

## FEATURES

- Three heads and three motors
- Closed-loop/dual capstan tape drive
- An AC servo-controlled capstan drive motor
- High-performance F & F (Ferrite and Ferrite) heads
- Separate 3-way bias and equalization selectors
- Logic-controlled transport function buttons
- First stage of the amplifier and the playback head are directly coupled.

## WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

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# PRECAUTIONS

## On safety

● Before operating, be sure the operating voltage of your unit is identical with that of your local power supply.

This instruction manual covers two types of the TC-765.

Type 1 (available in Europe) : set for 220 V AC. To operate on other voltage, refer to the separate sheet.

Type 2 (available in other countries) : set for 120 V AC. To operate on other voltage, consult your Sony Service Station or Sony dealer in the country where the unit will be used.

● Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.

● Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

## On installation

● Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with adequate air circulation.

● Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or mechanical vibration.

## On head cleaning

The best performance of your unit depends on the periodic cleaning of the heads and all surfaces over which the tape travels. Dirty heads and tape path cause :

● Loss of high frequency response

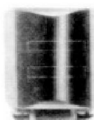
● Loss of sound volume

● Sound drop-out, etc.

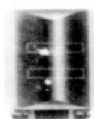
Cleaning should be done every after 10 hours of operation.

For details, see "Maintenance"

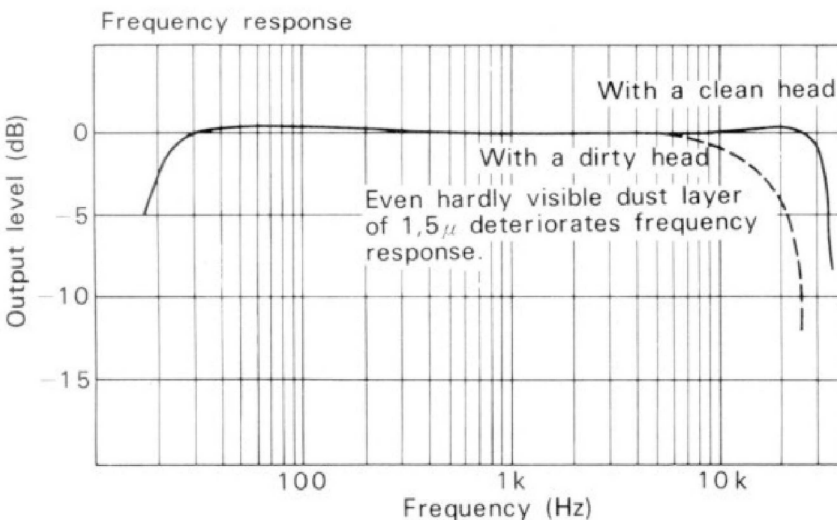
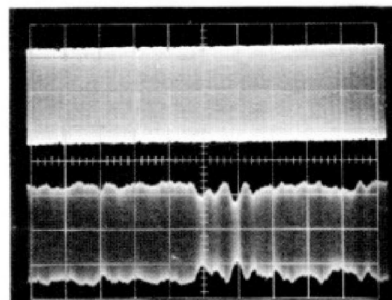
Playback waveform  
at 10 kHz



With a clean head



With a dirty head  
(The output level  
fluctuates.)



If you have any question or problem with your unit, please contact your Sony Service Station or Sony dealer.

## FUNCTION OF CONTROLS



### 1 Tension arms/automatic shut-off switches

These arms maintain uniform tape tension. When all the tapes are wound and these arms return to the former position, tape transport mechanism will stop.

### 2 TIMER switch

Usually set this switch to OFF.

To make timer-activated operation, set it to ON.

### 3 TAPE SPEED selector

19 cm (7 1/2 ips): For high quality recording  
9.5 cm (3 3/4 ips): For longer time recording

### 4 REEL SIZE selector

Select the optimum rewind tension and reel torque for the reel used; The "10" position is for 10 1/2-inch (27 cm) reels, and "7" is for 7-inch (18 cm) or 5-inch (13 cm) reels.

### 5 POWER switch

This turns the power on or off. The VU meters will light up when the unit is turned on.

### 6 VU meters

With MONITOR switch set at SOURCE, the meters show the recording level adjusted by the REC LEVEL controls.  
With the MONITOR switch set at TAPE, the meters show the output level adjusted by the PB LEVEL controls. 0 VU reading corresponds to 0.435 V.

### 7 HEADPHONES jack

Insert low-impedance headphones to monitor the input and recorded signals.

### 8 MIC jacks

Any low-impedance microphone equipped with a phone plug may be used. If your microphone is equipped with a mini plug, a plug adaptor for converting to phone plug is required.

#### ④ Mic attenuator switch [MIC ATT]

Usually set this switch at the "0" position.

Mic attenuator is useful when recording a large input signal on location (rock music, etc.) or recording with a microphone too close to the source without overloading the tape deck amplifier. When the needles of the VU meters swing over the 0 VU with the REC LEVEL MIC controls turned down on the scale around the indication 2-3, first set the MIC ATT switch at "15". At this position, the input level is reduced by 15 dB. If the input signal level is still large, use the "30" position. At this position, the level will be reduced by 30 dB.

#### ⑤ Tape counter and reset button

Use the counter for indexing tape contents. Once reels are threaded, set the counter to [0000] by pushing the reset button. The figures on the counter change as the tape passes. Make a note of the figures and the recorded program for later reference.

#### ⑥ Function buttons

● Recording, ◀◀ Rewind, ■ Stop, ▶▶ Forward and ▶▶▶ Fast-forward tape motion.

These buttons can be depressed at random to change tape motion from normal to fast wind, and vice versa (Logic-controlled transport function).

#### ⏸ Pause button

To momentarily stop during recording or playback, depress this button. To restart, depress it again. Also use this button for smoother start of recording.

#### ⑦ Recording level controls [REC LEVEL-MIC, LINE]

Adjust the recording level with these controls: inner knob for R channel and outer knob for L channel.

Turn down the unused controls full to "0".

MIC: When recording from the MIC jacks

LINE: When recording from the REC/PB and LINE IN jacks

#### ⑧ MONITOR switch

For tape playback, set the switch to TAPE. While recording, monitoring of input sound is possible with this switch set at SOURCE, and monitoring of recorded sounds is possible with this switch set at TAPE.

#### ⑨ Playback level controls [PB LEVEL]

These controls adjust the playback signal level of LINE OUT and HEADPHONES jacks. Generally, set the controls at center position. For further information, refer to page 9.

#### ⑩ Recording mode switches [REC MODE]

For recording, push in the switches. When these switches are pushed in, the record button lamp puts on and off repeatedly. For playback, release these switches to prevent inadvertent erasure.

#### ⑪ TAPE SELECT switches

BIAS: Select the optimum bias current for the tape to be used in recording mode.

EQ: Select the correct equalization characteristics for the tape to be used in recording mode.

These two switches have no effect on playback.

#### Recording monitor muting switch [REC MONITOR MUTE]

(rear)

When this switch is set to ON, the line outputs are cut except when the tape is played back with the MONITOR switch set at TAPE. See the table below.

This switch makes the microphone recording free from howling effect and is useful for instrumental practice which necessitates repetition of recording and playback.

	MONITOR switch	
	SOURCE	TAPE
During recording	no sound	no sound
During playback	no sound	yes

Headphone monitoring is free from this switch.

#### REMOTE CONTROL connector (rear)

Plug the Sony Remote Control RM-30 (optional) in this connector. The RM-30 features "record muting" as well as remote control operation. See page 10.

Any operation other than record muting is possible with either tape deck or RM-30.

#### INPUT SELECT switch (rear)

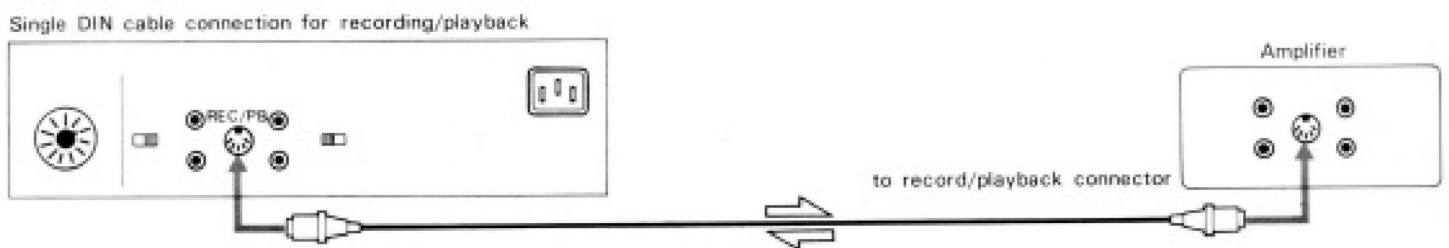
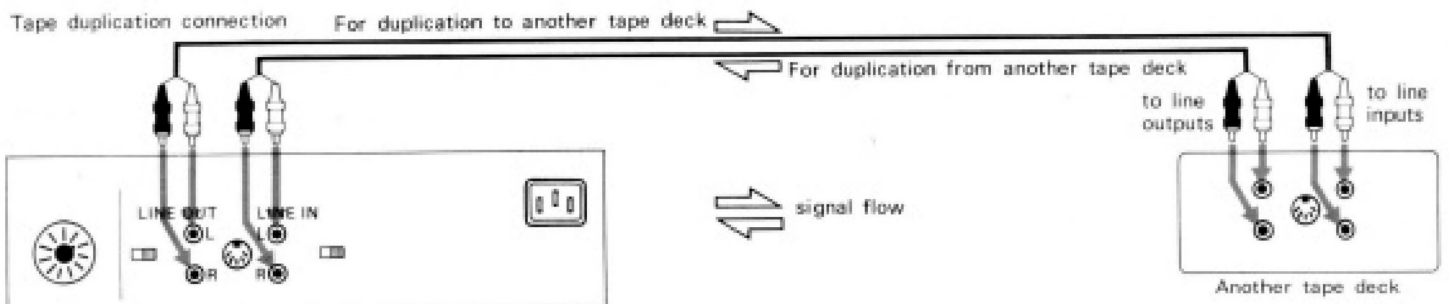
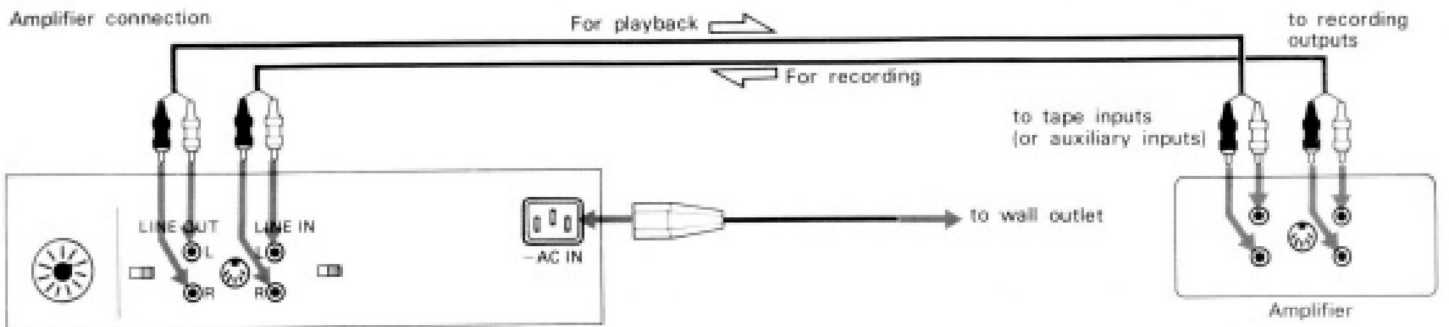
When recording from LINE IN jacks, set this switch at LINE.

When recording from REC/PB connector, set this switch at REC/PB.

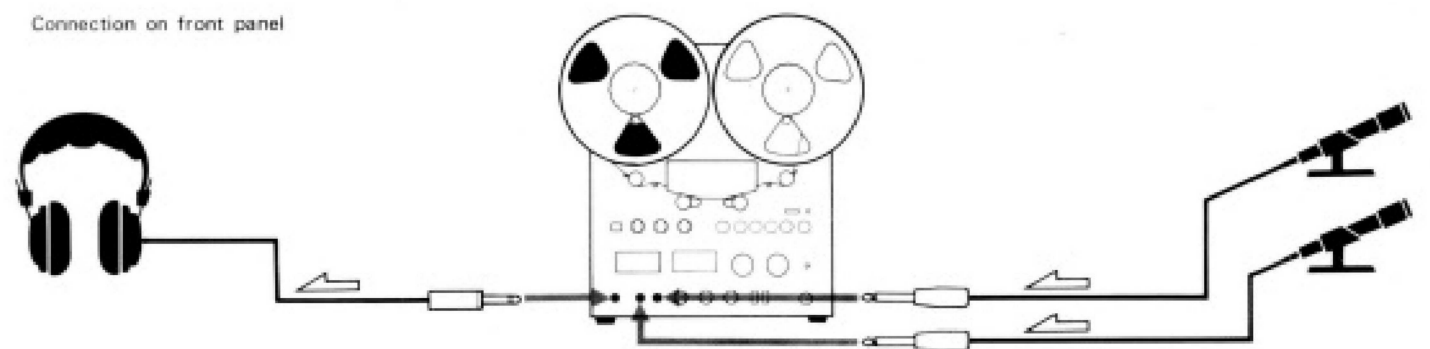
## CONNECTIONS

- Turn off the amplifier before making connections.
- Insert the cable connectors completely into jacks. Loose connections may cause hum and noise.
- The red plug of the supplied connecting cord should be connected to the right channel and the gray plug to the left channel.

- Connect the tape deck to an AC outlet with the power cord: First plug the cord into the tape deck AC IN socket, then into a wall outlet.



Connection on front panel



### REC/PB (DIN) connector

There are two possibilities of the amplifier connection, by supplied phono (RCA) connecting cords and a single 5-pin DIN connecting cable. Note the following points.

- The phono cord connections are recommended, since it will result in better signal-to-noise ratio.

- Connection between amplifier DIN connector and phono jacks of the tape deck is not recommended, since their input and output sensitivity and impedance are not correctly matched.
- To directly connect both tape deck DIN connectors, a DIN cable for tape duplication is required.
- When recording from the REC/PB connector, set the INPUT SELECT switch located in the rear to REC/PB position, and recording level should be adjusted with the REC LEVEL LINE controls.

## TAPE THREADING

Set the REEL SIZE selector according to the reels to be used. Use the same size reels for both supply and take-up.

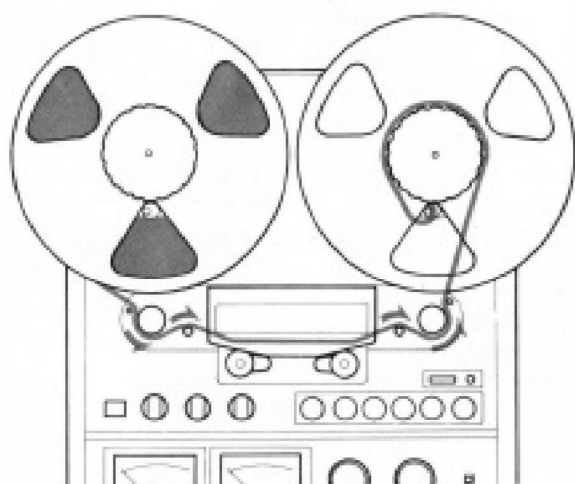
1. Secure the reels.



2. Pass the tape.

3. Wrap the tape around the hub of the right reel or insert the end of the tape into the reel slot.

4. Rotate the reels a few times by hand until there is no slack in the tape. If there is slack, tape will not move even if the function button is depressed.



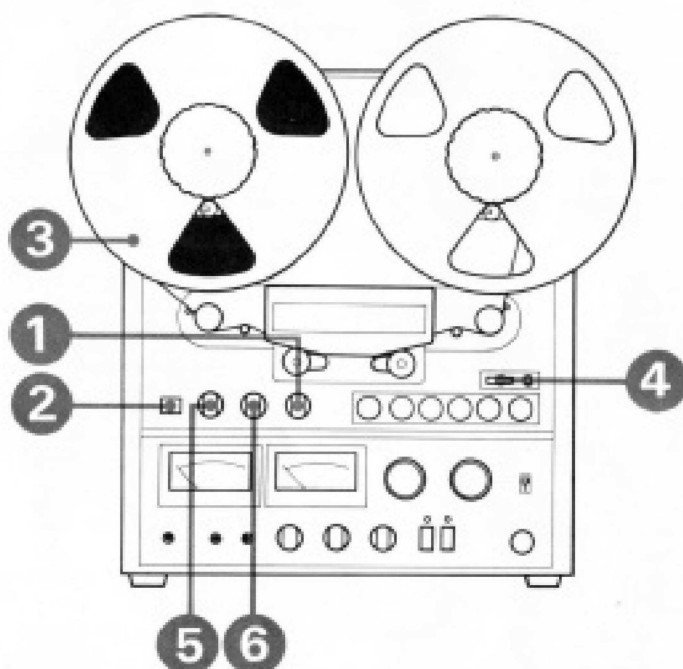
## RECORDING

### Fundamental steps

Check the INPUT SELECT switch:

When recording from LINE IN jacks → LINE

When recording from REC/PB connector → REC/PB



1 TIMER switch → OFF

2 POWER switch → Depress to ON.

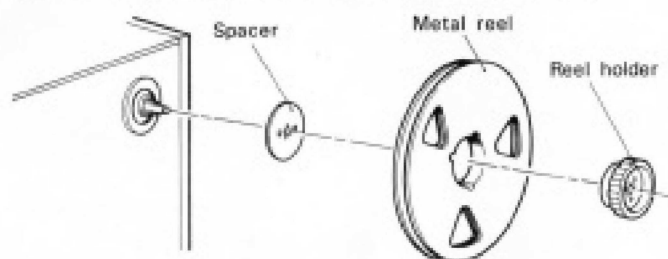
3 Thread a tape.

4 Tape counter → Reset to [0000]

5 REEL SIZE selector → Set to the reel diameter to be used.

6 TAPE SPEED selector → As desired.

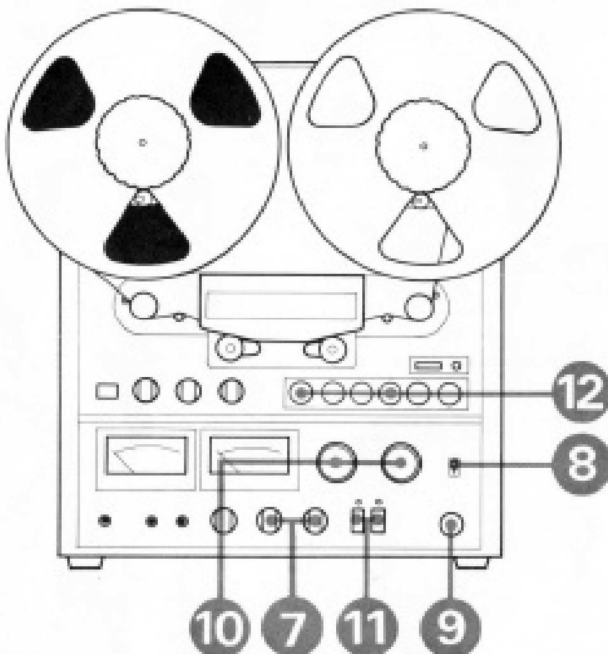
For the supplied 27 cm (10 1/2-inch) metal reel, use the supplied reel adaptor RAD-11 (reel holder and spacer) as illustrated.



● For optional plastic reel, neither reel holder nor spacer is required. If the plastic reel has a large center hole, use the reel holder only. The spacer is unnecessary.

## Recording

After the fundamental steps ① to ⑥, continue with the following steps ⑦ to ⑫.



⑦ TAPE SELECT switches (both BIAS and EQ) → Set according to the tape used.

⑧ MONITOR switch → SOURCE

⑨ PB LEVEL controls → Set to center click position.

⑩ Adjust the recording level with respective MIC or LINE controls while watching the VU meters.

MIC controls . . . for recording from MIC jacks

LINE controls . . . for recording from LINE IN jacks or REC/PB connector.

Be sure to turn the unused level controls full counterclockwise.

⑪ REC MODE switches → Depress.

⑫ While depressing the ● button, depress the ► button.

Now recording starts.

● When recording completes, depress the ■ button.

## Tape BIAS/EQ recommendations

The following list shows our recommended settings, which have been determined through critical listening tests and electrical characteristic measurements on commercially available tapes. The setting could be changed to your preference. For Sony tapes, be sure to use the recommended settings to obtain the optimum tape characteristics.

BIAS \ EQ	NORMAL	SPECIAL	Fe-Cr
LOW	SONY PR	BASF LH, LHS AGFA PE, PEM MEMOREX	SCOTCH #211, #212, #213 AMPEX 406, 407
MED	SCOTCH #218	SONY SLH SCOTCH CLASSIC TDK AUDUA	SONY Ferri-Chrome SCOTCH #206, #207 MAXELL UD
HIGH			SCOTCH #250

## Record monitoring

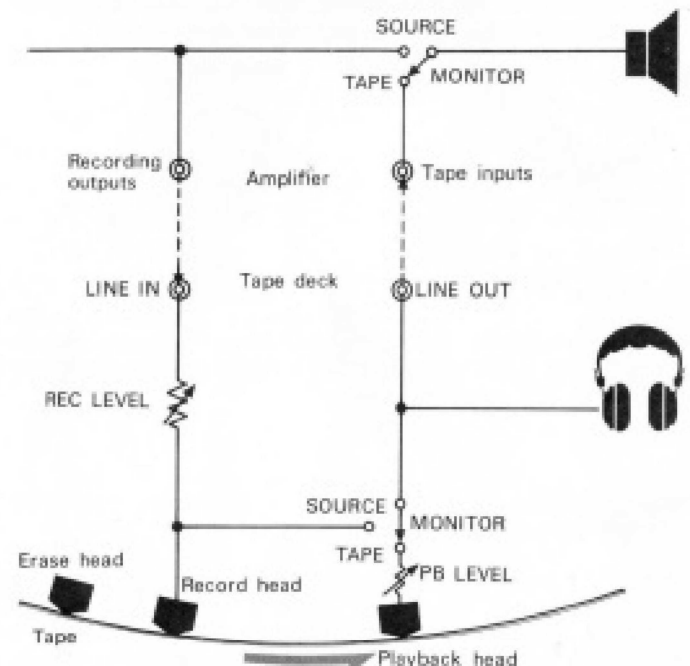
As this tape deck has separate record and playback heads, instantaneous tape-source comparison is possible with the MONITOR switch.

SOURCE : Source sound is heard

TAPE : Recorded sound is heard

● In microphone recording, if monitoring through the speakers, howling effect may occur. Use of the REC MONITOR MUTE switch avoids this howling effect and monitoring may be done through headphones.

● If the amplifier has a tape-monitor selector and if connection is made through tape deck LINE IN and LINE OUT jacks, source/tape comparison is possible with the amplifier monitor selector. In this case, the tape deck MONITOR switch should be set at TAPE.



### PB LEVEL controls

These controls adjust the playback signal level at the LINE OUT and HEADPHONES jacks. The adjusted level is indicated on the VU meters, with a 0 VU reading corresponding to 0.435 V output, which appears when the control is halfway up (with the indicator at "5"). Full clockwise rotation of the PB LEVEL control beyond midpoint will provide a 5 dB boost, and full counterclockwise rotation will bring the volume down to zero. Generally, set these controls at center position. The usages are as follows.

*During record monitoring*, the setting of these controls at center position provides nearly equal levels on both SOURCE and TAPE positions of the MONITOR switch.

*During playback*, adjust the tape deck to match other sources. If the tape deck playback level differs from that of other sources connected to the amplifier, such as a tuner, record player etc., the sound may become suddenly louder or softer when the amplifier input selector is switched back and forth between tape and some other source.

*During duplication* on another tape deck, adjust these controls so that the sound is not distorted.

### Recording a new material while the tape is in motion

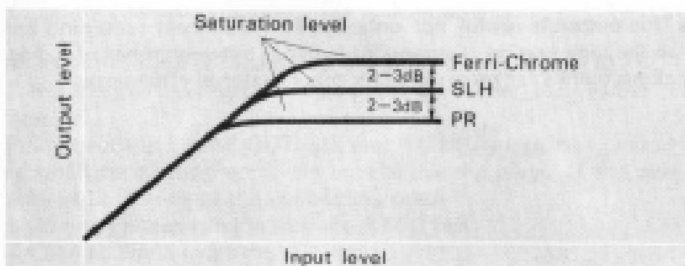
This tape deck may directly go from play to record while the tape is in motion.

1. Perform the necessary steps for recording.
2. Depress the REC MODE switches. The ● button blinks.
3. Depress the ► button and listen to the playback sound.
4. At the point where new material is to be recorded, depress the ● and ► buttons simultaneously. The ● button illumination changes to a steady red light. At this moment, recording begins.

### Recording level adjustment

Tape saturation levels differ between the types of tape.

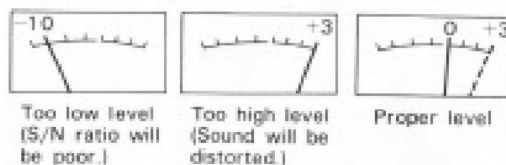
Recording level should be adjusted according to the tape to be used in order to utilize it to the utmost permissible level. This is the knack not only for deriving the possible characteristics from the tape but also assuring good recording result.



High recording level is recommended to reduce annoying tape noise, but overloaded and distorted tape could result if the level is too high.

When using a Sony SLH tape, for example:

Adjust the recording level so that the needles of the VU meters swing around the 0 VU reading and sometimes swing within red zone. Continuous deflection within red zone will lead to distortion.



But be cautious with peaks of short duration out of a relatively low recording level; as the needles of the VU meters cannot follow them because of their inertia, they will show levels much smaller than the actual levels (up to 12 or 14 dB).

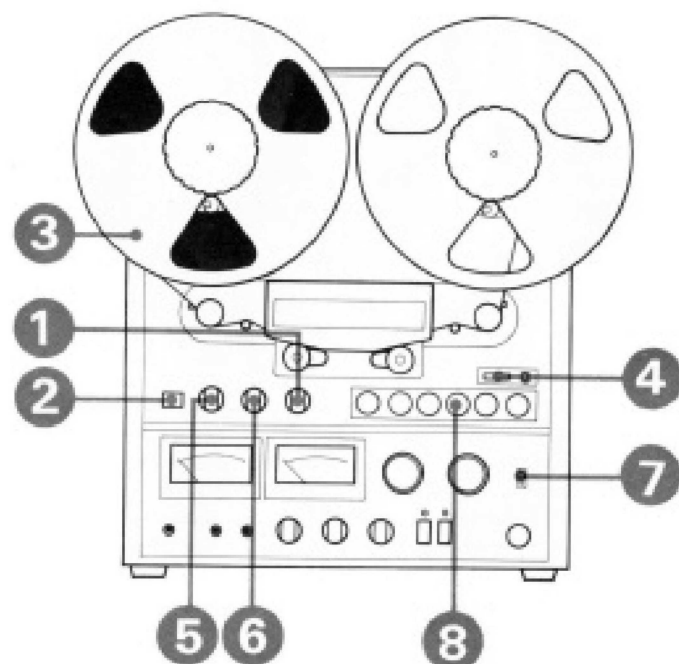
Recording of FM broadcasts or discs is relatively simple because broadcast stations and disc companies use standardized limiters to reduce the dynamic range of the original sound source.

More care has to be taken in case of live recordings. The dynamic range is undiminished by any limiter, and a small movement may change the distance between sound source and microphone, thus changing the signal level even when repeating an identical passage. Above all consideration has to be given to the fact that tape saturation and distortion at higher frequencies occur at lower levels, which may be especially troublesome in case of piano recordings, etc. To make things even more complicated, microphone amplifiers may overload. Using the MIC ATT switch is an effective method. In any way, having acquired a little bit of experience, you will be quite successful.

Do not change the recording level once the recording starts, as this will easily be audible during playback, especially when the stereo balance is changed. If adjustment becomes necessary, it is advisable to wait until a break or a pause between movements occurs or a soloist has finished his turn.



## PLAYBACK



- 1 TIMER switch → OFF
  - 2 POWER switch → Depress to ON.
  - 3 Thread a tape.
  - 4 Tape counter → Reset to [0000].
  - 5 REEL SIZE selector → Set to the reel diameter to be used.
  - 6 TAPE SPEED selector → Set according to the speed when recorded.
  - 7 MONITOR switch → TAPE
  - 8 Depress the ► button.
- Now playback starts.
- When playback completes, depress the ■ button.
  - In playback, TAPE SELECT switches have no effect.

## ERASING

When the tape deck functions in record mode, the erase head operates and any previous material is erased automatically. To erase the recorded contents without recording:

- Turn the REC LEVEL controls (both MIC and LINE) full counter-clockwise to "0".
- Set the BIAS switch at the position appointed in page 8, or at the HIGH position

And start the tape deck in record mode.

- For quick erasure, use a commercially available eraser.

## TIMER-ACTIVATED RECORDING AND PLAYBACK

Automatic recording and playback at any desired time is possible using a commercially available timer. Continual operation may be accomplished with a timer designed to turn the tape deck on and off any number of times.

### Recording

1. Set the tape deck **TIMER** switch to **OFF**.
  2. Connect the tape deck power cord to the timer which has been set for the desired time.
  3. Perform the necessary steps for recording. (Be careful not to depress the ● and ► buttons.)
  4. Set the tape deck **TIMER** switch to **ON**.
- The tape deck is now ready for automatic start of recording at the timer-set time.

## RECORD MUTING OPERATION

During the recording of FM broadcasts, you can short-circuit unwanted program sources like broadcasting commercials by using the **REC MUTE** button on the RM-30 (optional).

While this button is being depressed during recording, the tape keeps traveling, but the record head is inoperative.

The signals are therefore not recorded on the tape, and thus a moderate interspace is left between recordings.

1. When a tune is finished, depress the **REC MUTE** button. Hold it depressed for about 3 or 4 seconds (this button cannot be locked).

2. Next, while depressing the **REC MUTE** button, lock the pause button and release the **REC MUTE** button.

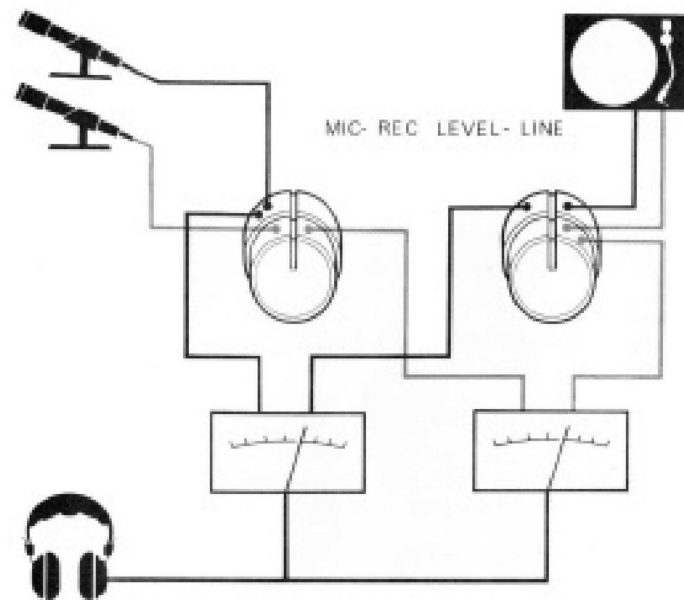
3. Just before the next tune starts, depress the pause button to release. Now the recording will begin again. Repeat these steps.

- While the **REC MUTE** button is depressed, needles of the VU meters deflect and the signal source can be monitored through headphones and **LINE OUT** jacks, when the **MONITOR** switch is set to **SOURCE**.

● This button is useful not only for FM broadcast recording but also for tape editing; keeping interspaces between tunes of a disc, making blanks for recording any other material afterwards.

## MIC-AND-LINE MIXING

Connect microphones to MIC jacks and line source to LINE IN jacks. While listening through headphones, adjust the mixing level by turning the respective controls of MIC-L, R, LINE-L, R. The VU meters indicate the composite recording level of mic and line inputs.



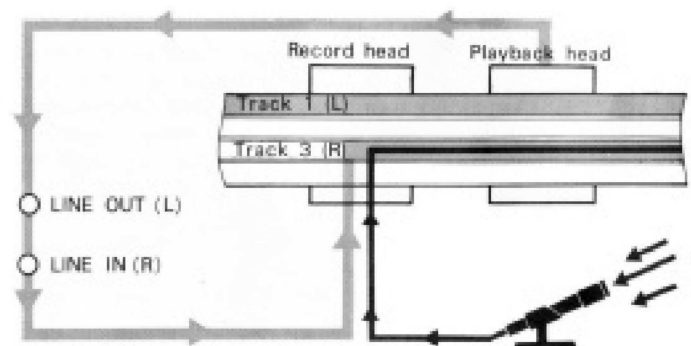
the R MIC control clockwise beyond the indication "5", and to decrease, turn it down.

8. Now Sound-on-Sound recording is prepared. Rewind the tape.  
9. Turn down the R PB LEVEL control full, set the L PB LEVEL control to "5", and depress the ● and ► buttons. Sing to the microphone.

● To listen to the composite recording, turn down the L PB LEVEL control and turn up the R PB LEVEL, then playback the tape.

● If you are not content with the result, repeat these steps as you like because the basic program is left recorded.

● For recording on the left channel (R → L), you have only to convert the R and L channels in the above mentioned steps.



## SOUND-ON-SOUND RECORDING

While playing back the basic program monophonically recorded in one channel, add a new program from a microphone and record the two programs in the other channel. This enables you to record a duet by yourself or create other special effects.

### Sound-on-Sound recording on the right channel (L → R)

1. Record the basic program on the left channel and rewind the tape.
2. Connect the L LINE OUT jack and R LINE IN jack by using the supplied connecting cord. Be sure to use the plugs of the same color at both ends of the connecting cord.
3. Connect a microphone into the R MIC jack.
4. Connect the headphones.
5. Push the R REC MODE switch.
6. Set the MONITOR switch to TAPE.
7. Adjust the recording level.

① Temporarily set the R LINE and R MIC controls to the indication "5".

② Turn the R PB LEVEL control full counterclockwise and set the L PB LEVEL control to the indication "5".

Depress the ● and ► buttons. Sing to a microphone while listening to the basic program through left headphone.

③ Rewind the tape. Turn down the L PB LEVEL control full counterclockwise and turn up the R PB LEVEL control to the indication "5". Depress the ► button and monitor the mixed sounds through right headphone. (Recording level is indicated in the R VU meter.)

④ Readjust the recording level as follows:

● To increase the whole recording level, turn the R LINE control clockwise beyond the indication "5", and to decrease, turn it down.

● To increase the mic sound against the basic program, turn

## ECHO RECORDING

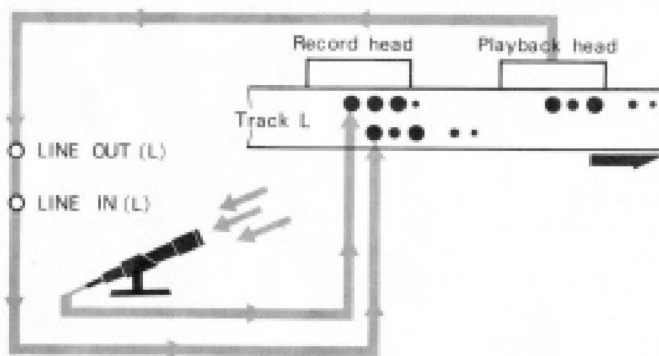
Recorded sound is caught by the playback head, and recorded again in the same track through line input. The distance between record head and playback head causes the resonant effect like an echo.

### Stereo echo

1. Insert two microphones into MIC jacks.
2. Turn the L LINE, R LINE, L MIC and R MIC controls full counter-clockwise.
3. Connect the LINE IN jacks and LINE OUT jacks by using the supplied connecting cord matching the channels R to R, and L to L.
4. Connect the headphones.
5. Set the MONITOR switch to TAPE.
6. Push the REC MODE switches and depress the ● and ► buttons.
7. While listening through the headphones, adjust the L and R MIC controls. Then slowly turn the L and R LINE controls clockwise for desired echo. Be careful not to excessively increase the recording level. Otherwise oscillation may occur as a rumbling sound.

Now, echo recording preparation is complete. Rewind the tape to the beginning and start a formal recording. In this case, disconnect the stereo headphones, since headphone monitoring may disturb your tempo because of the time-lag between original sound and headphone sound.

● For mono echo recording, use the desired L or R channel only. The illustration shows mono recording.



## EDITING

There are two ways of tape editing: editing by tape duplication and splicing. Before editing, play the original tape thoroughly, and note the tape counter number where the unwanted sounds (narration or commercials, pop noise, etc.) are located. Then go back and proceed with editing in either way.

### Editing by duplication

For connection, see page 6.

If one tape deck is inferior to the other in quality, use the better one as a master tape deck for the playback process to obtain better S/N.

### Editing by splicing

As the tape will be cut and spliced, recorded materials in opposite direction will also be cut off. If necessary, duplicate the tape to another tape before proceeding.

### Cueing

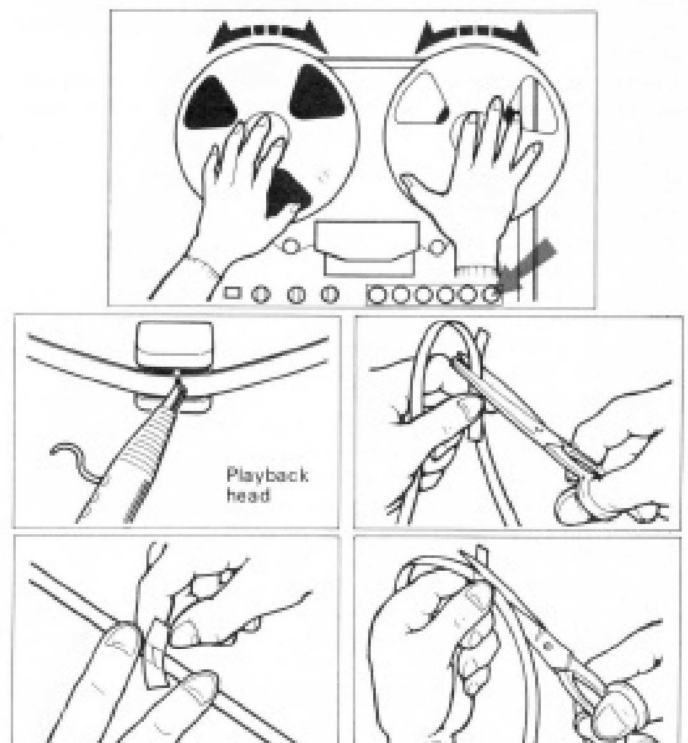
1. Stop the tape with the pause button in playback mode at the portion to be spliced.
2. Move the tape across the playback head back and forth by turning both reels by hand.
3. While listening to cue sound, find the correct portion to be spliced, and carefully mark it at the position of the playback head on the outer side of the tape with soft colored pencil. Yellow will be most distinctive.

Note: Take care not to get excessive marking material on the heads. Any stain on the heads will cause contamination and impair tape-and-head contact.

### Splicing

Use splicing tape and a demagnetized pair of scissors.

1. Neatly overlap the tapes to be spliced and cut diagonally.
2. Place the two diagonal tape ends together, outer side up, on a flat surface. Be careful to make ends meet but not overlap.
3. Apply a piece of splicing tape diagonally over the aligned ends, and press it firmly.
4. Trim off the excessive splicing tape, slightly cutting into the tape.



#### NOTE

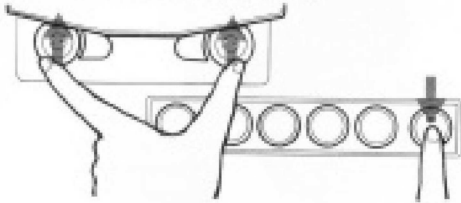
● Do not use ordinary cellophane tape as it tends to spoil recording tapes. Also avoid using magnetized scissors or razor blades. Magnetized instruments will cause a "click" or "pop" at the spliced portion.

● Take care not to unnecessarily touch the tape. Even invisible traces of grease and sweat from your fingers will hinder a good sticking.

#### Searching the program beginning in rewind or fast-forward mode ;

While the tape is fast-winding, depress the pause button, then slightly push up the left and right pinch rollers against the heads. Chattering sounds will be heard from the recorded part of the tape. Search the blank portion between these sounds.

The sound volume may be changed according to the pressure applied to the pinch rollers by your fingers.



● Don't push the pinch rollers excessively. Too much pressure will deteriorate or even cut the tape.

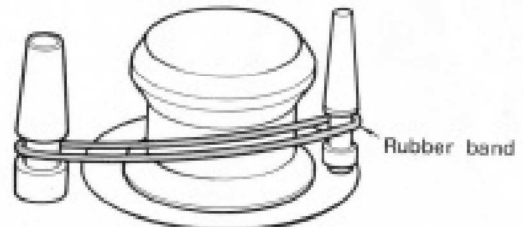
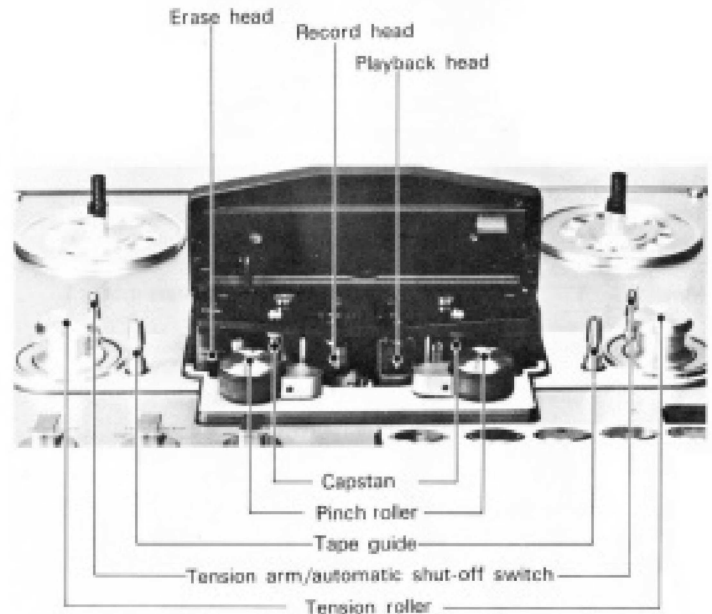
## MAINTENANCE

#### Cleaning of heads and tape path

Generally cleaning after every 10 hours of operation will be sufficient. However all surfaces over which tape travels should be cleaned before making high quality recordings.

Take the supplied head cleaning pen and wipe the heads and tape path.

For easier cleaning of pinch roller and capstan, rotate them by holding the automatic shut-off switch and the tape guide with a rubber band. Supply the power to the unit and depress the ► button.



#### Demagnetizing heads

Residual magnetism will gradually build up on the heads through continuous use and cause erasure of high frequencies and hiss build-up. The heads and metallic parts of the tape path should be demagnetized after 20-30 hours of operation with a commercially available head demagnetizer.

Be sure the unit is turned off.

#### Cleaning cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild soap solution. Do not use any type of scouring powder or solvent such as alcohol or benzine.

#### Inside check

Consult your nearest Sony Service Station or Sony dealer once a year to maintain optimum performance.

## SPECIFICATIONS

Power requirements	Type 1 (available in Europe) 220 V AC, 50/60 Hz (110, 120, or 240 V adjustable) Type 2 (available in other countries) 120 V AC, 50/60 Hz (110, 220, 240 V adjustable by the authorized Sony personnel)
Power consumption	90 W
Semiconductors	2 ICs, 3 FETs, 104 transistors 89 diodes
Tape speeds	19 cm/s (7 1/2 ips) 9.5 cm/s (3 3/4 ips)
Recording time	With 1100 m (3,600 ft) tape, 27 cm reel Stereo recording 180 minutes at 19 cm/s Mono recording 720 minutes at 9.5 cm/s
Fast winding time	Approx. 150 sec. with 740 m (2400 ft) tape
Reel	up to 27 cm (10 1/2-inch)
Track system	4-track 2-channel stereo
Heads	Record head 1, Playback head 1 Erase head 1
Motors	AC servo-controlled capstan motor 1 Induction reel motor 2
Bias frequency	160 kHz
Equalization	JIS standard 19 cm/s : 3,180 $\mu$ s + 50 $\mu$ s 9.5 cm/s : 3,180 $\mu$ s + 90 $\mu$ s
Signal-to-noise ratio	With Sony Ferri-Chrome Tape 61 dB
Total harmonic distortion	0.7%
Frequency response	With Sony Ferri-Chrome Tape and SLH Tape 30-25,000 Hz $\pm$ 3 dB at 19 cm/s 30-18,000 Hz $\pm$ 3 dB at 9.5 cm/s With regular tape 30-18,000 Hz $\pm$ 3 dB at 19 cm/s 30-15,000 Hz $\pm$ 3 dB at 9.5 cm/s
Wow and flutter	0.04% WRMS at 19 cm/s 0.08% at 9.5 cm/s
Inputs	Microphone input (phone jack) . . . . . 2 sensitivity 0.2 mV (-72 dB) for low impedance microphone Line input (phono jack) . . . . . 2 sensitivity 0.06 V (-22 dB) input impedance 100 k ohms
Outputs	Line output (phono jack) . . . . . 2 output level 0.435 V (-5 dB) at load impedance of 100 k ohms, with PB LEVEL controls set to center detent position, with PB LEVEL controls set to "10" 0.775 V (0 dB) Suitable load impedance more than 10 k ohms Headphone output (phone jack) . . . . . 1 for low impedance headphones
Record/playback (DIN) connector	Input impedance less than 10 k ohms Output impedance less than 10 k ohms
Other jack	11-pin remote control connector
Dimensions	Approx. 445 x 525 x 235 mm (w/h/d) (17 1/2 x 20 5/8 x 9 1/4 inches)
Weight	Including projecting parts and controls Approx. 27 kg (59 lb 8 oz)

Supplied accessories	Reel adaptor and spacer RAD-11 . . . . . 2 Reel R-11A . . . . . 1 Connecting cord RK-74H . . . . . 2 Head cleaning pen . . . . . 1
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Design and specifications subject to change without notice.

## TROUBLE CHECKS

The following chart will help correct most problem which may occur with the unit.

Before going through the check list below, first pay attention to the following fundamental points.

- The power cord must be connected firmly.
- Connection to the amplifier must also be firm.
- Heads, capstan and pinch roller should be cleaned.
- The amplifier controls and switches should be set correctly.

**Tape does not move even when function buttons are depressed.**

- There is slack in the tape.

**Tape does not run even when the ► button is depressed.**

- The pause button is depressed.

**When power is supplied, tape runs even though the ► button is not depressed.**

- The TIMER switch is set to ON.

**Recording source cannot be monitored in the playback mode, when setting the MONITOR switch to SOURCE.**

- The REC MONITOR MUTE switch is set to ON.

**During recording, there is a great volume difference between SOURCE and TAPE settings of the MONITOR switch.**

- The PB LEVEL controls are set far beyond midpoint.

**Unclear or distorted recording or excessive wow and flutter**

- Contamination of the heads.

**Poor S/N ratio during recording**

- The REC LEVEL controls unused (MIC or LINE) should be turned full counterclockwise.

**Recording cannot be made**

- The REC MODE switches are not depressed.
- Check the INPUT SELECT switch.

**No playback or decrease of sound reproduction**

- Contamination of the playback head.
- The MONITOR switch should be set to TAPE. At SOURCE position, no sound is heard.
- Check the amplifier volume controls.
- Check the amplifier input selector.
- Check if the PB LEVEL controls are set to "0".

**Too low microphone sound**

- Set the MIC ATT switch at "0".
- Use low impedance microphones.

**No sound from the headphones**

- Check the PB LEVEL controls.

**Insufficient erasure**

- Contamination of the erase head

**Oscillation occurs when trying to record from the amplifier**

- If the LINE OUT jacks of the tape deck are connected to the amplifier AUX jacks and if these are switched on, change the amplifier input selector to another position.