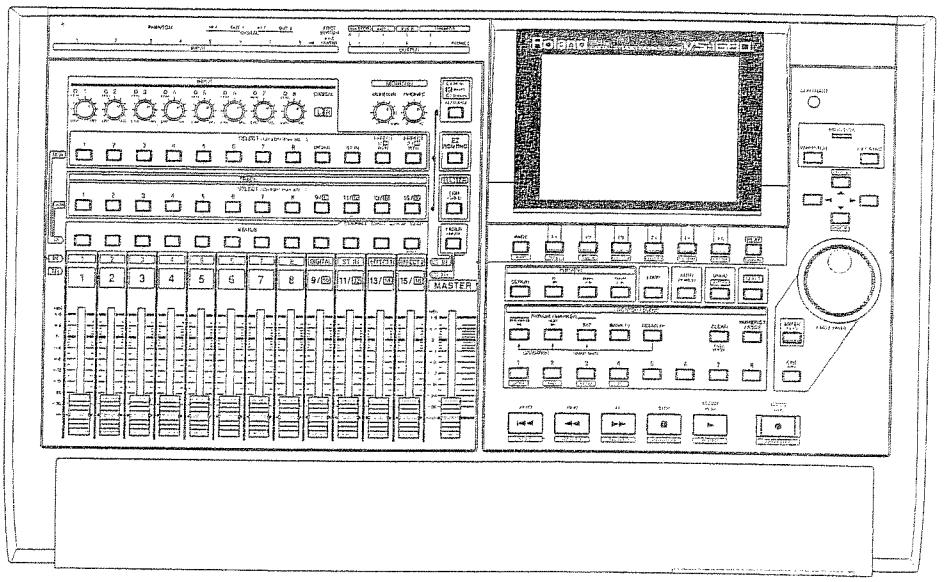
Roland®

24-bit DIGITAL STUDIO WORKSTATION

VS-1680

OWNER'S MANUAL



Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (p. 2), "USING THE UNIT SAFELY" (p. 3, 4), and "IMPORTANT NOTES" (p. 5). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Quick Start, Owner's Manual, and Appendices should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

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.

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 product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
9. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
10. The product 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 product; or
    C. The product has been exposed to rain; or
    D. The product does not appear to operate normally or exhibits a marked change in performance; or
    E. The product has been dropped, or the enclosure damaged.
11. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

For the USA

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded.
Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED
IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, BLUE: NEUTRAL, BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

The product which is equipped with a THREE WIRE GROUNDING TYPE LINE PLUG must be grounded.

USING THE UNIT SAFELY

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠WARNING and ⚠CAUTION Notices

⚠WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
⚠CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

⚠	The △ symbol alerts the user to important instructions or warnings.The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The ⃠ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

ALWAYS OBSERVE THE FOLLOWING

⚠WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.
- Do not open or perform any internal modifications on the unit. (The only exception would be where this manual provides specific instructions which should be followed in order to put in place user-installable options; see Quick Start p. 55, 57, 59.)
- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on stands that could wobble, or on inclined surfaces.
- Avoid damaging the power cord. Do not bend it excessively, step on it, place heavy objects on it, etc. A damaged cord can easily become a shock or fire hazard. Never use a power cord after it has been damaged.
- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.
- Protect the unit from strong impact. (Do not drop it!)

⚠WARNING

- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.
- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Always turn the unit off and unplug the power cord before attempting installation of the Hard disk drive unit (HDP88 series: Quick Start p. 55) or Effect expansion board (VS8F-2: Quick Start p. 57, 59).

⚠ CAUTION

- Always grasp only the plug on the power-supply cord when plugging into, or unplugging from, an outlet or this unit.

- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children.

- Never climb on top of, nor place heavy objects on the unit.

- Never handle the power cord or its plugs with wet hands when plugging into, or unplugging from, an outlet or this unit.

- Before moving the unit, disconnect the power plug from the outlet, and pull out all cords from external devices.

- Before cleaning the unit, turn off the power and unplug the power cord from the outlet (p. 32).

- Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet.

- When installing the Hard disk drive unit (HDP88 series) or Effect expansion board (VS8F-2), remove only the specified screws (Quick Start p. 55, 57, 59).

IMPORTANT NOTES

In addition to the items listed under "IMPORTANT SAFETY INSTRUCTIONS" and "USING THE UNIT SAFELY" on pages 2–4, please read and observe the following:

Power Supply

- Do not use this unit on the same power circuit with any device that will generate line noise (such as an electric motor or variable lighting system).
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

Placement

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.

Maintenance

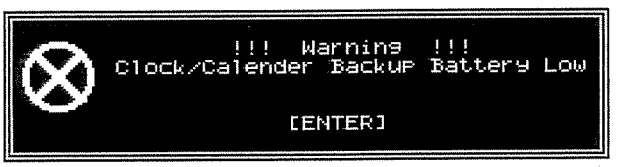
- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzine, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

Repairs and Data

- Please be aware that all data contained in the unit's memory may be lost when the unit is sent for repairs. Important data should always be backed up on a storage device (e.g., hard disk or Zip disk) or DAT recorder, or written down on paper (when possible). During repairs, due care is taken to avoid the loss of data. However, in certain cases (such as when circuitry related to memory itself is out of order), we regret that it may not be possible to restore the data, and Roland assumes no liability concerning such loss of data.

Memory Backup

- This unit contains a battery which powers the unit's memory circuits while the main power is off. When this battery becomes weak, the message shown below will appear in the display. Once you see this message, have the battery replaced with a fresh one as soon as possible to avoid the loss of all data in memory. To have the battery replaced, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.



Additional Precautions

- Please be aware that the contents of memory can be irretrievably lost as a result of a malfunction, or the improper operation of the unit. To protect yourself against the risk of loosing important data, we recommend that you periodically save a backup copy of important data you have stored in the unit's memory on a storage device (e.g., hard disk or Zip disk), or DAT recorder.
- Unfortunately, it may be impossible to restore the contents of data that was stored on a storage device (e.g., hard disk or Zip disk), or DAT recorder once it has been lost. Roland Corporation assumes no liability concerning such loss of data.
- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.)
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.

- A small amount of heat will radiate from the unit during normal operation.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- To transport the VS-1680, pack it in its original shipping carton, using the included packing or equivalent material. If an internal IDE hard disk (HDP88 series) is installed, then remove the hard disk. Place the hard disk in its carton and set this in the specified place inside the VS-1680 shipping carton. The unit is now ready to be transported. Moving the VS-1680 with the hard disk installed may result in loss of song data or damage to the hard disk.

Handling the Disk Drive

For details on hard disk handling, refer also to the instructions that accompanied your hard disk.

- Before performing any of the following actions, be sure to perform the shutdown procedure. Failure to do so may result in loss of song data or damage to the hard disk.
  - Turning off the power of the VS-1680
  - Turning off the power of the disk drive connected with SCSI connector
  - Removing a disk from a removable disk drive connected with SCSI connector

? **Shutdown** (Appendices p. 64)

? **Removable Disk Drive** (Appendices p. 64)

When the VS-1680 MIDI/DISK indicator or disk drive busy indicator is lit, it means that data is being written to or from the hard disk. If you are using a removable disk drive, confirm that this indicator is not lit before removing disks.

- While using the VS-1680, be careful not to subject the unit to vibration or shock, and avoid moving the unit while the power is turned on.
- Install the unit on a solid, level surface in an area free from vibration. If the unit must be installed at an angle, be sure the installation does not exceed the permissible range.
- Avoid using the unit immediately after it has been moved to a location with a level of humidity that is greatly different than its former location. Rapid changes in the environment can cause condensation to form inside the drive, which will adversely affect the operation of the drive and/or damage removable disks. When the unit has been moved, allow it to become accustomed to the new environment (allow a few hours) before operating it.

Concerning Copyright

The law prohibits the unauthorized recording, public performance, broadcast, sale, or distribution etc. of a work (CD recording, video recording, broadcast, etc.) whose copyright is owned by a third party.
The VS-1680 does not implement SCMS. This design decision was made with the intent that SCMS should not restrict the creation of original compositions which do not violate copyright law. Roland will take no responsibility for any infringement of copyright that you may commit in using the VS-1680.

? **SCMS** (Appendices p. 64)

Disclaimer of Liability

Roland will take no responsibility for any direct damages, consequential damages, or any other damages which may result from your use of the VS-1680. These damages may include but are not limited to the following events which can occur when using the VS-1680.

- Any loss of profit that may occur to you.
- Permanent loss of your music or data.
- Inability to continue using the VS-1680 itself or a connected device.

About the License Agreement

The VS-1680 and its CD-R capability are designed to allow you to reproduce material to which you have copyright, or material which the copyright owner has granted you permission to copy. Accordingly, reproduction of music CDs or other copyrighted material without the permission of the copyright owner, other than for your own personal use and enjoyment (private use) constitutes copyright infringement, which may incur penalties. Consult a copyright specialist or special publications for more detailed information on obtaining such permission from copyright holders.

CONTENTS

Preparations

About the Package Contents

The following items are included with the VS-1680. Please check to make sure you have all the items.

- VS-1680
- AC cord
- Quick Start
- Owner's Manual (this manual)
- Appendices

Main Features

The Latest in Compact Home Studio Environments

The VS-1680 retains all of the features of Roland's VS-880 workstation; a revolution in the world of the home studio, with the disk recorder, digital mixer, and multi effects systematically and more organically integrated. From when you start picking mics to when you actually record to mixdown, adding effects, and on to creating the master data for playing through a PA or mastering on a CD, you can get a handle on every aspect of the recording process with the VS-1680 line in your home studio.

Disk Recorder Section

The digital disk recorder section provides sixteen playback tracks, and allows eight tracks to be recorded simultaneously. Each track features sixteen virtual tracks (V-tracks), providing a total of 256 tracks. This means that you can record multiple takes, make temporary mixes when editing, and create songs that require numerous tracks, all with room to spare.

The VS-1680's recording functions were designed for use with professional digital equipment (DAT recorders, digital mixers, digital effects, etc.). You can record and edit with top-quality sound, and lose none of that quality in the playback.

You can instantly find the location of sections in a song you want to hear repeatedly or places that you wish to record over (Locator) by placing marks at such points (Marker). These Markers are recalled by simple procedure, and you will never wait for any rewinding or fast-forwarding time.

Sounds are organized in Phrases, and copying, moving, and inserting these phrase units (with Phrase Edit), and other editing processes are all possible with the VS-1680. For example, you can create "break beats" by copying a four-measure drum pattern any number of times, or have the same chorus both at the beginning and end of a song.

The VS-1680 uses "non-destructive editing." This allows you to cancel and recover up to 999 previous recording and editing operations (Undo/Redo).

The internal clock runs battery power, so it continues to function, even after the power is turned off. This allows manage your songs by "time stamp," the time and date of recording that is registered in the song data.

Digital Mixer Section

You can store all mixer settings, including fader levels, pan, and effects. Stored settings can be recalled very simply, making it convenient in adjusting balances during mixdown and comparing mixes with effects.

Changes in settings over time, such as fader levels and pan, can also be stored (Auto Mix), so you can realize easy fade-ins and fade-outs in your mixes.

You can easily make the most appropriate mixer condition settings, including those for recording, track bouncing, and mixdown (EZ Routing).

Effects Section

The VS-1680 features the optional VS8F-2 effect expansion board. Up to two of these effect expansion boards can be installed in the VS-1680. With the VS8F-2 effect installed in the VS-1680, up to 4 high-quality stereo effects will be available for your use.

The VS8F-2 provides not only basic effects such as reverb and delay, but also effects ideal for vocals and guitar (such as guitar amp simulator) and even special effects such as RSS. The way in which each of these effects are organized by the 34 "algorithms" so that you can create new sounds easily.

The VS8F-2 provides 210 read only effects setting (Preset Patches) which designed for various uses. In addition, the VS8F-2 provides 200 read and write effects setting (User Patches) for changing and saving that contents. You can instantly switch between a variety of effects simply by selecting a patch.

Simple Operation

The VS-1680 can be operated as easily as conventional multi-track recorders. You will be able to enjoy the advantages of home studio from the day that you purchase it.

The VS-1680 maintains the well-known graphics (icons) made famous by Roland's VG-8 and V-Drums. The large, full-dot graphic display is backlit and inclined, so it is easy to read when used on stage or wherever high visibility is required.

Connectivity

A wide variety of connectors and jacks are provided, including two balanced XLR connectors. It features a wide input sensitivity range, from mic level (-50 dBu) to line level (+4 dBu), and phantom power can be applied, allowing you to plug in externally-powered condenser mics.

There are six sets of balanced input jacks, handling a wide input sensitivity range, from line level (+4 dBu) to mic level (-50 dBu). Furthermore, you can choose either the high-input (GUITAR (Hi-Z)) jack for directly plugging in an electric guitar, or the INPUT 8 jack.

Besides the RCA phono type (stereo) MASTER jacks, the (stereo) AUX A and AUX B jacks, and (stereo) MONITOR jacks are provided. You can monitor the effect send and other outputs without affecting the MASTER Out in any way.

The VS-1680 provides both coaxial and optical digital I/O connectors. With these, you can make digital connections with popular consumer electronic devices such as CD players, DAT recorders, MD recorders, and so on.

A SCSI connector (DB-25 type) is also provided, allowing you to connect to external SCSI devices such as the Zip drive and the CD-R drive.

MIDI IN and MIDI OUT/THRU connectors are also provided. You can synchronize the VS-1680 with an external MIDI sequencer, use the MIDI sequencer to control the VS-1680's mixer, sound an external MIDI sound generator with the metronome, and more.

Besides tracks for recording audio signals, the VS-1680 has sync track for storing MIDI clock message. You can even synchronize MIDI sequencers that are not compatible with MTC (MIDI Time Code) or MMC (MIDI Machine Control).

Substantial Options

HDP88 Serie's:

An internal 2.5-inch IDE hard disk. Having this internal hard disk installed makes the VS-1680 system compact and easy to transport. Furthermore, there is no need to make complex settings and no problems with faulty connections (unlike those which could occur when an external disk is used). We recommend that you install an internal hard disk when using the VS-1680.

* *For simultaneous recording or playback of a number of tracks, for getting more out of the available hard disk space, and in order to get the fullest performance in general from the VS-1680,* **we recommend using the HDP88-2100**.

CD-R Drive (designated by Roland):

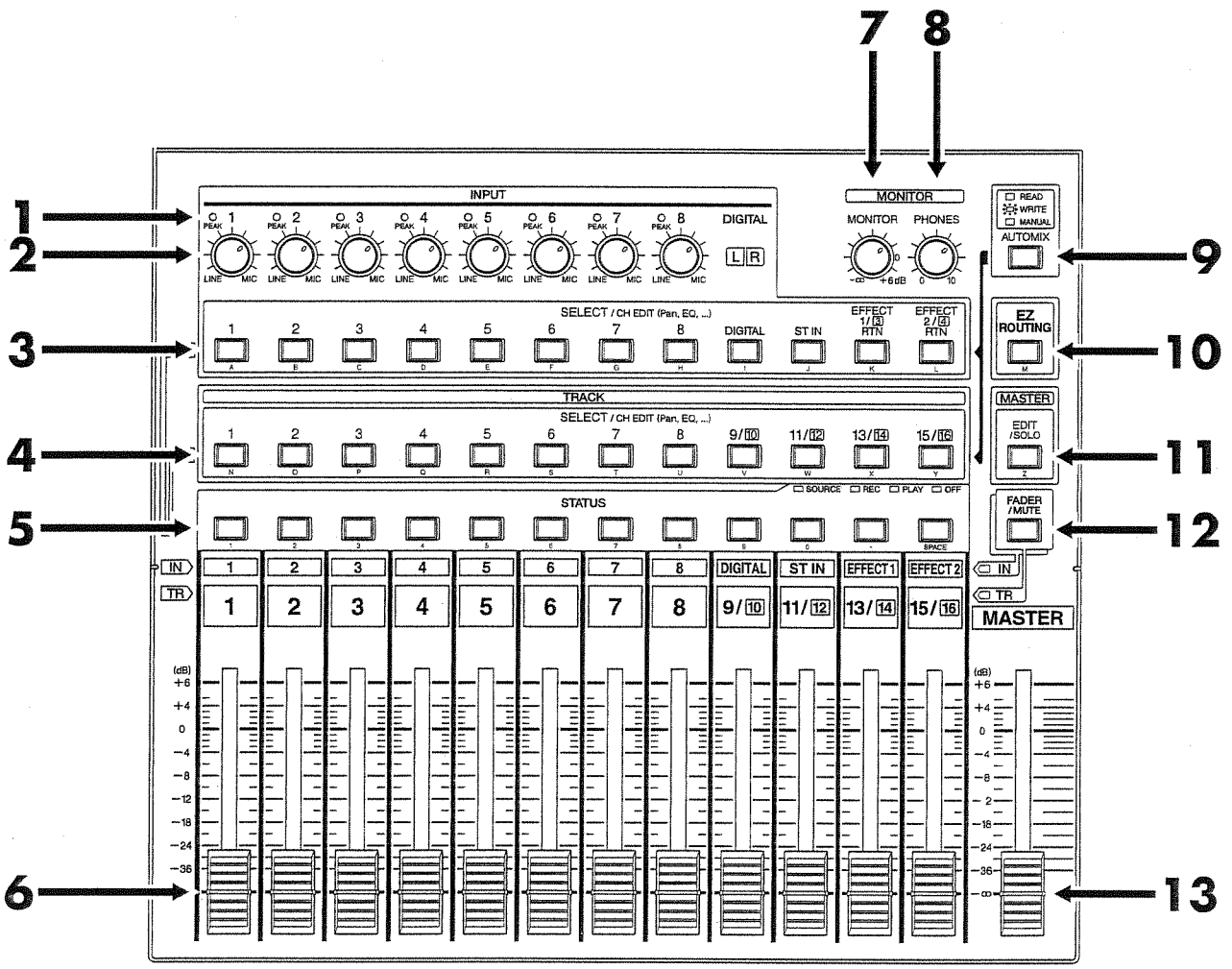
A CD-R drive connected with a SCSI connector. With this drive, you can write songs created on the VS-1680 as well as create your own original audio CDs. Additionally, you can use it for backing up songs to CD-R discs.

VS8F-2:

An effect expansion board that can be installed in the VS-1680. You can install two of these boards, which lets you add two stereo effects, for a total of up to four stereo effects.

* **The VS8F-1 effect expansion board is for use with the VS-880.** *It cannot be used in the VS-1680.*

Mixer Section



1. PEAK Indicators

These indicators allow you to confirm the sound level input at the input jacks (1–8). They help you to determine the correct input level when adjusting the INPUT knobs. You will need to specify the level at which the indicators light beforehand (p. 61). The indicators are set at the factory to -6 dB.

2. INPUT Knobs

These knobs adjust the sensitivity of the input jacks (1–8). Turn a knob fully to the right for mic level (-50 dBu), and fully to the left for line level (+4 dBu).

3. SELECT/CH EDIT (Select/Channel Edit) buttons

Use these buttons when you wish to change input mixer settings and to change input channels. The currently selected channel's indicators are lit.

1–8: Each channel (1–8)
DIGITAL: Digital input
ST IN: Stereo in
EFFECT 1/3 RTN: Effect 1 Return
EFFECT 2/4 RTN: Effect 2 Return

When you press these buttons while holding down the STATUS button, you can select which source to be recorded and the channel on which that source is recorded.

When numerics are combined with alphabetical characters ([NUMERIC/ASCII]), alphabetical characters can be input directly (Song Name, etc.).

4. SELECT/CH EDIT (Select/Channel Edit) buttons

Use these buttons when you wish to change track mixer settings and to change track channels. The currently selected channel's indicators are lit.

1–15/16: Each channel (1–15/16)

When you press these buttons while holding down the STATUS button, you can select a particular track to re-recorded to (Track Bouncing).

When numerics are combined with alphabetical characters ([NUMERIC/ASCII]), alphabetical characters can be input directly (Song Name, etc.).

5. STATUS Buttons

These buttons switch the status of each track. The current status is shown by the button indicator.

SOURCE (orange):
The input source or track assigned to the channel is being output.

REC (blinking red):
Recording is selected for the track assigned to the channel. During playback, the track data is normally output.

REC (blinking red and orange):
Recording is selected for the track assigned to the channel. During playback, you will be able to listen to the track.

PLAY (green):
The track assigned to the channel will playback.

OFF (off):
The channel is muted (silent).

When pressed in combination with the SELECT/CH EDIT button, this selects the source or track to be assigned to a track for recording.

6. Channel Faders

Use these faders to adjust the volume level of each channel or track.

7. MONITOR Knob

This adjusts the volume level output from the MONITOR jacks.

8. PHONES Knob

This knob adjusts the volume of the headphones.

9. AUTOMIX Button

This button switches the Auto Mix function on and off. The button indicator lights when Auto Mix is on.

10. EZ ROUTING Button

This button opens the EZ Routing screen.

11. EDIT/SOLO button

Press this button to make block settings for the master section of the mixer.

To use the Solo function to monitor only a specific channel, press this button while holding down the SELECT/CH EDIT button.

12. FADER/MUTE Button

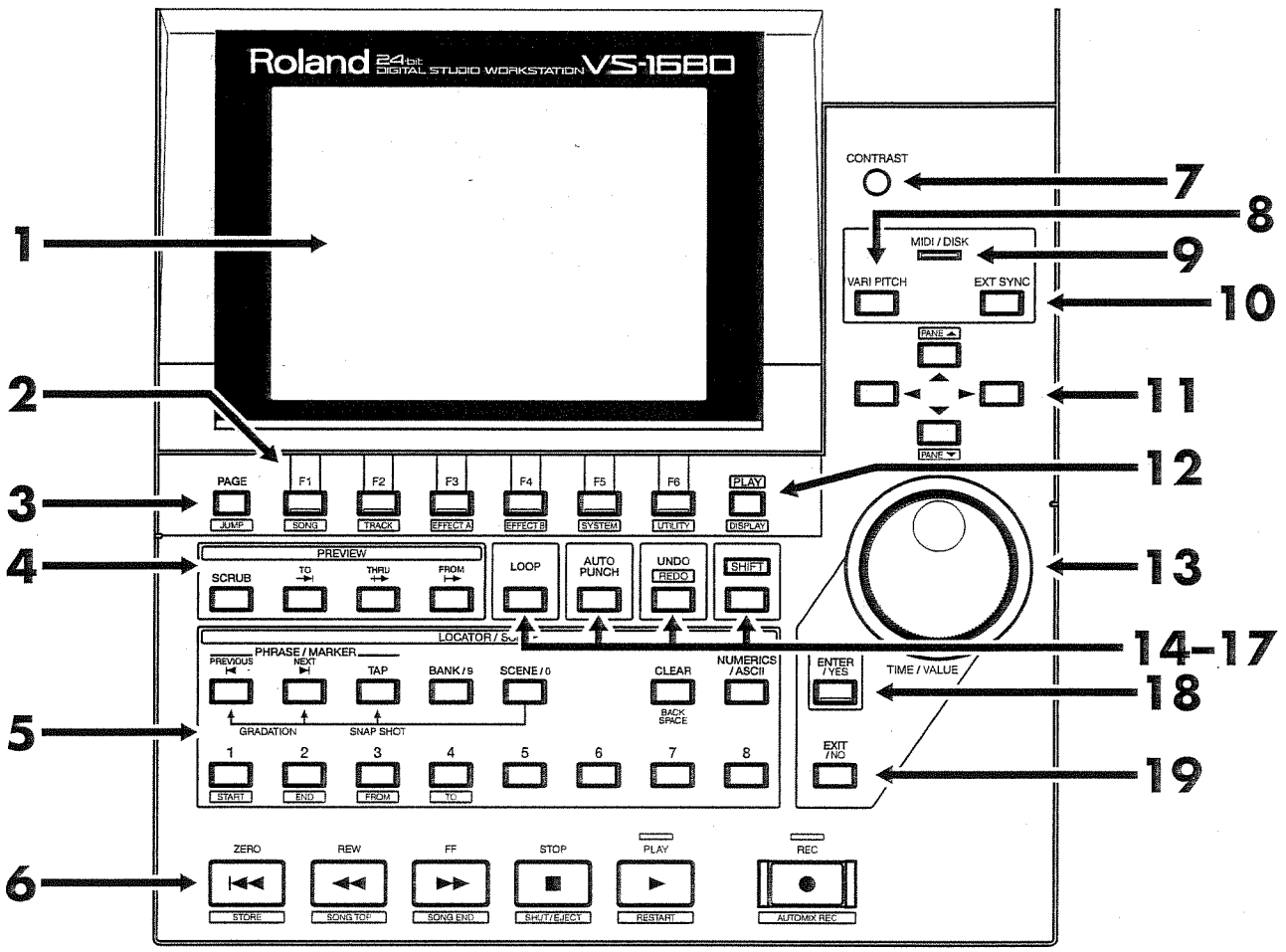
Pressing this button alternately assigns each channel's input mixer and track mixer to the fader for that channel. The button indicator shows the current status.

To mute the channel, press this button while holding down the SELECT/CH EDIT button.

13. Master Fader

Use this fader to adjust the overall output level.

Recorder Section



1. Graphic Display

This displays various data related to the current status of the VS-1680 during recording, playback, editing, changing the setting, and so on.

2. Function Button

This button is used to switch the display screen and to execute operations.
The function assigned to each button appears in the bottom of the display.

3. PAGE (JUMP) Button

This button switches pages on screens consist of several pages.
When the [SHIFT] button is held down at the same time, the Locator Jump screen is displayed.

4. PREVIEW button

Press this button to use the Preview function that plays back a specific length before and after the current location.

5. LOCATOR/SCENE Button

Pressing this button allows you to store or recall Locators and Markers or to store or recall Scenes (the mixer settings).

PREVIOUS:
Recalls the next start or end point of a phrase.
Pressed with [SHIFT], this button recalls the previous Marker.

NEXT:
Recalls the following start or end point of a phrase.
Pressed with [SHIFT], this button recalls the next Marker.

TAP:
This button is pressed to set Markers.

BANK/9:
Pressing this with the LOCATOR buttons (1–8) selects the Locator bank.
SCENE/0:
This is pressed when storing, recalling, and deleting Scenes.
CLEAR (Back Space):
This button deletes Locators, Markers, and Scenes.
NUMERICS/ASCII:
Press this when you want to use the STATUS and LOCATOR buttons for 10-key entry of Western numerals.
1–8:
These select the locator or Scene.

6. Transport Control Buttons

These buttons are used to operate the recorder.

ZERO: This returns the current time to "00h00m00s00" (zero return).

REW: The current time is moved back only while this button is held down. This corresponds to the rewind button on a tape recorder.

FF: While the button is held down, the current time is moved forward. This corresponds to the fast-forward button on a tape recorder.

STOP: Stops recording or playback of the song.

PLAY: Starts recording or playback from the current time.

REC: Press this button to record a song.

7. CONTRAST Knob

Use this to adjust the brightness of the display screen.

8. VARI PITCH button

Press this button when you wish to change the playback pitch (Vari Pitch function).

9. MIDI/DISK Indicator

This indicator lights green when MIDI messages are being received, and red when data is being written or read on the disk drive. If both of these are occurring, the indicator lights orange.

10. EXT SYNC (External Sync) Button

Press this button to select the device, whether the VS-1680 or an external MIDI device, to act as the master or main controlling device. With the VS-1680 selected as the master, the external MIDI device functions as the slave unit; with the external MIDI device selected as the master, the VS-1680 functions as the slave unit.

11. CURSOR Buttons

Normally (i.e. in Play Condition), this dial is used to move the current time. When making settings (i.e. in Edit Condition), this dial is used to modify parameter values.

12. PLAY (DISPLAY) Button

Press this button to return to the screen that appears when the VS-1680 is turned on (normal playback status).

13. TIME/VALUE Dial

In normal (playback) status, this dial adjusts the time of playback.
This is used to change the settings values for each parameter when settings are changed.

14. LOOP Button

This button turns Loop Recording on and off. Pressed with the LOCATOR button, it specifies the range to be recorded in Loop Recording.

15. AUTO PUNCH Button

This button turns Auto Punch-In Recording on and off. Pressed with the LOCATOR button, it specifies the range to be recorded in Auto Punch-In Recording.

16. UNDO (REDO) Button

Press this button to cancel a recording or editing step that you have made (Undo function). Pressed with [SHIFT], this button cancels the last performed Undo function (Redo function).

17. SHIFT Button

This button is pressed in conjunction with other buttons to access additional functions of those buttons.

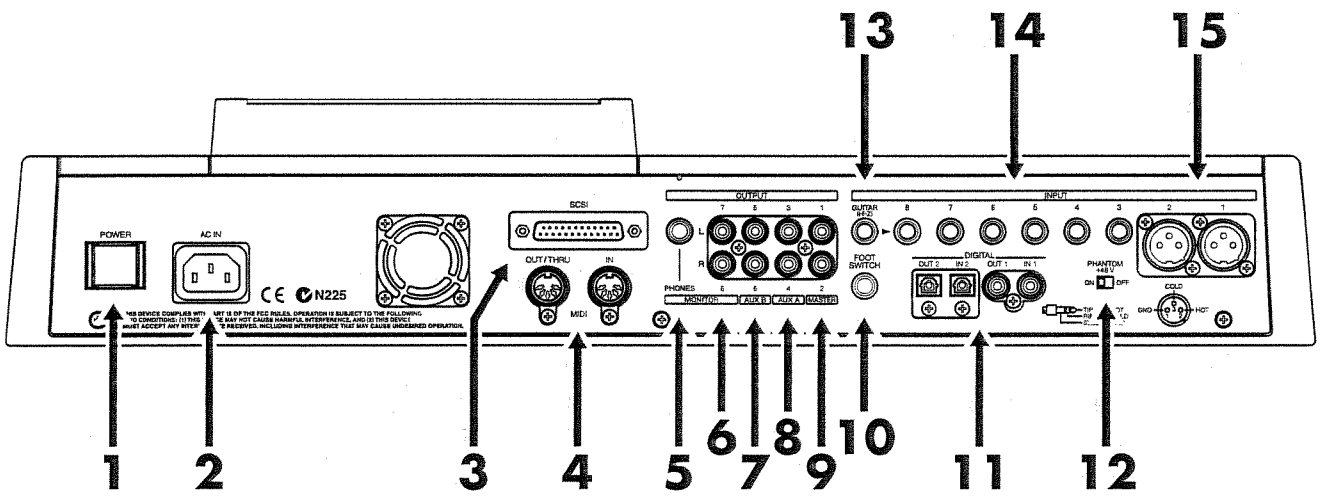
18. ENTER/YES Button

This is pressed to execute the current operation or select the current screen.

19. EXIT/NO Button

This is pressed to cancel the current operation or exit the current screen.

Rear Panel



1. POWER Switch

This switch turns power of the VS-1680 on and off.

2. AC IN (AC Inlet)

Connect the included power cable here.

3. SCSI Connector

This is a DB-25 type SCSI connector for connecting disk drives such as a Zip disk drive or a CD-R drive.

4. MIDI Connectors (IN, OUT/THRU)

External MIDI devices (MIDI controllers, MIDI sequencers, etc.) can be connected here.

IN: This connector receives MIDI messages. Connect it to the MIDI OUT connector of the external MIDI device.

OUT/THRU: This connector can be used either as a MIDI OUT or as a MIDI THRU connector. With the factory settings, it will function as a MIDI OUT connector, which means it is set to transmit MIDI messages.

5. PHONES Jack

An optional set of headphones can be connected here. The PHONES jack outputs the same sound as the MONITOR jack.

6. MONITOR Jacks (L, R)
7. AUX A Jacks (L, R)
8. AUX B Jacks (L, R)
9. MASTER OUT Jacks (L,R)

These are output jacks for analog audio signals (RCA phono type).

With the factory settings, all signals are output from the MASTER OUT jacks, the output of MONITOR is the same as that of the MASTER Out, and there is no output from the AUX (A and B) jacks. The output is determined by the block settings of the mixer's master section and the settings of each channel.

10. FOOT SWITCH Jack

An optional foot switch (such as the DP-2 or the BOSS FS-5U) can be connected here when you want to control recorder operations, mark point settings, and punch in/out operations, and so on with a foot switch. With the factory settings, a foot switch is set to start and stop the recorder.

11. DIGITAL Connectors (IN, OUT)

The VS-1680 features both coaxial and optical digital I/O connectors (conforming to S/P DIF).

IN: This inputs a digital audio signal (stereo). You can select either the coaxial input connection or the optical connection.

OUT: This outputs a digital audio signal (stereo). Here you can use both the coaxial connector and the optical connector simultaneously, and each can carry a different signal.

? **S/P DIF** (Appendices p. 64)

* *To record a digital audio signal, it is not sufficient to simply connect a digital audio device to the DIGITAL IN connector. When inputting a digital audio signal, refer to "Recording Digital Signals" (p. 74).*

* *It is not able to input or output analog audio signals.*

12. PHANTOM Switch

This turns phantom power (+48 V) on and off. When the factory settings, it is set to "Off."

? **Phantom Power** (Appendices p. 64)

* *Supplying phantom power to dynamic microphones or audio playback devices may result in damage to your equipment. Thoroughly read the owner's manual of your microphone, and* **make sure that the phantom power switch is set to "Off" unless you are using a condenser mic that requires phantom power**.

* *Switching the phantom power on or off while the VS-1680 is turned on produces a loud noise that can damage amps and speakers. Turn the phantom power on or off* **only when the VS-1680 is turned off**.

* *When nothing is plugged into the INPUT 1–2 jacks, make sure that the phantom power switch is set to "Off." Also, we recommend that turn the INPUT knob fully to the "LINE" to recording with as high sound quality as possible.*

13. GUITAR (Hi-Z) Jack (Guitar)
14. INPUT Jacks (3–8)
15. INPUT Jacks (1–2)

These are input jacks for analog audio signals. INPUT 1 and 2 are XLR connectors, and INPUT 3–8 are 1/4" phone jacks. On INPUT 8, the GUITAR (Hi-Z) jack, a 1/4" phone type high-impedance jack, can be used instead of, but not at the same time as the regular INPUT 8 jack; you may use either type of jack. If cables are connected to both inputs, the GUITAR (Hi-Z) jack will take priority. Use the INPUT knobs to adjust the input sensitivity of each input.

Chapter 1 Before You Start (VS-1680 Terminology)

This chapter explains basic concepts, internal structure, and basic operation that you will need to know in order to operate the VS-1680. Please read this chapter thoroughly to gain a better understanding of the VS-1680.

Saving and Managing Data

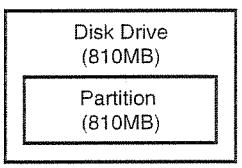
Managing Disk Contents (Partitioning)

The VS-1680 saves all of the data such as — performance data, mixing data, system data, etc. — on the disk drive. Thus, it cannot operate without either having an internal disk or being connected to a Zip drive with a SCSI connector. Furthermore, **the hard disk or Zip drive used by the VS-1680 cannot be used by another device.**

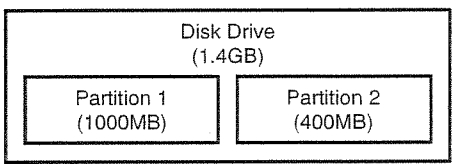
The VS-1680 is able to manage which 500 MB, 1000 MB or 2000 MB of disk space at once. If you use a disk drive with a capacity that is larger than this, you will need to divide it into two or more.

Each of these area is refered as the "partition." Up to 8 partitions can be created in one disk drive. For creating songs in a enough space, we recommend you to set the partitions to 2000 MB.

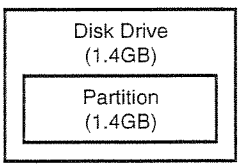
Ex. 1: When the disk drive is 810 MB, and the partition size is 1000 MB.



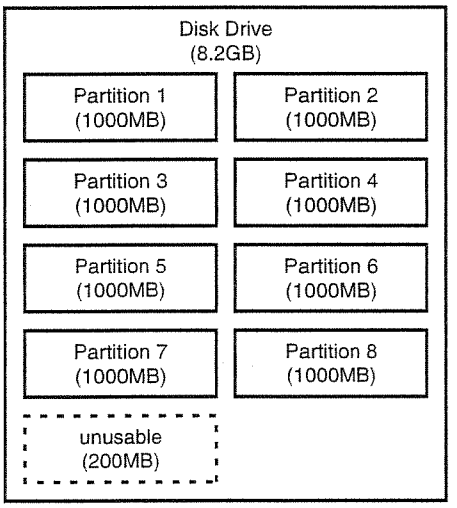
Ex. 2: When the disk drive is 1.4 GB, and the partition size is 1000 MB.



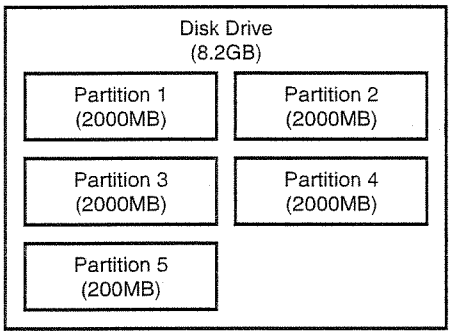
Ex. 3: When the disk drive is 1.4 GB, and the partition size is 2000 MB.



Ex. 4: When the disk drive is 8.2 GB, and the partition size is 1000 MB.



Ex. 5: When the disk drive is 8. 2 GB, and the partition size is 2000 MB.



Each partition on the VS-1680's disk drive is treated as an independent drive, with each partition automatically given a partition number (0–7). When a single hard disk has multiple partitions, you can specify which partition of which drive will be used (p.116). This disk drive partition currently used is referred to as the **current drive**.

* *If you wish to use hard disks or song data on both the VS-1680 and the VS-880, because of factors such as differing partition sizes and numbers of tracks, there will be limitations as to what you can do. For more detailed information, please see "Compatibility"* (p.148).

* *The VS-1680 accepts installation of Roland HDP88 serie's hard disks (hard disk drive units). For simultaneous recording or playback of a number of tracks, for getting more out of the available hard disk space, and in order to get the fullest performance in general from the VS-1680,* **we recommend using the HDP88-2100.**

The Location Where a Performance is Recorded (Song)

The location where a performance data is recorded is refered to as the **song**. For example on a cassette MTR, this would correspond to cassette tape. Up to 200 songs can be created in each partition. Normally, you should set the partition size at 2000 MB. When dealing with large numbers of songs at the same time, or when you want to use the data on the VS-880 as well, setting the partition size to 1000 MB is recommended. The song currently being recorded, played back, or edited is referred to as the **current song**. Following data are included in a song.

- All data recorded on V-tracks
- MIDI clocks of the sync track
- Points specified within songs (locator, marker, punch-in/out points, loop-in/out points) (p. 36)
- Scenes (mixer settings)
- Vari Pitch settings (p. 166)
- System settings (system, MIDI, disk, sync, Scene) (p. 184)
- Effect settings
- Auto Mix Data

Sources, Tracks, and Channels

On the VS-1680, the recorder section and mixer section use term **sources**, **tracks**, and **channels**. These terms may appear similar to each other, and will be confusing unless their differences are clarified.

Source: A signal which is input to the mixer section or recorded in the recorder section. On the VS-1680, this term refers in particular to the signals of the analog input jacks (1–8) and the digital in connector.

Track: A signal that is being input to or output from the recorder section. It also refers to the location of a signal that is being recorded onto or played back from the hard disk.

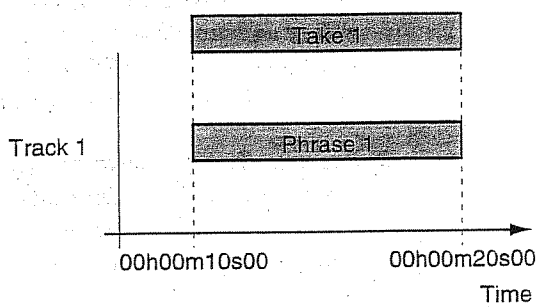
Channel: A signal that is being input to or output from the mixer section. This term refers in particular to the faders and buttons of the mixer section on the top panel.

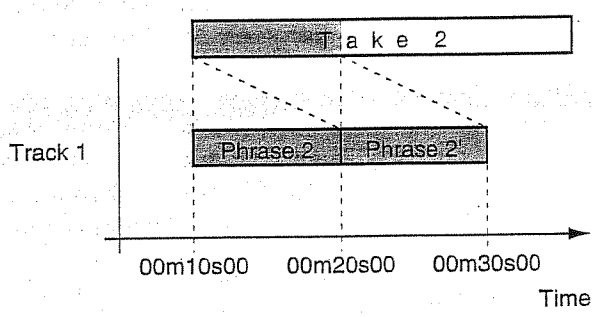
Takes, Phrases, and Playlists

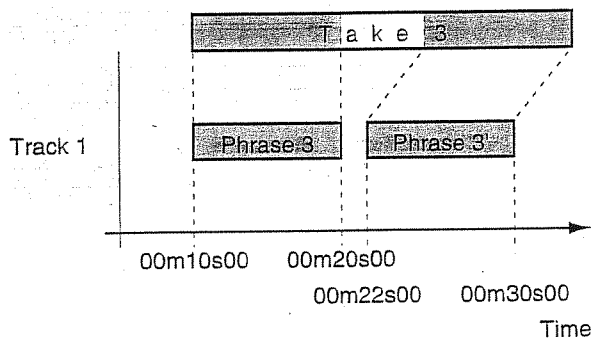
On the VS-1680, data is managed by groups called **takes**, **phrases**, and **playlists**. Please take a moment to make sure you understand the differences between each of these terms.

Takes: The data recorded to the disk is simply called a **take**. This recorded data includes wave data and time stamp (time and date imprint) information. With a new recording, each track consists of one take. Additionally, even when you record material onto tracks that already have takes on them, the previous takes are not deleted (overwritten).

Phrases: The data that defines which take is played back, including the start and stop times of that playback is called a **phrase**. The length of a phrase may just be the length of a take, or a phrase may consist of part of a take. Additionally, you can use any number of phrases from the same take, and have a phrase played back repeatedly as a sort of "break beats." This is displayed as one box in the playlist.







Playlists: Data that specifies "which phrases are played back and the order in which they are played" is called a **playlist**. The VS-1680 features 256 V-tracks, and a maximum of sixteen tracks that can be played back simultaneously. In the playlist, the phrases pasted to each track are displayed as a number of boxes.

About Events

The smallest unit of memory used by the VS-1680 to store recorded results on disk is called an **event**. A newly created song is provided approximately 18,000 events.

For each track, one recording pass uses two events. Operations such as punch-in/out or track copy also use up events. The number of events that are used up will fluctuate in a complex way. For example, auto mix (p.153) uses up six events for each Marker.

Even when your disk has ample free space, one song can use up all the available events, in which case no more data could be recorded to the song.

Remaining number of Events can be saved with the following procedures. Please try the most appropriate one with your situation.

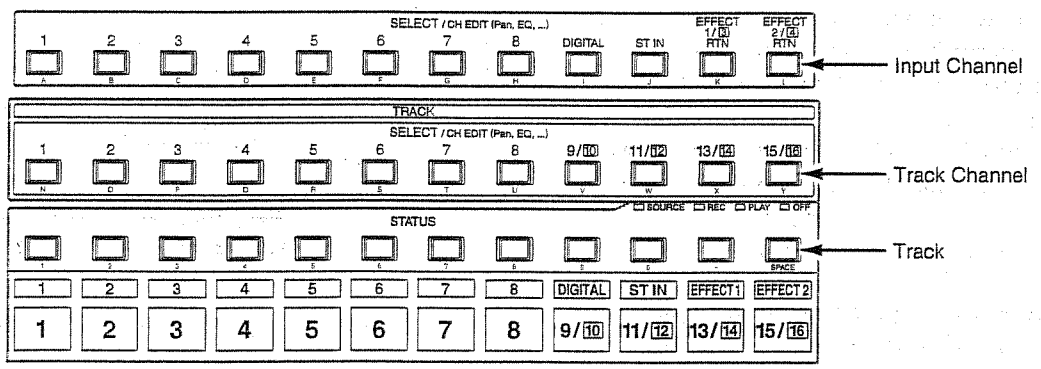
- **Execute Song Store (p. 32)**
  Please Execute Song Store if in UNDO condition ([UNDO] indicator is lit.). Events served for REDO will be released. But please note that you cannot cancel (REDO) the last UNDO if you once execute STORE.

- **Execute Song Optimize (p. 169)**
  Please execute Song Optimize if you have done a lot of Punch In recording. Events served for unnecessary audio data will be released. But please note that you can only do single level UNDO.

- **Erase AutoMix data (p. 160)**
  If you have recorded AutoMix data, erase unnecessary data. Events served for unnecessary AutoMix data will be released.

About Button Names

There are two groups of buttons referred to as SELECT/CH EDIT (Select/Channel Edit) buttons. Indications of button groups that are hard to distinguish in the Owner's Manual are described below.



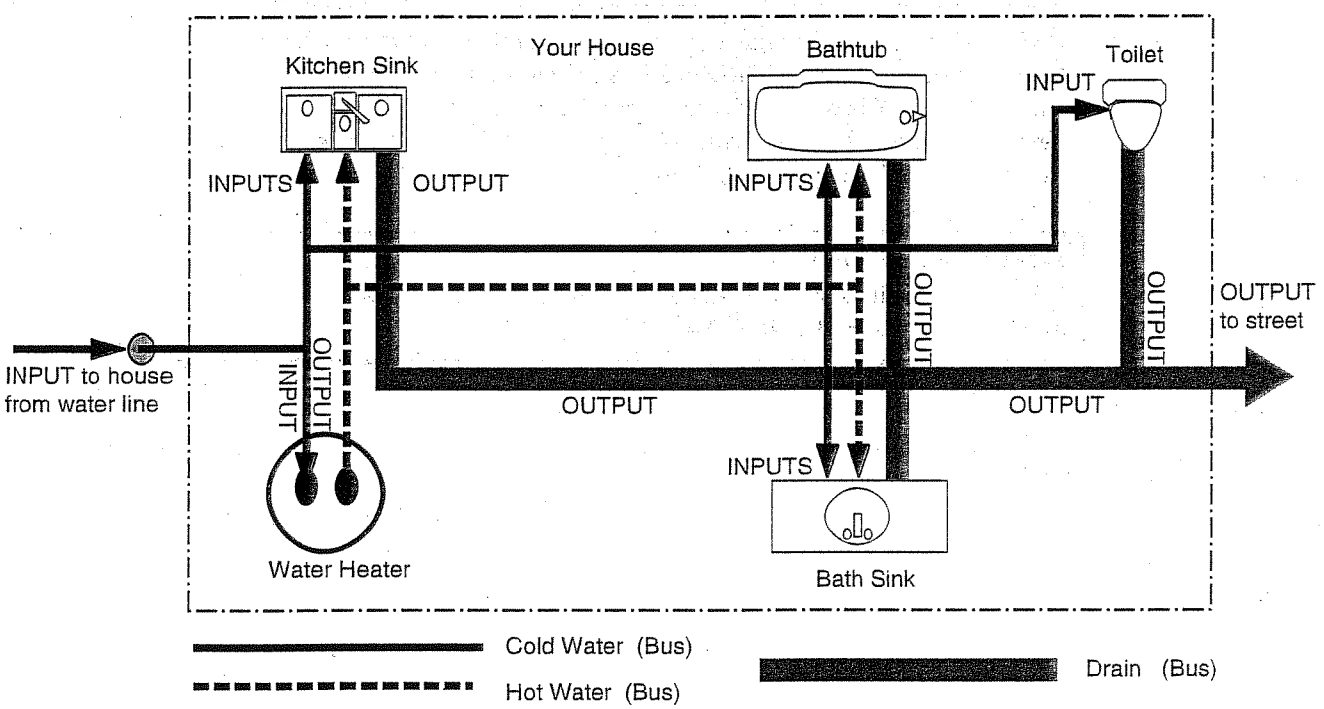
Mixer Section

The digital mixer specifies input or output status of the recorder section.
The VS-1680's mixers include the **input mixer**, which, in the signal path, is situated before the recording section, the **track mixer**, which is placed after the recording section, and the **Master Block**, which is used in determining which jacks and connectors output the signals from each of the other mixers.

* *For more detailed information about the mixer section, please refer to the "Mixer Section Block Diagram" (Appendices p. 60).*

Signal Flow (Buses)

On the VS-1680, signals flow through buses. buses are **shared lines through which multiple signals can be routed efficiently to multiple tracks or channels**. It may be easier to understand this if we use the analogy of water pipes. For example, the water that is supplied by the water company to your house is branched to a variety of locations within the house (kitchen, bathroom, toilet, etc.). The water that is used at each of these locations is then collected into the sewer, and carried away.



If we think of the VS-1680 as the house, the water being supplied from the water company corresponds to inputs such as mic or guitar. Some of these inputs are sent to recording tracks and are recorded. Other portions are sent to the effects, and reverb or chorus are applied before they are output.
The basic principle of the VS-1680 is that by specifying in this way **from where** and **to where** the common lines run, you can determine which input signals will be recorded on which track or sent to which effects, and where they will be output.

RECORDING Bus:
Signals assigned to the RECORDING bus are routed to the recorder section to be recorded. There are eight channels which can be assigned to the output of the input mixer, track mixer, and effects (Return). Signals assigned to the RECORDING bus cannot be routed to the MIX bus.

MIX Bus:
Signals assigned to the MIX bus are sent to the MASTER jacks for monitoring. It has two channels (L and R), and can take output signals from the input mixer, track mixer, and effects (Return). Signals assigned to the MIX bus cannot be routed to the RECORDING bus.

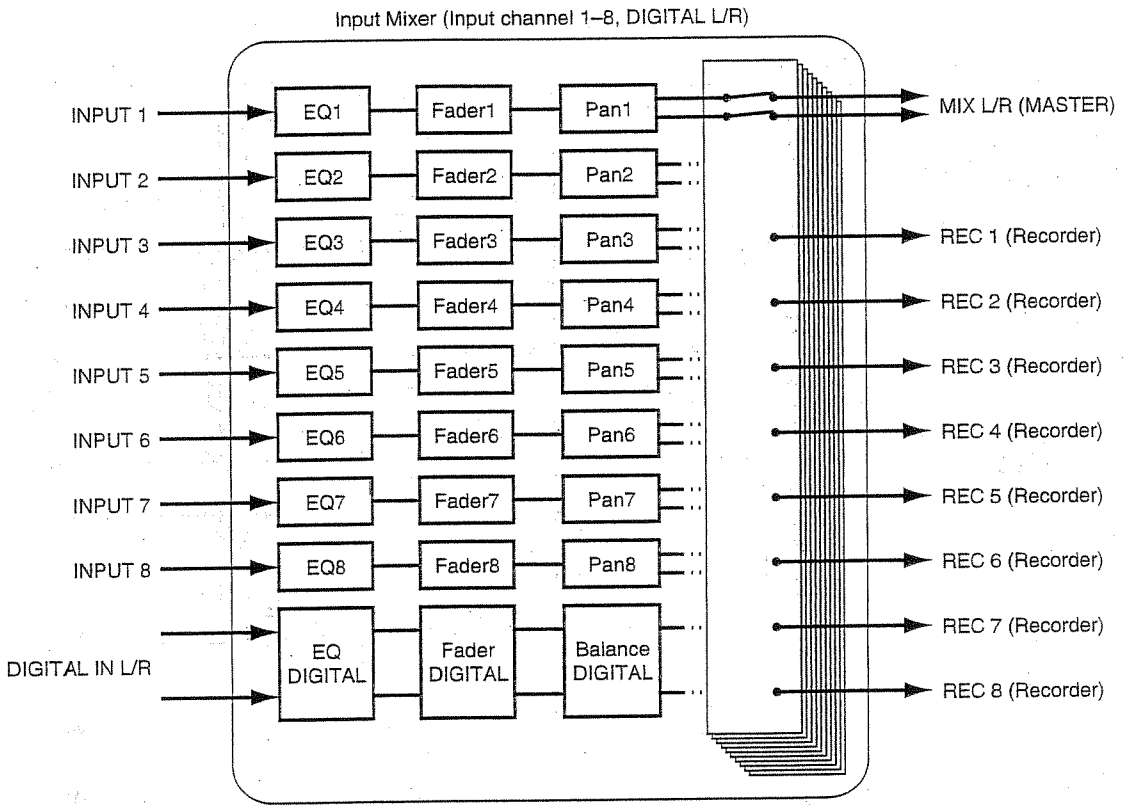
EFFECT Bus:
Signals assigned to the EFFECT bus are sent to the VS8F-2 to apply effects added to them. It has four channels (EFX1 L/R, EFX2 L/R), and can process signals from the input mixer and the track mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the EFFECT bus.

AUX Bus:
Signals assigned to the AUX bus are routed to the AUX jacks to allow addition mixes for monitoring. This bus features six channels (AUX1 L/R, AUX2 L/R, AUX3 L/R), and can take signals from the input mixer and the track mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the AUX bus. This is convenient if, for example, you want to connect an external effects device, or when you want an addition output separate from that of the MASTER Out jacks (individual out).

EFFECT bus and AUX bus
If VS-1680 installed two VS8F-2s, AUX bus (AUX1 L/R, AUX2 L/R) works as EFFECT bus (EFX3 L/R, EFX4 L/R).

Input Mixer

Input mixer is placed before the recorder section, and correspond to the external input sources (INPUT 1–8, DIGITAL IN L/R).

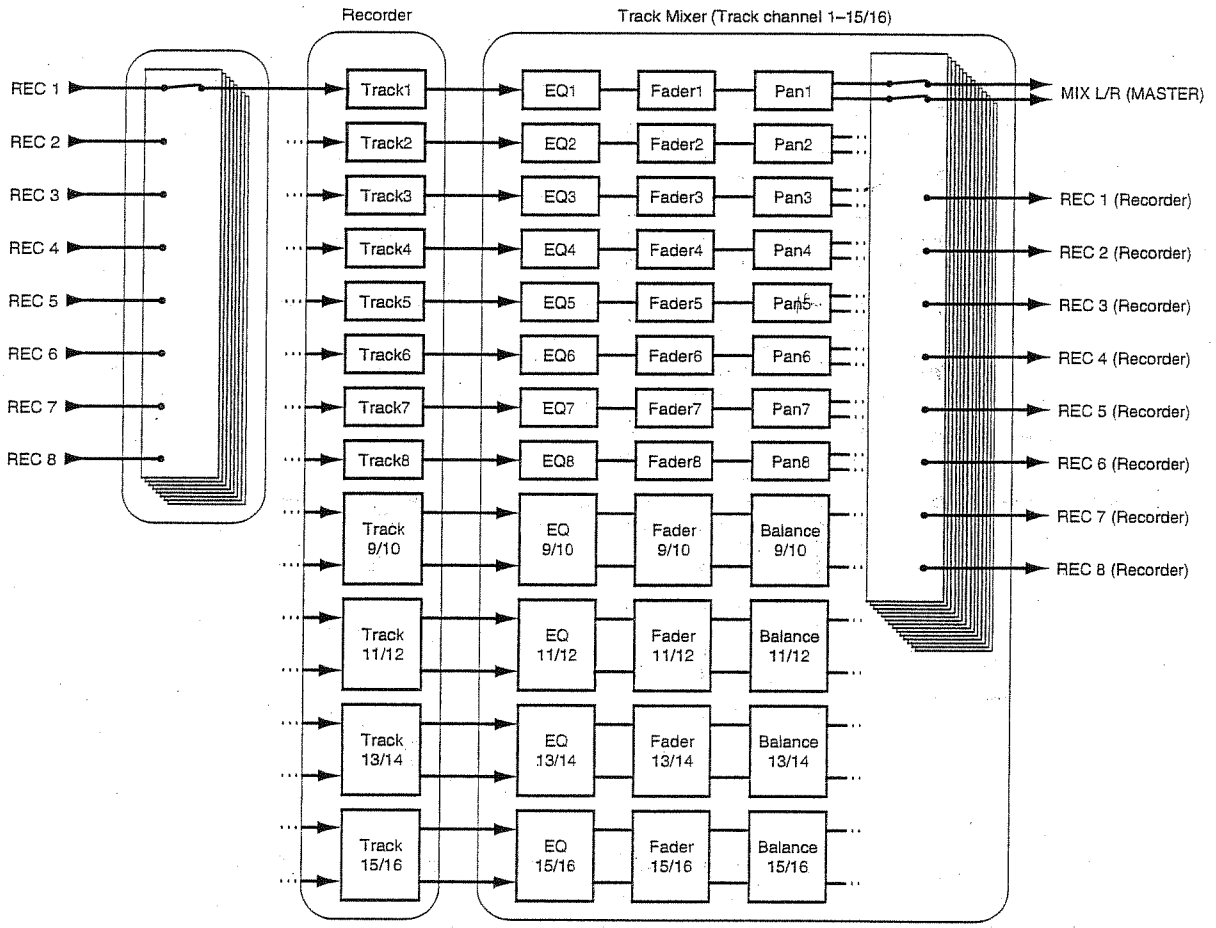


The output of each channel is assigned to tracks to be recorded. Channels not assigned to tracks are output directly from the MASTER jacks. Additionally, the status of tracks with signals assigned to them when not in record standby (STATUS indicator blinking red), also are output from the MASTER jacks. At this time, the following signals are assigned to the channel faders.

Channels 1–8:	INPUT jacks 1–8
DIGITAL:	DIGITAL IN connector L/R
ST IN:	Sources assigned to STEREO IN (p. 165)
EFFECT 1:	EFX1 return level or EFX3 return level
EFFECT 2:	EFX2 return level or EFX4 return level

Track Mixer

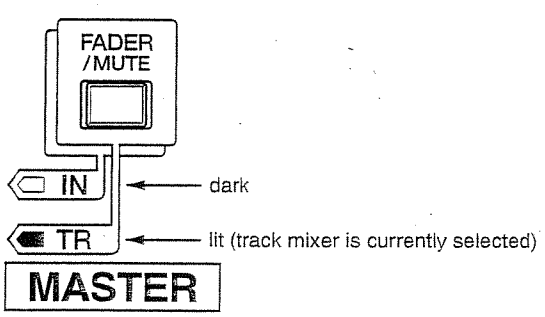
Track mixer is placed after the recorder section, and correspond to the tracks (1–15/16).



All of the tracks are output from the MASTER jacks. Additionally, tracks can also be routed back to the RECORDING bus for overdubbing, or re-rerecording. In this status, the channel faders 1–15/16 correspond respectively to Tracks 1–15/16.

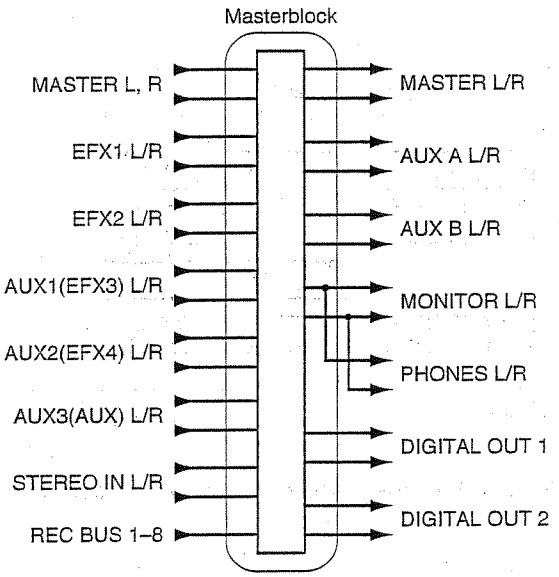
Switching the Fader Functions

On the VS-1680, it is able to adjust Input mixer or Track mixer by switching the function of the channel faders on the top panel. Pressing [FADER] on the top panel toggles between the input mixer and the track mixer. The button indicator indicates which mixer is currently selected.



Master Block

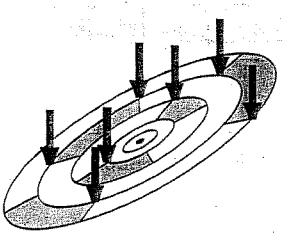
This selects the jacks or connectors connected to external equipment to which the output of each mixer is sent.

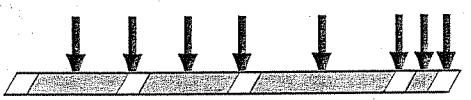


Recorder Section

Differences with a Tape-Type MTR

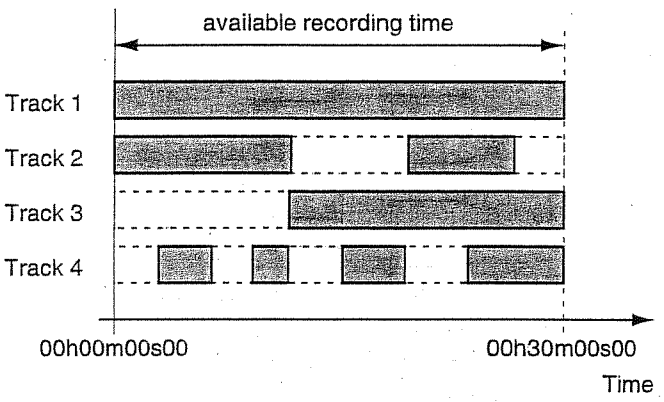
Unlike DAT recorders, which use tape, **digital disk recorders record performances (sounds) on a disk**, as do MD recorders. Music that is recorded on disk can be recalled and played back immediately, no matter where it is located on the disk. This is also obvious from the difference in speed at which you can move to the beginning of a song on a DAT recorder and on an MD recorder. The ability to freely move to data regardless of the time or sequence at which it was recorded is known as **random access**. In contrast, having to move to data in the order of the time or sequence at which it was recorded is known as **sequential access**.





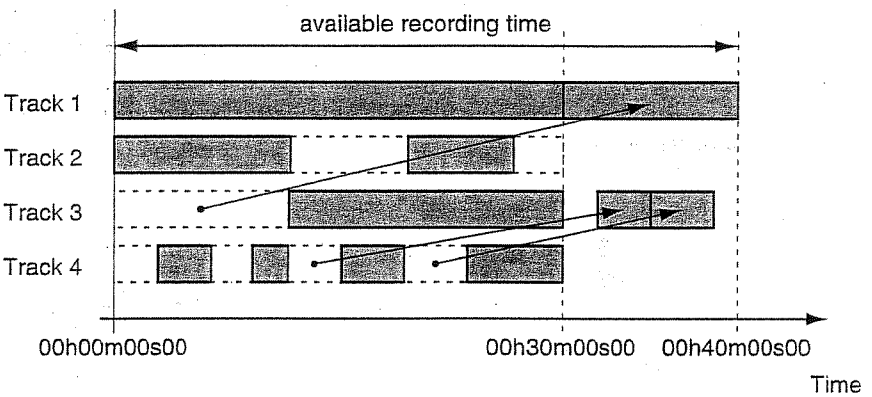
Track Minutes and Recording Time

With cassette tape recorders, the amount of time you can record on a tape is predetermined by the length of that tape. Moreover, any unused portion of the tape is wasted.



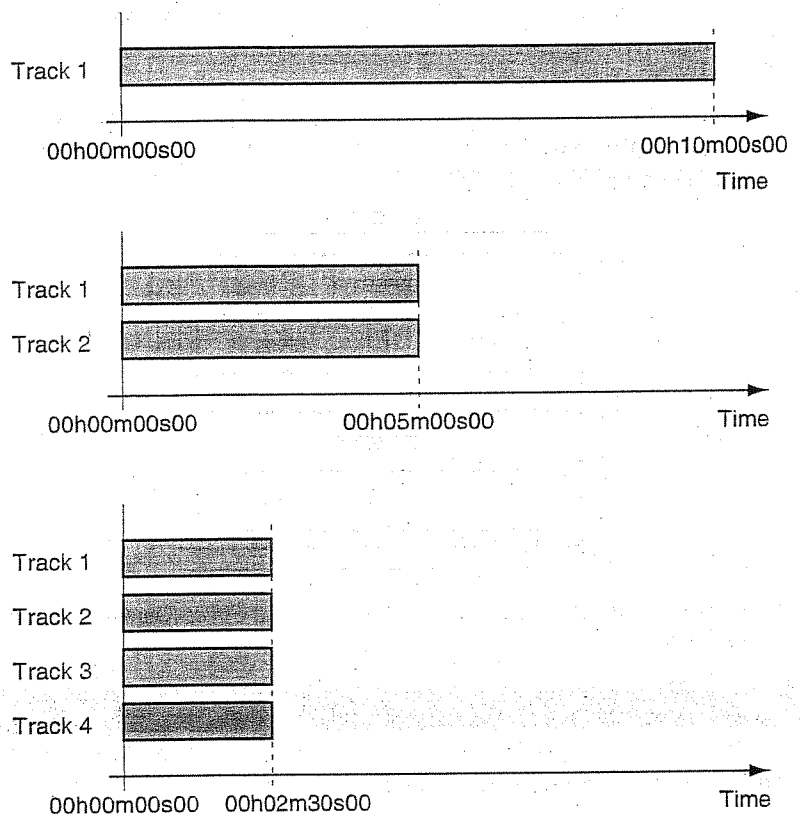
In Case of Tape Recording (using 30-minute tape)

In contrast, with disk recording, although available recording time is determined by the amount of disk space, only the disk space used in recording is taken, and beyond that, has no affect on the disk's remaining free space. Thus, depending on how you use tracks and phrases, the amount of available recording time will vary. Thus, this calls for a standard unit corresponding to the time of one continuous monaural signal recorded to one track. This unit is referred to as a **track minute**.



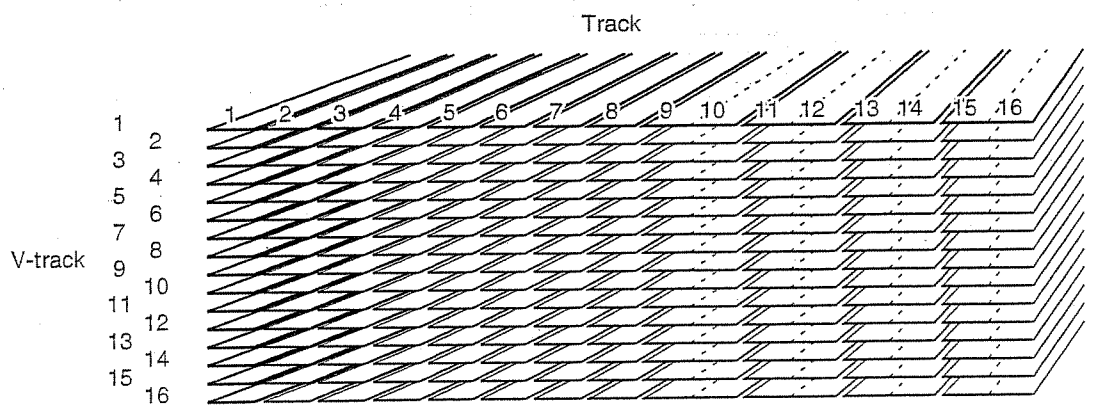
In Case of Disk Recording

For example, 10 track minutes be used for 10 minutes of monaural recording, 5 minutes of stereo recording, 2 minutes and 30 seconds of recording on four tracks, and so on.



Auxiliary Tracks for Each Track

The VS-1680 provides 16 playback tracks, and allows 8 tracks to be recorded simultaneously. Each track is composed from the features 16 supplementary tracks, each on of which can be used for recording or playback. In other words, you can record performances containing up to 256 (16 x 16) tracks, and select any of these auxiliary tracks to played back on a track. These auxiliary tracks are called **V-tracks**.

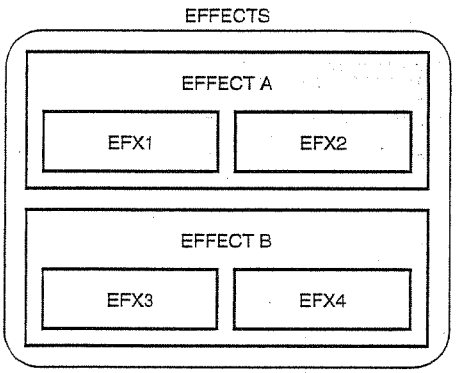


* *This Owner's Manual provides a blank virtual track sheet to help you keep track of your virtual track recordings (p. 72). Feel free to copy the sheet to use when you record.*

Effects Section

About the Effect Expansion Board

Up to two optional VS8F-2 effect expansion boards can be installed in the VS-1680. With two VS8F-2s installed, 4 high-quality stereo effects will be available simultaneously for your use.
With just one VS8F-2 installed, then you will only be able to use EFFECT A (EFX1/2). With two VS8F-2s installed, you will be able to use both EFFECT A (EFX1/2) and EFFECT B (EFX3/4).

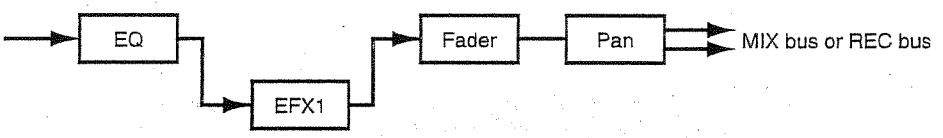


* *To install VS8F-2, please refer to "Installing the Effect Expansion Board" (Quick Start p. 57).*

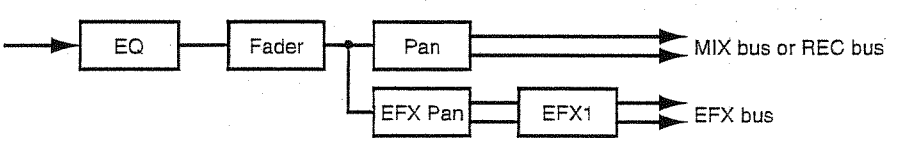
Connecting Effects

On the VS-1680, there are two ways to connect the effects devices. Please read and understand these differences described below.

Insert:
The effect is directly added either between each channel's equalizer and fader or before the master fader. Connect the effect in this manner if you want to use effects applied to change the output of the sound itself, such as when using distortion or overdrive effects.
When inserting an effect into one of the channels or into the Master Block, that effect cannot be used in another channel. For example, you insert EFX1 into Channel 1, then no other channel can access EFX1.



Send/Return:
Besides the RECORDING bus and the MIX bus, the output of each channel can also be sent to the EFFECT bus. Use this routing with effects such as reverb and delay, when you want to mix the sound without effects and the sound after effects have been applied.



* **The VS8F-1 effect expansion board is for use with the VS-880.** *It cannot be used in the VS-1680.*

Chapter 2 Basic Operation

This chapter explains the basic operation of the VS-1680. This covers all of the fundamental processes, including recording and editing, so please read and understand this chapter.

* *The explanations in this manual include illustrations that depict what should typically be shown by the display. Note, however, that your unit may incorporate a newer, enhanced version of the system (e.g., includes newer sounds), so what you actually see in the display may not always match what appears in the manual.*

Before You Begin

Turning On the Power

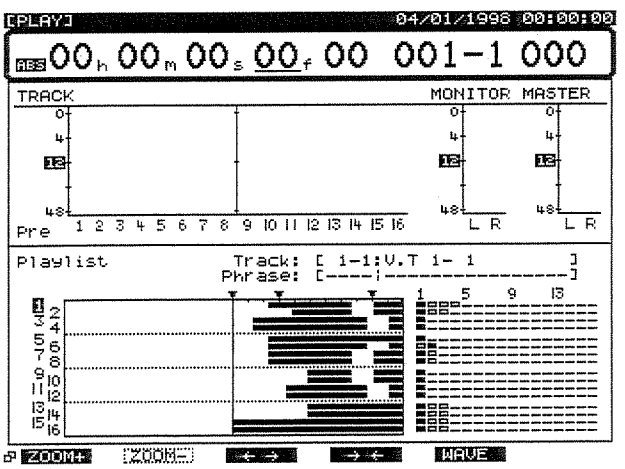
* *Once the connections have been completed (Quick Start p. 3), turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.*

* *Always make sure to have the volume level turned down before switching on power. Even with the volume all the way down, you may still hear some sound when the power is switched on, but this is normal, and does not indicate a malfunction.*

1. Turn on the power with the POWER switch on the rear panel of the VS-1680.

When the VS-1680 starts up properly, the following display will appear.

* *When you turn on the power of the VS-1680, the disk drive must be recognized and certain required data must be loaded. Thus, it takes a short while for the unit to start up.*



2. Turn on the power of connected audio equipment.

3. Raise the volume of the audio devices to appropriate levels.

If You Have Trouble Understanding Displays or Operations

If you are unfamiliar with what is displayed on a screen or find you are having difficulty understanding a certain procedure, press [PLAY (DISPLAY)]. This allows you to return immediately to the screen that appears when the power is turned on. Try whatever procedure you were working on from the beginning once more.

- If an operation has been performed incorrectly or cannot be executed correctly, **an error message appears in the display**. When this occurs, please refer to "Error Messages" (Appendices p. 13), and perform the specified measure.
- If even after you perform an operation using the prescribed procedure the result differs from that stated in Quick Start or in the Owner's Manual, please refer to "Troubleshooting" (Appendices p. 6).
- If the above steps do not resolve your problem, contact t a nearby Roland Service Center, or authorised Roland distributor.

Setting the Internal Clock

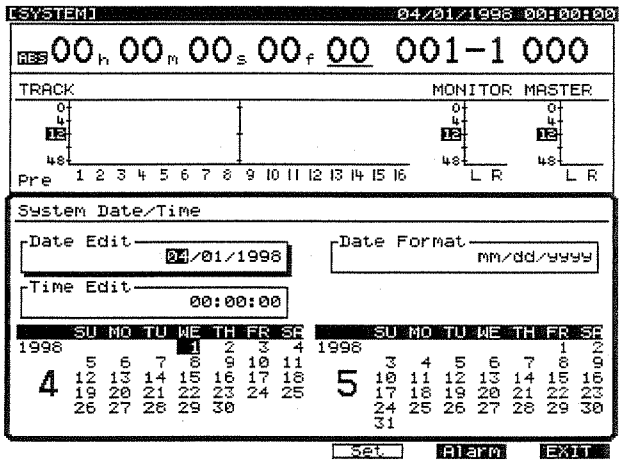
The VS-1680 features an internal clock. When you record a performance, the "time stamp," or **the time, day, and month of recording** is entered automatically. This makes for more convenient management of recordings by day/time and order. When you turn on the power for the first time after purchase of your VS-1680, use the following procedure to set the time and date first.

* *The internal clock is battery-powered. Once you set this, then repeating this step no longer be necessary whenever the VS-1680 is turned on. However, if for any reason the time setting is ever in error, use the same steps to reset the clock.*

1. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (DATE)]. If "DATE" does not appear in [F2], first press [PAGE] until "DATE" is displayed, and then press [F2 (DATE)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change the values for each of the settings.



Date Edit

This sets the date — year, month, and day — in the Western format.

Date Format

This selects the way the date is displayed.

mm/dd/yyyy:	Month/Day/Year
dd/mm/yyyy:	Day/Month/Year
yyyy/mm/dd:	Year/Month/Day
MMM. dd, 'YY:	Month/Day/Year
dd MMM 'YY:	Day/Month/Year

Time Edit

This sets the current time displayed in a 24-hour format.

At this point, the function buttons work as follows.

[F4 (Set)]:	Sets the date and time.
[F5 (Alarm)]:	Sets the alarm function (p. 193).
[F6 (EXIT)]:	Exits the screen without setting the date and time.

4. After setting the date and time, press [F4 (Set)] to synchronize it with the time signal.

The set time becomes effective immediately.

5. Press [PLAY (DISPLAY)].

The initial display reappears.

Before You Finish Operations

Saving the Performance to Disk (Song Store)

Song data that you recorded or edited will be lost if you simply turn the power off. Thus, you must execute the Shutdown procedure before turning the power off.

When you switch songs or change disks, a message will ask you to confirm whether the song should be saved (STORE Current?) (p. 33).

Additionally, the contents of a recorded performance can be lost because of unforeseen accidents, or even if there is an accidental power failure or power outage. **Once lost, the contents of a recorded performance cannot be restored to the previous conditions**. To avoid this from happening, use the following procedure to save your songs to the disk drive.

? **Current Song** (Appendices p. 63)

* *When handling important song data, or when using the VS-1680 for extended periods, we strongly recommended you to execute the Song Store procedure frequently.*

1. Hold down [SHIFT] and press [STORE (ZERO)].
2. "STORE OK?" appears in the display. Press [YES]. If the song is saved properly, the initial display reappears. If you wish to cancel the saving, press [NO].

Turning Off the Power

The contents of any recorded performance will be lost if you simply turn the power off. This may also result in damage to the hard disk. To safely turn off the power and be sure that your recorded performances are saved, **always be sure to follow the shutdown procedure when you finish working with the VS-1680**.

? **Shutdown** (Appendices p. 64)

1. While holding down [SHIFT], press [SHUT/EJECT (STOP)].
2. "SHUTDOWN/EJECT?" appears in the display. Press [YES].
3. "STORE Current?" then appears in the display. If you wish to save the current song, press [YES]. If you do not wish to save it (if you want to undo the contents of recording editing), press [NO]. **If you have selected a demo song, press [NO].**

4. When shut down has been completed properly, "PowerOFF/RESTART" appears in the display.
5. Turn down the volume of your audio equipment.
6. Turn off the power of the audio equipment.
7. Turn off the power of the VS-1680 with the POWER switch on the rear panel.

* *After the power is turned off, the momentum of the hard disk causes it to continue spinning for a short while. Any physical shock to the unit during this time may damage the hard disk. Avoid moving the VS-1680 with a hard disk installed for at least 30 seconds after turning off the power.*

If "STORE Current?" is Displayed

When you begin to execute the various operations such as shutdown, the message "STORE Current?" (Save the current song?) is displayed. This message asks you whether you wish to save the currently selected song to the disk drive. If you wish to save the song before continuing with the shutdown, press [YES]. If you want to proceed with the shutdown without saving the song, press [NO].
If you press [YES] in response to the "STORE Current?" message when Song Protect is on, or when if you have selected a demo song, the message "Song Protected" is displayed, and you will be unable to save the song. Before editing a song, set Song Protect to "Off" (p. 82). Otherwise, press [NO].

Restarting

You can restart the VS-1680 without turning off the rear panel POWER switch. This is convenient when switching disks in drives (such as the Zip drive) connected to the VS-1680's SCSI connector. Use the following procedure.

1. Perform the shutdown procedure as described in "Turning Off the Power" (p. 32).
2. Confirm that "PowerOFF/RESTART" appears in the display.
3. Hold down [SHIFT] and press [RESTART (PLAY)].

This restarts the VS-1680.

Basic Operations on the VS-1680

The VS-1680 features a wide variety of abilities (functions) and settings (parameters). These are organized by type, function, operation, and so on. The major organizational grouping within the song is referred to as a **condition**. A list of the different conditions described below.

Play Condition:
Here you can perform normal playback/recording. The VS-1680 is put in Play condition whenever the power is turned on.

Input Mixer Condition:
This is the condition in which input mixer-related settings are made.

Track Mixer Condition:
This is the condition in which settings related to the track mixer are made.

Master Block Condition:
This is where you make settings for the mixer's Master Block.

Song Condition:
Executes the operations related to each of the songs.

Track Condition:
Executes the operations related to each of the tracks.

Effect Condition:
In this status, you can make effects settings.

System Condition:
Here you can make settings that affect the entire environment of the VS-1680.

Utility Condition:
This is for executing other operations, including those having to do with any connected devices.

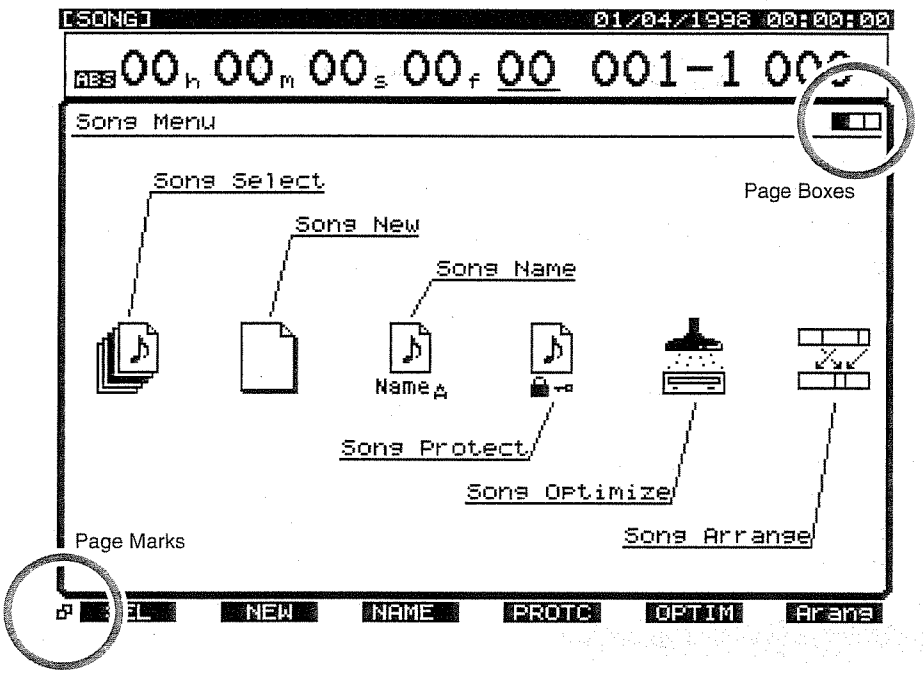
Here is the general process used when executing the functions and changing the settings included in each condition. Please take a look.

1. Display the menu for each condition.
2. Select the page containing the desired function or setting.
3. Select the setting to be changed.
4. Change the settings values.
5. Execute the operation.

Function Buttons

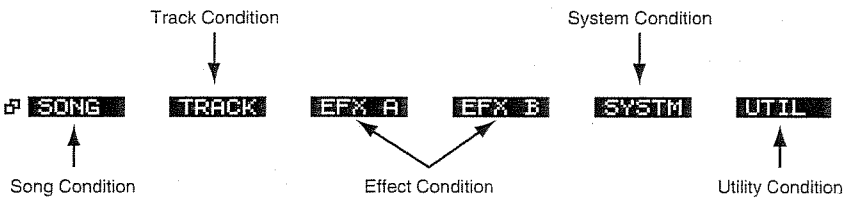
The function buttons have various functions such as **switching the display screen**, **executing operations**, **changing settings**, and so on, and the function assigned to any function button is displayed in bottom part of the display screen. White characters on a black background denote "screen switching functions," and black characters on a white background are used for "functions of executing operations and changing settings." Function buttons that do not appear cannot be used.

Depending on the screen, some function buttons may have six or more functions assigned to them and be composed of a number of "pages." These screens indicate **page boxes** and **page marks**. The number of ■ / □ indicates the total number of pages, with the currently open page indicated by ■. To switch the display screen or the function of the function buttons, press [PAGE].



Display Each of the Condition Menus

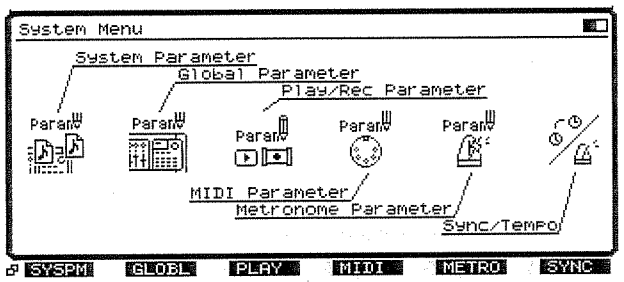
While holding down [SHIFT], press the function button ([F1]–[F6]) that corresponds to the condition you want to enter.



* *This step is unnecessary if you want to change settings related to each of the mixers.*

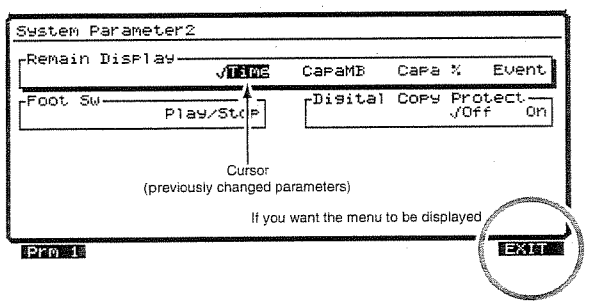
Selecting Pages Contained in Functions and Settings

The menu icon for each page is displayed. Press the function button ([F1]–[F6]) that corresponds to the page you want. When menu icons appear on several pages, press [PAGE].



When Selecting System Condition

When selecting System condition, rather than selecting a menu icon, the parameters themselves may be displayed. This allows immediate selection of previously changed parameters. If you want to display the menu icons, press [F6 (EXIT)].

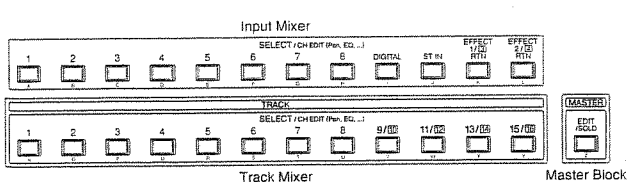


When you want to changes settings for each mixer, press the corresponding button, as shown below.

Input Mixer condition:
SELECT button for each input channel (1–8, DIGITAL, ST IN, EFFECT 1 RTN, EFFECT 2 RTN)

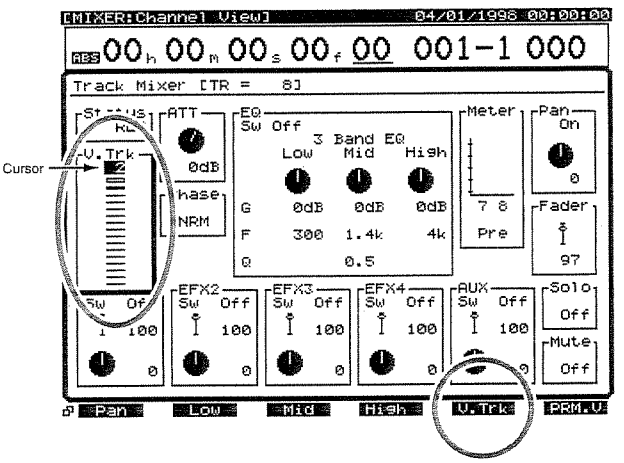
Track Mixer condition:
SELECT button for each track channel (1–16)

Master Block condition: [MASTER]



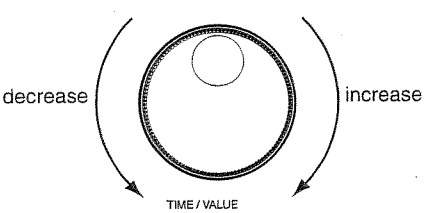
Select the Setting You Want to Change

Using [▲], [▼], [◀], and [▶], move the cursor to the setting (parameter) you want to change. Use the function button if there is more than one page.
The function buttons can be used to directly move the cursor for the settings for each mixer.



Change the Settings Values

Use the TIME/VALUE dial for this operation.
Rotating the dial counterclockwise decreases the values, rotating clockwise increases them. Although usually, increases and decreases in values are in single unit steps, by holding down [SHIFT] while rotating the TIME/VALUE dial, depending on the parameter, you can make values increase or decrease ten times (or one tenth) the normal rate.



Execute the Operation

After changing the value, to create the new song, select the different song, or otherwise set or execute the specified task or operation, press [YES]. A confirmation message will appear in the display. When the message appears, press [YES]. If you want to cancel the operation, then press [NO].

Switching Track Conditions

The condition for each track switches each time the STATUS button is pressed. You can check the condition by looking at the button indicators.

SOURCE (orange):
Allows you to monitor the input source or track assigned to each channel.

REC (blinking red):
Specifies what is recorded to each track. In playback, tracks are monitored. You can directly specify what is to be recorded by pressing the STATUS button while holding down [REC].

PLAY (green):
Plays back each track. You can directly specify what is to be played back by pressing the STATUS button while holding down [STOP].

OFF (darkness):
The track is muted (silent).

* *The VS-1680 can record up to eight tracks simultaneously. Thus,* **you cannot specify the track condition of REC or SOURCE for more than eight tracks.**

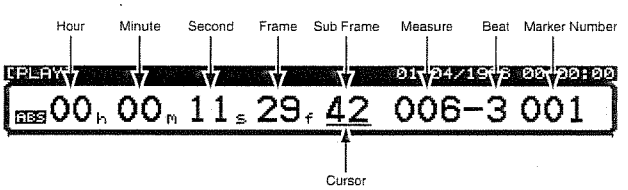
Changing the Current Time

The current playback time in the display is shown in SMPTE time code. The current measure, beat, and Marker number are also displayed. Use the following procedure to change the current playback time.

? **SMPTE Time Code** (Appendices p. 65)

1. Press [PLAY (DISPLAY)].
2. Hold down [SHIFT] and press [▲].

The time display is framed in bold lines.



3. Use the [◀] and [▶] buttons and the TIME/VALUE dial.

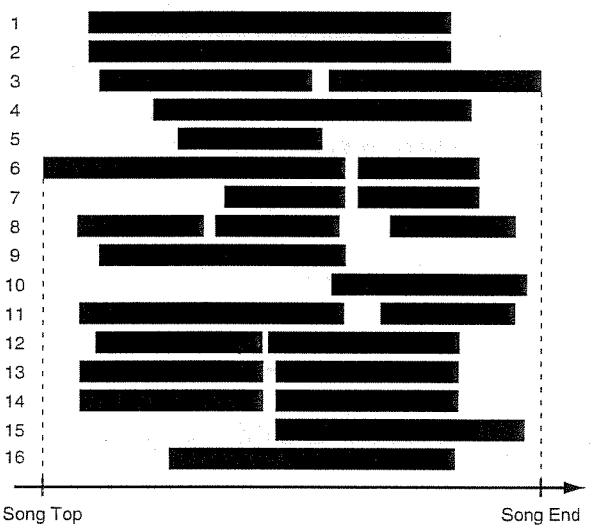
When using the TIME/VALUE dial, time playback time moves according to the position of the cursor. With the cursor moved to the subframe position, rotating the TIME/VALUE dial moves the time point in increments of 1/10 of a frame. To move the time in 1/100-frame increments, hold down [SHIFT] while rotating the TIME/VALUE dial.

Moving to the Beginning or End of the Performance

You can move directly from within any of the V-tracks in the currently selected track to the first or last location in the song that contains recorded sound. Use the following procedure.

To go to the first location in the song containing recorded sound:
Hold down [SHIFT] and press [SONG TOP (REW)].

To go to the last location in the song containing recorded sound:
Hold down [SHIFT] and press [SONG END (FF)].



Storing a Time Location

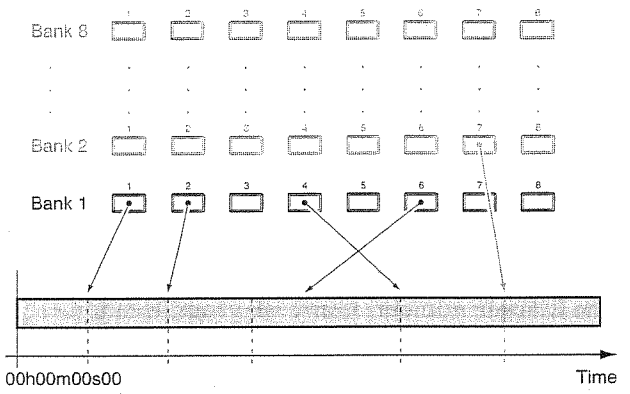
With the VS-1680, there are two ways you can mark and easily recall sections of a song that you want to record over or listen to repeatedly. One is called the **Locator** function, and the other one is referred to as the **Marker** function. Use each method according to its intended function.

Locator:
Store "locator," or time locations to the LOCATOR ([1]–[8]) buttons on the top panel of the VS-1680. Each button correspond to each time in a one-to-one correspondence, and you can move instantly to the location with the press of the corresponding button. There are eight banks for each button, providing you with up to 64 (8 x 8) locators.

Marker:
Up to 1000 locate points (000–999) can be set in rapid succession in each song. You can also store Auto Mix data (p. 157), and there is a sync track provided as well (p. 136).

Using the Locator

Time locations are stored with the LOCATOR buttons ([1]–[8]) on the top panel of the VS-1680. Each button correspond to each time in a one-to-one correspondence, and you can move instantly to the stored locations by pressing the buttons. There are eight banks for each button, providing you with up to 64 (8 x 8) locators. The locators are also a useful and convenient way to define sections of a song to be repeated in Loop Recording or for marking points in Punch-In Recording.



Storing Locators

1. Move to the location in a song where you want to set a locator.
2. Press a LOCATOR button ([1]–[8]). For example, if you wish to set Locator 1, press [1].

These can be used in recording/playback or while the song is stopped. When a locate point is set, the corresponding indicator lights.

Moving to a Stored Time Location

1. Press the LOCATOR button for the locate point to which you want to move. For example, if you wish to move to the Locator 1, then press [1].

Changing the Locator Bank

1. Press [BANK].

The button indicator lights.

2. Now the LOCATOR buttons function as buttons to switch Locator Banks.

The indicator for the LOCATOR button ([1]–[8]) corresponding to the current locate bank will be blinking.

3. Press the LOCATOR button ([1]–[8]) corresponding to the desired bank number. For example, if you wish to switch to Locator Bank 1, then press [1].
4. After the locator bank is switched, return to Play condition.

The [BANK] indicator goes out. If you wish to cancel the operation, then press [BANK] once more.

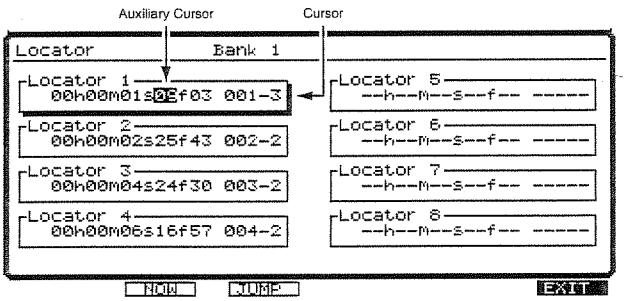
5. Continue with the steps described in "Storing Locate Points" and "Moving to a Stored Time Location."

Making Fine Adjustments to Stored Locators

1. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon appears in the display.

2. Press [F2 (Loc)]. If "Loc" does not appear in [F2], first press [PAGE] until "Loc" is displayed, and then press [F2 (Loc)].
3. Each of the locators is displayed. Using [▲], [▼], [◀], and [▶], move the cursor to the LOCATOR you want to change. However, if no locator is stored in the current LOCATOR, "–h–m–s–f– ––" appears in the display.



4. Enter the locator where you wish to change. Use the TIME/VALUE dial.

At this point, the function buttons work as follows.

[F2 (NOW)]: Enters the current time where the cursor is positioned.

[F3 (JUMP)]: Moves the current time where the cursor is positioned.

[F6 (EXIT)]: Exits the screen.

5. When you finished change settings, press [F6 (EXIT)].

The Utility menu icon is displayed.

Otherwise, press [PLAY (DISPLAY)]. Return to Play condition.

Deleting a Stored Time Location

1. While holding down [CLEAR], press the LOCATOR button ([1]–[8]) for locate point that you wish to delete. For example, if you wish to delete the LOCATOR 1's located point, then press [CLEAR] and [1] simultaneously.

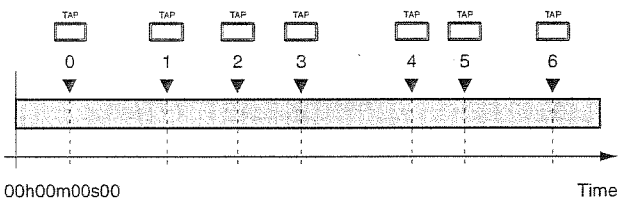
Using Markers

Along with the playback locate points, you can set up to 1000 Markers in sequence. The Markers are also a useful and convenient way to define sections of a song to be repeated in Loop Recording or for marking points in Punch-In Recording.

* *An interval of at least 0.1 seconds must left between markers. It will not be possible to add a new markers if a markers already exists at a location less than 0.1 seconds away.*

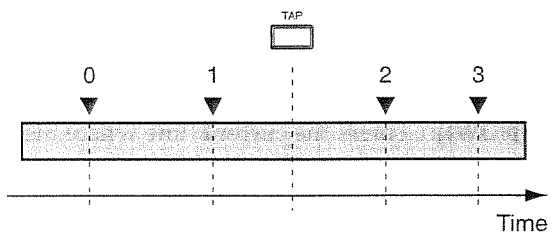
Marking a Time Location

Press [TAP], and a marker will be added to the current location. This can be done during recording or playback of the song as well as when the song is stopped.

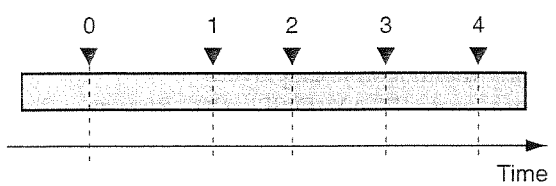


About Marker Numbers

Each marker is assigned a number 000-999, in the order of its time location. This means that if you add a new marker at a location earlier than an existing marker, the numbers of the subsequent markers will be incremented.



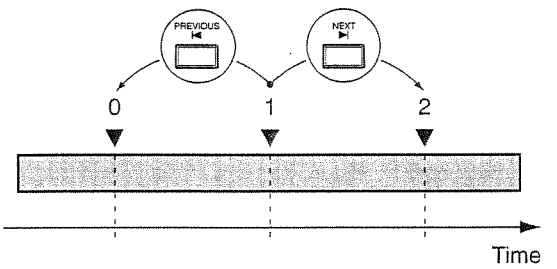
Before setting a Mark point



After setting a Mark point

Moving the Location of Markers

To move to the Marker immediately preceding the current playback time, hold down [SHIFT] and press [PREVIOUS]. You move ahead one marker at a time in the order they are placed each time the button is pressed. To move to the Marker immediately following the current playback time, hold down [SHIFT] and press [NEXT].



Displaying Markers

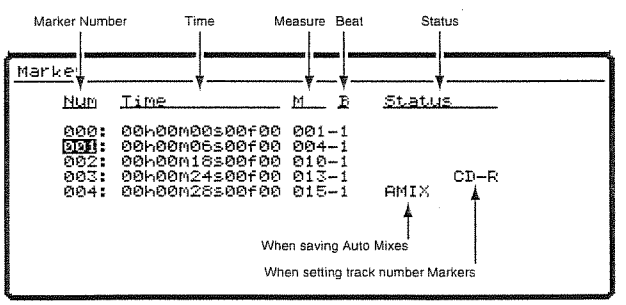
The Marker number at any playback location is indicated in the display. If there is no Marker number in the current location, then the closest preceding Marker number is displayed. If there are no markers in the song, "—" is indicated. If "***" is shown in the display, it indicates that although there are markers placed in the song, the current location is before the first marker.

Making Fine Adjustments to Marked Locations

1. Move to the marker where you want to change. Hold down [SHIFT] and press [PREVIOUS] or [NEXT] to move the marker.

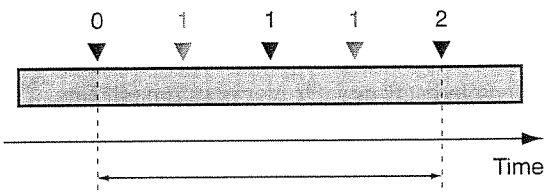
2. Hold down [SHIFT] and press [F6 (UTILITY)]. The Utility menu icon appears in the display.

3. Press [F1 (Mark)]. If "Mark" does not appear in [F1], first press [PAGE] until "Mark" is displayed, and then press [F1 (Mark)].



4. Each of the mark points is displayed. Using [▲], [▼], [◀], and [▶], move the cursor to the Marker you want to change. However, if no mark point is stored in the current Marker, "—: -h-m-s-f- —" appears in the display.

5. Set the marker where you wish to change. Use the TIME/VALUE dial. The time of a marker can be modified only within the range between the preceding and following markers.



Possible range of change

6. When you finished change settings, press [F6 (EXIT)].

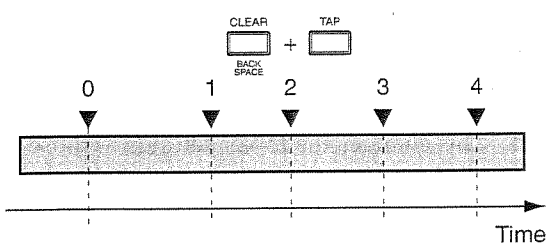
The Utility menu icon is displayed.
Otherwise, press [PLAY (DISPLAY)]. Return to Play condition.

Deleting a Marked Location

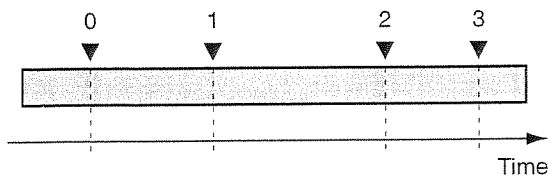
Setting markers makes it much easier to search for places within a song, but having too many of them actually cam make it more difficult to find the location you're looking for. It is a good idea to delete unneeded markers whenever you can.

1. Move to the marker you wish to delete.

2. While holding down [CLEAR], press [TAP]. Marker numbers for any markers after the deleted mark point shift one number ahead.



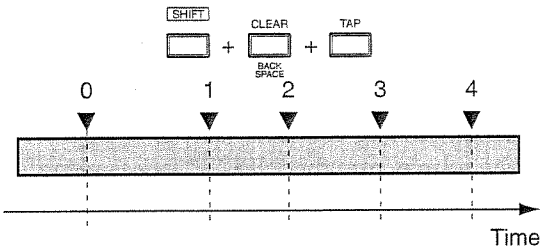
Before deleting a Marker



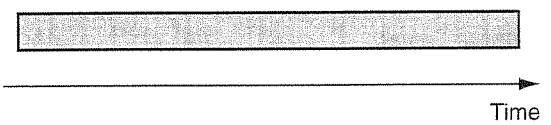
After deleting a Mark point

To Delete All Markers Simultaneously

1. Hold down [SHIFT] and [CLEAR] and [TAP] at the same time.



Before deleting a Marker



After deleting a Marker

2. "Clear All Tap Marker ?" appears in the display. If you want to delete the markers, press [YES]. If you want to cancel the procedure, the press [NO].

Storing Mixer Settings

With the VS-1680, there are two functions to recall mixer settings easily. One is refered to as the **Scene**, and the other one is referred to as the **EZ Routing**. According to the circumstances, please use each function.

Scene:

A Scene stores the current mixer settings, include that setting values in a song. For example, during mixdown, you can create a number of mixes with different settings for volume, pan, equalizer, etc., and compare those mixes, each one with all of its settings preserved. This is a very convenient feature.

EZ Routing:

The VS-1680 can store settings related to its mixer connections. These include settings for routing of inputs to tracks for recording, for determining where signals are output, and for determining which output is to be monitored. For example, these settings, which stay the same, regardless of the song, include playback and recording track settings during track bouncing, and effects settings during mixdown. This makes EZ Routing convenient in such situations.

Recording the Current Condition of the Mixer (Scene)

Up to 8 sets of settings, values included, that define the total condition of the mixer can be stored for each song, and can be recalled instantly at the touch of a button. A stored set of mixer settings is called a "Scene." A Scene includes not only the volume and pan settings, but also connections (e.g., the track to which the source from the INPUT 1 jack is recorded), V-track settings (the track to which each is recorded), and effects (such as the selection of the effect to be applied). This feature is convenient when you want to compare different balances of volume, pan, equalizer, and other settings during mixdown.

* *If you have a VS8F-2 installed, effects settings can be also recorded to Scenes.*

Storing a Scene

1. Press [SCENE].
The button indicator lights.

2. At this point, the SCENE button act to store or recall mixer conditions. Indicators are blinked for any SCENE buttons ([1]–[8]) storing mixer conditions.

3. Press a SCENE button ([1]–[8]) whose button indicator is not blinked. For example, if you want to record mixer conditions to Scene 1, then press [1].

4. When the Scene is stored, return to Play condition. The [SCENE] indicator goes off. If you wish to cancel the operation, then press [SCENE] once more.

Recalling a Scene

1. Press [Stop].

* *You cannot select a Scene during recording or playback.*

2. Press [SCENE].
The button indicator lights.

3. At this point, the LOCATOR/SCENE buttons function as buttons to store and recall mixer conditions. Indicators are blinked for any SCENE buttons ([1]–[8]) storing mixer conditions.

4. Press a SCENE button ([1]–[8]) whose button indicator is blinked. For example, if you want to recall the mixer conditions in Scene 1, then press [1].

5. The Scene is recalled, and you are returned to Play condition. The [SCENE] indicator goes off. If you wish to cancel the operation, then press [SCENE] once more.

Recalling a Scene Without Affecting the Current Fader Values

When a Scene is recalled, the fader values will change to the recalled settings. However, the positions of the top panel's faders themselves do not change. This means that the locations of the faders will not match their actual values.
If you want just the fader values to remain unchanged when you recall a Scene, make the following settings.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Scene Mode," and rotate the TIME/VALUE dial. If "Scene Mode" does not appear in the display, then press [F1 (Prm1)].

SYS Scene Mode

This setting determines the fader settings when a Scene is recalled.

All: This changes the mixer settings to those of the Scene being recalled. In this case, when a Scene is recalled, the location of the faders on the top panel may no longer match the actual fader settings.

KeepF: This changes the mixer settings to those of the Scene being recalled, with the exception of the fader settings. This means that even when a Scene is recalled, fader settings will still match the fader positions on the top panel.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

Deleting a Scene

1. Press [SCENE].

The button indicator lights.

2. The indicators for the [SCENE] buttons ([1]–[8]) to which mixer settings are stored then light.
3. While holding down [CLEAR], press any LOCATOR buttons ([1]–[8]) storing Scene. For example, if you wish to clear the settings stored in SCENE 1, then while holding down [CLEAR], press [1].
4. The mixer settings have been cleared. Press [SCENE] again.

The button indicator goes off. If you wish to cancel the operation, then press [SCENE] once more.

Making Mixer Settings Automatically (EZ Routing)

Settings related to mixer connections, including settings for routing of inputs to tracks for recording, for determining where signals are output, and for determining which output is to be monitored can be stored and recalled easily with the VS-1680. This is referred to as **EZ Routing**.

For example, when setting tracks to be played back or recorded during track bouncing, or when dealing with effects settings during mixdown there are settings which remain the same, regardless of the song. In such situations, by preparing stored mixer settings to be recalled later, you can easily get the most effective and appropriate mixer settings for each parameter.
At the time of purchase, your VS-1680 came with three read-only EZ Routing settings (Preset Routings) already configured. In addition to these, the VS-1680 offers 29 rewritable EZ Routing settings (User Routings), allowing you to make changes to the settings provided and then save these to the User Routings.

There are two types of EZ Routing: **Template** wherein you can check and change the various settings from a single list; and **Step Edit**, in which you can change the settings in order using a question-and-answer dialog type format. Furthermore, Step Edit features three different way to change the settings.

Recording:
Select this when you want to record the performance input via the INPUT jacks.

Mixdown:
Select this when you want adjust the balance of each track or to record a MD player or similar input in two-channel stereo.

Bouncing:
Select this when recording the performance data from multiple tracks onto a number of other tracks.

Storing Routings as a Single List (Template)

1. Press [EZ ROUTING].

The EZ Routing icon appears in the display.

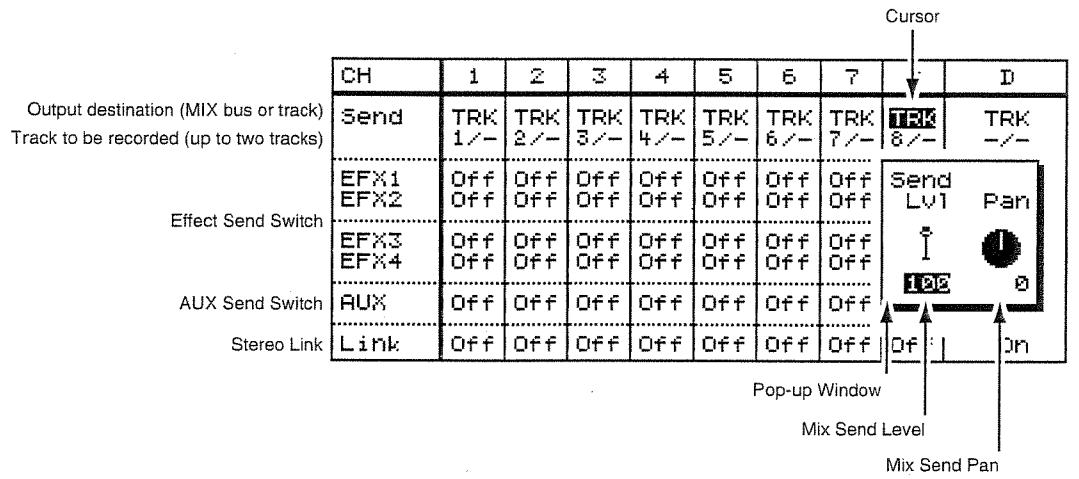
2. Press [F2 (INPUT)]. If "INPUT" does not appear in [F2], first press [PAGE] until "INPUT" is displayed, and then press [F2 (INPUT)].

At this time, the function buttons work as shown below.

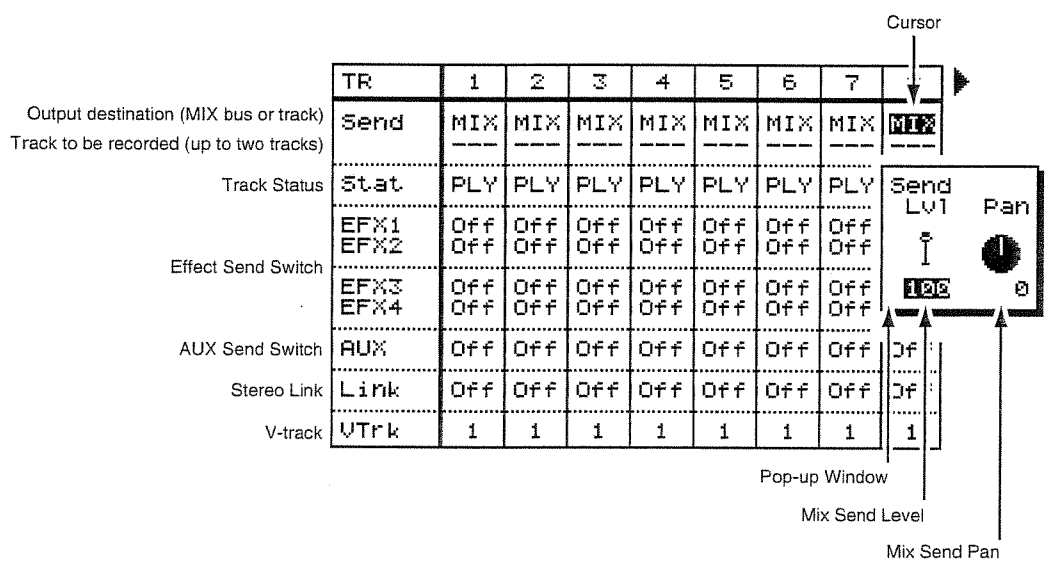
[F1 (COMMON)]: This displays the name of the current EZ Routing.
[F2 (INPUT)]: This is for making input mixer settings.
[F3 (TRACK)]: This is for making track mixer settings.
[F4 (EFX)]: This is for making effects settings.
[F5 (MST)]: This is for making Master Block settings.
[F6 (SAVE)]: This saves the current EZ Routing.

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to make each of the different settigns values. Pressing [ENTER] when the ENTER indicator is blinked fixes the various level and pan settings. If the level and pan settings are set, then press [EXIT (NO)].

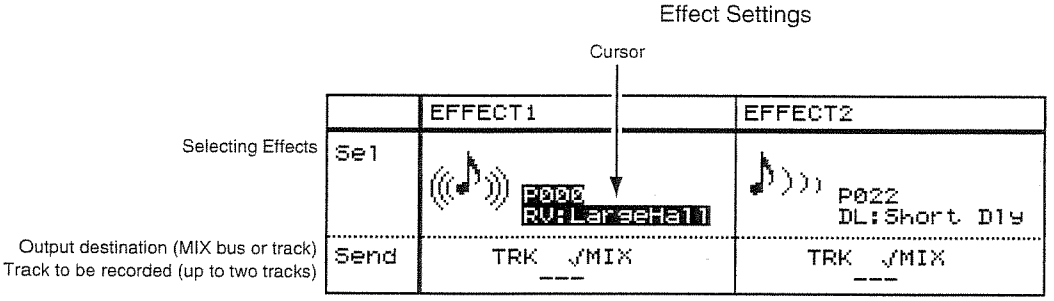
Input Mixer Settings



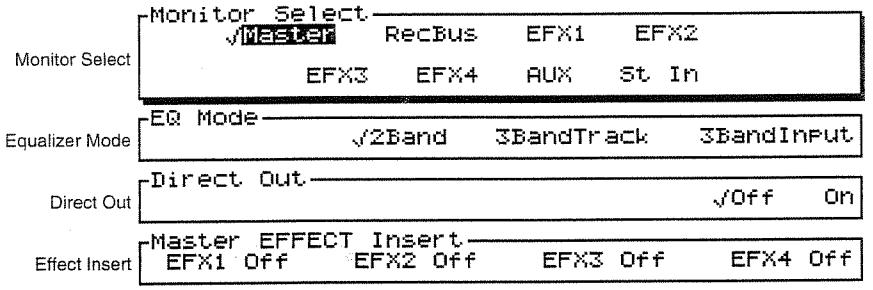
Track Mixer Settings



Effect Settings

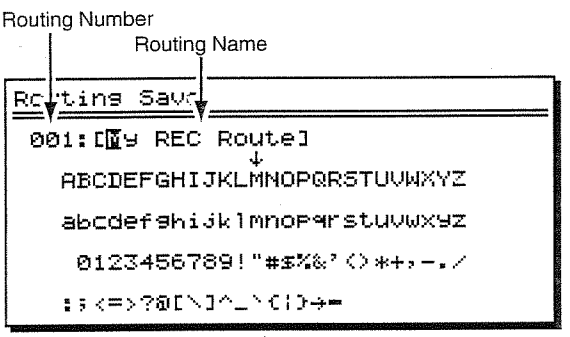


Master Block Settings



4. When you are finished making the EZ Routing settings, press [F6 (SAVE)].

5. The Routing Save screen appears in the display. Rotate the TIME/VALUE dial to select the destination routing number.



6. Press [►] to move the cursor. Press [▲], [▼], [◄], and [►] and rotate the TIME/VALUE dial to select the User Routing name.

At this time, the function buttons work as shown below.

[F1 (Hist)]: Pressing this button takes you through a register of the last 20 names entered, one at a time.

[F2 (Clr)]: Clears all characters in the window.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Confirms the routing and exits the screen

[F6 (EXIT)]: Exits the screen without accepting the routing.

7. After entering the name, press [F5 (Write)].

The routing is saved.

8. Press [PLAY (DISPLAY)].

Return to Play condition.

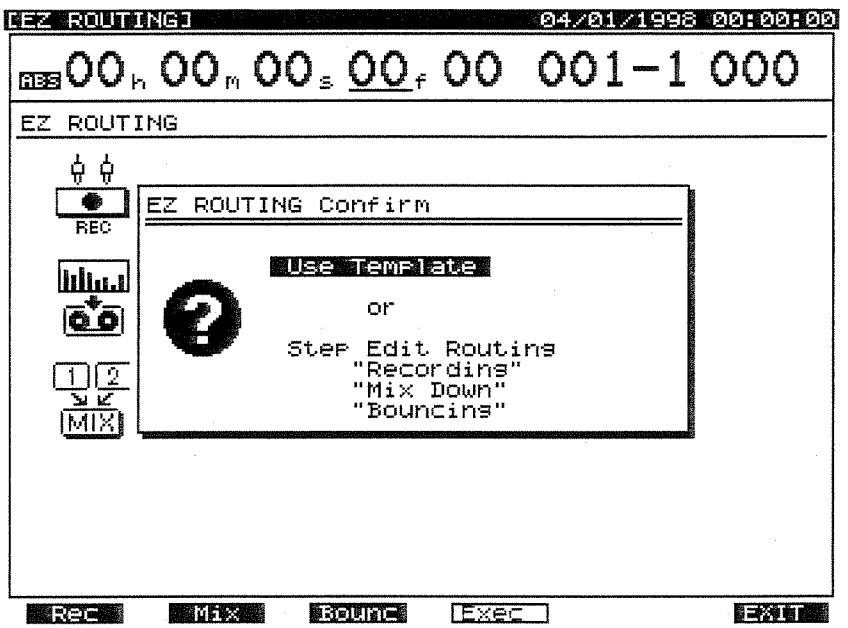
Storing Recording Settings (Recording)

Select this when you want to record the performance input via the INPUT jacks. If you wish to cancel the settings procedure, press [F6 (EXIT)].

1. Press [EZ ROUTING].

The EZ Routing icon appears in the display.

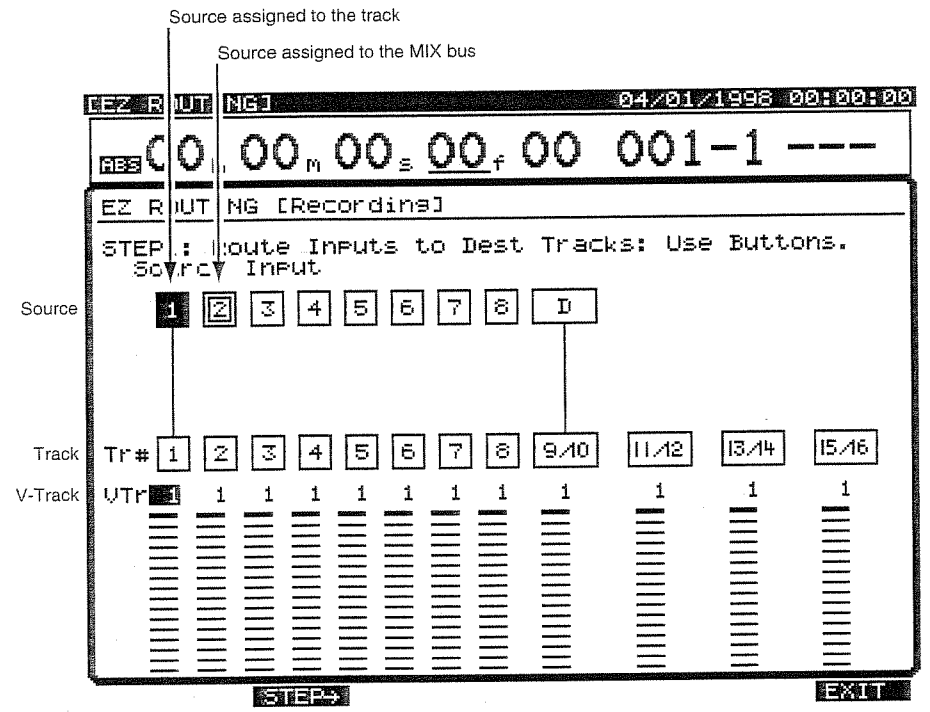
2. Press [F4 (Exec)]. If "Exec" does not appear in [F4], first press [PAGE] until "Exec" is displayed, and then press [F4 (Exec)].



3. Press [F1 (Rec)].

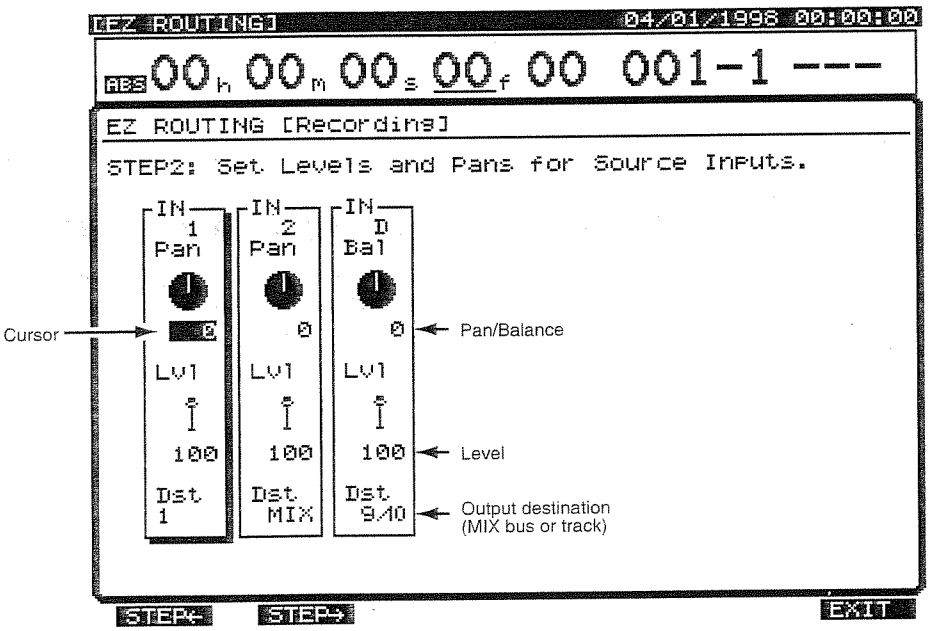
4. Specify which source is to be recorded on each track. First press the source input channel SELECT button, then press the track channel STATUS button for the track to which the source is to be recorded. With the EZ Routing, you can assign a single source to be recorded on up to two tracks. Additionally, by pressing the SELECT button when the input is not assigned to any track, you can have the source assigned to the MIX bus (the signal is not recorded). Press [◀] and [▶] to move the cursor. Rotate the TIME/VALUE dial to select the V-track to which you want the source recorded.

* *Sources that have Stereo Link set to "On" cannot be recorded to tracks on which Stereo Link is set to "Off" with the EZ Routing.*



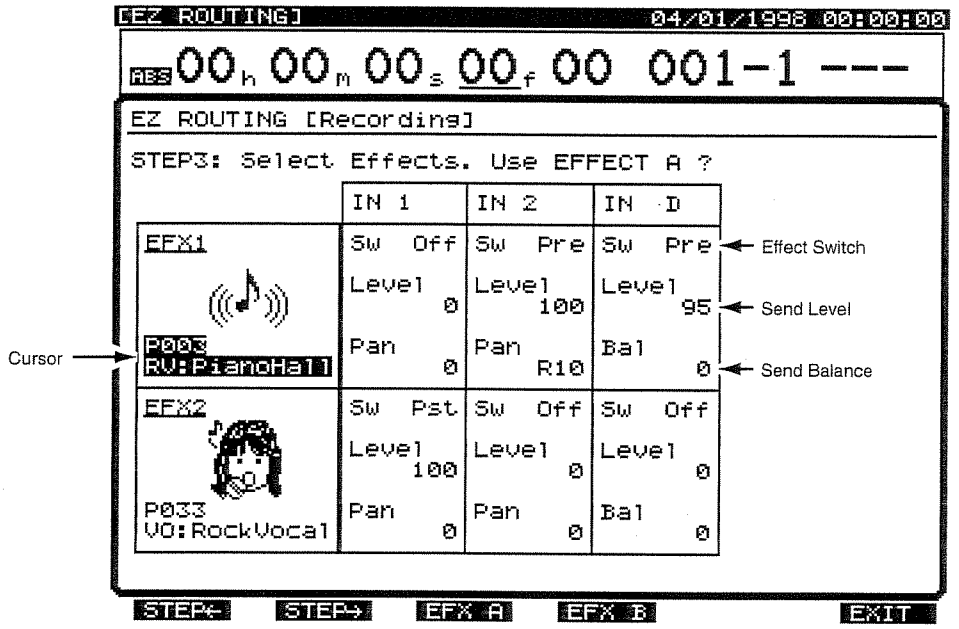
5. Press [F2 (STEP→)].

6. Only the source assigned to the track is indicated. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



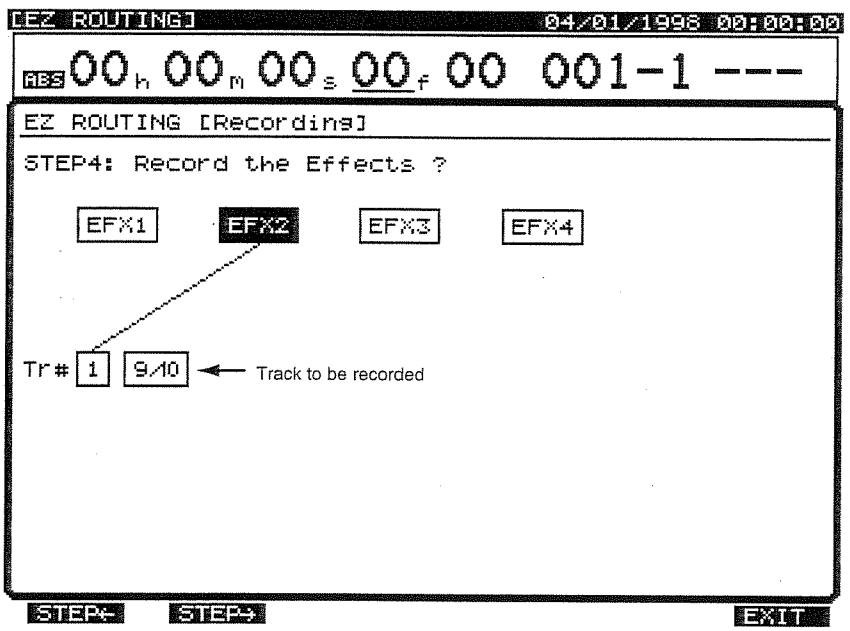
7. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

8. Make the settings for the effects. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values. Press [F3 (EFX A)] to make settings to EFFECT A (EFX1/2); press [F4 (EFX B)] to make settings to EFFECT B (EFX3/4).



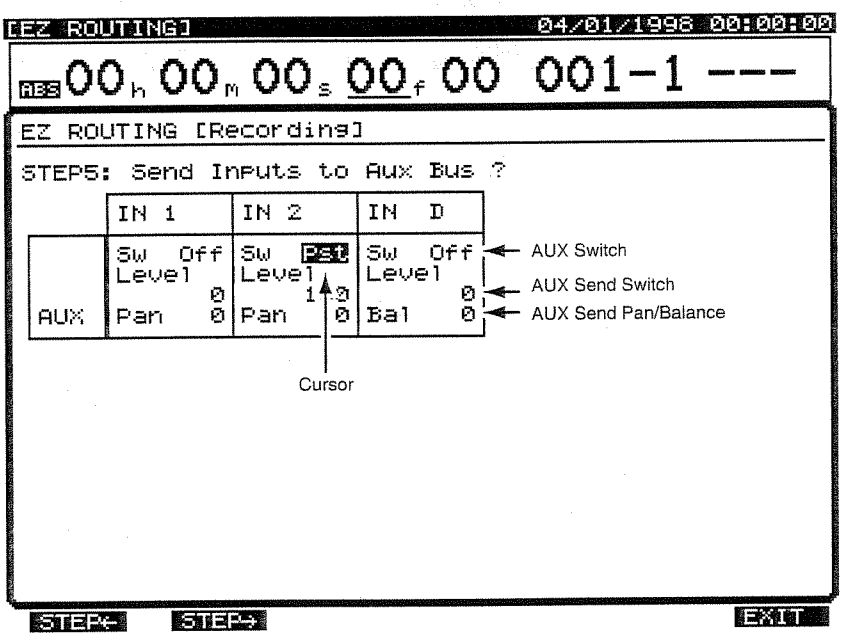
9. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

10. Determine whether or not the effects are to be recorded. First press the SELECT button for the input channel to which you are applying the effect, then press the track channel STATUS button for the track to which you want the effect to be recorded. When you want to assign EFX3/4, then hold down [SHIFT] when you press the SELECT button. You can also assign one effect for recording on up to two tracks.



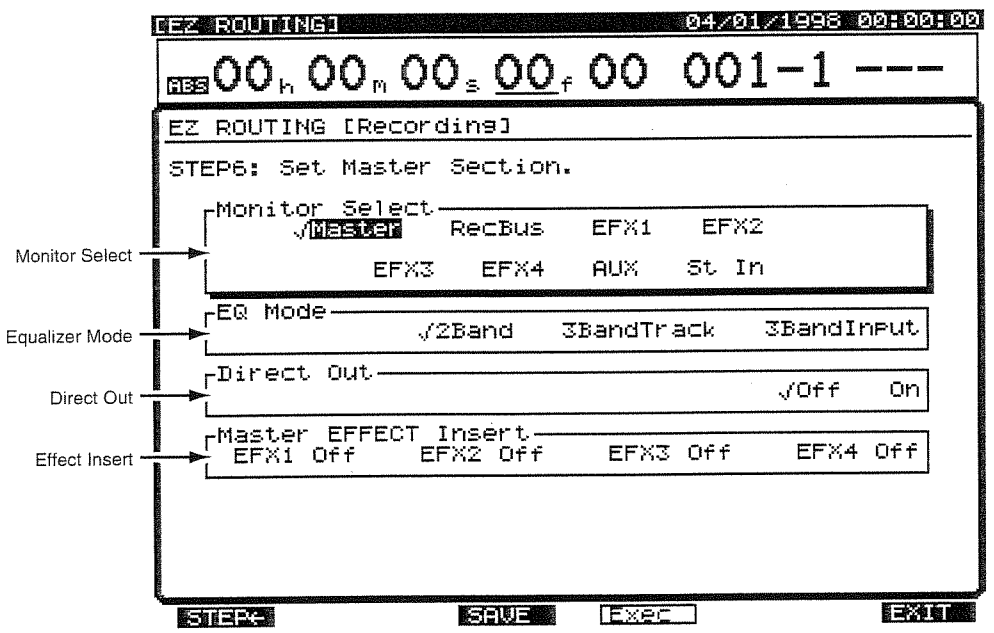
11. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

12. Determine whether or not the output is to be sent to the AUX bus. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



13. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

14. Determine how the output is to be sent. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



15. Press [F4 (Exec)].
A confirmation message appears in the display. Press [YES] if you want to set the selected routing.

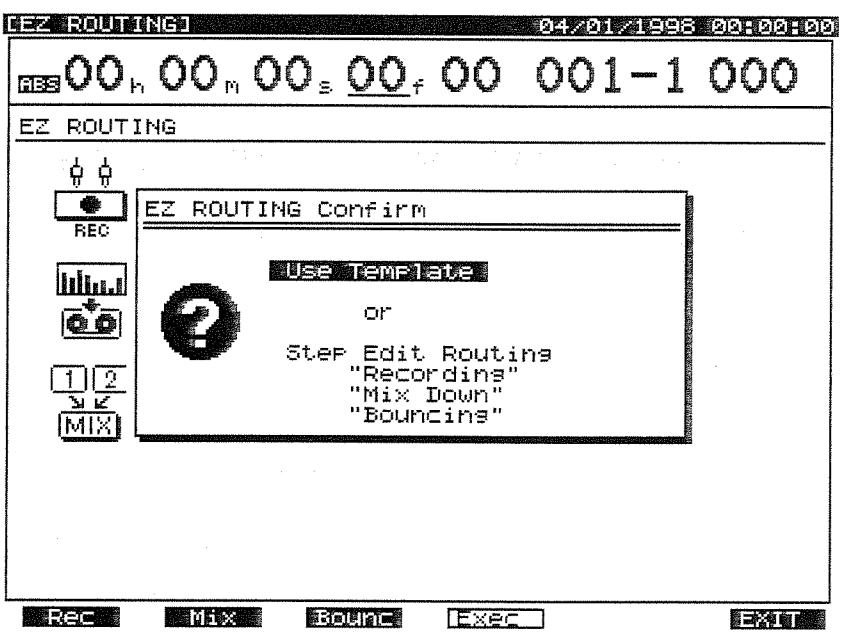
16. Press [F3 (SAVE)].
The Routing Save screen appears in the display. Save the routing using the procedure described in Steps 5–8 of "Storing Routings as a Single List (Template)" (p. 41).

Storing Mixdown Settings (Mixdown)

Select this when you want adjust the balance of each track or to record a MD recorder or similar input in two-channel stereo. Additionally, when playing back all 16 tracks, by mixing the output of the VS-1680 along with the output of a synchronized MIDI sequencer or other such device, you can also record to MD recorders or similar devices. If you want to cancel the settings procedure while still in progress, then press [F6 (EXIT)].

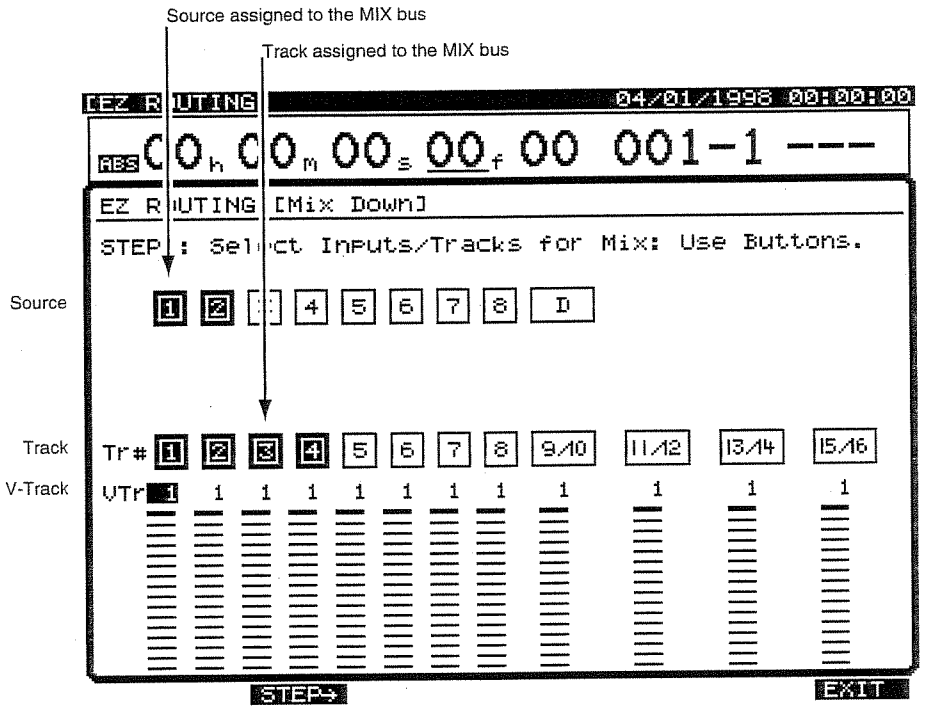
1. Press [EZ ROUTING].
The EZ Routing icon appears in the display.

2. Press [F4 (Exec)]. If "Exec" does not appear in [F4], first press [PAGE] until "Exec" is displayed, and then press [F4 (Exec)].



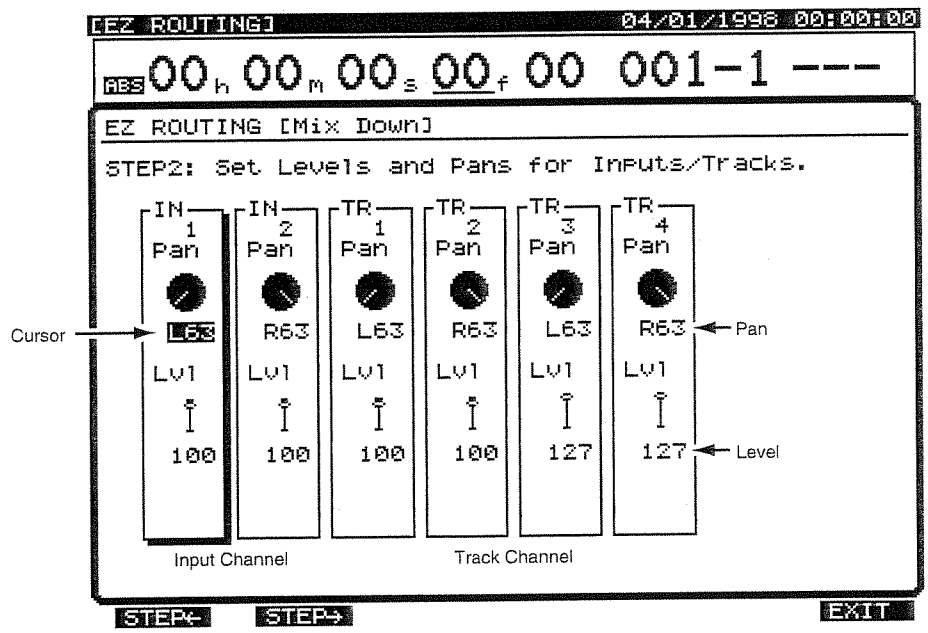
3. Press [F2 (Mix)].

4. Specify which source or track is to be output to the MIX bus. Press the selected source input channel SELECT buttons or the track channel SELECT buttons for the tracks you want to play back. Press [◄] and [►] to move the cursor. Rotate the TIME/VALUE dial to select the V-track to which you want to playback.



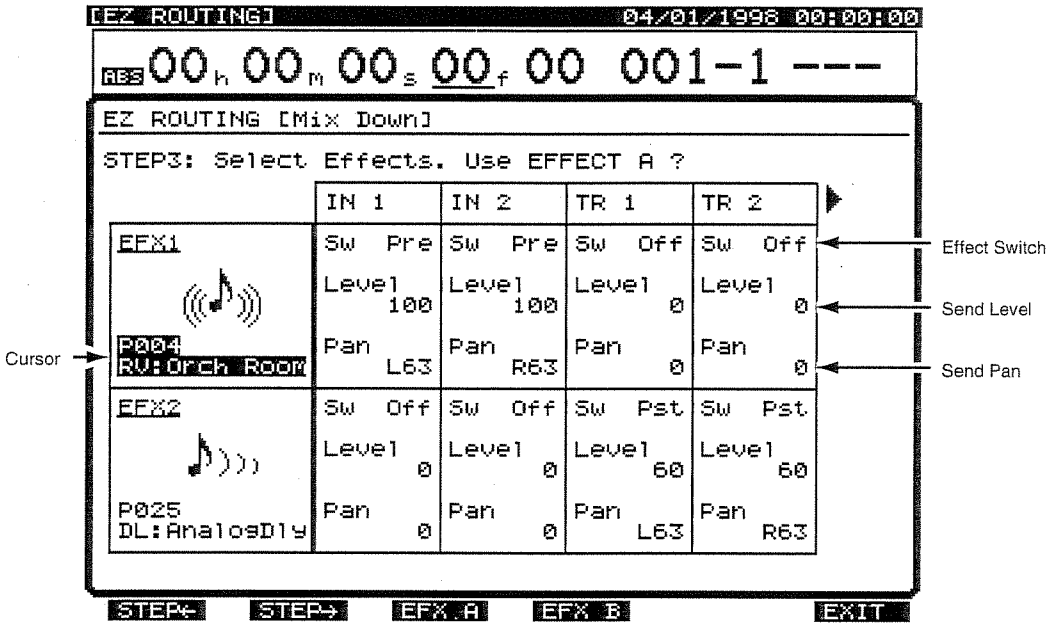
5. Press [F2 (STEP→)].

6. Only the sources or tracks assigned to the MIX bus are indicated. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



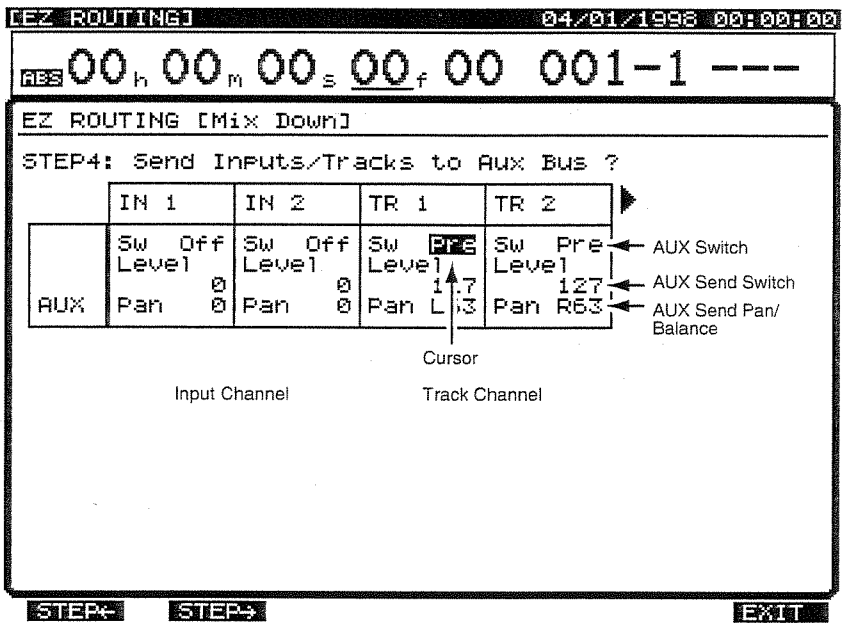
7. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

8. Make the settings for the effects. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values. Press [F3 (EFX A)] to make settings to EFFECT A (EFX1/2); press [F4 (EFX B)] to make settings to EFFECT B (EFX3/4).



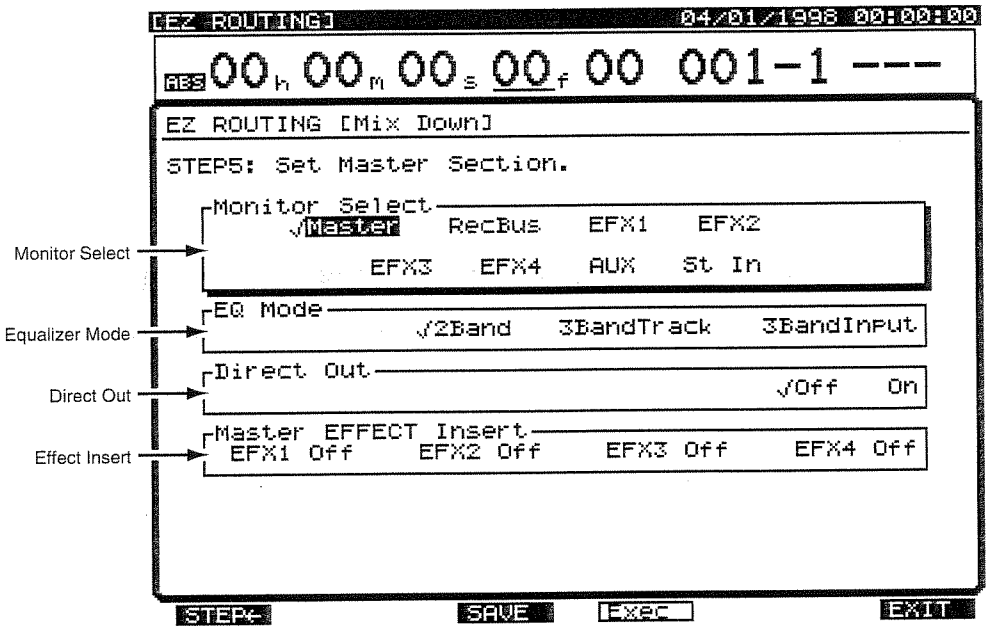
9. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

10. Determine whether or not the output is to be sent to the AUX bus. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



11. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

12. Determine how the output is to be sent. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



13. Press [F4 (Exec)].
A confirmation message appears in the display. Press [YES] if you want to set the selected routing.

14. Press [F3 (SAVE)].
The Routing Save screen appears in the display. Save the routing using the procedure described in Steps 5–8 of "Storing Routings as a Single List (Template)" (p. 41).

Storing Track Bouncing Settings (Bouncing)

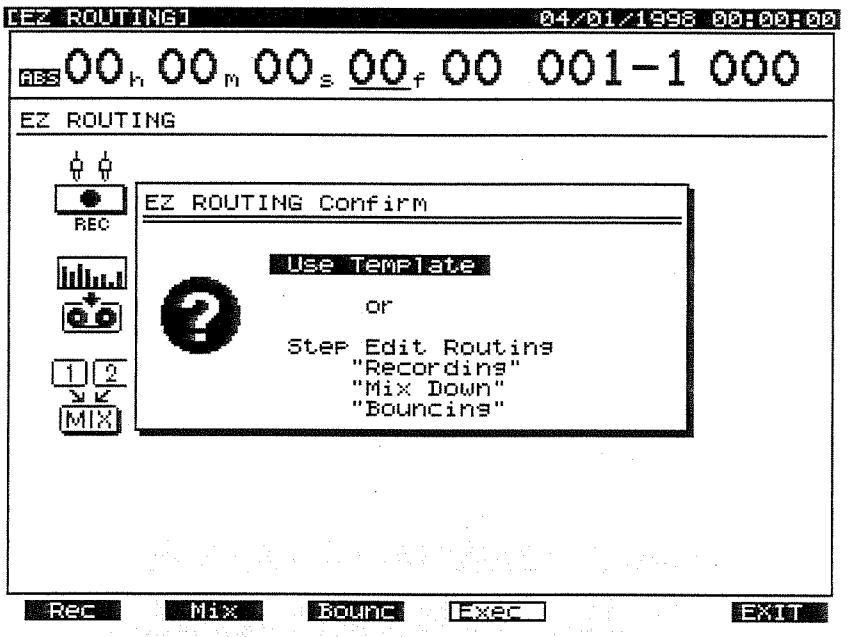
Select this when recording the performance data from multiple tracks onto a number of other tracks. If you want to cancel the settings procedure while still in progress, then press [F6 (EXIT)].

1. Press [EZ ROUTING].

The EZ Routing icon appears in the display.

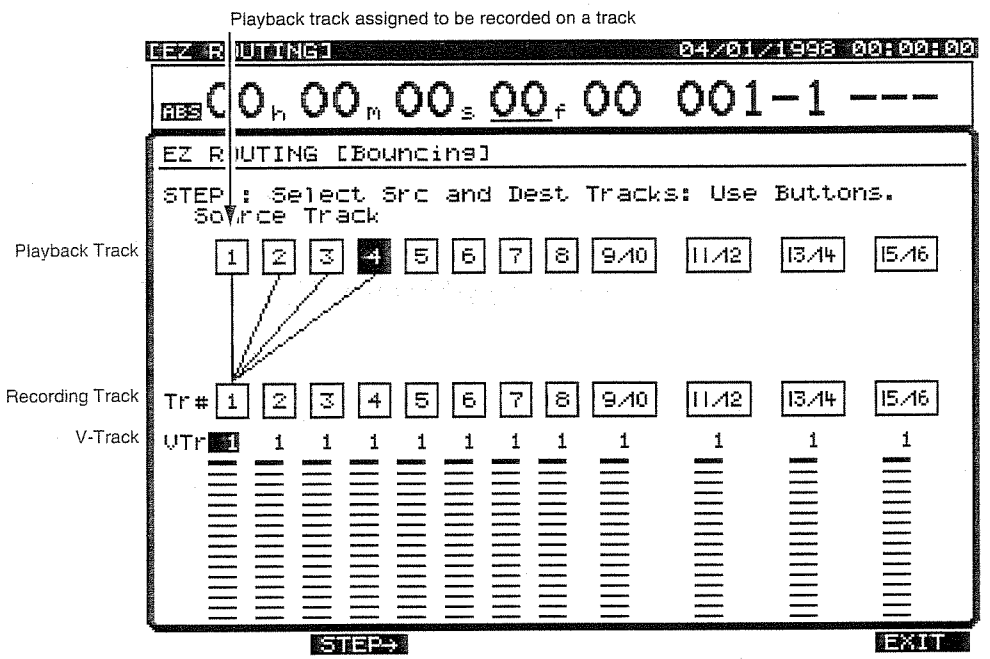
2. Press [F4 (Exec)]. If "Exec" does not appear in [F4], first press [PAGE] until "Exec" is displayed, and then press [F4 (Exec)].

3. Press [F3 (Bounc)].



4. Determine which tracks are to be recorded onto other tracks as well as which tracks will have other tracks recorded onto them. First, press the channel SELECT button for any track you want played back, then press the track channel STATUS button for any track to which you will record. You can assign a single playback track to be recorded on up to two tracks. Additionally, by pressing the SELECT button for any playback track not assigned to be recorded on another track, you can have the playback track assigned to the MIX bus (the signal is not recorded). Press [◄] and [►] to move the cursor. Rotate the TIME/VALUE dial to select the V-track to which you want the source recorded or played back.

* *Playback tracks that have Stereo Link set to "On" cannot be recorded to tracks on which Stereo Link is set to "Off" with the EZ Routing.*

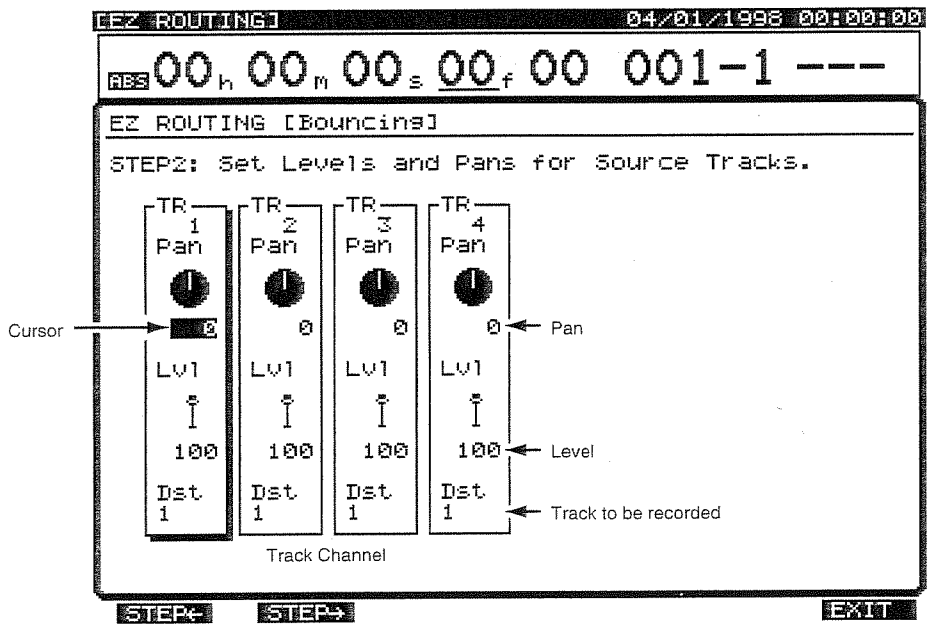


Playback Tracks and Recording Tracks

With the VS-1680, you can perform track bouncing on the same track. However, when you do this, each record or playback track is counted as a single track, with a limit of 16 tracks in total. For example, when you set the routing so that Track 1 is bounced to Track 1, then the STATUS indicator for Track 15/16 goes off, indicating the Track 16 is now not being played back.

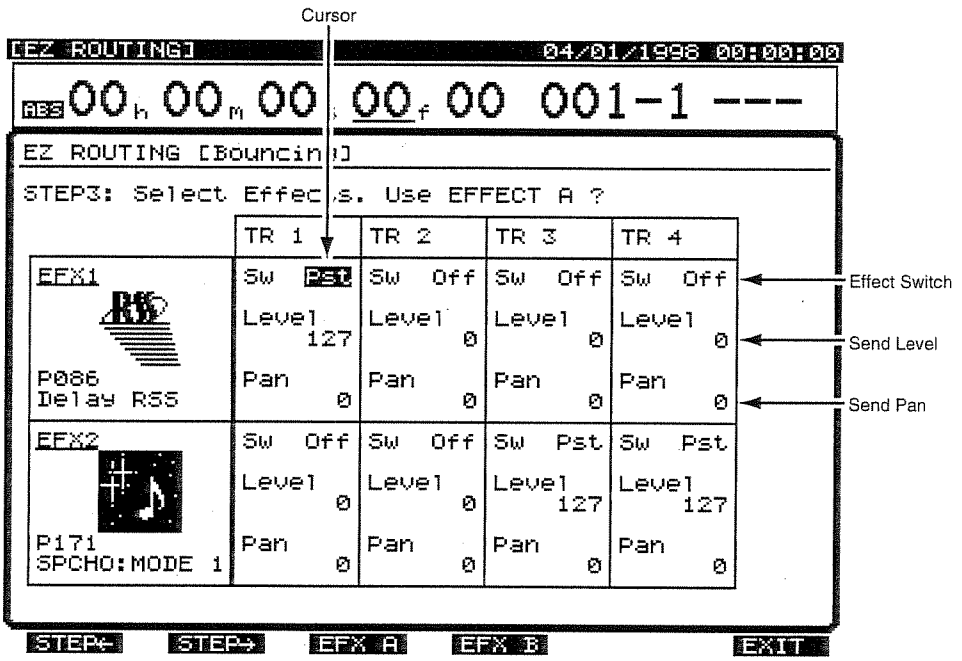
5. Press [F2 (STEP→)].

6. Only the playback tracks assigned to recording tracks are indicated. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



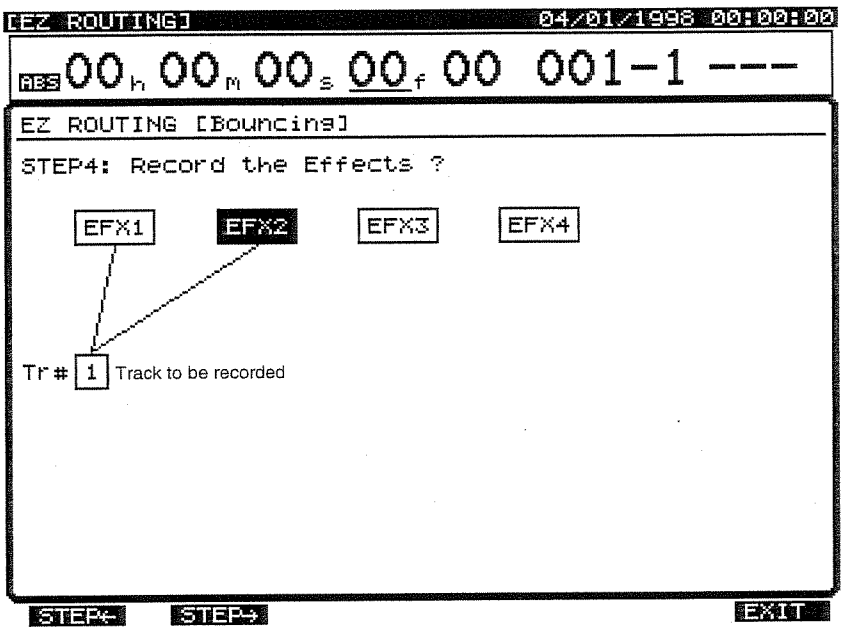
7. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

8. Make the settings for the effects. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values. Press [F3 (EFX A)] to make settings to EFFECT A (EFX1/2); press [F4 (EFX B)] to make settings to EFFECT B (EFX3/4).



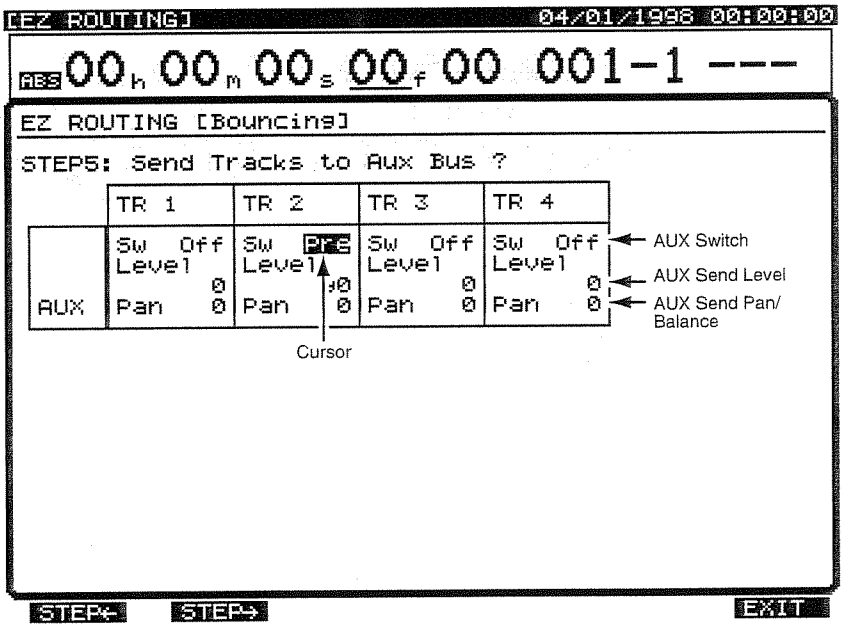
9. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

10. Determine whether or not the effects are to be recorded. First press the SELECT button for the input channel to which you are applying the effect, then press the track channel STATUS button for the track to which you want the effect to be recorded. When you want to assign EFX3/4, then hold down [SHIFT] when you press the SELECT button. You can also assign one effect for recording on up to two tracks with the EZ Routing.



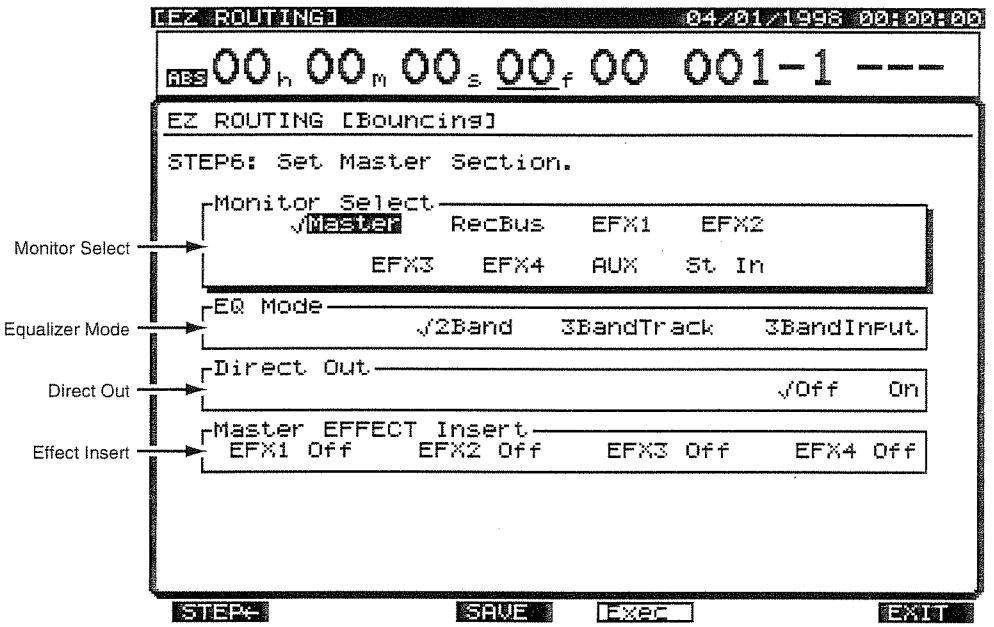
11. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

12. Determine whether or not the output is to be sent to the AUX bus. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



13. Press [F2 (STEP→)]. You can return to the previous screen by pressing [F1 (STEP←)].

14. Determine how the output is to be sent. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.



15. Press [F4 (Exec)].
A confirmation message appears in the display. Press [YES] if you want to set the selected routing.

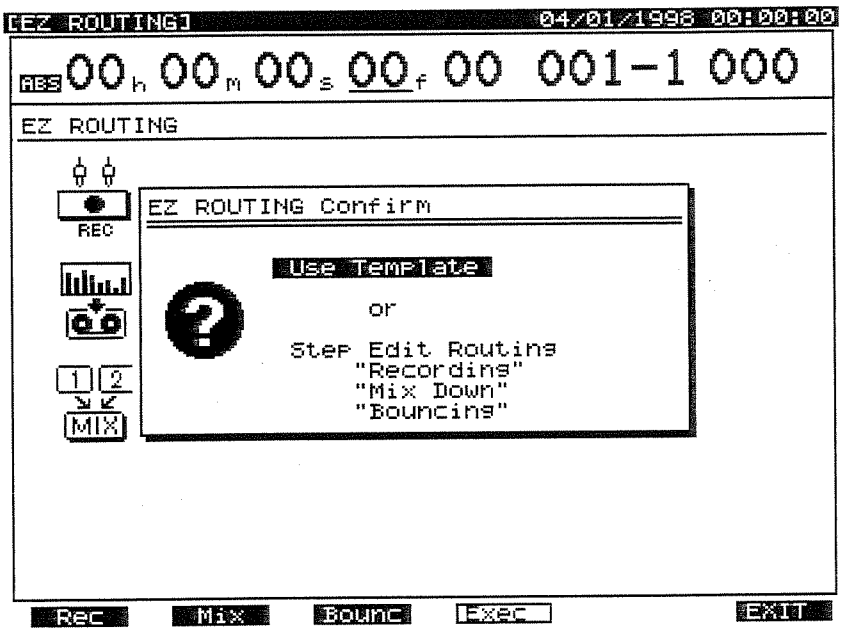
16. Press [F3 (SAVE)].
The Routing Save screen appears in the display. Save the routing using the procedure described in Steps 5–8 of "Storing Routings as a Single List (Template)" (p. 41).

Recalling EZ Routing

1. Press [EZ ROUTING].
The EZ Routing icon appears in the display.

2. Press [▲], [▼], [◀], and [▶]] or rotate the TIME/VALUE dial to move the cursor to the routing you want to use.

3. Press [F4 (Exec)]. If "Exec" does not appear in [F4], first press [PAGE] until "Exec" is displayed, and then press [F4 (Exec)].



4. Press [▲] and [▼] to move the cursor to "Use Template," and press [F4 (Exec)] once more.

5. A confirmation message is displayed. Press [YES].

The EZ Routing is recalled. If you wish to cancel the operation, the press [NO].

6. Press [PLAY (DISPLAY)].

Return to Play condition.

Deleting EZ Routings

1. Press [EZ ROUTING].

The EZ Routing icon appears in the display.

2. Press [▲], [▼], [◀], and [▶] or rotate the TIME/VALUE dial to move the cursor to the routing you want to delete.

3. Press [F6 (Del)]. If "Del" does not appear in [F6], first press [PAGE] until "Del" is displayed, and then press [F6 (Del)].

4. A confirmation message is displayed. Press [YES]. The EZ Routing is deleted. The following routing is advance one place. If you wish to cancel the operation, the press [NO]. However, "Recording," "Mix Down," and "Bouncing" are Preset Routings, they cannot be deleted.

5. Press [PLAY (DISPLAY)].

Return to Play condition.

Chapter 3 Multi-Track Recording

This chapter explains the operations necessary for recording with the VS-1680. Try out each operation as you read these instructions.

Recording

Items Necessary for Multi-Track Recording

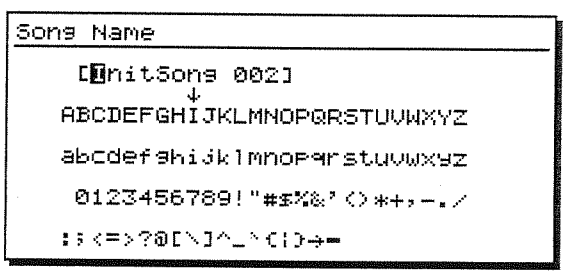
- VS-1680 (1)
- Internal IDE hard disk (HDP88 series)
- Audio equipment for the Master Out signal, or stereo headphones
- Recording source (electric guitar, synthesizer, CD player, etc.) or microphone

? **IDE** (Appendices p. 64)

Creating a New Song (Song New)

Recording cannot take place while a demo song is selected. **This is because the contents of the demo songs are protected from being changed or overwritten** (p. 81). Use the following procedure to prepare a new song. This process is analogous to exchanging cassettes on a multi-track tape recorder.

1. Hold down [SHIFT] and press [F1 (SONG)].
The Song menu icon is displayed.
2. Press [F2 (NEW)]. If "NEW" does not appear in [F2], first press [PAGE] until "NEW" is displayed, and then press [F2 (NEW)].
3. Press [F1 (Name)]
The Song Name screen appears in the display.
4. Using [▲], [▼], [◀], and [▶] and the TIME/VALUE dial, enter the name of the song.
At this point, the function buttons work as shown below.



[F1 (Hist)]: Pressing this button takes you through a register of the last 20 song names entered, one at a time.

[F2 (Clr)]: Clears all characters in the window.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Accepts/Confirms the song name and removes the screen.

[F6 (EXIT)]: Removes the screen without accepting the song name.

5. After entering the name, press [F5 (Write)].

> **Song Names**
> When you create a song, it will automatically be given a name like "InitSong 001." However this makes it difficult to remember what song it is. We recommend that you assign a unique name to your song so that data management will be easier. You can change the name of the song later, if desired.

6. Press [▲], [▼], [◀], and [▶] to move the cursor. Change each settings values by the the TIME/VALUE dial.

Sample Rate

Select a sample rate (32 kHz, 44.1 kHz, or 48.0 kHz). When you want to use a digital connection to a digital audio device, much the sample rate to that of the connected device. Furthermore, **when making an original audio CD, select 44.1 kHz**. You cannot change the sample rate after the song is recorded. In addition, you cannot mix different sample rates in the same song.

Record Mode (Recording Mode)

Select the sound's quality and time based on the recorded contents. Once a song is recorded, these settings cannot be changed.

MTP (Multi-Track Pro):
Compatible with professional-quality equipment (digital mixers, digital effects, processors, etc.). The high-quality sound can be worked with — recorded and edited — as is, with no loss of sonic quality when played back or output.

MAS (Mastering):
With this setting, you can get the high-quality sounds compatible to that's quality of CD player or DAT recorder. However, songs recorded with this selected for recording work on 8-track recorders (Tracks 1–8). Tracks 9–16 cannot be used. This mode is appropriate when recording edited two-channel stereo songs.

MT1 (Multi-Track 1):
While maintaining high-quality sound, recording time is approximately twice that available in "Mastering" mode. This mode is good when doing a lot of track bouncing.

MT2 (Multi-Track 2):
While maintaining high-quality sound, recording time is longer than that available in "Multi-Track 1" mode. This mode is good for normal operations.
LIV1 (Live 1):
Recording time is longer than with "Multi-Track 2" mode. This mode is appropriate when your hard disk lacks much free space or when recording live performances.
LIV 2:
Provides the longest recording time.

Icon
Select icons (graphic images) that directly impart the feeling for each song.

Copy System PRM (Copy System Parameter)
When set to "On," you can create a new song that has the current song's system parameters copied to it. Without remaking the previous settings such as preview length (p. 154), metronome settings (p. 167), and so on, you can begin recording or playback of the current song with the same environment (system parameters). However, parameters included in the [F2 (GLOBL)] page are not recognized.

Copy Mixer/Scene PRM (Copy Mixer/Scene Parameter)
When set to "On," you can create a new song that has the current song's mixer settings and stored Scenes copied to it.

7. Press [F4 (Exec)].
"Create New Song, Sure?" appears in the display.

8. Press [YES].
"STORE Current?" appears in the display.

9. If you wish to save the current song, press [YES]; if not, press [NO]. **If you have selected a demo song, then press [NO].** When the new song is created, the Song menu icon reappears in the display.

10. Press [PLAY (DISPLAY)].
The initial display reappears. The created new song is now selected for recording and playback.

About Recording Time
The recording time (track minutes) of both sampling rate and recording mode are as shown below (for one track, with 2.1 GB free space).

? **Track Minutes** (Appendices p. 65)

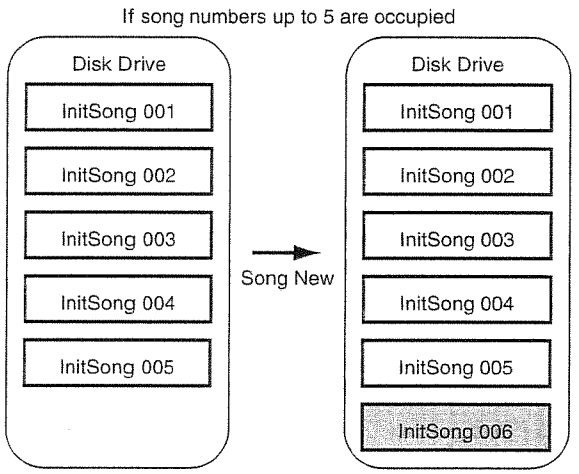
	Sample Rate		
Recording Mode	48.0 kHz	44.1 kHz	32.0 kHz
Multi-Track Pro	742 mins.	808 mins.	1114 mins.
Mastering	370 mins.	404 mins.	556 mins.
Multi-Track 1	742 mins.	808 mins.	1114 mins.
Multi-Track 2	990 mins.	1078 mins.	1484 mins.
Live 1	1188 mins.	1292 mins.	1782 mins.
Live 2	1484 mins.	1616 mins.	2228 mins.

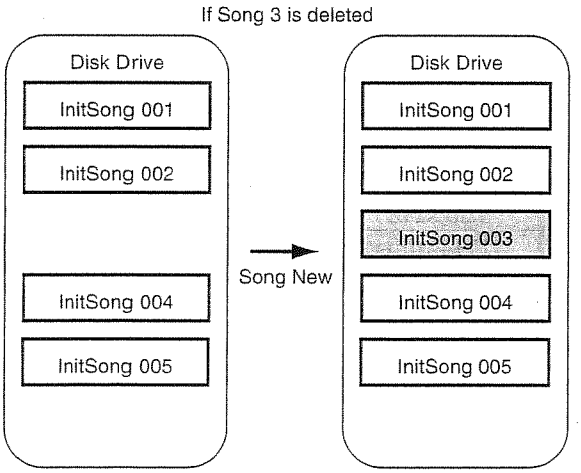
(All times approximate)

* *The above chart is a general yardstick for estimating recording times. Actual times may be somewhat shorter depending on your hard disk's specifications or the number of songs created.*

If "Drive Busy!" is Displayed
If this message appears during recording or playback, it means that the disk drive cannot catch up with the data read/write speed. In such instances, create a new song which lower the sample rate or recording mode from their current settings, and record over.

Song Numbers
On the VS-1680, management of song data is accomplished by assigning a song number to every song that is saved. Newly created songs are given the lowest currently available number. For example, if all numbers up to song number 5 are already assigned, then the number 6 is taken by the new song. Furthermore, even if song numbers up to 5 are occupied, if Song 3 is deleted, then the new song is given that now lowest vacant number.





General Course of the Recording Process

The procedure for recording with the VS-1680 is roughly as same as record process by multi-track recorders as mentioned before. This general process of recording a song is outlined below. Please take a moment to read through the steps.

1. Connect instruments and microphones to the VS-1680.
2. Record the basic part of the song; drums and bass, etc.
3. Record other parts (electric guitars, synthesizers, vocals, etc.) while playing back the basic part.
4. If there are any mistakes during the process, record over the places where they occurred (punch-in/punch-out).
5. Adjust the volume level, pan, equalization, and other settings for each part.
6. If you run out of empty tracks, you can marge the contents of two or more tracks onto a different track (track bouncing).
7. Mix down the tracks to your recorder and make a master tape.

Well, it's time to try multi-track recording. This will be explained using concrete examples.

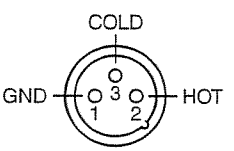
Connecting Instruments

1. Turn down the master fader as low as possible.
2. Connect instruments and microphones to the INPUT jacks.

The INPUT 8 jack and the GUITAR (Hi-Z) jack cannot be used simultaneously. The GUITAR (Hi-Z) jack takes precedence when connections are made to both jacks at the same time. If you wish to use the INPUT 8 jack, make sure that nothing is plugged into the GUITAR (Hi-Z) jack.

? **GUITAR (Hi-Z)** (Appendices p. 63)

* *The pin assignment for the XLR type connectors is as shown below. Before making any connections, make sure that this pin assignment is compatible with that of all your other devices.*



* *Howling could be produced depending on the location of microphones relative to speakers. This can be remedied by:*

1. Changing the orientation of the microphone(s).
2. Relocating microphone(s) at a greater distance from speakers.
3. Lowering volume levels.

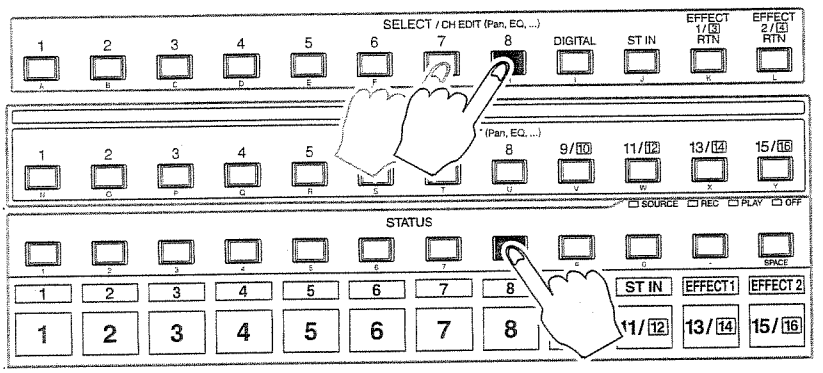
Recording to the Tracks

1. Select a recording track. While holding down [REC], press the STATUS button for the track to which you want to record.

The button indicator blinks red.

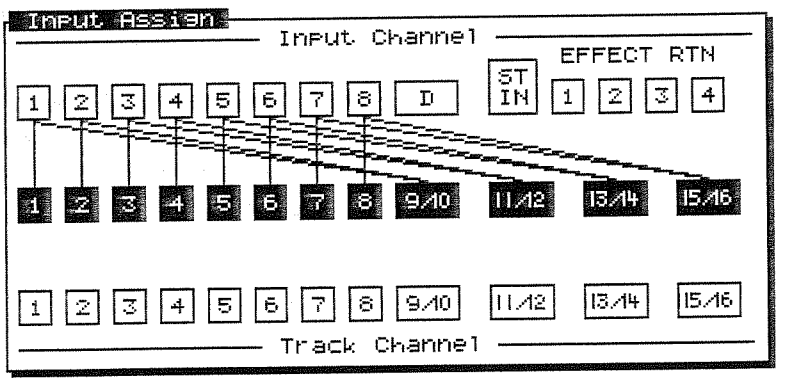
2. Select source to be recorded to the track. While holding down the STATUS button for the track to which you want to record, press the SELECT button for the input channel whose source you want assigned to the track.

The button indicator blinks.



Sources Assigned to Tracks

In a newly created song, sources are assigned to tracks as shown below.



3. Switch to the input mixer. Press [FADER] to light the IN indicator.

4. Determine the source volume. Since what is recorded is the sound after it passes through the fader, the faders should normally be set to around 0 dB.

5. Adjust the input sensitivity, with the INPUT knob of the channel input assigned as the source. Get a strong input signal by having instrument volumes as high as possible. At this time, raise the volume level as much as possible without making the PEAK indicator light up. Normally, this range is adjusted that the level meter moves within -12 to 0 dB when the channel fader is set to 0 dB.

6. Press [REC].
The button indicator blinks red.

7. Press [PLAY].
The button indicator lights green, and recording starts. Now begin playing.

8. When the performance is finished, press [STOP].
The song then stops.

9. Listen to the recorded performance. Press [ZERO] to return to the beginning of the song.

10. Switch to the track mixer. Press [FADER] to light the TR indicator.

11. Press [PLAY] to begin playback of the song.

12. Use the channel faders and the master fader to adjust the volume to a comfortable level.

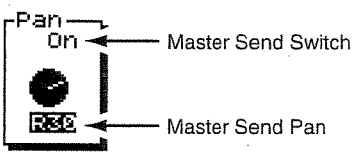
13. Does the recording sound as you though it would? If you are satisfied with the results of your recording, then save the song to the disk, using the procedure described in "Saving a Recorded Performance" (p. 63).

When You Are Recording in Stereo

When recording to Tracks 9/10–15/16 (stereo tracks), or when recording to tracks with Stereo Link (p. 164) on, you can set the pan for each input channel. After Step 5, perform the procedure described below.

5-1. Press the SELECT button for the input channel you want assigned as the source.
The button indicator lights, and the Input Mixer screen appears in the display.

5-2. Press [F1 (Pan)]. If "Pan" does not appear in [F1], first press [PAGE] until "Pan" is displayed, then press [F1 (Pan)]. Alternatively, use [▲], [▼], [◄], and [►] to move the cursor to "Pan."



5-3. Press [▲] and [▼] to move the cursor. Rotate the TIME/VALUE dial.

(Master Send Switch)

When this is set to "On," the source from each input channel, rather than being assigned to the RECORDING bus, is sent directly to the MIX bus. Set this to "On" when, for example, you simply want to mix the inputs without recording them. However, the sources that are assigned to the RECORDING bus are disabled.

(Master Send Pan)

This adjusts the pan setting (L63–0–R63) of the signal sent to the MIX bus and the RECORDING bus.

5-4. Repeat Steps 5-1 through 5-3 for all input channels to which you want to make pan settings.

5-5. After making the pan setting, press [PLAY (DISPLAY)].
Return to Play condition.

Saving a Recorded Performance (Song Store)

The contents of any recorded performance will be lost if you simply turn the power off, or even if there is an accidental power failure or power outage. **Once lost, the contents of a recorded performance cannot be restored to the previous conditions.** To avoid this from happening, use the following procedure to save your songs to the disk.

* *When handling important song data, or when using the VS-1680 for extended periods, we recommended that you to perform this procedure frequently.*

1. Hold down [SHIFT] and press [STORE (ZERO)].
2. "STORE OK?" appears in the display. If you are satisfied with the results of your recording, press [YES]. If you wish to cancel the save, press [NO].

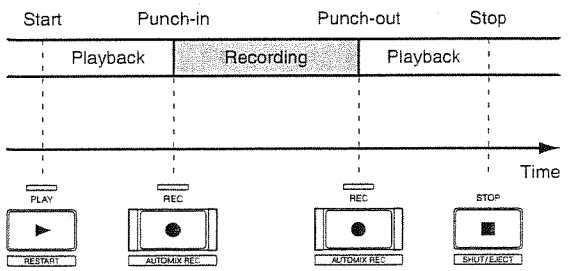
* *The contents of the demo songs are protected from being changed or overwritten (Song Protect (p. 81)). You cannot save operation with the demo songs. This means if you press [YES] at Step 2 when a demo song is selected, the message "Song Protected" will appear, and the procedure cannot be continued.*

Recording Over a Portion of a Performance (Punch-In/Punch-Out)

Sometimes, when listening to a recorded performance, even if you don't find it necessary to discard the entire song, there may be sections containing mistakes or lyrics that are hard to hear. In such instances, you will find the following procedure convenient for rerecording only selected parts of a recording. The switching from playback to recording status is called **punch-in**, and the switch back from recording to playback is referred to as **punch-out**.

Using the RECORD Button (Manual Punch-In 1)

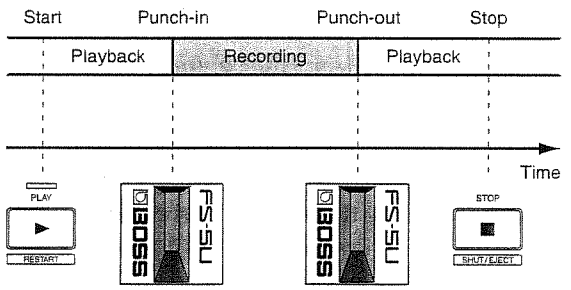
Use Transport Control Buttons to punch in and out.



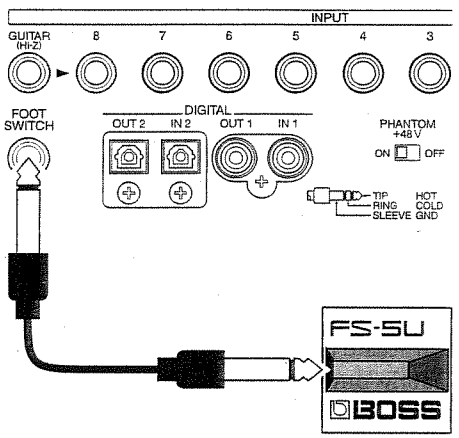
1. Hold down [REC] and press the STATUS button which you wish to re-record.
2. Press [ZERO] to return to the beginning of the song.
3. Press [PLAY] to begin playback of the song.
At this point, the **performance that has already been recorded** on the track or tracks that you want to re-record is monitored.
4. Press the STATUS buttons again.
The indicator alternately blinks red and orange. Now, confirm that you can hear **source you want recorded to the track** coming from the monitors.
5. During playback of the song, each time the button is pressed, the monitor switches between source and track. Using the input sensitivity knob, adjust the volume of the source so that it matches that of the prerecorded performance.
6. Once you have adjusted the input sensitivity, press [STOP].
7. Move to previous located point where you want to re-record.
8. Press [PLAY] again to playback the song.
9. When you reach the point in the performance you want to re-record, press [REC].
The VS-1680 goes in to record mode; start rerecording the song or performance.
10. When you have finished recording, press [REC] once more (or press [PLAY] to playback the song).
11. Each time the [REC] button is pressed, the unit alternately punches in and out. Repeat Steps 9 and 10 for any other tracks you wish to re-record.
12. Press [STOP] to stop the song.
13. Listen to the results of the rerecording. Return to the beginning of the song and press [PLAY].

Using the Foot switch (Manual Punch-In 2)

Use a foot switch to punch in and out. Using Punch-In/Punch-Out when both performing on an instrument and recording at the same time is difficult. In such instances, it is convenient to use a foot switch (such as the DP-2 or the BOSS FS-5U) to do your switches.



Connect an optional foot switch (such as the DP-2 or the BOSS FS-5U) to the VS-1680's FOOT SWITCH jack.



1. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, then press [F1 (SYSPM)].

3. Using [▲], [▼], [◀], and [▶], select "Foot Sw." If "Foot Sw" does not appear in the display, the press [F2 (Prm 2)].

FootSw (Foot switch icon)

Set the function of the foot switch connected to the FOOT SWITCH jack.

Play/Stop: Repeats playback and recording each time the foot switch is pressed.

Record: Performs the same function as [REC]. This is used for switching between recording and playback during manual Punch-In Recording.

TapMarker: Performs the same function as [TAP]. Pressing the foot switch sets a Marker at the mark point.

Next: Performs the same function as [NEXT]. Moves to the beginning or end of the following phrase each time the foot switch is pressed.

Previous: Performs the same function as [PREVIOUS]. Moves to the beginning or end of the previous phrase each time the foot switch is pressed.

GPI: Controls playback and recording of the song depending on the GPI trigger signal received from the FOOT SWITCH jack.

? **GPI** (Appendices p. 63)

4. Select "Record" with the TIME/VALUE dial.

5. Press [PLAY (DISPLAY)].

Return to Play condition.

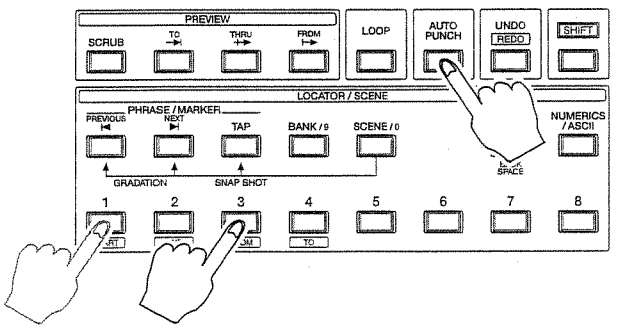
Now, you can switch the setting of the FOOT SWITCH jack between Punch-In and Punch-Out by the foot switch. Carry out Manual Punch-In as described in "Using the Record Button (Manual Punch-In 1" (p. 63). However, use the foot switch instead of the [REC] button to perform the operation.

Specifying Beforehand the Location for Rerecording (Auto Punch-In)

You can automatically punch in and punch out at previously specified locations. This function is called **Auto Punch-In**. This is convenient when you need to punch in or out at a precise time. Before you begin recording, set the times for punch-in/punch-out. There are three ways to set these times as described below. Use the method appropriate for your situation.

Using Locators:

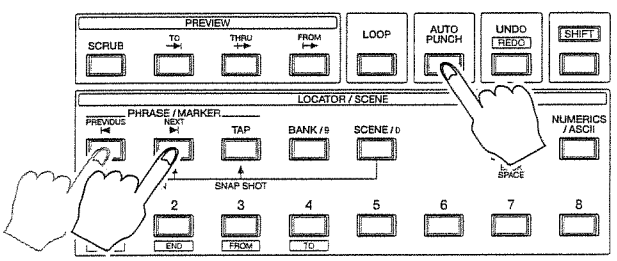
1. Preset locate points where you want to punch in/punch out.
2. While holding down [AUTO PUNCH], press the LOCATOR button specifying the locate point for the time at which you want to punch in.
3. Then, without releasing [AUTO PUNCH], press the LOCATOR button specifying the locate point for the punch-out time.



Using Markers:

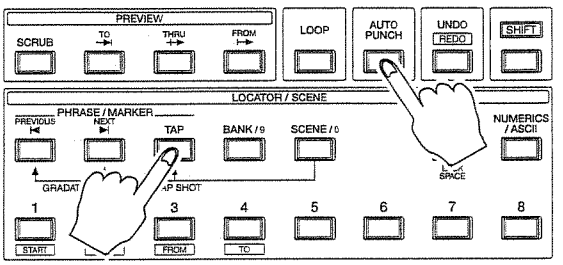
The space between two adjacent mark points can be used to define the segment for Punch-In Recording.

1. Preset Markers where you want to punch in and then punch out.
2. Move to the mark point located at the desired punch-in time.
3. While holding down [AUTO PUNCH], press [NEXT].
4. Without releasing [AUTO PUNCH], press [PREVIOUS].



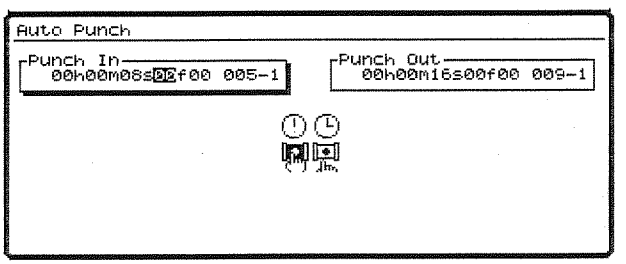
Specifying the Points While the Song Plays Back:

1. Press [PLAY] to begin playback of the song.
2. When you reach the desired punch-in location, hold down [AUTO PUNCH] and press [TAP].
3. Continue holding down [AUTO PUNCH], wait for the desired punch-out location, and then press [TAP] once again.
4. Press [STOP].



Making Fine Adjustments to the Punch-In Segment:

1. Hold down [SHIFT] and press [AUTO PUNCH].



2. The punch-in and punch-out locations appears in the display. Use [◀] and [▶] to move the cursor to the mark point you want to adjust.
   However, if no mark point is stored at the current location, "–h–m–s–f– ——" appears in the display.

At this time, the function buttons work as shown below.

[F1 (In)]: Moves the cursor to the punch-in location.
[F2 (NOW)]: Enters the current time as the punch-in/out point.
[F3 (JUMP)]: Moves the time to the punch-in/out point.
[F4 (Out)]: Moves the cursor to the punch-out location.
[F6 (EXIT)]: Exits the screen.

3. Enter the located point where you wish to change with the TIME/VALUE dial.
4. When you are done making the changes, press [F6 (EXIT)].

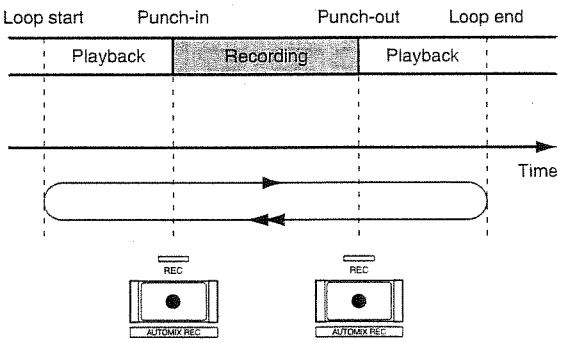
The utility menu screen appears in the display. Alternatively, press [PLAY (DISPLAY)]. Return to Play condition.

Recording Procedure:

1. Hold down [REC] and press the STATUS button for the track you wish to re-record.
2. Press [ZERO] to return to the beginning of the song.
3. Press [PLAY] to begin playback of the song.
At this point, the **performance that has already been recorded** on the track or tracks that you want to re-record is monitored.
4. Press the STATUS buttons again.
The indicator alternately blinks red and orange. Now, confirm that you can hear **source you want recorded to the track** coming from the monitors.
5. During playback of the song, each time the button is pressed, the monitor switches between source and track. Using the input sensitivity knob, adjust the volume of the source so that it matches that of the prerecorded performance.
6. Once you have adjusted the input sensitivity, press [STOP].
7. Press [AUTO PUNCH].
The button indicator lights, and Auto Punch-In Recording is enabled.
8. Move to a previous locate point where you want to re-record.
9. Press [REC] .
10. Press [PLAY] again.
Playback of the song begins.
11. The VS-1680 automatically goes into record mode at the point where the punch-in is set. Start the song or performance now.
12. When you reach the point where the punch-out is set, the VS-1680 automatically returns to playback mode. Press [STOP] to stop the song.
13. Listen to the results of the rerecording. Return to the beginning of the song and press [PLAY].

Repeatedly Recording Over the Same Area (Loop Recording)

You can repeatedly play back a specified area (the loop) and use Auto Punch-In Recording in that area. This is called **Loop Recording**. This is convenient for when you want to check the results immediately after recording, or if you want to record a number of takes of a guitar solo and compare the different takes.

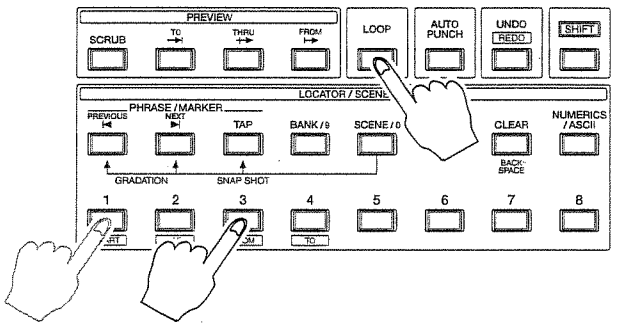


Before you begin recording, specify the begin and end times for the loop. There are three ways to specify the loop times. Use the method appropriate for your situation.

* *To specify the area re-recording (the punch-in point and punch-out point), refer to the previous section "Auto Punch-In."*
* *Make settings so that the loop completely includes the area to be rerecorded (i.e., from the punch-in point to the punch-out point). If the area to be rerecorded is not completely within the loop, recording may not start at the specified location, or may be interrupted in the middle of the area for recording.*

Using Locators:

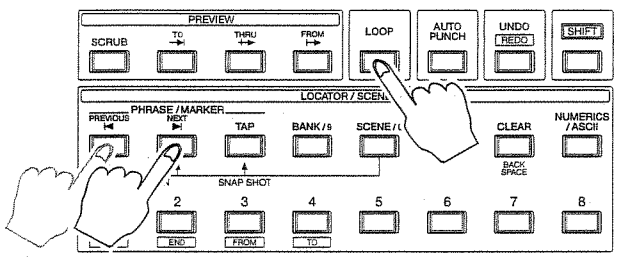
1. First store locate points where you want to begin and end the loop.
2. While holding down [LOOP], press the LOCATOR button for the locate point where you want the loop to begin.
3. Without releasing [LOOP], press the LOCATOR button which specified the end of the loop.



To Use Markers:

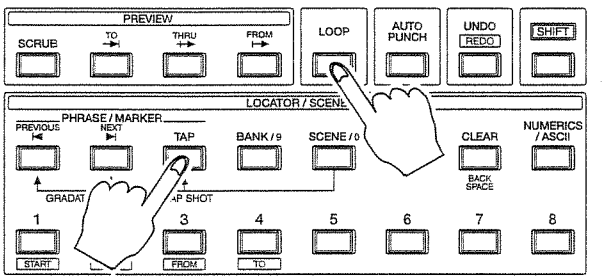
Adjacent mark points can be used to set the beginning and end of the loop.

1. First, set mark points where you want to punch in and punch out.
2. Move to the mark point at the beginning of the loop.
3. While holding down [LOOP], press [NEXT].
4. Without releasing [LOOP], press [PREVIOUS].



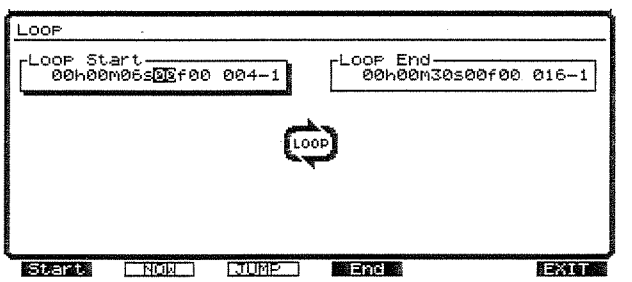
Specifying The Points While the Song Plays Back:

1. Press [PLAY] to begin playback of the song.
2. When you reach the desired location for the beginning of the loop, hold down [LOOP] and press [TAP].
3. Continue holding down [LOOP], and when you reach the desired location for the end of the loop, press [TAP] once again.
4. Press [STOP].



Making Fine Adjustments to the Loop:

1. Hold down [SHIFT] and press [LOOP].



2. The loop start and loop end points appear in the display. Use [◀] and [▶] to move the cursor to the point you want to adjust. However, if no mark point is stored at the current location, "–h–m–s–f– ——" appears in the display.

At this time, the function buttons work as shown below.

[F1 (Start)]: Moves the cursor to the loop start point.

[F2 (NOW)]: Enters the current time as the loop start/end point.

[F3 (JUMP)]: Moves the time to the loop start/end point.

[F4 (End)]: Moves the cursor to the loop end point.

[F6 (EXIT)]: Exits the screen.

3. Enter the mark point you want to adjust with the TIME/VALUE dial.
4. When you are finished making the changes, press [F6 (EXIT)].

The utility menu icon appears in the display. Alternatively, press [PLAY (DISPLAY)]. Return to Play condition.

Recording Procedure:

1. Hold down [REC] and press the STATUS button for the track you wish to re-record.
2. Press [ZERO] to return to the beginning of the song.
3. Press [PLAY] to begin playback of the song.
At this point, the **performance that has already been recorded** on the track or tracks that you want to re-record is monitored.
4. Press the STATUS buttons again.
The indicator alternately blinks red and orange. Now, confirm that you can hear **source you want recorded to the track** coming from the monitors.
5. During playback of the song, each time the button is pressed, the monitor switches between source and track. Using the input sensitivity knob, adjust the volume of the source so that it matches that of the prerecorded performance.
6. Once you have adjusted the input sensitivity, press [STOP].
7. Press [LOOP].
The button indicator lights, and Auto Punch-In Recording is enabled.
8. Press [AUTO PUNCH].
The button indicator lights. You are now set to do Loop Recording.
9. Press [PLAY].
Playback of the song begins. The song is played back until the end of the loop is reached, playback will return to the loop start point, and repeat.
10. Press [REC] where you want to re-record. The VS-1680 will then automatically go into record mode at the point where the punch-in is set. Start the song or performance then.
11. When you reach the point where the punch-in is set, the VS-1680 automatically returns to playback mode. Playback continues until the end of the loop, and the loop repeats from the start point once again.
12. With the next playback of the loop, listen to what you recorded to check the result. If the recording hasn't turned out as you intended, repeat Steps 10 and 11.
13. Press [STOP] to stop the song.
14. Listen to the results of the recording once more. Press [LOOP].
The button indicator goes off.
15. Press [AUTO PUNCH].
The button indicator goes off.
16. Return to the beginning of the song and press [PLAY].

Recording to Other Tracks (Overdubbing)

In multi-track recording, the normal process is to record new tracks while listening to the performance on previously recorded tracks played back. This is referred to as "overdubbing."

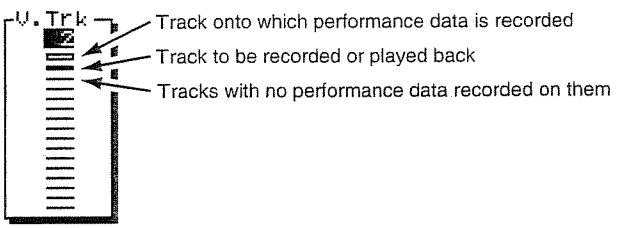
1. Select the tracks you want to play back. While holding down [STOP], press the STATUS buttons for the tracks you want to play back (i.e., that you want to hear while overdubbing).
The button indicators light green.
2. Select the tracks to which you want to record. While holding down [REC], press the STATUS buttons for the tracks to which you want to record.
The button indicators blink red.
3. Select the sources to record to the tracks. While holding down the STATUS buttons for the tracks you want to record to, press the SELECT buttons for the input channels whose sources you want assigned to the tracks.
The button indicators blink.
4. Now you are ready for overdubbing. Follow the Steps 4–17 of "Recording to the Tracks" (p. 61), to record and then check the content.

Recording on V-Track 2

The VS-1680 features 16 tracks, each of which contains 16 auxiliary tracks. These subsidiary tracks are referred to as "V-tracks." By using all of these tracks to their full potential, you can create recordings of up to 256 (16 x 16) tracks.

1. Press the SELECT button for the track whose V-track you wish to switch.
The button indicator lights. The Track Mixer screen appears in the display.
2. Press [F5 (V.Trk)]. If "V.Trk" does not appear in [F5], first press [PAGE] until "V.Trk" is displayed, and then press [F5 (V.Trk)].

3. Using the TIME/VALUE dial to set the V-track.



4. Press [PLAY (DISPLAY)].
Return to Play condition.

5. As described in "Recording to the Tracks" (p. 61), record and check the contents.

Using Effects

If optional VS8F-2 effect expansion boards are installed in the VS-1680, up to 4 high-quality stereo effects will be available for your use. If you do have the VS8F-2 installed in your VS-1680, try adding some effects.

* *For instructions on how to install the VS8F-2, please read "Installing the Effects Expansion Board" (Quick Start p. 57).*

Applying Effects to the Playback

When playing back a song, you can have effects such as reverb and delay applied to the sound. Here is an example of how to hear a song played back using the VS8F-2 to add reverb to Track 8.

Select an Effect:

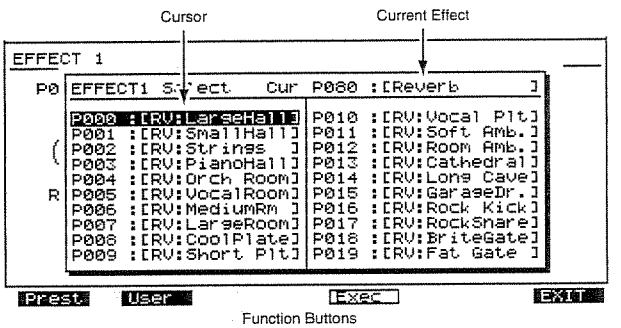
1. Hold down [SHIFT] and press [F3 (EFFECT A)].
The Effect A menu appears in the display.

> **If "No Effect Board" Appears in the Display**
> This indicates there is no VS8F-2 installed. In this case, you cannot use the internal effects.
> If the message appears even when a VS8F-2 is installed, it indicates that the effect expansion board has not being recognized properly.
> Perform the shutdown procedure and turn the power off as described in "Turning Off the Power" (p. 32), then reinstall the VS8F-2 correctly.

2. Press [F1 (EFX1)].
The Effects1 settings screen appears in the display.

3. Select the effect. Press [F2 (Sel)].
The effects list appears in the display.

4. Use the TIME/VALUE dial to move the cursor to the effect you wish to use. Here, select "P000 RV:LargeHall."
At this point, the function buttons work as shown below.



[F1 (Preset)]: Displays the Preset patch list.
[F2 (User)]: Displays the User patch list.
[F4 (Exec)]: Exits the screen after selecting the effect.
[F6 (EXIT)]: Exits the screen without selecting the effect.

5. After selecting the effect, press [F4 (Exec)].
The Effects1 settings screen reappears in the display.

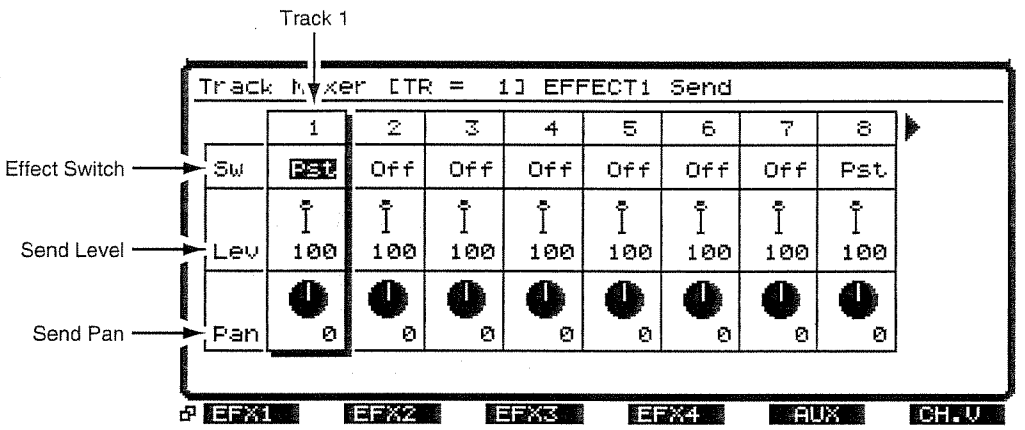
Specify the Tracks for Playback:

6. Hold down [STOP] and press the STATUS button for the track you want played back.
The button indicator lights green.

7. Press the SELECT button for the track to which you want to apply reverb.
The button indicator lights, and the Track Mixer screen appears in the display.

8. Press [F1 (EFX1)]. If "EFX1" does not appear in [F1], first press [PAGE] until "EFX1" is displayed, then press [F1 (EFX1)].

9. Press [F6 (PRM.V)].
The effect settings status for all tracks can be viewed.



10. Press [▲], [▼], [◀], and [▶] to move the cursor. Use the TIME/VALUE dial to set the effect switch, send level, and pan settings for each track channel.

Sw (Effect Switch)

This sets how the signal is sent to the EFFECT bus. In this case, select "Pst."

- **Off:** The signal is not sent.
- **Pre:** The sound before passing through the channel fader is sent.
- **Pst:** The sound after passing through the channel fader is sent.

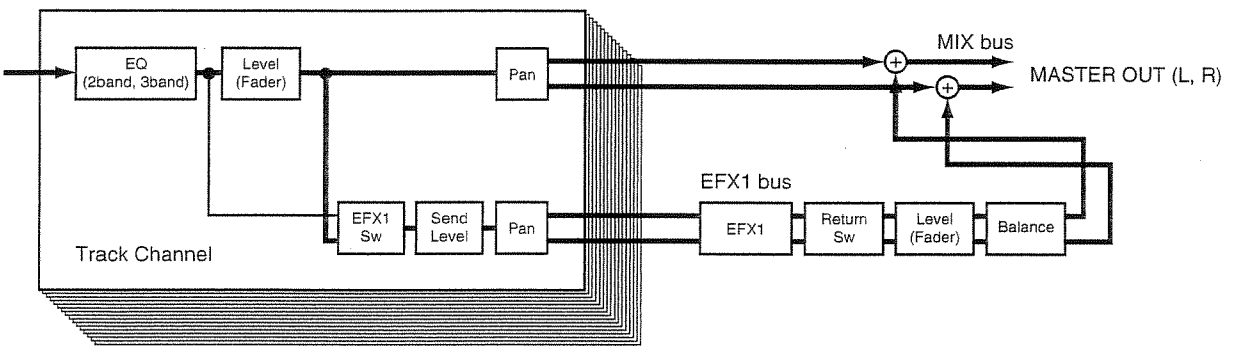
Lev (Send Level)

This adjusts the level (0–127) of the signal sent to the EFFECT bus.

Pan (Send Pan)

This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT bus.

This will cause the reverb to be applied. With this section, the signal flow will be follows.



11. Press [PLAY (DISPLAY)]
Return to Play condition. Play back the song and check to see that the effect is being applied to the sound.

Applying Effects While Recording (Send/Return)

Now we will see how to add affects to the source at the INPUT 8 jack, and then record the direct sound and the sound with effects to Track 8. This is convenient when you want to record vocals with reverb.

Select the Effect:

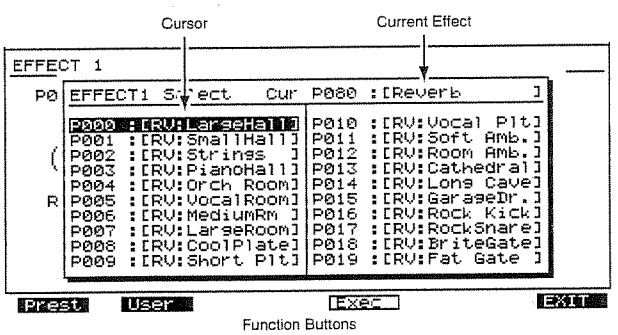
1. Hold down [SHIFT] and press [F3 (EFFECT A)].
The Effect A menu appears in the display.

> **If "No Effect Board" Appears in the Display**
> This indicates there is no VS8F-2 installed. In this case, you cannot use the internal effects.
> If the message appears even when a VS8F-2 is installed, it indicates that the effect expansion board has not being recognized properly.
> Perform the shutdown procedure and turn the power off as described in "Turning Off the Power" (p. 32), then reinstall the VS8F-2 correctly.

2. Press [F1 (EFX1)].
The Effects1 settings screen appears in the display.

3. Select the effect. Press [F2 (Sel)].
The effects list appears in the display.

4. Use the TIME/VALUE dial to move the cursor to the effect you wish to use. Here, select "P000 RV:LargeHall."
At this point, the function buttons work as shown below.



[F1 (Preset)]: Displays the Preset patch list.
[F2 (User)]: Displays the User patch list.
[F4 (Exec)]: Exits the screen after selecting the effect.
[F6 (EXIT)]: Exits the screen without selecting the effect.

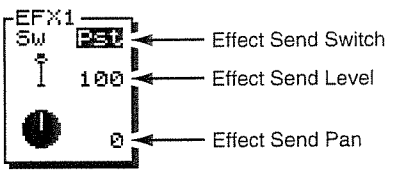
5. After selecting the effect, press [F4 (Exec)].
The Effects1 settings screen reappears in the display.

6. Press [PLAY (DISPLAY)]
Return to Play condition.

Specify the Input Channel to Which the Effect is to be Applied:

7. Press the Input Channel 8 SELECT button for the track to which you want to apply reverb.
The button indicator lights, and the Input Mixer screen appears in the display.

8. Press [F1 (EFX1)]. If "EFX1" does not appear in [F1], first press [PAGE] until "EFX1" is displayed, then press [F1 (EFX1)].



9. Press [▲] and [▼] to move the cursor. Use the TIME/VALUE dial to set the effect switch, send level, and pan settings for each track channel.

Sw (Effect Switch)

This sets how the signal is sent to the EFFECT bus. In this case, select "Pst."

Off: The signal is not sent.
Pre: The sound before passing through the channel fader is sent.
Pst: The sound after passing through the channel fader is sent.

Lev (Send Level)

This adjusts the level of the signal (0–127) sent to the EFFECT bus.

Pan (Send Pan)

This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT bus.

10. Hold down [REC] and press the Track 8 STATUS button.
The button indicator blinks red.

11. While holding down the Track 8 STATUS button, press the Input Channel 8 SELECT button and [EFFECT1 RTN] for Input Channel.
The button indicator blinks. At this point, the mixer is set up so that both the direct sound and the sound with effects can be recorded to Track 8.

12. Record and check the content as described in "Recording to the Tracks" (p. 61).

Applying Effects While Recording (Insert)

Many recordings of electric guitar, vocals, or the like contain the insertion of effects such as "Guitar Multi" and "Vocal Multi."
Here we will explain how you can connect an electric guitar to the GUITAR (Hi-Z) jack, add a stereo effect using the Guitar Multi effect, and record it to Tracks 9/10.

Select the Effect:

1. Connect your electric guitar to the GUITAR (Hi-Z) jack.

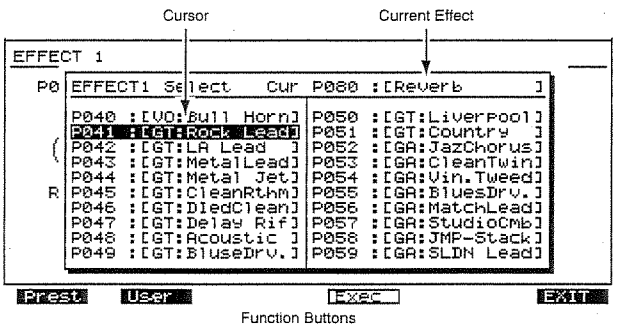
2. Hold down [SHIFT] and press [F3 (EFFECT A)].
The Effect A menu appears in the display.

> **If "No Effect Board" Appears in the Display**
> This indicates there is no VS8F-2 installed. In this case, you cannot use the internal effects.
> If the message appears even when a VS8F-2 is installed, it indicates that the effect expansion board has not being recognized properly.
> Perform the shutdown procedure and turn the power off as described in "Turning Off the Power" (p. 32), then reinstall the VS8F-2 correctly.

3. Press [F1 (EFX1)].
The Effects1 settings screen appears in the display.

4. Select the effect. Press [F2 (Sel)].
The effects list appears in the display.

5. Use the TIME/VALUE dial to move the cursor to the effect you wish to use. Here, let's select "P051 GT:Country."
The function buttons now work as shown below.



[F1 (Preset)]: Displays the Preset patch list.
[F2 (User)]: Displays the User patch list.
[F4 (Exec)]: Exits the screen after selecting the effect.
[F6 (EXIT)]: Exits the screen without selecting the effect.

6. After selecting the effect, press [F4 (Exec)].
The Effects1 settings screen reappears in the display.

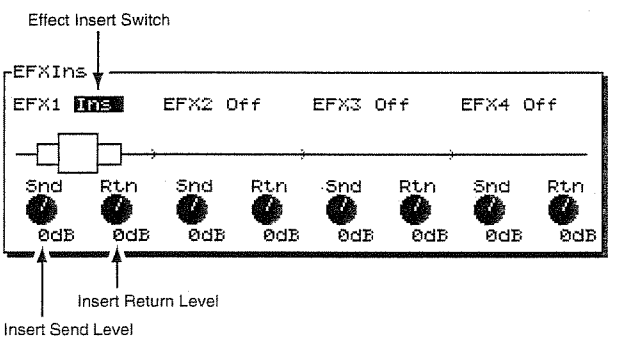
7. Press [PLAY (DISPLAY)].
Return to Play condition.

Specify the Input Channel to Which the Effect is to be Applied:

8. Press the Input Channel 8 SELECT button.
The Input Mixer screen appears in the display.

9. Press [F1 (Ef1In)]. If "Ef1In" does not appear in [F1], first press [PAGE] until "Ef1In" is displayed, then press [F1 (Ef1In)].

10. Press [YES].



11. Press [▲], [▼], [◀], and [▶] to move the cursor. Use the TIME/VALUE dial to set the effect switch, send level, and pan settings for Input Channel 8.

(Switch)

This sets how the Insert functions. In this case, select "InsR."
Off: There is no Insert.
Ins: Inserts in both channels of the stereo effect.
InsL: Inserts in the left channel of the stereo effect.
InsR: Inserts in the right channel of the stereo effect.
InsS: Inserts in the left and right channels of the stereo effect in series.

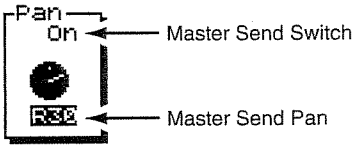
Snd (Insert Send Level)

This adjusts the level of the signal (-42–6 dB) sent to the Insert effect.

Rtn (Insert Return Level)

This adjusts the level of the signal (-42–6 dB) returned from the Insert effect.

12. Press [PAGE] until "Pan" is displayed in [F1], then press [F1 (Pan)].



13. Press [▲] and [▼] to move the cursor. With the TIME/VALUE dial, set the Switch and Pan settings for Input Channel 8.

(Master Send Switch)

When this is set to "On," the source from each input channel, rather than being assigned to the recording bus, is sent directly to the MIX bus. Set this to "On" when, for example, you simply want to mix the inputs without recording them. However, the sources that are assigned to the RECORDING bus are disabled.

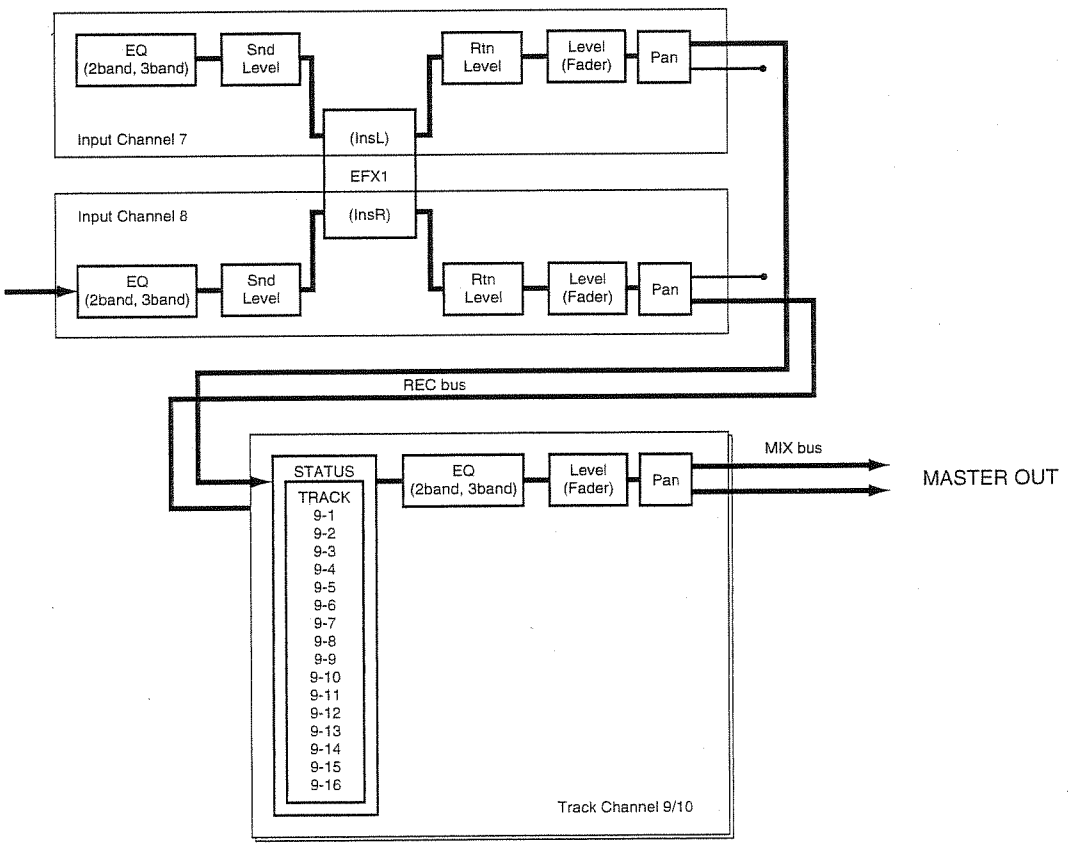
(Master Send Pan)

This adjusts the pan setting (L63–0–R63) of the signal sent to the MIX bus and the RECORDING bus. For now select "R63."

14. Press the Input Channel 7 SELECT button.

15. Repeat the Steps 9–13 to make the settings for Input Channel 7 as same as those for Input Channel 8. However, select "InsL" and "L63" for Steps 11 and 13, respectively.

16. Now the setup is completed. In this case, the signal flow will be as the follows.



17. Hold down [REC] and press the Track 9/10 STATUS button.
The button indicator blinks red.

18. Hold down the Track 9/10 STATUS button and input channel 7 and 8 SELECT buttons.

19. Record and check the content as described in "Recording to the Tracks" (p. 61).

Recording Digital Signals

With the VS-1680, you can record the digital signals output by CD players, DAT and MD recorders, Roland VS-880, and other digital audio devices as is.

* *The VS-1680's digital interface conforms to S/P DIF. When recording digital signals, be sure to digital audio devices conforming to the same standards.*

? **S/P DIF** (Appendices p. 64)

Items Necessary for Digital Recording

- VS-1680 (1)
- CD player, DAT and MD recorder, or other digital audio device or devices
- Digital connector cable (coaxial or optical)

Make the Digital Connections

Connect the digital output connector of your audio device with the VS-1680's DIGITAL IN connector.
DIGITAL IN1 is a coaxial connector, DIGITAL IN2 an optical connector. Use the appropriate connector for your audio device.
DIGITAL IN1 (coaxial) and DIGITAL IN2 (optical) cannot be used simultaneously. Select one of the connectors for use.

Match the Sample Rates

It can record the digital signals when the sample rate of the song is set to match the sample rate of the input source.
The song created when a disk drive is initialized will have a sample rate of 44.1 kHz. If the sample rate of the input source is other than 44.1 kHz, create a new song with that sample rate (p. 58). Then, if you wish to create original audio CDs, select that sample rate for 44.1 kHz (p. 58).

In Order to Make a Digital Connection with Your CD Player

At the time of purchase, the VS-1680 is not able to record the output of CD players via its DIGITAL IN connectors. Perform the following procedure when you wish to make a digital connection with your CD player.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBAL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "CD Digital Record."

4. With the TIME/VALUE dial, select "On."

5. A message concerning copyright appears in the display. After reading this carefully, press [ENTER (YES)].
This message also appears in the back cover of this Manual.

6. Continuing, a message with the licensing conditions is displayed. After reading this carefully, if you agree to the conditions, press [ENTER (YES)].
This message also appears in the back cover of this Manual. From now on, you can make a digital connection with CD players. If you do not agree to the conditions, then press [NO].

7. Press [PLAY (DISPLAY)].
Return to Play condition.

To Prevent Digital Connections with CD Players

Use the following procedure when you want to prevent digital connections with CD players.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBAL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].
3. Press [▲], [▼], [◀], and [▶] to move the cursor to "CD Digital Record."
4. Rotate the TIME/VALUE dial to select "Off."
5. Press [PLAY (DISPLAY)].

Return to Play condition.

Select the Master Clock

Synchronize the VS-1680's reference clock (the master clock) with the digital signal from the digital audio device.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, press [F1 (SYSPM)].
3. Pressing [▲], [▼], [◀], and [▶] to move the cursor to "MasterClk."

If "MasterClk is not displayed, then press [F1 (Prm 1)].

MasterClk (Master Clock)

This sets the VS-1680's reference clock.

DIGIN1: Based on the digital signal received from the DIGITAL IN 1 connector (coaxial).

INT: Based on the VS-1680's reference clock.

DIGIN2: Based on the digital signal received from the DIGITAL IN 2 connector (optical).

4. Select "DIGIN1" or "DIGIN2" with the TIME/VALUE dial.
5. Press [PLAY (DISPLAY)].

Return to Play condition.

If "Digital In Lock" is Displayed

This indicates that the reference clock for the sample rate is set by the digital signal from the DIGITAL IN connector. You can record using the digital connection.

If "Digital In Unlock" is Displayed

This indicates that no digital signal is being received from the DIGITAL IN connector. Alternatively, it may indicate that the sample rate selected for the song does not match the sample rate of the digital device connected to the DIGITAL IN connector. In this state, you cannot record using the digital connection.

Adjusting the Tone (Equalizer)

A two-band (low, high) or three-band (low, mid, high) parametric equalizer is provided for each channel. First make equalizer adjustments separately for each channel. If you have recorded any stereo pairs, be sure that the same settings are made for both tracks. Then, while paying attention to the overall balance, make final adjustments for equalizer, pan, and volume level for each channel.

* *If you adjust the equalizer while listening to the sound, you may notice a clicking noise. This is not a malfunction. If the noise is objectionable, make adjustments while the sound is not playing.*

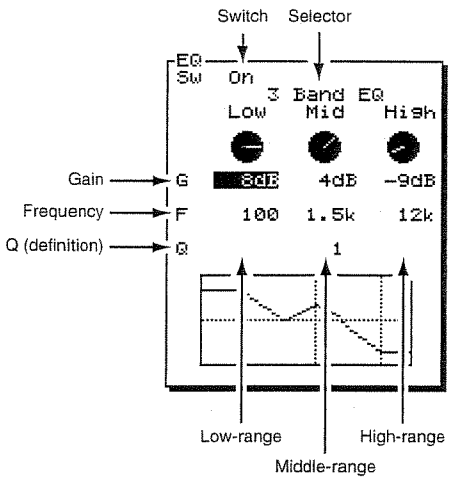
1. Press the SELECT button for the track whose equalizer setting you wish to adjust.

The button indicator lights, and the Track Mixer screen appears in the display.

2. Press [F2 (Low)]. If "Low" does not appear in [F2], first press [PAGE] until "Low" is displayed, and then press [F2 (Low)].
3. Press [YES].

4. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial.

The status of the equalizer (curve) appears in the display.



Sw (Equalizer Switch)

Enables and disables the equalizer.

(Equalizer Select)

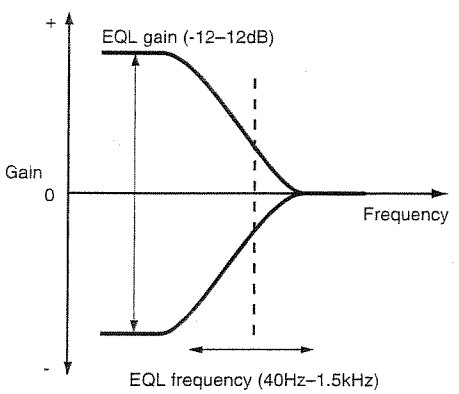
This setting selects the equalizer to be used.

2 Band EQ: 2-band equalizer

3 Band EQ: 3-band equalizer

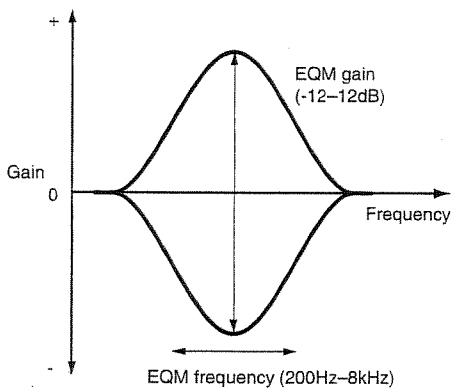
Low

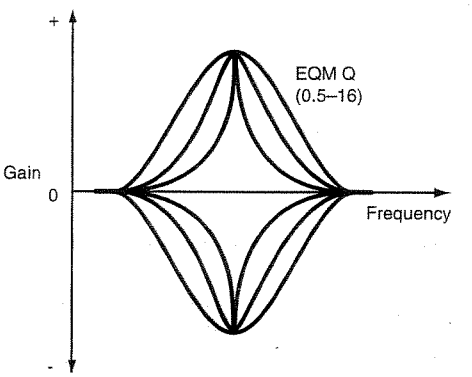
This adjusts the gain (-12–12 dB) and the center frequency (40 Hz–1.5 kHz) of the low-range (shelving) equalizer.



Mid

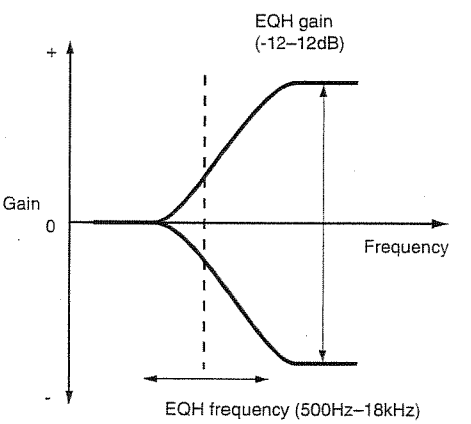
This adjusts the gain (-12–12 dB), center frequency (200 Hz–8 kHz), and Q (definition: 0.5–16) of the mid-range (peaking) equalizer. You cannot use this with the 2-band equalizer.





High

This adjusts the gain (-12–12 dB) and the center frequency (500 Hz–18 kHz) of the high-range (shelving) equalizer.



5. Repeat Steps 1–4 if you wish to make adjustments to other equalizers.

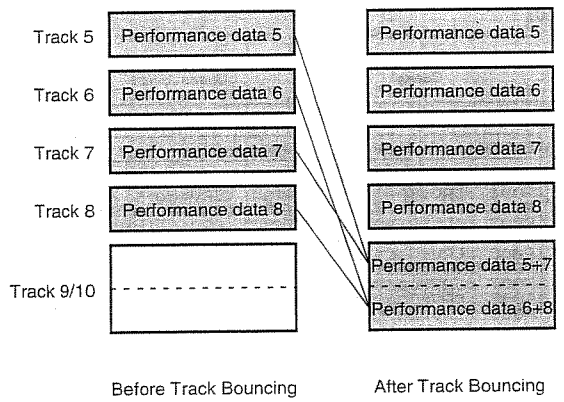
6. When you are finished making the adjustments, press [PLAY (DISPLAY)].

Return to Play condition. If necessary, save the song (p. 63).

* *The 3-band (low, mid, high) equalizer can be used on channel faders in only one mixer mode — either the Track mixer or Input mixer — at a time. You cannot use the equalizer in both mixers simultaneously on the same channel. For example, if you are using the 3-band equalizer on Track Channel 1, then you cannot use it on Input Channel 1.*

Combining the Contents of Tracks (Track Bouncing)

You can mix the performances recorded on two or more tracks and rerecord them onto a different empty track. This operation is known as **track bouncing**. It is a convenient technique to use when you have run out of free tracks.
In this section, we will mix the performances recorded on tracks 5–8, and rerecord the result in stereo on track 9/10.



* *Volume, pan, equalizer, effects, and other settings cannot be adjusted on tracks mixed with track bouncing. Do not use track bouncing with tracks to which you want to apply the equalizer and effects separately.*

Specify the Tracks for Playback and Recording:

1. While pressing [STOP], press the STATUS buttons for Tracks 5–8.

The button indicators light green.

2. Press the STATUS button for Track 9/10, so that the button indicators light orange.

3. While pressing the STATUS button for Track 9/10, press the SELECT buttons on Track Channels 5–8.

The button indicators blink.

4. Usually, the source entering the INPUT1–2 jack is also assigned for recording on Track 9/10. When you want to record only the material on Tracks 5–8, then while pressing the STATUS button for Track 9/10, press the Input Channel 1–2 SELECT button.

The button indicator goes off.

5. Now Tracks 5–8 can be monitored on Track Channel 9/10.

Adjust the Pan for Each Track:

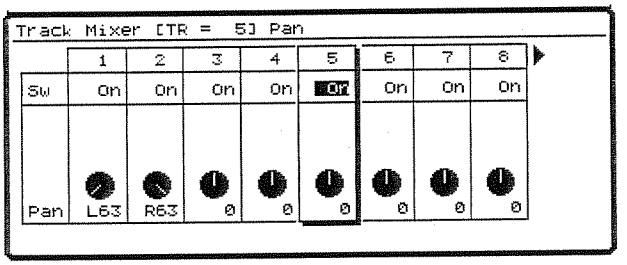
6. Press the Track Channel 5 SELECT button.

The button indicator lights, and the Track Mixer screen appears in the display.

7. Press [F1 (Pan)]. If "Pan" does not appear in [F1], first press [PAGE] until "Pan" is displayed, and then press [F1 (Pan)].

8. Press [F6 (PRM.V)].

The pan settings for all tracks can be viewed.



9. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to set the switch and pan settings for each track.

Sw (Master Send Switch)

When this is set to "On," the source from each input channel, rather than being assigned to the RECORDING bus, is sent directly to the MIX bus. Set this to "On" when, for example, you simply want to mix the inputs without recording them. However, the sources that are assigned to the RECORDING bus are disabled.

Pan (Master Send Pan)

This adjusts the pan setting (L63–0–R63) of the signal sent to the MIX bus or the RECORDING bus.

Adjust the Volume Levels for Each Track:

10. Press [PLAY (DISPLAY)].
Return to Play condition.

11. Press [FADER] so that the TR side indicator lights.

12. Press [PLAY] to begin playback of the song.

13. Adjust the volume balance with the faders for Channels 5–8. The presently monitored sound (volume levels, pan) will be recorded to Track 9/10 just as you hear it. You can raise the volume as much as possible without causing distortion.

14. Press [STOP] to stop playback of the song.

Record and Check the Content:

15. Press [ZERO] to return to the beginning of the song.

16. While pressing [REC], press the STATUS button for Track 9/10.
The button indicator blinks red.

17. Press [REC].
The button indicator blinks red.

18. Press [PLAY].
The button indicator lights green, and starts recording.

19. When recording is finished, press [STOP].
This stops the song.

20. Check the content of the recording. Press [ZERO] to return to the beginning of the song.

21. Mute (sound is prevented from playing) Tracks 5–8. Press the STATUS buttons for Tracks 5–8.
The button indicators go off.

22. Press [PLAY] to begin playback of the song.
Use the channel fader 9/10 and the master fader to adjust the volume to a comfortable level.

Applying Reverb While Track Bouncing

Sometimes you may want to record previously-recorded tracks to another track while apply the effects to them. Here is how to add reverb to Tracks 5–8 while bouncing these tracks to Track 9/10. This can be convenient when you want to add spatial effects such as reverb and delay to each track while mixing down.

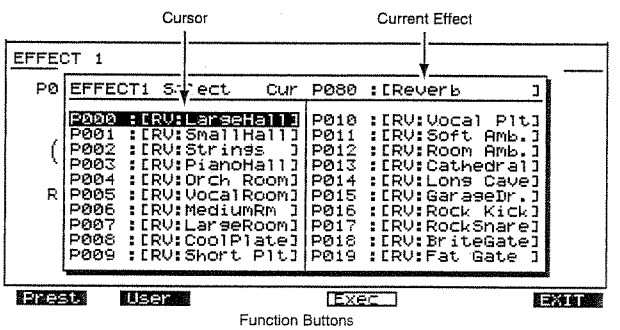
Select the Effect:

1. Hold down [SHIFT] and press [F3 (EFFECT A)].
The Effect A menu is displayed.

2. Press [F1 (EFX1)].

3. Select an effect. Press [F2 (Sel)]. The effects list appears in the display.

4. Use the TIME/VALUE dial to move the cursor to the effect you wish to use. Here, let's select "P000 RV:LargeHall."
At this time, the function buttons work as shown below.



[F1 (Preset)]: Displays the Preset patch list.
[F2 (User)]: Displays the User patch list.
[F4 (Exec)]: Exits the screen after selecting the effect.
[F6 (EXIT)]: Exits the screen without selecting the effect.

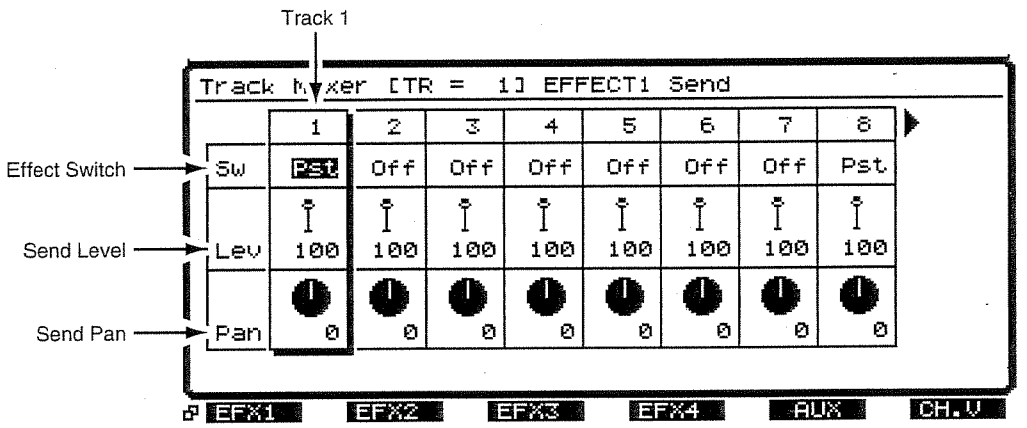
5. After selecting the effect, press [F4 (Exec)].

Specify the Track to Which the Effect is to be Applied:

6. Press the Track Channel 5 SELECT button.
The button indicator lights, and the Track Mixer screen appears in the display.

7. Press [F1 (EFX1)]. If "EFX1" does not appear in [F1], first press [PAGE] until "EFX1" is displayed, then press [F1 (EFX1)].

8. Press [F6 (PRM.V)].
The effects settings status for all tracks can be viewed.



9. Press [▲], [▼], [◀], and [▶] to move the cursor. Use the TIME/VALUE dial to make the effect switch, send level, and pan settings for each track channel.

Sw (Effect Switch)

This sets how the signal is sent to the EFFECT bus. In this case, select "Pst."

- **Off:** The signal is not sent.
- **Pre:** The sound before passing through the channel fader is sent.
- **Pst:** The sound after passing through the channel fader is sent.

Lev (Send Level)

This adjusts the level of the signal (0–127) sent to the EFFECT bus.

Pan (Send Pan)

This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT bus.

Specify the Tracks for Playback and Recording:

10. Hold down [STOP] and press the STATUS buttons for Tracks 5–8.
The button indicators light green.

11. Press the STATUS button for Track 9/10, so that the button indicator light orange.

12. Hold down the STATUS button for Track 9/10 and press the Track Channel SELECT buttons for Tracks 5–8.
The button indicators start blinking.

13. Normally, the signal received via the INPUT 1 jack is also assigned for recording on Track 9/10. When you wish to rerecord only Tracks 5–8, then while holding down the Track 9/10 STATUS button, press the INPUT Channel 1 SELECT button.

The button indicator goes off.

14. Now you have set it up so that you can monitor Tracks 5–8 and Effect Return on Track Channel 9/10. Press [PLAY (DISPLAY)].

Return to Play condition.

Record and Check the Content:

15. Carry out track bouncing by following the procedure described in "Combining the Contents of Tracks" (p. 77).

Creating a Master Tape

When you finish recording a song, adjust the balance of each track (equalizer, pan, and volume level), and using your stereo recorder, record a two-channel stereo master mix to a stereo cassette, DAT, MD, or other media. This process is called **mixdown**.

Prepare for Mixdown:

1. Hold down [STOP] and press the STATUS buttons for all tracks you want to have mixed down.

The indicators light green.

2. Press [FADER], so that the TR (Track) indicator to light.

3. Use the channel faders to adjust the volume of each track. First determine the volume of the song's main tracks (usually the vocals or perhaps a guitar melody). Then, set levels for the other tracks. It is a good idea to create a balance in which the volume of the other tracks is lower than the main tracks. Afterwards, make final adjustments to the pan and equalizer settings for each track as you listen to the overall mix.

To Record to a Cassette Tape

1. Connect the VS-1680's MASTER jacks to the input jacks of your cassette recorder.

2. Adjust the recording levels for the cassette recorder. Adjust the output volume with the VS-1680's master fader, making it as high as possible without causing any input overload on the recorder. Set the recording levels on the cassette recorder as high as possible before causing distortion, with the level meter moving a lot.

3. Press [ZERO] on the VS-1680.

4. Put the cassette recorder in record mode.

5. Press [PLAY] on the VS-1680 to begin playback of the song.

If you want to fade in or out, use the VS-1680's master fader for this.

6. When you have finished recording, stop the cassette recorder.

7. Press [STOP] on the VS-1680.

8. Listen to the recorded result. Rewind the tape and play back the recording.

Recording with DAT and MD Recorders

The VS-1680 features two types of digital out connectors, DIGITAL OUT1 (coaxial) and DIGITAL OUT2 (optical), either of which is ready to use. At the factory settings, these connectors are set to output the same sound as the MASTER jacks.

1. Connect the digital input connector of your digital recorder with the VS-1680's DIGITAL OUT connector.

2. Set your digital recorder to enable it to record digital signals. Match the recorder's sample rate to that of song recorded on the VS-1680 (normally at 44.1 kHz). Many digital recorders can determine the sample rate automatically. Match the rates manually only when special settings are necessary.

* *There are some DAT recorders that cannot record digital signals at 44.1 kHz. If such instances, change to an analog connection and set the recorder to enable it to record analog signals.*

3. Press [ZERO] on the VS-1680.

4. Put the digital recorder in record mode.

5. Press [PLAY] on the VS-1680.

Playback of the song begins. If you want to fade in or out, use the VS-1680's master fader for this.

6. When you have finished recording, stop the cassette recorder.

7. Press [STOP] on the VS-1680.

8. Listen to the recorded result. Rewind the tape and play back the recording.

To Prohibit Digital Copying

When mixing down from the VS-1680 to a DAT recorder or similar recorder via a digital connection, you can prevent digital copying of the tape to which the mixdown has been recorded.
For example, you are allowed to make only one copy of a regular audio CD onto a DAT tape. Once the digital copy has been made to the DAT tape, you cannot make further copies onto other digital devices using digital connections. This function makes DAT tapes copied digitally from the VS-1680 behave as those copied digitally from CDs.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Using [▲], [▼], [◀], and [▶], select "Digital Copy Protect."

Digital Copy Protect (Digital Copy Protect Switch)

This setting determines whether or not the digitally mixed down tape can be later copied digitally.
Off: Digital copying is not prohibited.
On: Digital copying is prohibited.

4. Rotate the TIME/VALUE dial. If you want to prohibit digital copying, the set this to "On."

5. Press [PLAY (DISPLAY)].
Returns to Play condition.
With this procedure, you have made it so that your digitally mixed master tapes cannot be later copied digitally onto DAT tapes or similar digital media.

* *Some DAT recorders do not conform to SCMS standards or cannot be connected digitally to CD players. If you are using such a DAT recorder, then if you set the Digital Protect Switch to "On," the digital output from the VS-1680 cannot be copied to the DAT recorder. In such instances, set the Digital Protect Switch to "Off."*

? **SCMS** (Appendices p. 64)

Protecting Songs (Song Protect)

The possibility that a performance saved to the disk may still be mistakenly overwritten (recorded over), or that the song itself may be accidentally deleted has been considered. You can protect songs from being rewritten in situations such as these. The function is called **Song Protect**.

Turning on Song Protect disables the following operations.
- Recording
- Undo (and Redo)
- Song Name, Song Optimize, Song Arrange, Song Split, and Song Combine
- Track Edit and Phrase Edit
- Recording to Sync Tracks
- Creating Tempo Maps
- Song Store

About Effective Use

Song Protect performs the same function as the protect tab or switch on floppy disks and magneto-optical disks. Thus, even if Song Protect is turned on, you can still store locate points and mark points, and carry out operations such as changing Scenes. However, when you try to save the work you have done, "Song Protected" appears in the display, and you are prevented from continuing any further with the save. However, when you remove Song Protect, any settings made when Song Protect was on are lost.
After you have finished all work for the day, turn on Song Protect immediately before shutting off the power to the VS-1680. Furthermore, right after turning on the power to the VS-1680 at the beginning the day's operations, you should immediately turn off Song Protect.

Protecting Performances

1. Make the current song the one to which you want to apply Song Protect.
2. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon appears in the display.

3. Press [F4 (PROTC)]. If "PROTC" does not appear in [F4], first press [PAGE] until "PROTC" is displayed, and then press [F4(PROTC)].
4. "Song Protect Off → On, Execute?" appears in the display. Press [F4 (Exec)].
5. A confirmation message appears in the display. Press [YES].
6. "STORE Current?" (Store the current song?) appears in the display. If you wish to have Song Protect applied to the song after it is saved, press [YES]; if not, then press [NO].
7. After the Protect is applied, "--- Complete ---" appears in the display. Press [PLAY (DISPLAY)].

Return to Play condition.

To Remove Song Protect

1. Select the song from which you currently want to remove the protect function.
2. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon appears in the display.

3. Press [F4 (PROTC)]. If "PROTC" does not appear in [F4], first press [PAGE] until "PROTC" is displayed, and then press [F4 (PROTC)].
4. The message "Song Protect On → Off, Execute?" appears in the display. Press [F4 (Exec)].
5. A confirmation message appears in the display. Press [YES].
6. When the protect function is removed, "--- Complete ---" appears in the display. Press [PLAY (DISPLAY)].

Return to Play condition.

Chapter 4 Editing a Recorded Performance (Track Editing)

This chapter explains the content and procedures for editing sound that has been recorded. Please read this chapter to gain an understanding of the concepts of "editing" described in this section.

About Editing Operations

On a tape recorder, in order to modify a performance that has been recorded you have to erase the performance which you recorded previously. Additionally, if you wish to change the composition of a song, you must re-record it from the beginning, or use scissors and tape to splice sections or the recording. In either case, with the tape itself subject to handling, it can never be returned to its original condition. This type of editing is known as **destructive editing**.
Compare with a tape recorder, with digital disk recording, since copying data has negligible effect on the sound, you can copy the original data before editing and back it up. It is also easy to copy parts of the data to different locations, or to erase specified portions of the data (Track Edit). Furthermore, even if you make a mistake during Punch-In Recording or Track Bouncing, you can restore data to its condition any number of steps before the edit, without the edited content being deleted (Undo function). Editing of this type which allows the original data to be recovered is known as **non-destructive editing**.

Track Edit

To edit the sound, you will need to specify the track or V-track and the location where you wish to edit. First press [PLAY (DISPLAY)], and begin each operation from Play condition.

How to Specify the Range (Locations) You Want to Edit

The three ways to specify the range (locations) you want to edit are shown below. Use the one appropriate for your situation.

Using the TIME/VALUE Dial

Press [▲], [▼], [◀], and [▶] to move the cursor to the location where you want to make settings, then rotate the TIME/VALUE dial.

Using the Function Buttons

Press [▲], [▼], [◀], and [▶] to move the cursor to the location where you want to make settings, then press [F2 (NOW)]. The current time is directly input to the location where you want to set.

Using the LOCATOR Buttons

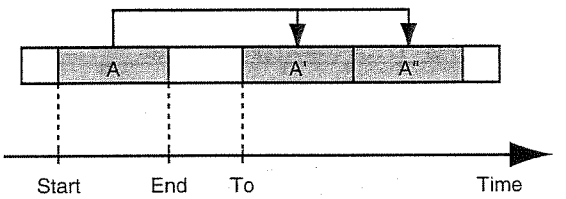
Hold down [SHIFT] and press the LOCATOR buttons ([1]–[4]). The current time corresponding to the button pressed is input directly to the location where you want to make settings.

[SHIFT] + [START (1)]: Start point
[SHIFT] + [END (2)]: End point
[SHIFT] + [FROM (3)]: From point
[SHIFT] + [TO (4)]: To point

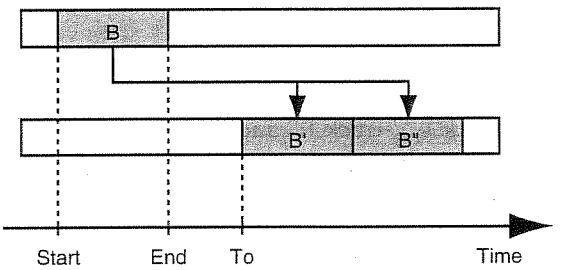
Repeating Performance Data (Track Copy)

This operation copies the playback data of a specified area to another location. For example, this is convenient when you play the same chorus both at the beginning and end of a song.

Example 1: Copying twice to the same track



Example 2: Copying twice to a different track

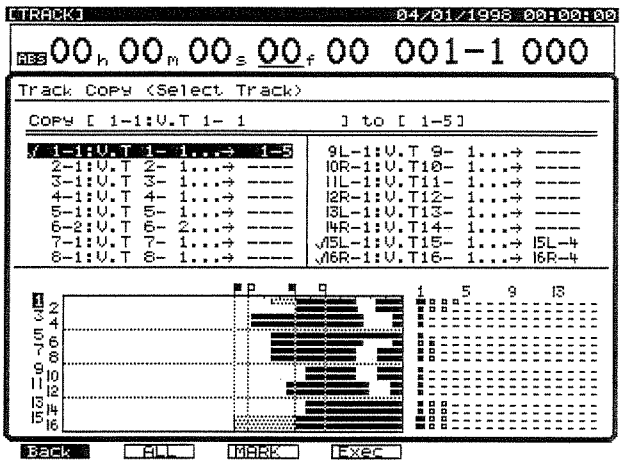


* *Set the length of the data to be copied so that it is greater than 0.5 seconds. With data shorter than 0.5 seconds, even though it can be copied, the sound will not play back.*

1. You can use Track Copy with the tracks that are currently audible. Select the V-track that contains the copy source playback data, and prepare that data for playback.
2. Hold down [SHIFT] and press [F2 (TRACK)].
3. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.
4. Press [F2 (Copy)]. If "Copy" does not appear in [F2], first press [PAGE] until "Copy" is displayed, and then press [F2 (Copy)].
5. Press [F1 (SelTr)].
6. Press the track channel SELECT button for the copy source track.

The button indicator lights.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track you want to copy, and then press [F3 (MARK)] or [YES].

This copies the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



7. Press the STATUS button for the copy destination track.

The button indicator lights red.

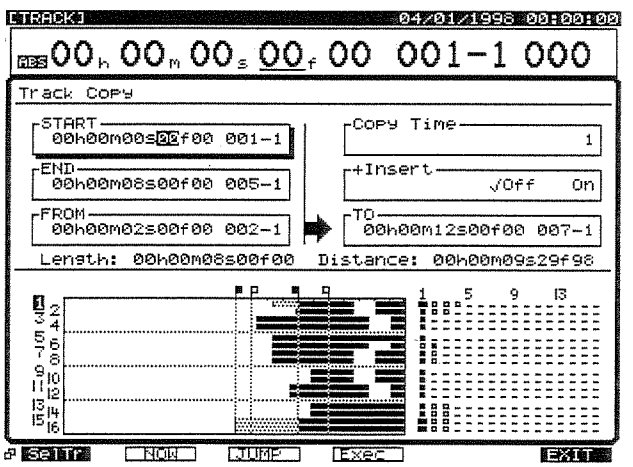
Rotating the TIME/VALUE dial allows you to specify the copy destination V-track. For example, "1-1" indicates "Track 1, V-track 1," and "9L-1" indicates "Track 9 (Stereo Track 9/10, left channel), V-track 1."

* *Do not designate V-tracks that have already been specified as copy destinations for other Tracks.*

8. Repeat Steps 6 and 7 if you want to copy multiple tracks simultaneously.

9. Press [F1 (Back)].

10. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



START (Start point)

Specifies the starting time of the copy range.

END (End point)

Specifies the ending time of the copy range.

FROM (From point)

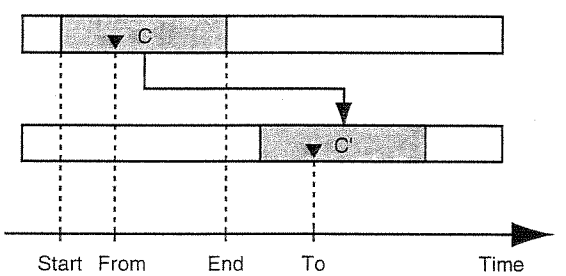
Specifies the time of the copy source playback data in relation to the "To" point. Normally you will set this to be the same as the Start point.

Using FROM Effectively

Normally, the data is copied starting at the specified copy destination time. However, if you want to have the copy made with reference to a point within the designated range where a specific sound occurs, set this with "FROM."

For example, suppose that you wish to copy a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the copy destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "FROM" as "the copy source time at which the explosion begins" and "TO" (the reference time of the copy destination) as "the copy destination time at which you want the explosion to occur." This lets you copy the data with the explosion placed with precisely the right timing.

Example3: Copying using the "FROM" setting

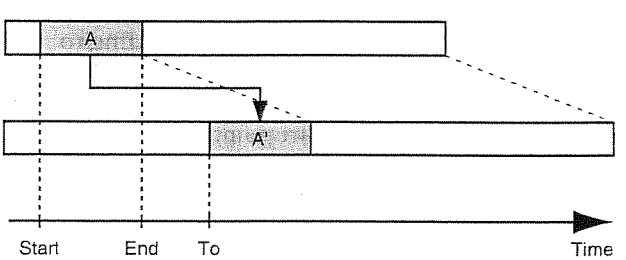


Copy Time

This specifies the number of times (1–99) the data is to be copied.

+Insert

When this is set to "On," a blank space is first inserted in the specified range, and then the copy is carried out.



TO (To point)
Specifies the reference time of the copy destination.

11. Press [F4 (Exec)].
This executes Track Copy.

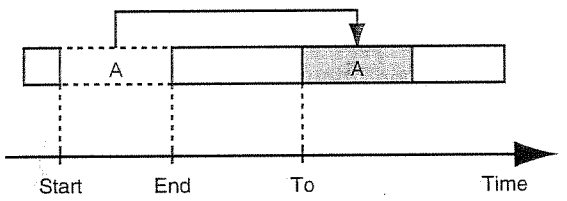
12. When the copy is completed correctly, "Complete" appears in the display.

13. Press [PLAY (DISPLAY)].
Return to Play condition.

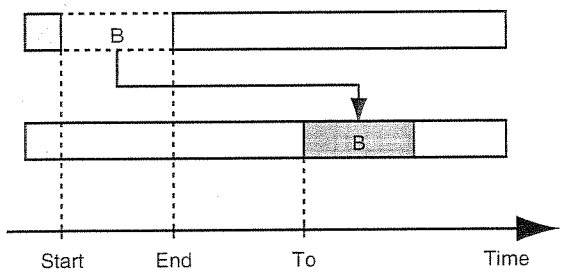
Moving Performance Data (Track Move)

This operation moves the playback data in a specified range to another location. This is convenient for correcting timing mistakes that can occur during recording.

Example 1: Moving with in the same track



Example 2: Moving to a different track



* *Set the length of the data to be moved so that it is greater than 0.5 seconds. With data shorter than 0.5 seconds, even though it can be moved, the sound will not play back. In addition, make sure that no data remains within 0.5 seconds before or after the designated range. Data remaining within this 0.5 seconds will not be played back.*

1. You can move the tracks that are currently audible. Select the V-track that contains the move source playback data, and prepare that data for playback.

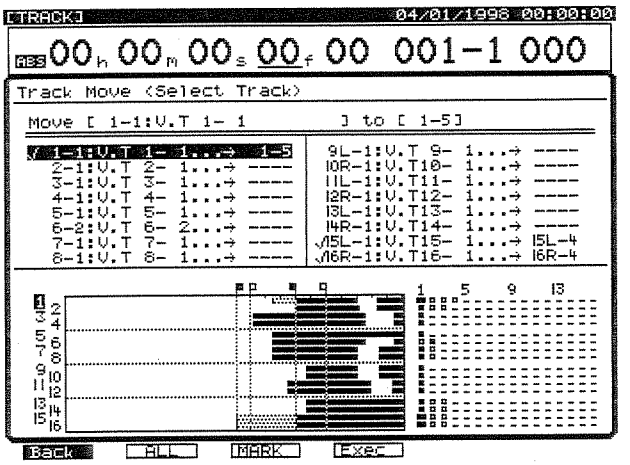
2. Hold down [SHIFT] and press [F2 (TRACK)].

3. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

4. Press [F3 (Move)]. If "Move" does not appear in [F3], first press [PAGE] until "Move" is displayed, and then press [F3 (Move)].

5. Press [F1 (SelTr)].

6. Press the SELECT button for the channel containing the move source track.
The button indicator lights.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track you want to move, and then press [F3 (MARK)] or [YES].
This moves the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



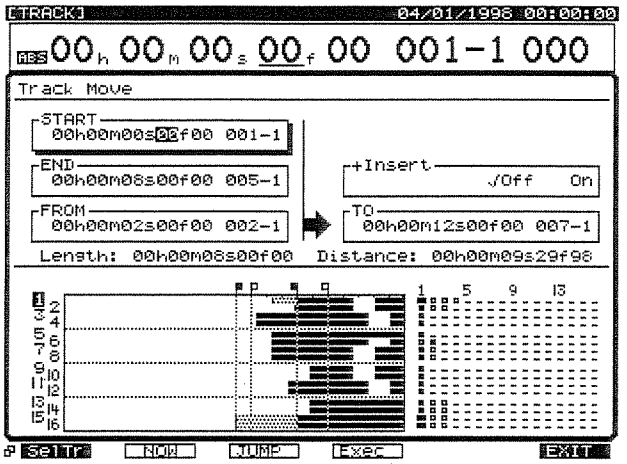
7. Press the STATUS button for the move destination track.
The button indicator lights red.
Rotating the TIME/VALUE dial allows you to specify the move destination V-track. For example, "1-1" indicates "Track 1, V-track 1," and "9L-1" indicates "Track 9 (Stereo Track 9/10, left channel), V-track 1."

* *Do not designate V-tracks that have already been specified as move destinations for other Tracks.*

8. Repeat Steps 6 and 7 if you want to move multiple tracks simultaneously.

9. Press [F1 (Back)].

10. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



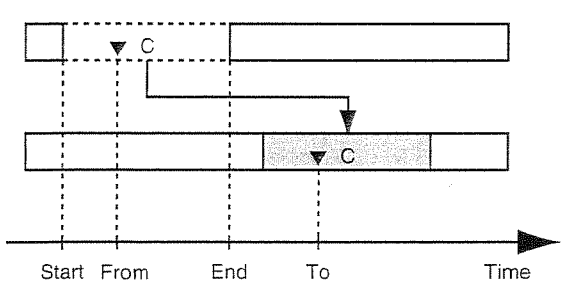
START (Start point)
Specifies the starting time of the move range.

END (End point)
Specifies the ending time of the move range.

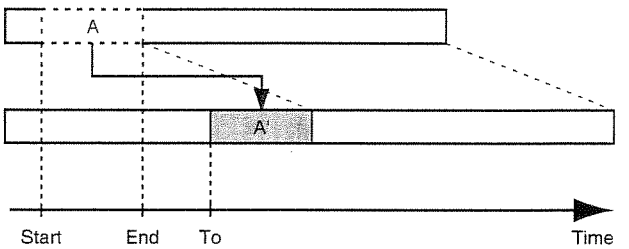
FROM (From point)
Specifies the time of the move source playback data in relation to the To point. Normally you will set this to be the same as the Start point.

Using FROM Effectively
Normally, the data is copied starting at the specified move destination time. However, if you want to have the move made with reference to a point within the designated range where a specific sound occurs, set this with "FROM."
For example, suppose that you wish to move a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the move destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "FROM" as "the move source time at which the explosion begins" and "TO" (the reference time of the move destination) as "the move destination time at which you want the explosion to occur." This lets you move the data with the explosion placed with precisely the right timing.

Example3: Moving using the "FROM" setting



+Insert
When this is set to "On," first, a blank space is inserted in the specified range, and then the move is carried out.



TO (To point)
Specifies the reference time of the move destination.

11. Press [F4 (Exec)].
This executes Track Move.

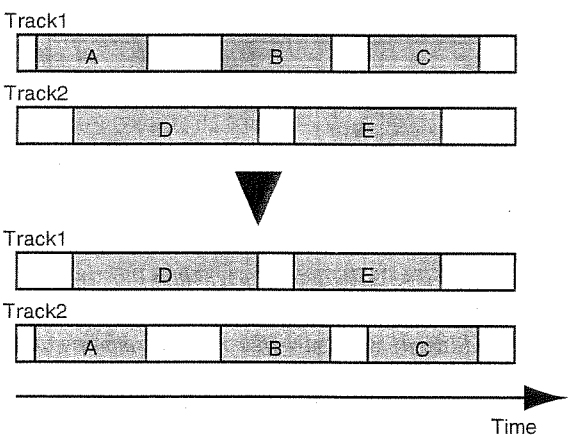
12. When the move is completed correctly, "Complete" appears in the display.

13. Press [PLAY (DISPLAY)].
Return to Play condition.

Exchanging Performance Data Between Tracks (Track Exchange)

This operation exchanges the playback data of two tracks.

Example: Exchanging tracks 1 and 2



1. Select the V-track containing the source playback data to be exchanged.

2. Hold down [SHIFT] and press [F2 (TRACK)].

3. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

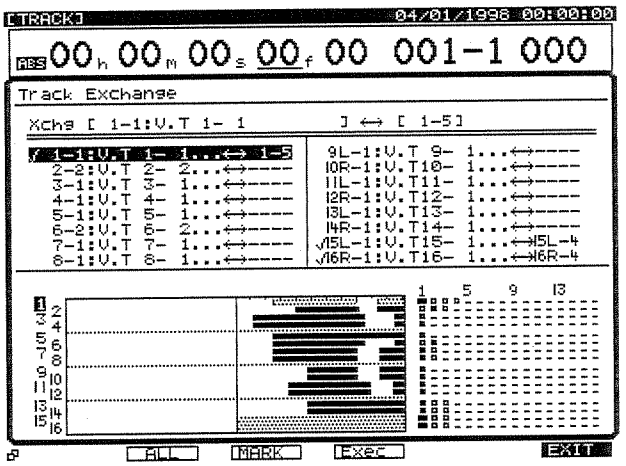
4. Press [F4 (Xchg)]. If "Xchg" does not appear in [F4], first press [PAGE] until "Xchg" is displayed, and then press [F4 (Xchg)].

5. Press the SELECT button for the channel containing the exchange source track.

The button indicator lights.

Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track you want to exchange, and then press [F3 (MARK)] or [YES].

This exchanges the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



6. Press the STATUS button for the exchange destination track.

The button indicator lights red.

Rotating the TIME/VALUE dial allows you to specify the exchange destination V-track. For example, "1-1" indicates "Track 1, V-track 1," and "9L-1" indicates "Track 9 (Stereo Track 9/10, left channel), V-track 1."

* *Do not designate V-tracks that have already been specified as exchange destinations for other Tracks.*

7. Repeat Steps 5 and 6 if you want to exchange multiple tracks simultaneously.

8. Press [F4 (Exec)].

This executes Track Exchange.

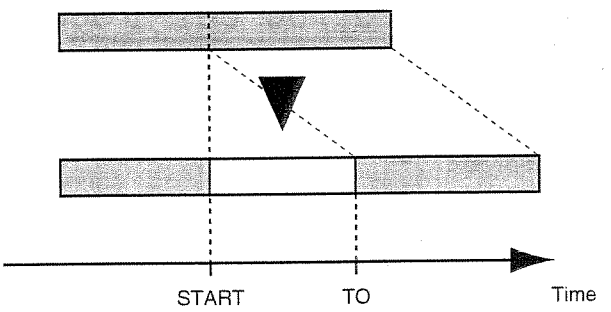
9. When the exchange is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].

Return to Play condition.

Inserting a Blank Space Into Performance Data (Track Insert)

This operation inserts blank space at the specified location.



* *Do not leave sound within 0.5 seconds before or after the area into which the data will be inserted. Any sound which is within 0.5 seconds of the inserted data will not be played back.*

1. Hold down [SHIFT] and press [F2 (TRACK)].

2. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

3. Press [F5 (Ins)]. If "Ins" does not appear in [F5], first press [PAGE] until "Ins" is displayed, and then press [F5 (Ins)].

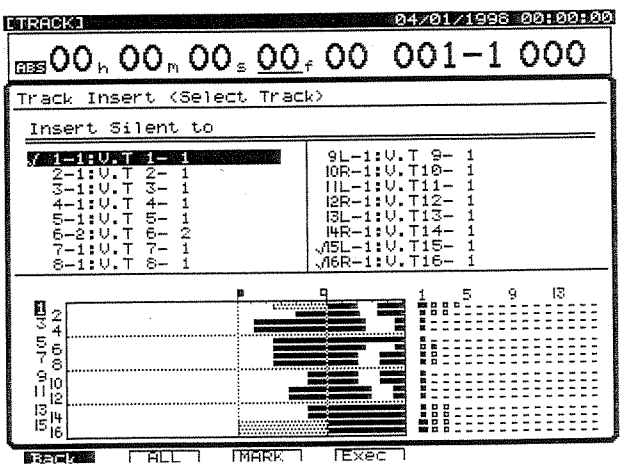
4. Press [F1 (SelTr)].

5. Press the SELECT button for the track into which you want to insert a blank space.

The button indicator lights red.

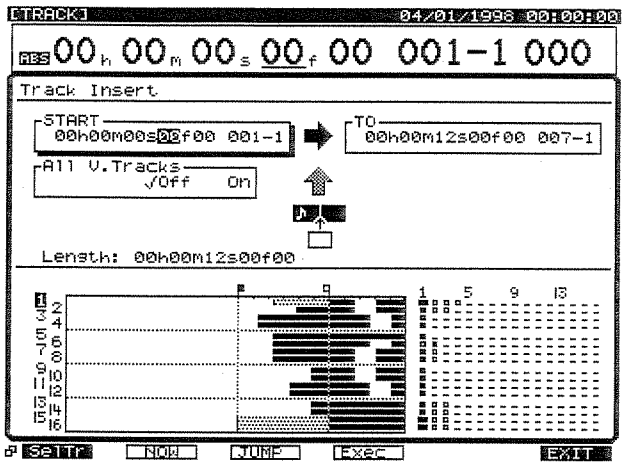
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track into which you want to insert a blank space, and then press [F3 (MARK)] or [YES].

This inserts a blank space in the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



6. Press [F1 (Back)].

7. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



START (Start point)

Specifies the starting time of the performance data that you wish to insert a blank space.

TO (To Point)

This specifies the point to which the performance data designated by "START" is moved.

All V.Tracks (All V-Tracks)

Normally, blank spaces can be inserted in the tracks that are audible. If you wish the same blank space to be inserted in all tracks, set this to "On."

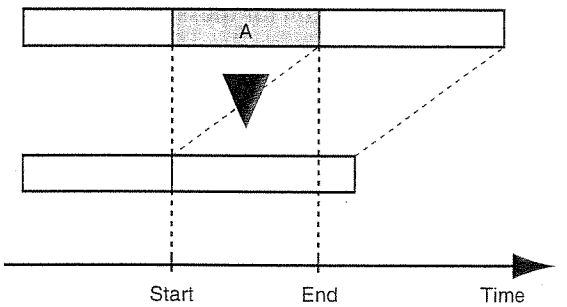
8. Press [F4 (Exec)].
This executes Track Insert.

9. When the insert is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].
Return to Play condition.

Deleting Performance Data (Track Cut)

This operation cuts playback data from the specified area. When playback data is cut using this operation, any playback data following the data that was cut will move forward to fill the gap. To use the analogy of a tape recorder, this operation is like cutting an unwanted portion out of an audio tape, and splicing the ends.



* *Do not leave sound within 0.5 seconds before or after the area to be cut. Any sound within 0.5 seconds of the cut data will not be played back.*

* *While it may seem that the performance data has disappeared, the data itself is not deleted from the hard disk. Thus, even when you carry out the Track Cut procedure, the free disk space shown in the display does not change.*

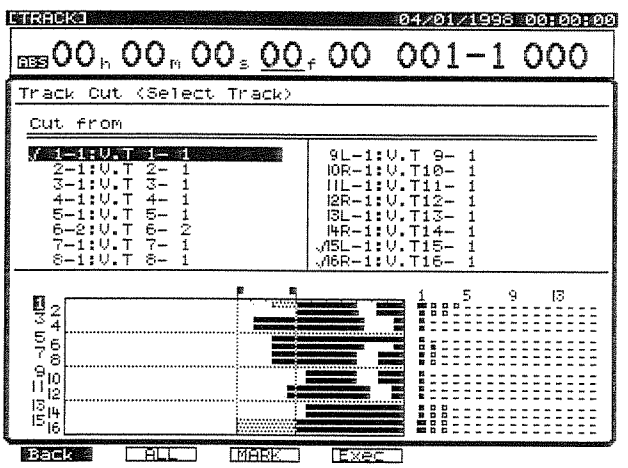
1. Hold down [SHIFT] and press [F2 (TRACK)].

2. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

3. Press [F6 (Cut)]. If "Cut" does not appear in [F6], first press [PAGE] until "Cut" is displayed, and then press [F6 (Cut)].

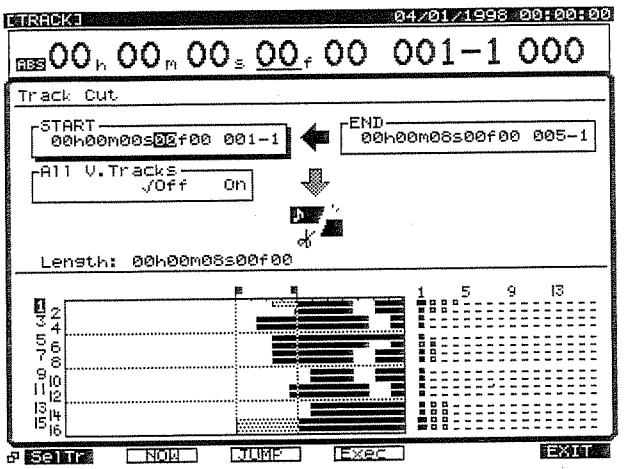
4. Press [F1 (SelTr)].

5. Press the SELECT button for the track on which you want to carry out Track Cut.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track on which you want to carry out Track Cut, and then press [F3 (MARK)] or [YES].
This cuts the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



6. Press [F1 (Back)].

7. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



START (Start point)

Specifies the starting time of the segment to be cut.

END (End point)

Specifies the ending time of the segment to be cut.

All V.Tracks (All V-Tracks)

Normally, data can be cut from the tracks that are currently audible. If you wish the same segment to be cut from all tracks, set this to "On."

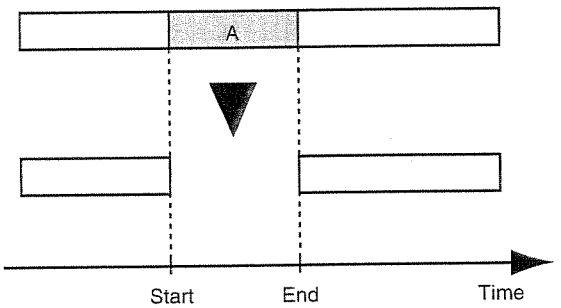
8. Press [F4 (Exec)].
This executes Track Cut.

9. When the cut is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].
Return to Play condition.

Erasing Performance Data (Track Erase)

This operation erases playback data from the specified area. If this operation is used to erase playback data, even if playback data exists after the area that was erased, it will not be moved forward. To use the analogy of a tape recorder, this operation is like recording silence over an unwanted section of the tape.



* *Do not leave sound within 0.5 seconds before or after the area to be erased. Any sound within 0.5 seconds of the erased data is not played back.*

* *While it may seem that the performance data has disappeared, the data itself is not deleted from the hard disk. Thus, even when you carry out the Track Erase procedure, the free disk space shown in the display does not change.*

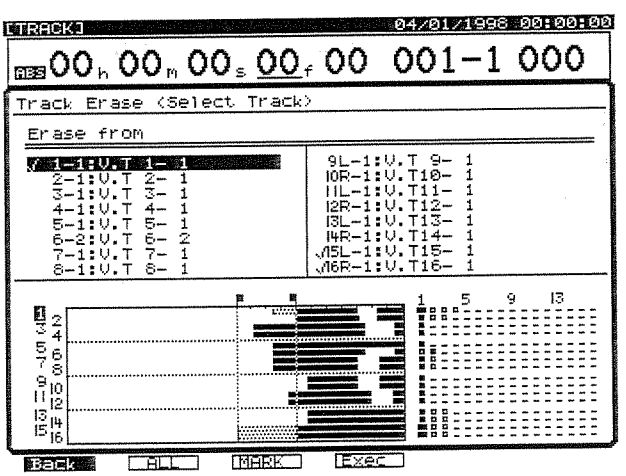
1. Hold down [SHIFT] and press [F2 (TRACK)].

2. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

3. Press [F2 (Erase)]. If "Erase" does not appear in [F2], first press [PAGE] until "Erase" is displayed, and then press [F2 (Erase)].

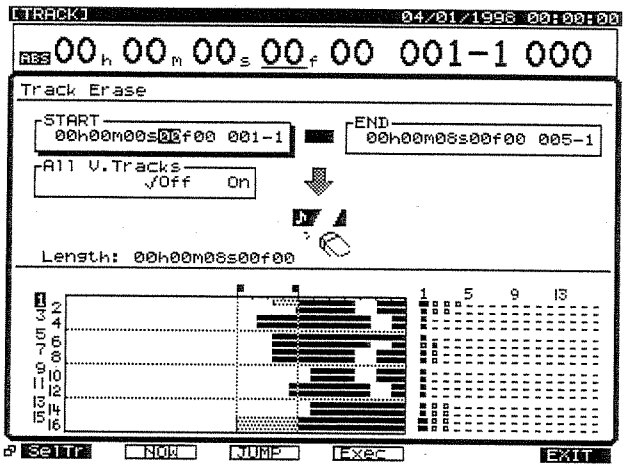
4. Press [F1 (SelTr)].

5. Press the SELECT button for the track on which you want to carry out Track Erase.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track on which you want to carry out Track Erase, and then press [F3 (MARK)] or [YES].
This erases the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



6. Press [F1 (Back)].

7. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



START (Start point)

Specifies the starting time of the segment to be erased.

END (End point)

Specifies the ending time of the segment to be erased.

All V.Tracks (All V-Tracks)

Normally, data can be erased from the tracks that are audible. If you wish the same segment to be erased from all tracks, set this to "On."

8. Press [F4 (Exec)].
This executes Track Erase.

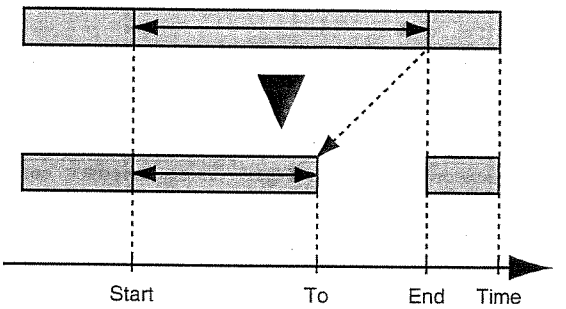
9. When Track Erase is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].
Return to Play condition.

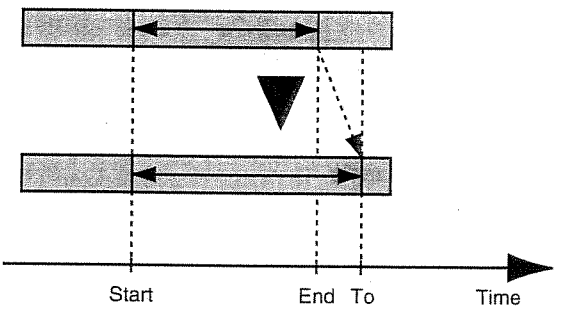
Modifying the Playback Time of the Performance Data (Track Time Compression/Expansion)

This operation allows you to expand or compress the playback time of a song to a specified length of time. You can specify the amount of compression or expansion in a range of 75–125%, but the more extreme the settings, the more adverse the effect will be on the sound quality. We recommend that you normally keep compression and expansion within a range of 93–107 %.

Example 1: Compression



Example 2: Expansion



In general, when you compress or expand the playback time, the pitch changes in proportion to the amount of compression or expansion. For example, if the playback time is shortened, the pitch of the sound played back then rises. On the VS-1680, you can select whether the playback pitch changes in accordance with the ratio of compression or expansion, or whether the original playback pitch is preserved.

* *Track Compression/Expansion creates new performance data with a different playback time. For this reason, it cannot be executed if there is not sufficient space on the current drive.*

* *It is not possible to make Track Compression/Expansion settings when the elapsed time from the Start Point to the End Point or from the Start Point to the To Point is less than 0.5 seconds.*

* *Do not compress data to a period of 0.5 seconds or shorter. If it is compressed to 0.5 seconds or less, the sound will not be played.*

1. Hold down [SHIFT] and press [F2 (TRACK)].

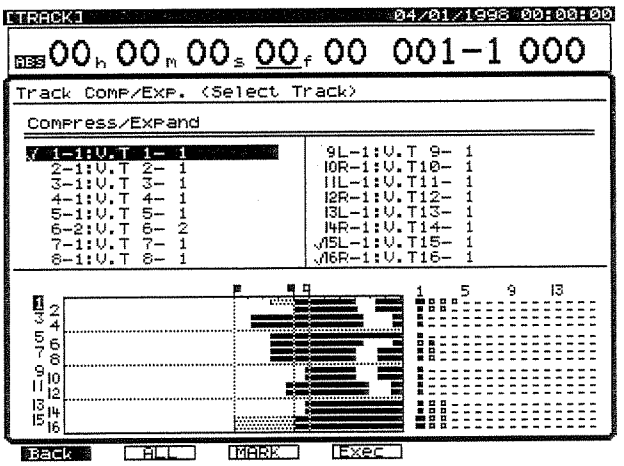
2. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.

3. Press [F3 (CmpEx)]. If "CmpEx" does not appear in [F3], first press [PAGE] until "CmpEx" is displayed, and then press [F3 (CmpEx)].

4. Press [F1 (SelTr)].

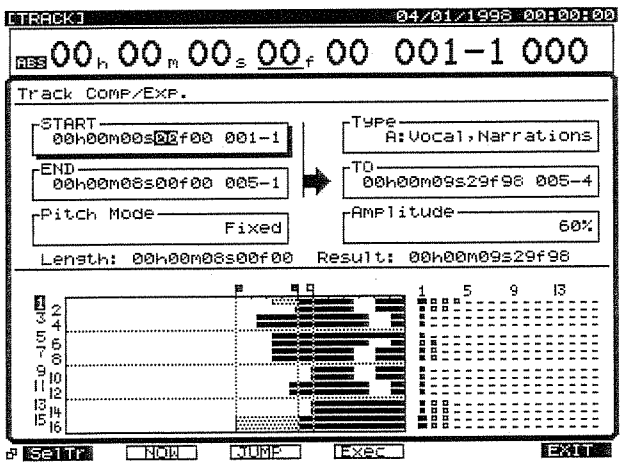
5. Press the SELECT button for the track you want to compress or expand.
The button indicator lights red.

Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the track you want to compress or expand, and then press [F3 (MARK)] or [YES].
This compresses or expands the performance data on the track containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



6. Press [F1 (Back)].

7. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



START (Start point)
This specifies when compression or expansion of the playback time starts.

END (End point)
This specifies when compression or expansion of the playback time ends.

Pitch Mode
If you want the playback pitch to change as a result of the compression or expansion, set this to "Variable"; if not, set this to "Fixed."

Type
This specifies the type of conversion. Select the setting that fits your needs or that matches the type song you are working with.

A: Vocal, Narrations
For vocals or narration.

B: Slow-tempo Songs
For slow-tempo songs such as slow ballads.

C: Fast-tempo Songs
For fast-tempo songs such as rock.

TO (To point)
This specifies the ending time location that will result from the compression or expansion.

Amplitude
This specifies the volume level ratio (50, 60, 70, 80, 90, 100%) that will result from the conversion. Normally, the default value of 60% is recommended. If the volume level after conversion is too low, use the Undo function to return to the original data, increase the amplitude settings, and try the operation again. However, excessively high settings can introduce noise in the data.

8. Press [F4 (Exec)].
This executes the compression or expansion.

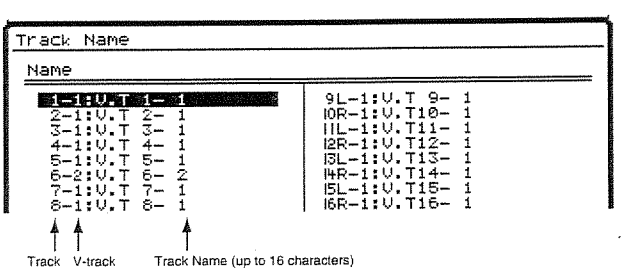
* *Be aware that, depending on conditions, it may take some time for compression or expansion to be completed. This is not a malfunction. Progress of the operation is shown in the display:* **do not turn off the power until the compression or expansion the track is completed**. You can cancel compression or expansion by pressing [NO].

9. When the compression or expansion is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].
Return to Play condition.

Naming Tracks (Track Name)

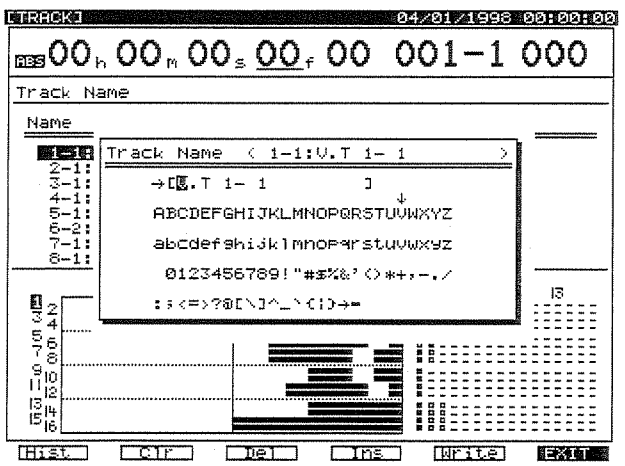
Normally, each track is given a name as is shown below.



You can freely change the names you use for tracks. When, for example, you record something over many times, remembering what performance is recorded on each track can become difficult.
In such instances, we recommend giving tracks unique names (such as "guitar" or "vocal") to make all these tracks more manageable.

1. You can change the names of tracks that are currently audible. First select the V-track you will be working with.
2. Hold down [SHIFT] and press [F2 (TRACK)].
3. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.
4. Press [F4 (Name)]. If "Name" does not appear in [F4], first press [PAGE] until "Name" is displayed, and then press [F4 (Name)].
5. Press [▲], [▼], [◀], and [▶] to move the cursor to the track you want to rename, and then press [F1 (Name)] or [YES].
6. The Track Name screen appears in the display. Using [▲], [▼], [◀], and [▶] and the TIME/VALUE dial, enter the name of the song.

At this time, the function buttons work as shown below.

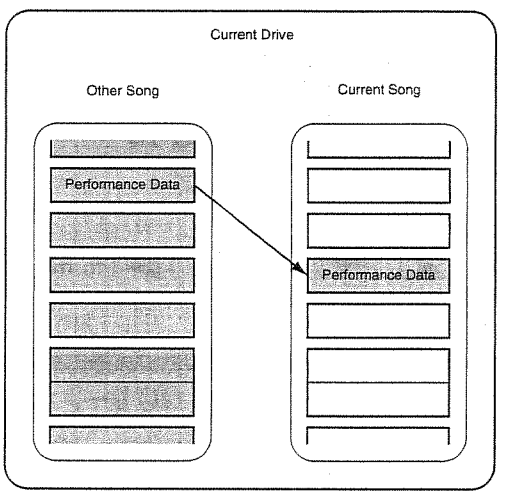


[F1 (Hist)]: Pressing this button takes you through a register of the last 20 track names entered, one at a time.
[F2 (Clr)]: Clears all characters in the window.
[F3 (Del)]: Deletes the character where the cursor is positioned.
[F4 (Ins)]: Inserts a space where the cursor is positioned.
[F5 (Write)]: Accepts/Confirms the track name and removes the screen.
[F6 (EXIT)]: Exits the screen without accepting the track name.

7. After entering the name, press [F5 (Write)].
8. Hold down [SHIFT] and press [STORE (ZERO)]. "STORE OK?" appears in the display.
9. Press [YES].
This saves the song.
10. Press [PLAY (DISPLAY)].
Return to Play condition.

Copying Performance Data from Other Songs (Track Import)

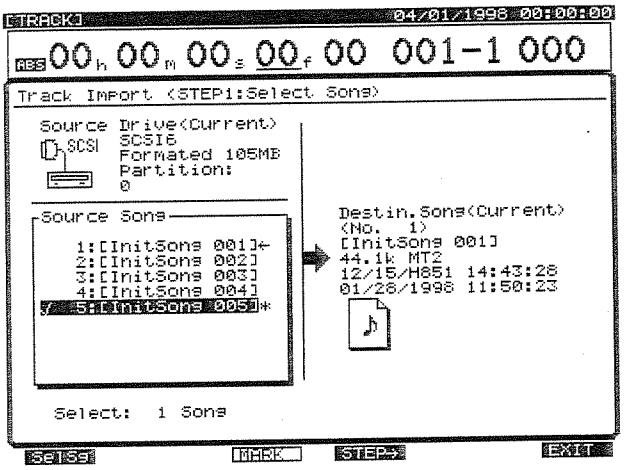
Copy the other song's performance data in the current drive to the current song.



* *You can import a track from the song that has same both sample rate and recording mode as current song. However, if there is insufficient free space on the current drive, Song Import cannot be carried out.*

1. First select the song you want to be the copy destination as the current song.
2. Hold down [SHIFT] and press [F2 (TRACK)].
3. Press [F1 (Tr/Ph)] so that Track Edit menu appears in the display.
4. Press [F5 (Imprt)]. If "Imprt" does not appear in [F5], first press [PAGE] until "Imprt" is displayed, and then press [F5 (Imprt)].
5. Rotate the TIME/VALUE dial to move the cursor to the copy source song and press [F3 (MARK)]. By pressing [F1 (SelSg)], you can have a list of the songs displayed. In this case, place markers on the songs, and then press [F1 (Back)].

6. Press [F4 (STEP→)].

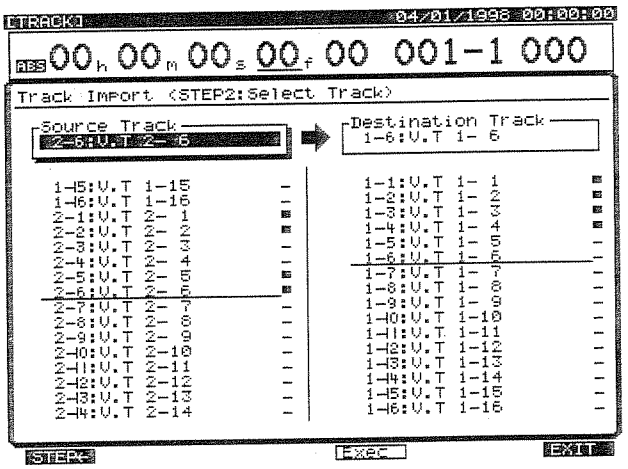


7. Press [◀].
The cursor moves to "Source Track."

8. Rotate the TIME/VALUE dial to select the copy source track.

9. Press [▶].
The cursor moves to "Destination Track."

10. Rotate the TIME/VALUE dial to select the copy destination track in the current song.



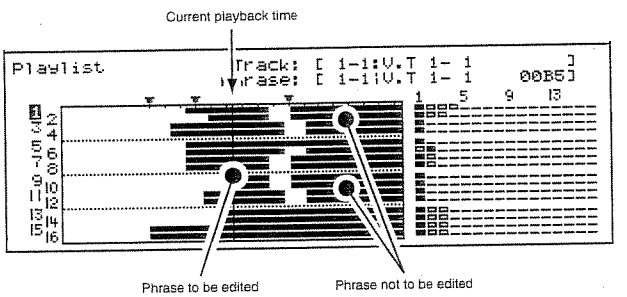
11. Press [F4 (Exec)].
This executes Track Import.

12. When the Track Import procedure is completed correctly, "Complete" appears in the display.

13. Press [PLAY (DISPLAY)].
Return to Play condition.

Phrase Edit

With this function, you can select and edit phrases. Compared to Track Edit, this procedure allows more musical edits.
First press [PLAY (DISPLAY)], and begin each operation from Play condition. You can edit the phrase at the current time location. Select beforehand the V-track onto which the phrase to be edited is recorded, and move to the time location containing the phrase so it can be worked on.



Repeating Phrases (Phrase Copy)

This operation copies the playback data of a specified phrase to another location. For example, this is convenient when you want a four-measure rhythm pattern to play repeatedly as a sort of "break beats" (Phrase Loop).

* *Phrases shorter than 0.5 seconds cannot be played back.*

1. Hold down [SHIFT] and press [F2 (TRACK)].

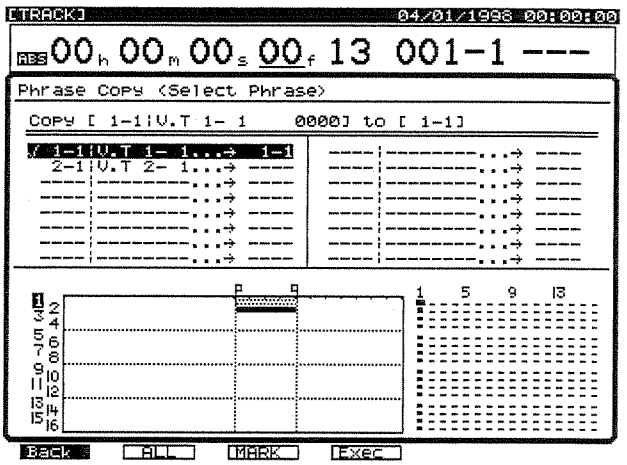
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.

3. Press [F2 (Copy)]. If "Copy" does not appear in [F2], first press [PAGE] until "Copy" is displayed, and then press [F2 (Copy)].

4. Press [F1 (SelPh)].

5. Press the SELECT button for the channel containing the copy source track.
The button indicator lights.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to copy, and then press [F3 (MARK)] or [YES].

This copies the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the phrases simultaneously.



6. Press the STATUS button for the copy destination track.

The button indicator lights red.

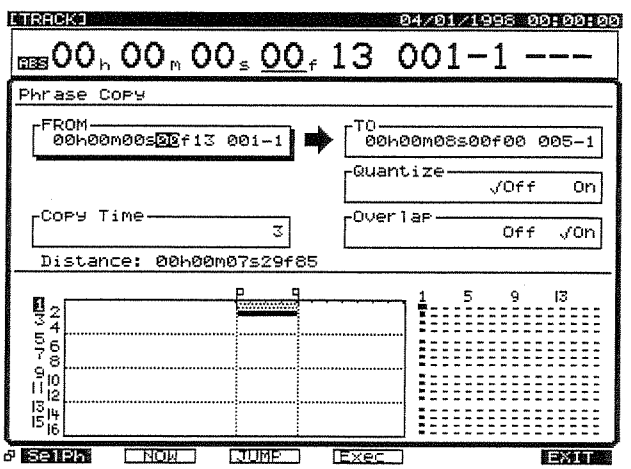
Rotating the TIME/VALUE dial allows you to specify the copy destination V-track. For example, "1-1" indicates "Track 1, V-track 1," and "9L-1" indicates "Track 9 (Stereo Track 9/10, left channel), V-track 1."

* *Do not designate V-tracks that have already been specified as copy destinations for other phrases.*

7. Repeat Steps 5 and 6 if you want to copy multiple tracks simultaneously.

8. Press [F1 (Back)].

9. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.



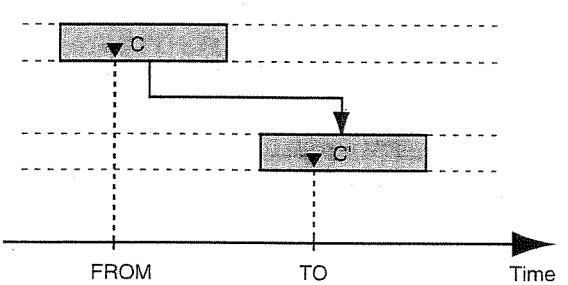
FROM (From point)

Specifies the time location of the source phrase to be copied to the copy destination. This time need not include the time containing the phrase.

Using FROM Effectively

Normally, the data is copied starting at the specified copy destination time. However, if you want to have the copy made with reference to a point within the designated range where a specific sound occurs, set this with "FROM."

For example, suppose that you wish to copy a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the copy destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "FROM" as "the copy source time at which the explosion begins" and "TO" (the reference time of the copy destination) as "the copy destination time at which you want the explosion to occur." This lets you copy the data with the explosion placed with precisely the right timing.



TO (To point)

This specifies the reference time of the copy destination.

Quantize

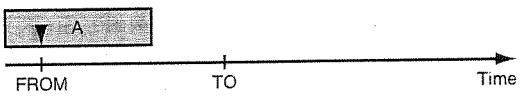
When Quantize is set to "On," the "TO" point (the copy destination reference point) is then placed at the beginning of the measure determined in the Tempo Map or Sync Track. For example, if the tempo in the Tempo Map is set to 120, you can program a one-measure phrase to take two seconds. However, when you need to figure more difficult tempos such as, say, 119.1, the timing of the phrase ending will shift very gradually. Now, this can be prevented. Setting Quantize to "On" also automatically works like "Overlap" on.

Overlap

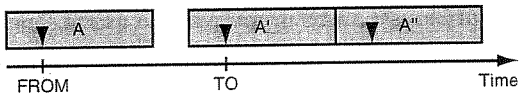
When this is set to "Off," the starting and ending points of the phrase can be thought of as being identical to the "START" and "END" points in Track Copy. In this case, when two or more copies of a phrase are made, the second and any subsequent copies are connected to the preceding one.

Set this to "On" preserves the length of the interval between "FROM" and "TO." Thus, when copying a phrase that is shorter than the interval between "FROM" and "TO" two or more times, starting with the second copy, a blank space is inserted after each copy of the phrase. Conversely, when the phrase is longer than the interval between "FROM" and "TO," the end of the phrase overlaps the following copy of the phrase.

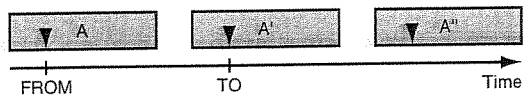
Example 1: When the phrase is longer than the interval between "FROM" and "TO"



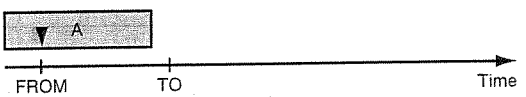
Copy Times = "2," Overlap = "Off"



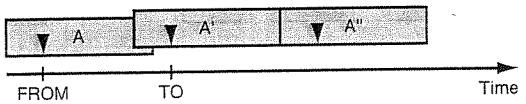
Copy Times = "2," Overlap = "On"



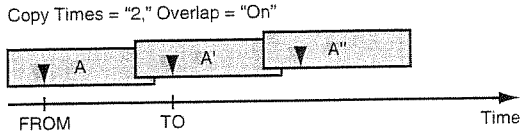
Example 2: When the phrase is shorter than the interval between "FROM" and "TO"



Copy Times = "2," Overlap = "Off"



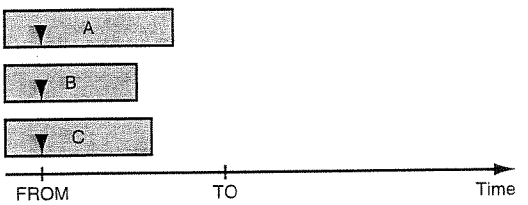
Copy Times = "2," Overlap = "On"



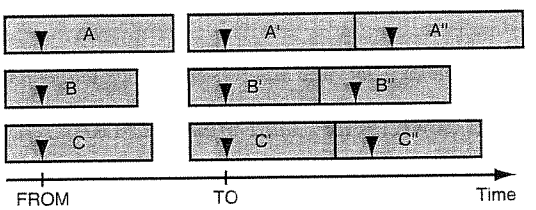
About Phrase Copy

When the "Overlap" function is off, you can consider copying multiple phrases simultaneously. In this case, if all of the selected phrases are not the same length, the timing of each will begin to drift from one another starting with the second copy. Therefore, in this sort of situation, make sure all the phrases are the same length beforehand by using phrases recorded together with Punch-In Recording, or with Trim In (p. 97) and Trim Out (p. 98).

Ex.: When the Phrase length differs



Copy Times = "2," Overlap = "Off"



When "Overlap" is on, there is no need to select phrases that are the same length. However, depending on the relationship between the phrase length and the interval between "FROM" and "TO," the end of the phrase may be indistinct. Use this feature according to the situation.

Copy Time

This specifies the number of times (1–99) the phrase is to be copied.

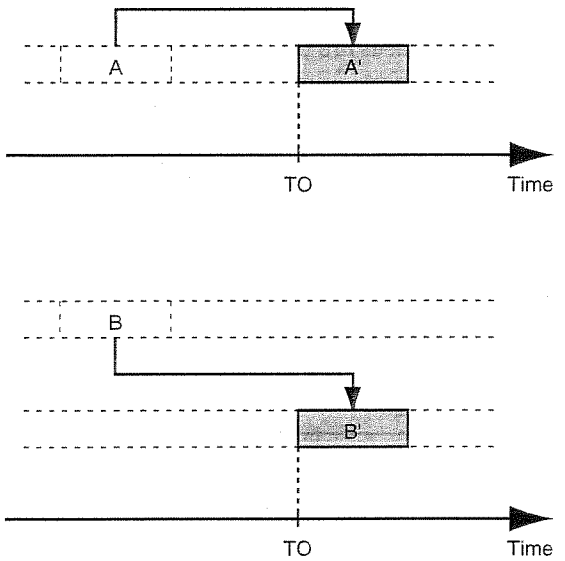
11. Press [F4 (Exec)].
This executes Phrase Copy.

12. When the copy is completed correctly, "Complete" appears in the display.

13. Press [PLAY (DISPLAY)].
Return to Play condition.

Moving Phrases (Phrase Move)

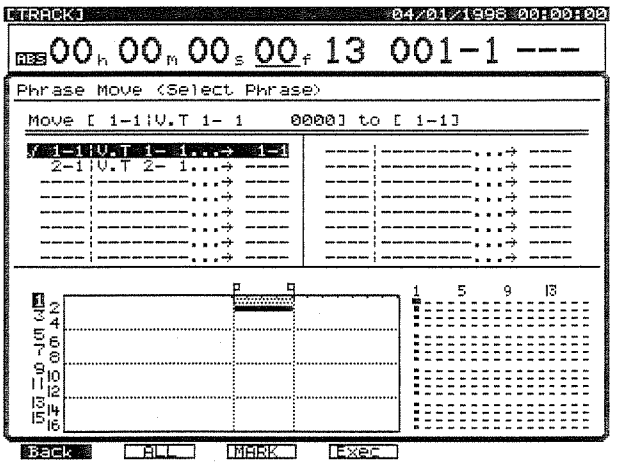
This operation moves the specified phrase to another location. This is convenient for correcting timing mistakes that can occur when recording performance data.



* *Phrases shorter than 0.5 seconds cannot be played back.*

1. Hold down [SHIFT] and press [F2 (TRACK)].
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.
3. Press [F3 (Move)]. If "Move" does not appear in [F3], first press [PAGE] until "Move" is displayed, and then press [F3 (Move)].
4. Press [F1 (SelPh)].
5. Press the SELECT button for the channel containing the move source track.

The button indicator lights.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to move, and then press [F3 (MARK)] or [YES].
This moves the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all phrases simultaneously.

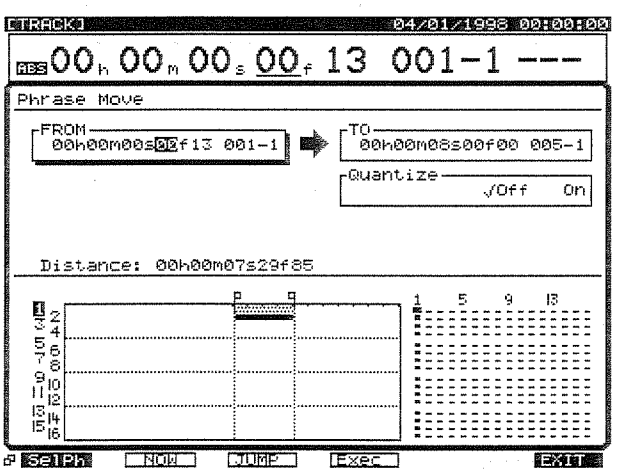


6. Press the STATUS button for the move destination track.

The button indicator lights red.
Rotating the TIME/VALUE dial allows you to specify the move destination V-track. For example, "1-1" indicates "Track 1, V-track 1," and "9L-1" indicates "Track 9 (Stereo Track 9/10, left channel), V-track 1."

* *Do not designate V-tracks that have already been specified as move destinations for other phrases.*

7. Repeat Steps 5 and 6 if you want to move several phrases simultaneously.
8. Press [F1 (Back)].
9. Press [▲], [▼], [◀], and [▶] to move the cursor. Set each of the values.

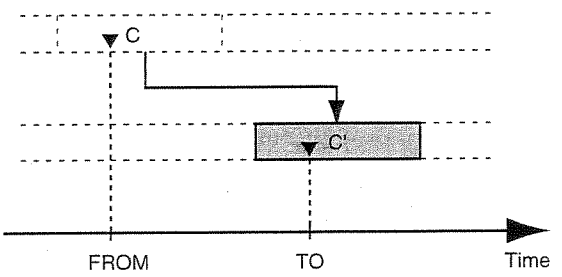


FROM (From point)

Specifies the time of the move source phrase being copied to the move destination. This time need not include the time containing the phrase.

Using FROM Effectively

Normally, the data is moved starting to the specified move destination time. However, if you want to have the move made with reference to a point within the designated range where a specific sound occurs, set this with "FROM."
For example, suppose that you wish to move a sound effect of a time bomb ticking and then exploding, and that you want to place the explosion at a specific timing location. Normally, in order to specify the move destination time, you would have to calculate the time until the explosion occurs. In such cases, however, you can specify "FROM" as "the move source time at which the explosion begins" and "TO" (the reference time of the move destination) as "the move destination time at which you want the explosion to occur." This lets you move the data with the explosion placed with precisely the right timing.



TO (To point)

Specifies the reference time of the move destination.

Quantize

When Quantize is set to "On," the "TO" point (the move destination reference point) is then placed at the beginning of the measure determined in the Tempo Map or Sync Track. For example, if the tempo in the Tempo Map is set to 120, you can program a one-measure phrase to take two seconds. However, when you need to figure more difficult tempos such as, say, 119.1, the timing of the phrase ending will shift very gradually. Now, this can be prevented.

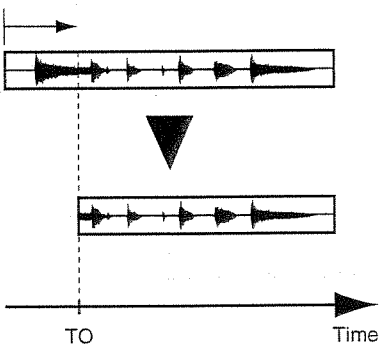
11. Press [F4 (Exec)].
This executes Phrase Move.

12. When the move is completed correctly, "Complete" appears in the display.

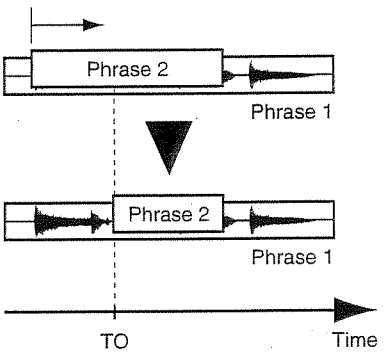
13. Press [PLAY (DISPLAY)].
Return to Play condition.

Adjusting the Beginning of the Phrase Sound (Trim In)

This adjusts the point at which the phrase begins (starts to sound) without changing the timing of the phrase itself. This is convenient when, for example, you want to select a section of the performance data to copy as a "break beats" (Phrase Loop).



When you apply Trim In to phrase 2 while phrase 2 is punched in to phrase 1, the part of phrase 1 obscured by phrase 2 becomes audible.



1. Hold down [SHIFT] and press [F2 (TRACK)].

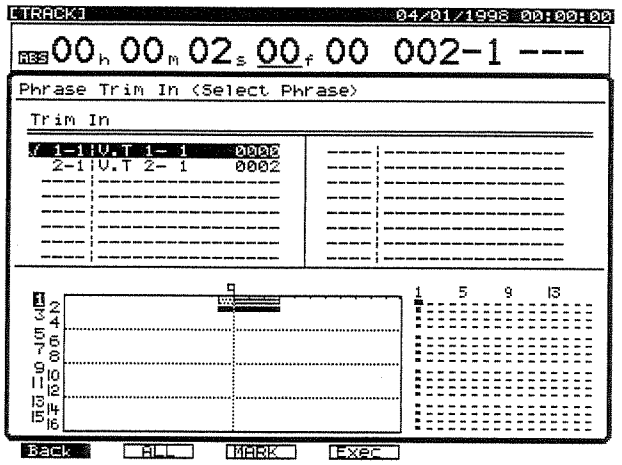
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.

3. Press [F4 (TrimI)]. If "TrimI" does not appear in [F4], first press [PAGE] until "TrimI" is displayed, and then press [F4 (TrimI)].

4. Press [F1 (SelPh)].

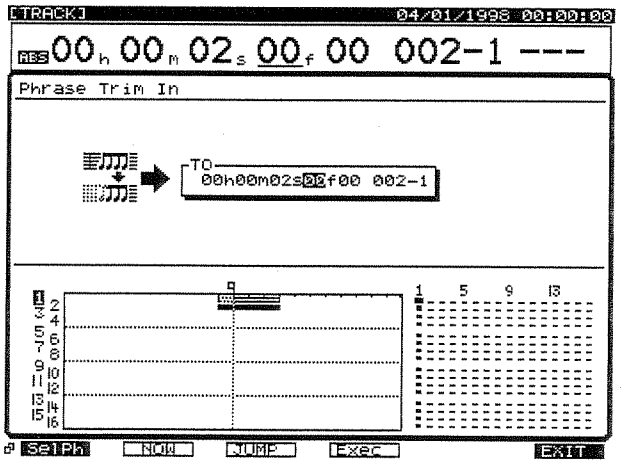
5. Press the STATUS button for the track that contains the phrase you want to trim.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to trim, and then press [F3 (MARK)] or [YES].

This trims the performance data on the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the phrases simultaneously.



6. Press [F1 (Back)].

7. Rotate the TIME/VALUE dial.



TO (To point)
Specifies the time for Trim In.

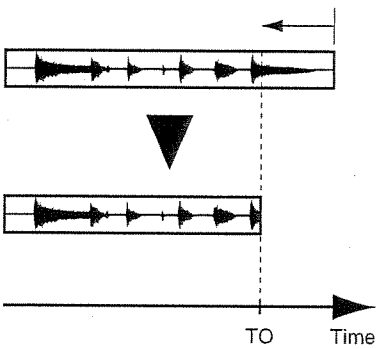
8. Press [F4 (Exec)].
This executes Trim In.

9. When the trim is completed correctly, "Complete" appears in the display.

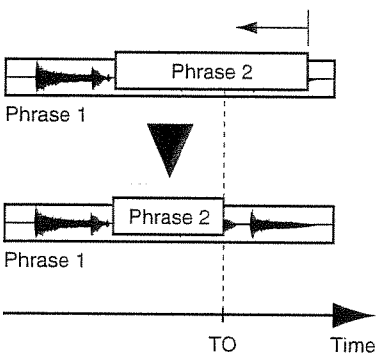
10. Press [PLAY (DISPLAY)].
Return to Play condition.

Adjusting the Ending of the phrase Sound (Trim Out)

This adjusts the point at which the phrase ends (stops playing) without changing the timing of the phrase itself. This is convenient when, for example, you want to select a section of the performance data to copy as a "break beats" (Phrase Loop).



When you apply Trim Out to phrase 2 while phrase 2 is punched in to phrase 1, the part of phrase 1 obscured by phrase 2 becomes audible.



1. Hold down [SHIFT] and press [F2 (TRACK)].

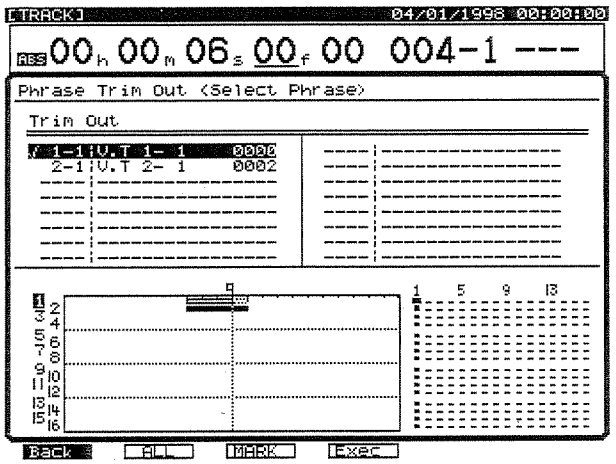
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.

3. Press [F5 (TrimO)]. If "TrimO" does not appear in [F5], first press [PAGE] until "TrimO" is displayed, and then press [F5 (TrimO)].

4. Press [F1 (SelPh)].

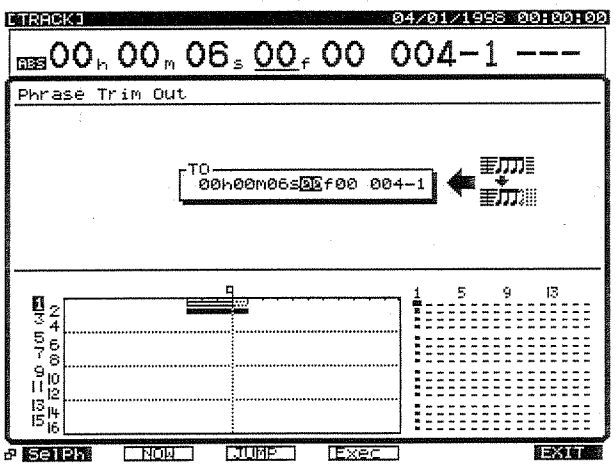
5. Press the STATUS button for the track that contains the phrase you want to trim.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to trim, and then press [F3 (MARK)] or [YES].

This trims the performance data on the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the phrases simultaneously.



6. Press [F1 (Back)].

7. Rotate the TIME/VALUE dial.



TO (To point)
Specifies the time for Trim Out.

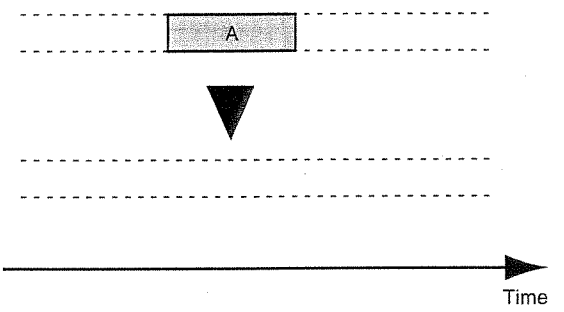
8. Press [F4 (Exec)].
This executes Trim Out.

9. When the trim is completed correctly, "Complete" appears in the display.

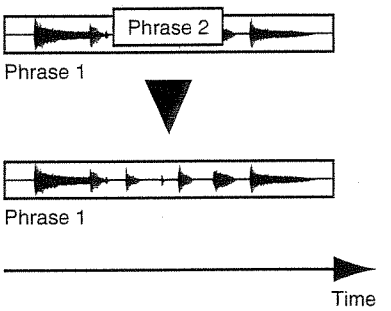
10. Press [PLAY (DISPLAY)].
Return to Play condition.

Deleting Phrases (Phrase Delete)

This operation deletes specified phrases. When this operation is used to, existing playback data after a deleted phrase is not moved forward.



When you apply Phrase Delete to phrase 2 while phrase 2 is punched in to phrase 1, the part of phrase 1 obscured by phrase 2 becomes audible.



* *While it may seem that the performance data has disappeared, the data itself is not deleted from the hard disk. Thus, even when you carry out the Phrase Delete procedure, the free disk space shown in the display does not change.*

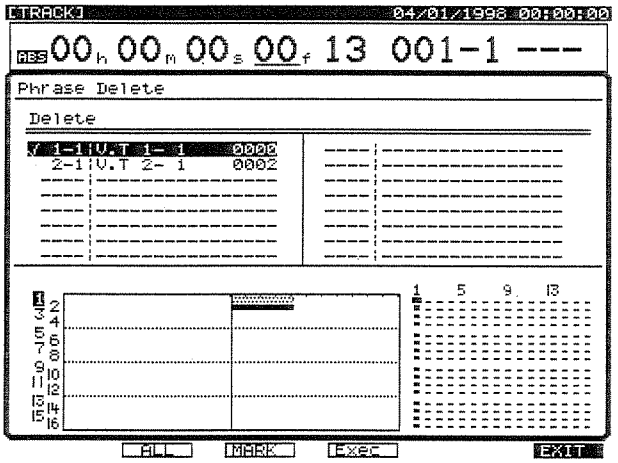
1. Hold down [SHIFT] and press [F2 (TRACK)].

2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.

3. Press [F6 (Del)]. If "Del" does not appear in [F6], first press [PAGE] until "Del" is displayed, and then press [F6 (Del)].

4. Press the STATUS button for the track that contains the phrase you want to delete.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to delete, and then press [F3 (MARK)] or [YES].

This deletes the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the tracks simultaneously.



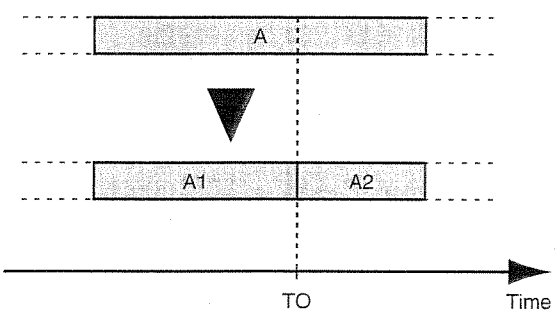
5. Press [F4 (Exec)].
This executes Phrase Delete.

6. When the deletion is completed correctly, "Complete" appears in the display.

7. Press [PLAY (DISPLAY)].
Return to Play condition.

Dividing Phrases (Phrase Split)

This operation allows you to divide phrase into two parts for the time-wise. This is convenient when, for example, you want to select a section of the performance data to copy as a "break beats" (Phrase Loop).



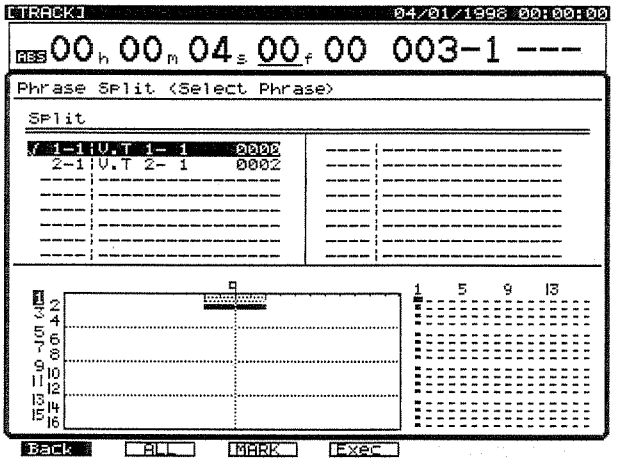
1. Hold down [SHIFT] and press [F2 (TRACK)].

2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.

3. Press [F1 (Split)]. If "Split" does not appear in [F1], first press [PAGE] until "Split" is displayed, and then press [F1 (Split)].

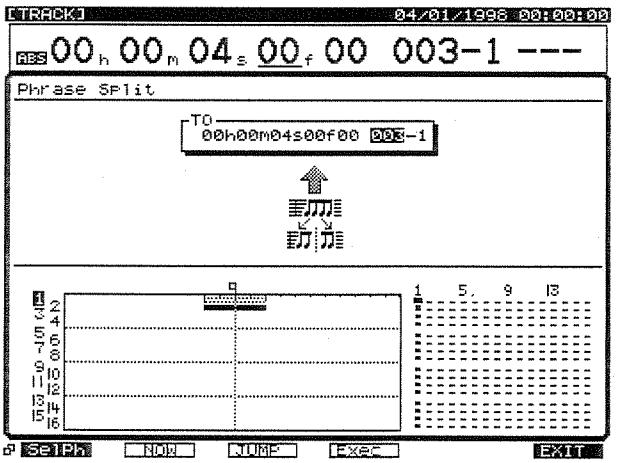
4. Press [F1 (SelPh)].

5. Press the STATUS button for the track that contains the phrase you want to split.
The button indicator lights red.
Alternatively, press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to split, and then press [F3 (MARK)] or [YES].
This splits the phrase containing the mark. When [F2 (ALL)] is pressed, you can place or remove the marks on all the phrases simultaneously.



6. Press [F1 (Back)].

7. Rotate the TIME/VALUE dial.



TO (To point)

Specifies the time for splitting the phrase.

8. Press [F4 (Exec)].
This executes Phrase Split.

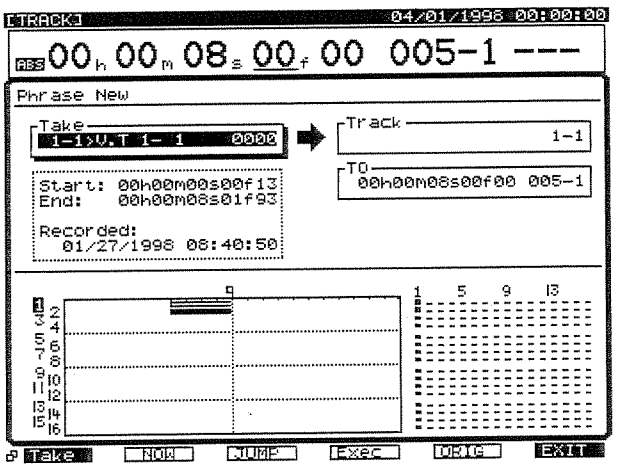
9. When the split is completed correctly, "Complete" appears in the display.

10. Press [PLAY (DISPLAY)].
Return to Play condition.

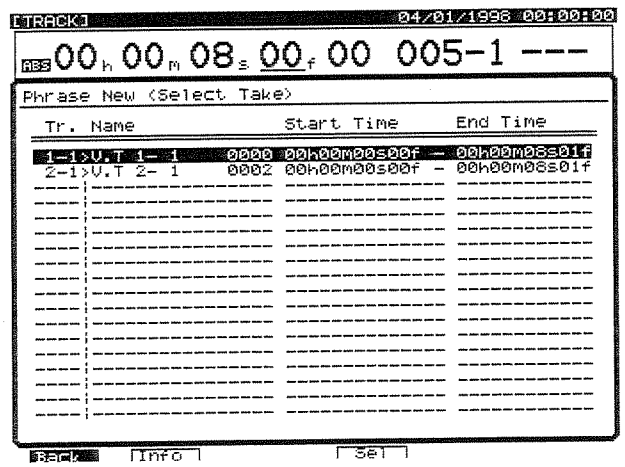
Creating New Phrases (Phrase New)

This creates a new phrase from an existing take.

1. Hold down [SHIFT] and press [F2 (TRACK)].
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.
3. Press [F2 (New)]. If "New" does not appear in [F2], first press [PAGE] until "New" is displayed, and then press [F2 (New)].
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "Take."



5. Rotate the TIME/VALUE dial to select the source take. By pressing [F1 (Take)], you can have a list of takes displayed. At this time, rotate the TIME/VALUE dial to select the take, and press [F4 (Sel)]. Each time you press [F2 (Info)], switches the information displayed about the take between the "take's start and stop points" and the "amount of disk space occupied and date and time of recording." When you finished select a take, press [F1 (Back)].



6. Press [▶].

The cursor moves to "Track."

7. Press the STATUS button of the track for the new phrase.

The button indicator lights red.
Alternatively, rotate the TIME/VALUE dial to select the track for the new phrase.
At this point, by pressing [F5 (ORIG)], the new phrase will be created to the same track/location of the source take.

8. Press [▼].

The cursor moves to "TO."

9. Rotate the TIME/VALUE dial to specify the time for the new phrase.
10. Press [F4 (Exec)].

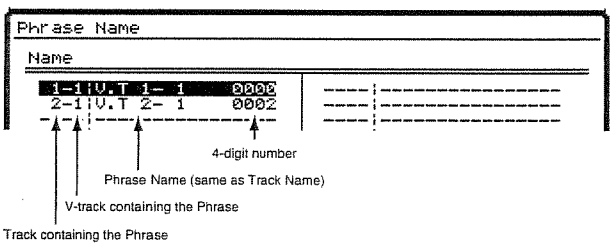
This executes Phrase New.

11. When the new phrase is created correctly, "Complete" appears in the display. Press [ENTER (YES)].
12. Press [PLAY (DISPLAY)].

Return to Play condition.

Naming Phrases (Phrase Name)

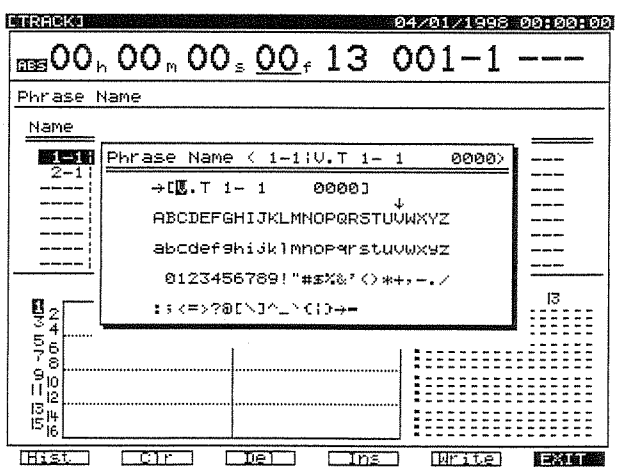
With each recording of the tracks, the following names (Phrase names) are given automatically.



You can freely change phrase names. When, for example, you record something over many times, keeping track of what performance is recorded in each phrase can become difficult. In such instances, we recommend giving phrases unique names (such as "riff" or "solo") to make all these phrases more manageable.

1. Hold down [SHIFT] and press [F2 (TRACK)].
2. Press [F1 (Tr/Ph)] so that Phrase Edit menu appears in the display.
3. Press [F4 (Name)]. If "Name" does not appear in [F4], first press [PAGE] until "Name" is displayed, and then press [F4 (Name)].
4. Press [▲], [▼], [◀], and [▶] to move the cursor to the phrase you want to rename, and then press [F1 (Name)] or [YES].
5. The Phrase Name screen appears in the display. Using [▲], [▼], [◀], and [▶] and the TIME/VALUE dial, enter the name of the phrase.

At this time, the function buttons work as shown below.



[F1 (Hist)]: Pressing this button takes you through a register of the last 20 phrase names entered, one at a time.

[F2 (Clr)]: Clears all characters in the window.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Accepts/Confirms the phrase name and removes the screen.

[F6 (EXIT)]: Exits the screen without accepting the phrase name.

6. After entering the name, press [F5 (Write)].
7. Hold down [SHIFT] and press [STORE (ZERO)]. "STORE OK?" appears in the display.
8. Press [YES].

This saves the song with its name.

9. Press [PLAY (DISPLAY)].

Return to Play condition.

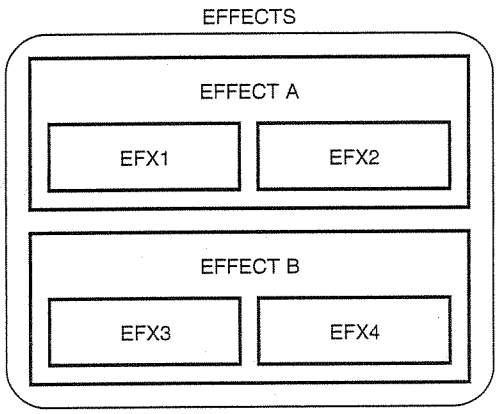
Chapter 5 Using the Internal Effects (VS8F-2)

The VS-1680 comes with the optional VS8F-2 effect expansion board. Up to two of these effect expansion boards can be installed in the VS-1680. With the VS8F-2 installed in the VS-1680, up to 4 high-quality stereo effects will be available for your use.
This chapter explains how to use these internal effects.

* *For instructions on how to install the VS8F-2, please read "Installing the Effect Expansion Board" (Quick Start p. 57).*

Composition of the Effects

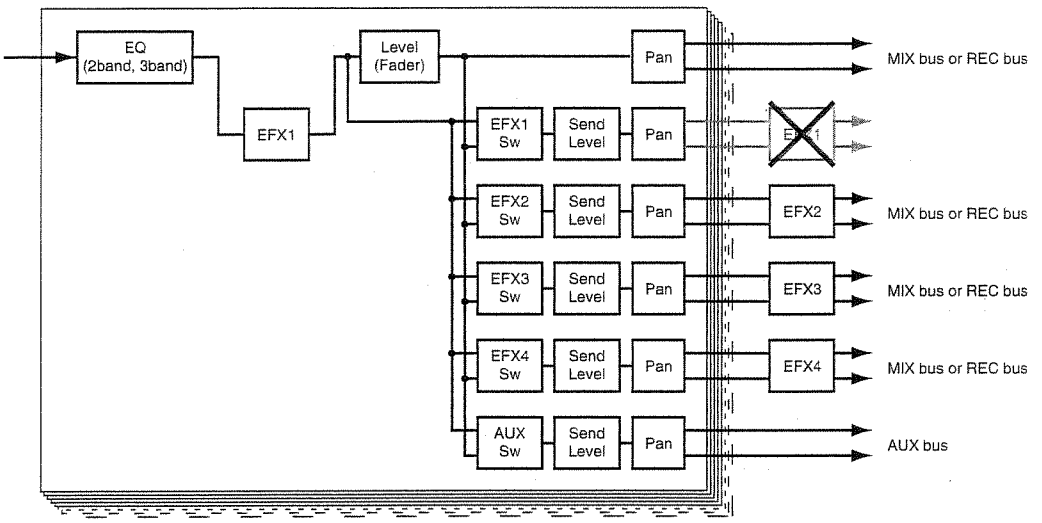
Up to two VS8F-2s can be installed in the VS-1680; these are called **EFFECT A** and **EFFECT B**.
Additionally, with two VS8F-2s installed, you can use two different effects at the same time. Each of the effects in EFFECT A, **EFX1** and **EFX2**, and the effects in EFFECT B, **EFX3** and **EFX4**, may be used, and you can select the effect to be used in each channel.



Connecting the Effects

Changing the Source Sound Itself (Insert)

The effect is directly added either between each channel's equalizer and fader or before the master fader. Connect the effect in this way if you want to use effects applied to change the output of the sound itself, such as when using distortion or overdrive effects.
When inserting an effect into one of the channels or into the Master Block, that effect cannot be used in send/return.



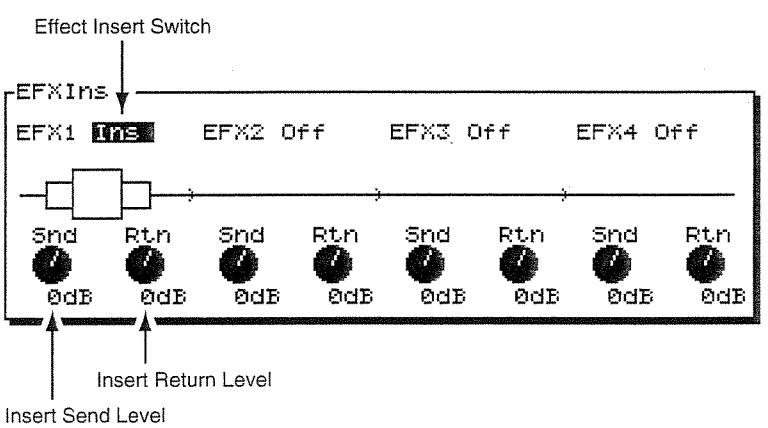
* *Depending on the effects used, when mixing with different effects inserted into each channel, or mixing channels having effects inserted with other channels having no effects, timing shifts may occur, or you may not be able to achieve the effect you desire.*

Inserting with Input and Track Channels

1. Select the channels to which the effect is to be applied. Press the SELECT buttons for the input or track channels to which you want to apply the effect.

The button indicators light, and the Input Mixer or Track Mixer screen appears in the display.

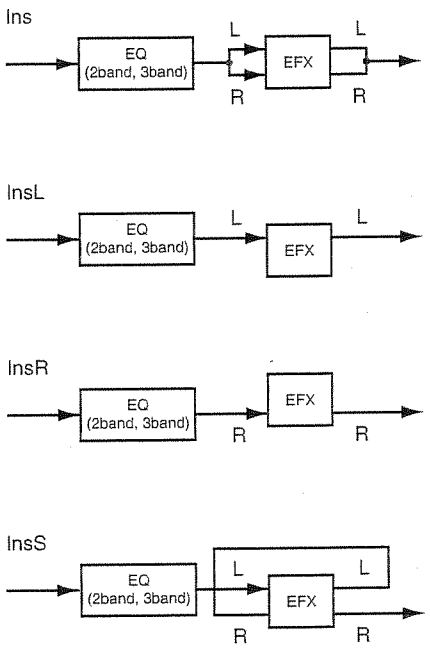
2. Press [F1 (Ef1In)]. If "Ef1In" does not appear in [F1], first press [PAGE] until "Ef1In" is displayed, then press [F1 (Ef1In)]. Alternatively, use [▲], [▼], [◄], and [►] to move the cursor to "EFXIns."
3. Press [YES].
4. Use [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial.



EFX1 (Effect Insert Switch)

This sets how the effects are connected.

Off: There is no Insert.
Ins: Inserts in both channels of the stereo effect.
InsL: Inserts in the left channel of the stereo effect.
InsR: Inserts in the right channel of the stereo effect.
InsS: Inserts in the combined left and right channels of the stereo effect in series.



* *When Ins or InsS is selected, that effect cannot be used on any other channel. Furthermore, when InsL or InsR is selected, that effect can be inserted on only one other channel.*

Snd (Insert Send Level)

This adjusts the level of the signal (-42–6 dB) sent to the Insert effect. Set the initial value to "0 dB."

Rtn (Insert Return Level)

This adjusts the level of the signal (-42–6 dB) returned from the Insert effect. Set the initial value to "0 dB."

5. At this point, you are ready to insert EFX1 into the selected channel. Press [PLAY (DISPLAY)].

Return to Play condition.

* *You can insert EFX2–EFX4 in the same way.*

Inserting an Effect into the Master Block

This inserts the effect into the MASTER Out. After the mix for each channel is completed, the entire song is put through the compressor, which is convenient at such times as when you listen to the total volume while mixing down.

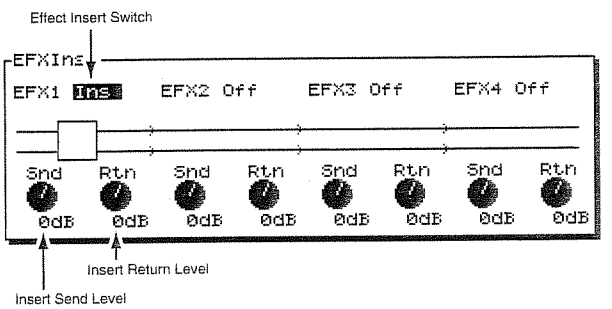
1. Press [MASTER].

The button indicator lights, and the Master screen appears in the display.

2. Press [F1 (Ef1In)]. If "Ef1In" does not appear in [F1], first press [PAGE] until "Ef1In" is displayed, then press [F1 (Ef1In)]. Alternatively, use [▲], [▼], [◀], and [▶] to move the cursor to "EFXIns."

3. Press [YES].

4. Use [▲], [▼], [◀], and [▶]] to move the cursor. Rotate the TIME/VALUE dial.



EFX1 (Effect Insert Switch)

This sets how the effects are connected.

Off: There is no Insert.
Ins: Inserts in both channels of the stereo effect.

Snd (Insert Send Level)

This adjusts the level of the signal (-42–6 dB) sent to the Insert effect. Set the initial value to "0 dB."

Rtn (Insert Return Level)

This adjusts the level of the signal (-42–6 dB) returned from the Insert effect. Set the initial value to "0 dB."

5. At this point, you are ready to insert EFX1 into the Master Block. Press [PLAY (DISPLAY)].

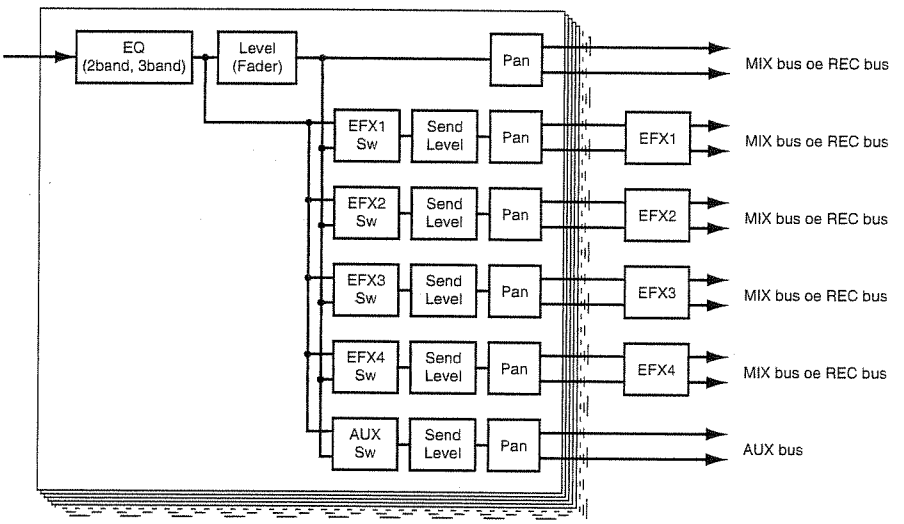
Return to Play condition.

* *You can insert EFX2–EFX4 in the same way.*

Adding the Sound with the Effect Applied to the Direct Sound (Send/Return)

When adding the sound with effect to the direct sound, such as is done with reverb or delay, use the EFFECT bus.

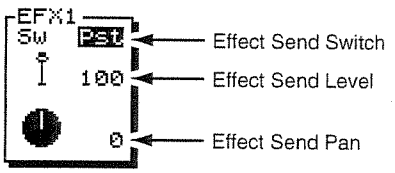
With some effects, while you can have output of both the direct sound and effect sound, it's usually better to have the effect sound output separately. The direct sound and effect sound are adjusted with each channel fader. The present signal flow is shown below.



1. Select the channels to which the effect is to be applied. Press the SELECT buttons for the input or track channels to which you want to apply the effect.

The button indicators light, and the Input Mixer or Track Mixer screen appears in the display.

2. Press [F1 (EFX1)]. If "Ef1In" does not appear in [F1], first press [PAGE] until "EFX1" is displayed, then press [F1 (EFX1)]. Alternatively, use [▲], [▼], [◄], and [►] to move the cursor to "EFX1."



3. Use [▲] and [▼] to move the cursor. Rotate the TIME/VALUE dial.

Sw (Effect Send Switch)

This selects the how the signal is sent to the EFFECT bus (send).

Off: The signal is not sent.
Pre: The sound before passing through the channel fader is sent.
Pst: The sound after passing through the channel fader is sent.

(Send Level)
This adjusts the volume level of the signal (0–127) sent to the EFFECT bus. Set the initial value to "100."

(Send Pan)
This adjusts the stereo placement of the signal (L63–0–R63) sent to the EFFECT bus. "L63" is fat left, and "R63" is far right. Set the initial value to "0" (center).

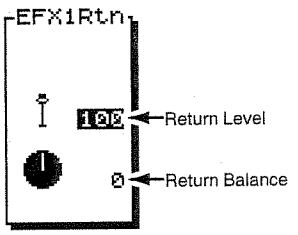
4. At this point, the effects are set up so that they will be add to the sound. Press [PLAY (DISPLAY)].
Return to Play condition.

* *You can insert EFX2–EFX4 in the same way.*

Adjusting the Return Level
You can adjust the volume of the effect sound (Return level) with the channel faders on the top panel. Use the following procedure.

4-1. Press the input channel [EFFECT 1/3 RTN] button.
The Effect Return screen appears in the display.

4-2. Press [F3 (EFX1)] or use [▲], [▼], [◀], and [▶] to move the cursor to "EFX1Rtn."



(Return Level)
This sets the volume level (0–127) of the effects. Set the initial value to "100." Use the channel faders for this.

(Return Balance)
This adjusts the left-right balance (L63–0–R63) of the effect. Set the initial value to "0" (center).

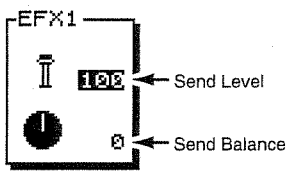
4-3. Press [FADER] so that the IN indicators light.
At this time, the EFX1 return level can be adjusted with the EFFECT1 fader. Similarly, the EFX2 return level can be adjusted with the EFFECT2 fader.

* *When you wish to adjust the return levels of EFX3 and EFX4, hold down [SHIFT] and press the input channel [EFFECT 1/3 RTN] or [EFFECT 2/4 RTN] buttons. The SHIFT button indicator lights. Now, the EFX3 return level can be adjusted with the EFFECT1 fader, and the EFX4 return level can be adjusted with the EFFECT2 fader.*

Adjusting the Balance of the Overall Effect Send Level

You can adjust the balance of the total effect send level for each effect with the effect send level (p. 107) and pan (p. 107) settings that are assigned to each individual channel left as they are.

1. Press [MASTER].
2. Press [F1 (EFX1)]. If "EFX1" does not appear in [F1], first press [PAGE] until "EFX1" is displayed, then press [F1 (EFX1)]. Alternatively, use [▲], [▼], [◄], and [►] to move the cursor to "EFX1."
3. Use [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial.



(Send Level)
This adjusts the total volume level of the signal (-42–6 dB) sent to the effect. Set the initial value to "100."

(Balance)
This adjusts the balance (L63–0–R63) of the total signal sent to the effect. Set the initial value to "0" (center).

* *You can adjust the overall send level and balance for EFX2–EFX4 in the same manner.*

Selecting Effects (Patch)

An effect settings is referred to as a **patch**. The VS-1680 provides 210 (P000-P209) read-only effects (Preset Patches) and 200 (U000-U199) read and write effects (User Patches). Please take a moment to check these effects.

* *If used in combination with the Vari Pitch function (p. 166), delay times may change somewhat, and for distortion effects (distortion, overdrive, etc.), there may be some change in the quality of the tone.*

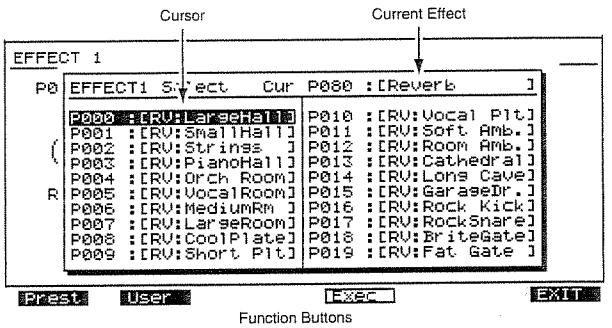
* *With some of the effects, you may not want the direct sound output, or other special setting may be required. Please refer to "Algorithm List" (Appendices p. 81) when making these settings.*

1. Press [PLAY (DISPLAY)].
2. When you wish to use EFX1/EFX2, hold down [SHIFT] and press [F3 (EFFECT A)]. When you wish to use EFX3/EFX4, hold down [SHIFT] and press [F4 (EFFECT B)].

If "No Effect Board" Appears in the Display
This indicates there is no VS8F-2 installed. In this case, you cannot use the internal effects.
If the message appears even when a VS8F-2 is installed, it indicates that the effect expansion board is not being recognized properly. Perform the shutdown procedure and turn the power off as described in "Turning Off the Power" (p. 32), then reinstall the VS8F-2 correctly.

3. Press [F1 (EFX1)].
The Effects 1 settings screen appears in the display.
4. Press [F2 (Sel)].
The effects list appears in the display.
5. Use the TIME/VALUE dial to move the cursor to the effect you wish to use.

At this point, the function buttons work as shown below.



[F1 (Preset)]: Displays the Preset patch list.
[F2 (User)]: Displays the User patch list.
[F4 (Exec)]: Exits the screen after selecting the effect.
[F6 (EXIT)]: Exits the screen without selecting the effect.

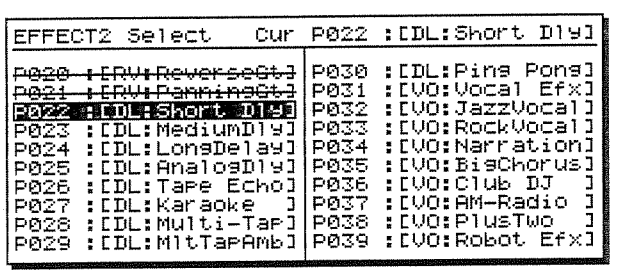
6. After selecting the effect, press [F4 (Exec)].
The EFX1 settings screen reappears in the display.

7. Check the effect to make sure that the sound is actually being played. Repeat Step 4 for any other patches whose effects you want to confirm.

8. After you have checked the patches, press [PLAY (DISPLAY)].
Return to Play condition.

* *Patches using the following algorithms can not be selected for EFX2 and EFX4. A horizontal line is drawn through the effect name in such cases. Please select patches using these algorithms for use with EFX1 or EFX3.*

- Reverb
- Gated Reverb
- Vocorder 2
- Voice Transformer



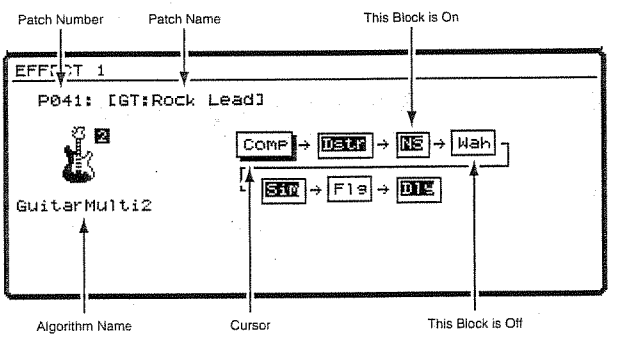
Creating New Effects Sounds

When creating a new effect, first select the existing patch whose sound is closest to the "image" of the patch you wish to create, and then alter that patch settings. Since changes to effects settings are temporary, they are lost once you select another patch or recall a different Scene. When saving changed effects settings, either save them to the User Patches or store the mixer settings as a Scene.

About Algorithms

An **algorithm** determines the composition or structure of an effect. The VS-1680 features 34 different algorithms. The settings for the effects in each patch use at least one of these algorithms. Check the algorithms used in each patch in "Preset Patch List" (Appendices p. 74). For details on each algorithm, refer to "Algorithm List" (Appendices p. 81).

1. Using the procedure described in "Selecting Effects (Patch)" (p. 108), call up the patch containing the effect on which you will base your new effect.
The following screen is displayed.

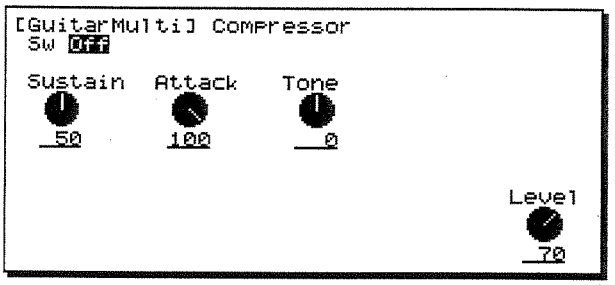


2. Press [◀] and [▶] to move the cursor on the screen. When you select a patch with an algorithm in which the effect can be turned on and off, you can use the TIME/VALUE dial to switch the On/Off value for each of the effect blocks. The display of effect blocks that are currently on is highlighted. Move the cursor to the effect block whose settings you wish to change.

3. Press [F3 (EDIT)].
A list of settings included in the effect block is displayed.

4. Press [▲], [▼], [◀], and [▶] to move the cursor on the screen. Move the cursor to the setting you want to change, and rotate the TIME/VALUE dial. For more detailed information about the kinds of setting included in each effect block, please refer to the "Algorithm List" (Appendices p. 81).

At this time, the function buttons work as shown below.



[F1 (←Blk)]: Displays the settings of the previous effect block.

[F2 (→Blk)]: Displays the settings of the next effect block.

[F4 (SAVE)]: Calls up the screen for saving the effect.

[F6 (EXIT)]: Exits the screen.

5. Save the effect.

When saving an effect's settings, it is necessary to either save them to the User Patches or store the mixer settings as a Scene. If you want to use them to another song, save them to a User Patch. If you are only going to use them to the currently selected song, then store it to a Scene.

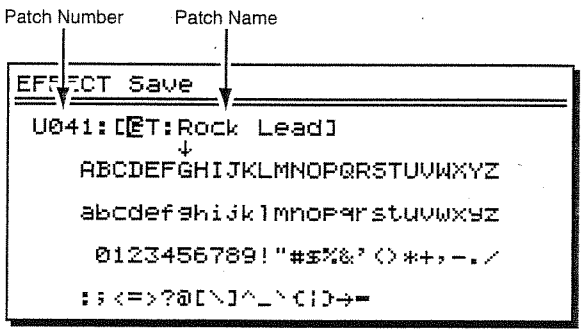
When Saving to User Patches

When you save effect settings to a User Patch, the User Patch that had previously been in that location is lost. At the time of purchase, the effects in the VS-1680's User Patches are the same as those stored in the Preset Patches.

1. Press [F4 (SAVE)].

The Effect Name screen appears in the display.

2. Rotate the TIME/VALUE dial to select the destination patch number (U000–U199).



3. Move the cursor by pressing [►]. Use [◄] and [►] and the TIME/VALUE dial to set the name of the User Patch.

At this time, the function buttons work as shown below.

[F1 (Hist)]: Press this button to go through a register of the last 20 User Patch names entered, one patch at a time.

[F2 (Clr)]: Clears all characters in the name display.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Accepts/Confirms the User Patch name and exits the screen

[F6 (EXIT)]: Exits the screen without accepting the User Patch name.

4. After entering the name, press [F5 (Write)].

The User Patch is saved.

5. Press [PLAY (DISPLAY)].

Return to Play condition.

When Storing to a Scene

For more detailed information, please refer to "Recording the Current Condition of the Mixer (Scene)" (p. 40).

1. Press [PLAY (DISPLAY)].

Return to Play condition.

2. Press [SCENE].

The button indicator lights.

3. Press the SCENE buttons ([1]–[8]) whose indicators are not blinked. For example, if you want to store the settings to Scene 1, then press [1].

4. After the Scene is stored, returns to Play condition. The [SCENE] indicator goes off. If you wish to cancel the operation press [SCENE] once more.

About Effect Levels

Many algorithms include parameters for effect level, which adjusts the output level of the effect sound, and direct level, which adjusts the output level of the direct sound. When these parameters are preceded by a minus sign, the phase is inverted.

The direct level of the Preset Patches, which were created with careful consideration given to the connection to the EFFECT bus, is set to "0."

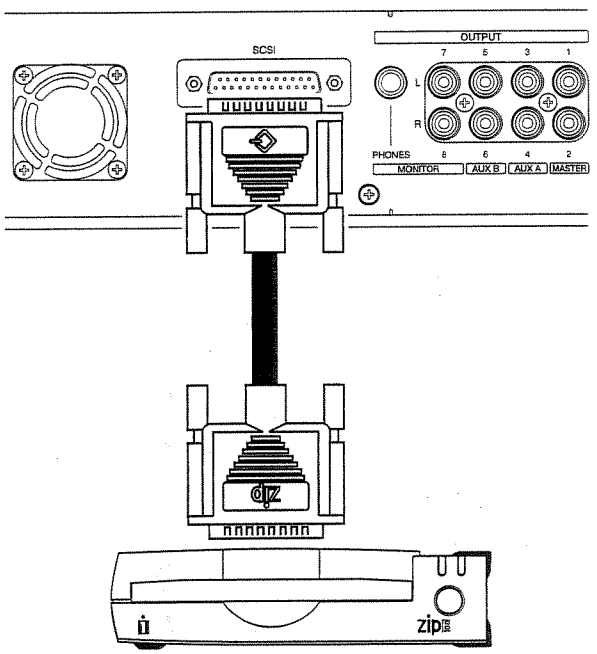
When inserting an effect into a channel, raise the direct level. To determine the type for each Preset Patch, please refer to "Preset Patch List" (Appendices p. 74).

Chapter 6 Use with a Zip Drive

A Zip drive can be connected to the SCSI connector of the VS-1680. Be sure to read the owner's manual for your Zip drive as well.
This chapter will explain the procedures for saving songs to Zip disks and for returning songs saved to Zip disks back to the internal hard disk.

Connecting the Zip Drive

Use the following procedure to connect the Zip drive to the VS-1680.



* *Once the connections have been completed, turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.*

* *Always make sure to have the volume level turned down before switching on power. Even with the volume all the way down, you may still hear some sound when the power is switched on, but this is normal, and does not indicate a malfunction.*

1. Turn on the power of the Zip drive.
2. Turn on the power of the VS-1680 with the POWER switch on the rear panel.
3. Turn on the power of connected audio equipments.
4. Raise the volume of the audio devices to appropriate levels.

* *For more detailed information regarding Zip drive connections, including the necessary settings, please refer to "About SCSI" (Appendices p. 5).*

Initializing the Disk (Drive Initialize)

A new disk just purchased at computer store or a disk that was used by another device **cannot be used on the VS-1680 as is**. You must initialize the disk so that it can be used by the VS-1680. When a disk is initialized, **the entire contents are irretrievably lost**. Check any such disk you plan to initialize to make sure that it does not contain anything that you don't want deleted.
Additionally, **disks used with the VS-1680 cannot be used on other devices (such as personal computers)**.

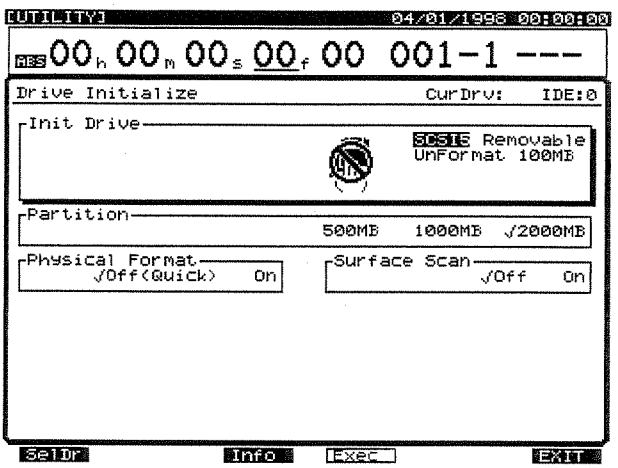
* *If you accidentally delete data that you need, that data cannot be restored to its previous condition. Roland Corporation assumes no liability concerning such loss of data.*

If you are using a drive or disk that has been partitioned, please note that **you will not be able to choose a particular partition that you wish to initialize**. When you carry out a drive initialization, the whole drive and all its partitions will be initialized at once.

Here is an example how to initialize new Zip disks.

1. Confirm that power of the Zip drive and the VS-1680 is turned on.
2. Insert a disk into the Zip drive.
3. Press [PLAY (DISPLAY)].
4. Hold down [SHIFT] and press [F6 (UTILITY)].
The Utility menu icon appears in the display.
5. Press [F6 (DrIni)]. If "DrIni" does not appear in [F6], first press [PAGE] until "DrIni" is displayed, then press [F6 (DrIni)].

6. Use [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to set each of the values.



Init Drive (Initialize Drive)

Select the disk drive (IDE, SCSI0–SCSI7). "IDE" indicators internal hard disks, and "SCSI0–SCSI7" (these are SCSI ID numbers) indicate external disk drives. For example, select "SCSI5" when selecting the Zip drive connection.

Partition

Select the partition size (500 MB, 1000 MB, or 2000 MB). In normal circumstances, select "2000 MB."

Physical Format

Select whether or not to use physical formatting. For new disks or disks that have been used by another device, select "On." For new hard disks or when formatting disks for Windows or Macintosh platforms, select "Off (Quick)."

Surface Scan

This confirms that the read and write functions in all of the disk drive's partitions are operating correctly when the drive is initialized. In normal circumstances, set this to "Off." When you particularly want to conduct a test of the read/write functions, the set this to "On" (p. 113).

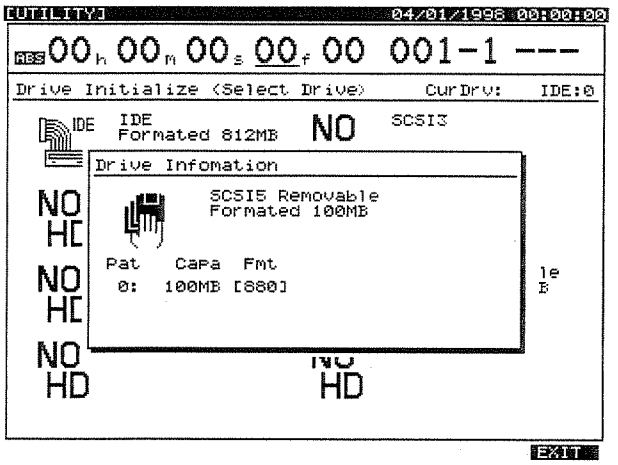
At this time, the function buttons work as shown below.

[F1 (SelDr)]: This displays a directory of the currently connected drives. Use [▲], [▼], [◀], and [▶] to select the drive that you want to initialize.

[F3 (Info)]: Displays the drive information.

[F4 (Exec)]: Executes initialization of the selected drive.

[F6 (EXIT)]: Exits the screen.



7. When the settings are made, press [F4 (Exec)]. "Initialize *****, OK?" appears in the display. "*****" refers to the drive's SCSI ID number. For example, "SCSI5" indicates a Zip drive.

8. Press [YES].
"Initialize *****, Sure?" (Really initialize the disk?) appears in the display.

9. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.

10. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

11. After the initialization is completed correctly, the VS-1680 restarts automatically, and return to Play condition.

* *Be aware that initializing a drive requires some time. This is not a malfunction. For example, when physical formatting is turned on, the time required to format one Zip disk is approximately 10 minutes. The progress of initialization will be shown in the display.* ***Be sure not to turn the power off until initialization is complete.***

Checking Disk Reliability

When initializing a hard disk or other disk, you can confirm that the read and write functions in all of the disk partitions are operating correctly. This is referred to as **Surface Scan**. If there are any places on the disk where the reading or writing of data cannot be performed, the VS-1680 **registers this as unusable memory**. Recording and playback then become unavailable at that location.
Performing this procedure deletes all contents saved on the disk. Conduct this check when initializing newly purchased disks or disks which previously have been used with a personal computer or other device. Be sure to make a backup copy of any disk you are presently using on the VS-1680 before carrying out the procedure on it.

1. Set Surface Scan to "On," and as described in "Initializing the Disk" (p. 111), carry out the Drive Initialize procedure.
2. After initialization of the disk is completed, Surface Scan begins automatically.

* *The Surface Scan procedure takes a certain amount of time.*
Be aware that Surface Scan requires some time. This is not a malfunction. For example, the time required to conduct Surface Scan on one Zip disk (100 MB) is approximately 10 minutes. The time it will take to conduct Surface Scan on your disk drive should be based on the size (capacity) of the disk. The progress of the Surface Scan procedure is shown in the display.

3. When Surface Scan is completed, one of the following messages appears in the display.

"File System Err":
A read or write failure has occurred in a location which stores basic data used by the VS-1680 for recording and playback. **This disk drive cannot be used by the VS-1680.**

"_____Defect":
The underlined portion will indicate the number of unusable memory locations in this drive. The larger this number is, the lower the reliability of this drive.

"— Complete —":
This drive has no unusable memory.

4. Press [YES].
The VS-1680 will restart.

Cancelling Surface Scan
You may cancel Surface Scan by performing the following procedure.

1. Press [EXIT (NO)].
"Cancel?" appears in the display.
2. Press [YES].
Surface Scan is new cancelled. However, the memory found to be unusable up to that point is not registered.
3. The VS-1680 restarts automatically.

Saving Performance Data to a Zip Drive (Song Copy)

You can save song data created on the VS-1680 to an external disk. This is a convenient way to have song data backed up in the event of possible disk drive problems or to save data when there is little free disk space.

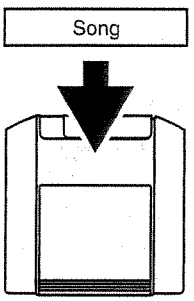
Furthermore, since Zip disks are easy to handle and manage, you can use them when sharing song data with friends or when you have a VS-1680 both in the studio and at home. We recommend keeping copies of important song data on multiple disks.

* *Incorrectly conducting the Song Copy procedure may result in loss of data. Roland Corporation assumes no liability concerning such loss of data. Furthermore, Roland does not warrant any copied data, regardless of the performance or condition of the Zip Drive.*

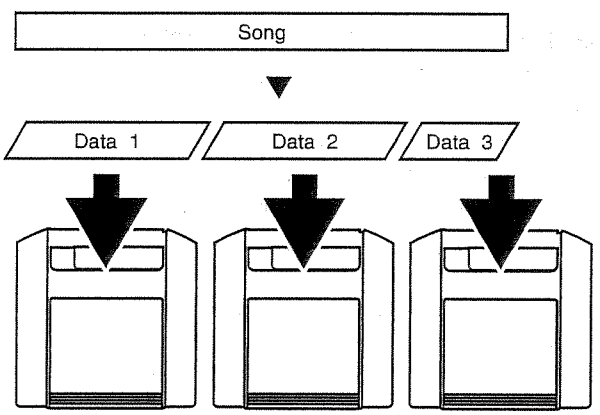
Backing Up Song Data with a CD-R Drive or DAT Recorder
You can use a CD-R drive or DAT recorder to back up song data from the VS-1680. Song data backed up onto a CD-R disc cannot be overwritten. Thus, this method is appropriate for backing up completely finished songs or other such data. Song data backed up on DAT tapes can be overwritten any number of times, but considering the time required for saving data, and because of reliability issues, it is more convenient to back up data using a Zip drive. Roland recommends backing up data (Song Copy) with a Zip drive.

There are two ways to carry out the Song Copy procedure. Select the method depend on the amount of free space on the destination disk (100 MB for Zip disks). The size of the current song is shown in the display.

Playable:
Use this method to copy songs that use relatively little data onto disks with sufficient memory to hold them. If the destination drive or disk already has saved song data on it, then you can copy additional songs that will fit within the remaining free space.



Archives:
Use this method to copy songs that are too large to be saved on a single disk. The song data is converted into a data format specifically for saving (archives format), and is copied onto multiple disks according to the free space on the disks. This means that it will not be possible to directly play back the song data. If you wish to play back song data copied in archive format, you will need to reload the archive data into the current drive using the appropriate procedure. Furthermore, song data cannot be copied onto disks that already have songs recorded on them.



About Optimize
When operations such as punch-in recording are repeated, old (now unused) performance data still remains on the disk drive. By erasing this unnecessary data from the disk drive, you can free up a significant amount of disk space.
When you find that you cannot save something to a single disk, then try the "Song Optimize" procedure (p. 169). This way, you can reduce the memory required to save a song, enabling you to save to a single disk.

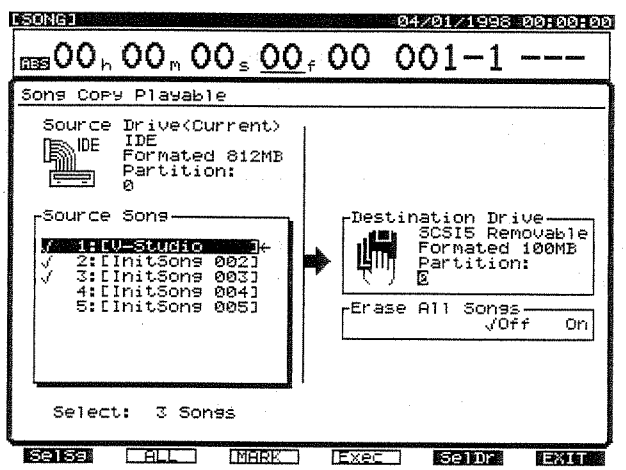
Saving a Song to a Single Disk (Playable)

Here, the procedure for saving a playable copy of a song on the VS-1680's internal hard disk to a Zip disk which is set to SCSI ID Number 5 is explained.

1. Select the disk containing the source song you want to copy as the current drive.
2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F1 (SONG)].

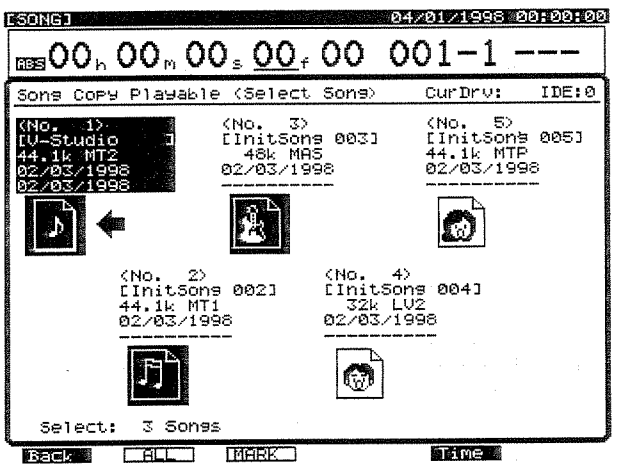
The Song menu icon appears in the display.

4. Press [F1 (CP PL)]. If "CP PL" does not appear in [F1], first press [PAGE] until "CP PL" is displayed, then press [F1 (CP PL)].



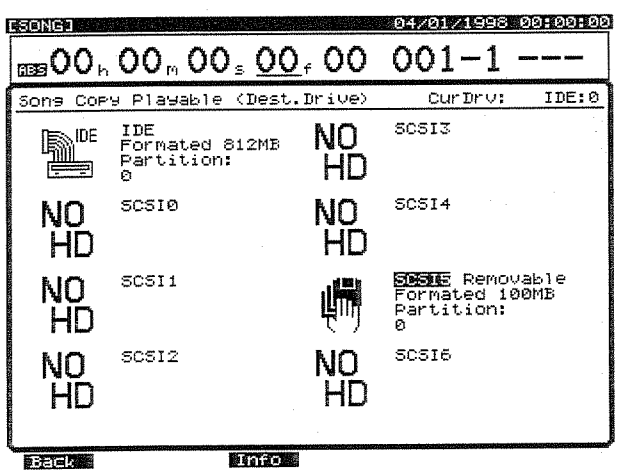
5. Press [◀] and [▶] to move the cursor to "Source Song."

6. Use the TIME/VALUE dial to move the cursor to the song you want to copy and press [F3 (MARK)]. By pressing [F2 (ALL)], you can place and remove Marks from all of the songs. In addition, you can press [F1 (SelSg)] to display a directory of the songs. At this point, after you have placed a Mark at the song you want, press [F1 (Back)].



7. Press [►] to move the cursor to "Destination Drive."

8. Use the TIME/VALUE dial to select the destination drive and partition. You can press [F5 (SelDr)] to display a directory of drives. At this point, use [▲], [▼], [◄], and [►] to select the destination drive, and select the destination partition with the TIME/VALUE dial. Once you have selected the destination drive, press [F1 (Back)].



9. If the source and destination drives are different, press [▼].

Move the cursor to "Erase All Songs" use the TIME/VALUE dial.

Erase All Songs

When this is set to "On," the copy procedure is carried out after the destination drive is initialized. If you want to perform the copy procedure leaving songs already saved in the destination drive as they are, then set this to "Off."

10. Press [F4 (Exec)].

A message asking if you want to continue appears in the display.

11. Press [YES].

"STORE Current?" (Store the current song?) appears in the display.

12. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

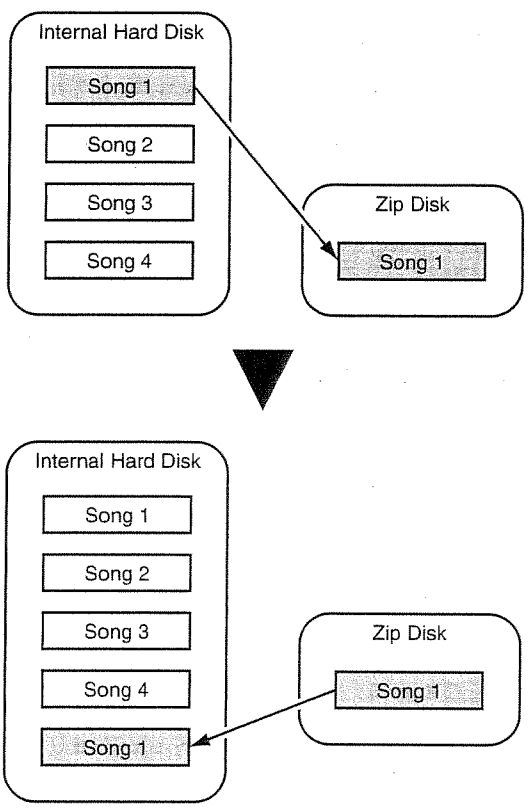
13. When the Playable Copy procedure is finished, return to Play condition.

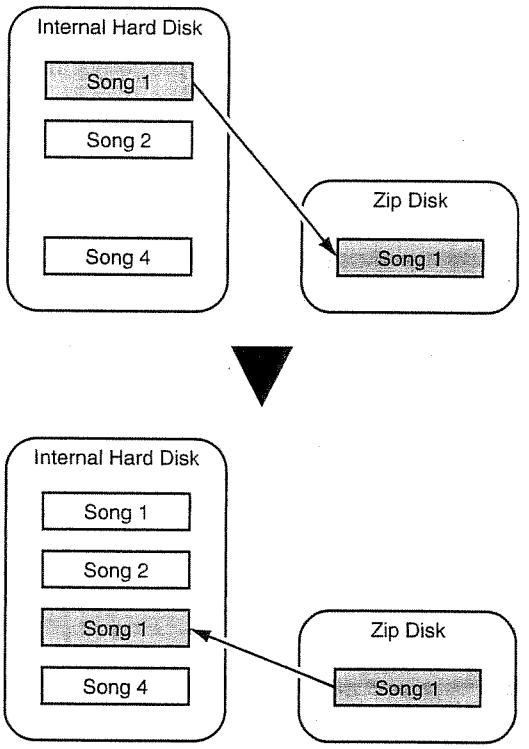
> **If "Disk Memory Full" Appears in the Display**
>
> This indicates that the destination disk has insufficient free space, or that the number of songs on the disk has exceeded the maximum number (200 songs) that can be stored on the disk, and that the copy procedure was cancelled. However, you can still use the song data copied up to that point.

To Load Data from Disks (Drive Select)

If you want to take playable songs that have been copied to Zip disks and load them onto the VS-1680's hard disk, first switch the current drive to the Zip drive (Drive Select). Afterwards, you can make playable copies onto the internal hard disk from the Zip disk.

* *Even if you remake a playable copy of a song from the Zip disk to the internal hard disk without first deleting an existing playable copy of the song from the hard disk (even if you return it to the hard disk), the original song is not overwritten. In this case, a new song is created with the same song name as that of the original and is written to the lowest available song number.*





1. Confirm that power of both the Zip drive and the VS-1680 is turned on.
2. Insert a disk into the Zip drive.
3. Press [PLAY (DISPLAY)].
4. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon appears in the display.

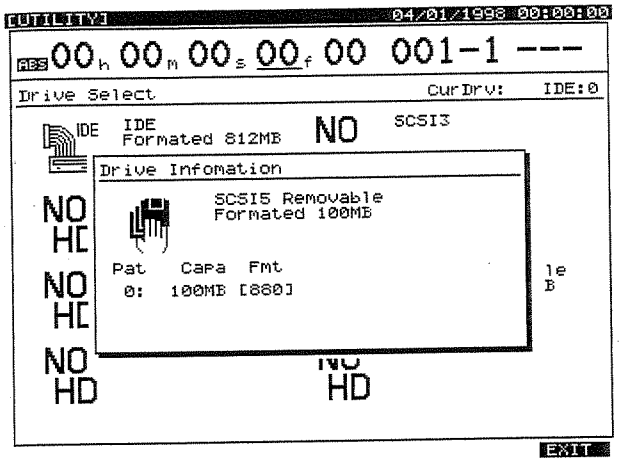
5. Press [F4 (DrSel)]. If "DrSel" does not appear in [F4], first press [PAGE] until "DrSel" is displayed, and then press [F4 (DrSel)].

A list of currently connected drives appears in the display.

6. Press [▲], [▼], [◀], and [▶] to move the cursor. Select the drive to which you want to change. By rotating the TIME/VALUE dial, you can select the partition you want to switch to. For now select Zip drive (SCSI5).

At this time, the function buttons work as shown below.

[F3 (Info)]: Displays the drive information.
[F4 (Exec)]: Executes drive select.
[F6 (EXIT)]: Exits the screen.



7. After you have selected the drive and partition, press [F4 (Exec)].
8. A confirmation message appears on the screen. Press [YES].
9. "STORE Current?" (Store the current song?) appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**
10. After you have switched the current drive, return to Play condition.
11. Following the procedure described in "Saving a Song to a Single Disk" (p. 114), make a playable copy of the song on the Zip disk to the internal hard disk.
12. After you have made the copy, repeat Steps 3–10 to reselect the internal hard disk as the current drive.

When You Cannot Save a Song to a Single Disk (Archives)

Handling of Archives Copy Disks

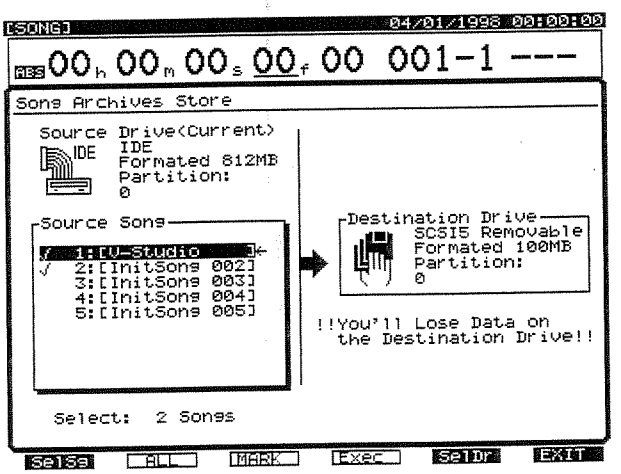
To save songs in archives format, the destination disk must be initialized. This initialization procedure differs from the usual Drive Initialize formatting (p. 111). This procedure lets you carry out Archives Copy with newly purchased disks, disks which previously have been used with a personal computer or other device, or other disks which have not been formatted with Drive Initialize. However, any song data saved to the disk is lost once the Archives Copy procedure is performed.
Additionally, you cannot designate a disk containing archive format songs as the current drive. If you try to do this, the disk is identified as being an **uninitialized disk**.

Saving to Disks (Store)

1. Make the drive (internal hard disk) containing the song you want to copy the current drive.
2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F1 (SONG)].

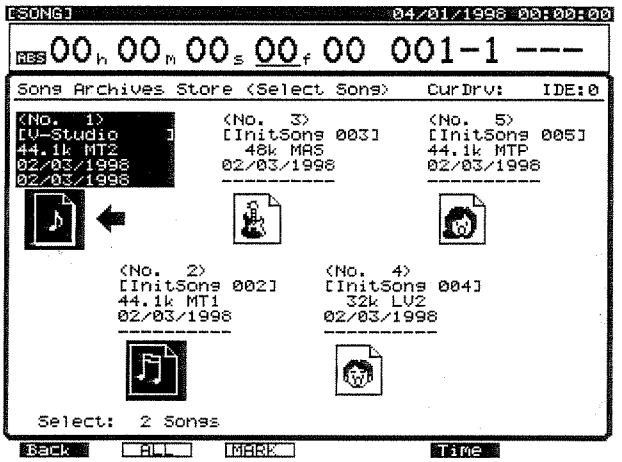
The Song menu icon appears in the display.

4. Press [F2 (AcStr)]. If "AcStr" does not appear in [F2], first press [PAGE] until "AcStr" is displayed, then press [F2 (AcStr)].



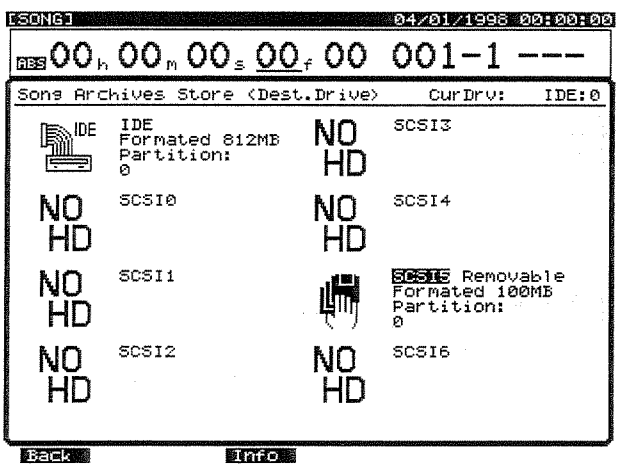
5. Press [◀] to move the cursor to "Source Song."

6. Songs that are marked are copied. Use the TIME/VALUE dial to move the cursor to the song you want to copy and press [F3 (MARK)]. By pressing [F2 (ALL)], you can place and remove Marks from all of the songs. In addition, you can press [F1 (SelSg)] to display a directory of the songs. At this point, after you have placed a Mark at the song you want, press [F1 (Back)].



7. Press [▶] to move the cursor to "Destination Drive."

8. Use the TIME/VALUE dial to select the destination drive. Press [F5 (SelDr)] to display a directory of drives. At this point, use [▲], [▼], [◀], and [▶] to select the destination drive, and press [F1 (Back)]. For now select Zip drive (SCSI5).



9. Press [F4 (Exec)].
A message asking if you want to continue appears in the display.

10. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.

11. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

* *All data saved on the Zip disk will be deleted. Do not use any Zip disk containing song data that you need.*

12. If the song holds a large amount of data, and cannot be contained on a single Zip disk, the disk is ejected, and the message "Please Insert Disk" appears in the display. Insert the next disk and press [YES]. At this time, be sure to write the disk numbers on the labels so that you can keep track of the order in which the disks were inserted into the drive.

13. When copying over multiple Zip disks, "Insert Disk #" (# indicates the number in the order of insertion) appears in the display. Insert each of the disks once more in the proper order and press [YES].

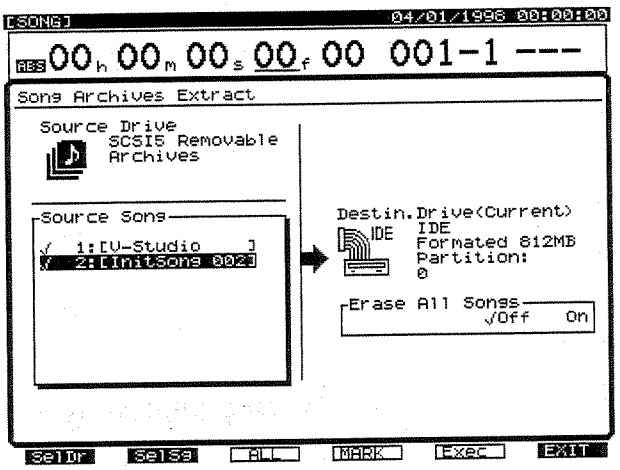
14. When the Archives Store procedure is finished, return to Play condition.

Loading Data From Disks (Extract)

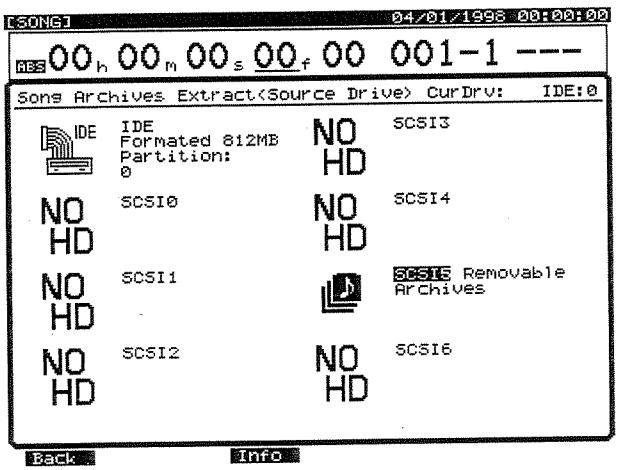
1. Select the load (restore) destination drive (internal hard disk) as the current drive.
2. Insert a disk that was copied by Archives Store into the Zip drive.
3. Press [PLAY (DISPLAY)].
4. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon appears in the display.

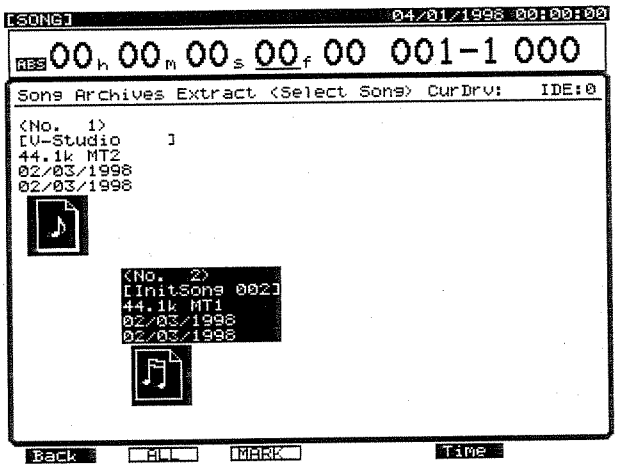
5. Press [F3 (AcExt)]. If "AcExt" does not appear in [F3], first press [PAGE] until "AcExt" is displayed, then press [F3 (AcExt)].



6. If several disk drives are connected, press [F1 (SelDr)] to have a list of the drives displayed. Use [▲], [▼], [◄], and [►] to select the source drive, and press [F1 (Back)].



7. Use [◄] and [►] to move the cursor to "Source Song."
8. Songs that are marked are loaded. Use the TIME/VALUE dial to move the cursor to the song you want to restore and press [F4 (MARK)]. By pressing [F3 (ALL)], you can place and remove Marks from all of the songs. In addition, you can press [F2 (SelSg)] to display a directory of the songs. At this point, after you have placed a Mark at the song you want, press [F1 (Back)].



9. Press [►] to move the cursor to "Erase All Song."

Erase All Songs

When this is set to "On," the recover procedure is carried out after the destination drive is initialized. If you want to perform the recover procedure leaving songs already saved in the current drive as they are, then set this to "Off."

10. Press [F5 (Exec)].

A message asking if you want to continue appears in the display.

11. Press [YES].

When "Erase All Songs" set to "Off," "STORE Current?" (Store the current song?) appears in the display.

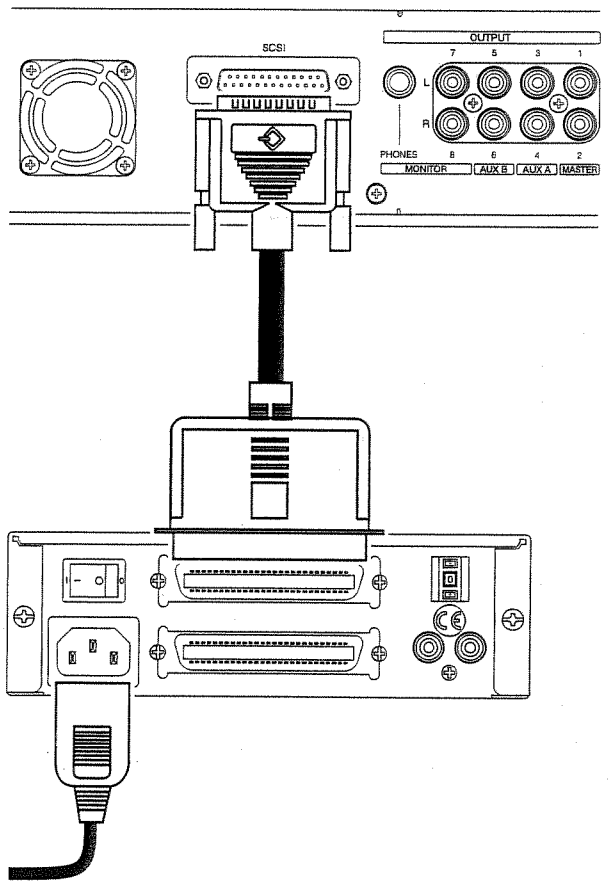
12. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**
13. Execute the load. When copying over multiple disks, "Insert Disk #" (# indicates the number in the order of insertion) appears in the display. Insert the next disk and press [YES].
14. When the Archive Extract procedure is finished, return to Play condition.

Chapter 7 Use with a CD-R Drive

You can connect a CD-R drive which is designated by Roland, to the VS-1680's SCSI connector. This chapter explains the procedures involved in creating your own original audio CDs and in backing up song data to CD-R discs. Refer to the owner's manual of CD-R drive as you proceed.
In addition, for more detailed information on SCSI, please refer to "About SCSI" (Appendices p. 5).

Connecting the CD-R Drive

* *To prevent malfunction and/or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.*



1. Turn on the power of the CD-R drive.
2. Turn on the power of the VS-1680.
3. Turn on the power of connected audio equipment.
4. Raise the volume of the audio devices to appropriate levels.

Creating an Audio CD

You can create your own audio CD by writing sound data that from two specified tracks on the VS-1680 to a CD-R disc.
The VS-1680 first creates a CD-R image data file on its internal IDE hard disk, then writes that image data to the CD-R disc. Thus, **an internal IDE hard disk is necessary for this procedure**. Furthermore, internal IDE hard disk must has a enough free space on the hard disk for the creation of the image data file.

* *Regardless of partition settings, all free space on the internal hard disk may be accessed by the image data file. After writing of the image data file to the CD-R disc is completed, it is automatically deleted.*

Items Necessary for Creating an Audio CD

- VS-1680 (1)
- CD-R drive (designated by Roland) (1)
- Internal IDE hard disk (1)
- Blank CD-R (Compact Disc-Recordable) disc
- Audio equipment to be connected to the MASTER jacks, or stereo headphones

Creating a Master Data

What is written to the CD-R disc is **performance data of the current song in two tracks (stereo tracks)**. This is not the performance data that can be heard from the output from the MASTER jacks or PHONES jack. Song data that can be written to CD-R discs for the creation of original audio CDs must satisfy the following conditions. Check the disc you plan to use.

Sample rate and recording mode:
Only **songs with a sample rate of 44.1 kHz** can be written to CD-R discs. Songs with sample rates other than this cannot be written to CD-R discs. While any recording mode may be used, for the higher-quality original CDs, either MTP (Multi-Track Pro), MAS (Mastering), or MT1 (Multi-Track 1) is recommended (p. 58).

Mixing:

The content of adjustments made to mixer settings during playback are not recorded to the CD-R disc. For example, in a normal performance, even if you control fade-ins and fade-outs with the master fader, this is not reflected in what is written to CD-R disc; rather, it ends up sounding as if the song is cutting in and out. Adjust equalizer, level, pan, and other settings during track bouncing.
Setting up Auto Mix beforehand can make the track bouncing operation simpler (p. 156).

Effects:

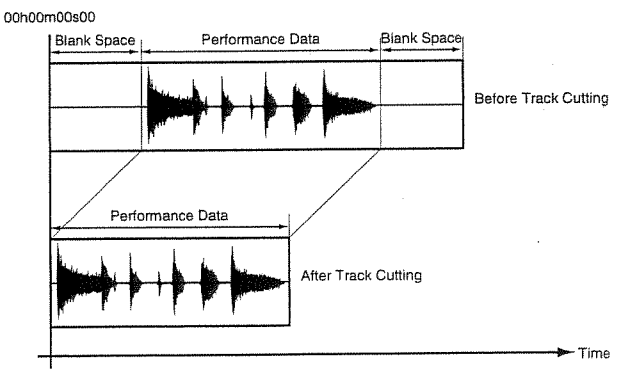
Effects that are operating during playback are not recorded on CD-R discs. For example, in a normal performance, even if you have reverb or delay applied to the output of each track, this is not reflected in what is written to CD-R disc; rather, it ends up sounding as if no effect has been applied. Add effects during track bouncing. (p. 78)

Track bouncing:

Two V-tracks, one as the left track and one as the right, can be written to a CD-R disc. Bounce the tracks of song data that has not been mixed down to two-channel stereo tracks (p. 77). Designate these tracks as the master tracks (V-track write sources) to be written to the CD-R disc when writing is to be carried out.

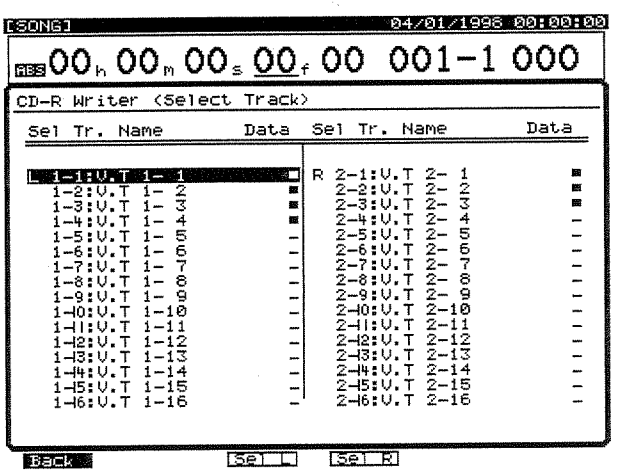
Range:

The two tracks designated by the VS-1680 for writing to the CD-R disc are written from the beginning of the tracks (normally "00h00m00s00") to the end (song end). Thus, any blank space on the tracks before or after the actual performance results in wasted space on the CD-R disc. To avoid this, use Track Cut to remove any unused portions on the tracks.



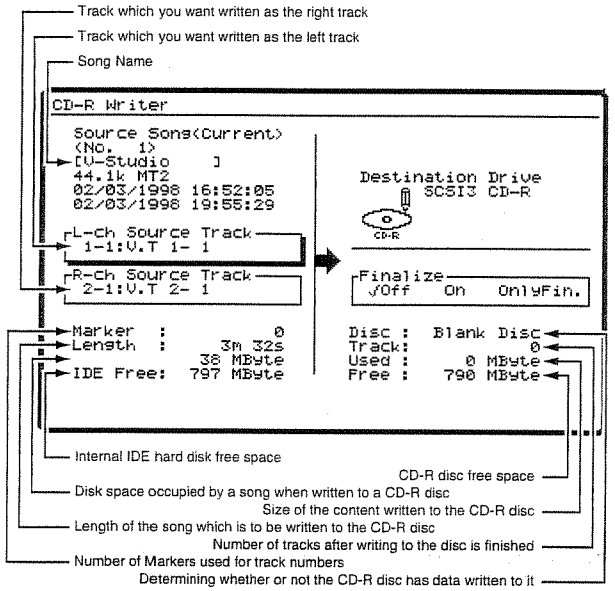
Writing Songs to CD-R Discs

1. Place a blank CD-R disc in the CD-R drive.
2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F1 (SONG)].
The Song menu icon appears in the display.
4. Press [F3 (CD Wt)]. If "CD Wt" does not appear in [F3], first press [PAGE] until "CD Wt" is displayed, then press [F3 (CD Wt)].
5. A confirmation message appears in the display. Press [YES].
6. "STORE Current?" (Store the current song?) appears in the display. If you wish to save the current song and write it to the disc, press [YES]; if not, press [NO].
7. Press [F1 (SelTr)].



8. Select the left and right tracks on the CD-R disc to which you want the song written. Use [▲], [▼], [◄], and [►] or the TIME/VALUE dial to move the cursor to the V-track which you want written as the left track, and press [F3 (Sel L)]. Continuing, move the cursor to the V-track which you want written as the right track, and press [F4 (Sel R)].
9. Press [F1 (Back)].

10. This display appears as shown below. Check each of the capacity. At this time, if you move the cursor to "L-ch Source Track" or "R-ch Source Track," you can switch each of the by rotating the TIME/VALUE dial.



* *If the "space required for the song being written to the CD-R disc" exceeds the total of the "free space on the internal IDE hard disk" and the "free space on the CD-R disc," you cannot write the song to the CD-R disc.*

Disk space required for the song being written to the CD-R disc

The disk space occupied by a song when written to a CD-R disc may not be equivalent to the size of the song itself. This is something that varies with the number of tracks and recording mode used. You can make a rough estimate of the space required for a song when written to a CD-R disc as shown below.

Size (bytes) = 44,100 (Hz) x 2 (stereo tracks) x 2 (bytes) x "song length" (in seconds)

* *The used capacity of the song is displayed as 1 MB = 1,000,000 bytes. The displayed value is the approximate standard value.*

11. Press [▲], [▼], [◀], and [▶] to move the cursor to "Finalize," and rotate the TIME/VALUE dial.

Finalize

To make CD-R discs prepared with the VS-1680 playable on ordinary CD players, a TOC (Table of Contents) must be written. Nothing beyond this can be written to finalized CD-R discs.

? **TOC** (Appendices p. 65)

Off: The song is written without the finalize procedure being carried out.

On: After the song is written, the finalize procedure is performed.

OnlyFin.: Only the finalize procedure is carried out, without the song being written.

12. Press [F4 (Exec)].
A confirmation message appears in the display.

13. Press [YES].
A message with the licensing conditions appears in the display. After reading this carefully, if you agree to the conditions, press [YES].
This message also appears in the back cover of this manual. Writing to the CD-R disc begins. If you do not agree to the terms, press [NO]. Return to the Step 2.

If "Not 44.1k Song!" Appears in the Display

The sample rate is not 44.1 kHz, so the song cannot be written to the CD-R disc. Press [ENTER (YES)] to return to Step 1. Please refer to "Creating a New Song" (p. 58).

If "Please Insert Disc!" Appears in the Display

This indicates that the CD-R drive's loading tray is open, that there is no disc loaded, or that the CD-R drive is in some other way not ready for use. Insert a CD-R disc, and press [YES].

14. After writing of the CD-R disc is correctly performed, "Write Another?" appears in the display. If you wish to write the same song data to another CD-R disc, place a new disc in the drive and press [YES]. Press [NO] to return to the Step 2.

Audifioning (Test Listening) Songs Written to CDs (CD Player Function)

You cannot playback CD-R discs that have just had written songs to them with regular commercial CD players. To listen to songs that have been just written to a disc in order to check them, carry out the following operation.

? **Finalize** (Appendices p. 63)

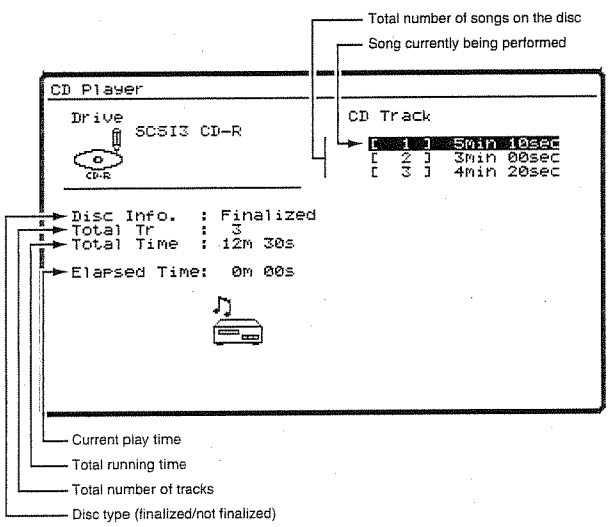
* *Other commercially-available CD software can also be played using the CD player function.*

* *You can listen to the contents of the disc through the* ***VS-1680's MONITOR jacks or the PHONES jack****. You cannot output the contents through the CD-R drive's PHONES jack or AUDIO OUT jacks.*

1. Insert the CD-R disc or commercial CD software onto the CD-R drive.
2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon appears in the display.

4. Press [F4 (CDPly)]. If "CDPly" does not appear in [F4], first press [PAGE] until "CDPly" is displayed, then press [F4 (CDPly)].
5. The CD-R disc information is displayed as shown below.



If "Please Insert Disc!" Appears in the Display

There is no disc in the CD-R drive. Insert a commercial software CD or a CD-R disc on which recording has been completed, press [YES], and try the operation once more.

If "Blank Disc" Appears in the Display

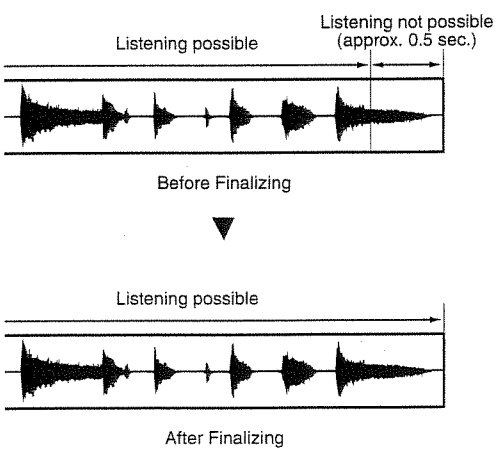
You are attempting to used the CD player function with a CD-R disc that has no performance data written to it. Insert a commercial software CD or a CD-R disc on which recording has been completed, and try the operation once more.

Only the following buttons, knobs, and faders effect the sound. Try listening to the contents of the disc.

[ZERO]: Goes to the start of the first song.
[REW]: Rapidly rewinds as long as the button is held down.
[FF]: Rapidly advances as long as the button is held down.
[STOP]: Stops the CD.
[PLAY]: Begins playing back from the present location.
[PREVIOUS] or [▲]: Returns to the previous song.
[NEXT] or [▼]: Advances to the next song.
MASTER Fader: Adjusts overall volume.
MONITOR Knob: Adjusts the volume output from the MONITOR jacks.
PHONES Knob: Adjusts headphone volume.

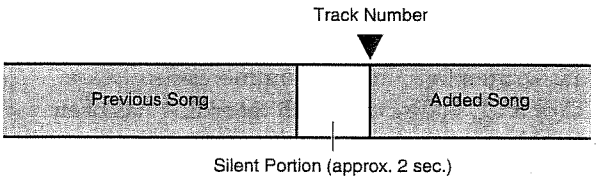
* *Transport control buttons are used in controlling the CD control. They are not controls for the VS-1680's songs. Furthermore, the content of the CD currently listened to cannot be recorded by the VS-1680.*

* *When listening to discs that have not been finalized, the last approximately 0.5 seconds of the song cannot be played back. Finalizing makes this portion audible.*



Writing Additional Songs to the Disc

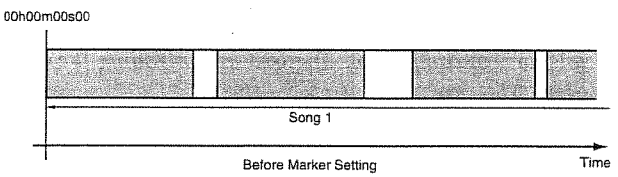
To the extent that any remaining free space allows, you can add songs to CD-R discs that have not yet been finalized. Repeat the procedure described in "Writing Songs to CD-R Discs" (p. 121).
Here you can insert approximately two seconds of blank space between the new song and the song before it. The track number is also recorded automatically.

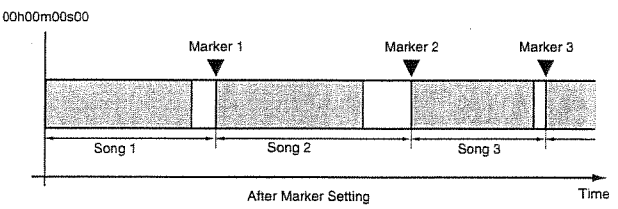


Arranging and Writing Multiple Songs to Disc

By sequencing a number of songs on one track, you can arrange those songs and write them to a CD-R disc. In this case, by presetting markers at the song boundaries to function as track numbers, you can write track numbers like those used in ordinary audio CDs, using the CD-R drive to write an audio CD. If desired, then carry out the following procedure.

* *The Song Combine (p. 173) and Track Import (p. 92) features can be used to arrange multiple songs onto the current song.*

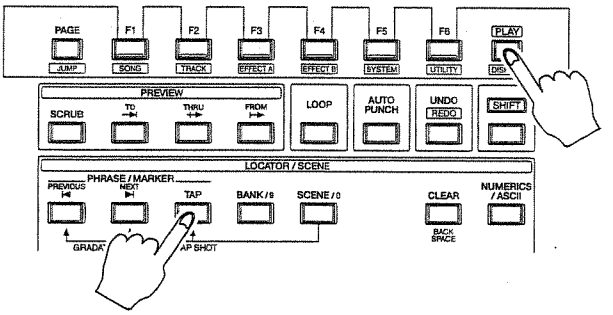




Determining Song Boundaries (Track Number)

1. While listening to the song, move the track number to the location in the song you want. If called for, we recommend the use of the preview and scrub functions (p. 154).

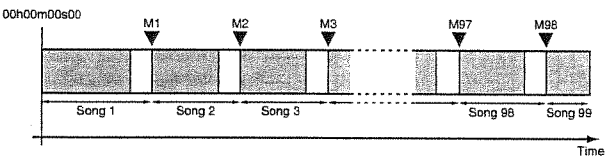
2. Hold down [PLAY (DISPLAY)] and press [TAP].



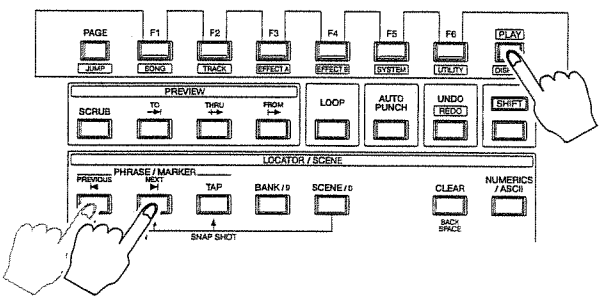
* *You cannot set markers for four seconds from the top of songs ("00h00m00s00").*

* *Due to audio CD standards, songs must be at least four seconds long. Thus, if you try to set two markers as track numbers within four seconds of each other, "Can't Set Marker" appears on the display, and the process cannot be carried out. Reset the track number markers so there is an interval greater than four seconds between them.*

* *Audio CD standards allow up to 99 songs to be stored on one disc. Furthermore, even if no track number marker is set at the beginning of the song, it is still used for the beginning of the first song. Thus, you can set up to 98 markers as track numbers.*



3. Pressing [PREVIOUS] while also pressing [PLAY (DISPLAY)] moves you to the previous track number marker. Pressing [NEXT] while also pressing [PLAY (DISPLAY)] moves you to the next track number marker. Please check the time at the track number.



4. Store the song to the CD-R disc by following procedure as described in "Writing Songs to CD-R Discs" (p. 121).

To Delete Track Number Markers

Delete markers used as track numbers the same way you would regular markers (p. 39).

1. Move to the marker you want to delete.
2. Hold down [CLEAR] and press [TAP].

Saving Songs to CD-R Discs (CD-R Backup)

You can save song data stored on the VS-1680's hard disk to CD-R discs. This procedure is called **backup**. Conversely, the process of loading backed up song data onto the internal hard disk is referred to as **recover**. Besides all V-track performance data, backed up data also includes Locator, Marker, and Scene settings made in the songs.

In CD-R backup, the song data is converted into a data format specifically for saving. This means that it will not be possible to directly play back the song data. If you wish to play back song data copied in archive format, you will need to reload the backed up data into the current drive using the appropriate procedure. Furthermore, when copying a song that does not fit on a single disc, it is copied onto multiple discs according to the free space on the discs.

Song data backed up on CD-R discs cannot be rewritten. Thus, this is an appropriate procedure for backing up completed song data in its final form.

* ***Song data recorded onto Zip disks cannot be backed up onto CD-R discs.***

* *Song data cannot be backed up onto discs that already have songs recorded on them.*

* *Incorrectly conducting the backup procedure may result in the loss of data. Roland Corporation assumes no liability concerning such loss of data. Furthermore, Roland does not warrant any copied data, regardless of the performance or condition of the CD-R drive.*

Backing Up Songs with Zip Drives and DAT Recorders

You can back up VS-1680 song data by using a Zip drive or DAT recorder. Song data stored on a Zip disk or DAT tape can be rewritten any number of times. This makes this an appropriate method for backing up data after work at the end of the day or at other regular intervals.
Considering the issues of time required to save data and reliability, the Zip drive is the more convenient method. **Roland recommends backing up (Song Copy) data with a Zip drive.**

Items Necessary for CD-R Backup

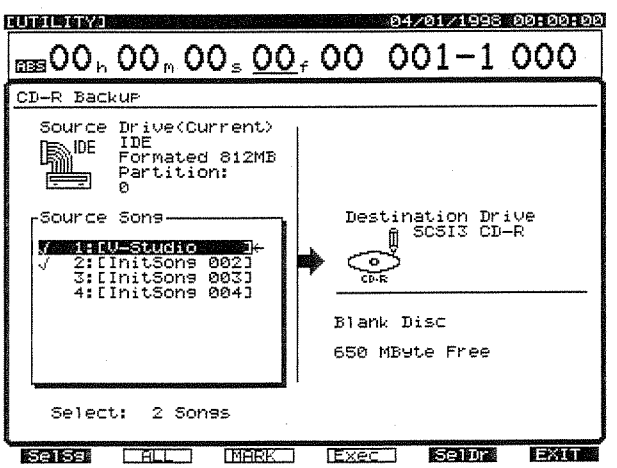
- VS-1680 (1)
- CD-R drive (1)
- Internal IDE hard disk (HDP88 series)
- Blank CD-R (Compact Disc-Recordable) disc

Saving Songs to CD-R Discs

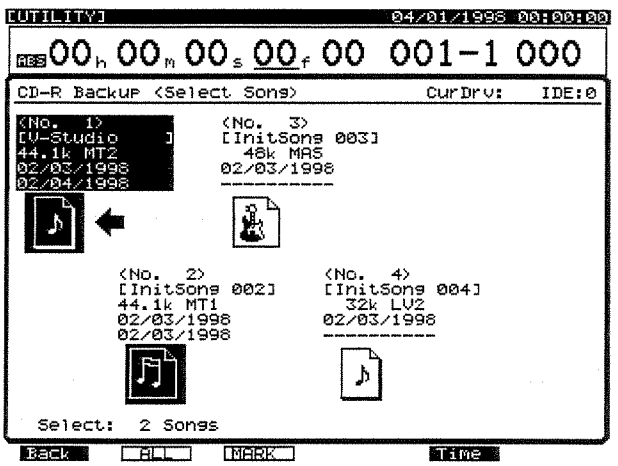
1. Select the disk (internal IDE hard disk) containing the source song you want to back up as the current drive.
2. Place a CD-R disc in the CD-R drive.
3. Press [PLAY (DISPLAY)].
4. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon appears in the display.

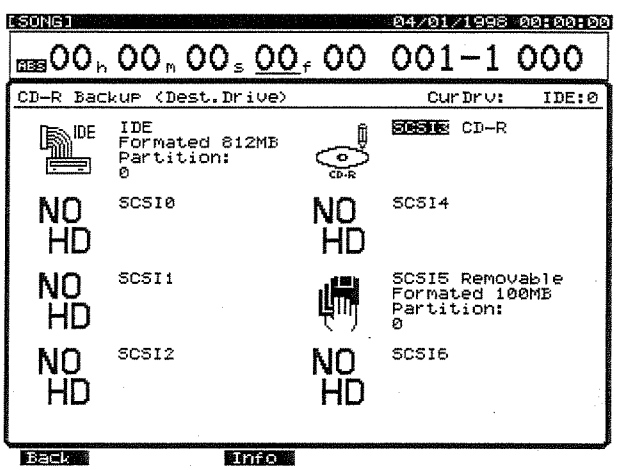
5. Press [F2 (CDRBk)]. If "CDRBk" does not appear in [F2], first press [PAGE] until "CDRBk" is displayed, then press [F2 (CDRBk)].



6. Songs that are marked are backed up. Use the TIME/VALUE dial to move the cursor to the song you want to back up and press [F3 (MARK)]. By pressing [F2 (ALL)], you can place and remove Marks from all of the songs. In addition, you can press [F1 (SelSg)] to display a directory of the songs. At this point, after you have placed a Mark at the song you want, press [F1 (Back)].



7. If several CD-R drives are connected to the VS-1680, you can press [F5 (SelDr)] to display a directory of drives. At this point, use [▲], [▼], [◀], and [▶] to select the CD-R backup destination drive, and press [F1 (Back)].



8. Press [F4 (Exec)].
A message asking for confirmation appears in the display.

9. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.

10. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

11. If the song holds a large amount of data, and cannot be contained on a single CD-R disc, the disc is ejected, and the message "Insert Disc #" (# indicates the number in the order of insertion) appears in the display to check the total amount of necessary discs. Insert the next CD-R disc and press [YES]. At this time, we recommend that you write the disc numbers on the labels so that you can keep track of the order in which the discs were inserted into the drive.

12. When copying over multiple CD-R discs, "Insert Disc #" (# indicates the number in the order of insertion) appears in the display. Insert each of the discs once more in the proper order and press [YES].

13. When the CD-R backup procedure is finished, return to Play condition.

Loading Songs From CD-R Discs

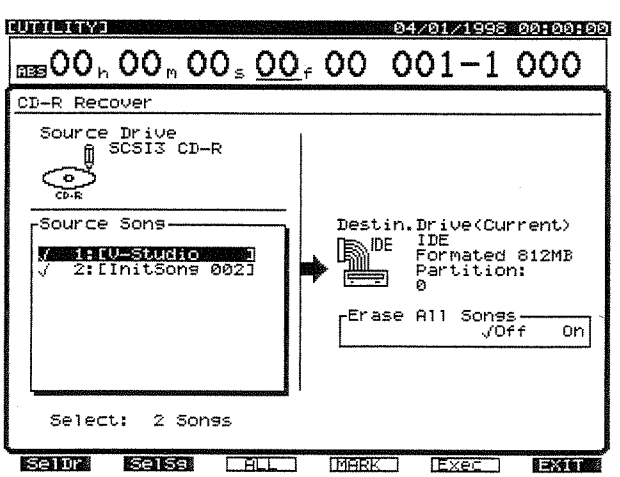
1. Select the disk (internal IDE hard disk) containing the song you want to load as the current drive.

2. Place the CD-R disc to which the song data has been backed up in the CD-R drive.

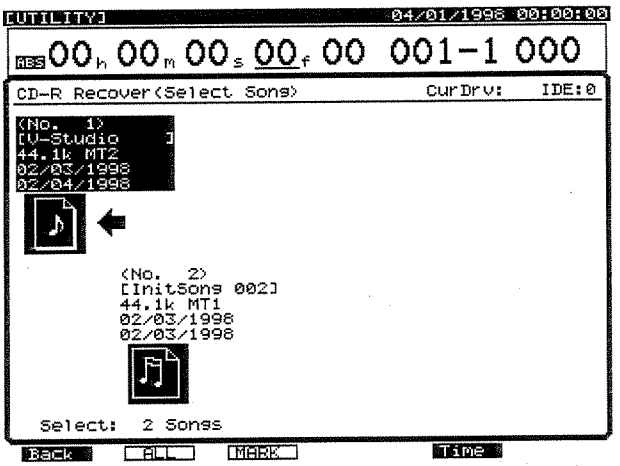
3. Press [PLAY (DISPLAY)].

4. Hold down [SHIFT] and press [F6 (UTILITY)].
The Utility menu icon appears in the display.

5. Press [F3 (CDRRc)]. If "CDRRc" does not appear in [F3], first press [PAGE] until "CDRRc" is displayed, then press [F3 (CDRRc)].



6. Songs that are marked are loaded. Use the TIME/VALUE dial to move the cursor to the songs you want to restore and press [F4 (MARK)]. By pressing [F3 (ALL)], you can place and remove marks from all of the songs simultaneously. In addition, you can press [F2 (SelSg)] to display a directory of the songs. At this point, after you have placed a Marker at the song you want, press [F1 (Back)].



7. Press [►] to move the cursor to "Erase All Song."

Erase All Songs

When this is set to "On," the recover procedure is carried out after the destination drive is initialized. If you want to perform the recover procedure leaving songs already saved in the current drive as they are, then set this to "Off."

8. Press [F4 (Exec)].

A message asking for confirmation appears in the display.

9. Press [YES].

"STORE Current?" (Store the current song?) appears in the display.

10. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

11. Execute the load. When over multiple discs, the disc is ejected, "Insert Disc #" (# indicates the number in the order of insertion) appears in the display. Insert the next disc and press [YES].

12. When the CD-R backup procedure is finished, return to Play condition.

Chapter 8 Use with MIDI Devices

This chapter describes the MIDI messages that can be handled by the VS-1680 and the operations that the VS-1680 can perform using MIDI messages.
For more detailed information about MIDI, please refer to "About MIDI" (Appendices p. 4).

Synchronizing with MIDI Sequencers

The VS-1680 can be operated in synchronization with a MIDI sequencer. **Refer to the owner's manual for your sequencer in conjunction with this manual.** There are two main ways to accomplish synchronization, **one is method using MTC (MIDI time code)** and **the other one is method using MIDI Clock**, with MIDI Clock further divided into two types, **Sync Track** and **Tempo Map**, either if which can be selected. Use the method that is appropriate for your situation.

? **MTC** (Appendices p. 64)

- Using MTC (MIDI time code) (p. 128)
- Using the sync track (p. 131)
- Using the tempo map (p. 133)

Items Necessary for Synchronization

- VS-1680 (1)
- Internal IDE hard disk (HDP88 series)
- Audio equipment to be connected to the MASTER jack, or stereo headphones
- External MIDI sequencer or computer sequencer software (such as Cakewalk Pro Audio)
- MIDI cables

Master and Slave

When synchronizing the VS-1680 with a MIDI sequencer, the device that sends, or transmits MTC or MIDI Clock and acts as the reference device is referred to as the **master**. Conversely, the device that receives the MTC or MIDI Clock signals from the controlling device is called the **slave**.
When using MTC, you can choose whether to have the MIDI sequencer be the master that controls the VS-1680, or to have the VS-1680 be the master that controls the MIDI sequencer. In contrast, when you use MIDI Clock, whereas you can synchronize a MIDI sequencer from the VS-1680 (VS-1680 as master), it will not be possible to synchronize the VS-1680 from the sequencer (VS-1680 as slave).

Using MTC

This section explains how the VS-1680 can be synchronized with a MIDI sequencer that implements MTC (MIDI Time Code). When using MTC, you can choose to have the VS-1680 be the master that controls the MIDI sequencer, or to have the MIDI sequencer be the master that controls the VS-1680.

MTC Type

The VS-1680 can work with the following types of MTC. Check the specifications of the MIDI devices that you are using, and select the appropriate type of MTC on the VS-1680.

30: 30 frames per second non-drop format. This is used by audio devices such as analog tape recorders, and for NTSC format black and white video.

29N: 29.97 frames per second non-drop format. This is used for NTSC format color video.

29D: 29.97 frames per second drop format. This is used for NTSC format broadcast color video.

25: 25 frames per second. This is used for SECAM or PAL format video, audio equipment, and film.

24: 24 frames per second. This is used for video, audio devices, and film in the US.

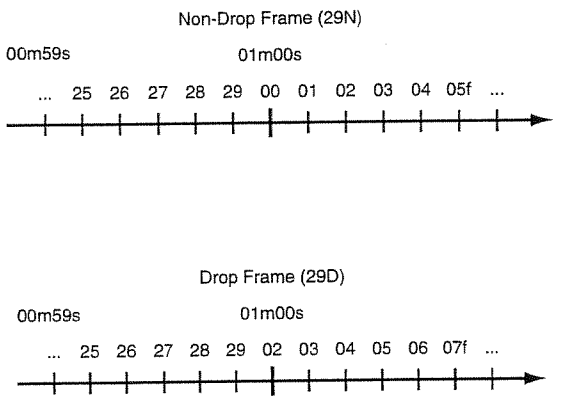
? **Frame** (Appendices p. 63)

? **NTSC Format** (Appendices p. 64)

? **SECAM/PAL Format** (Appendices p. 64)

Drop Frame and Non-Drop Frame

There are two types of time code used by NTSC format video cassette recorders, **drop**, in which the time code is not continuous, and **non-drop**, which features continuous time code. In drop, which is used for NTSC color video format, the first two frames of every minute are dropped, except for those at ten-minute intervals.

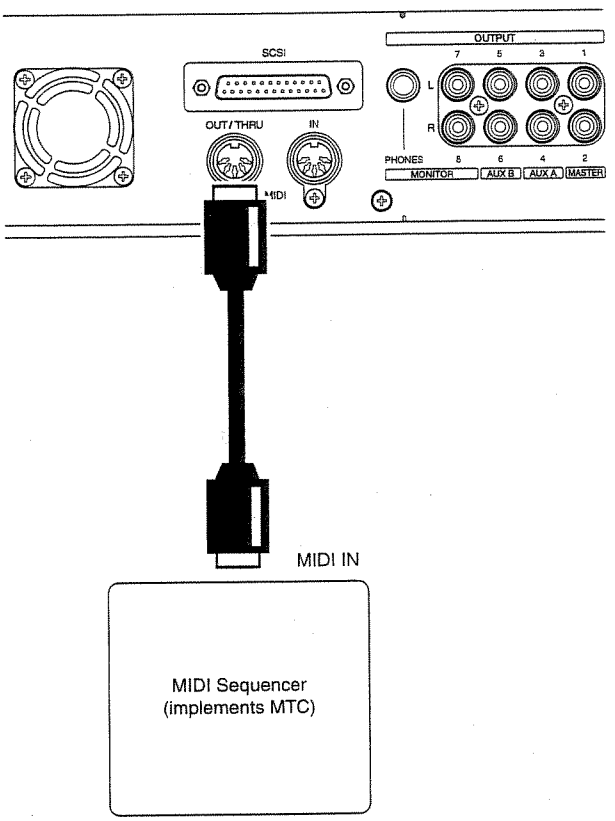


In most video and audio production, since formats with continuous frames are easier to deal with, non-drop is generally used. In contrast, in situations such as in broadcast, where the time code must match actual clock time, drop is used.

Synchronization with the VS-1680 as the Reference (Master)

When you are having the VS-1680 act to control the MIDI sequencer, use the following procedure.

1. Connect the VS-1680 and the MIDI sequencer as shown below.



2. Press [PLAY (DISPLAY)].

3. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

4. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].

5. Press [▲], [▼], [◀], and [▶] to move the cursor to "MIDI Thru," and rotate the TIME/VALUE dial.

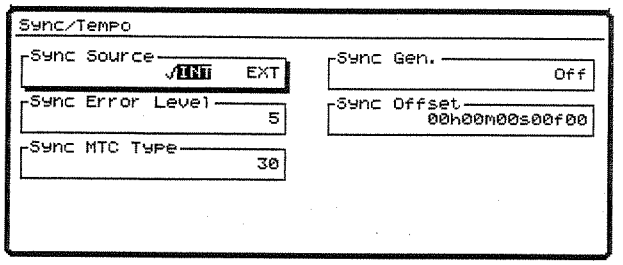
MIDI Thru (MIDI Thru Switch)

This selects the function of the MIDI OUT/THRU connector. For now, select "Out."

Out: The connector transmits MIDI messages from the VS-1680. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Hold down [SHIFT] and press [EXT SYNC].



7. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.

Sync Gen (Generator)

This selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "MTC."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

Sync MTC Type

This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC that matches your MIDI sequencer.

8. Press [PLAY (DISPLAY)].

Return to Play condition.

9. Set your MIDI sequencer so that it can operate according to the MIDI Clock messages received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VS-1680, the MIDI sequencer begins playback as well.

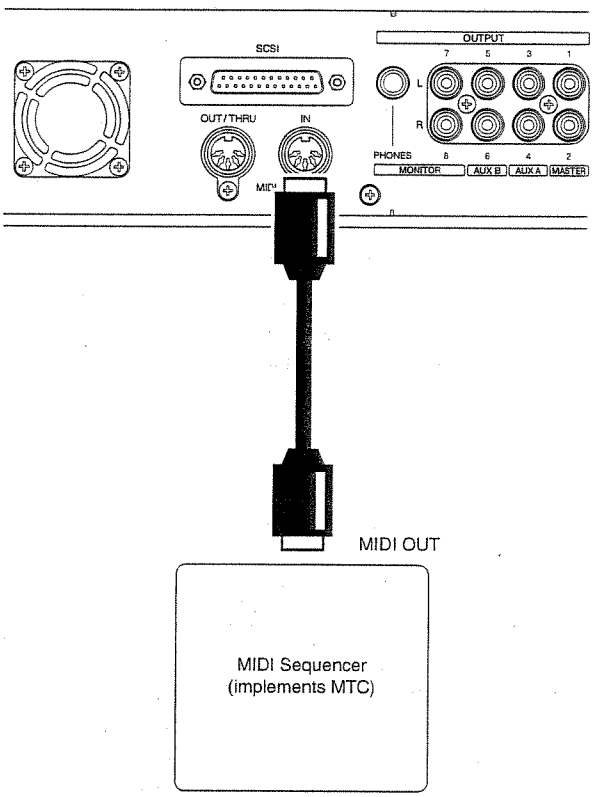
Synchronization with the MIDI Sequencer as the Reference (Slave)

When the MIDI sequencer is used as the basis to control the VS-1680, use the following procedure.

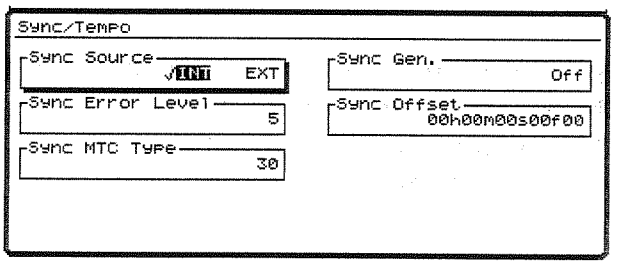
When using MIDI sequencer software for personal computers

When using MIDI sequencer software for personal computers, then depending on the hardware specifications and the playing conditions, the MTC signal sent to the VS-1680 may be unstable. As much as possible, try to synchronize using the VS-1680 as the master.

1. Connect the VS-1680 and the MIDI sequencer as shown below.



2. Hold down [SHIFT] and press [EXT SYNC].



3. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the values.

Sync Error Level

This sets the interval (0–10) for checking MTC reception when synchronizing the VS-1680 as MTC is transmitted by an external MIDI device. When MTC is not sent continuously, the VS-1680 checks the MTC and cancels synchronization if there is an error. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error.

Sync MTC Type

This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC that matches your MIDI sequencer.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

5. Set your MIDI sequencer to send MTC.

6. Press [EXT SYNC].
The button indicator blinks, indicating that the VS-1680 is synchronized using the MTC from the MIDI sequencer.

7. Press [PLAY].
The button indicator blinks green, indicating that the VS-1680 is in MTC receive standby mode. When the MIDI sequencer begins playback, then playback also begins on the VS-1680. During synchronization, the EXT SYNC indicator and PLAY indicator are lit.

Synchronizing with an External MIDI Device

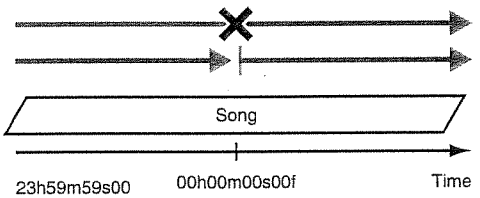
When the VS-1680 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. This time is called the **offset**. For example, if the MTC time is "01h00m00s00f00," and the song's time is "00h10m00s00f00," the "offset" is as follows.

(Offset)
= (MTC time) - (destined time of the song)
= (01h00m00s00f00) - (00h10m00s00f00)
= (00h50m00s00f00)

If the offset value turns out to be negative, add "24h00m00s00f00" to the MTC time before subtracting the destined time of the song. For example, if the MTC time transmitted is 00h00m50s00f00," and you want the song to play back at "00h01m00s00f00," then the offset works out as shown below.

(Offset)
= (MTC time) - (destined time of the song)
= (00h00m50s00f00) - (00h01m00s00f00)
= **(24h00m00s00f00) + (00h00m50s00f00)** - (00h01m00s00f00)
= (23h59m50s00f00)

* *With the VS-1680, continuous playback from "23h59m59s29f99" to "00h00m00s00f00" does not correspond to (overnight mode). The song that crosses over "00h00m00s00f00" momentarily stops at "23h59m59s29f99" then resumes playback.*



1. Press [PLAY (DISPLAY)].

2. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, press [F6 (EXIT)].

3. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, then press [F1 (SYSPM)].

4. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to change the values.

Offset

When the VS-1680 is running under the control of the MTC from an external MIDI device, you can synchronize the song's playback time and the MTC time. The offset settings range varies depending on the MTC type selected for the current song.

Time Display Format

Select one of the reference times (REL, ABS) that appear in the display. For now, choose "ABS."

REL: The starting time of the song is displayed as "00h00m00s00f00."

ABS: The time displayed includes the addition of the offset time.

5. Press [PLAY (DISPLAY)].
Return to Play condition.

Using the Sync Track (Master)

If your MIDI sequencer supports Song Position Pointer messages, you can use the MIDI Clock to synchronize operations. There are two methods of synchronization using the MIDI Clock: one is using the sync track, and the other one is using the tempo map. Here is an explanation of how to control the MIDI sequencer from the VS-1680 using the sync track.

What is the Sync Track?

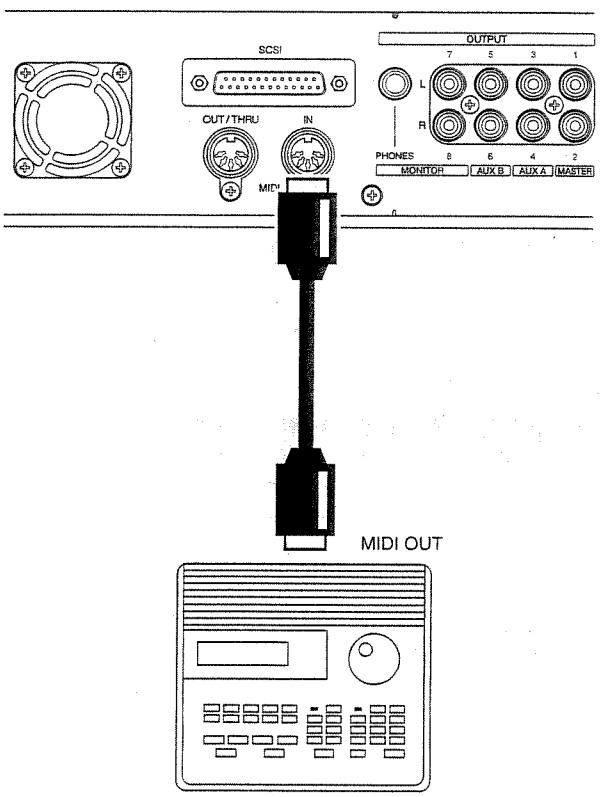
In addition to the tracks for recording audio signals, the VS-1680 has a separate track for recording MIDI Clock signals. This is called the **sync track**. Unlike conventional multi-track recorders, it is not necessary to reserve one of the audio tracks for recording the sync signal.

To use the sync track, first the MIDI clock of the MIDI song data to which you want to synchronize must first be recorded onto the sync track. Then, transmit the recorded MIDI clock data to the MIDI sequencer to synchronize the MIDI song data. This is a convenient method to use when the MIDI song data has been created earlier than the VS-1680 song.

In particular, when synchronizing to MIDI song data in which the tempo gradually increases or decreases, using the tempo map allows more precise following of tempo changes, compared to the tempo map in which tempo is set for each measure.

Recording MIDI Clock Messages

1. Connect the VS-1680 and the MIDI sequencer as shown below.



MIDI Sequencer

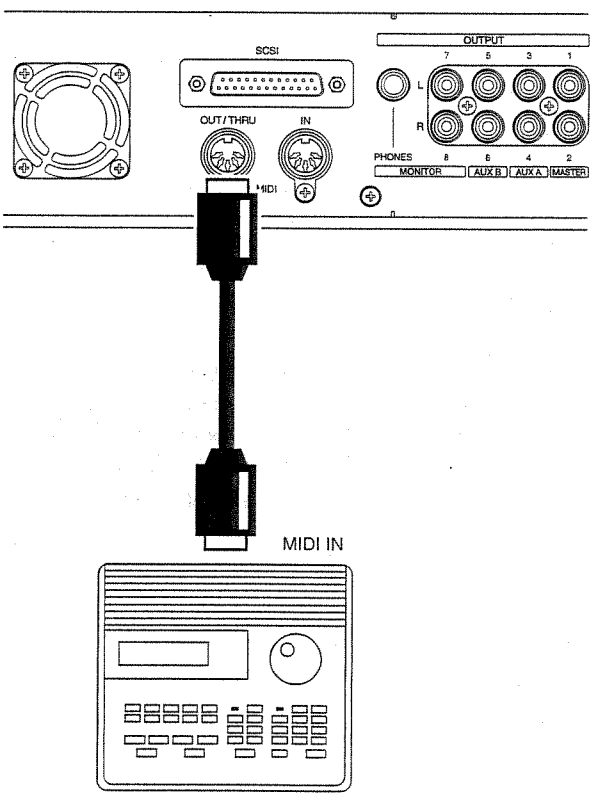
2. Hold down [SHIFT] and press [EXT SYNC].
3. Press [F1 (STRec)].
4. "Wait for Start Command" appears in the display, and the sync track is ready for record MIDI clock data. If you wish to cancel the record MIDI clock data, then press [EXIT (NO)].
5. Start playback of the MIDI song data.

The MIDI clock data is recorded on the sync track. While MIDI clock data is being recorded onto the sync track, the input sources can be monitored, but audio tracks cannot be recorded or played back.

6. When the MIDI song data is finished playing back, the VS-1680 automatically stops recording MIDI clock data.

Synchronized Operation

1. Connect the VS-1680 and the MIDI sequencer as shown below.



MIDI Sequencer

2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

4. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].

5. Press [▲], [▼], [◀], and [▶] to move the cursor to "MIDI Thru" and rotate the TIME/VALUE dial.

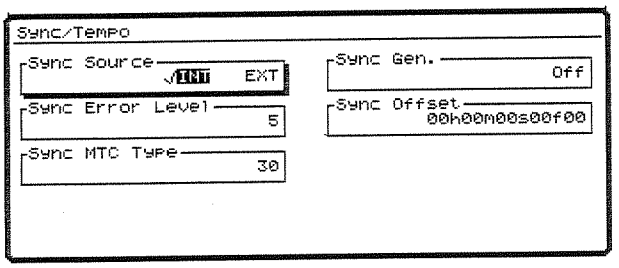
MIDI Thru (MIDI Thru Switch)

This selects the function of the MIDI OUT/THRU connector. For now, select "Out."

Out: The connector transmits MIDI messages from the VS-1680. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Hold down [SHIFT] and press [EXT SYNC].



7. Press [▲], [▼], [◀], and [▶] to move the cursor to "Sync Gen." and rotate the TIME/VALUE dial.

Sync Gen (Generator)

This selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "SyncTr."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

8. Press [PLAY (DISPLAY)].

Return to Play condition.

9. Set your MIDI sequencer so that it can operate according to the MIDI Clock messages received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VS-1680, the MIDI sequencer begins playback as well.

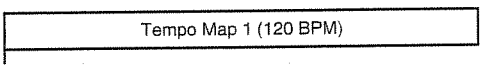
Using the Tempo Map (Master)

If your MIDI sequencer supports Song Position Pointer messages, you can use the MIDI Clock to synchronize operations. There are two methods of synchronization using the MIDI Clock: one is using the sync track, and the other one is using the tempo map. This section gives an explanation of how to control the MIDI sequencer from the VS-1680 using the tempo map.

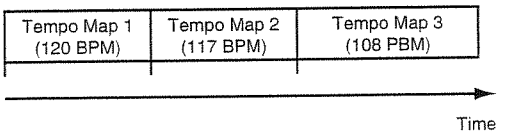
What is a Tempo Map?

A tempo map is a song's measure, beat, and tempo information. Transmitting this information to MIDI sequencers and other devices, it can be used in synchronizing operations with external MIDI devices. The tempo map sets tempo changes for each measure, so you can record information specifying changes in rhythm and tempo to be played from any designated measure. With the VS-1680, tempo maps are numbered sequentially from the beginning of the song, with Tempo Map 1 first, followed by Tempo Map 2, Tempo Map 3, and so on. Tempo Map 1 is already specified at the beginning of the song, and determines the initial tempo of the song. To change the tempo at a subsequent measure, create a new tempo map at each location where you want the tempo to change. Up to 50 tempo maps can be created.

Example 1: Song with no tempo changes



Example 2: Song with tempo changes occurring during the song

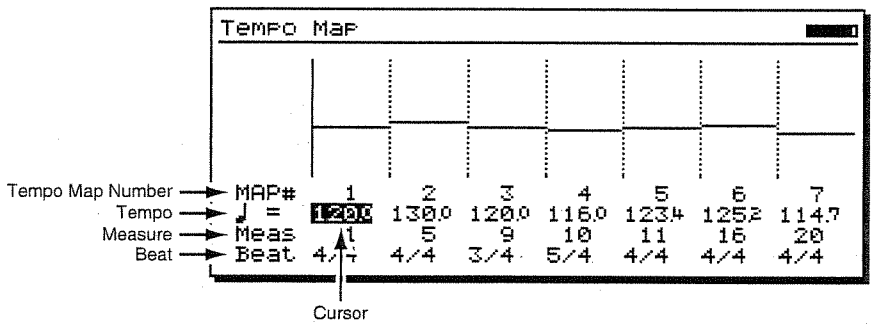


Creating a Tempo Map

1. Hold down [SHIFT] and press [TAP].

The Tempo Map screen appears in the display.

2. Tempo Map 1 (the song's initial tempo) is displayed. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to change each of the settings values. The measure appearing in the display and its beat, metronome sound, and MIDI Clock transmitted from the VS-1680 follow the tempo map settings.



♩ = (Tempo)

Sets the tempo map tempo (25.0–250.0).

Meas (Measure)

Selects the beginning measure (1–999) for each tempo map.

Beat

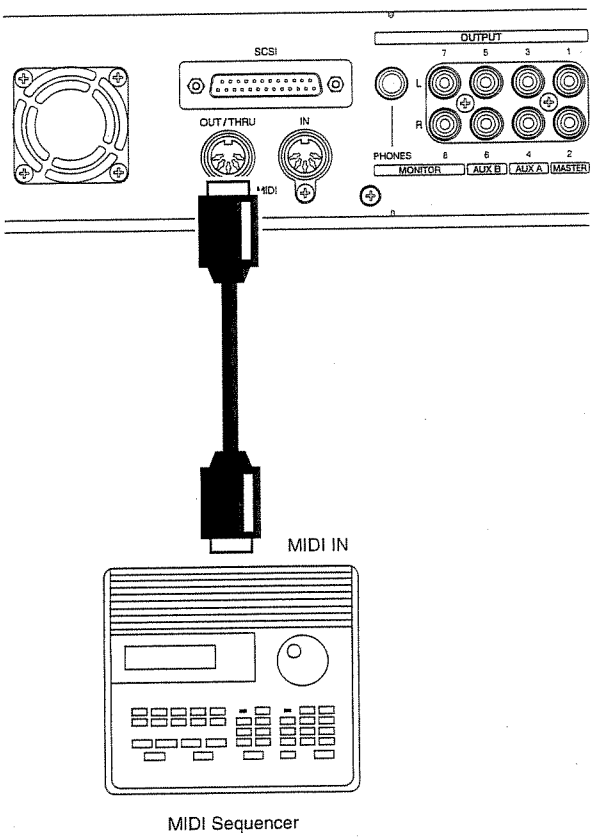
This sets the tempo map time signature (1/1–8/1, 1/2–8/2, 1/4–8/4, 1/8–8/8). At this time, the function buttons work as shown below.

[F2 (New)]: Adds a tempo map at a "new" location (at the end).
[F3 (Ins)]: Inserts a tempo map at the position of the cursor.
[F4 (Del)]: Deletes a tempo map at the position of the cursor.
[F6 (EXIT)]: Exits the Tempo Map screen.

* *Tempo Map 1 is the song's initial tempo. You cannot be changed or deleted the beginning measure setting of "1."*

Synchronized Operation

1. Connect the VS-1680 and the MIDI sequencer as shown below.



MIDI Sequencer

2. Press [PLAY (DISPLAY)].

3. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].

4. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].

5. Press [▲], [▼], [◀], and [▶] to move the cursor to "MIDI Thru" and rotate the TIME/VALUE dial.

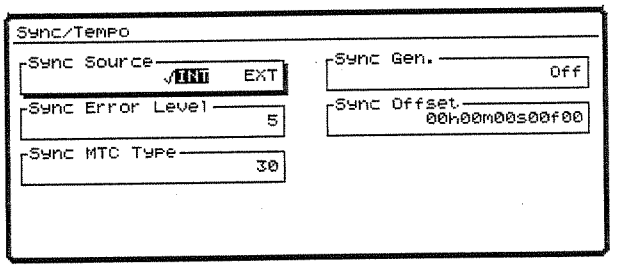
MIDI Thru (MIDI Thru Switch)

This selects the function of the MIDI OUT/THRU connector. For now, select "Out."

Out: The connector transmits MIDI messages from the VS-1680. Select this when you want to transmit metronome Note messages or mixer parameter settings (control change messages or exclusive messages).

Thru: MIDI messages received at the MIDI IN connector will be retransmitted from the connector without change.

6. Hold down [SHIFT] and press [EXT SYNC].



7. Press [▲], [▼], [◀], and [▶] to move the cursor to "Sync Gen." and rotate the TIME/VALUE dial.

Sync Gen (Generator)

This selects the type of synchronization signal that will be transmitted from the MIDI OUT connector. At this point, select "MIDIClk."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

8. Press [PLAY (DISPLAY)].
Return to Play condition.

9. Set your MIDI sequencer so that it can operate according to the MIDI Clock messages received from external devices, and set it so that it can play back MIDI song data. When playback begins on the VS-1680, the MIDI sequencer begins playback as well.

Various Operations Related to Synchronized Operation

There may be times when you want to use MIDI Clock to synchronize with an external MIDI sequencer or other device, even without recording using the metronome. In such instances, to synchronize with the tempo of the recorded song, first set a Marker. You can then create a sync track or tempo map beginning at that Marker.

Setting Markers Along with the Tempo

1. Press [ZERO].

2. Press [PLAY] to begin playback of the song.

3. While listening to the song, press [TAP] at the downbeat at the each beat.

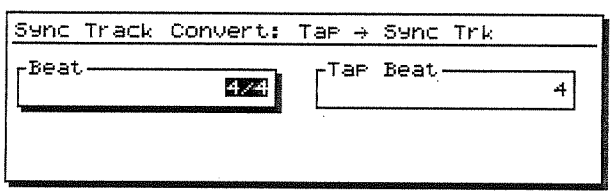
4. When you have finished setting the Markers, press [STOP].

* *To correctly place Markers on the downbeats of other song, we recommend using the Preview and Scrub functions.*

Creating a Sync Track from the Marker

A sync track can be generated from markers that were assigned according to the tempo of a previously recorded performance. This is convenient when you have already recorded a performance of an acoustic instrument such as guitar or vocal, and now you wish to synchronize a MIDI sequencer etc. to the recording.

1. Hold down [SHIFT] and press [EXT SYNC].
2. Press [F2 (STCnv)].
3. Press [F1 (TP→ST)].
4. Press [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change each value.



Beat
Specify the number of beat in one measure.

Tap Beat
Specify the number of marks in each measure.

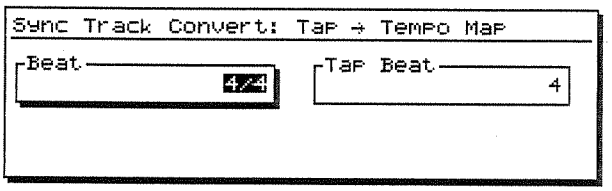
5. Press [F5 (Exec)].
6. A confirmation message asking if you want to save the changes to the sync track appears in the display. If you want to save the changes, press [YES]. If you wish to cancel, then press [NO].
7. Press [PLAY (DISPLAY)].

Return to Play condition.

Creating a Tempo Map from a Marker

A tempo map can be created from markers that were assigned according to the tempo of an already recorded song. This is convenient when you wish to synchronize a MIDI sequencer to a previously recorded performance of an acoustic instrument such as guitar or vocal.

1. Hold down [SHIFT] and press [EXT SYNC].
2. Press [F2 (STCnv)].
3. Press [F2 (TP→TM)].
4. Press [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change each value.



Beat
Specify the number of beat in one measure.

Tap Beat
Specify the number of marks in each measure.

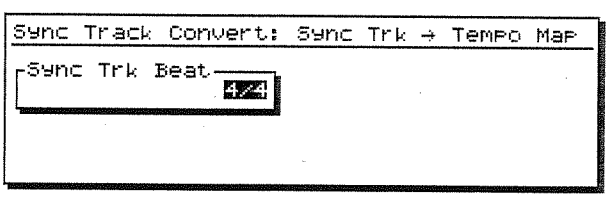
5. Press [F5 (Exec)].
6. A confirmation message asking if you want to save the changes to the tempo map appears in the display. If you want to save the changes, press [YES]. If you wish to cancel, then press [NO].
7. Press [PLAY (DISPLAY)].

Return to Play condition.

Creating a Tempo Map from a Sync Track

You can create a tempo map from sync track stored in the VS-1680. This is convenient when you want to change a sync track's MIDI Clock with the VS-1680.

1. Hold down [SHIFT] and press [EXT SYNC].
2. Press [F2 (STCnv)].
3. Press [F3 (ST→TM)].
4. Rotate the TIME/VALUE dial to change the value.



Sync Track Beat
Specify the number of beats per measure in the MIDI clock that is recorded in the sync track.

5. Press [F5 (Exec)].

6. A confirmation message asking if you want to save the changes to the tempo map appears in the display. If you want to save the changes, press [YES]. If you wish to cancel, then press [NO].

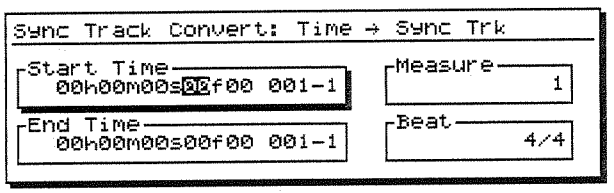
7. Press [PLAY (DISPLAY)].

Return to Play condition.

Creating a Sync Track Automatically

You can automatically create a sync track by specifying the start and end times of the song, and the number of measures that it contains. This is convenient when you already know the length of the song, such as with commercials.

1. Hold down [SHIFT] and press [EXT SYNC].
2. Press [F2 (STCnv)].
3. Press [F4 (TI→ST)].
4. Press [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change each value.



Start Time
Specify the song start time.

End Time
Specify the song end time.

Measure
Specify the number of measures within a specified time.

Beat
Specify the number of beats in one measure.

5. Press [F5 (Exec)].
6. A confirmation message asking if you want to save the changes to the sync track appears in the display. If you want to save the changes, press [YES]. If you wish to cancel, then press [NO].
7. Press [PLAY (DISPLAY)].

Return to Play condition.

Delaying Sync Track and Tempo Map Start Times

Usually, a sync track or tempo map is created with "00h00m00s00f00" as the beginning of the song. However, recording usually doesn't actually start from "00h00m00s00f00." In this kind of situation, you can determine how much later recording begins after the start of the song. This time is referred to as **offset**. For example, if you want recording to begin ten seconds after the start of the song (with time to spare), set the offset time to "00h00m10s00f00."

* *During recording or playback, when the beginning of a sync track or tempo map is reached, the start message is sent from the MIDI OUT connector. This is convenient when you wish to synchronize operation with an external MIDI sequencer.*

1. Hold down [SHIFT] and press [EXT SYNC].
2. Press [▲], [▼], [◀], and [▶] to move the cursor to "Sync Offset."
3. Specify the offset. Rotate the TIME/VALUE dial.
4. Press [PLAY (DISPLAY)].

Return to Play condition.

Use with a MIDI Controller

The VS-1680 can transmit its mixer settings and functions as MIDI messages. Conversely, MIDI messages from an external MIDI controller can be used to control the VS-1680's track status and mixer settings.

Switching Track Status

You can use MIDI control change messages to switch the status of each track (track status). MIDI channels 1–16 correspond to Tracks 1–16 respectively. Use controller number 3 to switch the track status.
Depending on the value of controller number 3, the track status changes as shown below.

When stopped:

VALUE	0–31	32–63	64–95	96–127
STATUS	MUTE →MUTE	MUTE →PLAY	MUTE →REC	MUTE →SOURCE
	PLAY →MUTE	PLAY →PLAY	PLAY →REC	PLAY →SOURCE
	REC- →MUTE	REC →PLAY	REC →REC	REC →SOURCE
	SOURCE →MUTE	SOURCE →PLAY	SOURCE →REC	SOURCE →SOURCE

During playback or recording:

VALUE	0–31	32–63	64–95	96–127
STATUS	— (*1)	MUTE →PLAY	— (*1)	— (*1)
	PLAY →MUTE	PLAY →PLAY	— (*1)	— (*1)
	— (*1)	— (*1)	REC →REC	REC →SOURCE (*2)
	SOURCE →MUTE	— (*1)	SOURCE →REC(*2)	SOURCE →SOURCE

(*1) Ignored.
(*2) Cannot be switched while recording. Also, "SOURCE" here indicates "the status in which the track indicator blinks alternately red and orange," and is valid only when Record Monitor is set to "AUTO" (p. 191).

Switching Scenes

You can switch Scenes with MIDI Program Change messages sent by the external MIDI controller.

During Playback of a Song
Scenes cannot be switched during playback of a song. Because of this, the VS-1680 stops momentarily if it receives a program change message during playback instructing it to change scenes. While it is stopped, the scene is switched, and then playback resumes.
Furthermore, during recording, only effect program change messages can be received. Scenes cannot be switched during recording.

1. Press [PLAY (DISPLAY)].
2. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].
3. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "P.C.Scene" and rotate the TIME/VALUE dial.

P.C.Scene (Program Change Scene)

With this set to "On," the scene is changed when program change messages are received. For now, select "On."

5. Press [PLAY (DISPLAY)].
Return to Play condition.
Use MIDI channel 16 for switching scenes. The relationship between the program change number received by the VS-1680 and the Scene Number it switches to is shown below.

Program Number	Scene Number
1–8	1–8

* *For more detailed information, please refer to "MIDI Implementation" (Appendices p. 25).*

Switching Effects

You can use MIDI control change messages transmitted from an external MIDI controller to switch effects.

1. Press [PLAY (DISPLAY)].
2. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].
3. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "P.C.Eff" and rotate the TIME/VALUE dial.

P.C.Eff (Program Change Effect)

With this set to "On," the effect is switched when program change messages are received. For now, select "On."

5. Press [PLAY (DISPLAY)].
Return to Play condition.

MIDI channels 1–4 correspond to EFX1–EFX4 respectively. The relationship between the bank number received by the VS-1680 and the Effect Patch Number it switches to is shown below.

Bank No.MSB	Bank No.LSB	Program No.	Patch No.
0	0	1–100	P000–P099
0	1	1–100	P100–P199
0	2	1–10	P200–P209
0	3	1–100	U000–U099
0	4	1–100	U100–U199

* *For more detailed information, please refer to "MIDI Implementation" (Appendices p. 25).*

Adjusting Effects

You can use MIDI control change messages transmitted from an external MIDI controller to control effects.

1. Press [PLAY (DISPLAY)].
2. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon appears in the display. If the System menu icon does not appear, then press [F6 (EXIT)].
3. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, then press [F4 (MIDI)].
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "C.C.Eff" and rotate the TIME/VALUE dial.

C.C.Eff (Control Change Effect)

With this set to "On," the effect is adjusted when control change messages are received. For now, select "On."

5. Press [PLAY (DISPLAY)].
Return to Play condition.

* *If you wish to use control change messages to switch effects, use NRPN (Non Registered Parameter Numbers). For more detailed information, please refer to "MIDI Implementation" (Appendices p. 25).*

Chapter 9 Use with a DAT Recorder (DAT Backup)

This chapter explains the procedures for using a DAT recorder in conjunction with the VS-1680. Refer to the owner's manual for your DAT recorder as you read this manual.

Before Backing Up with DAT

With a DAT recorder connected to the VS-1680's DIGITAL OUT connector (coaxial or optical), song data created on the VS-1680 can be saved using a DAT recorder. This procedure is referred to as **backup**. Conversely, the procedure of loading the previously backed up song data into the VS-1680 is referred to as **recover**. The song data that is backed up includes the data of all V-tracks, and song settings such as locate points, mark points, and scene settings. You should make backups of your data as a precaution against unforeseen problems, or when your disk drive is full and no more recording is possible. Furthermore, since DAT tapes are easily transported, this is convenient when you wish to exchange song data with a friend who also has a VS-1680, or when you have a VS-1680 both at home and in the studio. We recommend that important data be backed up onto multiple tapes.

? **DAT** (Appendices p. 63)

* *Incorrectly conducting the DAT Backup procedure may result in loss of data. Roland Corporation assumes no liability concerning such loss of data. Furthermore, Roland does not warrant any copied data, regardless of the performance or condition of the DAT recorder.*

Backing Up Song Data with a CD-R Drive or Zip Drive

You can use a CD-R drive or Zip drive to back up song data from the VS-1680. Song data backed up onto a CD-R disc cannot be overwritten. Thus, this method is appropriate for backing up completely finished songs or other such data. Song data backed up on Zip disks can be overwritten any number of times, but considering the time required for saving data, and because of reliability issues, it is more convenient to back up data using a Zip drive. Roland recommends backing up data (Song Copy) with a Zip drive.

Items Necessary for DAT Backup

- VS-1680 (1)
- Internal IDE hard disk (HDP88 series)
- DAT recorder (1)
- DAT tape (as many as needed)
- Digital connection cables (coaxial or optical)

About the Devices Used in DAT Backup

DAT recorder:

You can use a conventional DAT recorder.
Other digital recording devices, including MD recorders or DCC recorders, cannot be used to back up data. Furthermore, you cannot back up data if you are using a DAT recorder, for example one featuring external digital signal processing, whose playback data differs from the data as it was recorded.

* *Portable DAT recorders may require a special adapter when connecting to the VS-1680. Please check the owner's manual for your DAT recorder, or consult your dealer or service center to see what your model may require.*

Tape:

You can use a conventional DAT tapes.
However, 180-minutes tapes are very thin, and may easily stretch or become tangled in the recorder. Avoid using 180-minutes tapes.
When you need more than one tape to do the backup, prepare whatever number of tapes you need, making sure that all of the tapes feature the same recording time. It is recommended that you write the numbers of the tapes to indicate the order in which they are backed up.

Audio equipment:

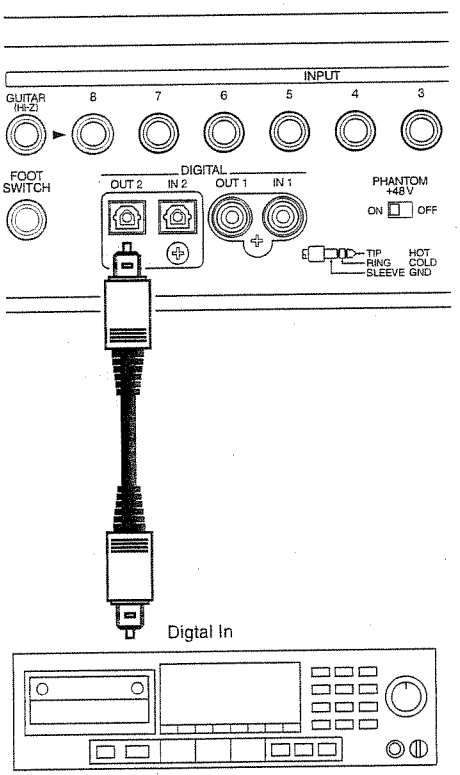
During DAT backups, no sound is output from the VS-1680 analog output jacks.
Additionally, turn down the volume of any connected audio devices at minimum level while song data is being backed up. The song data sent to the DAT recorder from the VS-1680 is a particular signal recorded on the disk. Monitoring this with the DAT recorder's volume raised may result in damage to your speakers, and may adversely affect your hearing.

Saving Song Data to a DAT Recorder (Backup)

Use the following procedure to back up the song data on the current drive.

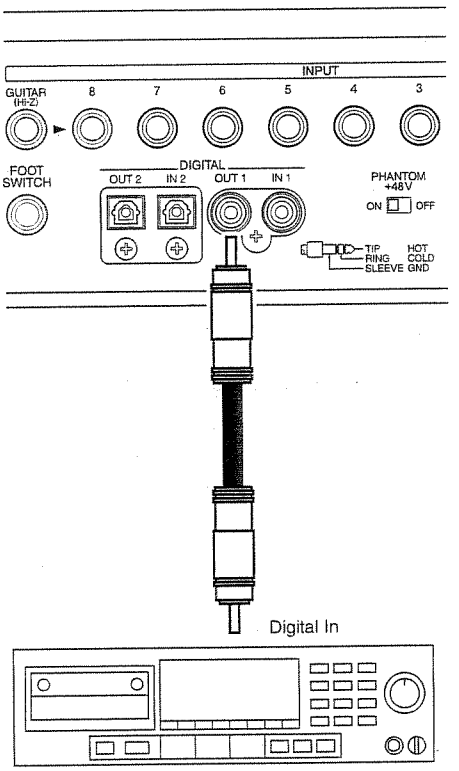
1. Connect the VS-1680 and the DAT recorder as shown below.

Optical



DAT recorder

Coaxial



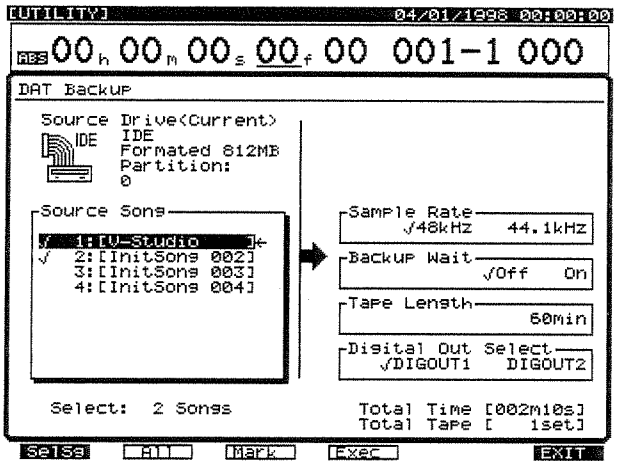
DAT recorder

2. Set the DAT recorder so that it is able to record digital signals.

* *Normally, the sample rate at which song data is transmitted is set at 48 kHz. This sample rate has no relation to the sample rate of the song data. If your DAT recorded requires you to set the sample rate, set it to 48 kHz.*

3. Hold down [SHIFT] and press [F6 (UTILITY)]. The Utility menu icon appears in the display.

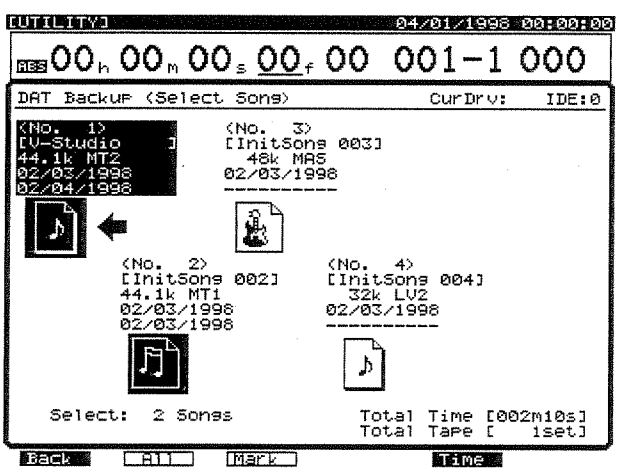
4. Press [F6 (DATBk)]. If "DATBk" does not appear in [F6], first press [PAGE] until "DATBk" is displayed, then press [F6 (DATBk)].



5. "STORE Current?" (Store the current song?) appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO].

6. Press [▲], [▼], [◀], and [▶] to move the cursor to "Source Song."

7. Use the TIME/VALUE dial to move the cursor to the song you want to copy and press [F3 (MARK)]. By pressing [F2 (ALL)], you can place and remove Marks from all of the songs. In addition, you can press [F1 (SelSg)] to display a directory of the songs. At this point, after you have placed a Mark at the song you want, press [F1 (Back)].



8. Press [▲], [▼], and [▶] to move the cursor. Set each of the values.

Digital Out Select

Select either "DIGOUT1" (coaxial) or "DIGOUT2" (optical) if you are going to back up data using the DIGITAL OUT connector.

Sample Rate

This sets the sample rate (48 kHz, 44.1 kHz) during DAT backup. This sample rate has no relation to the sample rate of the song data. Normally, this is set to 48 kHz.

Backup Wait

When this is set to "On," the data transmission speed will be slower. Turn this on when using a disk drive (such as a Zip drive) whose data read/write speed is slower. When this is set to "On," although it takes longer for the backup to finish, problems arising from the data transfer (such as data loss) are minimized. Normally, this is set to "Off."

Tape Length

Specify the interval at which backup will be paused. Set this so that the interval is no less than about five minutes shorter than the length of tape on which you are recording. When using tapes with different recording times, set this to the recording time of the shortest tape.

9. The approximate time it will take and the number of tapes needed to back up the data are indicated in the display. Please prepare the necessary number of tapes.

10. Press [F4 (Exec)].
A confirmation message appears in the display.

11. Press [YES].
"Please Rec DAT" appears in the display.

12. Put the DAT recorder in record standby, and press [YES] once more.

13. If you cannot back up everything on one tape, the operation is carried out for the length of time designated in "Tape Length." Insert the next tape into the DAT recorder and again put it in record standby, then press [YES].

The backup procedure continues in this fashion. At this time, we recommend that you write the tape numbers on the labels in the order they are backed up.

14. When the backup procedure is finished, "Please Stop DAT" appears in the display. Stop the DAT recorded and press [YES].

15. Press [PLAY (DISPLAY)]
Return to Play condition.

* *If you wish to cancel the backup, then press [EXIT (NO)]. This cancels the process, even if done during the backup itself. However, the song data recorded up to that point cannot be loaded into the VS-1680.*

* *To check whether or not a backup has been performed correctly, we recommend that you carry out the Verify procedure (p. 146).*

Disk Capacity Needed for Backup

One 60-minutes tape can back up approximately 330 MB of song data. For example, you need four 60-minutes (or two 120-minutes) tapes to back up 1000 MB of song data. However, the disk space available for each song decreases as the number of songs save increases. Look at the display to see the number of tapes needed to do the backup.

Time Needed for Backup

It takes about 60 minutes to back up 330 MB of song data. For example, backing up 1000 MB of data takes about 190 minutes. However, the higher the number of songs backed up, the longer it takes.

Loading Performance Data from a DAT Recorder (Recover)

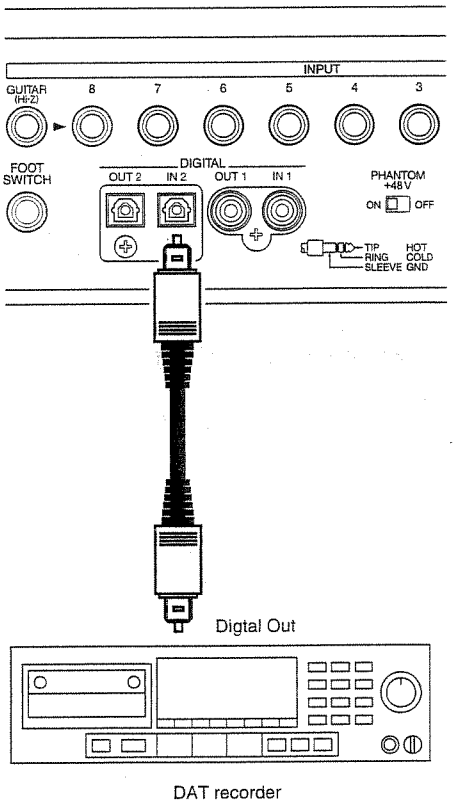
Use the following procedure to load song data that was backed up on a DAT recorder. If two or more songs were saved together during the backup, the data of all songs will be loaded.

* *You can recover VS-880 song data backed up using DAT backup.* ***However, you cannot edit or resave the recovered data on the VS-1680.***

* *If you wish to edit VS-880 song data with VS-1680, convert it to VS-1680 song data and create a copy.*

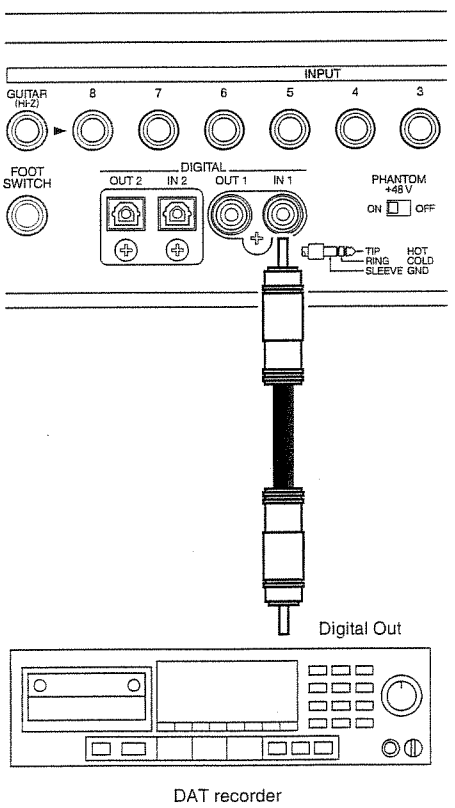
1. Connect the DAT recorder to the VS-1680 as following.

Optical



DAT recorder

Coaxial



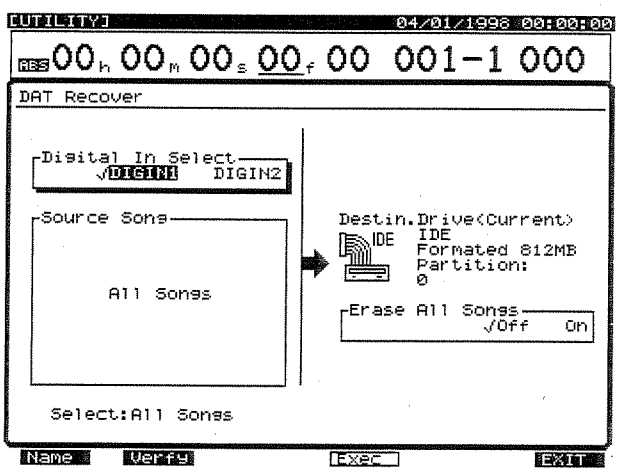
DAT recorder

2. Insert the tape which contains the song data into the DAT recorder. If the song data is backed up on two or more tapes, insert the first tape.

3. Prepare the tape for playback from the beginning of the song data.

4. Hold down [SHIFT] and press [F6 (UTILITY)].
The Utility menu icon appears in the display.

5. Press [F1 (DATRc)]. If "DATRc" does not appear in [F1], first press [PAGE] until "DATRc" is displayed, then press [F1 (DATRc)].



6. Press [◀] and [▶] to move the cursor. Set each of the values.

Digital In Select

Select either "DIGIN1" (coaxial) or "DIGIN2" (optical) if you are going to recover data using the VS-1680's DIGITAL IN connector.

Erase All Songs

When this is set to "On," song data is recovered after the current drive is initialized. If you want to keep the song data on the current drive when carrying out the recover procedure, set this to "Off."

7. Press [F4 (Exec)].

8. "STORE Current?" (Store the current song?) appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO].

9. "Please Play DAT" appears in the display.
Put the DAT recorder in play mode.

10. Load the data. If you have backed up the data to multiple tapes, then the operation is suspended when the end of each tape is reached. Insert the number tape indicated in the display, press [YES], and start the DAT recorder playing again.

11. When the recover procedure is finished, "Please Stop DAT" appears in the display. Stop the DAT recorder, then press [YES].

12. Press [PLAY (DISPLAY)].
Return to Play condition.

When Cancelling the Recover Operation

You can stop the recover operation by pressing [EXIT (NO)] during the recover. Moreover, when there is an error in song data backed up on a tape, the recover operation is temporarily halted. In such instances, you can choose whether to leave or delete the (unfinished) song data recovered up to that point.

* *This procedure* ***does not correct the disk error****, but tries to restore the song data while keeping as much possible of the non-error data. Depending on the location in which the error occurred, some noises may generated or settings for mixer, tempo map and sync track may be lost.*

* *Loud noises may damage your audio equipment such as amplifier and speakers. Please make sure to turn down the headphones level and master volume of the VS-1680 when you check errors in the song data.*

Cancelling a DAT Recovery Operation in Progress:

1. Press [EXIT (NO)] during the DAT recovery.
Recovery is stopped, and "Delete Err Song?" (Delete the song containing the error?) appears in the display.

2. If you would like to delete from the hard disk the song data that stopped the recovery operation, press [YES]. If you would like to keep it as it is though the recovery is not completed, press [NO].

When an Error is Found in the Song Data:

1. If an error is found in the song data which was recovered with the DAT recovery operation, "Recover Err Retry?"(An error was found. Retry the song?) appears in the display.

2. If you want to try to recover the data, press [YES]. If you want to cancel the recovery, press [NO].

3. If you press [NO] in Step 2, "Delete Err Song?" then appears in the display.

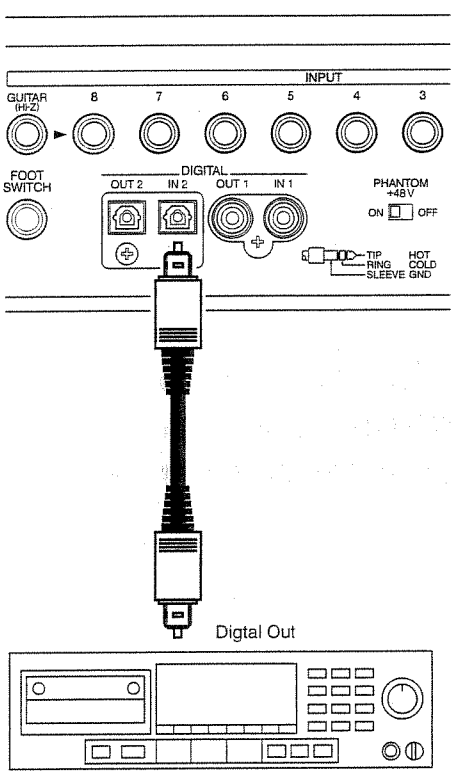
4. If you would like to delete the song data with the error from the hard disk, press [YES]. If you would like to keep it as it is though the error is included, press [NO].

Checking Names of Saved Performance Data (Name)

This operation lets you check the names of song data that was saved to a DAT tape. Even if you have saved the data of two or more songs in a single backup operation, you can check the name of each song.
This operation also allows you to load selected song data into the VS-1680. When the recover operation is used, the data for all songs which were saved together by the backup operation are loaded. In contrast, with the Name procedure, only the song data that you specify is loaded.

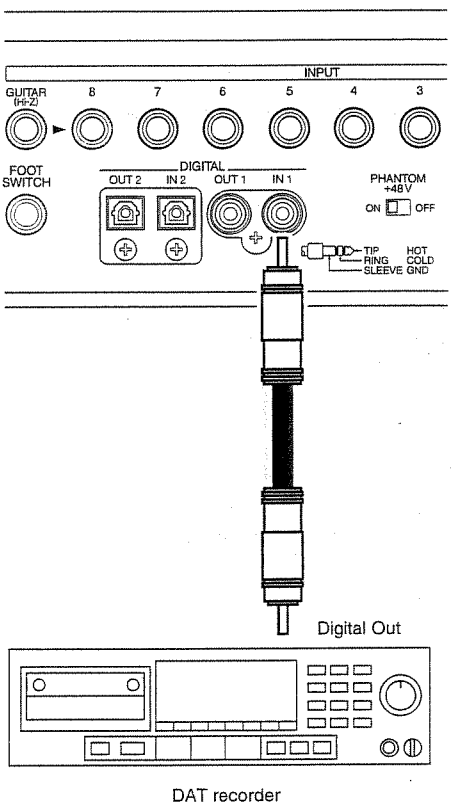
1. Connect the DAT recorder to the VS-1680 as following.

Optical



DAT recorder

Coaxial



DAT recorder

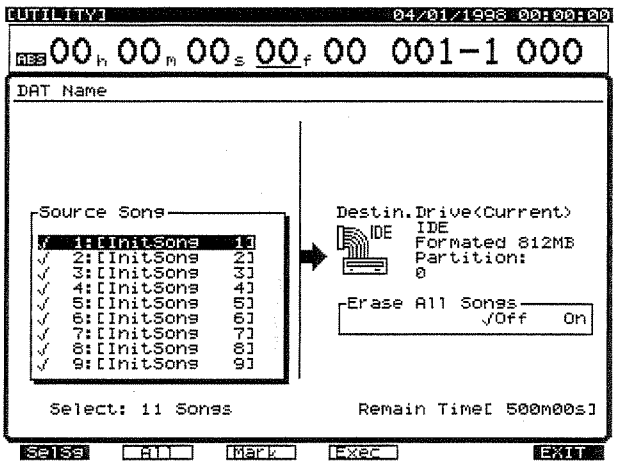
2. Insert the tape which contains the song data into the DAT recorder. If the song data is backed up on two or more tapes, insert the first tape.
3. Prepare the tape for playback from the beginning of the song data.
4. Hold down [SHIFT] and press [F6 (UTILITY)].
The Utility menu icon appears in the display.
5. Press [F1 (DATRc)]. If "DATRc" does not appear in [F1], first press [PAGE] until "DATRc" is displayed, then press [F1 (DATRc)].
6. Press [◀] to move the cursor to "Digital In Select" and rotate the TIME/VALUE dial.

Digital In Select

Select either "DIGIN1" (coaxial) or "DIGIN2" (optical) if you are going to recover data using the VS-1680's DIGITAL IN connector.

7. Press [F1 (Name)].
"Please Play DAT" appears in the display.
8. Put the DAT recorder in play mode.
This executes the loading of the song name.

9. When the load procedure is finished, "Please Stop DAT" appears in the display. Stop the DAT recorder, then press [YES]. The DAT Name screen appears in the display.

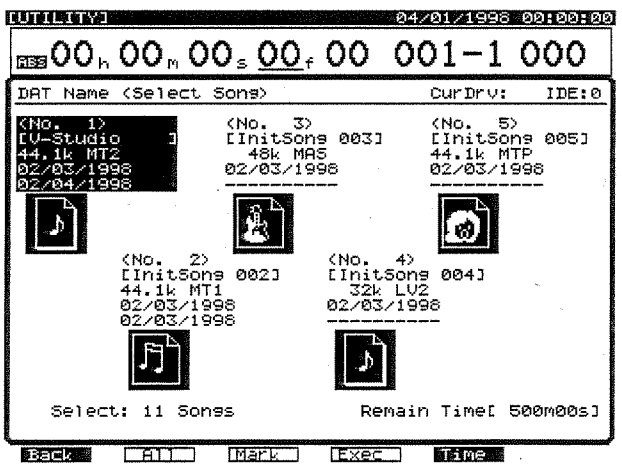


10. If you wish to end the operation after merely checking the, press [PLAY (DISPLAY)].
Return to Play condition.

11. If you recover only specified song data, the press [◀] to move the cursor to "source Song."

12. Songs that are marked are copied. Use the TIME/VALUE dial to move the cursor to the song you want to recover and press [F3 (MARK)]. By pressing [F2 (ALL)], you can place and remove Marks from all of the songs.

13. By pressing [F1 (SelSg)], you can have a list of the songs displayed. In this case, place marks on the songs you want to recover, and then press [F1 (Back)]. You can check the time and date any song was created or revised by pressing [F5].



14. Press [▶] to move the cursor to "Erase All Songs."

Erase All Songs

When this is set to "On," song data is recovered after the current drive is initialized. If you want to keep the song data on the current drive when carrying out the recover procedure, set this to "Off."

15. Press [F4 (Exec)].

16. When "Erase All Songs" set to "Off," "STORE Current?" appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO].

17. "Please Play DAT" appears in the display. Rewind the tape and then put the DAT recorder in play mode.

18. Loading of the song data begins. If you have backed up the data to multiple tapes, then the operation is suspended when the end of each tape is reached. Insert the number tape indicated in the display, press [YES], and start the DAT recorder playing again.

19. When the recover procedure is finished, "Please Stop DAT" appears in the display. Stop the DAT recorder, then press [YES].

20. Press [PLAY (DISPLAY)].
Return to Play condition.

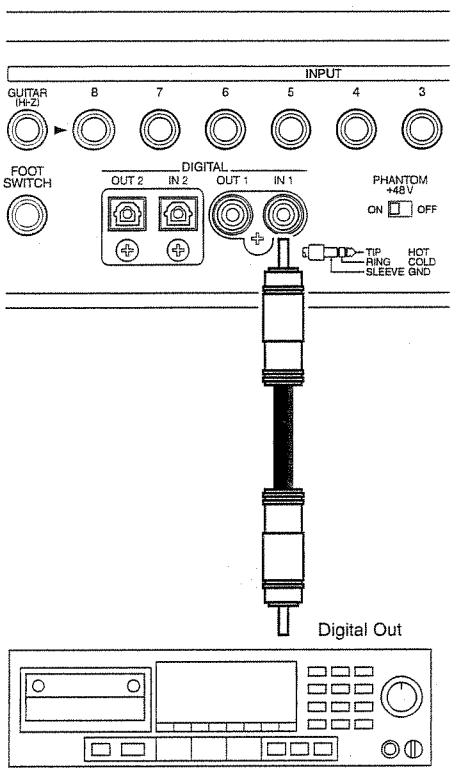
* *To cancel this operation, press [EXIT (NO)].*

Checking the Recording Condition of Saved Performance Data (Verify)

This operation checks the condition of song data that was recorded to DAT tape. However, it does not perform a comparison of the song data on the hard disk and the tape.
If results of the DAT verify operation warns that data is not recorded correctly, it is possible that the tape has been scratched or stretched. If the original song data still exists in the disk drive, perform the backup operation once again to a different DAT tape.

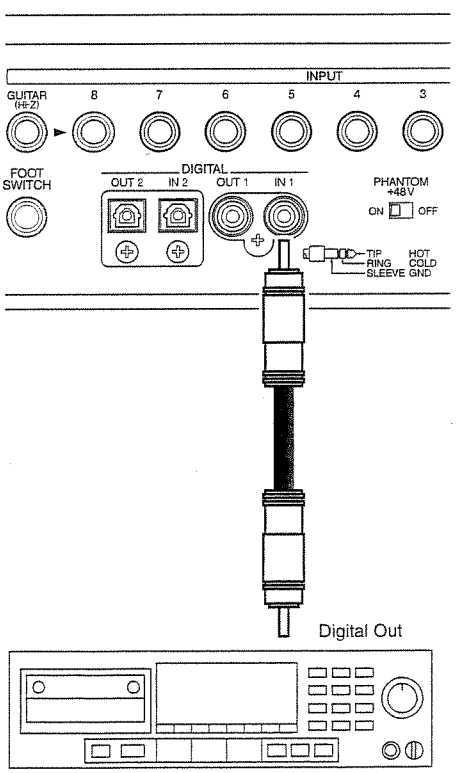
* *When performing DAT backups, in order to confirm that the data indeed has been properly backed up, we recommend that you carry out the Verify procedure as well.*

Coaxial



DAT recorder

Coaxial



DAT recorder

1. Connect the DAT recorder to the VS-1680 as left.
2. Insert the tape which contains the song data into the DAT recorder. If the song data is backed up on two or more tapes, insert the first tape.
3. Prepare the tape for playback from the beginning of the song data.
4. Hold down [SHIFT] and press [F6 (UTILITY)].
The Utility menu icon appears in the display.
5. Press [F1 (DATRc)]. If "DATRc" does not appear in [F1], first press [PAGE] until "DATRc" is displayed, then press [F1 (DATRc)].
6. Press [◀] to move the cursor to "Digital In Select" and rotate the TIME/VALUE dial.

Digital In Select

Select either "DIGIN1" (coaxial) or "DIGIN2" (optical) if you are going to recover data using the VS-1680's DIGITAL IN connector.

7. Press [F2 (Verify)].
"Please Play DAT" appears in the display.
8. Put the DAT recorder in play mode.
Verify the tape. If you have backed up the data to multiple tapes, then the operation is suspended when the end of each tape is reached. Insert the number tape indicated in the display, press [YES], and start the DAT recorder playing again.
9. When loading is finished, "Please Stop DAT" appears in the display. Stop the DAT recorder, then press [YES].
10. If there is no problem with the condition of the recorded song data, "Complete" appears in the display. If a warning message appears when the song data is loaded, then that song data cannot be loaded correctly. If you wish to check a tape again, insert the number tape indicated in the display, press [YES], and start the DAT recorder playing again. Press [NO] if you want to finish the procedure without checking the tape again.

* *To cancel this operation, press [EXIT (NO)].*

Chapter 10 Compatibility

Disks used with Roland's VS-880 and VS-840 models can also be used by the VS-1680. Additionally, song data recorded on such disks can be loaded by the VS-1680. However, because differences in the structure of disk space and song data on disks that can be used, there are a number of precautions concerning the loading and saving of data that should be observed.

Disk Compatibility

VS-880 → VS-1680

When internal hard disks that have been used by a VS-880 are installed in the VS-1680, or when Zip disks that have been used by a VS-880 are inserted into a Zip drive connected to the VS-1680, they are recognized as the initialization disk. In this case, the VS-1680 can be used for playing back songs recorded with the VS-880 and creating new songs as well. **However, you cannot use the VS-1680 to edit songs that were recorded on the VS-880 or save new versions of songs.**

Song data that has been saved using the Archive Copy procedure on the VS-880 can be restored (extracted) with the VS-1680. **However, the VS-1680 cannot edit or save new versions of the extracted songs.**

You can recover VS-880 song data backed up using DAT backup. **However, you cannot edit or resave the recovered data on the VS-1680.**

* *If you wish to edit VS-880 song data with VS-1680, execute the Song Archives Extract (p.119) or the DAT recover procedure (p.143) first. Then convert it to VS-1680 song data (Song Import).*

VS-1680 → VS-880

When internal hard disks that have been used by a VS-1680 are installed in the VS-880, or when Zip disks that have been used by a VS-1680 are inserted into a Zip drive connected to the VS-880, they are recognized as the initialization disk, provided they meet the conditions below. **In this case, however, the VS-880 can create new songs on the disk. Furthermore, the VS-880 cannot recognize songs recorded on the VS-1680.**

Partition space:
1 GB or less (Even if the disk has been initialized with the "Partition" set to "2000 MB," the disk can be used if the actual partition is 1 GB or less.)

Partition numbers:1–4 (5–8 cannot be used)

Song data that has been saved using the Archive Copy procedure on the VS-1680 cannot be restored (extracted) by the VS-880.

Song data that has been saved using the DAT Backup procedure on the VS-1680 cannot be restored (recovered) by the VS-880.

VS-840 ↔ VS-1680

Zip disks used on the VS-840 and VS-1680 are not mutually compatible. When a Zip disk used by a VS-840 is inserted in a Zip drive connected to the VS-1680, it is recognized as an uninitialized disk. In this case, only Song Import can be performed.
When a Zip disk used by a VS-1680 is inserted in a Zip drive connected to the VS-840, it is recognized as an uninitialized disk.

Loading VS-880/840 Performance Data into the VS-1680 (Song Import)

You can convert songs created on a VS-880 or VS-840 for use with the VS-1680 and copy them as new songs to the current drive. This is referred to as **Song Import**.

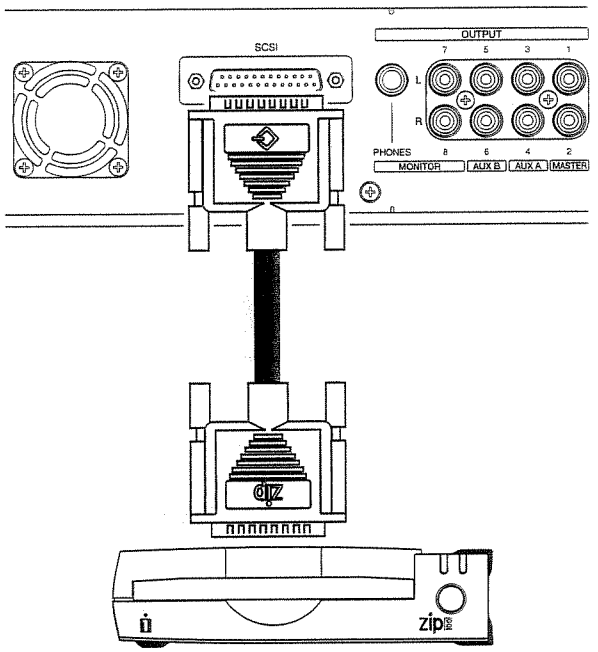
When VS-880 song data is converted, all the data such as mixer setting including equalizer and stereo link, system setting including sync track and tempo map, locators and markers, and effect setting will be copied.

However, VS-840 song data recorded on Zip disks only includes the **performance data (sound data) and the information describing the tracks on which the performance data is recorded.** Mixer settings such as equalizer and Stereo Link, locate and mark points, effects settings, and so on are not effective.

* *You can create a song that has same both sample rate and recording mode as source song. However, if there is insufficient free space on the current drive, Song Import cannot be carried out.*

Here, the procedure for importing a playable copy of a song on the Zip disk is explained. If you wish to import the song data which is Song Archives Extracted or DAT recovered, please proceed to Step 3.

1. Make settings as shown below.



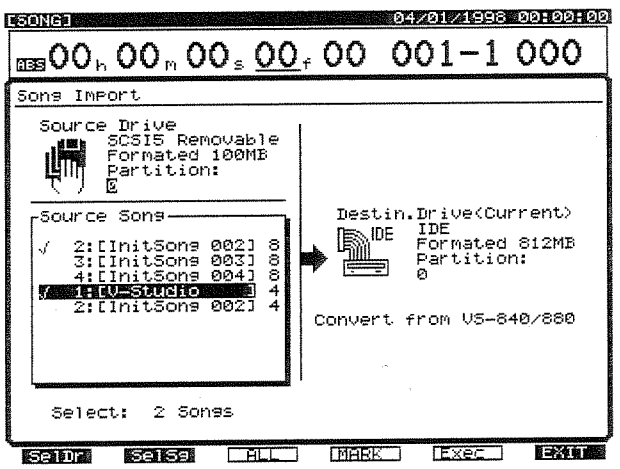
2. Insert the disk onto which VS-880/840 song data has been recorded into the Zip drive.

3. For the current drive, select the drive (IDE hard disk) you want to be the load destination.

4. Press [PLAY (DISPLAY)].

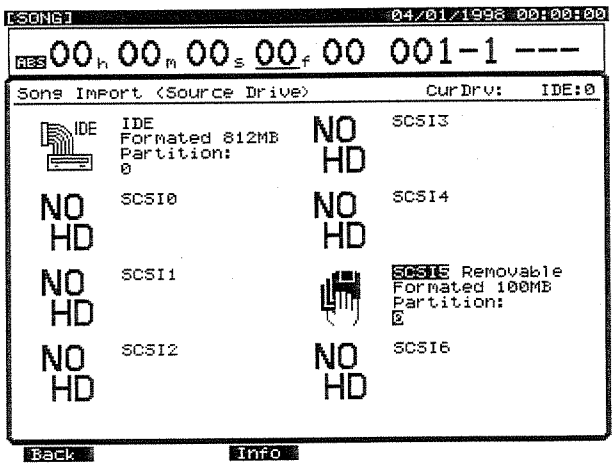
5. Hold down [SHIFT] and press [F1 (SONG)].
The Song menu icon is displayed.

6. Press [F4 (Imprt)]. If "Imprt" does not appear in [F4], first press [PAGE] until "Imprt" is displayed, and then press [F4 (Imprt)].

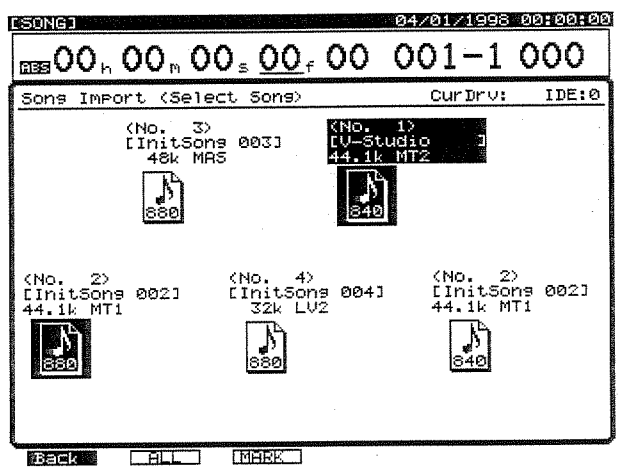


7. Press [F1 (SelDr)].
A list of drives appears in the display.

Press [▲], [▼], [◀], and [▶] to select the load source drive, and rotate the TIME/VALUE dial to select the load source partition, then press [F1 (Back)].



8. Rotate the TIME/VALUE dial to move the cursor to the song you want to copy, and press [F4 (MARK)]. When [F3 (ALL)] is pressed, you can place or remove the mark points on all the songs. In addition, by pressing [F2 (SelSg)], you can display a list of available songs. At this point, after placing mark points in the song, press [F1 (Back)].



9. Press [F5 (Exec)].
A confirmation message appears in the display.

10. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.

11. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

12. After Song Import is completed, return to Play condition. At this time, the song converted for use by the VS-1680 becomes the current song.

Converting VS-1680 Song Data for Use with the VS-880 (Song Export)

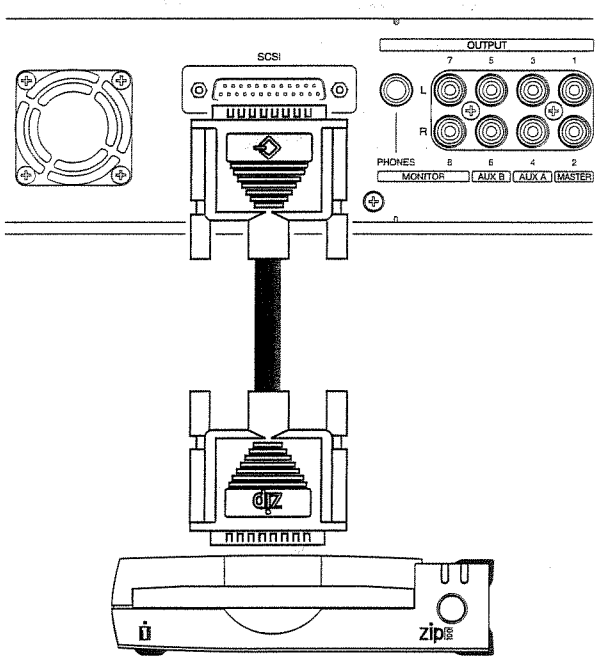
You can convert the current song for use with a VS-880 and copy it as a new songs to a Zip drive connected to the VS-1680's SCSI connector. This is referred to as **Song Export**.
All song data, including mixer settings such as equalizer and Stereo Link, system settings such as sync tracks and Tempo Maps, locate and mark points, effects settings, and so on are copied.

Limits of Song Exported

Tracks: 1–8
V-tracks: 1–8
Locators: Bank 1–Bank 4

* *You can create a song that has same both sample rate and recording mode as source song. If the song whose recording mode is set to "MTP" or "LIV2," Song Export cannot be carried out. However, if there is insufficient free space on the conversion destination drive, Song Export cannot be carried out.*

1. Make settings as shown below.



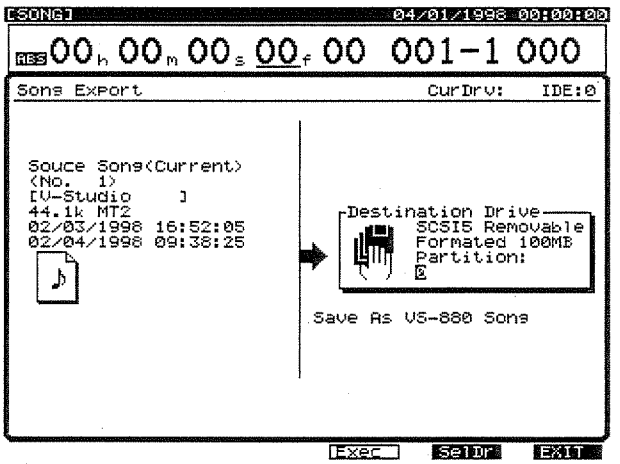
2. Select the song you want to convert as the current song.

3. Insert a disk into the Zip drive.

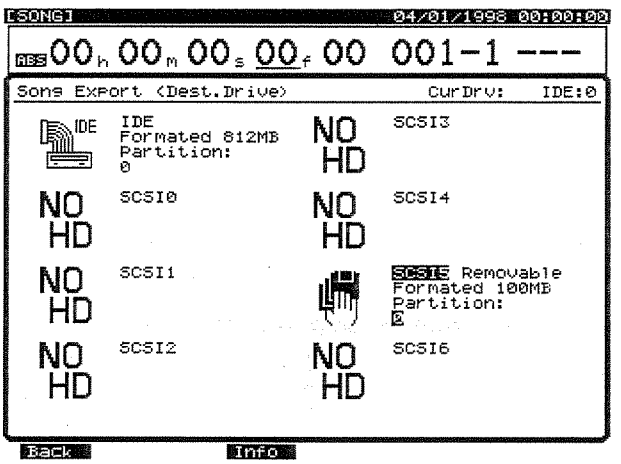
4. Press [PLAY (DISPLAY)].

5. Hold down [SHIFT] and press [F1 (SONG)].
The Song menu icon is displayed.

6. Press [F5 (Exprt)]. If "Exprt" does not appear in [F5], first press [PAGE] until "Exprt" is displayed, and then press [F5 (Exprt)].



7. Press F4 (SelDr)].
A list of drives appears in the display. Press [▲], [▼], [◀], and [▶] to select the conversion destination drive (the Zip drive), rotate the TIME/VALUE dial to select the conversion destination partition, then press [F1 (Back)].



8. Press [F4 (Exec)].
A confirmation message appears in the display.

9. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.

10. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

11. After Song Export is completed, return to Play condition.

How to Install the Hard Disk Which was Formatted with the VS-880EX to the VS-1680

When internal hard disks that have been used by a VS-880EX are installed in the VS-1680, or when Zip disks that have been used by a VS-880EX are inserted into a Zip drive connected to the VS-1680, they are recognized as the initialization disk. In this case, the VS-1680 can be used for playing back songs recorded with the VS-880EX and creating new songs as well (Song New).

- The VS-1680 recognizes a song created with the VS-880EX as Song Protect is on. You cannot set the Song Protect off, edit or newly save this song with the VS-1680.
- If you wish to edit VS-880EX song data with VS-1680, convert it to VS-1680 song data (Song Import).
- If you wish to delete VS-880EX song data with the VS-1680, execute Song Erase procedure on the VS-1680.

How to Recover the Archived Song Data

You can recover the following archived song data with the VS-1680.

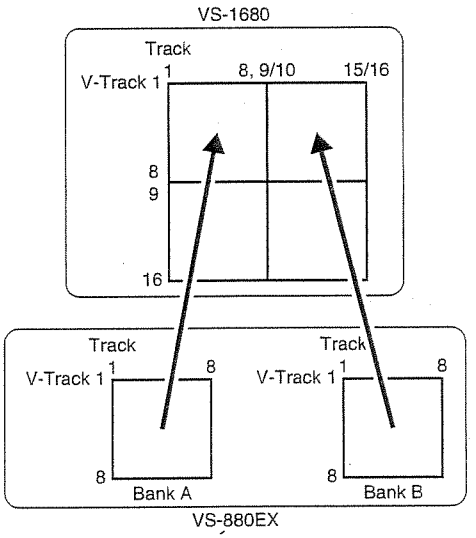
- Song data that has been saved on the Zip disks using the Archive Copy procedure on the VS-880EX
- Song data that has been backed up to the DAT tapes using the DAT Backup procedure on the VS-880EX
- Song data that has been backed up to the CD-R discs or CD-RW discs using the CD-R Backup procedure on the VS-880EX

Above song data are recovered as a VS-880EX song, and recognized as Song Protect is on. You cannot set the Song protect off.
In this case, you should first execute recover procedure (Archive Extract, DAT Recover or CD-R Recover). Then convert the recovered song data for use with the VS-1680 (Song Import).

Loading VS-880EX Performance Data into the VS-1680 (Song Import)

You can convert songs created on the VS-880EX for use with the VS-1680 and copy them as new songs to the current drive. This is referred to as **Song Import**. All the data such as mixer settings, system settings, locators and markers, and effect settings will be copied.

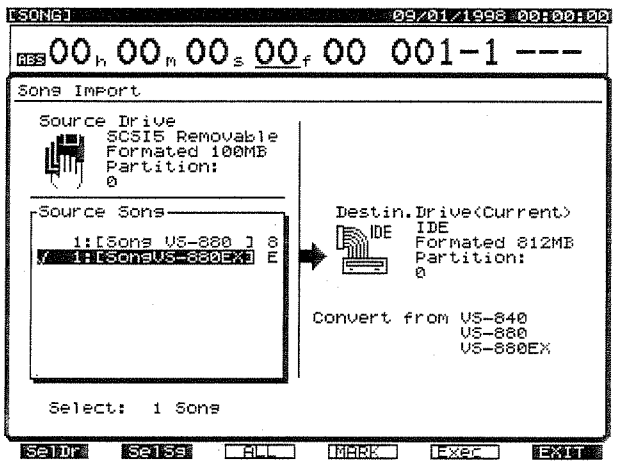
- Bank A of the VS-880EX is copied to the Tracks 1–8 (V-Tracks 1–8) of the VS-1680. Bank B of the VS-880EX is copied to the Tracks 1–8 (V-Tracks 9–16) of the VS-1680.



- The sample rate and recording mode of the newly created song will be the same as the original song.
- If there is insufficient free space on the current drive, Song Import cannot be carried out.

1. Connect the Zip drive to the VS-1680.
2. Insert the disk onto which VS-880EX song data has been recorded into the Zip drive.
3. For the current drive, select the drive (internal hard disk) you want to be the load destination.
4. Press [PLAY (DISPLAY)].
5. Hold down [SHIFT] and press [F1 (SONG)].

6. Press [F4 (Imprt)]. If "Imprt" does not appear in [F4], first press [PAGE] until "Imprt" is displayed, and then press [F4 (Imprt)].
7. Press [F1 (SelDr)]. Press [▲], [▼], [◀], and [▶] to select the load source drive, and rotate the TIME/VALUE dial to select the load source partition, then press [F1 (Back)].
8. Rotate the TIME/VALUE dial to move the cursor to the song you want to copy, and press [F4 (MARK)]. In this case, the VS-880EX Song data is discriminated with "E" at the end of the list.

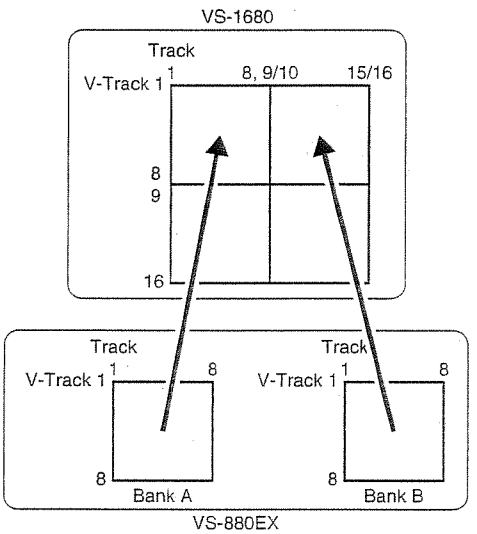


9. Press [F5 (Exec)].
10. Press [YES]. "STORE Current?" (Store the current song?) appears in the display.
11. If you wish to save the current song, press [YES]; if not, then press [NO]. Song Import procedure will begin.
12. After Song Import is completed, return to Play condition.

Converting VS-1680 Song Data for Use with the VS-880/VS-880EX (Song Export)

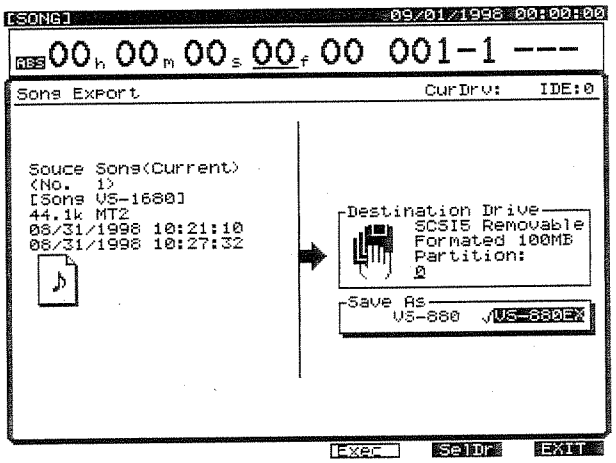
You can convert the current song for use with the VS-880 and copy it as new songs to a Zip disk. This is referred to as {Song Export}.
All the song data including mixer setting, system setting, time of marker and locator, and effect settings are converted. But conversion of some settings such as track and locator are limited by the VS-880EX's capacity.

- Tracks 1–8 (V-Tracks 1–8) of the VS-1680 are copied to the Bank A (Tracks 1–8, V-Tracks 1–8) of the VS-880EX. Tracks 1–8 (V-Tracks 9–16) of the VS-1680 are copied to the Bank B (Tracks 1–8, V-Tracks 1–8) of the VS-880EX. Tracks 9/10–15/16 (V-Tracks 1–16) are not copied.



- Time of locator in the Locator Banks 1–4 are copied. Times of locator in the Locator Banks 5–8 are copied.
- The sample rate and recording mode of the newly created song will be the same as the original song. **However, if the song whose recording mode is set to "MTP" or "LV2," Song Export cannot be carried out.**
- If there is insufficient free space on the conversion destination disk, Song Export cannot be carried out.

1. Connect the Zip drive to the VS-1680.
2. Select the song you want to convert for use VS-880/VS-880EX as the current song.
3. Insert a ZIP disk into the Zip drive.
4. Press [PLAY (DISPLAY)].
5. Hold down [SHIFT] and press [F1 (SONG)].
6. Press [F5 (Exprt)]. If "Exprt" does not appear in [F5], first press [PAGE] until "Exprt" is displayed, and then press [F5 (Exprt)].
7. Press [▲], [▼], [◄], and [►] to move the cursor to "Save As." Select the Song data format to be converted to, VS-880 or VS-880EX, with TIME/VALUE dial.



8. Press [F4 (Exec)].
9. Press [YES].
"STORE Current?" (Store the current song?) appears in the display.
10. If you wish to save the current song, press [YES]; if not, then press [NO]. Song Export procedure will begin.
11. After Song Export is completed, return to Play condition.

When VS-880, VS-1680 and VS-880EX Format Song Data are Existed in a Disk

If you recover the Song with Archive Extract or CD-R Recover, Song data with VS-880, VS-1680 and VS-880EX format may be created in a disk. In this case, Song numbers are sorted by Song data format as follows.

VS-880: 1–200
VS-1680: 1–200
VS-880EX: 1–200

But maximum song number which can be existed in a partition is 505. For example, maximum number of VS-880EX songs which can be saved is 105, if each 200 of VS-1680 Songs and VS-880 Songs have already be existing in the Partition 1 of the internal hard disk.

In the Song Select display, type of Song data is shown by icon.

 : for VS-1680

 : for VS-880

 : for VS-880EX

Previewing Techniques (Preview)

When editing a song, you will likely want to find precise points in the song, for example the point where sound begins or where the climax begins, when using Auto Punch-In Recording, and in other editing situations. In such instances, you can specify the amount of time for playback leading up to or following a designated point as well as monitor the data on the tracks while gradually shifting the current time in the song. This is referred to as the **Preview function**.
There are four Preview buttons, and each one works differently. Select the one whose function is most appropriate for what you are trying to accomplish.

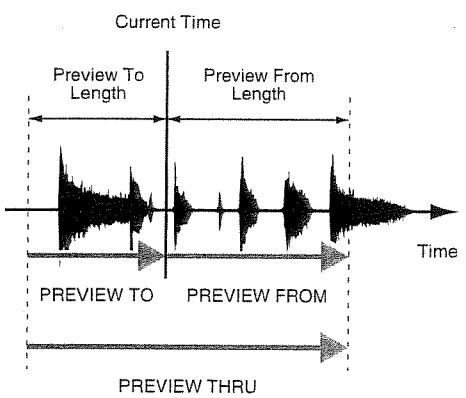
Using [TO] [THRU] [FROM]

You can set the length of playback time for the tracks you want to monitor for 1.0–10.0 seconds leading up to or starting from the current point in the song. Press each buttons while the song is stopped.

[TO]: A preview of the song is played back one time for the specified period of time up to the current time in the song (Preview To).

[FROM]: A preview of the song is played back one time for the specified period of time starting from the current time in the song (Preview From).

[THRU]: A preview of the song is played back for the specified period of time both up to and from the designated point in the song, i.e., with the current time placed at the center of the playback (Preview To + Preview From).



Finding the Location Where the Sound Begins (example)

1. While pressing [STOP], press the STATUS button for the track you want to monitor.

The button indicator lights green.

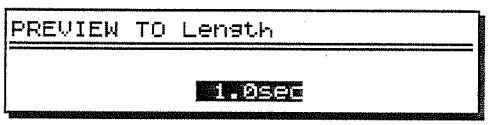
2. Press [PLAY] to begin playback of the song.
3. Play back the song until you reach the point you are looking for. Press [STOP] to stop playback.
4. Alternately press [TO] and [FROM].

The song before and after the current time is played back. Determine whether the beginning of the sound is earlier or later than the current time.

5. Next, rotate the TIME/VALUE dial to move the current time until you can hear a bit of the beginning of the sound when you press [TO].
6. Finally, rotate the TIME/VALUE dial to move the current time until the sound begins precisely when you press [FROM].
7. Now you can easily find the precise location where the sound begins. Place a mark point at the current time or store the current time in a locate point so that you will be able to easily find it later.

Adjusting the Preview Length

1. To adjust the "Preview To" length, hold down [SHIFT] and press [TO]. To adjust the length of "Preview From," hold down [SHIFT] and press [FROM].
2. The "Preview Length" is displayed. Rotate the TIME/VALUE dial to adjust the time. Press [TO] or [FROM] to check the actual playback time.



Preview Length
It sets a length of playback time in the preview function.

3. After you have finished making the settings, press [F6 (EXIT)].

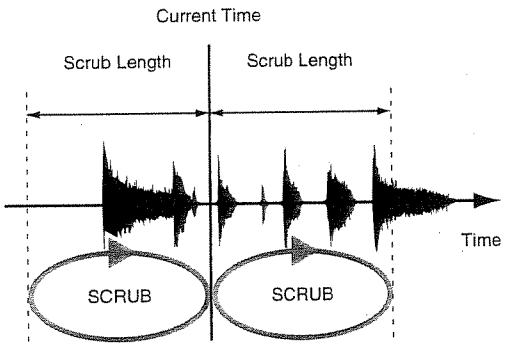
The initial display reappears.

Using [SCRUB]

This function is used to repeat playback of the song before and after a designated point on a selected track for a more precisely specified length of time (25–100 msec). Press [SCRUB] while the song is stopped. The button indicator lights, and the specified section is played back repeatedly.
The playback time (25–100 msec) is shorter than when Preview as used.

Press the following buttons while their button indicators are lit.

[▲] [▼]: Selects the track to be played back.
[TO]: The song is played back repeatedly up to the designated point.
[FROM]: The song is played back repeatedly starting from the designated point.



Finding the Location Where the Sound Begins (example)

1. While pressing [STOP], press the STATUS buttons for all tracks that you want to monitor.

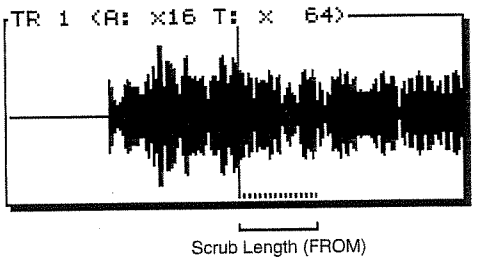
The button indicator lights green.

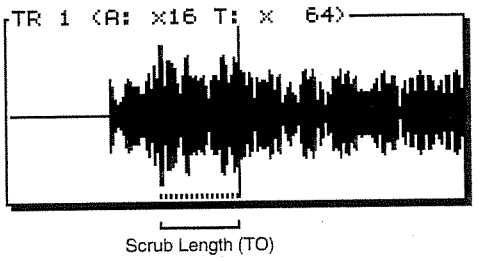
2. Press [PLAY] to begin playback of the song.
3. Play back the song until you reach the point you are looking for. Press [STOP] to stop playback.
4. Press [SCRUB].

The button indicator lights, and the specified section is played back repeatedly. Press [TO] or [FROM] to select the range before or after the current time that you want to play back.

5. Use [▲] and [▼] to select the track on which you want to use Scrub playback.
6. If you pressed [TO] in Step (4), rotate the TIME/VALUE dial to move the current time until you can just hear the very beginning of the sound. If you pressed [FROM] is Step 4, rotate the TIME/VALUE dial to move the current time until the sound begins precisely when you press [FROM].

If you press [F5 (WAVE)], waveform will be displayed. Area for scrub playback will be shown with dotted line, for your reference.

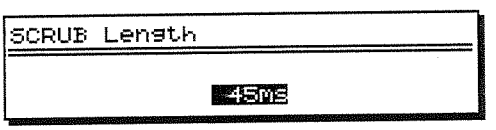




7. Now you can easily find the precise location where the sound begins. Press [SCRUB] once more. The indicator light goes off.
8. Place a marker at the current time or store the current time in a locator so that you will be able to easily find it later.

Adjusting the Scrub Length

1. Hold down [SHIFT] and press [SCRUB].
2. The "Scrub Length" is displayed. Rotate the TIME/VALUE dial to adjust the time. Press [SCRUB] to check the actual playback time.



Scrub Length

This sets a length (25–100 msec) of playback time when the Preview function [SCRUB] button is pressed.

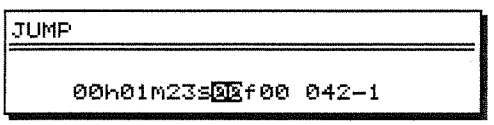
3. After you have finished making the settings, press [F6 (EXIT)].

The initial display reappears.

Recalling a Specific Location (Jump)

Besides using the TIME/VALUE dial, markers and locators to move the current time of the song, you can also directly specify a location or measure and beat to be recalled. This is convenient when designating locations during Track Edit and Phrase Edit.

1. Hold down [SHIFT] and press [JUMP (PAGE)].
2. "Jump" appears in the display. Use [◀], [▶] and the TIME/VALUE dial to enter the time location.



3. Press [F4 (Exec)].

The designated time location is recalled, and you are returned to the previous condition.

Recording Mixer Settings (Auto Mix)

With the VS-1680, you can record the present status or condition of the mixer as a **Scene**. Unlike with Scenes, you can alternatively store information at specific times during playback to markers. Referred to as **Auto Mix**, this includes the mixer settings, time-based channel fader movements, and other settings. When during playback you reach a point where a marker is set, the mixer settings automatically switch to those stored at the marker. This is convenient when mixing with complicated settings that are difficult to reproduce manually.

The following mixer settings can be recorded in Auto Mix.

* *Items printed in bold are those that can be adjusted directly with the faders on the top panel. You can record the time-based movements of the faders by moving the faders during playback of the song.*

INPUT Channel/TRACK Channel:
Fader
Pan
EFX1 Lev (Effect 1 Send Level)
EFX1 Pan (Effect 1 Send Pan)
EFX2 Lev (Effect 2 Send Level)
EFX2 Pan (Effect 2 Send Pan)
EFX3 Lev (Effect 3 Send Level)
EFX3 Pan (Effect 3 Send Pan)
EFX4 Lev (Effect 4 Send Level)
EFX4 Pan (Effect 4 Send Pan)
AUX Lev (AUX Level)
AUX Pan

STEREO IN:
Fader
(Balance)

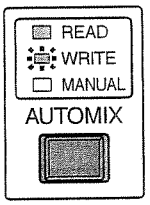
EFFECT RETURN:
(Effect 1 Return Level)
(Effect 1 Return Balance)
(Effect 2 Return Level)
(Effect 2 Return Balance)
(Effect 3 Return Level)
(Effect 3 Return Balance)
(Effect 4 Return Level)
(Effect 4 Return Balance)

Master Block:
(Master Level)
Master Balance
(Monitor Level)
Monitor Balance
(Master Effect 1 Send Level)
(Master Effect 1 Send Balance)
(Master Effect 2 Send Level)
(Master Effect 2 Send Balance)
(Master Effect 3 Send Level)
(Master Effect 3 Send Balance)
(Master Effect 4 Send Level)
(Master Effect 4 Send Balance)
(Master AUX Send Level)
(Master AUX Send Balance)

EFFECT:
EFX1 (Effect 1 Program Number)
EFX2 (Effect 2 Program Number)
EFX3 (Effect 3 Program Number)
EFX4 (Effect 4 Program Number)

Preparations for Auto Mix

Press [AUTOMIX]. The button indicator lights, indicating that Mix mode is on.

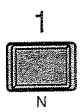


lit

At this time, while holding down the [AUTOMIX] button once more, each time the input channel or track channel SELECT button or the Master Block [EDIT] button is pressed, the status of each channel is switched as follows.

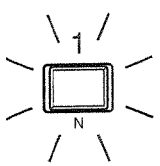
dark

Indicator off:
Auto Mix is disabled.



lit

Indicator on:
Auto Mix playback is enabled.



blink

Indicator blinking:
Auto Mix is enabled for recording and playback.

Recording the Mixer Settings, Method 1 (Snapshot)

Mixer settings recorded with Auto Mix can be recorded directly to markers. This method is known as taking a **Snapshot**. When you move to that marker, the mixer settings that were recorded will be reproduced. For example, this is convenient when you want the intro and ending to have different volume levels or different effect send levels for guitar parts during intros or solos.

1. Move to the time location where you wish to record the auto mix.
2. Confirm that Auto Mix mode is on.
3. Select the **channels which you want to record using Auto Mix**. While pressing [AUTOMIX], so that the button indicators to blink, press the input channel or track channel SELECT button or the Master Block [EDIT] button.
4. Hold down [SCENE] and press [TAP].

A marker is added at the current time location. At the same time, a Snapshot of the mixer settings is recorded at the marker. A marker in which mixer settings are recorded will be indicated by an "A" following it.

004A

5. Press [AUTOMIX].

The button indicator light goes off.

* *If a marker already exists within 0.1 seconds before the time location where you are attempting to place a new marker (i.e., the current time), the Snapshot is recorded at the earlier marker. A marker will not be newly assigned. If a marker already exists within 0.1 seconds after the time location at which you are attempting to place a new marker (i.e., the current time), the Snapshot is recorded at the later marker.*

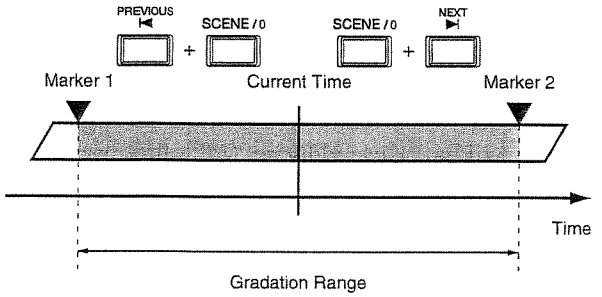
Recording the Mixer Settings, Method 2 (Gradation)

This creates an auto mix that smoothly connects Snapshots recorded in two adjacent markers. This method is called **Gradation**.
For example, this is convenient when you wish to specify the length of a fade-in or fade-out.

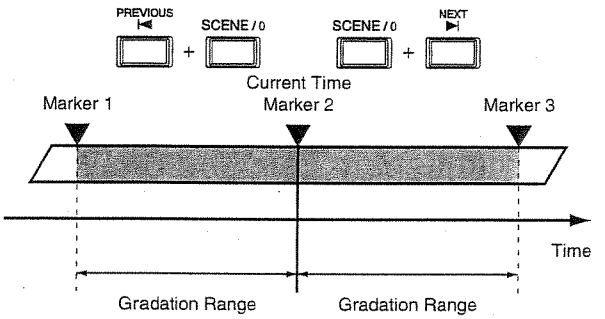
1. Follow the operation as described in "Recording the Mixer Settings, Method 1," record a Snapshot with the time locations at which you want Gradation to begin and end.
2. Confirm that Auto Mix mode is on.
3. Select the **channels which you want to record using Auto Mix**. While pressing [AUTOMIX], so that the button indicators to blink, press the input channel or track channel SELECT button or the Master Block [EDIT] button.
4. Hold down [SCENE] and press [PREVIOUS] or [NEXT].
5. A confirmation message appears on the screen. Press [YES].

A new mark point is automatically added between the two mark points, and Gradation is executed. Press [NO] if you wish to cancel Gradation.

When the current time is included in an adjacent marker:
Press either [SCENE] and [PREVIOUS] or [SCENE] and [NEXT], the gradation range will be specified in a same range.



When the current time matches with a marker:
When you press [SCENE] and [PREVIOUS], the gradation includes the preceding marker; pressing [SCENE] and [NEXT] creates a gradation including the following marker.



6. Press [AUTOMIX].
The button indicator light goes off.

Recording Fader Operations (Realtime)

With this method, time-based both channel fader and master fader movement during play back song are recorded to the marker directly. This method is referred to as **Realtime**. This is convenient when, for example, you want to freely adjust the volume levels of individual tracks.

* *The VS-1680 does not provide any PAN knobs. If you wish to adjust the pan during play back continuously, use the Snapshot and the Gradation together.*

1. Move to the time location at which you wish to record in Realtime.

2. Confirm that Auto Mix mode is on.

3. Select the **channels which you want to record using Auto Mix**. While pressing [AUTOMIX], so that the button indicators to blink, press the input channel or track channel SELECT button or the Master Block [EDIT] button.

4. Hold down [SCENE] and press [REC].
The AUTOMIX indicator blinks, indicating that Auto Mix Realtime recording is ready.

5. Press [FADER] to select the faders that will be in effect with the input mixer or track mixer.

6. Adjust the top panel channel faders and master fader to the desired positions.

* *When the Fader Match (p. 185) in the System parameters is set to "Null," and the current fader positions of do not match the actual volume levels, if you don't first move the channel faders to their actual values, you will be unable to record the data using Auto Mix.*

7. Press [PLAY] to begin playback.

8. Operate the channel faders and master fader on the top panel.
Auto mix data will be recorded only for those channels that are modified.

9. When the mix is finished, press [STOP].
markers will be automatically created in the area which was played back.

If "!!! Lack of EVENT !!" Appears in the Display
If you do a lot of recording or make numerous edits using such functions as Track Copy, the remaining number of events may fall below 1000. When this happens, you will not be able to continue recording Auto Mix data in real time. Please refer to "About Events" (p. 22). In addition, when planning to record for an extended period with Auto Mix, please check the remaining number of Events frequently, as described in "Checking the Remaining Disk Space" (p. 186).

If You Don't Want to Record Fader Settings (Mask Fader)

You can specify that the settings adjustable from the top panel will not be recorded, as described in "Recording the Mixer Settings, Method 1 (Snapshot)." For example, this is effective when you have made fade-in settings as in "Recording the Mixer Settings, Method 2 (Gradation)", and then wish to modify effect send levels or other settings.

1. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon is displayed.

2. Press [F5 (A.mix)]. If "A.mix" does not appear in [F5], first press [PAGE] until "A.mix" is displayed, and then press [F5 (A.mix)].

3. Rotate the TIME/VALUE dial to set Snap mode. At this time, select "Mask Fader."

Snap Mode

This selects the settings that will be recorded by the snapshot.

All: All settings are recorded.

MaskFader: Channel faders settings are ignored.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

5. Record the Snapshot as described in "Recording the Mixer Settings, Method 1."

Playing Back the Auto Mix

1. Press [AUTOMIX].

The button indicator lights, indicating that the VS-1680 is in Auto Mix mode.

2. Select the **channels for which you want Auto Mix played back**. While pressing [AUTOMIX], so that each button indicators light, press the input channel or track channel SELECT button or the Master Block [EDIT] button.

3. Press [PLAY].

Playback of Auto Mix begins.

Moving the channel faders or master fader while Auto Mix is being played back cancels the Auto Mix for that fader. If you stop and then start playback again, Auto Mix will once again take effect. Alternatively, you can temporarily disable Auto Mix during playback and then enable it by turning it on again.

Making Changes to Auto Mix (Micro Edit)

You can check and directly change the values for settings pertaining to all of the Auto Mix's data.

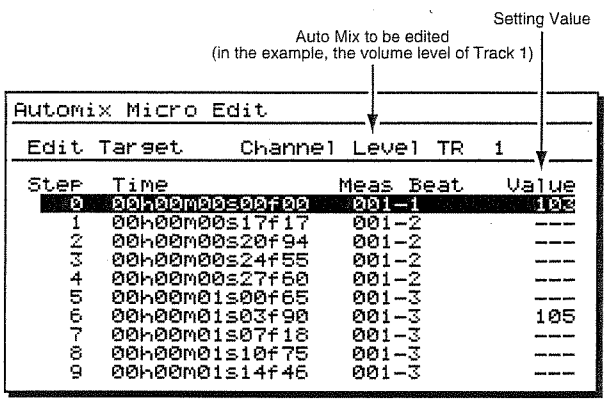
1. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon appears in the display.

2. Press [F5 (A.mix)]. If "A.mix" does not appear in [F5], first press [PAGE] until "A.mix" is displayed, and then press [F5 (A.mix)].

3. Press [F2 (Micro)].

The Micro Edit screen appears in the display.



4. Press [◀].

The cursor moves to "Edit Target." Rotate the TIME/VALUE dial to select the Auto Mix you want to edit.

5. Press [▲] and [▼] to move the cursor. Rotate the TIME/VALUE dial to edit each of the different settings values.

* *What can be edited here is the **Auto Mix data**. If you want to change markers, then please refer to "Making Fine Adjustments to Marked Locations" (p.38).*

6. Repeat Steps 4 and 5 for any other Auto Mix you wish to edit.

7. When you have finished editing, press [PLAY (DISPLAY)].

Return to Play condition.

Disabling Auto Mix Only on Specified Channels

1. Move to the point where you want to disable Auto Mix.
2. Confirm that Auto Mix mode is on.
3. Select the **channels for which you want Auto Mix disabled**. While pressing [AUTOMIX], so that the button indicators to blink, press the input channel or track channel SELECT button or the Master Block [EDIT] button.
4. Hold down [SCENE] and press [CLEAR].

Auto Mix is disabled on the selected channels.

5. Press [AUTOMIX].

The button indicator light goes off.

Disabling Auto Mix on All Channels

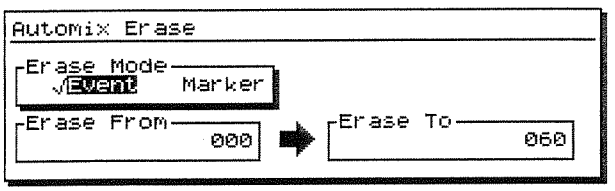
1. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon is displayed.

2. Press [F5 (A.mix)]. If "A.mix" does not appear in [F5], first press [PAGE] until "A.mix" is displayed, and then press [F5 (A.mix)].
3. Press [F4 (Erase)].

The Auto Mix Erase screen appears in the display.

4. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change each of the settings values.



Erase Mode

Select the auto mix data which will be erased.

Event: Only Auto Mix events will be erased.

Marker: Both markers and Auto Mix events will be erased.

Erase From

Specify the first marker in the range that you want Auto Mix erased.

Erase To

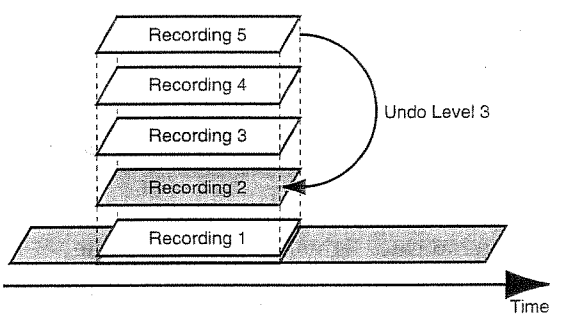
Specify the last marker in the range that you want Auto Mix erased.

5. Press [F4 (Exec)].
6. A confirmation message appears on the screen. Press [YES]. If you wish to cancel the erase, press [NO].

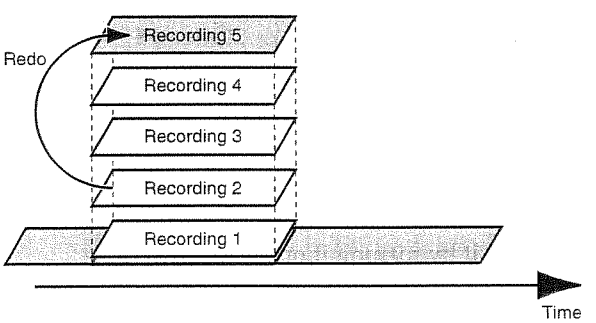
Undoing Recordings and Edits (Undo)

When using the VS-1680, recordings may not sound as you intend, settings for editing may be made incorrectly, or there may be other situations where you want to go back and try something again. In such instances, you can restore the previous conditions at each of the steps where something was changed. This is referred to as the **Undo function**. Moreover, you can restore conditions as they were before the last undo. This is called the **Redo function**.

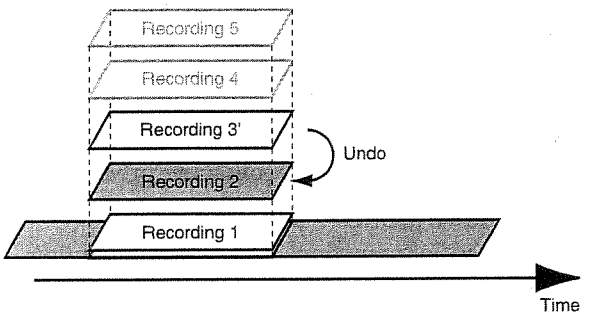
When using the Undo function, you will specify the number of previous steps that will be undone. For example, suppose that you use punch-in recording to perform five consecutive re-recordings of the same location. If you later decide to return to the condition of the second recording (step 2), you would set the Undo function to return to the condition of three steps earlier (Undo Level 3).



If, after executing the Undo operation, you decide to return to the condition of step 5, execute the Redo operation.



However if you once again record (step 3') after returning to the condition of recording number 2, the recordings 3–5 that were canceled by the Undo operation will be lost. This means that if after step 3' you use the Undo operation to return to the previous step, you will return to the condition of step 2.



Recording and Editing Operations Which Can Be Undone (Undo)

Recording or editing operations performed after creating a song are recorded together with the song data as its operation history, and the data itself is also preserved without being erased. For example, suppose that you perform 10 recording operations on song 1 and then create song 2. The operation history of song 2 is newly recorded from the time when song 2 was created. If you subsequently select song 1 again, the history of the 10 previous recording operations will still be there.

The Undo function refers to the operation history of the currently selected song, and restores the song to the condition in which it was the specified number of operations ago. In the case of song 1 in this example, you will be able to cancel the 10 recording operations that were performed. A maximum of 999 levels of operation history may be recorded for each song.

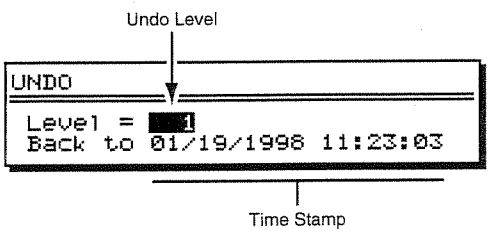
Operations That Can Be Undone

Operations that can be undone are **recording operations**, **each of the Track Edit operations**, and **each of the Phrase Edit operations**. Check the list below for operations that cannot be undone.

- Song Edit operations (Optimize/Erase/Split/Combine/etc.)
- Saves to User Effect Patches
- System operations (mixer initialization/Sync Track Recording/etc.)
- Utility operations (recording with Auto Mix/Drive Initialize/etc.)
- Storing in EZ Routing
- Stored Locators/Markers/Scenes

1. Press [UNDO].
2. "Level" appears in the display. Rotate the TIME/VALUE dial to select the number of previous steps the conditions of which you want to have restored.

When you execute Undo, the time stamp for whatever time you are returning to is displayed on the screen. Have a look.



3. Press [F4 (Exec)] to execute Undo.

The button indicator lights. If you want to cancel the Undo, press [F6 (EXIT)].

Canceling the Last-Performed Undo (Redo)

The Redo function can be executed when the UNDO indicator is lit. When the song data is saved, for example by your doing Song Store or selecting another song, the UNDO indicator will go out, indicating that the Undo function will no longer be available.

1. While the UNDO indicator is lit, hold down [SHIFT] and press [UNDO].
2. "Cancel the last UNDO?" appears in the display. Press [F4 (Exec].

The button indicator light goes off. If you wish to cancel, press [(F6 (EXIT)].

Cancelling Only the Very Last-Performed Operation

If you most frequently use the Undo function to undo just the previously performed recording/editing operation (i.e., undo level 1), you may prefer not to be bothered with the messages that appear when the [UNDO] button is pressed. In this case, make the following settings so that just the previous operation will be undone immediately when the [UNDO] button is pressed.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "UNDO message." If "UNDO message" does not appear, then press [F1 (Prm1)].

4. Rotate the TIME/VALUE dial to change the values for each of the settings. For now select "Off."

UNDO message
This selects whether or not the Undo confirmation message is displayed.
On: The message is displayed, asking how many levels you want to undo.
Off: The message is not displayed, and only the immediately preceding operation is undone.

5. Press [PLAY (DISPLAY)].
Return to Play condition.

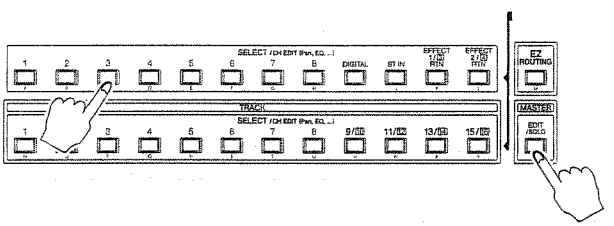
Listening Only to a Specific Channel (Solo/Mute)

When making equalizer adjustments or checking the balance during mixdown, it is often desirable to be able to monitor the sound of one specific channel. Although it would be possible to individually mute each of the channels that you didn't want to hear with STATUS buttons, this is inconvenient. In such cases, you can monitor only a specific channel and mute all the other channels. This is called the **Solo function**. To use the Solo function, use the following procedure.

1. Hold down [SOLO (EDIT)].
This turns the Solo function on; the SELECT button indicators for all input or track channels are all blink. In the present status, all input or track channels are monitored.

* *By holding down [SOLO (EDIT)], you can set a 0.3–2.0-second range (p. 190).*

2. While holding down [SOLO (EDIT)], press the SELECT button for the input or track channel you wish to monitor.
Only that button indicator stays blink, and only that channel is now monitored. You can now release the buttons. At this time you can make adjustments to fader, balance, equalizer, effects, and other settings.



3. Monitor and Mute alternate each time you press [SOLO (EDIT)] and SELECT buttons.
Furthermore, you can monitor two or more channels. However, channels which were muted before the Solo function was turned on cannot be monitored even when their SELECT buttons are pressed. Additionally, when you are monitoring just one channel, pressing the SELECT button of that channel allows you to then monitor all channels.

4. Hold down [CLEAR] and press [SOLO (EDIT)] allows you to monitor all channels.

Selecting the Channels to be Monitored

You can also select which channels to monitor through each channel's Edit screen. Use the following procedure.

3-1. Press the SELECT button for the input or track channels you wish to monitor.

3-2. Press [F3 (SOLO)]. If "SOLO" does not appear in [F3], first press [PAGE] until "SOLO" is displayed, and then press [F3 (SOLO)].

3-3. Rotate the TIME/VALUE dial.
You can monitor the channels for which you have selected "On."

3-4. Press [PLAY (DISPLAY)].
Return to Play condition.

About Solo Mode

If you press [SOLO (MASTER)] while holding [SHIFT], SOLO Mode turns on. Operation is as follows.

1. Press [SOLO (MASTER)] while holding [SHIFT].
"---SOLO MODE---" blinks in the display and indicates SOLO Mode is on. At the same time, indicators of the SELECT buttons for input and track channels blink. With this status, every channel can be monitored.

2. Press any of channel select buttons you wish to monitor.
Indicator of the button flashes and you can monitor only this channel. Fader, balance, equalizer, effects and so on are effective on each channel.

3. Everytime you press the SELECT button, monitor and mute status switch. Only when holding [AUTOMIX], you can check the automix status of each channel.

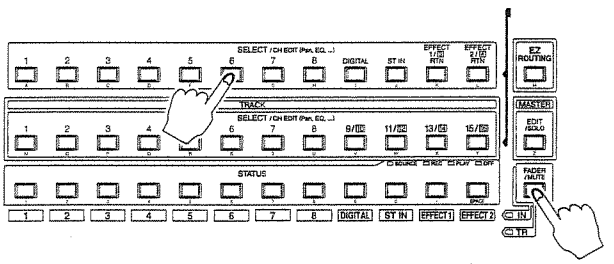
4. To turn the SOLO Mode off and go back to PLAY condition, press [SOLO (MASTER)] again while holding [SHIFT].

If, in contrast to the Solo function, you wish to mute only specific channels, use the following procedure.

1. Hold down [MUTE (FADER)].
This turns the Mute function on; the SELECT button indicators for all input or track channels are all blink. In the present status, all input or track channels are monitored.

* *By holding down [MUTE (FADER)], you can set a 0.3–2.0-second range (p. 190).*

2. While holding down [MUTE (FADER)], press the SELECT button for the input or track channel you wish to mute.
The button indicator goes off, and only that channel is now muted.



3. Monitor and Mute alternate each time you press [MUTE (FADER)] and SELECT button. You can also mute two or more channels.

4. Hold down [CLEAR] and press [MUTE (FADER)] allows you to monitor all channels.

Selecting the Channels to be Muted

You can also select which channels to mute through each channel's Edit screen. Use the following procedure.

2-1. Press the SELECT button for the input or track channels you wish to mute.

2-2. Press [F4 (Mute)]. If "Mute" does not appear in [F4], first press [PAGE] until "Mute" is displayed, and then press [F4 (Mute)].

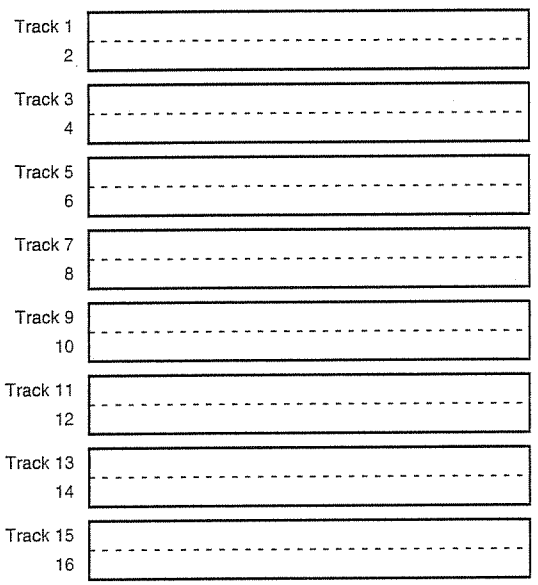
2-3. Rotate the TIME/VALUE dial.
You can mute the channels for which you have selected "On."

2-4. Press [PLAY (DISPLAY)].
Return to Play condition.

Simultaneously Adjusting a Stereo Source (Stereo Link)

When recording or playing back a stereo source, normal mixer operations require you to control the left and right channels separately, which can make it inconvenient to adjust equalizer, effects, and other settings. In such cases, you can have the settings for a pair of channels, with the exception of the fader and pan settings, linked so that they adjusted in the same way. This is called the **Stereo Link**.

When Stereo Link is on, adjacent odd- and even-numbered channels are paired as shown below. The settings of each odd-numbered channel will be the same as the settings of the corresponding even-numbered channel. When the setting of one channel are modified, the settings of the paired channel will change in the same way.



1. Press the SELECT button for the input or track channels for which you wish to have Stereo Link turned on.
2. Press [F1 (Link)]. If "Link" does not appear in [F1], first press [PAGE] until "Link" is displayed, and then press [F1 (Link)].
3. Rotate the TIME/VALUE dial. For now, select "On."

Link (Stereo Link)

This turns the Stereo Link function on and off.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

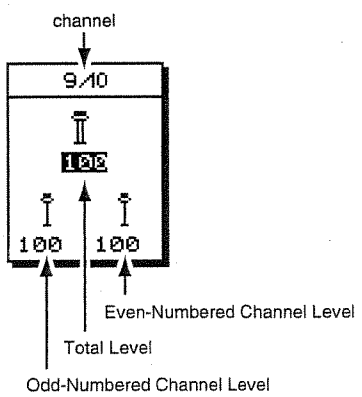
Adjusting the Faders

When Stereo Link is on, the balance of both channels is preserved, and the total volume level controlled with fader for the odd-numbered channel. If you want the channel faders to act independently, use the following procedure.

1. Press the SELECT button for the input or track channels for which you wish to adjust that channel's fader.
2. Press [F5 (Fader)]. If "Fader" does not appear in [F5], first press [PAGE] until "Fader" is displayed, and then press [F5 (Fader)].
3. Press [F6 (PRM.V)].

The values of each fader appears in the display.

4. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust each setting.



(Total Level)

With the balance of both channels preserved, this adjusts the total volume level (0–127). Use the fader for the odd-numbered channel for adjusting this.

(Odd-Numbered Channel Level)

This adjusts the volume level (0–127) of the odd-numbered (left) channel.

(Even-Numbered Channel Level)

This adjusts the volume level (0–127) of the even-numbered (right) channel.

5. Press [PLAY (DISPLAY)].

Return to Play condition.

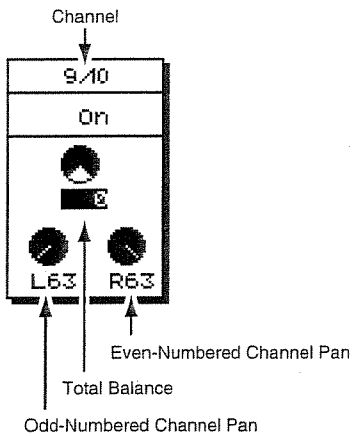
Adjusting the Pan

When Stereo Link is on, this adjusts the total left-right balance while preserving the pan settings for both channels. If you want to adjust the pan for each channel independently, use the following procedure.

1. Press the SELECT button for the input or track channels whose pan settings you wish to adjust.
2. Press [F1 (Pan)]. If "Pan" does not appear in [F1], first press [PAGE] until "Pan" is displayed, and then press [F1 (Pan)].
3. Press [F6 (PRM.V)].

Each of the pan settings appears in the display.

4. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to adjust each setting.



(Pan Switch)

When this is set to "On," the source from each input channel, rather than being assigned to the RECORDING bus, is sent directly to the MIX bus. Set this to "On" when, for example, you simply want to mix the inputs without recording them. However, the sources that are assigned to the RECORDING bus are disabled.

(Total Balance)

With the balance between both channels preserved, this adjusts the total left-right balance (L63–0–R63).

(Odd-Numbered Channel Pan)

This adjusts the pan (L63–0–R63) of the odd-numbered (left) channel.

(Even-Numbered Channel Pan)

This adjusts the pan (L63–0–R63) of the even-numbered (right) channel.

5. Press [PLAY (DISPLAY)].

Return to Play condition.

> **Even-Numbered Channel Settings**
> When you create a new song using the DIGITAL input channels (D), or track channels 9/10, 11/12, 13/14, or 15/16, Stereo Link is already set to "On." By turning off Stereo Link on these channels, you can make adjustment to each channel independently.
> At this point, pressing [DIGITAL] or the track channel SELECT button for the desired track allows you to make settings alternately to the odd- and even-numbered channels.

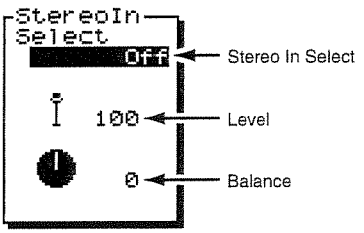
Mixing In a Stereo Source (Stereo In)

You can assign input signals from the INPUT jacks or DIGITAL IN connector to the MIX bus or RECORDING bus, without having them pass through the input mixer. You can also monitor these signals without having them pass through the input mixer or output mixer. This is referred to as **Stereo In**. This can be convenient when, for example, the same input source features sounds with effects and sounds without effects recorded on separate tracks. Use the following procedure for Stereo In.

1. Press the input channel's [ST IN].

The Stereo In/Effect Return screen appears in the display.

2. Press [F1 (St In)].
3. Press [▲] and [▼] to move the cursor. Rotate the TIME/VALUE dial to adjust each of the settings values.



StereoIn Select
This selects the external input connector or jack using Stereo In.

Off: Stereo In is not used.
Input 1/2: Selects INPUT jacks 1/2 for use with Stereo In.
Input 3/4: Selects INPUT jacks 3/4 for use with Stereo In.
Input 5/6: Selects INPUT jacks 5/6 for use with Stereo In.
Input 7/8: Selects INPUT jacks 7/8 for use with Stereo In.
Digital: Selects the DIGITAL IN connector (coaxial or optical) for use with Stereo In.

(Level)
This adjusts the volume level (0–127) for Stereo In.

(Balance)
This adjusts the balance (L63–0–R63) for Stereo In.

4. Press [PLAY (DISPLAY)]
Return to Play condition. The volume level of Stereo In can be adjusted directly with the channel faders (ST IN) when the input mixer is in effect (when the IN indicators are lit).

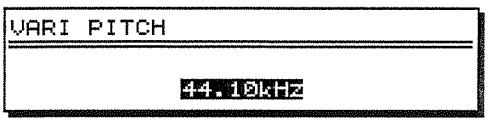
* *By holding down [ST IN] and pressing the input channel SELECT button, you can directly specify the input jack or connector to be used with Stereo In.*

Changing the Pitch During Playback (Vari-Pitch)

When recording an ensemble performance, all the instruments normally tune to an instrument such as an acoustic piano whose tuning cannot easily be changed. However, it is sometimes necessary to record (overdub) an acoustic piano onto an existing recording. In this case, if the pitch of the recording is different than that of the acoustic piano, something must be done about it.
In such cases, by changing the playback speed of the recorder, you can change the pitch of the performance being played back to match the pitch of the instrument you want to record. This is referred to as the **Vari-Pitch function**. Vari-Pitch can be used not only to compensate for pitch differences, but can also be used when you want to purposely produce special effects. To use the Vari-Pitch function, use the following procedure.

1. Press [VARI PITCH].
The button indicator lights, indicating that the Vari-Pitch function is on.

2. Press [VARI PITCH] while holding down [SHIFT].
The current sample rate appears in the display.



3. Press [PLAY] to begin playback of the song.

4. Rotate the TIME/VALUE dial to change the pitch of the playback. Check the playback to see how the pitch actually sounds.

5. When you have finished making the settings, press [F6 (EXIT)].
Return to Play condition. Now, Vari-Pitch turns on and off each time [VARI PITCH] is pressed.

Directly Inputting Alphanumeric Characters

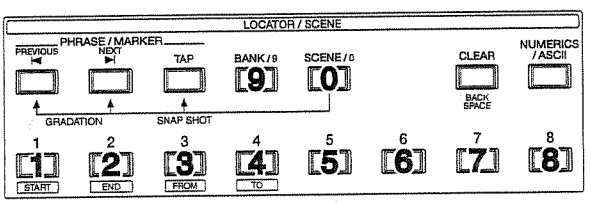
Not only can you use the normal process of rotating the TIME/VALUE dial to enter text, but you can also use the buttons on the top panel like an ASCII keyboard, for example when editing markers or locators (using numerals), or changing song and phrase names (using the alphabet).

Directly Entering Numerals (Numeric Keys)

1. Press [NUMERICS/ASCII].
The button indicator lights.

2. Press the LOCATOR/SCENE button.
The buttons can be used to enter numerals as indicated below.

* *Depend on parameters (effect etc.), you can enter "-" (a minus sign) by pressing [0] twice.*

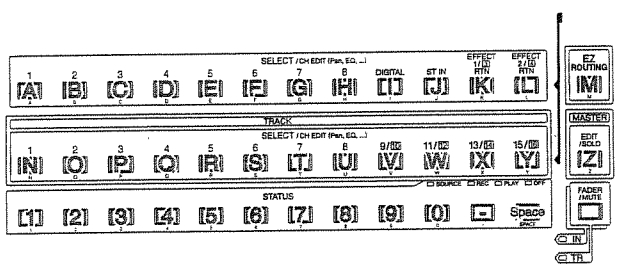


3. After you have finished entering the numbers, press [ENTER (YES)].
This sets the numbers.

Directly Entering Letters of the Alphabet

1. Press [NUMERICS/ASCII].
The button indicator lights.

2. Press the input or track channel SELECT buttons or the track STATUS buttons.
The buttons can be used to enter letters of the alphabet as indicated below.



3. After you have finished entering the letters, press [ENTER (YES)].
This sets the text.

Sounding the Metronome

No matter how accurately one tries to play, listening to the recording play back sometimes reveals inaccuracies in rhythm or tempo. The VS-1680 provides a metronome (click track) that can be sounded at a specified tempo. By listening to the metronome as you play your instrument, you will be able to record your performance with more accurate timing. At the same time, since this allows you to specify segments for song editing by measure and beat, you can edit songs in a more musical way.
The metronome tempo can be controlled by the Tempo Map or Sync Track MIDI Clock. When using this feature, set up the Tempo Map (p. 133) or Sync Track (p. 131) beforehand. When you create a new song, the Tempo Map default settings include a 4/4 rhythm and tempo of 120.

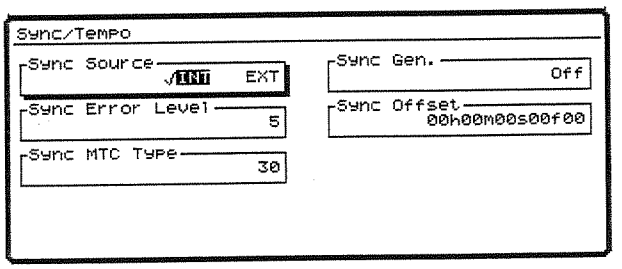
Using the Metronome During Recording

The metronome will begin sounding when recording or playback begins. However you may sometimes wish to hear a count-in on the metronome to help you catch the tempo before recording begins. In such cases, you can set aside the first few measures of the recording to be only for the count-in, and not record on those measures.
The metronome sound is only for the purpose of helping you keep your playing in time.

1. The Metronome is output from the MONITOR jacks. Connect your playback audio equipment to the MONITOR jacks.

2. Hold down [SHIFT] and press [EXT SYNC].
The Sync/Tempo screen appears in the display.

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Sync Gen.," and rotate the TIME/VALUE dial.



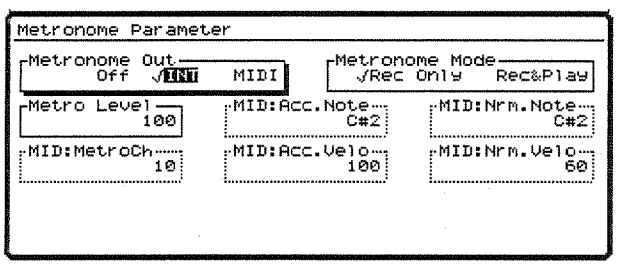
Sync Gen. (Generator)

This selects the MIDI Clock on which the Metronome will be based. Select "MIDIclk" if you wish to use the Tempo Map, and "SyncTr" if you are going to use Sync Track.

Off: The MIDI Clock is not transmitted.
MTC: MIDI Time Code is transmitted (the metronome does not sound).
MIDIclk: The Tempo Map MIDI Clock is transmitted.
SyncTr: The Sync Track MIDI Clock is transmitted.

4. Press [EXIT].
The System menu icon appears in the display.

5. Press [F5 (METRO)].



6. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust and set each of the values.

Metronome Out

This selects how the metronome is output. For now, select "INT."

Selecting "Off" prevents you from making any settings related to the Metronome.

Off: The metronome sound is not output.
INT: The metronome sound is output from the MONITOR jacks.
MIDI: The metronome signal is transmitted via the MIDI OUT connector.

Metro Level (Metronome Level)

This adjusts the volume level (0–127) of the metronome sound.

Metronome Mode

This is for selecting when the metronome sound is played.

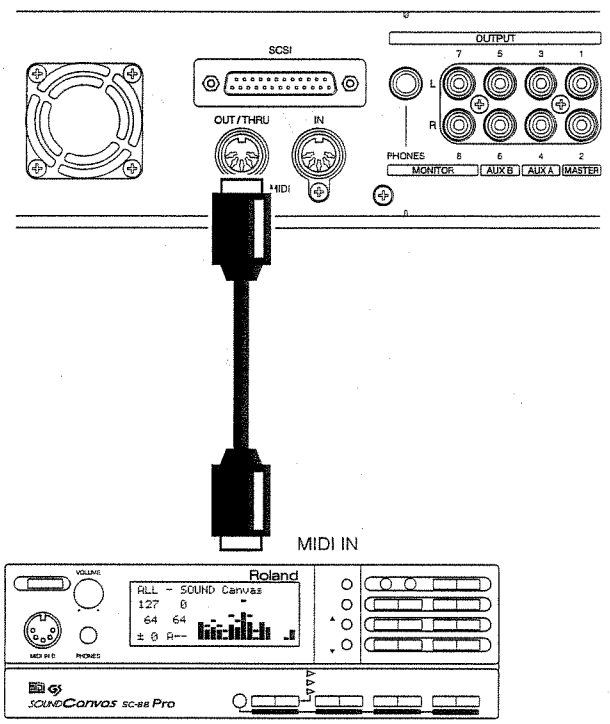
Rec Only: The metronome sounds only during recording.
Rec&Play: The metronome sounds during both recording and playback.

7. This completes the metronome settings. Press [PLAY (DISPLAY)] to return to Play condition.

Using an External MIDI Sound Source to Play the Metronome

A MIDI sound source can be used to play the metronome with a sound of your choosing. To do this, use the following procedure.

1. Connect the VS-1680 and the MIDI sound generator as shown below.



MIDI Sound Generator

2. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

3. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

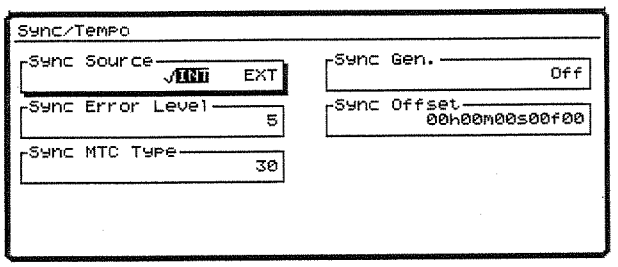
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "MIDI Thru," and rotate the TIME/VALUE dial.

MIDI Thru (MIDI Thru Switch)

This switches the function of the MIDI OUT/THRU connector. Here, select "Out."

Out: MIDI messages are sent from the VS-1680. Select this when sending metronome sound note messages or mixer parameter settings (Control Change messages or Exclusive messages).
Thru: This sends MIDI messages received via the MIDI IN connector without change.

5. Hold down [SHIFT] and press [EXT SYNC].
The Sync/Tempo screen appears in the display.



6. Press [▲], [▼], [◀], and [▶] to move the cursor to "Sync Gen.," and rotate the TIME/VALUE dial.

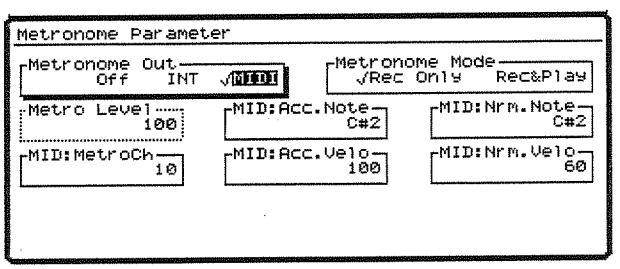
Sync Gen. (Generator)

This selects the MIDI Clock on which the Metronome will be based. Select "MIDIclk" if you wish to use the Tempo Map, and "SyncTr" if you are going to use Sync Track.

Off: The MIDI Clock is not transmitted.
MTC: MIDI Time Code is transmitted (the metronome does not sound).
MIDIclk: The Tempo Map MIDI Clock is transmitted.
SyncTr: The Sync Track MIDI Clock is transmitted.

7. Press [EXIT].
The System menu icon appears in the display.

8. Press [F5 (METRO)].



9. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to adjust and set each of the values.

Metronome Out

This selects how the metronome is output. At this point, select "MIDI."

Selecting "Off" prevents you from making any settings related to the Metronome.

Off: The metronome sound is not output.
INT: The metronome sound is output from the MONITOR jacks.
MIDI: The metronome signal is transmitted via the MIDI OUT connector.

Metronome Mode

This is for selecting when the metronome sound is played.

Rec Only: The metronome sounds only during recording.
Rec&Play: The metronome sounds during both recording and playback.

MID:Acc.Note (Accent Note)

This sets note numbers (C0–G9) for the downbeat. When the Drum set is playing, this selects specific percussion sounds.

MID:Nrm.Note (Normal Note)

This sets note numbers (C0–G9) for the upbeats. When the Drum set is playing, this selects specific percussion sounds.

MID:MetroCh (Metronome Channel)

This sets the MIDI channel (1–16) for transmitting Metronome sound Note Messages.

MID:Acc.Velo (Accent Velocity)

This sets the velocity (1–127) for the downbeat.

MID:Nrm.Velo (Normal Velocity)

This sets the velocity (1–127) for the upbeats.

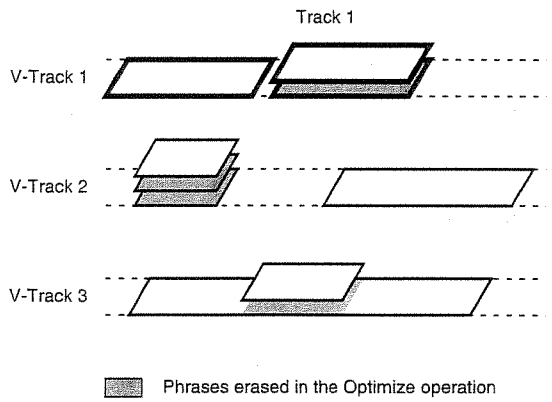
10. This completes the settings for sounding the metronome with an external MIDI device. Press [PLAY (DISPLAY)].
Return to Play condition.

When the Disk Has Little Remaining Space

Deleting Only Unneeded Performance Data (Song Optimize)

When operations such as overdubbing and Punch-In Recording are repeated, the old data will remain in the disk drive. In some cases, significant amounts of memory can be occupied by this unnecessary data, decreasing the available space on the current drive, and shortening the length of time available for recording.
Deleting this unnecessary data from the disk drive and thus freeing up available disk space on the drive is referred to as **Song Optimize**. This operation cannot be undone with the Undo function.

The Optimize operation searches all V-tracks on the target song, and when playing back those V-tracks, **erases the phrases that cannot be heard**. For example, even if you execute the Optimize with the V-track 1 of Track 1 selected, the phrases that are heard when V-tracks 2–16 are selected for playback are not deleted.



1. Select the song you want to optimize as the current song.
2. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon is displayed.

3. Press [F5 (OPTIM)]. If "OPTIM" does not appear in [F5], first press [PAGE] until "OPTIM" is displayed, and then press [F5 (OPTIM)].
4. "Song Optimize, Execute?" (Execute Song Optimize?) appears in the display. Press [F4 (EXEC)]. If you wish to cancel Song Optimize, the press [F6 (EXIT)].
5. A confirmation message appears in the display. Press [YES]. If you wish to cancel the procedure, press [NO].
6. When the optimize is finished, return to Play condition.

* *Be aware that, depending on conditions, it may take some time for the Optimize operation to be completed. This is not a malfunction. Do not turn the power off until the Optimize operation is completed.*

Deleting One Song of Performance Data (Song Erase)

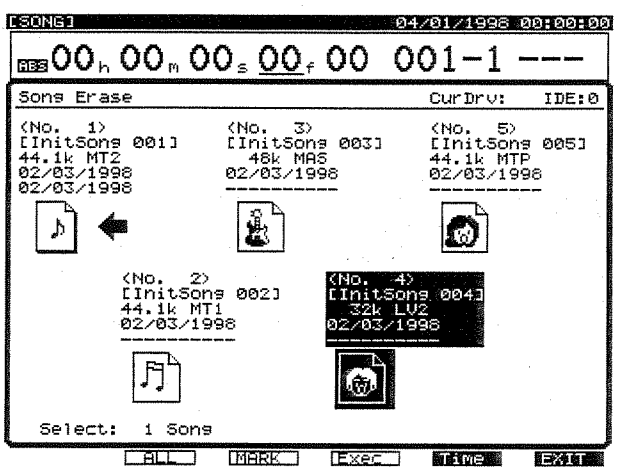
When you are making a master tape or backing up songs to a Zip disk, this operation deletes song data that has become unnecessary. This operation cannot be undone with the Undo function.

1. Select the drive contains the song you want to erase as the current drive.
2. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon is displayed.

3. Press [F6 (Erase)]. If "Erase" does not appear in [F6], first press [PAGE] until "Erase" is displayed, and then press [F6 (Erase)].
4. Rotate the TIME/VALUE dial to move the cursor to the song you want to erase, then press [F3 (MARK)].

A mark is placed at the song. Pressing [F3 (MARK)] alternately places or deletes the mark. When [F2 (ALL)] is pressed, you can place or remove all marks simultaneously.



6. Press [F4 (Exec)].
7. A confirmation message appears in the display. Press [YES]. If you wish to cancel the procedure, then press [NO].
8. If the song you are erasing is not the current song, "STORE Current?" then appears in the display.
9. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**
10. When the song has been erased, return to Play condition.

Changing the Name of Performance Data (Song Name)

You can change the names of your newly created songs and add comments that explain simply what kind of songs they are.

1. Make the song whose name you want to change the current song.
2. Press [PLAY (DISPLAY)].
3. Hold down [SHIFT] and press [F1 (SONG)].

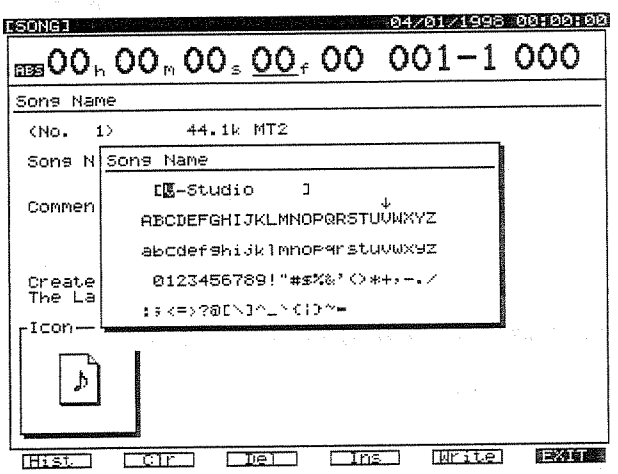
The Song menu icon appears in the display.

4. Press [F3 (NAME)]. If "NAME" does not appear in [F3], first press [PAGE] until "NAME" is displayed, and then press [F3 (NAME)].
5. If you want to change the name, press [F1 (Name)]; if you want to add a comment to the song, press [F2 (Comnt)].

At this time, you can use the TIME/VALUE dial to change the icons (graphic images).

6. Use [▲], [▼], [◀], and [▶] or rotate the TIME/VALUE dial to enter the song name or comment.

At this time, the function buttons work as shown below.



[F1 (Hist)]: Pressing this button takes you through a register of the last 20 song names entered, one at a time.

[F2 (Clr)]: Clears all characters in the window.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Confirms the song name and exits the screen

[F6 (EXIT)]: Exits the screen without accepting the song name.

7. When you have finished writing the song name or comments, press [F5 (Write)].
8. Hold down [SHIFT] and press [STORE (ZERO)].

"STORE OK?" appears in the display.

9. Press [YES].

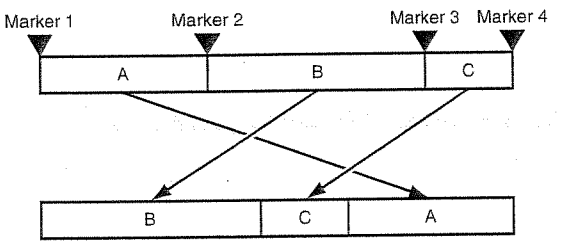
The song is saved.

10. Press [PLAY (DISPLAY)].

Return to Play condition.

Rearranging the Order of Song Data (Song Arrange)

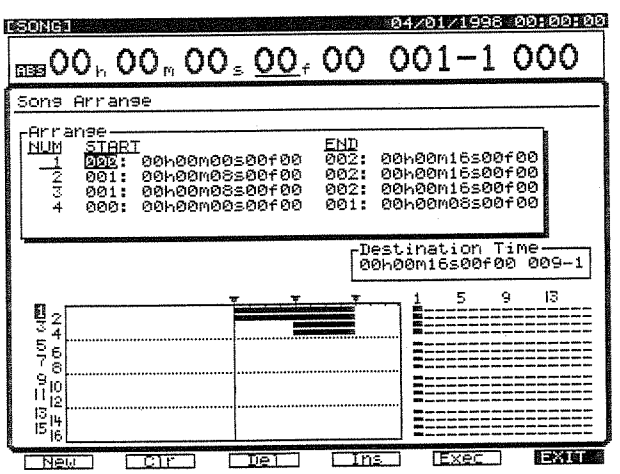
You can move the Markers that are placed in songs to rearrange the order of the song data, and so create new Playlists. This operation can be undone with the Undo function.



1. Follow the procedure as described in "Using Markers" (p. 38), preset the mark points so that the songs are in the order you want to change to.
2. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon is displayed.

3. Press [F6 (Arang)]. If "Arang" does not appear in [F6], first press [PAGE] until "Arang" is displayed, and then press [F6 (Arang)].



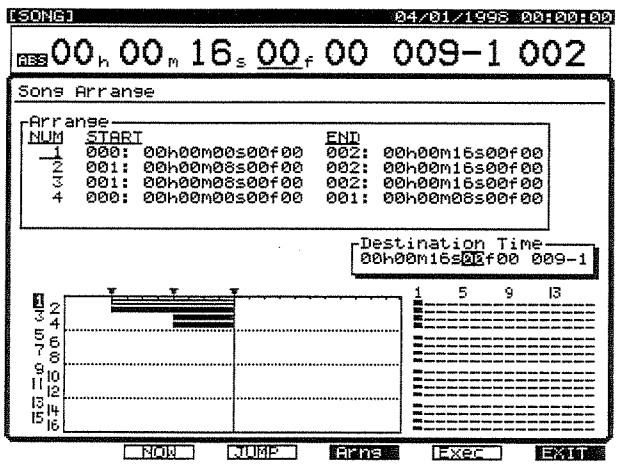
4. Press [▲], [▼], [◀], and [▶] to move the cursor to "Arrange."
5. First, specify the segment comprising the beginning. Rotate the TIME/VALUE dial to designate marker numbers at the start and end positions, and press [ENTER (YES)].

6. This sets you up to specify the next segment. Press [▲], [▼], [◀], and [▶] to move the cursor. Repeat Step 5 to designate the following segment in the same manner as the first.

You can arrange up to a maximum of 99 separate segments. At this time, the function buttons work as shown below.

[F1 (NEW)]: Specify the next segment.
[F2 (Clr)]: Clears the segment designation where the cursor is positioned.
[F3 (Del)]: Deletes the segment where the cursor is positioned.
[F4 (Ins)]: Inserts a segment designation where the cursor is positioned.
[F5 (Exec)]: Executes Song Arrange.
[F6 (EXIT)]: Exits the Song Arrange screen.

7. When all of the segments are in order, press [▶] to move the cursor to "Destination Time."



8. Press [◀] and [▶] to move the cursor. Use the TIME/VALUE dial to set the time location at which the newly created Playlist is to begin.

At this time, the function buttons work as shown below.

[F2 (NOW)]: Enters the current time where the cursor is positioned.
[F3 (JUMP)]: Moves the current time where the cursor is positioned.
[F4 (Arrg)]: Moves the cursor to "Arrange."
[F5 (Exec)]: Executes Song Arrange.
[F6 (EXIT)]: Exits the Song Arrange screen.

* *If the time for the new Playlist to begin is set at a point earlier than the previous song end, the original Playlist (performance data) is overwritten. Additionally, if the time for the new Playlist to begin is set after the last mark point of the original song, a mark point is set at the beginning of the new Playlist.*

9. Press [F5 (Exec)].

10. A confirmation message appears in the display. Press [YES]. If you wish to cancel the procedure, then press [NO].

11. When Song Arrange is executed, return to Play condition.

Dividing Performance Data Into Two Parts (Song Split)

You can copy only certain tracks that you have selected from all the V-tracks and create on the current drive a new song that has only those tracks copied onto it. This does not alter the current song.

New songs take on all settings (markers, locators, Auto Mix settings, Tempo Maps, sync tracks, system settings, etc.) except for the performance data, and a song name is automatically given with the last character changed in the original song's name.

Song Split cannot be carried out if there is not sufficient hard disk space. Furthermore, Song Split cannot be undone using the Undo procedure.

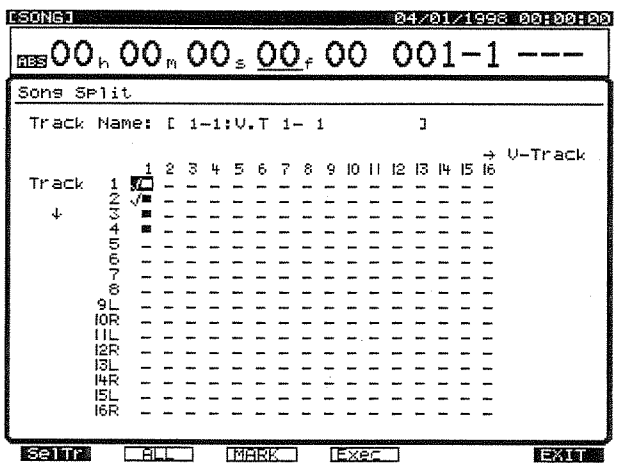
1. Hold down [SHIFT] and press [F1 (SONG)].

The Song menu icon is displayed.

2. Press [F1 (Split)]. If "Split" does not appear in [F1], first press [PAGE] until "Split" is displayed, and then press [F1 (Split)].

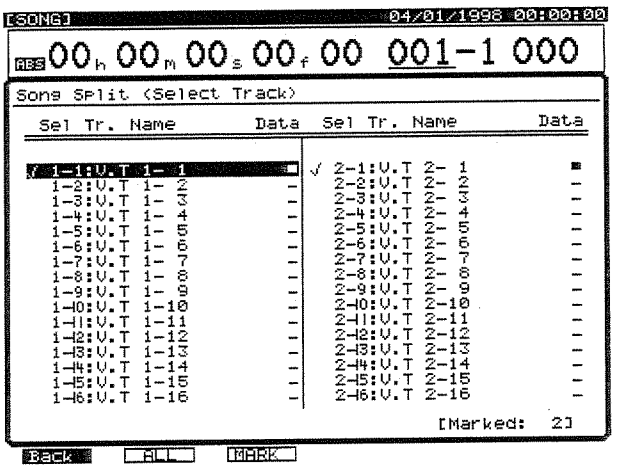
3. Press [▲], [▼], [◀], and [▶] or rotate the TIME/VALUE dial to move the cursor to the track you want to copy, and press [F3 (MARK)] or [YES].

The track containing the mark is copied.



4. You can check the track name by pressing [F1 (SelTr)].

If you are going to set a mark at this time, the press [F1 (Back)].



Setting Markers

When the cursor is moved to "Track," you can have marks simultaneously set to or deleted from all selected tracks. For example, if you move the cursor to "Track 1" and press [F3 (MARK)], marks are set in V-tracks 1–16 on Track 1.

By moving the cursor to "V-Track," you can then simultaneously set marks on the same number V-track on all the tracks. For example, if you move the cursor to "V-Track 1" and press [F3 (MARK)], marks are set on V-Track 1 of Tracks 1–16.

By pressing [F2 (ALL)], you can place and remove marks from all of the tracks simultaneously.

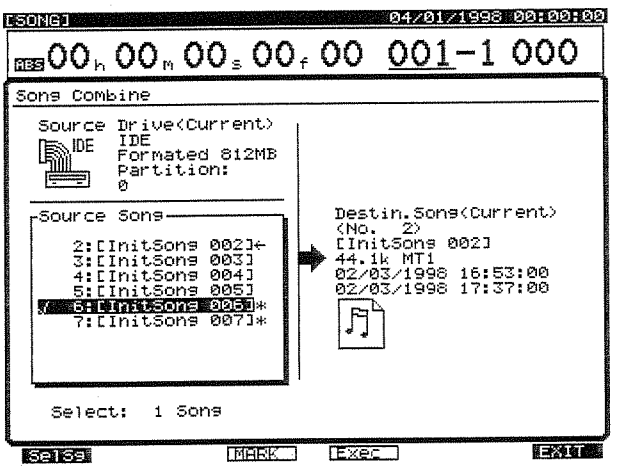
5. Press [F4 (Exec)].
6. A confirmation message appears on the screen. Press [YES]. If you wish to cancel the procedure, then press [NO].
7. "STORE Current?" (Store the current song?) appears in the display. If you wish to execute Song Split after saving the current song, press [YES]; if not, then press [NO].
8. When Song Split is executed, return to Play condition.

Connecting Performance Data (Song Combine)

All V-tracks from the other song on the current drive are moved to the current song, and that song is deleted. Any performance data already existing in the current song is overwritten by the performance data that is being move to the song. When you don't want to make any changes to the move source or move destination songs, first back up the song using Song Copy or the DAT Backup procedure.

You can perform Song Combine with any songs that have the same sample rate and recording mode. However, what is copied to the current song is **performance data (sound data)** and the information that designates **the tracks to which that performance data is recorded**. Other settings such as those concerning markers, locators, automix, tempo map, sync track or system are lost.

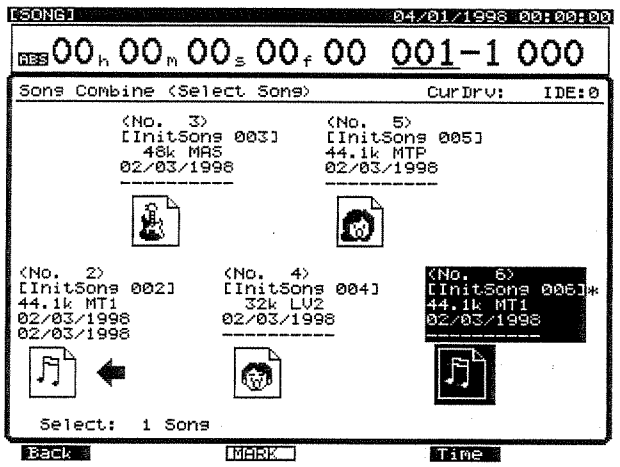
1. First, select the song you want to be the move destination as the current song.
2. Hold down [SHIFT] and press [F1 (SONG)].
3. Press [F2 (Combn)]. If "Combn" does not appear in [F2], first press [PAGE] until "Combn" is displayed, and then press [F2 (Combn)].



4. Rotate the TIME/VALUE dial to move the cursor to the move source songs and press [F3 (MARK)].

The songs with the marks are combined.

By pressing [F1 (SelSg)], you can have a list of the songs displayed. At this time, rotate the TIME/VALUE dial to select the song, and press [F1 (Back)].

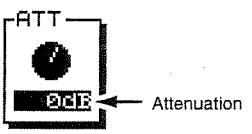


5. Press [F4 (Exec)].
6. A confirmation message appears on the screen. Press [YES]. If you wish to cancel the procedure, then press [NO].
7. "STORE Current?" (Store the current song?) appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO].
8. When Song Combine is executed, return to Play condition.

Adjusting the Levels for Each Track

You can adjust the volume level of each input and track channel without using the channel faders. You can raise the volume when playing back tracks that were recorded at low levels, avoid distorted sound that may occur when adjusting the channel equalizers, and be able to operate with the channel faders near 0 dB. Use the following procedure.

1. Press the SELECT button for the input or track channels whose volume levels you wish to adjust.
2. Press [F2 (ATT)]. If "ATT" does not appear in [F2], first press [PAGE] until "ATT" is displayed, and then press [F2 (ATT)].
3. Rotate the TIME/VALUE dial.



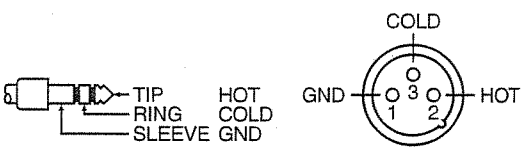
ATT (Attenuation)
Adjusts the volume level (-42–6 dB) of each channel's digital signal.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

When Using Balanced Inputs

The VS-1680 features balanced (TRS) INPUT jacks, each one configure as follows.



However, some audio devices have the opposite HOT (TIP) and COLD (RING) configuration. Using such equipment as is may result in poor sound placement, disintegration of the left-right balance, and a loss of the separation between left and right sounds when using stereo inputs. In such instances, you need to switch the phase of each channel.

1. Press the SELECT button for the input or track channels whose phase you wish to switch.
2. Press [F3(Phase)]. If "Phase" does not appear in [F3], first press [PAGE] until "Phase" is displayed, and then press [F3 (Phase)].

3. Rotate the TIME/VALUE dial.

Phase

This selects the phase (NRM, INV) for each channel. Usually, "NRM" is selected.

NRM: Normal phase (same phase as the input)

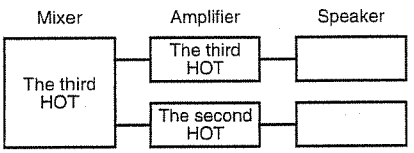
INV: Inverted phase (opposite phase)

4. Press [PLAY (DISPLAY)].

Return to Play condition.

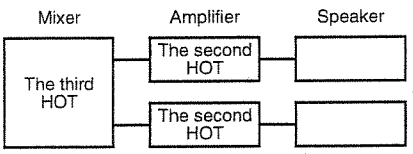
When Phase Mismatch is a Problem

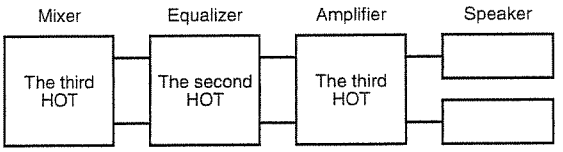
The situations shown below will result in problems. In such cases, select "INV." When using a number of pieces of equipment, it is recommended that you prearrange the HOT and COLD leads for all equipment.



When Phase Mismatch is Not a Problem

The situations shown below will not result in problems. In such cases, select "NRM."





Determining Output

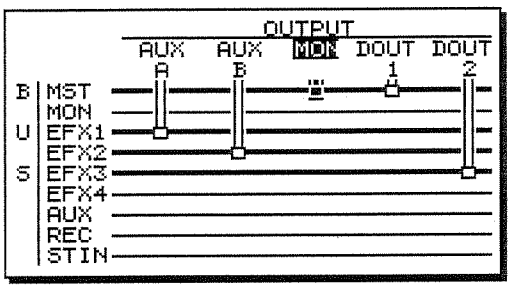
The VS-1680 features eight analog output jacks and two digital connectors, each of which can have various signals assigned to it. Set the output for each output jacks or connectors using the following procedure.

MONITOR Jacks

1. Press [MASTER].

The Master Block is displayed.

2. Determine what is to be output from the MONITOR jacks. Press [▲], [▼], [◀], and [▶] to move the cursor to the "OUTPUT (MON)," and rotate the TIME/VALUE dial.



Mon (Monitor)

This selects what sounds are heard through the MONITOR jacks.

MST: Same sound as is heard from the MASTER jacks (MIX bus).

EFX1: The sounds assigned to the (EFX1) EFFECT bus.

EFX2: The sounds assigned to the (EFX2) EFFECTS bus.

AUX1/EFX3: Sounds assigned to the AUX1 bus. With EFFECT B installed, the sounds are those assigned to the (EFX3) EFFECT bus.

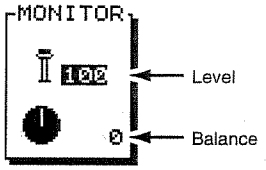
AUX2/EFX4: Sounds assigned to the AUX2 bus. With EFFECT B installed, the sounds are those assigned to the (EFX4) EFFECT bus.

AUX3/AUX: Sounds assigned to the AUX3 bus. With EFFECT B installed, the sounds are those assigned to the AUX bus.

REC: All sounds assigned to the RECORDING bus.

ST IN: Sounds assigned to Stereo In.

3. Press [F2 (Mon)]. If "Mon" does not appear in [F2], first press [PAGE] until "Mon" is displayed, and then press [F2 (Mon)].



(Level)
This adjusts the volume level (0–127) for the MONITOR jack. This is adjusted with the MONITOR knob on the top panel.

(Balance)
This adjusts the left-right balance (L63–0–R63) for the MONITOR jacks.

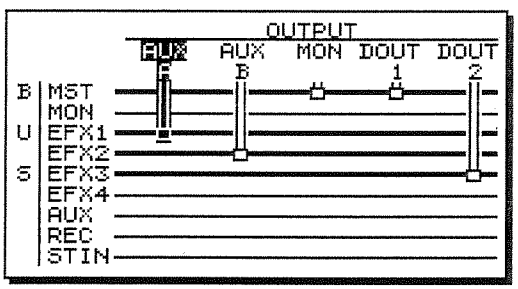
4. Press [PLAY (DISPLAY)]
Return to Play condition.

AUX Jacks

1. Press [MASTER].
The Master Block is displayed.

2. Press [F3 (AUX.A)]. If "AUX.A" does not appear in [F3], first press [PAGE] until "AUX.A" is displayed, and then press [F3 (AUX.A)].

3. Determine what is to be output from the AUX jacks by rotating the TIME/VALUE dial.



AUX A
This selects what sounds are heard through the AUX A jacks.

EFX1: The sounds assigned to the (EFX1) EFFECT bus.

EFX2: The sounds assigned to the (EFX2) EFFECT bus.

AUX1/EFX3: Sounds assigned to the AUX 1 bus. With EFFECT B installed, the sounds are those assigned to the (EFX3) EFFECT bus.

AUX2/EFX4: Sounds assigned to the AUX2 bus. With EFFECT B installed, the sounds are those assigned to the (EFX4) EFFECT bus.

AUX3/AUX: Sounds assigned to the AUX3 bus. With EFFECT B installed, the sounds are those assigned to the AUX bus.

4. Press [PLAY (DISPLAY)]
Return to Play condition.

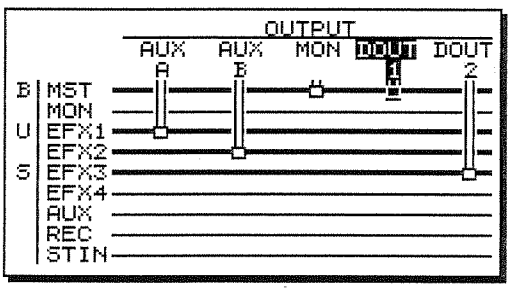
* *The AUX B jacks are set in the same way. Press [F4 (AUX.B)] at Step 2.*

DIGITAL OUT Connectors

1. Press [MASTER].
The Master Block is displayed.

2. Press [F5 (DOUT1)]. If "DOUT1" does not appear in [F5], first press [PAGE] until "DOUT1" is displayed, and then press [F5 (DOUT1)].

3. Determine what is to be output from the DIGITAL OUT connectors by rotating the TIME/VALUE dial.



DOUT1 (DIGITAL OUT1)
This selects what sounds are heard through the DIGITAL OUT1 (coaxial) connector.

MST: Same sound as is heard from the MASTER jacks (MIX bus).

MON: Same sound as is heard from the MONITOR jacks.

EFX1: The sounds assigned to the (EFX1) EFFECT bus.

EFX2: The sounds assigned to the (EFX2) EFFECT bus.

AUX1/EFX3: Sounds assigned to the AUX1 bus. With EFFECT B installed, the sounds are those assigned to the (EFX3) EFFECT bus.

AUX2/EFX4: Sounds assigned to the AUX2 bus. With EFFECT B installed, the sounds are those assigned to the (EFX4) EFFECT bus.

AUX3/AUX: Sounds assigned to the AUX3 bus. With EFFECT B installed, the sounds are those assigned to the AUX bus.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

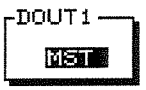
* *The DIGITAL OUT2 (optical) connector is set in the same way. Press [F6 (DOUT2)] at Step 2.*

DIRECT OUT

The sounds from each of the Tracks 1–8 or Tracks 9/10–15/16 are output from separate analog jacks.

1. Press [MASTER]. The Master Block is displayed.

2. Press [F5 (DIR)]. If "DIR" does not appear in [F5], first press [PAGE] until "DIR" is displayed, and then press [F5 (DIR)].

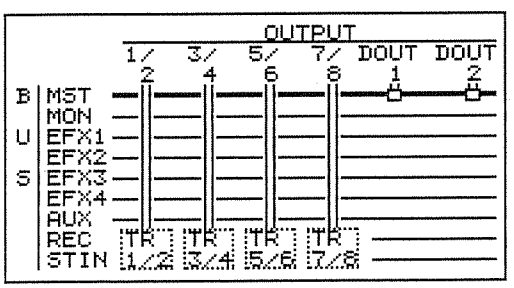


DIR OUT (DIRECT OUT)

Select Tracks to be assigned as Direct Out.

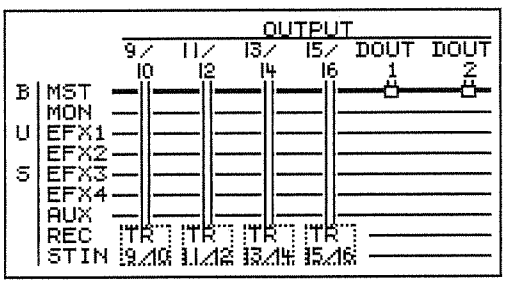
Off: Direct Out is not used.

1–8: The sounds from Tracks 1–8 are output from the following jacks. In this case, the settings for the MONITOR and AUX jacks are not in effect. The sounds from Tracks 7 and 8 are output from the PHONES jack. Additionally, the sounds output from the DIGITAL OUT connectors are specified in the Master Block (p. 176).



Track 1: MASTER jack (L)
Track 2: MASTER jack (R)
Track 3: AUX A jack (L)
Track 4: AUX A jack (R)
Track 5: AUX B jack (L)
Track 6: AUX B jack (R)
Track 7: MONITOR jack (L)
Track 8: MONITOR jack (R)

9–16: The sounds from Tracks 9/10–15/16 are output from the following jacks. In this case, the settings for the MONITOR and AUX jacks are not in effect. The sounds from Tracks 15L and 16R are output from the PHONES jack. Additionally, the sounds output from the DIGITAL OUT connectors are specified in the Master Block (p. 176).



Track 9L: MASTER jack (L)
Track 10R: MASTER jack (R)
Track 11L: AUX A jack (L)
Track 12R: AUX A jack (R)
Track 13L: AUX B jack (L)
Track 14R: AUX B jack (R)
Track 15L: MONITOR jack (L)
Track 16R: MONITOR jack (R)

3. Press [PLAY (DISPLAY)].

Return to Play condition.

Confirming That a Drive is Not Damaged (Drive Check)

You can check the drive you are using to make sure it can be read correctly. This is referred to as **Drive Check**.

This provides a way to determine whether a failure during Song Copy (p. 113) or DAT Backup (p. 141) is due to a problem in the song itself that was saved on disk, whether the problem is with the connections, or if there is a problem of some other kind.

If data cannot be read correctly, the display will indicate the song in which the error occurred.

1. Hold down [SHIFT] and press [F6 (UTILITY)].

The Utility menu icon is displayed.

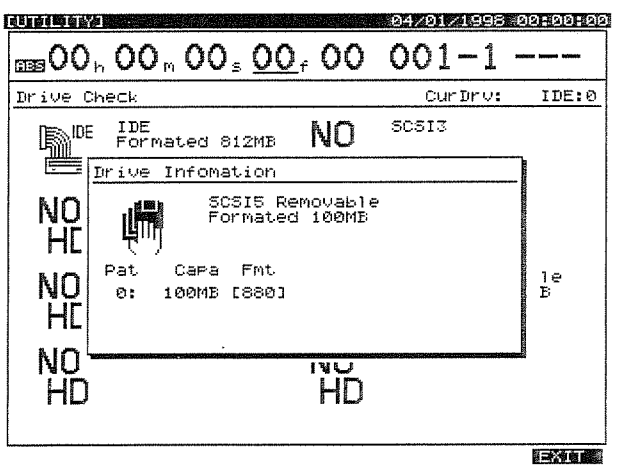
2. Press [F5 (DrChk)]. If "DrChk" does not appear in [F5], first press [PAGE] until "DrChk" is displayed, and then press [F5 (DrChk)].

A list of currently connected drives appears in the display.

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Select the drive you wish to check.

At this time, the function buttons work as shown below.

[F3 (Info)]: Displays information about the drive
[F4 (Exec)]: Executes the Drive Check
[F5 (EXIT)]: Exits the screen.



4. When you have selected the drive you wish to check, press [F4 (Exec)].

5. A confirmation message ask you that you want to proceed with the Drive Check appears in the display. Press [YES].

6. "STORE Current?" appears in the display. If you wish to save the current song, press [YES]; if not, then press [NO]. **If you have selected a demo song, then press [NO].**

7. Drive Check is the executed. Progress of the operation is shown in the display. Do not turn off the power until the operation is completed.

> **To Cancel the Drive Check**
> You can use the following procedure to cancel the Drive Check.
>
> **1.** Press [EXIT (NO)].
> "Cancel?" appears in the display.
>
> **2.** Press [YES].
> Drive Check is cancelled.

8. When Drive Check is completed, the display screen appears as shown below.

If the display indicates "No Err"

9-1. The entire disk could be read correctly. Press [YES].

Return to Play condition.

If the display indicates "___ Err"

The underlines portion will display the number of times that a read error occurred. Rotate the TIME/VALUE dial.

The display will indicate "Err" for locations where an error was found. Locations for which "OK" was displayed have no problems.

ResultList (Drive check results)

System: Location where basic data used by the VS-1680 for recording and playback is stored
Song List: Location where the saved songs are managed
InitSong 001:
InitSong 002: Each song (in actual use, the song name is displayed)
:
InitSong 200:

ClusterInfo. (Cluster information)

Total: Number of clusters on the entire disk
Defect: Number of clusters tagged as unusable memory
Used: Number of clusters currently being used
Free: Number of clusters currently not being used
X-LinkErr: Number of cross-linked clusters
LooseArea: Number of clusters whose links are lost
IllegalDIR: Number of directories with incorrect content

ReadError: Number of read errors detected by this operation

Clusters
These are the smallest unit of memory that the VS-1680 uses to manage data on a disk drive. The smallest physical units on a disk drive are called either **sectors** or **blocks**, and depending on the device, the size that is handled can be selected. For example, the VS-1680 is designed to use disks with 512 bytes/sector. When the VS-1680 manages song data, it handles 64 sectors as a single unit (cluster). This means that 512 (bytes) x 64 (sectors) = 32768 bytes (32 kilobytes) is one cluster.

Cross Link
This is an error in which a cluster is detected as being included in two or more songs. In such a case, a completely different song may be heard in the middle of a song. Such an error condition is referred to as a **cross link**.

Loose Areas
An error in which clusters not included in any song are detected as containing valid data. In this case, the VS-1680 will not store data in those clusters. A situation which causes this error to occur is called a **loose area**.

Directories
The VS-1680 stores data such as audio data or parameter values on disk in units called **files**. In order to manage large numbers of files, the VS-1680 keeps lists of file names and the locations on disk in which the data of these files is stored. These lists are called **directories**.
The "IllegalDIR" message will appear when this list is incorrect. For example, this message will appear if the data of a certain file is supposed to be recorded in an area of the disk which does not actually exist, or if the list itself becomes permanently unreadable.

If a disk error is found, it is possible to erase only the data that was lost as a result of the error. I.e., the disk can be restored to a correct operating condition while keeping as much possible of the non-error data.

* *This procedure does not correct the disk error. All error locations will be erased. This means that depending on the location in which the error occurred, a take that was recorded may no longer be playable, auto mix data may be lost, or even the entire song itself may be erased. If the error has occurred in the system or song list, the probability of this danger is especially high.*

9-2. Press [ENTER (YES)].
A confirmation message appears on the screen.

9-3. The message "You'll Lose Data" will appears in the display. Press [YES].
The Recover operation is executed. If you want to cancel the operation, press [NO].

9-4. When the recovery is finished, the results are shown on the display screen. Songs that have been partially altered are indicated by "Adj"; deleted songs are indicated by "Del." Songs that have not been changed are not indicated. Please check the display.

RecoverResult (Recovery result)
InitSong 001:
InitSong 003: Modified songs (in actual operation, the song name)
:
InitSong 200:

ClusterInfo. (Cluster information)
Total: Number of clusters on the entire disk
Defect: Number of clusters marked as unusable memory
Used: Number of clusters currently being used
Free: Number of clusters currently unused

9-5. Press [ENTER (YES)].
Return to Play condition.

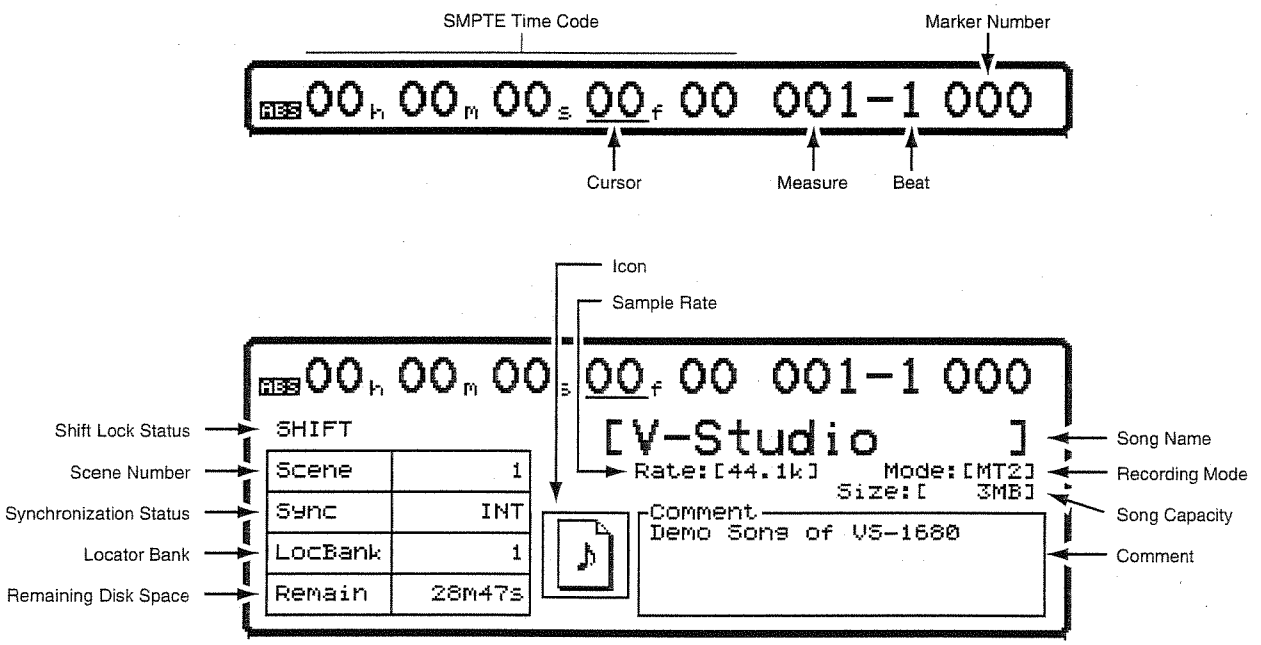
This section describes the settings that affect the overall functioning of the VS-1680.

Switching the Display Content

In Play condition, the graphic display is separated into different areas (pane). Use the [▲], [▼], [◄], and [►] or buttons as well as the TIME/VALUE dial to perform various operations in each zone. The currently active region is outlined with a bold line. Switching the currently active area is accomplished by pressing [SHIFT] along with [▲] and [▼].

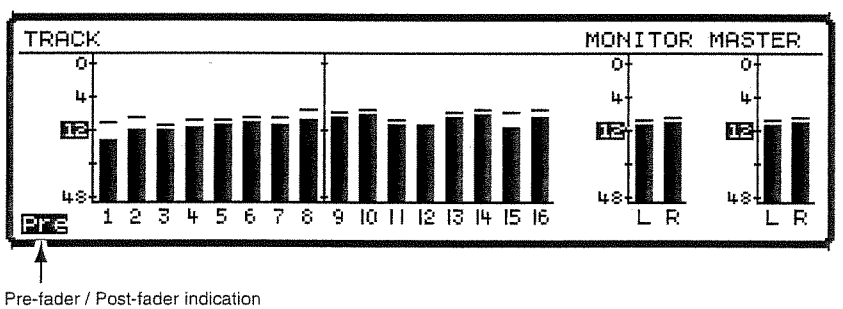
Upper Part of the Display

The current time of the song being played back is displayed here in SMPTE time code. To move the playback time, press [◄] and [►] to select the time point you want to move to, then rotate the TIME/VALUE dial to carry out the change. Each time you press [PLAY (DISPLAY)], what appears in the display is changed. With [▲] and [▼], you can select a track for scrub playback, etc.



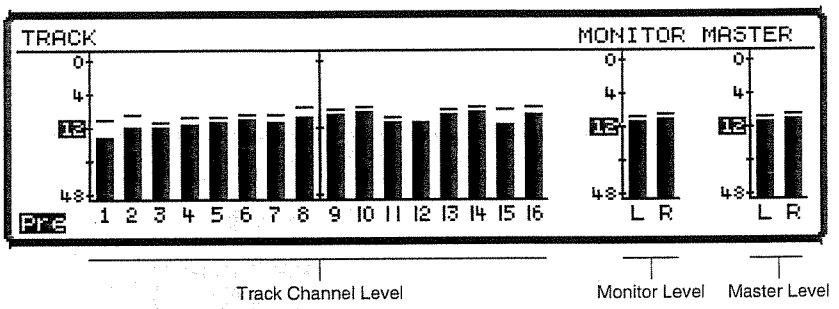
Center Part of the Display

The level meter is displayed here. Each time you hold down [SHIFT] and press [PLAY (DISPLAY)], the meter appears or disappears from the display.

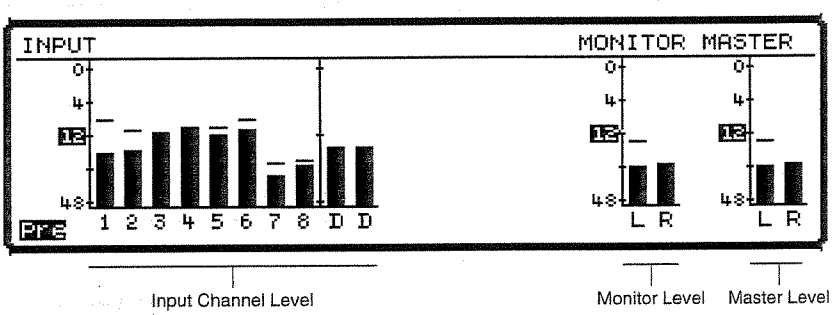


Each of the function button works as shown below.

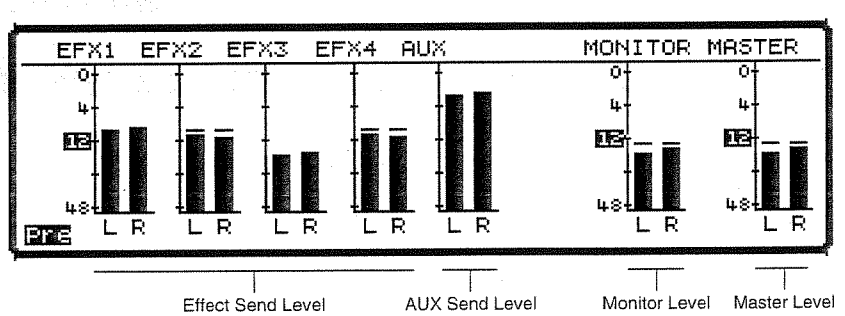
[F1 (LMTrk)]: This displays the track mixer level meter.



[F2 (LM In)]: This displays the input mixer level meter.

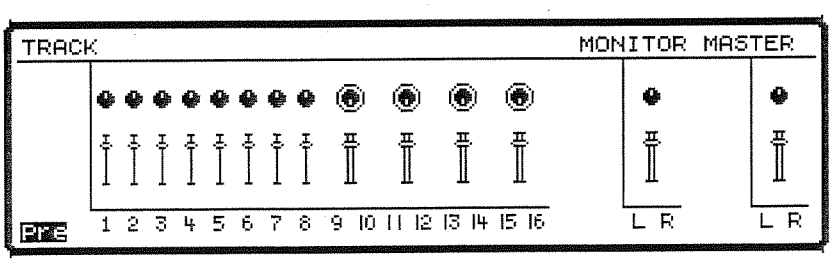


[F3 (LMAux)]: This displays the EFFECT bus and AUX bus level meters.



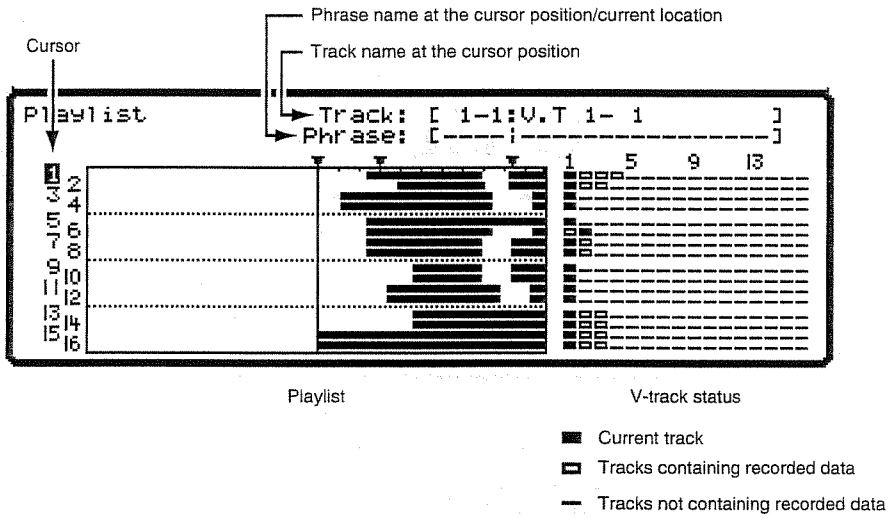
[F4 (PRE)] or [F4 (POST)]: This switches the display of the meter showing the signal level before passing through the fader (Pre) and after being adjusted by the fader (Pst).

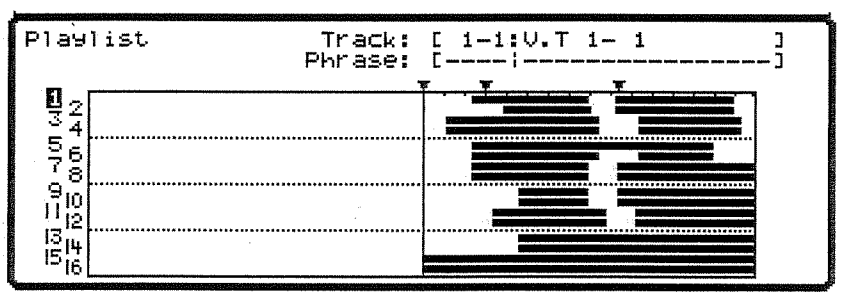
[F5 (F/P)] or [F5 (Meter)]: This switches between the display of the level meter and of the pan and fader positions for each channel.



Lower Part of the Display

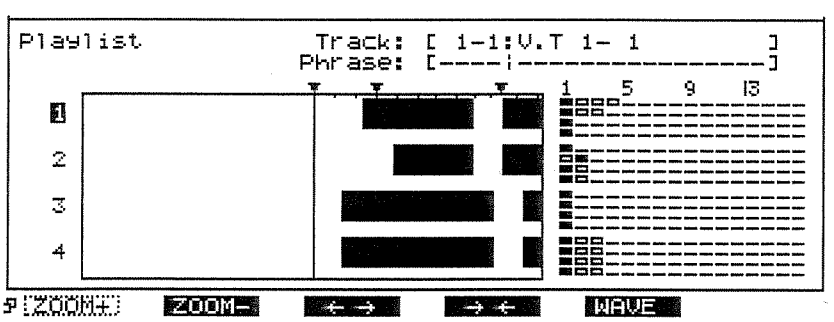
This area displays the Playlist. Each time you hold down [SHIFT] and press [PLAY (DISPLAY)], the display appears or disappears.



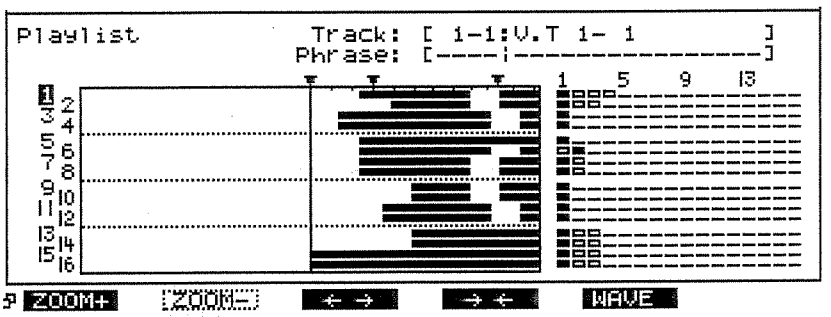


At this time, each of the function buttons works as shown below.

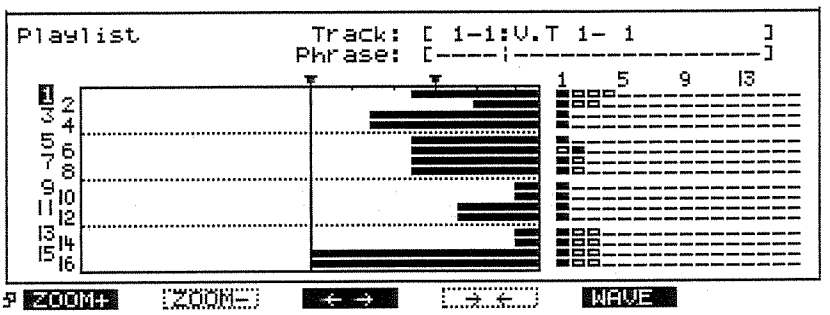
[F1 (ZOOM+)]: This enlarges (in three stages) the display of the Playlist in the Track area. When the waveform is displayed, this enlarges the display of the waveform in the level area.



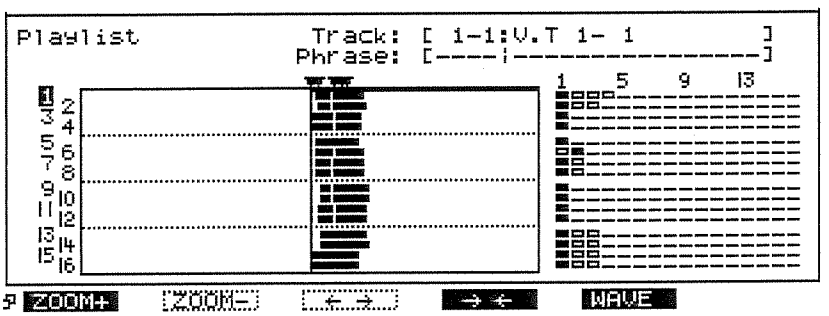
[F2 (ZOOM-)]: This reduces (in three stages) the display of the Playlist in the Track area. When the waveform is displayed, this reduces the display of the waveform in the level area.



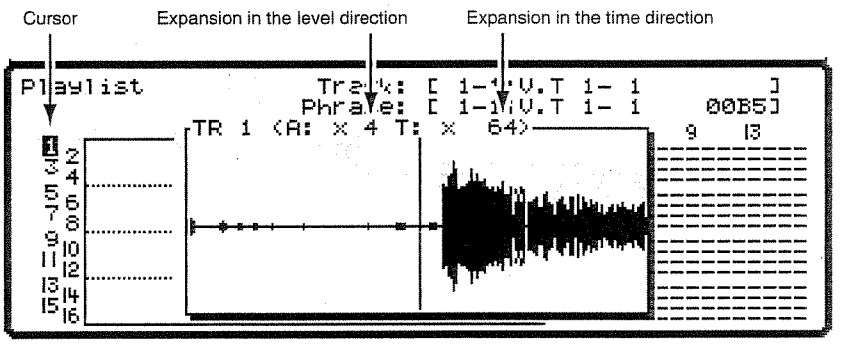
[F3 (← →)]: This enlarges (in four stages) the display of the Playlist in the time area. When the waveform is displayed, this enlarges the display of the waveform in the time area.



[F4 (→ ←)]: This reduces (in four stages) the display of the Playlist in the time area. When the waveform is displayed, this reduces the display of the waveform in the time area.



[F5 (WAVE)]: This displays the level (waveform) of the sounds recorded on the tracks. Pressing the button once more removes this from the screen. You can select the desired track by both rotating the TIME/VALUE dial or pressing [▲], [▼], [◄], and [►] while the lower part of the display is outlined with a bold line.



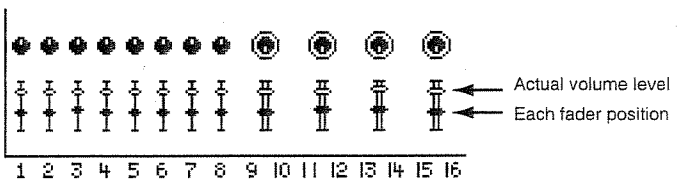
* *While the waveform is displayed, if the degree of expansion in the time direction between 16 times and 4096 times, then what is displayed may not be entirely accurate. Think of the display as a sort of general yardstick. If you wish to have the display show a more accurate representation, the select other expansion values.*

System Settings for Each Song (System Parameters)

These are overall settings that can saved in any song. These settings are lost if the power is turned off without the song being saved, or if the System settings are reset to their original conditions.

Having the Volume Change as Soon as the Faders are Moved

When you press [FADER] to switch between input and track channels or to recall Scenes, there will be times when fader positions may not correspond to their actual volume settings. In such instances, the position of each fader is represented by a black dot, and the actual level that is set is represented by a white circle. Use the following procedure when you wish to have the volume change as soon as the faders are moved.



1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "Fader Match," then rotate the TIME/VALUE dial. If "Fader Match" is not displayed, then press [F1 (Prm1)].

Fader Match

Here, the fader is selected to control the sound if there is a discrepancy between the current fader and the actual volume level.

Jump: The actual value will change at the instant that the fader is moved.

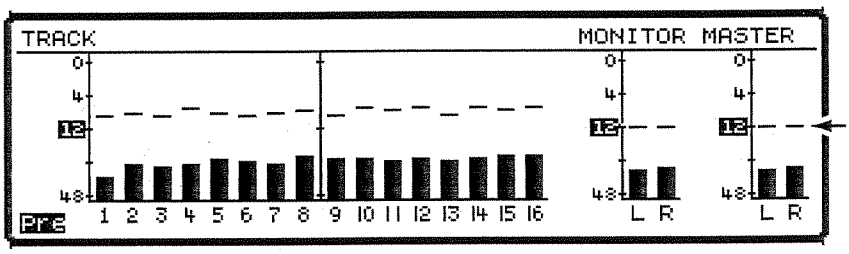
Null: No change is made unless the fader or pan knob is moved to its current actual value.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Holding Level Meter Peaks

You can hold the display of maximum values (peaks) while the level meter appears in the graphic display.



1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Peak Hold Sw," then rotate the TIME/VALUE dial. If "Peak Hold Sw" is not displayed, then press [F1 (Prm1)].

Peak Hold Sw (Peak Hold Switch)

With this set to "On," the level meter in the graphic display holds the display of peak levels.

4. Press [PLAY (DISPLAY)].

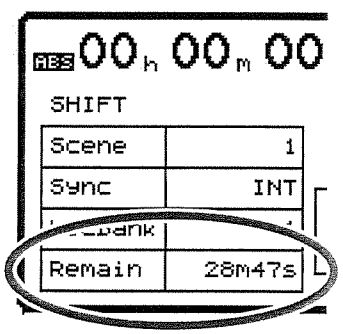
Return to Play condition.

When you press [PLAY (DISPLAY)], the peak display is reset (cleared). Deleting the level meter from the display, or switching to the input level, track level, AUX level, or other such display also resets the peak display.

Checking the Remaining Disk Space

The amount of free disk space available for recording the current song is displayed as "Remained" in the upper part of the display. You can select the type of display for this.

* *"Remain" does not appear while the level meter is being displayed (p. 180).*



1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Remain Display," then rotate the TIME/VALUE dial. If "Remain Display" is not displayed, then press [F2 (Prm2)].

Remain Display (Remaining Display)

This selects how the remaining disk space is shown.

Time: This indicates the time (minutes/seconds) left for recording.

CapaMB: This shows the actual memory (in megabytes).

Capa %: This indicates the remaining space as a percentage of the total disk space.

Event: This shows the number of events used in the recording.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

When Using the Foot Switch

With an optional foot switch (such as the Roland DP-2 or BOSS FU-5U) connected to the FOOT SWITCH jack, you can choose how the foot switch functions.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Foot Sw," then rotate the TIME/VALUE dial. If "Foot Sw" is not displayed, then press [F2 (Prm2)].

Foot Sw (Foot Switch)

This sets the foot switch function.

Play/Stop: Pressing the switch alternately starts and stops playback of the song.

Record: Works the same as the [REC] button. Use this to switch between recording and playback during manual Punch-In Recording.

TapMarker: Works the same as the [TAP] button. Mark points are set when the pedal is pressed.

Next: Works the same as the [NEXT] button. Each time the pedal is pressed recalls the next start or end point of a phrase. Pressing the switch in combination with [SHIFT] recalls the next marker.

Previous: Works the same as the [PREVIOUS] button. Each time the pedal is pressed recalls the previous phrase start or end point. Pressing the switch in combination with [SHIFT] recalls the previous marker.

GPI: This controls start and stopping of playback of the song according to the GPI trigger signal received from the FOOT SWITCH jack.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

Overall Settings for the VS-1680 (Global Parameters)

These are setting related to the overall operation of the VS-1680.

Holding the function of [SHIFT]

You can temporarily hold functions by pressing [SHIFT]. This allows you to show the menu icons for each condition and save songs with one hand.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Shift Lock," then rotate the TIME/VALUE dial.

Shift Lock (Shift Lock Switch)

Setting to "On" temporarily holds the [SHIFT] button function.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

5. Afterwards, the [SHIFT] button indicator light goes on and off each time the button is pressed. [SHIFT] is in effect when the indicator is lit. The hold is lifted the next time another button is pressed or if the TIME/VALUE dial is rotated.

To Display the Song Menu Icon

1. Press [SHIFT] and immediately release the button.
The button indicator lights. When the level meter is not displayed, "SHIFT" appears in the upper part of the display and shows the shift lock function is in effect.

2. Press [F1 (SONG)].
The button indicator goes off, and the Song menu icon appears in the display.

When Holding Down the [SHIFT] Button

If [SHIFT] is held down during the operation, the Shift Lock function will be ignored. For example, if you hold down the [SHIFT] and press [F1 (SONG)], Shift Lock will not be turned on when you take your finger off [SHIFT]. The function of [SHIFT] itself remains in effect, so the System menu icon is displayed at this time. Additionally, rotating the TIME/VALUE dial while holding down the [SHIFT] button increases or decreases the value of some parameter setting by a factor of ten (or 1/10).

Using the Numeric Keys

When changing the time location for locator or in Punch-In Recording, you can use the LOCATOR buttons as numeric keys to enter numbers directly. In this case, select how the numerals are entered.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "NUMERICS Type," then rotate the TIME/VALUE dial.

NUMERICS Type

This sets how numerals are entered when you use the LOCATOR buttons as a ten-key pad.

Up: Numerals are entered from lower-place digits up (from the right).

Down: Numerals are entered from higher-place digits down (from the left).

4. Press [PLAY (DISPLAY)].
Return to Play condition.

Example of entering numerals from lower to higher place digits

For example, let's see how "01h23m45s00f" is input when the NUMERICS Type is set to "Up."

1. Press [NUMERICS].

The button indicator lights.

2. The cursor appears at the digit furthest to the right (in the lowest place). Press the LOCATOR buttons [1], [2], [3], [4], [5], [0], and [0], in that order.

The numerals appear in the place furthest to the right and shift to higher places as other numerals are entered. You can also move the cursor to the desired place by pressing the [◄] and [►] buttons.

3. When you are finished inputting the number, press [ENTER (YES)].

The numerical value is set, and the button indicator goes off.

Example of entering numerals from higher to lower place digits

Now let's see how "01h23m45s00f" is input when the NUMERICS Type is set to "Down."

1. Press [NUMERICS].

The button indicator lights, and the current time in the song is displayed.

2. The cursor appears in the digit furthest to the left (the highest place). Press the LOCATOR buttons [0], [1], [2], [3], [4], [5], [0], and [0], in that order.

The numerals appear from left to right, just as they are entered. You can also move the cursor to the desired place by pressing the [◄] and [►] buttons.

3. When you are finished inputting the number, press [ENTER (YES)].

The numerical value is set, and the button indicator goes off.

Displaying Measures and Beats

If both the metronome is being used and MIDI clock messages are being transmitted, the measure and beat of the song can be displayed in the graphic display. When you are running in synchronization with an external device or recording a song along with a previously-created tempo map, this allows you to operate the VS-1680 just as though you were operating a MIDI sequencer. Set the metronome to sound as described in "Sounding the Metronome" (p. 167).

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "Measure Display," then rotate the TIME/VALUE dial. At this time, select "Always."

Measure Display

Use this to select whether or not the measure and beat appear in the graphic display.

Always: The measure and beat are constantly displayed.

Auto: The measure and beat are not displayed when the metronome is not in use.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Changing the VS-1680's SCSI ID Number

When connecting SCSI devices with the VS-1680, the SCSI ID number of each device must be set so that none of the devices have the same ID number. The VS-1680's SCSI ID number is set to "7" at the factory.

When connecting the VS-1680 to other SCSI devices (for example, Zip drives or CD-R drives), be sure to set the SCSI ID number for these other devices to a number other than "7."

If no other SCSI ID number is vacant, it is also possible to change the SCSI ID number of the VS-1680.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "SCSI Self ID," then rotate the TIME/VALUE dial.

SCSI Self ID (SCSI Self ID Number)

This sets the VS-1680's own SCSI ID number (0–7).

4. Hold down [SHIFT] and press [STORE (ZERO)].

"STORE OK?" appears in the display.

5. Press [YES].

The song is saved.

6. Press [PLAY (DISPLAY)].

Return to Play condition. The new SCSI ID number becomes effective from the next time when the VS-1680 is turned on.

When There Is No Hard Disk Installed

Even when there is no hard disk installed in the VS-1680, it still can be used with only a Zip drive connected to the SCSI connector. In such instances, it takes approximately 30 seconds after the power is turned on of the VS-1680 to check its internal hard disk connection status. To avoid this wait, you can preset the VS-1680 not to attempt to use the internal hard disk.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "IDE Drive," then rotate the TIME/VALUE dial.

IDE Drive

When not using the internal hard disk, set this to "Off." Normally, this is set to "On."

4. Hold down [SHIFT] and press [STORE (ZERO)].
"STORE OK?" appears in the display.

5. Press [YES].
The song is saved.

6. Press [PLAY (DISPLAY)].
Return to Play condition. The changed setting becomes effective from the next time when the VS-1680 is turned on.

Changing the Level at Which the Peak Indicator Lights

You can designate the level at which the peak indicator lights for sounds input via the INPUT jacks (1–8).

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Input Peak Level," then rotate the TIME/VALUE dial.

Input Peak Level

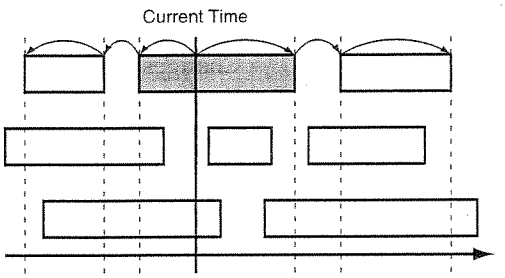
This sets the volume level at which the peak indicator lights.

CLIP: The indicator lights when the sound distorts.
-3dB: The indicator lights 3 dB before the sound distorts.
-6dB: The indicator lights 6 dB before the sound distorts.

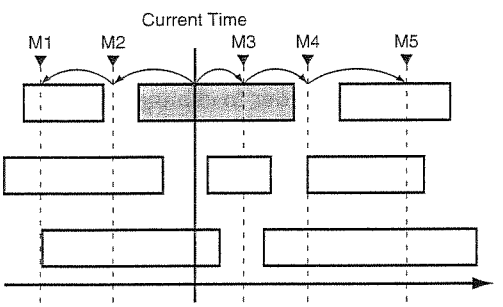
4. Press [PLAY (DISPLAY)].
Return to Play condition.

Searching Markers Using [PREVIOUS] and [NEXT]

Normally, [PREVIOUS] and [NEXT] are used to move the current playback time to the beginning or end of the previous or following phrase of selected track.



You can also change this function so that it recalls markers, just the way the skip button on a CD player works.



1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "PREVIOUS/NEXT Sw," then rotate the TIME/VALUE dial.

PREVIOUS/NEXT Sw (PREVIOUS/NEXT Switch)

This selects how the [PREVIOUS] and [NEXT] buttons function.

PHRASE: [PREVIOUS] and [NEXT] are used to move the current playback time to the beginning or end of the previous or following phrase.

MARKER: [PREVIOUS] and [NEXT] are used to move the current playback time to the previous or following marker.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Adjusting the Button Sensitivity

There are a number of buttons whose functions change depending on whether the button is pressed and immediately released or if it is held down.

Button Name Function When Pressed Function When Held Down

STATUS button

Function When Pressed: Changes the track status

Function When Held Down: Confirms the channel assigned to the track

[EDIT (SOLO)]

Function When Pressed: Edits the Master Block

Function When Held Down: Turns on the Solo function

[FADER (MUTE)]

Function When Pressed: Switches the input/track fader

Function When Held Down: Turns on the Mute function

You can specify the length of this time that the buttons must be held down in order to change their functions.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Switching Time," then rotate the TIME/VALUE dial.

Switching Time

This designates the time the buttons must be held down (0.3–2.0 seconds) in order to change functions.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Stopping the Cooling Fan

When using a mic near the VS-1680 or when mixing down from the VS-1680 to another recorder, you may find that noise from the VS-1680's cooling fan to be a problem. In such cases, you can temporarily turn off only the cooling fan.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (GLOBL)]. If "GLOBL" does not appear in [F2], first press [PAGE] until "GLOBL" is displayed, and then press [F2 (GLOBL)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Fan Control," then rotate the TIME/VALUE dial.

Fan Control

This specifies the manner in which the cooling fan is turned off.

Off: The fan is not turned off (the fan operates constantly).

Play: The fan stops during playback and recording (including record standby) .

Rec&Play: The fan definitely stops during playback and recording (including record standby) for at least 10 minutes.

* *Heat that can build up while the cooling fan is stopped for long periods, for example during extended playback or when placed in record standby for long stretches, may damage the internal hard disk. To avoid this problem, even when "Fan Control" is set to "Play," you should set the fan so that the stopping of the fan is automatically disabled (so that the fan continues to operate) as temperatures dictate.*

When "Fan Control" is set to "Rec&Play," the fan stops during playback and recording (including record standby) for at least 10 minutes. At this point, do not repeat recording or playing back often.

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Overall Settings for Playback and Recording (Play/Record Parameters)

These are settings related to the overall workings of the Play and Record functions.

Constantly Monitoring the Input Source

On channels for which Track Status is set to REC, playing back the song in record ready mode (REC indicator blinking) will allow you to monitor the performance that is recorded in the track, and during recording (REC indicator lit) you will be able to monitor the input source. At this time, pressing [STATUS] will let you switch between monitoring the track and monitoring the input source.
It is also possible to make settings so that the input source is always monitored.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F3 (PLAY)]. If "PLAY" does not appear in [F3], first press [PAGE] until "PLAY" is displayed, and then press [F3 (PLAY)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "Record Monitor," then rotate the TIME/VALUE dial.

Record Monitor

This switches between track and source monitoring.

AUTO: This switches monitoring between track and source.

SOURCE: This sets the VS-1680 to monitor the source at all times.

	While stopped	During playback	During recording
AUTO	SOURCE	TRACK/SOURCE	SOURCE
SOURCE	SOURCE	SOURCE	SOURCE

4. Press [PLAY (DISPLAY)].
Return to Play condition.

Stopping Automatically

You can cause song playback to stop automatically at a marker.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F3 (PLAY)]. If "PLAY" does not appear in [F3], first press [PAGE] until "PLAY" is displayed, and then press [F3 (PLAY)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "Marker Stop," then rotate the TIME/VALUE dial. At this time, set this to "On."

Marker Stop

When this is set to "On," playback of the song stops automatically when a designated marker is reached.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

5. Press [PLAY] to begin playback of the song.
When the song reaches the location containing the marker, playback then stops.

If Noise Between Segments is Obtrusive

In the seams or breaks that occur when recording is begun or ended or when a phrase is copied, obtrusive noise may occur. The VS-1680 fades-in and fades-out these breaks so that this noise will not be heard. If objectionable noise occurs, you can adjust the length of the fade-in and fade-out.

* *It is not possible to set the fade-in/fade-out time to 0. Thus in some cases, such as if you copy a sustained sound such as strings and use it elsewhere, the break may be even more noticeable than if there had been no fade.*

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F3 (PLAY)]. If "PLAY" does not appear in [F3], first press [PAGE] until "PLAY" is displayed, and then press [F3 (PLAY)].

3. Press [▲], [▼], [◄], and [►] to move the cursor to "Fade Length," then rotate the TIME/VALUE dial.

Fade Length

This sets the length (2, 10, 20, 30, 40, or 50 ms) of the fade-in or fade-out.

4. Press [PLAY (DISPLAY)].
Return to Play condition.

Scrolling the Waveform

While the level (waveform) of the sounds is displayed (p. 184), you can scroll the waveform display.

1. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].
2. Press [F3 (PLAY)]. If "PLAY" does not appear in [F3], first press [PAGE] until "PLAY" is displayed, and then press [F3 (PLAY)].
3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Waveform Scroll," then rotate the TIME/VALUE dial.

Waveform Scroll

When this is set to "On," the waveform display scrolls following playback time.

4. Press [PLAY (DISPLAY)]. Return to Play condition.
5. Press [F5 (WAVE)]. If "WAVE" does not appear in [F5], first press [PAGE] until "WAVE" is displayed, and then press [F5 (WAVE)].
6. Press [PLAY].

The waveform display scrolls.

Resetting Mixer and System Settings to Their Original State

After repeatedly making new settings to the input mixer, track mixer, and Master Block, as well as after changing the content of settings in System condition, you can restore the initial parameters existing when you started to create a song.

* *Even if you restore the settings to their initial state, the song, scene, tempo map and sync track data will not be lost. Furthermore, the IDE drive (p. 189), SCSI self ID (p. 188), Scene Mode (p. 40), Shift Lock (p. 187), and Numerics Type (p. 187) settings will not return to their default state.*

1. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].
2. Press [F1 (INIT)]. If "INIT" does not appear in [F1], first press [PAGE] until "INIT" is displayed, and then press [F1 (INIT)].
3. "Init Mixer/System PRM Sure?" (Do you want to restore the initial mixer and system parameters?) appears in the display. Press [YES]. If you want to cancel the operation, then press [NO].
4. When the initial conditions are restored, the System menu icon appears in the display. Press [PLAY (DISPLAY)].

Return to Play condition.

To Have a Message Displayed at a Specified Time

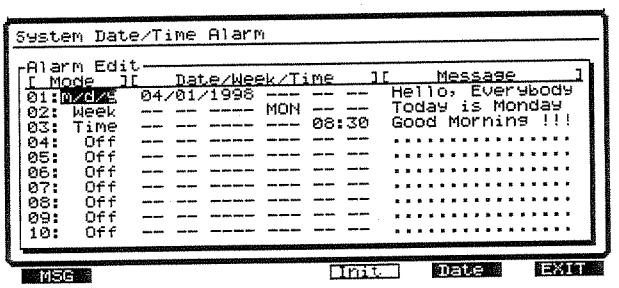
The VS-1680 features an internal clock, allowing you to have the unit turn on automatically on a specified day, or a specified time (except during Drive Initialize and other certain operations) to have a message of your choosing appear in the display. This is refered to as the **alarm function**. Use this, for example, to display birthday or Christmas greetings, or to check the amount of time available for creating a song.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F2 (DATE)]. If "DATE" does not appear in [F2], first press [PAGE] until "DATE" is displayed, and then press [F2 (DATE)].

3. Press [F5 (Alarm)].

4. Press [▲], [▼], [◀], and [▶] to move the cursor. Specify the date and time you wish the message to appear.



Mode

This specifies how often you want the message to appear.

Off: No message is displayed.

m/d/y: Sets a specific date, including year and month, such as 1998/April/1 (April 1, 1998) for the message to appear.

m/d/-: Sets a specific date every year, including the month, such as April/1 (every year on April 1) that the message is to appear.

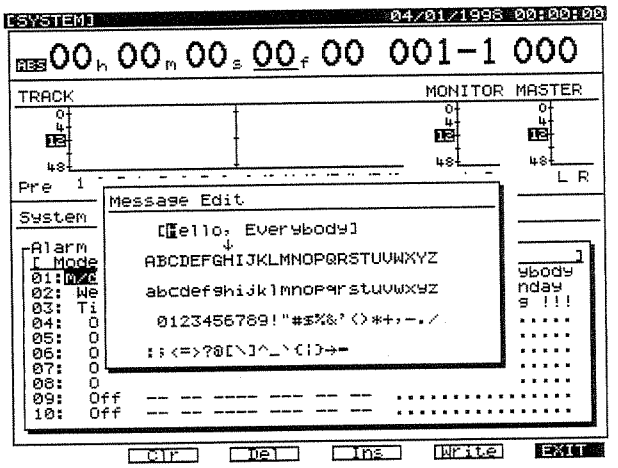
-/d/-: This specifies the day of every month (such as the first of every month) that the message is to appear.

Week: This specifies the day of the week (Sunday of every week, for example) that the message is to appear.

Time: This specifies the time of day (every day at 8:00, for example) that the message is to appear.

Every: The sets the message to be displayed every day.

5. Press [F1 (MSG)].
The Message Edit screen appears in the display. Press [▲], [▼], [◀], and [▶] and rotate the TIME/VALUE dial to input your message.
At this time, the function buttons work as shown below.



[F2 (Clr)]: Clears all characters in the window.

[F3 (Del)]: Deletes the character where the cursor is positioned.

[F4 (Ins)]: Inserts a space where the cursor is positioned.

[F5 (Write)]: Confirms the song name and exits the screen

[F6 (EXIT)]: Exits the screen without accepting the song name.

6. When you have entered your message, press [F5 (Write)].
You can store up to ten messages at a time. Repeat Steps 4–6 if you wish to input additional any messages.

7. Press [PLAY (DISPLAY)].
Return to Play condition.

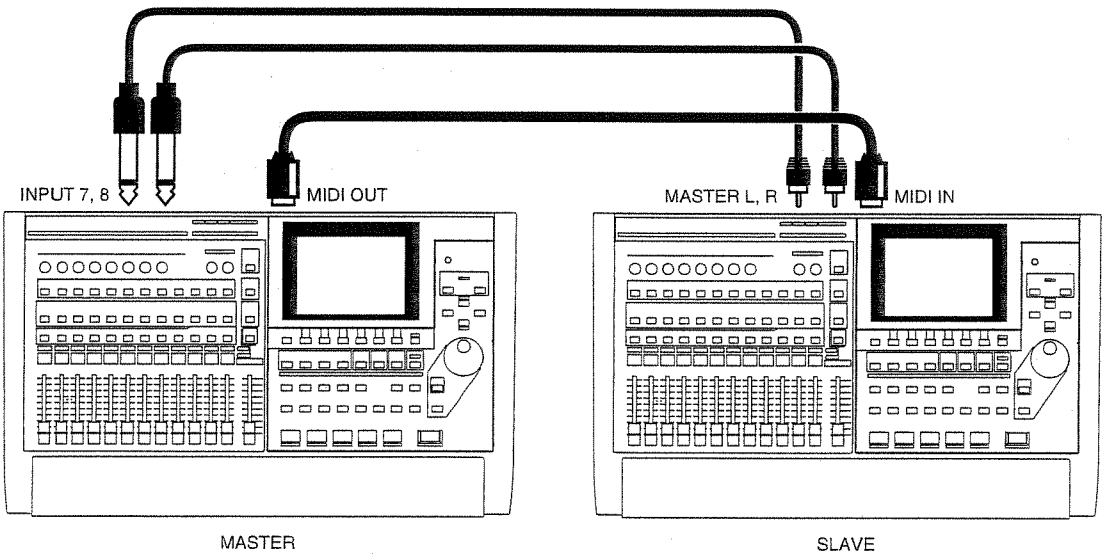
Chapter 13 Takein Advantages of the VS-1680 (idea and examples)

Along with the functions or external devices explained in earlier chapters, this chapter explains some actual ways and gives some tips in which the VS-1680 can be used effectively. First press [PLAY (DISPLAY)], and begin each operation from Play condition.

Synchronizing the Operations of Two VS-1680 Units

The VS-1680 is compatible with **MMC**. Here, we explain how the operation of two VS-1680 units can be synchronized. One VS-1680 acts as the MMC/MTC master, and the other acts as the MMC/MTC slave. Make connections as described below.

? **MMC** (Appendices p. 64)



* *In this example, you can use the master's Stereo In function for the mix balance between the master and slave VS-1680s (p. 165). First adjust the individual track balances on both machines. Of course, you can also send the output of the master and slave VS-1680s to a separate mixer. However, the master and slave units cannot be connected using digital connections.*

Settings for the Master VS-1680

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

3. Press [▲], [▼], [◄], and [►] to move the cursor. Rotate the TIME/VALUE dial to make the settings as described below.

Device ID
This sets the Device ID number (1–32) that is used when exchanging exclusive messages (mixer parameters) with an external MIDI device. Exclusive messages can be transmitted and received between devices which have the same Device ID number setting. Here, set this to "17."

MIDI Thru (MIDI Thru Switch)
This switches the function of the MIDI OUT/THRU connector. For now, set this to "Out."

Out: The connector transmits MIDI message such as metronome Note messages or MTC from the VS-1680.

Thru: MIDI messages received at the MIDI IN connector are retransmitted from the connector without any changes.

SysEx.Tx (System Exclusive Transmit Switch)
Exclusive messages are transmitted when this is set to "On." At this time, set this to "On."

MMC (MMC Mode)
This setting determines how the VS-1680 implements MMC. Set this to "MASTER."

Off: MMC is neither transmitted nor received.

MASTER: MMC is transmitted. The VS-1680 functions as the master device for external MIDI equipment.

SLAVE: MMC is received. The VS-1680 functions as a slave device for external MIDI equipment.

Control Type (Mixer Control Type)
This selects the type of MIDI messages that will be used when transmitting mixer settings to an external MIDI device, or when MIDI messages from an external MIDI device are used to control the mixer. At this time, set this to "Off."

Off: MIDI messages related to mixer operation are not transmitted or received.

C.C.: The mixer is controlled using Control Change messages.

Excl: The mixer is controlled using Exclusive messages.

* *When "C.C." or "Excl" is selected, making mixer adjustments on the master VS-1680 makes the same adjustments to the slave VS-1680 mixer. For more detailed information about Exclusive messages, please refer to "MIDI Implementation" (Appendices p. 25).*

4. Hold down [SHIFT] and press [EXT SYNC].

5. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to make the settings as described below.

Sync Source
This determines how the VS-1680 is synchronized with other devices. Here, set this to "INT."

INT: The VS-1680 runs according to its own internal clock. Select this setting when you are not synchronizing with other devices or when you want external MIDI devices to be controlled by synchronization signals from the VS-1680.

EXT: The VS-1680 is controlled with synchronization signals (MTC) from the connected external MIDI device. In this case, the VS-1680 does not operate unless it is receiving MTC signals. Select this setting when you want to use the MTC from an external MIDI device to control the VS-1680.

Sync Gen (Generator)
This selects the type of synchronization signal transmitted from the MIDI OUT connector. For now, set this to "MTC."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

Sync MTC Type (MTC Type)
This selects the type of MTC (30, 29N, 29D, 25, or 24). Set this to conform to the type of MTC on the slave VS-1680. Here, select "30."

7. Press [PLAY (DISPLAY)].
Return to Play condition.

Settings for the Slave VS-1680

1. Hold down [SHIFT] and press [F5 (SYSTEM)].
The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to make the settings as described below.

Device ID
This sets the Device ID number (1–32) that is used when exchanging exclusive messages (mixer parameters) with an external MIDI device. Exclusive messages can be transmitted and received between devices which have the same Device ID number setting. Here, set this to "17."

SysEx.Rx (System Exclusive Receive Switch)
Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VS-1680 is in Play condition.

MMC (MMC Mode)
This setting determines how the VS-1680 implements MMC. Set this to "SLAVE."

Off: MMC is neither transmitted nor received.

MASTER: MMC is transmitted. The VS-1680 functions as the master device for external MIDI equipment.

SLAVE: MMC is received. The VS-1680 functions as a slave device for external MIDI equipment.

Control Type (Mixer Control Type)
This selects the type of MIDI messages that will be used when transmitting mixer settings to an external MIDI device, or when MIDI messages from an external MIDI device are used to control the mixer. At this time, set this to "Off."

Off: MIDI messages related to mixer operation are not transmitted or received.

C.C.: The mixer is controlled using Control Change messages.

Excl: The mixer is controlled using Exclusive messages.

* *When "C.C." or "Excl" is selected, making mixer adjustments on the master VS-1680 makes the same adjustments to the slave VS-1680 mixer. For more detailed information about Exclusive messages, please refer to "MIDI Implementation" (Appendices p. 25).*

4. Hold down [SHIFT] and press [EXT SYNC].

5. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to set each of the values.

Sync Error Level
This sets the interval (0–10) for checking MTC receiving status when synchronize VS-1680 with MTC from an external MIDI device. If the MTC is not being sent continuously, the VS-1680 checks the MTC and if there is an error, cancels synchronization. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error. Normally, set this to "5."

Sync MTC Type
This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC so that it matches that of the master VS-1680. Here, set this to "30."

6. Press [PLAY (DISPLAY)].
Return to Play condition.

7. Press [EXT SYNC].
The button indicator blinks, indicating that the VS-1680 is ready to receive MTC.
In this condition, the slave VS-1680 is operated synchrony when the master VS-1680 is operated.
The EXT SYNC indicator is light during the synchronization.

> **Digital Connections Cannot Be Used**
> When Sync Source is set to "EXT," the VS-1680 operates according to the Clock signal (MTC) transmitted by the connected MIDI device. At such times, if you also set the master Clock to "DIGIN1" or "DIGIN2," the VS-1680 then also attempts to operate according to the Clock (digital signal) from the external digital device. This means the internal clock becomes mismatched. Thus, in the present example, the slave VS-1680 cannot record the digital signals transmitted by the master VS-1680.
>
> When the master Clock is set to "DIGIN1" or "DIGIN2," the VS-1680 operates according to the Clock (digital signal) transmitted by the connected MIDI device. You can thus make MTC the master Clock. However, in this case, the slave VS-1680 attempts to operate according to the MTC transmitted by the master VS-1680, while the master VS-1680 attempts to operate according to the digital signals transmitted by the slave VS-1680. In such instances, since this ends up in there being no reference clock, the VS-1680 cannot operate correctly.

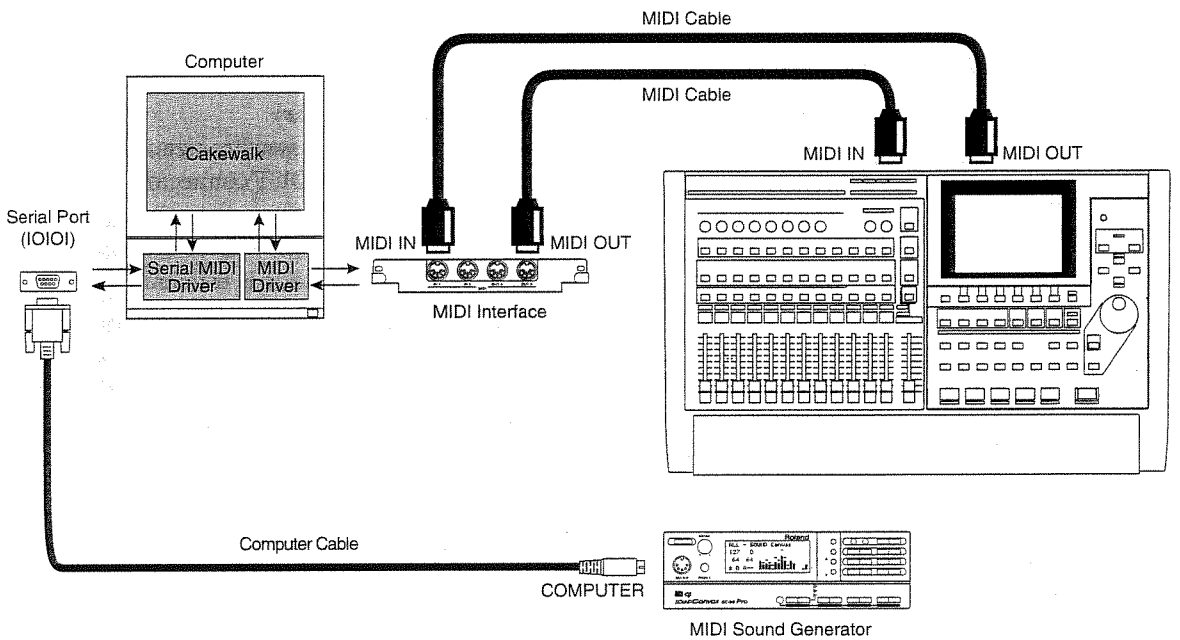
Synchronizing with Cakewalk Pro Audio (MMC)

The VS-1680 supports MMC. This means that when two VS-1680 units are synchronized or when a VS-1680 is used in conjunction with an MMC-supporting MIDI sequencer etc., operations such as song playback, stop and fast-forward can be performed by operating only the master device.

? **MMC** (Appendices p. 64)

* *Some MIDI devices are not compatible with the MMC used by the VS-1680. If you are using such a device, the VS-1680 cannot be operated in the manner described in this Owner's Manual. For more detailed information about MMC functions for the VS-1680, please refer to "MIDI Implementation" (Appendices p. 25).*

Here, we will see an example of synchronizing the VS-1680 with the Cakewalk Pro Audio software application. Cakewalk Pro Audio is a computer-based sequencer program compatible with MMC and MTC (for Windows 95). Make the connections as shown below, referring to the Cakewalk owner's manual as you go along.



In this example, Cakewalk is the master device when MMC is used, and the VS-1680 is the master device when using MTC. Cakewalk can be used to control such operations of the VS-1680 as playback, stopping, switching track status, and more.

* ***Use a MIDI interface*** *when connecting the VS-1680 to a computer. You can also use a MIDI interface in connecting a computer to a sound generator.*

Settings for the VS-1680

1. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to make the settings as described below.

MIDI Thru (MIDI Thru Switch)

This switches the function of the MIDI OUT/THRU connector. For now, set this to "Out."

Out: The connector transmits MIDI message such as metronome Note messages or MTC from the VS-1680.

Thru: MIDI messages received at the MIDI IN connector are retransmitted from the connector without any changes.

SysEx.Rx (System Exclusive Receive Switch)

Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can be received when the VS-1680 is in Play condition.

MMC (MMC Mode)

This setting determines how the VS-1680 implements MMC. Set this to "SLAVE."

Off: MMC is neither transmitted nor received.

MASTER: MMC is transmitted. The VS-1680 functions as the master device for external MIDI equipment.

SLAVE: MMC is received. The VS-1680 functions as a slave device for external MIDI equipment.

Control Type (Mixer Control Type)

This selects the type of MIDI messages that will be used when transmitting mixer settings to an external MIDI device, or when MIDI messages from an external MIDI device are used to control the mixer. At this time, set this to "C.C."

Off: MIDI messages related to mixer operation are not transmitted or received.

C.C.: The mixer is controlled using Control Change messages.

Excl: The mixer is controlled using Exclusive messages.

4. Hold down [SHIFT] and press [EXT SYNC].

5. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to set each of the values.

Sync Source

This determines how the VS-1680 is synchronized with other devices. Here, set this to "INT."

INT: The VS-1680 runs according to its own internal clock. Select this setting when you are not synchronizing with other devices or when you want external MIDI devices to be controlled by synchronization signals from the VS-1680.

EXT: The VS-1680 is controlled with synchronization signals (MTC) from the connected external MIDI device. In this case, the VS-1680 does not operate unless it is receiving MTC signals. Select this setting when you want to use the MTC from an external MIDI device to control the VS-1680.

Sync Gen (Generator)

This selects the type of synchronization signal transmitted from the MIDI OUT connector. For now, set this to "MTC."

Off: Synchronization signals are not transmitted.

MTC: MIDI Time Code is transmitted.

MIDIClk: MIDI Clock according to the Tempo Map is transmitted.

SyncTr: MIDI Clock data recorded on the sync track is transmitted.

Sync MTC Type

This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC of Cakewalk so that it matches that of the master VS-1680. Here, set this to "30."

6. Press [PLAY (DISPLAY)].

Return to Play condition.

Settings for Cakewalk Pro Audio

Make the settings for Cakewalk Pro Audio as described below. For more detailed information about Cakewalk, please refer to the Cakewalk owner's manual.

Setting | Clock:
MTC (receives MTC)

Setting | MIDI Out:
Check "Transmit MMC" (sends MMC)

Setting | Time Format:
MTC from the VS-1680 (here, set "30")

* *"30 Frame Drop" in Cakewalk corresponds to "29D" on the VS-1680.*

Under this condition, when playback is begun with Cakewalk, MMC is transmitted to the VS-1680, and upon receiving the MMC, the VS-1680 also begins playback. During playback, MTC is sent from the VS-1680 to Cakewalk, thus synchronizing operations.

Making Digital Connections with Cakewalk

When you have a sound card (such as Audiomedia III or CardD) that features digital input and output connectors installed in your computer, you can connect Cakewalk and your VS-1680 digitally. This is convenient when, for example, you want to record the audio tracks from the VS-1680 to Cakewalk via a digital connection, edit the material in Cakewalk, and then send it back via the digital connection to the VS-1680 for mixdown. Be sure to read the owner's manuals for Cakewalk as well as the sound card you are using.

About Sound Cards

Even when using the digital connections as described in the example, noise originating inside the computer in the vicinity of the sound card may be introduced into the sound. The level of noise will vary according to the computer's exterior panels, interior boards, the condition of the cable connections, etc. In general, high-performance sound cards that tend to resist this kind of noise better.

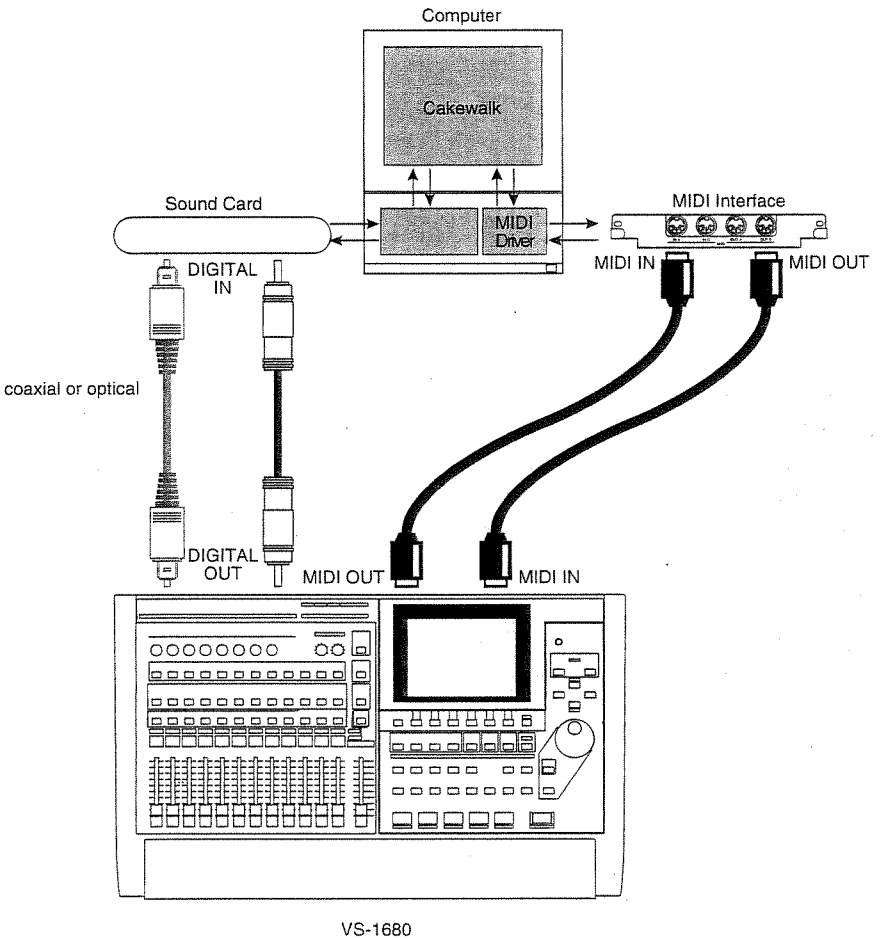
With sound cards that feature both analog and digital input and output, it may be necessary to set the card to use the digital input and output. After carefully reading the owner's manual for your sound card, make the necessary settings to enable the sound card to use the digital input and output connectors.

About the Recording Mode

Even when using the digital connections as described in the example, since audio tracks are recorded from the VS-1680 to Cakewalk, edited, and then sent back to the VS-1680, this can be likened to repeated track bouncing. Thus, we recommend that you to use a recording mode featuring higher quality sound, such as "MTP" or "MAS."

Recording to Cakewalk

1. Make the connections as shown below.



2. Follow the procedure as described in "Settings for the VS-1680" (p. 198) and "Settings for Cakewalk Pro Audio" (p. 199), set up the system so that the VS-1680 and Cakewalk are synchronized.

3. Make the settings to Cakewalk as shown below. For more detailed information, please refer to your Cakewalk owner's manual.

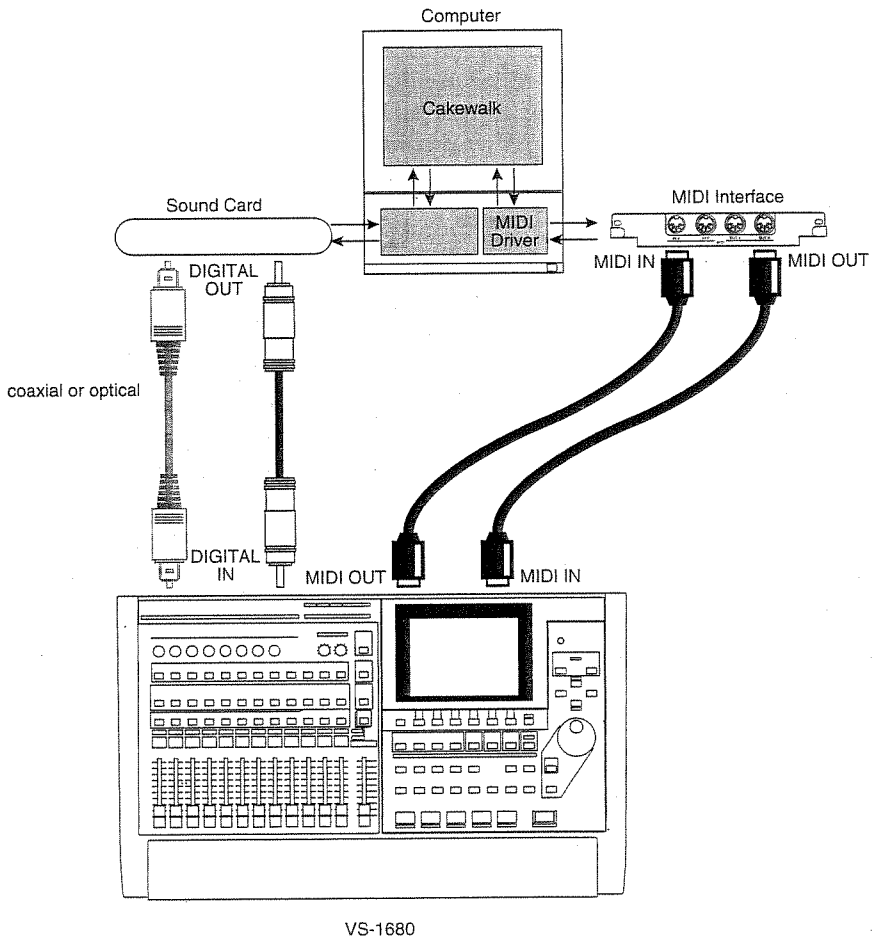
Settings | Audio Options... | Advanced | SMPTE/MTC Sync: "High-Quality"

* *If your computer does not feature adequate performance, even with the above settings, you may not be able to get stable digital audio output, meaning the sound will suffer when digital connections are used. Additionally, Cakewalk Pro Audio 5.0 and Cakewalk Professional 5.0 do not feature the above-mentioned settings. We recommend upgrading to Version 6.0.*

In the present status/condition, when record is begun with Cakewalk, MMC is transmitted to the VS-1680, and upon receiving the MMC, the VS-1680 also begins playback. During playback, MTC is sent from the VS-1680 to Cakewalk, thus synchronizing operations.

Recording to the VS-1680

1. Make the connections as shown below.



2. Follow the procedure as described in "Settings for the VS-1680" (p. 198) and "Settings for Cakewalk Pro Audio" (p. 199), set up the system so that the VS-1680 and Cakewalk are synchronized.

3. Make the settings to Cakewalk as shown below. For more detailed information, please refer to your Cakewalk owner's manual.

Settings | Audio Options... | Advanced | SMPTE/MTC Sync: "High-Quality"

* *If your computer does not feature adequate performance, even with the above settings, you may not be able to get stable digital audio output, meaning the sound will suffer when digital connections are used. Additionally, Cakewalk Pro Audio 5.0 and Cakewalk Professional 5.0 do not feature the above-mentioned settings. We recommend upgrading to Version 6.0.*

4. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

5. Press [F1 (SYSPM)]. If "SYSPM" does not appear in [F1], first press [PAGE] until "SYSPM" is displayed, and then press [F1 (SYSPM)].

6. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change the settings as shown below.

Master Clock

This is used to select the reference clock for the VS-1680 operations. Here, set this to "DIGIN1" or "DIGIN2."

DIGIN1: Based on the digital signal received at the DIGITAL IN connector 1 (coaxial).

INT: Based on the VS-1680's internal clock.

DIGIN2: Based on the digital signal received at the DIGITAL IN connector 2 (optical).

7. Press [PLAY (DISPLAY)].

Return to Play condition.

8. Make the settings for the VS-1680 by following the procedure as described in "Recording Digital Signals" (p. 74).

Under this condition, when playback is begun with Cakewalk, MMC is transmitted to the VS-1680, and upon receiving the MMC, the VS-1680 also begins record. During playback, MTC is sent from the VS-1680 to Cakewalk, thus synchronizing operations.

Using an External MIDI Device to Adjust the Mixer (Compu Mix)

The VS-1680 can send and receive the mixer settings and movements as MIDI messages. You can use an external MIDI controller to control the VS-1680's faders, and by using a MIDI sequencer to record mixer settings and movements during playback as MIDI song data, the mixer can be controlled automatically by the MIDI sequencer when the song is played back later. This is referred to as **Compu Mix**. Compu Mix uses Control Change messages and Exclusive messages.

This roughly describes how things proceed when performing operations using Control Change messages. For more detailed information, please read the appropriate pages.

When Using Exclusive Messages

When working in Compu Mix, you should use normal Control Change messages. However, if the use of Control Change messages would affect other MIDI devices in your setup, you may use System Exclusive message instead.

For more detailed information about Control Change messages and Exclusive messages, please refer to "MIDI Implementation" (Appendices p. 25).

The Correspondence Between MIDI Channels and Controller Numbers

MIDI channels correspond to the mixer channels as shown below. For channel pairs linked with the Stereo Link function, Control Change messages can be exchanged using the odd-numbered channel's MIDI channel. Control Change messages transmitted via the even-numbered channel's MIDI channel are ignored.

MIDI Channel	Input Mixer	Track Mixer	Master Block
1	1	1	-
2	2	2	-
3	3	3	-
4	4	4	-
5	5	5	-
6	6	6	-
7	7	7	-
8	8	8	-
9	DIGITAL L	9	-
10	DIGITAL R	10	-
11	ST IN	11	-
12	EFX1	12	-
13	EFX2	13	-
14	EFX3	14	-
15	EFX4	15	-
16	-	16	Master Block

Controller numbers correspond to the track channel parameters as follows.

Controller Number	Mixer Parameter
3	TRACK STATUS
7	MST Send Level
9	Level Meter
10	MST Send Pan/Balance
12	EQ L Freq.
13	EQ L Gain
14	EQ M Freq.
15	EQ M Gain
16	EQ M Q
17	EQ H Freq.
18	EQ H Gain
19	EFX1 SND Level
20	EFX1 SND Pan/Balance
21	EFX2 SND Level
22	EFX2 SND Pan/Balance
23	EFX3 SND Level
24	EFX3 SND Pan/Balance
25	EFX4 SND Level
26	EFX4 SND Pan/Balance
27	AUX Send Level
28	AUX Send Pan/Balance
29	MST Offset Level
30	MST Offset Balance

Controller numbers correspond to the input channel parameters as follows.

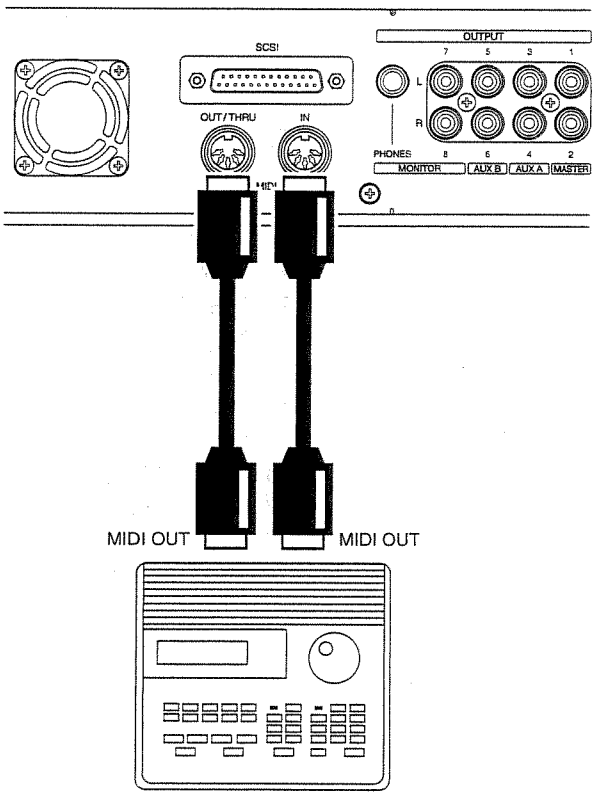
Controller Number	Mixer Parameter
68	MST Send Level
70	MST Send Pan/Balance
71	EQ L Freq.
72	EQ L Gain
73	EQ M Freq.
74	EQ M Gain
75	EQ M Q
76	EQ H Freq.
77	EQ H Gain
78	EFX1 SND Level
79	EFX1 SND Pan/Balance
80	EFX2 SND Level
81	EFX2 SND Pan/Balance
82	EFX3 SND Level
83	EFX3 SND Pan/Balance
84	EFX4 SND Level
85	EFX4 SND Pan/Balance
86	AUX Send Level
87	AUX Send Pan/Balance
88	MST Offset Level
89	MST Offset Balance

Controller numbers correspond to the Master section parameters as follows.

Controller Number	Mixer Parameter
68	Master Level
70	Master Balance
78	EFX1 SND Level
79	EFX1 SND Balance
80	EFX2 SND Level
81	EFX2 SND Balance
82	EFX3 SND Level
83	EFX3 SND Balance
84	EFX4 SND Level
85	EFX4 SND Balance
86	AUX Level
87	AUX Balance
102	Monitor Level
103	Monitor Balance
104	Monitor L Meter
105	Monitor R Meter
106	Master L Meter
107	Master R Meter

Preparations for Compu Mix

1. Make the connections as shown below.



MIDI Sequencer

2. Hold down [SHIFT] and press [F5 (SYSTEM)]. The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

3. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

4. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to change the settings as shown below.

MIDI Thru (MIDI Thru Switch)

This switches the function of the MIDI OUT/THRU connector. Here, select "Out."

Out: MIDI messages such as metronome sound Note messages or MTC are sent from the VS-1680.

Thru: This sends MIDI messages received via the MIDI IN connector and sends them without changes.

Cntrl Local (Control Local Switch)

When this is set to "Off," actual volume levels remain unchanged even when the faders on the top panel are moved (fader movements have no effect). Normally, this is set to "On." At this time, set the Control Local switch to "On."

Control Type (Mixer Control Type)

This selects the type of MIDI messages that will be used when transmitting mixer settings to an external MIDI device, or when MIDI messages from an external MIDI device are used to control the mixer. At this time, set this to "C.C."

Off: MIDI messages related to mixer operation are not transmitted or received.

C.C.: The mixer is controlled using Control Change messages.

Excl: The mixer is controlled using Exclusive messages.

5. Follow the procedure as described in "Synchronizing with MIDI Sequencers" (p. 128), make the necessary settings in both the VS-1680 and the MIDI sequencer to synchronize the two machines. In addition, make sure to set the MIDI sequencer so that MIDI messages received at the MIDI In connector are not output from the MIDI OUT connector.

Recording with Compu Mix

1. Prepare the VS-1680's mixer settings (faders, pan, etc.) and ready for playback the song.

2. Put the MIDI sequencer in Record mode, and begin playback with the VS-1680.

3. When playback begins, immediately hold down [SHIFT] and press [SCENE].

The mixer's initial condition is transmitted from the MIDI OUT connector.

4. As you listen to the song, make adjustments to the faders and other controls as needed.

5. When playback of the song is finished, stop the MIDI sequencer and the VS-1680.

This completes the recording with Compu Mix. Save the MIDI song data to a floppy disk or other storage media. When you go back to the beginning of the MIDI song data and the VS-1680 song, and then begin playback on the VS-1680, the mixer is controlled according to the Compu Mix while the song is played back.

To Have the Fader Movements Ignored

When playing back songs using Compu Mix, may be you want the actual volume levels to remain unchanged even when the faders on the top panel are moved. In such instances, use the following procedure.

1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].
3. Press [▲], [▼], [◀], and [▶] to move the cursor to "Cntrl Local," and rotate the TIME/VALUE dial.

Cntrl Local (Control Local Switch)

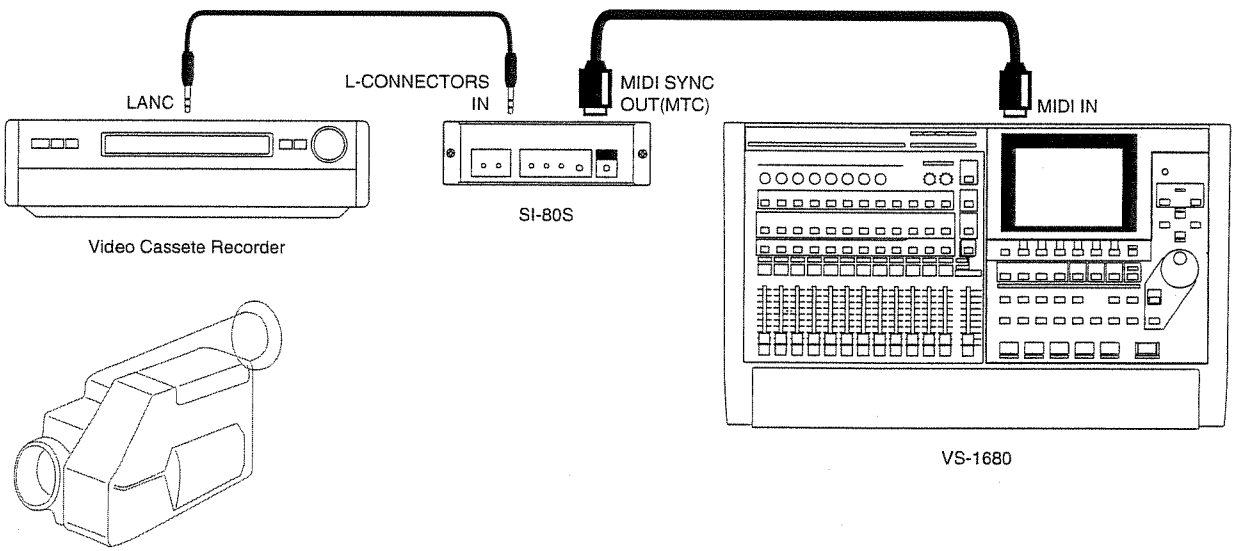
When this is set to "Off," actual volume levels remain unchanged even when the faders on the top panel are moved (fader movements have no effect). Normally, this is set to "On." At this time, set the Control Local switch to "Off."

4. Press [PLAY (DISPLAY)].

Return to Play condition.

Synchronizing with Video Equipment

When used in combination with the Roland SI-80S, you can control playback and stop functions on the VS-1680 with video equipment featuring a consumer video interface that conforms to (RCTC) time code. Make the connections as shown below, and refer to the SI-80S owner's manual and the owner's manual for your video device.



1. Hold down [SHIFT] and press [F5 (SYSTEM)].

The System menu icon is displayed. If the System menu icon does not appear, then press [F6 (EXIT)].

2. Press [F4 (MIDI)]. If "MIDI" does not appear in [F4], first press [PAGE] until "MIDI" is displayed, and then press [F4 (MIDI)].

3. Press [▲], [▼], [◀], and [▶] to move the cursor. Make the settings as shown below.

SysEx.Rx (System Exclusive Receive Switch)

Exclusive messages are received when this is set to "On." At this time, set this to "On." The Exclusive messages can then be received when the VS-1680 is in Play condition.

MMC (MMC Mode)

This setting determines how the VS-1680 implements MMC. Set this to "SLAVE."

- **Off:** MMC is neither transmitted nor received.
- **MASTER:** MMC is transmitted. The VS-1680 functions as the master device for external MIDI equipment.
- **SLAVE:** MMC is received. The VS-1680 functions as a slave device for external MIDI equipment.

4. Hold down [SHIFT] and press [EXT SYNC].

5. Press [▲], [▼], [◀], and [▶] to move the cursor. Rotate the TIME/VALUE dial to set each of the values.

Sync Error Level

This sets the interval (0–10) for checking MTC receiving status when synchronize VS-1680 with MTC from an external MIDI device. If the MTC is not being sent continuously, the VS-1680 checks the MTC and if there is an error, cancels synchronization. By setting a longer interval under such circumstances, synchronization can continue, even if there is a certain degree of error. Normally, set this to "5."

Sync MTC Type

This selects the MTC type (30, 29N, 29D 25, 24). Select the MTC so that it matches that of the SI-80S ("30," "29D," or "29N").

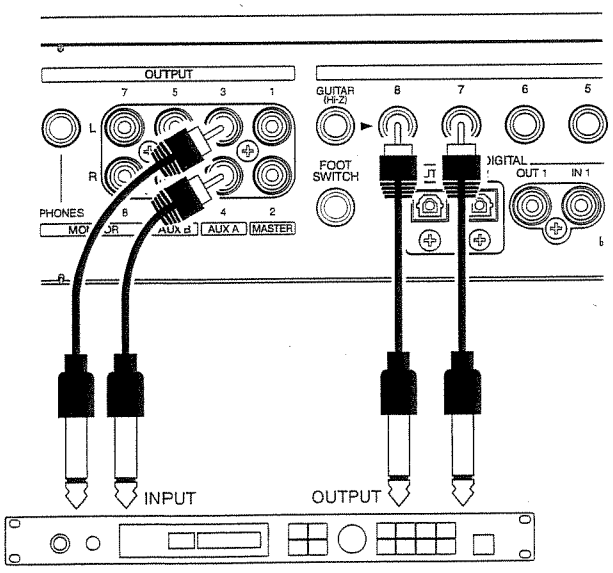
6. Press [PLAY (DISPLAY)].
Return to Play condition.

7. Press [EXT SYNC].
The button indicator lights, indicating that the VS-1680 is synchronized using the MTC from the SI-80S.
In this condition, operations performed on the video equipment are performed in synchrony on the VS-1680.

Using External Effects Devices

When using external effects devices, the AUX A/B jacks function as effects send jacks. Here we see how effects can be added to a performance recorded in stereo on Track 9/10. This is handy when, for example, you want to add reverb using an external effects device. Use the INPUT 7 and 8 jacks as the effect return jacks.

1. Connect your effects device as shown below.



2. Press the SELECT button on Track Channel 9/10.
The track mixer appears in the display.

3. Press [F5 (AUX)]. If "AUX" does not appear in [F5], first press [PAGE] until "AUX" is displayed, and then press [F5 (AUX)].

* *If EFFECT B is not installed, then [F4] displays "AUX3."*

4. Move the cursor to "AUX Sw." Rotate the TIME/VALUE dial to select "Pst."

5. Press [▲] and [▼] to move the cursor. Adjust the volume level (0–127) and pan (L63–0–R63) as needed.

6. Press [MASTER].
The Master Block appears in the display.

7. Press [F3 (AUX.A)]. If "AUX.A" does not appear in [F3], first press [PAGE] until "AUX.A" is displayed, and then press [F3 (AUX.A)].

8. Move the cursor to "AUX A." Rotate the TIME/VALUE dial to select "AUX."

9. Press [ST IN].

10. Press [F1 (St In)].

11. Move the cursor to "StereoIn Select." Rotate the TIME/VALUE dial to select "Input 7/8."

12. Press [▲] and [▼] to move the cursor. Adjust the Stereo In volume level (0–127) and left-right balance (L63–0–R63) as needed.

13. With this, you are now ready for add the external effect. Press [PLAY (DISPLAY)].
Return to Play condition.

14. While playing back the song, adjust the sound of the effect.
When the input mixer is in effect (when the IN indicator is lit), you can adjust the Stereo In (effect sound) volume level directly with the (ST IN) channel faders.

(R)

(S)

(T)

(U)

(V)

(Z)

For EU Countries

Apparatus containing Lithium batteries

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruks joner.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

For EU Countries

CE

This product complies with the requirements of European Directives EMC 89/336/EEC and LVD 73/23/EEC.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.
This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Concerning Copyright

The law prohibits the unauthorized recording, public performance, broadcast, sale, or distribution etc. of a work (CD recording, video recording, broadcast, etc.) whose copyright is owned by a third party.
The VS-1680 does not implement SCMS. This design decision was made with the intent that SCMS should not restrict the creation of original compositions which do not violate copyright law. Roland will take no responsibility for any infringement of copyright that you may commit in using the VS-1680.

? **SCMS** (Appendices p. 64)

Disclaimer of liability

Roland will take no responsibility for any "direct damages," "consequential damages," or "any other damages" which may result from your use of the VS-1680. These damages may include but are not limited to the following events which can occur when using the VS-1680.

- Any loss of profit that may occur to you
- Permanent loss of your music or data
- Inability to continue using the VS-1680 itself or a connected device

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