

Owner's Manual

Model

R8

8 TRACK RECORDER/REPRODUCER



Fostex®



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

"WARNING"

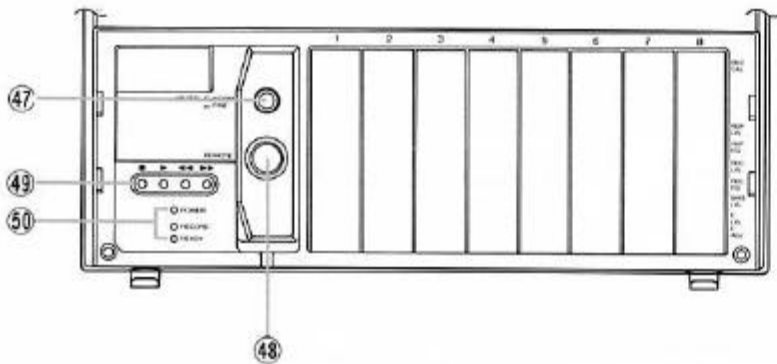
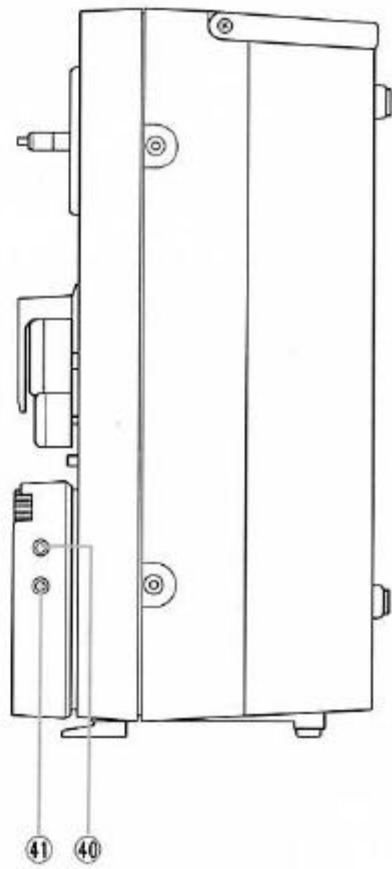
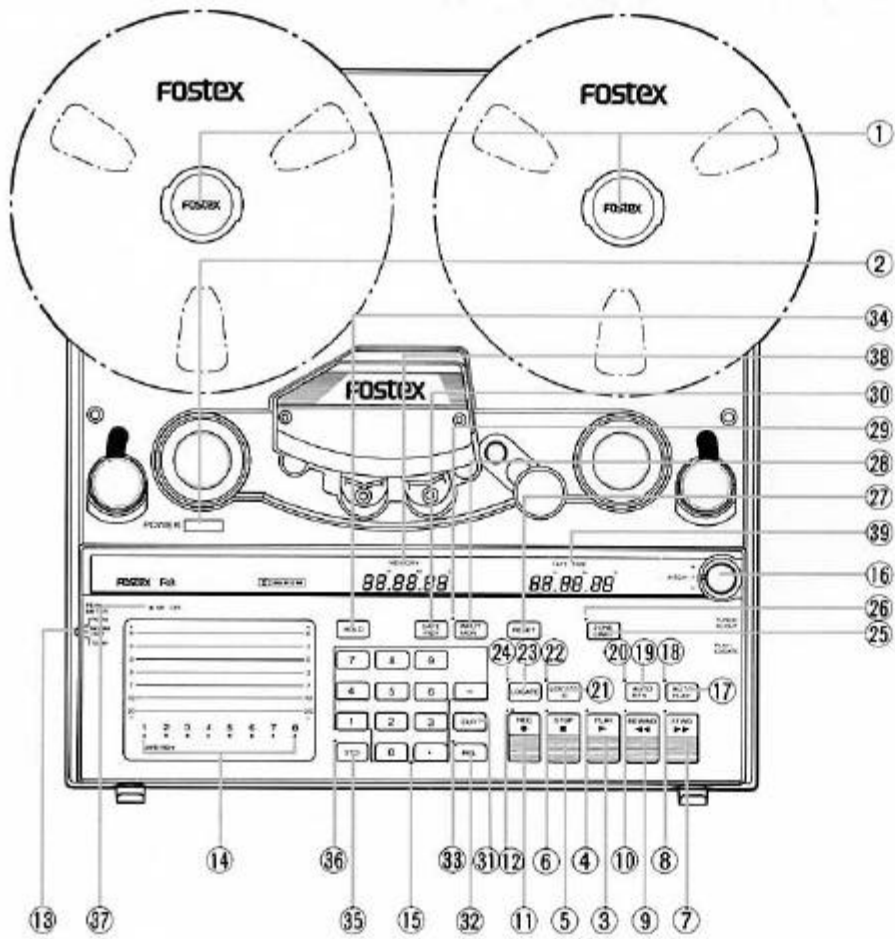
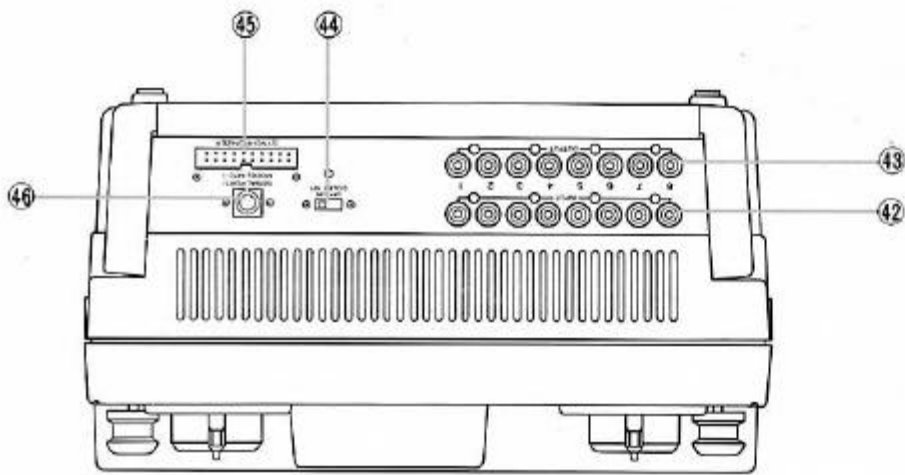
"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

SAFETY INSTRUCTIONS

1. **Read Instructions** — All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** — The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** — All operating and use instructions should be followed.
5. **Water and Moisture** — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. **Carts and Stands** — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. **Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power Cord Protection** — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.
14. **Nonuse Periods** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. **Object and Liquid Entry** — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. **Damage Requiring Service** — The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. **Servicing** — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



INTRODUCTION

Congratulations on your purchase of the Fostex R8. Even lighter and more compact than its predecessors, the R8 has many advanced features that make high-quality multi-track recording easier than ever.

The control panel is detachable and, when combined with the optional extension cable Model 8544, it functions as a practical remote control unit with built-in peak level meter. The microprocessor controlled R8 has a host of new features made possible by a sophisticated new 4-bit serial CPU: auto locate of up to 10 different memory points, auto

return, shuttle play, zone limit and other helpful features. The numeric key pad—a first among multi-track recorders—makes programming very easy, and the two 6-digit LED displays always tell you what's going on.

The transport assembly also offers substantial improvements such as a cam drive, superior mechanical precision until now available only on the most expensive open reel recorders.

We wish you many years of creative enjoyment with your new FOSTEX R8.

ABOUT THIS MANUAL

This manual has been written with both newcomers to multi-track recording as well as experienced users in mind. If you already have experience with MTRs, you can skip those sections containing information you are already familiar with, such as **SETUP** or **ROUTINE MAINTENANCE**.

Consider, though, that the R8 is a very sophisticated machine with a host of new, computer-controlled features. To be able to make the most of the R8, we recommend that you read the entire manual while actually operating the recorder.

The first section, **SETUP**, explains how to install your new R8, what cables and tapes to use, and how to load tape. It also gives you important information on sound signal and sync connections.

Once you have thus set up the R8, read section II., the **FEATURE AND FUNCTION OVERVIEW**. This section shows you how to detach the remote control panel from the main unit and then explains the basic tape transport functions. The advanced microprocessor-controlled features of

the R8 are also shortly introduced here.

Section III, **RECORDING AND PLAYBACK**, tells you all about the recording process, explaining the major multi-track techniques such as overdubbing, punch in/out and ping-pong recording. The **EDITING** section then goes on to show you how to use a razor blade and splicing block to create your final 8-track tape.

ADVANCED FEATURES gives you all the information necessary to operate the sophisticated computer-controlled functions of the R8, such as locate, auto return and zone limit.

The **LIST OF FEATURES** is mainly intended as a quick reference guide to all R8 features and functions, but it also contains additional details such as the working of some LEDs. You might want to skim through this section first to get to know the R8 and its many possibilities. To understand most operations, however, you will have to read the various preceding sections.

Finally, **ROUTINE MAINTENANCE** shows you how to keep your R8 in top operating condition.

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SECTION 1. SETUP

Placement

The R8 can be used in either the upright or horizontal position. Since the control panel is detachable, you will be able to easily operate the controls and watch the peak level meter regardless of how you install the R8.

Place the unit in a dry, well ventilated, stable location away from direct sunlight or other sources of heat. If you use the optional control panel extension cable (Model 8544), you can operate the R8 up to 5 meters away. Only one extension cable may be used.

A) CONNECTIONS

Cables

To obtain optimum sound quality, it is important to use only high quality audio cables with tightly braided shields, multi-strand center conductors and low internal capacitance, such as Fostex Models 8044 to 8049. Use cables of the shortest practical length and never use cables more than 3 meters (10 feet) long, to avoid signal deterioration (high frequency losses) and hum.

Keep the input and output cables apart by a few inches and as far as possible away from AC power cords. If you cannot avoid intersections between power and signal cables, try to have them cross at right angles.

The inputs and outputs of the R8 have RCA-type pin jacks—use cables with the corresponding plugs.

Signal Levels and Impedance

When hooking up the R8, it is necessary to have a look at the output levels (measured in dBV or dBm) and impedance values (measured in Ohms) of the equipment you want to connect to make sure that they match the specifications of the R8. Level or impedance mismatches can lead to sound signal distortion and even equipment damage.

The eight R8 INPUTS (42) are unbalanced, high impedance jacks which accept nominal -10 dBV (0.3 V) line level signals from low or high impedance sources. Many electronic musical instruments such as synthesizers or drum machines can be connected directly to these inputs; however, microphones, guitars and other low level signal sources cannot be patched to the R8 unless you use a microphone preamplifier or mixer.

NOTE: Never connect outputs indicated in watts (W) such as those of a power amplifier to the R8 INPUT jacks unless a suitable direct box is used to attenuate the signal level to around -10 dBV. Otherwise, you may severely damage your new tape recorder.

Mixer Connections

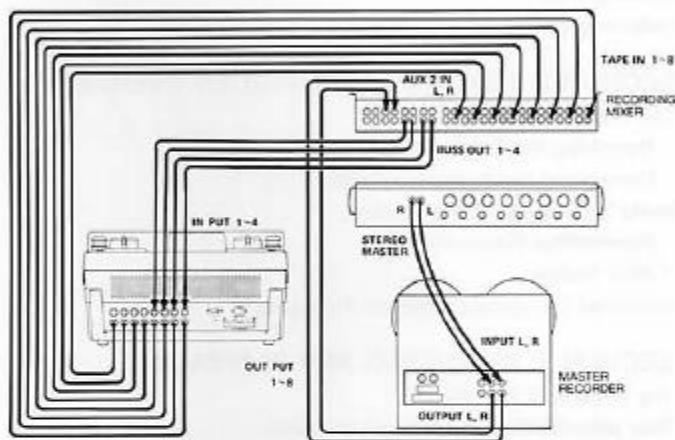
Though a variety of signal sources can be hooked up to the R8 INPUTS directly, they are generally used for connection of a mixing console's outputs.

The jacks of input channels 5 to 8 are connected in parallel to the jacks for channels 1 thru 4 respectively. Thus a mixer with four buss outputs can feed all eight tracks of your R8 without repatching.

NOTE: Signals connected to INPUT jacks 5 thru 8 are NOT internally routed to channels 1 thru 4.

The OUTPUT jacks (43) provide either the playback signals from the tape or the input monitor signals (input signal fold-backs). They are usually connected to a mixer's tape input jacks.

Depending on the console you are using, there are many different hook-up possibilities. The following illustration shows a typical example for connection of the R8 to an eight-channel recording mixer and a two-track master recorder.



Sync Connection

Today, a lot of recording work is done with sequencers and/or drum machines, which generally offer a tape sync feature. It allows you to put a sync pulse on one tape track, which can then be used to synchronize your MIDI controlled equipment with the seven remaining tape tracks.

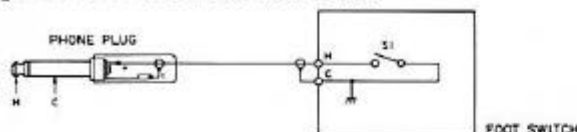
If your drum machine or sequencer is not equipped with tape sync, you can use an optional sync unit such as the FOSTEX TS-15.

The sync pulse is usually recorded on an edge track—1 or 8—which keeps possible leakage of the non-musical sync signal to a minimum. Connect the "tape sync output" (or equivalent) jack of your sequencer or drum machine to INPUT 1 or 8 of the R8 and the corresponding R8 OUTPUT to the "tape sync input" of the equipment you want to synchronize. After the pulse is recorded, the output of its sync track will go to the drum machine/sequencer when the tape is played back, thus enabling control via the R8.

Foot Switch Connections

Optional Model 8051 foot switches can be connected to the PUNCH IN/OUT (40) and PLAY/LOCATE (41) jacks on the right side of the control panel.

When making your own foot switches, use a 1/4 inch phone plug and follow the illustration below.



AC Connection

Connect the power cord of the R8 to any convenient wall outlet. Keep this cord as far away from signal cables as possible.

B) LOADING TAPE

Recommended Tapes

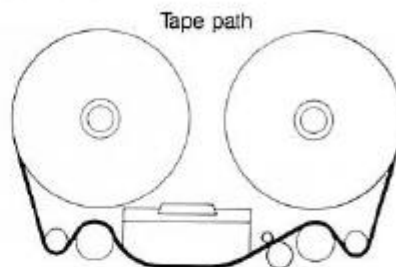
The R8 is designed for exclusive use with 7 inch or 5 inch reels. Since a 7" reel of 1 mil (35µm) tape is 550 meters (about 1800 feet), the maximum recording/playing time is approximately 22 minutes, which is usually more than sufficient to record even very long takes. We definitely do not recommend tape thinner than 1 mil because they will likely stretch and break.

The bias and equalization of the R8 have been factory aligned for use with Ampex 457 or equivalent high-quality tapes (such as Scotch 227). For specified results, use only these tape formulas; otherwise, it will be necessary to have your dealer realign the electronics.

Loading Tape

1. First, unscrew the holders from the drive shafts and remove them.

2. Insert an empty take-up reel onto the right drive shaft, pushing it all the way in while rotating it to make sure the black stabilizer pin (on the turntable) fits into one of the corresponding holes on the reel. Screw the holder back on to secure the take-up reel. Tighten it while holding the reel.
3. Attach the supply reel onto the left drive shaft in the same manner.
4. Thread the tape from the supply reel to the take-up reel as shown below.



Insert the end of the leader tape into one of the hub slits of the take-up reel and slowly turn that reel by hand until the slit is covered by tape (at least one full turn). You can now move the tape forward by pressing PLAY (3) or F FWD (7).

Switching On the R8

To turn on the R8, press the POWER switch (2). The MEMORY display (38) will show only zeroes (0), and the message "FOSTEX" will scroll over the LED meter. Depending on the position of the tension arm guides, the TAPE TIME display (39) shows zeroes (when the capstan (52) is rotating) or an error message (when the capstan is standing still).

The green STOP indicator blinks.

Press POWER again to turn off the R8. Note that this clears all memorized data such as the locate points or zone limit.

SECTION 2. FEATURE AND FUNCTION OVERVIEW

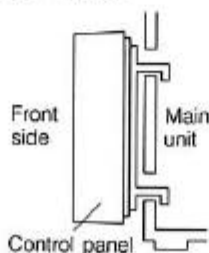
The Detachable Control Panel

One of the many practical features of the R8 is its detachable control panel, which can be used for remote control of the R8 from any convenient location. The supplied connection cable is 30 cm long, and an optional extension cable (Model 8544) is available so you can control all functions of the R8 from a distance of up to 5 meters. (Only one extension cable may be connected.)

Detaching the Control Panel

The control panel is attached to the main unit with hooks on the left and right sides of the panel that fit into a total of four openings as shown in the right illustration.

Please pull off the black stopper (plate) on bottom of the main unit before operating.



To remove it, grasp the control panel from below and carefully lift it upward until the hooks come out of their slots in the main unit, then pull it towards you.

The attachment hooks are collapsible and you can fold them inward to make the bottom of the remote control unit completely flat.

To attach the control unit, simply reverse the above procedure. Make sure that the connection cable properly fits into the provided recess, unfold the hooks and fully insert them into the four openings on the main unit, then gently press down on the control unit until it snaps into place.

Connecting the Extension Cable

Carefully disconnect the control panel cable from the REMOTE connector (48) by pulling it forward. Insert the extension cable instead, then connect the other end of the extension cable to the control panel cable.

Basic Tape Transport Functions

Before actually recording with your new R8, it is a good idea to get acquainted with the basic tape transport functions first. The R8 records and plays back at 38 cm/s (15 inches per second). This high speed ensures very low wow and flutter, and a high signal-to-noise ratio. Variable control of the tape speed is possible with the PITCH control knob (18), which allows you to increase or reduce the speed by 10% (the center detented position is OFF).

Rewind/Fast Forward/Play

The two transport buttons on the extreme right move the tape at high speed—F. FWD (7) in the direction of the take-up reel (toward the right), and REWIND (9) in the direction of the supply reel (toward the left). Continuing to press either of these buttons slows down the wind speed.

PLAY (3) transports the tape at the standard speed (15 IPS) from left to right.

The green LEDs above these buttons light up to show which transport mode is currently engaged.

Stop Modes

Pressing STOP (5) immediately stops any tape motion and the transport enters the standby mode. In this mode, indicated by the STOP LED (6) on constantly, the pinch roller (53) is positioned immediately next to the rotating capstan (52) so that the R8 can start to play right away as soon as the PLAY button is pressed.

If you hold down STOP for longer than half a second, the transport mechanism is released, making it easier to edit tape, etc. This Release Mode is indicated by the STOP LED blinking.

You can return to Standby Mode by shortly pressing STOP again (LED changes from blinking to on).

It is possible to enter any transport mode from either Standby or Release STOP modes. However, entering playback from the release mode takes longer since the pinch roller is further from the capstan.

When you do not intend to play or record for a while, it is a good idea to let the tension arm guides (54) drop to their lowest position by rotating either reel by hand to slacken the tape. This action stops the capstan motor, thus reducing wear on the capstan bearing for a longer service life. Before using the tape transport controls, again apply tension to the tape to re-start the capstan motor.

When letting the tension arm guides drop in this manner during Standby Mode, this mode is automatically exited and the STOP LED starts to blink indicating Release Mode. An error message appears on the TAPE TIME display.

Advanced Computer-Controlled Functions

The R8 offers a number of helpful computer-controlled transport features. They are introduced here to give you an idea of how you can make the recording and playback process described below even easier.

If you want to use some of these functions right away, you can of course read about ADVANCED FEATURES (page 13) before going on the next section. (Only the operation of locate 0 is described here).

a) Preroll

Allows you to start the tape automatically several seconds before the zero position or a memory point. This feature is very practical for overdubbing, because you can hear a few seconds of music before your cue point, making it easier to come in with the correct timing.

b) Locate 0

This function automatically returns the tape to the zero position on the TAPE TIME counter.

Simply press the LOCATE 0 button (21)—the R8 will rewind or fast forward as necessary, with the green LOCATE 0 (22) indicator lit. When the zero position is reached, the tape stops and this indicator goes out.

NOTE: *Locate 0 will not work when zone limit is set and the zero TAPE TIME position is outside of the designated zone.*

c) Locate

The R8 lets you set up to 10 different memory points, which can be automatically located with this function.

d) Auto Play

Used in combination with locate, locate 0 or auto return, this function automatically starts playback of the tape whenever a memory point or the zero position is reached.

When combined with auto return, the R8 will repeatedly play the designated section of the tape until stopped ("shuttle playback").

e) Auto Return

This feature automatically returns the tape to an adjustable "starting point" whenever a designated "ending point" is reached.

f) Zone Limit

Lets you specify a desired section ("zone") of the tape, to which all transport functions such as play or rewind will be limited—the tape will automatically stop when the beginning or the end of the zone is reached.

This feature is useful when working on a specific section of a tape.

g) Tape Reel Zone Limit

Similar to the preceding function, here the entire tape is the "zone." The R8 can be programmed to stop automatically when the end or beginning of a tape is approached during rewind or fast forward. This feature prevents the tape from accidentally coming off the reels.

SECTION 3. RECORDING AND PLAYBACK

The Recording Process

The first thing to do is to identify your tape with labels and voice identifications, then record reference tones for future alignment.

After these preliminaries, you can get down to your actual recording work. If you are using a sequencer or drum machine, the sync track will be the first one to record since it is the one that keeps your sequencer/drum machine and MIDI instruments synchronized.

Next come the "basic tracks"—usually the drums bass and other rhythm parts. They are called "basic" because they are the ones you will be using as reference for the "overdubs"—the recordings of all remaining tracks.

If you are not satisfied with a basic track or an overdub, you can, of course, record the whole thing over again, thus erasing the previous take. Sometimes, though, only a small section of a track will need re-doing. In such a case, the "punch in" feature allows you to selectively correct such parts. After "punch out", the R8 goes on to reproduce all tracks so you can check whether your correction fits in smoothly.

Since the R8 is an eight-track recorder, you can normally record a maximum of eight parts if you use one track for each part. However, it is possible to make use of the so-called "ping-pong" technique to make more tracks available for recording additional parts. To do so, you mix the reproduced sounds from two or more recorded tracks with a mixer and record the combination (sub-mix) on a separate (open) track. The original tracks containing the sounds used for the ping pong mix can now be recorded over for additional overdubs. The last step in the recording process is mixdown. When you are satisfied with all tracks, you can finally combine them all to create a stereo master tape.

Remember that many of the advanced features introduced in the preceding section are very helpful for recording, so be sure to make use of them. When repeatedly working on a certain section of the tape, whether for rehearsal or recording, use auto return. The tape will then automatically rewind to the desired location, such as the beginning of a take.

Tape Identification and Reference Tones

Before actually recording your music, you should

- label your tape
- create a tape track sheet
- record a voice identification
- record reference tones.

These simple operations make it much easier to identify a tape later on and reproduce it properly.

- Write a label and stick it on the reel—this will identify the tape and distinguish it from blank tape, helping to avoid accidental erasure.
- Blank tape track sheets are available on the market, but you can easily make your own. Write the title, artist, recording date, use of noise reduction, contents (instrument, voice, etc.) of each track and all other important information on this sheet to keep it in the tape box. Such sheets are very useful for later reference as well as during mixdown, overdubbing and editing.
- It is also often helpful to record the above information directly onto the beginning of the tape with your own voice

for each track. You then have a permanent aural identification of the tape that cannot get lost (like the track sheet can).

To record the voice identification and the test tones, proceed as described below under "Recording Basic Tracks."

d) Finally, record standard level reference tones on all tracks. This procedure will enable precise alignment of your R8 tapes on any other 1/4" 8-track to obtain the same frequency response and track-to-track levels.

Use a test tone oscillator such as the FOSTEX TT-15. You can route it through one of the mixer's inputs for easy assignment to each track. Record about 20 seconds of each of the following tones at a level of 0 dB:

- 1 kHz to check the reproduce amp level
- 10 kHz or 15 kHz..... to check the high frequency EQ
- 100 Hz or 50 Hz..... to check the low frequency EQ

Recording the Sync Track

NOTE: MIDI signals are not able to be recorded directly on magnetic tape. For this reason, you need a device which translates MIDI data into audio signals which can be "read" by the tape recorder. It's called FSK which stands for Frequency Shift Keying. Many sequencers and drum machines have FSK outputs built-in; there are also stand-alone units like the FOSTEX Model TS-15.

We assume that you have already chosen an edge track INPUT jack (1 or 8) for sync connection. To record the sync track, proceed as explained below under "Recording Basic Tracks", but be sure to set a lower input level than indicated for the music tracks—usually around -7 to -3 on the peak meter. Under no circumstances should the red peak meter LEDs light.

Once you have the sync track on tape, playing back the R8 will automatically start the drum machine/sequencer at the same point each time. Note that it is not necessary to record the drum machine at all. In fact, NOT recording the drum part on tape gives you the most flexibility, because you can change the drum track without having to re-record it. In addition, you are not using up any R8 tape track(s) for the drums, leaving room on the tape for more overdubs.

You only have to finally get your drum sounds on tape during mixdown, recording them directly on the stereo master tape for "first generation" quality.

Recording Basic Tracks

After you have put your sync track on tape, it is time to record the basic track(s)—those tracks that will form your reference for the overdubs. Accompaniment parts of the music such as bass or rhythm guitar are good examples for such basic tracks, since they are good timing references.

Once you have decided on the instruments to use, determine the tracks to record them on and write this information down on your track sheet.

- To select the track(s) for recording, first press the SAFE/RDY button (38).
A "t" for "track" will appear on the MEMORY display (38).
- Next, press the numeric key (15) that corresponds to the track you want to record.
The number of the selected track (1 thru 8) will appear on the (S)ECOND column of the MEMORY display.



The track number is displayed here.

At the same time, the SAFE/RDY LED (14) of the selected track will alternately flash green and red, indicating that the corresponding track is ready to record.

Of course, you can select several tracks for simultaneous recording by simply pressing the desired numeric keys one after the other.

3. Now adjust the input level(s) of the selected channel(s). Press the REC button (11).

The INPUT MON LED begins to blink and the input signal of the selected channel(s) can be monitored at the R8 output and on the peak level meter.

Make the necessary level adjustments on the instruments and or your mixer controls so that the R8 meter peaks only occasionally at +3 dB to +8 dB (red LEDs light up) during the loudest passages. This setting gives the best S/N ratio and least tape hiss.

4. Press RESET (27) before starting the recording so that the TAPE TIME counter (39) is reset to the 0 position at the beginning of the take. This will make it easy to later return to the precise starting point of your recording.

5. To start recording on the selected track(s), simultaneously press REC and PLAY (3).

The corresponding SAFE/RDY indicators(s) will light constantly in red, showing that the R8 is recording on this/these track(s). The red REC LED (12) is also lit.

• To avoid "late starts", depress the REC button first, then press PLAY while still holding down REC. If you do it the other way round, you may have a short gap at the beginning of your recording.

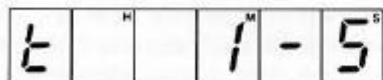
6. To stop the recording, press STOP (5).

You can also stop the recording and automatically rewind the tape to the beginning of the take by pressing LOCATE 0 (21).

Additional SAFE/RDY functions

A) When you want to select several adjacent tracks for recording, press SAFE/RDY to call up the track symbol "t" on the MEMORY display, input the first track, then a hyphen (minus key), and finally the last track.

For example, say you want to set tracks 1 through 5 to ready condition. Input [1] [-] [5] (or [5] [-] [1]) to obtain the following display.



The five SAFE/RDY LEDs of these tracks will blink red and green, showing that they are now ready for recording.

B) To reset selected tracks (green indicators lit) you have two options:

a) Use the same procedure as described above for track selection—if necessary, press SAFE/RDY to display the "t", then press the numeric key(s) corresponding to the track(s) you want to reset.

b) To reset all selected tracks to safe condition, at once simply press the clear button CLR (22) while the "t" is displayed.

NOTE: Use method B when working with one or two tracks only. Method A is for use with multiples of three or more.

Playback

Now that you have recorded your first track(s), you can listen to it (them) to check whether the recording was satisfactory.

1. Rewind the tape to the beginning of the take by pressing LOCATE 0 (21).

2. To avoid accidental erasure of a recorded track, set all tracks to the safe condition by pressing the clear button CLR (22).

At the same time, this operation enables you to monitor the recorded track by sending its signal to the corresponding OUTPUT jack (43) and the peak level meter.

3. Press the PLAY button (3) to start playback of your recording.

If you are happy with your basic track(s), you can continue your session with the overdubs. If you want to redo a basic track, simply re-record it on the same track as explained above. This procedure will automatically erase the previous take.

Overdubbing

"Overdubbing" refers to the recording of new sounds onto separate tracks while listening to the previously recorded basic track(s). This is one of the most important techniques in multi-track recording. It allows you to "layer" tracks one after the other.

Practicing Overdubs

You may want to practice your overdubs first without recording. For repeated rehearsal, use the auto return function (see page 14) to automatically rewind the tape to the beginning when the end of the take is reached.

1. To avoid accidental erasure of the basic track and to be able to listen to it during rehearsal, set it to safe—by pressing SAFE/RDY and either re-selecting that track with its numeric key or pressing CLR (22).

2. Select the track(s) to be overdubbed by entering its number(s) with the numeric keys.

3. Press the REC button (11).

This routes the input signal of the selected (ready) track(s) to the corresponding OUTPUT jacks and thus allows you to hear the sound of the track(s) while listening to playback of the basic track(s).

The INPUT MON LED blinks.

4. To start playback of the basic track, press PLAY (3).

You can now practice by playing along with this track.

Repeat your rehearsal until you are satisfied, then record the overdub tracks.

Overdubs

To actually overdub,

1. Rewind the tape to the zero position (if necessary) by pressing the LOCATE 0 button (21).

2. In order to be able to hear the basic track during overdubbing and to protect it from being erased in the course of recording, set that track to safe condition by pressing

- SAFE/RDY and then the corresponding numeric key.
- Input the numbers of the tracks you want to overdub with the numeric keys.
 - Press REC to monitor the input signal on the peak level meter, and adjust the instrument or mixer level so that the R8 meter peaks only occasionally at +3 dB to +8 dB for the track(s) to be recorded.
The INPUT MON LED blinks.
 - When you are ready to begin recording, press the REC and PLAY buttons simultaneously.
Play along with the sound of the basic track.

NOTE: If you are overdubbing via a live microphone, you will need to monitor the basic track(s) via headphones.

- If you are using the auto return function (p. 14), the tape will stop automatically at the end of the take and be rewind.
Otherwise, end the recording by pressing the STOP button (5).

You can now repeat this process as often as necessary to overdub all your tracks. If you are recording a total of more than eight parts, you will have to "open up" tracks by using the ping-pong function explained below.

Punch In/Out

Occasionally a recording is almost perfect except for a mistake or two. Instead of re-recording the entire track, the punch in/out procedure lets you selectively correct such unsatisfactory mistakes without having to redo everything else as well.

It's important to note, however, that timing is critical here. If you punch-in too early or punch-out too late, you could wreck the very thing you're trying to fix. For this reason, it's best to find a phrase or a section that surrounds the mistake and punch-in/out at logical points like downbeats.

Punch in/out can be performed by hand, but it is more practical to use the optional foot switch connected to the PUNCH IN/OUT jack (40). If you are both performer and recording engineer.

Rehearsal Mode

You can practice punch in and out using a connected foot switch, in order to get used to the timing and ensure a perfect punch in/out.

- While holding down the record button REC, step on the foot switch.
The orange REC indicator (12) will start to blink, showing that rehearsal mode has been entered.
- Select the track(s) you wish to punch in/out on with SAFE/RDY and the numeric keys.
The SAFE/RDY indicators of these tracks will blink red and green.
- Rewind to a location prior to the punch-in point, then press PLAY to start playback.
- When you reach the punch in point, step on the foot switch.
This operation switches the monitor from tape mode to input mode, meaning you will hear the sound from the recorded track(s) you want to correct until the foot switch is pressed, and then the signal present at the selected INPUT track(s) (i.e. the sound you are playing live).
- Step on the foot switch again when you reach the end of

the passage to be re-recorded, in order to punch out. This operation switches the monitor back to tape mode so you can once again hear the previous recording.

In other words, repeatedly pressing the foot switch allows you to toggle between tape monitor and input monitor on the selected track(s).

There are two important reasons for this rehearsal. First, you must match the recording levels of the track (pre-recorded) and the "live" part (to be recorded). Second, you must match the feel and phrasing so that when you punch-out, it sounds like a single performance.

- To cancel the rehearsal mode, press the REC button and at the same time step on the foot switch.

Actual Punch In/Out

- Rewind the tape to a location prior to the punch-in point.
- Select the track(s) you wish to punch in/out on with SAFE/RDY and the numeric keys.

The SAFE/RDY indicators of these tracks will flash red and green.

- Press the PLAY button to start playback.
- When you reach the punch in point, press PLAY and REC at the same time.

If you are using a foot switch connected to the PUNCH IN/OUT jack, you can step on the foot switch instead.

You can now record your new part over the previous mistake, thereby correcting it.

- To punch-out, hold down the PLAY button and simultaneously tap STOP.

If you are using a foot switch, step on it instead.

Either procedure ends the punch-out recording without stopping playback of the tape on all tracks, so that you immediately know whether your punch-out was smooth.

Of course, you can also end the punch-out by simply pressing the STOP button to stop the tape.

- If you press the STOP button for more than half a second while holding down PLAY, the tape will also stop.

Ping-Pong Recording

Also referred to as "bouncing tracks", ping-ponging is another important multi-track technique. During the ping-pong procedure, several existing tracks are played back, mixed into one track and at the same time re-recorded on an open track, which makes the original tracks available for subsequent overdubs. The ping-pong procedure may be repeated indefinitely in theory; but in practice, more than twice is usually not sonically pleasing.

Another version of the ping-pong technique lets you mix one or more live sources with several existing tracks, at the same time recording the mix on an available track.

To combine the playback (and live) sounds for the ping-pong, a mixer is necessary. See the manual of your console for details on mixing for ping-pong recording.

NOTE: Not all tracks are equally suitable for bouncing. If you record on a track adjacent to the one you are mixing from (for example, track 2 + 3 → 4), leakage in the record/play head could cause feedback. Therefore, try to avoid ping-pong recordings between neighboring tracks whenever possible.

If ping-pong to an adjacent track is absolutely necessary, you may have to lower the levels.

- Make sure the tracks you want to transfer with the ping-

pong are set to Safe condition (SAFE/RDY indicators green).

The track you want to bounce (the destination track) must be Ready for recording (SAFE/RDY LED flashes red and green).

2. To adjust the mixed level of the ping-pong tracks on your mixer, make a preliminary recording while watching the peak meter for the destination track.
3. Rewind to the beginning with LOCATE 0 and record with the appropriate level settings.
Bear in mind that once you complete a ping-pong procedure, that sub-mix will be treated as a single element in the final mixdown.

Cuing

This practical feature lets you search for the end or beginning of a recording at high speed, in either fast forward or rewind mode.

The R8 has a lifter mechanism which normally lifts the tape away from the head in these modes in order to prevent excessive head wear. This mechanism can be defeated with the cue function, thus allowing you to listen to the tape at high speed to detect a cue point.

1. Holding down the fast forward button F FWD (7) or the REWIND (9) button and tap the PLAY button (3) once. As soon as you release F FWD or REWIND, the cuing mode is entered and the sound can be monitored from the outputs and on the peak level meter. Once in the cuing mode, you can switch the direction of the tape (while still monitoring it) by pressing F FWD or REWIND.
You can also lower the tape speed by nodding these buttons, making it easier to detect the desired location.
2. To exit from this mode, press STOP or PLAY.
It is also possible to stop cuing by simultaneously pressing F FWD or REWIND and the PLAY button.

Mixdown

This is the process whereby the signals from the tracks of your R8 are remixed on your mixer to make a stereo master tape. You will need a mixing console and a two-track master recorder to make a mixdown recording.

As far as the R8 is concerned, mixdown is basically just normal playback—all important operations will be carried out on your mixer.

1. Make sure that all tracks of the R8 are in safe condition—all SAFE/RDY indicators (14) must be green.
The master record should be ready to record.
2. Start recording with the master recorder, and press the R8 PLAY button to reproduce all tracks.

Using a Synchronizer

A synchronizer such as the Fostex Model 4030 can be connected to the SYNCHRONIZER terminal (45) for control of the R8.

SMPTE time code is normally recorded on an edge track, usually track 1 or 8. Keep the recording level to about -7 to -3 on the R8 peak meter. SMPTE time code must always be recorded in one continuous pass.

Creative Use of the Pitch Control

The PITCH control can be used during recording or playback. Normally, these operations should be done with PITCH

centered for two reasons. (a) tapes are made at calibrated speeds, and (b) the record/play equalization and the Dolby circuitry are properly aligned only at the normal running speed. There are instances when different speeds are useful.

Retiming

If a recording has been made, say for a 60-second advertisement, and the overall program is a few seconds too short or too long, the PITCH control can be used during remixing to adjust the overall play time. The shift up or down in the frequency of the program should not be disturbing so long as a relatively small correction is used, say less than 5% (less than half the maximum speed deviation). A 5% speed change on a 60 second tape will add or subtract 3 seconds. In a longer program, say a 20 minute segment, a 5% change in length will amount to a full minute.

Retuning

Suppose the initial track is recorded with the performer out-of-tune. During subsequent overdubs, it may be impractical or impossible to re-tune the instruments to match the detuned original track. In this case, adjust the PITCH control up or down so that the playback pitch equals the pitch of the instrument which cannot be retuned. Then make the overdub at that speed. Subsequent overdubs and/or the mixdown can be done either at standard speed or the modified speed, as desired.

Speeding up a Performance without Changing the Pitch

When a performer wishes to play a complex passage at a tempo that would normally be difficult, if not beyond his ability, the PITCH control can be put to good use.

The technique is best used during an overdub, where at least one recorded track is available for a frequency reference. When making the overdub, set the PITCH control so it slows down the tape (rotate CCW). The performer then plays in tempo with the slowed down tape. During this operation, be sure the instrument is tuned to the lower pitch heard in the monitors.

For playback, return the PITCH control to the normal setting (centered). The overdub will now be heard in-tune, at normal pitch, and at a faster tempo than it was actually performed.

SECTION 4. EDITING

Once a tape has been recorded, it may be necessary to rearrange the order of some takes, splice two different reels of tape together, or, to add leader tape between takes on a given tape. All these operations are considered to be editing. To edit a tape, one should have the following materials available:

1. A splicing block. Such as Fostex Model 9930. This is usually made of aluminum, with a groove to hold the tape, and one or more grooves cut across the length of the block to guide the cutter.
2. A sharp, non-magnetic single-edged razor blade. To be sure the blade has no residual magnetism, it can be demagnetized in much the same way that the head assembly is demagnetized. Be sure to hold the blade securely, however, since a demagnetizer may pull strongly on the blade.

NOTE: A magnetized razor blade will cause an audible "click" or "pop" at the point of the splice. Do not use scissors.

3. A sharp white or yellow grease pencil to mark the intended splice point on the back of the tape.
4. A roll of 1/2" wide (1.3 cm) splicing tape. Splicing tape is specially manufactured for joining magnetic tape; it is thin, and has an adhesive that will adhere to the tape backing, yet not seep out of the splice under the typical pressures and temperatures encountered.

CAUTION: Never use conventional cellophane tape or packaging tapes for splicing. Some of the adhesive on such tapes may ultimately contaminate the recording tape, and may leave deposits on the tape heads and guides.

5. A supply of plastic or paper leader tape; plastic is stronger, but paper is easier to write upon with a pen or pencil, and is thus handy for making notes.

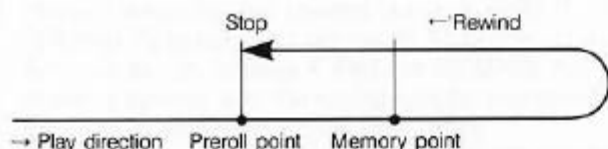
SECTION 5. ADVANCED FEATURES

Please note that all locate, auto return and zone limit memory points etc. are automatically canceled when power to the R8 is turned off.

Preroll

When you use the [locate zero] or the [locate] function, the tape will stop precisely at 0 or the selected memory point. For rehearsal or recording, though, it is often desirable to hear a few seconds of music prior to an actual entry, making it easier to keep time and come in correctly. These few seconds of tape before the entry are called the "preroll", and the R8 allows you to set an automatic preroll that will work with the locate zero and locate functions. Whenever these functions are used, the tape will then stop several seconds before 0 or the normal memory point.

The preroll time is adjustable between 0 and 9 seconds. If you attempt to set a preroll time of 10 seconds or longer, an error message "Err 4" will appear on the MEMORY display. The following illustration shows how the preroll function works:



You can always tell whether or not a preroll has been set by looking at the TAPE TIME display while the tape is being re-wound/fast forwarded with locate/locate 0. If a preroll has been programmed, the left-most digit of the display will blink, alternately showing "P" (for "preroll") and "0".

Preroll Setting

1. First, press the clear button CLR (31) to clear the MEMORY display (38).
2. Input the desired length of the preroll with the corresponding numeric key (15).

For example, if you want a preroll of five seconds, press [5]. This number will appear on the MEMORY:



- If you make a mistake during data entry, press CLR, then enter the correct number.
3. Press the store button STO (35).
The red STO LED (36) lights up, and the MEMORY display will change as follows:



4. Finally, press the minus key [-].
The STO LED will go out, indicating that the preroll time has been memorized.

Checking the Preroll Time

If you have forgotten the length of your preroll time, you can call it up on the MEMORY display by simply pressing the recall button RCL (32) and then the minus key [-].

The Locate Function

The R8 can store up to 10 different memory points, each with its own number, which can be automatically located with the locate function. This function allows you to find certain positions on the tape easily by specifying the number of the memory point and using the LOCATE button (23) as explained below.

Setting Memory Points

There are two basic ways to set memory points:

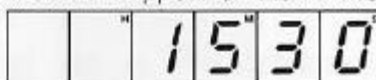
- a) You can enter the time location of a memory point directly with the numeric keys.
- b) You can input the position currently shown on the TAPE TIME display as a memory point by using the HOLD button.

a) Using the Numeric Keys

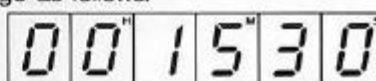
1. First, press the clear button CLR (31) to clear the MEMORY display (38).
2. Input the location of the desired memory point with the numeric keys (15).

For example, if you want to memorize the location "15 minutes 30 seconds", input the numbers by pressing the numeric keys in the order ([0] [0] [5] [3] [0]).

These numbers will appear on the MEMORY display:



- It is also possible to input negative time values (= memory points located before the zero point) by pressing the minus key [-] BEFORE entering the number(s).
 - If you make a mistake during data entry, press CLR and start again.
3. Next, press the store button STO (35).
The red STO LED (36) lights up, and the MEMORY display will change as follows:



4. You can now enter the desired number for the displayed memory point by pressing the corresponding numeric key (15). Numbers available are from 0 to 9.
For example, if you want to store the location "15 minutes 30 seconds" as memory point 0, press [0]. The STO LED goes out to indicate that the desired position has been memorized.
5. You can repeat the procedure from step 1. to 4. to input up to 10 memory points.
- Entering a different time location under an existing memory point number will erase the previous data.

b) Using the HOLD button

To input the present tape position shown on the TAPE TIME display (39),

1. Press the HOLD button (34).
The present TAPE TIME is now also shown on the MEMORY display (38).
2. Press the store button STO (35).
The red STO LED (36) lights up.
3. Enter the number of the memory point with the corresponding numeric key.

Checking Memory Points

You can easily check any currently stored memory point location. To do so, simply press the recall button RCL (32), then input the number of the point you want to check with the corresponding numeric key.

The location time of the desired memory point will appear on the MEMORY display, and the LOCATE LED (24) starts to blink. (If you do not want to use the locate function, press CLR (31) to turn off this LED.)

Clearing Memory Points

Individual memory points are automatically cleared when you input a new location time.

You can also erase memory points by pressing CLR (31), then STO (35), and finally entering the number of the point to be cleared.

To clear all currently stored memory points at once, hold down the numeric keys 0 and 9 and simultaneously press the CLR button (31).

- All memory points are also automatically cleared when the power to the R8 is turned off.

Using LOCATE

Once a memory point has been set, you can have the R8 automatically locate it by calling it up on the MEMORY display and using the LOCATE button:

1. Press the recall button RCL (32).
Its LED (33) will light.
2. Input the number of the desired memory point with the corresponding numeric key.
The red RCL LED goes out, and the green LOCATE LED (24) begins to flash instead. The time position of the selected memory point is shown on the MEMORY display.
3. To automatically fast forward/rewind the tape to the selected memory point, press the LOCATE button (23) as long as its LED is flashing.
This can be done in any transport mode—stop, play, rewind, etc.
The LOCATE LED remains lit during the search procedure. As soon as the selected memory point is reached, the tape will stop automatically. The LOCATE LED goes out.

Instead of having the tape stop at the memory point, you can also cause the R8 to automatically start playback when the selected point is reached by using the AUTO PLAY function (see below) or by pressing the PLAY button while the tape is being rewound or fast forwarded. (The PLAY LED will start to blink).

NOTE: The locate function will not always stop the tape precisely at the memory point—occasionally, there may be a difference up to one second. This deviation is not a malfunction.

AUTO PLAY

If you always want playback to start automatically when using the locate function, press the AUTO PLAY button (17) to light its green LED (18). As long as this LED is lit, the R8 will enter PLAY mode whenever a memory point is located.

To cancel AUTO PLAY, simply press this button again, noting that its LED goes out.

AUTO PLAY can also be used in combination with LOCATE 0 and AUTO RETURN.

The Auto Return Function

This function allows you to let the R8 automatically rewind to any desired point—the “start point”—as soon as it reaches a certain other definable location on the tape called the “end point.”

The start point and end point of the auto return zone can be chosen from among any of the currently stored memory points. Thus, at least two memory locations, namely a start point and an end point, must be stored in order to be able to use the auto return function. (See “Setting Memory Points” above on how to enter such memory points.)

The auto return function can also be used in combination with auto play. The R8 will then automatically start to play after rewinding to the start point, repeating this operation continuously until you stop it.

Setting the Auto Return Points

1. Press CLR (31) to clear the MEMORY display.
2. Enter the number of the start point, followed by a hyphen (the minus key) and then the number of the end point. (It is also possible to input these points in the reverse order, entering the end point first.)

For example, say you have programmed five memory points and want the R8 to automatically rewind to point number 1 (your start point, e.g. at the 10 second location) as soon as it reaches your end point number 5 at 1 minute 30 seconds:

Press the numeric keys . The MEMORY display will show.



3. Next, press the store button STO (35).
The STO LED will light, and the MEMORY display will change to show the memory point with the larger time value first (in our case point 5).
4. To store these auto return points in the memory, press the AUTO RTN button (19).
The STO LED will go out, indicating completion of the auto return point setting.

NOTE: If you made a mistake and specified the same memory point number as both the start and the end point (or if the specified memory point numbers contain the same time data), the AUTO RTN LED (20) will start to blink, indicating an error. Auto return mode cannot then be entered.

When this happens, correct the start/end point settings.

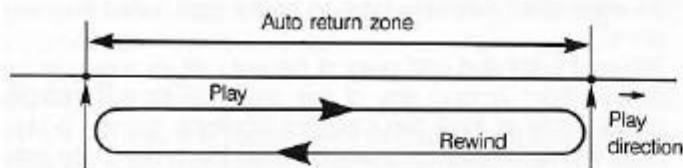
Using AUTO RTN

Once the two auto return points have been set, you can enter auto return mode by pressing the AUTO RTN button (19), thus lighting the green AUTO RTN LED (20).

As long as this LED is lit, the R8 will automatically rewind to the start point of the auto return zone whenever the end point is reached during playback. While the tape is being rewound, the LOCATE LED (24) will light.

You can combine auto return with the auto play function to automatically start playback at the start point. Simply press AUTO PLAY (17) so that both the AUTO RTN LED (20) and the AUTO PLAY LED (18) are lit. The R8 will now continuously

repeat playback of the auto return zone ("shuttle play"), re-winding to the start point whenever the end point is reached, until you press AUTO PLAY again to extinguish its LED.



The LOCATE (23) button can also be used any time in auto return mode to rewind/fast forward to the start point.

Checking the Auto Return Points

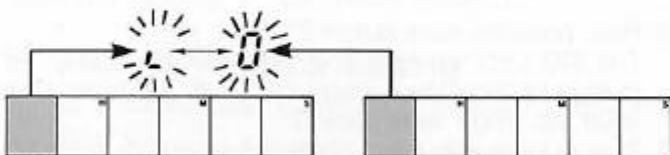
To call up the start and end point numbers on the MEMORY display, simply press RCL (32), then the AUTO RTN button.

The Zone Limit Function

The R8 lets you specify a certain zone on the tape to which all transport movements will be limited. In other words, playback, recording, fast forward, rewind and locate will only be possible within this zone—the tape will automatically stop when the beginning or the end of the zone is reached. This function is very useful when you are working on a specific section of the tape.

Setting the Zone Limit Points

1. Press recall RCL (32), then the ZONE LIMIT button (25). Both the MEMORY and the TAPE TIME display will show only zeroes, with the left-most digits blinking and alternately displaying "L" and "0".



2. Next, press the clear button CLR (31) to clear the two displays, which will now show only the flashing "L" symbol and a period after the last digit. The period on the MEMORY display will blink.
 - If a zone has already been set before, its start point will appear on the TAPE TIME display.
3. Use the numeric keys (16) to input the zone limit end point. The time value of this point is shown on the MEMORY display.

If you make a mistake during data entry, press CLR and input the correct data.
4. To finalize input of the zone limit end point, press the period key [.] .

The period on the TAPE TIME display will start to blink instead of the MEMORY display period, showing that you can now enter the zone limit start point.
5. Input the zone limit start point with the numeric keys, which display the time value on the TAPE TIME counter.
 - If the previous start point is displayed, you must first clear this value by pressing CLR. Again, mistakes can be corrected with CLR.
6. Press the store button STO (35), then the ZONE LIMIT button (25) to memorize the zone.

Using ZONE LIMIT

To activate the zone limit function, press ZONE LIMIT. Depending on the current tape position, the ZONE LIMIT indicator will either blink or stay lit.

The blinking LED shows the current position is outside the zone. As long as the current tape time value is within the zone, the indicator will remain lit.

- If the ZONE LIMIT button is pressed while the tape is being transported outside of the limit zone, tape motion will stop immediately. The ZONE LIMIT LED will blink.
- To cancel the zone limit function, press ZONE LIMIT again, noting that its LED goes out.

Checking the Zone Limit Points

To call up the zone limit start and end points on the displays, simply press RCL (32), then the ZONE LIMIT button (25). Both displays will have a flashing "0"- "L" symbol as their left-most digit, indicating zone limit mode. The MEMORY display shows the zone limit end point (the higher time value), while the TAPE TIME display indicates the start point.

Displaying the Zone Limit Time

To find out how long your zone is (i.e. the time difference between the start point and end point), press the recall button RCL (32), then HOLD (34).

The length of the zone is now indicated on the MEMORY display.

The Tape Reel Zone Function

When rewinding or fast forwarding a tape, you could forget to stop it on time so that the tape runs off the reel and has to be threaded again. To avoid this sort of accident, the R8 features the ability to automatically calculate and set a tape reel zone. Once this zone is set, the tape will automatically stop when the tape reaches the border of the zone. (With a standard 22 minute tape, the tape reel zone function stops the tape at a distance of about two minutes from the end or beginning).

- When a tape reel zone has been set, the regular zone limit function cannot be used.

Calculating the Tape Reel Zone

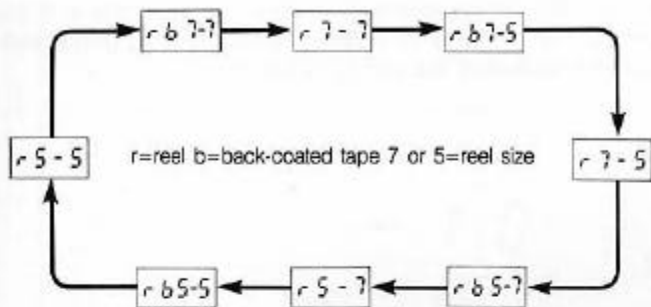
The length of the tape reel zone differs depending on the size of the reels and whether or not the tape is back-coated (thickness). It is therefore necessary to input the reel sizes and the type of tape so that the R8 can automatically calculate the zone length.

When power is turned on, the R8 is adjusted for AMPEX 457 or equivalent tape on the supply reel and the supplied 7 inch empty reel on the take-up side. If you are using this standard set-up, you do not have to input the reel sizes as explained in step 1., but can start right away with step 2.

1. There are eight reel size and tape type combinations to choose from. To call them up on the MEMORY display, press the recall button RCL (32), then the period key [.] . The first combination displayed is (r b7-7). "r" is short for "reel", and the two numbers on the right indicate the size of the reels—the left number showing the supply reel, the right number the take-up reel. The letter "b" means that the tape used is back-coated. In other words, "r b7-7" indicates that two 7 inch reels with back-coated tape will be

used as the basis for the calculation.

To call up the next possible combination, press the period key \square again, and so on until the desired combination is displayed.



The left number indicates the supply reel, the right number the take-up reel.

- Next, start playback of the tape, then press the PLAY button and the ZONE LIMIT button at the same time. The leftmost digit of the TAPE TIME display alternately shows "b" and "0", indicating that the R8 is currently calculating the tape reel zone.
- When the R8 has completed calculation, the 'b'0" display will stop flashing and the ZONE LIMIT LED $\text{\textcircled{26}}$ lights up to show that the tape reel zone has been set.

Displaying the Remaining Tape Time

Once the tape reel zone has been set, you can check the remaining time within the zone by pressing the recall button (RCL) $\text{\textcircled{32}}$ and then the AUTO PLAY button $\text{\textcircled{17}}$. The time until the end of the zone will be shown on the MEMORY display.

NOTES:

- Since the regular zone limit function cannot be used simultaneously with the tape reel zone, entering a tape reel zone cancels any zone limit settings and vice versa.
- Calculation of the tape reel zone is based on a tape thickness of $35\mu\text{m}$. If $50\mu\text{m}$ tapes or tapes that have been edited with splicing tape are used, it may not be possible to correctly calculate a tape zone.

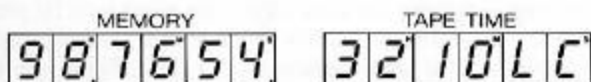
Memory Sort

The memory sort function is a practical means for checking various data concerning the memory points—how many points have been set, their order according to time value, location, etc.

To enter memory sort mode, press the recall button RCL $\text{\textcircled{32}}$, then the clear button CLR $\text{\textcircled{31}}$.

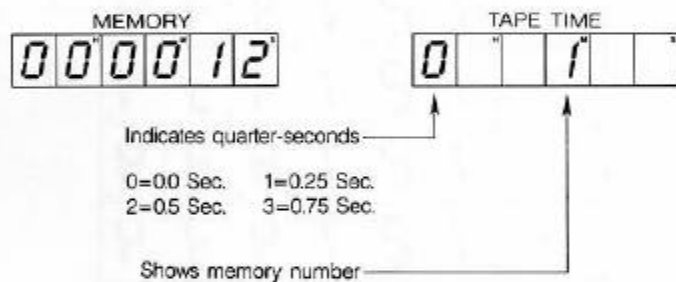
Memory Sort Data and Functions

- The display shows the numbers of the memory points in the order of their time values: the one with the largest value is displayed furthest on the left (on the MEMORY display), while the memory point with the smallest time value is shown furthest on the right (on the TAPE TIME counter).



In the above illustration, the time values of the memory points increase with larger memory point numbers. Thus memory point number 9 has the highest time value and memory point 0 has the smallest.

- On the display, "C" indicates the current counter position in relation to the memory points. If you play the tape or use fast forward/rewind during memory sort, you can see how this "C" moves between the numbers on the display. On the above display, all memory points have larger time values than the present counter position.
 - "L" indicates the previously located or currently selected locate point.
 - A period between two numbers shows that these memory points have the same time values. In the above example, memory points 8 and 7 are identical, as are points 4 and 3.
 - A period between the "L" symbol and a number indicates that this memory point is currently selected for locate.
- You can now call up the time value of each memory point on the displays by pressing the corresponding numeric key. As an example, if you press "1", the following display will appear:



Thus memory point 1 has a time value of 12.00 seconds. Quarter second values other than 0 are possible only during display of the current counter value (see next item). For example, if a number 3 was displayed on the TAPE TIME counter instead of the 0 in the above example, a time value of 12.75 (12 and three quarter) seconds would be indicated.

- Pressing the period key \square displays the current counter value, indicated by a "C" on the TAPE TIME display.
 - Pressing the minus key \square shows the time value of the currently selected locate point (i.e. the memory point the LOCATE button $\text{\textcircled{23}}$ will rewind/fast forward to). An "L" appears on the TAPE TIME display.
 - You can "freeze" the data on the displays by pressing the HOLD button $\text{\textcircled{34}}$ while holding down the desired numeric key. (The numeric key must be pressed first for this function to work.) To cancel this function, press HOLD again.
- If you press the store key STO $\text{\textcircled{36}}$ to make its LED blink, you can then directly rewind/fast forward to any desired memory point by simply pressing its numeric key. To rewind/fast forward to the previous locate point (memory point or other counter position), press \square . Pressing \square locates the last point where playback or recording was started. To cancel this direct locate mode, press the store button STO again.

Data Value Entry

In the preceding chapters, you have already learned how to input various kinds of data such as locate memory points. The following explains a slightly different method of value entry which is particularly useful when you want to correct or alter existing data.

To be able to use this method, a period must be blinking on the MEMORY display (38). The period key $\boxed{\cdot}$ is then used to

move the flashing period on the display. The two digits to the left of the blinking period are "ready to be edited or changed" for input—you can enter any desired numbers with the numeric keys.

In the four setting examples below, "." indicates that the period is lit, "o" shows a blinking period, and no period indication means that the period is not lit.

a) Altering a Memory Point Setting

Input	Display					
	1	2 ^M	0 ^M	5 ^M	3	4 ^S
$\boxed{1}$	1	2	5	1	3	4
$\boxed{4}$	1	2	1	4	3	4
$\boxed{-}$	1	2	1	4	3	4
$\boxed{-}$	1	2	1	4	3	4
$\boxed{\cdot}$	1	2	1	4	3	4
$\boxed{\text{STO}}$	1	2	1	4	3	4
$\boxed{1}$	1	2	1	4	3	4
$\boxed{\cdot}$	1	2	1	4	3	4

In this example, a memory point has been called up on the display with the RCL button (32) and the corresponding number key, then the blinking period was moved to the left with $\boxed{\cdot}$.

- The minus key $\boxed{-}$ enters and clears the minus sign regardless of the position of the blinking period.
- Pressing the store button STO (35) causes the period at the seconds column to disappear and the other two periods at the Hour and Minutes to light continuously. The STO indicator is lit, and you can now input the cue memory number.
- If you want to make further alterations after storing, simply press $\boxed{\cdot}$ again.

b) Altering an Auto Return Point

Input	Display					
				4	-	3
$\boxed{1}$				1	-	3
$\boxed{\cdot}$				1	-	3
$\boxed{2}$				1	-	2
$\boxed{\text{STO}}$				1	-	2
$\boxed{\text{AUTO RTN}}$				1	-	2
$\boxed{\cdot}$				1	-	2

In the next example, the data value was called up by pressing RCL and AUTO RETURN (19), then the blinking period was moved to the left. Pressing AUTO RETURN at the end of the procedure stores the displayed value.

c) Entering a New Memory or Auto Return Point

Input	Display				
		H		M	S
-					-
1				-	1
0			-	1	0
2			-	1	0
5		-	1	0	2
STO	-	0	0	1	0
1	-	0	0	1	0
.	-	0	0	1	0

Input	Display				
1					1
-				1	-
2			1	-	2
STO			1	-	2
AUTO RTN			1	-	2

For your reference, these illustrations show the regular input method already explained under "Setting Memory Points" further above.

Error Messages

The R8 is programmed to display certain "error messages" on the TAPE TIME counter to show you when the transport is not operative ("shut-off error") and to warn you of mistaken operation during data memorization ("store mode errors").

A) Shut-Off Error

When the tension arm guides have dropped to their lowest position, thus shutting off the tape transport, the following error message ("error t") appears on the TAPE TIME display.

E r r t

To be able to use the tape transport again, remove tape slack by rotating either or both reels by hand.

B) Store Mode Errors

All of these error messages show that you cannot store the current input data. Check the data and repeat entry to correct it.

Ⓐ **E r r 1** (Error 1)

Indicates that the input data is not suitable as an auto return point and therefore cannot be stored.

Ⓑ **E r r 2^s** (Error 2)

Appears when the data on the MEMORY display you have attempted to memorize contains symbols other than numbers.

Ⓒ **E r r 3^s** (Error 3)

Appears when the data on the TAPE TIME counter you have attempted to store contains symbols other than numbers.

Ⓓ **E r r 4^s** (Error 4)

Indicates that the input data is not suitable as a preroll value and therefore cannot be stored more than 10 seconds.

SECTION 6. LIST OF FEATURES

FRONT PANEL

① Reel Holders

These secure the reels on the reel turntable. (See page 6).

② POWER switch

Turns power to the R8 on (press) and off (release).

③ PLAY button

If the capstan is turning (both Tension Arms are up), pressing this button enters play mode.

You can also use PLAY to automatically start playback after a locate procedure (see "PLAY LED" below).

Besides, pressing this button together with STOP punches out during a recording (see page 10). Pressing this button together with F FWD or REWIND will initial Fast Search mode.

④ PLAY LED

This indicator lights up when play mode is entered and goes out when you exit this mode.

If you press play button during Locate mode, the LED blinks till it reaches to the locate point, and enters into play mode automatically.

⑤ STOP button

Press this button momentarily to stop the transport in the Standby Mode. Hold it down for longer than 0.5 seconds to stop transport in the Release Mode. (See page 7 for explanations of Standby and Release Modes.)

STOP is also used in combination with the PLAY button ③ to punch out during a recording. (See page 10.)

⑥ STOP LED

Lights constantly in the Standby Mode and blinks in the Release Mode.

⑦ F FWD (FAST FORWARD) button

Winds the tape at high speed from left to right onto the take-up reel.

Pressing this button with PLAY button will initiate Fast Search mode.

Pressing this button while the tape is being fast forwarded lowers tape speed.

⑧ F FWD LED

Lights up when the F FWD button is pressed.

⑨ REWIND button

Winds the tape at high speed from right to left onto the supply reel.

Pressing this button with PLAY button will initiate Rewind Search mode.

Pressing this button while the tape is being rewound lowers the tape speed.

⑩ REWIND LED

Lights up when the REWIND button is pressed.

⑪ REC (RECORD) button

This button serves two purposes. First, it is used to monitor the input signal of the selected channel(s) at the R8 output and on the peak level meter. (The INPUT MON LED ⑳ blinks when this condition exists).

The other function of the REC button is to start recording on the selected tracks (see page 9) by pressing it together with

the PLAY button ③. This operation can be done from stop mode or while tape is rolling during playback ("punch in").

⑫ REC LEDs

The R8 has two record LEDs—an orange one and a red one. The orange REC LED lights up to indicate the "record ready" condition. This condition is entered when no track has been selected for recording, and the PLAY button ③ and the REC button ⑪ are pressed simultaneously.

The red REC LED indicates the actual recording mode, which is entered when track(s) has (have) been selected, and the PLAY button ③ and the REC button ⑪ are pressed at the same time.

The orange REC LED will blink when an optional foot switch (Model 8051) has been used to enter rehearsal mode (see page 10).

⑬ PEAK METER mode switch

This switch allows you to select between three types of peak meter display modes—PERM (permanent), NORM/RST (normal/reset) and TEMP (temporary).

PERM: In this permanent PEAK HOLD mode, the indicator segment showing the highest peak of each channel is held continuously on the display until an even higher peak level is encountered, or until you set the mode switch to NORM/RST to reset the display.

NORM/RST: When set to this position, the display functions as a normal peak level meter. This position also resets the PERM mode peak hold function.

TEMP: In this 1 second PEAK HOLD mode, the levels of the highest peaks are held for about one second on the display.

To select the desired display mode, simply move this switch to the corresponding position.

⑭ SAFE/RDY (READY) LEDs

When these record track indicators are green, the corresponding tracks are "safe"—i.e. no recording is possible. When these LEDs alternately blink red and green, they indicate which tracks are "ready" for recording. While tracks are actually being recorded, the corresponding SAFE/RDY indicators are constantly lit red.

⑮ Numeric key pad

This key pad includes ten number keys from 0 to 9, a period key and a minus key (hyphen). They are used for data input and various command controls.

⑯ PITCH control

The pitch control knob adjusts the tape speed over a $\pm 10\%$ range. Rotating it clockwise (in the direction of the "+" symbol) increases the speed, while rotating it in the other direction decreases it. The center position, where the knob clicks into place, corresponds to the standard speed of 38 cm/s (15 ips).

⑰ AUTO PLAY button

Pressing this button to light its LED ⑱ enters AUTO PLAY mode, i.e. the R8 will start playback whenever a memory point is located. (See page 14.)

⑱ AUTO PLAY LED

When the AUTO PLAY LED is lit, auto play mode is currently set.

⑲ AUTO RTN (RETURN) button

When this button has been pressed to light its LED indicator, the tape will automatically return to a preset "start point" once the specified "end point" is reached (see page 14). Normally, the tape will stop there, but if used in combination with AUTO PLAY, playback will automatically begin from the start point, thus creating an endless play loop ("shuttle play"). To cancel auto return mode, simply press this button again.

⑳ AUTO TRN LED

This LED lights up to indicate auto return mode. If a mistake has been made when specifying the auto return zone (see page 14), this LED will blink instead, showing that auto return mode cannot be entered.

㉑ LOCATE 0 button

Press this button to automatically rewind/fast forward the tape to the "00H00M00S" position on the TAPE TIME display ㉓. (If you have set a pre-roll, the tape will stop at the pre-roll position instead. See page 13).

㉒ LOCATE 0 LED

This LED lights up when the LOCATE 0 button is pressed. As soon as the "00H00M00S" position is located, this LED goes out.

㉓ LOCATE button

Used to rewind/fast forward the tape to the currently selected memory position. (See page 13).

㉔ LOCATE LED

Lights up when LOCATE ㉓ is pressed and the R8 is searching for the selected locate point. It goes out as soon as tape reaches to the destination.

When the RCL button ㉒ is used in combination with a numeric key to recall a certain memory point, this LED starts to blink.

㉕ ZONE LIMIT button

Pressing this button limits tape travel within the specified zone (see page 15). The tape will automatically stop as soon as it goes out of the pre-programmed zone.

To cancel the zone limit (or tape reel zone) function, press this button again.

㉖ ZONE LIMIT LED

Pressing the ZONE LIMIT button ㉕ causes this LED to either light up or blink.

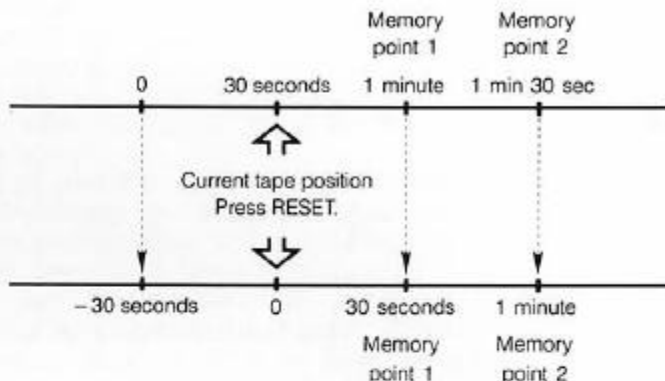
If ZONE LIMIT is pressed outside of the specified zone, this LED will blink. It also starts to flash when the end or the beginning of the zone is reached in zone limit mode.

The ZONE LIMIT LED lights up continuously when ZONE LIMIT is pressed within the limited zone, or as soon as the zone is entered in any of the transport modes.

㉗ RESET button

This button resets the TAPE TIME counter to 0; all currently displayed numbers are canceled and a 0 appears for all digits. The present tape location now becomes the cue point for the locate zero function.

When the RESET button is used, all locate function memory points are automatically readjusted (recalculated) to correspond to the new zero location. Thus memory points will still have the same position on the tape even after pressing RESET.



㉘ INPUT MON (MONITOR) button

Pressing this button allows you to monitor the input signals of all channels. These signals are also displayed on the peak level meter. (See page 9).

㉙ INPUT MON LED

This indicator lights up when the INPUT MON button is pressed, showing that you can monitor all input signals.

When the record button REC ⑪ is pressed alone, the INPUT MON LED starts to blink. Then, only the input signals of those tracks selected for recording (whose SAFE/RDY LEDs ⑭ are flashing red and green) will be present at the corresponding OUTPUT jacks and visible on the peak level meter.

㉚ SAFE/RDY (READY) button

Pressing SAFE/RDY allows you to select tracks for recording with the corresponding numeric keys ⑮. (For details, see page 8.)

㉛ CLR (CLEAR) button

This button has two main functions. One is to completely clear the MEMORY display ㉞ in order to input various data such as memory points.

It is also used to set all tracks selected for recording (whose SAFE/RDY LEDs ⑭ are blinking red and green) back to safe, causing their LEDs to light green.

㉜ RCL (RECALL) button

This button is used in combination with other keys to recall various memory settings on the displays. (See the section on "Advanced Features".)

㉝ RCL LED

Lights up when the recall button RCL is pressed and goes out when the desired data is shown on the display or RCL is pressed again.

㉞ HOLD button

Press this button to copy the data appearing on the TAPE TIME counter ㉓ to the MEMORY display ㉞, for instance when you want to use it as a memory point. Other functions of this button are explained in the "Advanced Features" section.

㉟ STORE button

This button is used to store various kinds of data in the internal memory.

36 STORE LED

This LED lights up when the STORE button is pressed. It automatically goes out when the respective data, such as a memory point number, is entered. It also goes out when store mode is canceled by pressing STORE again.

37 NR (NOISE REDUCTION) OFF LED

When this LED is lit, this shows that the built-in Dolby C noise reduction is currently turned off.

This indicator is also lit during the initial "FOSTEX" display when the power is turned on.

38 MEMORY display

Various kinds of data, such as memory points or tracks for recording, appear on this LED display.

39 TAPE TIME display

This is a counter that usually shows the current tape position in hours, seconds and minutes.

40 PUNCH IN/OUT jack

This jack is for connection of an optional foot switch (Model 8051) used for punch in and punch out (see page 10) and to set punch in/out rehearsal mode (page 10).

41 PLAY/LOCATE jack

By connecting an optional foot switch to this jack, you can control the locate and playback functions by foot. The first time you press the foot switch, the R8 will automatically locate the selected memory point. Pressing it again starts tape playback, and so on.

UPPER PANEL

42 INPUT jacks

Used for connection of signal sources—usually a mixer's buss outputs.

The jacks of channels 5 to 8 are normaled to channels 1 thru 4 respectively. Thus signals present at INPUT jacks 1 to 4 are automatically routed to channels 5 to 8 as well, but if you connect input 5—8, it will break the connection to 1—4.

43 OUTPUT jacks

Output jacks for each track are normally connected to the mixer's tape input jacks.

44 DOLBY NR (NOISE REDUCTION) switch

This switch allows you to turn the internal Dolby C noise reduction on or off.

The NR OFF LED 37 lights up when this switch is set to OFF (normally for calibration and alignment).

45 SYNCHRONIZER connector

For connection of an optional synchronizer (Model 4030), which allows SMPTE synchronization with other audio or video tape recorders.

46 SERIAL PORT/MODEL MTC-1 connector

In the near future, a MIDI time code controller (Model MTC-1) will be available for MIDI control of the R8. The SERIAL PORT is for connection of this unit.

MAIN UNIT CONTROLS

The following controls are located behind the detachable control panel and become visible when the panel is removed.

47 METER NORM/FINE switch

When adjusting the amplifier section of the R8, the meter fine mode allows you to "magnify" the vicinity of 0 dB, thus making more precise settings possible.

FINE		NORM	
<input type="checkbox"/>	2	8	<input type="checkbox"/>
<input type="checkbox"/>	1	3	<input type="checkbox"/>
<input type="checkbox"/>	0	0	<input type="checkbox"/>
<input type="checkbox"/>	-1	-3	<input type="checkbox"/>
<input type="checkbox"/>	-2	-7	<input type="checkbox"/>
<input type="checkbox"/>	-3	-10	<input type="checkbox"/>
<input type="checkbox"/>	-5 dB	-20	<input type="checkbox"/>

In FINE mode, the -5 dB segment lights up even when output level is less than -5 dB from a reference level.

Set the switch to FINE by pressing it in when making calibration. Press again to reset the meter to normal mode.

48 REMOTE control panel connector

This is used to connect the control panel cable or an optional extension cable Model 8544. (See page 6.)

49 Tape transport buttons

The four basic tape transport functions stop ■, play ►, rewind ◀◀ and fast forward ▶▶ can be controlled with these buttons, whose functions correspond to those of the equivalent control panel keys.

50 POWER-RECORD-READY LEDs

POWER: Indicates that power is on.

RECORD/READY: These LEDs have the same function as the REC LEDs 12. The red RECORD indicator lights up when a recording is actually being made, while the orange READY LED indicates "record ready" condition—i.e. no track has been selected for recording, and the PLAY button 3 and the REC button 11 have been pressed at the same time.

SECTION 7. ROUTINE MAINTENANCE

Cleaning and demagnetizing the tape path should be done regularly to keep your R8 in top operating condition. Though it is possible to adjust bias, level and equalization yourself, we definitely recommend leaving such electronic alignments to qualified service personnel.

A) Cleaning

In the course of recording and playback, all magnetic tape leaves a residue of oxide particles from its coating on the head assembly, capstan shaft and tape guides. A build-up of such residue in combination with dust etc. will gradually degrade the performance, especially at high frequencies. It is therefore necessary to clean the entire tape path as often as possible—ideally before each work session.

Use a common cotton swab moistened with head cleaning fluid or pure alcohol to clean the heads, tension arm guides, tape guides, capstan shaft and pinch roller. Never use organic solvents. Repeat this process until the cotton swab comes off perfectly clean.

Allow all parts to dry completely before loading tape.

To clean the exterior of the R8, wipe it with a soft moistened cloth.

B) Demagnetizing

Residual magnetism, which degrades performance and can partially erase valuable tapes, gradually builds up in the metal parts of the head assembly, etc.. This phenomena is due to the strong magnetic field generated by the record/playback head and is an unavoidable fact of tape recording.

To get rid of this residual magnetism, demagnetize the head area, capstan and guides after about every 8 hours of use with a demagnetizer such as the Fostex Model HD-10, carefully following its operation instructions. (If not carried out properly, demagnetization can do more harm than good!) Make ABSOLUTELY sure that the R8 is turned OFF when demagnetizing, and that no tapes are within 2 feet (0.6 meters). Do not turn on or even plug in a demagnetizer unless it is at least three feet (1 meter) away from the tape recorder. Approach the head area slowly with the demagnetizer turned on, and also remove it again slowly before turning it off at a distance of at least 3 feet.

SECTION 8. SPECIFICATIONS

TAPE FORMAT	1/4 inch tape width, 1 mil base 8 track, 8 channel (8 ch. record, 8 ch reproduce)	STARTING TIME	Less than 0.5 sec.
REEL SIZE	7 inch	FAST WIND TIME	120 seconds for 1800 ft. of tape
TAPE SPEED	15 ips, $\pm 0.5\%$	FREQUENCY RESPONSE	40 Hz ~ 18 kHz, for 15 ips ± 3 dB
PITCH CONTROL	$\pm 10\%$	SIGNAL TO NOISE RATIO	78 dB weighted, 60 dB unweighted for 15 ips, referenced to 3% T.H.D. level (10 dB above 0 dB) at 1 kHz
LINE INPUT	-10 dBV (0.3 V), impedance: 30k Ω , unbalanced	T.H.D.	Less than 1% at 1 kHz, 0 dB
LINE OUTPUT	-10 dBV (0.3 V), load impedance: 10k Ω , or higher, unbalanced	ERASURE:	Better than 70 dB at 1 kHz
RECORD LEVEL CALIBRATION	0 dB referenced to 320 nWb/m of tape flux	POWER REQUIREMENTS	120 V AC, 60 Hz, 55 W (U.S.A./Canada models) 220 V AC, 50 Hz, 55 W (European models) 240 V AC, 50 Hz, 55 W (UK/Australian models)
EQUALIZATION	IEC	DIMENSIONS, overall	12-1/2" (W) x 13-1/6" (H) x 6-5/6" (D)
WOW & FLUTTER	$\pm 0.06\%$ peak (IEC/ANSI), weighted for 15 ips, measured with flutter test tape	WEIGHT	22 lbs. (10 kg)

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