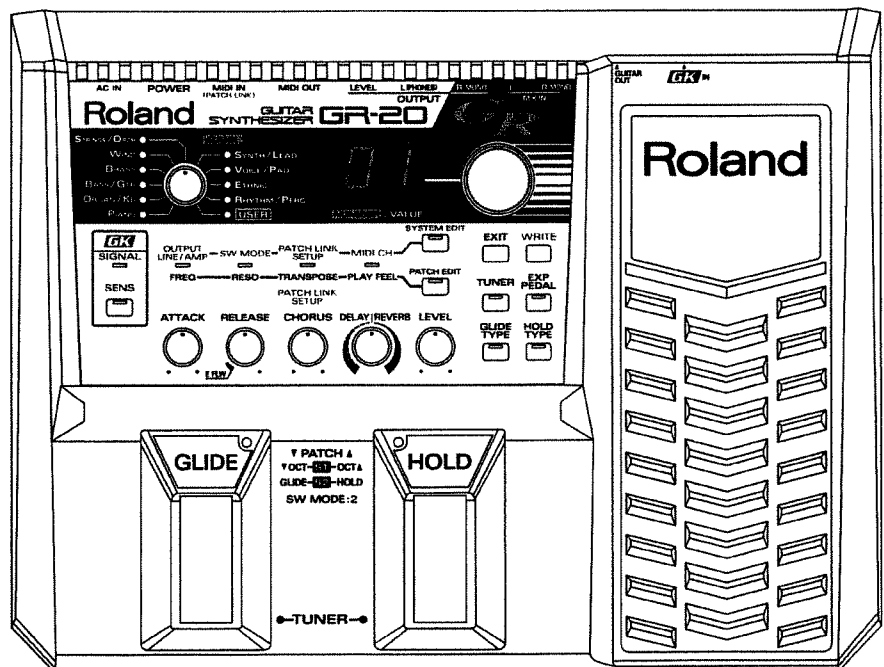# Roland®

GUITAR SYNTHESIZER GR-20

Owner's Manual

Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (p. 2–3, 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.

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.

.....

• 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.

⚠WARNING

• 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.

.....

• 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, the power-supply cord, or the plug has been damaged; or
  • If smoke or unusual odor occurs
  • 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.

⚠ WARNING

• 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 on the AC adaptor cord when plugging into, or unplugging from, an outlet or this unit.

• At regular intervals, you should unplug the AC adaptor and clean it by using a dry cloth to wipe all dust and other accumulations away from its prongs. Also, disconnect the power plug from the power outlet whenever the unit is to remain unused for an extended period of time. Any accumulation of dust between the power plug and the power outlet can result in poor insulation and lead to fire.

• 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 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. 10).

• 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 2–3, 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

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.

- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.

- 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.

- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.

- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.

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), or written down on paper (when possible). During repairs, due care is taken to avoid the loss of data. However, in certain cases (such as when circuitry related to memory itself is out of order), we regret that it may not be possible to restore the data, and Roland assumes no liability concerning such loss of data.

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 losing 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 another MIDI 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.

- Use a cable from Roland to make the connection. If using some other make of connection cable, please note the following precautions.

  - Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.

* All product names mentioned in this document are trademarks or registered trademarks of their respective owners.

Introduction

The GR-20 is a guitar synthesizer (guitar synth) which contains a high-quality sound generator and is designed for easy operation.

The GR-20 carefully analyses the pitch and volume of each string as it tracks the signals being output by the divided pickup (a pickup installed on your guitar which outputs a separate signal for each string), and uses this information to trigger its built-in sound generator. At the same time, a data stream interpreting your guitar performance can also be transmitted via the MIDI OUT connector, and used to play an external MIDI device, such as a sound module.

Main Features

- You can play more than 450 different types of synth sounds in the same way as when playing your guitar conventionally.

- In addition to playing the synth sounds by themselves, you can combine the normal guitar sound with the synth sound.

- When applying an external effects unit to the normal guitar sound, you can use the Mix In jack to mix the processed sound with the synth sound.

- The GR-20 can be used with any steel-string guitar on which a GK-3 or GK-2A (divided pickup; sold separately) can be correctly installed.

- Built-in effects (reverb, delay, chorus) are provided for the synth sound, creating a rich and spacious ambiance. (p. 20)

- You can adjust and store settings such as attack and decay time, and effect depth. (p. 20)

- You can use the GR-20's two foot pedals to apply a Hold effect or Glide effect. (p. 15)

- Use the built-in expression pedal to control parameters such as volume or filter. (p. 16)

- Since your guitar performance is output as MIDI data, you can use your guitar to play an external sound module or as an input device for your MIDI sequencer. (p. 28)

- A guitar tuner is built-in for quick and accurate tuning. (p. 13)

Contents

Names of Things and What They Do

Front Panel
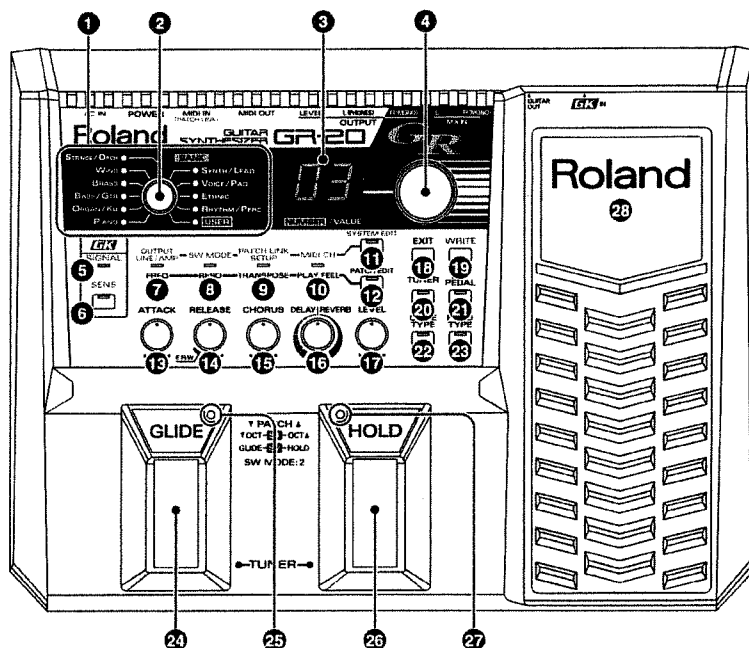
1. BANK indicators

These indicators light to indicate the currently selected sound bank. If the bank has been switched from an external device (such as via MIDI or by the switches of your GK pickup), the indicator for the selected bank will light regardless of the position of the BANK knob.

2. [BANK] knob

Selects the sound bank. The banks are organized into ten categories of sound. Sounds you edit can be stored in the User bank (p. 24).

3. Display

Indicates the currently selected sound number. When you're editing a parameter, the display indicates the value.

If you've edited the sound, the dot will light (p. 20).

4. [NUMBER/VALUE] knob

Use this to select the number of the sound you want to play. Use the [BANK] knob (2) to select a category of sounds, and use this knob to select a sound within that category.

This knob is also used to change the values of other parameters.

5. GK SIGNAL indicator

This indicator lights when a signal is received from the divided pickup.

6. [GK SENS] button

Press this button when you want to adjust the sensitivity to match the output of the divided pickup.

The system may malfunction if this adjustment is not made correctly. Please adjust this setting accurately to match your guitar (p. 12).

7. OUTPUT/FREQ indicator

This indicator lights when you edit the System parameter OUTPUT Select or the Patch parameter FREQ (p. 14, p. 21).

8. SW MODE/RESO indicator

This indicator lights when you edit the System parameter SW MODE or the Patch parameter RESO (p. 14, p. 21).

9. PATCH LINK SETUP/TRANSPOSE indicator

This indicator lights when you edit the System parameter PATCH LINK SETUP or the Patch parameter TRANSPOSE (p. 19, p. 21).

10. MIDI CH/PLAY FEEL indicator

This indicator lights when you edit the System parameter MIDI CH or the Patch parameter PLAY FEEL (p. 18, p. 21).

11. [SYSTEM EDIT] button

Press this when you want to edit System parameters (p. 14, p. 18, p. 19, p. 26, p. 27).

12. [PATCH EDIT] button

Press this when you want to edit Patch parameters (p. 21).

13. [ATTACK] knob

Adjusts the speed of the attack (p. 20).

14. [RELEASE] knob

Adjusts the length of the release (p. 20).

15. [CHORUS] knob

Adjusts the chorus depth (p. 20).

16. [DELAY/REVERB] knob

Adjusts the delay or reverb depth (p. 20).

17. [LEVEL] knob

Adjusts the volume of the synth sound for each patch (p. 20).

18. [EXIT] button

Press this to cancel an operation, or to return to a previous state.

19. [WRITE] button

Press this button to write (store) or copy a patch (p. 24, p. 25).

20. [TUNER] button

Press this button when you want to use the Tuner function (p. 13).

21. [EXP PEDAL] button

Press this button to select the function of the expression pedal (p. 23).

22. [GLIDE TYPE] button

Press this button to select the function of the Glide pedal (p. 22).

23. [HOLD TYPE] button

Press this button to select the function of the Hold pedal (p. 23).

24. GLIDE pedal

Press this pedal to apply the Glide effect to the sound (p. 15).

25. GLIDE indicator

This indicator will light or blink according to how you operate the GLIDE pedal.

26. HOLD pedal

Press this pedal to apply the Hold effect to the sound (p. 16).

27. HOLD indicator

This indicator will light or blink according to how you operate the HOLD pedal.

28. Expression pedal

Use this pedal to adjust the volume or to apply continuous change to the sound (p. 16).

NOTE
When you operate the expression pedal, please be careful not to get your fingers pinched between the movable part and the panel.

NOTE
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.

Rear Panel
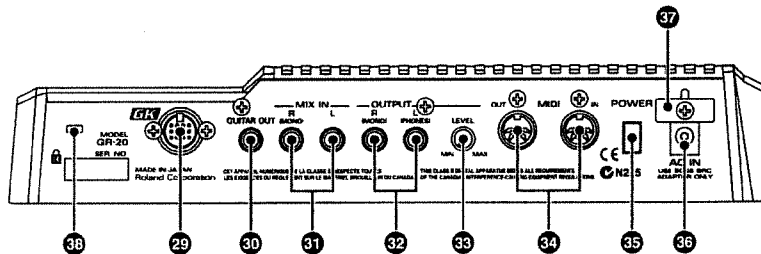
29. GK IN connector

Use the included GK cable (or GKC-3/5/10 (sold separately) to connect this connector to your divided pickup.

* For details on connections to a commercially available GK-compatible guitar, refer to the guitar manufacturer or your dealer.

30. GUITAR OUT jack

This jack outputs the sound from the normal pickup of your guitar. Connect this jack to your guitar amp or guitar effects unit.

31. MIX IN R(MONO)/L jacks

The sound that is input to these jacks is mixed with the synth sound of the GR-20 and sent from the OUTPUT jacks (32).

If you have connected the GUITAR OUT jack (30) to an external effects unit, connect the output of your effects unit to this jack; the synth sound and the sound processed by the effects unit will be output together from the OUTPUT jacks (32) (p. 17).

32. OUTPUT R (MONO)/L (PHONES) jacks

These jacks output the GR-20's synth sound combined with the sound that is input to the MIX IN jacks (31). If you're making connections to a monaural amp, use R (MONO) jack.

The L (PHONES) jack can also be used as a headphone jack (stereo). (However, if headphones are connected to L (PHONES) jack, you cannot simultaneously use R (MONO) jack as an output.)

If nothing is connected to the GUITAR OUT jack (30) or MIX IN jacks (31), the guitar's normal pickup sound will also be mixed into this output.

* This is available only if the output of your guitar is connected to the normal pickup input jack of the divided pickup.

33. [OUTPUT LEVEL] knob

Adjusts the volume that is sent from the output jacks.

34. MIDI IN/OUT connectors

These can be connected to external MIDI devices, allowing the GR-20 to send and receive MIDI data.

35. [POWER] switch

Turns the power on/off.

36. AC Adaptor jack

Connect the included AC adaptor (BRC-series) here.

NOTE

Use only the attached power-supply cord. Also, the supplied power cord must not be used with any other device.

37. Cable hook

Loop the AC adaptor cable around this hook to prevent the cable from being accidentally disconnected.

38. Security Slot ( )

http://www.kensington.com/

Chapter 1 Play the Sounds!

Preparing Your Guitar

- In order to use the GR-20 you will need a guitar that has a divided pickup (GK pickup) such as the Roland GK-3 or GK-2A, which can independently output a separate signal for each string.
- For details on installing the GK pickup, refer to the manual that came with your GK pickup.

- Notes may be sounded incorrectly if there are string buzzes due to improper neck curvature or buzzing frets, or if the octave adjustment (intonation) is incorrect.

MEMO

Various guitar manufacturers sell GK-Compatible guitars that have a pre-installed GK pickup or contain equivalent functionality. For details, contact your guitar dealer or a guitar manufacturer.

Connections

Stereo set, radio-cassette player, etc.

Synthesizer amp (keyboard amplifier, PA system, etc.)

To AUX, LINE IN

L   R

Stereo headphones

Guitar amp/ guitar effects processors

The (L) MIX OUT jacks can also be used as dual stereo headphone jacks. Also be aware that you cannot simultaneously use one jack as a LINE OUT while using the other as a headphone jack – that is, you can't use a monaural plug and a stereo plug at the same time.

L   R

Guitar with GK-3 / GK-2A / other GK-Compatible guitar

AC adaptor (BRC series)

Roland SYNTHESIZER GR-20

* 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

* The volume of your amp should be raised only after you have turned on the power of all your other equipment.

* If you're outputting in monaural, connect the cable to the R (MONO) OUTPUT jack.

* 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.

OUT MIDI IN POWER

AC IN USE BOSS BRC ADAPTOR ONLY
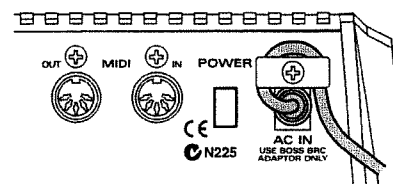
Turning the Power On

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

1. If you've connected a device to MIX IN, turn on the power of that device.

2. Turn on the power of the GR-20.

* *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.*

MEMO

After you've turned on the power, you'll be ready to play when the panel indicators and the display reach the state shown in the illustration. This state is called "Play mode."
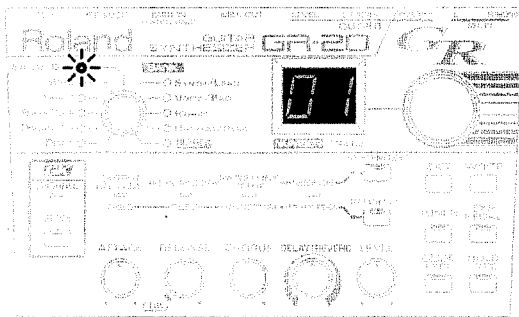
3. Turn on the power of your amp.

Adjusting the Output Level

Use the [OUTPUT LEVEL] knob on the rear panel to adjust the output level of the GR-20.

Turning the knob toward the right (toward MAX) will increase the volume. With the knob turned all the way to the left (toward MIN), the volume will be zero.

* *Normally, you should set this near the middle of the range.*
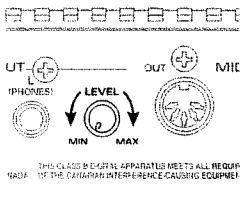
Adjusting the Input Sensitivity (GK SENS)

You'll need to adjust the input sensitivity of each string according to your picking strength and how the divided pickup is installed.

NOTE

If this adjustment is not made correctly, the system won't work properly. You must perform this adjustment to ensure that you're taking full advantage of the GR-20's capabilities.

* *Once you make this adjustment, it's stored within the GR-20; you won't need to make it again. However, you should perform the adjustment again after changing the strings or adjusting the action of your guitar, or before using a different GK guitar.*

1. Press the [GK SENS] button.

2. Play only the 6th string.

   The left side of the display will show "6," indicating that you played the 6th string.

   The right digit will show the GK SENS setting. The BANK indicators will function as a level meter and show the strength of the guitar signal.

* *If the left digit of the display does not show the number of the string you played, press the HOLD pedal or GLIDE pedal several times to make the desired string number appear.*
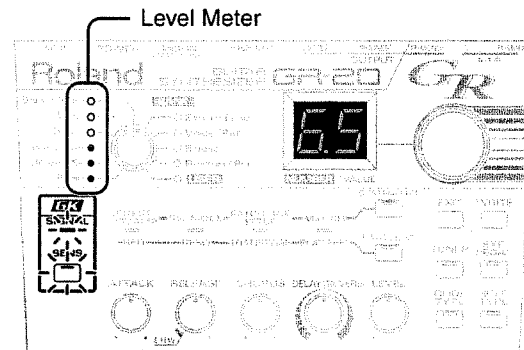
Level Meter

3. Adjust the sensitivity.

   Turn the [NUMBER/VALUE] knob to adjust the sensitivity. The sensitivity will increase as the number in the right of the display increases. Adjust the sensitivity so that all of the level meter indicators light briefly when you pick a note strongly.

* *You can also use your GK pickup's UP/S2 button and DOWN/S1 button to adjust the sensitivity in the same way.*

4. Perform steps 2–3 for strings 5–1 to adjust the sensitivity of all strings.

5. Press the [GK SENS] button or [EXIT] button.

The GK SENS settings you made are stored in the GR-20k, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the settings you made will not be stored.*

Tuning Your Guitar (Tuner Function)

Since the GR-20 analyzes the pitch of each string in order to determine the sound it should produce, you must tune your guitar accurately.

* *If your guitar is mistuned, the sound produced will be out of tune, and the system will not operate correctly.*

1. Press the [TUNER] button.

The [TUNER] button will light, and the Tuner function will be on. The lower two digits of the current reference pitch will be shown for approximately two seconds in the display. Then you will be able to tune your guitar.

Example: When the pitch is set to 440Hz
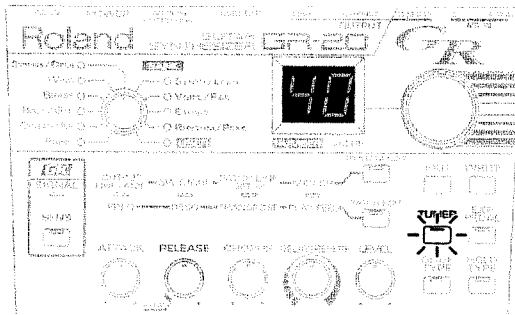
* *You can also turn on the Tuner function by pressing the HOLD pedal and GLIDE pedal simultaneously.*

2. Use the [NUMBER/VALUE] knob to adjust the reference pitch.

If you turn the [NUMBER/VALUE] knob slightly, the current reference pitch will be displayed for several seconds. By turning the [NUMBER/VALUE] knob during this time, you can adjust the reference pitch.

* *You can adjust the reference pitch in a range of 427 Hz–452 Hz.*

When the GR-20 is shipped from the factory, this is set to 440 Hz.

* *The reference pitch you specify will be stored when you exit the Tuner function. Be aware that the setting will not be stored if you turn off the power before doing so.*

3. Cleanly play an unfretted note on the string that you want to tune.

The display will indicate the note name.

C	C	F#	F#
C#	C#	G	G
D	D	G#	G#
D#	D#	A	A
E	E	A#	A#
F	F	B	B

4. Tune your guitar.

Watch the indicator in the panel, and tune your guitar so that only the green indicator in the middle is lit.

too low   too high
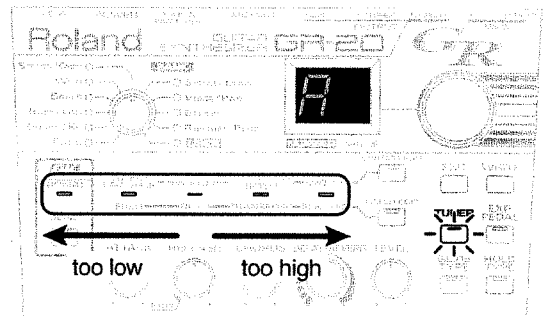
5. Repeat steps 3–4 to tune each string of your guitar.

6. Press the [TUNER] or [EXIT] button to exit the Tuner function.

The reference pitch you specified will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the reference pitch is being stored. Don't turn off the power during this time.*

Specifying the Output Device (OUTPUT SELECT)

Here you can specify the type of system connected to the OUTPUT jacks. This setting allows the GR-20 to internally optimize its sound for the type of playback system you are using.

* *This does not affect the sound that is input to MIX IN.*

1. Press the [SYSTEM EDIT] button a number of times until the OUTPUT/FREQ indicator lights.
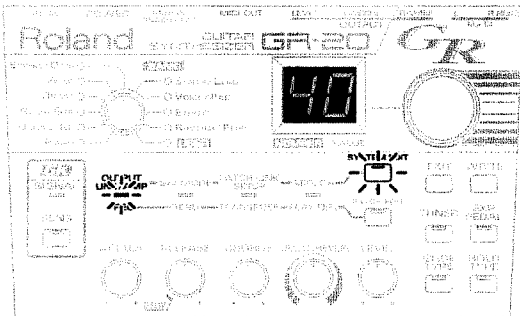
2. Use the [NUMBER/VALUE] knob to change the setting.

Guitar amp

Use this setting if you've connected the GR-20 to a guitar amp.

Line

Use this setting if you've connected the GR-20 to a keyboard amp, mixer, headphones, or recorder.

3. Press the [EXIT] button.

The setting will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the setting you made will not be stored.*

Selecting a Sound (Patch)

?

What is a Patch

A "patch" is a sound you play on the GR-20; in addition to the type of sound, a patch also contains settings for effects such as reverb and chorus.

The GR-20's patches are organized into ten banks by type, with the patches numbered within each bank.

In Play mode, the BANK indicator and the display show the patch that is currently selected.

You can edit the settings of a patch to your taste, and store edited patches in the USER bank (p. 24).

You can use any of the following ways to select a patch.

Using the Knob to Select Patches

1. Use the [BANK] knob to select the type of sound you want.

From the ten sound banks and the user bank, select the bank that contains the sound you want to use.

2. Use the [NUMBER/VALUE] knob to select a sound within the bank.

Turning the [NUMBER/VALUE] knob will change the number shown in the display, letting you choose from various sounds within the selected bank.
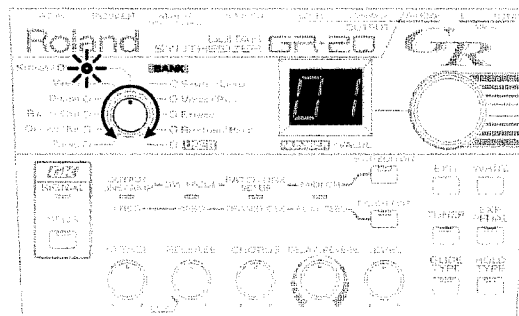
Using the Switches of the GK Pickup to Select Patches

In Play mode, you can use the UP/S2 button and DOWN/S1 button of the GK pickup to select the next or previous number.

When you reach the upper or lower limit within a bank, you will move to the next bank.
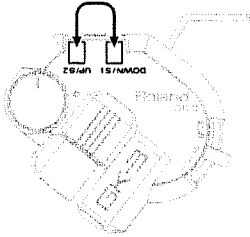
Using the Foot Pedals to Select Patches

When shipped from the factory, the GR-20's two foot pedals are assigned to the Hold function and Glide (Pitch Bend) function respectively. You can change these assignments so that the foot pedals will select patches.

For details, refer to **Changing the function of the foot pedals (SW MODE)** (p. 26).

Using an External Device Via MIDI to Select Patches

You can connect an external device (e.g., multi-effects unit) to the MIDI IN connector, and select patches on the GR-20 by operating the external MIDI device.

For details, refer to **Using the GR-20 with a Multi-effects Unit** (p. 18).

Play the GR-20!

Let's get started playing the GR-20. Check the following points.

1. Make sure that the GR-20 is in Play mode (the state it's normally in immediately following power up).

   In some cases, you won't hear any sound if the GR-20 is not in Play mode.

2. Set the select switch of your GK pickup to the "GK" position (on the GK-2A, the "SYNTH" position).

   If this switch is set to "GUITAR," the normal pickup sound will be output. If this switch is set to "MIX," the synth sound and the guitar normal pickup sound will be mixed and output.

3. Turn the volume of the GK pickup to the right.

   This volume controls the synth sounds of the GR-20.
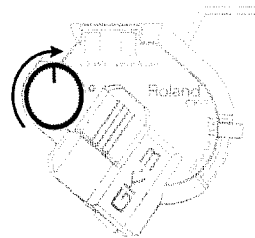
Using the Foot Pedal to Change the Pitch (GLIDE)

You can press the GLIDE pedal to change the pitch of the currently playing synth sound smoothly.

The type of change will depend on the sound, and you can also adjust the change to your taste (p. 22).
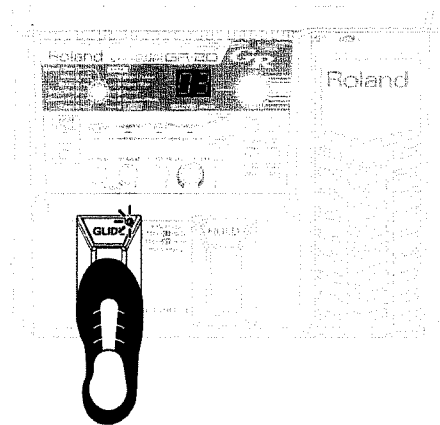
* *The GLIDE indicator will blink while you are pressing the pedal.*

Using the Foot Pedal to Sustain the Sound (HOLD)

You can press the HOLD pedal to sustain the synth sound you're playing. The effect will depend on the sound, and you can also adjust the effect to your taste (p. 23).
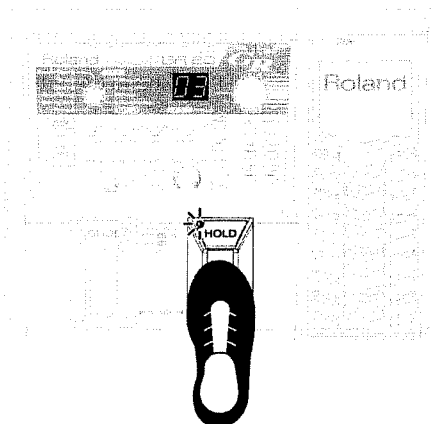
* *The HOLD indicator will blink while you are pressing the pedal.*

Using the Expression Pedal to Modify the Sound (EXP PEDAL)

You can use the expression pedal to continuously vary the volume or tone of the synth sound.

The effect will depend on the sound, and you can also adjust the effect to your taste (p. 23).
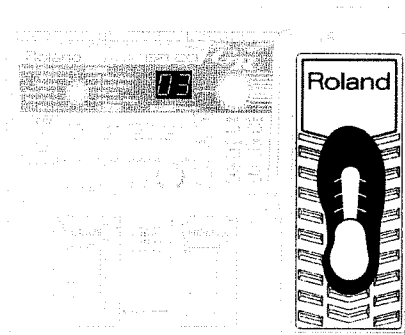
Turning the Power Off

When you're ready to turn off the power, be sure to do so in the following order.

1. Turn off the power of your amp.

2. Turn off the power of the GR-20.

3. Turn off the power of the device connected to MIX IN.

Chapter 2 Using the GR-20 with Guitar Effects

Here's how you can use your own effects unit and combine the sound of the guitar with the synth sound to create an even more interesting range of possibilities.

The sound of the guitar's normal pickups will pass through the GK cable and be output from the GR-20's GUITAR OUT jack.

The sound that is processed by your effects unit can be connected to the GR-20's MIX IN, and internally mixed with the GR-20's synth sound.

* *Connect the output of your guitar to the normal pickup input jack of the GK pickup.*

Connections

Using a compact effect device or a multi-effects unit that has no MIDI connector
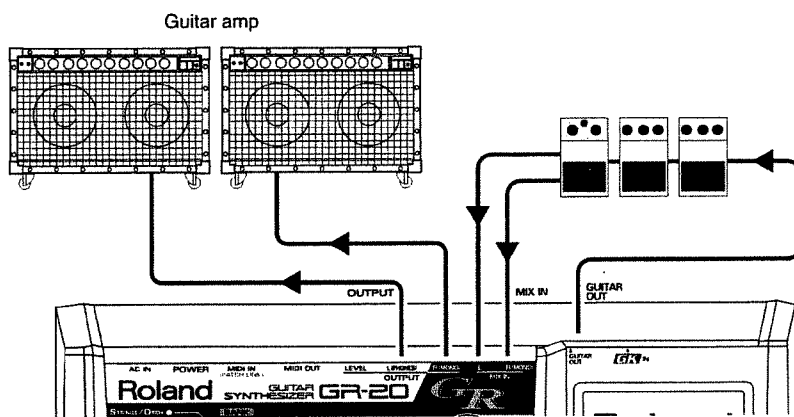
* *Set the GR-20's OUTPUT SELECT to "Guitar Amp" (p. 14).*

Using a multi-effects unit that has a MIDI connector
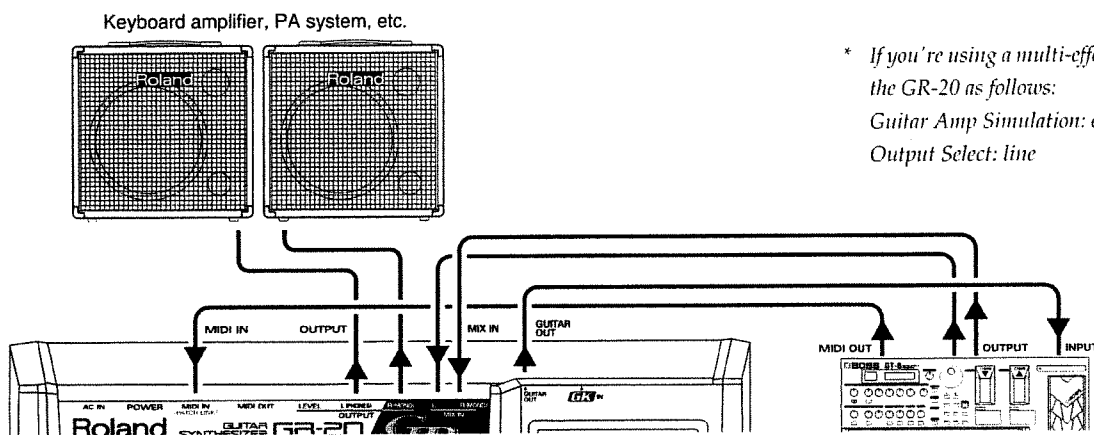
* *If you're using a multi-effects unit, set the GR-20 as follows:*
  Guitar Amp Simulation: on
  Output Select: line

* *Set the GR-20's OUTPUT SELECT to "Line" (p. 14).*

* *If your multi-effects device does not have a amp simulator, set the GR-20's OUTPUT SELECT to "Guitar Amp," and connect the output to a guitar amp.*

Switching between the Synth Sound and Guitar Sound

To switch between the synth sound and guitar sound, use the selector switch provided on your GK pickup.
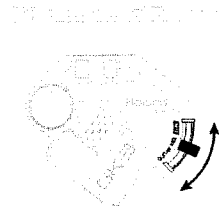
If the selector of your GK pickup (e.g., GK-3, GK-2A) is set to the GK position (labeled SYNTH on the GK-2A), the synth sound will be output. If set to the GUITAR position, the guitar sound will be output. If the selector is set to MIX, both sounds will be mixed and output.

* *To adjust the volume balance between the synth sound and guitar sound, use the volume (p. 20) of each patch to adjust the synth sound, and the volume of the guitar or the connected effects device to adjust the volume of the guitar sound.*

Using the GR-20 with a Multi-effects Unit

By connecting your multi-effects unit via MIDI, you can automatically change sounds (patches) on the GR-20 by selecting sounds (patches) on your multi-effects unit.

Channel (CH)

MIDI uses "channels" to send independent streams of data over a single cable. In order for data to be received, the receiving device must be set to receive the channel that the transmitting device is sending on. This means you must set the transmit channel of your multi-effects unit to match the receive channel of the GR-20.

1. Check the MIDI transmit channel of your multi-effects unit.
   For details, refer to the manual of your multi-effects unit.

2. Press the [SYSTEM EDIT] button a number of times until the MIDI CH/PLAY FEEL indicator lights.
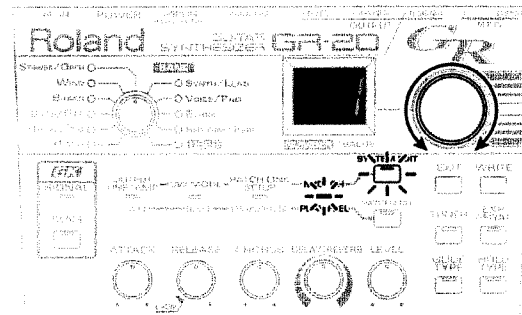
3. Use the [NUMBER/VALUE] knob to change the setting. Set the channel so it's the same as the MIDI transmit channel of your multi-effects unit.

4. Press the [EXIT] button.
   The setting will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the setting you made will not be stored.*

Patch Link Setup
(PATCH LINK SETUP)

Here's how to link the patches (sounds) of your multi-effects unit with the patches (sounds) of the GR-20. This will cause the GR-20 to automatically switch to the specified sound (patch) when you change patches on your multi-effects unit.

1. Use a MIDI cable to connect the MIDI OUT of your multi-effects unit to the GR-20's MIDI IN.

2. Make sure that the MIDI transmit channel of your multi-effects unit is the same as the MIDI channel of the GR-20 (p. 18).

3. Press the [SYSTEM EDIT] button a number of times until the PATCH LINK SETUP/TRANSPOSE indicator lights.
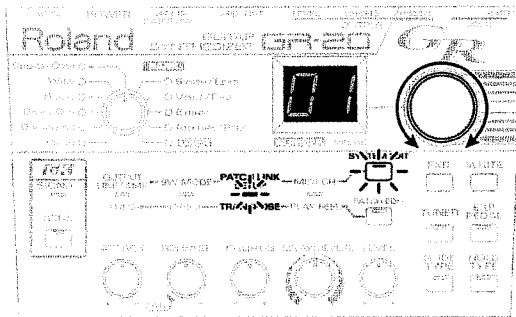
4. On your multi-effects unit, select the patch for which you want to specify a link.

   * *When you select a patch on your multi-effects unit, it will send a "MIDI Program Change" message to the GR-20. The GR-20 will remember the content of this message, and will be ready for you to specify the patch link setting.*

   * *If two or more consecutive patch changes occur when you are selecting a patch on your multi-effects unit, the GR-20 will remember only the last-received MIDI program change.*

5. Use the [BANK] knob and [NUMBER/VALUE] knob to select the synth sound in the GR-20 that you want to use with the effect you chose in step 4.

6. Repeat steps 4–5 to set as many links as you need.

7. Press the [EXIT] button.

   You will return to Play mode, and the settings you made will be stored.

   * *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

   * *If you turn off the power before returning to Play mode, your settings will not be stored.*

Chapter 3 Editing The Sounds

The GR-20 lets you modify the sound to your taste. This process is called "editing."

When you edit the settings, the decimal point in the display will light, indicating that the sound has been modified from the original settings.

Selecting a Sound to Start From

Use the [BANK] knob and [NUMBER/VALUE] knob to select the sound (patch) from which you want to start editing (p. 14).

Use the Knobs to Adjust the Sound
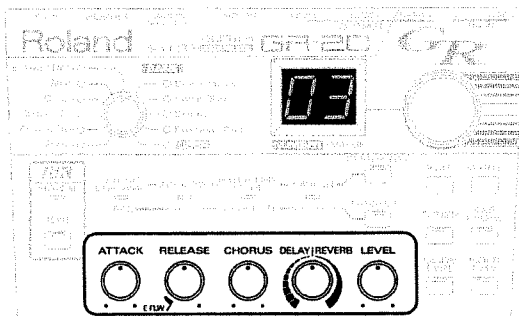
* *Immediately after a patch change, the sound you'll hear will reflect the settings stored in the patch, regardless of the positions of the knobs.*

Adjusting the Attack—ATTACK

This adjusts the attack time of the sound. Turning the knob toward the right will lengthen the time, producing a more gradual attack. Turning the knob toward the left will shorten the time, producing a sharper attack.

* *You will hear the original sound when the knob is at the center position.*

* *For some sounds, moving the knob may not make any difference.*

Adjusting the Release—RELEASE

This adjusts the release, from when you mute a string until it decays to silence. Turning the knob toward the right will lengthen the release, and turning it toward the left will shorten the release.

* *You will hear the original sound when the knob is at the center position.*

* *For some sounds, moving the knob may not make any difference.*

With the knob turned all the way to the left, it activates the envelope follower function.

Envelope Follower (E FLW) function

The guitar synth analyzes the vibration of your guitar string to detect the pitch, and then plays the appropriate synth sound. This means that if the string vibration is less than a certain level, it will not be possible to detect the pitch, and the synth sound will be silenced at that point. For some patches, the way in which the sound is silenced at this time may produce an unnatural result.

The envelope follower function causes the volume of the synth sound to always follow the string vibration of the guitar, making the synth sound decay naturally along with the decay of the string vibration.

* *For some patches, the effect may be slight.*

* *Using the envelope follower function on a decay-type synth sound such as piano or guitar may have the opposite effect, producing an unnatural-sounding decay.*

Adjusting the Spaciousness of the Sound—CHORUS

This adjusts the depth of the chorus effect, which gives the sound a spacious feel. Turning the knob toward the right will deepen the effect, and turning it toward the left will lessen the effect.

* *You will hear the original sound when the knob is at the center position.*

* *For some sounds, moving the knob may not make any difference.*

Adjusting the Reverberation —DELAY/REVERB

This controls two types of reverberation effect.

Delay is an effect that produces echo-like effects, while Reverb is an effect that simulates the way in which sound reflects from the walls of a hall or tunnel. The left half of the knob's range applies a delay effect, and the right half applies reverb. In either case, turning the knob farther will deepen the effect.

Adjusting the Volume—LEVEL

This adjusts the volume of the patch.

* *If you want to keep your edited sound, execute Write (p. 24) to write your settings into a USER patch.*

Editing Other Parameters

You will use the [PATCH EDIT] button and [NUMBER/VALUE] knob to edit these parameters.

1. Press the [PATCH EDIT] button a number of times until the indicator of the parameter you want to edit is lit.

2. Use the [NUMBER/VALUE] knob to edit the value.
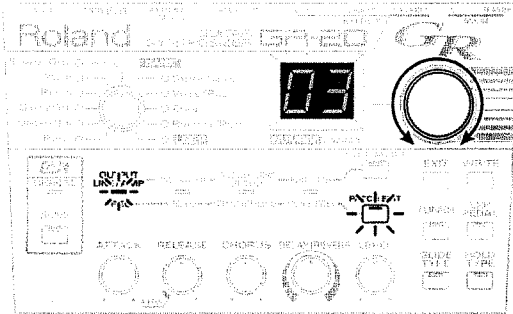
Adjusting the Brightness of the Sound—FREQ

This controls the cutoff frequency of the filter within the sound generator.

Increasing this setting will raise the frequency, producing a brighter tone. Conversely, decreasing this setting will lower the frequency, producing a softer tone.

Adding a Distinctive Character to the Tone—RESO

This controls the resonance of the filter within the sound generator. Increasing this setting will produce a more distinctive tone, while decreasing the setting will produce a milder tone.

Adjusting the Pitch —TRANSPOSE

The pitch of the synth sound produced by the GR-20 can be raised or lowered in one-octave steps relative to the pitch you play on your guitar.

(-2, -1, 0, +1, +2)

Adjusting the Playing Feel —PLAY FEEL

You can select the way in which the synth sound will respond to your picking dynamics. You can more naturally express your playing dynamics by changing this setting to suit a particular playing style or sound.
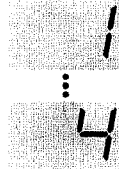
1-4:
The "1" setting gives you the widest range of volume change in response to your picking dynamics. With higher-numbered settings, even softly picked notes will sound at a high volume, making the volume more consistent even when you use tapping techniques or if your picking is not consistent.

No dynamics:
With this setting, notes will be sounded at a fixed volume regardless of your picking dynamics.

Strum:
This setting suppresses softly picked notes. Use this setting if unwanted notes are triggered when you strum or when your finger contacts a string unintentionally.

3. Press the [EXIT] button to return to Play mode.

* If you want to keep your edited sound, execute Write (p. 24) to write your settings into a USER patch.

Selecting the Type of Glide Effect—GLIDE TYPE

You can select how the pitch changes when you press the GLIDE pedal.

1. Press the [GLIDE TYPE] button.
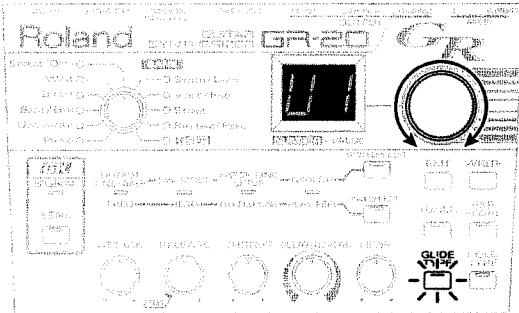
2. Use the [NUMBER/VALUE] knob to change the setting.

u1: GLIDE UP 1
d1: GLIDE DOWN 1

The pitch will change one semitone (up/down) when you press the GLIDE pedal, and will return to normal when you release the pedal.

u2: GLIDE UP 2
d2: GLIDE DOWN 2

The pitch will change a whole step (up/down) when you press the GLIDE pedal, and will return to normal when you release the pedal.

u3: GLIDE UP 3
d3: GLIDE DOWN 3

The pitch will change a perfect fourth (up/down) when you press the GLIDE pedal, and will return to normal when you release the pedal.

u4: GLIDE UP 4
d4: GLIDE DOWN 4

The pitch will change a perfect fifth (up/down) when you press the GLIDE pedal, and will return to normal when you release the pedal.

u5–u8: GLIDE UP 5–8
d5–d8: GLIDE DOWN 5–8

The pitch will change one octave (up/down) when you press the GLIDE pedal, and will return to normal when you release the pedal. Higher settings will shorten the time over which the pitch changes.

V1–V4: VIBRATO 1–4

Pressing the pedal applies vibrato (an effect that changes the pitch cyclically). The effect quickens as the value is increased

3. Press the [GLIDE TYPE] button or [EXIT] button to return to Play mode.

* If you want to keep your edited sound, execute Write (p. 24) to write your settings into a USER patch.

Selecting the Type of Hold Effect—HOLD TYPE

You can select the type of hold effect you'll get when you press the HOLD pedal.

1. Press the [HOLD TYPE] button.
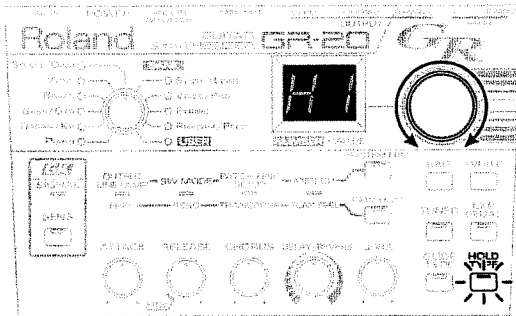
2. Use the [NUMBER/VALUE] knob to change the setting.

H1: HOLD 1

The notes that were sounding when you pressed the pedal will be held, and any notes you play while continuing to press the pedal will also be held. However, if you play any notes on a string that was already sounding, the previous note will disappear and be replaced by the newly played note. This lets you smoothly play notes located at different fret positions.

H2: HOLD 2

The notes that were sounding when you pressed the pedal will be held as long as you continue pressing the pedal. Subsequent notes that you play while holding the pedal will not be heard. This lets you hold a chord using the synth sound, and play a melody using the guitar sound.

H3: HOLD 3

The notes that were sounding when you pressed the pedal will be held as long as you continue pressing the pedal. Subsequent notes that you play while holding the pedal will sound but will not be held. (The notes that you can play afterward are limited to strings other than those that are being held.) This lets you hold a chord using the synth sound on the low notes, and play a melody on the high notes.

H4: HOLD 4

The notes that were sounding when you pressed the pedal will be held, and any subsequent notes you play while continuing to press the pedal will also be held. This is the same behavior as the damper pedal of a piano.

3. Press the [HOLD TYPE] button or [EXIT] button to return to Play mode.

* *If you want to keep your edited sound, execute Write (p. 24) to write your settings into a USER patch.*

Selecting the Effect Controlled by the Expression Pedal—EXP PEDAL

You can select one of the following as the effect controlled by the expression pedal.

1. Press the [EXP TYPE] button.
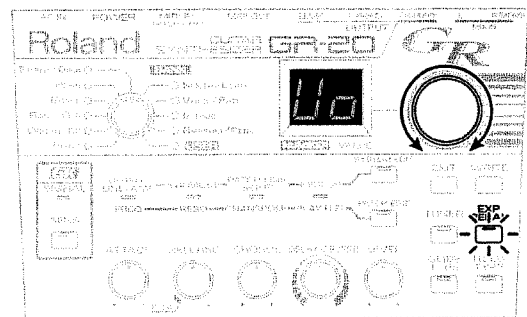
2. Use the [NUMBER/VALUE] knob to change the setting.

VO: VOLUME

The pedal will adjust the overall volume of the synth sound.

FL: FILTER

The pedal will adjust the filter cutoff frequency of the sound generator, varying the tone.

b1: PITCH BEND 1

When the pedal is pressed, the pitch changes up to a perfect fourth (max.).

b2: PITCH BEND 2

When the pedal is pressed, the pitch changes up to a perfect fifth (max.).

b3: PITCH BEND 3

When the pedal is pressed, the pitch changes up to one octave (max.).

b4: PITCH BEND 4

When the pedal is pressed, the pitch changes down to a semi tone (max.).

b5: PITCH BEND 5

When the pedal is pressed, the pitch changes down to a whole tone (max.).

b6: PITCH BEND 6

When the pedal is pressed, the pitch changes down to one octave (max.).

EF: Effect

The pedal will adjust the effect used within each patch.

* *The result will differ for each patch.*

* *For some patches, there will be no effect.*

3. Press the [EXP TYPE] button or [EXIT] button to return to Play mode.

* *If you want to keep your edited sound, execute Write (p. 24) to write your settings into a USER patch.*

Storing the Sounds You Create (WRITE)

The sounds you create will be lost if you change the patch or simply turn off the power. If you want to keep the modifications you've made, you must perform the Write procedure.

1. Press the [WRITE] button.
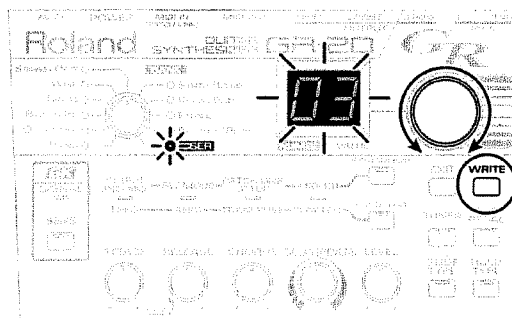
The BANK indicators will indicate USER, and the display will blink.

2. Use the [NUMBER/VALUE] knob to select the patch number into which you want to write your settings.

* *If you decide to abort the Write operation at this point, press the [EXIT] button.*

3. Press the [WRITE] button once again.

Your settings will be written into the patch you selected.

* *Use caution, since the settings previously stored in that patch will be overwritten and lost.*

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

Chapter 4 Other Functions

Copying Patches

Here's how you can copy patch settings. You can copy only to the USER bank.

1. Select the copy-source patch (the patch you want to copy from).

2. Press the [WRITE] button.
   The BANK indicator will change to USER, and the display will blink.
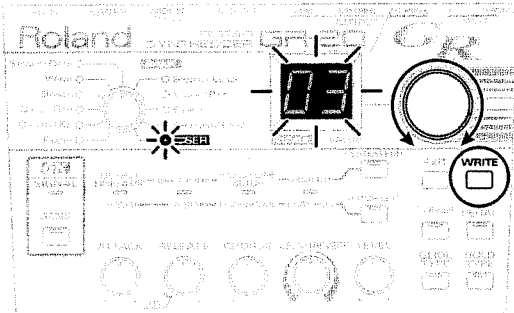
3. Use the [NUMBER/VALUE] knob to select the copy-destination patch number (patch number you want to copy to).

4. Press the [WRITE] button once again.
   The setting will be copied to the copy-destination patch.

   * *The decimal point in the display will blink while copying the setting.*

   * *Use caution, since the settings previously stored in the copy-destination patch will be overwritten and lost.*

Exchanging Patches

Here's how you can exchange (swap) patches within the USER bank. This is a convenient way to arrange USER bank patches in the desired order.

   * *This will not work if the selected patch is not in the USER bank.*

1. Select one of the patches that you want to exchange.

2. Hold down the [EXIT] button and press the [WRITE] button.
   The indication in the display starts blinking.
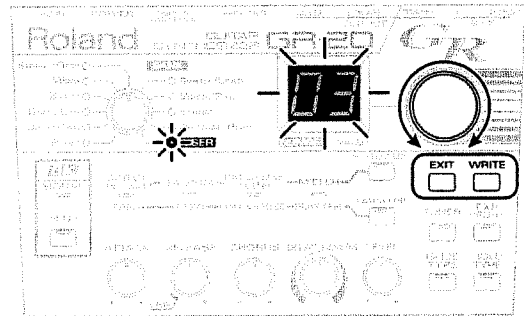
3. Use the [NUMBER/VALUE] knob to select the other patch that you want to exchange.

4. Press the [WRITE] button once again.
   The patches will be exchanged.

   * *The decimal point in the display will blink while the patches is being exchanged.*

Changing the function of the foot pedals (SW MODE)

You can change the function of the GLIDE pedal and the HOLD pedal by changing the switch mode. This setting also changes the function of your GK pickup's DOWN/S1 screen and UP/S2 switch.

Switch Mode 1

The GLIDE pedal operates the Glide function, and the HOLD pedal operates the Hold function.

Your GK pickup's UP/S2 switch and DOWN/S1 switch will move up/down through the patches.

* *This mode is selected when the GR-20 is shipped from the factory.*

Switch Mode 2

The HOLD pedal and GLIDE pedal will move up/down through the patches.

You can use your GK pickup's DOWN/S1 switch and UP/S1 switch in conjunction with the pedals to perform the following operations.

* When you press the DOWN/S1 switch, the GLIDE pedal will function as Octave Down and the HOLD pedal will function as Octave Up (TRANSPOSE).
  When you press DOWN/S1 (or UP/S2) once again, the pedals will revert to the patch up/down function.
* When you press the UP/S2 switch, the GLIDE pedal will function as Glide and the HOLD pedal will function as Hold.
  When you press UP/S2 (or DOWN/S1) once again, the pedals will revert to the patch up/down function.

1. Press the [SYSTEM EDIT] button enough times to get the SW MODE indicator to light.
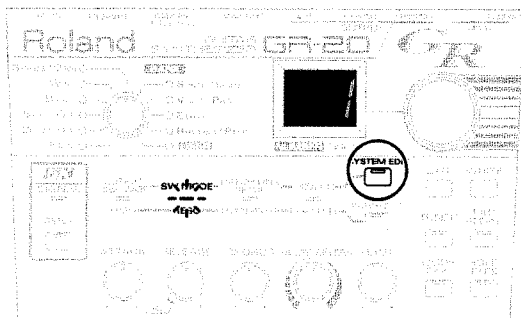
2. Use the NUMBER/VALUE knob to change the setting.

* *The actual mode of operation will not change until you store the setting and return to Play mode.*

3. Press the [EXIT] button.
   You will return to Play mode, and the setting will be stored.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *The setting will not be stored if you turn off the power without returning to Play mode.*

* *In Switch Mode 1, the GLIDE indicator and HOLD indicator will normally be lit; they will blink only while you press the pedal.*

* *In Switch Mode 2, the GLIDE indicator and HOLD indicator will normally be unlit; however, when the function of each pedal is being changed by pressing the DOWN/S1 switch or UP/S2 switch, the indicators will behave the same way as they do in Switch Mode 1.*

Saving Patches and System Parameter Settings on an External Device (BULK DUMP)

Here's how you can save the user bank patches and the system parameter settings via MIDI on an external device or computer (sequencer).

You can also transfer data via a MIDI cable directly between two GR-20 units.

MEMO

Sending GR-20 data in this way is called "bulk dump," and receiving this data is called "bulk load."

?

What are System Parameters?
Parameters that apply to the entire GR-20 (such as SW MODE and MIDI CH) are called "system parameters."

1. Connect the GR-20's MIDI OUT to your external device's MIDI IN.

2. Turn off the power of the GR-20, and then hold down the [PATCH EDIT] button while you turn the power on again.

The display will indicate "dP."
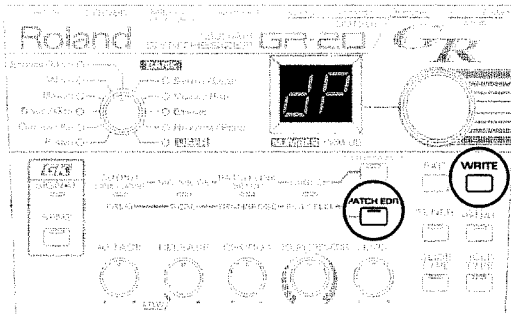
3. Begin recording on the external device that will receive the data.

If you want to transfer data between two GR-20 units, put the receiving GR-20 in the Bulk Load (p. 27) Ready state.

4. Press the [WRITE] button.

The data will be transmitted from MIDI OUT to the external device.

During transmission, the display will show the following.

Lit
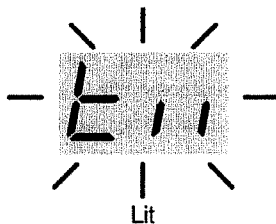
When the display returns to "dP," transmission has been completed.

5. Stop recording on the receiving device.

6. Turn off the power.

Loading Patches and System Parameter Settings From an External Device (BULK LOAD)

Here's how GR-20 settings saved via Bulk Dump on an external device can be loaded back into the GR-20 via MIDI.

NOTE

Performing the BULK LOAD operation will rewrite all the data in the GR-20. Be aware that all currently existing data will be lost.

1. Connect your external device's MIDI OUT to the GR-20's MIDI IN.

2. Turn off the power of the GR-20, and then hold down the [PATCH EDIT] button and turn the power back on again.

The display will indicate "dP."

3. Using the [NUMBER/VALUE] knob, get "Ld" to appear in the display.
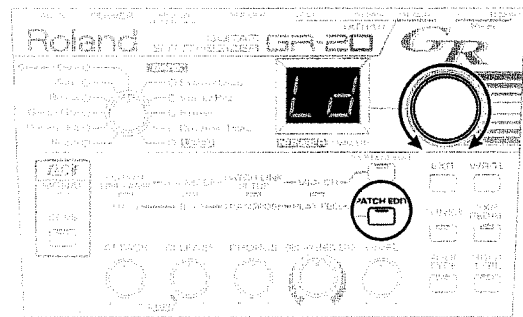
4. Transmit the data from your external device.

During transmission, the display will show the following, and the decimal point of the display will blink.

When the decimal point of the display stops blinking, and the display again shows "Ld," reception has been completed.

5. Press the [WRITE] button.

* *If the power of the GR-20 was turned off while the data was being received, the transmitted data will not be written into the GR-20. If necessary, perform the Bulk Load operation once again.*

6. Press the [EXIT] button to return to Play mode.

Chapter 5 Connecting an External Sound Module or Sequencer

You can use the GR-20 to play an external sound module via MIDI, or use it as an input tool for your sequencer.

Connecting an External Sound Module or Sequencer

Connect the GR-20 to your external sound module or computer (sequencer) as shown in the diagram.
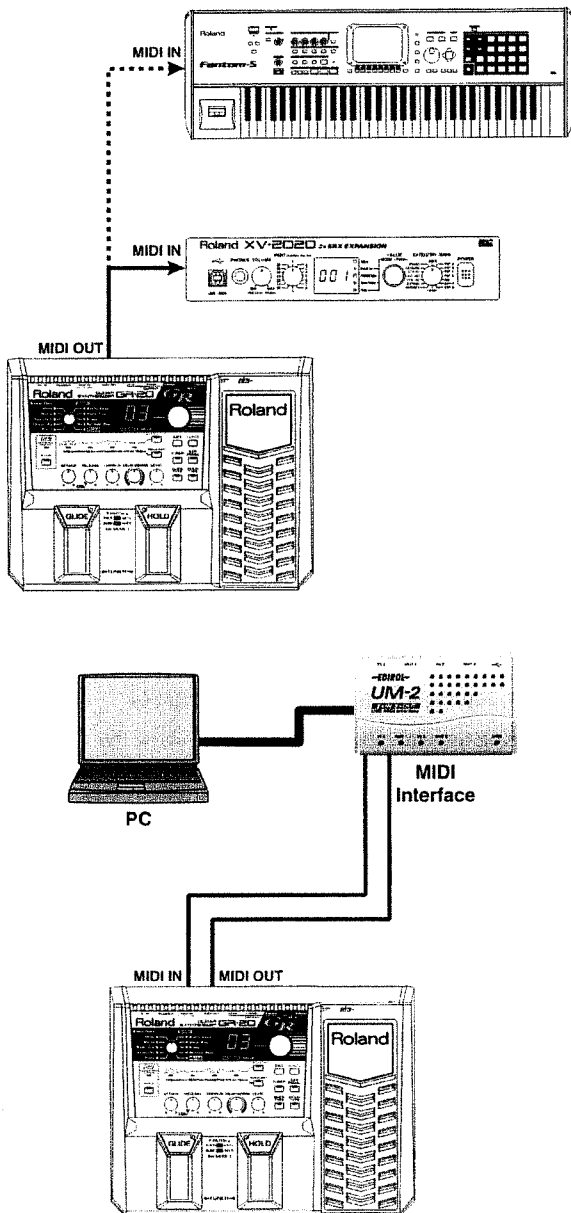
* If you are connecting the GR-20 to a sequencer, turn "Local Control Off" (p. 30).

Setting the Transmission Mode

The GR-20 lets you select either "Mono Mode transmission" or "Poly Mode transmission" as the method it uses when transmitting MIDI messages.

○Mono Mode transmission

Performance data for each string will be transmitted individually, with each using its own separate MIDI channel. Starting with the selected MIDI CH, six consecutive MIDI channels will be selected automatically. For example, if MIDI CH is set to 3, the six channels 3–8 will transmit MIDI data for strings 1–6, respectively.

Since continuous pitch change data (MIDI Pitch Bend messages) can be transmitted independently for each string, this allows you to use performance techniques typical of a guitar, such as use of the whammy bar and string bending.

* The connected sound module must be a multitimbral sound module with at least six parts.

○Poly Mode transmission

Performance data for all strings will be transmitted on a single MIDI channel. The selected MIDI CH will be used. Since the entire guitar will use only one channel, this lets you conserve MIDI channels. This also lets you control a sound module that is not able to receive six channels simultaneously.

* However, if two or more strings are sounding, bend data will not be transmitted; pitch change will occur only in semitone steps. This means that the pitch actually being played by the guitar will not be completely reflected by the synth sound.

1. Turn off the power of the GR-20, and hold down the [EXIT] button while you turn the power on again.
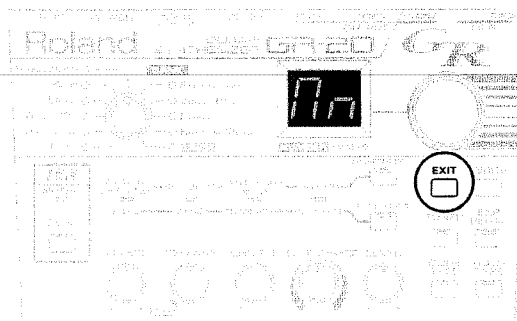
2. Use the [NUMBER/VALUE] knob to select the mode.

∏n   : MONO MODE

PL   : POLY MODE

3. Press the [EXIT] button.

The setting will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the setting you made will not be stored.*

Setting the MIDI Channel (BASIC CHANNEL)

* *You can select only channels 1–11. Channels 12–16 are not available.*

* *If the output mode is set to "Mono Mode," the GR-20 will use six channels starting with the channel you specify here.*

1. Press the [SYSTEM EDIT] button a number of times until the MIDI CH/PLAY FEEL indicator lights.
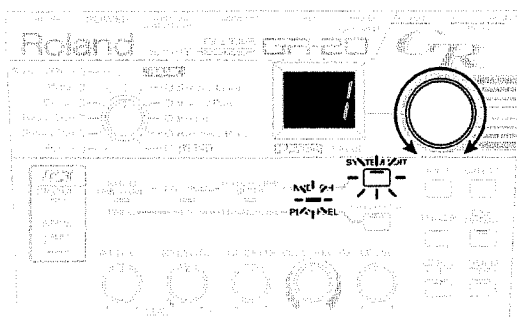
2. Use the [NUMBER/VALUE] knob to change the setting. Set the channel so it's the same as the MIDI transmit channel of your multi-effects unit.

3. Press the [EXIT] button.

The setting will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the setting you made will not be stored.*

Specifying the Bend Range

Since the GR-20 transmits Pitch Bend data based on a bend range of 24, you must set your sound module to a bend range of ±24. For details on making this setting, refer to the manual for your sound module.

MIDI Messages Transmitted by the GR-20

As performance data, the GR-20 transmits a note-on message when you play a note, a note-off message when a note stops, and pitch bend messages when you bend a note.

In addition to these messages, the GR-20 also transmits the following MIDI messages so that your performance can be faithfully reproduced when recorded and played back by a sequencer.

○ENVELOPE FOLLOW

If the RELEASE setting is E FLW (p. 20), MIDI control change number 18 (general purpose controller 3) will be transmitted according to the amplitude of the guitar string's vibration.

○GLIDE pedal

MIDI pitch bend messages will be transmitted according to the change in pitch.

○HOLD pedal

If the HOLD MODE is H1, H2, or H3

Outputting of MIDI note-off messages will be suspended as long as you continue pressing the pedal.

If the HOLD MODE is H4

Control change number 64 will be transmitted.

* *In the case of Poly Mode transmission (p. 28), the Hold effect cannot be conveyed entirely because it cannot be processed independently for identical pitches played on different strings.*

○Expression pedal

Control change number 7 (Volume) or number 4 (Foot Type) is transmitted according to movements of the pedal.

○Program change

This message is transmitted when you switch patches.

The sound bank is transmitted by MIDI Bank Select (CC#0), and the sound number is transmitted as a Program Change (PC).

Local Control Off

The state in which the GR-20's guitar control section is internally connected to the sound generator is referred to as "Local Control On." In contrast, the Local Control Off setting internally disconnects the GR-20's sound generator from the guitar control section, so that the sound generator will produce sound only in response to MIDI messages from MIDI IN. The guitar performance will be transmitted only from MIDI OUT.

GR-20
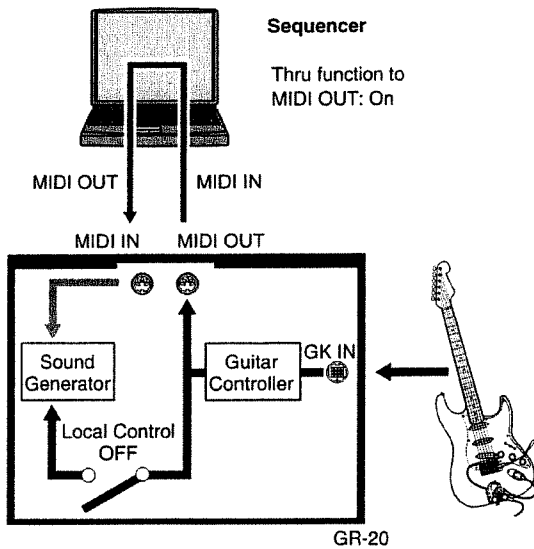
By selecting the Local Control Off setting and enabling the "Soft Thru" setting on your externally connected sequencer, you can avoid conflicts from occurring between the performance data from your guitar and from the sequencer.

1. Turn off the GR-20, and then hold down the [SYSTEM EDIT] button while turning the power on again.

   The display will indicate "Lo" for approximately one second, and the GR-20 will then enter Play mode.
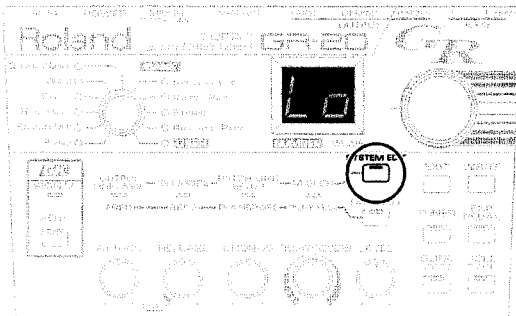
* *The Local Control Off setting cannot be stored.*

* *If the connections between the GR-20 and your external MIDI device form a loop, you must use the Local Control Off setting. If you make connections with this setting On, switches will not function, and the system will not operate correctly.*

* *To turn Local Control on, turn the power of the GR-20 off, then on again.*

Chapter 6 Appendices

Restoring the Factory Settings (Factory Reset)

If you want, you can get back all the settings and patches that the GR-20 had when you first took it out of the box; this process is called "Factory Reset."

You can restore the entire GR-20 to the factory-set state, or restore an individual user patch to its factory-set state.

HINT

Calibration settings for the expression pedal (p. 31) will not be returned to the factory-set condition. This means that even if you execute Factory Reset, you don't need to calibrate the expression pedal again.

NOTE

When you execute Factory Reset, all data you currently have stored in the unit will be overwritten by the factory-default data. If the GR-20 contains important data that you want to keep, use Bulk Dump (p. 26) to save it on an external MIDI device before you execute a Factory Reset.

1. Turn off the GR-20, and then hold down the [WRITE] button while turning the power on again.
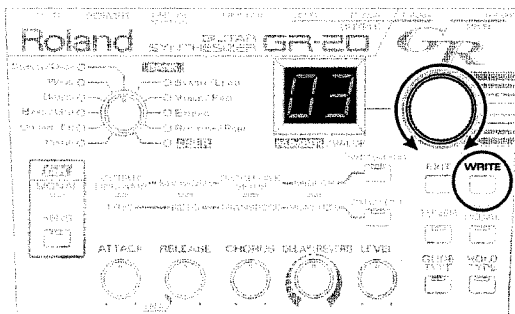
2. Use the [NUMBER/VALUE] knob to select the range of data that you want to restore to the factory settings.

: The entire GR-20 will be returned to the factory settings.

: Only the specified patch will be returned to the factory settings.

3. Press the [WRITE] button.

The decimal point in the display will blink, the Factory Reset operation will be executed. Then you will return to Play mode.

* *Do not turn off the power while the decimal point is blinking.*

Calibrating the Expression Pedal

When the GR-20 is shipped from the factory, the expression pedal is calibrated for optimum performance. However, with extended use, or depending on the conditions of use, this calibration may drift. If you experience problems, such as being unable to use the volume pedal to silence the sound entirely, or if the pitch does not rise or fall through the full range specified, you can use the following procedure to re-calibrate the expression pedal.

1. Turn off the power of the GR-20. Then hold down [EXP PEDAL] while you turn the power on again.

The display will indicate "Pu."

2. Fully release the pedal (applying pressure at the heel), and press the [WRITE] button.

The display will indicate "Pd."

3. Depress the pedal completely (applying pressure at the toe), and press the [WRITE] button.

The setting will be stored, and you will return to Play mode.

* *The decimal point in the display will blink while the setting is being stored. Don't turn off the power during this time.*

* *If you turn off the power before returning to Play mode, the setting you made will not be stored.*

Troubleshooting

During Normal Performance Using the GR-20 Alone

● Playing your guitar does not produce a synth sound

◆ Could the OUTPUT LEVEL have been lowered?

→ Use the rear panel [OUTPUT LEVEL] knob to raise the level appropriately (p. 12).

◆ Could the volume of the GK pickup be turned down?

→ Raise the volume of the GK pickup to an appropriate level.

◆ Could the select switch of the GK pickup be set to GUITAR?

→ Set the switch of the GK pickup to GK (or SYNTH) or MIX.

◆ Could the expression pedal be released?

→ Depress the expression pedal.

◆ Could the LEVEL be turned down?

→ Try turning the [LEVEL] knob (p. 20).

● Volume is uneven among the strings

◆ Was the "GK SENS" setting adjusted correctly for each string?

→ Perform the adjustment (p. 12).

● When using Pitch Glide (or the pitch function of the expression pedal), the pitch does not rise all the way

◆ Depending on the tone or the region of pitch, the range of upward change may be restricted for functions that modify the pitch continuously.

→ Use a narrower range of change (p. 22, p. 23).

● When using the GR-20's pedal effects or expression pedal, the result is different for each patch

◆ The effect produced using the expression pedal is different for each sound (patch).

→ Check the effect of each patch beforehand.

● Internal effects not applied to the guitar sound

◆ The GR-20's internal effects can only be applied to the synth sound. They cannot be applied to the normal guitar sound.

→ By using the guitar out jack you can apply an external guitar effects processor only to the guitar sound. (If you want the synth sound and guitar sound to share a single amp, use the MIX IN jacks as well.) (p. 17)

● The pitch of the synth sound does not change in the same way as the pitch of the guitar

◆ The pitch of some tones (such as percussion instruments and sound effects) will change in a different way than the pitch of your guitar; it does not indicate a malfunction.

● You sometimes hear a thin, modulated noise in an extremely high frequency range

◆ This is a phenomenon known as "aliasing noise," unique to digital sound generators. You may hear this when playing a slide or when using the glide function. This does not indicate a malfunction.

● The pitch changes in half-steps when bending or etc.

◆ On some sounds (patches) such as piano or organ, the pitch will not change smoothly, but change only in semitone steps. This is done intentionally in order to make the instrument sound more realistic; it does not indicate a malfunction.

When Using the GR-20 with other MIDI devices

● The external sound module connected to the MIDI OUT connector does not sound

◆ Do the MIDI channels of the transmitting and receiving devices match?

→ Match the MIDI channels (p. 29).

◆ Could you have turned down the volume using the volume control of the GK pickup or the expression pedal?

→ Raise the controller or volume.

● Only one string sounds on the external sound module (some strings do not sound)

    ◆ Could you be using Mono mode to transmit from the GR-20 to a sound module that is unable to receive six MIDI channels simultaneously?

    → Use a sound module that supports multitimbral operation (p. 28).

    → Use the GR-20 in Poly mode.

● Pitch is incorrect (different than the guitar pitch)

    ◆ Is the Bend Range of your external sound module set to +-24?

    → Set the Bend Range of your external sound module to +-24.

    ◆ Is your guitar tuned accurately?

    → Use the GR-20's Tuner function to tune your guitar accurately. You must also adjust your guitar so that accurate pitches are sounded even on the high frets.

● Pitch does not change smoothly

    ◆ On the GR-20, could you have selected a patch such as piano or organ for which the pitch changes in semitone steps?

    → Select a patch on the GR-20 whose pitch will change smoothly.

● When you view the note messages recorded in your sequencer, the pitches differ from what is actually sounded

    ◆ In order to convey the beginning of a note as quickly as possible, and to allow the pitch to change flexibly, the GR-20 transmits the pitch as a combination of note messages and pitch bend messages. This means that when you view only the note data using the event list ("microscope") screen of your sequencer, the data may appear to be different than the pitch that is actually sounded.

Other

● The volume level of the instrument connected to MIX IN jack is too low.

    ◆ Could you be using a connection cable that contains a resistor?

    → Use a connection cable that does not contain a resistor.

Patch List

BANK	No	NAME
PIANO	1	Grand E.P
	2	Rock Piano
	3	Piano / Bass
	4	4-Hand Piano
	5	Honky Tonk
	6	Piano & Strings
	7	Piano & Orchestra
	8	Piano & Choir Oohs
	9	Piano & Choir Aahs
	10	West Coast
	11	Ac.Piano
	12	Hard Rhodes
	13	Rhodes
	14	Phaser Rhodes
	15	Touch Sense E.P
	16	Soft Rhodes
	17	Smooth Rhodes
	18	Love E.P
	19	E.P / Bass
	20	Wide E.P
	21	Crystal Piano 1
	22	Crystal Piano 2
	23	Fantasy Piano
	24	Silky E.P Pad
	25	Detuned E.P Pad
	26	Chorus E.P Pad
	27	E.P & Strings
	28	E.P & Choir
	29	Great Rhodes
	30	GR Ballad
	31	Pulse E.P
	32	Shattering
	33	Dynamic Piano
	34	Minor Mood
	35	House
ORGAN/ KB	1	Rock Organ 1
	2	Rock Organ 2
	3	Rock Organ & Pedal Organ
	4	Rock Organ & Wood Bass
	5	Rock Organ & E.Bass
	6	Purple Organ
	7	Rock Organ 3
	8	Jazz Organ 1
	9	Jazz Organ 2
	10	Jazz Organ & Pedal Organ
	11	Jazz Organ & Wood Bass
	12	Jazz Organ & E.Bass
	13	Jazz Organ 3
	14	Jazz Organ 4
	15	Gospel Organ
	16	60's Organ

BANK	No	NAME
ORGAN/ KB	17	Glide Organ
	18	Cathedral
	19	Church Choir
	20	Rotary Choir Organ
	21	3 Tone Stack
	22	Organ & Synth Strings
	23	Ice Organ
	24	Clavi
	25	Retro Clavi
	26	Phase Clavi
	27	JUNO Clavi
	28	JUNO Keys
	29	Harpsichord
	30	Baroque Piano
	31	Harpsichord & Strings
	32	New Harpsichord
	33	Accordion
	34	Asian Trance
	35	Bell
	36	Twinkle
	37	Milky Way
	38	D-50 Stack
	39	Dream Bell
	40	Drama Stack
	41	Staccato Heaven
	42	Heaven Choir
	43	Hybrid Synth
	44	Archimedes
BASS/ GTR	1	Wood Bass
	2	Wood Pick Bass
	3	Electric Bass
	4	Phased Bass
	5	Fretless Bass 1
	6	Fretless Bass 2
	7	Slap Bass
	8	Touch Wah Slap Bass
	9	FM Bass
	10	FM Bass + Low
	11	Flat Bass
	12	Synth Bass
	13	2020 Bass
	14	Soft Reso Bass
	15	101 Bass
	16	TB-303
	17	Acid TB
	18	Wonder Bass
	19	Res Bass 1
	20	Res Bass 2
	21	Heavy
	22	System Bass
	23	Love Parade Bass
	24	Mix Bass
	25	MG Reso Bass
	26	Body Bass

BANK	No	NAME
BASS/ GTR	27	In Sync
	28	Throw up
	29	Basstortion
	30	Nylon Guitar
	31	Nylon Duet
	32	Nylon & Strings
	33	Nylon & Choir
	34	Ac.Guitar
	35	Ac.Guitar Oct
	36	Ac.Guitar + Low
	37	12 Str Guitar
	38	12 Str & Synth Strings
	39	12 Str Heaven
	40	Guitar & Pad
	41	Feedback
	42	Whammy
	43	OD-Paradise
	44	Small Amp Dist Vib
	45	Digital Rock Guitar
	46	Orgguitar
BRASS	1	Trumpet
	2	Trumpet Split
	3	Mute Trumpet
	4	Trombone
	5	Trombone Vib
	6	Tuba
	7	Horn
	8	Flugelhorn
	9	Tp Section
	10	Brass Section
	11	NewYork Brass
	12	Brass & Sax 1
	13	Brass & Sax 2
	14	French Horns
	15	5th French Horns
	16	French Heaven
	17	Pat Brass
	18	Brassy Saws
	19	Poly Brass 1
	20	Synth Brass 1
	21	Xpensive Synth Brass
	22	Synth Brass 2
	23	Synth Brass 3
	24	Poly Brass 2
	25	MG Brass
	26	Fat Synth Brass
	27	Breathy Brass
	28	Lee Brass
	29	Soft D-50 Brass
	30	Confident Lead
	31	Bright Synth Brass
	32	Brass It !
	33	Synth Brass Chord
	34	Wacky Brass

BANK	No	NAME
WIND	1	Fat Tenor Sax
	2	Bright Tenor Sax
	3	Moody Sax
	4	Alto Sax
	5	Alto Sax Vib
	6	Soprano Sax
	7	Baritone Sax
	8	Sax Ensemble
	9	Sax Section & Baritone Sax
	10	Brass Section & Baritone Sax
	11	Sax Section Oct
	12	Harmonica
	13	Blues Harp OD
	14	Blues Harp Dist
	15	Piccolo
	16	Flute
	17	Attack Flute
	18	Piccolo & Glocken
	19	Flute & Glocken
	20	Piccolo & Flute
	21	Flute & Clarinet
	22	Growl Flute
	23	Synth Flutes
	24	Playback Flute
	25	Clarinet
	26	Clarinet Duet
	27	Oboe
	28	Bassoon
	29	Oboe & Bassoon
	30	Wind Ensemble Cresc.
	31	Wind Ensemble
STRINGS /ORCH	1	Strings
	2	Hybrid Strings
	3	Dolce Strings
	4	Strings & Horns 1
	5	Warm Strings
	6	Tremolo Strings
	7	Strings Oct
	8	Strings & Timpani
	9	Nashville Strings
	10	Good Old Strings Pad
	11	Silicon Strings
	12	Lo-Bows
	13	Marcato Strings
	14	Pizzicato
	15	Violin Vib
	16	Violin
	17	Cello
	18	Cello Vib
	19	Synth Cello
	20	Gang Strings
	21	Retro Synth Strings
	22	Retro Synth Strings Oct
	23	Playback Strings 1

BANK	No	NAME
STRINGS /ORCH	24	Playback Strings 2
	25	Moving Strings
	26	Clustered
	27	Farewell
	28	Wind & Strings
	29	Orchestra & Choir
	30	Ending Scene
	31	Strings & Warm Brass
	32	Strings & Bright Brass
	33	Strings & Horns 2
	34	Synth Brass & Strings
SYNTH/ LEAD	1	Guitar Attack Soft Lead
	2	Digi Lead
	3	Attack Digi Lead
	4	Creamer
	5	GR-300 Saw 1
	6	Brass Lead
	7	Simple Synth Lead
	8	Loud Synth Lead
	9	Synth Pad & Saws
	10	Heavy Saws Lead
	11	Saw & Square Lead
	12	Poly Pulse
	13	Daft Lead
	14	Razor Lead
	15	Blister Lead
	16	Sharp Attack Lead
	17	Square Lead 1
	18	Square Lead 2
	19	Square Lead 3
	20	Reso Lead 1
	21	Square Lead 4
	22	Basic
	23	OB Lead
	24	Sine Lead
	25	70's Lead
	26	SH-2000
	27	Simple Soft Lead
	28	Soft Lead 1
	29	Soft Lead 2
	30	Reso Lead 2
	31	Reso Lead 3
	32	Saw Lead 1
	33	Saw Lead 2
	34	Bright Saw Lead
	35	Bright Moving Lead
	36	Saw Lead Vib
	37	Qwak Lead
	38	Flanger Ana Lead
	39	Porta Wah
	40	Wet Reso Lead
	41	GR-300 Saw 2
	42	The Machine
	43	Big BPF

BANK	No	NAME
SYNTH/	44	Haze Lead
LEAD	45	Vocoder
	46	Sweep Reso Lead
	47	Heavy Boost Lead
	48	Morph
	49	Sweep Lead
	50	Sync Sweep
	51	Vibro Sweep
	52	Rotary Lead
	53	Step Saws
	54	Touch Filter
	55	Trade Mark Lead
	56	Retro Synth
	57	No Bob No Hope
	58	House Of Phase
	59	Attack Organ Lead
	60	Minor Incid.
	61	Heavy Oct Lead
	62	Mental Chord
	63	House Chord 1
	64	House Chord 2
	65	Flack
	66	Waves
	67	Enterprise
	68	Chasing VOC
	69	Key In Sync
	70	Gated
	71	Delay Gate
	72	Acid Shuffle
	73	Didgeridoo Dance
	74	Phobia
	75	Deep
	76	Atmosphere
	77	Big Pipe Noise
	78	Sequencer
	79	Poly Key
	80	Sandy Synth Attack
	81	Detune Synth Attack
	82	For Synth Arpeggio
	83	Reso Synth Attack
	84	Trancy
	85	Fat Ana Lead 1
	86	Fat Ana Lead 2
	87	Wire Key
	88	Pulse Key
	89	Belly Keys
	90	Velo Sense
	91	Sugar Key
	92	Phobo Tron
	93	Sentimental
VOICE/	1	Jazz Doos
PAD	2	Jazz Scat Bop
	3	Jazz Scat Doos & Bop
	4	Male Aahs

BANK	No	NAME
VOICE/	5	Choir Aahs Soft
PAD	6	Choir Aahs
	7	Female Aahs
	8	Choir Oohs
	9	Pop Chorus
	10	Pop Voice
	11	Arpeggio Choir
	12	Melancholia
	13	Spaced Voxx
	14	Voice Pad 909
	15	Choir & Sweep
	16	Wide Vox
	17	Choir & Pad 1
	18	Choir & Pad 2
	19	Chorus Vox Pad
	20	Heavenly Pad
	21	S&H Layer
	22	Wide Pad
	23	Lost On Mars
	24	Miaow Pad
	25	JUNO Polaris
	26	Darkshine 1
	27	Darkshine 2
	28	Digi Saw Pad
	29	Analog Drama 1
	30	Saws Sweep 1
	31	Saws Sweep 2
	32	Xpensive Synth Pad
	33	Wall of Sand
	34	Super Bright Pad 1
	35	Super Bright Pad 2
	36	Pivotal Pad
	37	Pulsify
	38	Vintage Orchestra
	39	Cosmos Pad
	40	Analog Drama 2
	41	Soft Pad Oct
	42	Soft Pad
	43	Pad / Bass
	44	Silky Way
	45	JP-8 Haunting
	46	Shifted Glass
	47	Glass Voices
	48	2.2 Warm Dream
	49	Moving Fine Wine
	50	2.2 Bright Dream
	51	Wine Pad
	52	Glassy Pad
	53	Darkshine 3
	54	Soundtrack Seal
	55	Warm Pad
	56	Changes
ETHNIC	1	Sitar
	2	Sitar & Morocco Phrase

BANK	No	NAME
ETHNIC	3	Sitar+Tampura
	4	Sitar & Drone
	5	E.Sitar
	6	Sitar & Tabla
	7	Sitar & Tabla Phrase
	8	Sitar Pad
	9	Banjo
	10	5str Banjo
	11	Fiddle
	12	Flat Mandolin
	13	Flat Mandolin Tremolo
	14	Guitar & Morocco Phrase
	15	Koto
	16	Koto Heaven
	17	Shamisen
	18	Shamisen Ensemble
	19	Synth Shamisen
	20	Sanshin
	21	Sanshin Soft
	22	Kayakeum
	23	Erhu
	24	Erhu Vib Soft
	25	Erhu Vib Hard
	26	Erhu & China Phrase
	27	Ocarina
	28	Didgeridoo & Ocarina
	29	India Flute
	30	Andes
	31	Pan Pipes
	32	Pan Pipes Soft
	33	Zampona Soft
	34	Zampona Hard
	35	Shakuhachi
	36	Shakuhachi & Drum Phrase
	37	Katmandu
	38	Legato Bamboo
	39	Culture Flute
	40	Peru Lead
	41	Mizmar
	42	Mizmar Pad
	43	Shanai
	44	Dazin Shanai
	45	Gamelan Breathy
	46	Vox & Sitar & Tabla
RHYTHM /PERC	1	Vibraphone
	2	Glockenspiel
	3	Xylophone
	4	Marimba
	5	Steel Drum
	6	Timpani
	7	Impact
	8	Orchestra Hit
	9	Philly Hit
	10	Kalimba

BANK	No	NAME
RHYTHM /PERC	11	Agogo Bell
	12	Jublag
	13	Gamelan Set
	14	Kajar
	15	Asian Gong
	16	Finger Bell
	17	Balaphone
	18	Angklung
	19	Dragon
	20	Vox Set
	21	Vox & Perc. Kit
	22	Drum & Perc. Kit
	23	Drum Kit
	24	Machine & Perc. Kit
	25	Machine Kit
	26	Guiro & Cowbell Pattern
	27	Latin Perc. Set
	28	Conga Pattern
	29	Tabla & Conga Set
	30	Perc. & Morocco Phrase
	31	Bell & Morocco Phrase
	32	Vox & China Phrase
	33	Cuica & Drum Phrase
	34	Cuica & Samba Phrase
	35	Steel Drum & Samba Phrase
	36	Brass & Samba Phrase
	37	Tambourine & Tabla Phrase
	38	Synth Pulse & Tabla Phrase
	39	Drum Kit Pattern 1
	40	Drum Kit Pattern 2
	41	Playmate
	42	Delay Voice
	43	Tribal Drums
	44	Street Noise
	45	FX Tom Hit
	46	Perc. Heaven
	47	Analog Snare
	48	5th Gong
	49	Back Noise
	50	Oxygen

User Patch List

No	BANK	BANK No	NAME
1	BRASS	9	Tp Section
2	BASS/GTR	1	Wood Bass
3	PIANO	13	Rhodes
4	WIND	1	Fat Tenor Sax
5	STRINGS/ORCH	1	Strings
6	ORGAN/KB	1	Rock Organ 1
7	ETHNIC	2	Sitar & Morocco Phrase
8	VOICE/PAD	8	Choir Oohs
9	RHYTHM/PERC	5	Steel Drum
10	PIANO	1	Grand E.P
11	BASS/GTR	6	Fretless Bass 2
12	SYNTH/LEAD	5	GR-300 Saw 1
13	VOICE/PAD	51	Wine Pad
14	BRASS	3	Mute Trumpet
15	WIND	15	Piccolo
16	ORGAN/KB	25	Retro Clavi
17	STRINGS/ORCH	7	Strings Oct
18	SYNTH/LEAD	48	Morph
19	RHYTHM/PERC	33	Cuica & Drum Phrase
20	ETHNIC	17	Shamisen
21	VOICE/PAD	10	Pop Voice
22	PIANO	24	Silky E.P Pad
23	WIND	4	Alto Sax
24	ORGAN/KB	6	Purple Organ
25	BASS/GTR	12	Synth Bass
26	ETHNIC	30	Andes
27	RHYTHM/PERC	1	Vibraphone
28	RHYTHM/PERC	8	Orchestra Hit
29	VOICE/PAD	45	JP-8 Haunting
30	ORGAN/KB	33	Accordion
31	ORGAN/KB	35	Bell
32	WIND	14	Blues Harp Dist
33	BASS/GTR	7	Slap Bass
34	PIANO	6	Piano & Strings
35	BRASS	17	Pat Brass
36	ORGAN/KB	18	Cathedral
37	RHYTHM/PERC	36	Brass & Samba Phrase
38	STRINGS/ORCH	15	Violin Vib
39	BASS/GTR	32	Nylon & Strings
40	BASS/GTR	19	Res Bass 1
41	ORGAN/KB	41	Staccato Heaven
42	ETHNIC	9	Banjo
43	VOICE/PAD	16	Wide Vox
44	BRASS	1	Trumpet
45	PIANO	27	E.P & Strings
46	SYNTH/LEAD	62	Mental Chord
47	WIND	10	Brass Section & Baritone Sax
48	BASS/GTR	37	12 Str Guitar
49	BRASS	26	Fat Synth Brass
50	ETHNIC	16	Koto Heaven
51	PIANO	35	House
52	VOICE/PAD	26	Darkshine 1
53	RHYTHM/PERC	46	Perc. Heaven
54	BRASS	11	NewYork Brass
55	WIND	7	Baritone Sax
56	ORGAN/KB	15	Gospel Organ
57	BRASS	14	French Horns
58	SYNTH/LEAD	37	Qwak Lead
59	STRINGS/ORCH	18	Cello Vib
60	ETHNIC	3	Sitar + Tampura
61	VOICE/PAD	3	Jazz Scat Doos & Bop
62	RHYTHM/PERC	19	Dragon
63	PIANO	10	West Coast
64	WIND	18	Piccolo & Glocken
65	SYNTH/LEAD	10	Heavy Saws Lead
66	STRINGS/ORCH	24	Playback Strings 2
67	RHYTHM/PERC	35	Steel Drum & Samba Phrase
68	ETHNIC	24	Erhu Vib Soft
69	ORGAN/KB	29	Harpsichord
70	SYNTH/LEAD	29	Soft Lead 2
71	ORGAN/KB	37	Milky Way

No	BANK	BANK No	NAME
72	ETHNIC	36	Shakuhachi & Drum Phrase
73	SYNTH/LEAD	53	Step Saws
74	STRINGS/ORCH	32	Strings & Bright Brass
75	BRASS	32	Brass It !
76	SYNTH/LEAD	20	Reso Lead 1
77	SYNTH/LEAD	74	Phobia
78	RHYTHM/PERC	3	Xylophone
79	VOICE/PAD	39	Cosmos Pad
80	SYNTH/LEAD	82	For Synth Arpeggio
81	PIANO	17	Smooth Rhodes
82	BASS/GTR	23	Love Parade Bass
83	WIND	27	Oboe
84	SYNTH/LEAD	71	Delay Gate
85	VOICE/PAD	6	Choir Aahs
86	RHYTHM/PERC	48	5th Gong
87	SYNTH/LEAD	13	Daft Lead
88	ORGAN/KB	7	Rock Organ 3
89	VOICE/PAD	33	Wall of Sand
90	SYNTH/LEAD	65	Flack
91	BRASS	21	Xpensive Synth Brass
92	RHYTHM/PERC	12	Jublag
93	SYNTH/LEAD	91	Sugar Key
94	ETHNIC	20	Sanshin
95	VOICE/PAD	49	Moving Fine Wine
96	SYNTH/LEAD	1	Guitar Attack Soft Lead
97	STRINGS/ORCH	3	Dolce Strings
98	SYNTH/LEAD	41	GR-300 Saw 2
99	VOICE/PAD	20	Heavenly Pad

MIDI Implementation

Model: GR-20
Date: Dec. 18 2003
Version: 1.00

1. Recognized Receive Data

■Channel Voice Message

●Note Off

STATUS	SECOND	THIRD
8nH	kkH	vvH
9nH	kkH	00H

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity: 00H - 7FH (0 - 127)

* Velocity is ignored.

●Note On

STATUS	SECOND	THIRD
9nH	kkH	vvH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity: 01H - 7FH (1 - 127)

* vv=00H is received as Note-off

●Control Change

○Bank Select

STATUS	SECOND	THIRD
BnH	00H	mmH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
mm=Bank Number: 00H - 0AH

* The LSB of Bank Select is ignored.
* Can be received only through the Basic channel.

○Foot Type

STATUS	SECOND	THIRD
BnH	04H	vvH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
vv=Control Value: 00H - 7FH (0 - 127)

* Can be received only through the Basic channel.
* Received when EXP PEDAL TYPE = "FL", "EF".

○Volume

STATUS	SECOND	THIRD
BnH	07H	vvH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
vv=Volume: 00H - 7FH (0 - 127)

* Can be received only through the Basic channel.

○General Purpose #3

STATUS	SECOND	THIRD
BnH	12H	vvH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
vv=Control Value: 00H - 7FH (0 - 127)

* When E FLW is on, and recognized as the string envelope follow values.

○Hold1

STATUS	SECOND	THIRD
BnH	40H	vvH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
vv=Control Value: 00H - 7FH (0 - 127)
    00H-3FH=OFF, 40H-7FH=ON

* Can be received only through the Basic channel.

●Program Change

STATUS	SECOND
CnH	ppH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
pp=Program Number: 00H - 7FH (0 - 127) 0=prg.1 127=prg.128

* Can be received only through the Basic channel.
* The recognized Program Change Number corresponds to each patch as follows.

BANK MSB	PROGRAM NUMBER	PATCH
0	0	USER1
0	1	USER2
0	2	USER3
0	3	USER4
0	:	:
0	97	USER98
0	98	USER99
1	0	PIANO1
1	1	PIANO2
1	3	PIANO3
	:	:
2	0	ORGAN/KB1
2	1	ORGAN/KB2
2	3	ORGAN/KB3
	:	:
3	0	BASS/GTR1
3	1	BASS/GTR2
3	3	BASS/GTR3
	:	:
4	0	BRASS1
4	1	BRASS2
4	3	BRASS3
	:	:
5	0	WIND1
5	1	WIND2
5	3	WIND3
	:	:
6	0	STRING/ORCH1
6	1	STRING/ORCH2
6	3	STRING/ORCH3
	:	:
7	0	SYNTH/LEAD1
7	1	SYNTH/LEAD2
7	3	SYNTH/LEAD3
	:	:
8	0	VOICE/PAD1
8	1	VOICE/PAD2
8	3	VOICE/PAD3
	:	:
9	0	ETHNIC1
9	1	ETHNIC2
9	3	ETHNIC3
	:	:
10	0	RYTHM/PERC1
10	1	RYTHM/PERC2
10	3	RYTHM/PERC3
	:	:

●Pitch Bend Change

STATUS	SECOND	THIRD
EnH	llH	mmH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
mm,ll=Value: 00H, 00H - 7FH, 7FH (-8192 - +8191)

■Channel Mode Message

●All Note Off

STATUS	SECOND	THIRD
BnH	7BH	00H

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)

* Can be received only through the Basic channel
* Turn off all notes that are now on.

●OMNI OFF

STATUS	SECOND	THIRD
BnH	7CH	00H

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)

* Can be received only through the Basic channel.
* Will act the same as All Note Off.

●OMNI ON

STATUS	SECOND	THIRD
BnH	7DH	00H

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)

* Can be received only through the Basic channel.
* Will act the same as All Note Off.

●MONO

STATUS	SECOND	THIRD
BnH	7EH	mmH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
mm=Number of Individual Channels: 00H - 10H (0 - 16)

* Can be received only through the Basic channel.
* Will act the same as All Note Off.

●POLY

STATUS	SECOND	THIRD
BnH	7FH	00H

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)

* Can be received only through the Basic channel.
* Will act the same as All Note Off.

■System Realtime Message

●Active Sensing

STATUS
FEH

* Having received this message, the GR-20 expects to receive information of any status of data during about 420msec.If the GR-20 doesn't receive any message during that time, it acts as if the All Note Off message is received, and returns to normal operation (will not check interval of messages).

■System Exclusive Message

STATUS	SECOND	THIRD
F0H	iiH ddH	eeH F7H

F0H: System Exclusive
ii = ManufacturerID: 41H (65)
dd ......ee = Data: 00H - 7FH (0 - 127)
F7H: EOX (End Of Exclusive)

* For more details, refer to the page of "Roland Exclusive message" and Section 3 or after.

2. Transmitted Data

■Channel voice messags

●Note Off

STATUS	SECOND	THIRD
9nH	kkH	00H

n=MIDI channel Number: 0H - FH (ch.1 - ch.16)
kk=Note Number: 00H - 7FH (0 - 127)

●Note On

STATUS	SECOND	THIRD
9nH	kkH	vvH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity: 01H - 7FH (1 - 127)

●Control Change

○Bank Select

STATUS	SECOND	THIRD
BnH	00H	mmH
BnH	20H	llH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
mm,ll=Bank Number: 00H, 00H - 0AH, 00H

○Foot Type

STATUS	SECOND	THIRD
BnH	04H	vvH

n=MIDI Channel Number: 0H - BH (ch.1 - ch.12)
vv=Control Value: 00H - 7FH (0 - 127)

* When the Expression pedal is operated with EXP TYPE = "FL", "EF", the GR-20 sends this as the operation.

○Data Entry

STATUS	SECOND	THIRD
BnH	06H	mmH
BnH	26H	llH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
mm,ll=the value of the parameter specified by RPN

○Volume

STATUS	SECOND	THIRD
BnH	07H	vvH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
vv=Volume: 00H - 7FH (0 - 127)

* Transmitted the total volume fixed with expression pedal and GK PU operation.

◯General Purpose #3

STATUS	SECOND	THIRD
BnH	12H	vvH

n=MIDI Channle Number: 0H - FH (ch.1 - ch.16)
vv=Control Value: 00H - 7FH (0 - 127)

* Transmitted the envelope data of the strings when "E FLW " is on.
* Data is sent only in Mono mode. Transmission doesn't take place in Poly mode.

◯Hold1

STATUS	SECOND	THIRD
BnH	40H	vvH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
vv=Control value: 00H - 7FH (0 - 127)
01H-3FH=OFF, 40H-7FH=ON

* Transmitted the operation of HOLD TYPE = "H4".

◯RPN MSB/LSB

STATUS	SECOND	THIRD
BnH	65H	mmH
BnH	64H	llH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
mm=Upper byte of the parameter data designated by RPN
ll=Lower byte of the parameter data designated by RPN

<<< RPN >>>
Control change includes RPN(registered parameter number), function which are defined by the MIDI standard.
The GR-20 can transmit only one RPN: pitch bend sensitibity(RPN#0).

RPN	Data entry	
MSB LSB	MSB LSB	Function
00H 00H	18H 00H	pitch bend sensitivity

●Program change

STATUS	SECOND
CnH	ppH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
pp=Program Number: 00H - 7FH (prg.1 - prg.128)

* The recognized Program Change Number corresponds to each patch as follows.

BANK MSB	PROGRAM NUMBER	PATCH
0	0	USER 1
0	1	USER 2
0	2	USER 3
0	3	USER 4
0	:	:
0	97	USER 98
0	98	USER 99
1	0	PIANO 1
1	1	PIANO 2
1	2	PIANO 3
	:	:
2	0	ORGAN/KB 1
2	1	ORGAN/KB 2
2	2	ORGAN/KB 3
	:	:
3	0	BASS/GTR 1
3	1	BASS/GTR 2
3	2	BASS/GTR 3
	:	:
4	0	BRASS 1
4	1	BRASS 2
4	2	BRASS 3
	:	:
5	0	WIND 1
5	1	WIND 2
5	2	WIND 3
6	0	STRING/ORCH 1
6	1	STRING/ORCH 2
6	2	STRING/ORCH 3
	:	:
7	0	SYNTH/LEAD 1
7	1	SYNTH/LEAD 2
7	2	SYNTH/LEAD 3
	:	:
8	0	VOICE/PAD 1
8	1	VOICE/PAD 2
8	2	VOICE/PAD 3
	:	:
9	0	ETHNIC 1
9	1	ETHNIC 2
9	2	ETHNIC 3
	:	:
10	0	RYTHM/PERC 1
10	1	RYTHM/PERC 2
10	2	RYTHM/PERC 3
	:	:

●Pitch Bend Change

STATUS	SECOND	THIRD
EnH	llH	mmH

n=MIDI Channel Number: 0H - FH (ch.1 - ch.16)
mm,ll=Value: 00H, 00H - 7FH, 7FH (-8192 - +8191)

■System Realtime Message

◯Active Sensing

STATUS
FEH

* This message is always transmitted at about 270msec' interval.

◯System Exclusive message

STATUS	SECOND	THIRD
F0H	iiH,ddH,......,eeH	F7H

F0H: System Exclusive
ii=ID Number: 41H (65)
dd,....,ee=Data: 00H-7FH (0-127)
F7H: EOX (End of Exclusive/System Common Message)

* For more details, refer to the page "Roland exclusive message" and Section3 or after.

3. Exclusive Communications

The GR-20 can transmit or receive system and patches parameters using system exclusive messages. Model ID of exclusive message available on the GR-20 is 00H 72H.Device ID is fixed at 10H.
When the GR-20 receives an Identify Request inquiry message, it will transmit an Identity Reply.

●Request Data1 RQ1 (11H)

THis message is to request the GR-20 to transmit its parameters.
The address and size indicate the type and amount of parameters requested.
The GR-20 itself does not send this message.
When the GR-20 receives this message, it responds with appropriate parameters if the following conditions are satisfied:

1. The address indicated with RQ1 matches with one of the parameter base address of the GR-20
2. When the Bulk Load standby mode.

With these conditions provided, the GR-20 transmits specified parameters in Data Set 1 (DT1) message.

Byte	Comments
F0H	System Exclusive Status
41H	Manufacturer ID (Roland)
10H	Device ID (Dev=10H)
00H	Model ID MSB (GR-20)
72H	Model ID LSB (GR-20)
11H	Command ID (RQ1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size
ssH	Size LSB
sum	Check sum
F7H	EOX (End Of Exclusive)

●Data Set 1: DT1 (12H)

The GR-20 transmits this message in the following conditions.
If the address matches with one of the parameter base addresses of the GR-20, the received data is stored at the specified address of the memory.

The GR-20 transmits this message in the following conditions.
When data request (RQ1) is received with the Bulk Load mode, and the specified parameters are transmitted.
or you executes Bulk Dump function.

Regarding details of the parameter transmitted/sended, please refer to the Parameter Address Map.

Byte	Comments
F0H	System Exclusive Status
41H	Manufacturer ID (Roland)
10H	Device ID (Dev=10H)
00H	Model ID MSB (GR-20)
72H	Model ID LSB (GR-20)
12H	Command ID (DT1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
eeH	Data
:	:
ffH	Data
sum	Check Sum
F7H	EOX (End of Exclusive)

Model ID   The Model ID of the GR-20 is 00H 30H.
Device ID   Device ID of the GR-20 is fixed at 10H.
/Example of creating the exclusive message/
If you want to set as the following the parameter LEVEL/FREQ/RESO TRANSPOSE of USER BANK 01 Patch, create data as the following and send it to your GR-20.

Reverb setting:
LEVEL: 90
FREQ: 50
RESO: 60
TRANSPOSE: +1oct

Tramsmitted data:

F0H 41H 10H 00H 72H 12H 01H 00H 00H 06H 5AH 32H 3CH 03H 2EH F7H
1   2   3   4   5   6   7   8   9

1. Exclusive status is F0H.
2. Roland's Manufacturer ID is 41H.
3. This is the device ID.(Fixed at 10H for GR-20)
4. Model ID of the GR-20 is 00H 72H.
5. DT1(Data Set1) Command ID is 12H.
6. These are the parameter addresses. Please find the start address of the USER BANK 01 Patch from the table of the start address.You can find the address as 01H 00H 00H 00H. Next, please find the offset address of the LEVEL Parameter from the table 4-2. That is 00H 00H 06H.The result will be 01H 00H 00H 06H.

     01H 00H 00H 00H   (the start address of the USER patch)
+)   00H 00H 06H   (the offset address of the LEVEL)

     01H 00H 00H 06H

7. The settings value for LEVEL is 90. This is expressed as 5AH in hexadecimal notation with two digits. (Refer to the attached Chart A-1)
The settings value for FREQ is 115. This is expressed as 32H in hexadecimal notation with two digits.
The settings value for RESO is 60. This is expressed as 3CH in hexadecimal notation with two digits.
The settings value for TRANSPOSE is +1oct. This is expressed as 03H in hexadecimal notation with two digits from Table 4-4.

8. This is the check sum byte.The error checking process uses a Checksum and provides a pattern where the last significant 7 bits are zero when values for address, data(or size) and the Checksum are summed.
If the address of the exclusive message that you wish to send is aa bb cc ddH and the data(or size) is ee ff hh iiH,

aa + bb + cc + dd + ee + ff + hh + ii = sum
sum / 128 = quotient ...remainder
128 - remainder = checksum
* However, when sum=0, then the checksum also results in 0.

In case of this example,

F0H 41H 10H 00H 72H 12H 01H 00H 00H 06H 5AH 32H 3CH 03H ??H F7H
                    address   data   checksum

Using the above formula, Checksum will be as follows.

01H + 00H + 00H + 06H + 5AH + 32H + 3CH + 03H = 1 + 0 + 0 + 6 + 90 + 50 + 60 + 3 = 210(sum)
210(sum) / 128 = 1(quotient) ...82(remainder)
checksum = 128 - 82(remainder) = 46 = 2EH

If you calculate with hexadecimal,

aa + bb + cc + dd + ee + ff = sum(xxH)
sum(xxH) / 80H = quotient ...remainder
80H - remainder = checksum

Checksum will be as follows.

01H + 00H + 00H + 06H + 5AH + 32H + 3CH + 03H = D2H
D2H / 80H = 01H(quotient) ...52H(remainder)
checksum = 80H - 52H(remainder) = 2EH

9. F7H is the mark of the end of exclusive.

●Inquiry Message

○Identity Request

Byte	Comments
F0H	Exclusive Status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	SubID#1
01H	SubID#2
F7H	EOX (End of Exclusive)

* The 7FH (Broadcast) device ID is also supported.
* Identity request can be received when Bulk Load is standby in System mode.
* When an Identity Request is received, the GR-20 will transmit the following Identity Reply.

○Identity Reply

Byte	Comments
F0H	Exclusive Status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID (fixed at 10H)
06H	SubID#1
02H	SubID#2
41H	ID number(Roland)
72H 01H	Device Family Code
00H 00H	Device Family Number Code
00H 00H 00H 00H	Software Revision Level
F7H	EOX (End of Exclusive)

* When an Identity Request is received, the GR-20 will transmit the above Identity Reply.

4. Parameter Address Map

Addresses and sizes are expressed in 7-bit hexadecimal values.

Address	MSB		LSB
Binary	0aaa aaaa	0bbb bbbb 0ccc cccc	0ddd dddd
7 bit Hex	AA	BB CC	DD

Size	MSB		LSB
Binary	0sss ssss	0ttt tttt 0uuu uuuu	0vvv vvvv
7 bit Hex	SS	TT UU	VV

Table 4-1. Start Address

Start Address	Contents and Remarks			Table
00 00 00 00		System		*4-2
00 01 00 00	System	Patch Link Map		*4-3
01 00 00 00	Patch	USER	1	*4-4
01 00 01 00	Patch	USER	2	*4-4
01 00 02 00	Patch	USER	3	*4-4
01 00 03 00	Patch	USER	4	*4-4
01 00 04 00	Patch	USER	5	*4-4
01 00 05 00	Patch	USER	6	*4-4
01 00 06 00	Patch	USER	7	*4-4
01 00 07 00	Patch	USER	8	*4-4
01 00 08 00	Patch	USER	9	*4-4
01 00 09 00	Patch	USER	10	*4-4
01 00 0A 00	Patch	USER	11	*4-4
01 00 0B 00	Patch	USER	12	*4-4
01 00 0C 00	Patch	USER	13	*4-4
01 00 0D 00	Patch	USER	14	*4-4
01 00 0E 00	Patch	USER	15	*4-4
01 00 0F 00	Patch	USER	16	*4-4
01 00 10 00	Patch	USER	17	*4-4
01 00 11 00	Patch	USER	18	*4-4
01 00 12 00	Patch	USER	19	*4-4
01 00 13 00	Patch	USER	20	*4-4
01 00 14 00	Patch	USER	21	*4-4
01 00 15 00	Patch	USER	22	*4-4
01 00 16 00	Patch	USER	23	*4-4
01 00 17 00	Patch	USER	24	*4-4
01 00 18 00	Patch	USER	25	*4-4
01 00 19 00	Patch	USER	26	*4-4
01 00 1A 00	Patch	USER	27	*4-4
01 00 1B 00	Patch	USER	28	*4-4
01 00 1C 00	Patch	USER	29	*4-4
01 00 1D 00	Patch	USER	30	*4-4

Start Address	Contents and Remarks			Table
01 00 1E 00	Patch	USER	31	*4-4
01 00 1F 00	Patch	USER	32	*4-4
01 00 20 00	Patch	USER	33	*4-4
01 00 21 00	Patch	USER	34	*4-4
01 00 22 00	Patch	USER	35	*4-4
01 00 23 00	Patch	USER	36	*4-4
01 00 24 00	Patch	USER	37	*4-4
01 00 25 00	Patch	USER	38	*4-4
01 00 26 00	Patch	USER	39	*4-4
01 00 27 00	Patch	USER	40	*4-4
01 00 28 00	Patch	USER	41	*4-4
01 00 29 00	Patch	USER	42	*4-4
01 00 2A 00	Patch	USER	43	*4-4
01 00 2B 00	Patch	USER	44	*4-4
01 00 2C 00	Patch	USER	45	*4-4
01 00 2D 00	Patch	USER	46	*4-4
01 00 2E 00	Patch	USER	47	*4-4
01 00 2F 00	Patch	USER	48	*4-4
01 00 30 00	Patch	USER	49	*4-4
01 00 31 00	Patch	USER	50	*4-4
01 00 32 00	Patch	USER	51	*4-4
01 00 33 00	Patch	USER	52	*4-4
01 00 34 00	Patch	USER	53	*4-4
01 00 35 00	Patch	USER	54	*4-4
01 00 36 00	Patch	USER	55	*4-4
01 00 37 00	Patch	USER	56	*4-4
01 00 38 00	Patch	USER	57	*4-4
01 00 39 00	Patch	USER	58	*4-4
01 00 3A 00	Patch	USER	59	*4-4
01 00 3B 00	Patch	USER	60	*4-4
01 00 3C 00	Patch	USER	61	*4-4
01 00 3D 00	Patch	USER	62	*4-4
01 00 3E 00	Patch	USER	63	*4-4
01 00 3F 00	Patch	USER	64	*4-4
01 00 40 00	Patch	USER	65	*4-4
01 00 41 00	Patch	USER	66	*4-4
01 00 42 00	Patch	USER	67	*4-4
01 00 43 00	Patch	USER	68	*4-4
01 00 44 00	Patch	USER	69	*4-4
01 00 45 00	Patch	USER	70	*4-4
01 00 46 00	Patch	USER	71	*4-4
01 00 47 00	Patch	USER	72	*4-4
01 00 48 00	Patch	USER	73	*4-4
01 00 49 00	Patch	USER	74	*4-4
01 00 4A 00	Patch	USER	75	*4-4
01 00 4B 00	Patch	USER	76	*4-4
01 00 4C 00	Patch	USER	77	*4-4
01 00 4D 00	Patch	USER	78	*4-4
01 00 4E 00	Patch	USER	79	*4-4
01 00 4F 00	Patch	USER	80	*4-4
01 00 50 00	Patch	USER	81	*4-4
01 00 51 00	Patch	USER	82	*4-4
01 00 52 00	Patch	USER	83	*4-4
01 00 53 00	Patch	USER	84	*4-4
01 00 54 00	Patch	USER	85	*4-4
01 00 55 00	Patch	USER	86	*4-4
01 00 56 00	Patch	USER	87	*4-4
01 00 57 00	Patch	USER	88	*4-4
01 00 58 00	Patch	USER	89	*4-4
01 00 59 00	Patch	USER	90	*4-4
01 00 5A 00	Patch	USER	91	*4-4
01 00 5B 00	Patch	USER	92	*4-4
01 00 5C 00	Patch	USER	93	*4-4
01 00 5D 00	Patch	USER	94	*4-4
01 00 5E 00	Patch	USER	95	*4-4
01 00 5F 00	Patch	USER	96	*4-4
01 00 60 00	Patch	USER	97	*4-4
01 00 61 00	Patch	USER	98	*4-4
01 00 62 00	Patch	USER	99	*4-4

Table 4-2. System

offset	ID	min	max (dec)	max (hex)	
00	GK SENS 1	0	8	08	0="1" - 8="9"
01	GK SENS 2	0	8	08	0="1" - 8="9"
02	GK SENS 3	0	8	08	0="1" - 8="9"
03	GK SENS 4	0	8	08	0="1" - 8="9"
04	GK SENS 5	0	8	08	0="1" - 8="9"
05	GK SENS 6	0	8	08	0="1" - 8="9"
06	OUTPUT LINE/AMP	0	1	01	0="Ln", 1="GA"
07	SW MODE	0	1	01	0="1", 1="2"
08	MIDI CH	0	10	0A	00H="1ch" - 0aH="11ch"
09	MIDI MONO/ POLY	0	1	01	0="MONO", 1="POLY"
0A	MASTER TUNE	0	127	7F	3fH="440.0Hz"
0B	reserve	7	7	07	
0C	reserve	0	0	00	
0D	reserve	0	0	00	
0E	reserve	0	0	00	
0F	reserve	0	0	00	

Table 4-3. Patch Link Map

offset		MIDI bank select MSB	MIDI Prgram Change Number	GR-20 Patch Number
00	00	0	0	MSB
00	01			LSB
00	02	0	1	MSB
00	03			LSB
:	:			
01	7E	0	127	MSB
01	7F			LSB
02	00	1	0	MSB
02	01			LSB
02	02	1	1	MSB
02	03			LSB
:	:			
03	7E	1	127	MSB
03	7F			LSB
04	00	2	0	MSB
04	01			LSB
04	02	2	1	MSB
04	03			LSB
:	:			
05	7E	2	127	MSB
05	7F			LSB
06	00	3	0	MSB
06	01			LSB
06	02	3	1	MSB
06	03			LSB
:	:			
07	7E	3	127	MSB
07	7F			LSB
08	00	4	0	MSB
08	01			LSB
08	02	4	1	MSB
08	03			LSB
:	:			
09	7E	4	127	MSB
09	7F			LSB
0A	00	5	0	MSB
0A	01			LSB
0A	02	5	1	MSB
0A	03			LSB
:	:			
0B	7E	5	127	MSB
0B	7F			LSB
0C	00	6	0	MSB
0C	01			LSB
0C	02	6	1	MSB
0C	03			LSB
:	:			
0D	7E	6	127	MSB
0D	7F			LSB
0E	00	7	0	MSB
0E	01			LSB
0E	02	7	1	MSB
0E	03			LSB
:	:			
0F	7E	7	127	MSB
0F	7F			LSB
10	00	8	0	MSB
10	01			LSB
10	02	8	1	MSB
10	03			LSB
:	:			
11	7E	8	127	MSB
11	7F			LSB
12	00	9	0	MSB
12	01			LSB
12	02	9	1	MSB
12	03			LSB
:	:			
13	7E	9	127	MSB
13	7F			LSB
14	00	10	0	MSB
14	01			LSB
14	02	10	1	MSB
14	03			LSB
:	:			
15	7E	10	127	MSB
15	7F			LSB

/Example using RQ1/
To extract the all system parameters, send the following message to the GR-20.

F0 41 10 00 72 11 00 00 00 00 00 00 00 00 10 70 F7

/Example using DT1/
To change OUTPUT LINE/AMP to GA and SW MODE to "2", send the following message to the GR-20.

F0 41 10 00 72 12 00 00 00 06 01 01 78 F7

Table 4-4. Patch

offset (Hex)	ID	min	max (dec)	max (hex)	Description
00	Preset PATCH Number MSB	0	3	03	
01	Preset PATCH Number LSB	0	127	7F	
02	ATTACK	0	99	63	
03	RELEASE	0	99	63	
04	CHORUS	0	99	63	
05	DELAY/RE-VERB	0	99	63	
06	LEVEL	0	99	63	
07	FREQ	0	99	63	
08	RESO	0	99	63	
09	TRANSPOSE	0	4	04	0="-2oct", 1="-1oct", 2="0", 3="+1oct", 4="+2Oct"
0A	PLAYFEEL	0	4	04	0-3="1"-"4", 5="nd", 6="St"
0B	EXP PEDAL	0	8	08	0="FV", 1="FL", 2="b1", 3="b2", 4="b3", 5="b4", 6="b5", 7="b6", 8="EF"
0C	HOLD TYPE	0	3	03	0="H1", 1="H2", 2="H3", 3="H4"
0D	GLIDE TYPE	0	19	13	00H="d8",01H="d7", 02H="d6",03H="d5", 04H="d4",05H="d3", 06H="d2",07H="d1", 08H="u1",09H="u2", 0aH="u3",0bH="u4", 0cH="u5",0dH="u6", 0eH="u7",0fH="u8", 10H="v1",11H="v2", 12H="v3", 13H="v4"
0E	DELAY	0	99	63	
0F	Reserve	0	0	00	

/Example using RQ1/
To extract all the data of patch USER BANK 50, send the following message to the GR-20.

F0 41 10 00 72 11 01 00 31 00 00 00 00 10 3D F7

/Example using DT1/
If you want to set as the following the EXP PEDAL parameter of patch USER BANK 10 is "FL", create data as the following and send it to your GR-20.

F0 41 10 00 72 12 01 00 09 0B 01 6A F7

A-1. Decimal VS Hexadecimal

With a MIDI System, the data value, the address, or size in an exclusive message is expressed in 7-bit hexadesimal values.The table below shows decimal value and thier hexadecimal counterparts.

Decimal	Hex	Decimal	Hex	Decimal	Hex	Decimal	Hex
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

When expressing a MIDI channel number or a program change number, please notice that the values are less by one .For example, MIDI channel is expressed as 0 through 15 instead of 1 through 16.
The range of 7 bit can express 128 steps from 0 to 127. To express broader range, use several data bytes.

GUITAR SYNTHESIZER
Date : Dec. 18, 2003

Model GR-20 ## MIDI Implementation Chart
Version : 1.00

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1–16　　　　* 1 1–16	1–16　　　　* 1 1–16	Memorized
Mode	Default Messages Altered	Mode 3, 4 (M=6)　* 1 X **************	Mode 3, 4 (M=6) X	Memorized
Note Number :	True Voice	0–127 **************	0–127	
Velocity	Note ON Note OFF	O 9n V=1–127　* 2 O 9n V=0	O X	
After Touch	Key's Ch's	X X	X X	
Pitch Bend		O	O	
Control Change	0, 32 4 6, 38 7 18 64 100, 101	O O O O O O O	O (MSB only)　* 3 O　　　　　　* 3 X O　　　　　　* 3 O O　　　　　　* 3 X	Bank Select Foot Type Data Entry Volume General Purpose 3 (Envelope Follower) Hold 1 RPN LSB, MSB (Pitch Bend Sensitivity only)
Prog Change	: True #	O 0–127 **************	O 0–127　　　* 3	
System Exclusive		O	O　　　　　　* 4	System Parameters, User Patch Parameters
System Common	: Song Pos : Song Sel : Tune	X X X	X X X	
System Real Time	: Clock : Command	X X	X X	
Aux Message	: All sound off : Reset all controllers : Local ON/OFF : All Notes OFF : Active Sense : System Reset	X X X X O X	X X X O (123–127) O X	
Notes		* 1 Can be memorized after powering off. * 2 When PLAY FEEL="nd," v=100. * 3 Can be received only through the Basic channel. * 4 Can be received when Bulk Load is standby in System mode.		

Mode 1 : OMNI ON, POLY　　Mode 2 : OMNI ON, MONO　　　　　　　　　　　　O : Yes
Mode 3 : OMNI OFF, POLY　Mode 4 : OMNI OFF, MONO　　　　　　　　　　　　X : No

Main Specifications

GR-20: GUITAR SYNTHESIZER

- Sound Generator
  1 part

- Maximum Polyphony
  48 voices

- Patches
  User: 99
  Preset: 469

- Display
  7 segments, 2 characters (LED)

- Effects
  MULTI-FX (included in the patches)
  Chorus
  Delay/Reverb

- Connectors/Jacks
  GK IN
  GUITAR OUT
  MIX IN L
  MIX IN R (MONO)
  OUTPUT L (PHONES)
  OUTPUT R (MONO)
  MIDI IN
  MIDI OUT
  AC IN

- Power Supply
  AC 14 V (AC Adaptor)

- Current Draw
  600 mA

- Dimensions
  313.8 (W) x 244.9 (D) x 63.1 (H) mm
  12-3/8 (W) x 9-11/16 (D) x 2-1/2 (H) inches
  Maximum height:
  313.8 (W) x 244.9 (D) x 97.5 (H) mm
  12-3/8 (W) x 9-11/16 (D) x 3-7/8 (H) inches

- Weight
  1.7 kg
  3 lbs 12 oz (excluding the AC Adaptor)

- Accessories
  Owner's Manual
  AC Adaptor BRC series
  GK Cable (5 m)
  Divided Pickup (GK-3)

- Options
  GK Cable: GKC-3 (3 m), GKC-5 (5 m), GKC-10 (10 m)
  Unit Selector: US-20
  GK Parallel Box: GKP-4

* *In the interest of product improvement, the specifications and/ or contents of this package are subject to change without prior notice.*

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