

3-MOTOR 3-HEAD  
STEREO TAPE DECK

# RT-1011L

OPERATING INSTRUCTIONS

KU



Walnut grained vinyl side panels are used in the construction of this cabinet.

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

 PIONEER®

# IMPORTANT PRECAUTIONS

## Keep Heads Clean

Each time before using the RT-1011L, clean the heads with the accessory cleaning bar as shown in Fig. 1. If dirt is extensive, refer to cleaning tape path parts of this Instructions on page 17.

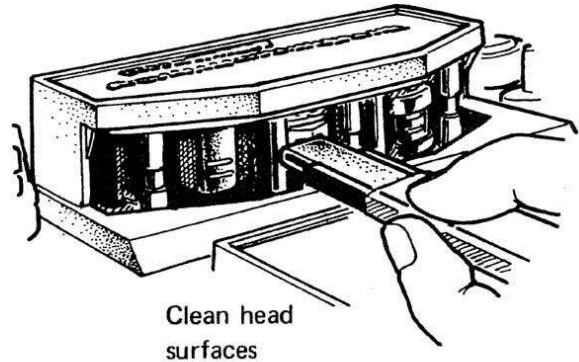


Fig. 1

## Use Same Diameter Reels

Be sure to employ same size reels for supply and take-up. Substantially different reel sizes may induce tape running irregularities and possible tape damage. If reel thickness varies, use the accessory reel adjusting sheet.

## Be Sure to Set Reel Clamps

Reel clamps are provided for securing the reels to the center shafts. After setting reel in place, as shown in Fig. 2, pull spring loaded center shaft tip outwards and turn it 60° left or right to clamp the reel. This is particularly important when using the RT-1011L vertically, as a reel becoming disengaged during high speed fast forward or rewind presents a safety hazard.

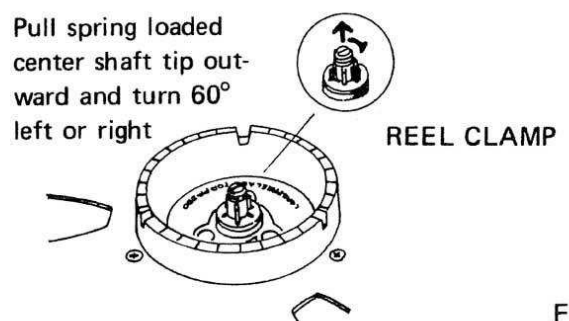


Fig. 2

## PLACEMENT CONSIDERATIONS

Avoid placing the RT-1011L in locations such as the following:

- In direct sunlight, near radiators or other heat sources.
- Area with poor ventilation or high humidity.
- Places with high dust or dirt content.
- Near magnetic field sources, such as transformers, motors or television equipment.
- On unstable or unlevel supports.

We are very grateful for your confidence in selecting the RT-1011L. That you have invested in this professional instrument indicates your serious intention to pursue the science and art of sound recording and reproduction to beyond the common level. It is therefore recommended that you read this Instructions thoroughly in order to become familiar with the correct operation of this tape deck. Beyond the essential points outlined herein, your only limitations are your accumulated knowledge and technique.

## CONTENTS

Important Precautions .....	2
Features .....	3
Section Designations & Functions .....	4
Connections .....	6
Basic Operation .....	7
Playback .....	9
Recording .....	10
Recording with Microphones .....	12
4-Track Monophonic Recording .....	13
Mixing Recording .....	13
Sound on Sound Recording .....	14
Echo Recording .....	14
Automatic Start and Stop Functions ..	15
Tape Handling Notes .....	16
Maintenance .....	17
Specifications .....	18
Troubleshooting Chart .....	20
Schematic Diagrams ....	Enclosed herewith

## FEATURES

### Sturdy Construction to Professional Standards

All mechanical parts are assembled on a chassis made of 5mm thick aluminum of high dimensional precision and supported by a unified diecast frame. This heavy-duty construction gives high accuracy and long durability.

### Precision Tape Transport Can Accommodate 10-1/2 in. Reels

The capstan is driven by a 4/8-pole hysteresis synchronous motor with a large 100mm (DIAM.) flywheel to maintain superb speed accuracy without wow and flutter. The capstan itself is machined to extremely precise tolerances. The reels are driven by a pair of specially designed 6-pole inner rotor induction motors which combine the ideal torque characteristics of eddy current motors with the high starting torque of induction motors. No excessive stress is applied to the tapes, thanks to the low rotational inertia of the motors and the solenoid-controlled differential band brakes.

### Three Tape Heads

The playback head features highly precise track alignment, intimate tape-to-head contact due to its hyperbolic curvature, and gives excellent performance in regard to phase accuracy, linear frequency response and crosstalk. In the recording head much attention has been paid to obtain optimum bias, signal-to-noise ratio and frequency response characteristics. The three-head system of course permits professional after-tape monitoring of a recording in progress.

### Direct Coupled Playback Amplifier of Wide Dynamic Range

For each of the two channels, a 3-stage direct coupled amplifier with low-noise silicon transistors is provided. Its dynamic range goes to beyond 20dB above 0 VU level.

### Separate Recording Amplifiers for LINE and MIC Inputs

The 2-channel recording amplifier features an excellent signal-to-noise ratio and a wide dynamic range of 50dB. The microphone inputs are sensitive enough to permit the use of studio-quality 600-ohm condenser microphones. To maintain stable recording conditions regardless of AC line voltage fluctuations or temperature changes, a stabilized voltage supply has been adopted, while a bias current limiter has been included in the bias supply oscillator circuit.

Independent level controls for the LINE and MIC inputs permit effective mixing of program sources, "sing-along" recording, sound-on-sound recording and other professional processing methods.

### Click Noises Prevented by Electronic Switching

Solid state electronic — not mechanical — switches in the recording and playback equalizer circuits and a dynamic relay in the recording bias circuit prevent those unpleasant click noises caused by normal switches.

### 2-position Bias Selector, 2-position Equalizer Selector

To make the best of the extra quality potential of low-noise, high output tape (L.H. tape), recording bias current and equalization are of paramount importance. On model RT-1011L, bias current and equalization selector switches have been provided to establish optimum recording conditions for all types of recording tape now on the market.

### Swift-action Electronic Pushbutton Control with Perfect Tape Protection

All transport functions are switched by electronic solenoid pushbuttons. You can switch from any mode directly to any other mode without having to push the stop button and without fear of undue stress on the tape.

### Automatic Recording in Your Absence

The tape deck can be preset for recording and, with the help of an optional time, can be energized at a preselected time, for example to record an FM broadcast program that you do not wish to miss.

### Auxiliary Controls Worthy of a Studio Machine

Tape tension can be changed according to reel size. Other controls include separate record switches for both channels, tape/source monitor switch, a "recording" indicator equipped with a light emitting diode, a headphone jack, etc.

### Function Begets Form

Outward appearance matches technical excellence — the impressive looking control panel, large-sized LEVEL meters and handsome controls are visual expressions of the high level of technical performance that you can expect from this tape machine.

# SECTION DESIGNATIONS & FUNCTIONS

## Tape Counter

Depress the reset button to obtain "0000" indication before starting to record. Locating tape passages during playback can then be easily performed.

## Guide Roller Arm

Locks toward the left for convenient tape threading. Be sure to release the lock after threading tape.

## PAUSE Switch

Employ for briefly stopping tape motion. Set this switch to ON to stop tape during record or playback. Switch does not operate during fast forward or rewind.

The time lag caused by switching from fast forward or rewind to play can be minimized by using this switch. For details see the section "USING PAUSE SWITCH FOR RAPIDLY SWITCHING FROM FAST FORWARD OR REWIND TO PLAY" on page 8.

## POWER Switch

Depress for power on; depress again for power off.

## REEL SIZE SELECTOR Button

Button should be in the raised position when using 10-1/2in (26cm) reels. Depress button to employ 7 in (17cm) reels. Since button locks in depressed position, press it again to release the lock before using 10-1/2in (26cm) reels.

- NOTES:**
1. Be sure to employ two reels of the same size and material.
  2. Do not employ reels smaller than 5in (12cm).

## SPEED SELECTOR Button

Selects tape record and playback speed. Raised position is for 19cm/s (7-1/2 ips) and depressed position for 9.5cm/s (3-3/4 ips). When changing from 9.5cm/s (3-3/4 ips) to 19cm/s (7-1/2 ips) setting, push the button to release lock.

## MIC Recording Level Controls

Adjust microphone input and also input source connected to REC/PB (DIN) connector on the rear panel.

## LINE Recording Level Controls

Adjust recording level of source connected to INPUT (REC) Jack on the rear panel.

**NOTE:** The MIC and LINE recording level controls both consist of a pair of friction-coupled knobs; the inner knob controls the left channel, the outer ring, the right channel. Usually, knob and ring rotate together, but you can rotate one while holding the other in place with your other hand.

## REC Indicator

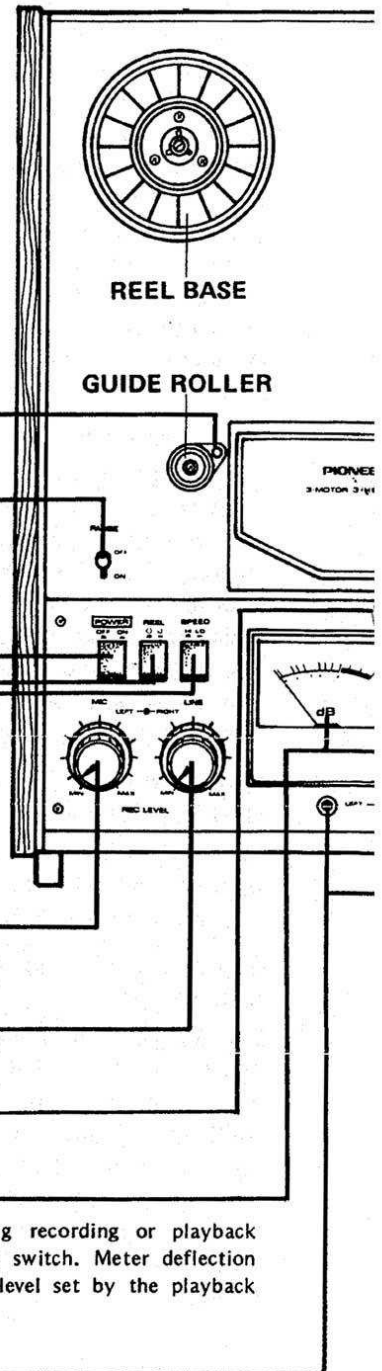
Red light emitting diode lights up when recording mode both stereo recording and monophonic recording.

## LEVEL Meters

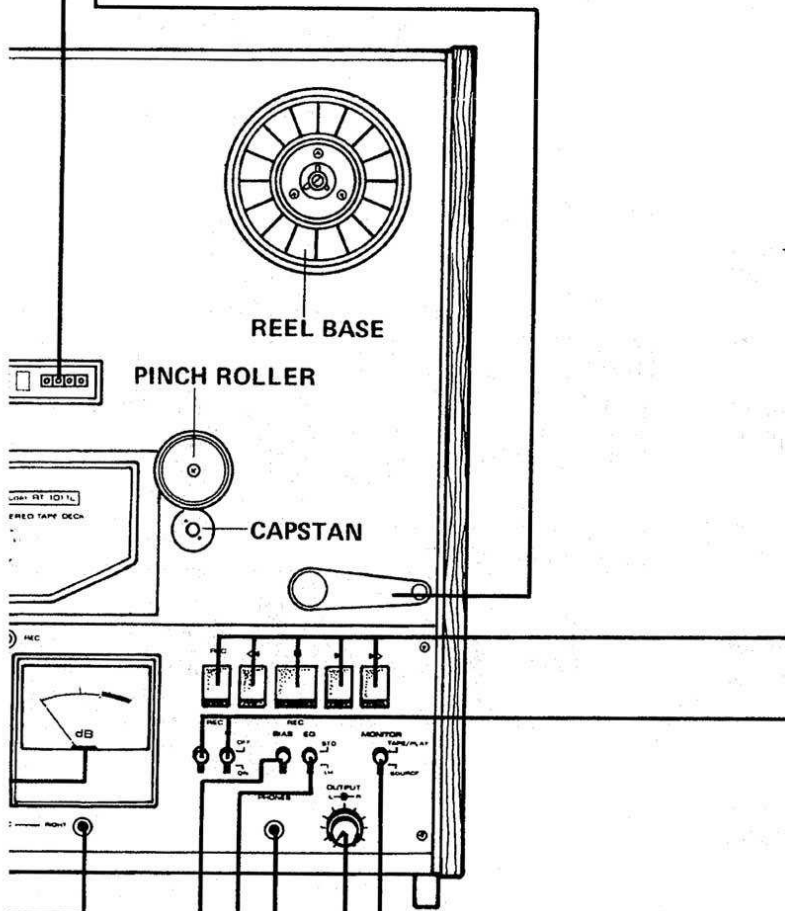
Meters for determining levels during recording or playback according to selection of MONITOR switch. Meter deflection during playback is based on output level set by the playback level controls (OUTPUT L & R).

## MIC Jacks

Either low impedance (600Ω) or high impedance (10kΩ ~ 50kΩ) microphones may be employed. Jacks accept standard 6mm diameter plugs.



**Tension Arm**  
Tension arm is interlinked with a shut-off switch. If tape slackens, breaks or runs out, operation is automatically stopped and function buttons released.



**Function Buttons**

- Stop Button: Depressing button stops recording playback, fast forward or rewind operations.
- ▶ Play Button: Depress for playback. To record, push the REC button while holding this button depressed.
- Fast Forward Button: Depress for fast forward. Tape will be taken up by the right reel at high speed.
- ◀ Rewind Button: Depress for rewind. Tape will be taken up by the left reel at high speed.
- REC Button: To record, depress this button while holding play button depressed.

**NOTE:** It is not necessary with the RT-1011L to depress the stop button between selecting operations. From fast forward or rewind, for example, the play button can be directly pressed. The tape will be automatically brought to a stop, then switched to playback speed after a few seconds. This process does not damage the tape.

- To go directly from FAST FORWARD or REWIND to PLAY, refer to page 8.
- For using thin tape in thickness, refer to NOTES on page 8.

**REC Switches (L & R)**

Select recording mode. When either or both are set to OFF, recording and erase functions do not operate for the corresponding track. Be sure to set both switches to ON when a conventional stereo recording is being made.

- L: To record on left channel
- R: To record on right channel
- L & R both ON: For stereo recording

**MONITOR Switch**

Select the outputs, including phones for either playback (through the tape) or source (before recording)

- TAPE/PLAY: For playback or recorded signal
- SOURCE: Signal can be heard immediately prior to being recorded.

**OUTPUT Level Controls (L & R)**

Controls for adjusting playback output levels. Inner knob adjusts left channel and outer knob the right channel.

**PHONES Jack**

Connect stereo headphones to this jack.

**EQ Switch**

Selects the recording equalization characteristics in accordance with the type of tape to be used.

- STD: For recording on normal, conventional tape.
  - LH: For recording on low-noise high-output tape.
- This switch has no function in playback.

**BIAS Switch**

Selects the recording bias current in accordance with the type of tape to be used.

- STD: For recording on regular tape. Small bias current.
- LH: For recording on low-noise high-output tape. Strong bias current.



# CONNECTIONS

## STEREO SYSTEM COMPOSITION

The RT-1011L is a stereophonic 4-track 2-channel tape deck for recording and playback. By connecting to a 2-channel stereo amplifier, as illustrated in Fig. 3, stereophonic tape recording and playback can be performed.

### Playback Connections

With accessory connecting cord, connect OUTPUT (PB) jacks to stereo amplifier tape playback jacks, as shown in Fig. 4.

Connect LEFT OUTPUT (PB) jack of RT-1011L to left channel playback jack of stereo amplifier.

Connect RIGHT OUTPUT (PB) jack of RT-1011L to right channel playback jack of stereo amplifier.

### Recording Connections

As shown in Fig. 4, connect one set of INPUT (REC) jacks to stereo amplifier recording output jacks (TAPE REC) with accessory connecting cord.

Connect LEFT INPUT (REC) jack of RT-1011L to left channel recording output jack of stereo amplifier.

Connect RIGHT INPUT (REC) jack of RT-1011L to right channel recording output jack of stereo amplifier.

### Employing REC/PB (DIN) Connector

If the stereo amplifier is provided with a DIN type record/playback connector, use the separately sold connecting cord (Pioneer PP-101) to connect it to the RT-1011L, as shown in Fig. 4.

Both recording and playback connections are performed by this, eliminating the need for the connections described above.

### GND Terminal

Chassis ground terminal. If externally induced hum etc. is excessive, connect this terminal to amplifier ground terminal or to an earth ground.

*NOTE: When using tape deck horizontally, use spacers under deck to make it slant for easy operation.*

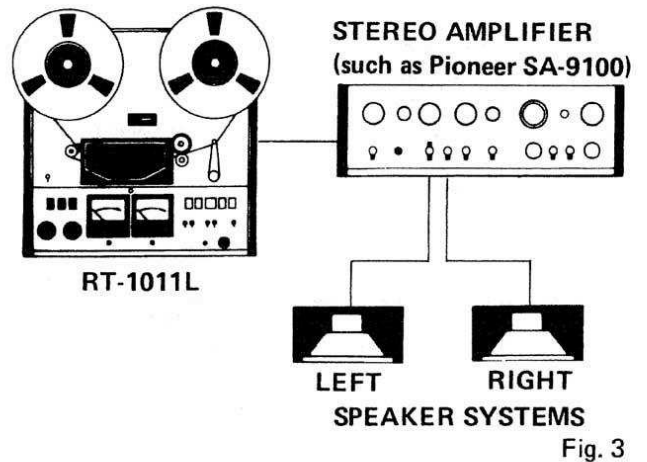


Fig. 3

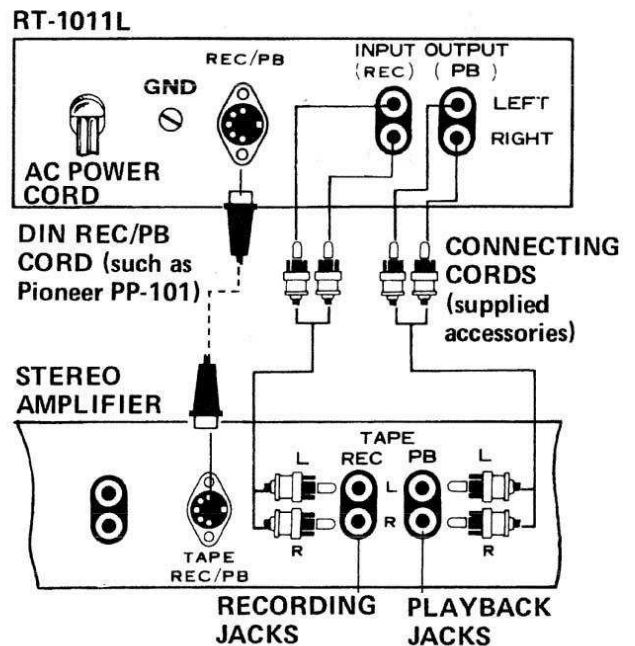


Fig. 4

# BASIC OPERATION

## TAPE THREADING

Either 7 in. or 10-1/2in. reels may be used, however, be sure to employ two reels of the same size to avoid undue stresses on the tape.

1. Set loaded reel on the left reel base and empty take-up reel on the right base. If NAB type 10-1/2in reels are used (large center holes), employ reel adaptors as shown in Fig. 5. If reel thicknesses differ, place the supplied reel sheet between the reel adaptor and reel base of the thinner reel (Fig. 6).
2. After a reel is set in place, pull the spring loaded center shaft outward and turn it 60° either left or right to clamp the reel. This is particularly important when using the RT-1011L vertically.
3. Depress the REEL SIZE SELECTOR button when using 7 inch reels. This button should be in the raised position when employing 10-1/2in reels.
4. For easier tape threading, lock the guide roller arm in the lefthand position (Fig. 9). Insert tape leading end properly into the take-up reel slit, as shown in Fig. 10. Turn the reel 2 or 3 times so that tape will not come loose and to take up tape slack. Before running the tape, do not forget to release the guide roller arm lock.

10-1/2in. REEL ADAPTOR

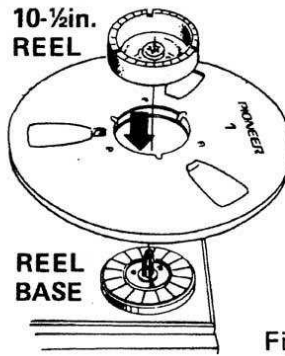


Fig. 5

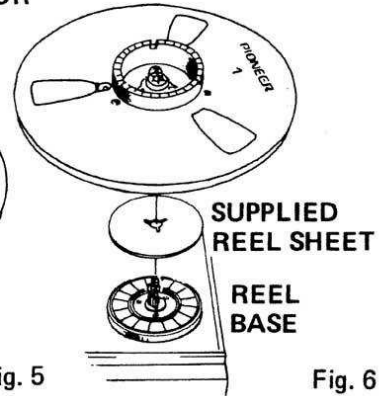


Fig. 6

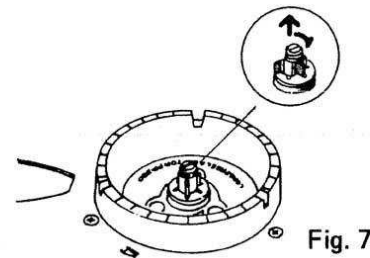


Fig. 7

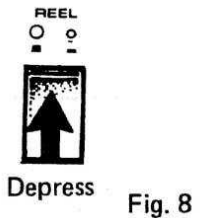


Fig. 8

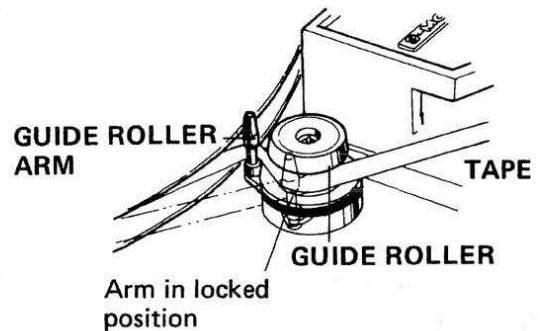
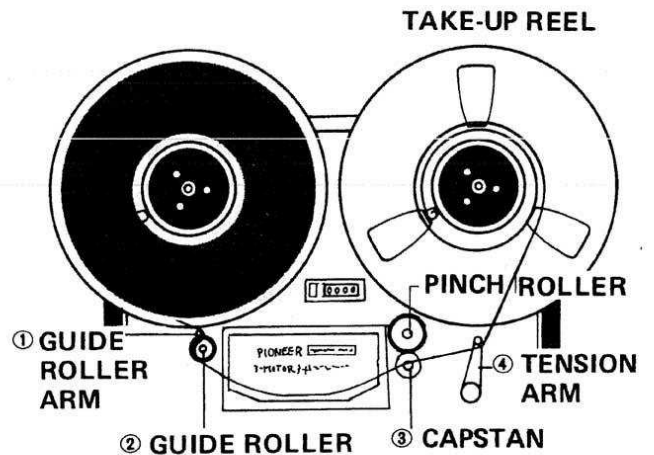


Fig. 9



Above numbers indicate tape threading sequence.

Fig. 10

## PLAYING TAPE (Fig. 11)

1. First depress the ■ stop button to insure that function buttons are released.
2. Depress the POWER switch. Level meters light and capstan rotates.
3. Depress the ► play button. Tape travels from left to right.
4. To stop tape motion, depress the ■ stop button.

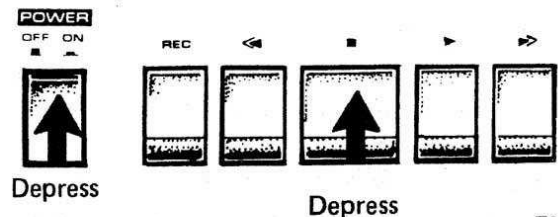


Fig. 11

## SELECTING TAPE SPEED (Fig. 12)

Tape speed is 19cm/s (7-½ ips) when SPEED button is in the raised position. Depress the button for 9.5cm/s (3-¾ ips) tape speed. Since the button locks in the depressed position, press it again to release the lock and return to 19cm/s.

HI .....	19cm/s (7-½ips)
LO .....	9.5cm/s (3-¾ips)



Depress this button for 9.5cm/s (3-¾ips) tape speed.

Fig. 12

## PAUSE SWITCH OPERATION (Fig. 13)

Set the PAUSE switch to ON to temporarily stop tape motion during record or playback. Return this switch to OFF to resume tape motion. The PAUSE switch does not function during fast forward or rewind.

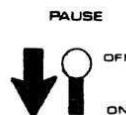


Fig. 13

## FAST FORWARD AND REWIND (Fig. 14)

1. Depress the ► fast forward (or ◀ rewind) button. Tape will travel at high speed in the selected direction.
2. To stop the tape motion, depress the ■ stop button.

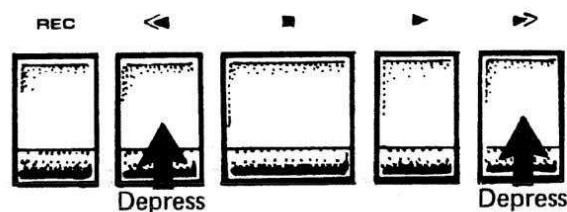
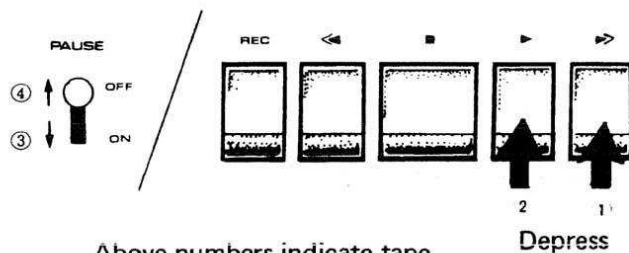


Fig. 14

## USING PAUSE SWITCH FOR RAPIDLY SWITCHING FROM FAST FORWARD OR REWIND TO PLAY (Fig. 15)

When the tape is moving at fast forward or rewind and the ► play button is depressed, in order to protect the tape, a delay of several seconds elapses before play is initiated. Under some circumstances this delay may be inconvenient (such as when locating a recorded passage, cuing, etc.). The following procedure will minimize the delay.

1. Depress ► fast forward or ◀ rewind.
2. Depress ► play button and set the PAUSE switch to ON.
3. After the tape has come to a complete stop, return the PAUSE switch to OFF. The tape will then immediately travel at play speed.



Above numbers indicate tape operating sequence

Fig. 15

**NOTE:** Make sure the tape has come to a complete stop before returning the PAUSE switch to OFF. Tape stretching or breakage may occur if tape is still moving.

- NOTES:**
1. With the RT-1011L, it is not necessary to depress the stop button between operations. Simply depress the desired function button.
  2. When using long play, thin tapes, do not switch directly from fast forward or rewind to stop or play. Instead, switch from one fast speed to the other (as from fast forward to rewind), wait until the tape motion has slowed, then switch to stop or play button.



# PLAYBACK

1. Thread tape correctly, as described in section on TAPE THREADING on page 7.
2. Depress POWER switch (Fig. 16). The level meters illuminate and the capstan rotates. If the capstan does not rotate, check tape threading. It will not turn if the tape is excessively slack.
3. Depress the REEL SIZE SELECTOR button when using 7 in reels. This button should be in the raised position when employing 10-1/2in reels (Fig. 16).
4. Determine at which speed the tape has been recorded and set the SPEED SELECTOR button accordingly (Fig. 16).
5. Set MONITOR switch (Fig. 17) to TAPE/PLAY. Sound will not be heard if set to SOURCE.
6. Depress the ► play button (Fig. 18). Tape will run from left to right in playback mode.
7. Operate stereo system and adjust volume and tone according to preferences. Volume can be adjusted by the OUTPUT LEVEL controls L&R (Fig. 19).
8. Control the output level of the signal from the recorded tape by rotating the OUTPUT LEVEL CONTROL (Fig. 19), with care taken not to make the needles of the LEVEL METERS swing over 0dB. If the input level of the stereo amplifier is low, the sound being played back may be distorted. In such a case, try to make the output level lower by rotating the OUTPUT LEVEL CONTROL to the left (counterclockwise). If the output levels of other stereo components such as a stereo tuner, cassette tape deck, etc. are also low, in the same manner, try to make those levels match the same as the RT-1011L's by controlling the OUTPUT LEVEL CONTROL of this tape deck.
9. Set all controls on your 2-channel amplifier for tape playback. Volume and tone must be adjusted with the controls on the amplifier.
10. To temporarily stop the tape running, set the PAUSE switch to ON (Fig. 20-A).
11. To stop the tape running, depress the ■ stop button (Fig. 20-B). The RT-1011L tension arm is interlinked to a shut-off switch which automatically stops the machine if the tape should break or run out.

## FAST FORWARD FUNCTION

1. Set the REEL switch by your reel size. Then, depress the ► fast forward button (Fig. 21).
  - To switch from fast forward to play, simply depress the ► play button. The tape will stop and, after a few seconds, proceed at play speed.
  - If fast forward has proceeded beyond the desired point, simply depress the ◀rewind button. The tape will stop, reverse and travel from right to left at high speed.
2. To stop fast forward motion, depress the ■ stop button.

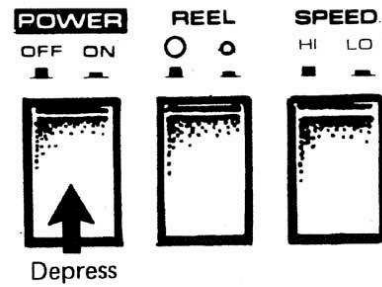


Fig. 16



Fig. 17

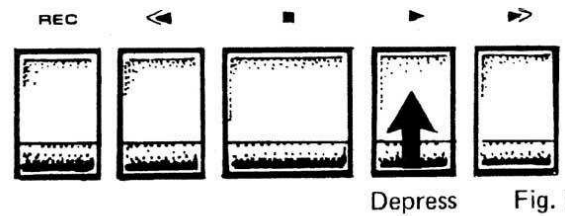


Fig. 18

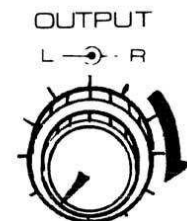


Fig. 19

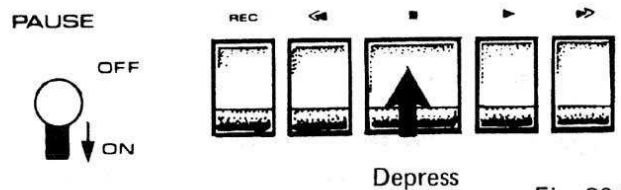


Fig. 20-A

Fig. 20-B

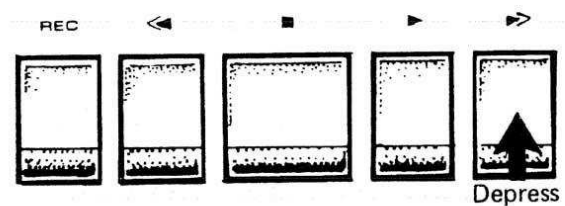


Fig. 21

## REWIND FUNCTION

1. Set the REEL switch by your reel size. Then, depress the ◀ rewind button (Fig. 22).
  - To switch from rewind to play, simply depress the ▶ play button.
  - If rewind has proceeded beyond the desired point, simply depress the ▶ fast forward button.
2. To stop rewind motion, depress the ■ stop button.

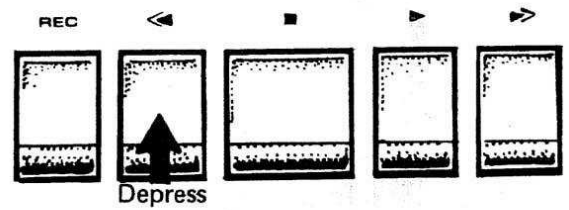


Fig. 22

## RECORDING

1. Correctly thread the tape as described in the TAPE THREADING section on page 7.
2. Depress the power switch (Fig. 23).
3. Confirm REEL SIZE SELECTOR button setting (Fig. 23). Depressed position is for 7in (17cm) reels and raised position for 10-½in (26cm) reels. It is important to check this selector button setting, as improper tape tension can impart stresses on the tape. When restoring the button to the raised position, push it and release.
4. Set SPEED switch for desired tape speed (Fig. 23).

HI ..... 19cm/s (7-½ips)  
 LO ..... 9.5cm/s (3-¾ips)

19cm/s is most suitable for recording music. 9.5cm/s, suitable for recording conversation, gives longer recording time and greater tape economy, albeit at a slight loss in sound quality.

5. Set BIAS and EQ switches according to the type of employed tape (Fig. 24). For detailed description of the operation of these switches, refer to the section "The REC Bias & EQ Switches" on page 11.
6. Set REC switches (L & R) to ON (Fig. 24). When these switches are set to ON, red indication appears in switch slots.
7. Set MONITOR switch at position SOURCE. The level meters now indicate the level of the incoming signal so that you can adjust the recording level control for optimum recording quality. If the deck is connected to the amplifier via its DIN-type REC/PB connector, the recording level must be adjusted with the MIC recording level control. Refer to Fig. 25. For details, refer to the section "Recording Level Adjustments" on page 11.
8. Push the REC and ▶ PLAY buttons simultaneously (Fig. 26). The recording indicator lights up, the tape begins to travel, and recording starts.
9. To ascertain the quality of the recording being made, set the MONITOR switch at position TAPE/PLAY (Fig. 27). You now hear the taped sound, as picked up by the playback head, through headphones or speakers. If this check reveals poor sound quality, check the possible sources of trouble such as recording level adjustment, wrong REC BIAS or REC EQ setting, dirty tape heads, inferior tape quality, etc., and start anew.

**NOTE:**  
 Set the REEL switch by your reel size or the fast forward and rewind may not be done.

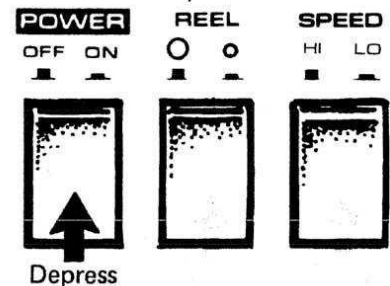


Fig. 23

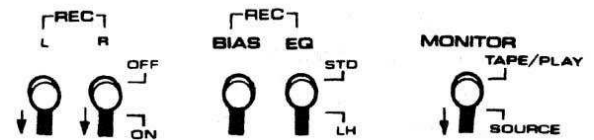


Fig. 24

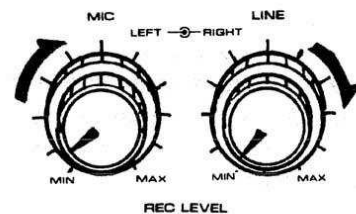


Fig. 25

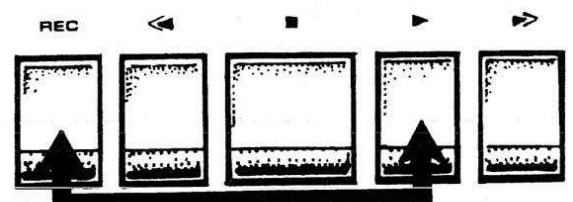


Fig. 26

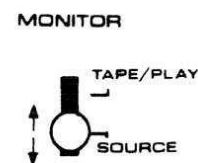


Fig. 27

10. To interrupt the recording momentarily, set the PAUSE switch at ON (Fig. 28-A).

11. Whenever you want to stop the recording, push the ■ STOP button (Fig. 28-B).

### RECORDING LEVEL ADJUSTMENTS

The MIC or LINE recording level controls (Figs. 29 & 30) should be adjusted so that meter deflection is up to the red line continuously.

#### Level Adjustments with PAUSE Switch

Set the PAUSE switch to ON after the recording mode has been set up. This allows the levels to be adjusted freely without the tape in motion. After adjusting, set the PAUSE switch to OFF and start recording. The PAUSE switch is also effective in eliminating commercial messages or unwanted sources during recording.

#### Level Adjustments for FM Stereo Broadcasts

To adjust left and right recording levels for FM stereo broadcasts, set the mode switch of the tuner to FM MONO. Adjust so that L and R level meter deflections are equal.

### THE REC BIAS AND REC EQ SWITCHES (Fig. 31)

#### The REC BIAS Switch

A proper amount of bias current must be applied to the tape in order to obtain proper frequency response and distortion-free recordings. This bias current varies with the type of tape to be used.

Actually, almost all brands of tapes not otherwise marked can be considered "regular" and recorded with the REC BIAS switch set at STD. So-called "low-noise high-output" tapes, on the other hand, require more bias current — the REC BIAS switch should be set at LH.

- If a recording is made on low-noise high-output tape with the REC BIAS switch at STD, insufficient bias current will cause an unnatural boost in the high sound range, leading to distortions.
- Conversely, a recording made on regular tape with the switch at LH will suffer from poor high frequency response.

#### The REC EQ Switch

The amount of High frequency boost that must be applied to the signal in the recording process differs for regular and low-noise high-output tapes and must be selected along with the bias current. This is done by the REC EQ (recording equalization) switch, set it as STD for regular tapes, at LH for low-noise high-output tapes.

- Recording on LH tape with the switch at STD will cause an unnatural boost in the high range.
- Conversely, recording on regular tape with the switch at LH will cause inferior response in the high frequency range.

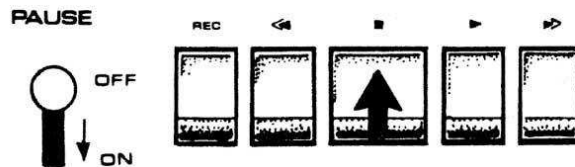


Fig. 28-A

Fig. 28-B

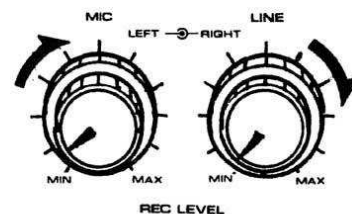


Fig. 29

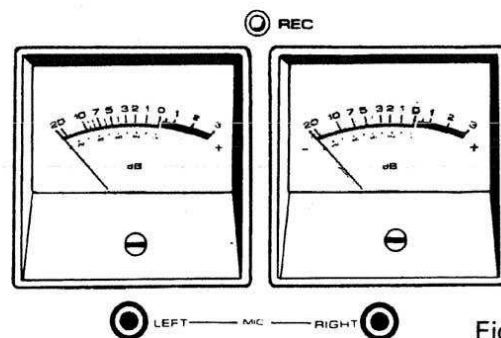


Fig. 30

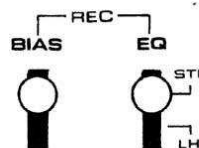


Fig. 31

### RECOMMENDED BIAS & EQ SWITCHES SETTINGS

The following switch settings are suggested for popular brands of tape.

EQ \ BIAS	STD	LH
	STD	100, 150, other regular tapes
LH	Scotch 211 Some long-playing (150 type) and LH type (SCOTCH 212, 218 BASF 35 LH AGFA PE 36 MEMOREX 1200) Tapes give good results at this setting.	SCOTCH 206, 212, 218 BASF 35 LH AGFA PE 36 MEMOREX SONY SLH FUJI FB101, FB151, FG150 MAXELL LNE50 UD50 TDK SD 150 HITACHI UD O

Table 1

## Switch Settings for Common Brands of Tape

The table 1 gives recommended bias and equalization switch settings for a number of common brands of tape. These settings have been found optimum in actual recording tests with model RT-1011L and therefore are not necessarily identical with the tape manufacturers' specifications. (Refer to Table on page 11).

If you want your favorite tone quality, select BIAS and EQ switch settings by switching TAPE MONITOR.

### Successive Recording (Fig. 32)

While playing back a previously recorded program, an additional program can be recorded immediately following it.

1. Depress the ► play button only. With the RT-1011L in playback mode, set the REC switches (L & R) to ON. Recording will not be started by this setting.
2. When the tape reaches the point where additional recording is to start, simultaneously depress the REC and ► play buttons. Be sure to depress both buttons, as depressing only the REC button will cause the ► play button to be released, stopping the tape motion.

### Monitoring Recording in Progress (Fig. 33)

The separate erase, record and play heads of the RT-1011L allow the sound that is being recorded by the record head to be immediately reproduced by the playback head. This is the sound heard when the MONITOR switch is set to TAPE/PLAY while recording is in progress. When this switch is set to SOURCE, the sound can be heard as it comes from the program source before it reaches the tape. Thus if this switch is operated alternately between their two positions as a recording is being made, the sounds can be compared and equipment adjusted for optimum performance.

*NOTE: To monitor a recording, be sure to set the monitor switch of the stereo amplifier to ON (TAPE MONITOR).*

## RECORDING WITH MICROPHONES

### STEREO RECORDING

1. Employ two microphones of the same type and connect them to the front panel MIC jacks (Fig. 34).
2. Set REEL SIZE and SPEED SELECTOR buttons.
3. Position REC switches (L & R) to ON (Fig. 35).
4. Set MONITOR switch to SOURCE.
5. Adjust recording levels with MIC recording level controls (Fig. 36).
6. Simultaneously depress REC and ► play buttons (Fig. 37). Recording by microphones can then be performed. Monitoring in this case should be performed with headphones to avoid acoustic feedback which may occur if speakers are used for monitoring.

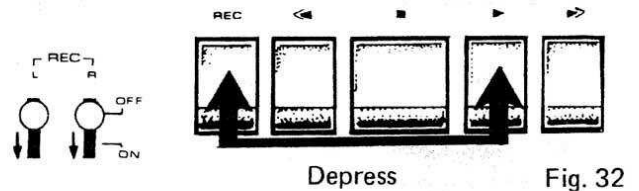


Fig. 32

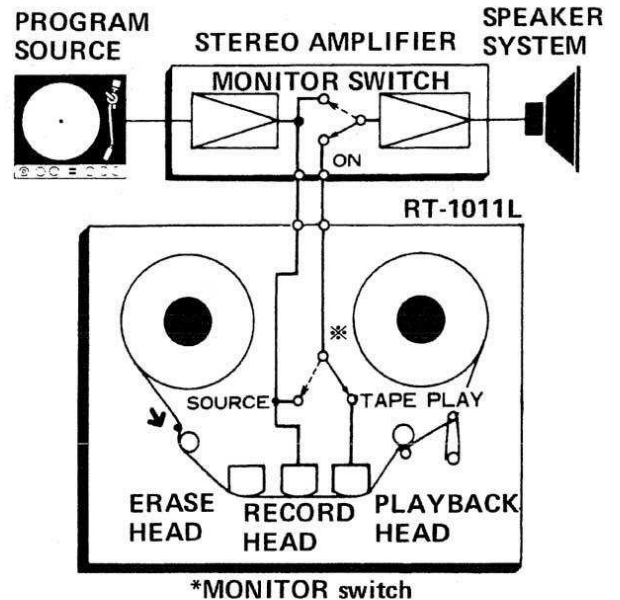


Fig. 33

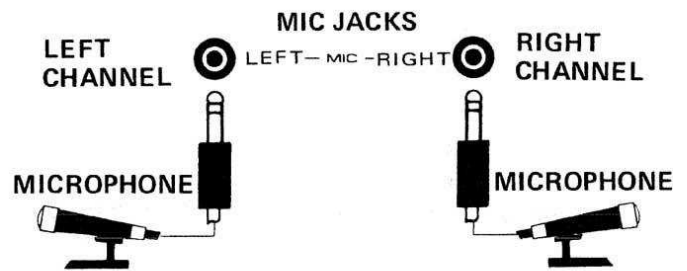


Fig. 34

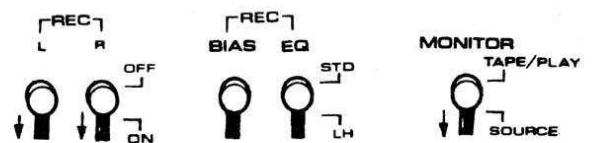


Fig. 35

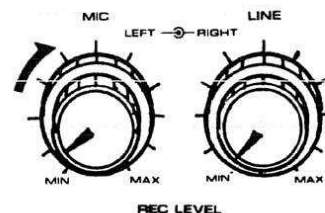


Fig. 36

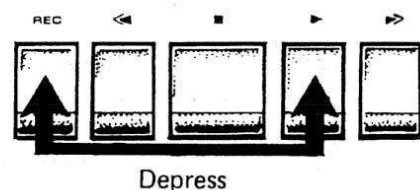


Fig. 37



- NOTES:**
1. Either low impedance (600Ω) or high impedance (10kΩ ~ 50kΩ) microphones may be employed.
  2. Consult audio equipment dealer for a broad selection of microphones to meet any recording situation. Especially recommended are the Pioneer DM-P1A and DM-3A high performance microphones.

## 4-TRACK MONOPHONIC RECORDING

By using only one microphone or one channel (L CH. or R CH.) REC terminals, the four tracks of the tape can be used for four separate monophonic recordings (Fig. 38). This method gives greatest tape economy.

Track 1	L <sub>1</sub>
Track 2	R <sub>2</sub>
Track 3	R <sub>1</sub>
Track 4	L <sub>2</sub>

- (1) Input to left channel, tape side 1
  - (2) Input to left channel, tape side 2
  - (3) Input to right channel, tape side 1
  - (4) Input to right channel, tape side 2
- (1) - (4) is the recommended order of making four monophonic recordings.

1. Make 1st recording on track 1.  
REC switches: L ON, R OFF (Fig. 39). Use LEFT channel MIC jack or INPUT (REC) terminal.
2. Turn tape over, re-load. Make 2nd recording on track 4.  
Controls and inputs as before.
3. Turn tape over again. Make 3rd recording on track 3.  
REC switches: L OFF, R ON (Fig. 40). Use RIGHT channel MIC jack or INPUT (REC) terminal.
4. Turn tape over again. Make 4th recording on track 2.  
Controls and inputs as above.

The tape now contains four monophonic recordings on tracks 1, 4, 3 and 2, in that order.

- NOTE:**
- For playing back the monophonic tape recorded in the order to tracks 1, 4 (L channels) and 2, 3 (R channels) use the following procedure:
1. For playback of tracks 1, 4: set the amplifier's MODE switch to position MONO LEFT.
  2. For playback of tracks 2, 3: set the MODE switch to position MONO RIGHT.

Fig. 38

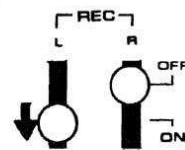


Fig. 39

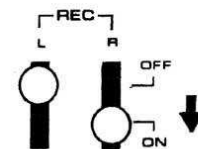


Fig. 40

## MIXING RECORDING

The RT-1011L contains provisions for mixing the signals connected to the MIC jacks and INPUT (REC) jacks, or to the REC/PB (DIN) connector and INPUT (REC) jacks. The mixed signals can then be recorded. For basic operation of the RT-1011L, refer to section "RECORDING" on page 10.

### Mixing MIC & INPUT (REC) Signals

1. Connect microphones to MIC jacks and signal from stereo amplifier to INPUT (REC) jacks (Fig. 41).
2. Adjust microphone recording levels with the MIC recording level controls and the INPUT (REC) signal with the LINE recording level controls.

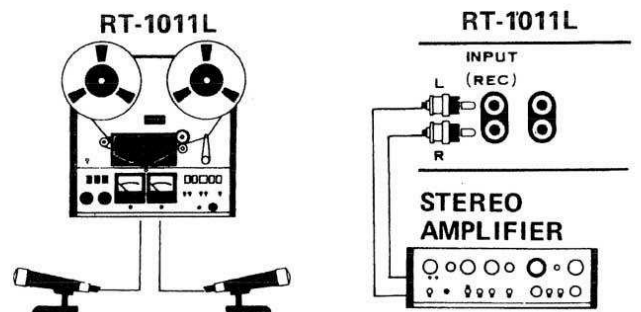


Fig. 41

### Mixing REC/PB & INPUT (REC) Signals

1. Apply signals to be mixed to the REC/PB (DIN) connector and INPUT (REC) jacks.
2. Adjust REC/PB (DIN) connector signal with the MIC recording level controls and INPUT (REC) jacks signal with the LINE recording level controls.

**NOTE:** When mixing microphone and LINE signals, slightly reducing the recording level of the LINE signal may provide a better effect.



# SOUND ON SOUND RECORDING

A signal is first recorded monophonically on either the left or right channel. During playback, this signal is then mixed with a microphone signal and the result recorded on the vacant channel. This sound on sound technique permits adding voice to background music, one-man duets, and a host of entertaining effects (Fig. 42).

## Left Channel Playback & Right Channel Record

1. Connect LEFT OUTPUT (PB) jack to RIGHT INPUT (REC) jack (Fig. 43).
2. Connect microphone to R MIC jack, set R REC switch to ON and L REC switch to OFF. Set the RT-1011L in recording mode; tape motion begins.
3. Adjust recording levels with the MIC and LINE recording level controls. If the playback output of the RT-1011L is too high, adjust it with the OUTPUT level control. Table 2 shows level meter deflection and OUTPUT (PB) jack signal according to MONITOR switch setting.

## Right Channel Playback & Left Channel Record

1. Connect RIGHT OUTPUT (PB) jack to LEFT INPUT (REC) jack.
2. Plug microphone into L MIC jack, set L REC switch to ON and R REC switch to OFF. Proceed with recording.

# ECHO RECORDING

A separately sold connecting cord is available from audio dealers which permits echo recording. This special effect is particularly interesting when recording voice.

## CONNECTION

1. Connect microphones to MIC jacks.
2. Connect RT-1011L rear panel jacks and stereo amplifier input terminals as follows (Fig. 44).  
LEFT OUTPUT (PB) jack and LEFT INPUT (REC) jack to stereo amplifier LEFT playback (TAPE MONITOR) terminal  
RIGHT OUTPUT (PB) jack and RIGHT INPUT (REC) jack to stereo amplifier RIGHT playback (TAPE MONITOR) terminal

## RECORDING AND PLAYBACK

1. Set LINE recording level control to minimum (fully counterclockwise) and OUTPUT level controls to positions so that the level meters do not deflect to the extreme right.
2. Position MONITOR switch to SOURCE and adjust MIC recording level controls to optimum level.

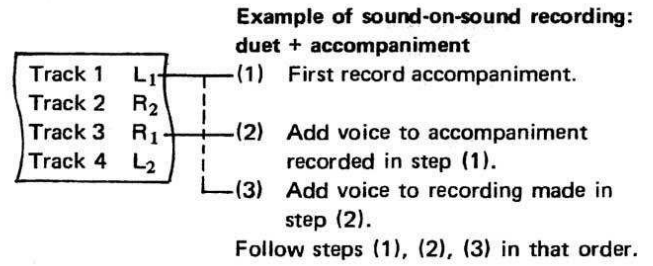


Fig. 42

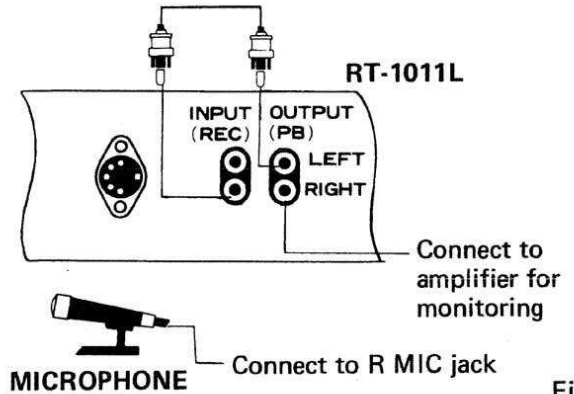


Fig. 43

Monitor Switch	Channel	Level Meter	OUTPUT Terminal
TAPE/PLAY	LEFT RIGHT	Deflects Deflects	Pre-recorded signal Signal just recorded
SOURCE	LEFT RIGHT	— Deflects	— Signal to be recorded

Table 2

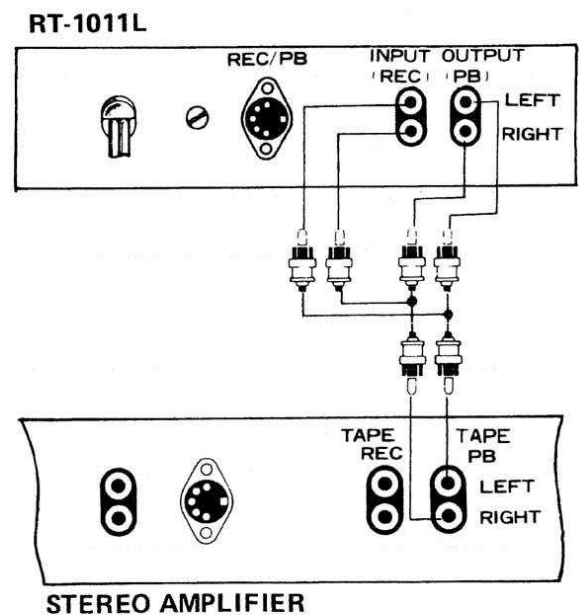


Fig. 44

3. With the LINE recording level control still at minimum, set the MONITOR switch to TAPE/PLAY and begin recording.
4. Set the monitor switch of the stereo amplifier to ON and gradually increase the LINE recording level control setting. Listen to the echo and stop turning the control when the optimum position is reached.

**NOTES:** 1. Do not increase the LINE recording level excessively, as howling will be produced.

2. The echo timing differs with tape speed. Set the SPEED SELECTOR button for the most desirable effect.

## AUTOMATIC START AND STOP FUNCTIONS

By using a separately sold timer switch, unattended recording, programmed start and stop operation, such as when using BGM at a store, can be performed.

### UNATTENDED RECORDING

1. Connect AC power cords of RT-1011L, amplifier and receiver, tuner, etc. to timer switch (Fig. 45).
2. Set power switches of RT-1011L, amplifier or receiver to ON.
3. Operate amplifier or receiver, tune in desired station and adjust the RT-1011L recording level controls.
4. Set timer switch so that power will be supplied to the equipment at the desired time. When timer switch has been set, since power to the RT-1011L is cut off, the function buttons are released. Therefore, again simultaneously depress the REC and ▶ play buttons. By this setup, power will be supplied to the equipment at the appointed time and recording automatically performed. If the timer switch is also set so that power will be turned off after the desired interval has elapsed, completely unattended recording can be performed.

### PROGRAMMED OPERATION

1. Connect AC power cords of RT-1011L, amplifier, etc. to timer switch.
2. Set the timer switch so that power will be turned off 30 to 60 minutes later. The timer switch will then automatically turn off the equipment at the programmed time.
3. If the timer switch is set so that power will be supplied to the equipment at a desired time and the RT-1011L set for playback, "wakeup" operation can be performed.

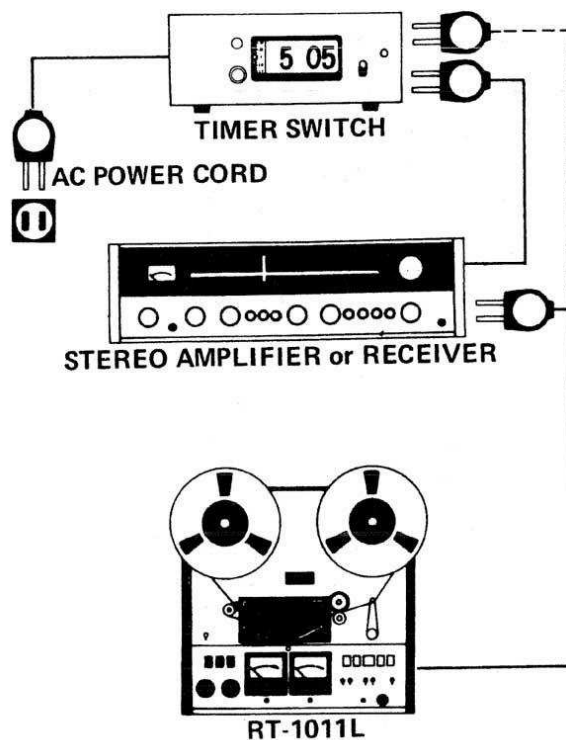


Fig. 45

# TAPE HANDLING NOTES

## TAPE REELS

- Use reels of the same size and material. If left and right reels differ, operating irregularities may occur.
- Do not use warped reels, as the edges of the tape can be damaged.

## TAPE

- Do not use deformed, soiled or old tape. Noise will be incurred and heads possibly scratched.
- Before using new tape, or tape that has been stored for a long time, run it through the RT-1011L at fast forward and rewind. This will promote better tape running and tape to head contact during record and playback.

## SPLICING TAPE

If tape breaks, it can be spliced as described below (Fig. 46).

1. Overlap ends of broken tape. Cut as shown in the figure at about a  $60^\circ$  angle.
2. Cut about 25mm (1-inch) of splicing tape, do not use other types of mending tape.
3. With tape backing side upwards (usually shiny side of tape), align the cut ends on a flat surface.
4. While holding so that cut ends do not separate, apply splicing tape.
5. After applying, lightly rub the back of the splicing tape with a blunt tipped tool (top of ballpoint pen, etc.) to remove trapped air bubbles.
6. Trim exposed edges of the splicing tape, cutting slightly into the recording tape (Fig. 46). If recorded tape has been broken, and the break is "clean" (without stretching, which may occur with polyester tapes), an attempt can be made to splice the broken ends directly together, foregoing the cutting step in Item 1. This would eliminate an audible interruption in the sound during playback.

## STORING TAPE

For best protection, do not rewind tape after playing or recording. Instead, store it in un-rewound condition and rewind it immediately before playing. The reason for this is that when a tape is being played, it is wound onto the take-up reel in a regulated, smoothly controlled tension. This is most desirable when storing tape for extended periods of time.

When storing tape, avoid places with extremes of temperature or humidity, and locations near magnetic fields, such as on top of or near an amplifier, television set, speaker, etc.

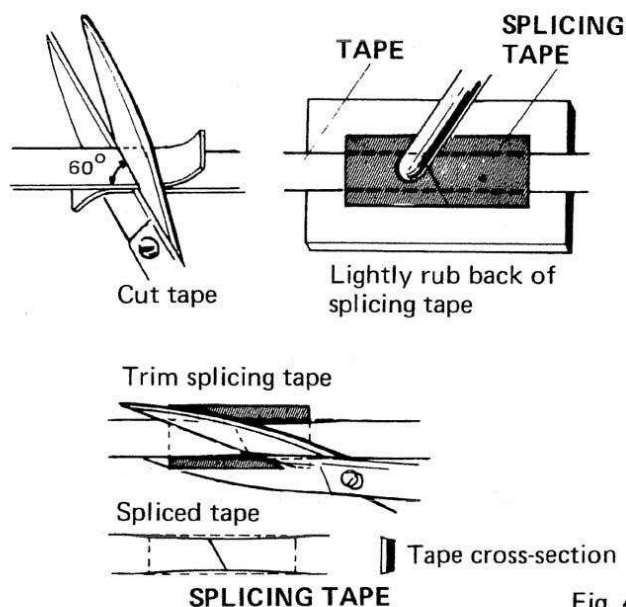


Fig. 46

# MAINTENANCE

The RT-1011L is a carefully manufactured, precision instrument. To keep it always in top condition, the following simple maintenance procedures are recommended.

## CLEANING TAPE PATH PARTS

As indicated in Fig. 47, the heads, tape guides, pinch roller, capstan, and tension arm are vulnerable to dirt and tape particle accumulation. Foreign matter or oil adhering to these parts may lead to deterioration of sound quality, poor stereo balance, and operating irregularities. For regular maintenance, use the accessory head cleaning ribbon, as shown in Fig. 48. But if dirt accumulation is extensive, it should be cleaned with the accessory cleaning bar or soft cloth moistened with the accessory cleaning fluid.

## DEMAGNETIZING HEADS

A Separately sold head demagnetizer ("degausser") is available from an audio equipment dealer which should be employed to demagnetize the RT-1011L heads at least once a month, or after extended operating sessions (Fig. 49). For detailed description of application, refer to instructions accompanying demagnetizer.

## LUBRICATION

The following places (Fig. 50) should be oiled once a year with a good quality light machine oil.

- Capstan Bearing      1 or 2 drops
- Pinch Roller Shaft    1 drop

Clean any excess oil after applying.

*NOTE: Use particular care not to get oil onto the rubber portion of the pinch roller. If oil inadvertently adheres to this part, clean it carefully with accessory cleaning fluid.*

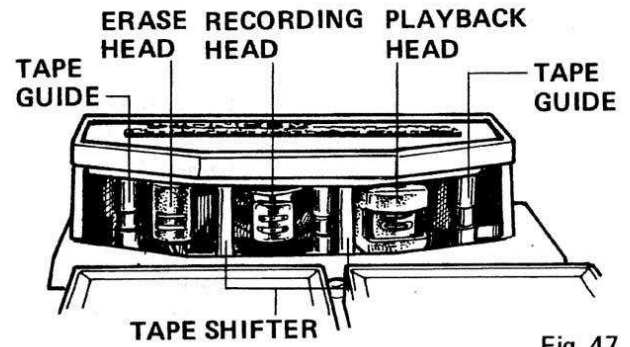


Fig. 47

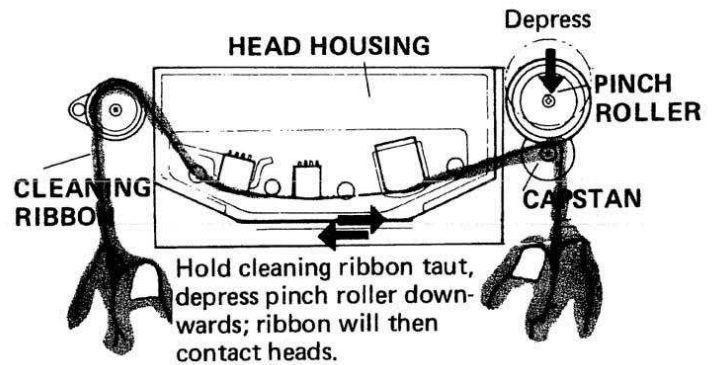


Fig. 48

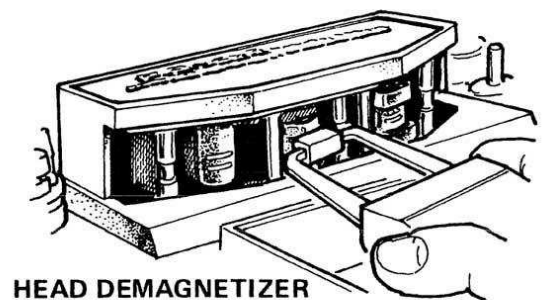


Fig. 49

Moisture forms in the operating sections of this model and the model's performance will be impaired if the model is brought from cool surroundings into a warm room or if the temperature of the room rises suddenly.

To prevent any performance impairment, let the model stand in its new surroundings for about an hour before switching it on, or ensure that the room temperature rises gradually.

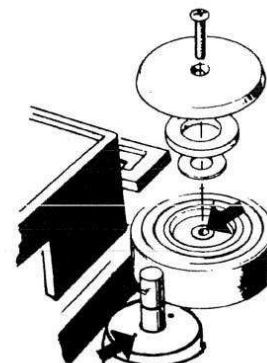


Fig. 50

# SPECIFICATIONS

Operation	3-motor, 3-head system 4-track 2-channel recording, 4-track 2-channel playback operations
Heads	4-track 2-channel playback head x 1 4-track 2-channel recording head x 1 4-track 2-channel erase head x 1
Motors	For reel; 6-pole iner rotor induction motor x 2 For capstan; 4/8-pole hysteresis synchronous motor x 1
Tape speeds	19cm/s (7-½ ips), 9.5cm/s (3-¾ ips)
High speed wind times	10-½in. reel; 110 sec at 740m (2400 feet) tape 7-in. reel; 90 sec at 370m (1200 feet) tape
Wow and flutter	19cm/s; 0.08% WRMS (0.10% RMS) 9.5cm/s; 0.10% WRMS (0.13% RMS)
Signal to noise ratio	More than 55 dB
Distortion	Less than 1%
Frequency response	19cm/s; 40Hz to 20,000Hz ± 3 dB 9.5cm/s; 40Hz to 12,000Hz ± 3 dB
Crosstalk	More than 60 dB
Stereo channel separation	More than 50 dB
Erase ratio	More than 60 dB
Recording bias frequency	125 kHz
Inputs	Microphone; 0.25mV to 80mV/20kΩ (1mV reference) Line input; 50mV to 25V/100kΩ (316mV reference) DIN; 15mV to 1.5V/1.5kΩ
Outputs	Line; 316mV/50kΩ load at 0 VU Output impedance; Less than 10kΩ DIN; 316mV/50kΩ load at 0 VU Output impedance; Less than 10kΩ Headphone; 40mV/8Ω at 0 VU Load impedance; 4 to 16Ω
Subfunctions	2-position bias selector Pause lever (locking, also used as lag canceller) 4-digit tape counter Tape monitor switch Tension arm (locking) Mic recording level control Line recording level control Output level control



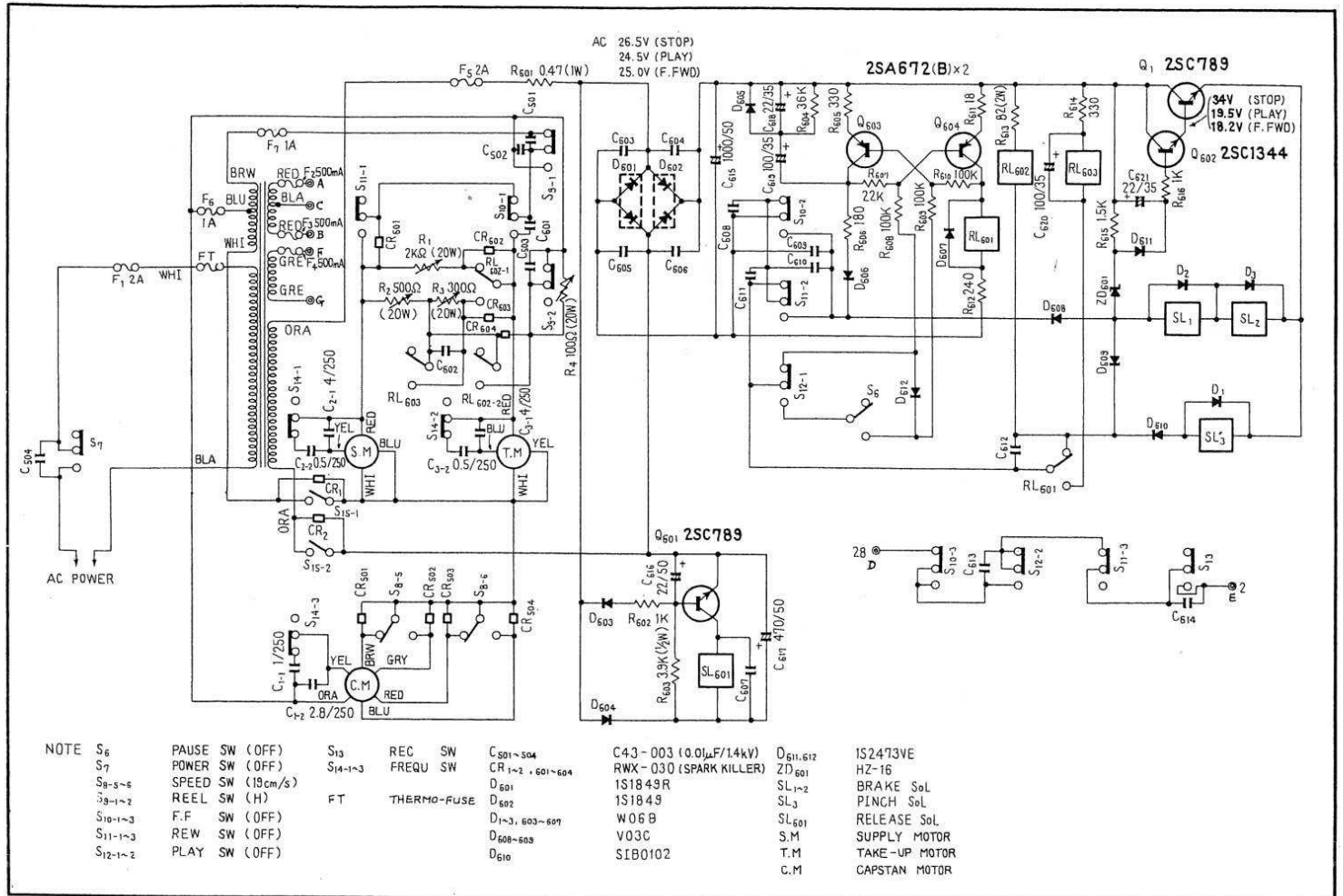
Power requirements	AC. 120V 60Hz	
Power consumption	115W	
Dimensions	428(W) x 431(H) x 227(D)mm (including feet and reel shafts)	
	16-27/32(W) x 17(H) x 8-15/16(D) in.	
Weight	Without package; 18.6kg (41 lb)	
	With package; 22.4kg (49 lb 4 oz)	
Furnished parts	10-½in. metal reel (Pioneer PR-100)	1
	10-½in. reel adaptors with reel adjusting sheets	2
	Connection cords	2
	Splicing tape	1
	Cleaning kit	1
	Cleaning ribbon	1
	Fuse (2A)	1
	Operating instructions	1

**NOTE:**

*Specifications and the design subject to possible modification without notice due to improvements.*

# RT-1011L

## SCHEMATIC DIAGRAM (CONTROL)





# TROUBLESHOOTING CHART

What appears to be a defect or malfunction of the machine is often caused by operating errors, inferior tape quality or poor maintenance. The following chart lists common malfunctions and the ways to avoid them.

TROUBLE	CAUSE	REMEDY
1. No power	AC cord not properly plugged in	Check connection, plugs, sockets.
2. No or unstable tape travel	a) Slack tape b) Two reels of different size. c) REEL SIZE switch not set correctly.	a) Pull tape taut. b) Use two reels of the same size. c) Check position of REEL SIZE switch.
3. Fast forward or rewinding impossible.	a) Extreme different reel sizes b) REEL switch incorrectly positioned.	a) Use two reels of the same size. b) Set it correctly to the reel size used.
4. Noisy playback sound	a) Connection cords not properly b) Noise contained in recording tape c) External induction noise  d) Heads magnetized	a) Check connections. b) No remedy. Use better tape. c) Place unit and tapes away from TV set, amplifier, fluorescent tubes and other appliances that cause interference. d) Demagnetize heads.
5. Drop-outs	a) Heads dirty  b) Tape dirty c) Tape stretched or curled	a) Clean heads with supplied cleaning bar or fluid. b) c) Use tape of higher quality.
6. Poor playback sound quality (poor frequency response, distortion, unwanted recorded sound)	a) Heads dirty  b) Playback at wrong tape speed c) Tape is recorded with different track system.	a) Clean heads with supplied cleaning bar or fluid. b) Operate deck at specified speed. c) Ascertain track system of recording. Set PLAY switch accordingly.
7. Recording impossible. Level meters do not indicate.	Not properly connected	Check connection to INPUT (REC) terminals of MIC jacks.
8. Distortions in self-made recording	Recording was made with excessive input level.	Turn output level controls on tuner or amplifier down to obtain correct recording level when level controls on tape deck are in center position.

## PIONEER ELECTRONIC CORPORATION

4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

**U.S. PIONEER ELECTRONICS CORPORATION**

75 Oxford Drive, Moonachie, New Jersey 07074, U.S.A.

**PIONEER ELECTRONIC (EUROPE) N.V.**

Luithagen-Haven9, 2030 Antwerp, Belgium

**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.**

178-184 Boundary Road, Braeside, Victoria 3195, Australia

Printed in Japan