Owner's Manual

Model

FD-4

Digital 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.
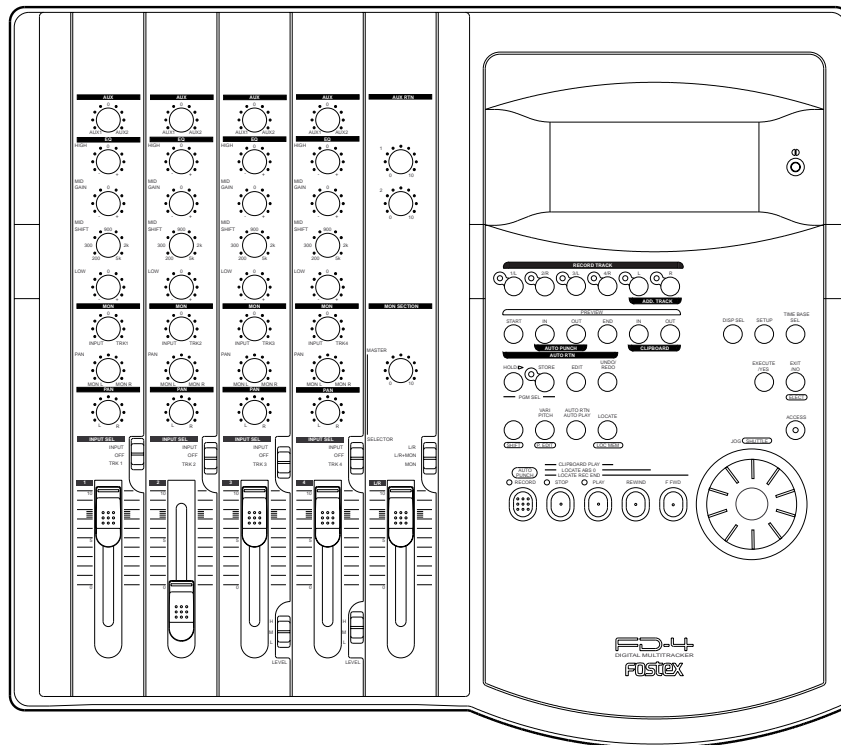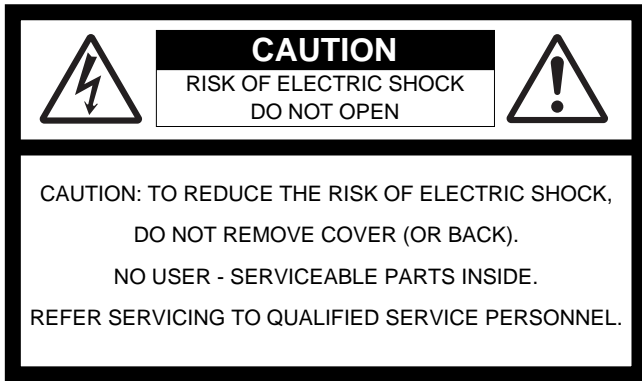
"WARNING"

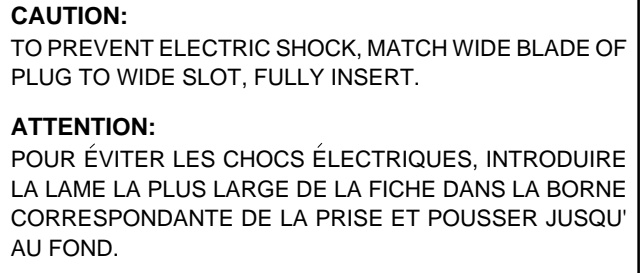"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

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.

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.

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.

2

Introduction

Thank you for choosing the Fostex FD-4. The FD-4 is a four-track multitracker equipped with two additional virtual tracks. It uses a SCSI removable disk, such as a Zip cartridge or an MO disk, as a recording media to perform six-track recording and four-track playback.

Main features

Mixer section

The FD-4 is equipped with a four-channel analog mixer that achieves the high tonal quality required by state-of-the-art digital recording.

- The mixer section features four input channels. Inputs 1 and 2 supports line level input and Inputs 3 and 4 support a wide range of input sources, from line level to mic level.

- Inputs 3 and 4 are equipped with a microphone amplifier, a three-stage trim switch, and an insert jack, as well as a balanced XLR connector.

- All input channels have a three-point equalizer (two channels: shelving, one channel: parametric), that allow for a sharp and high-responsive tone adjustment.

- Two AUX sends and returns allows for flexible sound processing. You can connect two ambient-type signal processors with stereo outputs.

- The mixer section also features an "All Stereo Mix function" that facilitates producing a stereo masterpiece and allows you to master all sources in stereo, including synchronizing MIDI sound sources.

Recorder section

The FD-4's recorder section uses a recording format called FDMS-3 (Fostex Disk Management System-3). It uses an external SCSI device (stationary disk or removable disk) as the recording media.

- Two Additional tracks enable for stereo ping-pong recording of four Real tracks.

- The FD-4 features non-destructive audio editing (a great advantage of digital recording) such as Copy & Paste, Move & Paste, Erase, etc. You can choose Time Base (ABS or MTC) or MIDI bar/beat/clock as the unit.

- Three recording modes: Normal mode, Mastering mode 1, and Mastering mode 2, to support various recording media.

- A "Preview function" allows for an intuitive fine-adjustment of an editing point (locate point).

- An "Undo/Redo function" enables you to easily correct recording and editing mistakes.

- A "Vari Pitch function" allows you to fine-tune the pitch.

- A "Digital Input Track Setting function" is used to record digital signals from CD or MD to any track on the FD-4. (This function is available when recording mode is set to Mastering mode 1 or 2.)

- A "Digital Output Track Setting function" enables you to output digital signals by selecting any two output sources from Real tracks 1-4 and the L/R outputs in the mixer section.

- You can also use the DATA IN/OUT jacks to mix down digital signals to an external DAT, and to save and load song data (audio data and SETUP mode settings) to and from the DAT.

- A "Digital Remix function" allows for digital output of all twelve sources remixed in the mixer section.

- MIDI clock and Song Position Pointer can be transmitted according to the internal programmable Tempo Map. You can set up a synchronization system with a sequencer or a rhythm machine without wasting a track.

- You can use the FD-4 as a sync slave machine by sending MTC from a connected device.

- The FD-4 supports MTC, MMC, and Fostex System Exclusive Message, which allows for advanced control and high-precision synchronization from external sequencing software. You can set the device number and MTC frame rate for MMC and Fostex System Exclusive Message. Also, "MTC Offset function" and "Offset Mode function" are useful for setting up a sync environment using an external sequencing software.

- Auto Punch In/Out and Manual Punch In/Out functions offer two modes: "Take" for a real recording, and "Rehearsal" for monitoring the part between the in and out points.

- The "Program Select function" enables you to select a song from up to 99 songs and name the songs.

- Recorder In jacks (L/R) are used to record audio directly to the recorder section, bypassing the mixer section.

- A "Bar/Beat Resolution function" is used to edit audio at the beginning of the beat (round up or round off to a beat).

- The "Metronome function" can be used as a rhythm guide for recording.

- Various edit functions using an edit point (locate point), such as Copy & Paste, Move & Paste, Erase, Auto Punch In/Out, Auto Locate, are available. You can also locate ABS 0 or REC END regardless of the edit point (locate point).

- You can set a preroll time of 0 to 10 seconds.

- A "Disk Remain Display function" offers a clear indication of available recording time and disk space (in mono track recording). You can choose the Time Base from ABS, MTC, and BAR/BEAT/CLK.

Recording Preparation

The FD-4 does not include recording/playback media. First you need to connect a SCSI drive and format a disk so that you can record, play back, and edit on the FD-4.

You may use a removable SCSI drive, such as an MO drive, EZ drive or a Zip drive. For more information on removable SCSI disks supported by the FD-4, refer to the "List of the drives with operation guaranteed" attached to this manual.
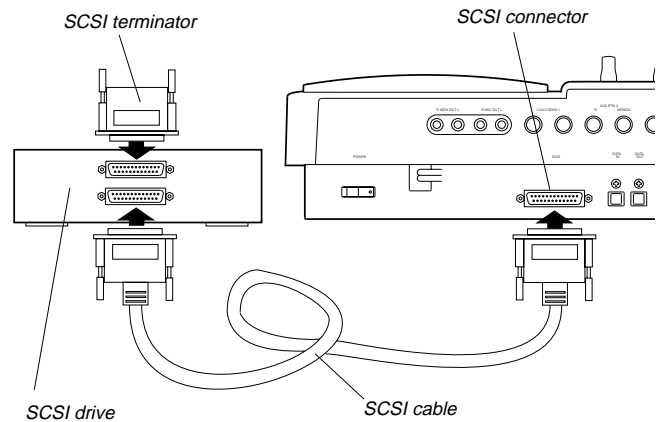
FOSTEX does not guarantee data integrity recorded on the FD-4 using an unlisted removable drive.

<About damages>
Fostex is not responsible for any "direct damage" or " indirect damage" caused by using the FD-4.
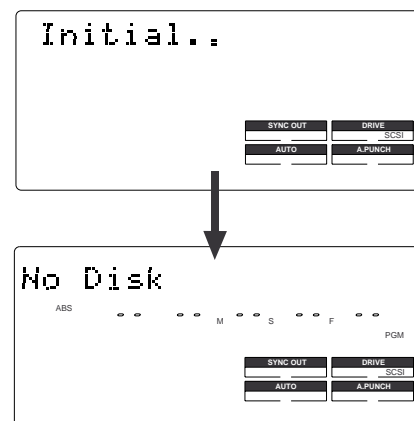
<About copyrights>
It is prohibited law to use any part of a CD recording or video images or audio data for which a copyright is possessed by a third party for commercial purpose such as contents, broadcasts, sales, or distribution - any purpose other than for your personal pleasure.

Connecting a SCSI drive

Connect a SCSI drive to the SCSI terminal on the FD-4. Refer to the figure on the right and read the notes and steps described here to connect the drive.

• Handling a SCSI drive
A SCSI drive and its disk are made of precision parts that are susceptible to strong external impact and magnetic fields. Handle them carefully. Do not drop them on the floor or place them near a device that could generate a strong magnetic field (such as a large TV, speakers, etc.). Read the instruction manual that comes with your SCSI drive before you try to connect it to the FD-4.

• Notes on connection
1. *You can connect only one SCSI drive to the FD-4's SCSI terminal. Do not "daisy-chain" multiple SCSI drives.*

2. *Install a SCSI terminator on the other connector on the connected SCSI drive. (If it has a termination switch, be sure to turn the switch to "terminate" or "on.")*

3. *Before making the connection, be sure to turn off the power to all devices.*

4. *The FD-4 has a 25-pin female SCSI connector that supports the Macintosh. Use an appropriate, standard SCSI cable. Fix the connector of the cable with screws.*

5. *There is no restriction regarding the ID number for a connected SCSI drive. The FD-4 will automatically recognize and display the ID number that is set on the SCSI drive.*

SCSI terminator SCSI connector
SCSI drive SCSI cable

• After making the connection, turn on the power to the FD-4 and the SCSI drive.

If the connection is made correctly, turning on the power to both devices will display the "Initial.." message, then the "No Disk" message. (The following example assumes that a removable SCSI drive is connected. If a stationary disk is connected, the [UnFormat ?] message (see the next page) appears instead of the [No Disk] message.)
This message means that a disk has not been inserted into the SCSI drive. Follow the steps on the next page to set up and format the disk so that you can use it to record and play back.

<Note>
If the "No Drive !" message and the "Initial.." message flash alternately on the display when you turn on the power, the FD-4 cannot recognize the SCSI drive. Check to see whether all connections are made correctly, that the power to the SCSI drive is turned on, and that the cable is not defective.

5

Formatting a new disk

Follow the procedure below to format a new disk.
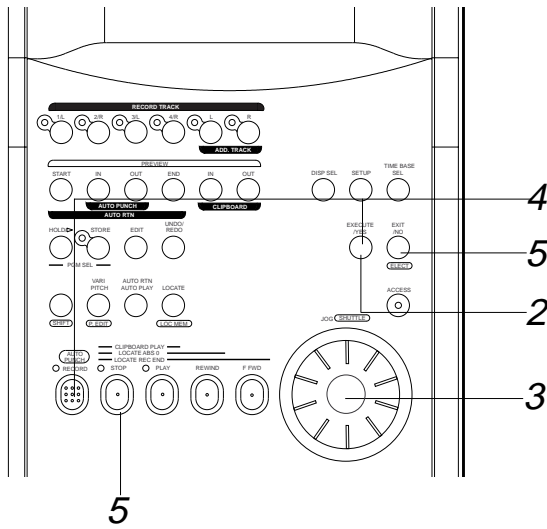
1. **Insert a disk into the SCSI drive.**

If you insert an unformatted disk or a disk in an inappropriate formats, the FD-4 recognizes that the disk is "unformatted," displays the "Unformat!" message, then automatically enters SETUP mode, and displays the "Format ?" menu.

At this time, the ID number of the connected SCSI drive will appear and [SURE ?] will blink on the display. (In the following example, the FD-4 recognizes that the ID number of the connected SCSI drive is set to [ID 2].)

Flashing

2. **Press the EXECUTE/YES key.**

The FD-4 displays [Pls Wait !], then immediately displays the recording mode menu, with [Normal] and [SURE ?] flashing as shown below.

Flashing
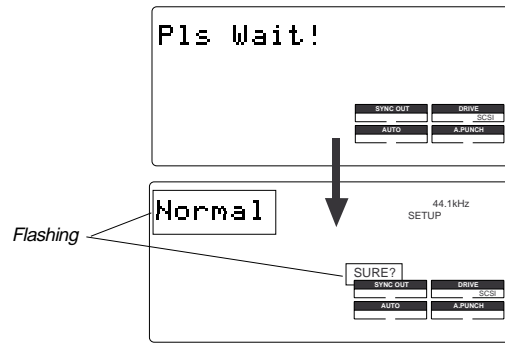
There are three recording modes (see the following table). In most cases, select [Normal] (Normal mode) ,which is currently displayed. If you prefer higher quality recording (CD-level quality with a sampling rate of 44.1kHz), select "Mastering mode 1" or "Mastering mode 2." Note that available recording time is shorter in Mastering mode 1 and 2.
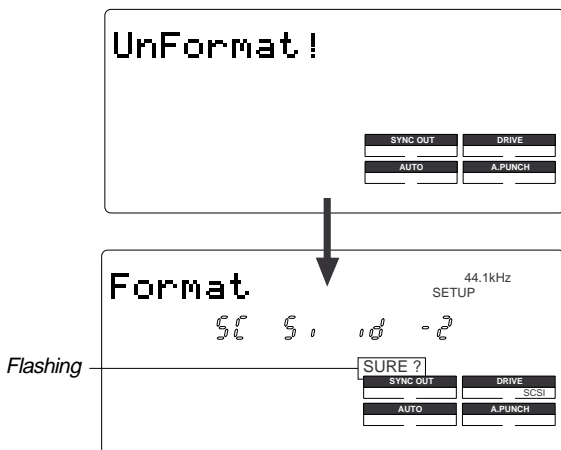
<Recording mode>

Recording mode	*Sampling rate*	*Quantization*	*Available recording track in real-time*
Normal mode	*32 kHz*	*DAC **	*4 Real tracks + 2 Additional tracks*
Mastering mode 1	*44.1 kHz*	*16-bit linear*	*4 Real tracks + 2 Additional tracks*
Mastering mode 2	*44.1 kHz*	*16-bit linear*	*4 Real tracks (See Notes below.)*

(*) Digital Audio Acoustic Coding.

<Notes>

* You can record only to Real tracks on a disk formatted in Mastering mode 2.

However, you can perform operations other than recording, such as "Track Exchange," using Additional tracks.

For more information, refer to the "Real track and Additional track" section of the "Before Starting" chapter.

* After you record data on a disk formatted in Normal mode, if you mix down the data digitally to DAT, copy the data, or save or load the song data, select "32kHz/SP mode" as a recording mode for the DAT recorder.

* The FD-4 employs a recording format called "FDMS-3" (Fostex Disk Management System-3), which is also used on the Fostex digital master recorder D-160.

Therefore, the D-160 can play back data that was recorded in Mastering mode 1 or 2 on the FD-4. However, the D-160 can not play back data recorded in Normal mode.

3. Turn the JOG dial to select a recording mode.

Turning the JOG dial counter-clockwise (to the left) will display the recording mode indication in the order of [Normal] -> [Master 2] -> [Master 1].
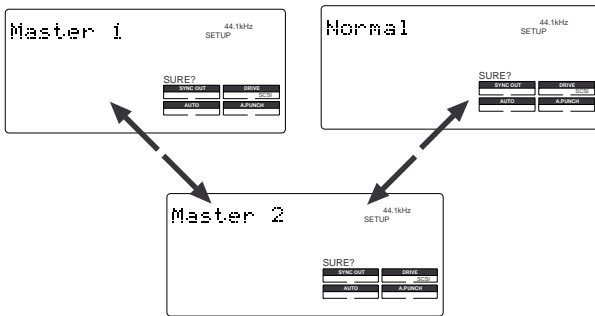
4. Press the EXECUTE/YES key while holding down the RECORD button.

The [Format ?] message lights up on the display, and a negative value of the unformatted disk area size (Megabytes) will count down as the format operation progresses. All keys will be disabled during the format operation. Please wait a while.

When formatting is complete, [COMPLETED !] lights up on the display, and the FD-4 stops accessing the SCSI disk. The display looks something like below. (If you have selected Mastering mode 1 or 2, [44.1kHz] lights up on the display.)

5. Press the STOP button or the EXIT/NO key.

Press the STOP button or the EXIT/NO key to exit SETUP mode. The Time Base will change to ABS (ABS 0 appears). Formatting will automatically create one Program on the disk (PGM 01), and display its title (#0001). (This title also appears whenever you insert a formatted disk in the SCSI drive.) The display indicators mean the following:

"Temporary title" for Program 1 (See Note 1.)

Program number (See Note 2.)

ABS is selected as Time Base. (See Note 4.)

ABS time 0

The default setting of SYNC OUT (See Note 5.)

The current drive is a SCSI drive.

<Note 1>

When you format a disk, a Program is named "temporary title." You can edit this title as you wish. For more information, refer to "Editing a Program title" of the "Handling Programs" chapter on page 39.

<Note 2>

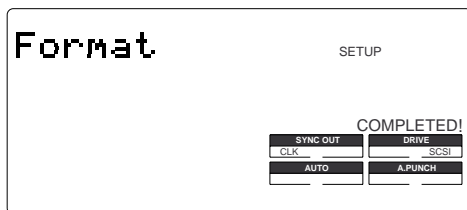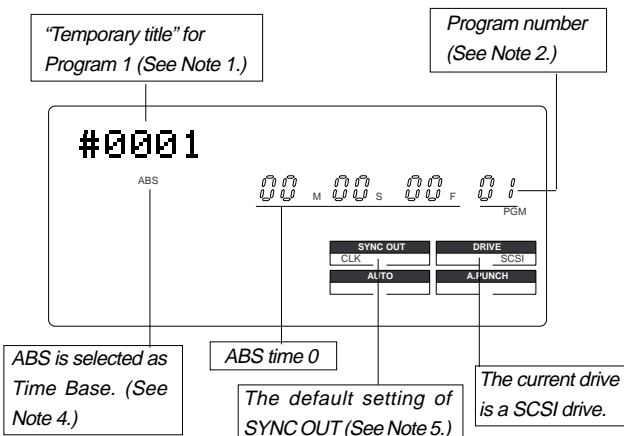*Formatting will automatically create one Program on the disk. You can create up to 99 Programs, depending on the available disk space. You can also select a desired Program from multiple Programs. For more information, refer to "Managing songs by Program Change function" in the "Before Starting" chapter on page 25. For more information, refer to "Using a Program Change function" on page 37.*

<Note 3>

If you format a disk in Master 1 or Master 2 recording mode, the sampling rate indicator [44.1kHz] lights up. If you select Normal mode, nothing lights up.

<Note 4>

After formatting the disk, the FD-4 automatically selects ABS as Time Base. You can select ABS, MTC time, or BAR/BEAT/CLK as the Time Base. For more information, refer to the "Display Section" in the "Names and Functions" chapter on page 21.

<Note 5>

The indicated "SYNC OUT" setting ([CLK]) means that clock signals (MIDI clock signal and Song Position Pointer) are output as a sync signal from the FD-4's MIDI OUT connector to an external MIDI device. You may change this setting, if necessary, when you are using the FD-4 to sync with an external MIDI device. For more information, refer to "SYNC OUT setting" in the "Changing the Initial Settings" chapter on page 86.

Now that you completed connecting the SCSI drive and formatting the disk, you can start recording and playing back.

Removing a disk from the SCSI drive

If a removable disk is inside the SCSI drive, you cannot eject it using the eject switch on the drive. Follow the procedure below using the key on the control panel of the FD-4 to eject the disk.

1. Press the EXIT/NO key while holding down the SHIFT key.

The disk is ejected from the SCSI drive and [No Disk] appears on the display.
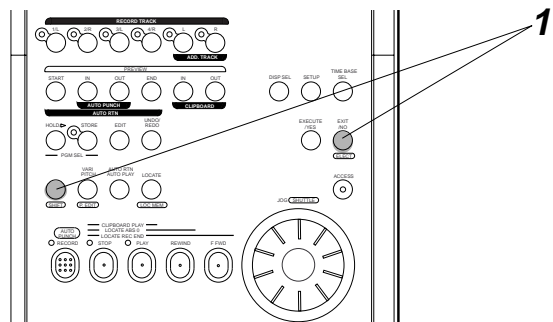
Formatting the disk again

If you wish to change the recording mode of a formatted disk or to re-format a used disk, you need to set the FD-4 to SETUP mode and use the [Format ?] menu.

In the following procedure, we assume that the power to the FD-4 and the SCSI drive is already turned on.

1. Insert a disk into the SCSI drive.

When you insert a formatted disk into the SCSI drive, the FD-4 displays the recording mode of the disk (Master 1, Master 2, or Normal) and the type of Time Base that was used previously.
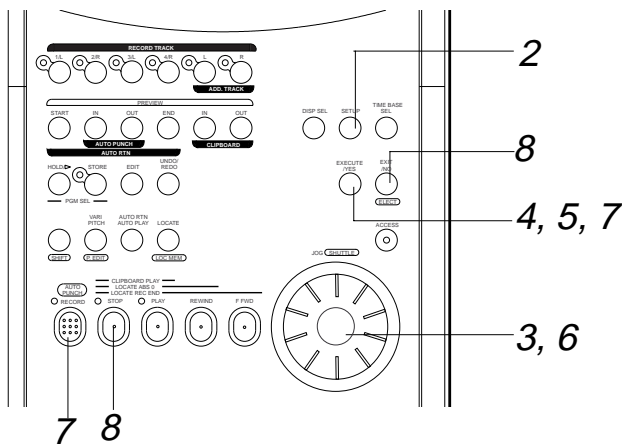
2. Press the SETUP key.

The FD-4 enters SETUP mode and displays the first layer, in which you can select the desired SETUP menu.

If the FD-4 enters SETUP mode after you format a disk or turn on the power and insert a disk, the FD-4 displays the first layer of the [Sign. Set ?] (signature setting) menu as shown below. ("?" flashes.)

Otherwise, the FD-4 displays the first layer of the menu that was shown before the FD-4 exited SETUP mode.
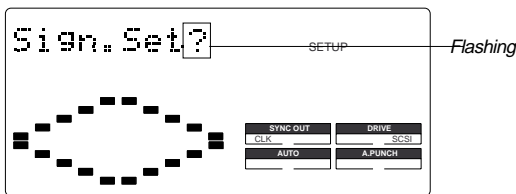
3. Turn the JOG dial and select [Format ?].

You can also use the HOLD/> key, REWIND button, or F FWD button to select the [Format ?] menu.
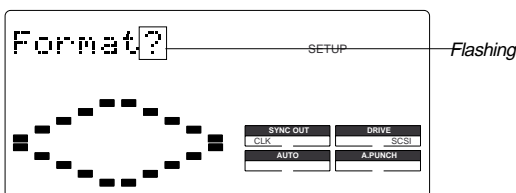
4. Press the EXECUTE/YES key.

As explained in the "Formatting a new disk" section, the ID number of the connected SCSI drive appears and [SURE ?] flashes on the display.
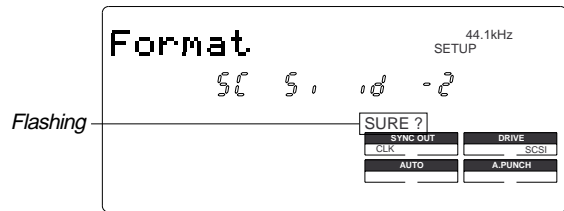
5. Press the EXECUTE/YES key again.

[Pls Wait !] appears momentarily, then the recording mode selection display appears.
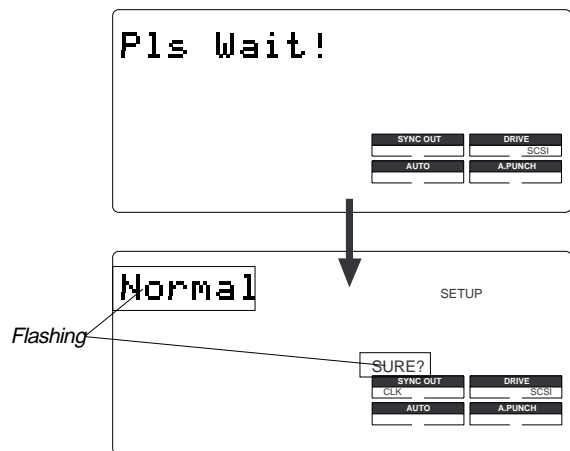
6. Use the JOG dial to select a recording mode.

Refer to the "Formatting a new disk" section for more information on recording modes.

7. Press the EXECUTE/YES key while holding down the RECORD button.

The FD-4 starts formatting the disk in selected recording mode. Wait a while. When formatting is complete, [COMPLETED !] lights up on the display, and the FD-4 stops accessing the disk.
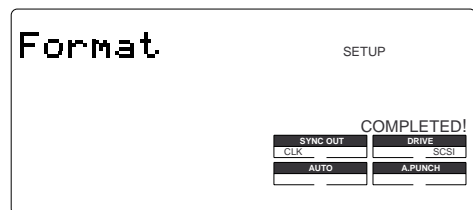
8. Press the STOP button or the EXIT/NO key.

The FD-4 exits SETUP mode and displays ABS 0.

Names and Functions

Rear panel
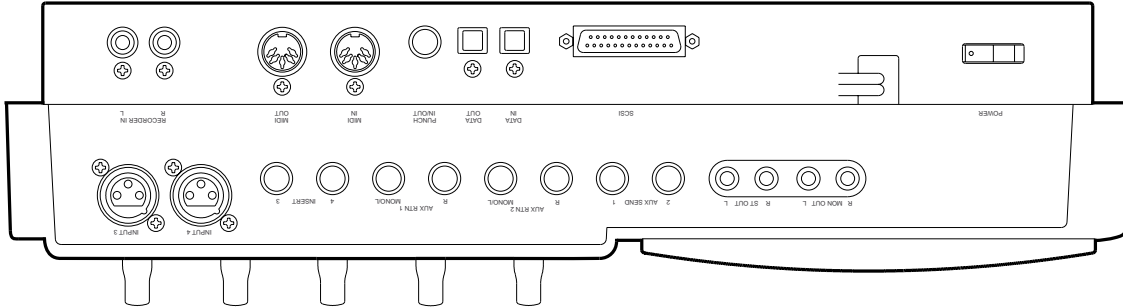
Control panel
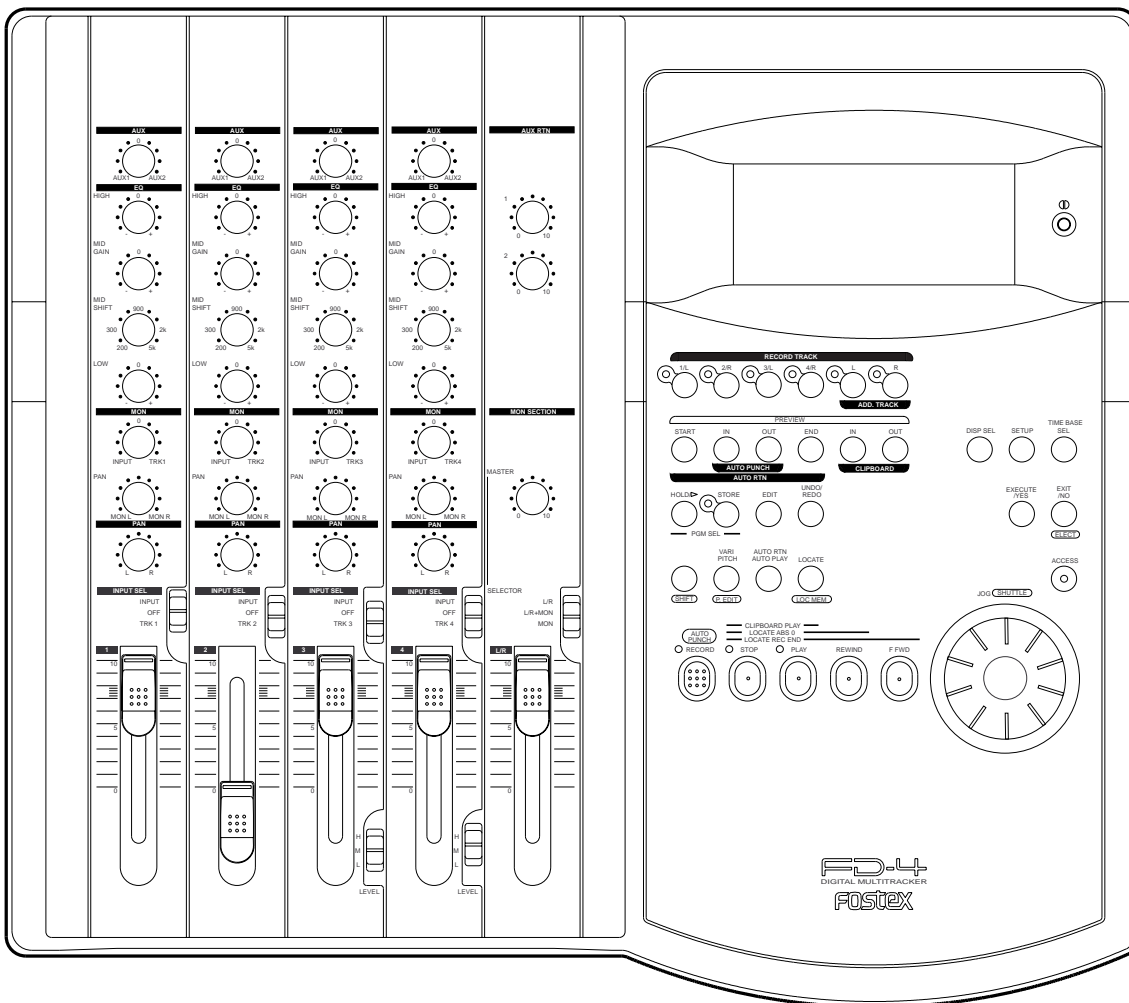
Front panel
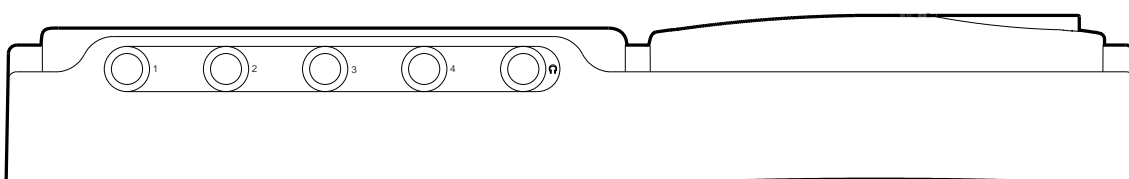
Control Panel (Mixer Section) *Letters in brackets ([ ]) are labels on the panel.*
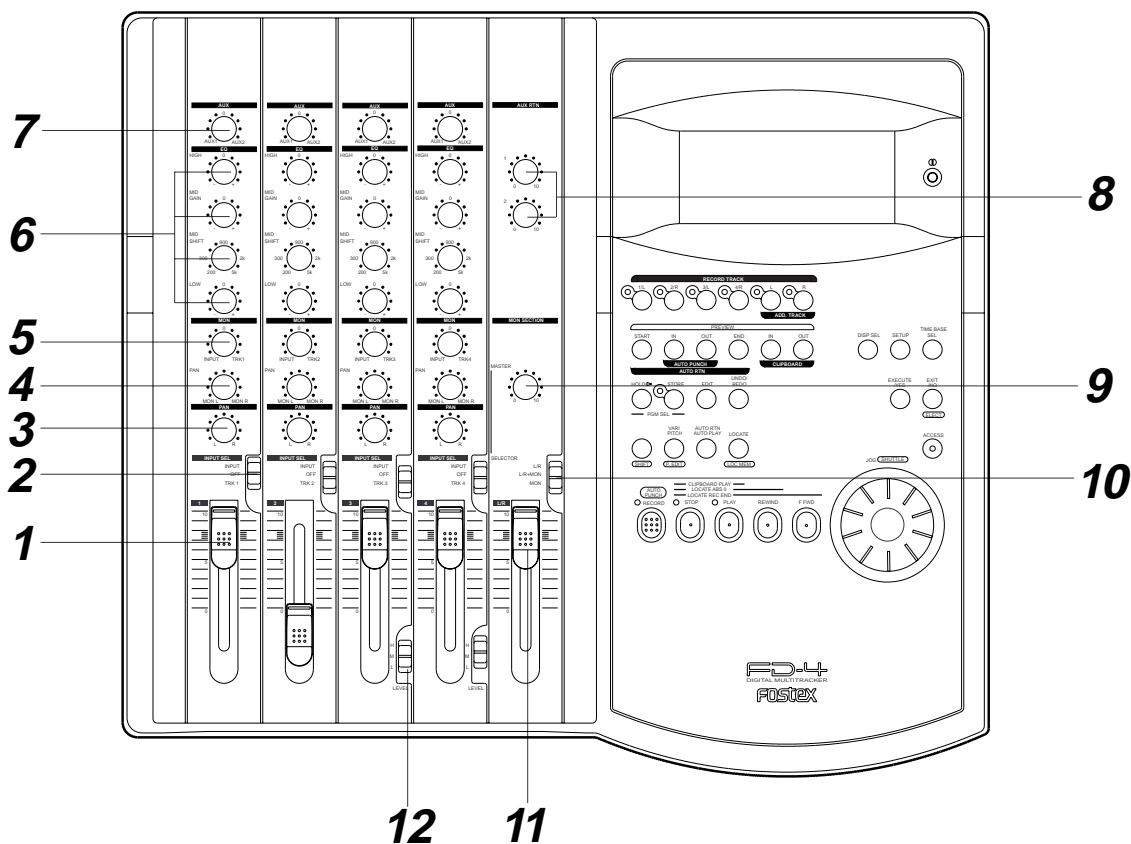
1. Input faders [1-4]

These faders allow you to control the input level of signals selected via the INPUT SEL switch [2] (that is, the input signals from the INPUT jacks or the recorder output signals). Nominal level is obtained at fader position of 7-8, and the fader achieves approximately 6dB of gain at the 10 position.

2. Input select switches [INPUT SEL (INPUT/OFF/TRK)]

These switches allow you to select signals to be routed to the input faders. The following options are available:

"INPUT"	*Signals from instruments and microphones connected to the INPUT jacks are routed to the channel faders.*
"OFF"	*The switch is turned off. No signals are routed.*
"TRK"	*Recorder output signals (TRK 1-4) are routed to the channel faders, with Track 1 output routed to Channel 1, Track 2 routed to channel 2, etc.*

3. Panpot knobs [PAN (L/R)]

Panpot knobs have the following two functions:

1	*During recording, you can use them to pan channel signals of the sound sources connected to the INPUT jacks to Tracks 1-4 (or Tracks 5 and 6). Turn the knobs all the way to L or R. If you turn the knob to L, the corresponding channel signal is recorded to Tracks 1 and 3 (and 5). If you turn the knob to R, the corresponding channel signal is recorded to Tracks 2 and 4 (and 6). (Tracks 5 and 6 are available only in Mastering mode 1 and Normal mode.)*
2	*For mixdown, use these knobs to determine the stereo image of the playback sound of Tracks 1-4. Turn the knobs to the desired position.*

4. Monitor panpot knobs [PAN (MON L/MON R)]

These knobs allow you to adjust the balance of the signals that were level-adjusted for the level via the MON knob [5] before you send them to the monitor section L and R. The following options are available.

"MON L"	*The signal routed to the MON knob will be sent only to monitor section "L."*
"Center"	*The signal routed to the MON knob will be sent to both monitor section "R" and "L" at the same level.*
"MON R"	*The signal routed to the MON knob will be sent only to monitor section "R."*

5. Monitor level control knob [MON (INPUT/TRK)]

These knobs are used to select signals sent to monitor sections L and R, and to adjust the level of those signals. The following options are available.

"TRK"	The recorder output signals are sent to the monitor section. As you turn the knob to the right, the signal level becomes higher.
"0"	No signals are sent.
"INPUT"	Pre-fader signals* from the INPUT jacks are sent to the monitor section. As you turn the knob to the left, the signal level becomes higher.

* Pre-fader signal: Input signals before reaching the input faders

6. Equalizer control knobs [EQ (HIGH/MID/LOW)]

These knobs are used to adjust tonal quality of the signals routed to the channel faders. The following settings are available.

|	
"HIGH"	Signals with a frequency of 12kHz will be boosted/cut up to +/-15dB.
"MID GAIN"	The frequency range selected via the MID SHIFT knob (200Hz-5kHz) will be boosted/cut up to +/-15dB.
"MID SHIFT"	Use this setting to select a frequency range to boost or cut using the MID GAIN knob. You can set the frequency in the range of 200Hz-5kHz.
"LOW"	Signals with a frequency of 80Hz will be boosted/cut up to +/-15dB.
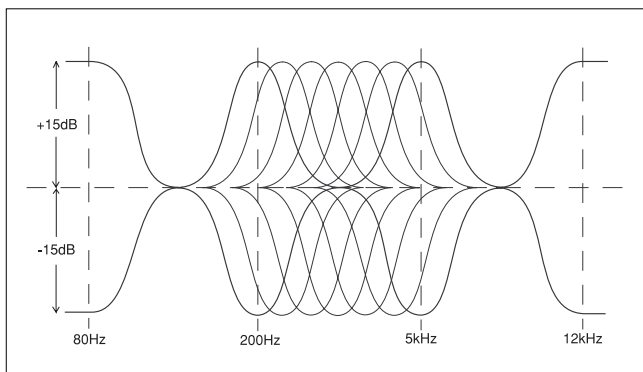
7. AUX send knobs [AUX (AUX 1/AUX 2)]

These knobs are used to select whether the channel fader signals are output from the AUX SEND 1 jack or AUX SEND 2 jack, and to adjust the level of those signals. That is, the signals selected and adjusted via these knobs will be sent from the AUX SEND jack 1 or 2 to an external device, such as an effect unit.

"AUX 1"	Signals are sent to the AUX SEND jack 1. Turning the knob to the left will increase the output level.
"0"	No signals are sent.
"AUX 2"	Signals are sent to the AUX SEND jack 2. Turning the knob to the right will increase the output level.

8. AUX return knobs [AUX RTN (1, 2)]

These knobs allow you to adjust the input level of processed signals from a connected external effect unit.

AUX RTN 1	These knobs enable you to adjust the input level of processed signals from an external effect unit connected to the AUX RTN jack 1. The level of both signals input to AUX RTN 1 L/MONO and R will be adjusted equally.
AUX RTN 2	These knobs enable you to adjust the input level of processed signals from an external effect unit connected to the AUX RTN jack 2. The level of both signals input to AUX RTN 2 L/MONO and R will be adjusted equally.

9. Monitor master knob [MONITOR SECTION (MASTER)]

This knob allows you to adjust the final level of monitoring signals, that is, the headphone volume and the level of signals output from the MON OUT L/R jacks.

10. Monitor select switch
[SELECTOR (L/R, L/R+MON, MON)]

This switch allows you to select a signal to be routed to the MON OUT L/R and PHONES jacks. The following options are available.

"L/R"	This selects signals output from the STEREO OUT L/R jacks (stereo bus L/R signals).
"L/R+MON"	This selects both signals output from the STEREO OUT L/R jacks and signals routed to channel monitor buses L/R.
"MON"	This selects signals routed to channel monitor buses L/R.

11. Master fader [L/R]

The master fader allows you to adjust the level of signals output from the STEREO OUT L/R jacks (stereo bus L/R output signal). The fader setting will affect the level of recorder input signals.

12. Input level switches [LEVEL (H/M/L)]

Set these switches to appropriate positions according to the output level of the devices connected to input jacks 3 and 4 (the phone jacks on the front panel or the XLR connector on the rear panel).
Connect a microphone or other low-output device to input jacks 3 and 4 (on the front panel or rear panel) that have the input level switch. Refer to the example below.

<Example>	
"L (-50dB)"	Set the switch to this position when you connect a microphone.
"M (-30dB)"	Set the switch to this position when you connect a single-coil or humbucking type electric guitar or bass.
"H (-10dB)"	Set the switch to this position when you connect a keyboard or drum machine.

Control panel (Recorder Section)
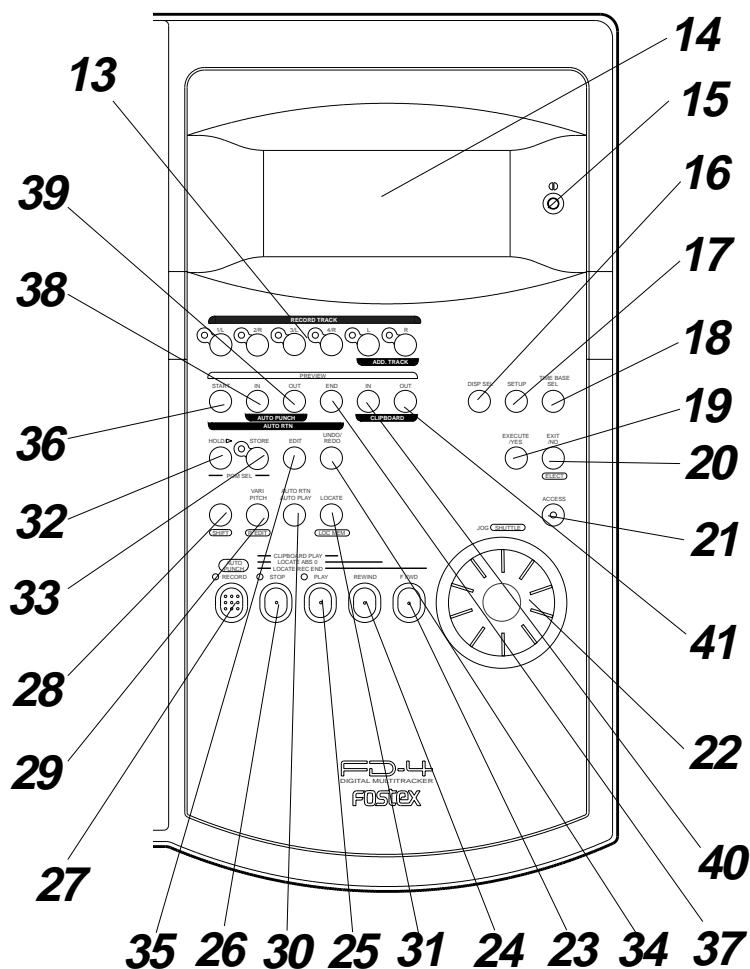
13. Record track select keys
[RECORD TRACK (1/L, 2/R, 3/L, 4/R, L, R)]

These keys enable you to select "SAFE" or "READY" for a recording track. Pressing the key once will cause the corresponding track to enter READY mode, and the LED of the key you pressed to flash. Pressing the key again will cause the corresponding track to enter "SAFE" mode, and the LED to turn off.

The indication; 1/L, 2/R, 3/L, 4/R are for Real tracks, and L and R are for Additional tracks 5 and 6.

When you start recording on a track in READY mode, the flashing LED remains lit steadily.

If you press only the RECORD button with a track in READY mode, you can monitor the signal input to the READY track so that you can adjust the recording level. To cancel this input monitoring status, press the RECORD button again. (This causes the FD-4 to enter playback monitoring mode.) You can also use these select keys to select tracks to edit for Copy & Paste, Move & Paste, Erase, etc.

> *<Note>*
> *You can record on Additional tracks in real-time only when recording mode is "Normal mode" or "Mastering mode 1."*

> *Refer to page 26 for more information on playback monitoring and input monitoring.*
>
> *Refer to page 28 for more information on using the RECORD TRACK select keys.*

14. LCD
The LCD indicates signal levels and various settings.

> *Refer to "Display Section" on page 20 for more information on the display.*

15. Contrast adjustment knob
Use this knob to adjust the contrast of the LCD. Turning this knob clockwise will increase the contrast, and turning it counter-clockwise will decrease the contrast.

> *<Note>*
> *The display is not illegible if you leave the knob counter-clockwise all the way.*

16. Display indication select key

Pressing this key each time will change the display indication as follows:


```
Currently-selected Time Base indication *1
            ↓
Currently-selected Time Base REMAIN indication *2
            ↓
External MTC IN indication *3
```

*1 The current position in terms of Time Base selected via the TIME BASE SEL key appears. ABS time, MTC time, or BAR/BEAT/CLK is used.

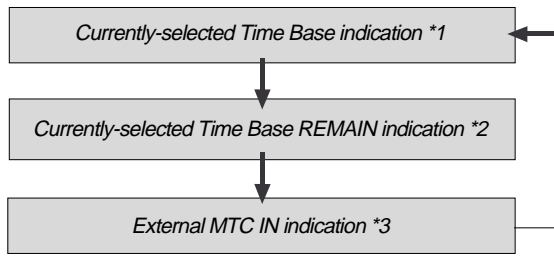**2 Available recording time and space on the current SCSI disk appears. Time indication uses the currently-selected Time Base (ABS, MTC, or BAR/BEAT/CLK). The space indication uses MB (Megabyte). (The values are based on mono track recording.)*

*3 MTC being input from an external MIDI device to the FD-4 appears. If no MTC is input, the display shows "00H 00M 00S 00F."
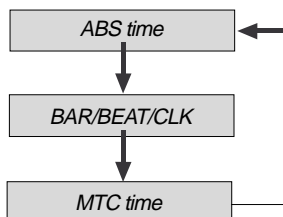
17. Setup key [SETUP]

Press this key to set the FD-4 in SETUP mode to execute various menus. This key works only when the FD-4 is stopped.

Refer to page 81 for more information on SETUP mode.

18. Time Base select key

Pressing this key repeatedly will switch Time Base as follows:

```
ABS time
   ↓
BAR/BEAT/CLK
   ↓
MTC time
```

19. Execute/Yes key [EXECUTE/YES]

Press this key to confirm the edit operations, such as Copy & Paste, Move & Paste, and Erase, and to set the parameters of SETUP menus.

Refer to pages 56 and 81 for more information on the operation of this key.

20. Exit/No key [EXIT/NO/ EJECT]

This key is the counterpart of the EXECUTE/YES key.
Press this key to cancel an operation. When you use a removable SCSI disk, pressing this key while holding down the SHIFT key will eject the disk.

Refer to pages 7, 56 and 81 for more information on the operation of this key.

21. Access LED [ACCESS]

This LED lights up or flashes when data is being written to or read from an external SCSI drive disk.

<Note>
Do not turn off the power to the unit when this LED lights up or flashes. Otherwise you may lose data on the hard disk connected to the unit.

22. JOG dial [JOG/ SHUTTLE]

When the FD-4 is stopped, use the JOG dial to perform a jog operation (forward or reverse) for audio scrubbing without pitch change. You can also use this dial to increase and decrease the numeric values or input alphabetical characters in edit mode.

Rotating the JOG dial while holding down the SHIFT key will enable you to perform the shuttle operation with different speeds ranging from normal speed to 64-times speed.

Refer to page 62 for more information on the cue/review function and the shuttle function.

23. Fast forward button [F FWD]

Pressing this button while the FD-4 is stopped will start fast forwarding at low speed at first, then gradually accelerate to 30-times speed. If you press this button while the FD-4 is playing, cueing (fast forwarding with sound) starts at three-time speed. Pressing this button while holding down the STOP button will activate the "LOCATE REC END" operation, which will locate the end point of the recording on the Real track in the current Program. You can also use this button to locate an edit point in edit mode.

Refer to the "STOP button" section and page 66 for more information on the "LOCATE ABS 0" operation.

24. Rewind button [REWIND]

Pressing this button while the FD-4 is stopped will start rewinding at low speed at first, then gradually increase the speed up to 30-times speed. If you press this button while the FD-4 is playing, cueing (rewinding with sound) starts at three-times speed. Pressing this button while holding down the STOP button will activate the "LOCATE ABS 0" operation, which will locate the beginning of the current Program (ABS time: 00m 00s 00f). You can also use this button to locate an edit point in edit mode.

Refer to the "STOP button" section and page 66 for more information on the "LOCATE ABS 0" operation.

13

25. Play button [PLAY]

Pressing this button causes the recorder section to play back. Pressing this button while holding down the RECORD button when a track is in READY mode will cause the FD-4 to start recording on the READY track.

Pressing only this button during the recording operation will punch-out (cancel) recording. Pressing this button while holding down the STOP button will cause the "CLIPBOARD PLAY" operation to start.

> * Refer to the "STOP button" section and page 57 for more information on the "CLIPBOARD PLAY" operation.
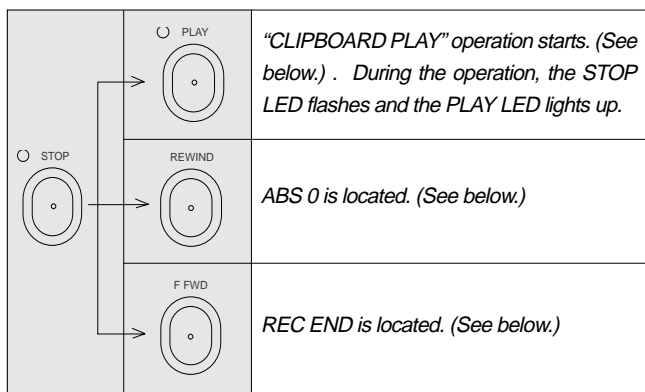>
> * Refer to page 48 for more information on the Punch Out operation using the PLAY button.

26. Stop button [STOP]

Pressing this button during the playback, recording, fast forward, or rewind operation will stop the recorder transport operation. Pressing this button while the FD-4 is in SETUP mode will cause the unit to exit SETUP mode.

Pressing the PLAY, REWIND, or F FWD button while holding down the STOP button will cause the following operations to start.

If you wish to rehearse the Manual Punch In/Out operation using the foot switch, press the foot switch while holding down this button to enter Rehearsal mode.

PLAY	"CLIPBOARD PLAY" operation starts. (See below.) . During the operation, the STOP LED flashes and the PLAY LED lights up.
STOP REWIND	ABS 0 is located. (See below.)
F FWD	REC END is located. (See below.)

* CLIPBOARD PLAY operation

The CLIPBOARD PLAY operation plays back data on the clipboard. (If the clipboard does not contain any data, the display shows [Void Data !] and nothing happens.). During this operation, the display indicates the type of the data ("Copy Clip" for copy data, and "Move Clip" for move data), and the duration. The indicator of the copy source or move source track flashes. In this way, you will know which track the currently playing data comes from and why the data is on the clipboard.

* ABS 0 locate operation

This operation locates the beginning of the current Program (ABS time: 00m 00s 00f).

* REC END locate operation

This operation locates the end of the audio recording (REC END) on the Real track in the current Program.

14

> * Refer to pages 57 and 66 for more information on these operations.
>
> * Refer to page 46 for more information on the Punch In/Out operation using a foot switch.

27. Record button [RECORD/ AUTO PUNCH]

Pressing the PLAY button while holding down this button will cause the FD-4 to start recording on any READY tracks. At this time, the flashing LED of the RECORD TRACK select key for the corresponding READY track lights up steadily, and the PLAY LED and the RECORD LED light up.

If you press only the RECORD button, a READY Real track enters input monitoring mode (The RECORD LED flashes.). At this time, pressing the RECORD button again will cancel the input monitoring mode, and the track will return to playback monitoring mode.

Pressing the RECORD button while holding down the SHIFT key will toggle between AUTO PUNCH on and off.

> * Refer to page 28 for more information on recording.
>
> * Refer to page 43 for more information on AUTO PUNCH mode.
>
> * Refer to page 26 for more information on input monitoring and playback monitoring.

28. Shift key [SHIFT]

Press a key, button, or turn the dial while holding down the SHIFT key to activate the following "shift-invoked" functions.

> You can audition the data at edit points (locate points) stored in the memory keys. (For more information, refer to "Preview function" on page 69.)

> The removable SCSI disk is ejected. (Refer to "Recording Preparation" on page 7.)

> Auto Punch mode is turned on and off. (Refer to "Punch In/Out" on page 43.)

> You can edit Vari Pitch data. (Refer to "Playback in Vari Pitch mode" on page 40 for more information.)

> You can edit locate data stored in the LOCATE key. (Refer to "Storing an edit point (locate point)" on page 63 for more information.

> The SHUTTLE dial function is activated. (Refer to "JOG dial/SHUTTLE dial cueing" on page 62 for more information.)

29.Vari Pitch key [VARI PITCH/ P.EDIT]

This key toggles Vari Pitch mode on and off. When Vari Pitch mode is on, the "VARI PITCH" indicator lights up on the display, and the FD-4 plays using the current pitch data. Pressing the VARI PITCH key while holding down the SHIFT key will cause the FD-4 to enter edit mode, in which you can change pitch data in real-time.

To exit edit mode, press the EXIT/NO key.

> *Refer to page 40 for more information on playing with Vari Pitch and editing Vari Pitch data.*

30.Auto Return/Auto Play mode on/off key [AUTO RTN/AUTO PLAY]

Use this key to turn on and off Auto Return mode, Auto Play mode, and Auto Repeat mode. Each time you press the key, the mode will change and the following indication will be displayed.

AUTO	Auto Return/Play mode is OFF. (No indication)
AUTO PLAY	Auto Play mode is ON. ("PLAY" lights up.)
AUTO RTN	Auto Return mode is ON. ("RTN" lights up.)
AUTO PLAY RTN	Auto Repeat mode is ON. (Both "PLAY" and "RTN" light up.)

* Auto Play mode
The FD-4 locates a point and starts playing from the locate point.

* Auto Return mode
When the AUTO RTN END point is reached while the recorder section is playing, the FD-4 automatically locates the AUTO RTN START point.
This mode is effective only if the AUTO RTN START point and the AUTO RTN END point have already been specified.

> <Note>
> The Auto Return function is enabled only when the FD-4 is playing. While the FD-4 is recording, the FD-4 will not locate the START point after it reaches the AUTO RTN END point.

*Auto Repeat mode
This mode is effective only when Auto Play mode and Auto Return mode are turned on. The FD-4 will play the part between the AUTO RTN START point and the AUTO RTN END point repeatedly. This mode is also effective only if the AUTO RTN START point and the AUTO RTN END point have already been specified.

> *Refer to page 66 for more information on each mode.*

31. Locate key [LOCATE/ LOC MEM]

Use this key to locate a point. Press a key that stores locate points, such as the CLIPBOARD IN/OUT keys, AUTO PUNCH IN/OUT keys, and AUTO RTN START/END keys, then press the LOCATE key to locate a point stored in the corresponding key.

The last locate data will replace the data stored in the LOCATE key. Therefore, pressing only the LOCATE key will locate the last locate point. If you have set Auto Play mode, the FD-4 will start playing from the located point.

Pressing the LOCATE key while holding down the SHIFT key will cause the FD-4 to enter edit mode, in which you can edit data stored in the LOCATE key.

> *Refer to page 66 for more information on the Locate function.*
>
> *Refer to page 63 for more information on editing data using the LOCATE key.*
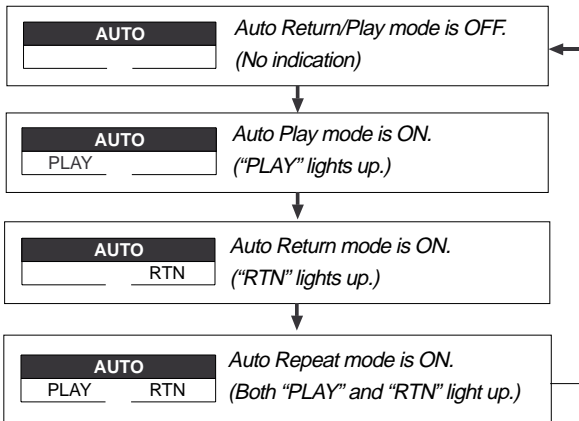
32. Hold/> key [HOLD/>]

Pressing the HOLD/> key while the recorder is operating will cause the FD-4 to capture the time at which you pressed the key (or bar/beat/clock value), display it, then enter edit mode. (If you press the HOLD/> key while the recorder section is stopped, the FD-4 enters edit mode directly.)

To cancel edit mode, press the STOP button, DISP SEL key, or the EXIT/NO key.

In edit mode, you can use this key to select a digit of the value to edit (edit point). You can select a digit which flashes on the display) in the following order.

> **ABS or MTC is used as Time Base:**
> First, "S" (second) flashes. Each time you press the HOLD/> key, the flashing characters change in this order: F -> SF -> H -> M-> S.

> **BAR/BEAT/CLK is used as Time Base:**
> First, "BAR" flashes. Each time you press the HOLD/> key, the flashing indicator changes in this order: ♩ -> CLK -> BAR.

If you press the HOLD/> key and the STORE key simultaneously while the recorder is stopped, the FD-4 enters Program Select mode, in which you can select a Program or set up a new Program.

> *Refer to page 63 for more information on editing memory.*
>
> *Refer to page 37 for more information on the Program Select function.*

33. Store key [STORE]

This key is used to store time values (or bar/beat/clock values) in the memory keys. Press this key, then one of the following keys to store data indicated on the display (including edit data) in the corresponding memory key. If you press the STORE key and the HOLD/> key simultaneously while the recorder is stopped, the FD-4 enters Program Select mode, in which you can select a Program or set up a new Program.

Press the STORE key, and press the CLIPBOARD IN key.
The CLIPBOARD IN point is stored.
This data can be used as locate data.

Press the STORE key, and press the CLIPBOARD OUT key.
The CLIPBOARD OUT point is stored.
This data can be used as locate data.

Press the STORE key, and press the AUTO PUNCH IN key.
The AUTO PUNCH IN point is stored.
This data can be used as locate data.

Press the STORE key, and press the AUTO PUNCH OUT key.
The AUTO PUNCH OUT point is stored.
This data can be used as locate data.

Press the STORE key, and press the AUTO RTN START key.
The AUTO RTN START point is stored.
This data can be used as locate data.

Press the STORE key, and press the AUTO RTN END key.
The AUTO RTN END point is stored.
This data can be used as locate data.

To cancel the store operation after you have pressed this key, press the EXIT/NO key.

* Refer to page 66 for more information on the Locate function.

* Refer to page 63 for more information on storing edit points (locate points).

* Refer to page 37 for more information on the Program Select function.

34. Undo/Redo key [UNDO/REDO]

If you wish to restore the status prior to editing, recording, or performing a punch in/out take, press the UNDO/REDO key. Pressing the UNDO/REDO key again will restore the status obtained before you pressed the [UNDO/REDO] key the first time.

When you undo the operation, [Undo!] appears. When you redo the operation, [Redo!] appears on the display for a short moment.

<Note>
The Undo/Redo function is enabled only when the FD-4 is stopped.

Refer to pages 30, 31, 33, 46, 48, 50, 58 and 60 for more information on the Undo/Redo function.

35. Edit key [EDIT]

Pressing this key causes the FD-4 to enter menu selection mode for editing tracks, and displays the title of the menu you used last time. Press this key repeatedly or turn the JOG dial to select a menu. The edit menus appear in the following order. To execute a desired menu, select the menu, then press the EXECUTE/YES key.
To exit selection mode, press the EXIT/NO key.

Copy Clip
Move Clip
Copy Paste (or Move Paste *)
Erase
TRK Exchange
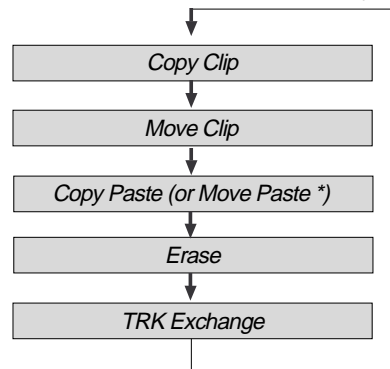
(*) After you execute Copy Clip, "Copy Paste" appears. After you execute Move Clip, "Move Paste" appears.

* Refer to page 56 for more information on Copy & Paste and Move & Paste.

* Refer to page 58 for more information on Erase.

* Refer to page 60 for more information on Track Exchange.

36. Auto Return Start key
[AUTO RTN START/ PREVIEW]

Use this key to store the start point (AUTO RTN START point) for the Auto Return function and the Auto Repeat function. When you press this key, the FD-4 displays the currently-stored data, which you can edit. After editing the data, press the STORE key, then the AUTO RTN START/PREVIEW key to store the edited data in this key. The stored data can be used as locate data.

This memory is reset to the factory default value when you turn off the power to the FD-4.

If you press the AUTO RTN START/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-in part at the stored AUTO RTN START point.

* Refer to page 63 for more information on setting and editing the AUTO RTN START point.

* Refer to page 66 for more information on the Auto Return and Auto Repeat functions.

* Refer to page 69 for more information on previewing data at the AUTO RTN START point.

37. Auto Return End key [AUTO RTN END/ PREVIEW]

Use this key to store the start point (AUTO RTN END point) for the Auto Return function and the Auto Repeat function. When you press this key, the FD-4 displays currently-stored data, which you can edit. After editing the data, press the STORE key, then press the AUTO RTN END/PREVIEW key to store the edited data in this key. The stored data can be used as locate data.

If you press the AUTO RTN END/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-out part at the stored AUTO RTN END point.

> *Refer to page 63 for more information on setting and editing the locate point.*
>
> *Refer to page 66 for more information on the Auto Return and Auto Repeat functions.*
>
> *Refer to page 69 for more information on previewing data at the AUTO RTN END point.*

38. Auto Punch In key [AUTO PUNCH IN/ PREVIEW]

Use this key to store the punch in (recording start) point for the Auto Punch In/Out function The stored data is also used as a paste start point (for Copy & Paste, Move & Paste) and as an erase start point.

When you press this key, the FD-4 displays currently-stored data, which you can edit. After editing the data, press the STORE key, then press the AUTO PUNCH IN/PREVIEW key to store the edited data in this key. The stored data can be used as locate data.

If you press the AUTO PUNCH IN/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-out part at the stored AUTO PUNCH IN point.

> *Refer to page 63 for more information on setting and editing the locate point.*
>
> *Refer to page 43 for more information on the Auto Punch In/ Out functions.*
>
> *Refer to page 69 for more information on previewing data at the AUTO PUNCH IN point.*

39. Auto Punch Out key [AUTO PUNCH OUT/ PREVIEW]

Use this key to store the punch out (recording end) point for the Auto Punch In/Out function The stored data is also used as an erase end point.

When you press this key, the FD-4 displays currently-stored data, which you can edit. After editing the data, press the STORE key, then press the AUTO PUNCH OUT/PREVIEW key to store the edited data in this key.
The stored data can be used as locate data.

If you press the AUTO PUNCH OUT/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-in part at the stored AUTO PUNCH OUT point.

> *Refer to page 63 for more information on setting and editing the locate point.*
>
> *Refer to page 43 for more information on the Auto Punch In/ Out functions.*
>
> *Refer to page 69 for more information on previewing data at the AUTO PUNCH OUT point.*

40. Clipboard In key [CLIPBOARD IN/ PREVIEW]

Use this key to store the start point of audio data to be copied or moved.

When you press this key, the FD-4 displays data currently stored, and you can edit the data. After editing the data, press the STORE key, then press the CLIPBOARD IN/PREVIEW key to store the edited data in this key. The stored data can be used as locate data.

If you press the CLIPBOARD IN/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-in part at the stored CLIPBOARD IN point.

> *Refer to page 63 for more information on setting and editing the locate point.*
>
> *Refer to page 56 for more information on the Copy & Paste/ Move & Paste functions.*
>
> *Refer to page 69 for more information on previewing data at the CLIPBOARD IN point*

41. Clipboard In key [CLIPBOARD OUT/ PREVIEW]

Use this key to store the end point of audio data to be copied or moved.

When you press this key, the FD-4 displays currently-stored data, which you can edit. After editing the data, press the STORE key, then press the CLIPBOARD OUT/PREVIEW key to store the edited data in this key. The stored data can be used as locate data.

If you press the CLIPBOARD OUT/PREVIEW key while holding down the SHIFT key when the recorder is stopped, you can preview the fade-out part at the stored CLIPBOARD OUT point.
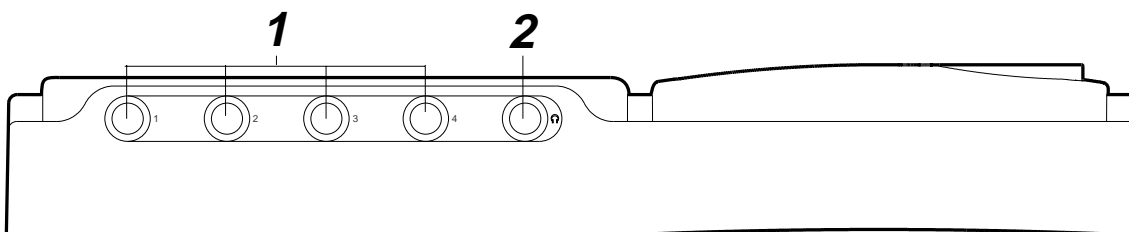
> *Refer to page 63 for more information on setting and editing the locate point.*
>
> *Refer to page 56 for more information on the Copy & Paste/ Move & Paste functions.*
>
> *Refer to page 69 for more information on previewing data at the CLIPBOARD OUT point*

17

Front Panel (Input/Output Section)

1. Input jacks [1, 2, 3, 4] (Connector: phone)

Connect sound sources, such as musical instruments and microphones, here.

Connect a microphone to input jacks 3 and 4, which are equipped with TRIM switches that allow you to switch according to the connected microphone output level. Input channels 3 and 4 also support balanced XLR connectors on the rear panel.
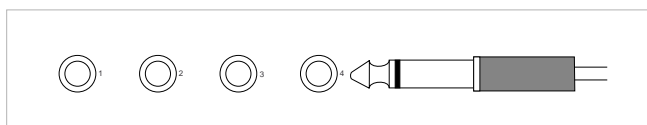
The phone jacks for input channels 3 and 4 on the front panel have priority. If you connect sound sources to these jacks, the balanced XLR jacks for input channels 3 and 4 on the rear panel will be disabled.

2. Headphone jack [PHONES] (Connector: stereo TRS phone)

Connect headphones here. You can adjust the headphone volume using the MASTER knob in the monitor section.
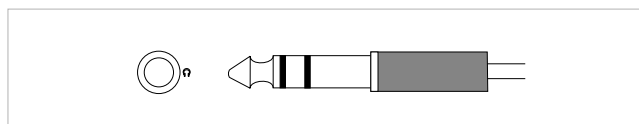
Rear Panel (Input/Output Section)
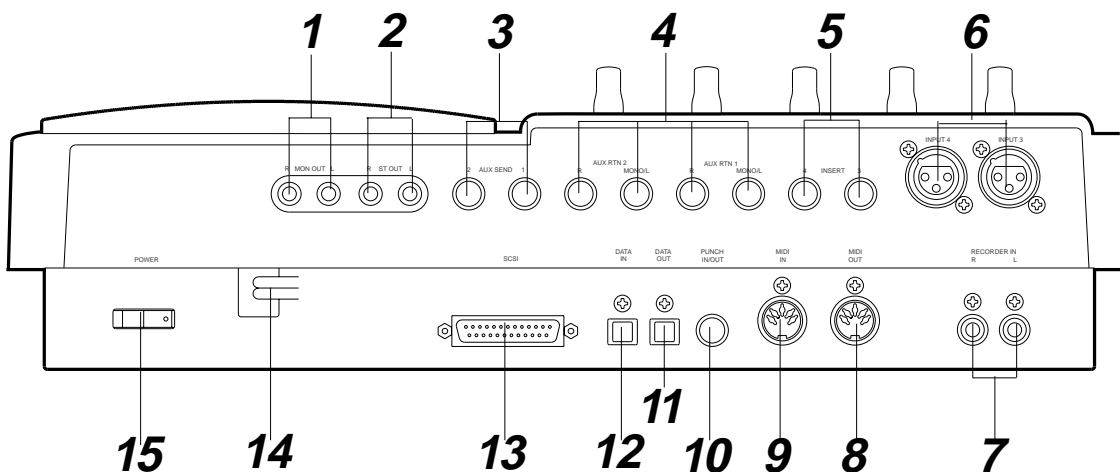
1. Monitor Out jacks [MON OUT L, R] (Connector: RCA pin)

Connect monitoring speakers and amplifier or powered speakers here. These jacks output signals selected by the SELECTOR in the monitor section (L/R, L/R+MON, or MON). Use the MASTER knob in the monitor section to adjust the output level.
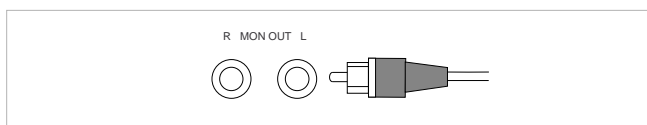
2. Stereo Out jacks [ST. OUT L, R] (Connector: RCA pin)

These jacks output stereo bus L/R signals. Connect these jacks to the input jacks of a master recorder. You can adjust the output level using the master fader L/R.

18
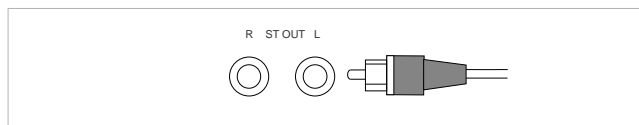
3. AUX Send jacks 1, 2 [AUX SEND 1, 2]
(Connector: phone)

Connect these jacks to the input of an effect unit.
The AUX SEND jacks send out signals selected and adjusted by the AUX send knobs to the connected effect unit.
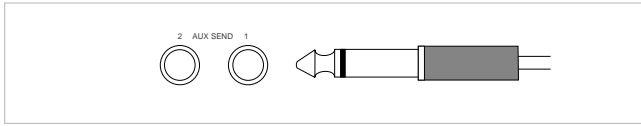
4. AUX Return jacks 1, 2 [AUX RTN 1, 2]
(Connector: phone)

Connect these jacks to the output of an effect unit.
You can also use these jacks as auxiliary inputs.
If a connected effect unit has a mono output, connect the output to the L/MONO jack of the FD-4. The right channel will also receive the same signal. Adjust the level of processed signals using AUX RTN knobs 1 and 2.
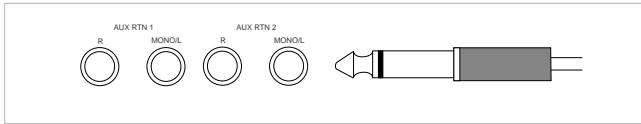
5. Insert jacks 3, 4 [INSERT 3, 4]
(Connector: stereo TRS phone)

Use these jacks when you wish to apply an effect to the signal input at input jacks 3 and 4 (unbalanced inputs on the front panel or balanced inputs on the rear panel).
In particular, use them when you wish to apply a compressor/limiter.

Refer to page 41 for more information on examples of using the INSERT jacks.

6. Balanced input connectors 3, 4 [INPUT 3, 4]
(Connector: balanced XLR)

Connect sound sources that have balanced outputs, such as musical instruments and microphones.
Input channels 3 and 4 also support phone jacks on the front panel.
The phone jacks for input channels 3 and 4 on the front panel have priority. If you connect sound sources to these jacks, the balanced XLR jacks for input channels 3 and 4 on the rear panel will be disabled.
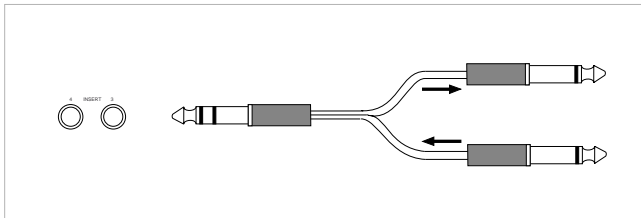
Pin 1: GND
Pin 2: HOT
Pin 3: COLD
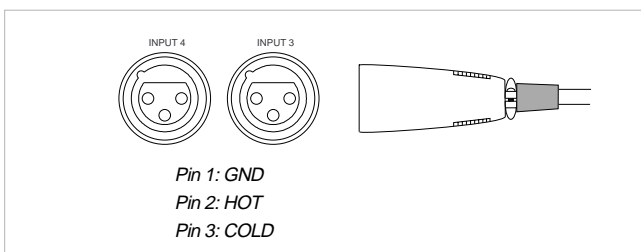
7. Recorder in jacks L, R [RECORDER IN L, R]
(Connector: RCA pin)

These jacks are used to route analog signals input from an external device directly to the recorder section. Using these jacks enables you to use only the recorder section, bypassing the mixer section.
Signals input from these jacks are recorded to the tracks selected by the RECORD TRACK select keys.
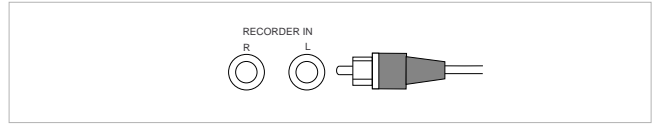
Refer to page 55 for more information on using the RECORDER IN jacks.

8. MIDI OUT jack [MIDI OUT] (Connector: DIN 5-pin)

Connect this jack to the MIDI OUT jack of an external MIDI device.
This jack transmits MTC (MIDI timecode), MIDI clock & Song Position Pointer, MMC (MIDI Machine Control) command, response, and FEX (Fostex System Exclusive Message) response.
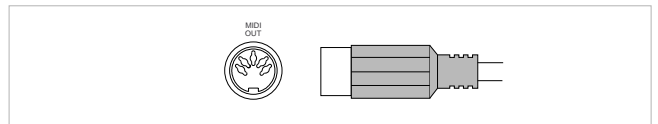
Refer to page 71 for more information on the example of using the MIDI OUT jack.

9. MIDI IN jack [MIDI IN] (Connector: DIN 5-pin)

Connect this jack to the MIDI IN jack of an external MIDI device. You can control the FD-4 remotely by inputting MMC (MIDI Machine Control) command or FEX (Fostex System Exclusive Message) here.
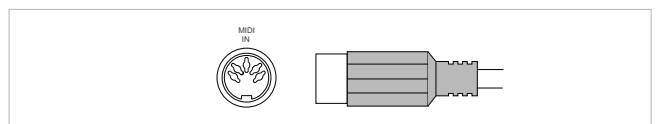
Refer to page 71 for more information on using the MIDI IN jack.

10. Punch in/out jack [PUNCH IN/OUT]
(Connector: phone)

Using an optional foot switch connected to this jack enables you to perform the Manual Punch In/Out operation (including rehearsal) using your foot. Connect an optional Fostex foot switch, Model 8051.
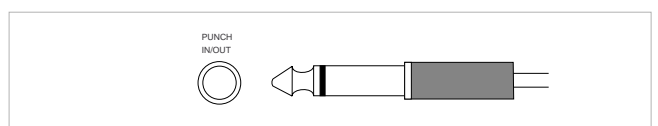
Refer to page 46 for more information on using the PUNCH IN/OUT jack.

19

11. Data output jack [DATA OUT] (Connector: OPTICAL)

Connect this jack to the OPTICAL digital input of an external digital device to save song data to a DAT or to record digitally to a digital device (MD, DAT, CD-R, etc.).
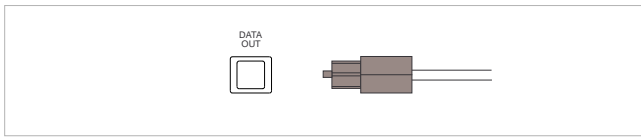
Refer to pages 52 and 76 for more information on using the DATA OUT jack.

12. Data input jack [DATA IN] (Connector: OPTICAL)

Connect this jack to the OPTICAL digital output of an external digital device to load song data from a DAT or to record data digitally from a digital device (MD, DAT, CD-R, etc.) to the FD-4.
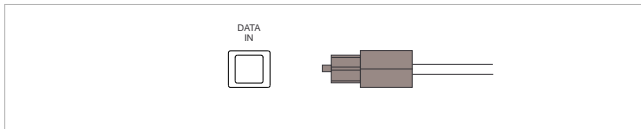
Refer to pages 52 and 76 for more information on using the DATA IN jack.

13. SCSI connector [SCSI] (Connector: D-SUB 25-pin)

Connect an external SCSI drive as the recording media for the FD-4.
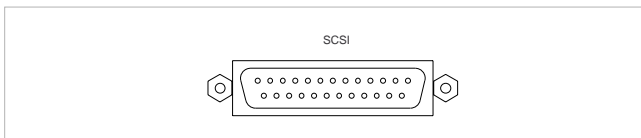
Refer to page 5 for more information on connecting an external SCSI drive.

14. Power cable

Connect the power cable to an AC outlet.

15. Power switch [POWER]

This switch turns power on and off to the FD-4.

Display Section

The FD-4 uses a liquid crystal display which integrates a 9-digit/35-dot message section, 7-segment display section, and level meters.

The level meters indicate the output level of tracks 1-4 and stereo out L/R.

The time display shows various temporal information in different units, such as ABS time (absolute time), MTC (MIDI timecode), BAR/BEAT/CLK (bar/beat/clock), and makes it easy to check the recorder's current time.

The message display shows various messages required to operate the FD-4, and offers interactive operation.

This section describes display functions along with examples.

Display when the power is turned on

When you turn the power on to the FD-4 and the connected external SCSI drive (with a formatted removable disk inserted), the display shows the [Initial...] message, then Recording mode (Normal, Master 1 or Master 2), and finally the Time Base of the last Program that was used before you turned the power off.

The following example shows that the FD-4 started with the ABS Time Base used in Program 1.
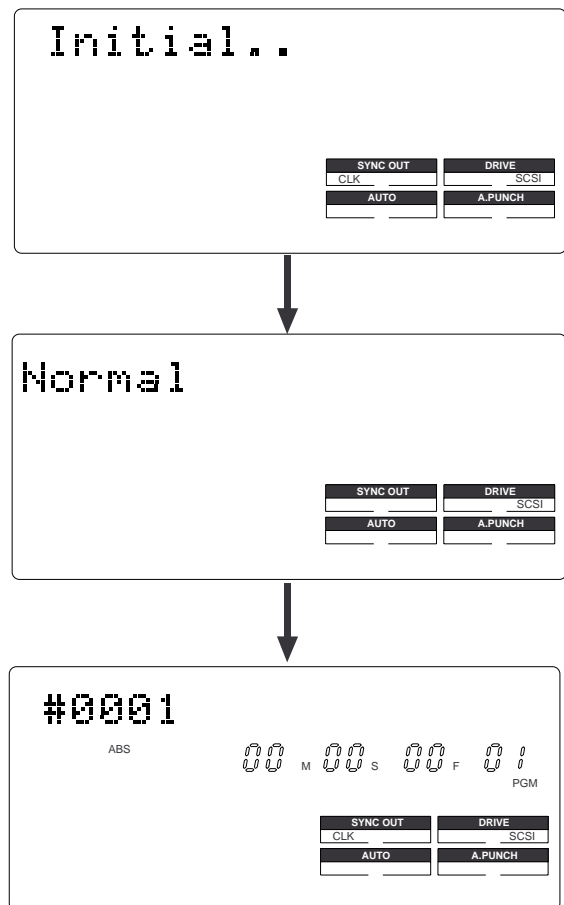
Preset display

The display below shows all preset items for explanation purposes.
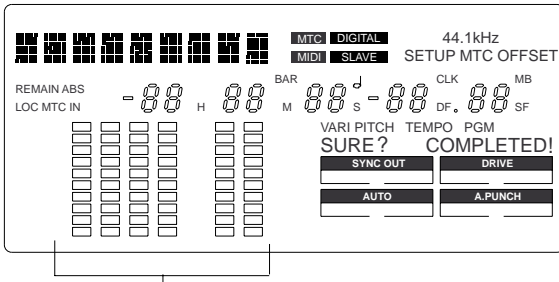
The level meter shows the recorder output level and the recording level for tracks 1~4 and stereo bus L, R.

ABS	*Lights up when ABS is selected as Time Base.*
MTC	*Lights up when MTC is selected as Time Base.*
REMAIN	*Lights up to indicate available recording time and space on the disk.*
SETUP	*Lights up when the FD-4 enters SETUP mode.*
COMPLETED !	*Lights up when an edit operation (copy, move, paste, or erase) is completed.*
SURE ?	*Lights up to confirm or cancel the operation when you are making settings or edits.*
MTC OFFSET	*Lights up when the MTC Offset menu is selected in SETUP mode.*
PGM	*Lights up to indicate the current Program number.*
TEMPO	*Lights up when the tempo setting menu is selected in SETUP mode.*
VARI PITCH	*Lights up when Vari Pitch mode is turned on.*
44.1kHz	*Indicates a sampling rate of the corresponding Recording mode. It does not light up when the disk is formatted in Normal mode.*
MTC IN	*Lights up to indicate that MTC is input from an external MIDI device to the FD-4.*
LOC	*Lights up when the FD-4 enters locate point (edit point) edit mode.*
DIGITAL	*Lights up when the digital input track settings are made in SETUP mode and the FD-4 is receiving digital signals correctly. However, if the FD-4 is not receiving digital signals correctly, or if there is a connection problem, this indicator flashes.*
SLAVE	*Flashes when Slave mode in SETUP mode is turned on. When a signal is locked, the flashing indicator lights up steadily.*
MIDI	*Lights up when the FD-4 is receiving effective MIDI messages (MMC or FEX) from an external device.*

MTC	*Lights up when the FD-4 receives MTC (MIDI Time Code) from an external device.*
%	*Lights up when the FD-4 enters Vari Pitch data edit mode.*
MB	*Indicates available disk space on the disk in megabytes when the REMAIN indicator appears.*
H, M, S, F, SF	*Lights up to indicate a time value when ABS or MTC is used as Time Base.*
BAR, ♩, CLK	*Lights up to indicate a bar/beat/clock value when BAR/BEAT/CLK is selected as Time Base.*
▦▦▦▦▦▦	*Indicates a Program title, edit parameters, and SETUP mode parameters.*
SYNC OUT	*Indicates the "SYNC OUT settings" in SETUP mode.*
AUTO	*Indicates the AUTO PLAY/AUTO RTN mode settings.*
DRIVE	*Indicates the current drive. Usually, [SCSI] lights up.(*)*
A.PUNCH	*Indicates the AUTO PUNCH mode settings.*

(*) When the FD-4 has the optional 2.5 inch internal IDE hard disk installed, and an external SCSI drive is not connected, [IDE] will be lit. However, even though an internal hard disk has been installed, if the external SCSI drive is connected, the SCSI drive will have priority and [SCSI] will be lit.

Display examples for Time Base selected via the TIME BASE SEL key

You can use the TIME BASE SEL key to select ABS, BAR/BEAT/CLK, or MTC as Time Base. The following examples show the displays when you select a Time Base at the beginning of the disk of Program 1.

Time Base is ABS.
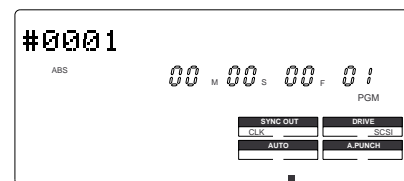
Time Base is BAR/BEAT/CLK.
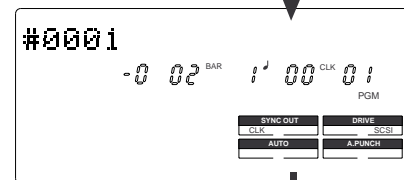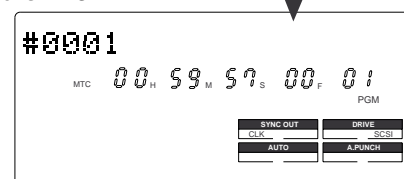
Time Base is MTC.

Selecting Time Base using the DISP SEL key

When you press the DISP SEL key after you select a Time Base using the TIME BASE SEL key, the display changes as follows:

Time Base is ABS.
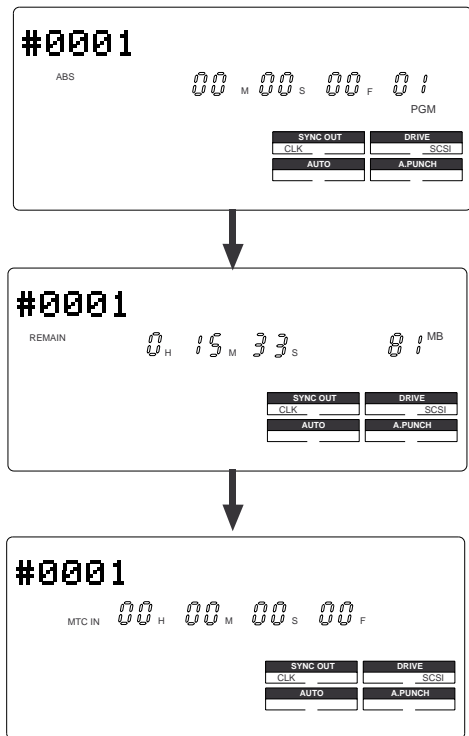
Time Base is BAR/BEAT/CLK.
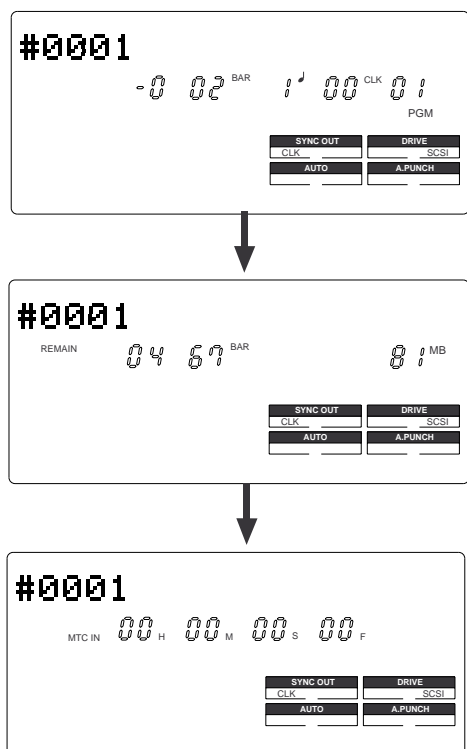
Time Base is MTC.
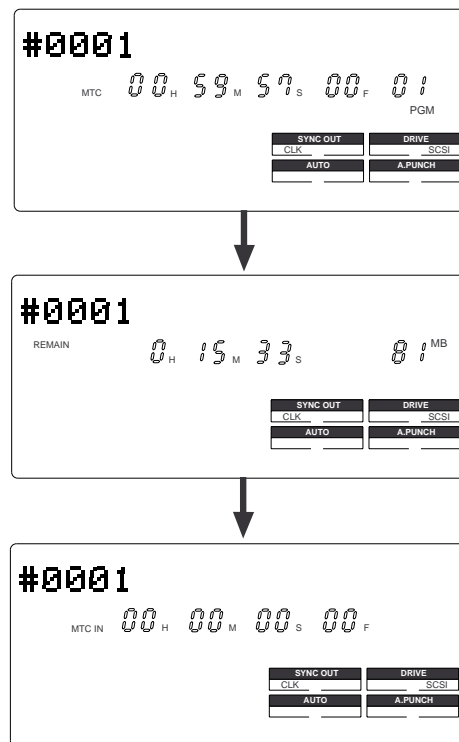
The REMAIN display

The REMAIN display always indicates the figure converted to mono track.

In other words, the remaining disk capacity for one track in which a recording can be made and the remaining time are displayed. The figure displayed here applies to all of the real tracks and additional tracks.

For details on the REMAIN display, please refer to "FD-4 recording type and the REMAIN indicator" in "Before starting" on page 25.

Disk recordable remaining capacity is displayed.

Disk recordable remaining time is displayed.
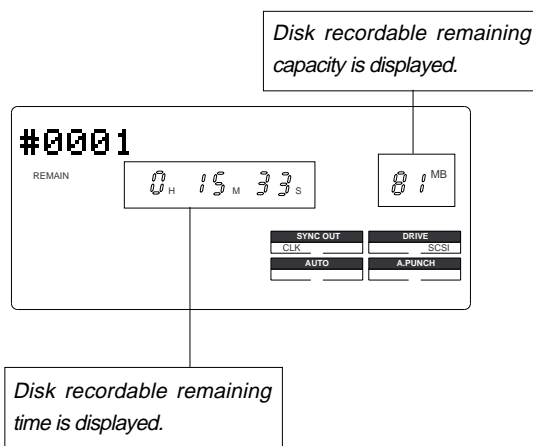
Warning messages

The following warnings are shown operating mistakes are made, an unsuitable editing point (= locate point) is input, or when errors occur. If any of these warnings appear, refer to information detailed below.

<Void Data> message
This means registered data necessary for the selected operation is incorrect.
Action to take:
Re-register the correct data.

```
Void Data
```
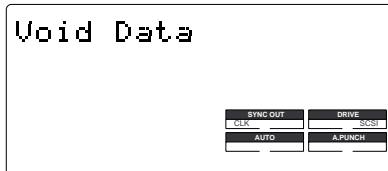
<Void Out> message
This means the registered in/out point is wrong.
Action to take:
Re-register the correct data.

```
Void Out!
```
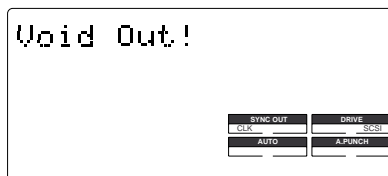
<Track unselected> message
This means a track has not been specified.
Action to take:
Select any one track with the RECORD TRACK select key.

```
SelectTrk
```
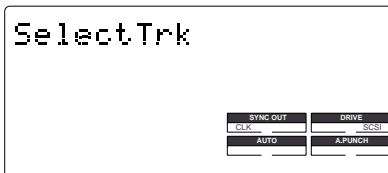
<Over> message
This means that disk space necessary for recording and editing is insufficient.
Action to take:
Before proceeding to the next operation, temporarily data in order to source empty space necessary for the next operation.

```
Over!
```
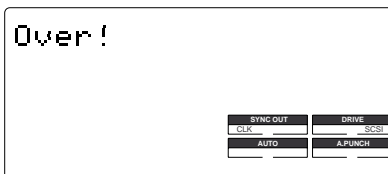
<Load Err > message
This means that loading is impossible because there is an error in data applied to the DATA IN connector from the external DAT.
Action to take:
Check the external DAT connected to the DATA IN connector and be sure there is no problem with the DAT tape. Then, try loading again.

```
Load Err
```
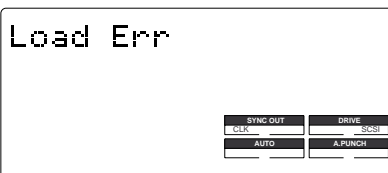
<Unformat !> message
An unformatted or crashed SCSI disk.
After a few seconds of this display, the FD-4 automatically enters the SETUP mode [Format ?] menu.
Action to take:
Press the EXECUTE/YES key while pressing the RECORD button.

> **<Note>**
> Any sound data recorded up to this point on the disk will be lost.

```
UnFormat!
```
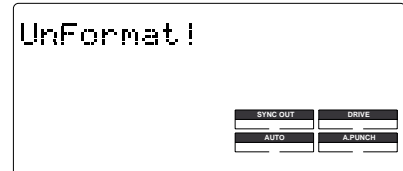
<Track Over> message
This means the number of recording tracks has been exceeded.
Action to take:
Simultaneous recording is possible on only two tracks. Setup the recording track again.

```
TrackOver
```
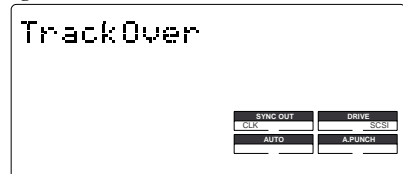
<Can't Rec> message
This means the specified additional track cannot be recorded. This is displayed when recording is attempted on the additional track by using the [Mastering mode 2] disk.
Action to take:
If recording is to be make on the additional track, format in the [Normal mode] or [Mastering mode 1].

```
Can't Rec
```
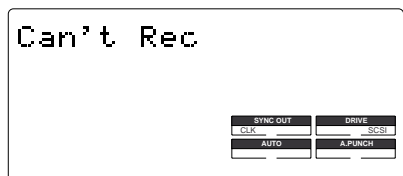
<Rec + Yes !> message
This means press the EXECUTE/YES key while pressing the RECORD button (This is displayed when formatting).
Action to take:
Press the EXECUTE/YES key while pressing the RECORD button.

```
Rec+Yes!      SETUP
         SURE?
```
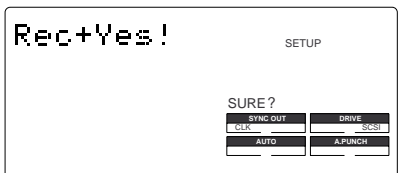
<Protected> message
This means the disk inserted in the drive cannot be used because it is write-protected. The disk will be ejected automatically.
Action to take:
Release the write-protect and re-insert it.

```
Protected
```
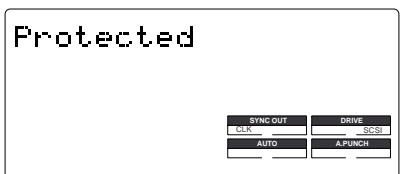
Before Starting

This chapter describes some basic items that you need to know before you start operating the FD-4.
All users, including those who are familiar with using tape-based multitrackers and those who are new to multitrackers, should read this chapter thoroughly to understand the functions of the FD-4.

> **1. *Time Base***
>
> **2. *Recording method and REMAIN display***
>
> **3. *Managing songs by Program Change function***
>
> **4. *Real tracks and Additional tracks***
>
> **5. *Input monitoring and playback monitoring***
>
> **6. *PAN knobs and stereo bus***

Time Base

The word "Time Base" appears frequently in this manual. The concept of Time Base is similar to a "tape counter" on a conventional tape-based multitracker in that it indicates the precise position of the recorder transport section (the current position).
The FD-4 offers three types of Time Base: ABS (Absolute type), MTC (MIDI time code), and BAR/BEAT/CLK (bar/beat/clock). ABS indicates an absolute time on the disk. MTC indicates a relative time that is obtained by adding a certain value (MTC offset value) to the ABS value. BAR/BEAT/CLK indicates the position in a song created in the internal Tempo Map according to MIDI clock and Song Position Pointer. The following diagrams depict the relationship among these three types of the Time Base.
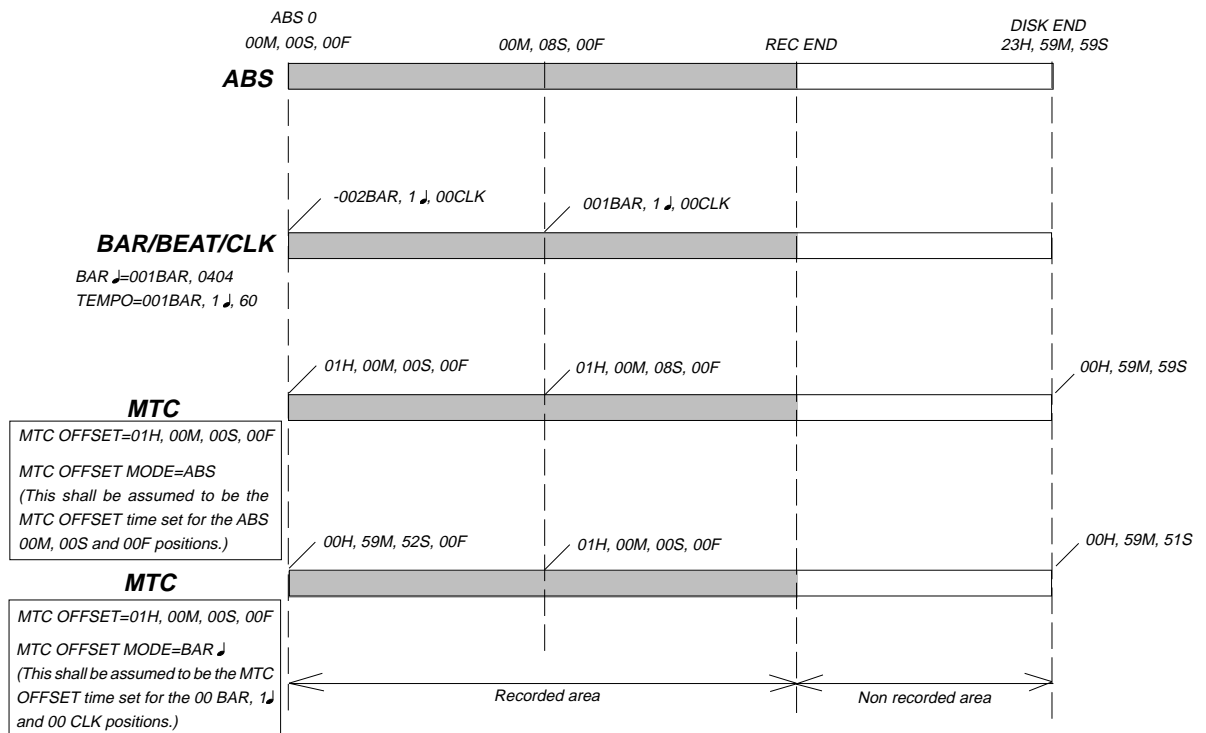
> 🔍 You can switch between these three types of Time Base to suit your purpose. (Refer to the explanation in "Display Section" on page 21 for more information on switching Time Base.)

> ⚠️ **<Note>**
> When BAR/BEAT/CLK is selected as Time Base, the position for ABS 0 (top of the disk) is always "- 2 BAR, 1 ♩, 00 CLK" and you cannot modify this value.

Recording method and REMAIN indicator

Recording method

The FD-4 uses a SCSI removable disk (such as an MO disk or Zip disk) instead of a cassette tape. You can start recording sound sources from any point on a formatted disk as long as the point is within the range of 24 hours in ABS time. (Refer to the following diagram.)

You can record at any point within 24 hours in ABS Time.

The area actually used on the disk

Recordable disk area.
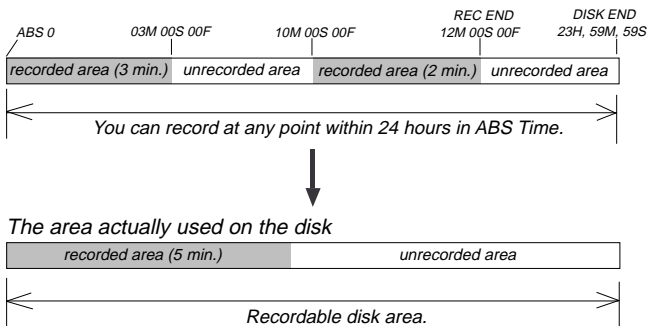
For example, if you record three minutes of data starting from ABS 0 (top of the disk) as shown in the diagram, then record two minutes starting at the 10-minute point in ABS time, the recording end point is 12 minutes in ABS time. However, this does not mean that the entire recording duration is 12 minutes. The disk space actually used for recording is five minutes (3 minutes + 2 minutes). That is, the area between three minutes and ten minutes in terms of ABS time is still unrecorded.

When you try to play or fast forward this unrecorded area, the time counter on the display will count, but the FD-4 will not access the disk. However, MTC will be output when you try to play this area.

On the FD-4, the top of the disk is called "ABS 0" and the recording end point is called "REC END."

REMAIN indicator

The REMAIN indicator displays available recording time expressed in time value or bar/beat/clock value, depending on the currently selected Time Base. It also indicates the available disk space.

The REMAIN indicator displays the amount of unrecorded area.

recordable disk area
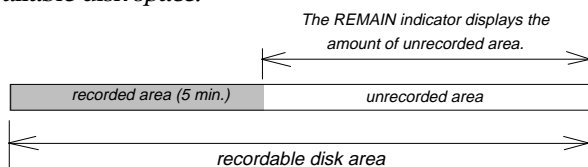
Right after you format the disk, the REMAIN indicator will show the maximum recordable time and space on the disk. The values will decrease as the actual recorded area expands. The REMAIN value is calculated by deducting the time and space of all data on the Real tracks and Additional tracks from the original available recording time and space in mono-track base. That is, the value indicates available recording time and space if you record on one mono track.

If you wish to know how much you can record on four tracks, you need to divide the current REMAIN value by four.

Managing songs by Program Change function

The FD-4 features Program Select function, which enables you to set up to 99 Programs on the disk.

When you format a disk, one Program will be automatically created on the disk. You may create more Programs, if necessary. You may also delete unnecessary Programs.

The FD-4 also features Program Change function that enables you to select one of the Programs set on the disk. Programs on the disk are something like independent containers. You can record, play, and edit each container without affecting other containers.

You can also name Programs, which is useful for managing songs.
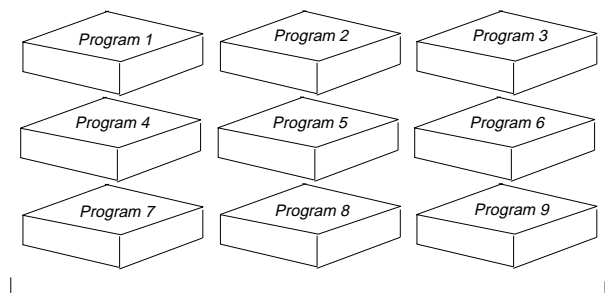
You can set up to 99 Programs (independent containers).

Refer to page 36 for more information on the Program Select function.

<Note>
Total available recording time is always the maximum available recording time on the disk, regardless of the number of Programs you set on the disk. That is, if you use up the maximum recording time for one Program, you will not be able to record any data in other Programs.

Real track and Additional track

The FD-4 features four Real tracks (1–4) and two Additional tracks (L and R), for a total of six tracks.
Real tracks are used to record sound sources in real-time.
Additional tracks are used to temporarily store the sound recorded in the Real tracks.
This is useful since you can move data from Real tracks to Additional tracks to obtain empty tracks for recording.
The Track Exchange function of the FD-4 handles this operation. This function allows you to swap data freely between six mono tracks. You can also swap Real tracks 1–2 or 3–4 with Additional tracks L and R.

You can swap data between six mono tracks.

You can also swap Real tracks 1–2 or 3–4 with Additional tracks L and R.
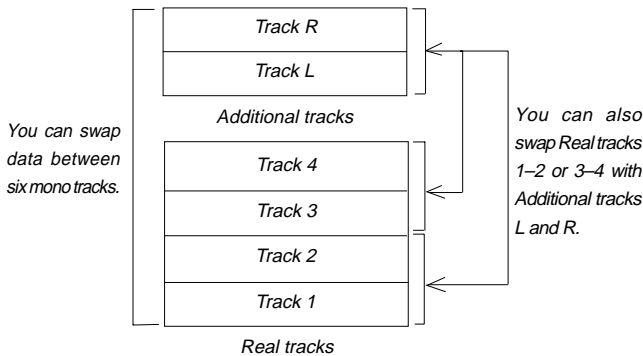
If the disk is formatted in Normal mode or Matering mode 1, you can record to Additional tracks in real-time.
This feature allows you to perform ping-pong recording from Real tracks 1–4 to Additional tracks L and R.
You cannot use this feature with a disk in Mastering mode 2, although you can still use the Track Exchange function.

<Note>
You cannot play back data on Additional tracks in all recording modes. If you wish to play data on an Additional track, first use the Track Exchange function to move the data to a Real track.

<Note>
Data on the Additional tracks also affects the REMAIN value. If Real tracks contain no data, but Additional tracks contain data, the amount of the data (time and space) will be reflected in the REMAIN value.

Refer to page 60 for more information on the Track Exchange function.

Refer to page 51 for more information on the Ping-pong recording to additional track.

Input monitoring and playback monitoring

There are two methods for monitoring track sound (only on the Real tracks): input monitoring and playback monitoring. They are defined as follows:

Input monitoring

Input monitoring means to monitor via track output the recording signal sent to the Real tracks of the recorder. That is, you are monitoring a post-recorder signal, not a pre-recorder signal. The FD-4 enters input monitoring status when you perform one of the following operations.

- **When you set a track to recording mode**
  To set a track to recording mode, press the RECORD TRACK select key to set the track READY, then press the PLAY button while holding down the RECORD button.
  When recording starts on the READY track, the FD-4 auto matically enters input monitoring status.

- **When you set a track to recording stand-by mode**
  To set a track to recording stand-by mode, press the RECORD TRACK select key to set the track READY, then press only the RECORD button. (Pressing the RECORD button again will cause the FD-4 to enter playback monitoring mode.)
  Under this condition, only the READY track enters input moni toring mode, on stand-by for recording.

Track 4: INPUT monitor, Tracks 1~3: REPRO monitor
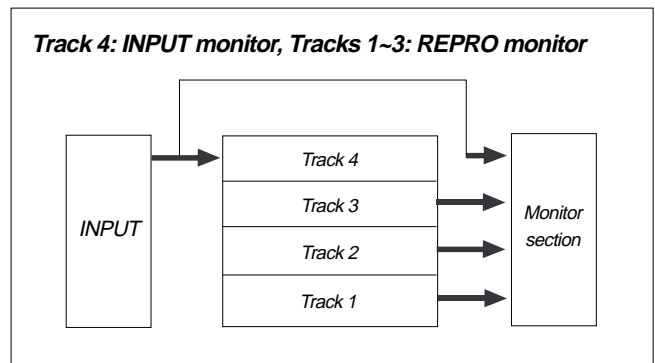
Playback monitoring

"Playback monitoring" means to monitor the playback sound of the tracks (only Real tracks). That is, you are monitoring the playback sound on the track, not the sound being recorded to the track.

All tracks: REPRO monitor
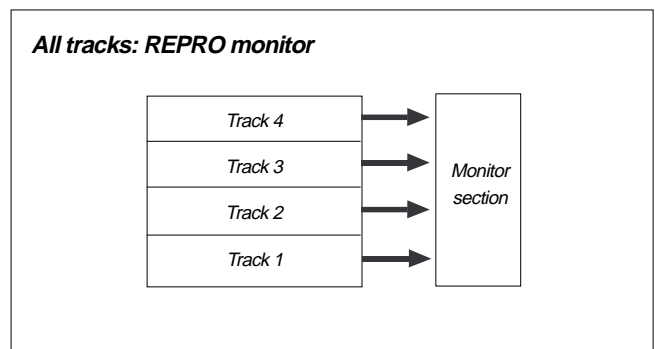
PAN knobs and stereo bus

The FD-4 features a four-channel mixer function that enables you to mix four sound sources into a stereo mix. Since the mixer functions and signal flow are not visible, the following diagram will help you understand them. The diagram shows the flow of signals from the inputs through the mixer section to the recorder.

The thick line in the diagram is called the "stereo bus", which collects the channel signals that are panned and processed by the EQ. The signals are adjusted for the final level by the master faders L/R, then routed to the STEREO OUT L/R jacks. The same signals are routed to the recorder (external SCSI disk) and recorded in the specified tracks.

In this case, the PAN knobs function like a turn signal to stereo buses L and R. As shown in the diagram, rotating the PAN knob toward L will cause signals to be sent to stereo bus L. Rotating the PAN knob toward R will cause signals to be sent to the stereo bus R. Stereo bus L signals are then routed to Real tracks 1 and 3 and Additional track L.

Stereo bus R signals are routed to Real tracks 2 and 4 and Additional track R. You can select a recording track using the RECORD TRACK select keys. (You can record to Additional tracks in real-time only on the disk in Mastering mode 1 or Normal mode.)

For example, to record all sound sources input to channels 1–4, turn all channel PAN knobs completely to L, and press the RECORD RACK select key 1/L to set the track READY.

STEREO BUS L

ST OUT L, R

STEREO BUS R

L R L R L R

PAN knob

| 1/L | 2/R | 3/L | 4/R | L | R |

REC SEL switch
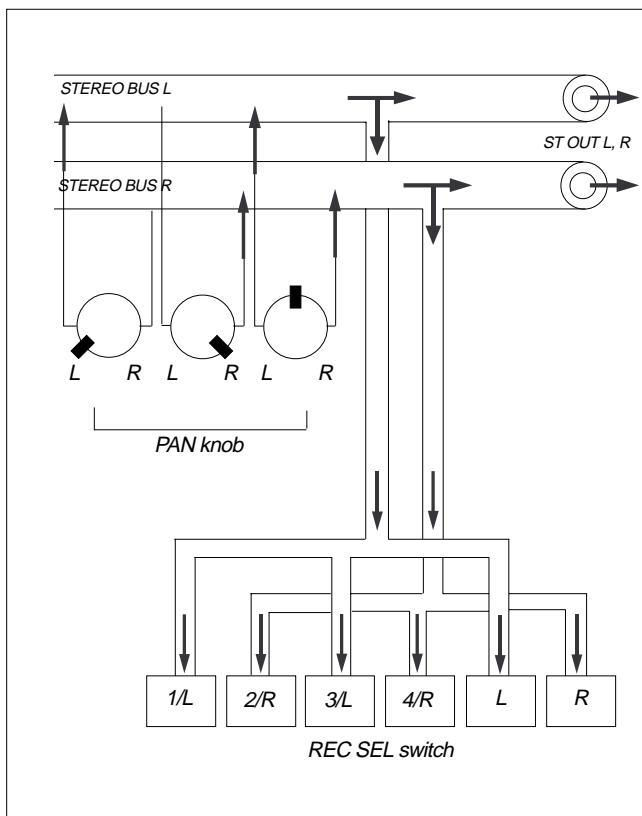
Basic Recording and Playback

This chapter explains how to perform basic recording and playback so that you can get used to operating the FD-4. This chapter will be helpful not only for those who are new to a multitracking, but also to those who are used to handling a tape-based multitracker to master the basic operation of the FD-4.

After you master this basic chapter, proceed to the next "advanced" chapter to try multitrack recording using advanced techniques.

The explanations here assume that a SCSI drive is connected as described in the "Recording Preparation" chapter and the disk is formatted in "Normal" recording mode.

<Note>

You can record up to two tracks simultaneously. If you try to set more than two tracks to READY mode, [Track Over] appears on the display and recording mode will be canceled.

FD-4 initial settings

Before you start operating the FD-4, or when you wish to proceed to the next step, you need to reset the knobs and switches on the FD-4. This is called "initializing the FD-4" in this document. Set the knob and switch settings to the following positions. Always remember to "initialize the FD-4" before you proceed to the next step.

<Initial settings>

1. Lower the input channel faders and master faders L/R.

2. Set the LEVEL switch for channels 3 and 4 to H (–10dB).

3. Set the knobs and switches to the center position or "0" position.

4. Turn all the RECORD RACK select keys to OFF (SAFE).

5. Set all control keys to off (LEDs will turn off).

Point 3   Point 4

Point 1   Point 2   Point 5
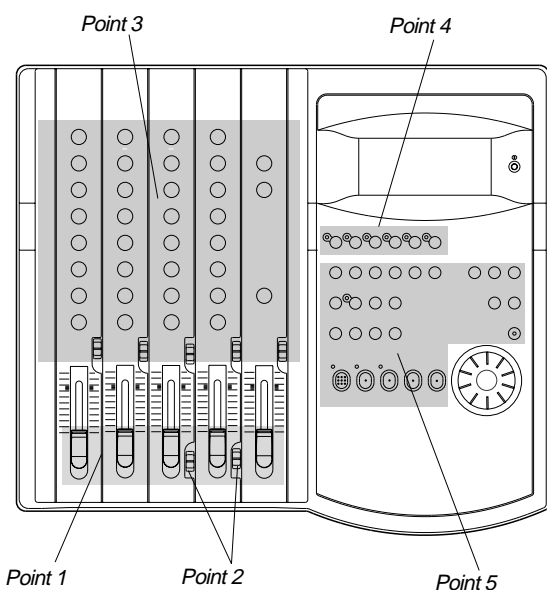
Recording one sound source to one track

To get used to basic recording, record one sound source to one Real track. We will use electric guitar as the sound source in this example.

| Real track 4 |
| Real track 3 |
| Real track 2 |
| Real track 1 |

---
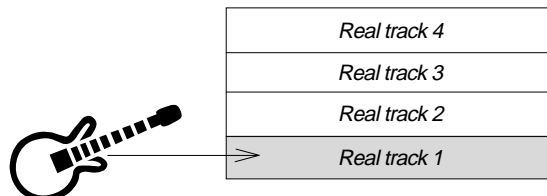
* Initialize the FD-4 before recording.

Setting the disk

1. Turn on the power to the FD-4 and the SCSI drive, and insert the disk.

The FD-4 displays [Normal] (recording mode), then displays the start of ABS time (ABS 00M 00S 00F).

2. Press the DISP SEL key to display the REMAIN indicator.

The REMAIN indicator shows the available recording duration and free disk space for mono track recording.

3. After you check the REMAIN time, press the DISP SEL key to display the ABS time.

Connecting the guitar and the monitoring headphones
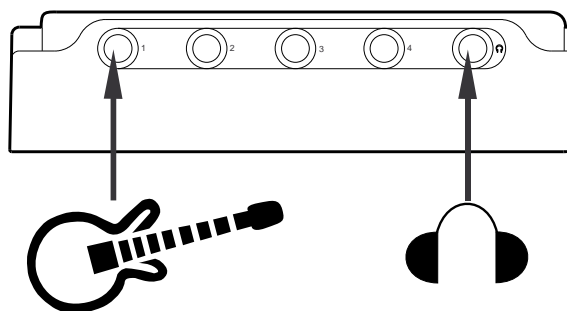
1. Connect the guitar to input jack 1, and connect the monitoring headphones to the PHONES jack.

You can connect the guitar to any input jack.
If you wish to connect a sound source that requires the adjustment of the input level, such as a microphone, connect it to input jack 3 or 4. The input jacks support either the mic level or line level, and have LEVEL switches that allow for input level adjustment.
You can also use the balanced inputs (INPUTs 3 and 4) on the rear panel to connect a balanced output from the sound source (XLR connector).
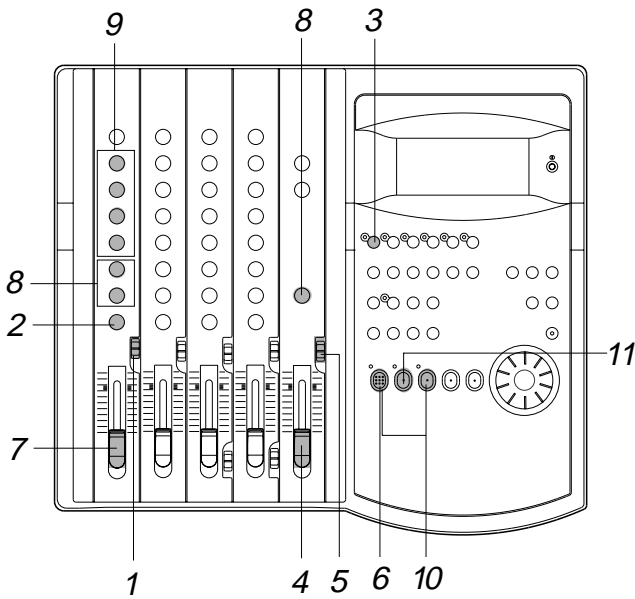
Setting the switch and knob

1. Set the channel 1 INPUT SEL switch to [INPUT].
The electric guitar signal is routed to the input channel 1 fader. If you connect the instrument to another input jack, set the INPUT SEL switch of the corresponding channel to [INPUT].

2. Turn the channel 1 PAN knob to [L] all the way.
The electric guitar signal is routed to the stereo bus L.

3. Press the RECORD RACK select key [1/L] so that the [1/L] LED will flash.
Track 1 becomes READY mode.

Adjusting the recording level

4. Raise the master fader L/R to the [7–8] position.

5. Set the SELECTOR in the monitor section to [MON].

6. Press the RECORD button.
The RECORD LED flashes and track 1 enters input monitoring mode.
In this mode, the electric guitar signal routed to track 1 is output through the recorder track 1 output.

7. While playing the guitar, raise the input channel 1 fader to [7–8], and adjust the recording level while checking the level meter 1.
When you raise the input fader, the level meter L also moves. This meter indicates the output level of the stereo bus L.
Adjust the input fader so that the level meter will occasionally reach the [0] point of the meter at maximum volume. (Make sure that the meter at the [OL] section will not light up.)

Monitoring the recording signal

8. Turn the MON knob in the MON mix section of channel 1 toward [TRK] and turn the MASTER knob in the monitor section to adjust the monitoring level
Use the MON PAN knob in the MON mix section to adjust the stereo image of the monitoring sound.

9. Adjust the equalizer for channel 1 if necessary.
If equalizing changes the level and the [OL] section of the meter lights up, lower the level using the input channel 1 fader.

<Using the SELECTOR switch while monitoring>

* You can select the type of monitoring sound using the SELECTOR in the monitor section. Set the SELECTOR to [MON] to monitor the recording sound, and turn the MON knob in the MON mix section for the channel that corresponds to the real track toward [TRK]. Since we are now monitoring the track 1 recorder output, use the MON mix section of channel 1. At this time, by turning the MON knob toward [INPUT], you can monitor the pre-fader signal routed from the input jack (the signal that is unaffected by the input fader and equalizer).

* If you set the SELECTOR to [L/R], you can monitor the signal routed to the recorder (the signal that is going to be recorded). Since the level of the monitoring sound changes with the input fader position, regardless of the MON mix section setting, you need to use the MASTER knob in the monitor section to adjust the monitoring level.

* If you set the SELECTOR to [L/R+MON], you can monitor both signals with the [MON] and [L/R] settings.

Starting recording

10. Press the PLAY button while holding down the RECORD button.
The flashing RECORD LED and the LED of the READY track remain lit, indicating that the track is now recording. At this time, the recording Real track is in input monitoring mode.

Stopping recording

11. To stop recording, press the STOP button.

<Note>

After you finish recording, press the STOP button immediately. If you keep recording silence, you will waste disk space.

Now you have recorded the guitar sound in Real track 1 via the input jack 1. We can use the same method to record other sound sources to other tracks.
The next table shows guideline settings for track 2–4 recording. You can connect any sound sources to any input jacks.

Recording track	REC TRACK select key for track READY	INPUT SEL switch position	PAN knob adjustment	Monitor section's SELECTOR position	Adjusting the monitor sound of the recording track
Track 1	1/L is READY.		Turn all the way to L.		Use the channel 1 MON mix section to adjust the monitoring sound for track 1.
Track 2	2/R is READY.		Turn all the way to R.		Use the channel 2 MON mix section to adjust the monitoring sound for track 2.
Track 3	3/L is READY.	Set to INPUT	Turn all the way to L.	Set to MON	Use the channel 3 MON mix section to adjust the monitoring sound for track 3.
Track 4	4/R is READY.		Turn all the way to R.		Use the channel 4 MON mix section to adjust the monitoring sound for track 4.

Undo/Redo recording

You can undo or redo a real-time recording.

- *Press the UNDO/REDO key after recording is complete to restore the conditions that existed prior to the recording.*
- *Press the UNDO/REDO key again to restore the conditions that existed after the recording.*

<Note>

The Undo/Redo is effective only in the stop mode of the FD-4.
Undo/Redo will not effective if the following is executed prior to carrying out UNDO/REDO.

1. *When a new recording made.*
2. *When a new editing is executed.*
3. *While in the Auto Punch On mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.*
4. *When the power is momentarily switched off.*
5. *When the program is changed.*
6. *When the disk is ejected.*

Recording onto the additional track

On a disk formatted in the [Normal mode] or the [Mastering mode 1], real time recording is possible on the additional track L and R.
However, when real time recording onto the additional track, unlike recording onto a real track, the additional track cannot be entered in the input monitor mode.
As shown in the chart below, the stereo bus L, R output sound is directly monitored by switching the monitor section SELECTOR to [L/R].
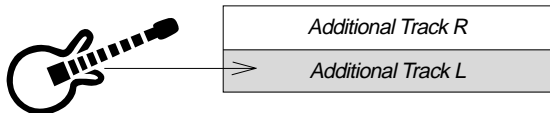
<Note>

When recording is attempted on the additional track on a disk formatted in "Mastering mode 2," [Can't Rec] will be displayed and the recording mode canceled.

---

* When recording on the additional track, if the monitor section SELECTOR is set to [L/R] as shown in the chart below, the stereo bus L, R signal sound quality processed such as with an equalizer for example, can be monitored.
Also, if the SELECTOR is switched to [MON], and MON knob of the channel to which the sound source is input is rotated to the [INPUT] side, the pre-fader signal can be monitored. In other words, signals which have not been affected by the INPUT fader and equalizer, can be monitored.

Additional Track R
Additional Track L

Recording track	REC TRACK select key for track READY	INPUT SEL switch position	PAN knob adjustment	Monitor section's SELECTOR position	Adjusting the monitor sound of the recording track
Track L	L is READY.	Set to INPUT	Turn all the way to L.	Set to L/R	For the purpose of monitoring the stereo bus L output, the monitor sound is adjusted only with the monitor section MASTER knob.
Track R	R is READY.		Turn all the way to R.		For the purpose of monitoring the stereo bus R output, the monitor sound is adjusted only with the monitor section MASTER knob.

Checking the recording sound

Playing track 1

When you finish recording, play back the data if the recording is acceptable.
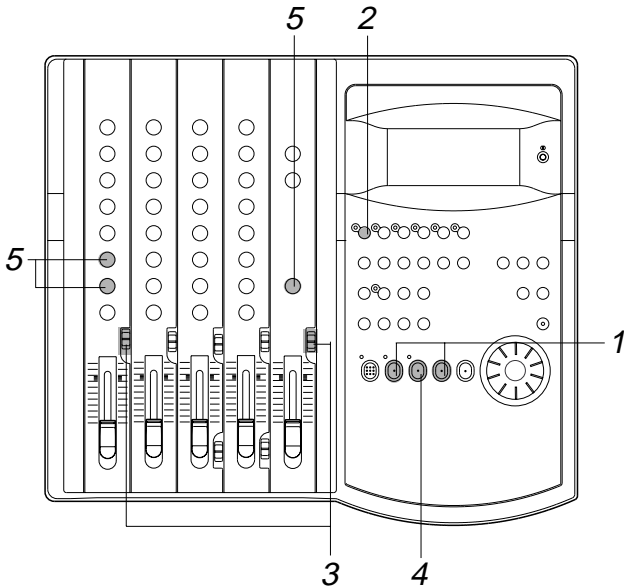
1. Press the REWIND button while holding down the STOP button.
The FD-4 locates the beginning of the Program (ABS 0) (LOCATE ABS 0).

2. Turn the RECORD TRACK select key off so that you will not record data accidentally.

3. Leave the INPUT SEL switch and the SELECTOR in the monitor section as they are.

4. Press the PLAY button to start playback.

5. Turn the channel 1 MON knob toward [TRK], and gradually raise the MASTER knob in the monitor section. Use the MON PAN knob to adjust the stereo image of the monitoring sound.
You can monitor the recorded sound on track 1.

<Note>
Do not raise the MASTER knob too high if you are monitoring through headphones for a long period of time.

<Notes on playback>
When tracks 1–4 are played, the track signals are routed to the MON mix section of the channels with the corresponding track numbers. That is, track 1 signal is routed to channel 1 MON mix section, track 2 signal is routed to channel 2 MON mix section, etc.
To monitor the track playback sound, use the corresponding channel's MON knob to adjust the level, and use the MON PAN knob to adjust the stereo image.

Channel MON mix section
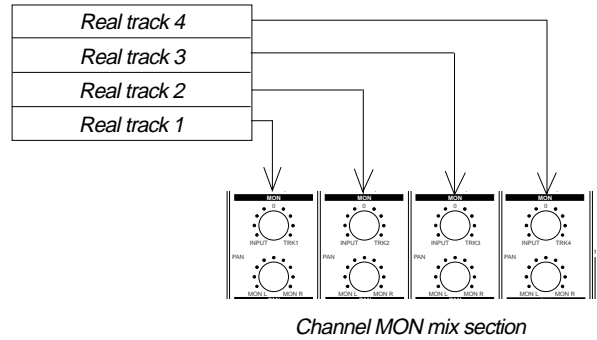
You can also route the track playback sound to the input faders. To do so, set the INPUT SEL switch to TRK.

Playback of the additional track sound

<Notes in playback on the Additional track>
Sound recorded on the additional track cannot be played back in real time while it is located there. In order to playback the additional track's sound, the recorded data must be temporarily exchanged with one of the real tracks. For explanations on mutually replacing tracks, please refer to "Track Exchange Function" on page 60. The sound on the additional track exchanged to a real track can be played back using the same procedures explained in the left column.

<Undo/redo subsequent to exchange>
Even after temporarily exchanging onto a real track, "undo/redo" can be executed for the purpose of checking the sound recorded on the additional track, in the same way as at real track recording. However, "undo/redo" subsequent to track exchange is permissible only once for each function. A second try will be ignored.

* If the UNDO/REDO key is pressed after checking the sound transferred to the real track, it can be returned to the state prior to recording onto the additional track.

* If the UNDO/REDO key is pressed subsequent to executing UNDO, it can be returned to the state prior to exchange of the additional track and the real track.

<Note>
The Undo/Redo is effective only in the stop mode of the FD-4, the same as when recording onto a real track..
Undo/Redo will not effective if the following is executed prior to carrying out UNDO/REDO.

1. When a new recording made.
2. When a new editing is executed.
3. While in the Auto Punch On mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.
4. When the power is momentarily switched off.
5. When the program is changed.
6. When the disk is ejected.

Basic Multitrack Recording

You learned how to record one sound source to one track in the "Basic Recording and Playback" chapter.

This chapter explains how to perform multitrack recording, which is, of course, the primary application of a multitracker.

Multitrack recording is the term for a series of processes in which you record various sound sources to different tracks and combine them into two mixes (L and R).

This recording involves one important process called "overdubbing," in which you record an additional sound source to a different track while monitoring the input sound and listening to the already-recorded sound play back.

As an example of the steps involved in overdubbing, we record the following instruments to tracks 1–4.

1. Record a drum machine to track 1.
2. Record an electric bass to track 2 while listening to track 1 playback.
3. Record an electric guitar to track 3 while listening to tracks 1 and 2 playback.
4. Record the vocal to track 4 while listening to tracks 1–3 playback.

Track 1 -> Drum machine

Track 2 -> Electric Bass
Track 1 -> Drum machine

Track 3 -> Electric Guitar
Track 2 -> Electric Bass
Track 1 -> Drum machine

Track 4 -> Vocal
Track 3 -> Electric Guitar
Track 2 -> Electric Bass
Track 1 -> Drum machine
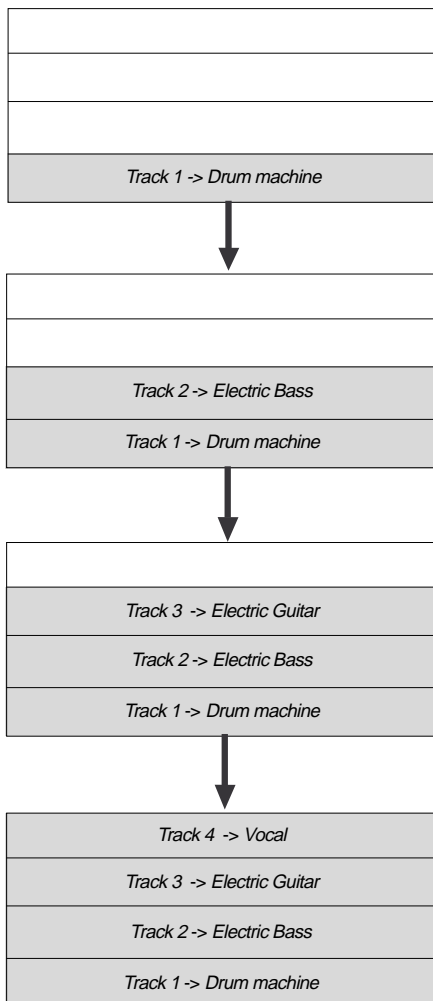
Recording a drum machine to track 1

Record the drum machine sound to track 1 as per to the "Basic Recording and Playback" chapter.

Overdubbing the bass to track 2

This step assumes that only one Program has been set up. If multiple Programs have already been set up, first select the desired Program. Do not select another Program until you finish a series of overdub operations.

Refer to "Using the Program Change function" on page 37 for more information on changing the Programs.

* Initialize the FD-4.

Connecting a sound source
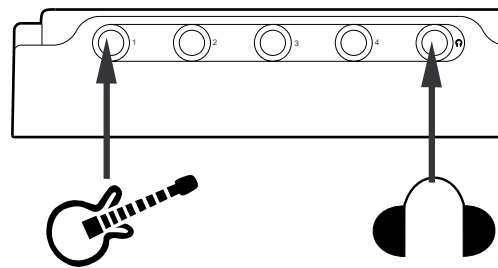
1. Connect the electric bass to input jack 1.
You may connect the bass to any input jack.
If you connect it to input jack 3 or 4, set the LEVEL switch to [H].

Setting the switch and knob
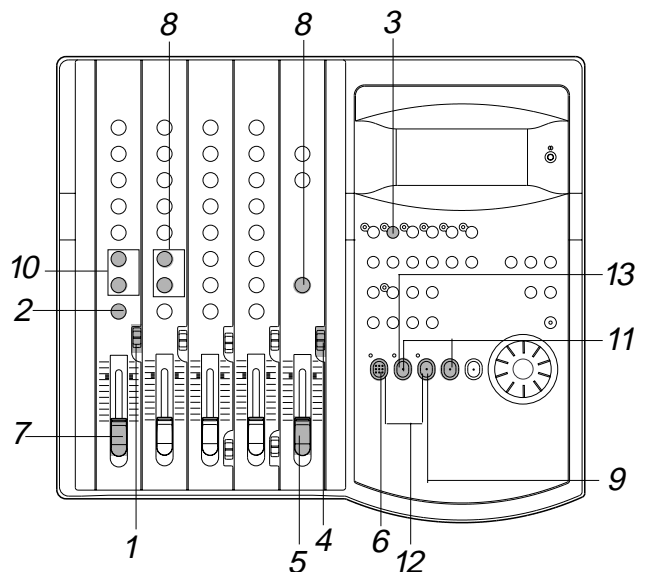
1. Set the channel 1 INPUT SEL switch to [INPUT].

2. Turn the channel 1 PAN knob all the way to [R].

3. Press the RECORD RACK select key [2/R] to set track 2 to READY mode.
The 2/R LED flashes.

4. Set the SELECTOR in the monitor section to [MON].

Adjusting the recording level

5. Raise the master fader L/R to [7–8].

6. Press the RECORD button.
The RECORD LED flashes, and the READY track 2 enters input monitoring mode.

7. Raise the channel 1 input fader to [7–8] and play the bass.
While observing level meter 2, use the input fader and equalizer to obtain the optimum tonal color and recording level.

Monitoring the electric bass sound

8. Use the channel 2 MON mix section to adjust the monitoring level of the electric bass sound.
Turn the MON knob toward [TRK 2] and turn the MASTER knob in the monitor section.
Use the MON PAN knob to adjust the stereo image of the monitoring sound.

Practicing overdubbing

Monitor the electric bass sound while listening to the playback of the drum machine sound on track 1.

9. Press the PLAY button to play the recorder.
At this time, the LED of the READY track and the RECORD LED keep flashing.

10. Use the channel 1 MON mix section to adjust the track 1 playback sound.
Play the electric bass while monitoring the drum machine sound on track 1.
You can monitor the drum machine sound (playback monitoring) and the electric bass sound (input monitoring) at the same time.
Use the MON knobs and MON PAN knobs of channels 1 and 2 to adjust the volume level and balance.
At this stage, the bass sound is not recorded. Practice your performance until you are satisfied.

Starting overdubbing

11. Press the REWIND button while pressing the STOP button to locate the beginning of the Program.

12. Press the PLAY button while pressing the RECORD button.
Play the electric bass while listening to the drum machine sound on track 1.

Quitting overdubbing

13. Press the STOP button to stop recording.

Listening to the overdubbed sound
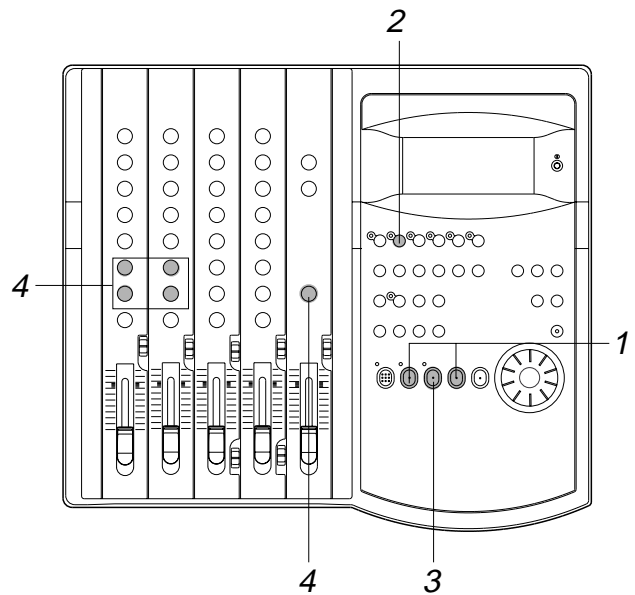
1. Press the REWIND button while holding down the STOP button to locate the beginning of the Program.

2. To avoid accidental recording, turn the RECORD TRACK select key 2/R off.

3. Press the PLAY button to play back from the beginning.

4. Adjust the playback sound of tracks 1 and 2 in the channels 1 and 2 MON mix section.

The following table shows the switch settings for overdubbing on tracks 3 and 4. (Refer to next page.)
In this example session, we record the electric guitar to track 3 and the vocal to track 4 in the same way as we overdubbed track 2.

Undo/redo overdubbing

You can undo or redo overdubbing.

- *Press the UNDO/REDO key after recording is completed to restore the conditions that existed prior to the overdubbing.*
- *Press the UNDO/REDO key again to restore the conditions that existed after the overdubbing.*

<Note>
The Undo/Redo function is effective only when the FD-4 is stopped. The Undo/Redo is ineffective if you perform one of the following operations after you finish recording.

1. *When a new recording is made.*
2. *When a new editing is executed (such as Copy & Paste, Move & Paste, Erase).*
3. *While in the AUTO PUNCH ON mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.*
4. *When the power is momentarily switched off.*
5. *When the program is changed.*
6. *When the disk is ejected.*

33

Settings for overdubbing the electric guitar to track 3

INPUT jack	REC TRACK select key for track READY	INPUT SEL switch position	PAN knob adjustment	Monitor section's SELECTOR position	Adjusting the monitoring level of the recording track.	Adjusting the monitor level of track 1 and 2.
Any INPUT jack	3/L	Set the switch of the channel to which the sound source is connected to INPUT.	Turn the knob of the channel to which the sound source is connected all the way to L.	Set to MON.	Use the MON mix section of channel 3 to adjust the monitoring level of the sound being recorded to track 3.	Use the MON mix section of channels 1 and 2 to adjust the monitoring level of tracks 1 and 2 respectively.

Settings for overdubbing the vocal to track 4

INPUT jack	REC TRACK select key for track READY	INPUT SEL switch position	PAN knob adjustment	Monitor section's SELECTOR position	Adjusting the monitoring level of the recording track.	Adjusting the monitor level of track 1 and 2.
Input jack 3 or 4 (on the front panel or the rear panel), with the LEVEL switch set to [L]	4/R	Set the switch of the channel to which the sound source is connected to INPUT.	Turn the knob of the channel to which the sound source is connected all the way to R.	Set to MON.	Use the MON mix section of channel 4 to adjust the monitoring level of the sound being recorded to track 4.	Use the MON mix section of channels 1, 2 and 3 to adjust the monitoring level of tracks 1, 2 and 3 respectively.

Mixdown

Mixdown is the final process in multitrack recording, in which you combine multiple recorded track data into stereo L and R (2 mixes) and copy (dub) to the master recorder.

You can apply effects to the recordings on tracks 1–4 via Aux send/return, equalize the signals, and adjust the overall volume level and stereo image before mixdown.
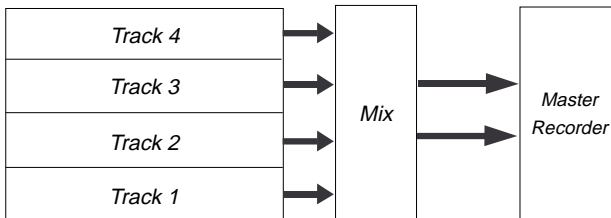
To output signals for mixdown (stereo bus L/R output), the FD-4 is equipped with DATA OUT jacks that output digital signals (S/P DIF format), as well as the STEREO OUT L/R jacks for analog output.

This makes it possible to perform high-quality digital mixdown without tonal deterioration onto an external DAT machine with optical inputs.

Refer to "Advanced Operation" for more information on digital mixdown and other mixes using advanced techniques.

- Initialize the FD-4.
- Use two effect units, reverb and chorus, for effects.

Connecting external devices
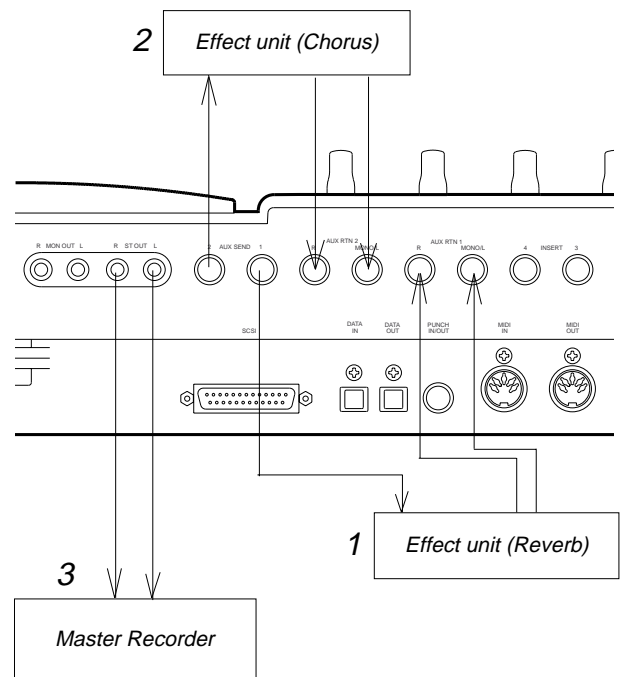
1. **Connect the input and output jacks of the reverb unit to the AUX SEND1 and AUX RTN1 of the FD-4 respectively.**

2. **Connect the input and output jacks of the chorus unit to the AUX SEND2 and AUX RTN2 of the FD-4 respectively.**

3. **Connect the input jacks of the master recorder (DAT or analog recorder) to the STEREO OUT L/R of the FD-4.**

Effect unit 1

Effect unit 2

5, 12

Master Recorder

10

9

2

1

7

7

3

4, 8

14

6, 13

Turn the knob toward [AUX 1] to apply reverberation;
turn it toward [AUX 2] to apply chorus.

**10. Use the AUX RTN 1 and AUX RTN 2 knobs to adjust the
input level from the effect units to the stereo bus L/R.**

Mixdown

**11. Press the REWIND button while holding down the STOP
button to locate the beginning of the Program.**

12. Start recording on the master recorder.
Adjust the input level on the master recorder so that its
level meters indicate almost the same level as the FD-4's
level meters L/R.

**13. Press the FD-4's PLAY button to play the Program from the
beginning.**
Operate the master faders L/R to fade the mixdown sound
in and out.

Quitting mixdown

14. Stop the master recorder and the FD-4.

Setting the switch and knob on the FD-4

1. Set the INPUT SEL switches of channels 1–4 to [TRK].
In this way, the output from recorded tracks 1–4 will be
routed to the corresponding input channel faders for
equalization and effect processing.

2. Set the channel PAN knobs accordingly.
There is no rule on the position of the PAN knobs.
The settings would differ depending on the type of the
instrument you recorded or the feel of your song.
You can, for example, pan a given instrument to the left
and the vocal to right. Follow your intuition.

3. Set the SELECTOR in the monitor section to [L/R].

4. Raise the master fader L/R to [7–8].

Setting the output level and the master recorder

5. Set the master recorder to recording standby mode.
You should be able to check the recording level.

**6. Press the PLAY button to play back the Program from the
beginning.**

**7. Raise the channel faders and turn the MASTER knob in the
monitor section gradually to monitor the sound.**
Use the channel faders to adjust the track playback levels
while monitoring the sound.
At this time, check the level meters L and R and adjust
the faders so that the [OL] section of the meter will not
light up with the maximum level.

**8. When you obtain a satisfactory balance, use the master
fader L/R to adjust the final output level.**
Also adjust the input level on the master recorder.

Settings for the effect units

**9. Turn the AUX knob for the channel signal to which you wish
to apply effects toward [AUX 1] or [AUX 2].**

Handling Programs

This chapter explains how to handle Programs.
It covers the following topics:

> **1. Creating a new Program**
> **2. Using a Program Change function**
> **3. Deleting a Program**
> **4. Editing a Program title**

Creating a new Program

You can manage individual songs by setting multiple Programs on the disk as explained in the "Managing songs by Program Change function" section of the "Before Starting" chapter. You can create up to 99 Programs can be created as long as the disk space allows.

When you format a disk, one Program will be automatically created. Follow the steps below to create a new Program (in addition to the Program created on the disk during the format operation).
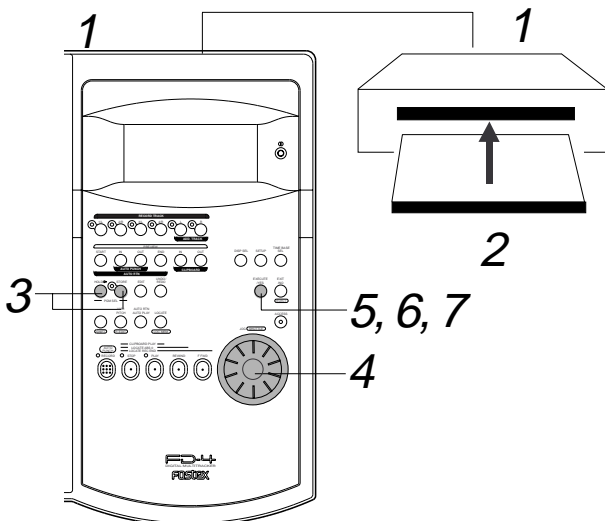
1. Turn on the power to the FD-4 and a connected SCSI drive.

2. Insert a formatted disk into the SCSI drive.

The FD-4 displays [Initial..], [(SCSI drive name and ID number)], [(Recording mode, such as [Normal])], then the top of ABS Time Base (ABS 0).
The current Program is [PGM 01]. [#0001] is the default name of PGM 01.
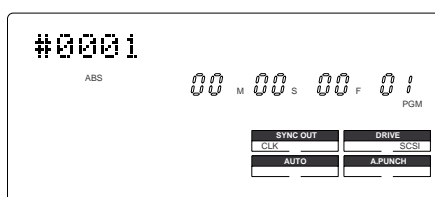
3. While holding down the HOLD/> key, press the STORE key. (Alternatively, while holding down the STORE key, press the HOLD/> key.)

[Select PGM] appears on the display briefly, then changes to a flashing "01" ([#0001 of PGM 01) and [SURE?] flash. ([#0001] is the default name of PGM 01.)
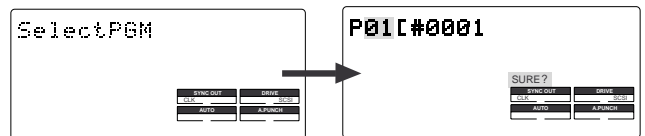
4. Turn the JOG dial clockwise.

The question marks "?" of [New PGM ?] and [SURE?] flash. This indication asks you if you wish to set a new Program (Program 2).
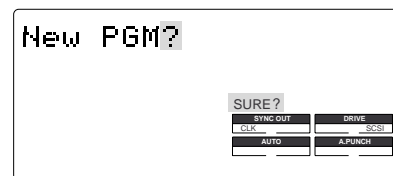
5. Press the EXECUTE/YES key.

The FD-4 automatically enters [Title Edit ?] menu in SETUP mode. You can enter a title for Program 2. ([t] and [?] flash alternately.)
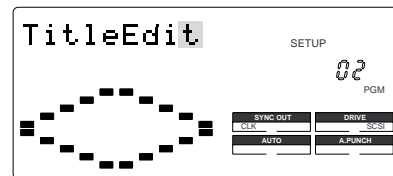
6. Press the EXECUTE/YES key again.

A default title (#0002) appears on the display, with "#" and [SURE?] flashing. This means that you can enter a name for the new Program.
If you prefer the default name, press the EXECUTE/YES key again. If you wish to name the Program with a unique title, continue the steps below. In either case, you can change the title later, as explained in "Editing a Program title."

> **To enter a title:**
>
> • Turning the JOG dial will enter a character or number at the location of the flashing cursor. You can enter up to 16 characters, nine of which will appear on the display.
>
> • To move the flashing cursor, press the HOLD/> key, the REWIND button, or the F FWD button. The F FWD button is the most convenient.
>
> • You can enter the following characters and numbers:

```
#$%&'()*+,-./01234
56789:;<=>?@ABCDEF
GHIJKLMNOPQRSTUVWX
YZ[¥]^_`abcdefghij
klmnopqrstuvwxyz{|
}→←_!"
```

7. When you finish entering the title, press the EXECUTE/YES key.

Program 2 (PGM 02) and its title are set.

The display shows the ABS Time Base indication of the Program.

<Important!>

- *When you create a new Program by selecting the [New PGM ?] menu, a new Program is created with an increment number.*

  That is, if only one Program exists and when you create a new Program, it will be named Program 2.

  If Programs 1–5 already exist, a new Program number will be 6.

- *If there is insufficient recording space on the disk, you cannot create the new Program. Each time you create a new Program, the recordable area on the disk will decrease.*

Using the Program Change function

If multiple Programs exist on the disk, you need to select a Program to record, play, or edit. This section describes how to select a Program.

<Note>

You cannot use the Program Change function when the FD-4 is in SETUP mode.
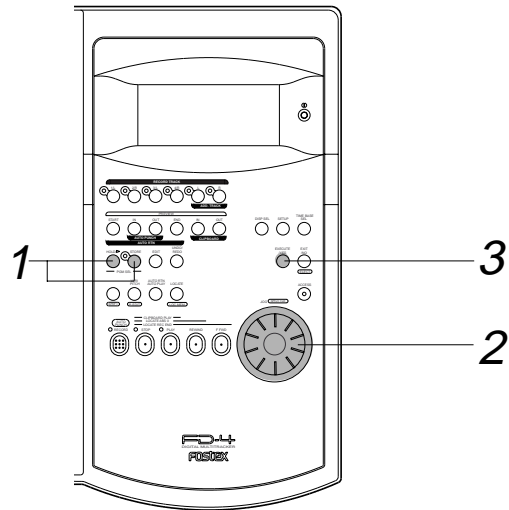
1. When the FD-4 is stopped, press the STORE key while holding down the HOLD/> key. (Or press the HOLD/> key while holding down the STORE key.)
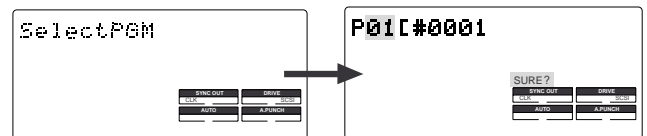
2. Turn the JOG dial to select the desired Program number (flashing).

Rotating the JOG dial counter-clockwise decreases the number, and rotating it clockwise increases the number. If you turn the JOG dial clockwise all the way, [New PGM ?] will be selected.

Select [New PGM ?] to create a new Program as mentioned in the previous section "Creating a new Program."

For example, you can select one of seven Programs as follows:

PGM 01	PGM 02	PGM 03	PGM 04	PGM 05	PGM 06	PGM 07	New PGM

You can select up to PGM 01 in this direction.   *You can select from PGM 03 up to New PGM in this direction.*
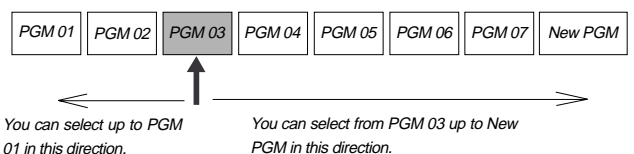
3. Press the EXECUTE/YES key.

The ABS Time Base indication for the selected Program appears.

In this way, you can be sure to select a Program before you start working.

37

Deleting a Program

This section explains how to delete an unnecessary Program.

Deleting an unnecessary Program will expand the recordable area, making your work flow more smoothly, since recording or editing requires sufficient recordable area (free space on the disk). Use the [Del. PGM ?] menu in SETUP mode to delete a Program.

<Notes on deleting a Program>

• *You can delete only the currently-selected Program. Refer to the previous section, "Using a Program Change function," for information on how to select the desired Program before you proceed to delete the Program.*

• *If only one Program exists and you try to delete it, data contained in the Program will be deleted, but the Program itself will remain.*
  For example, assume that PGM 01 –07 exist and you try to delete PGM 05. Program number 05 will remain, but the data inside PGM 05 will be replaced with the data of PGM 06. The subsequent Programs' data will move in the same way. Therefore, it will appear that PGM 07 has been deleted. If you delete the last Program (PGM 07 in this example), PGM 07 will be completely deleted.

PGM 01	PGM 02	PGM 03	PGM 04	PGM 05	PGM 06	PGM 07

  If you try to delete PGM 05, only the data of PGM 05 will be deleted and the data of PGM 06 will move into PGM 05.

  After deleted

PGM 01	PGM 02	PGM 03	PGM 04	PGM 05	PGM 06
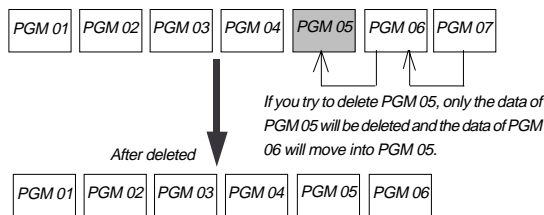
• *You cannot use the Undo/Redo function to delete Programs. Make sure that you delete the correct Program.*
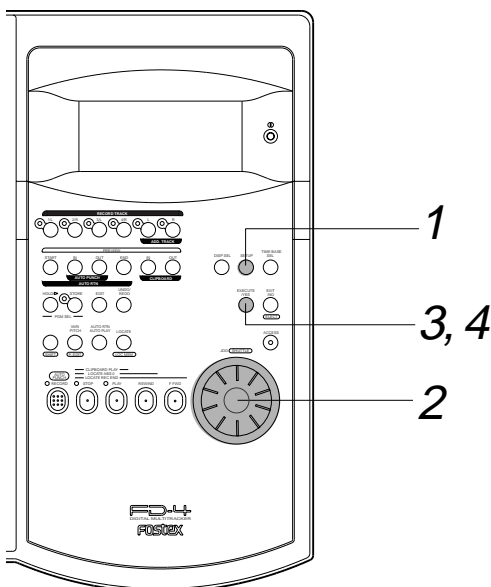
---

1. Press the SETUP key while the FD-4 is stopped.

The FD-4 enters SETUP mode, and displays the first hierarchy of the SETUP menu that was displayed before you turned off the power.

The default setting is [Sign. Set ?] menu (setting a time signature).
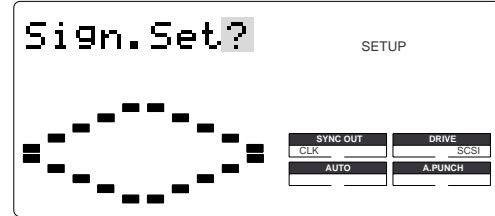
2. Turn the JOG dial to select the first hierarchy of the [Del. PGM ?] (deleting a Program) menu.

Alternatively, you can use the HOLD/> key, the REWIND button, or the F FWD button.
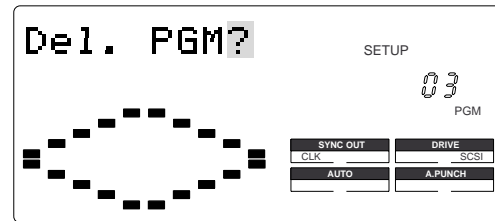
3. Press the EXECUTE/YES key.

The number of the Program to be deleted appears and [SURE ?] flashes.
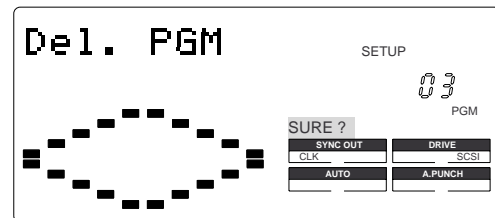
To cancel the delete operation, press the EXIT/NO key while [SURE ?] is flashing. Each time you press the button or key, the FD-4 will return to a higher level in the hierarchy, and finally exit SETUP mode.

4. Press the EXECUTE/YES key again.

When the FD-4 displays [Deleting...] and finishes deleting the Program, the data of the next Program number moves in, and its ABS time appears.

• *To check the REMAIN time and free space, press the DISP SEL key to display the [REMAIN] indication after the Program is deleted.*

Editing a Program title

You can name the Program as explained in the "Creating a new Program" section. You can also change the title later by using the [Title Edit ?] menu in SETUP mode.

<Note>

You can edit the title of the selected Program before you select SETUP mode. You cannot select a Program after the FD-4 enters SETUP mode. Be sure to select the desired Program using the steps explained in the "Using the Program Change function" section.
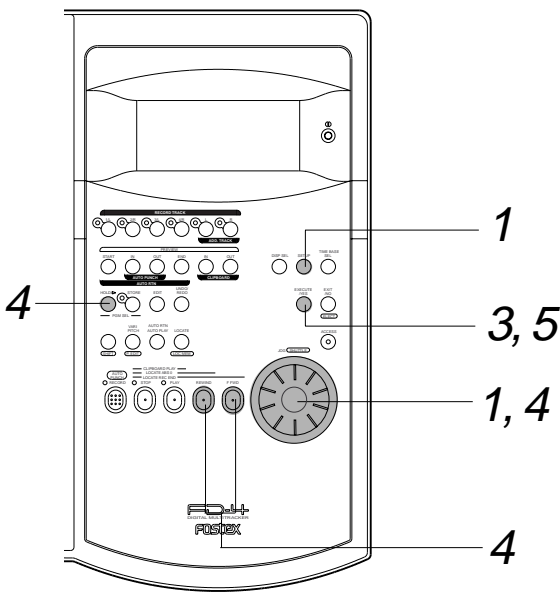
1. Press the SETUP key while the FD-4 is stopped.

The FD-4 enters SETUP mode and displays the first hierarchy level of the SETUP menu that was selected before you turned off the power.
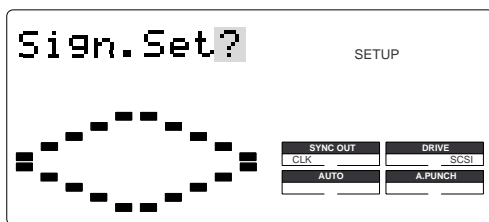
2. Turn the JOG dial to select the first hierarchy level of the [Title Edit ?] (title edit) menu.

The currently-selected Program number also appears. You can also use the HOLD/> key, the REWIND button, or the F FWD button to select the first hierarchy level display.
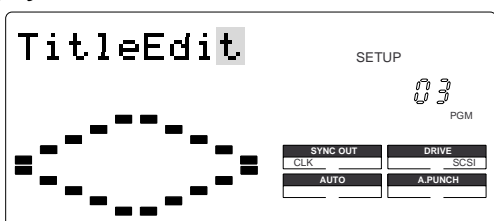
3. Press the EXECUTE/YES key.

The currently-selected Program title appears with the left-most character flashing.
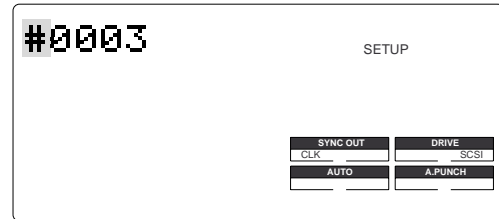
4. Press the HOLD/> key, the REWIND button, or the F FWD button to move the flashing cursor, and use the JOG dial to enter characters or numbers.

To move the flashing cursor, press the HOLD/> key, the REWIND button, or the F FWD button. The F FWD button is the most convenient.

You can enter up to 16 characters, nine of which will appear on the display.

You may enter the following characters and numbers:
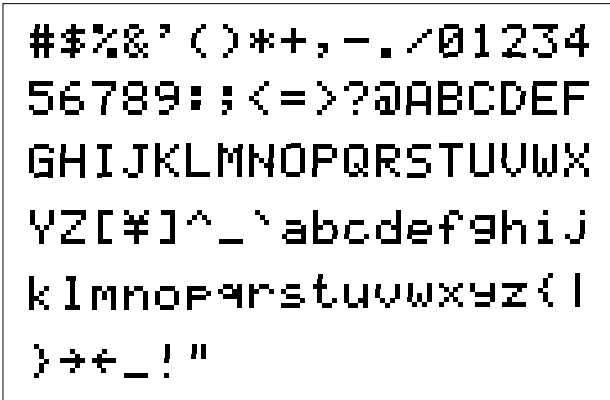
5. After you enter the title, press the EXECUTE/YES key.

The new title is confirmed, and the ABS time value of the Program appears.

39

Playback in Vari Pitch Mode

This chapter explains how to change the playback speed of
the recorder using the Vari Pitch function. You can set Vari
Pitch in the range of +6.0% to −6.0% in 0.1% steps.
The VARI PITCH key turns Vari Pitch mode on and off.
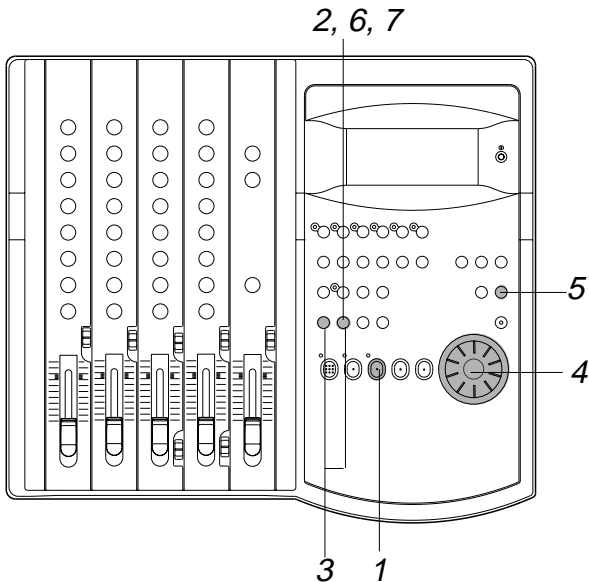
1. Press the PLAY button to play the FD-4.

2. Press the VARI PITCH key.

The [VARI PITCH] indicator lights up on the display,
indicating that Vari Pitch mode is turned on.
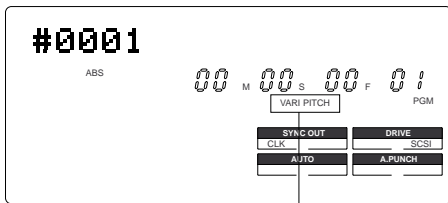
*VARI PITCH lights up to indicate Vari
Pitch mode is turned on.*

**3. Press the VARI PITCH key again while holding down the
SHIFT key.**

The FD-4 enters Vari Pitch data edit mode, and the
current pitch data flashes on the display.

The current pitch data flashes.

4. Set the desired pitch data using the JOG dial.

You can hear the changes in playback speed.

5. After you set the pitch data, press the EXIT/NO key.

The FD-4 exits from Vari Pitch data edit mode and
continues playing with the Vari Pitch you just set.

**6. To turn off Vari Pitch mode, press the VARI PITCH key. (The
[VARI PITCH] indicator turns off.)**

Vari Pitch mode is cancelled, and the FD-4 resumes
playback at normal speed.

**7. If you wish to play back data at the current Vari Pitch again,
press the VARI PITCH key to turn the mode on.**

You can turn the Vari Pitch function on and off and edit the
pitch data while the FD-4 is playing or stopped, but not
during recording.
However, if the Vari Pitch function has already been turned
on and the pitch data was specified before you start
recording, the FD-4 will record using the current Vari Pitch.

<Note>

Even if the pitch data is 0.0% (no speed change), pressing the
VARI PITCH key will turn on the [VARI PITCH] indicator on the
display. In other words, the [VARI PITCH] display indicates that the
Vari Pitch function is turned on.

<Note>

The Vari Pitch function is automatically turned off and the [VARI
PITCH] indicator is turned off under the following conditions:

• You have turned on the power to the FD-4. (The pitch data will
be reset to 0.0%.)

• You have set "Slave mode setting" in SETUP mode to ON. (The
pitch data previously set will be maintained.

• You have specified a track for "Digital input track setting" in SETUP
mode, and [DIGITAL] lights up on the display. (The pitch data
previously set is retained.)

Recording to a Metronome Sound

This chapter explains how to record your performance while you are playing an instrument accompanied by a metronome based on the time signature and tempo specified in the Tempo Map. The metronome sound is output from track 4.

For example, record the acoustic guitar using a microphone to track 2 while using a compressor/limiter.

* Initialize the FD-4 before the operation.
* If multiple Programs exist, first select the desired Program.

Connecting a sound source and a effect unit

If the microphone has a balanced (XLR) connector, use INPUT 3 (XLR) jack on the rear panel.

Compressor/limiter
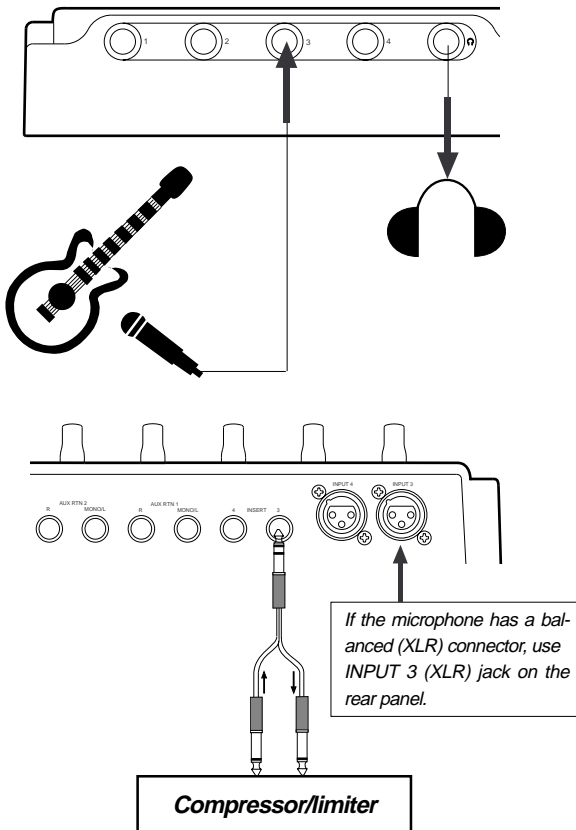
1. Connect a microphone to input jack 3.
If the microphone has a balanced (XLR) connector, use INPUT 3 (XLR) jack on the rear panel.

2. Connect a compressor/limiter to INSERT jack 3 on the rear panel.
The compressor/limiter will be applied to channel 3 signal.

Setting the switch and knob

Compressor/limiter
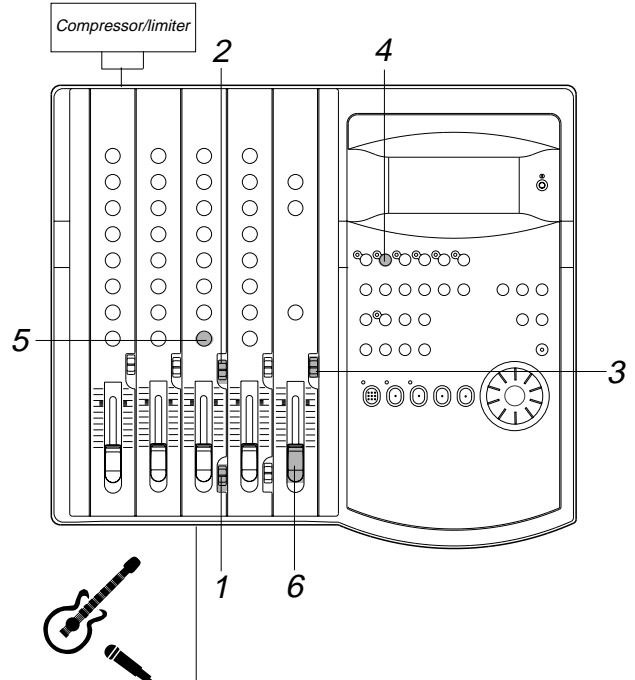
1. Set channel 3 LEVEL switch to [L].

2. Set channel 3 INPUT SEL switch to [INPUT].

3. Set the SELECTOR in the monitor section to [MON].

4. Set the RECORD TRACK select key 2/R to READY.

5. Turn channel 3 PAN knob all the way to R.

6. Raise the master fader L/R to [7–8].

Creating a Tempo Map

1. Set the time signature using the "Setting a time signature" menu in SETUP mode.
Refer to the "Setting a time signature" section on page 82.

2. Set a tempo for a given point using the "Setting a tempo" in SETUP mode.
Refer to the "Setting a tempo" section on page 83.

Turning the Metronome function on

1. Turn the Metronome function on using the "Setting the Metronome function" menu in SETUP mode.
Refer to the "Setting the Metronome function" section on page 85.
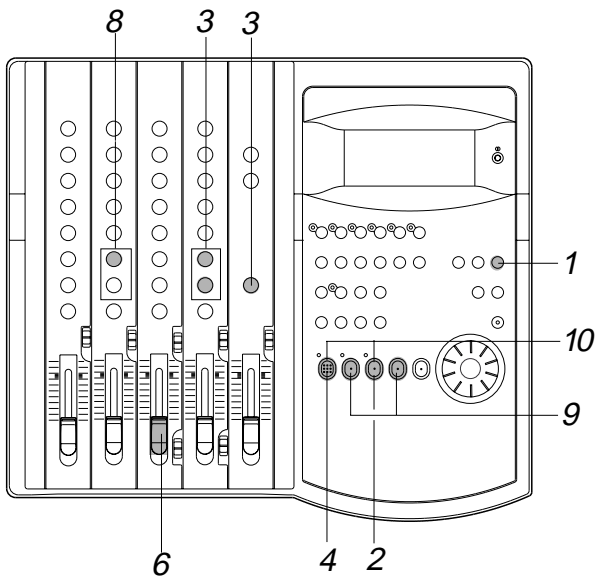
Checking the metronome sound

1. Select the BAR/BEAT/CLK Time Base using the TIME BASE SEL switch.

2. Start playback from the beginning of the Program.
Even if the selected Program does not have any recorded data, track 4 outputs the metronome sound and the FD-4 counts time.

3. Turn the MON knob of channel 4 MON mix section toward TRK, and turn the MASTER knob in the monitor section gradually.
You will hear the metronome output from track 4 using the tempo and time signature set in the Tempo Map.

Monitoring the guitar sound and adjusting the recording level

4. Press the RECORD button.
Track 2 enters input monitoring mode.

5. Play the guitar.

6. Adjust the recording level of the guitar sound using the channel 3 input fader.
As you raise the input fader, level meter 2 will respond.

7. Adjust the output level on the compressor/limiter.

8. Adjust the guitar monitoring level using the channel 2 MON mix section.
Use the channel 2 MON knob to adjust the level, and use the MON PAN knob to adjust the stereo image.

Starting recording

9. Locate the top of the Program.

10. Hold down the RECORD button and press the PLAY button to start recording.

11. Play the guitar in time with the metronome.
The guitar sound is recorded at the recording level adjusted in step 6.

Quitting recording

1. Press the STOP button to stop the recorder.

Checking the recorded sound

1. Set the RECORD TRACK select key 2/R to off.

2. Lower channel 3 input fader.

3. Locate the top of the Program and start playback.

4. Turn the channel 2 MON knob to the left to check the recorded guitar sound.
Since the Metronome function still remains on, you can hear the metronome sound during playback as you turn the channel 4 MON knob.

<Note>
When you finish using the Metronome function, turn the function off in SETUP mode.

<Note>
When the Metronome function is on, you cannot record data on track 4, nor can you play data recorded on track 4.

If you wish to re-record the sound, use the Undo/Redo function to re-start recording as explained in the "Basic Recording and Playback" chapter.

Punch In/Out Recording

What is Punch In/Out recording?

Punch In/Out recording enables you to record over previously-recorded parts. See the diagram below. For example, using the Punch In/Out function allows you to change an unsatisfactory guitar solo.

The FD-4 offers two types of Punch In/Out functions. One is called Auto Punch In/Out, in which you automatically re-record a specified part. The other is called Manual Punch In/Out, in which you record data manually (using your foot to operate an optional foot switch, model 8051).

Both functions feature "Rehearsal mode" to enable you to practice repeatedly until you are ready.
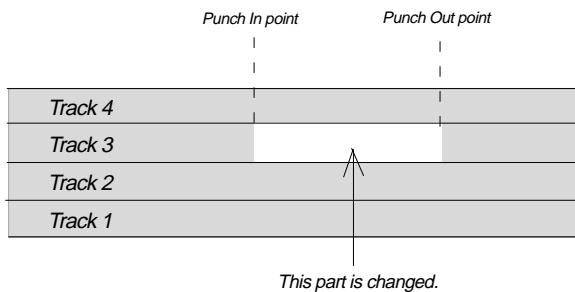
- *Select a Program for Punch In/Out recording.*
- *Initialize the FD-4.*

<Note>
You can use the Punch In/Out recording only for Real tracks 1–4. If you wish to use Punch In/Out recording for data on an Additional track, first move the data to the Real tracks.

Auto Punch In/Out

To perform Auto Punch In/Out recording, you need to specify the Auto Punch In point (recording start point) and the Auto Punch Out point (recording end point).

Storing the edit points

1. Refer to "Storing the edit points" on page 63 to set the Auto Punch In/Out points.
Store the Auto Punch In point to the AUTO PUNCH IN key, and the Auto Punch Out point to the AUTO PUNCH OUT key.

- *Refer to page 63 for more information on storing the edit points.*
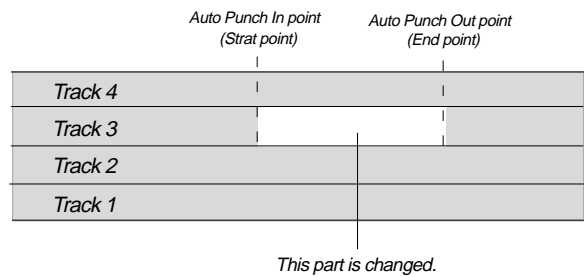
<Note>
Make sure that you specify an Auto Punch In point that precedes the Auto Punch Out point. If the Auto Punch Out point precedes the Auto Punch In point, [Void Out !] appears and you will be unable to perform Auto Punch In/Out recording.

Previewing and trimming the edit points

You can check the stored edit points by pressing the corresponding memory keys to display them on the LCD. You can also change the points if necessary.

In this example, use the Preview function to fine-tune the point while previewing.

1. While the FD-4 is stopped, hold down the SHIFT key and press the memory key.
Pressing the AUTO PUNCH IN key enables you to listen to the sound at the AUTO PUNCH IN point ("previewing the sound rise [fade-out]"). Pressing the AUTO PUNCH OUT key enables you to listen to the sound at the AUTO PUNCH OUT point ("previewing the sound fall [fade-in]").

2. Trim the edit point while auditioning the sound.

- *Refer to page 69 for more information on the Preview function.*

43

When you finish storing and adjusting the edit points, you can proceed to the Auto Punch In/Out operation.
In this example, we re-record part of the guitar phrase that was already recorded on track 3. First follow the "Preparation" below, then rehearse, and record a take.

Preparation

2-E
2-C
2-A
2-B
1
2-D
2-F
2-G
2-H
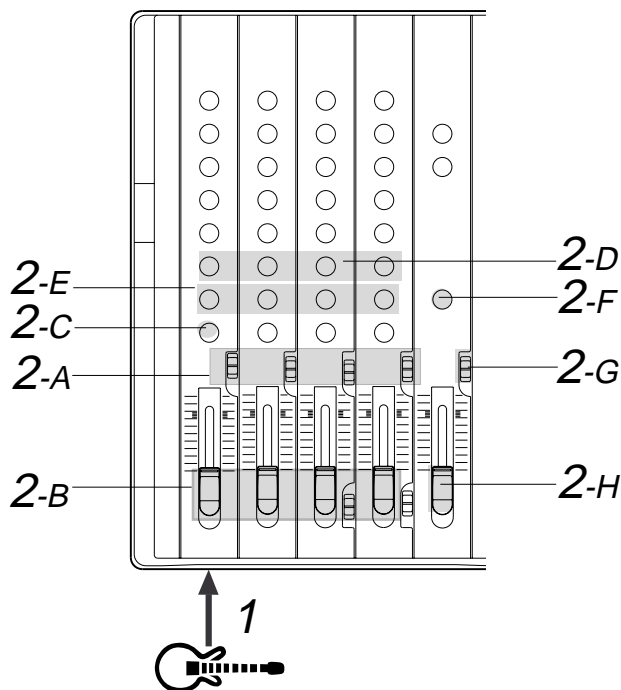
Connecting the instrument

1. Connect the guitar to input jack 1.

Microphones and some instruments require an input level adjustment.
Connect these to input jacks 3 and 4 (unbalanced jacks on the front panel or balanced connectors on the rear panel) that are equipped with the LEVEL switches.

Setting the mixer section

2. Set up the mixer section as follows:

A	**INPUT SEL switch**	Channel 1 -> [INPUT] Channel 2 -> [OFF]
B	**Input fader**	Channel 1 -> as you wish Channel 2~4 -> [0]
C	**Channel 1 PAN knob**	[L] (Turn all the way to left.)
D	**MON knob**	Channel 1~4 -> Turn toward [TRK]. Adjust the track monitor level.
E	**MON PAN knob**	Channel 1~4 -> Adjust for easier monitoring.
F	**MON MASTER knob**	Adjust for easier monitoring.
G	**MON SELECTOR**	Switch to [MON]
H	**Master fader L/R**	Raise up to [7~8].

Rehearsing Auto Punch In/Out recording

In Rehearsal mode, the READY track assumes input monitoring mode between the Auto Punch In and Out points, and the sound is not recorded. You can practice Auto Punch In/Out operation repeatedly before you proceed to actual recording.
Locate the recording start position slightly before the Auto Punch In point.

<Tips for rehearsal>

Set the preroll value while referring to the "Changing the Initial Settings (SETUP Mode)" chapter. In this way, the FD-4 can locate a point that precedes the Auto Punch In point by the specified preroll value. This enables you to start playback slightly before the Punch In point. (Refer to page 85 for more information on "Changing the Initial Settings.")

The FD-4 will repeat playback data between the AUTO RTN START point and the AUTO RTN END point if you set the AUTO RTN START point before the Auto Punch In point and the AUTO RTN END point after the Auto Punch Out point. This allows you to repeat rehearsal. See the "Hints" on page 45.

---

1. Press the RECORD button while holding down the SHIFT key.

The [RHSL] indicator flashes in the A.PUNCH mode indication area of the display. This means that Auto Punch mode is turned on.

A. PUNCH
RHSL

2. Set the track for Auto Punch In/Out to READY.

Press the RECORD RACK select key [3/L] to set track 3 to READY.

3. Start playback on the FD-4 from a point slightly before the Auto Punch In point.

Rehearsal starts, and the FD-4 operates as follows:

Playback start point	Auto Punch In point (Rehearsal in)	Auto Punch Out point (Rehearsal out)	Playback end point
	Track 4		
	Track 3	This part is changed.	
	Track 2		
	Track 1		

All tracks are in playback monitoring mode.

Only track 3 in input monitoring mode.
The sound is not recorded at this time.
The RECORD LED flashes.

All tracks are in playback monitoring mode.

The FD-4 punches in automatically at the Punch In point.

The FD-4 punches out automatically at the Punch Out point.

The LED of the REC TRACK select key 3/L remains flashing.

4. Play the guitar accompanying the playback sound from tracks 1 and 2 for rehearsal, while adjusting the recording level.

You will hear the guitar performance between the Auto Punch In and Out points. Otherwise, you will hear the recorded guitar sound.
Use the channel 1 input fader to adjust the recording level of the guitar. Turn the channel MON knobs toward [TRK] to adjust the playback level of tracks 1–3.

5. When you are satisfied with your rehearsal, press the STOP button.

<Hint 1>

Locating a point slightly before the Auto Punch In point

To locate the playback start point for rehearsal, press the AUTO PUNCH IN key, then press the LOCATE key.

The FD-4 displays the time (position) stored in the AUTO PUNCH IN key, and locates the point and stops.

Press the REWIND button to go backward. If you have set the preroll time as described on page 85, you can locate a point that precedes the Auto Punch In point by the specified preroll value. For more information, see "Setting a preroll time" on page 85.

Auto Punch In point   Auto Punch Out point

Stop here.

Locate   Locate

The FD-4 stops at a point that precedes the Auto Punch In point by the specified preroll time. (0~10 seconds)

<Hint 2>
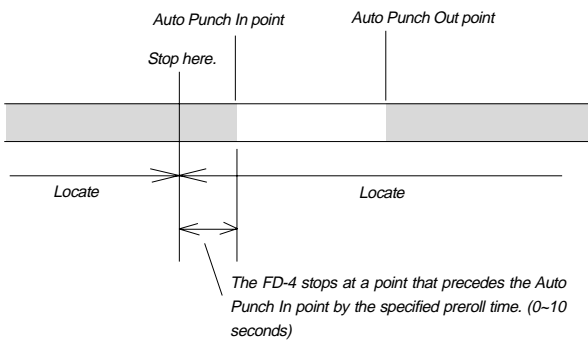
Quick and easy operation for repeated rehearsal

Using the Auto Return function and the Auto Play function enables you to rehearse repeatedly.

As shown below, set the AUTO RTN START and END points for Auto Return and Auto Play. In this way, you can repeat rehearsal easily, while checking the recording level and concentrating on your performance.

Refer to page 63 for more information on setting the AUTO RTN START/END points.

Auto Punch In point   Auto Punch Out point

AUTO RTN START point   AUTO RTN END point

Rehearsal area

Playback starts from the AUTO RTN START point, and you can rehearse Auto Punch In/Out.

When the AUTO RTN END point is reached, the FD-4 locates the AUTO RTN START point.

<Note>
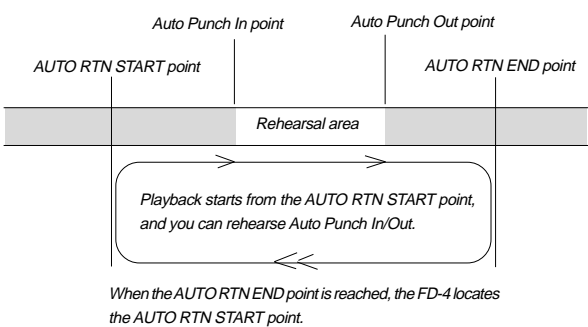
If the FD-4 display [Over] when you turn on Auto Punch mode, the disk does not have enough free space for Auto Punch In/Out. You need to erase part of the Program data, then try again.

Auto Punch In/Out Take

After you are satisfied with your rehearsal, you can proceed to an actual take of Auto Punch In/Out. You can undo or redo Auto Punch In/Out recording if you change your mind.

• *The control panel settings are the same as those for rehearsal.*

1. Locate a point slightly before the Auto Punch In point.

2. Confirm that Auto Punch mode is turned on.
   If it is not on, press the RECORD button while holding down the SHIFT key.

3. Press the RECORD TRACK select key [3/L] to set track 3 to READY.

4. Press the RECORD button while holding down the PLAY button.
   The flashing [RHSL] on the display changes to an illuminated [TAKE], and recording starts.
   The FD-4 operates as follows. To record, hold down the PLAY button and press the RECORD button.

A. PUNCH
TAKE

Playback start point   Auto Punch In point (Rehearsal in)   Auto Punch Out point (Rehearsal out)   Playback end point

Track 4
Track 3   *This part is changed.*
Track 2
Track 1

All tracks are in playback monitoring mode.   *Only track 3 is in input monitoring mode, and data will be recorded. The Record button LED flashes in this area.*   *All tracks are in playback monitoring mode.*

The FD-4 punches in automatically at the Punch In point.   *The FD-4 punches out automatically at the Punch Out point.*

• *The LED of the REC RACK select key 3/L remains steadily lit between the Punch In and Out points. Otherwise, it flashes.*

• *When the Auto Punch Out point is passed, the FD-4 cancels Auto Punch mode automatically, and nothing appears in the A. PUNCH display area.*

5. Hold down the PLAY button and press the RECORD button.

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

7. Play track 3 to check the result of the Auto Punch In/Out operation.

<Caution after Punch Out>

At "Take" of punch out, the punch-in recording track will not immediately enter the repro monitor mode from the input monitor mode enter the repro monitor mode about two seconds after mute playback. This is a functional feature of FD-4 and not a malfunction.

45

Undo/Redo Auto Punch In/Out recording

You can undo or redo Auto Punch In/Out recording.
Press the UNDO/REDO key after recording is complete to
restore the conditions that existed prior to the recording.
Press the UNDO/REDO key again to restore the conditions
that existed after the recording. Follow the notes below:

<Note-1>

The Undo/Redo function is effective only when the FD-4 is stopped.

<Note-2>

The Undo/Redo is not effective if you perform one of the following
operations after you finish recording:

- When a new recording is made.
- While a new editing is executed (such as Copy & Paste, Move &
  Paste, or Erase).
- When in the AUTO PUNCH ON mode, when the AUTO PUNCH
  IN point is passed in the PLAY (or RECORD) mode.
- When the power is momentarily switched off.
- When the program is changed.
- When the disk is ejected.

Manual Punch In/Out

This section explains how to perform Manual Punch In/
Out using a foot switch (optional Model 8051).
You do not need to specify the Punch In/Out points.
Instead, you press the foot switch at the Punch In/Out point.
Manual Punch In/Out also offers rehearsal and actual takes.
You can repeat rehearsal until you are ready.
As an example, replace a part of the recorded guitar solo on
track 3.

- Initialize the FD-4.
- Select a desired Program for Punch In/Out.

Preparation

Foot switch Model 8051
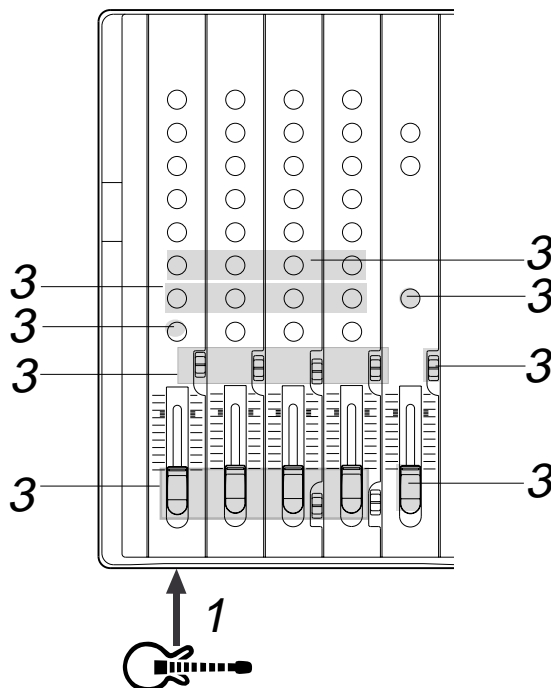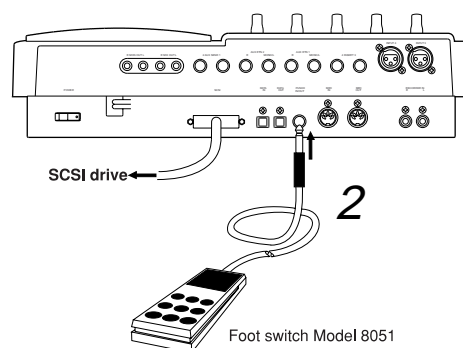
Connecting the instrument and a foot switch

1. Connect the guitar to input jack 1.

**2. Connect an optional foot switch (Model 8051) to the PUNCH
IN/OUT jack on the rear panel.**

Setting the mixer section.

3. Set up the mixer control section as explained in the "Auto Punch In/Out" section.

Rehearsing Punch In/Out recording

In Rehearsal mode, the READY track enters input monitoring mode between the Punch In and Out points (the points at which you press the foot switch), and the sound is not recorded. You can practice the Punch In/Out operation repeatedly before you proceed to actual recording.

1. Press the foot switch while holding down the STOP button.
The FD-4 displays [Rehsl On] for a second and enters Rehearsal mode.
[RHSL] flashes in the A.PUNCH display area.

A. PUNCH
RHSL

2. Press the RECORD TRACK select key [3/L] to set track 3 to READY.

3. Press the PLAY button to play back from a point slightly before the Punch In point.

4. Play the guitar accompanying the playback of tracks 1 and 2.
Follow the instructions in the "Auto Punch In/Out" section to adjust the recording level and the monitor level.

5. Press the foot switch once at the desired Punch In point, then press the foot switch again at the desired Punch Out point.
The FD-4 operates as follows. You will hear your performance between the Punch In/Out points. Otherwise, you will hear the previously-recorded guitar.

Playback start point	Punch In point (Rehearsal in)	Punch Out point (Rehearsal out)	Playback end point
Track 4			
Track 3	This part is changed.		
Track 2			
Track 1			

All tracks are in playback monitoring mode.	Only track 3 is in input monitoring mode. The sound is not recorded at this time. The Record button LED flashes in this area.	All tracks are in playback monitoring mode.

Press the foot switch at the Punch In point.

Press the foot switch at the Punch Out point.

6. When you finish rehearsing, press the STOP button.
If you are still unsatisfied, repeat steps 3–5.

Cancelling Rehearsal mode

1. While holding down the STOP button, press the foot switch.
[Rehsl Off] appears for a second, the flashing [RHSL] indicator in the A. PUNCH display area disappears, and Rehearsal mode is cancelled.

> **<Hint>**
> To rehearse repeatedly, set the AUTO RTN START point slightly before the Punch In point, and the AUTO RTN END point slightly before the Punch Out point.
> This will help you concentrate on your performance or check the recording level easily (especially since Manual Punch In/Out involves operating the foot switch operation as well as the FD-4). (See <Hint-2> in the "Rehearsing Auto Punch In/Out recording" for more information.)

Manual Punch In/Out take

You can proceed to record if you are satisfied with the recording level, foot switch timing, and rehearsal.

> **<Note>**
> You cannot record a second take during the Manual Punch In/Out operation without stopping the FD-4. That is, the FD-4 will continue playing after you finish recording a take, but you cannot record another take by pressing the foot switch.

1. Confirm that Rehearsal mode is cancelled, and start playing the FD-4 from a point slightly before the desired Punch In point.

2. Play the guitar, accompanying the playback of tracks 1 and 2.

3. Press the foot switch at the desired Punch In point. Press the foot switch again at the desired Punch Out point.
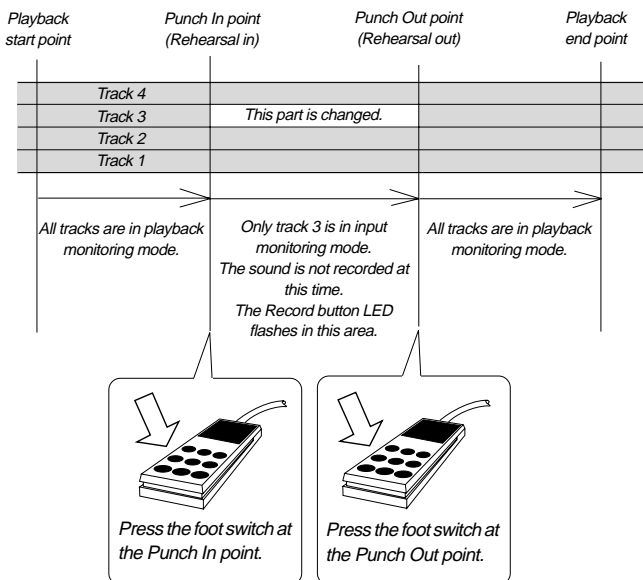The FD-4 will operate as follows. The FD-4 enters recording mode at the Punch In point, and cancels recording mode at the Punch Out point.

Playback start point	Punch In point (Take in)	Punch Out point (Take out)	Playback end point
Track 4			
Track 3	This part is changed.		
Track 2			
Track 1			

All tracks are in playback monitoring mode.	Only track 3 is in input monitoring mode, and data will be recorded.	All tracks are in playback monitoring mode.

Press the foot switch at the Punch In point.

Press the foot switch at the Punch Out point.

47

4. Press the STOP button.

5. Play track 3 and check the result of Punch In/Out.

<Caution after Punch Out>

At "Take" of punch out, the punch-in recording track will not immediately enter the repro monitor mode from the input monitor mode enter the repro monitor mode about two seconds after mute playback. This is a functional feature of FD-4 and not a malfunction.

<Hint>

You can use the PLAY button and the RECORD button, instead of using the foot switch. Follow the steps below.
This method also does not allow you to record another take unless you stop the FD-4 first.
Procedure:

1. Press the PLAY button to start playback from a point slightly before the Punch In point.

2. Press the RECORD button while holding down the PLAY button at the desired Punch In point. (Punch In recording starts.)

3. Press the PLAY button at the desired Punch Out point. (Recording is punched out.)

• If you press only the RECORD button in both steps 2 and 3, you can rehearse Punch In/Out.

Undo/Redo Manual Punch In/Out recording

You can undo or redo Manual Punch In/Out recording. Press the UNDO/REDO key after recording is complete to restore the conditions that existed prior to the recording. Press the UNDO/REDO key again to restore the conditions that existed after the recording. Follow the notes below:

<Note-1>

The Undo/Redo function is effective only when the FD-4 is stopped.

<Note-2>

The Undo/Redo is ineffective if you perform one of the following operations after you finish recording.

• When a new recording is made.
• While a new editing is executed (such as Copy & Paste, Move & Paste, or Erase).
• When in the AUTO PUNCH ON mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.
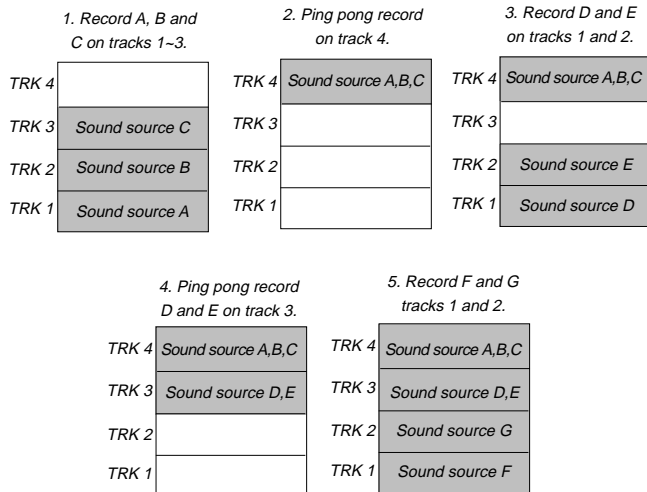*• When the power is momentarily switched off.*
• When the program is changed.
• When the disk is ejected.

Ping-Pong Recording

Ping-pong recording is a recording process in which you mix the playback sound of multiple tracks and record the mix on an empty track. Ping-pong recording enables you to use previously-recorded tracks in a new recording.
In this way, you can overdub more sound sources using a limited number of tracks.

<Example of ping-pong recording>

1. Record A, B and C on tracks 1~3.

TRK 4	
TRK 3	Sound source C
TRK 2	Sound source B
TRK 1	Sound source A

2. Ping pong record on track 4.

TRK 4	Sound source A,B,C
TRK 3	
TRK 2	
TRK 1	

3. Record D and E on tracks 1 and 2.

TRK 4	Sound source A,B,C
TRK 3	
TRK 2	Sound source E
TRK 1	Sound source D

4. Ping pong record D and E on track 3.

TRK 4	Sound source A,B,C
TRK 3	Sound source D,E
TRK 2	
TRK 1	

5. Record F and G tracks 1 and 2.

TRK 4	Sound source A,B,C
TRK 3	Sound source D,E
TRK 2	Sound source G
TRK 1	Sound source F

Result: a total of 7 recorded parts A~D.

In this example session, ping-pong record the sound sources recorded on tracks 1–3 to track 4. At this time, apply effects to tracks 1–3 signals.

TRK 4		
TRK 3	Sound source C	Ping pong recording (Original sound and effected sound)
TRK 2	Sound source B	
TRK 1	Sound source A	

- *Initialize the FD-4.*
- *If multiple Programs exist, select the desired Program first.*
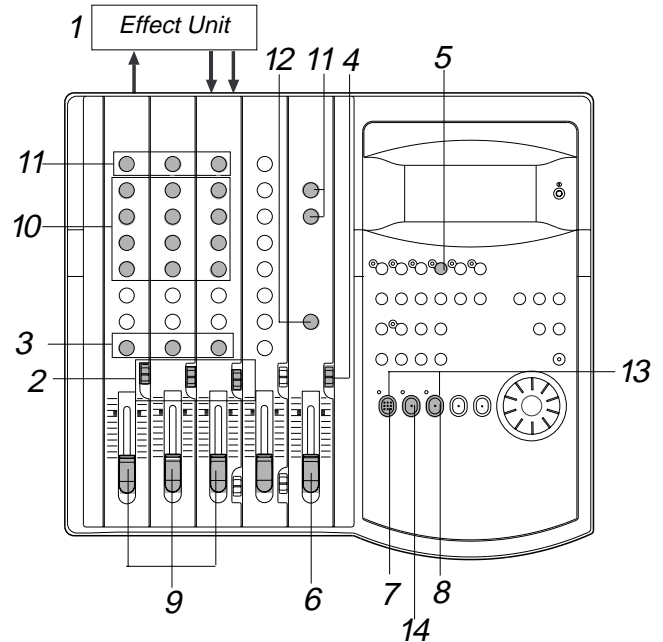
Connecting effect units

1. Connect effect units to Aux send/return.

Setting the switch and knob

2. Set the channels 1–3 INPUT SEL switches to TRK.
Tracks 1–3 playback signals are routed to the corresponding input channel faders.

3. Turn the channels 1–3 PAN knobs all the way to [R].

4. Set the monitor SELECTOR to L/R.
You can monitor the stereo bus L/R output signals.

5. Press the RECORD TRACK select key 4/R to set track 4 to READY.

6. Raise the master fader L/R to 7–8.

Adjusting the recording level/rehearsal

7. Press the RECORD button to set track 4 to input monitoring mode.

8. Start playing the Program from the beginning.

9. Use the channels 1–3 input faders to adjust the track output levels.
The level meters 4 and R respond. Tracks 1–3 level meters indicate the corresponding track output levels.

10. Adjust the channel equalizers, if necessary.

49

11. Turn the AUX knob of the channel signal to which you wish to apply effects toward AUX 1. Use the AUX RTN 1 knob to adjust the return signal level.

At this time, make sure that the [OL] section of level meters 4 and R do not light up continuously.

12. Raise the MASTER knob in the monitor section gradually to listen to the mix to be ping-pong recorded.

When you finish adjusting the level, effects, and balance, stop the recorder section and locate the top of the Program.

Performing ping-pong recording

13. Hold down the RECORD button and press the PLAY button to start recording.

Quitting ping-pong recording

14. Stop the recorder section, and initialize the FD-4.

Checking the ping-pong recording results

1. Set the monitor SELECTOR to MON.

2. Play the Program from the beginning.

3. Turn the channel 4 MON knob toward [TRK] and turn the MASTER knob in the monitor section gradually to audition the sound on track 4.

If the result is not satisfactory, you can undo/redo the recording as described below.

Undo/Redo ping-pong recording

You can undo or redo ping-pong recording.

- *Press the UNDO/REDO key after ping-pong recording is complete to restore the conditions that existed prior to the recording.*

- *Press the UNDO/REDO key again to restore the conditions that existed after the recording.*

When you perform Undo or Redo, [Undo !] or [Redo !], then [COMPLETED !] appear, and the FD-4 displays the previous Time Base.

<Note>

The Undo/Redo function is effective only when the FD-4 is stopped. The Undo/Redo is ineffective if you perform one of the following operations after you finish ping-pong recording.

1. When a new recording is made.
2. When a new editing is executed (such as Copy & Paste, Move & Paste, Erase).
3. While in the AUTO PUNCH ON mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.
4. When the power is momentarily switched off.
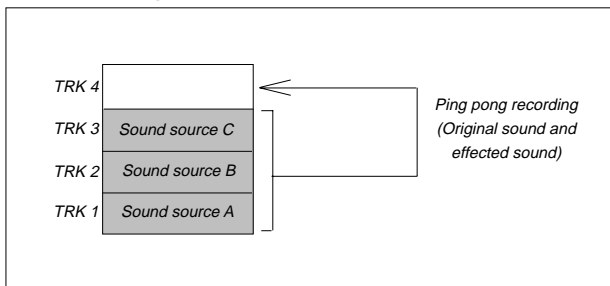*5. When the program is changed.*
6. When the disk is ejected.

Now you have applied effects to tracks 1–3, mixed them, and recorded to track 4.

After this ping-pong recording, you can erase data on tracks 1–3 and overdub other sound sources.

In this way, you can record numerous sound sources with a limited number of tracks.
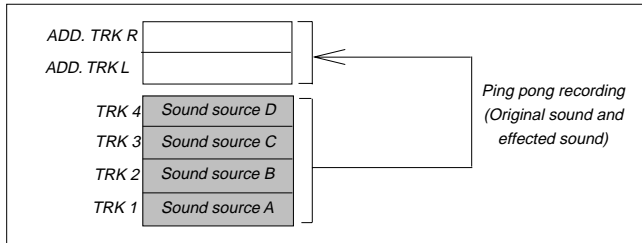
You can also use the Additional tracks of the FD-4 for ping-pong recording (excluding disks formatted in Mastering mode 2).

Refer to the next page for more information on ping-pong recording on the Additional tracks.

Ping-pong Recording to Additional Tracks

This chapter explains how to perform ping-pong recording using Additional tracks L and R.

In this example session, we ping-pong record tracks 1–4 to the Additional tracks.

```
ADD. TRK R  [          ]
ADD. TRK L  [          ]                    Ping pong recording
                                            (Original sound and
   TRK 4  [ Sound source D ]                  effected sound)
   TRK 3  [ Sound source C ]
   TRK 2  [ Sound source B ]
   TRK 1  [ Sound source A ]
```

<Notes>

* This function is available only when you are using a disk formatted in Normal mode or Mastering mode 1.
  You cannot use a disk formatted in Mastering mode 2, which allows for normal ping-pong recording.

* You cannot play back data recorded on Additional tracks. To play back the data, move it to Real tracks 1–2 or 3–4.

---

* Initialize the FD-4 before you start the operation.
* If multiple Programs exist, select the desired Program first.

Connecting effect units

1. Connect effect units to Aux sends/returns.

Setting the switch and knob

1. Set the channel 1–4 INPUT SEL switches to TRK.
Tracks 1–4 playback signals are routed to the corresponding input channel faders.

2. Turn the channel 1–4 PAN knobs all the way [L] or [R] depending on the sound sources so that they will be recorded to Additional tracks L and R.

3. Set the monitor SELECTOR to L/R.
You can monitor the stereo bus L/R output signals.

4. Press the RECORD TRACK select keys L and R.

5. Raise the master fader L/R to 7–8.

Adjusting the recording level/rehearsal

6. Start playing the Program from the beginning.
Since Additional tracks cannot be set to input monitoring mode, you do not have to press the RECORD button at this time.

7. Use the channel 1–4 input faders to adjust the track output levels.

At this time, check the recording level of the Additional tracks via the level meters L and R. Adjust the input channel faders so that the [OL] section of the level meters L and R will not light up continuously.

8. Adjust the channel equalizers, if necessary.

9. Turn the AUX knob of the channel signal to which you wish to apply effects toward AUX 1. Use the AUX RTN 1 knob to adjust the return signal level.
At this time, make sure that the [OL] section of level meters 4 and R do not light up continuously.

10. Raise the MASTER knob in the monitor section gradually to listen to the mix sound to be ping-pong recorded.
When you finish adjusting the level, effects, and balance, stop the recorder section and locate the top of the Program.

Performing ping-pong recording

11. Holding down the RECORD button and press the PLAY button to start recording.

Quitting ping-pong recording

12. Stop the recorder section, and initialize the FD-4.

Checking the result of ping-pong recording

Because any sound that has been ping ponged onto the additional track cannot be checked directly, the additional track and a real track must be temporarily exchanged.

1. Use the Track Exchange function to swap data between the Additional and Real tracks.

* See "Track Exchange" on page 60 for more information on moving data between tracks.

2. Set the monitor SELECTOR to MON.

3. Play the Program from the beginning.

4. Turn the MON knob of the channel (to which you moved the data) toward [TRK] and turn the MASTER knob in the monitor section gradually to audition the sound.

After exchanging the additional track with the real track and checking it. UNDO/REDO can be executed in the same way as with the previous "ping pong recording" if you are not satisfied after checking it.

If UNDO is executed after checking the sound, it can be returned to the state prior to executing ping pong.

If REDO is executed after execution of UNDO, it can be returned to the state prior to the second execution of UNDO (The state upon moving to the real track).

Digital Recording

Digital recording from an external digital device

This chapter describes how to digitally record data from a connected digital device (CD, MD, DAT, etc.) to tracks on the FD-4.

Use the "Setting digital input tracks" menu in SETUP mode to assign incoming digital signals (L, R) to a track.

The currently-selected Program will be used for digital recording. The digital input track assignment is shared by all existing Programs.

> **<Note>**
>
> The "Setting digital input tracks" menu has Real tracks 1–4 and Additional tracks L (indicated as 5) and R (indicated as 6) as options. However, you can record digital data to Additional tracks if the disk's recording mode is Normal or Mastering 1. If the disk is formatted in Mastering mode 2, you cannot record data on the Additional tracks. If you try to record data on the Additional tracks using the disk in Mastering mode 2, an error message [Can't Rec!] appears and the operation is ignored.
>
> **<Note>**
>
> When you are using a disk in Normal mode, input a digital source with a sampling rate of 32kHz. When you are using a disk in Mastering mode 1 or Mastering mode 2, input a digital source with a sampling rate of 44.1kHz.

Connecting an external digital device

1. Connect the DATA IN jack of the FD-4 with the OPTICAL OUT jack of an external digital device using an optical cable.
If the digital device has only the COAXIAL (RCA pin) jack as a digital output, use a Fostex COP-1 (an optional optical/coaxial converter).
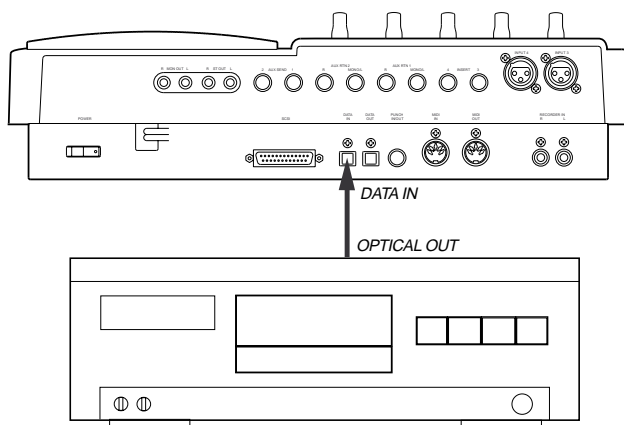
DATA IN

OPTICAL OUT

Selecting a Program to record

1. If multiple Programs exist, first select the desired Program using the Program Change function.

> • See page 36 for more information on Program Change.

Setting a recording track

2. Select the desired track using the "Setting digital input tracks" menu in SETUP mode.
When a track is assigned and a correct digital signal is input, the FD-4 displays [DIGITAL] on the display.
If incoming digital signal is abnormal, the [DIGITAL] indicator flashes. Refer to "Setting digital input tracks" in the "Changing the Initial Settings (SETUP Mode)" chapter on page 91.

> **<Caution>**
>
> Do not connect or disconnect an optical cable to or from the DATA IN jack of the FD-4 while a track is assigned as digital input. Otherwise, noise may be induced to the FD-4, affecting the connected digital device.

When you finish setting the parameters in SETUP mode, be sure to press the EXIT/NO key or the STOP key to exit SETUP mode.

3. Press the RECORD RACK select key of the assigned track to set the track to READY.

Starting and quitting recording

1. Locate the top of the Program.

2. Make sure that [DIGITAL] lights up on the display. Hold down the RECORD button and press the PLAY button to start recording on the FD-4.

3. Start playback on the external digital device.
You do not need to adjust the recording level during digital recording. If you are recording data on one of tracks 1–4, set the monitor SELECTOR to [MON] so that you can monitor the recorded signal via the MON mix section of the channel that corresponds to the track.
You cannot monitor the signal while you are recording data on an Additional track.

4. When recording is complete, stop the FD-4 and the digital device.

> **<Note>**
>
> While a track is assigned for digital input, you cannot use the same track for analog recording via the corresponding input jack. When you finish digital recording, set the "Setting digital input tracks" menu to [L-, r-] (no assign).

Digital recording to an external device

This section explains how to record digital data from the FD-4 to an external digital device, such as an MD, DAT, or CD-R.

You can select any pair combination from Real tracks 1–4 and S-T (STEREO OUT L/R output in the mixer section) for digital output L and R.

The current Program is used for digital recording.

The digital output track assignment is shared by all existing Programs.

> **<Note>**
>
> *When you are using a disk in Normal mode, digital signal will be output with a sampling rate of 32kHz. When you are using a disk in Mastering mode 1 or Mastering mode 2, digital signal will be output with a sampling rate of 44.1kHz.*
>
> **<Note>**
>
> *You cannot output data on the Additional tracks as it is. You need to move the data to the Real tracks using the Track Exchange function.*

Connecting an external digital device

1. Connect the DATA OUT jack of the FD-4 with the OPTICAL IN jack of an external digital device using an optical cable.

If the digital device has only the COAXIAL (RCA pin) jack as a digital output, use an optional COP-1 (optical - coaxial converter).
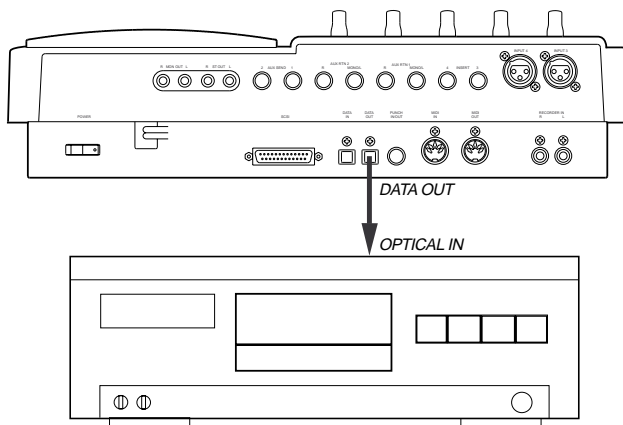
Selecting a Program to record

1. If multiple Programs exist, first select the desired Program using the Program Change function.

Setting a digital output track

2. Select the desired track using the "Setting digital output tracks" menu in SETUP mode.

If you assign [L-□ , r-□] (STEREO OUT L and R), the STEREO OUT L/R output of the FD-4 will have priority,

which enables you to perform digital mixdown as described later.

Refer to "Setting digital output tracks" in the "Changing the Initial Settings (SETUP Mode)" chapter on page 92 for more information on setting a digital output track.

> **<Note>**
>
> *You cannot assign the same track to L and R.*
>
> *When you finish setting the parameters in SETUP mode, be sure to press the EXIT/NO key or the STOP key to exit SETUP mode.*

Starting and quitting recording

1. Locate the top of the Program.

**2. Start recording on the external digital device.**

3. Press the PLAY button on the FD-4 to start playback.

Digital data is output from the selected track and recorded on the external digital device.

4. When recording is complete, stop the FD-4 and the digital device.

Digital mixdown

As described in the previous section, you may mix down digital signals from tracks 1–4 to an external digital device using the procedure described in the basic mixdown section, in which you set [L-▢, r-▢] for digital output tracks. Refer to the "Basic Multitrack Recording" chapter for information on how to connect effect units.

> **<Note>**
> When you are using a disk in Normal mode, digital signal will be output with a sampling rate of 32kHz. When you are using a disk in Mastering mode 1 or Mastering mode 2, digital signal will be output with a sampling rate of 44.1kHz.
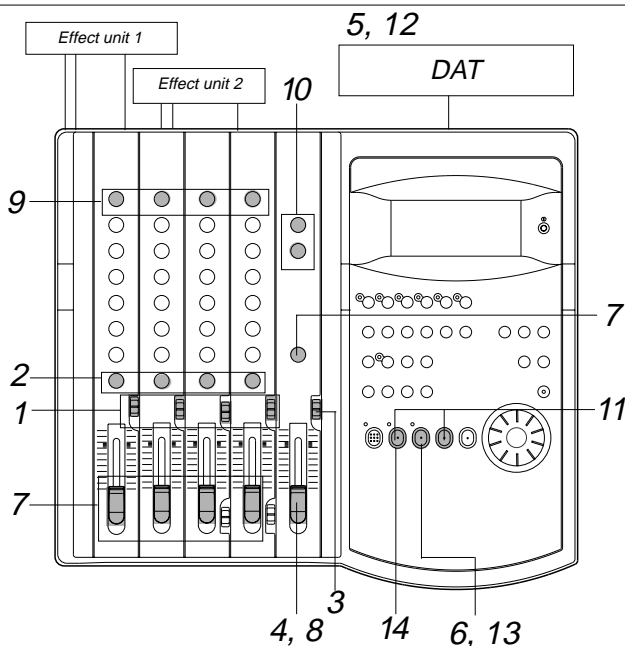
Connecting an external digital device

1. Connect the DATA OUT jack of the FD-4 with the OPTICAL IN jack of an external digital device using an optical cable.

Assigning output tracks

2. Use the "Setting digital output tracks" menu in SETUP mode to select [L- ▢ , R- ▢] as output tracks.
Refer to "Setting digital output tracks" of the "Changing the Initial Settings (SETUP Mode)" chapter.

Setting the switch and knob on the FD-4

1. Set the INPUT SEL switches of channels 1–4 to [TRK].
In this way, the output from recorded tracks 1–4 will be routed to the corresponding input channel faders for equalization and effect processing.

2. Set the channel PAN knobs accordingly.
There is no rule on the position of the PAN knobs. The settings will vary depending on the type of instrument you recorded or the feel of your song. You can, for example, pan a given instrument to the left

and the vocal to right. Follow your intuition.

3. Set the SELECTOR in the monitor section to [L/R].

4. Raise the master fader L/R to [7–8].

Setting the output level and the master recorder

5. Set the master recorder to recording standby mode.
You should be able to check the recording level.

6. Press the PLAY button to play back the Program from the beginning.

7. Raise the channel faders and gradually turn the MASTER knob in the monitor section to monitor the sound.
Use the channel faders to adjust the track playback levels while monitoring the sound. At this time, check the level meters L and R and adjust the faders so that the [OL] section of the meter will not light up with the maximum level.

8. When you obtain a satisfactory balance, use the master fader L/R to adjust the final output level.
Also adjust the input level on the master recorder.

Settings for the effect units

9. Turn the AUX knob for the channel signal to which you wish to apply effects toward [AUX 1] or [AUX 2].
Turn the knob toward [AUX 1] to apply reverberation; turn it toward [AUX 2] to apply chorus.

10. Use the AUX RTN 1 and AUX RTN 2 knobs to adjust the input level from the effect units to the stereo bus L/R.

Mixdown

11. Hold down the STOP button and press the REWIND button to locate the beginning of the Program.

12. Start recording on the master recorder.
Adjust the input level on the master recorder so that its level meters indicate almost the same level as the FD-4's level meters L/R.

13. Press the FD-4's PLAY button to play the Program from the beginning.
Operate the master faders L/R to fade the mixdown sound in and out.

Quitting mixdown

14. Stop the master recorder and the FD-4.

How to use the RECORDER IN jack

The following explains the various functions of the RECORDER IN jack.

There are two ways to use the RECORDER IN jack.

> 1. Synchronizing an external MIDI sound source with the performances recorded on tracks 1 ~ 4 and digitally mixing down a maximum of eight channels of sound sources.
> 2. Directly recording external sound sources without routing them through a mixer.

Eight channels of digital mixdown

In this method, the RECORDER IN (L, R) jacks of the FD-4 are directly connected to the MON OUT (L, R) jacks and the monitor SELECTOR switched to [L/R+MON]. Then, the monitor bus L, R signal and the stereo bus L, R signals are both simultaneously output from MON OUT L, R and input to RECORDER IN L, R. As shown in the drawing below, an external MIDI sound source is input to INPUT jacks 1~4, and then each channel INPUT fader is raised, and performances recorded on tracks 1~4 are applied to each channel MON mix section, and played back using MIDI sync of both performances. With this method, a maximum of eight channels (Tracks 1~4 and MIDI sound) of sound sources are mixed and sent to the RECORDER IN L, R from MON OUT L, R, and digitally mixed down in an outboard digital device (DAT).
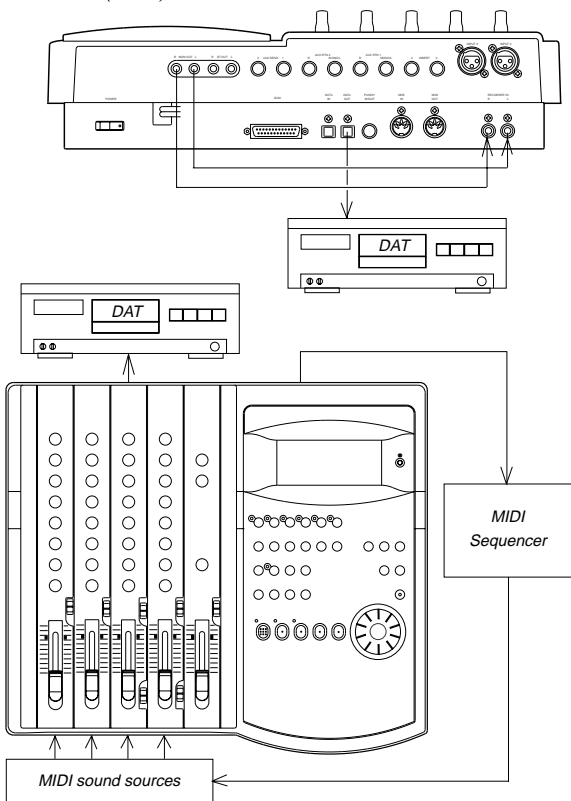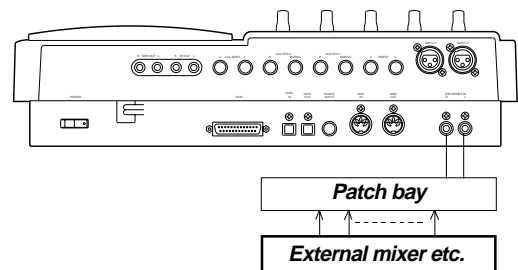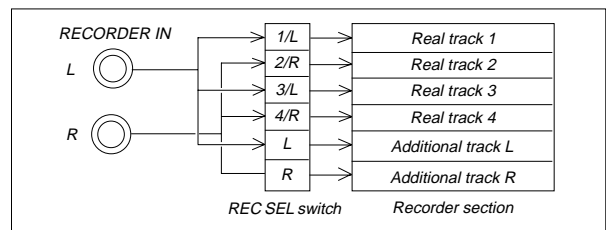

For details on digital mixdown by synchronizing with a MIDI sound source, please refer to "MIDI clock sync system" of "MIDI synchronization" on page 71.

Direct recording of an external sound source

Here, an external sound source is directly input to the RECORDER IN jack of the FD-4 and recorded in the recorder section without passing through a mixer.
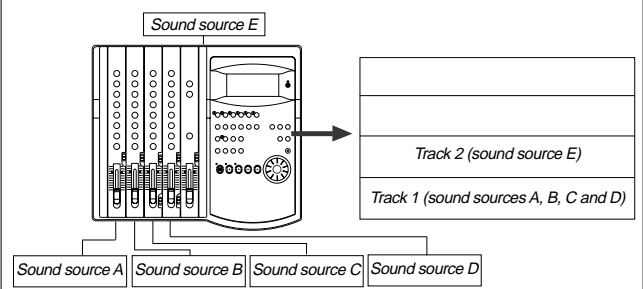
In this case, if an external input is connected to L and R of the RECORDER IN jack, it will not be possible to record through the mixer section.

In the illustration below, the signal input to L of RECORDER IN is sent to tracks 1, 3 and L, and the signal input to R of RECORDER IN is sent to tracks 2, 4 and R. Any two tracks are selected for recording. If the connection is made from the mixer group out, using a patch bay will faciliate connections from the front panel as shown in drawing below. The recording level is adjusted at the external equipment side and, by setting the monitor section SELECTOR to [MON] at the FD-4 side, sound can be monitored using the MON mix section of the channel corresponding to each track. Recording onto the additional track is possible only in the normal mode and mastering mode 1.

RECORDER IN

L	1/L	Real track 1
	2/R	Real track 2
	3/L	Real track 3
R	4/R	Real track 4
	L	Additional track L
	R	Additional track R

REC SEL switch   Recorder section

Patch bay

External mixer etc.

> **<More applications for using RECORDER IN>**
>
> If an external sound source is connected to both L and R of RECORDER IN, recording cannot be done via the INPUT fader. If only one jack (L or R) is connected, the track corresponding to the jack not connected can be recorded simultaneously via the INPUT fader. For example, if sound source E is connected to only L of RECORDER IN, another sound source applied via the INPUT fader can be recorded on any one of tracks, 2, 4, R corresponding to R of RECORDER IN to which nothing is connected. In other words, because the FD-4 can simultaneously record two tracks, a sound source from RECORDER IN can be recorded on one track and sound source routed via the INPUT fader can be simultaneously recorded on the other track.
>
>
>
> Sound source E
>
> Track 2 (sound source E)
> Track 1 (sound sources A, B, C and D)
>
> Sound source A   Sound source B   Sound source C   Sound source D

Editing Tracks

The FD-4 features speedy, non-linear, non-destructive editing of independent audio tracks and uses a Zip, EZ or MO disk as the recording media.

The following edit functions enable you to edit tracks. Press the EDIT key on the control panel to access the edit menu.

<Edit functions>

Copy & Paste

You can copy a specific range of data from a specific track and paste it to the same or a different track.

Move & Paste

You can move a specific range of data from a specific track and paste it to the same or a different track.

Erase

You can erase a specific range of data from a specific track or from all tracks.

Track Exchange

You can swap data between tracks.
Monaural track data can be swapped between Real tracks 1–4 and Additional tracks L/R. Two-track data can be swapped between Real tracks 1–2, 3–4, and Additional tracks L–R.

<Note>

These edit functions are available for the currently-selected Program. If the disk contains multiple Programs, you need to select the desired Program first to perform the track edit operation.
Do not select another Program until you finish the edit operation. Otherwise, you may lose or incorrectly edit another Program.

Copy & Paste and Move & Paste

Copy & Paste and Move & Paste might seem like the same function. However, they are different, as shown in the diagram. Remember this difference when you start using these functions.
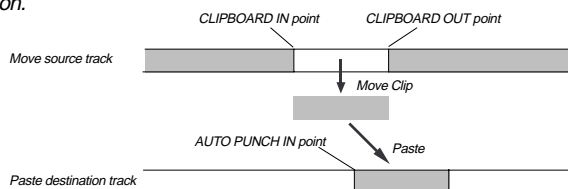
• *Copy & Paste*

Using the Copy & Paste function enables you to copy a specific range of data from a specific track to the clipboard as shown below (this is called [Copy Clip] operation on the FD-4), then paste the data at a specific point in a specific track. The number of copy source tracks and the number of destination tracks are the same. That is, if you copy mono track data, you can paste it to a mono track. If you copy adjacent odd/even tracks (e.g., track 1 and track 2), you can paste it to adjacent odd/even tracks. The data on the clipboard remains as it is. You can paste it as many times as you wish.
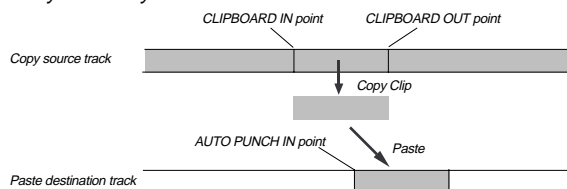
• *Move & Paste*

Move & Paste is almost the same as Copy & Paste. It allows you to move a specific range of data from a specific track to the clipboard (this is called [Move Clip] on the FD-4), and paste it to a destination track. The difference from Copy & Paste is that the data on the source track and the clipboard will be erased when you paste the data to the destination.

Follow the steps below to perform the Copy & Paste or Move & Paste operation.

Store the copy (move) start point (CLIPBOARD IN point), end point (CLIPBOARD OUT point), and the paste start point (AUTO PUNCH IN point).

Check the stored edit points using the Preview function and make adjustments if necessary.

Specify the copy (or move) source track, and copy (or move) the data to the clipboard.

Specify the destination track and the number of times for the paste operation (repeated paste), and execute the paste operation.

Storing the edit points

1. Refer to the "Storing and editing the locate points to the memory keys" section for information on storing the copy (or move) start and end points, and the paste start point.
Store the copy (or move) start point to the CLIPBOARD IN key, the end point to the CLIPBOARD OUT key, and store the paste start point to the AUTO PUNCH IN key.

- See "Storing and editing the locate points to the memory keys" on page 63

.

Checking and adjusting the edit points

After you store the edit points, you can check them on the display by pressing the corresponding keys. You may also adjust the points. This section explains how to preview and fine-tune the edit points using the Preview function.

1. While the recorder section is stopped, press and hold down the SHIFT key and press the memory key for which you wish to check the edit point.
You can preview "fade in" at the CLIPBOARD IN point, "fade out" at the CLIPBOARD OUT point, and "fade out" at AUTO PUNCH IN point.

2. Trim the edit point while previewing.

- Refer to "Preview Function" on page 69 for more information.

Executing Copy (or Move)

**1. Press the RECORD TRACK select key of the copy (or move) source track to set it READY.**
Select from mono tracks or adjacent odd-even tracks (1–2, 3–4, L–R).

<Note>
If you select non-adjacent tracks, such as tracks 1 and 3, or tracks 1, 2, and 4, the copied (or moved) data will be pasted back to the copy (or move) source tracks.

2. Press the EDIT key repeatedly until [Copy Clip (or [Move Clip]) flashes on the display.
Select [Copy Clip] to execute Copy & Paste.
Select [Move Clip] to execute Move & Paste.
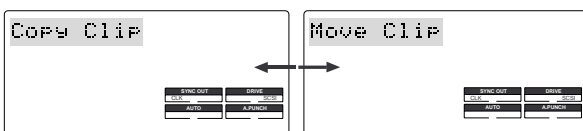
3. Press the EXECUTE/YES key.
The copy or move operation will complete immediately. The display briefly indicates [COMPLETED !], then flashes the [Copy Paste] message (or the [Move Paste] message). The FD-4 enters standby mode for the paste operation. The LEDs of the selected RECORD TRACK select keys continue to flash.
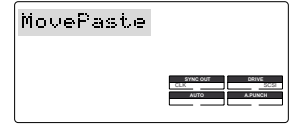
<Note>
Pressing the EXECUTE/YES key without selecting a track in Step 1 will cause the display to indicate an alarm message [Select TRK !]. Select a track, then press the EXECUTE/YES key.

Now the sound data to be pasted has been copied (or moved) to the clipboard, you can check the data on the clipboard by following the steps below. If there is no problem with the data, you can proceed to the paste operation.

Checking the clipboard data

* Hold down the STOP button and press the PLAY button.
The FD-4 indicates whether the sound data on the clipboard is a copied data or moved data ([Copy Clip] or [Move Clip]) and plays the data (this is called clipboard playback). To listen to the clipboard playback, rotate the channel 1 MON knob toward [TRK] and raise the MASTER knob in the monitor section.

* Press the EDIT key again to get ready for the paste operation.
[Copy Paste] or [Move Paste] flashes on the display.

Executing Paste

4. Press the EXECUTE/YES key again.
The display indication enables you to set the number of the paste operations. The number and [SURE ?] flash. At this time, the flashing RECORD TRACK select key LED becomes continuously lit.
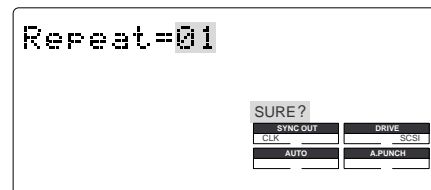
5. Select a destination track to paste data.
All selected tracks' LEDs light up.
You can select only mono tracks as the destination of a copied or moved mono track. If you copied or moved adjacent odd-even tracks, you can select only adjacent odd-even tracks as the destination.
If you do not select any tracks, the data will be pasted back to the copy or move source track.

6. Turn the JOG dial to enter the number of repeats (Repeat=**).
You can enter up to 99. However, this is automatically limited by the available recording space on the disk. That is, if the disk has enough free space, you can set up to 99 repeats. If the disk has only a small amount of free space, the JOG dial allows you to set a lower number of repeats.

7. Press the EXECUTE/YES key.

[Copy Paste] (or [Move Paste]) flashes and the duration of the pasted data appears as a negative number on the display. This number will count down as the paste operation proceeds.

When the paste operation is complete, the flashing [Copy Paste] (or [Move Paste]) lights up continuously, and [COMPLETED !] is displayed.

<Note>

If you try to execute the paste operation by pressing the EXECUTE/ YES key when the disk has insufficient free space, [Over !] appears on the display and edit mode is cancelled. In this case, you need to delete unnecessary data or Programs. Refer to the following section, "Erase," and to "Erasing a Program" on page 38 for more information on erasing.

8. Press the STOP button or the EXIT/NO key.

The FD-4 exits edit mode and displays the previous Time Base indication.

9. Turn off the RECORD TRACK select key of the copy (or move) source track.

Undo/Redo Paste

You can undo or redo a Copy & Paste and Move & Paste operation.

- To restore the data that existed prior to the paste operation, press the UNDO/REDO key.
- To restore the pasted data after you undo the paste operation, press the UNDO/REDO key again.

<Note>

The Undo/Redo function is effective only when the FD-4 is stopped.

<Note>

If you perform one of the following operations after you use the Copy & Paste or Move and Paste operation, the Undo/Redo function will no longer be effective.

1. When a new recording is made.
2. When a new editing is executed (such as Copy & Paste, Move & Paste, Erase).
3. While in the AUTO PUNCH ON mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.
4. When the power is momentarily switched off.
5. When the program is changed.
6. When the disk is ejected.

Erase

There are two methods for erasing data. Understand the difference between these methods before you use the Erase function.

* If multiple Programs are set on the disk, first select the desired Program. Do not select another Program until you finish the erase operation.

- **Erasing a specified part of the data between ABS 0 and REC END**

You may erase a specified part of the data between ABS 0 and REC END (the end point of the recording) in the currently-selected Program. (The erased part is replaced with silence.)

You can erase data on a mono track and multiple tracks (including Real tracks and Additional tracks).

As shown below, the REC END point (the end point of recording) is not affected. The erased area is replaced with silence. As a result, the REMAIN time and space will increase. (You will have more recordable space on the disk.)
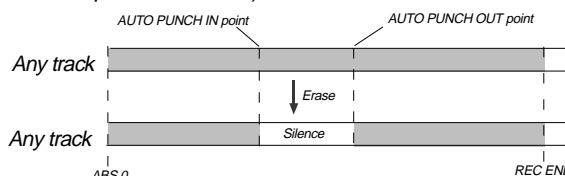
- **Erasing data from a specified point to REC END**

You may erase all data in the range from a specified point to REC END in the currently-selected Program. You can erase data on a mono track and multiple tracks (including Real tracks and Additional tracks). When you erase all the tracks' data, the REC END point will move backward. However, if you erase data on a mono track or multiple tracks (but not all tracks), the REC END point may not be affected. (Refer to the note below.) After the erase operation, the REMAIN time and space will increase.


<Note>
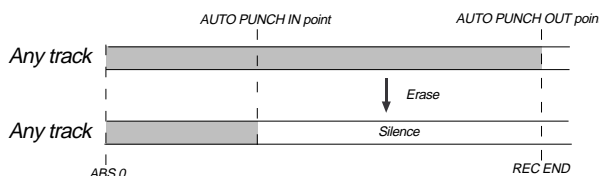
The REC END point is the end point for recording on the Real tracks. The Erase function uses the REC END point on the Real tracks, even if the recording end point on an Additional track is located later. If all tracks contain data as shown below, you need to specify the recording end point of the Additional track (or later point) as an erase end point in order to erase the data from the specified point. You need to move the Additional track data to a Real track to find out where the REC END point is.
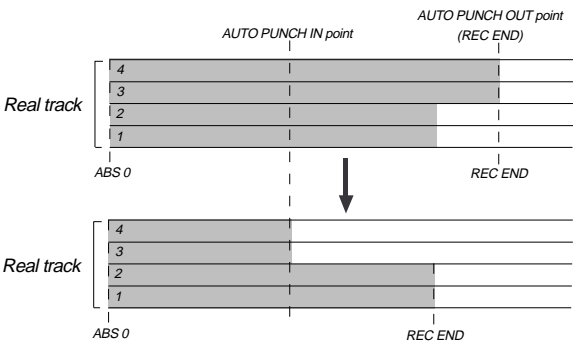
<Note>

If all Real tracks contain data as shown below, erasing data on tracks 1 and 2 will not affect the position of REC END.
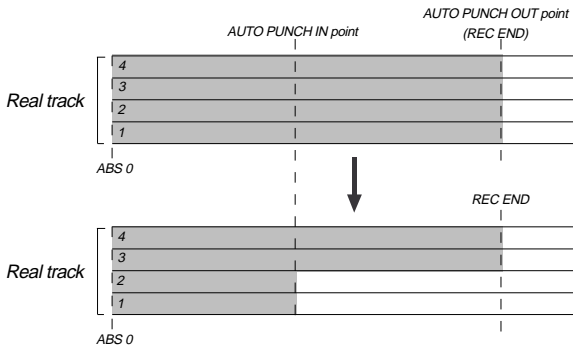
On the other hand, if all Real tracks contain data as shown below, erasing data on tracks 3 and 4 will move up REC END to the end point of tracks 1 and 2.

Follow the steps below to erase data:

Store the erase start point (AUTO PUNCH IN point) and the erase end point (AUTO PUNCH OUT point).

↓

Use the Preview function to check the stored edit points and adjust them if necessary.

↓

Specify a track to erase and execute the function.

Storing the edit points

1. Refer to the "Storing and editing the locate points to the memory keys" section for information on storing the erase start and end points.

Store the erase start point to the CLIPBOARD IN key, and the end point to the CLIPBOARD OUT key.

- *If you wish to erase the data from a specific point, store the REC END or later point as the erase end point. Refer to the note above for information on storing the REC END point.*
- *See "Storing and editing the locate points to the memory keys" on page 63.*

Checking and adjusting the edit points

After you store the edit points, you can check them on the display by pressing the corresponding keys.
You may also adjust the points.

1. While the recorder section is stopped, press and hold down the SHIFT key and press the memory key for which you wish to check the edit point.

You can preview "fade-out" at the AUTO PUNCH IN point and "fade-in" at AUTO PUNCH OUT point.

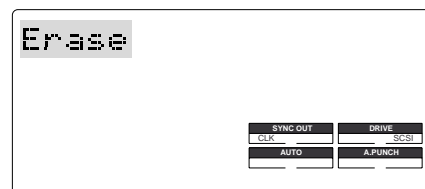**2. Trim the edit point while previewing.**

- *Refer to "Preview Function" on page 69 for more information.*

Executing Erase

1. Press the RECORD TRACK select key of the track to erase to set it READY.

You can select a mono track, multiple tracks, or all tracks.

2. Press the EDIT key repeatedly until [Erase] flashes on the display.

3. Press the EXECUTE/YES key.

The flashing [Erase] message lights up steadily, and [SURE ?] flashes.

- *To cancel the erase operation, press the STOP button or the EXIT/NO key while [SURE ?] flashes on the display.*

59

4. Press the EXECUTE/YES key again.

The FD-4 starts erasing the data and [Erase ....] flashes. When the erase operation is completed, [COMPLETED !] lights up.

5. Press the STOP button or the EXIT/NO key.

The FD-4 exits edit mode and displays the previous Time Base indication.

- *To erase the data in its entirety from the tracks, you can also use the Program Delete function to erase the entire Program.*
  In either case, you can expand the recordable area on the disk. Use either one of the erase operations to erase unnecessary data if the FD-4 displays an alarm message indicating insufficient recordable space for Auto Punch In/Out, Copy & Paste, or Move & Paste.

- *Refer to "Deleting a Program" on page 38 for more information on the Program Delete function.*

Undo/Redo Erase

You can undo or redo the Erase operation.

- *To restore the data that existed before you erased it, press the UNDO/REDO key.*
- *To restore the data after you undo the Erase operation, press the UNDO/REDO key again.*

When you press the UNDO/REDO key, the FD-4 will undo or redo the operation immediately, and display [Undo!] or [Redo !] and [COMPLETED !].

<Note>

The Undo/Redo function is effective only when the FD-4 is stopped.

<Note>

If you perform one of the following operations after you use the Copy & Paste or Move and Paste operation, the Undo/Redo function will no longer be effective.

1. *When a new recording is made.*
2. *When a new editing is executed (such as Copy & Paste, Move & Paste, Erase).*
3. *While in the AUTO PUNCH ON mode, when the AUTO PUNCH IN point is passed in the PLAY (or RECORD) mode.*
4. *When the power is momentarily switched off.*
5. *When the program is changed.*
6. *When the disk is ejected.*

Track Exchange

The Track Exchange function enables you to swap mono track data or multiple track data of the current Program. You can swap mono track data between Real tracks and Additional tracks. You can swap multiple track data between two Real tracks (1–2, or 3–4) and Additional tracks (L and R).

Refer to the diagrams below for information on how data on the tracks can be moved using this function.

The Track Exchange function also enables you to move Real track data to an empty Additional track (to empty the original Real track) so that you can use the Real track for a new recording. This application adds flexibility to the usage of tracks. You can move data on the Additional track back to the Real track to audition the data, since data in an Additional track cannot be played in real-time.

You can also use this function when you wish to check the REC END point of the Additional track, as described in the "Erase" section.
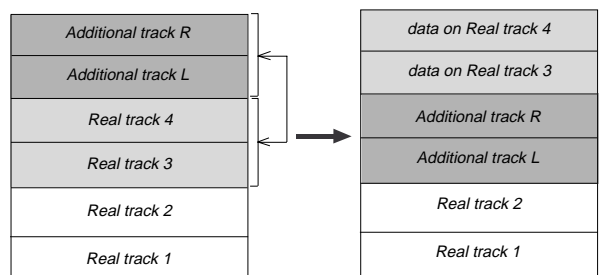
Swapping data between Real tracks (mono track data)
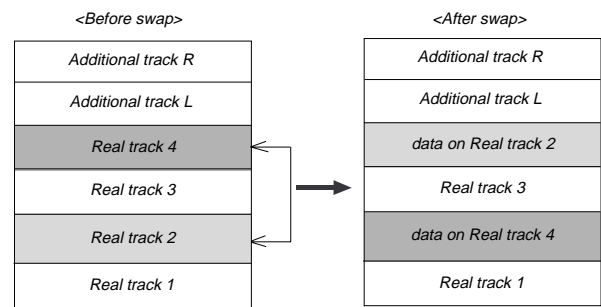
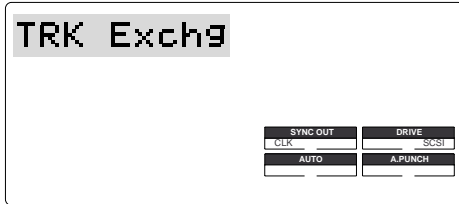**Swapping data between a Real track and an Additional track (mono track data)**
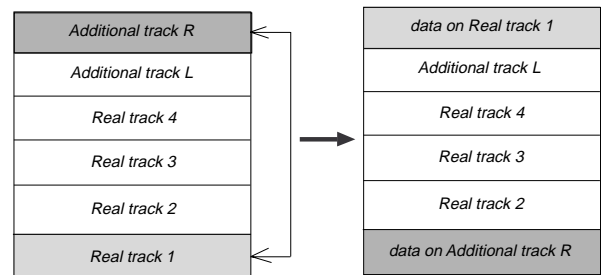
Swapping data between Real tracks and Additional tracks (multiple track data)
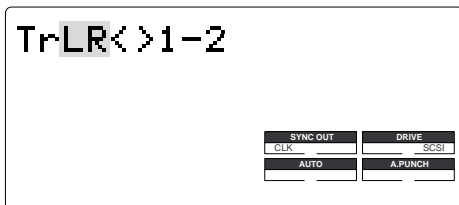
Executing Track Exchange

1. While the FD-4 is stopped, press the EDIT key repeatedly until [TRK Exchg] flashes on the display.

Alternatively, you can press the EDIT key, then use the JOG dial.

```
TRK Exchg
                              SYNC OUT      DRIVE
                              CLK              SCSI
                              AUTO          A.PUNCH
```

2. Press the EXECUTE/YES key.
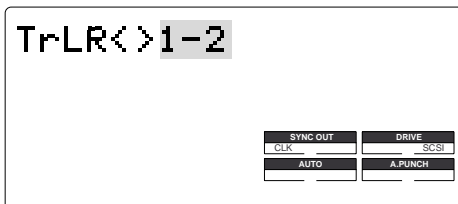
The display shows the track selection.
The current display shows that you can swap two-track data between Additional tracks L/R and rear tracks 1–2. If you wish to select other tracks, follow the steps below.
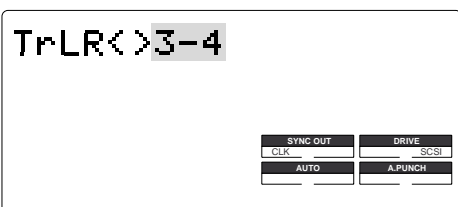
```
TrLR<>1-2
                              SYNC OUT      DRIVE
                              CLK              SCSI
                              AUTO          A.PUNCH
```

3. Select the tracks to swap data.

• Selecting Additional tracks L–R and Real tracks 3–4:

1. Press the HOLD/> key, the REWIND button, or the F FWD button to move a flashing cursor on [L–R] (left) to [1–2](right).

```
TrLR<>1-2
                              SYNC OUT      DRIVE
                              CLK              SCSI
                              AUTO          A.PUNCH
```
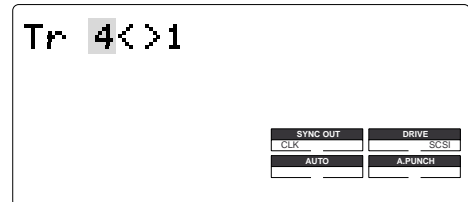
2. Turn the JOG dial to change flashing [1–2] to flashing [3–4].

```
TrLR<>3-4
                              SYNC OUT      DRIVE
                              CLK              SCSI
                              AUTO          A.PUNCH
```

• Swapping mono track data

1. When [L–R] is flashing, turn the JOG dial.

Turning the JOG dial allows you to select a mono track from [1], [2], [3], [4], [L], and [R] in the left column. The right column continues to indicate [1]. For example, if you select [4] in the left column, the display indicates [4<>1], meaning you can swap data between tracks 4 and 1.

```
Tr 4<>1
                              SYNC OUT      DRIVE
                              CLK              SCSI
                              AUTO          A.PUNCH
```

2. To select a number in the right column, press the HOLD/> key, the REWIND button, or the F FWD button to move the flashing cursor to the right column, then use the JOG dial to select the desired number.

* When you swap data between mono tracks, the indications [4<>1] and [1<>4], for example, mean the same thing — swapping data between tracks 1 and 4.

<Note>
If you select the same tracks for swapping mono track data, the setting is ignored. The FD-4 will indicate [Select Err] for a short moment, then return to the previous display.

4. Press the EXECUTE/YES key.

[Exchange] lights up and the swapping operation is completed immediately.
The FD-4 indicates [COMPLETED !], then returns to the previous Time Base display.

* You cannot play data or check the REC END point on the Additional tracks. To do so, you need to move the data to a Real track.
If you load back-up data from an external DAT recorder, the data maintains the same condition as when you previously saved it to DAT.
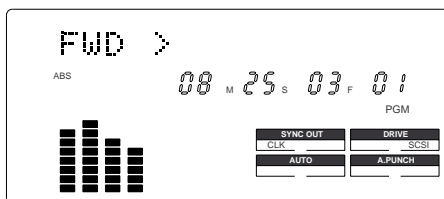
Cue & Review Function

This chapter explains how to use the "Cue & Review function" with the REWIND button, the F FWD button, and the JOG/SHUTTLE feature. Using this function enables you to fast forward or rewind at different speeds while the recorder section is playing or stopped.

During the Cue & Review operation, you will hear the sound recorded on the disk, which makes it easy for you to locate the desired point.
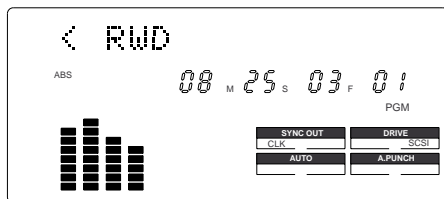
Cue & Review function using the REWIND and F FWD buttons

You may cue & review the audio data at three-times speed while the recorder is playing.

1. Press the PLAY button to play the audio data.

2. Press the F FWD button during playback.
   [FWD>] appears on the display, and the FD-4 cues in the forward direction at three-times speed.

```
FWD  >
ABS
      08 M 25 S 03 F 01
                       PGM

              SYNC OUT    DRIVE
              CLK          SCSI
              AUTO        A.PUNCH
```

3. Press the PLAY button again to restore the original play back speed.

4. Press the REWIND button instead of the F FWD button.
   [<RWD] appears on the display, and the FD-4 cues in the reverse direction at three-times speed.

```
<  RWD
ABS
      08 M 25 S 03 F 01
                       PGM

              SYNC OUT    DRIVE
              CLK          SCSI
              AUTO        A.PUNCH
```

5. Press the PLAY button to restore the original playback speed.

## Digital scrubbing using the JOG dial

You may perform digital scrubbing while the recorder section is stopped.

1. Turn the JOG dial clockwise or counter-clockwise while the recorder section is stopped.
   You can perform digital scrubbing in the forward or reverse direction.
   [FWD>] or [<REW] appears on the display.
   When you release the JOG dial, [STILL] appears, and the transport section stops.

2. Press the STOP button to cancel digital scrubbing.

Cue & Review function using the SHUTTLE feature

You may cue and review data at a speed from normal to 64-times speed, using the SHUTTLE feature while the recorder is playing.
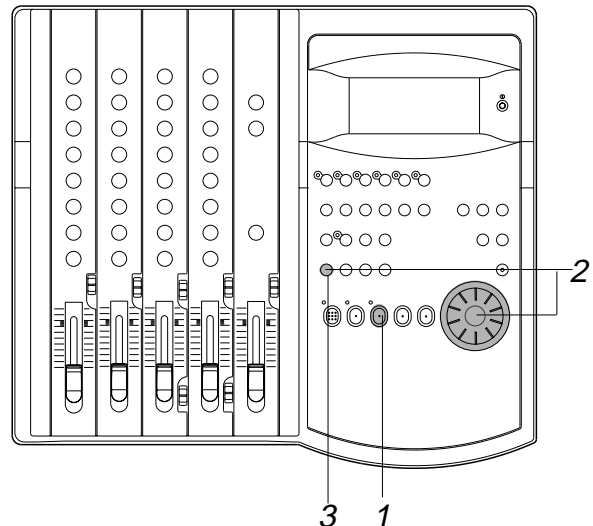
1. Press the PLAY button to start playback.

2. Hold down the SHIFT key and turn the JOG dial clockwise or counter-clockwise.
   Turning the JOG dial clockwise will change the cueing speed. Turning the JOG dial counter-clockwise will change the reviewing speed.
   The FD-4 displays the selected cue or review speed, which you can select from normal, two-times, four-times, eight-times, 16-times, 32-times, and 64-times speed.
   As long as you are holding down the SHIFT key, playback continues at the selected speed.

```
16<  RWD                    FWD  >32
ABS                         ABS
   08 M 25 S 03 F 01           08 M 25 S 03 F 01
              PGM                        PGM
```
<Display of 16-times review>   <Display of 32-times cue>

3. Release the SHIFT key to cancel the cue and review operation.
   The recorder resumes playback at the original speed.

> **<Note>**
> The cue and review operation does not affect pitch. Because the FD-4 performs this function by skipping part of data during playback.
>
> **<Note>**
> When the beginning of the disk is reached during the review operation, the FD-4 starts normal playback, even if you are still holding down the SHIFT key. When the end of the disk (ABS time: 23H 59M 59S) is reached during the cue operation, the FD-4 stops and the PLAY button LED flashes.

Storing a Locate Point (Edit Point)

You can store time information (time or bar/beat/clock) in each memory key. The stored time information will be used to locate a point in data in the recorder section, or as an edit point to perform the Auto Punch In/Out, Copy & Paste, Move & Paste, or Erase function.

This chapter describes how to store data in the memory keys and edit the stored data.

Data stored in the memory keys is used in the following operations:

AUTO PUNCH IN key	Locating the AUTO PUNCH IN point Recording start point for the Auto Punch In/Out operation Paste start point for the Copy & Paste or Move & Paste operation Erase start point for the Erase operation
AUTO PUNCH OUT key	Locating the AUTO PUNCH OUT point Recording end point for the Auto Punch In/Out operation Erase end point for the Erase operation
CLIPBOARD IN key	Locating the CLIPBOARD IN point Copy start point for copying or moving data to the clipboard during the Copy & Paste or Move & Paste operation
CLIPBOARD OUT key	Locating the CLIPBOARD OUT point Copy end point for copying or moving data to the clipboard during the Copy & Paste or Move & Paste operation
AUTO RTN START key	Locating the AUTO RTN START point Locate end point from AUTO RTN END in Auto Return or Auto Repeat modes
AUTO RTN END key	Locating the AUTO RTN END point Locate start point to AUTO RTN START in Auto Return or Auto Repeat modes

<Note on storing the locate point>

When you set the IN/OUT points for Auto Punch In/Out, IN/OUT points for Copy & Clip/Move & Clip, and START/END points for Auto Return/Auto Repeat, make sure that IN points precede the OUT points and START points precede the END points.

- *You can store locate points for each Program. (You need to select a Program first.)*
- *The data can be also saved or loaded even after the Song data is saved or loaded.*
- *All locate points stored in the memory keys will be maintained after you turn off the FD-4.*
  In addition to the memory keys, you can store data in the LOCATE key in real-time. The LOCATE key always stores the point most recently located by the FD-4. That is, data in the LOCATE key is overwritten by new data each time the FD-4 locates a point. You can also edit the data in the LOCATE key. Refer to the following pages for more information on how to edit data.

Storing and editing the locate points to the memory keys

Storing in real-time

You can store the locate point (in the ABS, MTC, or BAR/BEAT/CLK Time Base) in real-time while the FD-4 is playing.

- *Select the desired Time Base using the TIME BASE SEL key if you wish to use a Time Base other than ABS.*
- *The stored or edited locate points are used only in the currently-selected Program.*
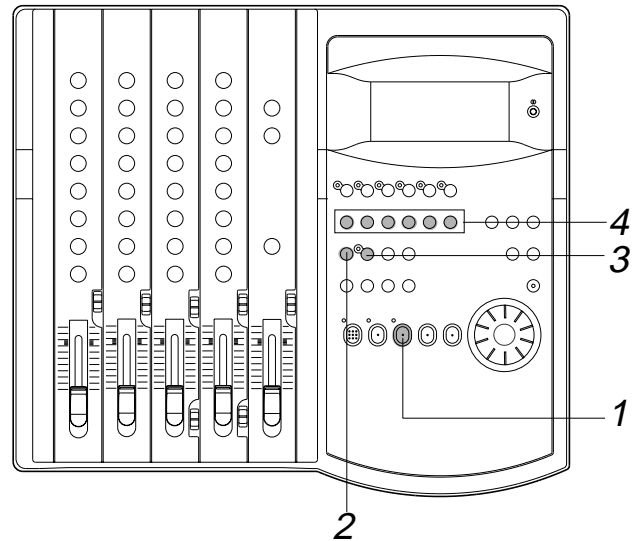
1. Press the PLAY button to play back data.

2. When the point you wish to store is reached, press the HOLD/> key.
The time value or bar/beat/clock value of the point is captured. The FD-4 enters data edit mode.

3. Press the STORE key.
The STORE LED lights up.

4. Press the desired memory key.
*The STORE LED turns off.*
The captured time value (or bar/beat/clock value) is stored in the memory key. After the data is stored, the FD-4 displays the previous Time Base and continues playback.

- *You can omit Step 2 above to speed operation.*

- *If you set "BAR/BEAT Resolution mode" in SETUP mode to ON, the FD-4 will round off the CLK value of the captured bar/beat/clock value. That is, the locate point will be at the beginning of the beat (00). Refer to page 92 for more information.*

Editing and storing locate data

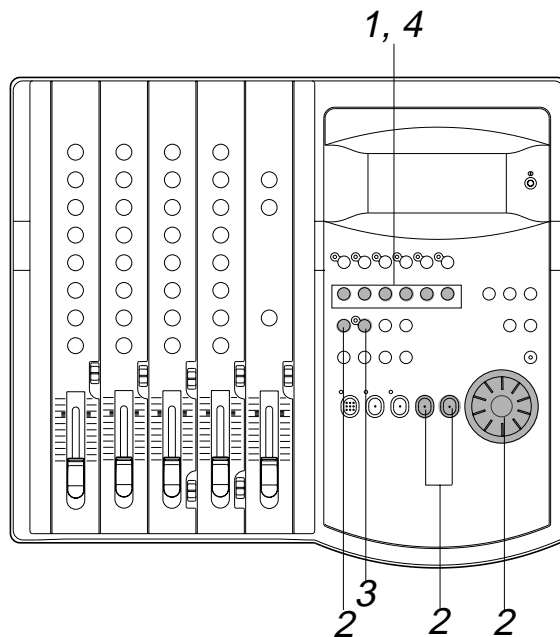*If you know the position of the desired locate point, follow the steps below.*

Editing and storing data

You can recall data stored in the memory key, edit it, and store it. again
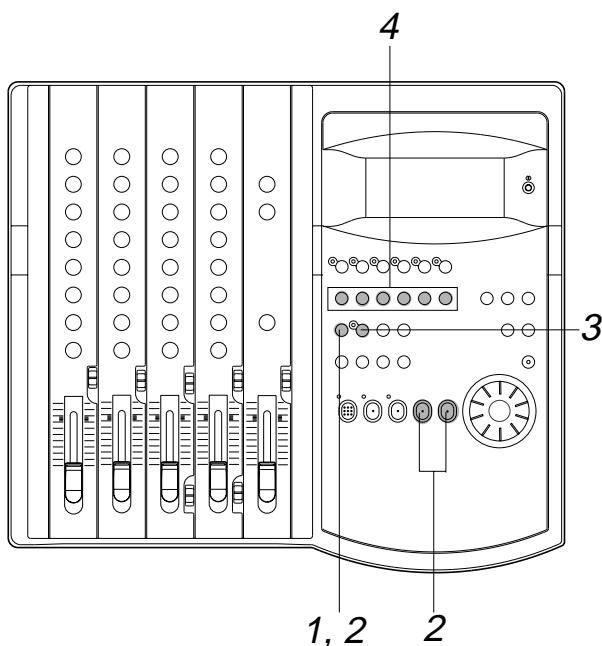
1. Press the HOLD/> key while the FD-4 is stopped.

The currently-displayed time value (or bar/beat/clock value) is captured and the FD-4 enters data edit mode.

2. Press the HOLD/> key, REWIND button, or the F FWD button to move the flashing cursor on the time value digit, and use the JOG dial to increase or decrease the value.

3. Press the STORE key.

The STORE LED lights up.

4. Press the desired memory key.

The STORE LED turns off.
The input time value (or bar/beat/clock value) is stored in the corresponding memory key.

• *Press the STORE key instead of the HOLD/> key in Step 1 above and omit Step 3 to speed operation.*

---

1. While the FD-4 is stopped, press the memory key that stores the data you wish to edit.

The stored data appears on the display and the FD-4 enters data edit mode.

2. Press the HOLD/> key, REWIND button, or the F FWD button to move the flashing cursor to the time value digit, and use the JOG dial to increase or decrease the value.

3. Press the STORE key.

The STORE LED lights up.

4. Press the memory key that you pressed in Step 1 again.

The STORE LED will turn off.
*The edited data is stored, and the FD-4 displays the previous Time Base indication.*

• *You can store the edited data in a memory key other than the one you pressed when you recalled the data. For example, you can recall the AUTO PUNCH IN point data, edit it, and store it to the AUTO PUNCH OUT key.*

• *Refer to page 43 for more information on Auto Punch In/Out.*
• *Refer to page 56 for more information on Copy & Paste, Move & Paste, and Erase.*
• *Refer to page 66 for more information on Auto Return and Auto Repeat.*

• *You can also use the Preview function to edit the stored locate points (edit points). Refer to "Preview Function" on page 69 for more information.*

Editing the data stored in the LOCATE key

You can recall the last located point and edit the value.
You can use the edited value to locate the point later or
store it to another memory key.
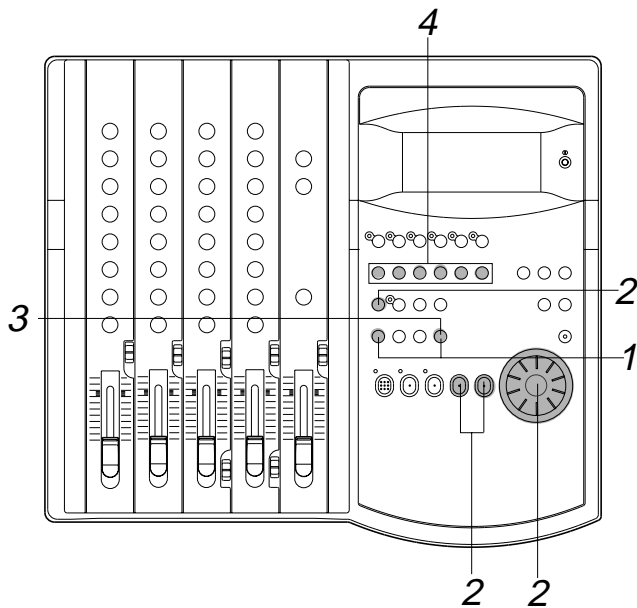
**1. Press the SHIFT and LOCATE keys simultaneously while
the FD-4 is stopped.**

The last located point stored in the LOCATE key appears
on the display and the FD-4 enters data edit mode.
If no data is stored (that is, if the FD-4 has not located any
point since the power was turned on), 00H 00M 00S 00F
00SF appears and "00" of the digits "00S" flashes.

**2. Press the HOLD/> key, REWIND button, or the F FWD button
to move the flashing cursor to the time value digit, and use
the JOG dial to increase or decrease the number to the
desired value.**

3. To located the edited point, press the LOCATE key.

When you execute the Locate function, the locate point is
stored as locate data in the LOCATE key.

**4. To store the edited data to another memory key, input the
desired value, press the STORE key, then press the desired
memory key.**

The data is stored to the corresponding memory key.
The data stored in the LOCATE key will not change.

<Note>
You cannot preview the data stored in the LOCATE key, unlike other
memory keys.

65

Locate Function

The FD-4 locates the desired edit point immediately (that is, it moves the current position of the data in the recorder section).

Locate points include edit points (in ABS time, MTC time, or in bar/beat/clock) that are stored for the Copy, Move, Paste, Erase, and Auto Punch In/Out operations.

They also include the top of a Program (ABS 0), the recording end point in a Program (REC END), and a direct locate point for which you can specify the time.

You can also use the Auto functions, such as Auto Play, Auto Return, and Auto Repeat, with the Locate function.

Direct Locate

The Direct Locate function enables you to locate the following points:

• Locate the beginning of the Program (LOCATE ABS 0)

Press the REWIND button while holding down the STOP button. The FD-4 will immediately locate the beginning of the currently-selected Program.

• Locate the recording end point of the Program (LOCATE REC END)

Press the F FWD button while holding down the STOP button. The FD-4 will immediately locate the end point of the currently-selected Program.

• Locate the position stored in one of the memory keys

Press the desired memory key, then press the LOCATE key. The FD-4 will locate the point (edit point) stored in the corresponding memory key immediately.

• Locate a specified point

Refer to "Editing and storing locate data" in the chapter "Storing a Locate Point (Edit Point)" for information on how to edit the data and on pressing the LOCATE key instead of the STORE key. The point at specified time value (or bar/beat/clock value) will be located immediately.

• Locate the last-located point

Press the LOCATE key.

Since the LOCATE key always stores the last-located point (excluding LOCATE ABS 0 and LOCATE REC END), just press the LOCATE key to locate the last-located point again.
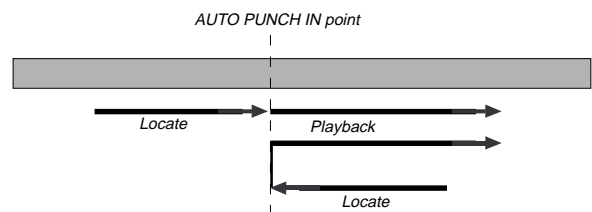
Auto Play

The Auto Play function allows the FD-4 to start play back automatically from the located point. AUTO PLAY mode should be turned on before you execute the Direct Locate function described above.

<Note>

This function is effective within 24 ABS hours. Therefore, if playback continues over the recording end point, the FD-4 will still continue counting the time. Also, when the FD-4 locates ABS REC END, it will continue counting the time from the recording end point. (However, the FD-4 does not access the disk after reaching the recording end point.)

(Example) Locating the AUTO PUNCH IN point

Executing the Auto Play function
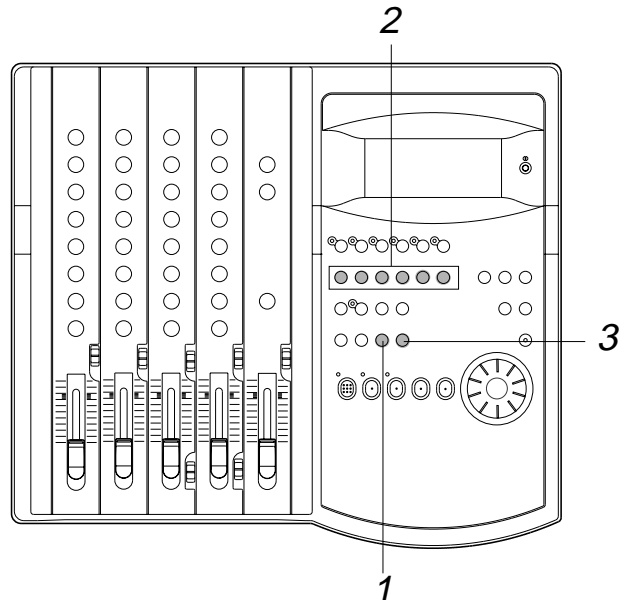
1. Press the AUTO RTN/AUTO PLAY key to turn on the [PLAY] indicator on the bottom of the display.

AUTO
PLAY

2. Press the desired memory key.
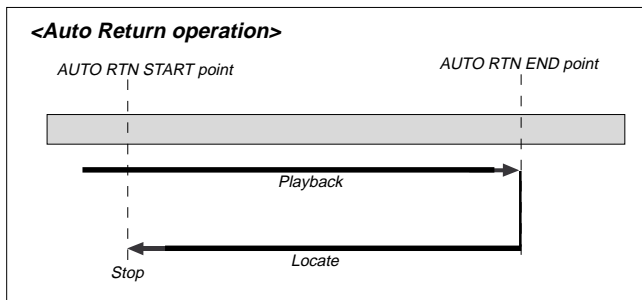
3. Press the LOCATE key.

The FD-4 locates the point and plays as shown in the diagram.

> • You can set a preroll time in the [Preroll ?] menu in SETUP mode so that the FD-4 will start playback preroll time before the locate point. You can set the preroll time from 0 to 10 seconds. Refer to the chapter "Changing the Initial Settings (SETUP Mode)" on page 85.
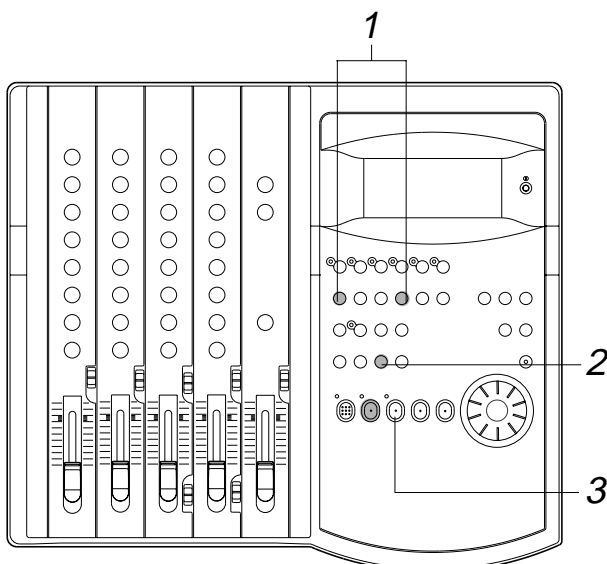
Auto Return

This function allows the FD-4 to play data up to the AUTO RTN END point, then automatically locate the AUTO RTN START point as shown in the diagram below.

To enable this function, AUTO RTN mode should be on and the AUTO RTN START point and AUTO RTN END point should already be set.

<Auto Return operation>

Executing the Auto Return function

1. Store the AUTO RTN START and AUTO RTN END points.

Refer to the chapter "Storing a Locate Point (Edit Point)" on page 63 for information on storing the desired points in the AUTO RTN START key and the AUTO RTN END key.

2. Press the AUTO RTN/AUTO PLAY key to turn on the [RTN] indicator at the bottom of the display.

AUTO
RTN

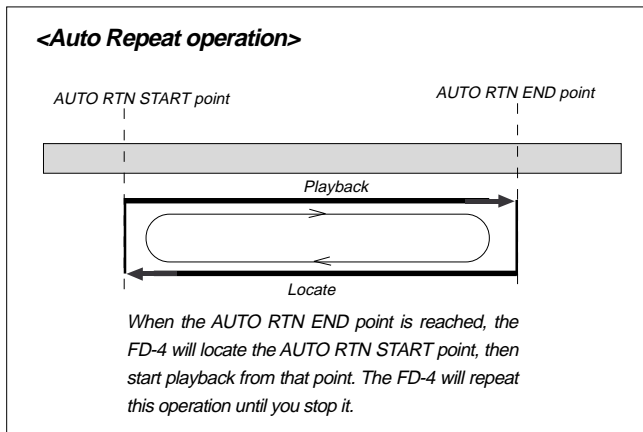**3. Start playback a little before the AUTO RTN END point.**

The FD-4 operates as shown in the diagram and stops at the AUTO RTN START point.

> • You can set a preroll time in the [Preroll ?] menu in SETUP mode so that the FD-4 will start playback preroll time before the locate point. You can set the preroll time from 0 to 10 seconds. Refer to the chapter "Changing the Initial Settings (SETUP Mode)" on page 85.
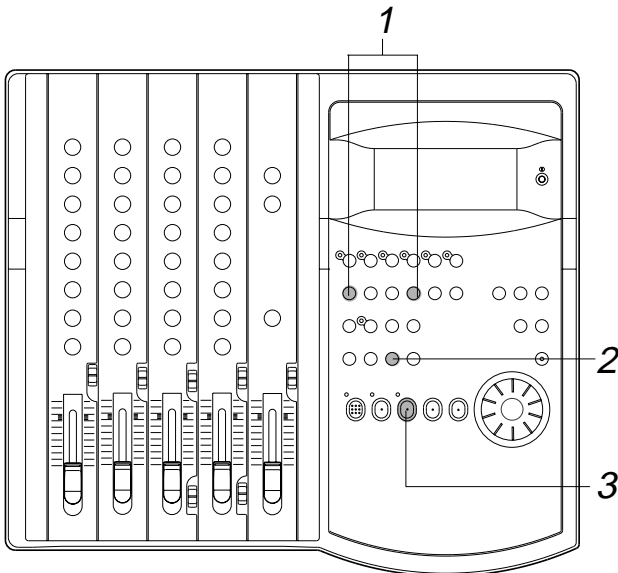
Auto Repeat

The Auto Repeat function allows the FD-4 to repeat play-back up to the AUTO RTN END point, automatically locate the AUTO RTN START point, then play up to the AUTO RTN END point until you cancel the function by pressing the STOP button. To enable this function, both AUTO PLAY mode and AUTO RTN mode should be turned on, and the AUTO RTN START point and the AUTO RTN END point should already be set.

Using this function will facilitate the Auto Punch In/Out and Manual Punch In/Out rehearsal. See "Hint" after the following section.

<Auto Repeat operation>

When the AUTO RTN END point is reached, the FD-4 will locate the AUTO RTN START point, then start playback from that point. The FD-4 will repeat this operation until you stop it.

Executing the Auto Repeat function

1. Store the AUTO RTN START and AUTO RTN END points.

Refer to the chapter "Storing a Locate Point (Edit Point)" on page 63 for information on storing the desired points in the AUTO RTN START key and the AUTO RTN END key.

2. Press the AUTO RTN/AUTO PLAY key to turn on the [PLAY RTN] indicator on the bottom of the display.

AUTO	
PLAY	RTN

3. Start playback a little before the AUTO RTN START point.

The FD-4 operates as shown in the diagram, and stops at the AUTO RTN START point.

• *You can set a preroll time in the [Preroll ?] menu in SETUP mode so that the FD-4 will start playback preroll time before the locate point. You can set the preroll time from 0 to 10 seconds. Refer to the chapter "Changing the Initial Settings (SETUP Mode)" on page 85.*

<Hint>

You can make repeated Auto Punch In/Out rehearsal much easier and quicker by using the Auto Repeat function. Set the AUTO RTN START point prior to the AUTO PUNCH IN point, and set the AUTO RTN END point after the AUTO PUNCH OUT point. The recorder will repeat the operation automatically so you can concentrate on your rehearsal.

Cancel Auto Repeat mode before you record a take.
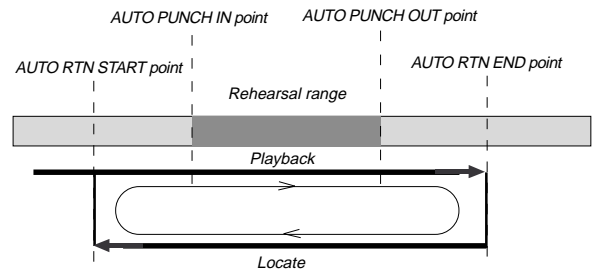
The FD-4 will play this range repeatedly for rehearsal, which makes it easy for you to check the recording level and practice your performance.

Preview Function

The preview function enables you to repeatedly audition the rise (fade in) or the fall (fade out) of the sound data at a locate point (edit point) that is stored in the AUTO PUNCH IN/OUT, AUTO RTN START/END, or CLIPBOARD IN/OUT key. This is also called "point rehearsal."

With this function, you can check the locate points in real-time.

You can also use this function to fine-tune the position of the locate points while previewing the sound.

This function is effective only when the FD-4 is stopped.

Executing the Preview function
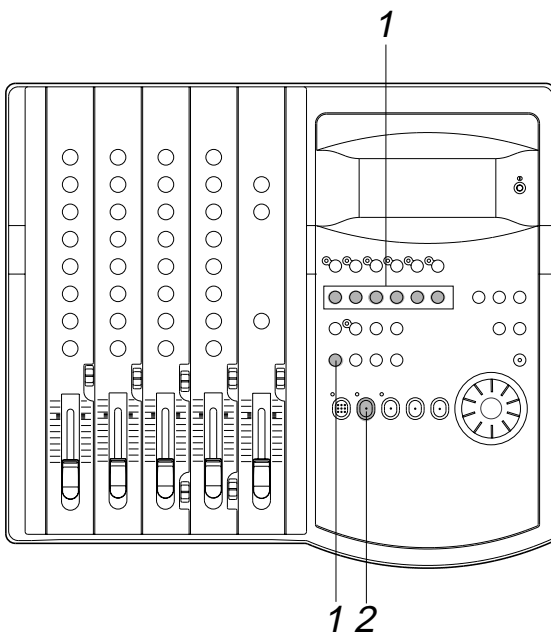
1. Press the desired memory key while holding down the SHIFT key when the FD-4 is stopped.
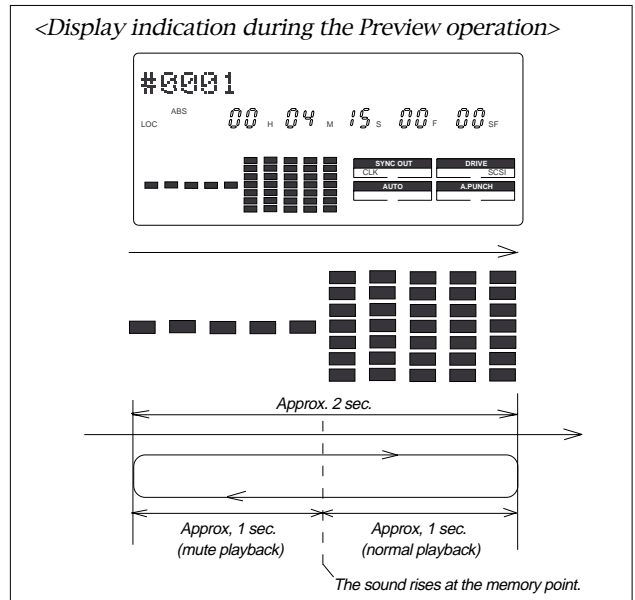
Pressing the desired memory key will enable you to preview the sound at the locate point (edit point) stored in the corresponding memory key.

Memory key	Operation
AUTO PUNCH IN key AUTO RTN END key CLIPBOARD OUT key	The FD-4 plays the fall (fade out) of the sound at the locate point stored in the keys.
AUTO PUNCH OUT key AUTO RTN START key CLIPBOARD IN key	The FD-4 plays the rise (fade in) of the sound at the locate point stored in the keys.

Refer to the following diagram for the display indication during the Preview operation.

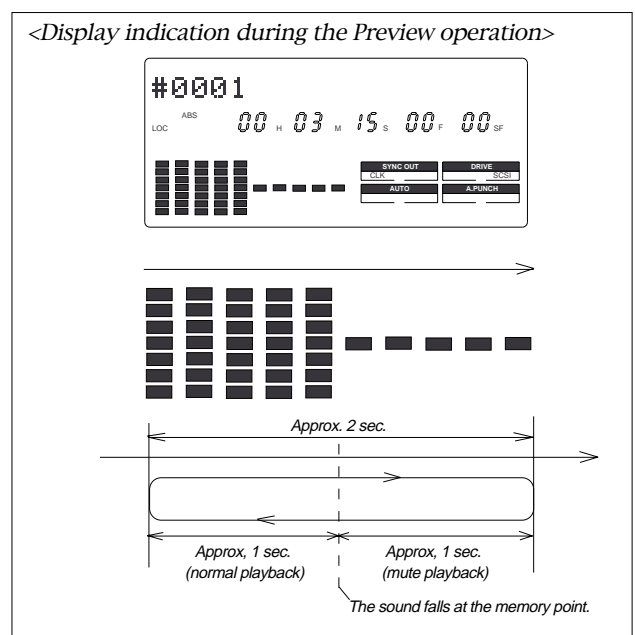## • Previewing the rise of the sound (fade in)

While holding down the SHIFT key, press the AUTO RTN START key, the AUTO PUNCH OUT key, or CLIPBOARD IN key.

<Display indication during the Preview operation>

Approx. 2 sec.

Approx, 1 sec. (mute playback)   Approx, 1 sec. (normal playback)

The sound rises at the memory point.

The FD-4 repeats playback the "rise sound" at the locate point (edit point). As shown in the diagram, one-second of data prior to the locate point is muted during playback. The mute is off (fade in) at the locate point and the sound is played back for one second.
The FD-4 will repeat this operation until you quit the Preview function.

• Previewing the fall of the sound (fade out)

While holding down the SHIFT key, press the AUTO END START key, the AUTO PUNCH IN key, or the CLIPBOARD OUT key.

<Display indication during the Preview operation>

Approx. 2 sec.

Approx, 1 sec. (normal playback)   Approx, 1 sec. (mute playback)

The sound falls at the memory point.

69

The FD-4 repeats playback of the "fall sound" at the locate point (edit point). As shown in the diagram, one-second of data prior to the locate point is played back, then muted (fade out) at the locate point. The muted playback continues for one second. The FD-4 will repeat this operation until you quit the Preview function.

Quitting the Preview function

2. Press the STOP button or the EXIT/NO key.

Trimming the sound while previewing

You can trim the position of the locate point (edit point) using the JOG dial while you preview the sound.
*At this time, you can also adjust the size of the trimming steps (the amount of offset controlled by the JOG dial). Trimming allows you to fine-tune the position of the locate point stored in the memory keys while previewing the sound. Use this function to change the Auto Punch In/Out points, the start point of Copy & Paste and Move & Paste, and the start and end points of the Erase function.*

<Notes>

• *You can audition the result of trimming during the next preview. That is, if you trim the position while previewing the sound for the first time, you can check the result when you preview the sound next time.*

• *If the locate point is shifted outside the range of the preview playback as a result of trimming, [Void Data!] and the locate point indication appear alternately. In this case, you cannot use the Preview function. Trim the position again so that it will be within the playback range.*

• *When Auto Punch mode is turned on and you trim the Auto Punch In or Auto Punch Out point while previewing the sound with [Void Data!] indicated on the display, Auto Punch mode will be cancelled.*
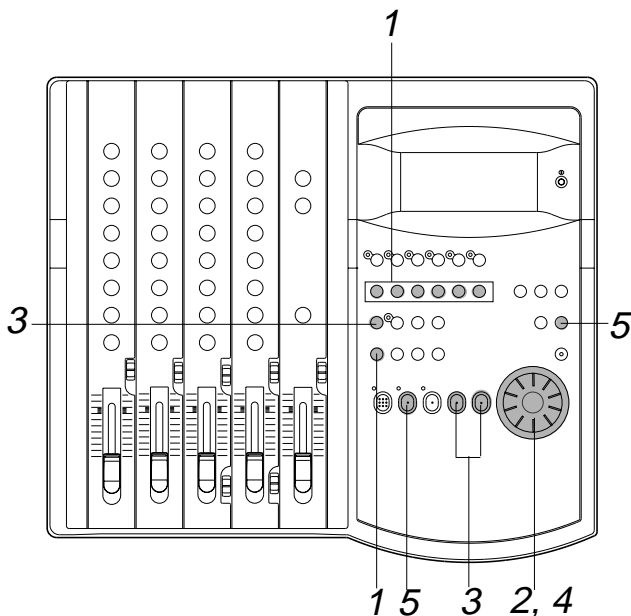
1. Start previewing the sound by following the steps described on the previous page.

2. Use the JOG dial to trim the position.
When previewing starts, the unit of JOG trimming flashes on the screen. For example, SF (sub-frame) flashes if ABS Time Base or MTC Time Base is selected. CLK (clock) flashes if BAR/BEAT/CLK is selected.
The flashing value also indicates the position you can trim.

(Example) Time Base is ABS: (SF flashes.)
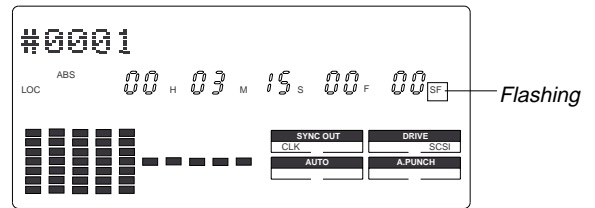
(Example) Time Base is BAR/BEAT/CLK (CLK flashes.)
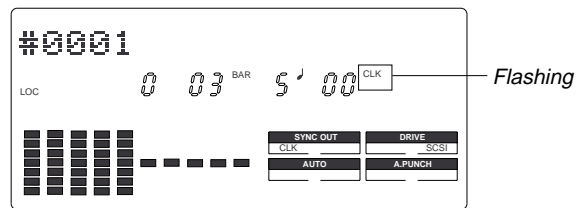
3. To change the unit of trimming, press the HOLD/> key, the REWIND button, or the F FWD button.
These buttons will change the trimming unit as follows:

	Time Base	
	ABS or MTC	**BAR/BEAT/CLK**
HOLD/> key or F FWD button	SF ->H ->M -> S ->F	CLK -> BAR -> ♩
REWIND button	SF <-H <- M<- S <- F	CLK <- BAR <- ♩

4. Trim the position at the selected unit (digit).

Quitting the trimming function

5. Press the STOP button or the EXIT/NO key.
The trimmed locate point (edit point) data will be stored in the corresponding memory key.

MIDI Synchronization

MIDI clock sync system

You can configure the sync system to use a stand-alone sequencer synchronizing as a MIDI clock slave by inserting time signature settings and tempo settings at any position in a song using a programmable Tempo Map of the FD-4. In this system, the recorder output of the FD-4 is routed to the input channel faders, and up to four MIDI sound sources connected to the input jacks are routed to the MON mix section. In this way, you can mix down up to eight channel sound sources without using an external mixing console. You can also mix down digital signals to an external digital master recorder by connecting MON OUT (L/R) of the FD-4 to RECORDER IN.

- *Initialize the FD-4 before the operation.*
- *If multiple Programs exist, select the desired Program first.*

Connecting and setting an external device
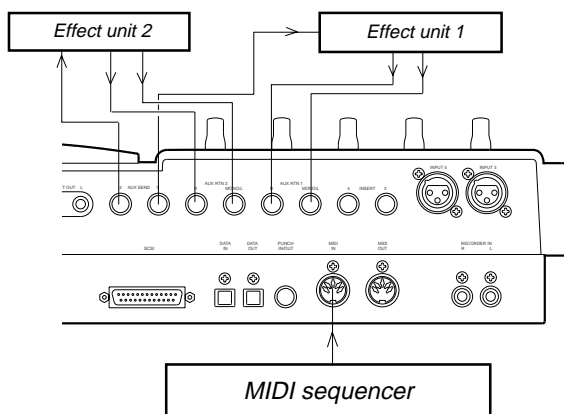
1. Connect the MIDI OUT jack of the FD-4 to the MIDI IN jack of the MIDI sequencer.

2. Set the MIDI sequencer to "MIDI clock slave" mode, and connect the MIDI sound source (played automatically) to the input jack of the FD-4.

3. Connect the effect units, if desired.

Setting MIDI SYNC OUT

1. In the "Setting MIDI sync output signal" menu in SETUP mode, select "MIDI clock (Clk)" for the MIDI sync signal output.
If you wish to use the Metronome function, turn the "Setting the Metronome function" menu in SETUP mode to ON.

- *See pages 85 and 86 for more information.*

Creating a Tempo Map

1. Specify time signatures for the measures using the "Setting a time signature" menu in SETUP mode. Then, specify the tempo for given measures and beats using the "Setting a tempo" menu in SETUP mode.

- *See pages 82 and 83 for more information.*

2. Play the FD-4 in play mode to see if the MIDI sequencer synchronizes to the FD-4 according to the Tempo Map.
At this time, select the BAR/BEAT/CLK Time Base to see if the MIDI sequencer synchronizes correctly.

Overdubbing

1. Overdub the syncing MIDI sound sources to tracks 1–4 as described in the "Basic Recording and Playback" chapter.
You can also record a MIDI sound source as a guide.

Mixing down while syncing MIDI sound sources

When you finish overdubbing, proceed to mixdown. As shown in the diagram, use the connected MIDI sound sources as virtual tracks, synchronize them to the FD-4, and mix down digital signals while applying effects.
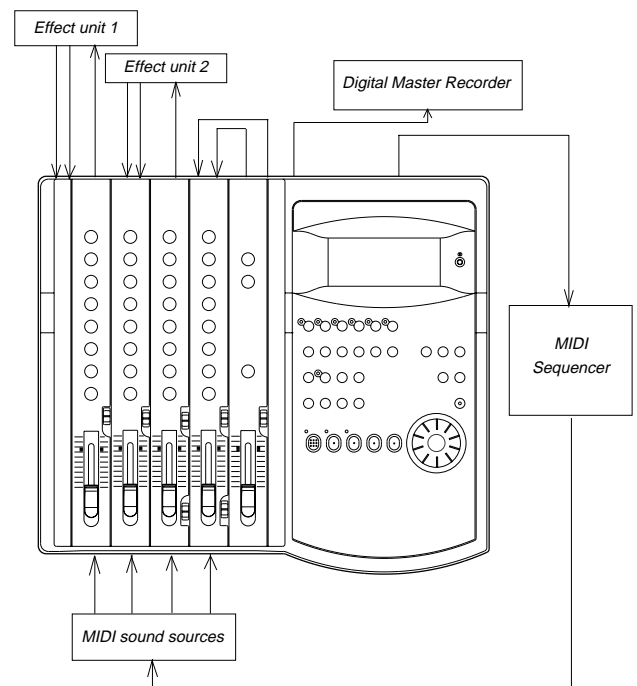

1. Set the channel 1–4 INPUT SEL switches to [TRK].

2. Set the SELECTOR in the monitor section to [L/R+MON].

3. Raise the master faders L/R to [7–8].

4. Connect the MON OUT (L/R) jacks and the RECORDER IN jacks directly.
This connection will route the L/R+MON signals output from MON OUT (L/R) to the DATA OUT jacks via the RECORDER IN jacks for mixdown. (The L/R+MON signals included the playback signals from tracks 1-4 and four MIDI sound sources.)
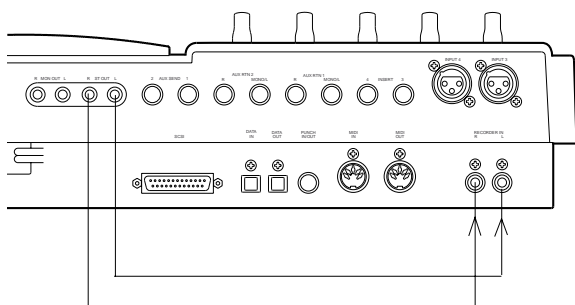
5. Set the "Setting digital output tracks" in SETUP mode to [L–⌐, r-⌐].

• See page 92 for more information.

6. Use the input channel faders and the PAN knobs to adjust the playback levels and stereo image of tracks 1–4.
Turn the MON knob in the MON mix section of the corresponding channels toward [INPUT] to adjust the input level of the MIDI sound sources, and use the MON PAN knob to adjust the stereo image.

**7. Use the MASTER knob in the monitor section to adjust the final output level for mixdown.**

8. If you wish to apply effects to a track, turn the AUX knob and AUX RTN knob of the corresponding channel to adjust the effect amount and balance.

MTC sync/Machine Control system

This section explains a synchronization system controlled by a computer using MMC (MIDI Machine Control) and controlled by MTC (MIDI time code) output from the FD-4. The FD-4 adds a given offset value to the ABS time on the disk and outputs the information as MTC of a given frame rate. In addition, the FD-4 can receive external MMC and Fostex System Exclusive Message (FEX) to perform certain operations. Changing the device ID number included in the messages transmitted from the computer allows you to control various operations on the FD-4 individually. Use the "Setting the MIDI device number" menu in SETUP mode to set the device ID number.

• Initialize the FD-4.
• If multiple Programs exist, select the desired Program first.

Connecting an external device
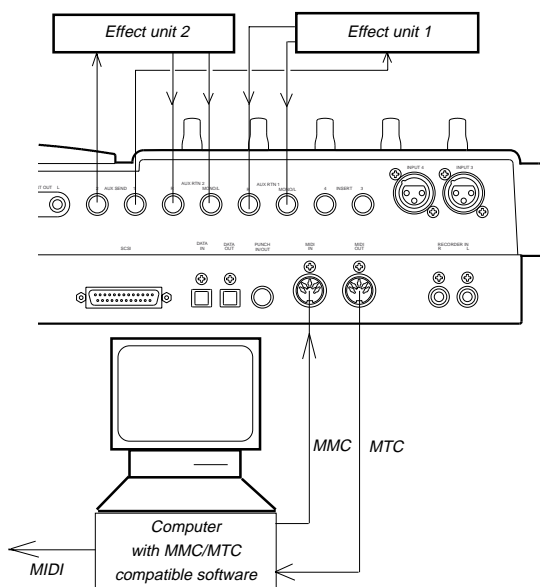
1. Connect the MIDI IN jack and MIDI out jack to the MIDI OUT/ IN jacks of the computer (using a MIDI interface).
The computer should be running sequence software that supports MMC and MTC.

2. Set the sequence software to MTC slave mode and MMC output mode, and select the desired MTC frame rate.

3. Connect the MIDI sound sources and effect units accordingly, in the manner as explained in the "MIDI clock sync system" section.

Setting MIDI SYNC OUT

1. Set the MIDI sync signal to be output to "MTC (Mtc)" in the "Setting MIDI sync output signal" menu in SETUP mode.
At this time, select [MTC] for Time Base for convenience.

• Refer to page 86 for more information on SETUP mode.

Setting MTC OFFSET

1. Set the time offset from the ABS time (less than six hours) in the "Setting an MTC offset value" menu in SETUP mode.

- *See page 88 for more information.*

Setting a frame rate

1. Select the same MTC frame rate as that for the sequence software in the "Setting an MTC frame rate" in SETUP mode.

- *See page 87 for more information.*

Setting the device ID number

1. Set the same device ID number as the MMC device number for the sequence software and the FEX device number in the "Setting the device ID number" menu in SETUP mode. *You do not set a number if the sequence software transmits [7Fh], which means [ALL DEVICE].*

- *See page 93 for more information.*

Checking synchronization and Machine Control

**1. Operate the FD-4 in play mode, and check to see if the sequence software synchronizes to the MTC output from the FD-4.** *Check to see if the FD-4 plays, stops, and locates points correctly when it is controlled from the computer.*

Overdubbing

1. Overdub on tracks 1 – 4 as explained in "Overdubbing" of the "MIDI clock sync system" section.

Mixing down while syncing the MIDI sound sources

1. Synchronize the output from tracks 1–4 with four MIDI sound sources, and mix down while applying the effects, as explained in "Mixing down while syncing MIDI sound sources" in the "MIDI clock sync system" section.

<Please read this>
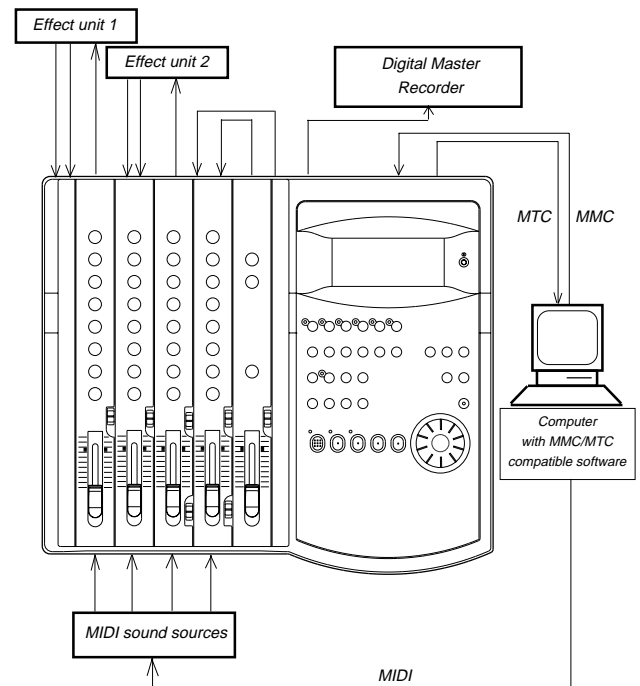
About MMC REC Out function

If you use the MMC REC Out function, operating the FD-4 will cause the MIDI OUT connector to output the MMC command that corresponds to the operation.

For example, pressing the PLAY button while pressing the RECORD button will output the MMC REC command from the MIDI OUT connector. The following commands are output:

Operation on the FD-4	Output MMC command (Device No. = 7F fixed)
PLAY + RECORD buttons	REC command
Punch In operation in TAKE mode of Auto Punch In/Out.	
Punch In operation via a footswitch.	
RECORD button ON/OFF.	Input monitor ON/OFF command
Rehearsal In in rehearsal mode of Auto Punch In/Out.	
Rehearsal In via a footswitch.	
PLAY button	REC EXIT command
Punch out in TAKE mode of Auto Punch In/Out	
Punch out via a footswitch.	
STOP button	STOP command

These MMC commands are output only when you operate the buttons on the FD-4. They are not output when the FD-4 receives external MMC commands.

You cannot turn off the MMC REC Out function. Whenever you perform any of the operations described above, the corresponding command is output. This is something you should note. If the sequencer connected to the FD-4's MIDI OUT is in record mode and you operate the FD-4, the corresponding MMC command will be recorded in a track on the sequencer. Then, if MIDI data is sent from the sequencer to the FD-4, the MMC command recorded in the sequence data will cause the FD-4 to enter record mode.

Sync system in Slave mode

You can set up the system in which the FD-4 in Slave mode synchronizes to an external master MIDI device.
In this example, a master device is a computer running sequence software.

> **<Note>**
> Make sure to use an external MIDI device that is able to output MTC as a master device.

> • Initialize the FD-4 before you start the operation.
> • If multiple Programs exist, select the desired Program first.

Connecting an external device

1. Connect the MIDI OUT jack of a computer running sequence software to the MIDI IN jack of the FD-4.

The connected computer should be running sequence software that supports MMC/MTC.

MTC

with Sequence Software
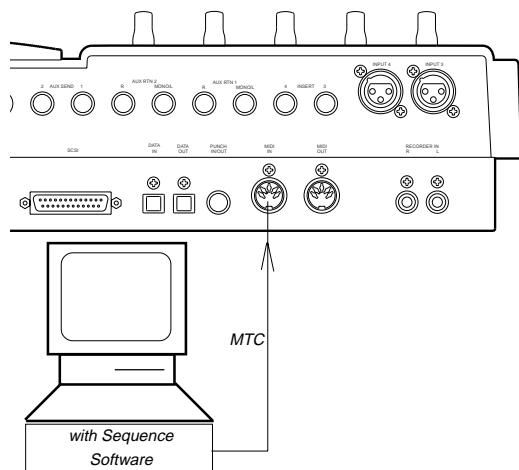
Setting up the external device

1. Set the following items on the sequence software.
  • Set up the sequence software to output MTC.
  • Set a frame rate of MTC.
  • Check the start time of the song.

> * Refer to the instruction manual that comes with the external device for more information.

Setting the FD-4

1. Set the frame rate of the sequence software, as described in the "Setting an MTC frame rate" menu in SETUP mode.

> * See "Setting an MTC frame rate" on page 87 for more information.

2. Set an offset time value in the "Setting an MTC offset value" menu in SETUP mode.

> * See "Setting an MTC offset value" on page 87 for more information.

3. Set the desired mode in the "Setting Offset mode" menu in SETUP mode.

> * See "Setting Offset mode" on page 88 for more information.

4. Turn Slave mode ON in the "Setting the Slave mode" menu in SETUP mode.

> * See "Setting the Slave mode" on page 88 for more information.

5. Set the slave type to [Vari] in the "Setting the Slave type" menu in SETUP mode.

> * See "Setting the Slave type" on page 89 for more information.

6. Press the TIME BASE SEL key to display the MTC Time Base.

> **<Notes on setting MTC-related parameters>**
> The MTC offset time and MTC offset mode determines whether or not MTC (MTC offset time) is output at ABS 0 or 001BAR 1♩00CLK. Follow the guide below, according to the start time of the song of the sequence software.
>
> • **Offset mode = ABS:**
> Set the MTC offset time to three seconds prior to the start time of the song of the sequence software. The FD-4 does not chase and lock to incoming MTC immediately. To synchronize the FD-4 from the beginning of the song, you need to set a preroll time and play the song a little before the top of the song of the sequence software.
>
> • **Offset mode = BAR ♩:**
> You can set the MTC offset time to the start time of the song. As explained previously, the ABS 0 position is [-002BAR 1♩00CLK], which allows for synchronization from the top of the song. The duration of two measures changes depending on the setting of the time signature and the tempo of the first measure. (Example: slow tempo = longer duration)

Checking the chase and lock operation

1. When you play the sequence software, the [MTC IN] indicator on the display lights up, and the flashing [SLAVE] lights up continuously, which indicates that chase and lock is complete.

At this time, make sure that MTC output from the sequence software is being displayed on the FD-4.

2. When you stop the sequence software, MTC transmission is interrupted and the FD-4 stops.

The [SLAVE] indicator on the display starts flashing.

3. While the sequence software is fast forwarding or rewinding, the FD-4 remains stopped. As soon as you start play back or record, the FD-4 immediately performs the chase and lock operation.

> **<Note>**
> The FD-4 can chase and lock to MTC only when the speed variation of MTC sent from the master device (computer) is within +/-5.6%.
> Within this range, the FD-4 will use the Vari Pitch function internally to chase MTC. If this range is exceeded, the FD-4 cannot chase and lock. If the speed variation of the master device is large, play the sequencer before recording so that the FD-4 will learn the speed of the master device. In this way, the FD-4 will lock to time code quicker next time.

• *If the FD-4 does not chase and lock correctly, check the connecting cables and settings.*

Recording

You can record data on the FD-4 while the FD-4 is chasing and locking to the sequence software signals.

\<Hint\>

About the option "Vari" in the "Setting the Slave type" in SETUP mode:

If the FD-4 chases and locks to only an incoming MTC, Vari Pitch is applied all the time. Under this condition, if the FD-4 outputs digital signals to a connected digital device, the device may not be able to accommodate the FD-4's speed variation (MTC speed variation of the master device), resulting in interrupted signal input at the digital device.

To solve this problem, set the "Setting the Slave type" menu to "Free." This will cause the FD-4 to follow its internal clock after it finishes the chase and lock operation, supplying stable digital signals to the external digital device.

With the "Free" setting, if the MTC offset between the master and slave devices exceeds "10 frames," the slave device interprets this as out of lock, and tries to chase and lock again (re-chase operation). During the re-chase operation, the audio output will be muted and digital signal transmission is also interrupted. If the offset is within 10 frames, the slave device will continue running while recognizing the offset.

\<Note\>

If you set the "Setting the Slave type" menu to "Vari," the FD-4 applies Vari Pitch all the time to chase MTC.

However, if a digital input track is assigned in the "Setting digital input tracks" in SETUP mode, the FD-4 will sync to incoming digital signals (external wordclock sync). This means that the FD-4 will not apply Vari Pitch during chasing even with the "Vari" setting.

The FD-4 will sync to incoming digital signals after it locks MTC.

Saving and Loading Song Data

Outline of the save/load operation

The FD-4 enables you to save the recorded song data (including SETUP data) to a connected DAT machine and load the saved data as is from DAT to the SCSI disk in the FD-4. This function allows you to work on different projects using the same SCSI disk.

You can save and load one Program at a time, and select any Program if multiple Programs exist.

You can also specify whether to save only four-Real tracks data, or both Real tracks and Additional tracks.

The following diagram shows how the data is saved to a DAT tape and loaded to the FD-4. (In this example, four-Real tracks and two-Additional tracks are saved and loaded.)
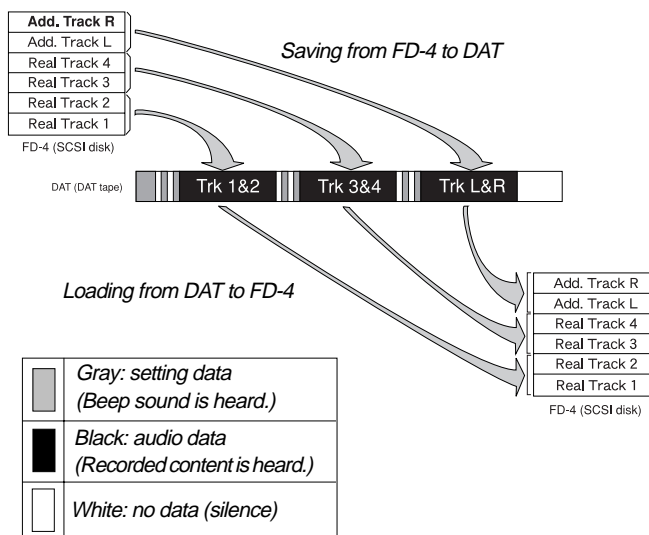
As shown in the diagram above, tracks 1 and 2, 3 and 4, and L and R are paired respectively when they are saved to the DAT tape. If the duration of each track data is "n" minutes, it takes three times "n" minutes to save all four Real tracks and two Additional tracks. (It takes twice "n" minutes to save only Real tracks.)

When the data is loaded, two tracks are paired in the same way. The data loaded into the FD-4 remains in the same exact condition as when you previously saved it to a DAT tape. Therefore, if you save unfinished data and then load it, you can pick up where you left off.

Connecting a DAT machine

Connect the FD-4 to a DAT machine using optical cables, as shown below.

Use an optional Fostex COP-1 (optical coaxial converter) if the DAT machine has only COAXIAL connectors (RCA pin jacks) for digital I/O. Use an optional Fostex COP-1 if the DAT has only COAXIAL connectors for digital I/O.
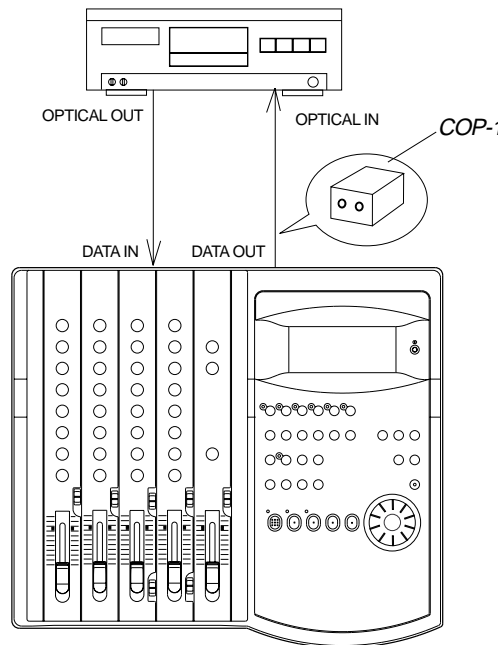
To make the DAT connection clearer, other devices are omitted in the example above.

<Notes on connection>

If the connected DAT (preferably a professional model) features sync operation with external clock and its "INPUT (or EXTERNAL SYNC)" sync mode switch is set to OPTICAL, trying to load data with both digital I/Os connected as shown in the diagram may cause a digital clock loop to form and loading may fail.

In this case, set the sync mode of the DAT to INTERNAL, or disconnect the optical cable from the DATA OUT of the FD-4 before loading data. This type of problem will not occur during the save operation since the DATA IN connector of the FD-4 is not effective.

Remember this!

- *Set the DAT recording mode to 32kHz/SP mode to save data recorded on a disk formatted in Normal mode.*

FD-4

DAT

Save

Record mode: 32kHz/SP mode

Data recorded on a disk in Normal mode
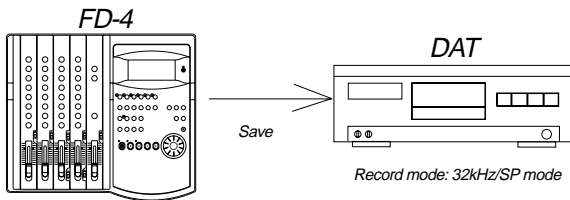
- *You cannot load data with a different sampling rate. For example, if you save data recorded in Normal mode to a DAT tape, then load it back to the FD-4, you will be unable to load the data if the load destination disk has been formatted in Mastering mode 1 or 2 (sampling rate: 44.1kHz), and vice versa.*

FD-4

DAT

Save

Record mode: 32kHz/SP mode

Data recorded on a disk in Normal mode

FD-4

Load

Disk in Mastering 1 or Mastering 2
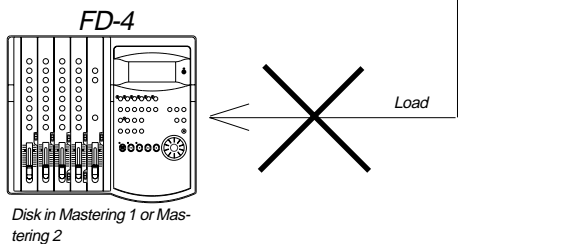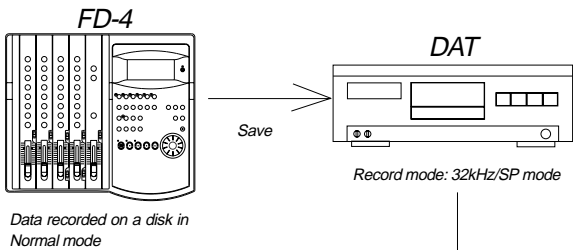
• Even with the same sampling rate...

Assume that you recorded Real tracks and Additional tracks on the disk in Mastering mode 1, saved them to a DAT tape, then loaded them back to a disk in Mastering mode 2.

The FD-4 will load the data normally since Mastering mode 1 and Mastering mode 2 use the same sampling rate. However, since the load destination is a disk in Mastering mode 2, you cannot record data to Additional tracks. That is, you were formerly able to record Additional tracks in real-time on the disk in Mastering mode 1, but now you cannot. If the original disk is in Mastering mode 2 and the load destination disk is in Mastering mode 1, the situation will be reversed. You could not record data on Additional tracks, but now you can.

Remember that whether you can record Additional tracks depends on the disk recording mode. Refer to the notes on recording mode in the "Recording Preparation" chapter.

Saving song data

In this example, song data on all tracks (4 Real tracks + 2 Additional tracks) of Program 1 is saved to a DAT tape.

Preparing a DAT machine

- *Turn the power on to the DAT machine and insert a DAT tape into the DAT.*

- *Check to see if the write-protect tab is closed on the DAT tape so the machine can record.*

- *Rewind the tape to the beginning, if necessary.*

- *Set the recording mode of the DAT so that it will record digital signal via the optical connector. If the data has been recorded on the disk in Normal mode, set the recording mode of the DAT to 32kHz/SP mode. Refer to the instruction manual that comes with the DAT machine for other settings.*

Operation on the FD-4

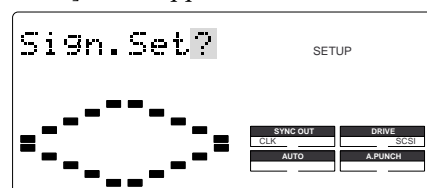*Use the "Save PGM ?" menu in SETUP mode to execute the save operation.*
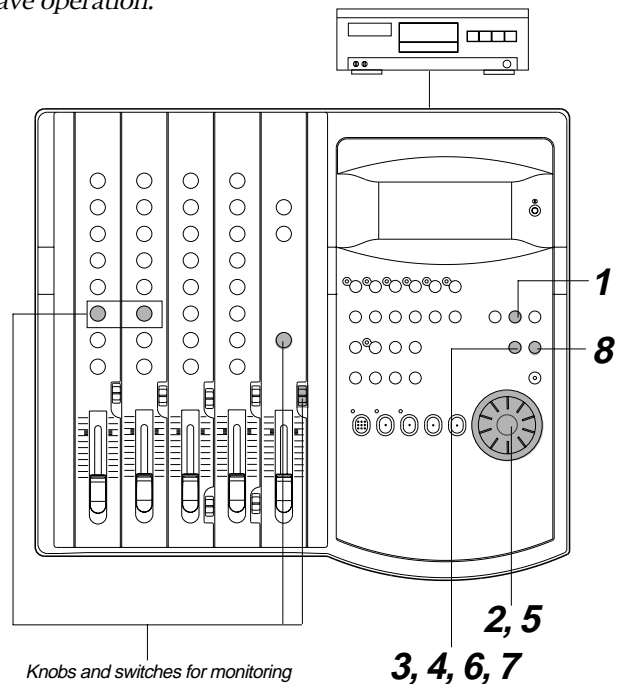
Knobs and switches for monitoring

The gray area in the display illustration indicates it is flashing.

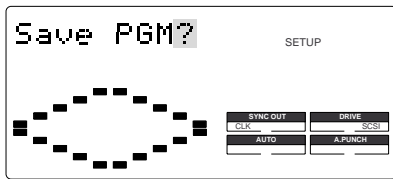**1. Press the SETUP key while the FD-4 is stopped.**

The FD-4 enters SETUP mode and displays the first hierarchy of the menu previously selected. The [Sign. Set ?] menu appears in default.
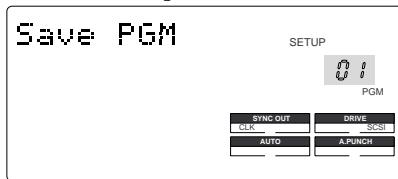
2. Use the JOG dial to display [Save PGM ?].

[?] flashes in the first hierarchy of the [Save PGM ?] menu.

```
Save PGM?        SETUP
   _____
  |           |
  |_____|

         SYNC OUT        DRIVE
      CLK            SCSI
         AUTO        A.PUNCH
```

3. Press the EXECUTE/YES key.

[?] stops flashing, and the Program number flashes.
This number indicates the program that was selected
before the FD-4 entered SETUP mode.
If multiple Programs exist, you can select the desired
Program in the next step.

```
Save PGM         SETUP

                  01
                  PGM
         SYNC OUT        DRIVE
      CLK            SCSI
         AUTO        A.PUNCH
```
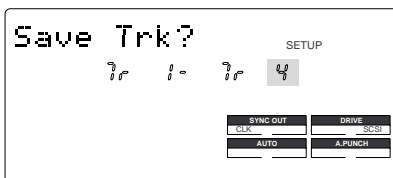
4. Use the JOG dial to select the desired Program.

Select [01] (Program number 1) in this example.
You cannot select other numbers if only one Program
exists.

5. Press the EXECUTE/YES key.

The FD-4 displays the track selection for the save
operation, and [4] flashes. The next step allows you to
select whether you wish to save tracks 1–4 or 1–6. (The
following figure indicates tracks 1–4.)

```
Save Trk?        SETUP
      Tr  1-  Tr   4

         SYNC OUT        DRIVE
      CLK            SCSI
         AUTO        A.PUNCH
```
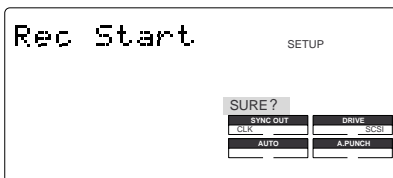
6. Select the tracks to save using the JOG dial.

Rotating the JOG dial causes [4] and [6] to flash
alternately. In this example, select [6] to save data on all
tracks including the Additional tracks.
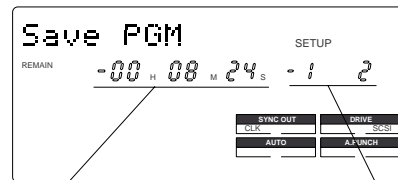
7. Press the EXECUTE/YES key.

[Rec Start] appears and [SURE ?] flashes.

```
Rec Start        SETUP


            SURE?
         SYNC OUT        DRIVE
      CLK            SCSI
         AUTO        A.PUNCH
```

**8. Start recording on the DAT machine, then press the
EXECUTE/YES key.**

The display changes as follows, and the save operation is
in progress.
The pilot signal (beep sound), tracks 1 and 2, 3 and 4,
and 5 and 6 will be saved to the DAT tape sequentially, in
this order. During the save operation, the level meters 1
and 2, and L and R on the FD-4 indicate the output levels.

```
Save PGM          SETUP
REMAIN  -00 H 08 M 24 S  - 1    2

           SYNC OUT        DRIVE
        CLK            SCSI
           AUTO        A.PUNCH
```

*This area indicates a negative value of
total duration taken to save data (tracks
1–6), which increments as the save op-
eration progresses.*

*This area indicates the tracks of
data currently saved. In this ex-
ample, tracks 1 and 2 are being
saved. This will change to 3 and 4,
then 5 and 6.*

When the save operation is complete, [COMPLETED !] lights
up on the display, and FD-4 stops. Stop recording on the
DAT machine.

*You can monitor the data using the following methods, in addi-
tion to using the headphones connected to the DAT machine.*

- *Monitor selector [MON]*
- *Turning the MON knobs for channels 1 and 2 toward [TRK 1]
  and [TRK 2] respectively*
- *Turning the MASTER knob in the monitor section*

9. Press the STOP button or the EXIT/NO key.

[COMPLETED !] disappears, the Program of the data you
saved to the DAT is selected, and the ABS Time Base
appears.

Loading song data

You can load the data from DAT to the SCSI disk of the FD-4.

Preparing a DAT machine

• *Turn on the power to the DAT machine, and insert the tape that includes the data you wish to load.*

• *Locate a point slightly before the pilot signal recorded at the beginning of the data.*

Operation on the FD-4

Use the "Load PGM ?" menu in SETUP mode to execute the load operation. This menu can be found before the "Save PGM ?" menu.


Knobs and switches for monitoring
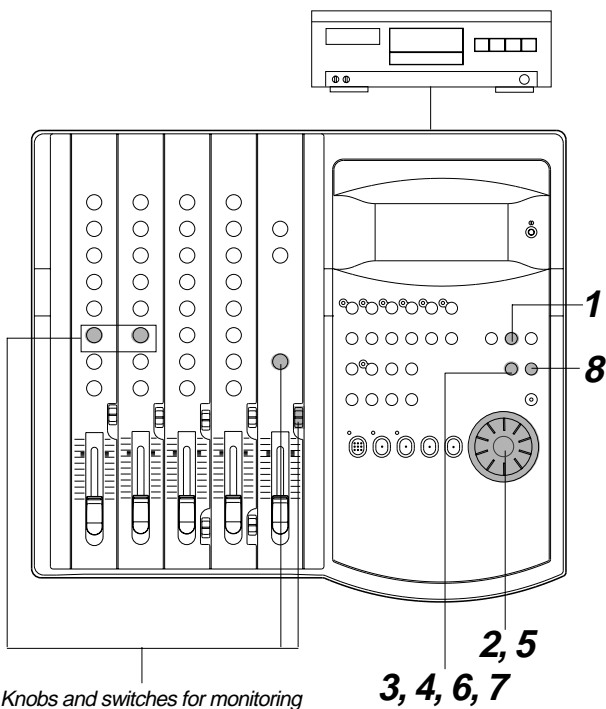
The gray area in the display illustration indicates it is flashing.

1. Press the SETUP key when the FD-4 is stopped.

The FD-4 enters SETUP mode, and the first hierarchy of the menu previously selected appears on the display. The [Sign Set ?] menu appears in default.
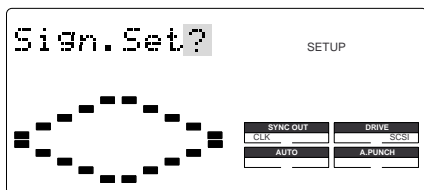

2. Turn the JOG dial to display [Load PGM ?], then press the EXECUTE/YES key.

[?] stops flashing, and the Program number flashes. This number indicates the program that is selected on the load destination disk. If multiple Programs exist, you can select the desired Program in the next step.
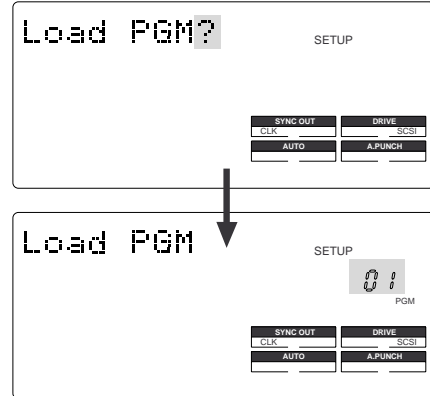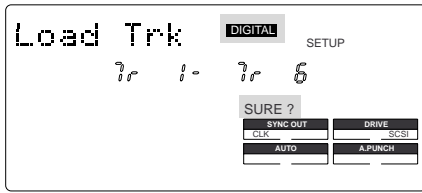

3. Use the JOG dial to select the desired Program.

You can select [01] or [02] if only one Program exists on the disk.

If you select [02], [PGM] and [New] flash alternately. This means that you can set up a new Program. If you do not wish to lead data to Program 1, select [02] to automatically create a new Program 2 on the disk, and Program 2 will be selected as the destination. (In the same way, if Programs 1–4 exist and you select [05], [New] flashes. That is, if you select the next largest Program number, [New] flashes.)

4. Press the EXECUTE/YES key.

The FD-4 displays the track selection for the load operation, and [4] flashes. The next step allows you to select whether you wish to save tracks 1–4 or 1–6. (The following figure indicates tracks 1–4.)
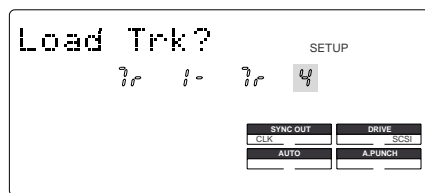
5. Select tracks to load using the JOG dial.

Rotating the JOG dial causes [4] and [6] to flash alternately. In this example, select [6] to load data on all tracks, including the Additional tracks.

If you select [4], data from tracks 1–4 will be loaded.

6. Press the EXECUTE/YES key.

The load destination Program and track data to be loaded will be confirmed. The FD-4 displays an illuminated DIGITAL indicator and a flashing [SURE ?] message. A flashing DIGITAL indicates that the FD-4 is not receiving digital signals from the DAT correctly. Check the DAT setting and cable connections.

79

```
Load Trk    DIGITAL  SETUP
        Tr  1-  Tr  6
                SURE ?
            SYNC OUT        DRIVE
            CLK             SCSI
            AUTO            A.PUNCH
```
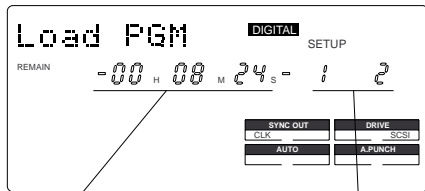
7. Press the EXECUTE/YES key again.

[Play DAT !] appears on the display.

```
Play DAT!   DIGITAL  SETUP


            SYNC OUT        DRIVE
            CLK             SCSI
            AUTO            A.PUNCH
```
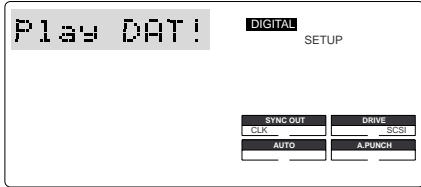
8. Start playing the DAT machine.

When the saved pilot signal is played, the load operation
starts automatically. The duration for the load operation
appears as a negative value and increments as the opera
tion progresses. The tracks being loaded also appear on
the display.

```
Load PGM    DIGITAL  SETUP
REMAIN
      -00 H 08 M 24 S -  1    2
            SYNC OUT        DRIVE
            CLK             SCSI
            AUTO            A.PUNCH
```

This area indicates a negative value of the total duration required to load data, which counts up as the load operation progresses.	This area indicates the tracks of currently-loaded data. In this example, tracks 1 and 2 are being loaded. This will change to 3 and 4, then 5 and 6.

During the load operation, the LEDs of the RECORD TRK
select keys 1/L and 2/R flash, and the level meters for
tracks 1 and 2, and L and R reflect the levels.

You can monitor the data using the following methods:

• Using the monitor selector [MON]
• Turning the MON knobs for channels 1 and 2 toward [TRK 1] and
  [TRK 2] respectively
• Turning the MASTER knob in the monitor section

When the save operation is complete, [COMPLETED !] lights
up on the display, and FD-4 stops. Stop playing the DAT
machine.

9. Press the STOP button or the EXIT/NO key.

[COMPLETED !] disappears, the Program for the data you
loaded is selected, and the ABS Time Base appears.

Changing the Initial Settings (SETUP Mode)

SETUP mode of the FD-4 offers the "Changing the initial settings" menus that configure the operating environment of the FD-4, and the "Execution" menus that execute certain operations, such as save and load.

The "Changing the initial settings" menus include 16 parameters as shown in Table-1 below. These parameters were set before the unit was shipped from the factory (These values are called "initial settings."). Modifying these settings allows you to change the operating environment of the FD-4.

Also, as shown in Table-2, the "Execution" menus include five items: Title Edit?, Del. PGM?, Load PGM?, Save PGM?, and Format?, which you can execute by selecting the corresponding SETUP menu. This chapter explains how to use the "Changing the initial settings" menus shown in Table-1. For more information on the "Execution" menus, refer to the corresponding pages in the "Reference page" column in Table-2.

<Table-1> "Changing the initial settings" menus

Parameters	Default setting	Refer page
"Setting a time signature"	001 BAR 4/4	82
"Setting a tempo"	001 BAR1 ♩120	83
"Setting the Metronome function"	OFF	85
"Setting a preroll value"	00	85
"Setting MIDI sync output signal"	CLK (Clock)	86
"Setting an MTC frame rate"	25 frame	87
"Setting an MTC offset value"	00h59m57s00f00sf	87
"Setting Offset mode"	ABS	88
"Setting the Slave mode"	OFF	88
"Setting the Slave type"	Vari	89
"Setting the Record Protect function"	OFF	90
"Setting digital input tracks"	L-, r- (no assign)	91
"Setting digital output tracks"	L-⌐ , r-⌐ (ST OUT)	92
"Setting BAR/BEAT resolution mode"	OFF	92
"Setting the MIDI device number"	00	93

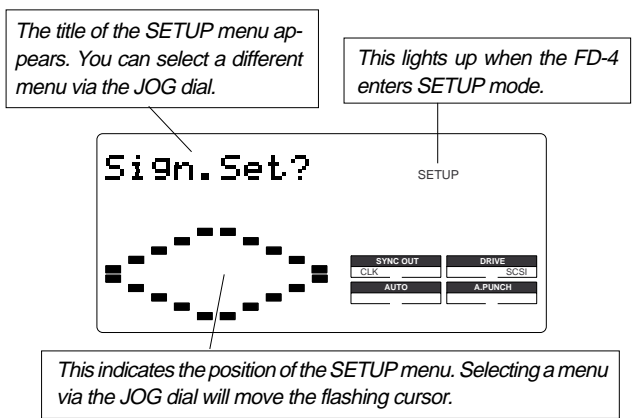**<Table-2> "Execution" menu**

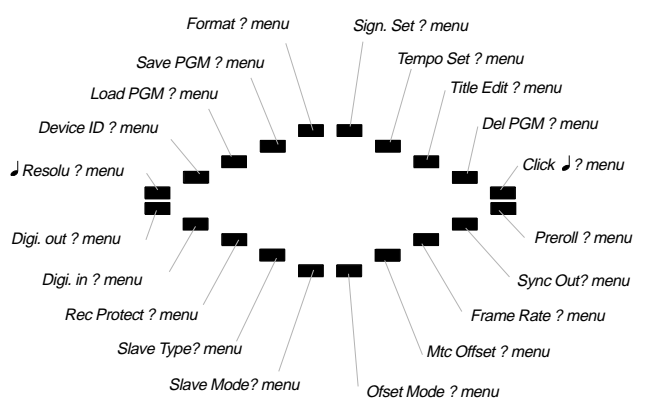| Items	Refer page
Editing a Program title	38
Deleting a Program	39
Saving song data to an external DAT	77
Loading song data from an external DAT	79
Formatting an external SCSI disk	6-8

Selecting SETUP mode

Follow the steps below to select the desired SETUP menu in SETUP mode.

1. While the FD-4 is stopped, press the SETUP key on the control panel.
Pressing the SETUP key causes the FD-4 to enter SETUP mode. The FD-4 displays the first hierarchy level of the SETUP menu you selected before you turned off the power. At this time, the menu graphics appear as shown below. The flashing menu indicator is the currently-selected menu. Turning the JOG dial will select a different menu and the corresponding menu indicator will flash. The following diagram shows the position of each menu.

The title of the SETUP menu appears. You can select a different menu via the JOG dial.

This lights up when the FD-4 enters SETUP mode.

This indicates the position of the SETUP menu. Selecting a menu via the JOG dial will move the flashing cursor.

<Note>
With the factory initial settings, or when you turn on the power again after you format an external SCSI disk, "Sign. Set? (Setting a time signature)" appears. Otherwise, the first hierarchy level of the previously-selected SETUP menu appears.

Format ? menu
Save PGM ? menu
Load PGM ? menu
Device ID ? menu
♩Resolu ? menu
Digi. out ? menu
Digi. in ? menu
Rec Protect ? menu
Slave Type? menu
Slave Mode? menu
Sign. Set ? menu
Tempo Set ? menu
Title Edit ? menu
Del PGM ? menu
Click ♩? menu
Preroll ? menu
Sync Out? menu
Frame Rate ? menu
Mtc Offset ? menu
Ofset Mode ? menu

2. Select the desired menu using the JOG dial, then press the EXECUTE/YES key.
The FD-4 displays the second hierarchy level of the selected SETUP menu, where you can set parameters. (Refer to the next page for more information.)

To exit SETUP mode, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode.

Setting a time signature

Using the "Setting a time signature" menu, you can set a time signature of a given measure on the internal programmable Tempo Map. For example, you can specify "4/4 for the first and second measures, and 2/4 from the third measure." Setting a time signature and tempo will create a Tempo Map, which allows the FD-4 to manage a song using the BAR/BEAT/CLK Time Base. You can also use the Metronome function. The time signature and tempo setting are required when MIDI clock & Song Position Pointer are output to an external sequencer.

- *Initial setting: 4/4 for bar 001 (not specified for 002 and later.)*
- *Setting range of measures: 001 – 999*
- *Setting range of time signatures: 1/4, 2/4, 3/4, 4/4, 5/4, 1/8, 3/8, 5/8, 6/8, 7/8, 8/8, -/- (delete)*
- *Max. setting points: 64 points*

* You can set time signatures for each Program individually.
* The settings can be saved and loaded as part of the song data.
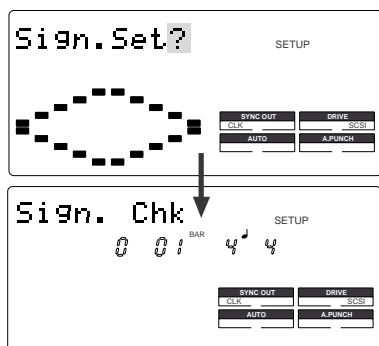** The settings are maintained after you turn off the power to the unit.*

Storing a time signature

1. Select a Program for which to set a time signature.
Refer to "Using the Program Change function" on page 37 for information on selecting a Program.

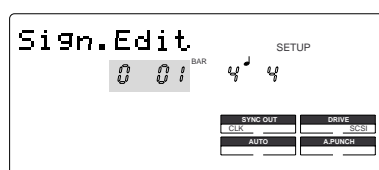**2. Press the SETUP key, use the JOG dial to select the "Sign. Set?" menu, then press the EXECUTE/YES key.**
The indication changes to "Sign. Chk" and the current time signature appears. The initial setting is "001BAR 4♩ 4" (4/4 for the first measure).

At this time, rotating the JOG dial clockwise enables you to check the current time signatures in sequence. With the initial setting, time signatures after the first measure are all "---BAR-♩-." This means that a time signature of 4/4 applies to all measures.

3. Press the EXECUTE/YES key.
The indication changes to "Sign.Edit" and "001 (measure)" of "001BAR"4♩4" flashes. You can enter any time signature here.

- **Rotate the JOG dial to enter the desired measure number.**
If you wish to keep the initial setting for the first measure, enter 002. If you try to enter any number other than 001, the time signature indicator shows "-♩-.." This means that no time signature is set for any measures other than the first measure. To change the time signature for the first measure, follow the steps below, without entering any other measure number.

- **Press the HOLD/> key, the REWIND button, or the F FWD button to display flashing "–" of "-♩-" and enter the time signature using the JOG dial.**

The following measure numbers and time signatures can be entered via the JOG dial.

Measures	001–999, selection of All Clear? indication "All Clear?" means that data in its entirety will be cleared. This is used to initialize the parameter. (Refer to "Clearing stored time signature/tempo data.")
Time signatures	1/4, 2/4, 3/4, 4/4, 5/4, 1/8, 3/8, 5/8, 6/8, 7/8, 8/8, -- "--" means no time signature assigned, and is used to delete time signature data. (Refer to "Modifying (or deleting) stored time signatures" for more information.)

<Note>
You cannot assign "- -" to measure 001.

4. Press the EXECUTE/YES key whenever you enter a pair of measure/time signature values.
Repeat this step to specify the necessary time signature for the measures.

To cancel the setting operation, or to exit SETUP mode after storing data, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode.

Modifying (or deleting) stored time signatures

1. Repeat steps 1–3 described in the "Storing a time signature" section to display "Sign.Edit."

2. Press the HOLD/> key, the REWIND button, or the F FWD button so that the flashing cursor is on the time signature value.

3. Use the JOG dial to enter a new value.
Entering "--" deletes the existing data. Note that you cannot enter "–" for measure 001.

4. Press the EXECUTE/YES key.

To cancel the setting operation, or to exit SETUP mode after storing data, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode.

<Caution>
If modifying or deleting the stored time signature causes the bar/beat setting for the tempo specified in the "Setting a tempo" menu to disappear, the tempo setting will also be automatically erased.
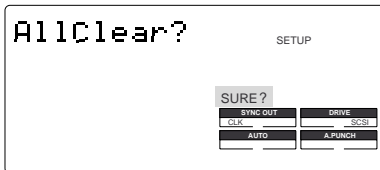
Clearing all time signature and tempo settings

<Caution>
Using this function will erase not only the time signature setting but also the tempo data specified in the "Setting a tempo" menu described in the next section.

1. Repeat steps 1–3 described in the "Storing a time signature" section to display "Sign.Edit."

2. While the measure number is flashing, turn the JOG dial counter-clockwise to select "All Clear?."
When "All Clear?" appears, "SURE?" flashes, and you can clear the time signature and tempo data in the next step.

To cancel the All Clear operation, press the STOP button or the EXIT/NO key now. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode.

3. Press the EXECUTE/YES key.
The stored time signature and tempo data in its entirety are cleared, and the initial settings are restored.

Setting a tempo

The "Setting a tempo" menu enables you to specify a tempo at a given point in a song that already has a time signature setting. For example, you can specify a tempo of 150 to the third beat of the 12th measure.

Time signature and tempo settings make a Tempo Map, which is used by the FD-4 to manage the song using the BAR/BEAT/CLK Time Base, and enable the Metronome function. Tempo settings as well as time signature settings are required when you wish to output MIDI clock and Song Position Pointer to an external sequencer.

- *Initial setting: bar 001, beat 1: 120*
- *Setting range of measures: Determined by the time signature setting.*
- *Setting range of beats: Determined by the time signature setting.*
- *Setting range of tempo: 30–250/quarter note, --- (delete)*
- *Max. setting points: 64 points*

* You can set the tempo for each Program individually.
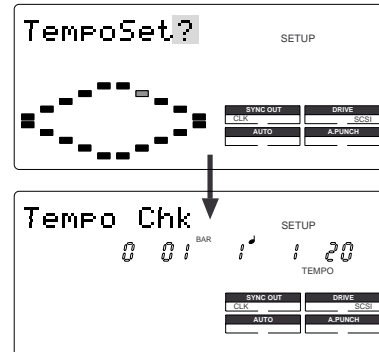** The settings can be saved and loaded as part of song data.*
* The settings are maintained after you turn off the power to the unit.

Checking the stored tempo setting

1. Select a Program to check the tempo setting for.
Press the SETUP key, use the JOG dial to select the "Tempo Set?" menu, then press the EXECUTE/YES key.
Indication on the display changes as shown below, and the current tempo appears. The initial setting is [001 BAR 1 ♩ TEMPO 120]. This means that a tempo for the first beat of the first measure is set to 120.

2. Rotate the JOG dial clockwise.
You can view the current tempo values in sequence. Tempo value [- - - BAR - ♩ TEMPO - - -] means that no tempo values are specified after the current setting. With the initial setting, [001 BAR 1 ♩ TEMPO 120] is followed by [- - - BAR - ♩ TEMPO - - -].

Storing a tempo value

3. Press the EXECUTE/YES key.
The display indicates "Tempo Edit" and "TEMPO" flashes. (See the figure below.) This means that you can enter a value now.

83

4. Press the HOLD/> key, the REWIND button, or the F FWD button to move the flashing cursor to the desired edit location, and use the JOG dial to enter the bar/beat/tempo information to be stored.

Pressing the HOLD/> key or the F FWD button repeatedly will move the flashing cursor from TEMPO to BAR and to ♩, then returns to TEMPO.

Pressing the REWIND button repeatedly will move the cursor in the opposite direction.

The bar and beat settings for the time signatures deter mine the setting range of bar and beat settings for the tempo. You can specify a tempo between 30 and 250 per quarter note.

The indication [---] means "no tempo," which is used to delete a tempo setting.

When you turn the JOG dial, [---] appears for the bars and beats for which no tempo has been set.

5. Press the EXECUTE/YES key.

The display shows the stored bar/beat/tempo, then returns to the Tempo Edit indication (as shown in step 3).

6. Repeat steps 3-5 to store necessary tempo data.

For example, if you specify tempo values in the song with [001 BAR 4 ♩ 4] and [005 BAR 3 ♩ 4] settings, the Tempo Map includes the settings shown in the table below.

Tempo=120   *Tempo=90*

Tempo=60   *Tempo=120*

Tempo Map	
Time signature setting	**Tempo setting**
001 BAR 4 ♩ 4	*001 BAR 1 ♩ TEMPO 120* *003 BAR 1 ♩ TEMPO 90*
005 BAR 3 ♩ 4	*005 BAR 3 ♩ TEMPO 60* *007 BAR 2 ♩ TEMPO 120*

Modifying (or deleting) stored tempo settings

1. Repeat steps 1–3 described in the "Storing a tempo value" section to display "Tempo Edit?"

2. Press the HOLD/> key, the REWIND button, or the F FWD button so that the flashing cursor is on the measure num ber. Turn the JOG dial to select bar/beat to edit or delete.

3. Press the HOLD/> key, the REWIND button, or the F FWD button so that the flashing cursor is on the TEMPO number.

4. Use the JOG dial to enter a new value.

Entering "--" deletes the data at the selected bar/beat.

5. Press the EXECUTE/YES key.

6. Press the STOP button or the EXIT/NO key repeatedly to exit SETUP mode.

Setting the Metronome function

"Setting the Metronome function" menu allows you to determine whether or not the FD-4 outputs a metronome sound from Real track 4 during playback or recording. Turning the Metronome function on enables you to record your performance while playing the instrument accompanying the metronome sound.

<Note>

Since Real track 4 outputs the metronome sound when this function is turned on, you cannot play the audio recorded on this track. Also, do not record any data on track 4.

The FD-4 can output the metronome sound even from an unrecorded area (outside of the range from ABS 0 to ABS REC END) on track 4.

• *Initial setting: oFF*
• *Option: oFF, on*

* *You can turn the function on and off for each Program individually.*
* *The settings can be saved and loaded as part of the song data.*
* *The settings are maintained after you turn off the power to the unit.*

Setting the Metronome function

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Click ♩ ?] (? flashes.), then press the EXECUTE/YES key.
The current setting (oFF or on) appears on the display. Pressing the EXECUTE/YES key lights up the flashing [?] character steadily; the current setting flashes. The initial setting is [oFF] as shown below.

3. Turn the JOG dial to select on or oFF.
Selecting [on] will enable the output of the metronome sound. Selecting [oFF] (initial setting) will disable the metronome output.

4. Press the EXECUTE/YES key.
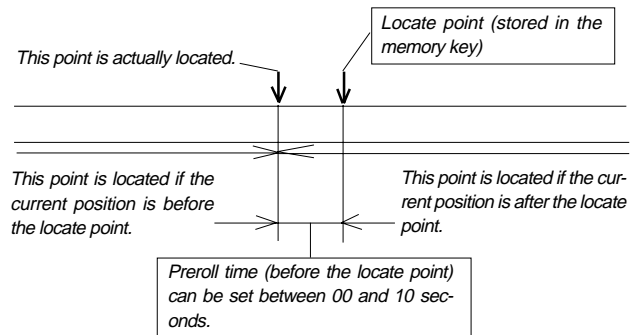*The display shows the selection (on or oFF), then returns to the indication in step 2.*

To cancel the setting operation, or to restore a setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting a preroll value

The FD-4 features the Preroll function that enables you to locate a position a few seconds prior to a specified locate point. The "Setting a preroll value" menu allows you to set the preroll time (in seconds).
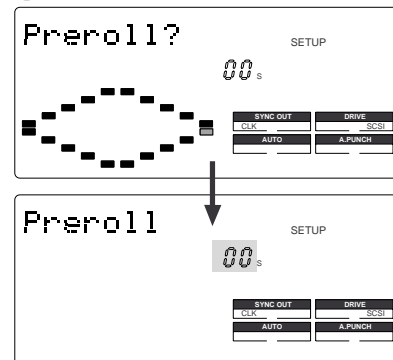The Preroll function is convenient when you wish to monitor the audio data from a point slightly before the locate point.

• *Initial setting: 00 second*
• *Setting range of preroll time: 00-10 seconds in one second steps*
* *You can set the value for each Program individually.*
* *The settings can be saved and loaded as part of the song data.*
* *The settings are maintained after you turn off the power to the unit.*

Setting a preroll time

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Preroll ?] (? flashes.), then press the EXECUTE/YES key.
The current preroll time setting appears on the display. Pressing the EXECUTE/YES key lights up the flashing [?] character steadily; the current setting flashes. The initial setting is [00] as shown below.

3. Turn the JOG dial to enter a desired preroll time value.
You can set a value in one-second increments. Rotating the JOG dial clockwise increases the value, and rotating it counter-clockwise decreases the value.

4. Press the EXECUTE/YES key.
The display shows the value, then returns to the indication that appeared in step 2.

To cancel the setting operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

85

Setting MIDI sync output signal

The "Setting MIDI sync output signal" menu enables you to select the type of MIDI sync signals output from the MIDI OUT connector on the rear panel of the FD-4 to an external MIDI device.

The options are MIDI clock & Song Position Pointer, or MTC (MIDI time code). Select an appropriate option depending on the type of signal supported by the connected MIDI device.

If you select MIDI clock & Song Position Pointer, first you need to set the time signatures and tempo as described previously. If you select MTC, you first need to set the MTC frame rate, the MTC offset time, and the MTC offset mode as described later.

<Note>

The FD-4 can output MIDI clock & Song Position Pointer, and MTC even from an unrecorded area (outside of the range of ABS 0 to ABS REC END).

- Initial setting: CLK (clock & Song Position Pointer)
- Option: CLK (clock & Song Position Pointer),
  MIDI (MIDI time code), OFF (no output)

* You can set the parameters for each Program individually.
* The settings can be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.
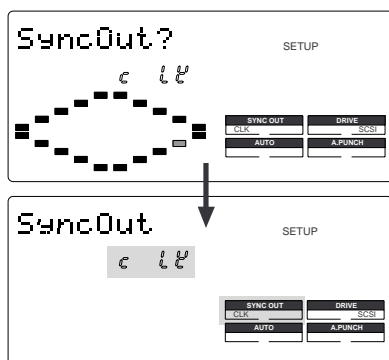

Setting MIDI sync signal

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Rotate the JOG dial to select [Sync Out ?] (? flashes.), then press the EXECUTE/YES key.

The currently-selected MIDI sync signal type appears on the display.
Press the EXECUTE/YES key to turn off the flashing [?] indication. The MIDI sync signal type indication flashes, and the ⬚SYNC OUT⬚ indicator flashes indicating the SYNC OUT setting.
The initial setting is [cLk] as shown below.

3. Turn the JOG dial to select the desired MIDI sync signal.

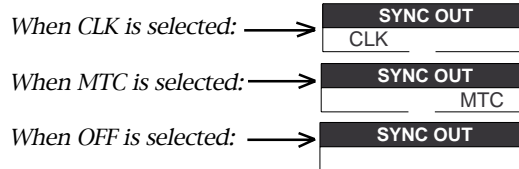Setting this parameter to [cLK] (initial setting) will select MIDI clock & Song Position Pointer.
Setting the parameter to [MTC] will select MIDI time code.
With the [oFF] setting, no MIDI sync signal will be output.

4. Press the EXECUTE/YES key.

The selected MIDI sync signal type is stored, and the FD-4 returns to the display with the flashing [?] indicator as shown in step 2.

Each option appears on the display as follows.

When CLK is selected: ⟶ **SYNC OUT** / CLK

When MTC is selected: ⟶ **SYNC OUT** / MTC

When OFF is selected: ⟶ **SYNC OUT**

To cancel the setting operation, or to restore a setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.
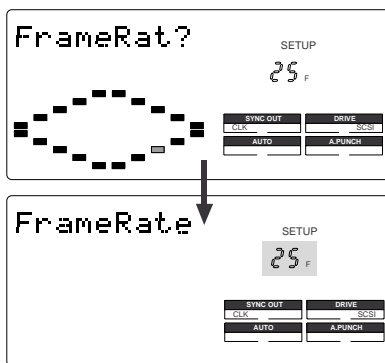

Setting an MTC frame rate

The "Setting an MTC frame rate" menu enables you to set the frame rate for MTC output from the MIDI OUT connector of the FD-4 to an external MIDI device. If you have already set the type of MIDI sync output signal to [MTC], you need to set the frame rate. Use the frame rate of MTC received by the external MIDI device (or sequence software).

- *Initial setting: 25 frames*
- *Setting range of frame rate: 24, 25, 30df, 30nd*

* You can set the value for each Program individually.
* The settings can be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.

Setting an MTC frame rate

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Frame Rate (?)] ("e" and "?" flash alternately.), then press the EXECUTE/YES key.
The current frame rate setting appears on the display. Press the EXECUTE/YES key to turn off the flashing [?] character; the current setting flashes. The initial setting of [25] flashes as shown below.

3. Turn the JOG dial to enter the desired frame rate.
Rotating the JOG dial clockwise or counter-clockwise displays available frame rates as an alternative.

4. Press the EXECUTE/YES key.
The selected frame rate is stored and the display returns to the indication with a flashing [?] that appeared in step 2.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.
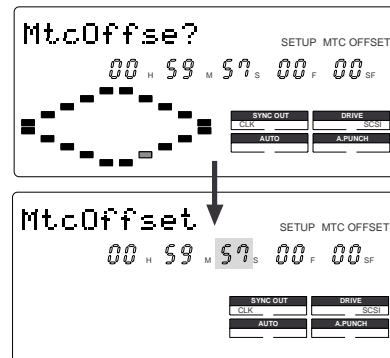
Setting an MTC offset value

The "Setting an MTC offset value" menu enables you to specify an offset time value – the difference between the time of MTC output from the FD-4 and the ABS 00m 00s 00f 00sf time. You need to specify this value if you have selected [MTC] for the "Setting MIDI sync output signal" menu.
With the initial setting of 00h 59m 57s 00f 00sf, for example, MTC of 59m 57s 00f 00sf is output at the ABS time 00m 00s 00f 00sf. You can also set an offset value from the 001 BAR 1 ♩ 00 CLK value (bar/beat) on the Tempo Map. Refer to the next section for information on MTC Offset mode.

- *Initial setting: 00h 59m 57s 00f 00sf*
- *Setting range of offset time: 00h 00m 00s 00f 00sf – 23h 59m 59s 29f 99sf*

* You can set the value for each Program individually.
* The settings can be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.

Setting an MTC offset

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Mtc Offset (?)] ("t" and "?" flash alternately.), then press the EXECUTE/YES key.
The current offset value appears on the display. Pressing the EXECUTE/YES key turns off the flashing [?] character, and the value in seconds flashes.
You can enter a value at the flashing digit. The number "57" of the initial setting [57s] flashes as shown below.

3. Use the HOLD/> key, the REWIND button, or the F FWD button to move the flashing cursor, and turn the JOG dial to enter the desired offset value.
Press the HOLD/> key or the F FWD button to move the flashing cursor to the right, and press the REWIND button to move it to the left. Turning the JOG dial continuously will round up the number to the next digit. For example, if you rotate the JOG dial on the seconds digit up 59, turning the dial further will increase the number on the digit of minute by one.

4. Press the EXECUTE/YES key.
The selected offset value is stored and the display returns to the indication with the flashing [?] that appeared in step 2.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

\<Note\>
For example, if you set MTC Offset mode to [ABS] (see the next section) and you wish to start the song from MTC's 1h 00m 00s 00f, you may wish to set a preroll of three seconds with an MTC offset of 00h 59m 57s 00f.

Setting Offset mode

If you have selected [MTC] in the "Setting Offset mode" menu, you need to select MTC Offset mode. This menu enables you to determine whether the specified MTC is output at ABS 00h 00m 00s 00f or at 001 BAR 1 ♩ 00 CLK (bar/beat) of the Tempo Map.

\<Note\>
As an example, if you set MTC Offset mode to [ABS] and you wish to start the song from MTC's 1h 00m 00s 00f, you may want to set a preroll of three seconds with MTC offset of 00h 59m 57s 00f.
If you select [BAR ♩] as the MTC Offset mode, a preroll of two measures is automatically set. Use 01h 00m 00s 00f; do not set a preroll value.

\<Note\>
If you set Offset mode to [BAR ♩] and use MTC to synchronize sequence software on the computer, the tempo of the sequencer may sometimes slip gradually. This is because the tempo of the FD-4 and the tempo of the software are slightly different even if both use the same tempo. Some sequence software can read the tempo output from the FD-4 correctly. We recommend that you use the tempo of the FD-4 on the sequence software.
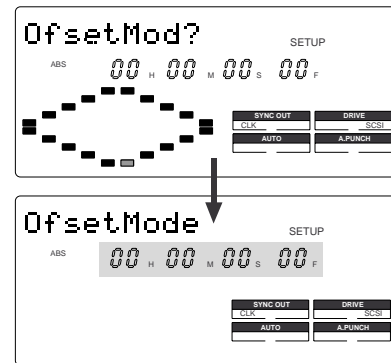*No such problems will occur if the sequence software synchronizes the FD-4 via MIDI clock, instead of MTC.*

- *Initial setting: ABS 00h 00m 00s 00f*
- *Offset mode option: ABS (00h 00m 00s 00f), BAR ♩*
  (001 BAR 1 ♩)

- ** You can set the mode for each Program individually.*
- ** The settings can be saved and loaded as part of the song data.*
- ** The settings are maintained after you turn off the power to the unit.*

Setting MTC Offset mode

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Offset Mode (?)] ("e" and "?" flash alternately.), then press the EXECUTE/YES key.
The current offset mode appears on the display.
Pressing the EXECUTE/YES key to turn off the flashing [?] character.
The Offset mode indicator flashes.
With the initial setting, [ABS 00h 00m 00s 00f] flashes as shown below.
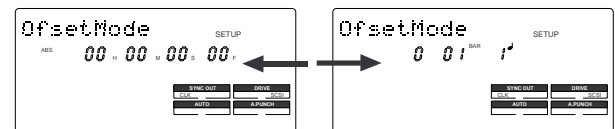

3. Use the JOG dial to select the desired Offset mode.
Rotating the JOG dial clockwise or counter-clockwise will alternately show a flashing "AS 00h 00m 00s 00f" and "001BAR 1 ♩".
If you select [ABS 00h 00m 00s 00f], the specified MTC offset time is output at ABS 00h 00m 00s 00f.
If you select [001BAR 1 ♩], the specified MTC offset time is output at 001 BAR 1 ♩ 00 CLK of the Tempo Map.

4. Press the EXECUTE/YES key.
The selected offset mode is stored and the display returns to the indication with flashing [e] and [?].

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting the Slave mode

The "Setting the Slave mode" menu allows you to set Slave mode of the FD-4 to on and off.
When Slave mode is turned on, the FD-4 will lock to MTC input from the master device. The FD-4 can also sync to the selected external sync signal if you select an appropriate Slave type.
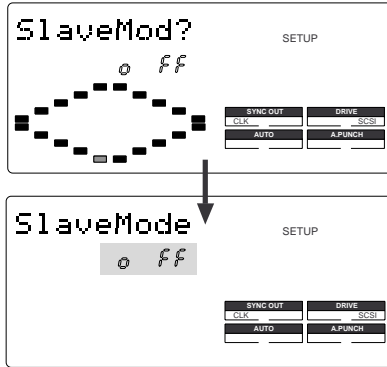With this menu setting, you can set up a system in which multiple FD-4s operate in sync or an FD-4 synchronizes to a Fostex digital multitrack recorder, as well as the FD-4 locking to MTC output from the sequence software.

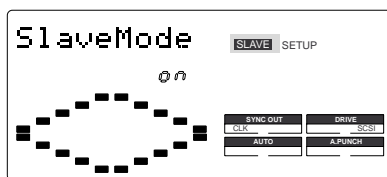- *Initial setting: oFF*
- *Option: on or oFF*

- ** You can set the mode for each Program individually.*
- ** The settings can be saved and loaded as part of song data.*
- ** The settings are maintained after you turn off the power to the unit.*
- ** The Program is automatically checked before the operation.*
- ** The sampling rate is automatically checked before the operation.*

Turning Slave mode on and off

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Slave Mode (?)] ("e" and "?" flash alternately), then press the EXECUTE/YES key.
The current slave mode appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the Slave mode indicator flashes.
With the initial setting, [oFF] flashes as shown below.

3. Use the JOG dial to turn Slave mode on and off.
Rotating the JOG dial clockwise and counter-clockwise alternates flashing [on] and [oFF].
Selecting [on] turns Slave mode on, and selecting [oFF] turns Slave mode off.

4. Press the EXECUTE/YES key.
If you select [oFF], "e" and "?" flash alternately.
If you select [on], "e" and "?" flash alternately and [SLAVE] flashes as shown below.
This means that the FD-4 has not locked to the sync signal.
When the FD-4 locks to the sync signal from the master device, [SLAVE] lights up steadily.
After you set Slave mode to [on], you need to select the Slave type (type of sync signal) described in the next section.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.
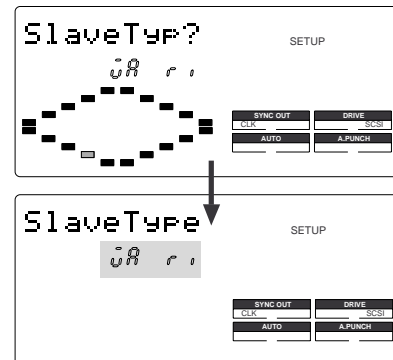
Setting the Slave type

The "Setting the Slave type" menu enables you to select the type of external sync signal used when the FD-4 is set as a slave to sync to an external device.

- *Initial setting: VAri*
- *Option: VAri: The FD-4 synchronizes only to external MTC.*
- *SPdiF: The FD-4 locks to MTC, then synchronizes to incoming S/PDIF digital signals.*
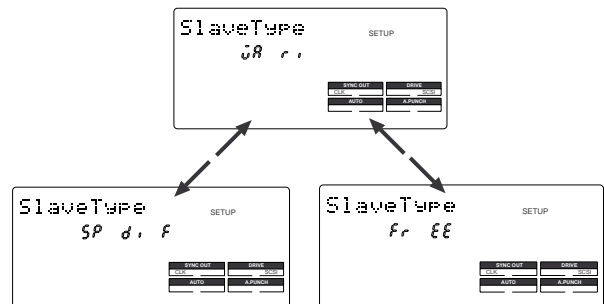- *FrEE: The FD-4 locks to MTC, then synchronizes to the internal clock.*

* You can set the parameter for each Program individually.
* The settings can be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.
* The Program is automatically checked before the operation.
* The sampling rate is automatically checked before the operation.

Setting the Slave type (external sync signal)

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Slave Type (?)] ("e" and "?" flash alternately), then press the EXECUTE/YES key.
The current Slave type appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the Slave type indicator flashes.
With the initial setting, [VAri] flashes as shown below.

3. Use the JOG dial to select the desired Slave type.
Rotating the JOG dial clockwise and counter-clockwise will cause the [VAri], [SPdiF], and [FrEE] indicators to flash in sequence.

89

\<Note\>

- *You need to input MTC from an external device to the FD-4 with any Slave type (external sync signal).*

- *The FD-4 re-chase window is fixed to ten frames. That is, if an offset between the master device and slave device exceeds ten frames, the FD-4 interprets that as out of sync, and tries to chase and lock to MTC sent from the master device. (This operation is called "re-chasing.") During the re-chase operation, audio output is muted. If the slave machine slips with MTC from the master device by less than ten frames, the slave machine continues running while recognizing the slippage.*

\<Note\>

- *This menu is used to select a digital signal used for external syn chronization when Slave mode is turned on. If you wish to specify the type of digital signals to record, you need to use the "Setting digital input tracks" menu.*

- *When you set the Slave type, the Vari Pitch function is automatically disabled. (The [VARI PITCH] indicator turns off.)*

4. Press the EXECUTE/YES key.

The selected Slave type is stored, and "e" and "?" flash alternately.

\<Note\>

- *If you set the Slave type to [SP diF] (S/P DIF digital signal), [DIGITAL] lights up on the display when the FD-4 receives a normal digital signal from the external device. If the signal is abnormal, the [DIGITAL] and FS (sampling rate) indicators flash to give you an alarm.*

- *If you set the Slave type to [SP diF] (S/P DIF digital signal), approximately two seconds of the sound in the entire system will be muted when the FD-4 locks or unlocks to clock. Make sure to input a stable digital signal source.*

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting the Record Protect function

The FD-4 features the Record Protect function, which is similar to the function of record-protect tabs on cassette tapes. The "Setting the Record Protect function" menu allows you to turn the Record Protect function on and off.
When this function is turned on, you cannot record, paste, or erase data. Use this function to protect your precious data from being erased accidentally.

- *Initial setting: oFF*
- *Option: on or oFF*

* *You can turn the function on and off for each Program individually.*
* *The settings can be saved and loaded as part of the song data.*
* *The settings are maintained after you turn off the power to the unit.*
* *The Program is automatically checked before the operation.*
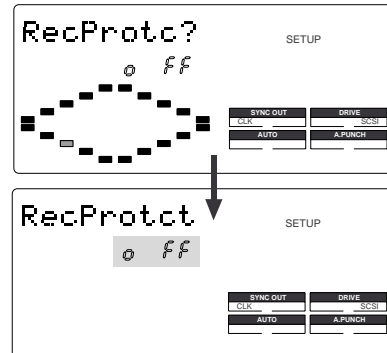
Recording enabled/disabled

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Rec Protct (?)] ("t" and "?" flash alternately), then press the EXECUTE/YES key.
The current setting appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the recording enabled/disabled indicator flashes.
With the initial setting, [oFF] flashes as shown below.

3. Use the JOG dial to enable or disable recording.
Rotating the JOG dial clockwise and counter-clockwise will flash [on] and [oFF] alternately.
Selecting [oFF] enables recording; you can record, paste, and erase data.
Selecting [on] disables recording; and you cannot record, paste, or erase data.

\<Note\>
When recording is disabled (on) and you try to record, paste, or erase data, the FD-4 displays [Protected] for a second, indicating that you cannot perform the operation. To perform the operation, you need to enable recording (oFF).

4. Press the EXECUTE/YES key.
"t" and "?" flash alternately.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.
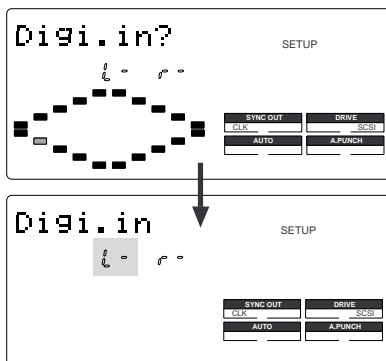
90

Setting digital input tracks

The "Setting digital input tracks" menu allows you to assign digital signals input at the DATA IN connector of the FD-4 to the tracks. You can perform digital recording from an external digital device (CD, MD, DAT, digital mixer, etc.) using this function.

The number of assignable tracks varies depending on the recording mode of the connected SCSI disk. If the disk is formatted in Master 1 mode or Normal mode, you can assign signals to tracks 1–6 (including two Additional tracks). If the disk is formatted in Master 2 mode, you can assign signals to tracks 1–4.

- *Initial setting: L-, R- (No assign for L and R)*
- *Assignable tracks: L channel = 1–6, -- (no assign)*
  R channel = 1–6, -- (no assign)

- * *If the SCSI disk has been formatted in Master 2, assignable tracks are 1–4 for L and R.*
- * *This setting is shared by all Programs in the same disk.*
- * *The settings cannot be saved and loaded as part of the song data.*
- * *The settings are maintained after you turn off the power to the unit.*

Setting digital input tracks

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Digi. in ?] ("?" flash alternately), then press the EXECUTE/YES key.
The current digital input track assignment appears on the display. Pressing the EXECUTE/YES key turns off the flashing [?] character, and the L channel setting of the digital input track flashes.
With the initial setting, L- and r- appear and [L-] flashes as shown below. You can select a flashing channel to assign a track.

3. Press the HOLD/> key, the REWIND button, or the F FWD button to select a channel (L or r) and use the JOG dial to specify a track.

<Note>
- *You cannot assign L channel and R channel to the same track. If you assign the same track and press the EXECUTE/YES key, the last channel you set will have priority, and the first channel will be automatically set to [-].*
  For example, if you assign L channel to [2], then assign R channel to [2], and press the EXECUTE/YES key, L channel will be set to [L-], and R channel will be set to [r2].

- *If the SCSI disk has been formatted in Master 1 or Normal recording mode, you can assign tracks 5 and 6 (Additional tracks). If the disk has been formatted in Master 2 mode, and if you try to assign the channel to track 5 and 6 and record data, record stand-by mode will be cancelled, and the RECORD TRACK LED (L,R) will flash quickly. Refer to "Digital Recording" on page 52 for more information.*

4. Press the EXECUTE/YES key.
The selected track assignment is stored, and "?" flashes. When the FD-4 receives a correct digital signal, [DIGITAL] lights up on the display.

<Note>
- *If [DIGITAL] flashes on the display, check the connection with the external device, and the settings on the FD-4 and the external device.*

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting digital output tracks

The "Setting digital output tracks" menu enables you to assign the track that outputs digital signals from the DATA OUT connector of the FD-4 to an external digital device. You can send the recorded audio data on the FD-4 to an external digital device (MD, DAT, digital mixer, etc.) in the digital format. Assignable tracks are tracks 1–4 and s-t (STEREO OUT L, R outputs).
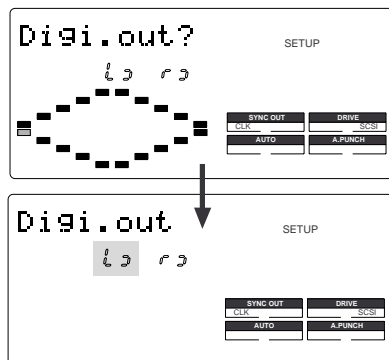
- • Initial setting: L⊐ , r ⊐ (STEREO OUT L, R output) ⊐ = s
- • Assignable tracks: L channel = 1–4, ⊐ (STEREO OUT L)
  R channel = 1–4, ⊐ (STEREO OUT R)

- * This setting is shared by all Programs in the same disk.
- * The settings cannot be saved and loaded as part of the song data.
- * The settings are maintained after you turn off the power to the unit.

<IMPORTANT>

Match the sampling rate of the digital input on the external device with the sampling rate of the FD-4 to send digital signals from the FD-4 to the external device.

Setting digital output tracks

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Digi. out ?] ("?" flashes), then press the EXECUTE/YES key.
The current digital output track assignment appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the L channel setting of the digital output track flashes. With the initial setting, L ⊐ and r⊐ appear, and [L ⊐] flashes as shown below. You can select a flashing channel to assign a track.

3. Press the HOLD/> key, the REWIND button, or the F FWD button to select a channel (L or r) and use the JOG dial to specify a track.

4. Press the EXECUTE/YES key.
The selected track assignment is stored, and "?" flashes. When the FD-4 receives a correct digital signal, [DIGITAL] lights up on the display.

<Note>

If [DIGITAL] flashes on the display, check the connection with the external device, and the settings on the FD-4 and the external device.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting BAR/BEAT resolution mode

The "Setting BAR/BEAT resolution mode" menu enables you to turn BAR/BEAT resolution mode on and off. The initial setting is "off." When you turn this mode on, the CLK (clock) digits will be always round off to 00 and be stored in the memory key while the FD-4 is using the BAR/BEAT/CLK Time Base. That is, beat resolution is used.
Using this function allows you to automatically store a beat-resolution value of the CLIPBOARD IN/OUT points and other points in real-time. (Press the STORE key, then the corresponding memory key while playing the FD-4.)
Therefore, it is very convenient when you perform the Copy & Paste or Move & Paste operation in beat-resolution.

For example, assume that you have stored the value for 001BAR1 ♩46 CLK as the CLIPBOARD IN point, and the value for 002BAR 4 ♩51 CLK as the CLIPBOARD OUT point.
These values will be used as they are if BAR/BEAT resolution mode is turned off. However, the mode is turned on, the following values will be stored instead. The following example has a time signature setting of 4/4.

001 BAR 1 ♩46 CLK -> 001 BAR 1 ♩00 CLK
(A CLK value of 46 will be rounded off.)

002 BAR 4 ♩51 CLK -> 003 BAR 1 ♩00 CLK
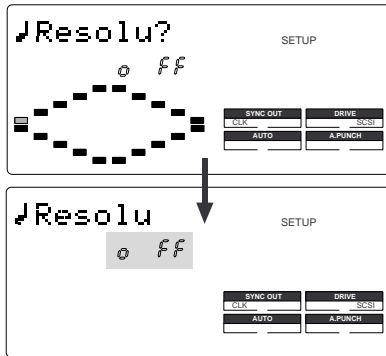(A CLK value of 51 will be rounded up.)

- • Initial setting: oFF
- • Options: on, oFF

* This setting is shared by all Programs in the same disk.
* The settings cannot be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.

Setting BAR/BEAT resolution mode

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [♩ Resolu ?] ("?" flashes), then press the EXECUTE/YES key.
The current BAR/BEAT resolution mode setting appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the BAR/BEAT resolution mode setting flashes.
With the initial setting, [oFF] flashes as shown below.

3. Use the JOG dial to turn the mode on or off.

When you turn the JOG dial clockwise and counter-clock wise, [on] and [oFF] flash alternately.
Selecting [on] turns BAR/BEAT resolution mode on, and selecting [oFF] turns BAR/BEAT resolution mode off.

4. Press the EXECUTE/YES key.

The selected mode setting is stored, and "?" flashes.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

Setting the MIDI device number

The "Setting the MIDI device number" menu enables you to set the FD-4 device ID number required to control the unit from a sequence software using MMC (MIDI Machine Control) or FEX (Fostex System Exclusive Message).
The transmit device ID links to this setting.
You can set the device ID from 00 to 99.
However, if the device ID number of the message the FD-4 receives is [7F], the FD-4 will recognizes it to perform the corresponding operation, regardless of its device ID setting.

• Initial setting: 00
• Device ID: 00–99

* This setting is shared by all Programs in the same disk.
* The settings cannot be saved and loaded as part of the song data.
* The settings are maintained after you turn off the power to the unit.
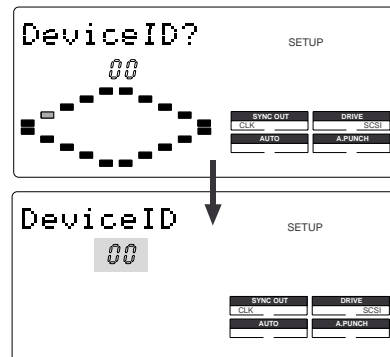
Setting the MIDI device ID

1. While the FD-4 is stopped, press the SETUP key to enter SETUP mode.

2. Turn the JOG dial to select [Device ID?] ("?" flashes), then press the EXECUTE/YES key.

The current MIDI device ID number appears on the display.
Pressing the EXECUTE/YES key turns off the flashing [?] character, and the MIDI device ID number flashes.
With the initial setting, [00] flashes as shown below.

3. Use the JOG dial to set the desired MIDI device ID number.

Turning the JOG dial clockwise increments the value, and turning it counter-clockwise decrements the value.

4. Press the EXECUTE/YES key.

The MIDI device ID number is stored, and "?" flashes.

To cancel the operation, or to restore the setting obtained prior to the EXECUTE/YES key press, press the STOP button or the EXIT/ NO key. Each time you press one of these keys, the FD-4 returns to the previous hierarchy level of the menu, and finally exits SETUP mode and displays the previous Time Base.

(Digital Multitracker)
Model FD-4 **MIDI Implementation Chart** Date:
Version: V1.00

Function....................		Transmitted	Recognized	Remarks
Basic	Default	X	X	
Channel	Changed	X	X	
Mode	Default	X	X	
	Message	X	X	
	Altered	********************************	X	
Note		X	X	
Number:	True voice	********************************	X	
Velocity	Note ON	X	X	
	Note OFF	X	X	
After	Key's	X	X	
Touch	Channel's	X	X	
Pitch Bend		X	X	
Control Change		X	X	
Program		X	X	
Change:	True #	********************************	X	
System Exclusive		○ (rem. 1)	○ (rem. 2)	
Common	: Quarter frame	○	○	
	: Song Position	○	X	
	: Song Select	X	X	
	: Tune	X	X	
System	: Clock	○	X	
Real Time	: Commands	○ (rem. 3)	X	
Aux. Message	: Local ON/OFF	X	X	
	: All Notes OFF	X	X	
	: Active Sense	X	X	
	: Reset	X	X	
Notes		rem. 1: MMC (Device ID=00~99, 127), MTC, Identity reply, FOSTEX Exclusive		
		rem. 2: MMC (Device ID=00~99, 127), MTC, Inquiry, FOSTEX Exclusive		
		rem. 3: START, STOP, CONTINUE		

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   ○: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X: No

MMC Command List

Command List	Movement (Recorder)
01: STOP	STOP
02: PLAY	PLAY
03: DEFERRED PLAY	DEFERRED PLAY
04: FAST FORWARD	F FWD
05: REWIND	REWIND
06: RECORD STROBE	REC
07: RECORD EXIT	PUNCH OUT
09: PAUSE	STOP
40: WRITE	Refer to MMC Response/Information Field List
41: MASKED WRITE	Refer to MMC Response/Information Field List
42: READ	Refer to MMC Response/Information Field List
44: LOCATE	LOCATE to Setting Data
47: SHUTTLE	CUE/REVIEW (+/- 1~60 times)
4C: MOVE	Refer to MMC Response/Information Field List
4D: ADD	Refer to MMC Response/Information Field List
4E: SUBTRACT	Refer to MMC Response/Information Field List

MMC Response/Information Field List	Command
01: SELECTED TIME CODE	READ/WRITE/MOVE/ADD/SUBTRACT
03: REQUESTED OFFSET	READ/WRITE
04: ACTUAL OFFSET	READ
08: GP 0	READ/WRITE/MOVE/ADD/SUBTRACT
09: GP 1	READ/WRITE/MOVE/ADD/SUBTRACT
0A: GP 2	READ/WRITE/MOVE/ADD/SUBTRACT
0B: GP 3	READ/WRITE/MOVE/ADD/SUBTRACT
0C: GP 4	READ/WRITE/MOVE/ADD/SUBTRACT
0D: GP 5	READ/WRITE/MOVE/ADD/SUBTRACT
0E: GP 6	READ/WRITE/MOVE/ADD/SUBTRACT
0F: GP 7	READ/WRITE/MOVE/ADD/SUBTRACT
48: MOTION CONTROL TALLY	READ
4C: RECORD MODE	READ/WRITE
4E: TRACK RECORD STATUS	READ
4F: TRACK RECORD READY	READ/WRITE/MASKED WRITE
51: RECORD MONITOR	READ/WRITE

Inquiry Message List

IDENTITY REQUEST: F0, 7E, <channel>, 06, 01, F7
IDENTITY REPLY: F0, 7E, <channel>, 06, 02, 51, 01, 00, 0F, 00, 01, 00, 7F, 7F, F7

     51: Fostex ID

     01, 00: Device family code

     0F, 00: Device family number FD-4

     01, 00, 7F, 7F: Software version

Maintenance

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.

Specifications

* Mixer section

\<INPUT 1, 2\>

Connector	: ⌀ 6mm Phone jack (x 2)
Input Impedance	: 20k ohm or higher
Reference Input Level	: -10dBV

\<INPUT 3, 4\>

Connector	: ⌀ 6mm Phone jack (x 2)
	: XLR-3-31 type (x 2)
Input Impedance	: 20k ohm or higher
Reference Input Level	: L: -50dBV, M: -30dBV, L: -10dBV

\<INSERT 3, 4\>

Connector	: ⌀ 6mm Phone jack (x 2)
Load Impedance	: 10k ohm or higher
Reference Output Level	: -10dBV
Input Impedance	: 10k ohm or higher
Reference Input Level	: -10dBV

\<AUX SEND 1, 2\>

Connector	: ⌀ 6mm Phone jack (x 2)
Load Impedance	: 10k ohm or higher
Reference Output Level	: -10dBV

\<AUX RTN 1, 2\>

Connector	: ⌀ 6mm Phone jack (x 4)
Input Impedance	: 8k ohm or higher
Reference Input Level	: -20dBV

\<STEREO OUT L, R\>

Connector	: RCA pin jack (x 2)
Load Impedance	: 10k ohm or higher
Reference Output Level	: -10dBV

\<MONITOR OUT L, R\>

Connector	: ⌀ 6mm Phone jack (x 2)
Load Impedance	: 10k ohm or higher
Reference Output Level	: -10dBV

\<PHONES OUT\>

Connector	: ⌀ 6mm Stereo Phone jack
Load Impedance	: 16 ohm or higher

\<RECORDER IN L, R\>

Connector	: RCA Pin jack (x 2)
Input Impedance	: 20k ohm or higher
Reference Input Level	: -10dBV

\<DATA IN/OUT\>

Connector	: Optical (x 2)
Format	: IEC 958 Part 3 (S/P DIF)

\<MIDI IN/OUT\>

Connector	: DIN 5 pin
Format	: MIDI

\<PUNCH IN/OUT\>

Connector	: ⌀ 6mm Phone jack (x 1)

(An optional FOOT SW Model 8051 can be connected.)

\<Equalizer\>

HI	: 12kHz +/-15dB (Shelving Type)
MID	: 200Hz ~ 5kHz +/- 15dB (Parametric Type)
LO	: 80Hz +/- 15dB (Shelving Type)

\<Frequency Response\> : 20Hz ~ 20kHz

* Recorder section

\<Recording/Reproducing\>

Recording Medium	: External SCSI device (SCSI-2, asymmetrical transfer)
	: Internal 2.5 inch hard disk (E-IDE type)
	: Connectable SCSI device: One

\<Recording Format\> : FDMS-3*
(* Fostex Disk Management System-3)

\<Recording Mode\>

Normal Mode	: 4 Real track + 2 Additional track (Sampling Rate: 32kHz/ DAC*)

(*) Digital Audio Acoustic Coding)

96

Mastering Mode 1   : 4 Real track + 2 Additional track (Sampling Rate: 44.1kHz/16-bit linear)

Mastering Mode 2   : 4 Real track (Sampling Rate: 44.1kHz/16-bit linear)

<Digital Input/Output>

    * 32kHz/16-bit linear (Normal mode), Corresponds to DAT 32kHz/SP mode.

    * 44.1kHz/16-bit linear (Mastering mode 1, 2)

<Save/Load>   : FDIO-1*

    (*) Fostex Data Input /Output-1)

<Recording Track> : 2 tracks (Analog x 2, or Digital x 2)

<Playback Track> : 4 tracks

<Program No.>   : Maximum 99 tunes

<Vari pitch.>   : +/-6%

<Crossfade>   : 10msec.

<Recording/reproducing frequency>

    : 20Hz ~ 15.5kHz (Normal mode)
    : 20Hz ~ 20kHz (Mastering mode 1, 2)

<Dynamic Range>   : 90dB

<Total harmonic distortion> : 0.008% (Mastering mode 1, 2)

<Tempo map>

    Signature   : 1/4, 2/4, 3/4, 4/4, 5/4, 1/8, 3/8, 5/8, 6/8, 7/8, 8/8

    Tempo   : quarter note (1/4 note) = 30 ~ 250

* General

<Dimensions (mm)>   : 402 (W) x 110 (H) x 355 (D)
<Weight>   : Approx. 4kg
<Power supply>   : AC 120V, 60Hz
    : AC 230V ~ , 50/60Hz
<Power Consumption>   : 15W

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

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>
NAME: ATEC Audio-u. Videogeraete VertriebsgesmbH.
ADD: Im Winkel 5, A-2325 Velm, Austria
TEL: (+43) 2234-74004, FAX: (+43) 2234-74074

<BELGIUM>
NAME: EML N. V.
ADD: Bijvennestraat 1A, B3500 Hasselt, Belgium
TEL: (+32) 11-232355, FAX: (+32) 11-232172

<DENMARK>
NAME: SC Sound ApS
ADD: Malervej 2, DK-2630 Taastrup, Denmark
TEL: (+45) 4399-8877, FAX: (+45) 4399-8077

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

<FRANCE>
NAME: Musikengro
ADD: ZAC de Folliouses, B. P. 609, 01706 Les Echets, France
TEL: (+33) 72 26 27 00, FAX: (+33) 72 26 27 01

<GERMANY>
NAME: Studiosound & Music GmbH
ADD: Scheppe Gewissegasse 8, D-35039 Marburg, Germany
TEL: (+49) 6421-12071, FAX: (+49) 6421-15522

<GREECE>
NAME: Bon Studio S. A.
ADD: 6 Zaimi Street, Exarchia, 106.83 Athens, Greece
TEL: (+30) 1-3809605-8, 3302059, FAX: (+30) 1-3845755

<ICELAND>
NAME: I. D. elrf. electronic Ltd.
ADD: Armula 38 108 Reykjavik, Iceland
TEL: (+354) 588 5010, FAX: (+354) 588 5011

<ITALY>
NAME: Recoton Italia Srl.
ADD:V. 1 Maggio, N 18, 40050 Quarto Inferiore, (BO) Italy
TEL: (+39) 51-768576, FAX: (+39) 51-768336

<THE NETHERLANDS>
NAME: IEMKE ROOS AUDIO B. V.
ADD: Kuiperbergweg 20, 1101 AG Amsterdam, The Netherlands
TEL: (+31) 20-697-2121, FAX: (+31) 20-697-4201

<NORWAY>
NAME: Siv. Ing. Benum A/S
ADD: P. O. Box 145 Vinderen, 0319 Oslo 3, Norway
TEL: (+47) 22-139900, FAX: (+47) 22-148259

<PORTUGAL>
NAME: Caius - Tecnologias Audio e Musica, Lda.
ADD: Rua de Santa Catarina, 131 4000 Porto, Portugal
TEL: (+351) 2-2084456/325400, FAX: (+351) 1-5930716

<SPAIN>
NAME: Multitracker. S. A.
ADD: C/Garcilaso No. 9, Madrid 28010, Spain
TEL: (+34) 1-4470700, 1-4470898, FAX: (+34) 1-5930716

<SWEDEN>
NAME: TTS Tal & Ton Studioteknik AB
ADD: Gelbgjutarevagen 4, S-171 48 Solna, Sweden
TEL: (+46) 8-7340750, FAX: (+46) 8-824476

<SWITZERLAND>
NAME: Audio Bauer Pro AG
ADD: Bernerstrasse-Nord 182, CH-8064 Zurich, Switzerland
TEL: (+41) 1-4323230, FAX: (+41) 1-4326558

<UK>
NAME: SCV London
ADD: 3A 6-24 Southgate Road, London N1 3JJ, England, UK
TEL: (+44) 171-923-1892, FAX: (+44) 171-241-3644

INDEX