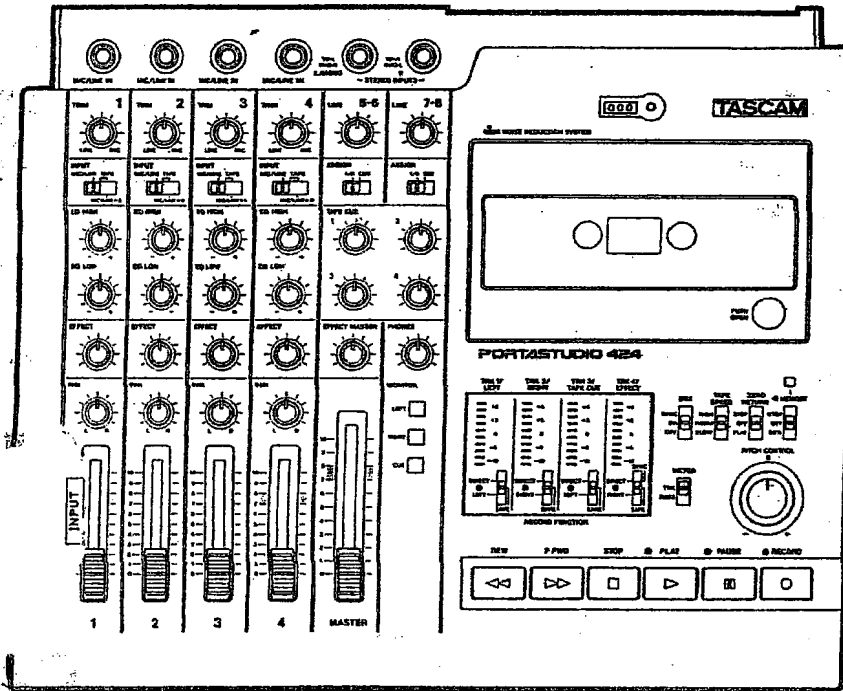


TASCAM

TEAC Professional Division

424

PORTASTUDIO



OWNER'S MANUAL

5700124701

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The PORTASTUDIO 424 is...

The PORTASTUDIO 424 is an 4-track "Multi-track Master" cassette tape recorder and a full-function 8x2 mixer combined into a single workstation.

Its high audio quality and creative flexibility reflect the experience and innovation that have allowed TASCAM to earn its reputation in professional audio production fields, and its user-friendly design makes the 424 suitable for anyone, from expert to novice.

Using this manual : To get the most out of your 424, please take the time to read through this manual. Some time spent now will keep you from overlooking some of the features that make the 424 a more creative tool. You may discover some new tricks you haven't tried before.

Use of capital letters : In general, we use all upper case type to designate a particular switch, control, jack name or label (like PAN). Transport modes and some features are described with an upper case first letter (like Record mode).

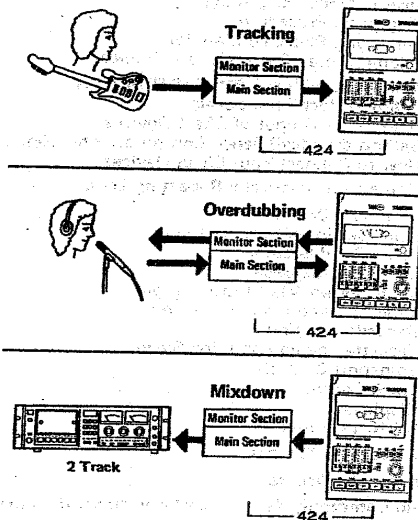
The Recording System

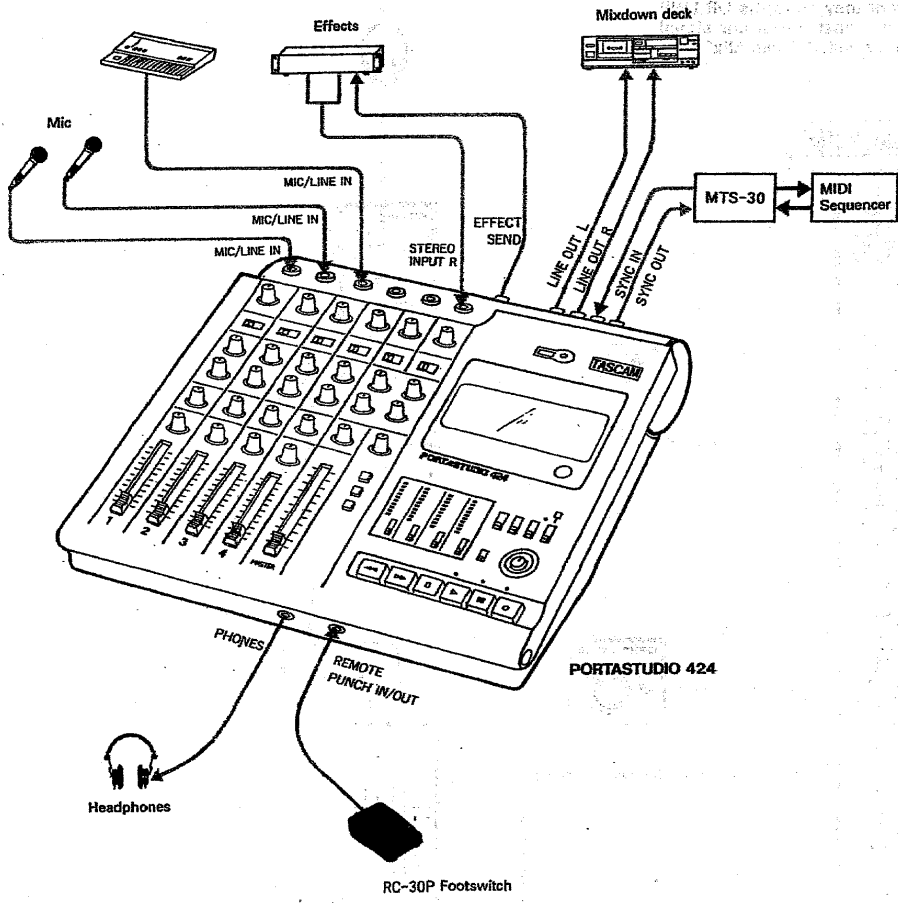
The PORTASTUDIO 424 is a complete audio production facility in a single box. It is divided into two major sections: a full-function mixer and an 4-channel, multitrack cassette recorder. To complete the recording system, you'll additionally need these: Input devices (microphones, instruments), Output devices (headphones, 2-track recorder, Effects processors, etc.), as shown on the next page.

The Three Steps to Multitrack

The diagram on the right depicts how signals from equipment connected to the 424 can be routed.

In **TRACKING** and **Overdubbing**, the mixer inputs are usually microphones or instruments, going to different tracks of the recorder. In **OVERDUBBING**, the **MONITOR** section and **TAPE CUE** of the mixer must be used to listen to previous tracks while you record new ones, so there is a two-way flow through the console. In **MIXDOWN**, signal comes from the multi-track and is sent to an external 2-track recorder.



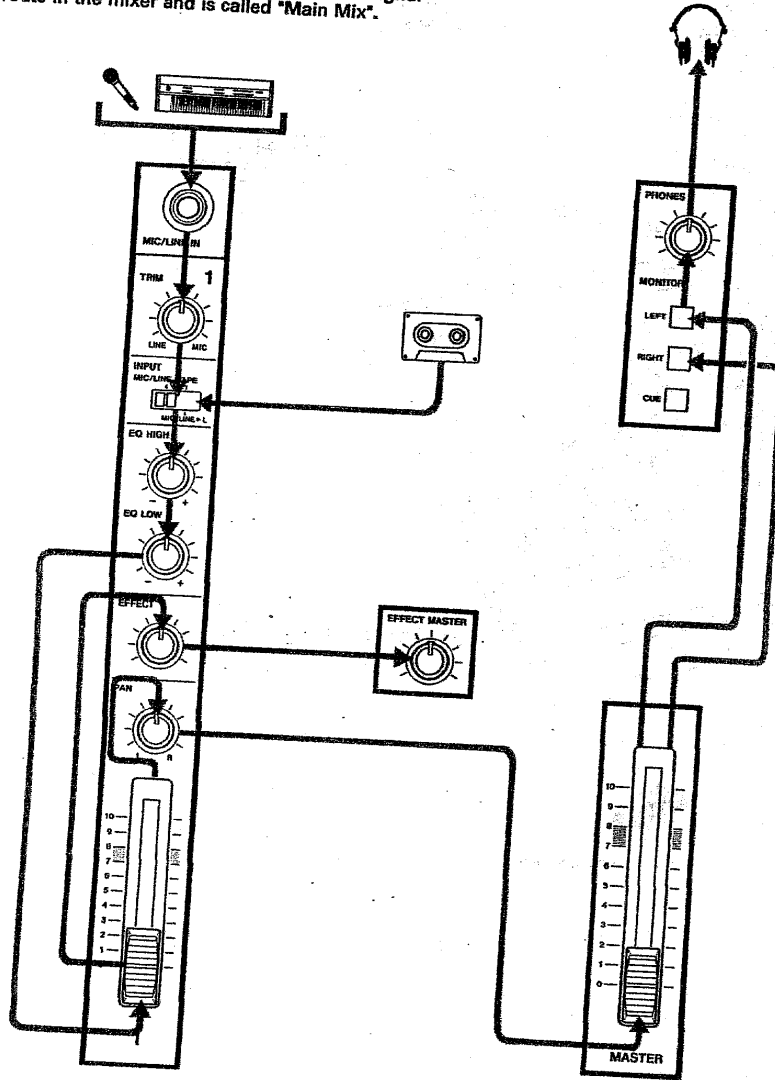


PORTASTUDIO 424

Understanding the Mixer

Signal Flow in the 424 Mixer

The illustration below shows how the input signal passes through the 424 Mixer section. After the MASTER fader they go to the L/R LINE OUT jacks. This is the most important signal route in the mixer and is called "Main Mix".



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Tape Cue Monitor System

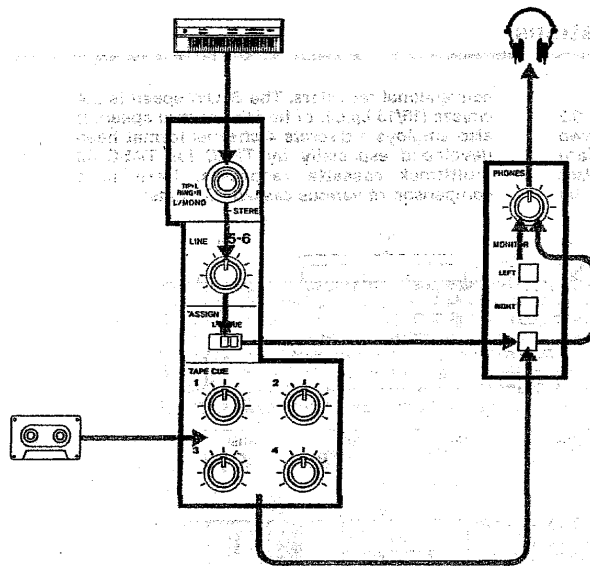
The TAPE CUE mix and MONITOR switches are also crucial for successful multitrack recording, because they control what you hear in the headphones. This CUE mix is totally independent from the Main Mix going to tape. If you don't use the CUE mix, you run the risk of accidentally "bouncing tracks" every time you record new material.

The 4 TAPE CUE controls act like a separate 4x1 mixer, dedicated solely so you can hear playback from the multitrack recorder in your headphones. Settings of these controls don't affect the mix going to tape. When any of the TAPE CUE controls are turned to the right, CUE is pressed in the MONITOR switch, and the PHONES controls is turned up, you can hear tape playback in the headphones. You can adjust the monitor level of each track by adjusting its TAPE CUE control. The channels of the Main Mix remain free to handle external inputs for recording.

If you can hear tape playback in your headphones when CUE is not pressed, it means you're hearing tape through the Main Mix. This is correct for mixdown and bouncing tracks, but during overdubbing it can cause previous tracks to be mixed together with new tracks, instead of each part remaining separate. Use the TAPE CUE to avoid this.

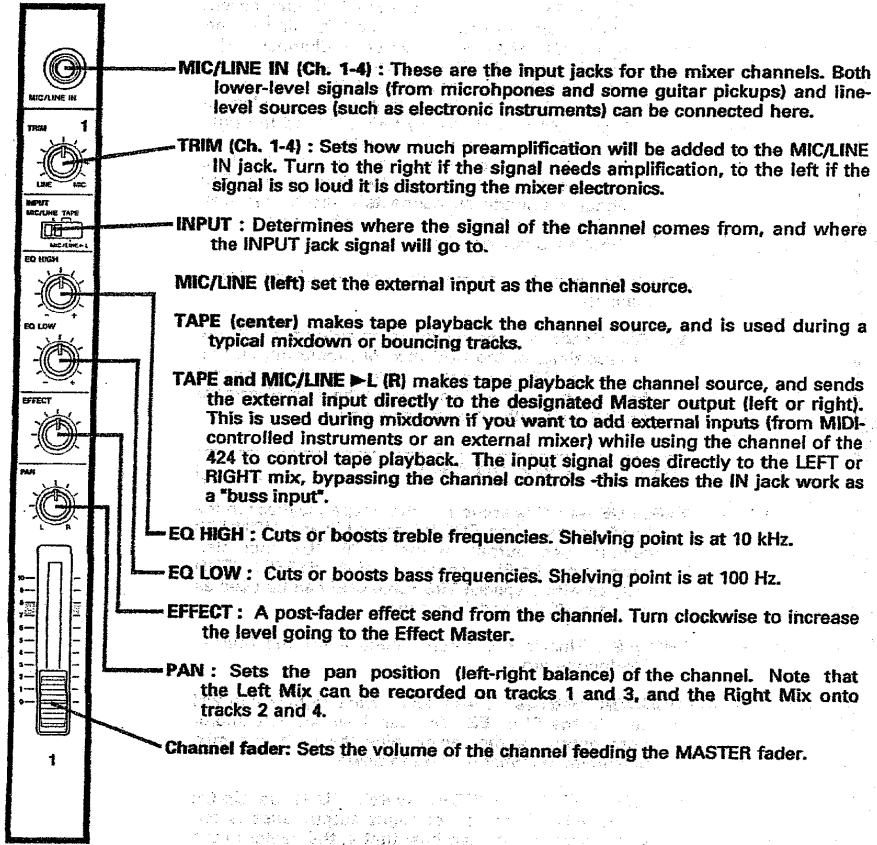
The three MONITOR switches choose which mix(es) you can hear in the PHONES - the CUE mix, and the LEFT and RIGHT outputs of the Main Mix. You press LEFT or RIGHT to hear what you are recording; for example, LEFT while recording onto track 1.

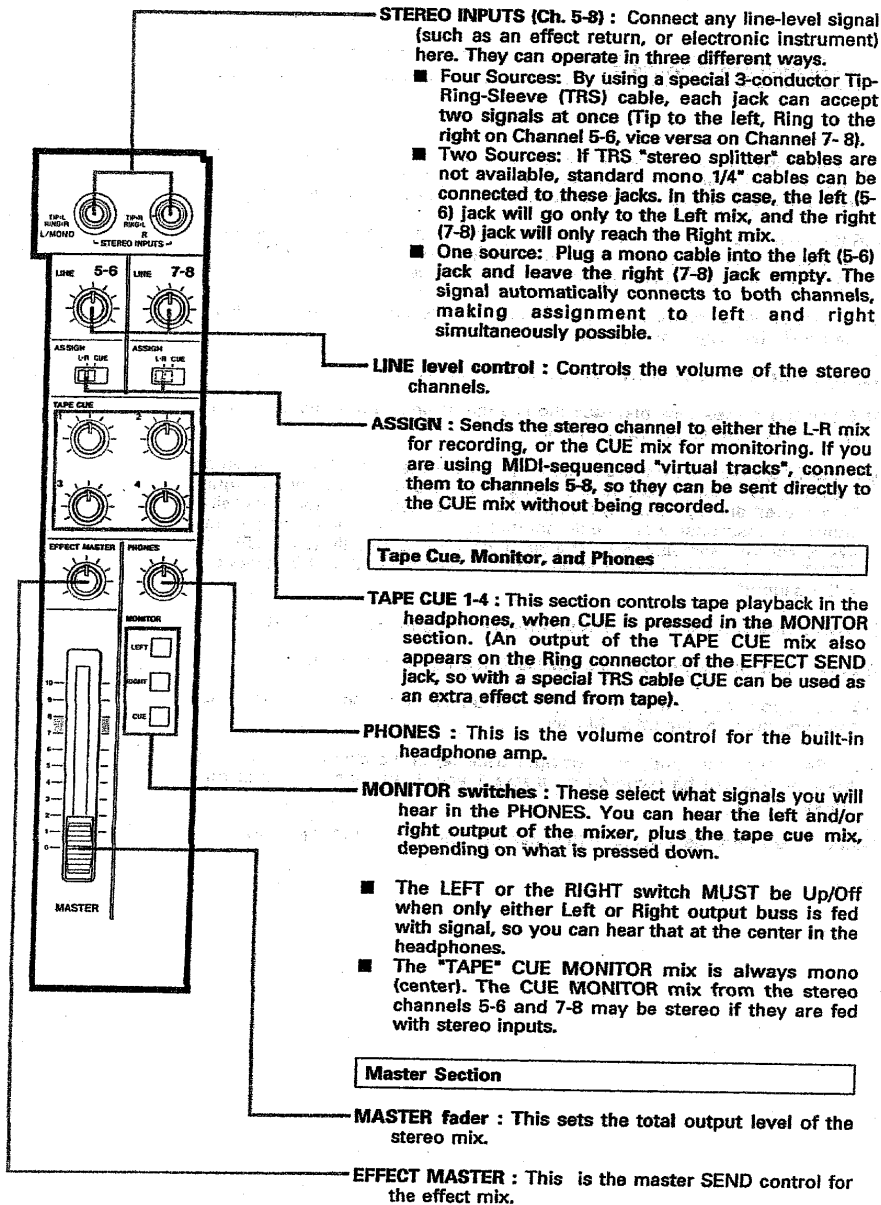
If you need to add external sources to the CUE mix (for example, a MIDI-synchronized drum machine that you don't want to record on tape), the ASSIGN switches for channels 5-6 and 7-8 have a CUE position. This sends the output of the stereo channel directly to the CUE mix.



PORTASTUDIO 424 Brief Guide For detailed information on each feature, see "Features"

Input selection and adjustment





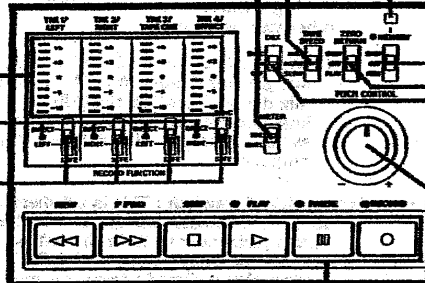
Recorder controls

TRK (Track) LED : When a track is in SAFE position, its indicator will light in green. In any other positions than SAFE, it will light in red, regardless of the current transport mode.

Meters : These show the recorded level of the respective tape tracks OR the output level of different sections of the mixer (as set by the METER switch). The average level should be in the center (0), but occasional peaks up to +6 scale are acceptable.

METER switch : In the TRK position, the four meters will show the record or playback level of the four tape tracks. This is the normal setting during recording. In the BUSS position, you can meter the output level of the mixer sections (left, right, tape cue, and effect). This is the normal setting during mixdown.

TAPE SPEED : HIGH is 3-3/4 ips (9.5 cm/sec.), double the standard (NORMAL) cassette tape speed of 1-7/8 ips (4.8 cm/sec.). SLOW is 15/16 ips (2.4 cm/sec.) half normal speed. SLOW is recommended for practice only.



MEMORY switch : Determines what will happen when the transport reaches the MEMO point : automatic STOP, automatic REWIND, or no effect (OFF).

MEMORY enter key : When this key is pressed the first time, the current counter location is memorized (red LED lit). A second press clears that memory (LED off). A third press establishes a new MEMO point (LED lit).

ZERO RETURN : Determines what will happen when the transport is fast wound to the zero position : automatic STOP, automatic PLAY, or no effect (OFF).

DBX : This turns the dbx noise reduction ON and OFF for all four tracks. Normally, leave it on. In the SYNC position, the dbx is on for tracks 1-3, and off on track 4. Use SYNC when using Track 4 to record and playback MIDI sync tones or time code. When SYNC is on, the DIRECT side of Track 4's RECORD FUNCTION switch gets its signal from the SYNC IN jack, instead of from mixer Channel 4.

PITCH CONTROL : Increases or decreases the speed of the transport in both Record or Play mode, over a 12% range.

Transport keys : These work the same as on any cassette recorder.

RECORD FUNCTION switches 1-4: These control which track(s) will be recorded when the master RECORD and the PLAY key is pressed, and choose where the signal to be recorded is coming from :

DIRECT : The track will be recorded with the direct output of the same-numbered channel (channel 1 goes to track 1, etc.). Adjust recording level with the Channel Fader only. On Track 4, if the dbx switch is in the SYNC position, track 4 will record the signal from the SYNC IN jack instead of from Channel 4.

SAFE : The track will not be recorded.

LEFT (1,3) or RIGHT (2,4) : The track will be recorded with the Left or Right Mix. Recording level is adjusted by the Channel Faders and the MASTER fader. Any combination of inputs can be recorded at once onto a track, in a mix determined by their PAN controls and faders.

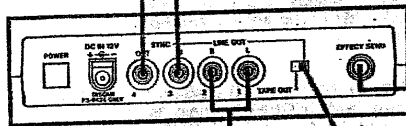
Tape counter (not shown) : A three-digit display that shows the current tape position, used for autolocation functions.

Counter reset button (not shown) : Press to change the counter to "000".

OUTPUT JACKS: Rear panel

SYNC OUT jack : Connect this to the input of a MIDI sync or SMPTE time code reader. This jack always gets signal directly from tape track 4.

SYNC IN jack : Connect the output of a MIDI sync or SMPTE time code generator to this jack. When the DBX switch is in the SYNC position, this jack connects directly to the DIRECT side of the Track 4 RECORD FUNCTION switch. When the Output Selector switch is in the TAPE OUT position, this jack gets signal directly from tape track 3.



EFFECT SEND : Connect this to the input of an effect device.

CUE OUT feature : If you have a "stereo splitter" TRS 3-conductor cable, the Tip will receive the EFFECT OUT signal, and the Ring will receive the CUE OUT signal, allowing the use of a second effect device during mixdown, when CUE is not otherwise being used.

■ **NOTE :** Since the TAPE CUE section does not get signal from the LEFT and RIGHT mix during recording, the CUE OUT is not intended for connection to a monitoring system. Use the PHONES jack for this purpose.

Output Selector switch : This is a "where from" switch: it selects the source for the four output jacks next to it. In the left position, the four jacks act as four TAPE OUT jacks, getting signal directly from the multitrack tape without passing through any mixer controls. In the right position, the first two jacks act as LINE OUT Left and Right, jack 3 acts as SYNC IN, and jack 4 acts as SYNC OUT.

LINE OUT L and R jacks : Normally, connect these jacks to the Left and Right inputs of your mixdown deck. When the Output Selector switch is in the TAPE OUT position, these jacks will get signal directly from tape tracks 1 and 2 instead of from the stereo output of the mixer.

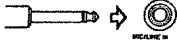
These jacks can also be connected to the inputs of external mixers and amplifiers, etc. However, since the TAPE OUT section can not be heard through LINE OUT L-R, they are not intended for connection to a monitoring system. Only the PHONES jack gets a mix of cue and stereo.

Step-by-step Operations Guide

LET'S TRY THE 424 MIXER

Before connections

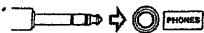
Source connection



Powering on



Headphones connection



Input source



To learn how the mixer works, first you need to plug a signal source into one of the six 1/4" jacks located at upper top of the 424, in your easy reach.

As an example, we'll use a microphone as the source.

- Turn all the TRIM controls all the way to the left/LINE position.
- Turn all the EQ controls to their center "0" position.
- Bring all the faders down.
- Turn all the TAPE CUE, EFFECT, and PHONES controls full counterclockwise, and set all the MONITOR switches to OFF (their Up position).
- Turn the LINE 5-6 and LINE 7-8 level controls full counterclockwise, and set the ASSIGN switches to the CUE position.

1. Have in hand a dynamic microphone and a set of stereo headphones.
2. Plug the 1/4" plug on your microphone cable into the leftmost MIC/LINE IN jack for channel 1.
3. Connect the provided AC adaptor to the DC IN jack, and the other end of the adaptor cable to an AC outlet.
4. Turn the 424 on. (The POWER switch is located on the back, next to the DC IN jack.)
5. Plug your headphones into the front PHONES jack.
6. Set the channel 1 INPUT switch to the left source MIC/LINE position.

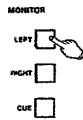
Panning



Channel level

Group level

Monitor selection



Listening level



TRIM adjustment



7. Turn the channel 1 PAN control all the way to the left position.

8. Raise the channel fader to "7" on the level scale.

9. Raise the MASTER fader to "7".

10. Press the MONITOR LEFT switch. The RIGHT switch must be OFF, so you can hear the Left mix at the center in the headphones.

11. Turn the PHONES level control up to the 12 o'clock position.

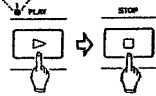
12. While speaking into the mic, slowly turn the TRIM control in channel 1 to the right. You will hear your voice in the headphones.

When using a line level source (such as electronic instruments) instead of the mic, the TRIM does not need to be turned up very far, if at all.

How to Record on Track 1

Loading a cassette

Getting past the leader tape

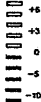


Resetting the counter

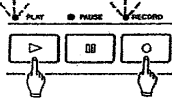
Selecting tracks



Mic level adjustment



Beginning to record



Stopping recording



Putting track into "Safe"



As a trial, let's record your voice on tape.

1. Have in hand a new cassette tape (Type II, C-90 length or shorter). Make sure the DBX switch is set to ON.
2. Press on the cassette door's lower right hand corner, and it will spring open. Insert your cassette tape. Close the door.
3. Press PLAY and allow the tape to run for about 10 seconds. This will run the tape leader onto the takeup reel, and put the beginning of the tape in front of the heads.

4. Press the Counter Reset button, so you can use the ZERO RETURN function to get back to this point.

5. Set the TRK 1 RECORD FUNCTION switch to DIRECT or LEFT. The TRK 1 indicator will switch to light in red.

If you use DIRECT, the METER switch must be in the TRK position. If you use LEFT, the METER switch can be in either TRK or BUSS.

6. Speak into the mic. You will see meter 1 move. If no level or too low a level is shown, continue to speak into the mic and slowly turn the channel 1 TRIM control to the right/MIC until the meter averages at "0" and peaks at "+6".

7. Hold RECORD and press PLAY to initiate recording.

8. Speak into the mic.

9. Press STOP to stop the tape and terminate recording.

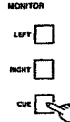
10. Set the TRK 1 RECORD FUNCTION switch back to its SAFE position. The TRK 1 indicator will switch to light in green as before.

How to Play Back Track 1 through CUE MONITOR

Locating tape to 000



Monitor Selection



Begin playback



TAPE CUE 1 adjustment



Stop playback



1. Set the ZERO RETURN switch to STOP. Press REW. The tape will rewind, automatically stopping at counter zero point.

2. Press CUE in the MONITOR select switches, so you can hear the tape. Turn LEFT off, so you don't hear the noise from the microphone or instrument in the phones.

3. Press PLAY.

4. Slowly turn the TAPE CUE 1 control to the right. You will hear what you have recorded on track 1 in your headphones.

5. Press STOP to stop play.

How to Make an Overdub on Track 2

Same levels

Panning



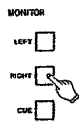
Overdubbing is recording one or more additional tracks on the same tape, while listening to previously recorded tracks using CUE.

Leave the microphone connected to the channel 1 input. There is no need to repatch it to channel 2 to record on track 2. You can continue to use channel 1 because the channel's PAN makes it possible to send any channel to any track of the recorder.

1. All level controls should be set the same as they were for the first track : the channel 1 fader and MASTER fader at about 7, the TRIM undisturbed, the INPUT at MIC/LINE. All other channel faders, including 5-6 and 7-8, should be off.

2. Turn the channel 1 PAN control all the way to the right position.

Monitor selection



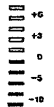
Locating tape to 000



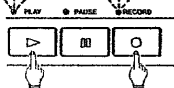
Track selection



Record level adjustment (TRIM)



Begin to record



Monitoring input/tape

Stop recording



Putting track 2 into "Safe"



3. Press the MONITOR RIGHT switch (down position). The MONITOR CUE switch should also be on. The LEFT switch should be off.

4. Press the REW key, so the tape will rewind to the beginning of the track 1 recording.

5. Set the TRK 2 RECORD FUNCTION switch to RIGHT. The TRK 2 indicator will switch to light in red.

6. Speak into the mic to check to see meter 2 move. If no level or too low a level is shown, continue to speak into the mic and slowly turn the channel 1 TRIM control to the right until the meter averages at "0" and peaks at "+6".

7. Hold RECORD and press PLAY to initiate recording.

8. You will hear track 1 play, together with the new signal going to track 2, in the headphones, monophonic (centered) as long as the LEFT MONITOR switch is not pressed. If LEFT is pressed, you'll hear the signal going to track 2 on the right side, and the track 1 playback at the center.

NOTE: Adjust only the TAPE CUE 1 control or the PHONES control if you need to change the balance between the old and new track in your headphones. Leave the Channel and MASTER faders alone, because they control the level being recorded.

9. Press STOP to stop recording.

10. Set the TRK 2's RECORD FUNCTION switch to SAFE, so the indicator switches to light in green as before.

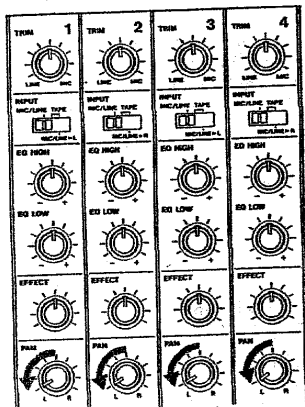
How to Record All Other Tracks

Tracks 3 and 4 can be recorded using almost the same procedure just shown for tracks 1 and 2. Just use the applicable RECORD FUNCTION switches, and the PAN controls should be rotated to the LEFT for recording on Track 3 and to the RIGHT for Track 4.

How to Record Many Sources onto a Single Track

In the first example, we recorded one source onto one track at a time for simplicity. But the mixer of the Portastudio 424 can take multiple channels and mix them onto a single track. To do this :

- Set the PAN control of each channel to the same setting, for example :



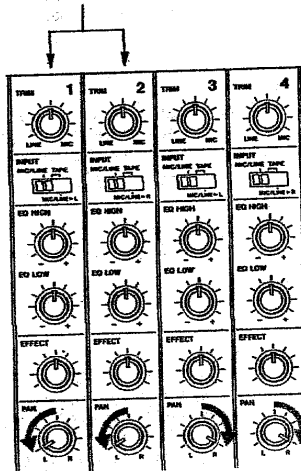
In this example, all instruments plugged into channels 1-4 will be recorded onto Track 1 or 3.

- Lower the MASTER fader to make overall level adjustments once you have each channel's TRIM and fader level set.
- Make sure the INPUT switch of every channel you want to record is set to MIC/LINE.
- You can't record the stereo channels onto a single track. See also page 38.

How to Record a Mix onto Two Tracks Simultaneously

If you want to record multiple sources onto two tracks, you use the channel PAN controls to send them to LEFT or RIGHT (or anywhere in between, if you're making a stereo mix). The track RECORD FUNCTION switches choose what track the Left and Right mixes will be recorded on. Note that in this method, the mixer channel number has nothing to do with what track the instrument winds up on. Any mixer channel can be panned to any track.

These mixer channels are being sent to the LEFT, for recording on either Track 1 or Track 3.



These mixer channels are being sent to the RIGHT, for recording on either Track 2 or Track 4.

- Press both the LEFT and RIGHT MONITOR switches (plus CUE if you need to hear tape tracks or MIDI virtual tracks.)

Recording is the same procedure as for one track. In the example above, switch RECORD FUNCTION 3 to LEFT, and RECORD FUNCTION 4 to RIGHT to record on tracks 3 and 4 simultaneously.

Restrictions: The 424's mixer section has only two main mixes, Left and Right. For this reason, you can record only two tracks at once while you're recording a mix of instruments (for example, two instruments on track 1, three instruments on track 2). Also, you can record a mix only on combinations of even/odd numbered tracks (1 & 2, 1 & 4, 2 & 3 etc.). If Track 1 and Track 3's RECORD FUNCTION switches are both in the LEFT position, they will both record the same mix.

Recording the stereo line channels (5-6, 7-8): It is possible to record up to eight sources simultaneously, using the four standard mixer channels plus the two stereo channels. If the ASSIGN switch is in its L-R position, and the LINE level control is turned up, the LINE signal will be recorded along with any other channels sent to the Left or Right mix. Since there is no PAN control, the signals are set to the "hard left" and "hard right" position.

For more information about Stereo channels see pp. 30-31.

Recording on More than Two Tracks Simultaneously: DIRECT

It is possible to record on three or four tracks at the same time by using the DIRECT position of the RECORD FUNCTION switches. In Direct recording, each track gets its signal from a single mixer channel only - Track 3 from channel 3, etc.

- When using DIRECT, the MASTER fader has no effect on the record level. It only affects the level going to the headphones (via MONITOR LEFT and RIGHT switches). Use the CHANNEL FADER only to set record levels.

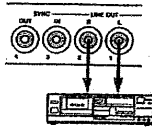
- The METER switch must be in the TRK position to see recording levels during Direct recording.

- Even when DIRECT is on, a channel still goes to the Left/Right mix. If you record another track with LEFT or RIGHT at the same time, you must check your PAN settings. For example, you can record a vocal DIRECT onto Track 3, and record multiple instruments on Track 1 via LEFT at the same time. But Channel 3's PAN control must be turned hard right, otherwise you'll wind up with vocals "bleeding through" onto Track 1's instruments.

- DIRECT can be used anytime you want to record a single channel to a single track.

How to Mix Down

Connections



Master level

Monitor source



Channel source to tape



Playback level

Review

Record level

When the four tracks are all recorded, the final step is mixing them into a standard stereo format. This procedure is known as Remixing or Mixing down. During this procedure the tracks are blended together and balanced to create the desired sound.

1. Connect the LINE OUT L jack of the 424 to the left line input of the mixdown deck, and the LINE OUT R jack, to the right line input.
 2. Raise the MASTER fader to the shaded area between 7 and 8.
 3. Press the LEFT and RIGHT MONITOR selector switches. The CUE MONITOR switch must be UP.
 4. Set all the INPUT switches on the four input channels to their center TAPE position.
 5. Press PLAY and, while listening to the tape play, use the channel faders to set each track's relative level for the desired balance. The channel 1 fader is being fed with track 1, the channel 2 fader, with track 2, the channel 3 fader, with track 3, and so on.
 6. Adjust the PAN controls to set each track's left-to-right position for the desired stereo image. You may also want to use the EQ controls to adjust the individual tracks for the desired tonality. (For using effects, see page 25.)
 7. When the signal balance, level, and tonality sound right, rewind the tape, and press PLAY again to check the result.
 8. Rewind the Multitrack tape again. Put a blank tape in the mixdown deck and let it play for 10 to 15 seconds, then stop it and reset the mixdown deck's counter to zero.
 9. Press PLAY on the 424.
 10. Put the mixdown deck into its "Record Ready" mode, and adjust its input level controls for the desired record level.
 11. Rewind the multitrack tape to the beginning of the recording.
 12. Put the mixdown deck into Record mode then press PLAY on the 424.
 13. When the recording is done, stop both machines, rewind the mixdown tape and listen to it.
- If the mixdown tape does not sound right, make the necessary corrections and re-do from the beginning.

Punch-in or Insert Recording

"Punching in" or "insert recording" is when you record over a small section of a previously recorded track in order to fix a mistake or improve a performance, while keeping the rest of the track as before. The mixer settings should be exactly the same as they were during the original recording.

Punch-in/out Procedure

The 424 offers 2 ways to initiate the punch-in. The first is with the transport RECORD key, the second, with the remote foot switch.

In the following example, we'll use track 2 as the punch-in track.

1. Either plug the source into Channel 2 if you're using DIRECT recording, or turn the PAN control all the way to the right if you're recording using RIGHT.

No resetting of the mixer is necessary if you're punching into a track you've just recorded.

2. To hear the tape, use the TAPE CUE. Press the CUE switch in the MONITOR switch rack. Press PLAY to play the tape. Turn up the TAPE CUE 2 control to the desired level.
3. To hear the instrument, press the MONITOR RIGHT switch, and play the instrument. You'll hear it together with the tape signals in the headphones, in mono (centered) if the MONITOR LEFT switch is Off/Up. Adjust the PHONES and TAPE CUE controls for the desired listening level of the headphones. Stopping the tape will allow you to hear only the instrument.
4. Set the TRK 2's RECORD FUNCTION switch to the RIGHT position. The TRK 2 indicator will switch to light in red, and the respective meter will show the level from your instrument. If your previous settings were disturbed, adjust the channel fader and the MASTER fader for a level matching that of the original recording.

Use the TAPE CUE 2 control to set the balance between the new signal and the recorded one in the headphones.

Selecting In and Out Points

For both musical and technical reasons, when punching in or out of a track, you must select points that are "in the clear", i.e., in the pauses between phrases or notes. It sounds unnatural and makes the insert noticeable if you record a new note before the old one has ended, or are holding a note as you punch in or out. Making inserts well requires some practice. Because of the spacing between the erase and record heads, you need to anticipate your in/out points by a fraction of a second for extremely tight cues.

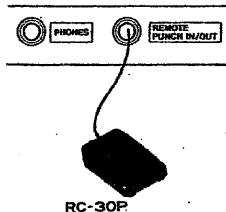
IMPORTANT NOTE : Punch-in erases old material on the track and this change is permanent. A few practice runs made on recordings that you can freely destroy (erase) will get you accustomed to the timing of punching in and out.

Punching-in/out with RECORD



1. Locate the tape to a point a little lower than the expected punch-in point. Then, press PLAY.
2. When you reach JUST BEFORE the error, press RECORD. Track 2 starts recording. The old material on track 2 is being erased and you'll hear the new material going to that track, along with other already recorded tracks through the corresponding TAPE CUE controls.
3. To punch out of record, press PLAY. You will hear the output of track 2 again in the monitor mix.
4. To stop the tape, press STOP.

Using the Remote Footswitch (RC-30P)

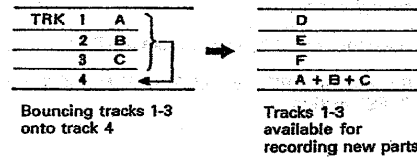


If you are recording alone and are too busy playing an instrument to push the switches, the use of the optional remote foot switch is really handy.

1. Plug the RC-30P into the REMOTE PUNCH IN/OUT jack on the front of the 424.
2. Locate the tape to a point a little lower than the error, then press PLAY.
3. When you reach JUST BEFORE the error, press the foot switch. It has the same effect as pressing RECORD and Track 2 starts recording.
4. To punch out of record, press again the foot switch. It has the same effect as pressing PLAY. You will hear the output from track 2 again in the monitor mix.
5. To stop the tape, press STOP.

Bouncing Tracks (Ping-pong)

The recording capability of the PORTASTUDIO 424 is not limited to four tracks. You can "bounce" or combine tracks you have recorded to an empty track, and then replace the original tracks with new material. A bounce is like a mixdown, except you are recording to one of the tracks of the 424 instead of to an external recorder. The following diagrams depict the process.



During a bounce you can add live sources along with the prerecorded tracks, using the "empty" mixer channels not being used for tape playback. This gives you even more ways to add layers to a composition. For example, you can bounce tracks 1-3 along with another "live" part onto track 4, for a total of four parts on one track.

Ping-pong Procedure

In this example, we will combine material from tracks 1, 2 and 3 onto track 4 without live material or effects.

1. Set the INPUT switches of channels 1-3 to the TAPE (center) position.
2. Turn all the PAN controls to the Right.
3. Set the Channel Faders 1 through 3 to 7. All unused faders should be OFF.
4. Raise the MASTER fader to 7.
5. Press the MONITOR RIGHT switch, and make sure all other MONITOR switches (CUE, LEFT) are OFF.
6. Switch the TRK 4's RECORD FUNCTION switch to RIGHT. Make sure that all other RECORD FUNCTION switches are set to SAFE with their indicators lit in green.
7. Rewind the tape to the beginning of the song, and press PLAY.
8. Use channel faders 1 through 3 to make any necessary level adjustments. You may want to repeat this step several times to get the balance correct.

-
9. When the balance is right and the level is peaking at "+6" on the TRK 4 meter (or on the RIGHT meter if the METER switch is in the BUSS position), stop and rewind the tape to the beginning of the track.
 10. Hold RECORD and press PLAY. Track 4 will record a copy of what is on tracks 1-3.
 11. You'll hear the mix being recorded on track 4 in the headphones.
 12. Once the recording is done, press STOP.
 13. Switch the TRK 4's RECORD FUNCTION switch back to the SAFE position.

Ping-pong Plus Live Material

You may use any open channels to add "live" material to the tracks being re-recorded. In our example, Channel 4 of the mixer is open, as are the stereo channels. To make use of this:

1. Plug the source into the MIC/LINE IN jack 4.
2. Set Channel 4's INPUT switch to MIC/LINE.
3. Turn the PAN control to the Right.
4. Set the TRIM and Channel Fader as for any other recording.
5. Set the other channel faders (1-3) for the final balance. Proceed with the Ping-pong procedure as before.

You will wind up with a mix of the live instruments along with the previously recorded tracks all on track 4.

Adding Stereo Channels to a Bounce

When bouncing tracks using stereo channels 5-6 and 7-8, you must:

1. Set the ASSIGN to L-R.
2. Make sure the source you want to add to the mix will feed the correct side. In the example of bouncing to track 4 above, the source must be connected to the Tip of a plug inserted into channel 7-8, or the Ring of a plug inserted into channel 5-6, since these are the only connectors that feed the RIGHT side of the master mix.

For more information, see pp. 30-31, "Stereo Input Section".

Using Effects with the PORTASTUDIO 424

Effects and signal processing is one of the areas where you can really start to have fun customizing your sound, and develop your own unique recording style. Because there are so many possibilities, it also can be confusing. There are many different effect units on the market, all with different controls, types of inputs and outputs, and other characteristics. Read the manual of your effects device, and the following sections to get the complete story of what's possible for your particular situation.

1. **In-line processing:** The processing that's easiest to understand doesn't involve the 424 directly at all. You can plug your instrument directly into the input of the effect device, and plug the output of the device directly into a line input of the 424. The whole signal gets processed (flanged, doubled, limited, delayed etc.), and only one instrument can use that processor. Effect pedals for guitar are typically used this way. To get a mix of processed ("wet") and original ("dry") signal, the unit must have its own "MIX" or "BALANCE" control.
2. **Send/return mix processing:** This is the most common method of effect processing, especially for reverb and delay. It allows a number of different channels to use the same effect, while allowing you to control how much effect is mixed with each channel. Each of the lower 4 mixer channels can send signals to the EFFECT SEND output jack. This output can then be connected to the input of an effect device. The processed signal output from the effect unit is connected back to the Portastudio, using STEREO INPUTS 5-6 or 7-8, which becomes an effect return. This effect return can be sent to either the L-R mix for recording, or the CUE mix (for hearing it only in the headphones) using the ASSIGN switch. This whole path - from the EFFECT SEND to the reverb and back into a STEREO INPUT - is called an effects loop. The EFFECT control on the standard channels and the EFFECT MASTER control determine how much signal goes to the reverb unit; the LINE control on the stereo channels determine how much returns from the reverb unit.

Setting Effect Send Levels

The goal is to keep the effect unit itself from distorting, while staying above the noise that effect units generate. To get the best signal-to-noise from most effects units, you should send it as strong a signal as you can. With a properly set input signal in the 424, the channel EFFECT SEND set to about 2 o'clock, and the EFFECT MASTER at about 2 o'clock, you should get a fairly loud signal from the EFFECT SEND jack.

If your effects device has an input level control of its own, it should be set so the meter or signal light of the effects device is just under the overload point on peak signals. When you want to hear less effect overall, turn down the return LINE control, not the EFFECT MASTER.

Setting the Output Level of Effect Devices

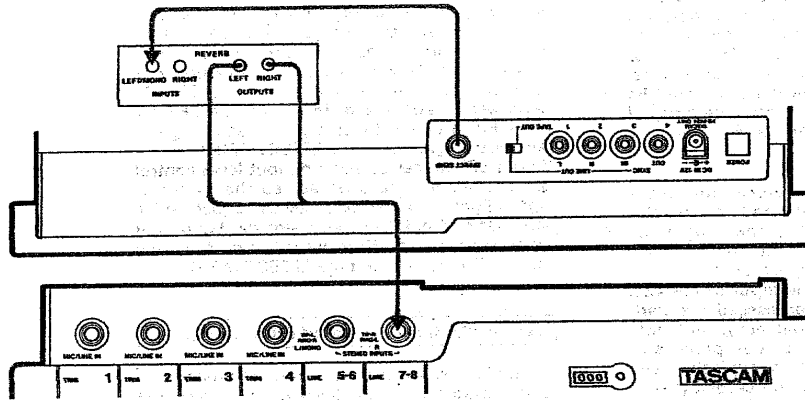
If the effect send level has been set properly, in most cases the output level of the effect unit should be set as high as possible without clipping (distorting) the STEREO INPUTS of the 424, but low enough so that you have a reasonable range of control. If you can get the effect sound you want with the return LINE control in the 12 to 2 o'clock range, you're in the ballpark. If, on the other hand, very small settings of the Effects Return still give you a mix drowning in effects, turn down the output level of your effect device.

Some effect units have rear panel switches setting input and output level ranges between "+4" and "-20 dB". In this case, try setting the input to -20 (high sensitivity) and the output to +4 (full output level).

Setting the Mix/Balance Control on Effect Devices

When it's being used in a send-return mix, set the mix/balance of your effect device all the way to "wet" or full processing with no direct original signal. In send/receive processing, the dry signal goes down the 424's Channel Fader to be mixed with the effect return signal at the L-R MASTER. Therefore, you don't need any "dry" signal coming to the effects return. The mix/balance control is set toward "dry" only when you're using the effects device as an in-line processor.

How to Connect Your Effects Devices



There is no absolute "right" or "wrong" way to do this—there are several ways, each with its own consequences.

The diagram shows the most common method. EFFECT SEND feeds a reverb unit, which has a synthesized stereo output patched into STEREO INPUTS 7-8. A special "stereo splitter" cable is used, with the 3-conductor (Tip-Ring-Sleeve) end plugged into LINE 7-8, and the other end split to two 2-conductor plugs connected to the Left and Right Outputs of the effect unit.

Mono returns: A special feature of the STEREO INPUTS allows continuously variable control between left and right if desired: a mono effect connected to 5-6 jack will go to both the "5-6" and "7-8" LINE controls if nothing is plugged into the "7-8" jack. In this mono mode, the 5-6 LINE control adjusts how loud the mono effect will be on the Left side, and the 7-8 LINE control how loud it will be on the Right side. You can vary the two controls to send signal anywhere between the two sides, similar to using a PAN control.

Patching effects to an input channel: There's no law that says the output of an effects device must be plugged into a STEREO INPUT, either. They can also be plugged into a MIC/LINE IN jack (Channels 1-4) just like any other source, if you are cautious

about one thing: make sure the EFFECT controls of those channels are set to the off position. Otherwise, you will be sending the output of the effect device back to itself, which is a kind of feedback. (If the effect device is a digital delay, feedback has the same effect as a regeneration (number of echoes) control). An advantage of returning effects to a main channel is that you can EQ the effect return.

To record reverb onto a track: Switch the ASSIGN switch to L-R, and adjust the controls for the sound you want. Remember that stereo signals must be recorded onto two tracks to keep their "stereo" effect.

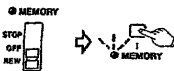
To hear reverb in the headphones but not record the reverb: Switch the ASSIGN switch to the CUE position. By pressing the CUE switch in the MONITOR switch rack you'll hear the reverb, but the recording will be "dry".

Making an Automatically Repeating Loop

Start point



End point

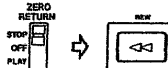


To stop the sequence

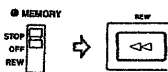
Erasing

Locating the Tape

To 000



To MEMORY



It is convenient when one passage must be repeated over and over to set up an automatic loop using ZERO RETURN and MEMORY.

Locate the tape to the desired start point, and press the Reset button next to the counter. Set the ZERO RETURN switch to PLAY.

If the red LED next to the MEMORY key is currently on, first turn it off by pressing the key. Then, set the MEMORY switch to REW, and at the end of the section you want to repeat, press the MEMORY key again. Its LED will again light, showing you that the memory has been entered.

Once the end point of your loop has been memorized, press REW. The tape will be rewound back to the counter zero point, starting automatically playing to the MEMO point.

Set the MEMORY switch to STOP or OFF.

The current MEMORY point is erased when the MEMORY key is pressed to turn its LED off. The MEMORY is also be erased when the cassette is taken out from the compartment or the power is turned off

NOTE : *The MEMORY STOP and REW functions are active in Record mode too. Before starting recording, be sure to erase the memory or switch the MEMORY switch to OFF, to prevent recording from stopping at an unexpected point.*

If ZERO RETURN is set to STOP, press either F.FWD or REW to fast wind the tape to the counter zero point.

If MEMORY is set to STOP, press either F.FWD or REW to fast wind the tape to the memory point.

Recording with Tape Sync - Using the TASCAM MTS-30

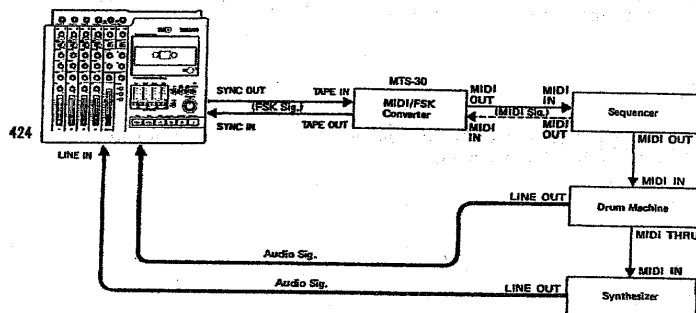
Connections

The 424 has a SYNC feature that allows you to have your electronic instruments play in sync with the tape. MIDI clocks are themselves a computer type digital language and cannot be recorded on analog tape; it is necessary to convert them to recordable FSK (Frequency Shift Keying) signals using an appropriate converter, such as the MTS-30.

The MTS-30 is not a mere MIDI-FSK converter but translates MIDI clocks into a FSK sync signal containing score "bar" information or "Song Position Pointer", allowing the associated MIDI equipment to stay in sync and follow the tape no matter where you move the tape within a given song. The maximum stability or resolution of the synchronization is ensured by a TEAC-exclusive error correction circuit in the MTS-30.

The 424 has dedicated jacks for SYNC tones and can directly record and read them without passing through the 424 mixer. A direct connection between the sync tone generator and the 424 recorder ensures that FSK won't accidentally leak into the audio, and unwanted audio won't leak into the FSK tone.

1. Set the DBX switch to SYNC. Make sure the Output Selector switch on the back panel to the right (SYNC-LINE OUT) position. This defeats the dbx encode/decode for track 4 only.
2. Set the Track 4's RECORD FUNCTION switch to the DIRECT position. This patches the SYNC IN jack to Track 4 and allows no channel signal to reach there.
3. Connect the TAPE OUT of the MTS-30 to the SYNC IN of the 424, and the SYNC OUT of the 424 to the TAPE IN of the MTS-30.



atures and Controls

