

**YAMAHA**

**G10**

**GUITAR MIDI CONTROLLER  
CONTROLEUR GUITARE MIDI**

**G10C**

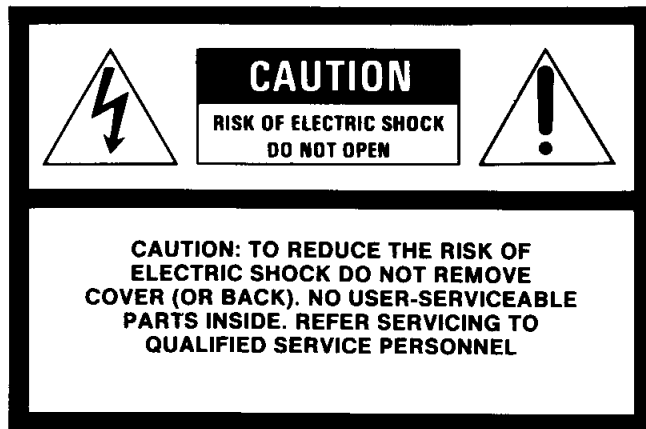
**GUITAR MIDI CONVERTER  
CONVERTISSEUR GUITARE MIDI**

**OPERATING MANUAL  
MANUEL D'UTILISATION  
BEDIENUNGSANLEITUNG**

## SUPPLEMENTAL MARKING INFORMATION

**This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.**

Yamaha Digital Musical Instrument Products will have either a label similar to the graphic shown below or a molded/stamped facsimile of the graphic on its enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated.



The Exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

*You are the proud owner of the most versatile, most powerful, most playable MIDI guitar system currently available. To ensure that you obtain maximum performance from your Yamaha MIDI Guitar System, please read this operation manual carefully, and keep it in a safe place for later reference.*

## MAIN FEATURES

### G10 MIDI Guitar Controller

**T**he G10 is both a totally new type of musical instrument and a responsive guitar that will give the guitarist full, easy access to the vast world of MIDI sound control.

**T**he G10 employs a new Yamaha technique in which ultrasonic sound is transmitted along the strings and the fingered fret is precisely determined by analyzing the reflected wave. Pitch data is thus available immediately so there is no response delay.

**S**tring bend and velocity sensors work in conjunction with the pitch sensor to provide natural guitar response. Subtle picking variations come through with clean precision, and you can mute, bend, pull-off and hammer-on as you always have on your favorite acoustic or electric guitar.

**S**mooth-operating controller arm and controller wheel can be assigned to a wide range of MIDI control change functions.

**B**reath controller jack permits use of a Yamaha breath controller so that wind and tonguing techniques can be combined with guitar performance.

**P**rogram change buttons are provided — with an LED display — for easy selection of voices on the controlled synthesizer or tone generator.

### G10C MIDI Guitar Converter

**64** internal performance memories can be programmed with data pertaining to how control data from the G10 is interpreted and converted to MIDI output. Programmable parameters include:

- MIDI program number/performance memory assignment.
- MIDI transmit channel for each string.
- Volume for each string.
- Open tuning for each string.
- Normal or Left-hand trigger mode.
- Capotasto fret position.
- Legato ON/OFF.
- Velocity curve assignment.
- Sensitivity offset.
- Mute sensitivity for each string.
- Pitch bend send range.
- Controller assignments.
- And many more . . .

**O**ptional RAM4 data cartridges can be used to store performance memory data for instant recall when needed.

**T**he G10C is equipped with a complete set of specially-programmed voices for the Yamaha TX802 and TX81Z FM tone generators. This data and the corresponding parameters can be directly downloaded to a TX802 or TX81Z via the MIDI interface and played right away.

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## PRECAUTIONS — READ THIS FIRST!

### 1. AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION

Keep both the G10 and G10C away from locations where they are likely to be exposed to high temperatures or humidity — such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

### 2. AVOID PHYSICAL SHOCKS

Strong physical shocks to the G10 and G10C can cause damage. The G10 and G10C are precision musical devices, handle them with care.

### 3. DO NOT OPEN THE UNITS OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF

The G10 and G10C contain no user-serviceable parts. Refer all maintenance to qualified Yamaha service personnel. Opening the units and/or tampering with the internal circuitry will void the warranty.

### 4. MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS

Always turn the power OFF prior to connecting or disconnecting cables. This is important to prevent damage to the MIDI guitar system itself as well as other connected equipment.

### 5. HANDLE CABLES CAREFULLY

Always plug and unplug cables — including the AC cord — by gripping the connector, not the cord.

### 6. CLEAN WITH A SOFT DRY CLOTH

Never use solvents such as benzine or thinner to clean the G10 or G10C. Wipe clean with a soft, dry cloth.

### 7. ALWAYS USE THE CORRECT POWER SOURCE

Make sure that the power source-voltage specified on the rear panel of the G10C matches your local AC source.

U.S. and Canadian Models: 120V AC, 60 Hz

General Model: 220 ~ 240 AC, 50/60 Hz

### 8. ELECTRICAL INTERFERENCE

Since the G10C contains digital circuitry, it may cause interference and noise if placed too close to TV sets, radios or similar equipment. If such a problem does occur, move the G10C further away from the affected equipment.

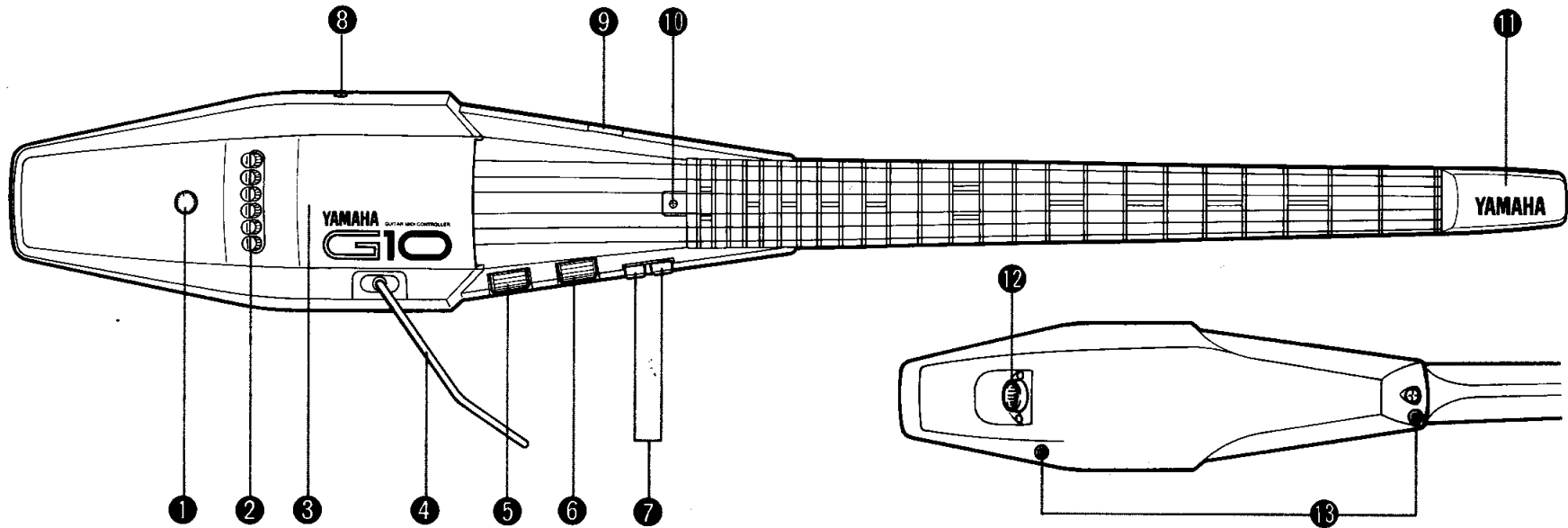
### 9. USE ONLY THE SPECIFIED STRINGS FOR THE G10, AND KEEP THEM CLEAN

The G10 Guitar MIDI Controller will only function properly when strung with the specified type of strings: 0.4 mm or 0.016" gauge plain (non-wound) guitar strings. For proper, reliable operation, the G10 strings must be kept clean at all times. Nicks or kinks in the strings can also cause misoperation. See "G10 RE-STRINGING AND MAINTENANCE" on page 37 of this operation manual for details.

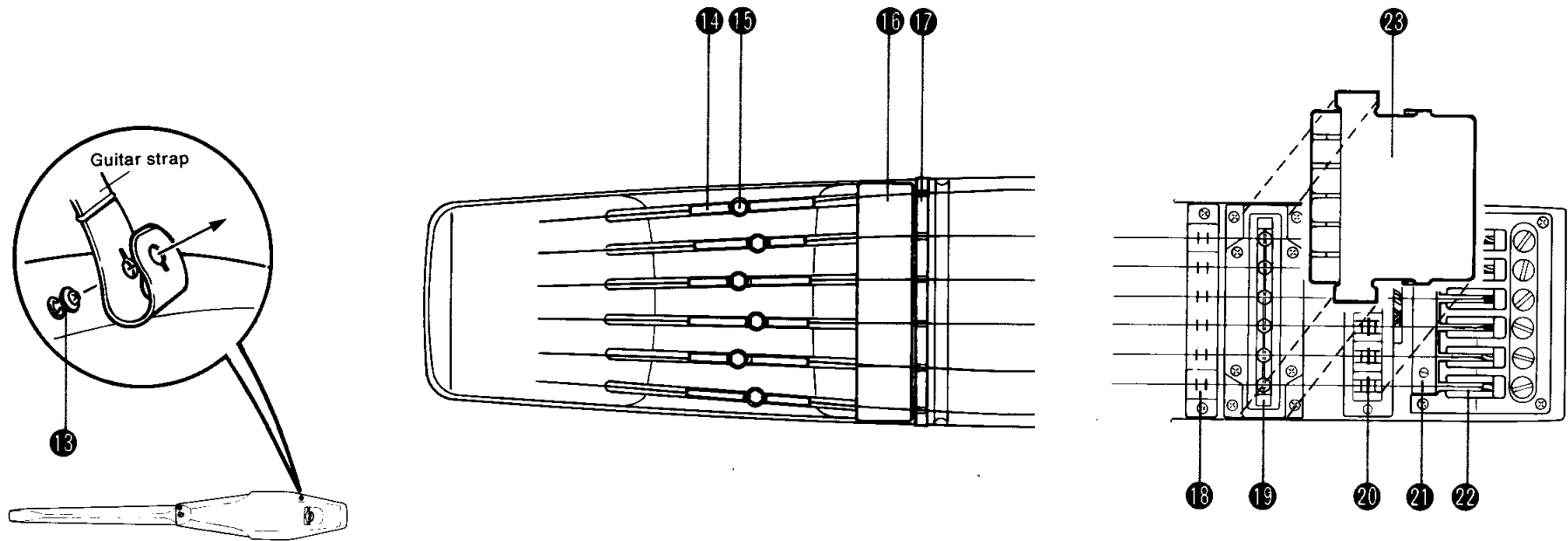
#### BACKUP BATTERY

The G10C contains a long-life lithium battery which maintains the contents of the buffer and RAM memory locations even when the unit is turned OFF. With normal use the battery should last for approximately 5 years. If the battery voltage falls below the safe level, however, the **\*\*\* CAUTION \*\* Change battery!** display will appear on the LCD when the power is first turned ON. If this occurs, have the battery replaced as soon as possible by a qualified Yamaha service center. Do not attempt to replace the battery yourself. Normal operation can be temporarily resumed after this display appears by pressing any button on the G10C panel. Before replacing the battery it is a good idea to save any important performance data on a Yamaha RAM4 Data Cartridge. If the battery voltage falls below the operational level, the **\*\*\* CAUTION \*\* No battery!** display will appear when the power switch is turned on and operation will not be possible.

## G10 GUITAR MIDI CONTROLLER NOMENCLATURE



- 1 Sensitivity Control:** This control adjusts the G10's picking sensitivity. Use it to set the optimum sensitivity for your picking style. Rotating the control clockwise increases sensitivity.
- 2 Tension-Adjust Tailpiece:** The tailpiece accepts the ball-end of the guitar strings used by the G10, and the six knurled knobs are used to set the desired string tension. The G10 strings do not have to be "tuned" as in a standard guitar, but all six strings should be set to approximately the same tension. Optimum tension results in an open string pitch between F and G.
- 3 Sensor Cover:** The sensor cover snaps in place over the G10 sensor well, covering and protecting the sensors while providing a solid rest for the picking hand.
- 4 Controller Arm:** In outward appearance the controller arm resembles the tremolo arm on an electric guitar, but in the G10 it can be used to control pitch, volume, modulation, pan and other functions.
- 5 Volume Wheel:** The G10's main volume control. The volume wheel is located for easy, convenient access while playing.
- 6 Controller Wheel:** Like the controller arm, the controller wheel provides extra expressive capability by controlling modulation, portamento time or pan.
- 7 Performance Selector Buttons:** These buttons are used to select the desired performance memory location on the G10C Guitar MIDI Converter and, simultaneously, the corresponding voice on the MIDI tone generator used. Either button can be held down for continuous incrementing or decrementing.
- 8 Breath Controller Jack:** A Yamaha BC1/BC2 breath controller can be plugged in here, allowing breath and tonguing techniques to be applied to voices controlled by the G10.
- 9 Performance Number Display:** When a performance memory/voice is selected using the performance selector buttons, its number is displayed on the easy-to-read 3-digit LED display.
- 10 Truss Rod Cover:** This cover can be removed with a standard Phillips (+) screwdriver, providing access to the truss rod nut for neck curvature adjustment.
- 11 Headstock:** The headstock cover slides off to allow access to the headstock string locks.



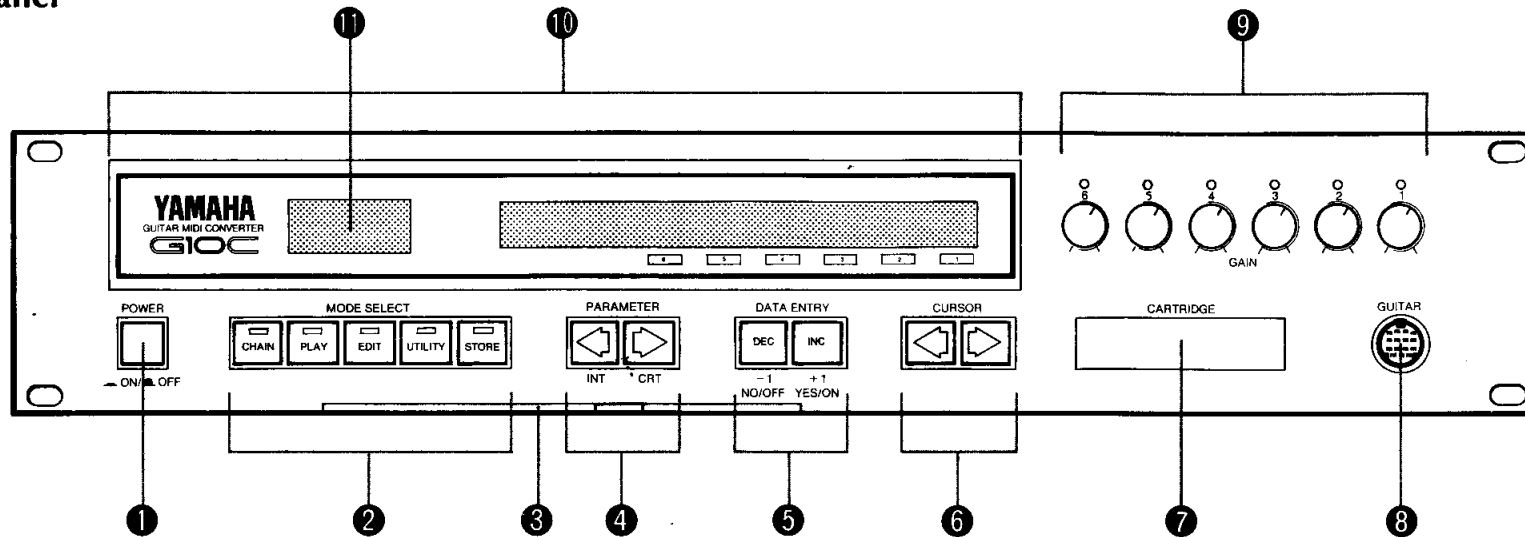
- 12 Output Connector:** The 7-meter multi-pin connector cable which connects the G10 to the G10C converter unit plugs in here. Align the arrow on the cable connector with the protrusion on top of the G10 connector and insert firmly until the connector clicks in place. To remove the connector, simply pull firmly on the release ring surrounding the connector.
- 13 Guitar Strap Pins:** Standard guitar strap pins allow the use of the guitar strap provided, or one of your own choice. When using the provided guitar strap, be sure to fold one end of the strap double and press both holes over the guitar strap pin closest to the multi-pin connector, as shown in the above illustration.
- 14 Headstock String Lock:** The six headstock string locks firmly secure the headstock end of the G10 strings.
- 15 String Lock Screw:** These screws loosen or tighten the headstock string locks, allowing easy replacement of the G10 strings.
- 16 Headstock Damper:** Damps vibration of the headstock end of the strings.
- 17 String Guide:** Determines proper string spacing.
- 18 Velocity Sensor:** This electromagnetic pickup detects the amplitude of string vibration, permitting accurate output of MIDI note velocity data corresponding to how hard the strings are played.
- 19 String Bend Sensor:** The central sensor uses a precision opto-electronic system to sense string bend independently for each string.
- 20 Ultrasonic Pitch Sensor:** Yamaha's original ultrasonic pitch sensor achieves precise pitch sensing without delay.
- 21 Tail Damper:** Damps vibration of the tailpiece end of the strings.
- 22 Tensioner:** The ball-ends of the G10 strings are hooked into the 6 tensioners. The tensioners are rotated to apply tension to the strings by turning the 6 knurled knobs on the tension-adjust tailpiece.
- 23 Handrest/Damper:** Fits over the G10's three sensors (inside the sensor cover) providing protection and a convenient handrest when playing the G10 with the sensor cover removed. Also damps the acoustic sound of the strings.

**Important!**

See "G10 RE-STRINGING AND MAINTENANCE" on page 37 of this operation manual for more detailed information.

## G10C GUITAR MIDI CONVERTER CONTROLS AND CONNECTORS

### Front Panel



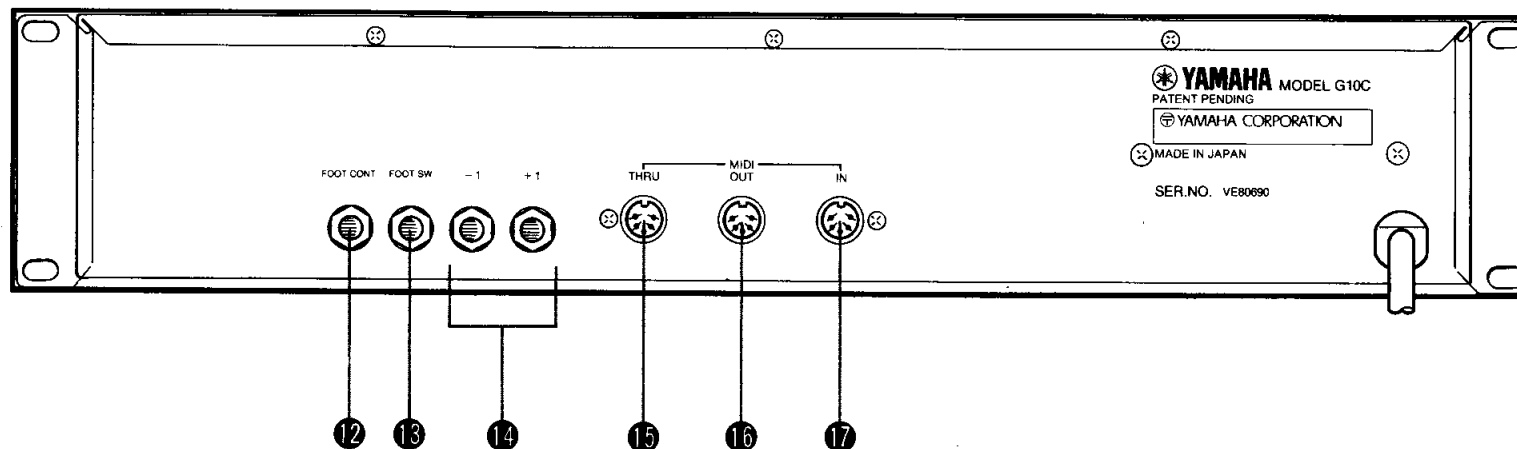
- ① **POWER Switch:** Press once to turn power to the G10C and G10 ON, a second time to turn power OFF.
- ② **MODE SELECT Buttons:** The CHAIN, PLAY, EDIT, UTILITY and STORE buttons allow access to the G10C's main functional modes. When one of these modes is selected, the LED indicator in the corresponding MODE SELECT button will light.
- ③ **Guide Sheet:** The guide sheet slides out from the G10C to provide a handy reference to the available edit and utility functions.
- ④ **PARAMETER Buttons:** The PARAMETER ◀ and ▶ buttons are used to select any of the available parameters in the EDIT or UTILITY modes. In the PLAY mode they are used to select either the internal (INT) or external cartridge (CRT) memory groups. The PARAMETER buttons also select INT or CRT memory in the STORE mode.
- ⑤ **DATA ENTRY Buttons:** In the PLAY mode the DATA ENTRY DEC and INC buttons can be used to select any of the available G10C performance memory locations. In the EDIT and UTILITY modes they are used to set the required data values, to turn functions on or off, or to initiate certain utility functions.
- ⑥ **CURSOR Buttons:** The CURSOR ◀ and ▶ buttons are used in the EDIT and UTILITY modes to select parameters shown on the LCD display panel.
- ⑦ **CARTRIDGE Slot:** G10C performance and other data can be saved to or loaded into the internal memory from a Yamaha RAM4 data cartridge plugged into the cartridge slot. The G10C also permits saving or loading TX81Z tone generator voices and data to or from a cartridge plugged into this slot, for convenient external storage of TX81Z data.
- ⑧ **GUITAR Input Connector:** The 7-meter multi-pin connector cable which connects the G10 to the G10C converter unit plugs in here. Align the arrow on the cable connector with the protrusion on top of the G10C connector and insert firmly until the connector clicks in place. To remove the connector, simply pull firmly on the release ring surrounding the connector.
- ⑨ **GAIN Controls 1 — 6:** The six GAIN controls individually adjust the gain of the G10's six strings, allowing you to optimally match string response to your playing style.



- ⑩ **LCD Display Panel:** This 40-character x 2-line backlit LCD display panel shows all pertinent prompts and data for the current G10C mode.

- ⑪ **PERFORMANCE NO. LED Display:** The currently selected G10C performance memory location number is shown on this 3-digit LED display.

## Rear Panel



- ⑫ **FOOT CONT. Jack:** A Yamaha FC7 Foot Controller plugged into this jack can be used to control modulation, volume, portamento time or panning.
- ⑬ **FOOT SW Jack:** A Yamaha FC4 or FC5 Footswitch plugged into this jack can be used for sustain or portamento ON/OFF control.
- ⑭ **-1 and +1 Jacks:** Yamaha FC4 or FC5 Footswitches plugged into these jacks can be used for foot selection of the G10C's performance memory locations.

- ⑮ **MIDI THRU Connector:** The MIDI THRU connector simply re-transmits any MIDI data received at the MIDI IN connector, permitting a number of MIDI devices to be connected in series.
- ⑯ **MIDI OUT Connector:** The MIDI OUT connector transmits all necessary MIDI data from the G10C to the MIDI tone generator to be controlled.
- ⑰ **MIDI IN Connector:** The MIDI IN connector receives MIDI data from an external MIDI device. A Yamaha MFC1 MIDI Foot Controller, for example, can be connected to the MIDI IN connector to permit random selection of G10C performance memory locations.

## SETTING UP

### 1. Install the G10 Controller Arm

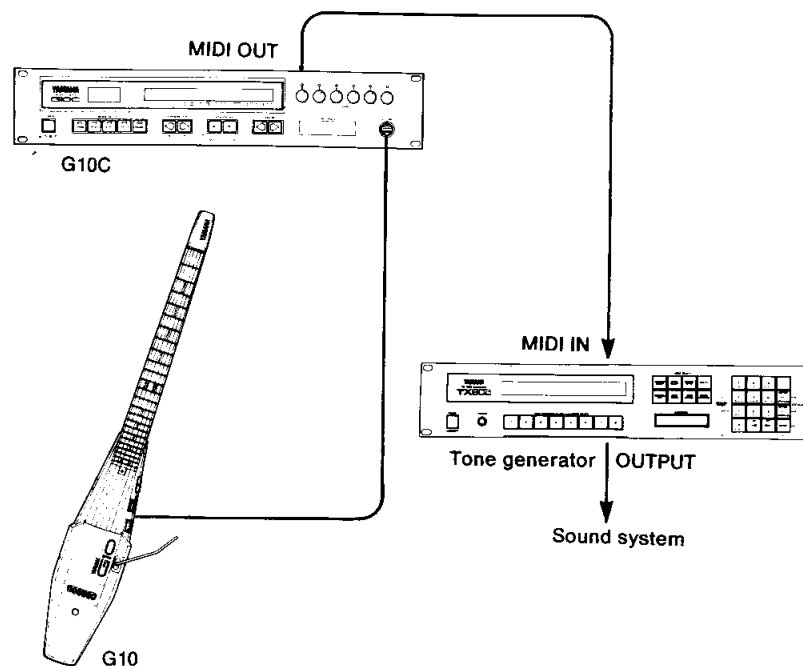
Install the G10 controller arm by screwing it into the threaded receptacle located below the ultrasonic pitch sensor. The arm screws in clockwise. Screw the arm in until it stops, then rotate it backwards by about one turn to allow the arm to move freely.

### 2. Set the Proper G10 String Tension

Use the knurled knobs on the G10 tension-adjust tailpiece to set all strings to the same acoustic "pitch." It might be easier to do this if the sensor cover and string damper are first removed so that acoustic pitch of the strings can be heard clearly. Set all strings to the same pitch: somewhere between about F and G, depending on the string tension you find to be the most "playable." Once the string tension has been set, replace the string damper and sensor cover.

### 3. Make All Necessary System Connections

First, make sure the power to the G10, tone generator and your sound system is turned OFF. Begin by connecting the G10C MIDI OUT connector to the MIDI IN connector of your tone generator with the MIDI cable provided. If you use a different MIDI cable, make sure it is no longer than about 15 meters since longer cables can pick up electrical noise that can result in improper operation. Next, connect the outputs of the tone generator to the sound system you intend to use. Finally, connect the G10 to the G10C with the 7-meter multi-pin connector cable provided — align the arrows on the cable connectors with the protrusions on the top of the G10 and G10C connectors, and press firmly until the connectors click into place.



### 4. Turn Power ON

Make sure the power cords for all the equipment to be used are plugged into AC appropriate sockets. First turn ON the G10C and your tone generator, and then the sound system. The sound system should always be turned on LAST.

#### Note:

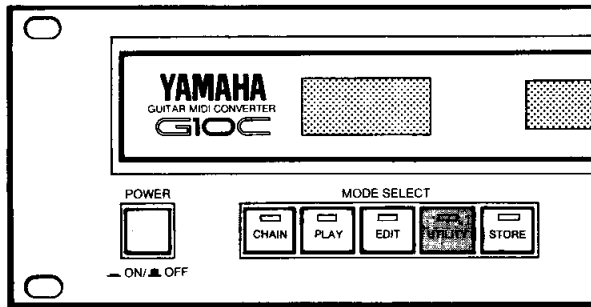
Since the G10C automatically runs a battery of tests on the G10C system and the G10 when the power is initially turned ON — including a test for proper string sensing, make sure that nothing is touching the G10 strings when you turn the power switch ON or during the startup display (approx. 4 seconds).

If the "String error" display appears, check the "NG" string (refer to "When is it Time to Change Strings?" on page 37). If the "System error" display appears, have the G10C checked by qualified Yamaha service personnel.

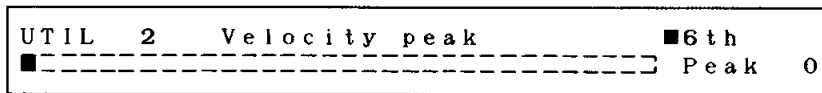
### 5. Use the DISPLAY VELOCITY PEAK Function to Set the G10C Gain Controls

The G10C provides a DISPLAY VELOCITY PEAK function that makes it simple to set the G10C **GAIN controls** to their optimum positions.

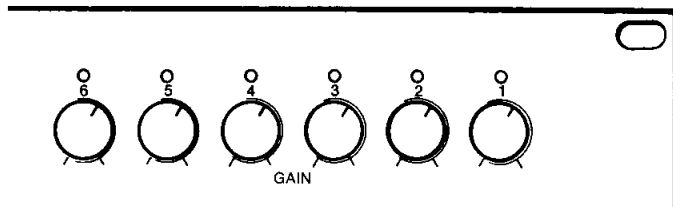
1. Press the G10C UTILITY button to enter the utility mode.



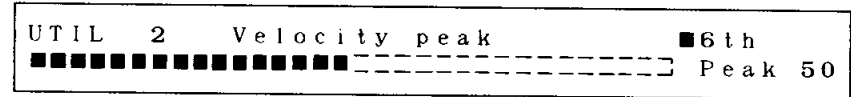
2. Use the PARAMETER buttons to locate the “UTIL 2 Velocity peak” function. If the first utility function — “UTIL 1 Memory” — appears when you press the UTILITY button, all you have to do is press the PARAMETER  $\triangleright$  button once to access “UTIL 2 Velocity peak.” Here’s how the display should look:



Note that the flashing block cursor is located before “6th” on the display, indicating that you can set the **GAIN control** for the 6th string (the leftmost **GAIN control**, numbered “6”).

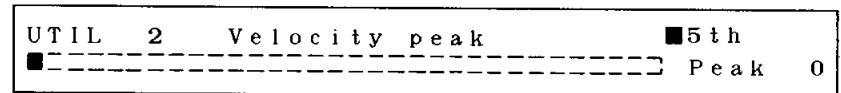


3. Pick the 6th string on the G10 (the string closest to the performance number display) the hardest you will pick it while actually playing. The velocity peak bar graph should move to the right and the peak level detected will be shown to the right of “Peak” on the display.



Continue picking the 6th string and adjust the **GAIN (6) control** until you get a peak reading of “99.” This sets the optimum gain level for the 6th string.

4. Press the DATA ENTRY DEC button to move on to the 5th string.



Repeat the adjustment process for the 5th string, press the DATA ENTRY DEC button to move on to the 4th string, adjust the 4th string **GAIN control**, and continue this process until you have properly adjusted the **GAIN controls** for all 6 strings.

5. Press the PLAY button to return to the normal PLAY mode.

## PLAY NOW — LEARN THE DETAILS LATER

This section is devoted to those of you (probably most of you) who want to get right down and play your MIDI guitar system. Yamaha has made this easy by providing the G10C with complete sets of pre-programmed voices and performance data for the TX802 and TX81Z FM Tone Generators, with which the MIDI Guitar System was primarily designed for use. Simply follow the instructions below, play, and enjoy. Then, when you're ready to learn about what the G10 and G10C can really do for you, go on to the next section.

1. Make sure that your system is properly set up and turned ON as described in the previous "SETTING UP" section.
2. Press the G10C UTILITY button. "UTIL 1" should appear at the upper left-hand corner of the display. If a different "UTIL" number appears, press the PARAMETER  $\triangleleft$  button a few times until "UTIL 1" does appear. The display should look like this:

```
UTIL 1 ■Protect >Initialize? >Recall?
Memory      On
```

3. Press the DATA ENTRY DEC (NO/OFF) button to turn the G10 memory protect function OFF. The display should now appear as follows:

```
UTIL 1 ■Protect >Initialize? >Recall?
Memory      Off
```

4. Press the PARAMETER  $\triangleright$  button 9 times until the "UTIL 10" display appears. The flashing block cursor should appear immediately before "Dev.#" on the display.

```
UTIL 10 ■Dev. # >Data >Transmit?
Sys. ex.      1   All
```

5. Check the number below "Dev.#" on the display. If it is "1" then go on to the next step. If it is any other number use the DATA ENTRY DEC and INC buttons to set it to "1".
6. Before you go on to the next step there are a few things which must be set up on your TX802 or TX81Z. Check the following points carefully while referring to your tone generator's operation manual. Make sure that:
  - Any TX802 or TX81Z data that you wish to keep has been backed up by storing to cartridge or cassette tape.
  - The TX802 or TX81Z memory protect function is OFF.
  - The TX802 device number is set to match the G10C device number (1 or "all"), or the TX81Z BASIC RCV.CH is set to match the G10C device number (1 or "omn").
  - The TX81Z SYSTEM EX. function is turned ON.
7. Press the PARAMETER  $\triangleleft$  button 7 times until the "UTIL 3, TX Setup" function appears.

```
UTIL 3      ■Data      >Execute?
TX Setup    802all
```

8. If you have a TX81Z tone generator, press the DATA ENTRY INC button until "81Zall (A)" or "81Zall (B)" appears below "Data" on the display. (A) and (B) are two different data sets (24 performances each) for the TX81Z. If you have a TX802 tone generator use the DATA ENTRY DEC and INC to select "802all".

9. Press the CURSOR  $\triangleright$  button to move the flashing cursor to the “Execute?” prompt.

```
UTIL 3      >Data      ■Execute?
TX Setup    802all
```

10. Press the DATA ENTRY INC (YES/ON) button. The G10C will respond with “Are you sure?”

```
UTIL 3      >Data      >Execute?
TX Setup    802all    Are you sure■
```

11. Press the DATA ENTRY INC (YES/ON) button a second time to start the actual TX setup procedure. “Now Executing!” will appear while the G10C is setting up your TX81Z or TX802 tone generator. Your tone generator will also display a message indicating that it is receiving MIDI data.

```
UTIL 3      >Data      ■Execute?
TX Setup    802all    Now executing!
```

12. As soon as the automatic setup is finished, the G10C will switch to the PLAY mode, with the first performance memory in the selected TX81Z or TX802 performance memory group selected.

```
PLAY P1 101 <TX802-1 >
```

Now you’re ready to play. Use the performance selectors on the G10 or the DATA ENTRY DEC and INC buttons on the G10C to select and try out the different preset voices.

**Note:**

- Refer to “3. TX SETUP” on page 25 of this manual for more information on TX802 and TX81Z tone generator setup procedures.
- The 24th fret of the G10 is not playable.

## A Note about Tone Generators

### Multi-channel Reception

Since one of the main functions of the G10C is to transmit MIDI data to a MIDI-compatible tone generator system, MIDI channel matching between the G10C and the tone generator system used must be considered carefully. The G10C normally transmits the data for each of the G10’s 6 strings on a separate MIDI channel (it is also possible to transmit the data for all strings on a single channel). The main reason for this is that the G10C employs MIDI pitch bend data to transmit string “choking” or “bending” information, and this must be independent for each string in order to achieve natural string bending effects. If the data for all 6 strings were transmitted on a single channel, performance techniques involving the simultaneous bending of two or more strings, or the bending of one string while others are played normally, would not produce the desired effect.

Although it is possible to use 6 independent tone generators with the G10C — one for each string, the result would be a rather cumbersome, unwieldy system. The ideal tone generator for use with the G10C is a “Multi-timbre” or “Multi-channel” type that allows control of at least 6 different voices on separate MIDI channels.

### The MONO Mode

The attack of a guitar sound varies considerably according to the performance techniques used. Trills and hammer-ons, for example, result in a much softer attack than normal picking. For a synthesizer or tone generator to accurately recreate such nuances it must provide a MONO MODE. Some tone generators only offer a polyphonic mode, and are not suitable for use with the G10 and G10C since the attack of every note played will sound the same — no matter how it is played. This is far from the natural guitar response and playability that the G10 and G10C are capable of providing.

The Yamaha TX81Z and TX802 tone generators, and the DX11 synthesizer, all offer both multi-timbre capability and a MONO mode, and are ideal choices for use with the G10 and G10C.

## TX802 Preset Performance List

G10	TX802	G10	TX802
P1 101	INT01 <Electric Guitar 1 >	P1 133	INT33 <Synsax >
P1 102	INT02 <Overdrive 1 >	P1 134	INT34 <Synth Brass >
P1 103	INT03 <Overdrive 2 >	P1 135	INT35 <Whistle >
P1 104	INT04 <Electric Guitar 2 >	P1 136	INT36 <Synth Solo 1 >
P1 105	INT05 <Electric Guitar 3 >	P1 137	INT37 <Synth Solo 2 >
P1 106	INT06 <Electric Guitar 4 >	P1 138	INT38 <Synth Solo 3 >
P1 107	INT07 <Electric Guitar 5 >	P1 139	INT39 <Synth Solo 4 >
P1 108	INT08 <12st. Electric 1 >	P1 140	INT40 <Sitar >
P1 109	INT09 <12st. Electric 2 >	P1 141	INT41 <Shamisen >
P1 110	INT10 <Chorus Mallet Guiatr >	P1 142	INT42 <Koto >
P1 111	INT11 <Harmonics >	P1 143	INT43 <6st. E. Bass 1 >
P1 112	INT12 <Elec. Acoustic 1 >	P1 144	INT44 <6st. E. Bass 2 >
P1 113	INT13 <Elec. Acoustic 2 >	P1 145	INT45 <6st. Fretless >
P1 114	INT14 <12st. Acoustic >	P1 146*	INT46 <5st. E. BASS ►► 5st. >
P1 115	INT15 <Trad Gut Guitar >	P1 147**	INT47 <Double Bass ►► 4st. >
P1 116	INT16 <Requinte Guitar >	P1 148**	INT48 <Fretless ►► 4st. >
P1 117	INT17 <Elec. Gut Guitar 1 >	P1 149**	INT49 <Synth Bass 1 ►► 4st. >
P1 118	INT18 <Elec. Gut Guitar 2 >	P1 150**	INT50 <Synth Bass 2 ►► 4st. >
P1 119	INT19 <Electronic Piano >	P1 151	INT51 <A. Guitar ►► open E >
P1 120	INT20 <Fat Strings >	P1 152	INT52 <12st. Guitar ►► open E >
P1 121	INT21 <Synth Ensemble 1 >	P1 153	INT53 <A. Guitar ►► open D >
P1 122	INT22 <Synth Ensemble 2 >	P1 154	INT54 <12st. Guitar ►► open D >
P1 123	INT23 <Synth Ensemble 3 >	P1 155	INT55 <Flute ►► mono >
P1 124	INT24 <Choir >	P1 156	INT56 <Harmonica ►► mono >
P1 125	INT25 <Fantasy 1 >	P1 157	INT57 <Horn ►► mono >
P1 126	INT26 <Fantasy 2 >	P1 158	INT58 <Synsax ►► mono >
P1 127	INT27 <Fantasy 3 >	P1 159	INT59 <Whistle ►► mono >
P1 128	INT28 <Fantasy 4 >	P1 160	INT60 <Combination 1 ►► mono >
P1 129	INT29 <Fantasy 5 >	P1 161	INT61 <Combination 2 ►► mono >
P1 130	INT30 <Flute >	P1 162	INT62 <Combination 3 ►► mono >
P1 131	INT31 <Harmonica >	P1 163	INT63 <Combination 4 ►► mono >
P1 132	INT32 <Horn >	P1 164	INT64 <Combination 5 ►► mono >

\* 1st string produces no sound.

\*\* 1st and 2nd strings produce no sound.

## TX81Z Preset Performance List

A group		B group	
G10	TX81Z	G10	TX81Z
P2 101	PF01 E. Guitar 1	P3 101	PF01 SynLead 1
P2 102	PF02 E. Guitar 2	P3 102	PF02 SynLead 2
P2 103	PF03 E. Guitar 3	P3 103	PF03 SynLead 3
P2 104	PF04 E. Guitar 4	P3 104	PF04 SynLead 4
P2 105	PF05 Fuzz 1	P3 105	PF05 SynLead 5
P2 106	PF06 Fuzz 2	P3 106	PF06 SynLead 6
P2 107	PF07 E. Guitar 5	P3 107	PF07 SynLead 7
P2 108	PF08 ChorusGt	P3 108	PF08 SaxSection
P2 109	PF09 A. Guitar 1	P3 109	PF09 Brass
P2 110	PF10 12strings	P3 110	PF10 Trumpet
P2 111	PF11 A. Guitar 2	P3 111	PF11 Flute
P2 112	PF12 A. Guitar 3	P3 112	PF12 Clav. 1
P2 113	PF13 A. Guitar 4	P3 113	PF13 Clav. 2
P2 114	PF14 A. Guitar 5	P3 114	PF14 Vibe
P2 115	PF15 A. Guitar 6	P3 115	PF15 E. Organ
P2 116	PF16 A. Guitar 7	P3 116	PF16 Accordion
P2 117	PF17 SynGuitar1	P3 117	PF17 E. Piano
P2 118	PF18 SynGuitar2	P3 118	PF18 Harp
P2 119	PF19 SynGuitar3	P3 119	PF19 Koto
P2 120	PF20 SynGuitar4	P3 120	PF20 E. Violin
P2 121**	PF21 SynBass 1	P3 121	PF21 Sitar
P2 122**	PF22 SynBass 2	P3 122	PF22 SynVox
P2 123**	PF23 SynBass 3	P3 123	PF23 Harmonica
P2 124**	PF24 Fretless	P3 124	PF24 Strings

\*\* 1st and 2nd strings produce no sound.

● For details, see the separate performance list.

## THE PLAY MODE

This is the mode you'll normally use when playing the MIDI guitar system. In the PLAY mode you can select a performance memory group and any of the performance memory locations it contains. The available performance memory groups and their memory ranges are listed below.

PERFORMANCE MEMORY GROUP	RANGE
INT (Internal RAM)	1 — 64
CRT (External RAM4 data cartridge)	1 — 64
P1 (TX802 preset performance data)	101 — 164
P2 (TX81Z preset performance data group A)	101 — 124
P3 (TX81Z preset performance data group B)	101 — 124



### What is a Performance Memory?

A performance memory is a memory location inside the G10C or in an external RAM4 data cartridge (optional) plugged into the G10C that contains data pertaining to how signals from the G10 Guitar MIDI Controller are to be interpreted by the G10C Guitar MIDI Converter and converted to MIDI messages which will be transmitted to your tone generator. If you've already followed the instructions in the preceding "PLAY NOW — LEARN THE DETAILS LATER" section, you've already made use of the preset performance memory data provided for the TX802 or TX81Z voice sets.


At first, the G10C's 64 internal memory locations contain "initial" performance data which must be edited by you to match the voices you will be using. The various performance parameters provided can be edited by you to create precisely the type of response and operation you need, and then stored in one of the internal memory locations or a RAM4 data cartridge. The parameters and how they can be edited are described in the following section — "THE EDIT MODE."


Each performance memory location corresponds to a voice on your tone generator, so for each voice you can have different tunings, different types of pitch bend and many other important parameters. Each time you select a new performance memory using the performance selectors on the G10 or the DATA ENTRY buttons on the G10C, the G10C transmits a MIDI program change number to your tone generator, thus selecting the corresponding voice.

### Selecting a Performance Memory Group

To select a performance memory group or memory location the G10C must first be in the PLAY mode. If it is not already in the PLAY mode when initially turned ON (indicated by the fact that the indicator LED in the PLAY button is ON), activate the PLAY mode by pressing the PLAY button. Any of the 4 available "internal" performance memory groups can then be selected by pressing the PARAMETER  (INT) button on the G10C. Each time the PARAMETER  button is pressed, the following performance memory groups are called in sequence:

```
INT (internal) → P1 (TX802 presets) → P2 (TX81Z presets A)
→ P3 (TX81Z presets B) → INT . . . .
```

A cartridge performance memory group can be called — if a data cartridge that has been properly formatted and loaded with performance data is plugged into the G10C cartridge slot\* — by pressing the PARAMETER  (CRT) button.

If a performance data cartridge is not plugged in and you attempt to select a cartridge performance group, the "CRT not ready!" error message will appear on the LCD display. If you attempt to select a cartridge performance group with the wrong type of cartridge plugged in (i.e. a TX81Z voice cartridge), the "CRT format error!" message will appear. Simply press the PARAMETER  (INT) button to remove the error message and return to the INT performance memory.

\* Refer to "5. CARTRIDGE FORMAT" on page 28 for instructions on formatting a blank RAM4 cartridge for storage of G10C performance data. Refer to "THE STORE MODE" on page 22 for instructions on storing G10C performance data to the cartridge.

**Note:**

Yamaha RAM4 data cartridges that can be used for external storage of G10C performance data are available from your Yamaha dealer.

### Selecting Performance Memory Locations

Once the desired performance memory group has been selected, any of the performance memory locations it contains can be selected by pressing either the performance selector buttons on the G10, or the DATA ENTRY DEC and INC buttons on the G10C. The left selector button on the G10 (from the player's viewpoint) or the DATA ENTRY INC button on the G10C increases the selected program number by 1, and the right button on the G10 or the DATA ENTRY DEC button on the G10C decreases the program number by one. Either button can be held down for continuous incrementing or decrementing.

### MIDI Memory Location Selection

MIDI program change numbers received at the G10C MIDI IN connector can also be used to select memory locations. In this case the G10C MIDI receive channel must be set to match the transmit channel of the transmitting device (a Yamaha MFC05 MIDI Foot Controller, for example).

Refer to "System 1: Receive Channel" on page 32.

The relationship between received MIDI program change numbers and the memory location selected is shown in the chart below.

Mode	Program Number	Performance Number
INT/CRT	1 ~ 64 65 ~ 128	INT1 ~ 64 CRT1 ~ 64*
P1	1 ~ 64 65 ~ 128	101 ~ 164 101 ~ 164
P2, P3	1 ~ 24 25 ~ 48 :	101 ~ 124 101 ~ 124 Internal memory (101 ~ 124) is accessible.

\* When not using a cartridge, only the internal memory (INT1 ~ 64) is accessible.

### Footswitch Memory Location Selection

Yamaha FC4 or FC5 footswitches plugged into the rear-panel "-1" and "+1" jacks can also be used to select memory locations. Press the "+1" footswitch to increase the memory location number by one (hold to increment continuously), on the "-1" footswitch to decrease the memory location number by one (hold to decrement continuously).



## THE EDIT MODE

The edit mode is selected by pressing the EDIT button, and is used to edit performance parameters for the performance memory location previously selected in the PLAY mode. When the EDIT mode is selected, the performance data for the currently selected performance memory location is called into a special "performance edit buffer" in which the actual editing takes place. Edited data must then be stored into one of the performance memory locations using the STORE mode (see "THE STORE MODE" on page 22).





### General Parameter Editing Procedure

These are the steps you'll need to follow to edit any of the available parameters.

1. Select the performance memory group and the performance memory location you wish to edit as described in "THE PLAY MODE" section (page 13).
2. Press the EDIT button while in the PLAY or UTILITY mode to enter the edit mode (if you press EDIT while in the CHAIN mode, the CHAIN EDIT mode will be selected — refer to "THE CHAIN MODE" on page 35). The basic edit mode display format looks like this:

```
EDIT 1 Program Number >Common
INT 1 > 1 > 1 > 1 > 1 > 1
```

6 5 4 3 2 1

3. Use the PARAMETER  and  buttons to select the parameter you wish to edit. Holding down either of the PARAMETER buttons causes continuous scrolling of the parameters in the specified direction. The parameters will be described in detail below.
4. If the selected parameter permits editing for each individual string, the CURSOR  and  buttons can be used to place the flashing block cursor before the parameter of the string to be edited. The corresponding string numbers are printed below the LCD display. If the cursor is placed before the "Common" prompt on the display, the data for all strings will be edited simultaneously. Some parameters do not permit individual string editing, and no flashing cursor will appear.

```
EDIT 1 Program Number ■Common
INT 1 > 2 > 2 > 2 > 2 > 2
```

6 5 4 3 2 1

```
EDIT 1 Program Number >Common
INT 1 > 1 > 1 ■ 2 > 1 > 1 > 1
```

6 5 4 3 2 1

There are a few exceptions to this general pattern, such as the Performance Name function in which the cursor is used to determine the character position to be edited in the performance name. These exceptions will be discussed in the appropriate parameter descriptions.

5. Use the DATA ENTRY DEC and INC buttons to change the value or setting of the selected parameter. As soon as any parameter is edited, the INT, CRT, P1, P2 or P3 display at the bottom left-hand corner of the LCD changes to lower case (int, crt, p1, p2 or p3) to indicate that a parameter has been changed.

```
EDIT 1 Program Number ■Common
int 1 > 5 > 5 > 5 > 5 > 5
```

6 5 4 3 2 1

6. At this point it is possible to compare the effect of the edited parameter with that of the original parameter value by pressing the EDIT button. This activates the COMPARE mode in which the original value is temporarily restored. The flashing cursor appears over a letter "C" on the bottom line of the display to indicate that the COMPARE

mode is active. Return to your edited parameter value by pressing the EDIT button again. The letter "C" will then disappear from the display.

- The changes are stored in a temporary "edit buffer" and will be lost if you return to the PLAY mode and select another performance memory location. If you wish to keep parameter changes so that they will be recalled whenever that performance memory location is selected, it is necessary to use the STORE function to store the edited performance data in one of the G10C's INT performance memory locations or a CRT memory (this could be the current performance memory or a different one). See "THE STORE MODE" on page 22.

### Descriptions and Use of the Edit Mode Parameters

#### 1. PROGRAM NUMBER

*Program Number Range: 1 — 128*

```

EDIT 1   Program number   >Common
INT 64   > 15 > 15 > 3 > 3 > 21 > 21
  
```

This parameter determines the MIDI program change number transmitted by the G10C when the current performance memory location is selected. The MIDI program change numbers are used to automatically select the appropriate voice on your tone generator for each G10C performance memory location. Normally, the program change numbers will be set to the same number as the G10C performance memory number, so that when you select performance memory number 1, for example, voice (or performance) number 1 will also be selected on the tone generator. The program numbers can be changed if necessary so that, for example, voice (or performance) number 32 will be automatically selected on the tone generator when you select G10C performance memory number 16. Unless you will be using different tone generators for each string, the program numbers for each string should be set to the same value. Simply place the cursor before the "Common" prompt (this is where it is when the parameter is first called), and use the DATA ENTRY DEC and INC buttons to set the program change numbers for all strings simultaneously.

#### 2. TRANSMIT CHANNEL

*MIDI Transmit Channel Range: 1 — 16*

```

EDIT 2   Transmit channel
INT 64   > 6 > 5 > 4 > 3 > 2 > 1
  
```

Normally, the data for each G10 string will be transmitted on a different MIDI channel. The TX802 and TX81Z FM Tone Generators allow up to 8 different voices to be controlled on different MIDI channels. Each string on the G10 controls a different voice, even though the voices may be of the same performance "set." This parameter allows the MIDI transmit channels for each string to be changed so you can assign any string to any voice, assuming that the voice you wish to control by a particular string is set up to receive on the corresponding MIDI channel number. Refer to your tone generator's operation manual for instructions on setting the MIDI receive channels for different voices.

Of course, it is also possible to assign several strings to the same MIDI transmit channel number and voice. If you do this, however, all control data associated with one of the strings will affect all others assigned to the same channel.

#### 3. VOLUME

*Volume Range: 0 — 99*

```

EDIT 3   Volume           >Common
INT 64   > 99 > 99 > 99 > 99 > 99 > 99
  
```

The VOLUME parameter makes it possible to independently alter the volume of sound produced by each string, so you can set up the ideal overall string balance for each voice or match the volume of different performance memories. The volume range is from 0 to 99, with a setting of 99 producing maximum volume. The minimum setting of 0 produces no output from the corresponding string.

#### 4. OPEN TUNING

*Open Tuning Range: C-2 – G#6*

```
EDIT 4   Open tuning       >Common
INT 64   > E2 > A2 > D3 > G3 > B3 > E4
```

This parameter is used to tune the “open” (unfretted) pitch of each individual string. The normal guitar tuning is E2, A2, D3, G3, B3 and E4 for strings 6 through 1. Using this parameter you can tune the G10 to an open chord or any other open tuning that you would use on a normal guitar.

#### 5. TRIGGER MODE

*Trigger Mode Settings: Normal, Left Hand*

```
EDIT 5   Trigger mode
INT 64   Normal
```

In the **Normal** trigger mode the G10 responds properly to normal guitar playing technique: i.e. fretting with the left hand and producing sound by picking with the right hand. The **Left Hand** mode, however, causes notes to be produced as soon as they are fretted, making it possible to play without actually picking. Both the left and right hands can be used to fret notes on the G10 neck in the Left Hand trigger mode, allowing a range of new and versatile playing techniques.

#### 6. CAPOTASTO

*Capotasto Range: 0F – 23F*

```
EDIT 6   Capotasto
INT 64   OF
```

In the same way that you would use a “capo” to raise the overall pitch of a normal guitar, the CAPOTASTO parameter can be set at any fret from 0 to 23 to raise pitch and make it simple to play in a transposed key. If for example, you set the CAPOTASTO parameter to 2F (2nd fret), fingering and playing what would normally be an open C chord at the 3rd fret would produce a D chord. All fret positions below the fret at which the “capo” is set produce the pitch of the fret at which the capo is set. The capo is “OFF” when set to 0F.

#### 7. LEGATO

*Legato Settings: On, Off*

```
EDIT 7   Legato
INT 64   On
```

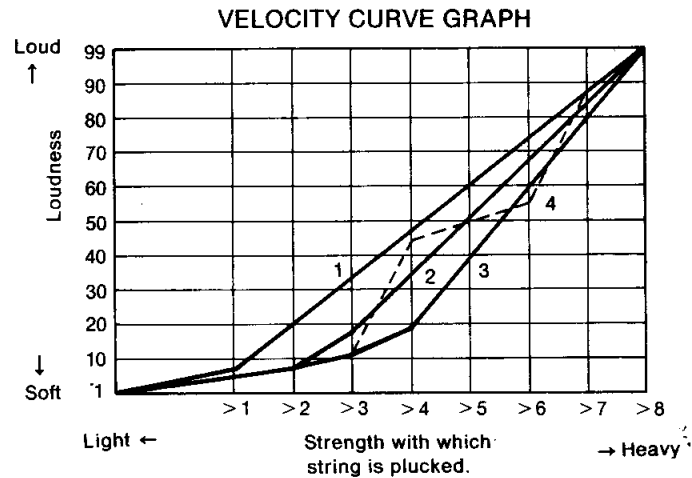
When the LEGATO parameter is ON, sliding your finger across several frets on a single string causes a smooth, natural guitar-like slide. When LEGATO is turned OFF, the pitch at each fret is heard separately, producing more of a “glissando” type effect. Legato OFF can only be used when the tone generator is set to the MONO mode.

#### 8. VELOCITY CURVE ASSIGN

*Velocity Curve Settings: 1, 2, 3, 4, U1, U2, U3, U4*

```
EDIT 8   Vel. crv assign   >Common
INT 64   > 1 > 1 > 1 > 1 > 1 > 1
```

This parameter is particularly important for achieving the optimum response from each of the G10’s strings. A velocity curve is essentially a relationship between the strength with which a string is picked and the output level it produces. Four preset velocity curves are provided, and the relationship between picking strength and output for all four is shown in the graph below.



Preset velocity curves 1 through 4 are indicated by the numbers 1 through 4 on the G10C display. Four "user" velocity curve memories are also provided, and these can be programmed by you using the VELOCITY CURVE EDIT utility function described on page 33. The user velocity curves are indicated by U1, U2, U3 or U4 on the G10 display.

## 9. SENSITIVITY OFFSET

*Sensitivity Offset Range: -7 - +7*

```
EDIT 9   Sensitivity offset
INT 64                                     +0
```

The overall sensitivity of the G10 can be adjusted by using the sensitivity control on its body. If you require different sensitivity for different voices, however, the SENSITIVITY OFFSET parameter lets you adjust individual voice sensitivity over a wide range. A setting of +0 corresponds to normal sensitivity. Minus settings (-1 - -7) increase the sensitivity of the current performance memory, and plus settings (+1 - +7) decrease sensitivity.

## 10. MUTE

*Mute Range: 1 - 8*

```
EDIT 10   Mute                               >Common
INT 64    > 4 > 4 > 4 > 4 > 4 > 4
```

By fretting a note just lightly and picking in the normal manner, an effect similar to muted picking on a normal guitar can be achieved. The MUTE parameter determines the sensitivity of the muting effect. At the maximum setting of 8, muting can be accomplished by releasing pressure on the fret just slightly. At the minimum setting of 1, muting will only occur if very slight pressure is applied to the string at the desired fret. The mute level of the open strings is fixed at the maximum level of 8.

### Note:

Harmonics can not be produced on the G10 by lightly touching the strings at a fret position.




## 11. PERFORMANCE NAME

```
EDIT 11   Performance name
INT 63    <E. Guitar 1>
```

The PERFORMANCE NAME parameter makes it possible to create a name or title for the current performance memory location which will be displayed on the G10C LCD whenever that performance memory location is selected. Performance names can be up to 10 characters long. When the PERFORMANCE NAME parameter is selected, the flashing cursor appears over the first letter of the current performance name on the bottom line of the display. The character under the cursor can be changed by using the DATA ENTRY DEC and INC buttons to scroll through the list of available characters. Holding the DATA ENTRY DEC or INC button down causes continuous scrolling through the character list in the specified direction.

The available characters are:



```
[SPACE]! " # $ % & ' ( ) * + , - . /
0 1 2 3 4 5 6 7 8 9 : ; < = > ?
@ A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z [ \ ] ^ _
` a b c d e f g h i j k l m n o
p q r s t u v w x y z { | } → ←
```

When the first character of your name has been selected, press the CURSOR  button to move the flashing cursor to the next character position and select the next character as described above. Continue this process until your name is complete. The CURSOR  and  buttons can be used to move the cursor to any character position for editing.

## 12. FUNCTION?

```
EDIT 12           Function?
INT 64
```

This is really not a parameter, but a prompt asking you if you wish to access the 5 available edit functions. The edit functions pertain to the G10's string bend response, controller arm and controller wheel functions, and the operation of a foot switch and foot controller connected to the G10C FOOT SW and FOOT CONT jacks.

If you wish to access these functions, press the DATA ENTRY INC (YES/ON) button from the "Function?" prompt. The functions can then be accessed using the PARAMETER  and  buttons.

### ■ Function 1: Pitch Bend Send Range

```
ED. FUNC 1 Pitch bend send range
INT 64           12
```

For the most natural string bend operation, this parameter should be set to the same value as the pitch bend parameter of the corresponding tone generator voice. The Pitch Bend Send Range values go from 1 to 12, but in this case the values do not have a specific correspondence to pitch. A setting of 1 will create the maximum possible pitch bend (determined by the tone generator pitch bend setting) with only a slight string movement. A setting of 0, on the other hand, will result in no pitch bend even if a string is bent or the controller arm is operated. At a setting of 12 only a small amount of pitch bend will be produced even with a large string movement. Use the DATA ENTRY DEC and INC buttons to set the desired pitch bend range value.

### ■ Function 2: Arm (Pitch Bend Max/Control Name)


```
ED. FUNC 2 Arm >P. bend max >Control name
P1 101           +/- 6           Off
```

#### (1) Pitch Bend Max

When this function is first called, the flashing cursor will be in front of the "P.bend max" prompt. The normal function of the controller arm is pitch bend — just as in a standard electric guitar. This parameter (**P.bend max**) allows setting the maximum amount of pitch bend produced by maximum upward or downward movement of the controller arm. The "**P.bend max**" parameter range is from 0 to 12. Each increment corresponds to approximately 100 cents (100 cents = one semitone). A setting of 0 effectively turns the arm OFF and results in no pitch bend. The way the pitch bend effect responds depends on the pitch bend range setting of the tone generator and the G10C Pitch Bend Send Range setting. If this parameter is set to a value higher than the tone generator's pitch bend range, no increase in the pitch bend range will occur.

The adjacent **Control Name** parameter is automatically set to "Off" when the "**P.bend max**" parameter is set to any value other than 0.

#### (2) Control Name

Press the CURSOR  button to move the flashing cursor to the "**Control name**" prompt if you wish to assign a function other than pitch bend to the controller arm. Use the DATA ENTRY DEC and INC buttons to

select one of the **Control Name** settings listed below. Setting the **Control Name** parameter to anything except OFF automatically resets the maximum pitch bend value to  $\pm 0$ .

- **Off:** No MIDI control change data will be transmitted, thus the arm will either control pitch or have no effect if “**P.bend max**” is set to  $\pm 0$ .
- **Mod. wheel:** The arm will function in the same way as a modulation wheel on a synthesizer, controlling the depth of modulation according to the modulation settings for the corresponding tone generator voice.
- **Breath ctrl:** Operating the arm will transmit the same type of data as produced by the Yamaha breath controller, controlling volume and/or timbre according to the breath controller settings for the corresponding tone generator voice.
- **Porta. time:** The position of the arm sets the portamento time — i.e. the length of an automatic “slide” produced between two consecutive notes played on the same string. The appropriate portamento settings must be made for the corresponding tone generator voice.
- **Volume:** This setting allows the controller arm to be used for volume control. When this setting is selected, the volume produced by the position of the arm is added to that produced by the current G10 volume wheel setting. If a foot controller is plugged into the G10C FOOT CONT jack, and is assigned to volume control operation, the volume settings of all three controllers — arm, volume wheel and foot controller — are added.
- **Pan:** The position of the arm determines the position of the sound in the stereo sound field if a tone generator with MIDI stereo panning capability is used.


#### ■ Function 3: Wheel (Direction/Control Name)

```
ED. FUNC 3 Wheel >Direction >Control name
P1 101                Up          Mod. wheel
```

#### (1) Direction

When this function is first called, the flashing cursor will be in front of the “**Direction**” prompt. The normal direction setting is “Up,” so that the effect of the controller wheel increases as it is rolled up towards the player. In the alternate setting of “Down,” the effect of the controller wheel increases as it is rolled down away from the player. Use the DATA ENTRY DEC and INC button to select the desired setting.

#### (2) Control Name


Press the CURSOR  button to move the flashing cursor to the “**Control name**” prompt if you wish to assign a different function to the controller wheel. Use the DATA ENTRY DEC and INC buttons to select one of the **Control Name** settings listed below.

- **Mod. wheel:** The controller wheel will function in the same way as a modulation wheel on a synthesizer, controlling the depth of modulation according to the modulation settings for the corresponding tone generator voice.
- **Porta. time:** The position of the controller wheel sets the portamento time — i.e. the length of an automatic “slide” produced between two consecutive notes played on the same string. The appropriate portamento settings must be made for the corresponding tone generator voice.
- **Pan:** The position of the controller wheel determines the position of the sound in the stereo sound field if a tone generator with MIDI stereo panning capability is used.

#### ■ Function 4: Foot Switch

```
ED. FUNC 4 Foot switch
INT 64                               Sustain sw.
```

This parameter determines the function of a footswitch (Yamaha FC4 or FC5) connected to the G10C's rear-panel FOOT SW jack. Use the DATA ENTRY DEC and INC buttons to select the desired function.

- **Sustain sw:** The footswitch controls sustain ON/OFF. Press for sustain, release  for sustain OFF.

- **Porta. sw:** The footswitch controls portamento ON/OFF. Press for portamento, release to turn portamento OFF.

### ■ Function 5. Foot Controller

ED. FUNC 5 Foot controller
INT 64 Foot ctrl

This parameter can be used to assign a foot controller (Yamaha FC7) plugged into the G10C's rear-panel FOOT CONT jack to any of the functions listed below. Use the DATA ENTRY DEC and INC buttons to select the desired function.

- **Mod. wheel:** The foot controller will function in the same way as a modulation wheel on a synthesizer, controlling the depth of modulation according to the modulation settings for the corresponding tone generator voice.
- **Foot ctrl:** Operating the foot controller will transmit standard MIDI foot controller data, controlling any parameter which the corresponding voice is set up to respond to.
- **Porta. time:** The position of the foot controller sets the portamento time — i.e. the length of an automatic “slide” produced between two consecutive notes played on the same string. The appropriate portamento settings must be made for the corresponding tone generator voice.
- **Volume:** This setting allows the foot controller to be used for volume control. When this setting is selected, the volume produced by the position of the foot controller is added to that produced by the current G10 volume wheel setting. If the arm controller is assigned to volume control, the volume settings of all three controllers — arm, volume wheel and foot controller — are added.
- **Pan:** The position of the foot controller determines the position of the sound in the stereo sound field if a tone generator with MIDI stereo panning capability is used.

#### Note:

If more than one controller is set to the same function (other than volume), the function applies to the last controller operated.

## THE STORE MODE

Once you've edited any of the G10C's performance parameters, it is necessary to STORE the new parameters in either an internal (INT) or cartridge (CRT) performance memory location otherwise the changes you have made will be lost as soon as you select a new performance memory location in the PLAY mode. The performance store function can be accessed directly from the EDIT, PLAY or CHAIN modes, but not from the UTILITY mode.

### Note:

To store to a cartridge memory location a properly formatted Yamaha RAM4 data cartridge must be plugged into the G10C cartridge slot, and the cartridge MEMORY PROTECT switch must be set to OFF. Refer to "5. CARTRIDGE FORMAT" on page 28 for instructions on formatting a new RAM4 cartridge for performance memory storage.

1. If you intend to store to an internal (INT) memory location, the G10C memory protect function must first be turned OFF. Refer to "1. MEMORY (PROTECT/INIT/RECALL)" on page 24 for instructions.
2. Press the STORE button to enter the store mode. Note that the STORE function cannot be directly accessed from the UTILITY mode\*. If you are in the UTILITY mode (after you've turned memory protect OFF, for example), first press either the CHAIN, PLAY or EDIT button and then press STORE.

```
STORE   >Store to      >Execute?
INT  1   INT  10
```

3. While the flashing cursor is located in front of "Store to" on the display, select the memory location to which you intend to store the edited data. Initially, the "Store to" location will be set to the memory location in which the parameters were edited, allowing you to store the data back into the original location without having to go through the selection process.

To select an internal memory location, press the PARAMETER ◀ (INT) button and then use the DATA ENTRY DEC and INC buttons to select the desired memory location number.

To select a cartridge memory location, press the PARAMETER ▶ (CRT) button and then use the DATA ENTRY DEC and INC buttons to select the desired memory location number.

4. Press the CURSOR ▶ button to move the cursor to the "Execute?" prompt.
5. Press the DATA ENTRY INC (YES/ON) button. The G10C will respond with "Are you sure?" Press the DATA ENTRY INC (YES/ON) button again to confirm and execute the STORE operation. If the STORE operation is successful, "Completed!" will appear on the display.

\* The STORE mode can be accessed from the UTILITY mode in one isolated case: If the Velocity Curve Edit utility is selected. In this case, however, the VELOCITY CURVE STORE function will be activated. Refer to "System 2: Velocity Curve Edit" on page 33.

### STORE Error Messages

If things are not set up properly when you attempt to execute a STORE operation, one of the following error messages will appear.

#### Memory protected!

You have attempted to STORE to an internal memory location without first turning the G10C memory protect function OFF.

#### CRT not ready!

You have attempted to store to a cartridge memory location but a cartridge is not plugged into the G10 cartridge slot, or the cartridge is not properly inserted.



**CRT format error!**

You have attempted to store to a cartridge that is not properly formatted for G10C performance data.

**CRT bank unavail!**

You have attempted to store to a bank that is not available on the cartridge.

**CRT protected!**

You have attempted to store to a cartridge memory location but the cartridge MEMORY PROTECT switch is set to ON.

**CRT store error!**

An undefined error has occurred during the cartridge store operation. Try again or try a different cartridge.

## THE UTILITY MODE

The UTILITY mode contains a range of utility functions including jobs like memory management, cartridge formatting and others. Since most of the UTILITY mode functions initiate some form of immediate action, they are not “memorized” in the same way that the edit parameters are. The exceptions to this are a group of four SYSTEM SETUP parameters available through the UTILITY mode.

The UTILITY mode is activated by pressing the UTILITY button. Its various functions and parameters are accessed by using the PARAMETER ◀ and ▶ buttons, and changes are made in the same way as described for the edit parameters (See “General Parameter Editing Procedure” on page 15).

### 1. MEMORY (PROTECT/INIT/RECALL)

```

UTIL  1  >Protect >Initialize? >Recall?
Memory      Off
  
```

This utility group includes all the functions you need for memory management.

#### PROTECT

With the cursor located just before “**Protect**” on the display, use the DATA ENTRY DEC and INC buttons to turn the memory protect function ON or OFF. Memory protection must be turned OFF whenever you wish to store edited performance data to the internal memory, or perform any other operation that affects the internal memory. Memory protect is automatically turned ON when power to the G10C is initially turned ON.

#### INITIALIZE

This function initializes the G10C performance edit buffer, setting all parameters in the buffer to their “initial” values. The initialized parameter values are given in the chart below. From the “**Protect**” function, press the CURSOR ▶ button once to move the cursor to “**Initialize?**” on the display. Press the DATA ENTRY INC (YES/ON) button. The G10C will respond with “Are you sure?” Confirm and execute the initialization function by pressing DATA ENTRY INC (YES/ON) a second time. “Completed!” will appear when the initialization has been successful.

#### Initial Parameter Data

Parameter	String	6	5	4	3	2	1
Program number		1	1	1	1	1	1
Transmit channel		6	5	4	3	2	1
Volume		99	99	99	99	99	99
Open tuning		E2	A2	D3	G3	B3	E4
Trigger mode		Normal					
Capotasto		OFF					
Legato		On					
Velocity assign		1	1	1	1	1	1
Sensitivity offset		0					
Mute		4	4	4	4	4	4

Parameter	
Performance name	Init perf
Pitch bend range	12
Arm(P.bend max)	+/- 4
Arm(Control name)	Off
Wheel(Direction)	Up
Wheel(Control name)	Mod.wheel
Foot switch	Sustain sw.
Foot controller	Foot ctrl

#### RECALL

The Memory Recall function can be extremely useful if you make a mistake while editing the performance parameters. By using **Recall**, you can restore all the contents of the performance edit buffer prior to the last edit operation.

Move the cursor to the right of “**Recall**” on the display using the CURSOR buttons. Press the DATA ENTRY INC (YES/ON) button. The G10C will respond with “Are you sure?” Confirm and execute the recall function by pressing DATA ENTRY INC (YES/ON) a second time. “Completed!” will appear when the recall operation has been successful.

## 2. DISPLAY VELOCITY PEAK

```

UTIL  2   Velocity peak   █6th
█----- Peak  0
  
```

A detailed description of the use of this function was given in.

“5. Use the DISPLAY VELOCITY PEAK Function to Set the G10C Gain Controls” on page 9.

The velocity peak display makes it easy to set the G10C’s front panel GAIN controls to their optimum settings. When initially called, the cursor will be located before “6th” on the display, indicating that the G10C is ready to test the velocity level of the 6th string. If you pick the 6th string on the G10 the hardest you will pick it while playing, the peak bar-graph meter will move to the right and the detected peak level will be shown after “Peak” on the display. The GAIN control for the 6th string should be adjusted so that a peak reading of “99” is obtained when the 6th string is picked. The same applies to all other strings and GAIN controls. The DATA ENTRY DEC and INC buttons are used to select the string to set.

## 3. TX SETUP

```

UTIL  3   >Data   >Execute?
TX Setup   802all
  
```

This utility function allows setting up a TX802 or TX81Z tone generator to use preset voices provided by the G10C. TX setup operations can be broadly divided into two types:

1. Transferring voice, performance and system data to the tone generator from the G10C for a complete automatic system setup.
2. Modifying only some of the TX81Z or TX802 parameters for voices being played via the G10.

With the flashing cursor located before “Data” on the display, the DATA ENTRY DEC and INC buttons can be used to select the desired setup data: 802all, 81Zall (A), 81Zall (B), 802int or 81Zint.

### 802 all

802all transmits 64 performance data sets (voice + performance) and system data to a TX802 tone generator.

Prior to transmitting this data make sure that:

- The G10C memory protect function is OFF (UTIL 1).
- The G10C device number is set to an appropriate value — usually 1 (UTIL 10).
- Any TX802 data that you wish to keep has been back up by storing to cartridge, etc.

### ■ Preparing the TX802 for 802 all Setup

1. Press the TX802 SYSTEM SETUP button, and then the number-8 PARAMETER select button.
2. Press the TX802 – 1 (OFF) button to turn the memory protect function OFF.

```

SYSTEM8> Internal memory protect   ► off
  
```

3. Press the TX802 number-4 PARAMETER SELECT button.

```

SYSTEM4> System exclusive device number   ► all
  
```

4. Make sure the device number is set to either “all” or “1” (use the +1 (ON) and/or –1 (OFF) buttons to set the device number if necessary).
5. Press the PERFORMANCE SELECT button to return to the performance display.

**81Z all (A) and 81Z all (B)**

81Zall (A) and 81Zall (B) transmit 24 performance data sets (voice + performance) and system data to a TX81Z tone generator.

Prior to transmitting this data make sure that:

- The G10C memory protect function is OFF (UTIL 1).
- The G10C device number is set to an appropriate value — usually 1 (UTIL 10).
- Any TX81Z data that you wish to keep has been back up by storing to cassette, etc.

**■ Preparing the TX81Z for 81Z all Setup**

1. Press the TX81Z PLAY/PERFORM button to call the “PLAY SINGLE” display.

```
PLAY SINGLE
101 Grand Piano
```

2. Press the UTILITY button, use the PARAMETER◀ and ▶ buttons to locate the memory protect function, and press the DEC (OFF) button to turn memory protection OFF.

```
UTILITY MODE
Mem Protection → off
```

3. Press the PARAMETER◀ button once to call the display shown below.

```
UTILITY MODE
Midi Control?
```

4. Press the INC (YES) button to call the display shown here.

```
UT MIDI CONTROL
Basic Rcv. Ch=omn ← *
```

- \* In the TX81Z the “Basic Rcv. Ch” represents the MIDI receive channel number and device number.
5. If the “Basic Receive Ch” is not equal to either “omn” (omni) or “1,” use the DEC (-1) and/or INC (+1) buttons to set it to one of these values.
  6. Press the PARAMETER▶ button 7 times to call the display shown below.

```
UT MIDI CONTROL
Exclusive: on
```

MIDI exclusive messages can be received when “Exclusive” is “on.”

7. If this parameter is “off,” press the INC (ON) button to turn it “on”.
8. Press the PLAY/PERFORM button to return to the “PLAY SINGLE” display.

**802 int**

802int performs a “parameter change transmission” which re-writes TX802 internal voices (I01 — I64) for use with the G10. (transmission takes about 25 seconds).

Prior to transmitting this data make sure that:

- The G10C memory protect function is OFF (UTIL 1).
- The G10C transmit channels for all 64 INT performance memories are set to 6 through 1 for the corresponding strings (EDIT 2).
- The G10C device number is set to an appropriate value — usually 1 (UTIL 10).
- Any TX802 data that you wish to keep has been backed up by storing to cartridge, etc.

**■ Preparation for 802 int Setup**

In addition to the steps outlined in “Preparing the TX802 for 802 all Setup” (page 25), perform the following.

1. Press the TX802 **UTILITY** button, then press the number-5 **PARAMETER SELECT** button to call the following display (the “5” button alternately calls two displays).

```
UTIL5> Initialize perf. edit buffer?
```

2. Press the **+1 (YES)** button. The TX802 will respond with “Are you sure?” Press the **+1 (YES)** button a second time.
3. When “Completed!” appears on the display, press the **VOICE SELECT** button.
4. Press the **▶** button once to move the cursor one position to the right.

```
VOICE SELECT          <Strings 1 > Rch=1
 I 01  <-----▶
```

5. Press the “1” button on the numeric pad (the grey buttons), then press the **ENTER** button (“I01” will appear on the display).

```
VOICE SELECT          <Strings 1 > Rch=1
 I 01  I 01 <-----▶
```

6. Set voices 3 — 6 to “I01” in the same way.
7. Press the **PERFORMANCE EDIT** button, then the number-1 **PARAMETER SELECT** button.
8. Using the **◀** and **▶** buttons to move the cursor to the appropriate positions on the display, use the **+1 (ON)** and **-1 (OFF)** buttons to set the **MIDI** channels as shown below.

```
PERF. EDIT1> Receive channel (<Altr asgn)
          6     5     4     3     2     1  <--- <---
```

9. When “Completed!” appears on the display, press the **SYSTEM SETUP** button and then the number-3 **PARAMETER SELECT** button to call the display shown below (the number-3 **PARAMETER SELECT** button alternately selects 3 displays).

```
SYSTEM3> Perform select channel
          by program change           ▶1
```

10. Press the **-1 (OFF)** button to turn the parameter “off.”.

**81Z int**

81Zint performs a “parameter change transmission” which re-writes TX81Z internal voices (I01 — I32) for use with the G10. (transmission takes about 12 seconds).

Prior to transmitting this data make sure that:

- The G10C memory protect function is **OFF** (UTIL 1).
- The G10C transmit channels for all 64 INT performance memories are set to 6 through 1 for the corresponding strings (EDIT 2).
- The G10C device number is set to an appropriate value — usually 1 (UTIL 10).
- Any TX81Z data that you wish to keep has been backed up by storing to cassette, etc.

**■ Preparation for 81Z int Setup**

In addition to the steps outlined in “Preparing the TX81Z for 81Z all Setup” (page 26), perform the following.

1. Press the TX81Z PLAY/PERFORM button to call the performance mode display (as shown below).

```
PF01 AcustcGuit
C01/C01/C01/C01→
```

2. Press the UTILITY button, then locate the display shown below by using the PARAMETER◀ and ▶ buttons.

```
P. UTILITY singl → mono 8
Init Perfrm?
```

3. Press the DEC (OFF) button 4 times to set "singl" in the upper right-hand corner of the display to "mono8."
4. Press the INC (ON) button. The TX81Z will respond with "Are you sure?" Press the INC (ON) button a second time.

#### Executing TX Setup

When the desired data has been selected and the necessary preparation has been taken care of, press the G10C cursor ▶ button to move the cursor to "Execute?" on the display and press the INC (ON) button. The G10C will respond with "Are you sure?". Press the INC (ON) button a second time to actually execute the TX SETUP operation.

#### Note:

When "802all" or "81Zall" are executed, the G10C automatically enters the P1 or P2 play mode and the tone generator performance memory locations can be selected.

When "802int" or "81Zint" are executed, the G10C automatically enters the INT play mode and the tone generator voices can be selected.

## 4. GUITAR RESET

```
UTIL 4           Execute
Guitar reset  OK  OK  OK  OK  OK  OK
```

6 5 4 3 2 1

The GUITAR RESET function completely resets the G10 Guitar MIDI Controller and performs a test for proper operation of each string. Press the DATA ENTRY INC (YES/ON) button in response to the "Execute?" prompt to execute the reset function. If all strings check out OK, "OK" will be displayed above each string number on the G10C display. If a fault is detected in the operation of any string, "NG" will be displayed above the corresponding string number. "NG" errors can be caused by something touching the strings during the reset operation, a dirty or nicked string, or a string that is not appropriate for use on the G10 (wound strings, for example). Faulty strings must be replaced before normal operation can be resumed.

The GUITAR RESET function also checks all G10 control signals. If a control signal is found to be faulty, the "\*\*\* CAUTION \*\* System error!" message will appear and operation will be halted. If this occurs, you should have the G10 and G10C checked by qualified Yamaha service personnel.

## 5. CARTRIDGE FORMAT

```
UTIL 5  >Type      >Execute?
CRT Format  G10C
```

The CARTRIDGE FORMAT function is used to format blank Yamaha RAM4 data cartridges for storage of G10C data or TX81Z data. Blank RAM4 data cartridges are available at your Yamaha dealer. New cartridges MUST be properly formatted before they can be used by the G10C.

**Note:**

The G10C can be used to transmit and receive voice data between a TX81Z tone generator and a properly formatted RAM4 cartridge plugged into the G10C. See "8. CARTRIDGE TRANSMIT" and "9. CARTRIDGE RECEIVE" on page 30 and 31.

1. Begin by turning the cartridge MEMORY PROTECT switch OFF and plugging the cartridge into the G10C cartridge slot.
2. With the flashing cursor located before "Type" on the display, use the DATA ENTRY INC and DEC buttons to select "G10C" or "TX81Z(VD)" formatting. The latter is the same format used by the DX11 synthesizer.
3. Press the CURSOR  $\triangleright$  button to move the cursor to "Execute?" on the display, and press the DATA ENTRY INC (YES/ON) button. The G10C will respond with "Are you sure?"
4. Press the DATA ENTRY INC (YES/ON) button again to execute the format operation. "Completed!" will be displayed when the format operation has been successfully completed.

If the "CRT protected!" display appears when you attempt to execute the format operation, the cartridge MEMORY PROTECT switch has not been turned OFF. Remove the cartridge, turn the MEMORY PROTECT switch OFF, reinsert, and try again.

If the "CRT not ready!" display appears when you attempt to execute the format operation, a cartridge has not been properly inserted into the G10C cartridge slot. Insert a cartridge and try again.

## 6. CARTRIDGE LOAD

```
UTIL  6   >Bank >Data  >Execute?
CRT Load   1   All
```

This function loads G10C performance from an external cartridge into the G10C's internal memory.

1. Make sure the G10C memory protect function is OFF and insert the cartridge to be loaded into the G10C cartridge slot.

2. With the cursor located before "Bank" on the display, use the DATA ENTRY DEC and INC buttons to set the bank from which data is to be loaded. If you are loading from a RAM4 cartridge, set this parameter to "1."
3. Press the CURSOR  $\triangleright$  button to move the cursor to "Data" on the display.
4. Use the DATA ENTRY DEC and INC buttons to select the data to be loaded:
  - **All:** All performance, utility and chain data will be loaded.
  - **Perf.:** Performance data will be loaded into the 64 INT performance memories.
  - **Util.:** Utility data including the 4 user velocity curve memories will be loaded. Refer to "11. SYSTEM SETUP?" on page 32 or "G10C Parameter Lists" on page 24 for information on loadable utility data.
  - **Chain:** Chain memory data will be loaded. Refer to "THE CHAIN MODE" on page 35 for information on the chain memories.
5. Press the CURSOR  $\triangleright$  button to move the cursor to "Execute?" on the display, and press the DATA ENTRY INC (YES/ON) button. The G10C will respond with "Are you sure?"
6. Press the DATA ENTRY INC (YES/ON) button again to execute the load operation. "Completed!" will be displayed when the load operation has been successfully completed.

If the "Memory protected!" display appears when you attempt to execute the cartridge load operation, turn the G10C memory protect function OFF and try again.

If the "CRT not ready!" display appears when you attempt to execute the cartridge load operation, a cartridge has not been properly inserted into the G10C's cartridge slot.

If the "CRT format error!" display appears when you attempt to execute the cartridge load operation, the wrong type of cartridge (wrong cartridge format) has been inserted into the G10C cartridge slot.

If the "CRT bank unavail!" display appears when you attempt to execute the cartridge load operation, you have selected a cartridge bank which is not available on the cartridge used.

## 7. CARTRIDGE SAVE


```

UTIL  7          >Data  >Execute?
CRT Save        All
  
```

This function is used to save internal G10C performance and other data to a properly formatted RAM4 data cartridge.

1. Make sure the cartridge MEMORY PROTECT switch is OFF and insert the cartridge into the G10C cartridge slot.
2. With the cursor located before "Data" on the display, use the DATA ENTRY DEC and INC buttons to select the data to be saved:

- **All:** All performance, utility and chain data will be saved.
- **Perf.:** Performance data will be saved into the 64 CRT performance memories.
- **Util.:** Utility data including the 4 user velocity curve memories will be saved.
- **Chain:** Chain memory data will be saved. Refer to "THE CHAIN MODE" on page 35 for information on the chain memories.

3. Press the CURSOR  button to move the cursor to "Execute?" on the display, and press the DATA ENTRY INC (YES/ON) button. The G10C will respond with "Are you sure?"
4. Press the DATA ENTRY INC (YES/ON) button again to execute the save operation. "Completed!" will be displayed when the save operation has been successfully completed.

If the "CRT Memory protected!" display appears when you attempt to execute the cartridge save operation, remove the cartridge, turn the MEMORY PROTECT switch OFF and try again.

If the "CRT not ready!" display appears when you attempt to execute the cartridge save operation, a cartridge has not been properly inserted into the G10C's cartridge slot.

If the "CRT format error!" display appears when you attempt to execute the cartridge save operation, the wrong type of cartridge (wrong cartridge format) has been inserted into the G10C cartridge slot.


If the "CRT store error!" display appears when you attempt to execute the cartridge save operation, an undefined error has occurred during the save operation. Try again or try another cartridge.

## 8. CARTRIDGE TRANSMIT

```

UTIL  8          >Bank >Data  >Execute?
CRT Trans      1A   All
  
```

The CARTRIDGE TRANSMIT function transmits data from an external TX81Z (or DX11) format data cartridge to a TX81Z (or DX11) connected to the G10C MIDI OUT connector.

1. Make sure the TX81Z (or DX11) memory protect function is OFF and insert the cartridge to be transmitted into the G10C cartridge slot.
2. With the cursor located before "Bank" on the display, use the DATA ENTRY DEC and INC buttons to set the bank from which data is to be transmitted. If you are using a RAM4 cartridge, set this parameter to "1A" or "1B".
3. Press the CURSOR  button to move the cursor to "Data" on the display.
4. Use the DATA ENTRY DEC and INC buttons to select the data to be transmitted:

- **All:** All data.
- **Voice.:** Voice data.
- **Perf.:** Performance data.
- **SetAL:** Program change table, effect and micro tuning buffer data.
- **SetSY:** System data.
- **SetPC:** Program change table data.
- **SetEF:** Effect data.
- **SetMC:** Micro-tuning buffer data.



5. Press the CURSOR  $\triangleright$  button to move the cursor to "Execute?" on the display, and press the DATA ENTRY INC (YES/ON) button. The G10C will respond with "Are you sure?"
6. Press the DATA ENTRY INC (YES/ON) button again to execute the transmit operation. "Transmitting" will be displayed while the data is being transmitted, and "Completed!" will be displayed when the transmit operation has been successfully completed.

If the "Memory protected!" display appears when you attempt to execute the cartridge transmit operation, turn the G10C memory protect function OFF and try again.

If the "CRT not ready!" display appears when you attempt to execute the cartridge transmit operation, a cartridge has not been properly inserted into the G10C's cartridge slot.

If the "CRT format error!" display appears when you attempt to execute the cartridge transmit operation, the wrong type of cartridge (wrong cartridge format) has been inserted into the G10C cartridge slot.

If the "CRT bank unavail!" display appears when you attempt to execute the cartridge transmit operation, you have selected a cartridge bank which is not available on the cartridge used.

## 9. CARTRIDGE RECEIVE

UTIL 9	Bank
CRT Receive	1A

The CARTRIDGE RECEIVE function receives data which is bulk-dumped from a TX81Z or DX11 and stores it to a properly formatted cartridge inserted into the G10C cartridge slot.

1. Insert a RAM4 cartridge formatted for TX81Z data into the cartridge slot after making sure that its MEMORY PROTECT switch is OFF.
2. Use the DATA ENTRY DEC and INC buttons to select either cartridge bank 1A or 1B (two "banks" of TX81Z or DX11 data can be stored in a single cartridge).

3. Execute a "bulk dump" from the TX81Z or DX11. The G10C will acknowledge each data group as it is received with the following messages:

Voice data received!  
 Perf. data received!  
 SetAL data received!  
 SetSY data received!  
 SetPC data received!  
 SetEF data received!  
 SetMC data received!

If the "CRT protected!" display appears when you attempt to execute the cartridge receive operation, remove the cartridge, turn the MEMORY PROTECT switch OFF and try again.

If the "CRT not ready!" display appears when you attempt to execute the cartridge receive operation, a cartridge has not been properly inserted into the G10C's cartridge slot.

If the "CRT format error!" display appears when you attempt to execute the cartridge receive operation, the wrong type of cartridge (wrong cartridge format) has been inserted into the G10C cartridge slot.

If the "CRT store error!" display appears when you attempt to execute the cartridge receive operation, an undefined error has occurred during the receive operation. Try again or try another cartridge.



## 10. SYSTEM EXCLUSIVE

UTIL 10	>Dev. #	>Data	>Transmit?
Sys. ex.	1	All	

This utility function group sets up the conditions for MIDI SYSTEM EXCLUSIVE data transmission and reception. System exclusive data includes all performance utility and chain data. The "Transmit?" function can be used to immediately transmit (perform a "bulk dump" of) the selected system exclusive data via the MIDI OUT connector. This can be used to transmit G10C data directly to a second G10C unit, to a MIDI Data Recorder such as the Yamaha MDF1, or to a MIDI Sequence Recorder such as the Yamaha QX3.

While the cursor is located before “Dev.#” on the display, the DATA ENTRY DEC and INC buttons can be used to select the desired MIDI device number for the G10C. The device number is the MIDI channel on which all system exclusive data will be transmitted and received. The device number range is OFF, 1 – 16. When “Dev.#” is set to OFF, transmit, receive, TX setup, cartridge transmit and cartridge receive (for TX81Z data) will not function.

### ■ Immediate System Exclusive Data Transmission (Bulk Dump)



1. Press the CURSOR  button to move the cursor to “Data” on the display. The DATA ENTRY DEC and INC buttons can now be used to select the desired data group for immediate transmission as follows:
  - **All:** All performance, utility and chain data will be transmitted.
  - **Perf.:** Performance data will be loaded into the 64 INT performance memories.
  - **Util.:** Utility data including the 4 user velocity curve memories will be transmitted.
  - **Chain:** Chain memory data will be transmitted. Refer to “THE CHAIN MODE” on page 35 for information on the chain memories.
2. When the desired data group has been selected, press the CURSOR  button to move the cursor to “Transmit?” on the display.
3. Press the DATA ENTRY INC (YES/ON) button. The G10C will respond with “Are you sure?”
4. Press the DATA ENTRY INC (YES/ON) button again to confirm and actually begin transmission of the selected system exclusive data. “Transmitting!” will appear on the display while the data is being transmitted, and “Completed!” will appear when transmission has finished.

#### Note:

The device number of the receiving device must be set to the same device number to which the G10C is set.

## 11. SYSTEM SETUP?

```
UTIL 11   System setup?
```

This is not actually a utility mode, but a prompt asking you if you wish to access the 4 available system setup utilities. Press the DATA ENTRY INC (YES/ON) button to access the system setup utilities, and use the PARAMETER  and  buttons to select the desired system setup function.

### System 1: Receive Channel

```
UT. SY 1
Receive channel          omni
```

This utility function sets the G10C MIDI receive channel. The receive channel can be set from 1 to 16, or to OMNI. In the OMNI mode MIDI reception is possible on all channels.

The G10C is capable of receiving MIDI program change and control change messages via its MIDI IN connector. Program change data can be used to select any of the G10C’s performance memory locations. A Yamaha MFC1 MIDI Foot Controller could be connected to the MIDI IN connector, for example, allowing random selection of performance memory locations.

Received MIDI control change data is merged with the G10C’s internally generated data and transmitted via the MIDI OUT connector.

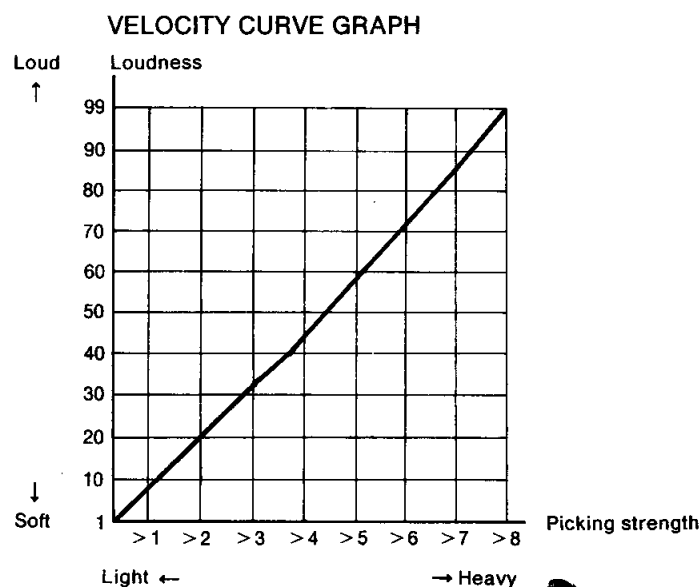
Use the DATA ENTRY DEC and INC buttons to select the desired MIDI receive channel, or the OMNI mode.

## System 2: Velocity Curve Edit

UT. SY 2	>Crv	>1	>2	>3	>4	>5	>6	>7	>8
Vel. crv edit	1	6	19	33	45	59	72	85	99

The Velocity Curve Edit function makes it possible for you to create your own velocity curve and store the original curve in one of the 4 available user velocity curve memories — U1, U2, U3 and U4. A velocity curve is essentially a relationship between the strength with which a string is picked and the output level it produces. Referring to the velocity curve graph below, the 8 values along the horizontal x-axis represent the strength with which the strings are picked, and the values from 0 to 99 along the vertical y-axis represent the loudness of the sound produced (MIDI note-on velocity value). For each of the 8 points on the x-axis, you can program a y-axis value from 0 to 99 as long as each value is at least equal to or higher than the preceding value. That is,  $y_1 \leq y_2 \leq y_3 \leq \dots$  etc.

The numbers from 1 to 8 shown across the top of the G10C display represent the y-axis values that can be programmed for the 8 x-axis picking strengths shown on the graph, and the numbers below them on the bottom line of the display are the currently programmed values.



1. While the cursor is located before "Crv" on the display, use the DATA ENTRY DEC and INC buttons to select the velocity curve you wish to edit. You can select any of the preset curves — 1, 2, 3, or 4 — or one of the curves in the user velocity curve memory — U1, U2, U3 or U4. When you select a curve, its data is called into a special velocity curve edit buffer, from which it must be stored into one of the user curve memories when editing is complete.
2. Press the CURSOR button to move the cursor to "1" on the display.
3. Use the DATA ENTRY DEC and INC buttons to set the desired loudness value for the x1 point.
4. Press the CURSOR button to move the cursor to "2" on the display, program the loudness value for the x2 point using the DATA ENTRY buttons, and continue this process until all 8 points have been programmed as required.

### ■ Velocity Curve Store

Once the desired velocity curve has been programmed, it must be stored in one of the 4 available user velocity curve memories.

1. Make sure that the G10C memory protect function is OFF.
2. Press the STORE button while in the Velocity Curve Edit utility.
3. While the cursor is located before "Store to" on the display, select the user velocity curve memory to which you wish to store the edited curve data — U1, U2, U3 or U4.
4. Press the CURSOR button to move the cursor to "Execute?" on the display.
5. Press the DATA ENTRY IN (YES/ON) button. The G10 will respond with "Are you sure?"
6. Press the DATA ENTRY INC (YES/ON) button again to confirm and execute the store operation.

## System 3: Bend Curve

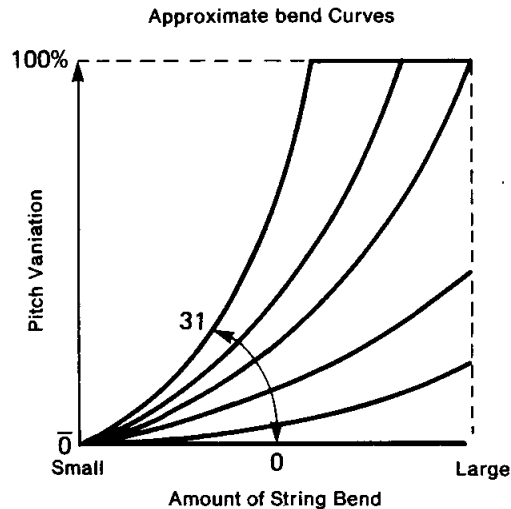
```

UT. SY 3
Bend curve > 16 > 13 > 15 > 18 > 15 > 7

```

The Bend Curve utility function permits setting an independent string bend “sensitivity” for each of the G10’s strings. A value between 0 and 31 can be set for each string. A setting of 0 produces no string bend for the corresponding string, while the maximum setting of 31 produces an extremely large pitch variation with only slight string motion.

Use the CURSOR  $\leftarrow$  and  $\rightarrow$  buttons to set the cursor at the bend curve value of the string to be edited, then use the DATA ENTRY DEC and INC buttons to set the desired new value.



## System 4: Global Channel

```

UT. SY 4   >Control >Program >P. bend (Arm)
Global ch.   G16      G16      G16

```

This function is useful when the G10C is used with a tone generator that features global channel capability. The global channel feature causes MIDI **program change**, **control change** and **pitch change** data for all six voices to be transmitted over a single separate channel, thus eliminating the possibility of receive buffer overflow at the receiving device.

The global channel can be independently set to G1 through G16, or OFF, for control change, program change and pitch bend (controller arm) data. Use the CURSOR  $\leftarrow$  and  $\rightarrow$  buttons to select the data for which you wish to set a global channel, and use the DATA ENTRY DEC and INC buttons to set the desired global channel.

**Note:**

When a global channel is set for P. bend (Arm), errors can occur when bending a string and using the arm at the same time. Set the global channel to “off” to eliminate this problem.

- If global-channel program change transmission is selected the program change data will be the program change number set for the 6th string (see page 16).
- String-bend data is sent on the channel set for the corresponding string regardless of global channel settings.
- Global channel numbers should not be set to the same channel number used by any of the strings.

# THE CHAIN MODE

The chain mode permits setting up a specific sequence of performance memory locations — internal, preset or cartridge — which can then be called using the G10 performance selectors, the G10C DATA ENTRY DEC and INC keys, or footswitches plugged into the rear-panel - 1 and + 1 jacks. Four CHAIN memories are provided (A through D), and each CHAIN may be programmed with a maximum of 20 steps. You could, for example, set up a chain something like this:

INT 1 ↔ CRT 4 ↔ P1 103 ↔ INT 16 ↔ CRT 9

If you press INC after the highest step in the chain is reached, the first step in the chain will be selected. In the same way, if you press DEC after the first step has been reached, the highest step in the chain will be selected.

The CHAIN mode is selected by pressing the CHAIN button, and any of the four available CHAIN memories (A, B, C or D) can be selected by repeatedly pressing the CHAIN button (or by MIDI program change number reception). The currently selected CHAIN memory is shown under "Chain" on the display. Any of the available steps in the selected chain are selected in the same way as performance memory locations are selected in the PLAY mode (Page 14), except for MIDI program change number reception.

```
CHAIN  PLAY  Chain  Step  Perf.  Total
                <A>      1 = INT 1  20
```

- "Step" = currently selected step within chain.
- "Perf" = performance memory location selected by the current step.
- "Total" = the total number of steps in the chain.

**Note:** Chain samples (for use with the TX802) are programmed in memories A and B when the G10C is originally shipped.

## Chain Editing

The CHAIN EDIT mode is activated by pressing the EDIT button while in the CHAIN mode.

```
CHAIN  EDIT  ■Chain >Step >Perf.  Total
                <A>      1 = INT 1  1
```

1. When the CHAIN EDIT mode is selected, the flashing block cursor will appear in front of "Chain" on the display.
2. Use the DATA ENTRY DEC and INC buttons to select the CHAIN memory you wish to program or edit (A, B, C or D).

3. Press the CURSOR  $\leftarrow$  button to move the cursor to "Step" on the display, and use the DATA ENTRY DEC and INC buttons to select the step you wish to program. If the step number you select is a number higher than the total number of steps currently in the selected CHAIN (as shown under "Total" on the display), "\*\*\*\*\*" will appear under "Perf." indicating that the selected step has not yet been programmed. "Step" cannot be set to a number greater than "Total" + 1, up to a maximum of 20.
4. Press the CURSOR  $\rightarrow$  button to move the cursor to "Perf." on the display. Use the PARAMETER  $\leftarrow$  (INT) and  $\rightarrow$  (CRT) buttons to select internal (INT) or cartridge (CRT) memory, and use the DATA ENTRY DEC and INC buttons to select the desired memory location.
5. To program the next step, press the CURSOR  $\leftarrow$  button to move the cursor back to "Step" on the display, use DATA ENTRY DEC and INC to select the next step, move the cursor back to "Perf." and set the memory location for the new step. The "Total" number is updated every time you add a new step. Repeat this process until the entire chain has been programmed as required.
6. Press the CHAIN button to return to the CHAIN mode.

**Note:**

The last programmed step can be deleted by moving the cursor to "Total" and pressing the DATA ENTRY DEC button to reduce the total step count. The last programmed step can also be deleted by first selecting it, moving the cursor to "Perf." and then holding the DATA ENTRY DEC button until "\*\*\*\*\*" appears on the display.

## G10 RE-STRINGING AND MAINTENANCE

### When is it Time To Change Strings?

A fresh set of strings on the G10 will last for quite a while. With time and use, however, the strings will get dirty, become corroded and develop nicks and scratches that can adversely affect performance. You can make the strings last longer by wiping them clean after every use, but the time will come when the G10C will present you with a message like this when you first turn it ON:

```

** CAUTION **   String error!
  OK  OK  NG  NG  OK  OK
  
```

6 5 4 3 2 1

In this case the power-on system check found strings 1, 2, 5 and 6 to be fine, but strings 3 and 4 are no good (therefore "NG"). This kind of string error can be caused by something touching the strings when you turn the G10C ON. You might want to try turning the G10C OFF and then ON again just to be sure. If the error message appears again, then there's almost certainly something wrong with the indicated strings, and they should be replaced immediately. It is a good idea to change all six strings at the same time even if only one or two strings are faulty. This is because if you only change the faulty strings, it won't be long before the others will have to be changed anyway. It's better simply to change the whole lot and be safe.

### Strings that Can Be Used on the G10

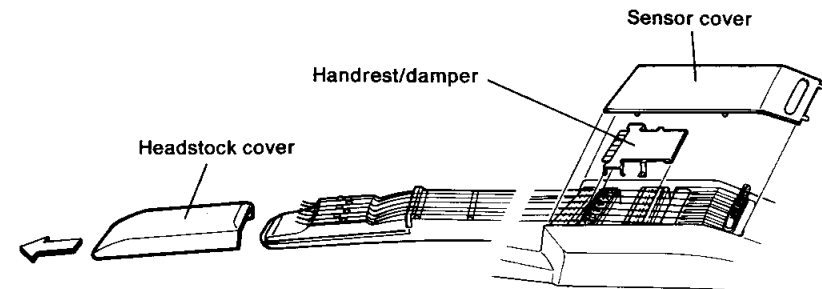
The G10 uses standard guitar strings that can be purchased at any good music store. The only difference between the G10 and any other guitar is that the G10 uses all the same gauge and type of string. Here's what you need:

- **Six 0.4 mm or 0.016" gauge plain (non-wound) guitar strings.**

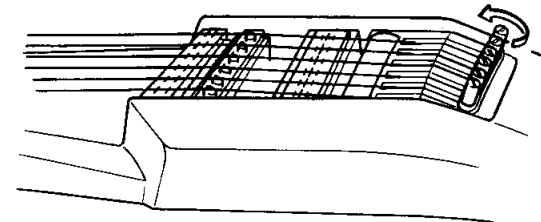
These would normally be "3rd strings" in a standard set of electric guitar strings. Please note that this is the **ONLY** type of string that can be used on the G10. Other strings, particularly wound types, will either simply not work or work erratically at best. Be sure to use the specified string at all times.

### Removing the Old Strings

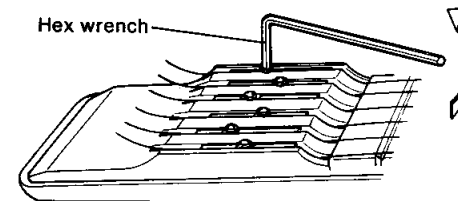
1. Remove the G10 sensor cover and then the string damper.
2. Slide off the headstock cover.



3. Rotate all six tension-adjustment knobs on the tension-adjust tailpiece counterclockwise until they stop rotating.



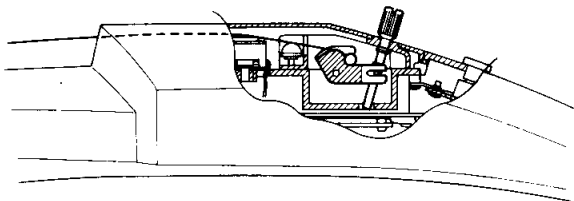
4. Loosen the string lock screws slightly using the hexagonal (Allen) wrench provided.



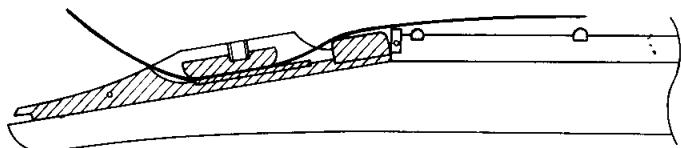
5. Slide the headstock end of each string out from under its headstock string lock and remove the ball end from the tailpiece claw.

## Installing the New Strings

1. Hook the ball end of the string into the tailpiece claw.

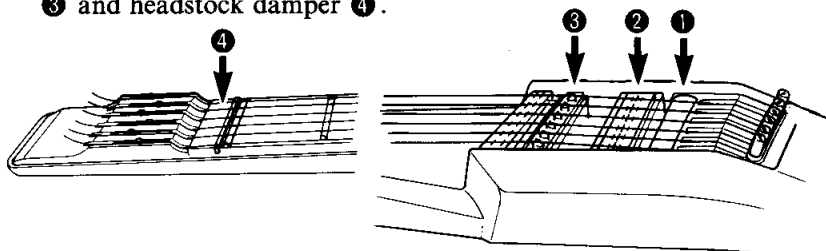


2. Slide the other end of the string under the appropriate headstock string lock on the headstock.

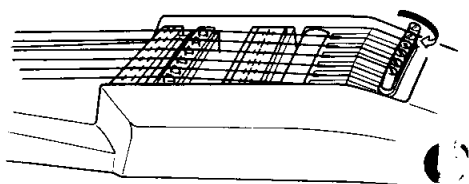


3. Pull firmly on the end of the string protruding from the headstock string lock with one hand while locking it down using the other hand (use the hexagonal wrench). The hexagonal screw only needs to be screwed in about 30 degrees after it stops against the string.

4. Make sure that each string passes through the appropriate grooves in the tailpiece damper ①, ultrasonic sensor ②, string bend sensor ③ and headstock damper ④.



5. While making sure that the strings stay in their respective grooves, rotate the tension-adjustment knobs on the tailpiece clockwise to increase the tension on each string until each string is tuned to approximately F#. You could use another instrument or a tuning fork for pitch comparison.



6. Replace the headstock cover, the string damper and the sensor cover.

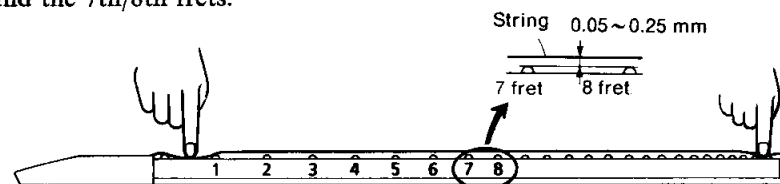
## General Maintenance Information

### Important!

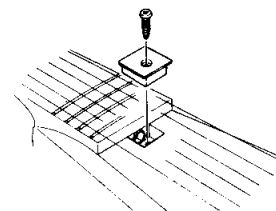
Although we strongly recommend that all maintenance and adjustment other than string replacement be performed by a trained, qualified guitar repairman, the following information is provided for reference.

### STEP 1: Truss Rod Adjustment

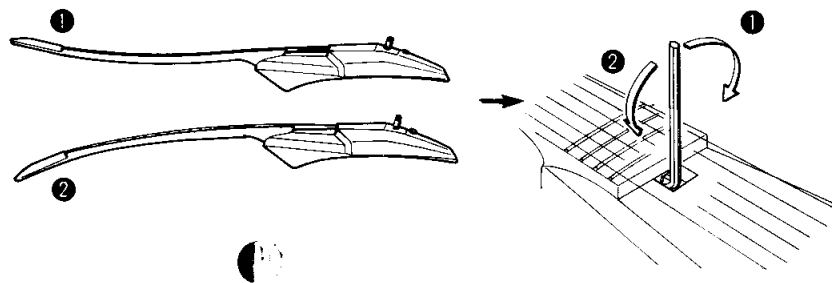
Optimum neck curvature is approximately 0.05 – 0.25 mm at the 7th and 8th frets. That is, if the strings are fretted at the 1st and 24th frets, there should be a gap of between 0.05 and 0.25 millimeters between the strings and the 7th/8th frets.



Begin by unscrewing and removing the truss rod cover.



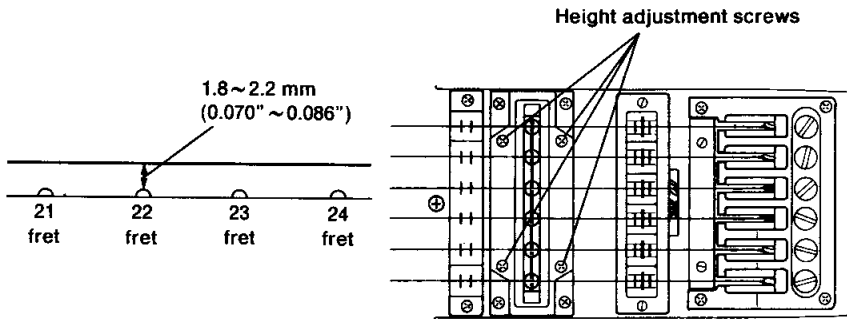
Insert large hexagonal wrench into truss rod nut and rotate clockwise ① to tighten the truss rod and decrease curvature (be careful, turning too far in this direction can cause reverse curvature). Rotate counterclockwise ② to loosen the truss rod for increased curvature.





**STEP 2: String Height Adjustment**

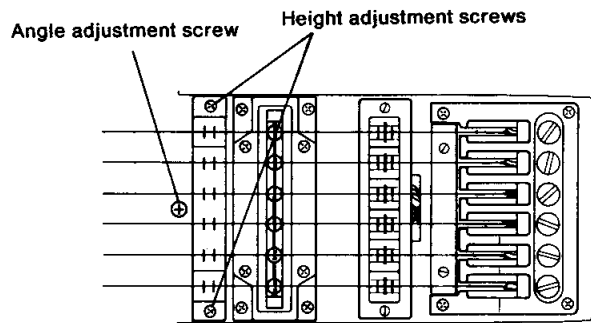
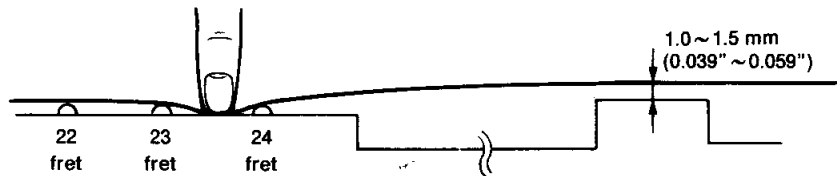
Optimum string height for the G10 is between 1.8 and 2.2 millimeters at the 22nd fret. String height is set by adjusting the height of the string bend sensor using its four height adjustment screws.



Be sure to adjust all screws evenly so that the sensor is approximately parallel to the strings.

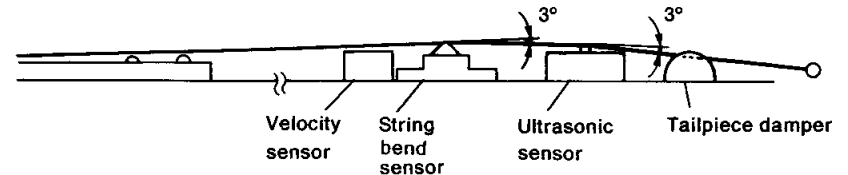
**STEP 3: Velocity Sensor Height Adjustment**

The velocity sensor must be parallel to the strings and between 1 and 1.5 millimeters away from all strings. Adjust height using the two screws on either end of the sensor, and set the angle of the sensor using the single screw located in front of it.

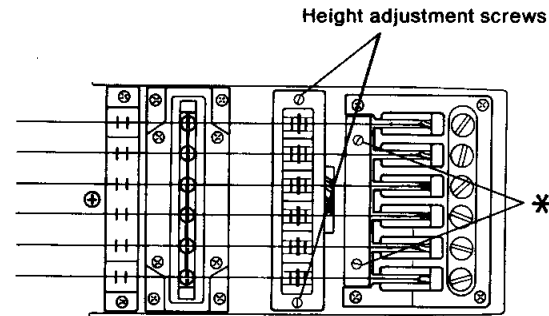


**STEP 4: Ultrasonic Sensor Height Adjustment**

The G10 ultrasonic sensor must be set lower than the string bend sensor so that the strings bend over the string bend sensor at an angle of approximately 3 degrees.



Adjust the height of the ultrasonic sensor using the two screws on either end.



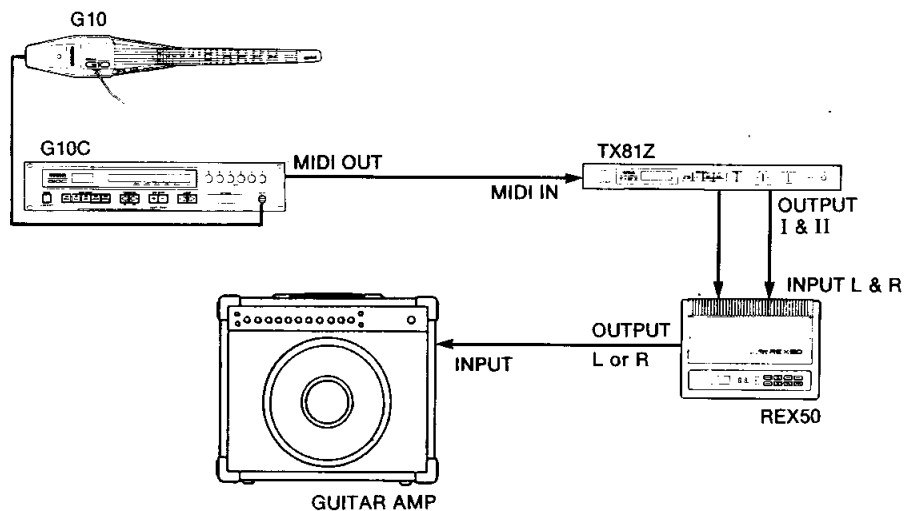
\* Tail damper height can be adjusted using these two screws.

## G10/G10C SYSTEM EXAMPLES

The system examples given below are only a small sample of what can be done with the G10 and G10C. They should however, help you to develop a system that most ideally suits your own musical requirements.

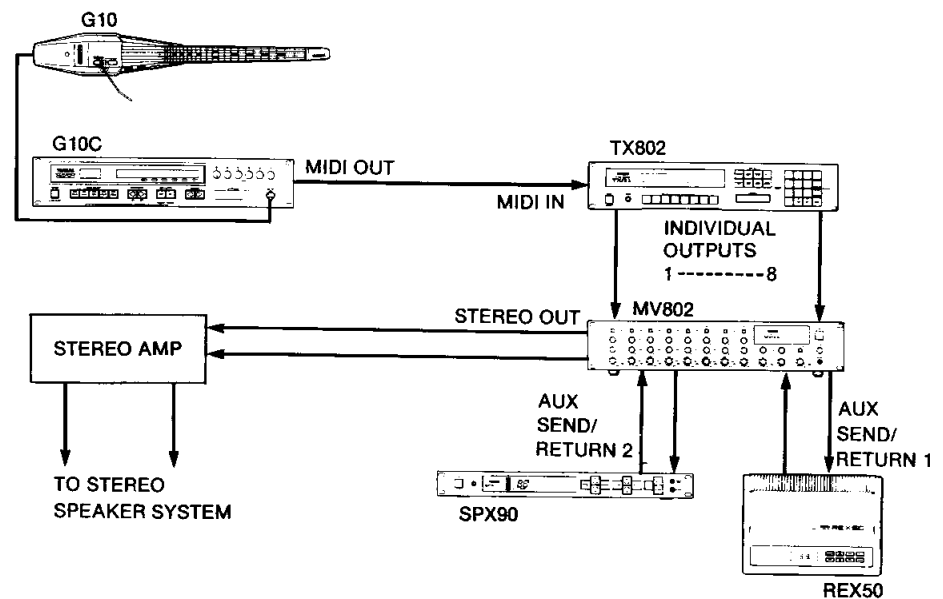
### 1. Live System A

The system shown here is simple and straightforward, offering both maximum simplicity and vast performance potential. The G10 system drives a TX81Z FM Tone Generator, the audio output of which is fed to a standard guitar amplifier via a REX50 digital multi-effect unit for extra signal-processing versatility. Other guitar effects can be connected "in-line" with the REX50 if required.



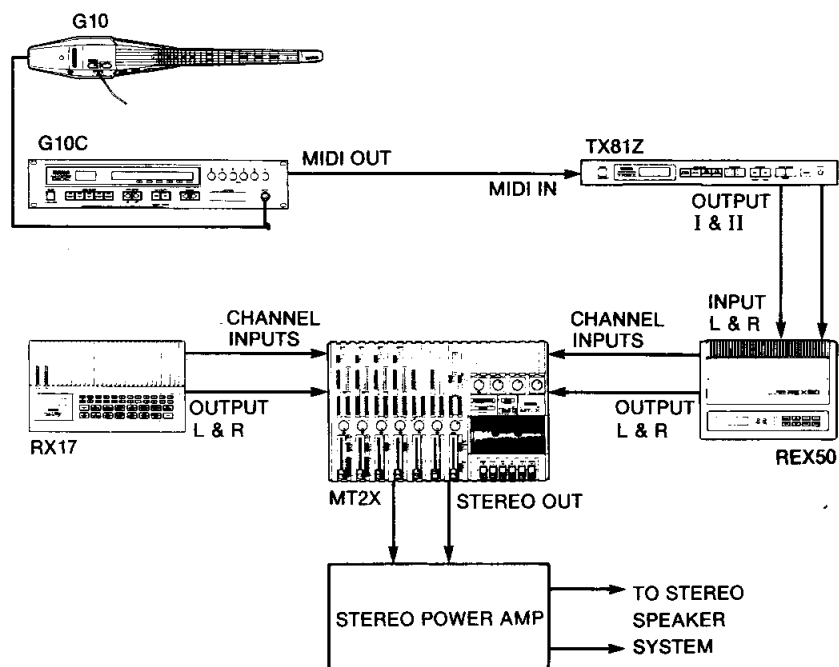
### 2. Live System B

This system concentrates on expanded voice control and signal processing capability as well as high-power stereo output. A TX802 FM Tone Generator is used for the superior 6-operator FM voice quality it provides, and its 8 individual outputs are fed to the inputs of an MV802 Rack Mount Mixer. The MV802 allows precise level balancing between voices, stereo panning, and versatile effects application capability with two auxiliary send/return systems. An SPX90II Digital Multi-effect Processor and REX50 Digital Multi-effector are connected into the MV802's AUX loops. This allows two effects to be applied simultaneously, and the degree of effect applied to each voice can be precisely controlled. The stereo output of the MV802 drives a stereo power amplifier, which, in turn, drives a pair of sound-reinforcement or guitar-type speakers.



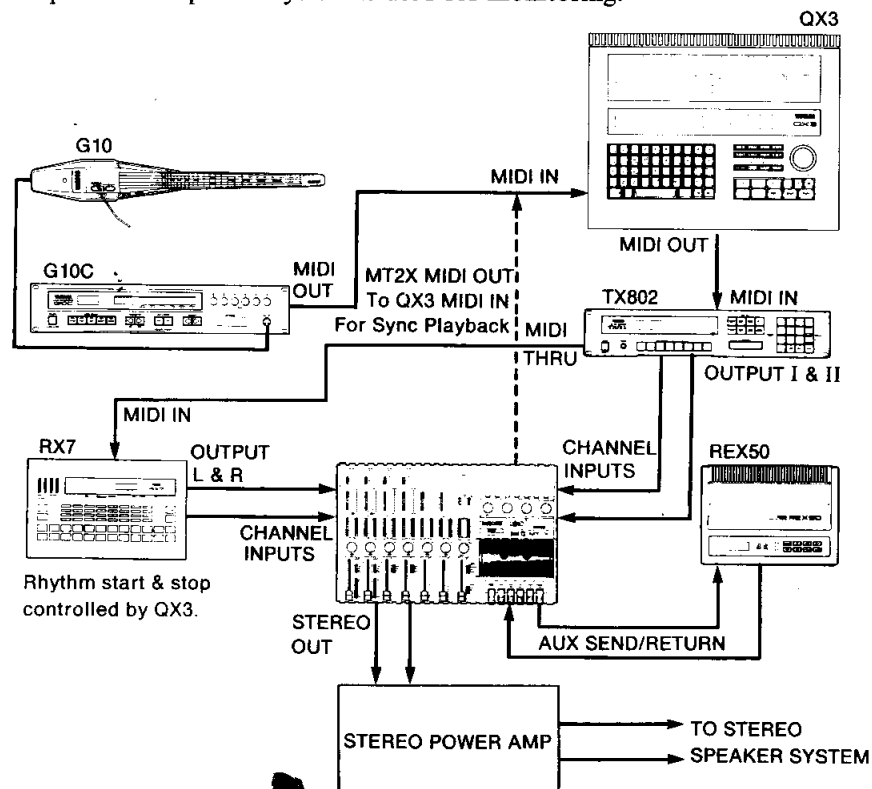
### 3. Guitarist's MIDI Studio A

The main goal of this setup is to provide multitrack recording capability that will enable you to make high-quality multitrack "demo" tapes to convince that important producer that your music is really worth listening to, or to try out compositions and arrangements on your own. As in "Live System A," the G10 system drives a TX81Z FM Tone Generator and a REX50 Multi-effector is used to provide a range of effects when needed. An RX17 Digital Rhythm Programmer is added to provide programmable drums and percussion. The outputs of the REX50 and RX17 are connected to the MT2X Multitrack Cassette Recorder which is used to record, overdub and ping-pong the various parts of your composition as required. The stereo outputs from the MT2X feed a power amplifier and speaker system that provides monitor sound during both recording and playback.



### 4. Guitarist's MIDI Studio B

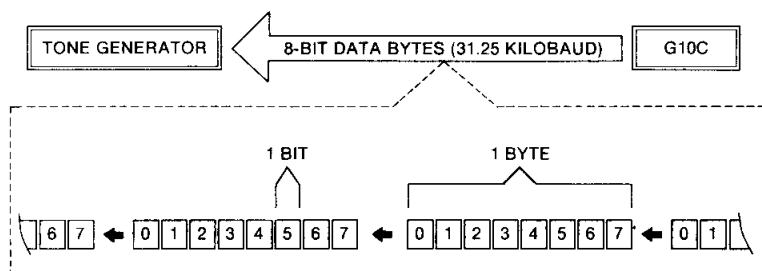
For even more creative control and versatility than provided by "Guitarist's MIDI Studio A," this system adds synchronized MIDI sequencing to multitrack recording capability. A TX802 FM Tone Generator is used for full 6-operator FM sound, and an RX7 Digital Rhythm Programmer offers extraordinary rhythm programming versatility. As in the previous system, a REX50 Multi-effector gives your sound more variety with a comprehensive range of top-quality digital effects. The main difference here is that a QX3 Digital Sequence Recorder can be used to digitally record, edit and refine several tracks of MIDI data which can then automatically "play" the TX802. The MT2X Multitrack Cassette Recorder features built-in MIDI tape sync capability, so playback of the sequenced tracks from the QX3 can be synchronized with playback of tracks actually recorded on tape. This effectively gives you many more "tracks" to work with, significantly expanding creative versatility and scope. A stereo power amplifier and speaker system is used for monitoring.



## Inside MIDI—an Introduction

As a guitarist, you've probably heard a lot about MIDI from your keyboard-player friends and acquaintances. You may not, however, have taken the time to learn what MIDI is all about. Well now that you're the proud owner of a very fine MIDI guitar system, it's time to take a good look at MIDI and what it can do. The following isn't required reading, but it should help you to get started.

MIDI, the Musical Instrument Digital Interface, is a serial data interface designed specifically to allow electronic music equipment to "communicate." 8-bit data bytes are sent from the transmitting device (the G10C in the case of the MIDI Guitar System) to the receiving device (your tone generator) at a pretty quick 31.25 kilobaud (that's 31,250 bits per second).



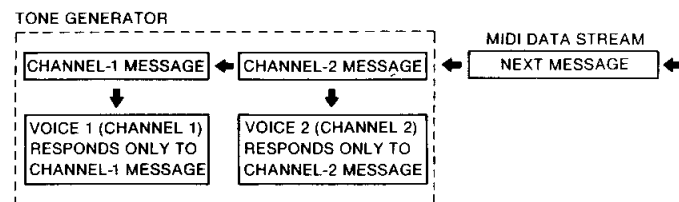
Amazingly, a great deal of meaningful information is encoded into all those bits and bytes.

The people who initially devised the MIDI system provided a handy list of "MIDI MESSAGES" that covers the basic requirements of musical instrument communication. These are divided up into "CHANNEL MESSAGE" and "SYSTEM MESSAGE" categories. The logic behind this broad division is that CHANNEL MESSAGES are those which are specific to any one of 16 available MIDI channels, while SYSTEM MESSAGES contain no channel information and affect the entire "system."

### Channel Messages

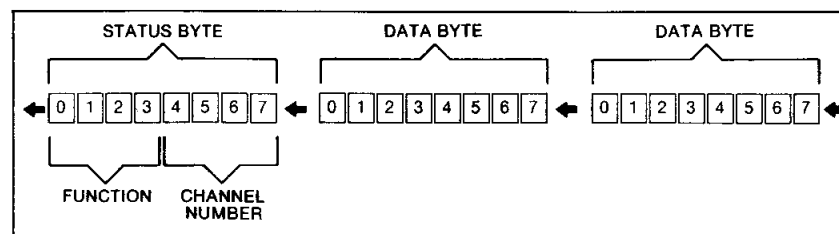
For the MIDI system to be of any real value, it must be able to control a number of different pieces of equipment in different ways. The G10C, for example, controls six different voices via a single MIDI cable — these

voices could all be provided by a single tone generator, or independent tone generator units. To make this possible the CHANNEL MESSAGES are all encoded with a MIDI channel number, 1 through 16, which the receiving device checks to determine whether it should respond to the message or not, or which of its several voices are to be controlled.



The MIDI CHANNEL MESSAGES require two or three bytes (a "byte" is comprised of 8 data "bits") to transfer the desired information. In all cases the first byte transmitted is referred to as the "status byte." It is the status byte which tells the receiving device 1) the function of the message and how many bytes are to follow, and 2) which of the 16 available MIDI channels it is being transmitted on. This is accomplished by dividing the status byte into two 4-bit "nybbles." The most-significant four bits define the function of the message (which simultaneously informs the receiving device of the number of bytes it contains), and the least-significant four bits define the MIDI channel. This format limits the maximum number of MIDI channels to 16 since four bits can represent a maximum of 16 different values. The status byte is followed by one or two data bytes. The function of the first data byte varies, but the second data byte invariably represents a numerical value required by the specific function.

### A 3-BYTE MIDI MESSAGES



To exemplify the 3-byte message form, let's take a look at the NOTE ON message. Simply stated, this message plays a note on an instrument or tone generator. The G10C transmits an appropriate NOTE ON message to your tone generator when you play a note on the G10. The status byte

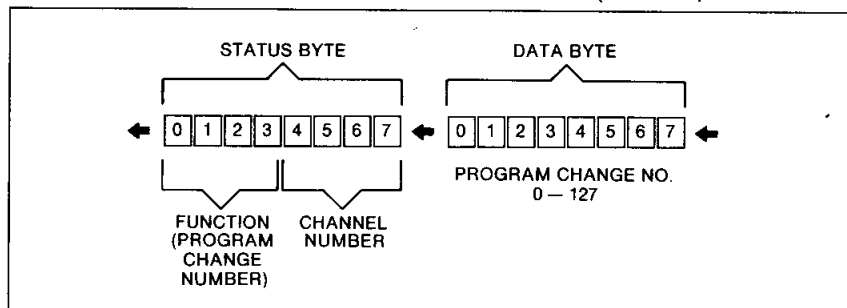
(9n in hex) tells the tone generator to play a note (MSB nybble: 9 hex = 1001 binary) using the voice set to receive on MIDI channel “n.” If, for example, the message were to play a note on channel 1, the status byte would be “90” in hex, or “10010000” in binary notation. Note that MIDI channel numbers 1 through 16 are actually represented by numbers 0 through 15 (0 through F in hex, or 0000 through 1111 in binary).

The first data byte following the status byte then tells the receiving device which note to play. 128 note numbers are available (00 through 7F hex), representing notes C-2 through G8. The second and last data byte in the NOTE ON message is a “velocity” value from 0 to 127 (128 values) which tells the receiving device how loud the note is to be played.

STATUS	1st DATA	2nd DATA
1001nnnn	0kkkkkkk	0vvvvvvv
Note on & channel no.	Note no.	Velocity

One of the two 2-byte messages in the CHANNEL MESSAGE category is PROGRAM CHANGE. This message is used to switch voices on synthesizers and tone generators, to change effect programs in MIDI-compatible digital effect devices, etc. The G10C transmits a PROGRAM CHANGE message to your tone generator each time you select a new performance memory location. As in the NOTE ON message just described, the status byte of the PROGRAM CHANGE message defines the function of the message and its MIDI channel number. The first and only data byte represents, logically enough, the number of the program or voice to switch to (0 through 127).

A MIDI PROGRAM CHANGE MESSAGE (2 BYTES)



Refer to the MIDI DATA CHART on the following page for a listing of all defined MIDI messages.

## System Messages

Unlike the CHANNEL MESSAGE group, SYSTEM MESSAGES are not channel-specific and therefore do not have a channel number encoded in the status byte. Currently defined SYSTEM MESSAGE status bytes all have the distinction of having the most-significant four bits set to “1.” That is, “1111000” through “11111111” in binary notation or “F0” through “FF” in hex. A quick peek at the MIDI DATA CHART on the following page will tell you that even some of these do not yet have a defined function (F1, F4, F5, F9 and FD). This is actually a very good thing, since it provides some leeway for implementation of new functions as they become necessary. One member of the SYSTEM MESSAGE group, the SYSTEM EXCLUSIVE message, is defined as a message but has no specific function. It is sort of an all-purpose message provided for applications unique to each individual manufacturer. Not only does the SYSTEM EXCLUSIVE message lack a specified function, but it also has no specified number of data bytes. For this reason it is most frequently used for “dumping” large amounts of information from one piece of equipment to another. The G10C uses the SYSTEM EXCLUSIVE message when it “dumps” the TX setup data to a TX802 or TX81Z tone generator during a TX SETUP operation.

## MIDI Data Chart

	Message	Status Byte	First Data Byte (xx)	Second Data Byte (yy)	
CHANNEL MESSAGE	Note Off	8n	Note Number	Velocity	
	Note On	9n	"	"	
	Polyphonic Aftertouch	An	"	Pressure	
	Control Change	Bn	(Control Number) 01 Modulation Wheel 02 Breath Controller 04 Foot Controller 05 Portamento Time 06 Data Entry Slider 07 Main Volume 0A Pan	Data " " " "	
	(Channel Mode Message)	40 Sustain			
		41 Portamento			00: Off 7F: On
		42 Sostenuto			
		43 Soft			
		60 Data Increment			7F
		61 Data Decrement			7F
		7A Local			00: Off, 7F: On
	7B All Note Off			00	
	7C Omni Off			00	
7D Omni On			00		
7E Mono On			00-0A (Number of channels)		
7F Poly On			00		
Program Change	Cn	Program number			
Channel Aftertouch	Dn	Pressure			
Pitch Wheel	En	LSB	MSB		
SYSTEM MESSAGE	System Exclusive	F0	Mftr. ID code	Undefined	
		F1			
	Song Position Pointer	F2	LSB	MSB	
		F3	Song number		
	Song Select	F4, F5			
		F6			
	Tune Request	F6			
	End Of Exclusive	F7			
	Timing Clock	F8			
		F9			
	Start	FA			
	Continue	FB			
	Stop	FC			
		FD			
Active Sensing	FE				
System Reset	FF				

## MIDI Messages

Any of the following MIDI messages may appear when the G10C is receiving MIDI data.

**Now receiving!**

The G10C is currently receiving bulk data from a MIDI device.

**\*\* MIDI data error!**

A framing or overrun error has occurred.

**\*\* MIDI receive buffer full!**

Too much MIDI data was received all at once.

**\*\* MIDI checksum error!**

A data error has occurred during the data transfer.

**\*\* MIDI bulk rejected by memory protect!**

The G10C memory protect function is ON and the bulk data cannot be received.

**\*\* MIDI bulk rejected by dev# conflict!**

The device number of the transmitting device is not set to the same number as the G10C.

## G10

### Fingerboard

23-fret scale

### Strings

"3rd string" (0.4 mm/0.016"), plain (non-wound), x 6

### String tension Adjustment

Knurled bridge knobs x 6

### Pitch Sensing

Ultrasonic sound sensor

### Velocity Sensing

Electromagnetic divided pickup

### String Bend Sensing

Optical shutter sensor

### Controls

Volume, controller wheel, sensitivity adjustment, arm, performance increment and decrement switches

### Connectors

Breath controller input, multi-pin cable output

### Dimensions (L x W x D)

1002.8 x 138 x 108 mm (3' 3-1/2" x 5-3/8" x 4-1/4")

### Weight

2.5 kg (5 lbs 8 oz)

### Accessories

- Guitar strap
- 7-meter multi-pin connector cable
- Hexagonal wrench x 3
- Screw driver
- Carrying case

## G10C

### Internal Memory

Performance memory x 64

Velocity curve memory x 4

Chain memory x 4

TX802 preset data (performance x 64, voice x 64, system x 1)

G10C Performance data for TX802 x 64

TX81Z preset data (performance x 48, voice x 56, system x 2)

G10C Performance data for TX81Z x 48

### External Memory

Yamaha RAM4 data cartridge

### Controls

Gain trimmers x 6,

MODE SELECT (CHAIN, PLAY, EDIT, UTILITY, STORE),

PARAMETER (◀/INT, ▶/CRT), DATA ENTRY

(DEC/- 1/NO/OFF, INC/+ 1/YES/ON), CURSOR (◀, ▶)

### Displays

40-character x 2-line backlit LCD

MODE SELECT key LEDs x 5

Note ON indicator LEDs x 6

PERFORMANCE NUMBER LED Display

### Front Panel Connector

GUITAR

CARTRIDGE SLOT

### Rear Panel Connectors

FOOT CONTROL, FOOT SW, -1, +1,

MIDI IN/OUT/THRU

### Dimensions (W x H x D)

480 x 88 x 282 mm (18-7/8" x 3-1/2" x 11-1/8")

### Weight

5.3 kg (11 lbs 11 oz.)

### Power Requirements

USA, Canada 120V

General model 220~240V

### Power Consumption

30W

### Accessory

- MIDI cable

\* Specifications are subject to change without notice.

# IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

## INFORMATION RELATING TO POSSIBLE PERSONAL INJURY, ELECTRIC SHOCK AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

**WARNING** — When using electronic products, basic precautions should always be followed, including the following:

1. Read all Safety and Installation Instructions, Supplemental Marking and Special Message Section data, and any applicable assembly instructions BEFORE using this product.
2. Check unit weight specifications BEFORE you attempt to move this product.
3. Main power supply verification. Yamaha Digital Musical Instrument products are manufactured specifically for use with the main supply voltage used in the area where they are to be sold. The main supply voltage required name plate. If any doubt exists please contact the nearest Yamaha Digital Musical Instrument retailer.
4. Some Yamaha Digital Musical Instrument products utilize external power supplies or adapters. Do NOT connect products of this type to any power supply or adapter other than the type described in the owners manual or as marked on the unit.
5. This product may be equipped with a plug having three prongs or a polarized line plug (one blade wider than the other). If you are unable to insert the plug into the outlet, contact an electrician to have the obsolete outlet replaced. Do NOT defeat the safety purpose of the plug. Yamaha products not having three prong or polarized line plugs incorporate construction methods and designs that do not require line plug polarization.
6. **WARNING** — Do NOT place objects on the power cord or place the unit in a position where any one could walk on, trip over, or roll anything over cords of any kind. An improper installation of this type can create the possibility of a fire hazard and/or personal injury.
7. Environment: Your Yamaha Digital Musical Instrument should be installed away from heat sources such as heat registers and/or other products that produce heat.
8. Ventilation: This product should be installed or positioned in a way that its placement or location does not interfere with proper ventilation.
9. Yamaha Digital Musical Instrument products are frequently incorporated into "Systems" which are assembled on carts, stands or in racks. Utilize only those carts, stands, or racks that have been designed for this purpose and observe all safety precautions supplied with the products. Pay special attention to cautions that relate to proper assembly, heavier units being mounted at the lower levels, load limits, moving instructions, maximum usable height and ventilation.
10. Yamaha Digital Musical Instrument products, either alone or in combination with amplification, headphones, or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do NOT operate at high volume levels or at a level that is uncomfortable. If you experience any discomfort, ringing in the ears, or suspect any hearing loss, you should consult an audiologist.
11. Do NOT use this product near water or in wet environments. For example, near a swimming pool, spa, in the rain, or in a wet basement.
12. Care should be taken so that objects do not fall, and liquids are not spilled into the enclosure.
13. Yamaha Digital Musical Instrument products should be serviced by a qualified service person when:
  - a. The power supply/power adapter cord or plug has been damaged; or
  - b. Objects have fallen, or liquid has been spilled into the products; or
  - c. The unit has been exposed to rain; or
  - d. The product does not operate, exhibits a marked change in performance; or
  - e. The product has been dropped, or the enclosure of the product has been damaged.
14. When not in use, always turn your Yamaha Digital Musical Instrument equipment "OFF". The power supply cord should be unplugged from the outlet when the equipment is to be left unused for a long period of time. NOTE: In this case, some units may lose some user programmed data. Factory programmed memories will not be affected.
15. Electromagnetic Interference (RFI). Yamaha Digital Musical Instruments utilize digital (high frequency pulse) technology that may adversely affect Radio/TV reception. Please read FCC Information (Next Page) for additional information.
16. Do NOT attempt to service this product beyond that described in the user maintenance section of the owners manual. All other servicing should be referred to qualified service personnel.

**PLEASE KEEP THIS MANUAL  
FOR FUTURE REFERENCE!**

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.



# SPECIAL MESSAGE SECTION

**ELECTROMAGNETIC INTERFERENCE (RFI):** Your Yamaha Digital Musical Instrument Product has been type tested and found to comply with all applicable regulations. However, if it is installed in the immediate proximity of other electronic devices, some form of interference may occur. For additional RFI information see FCC information section located in this manual.

**IMPORTANT NOTICE:** This product has been tested and approved by independent safety testing laboratories in order that you may be sure that when it is properly installed and used in its normal and customary manner, all foreseeable risks have been eliminated. **DO NOT** modify this unit or commission others to do so unless specifically authorized by Yamaha. Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is/has been modified. Implied warranties may also be affected.

**SPECIFICATIONS SUBJECT TO CHANGE:** The information contained in this manual is believed to be correct at the time of printing. Yamaha reserves the right to change or modify specifications at any time without notice or obligation to update existing units.

**NOTICE:** Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed), are not covered by the manufacturer's warranty. Please study this manual carefully before requesting service.

**STATIC ELECTRICITY CAUTION:** Some Yamaha Digital Musical Instrument products have modules that plug into the unit to perform various functions. The contents of a plug-in module can be altered/damaged by static electricity discharges. Static electricity build-ups are more likely to occur during cold winter months (or in areas with very dry climates) when the natural humidity is low. To avoid possible damage to the plug-in module, touch any metal object ( a metal desk lamp, a door knob, etc.) before handling the module. If static electricity is a problem in your area, you may want to have your carpet treated with a substance that reduces static electricity build-up. See your local carpet retailer for professional advice that relates to your specific situation.

Model \_\_\_\_\_

Serial No. \_\_\_\_\_

Purchase Date \_\_\_\_\_

## FCC INFORMATION

While the following statements are provided to comply with FCC Regulations in the United States, the corrective measures listed below are applicable worldwide.

This series of Yamaha professional music equipment uses frequencies that appear in the radio frequency range and if installed in the immediate proximity of some types of audio or video devices (within three meters), interference may occur. This series of Yamaha combo equipment have been type tested and found to comply with the specifications set for a class B computing device in accordance with those specifications listed in subpart J of part 15 of the FCC rules. These rules are designed to provide a reasonable measure of protection against such interference. However, this does not guarantee that interference will not occur. If your professional music equipment should be suspected of causing interference with other electronic devices, verification can be made by turning your combo equipment off and on. If the interference continues when your equipment is off, the equipment is not the source of interference. If your equipment does appear to be the source of the interference, you should try to correct the situation by using one or more of the following measures:

Relocate either the equipment or the electronic device that is being affected by the interference. Utilize power outlets for the professional music equipment and the device being affected that are on different branch (circuit breaker or fuse) circuits, or install AC line filters.

In the case of radio or TV interference, relocate the antenna or, if the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact your authorized Yamaha professional products dealer for suggestions and/or corrective measures.

If you cannot locate a franchised Yamaha professional products dealer in your general area contact the Electronic Service Department, Yamaha Music Corporation, 6600 Orangethorpe Ave., Buena Park, CA 90620, U.S.A.

If for any reason, you should need additional information relating to radio or TV interference, you may find a booklet prepared by the Federal Communications Commission helpful:

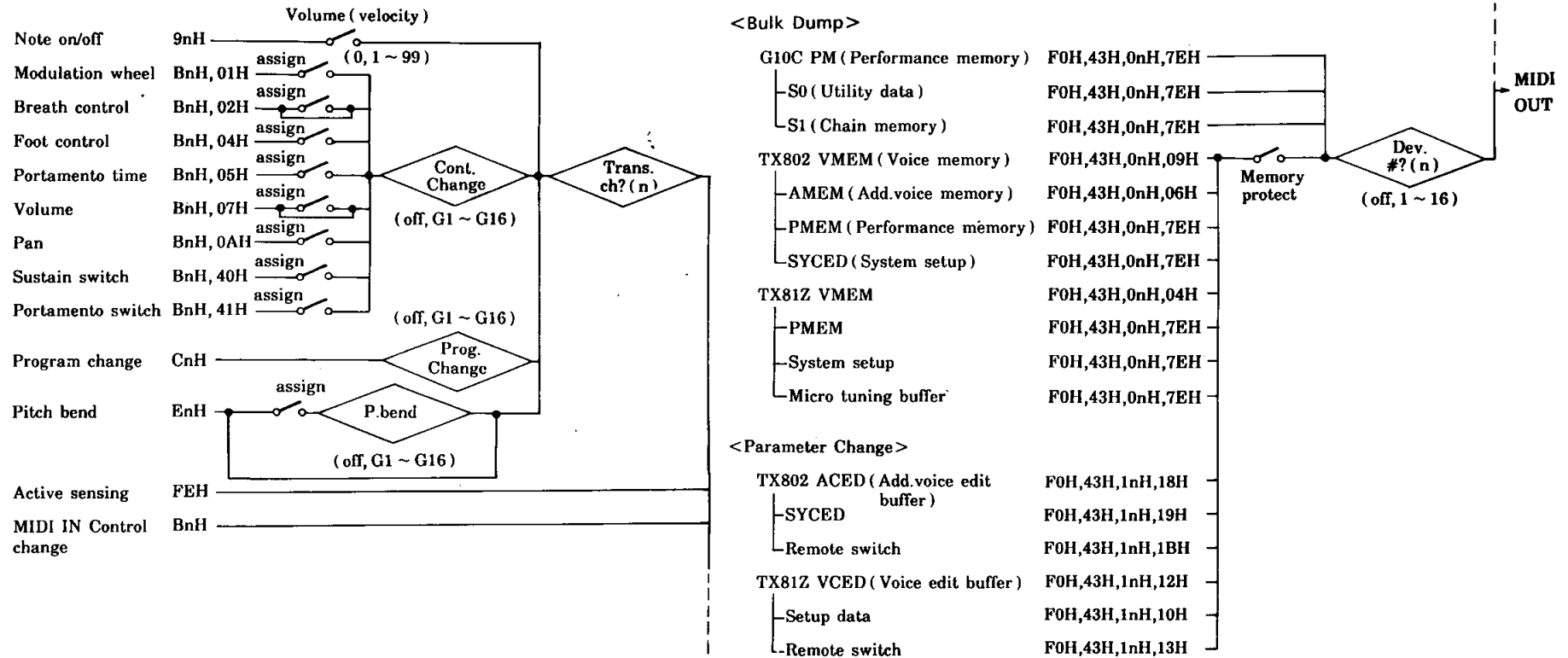
"How to Identify and Resolve Radio — TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402 — Stock No. 004-000-00345-4.

## **MIDI DATA FORMAT**

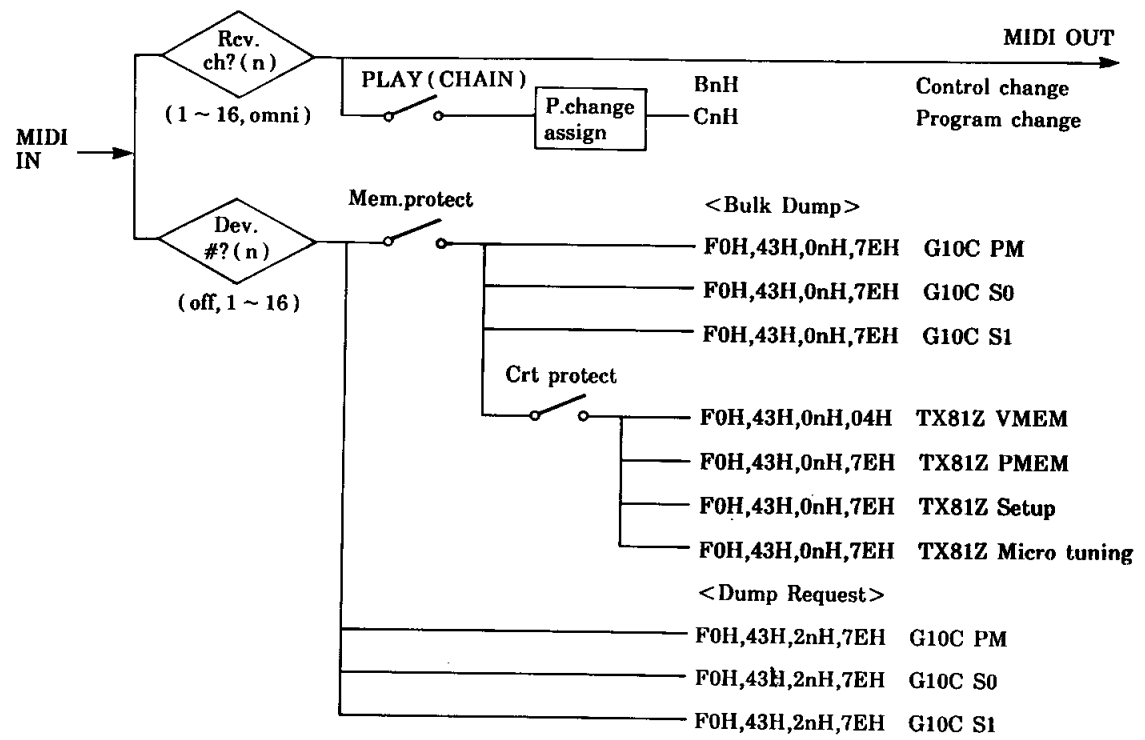
1. Transmission Conditions
2. Reception Conditions
3. Channel Message
4. System Exclusive Message
5. System Realtime Message
6. G10C Parameter Lists
7. MIDI Implementation Chart

# MIDI Data Format

## 1. Transmission Conditions



## 2. Reception Conditions



### 3. Channel Message

#### 3-1. Transmission

##### 3-1-1. Note ON/OFF

Transmission note range = C-2 – G8

Transmission velocity range = 0 – 127 (NOTE ON only)

NOTE ON = 0 is interpreted as NOTE OFF.

##### 3-1-2. Control Change

According to the functions assigned to the various controllers, control change data is transmitted on the currently set transmit channel as shown in the chart below.

Control No.	Parameter	Data Range
1	Modulation wheel	0 ... 127
2	Breath control	0 ... 127
4	Foot control	0 ... 127
5	Portamento time	0 ... 127
7	Volume	0 ... 127
10	Pan	0 ... 127
64	Sustain switch	0(off), 127(on)
65	Protamento switch	0(off), 127(on)

When a global channel between G1 and G16 is set, all control change data is transmitted on that channel.

Control change data received on the set receive channel is merged with internally generated data and transmitted via the MIDI OUT connector.

##### 3-1-3. Program Change

When a new program is selected, the program change number assigned to that memory location is transmitted.

When a global channel between G1 and G16 is set, the program change number assigned to the 6th string is transmitted on that channel.

##### 3-1-4. Pitch Bend

Pitch bend data is transmitted on the set transmission channel with 7-bit resolution. When a global channel is set, arm data is all transmitted on that channel.

#### 3-2. Reception

##### 3-2-1. Control Change

Control change data is received on the set reception channel.

##### 3-2-2. Program Change

In the PLAY or CHAIN modes, program change numbers received on the set receive channel cause selection of the corresponding performance memory location or chain step.

Receivable program change numbers and the memory locations they select are shown in the chart below.

Mode	Program Number	Performance Number
INT/CRT	1 ~ 64	INT1 ~ 64
	65 ~ 128	CRT1 ~ 64*
P1	1 ~ 64	101 ~ 164
	65 ~ 128	101 ~ 164
P2, P3	1 ~ 24	101 ~ 124
	25 ~ 48	101 ~ 124
	-	(Repeat every 24 performances)
	121 ~ 128	101 ~ 108
CHAIN	1 ~ 4	A ~ D

\* If no cartridge is inserted, repetition begins from INT1.

### 4. System Exclusive Message

#### 4-1. Bulk Dump

The following bulk dump types are provided.

- (1) TX802 voice memory (VMEM) & additional voice memory (AMEM).
- (2) TX81Z voice memory (VMEM).
- (3) G10C performance memory (PM).
- (4) TX802 performance memory (PMEM).
- (5) TX81Z performance memory (PMEM).
- (6) G10C utility (S0).
- (7) G10C chain (S1).
- (8) TX802 system setup (SYCED).
- (9) TX81Z setup data.

- Refer to the TX802 and TX81Z operation manuals for details on their bulk dump data format.

**4-1-1. TX802 VMEM & AMEM Bulk Dump**

When "TX802all" of the TX SETUP mode is executed, the data for the 64 preset voices contained in the G10C is transmitted in two groups: 1-32 and 33-64. Transmission follows the sequence given below.

- 1) Voice block parameter change (block = 0).
- 2) AMEM bulk data (1-32).
- 3) VMEM bulk data (1-32).
- 4) Voice block parameter change (block = 1).
- 5) AMEM bulk data (33-64).
- 6) VMEM bulk data (33-64).

**4-1-2. TX81Z VMEM Bulk Dump**

When "81Zall" of the TX SETUP mode is executed, the data for the 32 preset voice contained in the G10C is transmitted. Further, when the utility mode CRT TRANSMIT or CRT RECEIVE functions are executed, data for 32 voices is transferred between the TX81Z and an appropriately formatted data cartridge plugged into the G10C cartridge slot.

**4-1-3. G10C PM Bulk Dump**

Data for the 64 G10C internal performance memory locations is transmitted or received in the format shown below.

STATUS	11110000	F0H
ID	01000011	43H
SUB-STATUS	0000nnnn	0nH (n=device number)
FORMAT NUMBER	01111110	7EH
BYTE COUNT (MSB)	00011100	1CH
BYTE COUNT (LSB)	01001010	4AH
HEADER	01001100	4CH "L"
	01001101	4DH "M"
	00100000	20H " "
	00100000	20H " "
	00111000	38H "8"
	00110101	35H "5"
	00110000	30H "0"
	00111000	38H "8"
	01010000	50H "P"
	01001101	4DH "M"
DATA	0ddddddd	
	0ddddddd	
CHECKSUM	0eeeeeee	
EOX	11110111	F7H

Data size=3658 bytes, Total bulk size=3666 bytes

- Refer to the G10C Parameter Lists on page 46 for details on the data contents.

**4-1-4. TX802 PMEM Bulk Dump**

When "802all" of the TX SETUP mode is executed, the 64 preset performance data groups contained in the G10C are transmitted.

**4-1-5. TX81Z PMEM Bulk Dump**

When "81Zall" of the TX SETUP mode is executed, the 24 preset performance data groups contained in the G10C are transmitted. Further, when the utility mode CRT TRANSMIT or CRT RECEIVE functions are executed, 32 performance data groups are transferred between the TX81Z and an appropriately formatted data cartridge plugged into the G10C cartridge slot.

**4-1-6. G10C S0 Bulk Dump**

The G10C utility data is transmitted using the format shown below.

F0H, 43H, 0nH, 7EH, 00H, 41H, LM8508S0, <S0data>, sum, F7H

Data size = 65 bytes, Total bulk size = 73 bytes

- Refer to the G10C Parameter Lists on page 46 for details on the data contents.

**4-1-7. G10C S1 Bulk Dump**

The G10C chain data is transmitted using the format shown below.

F0H, 43H, 0nH, 7EH, 01H, 2EH, LM8508S1, <S1data>, sum, F7H

Data size = 174 bytes, Total bulk size = 182 bytes

- Refer to the G10C Parameter Lists on page 46 for details on the data contents.

**4-1-8. TX802 SYCED Bulk Dump**

When "802all" of the TX SETUP mode is executed, the preset TX802 system setup data contained in the G10C is transmitted.

**4-1-9. TX81Z Setup Data Bulk Dump**

When "81Zall" of the TX SETUP mode is executed, the preset TX81Z setup data contained in the G10C is transmitted.

Further, when the utility mode CRT TRANSMIT or CRT RECEIVE functions are executed, TX81Z setup data is transferred between the TX81Z and an appropriate formatted data cartridge plugged into the G10C cartridge slot.

The 4 bulk data types listed below are available, and each can be transmitted individually in the utility mode.

SY..... System  
 PC..... Program Change Table  
 EF..... Effect Data  
 MC..... Micro-tuning Data

#### 4-2. Parameter Change

In the TX SETUP mode, when "802int" is executed items (1) through (3) listed below are transmitted, and when "81Zint" is executed items (4) through (6) listed below are transmitted.

- (1) TX802 additional voice edit buffer (ACED).
- (2) TX802 system setup (SYCED).
- (3) TX802 remote switch.
- (4) TX81Z voice edit buffer (VCED).
- (5) TX81Z setup data.
- (6) TX81Z remote switch.

The parameter change format for items (1) through (4) and (6), listed above, is as shown below. Refer to 4-2-5 for the format for item (5).

11110000 FOH  
 01000011 43H  
 0001nnnn 1nH (n=device number)  
 0gggggghh Group, sub-group number  
 0pppppppp Parameter number  
 0ddddddd Data  
 11110111 F7H

##### 4-2-1. TX802 ACED Parameter Change

The following items within the TX802 additional voice buffer data group are changed.

g	h	p	Parameter	Data
6	0	15	poly/mono pitch bend range	1 (mono) 12
		16		

g : Group number  
 h : Sub-group number  
 p : Parameter number

##### 4-2-2. TX802 SYCED Parameter Change

The voice data receive block within the TX802 system data group is changed.

g	h	p	Parameter	Data
6	1	77	Voice data receive	0 (block:1-32) 1 (block:33-64)

##### 4-2-3. TX802 Remote Switch Parameter Change

The following items within the TX802 panel switch data group are changed.

g	h	p	Switch	Data
6	3	79	+1	127(on)
		81	PERFORMANCE SELECT	127(on)
		82	VOICE SELECT	127(on)
		88	STORE	127(on)

##### 4-2-4. TX81Z VCED Parameter Change

The following items within the TX81Z voice edit buffer data group are changed.

g	h	p	Parameter	Data
4	2	63	poly/mono pitch bend range	1 (mono) 12
		64		

#### 4-2-5. TX81Z Setup Data Parameter Change

The following items within the TX81Z setup data group are changed.  
The data format is as shown below.

```

11110000 F0H
01000011 43H
0001nnnn 1nH (n=device number)
Oggggghh Group, sub-group number
01111011 7BH
Oppppppp Parameter number
Oddddddd Data
11110111 F7H
  
```

g	h	p	Parameter	Data
4	0	3	program change sw.	2(ind)
		4	control change sw.	17(G16)
		5	pitch bend sw.	1(norm)
		9	combine	1(on)

#### 4-2-6. TX81Z Remote Switch Parameter Change

The following items within the TX81Z panel switch data group are remotely controlled.

g	h	p	Switch	Data
4	3	65	STORE	0(off), 127(on)
		68	PLAY	127(on)
		72	+1	127(on)

- G10C PM F0H, 43H, 2nH, 7EH, LM -- 8508PM, F7H
- G10C S0 F0H, 43H, 2nH, 7EH, LM -- 8508S0, F7H
- G10C S1 F0H, 43H, 2nH, 7EH, LM -- 8508S1, F7H

## 5. System Realtime Message

### 5-1. Active Sensing (FEH)

FEH is transmitted approximately every 300 milliseconds.

## 6. G10C Parameter Lists

### Performance Memory (PM)

No.	Parameter	Data
0-5	Program number (1-6)	0-127
6-11	transmit chanel (1-6)	0-15
12-17	volume (1-6)	0-99
18-23	open tuning (1-6)	0-104
24	trigger mode	0(Normal), 63(Left hand)
25	capotasto	0-23
26	legato	0(on), 31(off)
27-32	velocity curve assign (1-6)	0-3, 4-7(U1-U4)
33	sensitivity offset	0-6(-7~-1), 7-14(0~7)
34-39	mute (1-6)	0-7
40-49	performance name (10char.)	32-127
50	pitch bend send range	0-12
51	pitch bend max	0-12
52	arm control no.	0(off), 1, 2, 5, 7, 10
53	wheel direction	0(up), 1(down)
54	wheel control no.	1, 5, 10
55	foot switch no.	0(off), 64, 65
56	foot control no.	0(off), 1, 4, 5, 7, 10

### Utility Data (S0)

No.	Parameter	Data
0	device#	0(off), 1-16
1	receive ch.	0-15, 16(omni)
2	edit curve no.	0-3, 4-7(U1-U4)
3-10	curve data	1-99
11-16	bend curve	0-31
17	global ch.(control change)	0(off), 1-16
18	global ch.(program change)	0(off), 1-16
19	global ch.(pitch bend)	0(off), 1-16
20	CRT load bank	0-15
21	CRT trans.bank	0-31(1A-16B)
22	CRT receive bank	0(1A), 1(1B)
23-30	velocity crv memory (U1)	1-99
31-38	velocity crv memory (U2)	1-99
39-46	velocity crv memory (U3)	1-99
47-54	velocity crv memory (U4)	1-99



**Chain Data (S1)**

No.	Parameter	Data
0	total no.	0-20
1	Step 1 performance no.	0-63(INT), 64-127(CRT)
2	" performance bank	0(INT/CRT), 1(P1), 2(P2), 3(P3)
3	Step 2 performance no.	
4	" performance bank	
.	.	
.	.	
.	.	
39	Step 20 performance no.	
40	" performance bank	

Function ...		Transmitted	Recognized	Remarks
Basic	Default	: 1 - 16	: 1 - 16	memorized
Channel	Changed	: 1 - 16	: 1 - 16	
Mode	Default	: x	: x	
	Messages	: x	: x	
	Altered	: *****	: x	
Note		: 0 - 127	: x	
Number	: True voice	: *****	: x	
Velocity	Note ON	: o 9nH,v=1-127	: x	
	Note OFF	: x 9nH,v=0	: x	
After	Key's	: x	: x	
Touch	Ch's	: x	: x	
Pitch Bender		: o *1	: x	: 7 bit resolution
	1	: o *2		: Modulation wheel
	2	: o		: Breath control
	4	: o *2		: Foot control
Control	5	: o *2		: Portamento time
	7	: o		: Volume
Change	10	: o *2		: Pan
	64	: o *2		: Sustain
	65	: o *2		: Portamento
	0 - 121	: o *3	: o *3	
Prog		: o 0 - 127	: o 0 - 127	
Change	: True #	: *****	: 0 - 127	
System Exclusive		: o *4	: o *4	: Bulk data
System	: Song Pos	: x	: x	
	: Song Sel	: x	: x	
Common	: Tune	: x	: x	
System	: Clock	: x	: x	
Real Time	: Commands	: x	: x	
Aux	: Local ON/OFF	: x	: x	
	: All Notes OFF	: x	: x	
Mes-	: Active Sense	: o	: x	
sages	: Reset	: x	: x	
Notes:	*1 = Transmit if pitch bend switch is on.			
	*2 = Transmit if control change switch is on.			
	*3 = Control change messages received from MIDI IN are only bypassed to MIDI OUT.			
	*4 = Transmit/receive if system exclusive switch is on.			

Mode 1 : OMNI ON, POLY      Mode 2 : OMNI ON, MONO      o : Yes  
 Mode 3 : OMNI OFF, POLY    Mode 4 : OMNI OFF, MONO      x : No

**PERFORMANCE DATA/  
CHAIN DATA CHART**

**TABLEAU DES DONNEES DE  
"PERFORMANCE"/DONNEES DE CHAINE**

**PERFORMANCE- UND  
CHAIN-DATENÜBERSICHT**

**G10 Performance Data**

PERFORMANCE NO. \_\_\_\_\_ NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

PARAMETER	STRING	6	5	4	3	2	1	PARAMETER	STRING	6	5	4	3	2	1	
Program number								Mute								
Transmit channel								P. bend send range								
Volume								Arm (P. bend max)							+/-	
Open tuning								Arm (Control name)								
Trigger mode		Normal/Left hand							Wheel (Direction)							Up/Down
Capotasto								Wheel (Control name)								
Legato							On/Off	Foot switch								
Vel. crv assign								Foot control								
Sensitivity offset																

MEMO

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