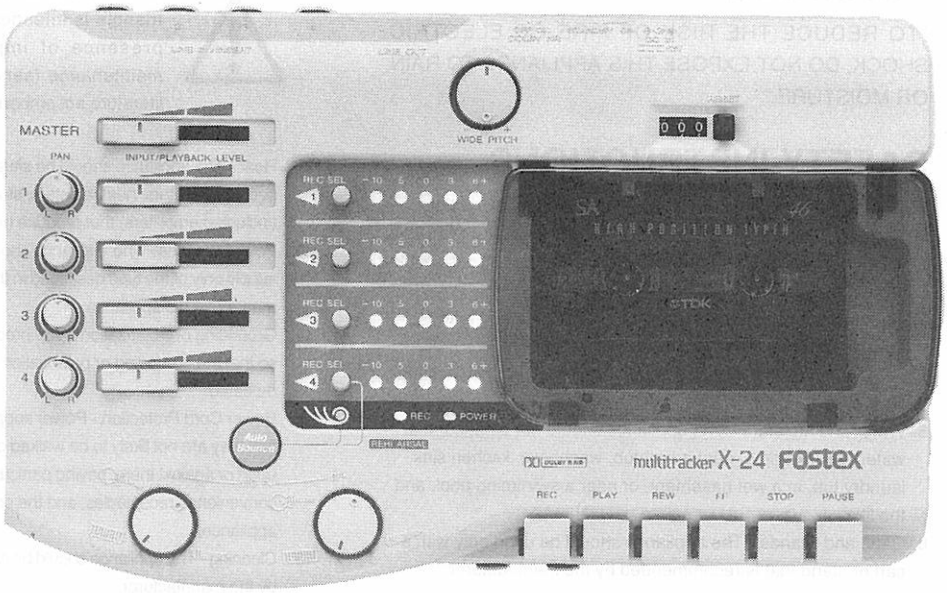
Owner's Manual

Model X-24

Multitracker



FOSTEX

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER - SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION:
POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

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.

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.

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 dose 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.

Model X-24 Owner's Manual Correction

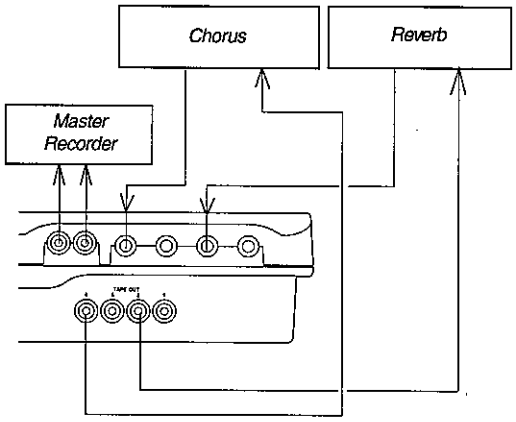
There are type errors on the page 21 of Owner's Manual. Please rectify the manual as attached.

<Error>

**** Apply an effect at mixdown!***

In this process, when mixing the sound sources recorded on tracks 1~4 and copying (dubbing) it to a master recorder, apply the effect on the desired track playback sound as they are mixed down. As an example, reverb will be applied to track 2 and chorus to track 4.
In particular, as the mixed down sound cannot be independently effect processed, individual effects must first be applied during mixed down.

As shown in drawing below, connect the X-24 TAPE OUT 2 to the reverb input, the reverb output to the X-24 LINE IN/INSERT 2, and connect TAPE OUT 4 to the chorus input, and the chorus output to LINE IN/INSERT 4.



After doing so, switch on the previously described "overdubbing" and the "rehearsal mode" explained in "punch in/out," and furthermore, switch on the REC SEL switches 2 and 4. By doing so, tracks 2 and 4 will be in the input monitor mode and thus the amount of effect can be monitored.
After doing this, start playback by pressing the PLAY button and mixdown.
The amount of effect is adjusted at the chorus and reverb side.
For practice, mixdown can also be carried out with "rehearsal mode" switched on.

<Correct>

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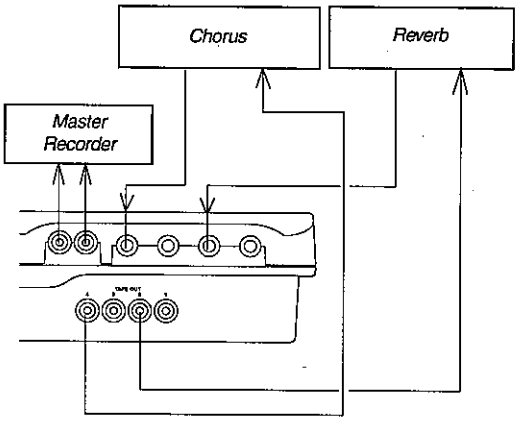

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正誤表

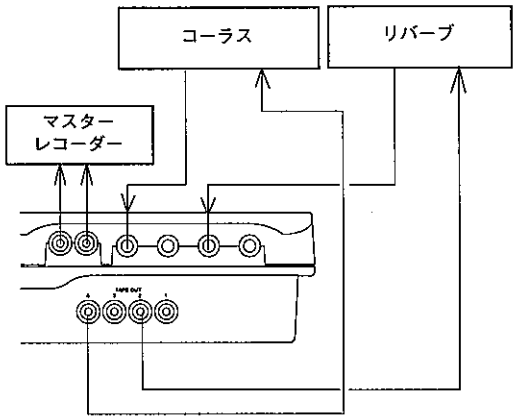
本文21ページ記載「エフェクト処理」の説明（**下記アンダーライン部分**）に誤りがありました。
お詫びして訂正させていただきます。

<誤>

■ ミックスダウン時に好みのエフェクトをかける！

ここでは、トラック１～４に録音された音源をミックスして、マスター・レコーダーへコピー（ダビング）する際、希望のトラック再生音にエフェクト処理しながらミックスダウンします。
例として、トラック2の演奏にはリバーブを、トラック4の演奏にコーラスをかけて処理します。
特にミックスダウンされた音は後で個別にエフェクト処理などができないため、ミックスダウンする際に希望の音にエフェクトをかける必要があります。

下の図のように、本機のTAPE OUT 2とリバーブのインプット、リバーブのアウトプットを本機のLINE IN/INSERT 2へ接続し、同じ要領でTAPE OUT 4とコーラスのインプット、コーラスのアウトプットをLINE IN/INSERT 4へ接続します。



このとき、前述の「オーバーダビング」および「パンチイン／アウト」の項で説明した「リハーサル・モード」をオンにし、さらにREC SELスイッチの２と４をREC READYにします（こうすることで、トラック２と４がインプットモニターになってエフェクトのかかり具合がモニターできるようになります）。
この状態でPLAYボタンを押して再生をスタートさせ、ミックスダウンします。
エフェクトの強弱はコーラスおよびリバーブ側で調整します。なお、「リハーサル・モード」がオンのままでもミックスダウンは実行できます。

<正>

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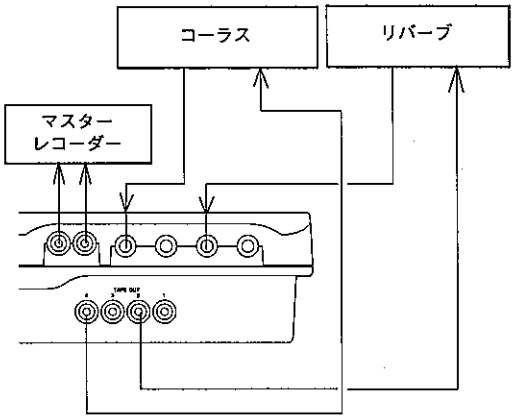

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この状態でRECORDボタンを押して（PLAYボタンも同時に機能）再生をスタートさせ、ミックスダウンします。
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Thank you very much for purchasing the Fostex Model X-24 Multitracker.
The X-24 is a four-track, four-channel recorder containing four line inputs in addition to two wide range inputs from line level to mic level. Nine point five cm/s speed and Dolby B type noise reduction are employed for high quality recording. In particular, the exclusive Fostex "auto bounce function," which makes ping pong recording a snap, allows anyone to carry out ping pong recording easily.
And, the X-24 contains a "rehearsal" mode which is convenient for overdubbing and punch in/out.. You can practice until you are satisfied prior to recording.
Please read this owner's manual thoroughly before using the X-24 to make the best use of its features for a long time.

Table of Contents

Precautions (please read before use)

Power supply

* When unplugging the AC adaptor from the outlet, be sure to grasp the adaptor. Attempting to unplug it by pulling on the AC cable may damage the wiring.

* It is dangerous to use any power cable that is cut or frayed. If the power cable is damaged, immediately stop using it, and have it repaired.

* Do not plug in or unplug the AC adaptor with wet hands. Doing so may result in dangerous electric shock.

* Do not open the unit or touch any parts inside. Doing so may result in a dangerous electric shock, and could damage the unit.

* Do not let water or other liquids, flammable materials, or metal objects such as pins get inside the unit.
These things may cause electrical shock or short circuit the X-24, and damage it.
If the X-24 should become wet, unplug the AC adaptor from the AC outlet, and contact your authorized service station.

* When turning the power on, turn the X-24 on first before turning on any equipment connected to it. Doing so will avoid possible damage to the other equipment.
Also, when connecting or disconnecting cables to or from the X-24's input or output jacks, make sure that the MASTER fader is set to "0."

* When the AC adaptor is connected to an AC outlet, it will continue to draw small amounts of power even if the switch is set to off (STANDBY).
If you will not be using the X-24 for an extended period of time, be sure to unplug the AC adaptor from the outlet.

Location

* Avoid using the X-24 in the following locations:

  * Locations of extreme low or high temperatures, or extreme changes in temperature.

  * Locations with excessive moisture or dust.

  * Locations where direct sunlight falls for an extended time, or near a stove or other source of heat.

  * Locations where electrical voltage varies.

  * Unstable locations or where there is heavy vibration.

  * Near strong magnetic fields (on top of a television or speaker).

Cautions for Using the X-24

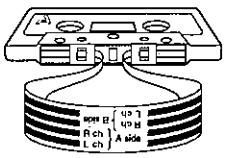
* *If a monitor speaker with an internal amplifier is connected to the LINE OUT jack, do not advance the monitor speaker volume control or the X-24 MASTER fader. Doing so could make a loud noise from the speaker or headphone and damage your hearing.*
* *When plugging external equipment into the X-24 input jack or headphone jack, always switch off power to X-24.*
* *When using an external mic, do not bring it close to the monitor speaker while the INPUT and MASTER faders are raised and with the track corresponding to the channel to which the mic is connected, set for input monitoring.*
  Doing so will cause feedback.
* *Do not apply the LINE OUT jack signals to the mic input or line input jacks (For example, directly connecting the LINE OUT jack to the input jack.). Oscillation will occur and could hurt your ears if monitoring with headphones.*
* *Be sure to use the AC adaptor included with this X-24. Should an adaptor with a different voltage or wrong plug polarity be used, it could cause a fire or ruin the X-24.*

Before Using the X-24

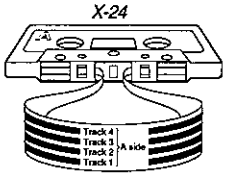
<The difference between multitracker recording and cassette deck recording>

A stereo cassette deck allows for stereo recording on side A and side B of a cassette tape.
As shown in the figure below, a cassette tape is divided into four tracks: two for side A, and two for side B.
On the other hand, a multitracker, such as the X-24, uses all four tracks on the same side. If you record something on the multitracker and play the tape on a cassette deck, Tracks 1 and 2 will play normally, but when you try to play the other side of tape, Tracks 3 and 4 will play in reverse.

Stereo cassette deck.



X-24



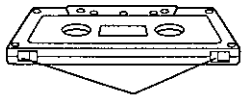
<Handling cassette tapes>

Cassette tape suitable for recording:

The X-24 perform best with a high-position cassette tape (TYPE II, HIGH).
We recommend that you use these types or equivalent tapes for multitrack recording.
C-120 tapes (60 minutes each side) are thin and not suitable for repeated recording or playback.
Use C-90 or shorter tapes for good performance.

Using write-protection tabs:

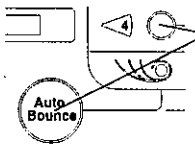
On the edge of a cassette tape are write-protection tabs that are used to prevent any recorded data from being accidentally erased. You may want to break the tab for side A and side B of a cassette tape that you have already recorded, since the X-24 uses all four tracks at the same time. If you later wish to record data on a tape with broken tabs, apply a piece of scotch tape to cover the tab hole.



Write-protection tab

<Rehearsal mode>

The Fostex X-24 contains a "rehearsal mode" which is convenient when using the punch in/out modes.
The rehearsal mode lets you practice in/out timing and adjust the recording level by going through the punch in/out take operation without entering the recording mode.
By using this function, you can practice any number of times before doing the actual take.

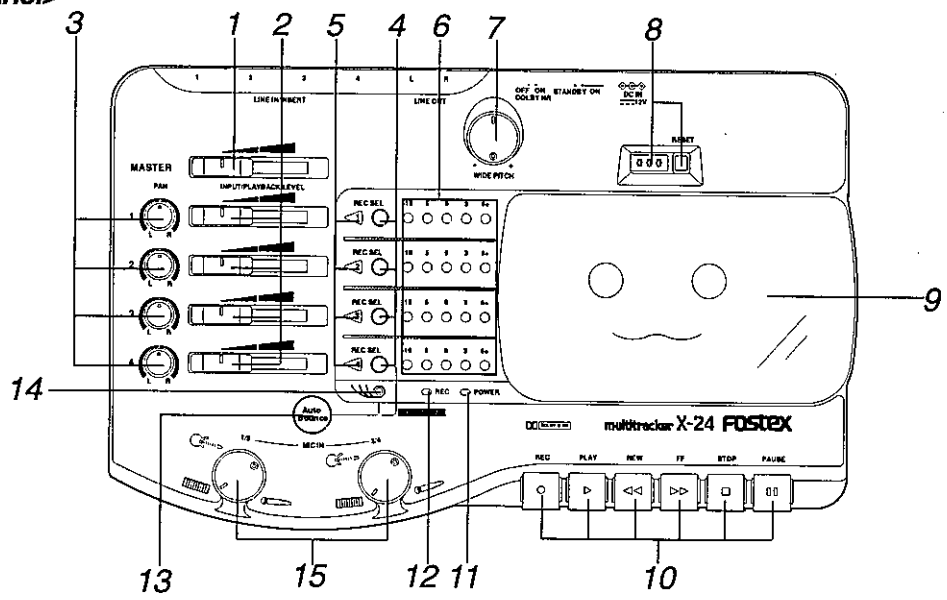


On/off of the rehearsal mode is switched by pressing the REC SEL switch 4 while pressing the Auto Bounce button.

Besides the punch in/out mode, this rehearsal mode can also be used to set the recording level for overdubbing. For details, refer to "Overdubbing" on page 13 and "Punch in/out" on page 16.

Names and Functions

<Top Panel>



1. Master fader [MASTER]

This controls output levels from LINE OUT L, R and headphones.

2. Input/playback level control faders [INPUT/PLAYBACK LEVEL]

These faders have two functions:
One function is to control the recording level. Input levels applied to the INPUT jack (front or rear) are controlled by this faders. The other function is to control the tape playback level of each track.

3. Pan pot knob [PAN]

The stereo image positioning of each track when monitoring the tape playback or at mix down is controlled by these knobs. Adjust the knob for the most suitable position of the musical instrument that is being played back.

4. Record track select switch [REC SEL]

These are for selecting a track to be recorded. When the switch is pressed, the record track LED (green) will blink to indicate that this track is REC READY. If pressed again, REC READY is canceled and the LED will go out. Also, if the REC SEL switch 4 is pressed while pressing the Auto Bounce button, the REC LED (red) will blink to indicate that the X-24 has entered the "rehearsal mode." To cancel the "rehearsal mode," repeat the same procedure.

** Refer to "Rehearsal mode" on pages 13 and 16 for details.*

<Note>

When the Auto Bounce button is "ON," the X-24 is in the ping pong recording mode and thus, only one REC SEL switch can be switched on. Also, when the X-24 is in the auto bounce mode (ping pong recording) or normal recording mode, if the Auto Bounce button is switched on and off when any one REC SEL switch is set to the READY state, the selected REC SEL switch will be canceled. In this case, if recording is to be started, the recording track must be reselected with the REC SEL switch.

5. Record track LED

This LED will blink to indicate that the track is in the REC READY mode when the REC SEL switch is pressed once. If recording is started from the blinking state of the LED, the LED will change from blinking to lit. If the REC SEL switch is pressed again, REC READY will be canceled and the LED will extinguish.

6. Level meter

This indicates the recording/playback level. During recording, 0 ~ 3 on this meter is the optimum level.

7. Pitch control knob [WIDE PITCH]

Tape speed can be adjusted within the range of -50% ~ +12%. This is normally set to the center position. Use this knob during playback of recorded music to practice your performance at a slower speed.

8. Tape counter/reset button [RESET]

Tape travel is counted and indicated here.
The count can be returned to [000] by pressing the reset button.

9. Cassette lid/Cassette tray

Insert a cassette tape here.
Always load or unload cassette while the transport is in the stop mode.

10. Transport control buttons

Play button [PLAY]

Playback is started by pressing this button.

Stop button [STOP]

Tape transport buttons PLAY, REC, REW and FF will cancel and the tape stopped when this button is pressed while the tape is in playback, recording, fast forward or rewind modes.

Fast forward button [FF]

The tape will fast forward at high speed when this button is pressed.

Rewind button [REW]

Tape will be rewound at high speed when this button is pressed.

Recording button [REC]

When this button is pressed when any one record track LED is blinking, the PLAY button will be pressed simultaneously and recording will start. If the PAUSE button had been pressed, the X-24 will enter the record standby mode and the tape will remain stopped.
In the record or record standby modes, the REC LED (red) will be lit and at the same time, the record track LED will also change from blinking to lit.

> **<Note>**
> The REC button will be ineffective if the "cassette erase prevention tab" is broken off.

Pause button [PAUSE]

If this button is pressed during playback or recording, the tape will stop (PLAY and RECORD buttons will remain unchanged). If this button is pressed again, the stop mode will cancel and playback or recording will resume. This does not function during rewind or fast winding modes.

11. Power LED [POWER]

This is lit when the power is switched on.

12. Record LED [REC]

This is lit in red when the X-24 is put in the record or record standby mode. It will also light when the X-24 is put in the "rehearsal mode" by pressing the REC SEL switch 4 while pressing the Auto Bounce button.

13. Auto bounce on/off button [Auto Bounce]

On/off of the Auto Bounce function (ping pong recording) is selected with this button. This function is switched ON by pressing once, and switched OFF by pressing again. When switched on, the Auto Bounce LED will blink in quick flashes. If the REC SEL switch 4 is pressed while pressing this button, the X-24 enters the "rehearsal mode." To cancel the rehearsal mode, repeat the same procedure.

> **<Note>**
> Ping pong recording cannot be canceled by pressing the Auto Bounce button once the process has started.

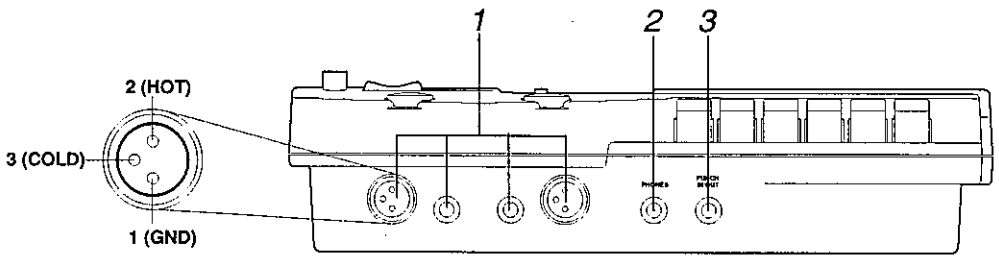
14. Auto bounce LED

This will blink in quick flashes when the Auto Bounce function is switched on and extinguish when switched off. If a ping pong track is then selected by the REC SEL switch, this LED will change to lit.

15. Trim knob

The input level is adjusted with this knob depending on the sound source input to the front panel MIC IN jack (PHONE or XLR).
This knob can be adjusted from line level to mic level.

<Front panel>



1. Mic input jack [MIC IN 1/3, 2/4]

Normally, microphones are plugged in here.
Inputs from mic level to line level is possible because a trim knob is provided for each input.
Both XLR connectors (balanced) and PHONE jacks (unbalanced) are provided, and either can be used depending on the application.
The sound source input to MIC IN jack 1/3 is sent to tracks 1 and 3, and the inputs to MIC IN jack 2/4 is sent to tracks 2 and 4.

<Note>
The XLR connector and PHONE jack cannot be used in parallel.

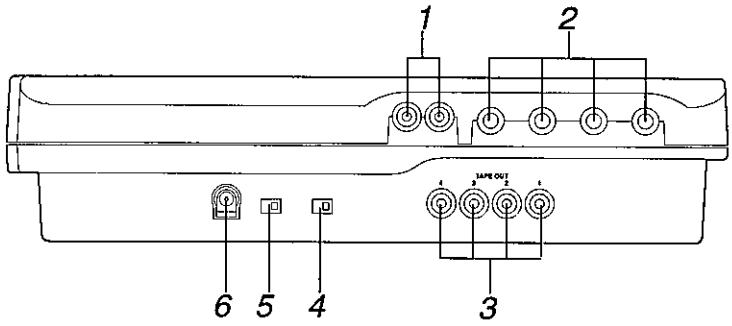
2. Headphone jack [PHONES]

A monitor headphone is plugged in here.

3. Punch in/out jack [PUNCH IN/OUT]

The optional Foot Switch (Model 8051) used to punch in/out is plugged in here.

<Rear Panel>

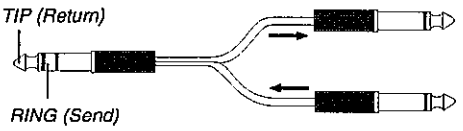


1. Line out jack [LINE OUT L, R]

These are connected to the master recorder input connectors (L, R) for mixdown.
Monitor speakers with internal amplifiers can also be connected here. The output level can be adjusted with the MASTER fader.

2. Line in/insert jack [LINE IN/INSERT 1, 2, 3, 4]

Line level sound sources are input here.
Input signals are sent only to the corresponding tracks.
If a sound source input from the front panel MIC IN jack is to be processed, use these jacks to insert a compressor/limiter or other effect.



<Note>
Please note the following relation between this jack and the front panel MIC IN jack:
Example: should a sound source be plugged into LINE/INSERT 1, you cannot record the sound source, plugged into the front panel MIC IN 1/3 jack, on track 1 but it is possible to record onto track 3.
In other words, since priority is always given to the LINE IN/INSERT jacks, you cannot record both sound sources simultaneously on the same track but you can do so at the same time on separate tracks.

3. Tape out jack [TAPE OUT 1, 2, 3, 4]

Signals from tracks 1~4 are output here.
These outputs can be sent to external mixers and effecter input connectors for effect processing.
In addition, TAPE OUT 4 can also be used as the SYNC OUT jack to send the sync signal recorded on the tape to an external MIDI sequencer.

4. Dolby B noise reduction on/off switch [DOLBY NR ON/OFF]

The switch for the Dolby B noise reduction.
For the sake of high quality recording and playback, we recommended using Dolby B.
If a tape recorded with Dolby B noise reduction is to be played back, be sure to set this switch to ON.

5. Power switch [ON-STANDBY]

This switch is for on/off (STANDBY) of power to the X-24. Even when this is switched off (STANDBY), a small current will continue to flow.
So, if the X-24 is not to be used for long periods, the AC adaptor should be disconnected from the wall socket.

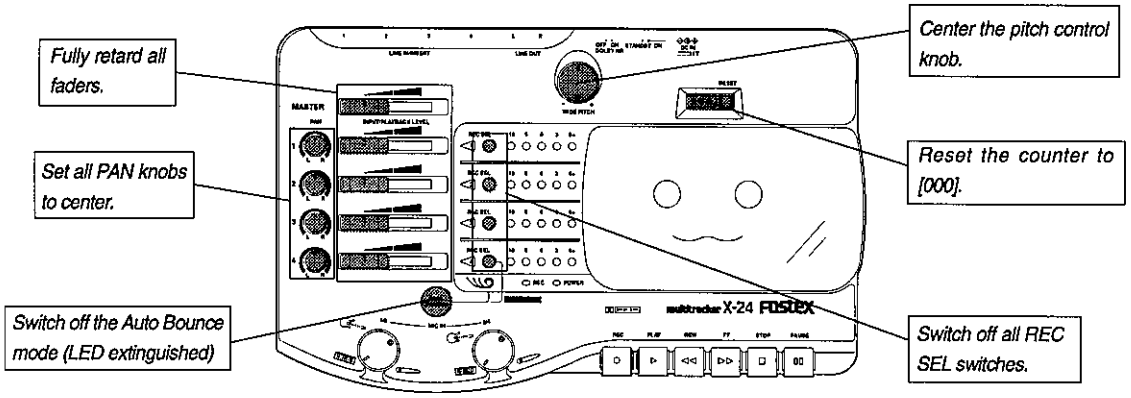
6. DC IN connector [DC IN 12V]

The exclusive AC adaptor packaged with X-24 is plugged in here.

Basic Operation "Let's Try Recording"

Initial setup of the Fostex X-24

After completing a recording session, repeat all knobs and switches of the X-24 to their initial settings before proceeding to the next recording session or playback. Do this to avoid any unexpected problems from switch and knob settings of the previous session which could be unsuitable for the next recording.
In this manual, this will be called "initial setting" and the control panel switches and knobs shall be set as shown below. Always return to this "initial setting" before proceeding to a new recording session.



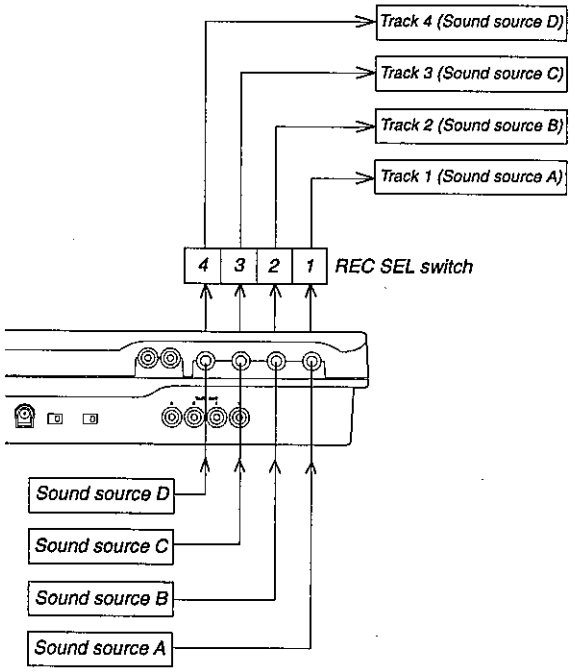
Remember the following before starting to record!

On the Fostex X-24, jacks (or connectors) to input musical instruments and mics are provided at the front and rear panels. The functions of these input jacks (or connectors) will be explained in the following.

* Rear panel LINE IN/INSERT jack

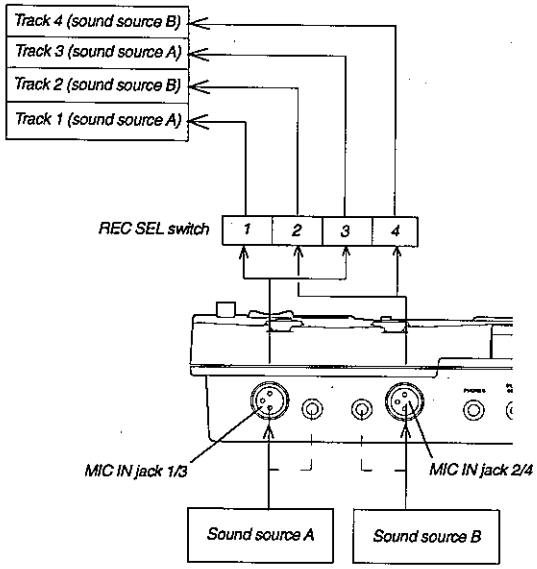
Normally, a line level sound source with a PHONE type plug is connected here (A mic cannot be plugged in here.). Signals applied to each input jack are designed to be recorded on the track corresponding to the input channel. In other words, the signal input to LINE IN /INSERT1 is recorded on track 1, the signal input to LINE IN/INSERT 2 is recorded on track 2, and so on. It cannot be recorded to any other track.
Therefore, by connecting four different sound sources to these LINE IN/INSERT jacks, four tracks can be recorded simultaneously.
These jacks also serve as the insert point. For example, various effecters can be connected here, such as a compressor for a mic sound source input to the front panel input jack.
The purpose of using this as the insert point is exclusively for effect processing of the sound source input to the front panel input jack (or XLR connector).

For how to connect effecters, please refer to page 21.



* Front panel MIC IN (1/3, 2/4) jack

Microphones are generally plugged in here.
Use the trim knob provided for each input, to adjust the input level to match the output level of the sound source that is connected.
Line level sound sources can be adjusted because the trimming range covers from mic level up to line level.
Both PHONE jacks and XLR connectors are provided which allow s many types of sound sources.
However, remember that priority is given to the PHONE jack, and if it is being used, the XLR connector will be ineffective.
Unlike the rear panel input jacks, signals input to these input jacks (or the XLR connectors) will be recorded on tracks 1 and 3 for the signals into MIC IN 1/3, and to tracks 2 and 4 for signals into MIC IN 2/4.
Tracks to be recorded to will be determined by the REC SEL switch setting.

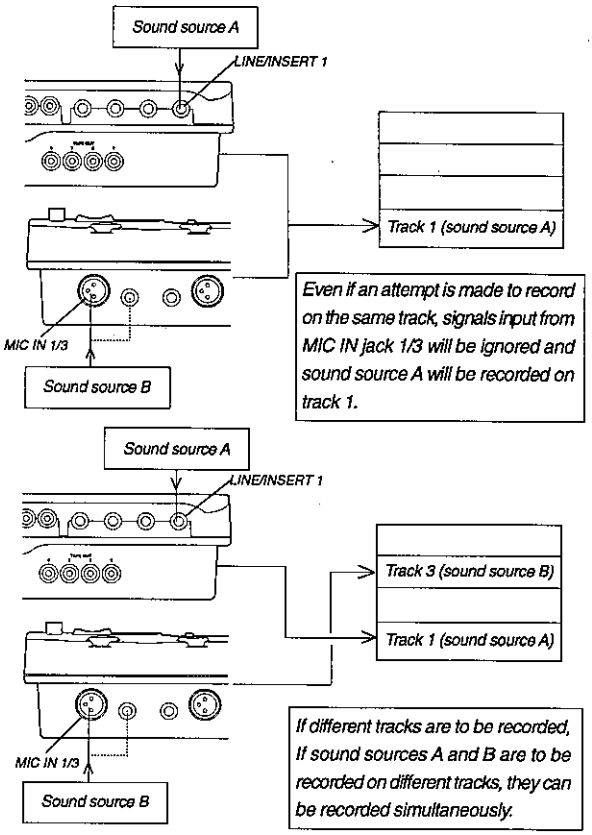


* The relation between the front panel MIC IN (1/3, 2/4) jack and the rear panel LINE IN/INSERT jack.

Since there is the following relationship between the MIC IN and LINE IN/INSERT jacks, this should be kept in mind when recording.

Order of priority when recording on the same track:
The rear panel LINE IN/INSERT jack will have priority. For example, when attempting to record to track 1 by simultaneously applying a sound source to the rear panel LINE IN/INSERT jack 1 and the front panel MIC IN jack 1/3, priority will be given to the LINE IN/INSERT jack 1 for sending the signal to track 1, and the signal from the MIC IN jack 1/3 will be ignored.

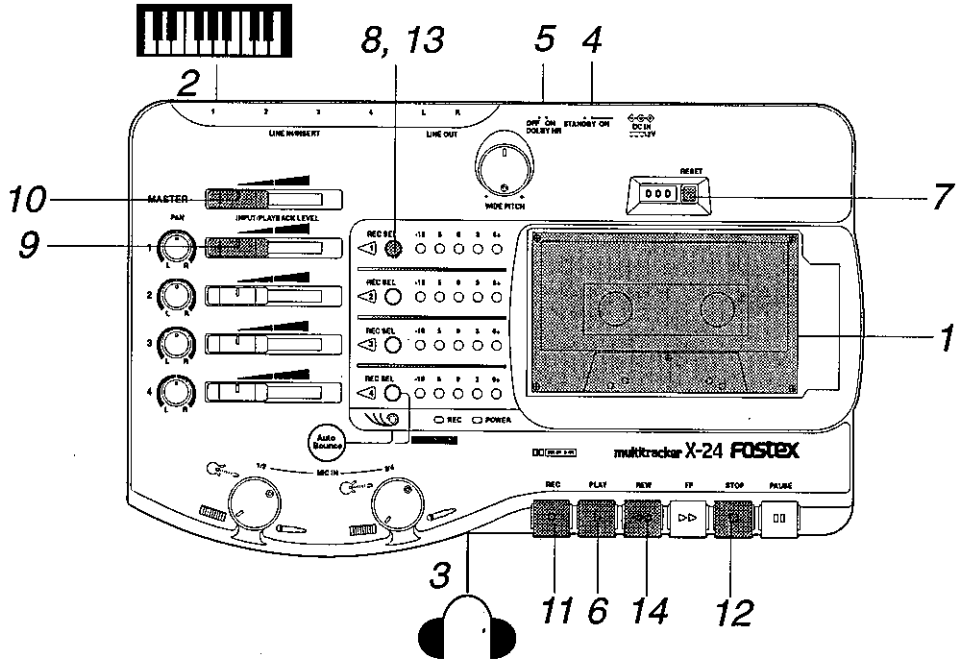
Order of priority when recording to different tracks:
If the recording is to be made on separate tracks, they will have no order of priority and signals can be recorded to all tracks.
In other words, when thus connected, signals from LINE IN/INSERT jack will have priority for recording on track 1 but the signal from MIC IN jack 1/3 can be recorded on track 3.
On the other hand, if it is connected to the LINE IN/INSERT jacks 1 and 3, all signals from the MIC IN jack will be ignored.
This also applies to the LINE IN/INSERT jacks 2 and 4, and MIC IN jack 2/4.



Basic Recording - 1 (Recording from the rear panel LINE IN/INSERT jack)

First, connect your musical instrument and try recording on the desired track.
As an example, a synthesizer will be recorded on track 1. In this and later explanations, its assumed the AC adaptor is connected to X-24.

> ** Before proceeding to the next step, set X-24 to its "initial settings."*



1. Lift the cassette tray lid and load the cassette to the cassette tray.
If a previously recorded tape is being used, check that the rear side erasure prevention tab has not been broken off.
If it is, cover the hole with a piece of scotch tape.

2. Connect the synthesizer output with a cable to the rear panel LINE IN/INSERT jack 1.

3. Plug the monitor headphone into the PHONES jack.

4. Switch on the power.
The POWER LED will light (green).

5. Switch ON the Dolby B noise reduction switch.

6. Press the PLAY button to advance the tape for a few seconds.
This will wind the leader tape at the head of the recording tape. If a used tape is not completely rewound, press the REW button to wind to the beginning and repeat the same process.

7. After the leader section of the tape is wound past, press the RESET button to set the counter to [000].

8. Press the REC SEL switch 1 to enter track 1 to the REC READY mode.
The record track LED 1 will blink.

9. While playing the synthesizer, gradually raise the channel 1 INPUT/PLAYBACK LEVEL fader.
As the fader is raised, the channel 1 level meter will start to blink.
Adjust the recording level by raising the INPUT/PLAYBACK LEVEL fader to a point where the meter [3] blinks at maximum sound volume.

10. The headphone sound volume can be adjusted by the MASTER fader.
Position the monitor sound image with the channel 1 PAN knob.

11. After adjusting the recording level, press the REC button (the PLAY button will also be pressed automatically) to start recording.

Together with the REC LED lit in red, the blinking record track LED will change to constantly lit.

12. When you finish recording, press the STOP button.

The recording mode will be canceled (REC LED is extinguished) and the record track LED will blink.

13. REC SEL switch 1 is pressed to cancel REC READY of track 1.

14. Press the REW button to rewind tape to counter [000].

Recording on track 1 by using the rear panel LINE IN/INSERT jack 1 is done with the above procedure.

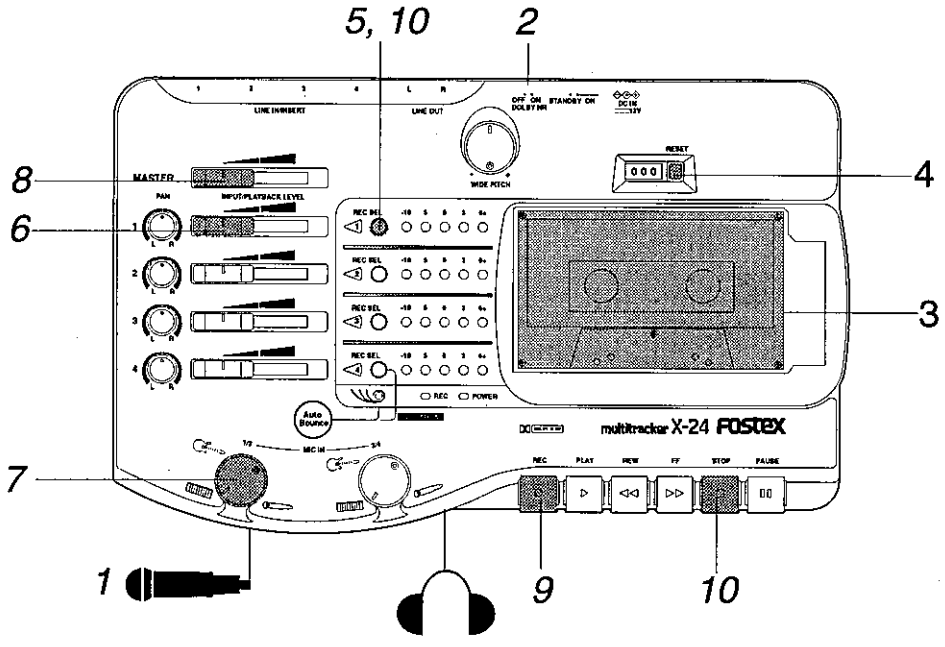
The chart below shows how the LINE IN/INSERT jack, REC SEL switch and INPUT/PLAYBACK LEVEL faders are used and setup when recording on tracks 2~4.
Try recording on tracks 2~4 also by referring to this chart.

Recording Track	Use the LINE IN/INSERT jack	Use the INPUT/PLAYBACK LEVEL fader	Use the REC SEL switch
Track 2	LINE IN/INSERT jack 2	Channel 2 INPUT/PLAYBACK LEVEL fader	REC SEL switch 2
Track 3	LINE IN/INSERT jack 3	Channel 3 INPUT/PLAYBACK LEVEL fader	REC SEL switch 3
Track 4	LINE IN/INSERT jack 4	Channel 4 INPUT/PLAYBACK LEVEL fader	REC SEL switch 4

Basic Recording - 2 (Recording with the front panel MIC IN jack)

Next, let's try recording a vocal on track 1 by plugging a mic into the front panel MIC IN jack 1/3.

** Before proceeding to the next step, remember to reset the X-24 to its "initial settings."*



1. ***Plug a mic into the front panel MIC IN jack 1/3 (PHONE or XLR).***
2. ***Switch ON the Dolby B noise reduction switch.***
3. ***If this is a new song, load a cassette in the transport and advance tape to recording start position as was previously described.***
4. ***Reset the counter to [000] by pressing the RESET button.***
5. ***Put track 1 in the REC READY mode by pressing REC SEL switch 1.***
   Record track LED 1 will blink.
   The signal from MIC IN jack 1/3 can also be recorded to track 3.
   If track 3 is entered in the REC READY mode by pressing the REC SEL switch 3, the same signal can be recorded also to tracks 1 and 3.
6. ***Raise the channel 1 INPUT/PLAYBACK LEVEL fader to the position shown below.***

7. ***Adjust the level with the trim knob so that 0 ~ 3 of the level meter is lit.***
8. ***The headphone sound volume can be adjusted with the MASTER fader.***
9. ***After the recording level has been adjusted, start recording by pressing the REC button.***
10. ***Upon completing the recording, press the STOP button to stop the transport and switch off the REC SEL switch 1.***

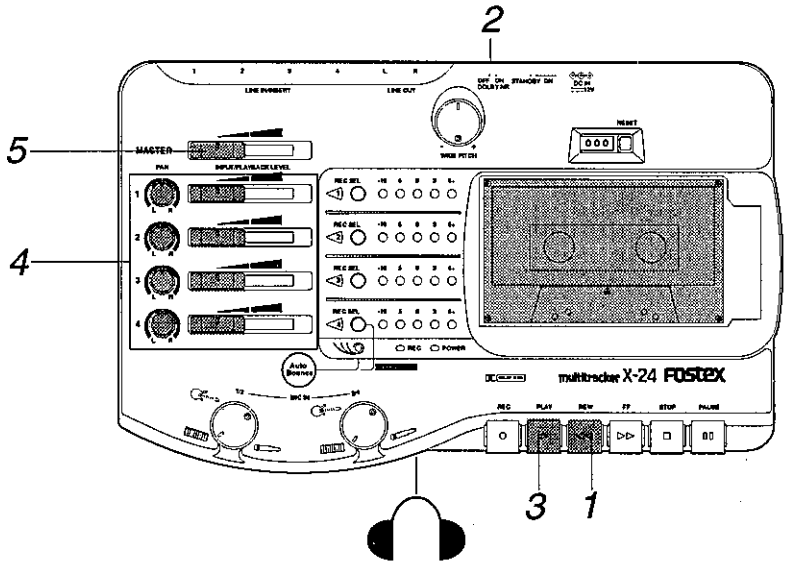
As before, the following consolidated chart shows how the MIC IN jack (connector), REC SEL switch and INPUT/PLAYBACK LEVEL faders are used and setup when recording on tracks 2 ~ 4.
Try recording on tracks 2 ~ 4 by referring to this chart.

Recording Track	Use the MIC IN jack	Use the INPUT/PLAYBACK LEVEL fader	Use the REC SEL switch
Track 2	MIC IN jack 2/4	Channel 2 INPUT/PLAYBACK LEVEL fader	REC SEL switch 2
Track 3	MIC IN jack 1/3	Channel 3 INPUT/PLAYBACK LEVEL fader	REC SEL switch 3
Track 4	MIC IN jack 2/4	Channel 4 INPUT/PLAYBACK LEVEL fader	REC SEL switch 4

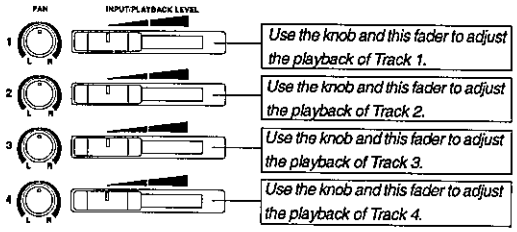
Basic Playback Procedure

Lets playback and listen to the sound recorded during BASIC RECORDING.
It is assumed different sounds are recorded to the tape on tracks 1 ~ 4.

** Before proceeding to the next step, reset the X-24 to its "initial settings."*



1. **Rewind the recorded tape to its beginning.**
2. **Switch ON the Dolby B noise reduction switch.**
3. **Press the PLAY button to playback from the head of the tape.**
4. **Gradually raise the INPUT/PLAYBACK LEVEL faders of each channel.**
   Adjust the channel fader corresponding of each track. Adjust the PAN knobs of each channel for the proper image position of the respective track playback sound.
5. **Adjusted with the MASTER fader for proper sound volume.**



<Note>
If you use headphone for long hours of monitoring, be careful not to raise the MASTER fader too high.
If monitoring is continued for long hours at high sound volumes, it could hurt your hearing.
Take a break occasionally to give your ears a rest.

Multiple Recording

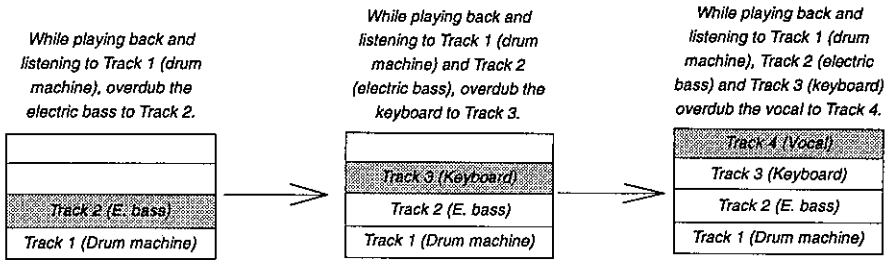
You should now have a good understanding of basic recording and playback operation of the X-24.
If not, you might want to review the previous information about the recorder.
Now let's use the X-24's multiple recording function.
The following will explain overdubbing which is a fundamental function of multiple recording, and also the mixdown process where sound recorded to the four tracks are mixed and copied (dubbed) to the master recorder.

Overdubbing

Layered recording of sound, in other words, overdubbing, is the technique of listening to (monitoring) a previously recorded track while recording another performance to a different track.
For example, in the basic style of recording, the rhythm section (drum machine) is recorded on track 1 and while listening to the drumtrack, the electric bass is recorded on track 2...and thus different sounds are recorded in layers on the four tracks.

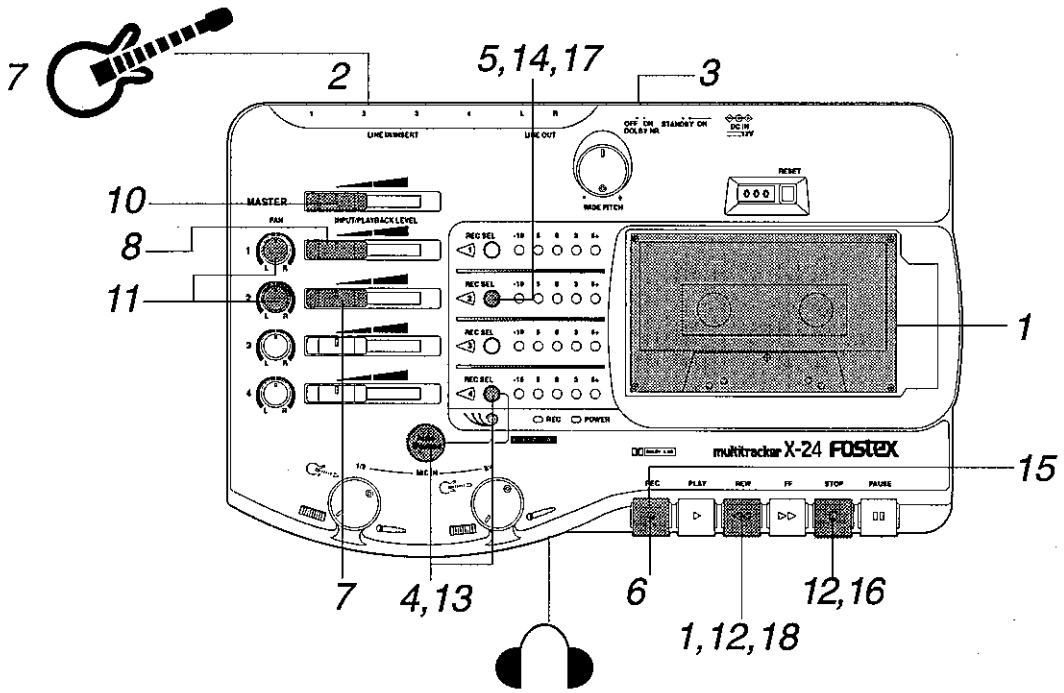
As an example here, assuming that the drum machine is recorded on track 1 (The synthesizer sound recorded in BASIC RECORDING can be replaced with the drum machine), then overdub an electric bass on track 2, a keyboard to track 3 and a vocal to track 4.

<Overdubbing Electric Bass in Track 2 While Listening to The Drum Machine>



* *Before starting to overdub, refer to "Basic method of playback" and practice the electric bass track while listening to the track1 drum machine sound.*

* *Before starting to operate, set X-24 to its initial settings.*



1. As with the basic operation, set the tape recorded with the drum machine and rewind tape to its starting position ([000]) for recording.

2. Plug the electric bass into rear panel LINE IN/ INSERT jack 2.

LINE IN/INSERT jack 2 is used for recording on track 2.

> *<Note>*
> *This is the simplest way to record a bass, but you may want to use an amplifier or direct box.*

3. Switch ON the Dolby B noise reduction switch.

**** Adjust The Recording Level By Using The Rehearsal Mode***

When overdubbing, practice by listening to the prerecorded track sound.

4. While pressing the Auto Bounce button, press REC SEL switch 4.

The rehearsal mode is entered and the REC LED will blink.

5. Press REC SEL switch 2 to enter track 2 in the REC READY mode.

6. Press the REC button to start tape.

Since the X-24 is in rehearsal mode, it will not record.

7. While playing the electric bass, adjust the recording level by gradually raising the channel 2 INPUT/PLAYBACK LEVEL fader.

8. The playback sound of track 1 is adjusted with the channel 1 INPUT/PLAYBACK LEVEL fader.

9. Practice play the electric bass while listening to track 1.

10. The headphone sound volume can be adjusted with the MASTER fader.

11. The image position of each monitor sound is adjusted for monitoring with each channel PAN knob.

12. After you have enough practice, stop the X-24 and rewind the tape to [000].

**** Overdubbing Take***

13. Cancel the rehearsal mode by pressing the REC SEL switch 4 while pressing the Auto Bounce button.

The blinking REC LED will extinguish. At the same time, the REC READY track will also cancel and the blinking record track LED will extinguish.

14. Press the REC SEL switch 2 again to enter track 2 in the REC READY mode.

15. Start recording by pressing the REC button.
While listening to the track 1 playback, play the electric bass and overdub it to track 2. During recording, the record track LED of the REC READY track and the REC LED will both be lit.

16. When you have finished overdubbing, press the STOP button to stop the transport.

17. Press REC SEL switch 2 to extinguish the indicator.

18. Rewind the tape to the head and playback sound on tracks 1 and 2. If you have any questions, please refer to "Basic method of playback."

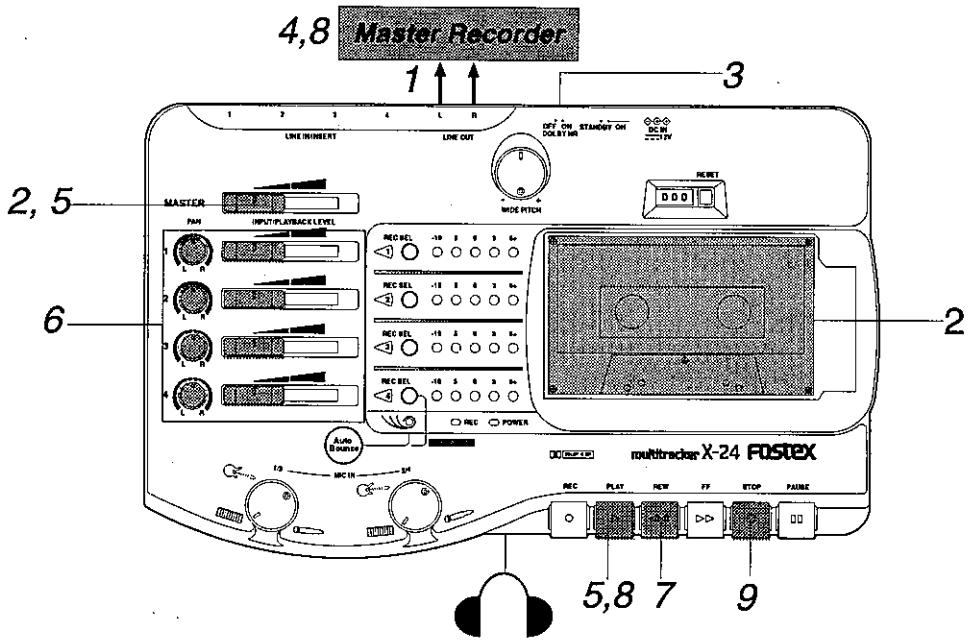
The following chart uses the INPUT jacks (front or rear), REC SEL switches and INPUT/PLAYBACK LEVEL faders for overdubbing into tracks 3 and 4.

Track for overdubbing	INPUT jack for connecting sound source	Recording level adjusting fader	REC SEL switch	Playback track level adjusting	PAN knob adjusting	Monitor sound adjusting
Track 3	LINE IN / INSERT jack 3	Channel 3 INPUT/ PLAYBACK LEVEL fader	REC SEL switch 3	Adjust the playback level of tracks 1 and 2 with channel 1 and 2 INPUT/ PLAYBACK LEVEL faders.	Rotate to the position most suitable for monitoring.	Adjust to the most comfortable monitoring level with the MASTER fader.
Track 4	MIC IN jack 2/4	Channel 4 INPUT/ PLAYBACK LEVEL fader	REC SEL switch 4	Adjust the playback level of tracks 1 ~ 3 with channel 1 ~ 3 INPUT/ PLAYBACK LEVEL faders.		

Mixdown

After all four tracks have been recorded, the next step is mixdown.
Mixdown is the process of adjusting the sound volume and sound image positioning of what was recorded on tracks 1 ~ 4, and as a final result, mix them to two channels (stereo) and dubbing (copy) it to a master recorder.

** Before proceeding to the next step, set X-24 to its "initial settings."*



1. Interconnect the X-24 LINE OUT L, R jack with the master recorder inputs (L, R).
Load a tape to record in the master recorder and wind tape to its start point.

2. Load the previously overdubbed tape in the X-24 and wind to the head of the tape.

3. Switch ON the Dolby B noise reduction switch.

**** Adjust The Output Level/Recording Level***

4. Set master recorder to record standby.

Press the PAUSE button and enter the recording mode so that the master recorder level meters work. Because master recorders from different manufacturers work in different ways, please refer to the operating manual of the master recorder to be used.

5. Press the X-24 PLAY button to playback the tape from the head.

6. The output level of each track is adjusted by the INPUT/PLAYBACK LEVEL fader of the channel corresponding to each channel, and the output balance is adjusted by the PAN knob.

In this process, the master recorder recording level is adjusted so that its level meter indicates the optimum level.

<Note>
There is no fixed rule in determining the playback sound image position with each track PAN knob at mixdown.
This is where your creatively is important. Try for a sound that is pleasing to you!

7. The headphone sound volume can be adjusted by the MASTER fader.

8. After setting the recording level and other conditions, rewind the tape to its head.

**** Final Take Of Mixdown***

9. Put the master recorder first in the record mode, and then start X-24 in the playback mode.

10. Upon completing the mixdown, stop both the X-24 and the master recorder.

Special Application

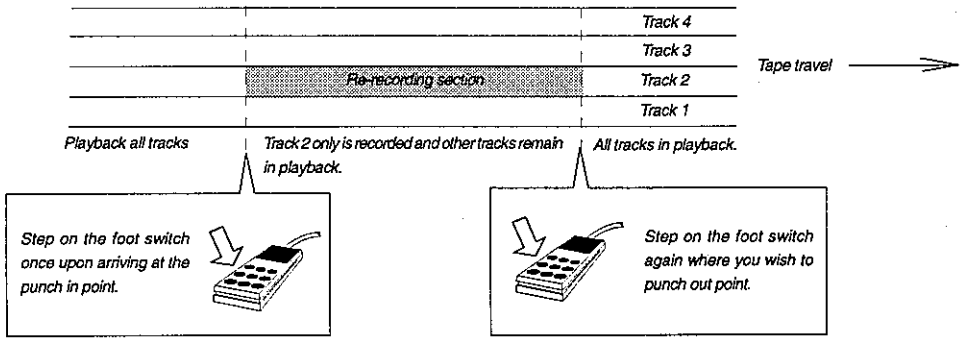
In the "Basic Operation" section, you mastered the X-24's basic recording/playback and multiple recording abilities.. In this section, "Punch in/out recording," "Ping pong recording," "Tape sync" and "How to use the effects" will be explained.

Punch In/Out Recording

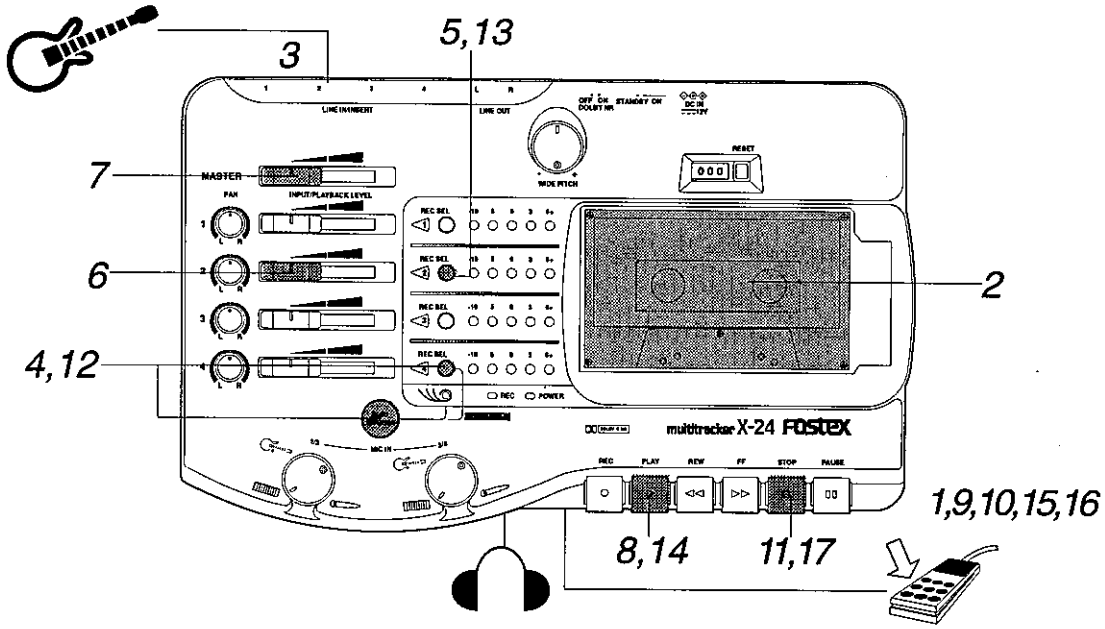
Punching in and out is used to enter one portion of an already recorded tape and then, re-recorded a section. Use this function to fix mistakes or improve on previously recorded material.
A rehearsal mode is provided in the X-24 and as explained before in the "over dubbing" section, the recording level can be adjusted and performance technique practiced before the take by using this mode.

<NOTE>
To use punch in/out, the tape is played back up to the point where you want to change what has been recorded, and at the point between phrases, the recording mode is entered and new material recorded.. This is called the punch in.
The process of returning again to playback after ending recording of the replacement section. This is called the punch out.
To use this process on the X-24, the optional foot switch (Fostex model 8051) is necessary.

Punch in/out is carried out as shown below.



For example, part of the track 2 electric bass recorded will be replaced during overdubbing.
We are assuming that the prerecorded tape is already loaded in the X-24 and the tape rewound to its head.



1. The optional foot switch is plugged into the PUNCH IN/OUT jack.

2. Advance the tape to point just before where new material is to be inserted..

3. Plug the electric bass into the rear panel LINE IN/ INSERT jack 2.

**** Practice By Using The Rehearsal Mode***

4. Press the REC SEL switch 4 while pressing the Auto Bounce button to enter the rehearsal mode.

5. Put track 2 in the REC READY mode by pressing the REC SEL switch 2.

6. Raise the channel 2 INPUT/PLAYBACK LEVEL fader to the roughly estimated recording level while playing the electric bass.
In this setting, the bass cannot be monitored.

7. The headphone sound volume can be adjusted by the MASTER fader.

8. Start playback by pressing the PLAY button.
Because all four tracks will be in playback, with the exception of track 2, adjust the other track monitor sound with each INPUT/PLAYBACK LEVEL fader and set the monitor sound image position with the PAN knobs.

9. Step on the foot switch once upon arriving at the punch in point.
The record track LED 2 will change to constant lighting and track 2 only will be in the input monitor mode.
The new bass part can be heard in track 2 together with the playback sound from the other tracks.

10. Step on the foot switch again where you wish to punch out.

11. Upon completing rehearsal, stop the transport by pressing the STOP button and rewind the tape.
Because no recording will take place during rehearsal, repeat the process up to this point to set the recording level and get your playing technique down, and also practice the timing of the punch in and out.

**** Take Of The Punch In/Out***

12. Cancel the rehearsal mode by pressing the REC SEL switch 4 while pressing the Auto Bounce button.
The REC LED will go out.

13. Enter track 2 in the REC READY mode by pressing the REC SEL switch 2 again.

14. Playback the tape from slightly before the punch in point.

A good idea is to play the bass in unison with the playback sound to get in sync for the punch in.

15. Step on the foot switch at the punch in point.
Track 2 will enter the input monitor mode and also enter the recording mode (REC LED will be lit). The electric bass performance will be recorded.

16. Step on the foot switch again at the point you wish to punch out.
The recording mode will be canceled and all tracks will be in the playback mode.

17. Upon completing the replacement, press the STOP button to stop the transport, rewind the tape and listen to result of your punch in/out performance.

<NOTE>

Skill is required to match the newly replaced sound level with that of the prerecorded sound.
Try the following method to roughly match the level.

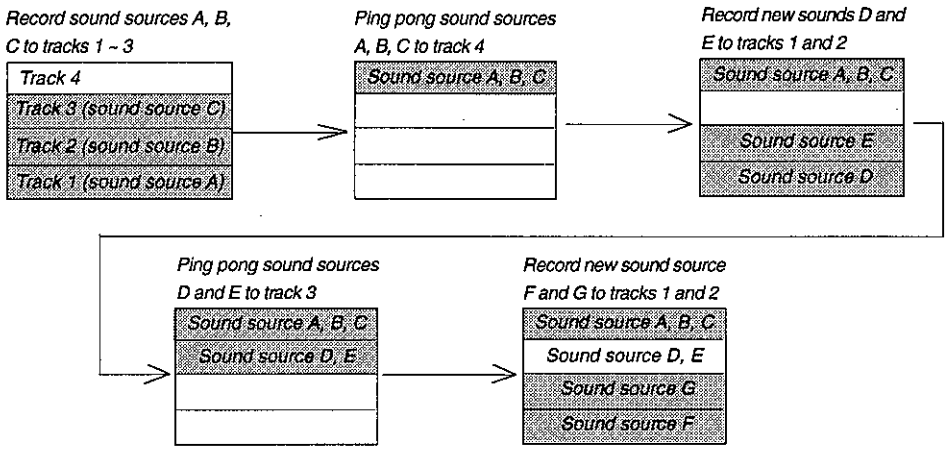
1. *While playing the track in which a replacement is to be made, adjust the INPUT/PLAYBACK LEVEL fader so that the meter indicates 0 ~ 3, the same as at recording.*
2. *While playing the musical instrument to be newly recorded in the rehearsal mode, adjust the INPUT/PLAYBACK LEVEL fader such that the level meter lights up about the same as during playback.*

By following these procedures, the new recording will match the sound level with the prerecorded material.

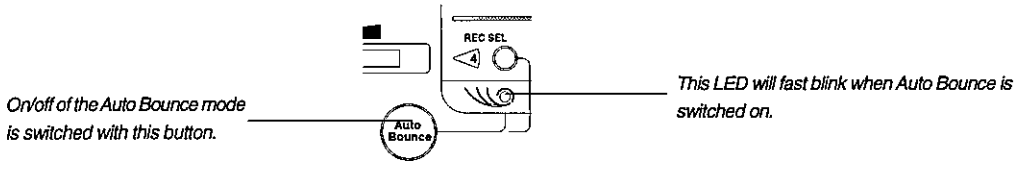
Ping Pong Recording (Using The Auto Bounce Function)

In a multitracker, the four tracks can be used effectively to record many sound sources. However, if all four tracks are recorded on, you won't have any more tracks for another musical instruments or vocals. But, there is a method to make an open track for more recording. This method is called ping pong recording in which playback sounds from multiple number of recorded tracks are mixed and recorded to an empty track.
By ping pong recording, another musical instrument or vocal can be overdubbed, so that more sound sources can be recorded.

<As an example, you can record six tracks by using ping pong recording as shown in the schematic below>



The "Auto Bounce" ping pong recording function is employed in X-24.
When the auto bounce function is used, complicated ping pong recording can be simplified to a great extent.

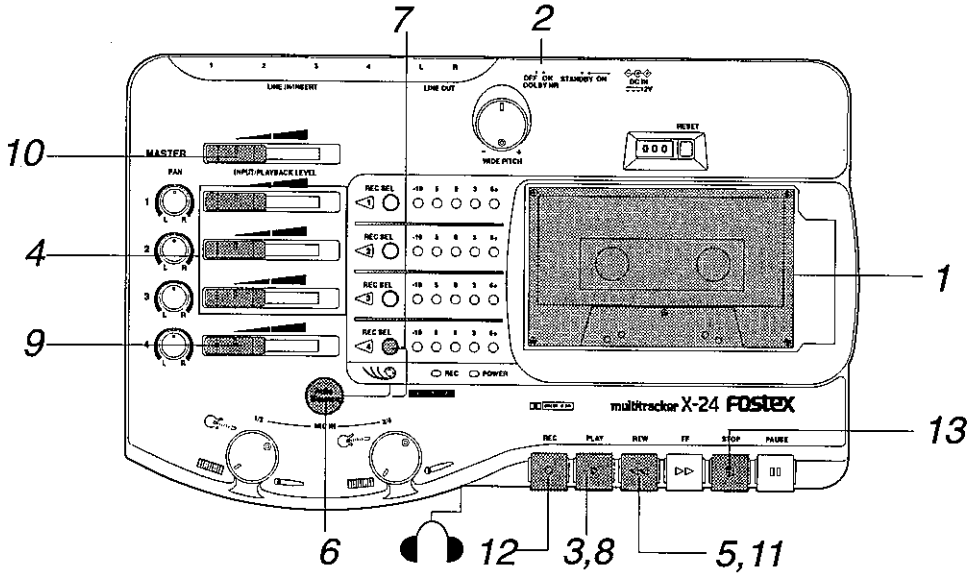


<Beware of oscillation during ping pong recording>

When ping pong recording between adjacent tracks such as from track 2 to track 1 or 3, oscillation occurs in some cases if the gain control is raised too high. If this happens, immediately stop recording. If you are monitoring with headphone or an external monitor while the sound is oscillating, it could cause damage to your hearing. After stopping recording, reduce the output (in the X-24, the INPUT/PLAYBACK LEVEL fader) to a suitable level and then resume recording.

In this section, the sound recorded on tracks 1 ~ 3 are mixed and ping pong recorded to track 4.

** Before proceeding to the next step, reset the X-24 to its "initial settings."*



1. Load the tape and rewind to head of the tape.

2. Switch ON the Dolby B noise reduction switch.

3. Playback tape by pressing the PLAY button.

4. Adjust tracks 1 ~ 3 playback level with the channel 1 ~ 3 INPUT/PLAYBACK LEVEL faders.

5. Upon completing these adjustments, rewind the tape to its head.

6. Enter the Auto Bounce mode by pressing the Auto Bounce button.
The Auto Bounce LED will blink.

7. Enter track 4 in REC READY by pressing the REC SEL switch 4.
The Auto Bounce LED will change to constant lighting and record track LED 4 will start to blink.

8. Playback the tape from its head.

9. Adjust the track 4 recording level with the channel 4 INPUT/PLAYBACK LEVEL fader.

10. The headphone sound volume can be adjusted with the MASTER fader.

11. After completing adjusting of the recording level, rewind the tape to its head.

12. Start recording by pressing the REC button.

13. After completing ping pong recording, stop the transport by pressing the STOP button.
Subsequently, new performances can be overdubbed onto tracks 1 ~ 3.

<Monitoring>

For monitoring, the PAN knob of the channel to which ping pong is carried out is fully rotated L or R, and the other channel PAN knobs fully in the opposite direction. Using these a settings, the sound of the ping pong receiving channel (track 4 in this example) and the ping pong originating channel (tracks 1 ~ 3 in this example) can be separately monitored.

<Notes on Auto Bounce recording>

When the Auto Bounce mode is ON, it is in the ping pong recording mode and only one REC SEL switch can be selected. Also, when a track to be ping ponged is selected, if the Auto Bounce button is switched on and off, the REC SEL switch of the selected track will be released.

Tape Sync

Tape sync is a great function for synchronizing the automatic performance of a sequencer and drum machine (MIDI sound source) to a performance recorded on the tape.
Here's why this function is so handy:

1) The number of tracks can be economized because automatic performances of MIDI equipment need not be recorded to the tape.
2) Because the dynamic sound of an electronic musical instrument (synthesizer, drum machine, etc.) can be directly mixed down, a higher quality sound can be obtained.
3) Flexible editing, such as overdubbing of an automatic performance or subsequent replacing of the drum machine rhythm, is possible.

<NOTES>

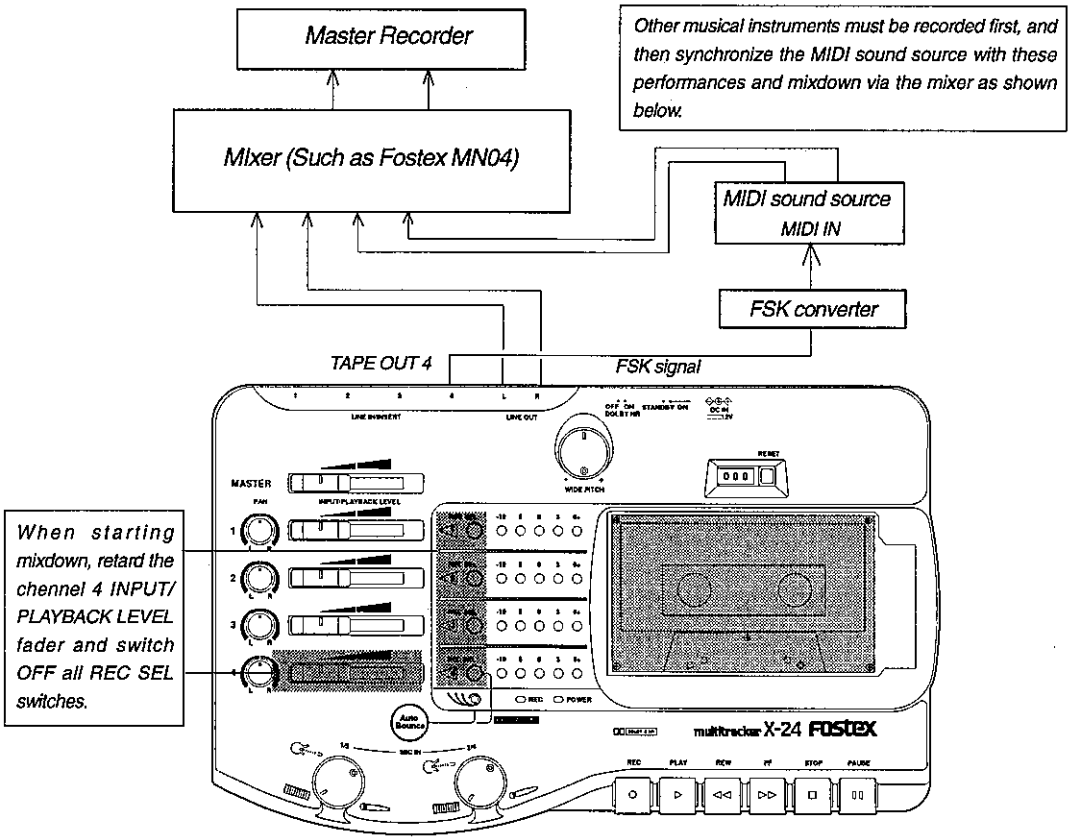
** In order to carry out tape sync, it is necessary to reserve track 4 for recording and playback of the sync signal called "FSK signal." The FSK signal is a modulation into sound of the performance tempo information signal output from the sequencer or drum machine called "MIDI clock." This is one form of MIDI signal. The track recorded with this signal serves as the "conductor's baton," so to speak. When this signal is played back and sent to the sequencer or drum machine, the MIDI equipment will start performing in sync with the tempo of this signal.*

** Some sequencer and drum machine cannot independently input or output FSK signals. When using this type of equipment, an MIDI/FSK converter is required. For details, please refer to the MIDI Equipment Operating Manual.*

<Important>

After recording the FSK signal to track 4, be sure to switch off REC SEL switch 4 and completely retard the channel 4 INPUT/PLAYBACK LEVEL fader before proceeding to mixdown.

<Connecting example for tape sync>



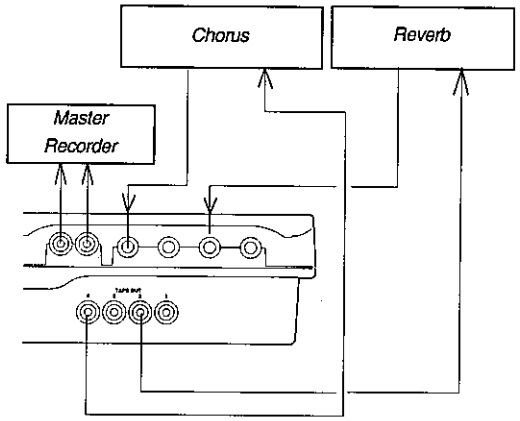
Effect Processing

There are the following methods in effect processing when using the effects such as reverb, chorus, compressors or limiter, etc. To obtain a sound of your preference, refer to each method below.

Apply an effect at mixdown!

In this process, when mixing the sound sources recorded on tracks 1 ~ 4 and copying (dubbing) it to a master recorder, apply the effect on the desired track playback sound as they are mixed down.
As an example, reverb will be applied to rack 2 and chorus to track 4.
In particular, as the mixed down sound cannot be independently effect processed, individual effects must first be applied during mixed down.

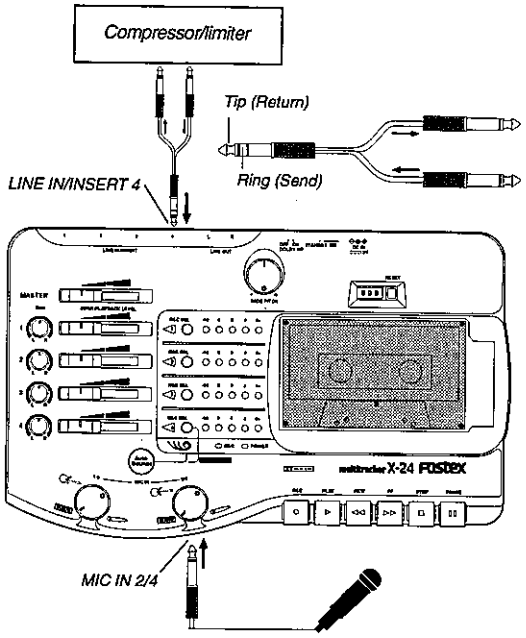
As shown in drawing below, connect the X-24 TAPE OUT 2 to the reverb input, the reverb output to the X-24 LINE IN/INSERT 2, and connect TAPE OUT 4 to the chorus input, and the chorus output to LINE IN/ INSERT 4.



After doing so, switch on the previously described "overdubbing" and the "rehearsal mode" explained in "punch in/out," and furthermore, switch on the REC SEL switches 2 and 4. By doing so, tracks 2 and 4 will be in the input monitor mode and thus the amount of effect can be monitored.
After doing this, start playback by pressing the PLAY button and mixdown.
The amount of effect is adjusted at the chorus and reverb side.
For practice, mixdown can also be carried out with "rehearsal mode" switched on.

Apply the compressor/limiter to the mic input and record it!

Using the X-24 insert (LINE IN/INSERT)jack, the compressor/limiter is applied to the mic sound (vocal) input to the front panel MIC IN jack (PHONE or XLR) and recorded.
As an example, a mic is plugged into the MIC IN jack 2/4 and a vocal recorded to track 4.
The input/output of the compressor/limiter is connected to the insert jack as shown in drawing below. Using this connection, the compressor/limiter can be applied to the vocal only and recorded to track 4.



As explained in "overdubbing," when the vocal is overdubbed while listening to the sound recorded on another track, the amount of effect applied can be checked if practice is done with the "rehearsal mode" switched on.
The rehearsal mode, however, must be switched off during the overdub take.

Troubleshooting

	Problem	Points to check	Action
Sound trubble	Wow, flutter, or dropouts	Are the capstan and pinch roller dirty?	Clean them.
		Is the tape damaged?	Use a new high-quality tape.
	Sound quality and level significantly different from when recorded.	Is the head dirty?	Clean the head.
		Are you using a tape other than a high-position tape?	Use a high-position tape (Type 2)
	Significant distortion/noise	Did you set the INPUT/PLAYBACK LEVEL fader and TRIM knob correctly?	Set them correctly.
	Playback pitch different from when recorded.	Is the PITCH control in the same position as when recorded?	Set the control in the same position.
	No sound from the headphones.	Are the INPUT/PLAYBACK LEVEL faders for each track and the MASTER fader raised?	Raise the fader.
Recording trubble	Cannot record on the desired track.	Is the REC SEL switch set appropriately for the connected instrument?	Check the input connection and switch settings.
	Cannot record.	Is the write-protect tab broken on the cassette tape?	Attach a piece of scoth tape over the broken tab.
		Is the INPUT/PLAYBACK LEVEL fader of the connected input channel raised correctly?	Raise the INPUT/PLAYBACK LEVEL fader.
	Cannot ping-pong record.	Is the Auto Bounce function ON?	Turn the Auto Bounce button ON.
		Has the ping-pong track specified by the REC SEL switch?	Specify the track for ping-pong recording.
Others	Tape does not transport.	Is the cassette tape installed correctly?	Insert the tape correctly.
	Power is not turned on.	Is the AC adaptor connected correctly?	Connect the AC adaptor correctly.

Maintenance

1. Cleaning the exterior

*** For normal cleaning, use a soft dry cloth.**

For stubborn dirt, moisten a cloth in diluted detergent, wring it out firmly, and wipe the dirt off. Then polish with a dry cloth. Never use solvents such as alcohol, thinner or benzene, since these will damage the printing and finish of the exterior.

2. Cleaning the head, roller and capstan

*** Record/playback head**

As the X-24 is used, the record/playback head will become coated with oxide residue from the tapes. If this residue is allowed to build up, recordings will contain more noise, and dropouts may occur during playback. To prevent this, regular cleaning is important. Use a commercially available cleaning kit etc. to clean the head. If cleaning the head does not restore the sound quality, it is possible that the head is worn. Contact an authorized service station for repair.

*** Capstan and pinch roller**

The capstan and pinch roller are important parts that hold the tape and move it along at the correct speed. As with the head, these parts can also become dirty with oxide residue and dust, which will cause increased wow or flutter, or even damage the tape by pulling it out of the cassette. Since cassette tape is very thin, it is especially dangerous to use a cassette deck with dirty pinch rollers. As with the head, it is important to always keep these parts clean. Clean them using a cotton swab or gauze soaked in cleaning solution or isopropyl alcohol. Never use organic solvents such as lacquer thinner, since this will severely damage the pinch rollers.

3. Demagnetizing the head

After long periods of use, the head begins to develope a magnetic field in addition to the oxide residue described above. This can also occur if a magnet or a magnetized object (scissors, etc.) is allowed to come near the head or touch it. If the head or capstans become magnetized, frequency response will be degraded and noise will increase. In extreme cases, noise can be created on previously recorded tapes that you playback, rendering them useless.

Once a month or so, you should use a demagnetizer (head eraser) to demagnetize the head. Carefully read and follow the instruction included with your demagnetizer, and do not allow it to came near recorded tapes.

Specifications

MIC INPUT (x 2)

Connector	:	XLR type connector (Balanced)
	:	φ 6 PHONE jack (Unbalanced)
Input impedance	:	10k Ω or higher
Reference input level	:	-50 ~ -10dBV

LINE/INSERT (x 4)

When use the LINE IN jack;

Connector	:	φ 6 PHONE jack
Input impedance	:	10k Ω or higher
Reference input level	:	-10dBV

When use the INSERT jack;

Connector	:	φ 6 STEREO PHONE jack (Tip: Return, Ring: Send)

LINE OUT (L, R)

Connector	:	RCA pin jack
Output load impedance	:	10k Ω or higher
Reference output level	:	-10dBV

TAPE OUT (x 4)

Connector	:	RCA pin jack
Output load impedance	:	10k Ω or higher
Reference output level	:	-10dBV

PHONES

Connector	:	φ 6 STEREO PHONE jack
Output load impedance	:	16 Ω or higher
Maximum output	:	20mW (at 32 Ω)

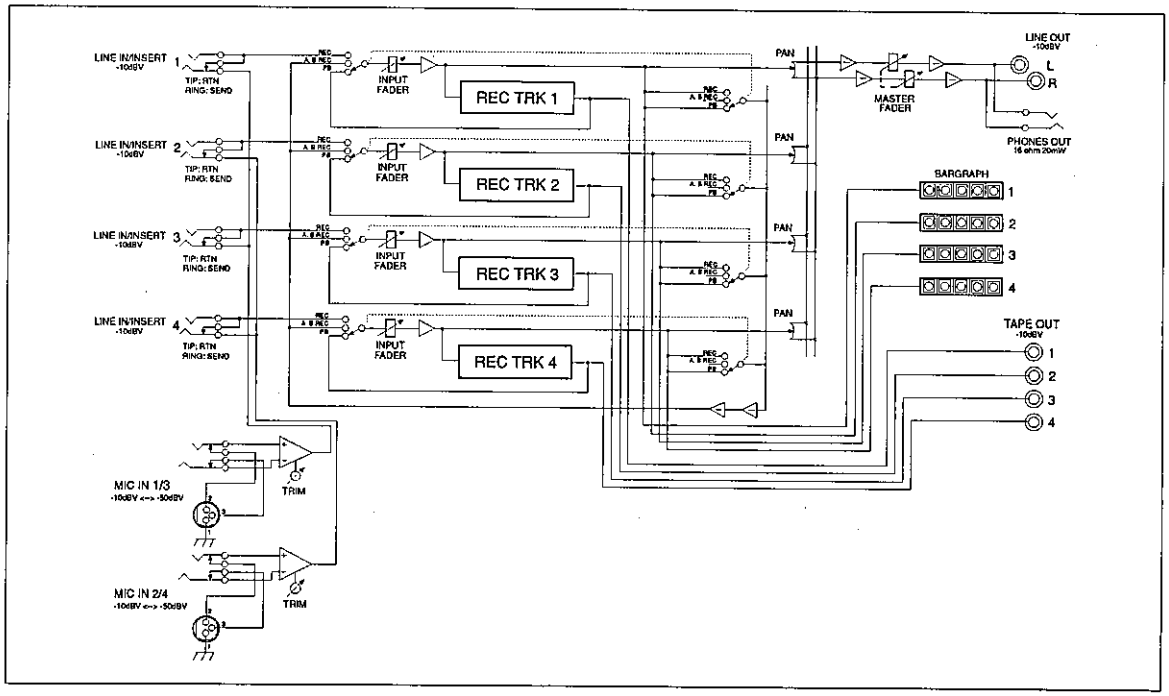
Recording Tape	:	Less than C-90 (TYPE-2 or HIGH position)
Record tracks	:	4 tracks, one direction
Tape speed	:	9.5 cm/s
Noise Reduction	:	Dolby B noise reduction system
Tape rewinding time	:	150 seconds (when a C-60 tape is used)
Frequency response	:	Mixer section; 20Hz ~ 20kHz Recorder section; 40Hz ~ 14kHz
Heads	:	4-tracks, 4-channel recording/playback 4-tracks, 4-channel erase
Power supply	:	Fostex AC adaptor, AD-12A DC 12V (12 ~ 16V), 10W
Weight	:	Approx. 1.5kg (excluding the AC adaptor)
Dimensions	:	307 (W) x 73 (H) x 191 (D) mm

* Specifications and appearance are subject to change without notice for product improvement.

* Dolby Noise Reduction is manufactured under license from Dolby Laboratories Licensing Corporation.

* Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Block Diagram



Declaration of EC Directive

This equipment is compatible with the EMC Directive (89/336/EEC) - Directive on approximation of member nation's ordinance concerning the electromagnetic compatibility and with the Low Voltage Directive (73/23/EEC) - Directive on approximation of member nation's ordinance concerning electric equipment designed to be used within the specified voltage range.

The Affect of Immunity on This Equipment

The affect of the European specification EN50082-1 (coexistence of electromagnetic waves - common immunity specification) on this equipment are as shown below.

** In the electrical fast transient / burst requirements, radiated electromagnetic field requirements and static electricity discharging environment, this could be affected by generation of noise in some cases.*

FOSTEX DISTRIBUTORS LIST IN EUROPE

*** Including non - EU countries. * underlined: contracted distributors (as of November, 1997)**

<AUSTRIA>
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ADD: Im Winkel 5, A-2325 Velm, Austria
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ADD: Bijvennestraat 1A, B3500 Hasselt, Belgium
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<DENMARK>
NAME: SC Sound ApS
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TEL: (+45) 4399-8877, FAX: (+45) 4399-8077

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NAME: Noretron Audio
ADD: Tonttumuorinkuja 4, FIN-02200 Espoo, Finland
TEL: (+358) 0-5259330, FAX: (+358) 0-52593352

<FRANCE>
NAME: Musikengro
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ADD: Scheppe Gewissegasse 8, D-35039 Marburg, Germany
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