BR-8600E

INSTRUCCIONES

For reference, the text of the instruction booklet of this model is reproduced in the following pages.
Numbering of the pages also corresponds with that of the booklet.

Warning Notice

FOR YOUR SAFETY (Australia)

1. Insert this plug only into effectively earthed three-pin power outlet.
2. If any doubt exists regarding the earthing, consult a qualified electrician.
3. Extension cord, if used, must be three-core correctly wired.

FOR YOUR SAFETY

Install any external aerial to AS 1417.1

IMPORTANT (In the United Kingdom)
Mains Supply (AC 240 V~, 50 Hz only)
WARNING – THIS APPARATUS MUST BE EARTHED

The wires in this mains lead are coloured in accordance with the following code:

GREEN-and-YELLOW:	EARTH
BLUE:	NEUTRAL
BROWN:	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows. The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or which is coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

POWER SYSTEM

Connection to the mains supply

The operating voltage of this set is preset to 240 V~ at the factory.

Before connecting to mains, check that the voltage selector on the rear panel is set to the same voltage as your local mains supply.

Adapting to local power line

This set operates on either 110, 120, 220 or 240 V~.

If the preset voltage is different from the power line voltage in your area, reset the voltage selector by inserting a screwdriver into the slot of the voltage selector and turning it until the correct voltage is displayed.

CAUTION

To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

Note: The rating plate and the safety caution are on the rear of the unit.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

VHS
PAL

Only cassettes marked "VHS" can be used with this video cassette recorder.

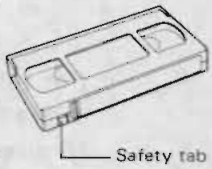
PRECAUTIONS

Handling and storage

- Avoid using the recorder under the following conditions:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibrations, and
  - poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving it from a cold place to a warm place or soon after heating a room which was cold. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

Video cassettes

- The BR-8600E employs VHS-type cassettes only. E-240 for 240 minutes, E-180 for 180 minutes, E-120 for 120 minutes, E-90 for 90 minutes, E-60 for 60 minutes and E-30 for 30 minutes of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

CONTENTS

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FEATURES

Professional-quality editing functions
The BR-8600E has a pair of rotary erase heads and a blanking switcher which make possible assemble and insert editing with virtually no distortion at the edit points. Edit flagging is minimised by use of a framing servo and extremely stable horizontal phase lock.

Colour framing servo circuit
The built-in colour framing servo circuit stabilises the colour phase at edit points.

Auto H-phase control
The BR-8600E can be automatically aligned with the horizontal phase of the input signal by the microprocessor-controlled auto H-phase lock system.

Preroll function for automatic editing
An independent PREROLL button is provided on the control panel to automatically backspace the tape by about 10 seconds of programme time. When no edit controller is being used, reasonably accurate editing can be accomplished with two BR-8600E's utilising the PREROLL buttons on the recorder and source. After you locate the edit-in points by using the convenient dial search controls, the press of the PREROLL buttons prerolls each machine. When the EDIT START buttons are pressed simultaneously, the edit takes place at the predetermined edit points.

Heavy-duty mechanism with direct-drive motors
The head drum is directly driven by a servo-controlled brushless DC motor, while the capstan and reels are also directly driven by independent DC motors. This assures highly stable pictures as well as greatly improved reliability. To add further to reliability and durability, the mechanism is supported by an aluminium diecast chassis.

Variable-speed dial search
A convenient, easy-to-operate control dial is provided for fast and accurate location of edit points. Turning this rotary dial varies the tape speed from still to 10 times normal, in both forward and reverse directions. The sensitivity of the control is dependent on the selected speed, so that fast, positive control of the tape is always maintained.

Video recording adjustment — video level/tracking meter
Normally the Automatic Gain Control (AGC) circuit optimises the video recording current, depending on the input video signal. For demanding professionals, however, this circuit can be defeated and the video level can be manually adjusted by referring to the video level meter. During playback, the meter functions as a tracking meter and helps in precise playback adjustment together with an independent tracking control.

Two-channel audio for stereo recording and playback
Independent audio level meters are provided for channels 1 and 2. The audio levels of the two channels can therefore be separately adjusted. Independent audio limiters are provided and can be switched in and out as needs require.

Dolby* B noise reduction incorporated
To further improve sound quality by reducing tape hiss, Dolby B noise reduction circuitry is incorporated in the audio recording and playback circuits.

Y-frequency response control
By controlling the level of the luminance signal while maintaining the pulse characteristics in playback, the Y-frequency response control can compensate for deterioration of the frequency response of the luminance signal that might occur due to the transmission characteristics of cables.

New dubbing system
For cleaner transfers with less picture deterioration, the BR-8600E employs a new dubbing system which transmits the modulated luminance signal and the unconverted chroma signal separately using a 7-pin cable. Both input and output terminals for this type of dubbing are provided.

Three video inputs selectable
Three video inputs (LINE, 8-pin TV, DUB) are provided, and the input select switch on the front panel makes it possible to incorporate signals from a tape, a camera or a TV monitor on to an edited tape by simply operating the switch.

Field-still and slow-motion playback
The BR-8600E has two pairs of video heads: one pair for recording and normal-speed playback, the other pair (extra video heads) for still and slow-motion playback. This is in keeping with JVC policy; recording of the highest possible quality is assured and stable pictures can be obtained even in still and slow-motion modes. Ease of locating edit points is considerably enhanced.

External sync capability
The BR-8600E is equipped with all the terminals and connectors required by video professionals for editing; the SYNC IN connector enables external synchronization so that the BR-8600E can easily be incorporated in an existing video system. By use of the SYNC IN and RF OUT connectors, a time base corrector (TBC) can also be connected.

Total front operation
As well as the front cassette loading system, all switches and controls are accessible from the front. Conforming to the 19" rack mount standard, the BR-8600E presents no problem at all when it is to be installed in your existing production house.

Electronic tape counter/lap timer with fluorescent display
A 4-digit counter provides a convenient means of addressing tape segments. The display doubles as a 5-digit lap timer showing tape running time in hours, minutes and seconds. The fluorescent display used assures easy readability.

Tape end warning
About 5 minutes before the end of the tape, the electronic tape counter starts flashing, indicating that the tape is coming to an end.

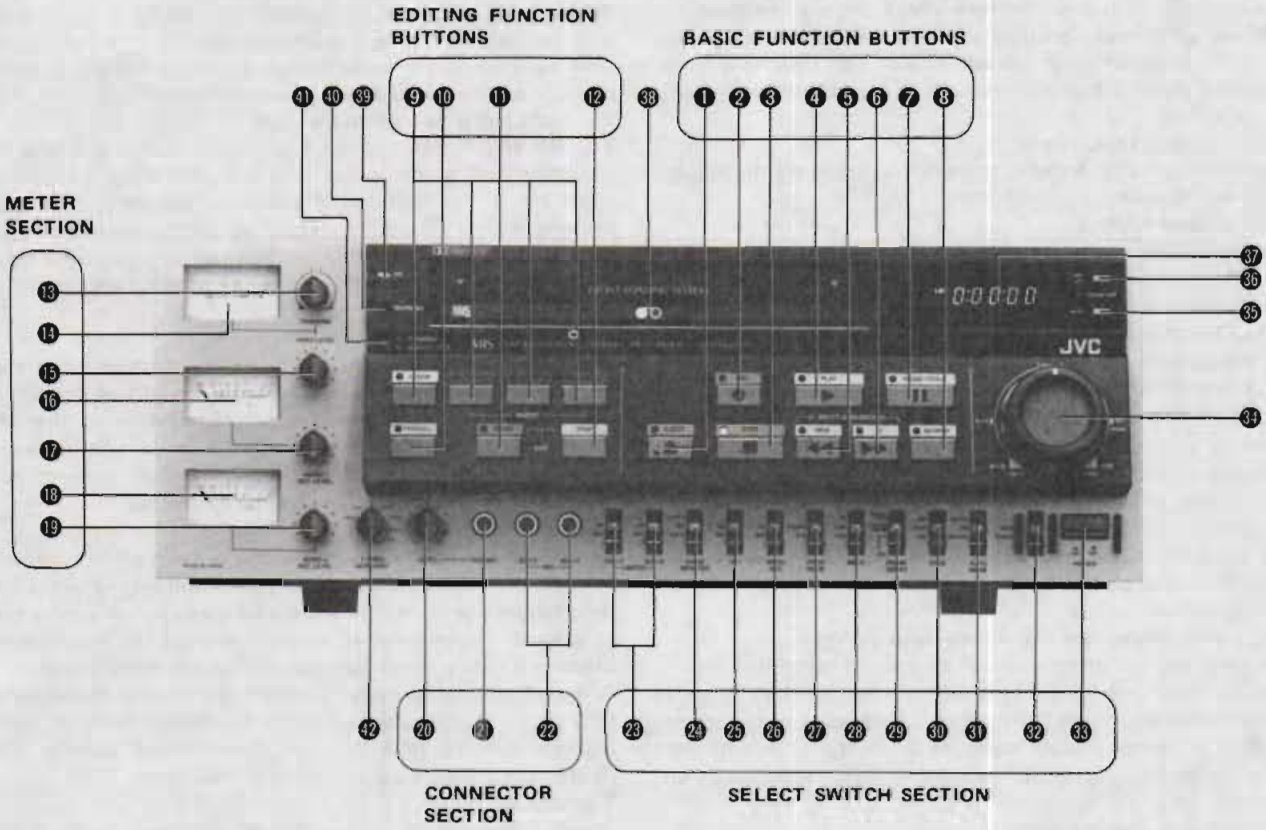
Shuttle Search at about 10 times normal speed
Run the tape at about 10 times normal speed either forward or in reverse while watching the speeded-up picture. You can scan through a whole 2-hour programme in about 12 minutes.

Automatic search and repeat
In conjunction with the tape counter, the automatic search mode enables any section of the programme to be located automatically. In the automatic repeat mode, the entire tape is automatically played back any number of times.

Additional features
- External hour meter to show the running total of operating hours.
- Audio monitor output selectable (CH-1, CH-2, MIX).
- Automatic rewind at tape end.
- Electronic tape tension control.
- Condensation detector and built-in moisture condensation prevention heater.
- Warning indicator for any malfunction related to tape transport or moisture condensation.
- Frame servo indicator.
- BNC video and RCA audio connectors.
- Front panel connectors for two microphones and a set of stereo headphones.
- 8-pin connector for TV monitor.
- 45-pin connector for editing or remote control unit.

* Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

CONTROLS AND CONNECTORS



BASIC FUNCTION BUTTONS

❶ EJECT button
Press to eject the cassette. This button can be pressed in the Stop mode or immediately after the STOP button has been pressed. The EJECT indicator will flash during automatic unloading of the cassette and then remain lit upon completion of ejection.

❷ Record button (REC)
Press together with the PLAY button for video and audio recording. Audio is recorded on both channels, if there are input signals for them. The REC and PLAY indicators light during recording. (The PLAY indicator flickers first until tape loading is completed.)

❸ STOP button
To stop the tape. When the STOP button is pressed, the tape is unloaded and then the Stop mode is engaged. The STOP indicator flickers during tape unloading and remains lit upon completion of unloading.

❹ PLAY button
Press to start playback. The PLAY indicator will light. Press together with the REC button to start recording.

❺ Rewind button (REW)
Press to rewind the tape inside the cassette. While the tape is being rewound, the REW indicator will light. This button can be pressed in any mode except Record, Edit or Eject. To release the Rewind mode, press the PLAY, STOP or FF button, depending on the mode you want to select next. Pressing this button in the Play or Still mode enables high-speed playback at about 10 times normal in the reverse direction. During search the REW indicator will remain lit.

❻ Fast Forward button (FF)
Press to fast forward the tape inside the cassette. While the tape is being fast forwarded, the FF indicator will light. This button can be pressed in any mode except Record, Edit or Eject. To release the Fast Forward mode, press the PLAY, STOP or REW button, depending on the mode you want to select next. Pressing this button in the Play or Still mode enables high-speed playback at about 10 times normal in the forward direction. During search the FF indicator will remain lit.

❼ PAUSE/STILL button
Press to stop the tape temporarily during recording or playback. To release the Pause or Still mode, press any button except EJECT corresponding to the mode you wish to enter next.

❽ SEARCH button
Press to change the playback speed instantly to that previously set with the rotary search dial ㉞.

EDITING FUNCTION BUTTONS

⑨ Edit mode select buttons

ASSEM: When this button is pressed to ON (the LED will light), video, audio-1 and audio-2 signals are all assemble-edited when the EDIT START button is pressed.

INSERT

AUDIO-1: Press to ON to insert-edit the audio-1 signal.

AUDIO-2: Press to ON to insert-edit the audio-2 signal.

VIDEO: Press to ON to insert-edit the video signal.

- To release these buttons to OFF, press them once again.
- The AUDIO-1, AUDIO-2 and VIDEO buttons can be pressed to ON in any combination. Also, these buttons can be switched ON or OFF even during insert-editing.

⑩ PREROLL button

Operative in the Pause or Still mode. When this button is pressed after the edit point has been determined with the PAUSE/STILL button, the tape is rewound by about 10 seconds of programme time and enters the Edit Standby mode. (The PREROLL indicator lights.) To cancel this mode, press the EDIT STOP or PLAY button.

⑪ EDIT START button

Press to start editing. This button functions only in the Play mode.

⑫ EDIT STOP button

Press to stop editing.

METER SECTION

⑬ TRACKING control

To remove noise bars during playback, turn this control so that the meter ⑭ makes its maximum deflection.

⑭ TRACKING/VIDEO LEVEL meter

This meter functions as a tracking meter during playback and as a video level meter during recording.

⑮ VIDEO LEVEL control

To adjust the video recording current manually, set the VIDEO AGC switch ㉖ to OFF and turn this control so that the meter ⑭ deflects into the green area.

⑯ AUDIO-1 REC LEVEL meter

This meter indicates the level of the audio-1 signal during recording and playback.

⑰ AUDIO-1 REC LEVEL control

To adjust the audio-1 recording level, turn this control so that the meter ⑯ deflects to "0" with the loudest signal.

⑱ AUDIO-2 REC LEVEL meter

This meter indicates the level of the audio-2 signal during recording and playback.

⑲ AUDIO-2 REC LEVEL control

To adjust the audio-2 recording level, turn this control so that the meter ⑱ deflects to "0" with the loudest signal.

CONNECTOR SECTION

⑳ PHONES LEVEL control

Turn to adjust the output level of the PHONES jack.

㉑ PHONES jack

Connect a set of headphones having an impedance of 8 ohms. The signal selected with the AUDIO MONITOR switch ㉔ can be heard.

㉒ Microphone jacks (MIC AUD-1, AUD-2)

Connect microphones having an impedance of 600 ohms and a sensitivity of -70 dBm.

SELECT SWITCH SECTION

㉓ Audio limiter switches (LIMITER AUD-1, AUD-2)

Set to ON to activate the built-in audio limiter circuit. The limiter circuit can be switched on or off separately for the two audio tracks and manual level control is possible even when the limiter circuit is switched on.

㉔ AUDIO MONITOR select switch

This switch selects the audio output available from the 8-pin TV connector, headphone jack and AUDIO MONITOR connector.

AUD-1: To hear the audio-1 signal.

MIX: To hear a mixture of audio-1 and audio-2 signals.

AUD-2: To hear the audio-2 signal.

㉕ Audio noise reduction switch (NR)

Set to ON to activate the built-in Dolby* noise reduction system to reduce tape hiss.

㉖ VIDEO AGC switch

Set to ON to activate the built-in video AGC circuit.

㉗ VIDEO MODE select switch

Select one of the two positions according to the input signal during recording or the output signal during playback.

COLOUR: Set to this position when the input or playback video signal is a colour signal.

B/W: Set to this position when the input or playback video signal is monochrome.

㉘ INPUT select switch

TV: Set to this position to record video and audio signals input via the 8-pin TV connector. In this case, the audio signal is recorded on the audio-1 track.

LINE: Set to this position to record video signals input via the VIDEO IN LINE connector and audio signals input via the AUDIO IN (AUD-1, AUD-2) connectors or the MIC (AUD-1, AUD-2) jacks.

DUB: Set to this position to record video signals input via the DUB IN connector and audio signals input via the AUDIO IN (AUD-1, AUD-2) connectors or the MIC (AUD-1, AUD-2) jacks.

㉙ FRAME SERVO switch

FRAME: Set to this position when editing from tapes which were not recorded in the colour frame mode.

COLOUR FRAME: Normally set to this position. Colour framing servo will produce distortion-free edits.

OFF: Set to this position when editing tapes which contain random-interlaced or low S/N signals.

㉚ SYNC select switch

For selecting between different reference sync signals for the servo system during recording and playback. For more information refer to "REFERENCE SYNC SIGNALS FOR RECORDING AND PLAYBACK" on page 16.

㉛ AUTO MODE switch

This switch selects automatic operations.

MEMORY: The tape stops automatically when it is rewound or fast forwarded to the point corresponding to the counter reading of "0" and the unit enters the Stop mode.

OFF: No automatic operation.

REPEAT: When the tape is rewound to its beginning, it stops and then is reloaded automatically to repeat playback.

㉜ LOCAL/REMOTE select switch

LOCAL: Set to this position when the recorder is to be controlled with its own function buttons. (With this switch set to the LOCAL position, the remote control unit connected to the rear panel 45-pin REMOTE connector will not function.)

REMOTE: Set to this position when the recorder is to be remote-controlled with the remote control unit connected to the 45-pin REMOTE connector. (No function buttons of the recorder except STOP and EJECT will function when this switch is set to the REMOTE position.)

㉝ POWER button

Press to turn the power on. The level meters and the counter display will be illuminated. Pressing again will switch the power off.

㉞ Search dial

This search dial becomes operative by pressing the SEARCH button ❽.

When the dial is set to STILL (centre position), the Still mode is engaged. When the dial is turned clockwise toward FWD, forward playback takes place at a speed corresponding to the dial setting. When the dial is turned counterclockwise toward REV, reverse playback takes place at a speed corresponding to the dial setting. The search speed is continuously variable between 1/15 and 5 times normal in both directions. When the dial is turned fully clockwise or counterclockwise past the 5-times-normal setting, the maximum search speed of about 10 times normal is obtained. If the control mode is changed by any function button, the dial setting remains unchanged; when the SEARCH button ❽ is pressed, playback speed and direction corresponding to the dial setting are automatically restored.

㉟ Counter reset button (RESET)

Press to reset the tape or lap time counter to zero.

㊱ Display mode select button (TAPE/LAP)

The fluorescent display functions as a tape counter with this button in its "out" position. When the button is pressed in, the display changes to a lap time counter. To change back to the tape counter, press the button once again.

㊲ Electronic tape counter/Lap time counter/Tape-end warning indicator

This fluorescent display functions as a 4-digit tape counter or a 5-digit lap time indicator, depending on the setting of the display mode select button. In either mode, the display starts flashing 5 to 10 minutes before the tape end during recording. While the tape is being wound in the forward direction, the counter reading advances in the direction of increasing numbers. While the tape is being wound in the reverse direction, the counter reading changes in the direction of decreasing numbers and after zero a "minus" sign appears.

㊳ Cassette loading slot

With the POWER button pressed to ON, insert a video cassette with its labelled edge facing toward you. The cassette carriage itself will automatically take control and retract the cassette into the correct loaded position. The lower door flap will show a mark indicating that a cassette is loaded.

㊴ Audio noise reduction indicator (NR)

Lights when the built-in Dolby* noise reduction system is activated.

㊵ WARNING indicator (WARNING)

If the tape running is in some way incorrect, this indicator starts flashing. The causes may be:

(1) the moisture condensation sensor is in operation;
(2) the tape-end sensor lamp has blown;
(3) the head drum does not rotate;
(4) the eject mechanism does not operate properly;
(5) the automatic loading and unloading mechanism does not operate properly;
(6) the tape stops running, or
(7) a tape recorded in the LP (Long Play) mode is played back.

㊶ FRAMING/SERVO LOCK indicator

When the tape is running with its colour frames locked to those of the input signal, the LED turns green.

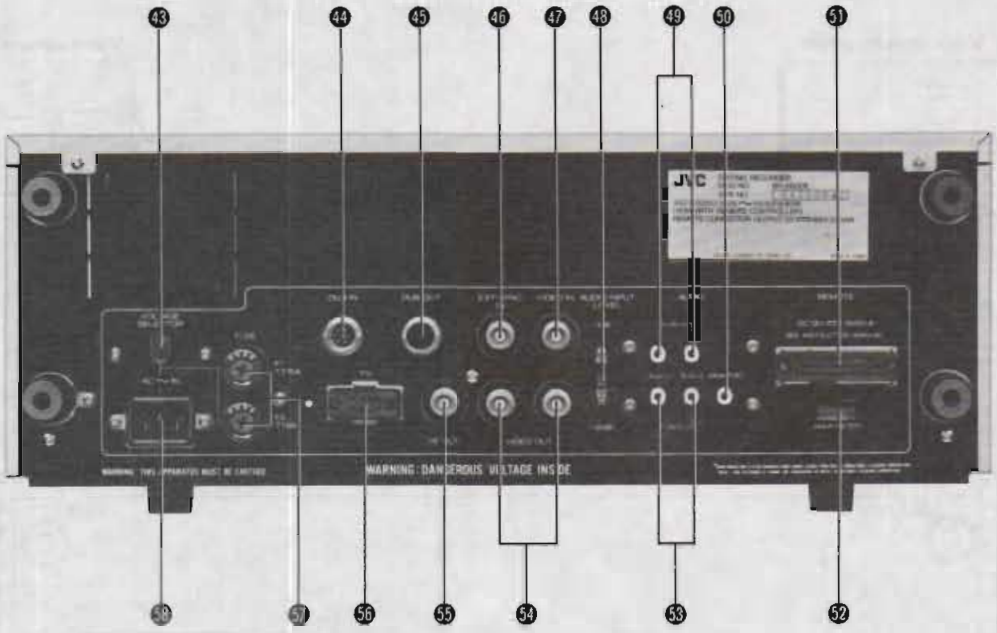
When the frame servo is not used, the LED turns green.

If the servo is unlocked, the LED alternates in colour.

㊷ Y-FREQ RESPONSE control

Turn to adjust the luminance (Y) signal output response.

REAR PANEL



43 VOLTAGE SELECTOR
See "POWER SYSTEM" on page 1.

44 DUB IN connector
Receives signals from the 7-pin dubbing output connector of a source player via the 7-pin dubbing cable (provided).

45 DUB OUT connector
When dubbing from the BR-8600E to a second recorder equipped with a 7-pin dubbing input connector, connect DUB OUT to DUB IN using the 7-pin dubbing cable (provided).

46 External sync signal input connector (EXT SYNC IN)
This input connector accepts an external reference sync signal when the recorder is to be operated in the external sync mode. The external sync signal can be a composite sync signal or a composite video signal.

47 VIDEO IN connector
Input connector for video signals.

48 Audio input level select switch (AUDIO INPUT LEVEL)
Select either –6 dB or –20 dB according to the level of the audio input signal. The level is switched for both audio channels simultaneously.

49 AUDIO IN connectors (AUD-1, AUD-2)
Input connectors for audio-1 and audio-2 signals.

50 AUDIO MONITOR output connector
The audio signal selected by the AUDIO MONITOR switch is present at this connector.

51 REMOTE control connector
Connect a JVC remote control unit.

52 HOUR METER
This indicates the total operating time. After 1,000 hours of operation, the red line moves to the right end of the scale.

53 AUDIO OUTPUT connectors (AUD-1, AUD-2)
Output connectors for audio-1 and audio-2 signals.

54 VIDEO OUT connectors
Output connectors for video signals.

55 RF OUT connector
For connection to the DOC (Dropout Compensator) input terminal of a TBC (Time Base Corrector).

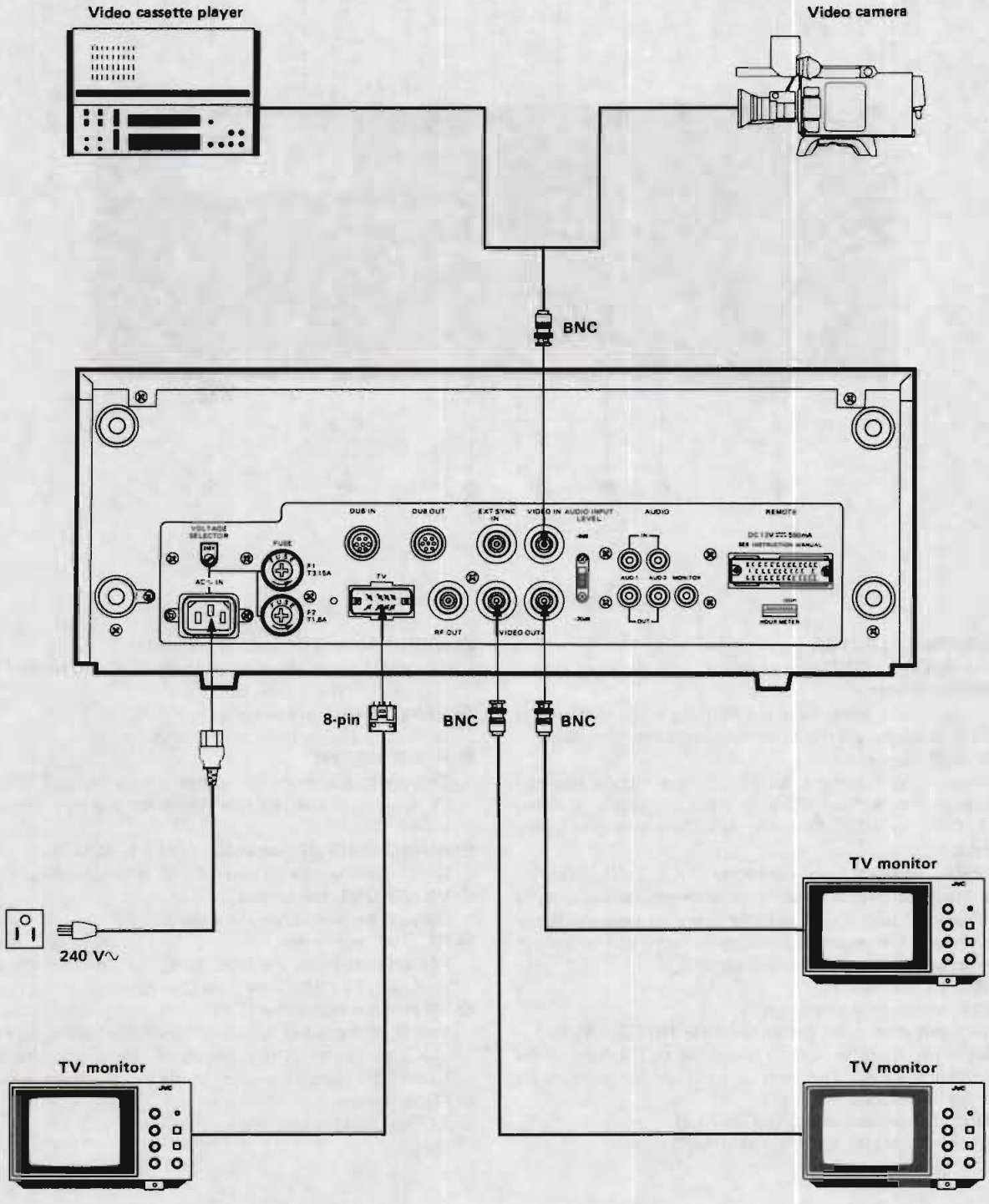
56 TV monitor connector (TV)
This is an 8-pin input/output connector for the connection of a TV monitor. The audio signal selected by the AUDIO MONITOR switch is present at the audio output terminal.

57 FUSE holders

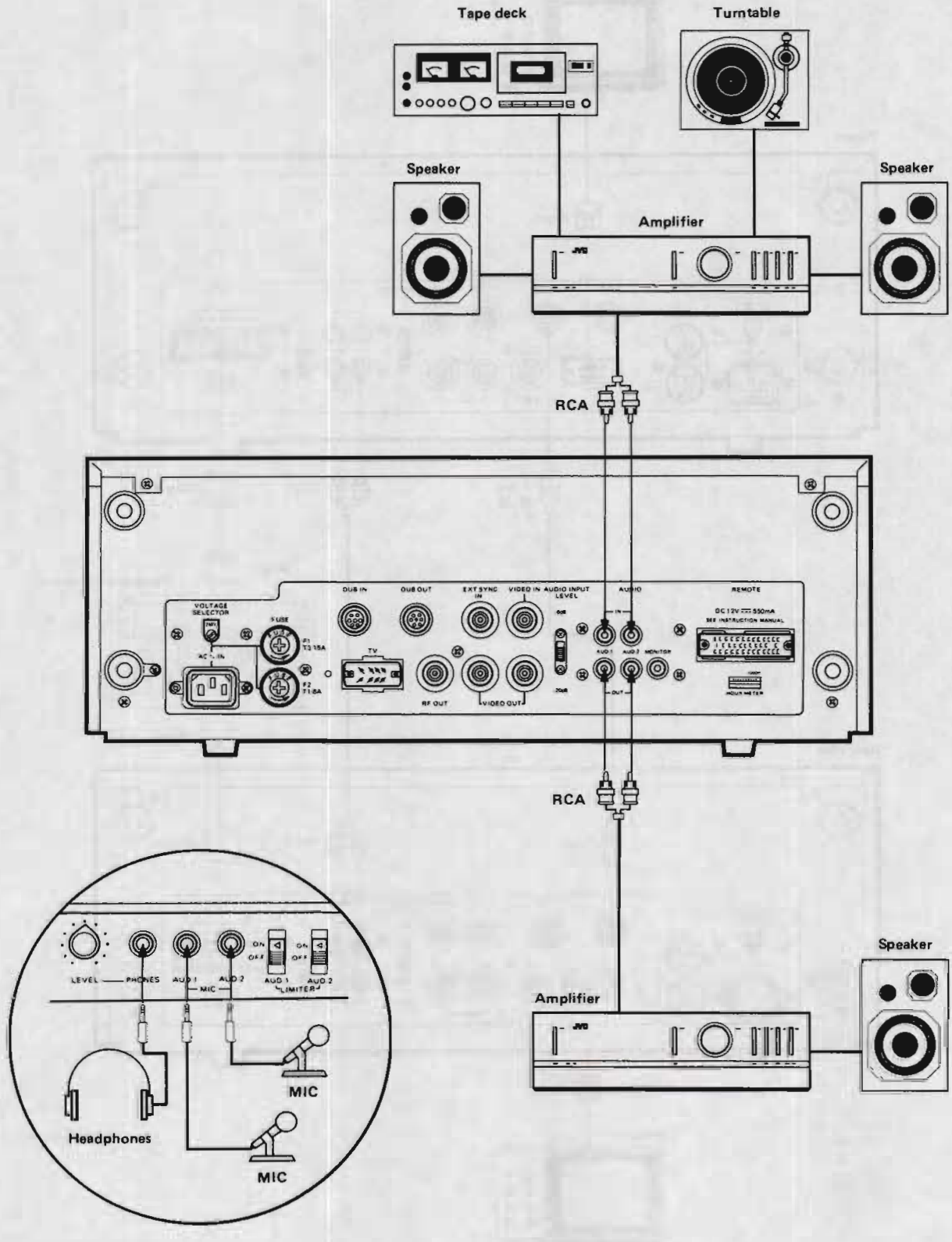
58 AC input socket (AC IN)

CONNECTIONS

VIDEO EQUIPMENT CONNECTION

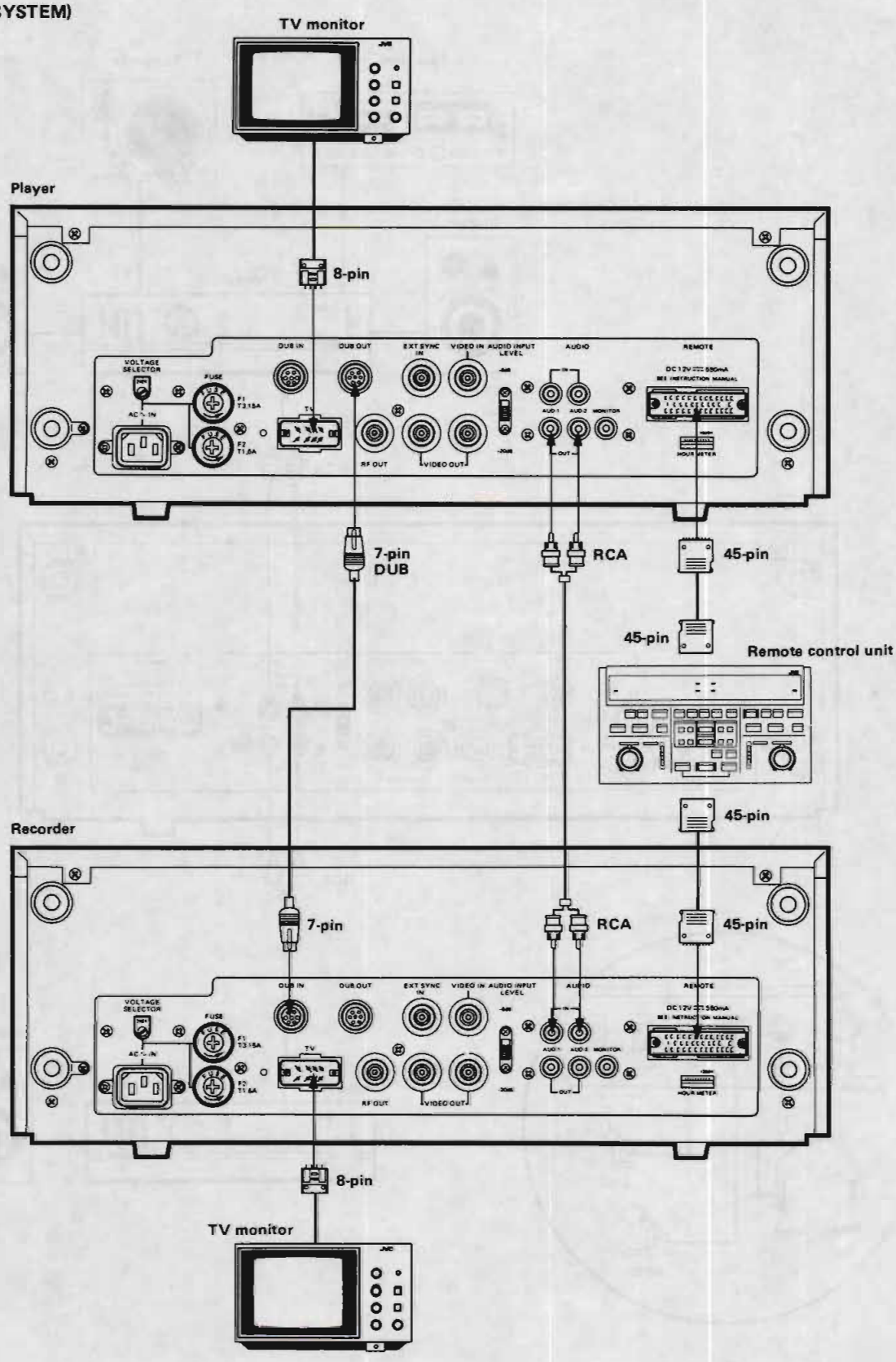


AUDIO EQUIPMENT CONNECTION



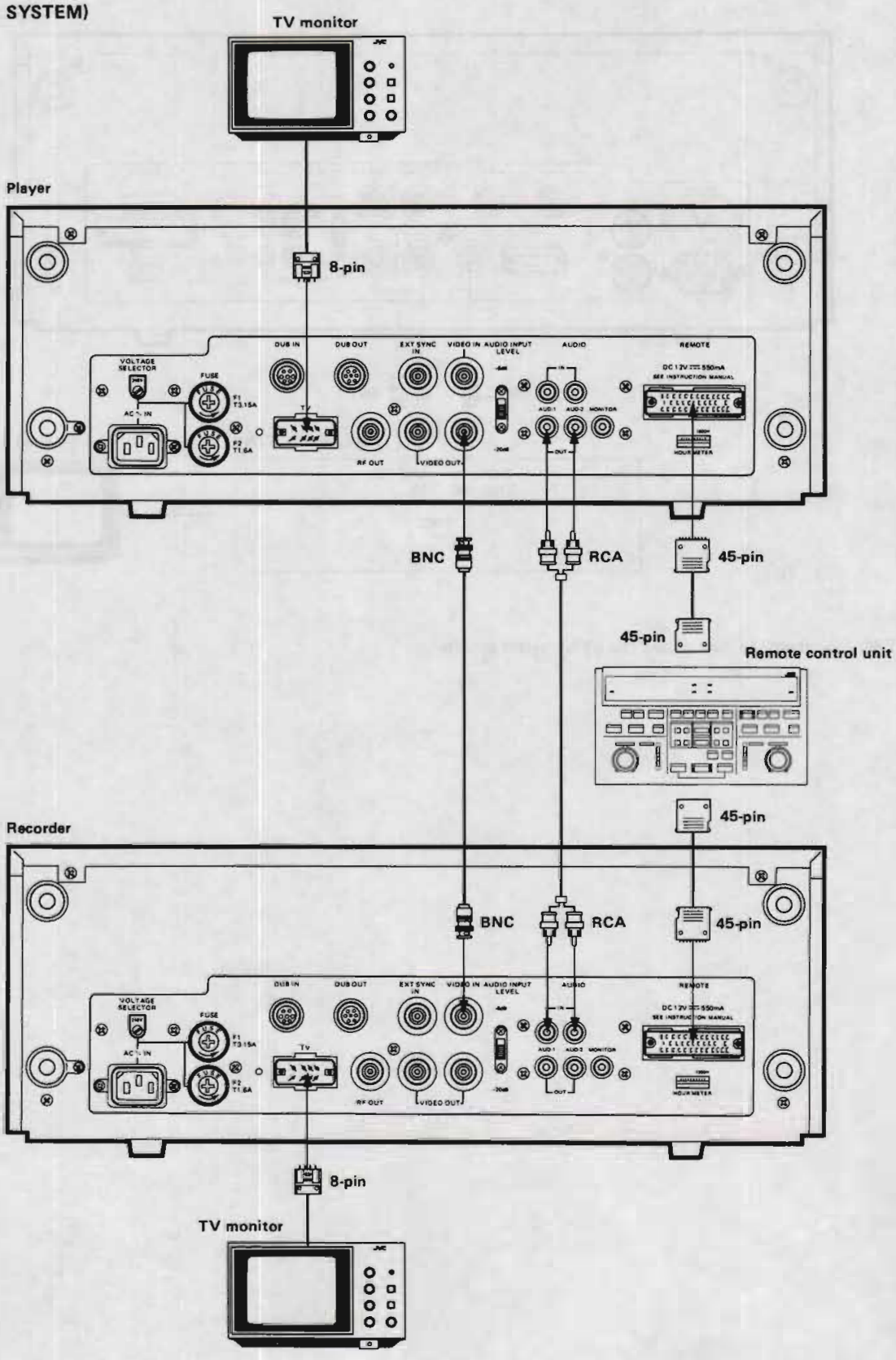
CONNECTION FOR TAPE-TO-TAPE EDITING

(NEW DUB SYSTEM)

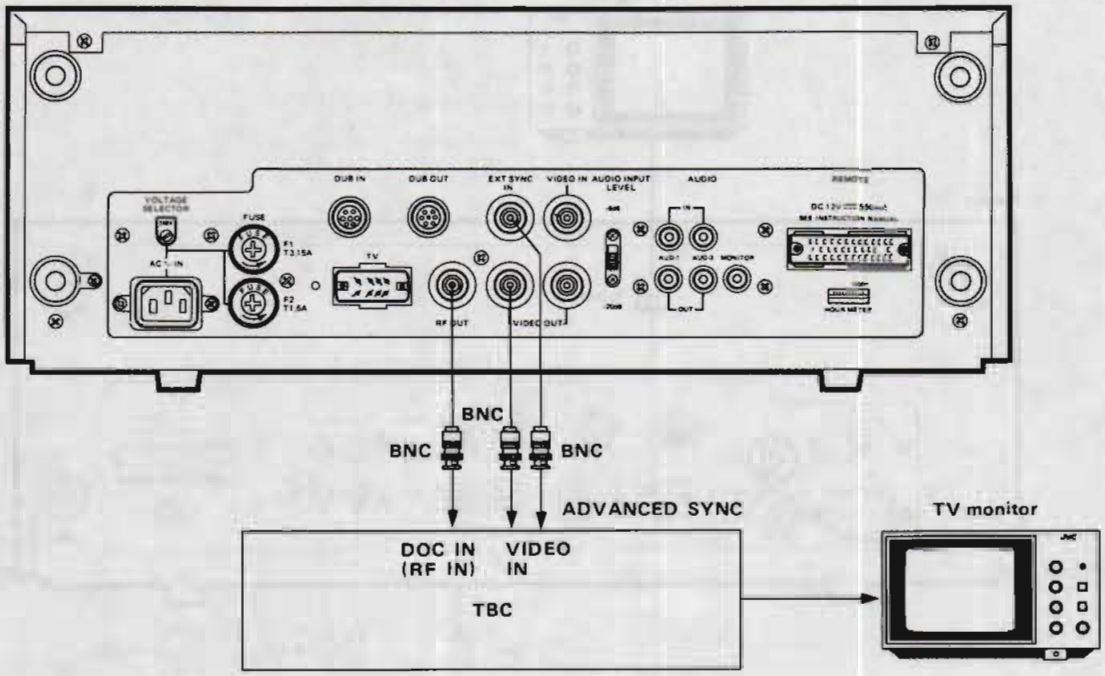


CONNECTION FOR TAPE-TO-TAPE EDITING

(VIDEO DUB SYSTEM)



CONNECTION TO TIME BASE CORRECTOR



With a TBC connected, be sure to set the SYNC select switch to TBC.

LOADING AND UNLOADING A VIDEO CASSETTE

LOADING

❶ Press the POWER button to ON. The EJECT indicator will flash.

❷ After the EJECT indicator stops flashing and remains lit, insert a cassette with its labelled side facing you. The cassette will automatically be retracted and loaded in the correct position.

- With a cassette inserted, the door flap with the ●○ mark appears to indicate "cassette inserted".
- The STOP indicator will flash during automatic loading of the cassette and, when it has been correctly loaded, will remain lit.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- If loading does not result in positioning the cassette correctly, it will automatically be ejected after about 6 seconds.

Note:
After unpacking your new recorder the door flap with the "cassette inserted" mark may be displayed. This is not due to any defect of the unit. Simply insert a cassette. After the first loading/unloading cycle, the door will function properly to show the flap without the mark when no cassette is inserted and the flap with the mark when a cassette is inserted.

UNLOADING

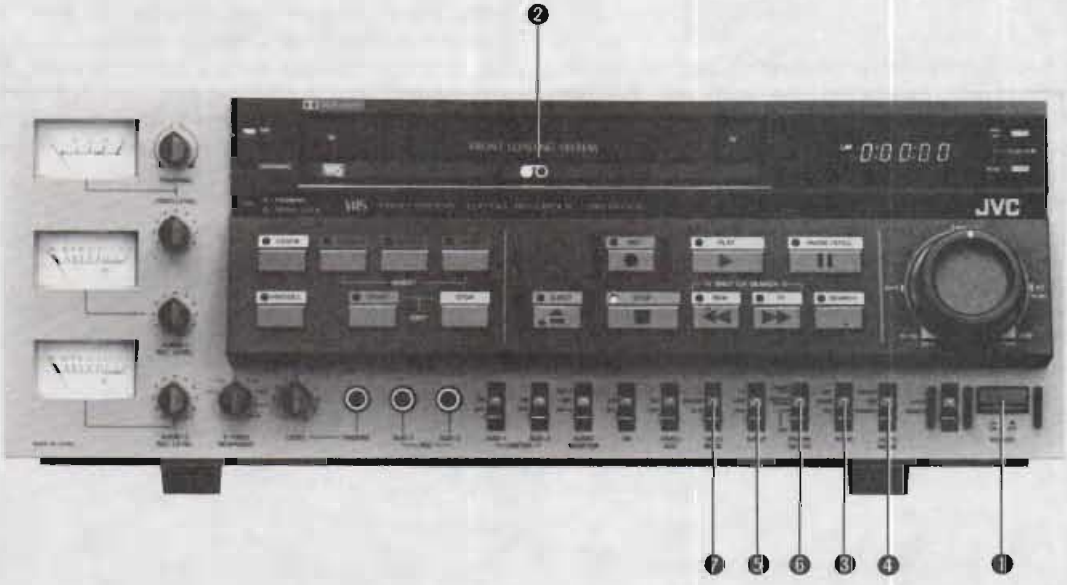
❶ Press the EJECT button in the Stop mode. The cassette will automatically be ejected.

❷ Remove the cassette from the cassette loading slot.

- The EJECT indicator will flash during automatic unloading of the cassette and then remains lit upon completion of ejection.
- The EJECT button can be pressed immediately after the STOP button has been pressed. The logic circuit will memorise the sequence; it will first set the recorder in the Stop mode and then automatically change it to the Eject mode.

PLAYBACK

PREPARATIONS



❶ Press the POWER button to ON.
❷ Insert a pre-recorded video cassette into the cassette loading slot.
❸ Set the SYNC switch to VIDEO.
- If an external sync signal is used, set it to EXT.
- If a TBC is used, set it to TBC.

❹ Set the AUTO MODE switch to OFF.
❺ Set the INPUT select switch to LINE.
❻ Set the FRAME SERVO switch to COLOUR FRAME.
❼ Set the VIDEO MODE switch to COLOUR.
- If the recorded video signal is monochrome, set it to B/W.

Note:
If a video signal is applied to the VIDEO IN connector, playback is locked to this video signal. Therefore, if the sync signal contained in this video signal is not stable, the playback picture will be distorted when the SYNC switch is in the VIDEO position. To use the internal sync mode, disconnect the signal at the VIDEO IN connector.

PLAYBACK

Procedure
1. Press the PLAY button. The tape will start running and the playback picture will appear on the monitor screen.
2. Press the STOP button to stop playback.

Tracking adjustment
When a tape recorded with a different recorder is played back, noise bars may appear or the picture may be blurred. In such a case, turn the TRACKING control to correct the picture while referring to both the monitored picture and the tracking meter (VIDEO LEVEL meter). Optimum tracking is obtained when the meter makes its maximum deflection.
Note:
It is recommended that tracking be checked even when tapes recorded using this unit are played back.

Input monitoring during playback
If you wish to monitor the signal applied to the input connector during playback, press the REC button in the Play mode. The input signal will appear on the monitor screen.
Note:
Do not press the REC and PLAY butfons simultaneously; otherwise the unit enters the Record mode and any recordings on the tape are erased.

DIAL SEARCH & SHUTTLE SEARCH

VARIABLE-SPEED DIAL SEARCH IN BOTH DIRECTIONS

This function is very useful in locating edit points quickly. The search speed is continuously variable between about 1/15 and 5 times normal in both directions. The speed of about 10 times normal is also available when the dial is fully turned in either direction.

1. Turn the search dial until the desired search speed is reached.
   - The STILL position (centre click-stop) provides a still picture.
   - Turn the dial clockwise to search in the forward direction; counterclockwise to search in the reverse direction.
   - The X1 click-stop provides normal speed in the forward direction and X-1 gives normal speed in the reverse direction.
   - There is another click-stop between X1 and X10 and between X-1 and X-10. This is the position for the 5 times normal speed.
   - The fully clockwise or counterclockwise position corresponds to the maximum search speed of about 10 times normal.
2. To cancel the adjusted speed, simply press the PLAY, PAUSE/STILL, REW, FF or STOP button, depending on the mode to be entered next. The dial setting remains unchanged.
   - To enter the dial search mode again, press the SEARCH button. The speed corresponding to the dial setting will be restored instantly.

Notes:

- While in the Search mode, an extra pair of video heads operate and pick up only odd-number fields of the picture. When the dial is set to X1 or X-1, frame playback is engaged.
- If the Still mode continues for too long a time, the tape could be damaged. Therefore, if you leave the unit in the Still mode for more than about 3 minutes 45 seconds, the video track being traced will shift automatically.
- The search dial does not function for about 2 seconds after the REMOTE/LOCAL switch is reset to REMOTE.

SHUTTLE SEARCH & REW/FF

When the REW or FF SHUTTLE SEARCH button is pressed in the Stop mode, normal rewind or fast forward takes place. When these buttons are pressed in the Play, Search or Still mode, the tape runs at about 10 times normal speed in the corresponding direction. The buttons can be locked and the indicator lights. You can follow the speeded-up picture on the monitor screen.

Note:

The tape counter on the RM-86U remote controller does not function in the normal rewind and fast forward modes.

REPEAT PLAYBACK, COUNTER SEARCH & AUTO REWIND

REPEAT PLAYBACK

When the entire tape, from the beginning to the end, is to be repeated, proceed as follows:

1. Set the AUTO MODE switch to REPEAT.
2. Press the PLAY button to start playback.
   - When the tape reaches its end, it is rewound to the beginning and then played back again automatically. The procedure is repeated as many times as desired.

COUNTER SEARCH

The counter search mechanism functions in conjunction with the tape counter and stops the tape automatically in the Rewind or Fast Forward mode at the counter reading of "0".

1. Change the display to the tape counter mode by pressing the TAPE/LAP button.
2. Press the COUNTER RESET button at a point which you may wish to locate later.
3. Set the AUTO MODE switch to MEMORY.
4. Press the REW or FF button when you need to return to the designated point. The tape will stop automatically at the counter reading of "0".

Notes:

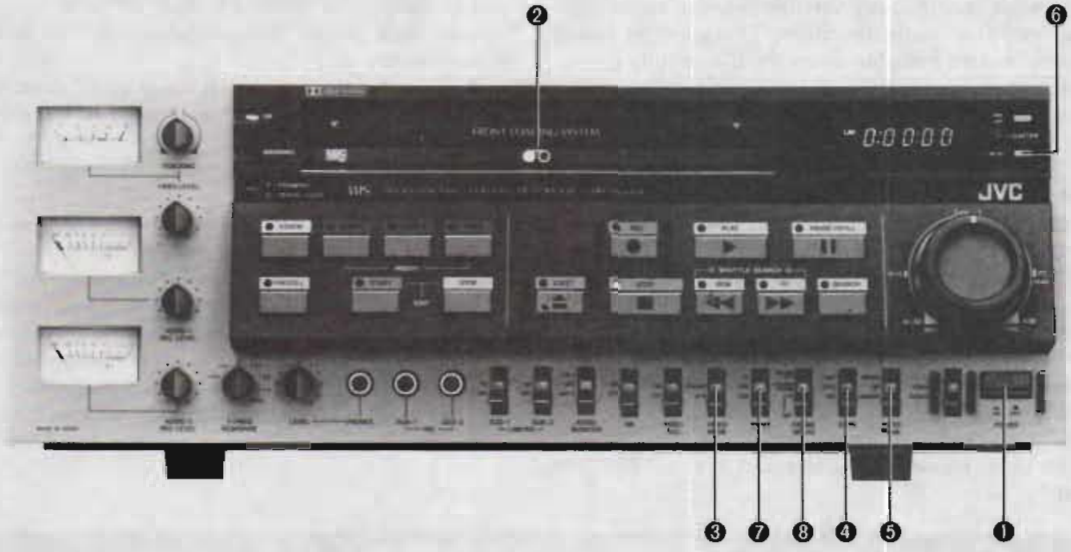
- The counter search mechanism does not function in the Shuttle Search mode.
- The tape may stop at a position slightly deviated from the counter reading of "0".

AUTO REWIND

When the tape reaches its end in the Play or Record mode, it is automatically rewound to the beginning and then the Stop mode is engaged. The counter search mechanism functions automatically while the tape is being rewound. If the tape reaches its end in the Fast Forward mode, the auto rewind mechanism does not function and the Stop mode is engaged immediately.

RECORDING

PREPARATIONS



❶ Press the POWER button to ON.
❷ Insert a video cassette into the cassette loading slot.
❸ Set the VIDEO MODE switch to COLOUR.
- If the input video signal is monochrome, set it to B/W.

❹ Set the SYNC switch to VIDEO.
- If an external sync signal is used, set it to EXT.
- If a TBC is used, set it to TBC.

❺ Set the AUTO MODE switch to OFF.
❻ Reset the tape counter by pressing the COUNTER RESET button.
❼ Set the INPUT select switch as required.

TV: To record signals from the TV monitor connected to the 8-pin TV connector. The audio signal will be recorded on the audio-1 track.

LINE: To record the video signal from a source connected to the VIDEO IN connector together with the audio signals from the AUDIO IN AUD-1 and AUD-2 connectors or the MIC AUD-1 and AUD-2 jacks.

DUB: To record the video signal from a source connected to the DUB IN connector together with the audio signals from the AUDIO IN AUD-1 and AUD-2 connectors or the MIC AUD-1 and AUD-2 jacks.

- If a microphone is connected to either MIC jack, the input from the corresponding AUDIO IN connector is automatically switched off.

❽ Set the FRAME SERVO switch to COLOUR FRAME or FRAME, depending on the source material.
- It is recommended that this switch be set to OFF when you record from a tape whose playback picture has an inferior S/N ratio, a more than third-generation copy, a tape recorded using a random-interlaced ITV camera or a tape edited using another manufacturer's editor.
- If the DUB mode is applied when editing from a tape not recorded in the frame servo mode, problems such as colour flashing might occur. In this case, use the LINE mode.
- In editing, tapes recorded in the frame servo mode should be used for both the recorder and player, whenever possible.

RECORDING LEVEL ADJUSTMENTS

Video level adjustment

- For automatic level control, set the VIDEO AGC switch to ON.
- For manual level control, set the VIDEO AGC to OFF and turn the VIDEO LEVEL control so that the VIDEO meter deflects into the green zone while applying the video signal to be recorded.

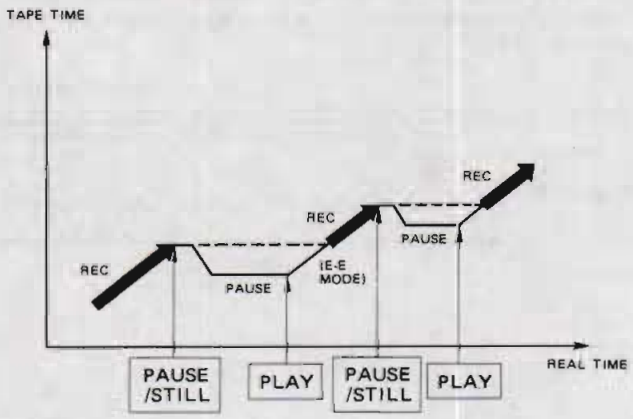
Audio level adjustment

- Set the AUDIO INPUT LEVEL switch, on the rear panel, depending on the input signal level.
- Turn the AUDIO REC LEVEL control until the AUDIO meter deflects to "0" with the loudest signal. This is the standard adjustment of the audio recording level.
- Set the LIMITER switch to ON to avoid eventual over-level recordings.

RECORDING

1. Press the REC and PLAY buttons simultaneously. The Record mode will be engaged and both the REC and PLAY indicators will light.
2. Press the STOP button to stop recording.

RECORD PAUSE & ASSEMBLE RECORDINGS



Recording can be stopped temporarily and restarted without detectable distortion in the picture.

1. Press the PAUSE/STILL button during recording. Recording will be stopped with the REC indicator still lit. The tape is automatically rewound by about 2.4 seconds of programme time and stops in the Record Pause mode with both the REC and PAUSE/STILL indicators lit. The E-E picture will appear on the screen. When the PAUSE/STILL button is pressed again in this state, the picture recorded immediately before can be seen as a still picture.
   - If recording is restarted immediately after the still picture appears, the top portion of the picture at the edit point may be skewed.
2. To restart recording, press the PLAY button. The tape will be played back for about 2.4 seconds (the picture on the screen is not the playback picture, but the input signal to be recorded) and the mode will switch automatically from playback to recording at the point where the PAUSE/STILL button was pressed.

REFERENCE SYNC SIGNALS FOR RECORDING AND PLAYBACK

The reference sync signal for the servo systems during recording and playback differs as illustrated below, depending on the setting of the SYNC select switch and the presence of the signals applied to the input terminals.

Presence of input signal / SYNC SELECT switch position		EXT	VIDEO	TBC
EXT SYNC IN	VIDEO IN			
O	O	EXT	VIDEO	EXT
O	X	EXT	EXT	EXT
X	O	VIDEO	VIDEO	VIDEO
X	X	INT	INT	INT

O : Input signal present X : No input signal

INPUT SELECT switch → LINE

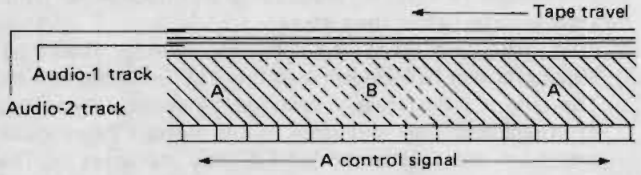
ELECTRONIC EDITING

TYPES OF ELECTRONIC EDITING

Electronic editing includes two different types of functions; insert editing and assemble editing. The signals to be inserted of assembled can be camera signals, TV broadcast signals or playback signals from a video cassette recorder.

Insert editing

Insert editing is a technique for replacing part of the recorded video and/or audio signals with new recordings, utilising the control signals already recorded.



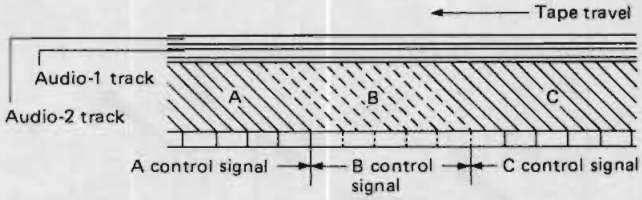
In the Insert Edit mode, the video, audio-1 and audio-2 signals can be recorded separately or in any combination. This means you can edit both video and audio signals simultaneously or first edit the video signal and then the audio signals in accordance with the newly recorded video signal. Or you can edit the audio signals first and then record new images in accordance with the sound.

Note:

Insert editing should be applied to those tape segments on which the video and control signals have been correctly recorded in advance.

Assemble editing

Assemble editing is a technique to edit a full-length tape in which video and audio signals together with the control signal are newly recorded following an already recorded control signal. This is convenient for editing short scenes one after another.



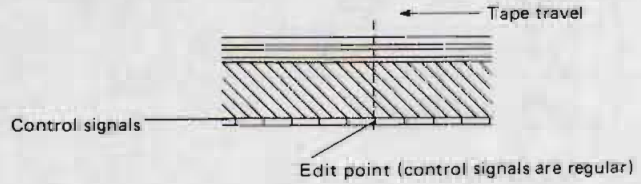
MECHANISMS FOR ENHANCING EDITING ACCURACY

The BR-8600E is fully equipped for high-accuracy electronic editing.

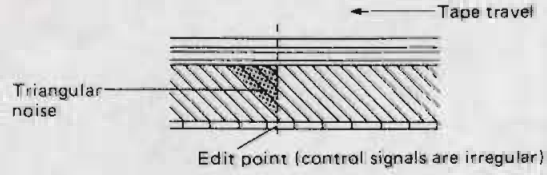
Rotary erase mechanism

The rotary erase mechanism is essential for quality edits. A pair of erase heads are mounted on the head drum, each before a corresponding video head, and, in both insert and assemble editing, these erase heads erase the recorded signal on each track before the video heads record new signals. Unlike home-use editing mechanisms using a fixed erase head which allow new recordings over old ones and result in triangular noise, the rotary erase mechanism provides cleaner edits free from noticeable distortion. It also enables separate use of the video, audio-1 and audio-2 tracks for flexible editing.

Electronic editing



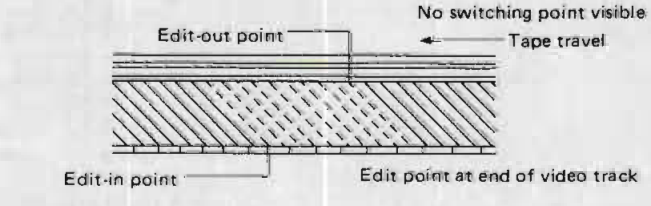
Editing with fixed erase head



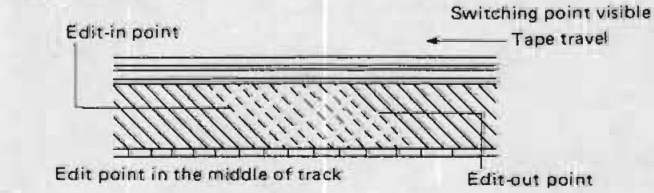
Blanking switcher mechanism

The rotary erase mechanism cannot provide perfect edits on its own. If editing is started in the middle of one video track, a switching point will be noticeable on the screen momentarily. To avoid this, the blanking switcher mechanism controls editing so that the switching point always falls on the blanking period of the video signal (during this period, switching from one track to another takes place in perfect synchronization outside the raster). Because the signal is not visible on the screen during the blanking period, there is no distortion at edit points.

Blanking switcher editing



Ordinary editing



ASSEMBLE EDITING

- Press the POWER button to ON and load a video cassette correctly.

❶ Set the VIDEO MODE switch to COLOUR.
- For other settings, refer to page 15.

❷ Set the SYNC switch to VIDEO.
- For other settings, refer to page 15.

❸ Set the INPUT select switch as required.
- Refer to page 15.

❹ Press the ASSEMBLE button to ON.

❺ Press the PLAY button to start playback.

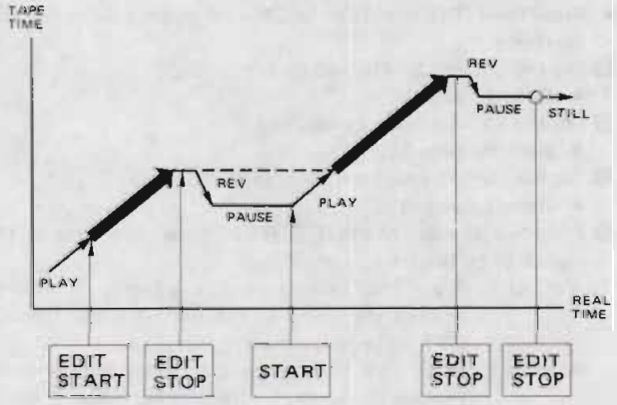
❻ Press the EDIT START button at the point where you wish to introduce new programme material. The video and audio signals are all recorded simultaneously.

❼ Press the EDIT STOP button to stop assemble editing. This cancels recording and rewinds the tape for about 10 seconds of programme time and stops. The Record Pause mode has been engaged and the PREROLL indicator lights.

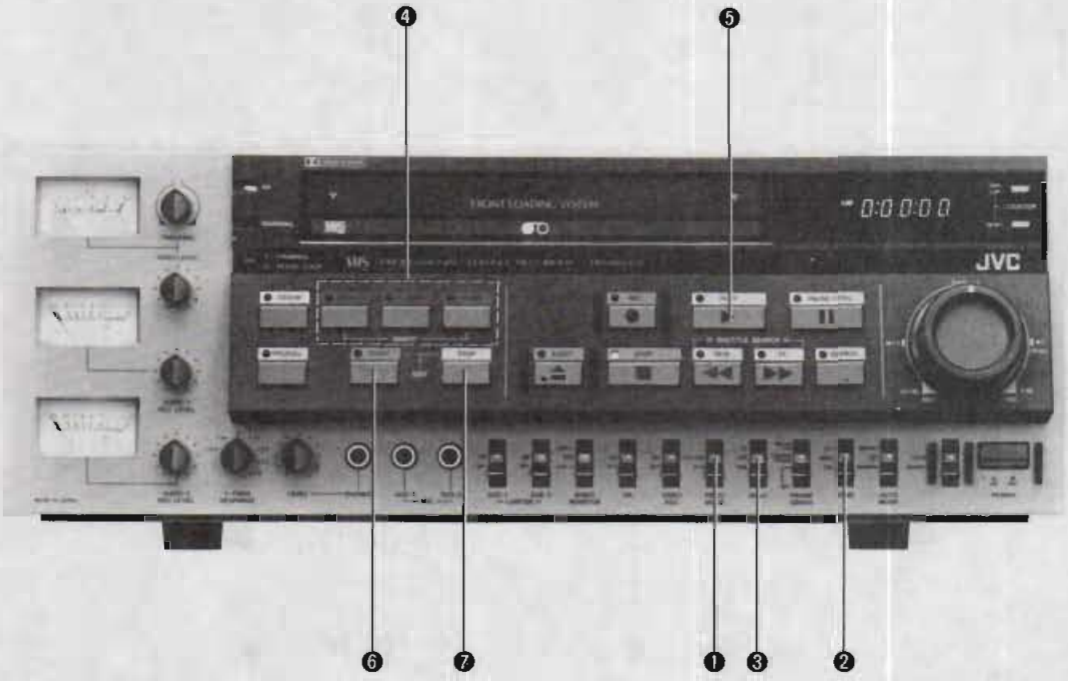
❽ To assemble more programme material following the previous edit, press the EDIT START button. First the Play mode is entered and, when playback proceeds to the point where the previous edit ended, recording of the new programme material begins automatically.

❾ Assembling of successive programme segments can be continued simply by pressing the EDIT STOP and the EDIT START buttons alternately.

❿ To cancel the Record Pause mode after completion of the assemble editing process, press either the PLAY button or the EDIT STOP button.



INSERT EDITING



- Press the POWER button to ON and insert a video cassette correctly.

❶ Set the VIDEO MODE switch as required.
- Refer to page 15.

❷ Set the SYNC switch as required.
- Refer to page 15.

❸ Set the INPUT select switch as required.
- Refer to page 15.

❹ Press one or more of the INSERT buttons depending on the signals to be inserted.

AUDIO-1: Press this button to ON when you wish to replace the sound on the audio-1 track. Leave it OFF to preserve the original sound.

AUDIO-2: Press this button to ON when you wish to replace the sound on the audio-2 track. Leave it OFF to preserve the original sound.

VIDEO: Press this button to ON to replace the video signal with new material. Leave it OFF to preserve the original picture.

❺ Press the PLAY button to start playback.

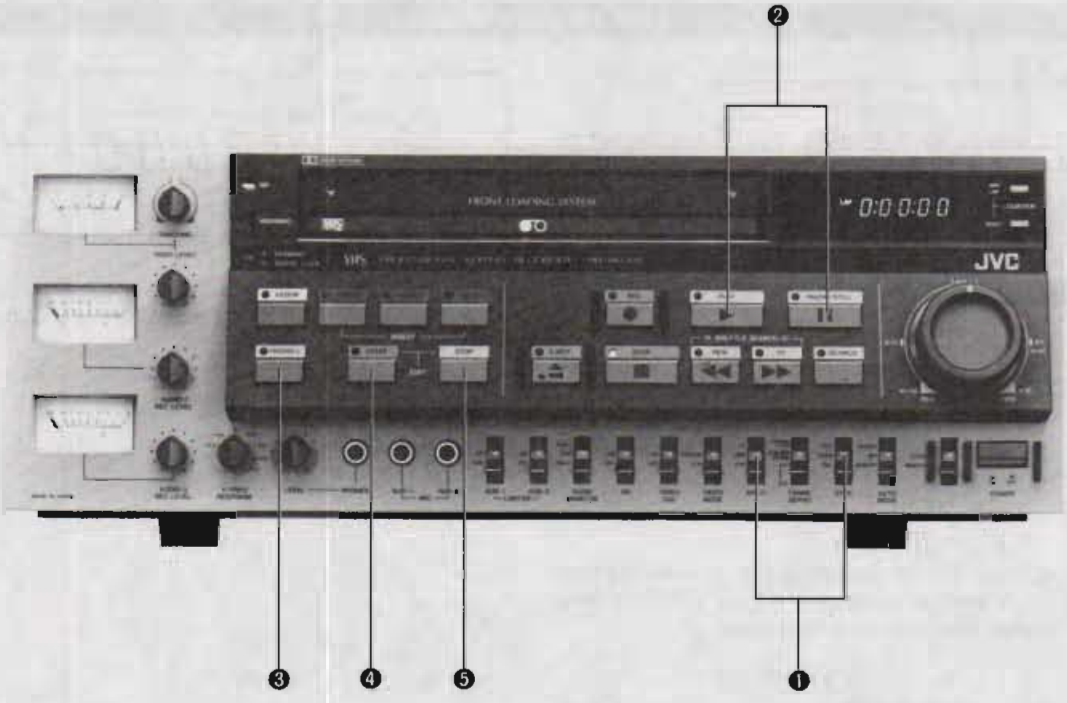
❻ Press the EDIT START button at the point where you wish to insert new programme material. Recording will take place only for the channels which have been selected with the INSERT buttons.

Note: The INSERT buttons (VIDEO, AUDIO-1 and AUDIO-2) can be switched ON or OFF independently at any time while in the Insert Edit mode.

❼ To stop insert editing, press the EDIT STOP button. The recorder will enter the Play mode.

Notes:
- Insert editing is not possible with tapes without correctly recorded control signals.
- Insert editing will stop automatically if a tape segment without correctly recorded control signals is reached.

PREROLL EDITING



This function enables edit-in points to be determined accurately in both the Assemble and Insert Edit modes.

- Press the POWER button to ON and insert a video cassette correctly.

❶ Set the SYNC and INPUT switches as required.

❷ Press the PLAY button to start playback and determine the edit-in point by using the search functions (see page 14). Press the PAUSE/STILL button at the edit-in point.

❸ Press the PREROLL button. The tape will be rewound by about 10 seconds of programme time and stop in the Pause mode. The PREROLL indicator will light to show that you are ready to start editing.

❹ Press the EDIT START button. First the Play mode is engaged and then the recorder automatically switches to the Record mode at the predetermined edit-in point. The PLAY indicator will light.

❺ To stop editing, press the EDIT STOP button.

- In the Insert Edit mode, the Play mode will be entered.
- In the Assemble Edit mode, the Record Pause mode will be entered.

DETERMINING EDIT-OUT POINTS

The BR-8600E permits edit-out points to be determined using the tape counter.

1. Press the TAPE/LAP button to engage the Tape Counter mode.
2. Press the PLAY button to start playback and press the COUNTER RESET button at a point you want to stop editing.
3. Set the AUTO MODE switch to MEMORY.
4. Rewind the tape and start editing (assemble, insert or preroll editing).
5. Editing will stop automatically at the point where the tape counter was reset to "0".
   - In the Insert Edit mode, the Play mode will be entered.
   - In the Assemble Edit mode, the Record Pause mode will be entered.

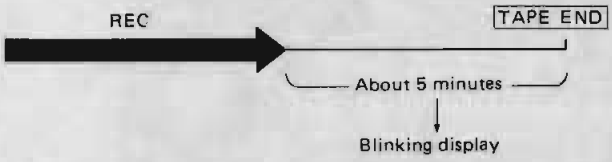
Note:
The edit-out point may deviate from the counter reading of "0" by a few frames.

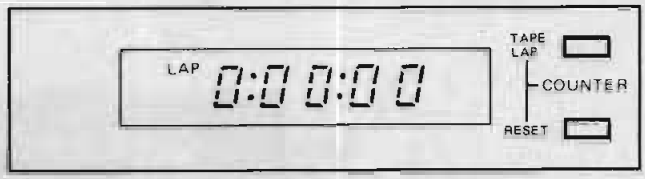
WARNING INDICATORS

TAPE END WARNING

Tape end warning is given only during recording.

- The counter display starts blinking about 5 minutes before the end of the tape during recording.

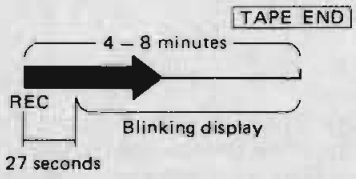




Notes:

- The timing of tape end warning differs slightly, depending on the type of cassette.
- With an EC-30 compact video cassette (in its adapter), tape end warning does not function.

- If recording is started with a cassette with a remaining tape time of only 5 minutes or so, the display starts blinking about 27 seconds after recording has started.



MALFUNCTION WARNING

The WARNING indicator shows several different malfunctions by different blinking intervals.

If it blinks **with an interval of 0.6 sec,**

- there may be something wrong with the tape transport, or
- the head drum is not rotating.

If it blinks **with an interval of about 1.3 sec,**

- the tape cannot be unloaded, or
- the tape end sensor lamp has blown.

If it blinks **with an interval of 0.8 sec,**

- there is condensation inside the recorder, or
- a tape recorded in the LP mode is played back.

Other warnings

- If tape loading cannot be completed within 5 seconds, tape unloading takes place.
- If the cassette cannot be ejected within 7 seconds, the eject mechanism stops operating.

SPECIFICATIONS

GENERAL

Format	: VHS 1/2" (12.7 mm) PAL standard
Power requirement	: 100/120/220/240 V AC, 50/60 Hz
Power consumption	: 80 watts (Max. 90 watts with the Automatic Editing Control Unit, 12 V DC, 550 mA)
Dimensions	: 44.0(W) x 16.5(H) x 43.0(D) cm
Weight	: 19 kg
Operating temperature	: 5°C to 40°C
Storage temperature	: -20°C to 60°C
Tape speed	: 23.39 mm/sec
Recording & Playback time	: Max. 180 min. with JVC E-180
Fast forward/rewind time	: Less than 4.5 min.
Wow and flutter	: Less than 0.3 % rms
Search speed	: Shuttle FWD/REV ±10X Variable 0 – ±5X, ±10X

VIDEO

Recording & Playback system	: Rotary two-head helical scanning system Luminance: FM recording Colour signal: Phase shift, converted subcarrier direct recording
Video signal system	: PAL-type colour signal
Input	: Line/TV 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	: Line/TV 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	: 45 dB (Rohde and Schwarz noise meter)
Dubbing system	: Y-629
Horizontal resolution	: Monochrome: 300 lines, Colour: 250 lines
Sync input	: 4 +0/-3 Vp-p, 75 ohms, unbalanced
Input select	: TV/LINE/DUB
Sync select	: EXT/VIDEO/TBC

AUDIO

Input	Line	: -6/-20 dBs (selectable), 10 k-ohms, unbalanced (CH-1/CH-2)
	Mic	: -70 to -60 dBm, 600 ohms, unbalanced
	TV	: -20 dBs, 10 k-ohms, unbalanced
Output	Line	: -6 dBs, low impedance, unbalanced
	Monitor	: 0 dBs, low impedance, unbalanced (CH-1/MIX/CH-2)
	Headphone	: Variable, 8 to 300 ohms, unbalanced
	TV	: 0 dBs, low impedance, unbalanced
Signal-to-noise ratio		: 48 dB (NR-on), 43 dB (NR-off) (at 3 % distortion level)
Frequency response		: 40 to 12,000 Hz
Input select		: TV/LINE/DUB
Monitor output select		: CH-1/MIX/CH-2

CONNECTORS

Video	
Line input/output	: BNC-type connectors
Dub input/output	: 7-pin connector
RF output	: BNC-type connector
SYNC input	: BNC-type connector
TV input/output	: EIAJ 8-pin TV connector
Audio	
Line input/output	: RCA-type pin jacks
Mic	: 6 mm jacks
Monitor out	: RCA-type pin jack
Headphone	: 6 mm jack
Remote control	: 45-pin connector
AC In	: 3-wire IEC AC connector
Accessories	: Dubbing cable, monitor cable, dust cover

Design and specifications subject to change without notice.