

MASTER VIDEORECORDER
MV-10000

General Information
and
Operating Instructions

INTRODUCTION

The Sony Master Videocorder, MV-10000, is a professional, high-performance color video tape recorder designed to produce and edit superior quality master tapes. Master tapes produced and edited on the MV-10000 are ideally suited for transfer to Videocassette or reel-to-reel video tape format. Note: Read this manual carefully and refer to it as necessary during Master Videocorder operation. If there are any questions about operation or performance of the Sony Master Videocorder, contact the Sony Field Engineer responsible for your unit.

LIST OF ILLUSTRATIONS

④-1	Videocorder Dimensions	5
⑤-1	MV-10000 Unit Identification, Front View	6
⑤-2	MV-10000 Unit Identification, Rear View	6
⑤-3	Tape Transport Identification	7
⑤-4	Auxiliary Control Panel	7
⑤-5	Main Control Panel (Including Meter Panel)	8
⑤-6	Subcontrol Panel, Servo Unit Circuit Board, Video 1 Unit Circuit Board and Color Unit Circuit Board Panel Controls	9
⑤-7	Video 2/Audio Unit Circuit Board Panel Control	9
⑤-8	Power Supply Panel Controls	9
⑤-9	Processing Amp Unit Circuit Board Panel Controls	10
⑤-10	Processing Amp Unit, Rear Panel	10
⑥-1	Connector Panel	10
⑨-1	Tape Threading	29
10-1	Connection Diagram	36
10-2	Video Head and Video Tape	37
10-3	Tape Format	37
10-4	Overall Diagram	38
10-5	Video Recording and Playback	39
10-6	Tape Transport	40
10-7	Video 1 Unit	41
10-8	Video 2/Audio Unit	42
10-9	Color Unit	43
10-10	Processing Unit	44
10-11	Servo Unit	45
10-12	System Control Unit	46

TABLE OF CONTENTS

1	SPECIFICATIONS	3
2	ELECTRICAL FEATURES	4
3	MECHANICAL FEATURES	5
4	INSTALLATION	5
5	LOCATION OF PARTS AND CONTROLS	6
6	CONNECTOR AND SWITCH FUNCTIONS (REAR CONNECTOR PANEL)	11
7	FUNCTIONS OF CONTROLS, INDICATORS AND METERS	12
8	PRELIMINARY SETUP	28
8-1	Power Cable and Switches	28
8-2	Signal Cables and Switches	28
9	TAPE THREADING	29
10	OPERATION	30
10-1	Preliminary Setup	30
10-2	Recording	30
10-3	Playback	30
10-4	Insert Editing	32
10-5	Add Editing	32
10-6	Cueing	32
10-7	Cue Sources	32
10-8	Cue Level Controls and Monitoring	33
10-9	Cue Operation	33
10-10	Tape Duplication	33
10-11	MV-10000 In Playback	33
10-12	MV-10000 In Record	33
10-13	Remote Control	33
10-14	Parallel Operation	34
11	OPERATOR MAINTENANCE	34
12	ILLUSTRATIONS	36
13	BLOCK DIAGRAM	38

LIST OF TABLES

Table		
7-1	Main Control Panel	12
7-2	Auxiliary Control Panel	18
7-3	Servo Unit Circuit Board Panel Controls	20
7-4	Processing Amp Unit Circuit Board Panel Controls	22
7-5	Video 1 Unit Circuit Board Panel Controls	25
7-6	Color Unit Circuit Board Panel Controls	25
7-7	Video 2/Audio Unit Circuit Board Controls	26
7-8	Power Supply Panel Controls, Indicators and Connectors	27
10-1	Playback Tape Condition Versus Servo Lock Mode	31

1. SPECIFICATIONS

Video band width	30 Hz - 4.0 MHz \pm 1.0 dB; less than 3 dB down at 4.2 MHz
Signal-to-noise ratio	Better than 52 dB weighted* (46 dB unweighted) p-p video signal to RMS noise
DG (Differential Gain)	less than 5%
DP (Differential Phase)	less than 5°
Tilt	less than 2%
K Factor	less than 2% at 2T pulse
Jitter	0.5 micro sec peak to peak in V H mode
Drift	\pm 0.5 micro sec in V H mode
Color moiré	better than 36 dB (75% color bars)
Video input level	Rated input 1.0 V(p-p)
Video output	1.0 V (p-p), 75 ohms
Color recovery system	special double heterodyne system
	Band width: luminance bandwidth: 30 Hz to 2.5 MHz chrominance bandwidth: 3.0 MHz to 4.2 MHz
Video Recording Heads	1.5 head system (1 head exclusively for video; 1 head for vertical interval)
External sync input level	4 V (p-p) negative, 75 ohms
External subcarrier input level	2 V (p-p), 75 ohms
Recording time	93 minutes (10 1/2 inch reel)
Editing	video and audio (add and insert modes)
Tape speed	7 1/2 ips
Fast forward and rewind	time 3 minutes approx. (10 1/2 inch reel)
Servo Lock-up (start-up time)	approx. 5 seconds, from standby mode
Tape Drive	Dual Capstan (Servo Control)
Tape Motion Controls	full electrical pushbutton control (for all tape transport functions), including Edit
Tracking adjustment	manual
Tape	2-inch CrO ₂ (or equivalent)
Tape tension (skew) adjustment	manual or automatic
Tracks	1 video track, 2 audio tracks, 1 cue track, 1 control track

Recording level adjustment	1 video, 2 audio, 1 cue
Reel	NAB standard type (10 1/2 inches maximum)
Audio band width	30 Hz - 20 kHz \pm 2 dB (CH-1 and CH-2)
Audio channel signal-to-noise ratio	better than 50 dB (CH-1 and CH-2)
Wow and flutter	less than 0.1% rms (0.6 Hz to 250 Hz)
Cue channel band width	100 Hz - 15 kHz \pm 3 dB
Cue channel signal-to-noise ratio	better than 40 dB
Head life	more than 500 hours
Ambient operating temperature	40° - 95°F
Power consumption	1 kW maximum
Weight	705 lb., approx.
Tape counter	indicates tape running time in hours, minutes and seconds

* Measured by Rhode & Schwarz Video noise meter

ACCESSORIES SUPPLIED

The following accessories are supplied with the MV-10000 (their uses are explained in the service manual):

- Record current pickup cable.
- FQ adjustment jig.
- Extension cards. (The cards are: SYSCON Unit Card, PROC Unit Card, MPA Unit Card and Card for VIDEO-1 Unit, VIDEO-2/AUDIO and COLOR Unit.)

Design and specifications subject to change without notice.

2. ELECTRICAL FEATURES

2-1. REFERENCE SYNC SERVO SYSTEM

The MV-10000 employs a reference sync servo system which permits a minimum of time base error, thus assuring minimal jitter and drift. The complete servo system consists of three subsystems: Drum, Capstan and Tension.

1) Head Drum Servo

To synchronize the drum rotation in Record (including edit mode), the pulse generator in the rotary drum is compared with reference sync. However, in playback mode you can select the following five servo lock modes:

SERVO LOCK MODE (CONTROL POSITION)	SIGNALS USED
1. V (Vertical)	Reference Vertical Sync Vs Playback Vertical Sync
2. H (Horizontal)	Reference Horizontal Sync Vs Playback Horizontal Sync
3. V and H (Vertical and Horizontal)	Reference Vertical and Horizontal Sync Vs Playback Vertical and Horizontal Sync
4. EDITING V and H (Editing Vertical and Horizontal)	Delayed Reference Vertical and Horizontal Sync (approx. 3.6 μ s) Vs delayed Playback Vertical and Horizontal Sync (to compensate for electronic delays in Edit mode)
5. PG (Pulse Generator)	Reference Vertical Sync Vs Internal Pulse Generator

2) Capstan Servo

The capstan servo controls the capstan located on the take-up side of the head drum. In the PB mode it adjusts tape speed to accomplish tracking and establishes the odd/even field relationship relative to Reference Sync.

3) Tension Servo

The tension servo system controls the capstan on the supply side of the Head Drum. The supply side tension sensor detects tension changes which are translated into error voltages to decrease or increase the supply capstan. The tension servo, and thus skew, can be controlled automatically as well as manually. The tension servo in the playback mode controls skew automatically by detecting displacement of picture information at the switching point. In the edit mode an automatic tension memory servo is activated.

2-2. HIGH BAND FM RECORDING

The MV-10000 employs an NTSC direct high-band, FM recording system to assure high quality video recording and playback. The MV-10000 utilizes a one-and-a-half head system (2 heads are used, one head for video; the other head is for vertical interval information). High quality heads and high energy tape (CrO₂ type) permit high-band recording with a relative head-to-tape velocity of less than 906 ips.

RECORDING CHARACTERISTICS

FM Carrier

Video bandwidth 30 Hz - 4.0 MHz \pm 1 dB; 4.2 MHz - 3 dB

Sync tip frequency 7.06 MHz

Pedestal frequency 7.90 MHz

White peak frequency 10,000 MHz

The high-band carrier frequency eliminates beat interference caused by spurious noise. The frequency deviation (2.94 MHz) assures a good signal-to-noise ratio. The use of both side bands allows minimum of waveform distortion. In addition, good frequency response and low differential gain and phase characteristics assures, essentially, distortion-free color signals even after several generations of tape duplication.

2-3. BUILT-IN ROTARY ERASE HEADS

Built-in rotary erase heads permit erasure of video information on a field by field basis, thus insuring clean inserts in the editing modes of operation.

2-4. AUDIO RECORDING

Two high-quality audio tracks (50 Hz - 20 kHz) are independently available, permitting, among other uses, stereo or bilingual recording.

2-5. SEPARATE CUE TRACK

A separate track for cue signals on which voice or cue tones may be recorded is provided.

2-6. DROP-OUT COMPENSATOR

The MV-10000 is equipped with a drop-out compensator.

2-7. COLOR PHASE STABILIZATION

A color phase stabilizer employing a double special heterodyne system is an integral part of the MV-10000.

2-8. VIDEO PROCESSING AMPLIFIER

A video processing amplifier is an integral part of the MV-10000.

2-9. TAPE INTERCHANGEABILITY

Complete tape interchangeability is assured.

3. MECHANICAL FEATURES

The MV-10000 is relatively compact and mobile when compared to units of similar performance and capability. Good serviceability is assured by adequate access to all units; easily accessible controls, test points and monitoring devices allow ease of adjustment. The video heads can be changed easily.

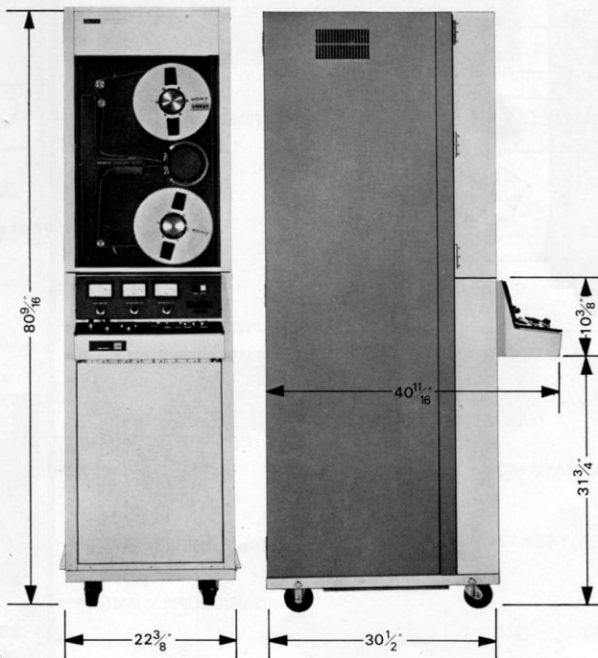
4. INSTALLATION

For ease of mobility the MV-10000 is equipped with four heavy-duty casters. The installation surface for the MV-10000 should be as flat as possible. The allocated installation space should include at least four feet of working space behind the Videocorder. Additional installation considerations for the facility should include:

- Freedom from dust and moisture
- Freedom from strong magnetic or electric fields
- Freedom from extremely high temperatures
- Freedom from vibration

Note: Electrical connections are described in Sections 6 and 8. The Videocorder weighs approximately 705 pounds. Dimensions are shown in Figure 4-1.

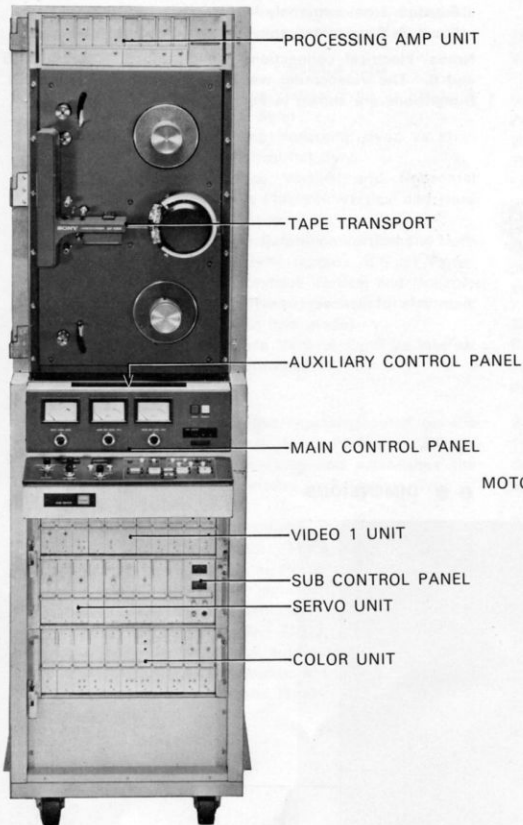
4-1 DIMENSIONS



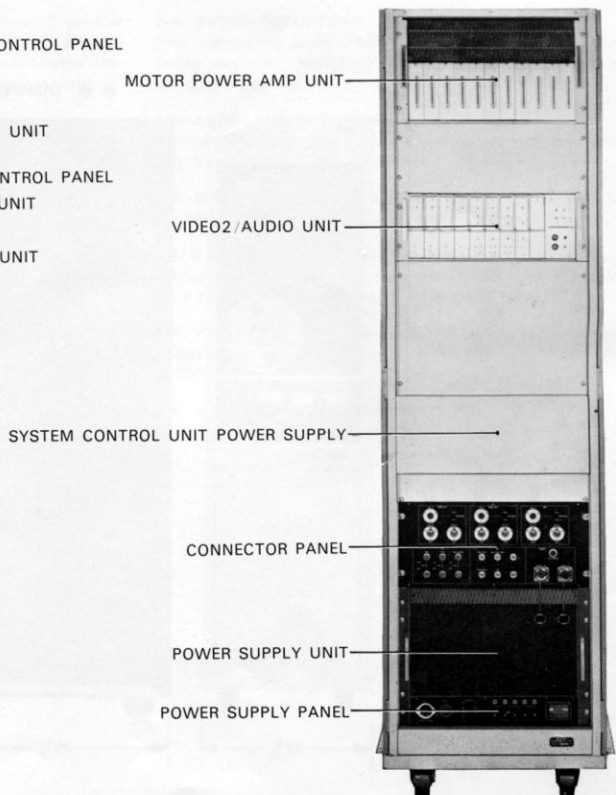
5. LOCATION OF PARTS AND CONTROLS

5-1. The figures of this section provide location and identification information for the MV-10000 Sony Master Videocorder. (Sections 6 and 7 provide function information.)

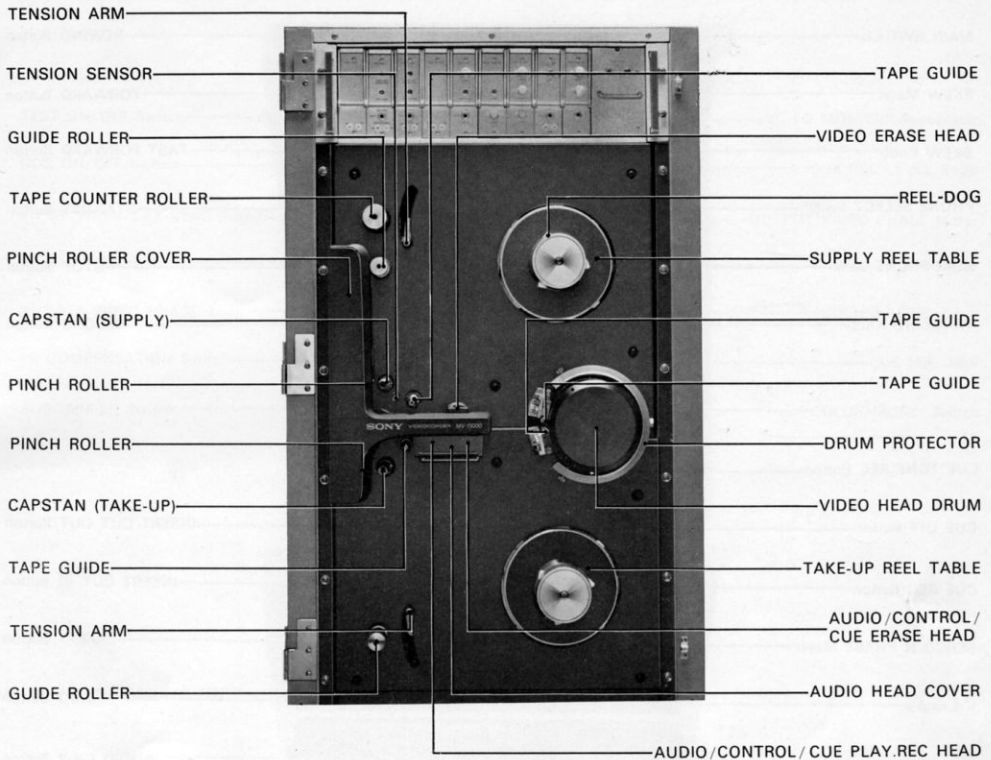
5-1 MV-10000 UNIT IDENTIFICATION, FRONT VIEW



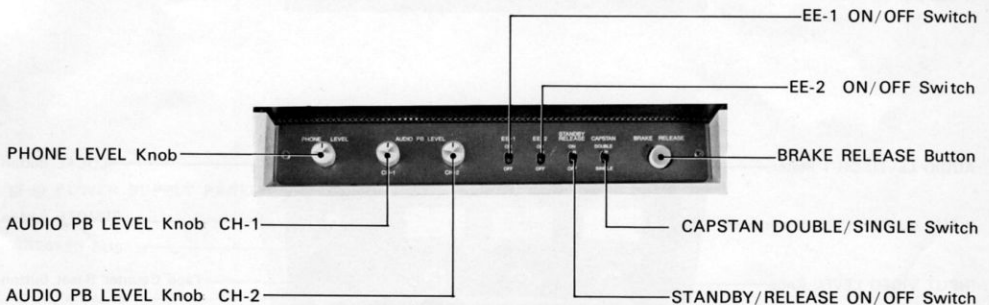
5-2 MV-10000 UNIT IDENTIFICATION, REAR VIEW



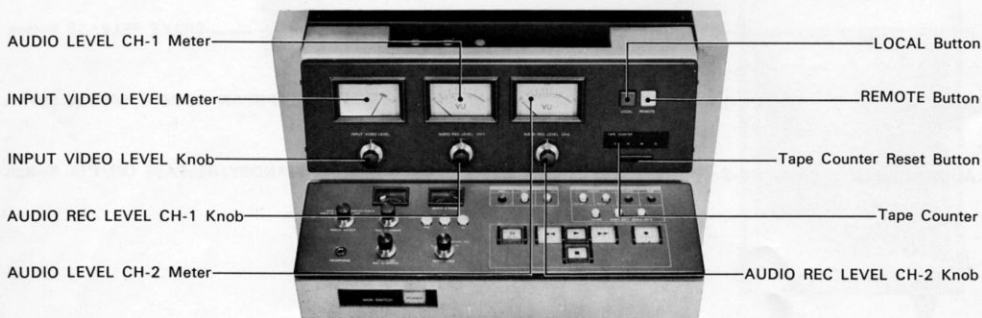
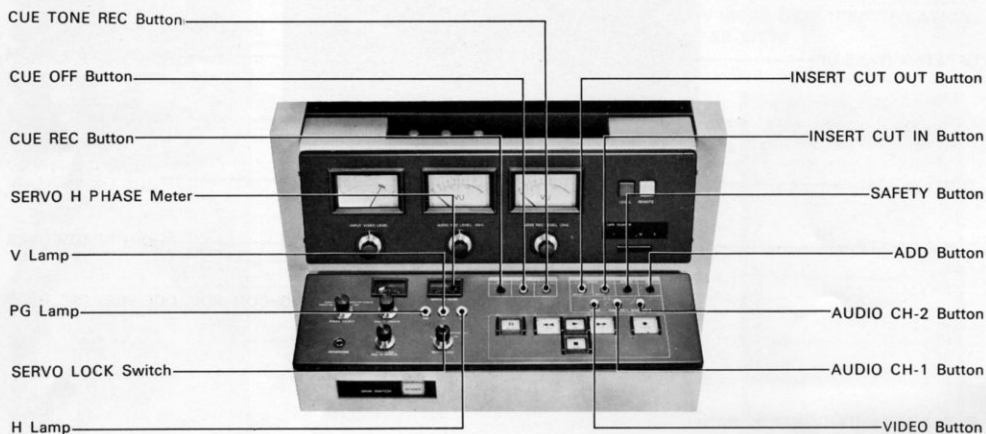
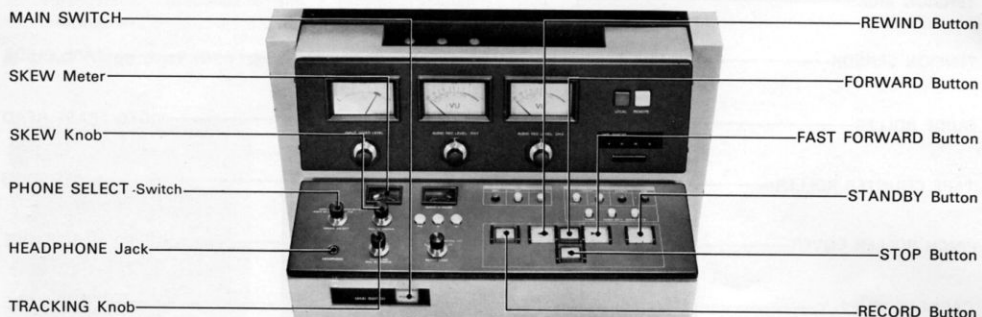
⑤-⑤ TAPE TRANSPORT IDENTIFICATION



⑤-⑥ AUXILIARY CONTROL PANEL



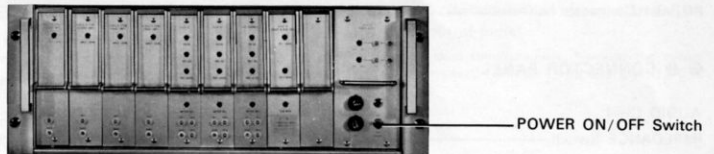
6-6 MAIN CONTROL PANEL (Including Meter Panel)



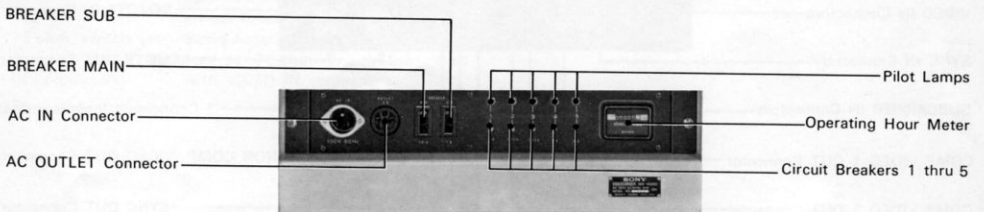
6-6 SUBCONTROL PANEL, SERVO UNIT CIRCUIT BOARD, VIDEO 1 UNIT CIRCUIT BOARD AND COLOR UNIT CIRCUIT BOARD PANEL CONTROLS



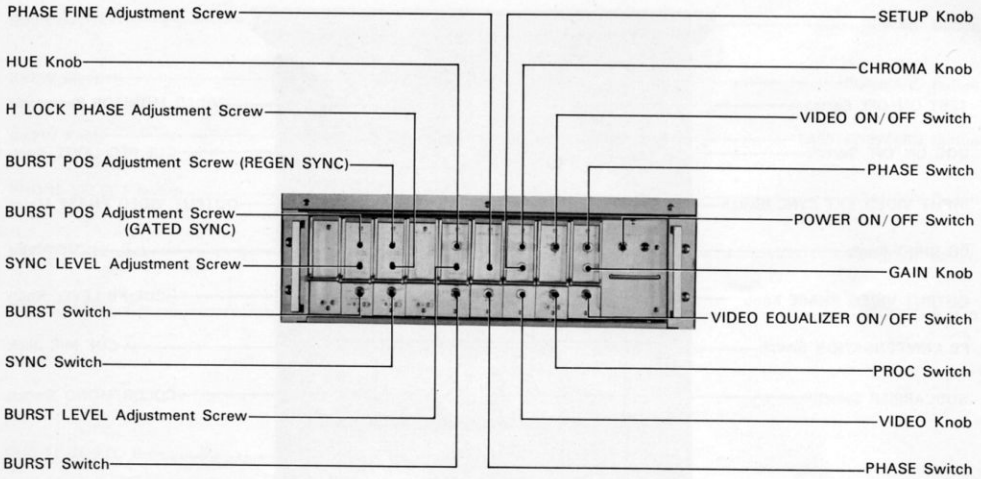
6-7 VIDEO 2/AUDIO UNIT CIRCUIT BOARD PANEL CONTROL



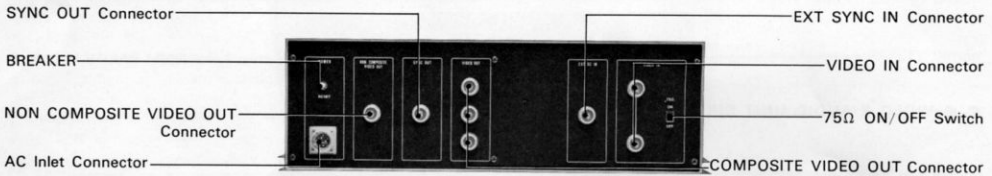
6-8 POWER SUPPLY PANEL CONTROLS



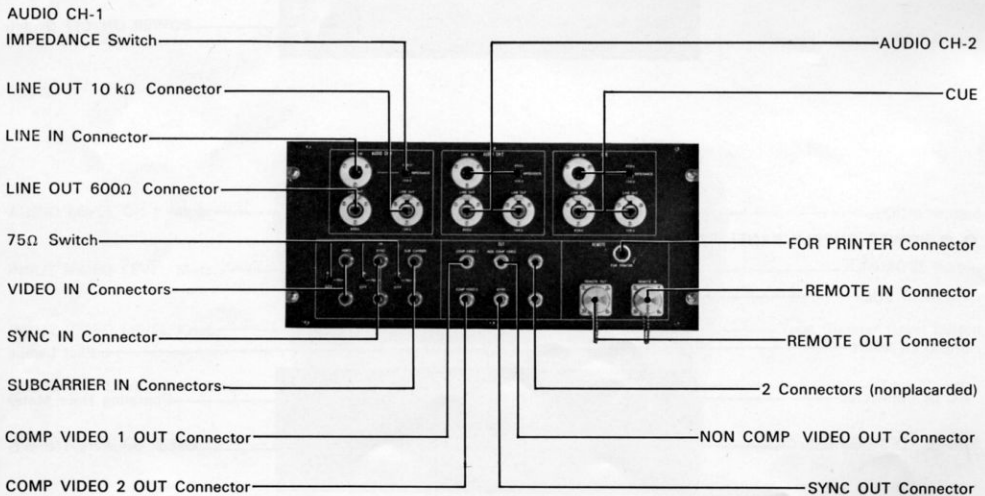
6-9 PROCESSING AMP UNIT CIRCUIT BOARD PANEL CONTROLS



6-10 PROCESSING AMP UNIT, REAR PANEL



6-1 CONNECTOR PANEL



6. CONNECTOR AND SWITCH FUNCTIONS (REAR CONNECTOR PANEL)

6-1. The function of the various connectors and switches on the rear connector panel are described below (additional cabling, switching and control information are located in Sections 7 and 8).

CONNECTOR OR SWITCH	FUNCTION
AUDIO CH-1	
LINE IN connector	Channel 1 audio source input (standard level should be +4 dB)
IMPEDANCE switch	600 ohm position allows termination of audio input line in 600 ohm, 10 k ohm position provides high input impedance, and may be used to bridge an audio line
* LINE OUT 10 k ohm connector	Provides a high impedance Channel 1 audio output (10 k ohm)
* LINE OUT 600 ohm connector	Provides a 600 ohm Channel 1 audio output
AUDIO CH-2	
LINE IN connector	Same as AUDIO CH-1
IMPEDANCE switch	Same as AUDIO CH-1
LINE OUT 10 k ohm connector	Same as AUDIO CH-1
LINE OUT 600 ohm connector	Same as AUDIO CH-1
CUE	
LINE IN connector	Same as AUDIO CH-1
IMPEDANCE switch	Same as AUDIO CH-1
LINE OUT 10 k ohm connector	Same as AUDIO CH-1
LINE OUT 600 ohm connector	Same as AUDIO CH-1
IN	
VIDEO connectors	Top connector is input for composite video (should nominally be 1.0 V, (p-p)). Bottom connector may be used as a looping output (see 75 ohm switch function)
75 ohm switch (associated with VIDEO IN connectors)	ON position allows termination of 75 ohm for input video. OFF position removes termination allowing input video to be looped through to other equipment
SUBCARRIER connectors	Top connector is input for external subcarrier (should nominally be 2 V, (p-p)). Bottom connector may be used as a looping output (see 75 ohm switch function)
75 ohm switch (associated with SUBCARRIER IN connectors)	Same function for SUBCARRIER connectors as 75 ohm switch associated with VIDEO IN connectors
SYNC connectors	Top connector is input for external EIA sync (should nominally be 4.0 V, (p-p)). Bottom connector may be used as a looping output (see 75 ohm switch function)
75 ohm switch (associated with SYNC IN connectors)	Same function for SYNC IN connectors as 75 ohm switch associated with VIDEO IN connectors

OUT

COMP VIDEO 1 connector	One of two identical output connectors supplying a 75 ohm, 1.0 V (p-p) composite video signal
COMP VIDEO 2 connector	One of two identical output connectors supplying a 75 ohm, 1.0 V (p-p) composite video signal
NON COMP VIDEO connector	Output connector supplying a 75 ohm, 0.7 V (p-p) non-composite video signal
SYNC connector	Output connector supplying a 75 ohm, 4.0 V (p-p) sync signal
2 connectors (non-placarded)	These spare connectors are not connected or used in the present MV-10000 configuration

REMOTE

REMOTE IN connector	Input connector used in conjunction with the REMOTE OUT connector of a second MV-10000 to allow control of both MV-10000's from the control panel of the second MV-10000. This configuration may be repeated, in series, to allow control of several MV-10000's from one control panel (see REMOTE OUT connector)
REMOTE OUT connector	Output connector used in conjunction with the REMOTE IN connector of a second MV-10000 to allow control of both MV-10000's from the control panel of the first MV-10000. This configuration may be repeated in series to allow control of several MV-10000's from one control panel
FOR PRINTER connector	Input connector providing control signals from the Sony D-100 Videocassette Printing System thus allowing basic functions of the MV-10000 to be controlled from the D-100 control panel

* These two outputs may be used simultaneously, however the output signal level of the 10 k ohm connector will be 1.4 dB less than the 600 ohm connector.

7. FUNCTION OF CONTROLS, INDICATORS AND METERS

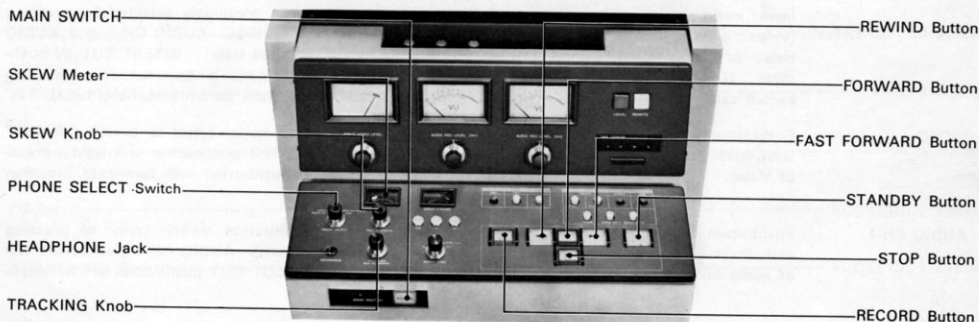
7-1. The following tables provide information concerning the function and operation of the various MV-10000 controls, indicators and meters located on the Main Control Panel, Auxiliary Control Panel, Servo Unit, Processing Amplifier Unit,

Video 1 Unit, Color Unit, Video 2/Audio Unit and the Power Supply. (Connector panel information is provided in Section 6.)

Table 7-1. Main Control Panel

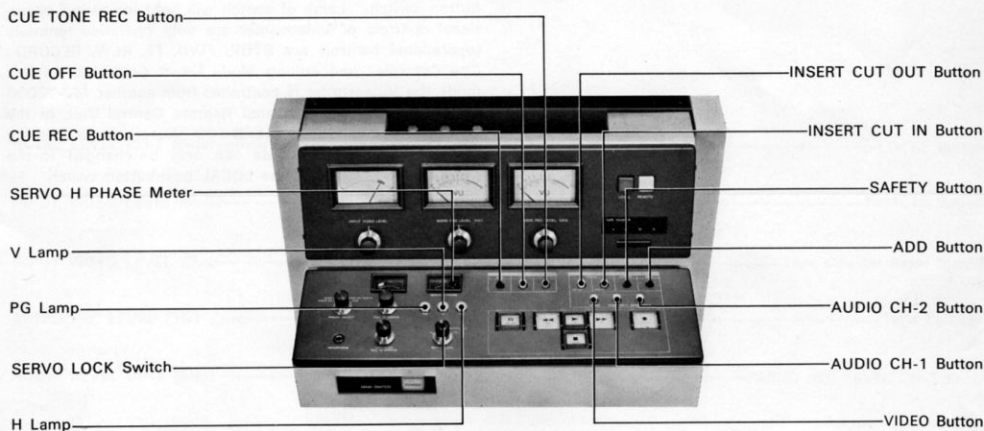
NOMENCLATURE	TYPE AND FUNCTION	OPERATION
MAIN SWITCH POWER	Pushbutton switch; provides front panel control of AC power to Video-corder.	Press on or off. Self-contained lamp will light when switch is in ON position. STOP mode is automatically initiated when power is first turned on (STOP pushbutton will light).
RECORD	Pushbutton switch; in conjunction with FWD pushbutton selects the Record mode of operation.	Press RECORD pushbutton while simultaneously pressing FWD pushbutton. Self-contained lamps in each pushbutton will light when Record mode is initiated (REC pushbutton on CUE section of Control panel will also light.) System will also automatically enter standby mode if not already initiated (STANDBY pushbutton will light). (Record mode can only be terminated by pressing STOP, REW or FF pushbuttons).
REW	Pushbutton switch; selects Rewind mode of operation, causing tape to rewind a 10 1/2 inch reel within 3 minutes.	Press pushbutton; self-contained lamp will light while system is in Rewind mode. (Rewind mode can be terminated by pressing STOP, FWD, FF pushbuttons, or placing system in Record mode (simultaneously pressing RECORD and FWD pushbuttons).
FWD	Pushbutton switch; selects Forward (playback) mode of operation (tape moves at 7 1/2 inches per second).	Press pushbutton; self-contained lamp will light while system is in the Forward mode. (Forward mode can only be terminated by pressing STOP, FF, REW or placing system in Record mode (simultaneously pressing RECORD and FWD pushbuttons).
FF	Pushbutton switch; selects Fast Forward mode of operation allowing a 10 1/2 inch reel to completely wind in the forward direction within 3 minutes.	Press pushbutton; self-contained lamp will light while system is in the Fast Forward mode. Fast Forward mode can only be terminated by pressing STOP, FWD, REW or placing system in Record mode (simultaneously pressing RECORD and FWD pushbuttons).
STANDBY	Pushbutton switch; selects Standby mode (head drum comes up to speed allowing servo lock-up, independent of, and, if desired, prior to, any operating mode selection).	Press pushbutton; self contained lamp will light while system is in Standby mode, i.e., head drum up to proper speed. At this time Standby mode can be terminated only by pressing STANDBY pushbutton a second time (STOP pushbutton will terminate Standby mode only if an operational mode has been selected after Standby mode is in effect). If a mode of operation is selected without pressing STANDBY pushbutton, Standby mode is automatically initiated and lamp will light (during this condition both Standby and the operational mode can be terminated by pressing STOP pushbutton). If STANDBY RELEASE toggle switch on Auxiliary Control panel is in OFF position, Standby mode can only be terminated by pressing STANDBY pushbutton a second time (after the STOP pushbutton has terminated the operational mode).
STOP	Pushbutton switch; allows any operational mode to be terminated (will not terminate Standby mode if STANDBY RELEASE conditions are in effect). (Refer to STANDBY of this table and STANDBY RELEASE of AUXILIARY CONTROL PANEL table).	Press pushbutton; self-contained lamp will light while Stop condition is in effect. Note that system automatically initiates the Stop condition when power is first applied.

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
PHONE SELECT	Rotary switch; allows selection of audio signal supplied to HEADPHONE jack in either Record or Forward (Playback) mode (selections are AUDIO CH-1; AUDIO CH-2; AUDIO CH-1 & CH-2; and CUE). Volume control (PHONE LEVEL) is provided on AUXILIARY CONTROL panel.	Rotate switch to desired selection and, with headphone connection made to HEADPHONE jack, adjust PHONE LEVEL control on AUXILIARY CONTROL panel for desired level. (PHONE LEVEL control affects only audio level supplied to HEADPHONE jack).
HEADPHONE	Phone jack; allows connection of headphones for audio monitoring of selected audio signals (refer to PHONE SELECT, above).	Connect mating headphone plug, select desired audio signal and level (see PHONE SELECT, above). Either 8 ohm or 600 ohm headphones may be used.
SKEW	Rotary potentiometer mechanically coupled to push-pull switch; allows tension of supply tape to be varied (either automatically or manually), thus allowing skew to be controlled in the playback or edit modes.	With control in down position, and PB COMPENSATION switch (on TENSION SERVO circuit board of Servo Unit) in the ON position, switch contacts allow automatic control of tension and potentiometer has no effect on tension control circuitry; with control in up position rotation of the potentiometer provides limited manual control of tension (skew). With the PB COMPENSATION switch in the OFF position and the SKEW potentiometer in the up position, skew control is manual only. Control (automatic or manual) is effective only in the Playback mode. A skew meter (null-type) provides a visual indication of skew in either the manual or automatic mode.
SKEW	Meter, null-type; provides a visual indication of skew (during playback) in either the manual or automatic skew control mode (refer to SKEW (Potentiometer), above).	Correct skew (tension) is indicated when meter deflection is in blue zone (center); deflection to left or right indicates skew error (excessive or insufficient tension, respectively). SKEW control may be placed in manual mode and adjusted as necessary if automatic skew control is inadequate (refer to SKEW (potentiometer), above).
TRACKING	Rotary potentiometer mechanically coupled to push-pull switch; allows manual correction of tracking error during playback of tape recorded on another machine.	Pull up to operate, thus allowing switch contacts and potentiometer to be inserted in tracking circuitry during Playback. Rotation of potentiometer advances or retards tape position in relation to Control Track head, thus allowing tracking control. Control is adjusted for minimum noise in picture.



NOMENCLATURE	TYPE AND FUNCTION	OPERATION
SERVO LOCK	Rotary switch; allows mode selection for servo lock-up of the Drum Head. Selections are V (Vertical); H (Horizontal); V and H (Vertical and Horizontal); EDITING V & H (Editing Vertical and Horizontal); and PG (Pulse Generator). (Refer to paragraph 2-1 of Section 2 for additional information on the various servo-lock modes).	Rotate switch to desired servo lock selection. Indicator lamps for each of the basic servo modes light when their respective servo circuits are stable, i.e., locked-up.
PG (Pulse Generator)	Indicator lamp; indicates Pulse Generator servo lock-up of Drum Head when lighted.	Lamp will light when Drum PG (Pulse Generator) pulses are within ± 6 H of Reference Vertical Sync. Fine adjustment of PG timing is possible by adjustment of PG SHIFT control on PG FG AMPL circuit board (described in Servo Unit Control Panels table) and observation of SERVO H PHASE meter (described later in this table).
V (Vertical)	Indicator lamp; indicates Vertical Sync servo lock-up when lighted.	Lamp will light when Playback Vertical Sync is within $\pm 1/3$ H of Reference Vertical Sync.
H (Horizontal)	Indicator lamp; indicates Horizontal Sync servo lock-up when lighted.	Lamp will light when Playback Horizontal Sync is within $\pm 2.5 \mu\text{sec}$ of Reference Horizontal Sync.
SERVO H PHASE	Null-type meter; indicates phase difference between playback Horizontal Sync and Reference Horizontal Sync during playback.	Observe meter for deflection within the blue zone (indicates Horizontal sync signals—Playback and Input—are in phase. Refer to PG (Pulse Generator entry, above), for additional information.
EDITING MODE		
SELECT		
ADD	Pushbutton switch; in conjunction with SAFETY pushbutton switch allows continuous (junctionless) addition of video and audio.	Press ADD and SAFETY switches simultaneously while in Playback mode. ADD and CUE REC pushbuttons will light. (REC pushbutton—described later—located on CUE section of Control panel). Add mode is terminated only by selection of FF, REW or STOP modes. Note that all channels (video, audio and cue) are in the recording condition during the ADD mode.
SAFETY	Pushbutton switch; in conjunction with ADD or INSERT pushbuttons, allows initiation of ADD or INSERT modes, respectively. Functions, basically as a safety feature to prevent inadvertent addition or insertion.	Press SAFETY pushbutton simultaneously with either the ADD or INSERT CUT IN pushbuttons to initiate the desired operational mode (INSERT CUT IN pushbutton described later).
INSERT		
CUT IN	Pushbutton switch; in conjunction with SAFETY pushbutton switch allows insertion of new material (video; either or both audio channels; or any combination of the three. New material is pushbutton-switch selected).	Press INSERT CUT IN and SAFETY pushbutton switches simultaneously while in Playback mode. Note that Insert material must have been previously selected by pressing some combination of the VIDEO, AUDIO CH-1 and AUDIO CH-2 pushbuttons (described later). INSERT CUT IN pushbutton will light. Insert mode is terminated by pressing INSERT CUT OUT pushbutton switch (described later).
VIDEO	Pushbutton switch; in conjunction with Insert mode, allows insertion of Video.	Press VIDEO pushbutton switch (prior to pressing INSERT CUT IN pushbutton). VIDEO pushbutton will light. Pressing INSERT CUT OUT pushbutton will terminate Insertion mode.
AUDIO CH-1	Pushbutton switch; in conjunction with Insert mode, allows insertion of audio on channel one.	Press AUDIO CH-1 pushbutton switch (prior to pressing INSERT CUT IN pushbutton). AUDIO CH-1 pushbutton will light. Pressing INSERT CUT OUT pushbutton will terminate Insertion mode.

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
AUDIO CH-2	Pushbutton switch ; in conjunction with Insert mode, allows insertion of audio on channel two.	Press AUDIO CH-2 pushbutton switch (prior to pressing INSERT CUT IN pushbutton). AUDIO CH-2 pushbutton will light. Pressing INSERT CUT OUT pushbutton will terminate Insertion mode.
CUT OUT	Pushbutton switch ; allows termination of Insertion mode.	Press CUT OUT pushbutton switch. INSERT CUT IN pushbutton switch will be extinguished. Note that Insert mode pushbutton switches (VIDEO, AUDIO CH-1 and AUDIO CH-2) will remain lighted until individually pressed.
CUE REC	Pushbutton switch ; allows recording of audio cue signals on a separate cue track. Cue signal may be any of the following three sources : CUE MIC jack on SUB CONTROL board panel of Servo unit ; CUE LINE IN jack on Connector panel ; or an internal 400 Hz tone generator. A CUE REC LEVEL potentiometer and associated meter located on the SUB CONTROL board panel of the Servo unit allow the CUE MIC or CUE LINE IN inputs to be adjusted (the internal tone is established at zero VU and can not be adjusted from the front panel). Cue signals can be monitored from the HEADPHONE jack when the PHONE SELECT switch is in the CUE position. (Refer to Servo Unit Control Panels table for additional Cue control information).	<p>Playback Mode :</p> <p>Press CUE REC pushbutton to record either CUE MIC or CUE LINE IN cue signals (if both sources are connected, both sources will be mixed on cue track). CUE REC pushbutton will light indicating Cue Record Head is in record mode. Pressing CUE OFF pushbutton (described later) will terminate cue recording.</p> <p>Record Mode .</p> <p>Recording of either CUE MIC or CUE LINE IN cue signals is initiated during the Record mode and is terminated only if the Record mode is terminated. CUE REC pushbutton will light.</p> <p>400 Hz Tone :</p> <p>The 400 Hz internal tone may be added to the Cue track during either Record or Playback by pressing the CUE TONE REC pushbutton (described later). CUE REC pushbutton will be lighted while CUE TONE REC pushbutton is pressed.</p>
OFF	Pushbutton switch ; allows termination of cue recording during Playback mode. Recording of any supplied cue signals can not be terminated during Record mode.	Press CUE OFF pushbutton, during Playback and observe that CUE REC pushbutton extinguishes indicating termination of cue recording from CUE MIC or CUE LINE IN signal sources (cuing from 400 Hz internal tone generator is still possible by pressing TONE REC pushbutton, described later).
TONE REC	Pushbutton switch (momentary) ; allows recording of internal 400 Hz tone on Cue track during Playback or Record.	Press and hold pushbutton for as long as 400 Hz cue tone is desired. CUE TONE REC and CUE REC pushbuttons will light (if in Record mode, CUE REC pushbutton will already be lighted).



NOMENCLATURE	TYPE AND FUNCTION	OPERATION
INPUT VIDEO LEVEL (CONTROL)	Rotary potentiometer ; allows adjustment of input video level. Associated meter allows visual indication of video level.	Adjust INPUT VIDEO LEVEL potentiometer for INPUT VIDEO LEVEL meter deflection within the blue zone. (Note that potentiometer and meter are operative for input video at all times).
INPUT VIDEO LEVEL (METER)	Meter ; provides visual indication of video level.	Observe meter while adjusting INPUT VIDEO LEVEL potentiometer for deflection within the blue zone. (Meter circuit and potentiometer are operative for input video at all times).
AUDIO REC LEVEL CH-1 (CONTROL)	Rotary potentiometer ; allows adjustment of input audio level for recording on channel one. Associated meter provides visual indication of the input level.	Adjust AUDIO REC LEVEL CH-1 potentiometer for peak meter deflections just to the edge of the red zone (zero VU).
AUDIO LEVEL CH-1 (METER)	Meter ; provides visual indication of the audio level on channel one during recording or playback.	During record mode observe meter while adjusting AUDIO REC LEVEL CH-1 potentiometer for peak deflections just to the edge of the red zone (zero VU). Operation is the same during Playback mode except that AUDIO PB LEVEL CH-1 potentiometer (located on Auxiliary Control panel) is adjusted.
AUDIO REC LEVEL CH-2 (CONTROL)	Rotary potentiometer ; allows adjustment of input audio level for recording on channel two. Associated meter provides visual indication of the input level.	Adjust AUDIO REC LEVEL CH-2 potentiometer for peak meter deflections just to the edge of the red zone (zero VU).
AUDIO LEVEL CH-2 (METER)	Meter ; provides visual indication of level on channel two during recording or playback.	Observe meter while adjusting AUDIO REC LEVEL CH-2 potentiometer for peak deflections just to the edge of the red zone (zero VU). Operation is the same during Playback mode except that AUDIO PB LEVEL CH-2 potentiometer (located on Auxiliary Control panel) is adjusted.
LOCAL	Pushbutton switch ; in conjunction with REMOTE pushbutton switch (described later) allows either Local or Remote operation of the Videocorder.	Press LOCAL pushbutton switch. Lamp of switch will light indicating operational controls of Videocorder are operative locally only.
REMOTE	Pushbutton switch ; in conjunction with LOCAL pushbutton switch allows either Remote or Local operation of the Videocorder.	The Local mode can only be changed to Remote mode by pressing REMOTE pushbutton switch. Note that when power is first applied to the Videocorder, the previously selected mode LOCAL will always be in effect. Press REMOTE pushbutton switch. Lamp of switch will light indicating operational controls of Videocorder are only operative remotely (operational controls are STOP, FWD, FF, REW, RECORD ; Cue Controls ; and Editing Mode Insert Controls). In this mode the Videocorder is controlled from another MV-10000 (in Local mode) ; the optional Remote Control Unit, or the Main Control panel of the D-100 Videocassette Printing system. The Remote mode can only be changed to the Local mode by pressing the LOCAL pushbutton switch.

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
TAPE COUNTER	<p>Meter, digital display; provides a continuous index of tape movement in hours, minutes and seconds. The meter is driven by a photo-cell coupled rubber roller that is continuously in contact with the tape, thus allowing precise location of desired tape segments.</p> <p>Meter indicates to a maximum of 23 hours, 59 minutes and 59 seconds before returning to zero.</p>	<p>Observe meter during operation to note time for subsequent relocation of any desired tape segment. Meter readout is always zero when power is first applied. A reset pushbutton switch allows resetting of meter to zero at any time.</p>
TAPE COUNTER RESET	<p>Pushbutton switch; allows TAPE COUNTER meter to be reset to zero at any time.</p>	<p>Press pushbutton switch (below TAPE COUNTER meter) and observe that meter readout becomes zero.</p>

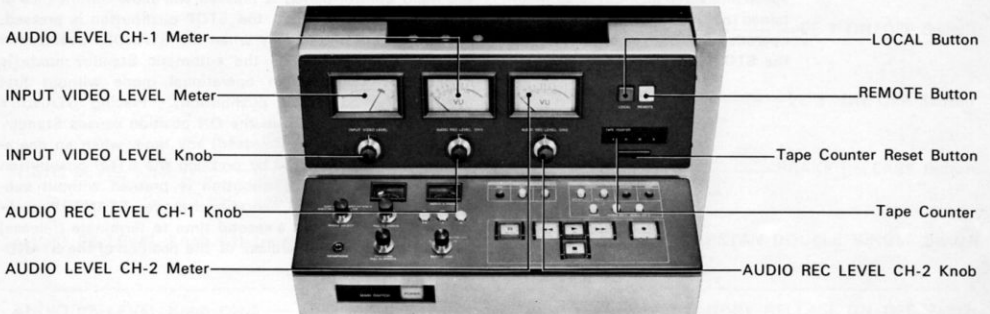


Table 7-2. Auxiliary Control Panel

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
PHONE LEVEL	Rotary Potentiometer ; allows adjustment of audio level from HEADPHONE jack (located on Main Control panel).	With headphone connected to HEADPHONE jack on Main Control panel and PHONE SELECT switch set for desired output (either or both, audio channels ; or cue), adjust PHONE LEVEL potentiometer for desired listening level. Note that the PHONE LEVEL potentiometer has no effect on any audio level at any other point.
AUDIO PB LEVEL CH-1	Rotary Potentiometer ; allows adjustment of output audio level on channel one during playback. AUDIO LEVEL CH-1 meter (on Main Control panel) provides visual indication of playback level.	Adjust CH-1 potentiometer for desired audio output as indicated on AUDIO LEVEL CH-1 meter (This is same meter used during Record mode).
CH-2	Same as channel one, above.	Same as Channel one, above.
EE-1	Two-position toggle switch ; in conjunction with EE-2 toggle switch, determines video and audio output of Videocorder (E-E or Playback) during all operational modes except Record (see chart below).	Normal position is ON (see chart, below).
EE-1 AND EE-2 SWITCH POSITION VERSUS VIDEO AND AUDIO OUTPUT		
EE-1	EE-2	VIDEO AND AUDIO OUTPUT
ON	ON	E-E/Playback*
	OFF	E-E
OFF	ON	Playback
	OFF	Playback
<p>During Record EE switches have no effect, and video and audio are E-E at all times.</p> <p>* Video and audio output switches from E-E to Playback when Drum Head comes up to speed and PG Servo locks up (as indicated by lighting of PG lamp).</p>		
EE-2	Two-position toggle switch ; in conjunction with EE-1 toggle switch allows automatic switching of video and audio outputs from E-E to Playback during PG servo lock-up while in the Forward (Playback) mode (see chart, above).	Normal position is ON (see chart above).
STANDBY RELEASE	Two-position toggle switch ; allows Standby mode (Head Drum up to speed and servo lock-up) to be maintained (not released) even though an operational mode is terminated by the STOP pushbutton switch.	Placing STANDBY RELEASE toggle switch in the OFF position either before or after the STANDBY pushbutton switch (on the Main Control panel) is pressed will allow continuance of the Standby mode when the STOP pushbutton is pressed. (Note that this is true only when the STANDBY pushbutton is pressed and not when the automatic Standby mode is initiated by selecting an operational mode without first pressing the STANDBY pushbutton). Placing STANDBY RELEASE toggle switch in the ON position causes Standby mode to be terminated (released) any time, when an operational mode is terminated by pressing the STOP pushbutton switch. If STANDBY pushbutton is pressed without subsequent selection of an operational mode, STANDBY pushbutton must be pressed a second time to terminate (release) the Standby mode regardless of the position of the STANDBY RELEASE switch.

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
CAPSTAN (DOUBLE/SINGLE)	Two-position toggle switch ; allows the tape supply pinch roller to be made inoperative (for service purposes).	Capstan switch, for normal operation, must be in DOUBLE position (pinch rollers for supply and take-up capstans operative). For service purposes, switch is set to SINGLE allowing supply pinch roller to be released.
BRAKE RELEASE	Pushbutton switch ; allows brake of supply tape reel to be released for ease of tape threading.	Press BRAKE RELEASE pushbutton and note that supply reel may now be easily turned. Pressing BRAKE RELEASE pushbutton a second time reactivates brake ; if BRAKE RELEASE pushbutton is not pressed a second time, the selection of any operational mode will automatically reactivate the brake.

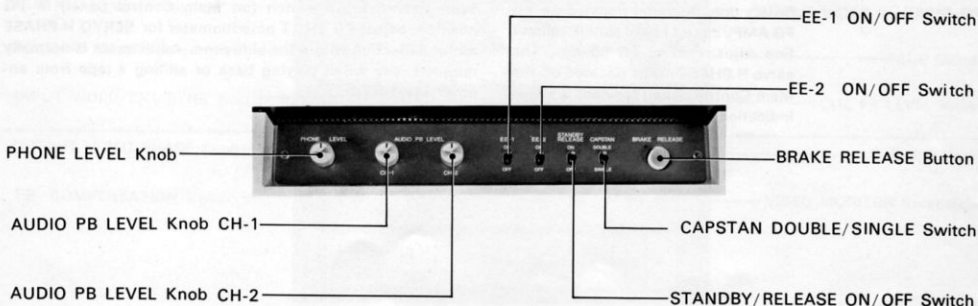


Table 7-3. Servo Unit Circuit Board Panel Controls

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
OUTPUT VIDEO PHASE	Rotary Potentiometer (located on LOGIC CIRCUIT board); allows fine phasing adjustment of output video to allow exact synchronization with the input reference signal (of prime importance when switching or mixing other video material). Associated meter, on SUB CONTROL circuit board, allows visual indication of the phase relationship.	During Playback, observe OUTPUT VIDEO PHASE meter (on SUB CONTROL circuit board) and adjust OUTPUT VIDEO PHASE potentiometer for centered meter deflection (within the blue zone).
OUTPUT VIDEO PHASE	Null-type meter; provides visual indication of phase relationship between output video and input sync (input video or external sync).	Observe OUTPUT VIDEO PHASE meter (on SUB CONTROL circuit board) while adjusting OUTPUT VIDEO PHASE potentiometer (on LOGIC CIRCUIT board) for centered meter deflection (within the blue zone).
CUE MIC	Microphone jack; provides microphone connection for recording of audio on the cue track; switch located internally on SUB CONTROL circuit board, allows use of either a low or high impedance microphone. An associated level control and meter provide control of the CUE MIC input. (Refer to CUE controls in Main Control panel table for additional cue information).	With CUE controls of the Main Control panel in the appropriate positions and the CUE MIC jack connected to a microphone, adjust the CUE MIC potentiometer (described later) while observing the CUE METER for desired audio level.
CUE REC LEVEL	Rotary potentiometer; allows recording level of the CUE MIC or CUE LINE inputs to be adjusted. Associated CUE meter allows visual indication of the recording level.	With CUE controls of the Main Control panel in the appropriate positions and the CUE MIC jack connected to a microphone, adjust the CUE REC LEVEL potentiometer (described later) while observing the CUE METER for desired audio level.
PB LEVEL	Rotary potentiometer; allows adjustment of playback level of CUE track. (Cue track output may consist of any combination of the following signals: CUE MIC, CUE LINE or internal 400 Hz tone).	While observing CUE METER, adjust CUE PB LEVEL potentiometer for desired playback level.
CUE METER	VU meter; provides visual indication of the cue signal level while the cue signal is being either recorded or played back.	Observe meter as required for cue level recording or playback (nominally zero VU).
VIDEO MONITOR	Connector; provides front panel access of video output for monitoring purposes.	As desired, connect video monitor or oscilloscope to VIDEO MONITOR connector.
PG SHIFT	Rotary potentiometer (located on PG FG AMPL circuit board panel); allows fine adjustment of PG timing. The servo H PHASE meter (located on the Main Control panel) provides a visual indication of this timing.	With SERVO LOCK switch (on Main Control panel) in PG position, adjust PG SHIFT potentiometer for SERVO H PHASE meter deflection within the blue zone. Adjustment is normally required only when playing back or editing a tape from another MV-10000.

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
INPUT VIDEO/EXT SYNC	Two-position toggle switch (located on REF SYNC PROCESS circuit board); allows selection of reference sync (input video or external sync) for servo operation.	Select appropriate switch position in accordance with supplied input signals. Normal operating position is INPUT VIDEO, however, if both signals are supplied, EXT SYNC position may be selected if desirable.
PB COMPENSATION	Two-position toggle switch (located on TENSION SERVO circuit board); allows selection of either manual or automatic operation of the tension (skew) servo in the Playback mode. (Refer to SKEW control entry in Main Control panel table.)	Normal operating position for the PB COMPENSATION switch is ON, thus allowing automatic skew control. With the PB COMPENSATION switch in the OFF position full manual control is allowed. (Refer to SKEW control entry in Main Control panel table.)

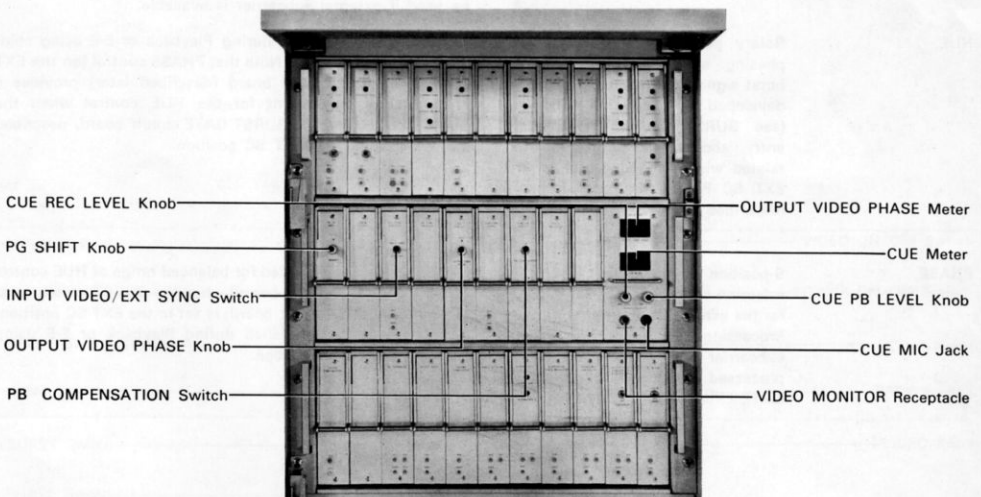


Table 7-4. Processing Amp Unit Circuit Board Panel Controls

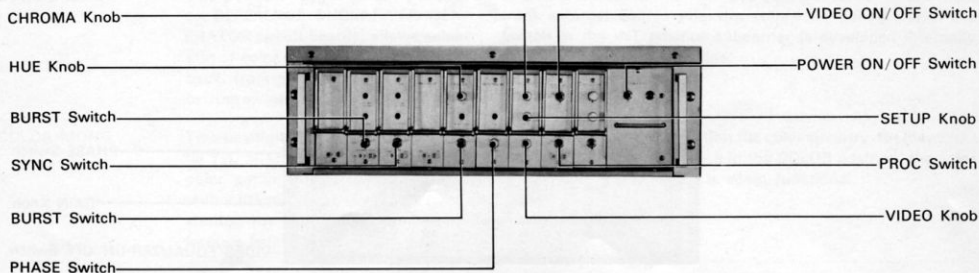
NOMENCLATURE	TYPE AND FUNCTION	OPERATION
POWER BLOCK CIRCUIT BOARD		
ON/OFF	Two-position toggle switch; allows ac power for POWER BLOCK circuit board to be turned on or off. Associated lamp provides visual indication of switch position.	Switch must be in ON position for Videocorder operation. With switch in ON position, associated lamp is lighted.
ON/OFF	Indicating lamp; associated with ON/OFF power switch to provide visual indication of switch position.	Lamp will light when ON/OFF switch is in ON position.
SYNC GEN 2 CIRCUIT BOARD		
BURST	Two-position toggle switch; allows selection for normal processing of burst during Playback or E-E (in the RESHAPED position), or inhibits the processing of burst for test purposes (in the UNSHAPED (TEST) position).	Normal operating position is RESHAPED. In this position burst is separated from the incoming video signal (Playback or E-E) to the Processing Amp. Reshaped burst, developed from either the incoming burst or external subcarrier (dependent on position of BURST switch on BURST GATE circuit board, described later) and reinserted into the composite output video signal of the Processing Amp. In the UNSHAPED (TEST) position, the burst signal is not processed; this switch position is for test purposes only.
PULSE GEN CIRCUIT BOARD		
SYNC	Two-position toggle switch; allows selection of either regenerated sync (REGEN position) or original reprocessed sync (GATED position) to be added to the video signal.	In the REGEN switch position, sync is separated from the input video to the Processing Amp and an internal sync generator (synchronized to the Processing Amp input video signal) produces new sync (regenerated) for insertion into the output video. In the GATED position, sync is also separated from the input video to the Processing Amp. However, the separated sync, in this case is processed and then reinserted into the output video.
BURST GATE CIRCUIT BOARD		
BURST	Two-position toggle switch; allows selection of either incoming video (Playback or E-E) or external subcarrier to be utilized for development of the reinserted burst signal.	In the TAPE position, burst from the incoming signal (Playback or E-E) is utilized to develop the reinserted burst. (See the SYNC GEN 2 entry, above). In the EXT SC position, the signal utilized for burst processing is the external Subcarrier input (provided from the rear connector panel). The EXT SC position provides greatest playback color stability and should be used if external subcarrier is available.
HUE	Rotary potentiometer; allows fine phasing adjustment of processed burst signal. When burst signal is developed from external subcarrier (see BURST GATE circuit board entry, above) this control is interrelated with PHASE control on the EXT SC PHASE ADJ circuit board (described later).	HUE control is adjusted during Playback or E-E using color bars and vectorscope. Note that PHASE control (on the EXT SC PHASE ADJ circuit board (described later) provides a coarse range adjustment for the HUE control when the BURST switch (on the BURST GATE circuit board, described above) is set to the EXT SC position.
EXT SC PHASE ADJ CIRCUIT BOARD		
PHASE	5-position rotary switch; provides selection of five discrete phase shifts for the external Subcarrier within the Processing Amp (when the external subcarrier is used to develop the processed burst signal, see BURST GATE circuit board, above).	PHASE control is adjusted for balanced range of HUE control (on BURST GATE circuit board) when the BURST switch (also on BURST GATE circuit board) is set to the EXT SC position. Adjustment is accomplished during Playback or E-E using color bars and vectorscope.

VIDEO PROCESS CIRCUIT BOARD

VIDEO	Rotary potentiometer; allows over-all video level (luminance and chrominance) of the Processing Amp output to be adjusted. Burst and sync are not affected.	Video control is adjusted to produce the correct over-all video level using color bars and a waveform monitor or vector-scope. Note that burst and sync are not affected by this control.
SETUP	Rotary potentiometer; allows pedestal (black level) level of the Processing Amp output to be independently adjusted.	SETUP control is adjusted to produce the correct pedestal level using color bars and a waveform monitor.
CHROMA	Rotary potentiometer; allows Chroma level of the Processing Amp output to be independently adjusted.	CHROMA control is adjusted to produce the correct chroma level using color bars and vectorscope.

OUTPUT AMP & SYNC SEP CIRCUIT BOARD

VIDEO	Two-position toggle switch; allows video to be eliminated from the Processing Amp output (leaving only sync and burst).	Normal position for the VIDEO switch is ON, thus allowing the complete (composite) video signal to be provided at the Processing Amp output. In the OFF position only sync and burst is provided at the output (color black or black burst).
PROC	Two-position toggle switch; allows video output (Playback or E-E) to bypass or be processed by the circuitry of the Processing Amp.	Normal position for the PROC switch is OUTPUT, thus allowing processing of the video output (playback or E-E). With the PROC switch in the INPUT position, the video bypasses all processing circuitry of the Processing Amp (output of Processing Amp is same as input). (Note that this switch may be used to observe incoming video quality or as an emergency Processing Amp bypass in the event of a Processing Amp malfunction).



VIDEO EQUALIZER CIRCUIT BOARD

ON/OFF	Two-position toggle switch; allows high frequency elements of the luminance signal to be emphasized thus providing enhancement control of picture detail (commonly referred to as aperture correction).	With the switch in the ON position, the video signal is processed by the Video Equalization circuitry. The controls for this circuitry (PHASE and GAIN) are described below. In the OFF position the video signal bypasses the equalization circuitry and the controls have no effect.
PHASE	Five-position selector switch; allows selection of 5 discrete phase settings for matching the frequency compensated signal with the uncompensated video.	PHASE switch is rotated for equal overshoot of leading and trailing edges of contrasting picture elements. Note that this control is effective only when the ON/OFF switch (described above) is in the ON position.
GAIN	Rotary potentiometer; provides level control of video equalization signal.	Adjust GAIN control for desired overshoot. Note that this control is only effective when the ON/OFF switch (described above) is in the ON position.

Note: Screwdriver adjustments are normally considered to be technician adjustments and, as such, are described in the service manual. However, because of the common use and function of most processing amplifiers, the following screwdriver adjustments are also provided here, as an aid to those Videocorder operators familiar with processing amplifier operation. (Note that these adjustments are factory-positioned and normally require no further adjustment.)

- FINE adjustment on EXT SC PHASE ADJ circuit board; provides approx. 130 degree range for fine adjustment of external subcarrier phase (PHASE control provides course adjustment).

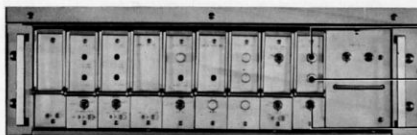
- BURST LEVEL adjustment on BURST GATE circuit board; provides level adjustment for reinserted burst.

- H LOCK PHASE adjustment on PULSE GEN circuit board; provides timing adjustment for reinserted sync (regenerated)

- BURST POS (REGEN SYNC) adjustment on PULSE GEN circuit board; provides timing adjustment for reinserted burst during the regenerated sync mode (when the SYNC switch, also on PULSE GEN circuit board, is in the REGEN position).

- SYNC LEVEL adjustment on SYNC GEN 2 circuit board; provides adjustment of sync level of composite video output.

- BURST POS (GATED SYNC) adjustment on SYNC GEN 2 circuit board; provides timing adjustment for reinserted burst during the gated sync mode (when the SYNC switch, in the PULSE GEN circuit board, is in the GATED position).



PHASE Switch

GAIN Knob

VIDEO EQUALIZER-ON / OFF Switch

Table 7-5. Video 1 Unit Circuit Board Panel Controls

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
DOC	Two-position toggle switch (located on DROP OUT COMPENSATOR-1 circuit board); allows drop out compensation circuitry to be activated or deactivated.	Switch is normally set to ON position, thus allowing (during Playback) any video drop out to be compensated by insertion of the previous video line. When switch is set to OFF position, the drop-out compensation circuitry is disabled.
TEST	Two-position toggle switch (located on DROP OUT COMPENSATOR-2 circuit board); provides selection of a test condition for adjustment of the drop-out compensation circuitry.	Switch is set to OFF position for normal operation. When the switch is set to ON position, a test condition is established to allow technician adjustment of drop-out compensation circuitry.

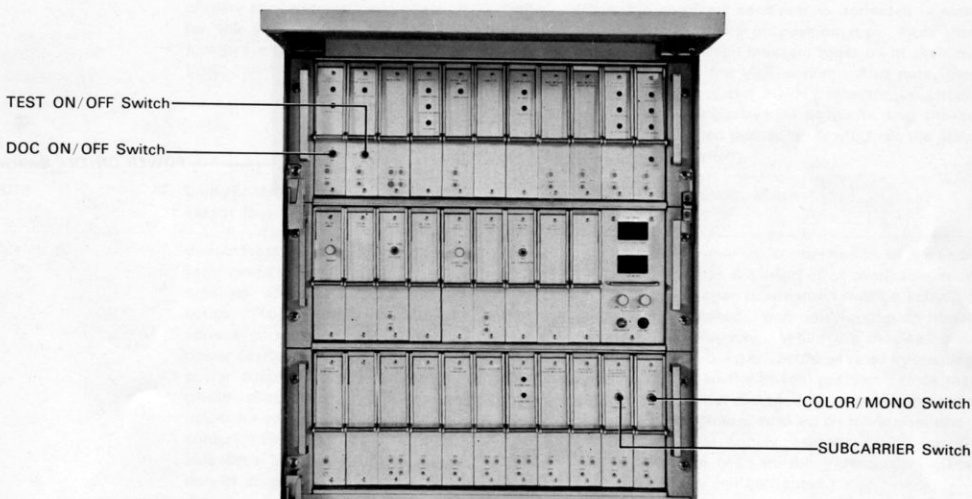


Table 7-6. Color Unit Circuit Board Panel Controls

SUBCARRIER	Two-position toggle switch (located on REFERENCE SUBCARRIER GENERATOR circuit board); allows selection of color subcarrier, during Playback, from either an external source or from an internally generated signal.	With the switch in the EXT position, subcarrier is accepted from external source (via the connector panel). With the switch in the INT position subcarrier is developed internally utilizing burst of input video.
COLOR/MONO	Two-position toggle switch (located on Y/C MIXER circuit board); allows color circuitry to be bypassed for monochrome video signal, thus preventing the possibility of any interference from the color circuitry.	With switch in MONO position the color circuitry, for Playback, is bypassed; with the switch in the COLOR position, the color circuitry for Video signal is again functional.

Table 7-7. Video 2/Audio Unit Circuit Board Panel Controls (all items located on AUDIO POWER SUPPLY Circuit Board)

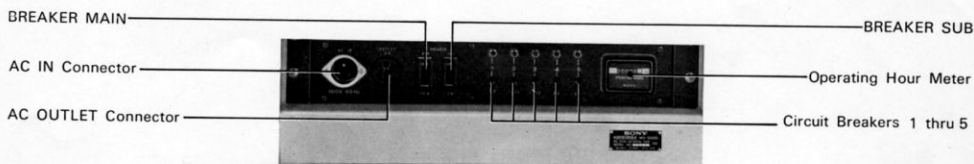
NOMENCLATURE	TYPE AND FUNCTION	OPERATION
POWER	Two-position toggle switch ; allows ac power for AUDIO POWER SUPPLY circuit board to be turned on or off. Indicating lamp ; associated with POWER toggle switch to provide visual indication of switch position. One amp fuse (two each) ; provides overload protection for the two dc circuits (24 VDC and 35 VDC) of the AUDIO POWER SUPPLY circuit board.	Switch must be in ON position for Videocorder operation. With switch in ON position, associated lamp is lighted. Lamp lights when POWER switch is ON. Remove and replace, if necessary.



POWER ON/OFF Switch

Table 7-8. Power Supply Panel Controls, Indicators and Connectors

NOMENCLATURE	TYPE AND FUNCTION	OPERATION
AC IN	Connector ; 3-pin (male) power receptacle. Accepts primary ac source power for Videocorder operation (mating power cable supplied).	Connect supplied cable to AC IN connector. When other end of cable is connected to ac source, ac power is provided to the MAIN BREAKER and the SUB BREAKER (described later). Additionally, ac power is provided to the ac OUTLET (described later).
OUTLET	Connector ; 3-pin (female) polarized, grounding-type, power receptacle. Provides a source of primary ac power for operation of any desired accessories or test equipment. Note that this power is routed directly from the AC IN connector.	Connect any desired ac-operated item to this connector ; power is available at this connector whenever source power is applied to the AC IN connector and is independent of any switches or circuit breakers.
BREAKER MAIN	Circuit breaker, 10 amp, magnetic ; in conjunction with SUB circuit breaker (described later) provides primary ac power overload protection for the Videocorder. Breaker also provides a manual switching function.	MAIN circuit breaker is manually closed (set to up position). In the event of an overload, circuit breaker will automatically open, thus interrupting operating ac power to the Videocorder. When the overload condition is corrected, circuit breaker should be reset to its on position (up). Note that both the MAIN and SUB circuit breakers must be in their on positions for operation of the Videocorder. Also note, that after power is connected to the AC IN connector, the circuit breakers are set to their respective on positions, that the ac power is normally controlled (turned on or off) from the Main Control panel (POWER switch).
SUB	Same as MAIN circuit breaker, above, except that current rating is 1 amp.	Same as MAIN circuit breaker, above.
1 thru 5	Circuit breakers (push-type) and indicator lamps (5 each) individual circuit breakers and associated indicator lamps. These circuit breakers, of various current ratings, provide ac power overload protection for the dc power supplies of the Videocorder (these supplies provide operating power for various units of the Videocorder). The associated lamps provide visual indications of the application of ac power.	During normal operation, only visual observation of the indicating lamps is required. In the event of an overload, circuit breaker will automatically open (pushbutton will be extended and lamp will be extinguished), thus interrupting ac power to the appropriate power supply. When the overload condition is corrected, circuit breaker should be reset by pushing the extended pushbutton to the in (on) position. Note that these circuit breakers are not designed for manual operation (opening of the circuit by pulling outward on the pushbutton). Also note that the power supply associated with circuit breaker number 3 is not used in the Videocorder. (The associated lamp however, will be lighted.)
OPERATING HOURS	Hour meter (6 digits, including tenths) ; meter provides true operating time (based on Head Drum rotation) with numerical readout from zero to 99,999.9 hours.	To determine operating time of Videocorder, only visual observation of meter is required. No mechanical reset of the meter is provided.



8. PRELIMINARY SETUP

8-1. POWER CABLE AND SWITCHES

Note: Switches on the rear panel of each of two units (Main Power Supply and Syscon Power Supply) allow the application of either of types of AC input power: 100 VAC or 120 VAC; and 50 Hz or 60 Hz.

A 100/120 VAC switch is also located in the POWER Block associated with the Processing Amplifier Unit and the Video 2/Audio Unit. However, these switches (covered by a screen and/or cover) are verified during check-out for the power configuration available at the intended installation site. (For purposes of this manual, it is assumed that site power is 120 VAC, 60 Hz.)

- 1) Connect jack of supplied power cable to AC IN connector on rear panel of Main Power Supply and connect plug to facility power outlet.
- 2) Set the MAIN and SUB circuit breakers to their respective ON positions (up).
- 3) Set the POWER switch of the AUDIO POWER SUPPLY to ON (located on panel of VIDEO 2/AUDIO unit).
- 4) Set the POWER switch of the POWER BLOCK to ON (located on panel of PROCESSING AMPLIFIER (PROC AMP. Unit).
- 5) Press MAIN SWITCH POWER pushbutton (on front of Main Control panel) and observe that the following lamps light.
MAIN SWITCH POWER pushbutton
PROC AMP POWER BLOCK lamp
AUDIO POWER SUPPLY lamp
Five lamps associated with the five pushbutton circuit breakers (on rear of Main Power Supply)

Note-1: The MAIN SWITCH POWER pushbutton is mechanical. That is, the associated contacts of the switch may be operated (closed or opened by pressing the pushbutton) regardless of whether power is applied to the MV-10000.

Note-2: The reel motors of the MV-10000 are thermally protected. In the event of reel motor overheating, power is removed from the Tape Transport, however, the ventilation fans continue to operate. Pressing the POWER MAIN switch first to off and then to on will restore operating power provided the overheating condition no longer exists.

8-2. SIGNAL CABLES AND SWITCHES

Except for connector panel the MV-10000 accepts high impedance video, external subcarrier and reference sync. These signals can be looped through to other equipment via the connector panel. However, avoid double or open-circuit termination of these signals by proper setting of the appropriate 75 ohm switches. See Section 6.

Note: During Playback, to enable servo lock-up, and therefore, proper performance of the MV-10000, either input video or external sync must be supplied.

- 1) For initial set-up, check the following switch positions:

PROC AMP UNIT

SYNC GEN 2 board	BURST switch to RESHAPED
PULSE GEN board	SYNC switch to REGEN
BURST GATE board	BURST switch to EXT SC*
OUTPUT AMP & SYNC SEP board	VIDEO switch to ON
	PROC switch to OUTPUT

SERVO UNIT

REF SYNC PROCESS board	INPUT VIDEO/EXT SYNC switch to INPUT VIDEO
TENSION SERVO board	PB COMPENSATION switch to ON

* Only if no external subcarrier provided to Videocorder, otherwise set switch to TAPE.

COLOR UNIT

REFERENCE SUBCARRIER GENERATOR board	SUBCARRIER switch to EXT*
Y/C MIXER board	COLOR/MONO switch to COLOR

* If no external subcarrier is supplied, set the switch to INT.

AUXILIARY CONTROL PANEL

EE-1 switch to ON
EE-2 switch to ON

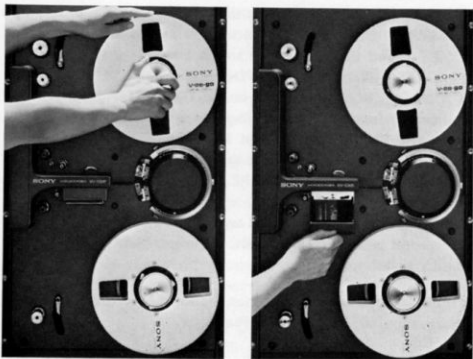
CAPSTAN DOUBLE/SIGLE switch to DOUBLE.

- 2) Observing termination requirements, make video, audio and cue cabling connections to rear connector panel as required. Refer to Section 6 as necessary.
- 3) If microphone connection to CUE MIC jack on SUB CONTROL circuit board of SERVO UNIT is desired, proceed as follows:
 - a- Remove main power from Videocorder.
 - b- Remove SUB CONTROL circuit board and ascertain that IMPEDANCE toggle switch is properly set (HIGH or LOW) for impedance of microphone.
 - c- Replace SUB CONTROL circuit board and turn on main power.

9. TAPE THREADING

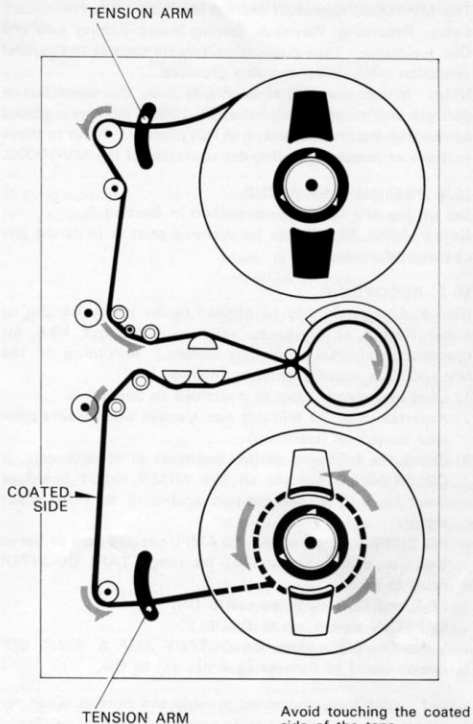
9-1. Thread tape as follows :

1. Turn on main power by depressing POWER switch on Main Control panel.
2. Open Audio Head cover by pressing downward on lip. Cover is hinged at base.
3. Press BRAKE RELEASE pushbutton on Auxiliary Control panel (removes brake from supply spindle).
4. Rotate both reel locks (splined, outer portion of spindles) to extreme counter-clockwise position.
5. Slide a full reel onto supply spindle. Holding the supply reel lock with one hand, rotate the supply reel clockwise until the spring loaded reel stops snap into the matching recesses of the reel hub. Less than 120 degrees of rotation is required.
6. Holding the rim of the supply reel with one hand, rotate the reel lock clockwise until reel is firmly locked against the reel table. (Three reel dogs, on the outer edge of the spindle) Extend and press inward as the reel lock is rotated clockwise.



7. Install an empty reel onto the take-up spindle by repeating steps 5 and 6. (Reels should be same size.)
8. Unwinding tape from the supply reel as required, thread tape in the path, and direction shown in Fig. 9-1.
9. Take up any slack by rotating the reels.
10. Close the Audio Head cover.

Note: To operate the MV-10000 Transport, one of the TENSION ARM switches must be actuated.



10. OPERATION

The MV-10000 operation section is divided into Preliminary Setup, Recording, Playback, Editing Insert, Editing Add and Cue functions. Tape duplication, remote control and parallel operation information are also provided.

Note: It is assumed that familiarity with the controls, indicators and connectors of the MV-10000 has been gained by reading Sections 6 and 7 of this manual. Refer to these sections as necessary during the operation of the MV-10000.

10-1. PRELIMINARY SETUP

Set up the MV-10000 as described in Section 8.

Note: Allow 30 minutes for warmup prior to initiating any operational mode.

10-2. RECORDING

(Cue audio signals may be applied to the cue track during either Record or Playback; refer to paragraph 10-6 for operational information on this feature.) Recording on the MV-10000 is accomplished as follows:

- 1) Load and thread tape as described in Section 9.
- 2) Ascertain that 30 minutes has elapsed since Main Power was turned on (warm-up).
- 3) Check the following control positions or conditions:
COLOR/MONO switch, on Y/C MIXER circuit board of Color Unit, to proper position according to video input signal.
PG SHIFT control, on PG FG AMPL circuit board of Servo Unit, to center position of its range TAPE COUNTER reset to zero.
EE-1 and EE-2 switches set to ON.
CAPSTAN switch set to DOUBLE.
Video ON/OFF switch, on OUTPUT AMP & SYNC SEP circuit board of Processing Amp, set to ON.

Note-1: The following steps provide the normal video recording sequence. However, to provide a standard reference for playback setup, it is recommended that approximately one minute of the beginning of the tape be recorded with 75% standard color bars (1 V (p-p)) on the video track and audio signals of 1 kHz (0 VU) on each of the audio channels.

Note-2: If desired, the audio track may be headphone-monitored during the following steps (or at anytime) by use of the HEADPHONE jack, the PHONE LEVEL control and the PHONE select switch.

- 4) Adjust INPUT VIDEO LEVEL control for deflection within the blue zone of the INPUT VIDEO LEVEL meter.
- 5) Adjust AUDIO REC LEVEL controls (CH-1 and CH-2) for peak deflections of zero VU on AUDIO LEVEL meters. If standard tone is being recorded, meter deflection should be set for a constant zero VU reading.
- 6) Press the STANDBY pushbutton. Observe that PG lamp lights when Drum Head comes up to speed. Also, observe that V lamp and H lamp light.
- 7) Press RECORD and FWD pushbuttons simultaneously. System is now in record mode for all channels (one video channel, two audio channels and one cue channel).
- 8) When recording is complete, press STOP pushbutton.

10-3. PLAYBACK

(Cue audio signals may be applied to the cue track during either Record or Playback. Refer to Paragraph 10-6 for operational information on this feature). Playback on the MV-10000 is accomplished as follows:

Note: Read the following Playback procedure in its entirety prior to actually performing the accompanying Playback steps.

- 1) Load and thread tape as described in Section 9.
- 2) Ascertain that 30 minutes has elapsed since Main Power was turned on (warm-up).
- 3) Using a Color Bar Generator, Wave Form Monitor and Vectorscope ascertain the proper setup for the following Processing Amp Unit controls:
HUE control (on BURST GATE circuit board)
CHROMA, SET UP and VIDEO controls (on VIDEO PROCESS circuit board)
- 4) Ascertain the following control positions or conditions:
COLOR/MONO switch, on Y/C MIXER circuit board of Color Unit, to proper position according to recorded tape
SERVO LOCK switch set to V & H position
EE-1 and EE-2 switches set to ON
CAPSTAN switch set to DOUBLE
VIDEO ON/OFF switch, on OUTPUT AMP & SYNC SEP circuit board of Processing Amp Unit set to ON
TAPE/EXT SC switch, on BURST GATE circuit board of Processing Amp Unit, set to EXT SC if external subcarrier is provided (set to TAPE if no external subcarrier is supplied)
INPUT VIDEO/EXT SYNC switch, on REF SYNC PROCESS circuit board of Servo Unit, to proper position as dictated by reference sync

Note: Reference sync (Input Video or External Sync) must always be supplied during Playback.

- 5) Press the STANDBY pushbutton. Observe that PG lamp lights when Drum Head comes up to speed. Also, observe that V lamp and H lamp are both lighted.
- 6) Press the FWD pushbutton. Observe that PG lamp lights when Drum Head comes up to speed; also note that V and H lamps light in accordance with SERVO LOCK control selection (normal selection is V and H).
- 7) Pull TRACKING control up (on) and adjust for minimum noise in the Playback picture. (Preferably the color bars recorded at the beginning of the tape.) (Tracking Adjustment is not normally necessary for tapes produced on the same MV-10000.)
- 8) Observe SKEW meter for deflection within the blue zone. (Skew control is now automatic.)
- 9) If all three lamps (PG, V and H) are not lighted in the PG SERVO LOCK position, proceed as follows:
 - a. Set the SERVO LOCK control to PG.
 - b. Adjust the PG SHIFT control, on the PG FG AMPL circuit board of the Servo Unit, for SERVO H PHASE meter indicator deflection within the blue zone.
 - c. Observe that the PG, V and H lamps light.
 - d. Return the SERVO LOCK control to the V & H position.

Finer tracking can be obtained by the following method:

- a. Using vectorscope, observe the chroma of the 75% color bars and adjust the TRACKING control for maximum convergence of each color vector (minimum-size color vector dots).
 - b. Set the EE-1 Switch to ON.
 - c. Alternately set the EE-2 Switch to ON and OFF and adjust the EQUALIZER-1 and EQUALIZER-2 potentiometers (on PLAYBACK EQUALIZER circuit board of the VIDEO 1 unit) to obtain equal chroma levels.
 - d. Play back the beginning of the tape, and check video and audio by using a monitor. When check is finished, rewind tape and play back the program from its beginning.

Note: The preceding adjustments of Step 8 are not normally necessary for tapes produced on the same MV-10000.
 - e. If tape condition does not permit playback in the V & H servo lock mode, refer to table 10-1 for selection of alternate modes.
- 10) Adjust AUDIO PB LEVEL controls (CH-1 and CH-2) as necessary for peak meter deflection of zero VU on AUDIO LEVEL meters (CH-1 and CH-2).
- Note: If editing (Insert or Add) is planned for 10 minutes or longer, proceed directly to Step b, regardless of whether SKEW meter deflection is automatically maintained or not. This note may be ignored if editing is not planned or for editing times of less than 10 minutes. If SKEW meter deflection is not automatically maintained within the blue zone, proceed as follows:
- a. Pull SKEW control up and adjust as necessary for proper SKEW meter deflection (skew control is now semiautomatic). If proper SKEW meter deflection can not be maintained, proceed to Step b.
 - b. Set PB COMPENSATION switch, on TENSION SERVO circuit board of Servo Unit, to OFF and again adjust the SKEW control (still in the up position) for proper SKEW meter deflection. (Skew control is now manual.)
- 11) If insert- or add-editing is desired, refer to Paragraphs 10-4 and 10-5 respectively.
- 12) When Playback is complete, press STOP pushbutton and, as applicable, set TRACKING, SKEW and PB COMPENSATION controls to normal.

Table 10-1. Playback tape condition versus Servo Lock Mode

TAPE CONDITION (SYNC)	SERVO LOCK MODE	REMARKS
V and H sync both normal	V & H	Normal Playback servo mode. Least jitter. In this mode, the output video is in phase with the external reference sync.
H sync normal (V sync poor)	H	Used for Playback when V sync not stable and/or noisy. Little jitter. In this mode, the output video is in phase with external reference H sync.
V sync normal (H sync poor)	V	Used for Playback when H sync is not stable and/or noisy. Greater jitter than H Servo Lock mode. In this mode, the output video is in phase with external reference V sync.
Both V and H sync poor	PG	Used for Playback when both H sync and V sync are not stable and/or noisy. Greater jitter than V Servo Lock mode. (This mode may also be used for editing when either V or H sync is poor. In this mode, the output video is delayed approximately 3.6 microseconds in relation to the external reference sync (compensates for editing requirements).)
V and H sync both normal	EDITING V & H	Normal edit servo mode. Delay produced in output video phasing. In this mode, the output video is delayed approximately 3.6 microseconds in relation to external reference sync (compensates for editing requirements).

10-4. INSERT EDITING

Insert editing, i.e., the insertion of new material (any combination of video or audio) into previously recorded tape, is accomplished as follows:

Note: The tape into which an insert is to be made, must have a continuously recorded control track, both before and after the planned insert portion. This allows synchronization of the insert video tracks with those of the original recording.

- 1) Perform Steps 1 through 10 of the preceding Playback procedure (Paragraph 10-3).
Note: Automatic skew control may be utilized for Edits of 10 minutes or less; manual skew control must be used for Edits of 10 minutes or longer (refer to Paragraph 10-3, Step 10).
- 2) Observe the playback picture and tape counter and determine the beginning and end points of the insert. Cue tones may also be utilized for audible indications of the insert; refer to Paragraph 10-6.
- 3) Rewind tape (press REW pushbutton) to a suitable starting point in preparation for actual editing. Press STOP pushbutton.
- 4) Adjust insert-video by adjusting INPUT VIDEO LEVEL control for deflection within the blue zone of the INPUT VIDEO LEVEL meter.
- 5) Adjust insert-audio by adjusting AUDIO REC LEVEL controls (CH-1 and CH-2) for peak deflections of zero VU on AUDIO LEVEL meters.
- 6) Press the STANDBY pushbutton. Observe that PG lamp lights when Drum Head comes up to speed.
- 7) Press FWD pushbutton for Playback mode. Also observe that V lamp and H lamp are both lighted in the PG SERVO LOCK position.
- 8) Set the SERVO LOCK control to the EDITING V & H position. If necessary the PG position may be used. Refer to table 10-1.
- 9) Press the appropriate combination of EDITING MODE SELECT pushbuttons, i.e., VIDEO, AUDIO CH-1 and AUDIO CH-2.
- 10) Press the CUT IN button and SAFETY button simultaneously.
Note: No tracking or skew adjustments should be made during insertion.
- 11) When insert is finished, press the INSERT CUT OUT pushbutton.
- 12) Press STOP pushbutton. If desired, rewind and playback tape for review of edit insert.

10-5. ADD EDITING

Add editing, i.e., the addition of new material onto the end of previously recorded tape, is accomplished as follows.

Note: The tape onto which an addition is to be made must have a continuously recorded Control Track up to the point of the planned addition. During the add-edit, all channels, (video, audio aud cue) are in the record condition.

- 1) Perform Steps 1 through 10 of the Playback procedure (Paragraph 10-3).
- 2) Observe the playback picture and tape counter and determine the point at which the new information is to be added (cue tones may also be utilized for audible indications of the add point). Refer to Paragraph 10-6.
- 3) Rewind tape (press REW pushbutton) to suitable starting point in preparation for actual editing. Press STOP pushbutton.
- 4) Adjust add-video by adjusting INPUT VIDEO LEVEL control for deflection within the blue zone of the INPUT VIDEO LEVEL meter.
- 5) Adjust add-audio by adjusting AUDIO REC LEVEL controls (CH-1 and CH-2) for peak deflections of 0 VU on AUDIO LEVEL meters.
- 6) Press the STANDBY pushbutton. The Videocorder is normally operated in PG mode. Observe that PG lamp lights when Drum Head comes up to speed. Also observe that V lamp and H lamp are both lighted.
- 7) Press FWD pushbutton for Playback mode. Also observe that V lamp and H lamp are both lighted in the PG SERVO LOCK position.
- 8) Set the SERVO LOCK control to the EDITING V & H position. If necessary the PG position may be used. Refer to table 10-1.
- 9) Press the SAFETY button and the ADD button simultaneously.
Note: No tracking or skew adjustments should be made during the addition.
- 10) When the addition is finished, press the STOP pushbutton.
- 11) If desired, rewind and playback tape for review of addition.

10-6. CUEING

The cue function of the MV-10000 uses a separate and independent tape track and may be used in a variety of ways during any operational mode. Cue sources, controls and meters are described in the following paragraphs.

10-7. CUE SOURCES

CUE signals may be provided from three separate sources as follows.

- 1) Externally from CUE LINE IN jack; located on connector panel. Any audio signal source may be used (should be +4 dB).
- 2) Externally, by microphone, from CUE MIC jack; located on SUB CONTROL circuit board of Servo unit. Any standard microphone may be used.
Note: When CUE MIC jack is to be used, ascertain that IMPEDANCE switch located internally on SUB CONTROL circuit board, is set for impedance of microphone (HIGH or LOW).
- 3) Internally from 400 Hz tone generator.

10-8. CUE LEVEL CONTROLS AND MONITORING

The level of the two external cue signals (CUE LINE IN and CUE MIC) applied to the cue track is controlled by the CUE REC LEVEL control. This level as observed on the CUE METER should not exceed zero VU. The level of the internal 400 Hz tone generator is internally set for zero VU and cannot be externally adjusted. The level, however, may be observed on the CUE METER. The Playback level of the cue track is controlled by the CUE PB LEVEL control. This level, as observed on the CUE METER, should not exceed zero VU. The cue track may be monitored at anytime by use of headphones connected to the HEADPHONE jack with the PHONE SELECT switch set to CUE. The level to the headphones is adjusted by the PHONE LEVEL control. (This control only affects the headphone signal.)

10-9. CUE OPERATION

Cue operation is identical during the Record mode and the Edit-Add mode. Additionally, cue operation is also identical during the Playback and Edit-Insert modes. Therefore, the following cue operation information is categorized accordingly, i.e., Record-Add and Playback-Insert.

1) Record-Add Operation

- a) If CUE LINE IN or CUE MIC signals are to be used, establish levels as described in Paragraph 10-6.
- b) Since the Cue Record Head is always in the record condition when the MV-10000 is in the Record mode or Edit-Add mode, any signals applied to the CUE LINE IN or CUE MIC connectors will automatically be recorded. CUE REC pushbutton is always lighted during the Record mode or the Edit-Add mode.
- c) When the 400 Hz tone is to be applied to the cue track, press the CUE TONE REC pushbutton. Tone will be applied only while pushbutton is pressed down.

Note: The cue circuitry will accept, mix any combination of the cue signals and apply to the cue track (CUE LINE IN, CUE MIC and internal 400 Hz tone).

The internal 400 Hz tone will cause muting of the other cue signals.

2) Playback-Insert Operation

- a) If CUE LINE IN or CUE MIC signals are to be used, establish levels as described in Paragraph 10-6.
- b) When the CUE LINE IN or CUE MIC signal is to be applied to the cue track, press the CUE REC pushbutton. The CUE REC pushbutton will light and remain lighted indicating cue track recording. At the completion of the desired cue, press the CUE OFF pushbutton (CUE REC light will extinguish).
- c) When the 400 Hz tone is to be applied to the cue track, press the CUE TONE REC pushbutton. Tone will be applied only while pushbutton is pressed down.

Note: The cue circuitry will accept, mix and apply to the cue track, any combination of the cue signals (CUE LINE IN, CUE MIC and internal 400 Hz tone).

10-10. TAPE DUPLICATION

Tape duplication, or dubbing from one MV-10000 to another MV-10000, is accomplished with one MV-10000 in the Playback mode and the other in the Record mode. The following information augments the Playback and Record procedures, given earlier, in order to obtain optimum duplication or dubbing results of color signal.

10-11. MV-10000 IN PLAYBACK

Check that the following switches on the MV-10000, used for Playback during duplication or dubbing, are in the positions indicated below.

INPUT VIDEO/EXT SYNC switch set to EXT SYNC (located on REF SYNC PROCESS circuit board of Servo unit). External sync must be provided.

COLOR/MONO switch in MONO (located on Y/C MIXER circuit board of Color unit) REGEN/GATED switch in GATED (located on PULSE GEN circuit board of Processing Amp unit).

TAPE/EXT SC switch in TAPE (located on BURST GATE circuit board of Processing Amp unit).

BURST switch in UNSHAPED (TEST) (located on SYNC GEN-2 circuit board of Processing Amp unit).

SERVO LOCK control in V & H (located on Main Control panel). This switch position assumes good vertical and horizontal sync pulses on tape. Refer to table 10-1.

10-12. MV-10000 IN RECORD

Check that the following switches on the MV-10000, used for Recording during duplication or dubbing, are set as indicated below.

INPUT VIDEO/EXT SYNC switch in EXT SYNC (located on REF SYNC PROCESS circuit board of Servo unit). External sync must be provided in order of this switch position to be used.

COLOR/MONO switch in COLOR, (switch located on Y/C MIXER circuit board of Color unit).

INT/EXT switch in EXT (located on REFERENCE SUBCARRIER GENERATOR circuit board of Color unit).

The external subcarrier is used in stabilizing the E-E color.

10-13. REMOTE CONTROL

The MV-10000 can be controlled from a remote location by use of a remote control unit. Using the Remote Control unit, remote operation is accomplished as follows.

- 1) Connect the cable between the REMOTE IN connector of the MV-10000 Connector panel and the connector of the Remote Control unit.
- 2) Turn on main power to the MV-10000 and load tape as described in Section 9.
- 3) Press the REMOTE pushbutton on the Main Control panel and observe that the indicator lamps light on the Remote Control unit.
- 4) Press the LOCAL pushbutton on the Main Control panel and establish appropriate levels and adjustments of the MV-10000 as described in preceding paragraphs.
- 5) Again, press the REMOTE pushbutton on the Main Control panel.

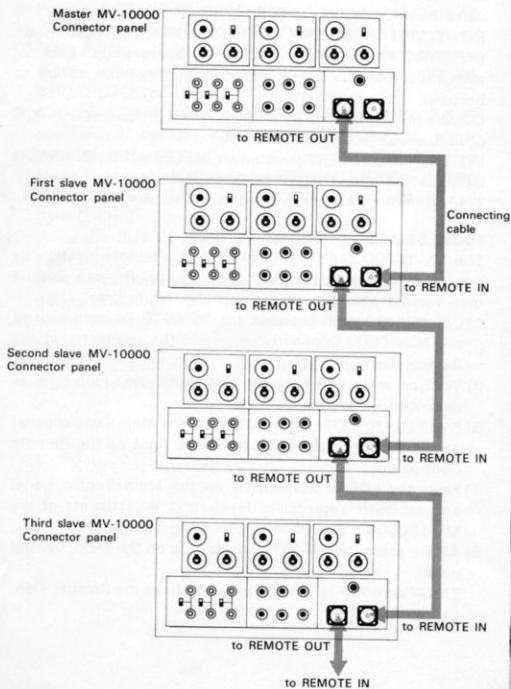
The MV-10000 is now operational from the Remote Control unit.

10-14. PARALLEL OPERATION

Simultaneous parallel operation of two or more MV-10000's is accomplished as follows.

- 1) Turn on main power to each of the MV-10000's to be operated in parallel and load tape in accordance with Section 9.
- 2) Establish appropriate levels and adjustments. All operational switches and controls of each MV-10000 should be set to the same positions.
- 3) Interconnect all MV-10000's in series by connecting the REMOTE OUT connector of the first MV-10000 to the REMOTE IN connector of the next MV-10000; repeat this interconnection arrangement for all MV-10000's to be parallel-operated. Special Sony cables are used for these interconnections.
- 4) The first MV-10000 will now be the Master and all others will be Slaves.
- 5) Press the REMOTE pushbuttons of all Slave MV-10000's and press the LOCAL pushbutton of the Master MV-10000.
- 6) All MV-10000's are now controlled by the Main Control panel of the Master MV-10000.

Note: If it is desired to operate the Master as well as all Slave MV-10000's from a remote location, connect the Remote Control unit to the REMOTE IN connector of the Master MV-10000 and press the REMOTE pushbutton on the Main Control panel. (All MV-10000's are now slaves of the Remote Control unit).



11. OPERATOR MAINTENANCE

To assure peak performance in both record and playback the following daily maintenance is required.

1. Head cleaning (Video, Audio and Erase heads).

To avoid head clogging, clean the heads by using the supplied cleaning tips before threading the tape.

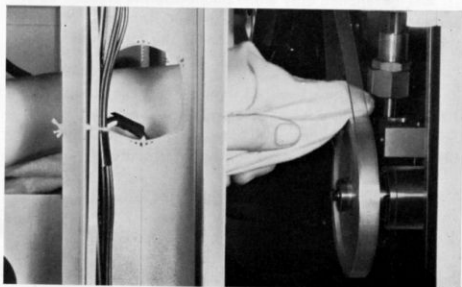
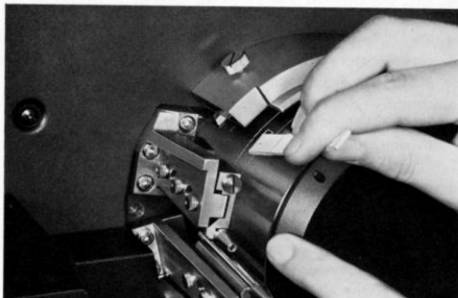
Moisten the chamois tips with benzine or methyl alcohol and clean the two video heads and two rotary erase heads. To maintain intimate contact between drum and tape, it is advisable to clean the portion of the drum over which the tape travels.

2. Capstan cleaning.

3. After each 50 hours of operation, moisten a sheet of gauze with methyl alcohol and clean the two mylar belts located between the capstan motors and the capstans.

Note-1: If the MV-10000 is not to be operated for a long period of time, rewind any tape onto the supply reel and remove the reel from the MV-10000.

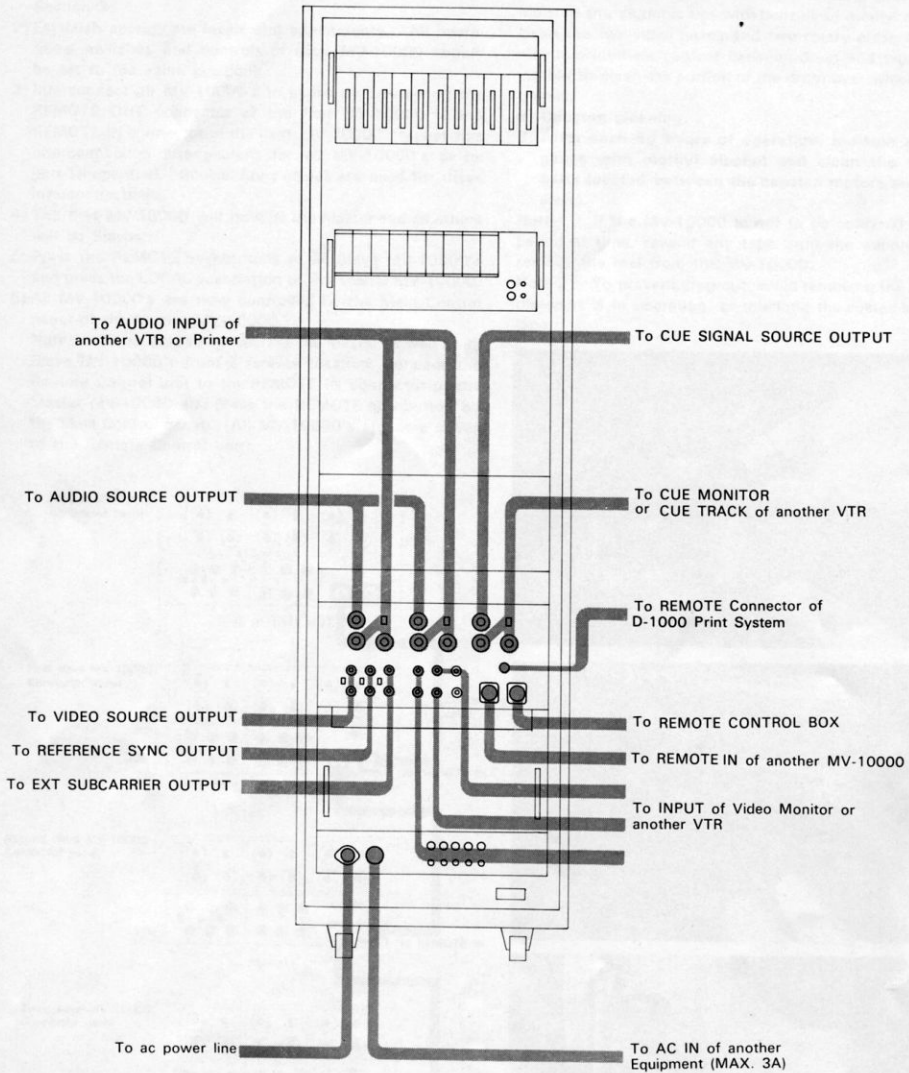
Note-2: To prevent drop-out, avoid removing the tape while transport is in operation, or touching the coated side of the tape.



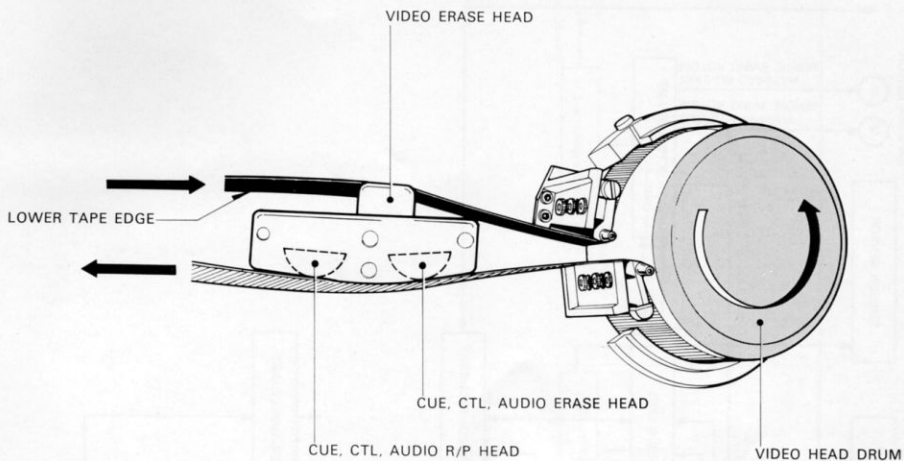


12. ILLUSTRATIONS

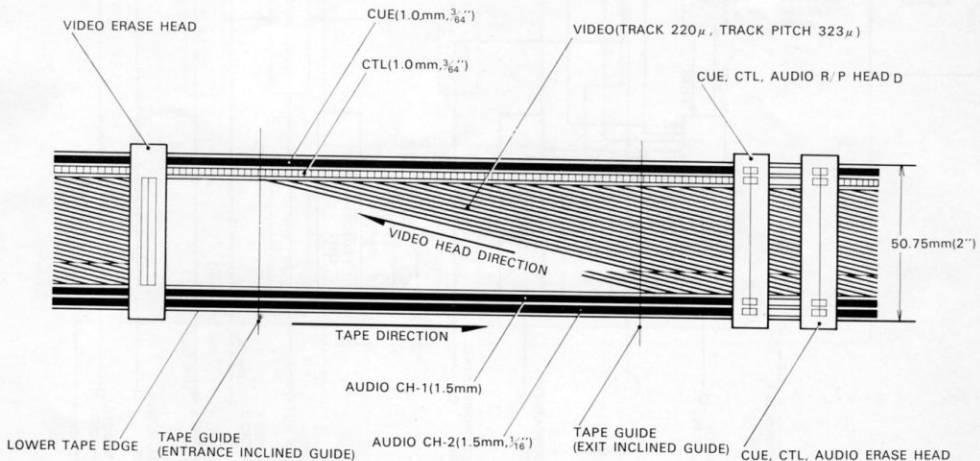
①-① CONNECTION DIAGRAM



12-2 VIDEO HEAD AND VIDEO TAPE

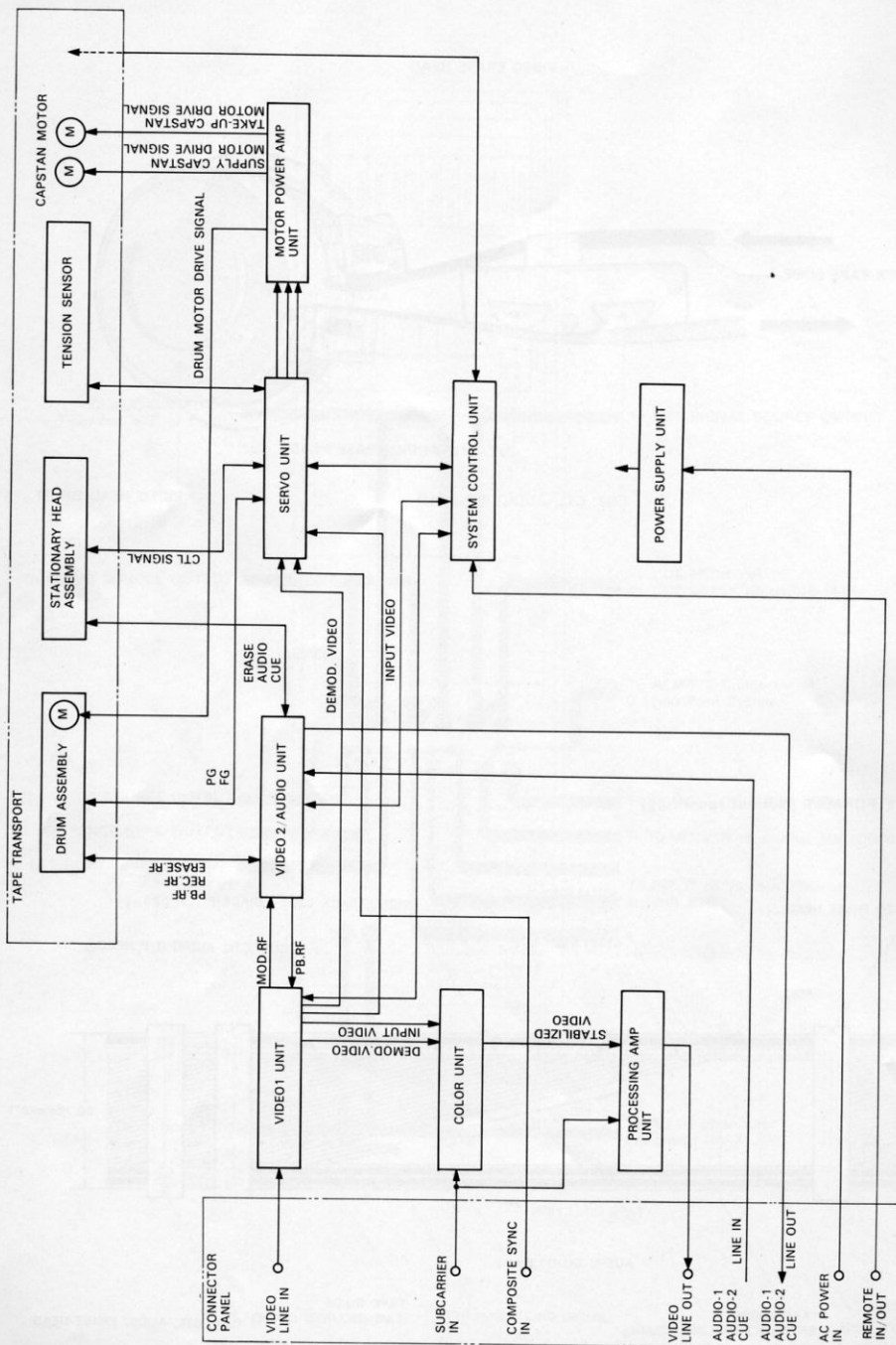


12-3 TAPE FORMAT (Normal recording)

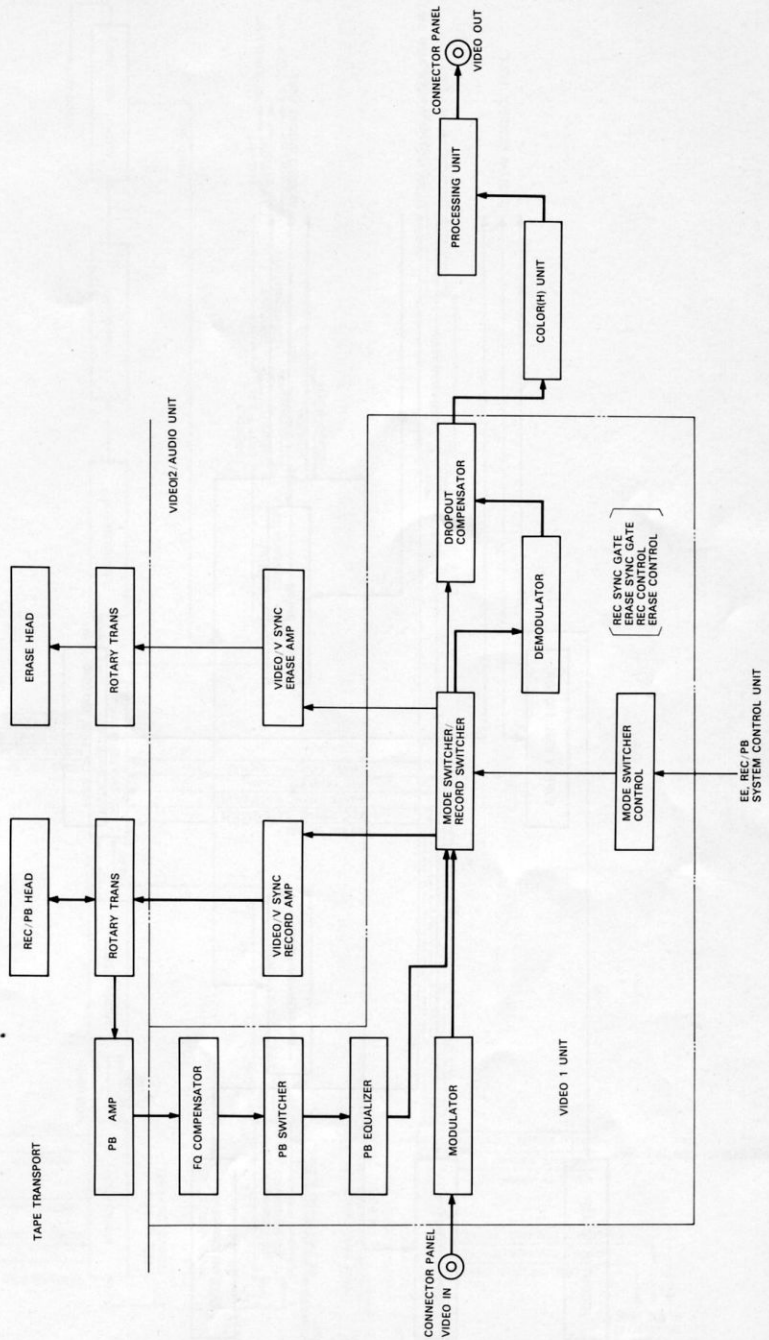


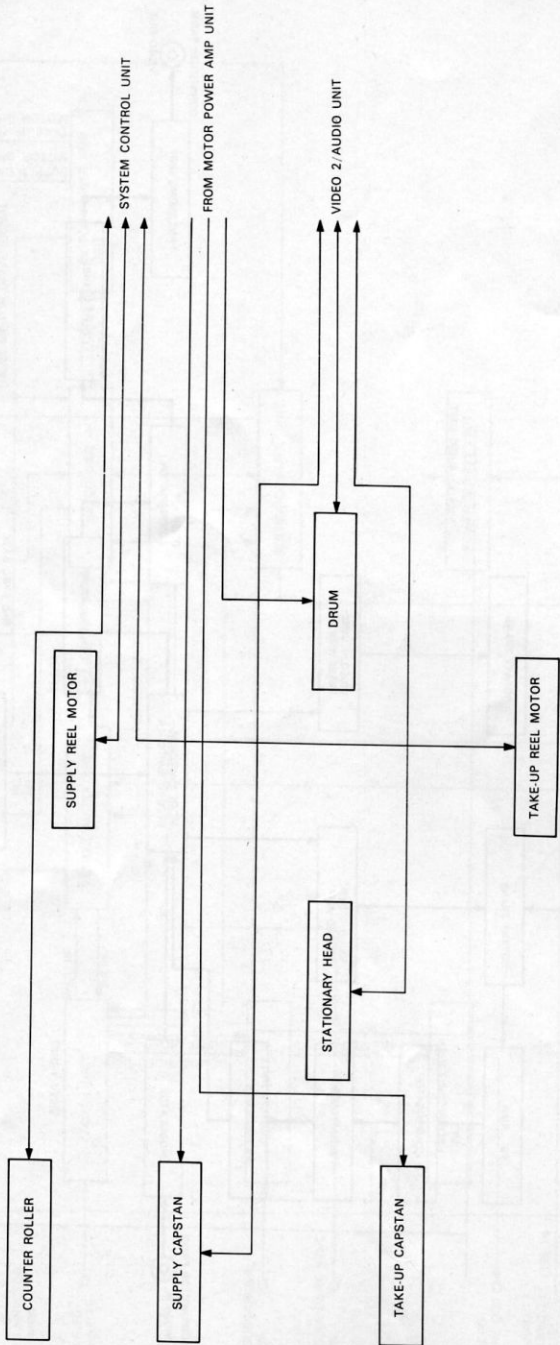
13. BLOCK DIAGRAM

⑧-① OVERALL DIAGRAM

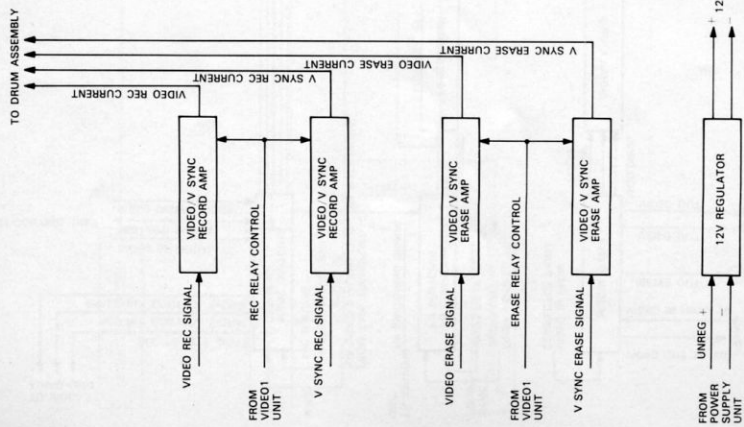
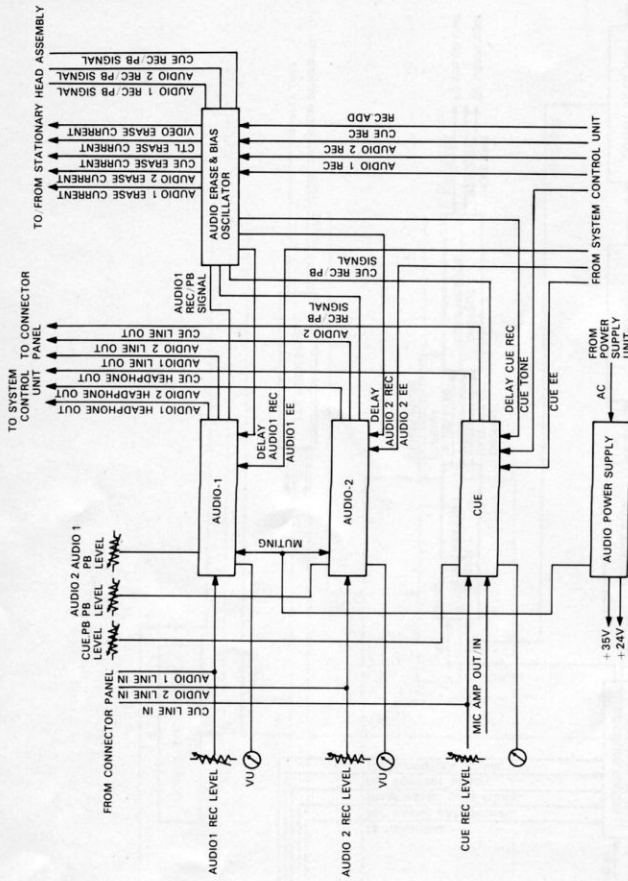


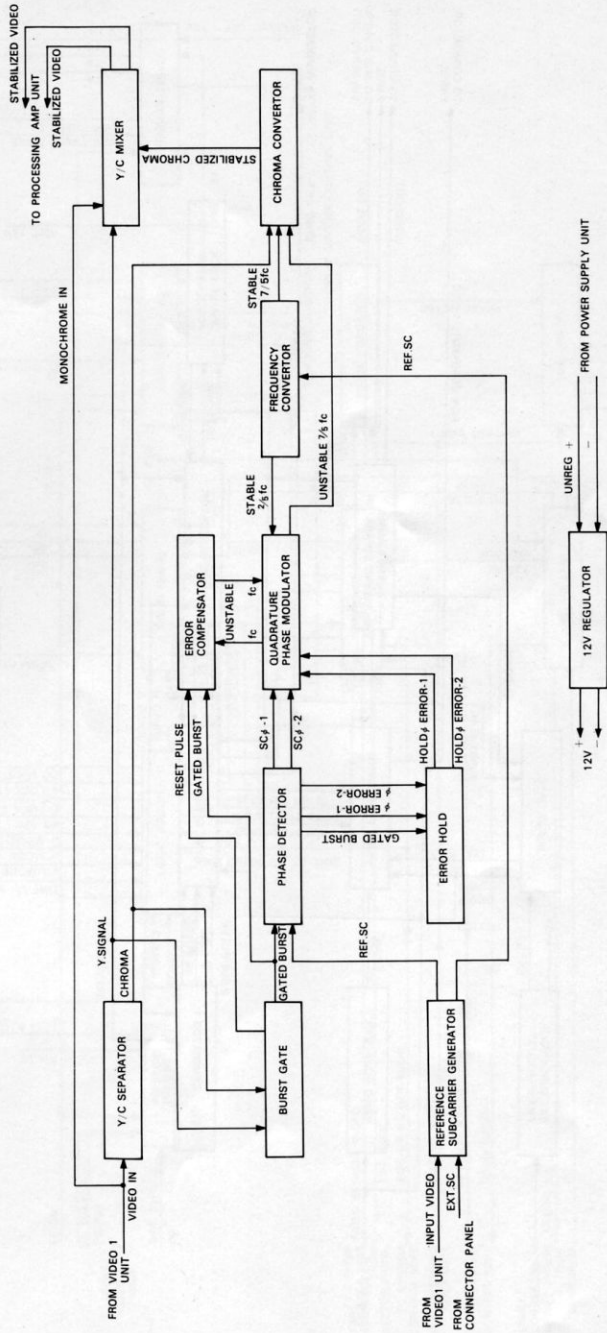
①-② VIDEO RECORDING AND PLAYBACK

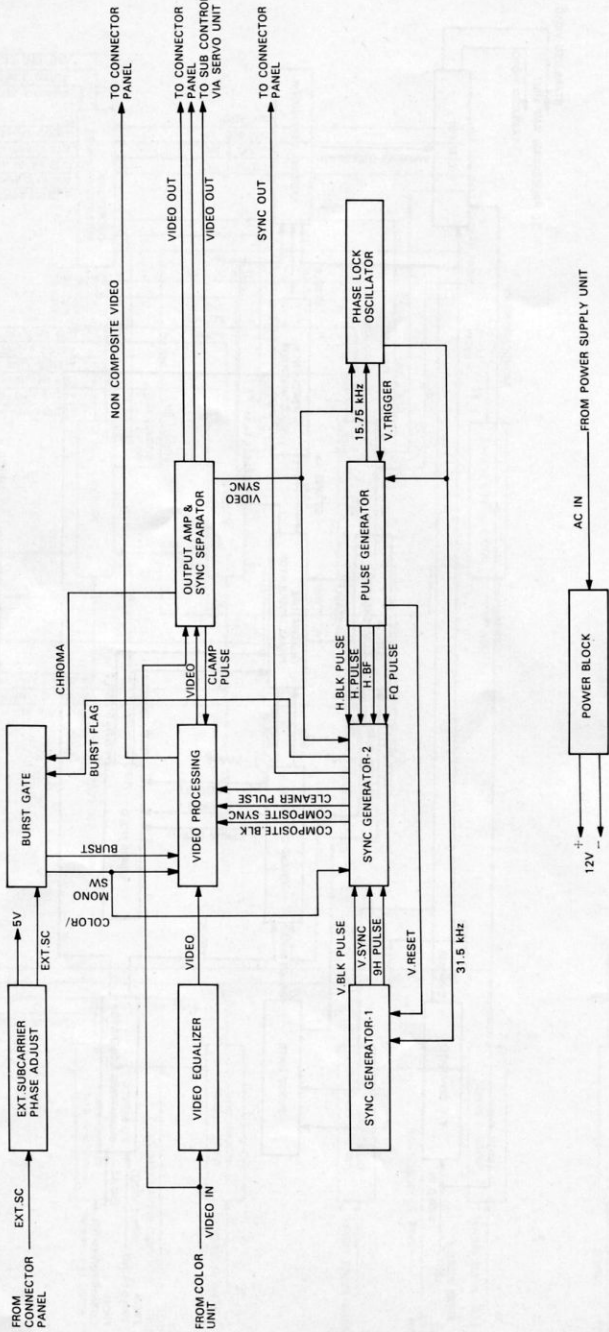




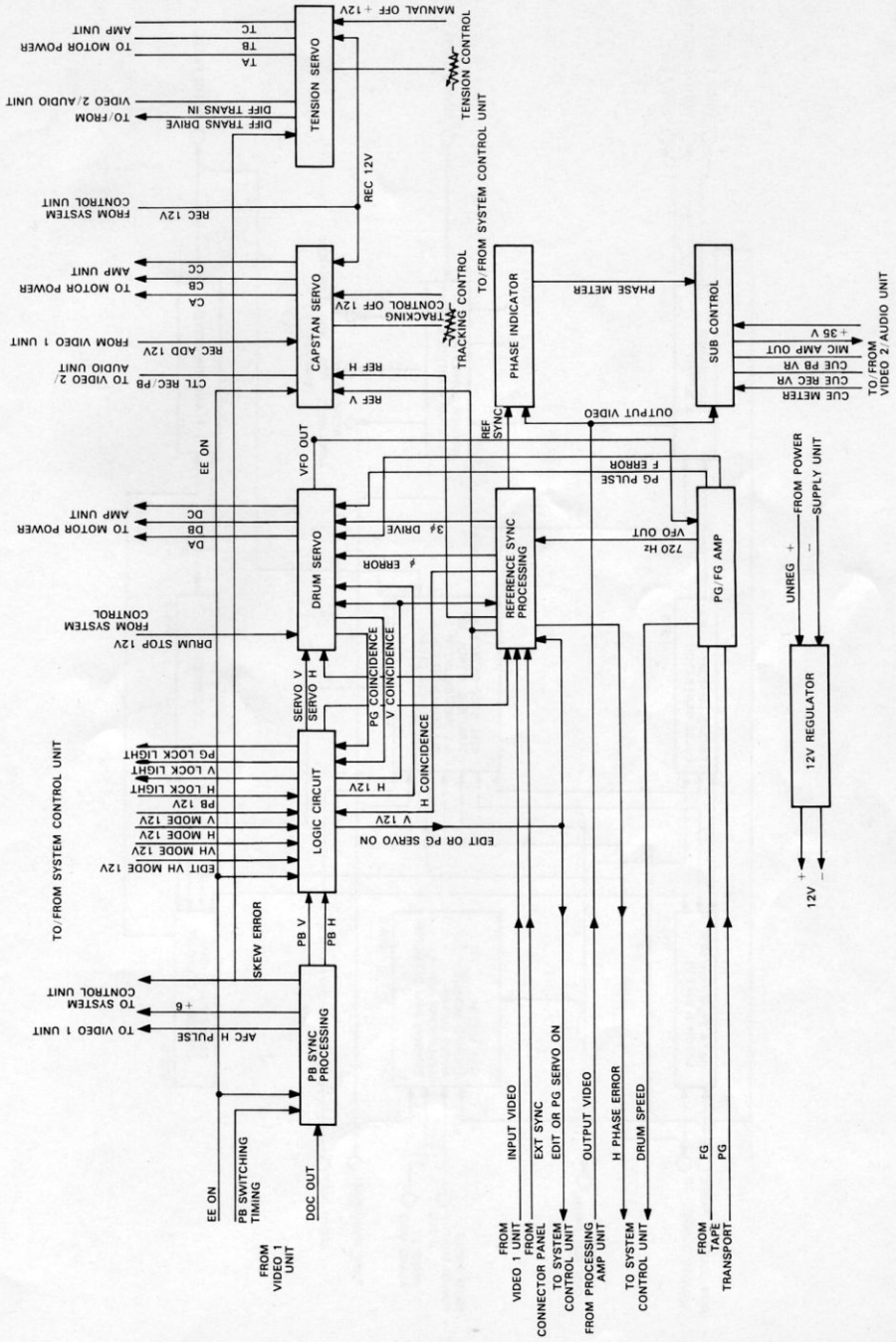
②-② VIDEO 2/AUDIO UNIT



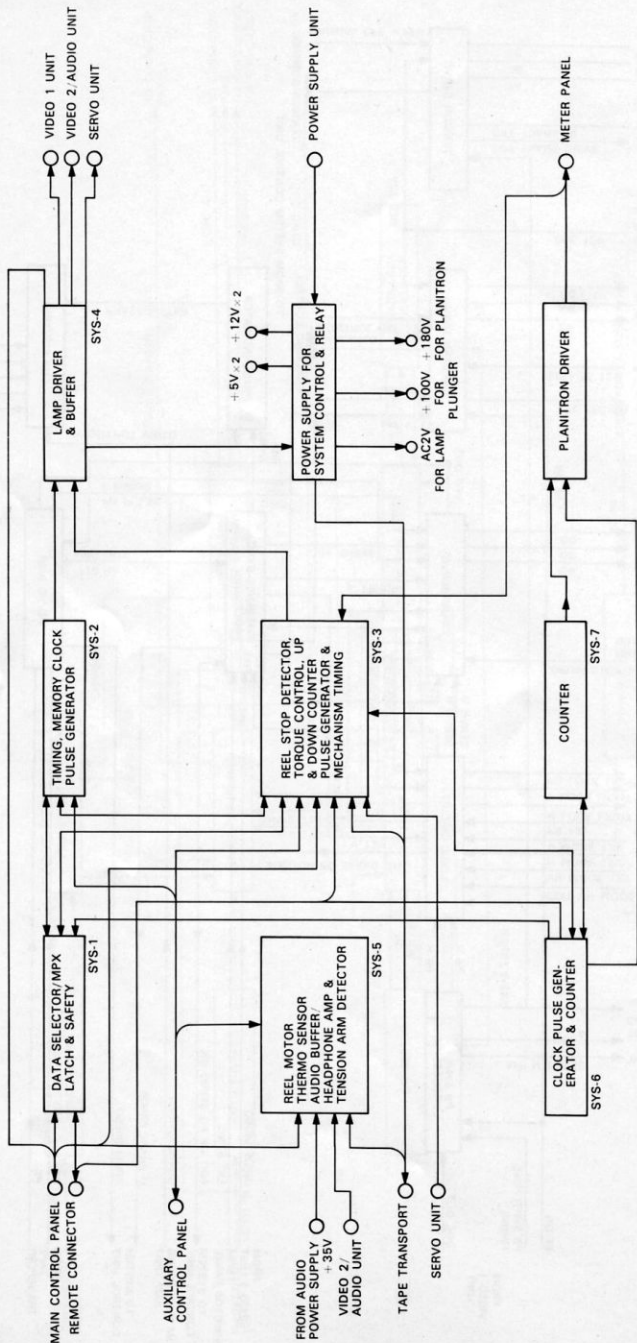




⑧ - ⑧ SERVO UNIT

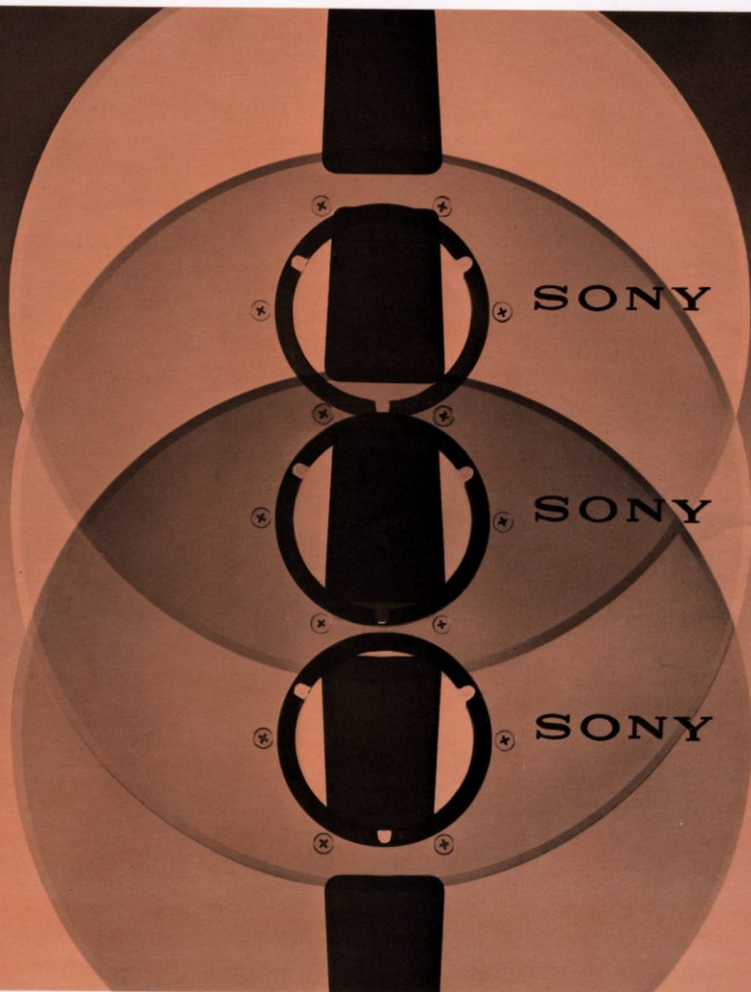


16-9 SYSTEM CONTROL UNIT



MASTER VIDEOCODER[®]

MODEL MV-10000 FOR VIDEOCASSETTE* PROGRAM ORIENTATION



*Trademark of SONY CORPORATION

SONY[®]

MASTER VIDEORECORDER

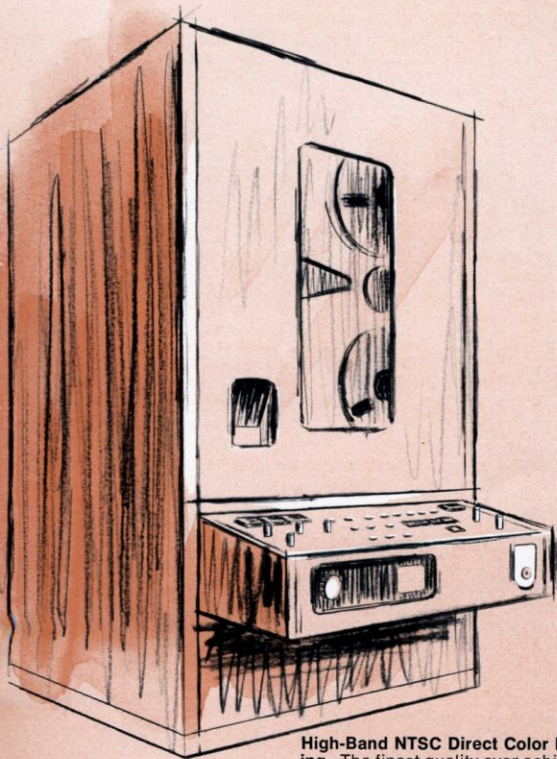
MODEL MV-10000 FOR VIDEOCASSETTE PROGRAM ORIENTATION

In keeping with its tradition as a world leader in the development and manufacture of the finest video products, SONY is proud to introduce still another innovation to the video industry . . . the MV-10000 Master Videocorder for VIDEOCASSETTE program origination.

At last, SONY research and production know-how has answered the crying need of the burgeoning VIDEOCASSETTE market by providing the industry with a totally new concept in VTR design. For the first time, VIDEOCASSETTE program producers have available to them a heavy-duty Master Videocorder which has been precision-built to provide long lasting reliability. The MV-10000 will produce high-band color video tapes whose high-level of picture quality is comparable to the highest priced, most sophisticated VTR on the market. But that is where the comparison ends . . . SONY's Master Videocorder comes to you as a compact unit that is easy to operate, easy to maintain, and at a price that makes it a major breakthrough for those who produce programs for the VIDEOCASSETTE market.

The MV-10000 Master Videocorder, in conjunction with a unique color camera, printing system and VIDEOCASSETTE player, completes the SONY "TOTAL VIDEO SYSTEM" concept . . . as we enter a whole new era of the video age.

FEATURES:



High-Band NTSC Direct Color Recording—The finest quality ever achieved by any slant track video tape recording.

Multi-Generation Dubbing Capability—Dubbed to 4th generation without any practical loss of quality, which assures professional quality electronic editing or assembly.

Reference Sync Servo System—Extremely stable picture is obtained. Versatile external sync drive allows superimposing or switching with other video sources.

Double Heterodyne System—Produces high quality color picture.

Special 1.5 Video Head System—No need to worry about color banding noise, venetian blind effects, or any similar problem caused by multiple video heads. Also minimizes dropout with better tape to head contact system.

Tape Economy—Approximately 60% of existing 4 head VTR.

Stereo Sound Recording—A definite requirement for future video systems.

Direct Color Process—With optional video phase stabilizer and color phase stabilizer.

Compact Lightweight Design—Makes transportation and installation easy.

System Adaptability—For standard EIA 19" rack mount. Standard connections and signal system.

Most Advanced Video Tape—Chromium dioxide tape (or equivalent) for best picture quality.

Complete Editing Versatility—Insert and add; video with rotary erase head; audio, video, and cue can be edited independently.

Time Base Stability—Meets or exceeds RS 170 specification of EIA. Less than 0.5 micro seconds deviation in horizontal mode, relative to reference sync.

Dropout Compensator—Newly designed, built-in dropout compensator.

SONY MASTER VTR MODEL MV-10000 TECHNICAL SPECIFICATIONS

GENERAL

Tape: 2" Chromium Dioxide or Equivalent
Reels: EIA 10.5" Max.
Rec. Time: 93 min. with 10.5" reel
Video Rec. Format: 1.5 Head
Tracks: Audio 2; Cue 1; Ctl 1; Video 1
Start Time: 2 sec. from stand-by Mode
FF Rwd: 180 sec.
Weight: approx. 198 lbs.
19" Rack Mount: Vertical or Horizontal
Color: Double Heterodyne System
Audio Channels: Available for stereo
Tape Speed: 8.58 ips

CONTROLS

Tape Motion Control: Full electrical push button of all tape transport including edit function
Record Level Control: 1 for video; 2 for audio; 1 for cue
Timer: Reads tape passage in minutes and seconds
Tracking Control: (Manual)
Tape Tension Control: (Audio/Manual)
Edit:
(a) Edit video with rotary erasehead
(b) Audio, video, cue and selected channels can be edited separately
(c) All channels can be edited in both "ADD" and "INSERT"

PERFORMANCE CHARACTERISTICS

Video band width:
(both monochrome and color): ± 0.5 dB 30Hz to 4.2 MHz Less than 3 dB down at 4.5 MHz
Signal to Noise Ratio:
(a) 49 dB p-p signal to RMS noise
(b) 43 dB p-p signal to RMS noise at 4th generation in video to video dubbing
DG: Less than 3%
DP: Less than 3°
H.V. tilt: Less than 2%
K Factor: Less than 2% at 2T pulse
Time Base Error: Meets or exceeds EIA RS-170 Less than 0.5 micro seconds in Horizontal Mode Relative to Reference Sync
Wow and Flutter: 0.07% R.M.S. (0.6 Hz to 250 Hz)
Audio Bandwidth: Both CH 1 and CH 2, 50 Hz—20 KHz ± 2 dB
Cue Channel Bandwidth: 50 Hz—10 KHz ± 3 dB
Audio Channel S/N: Both CH 1, CH 2 53 dB
Color Moire: More than 40 dB down measured with color bars of 75% saturation
Drop Out Compensator—Built in
Color Proc. AMP—Built in
Input Level: 0.5 to 2.0 Vp-p 1.0 Vp-p nominal
Output Level: 1.0 Vp-p into 75 OHM line
Head wear: More than 500 hr., Easy to change, Perfect interchangeability.

Note: Specifications subject to change without notice.

SONY CORPORATION OF AMERICA
47-47 Van Dam Street, Long Island City, New York 11101 (212) 361-8600