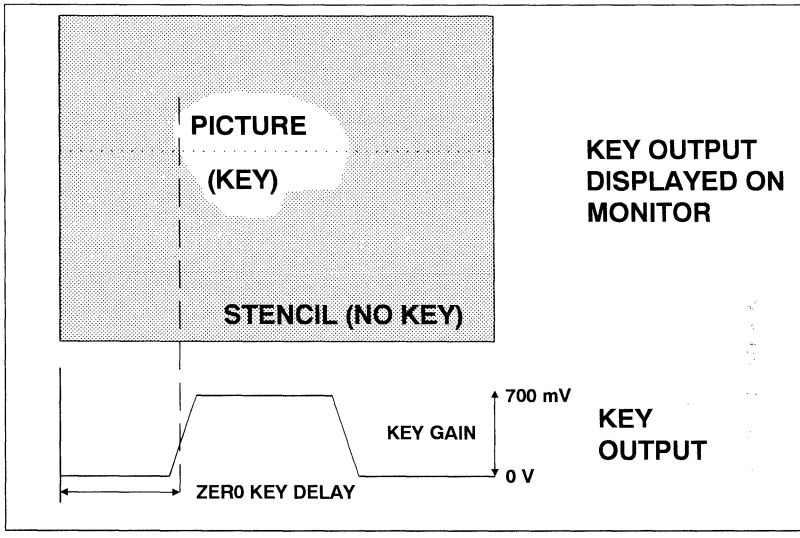
The system must be locked to output ref (black and burst) using the Full Page Set-up and *VIDEO IN/OUT* menu. The system's *h phase* (system's sync out) must be aligned to the *output ref* (reference sync). The Coder's H phase can then be set to the required position.

The system can operate in RGB mode by setting internal configuration links. Switch 5 of the optional Vistek Coder selects RGB/YCrCb operation.

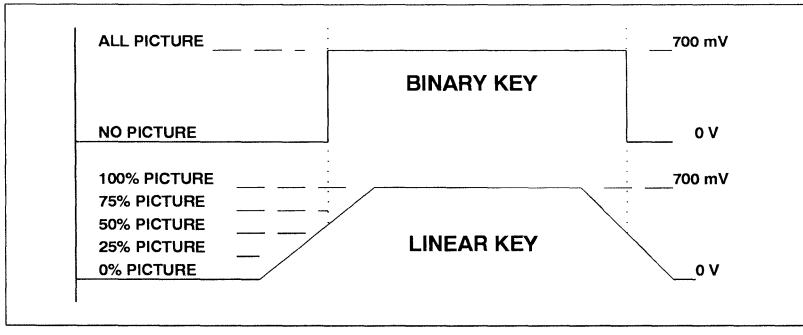
Key Applications

A LINEAR KEY OPERATION

The Key output signal from the system is effectively the Mainframe's internal stencil, which allows stencilled areas of the output picture to be hidden whilst showing un-stencilled areas.



The Mainframe provides a Key output with linear values from 0% (black = zero picture) to 100% (peak white = maximum picture). This is directly related to the opacity of picture with respect to a keyed background picture when using a linear keyer.



CONNECT

The key can be used by 'two-level' keyers and mixers to good effect, but operates best with keyers and mixers with true linear keying facilities.

The linear key output allows cut-outs and pictures to be keyed, within a mixer, into a background picture producing 'soft-edged' transitions.

The input key delay, gain and black level should be adjusted so that zero key = no stencil, and maximum key = full stencil. This is done using the full page *VIDEO IN/OUT* menu.

B ANALOGUE/DIGITAL KEY TIMING

The locking reference for 'live key' operation is obtained from the selected input video source (whether or not 'live video' has been selected). Therefore Analogue 'live key' could be used, and be timed to, one of the digital sources. This mode of operation is not advisable as large timing differences may occur between the analogue key source and the digital video source.

SYSTEM CONNECTIONS

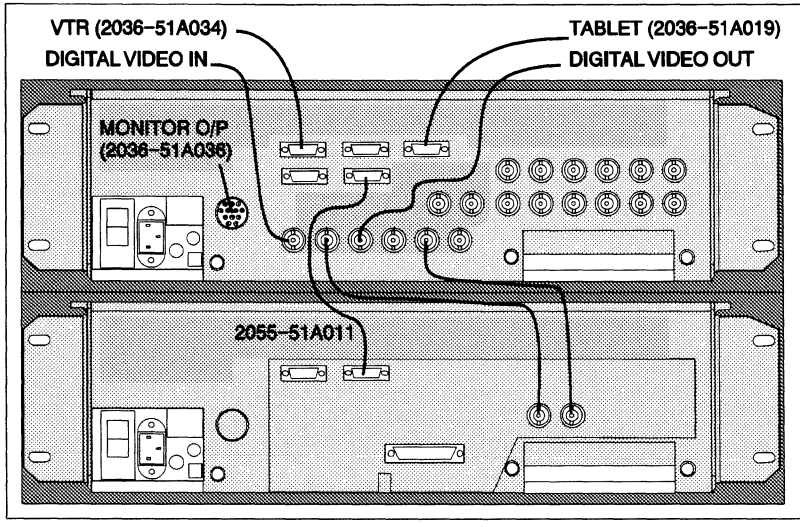
Inter-Connection (Mark 4 Painting Unit) SERIAL Loi

The Harriet system mark 4 Painting unit and mark 2 Ramcorder unit should be inter-connected as follows:

PAINTING UNIT	CABLE	RAMCORDER UNIT
Serial 601 I/P B		Serial 601 Output
Serial 601 0/P2 B		Serial 601 Input
Serial C	2055-51A011	Port B

PAINTING UNIT	CABLE	TABLET
Tablet	2036-51A019	Output

PAINTING UNIT	CABLE	BETACAM SP
Serial A	2036-51A043	Remote 1



For the above connections, the system's Full Page menu *CONFIGURE* function must be set up as detailed in the "Configure" section of Volume 1, Chapter 8.

SEE PG. 14

CONNECT

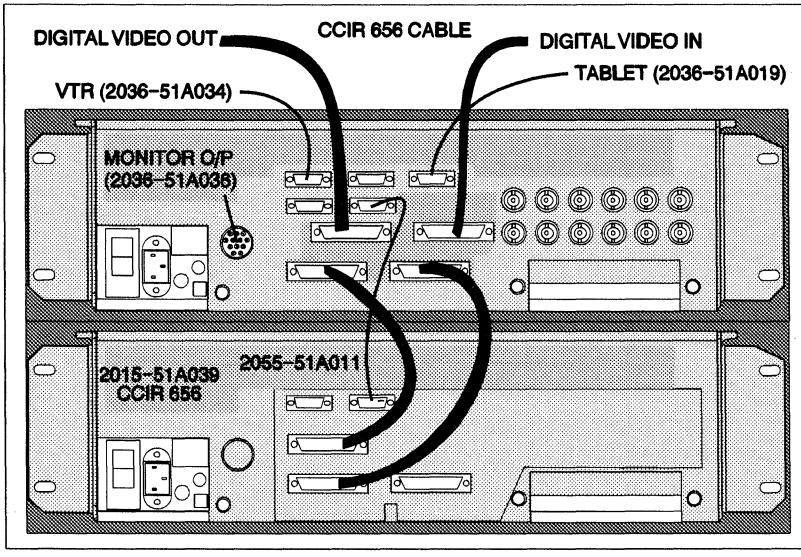
Inter-Connection (Mark 3 Painting Unit) PARALLEL 60

The Harriet system mark 3 Painting unit and Ramcorder unit should be inter-connected as follows:

PAINTING UNIT	CABLE	RAMCORDER UNIT
Digital B In	2015-51A039	Digital Output
Digital B Out	2015-51A039	Digital Input
Serial C	2055-51A011	Port B

PAINTING UNIT	CABLE	TABLET
Tablet	2036-51A019	Output

PAINTING UNIT	CABLE	BETACAM SP
Serial A	2036-51A043	Remote 1



For the above connections, the system's Full Page menu *CONFIGURE* function must be set up as detailed in the "Configure" section of Volume 1, Chapter 8.

SEE PG. 15

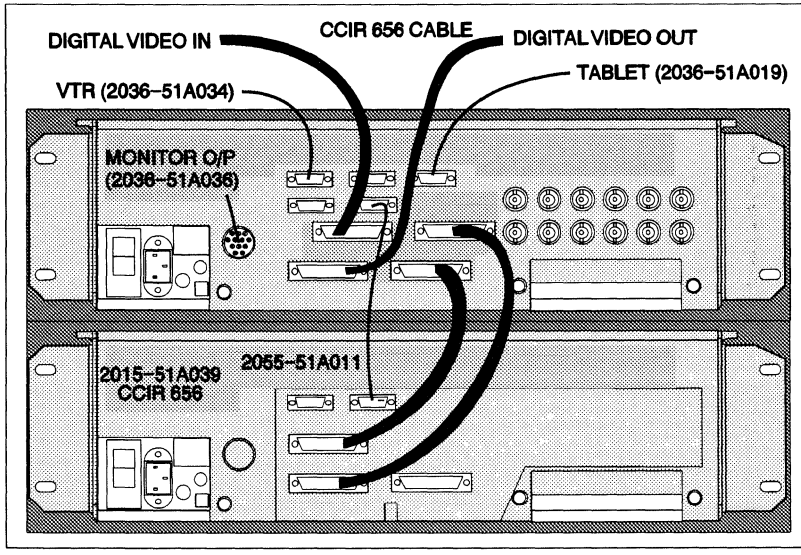
Inter-Connection (Mark 2 Painting Unit) PARALLEL GDI

The Harriet system mark 2 Painting unit and Ramcorder unit should be inter-connected as follows:

PAINTING UNIT	CABLE	RAMCORDER UNIT
Digital B In	2015-51A039	Digital Output
Digital B Out	2015-51A039	Digital Input
Serial C	2055-51A011	Port B

PAINTING UNIT	CABLE	TABLET
Tablet	2036-51A019	Output

PAINTING UNIT	CABLE	BETACAM SP
Serial A	2036-51A043	Remote 1



For the above connections, the system's Full Page menu *CONFIGURE* function must be set up as detailed in the "Configure" section of Volume 1, Chapter 8.

SEE PG. 15

VTR Connections

The system and VTR (Betacam) can be configured in two different ways:

With external locking reference (recommended): If an external locking reference signal is available the system should be connected as follows. The locking reference signal should be connected to the Painting unit's "REF IN" socket then from the Painting unit's "REF OUT" to the Betacam's "INPUT REF VIDEO" socket and terminated.

Without external locking reference (not recommended): If an external locking reference signal is not available, the system can use the Betacam's internal reference generator as follows. The black-burst signal from the Betacam's "OUTPUT VIDEO REF" should be connected to the Painting unit's "REF IN" and the "REF OUT" socket should be terminated.

SHARED USER BUS

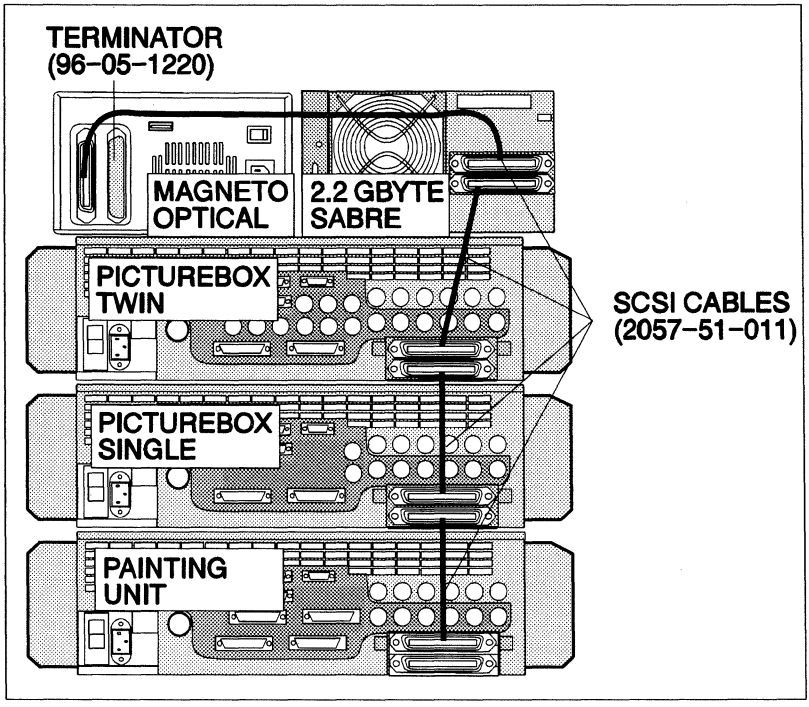
Description

Quantel's 'Shared User Bus' provides a system for integrating two or three closely related users together. The system allows graphics to be quickly exchanged between connected units with library management data such as title, category and entry date.

A Shared User Bus system can be formed between a Picturebox Twin and Single, a Picturebox Twin and Harriet, or Picturebox Twin, Single and Harriet. In each configuration, connection is by means of the SCSI Expansion Bus on the rear of the Mainframe and the second internal disk of the Picturebox Twin becomes a shared disk that is available to all users. Additional 2.2Gbyte and Magneto Optical drives connected to the SCSI Expansion Bus also form part of the shared system, allowing economical use of the storage to be made by all users.

Each system connected maintains a private internal disk providing complete independence from other users.

Shared User Bus Example



This example shows how a Picturebox Single, Picturebox Twin, a Harriet, a 2.2 Gbyte Sabre drive and a Magneto Optical drive are connected together to form a Shared user bus.

In this configuration, both Pictureboxes and the Harriet have access to the 2.2 Gbyte Sabre, the Magneto Optical and also to the Picturebox Twin's second internal 520 Mbyte drive.

The Picturebox Twin is acting as the 'Master' and the Harriet and Picturebox Single are acting as 'Slaves'.

Note that if required the internal terminator of the Magneto Optical drive could be used instead of the external terminator (96-05-1220) shown above.

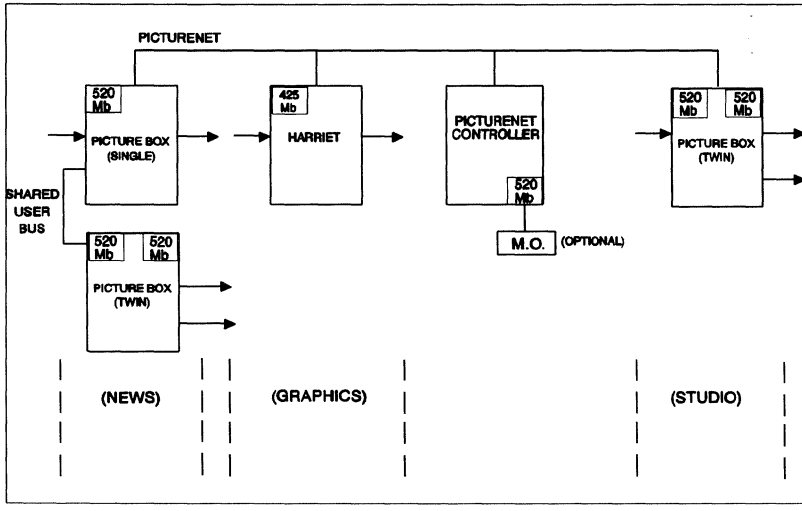
Note that the Harriet SCSI bus is terminated internally, and that the lower connector is not part of the 'Shared User Bus'.

PICTURENET CONNECTIONS

Description

Picturenet allows a large network of Picturebox, Paintbox, Harriet and Shared User Bus systems to be formed. Up to 30 workstations can be supported. The workstations are linked, via Ethernet to a Picturenet Controller which forms the heart of the system and to which a central pool of disk drives can be connected.

Picturenet also forms part of Quantel's Picturebank, designed to cater for systems where a large number of pictures are to be shared as a central archive, and where greater management of these pictures and their users is required.



Note: Refer to the chapter 9 "Picturenet/Picturebank" of volume 1 for operational information.

Implementation

Picturenet uses standard Thin Wire Ethernet to form the distributed network between connected units. The network system is managed by a Picturenet Controller which acts as a file server supporting up to 5 external disk drives. These disks are used to form a central archive of images that are available to each unit connected. The drives are also used as a holding area when transferring pictures between stations.

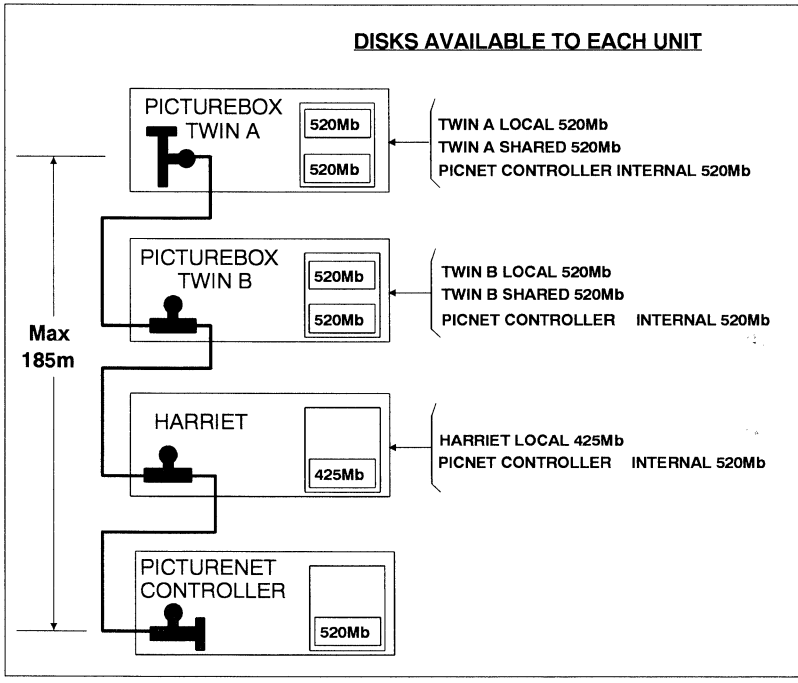
The Ethernet interface option allows Pictureboxes, Paintboxes and Harriets to be connected together using a dedicated 'Thin Wire' Ethernet network. The Ethernet node provided is a 50 Ohm BNC stub, conforming to the IEEE specification 802.3. Up to 30 such nodes can be connected, via 'T-Adaptors', up to a total length of 185 metres without repeaters.

☞ **Caution: the 50 Ohm sockets can be permanently damaged by 75 Ohm plugs, therefore great care must be taken when connecting video cables.**

☞ **Caution: both ends of the Ethernet cable run must be terminated correctly.**

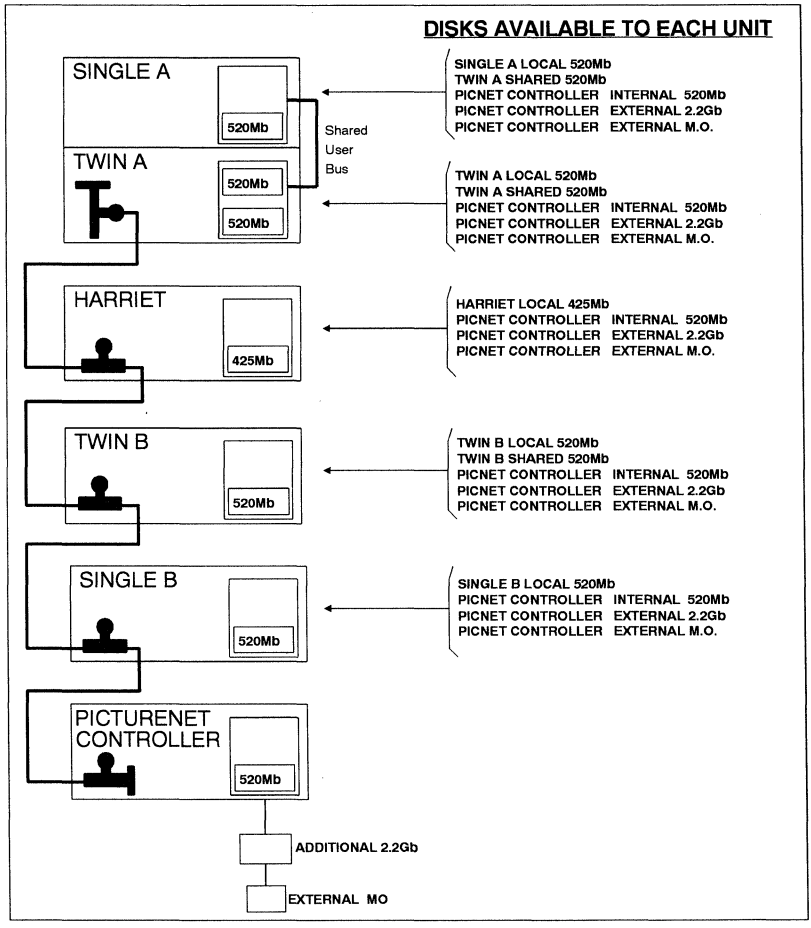
Picturenet - Stand-Alone Units

Pictureboxes, Paintboxes and Harriets can be connected together by attaching them directly to the Ethernet from the Picturnet Controller. This gives each system connected to the Ethernet access to the Picturenet Controller's shared disks as well its own disks.



Picturenet - SUB and Stand-Alone Units

Pictureboxes, Paintboxes and Harriets can be connected together by attaching them directly to the Ethernet from the Picturnet Controller. This gives each system connected to the Ethernet access to the Picturenet Controller's shared disks as well its own disks. Units connected together via a Shared User Bus can also be connected to the Picturenet by attaching one of the units of the SUB to the Ethernet.



CHAPTER 6

CONFIGURATION

MAINFRAME CONFIGURATION

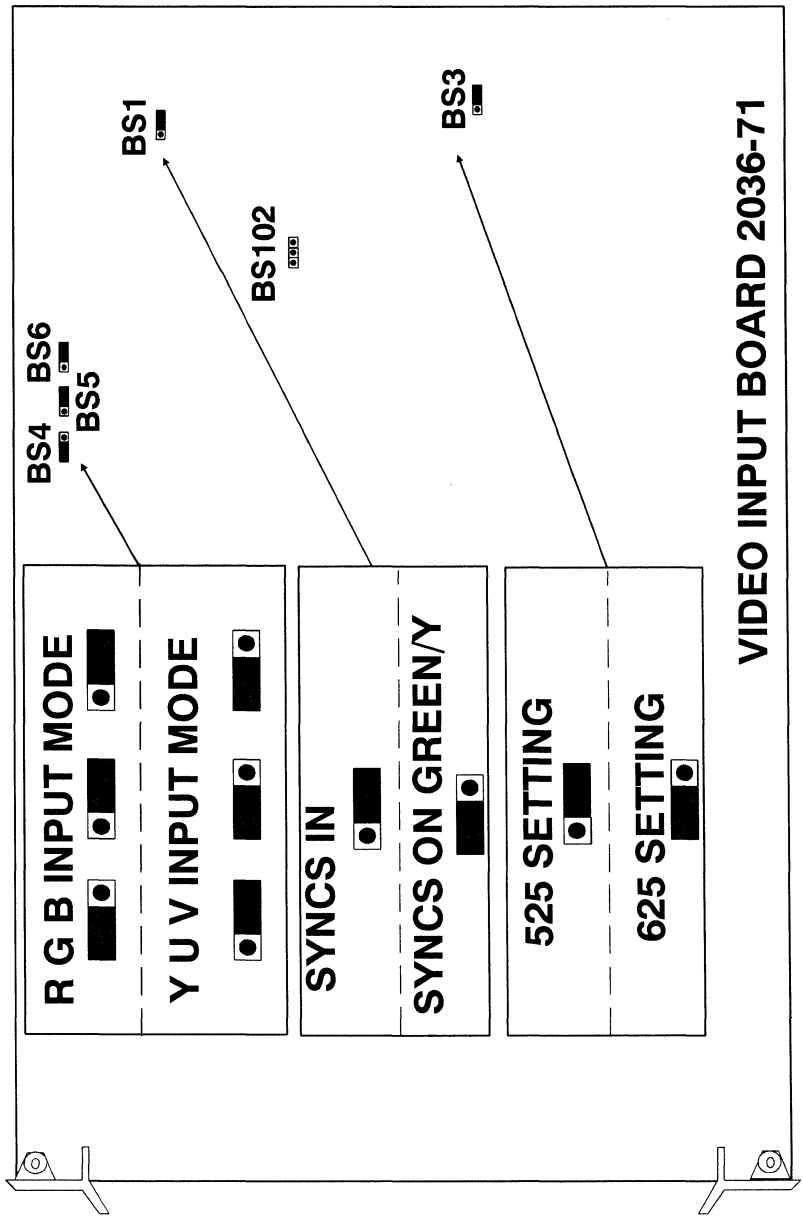
Introduction

Nearly all system configuration is performed using the system's Full Page menus:

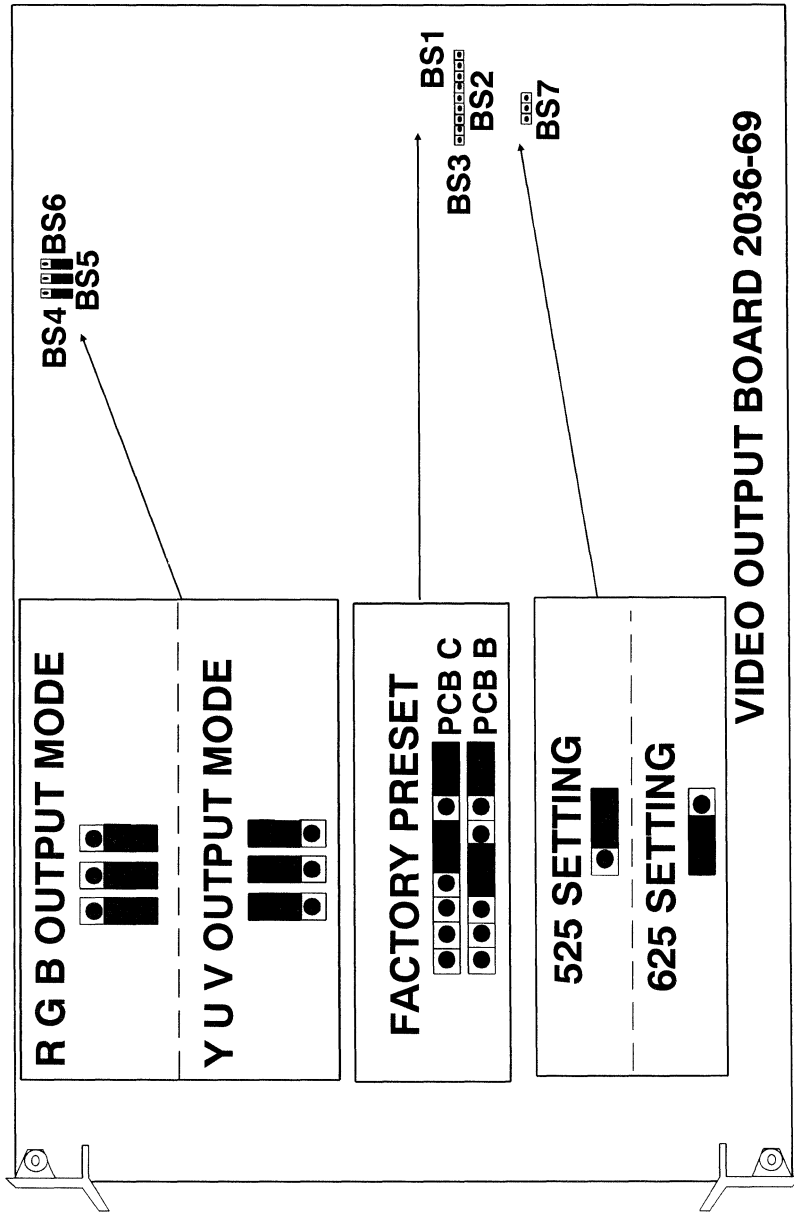
ARTIST	This menu is intended for the artist to use in order to setup user (personal) preferences.
CONFIGURE	This menu is used to configure the system's serial ports for use with various other equipment (ie Ramcorder, VTR and Printer).
OUT	This menu is used to configure the system's video outputs for use as 'Main', 'Preview' or 'Key'.
VIDEO IN / OUT	This menu is used to calibrate and setup the system's video inputs and outputs.
SYSTEM	This menu is used to configure and load new software, fonts and brushes for use on the system.
DISK	This menu is used to format and initialise disks for use by the system once they have been configured to the appropriate addresses.

Other configurations not performed directly using the system's menus, and not covered previously are detailed in this section.

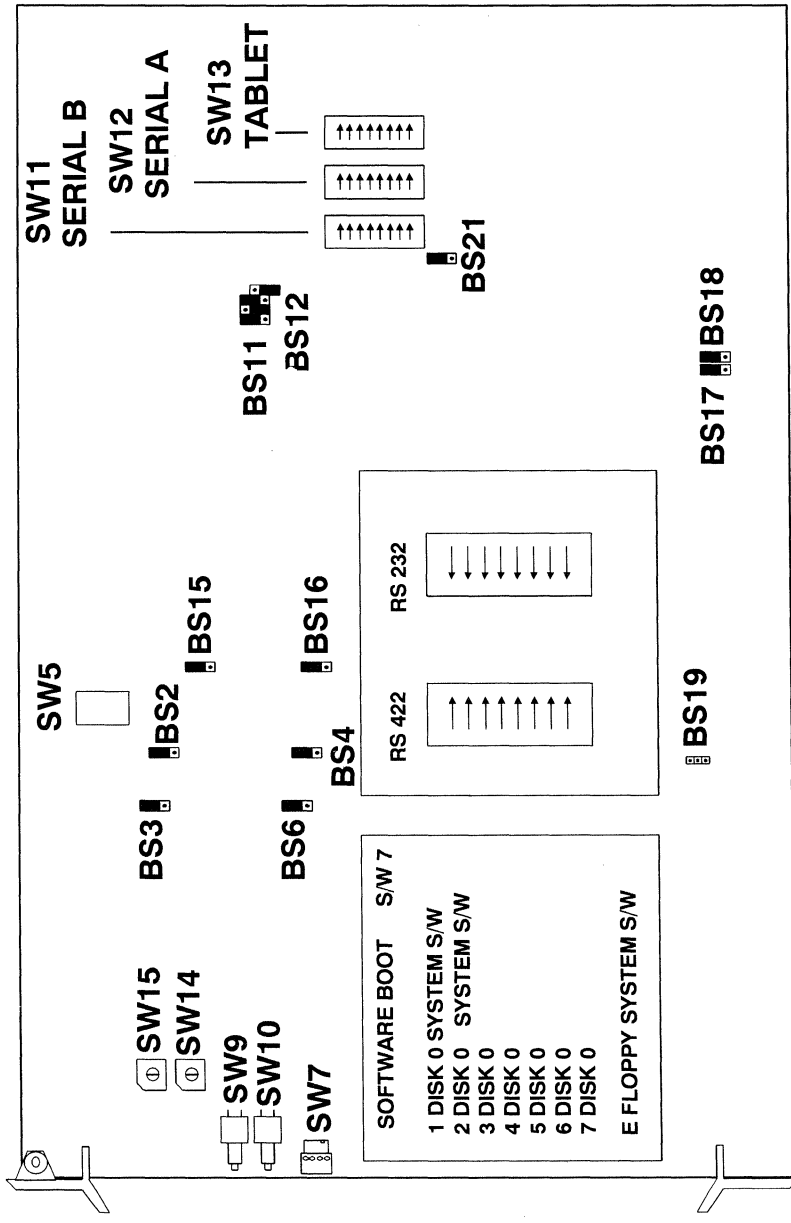
Video Input Board 2036-71



Video Output Board 2036-69



CPU Board 2036-74



BETACAM SP SETUP

Description

The Betacam configuration is a combination of front panel switches, internal switches and set-up items. The settings for the system may conflict with those currently used. Details are provided so that the essential settings can be determined to suit the specific installation.

☞ **Caution: The Betacam tape must be striped throughout its' entire length with continuous and constant LTC and VITC timecode. If this is not performed, problems will be encountered when the tape is cued to timecode entries.**

Front Panel Switches

The front panel switches should be adjusted while in 'Local' mode, otherwise changes may not be recognised.

PB PB/EE	This should be set to PB otherwise the video will howl round in E to E while not playing.
CTL/TC/U-BIT	This should be set to TC otherwise the system will sometimes search incorrectly.
DT	This should be set to SRC as other settings turn dynamic tracking off or limit the shuttle speed.
REMOTE1/LOCAL/REMOTE2	This should be set to REMOTE1 otherwise Set-up Item 006 (local function Enable), if set to 2, will enable LOCAL as well.

Sub Control Panel Switches

The system has only been tested with the following switch settings:

CAPSTAN LOCK	This should be set to 2FLD.
TBC BYPASS	This should be set to ON.
VIDEO IN	This should be set to AUTO.

Internal Board Switches

The system has only been tested with the following switch settings:

VITC/AUTO/LTC	This should be set to AUTO as the system requires accurate timecodes at all times.
VITC	This should be set to ON as the system requires accurate timecodes at all times. Both VITC and LTC are needed.
INT/EXT	This should be set to INT if no external timecode is available.
REGEN/PRESET	This should be set to PRESET if no external timecode is available.
REC/FREERUN	This should be set to FREERUN if no external timecode is available.
NDF/DF	This should be set to DF. Note that it is not available on PAL machines.

Set-Up Items

The Set-up Items can be selected by pressing the SYSTEM SETUP MENU internal switch then turning the jog wheel while monitoring the Video3 output and the timecode display. In order to select Set-up Items 100 onwards it is necessary to first turn on switch A-11 on the SY 61 board. To change the selected Set-up Item, press the SHUTTLE/JOG button and turn the jog wheel. The altered Set-up Items can subsequently be saved by selecting the SYSTEM SETUP SET switch.

006 : This is the Local Function Enable control. If the Betacam is nearby this item should be set to 2. This enables the local front panel control and remote control at the same time. If, however, the Betacam is not nearby this item should be set to 1 (REMOTE) as this will only provide local STOP and EJECT.

008 : This is the Monitor Selection control for VTR to VTR edit. This Item should be set to 0 (recorder only) as EE selection is controlled only by the PB/PBEE front panel switch.

102 : This is the Maximum Tape Speed control. This Item should be set to 0 (x35) as this gives faster searches.

304 : This is the Edit Field Select control. This Item should be set to 0 (for field 1 dominance) or 1 (for field 2 dominance).

401 : This is the Function Mode After Cue-up control. This Item should be set to 1 (still video after cue-up) as searching to timecode and single frame movements with 'Search Single' on does not drop the VTR out to stop after finding the requested frame.

501 : This is the Still Timer control. This Item should be set to 03 (20 seconds) to trade-off tape-head wear against picture loss due to timeout.

502 : This is the Tape Protection From Search control. This Item should be set to 0 (step forward), 1 (standby off) or 2 (tension release) as required.

503 : This is the Tape Protection From Stop control. This Item should be set to 0 (standby off) or 1 (tension release) as required.

CHAPTER 7

STARTUP

START-UP

Power Up Procedure

A INITIAL POWER-UP

Before attempting to power-up the system for the first time, ensure that it has the correct mains supply and that the system is correctly connected together.

B NORMAL POWER-UP

The system is designed to be powered and operating continually. But when the system is to be powered down and powered up, the following should be remembered.

Always ensure that all externally connected disk drives are turned on before the Mainframe is turned on or reset.

Always ensure that the Pen is out of proximity when the Tablet is powered-up, and always power-up the tablet before the Mainframe.

☞ **Caution: Problems can occur if the Mainframe is switched on when the Tablet has been previously powered on with the pen in proximity to the digitising area. These problems may include painting when no pressure is applied or uncontrolled selection of menu options.**

This problem, if it arises, can be solved by:

Firstly resetting the tablet.

Secondly by turning off the Mainframe and Tablet, then turning on the Tablet and Mainframe ensuring that the pen is out of proximity.

C POWER-DOWN PROCEDURE

Always ensure that any pictures, cut-outs, palettes, stencils, etc have been saved. Turn off the Mainframe then the Tablet.

Note: Always wait 20 seconds after the Mainframe is switched off, before turning on the system again. This will allow the internal and external disk drives to run down correctly.

Correct Operation

Under normal operating conditions, the unit will provide both an analogue video output and a CCIR 656 digital video output as soon as the system is powered up.

When the system is reset, the picture in the main store is maintained and displayed on the system's output. On power-up, however, the system's output will display random picture information until the main framestore is loaded with a 'Welcome Picture' (ie Logo) or 'Beta site' software statement.

Note that from power-up it takes approximately 30 seconds before the main output is wiped, then a further 30 seconds before the system's menu and cursor appear. During this period, the system's computer runs various diagnostic 'self test' routines to check that the system is operating correctly. Any discrepancies found will be indicated on the system's main menu as an error bar.

System Reset

A RESET FROM CORDLESS PEN TABLET

The tablet can be reset using the 'reset' button at the rear of the tablet. The system can be reset using the ***RECESSED*** button at the rear of the tablet. This button must be pressed twice to reset the system.

B RESET FROM MAINFRAME

The system can be reset by using the system's reset button. This is situated inside the unit's front panel, accessed through the hole in the front panel as shown below using a small trimming tool or pencil.

Note: that the system is automatically reset when the unit is powered off and on.

INDEX