SYNCLAVIER (R) II
DIGITAL GUITAR OPTION

SETUP INSTRUCTIONS

-PRELIMINARY VERSION-

November, 1983

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HARDWARE COMPONENTS

The Synclavier (R) II Digital Guitar Option incorporates the following components:

Roland GR Guitar

Any of the Roland G series guitars can be used (G-303, G-505, G-202, or G-808). We highly recommend the Roland G-303 and G-505. There are potential acoustic cross-talk problems with the G-808, due to its through-neck construction.

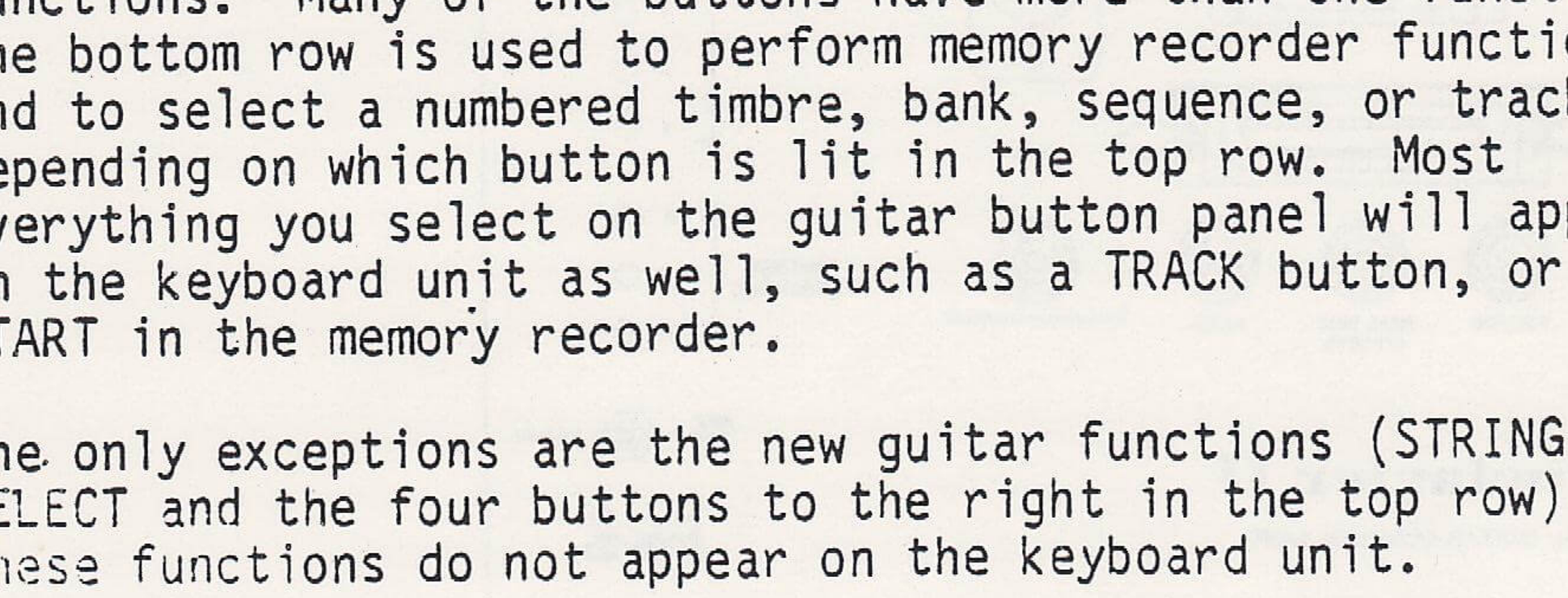
A vinyl face plate with labels for all the knobs is supplied by New England Digital.

NOTE: You can use a Roland US-2 Switch Box with the Digital Guitar Option. However, observe the following cautionary warnings. If you have one unit only, plug it into Channel A. If you have a Synclavier unit and a Roland Synth Module, plug the Synclavier into Channel A and the Roland into Channel B. You may then switch between the synths or use them simultaneously! Note that the functions of the guitar knobs are very different in the two systems. And the touch plates are used to turn on vibrato on the Roland and to turn on the DYNAMIC RANGE control on the Synclavier. See "Activating the DYNAMIC RANGE Control" on page 13 of this manual.

Guitar Button Panel

The guitar button panel is packed with many of the most frequently used Synclavier (R) II keyboard control panel functions. Many of the buttons have more than one function. The bottom row is used to perform memory recorder functions and to select a numbered timbre, bank, sequence, or track, depending on which button is lit in the top row. Most everything you select on the guitar button panel will appear on the keyboard unit as well, such as a TRACK button, or START in the memory recorder.

The only exceptions are the new guitar functions (STRING SELECT and the four buttons to the right in the top row). These functions do not appear on the keyboard unit.

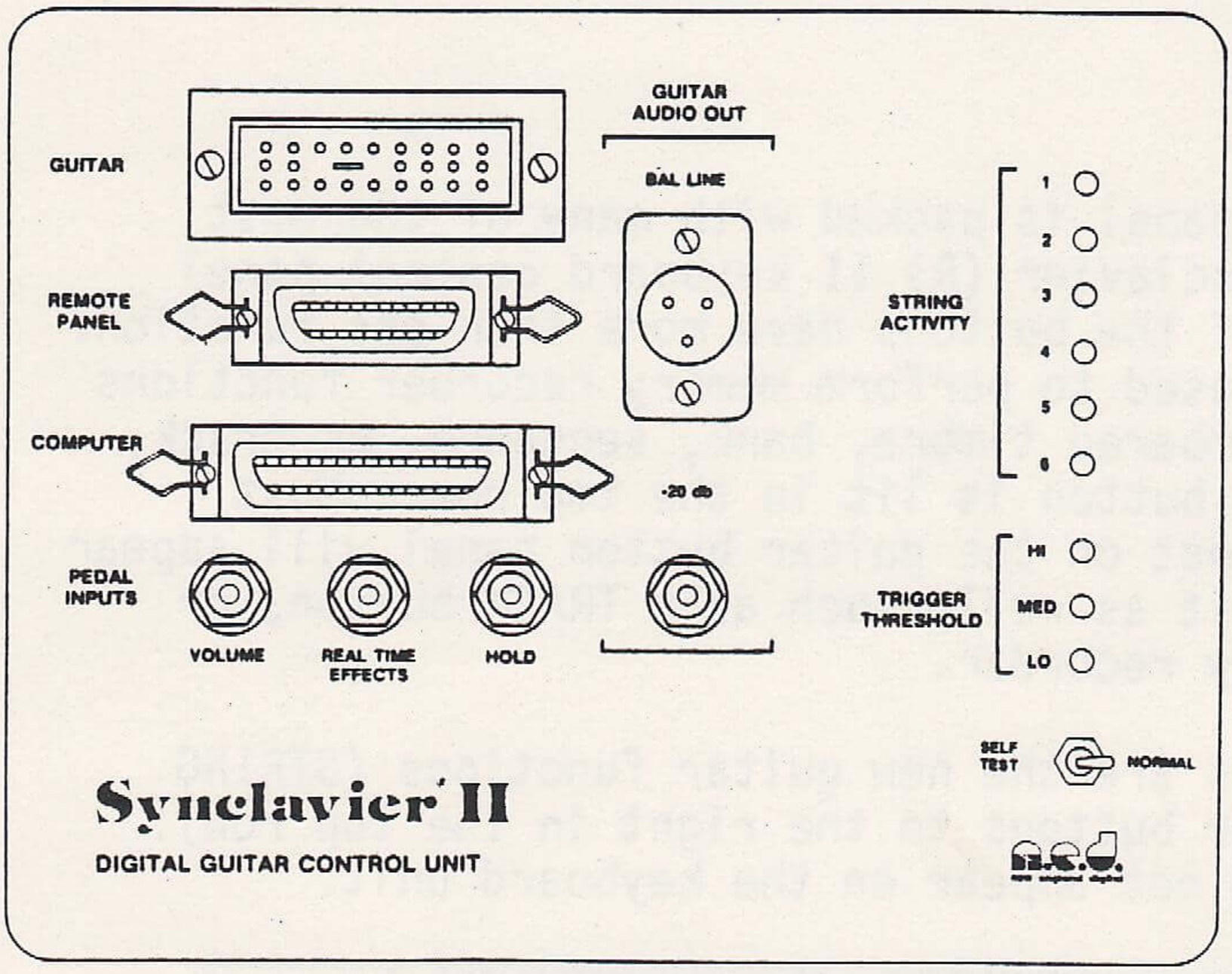


The guitar button panel may be mounted on the guitar or on a standard microphone stand. A mounting arm and panel mounting kit are supplied with the system.

Digital Guitar Control Unit and Cables

The Digital Guitar Control Unit is a rack-mounted case containing hardware that translates the input from the guitar and guitar button panel into digital information for the computer. A guitar interface card, the D134, permits the computer to read from or write to the Digital Guitar Control Unit.

The Digital Guitar Control Unit front panel has connectors for cables from the guitar, the remote guitar button panel, computer, and three pedals. It also has two outputs for the direct guitar output. There are two sets of multi-colored LED's: The top set indicate which string(s) is(are) active. The lower set indicate the state of the volume TRIGGER THRESHOLD. Finally, there is a self test switch, which can be used to test the integrity of all the components in the system: the guitar, the Digital Guitar Control Unit, the guitar controls and button panel, the computer, the interface, and the synthesizer channels.



Guitar Pedals (optional)

Two pedals and one foot switch or three pedals can be connected to the Digital Guitar Control Unit.

Synclavier (R) II Digital Music System

a. Keyboard unit

b. Digital Synthesizer

c. D134 guitar interface board

d. Dual floppy disk drives or one floppy and Winchester disk

e. VT-series or ADM computer terminal (optional)

f. Stereo boards (optional)

ADX/DAX Conversion Module for the Sample-to-Disk (tm) system (optional)

UPDATING A SYNCLAVIER (R) II FOR THE DIGITAL GUITAR OPTION

If you already own a Synclavier (R) II system and are adding the Guitar Option, you must perform some preliminary tasks. First, you must replace the blank DIGITAL GUITAR connector on the back panel with a wired connector. Second, you must insert the new D134 interface board into the computer bin. Finally, you must connect the connector to the card.

If you have purchased a new system with the Digital Guitar Option, skip over these instructions and proceed to page 6.

1. Disconnect power from the computer.

> WARNING: To prevent shock hazard and to protect internal circuitry, always unplug the computer before removing the back panel.

2. Remove the back connector panel of the computer.

3. Remove the plastic rods which have been screwed in to keep the boards from moving during shipping.

4. Unscrew and remove the DIGITAL GUITAR connector from the connector panel.

5. Then insert and attach the new DIGITAL GUITAR connector.

6. Press the D134 board firmly into any even-numbered slot on the right side of the computer bin. Observe the correct orientation: As with all boards in the computer, the components should be located on the right side, the printed circuits on the left.

7. Attach the gray flat cable from the connector to the D134. Be sure the colored wire is facing down.

8. Replace the back connector panel.

SYSTEM SETUP

Set up the Synclavier (R) II.

First make sure your basic Synclavier (R) II system is set up as described in the Synclavier II Setup and Instruction Manual. Be sure to turn on and check out the system as described on pages 10 to 13 in that manual.

Then, turn off the system.

Mount the guitar button panel.

Mount the guitar button panel on the guitar or on a mike stand with the mounting arm and panel mounting kit supplied.

Attach the label faceplate.

Adhere the label faceplate to the face of the Roland guitar as follows:

1. First turn all knobs fully counter-clockwise and note the position of either the "0" or the "line" on each knob.

2. Remove the knobs from the guitar by lifting them upward.

3. Peel off the faceplate paper backing and position the faceplate on the face of the guitar.

4. When the plate is in proper position, apply pressure and smooth out the bubbles in the vinyl. The plate has a removable pressure sensitve adhesive and can be removed and re-applied without marring the wood surface.

5. Replace the knobs on guitar. Make sure they are all in their noted positions and fully counter-clockwise.

Connect the components.

Use the appropriate cables to make the following connections:

1. Connect the guitar, guitar button panel, and pedals (if any) to the Digital Guitar Control Unit.

2. Connect the direct guitar output on the Digital Guitar Control Unit to your audio system.

3. Connect the Digital Guitar Control Unit to the computer. Connect one end of the long flat black cable to the Control Unit connector labeled COMPUTER and the other to the computer back-panel connector labeled DIGITAL GUITAR.

You should not have any problems because all the cables are different and may only be connected in one way.

The rest of the adjustments are made with the system turned on.

Turn on and load the system.

1. Turn on the disk drives and the computer.

2. Insert the Synclavier (R) II Guitar Real Time System diskette (latest release) in the left-hand drive.

3. Press the LOAD button.

OR

1. Turn on the disk drives, the computer, and the terminal.

2. Insert the SCRIPT Guitar System diskette in the left-hand drive and a SCRIPT user diskette in the right-hand drive.

3. Press the LOAD button.

4. Type

   PLAY

Your system should now be connected and running. Before you start to play, however, you must adjust the Roland guitar so that it will interact properly with the Digital Guitar Control Unit and the Synclavier (R) II system.

SETTING UP ROLAND GR GUITARS FOR USE WITH THE SYNCLAVIER (R) II

The Synclavier (R) II Digital Guitar Option measures both dynamics and pitch coming from the guitar strings. These measurements are used to set the pitch and modify the volume and/or harmonic envelopes of timbres played from the guitar. To use the Synclavier (R) II system with reliable results, it is essential that you properly set the Roland hexaphonic pickup height and adjust the output levels of all six strings. Please read and follow the setup procedures for the Roland guitar carefully and perform them in the order presented!

Selecting Strings

Optimum performance is also related to string gauge. We recommend a set of round wound strings (such as D'Addario XL Regular Light Gauge or equivalent) as follows:

first	.010 in.	(0.25 mm.)
second	.013 in.	(0.33 mm.)
third	.017 in.	(0.43 mm.) plain
fourth	.025 in.	(0.66 mm.)
fifth	.036 in.	(0.91 mm.)
sixth	.046 in.	(1.17 mm.)

Adjusting the Hex Pickup Height

1. Lower the hexaphonic pickup away from the strings and adjust bridge height and intonation for desired action. Avoid action so low that it causes fret "slap" or "buzz," as this will interfere with proper pitch tracking. (If you cannot lower the action enough, you may require some fret work.)

2. Next raise the hex pickup so that it just touches the first and sixth string when the 22nd fret is stopped.

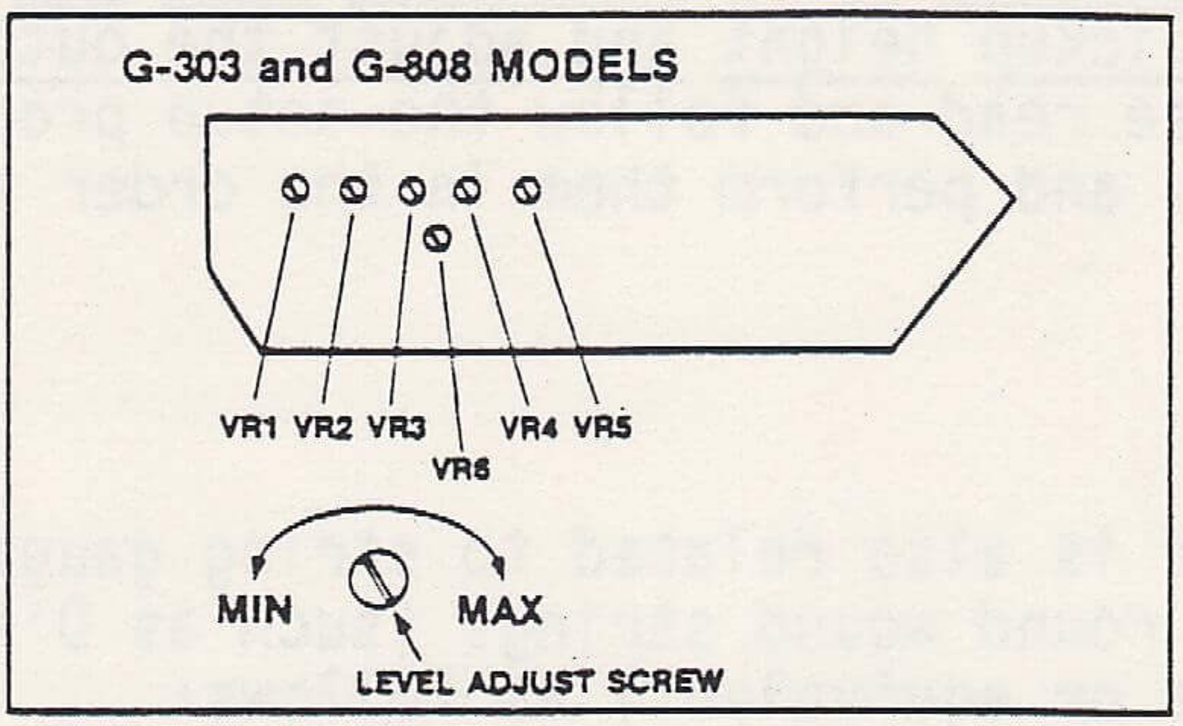
3. Now lower the pickup so that just enough clearance is present to prevent contact with any string when played at the 22nd fret. The recommended clearance is 0.5 to 0.8 mm. (.02 to .032 inch). A 0.6 mm. nylon pick makes a good feeler gauge.

Adjusting String Output Levels

The output level of each string is adjusted by a potentiometer screw on a circuit board inside the guitar backplate. At the Roland factory, these six controls are nominally set at mid-rotation. However, these settings will probably not provide the desired balance for playing Synclavier (R) II timbres with dynamics. Follow the steps below to adjust the balance of the strings:

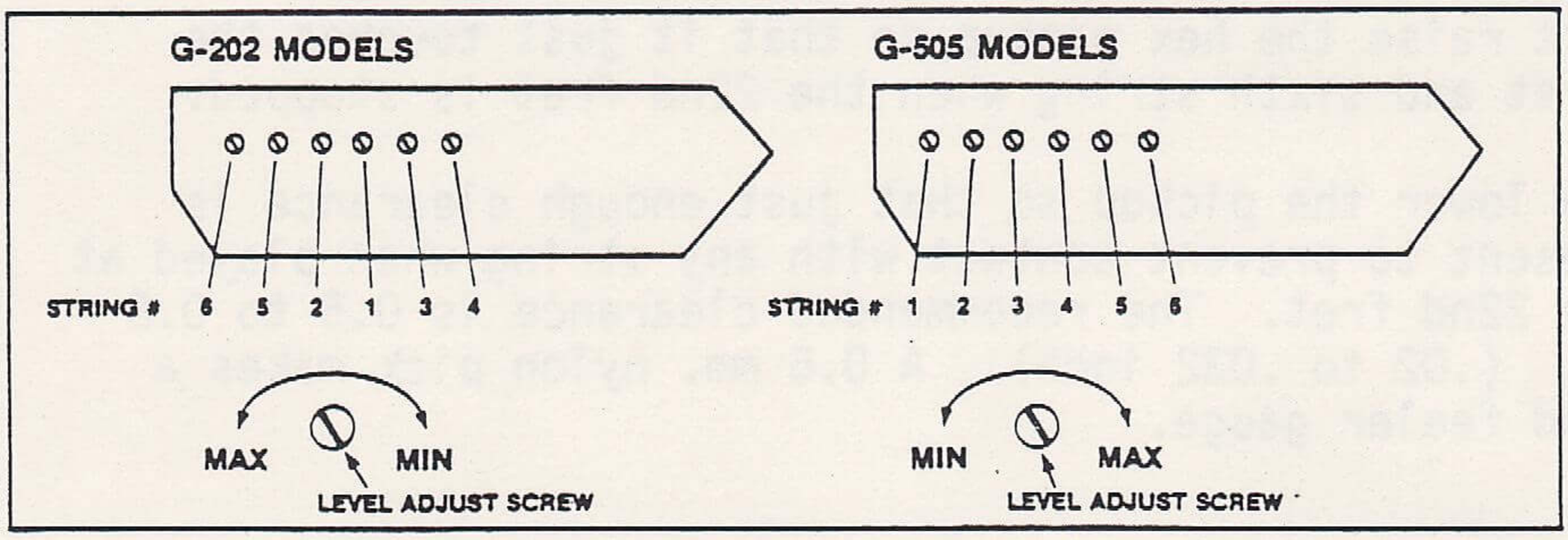
1. Locate the six level adjust screws on your guitar.

   a. For G-303 and G-808 models, remove the backplate from the guitar. You will see six level adjust screws labeled VR1 through VR6, corresponding to strings one through six, respectively.



   b. For the G-202 and G-505, place the guitar face down with the neck to your left. You will see a row of six holes on the backplate. The level adjustment for each string can be made by placing a small screwdriver in the appropriate hole and turning the small trimpot, or level control screw, behind the hole. Use good lighting so that you can see the screws.

   The six trimpots correspond to the strings as indicated in the figures below:



2. Check that the controls for all strings are set at approximately mid-rotation to start. (This is the way they are generally set at the factory.)

3. Now, with the system turned on and loaded as described above, set the BALANCE knob on the guitar fully clockwise to SYNTH and set the DYNAMIC RANGE knob fully counter-clockwise to MAX.

4. Choose a simple timbre with the DYNAMIC VOLUME button lit. Timbre 1-1 is fine.

5. Play and note the relative balance of string levels. Some will be softer than others. Note those strings which are too soft, and turn their corresponding level clockwise (G-303, G-808, and G-505) or counter-clockwise (G-202) to increase the level. Play again and make additional adjustments if necessary until you have the desired levels on all strings.

6. Replace the guitar backplate (G-303 and G-808).

Activating the DYNAMIC RANGE Knob

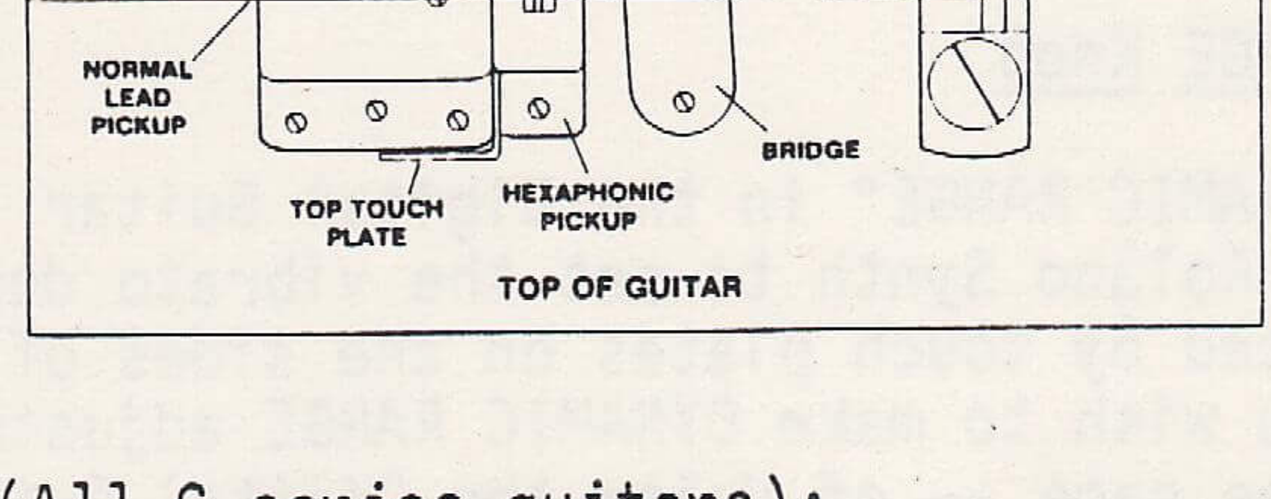
The knob used for "DYNAMIC RANGE" in the Digital Guitar Option is used in the Roland Synth to set the vibrato depth and vibrato is activated by touch plates on the sides of the "lead" pickup. If you wish to make DYNAMIC RANGE adjustments (for a description, see page -- of Using the Digital Guitar Option), then you will always want the touch plates effectively "on." Otherwise, the knob will not be active and the DYNAMIC RANGE will be set at MAX irrespective of the actual position of the knob. There are two ways to ensure that this control is active, depending on the particular model of guitar you are using. If you plan to switch back and forth between Synclavier and Roland systems, you must choose method 2.

1. Wiring the lower touch plate so that the control is always active (G-303 and G-808 only).

2. Touching the top touch plate (or button) each time you turn on the system (all G series guitars).

Method 1 (G-303 and G-808):

Simply wrap a piece of solid wire around the lower tailpiece mounting post and wedge the other end of this wire into the lower touch plate. The DYNAMIC RANGE knob is now always active whenever you turn the guitar on.



Method 2 (All G series guitars):

Place some insulating tape over the lower touch plate (or touch button), so that it cannot be accidentally touched while the guitar is played. Each time you turn on the guitar system, first touch the top touch plate (or button) and tailpiece simultaneously with your fingers. The DYNAMIC RANGE control is now active and will remain active until you turn off power (or somehow touch the lower plate (or button), which should not be possible if it has been properly covered with tape!)

USING THE SELF-TEST DIAGNOSTIC FEATURE

The Digital Guitar Option is, in itself, a complex system of both hardware and software which must interact with the Synclavier (R) II system. Furthermore, the Roland Guitar contains electronic circuitry which is not warranteed by New England Digital.

In any case, the Digital Guitar Control Unit has an internal self-test feature which is designed to exercise all functions of the guitar and the digital guitar system without requiring the player to play the guitar.

Once you have the whole Digital Guitar system set up for normal operation and the Roland Guitar adjusted as described above, simply switch the switch on the front panel of the Digital Guitar Control Unit from NORMAL position to SELF-TEST to activate the self test feature.

The Digital Guitar Control Unit will generate six distinct test tones and apply these in succession to each of the six string channels of the unit. In effect, it plays all six strings one after another repeatedly. While this is taking place, you should be able to hear these pitches in any timbre selected, test the guitar MASTER VOLUME, BALANCE, REAL TIME EFFECTS, SUSTAIN and DYNAMIC RANGE knobs for functionality, see visual indications of triggering of notes on the LED STRING ACTIVITY indicators, and test all button panel functions. For instance, you can record, play back, and transpose these tones. Any non-functionality can be easily detected and reported to New England Digital for diagnostic help.

This provides a very rigorous total system test of pitch and volume tracking, digital coding, cabling, computer processing, and synthesizer functionality. We suggest that when you first power up the system, you briefly perform this self-test. It can immediately tell you if your cables are all plugged in, your audio works, your guitar module is functioning, etc.