FOR.A®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

DIGITAL TIME BASE CORRECTOR **FA-310**

(4th EDITION – Rev.3: S/N. 3241101~Higher)

FOR-A COMPANY LIMITED

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SECTION 1. SPECIFICATIONS AND INSTALLATION

1-1. GENERAL

The FA-310 is a versatile, economically-priced Time Base Corrector that meets the highest demands of the broadcast, post-production, corporate and industrial segments of today's television market.

The technical merits of S-VHS recording, with its higher picture quality, as compared to other equipment of comparable cost, are preserved by the FA-310. This is a result of the high signal tranparency inherent in the design, which provides a full 5.0MHz of bandwidth for both component and S-VHS video inputs. Futhermore, the FA-310 provides transcoded Y/C358, composite video and Y,P_R,P_B component video signal outputs to allow further post-production operations in virtually any signal format. It also has a noise reduction function to improve signal quality.

The shuttle capability of the FA-310 permits lock-up to signals over 40 times the normal tape speed, thus allowing the operator to view pictures even during high-speed search operation.

The FA-310 even includes a dropout compensator (DOC) to remove picture disturbances that would otherwise detract from the program material.

1-2. FEATURES

- Component processing with 4:2:2 sampling and 8-bit processed Y and C.
- Input and Output are compatible with S-VHS (Y/C358), 4-pin connectors are provided.
- Wideband CCD comb filter maintains high resolution and high picture quality.
- Frame memory eliminates correction range limitations.
- Noise reduction function with motion compensation circuits using a frame rate recursive filter.
- Built-in DOC (Dropout Compensator).
- Automatic picture freeze using input signal deterioration detection.
- Internal adjustment of signal output phases.
- Connecting optional Process Control Unit, PCU-2, to REMOTE connector allows remote control of video level, chroma level, chroma phase, setup level, operate/bypass selection and FIELD/FRAME ON/OFF.
- Connecting optional FA-RS232C Interface Unit to REMOTE connector allows video level, chroma level, chroma phase, setup level, operate/bypass selection and FIELD/FRAME ON/OFF to be controlled by external computer or other devices capable of RS-232C communication.
- Optional Y/C DUB capablity.
- Optional dynamic tracking capability. (*Dynamic tracking is a Sony trademark)

1-3. Specifications

Television Format	NTSC Standard
Processing Format	Component
Correction Range	2 Fields
INPUT SIGNALS	(When inputting 100% white, 75% color bars)
VIDEO	Composite 1.0 Vp-p, 75 Ω, 1 input, BNC Y/C 358 Y: Luminance, 1.0 Vp-p, 75 Ω C: Chroma, (Burst level) 0.286 Vp-p, 75Ω, 1 input, 4-pin (input selectable), S type connectors Component (optional) Y: 1.0 Vp-p, 75Ω P_B(B-Y): 0.757Vp-p, 75Ω P_R(R-Y): 0.757Vp-p, 75Ω 1 input each, BNC (Same input connector used for composite or Y signal input)
Y/C DUB (option)	Y: 1.0 Vp-p, 75Ω, 4-pin S-connector, Composite: 1.0 Vp-p, 75Ω

NOTE: If Y/C DUB is selected, only the Y signal is used as the DUB input, while the C signal is obtained from internal separation of the COMPOSITE/Y input. (Composite signal input must be present.) Furthermore, if the VTR Y/C

DUB output signal input to the FA-310 is above or below 1.0 Vp-p, the difference must be compensated for and the internal input level adjusted to 1.0 Vp-p. (See page 2-16.)

HD/VD (option)	4.0 Vp-p, 75Ω, 2 inputs (HD & VD), BNC
GENLOCK	BB 0.429 Vp-p, 75Ω or high impedance loop- through, BNC
DOC	RF 0.2 to 1.0 Vp-p, 75Ω, BNC
DT (option)	Dynamic Tracking possible with optional interconnection cable

OUTPUT SIGNALS

VIDEO	(When inputting 100% white, 75% color bars) Composite 1.0 ±0.05 Vp-p, 75Ω, 2 outputs, BNC **COMPOSITE 1** used for bypass output. Y/C 358 Y: Luminance, 1.0 ±0.05 Vp-p, 75Ω C: Chroma , (Burst level) 0.286 ±0.02 Vp-p, 75Ω, 1 output, 4-pin S connector Component Y: 1.0 ±0.05 Vp-p, 75Ω P_B(B-Y): 0.757 ±0.05 Vp-p, 75Ω P_R(R-Y): 0.757 ±0.05 Vp-p, 75Ω 1 output each, BNC (Same connector is used for COMPOSITE 2 OUT and Y OUT. Output is determined by the set- ting of JP7 on the Process Card.) RGB (Optional) 0.7 ±0.05 Vp-p, 75Ω 1 output each, BNC (Component outputs are disabled when unit is modified for RGB output.)
ADV SYNC	4.0 Vp-p, 75Ω, 1 output, BNC connector

Quantization	Y: 8-bit, C: 8-bit
Sampling Frequency	Y: 13.5 MHz C: 6.75 MHz (4:2:2 format)
Freeze	Frame/field selectable
Noise Reduction	Luminance and chrominance, motion detection, 4-step selec- table frame rate, reduc- tion by recursive filter. Maximum noise reduc- tion 9 dB (Dependent on noise levels, movement, etc.)
Strobe Freeze	Automatic strobe freeze can be set OFF/ON. Strobe time interval can also be set by a card edge adjustment. Interval range is 0.3 ~ 1.6 sec.
Auto Freeze	When no signal is input or a disturbance affect- ing H timing only occurs (such as excessive noise) the picture is automatically frozen by field. (Selectable ON/OFF at card edge. Factory set to OFF.)
Vertical Blanking	Internal, ON/OFF selectable
Frequency Response	Y: 0.5 MHz to 5 MHz (±0.5/-3dB max) With SC TRAP OFF C: 3.58 MHz (± 0.5 MHz /-3dB)
DG,DP	2%, 2° (APL 50%)
K Factor (2T)	2% (Composite in-out) 1% (Y in-out)
H,V TILT	1%
Output Signal Jitter	Luminance ±15 nsec, Chrominace ±2°
S/N Ratio	56 dBp-p/rms (Excluding quantization noise)
Power Supply	100 ~ 117 VAC Auto-select, 50/60 Hz

Power Consumption	74 VA (48W)
Ambient Temperature	10 to 40°C (50 to 104°F)
Ambient Humidity	10 to 90%
Dimensions	430(W) x 44(H) x 450(D) mm [17"(W) x 1.75"(H) x 17.7"(D)]
Weight	Approx. 8 kg (18 lb)
Options	1) DT modification 2) DT cable 3) Y/C DUB modification 4) Y/C DUB cable 5) YP_BP_R modification 6) Rack slide rails 7) RGB modification 8) PCU-2 Process Control Unit 9) HD/VD modification

1-4. INSTALLATION

a. Unpacking

This unit is fully assembled prior to shipment, and is ready to operate immediately upon unpacking.

Check your received items against the packing list below.

ITEM	QUANTITY
MAIN UNIT	1
AC POWER CORD	1
OPERATION MANUAL	1
RACK MOUNTING KIT	1

Check to ensure that no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

b. Power Supply

This unit can be operated on 100 ~ 117VAC, 50/60Hz. Required voltage should be specified at the time of purchase.

c. Grounding

This unit comes equipped with a 3-pin power cable that automatically grounds the unit to protect against electrical shock. In the event of your power outlet has a 2 pin-socket, use a 2-pin to 3-pin connector adaptor and ground the green wire (pig tail), or ground the ground terminal on the rear panel of the main unit.

d. Installation

Avoid using the FA-310 in areas having high temperature, high humidity or excessive dust. Moderate air-cooling is required for optimum operation. Ensure that no other equipment is located closer than 5cm from the front or rear of this unit.

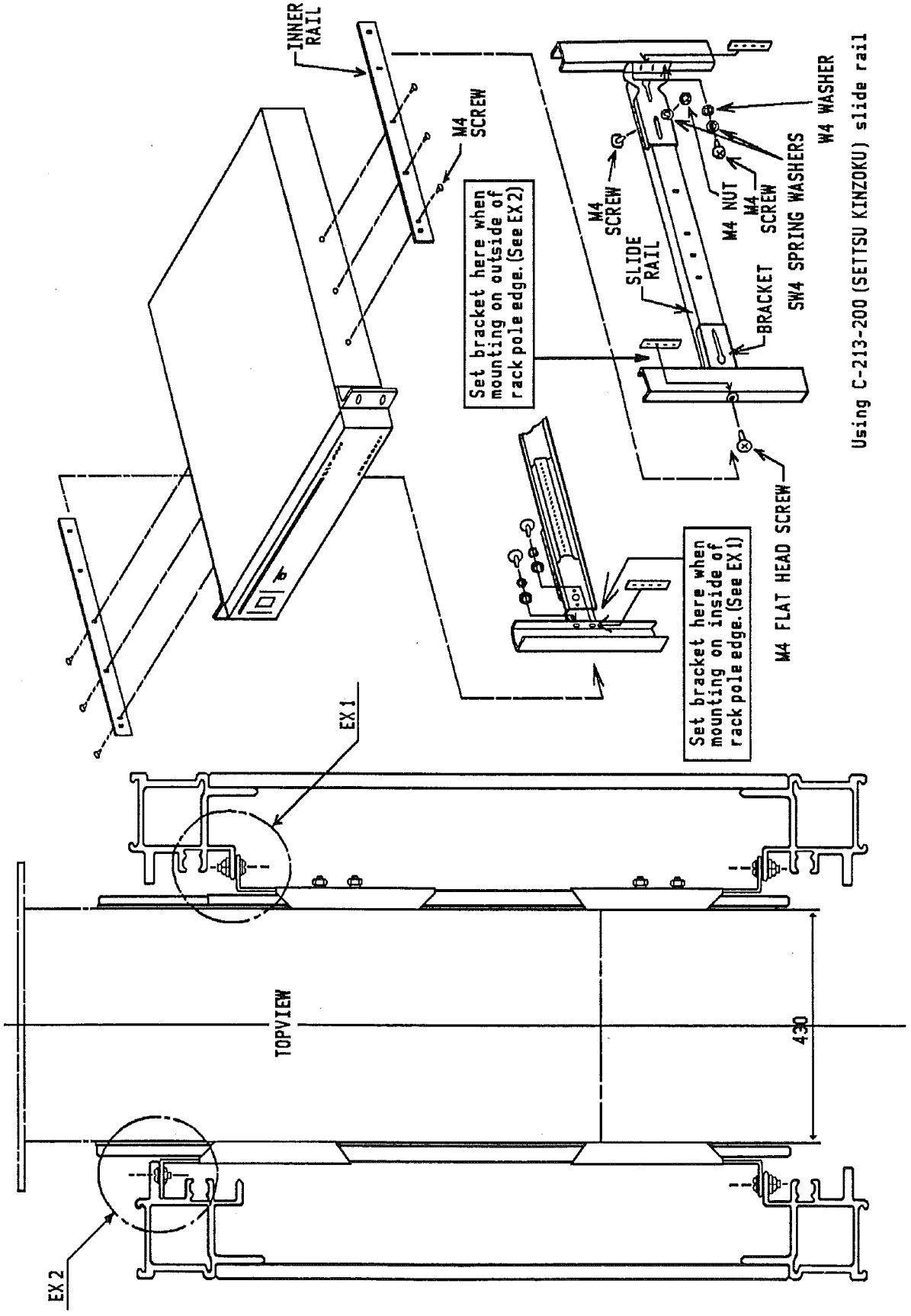
e. Tabletop Unit

The base plate of this unit is fitted with rubber feet for tabletop use.

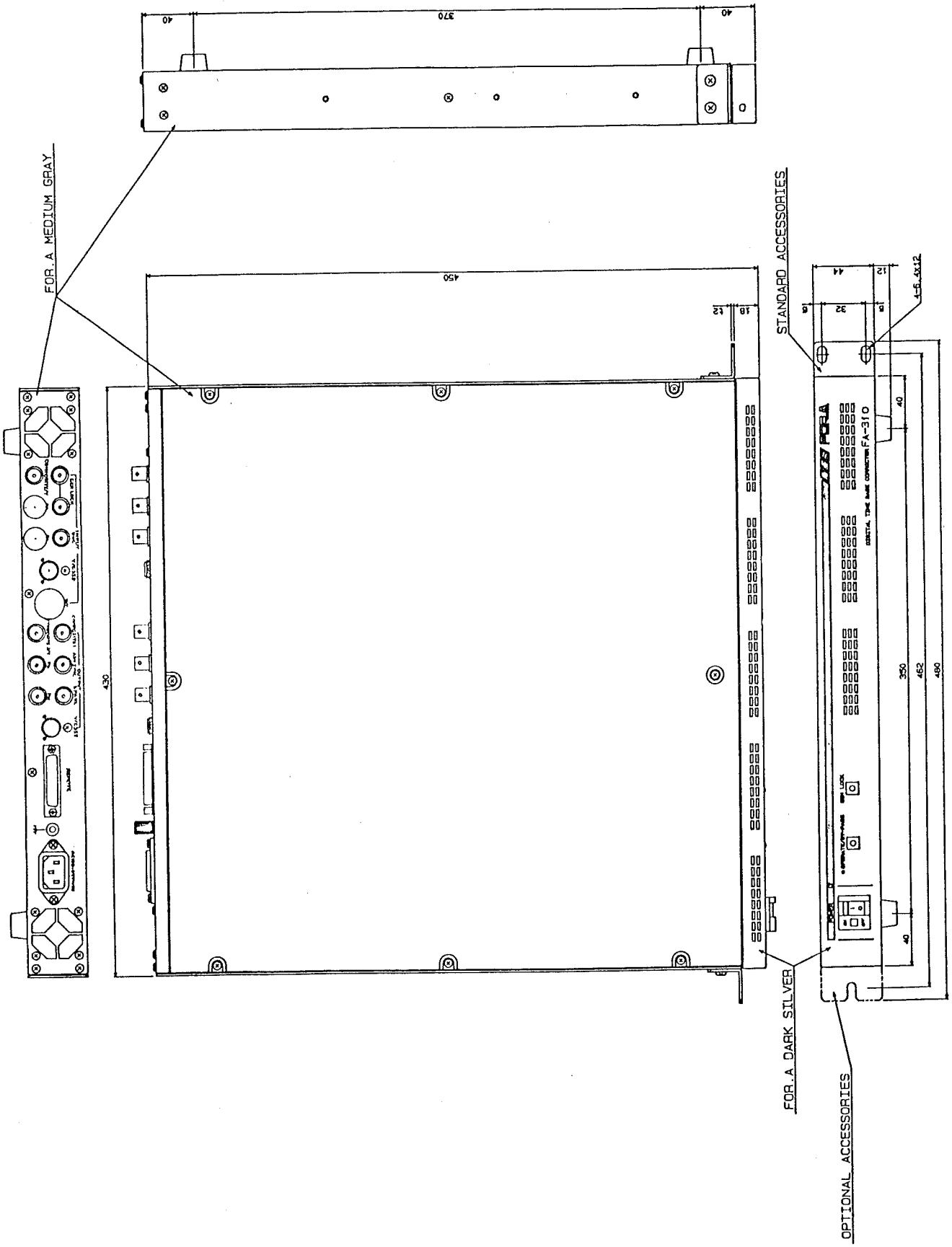
f. Rack Mounting

When rack mounting the unit, remove the rubber feet and use the brackets fitted to the sides of the unit. For optional slide rail mounting, see figure 1-1 on the following page.

FIG. 1-1


INNER RAIL
M4 SCREW
Set bracket here when mounting on outside of rack pole edge.(See EX2)
M4 SCREW
SLIDE RAIL
M4 NUT
M4 SCREW
W4 WASHER
SW4 SPRING WASHERS
BRACKET
Using C-213-200 (SETTSU KINZOKU) slide rail
M4 FLAT HEAD SCREW
Set bracket here when mounting on inside of rack pole edge.(See EX1)
EX1
TOPVIEW
430
EX2

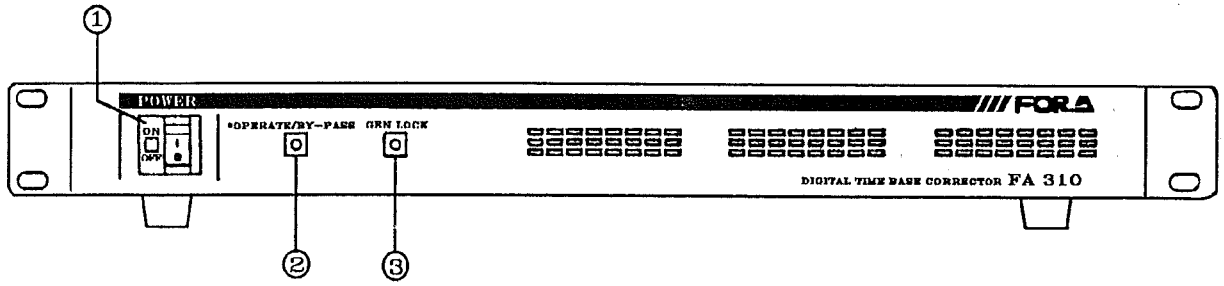
1-5. EXTERNAL DIMENSIONS



SECTION 2. OPERATION

2-1. PANEL DESCRIPTION AND FUNCTIONS

2-1-1. Front Panel

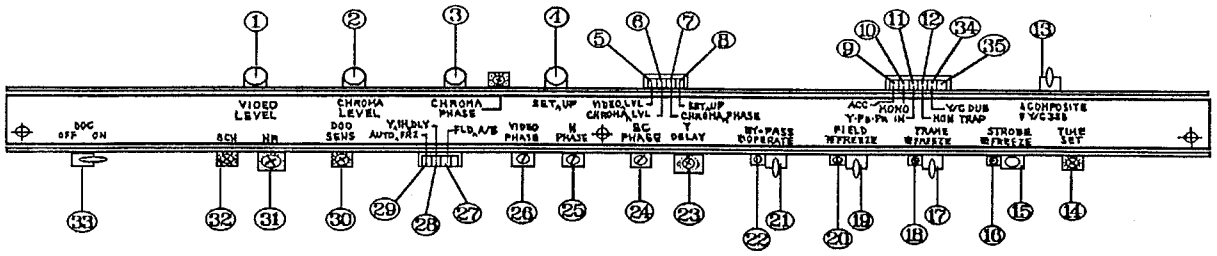


1) POWER switch and indicator Indicator lights when power is switched on.

2) OPERATE/BY-PASS indicator Indicator lights when the BYPASS/OPERATE switch inside the unit is set to OPERATE.

3) GEN LOCK indicator Indicator lights when a genlock signal (Black Burst) is fed to the GEN LOCK IN connector on the rear panel.

2-1-2. Internal Adjustments - Front



1) VIDEO LEVEL Used to adjust the input video level in relation to the input video level at the connector (1 Vp-p) when VIDEO LVL [5] is OFF (down). Adjustable range is approx. ±3 dB (min range is 6 dB).

2) CHROMA LEVEL Used to adjust the chroma level of the input signal in relation to the input video level (75% color bar signal) when CHROMA LVL [6] is OFF (down). Adjustable range is approx. ±3 dB (min range is 6 dB). When the white position mark is placed straight up, output level is at unity.

3) CHROMA PHASE Used to adjust the relative phases of the TBC burst and chroma output to within a range of ±30° when CHROMA PHASE is OFF (down). When the white position mark is placed straight up, output chroma phase will match input chroma phase.

4) SET UP

Used to adjust TBC output set up level in relation to input video set up level. Adjustable range is approx. 15 IRE (min range is 30 IRE).

5) VIDEO LVL

Allows adjustment of the input video level (VIDEO LEVEL [1]) when set to OFF (down). When set to ON (up), output and input video levels are equal.

When optional PCU-2 is connected, this switch must be set to ON (up) to enable remote video level adjustment by the CPU-2.

6) CHROMA LVL

Allows adjustment of chroma level (CHROMA LEVEL [2]) when set to OFF (down). When set to ON (up), output and input chroma levels are equal.

When optional PCU-2 is connected, this switch must be set to ON (up) to enable remote chroma level adjustment by the CPU-2.

7) CHROMA PHASE

Allows adjustment of chroma phase (CHROMA PHASE [3]) when set to OFF (down). When set to ON (up), output and input chroma phases are equal.

When optional PCU-2 is connected, this switch must be set to ON (up) to enable remote chroma phase adjustment by the CPU-2.

8) SET UP

Allows adjustment of TBC output set up level (SET UP [4]) when set to OFF (down). When set to ON (up), output and input set up levels are equal.

When optional PCU-2 is connected, this switch must be set to ON (up) to enable remote set up level adjustment by the CPU-2.

9) ACC (ON/OFF)

Used to turn ACC (Auto Chrome Control) ON and OFF. When set to ON (down), chroma level is adjusted automatically, based on the burst level of the input signal.

10) MONO (B/W / COLOR)

Selection switch for B/W (Black & White) or color processing. When B/W is selected (MONO ON (down)), the output does not have a burst signal. When COLOR is selected (MONO OFF (up)), a burst signal is generated on the output, even if a B/W signal is input.

11) YP_RP_B IN (ON/OFF)

If the optional Y P_R P_B input is used, this switch must be set to ON (down). Otherwise, normally set to OFF (up).

12) NON TRAP (ON/OFF)

Factory set to OFF (up) for TBC use. Set to ON (down) when the FA-310 is used as a frame memory. When ON, a 3.58 MHz trap is released to increase picture resolution.

13) COMPOSITE / Y/C 358

Used to select either the composite or Y/C 358 (S-VHS) signal as the input video. Set this switch to the COMPOSITE side when YP_BP_R or Y/C DUB input is used.

14) TIME SET

Adjusts strobe freeze time interval when STROBE FREEZE [15] is ON (up).

When optional PCU-2 is connected, STROBE FREEZE [15] must be set to OFF and this adjustment is disabled.

15) STROBE FREEZE

Used to initiate a strobe freeze function when either FRAME FREEZE [17] or FIELD FREEZ [19] is set to ON (corresponding indicator is lit). Should be set to OFF when power is first turned ON (STROBE FREEZE indicator [16] is not lit).

When optional PCU-2 is connected,this switch must be set to OFF (corresponding indicator is not lit).

16) STROBE FREEZE (indicator)

Lights when STROBE FREEZE [15] is ON.

17) FRAME FREEZE

Used to initiate a frame freeze function.

If FIELD FREEZE [19] is ON (up) when this switch is initiated, it will overide the field freeze (switch [19] will reset to OFF and indicator [18] will go out) and replace it with a frame freeze. In addition, this switch automatically resets to OFF whenever unit power is switched ON.

When optional PCU-2 is connected, this switch must be set to down (indicator not lit) to enable remote selection of FRAME FREEZE ON/OFF by the PCU-2.

18) FRAME FREEZE (indicator)

Lights when FRAME FREEZE [17] is ON.

19) FIELD FREEZE

Used to initiate a field freeze function.

If FRAME FREEZE [17] is ON (up) when this switch is initiated, it will overide the frame freeze (switch [17] will reset to OFF and indicator [18] will go out) and replace it with a field freeze. In addition, this switch automatically resets to OFF whenever unit power is switched ON.

When optional PCU-2 is connected, this switch must be set to down (indicator not lit) to enable remote selection of FIELD FREEZE ON/OFF by the PCU-2.

20) FIELD FREEZE (indicator)

Lights when field freeze [19] is ON.

21) BY-PASS/OPERATE

When in OPERATE mode (BY-PASS/OPERATE indicator [22] is lit), a time base corrected signal is output by the unit. When in BY-PASS (indicator [22] is not lit), video input to the unit will be directly bypassed to the unit output.

When optional PCU-2 is connected, this switch must be set to OPERATE (indicator lit) for remote selection of BY-PASS/OPERATE to be performed by the PCU-2.

22) BY-PASS/OPERATE (indicator)

When lit, indicates the unit is in the OPERATE mode. When not lit, the unit is in the BY-PASS mode.

23) Y DELAY

Adjusts delay between the Y nad C signals by changing Y signal phase. Phase change is adjustable in 16 steps / 74 nsec each.

24) SC PHASE

Used to adjust TBC output SC phase in relation to the input video. Adjustable range is ±180°. Physical adjustment range of the pot is 15 turns.

25) H PHASE

Used to adjust TBC output H phase in relation to the input video. Adjustable range is approx. ±2μsec (min range is 4 μsec). Physical adjustment range of the pot is 15 turns.

26) VIDEO PHASE

Used to adjust TBC output video phase. Adjustable range is approx. ±1.5 μsec (min range is 3 μsec). Physical adjustment range of the pot is 15 turns.

NOTE

When a composite signal is input, signals separated by the comb filter will be Y/C mixed during composite output processing. If the phase relationship between Y and subcarrier differs from that of the signal at Y/C separation, and a sweep signal is input, the optimum sweep output may not be obtained. In this case, observe the output waveform and adjust the VIDEO PHASE control until the output signal is as close to the input as possible.

27) FLD A/B

Pressing this switch will either change field 1 to field 2 or field 2 to field 1 depending on timing.

28) Y 1H DELAY

When ON (up), applies a 1H delay to the Y (luminance) signal only. This switch is used to offset the luminance-chrominance gap produced during 1/2" VTR dubbing.

29) AUTO FRZ

When ON (up), the output video signal will be automatically frozen whenever the input signal is disturbed.

30) DOC SENSITIVITY

Used to adjust dropout detection sensitivity (sensitivity increases as the adjustment pot is turned clockwise).

31) NR

Adjusts the noise reduction (NR) level of the unit in 4 steps;
0 NR (OFF/step 1), 1 NR (step 2), 2 NR (step 3) and 3 NR (step 4).
(The NR switch has 9 stops. Positions 4 & 8 = 0 NR, 5 & 9 = 1, 6 = 2 and 7 = 3.)

32) SCH

Used to adjust the phase relationship between SC and H sync.

33) DOC ON/OFF

Used to turn the Dropout compensation function ON and OFF

34) YC DUB

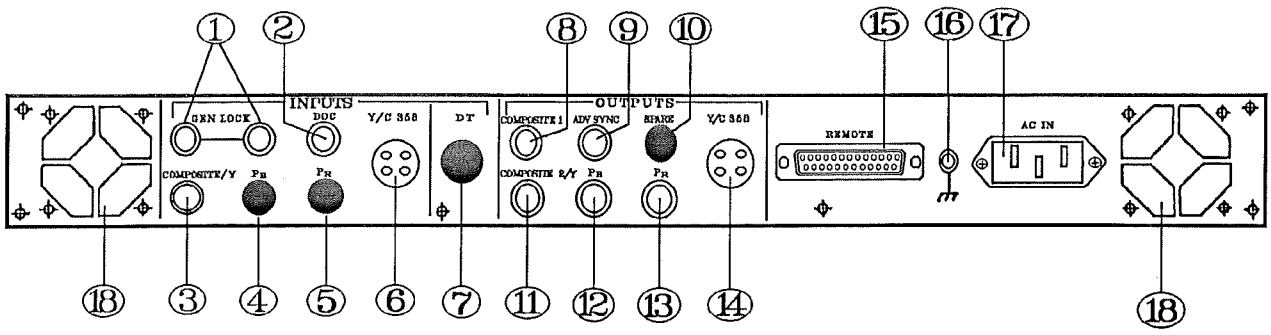
Used to enable YC DUB operation. When set to ON (up), VTR YC DUB signals can be used as the FA-310 input. When YC DUB is enabled, both Y/C358 and composite signals must be input to the FA-310.

35)

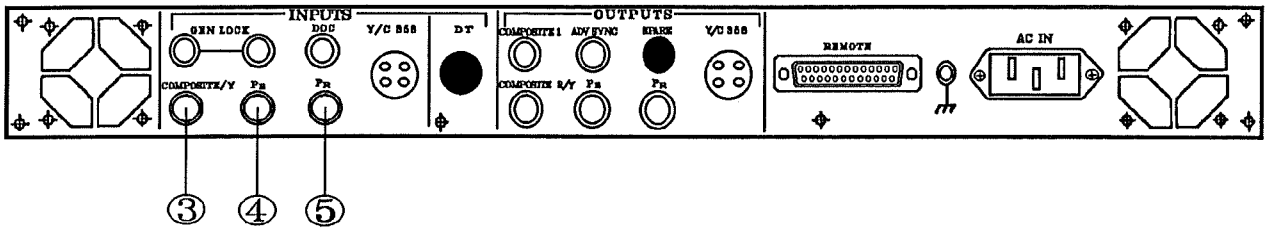
Not used.

2-1-3. Rear Panel Configurations

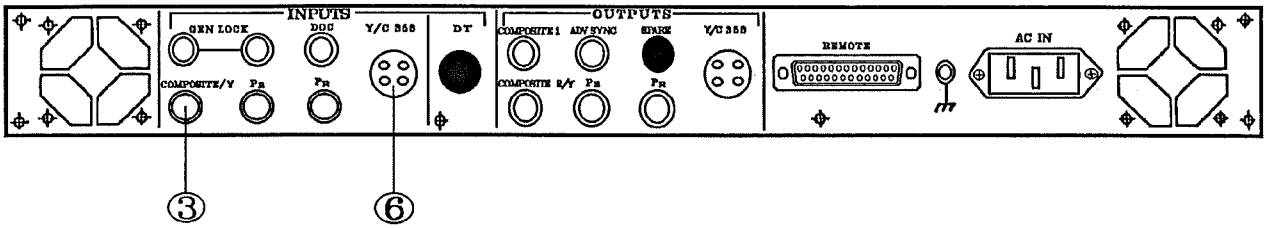
A) STANDARD



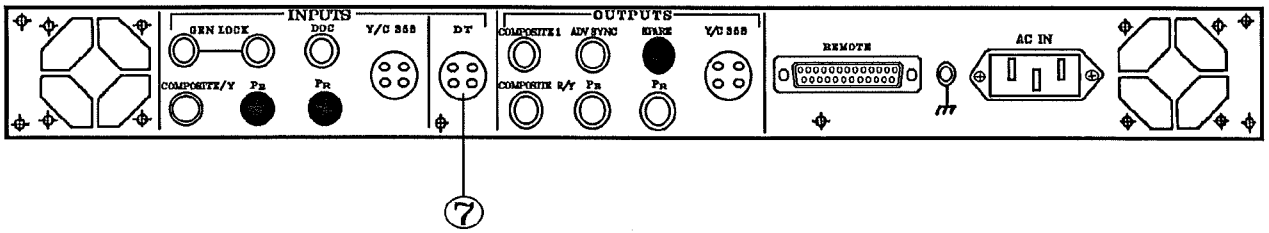
B) YP_BP_R INPUT OPTION



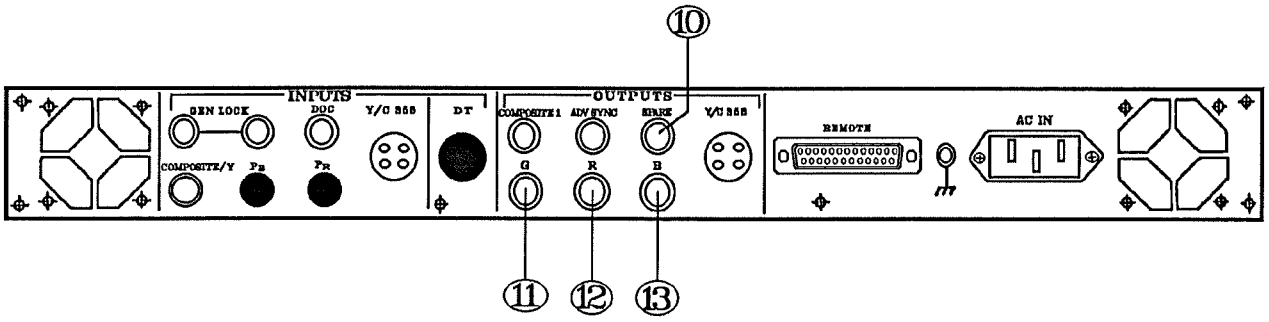
C) Y/C DUB INPUT OPTION



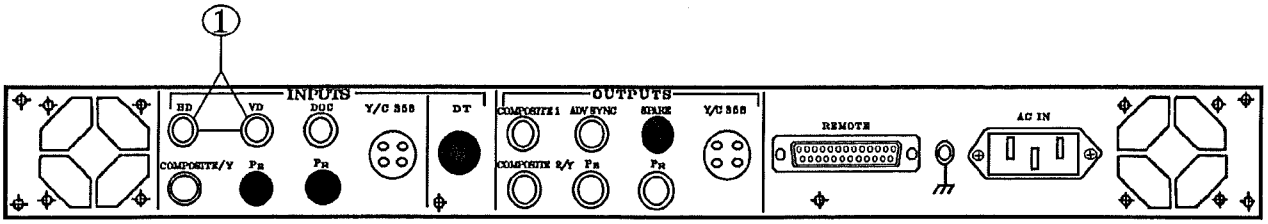
D) DT INPUT OPTION



E) RGB OUTPUT OPTION



F) HD/VD INPUT OPTION



NOTE: All listings marked with an * are normally holes for optional connectors. As shown in thefigures on the previous page, rubber plugs are installed if the related options not chosen.

REAR PANEL INPUTS (Figures A~F)

1) GEN LOCK (HD/VD)

Input connectors for reference black burst signal.

If the HD/VD option is chosen, these connectors will be labeled as HD and VD, not GENLOCK, and HD/VD signals can be input in place of reference black burst.

If no connections are made, internal sync operation is automatically selected.

2) DOC

Input connectors to supply an RF VTR signal to initiate the DOC (Dropout Compensation) function of the FA-310. The RF signal is used to detect any dropout of the output signal.

3) Composite/Y

Input connector for a composite input video signal from a VTR.

If the optional Y P_B P_R input is used, this becomes the Y input.

If the optional Y/C DUB input is used, input a VTR composite signal.

4) P_B*

Optional connector for the P_B component of a component signal.

5) P_R*

Optional connector for the P_R component of a component signal.

6) Y/C 358

4-pin input connector for a Y/C 358 signal from an S(S-VHS) VTR.

When the Composite / Y/C 358 selection switch is set to Y/C 358, input signals are processed by the unit.

If the optional Y/C DUB input is used, input a VTR DUB signal.

7) DT*

Optional DT input signal connector. Use the optional exclusive cable. Pin designations are as shown below.

PIN NO.	SIGNALS
1	GND (ground)
2	DT-ON
3	NC (no connection)
4	DT-V
5	GND (ground)
6	NC (no connection)

REAR PANEL OUTPUTS

8) Composite 1

Video signal output. If the unit is OFF, or in the BY-PASS mode, the signal supplied to the COMPOSITE/Y video input will pass directly to this connector.

If the unit is in OPERATE, a timebase corrected signal will be output.

9) ADV SYNC

Used to feed an advanced sync signal (8H) to the EXT SYNC input of a capstan servo VTR for synchronization purposes.

10) Spare (SYNC)

Spare connector hole. Normally has a rubber plug installed.

If the optional RGB output is chosen, this connector is used to output a SYNC signal.

11) Composite 2/Y (G)

Outputs either composite video or a component Y signal, depending on the setting of JP7 on the PROCESS Card. No signal will be output if the unit is in the BY-PASS mode.

If the optional RGB output is chosen, a G signal will be output when the unit is in the OPERATE mode.

12) P_B (B)

When the unit is in the OPERATE mode, the time base corrected P_B(B-Y) component of the input video signal will be output. When in BY-PASS, no signal is present.

If the optional RGB output is chosen, a B signal will be output when the unit is in the OPERATE mode.

13)P_R (R)

When the unit is in the OPERATE mode, the time base corrected P_R(R-Y) component of the input video signal will be output. When in BY-PASS, no signal is present.

If the optional RGB output is chosen, an R signal will be output when the unit is in the OPERATE mode.

14) Y/C 358

Y/C 358 (Luminance/3.58 MHz Chrominance) component signal output. When the unit is in the BY-PASS mode, or power is OFF, the Y/C 358 input signal is passed directly to this connector.

15) Remote

Input connector for external control signals.

Used for connection to the optional PCU-2. (For details see Sec. 2-8, "Remote Connection".)

OTHER

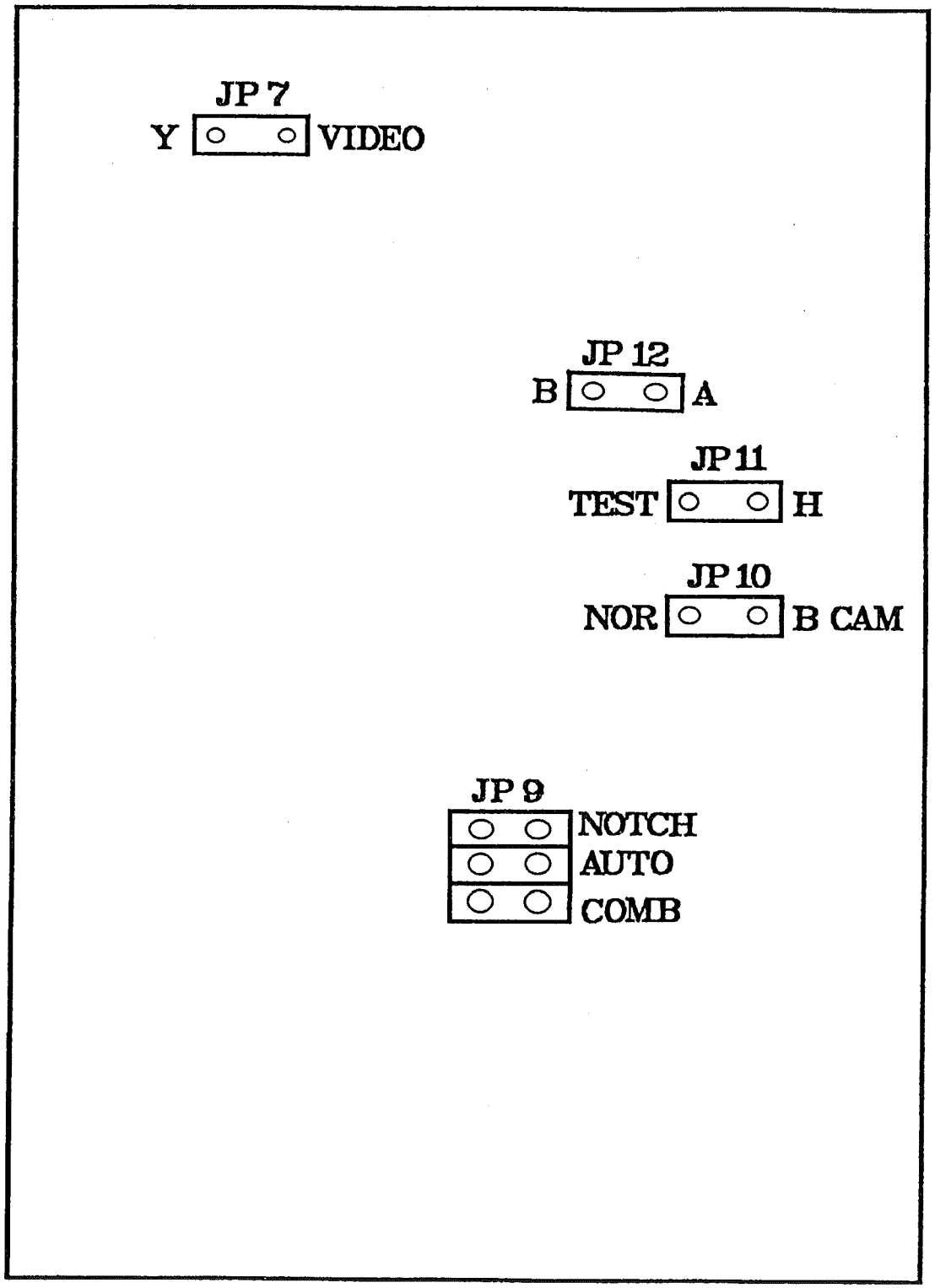
16) Ground terminal

17) AC IN

18) Fans

2-2. INTERNAL ON-BOARD SETTINGS

2-2-1. PROCESS CARD



JP 7) Used to select signal output of the COMPOSITE 2/Y connector.

Y  VIDEO	COMPOSITE output selected.
Y  VIDEO	Y output selected. (Set to Y when the Y·P_R·P_B output is required.)

***Factory setting is Y.**

NOTE: If the optional RGB output is used, composite output is no longer possible and jumper must be set to Y.

JP 9)

 NOTCH	Notch filter mode.
 AUTO*	Auto filter selection mode.
 COMB	Comb filter selection mode.

***Factory setting is AUTO**

JP 10) Used for Betacam connection.

NORM  B CAM	Normal setting
NORM  B CAM	Set to B CAM when a Betacam VTR is used.

***Factory setting is NORM.**

JP 11) Used for maintenance purposes only.

TEST  H	Normal setting.
TEST  H	This setting is used for service purposes only. Do not use during normal operation.

JP 12) Used to invert chrominance phase.

B  A	Chrominance phase default setting.
B  A	This setting inverts chrominance phase 180°. Use as necessary.

2-2-2. DIGITAL CARD

JP 7) Used to set V blanking.

SHORT Vertical blanking is applied to the unit.

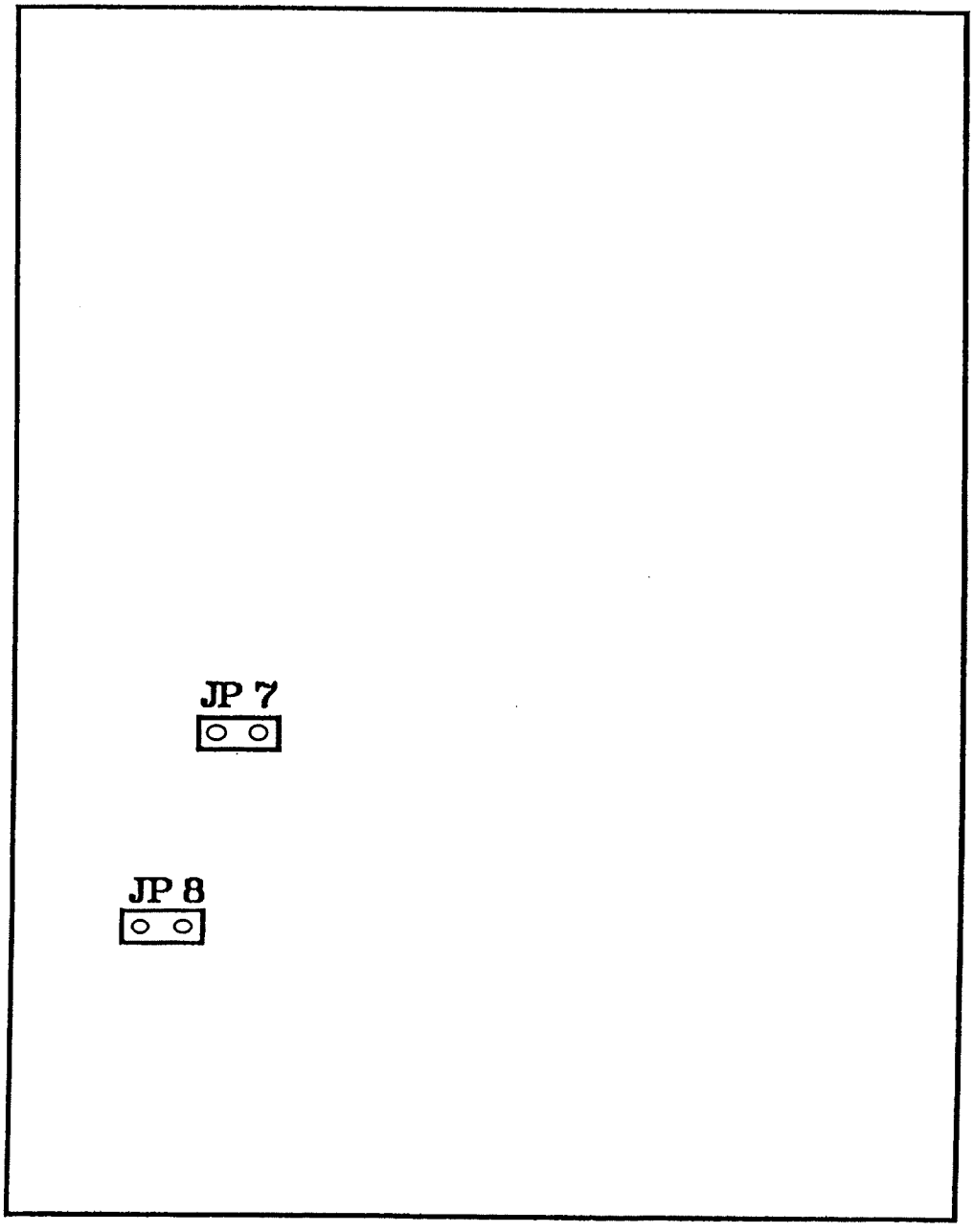
OPEN* Vertical blanking is released to pass through the VITS signal.

*** Factory set to OPEN.**

JP 8)*

Set to OPEN. ***Used for alignment purposes only.**

FRONT ⇑



2-3. CONNECTION AND OPERATION

2-3-1. Connection to composite VTRs (U-matic, VHS, Beta, etc.)

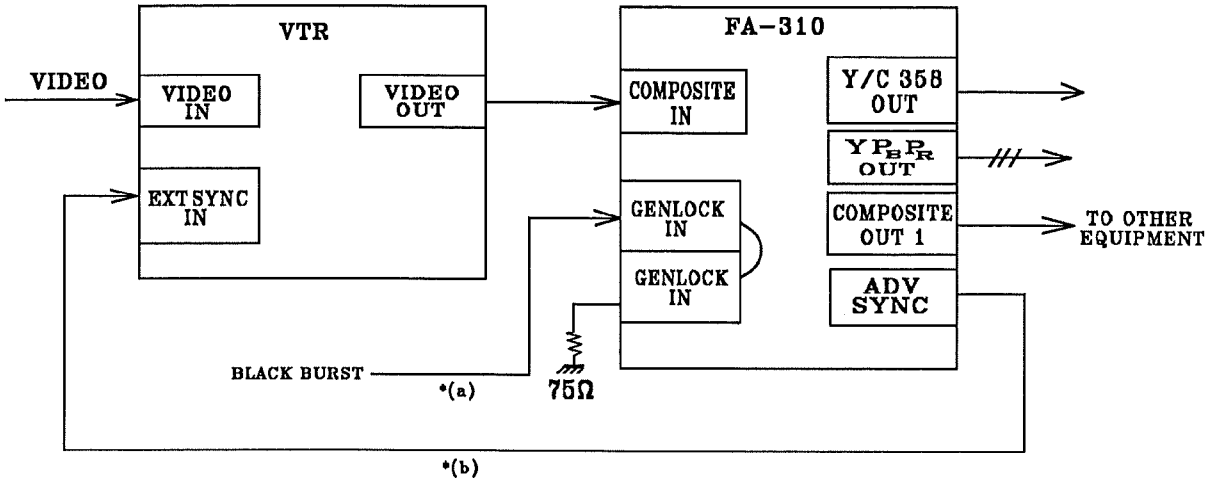


Fig. 2-3-1

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.

* (b) This connection is not required for VTRs without an EXT SYNC input.

When the above connections are complete, proceed as follows (even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE.

3) Set the COMPOSITE / Y/C 358 (S-VHS) switch to COMPOSITE (up).

4) Set YP_BP_R IN switch to OFF (up).

5) Set YC DUB switch to OFF (up).

6) Refer to Section 2-2. and operate or adjust the controls as required.

2-3-2. Connection to Y/C358 VTRs (S-VHS, etc.)

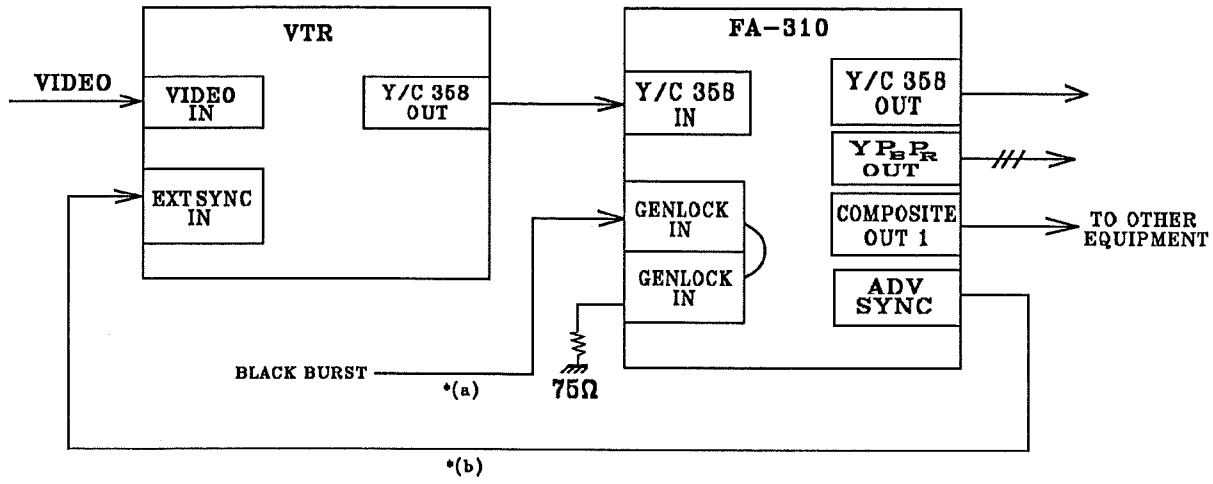


Fig. 2-3-2

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.
* (b) This connection is not required for VTRs without an EXT SYNC input.

When the above connections are complete, operate as follows(even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE.

3) Set the COMPOSITE / Y/C358 (S-VHS) switch to YC358(S-VHS) (down).

4) Set YP_BP_R IN switch to OFF (up).

5) Set YC DUB switch to OFF (up).

6) Refer to Section 2-2. and operate or adjust the controls as required.

2-3-3. Connection to video units other than VTRs (Camera, Switcher, etc.).

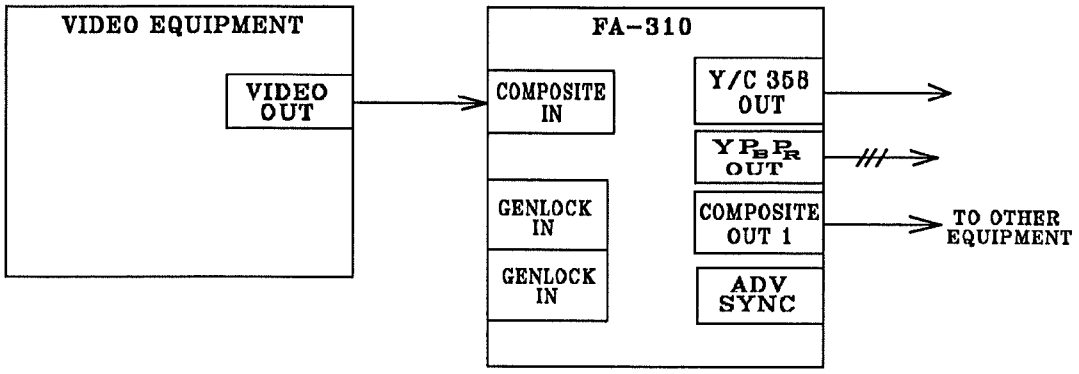


Fig. 2-3-3

When the above connections are complete, operate as follows:

1) Confirm the voltage and power source are correct for the FA-310 and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE.

3) Set the COMPOSITE / Y/C358 (S-VHS) switch to COMPOSITE (up).

4) Set YP_BP_R IN switch to OFF(up).

5) Set YC DUB switch to OFF (up).

6) Refer to Section 2-2-2. and operate or adjust the controls as required.

7) Setting NON TRAP on the card edge (see Sec. 2-1) to ON (down) will increase picture resolution.

2-3-4. To genlock the FA-310 with the system reference signal

When the FA-310 is genlocked to a system, or when it is used as part of a system, connections should be made as shown below.

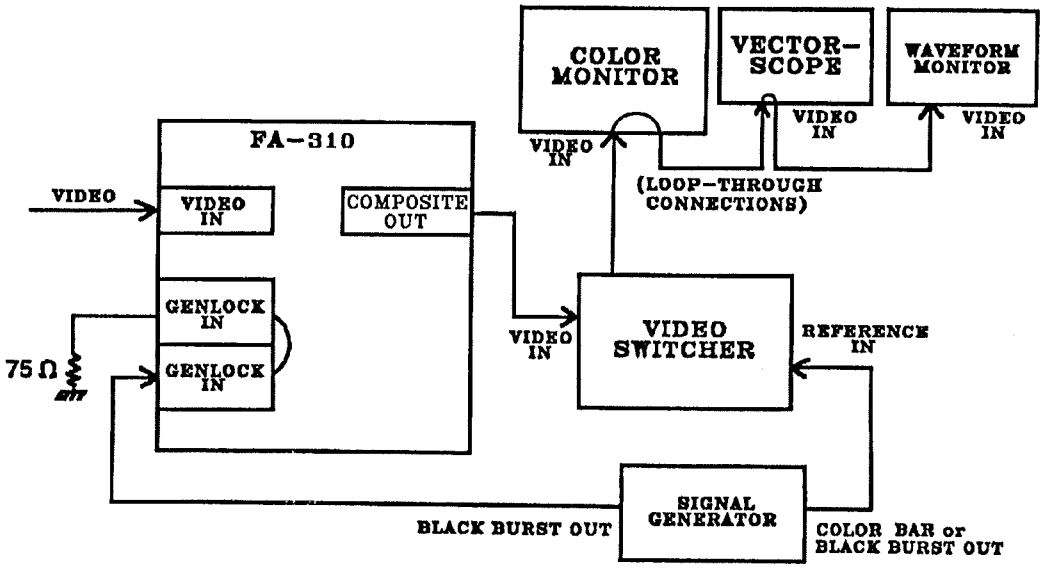


Fig. 2-3-4

NOTE: The connections outlined in Fig.2-3-4 indicate minimum requirements.

When the above connections are complete, operate as follows:

1) Confirm the voltage and power source are correct for the FA-310 and switch power ON.

2) Confirm that the GEN LOCK indicator is lit.

NOTE: The following adjustments can only be performed when a genlock reference signal is input.

3) Adjust the H PHASE control inside the FA-310 until the H phase of the FA-310 video output matches system H phase at the input side of the switcher, etc.

4) Adjust the SC PHASE control inside the FA-310 until the burst phase of FA-310 video output matches burst phase of the system reference black burst signal at the input side of the switcher, etc.

2-3-5. Connection to component (Betacam) VTRs (OPTION)

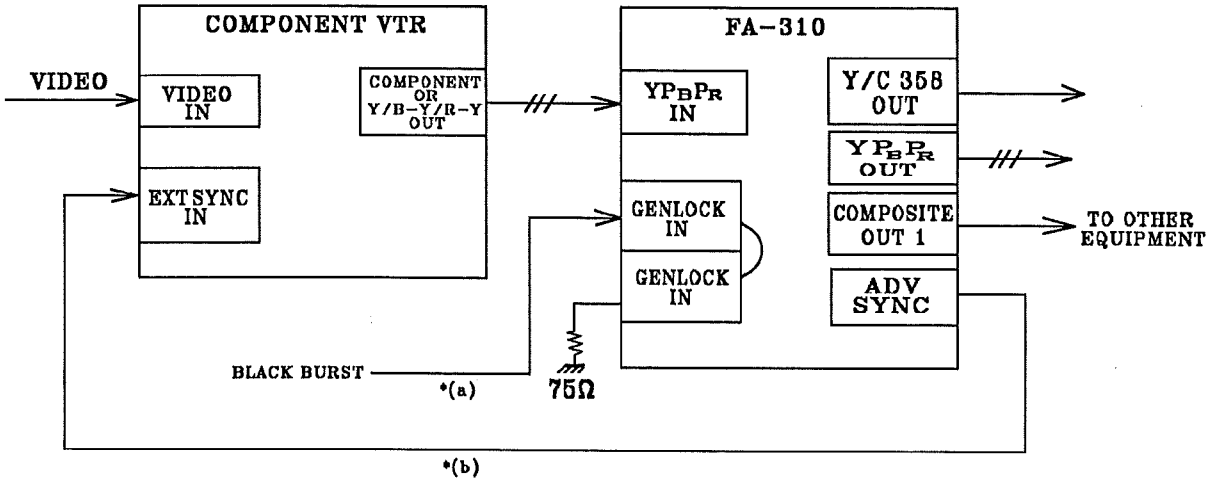


Fig. 2-3-5

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.
* (b) This connection is not required for VTRs without an EXT SYNC input.

When the above connections are complete, operate as follows(even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE.

3) Set COMPOSITE / Y/C358 switch to COMPOSITE (up).

4) Set YP_BP_R IN switch to ON (down).

5) Set YC DUB switch to OFF (up).

6) Refer to Section 2-2. and operate or adjust the controls as required.

2-3-6. Connection of Y/C DUB signal from U-matic VTRs (OPTION)

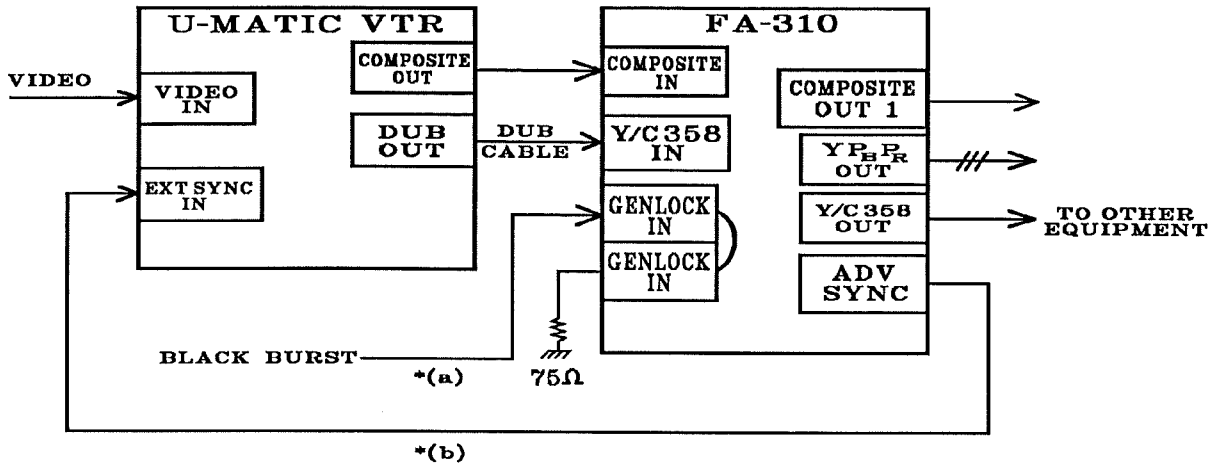


Fig. 2-3-6

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.

* (b) This connection is not required for VTRs without an EXT SYNC input.

When the above connections are complete, operate as follows(even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE and set the COMPOSITE / Y/C358 switch to COMPOSITE (up).

3) Set YC DUB switch to ON (down).

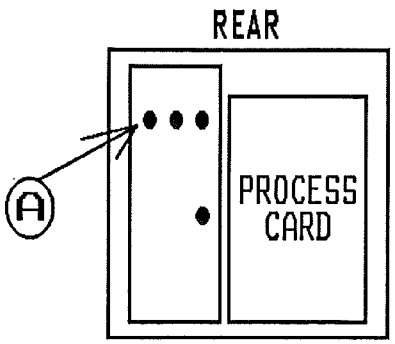
4) Set YP_BP_R IN switch to OFF (up).

5) Refer to Section 2-2. and operate or adjust the controls as required.

6) If the Y/C DUB input level from the VTR is not 1.0 Vp-p, adjust the FA-310 internal input level to compensate for the difference and obtain 1 Vp-p (see below).

To adjust Y DUB input level:

Remove FA-310 top panel and adjust A (indicated in the figure at right) to set COMPOSITE 2/Y output level to 1.0 Vp-p with the Y/C DUB card edge switch set to ON. Verify output level remains at 1.0 Vp-p when the Y/C DUB switch is set to OFF.



2-3-7. RGB Output Connection (OPTION)

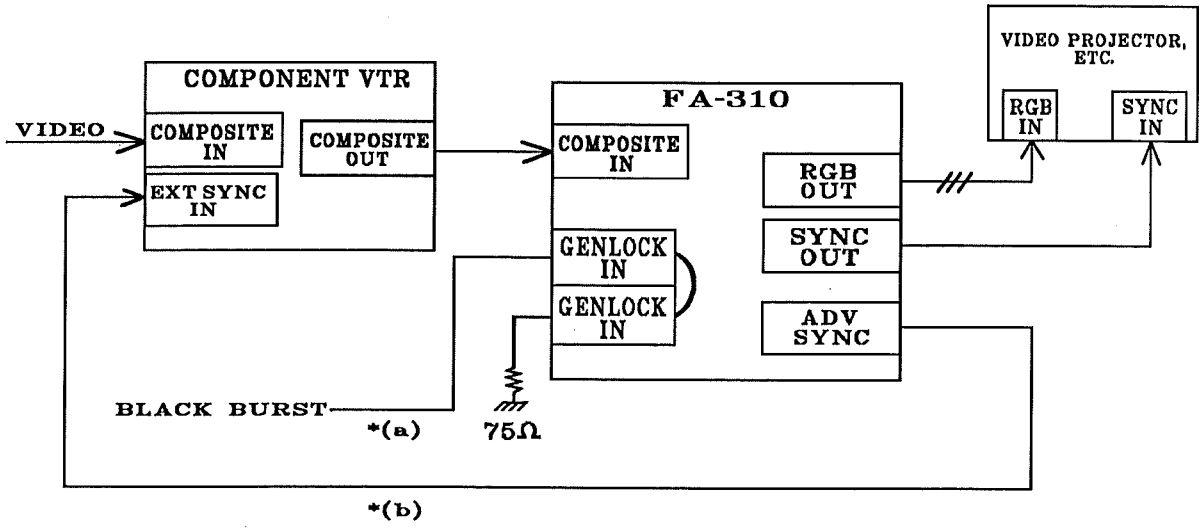


Fig. 2-3-7

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.
* (b) This connection is not required for VTRs without an EXT SYNC input.
* A composite VTR is used as an example in the figure above.
* When making RGB and SYNC OUT connnections, use either an RGB cable or four BNC cables of equal length.

When the above connections are complete, operate as follows(even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE.

3) Refer to Section 2-2. and operate or adjust the controls as required.

2-3-8. HD/VD Input Connection (OPTION)

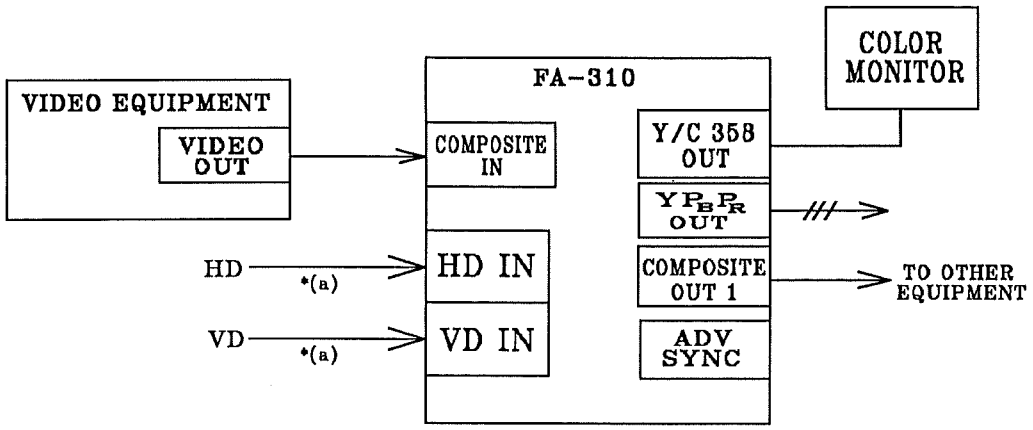


Fig. 2-3-8

* (a) Reference signal for genlock operation. When this signal is not connected, the FA-310 automatically goes to INTERNAL mode, and operates on an internally generated sync signal.

When the above connections are complete, operate as follows(even if the VTR has no EXT SYNC input):

1) Confirm the voltage and power source for the FA-310 are correct and switch power ON.

2) Set the OPERATE / BY-PASS switch to OPERATE and set the COMPOSITE / Y/C358 switch to COMPOSITE (up).

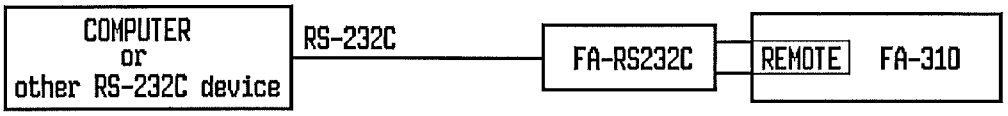
3) Refer to Section 2-2. and operate or adjust the controls as required.

2-3-9. Remote Connection

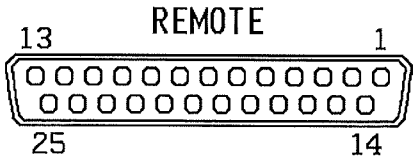
The remote connector on the rear panel of the FA-310 is used for connection to either the optional PCU-2 Process Control Unit or the FA-RS232C Interface Unit. The PCU-2 directly controls video level, chroma level, chroma phase, setup level, operate/bypass selection and FIELD/FRAME ON/OFF, while the FA-RS232C interface allows the same functions to be controlled by a computer or other RS-232C communication device.

A connection example for the PCU-2 is shown below.

A connection example for the FA-RS232C is shown below.



Both the PCU-2 and the FA-RS232C are connected to the REMOTE connector of the FA-310, which is a 25-pin D sub type. Connector pin arrangement and pin designations are as shown in the figure and table below.



Pin No.	Signal
1	VIDEO LEVEL
2	CHROMA LEVEL
3	CHROMA PHASE
4	SET UP
5	FRAME FREEZE ON/$\overline{\text{OFF}}$
6	FIELD FREEZE ON/$\overline{\text{OFF}}$
7	GND
8	OPERATE/$\overline{\text{BYPASS}}$
9	+12 VDC OUTPUT
10	NC (no connection)
11	$\overline{\text{GENLOCK}}$
12	$\overline{\text{REMOTE}}$
13	NC (no connection)

14	NC (no connection)
15	NC (no connection)
16	– 12 VDC OUTPUT
17	NC (no connection)
18	GND
19	NC (no connection)
20	NC (no connection)
21	NC (no connection)
22	NC (no connection)
23	NC (no connection)
24	NC (no connection)
25	NC (no connection)

IMPORTANT

Some interior card edge switch settings will have to be changed whenever the REMOTE connector is used.

Switches should be set as follows:

1) VIDEO LVL, CHROMA LVL, CHROMA PHASE, SET UP ⇒ All ON (down).

2) FRAME FREEZE, FIELD FREEZE ⇒ Both down. (Associated indicators not lit.)

3) STROBE FREEZE ⇒ OFF. (Associated indicator not lit.)

4) BY-PASS/OPERATE ⇒ OPERATE. (Associated indicator lit.)

Warning

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

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FOR.A®

FOR-A COMPANY LIMITED

Head Office : 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Overseas Division Phone: +81 (0)3-3446-3936, Fax: +81 (0)3-3446-1470
Japan Branch Offices : Osaka/Okinawa/Fukuoka/Hiroshima/Nagoya/Sendai/Sapporo
R&D/Production : Sakura Center/Sapporo Center

FOR-A America Corporate Office

11125 Knott Ave., Suite #A, Cypress, CA 90630, USA
Phone: +1 714-894-3311 Fax: +1 714-894-5399

FOR-A America East Coast Office

Two Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee NJ 07024, USA
Phone: +1 (201) 944-1120 Fax : +1 (201) 944-1132

FOR-A America Distribution & Service Center

2400 N.E. Waldo Road, Gainesville, FL 32609, USA
Phone: +1 352-371-1505 Fax: +1 352-378-5320

FOR-A Corporation of Canada

346A Queen Street West, Toronto, Ontario M5V 2A2, Canada
Phone: +1 416-977-0343 Fax: +1 416-977-0657

FOR-A Latin America & the Caribbean

5200 Blue lagoon Drive,
Suite 760, Miami, FL 33126, USA
Phone: +1-305-931-1700 Fax: +1-305-264-7890

FOR-A UK Limited

UNIT C71, Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, UK
Phone: +44 (0)20-8391-7979 Fax: +44 (0)20-8391-7978

FOR-A Italia S.r.l.

Viale Europa 50 20093, Cologno Monzese (MI), Milan, Italy
Phone: +39 02-254-3635/6 Fax: +39 02-254-0477

FOR-A Corporation of Korea

801 Dangsan Bld., 53-1 Dangsan-Dong, Youngdeungpo-Gu, Seoul 150-800, Korea
Phone: +82 (0)2-2637-0761 Fax: +82 (0)2-2637-0760

FOR-A China Limited

708B Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Phone: +86 (0)10-8721-6023 Fax: +86 (0)10-8721-6033