Owner's Manual

Model
X-55

MULTITRACKER

FOSTEX®

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.

A 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 does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or, cabinet that may impede the flow of air through the ventilation openings.

9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization – The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection – Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
    A. The power supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
17. Servicing – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Introduction

Thank you for purchasing the Fostex X-55.
The X-55 is a multitrack recorder with four inputs (two of which accept mic signals and can be specified as balanced or unbalanced inputs), a multi-function mixer, and a high-quality high-speed (9.5 cm/s) four-track cassette recorder. The X-55 allows you to create multi-track recordings using techniques such as track bouncing, punching in and out by footswitch, and using the AUX send/return jacks for effect processing. From tape sync to mixdown, the X-55 provides advanced functionality with simple operation. To take full advantage of the X-55, please read this manual carefully before use and keep it for later reference.

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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 hazardous to use a power cable which has been cut or frayed. If the power cable becomes damaged, immediately stop using it, and have it repaired.

- Do not plug in or unplug the AC adaptor when your hands are wet. Doing so may result in dangerous electric shock.

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

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

- When turning the power on, turn this unit on before turning on other equipment connected to this unit. Doing so will avoid possible damage to the other

equipment. Also, when connecting or disconnecting cables to or from the unit's input or output jacks, make sure that the INPUT fader and AUX volume of that channel are turned down to a level of 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 turned off (STANDBY). If you will not be using the unit for an extended length of time, be sure to unplug the AC adaptor from the outlet.

Location

- Avoid using the unit in the following types of location.

  * 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 is not steady.
  * Unstable locations or where there is heavy vibration.
  * Near strong magnetic fields (on top of a television or speaker).
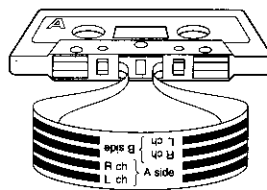
How to use the X-55

Here's what you can do with the X-55

Radio cassette players and stereo cassette decks record and playback stereo sound on each side; side A and side B. As shown in the diagram, a cassette tape is divided into four tracks. Two are used for side A and two for side B.
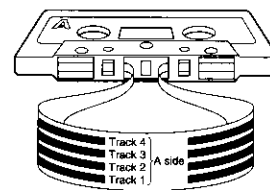
However the X-55 uses all four tracks at once (i.e., as a single side), and is able to record each track independently, allowing you to record instruments or vocal parts separately.

This chapter will give some actual examples of things that are possible when using the X-55, and explain the basic concepts that you need to understand.

Standard Cassette Deck   Model X-55

Record a four-person band

The X-55 has four tracks, and a different sound source can be recorded independently on each track.

Here's how you might record a four-person band (drums, bass, guitar and keyboard). Record the drums on one track. Then, while you playback the drum part you recorded, record the bass part on the second track. (This process is called "overdubbing".) As shown below, use the same procedure to record the guitar and then the keyboard on the remaining tracks to complete a four track recording.
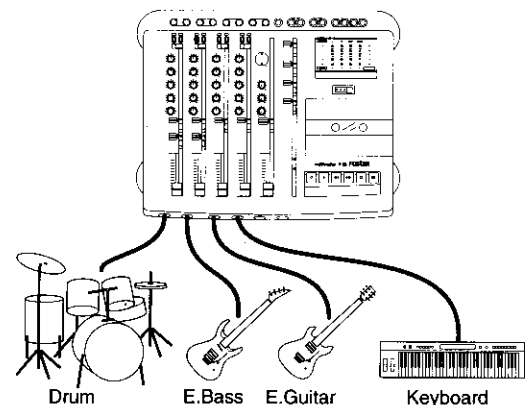
You can also use the X-55 to record a four-person performance. The four-person band

Drum   E.Bass   E.Guitar   Keyboard

in the example above could be recorded on two tracks; drums and bass on one track, and guitar and keyboard on another track. However, there are some restrictions on which tracks can be recorded simultaneously. On the X-55, the following four combinations are possible.

Tracks 1&2, Tracks 1&4, Tracks 2&3, Tracks 3&4

As shown above, the X-55 is not able to record simultaneously on two odd numbered tracks, on two even numbered tracks, or on all four tracks together. Details are explained in chapter 3.

Record a multi-track performance by yourself

If you are able to play more than one instrument, a multi-track recorder can be a very valuable music-making tool. This is even more the case if you are able to use MIDI instruments, since you can use the tape sync function to create large orchestral arrangements. This manual will explain first how to record one sound source on a single track, and gradually move on to more complex possibilities.

Once you understand the basic principles, multi-track recording is really quite simple and easy.

Use professional recording techniques

Another possibility is for you to record a favorite song by a professional musician, and then record your own performance on a different track. By using the pitch control to slow down the tape speed, you can more easily figure out and learn how to play rapidly played phrases.

If you make a few mistakes, these can be easily corrected using the punch in/out function. Alternatively, you can create your own "music minus-one" tapes!
In this way, the X-55's multi-track recording capabilities provide a wide variety of possibilities.

Some important terms used in this manual

This section explains some of the important terms used in this manual, which you need to understand in order to take advantage of the X-55.

Sound source

Instruments or microphones connected to the X-55 are collectively called "sound sources".

Signal

The X-55 is able to record not only sound from sound sources, but also synchronization signals used by the tape sync function. Thus, sounds and signals are collectively explained as "input signals" or "output signals".

Overdubbing

The process of playing back a previously recorded signal on one track while recording a different signal on another track is called "overdubbing".
On cassette radio players or stereo cassette decks, it is not possible to listen to the sound recorded on the left track while recording a new sound on the right track. However the X-55's overdubbing capabilities allow you to successively record new sounds on empty tracks.

Monitoring

As explained above, "overdubbing" includes the act of listening to a previously recorded sound. This "listening to a previously recorded sound" is often referred to as "monitoring". The word "monitor" means to check or verify, and in this manual's explanation of the recording process, listening to a previously recorded track or checking the input signal to be newly recorded is referred to·as "monitoring".

The difference between Tracks and Channels

The two concepts of Tracks and Channels are often confused, but in this manual they mean different things.
Channels refer mainly to the input/output system of the mixer section. For example, this manual tell you that "the bass connected to channel 1" should be "output from the Left channel".
Tracks, on the other hand, refer mainly to the input/output system of the recorder section (the tape). For example, this manual may tell you to "mixdown tracks 1, 2, 3 and 4". In other words, the X-55 contains a four-channel mixer section and a four-track recorder section.

Channel 1~4

Track 1~4
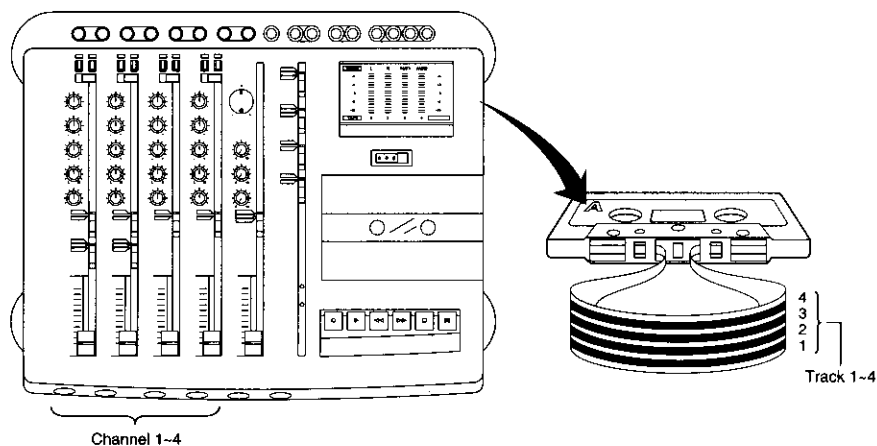
★ **About the PAN knobs and the stereo bus**

The X-55 contains a four-channel mixer. This means that you can mix four sound sources to stereo.

It is not possible to see from the outside how the signals flow. So, we have included a diagram below that explains the signal routing of the X-55. The thick pipe in the diagram is called the stereo bus, and the signals from each PAN knob are gathered here.

After the MASTER fader makes the final level adjustment, the signals are output from the STEREO OUT L and R jacks.

The PAN knobs have the function of routing signals to the stereo bus. The output of the stereo bus is also sent to the recorder section. As shown in the diagram, the output of the L side is sent to tracks 1 or 3, and the output of the R side is sent to tracks 2 or 4.

For example, if you wish to record the signals from all channels 1–4 on track 1, you should set only the upper REC SEL switch [1/OFF/3] to "1", and set the PAN knobs for all channels to the far "L" position.

★ **About the AUX system**
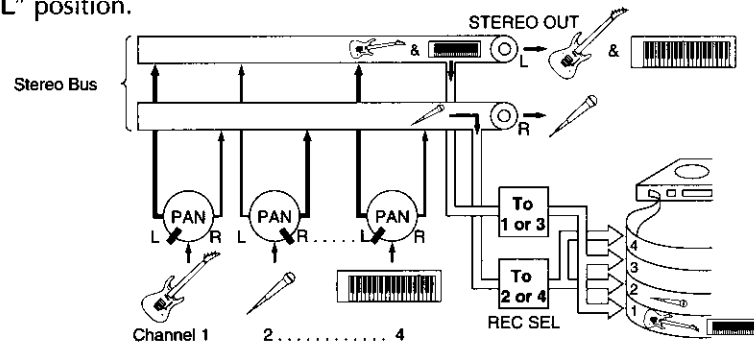
The AUX (auxiliary) system is an auxiliary or supplementary input system, and is used mainly for effect processing.

The AUX signals are provided in addition to the stereo bus explained in the preceding note. Since all channels 1–4 of the X-55 can send to the AUX system, it is easy to perform effect processing. It is also possible to send/return foldback (FB) signals using the AUX send. (Foldback is explained in the following STEP 3.)

STEP 3. Record four sound sources on four tracks (overdubbing)

As explained on page 16, overdubbing refers to the process of monitoring a previously-recorded track while you record new tracks. In STEP 3, you will learn how to use the basic procedures for overdubbing to record four sound sources on four tracks.

★ **About foldback (FB)**

FB is used mainly to monitor the playback signal from the tape during overdubbing. The reason for using FB for monitoring is that the signal from FB is sent neither to the stereo bus nor to the recorder section. The FB signal is sent directly out the FB jack, and can be monitored but not recorded. This means that you can monitor the signal from a tape track without using up an input or allowing the monitored signal to get into the track you are newly recording. By setting the MON SEL switch to "ST+FB" or "FB", you can monitor the FB signal through headphones or your monitor speaker. For details on using FB, refer to STEP 3 "Overdubbing".

About cassette tapes for the X-55

Suitable types of cassette tape

The X-55 is designed to use high-position cassette tapes (Chrome, type II), and will give the best performance when used with these tapes. We recommend that you use either these tapes or other tapes of equivalent quality. Since C-120 cassettes use thinner tape, they are not suitable for multi-track recording, where repeated recording and playback takes place. Avoid using anything longer than a C-90 with the X-55.

Using the erase-protect tabs

Cassette tapes have "tabs" that can be broken off to prevent valuable recordings from being accidentally erased. Since the X-55 uses all four tracks as a single side, break off the tabs for both side A and side B to prevent a completed recording from accidental erasure.

If you later decide to record over the tape, you can put sticky tape over the broken-off tab holes so that the tape can be re-recorded.

5

Control panel and front and rear panels
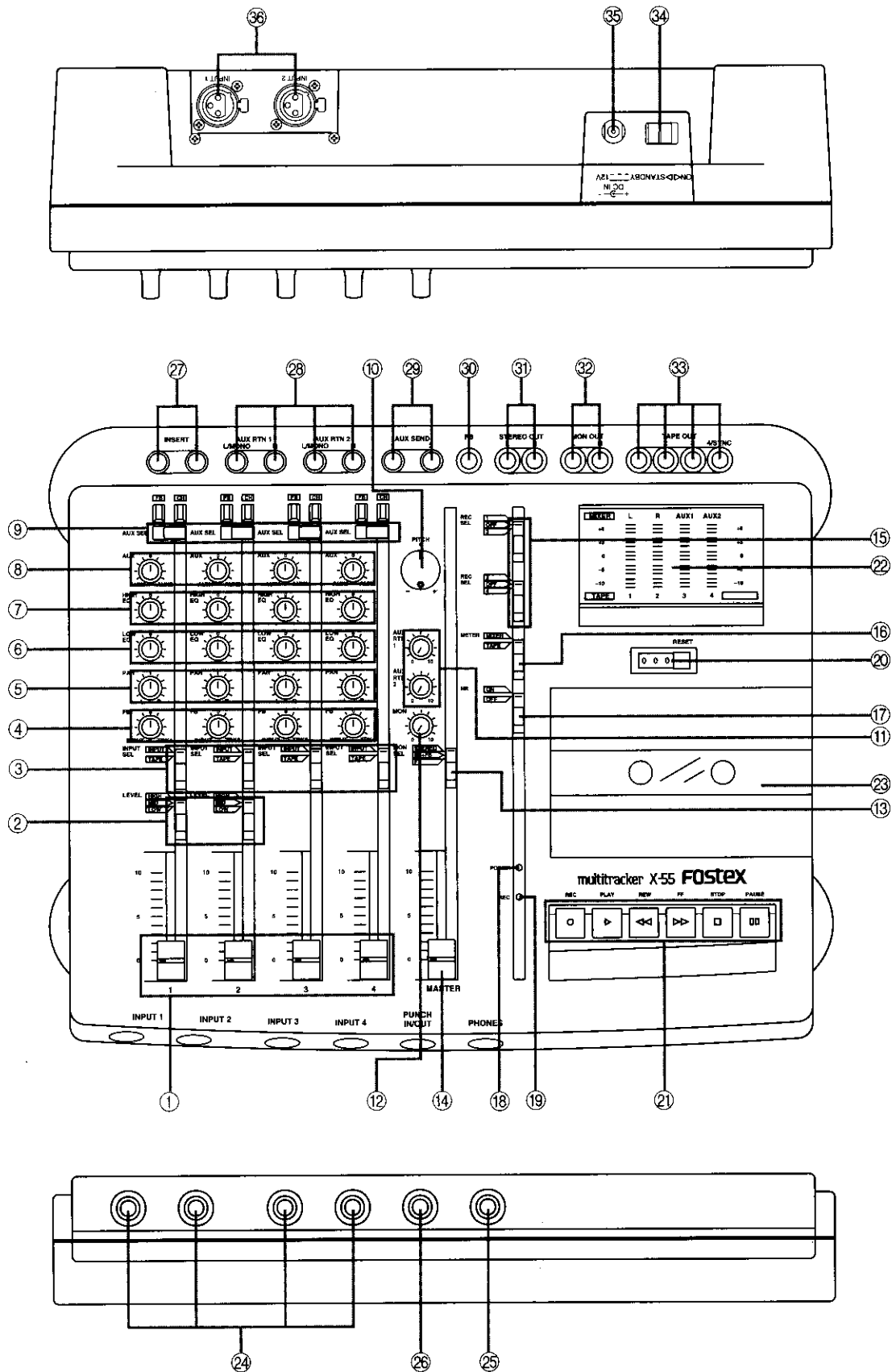
The words in square brackets [ ] refer to the printing on the front and rear panel.

Control panel

① Input faders [INPUT 1-4]
These faders adjust the level of the signals that are input from INPUT jacks 1-4, or the signal levels from tracks 1-4. The INPUT SEL switches determine which signal is adjusted by each fader.

② Level switches [LEVEL]
Set these switches to settings appropriate for the output level of the sound sources connected to INPUT jacks 1 and 2 (Balanced or Unbalanced). The level can be adjusted in three positions; HIGH, MID and LOW.

HIGH (-10 dBV)	High output level devices such as synthesizers or instruments that have been sent through an effect processor.
MID (-30 dBV)	Electric guitars, electric basses, drum machines, etc.
LOW (-50 dBV)	Low output level devices such as microphones.

③ Channel select switches [INPUT SEL]
These switches select the signal that is sent to the INPUT fader of each channel.

INPUT	The signal connected to the INPUT jack will be controlled by the INPUT fader.
TAPE	The playback signal of the tape will be controlled by the INPUT fader.

④ Foldback knobs [FB]
These knobs control the signal that is sent to the FB jack.

INPUT	The input signal received at the INPUT jack will be sent to the FB jack without being affected by the INPUT fader (i.e., pre-fader).
TRACK	The tape playback signal (from tracks 1-4) will be sent to the FB jack.

Foldback (FB) is used mainly to monitor the tape playback signal during overdubbing. Details are explained in the "Operation" section.

⑤ Panpot knobs [PAN]
The panpot knobs have the following two functions.
1. The panpot knobs are used to assign the sound sources connected to each INPUT jack to tracks 1-4. For this purpose, the panpot knobs are turned either full right or full left.
2. When playing back tracks 1-4 during mixdown etc., the panpot knobs are used to place each track in the desired stereo location. For this purpose, the panpot knobs are turned to the desired location.

⑥ Low equalizer knobs [LOW EQ]
These knobs control the low frequency range (100 Hz ±10 dB) of the input signal of each channel.

⑦ High equalizer knobs [HIGH EQ]
These knobs control the high frequency range (10 kHz ±10 dB) of the input signal of each channel.

⑧ AUX send knobs [AUX]
The AUX send knobs determine the level of the input signal or the FB signal (selected by the AUX SEL switch) that will be sent to an AUX SEND jack. The signal adjusted by these knobs can be sent to external devices such as effect units. At a position of "0", the signal will be sent to neither output.

AUX 1	Send the signal to the AUX SEND 1 jack.
AUX 2	Send the signal to the AUX SEND 2 jack.

⑨ AUX send select switches [AUX SEL]
These switches select the signal that is sent to AUX send.

CH	The signal from the INPUT fader will be sent to AUX.
FB	The signal from FB will be sent to AUX.

⑩ **Pitch control knob [PITCH]**
This knob allows you to adjust the tape speed over a range of ±12%. When the knob is in the center position ("0"), the tape speed will be normal.

⑪ **AUX return 1, 2 knobs [AUX RTN 1, 2]**
These knobs control the input signal from external devices (such as effect units) connected to the AUX RTN 1 and AUX RTN 2 jacks.

⑫ **Monitor level knob [MON]**
This knob controls the volume of the external monitor or headphones.

⑬ **Monitor select switch [MON SEL]**
This switch selects the signal to monitor.

STEREO	The signal that is output from the STEREO OUT L and R jacks will be monitored.
ST + FB	The signals from STEREO OUT L and R jacks and from the FB jack will be monitored together.
FB	The signal from the FB jack will be monitored.

⑭ **Master fader [MASTER]**
This fader controls the signal that is output from STEREO OUT L and R.

⑮ **Record track select switches [REC SEL]**
These switches select the track(s) that will be recorded. The signal assigned by the PAN knob to L or R will be sent to the track specified by these switches. If these are set to "OFF", the signal will not be recorded on any track.

⑯ **Meter select switch [METER]**
This switch selects the signal that is displayed in the meters.

MIXER	The meters will display the output level of stereo out L and R, and the output levels of AUX SEND 1 and 2.
TAPE	The meters will display the level of the signals recorded on tape (tracks 1–4).

⑰ **Dolby B noise reduction switch [NR]**
This switch turns Dolby B noise reduction on or off.
To enjoy recording and playing back high-quality sound, set this switch to the ON position.

⑱ **Power indicator [POWER]**
This indicator will light when the power switch is turned on.

⑲ **Recording indicator [REC]**
This indicator will light when one of the tracks is ready to record (i.e., when the REC SEL switch is in a position other than OFF) and the unit is in REC-PAUSE mode or in recording.

⑳ **Tape counter/reset button [RESET]**
This displays the tape location.
To reset the counter to [000], press the reset button.

㉑ **Transport control buttons**
* Record button [REC]
* Play button [PLAY]
* Rewind button [REW]
* Fast-forward button [FF]
* Stop button [STOP]
* Pause button [PAUSE]

㉒ **Meter display**
This display indicates the level of the signals selected by the METER select switch.

㉓ **Deck transport**
This is where the cassette tape is inserted.

Front panel input/output jacks

㉔ Input jacks [INPUT 1–4]

Sound sources you wish to input can be connected to these jacks.

INPUT jacks 1 and 2 are able to accept either line or mic signals, and jacks 3 and 4 are able to accept only line signals. For low output level mics or for instruments that require a switchable input level, use INPUT jacks 1 or 2. You can also use the XLR balanced connectors on the rear panel for INPUT 1 and 2. However, you cannot use both Input 1 and 2 jacks and XLR connectors on the rear panel simultaneously. The unbalanced phone jacks on the front panel always have priority.

㉕ Headphone jack [PHONES]

A set of headphones can be connected to this jack for monitoring.

㉖ Punch in/out jack [PUNCH IN/OUT]

When using the punch in/out function, connect a Fostex 8051 foot switch (sold separately) to this jack.

For details on the punch in/out function, refer to chapter 4, STEP 5.

Rear panel input/output jacks

㉗ Insert jacks [INSERT 1, 2]

These jacks can be used when you wish to do independent effect processing of the signals that are input into channels 1 and 2.

This capability is especially convenient when you are inputting an acoustic instrument or microphone to channel 1 or 2, and wish to process it with a compressor or effect unit.

Use a cable as shown in the following diagram.
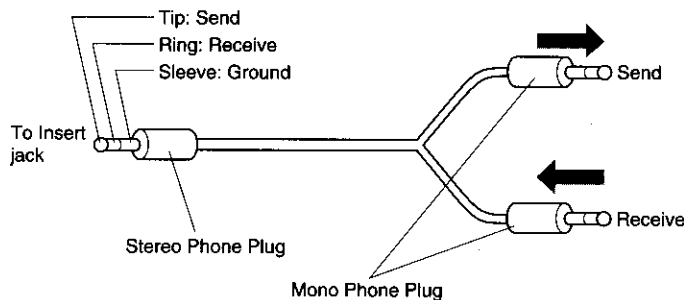
㉘ AUX return 1, 2 jacks [AUX RTN 1, 2]

The signal processed by effect units can be input to these jacks.

If you are using a device that has a mono output, connect it to the L/MONO jack.

㉙ AUX send 1, 2 jacks [AUX SEND 1, 2]

The output signal from these jacks can be sent to an effect unit, etc.

Connect these jacks to the input jacks of your effect unit or other device.

㉚ Foldback jack [FB]

This jack outputs the signal controlled by the FB jack.

This jack can output the input signal unaffected by the INPUT faders, or the playback signal from the tape. Foldback is used mainly for providing a monitor sound for the musicians.

㉛ Stereo out jacks [STEREO OUT L, R]

These jacks output the stereo L and R signals.

During mixdown etc., connect these jacks to the inputs of your master recorder.

㉜ Monitor out jacks [MON OUT L, R]

These jacks output the monitor signal that is selected by the MON SEL switch. Connect these jacks to your monitor amp/speaker system, etc.

㉝ Tape out jack [TAPE OUT 1–4/SYNC]

These jacks output the signals from tape tracks 1–4.

Use these jacks when you wish to use an external mixer, or for effect processing. Jack 4 can also be used as a SYNC OUT jack to transmit a synchronization signal to a MIDI sequencer, etc.

㉞ **Power switch [ON ◁▷ STANDBY]**
This switch turns the X-55's power on or off (standby).

Note: ───────────────────────────────────
When the AC adaptor is connected to an outlet, it will continue drawing a small amount of AC power even if you turn the power switch off (STANDBY). If you will not be using the X-55 for a while, be sure to disconnect the AC adaptor from the outlet.

㉟ **AC adaptor connector [DC IN ⎓ 12 V]**
Connect the included AC adaptor to this connector.

㊱ **Input connector [INPUT 1, 2]**
These are balanced XLR input connectors that can be used instead of INPUT 1 and 2 on the front panel.

Note: ───────────────────────────────────
You cannot use these connectors and the unbalanced phone jacks on the front panel at the same time. If you try to input signal to both front phone jacks and these connectors, only the phone jacks will accept the signal. If you wish to input signal to these connectors, do not connect the front phone jacks 1 and 2.

XLR connector pin assignment

1 (Shield)

3 (Cold)

2 (Hot)

3
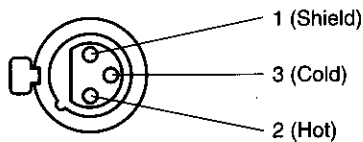
Basic operation (Start recording)

One step at a time

Now you are ready to actually begin using the X-55.

This manual explains the operation of the X-55 in eight steps. Once you have mastered the procedures of steps 1–4, you will be able to use nearly all of the X-55's functions. Steps 5–7 explain somewhat more advanced techniques. When you are familiar with all the steps 1–7, you can go ahead and develop your own recording methods.

STEP 1: Record one sound source on track 1 (see P.12)
STEP 2: Record four sound sources on two tracks (see P.14)
STEP 3: Overdubbing (see P.16)
STEP 4: Mixdown (see P.20)
STEP 5: Punch in/out (see P.22)
STEP 6: Pingpong recording (see P.24)
STEP 7: Orchestration using tape sync (see P.26)

Initial settings on the X-55

After completing one step, you should set the sliders and switches back in order before proceeding to the next step. Resetting the knobs and switches that were used in the previous step will prevent mistakes that may result from inappropriate settings. The process of setting the controls to the positions given in the following list is referred to in this manual as "initializing".

Remember to initialize the controls before beginning each step.

How to initialize the controls
* Lower the INPUT faders of all channels and the MASTER fader.
* Set all knobs to "0" (set the PAN knobs to the center position).
* Set the INPUT SEL switches of each channel to "INPUT".
* Set the AUX SEL switches of each channel to "CH".
* Set each of the REC SEL switches to "OFF".
* Set the METER switch to "MIXER".
* Set the Dolby NR switch to "OFF".
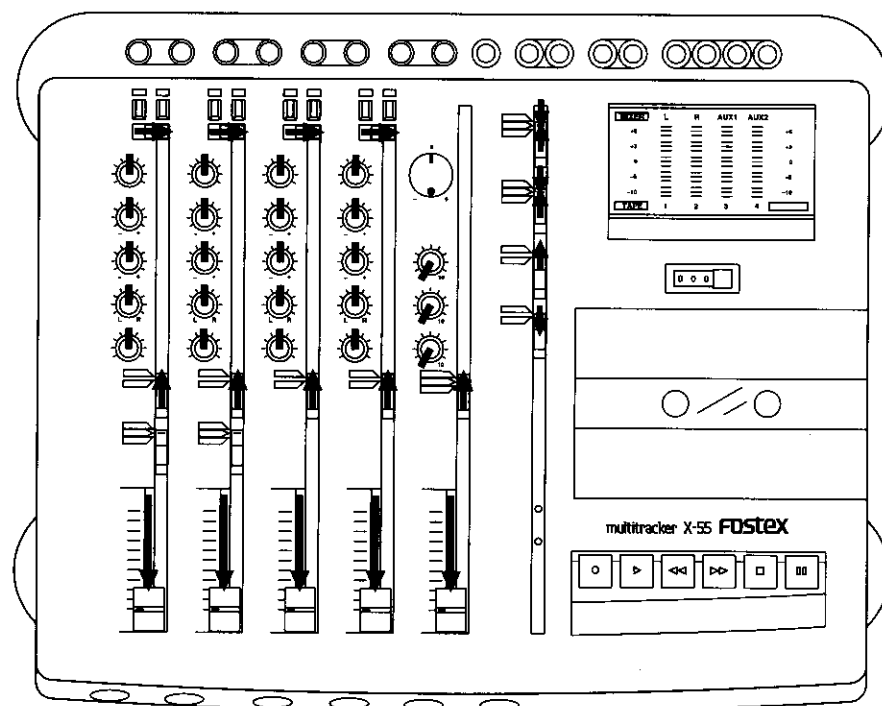
STEP 1: Record one sound source on track 1

In STEP 1, we will explain basic recording procedure on the X-55. In this section you will learn the roles and operation of the most important knobs and switches.

* Turn on the X-55 power.
* Before you begin, initialize the controls of the X-55.
* Insert the tape you wish to record on, and rewind it to the location at which you want to begin recording.
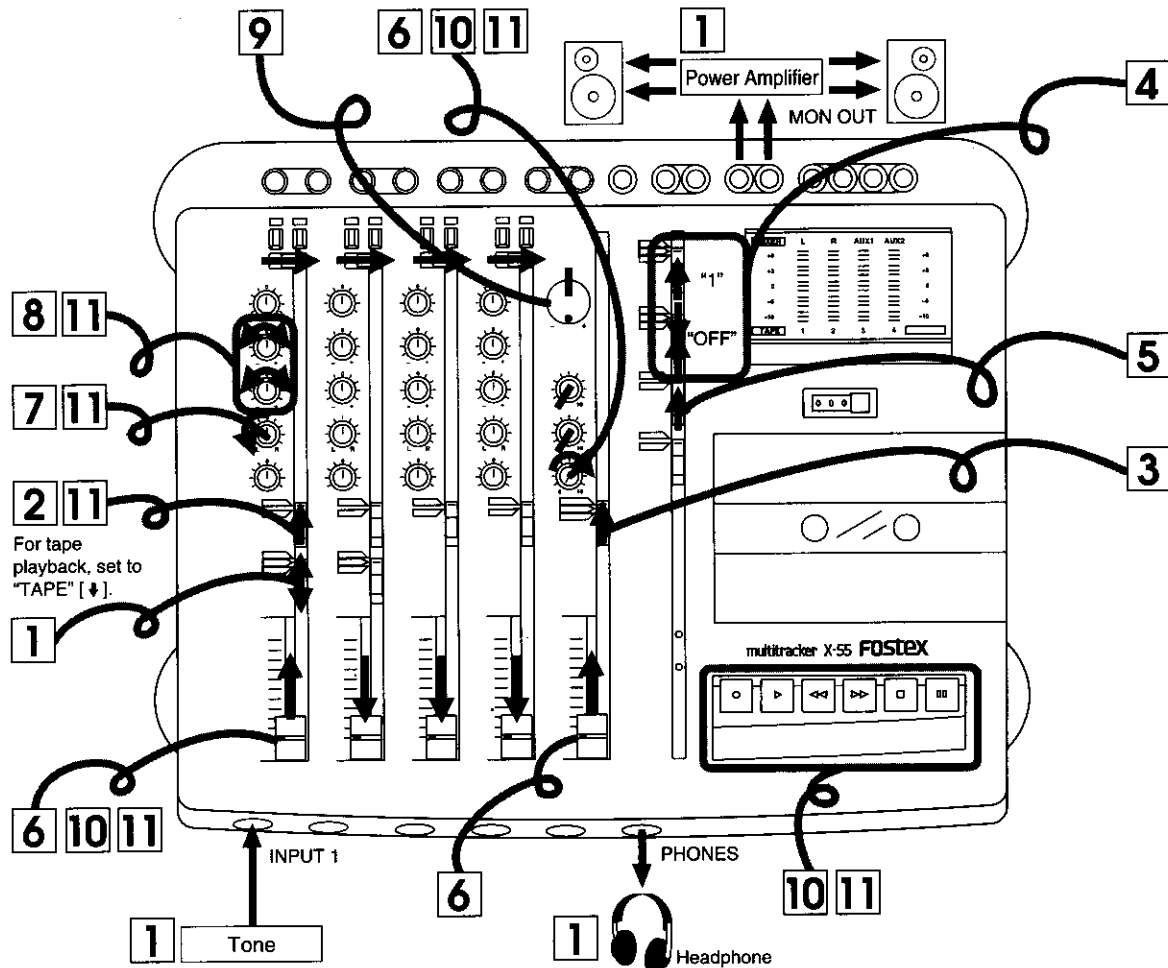
[1] Connect the sound source and monitor headphones

* Connect a set of headphones for monitoring to the **PHONES** jack. Alternatively, you can connect an amp/speaker system to the **MON OUT** L and R jacks.
  The volume of the monitor sound is controlled by the **MON** knob.

* Connect the sound source to the channel 1 **INPUT** jack (Balanced or Unbalanced). Depending on the type of sound source, set the **LEVEL** switch as follows.

  Level switch setting examples:
Synthesizer:	HIGH (−10 dBV)
Electric guitar or bass:	MID (−30 dBV)
Mic:	LOW (−50 dBV)

[2] INPUT SEL switch settings

* The **INPUT SEL** switch selects the signal that will be connected to the **INPUT** fader.
  In this example we want to connect the signal input from the channel 1 **INPUT** jack to the fader, so set the switch to "**INPUT**".

[3] MON SEL switch settings

* The **MON SEL** switch selects the signal that will be monitored.
  In this example, set the switch to "**STEREO**".

4 REC SEL switch settings

● The REC SEL switch selects the tape track on which recording will be done.
In this example we will be recording only track 1, so set the upper REC SEL switch (1/OFF/ 3) to "1". Leave the lower REC SEL switch (2/OFF/4) set at "OFF".

5 Viewing the level meters

● Set the METER switch to "MIXER" so that you can check the level of the signal input at the INPUT jack. To check the signal that is sent to track 1, you can set the X-55 to record or REC-PAUSE.

6 Adjusting the input signal

● Raise the MASTER fader to about 7 or 8.

● While playing your instrument (or singing into the mic), gradually raise the channel 1 fader until the level meter is moving in the area of "0".

● If necessary, change the setting of the LEVEL switch.

● If you are monitoring through headphones, gradually rotate the MON knob to the right.

7 PAN knob settings

● The PAN knobs are used to assign the input signal. In this example we want to send the input signal to track 1, so be sure to rotate the PAN knob all the way to the "L" position. (The signal will be sent to odd numbered tracks when the PAN is in the "L" position, and to even numbered tracks when in the "R" position.)

8 LOW and HIGH equalizer settings

● If you wish, you may use one or both of the equalizer knobs to adjust the tone of the input signal.
Since in multitrack recording the sounds can be layered and re-recorded many times, the high frequencies may eventually begin sounding dull. For this reason it is a good idea to boost the high frequencies a bit when recording.

9 PITCH knob settings

● When recording, set the PITCH knob at the center position ("0").

10 Start recording

● Press the PAUSE button. Then press the REC button, and the X-55 will enter "REC-PAUSE" mode. (The REC indicator will light.)

● Press the PAUSE button once again. REC-PAUSE mode will be canceled and the X-55 will begin recording. Alternatively, you can press the REC button without going through REC-PAUSE.

● Begin playing your instrument (or singing into the mic).

● From time to time, check that the level meter for the L channel is not going all the way to the top. If it is, adjust the channel 1 INPUT fader.

● If you are monitoring through headphones, adjust the MON knob as necessary.

● When you finish recording, press the STOP button and the tape will stop.

11 Playback (listen to the recording you just made)

● Press the REW button to rewind the tape.

● Set the channel 1 INPUT SEL switch to "TAPE".
In this example we are playing back track 1, so we will select the tape signal for channel 1.

● Press the PLAY button to start the tape.

● Use the channel 1 INPUT fader to adjust the volume. (Leave the MASTER fader as it was.)

● Rotate the MON knob to the right, and the recorded sound will be heard from your headphones or monitor system.

● To change the stereo location of the sound, rotate the channel 1 PAN knob.

● To adjust the tone, use the channel 1 HIGH and LOW EQ knobs.

13

STEP 2: Record four sound sources on two tracks

In STEP 2 we will explain how to record four sound sources on two tracks. In STEP 2 you will learn additional procedures and connections that will supplement what you learned in STEP 1.

* Before you begin, initialize the controls of the X-55.
* In this Step, you will learn how four sound sources (drum machine, bass, guitar, and synthesizer) being played simultaneously can be recorded on two tracks.
  In this example, the four sound source will be connected as follows, and recorded on tracks 1 and 2 as shown below.

  Drum machine & bass → Track 1
  Guitar & synthesizer → Track 2

* In this Step you will also learn how to connect an external effect device for effect processing.
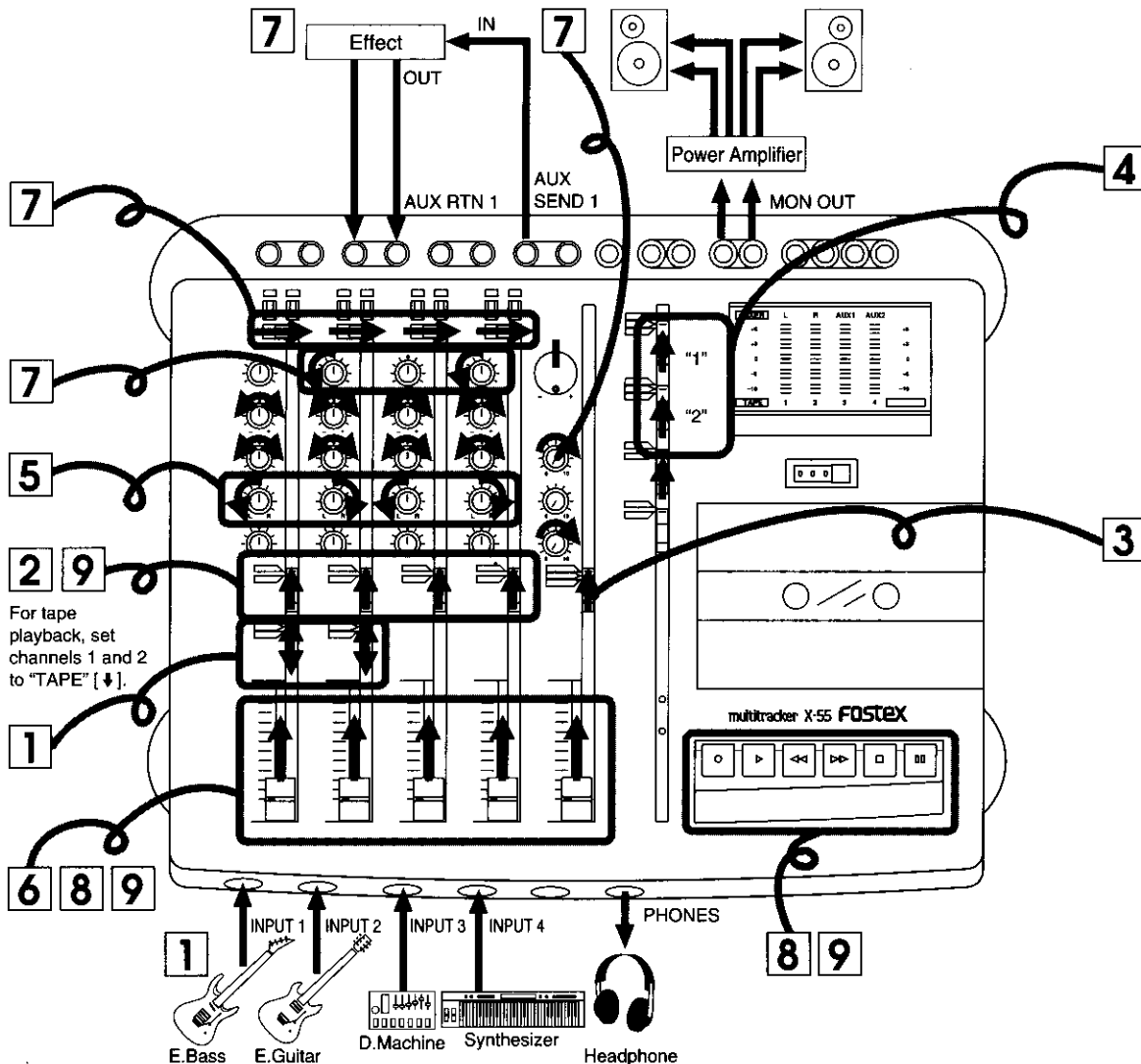
1 Connect the sound sources

* Connect each sound source to INPUT jacks 1–4.

Electric bass →	INPUT 1
Electric guitar →	INPUT 2
Drum machine →	INPUT 3
Synthesizer →	INPUT 4

* Sound sources for which you will need to make level adjustments should be connected to INPUT jacks 1 or 2 (Balanced or Unbalanced), so that you can set the LEVEL switch to a position appropriate for the output level of the sound source. In this example, set the LEVEL switches of channels 1 and 2 to "MID".

2 INPUT SEL switch settings

* Set the INPUT SEL switch of all channels to "INPUT".

3 MON SEL switch settings
• Set the MON SEL switch to "STEREO" as you did in STEP 1.

4 REC SEL switch settings
• In this example we will be recording on tracks 1 and 2, so set the two REC SEL switches as shown below.

REC SEL switch (upper) → "1"
REC SEL switch (lower) → "2"

5 PAN knob settings
• Since we will be recording the signals connected to the channels 1 and 3 INPUT faders (electric bass and drum machine) on track 1, turn the PAN knobs of channel 1 and 3 to the full "L" position.

• Since we will be recording the signals connected to the channels 2 and 4 INPUT faders (electric guitar and synthesizer) on track 2, turn the PAN knobs of channel 2 and 4 to the full "R" position.

6 Input signal adjustments
• Raise the MASTER fader to about 7 or 8.

• While playing each instrument, gradually raise the corresponding INPUT fader so that the level meter is moving in the region of "0".

7 Using AUX for effect processing
• You will need an effect processor unit (e.g., a reverb unit).

• Connect the input jack of the effect unit to the X-55's AUX SEND 1 jack, and connect the output jack of the effect unit to the X-55's AUX RTN 1 jack.

• Set the AUX SEL switches of all channels to "CH".

• In this example, we will use the effect unit to apply reverb to the electric guitar and synthesizer, so rotate the AUX knobs of channels 2 and 4 gradually to the "AUX 1" position. (The AUX 1 level meter will let you check the output level being sent to the reverb.)

• Gradually rotate the AUX RTN 1 knob to the right, and adjust the input level from the effect unit.

8 Start recording
• Press the PAUSE button. Then press the REC button, and the X-55 will enter "REC-PAUSE" mode. (The REC indicator will light.)

• Press the PAUSE button once again. REC-PAUSE mode will be canceled and the X-55 will begin recording. Alternatively, you can press the REC button without going through REC-PAUSE.

• From time to time, check that the level meters are not going all the way to the top. If they are, adjust the INPUT faders.

• When you finish recording, press the STOP button and the tape will stop.

9 Playback
• Press the REW button to rewind the tape.

• Set the channels 1 and 2 INPUT SEL switches to "TAPE".
In this example we are playing back tracks 1 and 2, so we will select the tape signal for channels 1 and 2.

• Press the PLAY button to start the tape.

• Use the channel 1 and 2 INPUT faders to adjust the volume. (Leave the MASTER fader at about 7 or 8.)

• To change the stereo location of the sound, rotate the channel 1 and 2 PAN knobs. To adjust the tone, use the HIGH EQ and LOW EQ knobs.

STEP 3: Overdubbing

As explained on page 4, overdubbing is the process of recording a new sound source on a track while you monitor the signal of a different, previously recorded track. In STEP 3, you will learn how to use basic overdubbing procedure to record many sound sources on four tracks.

STEP 3-1:

While monitoring the signal from track 1, record sound source B on track 1.

☆ Record sound source A to track 1 as explained in STEP 1.

☆ In this example, we will use FB to monitor the signal recorded on track 1 while you record an additional sound source on track 2 in the basic overdubbing procedure.

☆ Before you begin, initialize the controls of the X-55.

For tape playback, set channel 1 also to "TAPE" [↓].

INPUT 1

Tone B

PHONES

Headphone
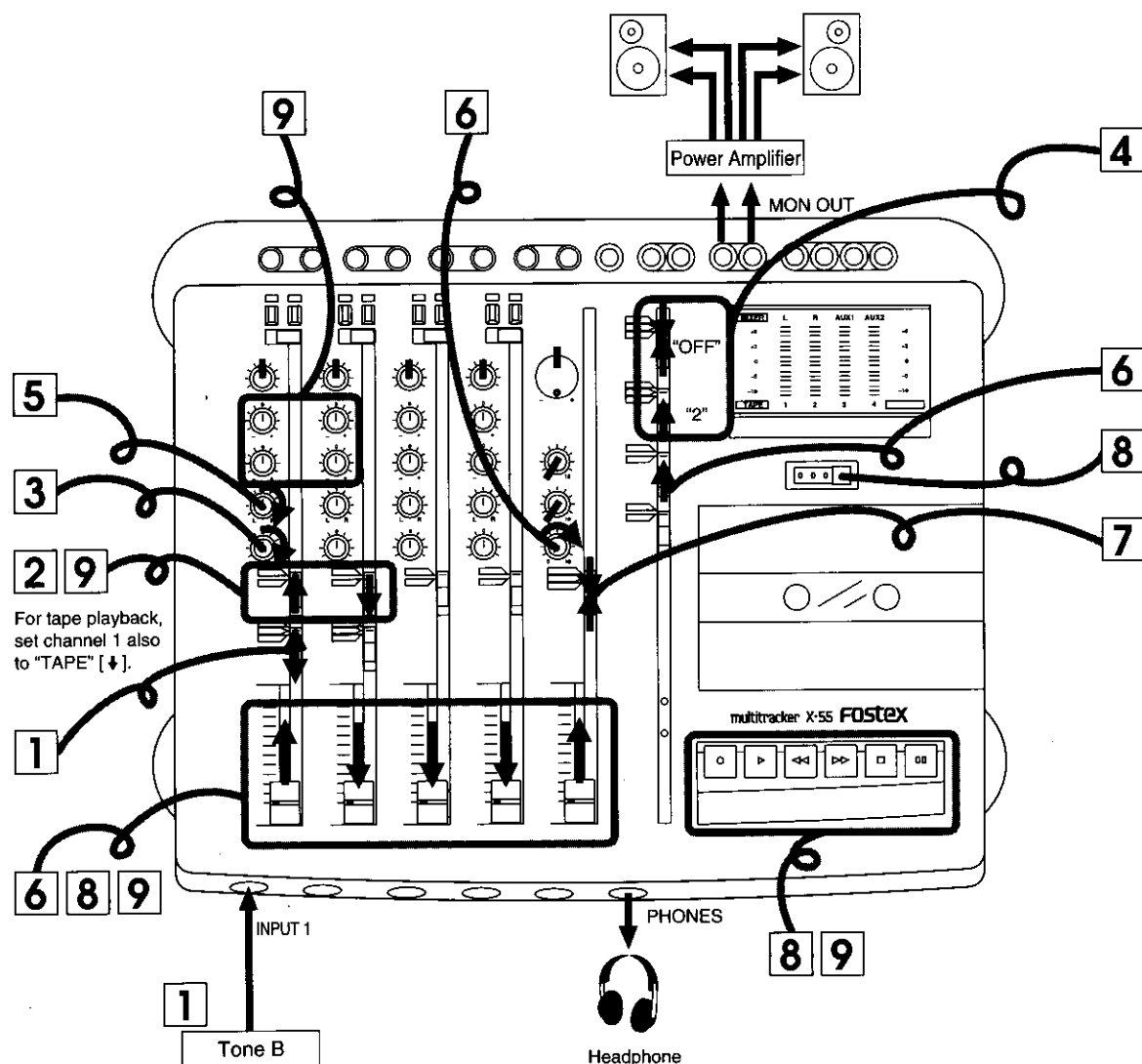
[1] Connect the sound source.

- Connect sound source B to INPUT jack 1 (Balanced or Unbalanced). You may use any INPUT jack 1–4, but in this example we will use INPUT jack 1. Set the LEVEL switch to a setting appropriate for the connected sound source.

2 INPUT SEL switch settings

● Set the channel 1 INPUT SEL switch to "INPUT".
This will connect the signal from sound source B to the INPUT fader.

3 FB knob settings

● In order to use FB to monitor the signal from track 1, gradually rotate the channel 1 FB knob to the "TRACK" side to adjust the volume of track 1.

4 REC SEL switch settings

● Set only the lower REC SEL switch to "2", and the upper switch to "OFF".
With these settings, recording will take place only on track 2.

5 PAN knob settings

● So that sound source B will be recorded on track 2, rotate the channel 1 PAN knob to the far "R" position.

6 Input signal adjustments

● Raise the MASTER fader to about 7 or 8.

● Set the METER switch to "MIXER".

● While playing sound source B, gradually raise the channel 1 INPUT fader so that the level meter R moves in the area of "0".

● To monitor the sound through headphones or your monitor system, rotate the MON knob to the right.

7 MON SEL switch settings

● Set the MON SEL switch to "ST+FB".
The signal from track 1 will be heard in the center, and the signal to be newly recorded will be heard from the right.

8 Start recording

● Press the REW button to rewind the tape.
When you reach the location where you wish to begin recording, press the RESET button to set the counter to "000".

● Press the PAUSE button. Then press the REC button, and the X-55 will enter "REC-PAUSE" mode. (The REC indicator will light.)

● Press the PAUSE button once again. REC-PAUSE mode will be canceled and the X-55 will begin recording. Alternatively, you can press the REC button without going through REC-PAUSE.

● When recording begins, the signal from track 1 will be heard at the level determined by the FB knob setting. Play along with the signal from track 1.

● From time to time, check that the level meter is not going all the way to the top. If it is, adjust the channel 1 INPUT fader.

● When you finish recording, press the STOP button and the tape will stop.

9 Playback

● Press the REW button to rewind the tape.

● Set the FB knob to "0" or set the MON SEL switch to "STEREO".

● Set the channels 1 and 2 INPUT SEL switches to "TAPE".
In this example we are playing back tracks 1 and 2, so we will connect the tape signal from tracks 1 and 2 to the channel 1 and 2 INPUT faders.

● Press the PLAY button to start the tape.

● Use the channel 1 and 2 INPUT faders to adjust the volume. (Leave the MASTER fader at about 7 or 8.)

● To change the stereo location of the sound, use the channel 1 and 2 PAN knobs.

● To adjust the tone, use the channel 1 and 2 equalizer knobs.

STEP 3-2:

While monitoring the signal from tracks 1 and 2, record sound sources C and D on track 3.

☆ In this Step, we will monitor the signal recorded on tracks 1 and 2 (sound sources A and B) as we record two sound sources C and D on track 3.

☆ Before you begin, initialize the controls of the X-55.
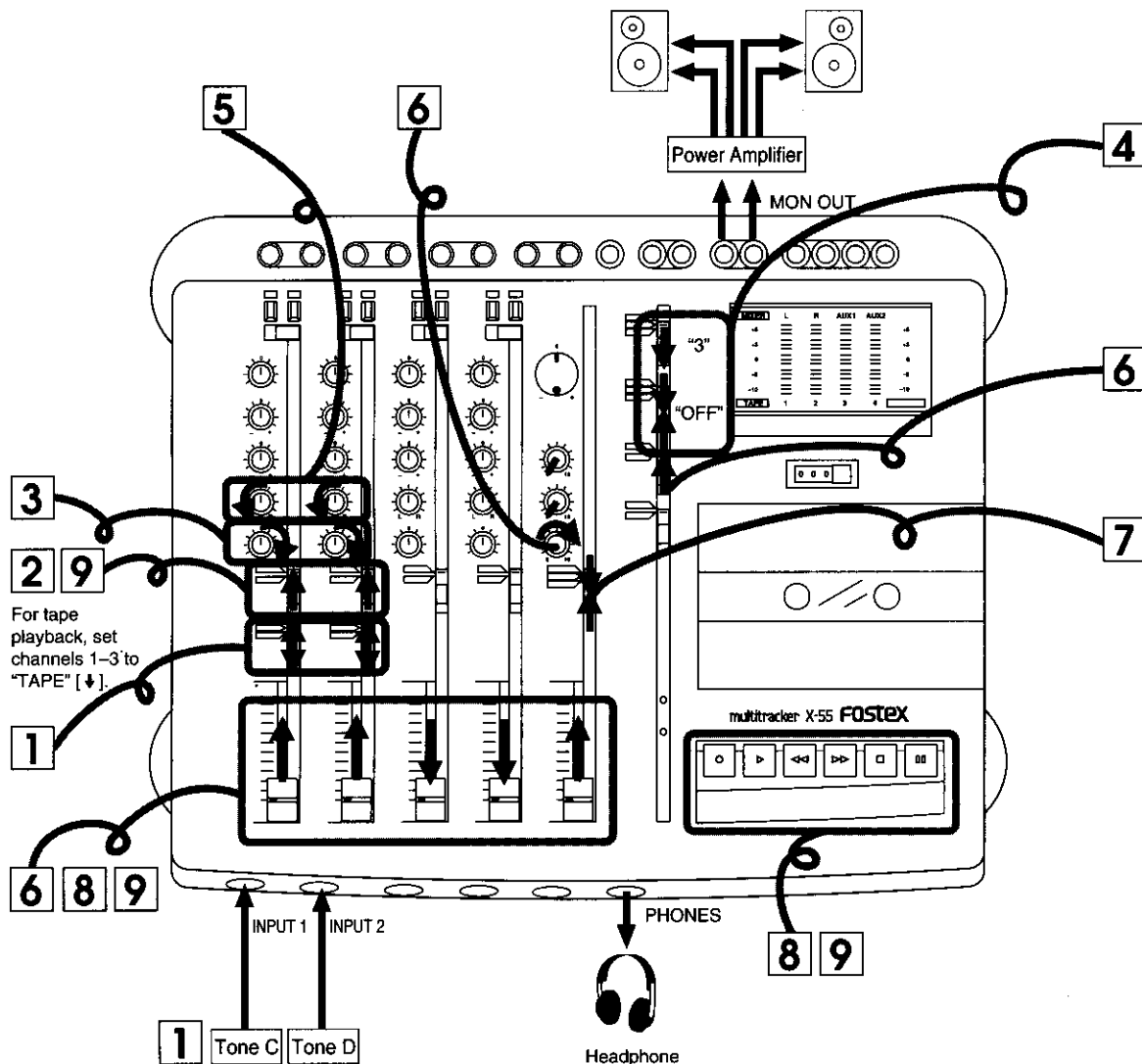
[1] Sound source connections

• Connect sound sources C and D respectively to INPUT jacks 1 and 2 (Balanced or Unbalanced).
Set the LEVEL switches as appropriate for the sound sources you connect.

[2] INPUT SEL switch settings

• Set the channel 1 and 2 INPUT SEL switches to "INPUT".

[3] FB knob settings

• So that you can use FB to monitor the signals from tracks 1 and 2 as you did in STEP 3-1, gradually rotate the channel 1 and 2 FB knobs toward the "TRACK" side to adjust the volume of tracks 1 and 2.

4 REC SEL switch settings

- Set only the upper REC SEL switch to "3", and set the lower switch to "OFF".
  With these settings, only track 3 will be recorded.

5 PAN knob settings

- So that the signals connected to channels 1 and 2 will be recorded on track 3, set both channel 1 and 2 PAN knobs all the way to the "L" position.

6 Input signal adjustments

- Raise the MASTER fader to about 7 or 8.

- Set the METER switch to "MIXER".

- While playing sound sources C and D, gradually raise the channel 1 and 2 INPUT faders so that level meter L moves in the area of "0".

- To monitor the sound through headphones or your monitor system, rotate the MON knob to the right.

7 MON SEL switch settings

- Set the MON SEL switch to "ST+FB".
  With this setting, the track 1 and 2 signals will be heard in the center, and the newly recorded sound source will be heard in the left side.

8 Start recording

- Press the REW button to rewind the tape.
  When you reach the location where you wish to begin recording, press the RESET button to set the counter to "000".

- Press the PAUSE button. Then press the REC button, and the X-55 will enter "REC-PAUSE" mode. (The REC indicator will light.)

- Press the PAUSE button once again. REC-PAUSE mode will be canceled and the X-55 will begin recording. Alternatively, you can press the REC button without going through REC-PAUSE.

- When recording begins, the signals from tracks 1 and 2 will be heard at the levels determined by the FB knob settings. Play along with the signals from track 1 and 2.

- From time to time, check that the level meter is not going all the way to the top. If it is, adjust the channel 1 and 2 INPUT faders.

- When you finish recording, press the STOP button and the tape will stop.

9 Playback

- Press the REW button to rewind the tape.

- Set the FB knob to "0" or set the MON SEL switch to "STEREO".

- Set the channels 1-3 INPUT SEL switches to "TAPE".
  In this example we are playing back tracks 1-3, so we will connect the tape signal from tracks 1-3 to the channel 1-3 INPUT faders.

- Press the PLAY button to start the tape.

- Use the channel 1-3 INPUT faders to adjust the volume. (Leave the MASTER fader at about 7 or 8.)

- To change the stereo location of the sound, use the channel 1-3 PAN knobs.

- To adjust the tone, use the channel 1-3 equalizer knobs.

In this way, you can use FB to monitor the signal from the previously recorded tracks while you record new sound sources. Now that you understand how the recorded and monitored signals are routed during overdubbing, and how each switch functions, you can take advantage of other types of recording technique.

STEP 4: Mixdown

> **What is mixdown?**
> Mixdown refers to the process of playing back the signals recorded on two or more tracks, combining these to a stereo (or mono) signal, and recording the result on a separate master tape. This is the final Step in creating a multitrack recording. During mixdown you can make fine adjustments to the level balance of each track, and add effect processing etc. to create the musical result you want.

☆ In this Step you will learn how the signals from tracks 1–4 that you overdubbed in STEP 3 can be mixed down and sent to a master recorder.

☆ Before you begin, initialize the controls of the X-55.
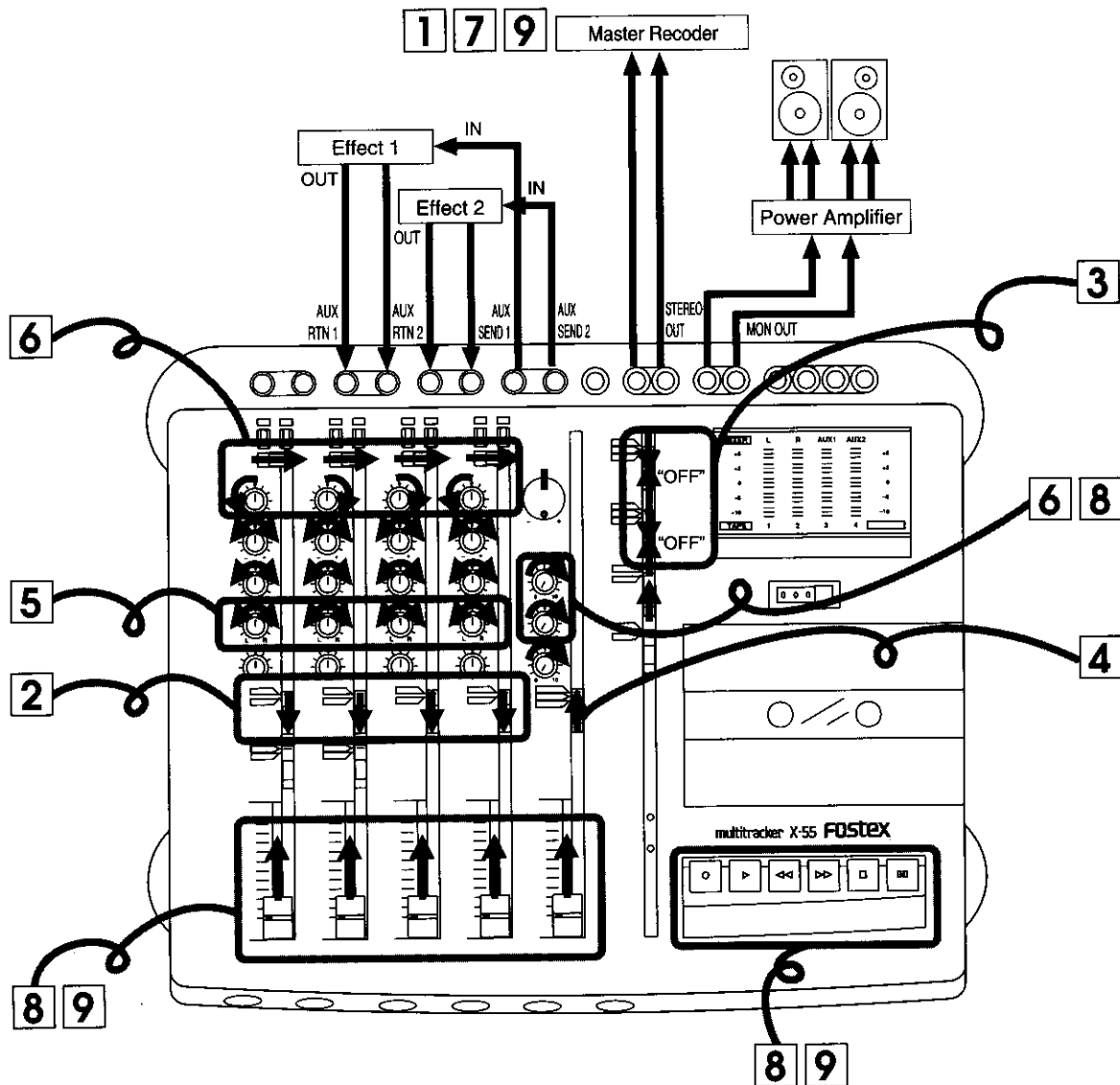
[1] Connections between the X-55 and the master recorder
• Connect the X-55's STEREO OUT L and R jacks to the master recorder's LINE IN jacks.

[2] INPUT SEL switch settings
• Set the INPUT SEL switches of all channels to "TAPE".

[3] REC SEL switch settings
• Set both REC SEL switches to "OFF".

4 MON SEL switch settings

● Set the MON SEL switch to "STEREO".

5 PAN knob settings

● Rotate the PAN knob of each channel to the desired stereo location.

6 Effect processing using AUX

● As shown in the diagram, connect two effect units so that effects can be applied to the signals from each track as follows.

> Track 1 → Effect unit 1
> Track 2 → Effect unit 2
> Track 3 → Effect unit 2
> Track 4 → Effect unit 1

● Connect the X-55's AUX SEND 1 and 2 jacks respectively to the input jacks of the two effect units. Connect the output jacks of the effect units to the X-55's AUX RTN 1 and 2 jacks. If an effect device has a mono output, connect the output to the "L/MONO" jack of the XR-5's AUX RTN 1 or 2.

● So that effect unit 1 will be applied to tracks 1 and 4, gradually rotate the channel 1 and 4 AUX knobs toward "AUX 1". (The AUX 1 level meter will indicate the output level to effect unit 1.)

● So that effect unit 2 will be applied to tracks 2 and 3, gradually rotate the channel 2 and 3 AUX knobs toward "AUX 2". (The AUX 2 level meter will indicate the output level to effect unit 2.)

● Gradually rotate the AUX RTN 1 and 2 knobs toward the right to adjust the input level from the effects device.

7 Master recorder settings

● Insert the tape on which the master recording will be made, and rewind it.

● So that you can check the master recorder's input level, set it to REC-PAUSE.

8 Rehearsal

● Press the REW button to rewind the tape.

● Press the PLAY button to start the tape.

● Use the channel 1–4 INPUT faders to adjust the volume of each track. (Leave the MASTER fader at 7 or 8.)

● Use the PAN knobs of each channel to set the desired stereo location for each track.

● Use the equalizer knobs of each channel to adjust the tone.

● Use the AUX RTN 1 and 2 knobs to adjust the input level from the effect units.

9 Start the mixdown

● First start recording on the master recorder.

● Press the X-55's PLAY button to start the tape.

● Use the MASTER fader to control the overall volume, and to fade-in or fade-out.

Advanced operation

After you have mastered basic operation

You have worked through Steps 1–4 and have learned the basic techniques of operating the X-55. In this section, you will learn more advanced multitrack recording techniques such as punching in/out and using tape synchronization.

STEP 5: Punch in/out

What is punch in/out?
Punch in/out refers to a technique in which you re-record only a specific part of a previously recorded track. For example, this technique can be used to re-record just a few measures of a guitar solo. You can playback the tape, and when you reach the section you want to re-record, press a footswitch to enter record mode without having to stop the tape. This is called "punching in". Then when you reach the end of the section you want to re-record, press a footswitch to return to play mode. This is called "punching out".

☆ To punch in/out you will need a separately sold Fostex 8051 footswitch.
☆ In this section we will explain how to monitor the signals from tracks 1–4 and punch in/out on a guitar solo recorded on track 1. The procedure is the same for other situations.
☆ Before you begin, initialize the controls of the X-55.
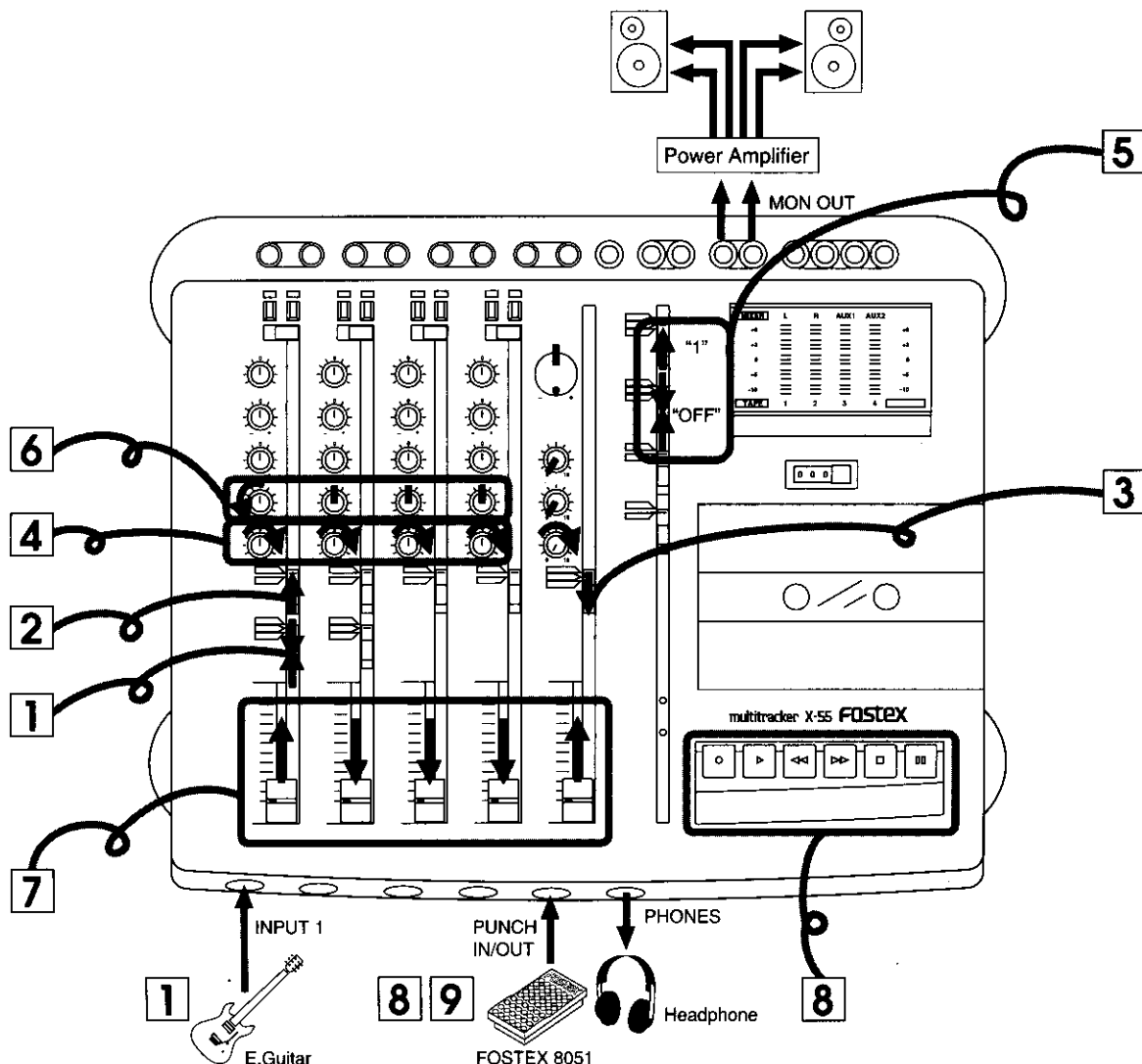
1 Sound source connections

- Connect the electric guitar to INPUT jack 1.
- Set the LEVEL switch to "MID".

2 INPUT SEL switch settings

- So that you can adjust the input signal of the electric guitar, set the channel 1 INPUT SEL switch to "INPUT".

3 MON SEL switch settings

- Set the MON SEL switch to "FB".

4 FB knob settings

- We will send the playback signals of tracks 1–4 to FB for monitoring.
- Gradually rotate the FB knobs of channels 1–4 in the "TRACK" direction to adjust the playback signals from tracks 1–4 for monitoring.

5 REC SEL switch settings

- Set the upper REC SEL switch to "1", and the lower REC SEL switch to "OFF". With these settings, only track 1 will be recorded.

6 PAN knob settings

- Rotate the channel 1 PAN knob all the way to the "L" direction.
- The channel 2–4 PAN knobs are not used.

7 Input signal adjustments

- Raise the MASTER fader to 7–8.
- While playing the electric guitar, adjust the channel 1 INPUT fader so that the level meter L moves in the "0" area.

8 Punch in

- Playback the tape.
- Immediately before the section you wish to punch in, press the footswitch once. When you press the footswitch, track 1 alone will enter record mode, and the sound of your guitar playing will begin being recorded on track 1. Until you punch in, you will be monitoring the playback signal from track 1. After you punch in (and until you punch out) you will be monitoring the newly recorded signal.

9 Punch out

- When the section you wish to re-record ends, immediately press the footswitch once again. Recording will end, and you will once again be monitoring the playback signal from track 1.
- Leave the control panel settings as they are, rewind the tape, and playback.
- If the results are not what you wanted, try the punch in/out procedure again.

STEP 6: Pingpong recording
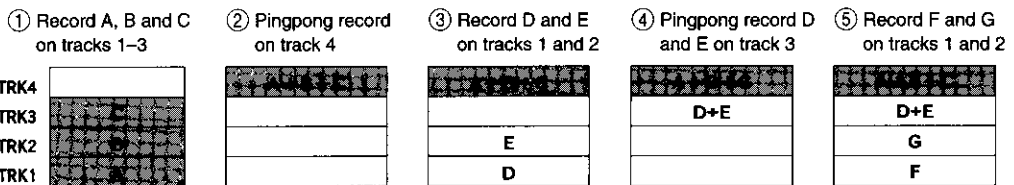
> **What is pingpong recording?**
> Pingpong recording refers to a technique in which the playback from two or more previously recorded tracks is mixed and recorded onto a different track. Pingpong recording can be used to free up tracks so that more sound sources can be recorded on them, allowing you to create recordings with more parts than there are actual tape tracks.

Be careful about oscillation during ping-pong recording

During ping-pong recording, raising the gain too high may generate oscillation. In this case, stop recording immediately. Monitoring sound with oscillation through headphones or external monitor devices may impair your hearing ability.

After you stop recording, lower the output level (Input faders 1–4 or Master fader on the X-55) to an appropriate gain level, or use the HIGH EQ knob to attenuate the high frequency range, and restart recording.

[Example] A seven-part ensemble using pingpong recording

	① Record A, B and C on tracks 1–3	② Pingpong record on track 4	③ Record D and E on tracks 1 and 2	④ Pingpong record D and E on track 3	⑤ Record F and G on tracks 1 and 2
TRK4					
TRK3				D+E	D+E
TRK2			E		G
TRK1			D		F

Result: a total of 7 recorded parts A–G!

☆ In this section we will explain how tracks 1–3 can be combined and processed with an effect while being re-recorded onto track 4.

☆ Before you begin, initialize the controls of the X-55.

For tape playback, set channels 1–3 to "INPUT", and channel 4 to "TAPE".

PHONES

Headphone
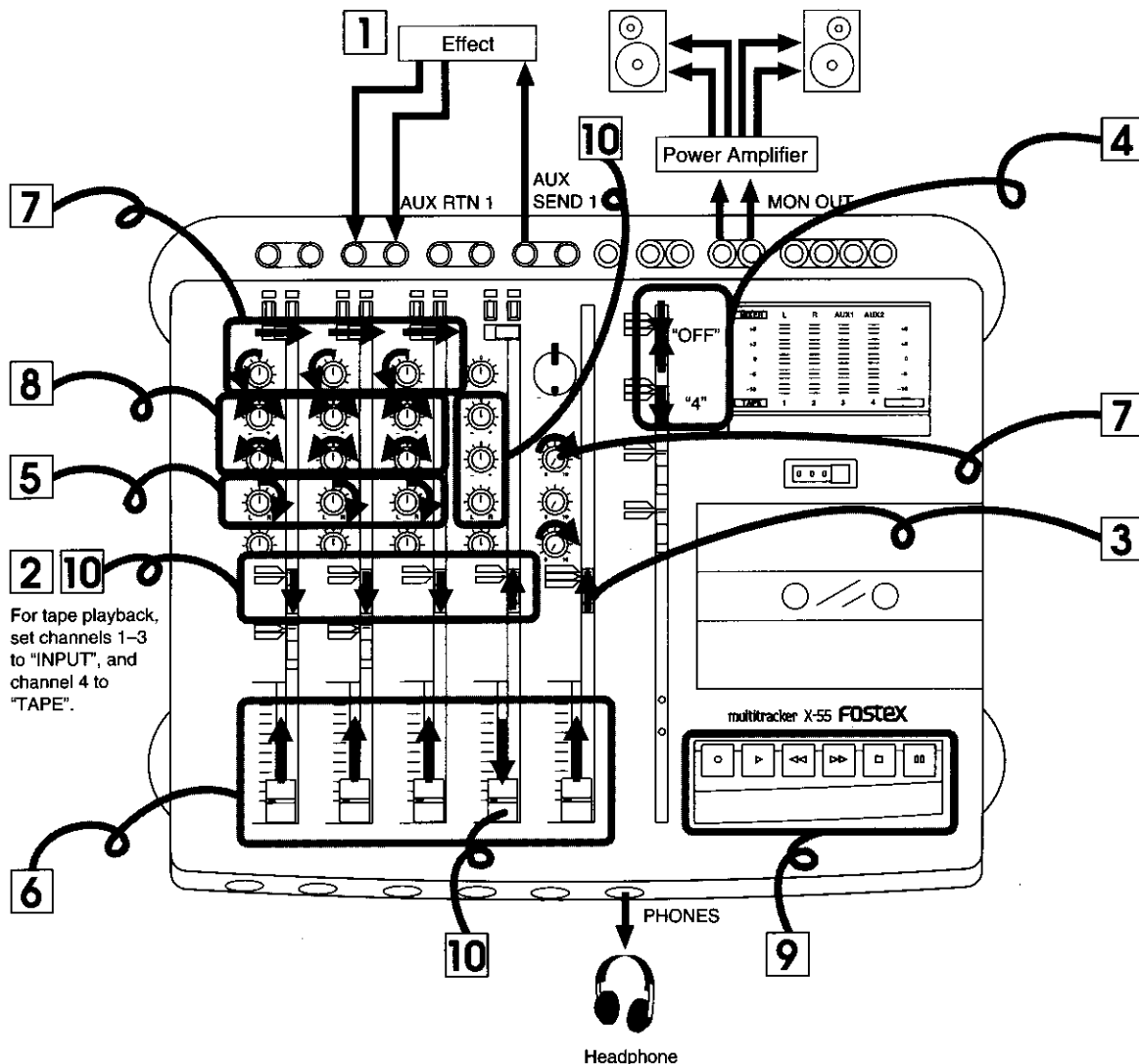
1 Effect unit settings

- Connect the X-55 to the effect unit.
  Connect the X-55's AUX SEND 1 jack to the effect unit's input jack, and the effect unit's output jacks to the X-55's AUX RTN 1 jacks.

2 INPUT SEL switch settings

- Set the channel 1–3 INPUT SEL switches to "TAPE", and the channel 4 switch to "INPUT".

3 MON SEL switch settings

- Set the MON SEL switch to "STEREO".

4 REC SEL switch settings

- Set only the lower REC SEL switch to "4", and set the upper REC SEL switch to "OFF". With these settings, only track 4 will be recorded.

5 PAN knob settings

- Rotate each of the channel 1–3 PAN knobs fully toward "R".

6 Input signal adjustments

- Raise the MASTER fader to 7–8.

- Adjust the playback signal volume of tracks 1–3 using the channel 1–3 INPUT faders.

7 Effect processing using AUX

- In this example we will apply an effect to the playback signal from tracks 1–3.

- Set the channel 1–3 AUX SEL switches to "CH".

- Gradually rotate the channel 1–3 AUX knobs toward "AUX 1".
  As you do this, pay attention to the effect output level and balance of the three tracks.

- Gradually rotate the AUX RTN 1 knob to the right to adjust the input level from the effect unit.

8 Use the equalizer to adjust the tone

- Use the channel 1–3 equalizer knobs to adjust the tone of the playback signals from tracks 1–3.

9 Start pingpong recording

- When you finish adjusting the volume, tone and effect for each track, press the REW button to rewind the tape to the beginning of the song.

- Press the REC button to start pingpong recording.

- During recording, watch the level meters and make sure that they do not go all the way to the top. If they do, adjust the levels, and re-do the pingpong recording.

Note:
Be aware that excessively high levels or excessively high equalizer settings can cause oscillation.

10 Playback

- Press the REW button to rewind the tape.

- Set the channel 4 INPUT SEL switch to "TAPE".
  In this example, we will use channel 4 to playback the signal that was recorded on track 4.

- Set each of the channel 1–3 INPUT SEL switches to "INPUT".

- Press the PLAY button to start the tape.

- Use the channel 4 INPUT fader to adjust the volume. (Leave the MASTER fader at 7–8.)

- Rotate the channel 4 PAN knob to adjust the stereo location.

- Use the channel 4 equalizer knobs to adjust the tone.

STEP 7: Orchestration using tape sync

What is tape sync?

Tape sync is a technique by which a performance recorded on tape can be synchronized to the automatic playback of a sequencer or drum machine (or other MIDI device). This provides the following advantages.

- Since there is no need to record the sound of the MIDI device's playback on tape, you can conserve tracks.
- Since the MIDI instrument (synthesizer, drum machine, etc.) is recorded directly to the master tape, the sound retains its original dynamic range and high quality.
- Additional advanced editing techniques are made possible, such as overdubbing the automatic playback, or rearranging drum machine rhythm patterns.

When you use tape sync, one of the tape tracks is used to record and playback a synchronization signal known as a FSK signal. The track containing the FSK signal performs a role similar to an orchestra conductor. When the FSK signal is played back and sent to the sequencer or drum machine, the sequencer or drum machine will playback in synchronization with the tempo map recorded in the signal, and will cause the other connected MIDI devices to playback as well.

Note: ───
Some MIDI devices are not able to input or output FSK signals. If this is the case with your MIDI device, you will need a separate MIDI/FSK converter. For details consult the manual for your MIDI device.

☆ In this example we will synchronize four MIDI sound source with the sounds recorded on tracks 1-3, to create an ensemble with seven sound sources.

STEP 7-1:
Before you begin tape sync playback (Recording the sync signal)
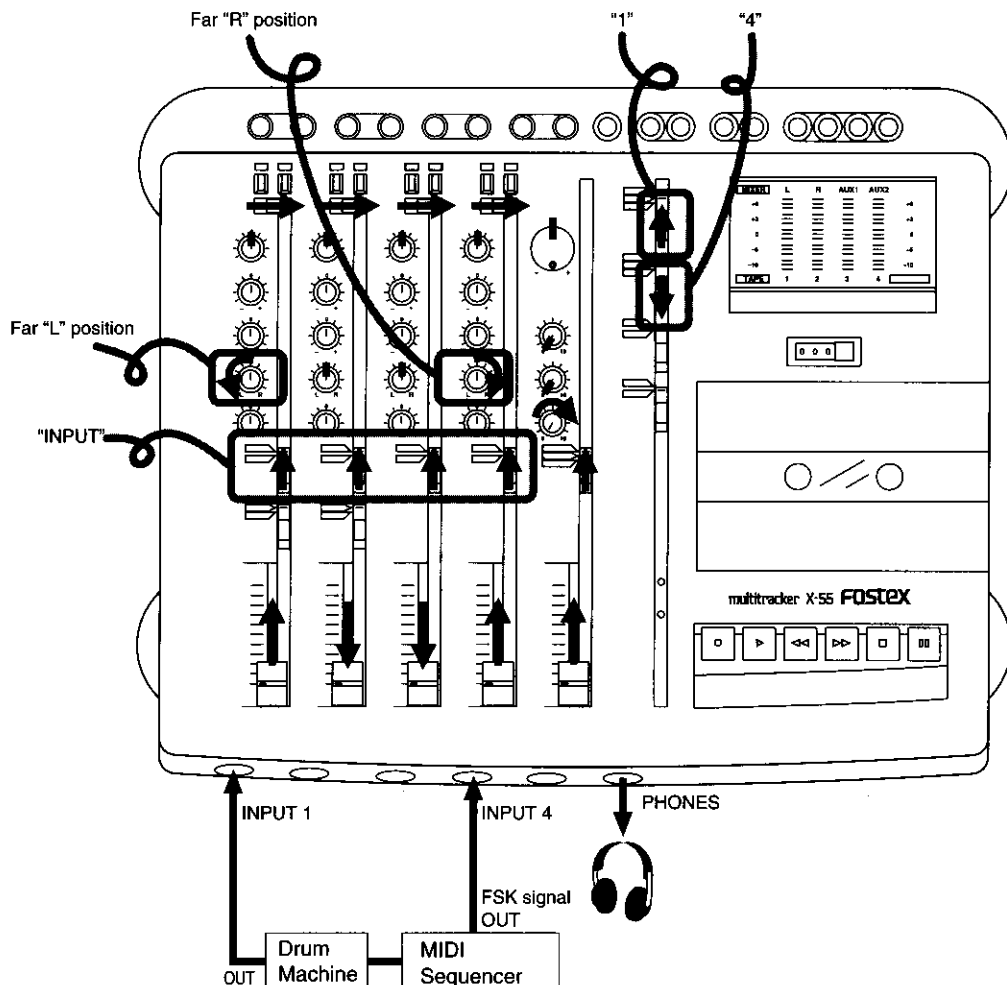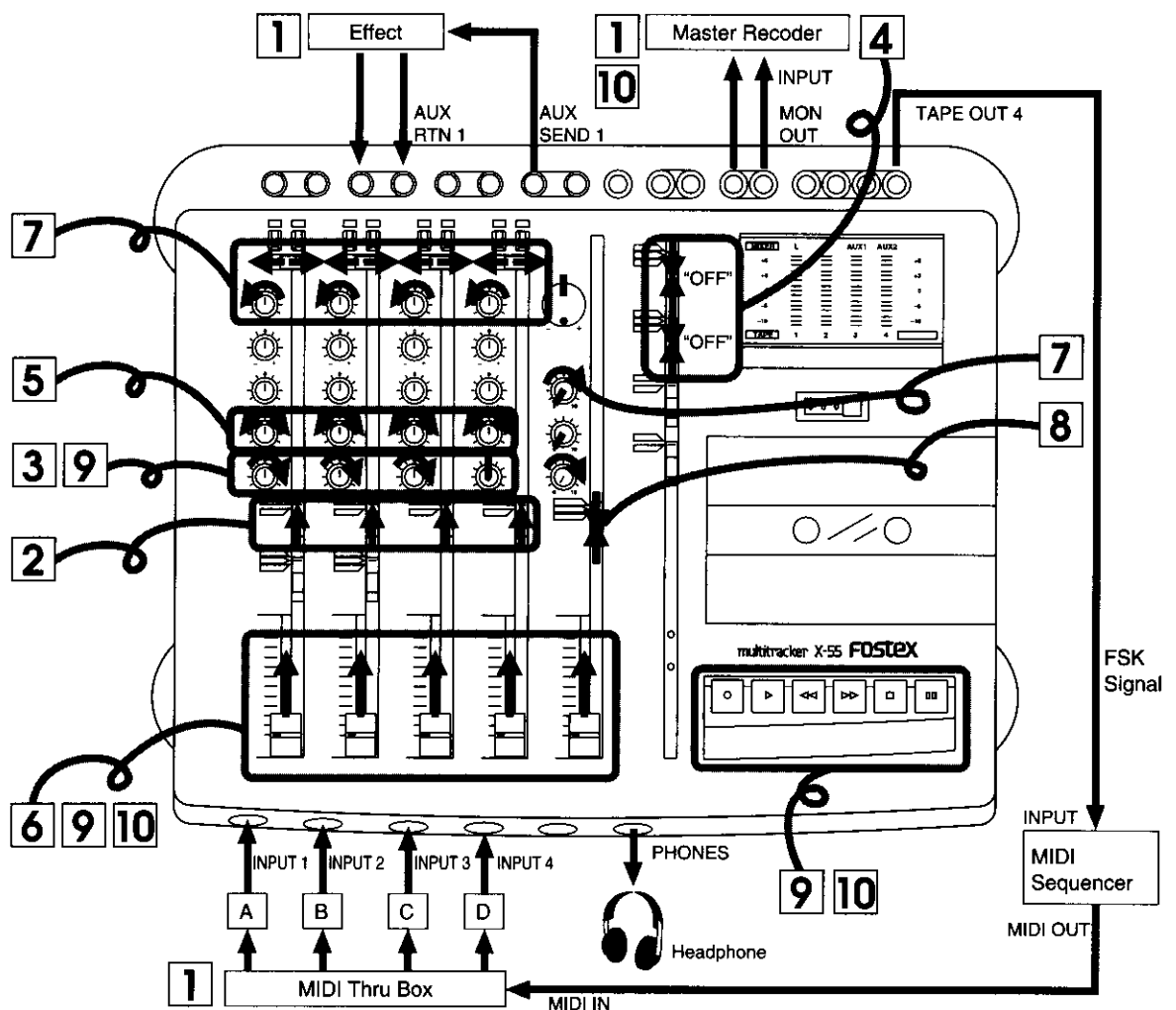
1 Connections between the X-55 and the MIDI devices

● Connect the X-55 to the MIDI devices as shown in the diagram.

2 Record the FSK signal

● First you must create a rhythm program on your drum machine or sequencer, and specify the tempo.

● Next, record the FSK signal from the drum machine or sequencer onto track **4**.
At this time, record the sound of the drum machine onto track 1 to use as a reference track. (Be sure to record at an appropriate tempo, since the tempo cannot be changed later.)

* Refer to the manual of your MIDI device regarding the appropriate level for the FSK signal. The manual of your MIDI device will also give the required length of the pilot tone (the high pitched pure tone of the FSK signal that indicates the standby condition before recording begins).

STEP 7-2:
Tape sync playback

1 Connections between the X-55 and the MIDI devices, master recorder and effect unit

● Connect the X-55 to the MIDI devices, master recorder, and effect unit as shown in the diagram.

● Connect the four MIDI sound sources to INPUT jacks 1–4.

● Connect the X-55's TAPE OUT jack 4 to the MIDI device INPUT jack.

27

2 INPUT SEL switch settings

- Set each of the channel 1–4 INPUT SEL switches to "INPUT".
  With these settings, the MIDI sound sources will be connected to the channel 1–4 INPUT faders.

3 FB knob settings

- Gradually rotate the channel 1–3 FB knobs in the "TRACK" direction to adjust the signals from track 1–3.

- Set the track 4 FB knob to "0" (center position).

4 REC SEL switch settings

- Set both switches to "OFF".

5 PAN knob settings

- Use the channel 1–4 PAN knobs to adjust the stereo position of each MIDI sound source.

6 MIDI device input signal adjustments

- Raise the MASTER fader to 7–8.

- While manually playing the MIDI devices, gradually raise the channel 1–4 INPUT faders to adjust the overall balance.

7 Effect processing using AUX

- To apply effect to four MIDI sound sources, set the all channel AUX SEL switches to "CH".

- So that the effect unit will be applied to tracks 1, 2, and 3, set the channel 1–3 AUX SEL switch to "FB".

- To adjust the amount of effect, rotate the channel AUX knobs toward "AUX1", and rotate the AUX RTN 1 knob. (Set the channel 4 AUX knob to "center" to apply effect to each track.)

8 MON SEL switch settings

- Set the MON SEL switch to "ST+FB".

9 Rehearsal

- Playback the X-55 and start the MIDI device.

- Use the FB knobs to adjust the signal of tracks 1–3, and use the INPUT faders to adjust the volume balance of the MIDI sound sources.

10 Mixdown the tape sync playback

- First start recording on the master recorder.

- Playback the X-55 and start the MIDI device.

- Use the MASTER fader to control the overall volume, and to fade-in or fade-out.

Troubleshooting

Problem	Points to check	Action
● Sound is unsteady or interrupted	Are the pinch roller or capstan dirty?	Clean the pinch roller and capstan.
	Is the tape damaged?	Use a new, good-quality tape.
● Sound quality or volume is significantly different than when recorded	Is the head dirty?	Clean the head.
	Are you using other than a high-position tape?	Use a high-position tape (Chrome, type II)
● Sound is distorted or noisy	Are the INPUT faders and LEVEL switches set appropriately? Are the level meters peaking or at an extremely low level?	Adjust the controls to appropriate level settings.
● Playback pitch is different than when recorded	Is the PITCH control at the same setting as when you recorded?	Set the PITCH control to the same setting as for recording.
● No sound in the headphones	Is the MON knob turned all the way to the left?	Turn the MON knob gradually to the right.
● Cannot send sound to the desired track; cannot record	Are the REC SEL switches set correctly? Are the PAN knob settings correct?	Set the PAN knob to the left for tracks 1 and 3, and to the right for tracks 2 and 4.
● Cannot record	Are the record-protect tabs of the cassette broken off?	Put sticky tape over the record-protect depressions of the cassette.
● The sound source input from the balanced XLR input connectors 1 and 2 cannot be recorded.	Is any other sound source connected to INPUT jacks 1 and 2 on the front panel?	Remove the sound source connected to INPUT jacks 1 and 2 on the front panel.
● Tape does not move	Is the cassette inserted correctly? Inserted all the way?	Insert the cassette correctly.
● Power does not come on	Is the AC adaptor connected correctly?	Connect the AC adaptor correctly.

MEMO

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, rollers and capstans

- **Record/playback head**
  As the X-55 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.

- **Capstans and pinch rollers**
  The capstans and pinch rollers 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 develop 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 instructions included with your demagnetizer, and do not allow it to come near recorded tapes.

Specifications

Inputs (×4)

Inputs 1, 2 (Unbalanced)
Microphone impedance	Less than 10 k
Input impedance	20 k or higher
Normal input level	H: −10 dBV
	M: −30 dBV
	L: −50 dBV

Inputs 1, 2 (Balanced)
Microphone impedance	Less than 1 k
Input impedance	2 k or higher
	(Level: −50 dBV)
	20 k or higher
	(Level: −30 dBV/−10 dBV)
Normal input level	H: −10 dBV
	M: −30 dBV
	L: −50 dBV

Inputs 3, 4
Input impedance	10 k or higher
Normal input level	−10 dBV

AUX RTN 1, 2 (L, R)
Input impedance	5 k or higher
Normal input level	−20 dBV

INSERT 1, 2
SEND (tip)
Output load impedance	10 k or higher
Normal output level	−10 dBV

RETURN (ring)
Input impedance	20 k or higher
Normal input level	−10 dBV

STEREO OUT L, R
Output load impedance	10 k or higher
Normal output level	−10 dBV

AUX SEND 1, 2
Output load impedance	10 k or higher
Normal output level	−10 dBV

Foldback (FB)
Output load impedance	10 k or higher
Normal output level	−10 dBV

Monitor output (MON OUT L, R)
Output load impedance	10 k or higher
Normal output level	−10 dBV

Tape output (TAPE OUT 1–4/SYNC)
Output load impedance	10 k or higher
Normal output level	−10 dBV

Headphone output (PHONES)
Output load impedance	16
Normal output level	20 mW

Equalizer
HIGH	10 kHz ±10 dB (shelving)
LOW	100 Hz ±10 dB (shelving)

Recording tape	Less than C-90 (Type II / High (CrO2) position)
Record tracks	4 tracks, one direction (simultaneous recording of up to two tracks possible)
Noise reduction	Dolby B NR (internal) (switchable on/off)
Tape speed	9.5 cm/s
Wow/flutter	±0.17% (IEC/ANSI)
Fast wind time	120 seconds (C-60 tape)
Pitch control	±12%
Recording time	22.5 minutes (C-90 tape)

Frequency response
Mixer	20 Hz–20 kHz
Recorder	40 Hz–14 kHz

Signal/noise ratio	58 dB (Dolby B NR IN, IHF-A)
Crosstalk	50 dB or higher (1 kHz)
Erasure ratio	70 dB or higher (1 kHz)

Heads
Rec/Play	4-channel record/playback
Erase	4-channel

|	
Power Requirement	DC12V (12–16V), 12W (Fostex AC adaptor)
Weight	2.6 kg (exclude AC adaptor)
Dimensions	405 (W) × 321 (D) × 105 (H)

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* 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
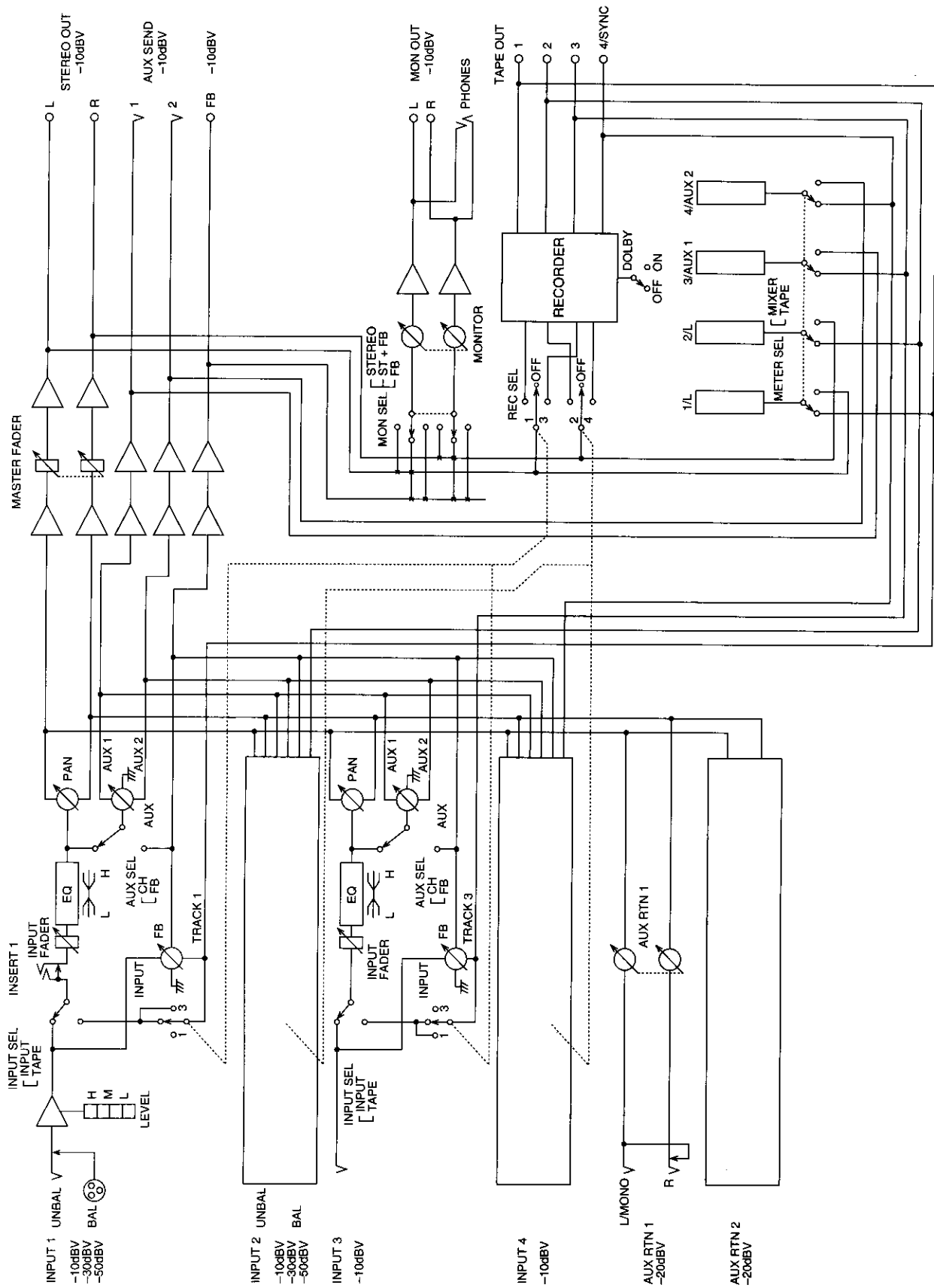
Declaration of EC Directive

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 connecting 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 Jun. 1, 1995)

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ADD: Olarinluoma 7, FIN-02200 Espoo, Finland
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