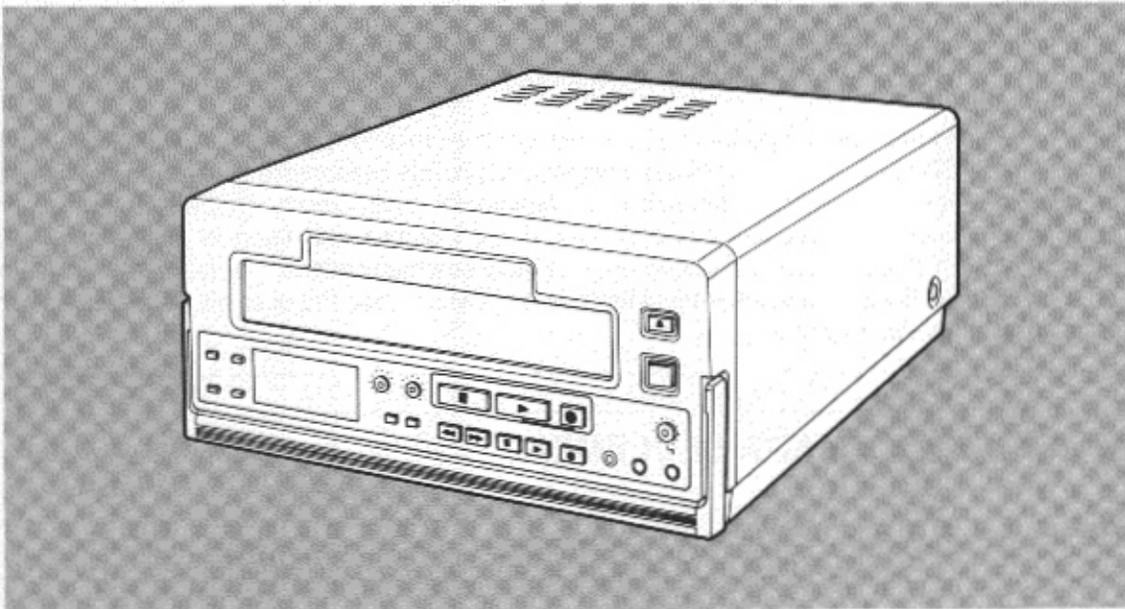# Operating Instructions

Panasonic **S VHS**
Professional/Industrial Video

Model AG-**5700**-P -K

Hi-Fi Video Cassette Recorder

Before attempting to connect, operate or adjust this product, please read these instructions completely.

Contents

Inspection

Standard Accessory

After removing the unit from its box, check to be sure it has not sustained any damage. Also check to see that you have the following accessory.
• S-VIDEO Cable (4P)

Optional Accessories

• Remote Controller, AG-A11
• Video Cassette Tape
• RS-232C Cable

Features

Recording and playback up to 2 or 6 hours
Using a 1/2" inch VHS or S-VHS cassette tape, you can record or playback in 2-hour or 6-hour mode.

Recording and playback in the S-VHS mode
With this unit, it is available to playback and record S-VHS cassette tape.

Illuminated buttons
The REC, PLAY and STOP buttons will light up when pressed.

Hi-Fi audio

Compact and light weight

Remote controlling by a computer
Conncting this unit to a computer via an RS-232C cable will allow remote control from the computer.

Sensor recording
• This unit is equipped with the "SENSOR REC" function. When a video signal transmitted from a satellite is inputted, the unit will turn ON automatically and set to the recording mode.
(This unit is equipped with automatic power ON/OFF function.)

Speedy Mechanism
The following operations start instantly after the corresponding buttons are pressed.)
• Playback operation
• FF/REW operations
• Switching from search forward playback to search reverseplayback, and vice versa.

Repeat playback
Repeat playback can be performed from tape beginning to its end or from tape beginning to interruption of the video signal.

Search playback
Locating any desired scene or position on the tape is made easy and fast by watching the tape being played back at about 7 times (2H mode) and 11 times (6H mode) normal speed in forward or reverse direction.

High speed VISS (VHS Index Search System) Automatic Search
During playback, if a VISS signal has been recorded at the beginning of an event, the scene can be searched and then played back automatically.

Clear picture in still and slow-motion modes

Audio dubbing
Audio dubbing can be performed onto the normal audio of the prerecorded tape.

Video Insert
Video insert (including FM audio insert) is available by the control signals from the RS-232C remote control connector.

Automatic playback/ejection
When the cassette tape is inserted in the auto play mode, playback starts automatically.
When the stop button is pressed, the tape rewound to its beginning and can be ejected automatically.

Cassette tape insertion/ejection in power OFF mode
Cassette tape insertion and ejection can be performed even when the power has been turned OFF.

Auto power ON
Power is turned ON automatically when the cassette tape is inserted in the unit.

Remote operation
Using an optional remote controller AG-A11, you can operate the unit about 5 meters away from the unit.

Controls

Front
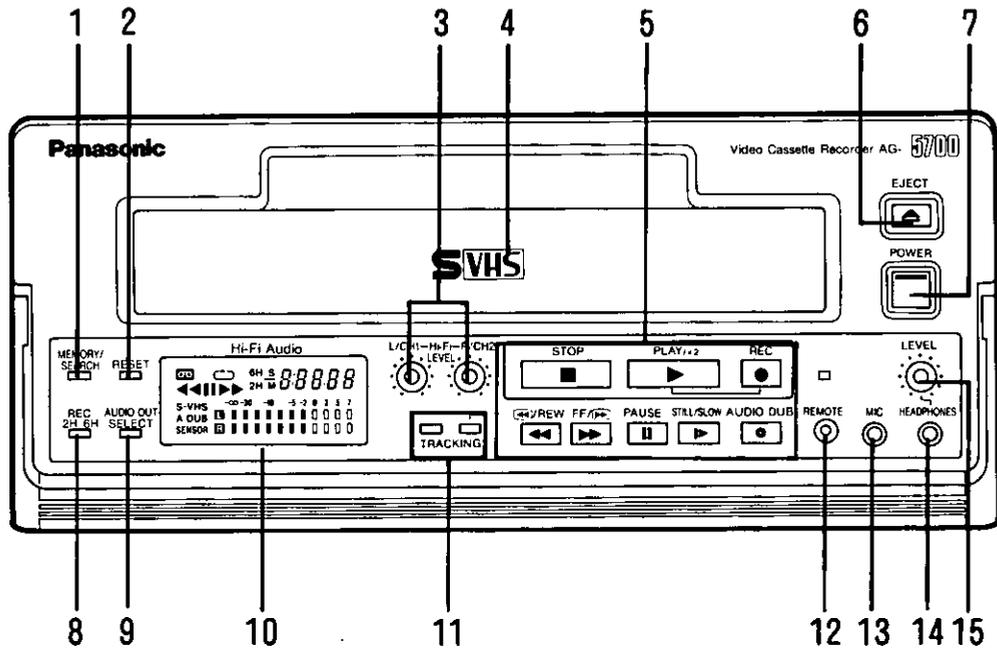
No.	Name	Page	No.	Name	Page
1	Memory/Search Button	10	8	Recording Mode Selector	7~9
2	Reset Button	10	9	Audio Monitor Output Selector	8
3	Hi-Fi Audio CH1/CH2 Level Controls	7	10	Counter/Audio Level Meters	7~10
4	Cassette Holder	—	11	Tracking Buttons	8~9
5	Operation Buttons STOP, PLAY, REC, REW, FF, PAUSE, STILL/SLOW, AUDIO DUB	7~12	12	Remote Jack (Mini-Jack)	14
			13	Microphone Jack	7, 13
6	Eject Button	—	14	Headphone Jack (Mini-Jack)	7
7	Power Switch	—	15	Headphone Level Control	7

Rear
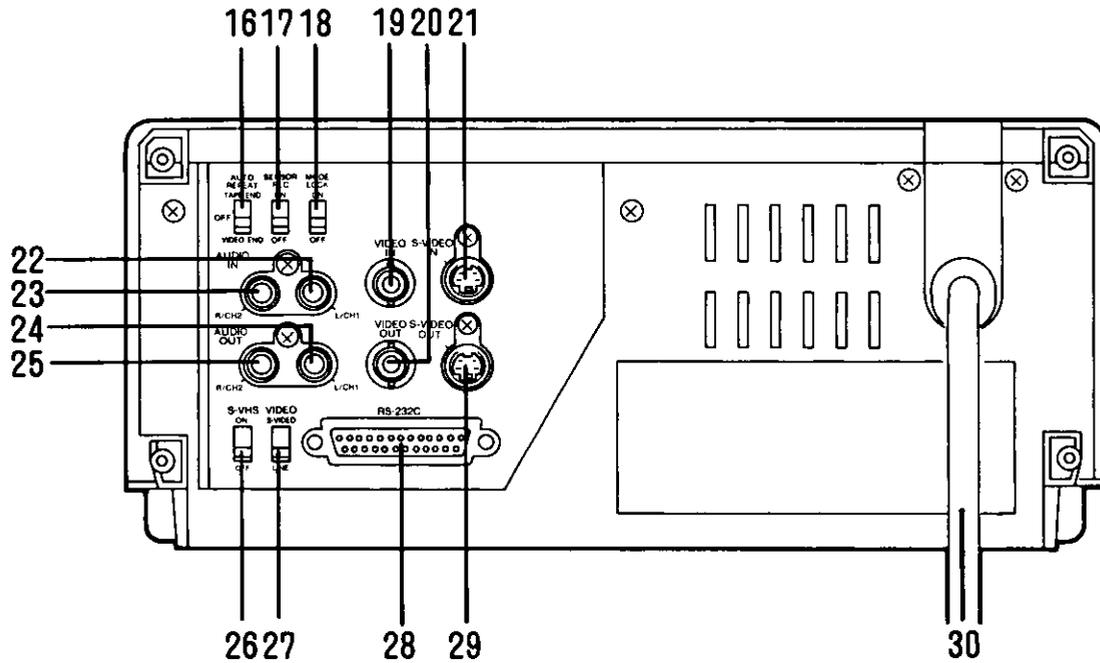
No.	Name	Page	No.	Name	Page
16	Auto Repeat Switch	11	24	Audio L/CH1 OUT Connector (PHONO)	—
17	Sensor Recording Switch	12	25	Audio R/CH2 OUT Connector (PHONO)	—
18	Mode Lock Switch	8	26	S-VHS Selector	7
19	VIDEO IN Connector (BNC)	7	27	Video Selector	7
20	VIDEO OUT Connector (BNC)	—	28	RS-232C Remote Control Connector	14
21	S-VIDEO IN Connector (BNC)	7	29	S-VIDEO OUT Connector	—
22	Audio L/CH1 IN Connector (PHONO)	7, 13	30	Power Cord	—
23	Audio R/CH2 IN Connector (PHONO)	7, 13			

Recording

— Video signal
— Audio signals

CH Audio Input	Hi-Fi	Normal
L/CH1	L/CH1*¹	L/CH1
R/CH2	R/CH2*²	R/CH2
L/CH1 & R/CH2	Stereo (L/CH1 & R/CH2)	Mixed Audio (L/CH1 & R/CH2)

Audio Signals are recorded as described on the table.
*1: Audio L/CH1 is recorded on both L/CH1 and R/CH2.
*2: Audio R/CH2 is recorded on R/CH2 only.

Microphone
(audio recorded as Hi-Fi audio and normal audio)

Note:
If connections are made both to the MIC and audio jacks, the microphone takes precedence.

Audio Monitoring

When using head-phones, you can adjust the volume using this control. To reduce the audio level, move the control to the left, and vice versa.

• Use headphones. (mini plug)
• If you use high impedance head-phones, the audio level may change.

Preparations

• Load the pre-recorded cassette tape. (Check that the tab on the cassette to prevent accidental erasure is still intact.) The STOP Button and the cassette IN indicator " 💿 " (in the counter) will light up.
• Set the S-VHS Selector and the Video Selector on the rear panel to the desired position.
• Select the desired tape speed (2H or 6H) with the Recording Mode Selector.

Audio Level Adjustment (Hi-Fi sound only)
The audio level can be adjusted only for Hi-Fi audio. Adjust the Hi-Fi Audio Level Controls so that the audio level meter indication is set to around 5 (so that the 7 level is not exceeded).
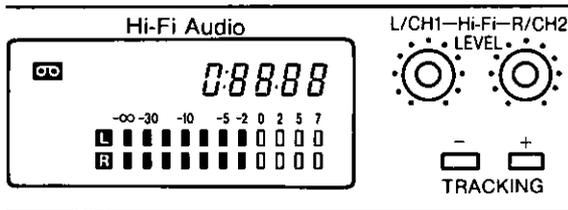
Operation

Recording starts when the REC and PLAY Buttons are pressed together.
• A cassette tape without its accidental erasure prevention tab will be ejected. Use a tape with its tab intact. When the PAUSE Button is used, the sequence of operation is as follows.

❶ Play back the tape and find the location which is to be recorded. Then press the PAUSE Button. The PAUSE indicator will appear on the tape counter and VTR is set to the playback pause mode.

❷ Press the REC and PLAY Buttons together. The REC Lamp now comes on and the VTR is set to the recording pause mode.

❸ When the PAUSE Button is pressed again, the VTR is released from the pause mode and recording begins.

Stopping Recording
Press the STOP Button.

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Playback

Preparations
- Press the Power Switch to ON.
- Be sure that the Mode Lock Switch is OFF.
- Be sure that the Auto Repeat Switch is OFF.
- Insert a recorded tape.
  The STOP Button and the cassette IN indicator " ▣ " (in the counter) will light up.
- Turn TV ON.

Audio Monitor Output Selector
Set the Audio Monitor Output Selector to the desired position.
When this unit is turned ON, the Hi-Fi mode is automatically selected. Each time you press the Audio Monitor Output Selector, the audio output mode will change as follows:

Hi-Fi → L CH → R CH → No indication(Linear)

Note:
In still and audio dubbing pause mode, the audio output mode will automatically switch to linear (no indication) no matter which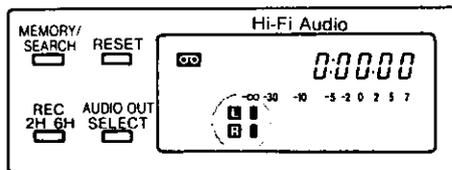 mode is selected. However, when the above mentioned modes are released, the audio output mode will return to the previous selected mode.

Mode Lock Switch
This switch makes it impossible to operate the switches on the front panel.. When it is set to ON, all the switches on the front panel do not function. However, operation is available using the wired remote controller or the RS-232C remote control signal even if the Mode Lock Switch is set to ON.

Normal Playback

Press the Play Button. Play Lamp lights and playback will start.
As this unit is equipped with the digital automatic tracking function, normally adjustment is unnecessary. If noise partially appears in the playback picture as shown below, press the Tracking " + " and " – " Buttons simultaneously to reduce the noise.

Precautions
If you leave this unit near a monitor television, interference from the monitor television may cause noise to get into the audio circuit. Be sure, therefore, to keep the unit a suitable distance (at least 20 cm) away from a monitor television.

Double-speed Playback

Press the PLAY Button during normal playback. The playback picture can be viewed at about twice normal playback speed. To return to normal playback, press the PLAY Button.

Slow Motion Playback

Press the SLOW Button during playback. The playback picture can be viewed at a lower speed. Each time you press the STILL/SLOW button, the unit will run at one of the slow motion speeds shown below. To return to normal playback, press the PLAY Button.

Normal Speed→ Still→ 1/30→ 1/20→ 1/10→ 1/7→ 1/6

- If slow motion playback continues for over 5 minutes, the unit will go into the stop mode automatically.
- No sound is heard during slow motion playback.

Rewind and Fast Forward the tape

When the unit is in stop mode:
Press the Rewind (REW) Button to rewind the tape.
Press the Fast Forward (FF) Button to move the tape forward rapidly.

Search Playback

• When the FF Button is held down while the unit is in the playback, slow motion playback or still, the tape will be played back in the forward direction at about 7 times (2H mode) or 11 times (6H mode) normal speed.
• When the Rewind Button is held down while the unit is in the playback, slow motion playback or still, the tape will be played back in the reverse direction at about 7 times (2H mode) or 11 times (6H mode) normal speed.

When the Memory/Search Button is pressed and "S" display appears in the counter, search forward or reverse playback can be obtained without keeping the FF or REW Button depressed.
• To release the Search Forward/Reverse manually, see page 10, section "Search".
• If this function is maintained for more than 10 minutes, the unit automatically returns to the previous mode.
• No sound is heard during SEARCH mode.
• Color program may be played back in Black and White or playback image may be dark during SEARCH mode, but this is not a malfunction.
• A skew may occur on the picture during SEARCH mode, but this is not a malfunction.
• When the picture rolls vertically in the SEARCH mode, adjust the vertical hold control on the TV set.

Still Playback

Press the Pause Button during normal playback or during slow motion playback. Press the Pause Button once again to resume normal playback.
• If noise appears during still playback, set for slow motion mode and adjust with the Tracking Buttons (either "+" or "–") to minimize the bands of noise as shown below, then press the Pause Button.

TRACKING

• If still playback continues for more than 5 minutes, the unit will go into the stop mode automatically.
• A distortion may occur on the picture during STILL mode, but this is not a malfunction.
• No sound is heard during STILL mode.
• Color program may be played back in Black and White or playback image may be dark during STILL mode, but this is not a malfunction.

After Finishing Playback

Press the Stop Button to stop the playback.

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Counter

Memory/Search Button
OFF

Press

Press

Press

Press

(Memory Stop Display)

(Search Display)

* Search Display is indicated only when the cassette tape is inserted.

Memory Stop

When the Memory/Search Button is pressed and the "M" display lights on the counter, the tape can be stopped near counter digit "0000" during FF or REW modes.

Press until "M" will appear.

/REW   FF/

— or —

Press   Press

Auto Stop near counter digit "0000"

Search

When the Memory/Search Button is pressed until the "S" display lights on the counter display, and the FF or REW button is pressed during normal playback, slow motion playback or still playback, search forward or reverse playback can be held for about 10 minutes. Thereafter, the unit will automatically return to the previous mode.

Press until "S" will appear.

/REW   FF/

— or —

Press   Press

REW or FF mode for about 10 min.

Counter Reset

If you press the reset button when "S" is not displayed, the counter indication will become "00000".

Press

• **To release the Search Forward/Reverse manually, proceed as follows:**

❶ Press the Play Button. The unit will go into the following mode.

Previous Mode	Subsequent Mode
Still Playback	Still Playback
Normal Playback	Normal Playback
Slow motion Playback	

❷ Press the Memory/Search Button to clear the "S" display. The unit will go into the previous mode.

❸ Press the Stop Button. The unit will go into the stop mode.

Intro Search

Press the Memory/Search Button and display the "S" indication in the counter display. When a VISS signal is found during FF operation, the tape is played back for about 10 seconds. Each time a VISS signal is found during FF operation, this function will repeat. Press the Play Button twice when desired scene is found. (If Play Button is pressed only once, the tape will playback in double-speed.)

Repeat Playback

Repeat playback between tape beg. and tape end

If it is desired to play back the tape repeatedly from tape beginning to tape end, proceed as follows:

❶ Set the Auto Repeat Switch to the "TAPE END" position.

❷ Press the Play Button.

Set the Auto Repeat Switch to "TAPE END".

Press PLAY
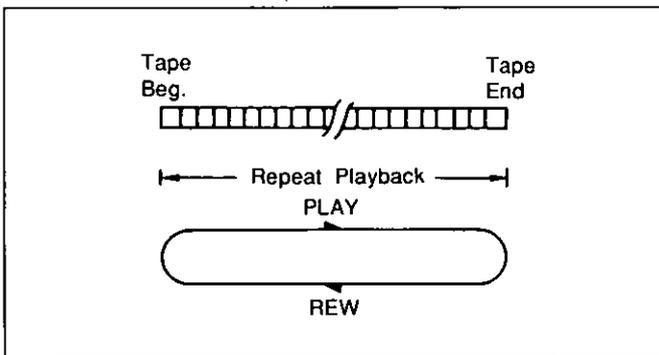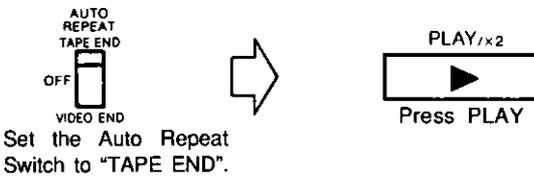
Repeat Playback between tape beg. and video end

If it is desired to play back the tape repeatedly from tape beginning to interruption of the video signal, first make sure that video recording on the tape is interrupted for at least 3 seconds (see diagram).

❶ Set the Auto Repeat Switch to the "VIDEO END" position.

❷ Press the Play Button.

Set the Auto Repeat Switch to "VIDEO END".

Press PLAY

* If the Control signal interruption time is shorter than above times, PLAY mode can be continued.
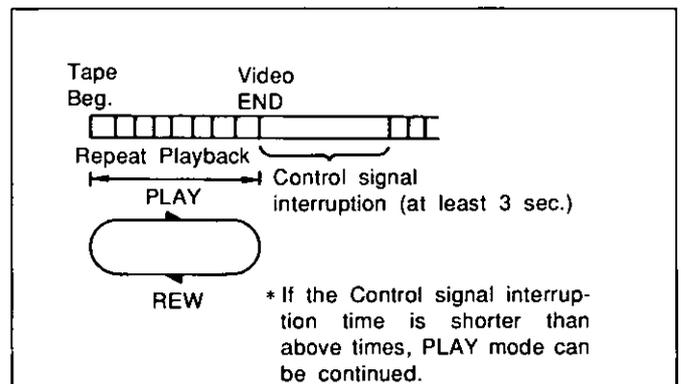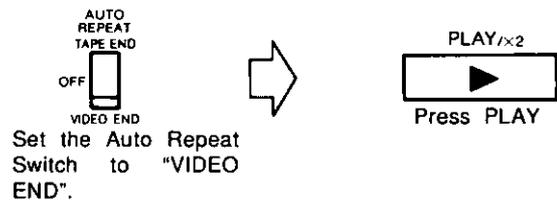
Notes:
* If short repeat playback is continued many times, the repeated section of tape may be damaged.
* NV-T160 type cassettes are not recommended for Repeat Playback use.

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VISS (VHS Index Search System)

VISS signal is recorded at the beginning of each recording. Every time the recording starts, VISS signal is recorded automatically at the beginning (including external timer recording). Moreover, VISS signal can be recorded manually by pressing the Record and Play Buttons simultaneously during recording. When the VISS signal is recorded at the beginning of each recording, it is available to select a desired scene easily.

❶ Press the Memory/Search Button and light the "S" indication.

Press the Reset Button to set to VISS mode. Each time the button is pressed, index number 01 to 20 can be selected.
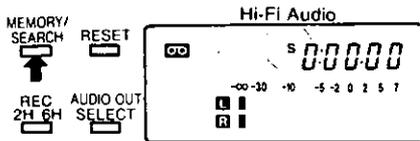
❷ Press the FF or REW Button.
- The index number will decrease one by one each time a VISS signal is found.
- Playback starts automatically when the number becomes to zero.
- The fast forward or rewinding speed is a little slower comparing to the normal FF/REW speed.
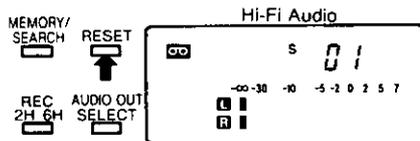
Sensor Recording

Sensor Recording System

Operate the unit by following the procedure below to record the video signal transmitted from a satellite.

❶ Set the Sensor Recording Switch to "ON".

The indication "SENSOR" will appear in the counter and the unit is set to the recording stand-by mode after the unit is automatically turned OFF.
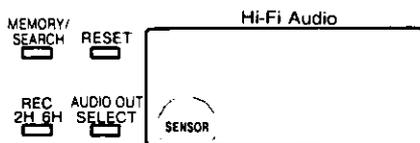
Note:
The indication "SENSOR" will flash when no tape is inserted or tape with broken removable tab is inserted.

❷ When the unit receives a video signal, the power is automatically turned ON and the recording starts. The recording stops at the tape end or when there is no more video input signal, and the unit is turned OFF again.

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Audio Dubbing

"Audio dubbing" is a function which records the sound after the cassette tape has been recorded. The sound is recorded on the normal audio track (and not on the Hi-Fi audio tracks).
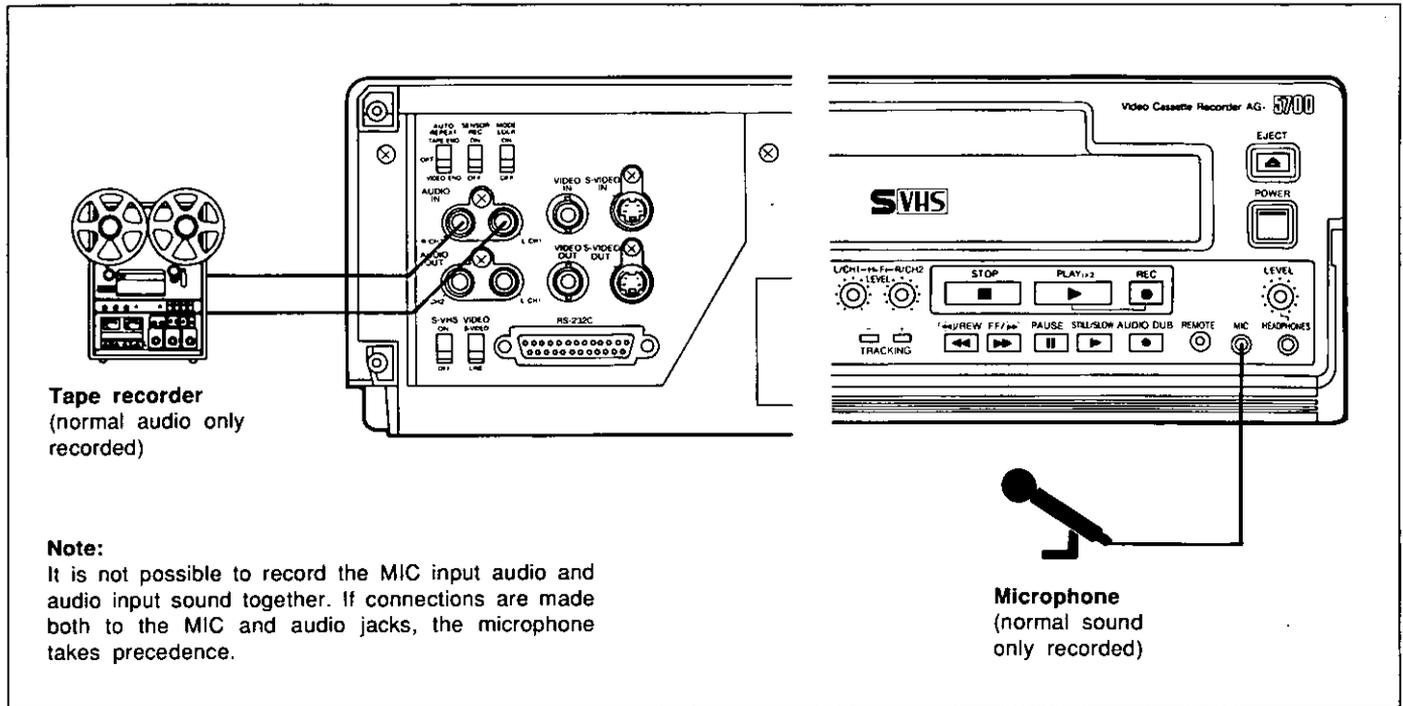
Tape recorder
(normal audio only
recorded)

Note:
It is not possible to record the MIC input audio and audio input sound together. If connections are made both to the MIC and audio jacks, the microphone takes precedence.

Microphone
(normal sound
only recorded)

Preparations
- Load the pre-recorded cassette tape. (Check that the tab on the cassette to prevent accidental erasure is still intact. If not, cassette tape will be ejected when the AUDIO DUB Button is pressed.)

- When you perform audio dubbing, the previously recorded audio will be erased, and the new audio will be recorded instead.
- Note that if you perform audio dubbing with the unit near a television receiver, howling may sometimes occur.
- You cannot perform audio dubbing when there is no recording tab on the cassette.

Operation

❶ Press the PLAY Button to start the playback.

❷ Press the PAUSE Button where the sound is to be added (audio dubbing).

❸ Press the AUDIO DUB Button.

❹ Audio dubbing starts as soon as the PAUSE Button is pressed to release the pause mode.

❺ Press the Pause Button to stop the audio dubbing.

❻ To make audio dubbing again, repeat steps ❸ and ❹.

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Remote Controller

When the optional accessory remote controller AG-A11 is connected to the Remote Control Jack on the front panel of this unit, the unit can be controlled from a distance instead of by using the buttons on the unit itself.
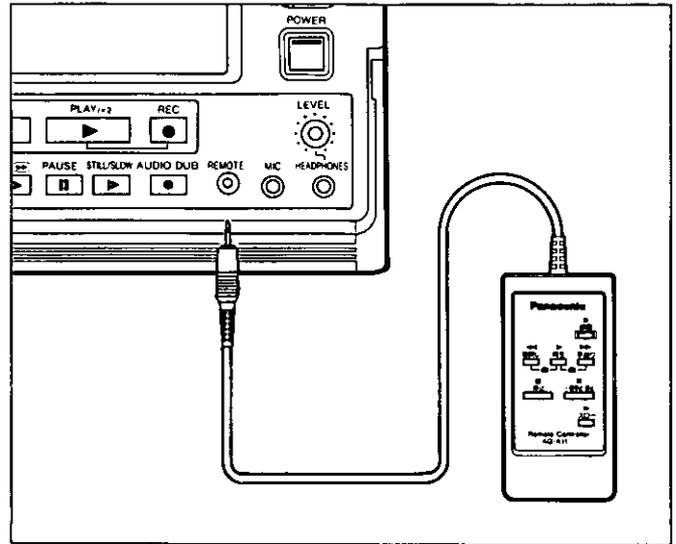
Computer Remote Control

The use of the optional RS-232C cable makes it possible to conduct various operations from a computer, as shown in the figure.
Refer to pages after 15 for details on RS-232C method. For details, consult with your authorized service personnel.

RS-232C Cable

Computer

RS-232C Remote
Control Connector
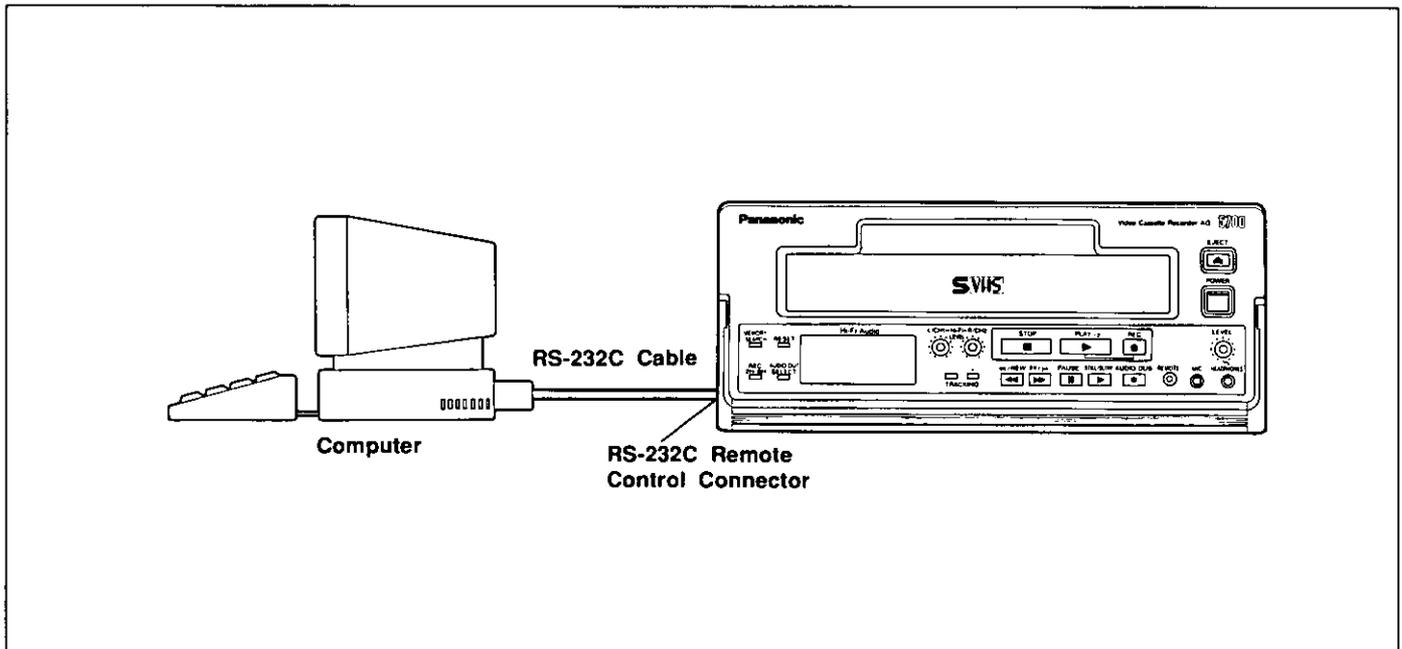
RS-232C Method

By using the RS-232C interface adaptor, the following functions can be controlled.

1) Basic operations

EJECT	INSERT
POWER ON/OFF	SEARCH PAUSE
STOP	SEARCH SPEED UP
PLAY	SEARCH SPEED DOWN
REC/PLAY	FORWARD/ADVANCE
FF	REVERSE/ADVANCE
REW	REVERSE/PLAY
PAUSE	POWER/ON
AUDIO/DUB	POWER/OFF
COUNTER RESET	Direct search ($\pm 1/30$, $\pm 1/6$, ± 1, ± 2, ± 7)

2) Simplified editing function
Video/audio/audio and video insert can be performed up to the specified frame position.

3) Search function
A specified frame position can be searched.

4) Confirming various statuses
The present VTR mode and interface state, for example, can be confirmed.

5) Others
- On-line check
- Counter calibration

1. Hardware Specifications

(1) Interface specifications

Connector D-SUB 25P DCE specifications

Pin No.	Signal	Description
1	FG	Frame GND
2	RXD (received)	Received Data
3	TXD (transmitted)	Transmitted Data
4	CTS	Clear To Send
5	RTS	Request To Send
6	DTR	Data Terminal Ready
7	GND	GND

Connection example

Personal computer side		VTR side	
1 FG	———————	1	FG
2 TxD	——————→	2	RxD
3 RxD	←———————	3	TxD
4 RTS	——————→	4	CTS
5 CTS	←———————	5	RTS
6 DSR	←———————	6	DTR
7 GND	———————	7	GND

(2) The communications conditions of this unit are 2400 bps, 7 bits 1 stop bit, and odd parity. Set the communications conditions on the personal computer according to this value. If it is unavoidably necessary to change the communications conditions at the VTR side, they can be changed as shown below. These switches are internal switches, so be sure to consult with your local dealer when you wish to change the communications conditions.

■ **Setting the Baud Rate**
(DIP switch DSW1)

1	2	
OFF	OFF	1200bps
ON	OFF	2400bps
OFF	ON	4800bps
ON	ON	9600bps

■ **Setting the Communication Protocol**
(Jumper wires W0 to W3)

	Bit Length W0	Stop Bit W1	Parity Check	
			W2	W3
No	7 bit	1 bit	ODD	Parity check
Yes	8 bit	2 bit	EVEN	No Parity

2. Software Specifications
(1) External interface specifications

Communications format	ASYNCHRONOUS FULL DUPLEX
Communications speed	1200/2400/4800/9600
Data bits	8BIT/7BIT
Stop bits	1BIT/2BIT
Parity	NONE/ODD/EVEN
Flow control	CTS/RTS flow control (XON/XOFF flow control is not supported.)

■ The factory settings are 2400 BAUD, 7 BITS, 1 STOP BIT, and ODD PARITY.
■ The receiving buffer of this VTR is 96 bytes.

(2) Send format (personal computer ⟶ VTR)
■ **Data format**
[STX] [discrimination] [:] [data] ([;] [discrimination] [:] [data]. . .) [ETX]
02H   XX XX XX 3AH XX 3BH XX XX XX 3AH XX   03H
          20H < XX < 7!H   (XX= Hexadecimal character code)

- ( )   : Means that the contents of the parentheses may be omitted.
- ;   : This is a code which is used to partition commands when several commands are being sent simultaneously. By using this semi-colon, serveral commands can be placed together.
- discrimination : This is command discriminator (3 bytes).
- :   : This is a code which is used to separate commands from data.
- data   : Add data codes as necessary.

1) A send command must always begin with STX (character code 02H).
   The discrimination which follows a send command is used to identify the command. Add Data after : (colon) as nessary. Finally, end the command with ETX (character code 03H).

2) If STX is sent once again before ETX is sent, the internal receive buffer on the VTR side will be cleared (the data that was received up to this point will be discarded), and data processing will take place again from the STX that was received once again.

(3) Receive format (VTR ⟶ personal computer)

The VTR sends data in the following format in response to one send command. If several commands are sent in a single operation, the VTR will send data in the following format in response to the command received immediately before ETX (last command).

1) When a command from the personal computer is received correctly by the VTR, the response data (reply data) will be as follows.

[STX] [DATA] . . . . [ETX]
02H XX   (03H)

Example: Send command   Replay data=Receive data
              [STX] QOP [ETX] ⟶ [STX] OEJ [ETX]
              [STX] QPL [ETX] ⟶ [STX] OPL [ETX]
              [STX] QCD [ETX] ⟶ [STX] CD☐☐☐☐☐☐☐☐☐☐ [ETX]

2) If there is incorrect data or the VTR is abnormal, the reason why the data could not be accepted will be sent back in the following format.

[STX] E R ☐ [ETX]
(02H)(45H)(52H)(XX)(03H)

- Description of ☐
  D (44H):   This means that condensation has formed in the VTR, preventing the VTR from processing data.
  E (65H):   This data indicates that the VTR accepted a command that it cannot process.
             This is caused by one of the following:
             - The VTR received a command that it does not support.
             - The data code is different.
             - The data is outside the allowable range.
             - A command was accepted in a mode that does not normally accept it (playback during a counter search).

3) If a communications abnormality occurs and an error is detected, the VTR will send back data beginning with a NACK (Negative Acknowledge character code 15H). If the VTR is sending data, it will send back the NACK after it has finished sending the data. In this case, the VTR will discard all of the received data that contained errors.

[NACK] ☐
(15H) (XX)

- Description of ☐
  4 (34H):   Over Run Error
  1 (31H):   Parity Error
  3 (33H):   Framing Error

OSP
OEJ
OPL
ORW
OFF
OPA
ORC
OAF

(4) Command list

1) BASIC OPERATION COMMAND (KEY COMMAND)

■ KEY COMMAND

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
OSP (STOP)	All operations will stop, and the VTR will enter the STOP mode.	[STX]OSP[ETX]	[STX]OSP[ETX]
OEJ (EJECT)	The cassette will be ejected.	[STX]OEJ[ETX]	[STX]OEJ[ETX]
OPL (PLAY)	This is the playback command. Playback takes place at normal speed only when the VTR is in the STOP, FF, REW, REVERSE, PLAY, SLOW or SLOW PAUSE mode.	[STX]OPL[ETX]	[STX]OPL[ETX]
ORW (REWIND)	This is the REW or REVIEW command. If the VTR is in the STOP or FF mode, it will go into the REW mode when this command is input. If the VTR is in the PLAY, PLAY PAUSE, REVERSE PLAY, SLOW or SLOW PAUSE mode, it will go into the REVIEW mode. However, it is necessary to continuously input this command at intervals of no more than 50 msec in order to sustain the REVIEW mode.	[STX]ORW[ETX]	[STX]ORW[ETX]
OFF (FAST FORWARD)	This is the FF or CUE command. If the VTR is in the STOP REW mode, the VTR will go into the FF mode when this command is input. If the VTR is in the PLAY, PLAY PAUSE, REVERSE PLAY, SLOW or SLOW PAUSE mode, it will go into the CUE mode. However, it is necessary to continuously input this command at intervals of no more than 50 msec in order to sustain the CUE mode.	[STX]OFF[ETX]	[STX]OFF[ETX]
OPA (PAUSE)	This is the pause or pause cancel command. If the VTR is in the PLAY, REVERSE PLAY or SLOW mode, it will go into the PLAY PAUSE mode. If it is in the REC mode, it will go into the REC PAUSE mode. If the VTR is in the SLOW PAUSE mode, it will go into the PLAY PAUSE mode, however the operation of the VTR will not change. If the VTR is in the INSERT, AUDIO VIDEO INSERT or AUDIO DUB mode, it will go into the PLAY PAUSE mode. If it is in the REC PAUSE mode, it will go into the REC mode. If it is in the INSERT PAUSE mode, it will go into the INSERT mode. If it is in the AUDIO DUB PAUSE mode, it will go into the AUDIO DUB mode. If it is in the AUDIO VIDEO INSERT PAUSE mode, it will go into the AUDIO VIDEO INSERT mode.	[STX]OPA[ETX]	[STX]OPA[ETX]
ORC (REC)	This is the recording command. When the VTR is in the STOP mode, it will go into the REC mode, and when it is in the PLAY PAUSE or SLOW PAUSE mode, it will go into the REC PAUSE mode. However, if the cassette tab is broken, the VTR will go into the EJECT mode.	[STX]ORC[ETX]	[STX]ORC[ETX]
OAF (ADVANCE FIELD)	This is the field advance (forward direction) command. It advances the tape one frame at a time when the VTR is in the PLAY PAUSE or SLOW PAUSE mode.	[STX]OAF[ETX]	[STX]OAF[ETX]

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Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
OAR (ADVANCE REVERSE FIELD)	This is the field advance (reverse direction) command. It moves the tape in the reverse direction one frame at a time when the VTR is in the PLAY PAUSE or SLOW PAUSE mode.	[STX]OAR[ETX]	[STX]OAR[ETX]
OPR (REVERSE PLAY)	This is the reverse play command. If the VTR is in the PLAY, PAUSE, SLOW or SLOW PAUSE mode, it will go into the REVERSE PLAY mode.	[STX]OPR[ETX]	[STX]OPR[ETX]
OSL (SLOW MODE SET)	This command is used to perform pre-processing before controlling the slow speed. Input this command once only before sending the OSD or OSU command. If this command is input when the VTR is in the STOP, PLAY, REW, FF, PLAY PAUSE, REVERSE PLAY or SLOW mode, the VTR will go into the SLOW PAUSE mode. Subsequently, the VTR will accept the OSD or OSU command.	[STX]OSL[ETX]	[STX]OSL[ETX]
OSD (SPEED DOWN)	This command controls the playback speed in the – direction.	[STX]OSD[ETX]	[STX]OSD[ETX]

–7, –5, –2, –1, –1/6, –1/7, –1/10, –1/20, –1/30, SLOW PAUSE, +1/30, +1/20, +1/10, +1/7, +1/6, +1, +2, +5, +7

←——————

OSD command

Each time an OSD command is sent, the speed setting will shift in the ←— direction. Send this command at intervals of at least 150 msec. If the speed is at the maximum value (–7 times normal speed), it will not shift any further.

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
OSU (SPEED UP)	This command controls the playback speed in the + direction.	[STX]OSU[ETX]	[STX]OSU[ETX]

–7, –5, –2, –1, –1/6, –1/7, –1/10, –1/20, –1/30, SLOW PAUSE, +1/30, +1/20, +1/10, +1/7, +1/6, +1, +2, +5, +7

——————→

OSU command

Each time an OSU command is sent, the speed setting will shift in the —→ direction. Send this command at intervals of at least 150 msec. If the speed is at the maximum value (+7 times normal speed), it will not shift any further.

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■ INSERT COMMAND

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
EIN (INSERT)	This is the insert pre-processing command. If this command is sent when the VTR is the PLAY PAUSE or SLOW PAUSE mode, the VTR will go into the INSERT/PAUSE mode. When the VTR is in the AUDIO DUB mode, it will go into the AUDIO VIDEO INSERT PAUSE mode. Subsequently, when the OPA command is sent, an INSERT operation will take place. If the cassette tab is broken, the VTR will go into the EJECT mode when the EIN command is sent.	[STX]EIN[ETX]	[STX]EIN[ETX]
EAD (AUDIO DUB)	This is the pre-processing command for the post-recording. If this command is sent when the VTR is in the PLAY PAUSE or SLOW PAUSE mode, the VTR will go into the AUDIO DUB/PAUSE mode. Subsequently, if the OPA command is sent, the AUDIO DUB operation will take place. If the cassette tab is broken, the VTR will go into the EJECT mode when the EAD command is sent.	[STX]EAD[ETX]	[STX]EAD[ETX]

| EIT: DATA | This command specifies an insert up to the specified position. If this command is input when the VTR is in the PLAY PAUSE, SLOW PAUSE or INSERT PAUSE mode, a VIDEO insert operation will take place to the specified counter position. When the tape reaches the position specified by DATA, the insert operation will end, and the VTR will go into the PLAY PAUSE mode. This operation can be canceled by an OSP command. If the operation mode changes as a result of a key input from the VTR proper or the remote controller, the insert operation will be canceled. When a command other than OSP, QCD, QOP, QOS, RCK, QRV or QID is sent by an EIT command during an insert operation, a command error will be returned from the VTR. | [STX]EIT: □□□ □□□□□ [ETX]

Counter data
□ □ □□ □□ □□
Sign Hours Minutes Seconds Frames

\|
−: Minus sign
+: Blank

Example:
When an insert operation is performed up to 1 hour, 12 minutes, 35 seconds and 00 frames
[STX]EIT:__1123500[ETX]
\|
Be sure to insert a blank. | [STX]EIT[ETX] |

| EAT: DATA | This command specifies a post-recording up to the specified position. If this command is input when the VTR is in the PLAY PAUSE, SLOW PAUSE or AUDIO DUB PAUSE mode, a post-recording operation will take place to the specified position. When the tape reaches the position specified by DATA, the post-recording operation will end, and the VTR will go into the PLAY PAUSE mode. This operation can be canceled by an OSP command. If the operation mode changes as a result of a key input from the VTR proper or the remote controller, the post-recording operation will be canceled. When a command other than OSP, QCD, QOP, QOS, RCK, QRV or QID is sent by an EIT command during an insert operation, a command error will be returned from the VTR. | [STX]EAT: □□□ □□□□□ [ETX]

Counter data
□ □ □□ □□ □□
Sign Hours Minutes Seconds Frames

\|
−: Minus sign
+: Blank

Example:
When an audio insert operation is performed up to 1 hour, 12 minutes, 35 seconds and 00 frames
[STX]EAT:__1123500[ETX]
\|
Be sure to insert a blank. | [STX]EAT[ETX] |

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
EVT: DATA	This command specifies an AUDIO & VIDEO INSERT up to the specified position. If it is sent when the VTR is in the AUDIO DUB PAUSE or AUDIO & VIDEO INSERT PAUSE mode, an AUDIO & VIDEO INSERT operation will take place up to the specified position. When the tape reaches the position specified by DATA, the AUDIO & VIDEO INSERT operation will end, and the VTR will go into the PLAY PAUSE mode. This operation can be canceled by an OSP command. If the operation mode changes as a result of a key input from the VTR proper or the remote controller, the AUDIO & VIDEO INSERT operation will be canceled. When a command other than OSP, QCD, QOP, QOS, RCK, QRV or QID is sent during EVT in AUDIO & VIDEO INSERT operation, a command error will be returned from the VTR.	[STX]EVT: □□□ □□□□□ [ETX] **Counter data** □ □ □□ □□ □□ Sign Hours Minutes Seconds Frames –: Minus sign +: Blank Example: When an audio insert operation is performed up to 1 hour, 12 minutes, 35 seconds and 00 frames [STX]EVT:_1123500[ETX] Be sure to insert a blank.	[STX]EVT[ETX]

Precaution:
- If the VTR proper goes into the Memory Stop mode during an insert operation (EIN, EVT, EIT), it will cut off when the counter reading becomes "0:00.00.00". Be sure, therefore, to cancel the Memory Stop mode in advance. An insert operation will also be interrupted when a VTR key, remote controller key, Memory/Search button or Reset button is operated, so do not operate these keys or buttons during an insert operation.

■ **SEARCH COMMAND**

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
SMC (SEARCH MODE COARSE)	This command sets the mode in which a search is performed by the SCP or SCS command to the High Speed Search mode. The search time can be reduced by performing a search in the FF or REW mode, however in this case the search accuracy falls off. If high search accuracy is required, use the following SMF command. If this command is sent, the VTR will be maintained in the COARSE mode until SMF is sent.	[STX]SMC[ETX]	[STX]SMC[ETX]
SMF (SEARCH MODE FINE)	This command sets the mode in which a search is performed by the SCP or SCS command to the Precision Search mode. The shuttle search speed is controlled according to the distance to the target, and the search accuracy is ±1 frame. If this command is sent once, the VTR will go into the FINE mode and remain in that mode until SMC is sent. **Precaution:** In this mode, a search is performed by CUE or REVIEW, hence a search cannot be performed for more than 10 minutes (more than 70 minutes on the tape). Processing is interrupted mid-way in order to protect the tape.	[STX]SMF[ETX]	[STX]SMF[ETX]

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
SCP: DATA	This command searches for the position specified by DATA, then puts the VTR into the PLAY mode at the end of the search. The search takes place in the mode specified by the SMC or SMF command. It is accepted if the VTR is in the STOP, PLAY, REW, FF, PLAY PAUSE, REVERSE PLAY, SLOW PAUSE or SLOW mode. The search can be canceled by means of the OSP or OEJ command. It will also be canceled if the operation mode changes as a result of a key input from the VTR proper or the remote controller. If a command other than OSP, OEJ, QCD, QOP, QOS, RCK, QRV or QID is sent during a search operation, a command error will be returned from the VTR.	[STX]SCP: □□□ □□□□□ [ETX] **Counter data** □ □ □□ □□ □□ Sign Hours Minutes Seconds Frames | –: Minus sign +: Blank	[STX]SCP[ETX]
SCS: DATA	This command searches for the position specified by DATA, then puts the VTR into the SLOW PAUSE mode at the end of the search. It is accepted if the VTR is in the STOP, PLAY, REW, FF, REVERSE PLAY, SLOW, PLAY PAUSE OR SLOW PAUSE mode. The search takes place in the mode specified by the SMC or SMF command. It can be canceled by means of the OSP or OEJ command. It will also be canceled if the operation mode changes as a result of a key input from the VTR proper or the remote controller. If a command other than OSP, OEJ, QCD, QOP, QOS, RCK, QRV or QID is sent during a search operation, a command error will be returned from the VTR.	[STX]SCS: □□□ □□□□□ [ETX] **Counter data** □ □ □□ □□ □□ Sign Hours Minutes Seconds Frames | –: Minus sign +: Blank Example: A search takes place up to 1 hour, 12 minutes, 35 seconds and 00 frames, then the picture freezes. [STX]SCS:_1123500[ETX] A search takes place up to –1 hour, 12 minutes, 35 seconds and 00 frames, then the tape is played back. [STX]SCS:– 1123500[ETX]	[STX]SCS[ETX]
SPT: DATA	This command causes playback to take place up to the specified position, then stop when a PAUSE command is input. It is accepted when the VTR is in the STOP, REW, FF, PLAY, REVERSE, PLAY, SLOW, PLAY PAUSE or SLOW PAUSE. If a command other than OSP, OEJ, QCD, QOP, QOS, RCK, QRV or QID is sent during a shuttle operation, a command error will be returned from the VTR. Playback will be canceled if the operation mode changes as a result of a key input from the VTR proper or the remote controller.	[STX]SPT: □□□ □□□□□ [ETX] **Counter data** □ □ □□ □□ □□ Sign Hours Minutes Seconds Frames | –: Minus sign +: Blank	[STX]SPT[ETX]

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■ SHUTTLE COMMAND

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
OSF: DATA (SHUTTLE FORWARD)	This is the forward direction shuttle command. It enables the playback speed to be varied between STILL and +7 times normal speed. If this command is sent when the VTR is in the STOP, REW, FF, PLAY, REVERSE, PLAY, SLOW, PLAY PAUSE or SLOW PAUSE mode, playback will take place at the speed specified by DATA. This operation can be canceled by means of the OSP or OEJ command. It can also be canceled by means of a key input from the VTR proper or the remote controller. If a command other than OSP, OEJ, OSF, OSR, QCD, QOP, QOS, RCK, QRV or QID is sent during a shuttle operation, a command error will be returned from the VTR.	[STX]OSF: □ [ETX]	[STX]OSF[ETX]
OSR: DATA (SHUTTLE REVERSE)	This is the reverse direction shuttle command. It enables the playback speed to be controlled between STILL and –7 times normal speed. If this command is sent when the VTR is in the STOP, REW, FF, PLAY, REVERSE PLAY, SLOW, PLAY PAUSE or SLOW PAUSE mode, playback will take place at the speed specified by DATA. This operation can be canceled by the OSP or OEJ command. It can also be canceled by means of a key input from the VTR proper or the remote controller. If a command other than OSP, OEJ, OSF, OSR, QCD, QOP, QOS, RCK, QRV or QID is sent during a shuttle operation, a command error will be returned from the VTR.	[STX]OSR: □ [ETX]	[STX]OSR[ETX]

For OSF, the relationship between the data of □ and the playback speed of the VTR is shown in the table below.

Data of □	Playback speed of VTR
0	STILL
1	+1/30
2	+1/6
3	+1
4	+2
5	+7

For OSR, the relationship between the data of □ and the playback speed of the VTR is shown in the table below.

Data of □	Playback speed of VTR
0	STILL
1	–1/30
2	–1/6
3	–1
4	–2
5	–7

■ Power function

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
POW	This command is used to turn the power ON and OFF. Normally, the VTR accepts it at any time. However, it is not accepted while EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL is being processed. (This is because the VTR cannot accept commands other than OSP or OEJ while EVT, EAT EIT, SPT, SCS, SCP, OSR, OSF or CCL is being processed.) The power ON/OFF operation can be controlled by a toggle. However, if the VTR is turned OFF during REW, the tape will be wound to the beginning then the power will be cut off.	[STX]POW[ETX]	[STX]POW[ETX]
PON	This command turns the power ON.	[STX]PON[ETX]	[STX]PON[ETX]
POF	This command turns the power OFF. The VTR can accept POF at any time apart from when EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL is being processed. However, if a command is sent during REW, the VTR will wind the tape to the beginning then the power will be cut off.	[STX]POF[ETX]	[STX]POF[ETX]

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■ **Reading various statuses**

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
QOP (OPERA-TION MODE)	This command inquires of the operation mode of the VTR. The VTR returns the following code by means of the QOP code.	[STX]QOP[ETX]	[STX]☐☐☐[ETX]

Operation mode of VTR	Code	Operation mode of VTR	Code
POWER OFF	POF	CUE	OSF
STOP	OSP	REV	OSR
EJECT	OEJ	SLOW	OSL
REWIND	ORW	SLOW PAUSE	OLP
FAST FORWARD	OFF	PLAY TO FRAME	SPT
RECORD	ORC	INSERT VIDEO TO FRAME	EIT
REC PAUSE	ORP	INSERT AUDIO TO FRAME	EAT
AUDIO DUBBING	EAD	INSERT AUDIO & VIDEO TO FRAME	EVT
A–DUB PAUSE	EAP	COUNTER CALIBRATE	CCL
PLAY PAUSE	OPP	PLAY	OPL
INSERT	EIN	REVERSE PLAY	OPR
INSERT PAUSE	EIP	x2 PLAY	OP2
AUDIO & VIDEO INSERT	EVI	REVERSE x2 PLAY	OM2
AUDIO & VIDEO INSERT PAUSE	EVP	DIRECT SEARCH	OF☐
			OR☐

■ **Precautions for executing a QOP command**

• Any command other than the SMC, SMF, QOP, QOS, QCD, QRV, QID, CRT or RCK command causes the mode of the VTR to change. If QOP is executed immediately after a command is sent, processing inside the VTR will not end completely, hence the previous mode will be returned from the VTR. To prevent this, wait for at least the time necessary for the mode to change, that is, about 300 msec., before sending the QOP command.

• If EVT, EAT, EIT, SPT, SCS or SCP is sent, the VTR will perform processing according to the particular command that was sent. If EVT, EAT, EIT or SPT was sent, the VTR will finally go into the PLAY PAUSE mode at the specified counter position. If SCS or SCP was sent, the VTR will go into the SLOW PAUSE mode. This process is shown in the figure below.

■ Return data sent from the VTR in response to a QOP command
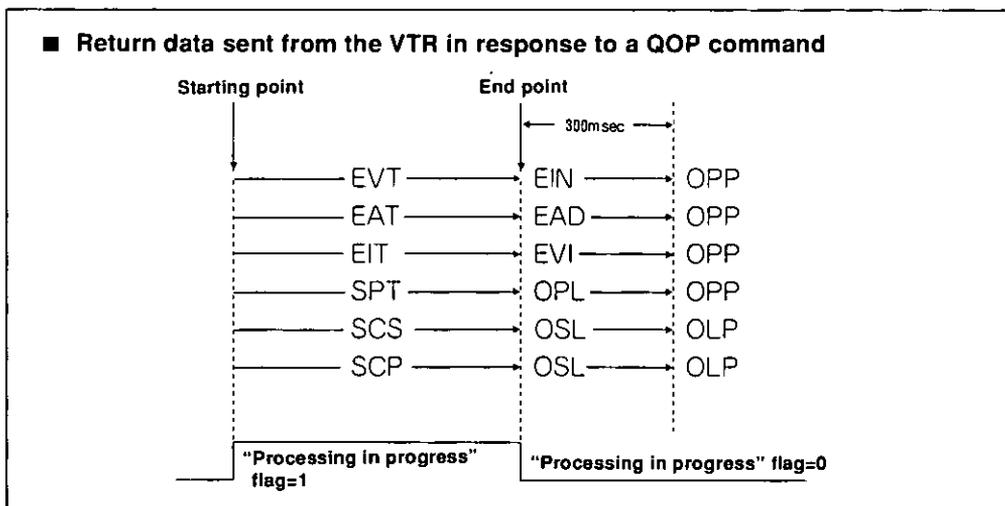
QOS commands are often used to ask the VTR regarding the situation of processing using these commands. For this reason, the timing between the commands and "processing in progress" flag is also shown in the above table.

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
QOS (OPERA- TION STATUS)	This command inquires of the processing state of the VTR. The VTR transmits the internal processing state in the form of a bit map, as shown in the following table. The communications format divides the data of TABLE 1 into the upper four bits and the lower four bits, enabling the data to be returned in the sequence upper data of ADRS 0, lower data of ADRS 0, upper data of ADRS 1, lower data of ADRS 1, ..., after [STX] OPS, as indicated by the following data. Four bits of this data can be expressed in hexadecimal form (0, 1, 2, ... E, F), converted into ASCII code, and returned. Example: Bit map | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | Hexadecimal 4 4 expression ASCII code 34H 41H	[STX]QOS[ETX]	[STX]OPS□₁□₂□₃□₄ □₅□₆□₇□₈□₉□₁₀[ETX] □₁ —— DATA ADRS0H □₂ —— DATA ADRS0L □₃ —— DATA ADRS1H □₄ —— DATA ADRS1L □₅ —— DATA ADRS2H □₆ —— DATA ADRS2L □₇ —— DATA ADRS3H □₈ —— DATA ADRS3L □₉ —— DATA ADRS4H □₁₀ —— DATA ADRS4L

TABLE 1 INTERNAL PROCESSING DATA

(Inscription method 1/0)

Address	7	6	5	4	3	2	1	0
DATA ADRS 0	0	0	0	0	0	0	0	0
DATA ADRS 1	Processing interruption	Processing being continued	0	0	0	0	6H: 1 2H: 0	0
DATA ADRS 2	REC INHT TAB	CASSETTE IN	VV	0	VTR STATUS			
DATA ADRS 3	0	0	0	0	0	0	0	0
DATA ADRS 4	0	Indetermi- nate	Indetermi- nate	Indetermi- nate	0	0	0	0

Processing interruption: Means that processing of the EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL command (continue command) is interrupted for some reason or other. When processing is interrupted, the bit becomes [1], and is held at [1]. If the above continue command is sent once again, this flag will be cleared.

Processing being continued: Means that processing of the EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL command (continue command) is being continued. While processing is taking place, the bit is [1]. When processing ends or if it is interrupted, the flag is cleared.

REC INHIBIT TAB: If the tab on the cassette is broken, the bit becomes [1].

CASSETTE IN: If the tape is inserted, the bit becomes [1].

VV: Means that the VTR has switched over to the playback screen. While the playback screen appears, the bit is [1].

VTR STATUS: Refer to the following table on the next page.

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TABLE 2 VTR STATUS DATA

BIT3~BIT0	VTR STATUS	BIT3~BIT0	VTR STATUS
1, 1, 1, 1	INSERT PAUSE OR AV INSERT PAUSE	0, 1, 1, 1	POWER OFF
1, 1, 1, 0	INSERT OR AV INSERT	0, 1, 1, 0	SLOW
1, 1, 0, 1	AUDIO DUB PAUSE	0, 1, 0, 1	CUE
1, 1, 0, 0	AUDIO DUBBING	0, 1, 0, 0	REVIEW
1, 0, 1, 1	RECORDING PAUSE	0, 0, 1, 1	FAST FORWARD
1, 0, 1, 0	RECORD	0, 0, 1, 0	REWIND
1, 0, 0, 1	PLAY PAUSE, SLOW PAUSE	0, 0, 0, 1	————————
1, 0, 0, 0	REVERSE *2 PLAY, REVERSE PLAY, PLAY, *2 PLAY	0, 0, 0, 0	STOP

This QOS command enables the execution state of the following commands to be checked by means of BIT6 and BIT7 of DATA ADRS1 which is part of the receive data that is returned after this QOS command is sent.

COUNTER SEARCH [STX]SCS: □□□□□□□□[ETX]
                [STX]SCP: □□□□□□□□[ETX]

PLAY TO FRAME   [STX]SPT: □□□□□□□□[ETX]

INSERT TO FRAME [STX]EAT: □□□□□□□□[ETX]
                [STX]EIT : □□□□□□□□[ETX]
                [STX]EVT: □□□□□□□□[ETX]

SHUTTLE   [STX]OSF: □[ETX]
                [STX]OSR: □[ETX]

COUNTER CALIBRATE [STX]CCL[ETX]

These commands require a certain amount of time to be processed, and processing does not end at the same time. They can be checked by performing the following processing with the personal computer.

Processing example:
First, one of the above commands is sent. As a result, the continue flag becomes [1] when the VTR starts processing, hence when the QOS command is sent, processing can be accepted correctly. If then the QOS command is sent periodically, and the processing continue flag and the processing interrupt flag are checked, it is possible to know whether processing ended normally or was interrupted mid-way.

	Processing interrupt flag	Processing continue flag
Processing being continued	0	1
Processing interrupted	1	0
Processing ended	0	0

The following are possible reasons for a processing interruption.
- Operation was performed from the front.
- The tape end and beginning was detected.
- The CUE or REVIEW limit time (10 minutes) was exceeded.
- An abnormality occurred in the VTR.

Precaution
Commands, apart from the following, that are sent from the personal computer will not be processed correctly for a period of at least 150 msec., even if the "processing in progress" flag becomes 0. Wait for at least 150 msec. before sending the following commands.
- Commands that can be accepted as soon as the "processing in progress" flag becomes 0.
  SMC, SMF, QOP, QOS, QCD, QID, QRV, RCK

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
QCD	This command inquires of the value of the present counter. The VTR can reply at any time. Example: Counter value: 1 hour; 25 minutes; 15 seconds; 10 frames Search mode: FINE, PLAY [STX]CDFS ⎵1251510[ETX] 　　　　　　↑ 　　　　　Blank	[STX]QCD[ETX]	[STX]CD▢₁▢₂▢₃▢₄ ▢₅▢₆▢₇▢₈▢₉▢₁₀[ETX] ▢₁: SEARCH MODE 　　COASE; C 　　FINE; F ▢₂: Indeterminate **Counter data** ▢₃: Sign 　　–; – sign 　　+; Blank ▢₄: Hours ▢₅: Minutes ▢₆ ▢₇: Seconds ▢₈ ▢₉: Frames ▢₁₀

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CRT
CCL
RCK
QRV
QID

■ **Other commands**

Send command	Description of operation	Personal computer send data	Reply data sent back from VTR
CRT	This command resets the counter. If the power is ON while the VTR is executing a command other than EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL, the VTR will accept commands from the personal computer. However, in the case of EVT, EAT, EIT, SPT, SCS, SCP, OSR, OSF or CCL, the VTR will return a command error. However, when the "S" indicator is lit, the VTR will go into the VISS mode.	[STX]CRT[ETX]	[STX]CRT[ETX]
CCL	This is the counter calibration command. It resets the counter after the tape has been rewound to the beginning. It can be executed if the VTR is in the STOP, PLAY, REW, FF, PLAY PAUSE, REVERSE PLAY, SLOW or SLOW PAUSE mode. It can be canceled by the OSP or OEJ command. The counter calibration operation will be canceled if the operation mode changes as a result of a key input from the VTR proper or the remote controller. If the VTR receives a command other than the OSP, OEJ, QCD, QOP, QOS, RCK, QRV or QID command while the counter is being calibrated, the VTR will return a command error.	[STX]CCL[ETX]	[STX]CCL[ETX]
RCK	This command checks if communication has been established (if the interface is operating). If the VTR is abnormal, a NACK can be returned; if it is normal, RCK can be returned.	[STX]RCK[ETX]	When normal: [STX]RCK[ETX] When abnormal: [NACK]
QRV	This command is used to refer to the version of the ROM used in the RS-232C in the VTR.	[STX]QRV[ETX]	[STX]VerX.XX 4/1/91[ETX] major version / miner version / date
QID	This command is used to refer to the type name of the VTR.	[STX]QID[ETX]	[STX]AG5700[ETX]

- If a key on the VTR or the remote controller, or the Memory/Search button, is operated while a CCL command is being executed, the operation of the CCL will not take place correctly, and processing will be interrupted. Take steps to ensure that these operations are not performed while a CCL command is being executed.
- If a CRT command is sent when "S" (search) appears on the display of the counter, the VTR will go into the VISS mode, preventing the counter from being reset. Consequently, when resetting the counter, be sure to press the Memory/Search button to cancel the search display in advance.

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■ Counter Accuracy and Editing Accuracy (2H mode)

(1) Counter accuracy (2H mode)

Condition	Counter accuracy
When search was performed in loading state	±1 frame
When search was performed in FF/REW	FF: −3 to −6 frames REW: +14 to +18 frames
When editing was performed	+10 frames

(2) Editing accuracy (2H mode)

IN point   OUT point

Before editing

7 to 8 frames   2 to 4 frames

After editing
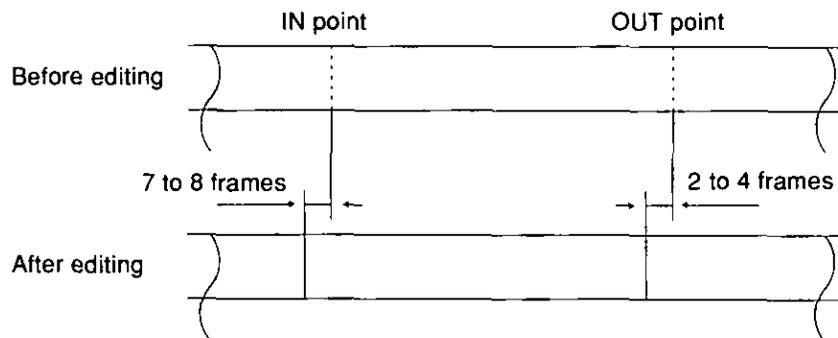
As shown in the above figure, the IN point is −7 to −8 frames and the OUT point is −2 to −4 frames. (The above figure shows the difference between the edit points.)
The error indicated in the above counter accuracy occurs, hence the IN point on the counter is +3 to +2 frames, and the OUT point on the counter is +8 to +6 frames.

■ Send command and reply data from the VTR

When a command is sent correctly, the format data of 1) described in the "(3) Receive format" (page 17) is sent back, however the VTR does not necessarily perform the operation specified by the command, even if it responds to the format of 1). For example, if the playback command ([STX]OPL[ETX]) is sent when the power to the VTR is OFF, [STX]OPL[ETX] will be returned from the VTR, however because the power is OFF, playback will not take place.

In such a case, the state of the VTR can be checked by using the VTR status sense command ([STX]QOP[ETX]).
If one of the following mistakes is made, an error code will be returned, and a certain amount of time will be necessary to search for the cause, so be very careful.

1. Failure to insert a space

    Example:

    [STX]SCS:1425128[ETX]

    In this example, the operator intended to input a command that would search for 1 hour, 42 minutes, 51 seconds, 28 frames and display a STILL picture. When searching in the positive direction, be sure to insert a space after [:]. The correct input is as follows.

    [STX]SCS:＿1425128[ETX]
             ↑
           Space

2. When the data exceeded the allowable range

    Example:

    [STX]SPT:＿1107015[ETX]
                  ↑
    The data for "second" unit in this example is 70, hence it is incorrect.
    Be sure to input data within the range 0 to 59.

3. When the next command is sent, a limit will be imposed on the commands that can be accepted until the completion of processing. Note that apart from when the special commands shown in the table below (commands that interrupt processing) are being executed, an error code will be returned.

Send command	Special commands that can be accepted during processing		
[STX]EVT:□□□□□□□□[ETX] [STX]EAT:□□□□□□□□[ETX] [STX]EIT :□□□□□□□□[ETX]	[STX]OSP[ETX] [STX]QCD[ETX] [STX]QOP[ETX]	[STX]QOS[ETX] [STX]RCK[ETX] [STX]QRV[ETX]	[STX]QID[ETX]
[STX]SPT:□□□□□□□□[ETX] [STX]SCS:□□□□□□□□[ETX] [STX]SCP:□□□□□□□□[ETX] [STX]OSR:□□□□□□□□[ETX] [STX]OSF:□□□□□□□□[ETX] [STX]CCL[ETX]	[STX]OSP[ETX] [STX]OEJ[ETX] [STX]QCD[ETX] [STX]QOP[ETX] [STX]QOS[ETX]	[STX]RCK[ETX] [STX]QRV[ETX] [STX]QID[ETX]	

■ Interval between the previous send command and the next send command
The AG-5700 is a multi-microcomputer VTR. A command that is to be processed in some way by the system control microprocessor in the VTR requires time (approx. 150 msec) to be transmitted between the RS-232C interface microprocessor and the system control microprocessor. The commands indicated below are used to perform processing in the system control microprocessor, so allow an intervals of at least 150 msec when sending a command from the personal computer. When sending the same command such as when sending the ORW command in order to perform a REVIEW operation, send it continuously.

* Commands used to perform some kind of processing on the system control microprocessor.

OSP
OEJ
OPL
ORW
OFF
OPA
ORC
OAF
OAR
OPR
OSL
OSD
OSU
CRT
EIN
EAD
POW
PON
POF

■ **COMMAND table**

The following table shows send commands and operations for each mode seen from the personal computer.
   [STX] is hexadecimal code 02H.
   [ETX] is hexadecimal code 03H.
   : is hexadecimal code 3AH.
     Discrimination section and data section mean the ASCII code corresponding to that symbol.

• BASIC OPERATION COMMAND

Send command	Receive data from VTR	Description of operation
[STX]OSP[ETX]	Same as at left	STOP
[STX]OEJ[ETX]	Same as at left	EJECT
[STX]OPL[ETX]	Same as at left	PLAY
[STX]ORW[ETX]	Same as at left	REWIND
[STX]OFF[ETX]	Same as at left	FAST FORWARD
[STX]OPA[ETX]	Same as at left	PAUSE/STILL
[STX]ORC[ETX]	Same as at left	RECORD
[STX]OAF[ETX]	Same as at left	ADVANCE/FORWARD
[STX]OAR[ETX]	Same as at left	ADVANCE/REVERSE
[STX]OPR[ETX]	Same as at left	REVERSE PLAY
[STX]OSL[ETX]	Same as at left	SEARCH PAUSE
[STX]OSD[ETX]	Same as at left	SEARCH SPEED DOWN
[STX]OSU[ETX]	Same as at left	SEARCH SPEED UP
[STX]EIN[ETX]	Same as at left	INSERT
[STX]EAD[ETX]	Same as at left	AUDIO DUB
[STX]EIT:□□□□□□□□[ETX]	[STX]EIT[ETX]	INSERT VIDEO TO FRAME Sign; Hours; Minutes; Seconds; Frames
[STX]EAT:□□□□□□□□[ETX]	[STX]EAT[ETX]	INSERT AUDIO TO FRAME Sign; Hours; Minutes; Seconds; Frames
[STX]EVT:□□□□□□□□[ETX]	[STX]EVT[ETX]	INSERT AUDIO&VIDEO TO FRAME Sign; Hours; Minutes; Seconds; Frames
[STX]OSF:□[ETX]	[STX]OSF[ETX]	DIRECT SEARCH (+ direction)
[STX]OSR:□[ETX]	[STX]OSR[ETX]	DIRECT SEARCH (– direction)
[STX]POW[ETX]	Same as at left	POWER ON/OFF
[STX]PON[ETX]	Same as at left	POWER ON
[STX]POF[ETX]	Same as at left	POWER OFF

• SEARCH COMMAND

Send command	Receive data from VTR	Description of operation
[STX]SMC[ETX]	Same as at left	SEARCH MODE COASE
[STX]SMF[ETX]	Same as at left	SEARCH MODE FINE
[STX]SCP:☐☐☐☐☐☐☐[ETX]	[STX]SCP[ETX]	COUNTER SEARCH PLAY Sign; Hours; Minutes; Seconds; Frames
[STX]SCS:☐☐☐☐☐☐☐[ETX]	[STX]SCS[ETX]	COUNTER SEARCH PAUSE Sign; Hours; Minutes; Seconds; Frames
[STX]SPT:☐☐☐☐☐☐☐[ETX]	[STX]SPT[ETX]	PLAY TO FRAME Sign; Hours; Minutes; Seconds; Frames

• MODE AND DATA SENSE COMMAND

Send command	Receive data from VTR	Description of operation
[STX]QOP[ETX]	[STX] ☐☐☐[ETX]	STATUS SENSE
[STX]QOS[ETX]	[STX] ☐☐☐☐☐☐☐☐☐[ETX]	DECK STATUS SENSE
[STX]QCD[ETX]	[STX]CD ☐☐☐☐☐☐☐☐☐[ETX]	COUNTER SENSE

• OTHER COMMAND

Send command	Receive data from VTR	Description of operation
[STX]CRT[ETX]	Same as at left	COUNTER RESET
[STX]CCL[ETX]	Same as at left	COUNTER CALIBRATE
[STX]RCK[ETX]	Same as at left	ON LINE CHECK
[STX]QRV[ETX]	[STX]Ver.X.XX DATA[ETX]	ROM VERSION SENSE
[STX]QID[ETX]	[STX]AG5700[ETX]	DECK ID SENSE

AG-5700 RS-232C mode transition table

Trans. Comm.	P. OFF	STOP	EJECT	PLAY	REW	FF	PLAY PAUSE	RV PLAY	SLOW	SLOW PAUSE	REC	REC PAUSE	INSERT	INSERT PAUSE	A. DUB	A. DUB PAUSE	AV INSERT	AV INSERT PAUSE
OSP				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
OEJ	○	○		○	○	○	○	○	○	○								
OPL		○			○	○		○	○	○								
ORW		○		•2		○	•2	•2	•2	•2								
OFF		○		•3	○		•3	•3	•3	•3								
OPA		○		○			○	○	○	○	○	○	○	○	○	○	○	○
ORC		○					○			○								
CRT		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
OAF							○			○								
OAR							○			○								
POW	○	○	○	○	•1	○	○	○	○	○	○	○	○	○	○	○	○	○
PON	○																	
POF		○	○	○	•1	○	○	○	○	○	○	○	○	○	○	○	○	○
OPR				○			○		○	○								
OSL		○		○	○	○	○	○	○	○								
OSD									○	○								
OSU									○	○								
EIN							○			○						○		
EAD							○			○								
EIT:							○			○				○				
EAT:							○			○							○	
EVT:																	○	○
SPT:		○		○	○	○	○	○	○	○								
SCS:		○		○	○	○	○	○	○	○								
SCP:		○		○	○	○	○	○	○	○								
OSR:		○		○	○	○	○	○	○	○								
OSF:		○		○	○	○	○	○	○	○								
CCL		○		○	○	○	○	○	○	○								

↑ RS-232C Command (Personal computer → VTR)

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This table indicates the way in which the VTR operates in response to a command from the personal computer. There are various cases: Even for the same command, the VTR will operate, not operate, return an error, or ignore the command depending on the state of the VTR. For this reason, refer to the section on programming using the personal computer.

How to read the table
The VTR mode is the present VTR state.
The send code is a control code output by the personal computer.

For example
(1) It can be seen that the VTR will stop when the VTR is in the REW state and OSP (STOP command) is sent from the personal computer.
If OPA (pause command) is sent, the column in the table is blank, so it can be seen that nothing will happen (an error will not occur either).
(2) It can be seen that when the VTR is in the EIT mode nothing will happen if OEJ (EJECT command) is sent from the personal computer, but that if OSP (STOP command) is sent the VTR will accept this command and stop.
It can also be seen that an error will occur if the VTR is in the EIT mode and OPL (PLAY command) is sent.

EIT: **	EAT: **	EVT: **	SPT: **	SCS: ** SCP: **	OSR: * OSF: *	CCL	DEW
O	O	O	O	O	O	O	ERD
			O	O	O	O	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD
ERE	ERE	ERE	ERE	ERE	O	ERE	ERD
ERE	ERE	ERE	ERE	ERE	O	ERE	ERD
ERE	ERE	ERE	ERE	ERE	ERE	ERE	ERD

O ..... Operation can be done
*1 ..... Tape rewound to beginning, then power OFF
*2 ..... Rev operation during continuous output
*3 ..... Cue operation during continuous output
ERE ... The ERE code is returned.
ERD ... The ERD code is returned.

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Cautions for Use

- Do not insert fingers or any other objects into the video cassette holder.
- Avoid operating or leaving the unit near strong magnetic fields. Be especially careful of large audio speakers.
- Avoid operating or storing the unit in an excessively hot, cold, or damp environment as this may result in damage both to the unit and to the tape.
- Do not spray any cleaner or wax directly on the unit.
- If the unit is not going to be used for a length of time, turn the Power OFF and disconnect the power plug from the AC outlet.
- Do not leave a cassette in the unit when not in use.
- Do not block the ventilation slots on the top of the unit.
- Use this unit horizontally and do not place anything on the top panel.
- Cassette tape can be used only for one-side, one direction recording. Two-way or two-track recordings cannot be made.
- Keep the VTR away from flower vases, tubs, sinks, etc.
  CAUTION: If liquids should be spilled into the VTR, serious damage could occur. If you spill any liquid into the VTR, remove power and consult qualified service personnel.
- Wipe the VTR with a clean, dry cloth. Never use cleaning fluids, chemicals or wax.
- Do not attempt to disassemble the unit. There are no user serviceable parts inside.
- If any liquid spills inside the unit, have the unit examined for possible damage.
- Refer any needed servicing to authorized service personnel.

Cleaning care for video heads
If the screen should appear as shown below, it means that the video heads are dirty. It is recommended that you clean the heads periodically. Use the optional cleaning tape and special purpose cleaning fluid to clean the heads. Consult with your dealer if the symptoms should persist even after cleaning.

Note:
- We do not recommend that you attempt to clean the video heads yourself.
- Repeated head cleaning will shorten the service life of the video heads.
- Nothing can be recorded on the head cleaning tape.
- If you use cleaning fluid, wipe the cleaned heads with a dry cloth before using the unit.

Dew Indication

When dew is detected, the safety device of this unit will operate in order to protect the cassette tape and video heads.
In case of dew detection, the " d " mark in the counter lights. Wait until the " d " mark goes out with Power switch turned ON.

" d " mark lights.

When playback is desired quickly at the time of dew
When operation is desired quickly at the time of dew, pull the plug of the power cord from the AC outlet, dry the inside sufficiently, and then reinsert the plug. When the " d " mark is not lit at this time, the VTR can be used immediately.

Note
Dew condensation normally occurs gradually. Therefore, there may be cases in which the " d " mark does not start flashing until 10 or 15 minutes after dew has begun to condense. In particular, if the temperature or humidity in the room change, wait about 20 minutes before using the unit.

Cause of Condensation
Condensation forms if warm air comes in contact with a cold object, for example on a window in a well-heated room in winter. It may form if the unit or the video cassette is exposed to sudden changes in temperature and humidity such as may occur when the unit or the video cassette is taken from a cold to a warm place. For instance:

- In a room where the heater has just been turned on in winter;
- In a room with steam or high humidity;
- If the unit or the cassette is brought from cold surroundings into a well-heated room.

Troubleshooting

...Check the following points once again.

Trouble	Corrections

No power

- Check that the power cord is connected to the AC outlet.
- Check that the Mode Lock Switch is OFF.

No operation starts when operation buttons are pressed.

- Check that the Power Switch is ON.
- Check that the cassette tape is inserted.
- Check the " d " mark.
  When the " d " mark lights:
  Take out the video cassette and leave the unit on and let it remain at room temperature until " d " mark disappears. Depending on the surrounding conditions, this may take several hours.
- Check that the Mode Lock Switch is set to the "OFF" position.

When the Record and Play Buttons are pressed at the same time, the tape is ejected.

- Check that the erasure prevention tab is still intact on the back of the tape.

The Playback picture is noisy or contains streaks.

- Press the Tracking "+" and "−" Buttons simultaneously to reduce the noise.

If the top of your playback picture waves back and forth excessively.

- Turn the horizontal control on the TV slowly to correct the wavy picture. If your TV does not have a horizontal control or adjusting the control does not help, please contact your Panasonic TV service center.

Repeated playback cannot be performed.

- Check that the Auto Repeat Switch is set at one of the Auto Repeat positions.

Refer servicing to qualified service personnel.

Specifications

Power Source:	120V AC, 50-60Hz
Power Consumption:	26W

Television System:	NTSC TV system; 525 lines, 60 fields
Video Playback System:	2 head-helical scanning, azimuth recording, S-VHS/VHS standards
Heads:	Video; 4 rotary heads
	Audio; 2 rotary heads (Hi-Fi 2ch)
	Erase; 1 full track erase
Tape Format:	S-VHS tape, VHS tape
Tape Speed:	33.35mm/s (2H mode)
	11.12mm/s (6H mode)
Recording Time:	120 minutes (2H mode with NV-T120)
Playback Time:	120 minutes (2H mode with NV-T120)
FF/REW Time:	Less than about 3 minutes (with NV-T120)
Remote:	Mini Jack (Front)
	RS-232C Connector (Rear)
Operating Temperature:	41°F to 104°F (during operation)
Operating Humidity:	35% to 80%
Weight:	Approx. 12.3lbs
Dimensions:	10-5/8"(W) × 13-3/8"(D) × 4-3/4"(H)

Video:

Input/Output:	Line (BNC); 1.0Vp-p, 75Ω unbalanced
	S-Video (4P); Y: 1.0Vp-p, 75Ω unbalanced
	C: 0.286Vp-p, burst level 75Ω unbalanced
Video Horizontal Resolution:	S-VHS; 400 lines (B/W, color)
	VHS; 240 lines (B/W, color)
Signal-to-Noise Ratio:	45dB (Color/2H mode)

Audio:

Input Level:	Audio; AUDIO IN (PHONO), −8dBv, 47kΩ unbalanced
	Mic; Mini-Jack, −60dB, 600Ω
Output Level:	Audio; AUDIO OUT (PHONO), −8dBv, 1kΩ unbalanced
	Headphones; M3, 8Ω
Channels:	3 Channels (Hi-Fi: 2 ch, normal: 1 ch)
Hi-Fi Audio:	Frequency Response; 20Hz to 20kHz
	Dynamic Range; 90dB
Normal Audio:	Frequency Response; 50Hz to 10kHz (2H mode)
	50Hz to 3kHz (6H mode)
S/N Ratio:	45dB (Normal Audio) (1Vrms=0dBv)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

MEMO