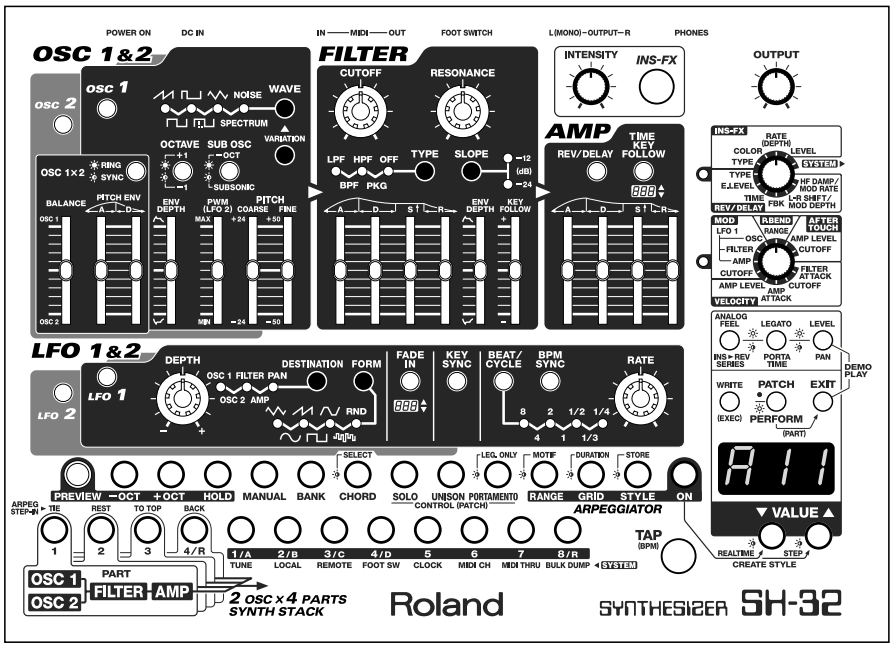
Roland®

SYNTHESIZER SH-32

OWNER'S MANUAL

Thank you, and congratulations on your choice of the Roland Synthesizer SH-32.

Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (p. 2; p. 4). 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, Owner's Manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.



The SH-32's **Low Boost function**, which compensates for smaller speakers and other systems with insufficient low end, is set to ON at the factory. When using the SH-32 with large speakers or a PA, we recommend turning this feature off. Use the following procedure.

1. **While holding down [2/B], turn on the SH-32's power.**
2. **Press [VALUE ▼] to switch the function to " OFF " (Off).**
3. **Turn the power off, then on again.**

For the U.K.

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

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 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.
Under no circumstances must either of the above wires be connected to the earth terminal of a three pin plug.

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 modify in any way) the unit or its AC adaptor.
- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Never use or store the unit in places that are:
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.
- 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.

⚠WARNING

- Be sure to use only the AC adaptor supplied with the unit. Also, make sure the line voltage at the installation matches the input voltage specified on the AC adaptor's body. Other AC adaptors may use a different polarity, or be designed for a different voltage, so their use could result in damage, malfunction, or electric shock.
- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!
- This unit, 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 immediately stop using the unit, and consult an audiologist.
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.

⚠WARNING

- Immediately turn the power off, remove the AC adaptor from the outlet, and request servicing by your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page when:
  - The AC adaptor or the power-supply cord has been damaged; or
  - Objects have fallen into, or liquid has been spilled onto the unit; or
  - The unit has been exposed to rain (or otherwise has become wet); or
  - The unit does not appear to operate normally or exhibits a marked change in performance.

- 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!)

- 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.

⚠ CAUTION

- The unit and the AC adaptor should be located so their location or position does not interfere with their proper ventilation.

- Always grasp only the plug or the body of the AC adaptor when plugging into, or unplugging from, an outlet or this unit.

- Whenever the unit is to remain unused for an extended period of time, disconnect the AC adaptor.

- 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 AC adaptor body, or its plugs, with wet hands when plugging into, or unplugging from, an outlet or this unit.

- Before moving the unit, disconnect the AC adaptor and all cords coming from external devices.

- Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet (p. 17).

- Whenever you suspect the possibility of lightning in your area, disconnect the AC adaptor from the outlet.

IMPORTANT NOTES

In addition to the items listed under "USING THE UNIT SAFELY" on page 2, 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).
- The AC adaptor will begin to generate heat after long hours of consecutive use. This is normal, and is not a cause for concern.
- 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

- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- To avoid possible breakdown, do not use the unit in a wet area, such as an area exposed to rain or other moisture.

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 in another MIDI device (e.g., a sequencer). 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.

  " bLo " (Battery Low)

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 in another MIDI device (e.g., a sequencer).
- Unfortunately, it may be impossible to restore the contents of data that was stored in the unit's memory, or other device (e.g., a sequencer) 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.
- 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.
- 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).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- In order to fully broaden the range of expression that is possible from its sounds, the SH-32 makes it possible to make settings for a wider range of parameters than those offered by an ordinary sound module. When turning up the filter resonance, effect feedback, or other parameters to extreme levels, reduce the volume so as not to overload the equipment used for playback.
- Since some of the Preset Patches were designed with a specific purpose in mind, they sound best if played within the appropriate range, or with suitable phrases. **Such sounds may get distorted if played outside the intended range.** When changing the register or phrase being used, reset the parameters for your sound so that such distortion is avoided.
- About reception of MIDI messages while the Arpeggiator is functioning
  - Internally, the SH-32 gives priority to the sound processing that uses the Wave Acceleration method. Due to the limitations of the system, **demands for the processing of large amounts of data for additional functions other than those related to the sound generation section (such as for the Arpeggiator or certain kinds of MIDI messages) may prevent the SH-32 from operating correctly**.
  - If a large volume of Control Change or Aftertouch messages are transmitted while the Arpeggiator is being used, or otherwise when numerous voices are sounding, processing for the sound generator is given priority. As a result, the Arpeggiator may stop working correctly, or the tempo may not be maintained. In particular, you should be careful with consecutive streams of densely packed MIDI messages, which is what devices other than the SH-32 may sometimes be sending.

How To Use This Manual

This owner's manual is organized as follows.

Quick Start

For those who are using the SH-32 for the first time, this section provides a simple explanation of how to use and enjoy various functions. Please read the "Quick Start" and follow along by actually operating the SH-32. This will help you understand most of what you need to know for basic operations. More advanced ways of using the SH-32 or details of other operations are explained in the "Advanced Use" section.

Advanced Use

The "Advanced Use" section is divided into 9 chapters. Before you read this manual, you should read through the "Quick Start" manual so you're familiar with the basic operation of the unit.

Chapter 1. An Overview of the SH-32

This chapter explains how the SH-32 is organized, the available memory locations, and the differences among settings depending on the mode. Reading it is essential for understanding SH-32 operational procedures.

Chapter 2. Creating Your Own Sounds

This chapter explains how SH-32 sounds are created, together with a description of how the parameters are organized. Comprehending the information in the chapter is an essential prerequisite before creating your own sounds.

Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)

This chapter explains how to make settings for the SH-32's onboard effects. Be sure to read this when adding effects to Patches and Performances.

Chapter 4. Playing the Rhythm Sets

This chapter explains how to play and create Rhythm Sets. Read this chapter when using Rhythm Sets.

Chapter 5. Using in Performance Mode

This chapter explains how to play and create Performances. Read this chapter when you wish to use Performances.

Chapter 6. Using Arpeggiator (ARPEGGIATOR)

This chapter explains how to use and make settings for the Arpeggiator, how to create Styles, and other related information. Read this chapter when you wish to use the arpeggiator.

Chapter 7. Using the Chord Memory Function (CHORD)

This chapter explains how to use and make settings for the Chord Memory function. Read this chapter when using the Chord Memory function.

Chapter 8. Using the SH-32 with External MIDI Devices

This chapter provides a description of MIDI, and explains how to use an external MIDI device to switch sounds, save settings onto external devices, and carry out other tasks. Read this material as necessary.

Chapter 9. Other Settings

This chapter explains how to set the system parameters, which determine the SH-32's operational environment, as well as the parameter functions, how to restore the default factory settings, and other related information. Read this material as necessary.

Appendices

This chapter contains a troubleshooting section for use when the SH-32 is not functioning as expected. There is also a list of error messages that you can refer to if an error message appears on the display. This chapter also contains information such as Patch/Rhythm Set/Performance lists, parameter lists and the MIDI implementation chart.

Notation Used in This Owner's Manual

To make operation procedures easy to understand, the following notation system is adopted:

Characters and numbers in square brackets [ ] indicate knobs and buttons on the front panel. For example, [CUTOFF] represents the CUTOFF knob and [PREVIEW] stands for the PREVIEW button.

(p. **) refers to pages within the manual.

Below are the meanings of the symbols preceding certain sentences in the text.

These are notes. Please be sure to read them.

These are reference memos. Read these as necessary.

These are hints for operating the SH-32. Read these as necessary.

These provide information from related reference pages. Read these as necessary.

Contents

Advanced Use 43

Appendices 95

Main Features

● Rich Sound with Full Synth Presence

Development of the SH-32 has involved a variety of approaches to thoroughly analyze synthesizer sounds in order to realize the "fat, sharp, clear sound" that is characteristic of analog synths.

To quantify these sound characteristics, various measurements and blind tests using renowned vintage synths, analog modeling synths, and other gear were carried out. The findings of such research formed the basis for designing our new Wave Acceleration Sound Generator(*), which is capable of the complete realization of the sound variations and qualities of a synthesizer. This allows you to produce vintage synth sounds and a wide variety of other waveforms, all with this one instrument.

The SH-32 synthesizer offers not only the sounds being demanded on today's music scene, but also provides the convenient operation that you get only with a digital unit.

* *This is a new approach to sound generation that permits creation of a wide variety of high-quality waveforms, while featuring numerous oscillators, something impossible with simple DSP synths.*

● Full Freedom to Create Your Own Unique Sounds

With the architecture of the SH-32's sound generator, you get two oscillators, one filter, an amp, and two LFOs for each sound, all controlled with an analog synth-like interface. The great freedom in creating sounds presented by this synthesizer means that you are likely to truly enjoy the sound creation process.

Each of the seven groups of waveforms, SAW, SQUARE, PULSE, PWM, TRIANGLE/SINE, SPECTRUM and NOISE, which comprise the foundation for creating sounds, also contains a number of variation waveforms, each featuring a different character. With a total of 67 different oscillator waveforms at your fingertips, the SH-32 makes it possible for you to create sounds unlike any others.

The SH-32 also includes four Rhythm Sets (two Preset and two User) that feature TR-909/808 and other drum waveforms. With 32 oscillators, far surpassing previous analog modeling synths, and four-part multitimbral sound, you can create songs that combine synth parts and rhythm part, all with one machine.

What's more, the SH-32 is also packed with a variety of useful features and functions for creating sounds, including a Suboscillator with subsonic mode (which makes it easy to add more to the low end), Oscillator Sync, a Ring Modulator, synchronization of the LFO to the tempo using the TAP button, and more. Whether it be the sounds of some of the most popular synthesizers, or sounds that were once very difficult to create using conventional analog and DSP synths, you can handle them all, since the sound creation potential you now have at your fingertips is enormous.

● Built-In Effect Functions Help Create a More Polished Sound

The SH-32 is equipped with internal effects processors that help make this a complete synthesizer module. You can use effects from two systems: 35 individual Insertion Effects, including distortion, phaser, flanger, and other effects, and 10 different kinds of reverb and delay (loop effects), allowing you to create an even greater variety of sounds.

● Programmable Arpeggiator Brings Out the Power in Your Performances

The SH-32 includes an Arpeggiator function, which allows the user to program Styles. Styles can be input in steps or in real time. In Performance mode, you can have arpeggios using the synth sounds played along with rhythm patterns that use TR-909/808 and other drum waveforms.

In addition, you can easily play a variety of complex chords, like those used in Trance and Techno music, in parallel by using this feature in combination with the Chord Memory function, which allows you to perform prerecorded chords with the press of a single button.

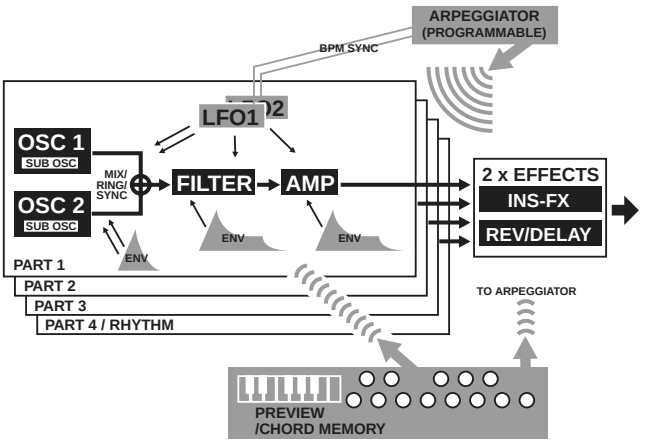
● Panel Designed for Intuitive Operation

The SH-32 features an intuitive panel design that lets you concentrate on creating sounds. For example, knobs are used for the filter, and sliders for the envelope; in all cases, the most convenient control for the purpose is used.

In addition, the panel includes thirteen buttons that can be used for note-entry, much like a keyboard. Using the Preview function, you can check your sounds over a scale of notes, without having to connect a MIDI keyboard.

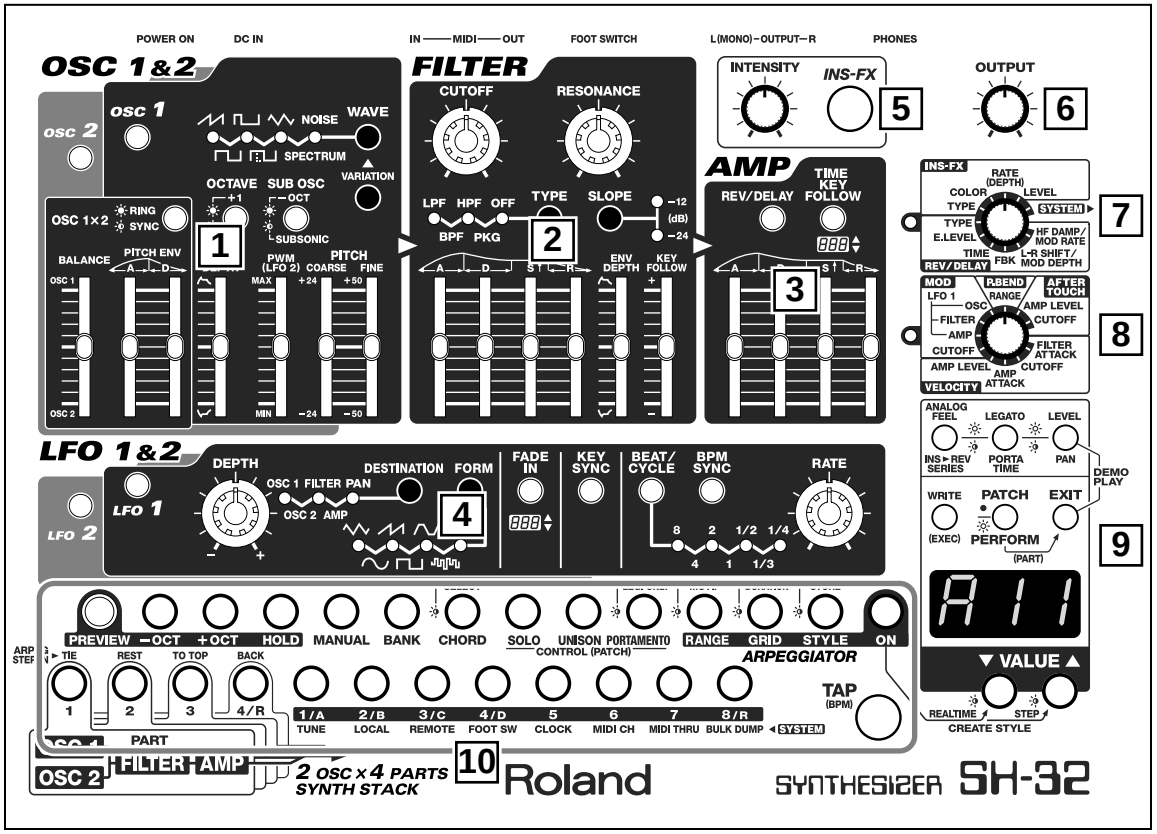
On top of this, the SH-32's compact desktop design means you can always have it at hand, ready to use. Use it with PCs, workstations, keyboards, groove gear and other equipment to bring out the full potential of this synthesizer, regardless of the application.

SH-32 Block Diagram (Conceptual)



Panel Descriptions

Front Panel



1 OSC 1 & 2 (Oscillator 1 & 2) Section

Select the waveforms on which sounds are based, and adjust the pitch and other components of the sound. In addition, you can combine OSC 1 and OSC 2 to create a wide variety of sounds. → (p. 52)

2 FILTER Section

Change the type of filter used, and alter the characteristics of the sound by making various changes to the output waveforms. → (p. 56)

3 AMP (Amplifier) Section

Alter the sound by changing the volume and the way sounds are output and muted. → (p. 58)

4 LFO 1 & 2 (Low Frequency Oscillator 1 & 2) Section

Use the LFO 1 and 2 waveforms to create cyclic changes in the pitch, brightness, volume, and other aspects of the sounds produced by the waveforms from OSC 1 and OSC 2. → (p. 59)

5

[INTENSITY]

Change the settings values of the Insertion Effects parameters. The parameters that can be set vary according to the selected Insertion Effects. → (p. 65)

[INS-FX]

Switches the Insertion Effects on and off. → (p. 64)

6

[OUTPUT]

Adjusts the overall volume that is output from the rear panel OUTPUT jacks and PHONES jack. → (p. 17)

7 FX/SYSTEM Knob

Selects the "INS-FX" (Insertion Effects) or "REV/DELAY" (Reverb/Delay) parameters to be set. → (p. 65, p. 66)

When this is set to "SYSTEM," you can make changes to the settings that govern the SH-32's overall behavior (system parameters). → (p. 90)

MEMO

When you select a parameter for which you want to make settings, the indicator on the left begins to blink, indicating that the SH-32 is ready for changes in the settings.

8 MIDI Settings Knob

Selects the parameter to be set when modifying sounds as the result of messages (Modulation, Pitch Bend, Aftertouch, Velocity) received from an external MIDI device. → (p. 85)

MEMO

When you select a parameter for which you want to make settings, the indicator on the left begins to blink, indicating that the SH-32 is ready for changes in the settings.

9

[ANALOG FEEL]/[INS > REV SERIES]

ANALOG FEEL: Press this button, causing the indicator to light, to set the degree to which analog-like modulation is applied to the pitch. → (p. 62)

INS > REV SERIES: Press this button, causing the indicator to blink, to select the way the Insertion Effects and Reverb/Delay are connected. → (p. 64)

[LEGATO]/[PORTA TIME]

LEGATO: Press this button, causing the indicator to light, to turn the Legato function on and off. → (p. 61)

PORTA TIME: Press this button, causing the indicator to blink, to set the time over which the pitch changes when playing portamento. → (p. 62)

[LEVEL]/[PAN]

LEVEL: Press this button, causing the indicator to light, to set the volume of the Patch or Performance. → (p. 59)

PAN: Press this button, causing the indicator to blink, to set the panning. → (p. 63)

Additionally, when used simultaneously with [EXIT], this allows you to listen to the demo songs. → (p. 18)

[WRITE (EXEC)]

This is pressed when saving (WRITE) tone, Arpeggiator, and other settings, or when executing (EXEC) various functions.

[PATCH]/[PERFORM]

PATCH: Press this button, causing the indicator light to go off, to switch to Patch mode. → (p. 20)

PERFORM: Press this button, causing the indicator to light, to switch to Performance mode. When in Performance mode, hold down [PERFORM] and press [EXIT] to switch to Part Assign mode. → (p. 20, p. 71)

[EXIT]

Pressed to cancel settings and other various operations.

Additionally, when used simultaneously with [LEVEL/PAN], this allows you to listen to the demo songs. → (p. 18)

Display

A variety of information, including the number of the selected sound and the values of various parameter settings, is displayed here.

[VALUE ▼/▲]

These change the various settings values.

To rapidly increase the value, hold down [▲] and press [▼].

To rapidly decrease the value, hold down [▼] and press [▲].

10

[PREVIEW]

Switches the Preview function on and off. → (p. 21)

[-OCT], [+OCT]

These shift the register played using the Preview function in octave units. → (p. 21)

[HOLD]

Switches the Preview function's Hold On and Hold Off. → (p. 21)

[MANUAL]

Switches the Manual function on and off. → (p. 52)

[BANK]

This is pressed when tone banks and numbers are switched. → (p. 23)

[CHORD]

Switches the Chord Memory function on and off. → (p. 81)

[SOLO]

Switches the Solo function on and off. → (p. 61)

[UNISON]

Switches the Unison function on and off. → (p. 62)

[PORTAMENTO]/[LEG. ONLY]

PORTAMENTO: Press this button, causing the indicator to light, and portamento will be turned on. → (p. 62)

LEG. ONLY: Press this button, causing the indicator to blink, to use portamento only when playing legato. → (p. 62)

[RANGE]/[MOTIF]

RANGE: Press this button, causing the indicator to light, to set, in octave units, the range in which arpeggios are played. → (p. 76)

MOTIF: Press this button, causing the indicator to blink, to select the arpeggio variation to be played during arpeggio performances. → (p. 76)

[GRID]/[DURATION]

GRID: Press this button, causing the indicator to light, to select the timing used to sound arpeggios during arpeggio performances. → (p. 75)

DURATION: Press this button, causing the indicator to blink, to select the note length used to play arpeggios during arpeggio performances. → (p. 76)

[STYLE]/[STORE]

STYLE: Press this button, causing the indicator to light, to select the basic style used to play arpeggios. → (p. 74)

STORE: Press this button, causing the indicator to blink, to save the arpeggio styles you have created. → (p. 79)

[ON]

Switches the arpeggiator on/off. → (p. 74)

Hold down [ON] and press [▼ (REALTIME)] to input arpeggio styles in real time. → (p. 77)

Hold down [ON] and press [▲ (STEP)] to input arpeggio styles in steps. → (p. 78)

[1]–[4/R]/[TIE], [REST], [TO TOP], [BACK]

1–4/R: Selects the Parts that are to be played simultaneously in Performance mode, or the Part for which settings are to be changed. → (p. 72, p. 73)

When you are inputting arpeggio styles in steps, these buttons perform the following functions. → (p. 78)

TIE: Inputs a tie.

REST: Inputs a rest.

TO TOP: Returns you to the beginning grid line.

BACK: Deletes the last note or rest that has been input.

[1/A]–[8/R]

These switch the tone banks and numbers. → (p. 23)

Setting the FX/SYSTEM knob to "SYSTEM" allows for selection of parameters with settings that affect the SH-32 as a whole (system parameters). → (p. 90)

[TAP (BPM)]

Sets the tempo (BPM) for arpeggios. You can also set the tempo by tapping this button at the desired rhythm. → (p. 74)

About the Symbols on the Panel

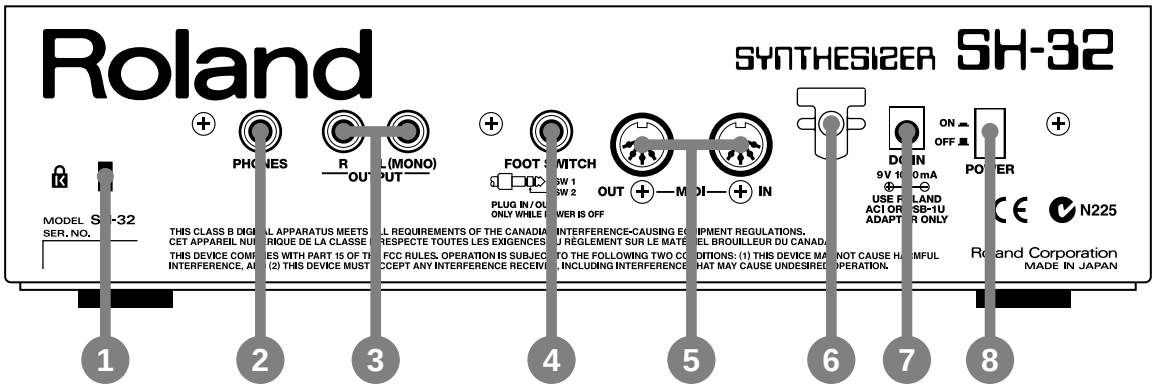
The following symbols, which appear on the SH-32's panel, are meant to depict the illumination state of the indicators.

 : Lit

 : Blinking

● : Off

Rear Panel



1. Security Slot ( )

http://www.kensington.com/

2. PHONES Jack

This is the jack for connecting headphones (sold separately). → (p. 16)

3. OUTPUT Jacks (L (MONO), R)

These jacks output the audio signal to the connected mixer / amplifier system in stereo. For mono output, use the L jack. → (p. 16)

4. FOOT SWITCH Jack

You can connect optional foot switch (BOSS FS-5U) or pedal switch (DP-2) to this jack, you can use it to select or modify sound or perform various other control. → (p. 16, p. 91)

5. MIDI Connectors (IN, OUT)

These connectors can be connected to other MIDI devices to receive and transmit MIDI messages. → (p. 16, p. 84, p. 92)

6. Cord Hook

Anchor the supplied AC adaptor cord using the cord hook. → (p. 16)

7. DC IN Jack

Connect the supplied AC adaptor to this jack. → (p. 16)

8. POWER Switch

This turns the power on / off. → (p. 17)

Getting Ready

Connecting External Devices

The SH-32 does not contain an amp or speakers. In order to produce sound, you need to hook up audio equipment such as a monitor speaker or a stereo set, or use headphones.

NOTE

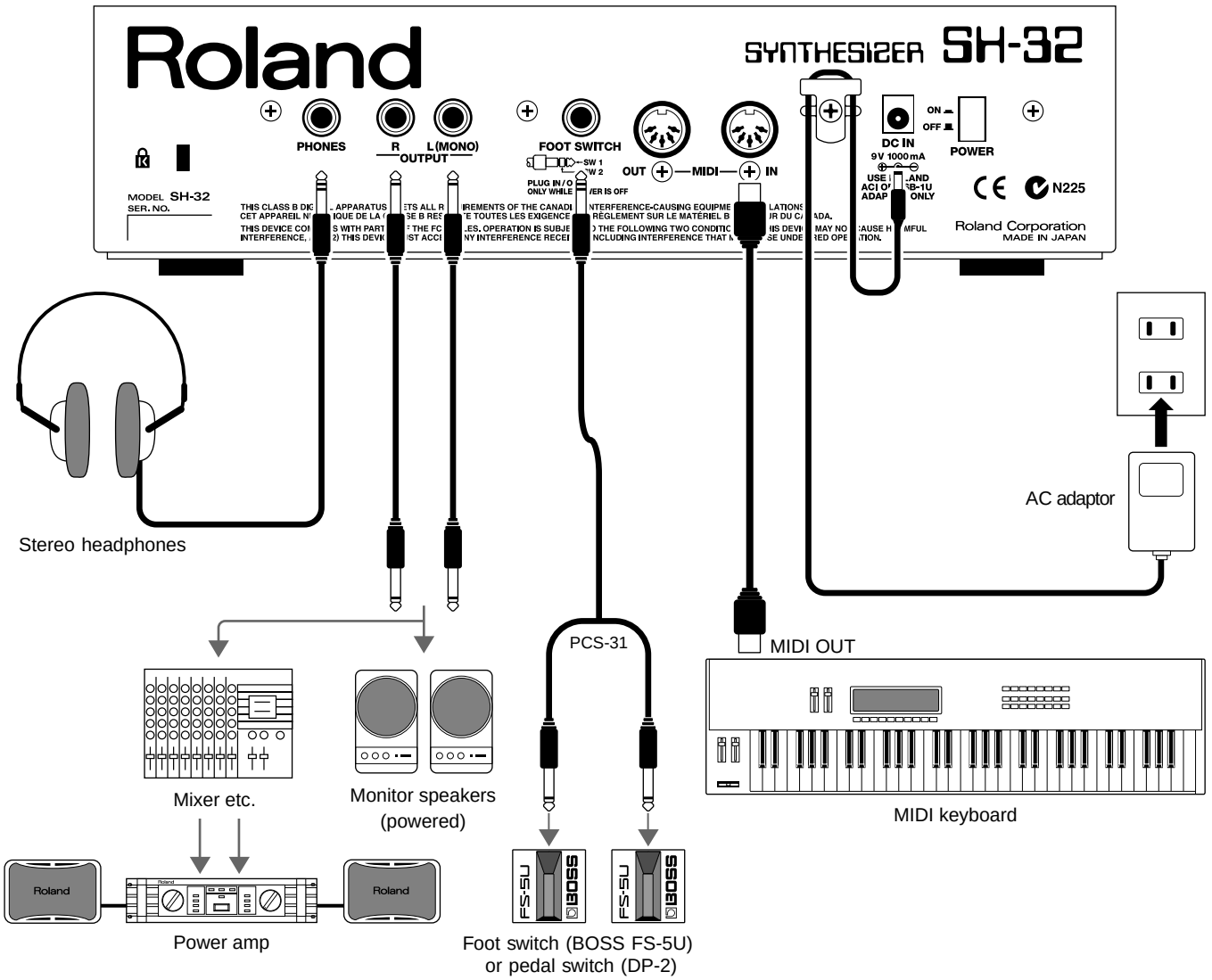
To prevent malfunction and / or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.

1. **Before you make connections, make sure that power is turned off for all devices.**
2. **Connect supplied AC adaptor to the DC IN jack, and plug the other end into an AC power outlet.**

NOTE

To prevent the inadvertent disruption of power to your unit (should the plug be pulled out accidentally), and to avoid applying undue stress to the AC adaptor jack, anchor the power cord using the cord hook, as shown in the illustration.

3. **Connect the SH-32 and the external device as shown in the figure.**



Use audio cables to connect audio equipment, such as an amp or speakers. Use MIDI cables to connect MIDI keyboard. If you are using headphones, plug them into the PHONES jack. Connect foot switches or pedal switches as necessary (p. 91).

HINT

In order to take full advantage of the SH-32's performance, we recommend using a stereo amp / speaker system, If you are using a mono system, make you connections to the OUTPUT jack L (MONO).

NOTE

Audio cables, MIDI cables, headphones, foot switches, and pedal switches are not included. These cables must be acquired separately.

Turning On the Power

NOTE

Once the connections have been completed (p. 16), 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.

1. **Before you turn the power on, check to make sure that:**
   - Are peripheral devices connected correctly?
   - Have the volume controls of the SH-32 and all connected audio devices been turned to the minimum position?
2. **Turn on the POWER switch located on the rear panel of the SH-32.**

NOTE

This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.

3. **Turn on the power of the connected audio equipment.**
4. **Play the SH-32 and gradually raise the volume controls of the SH-32, or the connected audio equipment to an appropriate volume level.**

NOTE

Be careful not to raise the volume excessively. Excessive volume may damage your amp / speaker system or could cause hearing problems.

Turning Off the Power

1. **Before turning off the power, make sure of the following point.**
   - Have the volume controls of the SH-32 and all connected audio devices been turned to the minimum position?
   - Have you saved the sounds or other data you've created?
2. **Turn off the power of the connected audio devices.**
3. **Turn off the POWER switch of the SH-32.**

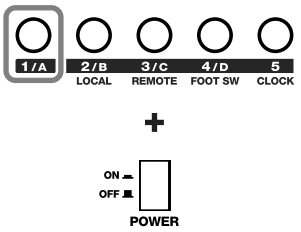
Restoring the Factory Settings (Factory Reset)

When using the SH-32 for the first time, start out by restoring the settings programmed at the factory to ensure that the SH-32 functions correctly according to the procedures described in the Owner's Manual.

NOTE

While you may already have created important data that you want to keep, all such existing data is lost when **Factory Reset** is carried out. If you do have data that you want to keep, save the data to an external MIDI sequencer or similar device (p. 88).

1. **First, turn off the power by pressing the POWER switch on the rear panel.**
2. **While holding down [1/A], turn the power back on.**



[1 / A] blinks; " rSt " (Reset) appears in the display as long as you continue to hold down [1 / A].

3. **Press [VALUE ▼/▲] to select " ALL " (All Data).**
4. **Press [WRITE (EXEC)].**

   [WRITE (EXEC)] blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm that you want to carry out a Factory Reset.
5. **Press [WRITE (EXEC)] once more to have the Factory Reset be carried out. To cancel the Factory Reset, press [EXIT].**

   All Patches, Rhythm Sets, Performances, Arpeggio Styles, Rhythm Styles, Chord Forms, and system settings are returned to the original factory-programmed settings.
6. **When you have finished Factory Reset, turn the power off, then on again.**

MEMO

You can also select the type of data you want to restore to the original factory settings when carrying out Factory Reset with the SH-32 (p. 94).

Listening to the Demo Songs

The SH-32 comes with three prerecorded demonstration songs. Playing back these demo songs is called **Demo Play**. Try starting out by playing the demo songs, and enjoy listening to the SH-32's excellent tones and effects.

No.	Song Name	Composer	Copyright
1	TRAVELER	WALL5	2001 © Roland Corporation
2	SPANK	SHIBUICHI ABE (from PCM)	2001 © Roland Corporation
3	CompFusion	Ken Suzuki	2001 © Roland Corporation

NOTE

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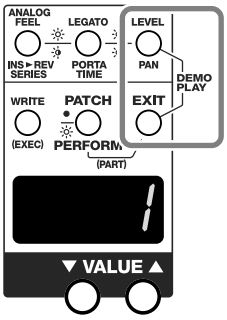
NOTE

Unsaved settings changes may be lost when you start Demo Play. Carry out the write procedure as required to save such data before listening to the demo songs (p. 63, p. 70, p. 73).

1. Simultaneously press [LEVEL/PAN] and [EXIT].

This starts Demo Play.



2. Press [VALUE ▼/▲] if you want to change the song to be played back.

3. Press [EXIT] to stop Demo Play and return to the normal operating mode.

MEMO

- No data for the music that is played will be output from MIDI OUT.
- The second demo song (spank) is intended to introduce you to the expanded capabilities provided by the SH-32. Understand that this demo uses extreme sounds that differ radically from those used in ordinary demonstration songs.

SYNTHESIZER SH-32

Quick Start

Producing Sound

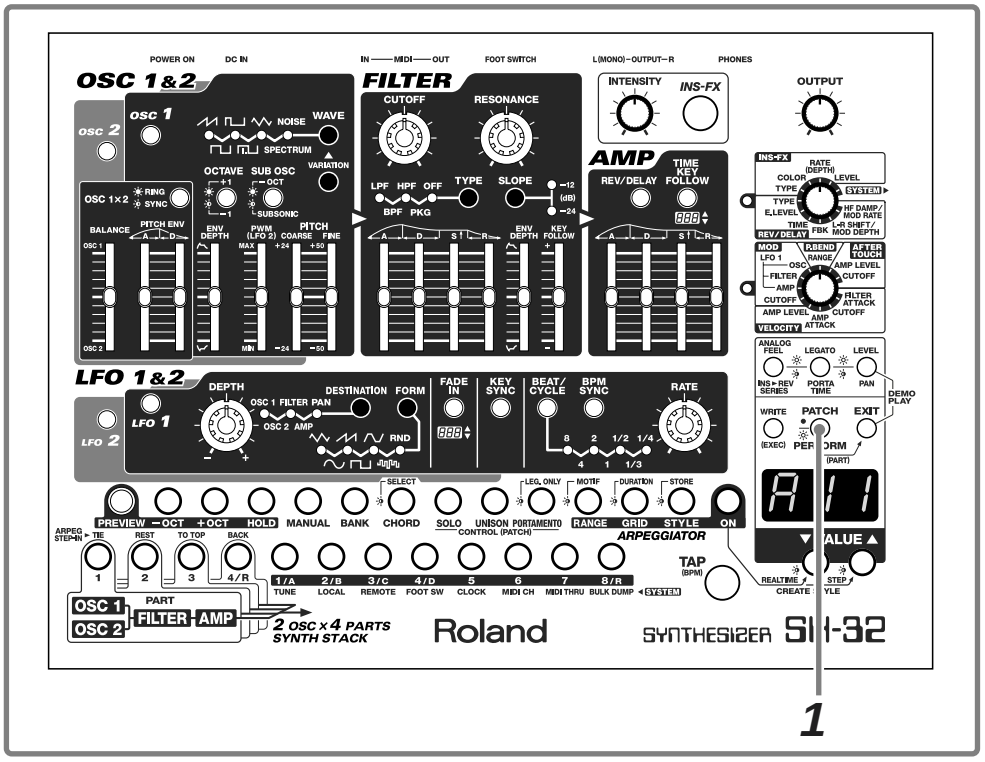
Getting Started

About the Playing Modes of the SH-32 (PATCH / PERFORMANCE)

SH-32 offers two modes, allowing you to choose the one that is best for the purpose you have in mind. You can either work with single "Patches" (**Patch mode**), or use four Patches (including a Rhythm Set) to play in combination with one another (**Performance mode**).

All procedures described in this Quick Start Manual assume that you're in the Patch mode, unless stated otherwise. Before operating the SH-32, first be sure that the Patch mode is selected.

Switching Modes



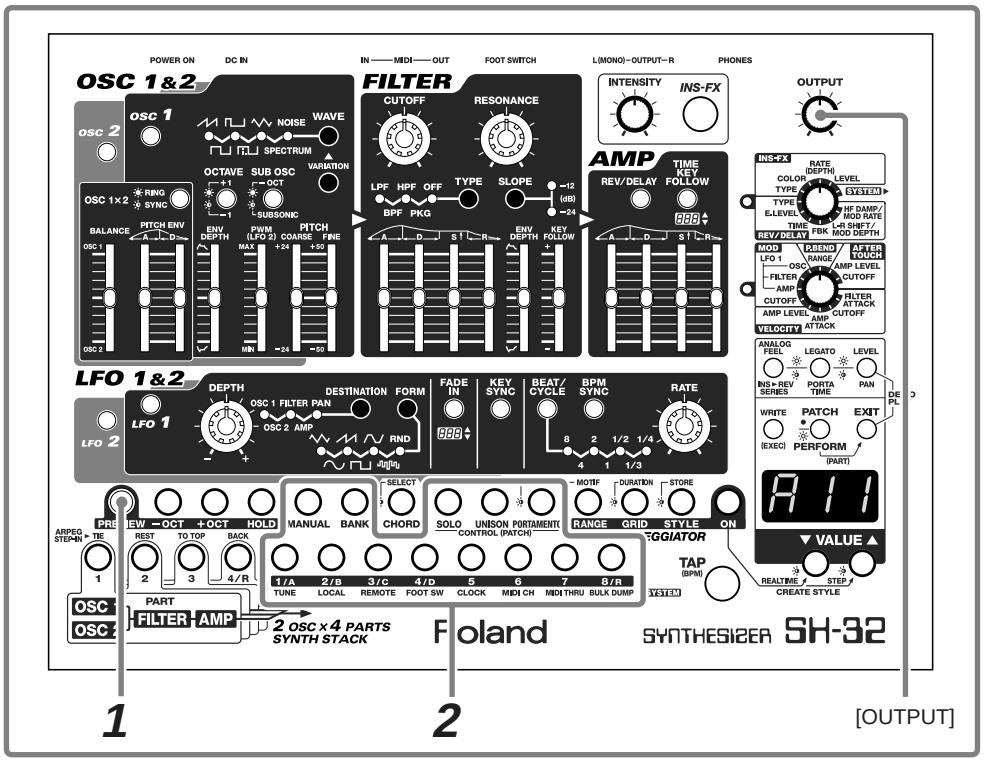
1 **Press [PATCH/PERFORM].**

When [PATCH / PERFORM] is not lighted, you are in Patch mode; if it's lighted, you're in Performance mode.

Press the button to toggle between Patch mode and Performance mode.

Standalone Play of Sounds (PREVIEW)

You can use the note-entry buttons on the unit to play notes (Preview function).

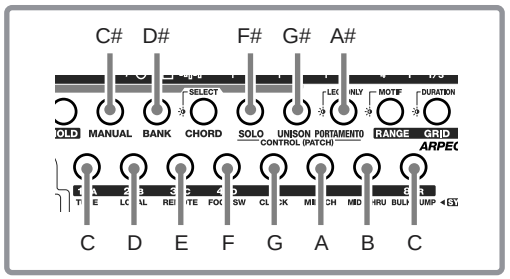


1 Press [PREVIEW].

[PREVIEW] lights up in red, and the buttons you can use in the preview mode (note-entry buttons) light up in orange.

2 Press any of the note-entry buttons to play a note.

You will hear the note assigned to the button you press.



To cancel the Preview function, press [PREVIEW] again to turn off the button.

How to Change the Volume

Turn [OUTPUT] to change the volume.

HINT

You can raise or lower the octave setting by pressing [-OCT] or [+OCT] to the right of [PREVIEW].
Each time you press [-OCT], the octave goes down. Each time you press [+OCT], the octave goes up. You can shift by up to four octaves in either direction. You can check the current octave through the blinking of the button. To restore the original conditions, press [-OCT] and [+OCT] simultaneously.

HINT

If you press [HOLD] (lights up in red), you can have the note continue to play after you release the note-entry button (Hold function). When a note is played using the Hold function, the note-entry button blinks in amber. To stop the held note, press the note-entry button again.
To cancel the Hold function, press [HOLD] again to turn off the button.

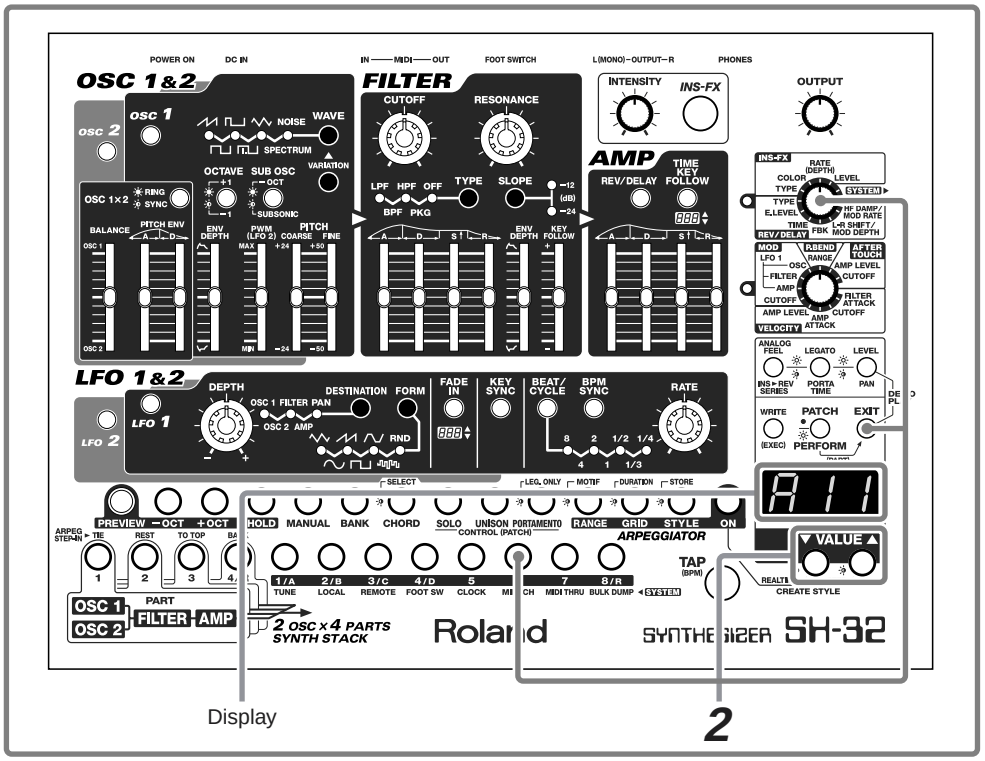
HINT

By holding down [PREVIEW] and pressing [VALUE ▼/▲], you can set the Velocity value (000–127) for the notes played with the note-entry buttons. However, this setting is not saved.

Playing a Sound with a MIDI Keyboard

You can play the SH-32's sounds using a MIDI keyboard. To do so, you need to connect the MIDI OUT connector of your keyboard with the MIDI IN connector of the SH-32 (p. 16).

See **"Chapter 8. Using the SH-32 with External MIDI Devices"** (p. 84) for details on MIDI settings.



1 Set the channel of the MIDI keyboard.

Set the MIDI transmit channel of the keyboard to Channel 1 (refer to the manual that came with your MIDI keyboard).

2 Set the MIDI channel of the SH-32.

Set the MIDI receive channel to Channel 1.

1. **Turn the FX/SYSTEM knob to "SYSTEM."**
2. **Press [6 (MIDI CH)].**

   [6 (MIDI CH)] blinks, and the MIDI channel number appears in the display.
3. **Press [VALUE ▼/▲] to select MIDI channel number "1."**

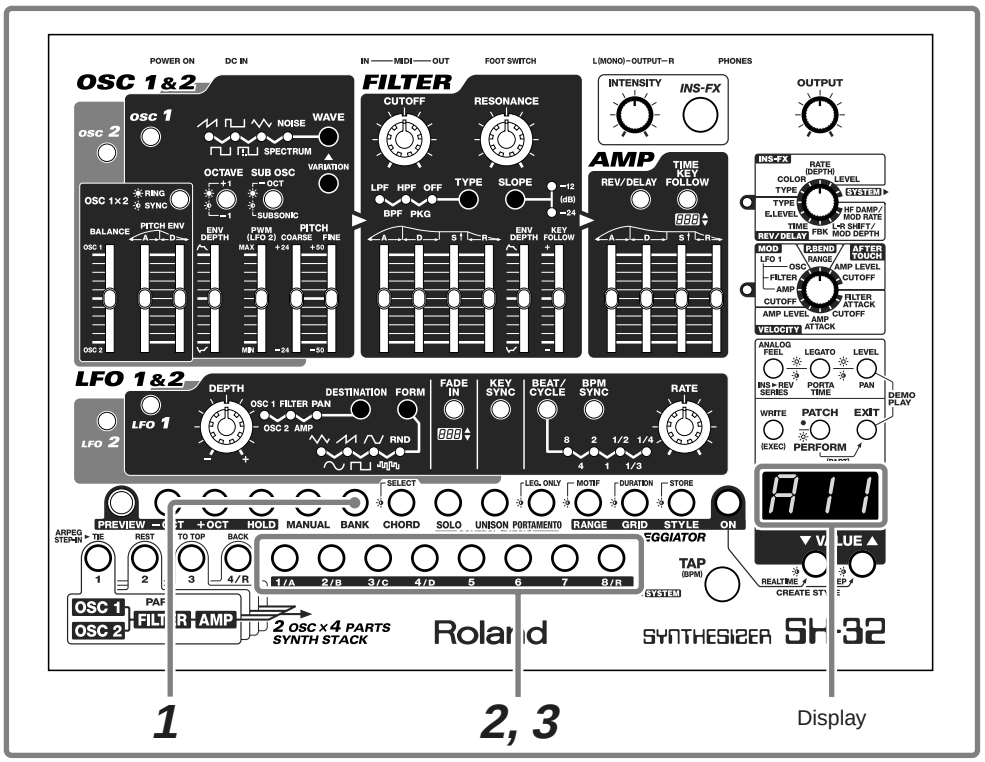
   The MIDI receive channel on the SH-32 is set to channel 1.
4. **Press [EXIT].**

3 Play something on the MIDI keyboard.

The SH-32 sounds the notes that have been played on the MIDI keyboard.

Listening to the Preset Sounds

The SH-32 comes with 128 different Preset Patches, so you can immediately enjoy having a wealth of sounds at your fingertips.



See **"Patches (A11–D88)"** (p. 45) for detailed information about the Patches.

MEMO

"A11" through "B88" are User Patches, "C11" through "D88" are Preset Patches. When shipped from the factory, the User Patches are the same as the Preset Patches.

1 Press [BANK].

[BANK] lights up, and [1 / A]–[4 / D] and [8 / R] blink.

NOTE

In step 1, if all of the buttons from [1 / A] through [8 / R] are blinking after you press [BANK], you will need to press [PATCH / PERFORM] to turn them off, then press [BANK] again (Patch mode p. 20).

2 Select a bank.

Press [1 / A]–[4 / D] to select a bank ("A" through "D").

The selected bank is shown in the display.

MEMO

In step 2, you can select a Rhythm Set by pressing [8 / R] (p. 25).

3 Select a Patch number.

Press [1 / A]–[8 / R] twice to select a Patch number ("11" through "88"). Press the first button to enter the 2nd digit of the number. Then press another to enter the first digit of the number.

The selected Patch number is shown in the display.

HINT

When a Patch number is shown in the display, you can also press [VALUE ▼ / ▲] to select a preset sound.

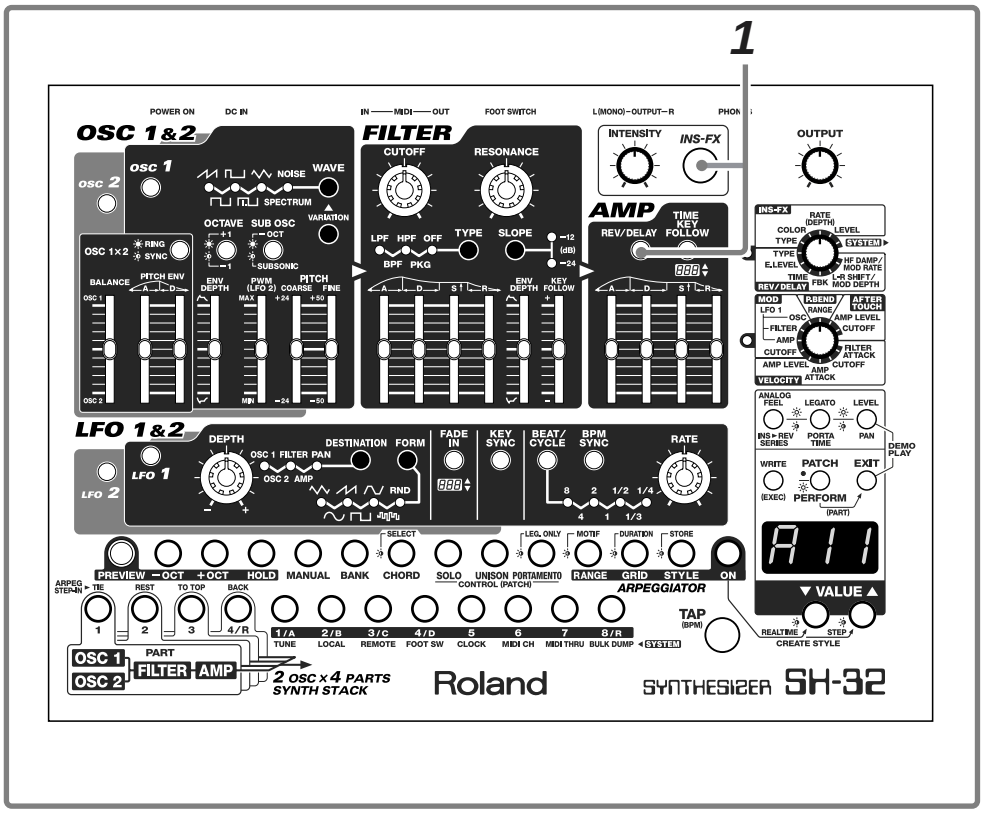
4 Use the Preview function (p. 21), or a MIDI keyboard to play some sounds.

The selected sound will be heard.

Using the Effects

The SH-32 comes with two independent effects processors; one of them provides spatial effects such as reverb and delay (Reverb / Delay), while the other is used for inserting distortion, phaser, tremolo, and various other effects (Insertion Effects). Effects can be switched on or off at the touch of a button.

See **"Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)"** (p. 64) for details on effects.



1 Press [INS-FX] or [REV/DELAY].

When you press [INS-FX], the button lights up, and the Insertion Effects is turned on.

When you press [REV / DELAY], the button lights up, and the Reverb / Delay is turned on.

The Insertion Effects and Reverb / Delay can be used at the same time.

HINT

You can set the type, intensity, and other details (p. 34).

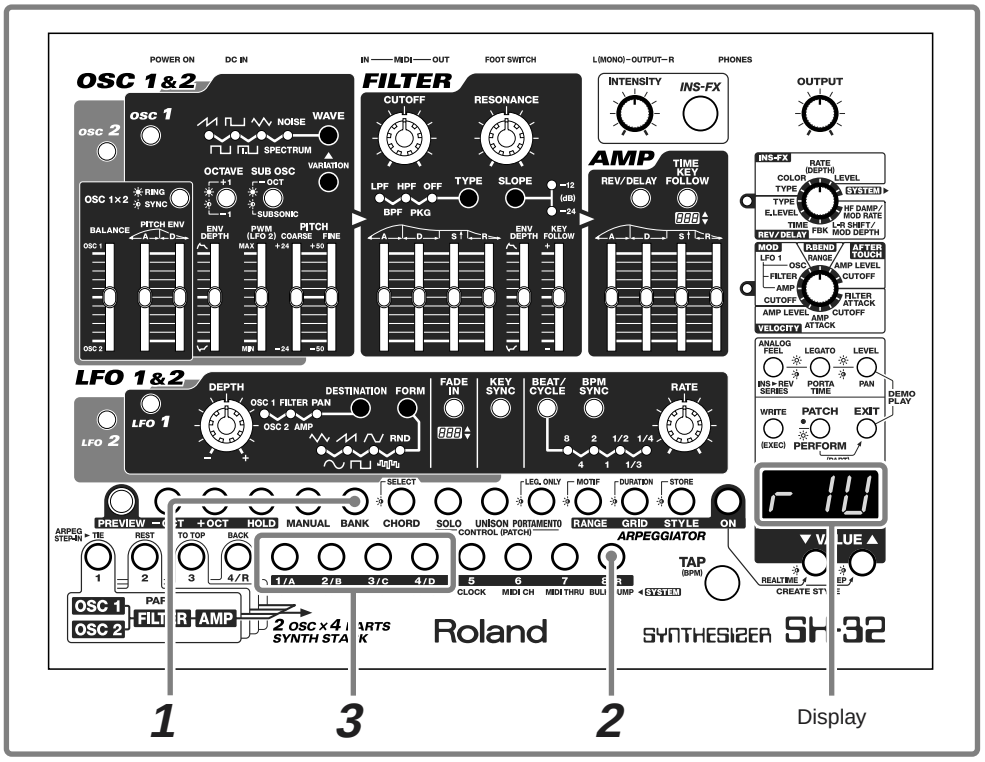
How to Turn Off the Effects

Press [INS-FX] or [REV / DELAY] to turn them off.

Playing a Rhythm Set

Apart from general synthesizer sounds, the SH-32 also has four Rhythm Sets. By using the onboard Arpeggiator (p. 36, p. 74), you can play a loop of simple rhythm patterns.

See **"Rhythm Sets (r1U, r2U, r3P, r4P)"** (p. 45) for details on Rhythm Sets.



1 **Press [BANK].**

[BANK] lights up, and [1/A]–[4/D], [8/R] blink.

2 **Press [8/R].**

You can select a Rhythm Set.

3 **Press [1/A]–[4/D] to select a Rhythm Set number.**

The selected Rhythm Set number is shown in the display.

r1U, r2U: User Rhythm Sets (can be overwritten)

r3P, r4P: Preset Rhythm Sets (cannot be overwritten)

4 **Use the Preview function (p. 21), or a MIDI keyboard to play some sounds.**

The selected Rhythm Set will be heard.

NOTE

In step 1, if all of the buttons from [1/A] through [8/R] are blinking after you press [BANK], you will need to press [PATCH/PERFORM] to turn them off, then press [BANK] again (Patch mode p. 20).

HINT

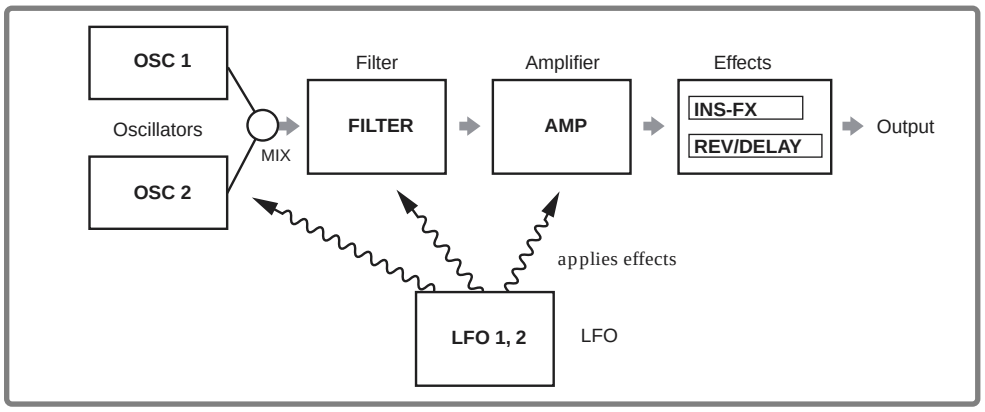
When a Rhythm Set number is shown in the display, you can also press [VALUE ▼/▲] to select a Rhythm Set.

Modifying the Sound

Creating Sounds

The SH-32 creates sounds in much the same way as other analog type synthesizers, as shown below.

See **"Chapter 1. An Overview of the SH-32"** (p. 44) for details of the SH-32's structure.



OSC (Oscillators)

Generate the basic waveforms used as the sound source by the synthesizer (p. 27).

FILTER

Alters the tone color by cutting or boosting the harmonic content of the waveforms created by the oscillators (p. 29).

AMP (Amplifier)

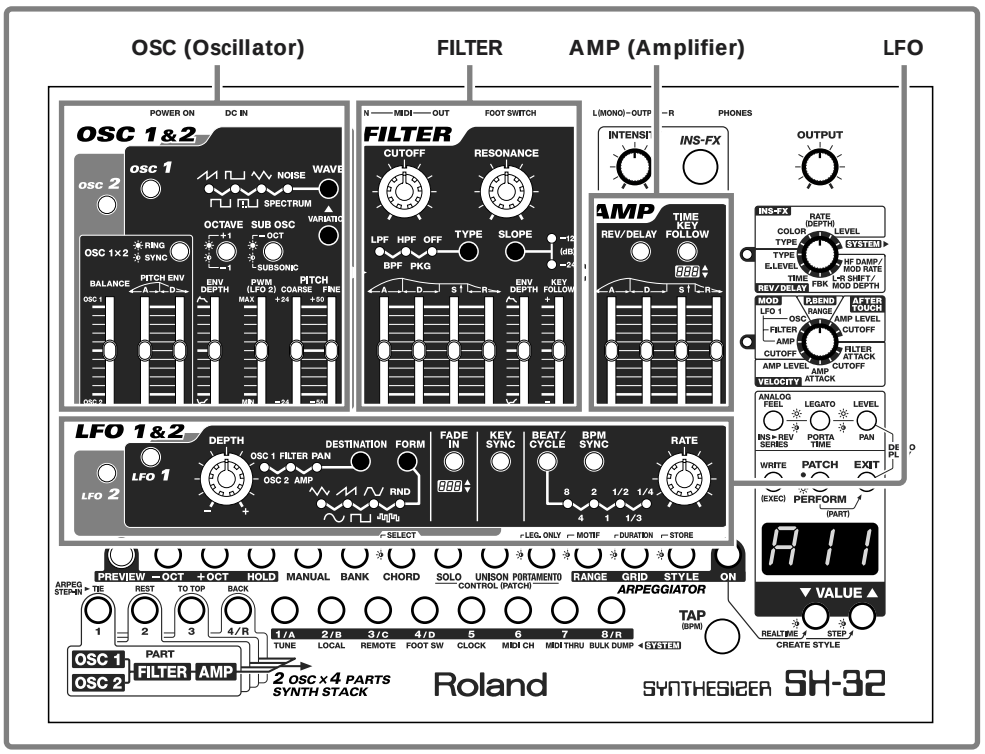
Produces changes in the amplitude of the sound, and creates the attack or decay portions of a sound (p. 31).

LFO (Low Frequency Oscillator)

An extra slow-rate oscillator that controls the oscillators, filter and amp, creating effects such as vibrato (p. 32).

Effects

Insert or create various effects such as reverb, delay, flanger, etc. (p. 34)



Easy Sound Editing

In the following, you will learn how to create a sound using the basic functions of the SH-32.

When creating a sound, play sounds using the Preview function (p. 21), or using a MIDI keyboard.

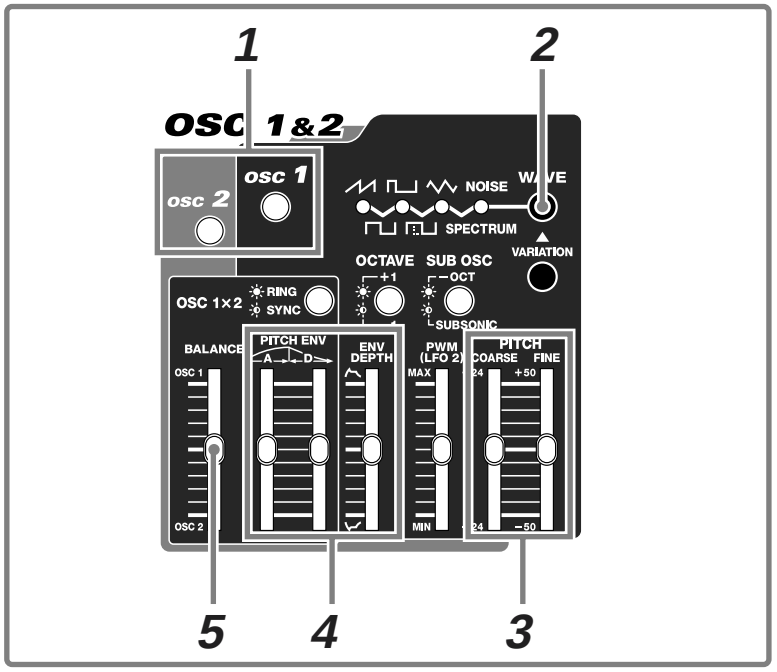
To present a generalized view of what you need to do to edit sounds, this Quick Start Manual introduces the operation while using Preset Patch "D88." So, before you begin, be sure to select Preset Patch "D88" (p. 23).

First, you need to select a waveform for the sound source.

1. Selecting a Waveform (Oscillator)

Here you create the waveforms for the sound source of the synthesizer.

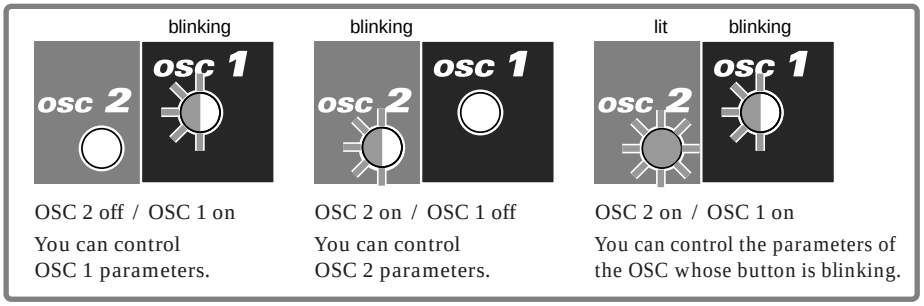
The SH-32 provides 2 oscillators, which can be used independently or mixed.



1 **Press [OSC 1] or [OSC 2] to select the oscillator you want to work with.**

The button you've pressed blinks, indicating that it is ready to be manipulated.

When the button is illuminated, it indicates that the oscillator is turned on (when turned off, the button is extinguished).



OSC 2 off / OSC 1 on
You can control OSC 1 parameters.

OSC 2 on / OSC 1 off
You can control OSC 2 parameters.

OSC 2 on / OSC 1 on
You can control the parameters of the OSC whose button is blinking.

HINT

When you select a preset sound (p. 23), the position of the sliders and knobs may not always correspond to the parameters (i.e., the sliders and knobs do not match the sound). However, if you press [MANUAL] (lighting it), the currently selected parameter will be set to the values indicated by the sliders and knobs. For details, see **"Creating Sounds that Reflect the Position of Sliders/Knobs (MANUAL)"** (p. 52).

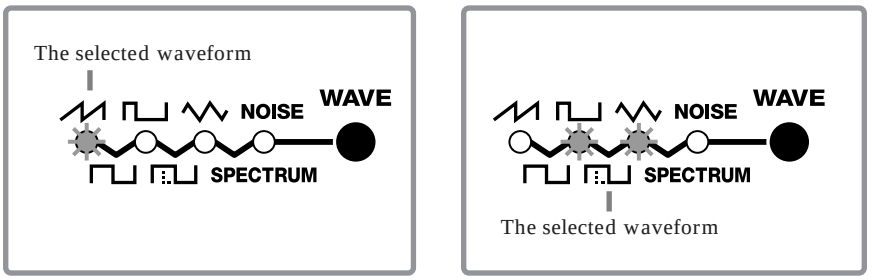
See **"Determining the Basic Waveform and Pitch (OSC 1 & 2)"** (p. 52) for details on the oscillator.

NOTE

The oscillator control panel controls both OSC 1 and OSC 2. When you select OSC 2 after setting OSC 1, the values of settings may not match the positions of the panel controls. This happens because, even after you select the other OSC, the panel controls remain at the same positions. Be careful with the position of controls when you are operating with OSC 1 and OSC 2 at different settings.

2 Press [WAVE] to select a waveform group.

The indicator for the currently selected waveform lights. To select one of the lower waveforms, get the two indicators above the waveform to light.



Here are some examples of waveform groups.

Saw Tooth waveform group

The waveforms of this group contain a fundamental sine wave and its integral harmonics, at a fixed ratio. This produces a sharp and bright tone.

Square waveform group

The waveforms of this group contain a fundamental sine wave and its odd numbered harmonics at a fixed ratio.

Triangle waveform group

This waveform group contains two types of sine waves and does not have any strong harmonics.

Monitor the sound while you choose the preferred waveform group.

3 Slide [PITCH COARSE] and [PITCH FINE] to set the sound's pitch.

Slide [PITCH COARSE] to change the pitch extensively. Slide [PITCH FINE] to fine-tune the pitch.

4 Slide [ENV DEPTH] and [PITCH ENV] to change the pitch over time.

Slide [ENV DEPTH] to adjust the depth of the pitch envelope.

Slide [PITCH ENV / A] to set the time required for the pitch change to reach its maximum. Slide [PITCH ENV / D] to set the time required for the pitch change to drop from the maximum to its original state. Both oscillators use [PITCH ENV A / D] in common.

5 Using [BALANCE], adjust the balance between oscillators 1 and 2.

When [OSC 1] or [OSC 2] is illuminated and its counterpart is blinking (when both are not off), set the balance between the both.

With this, the waveform upon which your sound is to be based is now ready. Next, we'll refine the sound by applying a filter to the waveform.

MEMO

Each group of waveforms has various waveform patterns, which you can select by pressing [VARIATION] (p. 53).

See **"Determining the Basic Waveform and Pitch (OSC 1 & 2)"** (p. 52) for details on waveforms.

HINT

You can easily shift the octave up or down by pressing [OCTAVE] (one octave up or down) (p. 54).

HINT

Using [SUB OSC] (p. 54), you can also add portions an octave lower to create a deep bass sound.

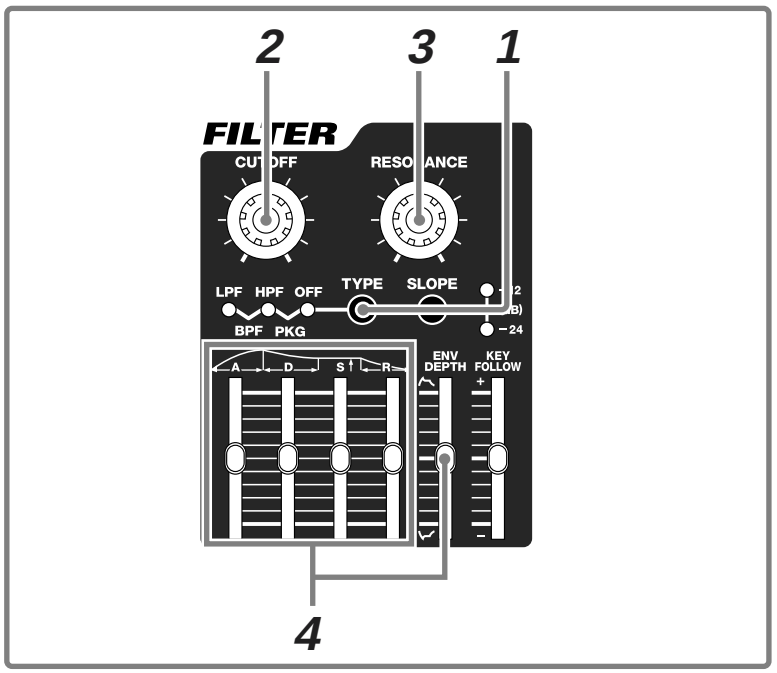
HINT

You can also synchronize the oscillator 1 waveform to the oscillator 2 pitch (p. 55).

2. Working on Oscillator Waveforms (FILTER)

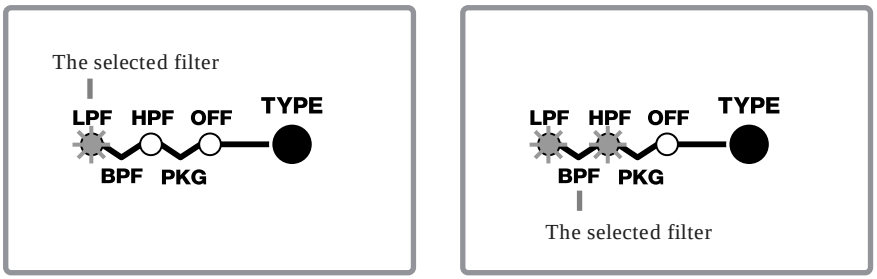
The filter alters the tone color by cutting or boosting the harmonics of the waveforms created by the oscillator.

See **"Changing the Characteristics of Sounds (FILTER)"** (p. 56) for details on the Filter.



1 Press [TYPE] to select a filter type.

The indicator of the selected filter type lights up. To select a filter type on the lower row, get the two indicators above the name to light.



LPF (Low Pass Filter)

Passes lower frequencies and blocks high frequencies. With this filter you can soften sharp sounds.

BPF (Band Pass Filter)

Passes specific frequencies and blocks other high and low frequencies. With this filter you can enhance the midrange frequencies of the sound.

HPF (High Pass Filter)

Passes high frequencies and blocks low frequencies. With this filter you can keep the upper sound portions, while eliminating the lower sound portions.

PKG (Peaking Filter)

Boosts the frequencies near the cutoff frequency. You can create a wah effect by adding a constant change to the cutoff frequencies with the LFO (p. 32).

See **"Internal Filter Types and Functions (TYPE, SLOPE)"** (p. 56) for details on filter types.

2 Turn [CUTOFF] to set the frequency you want to cut off (Cutoff Point).

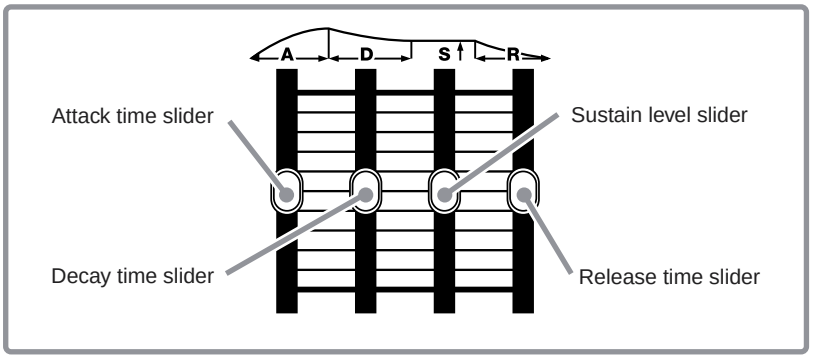
Here you determine the Cutoff Point of the filter you selected in step 1. Turn the knob clockwise to raise the Cutoff Point, and turn it counterclockwise to lower it.

3 Turn [RESONANCE] to enhance the frequency near the Cutoff Point set in step 2.

The further clockwise you turn the knob, the more the sound takes on a unique character.

4 To set the filter effect according to time lapse, use the Envelope sliders and [ENV DEPTH].

Slide [ENV DEPTH] to set the depth of the filter effect (either to + or -), and the Envelope sliders to set the time characteristics.



[A]: Attack Time

Sets the time required for the filter's effect to reach its peak. This time increases as you raise the slider.

[D]: Decay Time

Determines the time required for the transition from the peak to the sustain level. If the sustain level is at its maximum, this will have no effect.

[S]: Sustain Level

Determines the level that is to be maintained after the peak has been reached. While you continue to press a note-entry button (or the key of a MIDI keyboard) it will be maintained at this level.

[R]: Release Time

Sets the time that is to pass before returning to the original cutoff value, after you release your finger from a note-entry button (or the key of a MIDI keyboard).

Next, let's make the volume-related settings.

NOTE

If you turn [CUTOFF] too much, all of the audible frequencies could get eliminated, and you may hear no sound.

HINT

By operating the [CUTOFF] and [RESONANCE] knobs you used in steps 2 and 3 while playing, you can also create a special effect.

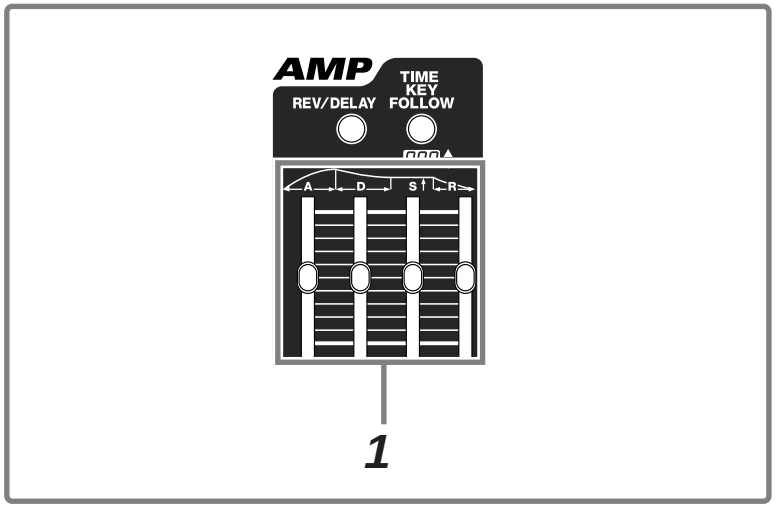
HINT

You can also change the filter Cutoff Point by the key range of the note-entry buttons or MIDI keyboard (KEY FOLLOW) (p. 58).

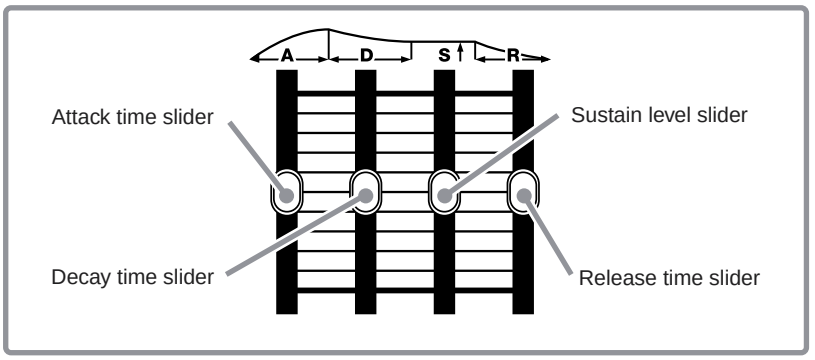
3. Adding Changes in the Volume (AMP)

After a sound's been created by the oscillators and has been filtered, you can apply changes to the volume of the sound, and control the attack or decay of the sound.

See **"Changing the Volume (AMP)"** (p. 58) for details on the amp.



1 **Use the Envelope sliders to adjust the changes in volume.**



[A]: Attack Time

Sets the time required for the volume to reach its peak. This time increases as you raise the slider.

[D]: Decay Time

Determines the time required for the volume to drop from the peak to the sustain level. If the sustain level is at its maximum, this will have no effect.

[S]: Sustain Level

Determines the level at which the volume is to be maintained after the peak has been reached. While you continue to press a note-entry button (or the key of a MIDI keyboard) it will keep sounding at this level.

[R]: Release Time

Sets the time needed for the volume to reach zero after you release your finger from a note-entry button (or the key of a MIDI keyboard).

For example, if you shorten the attack time and lengthen the release time, it may sound like a piano. If the sustain level is at maximum, it may sound like an organ, and if the attack time is long, it may sound like a strings section.

Now, try modifying the sound using the LFO.

HINT

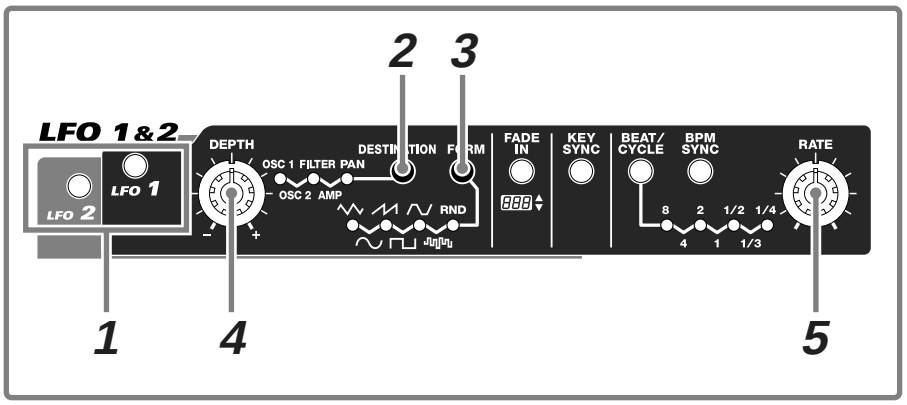
You can also get the volume modification times to change depending on the keyboard range within which the note-entry buttons or MIDI keyboard have been played (TIME KEY FOLLOW) (p. 59).

4. Adding Modulation to the Sound (LFO)

The LFO creates waveforms that can control the oscillator, filter, and amp, and add some extra change to the sound.

The SH-32 has two LFOs. Each LFO can be used independently in setting a different modulation depth with respect to the oscillator, filter, amp, and pan.

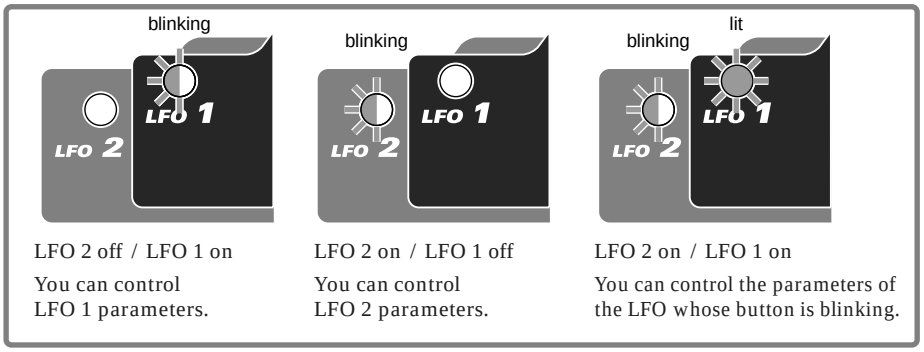
See **"Modulating the Sound (LFO 1 & 2)"** (p. 59) for details on LFO.



1 Press [LFO 1] or [LFO 2] to select the LFO you want to control.

The pressed button blinks, indicating that it is available for control.

When the button is illuminated, it indicates that the LFO is turned on (when turned off, the button is extinguished).



LFO 2 off / LFO 1 on
You can control LFO 1 parameters.

LFO 2 on / LFO 1 off
You can control LFO 2 parameters.

LFO 2 on / LFO 1 on
You can control the parameters of the LFO whose button is blinking.

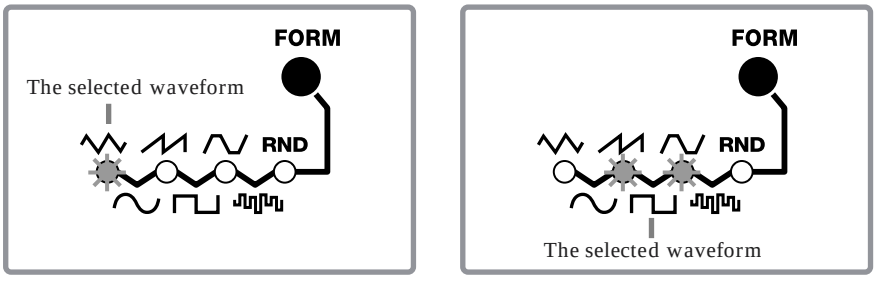
NOTE

The LFO control panel controls both LFO 1 and LFO 2. When you select LFO 2 after setting LFO 1, the values of settings may not match the positions of the panel controls. This happens because, even after you select the other LFO, the panel controls remain at the same positions. Be careful with the position of controls when you are operating with LFO 1 and LFO 2 at different settings.

2 Press [FORM] to select a waveform.

The indicator of the selected waveform lights up. To select a waveform on the lower row, get the two indicators above the waveform to light.

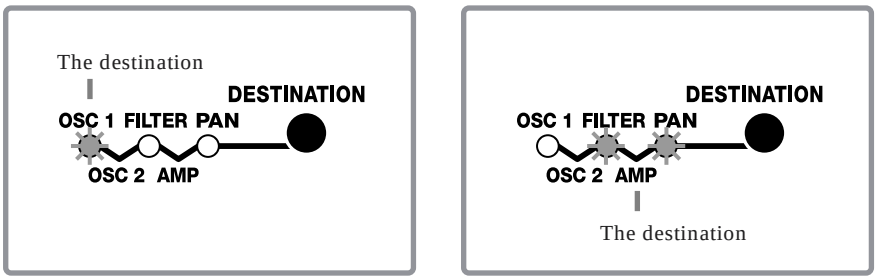
See **"Turning the LFO On and Off, and Switching Waveforms (LFO 1, LFO 2, FORM)"** (p. 59) for details on waveforms.



The manner in which sound changes depends on the waveform.

3 Press [DESTINATION] to set the destination for which the modulation depth is to be set by means of [DEPTH].

The indicator of the selected destination lights up. To select a destination on the lower row, get the two indicators above the name to light.



The manner in which sound changes depends on the destination of the LFO.

OSC 1,2

Adds an effect to the pitch of the waveform, creating a vibrato effect.

FILTER

Adds an effect to the Cutoff Point of the filter, creating a wah effect.

AMP

Adds an effect to the amp, creating a tremolo effect.

PAN

Applies an effect to the left / right positioning of sound, creating an auto-pan effect.

See **"Adjusting the Modulation Depth (DESTINATION, DEPTH)"** (p. 60) for details on the effects.

MEMO

You can add one LFO effect to several destinations.

4 Turn [DEPTH] to set the depth of the LFO effect.

The effect increases as you turn the knob clockwise.

5 Turn [RATE] to adjust the frequency (speed) of the LFO.

The speed becomes faster as you turn the knob clockwise, and slower when you turn it counterclockwise.

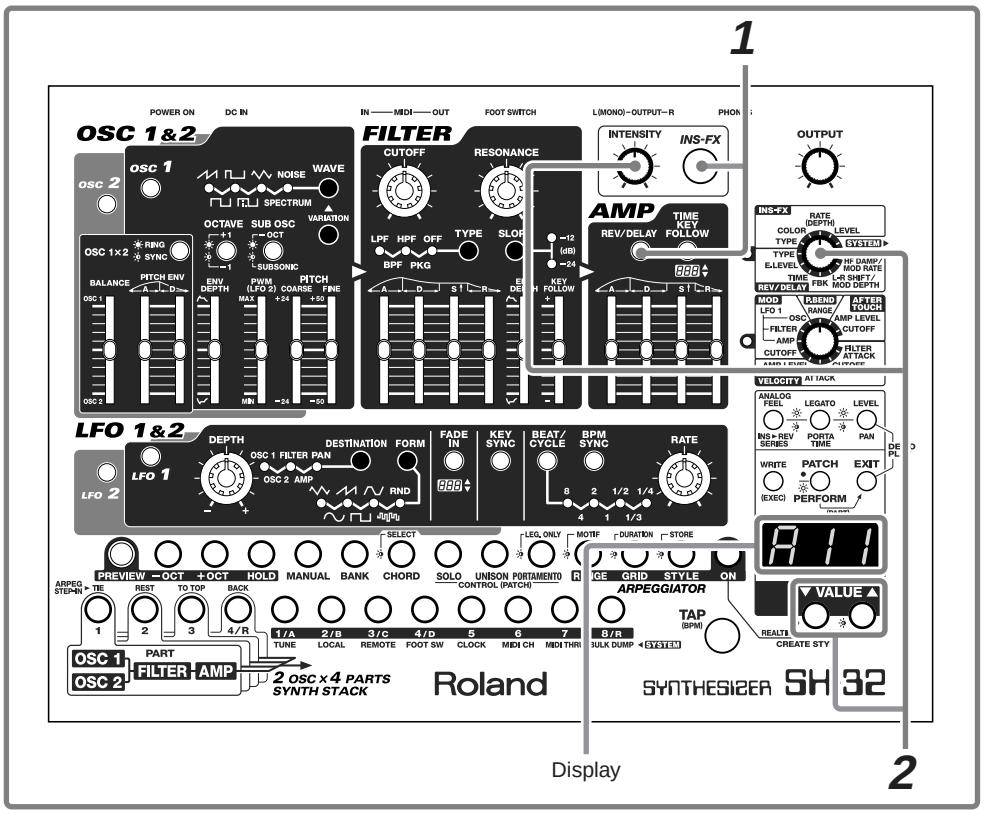
HINT

You can also synchronize the LFO with the tempo (BPM) (p. 61).

5. Adding an Effect

You can add effects to the sound created so far. The SH-32 has two independent effects processors; one of them provides spatial effects such as reverb and delay (Reverb / Delay), while the other is used for inserting distortion, phaser, tremolo, and other various effects (Insertion Effects).

See **"Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)"** (p. 64) for details on effects.



1 Press [INS-FX] or [REV/DELAY].

When you press [INS-FX], the button lights up, and the Insertion Effects is turned on.

When you press [REV / DELAY], the button lights up, and the Reverb / Delay processor is turned on.

2 Select an effect type and set the rate.

To set the Insertion Effects, turn [INTENSITY] to adjust the intensity, and use the FX / SYSTEM knob and [VALUE ▼ / ▲] to set the type and other details.

To set the Reverb / Delay, use the FX / SYSTEM knob and [VALUE ▼ / ▲] to set the value.

The effect types and values are shown in the display. See **"Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)"** (p. 64) for details.

Are you satisfied with the sound you created?

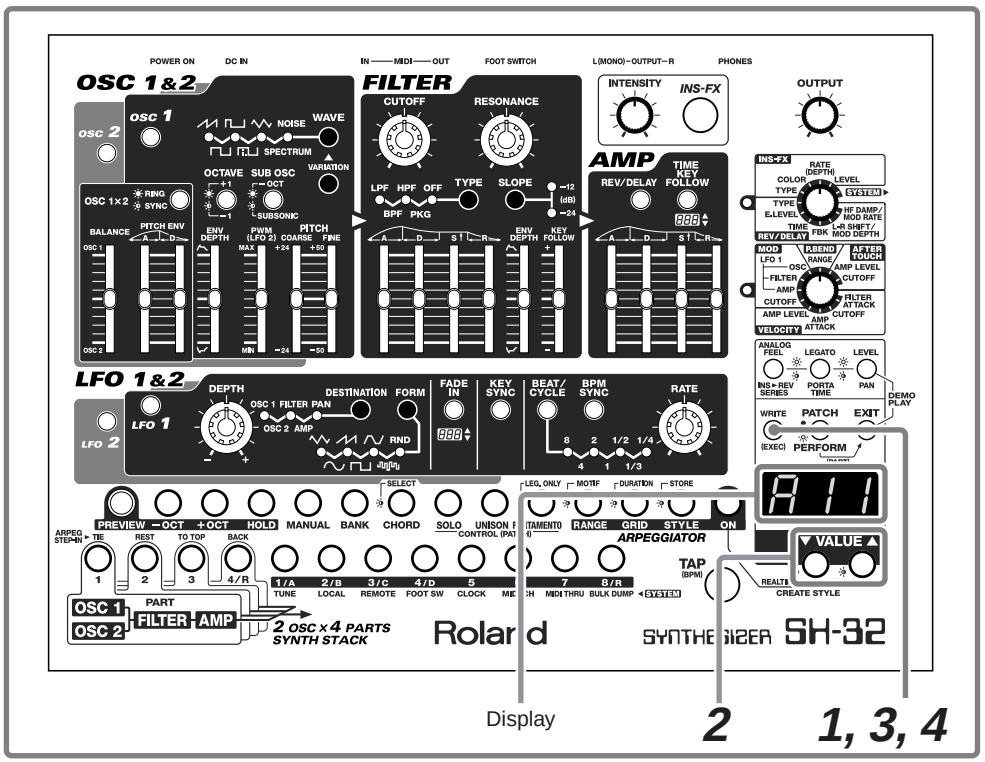
The sound settings created so far will be lost when you switch off the SH-32. Let's now save the sound into the internal memory.

HINT

You can use the Insertion Effects and Reverb / Delay at the same time. You can also line them up in series or in parallel (p. 64).

Saving the Sound

Sound created on the SH-32 relies on a unique interaction of several parameters, so it's a good idea to save your sound settings whenever you achieve something you like, and may want to use later. You can save as many as 128 different sound settings on the SH-32.



1 **When you've reached the point where you have a sound you want to save, press [WRITE].**

[WRITE] lights up, and a Patch number blinks in the display.

2 **Press [VALUE ▼/▲] to select the place where you want to save your Patch ([A11]–[B88]).**

3 **Press [WRITE].**

The " Sur " (Sure?) confirmation message appears in the display. To cancel the save, press [EXIT].

4 **Press [WRITE] again.**

First, " 0E " (Ok) blinks in the display, then the display returns to its original state. The sound is now saved to the selected Patch number.

HINT

You can also select a Patch number by pressing [BANK], selecting a bank with [1 / A] or [2 / B], and then selecting the save destination with [1 / A]–[8 / R].

Playing Arpeggio (Arpeggiator)

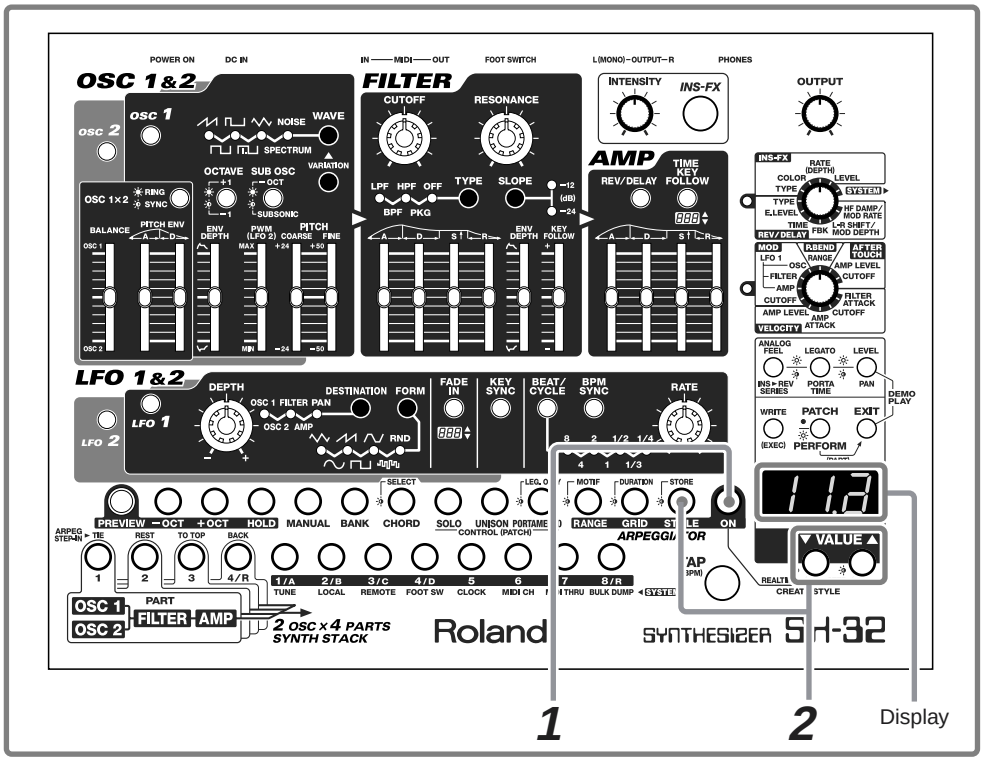
The SH-32 provides an automatic arpeggio function (Arpeggiator). With this function, you can play a chord in arpeggio. Also, when a Rhythm Set is selected, you can play a rhythm pattern.

An arpeggio is played in accord with the keys that are pressed. There are a number of preset Arpeggio Styles from which you can choose (Arpeggio Styles).

See **"Chapter 6. Using Arpeggiator (ARPEGGIATOR)"** (p. 74) for details on Arpeggiator.

Turning On/Off the Arpeggiator

Let's play with the Arpeggiator.



1 Press [ON].

The button lights up, and the Arpeggiator is turned on.

2 Press [STYLE] to light up the button, and press [VALUE ▼/▲] to select an Arpeggio Style.

The Arpeggio Style number is shown in the display ("11.a" through "88.a").

When a Rhythm Set is selected, you can select a Rhythm Style ("11.r" through "88.r").

NOTE

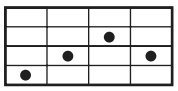
If you press [STYLE] again while the button is illuminated, it blinks, indicating that it is now in style-save mode (p. 79). When you press it again, it will return to style-selection mode.

See **"About Arpeggio Styles"** (p. 75) for details on Arpeggio Styles.

3 **Press a chord by using the Preview function (p. 21) or a MIDI keyboard to start playing arpeggio.**

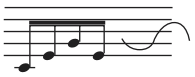
The Arpeggio Style of the SH-32 starts playing arpeggio according to the position of the touched key.

Example



When you select this style,

and play this cord,



you will hear this.

When you select a Rhythm Set in Patch mode (p. 25), the selected Rhythm Style will be played regardless of the position of the touched key.

How to Turn Off the Arpeggiator

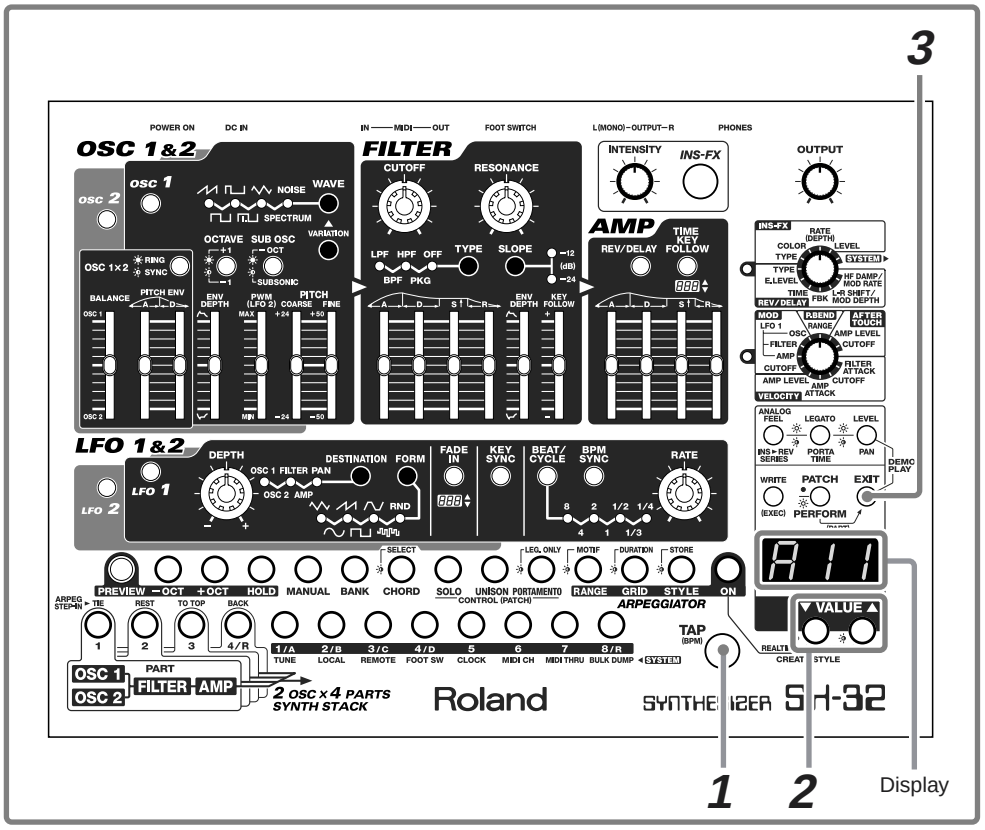
Press [ON] to turn the button off.

HINT

You can also create new Arpeggio Styles (p. 77).

Changing the Arpeggiator Tempo

You can change the tempo for arpeggio performances.



1 **Press [TAP (BPM)].**

[TAP (BPM)] lights up.

2 **Press [VALUE ▼/▲] to set the desired tempo.**

The tempo is shown in the display.

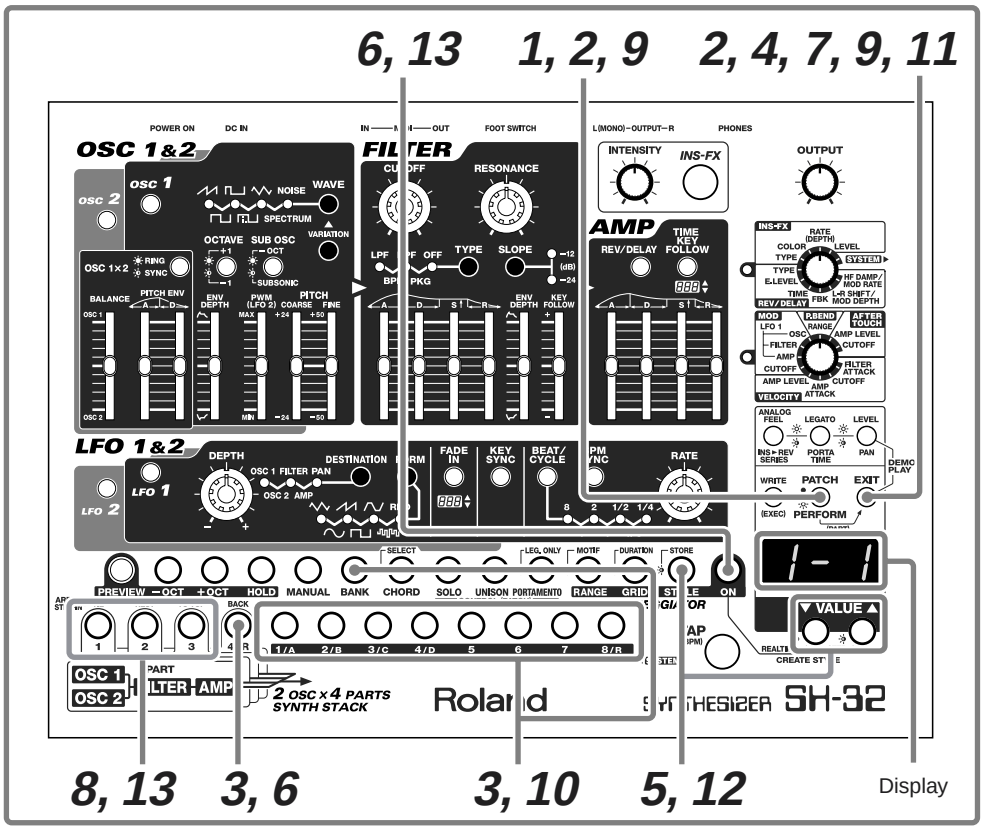
3 **Press [EXIT] to turn the button off.**

HINT

You can also set the tempo to the timing you've used when tapping the buttons (Tap Tempo) (p. 74).

Playing the Arpeggio Together with a Rhythm Pattern

In Performance mode, you can play the arpeggio while playing a rhythm pattern.



1

Press [PATCH/PERFORM] to light up the button, and to enter Performance mode.

In Performance mode, you can play four Parts (each with its own Patch assigned to it) at the same time.

See **"Chapter 5. Using in Performance Mode"** (p. 71) for details on Performance mode.

2

Press [EXIT] while pressing [PATCH/PERFORM], getting both buttons to blink.

The unit is now in the Part Assign mode.

See **"Selecting the Patch for Each Part (Part Assign Mode)"** (p. 71) for details on the Part Assign mode.

3

Set the Rhythm Set to Part 4.

1. **Press [4/R].**

   [4/R] blinks.

2. **Press [BANK], and then press [8/R].**

3. **Press [1/A]–[4/D] to select a Rhythm Set number.**

   The Rhythm Set number is shown in the display.

   The Rhythm Set can only be set to Part 4.

4 **Press [EXIT] to return to Performance mode.**

5 **Press [STYLE] to light up the button and then press [VALUE ▼/▲] to select a Rhythm Style.**

The Rhythm Style number is shown in the display.

☞ See **"About Rhythm Styles"** (p. 75) for details on Rhythm Styles.

6 **Press [4/R] while pressing [ON] to light up [4/R].**

The Part 4 is set for the arpeggio play.

7 **Press [EXIT].**

8 **Press [1]–[3] to choose a Part you want to play in arpeggio.**

The button of the selected Part blinks.

9 **Press [EXIT] while pressing [PATCH/PERFORM], getting both buttons to blink.**

The unit is in the Part Assign mode.

☞ See **"Selecting the Patch for Each Part (Part Assign Mode)"** (p. 71) for details on the Part Assign mode.

10 **Select a Patch for the Part you selected in step 8.**

1. **Press [BANK], and then press [1/A]–[4/D].**
2. **Press [1/A]–8/R] to select a Patch number.**

   The Patch number is shown in the display.

11 **Press [EXIT] to return to Performance mode.**

12 **Press [STYLE] to light up the button, and then press [VALUE ▼/▲] to select an Arpeggio Style.**

The Arpeggio Style number is shown in the display.

☞ See **"About Arpeggio Styles"** (p. 75) for details on Arpeggio Styles.

13 **Press the Part button that was selected in Step 8 while pressing [ON] to light up the Part button.**

The selected Part is set for arpeggio play.

14 **Use the Preview function (p. 21), or a MIDI keyboard to play some sounds.**

The rhythm pattern and arpeggio start playing.

Playing a Chord at the Touch of a Finger (Chord Memory)

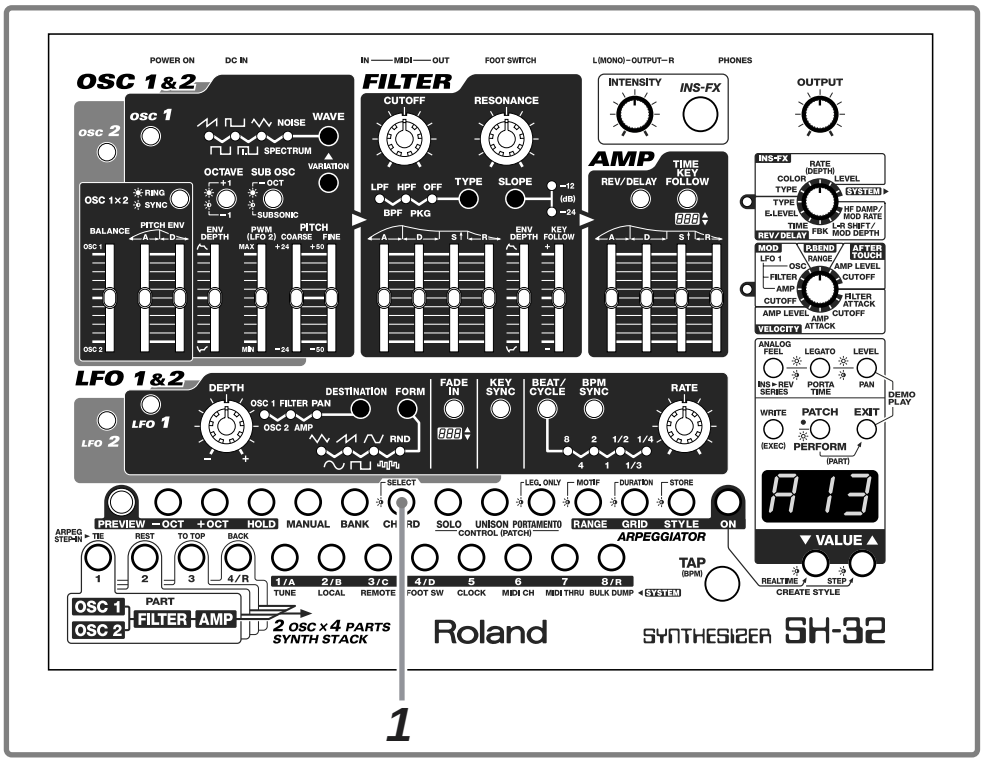
You can easily play a chord simply by touching just one key to which a “Chord Form” has been registered (Chord Memory function). The SH-32 can remember 64 different Chord Forms (11.c–88.c)

See **“Chapter 7. Using the Chord Memory Function (CHORD)”** (p. 81) for details on the Chord Memory function.

NOTE
The Chord Memory function cannot be used with Rhythm Sets.

Using the Chord Memory Function

Here’s how you can play a chord by using the Chord Memory function.



1 **Press [CHORD] to light up the button.**

The Chord Memory function is turned on.

2 **Use the Preview function (p. 21), or a MIDI keyboard to play a single note.**

You will hear a chord that corresponds to the Chord Form you’ve selected (p. 42). When you press the C4 key, you will hear the actual chord that is stored in the Chord Form. The other keys produce chords in a parallel manner relative to the C4 key.

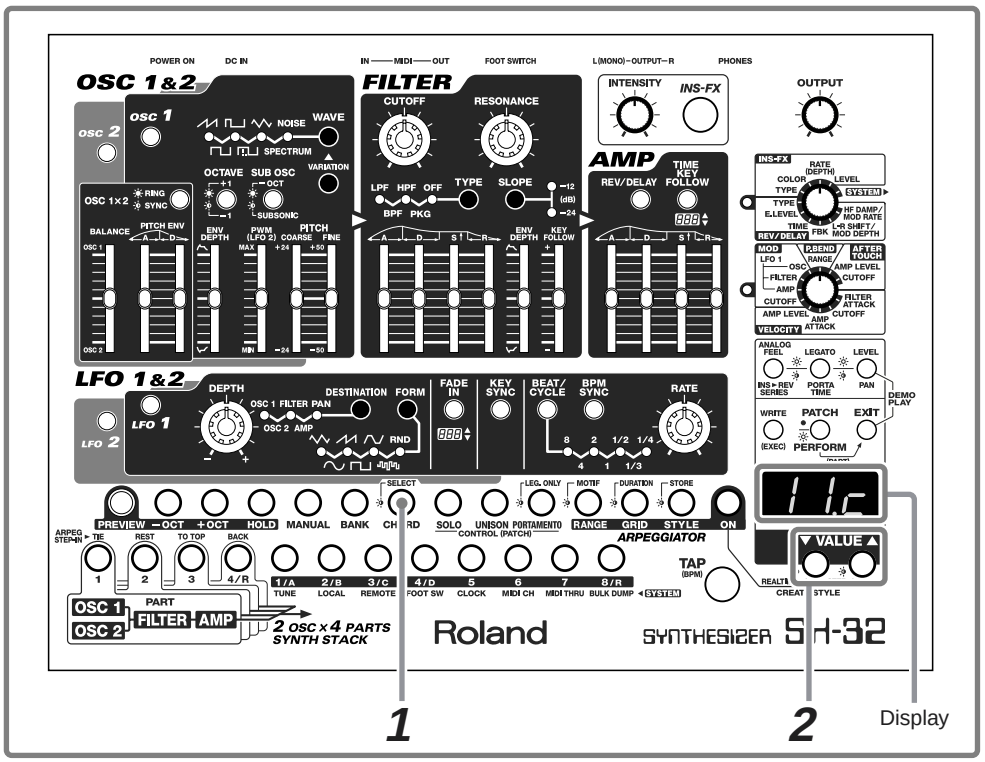
How to Turn Off the Chord Memory Function

Press [CHORD] twice to turn off the button, and the Chord Memory function is turned off.

HINT
You can also use a foot switch to turn on / off the Chord Memory function (p. 91).

Switching Chord Forms

You can select the Chord Form that has the chord you want to play from the preset Chord Forms.



1 **Press [CHORD] to make it blink.**

2 **Press [VALUE ▼/▲] to select a Chord Form number (11.c–88.c).**

The Chord Form number appears in the display.

3 **Use the Preview function (p. 21), or a MIDI keyboard to play sounds.**

See **"Selecting Chord Forms"** (p. 81) for more information about Chord Forms.

HINT

You can also change the Chord Form by pressing [BANK] and [1/A]–[8/R]. In this case, you will hear the C4 sound for confirmation.

HINT

You can also use a foot switch to change the Chord Form (p. 91).

HINT

Not only can you use the Chord Forms that come pre-programmed from the factory, you can also freely create and rewrite your own original Chord Forms as well. For more detailed instructions on creating Chord Forms, refer to **"Creating Your Own Chord Forms"** (p. 82).

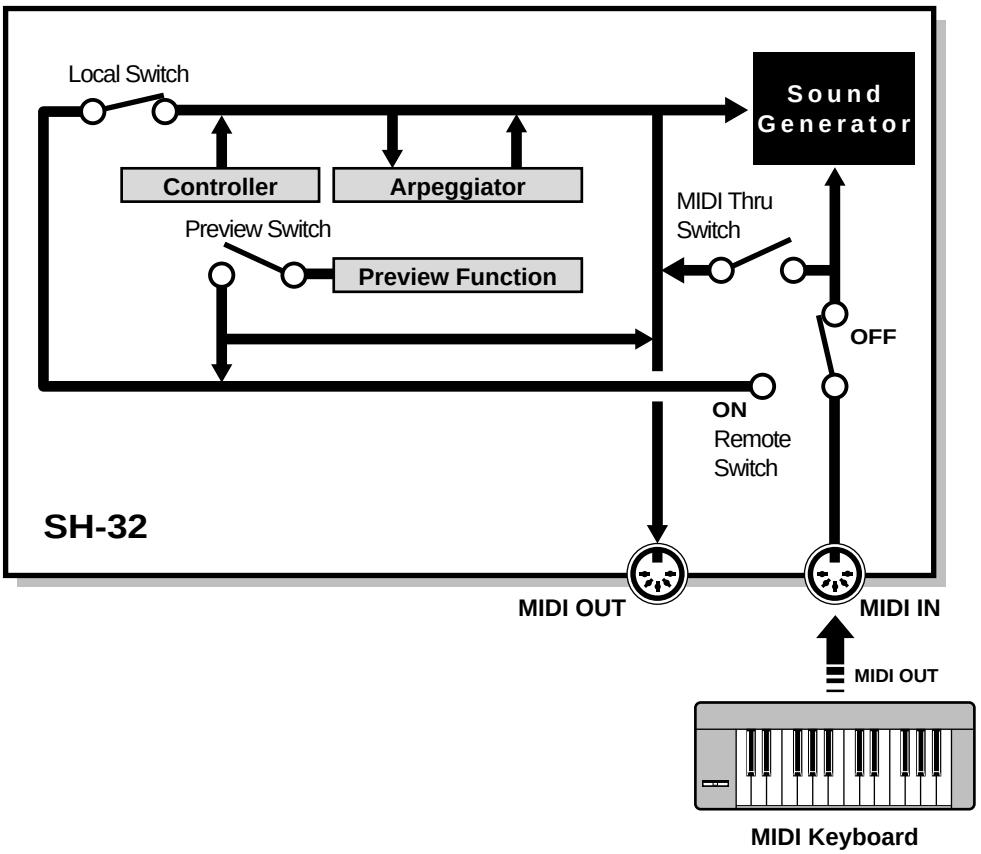
SYNTHESIZER SH-32

Advanced Use

Chapter 1. An Overview of the SH-32

How the SH-32 is Organized Internally

The SH-32 is broadly organized as follows.



MIDI Connectors

The SH-32 is equipped with two MIDI connectors (IN, OUT).
When the Remote Keyboard switch (REMOTE; p. 90) is set to ON, actions performed on an external MIDI keyboard connected to the MIDI IN connector are treated in the same way as those performed using the SH-32's Preview function (p. 21) to play sounds. You can also choose to have the OUT connector function as a THRU connector (p. 92).

Sound Generator

This is the section that produces the sound. You can play sounds using note messages from an external MIDI device. In addition, when the Preview function is turned on, you can play sounds by pressing designated button (note-entry buttons) on the SH-32 (p. 21).

About Maximum Simultaneous Notes

The SH-32 is capable of using 32 oscillators simultaneously. Data for greater numbers results in sounds being omitted. When all 32 oscillators are being used, any further sounds are given priority, deleting the sounds currently being played one at a time, starting with the least recent sound and progressing in order as more sounds are added. Keep this in mind when playing sounds with a lot of reverb, or when using the Chord Memory function.
(Note, though, that turning on the Suboscillator function does not impact the oscillator count.)

Arpeggiator

Arpeggios can be played in accord with note messages from an external MIDI device.
In addition, Using the Preview function, you can also control the Arpeggiator by pressing the designated buttons (note-entry buttons) (p. 21).

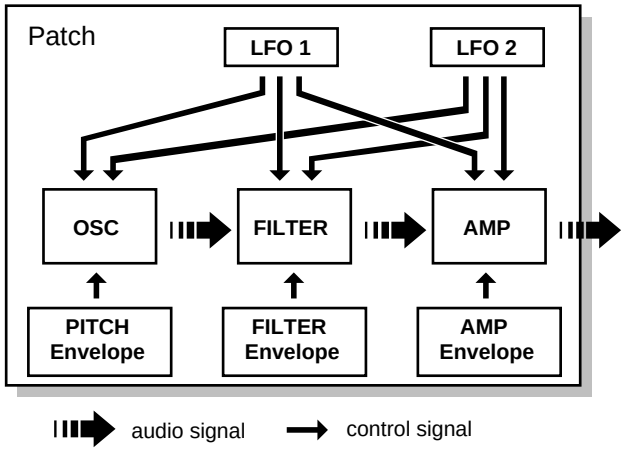
Controller

Controllers are the sliders, knobs, and buttons arranged on the panel. By operating these controllers, you can modify sounds. Naturally, you can use an external MIDI controller (such as a keyboard, pitch bend lever, or modulation lever) to make changes in the sounds.

Patches, Rhythm Sets, and Performances

Patches (A11–D88)

An individual sound used in a performance is called a **Patch**. The SH-32 offers a total of 256 Patches, divided into 128 "User Patches" and 128 "Preset Patches."



Patches consist of the following five components.

OSC (Oscillator)

Provides for selection of the waveforms (waves) that form the basis for sounds, and sets the pitch. There are two oscillators (OSC 1 and OSC 2), and you can combine these to create a wide variety of different sounds.

NOTE

You can only make pitch-related settings for the Rhythm Tones (percussion instruments) in the OSC section.

FILTER

Changes the brightness and other qualities of the sound, by setting the characteristics of the constituent frequencies.

AMP (Amplifier)

Sets the changes in volume.

Envelope

You use Envelope to initiate changes to occur to a sound over time. There are separate envelopes for Pitch, FILTER (filter), and AMP (volume). For example if you wish to modify the way in which the sound attacks or decays over time, you would adjust the AMP envelope.

LFO (Low Frequency Oscillator)

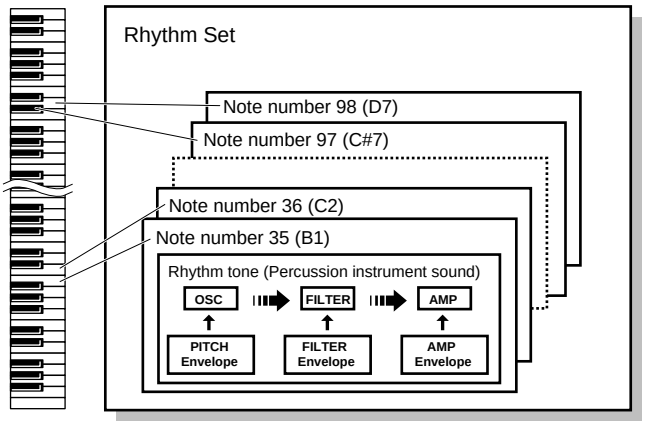
Use the LFO to create cyclic changes (modulation) in a sound. There are two LFOs (LFO 1 and LFO 2), and the effects of each one are applied to OSC (pitch), FILTER (filter), and AMP (volume or pan). When an LFO is applied to the OSC pitch, a vibrato effect is produced. When an LFO is applied to the FILTER cutoff frequency, a wah effect is produced. When an LFO is applied to the AMP volume, a tremolo effect is produced.

NOTE

You cannot apply LFO effects to the Rhythm Tones (percussion instruments).

Rhythm Sets (r1U, r2U, r3P, r4P)

A collection of multiple percussion instrument sounds is called a **Rhythm Set**. The SH-32 comes with four Rhythm Sets, divided into two "User Rhythm Sets" and two "Preset Rhythm Sets."
Since percussion instruments generally do not play melodies, there is no need for a percussion instrument sound to be able to play a scale on the keyboard. It is, however, more important that as many percussion instruments as possible be available to you at the same time. Therefore, each key (note number) of a Rhythm Set will produce a different percussion instrument.



Each percussion instrument consists of the following four elements. (For details, refer to the explanations for "Patches.")

OSC (Oscillator)

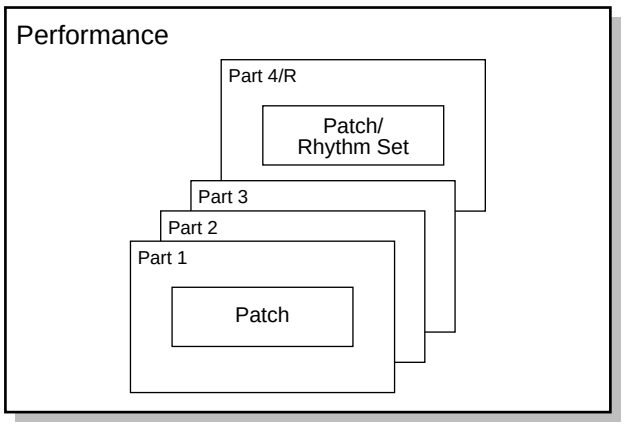
FILTER

AMP (Amplifier)

Envelope

Performances (1-1–8-8)

A combination of four Patches, or of three Patches and a Rhythm Set, is called a **Performance**. The SH-32 contains 64 Performances; all of these are User Performances that can be overwritten at will.
With Performances, four separate tones are handled simultaneously, thus allowing you to enjoy playing ensemble performances or performances using lush tones.



Part

A Part is the place to which a Patch or Rhythm Set is assigned when using the SH-32 in Performance mode. A single Performance comprises four Parts, with a Patch being assigned to each Part. You can also assign a Rhythm Set to only Part 4.

MEMO

- Since Performances store only information such as the Patch numbers used by individual Parts, they do not contain any actual sound parameter settings. Accordingly, if you modify any content saved to a Patch, it affects the sound of every Performance in which that Patch is used.
- Other than switching them on and off and adjusting the levels, no settings are made for the two effects processors (INS-FX, REV / DELAY) in the Performance itself. INS-FX (Insertion Effects) and REV / DELAY (Reverb / Delay) are each specified in Parts (p. 66), and the effect settings in the Patches assigned to those Parts are treated as the effect settings for the Performance as a whole.

The Different Data Saved Separately to Patches and Performances

● Arpeggio Styles/Rhythm Styles

These contain the arpeggios' basic styles; they are used by the Arpeggiator. 64 of each kind are provided, all of which can be overwritten by the user (p. 79).

● Chord Forms

These contain combinations of note numbers, which are used with the Chord Memory function. The unit provides 64 Forms, all of which can be overwritten by the user (p. 83).

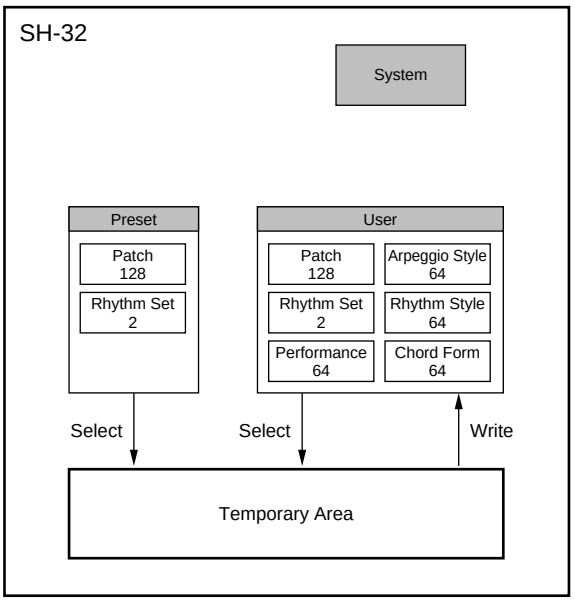
How Characters and Numerals Are Displayed

The display of the SH-32 indicates characters and numbers as follows.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Capital letters														
Small letters														
	O	P	Q	R	S	T	U	V	W	X	Y	Z		
Capital letters														
Small letters														
	1	2	3	4	5	6	7	8	9	0		♭		
														

About Memory

Patch and Performance settings are stored in what is referred to as **memory**. There are three kind of memory: temporary, rewritable, and non-rewritable.



Temporary Memory

Temporary Area

This is the area that holds the data for the Patch, Rhythm Set, or Performance that you've selected using the panel buttons.

When you play the keyboard or play back a sequence, sound is produced based on data in the temporary area. When you edit a Patch, Rhythm Set, or Performance, you do not directly modify the data in memory; rather, you call up the data into the temporary area, and edit it there.

Settings in the temporary area are temporary, and will be lost when the power is turned off or when you select another Patch / Rhythm Set / Performance. To keep the settings you have modified, you must write them into rewritable memory.

MEMO

Separate "Patch temporary areas" are maintained independently for the Patch mode and Performance mode. If you have switched between these two modes during the process of editing one and the same Patch, and then you save your changes while in one of these modes, the content of the temporary area for the other mode will not be revised.

Rewritable Memory

System Memory

System memory stores system parameter settings that determine how the SH-32 functions.

User Memory

User memory is where you normally store the data you need. User memory contains 128 patches, 2 rhythm sets, 64 performances, 64 arpeggio styles, 64 rhythm styles, and 64 chord forms.

MEMO

Arpeggio Styles, Rhythm Styles, and Chord Forms are saved as separate settings, independent of Patches and Performances. When these are overwritten or changed, it affects how sounds of Patches (including the Preset Patches) and Performances that use the Arpeggiator and Chord Memory functions are played.

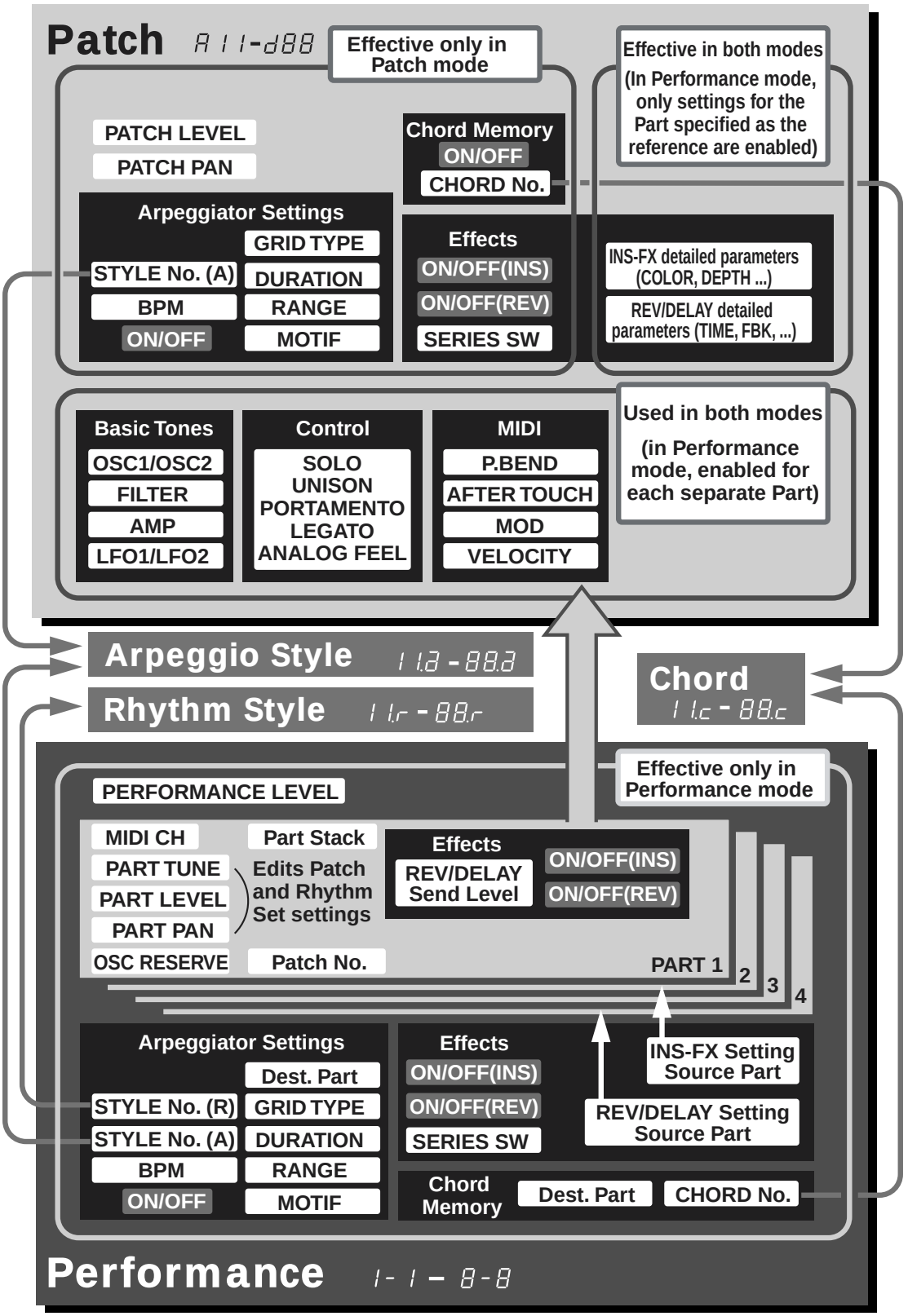
Non-Rewritable Memory

Preset Memory

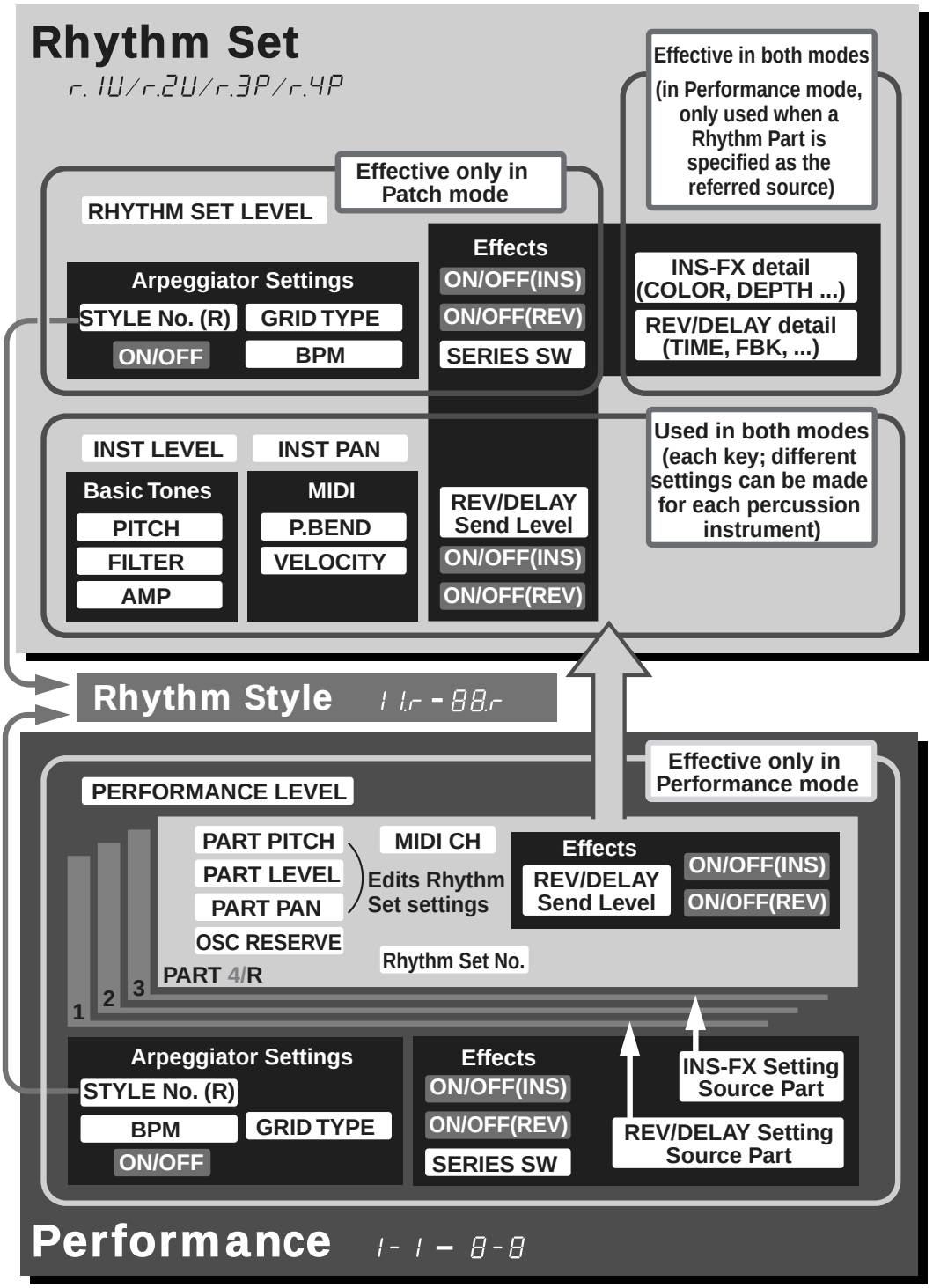
The contents of preset memory cannot be rewritten. However, you can call up settings from preset memory into the temporary area, modify them and then store the modified data in rewritable memory.

Main Setting Destinations

■ Patches and Performances

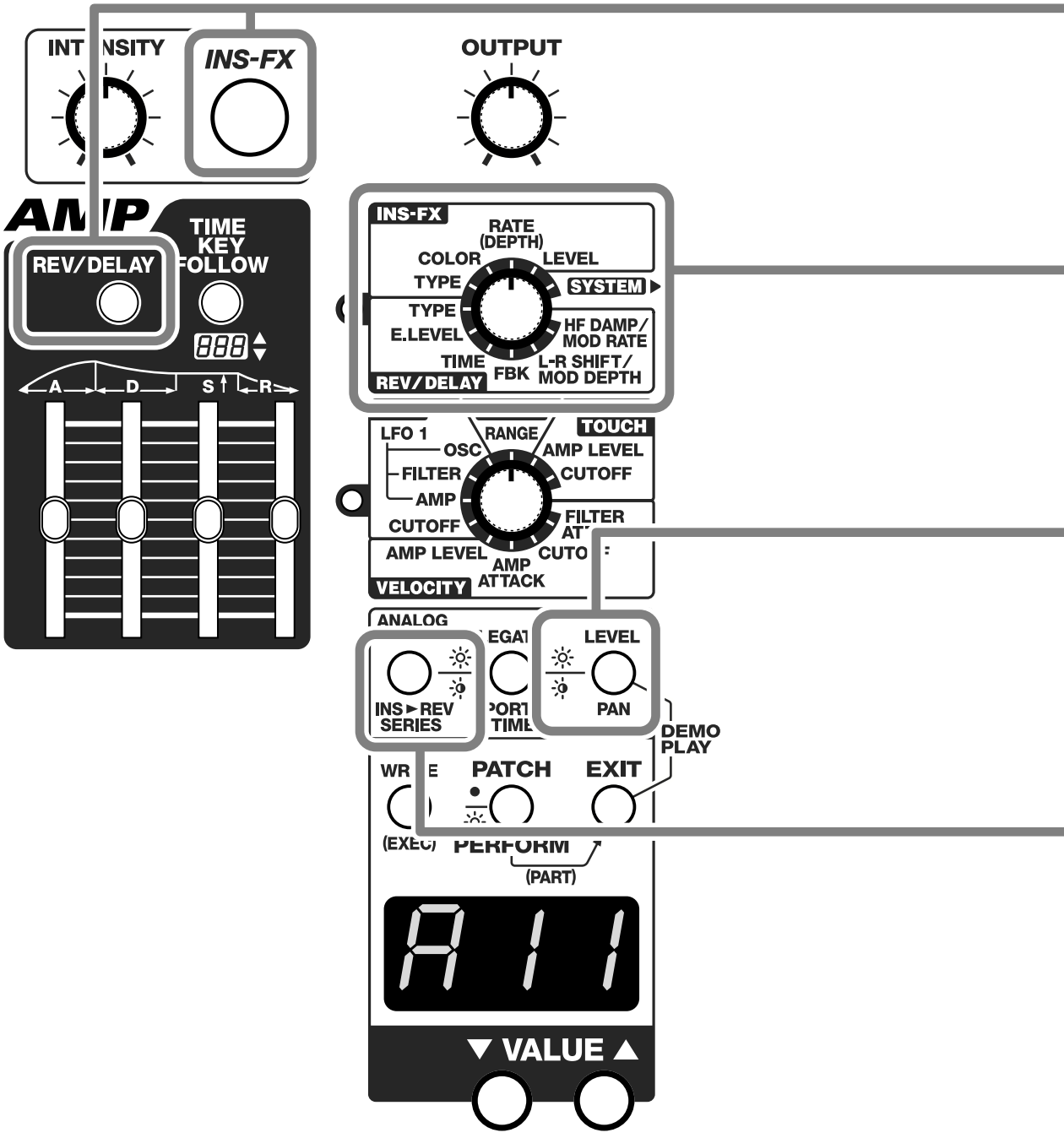


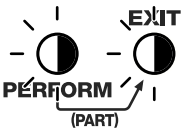
■ Rhythm Sets and Performances



Objects of Settings That Change with the SH-32's Mode

Even when the same knobs and buttons are used, the parameters that are changed with various settings vary according to the current mode as shown by the table on the following page.



Patch Mode	Performance Mode	Part Assign Mode	Rhythm Tone Edit
			Preview function turned on with a Rhythm Set selected in each mode 
• You can switch the Insertion Effects (INS-FX) or Reverb / Delay (REV / DELAY) on (indicator lit), or off (indicator off) for each individual Patch or Rhythm Set (p. 64, p. 65). • You can save settings content to each Patch or Rhythm Set with the write procedure (p. 63, p. 70). * When assigning Patches to the Parts in Performance mode, the settings here are disabled, and the settings for each Part in Part Assign mode go into effect.	• You can switch the Insertion Effects (INS-FX) or Reverb / Delay (REV / DELAY) on (indicator lit), or off (indicator off) for each individual Performance (p. 64, p. 65). • You can save settings content to each Performance with the write procedure (p. 73).	• You can switch the Insertion Effects (INS-FX) or Reverb / Delay (REV / DELAY) on (indicator lit), or off (indicator off) for each individual Part in a Performance (p. 64, p. 65). • Press [1]–[4 / R] (Part buttons) to specify the Part to be set. • You can save the settings content in groups consisting of four Parts to Performances with the write procedure (p. 73). * When assigning Patches to the Parts in Performance mode, the Patch settings are disabled, and the settings made here go into effect.	• You can switch the Insertion Effects (INS-FX) or Reverb / Delay (REV / DELAY) on (indicator lit), or off (indicator off) for each individual Rhythm Tone (percussion instrument) (p. 64, p. 65). • Press a note-entry button to specify the Rhythm Tone to be set. • You can save settings content to each Rhythm Set with the write procedure (p. 70). * When turning Rhythm Sets on and off as a whole, set the Preview function to off.
• Makes the detailed Insertion Effects (INS-FX) or Reverb / Delay (REV / DELAY) settings for each Patch or Rhythm Set (p. 65, p. 66). • Turn the knob to the desired parameter (other than SYSTEM), then press [VALUE ▼ / ▲] to make the settings. • You can save settings content to each Patch or Rhythm Set with the write procedure (p. 63, p. 70).	• Sets the parameters of the Patch or Rhythm Set assigned to the Part specified as the Performance's effect source (p. 65, p. 66). • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Patch or Rhythm Set with the write procedure (p. 73). * Effect parameter settings are not saved to the Performances.	• You can set only the REV / DELAY E.LEVEL (Effect Level) in each individual Part of a Performance (p. 67). • Press [1]–[4 / R] (Part buttons) to specify the Part to be set. • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Performance with the write procedure (p. 73).	• You can set only the REV / DELAY E.LEVEL (Effect Level) in each individual Rhythm Tone (percussion instrument) (p. 66). • Press a note-entry button to specify the Rhythm Tone to be set. • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Rhythm Set with the write procedure (p. 70).
• Sets the volume (LEVEL) or panning (PAN) for each individual Patch or Rhythm Set (p. 59, p. 63). • Press the button: if the indicator is lit, the volume is set; the pan is set when the indicator is blinking. Press [VALUE ▼ / ▲] to set the values. • You can save settings content to each Patch or Rhythm Set with the write procedure (p. 63, p. 70). * When assigning Patches to the Parts in Performance mode, both the settings here as well as the settings for each Part made in Part Assign mode are enabled.	• Sets the volume (LEVEL) setting for each individual Performance (p. 59). The panning (PAN) cannot be set. • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Performance with the write procedure (p. 73). * The pan settings for Performances are saved to each Part in Part Assign mode.	• Sets the volume (LEVEL) or panning (PAN) for each individual Part in a Performance (p. 59, p. 63). • Press [1]–[4 / R] (Part buttons) to specify the Part to be set. • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Performance with the write procedure (p. 73). * When assigning Patches to the Parts in Performance mode, both the Patch settings as well as the settings made here are enabled.	• Sets the volume (LEVEL) or panning (PAN) for each individual Rhythm Tone (percussion instrument) (p. 59, p. 63). • Press a note-entry button to specify the Rhythm Tone to be set. • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Rhythm Set with the write procedure (p. 70).
• Sets whether Insertion Effects (INS-FX) and Reverb / Delay (REV / DELAY) for each Patch or Rhythm Set are to be connected in series (SEr), or in parallel (PAr) (p. 64). • Press the button, causing the indicator to blink, then press [VALUE ▼ / ▲] to make the settings. • You can save settings content to each Patch or Rhythm Set with the write procedure (p. 63, p. 70). * When assigning Patches to the Parts in Performance mode, the settings here are disabled, and the Performance settings go into effect.	• Sets whether Insertion Effects (INS-FX) and Reverb / Delay (REV / DELAY) for each Performance are to be connected in series (SEr), or in parallel (PAr) (p. 64). • The procedure for making the settings is the same as in Patch mode. • You can save settings content to each Performance with the write procedure (p. 73). * When assigning Patches to the Parts in Performance mode, the Patch settings are disabled, and the settings made here go into effect.	• This cannot be set. * Conforms to the Performance's settings.	• Conforms to the Rhythm Set's settings.
• You can also change Patch tones using controls other than the sliders and knobs mentioned above.	• You can use controls other than the sliders and knobs mentioned above to change tone settings in Patches assigned to each Part in Performance mode.	• You cannot use controls other than the sliders and knobs mentioned above to change the settings.	• You can use controls other than the sliders and knobs mentioned above to change the Rhythm Tone (percussion instrument) settings.

Chapter 2. Creating Your Own Sounds

Creating Sounds that Reflect the Position of Sliders/Knobs (MANUAL)

In Manual mode, you edit parameter values by setting them to the current position of the sliders and knobs.

When you edit a Patch to change the sound, the various parameter values will not necessarily match the positions of the sliders or knobs. When working in Manual mode, the sound reflects the slider and knob positions, which is useful when you want to create sounds from scratch.

Press [MANUAL], causing the indicator to light up; of the parameters for the currently selected Patch, those that are represented on the panel will assume the actual settings, as determined by the positions of sliders and knobs.

NOTE

- This operation deletes any current settings in the temporary area (p. 47). If you want to keep the settings, save them to a Patch (p. 63).
- Parameter settings not represented on the panel will not change even when you press [MANUAL]. With OSC 1 and OSC 2, for example, the settings for the oscillator not currently being edited (where the indicator is not blinking) are not operational in Manual mode. In this case, when you call up the parameters to the panel display, the [MANUAL] indicator light then goes out. If necessary, you then can return the Manual mode by pressing [MANUAL] again.

Parameters Not Shown in the Panel Display

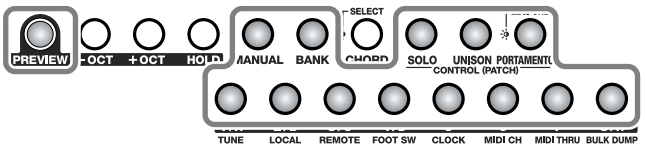
- Settings for the oscillator (either OSC 1 or OSC 2) not currently being edited
- Settings for the LFO (either LFO 1 or LFO 2) not currently being edited
- Parameters for the currently selected [DEPTH] setting other than those selected with [DESTINATION]

Using Preview Function Hold to Continue Playing a Sound

By having the Preview function hold, you can have sounds continue to play, even without having to hold down the SH-32's note-entry buttons. This is very a convenient feature, as it allows you to keep both hands free to adjust sliders and knobs while monitoring how a sound changes when, for example, you are editing sounds.

1. **Press [PREVIEW] to make the indicator light.**

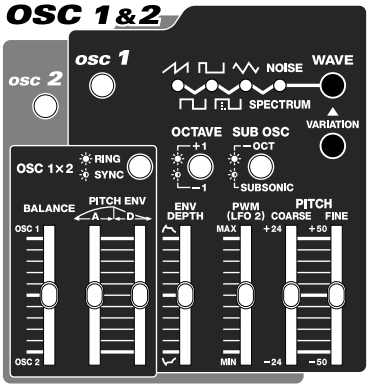
   Indicators are lit for buttons that may be used as the note-entry buttons.



2. **Press [HOLD] to make the indicator light.**
3. **Press the button for the key that you want to play.**

   The pressed button's indicator blinks, and the sound continues to play after you release the button.
4. **Press the same button once more to stop the sound.**

Determining the Basic Waveform and Pitch (OSC 1 & 2)



With the OSC 1 & 2 (Oscillator 1 & 2) section, select the waveform upon which the sound is based, then adjust the pitch and other aspects of the sound. You can also combine OSC 1 and OSC 2 to create a wide variety of sounds.

Oscillator ON/OFF and Mix Balance (OSC 1, OSC 2, BALANCE)

[OSC 1]/[OSC 2]

These switch the oscillators on and off. Press the button; the selected oscillator is on when the indicator is lit or blinking, and off when the indicator light is off. When both OSC 1 and OSC 2 are on, the oscillator with the blinking indicator is the one being edited. To turn off the oscillator that is not being edited, press the blinking button.

HINT

Pressing [OSC 1] and [OSC 2] simultaneously causes both indicators to blink, and both OSC 1 and OSC 2 become the edited objects, thus allowing you to make identical settings to the two oscillators at the same time.

MEMO

Using Patches in which two oscillators are played reduces the polyphony by half.

[BALANCE]

Adjusts the volume balance between OSC 1 and OSC 2. The OSC 1 volume increases as the slider is moved upwards; moving the slider down increases the OSC 2 volume.

Selecting the Fundamental Waveform (WAVE, VARIATION)

[WAVE]

Select the waveform groups on which the synthesizer's sounds are based. Each time [WAVE] is pressed, the selected waveform group is switched in the order shown right.

HINT

Holding down [WAVE] and pressing [VARIATION] switches the waveform groups in the reverse order of that shown right.

[VARIATION]

Each waveform group selected by pressing [WAVE] features a number of variations, providing you with an even wider sound palette. Pressing [VARIATION] switches the variations in order of variation number. Once you have selected a variation, press [EXIT].

HINT

By holding down [VARIATION] and pressing [WAVE], you can switch the variations in the reverse order. You can also select variations by pressing [VARIATION] and then pressing [VALUE ▼/▲].

MEMO

- The number of variations differs with the waveform group.
- " " (PWM waveform) includes no variations.

Waveform Group	Number of Variations	Description
(Sawtooth Wave) 	12 (1–12)	Often used in creating characteristic synthesizer sounds. Variation 12 is constructed from multiple, detuned, sawtooth waves layered together.
(Square Wave) 	10 (1–10)	Often used in creating characteristic synthesizer sounds. The subtle differences in waveforms that a variety of popular, classic synthesizers had can be expressed through switching variations.
(Pulse Wave) 	9 (1–9)	The Pulse group contains nine pulse wave variations you can switch through, with duty cycles ranging from 5% to 45%, set in multiples of 5%.
(PWM Wave) 	1 (N / A)	With this waveform, you can have the pulse width of a square wave change periodically. Use this when you want to create subtle changes in the tone.
(Triangle Wave / Sine Wave) 	5 (1–5)	This tone includes few harmonics and no unusual characteristics. The subtle differences in waveforms that a variety of popular, classic synthesizers had can be expressed through switching variations.
SPECTRUM 	20 (1–20)	You can select waveforms that are difficult to achieve with general analog synthesizers, such as voice-type waveforms and other waveforms with special harmonic structures and waves with formants.
NOISE 	10 (1–10)	Select from different noise types, including white noise, pink noise, and noise for which the pitch can be changed with the keyboard.

Determining the Pitch (OCTAVE, PITCH)

[OCTAVE]

Adjusts the pitch of the sound up or down in units of an octave (+/-1 octave). Press the button, causing the indicator to light, to raise the pitch one octave (+1); when the indicator blinks, the sound is lowered one octave (-1).

[PITCH COARSE]

Adjusts the pitch of the sound up or down in semitone steps (+/-2 octaves). The more the slider is moved upwards, the higher the pitch becomes, while moving the slider downwards lowers the pitch.

MEMO

In Part Assign mode (p. 71), you can set the pitch for Parts selected in Performance mode, and then save these settings to each individual Performance.

[PITCH FINE]

Adjusts the pitch of the sound up or down in 1-cent steps (+/-50 cents). The further up you move the slider, the higher the pitch becomes, while lowering the slider also lowers the pitch.

MEMO

- One cent is 1/100th of a semitone.
- In Part Assign mode (p. 71), you can set the pitch for Parts selected in Performance mode, and then save these settings to each individual Performance.

Creating a Fatter Sound

By selecting the same waveform for OSC 1 and OSC 2, setting [PITCH COARSE] at the center position, and then slightly shifting the pitch with [PITCH FINE], you can produce a sound that has greater fatness and breadth (detune effect).

Creating a Fatter Sound by Adding Components One Octave Below the Sound (SUB OSC)

[SUB OSC]

Switches the suboscillator function on and off. Press the button; the function is on when the indicator is lit or blinking, and off when the indicator is off.

MEMO

Turning the Suboscillator function on does not reduce the total number of available oscillators.

The Suboscillator function has two operational modes; these are switched by pressing [SUB OSC], causing it to light or blink.

-OCT Mode

Press [SUB OSC] to make the button indicator light. A dedicated sub oscillator wave one octave below the pitch current set, providing a thicker sound.

MEMO

The dedicated wave that is added in -OCT mode recalls the suboscillator wave of the vintage Roland Juno Series synths. Now it's easy to reproduce the sound of that legendary synth.

SUBSONIC Mode

Press [SUB OSC] to make the indicator start blinking. Frequency components with special characteristics centered one octave below the main oscillator pitch are added, resulting in a rock-solid, heavy, low end.

NOTE

The Suboscillator function, PWM function (p. 55), Ring Modulator function (p. 55), and Oscillator Sync function (p. 55) cannot be used simultaneously.

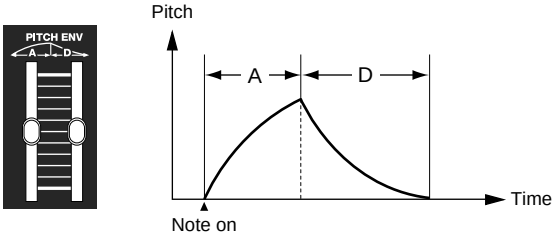
Changing the Pitch Over Time (PITCH ENV, ENV DEPTH)

[PITCH ENV A]

Sets the pitch envelope attack time. Moving the slider up increases the value.

[PITCH ENV D]

Sets the pitch envelope decay time. Moving the slider up increases the value.



A: The time from when the key is pressed until the maximum pitch change is reached

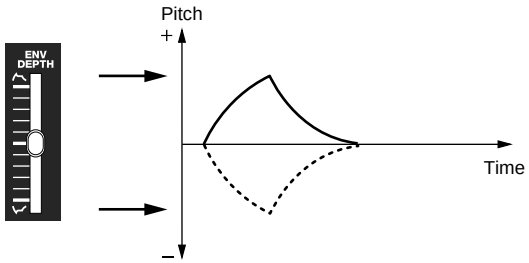
D: The time for the pitch to go from its point of greatest change back to the original pitch

MEMO

The PITCH ENV A/D setting is applied in common to OSC 1 and OSC 2.

[ENV DEPTH]

Here's how you can adjust the depth of the Pitch Envelope. The more the slider is moved upwards, the greater the change is. Moving the slider below the center position inverts the waveform, and the change in the opposite direction increases. At the center position, the pitch envelope does not create any change in pitch.



Changing the Pulse Width of a Square Wave Periodically (PWM)

[PWM (LFO 2)]

Adding an LFO to the pulse width (of a square wave), which results in a cyclic change in the square wave's pulse width, is called **Pulse Width Modulation (PWM)**. The amount of PWM applied is set with [PWM (LFO 2)]. The change in the pulse width increases as the slider is moved upwards, resulting in a tone with greater breadth that seems to spread out. The speed of modulation is set by turning the "LFO 2" [RATE] knob (p. 60).

NOTE

- The PWM effect is activated when " ⊓⊔ " (PWM wave) is selected with [WAVE] and LFO 2 is on.
- The PWM effect is not available for Patches using the Ring Modulator function (p. 55) or the Oscillator Sync function (p. 55).

For more detailed information about setting LFO 2, refer to **"Modulating the Sound (LFO 1 & 2)"** (p. 59).

Creating a Metallic Sound (OSC 1X2 RING)—Ring Modulator

[OSC 1X2 RING]

This is the Ring Modulator function. Press the button, causing the indicator to light, to turn on the Ring Modulator; this changes the sound, producing a metallic tone.

HINT

- The ring modulation effect is only applied to OSC 1; the OSC 2 tone is not changed. If the ring modulator effect is not sufficiently evident, raise [BALANCE] (toward the OSC 1 end). Moving [BALANCE] allows you to alter the ratio of the OSC 1 sound (to which ring modulation is applied), and the normal OSC 2 sound.
- Using [PITCH COARSE] or other controls to create different pitches for OSC 1 and OSC 2 makes it easier to produce the ring modulator effect.

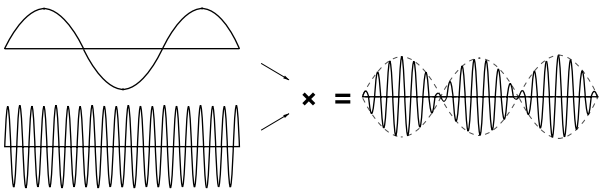
NOTE

The PWM function (p. 55) and Suboscillator function (p. 54) cannot be used at the same time a Patch using Ring Modulator is active.

What is a Ring Modulator?

The Ring Modulator combines the waves from OSC 1 and OSC 2 (producing the sum and difference at the output), to create a "cross" of the two signals producing tones with numerous harmonics (non-integer harmonics) not included in either of the original waveforms.

As the pitch difference between the two waveforms changes the harmonic structure, the result will be an unpitched metallic sound. This function is suitable for creating metallic sounds such as bells.

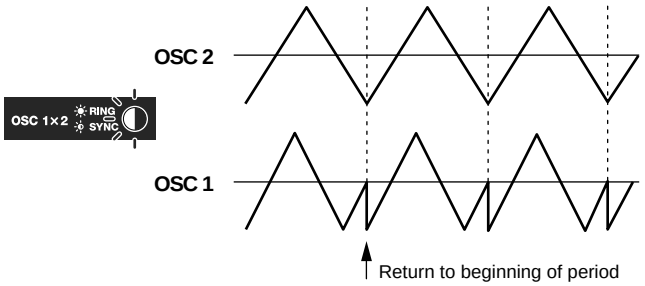


Creating an Assertive Solo Sound (OSC 1X2 SYNC)—Oscillator Sync

[OSC 1X2 SYNC]

Press the button, causing the indicator to blink, to turn on the Oscillator Sync function; this produces a complex tone containing numerous harmonics. This is effective when the OSC 1 pitch is higher than the OSC 2 pitch.

Oscillator Sync synchronizes the wave output from OSC 1 to the wave output by OSC 2. When set to the OSC 2 pitch as shown in the figure, Oscillator Sync forces the OSC 1 to return to the start of the OSC 2 wave's cycle, producing a complex waveform.
(image figure)



HINT

The Oscillator Sync effect is only applied to OSC 1; the OSC 2 tone is not changed. If the Oscillator Sync effect is not sufficiently evident, raise [BALANCE] (toward the OSC 1 end). Moving [BALANCE] allows you to alter the ratio of the OSC 1 sound, to which Oscillator Sync is applied, and the normal OSC 2 sound.

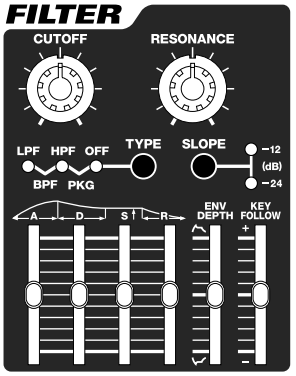
NOTE

- On the SH-32, **the Oscillator Sync function cannot be used together with the sound generator section's filter functions**. If you want to add a simple filter effect to a patch that uses Oscillator Sync, use INS-FX as the filter type (p. 64).
- Patches using Oscillator Sync are sounded only in mono. Furthermore, in Performance mode, they can be used only in Part 1. When used with Part 2 or 3, the Oscillator Sync function switches off automatically.
- When using Oscillator Sync, you cannot select a variation for the OSC 1 waveform. When you press [WAVE] to select the waveform group, an exclusive variation especially for synching is selected automatically.
- The Suboscillator function (p. 54), PWM function (p. 55) and Unison function (p. 62) cannot be used at the same time that a Patch using Oscillator Sync is active.
- In some cases, a reoccurring, cyclic noise may be audible in the low-frequency range in Patches using Oscillator Sync. This is a characteristic of the SH-32's synching operations, and does not indicate any malfunction.

Changing Tones with Oscillator Sync

Turning [OSC 1X2 SYNC] on and then adjusting [PITCH COARSE] and [PITCH FINE] changes the sound to produce a variety of different tones.

Changing the Characteristics of Sounds (FILTER)



This creates sounds filled with numerous harmonics of different frequencies, but by using filters to pass only certain frequency bands while blocking other frequencies, you can also change the characteristics of the sound. By adjusting the filters in the FILTER section, you can change the output waveforms in a variety of ways, thus changing the sound.

Internal Filter Types and Functions (TYPE, SLOPE)

[TYPE]

Selects the type of filter.

Filter Type	Description
LPF (Low Pass Filter) 	This filter passes low-frequency harmonics under the cutoff frequency. This is the filter that is most generally used, and it is effective for making sounds softer and mellower.
BPF (Band Pass Filter) 	This filter passes harmonics with frequencies near the cutoff frequency. This emphasizes the midrange. This works well for creating sounds with Particular sound qualities.
HPF (High Pass Filter) 	This filter passes high-frequency harmonics above the cutoff frequency. It is effective for creating a brighter, sharper sound.
PKG (Peaking Filter) 	This filter boosts harmonics with frequencies near the cutoff frequency. You can use this to create wah effects by employing an LFO to change the cutoff frequency cyclically.
OFF 	No filter is used.

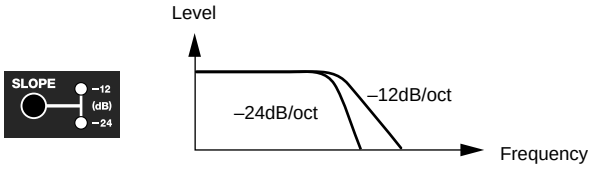
NOTE

When the Oscillator Sync function (p. 55) is in use, this is automatically set to "OFF" (filter cannot be used).

[SLOPE]

Switches the filter slope.

When the "-12" indicator is lit, a gentler slope (-12 dB / octave) is selected. When the "-24" indicator is lit, a steeper slope (-24 dB / octave) is selected, making it easier to distinguish harmonics with frequencies that are passed from those that are not.



Setting the Cutoff Frequency (CUTOFF)

[CUTOFF]

Sets the filter's cutoff frequency. Cutoff frequency is the parameter that determines the frequency at which the filter no longer passes (that is, cuts) harmonics with those frequencies. Changing the cutoff frequency allows you to control the brightness of the sound. The cutoff frequency rises the more the knob is turned to the right (clockwise), creating a brighter sound.

The Relationship Between Filter Type and Cutoff Frequency

When "LPF" is the selected filter, then fewer higher-order harmonics are included as the cutoff frequency is lowered, which creates a mellower sound. It simultaneously reduces the volume.

When "BPF" is the selected filter, then only frequencies in the frequency range specified in the setting are output. At higher settings values, the sounds from waves may cease to be output.

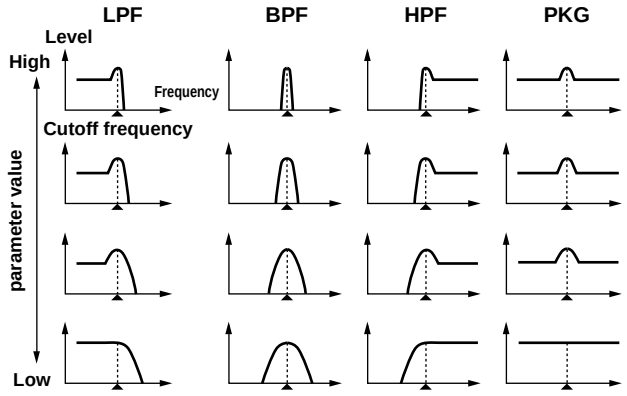
When "HPF" is the selected filter, then fewer lower-order harmonics are included as the cutoff frequency is raised, which creates a sharper sound. It simultaneously reduces the volume. At higher settings values, the sounds from waves may cease to be output.

When "PKG" is the selected filter, the harmonic components that are emphasized change according to the cutoff frequency value.

Using Resonance to Add Fullness to the Sound (RESONANCE)

[RESONANCE]

Turning this knob more to the right (clockwise) emphasizes the frequencies near the cutoff frequency, giving the sound a special quality.



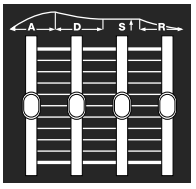
NOTE

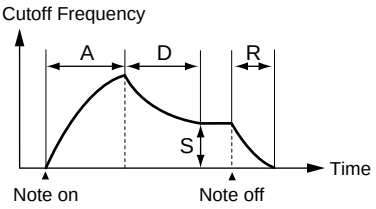
In response to demands by pro sound designers for tone-changing capabilities, the SH-32 permits a wide variety of resonance settings. Because of this, raising the resonance level too much results in extremely high output levels in specific frequency ranges. Be careful to keep the volume settings down when creating sounds in order to prevent overloading audio playback equipment.

Changing the Cutoff Over Time (A D S R, ENV DEPTH)

[A D S R]

Sets the filter envelope attack time, decay time, sustain level, and release time. Values increase the more the sliders are raised.





A: Time from the moment when the key is pressed until the brightness reaches its greatest change (attack time)

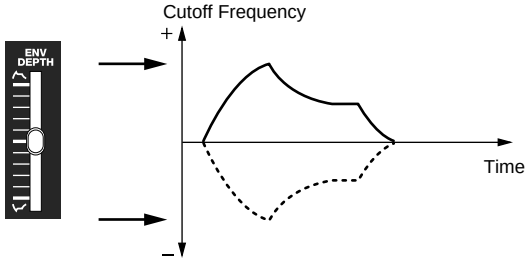
D: Time for the brightness to reach the sustain level (decay time)

S: Level at which the brightness remains at a fixed level (sustain level)

R: Time from the moment when the key is released until the brightness returns to the original level (release time)

[ENV DEPTH]

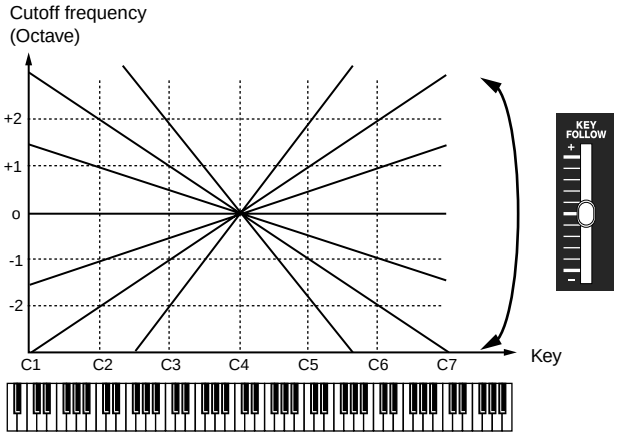
Sets the amount of filter envelope applied. The change in the sound increases the more you raise the slider above the center position. Moving the slider below the center position inverts the shape, and the change increases in the opposite direction. When set at the center position, there is no change due to the filter envelope, and only the [CUTOFF] setting (p. 57) is effective.



Changing the Filter According to the Keyboard Position (KEY FOLLOW)

[KEY FOLLOW]

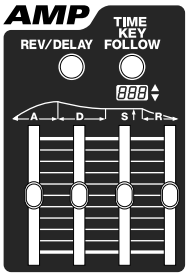
Use this parameter if you want the cutoff frequency to change according to the key that is pressed. With the cutoff frequency for the C4 key (Middle C) used as the reference, when you raise the slider, the cutoff frequency increases as you play keys in increasingly higher ranges above C4; when you lower the slider, the cutoff frequency decreases. The change itself increases the more the slider is raised or lowered.



Different Uses of Key Follow

The various ways you can use Key follow differ according to the object. For example, if you are using a brass tone to play a solo, then lower [KEY FOLLOW] below the center position to round off the upper notes; if playing background, raise [KEY FOLLOW] below the center position to flatten the sound.

Changing the Volume (AMP)

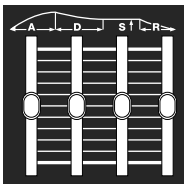


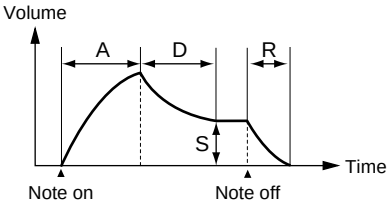
In the AMP (Amplifier) section, you can change the sound by changing the sound volume and the way the sounds are output and muted.

Changing the Volume Over Time (A D S R, ENV DEPTH)

[A D S R]

Sets the amplifier envelope attack time, decay time, sustain level, and release time. Values increase the more the sliders are raised.





A: Time from the moment when the key is pressed until the volume reaches its greatest level attack time)

D: Time for the volume to reach the sustain level (decay time)

S: Level at which the volume remains at a fixed level (sustain level)

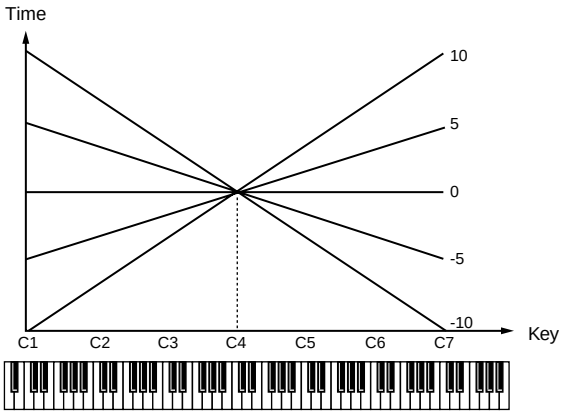
R: Time from the moment when the key is released until the volume returns to zero (release time)

Increasing and Decreasing the Rate of Change in Volume According to the Keyboard Position (TIME KEY FOLLOW)

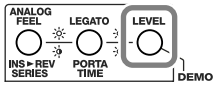
[TIME KEY FOLLOW]

Set this to have the time following the decay time of the amplifier envelope altered according to the position of the key pressed. With the amplifier envelope for the C4 key (Middle C) as the reference, then when values are positive (+), then the higher the key being pressed is above the C4 key, the shorter the time, with negative (-) values creating longer times. Larger settings will produce greater change.

Press [TIME KEY FOLLOW], causing the indicator to blink, then press [VALUE ▼/▲] to set the value (from -10 to 10). When you have finished making the settings, either press [TIME KEY FOLLOW] once more, or press [EXIT], causing the [TIME KEY FOLLOW] indicator light to go off.



Setting the Volume for Each Patch, Rhythm Set, or Performance



[LEVEL]

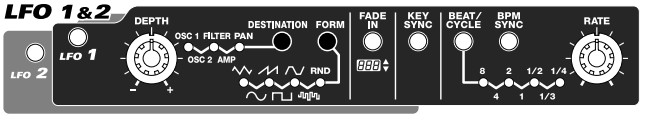
Sets the volume for each Patch, Rhythm Set, or Performance.

Press [LEVEL], causing the indicator to light up, then press [VALUE ▼/▲] to set the value (from 000 to 127). When you have finished making the settings, press [EXIT], causing the [LEVEL] indicator light to go off.

MEMO

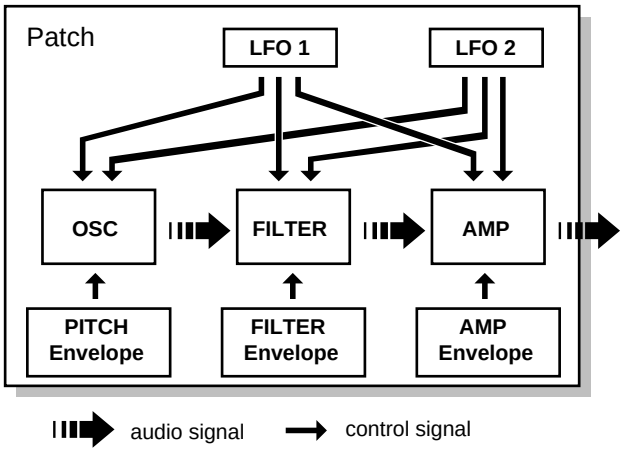
- In Rhythm Tone Edit (p. 69), this procedure sets the volume of each individual percussion instrument in the Rhythm Set.
- In Part Assign mode (p. 71), the volume settings selected in Performance mode are enabled, and these can be saved to individual Performances.

Modulating the Sound (LFO 1 & 2)



The LFO 1 & 2 (Low Frequency Oscillator 1 & 2) section outputs waveforms that are used for purposes that are different than those of the waveforms from the OSC 1 & 2 section. The waves from LFO 1 & 2 are used to create cyclic, periodic changes in the pitch, brightness, volume, and other aspects of the OSC 1 & 2 wave sounds.

LFO Arrangement and Functions



Use the LFO to create cyclic changes (modulation) in a sound. There are two LFOs (LFO 1/2), and these may affect OSC 1/2 (pitch), FILTER, AMP (volume), and PAN. When an LFO is applied to the OSC 1/2 pitch, a vibrato effect is produced. When an LFO is applied to the FILTER cutoff frequency, a wah effect is produced. When an LFO is applied to the AMP volume, a tremolo effect is produced.

Turning the LFO On and Off, and Switching Waveforms (LFO 1, LFO 2, FORM)

[LFO 1]/[LFO 2]

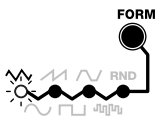
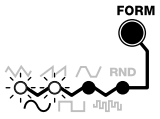
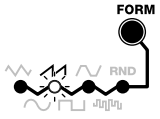
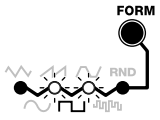
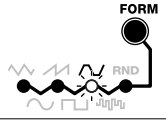
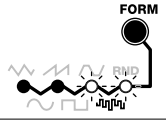
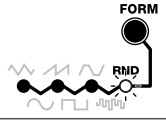
These switch the LFO 1/2 on and off. Press the button; the selected LFO is on when the indicator is lit or blinking, and off when the indicator light is off. When both LFO 1 and LFO 2 are on, the LFO with the blinking indicator is the one being edited. To turn off the LFO that is not being edited, press the blinking button.

HINT

- Pressing [LFO 1] and [LFO 2] simultaneously causes both indicators to blink, and both LFO 1 and LFO 2 become the edited objects, thus allowing you to make identical settings to the two LFOs at the same time.
- By holding down [LFO 1] or [LFO 2] along with [EXIT], you can clear the current LFO 1 or LFO 2 settings. You can then redo the settings, starting from their default state.

[FORM]

Select the output waveform for LFO. The sound will be modulated in the same shape as the selected LFO waveform.

Waveform	Description
(Triangle Wave) 	The sound will be modulated continuously. This is suitable when you want to obtain a vibrato effect.
(Sine Wave) 	The sound will be modulated continuously. This is suitable in situations where, for example, you want to obtain a smoother sound.
(Sawtooth Wave) 	Upon reaching the crest of the wave, the wave returns to the starting position, where it starts to rise again. Turning [DEPTH] to the left of center (counterclockwise) changes the phase of the waveform (once the trough of the wave is reached, the wave returns to the starting position, where it starts to fall again).
(Square Wave) 	The sound will be modulated as if it were being switched between two positions.
(Trapezoidal Wave) 	The sound will be modulated as if it were being switched between two positions. The sound produced is relatively smoother than that of the square wave.
(Sample & Hold Wave) 	The sound is modulated as if it were being switched randomly.
RND (Random Wave) 	The sound is modulated as if it were being switched randomly. The sound produced is relatively smoother than that of the sample and hold wave.

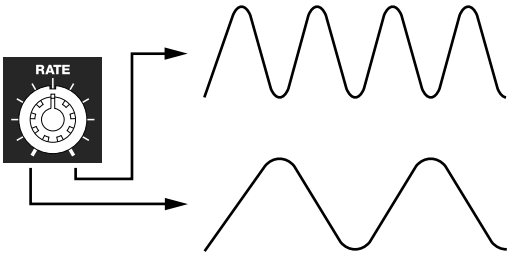
NOTE

The waveforms depicted on the SH-32's panel are merely images used for reference. While the actual waveforms that are output may resemble these images, they are not identical.

Adjusting the Rate of Modulation (RATE)

[RATE]

This adjusts the rate of the LFO's modulation. As the knob is rotated toward the right, the modulation will become faster.

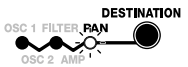


You can synchronize the LFO rate to Arpeggiator or an external MIDI device's tempo (clock). For more detailed information, refer to **"Synchronizing the Modulation to the Song Tempo (BPM SYNC, BEAT/CYCLE)"** (p. 61).

Adjusting the Modulation Depth (DESTINATION, DEPTH)

[DESTINATION]

Selects the waveform for which the modulation is to be set with [DEPTH].

Destination	Description
OSC 1 	Sets the LFO depth applied to the OSC 1 pitch, resulting in a vibrato effect.
OSC 2 	Sets the LFO depth applied to the OSC 2 pitch, resulting in a vibrato effect.
FILTER 	Sets the LFO depth applied to the filter (brightness), resulting in a wah effect.
AMP 	Sets the LFO depth applied to the amplifier (volume), resulting in a tremolo effect.
PAN 	Sets the LFO depth applied to the pan, resulting in a Particular effect in which the sound image moves cyclically.

[DEPTH]

Sets the amount of LFO that is applied (depth of modulation). The effect will increase as the knob is rotated further toward the right of center. Turning this to the left of center (counterclockwise) changes the direction of the waveform. At the center position, the LFO has no effect on the sound. Use [DESTINATION] to select the waveform to which the LFO is applied.

Synchronizing the Modulation to the Song Tempo (BPM SYNC, BEAT/CYCLE)

[BPM SYNC]

You can synchronize the LFO cycle to the tempo specified with [TAP (BPM)] (p. 74). When you press [BEAT SYNC], causing its indicator to light up, the SH-32 is readied for synchronization.

HINT

When CLOCK, a System function, is set to "MIDI" (MIDI), you can synchronize to the tempo of an external MIDI device (p. 92).

NOTE

The LFO tempo synchronization is effective only for the modulation rate. It does not particularly have any control over the phase (timing of the start and peak). Furthermore, even when the LFO is synchronized with the tempo, the internal BPM and MIDI clock operate independently. Although perfect synchronization may not always be maintained when large loads are placed on the sound generator section, it does not indicate a malfunction. If necessary, press [KEY SYNC] to turn on that function, then retransmit Note On at the appropriate cycle.

[BEAT/CYCLE]

When [BPM SYNC] is on (indicator is lit), the synchronization of the modulation is set in terms of the number of beats.

The indicator alternately lights and goes out each time the button is pressed. You can select from these settings: 8, 4, 2, 1, 1/2, 1/3, 1/4. For example, when "4" is selected, the length of the LFO cycle is four beats. Similarly, when "1/4" is selected the cycle is one-fourth of a beat (a sixteen note) in length.

MEMO

The blinking of the [BEAT/CYCLE] indicator has nothing to do with whether tempo synchronization is switched on or off, but instead indicates the selected LFO cycle rate.

Other LFO Settings (FADE IN, KEY SYNC)

[FADE IN]

Sets the time for the LFO's oscillation to reach the maximum level.

Press [FADE IN], causing the indicator to blink, then press [VALUE ▼/▲] to set the value (from 000 to 127). When you have finished making the settings, either press [FADE IN] once more, or press [EXIT], causing the [FADE IN] indicator light to go off.

[KEY SYNC]

Press [KEY SYNC], causing the indicator to light, when synchronizing the timing at which keys are pressed and the start of the LFO cycle.

HINT

If [KEY SYNC] is off while the PWM function is in use, the sonic qualities of the attack portion are not constant, but instead resemble the behavior of an analog synthesizer's PWM.

Other Settings (settings that can be saved to Patches)

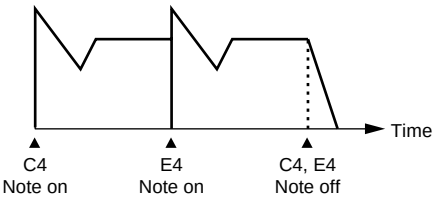
Settings for Use in Playing Monophonic Sounds (SOLO, LEGATO)

These provide useful settings for use with sax, flute, or other monophonic tones, or in other situations such as when playing solos using only one sound.

[SOLO]

Each note played when you press a key is crisp and distinct.

Press [SOLO], causing the indicator to light, to turn on the Solo function.

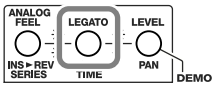


Each note has an attack

HINT

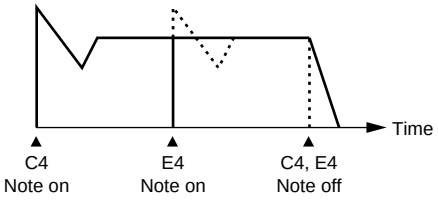
Using this in combination with portamento (p. 62) smooths the sound of the performance.

[LEGATO]



Only when playing legato, where each following key is pressed before the preceding key is released. This allows you to perform smoothly, with no breaks between the notes.

Press [LEGATO], causing the indicator to light, then press [VALUE ▲] to display "On" and turn on the legato function.



Attacks disappear and the notes are connected smoothly

If you press [VALUE ▲] while the Legato function is on, " trG " is displayed, and the SH-32 switches to a retrigger-type legato. When employing "Legato On" (as explained above), a smooth legato effect can be obtained. However, the limitations of the sound generator's internal processing mean that there may be times when the pitch does not change correctly when you jump to a key range that is not adjacent to the current range (for example, the pitch may peak out). In such cases, if you select " trG " (retrigger type), then while the legato may lose a degree of fluidity, you can achieve a legato effect in which the pitch changes correctly over a wider key range.

When you have finished making the settings, press [EXIT], causing the [LEGATO] indicator light to go off.

NOTE

When using glissando and other effects that create a continuous change in the pitch while Legato is on, the pitch may not rise beyond a certain fixed point, or there may be other limitations on the range over which the pitch can change.

Layering Sounds for Greater Fatness (UNISON)

[UNISON]

When the Unison function is on, then the sound of the currently selected Patch is divided into four separate sounds (oscillators), which are then layered, providing a fatter, more substantial sound.

Press [UNISON], causing its indicator to light, to turn the effect on.

NOTE

- Patches automatically switch to a single note when the Unison function is used. When the Unison and Solo (p. 61) functions are switched on at the same time, then the [SOLO] indicator to light up.
- The Unison function cannot be used in Patches that use Oscillator Sync (p. 55).

Applying the Portamento Function (PORTAMENTO, PORTA TIME)

[PORTAMENTO]

Portamento is an effect which smoothly changes the pitch from the first-played key to the next-played key.

Press [PORTAMENTO], causing the indicator to light or blink, to turn on portamento. When the indicator is lit, the portamento is applied continuously; when the indicator is blinking, portamento is applied only when you play legato (pressing one key before releasing the previous key).

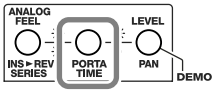
NOTE

When using glissando and other effects that create a continuous change in the pitch while Legato is on, the pitch may not rise beyond a certain fixed point, or there may be other limitations on the range over which the pitch can change.

HINT

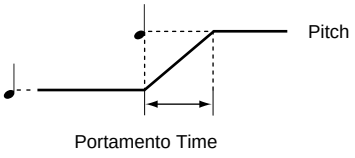
Applying portamento while [SOLO] is on provides an effect similar to the use of the slide technique on a violin.

[PORTA TIME]



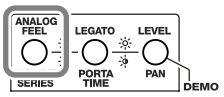
When portamento is used, this specifies the time over which the pitch will change. Higher settings will cause the pitch change to the next note to take more time.

Press [PORTA TIME], causing the indicator to blink, then press [VALUE ▼/▲] to set the value (from 000 to 127). When you have finished making the settings, press [EXIT], causing the [PORTA TIME] indicator light to go off.



Applying Analog-Like Modulation to the Pitch (ANALOG FEEL)

[ANALOG FEEL]

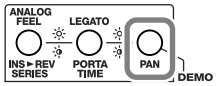


This creates a sort of instability in the sound, like that from an analog synthesizer.

Press [ANALOG FEEL], causing the indicator to light, then press [VALUE ▼/▲] to set the value (from 000 to 127). When you have finished making the settings, press [EXIT], causing the [ANALOG FEEL] indicator light to go off.

Changing the Pan When Using Stereo Output (PAN)

[PAN]



Sets the pan for the Patch or Rhythm Tone. "L64" is far left, "cnt" is center, and "r63" is far right.

Press [PAN], causing the indicator to blink, then press [VALUE ▼/▲] to set the value (L64–cnt–R63). When you have finished making the settings, press [EXIT], causing the [PAN] indicator light to go off.

MEMO

In Part Assign mode (p. 71), you can set the pan for Parts selected in Performance mode, and then save these settings to each individual Performance.

Effect Settings

The SH-32 has two independent onboard effects processors, known as the "Insertion Effects" and "Reverb / Delay." Using these effects, you can create a wide variety of different sounds.

Press [INS-FX] or [REV / DELAY] to turn on the Insertion Effects or Reverb / Delay, respectively (indicator lights). Press the button once more to turn off the effects (indicator light goes off).

You can select one of 35 different Insertion Effects and one of ten types of Reverb / Delay. To set the effect type and make more detailed settings for the selection, turn the FX / SYSTEM knob to a parameter name to call up that parameter, then press [VALUE ▼/▲] to set the value (p. 65, p. 66).

You can switch between two ways of connecting the two effects processors: they can be connected either in parallel or in series. Set this by pressing [INS > REV SERIES] and then [VALUE ▼/▲]. Switch the connection according to the effect you want to obtain, as well as the aim of the effect.

☞ For more detailed information on how to use the effects, refer to **"Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)"** (p. 64).

NOTE

You can make and save effect settings to individual Patches in Patch mode. In Performance mode and Part Assign mode, the types of parameters that can be set and whether or not those settings are enabled in these modes are different in Patch mode. For instructions on making settings in Performance mode and Part Assign mode, refer to **"Applying Effects in Performance Mode"** (p. 66).

Saving the Sounds You Have Created (WRITE)

Sounds with modified settings are temporary; your changes will be discarded as soon as you turn off the power, or select some other sound. When you want to keep a sound after changing its settings, save the sound to the SH-32's user memory.

MEMO

A dot appears in the display when a Patch's settings are changed. The dot disappears when the settings are saved to the SH-32.

NOTE

Any data currently stored in the location to which the new data is being saved is overwritten, and therefore lost, when the write procedure is executed. However, the factory setting data can be recovered by performing the Factory Reset procedure (p. 94).

1. **Make sure that the Patch you wish to save is selected.**
2. **Press [WRITE] to make the indicator light.**
   The Patch number blinks in the display.
3. **Specify the save-destination Patch with the same procedure previously used in selecting the Patch (p. 23). Select a Patch in the User banks (BANK A/B).**
4. **Press [WRITE] once again.**
   The indicator blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm the save.
5. **Press [WRITE] once more to execute the save. To cancel the save, press [EXIT].**

Auditioning to a Patch at the Save Destination

Before saving a Patch when you have an external MIDI keyboard connected to the SH-32's MIDI IN connector, you can play the Patch that is already at that save destination to determine whether or not you really do want that Patch to be overwritten. This gives you better protection against accidental overwriting of your important Patches.

NOTE

You cannot use the SH-32's note-entry buttons to check the sounds.

1. **Follow the procedure in Step 3 of "Saving the Sounds You Have Created (WRITE)" to select a save destination.**
2. **Press [PREVIEW], causing the indicator to blink.**
3. **Play the external MIDI keyboard to listen to the Patch at the save destination, so you can decide whether or not you mind having that Patch replaced.**
4. **After confirming the Patch, press [PREVIEW], causing the indicator light to go off.**
5. **Press [WRITE] to perform the save.**

Chapter 3. Applying Effects to the Sound (INS-FX, REV/DELAY)

About the Onboard Effects

The SH-32 has two built-in effect units, and you can independently edit each unit's settings.

Insertion Effects

These effects are inserted directly into the signal path. Included here are distortion, equalization, compression, Auto Wah, and other effects. Imagine a "black box" that changes the sound itself.

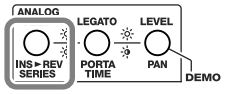
Reverb/Delay (Looped Effects)

This type of effect taps the output from the signal path, and then returns the effect-processed signal back to the signal path, mixing it with the sound source. You can select reverb, delay, chorus, and other effects that add reverberation or a wavering of the sound.

Ways of Connecting Effects (INS > REV SERIES)

You can make settings that determine whether Insertion Effects and Reverb/Delay are connected serially or in parallel in each Patch, Rhythm Set, or Performance.

1. Press [INS > REV SERIES], causing the indicator to blink.

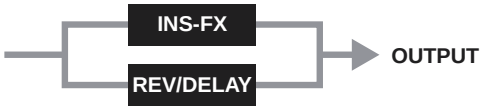


2. Press [VALUE ▼/▲] to make the setting.

Select " SEr " (Series) to connect serially or " PAr " (Parallel) to have the effects connected in parallel.

SEr

PAr



When you connect in series, you can add delay to the distortion sound. Additionally, when the effects are connected in parallel, you can set the level of the signal sent to the reverb or delay for each individual Performance or Rhythm Tone in a Rhythm Set.

3. When you have finished making the settings, press [EXIT], causing the [INS > REV SERIES] indicator light to go off.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

NOTE

If you select an Insertion Effects that is configured internally in mono when this is set to " SEr " (series), the sound generator section's pan setting and the LFO pan will have no effect.

Using the Insertion Effects (INS-FX)

This section explains the procedures used when working with the Insertion Effects.

Turning the Insertion Effects On and Off

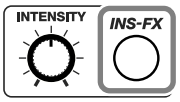
You can set whether the Insertion Effects are used (switched on), or not used (switched off) in each Patch, Rhythm Set, or Performance. Turn these settings OFF when you wish to listen to the unprocessed sound as you create a sound, or when you wish to use external effects processors instead of the built-in effects.

MEMO

In Part Assign mode (p. 71), the following procedure switches each Part on and off, and the Insertion Effects for the selected parts is switched on or off. In addition, you can turn the individual Rhythm Tones (percussion instruments) in Rhythm Tone Edit (p. 69) on and off.

1. Press [INS-FX], to switch the effects on or off.

The effect is on when the indicator is lit, and off when the indicator light is off.



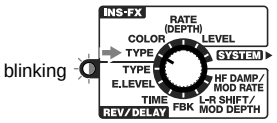
2. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

Selecting the Insertion Effects Type (TYPE)

The SH-32 features 35 different types of internal Insertion Effects; you can select the effect type for each individual Patch or Rhythm Set.

1. Confirm that the SH-32 is in Patch mode.

2. Rotate the FX/SYSTEM knob to "TYPE" in the "INS-FX" section.



3. Press [VALUE ▼/▲] to select which of the effects you want to use.

For details on the Insertion Effects, refer to **"Insertion Effects Parameters"** (p. 107).

4. When you finish making settings, press [EXIT] to end the procedure.

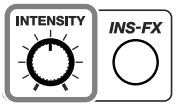
5. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70).

Setting the Insertion Effects

You can set a variety of parameters in each Patch or Rhythm Set for the Insertion Effects selected with the effect type.

Using the INTENSITY Knob

Assigned to the INS-FX [INTENSITY] knob is the specific parameter that is best suited for adjustment with the knob. The parameter assigned is predetermined for the selected effect type.



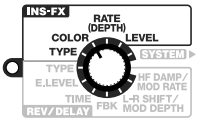
Rotate [INTENSITY] while [INS-FX] is lit to change the amount of the effect applied.

☞ The functions of parameters that may be set differs according to the effect selected with the effect type. For more details, refer to **"Insertion Effects Parameters"** (p. 107).

After adjusting the effect with [INTENSITY], the knob's settings are saved when you press [WRITE] and carry out the write procedure.

Using the FX/SYSTEM Knob and [VALUE ▼/▲]

1. **Confirm that the SH-32 is in Patch mode.**
2. **Turn the FX/SYSTEM knob to the parameter to be set; select "COLOR," "RATE (DEPTH)," or "LEVEL."**



☞ The functions of parameters that may be set differs according to the effect selected with the effect type. For more details, refer to **"Insertion Effects Parameters"** (p. 107).

3. **Press [VALUE ▼/▲] to select a value.**

NOTE You can make settings for the selected parameter only when the indicator to the left of the FX/SYSTEM knob is blinking.

4. **When you finish making settings, press [EXIT] to end the procedure.**
5. **To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70).**

Using the Reverb/Delay (REV/DELAY)

This section explains the procedures used when working with Reverb/Delay.

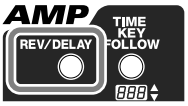
Turning the Reverb/Delay On and Off

You can set whether Reverb/Delay are used (switched on), or not used (switched off) in each Patch, Rhythm Set, or Performance. Turn these settings OFF when you wish to listen to the unprocessed sound as you create a sound, or when you wish to use external effects processors instead of the built-in effects.

MEMO In Part Assign mode (p. 71), the following procedure switches each Part on and off, and the Reverb/Delay for the selected parts is switched on or off. In addition, you can turn the individual Rhythm Tones (percussion instruments) in Rhythm Tone Edit (p. 69) on and off.

1. **Press [REV/DELAY], to switch the effect on or off.**

   The effect is on when the indicator is lit, and off when the indicator light is off.

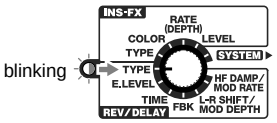


2. **To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).**

Selecting the Reverb/Delay Type (TYPE)

The SH-32 features 10 different types of internal Reverb/Delay effects; you can select the effect type for each individual Patch or Rhythm Set.

1. **Confirm that the SH-32 is in Patch mode.**
2. **Rotate the FX/SYSTEM knob to "TYPE" in the "REV/DELAY" section.**



3. **Press [VALUE ▼/▲] to select which of the effects you want to use.**

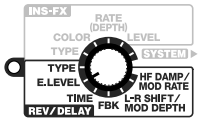
☞ For details on the Reverb/Delay, refer to **"Reverb/Delay Parameters"** (p. 113).

4. **When you finish making settings, press [EXIT] to end the procedure.**
5. **To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70).**

Setting the Reverb/Delay

You can set a variety of parameters in each Patch or Rhythm Set for the Reverb/Delay selected with the effect type.

1. **Confirm that the SH-32 is in Patch mode.**
2. **Rotate the FX/SYSTEM knob to select the "REV/DELAY" parameter to be set.**



Parameters That Can Be Set

E.LEVEL (Effect Level)

Sets the level of the signal sent to the Reverb/Delay.

MEMO

When using the Preview function (p. 21) while setting the effects for Rhythm Sets, you can set the effect level for each selected Rhythm Tone (percussion instrument) individually.

TIME (Reverb/Delay Time)

This sets the length of the reverberation sound when a reverb effect is selected with the effect type setting.

When a delay effect is selected, this sets the time delay from when the original sound is played until the delay sound is produced.

When a chorus effect is selected, this sets the time delay from when the original sound is played until the chorus sound is produced.

FBK (Feedback)

When a delay effect is selected with the effect type setting, this sets the volume at which the delay sound is re-input (feedback volume). Higher values result in more repeats.

L-R SHIFT/MOD DEPTH (L-R Shift/Modulation Depth)

When Stereo Delay is selected with the effect type setting, this sets the time delay from when the original sound is played until the delay sound is produced in the left and right channels (Left: from -50 to 0 msec; Right: from 0 to 50 msec). This allows you to shift the left and right delay times relative to each other. When set to 0 msec, there is no difference between the left and right sides.

This sets the depth of the modulation effect or the modulation of the chorus sound when Modulation Delay or Stereo Chorus is selected.

HF DAMP/MOD RATE (HF Damp/Modulation Rate)

This sets the cutoff frequency for the high end of the delay feedback sound when Modulation Delay is selected with the effect type setting. When not cutting the high frequencies, set this to "byp" (bypass).

This sets the cycle for the modulation effect only when Modulation Delay or Stereo Chorus is selected (units: Hz).

3. **Press [VALUE ▼/▲] to set the value.**

NOTE

You can make settings for the selected parameter only when the indicator at the left of the FX/SYSTEM knob is blinking.

4. **When you finish making settings, press [EXIT] to end the procedure.**
5. **To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70).**

Applying Effects in Performance Mode

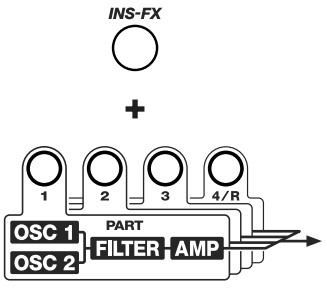
Unlike in Patch mode, where each Patch or Rhythm Set includes its own effect parameters, Performance mode uses the effect settings for the Patches and Rhythm Sets that are assigned to Parts specified in each Performance.

Selecting the Effect Settings Used in a Performance (Effect Source)

For the effect settings used in a Performance, you can select one of the effect settings from the Patches or Rhythm Sets assigned to each Part. The effect settings selected here are referred to as the **effect source**.

When Selecting Insertion Effects Settings

While holding down [INS-FX], press the button for the Part to which the Patch or Rhythm Set with the effect settings you want to use is assigned.

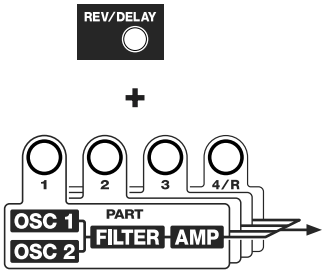


MEMO

Parts whose effect settings are used are indicated by the part buttons that light up when [INS-FX] is pressed.

When Selecting Reverb/Delay Settings

While holding down [REV/DELAY], press the button for the Part to which the Patch or Rhythm Set with the effect settings you want to use is assigned.



MEMO

Parts whose effect settings are used are indicated by the part buttons that light up when [REV/DELAY] is pressed.

About Effect Settings in Performance Mode

When in Normal Performance Mode

Normal Performance mode refers to the mode the SH-32 is in after you've pressed [PATCH/PERFORM], causing it to light up.

In this mode, you can make effect settings, just as in Patch mode. Any changes made in the various effects parameters result in changes in the settings for the Patch or Rhythm Set assigned to the Part designated as the effect source. Thus, settings changes are not stored within Performances, but are instead saved as settings for the Patch or Rhythm Set functioning as the effect source.

To save the settings, press [WRITE] and carry out the write procedure (p. 73).

☞ For more on how to set effects and parameters, refer to **"Using the Insertion Effects (INS-FX)"** (p. 64) and **"Using the Reverb/Delay (REV/DELAY)"** (p. 65).

When Using Part Assign Mode

Part Assign mode refers to the mode you are in after [EXIT] has been pressed while [PATCH/PERFORM] was held down, causing the indicators for both buttons to blink.

At this point, you can set the "REV/DELAY" "E.LEVEL" only when the Insertion Effects and Reverb/Delay are connected in parallel (p. 64). You cannot set parameters other than "E.LEVEL."

E.LEVEL (Effect Level)

Sets the level of the signal sent to the Reverb/Delay in the currently selected Part.

Rotate the FX/SYSTEM knob to "E.LEVEL" in "REV/DELAY," then press [VALUE ▼/▲] to set the value (from 000 to 127).

To save settings after changing E.LEVEL (effect level), press [WRITE] and carry out the write procedure for the Performance (p. 73).

Setting the Reverb/Delay Level in Performance Mode

● Master Effect Level Shared by All Parts

1. **While in normal Performance mode, turn the FX/SYSTEM knob to "E.LEVEL" in "REV/DELAY."**
2. **Press [VALUE ▼/▲] to set the value (000–127), then press [EXIT] to return to the original mode.**
3. **Save using the write procedure as needed.**
   The setting is saved to the effect source Patch.

● Effect Send Level for Each Part

1. **While in Part Assign mode, turn the FX/SYSTEM knob to "E.LEVEL" in "REV/DELAY."**
2. **Press [VALUE ▼/▲] to set the value (000–127), then press [EXIT] to return to the original mode.**
3. **Save using the write procedure as needed.**
   The four Parts are saved together to the Performance.

Chapter 4. Playing the Rhythm Sets

Selecting Rhythm Sets and Playing the Percussion Instruments

The SH-32 has four different Rhythm Sets stored internally; these are divided into two "User Rhythm Sets" and two "Preset Rhythm Sets."

1. **Press [PATCH/PERFORM], causing the indicator light to go off.**

   The SH-32 switches to Patch mode.

2. **Press [BANK].**

   The [1/A]–[4/D] and [8/R] indicators blink.

3. **Press [8/R].**

   The Rhythm Set bank is selected, and the [1/A]–[4/D] indicators blink.

4. **Press one of the buttons from [1/A] through [4/D] to select a Rhythm Set.**

   [1/A] **r1U** (User Rhythm Set)
   [2/B] **r2U** (User Rhythm Set)
   [3/C] **r3P** (Preset Rhythm Set)
   [4/D] **r4P** (Preset Rhythm Set)

MEMO

The factory-programmed User Rhythm Sets contain data that differs from that in the Preset Rhythm Sets.

5. **Play the MIDI keyboard connected to the MIDI IN connector or use the Preview (note-entry) function to play percussion instrument sounds.**

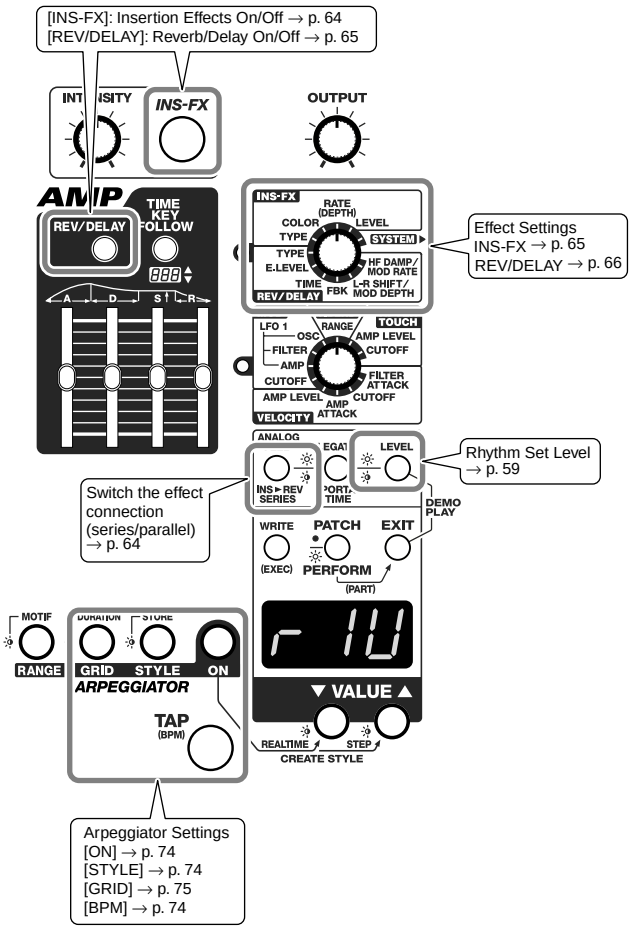
   If playing sounds with an external MIDI keyboard, be sure to match the MIDI channels (p. 84).

Editing a Rhythm Set

Making Settings for the Overall Rhythm Set

Here's how to make the common settings applied to all of the percussion instruments in the Rhythm Set.

1. **Select the Rhythm Set with the settings you want to change.**
2. **Confirm that the Preview function is off (the [PREVIEW] indicator light to go off).**
3. **You can set the parameters shown in the following figure. Use the knobs and buttons indicated for each parameter to make the settings. In addition, some parameters include values that are set by pressing [VALUE ▼/▲].**



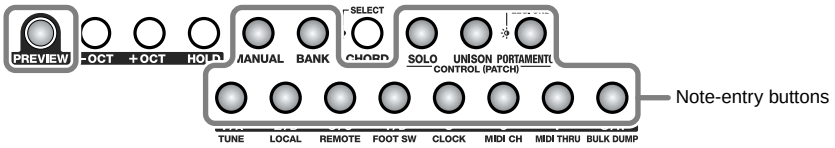
For more detailed information on each of the parameters, see the explanations on the reference pages for each parameter.

4. **To save the settings, press [WRITE] and carry out the write procedure (p. 70).**

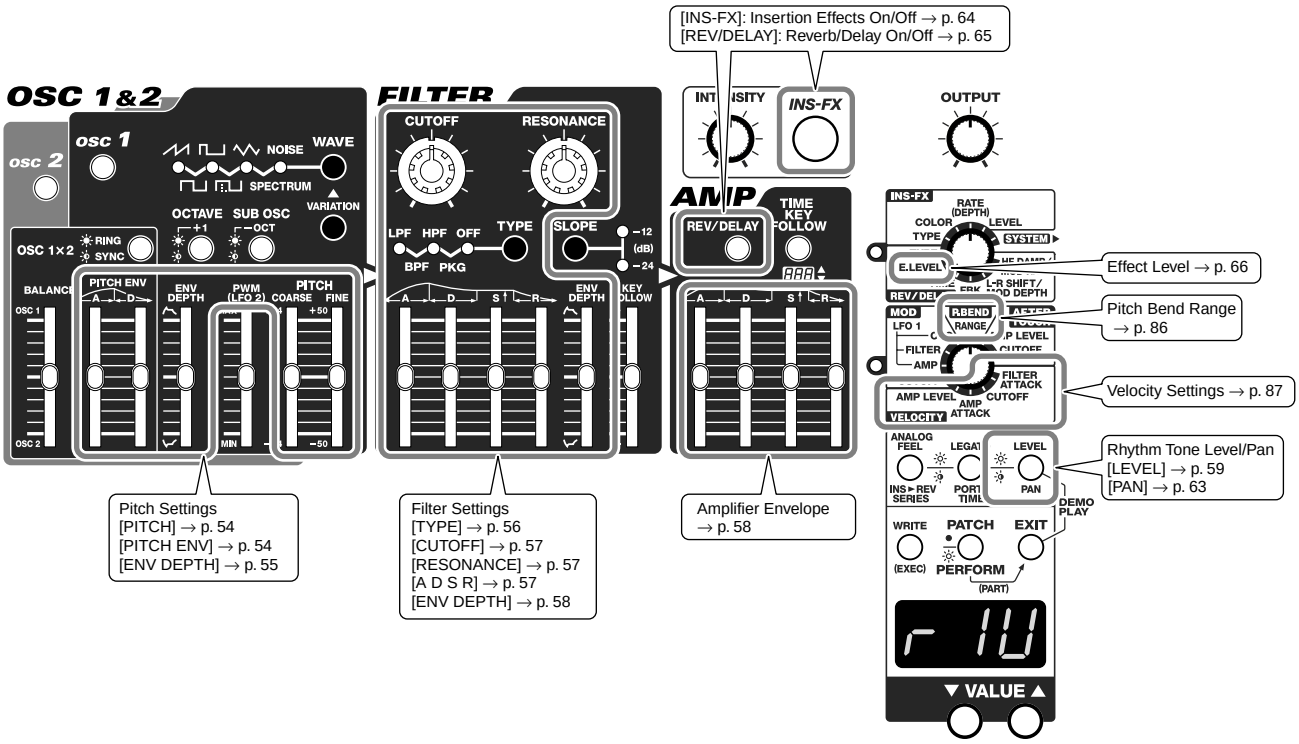
Making Settings for Each Rhythm Tone (Percussion Instrument)

Here's how to make the settings for the individual percussion instruments in the Rhythm Set.
These settings can be made in Patch mode, Performance mode, or Part Assign mode.

1. **Select the Rhythm Set with the settings you want to change.**
2. **Press [PREVIEW] to turn the Preview function on.**



3. **Press the note-entry buttons to select the percussion instrument for which you want to make the settings.**
   The pressed button blinks, indicating the selected percussion instrument.
4. **You can set the parameters shown in the following figure. Use the knobs and buttons indicated for each parameter to make the settings. In addition, some parameters include values that are set by pressing [VALUE ▼/▲].**



☞ For more detailed information on each of the parameters, see the explanations on the reference pages for each parameter.

5. **To save the settings, press [WRITE] and carry out the write procedure (p. 70).**

NOTE

- If you want to set the level of the signal sent to the Reverb / Delay (REV / DELAY-E.LEVEL) differently for each Rhythm Tone, be sure to set the type of effects connection (INS > REV SERIES) to " PAr " (parallel) (p. 64).
- You cannot use the panel controls to change the Rhythm Tone key number assignments.
- You can make filter and amp envelope settings (A, D, S, R) in Rhythm Tones as well. However, when the sustain level set with [S] is reached, the envelope immediately goes on to the release without holding at that level.

Saving Changed Settings (WRITE)

Changes in settings are temporary, and are lost when the power is turned off or when you select another tone. To keep the settings you have modified, save them to the SH-32's User Memory.

MEMO

A dot appears in the display when a Rhythm Set's settings are changed. The dot disappears when the settings are saved to the SH-32.

NOTE

Any data currently stored in the location to which the new data is being saved is overwritten, and therefore lost, when the write procedure is executed. However, the factory setting data can be recovered by performing the Factory Reset procedure (p. 94).

1. **Make sure that the Rhythm Set you wish to save is selected.**
2. **Press [WRITE] to make the indicator light.**
   The Rhythm Set number blinks in the display.
3. **Specify the save-destination Rhythm Set with the same procedure previously used in selecting the Rhythm Set (p. 68). Select a User Rhythm Set (r1U, r2U).**
4. **Press [WRITE] once again.**
   The indicator blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm the save.
5. **Press [WRITE] once more to execute the save. To cancel the save, press [EXIT].**

Chapter 5. Using in Performance Mode

Selecting a Performance and Playing the Patch for Each Part

The SH-32 has 64 different Performances stored internally; these are all stored in the User Performances; there are no Preset (read only) Performances.

1. **Press [PATCH/PERFORM] to make its indicator light.**
   The SH-32 switches to Performance mode.
2. **Press [BANK].**
   The [1/A]–[8/R] indicators blink.
3. **Press one of the buttons from [1/A] through [8/R] to select a bank (1–8).**
   The [1/A]–[8/R] indicators blink.
4. **Once again, press one of the buttons from [1/A] through [8/R] to select a Performance number.**
   1-1–8-8 (User Performances)
5. **Play the MIDI keyboard connected to the MIDI IN connector or use the Preview (note-entry) function to play sounds.**
   When using an external MIDI keyboard to play sounds, either set it to the MIDI channel for the Part you want to play (p. 84), or turn the Remote Keyboard Switch (REMOTE) on (p. 90).
   When using the Preview function to play sounds, the sounds from Patches in Parts selected with the Part buttons are played.

Selecting the Patch for Each Part (Part Assign Mode)

Select the Patches that are assigned to each Part in a Performance. The Patch number assigned to each Part can be stored as a Performance parameter.

1. **Confirm that the SH-32 is in Performance mode.**
2. **While holding down [PATCH/PERFORM], press [EXIT].**
   Both buttons blink, and the SH-32 switches to Part Assign mode.
3. **Press [1]–[4/R] (Part buttons) to select the Part to which the Patch is being assigned.**
4. **Select the Patch with the same procedure used in selecting the Patch in Patch mode (p. 23).**

MEMO

You can also assign a Rhythm Set to Part 4/R.

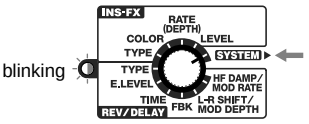
5. **Press [EXIT] to return to Performance mode.**
6. **To save the settings, press [WRITE] and carry out the write procedure (p. 73).**

Playing Sound in More Than One Part (Multitimbre)

When composing songs or performing data, the Patch used in each Part may be assigned to the Performance Parts, which are then set to separate MIDI channels. This type of sound generator, in which each Part is performed independently from the others, is called a **mutitimbral sound generator**.

The following section explains the use of the SH-32 as a mutitimbral sound generator.

1. **Confirm that the SH-32 is in Performance mode.**
2. **Assign a Patch to each Part (see previous sections).**
3. **Next, set the MIDI channel for each Part. Turn the FX/SYSTEM knob to "SYSTEM."**



4. **Press [6 (MIDI CH)] to make its indicator blink.**
5. **Press [1]–[4/R] (Part buttons) to select the Part whose MIDI channel you want to set, causing the button to light up.**
6. **Press [VALUE ▼/▲] to select the MIDI channel number (1–16). Set each Part to a different MIDI channel.**
7. **When you have finished making the settings, press [EXIT].**
8. **To save the settings, press [WRITE] and carry out the write procedure (p. 73).**
9. **Now you can connect an external sequencer or other such device to the SH-32 and compose songs and play back song data for ensemble performances.**

MEMO

In Step 5, if you press a Part button that is already lit, then the four Part buttons all light up simultaneously. At this point, you can press [VALUE ▼/▲] to set the MIDI channel used for receiving the Program Change message that switches the Performance itself (Performance Control Channel: 1–16, OFF). When this setting is made, it is automatically saved as a single setting applied to the entire system (p. 85).

NOTE

When using the SH-32 as a mutitimbral sound generator, turn the Remote Keyboard Switch (REMOTE) off (p. 90).

Layering Patches for a Thicker Sound (Part Stack Function)

By pressing more than one Part button at the same time in Performance mode, causing those buttons to light up, you can have all the Patches assigned to those Parts play simultaneously. This function is called the **Part Stack function**. Use this feature to achieve fat, complex sounds simply and easily.

MEMO

With the SH-32's Part Stack function, merely stacking (simultaneously pressing multiple Part buttons) allows you to have **all these Parts act as if they were all set to the same MIDI channel**. Regardless of the individual channel settings in each of the Parts used in a stack, messages are received only via the **MIDI channel for the Part with the lowest Part number**.

1. **Confirm that the SH-32 is in Performance mode.**
2. **Assign the Patches you want to have played to their respective Parts (p. 71).**
3. **Simultaneously press the buttons ([1]–[4/R]) for any Parts you want to have played together.**
   - You can stack up to a maximum of four Parts.
   - Stacked Parts need not be adjacent; for example, you can stack Part 1 and Part 3.
   - You cannot set two Part stacks at the same time.
   - The status of Part Stack can be saved together with the Performance settings, using the write procedure.
   - To exit Part Stack, press any of the stack's Part buttons twice.

MEMO

- Buttons for stacked Parts light / blink at the same time. If at this time only one of the buttons (one Part) is blinking, it indicates that part is being edited with the panel controls. When another button in the stack is pressed, that button blinks, and the corresponding Part becomes the one being edited. You cannot edit more than one Part at the same time.
- If any part in the stack is included in the Parts used by Arpeggiator (p. 80) or the Chord Memory function (p. 82), then the relevant function acts upon all of the parts in the stack.

Editing a Performance

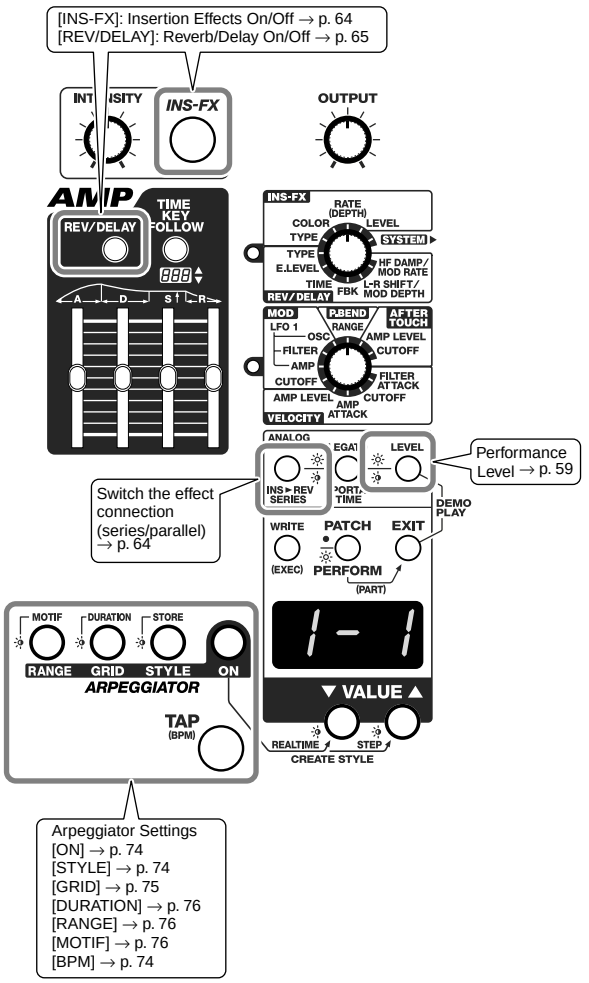
You can change these settings for the Patch or Rhythm Set assigned to each Part even in Performance mode. You can save changes to the settings to each Patch or Rhythm Set.

However, the parameters described in the following section, **"Settings Affecting the Overall Performance,"** are set for the Performance itself and can be saved to each Performance.

Settings Affecting the Overall Performance

Here's how to make the common settings applied to all of the Parts in the Performance.

1. **Select the Performance with the settings you want to change.**
2. **You can set the parameters shown in the following figure. Use the buttons indicated for each parameter to make the settings. In addition, some parameters include values that are set by pressing [VALUE ▼/▲].**



For more detailed information on each of the parameters, see the explanations on the reference pages for each parameter.

3. **To save the settings, press [WRITE] and carry out the write procedure (p. 73).**

Making Settings for Each Patch or Rhythm Set in the Parts

Here's how to make the settings for the individual Patches and Rhythm Sets in the Performance's Parts.

1. **Select the Performance containing settings you want to change.**
2. **Press [1]–[4/R] (Part buttons) to select the Part to which the Patch or Rhythm Set with the settings you want to change is assigned.**
3. **The procedure for making the settings is the same as that used in Patch mode. Refer to "Chapter 2. Creating Your Own Sounds" (p. 52) when making the settings.**
4. **To save the settings, press [WRITE] and carry out the write procedure (p. 73).**

Other Performance-Related Settings

For more information on the following procedures and settings in Performance mode, refer to the pages listed.

- Using the Effects → (p. 66)
- Using Arpeggiator → (p. 80)
- Using the Chord Memory Function → (p. 82)

Securing the Number of Oscillators in Each Part (Oscillator Reserve)

When the number of sounds being played exceeds the SH-32's maximum 32 oscillators then any further sounds are given priority, and the sounds from the oscillators currently being played are deleted, starting with the least recent sound and progressing in order as more sounds are added. To prevent sounds in Parts being played in Performance mode from being cut off due to the sounds being deleted, you can set the minimum number of oscillators to be maintained for individual Parts. For example, when the Oscillator Reserve for Part 1 is set to "10," then even if all 32 oscillators are in use, ten oscillators remain reserved for use by Part 1.

1. **Confirm that the SH-32 is in Performance mode.**
2. **Hold down [PATCH/PERFORM] and press [EXIT].**
   Both buttons blink, and the SH-32 switches to Part Assign mode.
3. **Press [1]–[4/R] (Part buttons) to select the Part whose Oscillator Reserve settings you want to make.**
4. **Press [OSC 1], causing the indicator to blink.**
5. **Press [VALUE ▼/▲] to set the number of oscillators (0–32) you want to reserve for that Part.**

NOTE

You cannot make settings that would result in a combined total of more than 32 oscillators reserved for all of the Parts.

6. **Press [EXIT] to return to Performance mode.**
7. **To save the settings, press [WRITE] and carry out the write procedure.**

Saving Changed Settings (WRITE)

Changes in settings are temporary, and are lost when the power is turned off or when you select another tone. To keep the settings you have modified, save them to the SH-32's User Memory.

MEMO

A dot appears in the display when a Performance's settings are changed. The dot disappears when the settings are saved to the SH-32.

NOTE

Any data currently stored in the location to which the new data is being saved is overwritten, and therefore lost, when the write procedure is executed. However, the factory setting data can be recovered by performing the Factory Reset procedure (p. 94).

1. **Make sure that Performance you wish to save is selected.**
2. **Press [WRITE] to make the indicator light.**
   The Performance number blinks in the display.
3. **Specify the save-destination Performance with the same procedure previously used in selecting the Performance (p. 71).**
4. **Press [WRITE] once again.**
   The [WRITE] and [PATCH / PERFORM] indicators blink. Once "Pt1" (Part 1) appears blinking in the display, if the settings for the Patch assigned to Part 1 are changed, then that Patch number blinks in the display. If the settings for the Part 1 Patch are not changed, then "---" blinks in the display.
5. **If the Patch settings are changed, then specify a Patch for the save destination. If you don't want to save the Patch settings, then press the button for the Part that is to be saved, causing the button to light up.**
6. **Repeat Steps 4 and 5 to carry out the same process for Parts 2 through 4.**
7. **When you have finished with the procedure up to Part 4, the message " Sur " (Sure?) blinks in the display, prompting you to confirm the save.**
8. **Press [WRITE] once more to execute the save. To cancel the save, press [EXIT].**

Chapter 6. Using Arpeggiator (ARPEGGIATOR)

About Arpeggiator

The SH-32's Arpeggiator function lets you perform arpeggios (chords in which notes are played in succession, one note at a time) just by playing the chords, using the notes in the chords you play. Not only can you use the factory-set **Arpeggio Styles**, which determine the way the arpeggio is played, but you can also freely rewrite Styles and enjoy performing your own original arpeggios. Furthermore, you can also play rhythm patterns when you have a Rhythm Set selected. What's more, you can perform in ensemble using these arpeggios and rhythm patterns in Performance mode.

Playing Arpeggios

Turning Arpeggiator On and Off

You can save the Arpeggiator On / Off settings individually in each Patch, Rhythm Set, or Performance.

1. Press ARPEGGIATOR [ON], causing the indicator to light.

When the Arpeggiator is turned on, you can then perform arpeggios by playing a MIDI keyboard connected to the MIDI IN connector or by using the Preview function (note-entry).

NOTE

If nothing is recorded to the Arpeggio Style selected at this time, then no sound will be played.

2. To turn off the Arpeggiator, press [ON] once more, causing the indicator light to go off.

3. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

- When the System function FOOT SW (Foot Switch) is set to "ArP", you can then use the foot switch connected to the FOOT SWITCH jack to turn the Arpeggiator on and off (p. 91).
- By holding the Preview function, you can have arpeggios continue to play even without having to hold down the SH-32's note-entry buttons (p. 21).

Using in Combination with the Chord Memory Function

When performing with the Arpeggiator, you can also use it along with the Chord Memory function (p. 81). After first storing complex Chord Forms in memory, you can then call them up when Arpeggiator is on, and you can easily create complex arpeggio sounds just by pressing a single key (or one note-entry button).

Determining the Tempo for Arpeggio Performances

This sets the Arpeggiator tempo. You can save the Arpeggiator tempo settings individually in each Patch, Rhythm Set, or Performance.

1. Press [TAP (BPM)], causing the indicator to light.

The current tempo value appears in the display.

2. Press [VALUE ▼/▲] to set the tempo value (20–250), or set the value by tapping [TAP (BPM)] a number of times with the same rhythm (Tap Tempo).

HINT

By holding down [EXIT] and pressing [VALUE ▼/▲], you can set the tempo value down to the first decimal place.

3. When you have finished making the setting, press [EXIT], causing the [TAP (BPM)] indicator to go off.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

HINT

You can synchronize the tempo of the arpeggio performance to the tempo of an external MIDI device. For details, refer to **"Synchronizing Arpeggiator and the LFO to an External MIDI Device"** (p. 88).

Selecting Styles for Arpeggio Performances (STYLE)

This selects the arpeggio's basic performance Style. You can save selected Style numbers separately to each Patch, Rhythm Set, or Performance.

1. Press [STYLE], causing the indicator to light.

The arpeggio's Style number appears in the display.

2. Press [VALUE ▼/▲] to select a Style number (11.a–88.a).

You can also select Style numbers directly by pressing [BANK] and pressing one of the buttons [1 / A]–[8 / R], then once again pressing one of the buttons [1 / A]–[8 / R].

For more on the prepared Arpeggio Styles already programmed in the SH-32, refer to the **"Arpeggio Style List"** (p. 102).

3. When you have finished selecting a Style, press [EXIT], causing the [STYLE] indicator to go off.

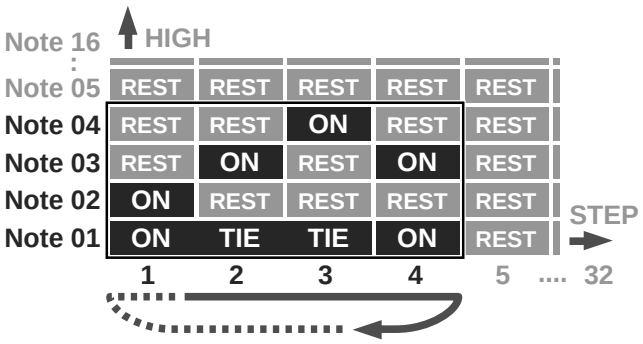
4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

HINT

When the System function FOOT SW (Foot Switch) is set to " a.UP ", you can also use the foot switch connected to the FOOT SWITCH jack to switch Arpeggio Style numbers (p. 91).

About Arpeggio Styles

An **Arpeggio Style** is a series of data for basic arpeggio patterns and chord styles recorded in the form of a grid consisting of a maximum of 32 steps x 16 pitches.



Each grid contains one of the following kinds of data.

- ON: Note On (with Velocity data)
- TIE: Tie (hold of the previous note)
- REST: Rest (no sound played)

The keys that are pressed along with the sequence in which they are pressed is referenced to the "lowest-pitched key during input."

An Arpeggio Style is not part of any Patch or Performance, but rather independent data; you can store up to 64 Arpeggio Styles. The numbers used for calling up these Arpeggio Styles are saved as parameters in Patches and Performances. Thus, you can use a single Arpeggio Style in different Patches and Performances at the same time.

The Relationship Between Arpeggio Styles and Rhythm Styles

When you select a Rhythm Set in Patch mode, Arpeggiator automatically switches to Rhythm Style performances or input.

When a Rhythm Set is assigned to Part 4/R in Performance mode, you can have the rhythm pattern play together with the arpeggio. In addition, if a Style is created when Part 4/R is selected with the Part buttons, then automatically it is a Rhythm Style that is created.

About Rhythm Styles

A **Rhythm Style** is data recording the Arpeggiator action (which creates the Rhythm Style) as applied to a Rhythm Set.

Although the data is organized the same way it is in Arpeggio Styles, **they differ from regular arpeggios in that it is always the notes specified during input that are played**. They do not change according to the keys pressed during a performance, and they play in a set, fixed rhythm pattern, regardless of the pitches of the keys that are pressed.

A Rhythm Style is not part of any Rhythm Set or Performance, but rather independent data; you can store up to 64 Rhythm Styles. The numbers used for calling up these Rhythm Styles are saved as parameters in Rhythm Sets and Performances. Thus, you can use a single Rhythm Style in different Rhythm Sets and Performances at the same time.

Changing the Beat and Shuffle (GRID)

This sets the particular note division and resolution in a "single grid" used in creating the arpeggio in an Arpeggio Style, and how much of a "shuffle" syncopation is to be to applied (none / weak / strong) to it (grid type).

1. Press [GRID], causing the indicator to light.

2. Press [VALUE ▼/▲] to select one of the following grid types.

04_: Quarter note (one grid section = one beat)

08_: Eighth note (two grid sections = one beat)

08L: Eighth note shuffle Light (two grid sections = one beat, with a light shuffle)

08H: Eighth note shuffle Heavy (two grid sections = one beat, with a heavy shuffle)

08t: Eighth note triplet (three grid sections = one beat)

16_: Sixteenth note (four grid sections = one beat)

16L: Sixteenth note shuffle Light (four grid sections = one beat, with a light shuffle)

16H: Sixteenth note shuffle Heavy (four grid sections = one beat, with a heavy shuffle)

16t: Sixteenth note triplet (six grid sections = one beat)

3. When you have finished making the settings, press [EXIT], causing the indicator light to go off.

Applying Staccato and Tenuto (DURATION)

This setting (duration) determines whether the sounds are played staccato (short and clipped), or tenuto (fully drawn out).

NOTE

This setting has no effect with Rhythm Styles.

1. Press [GRID], causing the indicator to blink.

2. Press [VALUE ▼/▲] to set the duration.

Settings values: 30, 40, 50, 60, 70, 80, 90, 100, 120, FUL, Ft1, Ft2

For example, when set to "30," the length of the note in a grid (or when a series of grids is connected with ties, the final grid) is 30% of the full length of the note set in the grid type.

FUL (Full): Even if the linked grid is not connected with a tie, the same note continues to sound until the point at which the next new sound is specified.

Ft1 (Filter 1): Just as with regular arpeggios, the varying combinations of note numbers are played according to the keys pressed during the performance; these are then substituted with the controls relative to the filter cutoff frequency. The patterns of the filter switching on and off changes according to how the keys are pressed.

Ft2 (Filter 2): The note numbers originally played when the Arpeggio Style was created are produced, regardless of the keys pressed during performance; then these are the controls relative to the filter cutoff frequency. This yields a fixed pattern where the changes occur in steps, similar to a step modulator.

With both "Ft1" (Filter 1) and "Ft2" (Filter 2), the note number designating the sound to be produced by Arpeggiator is replaced with the controls relative to the filter cutoff frequency. This provides a filter effect that changes the sound to a scale that progresses according to the rhythm.

Changing the Range of the Arpeggio (RANGE)

This adds an effect that shifts arpeggios one cycle at a time in octave units (octave range). You can set the shift range upwards or downwards (up to three octaves up or down).

NOTE

This setting has no effect with Rhythm Styles.

1. Press [RANGE], causing the indicator to light.

2. Press [VALUE ▼/▲] to set the octave range.

Settings value: -3–0–3

Selecting Ascending/Descending Variations (Different Ways of Playing the Sounds) (MOTIF)

This selects the method used to play sounds (motif) when you have a greater number of notes than programmed for the Arpeggio Style.

MEMO

When the number of keys played is less than the number of notes in the Style, the highest-pitched of the pressed keys is played by default.

NOTE

This setting has no effect with Rhythm Styles.

1. Press [RANGE], causing the indicator to blink.

2. Press [VALUE ▼/▲] to select one of the following motifs.

UP.L: Only the lowest of the keys pressed is sounded each time, and the notes play in order from the lowest of the pressed keys.

UP.H: Notes from both the lowest and highest pressed keys are sounded each time, and the notes play in order from the lowest of the pressed keys.

UP._: The notes play in order from the lowest of the pressed keys. No one note is played every time.

dn.L: Only the lowest of the keys pressed is sounded each time, and the notes play in order from the highest of the pressed keys.

dn.H: Notes from both the lowest and highest pressed keys are sounded each time, and the notes play in order from the highest of the pressed keys.

dn._: The notes play in order from the highest of the pressed keys. No note is played every time.

Ud.L: Only the lowest of the keys pressed is sounded each time, and the notes in the arpeggio are played in order from the lowest of the pressed keys and then back again in the reverse order.

Ud.H: Notes from both the lowest and highest pressed keys are sounded each time, and the notes play in order from the lowest of the pressed keys and then back again in the reverse order.

Ud._: The notes play in order from the lowest of the pressed keys, and then back again in the reverse order. No note is played every time.

rn.L: While only the lowest of the keys pressed is sounded each time, the notes in the arpeggio are played in random order.

<Example>

Action of a Style starting from the lowest note, "1-2-3-2" when the keys "**C**-D-E-F-**G**" are played

When "UP.L" is selected as the motif:

C-D-E-D → **C**-E-F-E → **C**-F-G-F (→ repeated)

When "UP._" is selected as the motif:

C-D-E-D → D-E-F-E → E-F-G-F (→ repeated)

When "Ud.H" is selected as the motif:

C-D-**G**-D → **C**-E-**G**-E → **C**-F-**G**-F → **C**-E-**G**-E (→ repeated)

Creating Your Own Styles

Not only can you use the prepared internal **Arpeggio Styles** and **Rhythm Styles** that determine how arpeggios are played, but you can also create them as well. This way, you can enjoy performing your own original arpeggios.

- The SH-32 is shipped from the factory with 64 Arpeggio Styles and 64 Rhythm Styles already programmed; all of these are freely rewritable. However, note that since these Styles are used in Preset Patches and factory-set User Performances as well, when you make changes in the Styles, then the sounds of Preset Patches and factory-set User Performances in which the Arpeggiator is turned on change. By carrying out Factory Reset (p. 94), you can get the SH-32 to once again sound exactly as it did when you first took it out of the box.
- If you **switch to something else** or **carry out the write procedure** before saving an Arpeggio Style or Rhythm Style that you've created, the newly created Style will be lost. Be sure to **save the Style first** if you want to keep it.

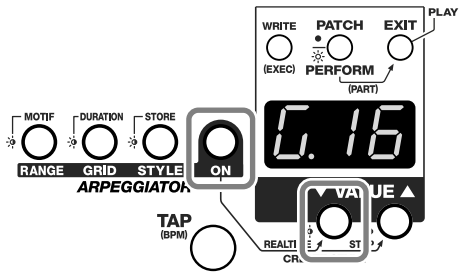
Creating Styles by Playing the Notes as They Are to Be Performed (REALTIME)

This creates styles in a similar manner to using a sequencer's Realtime Recording function. Record the performance just the way it is played using the note-entry buttons or an external MIDI keyboard.

1. Set the grid type (GRID: p. 75), duration (DURATION: p. 76), and tempo (BPM: p. 74) for the Arpeggio Style that is to be created.

2. Hold down ARPEGGIATOR [ON] and press [VALUE ▼ (REALTIME)].

[ON] lights up while [WRITE] and [VALUE ▼] blink, indicating that the SH-32 is in Realtime Input standby. Additionally, the Preview (note-entry) function is turned on.



3. "G." appears in the display (** indicates the number of grids). Press [VALUE ▼/▲] to specify the Style length in terms of the number of grids (1–32).**

This completes the preparations for Realtime Input.

4. Press [WRITE (EXEC)].

[WRITE (EXEC)] changes from a blinking to a constant light, the metronome guide sound plays, and a countdown "-3, -2, -1, 0" is displayed. Once the countdown has finished, the SH-32 is ready for Realtime Input. Input by pressing the SH-32's note-entry buttons or playing an external MIDI keyboard along with the progression "G.01, G.02, G.03, ..." that appears in the display.

- The metronome's accent plays once each beat, and a different click sound plays at the shortest interval that can be recorded in the Style. You cannot record at shorter intervals than that indicated by the click sound.
- A maximum of sixteen notes (specifying the sound pitch) can be used within one Style. The pitches are no longer recorded once you input the seventeenth and any other further notes that have new pitches. Although in this case, the grid continues, but note that the data is blank.
- With Realtime Input, recording for the length of the grid set in Step 3 (when set to "G.08," this would be "G.01"–"G.08") is repeated. You can layer further input of new notes with each new pass. However, when you layer input in the same grid, notes that have already been input to that grid are overwritten and erased.

5. When you have finished recording with Realtime Input, press [EXIT].

The metronome guide sound stops, and the SH-32 returns to the original mode.

6. Confirm that Arpeggiator is on ([ON] is lit), and press the SH-32's note-entry buttons or play the external MIDI keyboard to check the results of the Realtime Input.

NOTE

You cannot do partial edits of Styles. If a mistake is made, re-input the Style.

7. Remake the setting for the grid type (GRID: p. 75), duration (DURATION: p. 76), octave range (RANGE: p. 76), motif (MOTIF: p. 76), and tempo (BPM: p. 74) as needed.

8. If satisfied with the results of Realtime Input, save the created Style (p. 79). Additionally, if you also want to save parameters changed in a previous step, carry out the write procedure for the Patch or Performance.

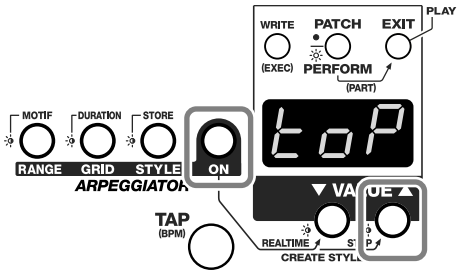
You can create Rhythm Styles using the same procedure described above when selecting a Rhythm Set in Patch mode, or when selecting a Part (4/R) to which a Rhythm Set is assigned while in Performance mode.

Creating Styles by Playing Sounds One At a Time (STEP)

This creates styles in a similar manner to using a sequencer's Step Recording function. Notes and rests are input and recorded one by one.

1. Hold down ARPEGGIATOR [ON] and press [VALUE ▲ (STEP)].

[ON] lights up while [VALUE ▲] blinks. "toP" appears in the display, indicating that the SH-32 is in Step Input standby. Additionally, the Preview (note-entry) function is turned on automatically.



2. Press the SH-32's note-entry buttons or play an external MIDI keyboard to input the first note.

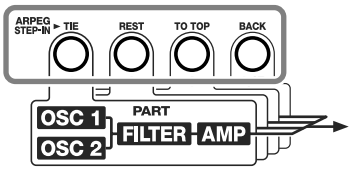
"G.02" appears in the display. The first note is input to the beginning grid, and input to the next grid is enabled.

- A maximum of sixteen notes (specifying the sound pitch) can be used within one Style. The pitches are no longer recorded once you input the seventeenth and any other further notes that have new pitches. Although in this case, the grid continues, but note that the data is blank.
- Be aware that if you input a new note before releasing the note-entry button or key on the keyboard for the note currently being input, both notes will be input together as a chord at the same grid.

MEMO

When inputting with an external MIDI keyboard, the force with which the keys are pressed (velocity) is also recorded, and this is reflected in arpeggios in the level and relative strength of the notes expressed.

3. In Step Input, you can use the following buttons to input ties and rests, and erase the immediately preceding input.



[TIE] (Part button 1): A tie is input to the grid, and the note input just before is connected with the tie.

[REST] (Part button 2): A rest is input to the grid.

[TO TOP] (Part button 3): This determines the Style's length when repeatedly layering input. When you press [TO TOP], the last grid to have data input to it is made the final step of the Style, and the Style returns to the beginning grid as the next grid to which data is input. After this, while inputting on the second and later cycles, when you reach the end of the Style as determined in the first cycle, the Style automatically returns to the beginning grid; you can continue with repeating input until you press [EXIT].

MEMO

If you continue to input data without pressing [TO TOP], the Style returns to the beginning grid once the limit (32nd grid) is reached.

[BACK] (Part button 4): Deletes the last note input and returns you to the grid immediately preceding the current input grid. You cannot go back more than one note.

4. When you have finished recording with Step Input, press [EXIT].

5. Confirm that Arpeggiator is on ([ON] is lit), and press the SH-32's note-entry buttons or play the external MIDI keyboard to check the results of the Step Input.

NOTE

You cannot do partial edits of Styles. If a mistake is made, re-input the Style.

6. Remake the setting for the grid type (GRID: p. 75), duration (DURATION: p. 76), octave range (RANGE: p. 76), motif (MOTIF: p. 76), and tempo (BPM: p. 74) as needed.

7. If satisfied with the results of Step Input, save the created Style (p. 79). Additionally, if you also want to save the parameter settings changed in a previous step, carry out the write procedure for the Patch or Performance.

You can create Rhythm Styles using the same procedure described above when selecting a Rhythm Set in Patch mode, or when selecting a Part (4/R) to which a Rhythm Set is assigned while in Performance mode.

Creating Styles Using an External Sequencer

Using an external sequencer, you can create Arpeggios and Rhythm Styles in the form of sequence data, then load that data into the SH-32 to create Styles.

To load the data, you need to synchronize the SH-32 to the tempo of the sequencer that'll be doing the transmitting, and then carry out Realtime Input.

1. Use a MIDI cable to connect the SH-32's MIDI IN connector to the MIDI OUT connector of the external sequencer.

2. Set the external sequencer so that it transmits its MIDI clock (is the master).

☞ For instructions on setting the external sequencer, refer to the manual that came with your sequencer.

3. Record the sequence data on which the Style is based from the sequencer to Measures 1 and 2. Three aspects of the notes, the "pitch," length," and "velocity," are expressed in the Style.

- Even if you input sequence data too rapidly, remember that the SH-32 cannot reproduce data that is of shorter duration than the grid itself. For example, if you create sequence data that does not include any shuffle or other similar form of expression, you can add it afterwards by setting the SH-32's grid type (GRID).
- Do not create sequence data containing more length than the corresponding limit for the Arpeggiator Style length (32 grids).

4. At the beginning of the completed sequence data, insert a four-beat empty measure as a leading to match the Arpeggiator's countdown.

5. Set the SH-32's System function CLOCK setting to " mid " (MIDI) (p. 92).

You can synchronize the SH-32 to the external sequencer's tempo (slave).

6. Set the grid type (GRID) to correspond to the Style's note division. For example, if using eighth notes, set this to "08_" (p. 75).

7. Hold down ARPEGGIATOR [ON] and press [VALUE ▼] to put the SH-32 in Realtime Input standby.

The Style's length (final grid in the current Style) is indicated as, for example, "G.16"; press [VALUE ▼/▲] to change this so that it corresponds to the length of the sequence data prepared with the sequencer.

8. Press [WRITE (EXEC)].

9. Play back the sequencer's data from the beginning.

After the countdown, the SH-32 proceeds with Realtime Input. After input of the designated number of measures is completed, when you stop the playback of the sequencer (or press [EXIT]), the metronome guide sound stops, and the SH-32 exits Realtime Input.

10. Set the SH-32's System function CLOCK setting to " int " (Internal) (p. 92).

11. Confirm that Arpeggiator is on ([ON] is lit), and press the SH-32's note-entry buttons or play the external MIDI keyboard to check the results of the Realtime Input.

NOTE

You cannot do partial edits of Styles. If a mistake is made, re-input the Style.

12. Remake the setting for the grid type (GRID: p. 75), duration (DURATION: p. 76), octave range (RANGE: p. 76), motif (MOTIF: p. 76), and tempo (BPM: p. 74) as needed.

13. If satisfied with the results of Realtime Input, save the created Style. Additionally, if you also want to save parameters changed in a previous step, carry out the write procedure for the Patch or Performance.

Saving the Styles You Have Created (STORE)

The Styles you create are temporary; they are deleted as soon as you turn off the power or select some other Style. If you want to keep a Style you have made, save it to the SH-32's memory.

- When you save a Style, any Style currently stored in the location to which the new Style is being saved is overwritten, and therefore lost. However, you can recover the Styles originally programmed at the factory by carrying out the Factory Reset procedure (p. 94).
- **Settings for the grid type (GRID), duration (DURATION), octave range (RANGE), motif (MOTIF), tempo (BPM), and other parameters are saved as data to individual Patches or Performances. Be aware that these settings are not saved in the procedure for saving Styles.**

1. Confirm that the current Style is the one you want to save.

2. Press [STYLE], causing the indicator to blink.

The Style number blinks in the display.

3. Press [VALUE ▼/▲] to specify the Style number to which you want to save the data.

Arpeggio Styles: 11.a–88.a
Rhythm Styles: 11.r–88.r

4. Press [WRITE].

[WRITE] blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm that the data is to be saved.

5. Press [WRITE] once more to carry out the save. To cancel the save, press [EXIT].

MEMO

Arpeggiator Styles are also held in separate "temporary areas" (p. 47) in Patch mode and Performance mode. Thus, even if a Style is saved in one mode, it is not reflected in the temporary area of the other mode until that sound is called up again.

Using Arpeggiator in Performance Mode

When using Arpeggiator in Performance mode, by assigning a Rhythm Set to Part 4/R, you can have rhythm patterns play at the same time the regular arpeggio is performed.

HINT

If you want only a rhythm pattern to play while using the Arpeggiator in Performance mode, as an alternative to sending a Note message to the rhythm part, you can play the rhythm pattern by transmitting a Hold 1 message (MIDI controller number 64) over the same MIDI channel instead.

Selecting the Style

One Arpeggio Style may be selected for the entire Performance (you cannot change Arpeggio Styles for each individual Part). However, by assigning a Rhythm Set to Part 4/R, you can select a Rhythm Style that differs from the Arpeggio Style.

MEMO

Arpeggio Styles (11.a–88.a) and Rhythm Styles (11.r–88.r) can be used both in Performance mode and Patch mode. Even if different tones are used by a Style with the same number, you can make settings to Arpeggiator parameters (grid type, duration, octave range, motif) that can be saved to individual Patches and Performances, allowing you to make changes in the Styles that are performed.

When Selecting an Arpeggio Style

1. **Confirm that the SH-32 is in Performance mode.**
2. **Press a Part button [1]–[3] to select a Part 1–3.**

MEMO

If a Patch is assigned to Part 4/R, then you can also select an Arpeggio Style by selecting Part 4/R.

3. **Press [STYLE], causing the indicator to light, then press [VALUE ▼/▲] to select the Style number (11.a–88.a).**
4. **Press [EXIT], causing the [STYLE] indicator light to go off.**

When Selecting a Rhythm Style

1. **Confirm that the SH-32 is in Performance mode.**
2. **Press Part buttons [4/R] to select a Part 4/R.**
3. **Confirm that a Rhythm Style is assigned to Part 4/R.**
4. **Press [STYLE], causing the indicator to light, then press [VALUE ▼/▲] to select the Style number (11.r–88.r).**
5. **Press [EXIT], causing the [STYLE] indicator light to go off.**

Specifying the Part Used to Play the Arpeggio

This specifies which of the Parts 1–4/R that is to be played using Arpeggiator. You can specify only one Part to play arpeggios, and that setting can be saved to individual Performances.

1. **Hold down ARPEGGIATOR [ON] and press a Part button ([1]–[4/R]) to select the Part you want to use with Arpeggiator; the button's light comes on.**

HINT

If a Rhythm Set is assigned to Part 4/R, then you can select Part 4/R in addition to one of the Parts 1–3 to be used with Arpeggiator. This way, you can simultaneously play an arpeggio and a rhythm pattern.

2. **When you carry out the procedure in Step 1 again, the light for the Part button that you previously pressed goes off, and the Part is removed as the subject for the Arpeggiator.**

- If you turn on Arpeggiator without any Part being assigned for the arpeggio performance, [ON] blinks, and no arpeggio is played. When using Arpeggiator in Performance mode, always be sure to carry out this step, and specify the Part in which the arpeggio is to be played.
- Although in this procedure only one Part can be specified for the arpeggio performance, if the specified Part is in a stack, then Arpeggiator acts upon all of the stacked Parts. If you do not want to have the Parts other then the one specified to be played as arpeggios, do not stack these parts (p. 72).

Arpeggiator Parameter Settings

Basically, Arpeggiator parameters (On/Off, selected Style, grid type, duration, octave range, motif, tempo) are set the same way as parameters in Patch mode, and can be saved to individual Performances. However, although the grid type and tempo settings are shared by the arpeggios and rhythm patterns, the duration, octave range, and motif settings are effective only in arpeggios.

NOTE

Settings for Arpeggiator parameters stored in Patches have no effect on operations in Performance mode. That is to say, even if a Patch containing Arpeggiator-related settings is assigned to a Part in a Performance, those settings do not affect the Performance, while the settings in Performance mode are enabled.

Creating Styles

You can also create original Arpeggio Styles in Performance mode using the same procedure used in Patch mode. If Part 4/R is selected while a Rhythm Set is assigned to it, a Rhythm Style is created.

For more detailed information about the procedures used for creating Styles, refer to **"Creating Your Own Styles"** (p. 77).

Chapter 7. Using the Chord Memory Function (CHORD)

About the Chord Memory Function

Chord Memory is a function that allows you to play chords based on pre-programmed **Chord Forms**, just by pressing a single key on the keyboard. The SH-32 can store 64 of these Chord Forms (11.c–88.c). The 64 Chord Forms programmed at the factory are all fully rewritable.

NOTE

The Chord Memory function is not used with Rhythm Sets.

Performing with the Chord Memory Function

Turning Chord Memory Function On and Off

The Chord Memory function On / Off settings can be saved to each Patch or Performance individually.

1. Press [CHORD], causing the indicator to light.

The Chord Memory function is turned on. When you play the MIDI keyboard connected to the MIDI IN connector or use the Preview (note-entry) function, the chords based on the currently selected Chord Forms are played.

MEMO

When you press the C4 key (Middle C), the chord is played using the exact chord structure recorded in the Chord Form. This is referenced to the C4 key; parallel chords are played by pressing other keys.

2. To turn off Chord Memory, press [CHORD] twice, causing the button's indicator light to go off.

3. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 73).

NOTE

When you use the Chord Memory function with a tone for which the Solo function is on ([SOLO] is lit), only one sound in the chord is played. When using the Chord Memory function, press [SOLO], [UNISON], and / or [OSC 1X2 SYNC] to turn off the Solo function ([SOLO] light goes off).

HINT

- When the System function FOOT SW (Foot Switch) is set to "crd", you can then use the foot switch connected to the FOOT SWITCH jack to turn the Chord Memory function on and off (p. 91).
- Both **Chord Memory function** On / Off settings and **Arpeggiator** On / Off settings can be saved to individual Patches and Performances. By selecting a suitable Chord Form for the Arpeggio Style you are using, then while both functions are switched on, you can create a **Patch or Performance in which the designated phrase can be played repeatedly just by pressing a single key**.

Selecting Chord Forms

This selects the **Chord Form** to which the sounds making up the chord being played are registered when the Chord Memory function is used. The Chord Form numbers selected can be saved to individual Patches and Performances.

1. Press [CHORD], causing the indicator to blink.

The Chord Form number appears in the display.

2. Press [VALUE ▼/▲] to select a Chord Form number (11.c–88.c).

You can also select Chord Form numbers directly by pressing [BANK] and pressing one of the buttons [1 / A]–[8 / R], then once again pressing one of the buttons [1 / A]–[8 / R]. In this case, pressing the C4 key plays the sound so you can confirm the selected Chord Form. Additionally, by pressing [HOLD], causing the button to light up, you can have sounds continue to play without having to hold down the buttons.

For more on the Chord Forms pre-programmed at the factory, refer to the **"Chord Form List"** (p. 104).

3. When you have finished selecting a Chord Form, press [CHORD], causing the indicator to go off.

4. To save the selected Chord Form number, press [WRITE] and carry out the write procedure (p. 63, p. 73).

HINT

When the System function FOOT SW (Foot Switch) is set to "c.UP", you can also use the foot switch connected to the FOOT SWITCH jack to switch Chord Memory numbers (p. 91).

Creating Your Own Chord Forms

Not only can you use the prepared internal **Chord Forms**, which determine the constituent notes of chords played using the Chord Memory function, but you can also freely create and rewrite them as well.

NOTE

The Chord Forms pre-programmed at the factory are used in Preset Patches and factory-programmed User Performances as well, so note that when you rewrite part of the Chord Forms, the sounds of Preset Patches and factory-set User Performances in which the Chord Memory function is turned on change. By carrying out Factory Reset (p. 94), you can get the SH-32 to once again sound exactly as it did when you first took it out of the box.

1. Press [CHORD], causing the indicator to blink.

The Chord Form number appears in the display.

2. Press [VALUE ▼/▲] to select a Chord Form number with the content you want to rewrite.

3. Press [WRITE], causing the button indicator to light.

The Preview (note-entry) function automatically turns on, [HOLD] lights up, and the chord recorded to the Chord Form selected in Step 2 continues to play.

4. Press [HOLD] to stop the sound.

5. Press a note-entry button to specify the note you want to be played when you press the C4 key.

The button for the specified sound blinks, and the sound is held and continues to play.

HINT

- You can deselect the held sound by pressing the blinking button again. Alternatively, you can deselect all sounds at once by pressing [HOLD].
- You can use [-OCT] and [+OCT] to specify sounds over an even wider range.

6. When you have finished making the settings for the sound you want to write to the Chord Form, press [WRITE] once more.

[WRITE] blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm that the data is to be saved.

7. Press [WRITE] once more to carry out the save. To cancel the save, press [EXIT].

MEMO

You can create and save Chord Forms in both Patch mode and Performance mode, and the same 64 Chord Forms are used from both modes.

Using the Chord Memory Function in Performance Mode

The Chord Memory function is not used with Rhythm Sets. Thus, the Chord Memory function cannot be used with Part 4/R in Performance mode if a Rhythm Set is assigned to that Part.

Selecting the Chord Form

One Chord Form may be selected for the entire Performance. You cannot change Chord Forms for each individual Part.

MEMO

Use of Chord Forms (11.c–88.c) and Rhythm Styles (11.r–88.r) is shared by both Performance mode and Patch mode.

1. Confirm that the SH-32 is in Performance mode.

2. If a Rhythm Set is assigned to Part 4/R, press a Part button [1]–[3] to select a Part 1–3.

NOTE

When a Rhythm Set is assigned to Part 4/R, you cannot select a Chord Form if you select Part 4/R.

3. Press [CHORD], causing the button indicator to blink, then press [VALUE ▼/▲] to select the Chord Form number (11.c–88.c).

4. Press [CHORD], causing the indicator light to go off.

Specifying the Part to Use the Chord Memory Function

Of the Parts to which Patches are assigned, this specifies the Parts that are to be played using the Chord Memory function. Only one Part can be specified for performances using the Chord Memory function; that setting can be saved to individual Performances with the write procedure.

1. Hold down [CHORD] and press a Part button ([1]–[4/R]) to select the Part you want to use with the Chord Memory function; the button's light comes on.

NOTE

- You cannot specify Part 4/R if a Rhythm Set is assigned to Part 4/R.
- Although in this procedure only one Part can be specified as using the Chord Memory function, if the specified Part is part of a stack, then Chord Memory still operates using the stacked Parts. If you do not want to have the Chord Memory applied to Parts other than the one specified, do not stack the Parts (p. 72).

Chord Memory Parameter Settings

The settings for the Chord Memory function On / Off and for selection of the Chord Forms are set basically the same way as in Patch mode, and these settings can be saved to individual Performances.

NOTE

Settings for Chord Memory parameters stored in Patches have no effect on operations in Performance mode. That is to say, even if a Patch containing Chord Memory settings is assigned to a Part in a Performance, those settings do not affect the Performance, while the settings in Performance mode are enabled.

Creating Chord Forms

You can also create original Chord Forms in Performance mode using the same procedure used in Patch mode. However, you cannot create a Chord Form for Part 4 / R if you select that Part while a Rhythm Set is assigned to it.

For more detailed information about the procedures used for creating Chord Forms, refer to **"Creating Your Own Chord Forms"** (p. 82).

Chapter 8. Using the SH-32 with External MIDI Devices

About MIDI

MIDI (Musical Instrument Digital Interface) is a standard that allows performance data and other information to be exchanged among electronic musical instruments and computers. Data can be transmitted and received if a MIDI cable is used to connect devices that have MIDI connectors. Virtually all electronic musical instruments today are equipped with MIDI. Without MIDI, we would not be able to play the SH-32's sounds using an external keyboard, or use the SH-32's Arpeggiator to play back MIDI performance data. Although the SH-32 can be used without knowing very much about MIDI, this chapter provides a simple explanation of the SH-32's MIDI functionality so that you can take the fullest advantage of electronic musical instruments. Upon reception of MIDI performance data, the SH-32 is capable of switching its sounds appropriately, and playing back such music data.

* *A separate publication titled **"MIDI Implementation"** is also available. It provides complete details concerning the way MIDI has been implemented on the SH-32. If you should require this publication (such as when you intend to carry out byte-level programming), please contact the nearest Roland Service Center or authorized Roland distributor.*

MIDI Connectors

The SH-32 has two MIDI connectors.

MIDI OUT Connector

MIDI messages are transmitted from this connector to external MIDI devices. This connector can also be used to re-output MIDI data received from the MIDI IN connector, unchanged (MIDI THRU; p. 92).

MIDI IN Connector

Performance messages from an external MIDI device are received here. When the SH-32 receives MIDI messages, it can produce sounds or switch settings.

About MIDI Channels

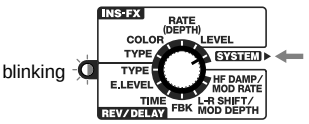
MIDI transmits performance data for up to sixteen musical parts over a single MIDI cable. This is made possible by MIDI channels. MIDI channels allow messages intended for a given instrument to be distinguished from messages intended for another instrument. There are sixteen MIDI channels (1–16), and normally the transmitting device must be set to the same MIDI channel as the receiving device in order for messages to be received.

Setting the MIDI Channel (MIDI CH)

Setting the Receive Channel in Patch Mode

This sets the MIDI channel used for switching Patches and controlling other operations in Patch mode from an external MIDI device.

1. **Press [PATCH/PERFORM], causing the indicator light to go off.**
   The SH-32 switches to Patch mode.
2. **Turn the FX/SYSTEM knob to "SYSTEM."**



3. **Press [6 (MIDI CH)] to make its indicator blink.**
4. **Press [VALUE ▼/▲] to select the MIDI channel number (1–16).**
5. **When you finish making settings, press [EXIT] to end the procedure.**

NOTE

MIDI channel setting in Patch mode is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.

Setting the Receive Channel for Each Part

This sets the MIDI Receive channel for each Part in the Performance.

1. **Press [PATCH/PERFORM], causing the button indicator to light.**
   The SH-32 switches to Performance mode.
2. **Turn the FX/SYSTEM knob to "SYSTEM."**
3. **Press [6 (MIDI CH)], causing the indicator to blink.**
4. **Press [1]–[4/R] (Part buttons) to select the Part for which the MIDI Receive channel is to be set.**
5. **Press [VALUE ▼/▲] to select a MIDI channel number (1–16).**
6. **When you have finished setting the channel, press [EXIT].**
7. **To save the settings, press [WRITE] and carry out the write procedure (p. 73).**

Setting the Performance Control Channel

This sets the Receive channel (**Performance Control Channel**) used when switching SH-32 Performances with MIDI messages (Program Change, Bank Select) transmitted by an external MIDI device. When you press the (lit) Part button selected in Step 4 of **"Setting the Receive Channel for Each Part,"** all of the buttons [1]–[4/R] are lit, and the Performance Control Channel can be set. Set this to "OFF" when Performances are not being switched from a connected MIDI device.

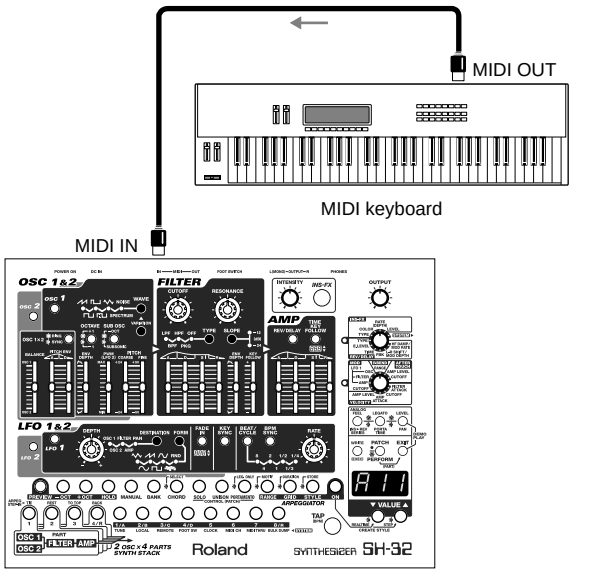
NOTE

- The Performance Control Channel setting is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.
- When receiving only Program Change messages, if the Performance Control Channel setting is the same as the Part's MIDI Receive channel, then switching of the Performance is given priority.

Playing the SH-32 from an External MIDI Keyboard

Use an external MIDI keyboard to play the SH-32's sounds.

1. Use a MIDI cable to connect the SH-32's MIDI IN connector to the MIDI OUT connector of the external MIDI keyboard.



2. Set the SH-32's receive channel to match the external MIDI keyboard's transmit channel.

- For instructions on how to set the SH-32's receive channel, refer to **"Setting the MIDI Channel (MIDI CH)"** (p. 84).
- For instructions on how to set the transmit channel of the external MIDI keyboard, refer to the owner's manual for your external MIDI keyboard.

HINT

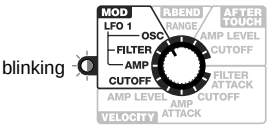
When the Remote Keyboard Switch (REMOTE) is set to "On," then the external MIDI keyboard may be set to any channel (p. 90).

3. Perform on the external MIDI keyboard to play the SH-32's sounds.

Changing the Sound with Modulation (MOD)

Modulation messages (MIDI controller number 1) from an external MIDI device connected to the MIDI IN connector can be used to modify the sound.

1. Turn the MIDI settings knob to the "MOD" parameter you want to set.



Parameters That Can Be Set

LFO 1-OSC

This uses modulation to change the depth of the LFO 1 modulation applied to the oscillator pitch.

LFO 1-FILTER

This uses modulation to change the depth of the LFO 1 modulation applied to the filter cutoff.

LFO 1-AMP

This uses modulation to change the depth of the LFO 1 modulation applied to the amplifier level.

When the value set is 1–63:

The sweep depth (depth of the modulation) increases in the positive direction when a Modulation message is received.

When the value set is 0:

The sweep depth does not change, even when a Modulation message is received.

When the value set is -63– -1:

The sweep depth increases in the negative direction when a Modulation message is received.

CUTOFF

This applies modulation to change the filter's cutoff frequency.

When the value set is 1–63:

The cutoff frequency increases above the value set for the Patch (p. 57) when a Modulation message is received.

When the value set is 0:

The cutoff frequency does not change, even when a Modulation message is received.

When the value set is -63– -1:

The cutoff frequency decreases below the value set for the Patch (p. 57) when a Modulation message is received.

2. Press [VALUE ▼/▲] to select the value (-63–63).

When the value is set to "0," then no change occurs when Modulation messages are received, and the sound is played according to the value set for the Patch. The change in the sound due to the modulation increases the more the value is increased above or lowered below "0."

NOTE

You can set the parameter only when the indicator to the left of the MIDI settings knob is blinking.

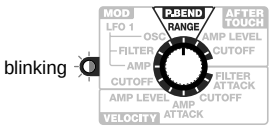
3. When you finish making settings, press [EXIT] to end the procedure.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 73).

Determining the Amount the Pitch is Changed with the Pitch Bender (P. BEND)

The pitch of the sound being played changes when you move the external MIDI keyboard's pitch bender. Here you can set the amount the pitch can change when the pitch bender is moved to its fullest extent (bend range) in semitone units (a maximum of two octaves above or below the note).

1. Turn the MIDI settings knob to "P.BEND"–"RANGE."



2. Press [VALUE ▼/▲] to set the value (000–024).

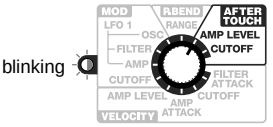
3. When you finish making settings, press [EXIT] to end the procedure.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

Changing the Sound with Aftertouch (AFTERTOUCH)

Aftertouch is a function that changes the way a sound is played when Aftertouch messages are received from an external MIDI keyboard. Such messages are generated when you use greater force to continue pressing down on a key after the note has sounded. You can use this function if you've connected an external MIDI device that is capable of transmitting Aftertouch messages (Channel Pressure) via MIDI.

1. Turn the MIDI settings knob to "AFTERTOUCH"–"AMP LEVEL" or "CUTOFF."



AMP LEVEL

This uses Aftertouch to change the volume.

When the value set is 1–63:

The volume increases when an Aftertouch message is received.

When the value set is 0:

The volume is unchanged when an Aftertouch message is received.

When the value set is -63– -1:

The volume decreases when an Aftertouch message is received.

CUTOFF

This changes the filter's cutoff frequency with Aftertouch messages.

When the value set is 1–63:

The cutoff frequency increases above the value set for the Patch (p. 57) when an Aftertouch message is received.

When the value set is 0:

The cutoff frequency does not change, even when an Aftertouch message is received.

When the value set is -63– -1:

The cutoff frequency decreases below the value set for the Patch (p. 57) when an Aftertouch message is received.

2. Press [VALUE ▼/▲] to set the value (from -63–63).

When the value is set to "0," then no change occurs when Aftertouch messages are received, and the sound is played according to the value set for the Patch. The change in the sound due to the aftertouch increases the more the value is increased above or lowered below "0."

NOTE

You can set the parameter only when the indicator to the left of the MIDI settings knob is blinking.

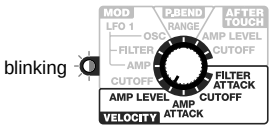
3. When you finish making settings, press [EXIT] to end the procedure.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 73).

Changing the Sound According to the Force Used to Play the Keys (VELOCITY)

You can use the variations in the force used to play the keys of an external MIDI keyboard connected to the MIDI IN connector (Velocity messages) to modify the sound.

1. Turn the MIDI settings knob to the "VELOCITY" parameter you want to set.



Parameters That Can Be Set

AMP LEVEL

This changes the volume according to the keyboard touch.

When the value set is 1–63:

The volume increases the more forcefully the keys are pressed, approaching the volume set for the Patch (p. 59).

When the value set is -63– -1:

The volume decreases the more forcefully the keys are pressed. The volume is lowest when the keys are played with the most force.

AMP ATTACK

This changes the attack time of the volume ("A" portion of A D S R) according to the keyboard touch.

When the value set is 1–63:

The time for the attack portion of the envelope becomes shorter the more forcefully the keys are pressed, yielding a sharper attack for the sound. The time approaches the length set for the Patch (p. 58) as the keys are played with less force.

When the value set is -63– -1:

The time of the attack portion of the envelope becomes longer as the keys are pressed with greater force.

CUTOFF

This changes the filter's cutoff frequency according to the keyboard touch.

When the value set is 1–63:

The more forcefully the keys are played, the further above the value set for the Patch (p. 57) the cutoff frequency becomes. The cutoff frequency approaches the set value as the keys are played with less force.

When the value set is -63– -1:

The more forcefully the keys are played, the further below the value set for the Patch (p. 57) the cutoff frequency becomes. The cutoff frequency approaches the set value as the keys are played with less force.

FILTER ATTACK

This changes the attack time of the filter's cutoff frequency ("A" portion of A D S R) according to the keyboard touch.

When the value set is 1–63:

The change in the cutoff in the attack portion of the sound ("A" portion of A D S R) becomes faster the more forcefully the keys are pressed; the rate approaches that set for the Patch (p. 57) as the keys are played with less force.

When the value set is -63– -1:

The change in the cutoff in the attack portion of the sound ("A" portion of A D S R) becomes slower the more forcefully the keys are pressed.

2. Press [VALUE ▼/▲] to select the value (-63–63).

When the value is set to "0," the sound is played according to the value set for the Patch, regardless of the velocity. The change in the sound in response to your playing dynamics increases the more the value is increased above or lowered below "0."

NOTE

You can set the parameter only when the indicator to the left of the MIDI settings knob is blinking.

3. When you finish making settings, press [EXIT] to end the procedure.

4. To save the settings, press [WRITE] and carry out the write procedure (p. 63, p. 70, p. 73).

Selecting SH-32 Sounds from an External MIDI Device

By transmitting Bank Select messages (MIDI controller number 0 and 32) and Program Change messages from the external MIDI device to the SH-32, you can select Patches, Rhythm Sets, or Performances. In other words, when you select sounds on an external MIDI device, the corresponding MIDI message will be transmitted to the SH-32, causing the SH-32 to select the appropriate Patch, etc.

1. Use a MIDI cable to connect the SH-32's MIDI IN connector to the MIDI OUT connector of the external MIDI device.

2. Set the SH-32's receive channel to match the external MIDI device's transmit channel.

- For instructions on how to set the SH-32's receive channel, refer to **"Setting the MIDI Channel (MIDI CH)"** (p. 84).
- For instructions on how to set the transmit channel of the external MIDI device, refer to the owner's manual for your external MIDI device.

3. From the external MIDI device, send a MIDI message for changing the sound.

NOTE

- If the Program Change numbers on your external MIDI device are referenced as values from 0 to 127, find the appropriate number by subtracting 1 from the number in the following correspondence chart.
- If the SH-32 receives no Bank Select messages, but only Program Change messages, it can switch only to sounds within certain banks, such as BANK A/B.

When Switching Patches

The MIDI messages transmitted by the external MIDI device will be received by the SH-32 to select Patches as shown in the following table.

Bank	Number	Bank Select		Program Change Number
		MSB	LSB	
A (User)	11–18	87	0	1–8
	21–28	87	0	9–16
	31–38	87	0	17–24
	41–48	87	0	25–32
	51–58	87	0	33–40
	61–68	87	0	41–48
	71–78	87	0	49–56
	81–88	87	0	57–64
B (User)	11–18	87	0	65–72
	21–28	87	0	73–80
	31–38	87	0	81–88
	41–48	87	0	89–96
	51–58	87	0	97–104
	61–68	87	0	105–112
	71–78	87	0	113–120
	81–88	87	0	121–128
C (Preset)	11–18	87	64	1–8
	21–28	87	64	9–16
	31–38	87	64	17–24
	41–48	87	64	25–32
	51–58	87	64	33–40
	61–68	87	64	41–48
	71–78	87	64	49–56
	81–88	87	64	57–64
D (Preset)	11–18	87	64	65–72
	21–28	87	64	73–80
	31–38	87	64	81–88
	41–48	87	64	89–96
	51–58	87	64	97–104
	61–68	87	64	105–112
	71–78	87	64	113–120
	81–88	87	64	121–128

When Switching Rhythm Sets

The MIDI messages transmitted by the external MIDI device will be received by the SH-32 to select Rhythm Sets as shown in the following table.

Bank	Number	Bank Select		Program Change Number
		MSB	LSB	
(User)	r1U	86	0	1
	r2U	86	0	2
(Preset)	r3P	86	64	1
	r4P	86	64	2

When Switching Performances

The MIDI messages transmitted by the external MIDI device will be received by the SH-32 to select Performances as shown in the following table.

Bank	Number	Bank Select		Program Change Number
		MSB	LSB	
(User)	1-1–1-8	85	0	1–8
	2-1–2-8	85	0	9–16
	3-1–3-8	85	0	17–24
	4-1–4-8	85	0	25–32
	5-1–5-8	85	0	33–40
	6-1–6-8	85	0	41–48
	7-1–7-8	85	0	49–56
	8-1–8-8	85	0	57–64

Synchronizing Arpeggiator and the LFO to an External MIDI Device

You can synchronize the Arpeggiator performance tempo and the LFO modulation cycle to an external MIDI device's tempo (clock).

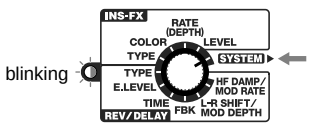
1. **Use a MIDI cable to connect the SH-32's MIDI IN connector to the MIDI OUT connector on the external MIDI device.**
2. **Set the System function's CLOCK to " ♫ id " (MIDI) (p. 92).**
3. **When synchronizing the LFO modulation rate, press [BPM SYNC], causing the indicator to light.**
4. **Transmit the MIDI clock from the external MIDI device. For instructions on how to do this, refer to the owner's manual for the external MIDI device.**

   This synchronizes the Arpeggiator performance tempo or LFO modulation cycle to the external MIDI device's tempo.

Saving SH-32 Settings on an External Sequencer (BULK DUMP)

With the SH-32, you can transmit various settings to an external device in the form of exclusive messages. This is referred to as **Bulk Dump**. Thus, you can save the SH-32's settings by connecting an external sequencer or other device and transmitting the data to the sequencer. Alternatively, instead of an external sequencer, by connecting another SH-32 and transmitting the data to it, you can set two SH-32s simultaneously.

1. **Use a MIDI cable to connect the SH-32's MIDI OUT connector to the MIDI IN connector of the external sequencer.**
2. **Turn the FX/SYSTEM knob to "SYSTEM."**



3. Press [8/R (BULK DUMP)] to make its indicator blink.

4. Press [VALUE ▼/▲] to select the data to be transmitted.

Type of Data to Transmit

ALL **(All Data):** Patches, Rhythm Sets, Performances, Arpeggio Styles, Rhythm Styles, Chord Forms, System Settings

Sou **(Sound Data):** Patches, Rhythm Sets, Performances

ArP **(Arpeggio/Rhythm Styles):** Arpeggio Styles, Rhythm Styles

CHd **(Chord Forms):** Chord Forms

SYS **(System Setup):** System Settings

1PA **(One Patch):** Temporary area Patch

1PF **(One Performance):** Temporary area Performance (including Patches for each Part)

1rH **(One Rhythm Set):** Temporary area Rhythm Set

1AP **(One Arpeggio/Rhythm Style):** Temporary area Arpeggio/Rhythm Style

1Cd **(One Chord Form):** Temporary area Chord Form

5. Put the external sequencer in record mode.

6. To save the settings, press [WRITE (EXEC)] and carry out the Transmit procedure.

While the data is being transmitted, "tnS" (Transmit) appears in the display. When "OK" (Ok) is displayed, the transmission has been completed.

7. Stop the external sequencer.

8. When you have finished transmitting the data, press [EXIT].

Restoring Saved Content to the SH-32

NOTE

Returning data to the SH-32 overwrites the data currently stored in the SH-32, and the overwritten data is lost. However, you can recover the data originally programmed at the factory to its original state by carrying out the Factory Reset procedure (p. 94).

1. Use a MIDI cable to connect the SH-32's MIDI IN connector to the MIDI OUT connector of the external sequencer.

2. Transmit (play back) the settings from the external sequencer.

NOTE

- When using the external sequencer to play back the data, make sure to use the same tempo as was used when the Bulk Dump was originally carried out. If played back at a faster tempo, the settings may not be correctly restored.
- If the SH-32's Device ID number used during reception of data during Bulk Dump differs from that used when the Bulk Dump data was saved, the data cannot be received correctly. Device ID numbers are used to distinguish devices from each other when MIDI messages are being transmitted and received by more than one of the same device. Normally, however, when only one device is used, there is no need to change the setting. For more detailed information on the Device ID, refer to (p. 93).

HINT

When recording a song to an external sequencer, record to the beginning of the song the settings for the SH-32's temporary area that are needed when the song is played.

By doing this, the appropriate Patches and Performance settings are called up to the temporary area merely by playing back the song, eliminating the need to reselect all the Patches and Performance settings before the song is played back. In addition, even if you change any settings after recording the song, you can play back the song correctly just by selecting Patch mode or Performance mode.

Temporary Area Settings Needed to Play Back Songs

Select from the following data as needed when selecting the data to be transferred with Bulk Dump.

In Patch mode: "1PA" ("1rH" for Rhythm Sets)

In Performance mode: "1PF"

When the song being performed uses the Arpeggiator or Chord Memory function, also record the following Arpeggio Style, Rhythm Style, and Chord Form data.

When Arpeggiator is used: "1AP"

When the Chord Memory function is used: "1Cd"

NOTE

If any Bulk Dump data other than that for the temporary area (ALL, Sou, ArP, CHd, SyS) is recorded at the beginning of the song, then the settings stored in the SH-32 (content of the User Memory and System Memory) are overwritten by the content of the Bulk Dump when that data is received by the SH-32. Only the temporary area data is needed for playback of the song. Accordingly, if you have Bulk Dump data recorded at the beginning of a song, we recommend that you select the temporary area data (1PA, 1PF, 1rH, 1AP, 1Cd).

For more detailed information on the temporary area, User Memory, and System Memory, refer to **"About Memory"** (p. 47).

Chapter 9. Other Settings

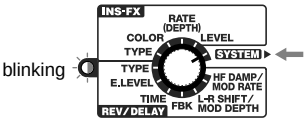
This section explains how to set the system parameters, how they work, and how to restore the settings as programmed at the factory.

Settings Applied to the SH-32 Overall (System Settings)

Settings whose parameters affect the SH-32's overall operating environment, such as tuning, the Local Switch On / Off, and so on, are called **system settings**. Explained here are the procedures used to make changes to the system settings, and the functions of the different parameters.

Procedure for Making the System Settings

1. Turn the FX/SYSTEM knob to "SYSTEM."



2. Press a button below to select the parameter to set.

The pressed button blinks, and the parameter indicated below the button is called up.

3. Press [VALUE ▼/▲] to set the value.

NOTE

You can make settings for the selected parameter only when the indicator to the left of the FX / SYSTEM knob is blinking.

4. When you have finished making the settings, press [EXIT].

NOTE

System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.

What the System Settings Do / System Setting Functions

For more on the procedures for setting the following parameters, as well as the way they work, refer to the respective reference pages.

- **MIDI CH** (MIDI Channel) → (p. 84)
- **BULK DUMP** (Bulk Dump) → (p. 88)

Setting the Master Tuning (TUNE)

This allows you to adjust the overall tuning for the SH-32. The display indicates the frequency of the A4 key (Middle A), with the hundreds place (i.e., 400) omitted.

Settings values: 26.0–40.0–54.0 (426.0–440.0–454.0 Hz)

Disconnecting the Preview (Note-Entry) Function from the Internal Sound Generator (LOCAL)

When you press [PREVIEW], turning on the Preview function, you can then use the SH-32's note-entry buttons to play sounds (p. 21). In this case, you can also set whether the note-entry buttons are disconnected from the internal sound generator (Local Switch: Off); or remain connected (Local Switch: On). Set this to Off when you want to prevent the overlapping of identical note messages within the SH-32 (i.e., the note being played twice) due to a looped connection with an external MIDI sequencer.

Settings values: OFF (Off), On (On)

NOTE

- When the Local Switch is set to Off, the Preview function's note-entry buttons are disconnected from both the Arpeggiator and Chord Memory functions, and performance data is only sent to the MIDI OUT connector.
- When the Remote Keyboard Switch (REMOTE) is on, the external MIDI keyboard connected to the MIDI IN connector assumes the same function as the SH-32's note-entry buttons. Therefore, the Local Switch also affects the connection between the external MIDI keyboard and the internal sound generator.

Having an External MIDI Keyboard Operate Like the Preview Function (REMOTE)

When the Remote Keyboard Switch (REMOTE) is on, the external MIDI keyboard connected to the MIDI IN connector then functions the same way as the SH-32's note-entry buttons.

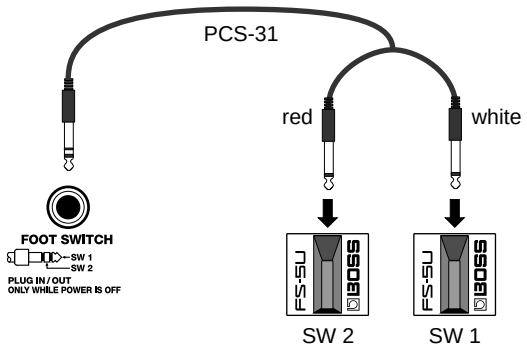
Settings values: OFF (Off), On (On)

NOTE

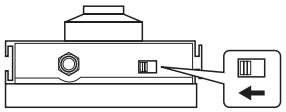
While the Remote Keyboard Switch is on, the channels used by MIDI messages that arrive from an external device won't be distinguished correctly.

Setting the Foot Switch Function (FOOT SW)

This selects the function controlled by the foot switch connected to the FOOT SWITCH jack. You can connect two switches, “SW 1” and “SW 2.” When using the DP-2 pedal switch (optional), you can use only the SW 1 function. When you connect two BOSS FS-5U foot switches (optional) with a PCS-31 splitter cable (optional), you can use both the SW 1 and SW 2 functions.



* Set the FS-5U’s Polarity switch as shown in the figure below.



NOTE

Always turn off the power before connecting or disconnecting the foot switch from the FOOT SWITCH jack. If you plug in or pull out cords while the power is on, the unit may fail to operate as expected.

Settings values:

P.UP

Switches the Patch, Rhythm Set, or Performance.

- SW 1 (PATCH / PERFORMANCE UP): Move forward by one tone number each time the pedal is pressed.
- SW 2 (PATCH / PERFORMANCE DOWN): Back up by one tone number each time the pedal is pressed.

c.UP

Switches the Chord Forms in the Chord Memory function.

- SW 1 (CHORD FORM UP): Move forward by one Chord Form number each time the pedal is pressed.
- SW 2 (CHORD FORM DOWN): Back up by one Chord Form number each time the pedal is pressed.

a.UP

Switches the Arpeggiator Arpeggio Styles.

- SW 1 (ARPEGGIO STYLE UP): Move forward by one Style number each time the pedal is pressed.
- SW 2 (ARPEGGIO STYLE DOWN): Back up by one Style number each time the pedal is pressed.

r.UP

Switches the Arpeggiator Rhythm Styles.

- SW 1 (RHYTHM STYLE UP): Move forward by one Style number each time the pedal is pressed.
- SW 2 (RHYTHM STYLE DOWN): Back up by one Style number each time the pedal is pressed.

tAP

- SW 1 (TAP BPM): Sets the tempo value according to the timing at which the pedal is pressed (Tap Tempo Teach).
- SW 2 (ARPEGGIATOR ON / OFF): Arpeggiator is alternately switched on or off each time the pedal is pressed.

inF

- SW 1 (INS-FX ON / OFF): INS-FX (Insertion Effects) are alternately switched on or off each time the pedal is pressed.
- SW 2 (REV / DELAY ON / OFF): REV / DELAY (Reverb / Delay) is alternately switched on or off each time the pedal is pressed.

NOTE

You cannot turn this on and off in Part Assign mode.

rEd

- SW 1 (REV / DELAY ON / OFF): REV / DELAY (Reverb / Delay) is alternately switched on or off each time the pedal is pressed.
- SW 2 (INS-FX ON / OFF): INS-FX (Insertion Effects) are alternately switched on or off each time the pedal is pressed.

NOTE

You cannot turn this on and off in Part Assign mode.

crd

- SW 1 (CHORD MEMORY ON / OFF): The Chord Memory function is alternately switched on or off each time the pedal is pressed.
- SW 2 (ARPEGGIATOR ON / OFF): Arpeggiator is alternately switched on or off each time the pedal is pressed.

ArP

You can determine whether or not Arpeggiator is played in the synth part or rhythm part in Performance mode.

- SW 1 (ARPEGGIO START / STOP): Alternately switches the playing or the arpeggio in the synth part on or off each time the pedal is pressed.
- SW 2 (RHYTHM START / STOP): Alternately switches the sounding of the rhythm part arpeggio (rhythm pattern) on or off each time the pedal is pressed.

Por

- SW 1 (PORTAMENTO ON / OFF): Portamento is alternately switched on (Legato only) / on (Normal) / off each time the pedal is pressed.
- SW 2 (SOLO ON / OFF): The Solo function is alternately switched on or off each time the pedal is pressed.

MEMO

In Performance mode, the Part called up in the panel is affected.

SoL

- SW 1 (SOLO ON / OFF): The Solo function is alternately switched on or off each time the pedal is pressed.
- SW 2 (PORTAMENTO ON / OFF): Portamento is alternately switched on (Legato only) / on (Normal) / off each time the pedal is pressed.

MEMO

In Performance mode, the Part called up in the panel is affected.

Selecting the Clock Used to Synchronize the Tempo (CLOCK)

This sets the clock used for synchronizing the Arpeggiator tempo or LFO tempo either to the internal clock (BPM setting) (int) or the external MIDI clock (mid).

Settings values: int (Internal), mid (MIDI)

NOTE

The following occurs if no MIDI Clock messages are sent from the external device while the clock is set to " mid " (MIDI).

- Arpeggiator performances do not start.
- The LFO set to ON in BPM SYNC (p. 61) stops.

In this case, although it appears that **the SH-32 has stopped producing sounds**, the system functions correctly once the MIDI Clock messages are received from the external device.

Using MIDI OUT as a THRU Connector (MIDI THRU)

This sets whether the MIDI OUT connector is assigned its normal transmission function (OFF), or functions as a THRU connector (On). When set to "On," most MIDI messages received at the MIDI IN connector are retransmitted without change from the MIDI OUT connector.

Settings values: OFF (Off), On (On)

MEMO

Note messages from the note-entry buttons are not output from the MIDI OUT connector if the Preview function is on while the MIDI THRU function is turned on.

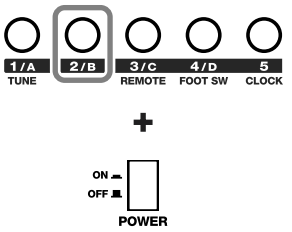
Switching the Low Boost Function On and Off

The SH-32 features a **Low Boost function** that is applied to the total output in order to compensate for a lack of low frequencies that occurs when you use small speakers and headphones. You can turn this on and off whenever you want.

MEMO

Low Boost function is set to ON at the factory and immediately after a Factory Reset has been carried out. **When connecting to large speakers or professional PA systems, we recommend turning Low Boost off.** When Low Boost is on, the characters " bSt " (Boost) blinks several times in the display after the startup message appears when you turn on the power to the SH-32.

1. **First, press the POWER switch on the rear panel to turn off the power.**
2. **While holding down [2/B], turn the power on again.**



[2/B] blinks, and " bSt " (Boost) appears in the display while [2/B] is held down.

3. **Press [VALUE ▼/▲] to switch the function to " On " (On) or " OFF " (Off).**
4. **When you have finished making the setting, turn the power off, then on again.**

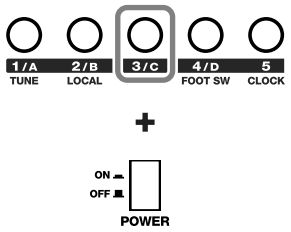
NOTE

The Low Boost function setting is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.

Selecting the Status to Use When the Power is Turned On

This selects the status to which the SH-32 switches when the power is turned on (Power Up mode).

1. **First, press the POWER switch on the rear panel to turn off the power.**
2. **While holding down [3/C], turn the power on again.**



[3/C] blinks, and " PuP " (Power up) appears in the display while [3/C] is held down.

3. **Press [VALUE ▼/▲] to switch the function to select the status to be used when you turn on the power.**

 LSt **(Last set):** Calls up the Patch or Performance selected at the time the power was last turned off.

 dEF **(Default):** Always calls up Patch "A11."

4. **When you have finished making the setting, turn the power off, then on again.**

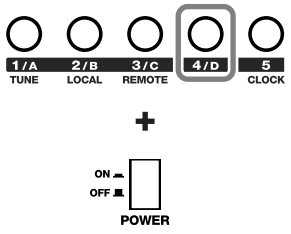
NOTE

The Power Up mode setting is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.

Selecting the MIDI Messages Used to Transmit Panel Control Information

This selects either MIDI Control Change messages or MIDI System Exclusive messages as the main means of sending and receiving information describing the actions of the panel sliders, knobs, and other controls, or when using an external MIDI device to change tones (MIDI Transmission/Reception mode).

1. **First, press the POWER switch on the rear panel to turn off the power.**
2. **While holding down [4/D], turn the power on again.**



[4/D] blinks, and " txM " (TxM) appears in the display while [4/D] is held down.

3. **Press [VALUE ▼/▲] to switch the function to select the setting.**

 OFF **(OFF):** Related Control Changes are not transmitted or received.

 Md1 **(MODE 1):** MIDI messages, primarily System Exclusive messages, are transmitted and received.

 Md2 **(MODE 2):** MIDI messages, primarily Control Change messages, are transmitted and received.

4. **When you have finished making the setting, turn the power off, then on again.**

NOTE

- The MIDI Transmission/Reception mode setting is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.
- In MODE 1, when System Exclusive message are being used to transmit and receive information, if a Control Change or other message is received, then that message is disregarded (exclusive messages are always received).

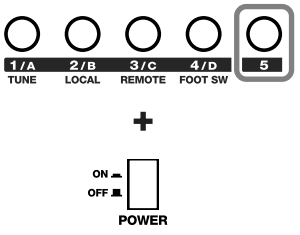
For more detailed information about the MIDI messages transmitted and received in each mode, refer to **"MIDI Transmit/ Receive Setting List"** (p. 115).

Changing the SH-32's Device ID Number

When exchanging System Exclusive messages(*) in a large-scale MIDI system that uses multiple SH-32s, this sets a different **MIDI Device ID number** for each SH-32, so the messages intended for each unit can be distinguished from the others (normally, this setting does not need to be changed).

* ***MIDI System Exclusive messages*** *are MIDI messages intended exclusively for a particular device; mastering the use of these messages requires detailed knowledge of how MIDI works. Referring to a particular device's* ***"MIDI Implementation"*** *is also necessary. A separate publication titled* ***"MIDI Implementation"*** *is also available. It provides complete details concerning the way MIDI has been implemented on the SH-32. If you should require this publication (such as when you intend to carry out byte-level programming), please contact the nearest Roland Service Center or authorized Roland distributor.*

1. **First, press the POWER switch on the rear panel to turn off the power.**
2. **While holding down [5], turn the power on again.**



[5] blinks, and " id " (ID) appears in the display while [5] is held down.

3. **Press [VALUE ▼/▲] to switch the function to select the Device ID number (017–032).**
4. **When you have finished making the setting, turn the power off, then on again.**

NOTE

The MIDI Device ID number setting is a system setting. System settings are saved the moment the parameter values are changed. Thus, these settings are not lost when the power is turned off, even without the write procedure being carried out.

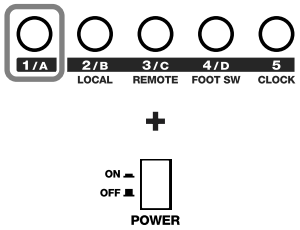
Restoring the Factory Settings (Factory Reset)

This restores all of the data contained in the SH-32 (or specified types of data) to the settings as programmed at the factory (Factory Reset).

NOTE

When a Factory Reset is carried out, all of the data that has been targeted for Factory Reset will be completely lost; this data cannot be recovered. If you have created any data that you want to keep, save the data by transmitting it to an external MIDI sequencer or similar device (p. 88).

1. **First, press the POWER switch on the rear panel to turn off the power.**
2. **While holding down [1/A], turn the power on again.**



[1/A] blinks, and " rSt " (Reset) appears in the display while [1/A] is held down.

3. **Press [VALUE ▼/▲] to select the data that is to be restored to the way it was when the instrument was shipped from the factory.**

Types of Data That Can Be Returned to Original Settings

ALL **(All Data):** Patches, Rhythm Sets, Performances, Arpeggio Styles, Rhythm Styles, Chord Forms, System Settings

Sou **(Sound Data):** Patches, Rhythm Sets, Performances

ArP **(Arpeggio/Rhythm Styles):** Arpeggio Styles, Rhythm Styles

CHd **(Chord Forms):** Chord Forms

SYS **(System Setup):** System Settings

4. **Press [WRITE (EXEC)].**

[WRITE (EXEC)] blinks, and the message " Sur " (Sure?) blinks in the display, prompting you to confirm that you want to carry out a Factory Reset.

5. **Press [WRITE (EXEC)] once more to carry out the Factory Reset. To cancel the Factory Reset, press [EXIT].**

The data selected in Step 3 is erased and returned to the original factory-programmed settings.

6. **Once the Factory Reset is complete, turn the power off, then on again.**

MEMO

When using the factory settings, in order to have Patches and Performances in which the Arpeggiator or Chord Memory function is set to "ON" play correctly, you need to carry out a Factory Reset not only for the Patches and Performances, but for the Arpeggio Styles, Rhythm Styles, and Chord Forms as well.

SYNTHESIZER SH-32

Appendices

Troubleshooting

If the SH-32 stops producing sound, or if it does not function the way you expect, please check the following points first.
If checking these points does not resolve the problem, please contact your dealer or a nearby Roland service center.

* *Roland can take no responsibility for the recovery of any lost data, or for any damages incurred as a result of such loss.*

Problem	Cause	Action
Power does not turn on	Is the AC adaptor connected correctly to the SH-32 and to an AC outlet?	Check the AC adaptor connections.
No Sound/Volume is low	Is the power of the connected devices turned on?	Make sure that the power of your amp or mixer system is turned on.
	Is the volume turned down?	Check the volume of the SH-32 and of the connected amp or mixer.
	Is there sound in the headphones?	If there is sound in the headphones, it is possible that the connection cables are broken, or that the amp or mixer is malfunctioning. Check the connection cables and your other equipment once again.
	Is the Demo Song playback selected?	Press [EXIT] to exit Demo Song playback mode (p. 18).
	Is the Local Switch turned OFF?	Turn the Local Switch ON (p. 90).
	Is the Patch or Performance level set too low?	Check the [LEVEL] setting (p. 59).
	Is the Sustain level of the AMP section set too low?	Check the [S] (AMP Env Sustain Level) setting of the AMP section (p. 58).
	Is the frequency of the FILTER section set too low?	Check the [CUTOFF] setting of the FILTER section (p. 57).
	Is the rate of the LFO 1 section set to slow?	Check the [RATE] setting of the LFO 1 section (p. 60).
	Have volume messages been received from an external MIDI device to lower the volume?	Check the volume.
	Do the transmit channel and the receive channel match?	Make sure that the transmit and receive channels of the SH-32 and the external MIDI device match (p. 84).
	Is the external MIDI clock reaching the SH-32 (when CLOCK is set to "MIDI" and the LFO's BPM SYNC or Arpeggiator is on)?	Set the external MIDI device so that the MIDI clock is transmitted properly.
	Is the Arpeggio Style (or Rhythm Style) blank (contains no notes) while Arpeggiator is on?	Either record notes to the Arpeggio Style (or Rhythm Style) or turn off Arpeggiator.
	Is an external MIDI keyboard being used with the REMOTE function turned on and LOCAL set to OFF?	When using the REMOTE function, set LOCAL to ON (p. 90).
	Is Slicer or a similar effect selected for INS-FX with an extremely slow cycle set?	Long periods in which no sound is produced can occur with these sorts of settings. Check the Rate and other cycle-related settings.
Pitch is wrong	Are the Pitch settings of the OSC 1&2 section correct?	Check the [COARSE] (Coarse Tune) / [FINE] (Fine Tune) settings of the OSC 1&2 section (p. 54).
	Is the Master Tune setting correct?	Check the Master Tune setting (p. 90).
	In Performance mode, are the tuning settings for each Part enabled?	In Part Assign mode, set PITCH [COARSE] and [FINE] to (0).
	Has a Pitch Bend message been received from an external device, leaving the pitch "hanging?"	Try moving the pitch bend lever of the connected MIDI keyboard.
Notes drop out (are broken off)	Is Solo / Unison selected?	When Solo or Unison is selected, only one note at a time will sound even if two or more keys are pressed. If you wish to play two or more notes at a time, press [SOLO] or [UNISON] to make the indicator go dark, selecting Poly (p. 61, p. 62).
	Is the maximum simultaneous polyphony being exceeded?	The SH-32 has a maximum polyphony of 32 voices. Try seeing if setting Oscillator Reserve can help (p. 73).
Sound is cracked (distorted)	Has the Patch level or other level been turned up?	Check the [LEVEL] setting (p. 59).
A sputtering noise, either periodic or non-periodic, is audible	Is the pan alternating over a wide range with a rapid LFO cycle?	The SH-32 is not equipped with any supplemental circuitry (which makes the connection between level changes smoother) for the pan, so noise may be generated when the pan changes rapidly or over a wide angle. If this becomes objectionable, use the INS-FX (Auto Pan Type) instead of the LFO to control the pan (p. 111).
	Is "Lon" (LOFI NOISE) selected as the INS-FX type?	This effect type generates simulated analog recorder noise even when there is no input (this does not indicate a malfunction).
No panning effect	Are you using a mono type INS-FX effect?	When you use a mono INS-FX, the sound generator's pan is disabled, so sound is localized at the center when output. Either turn off INS-FX, or use a stereo effect.
Sound generator filter not functioning	Is Oscillator Sync turned on?	Oscillator Sync and the sound generator section's filter cannot be used at the same time. By selecting Filter as the INS-FX type, you can easily apply the filter effect.
	Is the filter's ENV DEPTH set to "0" (when only A / D / S / R is not effective)?	Check the FILTER section's [ENV DEPTH] setting.
	Is the Rhythm Set being edited (when only the SLOPE cannot be switched)?	The filter's SLOPE cannot be replaced in Rhythm Sets (it is fixed at -12 dB).
REV/DELAY On/Off and the individual Parts' EFFECT LEVEL sent to REV/DELAY not effective	Is SEr (Series) selected in the INS > REV Series setting?	Set INS > REV Series to PAr (Parallel) and then make the separate settings for each Part (p. 64).
Sync type delay effects not properly synchronized	Have you exceeded the maximum delay time that can be set for the selected delay effect?	If the effect is synchronized correctly with shorter delay times, then use a setting that falls within that range.
Performances using Arpeggiator do not start	Has the MIDI clock from an external source been cancelled (when "MIDI" is selected for the CLOCK setting)?	Set the external MIDI device so that the MIDI clock is correctly transmitted.
	Is the Arpeggio Style (or Rhythm Style) blank (contains no notes)?	Record notes to the Arpeggio Style (or Rhythm Style).
	Could it be because the Part to be played as arpeggios has not been specified (ARPEGGIATOR [ON] flashing)?	Hold down ARPEGGIATOR [ON] and press a Part button to specify the Part in which arpeggios are to be played.

Problem	Cause	Action
Chords not sounding when played/single notes played even when Chord Memory is on	Is SOLO, UNISON, OSC 1x2 SYNC (Oscillator Sync), or some other function that would cause notes to be played one at a time turned on?	Turn off such functions.
	Does the Chord Form data have only one note recorded to it?	Either record the Chord Form data over again or select a different Chord Form (p. 81).
MIDI messages are not transmitted / received correctly	Are the various MIDI channel settings correct?	Check the Part MIDI channel, Performance Control channel and Remote Keyboard Switch settings (p. 84, p. 90).
	Are the various receive switch settings correct?	Check the settings of the Program Change Receive Switch and the Exclusive Receive Switch (p. 93).
	Is the Bulk Dump setting (type) correct?	Check the Bulk Dump setting (p. 88).
	Is the Device ID Number setting correct?	Set the Device ID Number that was used when recording the exclusive data to the sequencer (p. 93).
	Is the sequencer being played back at a correct tempo?	Playback the sequencer at the tempo that was used when recording the exclusive data.
When using MIDI Program Changes, the switching of sounds, and the production of the sound after switching takes too much time	Program Changes generally result in the modification of large amounts of data at one time. If large volumes of MIDI data are being transferred before and / or after switching sounds, the SH-32 may be unable to make the switch rapidly.	Try staggering the timing of such data transfers, for example by transmitting data from the sequencer a little earlier, or otherwise preventing multiple, simultaneous switches. You can also try other techniques, such as switching during breaks, or switching closer to the end of a long note in a different Part (for studio work or other such demanding applications, we recommend the use of multiple sound generator modules or recording sequencer audio tracks sequentially, mainly in Patch mode).
Poor MIDI transmission and reception of panel operations	The conditions and behavior of MIDI transmission and reception can be influenced by the MIDI transmission mode settings.	Refer to the **"MIDI Transmit/Receive Setting List"** (p. 115) to check the conditions of transmission and reception.
When using the SH-32 with a sequencer, Patches are played late after being switched	In general, when a multifunctional sound generating device and a MIDI sequencer are used together, processing of the sounds being played may lag when Patches are switched, or when large amounts of data are transmitted.	Reduce the number of MIDI messages; for example, by using the sequencer to thin out the data stream.
		Avoid having Program Changes occur simultaneously in multiple Parts.
		Use techniques such as switching sounds during breaks, whole notes, or at other points where the beat is not conspicuous.
		If at all possible, have any Patches that may be using two oscillators use one oscillator instead. In addition, you may also want to use the Suboscillator function.
		Switch sounds with release times that are longer than necessary to sounds with shorter release times.
		Use an external MIDI splitter or thru box instead of the MIDI THRU function.
The SH-32's Arpeggiator loses the tempo or stops when the transmitting MIDI device is adjusted	Are numerous MIDI messages being sent by the transmitting MIDI device?	Certain operations, including the use of the Arpeggiator, result in a large number of sounds being created. In such cases, the SH-32's system gives priority to processing the sounds themselves, which may halt the processing of large amount of MIDI data and prevent proper functioning.
Bulk Dump or other data and System Exclusive messages not received	Do you have the Remote Keyboard Switch on, and the Local Switch off?	Set the Local Switch to ON when the Remote Keyboard Switch is on.
	Are the transmitting and receiving devices set to different Device ID numbers?	Match up the Device ID numbers (p. 93).
Performances not switching smoothly	Do you have sounds switching continuously more than is necessary, or are you transmitting unneeded MIDI messages immediately after switching?	When buttons or Program Changes are used in switching Performances, internal processing of large amounts of data occurs all at once. This may cause malfunctioning, so avoid using the SH-32 for such operations. * Using Program Change messages to switch entire Performances is not an appropriate technique for switching sounds within the song being played.
Arpeggios not being played by the Arpeggiator	Do you have the Arpeggiator DURATION set to "Ft1" (Filter 1) or "Ft2" (Filter 2) in the Patch or Performance?	In this case, rather than playing normal arpeggios, the SH-32 switches to a function that creates the kind of sound changes you would get using a step filter; so, the keys that are pressed affect the filter.
The filter effect from the Arpeggiator is weak	Is the Arpeggiator's DURATION set to either "Ft1" (Filter 1) or "Ft2" (Filter 2)?	When "Ft1" is selected, no effect is produced by pressing only one key.
	Is the Filter setting suitable?	After confirming that the TYPE (Filter type) is not set to "OFF," and that [RESONANCE] is set somewhat high, use [CUTOFF] to find the point at which the effect is stronger.

Error Message List

If there has been a mistake in operation, or if the SH-32 is unable to continue processing as you directed, an error message will appear in the display. Take the appropriate action for the displayed error message.

* *This section gives the error messages in alphabetical order.*

Display	Situation	Action
b.Lo	The internal backup battery (the battery which maintains the data in the user memory) is running down.	Contact your dealer or a nearby Roland service center to have the battery replaced.
E.AS	It is possible that a MIDI cable has been pulled out or has a short.	Check the MIDI cable.
E.cS	The checksum value of a system exclusive message was incorrect.	Correct the checksum value.
E.FL	Due to an inordinate volume of MIDI messages received, the SH-32 has failed to process them properly.	Reduce the amount of MIDI messages to be transmitted.
E.nd	It is possible that the power has been turned off for the MIDI device connected to the SH-32's MIDI IN connector.	Check the power of the connected MIDI device.
E.rc	A MIDI message was received incorrectly.	If the same error message is displayed repeatedly, there is a problem with the MIDI messages that are being transmitted to the SH-32.

Patch List

Bank C (User)

No.	Patch Name	Comment
C11	Bass 1	Bass sound with Resonance effect
C12	SyncLead 1	Oscillator Sync lead sound
C13	Slicer 1	Beat sound that uses the LFO
C14	Arpeggiator Saw 1	Dance sound with ample use of Arpeggiator
C15	Dist Lead	Feedback lead with distortion strongly applied
C16	LFO Pulsing	FX sound with heavy use of Noise waveform and LFO
C17	Spank Noize	Noise sound used in the demo song “SPANK”
C18	GR300 Lead	Lead sound using the distinctive analog-synth Saw wave
C21	Synth Orch	Analog PAD sound
C22	Techno Saws	Classic deeply-detuned Dance sound
C23	Ring Bell	Bell sound produced with the Ring Modulator (INS-FX)
C24	Filter Arpeggiator	Sound with a strong sense of beat produced with filter controlled by Arpeggiator
C25	Noise Pad	Noise sound with distinctive character
C26	Low Sweep	Sweep sound typical of analog synth
C27	Bass Beat	Bass sound with a sense of pulsation from the LFO
C28	Arpeggiator Saw 2	Dance sound with ample use of Arpeggiator
C31	Moving Noise	FX sound using LFO
C32	Moving Strings	String sound with changes produced using the LFO
C33	Soft Lead	Distinctive analog-synth soft lead sound
C34	Arpeggiator Saw 3	Sequenced sound using Arpeggiator
C35	PWM Pad	PAD sound using the PWM function
C36	Techno Voice	Synth voice sound with Resonance
C37	Analog E.Piano	Electric piano-type sound characteristic of analog synths
C38	Zap	Classic sound that uses a higher Resonance setting
C41	Bass 2	Mild, low bass such as used in drum and bass
C42	Bass 3	Soft bass such as used in Hip Hop
C43	Bass 4	Classic SH-101-type bass sound
C44	Bass 5	SH-101-type bass sound with Resonance applied
C45	Bass 6	Classic Mini-type bass sound
C46	Bass 7	Synth bass using saw wave
C47	Comp-F Bass	Bass sound used in the demo song “CompFusion”
C48	Bass 8	Bass sound with Resonance applied (variation)
C51	Bass 9	Bass sound with Unison function
C52	Bass 10	Bass sound using multiple oscillators
C53	Bass 11	Bass sound with Resonance applied (variation)
C54	Bass 12	TB-303 bass sound, as used frequently in Techno and other styles
C55	Bass 13	Bass sound with delay
C56	Spank Bass	Bass sound used in the demo song “SPANK”
C57	Bass 14	Bass sound with distortion applied
C58	Lead 3	Pipe lead sound using triangle wave
C61	Lead 4	Pipe lead sound with combined rectangular wave and noise
C62	Lead 5	Lead sound with combined triangular wave and vibrato
C63	Lead 6	Lead sound using saw wave
C64	Lead 7	Lead sound with combined rectangular wave and pulse wave
C65	Lead 8	Lead sound using rectangular wave
C66	Lead 9	Lead sound with phaser added
C67	Lead 10	Lead sound with Resonance
C68	Lead 11	Lead sound with soft distortion added
C71	Lead 12	Lead sound using PWM
C72	Lead 13	Lead sound using SPECTRUM waveform
C73	Lead 14	Lead sound using Oscillator Sync
C74	Lead 15	Lead sound using distortion
C75	Lead 16	Lead sound with distortion and delay applied
C76	Syn Organ1	Synth organ sound
C77	Syn Organ1	
C78	Synth Sitar	Synth sitar
C81	Bell 1	Synth bell sound
C82	Bell 2	Synth bell sound variation
C83	Analog Piano 1	Analog synth piano-type sound
C84	Synth Clavi 1	Analog synth clavi sound
C85	Synth Clani 2	Analog clavi sound with distinctive attack
C86	Analog Key 1	Analog keyboard sound with Resonance
C87	Analog Key 2	Analog keyboard sound
C88	SEQ 1	Sound for analog sequences

Bank D (User)

No.	Patch Name	Comment
D11	SEQ 2	Sound for analog sequences
D12	SEQ 3	
D13	Reso BPF 1	Sound with Sweep, typically used in Techno and other styles
D14	Reso BPF 2	Techno Sweep sound variation
D15	Reso HPF	Techno Sweep sound with special filter characteristics
D16	LoFiRing	LoFi sound using Ring Modulator
D17	4th Saws	Techno sound with oscillator layering fourths
D18	Comp-F Lead	Lead sound used in the demo song “CompFusion”
D21	4th Reso Saw	Techno sound with Resonance
D22	SEQ 4	80’s-style analog sequence sound
D23	SEQ 5	Sound for analog sequence
D24	PolySynth 1	Polysynth sound
D25	PolySynth 2	
D26	PolySynth 3	
D27	PolySynth 4	
D28	Comp-F Poly	Synth sound used in the demo song “CompFusion”
D31	TRAVELER 1	Synth sound used in the demo song “TRAVELER”
D32	SawStack 1	Saw stack sound used for Dance, Techno, and other styles
D33	SawStack 2	
D34	SawStack 3	
D35	Brass 1	Classic analog brass sound
D36	Brass 2	Soft synth brass
D37	Brass 3	Soft synth brass with lots of resonance
D38	SynthPad 1	Synth PAD sound using saw wave
D41	SynthPad 2	Analog PAD sound
D42	SynthPad 3	Soft PAD sound with sweep
D43	SynthPad 4	
D44	SynthPad 5	PAD sound with Phaser
D45	Analog Strings	Analog strings sound
D46	Soft Strings	Soft analog strings
D47	Oct Strings	Analog strings sound with added octave
D48	SynthPad 6	HPF-swept PAD sound
D51	SynthPad 7	Bell PAD sound
D52	SynthPad 8	PAD sound with filter controlled by Arpeggiator
D53	SynthPad 9	
D54	Slicer 2	PAD sound using slicer
D55	LFOPad	PAD sound using LFO
D56	StepFlanger 1	PAD sound using Step Flanger
D57	StepFlanger 2	
D58	Pot	Analog percussion sound
D61	MetalStick	Analog tambourine-like sound
D62	Electronica 1	Driving sound used in Electronica and other styles
D63	Arpeggiator Saw 3	Dance sound with ample use of Arpeggiator
D64	SynthFX 1	FX sound with ample use of LFO Slicer
D65	SynthFX 2	FX sound with ample use of LFO
D66	SynthFX 3	
D67	SynthFX 4	PAD FX sound using Noise
D68	SynthFX 5	FX sound with ample use of LFO
D71	SynthFX 6	Classic analog FX sound using sample and hold LFO
D72	SynthFX 7	FX sound using LFO and Noise
D73	SynthFX 8	Sweep FX sound
D74	SynthFX 9	Classic FX sound using pink noise
D75	SynthFX 10	Bell FX sound with delay added
D76	SynthFX 11	Noise Sweep FX sound
D77	SynthFX 12	Analog sound simulating drops of water
D78	SweepingUp	FX sound used in the demo song “SPANK”
D81	TRAVELER 2	Synth sound used in the demo song “TRAVELER”
D82	TRAVELER 3	
D83	TRAVELER 4	
D84	TRAVELER 5	
D85	TRAVELER 6	
D86	TRAVELER 7	
D87	TRAVELER Bs	Bass sound used in the demo song “TRAVELER”
D88	INIT PATCH	Initial Patch (convenient Patch to use when creating sounds from scratch)

* *After Factory Reset is executed, the content of Bank A is identical to that of Bank C, and the content of Bank B is identical to that of Bank D.*

NOTE

When the content of Arpeggio Styles and Chord Forms are overwritten, the sounds of Patch in which they are used change.

Rhythm Set List

Note No.	r1U (User) Wave Name	r2U (User) Wave Name	r3P (Preset) Wave Name	r4P (Preset) Wave Name
21	BreakSnr2Rvs	BreakSnr2Rvs	BreakSnr2Rvs	BreakSnr2Rvs
22	TR808 Snr 5	TR808 Snr 5	TR808 Snr 5	TR808 Snr 5
23	TR909Snr4Rvs	TR909Snr4Rvs	TR909Snr4Rvs	TR909Snr4Rvs
C1 24	TR909 Snr 3	Break Snare2	Break Snare2	Break Snare2
25	TR909 Snr 7	TR909 Snr 7	TR909 Snr 7	TR909 Snr 7
26	TR909 Snr 5	TR808 Snr 8	TR808 Snr 8	TR808 Snr 8
27	TR909 Snr 5	TR909 Snr 5	TR909 Snr 5	TR909 Snr 5
28	TR909 Snr 7	TR808 Snr 5	TR808 Snr 5	TR808 Snr 5
29	Plastic BD 3	Plastic BD 3	Plastic BD 3	Plastic BD 3
30	Plastic BD 4	Plastic BD 4	Plastic BD 4	Plastic BD 4
31	TR909 Kick4	TR808 Kick1	TR808 Kick1	TR808 Kick1
32	JungleKick 2	JungleKick 2	JungleKick 2	JungleKick 2
33	SH32 Kick	TR808 Kick1	TR808 Kick1	TR808 Kick1
34	JungleKick 2	JungleKick 2	JungleKick 2	JungleKick 2
35	TR808 Kick1	TR909 Kick9	TR909 Kick4	TR909 Kick5
C2 36	TR808 Kick1	SH32 Kick	SH32 Kick	SH32 Kick
37	TR808 Rim	Ragga Rim 2	Ragga Rim 2	Ragga Rim 2
38	TR808 Snr 5	Break Snare2	TR909 Snr 3	TR909 Snr 3
39	TR909 Clap 1	Group Clap	Group Clap	Group Clap
40	TR808 Snr 8	Flange Snr	TR909 Snr 5	TR909 Snr 5
41	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
42	TR808 CHH 2	TR909 CHH 2	TR909 CHH 1	TR909 CHH 1
43	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
44	TR808 PHH 1	TR909 PHH 2	TR909 PHH 1	TR909 PHH 1
45	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
46	TR808 OHH 1	TR909 OHH 3	TR909 OHH 2	TR909 OHH 2
47	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
C3 48	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
49	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
50	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
51	TR909 Ride	TR909 Ride	TR909 Ride	TR909 Ride
52	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
53	TR909CrshRvs	TR909CrshRvs	TR909CrshRvs	TR909CrshRvs
54	CR78 Tamb	CR78 Tamb	CR78 Tamb	CR78 Tamb
55	HiBongo LoFi	HiBongo LoFi	HiBongo LoFi	HiBongo LoFi
56	TR808Cowbell	TR808Cowbell	TR808Cowbell	TR808Cowbell
57	LoBongo LoFi	LoBongo LoFi	LoBongo LoFi	LoBongo LoFi
58	TR626 Shaker	TR626 Shaker	TR626 Shaker	TR626 Shaker
59	JungleKick 2	TR909 Kick9	TR909 Kick9	TR909 Dst BD
C4 60	SH32 Kick	Plastic BD 2	Plastic BD 2	Plastic BD 2
61	TR808 RimLng	TR909 Rim	TR909 Rim	TR909 Rim
62	TR909 Snr 3	TR909 Snr 7	TR909 Snr 7	TR909 Snr 7
63	TR909 SnClp1	TR909 SnClp2	TR909 SnClp2	TR909 SnClp2
64	TR808 Snr 5	TR909 Snr 6	TR909 Snr 6	TR909 Snr 6
65	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
66	TR808 CHH 3	TR909 CHH 1	TR909 CHH 2	TR909 CHH 2
67	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
68	TR808 CHH 3	TR909 PHH 1	TR909 PHH 2	TR909 PHH 2
69	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
70	TR808 OHH 1	TR909 OHH 2	TR909 OHH 3	TR909 OHH 3
71	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
C5 72	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
73	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
74	TR808 Tom	TR808 Tom	TR808 Tom	TR808 Tom
75	TR707 Ride	TR707 Ride	TR707 Ride	TR707 Ride
76	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
77	TR909CrshRvs	TR909CrshRvs	TR909CrshRvs	TR909CrshRvs
78	CR78 Beat	CR78 Beat	CR78 Beat	CR78 Beat
79	HiBongo LoFi	HiBongo LoFi	HiBongo LoFi	HiBongo LoFi
80	TR808Cowbell	TR808Cowbell	TR808Cowbell	TR808Cowbell
81	LoBongo LoFi	LoBongo LoFi	LoBongo LoFi	LoBongo LoFi
82	TechnoShaker	CR78 Tamb	TechnoShaker	CR78 Tamb
83	TR909 Kick5	TR909 Kick5	TR909 Kick5	TR909 Kick5
C6 84	TR909 Kick4	TR909 Dst BD	TR909 Dst BD	TR909 Kick4
85	TR707 Rim	TR707 Rim	TR707 Rim	TR707 Rim
86	Break Snare2	FlangeSnrRvs	TR909 Snr 4	FlangeSnrRvs
87	TR909 SnClp1	TR909 SnClp1	TR909 SnClp1	TR909 SnClp1
88	Flange Snr	BreakSnr2Rvs	Flange Snr	Flange Snr
89	Beam HiQ	Beam HiQ	Beam HiQ	Beam HiQ
90	TR909 CHH 2	TR909 CHH 2	TR909 CHH 2	TR909 CHH 2
91	MG Blip	MG Blip	MG Blip	MG Blip
92	TR909 PHH 2	TR909 PHH 2	TR909 PHH 2	TR909 PHH 2
93	MG Zap 7	MG Zap 7	MG Zap 7	MG Zap 7
94	TR909 OHH 2	TR909 OHH 2	TR909 OHH 2	TR909 OHH 2
95	MG Zap 12	MG Zap 12	MG Zap 12	MG Zap 12
C7 96	P-Zing	P-Zing	P-Zing	P-Zing
97	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
98	CR78 Beat	CR78 Beat	CR78 Beat	CR78 Beat
99	TR606 Cym 1	TR606 Cym 1	TR606 Cym 1	TR606 Cym 1
100	TR909 Crash	TR909 Crash	TR909 Crash	TR909 Crash
101	Group Clap	MgWhiteNz	Group Clap	Group Clap
102	TR808 Rim	TR808 Rim	TR808 Rim	TR808 Rim
103	TR909 SnClp2	TR909 SnClp2	TR909 SnClp2	TR909 SnClp2
104	MG Zap 6	MG Zap 6	MG Zap 6	MG Zap 6
105	TR909 Clap 1	TR909 Clap 1	TR909 Clap 1	TR909 Clap 1
106	TR808 RimLng	TR808 RimLng	TR808 RimLng	TR808 RimLng
107	TR909 Clap 1	MgWhiteNz	TR909 Clap 1	TR909 Clap 1
C8 108	TR909 Clap 1	MMGPinkNz	TR909 Clap 1	TR909 Clap 1

NOTE

r1U and r2U are User Sets that can be overwritten. If these Rhythm Sets are overwritten, the sound of Performances in which they are used changes.
A Factory Reset (p. 94) can be performed if you want to restore the sounds programmed at the factory.

Performance List

No.	Performance Name	Arpeggio Style	Rhythm Style	Chord Form
1-1	Power Beat	11.a	52.r	
1-2	Techno Beat 1	11.a	11.r	
1-3	HipHop Beat 1	26.a	62.r	11.c
1-4	HipHop Beat 2	85.a	73.r	
1-5	Pop Beat 1	16.a	47.r	
1-6	Dist Sync			
1-7	LoFi Stack 1			
1-8	Noise FX 1			
2-1	LFO Pad			
2-2	Pop Beat 2	11.a	42.r	
2-3	Asian Beat	24.a	41.r	15.c
2-4	Bell ARP 1	51.a		
2-5	LoFi Stack 2			
2-6	Techno Beat 2	41.a	43.r	58.c
2-7	Noise Beat 1	11.a		
2-8	Noise Beat 2	11.a	71.r	
3-1	Clavi Beat 1	62.a	72.r	
3-2	Noise Beat 3			
3-3	LFO Low Beat	11.a	13.r	
3-4	Saw Beat			
3-5	Analog Gamelan			
3-6	Techno Beat 3	55.a	42.r	16.c
3-7	Stack Pad 1			
3-8	Stack Pad ARP	26.a		
4-1	Stack Pad Beat	26.a	44.r	
4-2	Stack Lead			
4-3	BPM Pad			
4-4	Techno Beat 4	11.a	18.r	77.c
4-5	Noise Beat 4	11.a	16.r	
4-6	Pulsing Pad 1			
4-7	Noise Beat 5	85.a	13.r	
4-8	KalimbaGliss			65.c

No.	Performance Name	Arpeggio Style	Rhythm Style	Chord Form
5-1	Sync Beat	85.a	31.r	
5-2	Noise Beat 6	11.a		
5-3	Organ Beat	11.a	87.r	45.c
5-4	Stack Pad 2			
5-5	Sweep FX			
5-6	Dance Beat 1	86.a	14.r	11.c
5-7	Pop Beat 3	85.a	31.r	
5-8	Noise Beat 6	26.a		
6-1	Noise Beat 7	85.a	13.r	
6-2	Noise Beat 8	26.a	76.r	
6-3	Sweep Pad 1			
6-4	Bell ARP 2	83.a		
6-5	LoFi Stack 3			
6-6	Pop Beat 4	16.a	47.r	
6-7	Clavi Beat 2	65.a	31.r	55.c
6-8	Stack Pad 3			
7-1	Bell ARP 3	47.a	18.r	
7-2	Pulsing Pad 2			
7-3	Noise Beat 9	85.a	55.r	
7-4	Dance Beat 2	24.a	53.r	37.c
7-5	Bellpad			
7-6	Dance Beat 3	11.a	31.r	11.c
7-7	LoFi Stack 4			
7-8	Bell Stack			
8-1	Sometimes	85.a	42.r	
8-2	Dance Beat 4	16.a	47.r	
8-3	Poly Brass			
8-4	Dist ARP	48.a	13.r	
8-5	Sweep Beat			
8-6	Broken!	11.a	28.r	
8-7	Sweep Pad 2			
8-8	INIT Performance			

NOTE

When the content of Arpeggio Styles (or Rhythm Styles), Chord Forms, and User Rhythm Sets are overwritten, the sounds of Performances in which they are used change.

A Factory Reset (p. 94) can be performed if you want to restore the sounds programmed at the factory.

Arpeggio Style List

* *All data is that programmed at the factory. For instructions on carrying out Factory Reset, refer to (p. 94).*
* *The "Patch/Performance Using This Arpeggio Style" column only lists the Arpeggio Styles when the Arpeggiator is turned on at the time the Patch or Performance is called up. When the content of a Arpeggio Style is overwritten, the sound of the Patch or Performances in which it is used changes.*

No.	Number of Notes	Number of Grids	Patch/Performance Using This Arpeggio Style
11.a	5	G.08	1-1, 1-2, 2-2, 2-7, 2-8, 3-3, 4-4, 4-5, 5-2, 5-3, 7-6, 8-6
12.a	2	G.16	C34
13.a	4	G.08	C14
14.a	4	G.32	
15.a	4	G.04	D23
16.a	9	G.16	D63, 1-5, 6-6, 8-2
17.a	3	G.08	
18.a	6	G.32	
21.a	5	G.23	D22
22.a	3	G.32	
23.a	3	G.04	
24.a	4	G.06	2-3, 7-4
25.a	9	G.16	
26.a	6	G.32	1-3, 3-8, 4-1, 5-8, 6-2
27.a	5	G.16	
28.a	5	G.16	
31.a	7	G.24	
32.a	6	G.32	D53
33.a	7	G.32	
34.a	3	G.06	
35.a	8	G.16	
36.a	5	G.16	
37.a	9	G.16	
38.a	12	G.32	
41.a	8	G.16	2-6
42.a	6	G.16	
43.a	6	G.16	
44.a	5	G.16	
45.a	7	G.16	
46.a	7	G.16	
47.a	2	G.02	7-1
48.a	3	G.03	8-4
51.a	4	G.04	2-4
52.a	3	G.06	
53.a	5	G.08	
54.a	4	G.08	
55.a	4	G.08	3-6
56.a	4	G.08	
57.a	4	G.08	
58.a	4	G.08	
61.a	4	G.08	
62.a	4	G.08	3-1
63.a	4	G.16	
64.a	4	G.08	
65.a	4	G.08	6-7
66.a	4	G.16	
67.a	4	G.08	
68.a	4	G.08	
71.a	4	G.16	
72.a	4	G.16	
73.a	4	G.16	
74.a	4	G.08	
75.a	4	G.08	
76.a	4	G.16	
77.a	4	G.08	
78.a	4	G.08	
81.a	4	G.08	
82.a	6	G.32	
83.a	3	G.08	6-4
84.a	4	G.16	
85.a	1	G.16	1-4, 4-7, 5-1, 5-7, 6-1, 7-3, 8-1
86.a	3	G.04	5-6
87.a	7	G.08	C24
88.a	10	G.32	D52

Rhythm Style List

* *All data is that programmed at the factory. For instructions on carrying out Factory Reset, refer to (p. 94).*
* *The "Performance Using This Rhythm Style" column only lists the Rhythm Styles when the Arpeggiator is turned on at the time the Performance is called up. When the content of a Rhythm Style is overwritten, the sound of the Performances in which it is used changes.*

No.	Rhythm Style Name	Number of Grids	Performance Using This Rhythm Style
11.r	BASIC (HOUSE / TECHNO 1)	32	1-2
12.r	BASIC (HOUSE / TECHNO 2)	16	
13.r	BASIC (HOUSE / TECHNO 3)	32	3-3, 4-7, 6-1, 8-4
14.r	BASIC (HIPHOP / R&B 1)	32	5-6
15.r	BASIC (HIPHOP / R&B 2)	32	
16.r	BASIC (REGGAE 1)	32	4-5
17.r	BASIC (REGGAE 2)	32	
18.r	BASIC (POP)	32	4-4, 7-1
21.r	BASIC (ROCK 1)	32	
22.r	BASIC (ROCK 2)	32	
23.r	BASIC (ROCK 3)	32	
24.r	BASIC (ROCK 4)	32	
25.r	BASIC (ROCK 5)	32	
26.r	BASIC (ROCK 6)	32	
27.r	BASIC (ROCK 7)	32	
28.r	BASIC (ROCK 8)	32	8-6
31.r	TECHNO / HOUSE 1	32	5-1, 5-7, 6-7, 7-6
32.r	TECHNO / HOUSE 2	32	
33.r	TECHNO / HOUSE 3	32	
34.r	TECHNO / HOUSE 4	32	
35.r	TECHNO / HOUSE 5	32	
36.r	TECHNO / HOUSE 6	32	
37.r	TECHNO / HOUSE 7	32	
38.r	TECHNO / HOUSE 8	32	
41.r	TECHNO / HOUSE 9	32	2-3
42.r	TECHNO / HOUSE 10	32	2-2, 3-6, 8-1
43.r	TECHNO / HOUSE 11	32	2-6
44.r	TECHNO / HOUSE 12	32	4-1
45.r	TECHNO / HOUSE 13	32	
46.r	TECHNO / HOUSE 14	32	
47.r	TECHNO / HOUSE 15	32	1-5, 6-6, 8-2
48.r	TECHNO / HOUSE 16	32	

No.	Rhythm Style Name	Number of Grids	Performance Using This Rhythm Style
51.r	TECHNO / HOUSE 17	32	
52.r	TECHNO / HOUSE 18	32	1-1
53.r	TECHNO / HOUSE 19	32	7-4
54.r	TECHNO / HOUSE 20	32	
55.r	TECHNO / HOUSE 21	32	7-3
56.r	TECHNO / HOUSE 22	32	
57.r	TECHNO / HOUSE 23	32	
58.r	TECHNO / HOUSE 24	32	
61.r	HIPHOP / R&B 1	32	
62.r	HIPHOP / R&B 2	32	1-3
63.r	HIPHOP / R&B 3	32	
64.r	HIPHOP / R&B 4	32	
65.r	HIPHOP / R&B 5	32	
66.r	HIPHOP / R&B 6	32	
67.r	HIPHOP / R&B 7	32	
68.r	HIPHOP / R&B 8	32	
71.r	HIPHOP / R&B 9	32	2-8
72.r	HIPHOP / R&B 10	32	3-1
73.r	HIPHOP / R&B 11	32	1-4
74.r	HIPHOP / R&B 12	32	
75.r	HIPHOP / R&B 13	32	
76.r	HIPHOP / R&B 14	32	6-2
77.r	HIPHOP / R&B 15	32	
78.r	HIPHOP / R&B 16	32	
81.r	DNB / 2STEP 1	32	
82.r	DNB / 2STEP 2	32	
83.r	DNB / 2STEP 3	32	
84.r	DNB / 2STEP 4	32	
85.r	DNB / 2STEP 5	32	
86.r	DNB / 2STEP 6	32	
87.r	DNB / 2STEP 7	32	5-3
88.r	DNB / 2STEP 8	32	

Chord Form List

* *All data is that programmed at the factory. For instructions on carrying out Factory Reset, refer to (p. 94).*
* *The "Patch/Performance Using This Chord Form" column only lists the Chord Forms when the Chord Memory function is turned on at the time the Patch or Performance is called up. When the content of a Chord Form is overwritten, the sound of the Patch or Performances in which it is used changes.*

No.	Constituent Notes of Chord Forms (when C4 is pressed)	Patch/Performance Using This Chord Form	Remarks
11.c	A2, A3, F4, A4, C5, E5	D63, 1-3, 5-6, 7-6	F Maj7
12.c	E2, E3, C4, E4, G4, B4	D23	C Maj7
13.c	G2, G3, Eb4, G4, Bb4, D5		Eb Maj7
14.c	D2, D3, Bb3, D4, F4, A4		Bb Maj7
15.c	C3, C4, F4, G4, C5, F5, G5, C6	2-3	C sus4
16.c	C2, C3, C4, C5, C6	3-6	C in different octaves only
17.c	C4, E4, G4, B4		C Maj7
18.c	C4, E4, G4, A4		C 6
21.c	C4, D4, G4		G sus4
22.c	C4, Eb4, G4		C min
23.c	C4, Eb4, G4, Bb4		C min7
24.c	C4, Eb4, G4, A4		C min6
25.c	C4, F4, G4		C sus4
26.c	C4, F4, G4, Bb4		C 7sus4
27.c	C4, G4, C5, E5, A5		C 6
28.c	C4, E4, B4, D5		C Maj9
31.c	C4, E4, A4, D5, G5		C 6 9
32.c	C4, G4, C5, Eb5, G5		C min
33.c	C4, G4, Bb4, Eb5, G5		C min7
34.c	C4, Eb4, Bb4, D5, G5		C min9
35.c	C4, Eb4, A4, D5, G5		C min6 9
36.c	C4, Gb4, Bb4, Eb5		C m7b5
37.c	C4, G4, Bb4, E5, G5	7-4	C 7
38.c	C4, E4, Bb4, D5, G5		C 9
41.c	C4, G4, C5, F5, G5		C sus4
42.c	C4, G4, Bb4, F5, G5		C 7sus4
43.c	C4, E4, G#4, C5		C Aug
44.c	C4, Gb4, C5, Eb5		C dim
45.c	C4, B4, E5, G5	5-3	C Maj7
46.c	C4, Bb4, Eb5, G5		C min7
47.c	C4, A4, Eb5, Gb5		C dim
48.c	C4, F4, G#4, C#5		C# Maj7
51.c	C4, Gb4, Bb4, Eb5		C m7b5
52.c	C4, F#4, A, Eb5		C dim
53.c	G3, C4, E4, B4		C Maj7
54.c	G3, C4, Eb4, Bb4		C min7
55.c	G3, C4, E4, Bb4	6-7	C 7
56.c	Gb3, C4, Eb4, Bb4		C m7b5
57.c	Gb3, C4, Eb4, A4		C dim
58.c	Eb3, G3, C4	2-6	C min
61.c	C4, F4, Bb4, Eb5		F 7sus4
62.c	C3, Bb3, E4, A4		A min b9
63.c	G3, B3, C4, E4		C Maj7
64.c	C4, E4, Gb4, B4		C Maj7 b5
65.c	C3, A3, Bb3, C4, D4, F4	4-8	Bb Maj9
66.c	G2, D3, A3, Bb3, F4, C5		G min9 11
67.c	F#2, C#3, G#3, A#3, F4, C5		F# Maj9#11
68.c	Bb2, C4, E4, G4		C 7
71.c	Ab1, Ab2, Ab3, Eb4, Gb4		Ab 7
72.c	G#2, G#3, C#4, F4		C# Maj
73.c	B2, F#3, A#3, D#4,		B Maj7
74.c	A2, A3, C4, E4		A min
75.c	F2, F3, C4, G4		C sus4
76.c	A2, A3, D4, G4		D sus4
77.c	A2, A3, E4, G4	4-4	A 7
78.c	G1, G4, A4, B4, D5	D22	G add9
81.c	B4, D5, E5, G5, A5, B5, D6, E6		G 6 9
82.c	A5, C6, D6, E6, A6		A min11
83.c	A3, D4, E4, D5, E5		A sus4
84.c	A4, C5, D5, E5, G5, A5		A min7 11
85.c	E5, G5, A5, B5, C6, D6		A min9 11
86.c	G#3, B3, C#4, E4, G#4, B4		C# min7
87.c	E3, A3, B3, C4, D4, E4		A min9 11
88.c	G3, C4, D4, Eb4, F4		C min9 11

Parameter List

Patch Parameters

Parameter		Value
Patch Common/ Control (p. 59, p. 61)	Level	0–127
	Pan	L64–63R
	Analog Feel	0–127
	Solo Switch	SOLO, POLY
	Unison Switch	OFF, ON
	Portamento Switch	OFF, LEGATO ONLY, FULLTIME
	Portamento Time	0–127
	Portamento Type	RATE, TIME
	Legato Switch	OFF, ON, trG (retrigger)
OSC 1&2 (p. 52)	Oscillator Switch	OSC1, OSC2, DUAL
	OSC1:2 Balance	-63 (OSC2)– +63 (OSC1)
	OSC 1x2 Mode	MIX, RING, SYNC
	Pitch Env Attack Time	0–127
	Pitch Env Decay Time	0–127
	OSC1	
	Wave Form	SAW, SQR, PLS, PWM, TRI, SPECT, NOISE
	Saw Variation	1–12
	Square Variation	1–10
	Pulse Variation	1–9
	Triangle Variation	1–5
	Spectrum Variation	1–20
	Noise Variation	1–10
	PWM Depth	0–127
	Sub Oscillator	OFF, -OCT, SUBSONIC
	Octave Shift	-1– +1
	Coarse Tune	-24– +24
	Fine Tune	-50– +50
	Pitch Env Depth	-63– +63
	OSC2 * Same as OSC1	
Filter (p. 56)	Filter Type	LPF, BPF, HPF, PKG, OFF
	Slope	-12, -24 [dB]
	Cutoff Frequency	0–127
	Resonance	0–127
	Cutoff Key follow	-200– +200
	Env Depth	1–127
	Env Attack Time	0–127
	Env Decay Time	0–127
	Env Sustain Level	0–127
	Env Release Time	0–127
Amp (p. 58)	Env Attack Time	0–127
	Env Decay Time	0–127
	Env Sustain Level	0–127
	Env Release Time	0–127
	Env Time Key follow	-100– +100
LFO 1&2 (p. 59)	**LFO1**	
	Switch	OFF, ON
	Wave Form	TRI, SIN, SAW-UP, SQR, TRP, S&H, RND
	Rate	0–127
	BPM Sync	OFF, ON
	Sync Beat / Cycle	8, 4, 2, 1, 1/2, 1/3, 1/4
	Fade Time	0–127
	Key Sync	OFF, ON
	Oscillator1 Depth	-63– +63
	Oscillator2 Depth	-63– +63
	Filter Depth	-63– +63
	Amp Depth	-63– +63
	Pan Depth	-63– +63
	LFO2 * Same as LFO1	

Parameter		Value
Patch Effects (p. 64)	INS > REV Series	SEr (Series), PAr (Parallel)
	INS-FX	
	INS-FX Switch	OFF, ON
	Type	* Refer to **"Insertion Effects Parameters"** (p. 107).
	Send Level	
	Intensity	
	Color	
	Rate (Depth)	
	Level	
	REV/DELAY	
	REV / DELAY Switch	OFF, ON
	Type	* Refer to **"Reverb/Delay Parameters"** (p. 113).
	E.Level	
	Time	
	FBK (Feedback)	
	L-R Shift / Mod Depth	
	HF Damp / Mod Rate	
	REV / DELAY Send Level	0–127
MIDI (p. 85)	**Pitch Bend**	
	Range	0–24
	Modulation/CC#1	
	LFO1 > Pitch Sens	-63– +63
	LFO1 > Filter Cutoff Sens	-63– +63
	LFO1 > Amp Level Sens	-63– +63
	Filter Cutoff Sens	-63– +63
	Channel After Touch	
	Amp Level Sens	-63– +63
	Filter Cutoff Sens	-63– +63
	Velocity	
	Amp Level Sens	-63– +63
	Amp Attack Time Sens	-63– +63
	Filter Cutoff Sens	-63– +63
	Filter Attack Time Sens	-63– +63
Arpeggiator (p. 74) * Patch mode only	Arpeggio Switch	OFF, ON
	Style	11.a–88.a
	Grid Type	04_, 08_, 08L, 08H, 08t, 16_, 16L, 16H, 16t
	Motif	UP.L, UP.H, UP._, dn.L, dn.H, dn._, rn.L
	Duration	30, 40, 50, 60, 70, 80, 90, 100, 120 (%), FUL, Ft1, Ft2
	Range	-3– +3 (octave)
	Tempo	20.0–250.0 (BPM)
Chord Memory (p. 81) * Patch mode only	Chord Switch	OFF, ON
	Chord Form Select	11.c–88.c

Rhythm Set Parameters

Parameter		Value
Rhythm Set Common/ Control (p. 59)	Rhythm Set Level	0–127
Rhythm Set Effects (p. 64)	INS > REV Series	SEr (Series), PAr (Parallel)
	INS-FX	
	INS-FX Switch	OFF, ON
	Type	* Refer to **"Insertion Effects Parameters"** (p. 107).
	Send Level	
	Intensity	
	Color	
	Rate (Depth)	
	Level	
	REV/DELAY	
	REV / DELAY Switch	OFF, ON
	Type	* Refer to **"Reverb/Delay Parameters"** (p. 113).
	E.Level	
	Time	
	FBK (Feedback)	
	L-R Shift / Mod Depth	
	HF Damp / Mod Rate	
	REV / DELAY Send Level	0–127
Rhythm Set Arpeggiator (p. 74) * Patch mode only	Arpeggio Switch	OFF, ON
	Rhythm Style	11.r–88.r
	Grid Type	04_, 08_, 08L, 08H, 08t, 16_, 16L, 16H, 16t
	Tempo	20.0–250.0 (BPM)
Rhythm Tone Parameters	**Rhythm Tone Common**	
	Level	0–127
	Assign Type	MULTI, SINGLE
	Mute Group	OFF, 1–31
	Pan	L64–63R
	OSC	
	Coarse Tune	-24– +24
	Fine Tune	-50– +50
	Wave	OFF, 1–63
	Pitch Env Attack Time	0–127
	Pitch Env Decay Time	0–127
	Pitch Env Depth	-63– +63
	Filter	
	Filter Type	LPF, BPF, HPF, PKG, OFF
	Cutoff Frequency	0–127
	Resonance	0–127
	Env Depth	-63– +63
	Env Attack Time	0–127
	Env Decay Time	0–127
	Env Sustain Level	0–127
	Env Release Time	0–127
	Amp	
	Env Attack Time	0–127
	Env Decay Time	0–127
	Env Sustain Level	0–127
	Env Release Time	0–127
	MIDI	
	Pitch Bender Range	0–24
	Velocity Amp Level Sens	-63– +63
	Velocity Amp Attack Time Sens	-63– +63
	Velocity Filter Cutoff Sens	-63– +63
	Velocity Sens Attack Time	-63– +63
	Effects	
	INS-FX Switch	OFF, ON
	REV / DELAY Switch	OFF, ON
	REV / DELAY Send Level	0–127

Performance Parameters

Parameter		Value
Performance Common/ Control (p. 59, p. 73)	Performance Level	0–127
	OSC Reserve Part 1	0–32
	OSC Reserve Part 2	0–32
	OSC Reserve Part 3	0–32
	OSC Reserve Part 4	0–32
Performance Effects (p. 64, p. 66) * Performance mode only	INS > REV Series	SEr (Series), PAr (Parallel)
	INS-FX	
	INS-FX Switch	OFF, ON
	Parameter Source Part	1–4
	REV/DELAY	
	REV / DELAY Switch	OFF, ON
	Parameter Source Part	1–4
Arpeggiator (p. 80) * Performance mode only	Performance Arpeggiator	OFF, ON
	Arpeggio Part	1–4
	Arpeggio Part Switch	OFF, ON
	Rhythm Part Switch	OFF, ON
	Arpeggio Style	11.a–88.a
	Rhythm Style	11.r–88.r
	Grid Type	04_, 08_, 08L, 08H, 08t, 16_, 16L, 16H, 16t
	Motif	UP.L, UP.H, UP._, dn.L, dn.H, dn._, rn.L
	Duration	30, 40, 50, 60, 70, 80, 90, 100, 120 (%), FUL, Ft1, Ft2
	Range	-3– +3 (octave)
	Tempo	20.0–250.0 (BPM)
Chord Memory (p. 82) * Performance mode only	Chord Switch	OFF, ON
	Chord Form Select	11.c–88.c
	Chord Part	1–4
Performance Part	Receive Channel	1–16
	Receive Switch	OFF, ON
	Part Level	0–127
	Part Pan	L64–63R
	Patch Select	A11–d88, r1.U, r2.U, r3.P, r4.P
	Part Coarse Tune	-24– +24
	Part Fine Tune	-50– +50
	Part Stack Switch	OFF, ON
	Effects	
	Part INS-FX Switch	OFF, ON
	Part REV / DELAY Switch	OFF, ON
	Part REV / DELAY Send Level	0–127

System Parameters

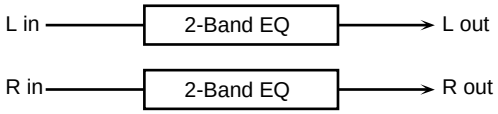
Parameter		Value
System Common (p. 90)	Master Tune	426.0–454.0 Hz
	Foot Switch	P.UP, c.UP, a.UP, r.UP, tAP, in.F, rE.d, crd, ArP, Por, SoL
	System Low Boost	OFF, ON
	Power Up Mode	dEF (Default), LSt (Last)
	Edit TxRx	OFF, Mode 1, Mode 2
MIDI (p. 90)	Local Off	OFF, ON
	Remote	OFF, ON
	Clock	Internal, MIDI
	MIDI Thru	OFF, ON
	Device ID	17–32

Effects List

Insertion Effects Parameters

STEREO EQ (Stereo Equalizer)

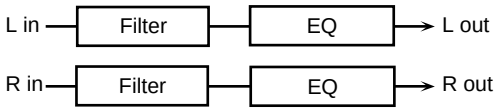
This is a two-band (one variable band + one fixed band: 700 Hz) peaking stereo equalizer.



Parameter	Value	Description
INTENSITY (Gain)	-15– +15 dB	Adjustable EQ boost / cut
COLOR (Freq)	200 Hz–8 kHz	Adjustable EQ reference frequency
RATE (DEPTH) (Q)	0.5, 1.0, 2.0, 4.0, 8.0	Adjustable EQ Bandwidth. Select a higher value to narrow the bandwidth.
LEVEL (700Hz Gain)	-15– +15 dB	(Fixed) 700-Hz boost / cut (Q = 1.0)

EZ FILTER

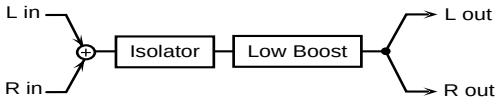
Simple stereo filter. You can use this to adjust the overall tone, or use it instead of the sound generator filter (this cannot be used when Oscillator Sync is active).



Parameter	Value	Description
INTENSITY (Cutoff Frequency)	0–127	Reference frequency of the filter
COLOR (Filter Type)	[LPF], [bPF], [HPF]	Type of filter **[LPF]:** cuts the frequency range above the Cutoff Frequency **[bPF]:** cuts the frequency range below and above the adjusted range **[HPF]:** cuts the frequency range below the Cutoff Frequency
RATE (DEPTH) (Q)	0.5, 1.0, 1.5, 2.0, 2.5, 3.0	Width of the adjusted range Select a higher value to narrow the width.
LEVEL (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost

ISOLATOR

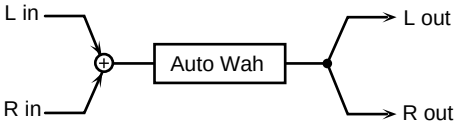
This is an equalizer that radically cuts the volume of selected frequencies, allowing you to create special effects cutting the volume in various ranges.



Parameter	Value	Description
INTENSITY (Gain)	-60– +4 dB	This boosts and cuts the selected frequency ranges. When set to -60 dB, frequencies in the range specified with Band Assign are not audible. At the center position (0 dB), the level is equal to that of the input sound.
COLOR (Band Assign)	L, M, H, L-M, L-H, M-H	You can select one or two frequency ranges to boost or cut; select from Low (L), Midrange (M), and High (H).
RATE (DEPTH) (Low Boost Sw)	OFF, ON	Turns Low Booster on / off. This emphasizes the bottom frequencies to create a heavy bass sound.
LEVEL	---	(not in use)

AUTO WAH

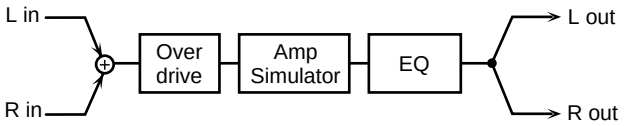
A filter that turns on and off to create a cyclical change in timbre.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.00 Hz	Frequency of modulation
COLOR (Filter Type)	[LPF], [bPF]	Type of filter **[LPF]:** The wah effect is applied over a wide frequency range. **[bPF]:** The wah effect is applied over a narrow frequency range.
RATE (DEPTH) (Depth)	0–127	Depth of modulation
LEVEL (Manual)	0–127	Adjusts the center frequency at which the effect is applied.

OVERDRIVE

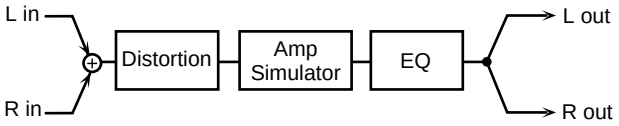
Creates a soft distortion similar to that produced by vacuum tube amplifiers.



Parameter	Value	Description
INTENSITY (Drive)	0–127	Amount of distortion Also changes the volume.
COLOR (Amp Type)	[SML], [bLt], [2St], [3St]	Type of guitar amp **[SML]:** small amp **[bLt]:** single-unit type amp **[2St]:** large double-stack amp **[3St]:** large triple-stack amp
RATE (DEPTH) (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost
LEVEL (Level)	0–127	Output level

DISTORTION 1

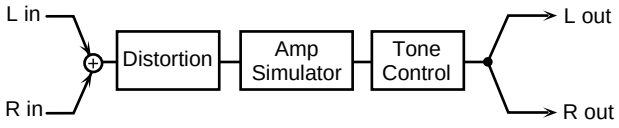
Produces a more intense distortion than Overdrive.



Parameter	Value	Description
INTENSITY (Drive)	0–127	Amount of distortion Also changes the volume.
COLOR (Amp Type)	[SML], [bLt], [2St], [3St]	Type of guitar amp **[SML]:** small amp **[bLt]:** single-unit type amp **[2St]:** large double-stack amp **[3St]:** large triple-stack amp
RATE (DEPTH) (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost
LEVEL (Level)	0–127	Output level

DISTORTION 2

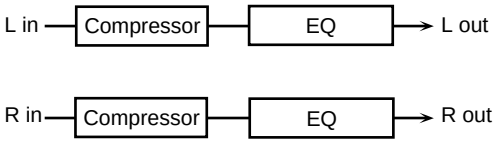
This is a distortion effect that provides heavy distortion.



Parameter	Value	Description
INTENSITY (Drive)	0–127	Amount of distortion Also changes the volume.
COLOR (Amp Type)	[SML], [bLt], [2St], [3St]	Type of guitar amp **[SML]:** small amp **[bLt]:** single-unit type amp **[2St]:** large double-stack amp **[3St]:** large triple-stack amp
RATE (DEPTH) (Tone)	0–127	Sound quality of the Distortion effect
LEVEL (Level)	0–127	Output level

STEREO COMPRESSOR

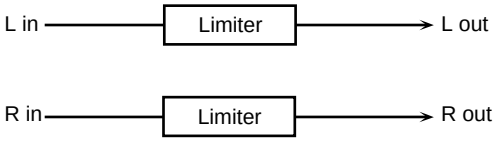
Flattens out high levels and boosts low levels, smoothing out fluctuations in volume.



Parameter	Value	Description
INTENSITY (Sustain)	0–127	Sets the duration of the compression.
COLOR (Attack)	0–127	Sets the speed at which compression starts.
RATE (DEPTH) (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost
LEVEL (Post Gain)	0, +6, +12, +18 dB	Adjusts the output gain.

STEREO LIMITER

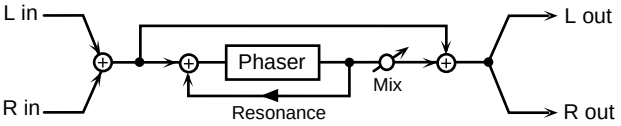
Compresses signals that exceed a specified volume level, preventing distortion from occurring.



Parameter	Value	Description
INTENSITY (Threshold)	0–127	Adjusts the volume at which compression begins.
COLOR (Release)	0–127	Adjusts the time after the signal volume falls below the Threshold Level until compression is no longer applied.
RATE (DEPTH) (Ratio)	1.5:1, 2:1, 4:1, 100:1	Compression ratio
LEVEL (Post Gain)	0, +6, +12, +18 dB	Adjusts the output gain.

PHASER

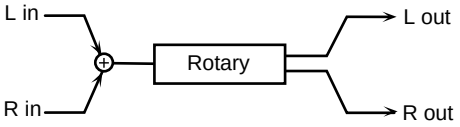
Adds a phase-shifted sound to the original sound, producing a swirling modulation that creates spaciousness and depth.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.0 Hz	Frequency of modulation
COLOR (Resonance)	0–110	Amount of feedback
RATE (DEPTH) (Depth)	0–65	Depth of modulation
LEVEL (Mix)	0–100	Level of the phase-shifted sound

ROTARY

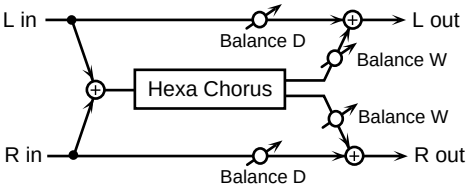
This effect is based on the classic rotary speaker sound that can also can be controlled with a knob.



Parameter	Value	Description
INTENSITY (Rate)	0–127	Rotational speed of the rotors
COLOR (Type)	[nor], [rEV]	**[nor]:** As you turn INTENSITY to the right (clockwise), the rotation of both the upper range and lower range rotors gets faster. **[rEV]:** As you turn INTENSITY to the right (clockwise), the rotation of the upper range speeds up, while the lower range rotor slows.
RATE (DEPTH) (Separation)	0–127	Adjusts the sound's separation.
LEVEL (Low Gain)	0–100%	Relative volume level of the upper range and lower range rotors.

HEXA-CHORUS

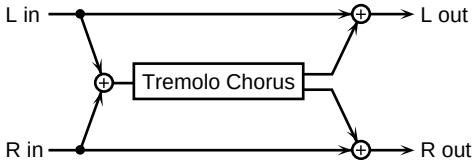
Uses a six-phase chorus (six layers of chorused sound) to give richness and spaciousness to the sound.



Parameter	Value	Description
INTENSITY (Balance)	0–100%	Relative amount of chorus sound
COLOR (Depth Deviation)	-20– +20	Adjusts the difference in modulation depth between each chorus layer.
RATE (DEPTH) (Rate)	0.05–10.0 Hz	Frequency of modulation
LEVEL (Depth)	0–127	Depth of modulation

tCh TREMOLO CHORUS

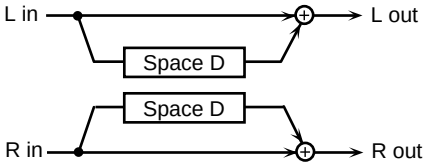
This is a chorus effect with added Tremolo (cyclic modulation of volume).



Parameter	Value	Description
INTENSITY (Tremolo Rate)	0.05–10.0 Hz	Modulation frequency of the tremolo effect
COLOR (Phase)	0–180 deg	Spread of the tremolo effect
RATE (DEPTH) (Chorus Rate)	0.05–10.0 Hz	Modulation frequency of the chorus effect
LEVEL (Chorus Depth)	0–127	Modulation depth of the chorus effect

SPd SPACE-D

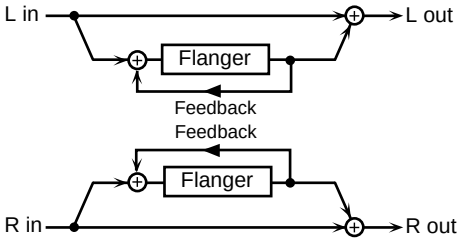
This is a multiple chorus that applies two-phase modulation in stereo. It creates no audible modulation, yet produces a transparent chorus effect.



Parameter	Value	Description
INTENSITY (Chorus Rate)	0.05–10.0 Hz	Frequency of modulation
COLOR (Chorus Phase)	0–180 deg	Spatial spread of the sound
RATE (DEPTH) (Chorus Depth)	0–127	Depth of modulation
LEVEL (Balance)	0–100	Relative amount of chorus sound

FLO STEREO FLANGER

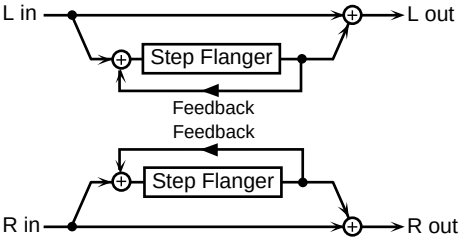
This is a stereo flanger. (The LFO has the same phase for left and right.) It produces a metallic resonance that rises and falls somewhat like a jet airplane taking off or landing.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.0 Hz	Frequency of modulation
COLOR (Phase)	0–180 deg	Spatial spread of the sound
RATE (DEPTH) (Depth)	0–127	Depth of modulation
LEVEL (Feedback)	-98– +98%	Adjusts the amount of the flanger sound that's fed back into the effect. Negative (-) settings invert the phase.

SFL STEP FLANGER

This is a flanger in which the flanger pitch changes in steps.



Parameter	Value	Description
INTENSITY (Step Rate)	0.05–10.0 Hz	Rate (period) of pitch change
COLOR (Depth)	0–127	Depth of modulation
RATE (DEPTH) (Rate)	0.05–10.0 Hz	Frequency of modulation
LEVEL (Feedback)	-98– +98%	Adjusts the amount of the flanger sound that's fed back into the effect. Negative (-) settings invert the phase.

SFS STEP FLANGER SYNC (Sync type)

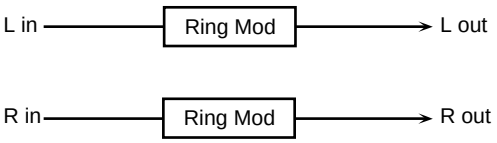
Step Flanger synchronized to the BPM. Rate, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
INTENSITY (Step Rate)	note *1 (p. 112)	Rate (period) of pitch change
COLOR (Depth)	* Same as "STEP FLANGER"	
RATE (DEPTH) (Rate)		
LEVEL (Feedback)		

How to Set the BPM Sync Start Timing (p. 112)

rnG RING MODULATOR

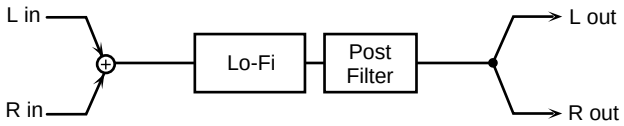
This is an effect that applies amplitude modulation (AM) to the input signal, producing bell-like sounds.



Parameter	Value	Description
INTENSITY (Frequency)	0–127	Adjusts the frequency at which modulation is applied.
COLOR (Polarity)	[UP], [dWn]	Direction in which the change in frequency moves **[UP]:** Towards higher frequencies **[dWn]:** Towards lower frequencies
RATE (DEPTH) (Sens)	0–127	Adjusts the amount of frequency modulation applied.
LEVEL (Balance)	0–100	Relative amount of effect sound

LOFI

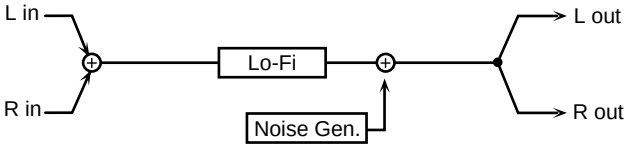
This is an effect that intentionally degrades the sound quality for creative purposes.



Parameter	Value	Description
INTENSITY (Cutoff)	200–8000 Hz	Reference frequency of the filter
COLOR (LoFi Type)	1–9	Degrades the sound quality. The sound quality grows poorer as this value is increased.
RATE (DEPTH) (Post Filter)	[OFF], [LPF], [HPF]	Filter type after passing through Lo-Fi **[OFF]:** no filter is used **[LPF]:** cuts the frequency range above the Cutoff **[HPF]:** cuts the frequency range below the Cutoff * When set to [OFF], INTENSITY has no effect.
LEVEL (Post Gain)	0, +6, +12, +18 dB	Adjusts the output gain.

LOFI NOISE

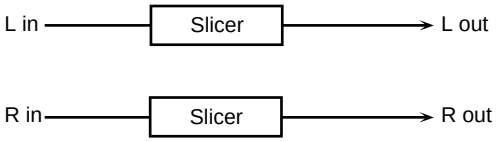
In addition to a Lo-Fi effect, this effect also generates disc noise.



Parameter	Value	Description
INTENSITY (Disc Noise Level)	0–127	Volume of the record noise
COLOR (LoFi Type)	1–9	Degrades the sound quality. The sound quality grows poorer as this value is increased.
RATE (DEPTH) (Disc Noise Type)	[LP], [EP], [SP], [rnd]	Type of record noise The frequency at which the noise is heard depends on the selected type.
LEVEL (Post Gain)	0, +6, +12, +18 dB	Adjusts the output gain.

SLICER

By applying successive cuts to the sound, this effect turns a conventional sound into a sound that appears to be played as a backing phrase. This is especially effective when applied to sustain-type sounds. Divides each cycle into eight parts.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.0 Hz	Repeat rate
COLOR (Pattern)	1–38	Slice pattern
RATE (DEPTH) (Shuffle)	0–127	Timing of volume changes in levels for even-numbered Beats The higher the value, the later the beat progresses.
LEVEL (Attack)	0–127	Speed at which the volume changes between beats

SLICER SYNC (Sync type)

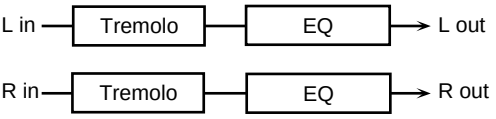
Slicer synchronized to the BPM. Rate, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
INTENSITY (Rate)	note *1 (p. 112)	Repeat rate
COLOR (Pattern)	* Same as “SLICER”	
RATE (DEPTH) (Shuffle)		
LEVEL (Attack)		

How to Set the BPM Sync Start Timing (p. 112)

TREMOLO

Cyclically modulates the volume to add tremolo to the sound.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.00 Hz	Frequency of the change
COLOR (Wave Type)	[tri], [SqU], [Sin], [SW1], [SW2]	Selects the way the volume is modulated. **[tri]:** triangle wave **[SqU]:** square wave **[Sin]:** sine wave **[SW1/2]:** sawtooth wave
		
RATE (DEPTH) (Depth)	0–127	Depth to which the effect is applied
LEVEL (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost

TREMOLO SYNC (Sync type)

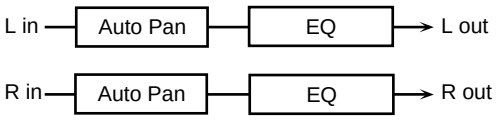
Tremolo synchronized to the BPM. Rate, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

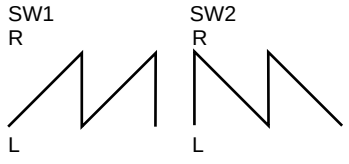
Parameter	Value	Description
INTENSITY (Rate)	note *1 (p. 112)	Frequency of the change
COLOR (Wave Type)	* Same as “TREMOLO”	
RATE (DEPTH) (Depth)		
LEVEL (EQ Gain)		

How to Set the BPM Sync Start Timing (p. 112)

APn AUTO PAN

Cyclically modulates the stereo location of the sound.



Parameter	Value	Description
INTENSITY (Rate)	0.05–10.0 Hz	Frequency of the change
COLOR (Wave Type)	[tri], [SqU], [Sin], [SW1], [SW2]	Selects the way the positioning of the sound is changed. **[tri]:** triangle wave **[SqU]:** square wave **[Sin]:** sine wave **[SW1/2]:** sawtooth wave
		
RATE (DEPTH) (Depth)	0–127	Depth to which the effect is applied
LEVEL (EQ Gain)	-15– +15	**+:** High boost **-:** Low boost

APS AUTO PAN SYNC (Sync type)

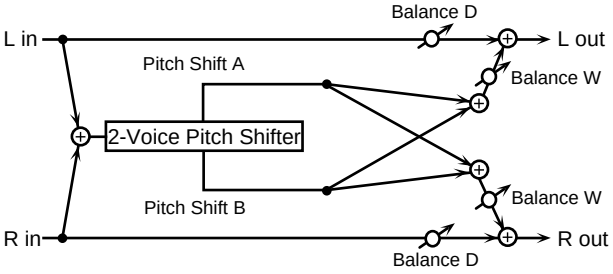
Auto Pan synchronized to the BPM. Rate, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
INTENSITY (Rate)	note *1 (p. 112)	Frequency of the change
COLOR (Wave Type)	* Same as "AUTO PAN"	
RATE (DEPTH) (Depth)		
LEVEL (EQ Gain)		

How to Set the BPM Sync Start Timing (p. 112)

PS 2-VOICE PITCH SHIFTER

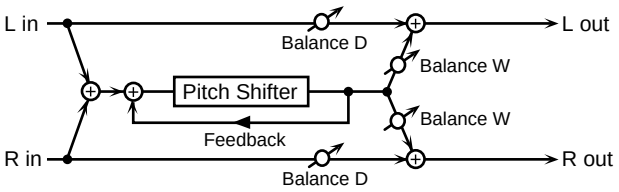
Shifts the pitch of the original sound. You can have two pitch-shifted sounds played, one above and one below the original sound, and change the difference between them.



Parameter	Value	Description
INTENSITY (Pitch)	0–127	Amount of pitch shift
COLOR (Pitch Mode)	[Fin], [Coa]	Smoothness of the change in pitch **[Fin]:** Continuous, **[Coa]:** Semitone steps
RATE (DEPTH) (Pre Delay)	0–350 ms	Adjusts the time until the pitch shifted sound is heard.
LEVEL (Balance)	0–100	Relative amount of pitch-shifted sound

FPS FEEDBACK PITCH SHIFTER

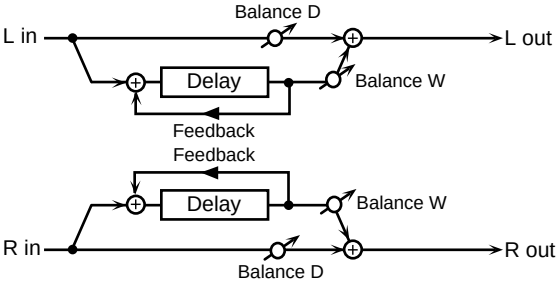
This allows the pitch-shifted sound to be fed back into the effect.



Parameter	Value	Description
INTENSITY (Pitch)	0–127	Amount of pitch shift
COLOR (Pitch Mode)	[Fin], [Coa]	Smoothness of the change in pitch **[Fin]:** Continuous, **[Coa]:** Semitone steps
RATE (DEPTH) (Pre Delay)	0–350 ms	Adjusts the time until the pitch shifted sound is heard.
LEVEL (Feedback)	-98– +98%	Adjusts the amount of the pitch-shifted sound that's fed back into the effect. Negative (-) settings invert the phase.

dLY STEREO DELAY

This is a stereo delay.



Parameter	Value	Description
INTENSITY (Delay Time)	0.0–240 ms	Adjusts the time until the delay sound is heard.
COLOR (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.
RATE (DEPTH) (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
LEVEL (Balance)	0–100	Relative amount of delay sound

dLS STEREO DELAY SYNC (Sync type)

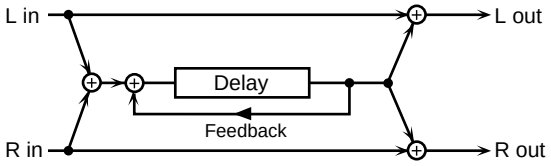
Stereo Delay synchronized to the BPM. Delay Time, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
INTENSITY (Delay Time)	note *1 (p. 112)	Adjusts the time until the delay sound is heard.
COLOR (HF Damp)	* Same as "STEREO DELAY"	
RATE (DEPTH) (Feedback)		
LEVEL (Balance)		

How to Set the BPM Sync Start Timing (p. 112)

LdL LONG DELAY

Although the effect sound is in mono, this delay provides a longer delay time.



Parameter	Value	Description
INTENSITY (Delay Time)	0.0–480 ms	Adjusts the time until the delay sound is heard.
COLOR (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.
RATE (DEPTH) (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
LEVEL (Balance)	0–100	Relative amount of delay sound

LdS LONG DELAY SYNC (Sync type)

Long Delay synchronized to the BPM. Delay Time, set with INTENSITY, changes according to the note length corresponding to the BPM setting.

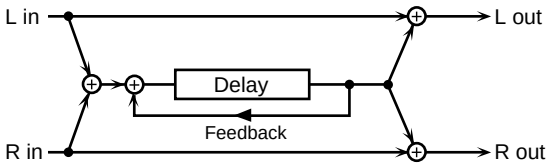
Parameter	Value	Description
INTENSITY (Delay Time)	note *1 (p. 112)	Adjusts the time until the delay sound is heard.
COLOR (HF Damp)	* Same as "LONG DELAY"	
RATE (DEPTH) (Feedback)		
LEVEL (Balance)		

☞ How to Set the BPM Sync Start Timing (p. 112)

rdL RESONANCE DELAY

This is a specialized delay in which the pitch of the feedback sound changes as the delay time is changed. When you turn [INTENSITY] with the feedback raised, the change in pitch is synchronized to the effect sound's repeat rate, resulting in a sense of movement that resembles the acceleration of a motorcycle engine.

You can use this effectively by rotating the knob when performing live, or in other situations. Lowering the feedback returns the effect to a normal delay.

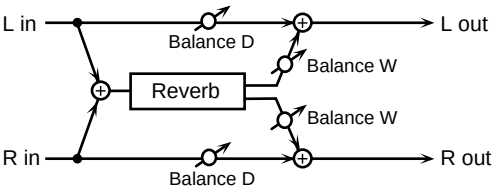


Parameter	Value	Description
INTENSITY (Delay Time)	0–127	Adjusts the time until the delay sound is heard.
COLOR (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.
RATE (DEPTH) (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
LEVEL (Balance)	0–100	Relative amount of delay sound

* *When you want to stop the feedback sound when it is playing continuously, press [INS-FX] once to turn the effect off, then turn it back on again.*

rEV REVERB

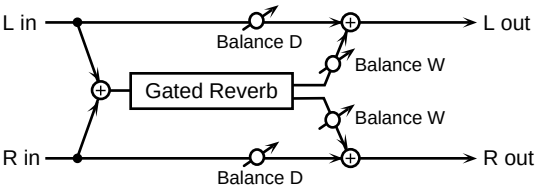
Adds reverberation to the sound, simulating an acoustic space.



Parameter	Value	Description
INTENSITY (Balance)	0–100	Relative amount of reverb sound
COLOR (Type)	[rM1], [rM2], [SG1], [SG2]	Type of reverb **[rM1]:** dense reverb with short decay **[rM2]:** sparse reverb with short decay **[SG1]:** reverb with fewer early reflections **[SG2]:** reverb with strong early reflections
RATE (DEPTH) (Pre Delay)	0–70 ms	Adjusts the time until the reverb is heard.
LEVEL (Time)	0–127	Duration of reverberation

GrV GATED REVERB

This is a special type of reverb in which the reverb is cut off without being allowed to decay naturally.



Parameter	Value	Description
INTENSITY (Balance)	0–100	Relative amount of reverb sound
COLOR (Type)	[nor], [rEV], [SW1], [SW2]	Type of reverb **[nor]:** conventional gated reverb **[rEV]:** backwards reverb **[SW1]:** the reverb moves from right to left **[SW2]:** the reverb moves from left to right
RATE (DEPTH) (Pre Delay)	0–100 ms	Adjusts the time until the reverb sound is heard.
LEVEL (Gate Time)	0–99	Adjusts the time from when the reverb is first heard until it disappears.

note *1:

$\frac{1}{64}$ (Sixty-fourth-note triplet), $\frac{1}{64}$ (Sixty-fourth note), $\frac{1}{32}$ (Thirty-second-note triplet),

$\frac{1}{32}$ (Thirty-second note), $\frac{1}{16}$ (Sixteenth note), $\frac{3}{32}$ (Dotted sixteenth note),

$\frac{1}{8}$ (Eighth note), $\frac{3}{16}$ (Dotted eighth note), $\frac{1}{4}$ (Quarter note),

$\frac{3}{8}$ (Dotted quarter note), $\frac{1}{2}$ (Half note), $\frac{3}{4}$ (Dotted half note),

$\frac{1}{1}$ (Whole note), $\frac{1}{1}$ x 2 (Whole note x 2), $\frac{1}{1}$ x 4 (Whole note x 4),

$\frac{1}{1}$ x 8 (Whole note x 8)

How to Set the BPM Sync Start Timing

After pressing [INS-FX], causing the button's light to go out, you can specify the start timing of the BPM synchronized (Sync type) effect by pressing the button, causing it to light again, at the start of a measure or some other desired point.

Reverb/Delay Parameters

r.ro REVERB ROOM

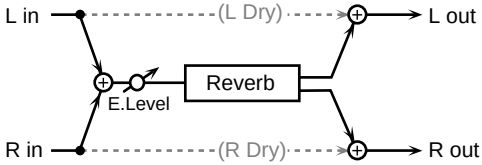
Simulates the reverberation in a smaller room.

r.SG REVERB STAGE

Simulates the reverberation on a stage.

r.HA REVERB HALL

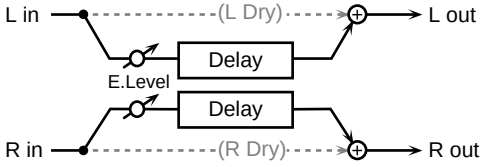
Simulates the reverberation in a larger hall.



Parameter	Value	Description
E.LEVEL (Reverb Level)	0–127	Output level of reverberation
TIME (Reverb Time)	0–127	Duration of reverberation
FBK	---	(not in use)
L-R SHIFT/MOD DEPTH	---	(not in use)
HF DAMP/MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which the high-frequency content of the reverb sound is cut, or "damped." If you don't want to damp the high frequencies, set this parameter to byP.

dLY STEREO DELAY

Delay that provides a stereo effect sound.



Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	0–500 ms	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/MOD DEPTH (L-R Shift)	-50– +50 ms	Difference between the left and right delay time You can bring out a sense of spaciousness and breadth by setting slightly differing delay times. **+:** The left delay time is lengthened. **-:** The right delay time is lengthened.
HF DAMP/MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.

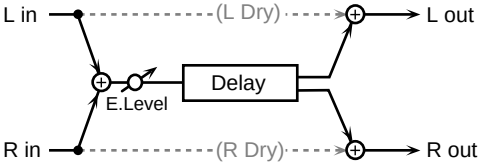
dLS STEREO DELAY SYNC (Sync type)

Stereo Delay synchronized to the BPM. Delay Time changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	note *2 (p. 114)	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/ MOD DEPTH (L-R Shift)	-50– +50 ms	Difference between the left and right delay time You can bring out a sense of spaciousness and breadth by setting slightly differing delay times. **+:** The left delay time is lengthened. **-:** The right delay time is lengthened.
HF DAMP/ MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.

lDL LONG DELAY

Although the effect sound is in mono, this delay provides a longer delay time.



Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	0–1000 ms	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/ MOD DEPTH	---	(not in use)
HF DAMP/ MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.

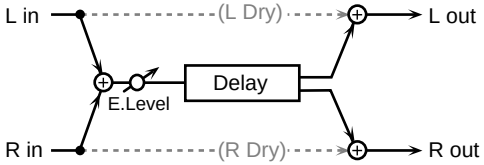
lDS LONG DELAY SYNC (Sync type)

Long Delay synchronized to the BPM. Delay Time changes according to the note length corresponding to the BPM setting.

Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	note *2 (p. 114)	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/ MOD DEPTH	---	(not in use)
HF DAMP/ MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.

PdL PAN DELAY (Panning Delay)

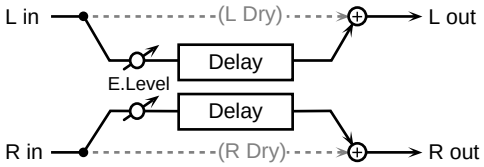
This is a delay effect with echoes that pan left and right.



Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	0–500 ms	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/MOD DEPTH	---	(not in use)
HF DAMP/MOD RATE (HF Damp)	200 Hz–8 kHz, byP	Adjusts the frequency above which sound fed back to the effect is filtered out. If you don't want to filter out any high frequencies, set this parameter to byP.

MdL MODULATION DELAY

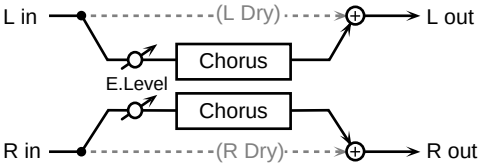
Adds modulation to the delayed sound, producing an effect similar to a flanger.



Parameter	Value	Description
E.LEVEL (Delay Level)	0–127	Output level of the delay sound
TIME (Delay Time)	0–370 ms	Adjusts the time until the delay sound is heard.
FBK (Feedback)	-98– +98%	Adjusts the amount of the delay sound that's fed back into the effect. Negative (-) settings invert the phase.
L-R SHIFT/MOD DEPTH (Modulation Depth)	0–127	Depth of modulation
HF DAMP/MOD RATE (Modulation Rate)	0.05–10.0 Hz	Frequency of modulation

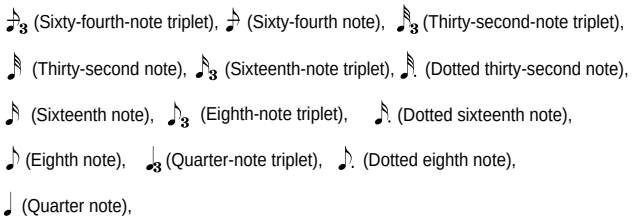
Cho STEREO CHORUS

Adds fatness and breadth to the sound.



Parameter	Value	Description
E.LEVEL (Chorus Level)	0–127	Volume of the chorus sound
TIME (Pre Delay)	0–370 ms	Adjusts the time until the chorus sound is heard.
FBK	---	(not in use)
L-R SHIFT/MOD DEPTH (Modulation Depth)	0–127	Depth of modulation
HF DAMP/MOD RATE (Modulation Rate)	0.05–10.0 Hz	Frequency of modulation

note *2:



MIDI Transmit/Receive Setting List

Exc: Exclusive Message
CC: Control Change

Section	Parameter	"Mod1" (Mode 1)	"Mod2" (Mode 2)	Remarks
Patch Common/ Control	Level	CC07	CC07	CC07: Volume, Value: 0–127
	Pan	CC10	CC10	CC10: Panpot, Value: 0–127 (64=Center)
	Solo Switch	CC126/127	CC126/127	CC126: Mono (Solo)/CC127: Poly
	Unison Switch	CC70	CC70	CC70: Sound Controller 1, Value: 0=OFF/1=ON
	Portamento Time	CC05	CC05	CC05: Portamento Time, Value: 0–127
	Portamento Type	Exc (Transmit/Receive)/ CC65 (Receive)	Exc (Transmit/Receive)/ CC65 (Receive)	CC65: Portamento, Value: 0–63=OFF/64–127=Fulltime, Exc (OFF/Legato Only/Fulltime)
	Legato Switch	Exc (Transmit/Receive)/ CC68 (Receive)	Exc (Transmit/Receive)/ CC68 (Receive)	CC68: Legato, Value: 0–63=OFF/64–127=ON, Exc (OFF/ON/Retrigger)
OSC 1&2	Oscillator 1:2 Balance	CC08	CC08	CC08: Balance, Value: 1–127 (64=Center)
	Pitch Env Attack Time	Exc	CC26	Value: 0–127
	Pitch Env Decay Time	Exc	CC27	Value: 0–127
OSC 1	Pitch Env Depth	Exc	CC25	Value: 1–127 (64=Center)
	PWM Depth	CC78	CC78	CC78: Sound Controller 9, Value: 0–127
	Coarse Tune	Exc	CC21	Value: 40–88 (64=Center)
	Fine Tune	CC77	CC77	CC77: Sound Controller 8, Value: 14–114 (64=Center)
OSC 2	Pitch Env Depth	Exc	CC57	Value: 1–127 (64=Center)
	PWM Depth	CC79	CC79	CC79: Sound Controller 10, Value: 0–127
	Coarse Tune	Exc	CC53	Value: 40–88 (64=Center)
	Fine Tune	CC76	CC76	CC76: Sound Controller 7, Value: 14–114 (64=Center)
Filter	Filter Type	Exc	CC34	Value: 0–4
	Cutoff Frequency	CC74	CC74	CC74: Sound Controller 5, Value: 0–127
	Resonance	CC71	CC71	CC71: Sound Controller 2, Value: 0–127
	Cutoff Kay Follow	Exc	CC30	Value: 44–84 (64=Center)
	Env Depth	CC81	CC81	CC81: General Purpose Controller 6, Value: 1–127 (64=Center)
	Env Attack Time	CC82	CC82	CC82: General Purpose Controller 7, Value: 0–127
	Env Decay Time	CC83	CC83	CC83: General Purpose Controller 8, Value: 0–127
	Env Sustain Time	Exc	CC28	Value: 0–127
	Env Release Time	Exc	CC29	Value: 0–127
Amp	Env Attack Time	CC73	CC73	CC73: Sound Controller 4, Value: 0–127
	Env Decay Time	CC75	CC75	CC75: Sound Controller 6, Value: 0–127
	Env Sustain Time	Exc	CC31	Value: 0–127
	Env Release Time	CC72	CC72	CC72: Sound Controller 3, Value: 0–127
LFO 1	Wave Form	Exc	CC15	Value: 0–6
	Rate	CC16	CC16	CC16: General Purpose Controller 1, Value: 0–127
	Fade Time	Exc	CC20	Value: 0–127
	Oscillator 1 Depth	CC18	CC18	CC18: General Purpose Controller 3, Value: 1–127 (64=Center)
	Oscillator 2 Depth	Exc	CC50	Value: 1–127 (64=Center)
	Filter Depth	CC19	CC19	CC19: General Purpose Controller 4, Value: 1–127 (64=Center)
	Amp Depth	CC80	CC80	CC80: General Purpose Controller 5, Value: 1–127 (64=Center)
	Pan Depth	Exc	CC09	Value: 1–127 (64=Center)
LFO 2	Wave Form	Exc	CC47	Value: 0–6
	Rate	CC17	CC17	CC17: General Purpose Controller 2, Value: 0–127
	Fade Time	Exc	CC52	Value: 0–127
	Oscillator 1 Depth	Exc	CC22	Value: 1–127 (64=Center)
	Oscillator 2 Depth	Exc	CC54	Value: 1–127 (64=Center)
	Filter Depth	Exc	CC23	Value: 1–127 (64=Center)
	Amp Depth	Exc	CC24	Value: 1–127 (64=Center)
	Pan Depth	Exc	CC41	Value: 1–127 (64=Center)
Patch Effect INS/ FX	Intensity	CC93	CC93	CC93: General Purpose Effect 3, Value: 0–127
Patch Effect REV/ DELAY	E.LEVEL	CC94	CC94	CC94: General Purpose Effect 4, Value: 0–127
	FBK (Feedback)	CC13	CC13	CC13: Effect Control 2, Value: 0–98
Performance Common/Control	Performance Level	CC07	CC07	CC07: Volume, Value: 0–127
Performance Part	Part Level	CC07	CC07	CC07: Volume, Value: 0–127
	Part Pan	CC10	CC10	CC10: Panpot, Value: 1–127 (64=Center)
Performance Part Effects	Part REV/DELAY Send Level	CC91	CC91	CC91: General Purpose Effect 1, Value: 0–127

* All Exclusive messages are received in both "Mod1" and "Mod2."

* When a parameter is contained in an Exclusive message in "Mod1," it does not function if a CC corresponding to the same parameter is received.

* *When Edit TxRx is set to "OFF," the related Control Changes are not transmitted or received. Additionally, when set to "Mod1," Control Changes transmitted only in "Mod2" are not received.*

* *Parameters other than those mentioned in this list are transmitted as Exclusive messages.*

MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic	Default	1–16	1–16	
Channel	Changed	1–16	1–16	
Mode	Default	X	Mode 3, 4	
	Messages	X	Mode 3, 4 (M = 1)	* 2
	Altered	**********		
Note Number :	True Voice	0–127 **********	0–127 0–127	
Velocity	Note On	O	O	
	Note Off	X	O	
After Touch	Key's	X	O	
	Channel's	X	O	
Pitch Bend		X	O	
Control Change	0, 32	O	O	Bank select
	1	X	O	Modulation
	5	O	O	Portamento time
	6, 38	X	O	Data entry
	7	O	O	Volume
	8	O	O	Balance
	10	O	O	Panpot
	11	X	O	Expression
	64	X	O	Hold 1
	65	X	O	Portamento
	66	X	O	Sostenuto
	68	X	O	Legato Foot Switch
	70	O	O	Sound Controller 1
	71	O	O	Sound Controller 2
	72	O	O	Sound Controller 3
	73	O	O	Sound Controller 4
	74	O	O	Sound Controller 5
	75	O	O	Sound Controller 6
	76	O	O	Sound Controller 7
	77	O	O	Sound Controller 8
	78	O	O	Sound Controller 9
	80	O	O	General Purpose Controller 5
	81	O	O	General Purpose Controller 6
	82	O	O	General Purpose Controller 7
	83	O	O	General Purpose Controller 8
	84	X	O	Portamento control
	91	O	O	General purpose effects 1
	93	O	O	General purpose effects 3
	94	O	O	General purpose effects 4
	95	O *3	O	General purpose effects 5
	15–31, 33–94	O *1	O *1	
	100, 101	X	O	RPN LSB, MSB
Program Change	: True Number	O **********	O 0–127	Program No. 1–128
System Exclusive		O	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune Request	X	X	
System Real Time	: Clock	O	O *1	
	: Commands	X	X	
Aux Messages	: All Sound Off	X	O	
	: Reset All Controllers	X	O	
	: Local On/Off	X	X	
	: All Notes Off	X	O (123–127)	
	: Active Sensing	O	O	
	: System Reset	X	X	
Notes		* 1 O X is selectable. * 2 Recognized as M=1 even if M≠1. * 3 When the arpeggio duration is set to Ft1 or Ft2 * For more on the corresponding MIDI messages, carry out these procedures while referring to the “MIDI Transmit/Receive Setting List” (p. 115).		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO X : No

Specifications

SH-32: Synthesizer

● Parts

4 parts

● Maximum Polyphony

32 voices

● Sound Generator Organization

2 Oscillators + 1 Filter + 1 Amp + 2 LFOs

Suboscillator (with subsonic mode; can be switched on and off independently of the oscillators), PWM function (can be switched on and off independently of the oscillators), Oscillator Sync function, Ring Modulator function (only one of the above functions may be selected at any one time; Patches in Oscillator Sync are played in mono)

LFO: 7 Waveforms, Tap Teach enabled in BPM Sync

● Synth Oscillator Waveforms

7 groups, 67 types (SAW: 12, SQUARE: 10, PULSE: 9, PWM: 1, TRIANGLE / SINE: 5, SPECTRUM: 20, NOISE: 10)

● Waveforms for Use in Rhythm Sets

63 Waveforms (Pre-installed waveforms include TR-909 and TR-808 kick, snare, hi-hat, and other waves)

● Effects

Insertion Effects: 35

Reverb / Delay: 10

● Preset Memory

Patches: 128

Rhythm Sets: 2

● User Memory

Patches: 128

Rhythm Sets: 2

Performances: 64

* *The Patches in User memory are identical to those in the Preset memory.*

● Arpeggiator

Arpeggio Styles: 64

Rhythm Styles: 64

Tempo: 20–250 BPM

Programmable (Realtime, Step)

Parameters: Grid Type, Duration, Octave Range, Motif

* *Styles can be overwritten by the user.*

● Chord Memory

Chord Forms: 64

● Display

8 segments x 3 characters LED

● Connectors

MIDI Connectors (IN, OUT)

Output Jacks (L, R) (1 / 4 inch phone type)

Headphones Jack

Foot Switch Jack

DC In Jack

● Power Supply

AC Adaptor (DC 9 V)

● Current Draw

1000 mA

● Dimensions

303 (W) x 228 (D) x 91.5 (H) mm

11-15 / 16 (W) x 9 (D) x 3-5 / 8 (H) inches

● Weight

1.9 kg / 4 lbs 4 oz (excluding AC Adaptor)

● Accessories

Owner's Manual

AC Adaptor (ACI series or PSB-1U)

● Options

Foot Switch: BOSS FS-5U

Pedal Switch: DP-2

Foot Switch Cable: PCS-31

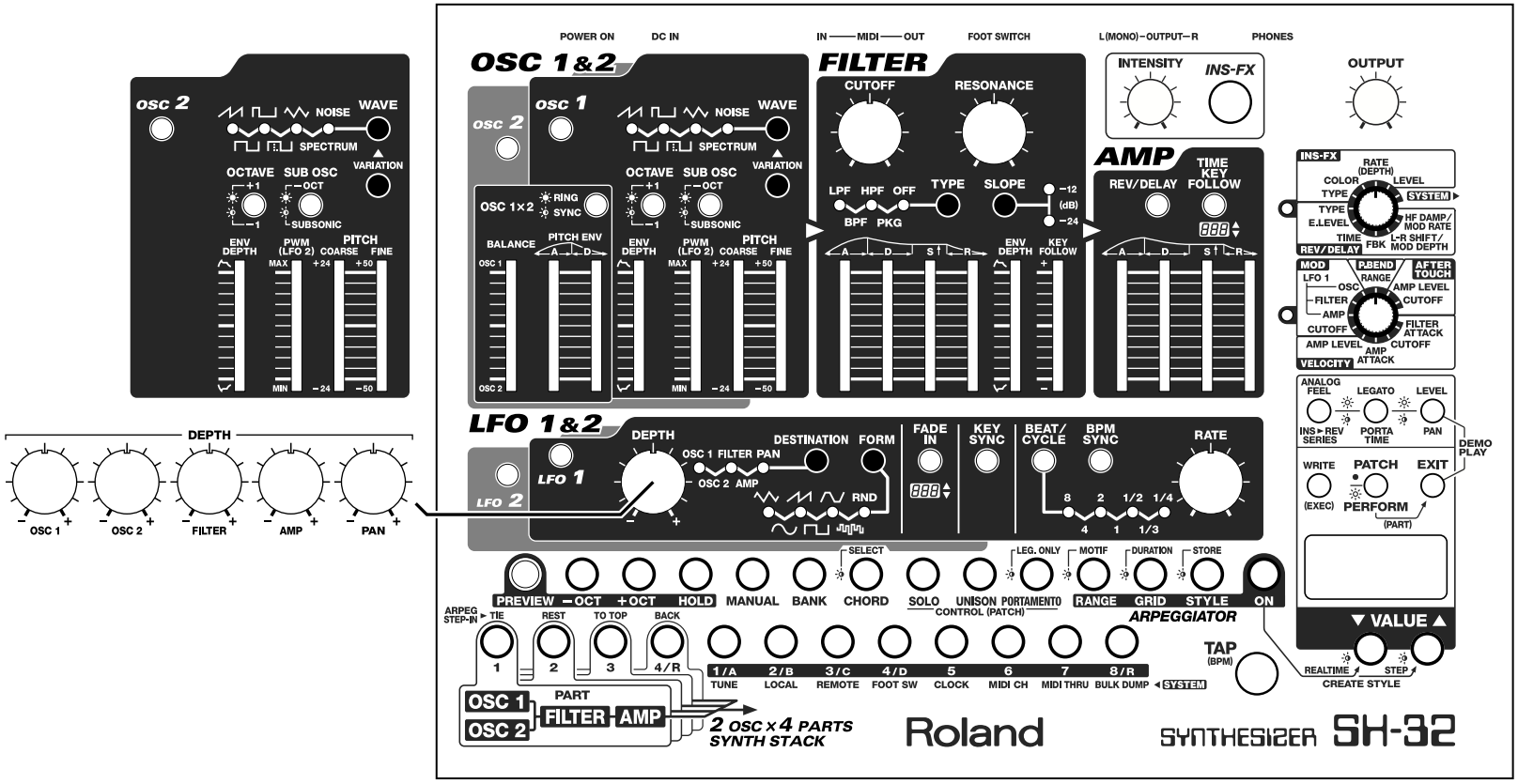
NOTE

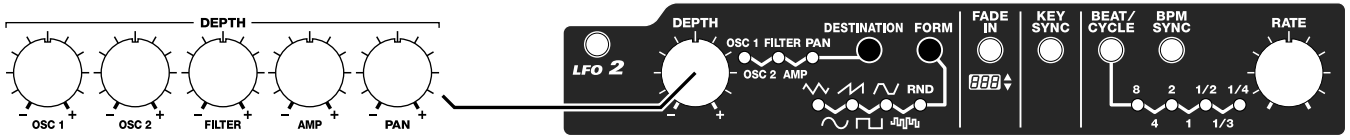
In the interest of product improvement, the specifications and / or appearance of this unit are subject to change without prior notice.

Index

Blank Chart

Use these for keeping notes regarding your tone settings.





INS-FX	
TYPE	
COLOR	
RATE (DEPTH)	
LEVEL	

REV/DELAY	
TYPE	
E.LEVEL	
TIME	
FBK	
L-R SHIFT/MOD DEPTH	
HF DAMP/MOD RATE	

MOD	
LFO 1 – OSC	
LFO 1 – FILTER	
LFO 1 – AMP	
CUTOFF	

P.BEND	
RANGE	

AFTERTOUCH	
AMP LEVEL	
CUTOFF	

MOD	
AMP LEVEL	
AMP ATTACK	
CUTOFF	
FILTER ATTACK	

Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

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25 Rue Jules Hermann,
Chaudron - BP79 97 491
Ste Clotilde Cedex,
REUNION ISLAND
TEL: (0262) 218-429

SOUTH AFRICA
That Other Music Shop (PTY) Ltd.
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Johannesbourg, SOUTH AFRICA

P.O.Box 32918, Braamfontein 2017
Johannesbourg, SOUTH AFRICA
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Paul Bothner (PTY) Ltd.
17 Werdmuller Centre,
Main Road, Claremont 7708
SOUTH AFRICA

P.O.BOX 23032, Claremont 7735,
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TEL: (021) 674 4030

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6 Huangmuchang Chao Yang
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TEL: (010) 6774 7491

Shanghai Xingtong Acoustics Equipment CO.,Ltd.
5F. No.1500 Pingliang Road
New East Club Plaza, Shanghai,
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TEL: (021) 5580-0800

HONG KONG
Tom Lee Music Co., Ltd.
Service Division
22-32 Pun Shan Street, Tsuen
Wan, New Territories,
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TEL: 2415 0911

INDIA
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409, Nirman Kendra Mahalaxmi
Flats Compound Off. Dr. Edwin
Moses Road, Mumbai-400011,
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TEL: (022) 498 3079

INDONESIA
PT Citra IntiRama
J1. Cideng Timur No. 15J-150
Jakarta Pusat
INDONESIA
TEL: (021) 6324170

KOREA
Cosmos Corporation
1461-9, Seocho-Dong,
Seocho Ku, Seoul, KOREA
TEL: (02) 3486-8855

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BENTLEY MUSIC SDN BHD
140 & 142, Jalan Bukit Bintang
55100 Kuala Lumpur, MALAYSIA
TEL: (03) 2144-3333

PHILIPPINES
G.A. Yupangco & Co. Inc.
339 Gil J. Puyat Avenue
Makati, Metro Manila 1200,
PHILIPPINES
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150 Sims Drive,
SINGAPORE 387381
TEL: 846-3676

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Bangkok 10100, THAILAND
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138 Tran Quang Khai St.,
District 1
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38 Campbell Avenue
Dee Why West. NSW 2099
AUSTRALIA
TEL: (02) 9982 8266

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32 Shaddock Street, Mount Eden,
Auckland, NEW ZEALAND
TEL: (09) 3098 715

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Av.Santa Fe 2055
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ARGENTINA
TEL: (011) 4508-2700

BRAZIL
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Rua San Jose, 780 Sala B
Parque Industrial San Jose
Cotia - Sao Paulo - SP, BRAZIL
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Nataniel Cox #739, 4th Floor
Santiago - Centro, CHILE
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OMNI MUSIC
75 Avenida Norte y Final
Alameda Juan Pablo II,
Edificio No.4010 San Salvador,
EL SALVADOR
TEL: 262-0788

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Av. Toluca No. 323, Col. Olivar
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MEXICO
TEL: 668-0480

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SUPRO MUNDIAL, S.A.
Boulevard Andrews, Albrook,
Panama City, REP. DE PANAMA
TEL: 315-0101

PARAGUAY
Distribuidora De Instrumentos Musicales
J.E. Olear y ESQ. Manduvira
Asuncion PARAGUAY
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San Borja, Lima 41,
REP. OF PERU
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Francisco Acuna de Figueroa 1771
C.P.: 11.800
Montevideo, URUGUAY
TEL: (02) 924-2335

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Av. Francisco de Miranda,
Centro Parque de Cristal, Nivel
C2 Local 20 Caracas
VENEZUELA
TEL: (212) 285-8586

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Siemensstrasse 4, P.O. Box 74,
A-6063 RUM, AUSTRIA
TEL: (0512) 26 44 260

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DK-2100 Copenhagen
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Roland France SA
4, Rue Paul Henri SPAAK,
Parc de l'Esplanade, F 77 462 St.
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TEL: 01 600 73 500

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Lauttasaarentie 54 B
Fin-00201 Helsinki, FINLAND
TEL: (9) 682 4020

GERMANY
Roland Elektronische Musikinstrumente HmbH.
Oststrasse 96, 22844 Norderstedt,
GERMANY
TEL: (040) 52 60090

GREECE
STOLLAS S.A.
Music Sound Light
155, New National Road
Patras 26442, GREECE
TEL: (061) 43-5400

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Intermusica Ltd.
Warehouse Area 'DEPO' Pf.83
H-2046 Torokbalint, HUNGARY
TEL: (23) 511011

IRELAND
Roland Ireland
Audio House, Belmont Court,
Donnybrook, Dublin 4.
Republic of IRELAND
TEL: (01) 2603501

ITALY
Roland Italy S. p. A.
Viale delle Industrie 8,
20020 Arese, Milano, ITALY
TEL: (02) 937-78300

NORWAY
Roland Scandinavia Avd. Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo
NORWAY
TEL: 273 0074

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P. P. H. Brzostowicz
UL. Gibraltarska 4.
PL-03664 Warszawa POLAND
TEL: (022) 679 44 19

PORTUGAL
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Cais Das Pedras, 8/9-1 Dto
4050-465 PORTO
PORTUGAL
TEL: (022) 608 00 60

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FBS LINES
Piata Libertatii 1,
RO-4200 Gheorghehi
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3-Bogatyrskaya Str. 1.k.l
107 564 Moscow, RUSSIA
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Roland Electronics de España, S. A.
Calle Bolivia 239, 08020
Barcelona, SPAIN
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Danvik Center 28, 2 tr.
S-131 30 Nacka SWEDEN
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SWITZERLAND
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Musitronic AG
Gerberstrasse 5, Postfach,
CH-4410 Liestal, SWITZERLAND
TEL: (061) 927-8383

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Mira Str. 19/108
P.O. Box 180
295400 Munkachevo, UKRAINE
TEL: (03131) 414-40

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Roland (U.K.) Ltd.
Atlantic Close, Swansea
Enterprise Park, SWANSEA
SA7 9FJ,
UNITED KINGDOM
TEL: (01792) 700139

MIDDLE EAST

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CYPRUS
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Tehran, IRAN
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AMMAN Trading Agency
245 Prince Mohammad St.,
Amman 1118, JORDAN
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Easa Husain Al-Yousifi
Abdullah Salem Street,
Safat, KUWAIT
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LEBANON
A. Chahine & Fils
Gerge Zeidan St., Chahine Bldg.,
Achrafieh, P.O.Box: 16-5857
Beirut, LEBANON
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Al Emadi Co. (Badie Studio & Stores)
P.O. Box 62,
Doha, QATAR
TEL: 4423-554

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aDawliah Universal Electronics APL
Corniche Road, Aldossary Bldg.,
1st Floor, Alkhobar,
SAUDI ARABIA

P.O.Box 2154, Alkhobar 31952
SAUDI ARABIA
TEL: (03) 898 2081

SYRIA
Technical Light & Sound Center
Bldg. No. 47,
Khaled Ebn Al Walid St.
Damascus, SYRIA
TEL: (011) 221-1230

TURKEY
Barkat muzik aletleri ithalat ve ihracat Ltd Sti
Siraselviler Caddesi Siraselviler
Pasaji No:74/20
Taksim - Istanbul, TURKEY
TEL: (0212) 2499324

U.A.E.
Zak Electronics & Musical Instruments Co. L.L.C.
Zabeel Road, Al Sherooq Bldg.,
No. 14, Grand Floor, Dubai, U.A.E.
TEL: (04) 3360715

NORTH AMERICA

CANADA
Roland Canada Music Ltd. (Head Office)
5480 Parkwood Way Richmond
B. C., V6V 2M4 CANADA
TEL: (0604) 270 6626

Roland Canada Music Ltd. (Toronto Office)
Unit 2, 109 Woodbine Downs
Blvd, Etobicoke, ON
M9W 6Y1 CANADA
TEL: (0416) 213 9707

U. S. A.
Roland Corporation U.S.
5100 S. Eastern Avenue
Los Angeles, CA 90040-2938,
U. S. A.
TEL: (323) 890 3700

As of January 1, 2002 (Roland)

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 Directive 89/336/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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

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.

INS-FX Parameter Correspondence Chart

Display (TYPE)	Effect Name	INTENSITY Knob	FX/SYSTEM Knob (Set with [VALUE ▼/▲])			
			COLOR	RATE/DEPTH	LEVEL	
EQ	STEREO EQ	Peaking GAIN	Peaking Frequency	Q	700Hz Gain	
FLt	EZ FILTER	Cutoff Frequency	Filter Type	Q	EQ Gain	
iSo	ISOLATOR	Gain	Band Assign	Low Boost SW	–	mono
WAh	AUTO WAH	Rate	Filter Type	Depth	Manual	mono
od	OVERDRIVE	Drive	Amp Type	EQ Gain	Level	mono
dt1	DISTORTION 1	Drive	Amp Type	EQ Gain	Level	mono
dt2	DISTORTION 2	Drive	Amp Type	Tone	Level	mono
CMP	STEREO COMPRESSOR	Sustain	Attack	Post Gain	EQ Gain	
LMt	STEREO LIMITER	Threshold	Release	Ratio	Post Gain	
PHr	PHASER	Rate	Resonance	Depth	Mix	mono
rot	ROTARY	Rate	Type	Separation	High Gain	mono
Hch	HEXA-CHORUS	Balance	Depth Deviation	Rate	Depth	
tch	TREMOLO CHORUS	Tremolo Rate	Phase	Chorus Rate	Chorus Depth	
SPd	SPACE-D	Chorus Rate	Chorus Phase	Chorus Depth	Level	
FLG	STEREO FLANGER	Rate	Phase	Depth	Feedback	
SFL	STEP FLANGER	Step Rate	Phase	Depth	Feedback	
SF.S	STEP FLANGER SYNC	Step Rate (Note)	Phase	Depth	Feedback	
rnG	RING MODULATOR	Frequency	Polarity	Sens	Balance	
LoF	LOFI	Cutoff Frequency	LoFi Type	Post Filter	Post Gain	mono
Lon	LOFI NOISE	Disc Noise Level	LoFi Type	Disc Noise Type	Post Gain	mono
SLi	SLICER	Rate	Pattern	Shuffle	Attack	
SL.S	SLICER SYNC	Rate (Note)	Pattern	Shuffle	Attack	
trM	TREMOLO	Rate	Wave Type	Depth	EQ Gain	
tr.S	TREMOLO SYNC	Rate (Note)	Wave Type	Depth	EQ Gain	
APn	AUTO PAN	Rate	Wave Type	Depth	EQ Gain	
AP.S	AUTO PAN SYNC	Rate (Note)	Wave Type	Depth	EQ Gain	
PS	2-VOICE PITCH SHIFTER	Pitch	Pitch Mode	Pre Delay	Balance	
FPS	FEEDBACK PITCH SHIFTER	Pitch	Pitch Mode	Pre Delay	Feedback	
dLY	STEREO DELAY	Delay Time	HF Damp	Feedback	Balance	
dL.S	STEREO DELAY SYNC	Delay Time (Note)	HF Damp	Feedback	Balance	
LdL	LONG DELAY	Delay Time	HF Damp	Feedback	Balance	
Ld.S	LONG DELAY SYNC	Delay Time (Note)	HF Damp	Feedback	Balance	
rdL	RESONANCE DELAY	Delay Time	HF Damp	Feedback	Balance	
rEV	REVERB	Time	Type	Pre Delay	Balance	
GrV	GATED REVERB	Gate Time	Type	Pre Delay	Balance	

* *mono: These are effects involving the sound generator that are composed monaurally. The sound generator section and LFO pan are disabled when monaural effects are applied while the connection of the Insertion Effects and the reverb/delay is set to "SEr" (Series).*

* *SLICER SYNC: The slicer pattern starts when the INS-FX button is pressed to turn the effect on.*

* *2-VOICE PITCH SHIFTER/FEEDBACK PITCH SHIFTER: You can select either of two types of effect with the "COLOR" setting: "Coa" (coarse), where changes are made in semitone units; and "Fin" (fine), where the changes occur smoothly.*

* *RESONANCE DELAY: To make the feedback sound come through more clearly, first press [INS-FX] to turn the effect off.*

* *With the SYNC effects, the modulation (LFO) cycle starts at the time [INS-FX] is pressed.*

* *With the SYNC effects, you can select from the following cycles with [INTENSITY]. (Thirty-second note, Sixteenth note, Dotted sixteenth note, Eighth note, Dotted eighth note, Quarter note, Dotted quarter note, Half note, Dotted half note, Whole note, Whole note x 2, Whole note x 4, Whole note x 8)*