# GX-1

## GUIDE TO YOUR YAMAHA ELECTONE

## Characteristics of the GX-1

1. A natural, living sound is obtained by changing the time relationship of pitch, tone and volume.
2. When one key is pressed in the Upper or Lower Manual or in Pedal board, a combination of two tones is obtained. The tone generators, however, work independently and a natural, rich harmonious sound fills the place.
3. A single tone module spans a wide range of tones, replacing the conventional tone levers that have fixed sounds of flute, strings, etc. Once tone modules are set, the player can obtain any desired tone, simply by pressing the tone selector. In addition, the tone modules' settings can be changed at will to suit the player's own taste and musical concepts.
4. This new system leads you into unexplored realms of expression.
5. Controls activated at the touch of a finger encompass a whole gamut of mechanism, giving you the greatest ease and freedom in your musical expression.
6. The acoustical cabinet was developed simultaneously to amplify the Natural Sound with the utmost fidelity.

Conceived for theaters and similar uses, the GX-1 electronic organ is the finest Electone Yamaha has developed. Using the most advanced electronic technology, together with the inventiveness and precision that have given birth to the world's most outstanding musical instruments, Yamaha has now created the GX-1.

A unique system produces Natural Sound, with that full, resonant tone essential to the music the new generations want to hear. Both composers and performing artists will find the GX-1 tailored to their personal styles and most complex demands.

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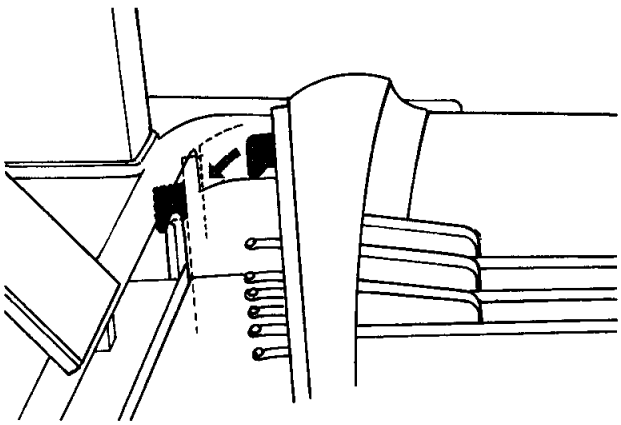
# How to Mount the Pedal Board and Adjust the Seat



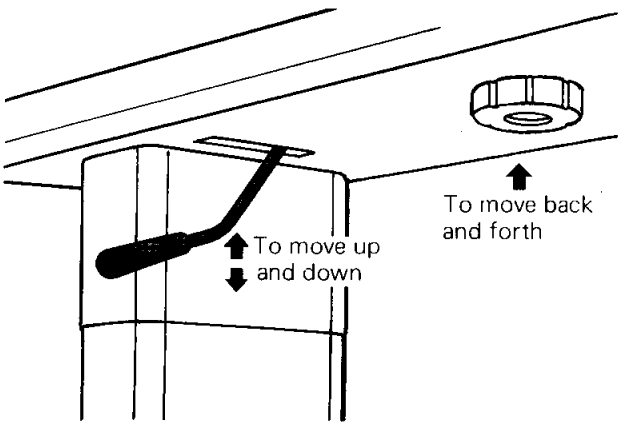
## HOW TO MOUNT THE PEDAL BOARD

The GX-1's Pedal Board is a self-contained unit, and, as such, it can be dismounted. The following precautions should be observed when dismounting or mounting the Pedal Board.

1. It must always be carried by 2 persons and under no circumstances should any extraordinary force be used.

2. When mounting, follow the direction of the arrow in the illustration shown while lifting it a little with a smooth, sliding motion.

3. When dismounting, lift slightly at first and then draw it out.




## TO ADJUST THE SEAT

The Seat of the GX-1 is an inseparable part of the Pedal Board cover. It can be moved back and forth or up and down to the ideal position for playing.

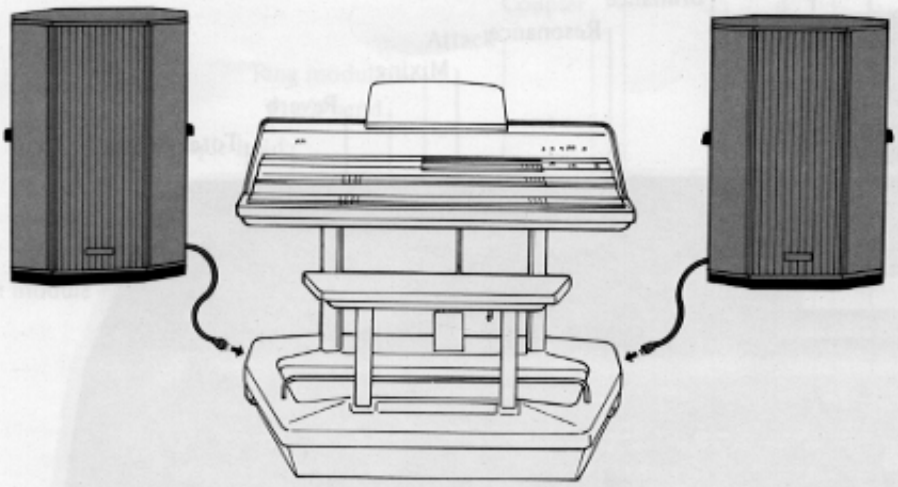
## TO MOVE IT UP AND DOWN

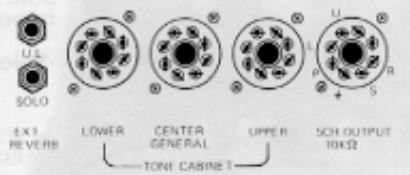
Sit lightly on the seat, and lift the handle under the seat plank to move it up. If you put more weight on the seat while holding this handle up, the seat will be lowered. Once the right position has been found, the seat will remain there if the handle is relased.

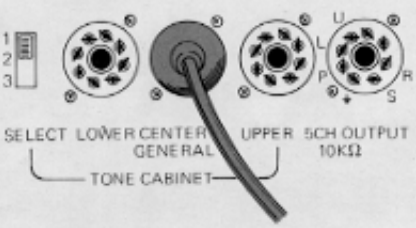
## TO MOVE BACK AND FORTH

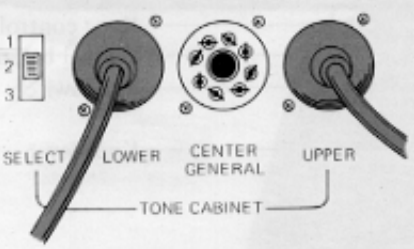
By loosening the screw of the adjustment bolt under the seat plank, the seat can be moved into the desired position by sliding it; then tighten the screw to prevent further movement.

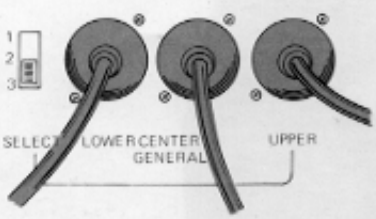
# Connecting the Tone Cabinet






**TONE CABINET TERMINALS**

The GX-1 has 4 terminals for the Tone Cabinet and a multiple units switch. These terminals are on the lower part of the main body of the GX-1 on both sides, and any of them can be used. Any Tone Cabinet model which can be used with an Electone can couple.

With the GX-1, one or more Tone Cabinets can be used according to the size of the hall where the player is performing. (Any conventional electone cabinet can be used, but the rotary speaker does not rotate and no sound is produced.)

**WITH ONE TONE CABINET**

Connect the Tone Cabinet as shown above when only one is to be used.

1. Connect the Center General Terminal to the Tone Cabinet's socket.
2. Set the Tone Cabinet's multiple Units Switch at "1".

**WITH TWO TONE CABINETS**

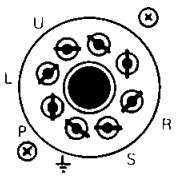
When using two Tone Cabinets, connect them as shown above.

1. Connect the Upper and Lower terminals to Tone Cabinet sockets.
2. Set the Multiple Units Switch at "2". Warning. - When using 2 Tone Cabinets:
   From Upper terminal to Upper
   From Lower terminal to Lower
   * The sounds of the Pedal, Solo Rhythm and Portamento boards are emitted from the Upper and Lower Terminals respectively.

**WITH THREE TONE CABINETS**

Connect the Tone Cabinets as shown above whenever 3 are being used.

1. Connect Upper, Lower and Center General terminals to sockets in the Tone Cabinet.
2. Set the Multiple Units Switch at "3". Warning. - When using 3 Tone Cabinets:
   From Upper Terminal to Upper
   From Lower Terminal to Lower
   The sounds of the Pedal, Solo, Rhythm and Portamento Boards are emitted from the Center General Terminal.




5CH OUTPUT
10KΩ

U.L.

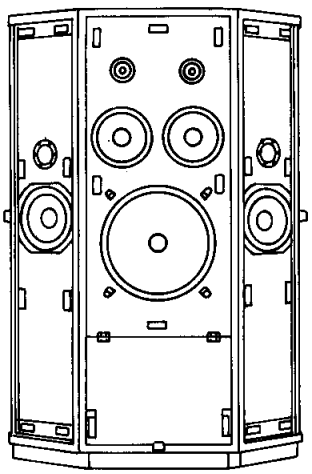
SOLO

EXT.
REVERB

**5 CHANNEL-OUT TERMINAL**
The respective sounds of Upper, Lower, Pedal, Solo, and Rhythm can be separated and become output from this terminal.
However, unless the special connector for this terminal is used, the Tone Cabinet will not be connected.

**EXT REVERB TERMINAL**
This terminal connects the Reverb Box found on the outside. When input, the reverb in the inside of the main body is cut off. The outside reverb can be controlled with Reverb Lever.
* The power input terminals are 2. One is the reverb for Upper and Lower and the other is the reverb for Solo.

# The GX-1's High Quality Speaker System—Model TX-II



TX-II Rear Panel

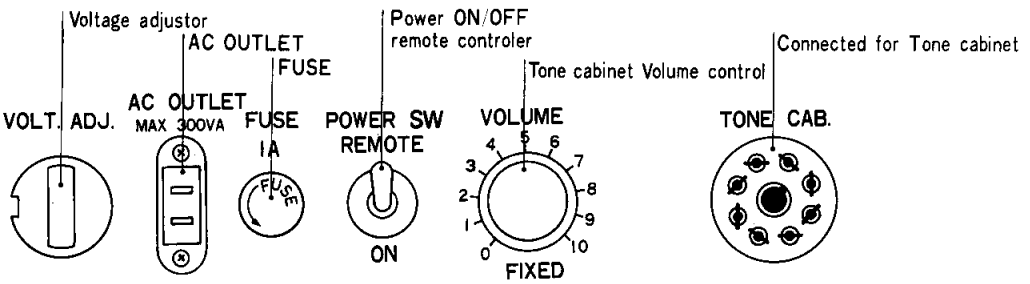



*Illustration is General model*

Any cabinet model designed for use with Electones can be connected to the GX-1. But to derive the full richness of the GX-1's Natural Sound, with total fidelity, Yamaha specifically developed the new TX-IIcabinet. They form an ideal combination.

**CIRCUITRY**
Input Sensitivity: 400mV, (MAX)
Output Power: 120W (RMS)
Power Consumption: 110W
Power Source: 50/60Hz, AC

**SPEAKERS**
Woofer: 38cm (15") x 1
Squawker: 20cm (8") x 4
Tweeter: 5cm (2") x 4

**DEMENSIONS**
Width: 94cm (37")
Depth: 65cm (25½")
Height: 138.8cm (54½")
Weight: 141kg (311 lbs.)


Tone
(Brilliance)
(Resonance)
Overtone
Sub oscillator
Pitch envelope
Overtone
Sustain
Volume
Coupler
Attack
Ring modulator
Pitch bend
Sample hold
Tone module
Electone
Touch
response
Noise
Sub
oscil-
lator
Auto Rhythm
Preset board
Tuning
Wave motion
Overtone preset
Preset piston


Preset tone selectors
Solo keyboard
Portamento
Volume
Brilliance
Resonance
Mixing
Reverb
Total volume
Solo touch response
Solo portamento
Power switch
Knee control
Exp. dynamic range compressor
Foot switch selectors
Knee control
Manual balance
Foot switch
Knee lever
Exp. Pedal
Pedal keyboard

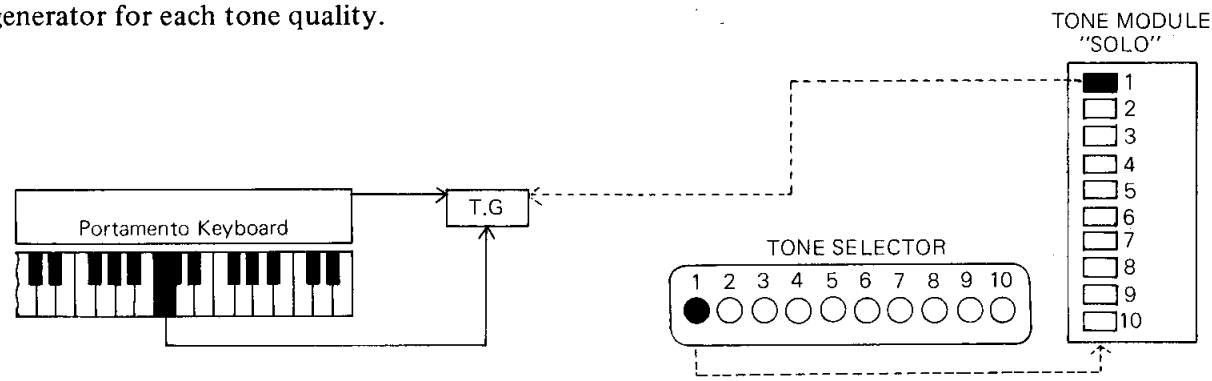
# The GX-1 Tone Generators

## PORTAMENTO KEYBOARD

This keyboard is a strip covering three continuous octaves changing pitch according to the place where pressure is exerted. By a sliding method, this portamento keyboard can lengthen and change pitch. And since it is coupled to the solo keyboard, the full potential of the solo keyboard can be utilized. When the solo keyboard is pressed simultaneously, the portamento keyboard prevails.

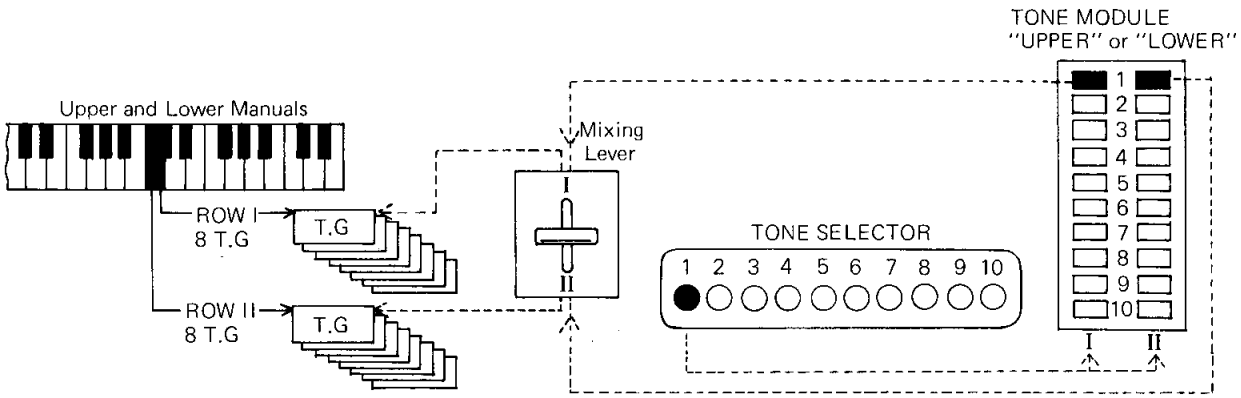
## SOLO KEYBOARD

The solo keyboard has the same width as the Upper and Lower manuals. It has one monotone tone generator for each tone quality.



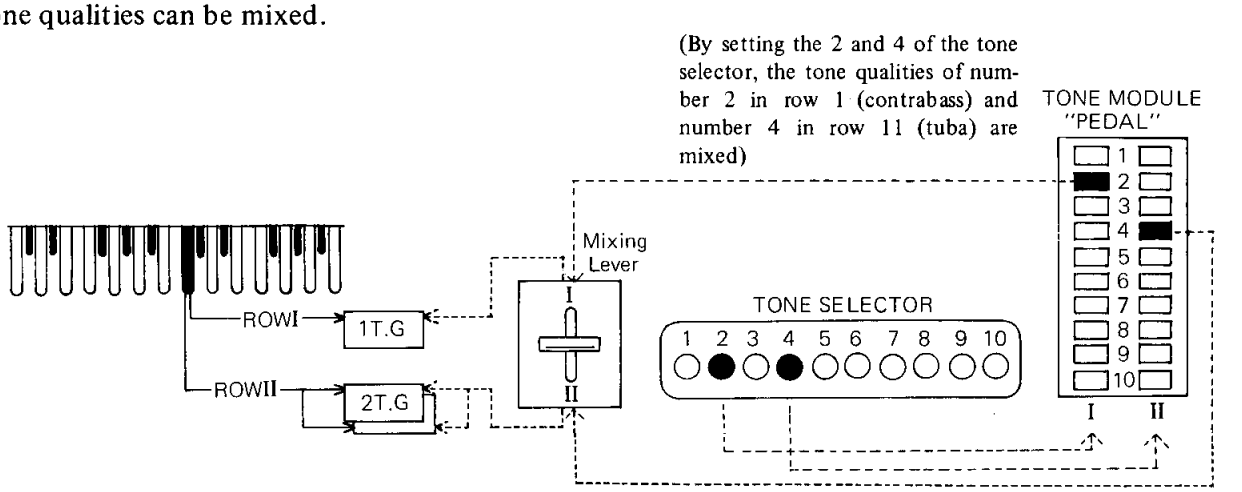

## UPPER AND LOWER MANUALS

As each manual is connected to two tone generators, sounds from the upper and lower manuals result from 16 tone generators, 8 from row I and 8 from row II. Therefore, by exerting pressure on the keyboards simultaneously, up to 8 chords can be obtained. Moreover, two tone qualities can be mixed.




## PEDAL KEYBOARD

The pedal keyboard produces monotone sounds, but because they are made from three tone generators, one from row I and two from row II, the bass sound created is extremely stable. Moreover, two tone qualities can be mixed.



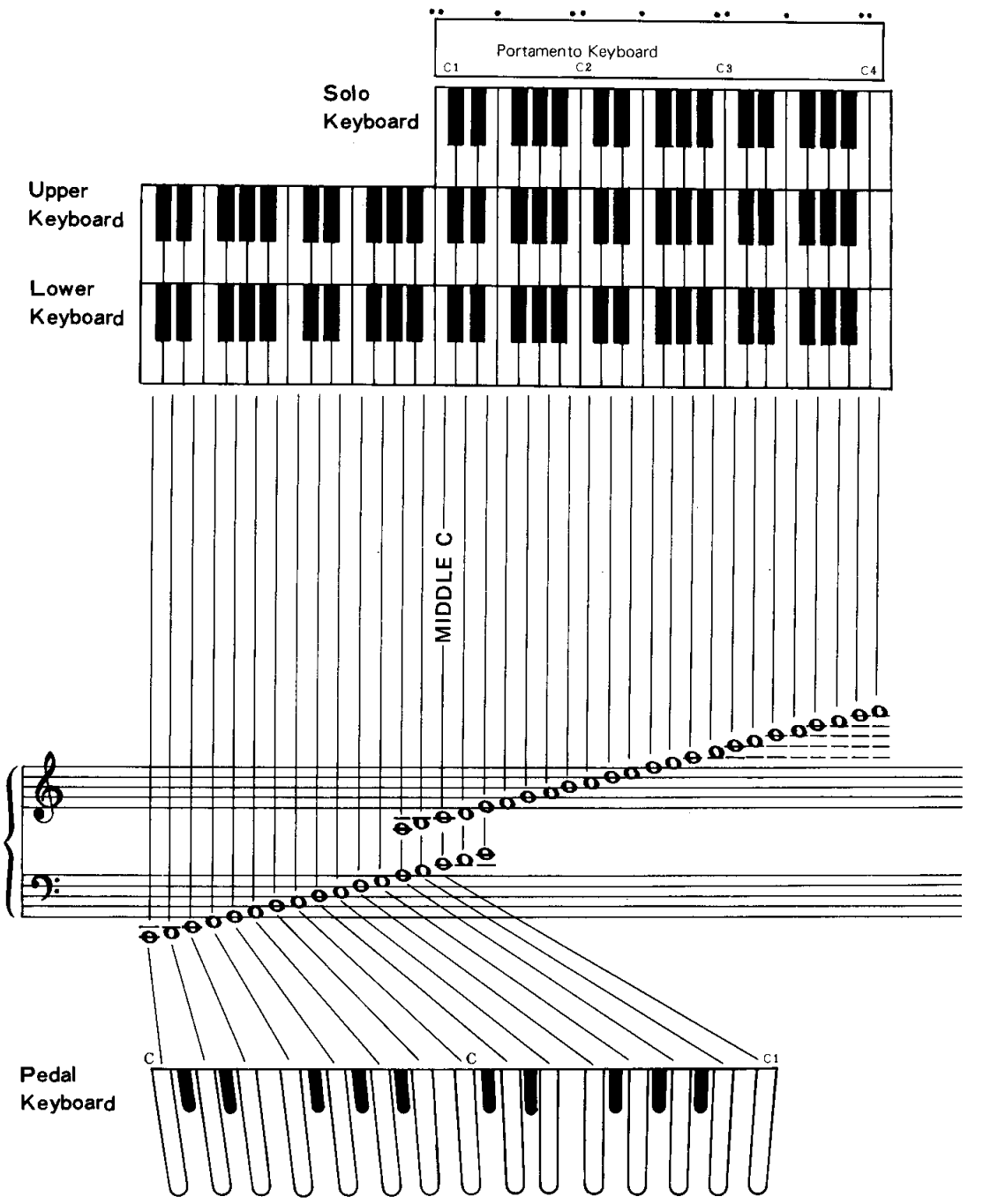
# The Keyboards

## KEYBOARDS

Upper Manual : 61 keys C ~ c4 5 octaves
Lower Manual : 61 keys C ~ c4 5 octaves
Pedal board : 25 keys C1~c 2 octaves
Solo board : 37 keys C1~c4 3 octaves
Portamento : 3 octaves c1 ~ c4

## TONE GENERATOR

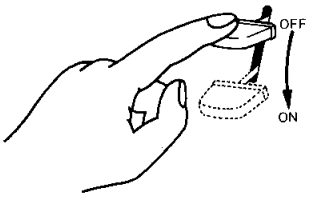
Upper Manual : 8 notes 2 rows
Lower Manual : 8 notes 2 rows
Pedal board : 1 note 2 rows
Solo board : 1 note 1 row
Portamento : Auto changeable with Solo board.
(portamento has priority)

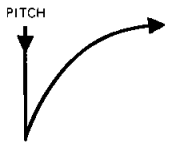


# Exclusive features of the GX-1; and how to use them.

## PITCH BEND

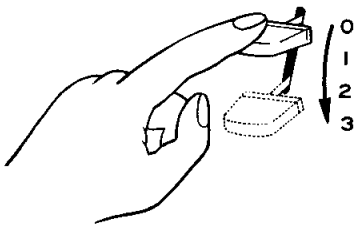
Thanks to this effect, when a key is pressed, pitch automatically and immediately becomes lower, and at the end of the set time, returns to its original position. The length of time required for pitch to change and then return to its original position is preset. The degree to which pitch is lowered is also preset.




## COUPLER

This lever permits more versatile performance by adding the tone colors from one manual to the notes played on another. For example, "L to U" adds tone selected for the lower manual to all notes played on the upper manual.

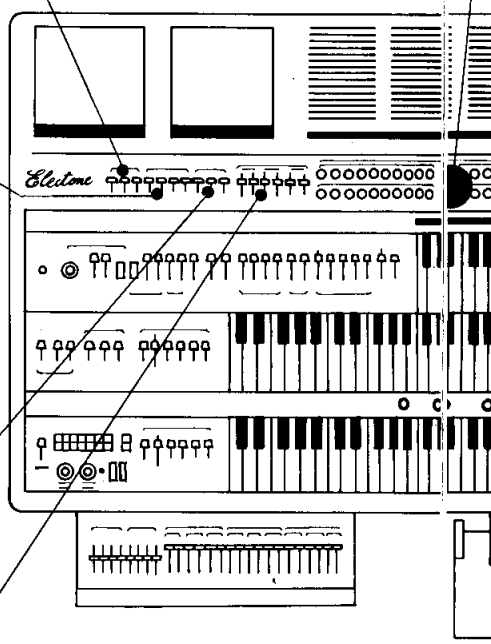



## SUSTAIN

This effect produces a trailing-note sound. If the lever is set all the way up, the decay time will be zero and therefore no sustain effect will occur unless the sustain effect has already been properly entered with the preset tone. Decay time is increased as the lever is pressed downwards.

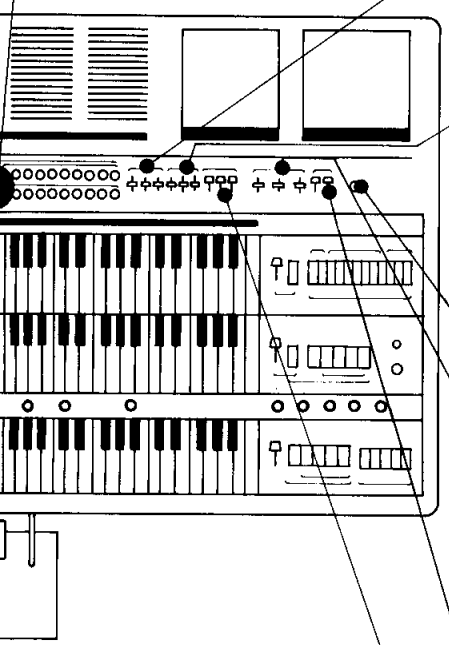
## OVERTONE

Preset tones have two rows of tone generators, and Overtone sets the pitch for both of them. The number "1" in this Overtone indicates the 16' of the conventional electone's harmonics (other equivalents are: 2 = 8', 4 = 4', and 8 = 2'.) This Overtone plays an important role in setting the sounds you produce with the GX-1, and you will find many ways to use it successfully.



## TONE

The structural organization of the totally preset tones of the GX-1 involves 20 tone generators, 10 in row I and 10 in row II of each of the Keyboards, with the exception of the Solo keyboard which has only the 10 of row I.
In addition to conventional tones preset by means of a tone lever, solo tone or preset tone, the player can instead choose the tones he likes, changing them to suit his varied musical intentions. Consequently, levers such as flute 8' or strings 4' are not found on the GX-1. By pressing the switch, a lamp is turned on under the numbers 1 to 10 and the desired tone can be selected. Even two tones can be selected simultaneously. A single selector button in each of the keyboards is used to obtain a combination of two tones from the tone generators in rows I and II. But when selecting two tones simultaneously, use the left hand button for tones in row I, and the right hand button for tones in row II. The extent of mixing is adjusted by means of the Mixing Lever, enabling you to obtain a wide variety of tones instantaneously (However, this is not applicable to the Solo Keyboard).

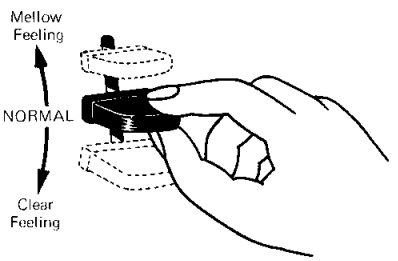


## VOLUME

This lever controls volume balance in the Upper and Lower Manuals as well as in the Pedal Board. The center line indicates normal volume: to increase volume push the lever on.

## BRILLIANCE

This effect imparts a sparkling yet gentle feeling to all tones. Put more technically, it adjusts the way harmonics are embraced.

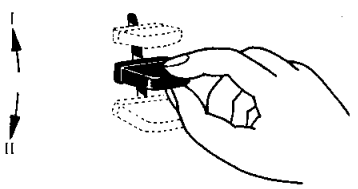



## TOTAL VOLUME

This lever adjusts the volume anywhere, and of any effect possible, on the GX-1, completely at the will of the player.

## MIXING

Selection of preset tones in row I and II, by the Overtone blend, is adjusted by this lever.




## REVERB

This effect creates the same echo as is produced naturally when an instrument is played in a very large hall. This effect can be divided between the Solo Keyboard and the Upper and Lower Manuals.
Echos last progressively longer as the lever is gradually pushed downward.

## RESONANCE

Resonance serves to stress the specified harmonics and create a most unique sound. Once mastered, this particular tone change can maximize the individuality of your music.

# Solo Keyboard's Effect Control

### RING MODULATOR

The Ring Modulator is used to obtain a very special effect with a different tone generator in the Solo Keyboard. With the modulation lever ON, a change is caused in the way the Ring Modulator operates.
The Ring Modulator effect does not function when the modulation lever is not connected.

### OSCILLATOR AND KEYBOARD

The effect's tone generator has a sawtooth waveform which is changed by means of the lever control, and the speed of modulation is regulated by means by the speed control.
With the Keyboard switch ON, speed changes in accordance with the pressing of the Solo Keyboard's Keys. That is, when a high pitch key is pressed the speed increases and it decreases when a low pitch key is pressed.

### NOISE:

This effect consists of noise. Modulated by the tone generator.
The nature of noise is used to cause color changes. This generated noise increases in high-frequency harmonics as the lever is pulled further out toward the player.

### ATTACK

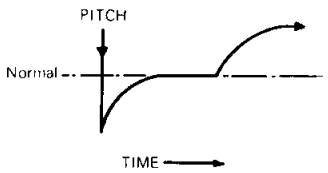
It adjusts the speed of the attack, or the time in which a note rises to full volume and pitch. Speed increases the more the lever is pulled out.

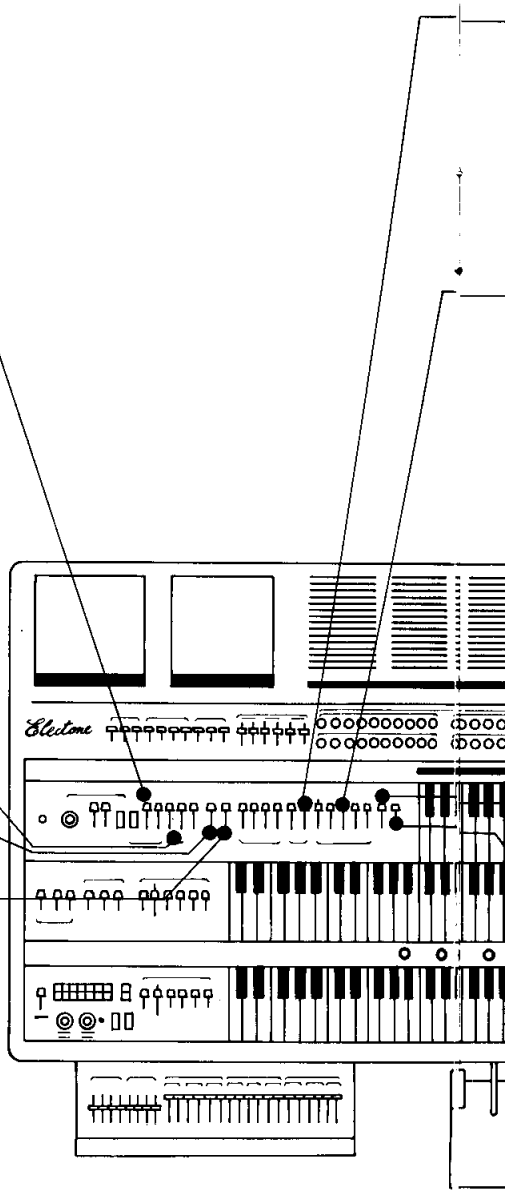
### SUSTAIN

It controls the trailing duration of the sustain effect. As the lever is pulled out more and more toward the player, the effect is prolonged.

### PITCH ENVELOP

The pitch and duration of a sound are made to change by means of these levers, in accordance with the attack or the decay as is shown in the following illustration.



### INITIAL PITCH:

When pressed, this controls the width of pitch instantaneously. Change increases by pulling the lever toward the player.

### 1st DECAY:

This controls the time it takes to return to the original pitch. The time is shortened by pulling the lever toward the player.

### 2nd DECAY

This controls decay time of the pitch after the finger is withdrawn from the key. The time becomes shorter by pulling the lever toward the player. (If there is not enough trailing to introduce sustain, the effect of final pitch and 2nd decay cannot be obtained.)

### FINAL PITCH:

This controls the width of the final pitch as the finger is withdrawn from the key. Increase change by pulling the lever toward the player.

## TONE BRILLIANCE:

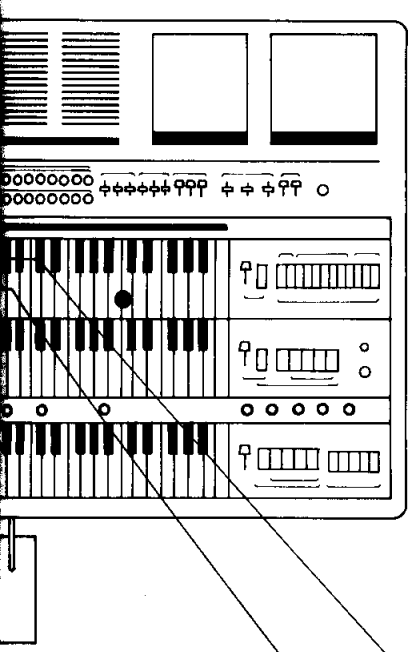
This effect imparts a glowing feeling of softness to the solo keyboard's tone quality. The normal position of the lever is the middle click-stop. If pressed back, a soft, mellow feeling is added. This gives a beautiful brilliance when pulled out toward the player.

## RESONANCE:

This is an effect that accentuates certain harmonics of the solo keyboard paralleling the resonance lever. Pulling the lever toward the player gradually changes the adjustment.

## SUB OSCILLATOR

By means of a separate oscillator, the tone generator produces tremolo, vibrato and wah-wah in the Solo Keyboard.



### VCO:

Usually called vibrato, VCO produces pitch changes in accordance with voltage. The vibrato effect grows deeper when the lever is pulled toward the player.

### VCF:

Usually called wah-wah, VCF changes the frequency according to voltage. By pulling the lever toward the player this effect becomes deeper.

### VCA:

Usually called electronic tremolo, the waveform amplitude is changed according to voltage. By pulling the lever toward the player, the tremolo effect becomes deeper.

### SPEED:

The speed of vibrato, tremolo and wah-wah increases when the lever is pulled toward the player. Set the middle click-stop for normal speed.

### FUNCTION:

This lever selects the waveform of the tone generator. There are 6 different functions.

- : (Sine wave) an undulating sound
- : (triangular wave) a harder feeling than the sine wave
- : (sawtooth wave) a high attack
- : (sawtooth wave) a slow speed attack
- : (square wave) a sharp-cornered feeling

S/H : (sample hold) Set function lever in this position, then adjust the Auto Rhythm and the Rhythm Pattern of the Sample Hold to obtain the Sub Oscillator effect.

## OVERTONE

This sets the overtone for the Solo Keyboard. It works by the same method as the overtones in the pedal board, and in the upper and lower manuals, 1/8 (128') is an extraordinarily low bass and can be used as an effect sound.

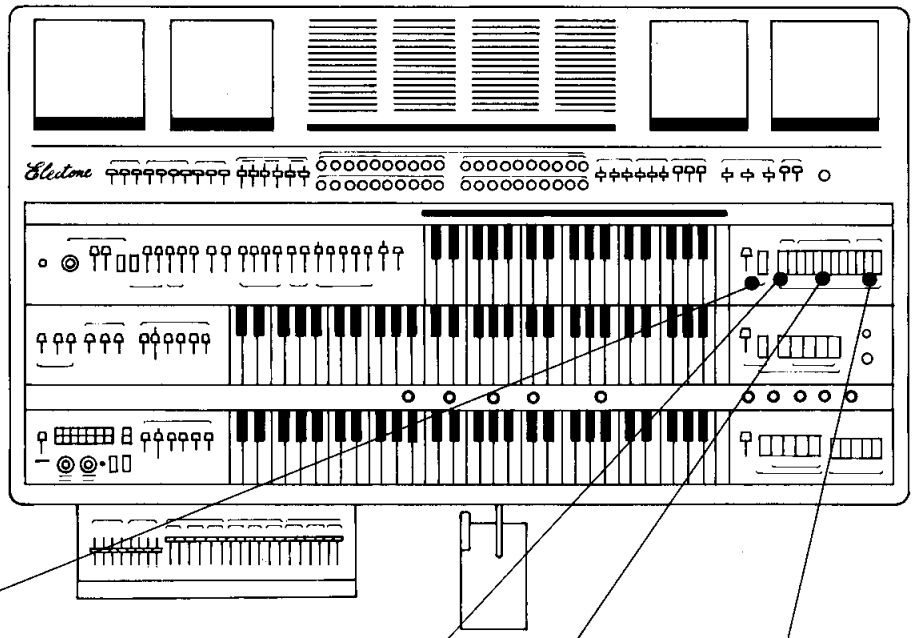
## VOLUME

This adjusts the volume of the Solo Keyboard. A center line, showing the standard level, makes for easy volume control.

## FOOT SWITCH (PORTAMENTO):

With this switch in the ON position, Portamento can be obtained in the Solo Keyboard only when the Foot Switch is on (with the Foot Switch pressed continuously). Oscillator slew rate is controlled by the Portamento Lever.

# Solo Keyboard



## SOLO PORTAMENTO

In the Solo Keyboard, to achieve the effect of a continual pitch change from the moment one key is pressed until the following one, keep the portamento lever on the left connected. The time rate is prolonged by pulling the lever toward the player. Connecting the left tablet, Lever 2 causes the portamento effect in the solo Keyboard. Therefore, when this tablet is connected (ON position) the portamento effect cannot be obtained with the Solo Keyboard.
It can be produced only after Lever 2 has been moved to the right. The duration of glide in the portamento effect is changed by adjusting the portamento lever accordingly.

## TOUCH RESPONCE

A light touch on the Solo Keyboard produces the following effects.

1st:

It changes in accordance with the pressure with which the keys are pressed.

### ATTACK TIME:

The Attack time becomes faster when keys are struck with harder force.

### INITIAL PITCH:

Sound becomes lower and returns to the original pitch right after the key is pressed. The pitch becomes deeper with greater applied pressure.

2nd:

When a key is pressed in the Solo Keyboard and then pressed again while sound is being produced the following effects are obtained.

### PITCH :

After the note is produced, stronger pressure causes pitch to rise.

### BRILLIANCE:

After the note is produced, it becomes brighter with stronger pressure.

### VOLUME:

After the note is produced, stronger pressure increases the volume.

After sound is produced, a stronger pressure will cause the same effect as with the sub oscillator.

Depress these tablets and the effect of the lever of Panel 2's sub oscillator is cancelled. For example, when a given VCO lever is connected and the speed tablet of touch response is in the ON position, a singing vibrato effect is obtained by pressing the Solo Keyboard with your fingers.

3rd:

This is the conventional touch vibrato obtained by pressing a key while moving the finger from side to side.
Vibrato, wah-wah and resonance effects are also produced.

# Playing the GX-1 After Selecting Preset Tones

HOW TO PLAY THE GX-1

First, check to see that control levers, switches, tablets, etc. are in their correct positions. If they are not in their correct positions, a sound may be changed from what it was set at, and it may resemble the desired basic sound, though it is not the same. In an extreme case, no sound at all will come out.

**(1) PRESET TONE**
Choose sounds by using the tone selector. Up to two can be selected to sound simultaneously.

**(1') OVERTONE**
Set the overtone at 2 on all keyboards. The 2 pitch corresponds to the 8' of the conventional tone lever.

**(2) MATCH THE PITCH OF THE SEVERAL KEYBOARDS**
(by using the tuning lever located on the preset board).

Normally the pitch of all keyboards match exactly, but it can be intentionally set to be uneven.

**(3) FRONT PANEL**
Choose the overtone.

**(4) MIXING**
Mix rows I and II.

When the lever is set in middle click-stop sounds comes out uniformly from I and II.

**(5) BRILLIANCE, RESONANCE**
Adjust the brilliance and resonance.

Because there is a considerable range of variation, first listen carefully to the sounds, and then set to the desired position.

**(6) VOLUME**
Adjust the volume of the various keyboards.

**(7) WAVE MOTION**
Adjust the wave motion.

This mechanism controls the differences in pitch of the tone generators in rows I and II to make them differ uninterruptedly from 0 on up. Using some degree of difference usually produces a richer sound. As pitch differs more and more, the beat gets faster (like surging waves).

**(8) EFFECT**
Coupler, Sustain, Reverb, Vibrato, etc.

Choose the effect to suit the mood of the music. For example, since the coupler mixes the sound of the upper manual to that of the lower one, or vice versa, choose the effect which creates a fuller, more stable sound.

# Control Levers of the Upper Manual

### TOUCH RESPONSE

This effect permits innumerable changes of expression which up to now were possible by merely pressing the keys of a keyboard musical instrument. The keyboard will vibrato sideways, in response to the finger technique, making exuberant vibrato, wah-wah and resonance effects available to meet the player's musical demands. This effect is only possible in the Upper Manual.

### RESONANCE, WAH-WAH, VIBRATO:

These effects are controlled by levers, and the feelings they evoke are obtained according to the extent that they are deepened.

### NOISE

The Noise signal originates in irregular proportions and sizes (from a very low number of vibrations to a very high one.)

### VCF:

With this, the wah-wah effects are obtained mixed irregularly with Noise.

### VCO:

With this, the vibrato effect is obtained mixed irregularly with Noise.

### COLOR:

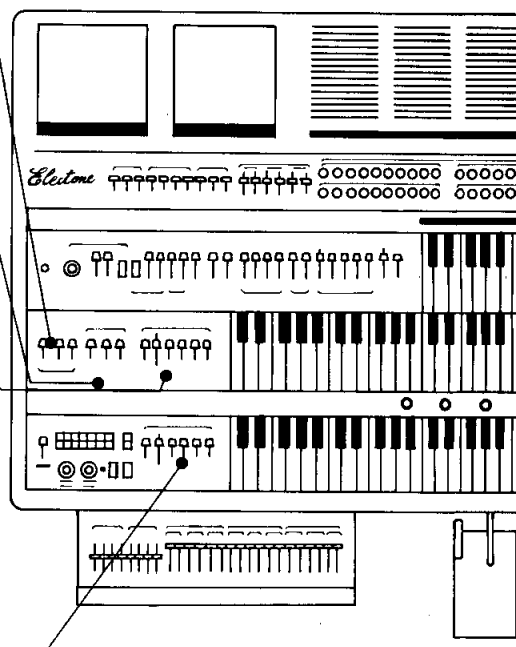
This changes the nature of Noise. When pulled toward the player, the elements in the high region become larger.

### SUB OSCILLATOR

It is the same as Upper Manual's sub oscillator and produces tremolo, vibrato and wah-wah modulations in the Upper Manual.
By means of the leftmost lever, the speed of the sub oscillator is coupled with the pitch of the Solo Keyboard. With this lever connected (ON) and drawn toward the player, the speed of the Upper Manual's sub oscillator increases when high pitch sounds of the Solo Keyboard are played, and slows down when low pitch sounds are played.
If the Solo Keyboard is not being played, it is possible to maintain the speed coupled to pitch as it was at the moment when the Solo Keyboard was pressed for the last time.

### FOOT SWITCH PORTAMENTO:

As with the solo yellow tablet on the left, only when the Foot Switch is in the ON position can Portamento be obtained in the Upper Manual.
The Portamento Lever controls the changes of the oscillator slew rate.




# Lower Manual

### SUB OSCILLATOR

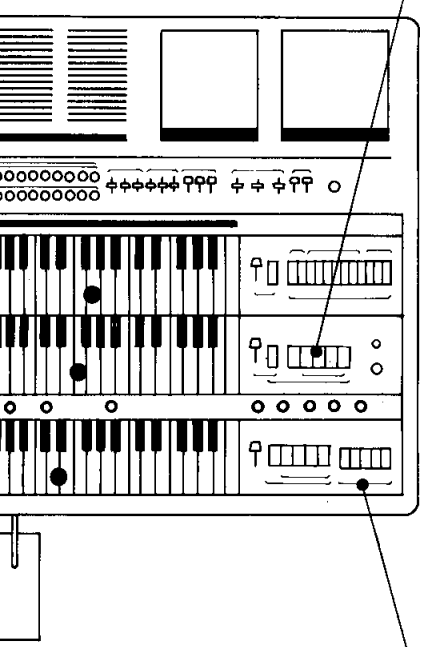
This has the same effect as explained under Upper Manual's sub oscillator, and produces vibrato and other modulations in the Lower Manual.

### FOOT SWITCH (SUB OSCILLATOR)

With this switch in the ON position, the sub oscillator effect on the Upper Manual can be cancelled by turning the Foot Switch on. The lamp works the same as in the Upper.

### KNEE CONTROL (LOWER SUSTAIN)

This Lower Sustain Tablet and Sustain-Lower lever determine the length of the trailing note effect, and by moving the Knee Lever all the way to the right the sustain effect is produced in the Lower Manual.



## KNEE CONTROL

Once having preset these tablets, Portamento and Sustain effects are produced, in the Upper Manual in the midst of playing, by activating the Knee Lever.

### UPPER PORTAMENTO:

This Portamento is an effect obtained in the Upper Manual. Pitch variation is continuously maintained from the moment that the first key is pressed until the next key is pressed. The depth of depression of the Portamento lever determines the time lapse (oscillator slew rate) until the second key is pressed. Playing harmony, pitch varies at random and is similar to the pitch of the keyboard being pressed.
When the right-hand panels are pushed in, the Portamento effect can be obtained in the Upper Manual by means of the Knee Lever. Therefore, if these panels are set at ON, Portamento cannot be obtained on the Upper Manual. Only when the Knee Lever is moved to the right, can this effect be obtained.
The yellow lever on the left adjusts the duration of the Portamento's pitch variation.

### UPPER SUSTAIN:

Using the Upper Sustain tablet and the Sustain-Upper lever, set the trailing length at the desired position. Then, by moving the Knee Lever all the way to the right the sustain effect is obtained in the Upper Manual.

### SUB OSCILLATOR

### VCO:

With this VCO tablet in the On position, pressing the Knee Lever all the way to the right produces the vibrato effect in the Upper Manual.

### VCF:

With this VCA tablet on moving the Knee Lever all the to the right produces a wah-wah effect on the Upper Manual.

### VCA:

With this VCA tablet ON moving the Knee Lever all the way to the right creates an electronic tremolo effect on the Upper Manual.

### SPEED:

With this Speed Tablet on, the speed of the sub oscillator's VCO, VCF and VAC changes as the Knee Lever moves to the right.
However, when the levers of the sub oscillator in the Upper Manual's effect control have been set, the corresponding levers in the Upper Manual's effects are cancelled by setting the Knee Control tablet in the ON position.

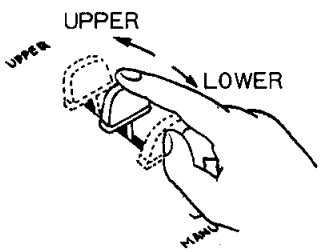
## FOOT SWITCH (SUB OSCILLATOR)

With this switch in the ON position, the sub oscillator effect on the Upper Manual can be cancelled by turning the Foot Switch on.

# Knee Control Switch and Others

## MANUAL BALANCE

This Manual Balance Lever balances the sounds of the Upper and Lower Manuals, and these match when it is in the middle click-stop position.
For example, if you want to stress a melody in the Upper Manual, press the lever forward and Preset it in the opposite direction to adjust the sound of the Lower Manual when it is too weak.




## KNEE CONTROL

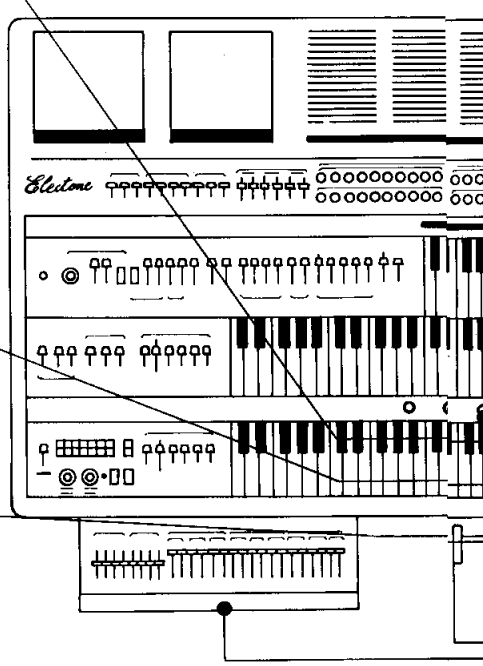
Set these tablet switches in advance. Then, by activating the Knee Lever in the midst of playing, sustain and other effects are obtained in the Lower Manual. With the exception of the Lower Sustain, the effects and their mode of operation are the same as explained under Knee Control.
(See Knee Control on page 14.)

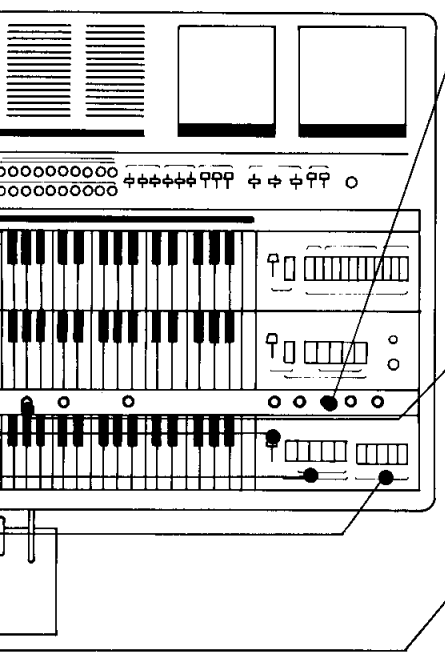
## FOOT SWITCH

The following 5 effects can be controlled by means of the Foot Switch. This switch selects the desired effect for the music being played.

### PORTAMENTO

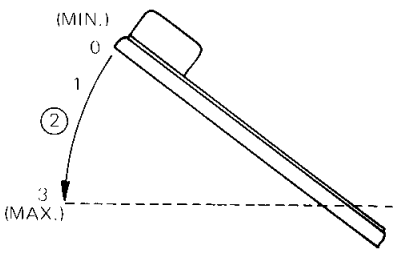
It is a rubber switch located on the upper left of the Expression Pedal. To connect it bend it to the left using the tip of the right foot. Once it is in the ON position, turn it off by repeating the same action.





## EXP. DYNAMIC RANGE COMPRESSOR

These 5 button switches fix the volume range that can be modified by means of the Expression Pedal, within a given range. For example, even if the Expression Pedal is in the OFF position when switch U is pushed in, volume can be preserved up to a certain degree. When the Expression Pedal is at max, volume change is practically nil. At mini, volume is preserved up to the usual middle point 2 of the pedal.




## OVERTONE PRESET BUTTON

In order to accomplish the musical intention, even in the midst of playing, buttons 1, 2, 3 and 4, which were preset with the selected overtones, can be interchanged at will. Also, connected to the inner part of button 4 is a pitch which resembles a full organ. Switch C cancels the preset.

## PRESET BOARD

The GX-1's preset does not indicate tone lever preset. Rather, it is 3 kinds of combinations of overtones in the Upper and Lower Manuals and in the Pedal Board. This preset is activated by means of the 5 buttons located between the Upper and the Lower Manuals.

### OVERTONE :

The overtone of the Preset Board corresponds to overtone.

### TUNING :

The GX-1's Upper and Lower Manuals, as well as the Pedal Board, can all be tuned, and its pitch can easily be adjusted for ensembles with other musical instruments. Pitch rises when the various levers are pulled toward the player. Pitch changes cover a range of 200 cents (1 whole tone).

### WAVE MOTION:

By changing pitch in row II and mixing in row I, the sound of the Upper and Lower Manuals as well as the Pedal Board produce a more robust impression. Raise the pitch by pulling the lever toward the player. There are two tone generators in row II of the pedal sounds. By controlling P II', a wave motion is obtained only in row II. This is why there is a P II and P II' only for the Pedal.

# Auto Rhythm Section

The GX-1's Auto Rhythm adds new mechanisms to the conventional ones. Image control, variations A and B, and Swinger increase the colorful possibilities of expression that are available. Details which used to be beyond the player's control, plus a clear tone quality, embellish your playing and innovative, colorful rhythm patterns provide deeper musical enjoyment.

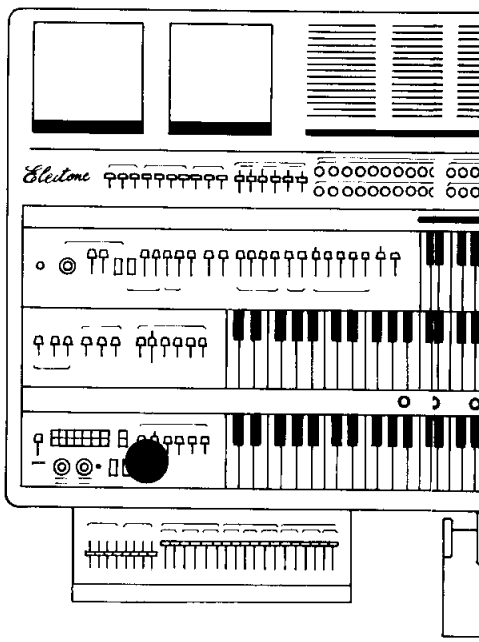
## RHYTHM SELECTOR

Press the Rhythm Selector Button to select the desired rhythm. Two or even three of the following 14 rhythm buttons may be pressed simultaneously and thus be used in combination. Furthermore, by using Variation A or B, one rhythm will acquire subtle differences and become 4 different rhythm patterns.

### EXAMPLES OF COMBINATIONS WITH MARCH

1 March I
2 March I + Variation A
3 March I + Variation B
4 March I + Variation A + Variation B

*When variation A and B are combined with Waltz, a rhythm with a 5/4 beat is obtained.




### RHYTHM START :

This switch sets the rhythm to start after 2 or 4 bars of the music have been played.

### SYNCHRO-START :

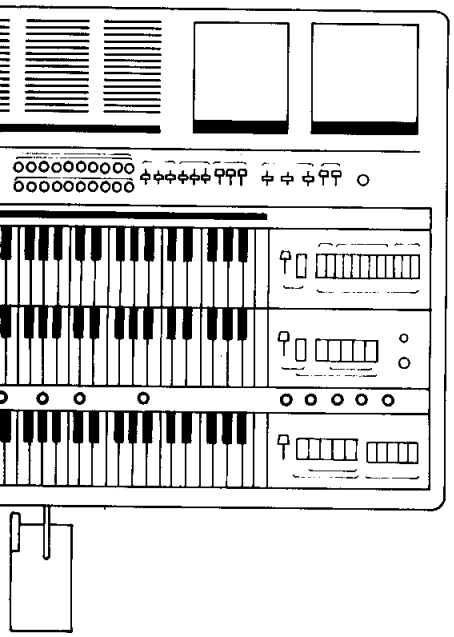
When the Synchro-Start switch is set in the ON position, it couples with the Lower Manual or with the Pedal Board, and rhythm starts the instant that you touch the board. At any one time your use of the above Start Switch and Synchro-Start should be limited to one or the other. If you start rhythm with the Start Switch, the same switch should be used to stop the rhythm. When rhythm is started with the Synchro Start switch, use the same switch to stop the rhythm. For best musical performance always follow this practice. Note that this does not apply when the Foot Switch is being used.

## IMAGE CONTROL:

This mechanism enhances rhythm by strengthening or weakening beat. The center line position is the normal setting. When the lever is pulled in the direction of the player, second and fourth beats are up-beat, when pushed back, first and third beats are upbeat.

## FOOT SWITCH (RHYTHM STOP)

When you want to restart or to stop the Auto Rhythm once it has already been started, press this switch to the ON position, and control Auto Rhythm by turning the Foot Switch on or off, accordingly.



## VOLUME :

Set Auto Rhythm Volume balancing it with the volume of the other keyboards. Volume set for the Auto Rhythm can be changed with the Expression Pedal just as with the Manual Keyboard. It is easier to achieve balance when this basic volume is lower than the other volumes.

## BALANCE :

This adjusts the balance between the volume of low sounds, such as bass drum, and high sounds, such as cymbals, to the personal tastes of the player, and also stimulates a new, different feeling from a single rhythm, according to the music to be played.
Turn the knob clockwise to weaken low sounds like bass drum and stress high sounds like the cymbals, for a gently enveloping feeling. Turn it counterclockwise to stress bass drum, bongo, conga and other drum sounds while weakening the high sounds such as cymbals.

## TEMPO CONTROL :

The Auto Rhythm's tempo can be controlled completely at will. With the synchro-start switch in the ON position, before producing any sounds, look at the tempo indicator lamp to verify the tempo. As a rule, turn on and off each unit of quarter note.

## SWINGER :

By continually changing the duration of sounds it produces a snappy, enlivened rhythm.

## SAMPLE HOLD :

The several rhythm pattern generators of Auto Rhythm, for example the pattern that produces bass drum or the pattern that produces cymbals, are coupled with Sample Hold, and with it one can change tone color and random variations of pitch. This is one waveform in the function of the sub oscillator on the Upper and Lower Manuals. This mechanism enables fully automatic play, producing tone and random pitch, even when the Solo Keys are not pressed. All effects except the Solo Keyboard's Touch Response and Portamento can be added to the sound of the Sample Hold.

## RHYTHM PATTERN :

Set this volume as you desire to conform with rhythms selected by means of the Auto Rhythm. The lamp will light to indicate that rhythm and volume conform. Sample Hold will be activated. For example, Sample Hold will be activated only with SD (snare drum), H H (high hat), SI.1 (cymbals), and BD (bass drum) whenever the swing rhythm is being produced.

## VCF :

This can change the tone when Sample Hold is activated.

## VCO :

This can change the pitch of tone when Sample Hold is in operation. The range of pitch variation is extended when the lever is pulled toward the player. Warning – These levers affect the Solo Keyboard's tone, so they should be in the OFF position when Sample Hold is not in use.

## S/H ON. OFF SWITCH :

When set in the ON position, this switch activates Sample Hold. However, it can not be activated unless the Auto Rhythm is activated.

# What makes the GX-1 truly Unique is Natural Sound.

Yamaha provides this Natural Sound for you by using a small printed-circuit board, which is an already set and integral part of the instrument.

The GX-1 has 70 tone modules each with a preset tone. They are:

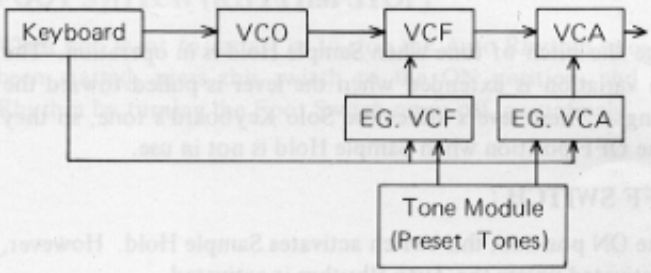
| | |
|---|---|
| Upper Manual | 10 tones (2 rows) = 20 |
| Lower Manual | 10 tones (2 rows) = 20 |
| Pedal Board | 10 tones (2 rows) = 20 |
| Solo Board | 10 tones = 10 |

These 70 tones hold the secret of the GX-1's Natural Sound.

Just like human beings, sounds are born, reach their prime and die; but the life of a sound, from creation to evanescence lasts only a few seconds.

Pitch, tone and volume undergo subtle changes just as the sounds produced from musical instruments, such as those of trumpet or violin, rise and gradually fade out. We take these sounds for granted as we consider them natural sound. The time relationship varies with each instrument, and accounts for its distinguishing character and sound. For example, the figure on page 20 visually represent the form of the sound waves of the brass sounds produced by the GX-1 as they gradually unfold. Until the GX-1, conventional electronic organs kept the wave of a sound unchanged throughout its duration when expressing a tonal quality. Now with the GX-1, the oscillator that produces sounds, the filter that decides tone quality, and the amplifier that increases volume are coordinately controlled and, thus, it is possible to subject interval, tone and volume to variations.

VCO : Voltage Controlled Oscillator
VCF : Voltage Controlled Filter
VCA : Voltage Controlled Amplifier
EG : Envelope Generator




Furthermore, to enable a change in sounds at the several points corresponding to their birth, rise and decay, the GX-1 has an envelope generator which is activated automatically when a key is pressed, and is capable of generating control signals that can be preset at will from 1/1000 of a second to 10 seconds. This is shown in the above (simplified) flow chart. The many elements required in the creation of sounds such as these have been reduced to 26 and can now be controlled by means of the tone section which is shown in figure 2.

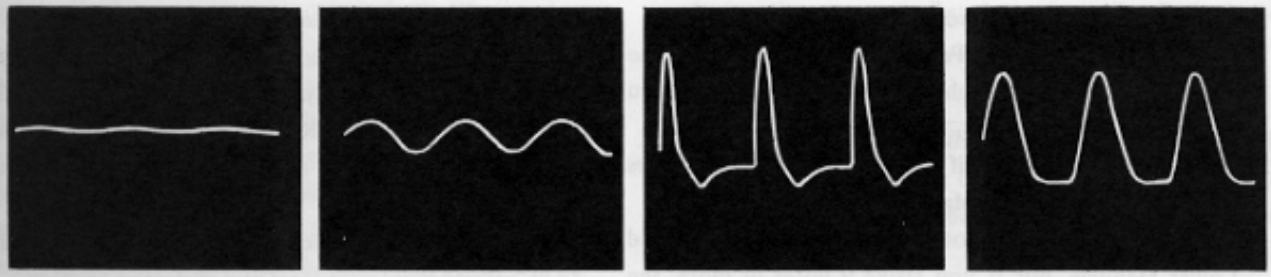
The entire range of tone qualities is produced by changing the way the it is set.

1. Choose the basic sound waveform.
   Needles to say, more than two waves can be mixed to meet your desires.
2. Choose the basic harmonics composition.
   At this stage, the fixed high pass and low pass filters are used.
3. In addition, the harmonics (waveform) change due to changes in the time relationship.
4. Change the time relationship in the duration of sustain, the curve of volume in the first decay, the first decay (duration of decay while the key is kept pressed down) and the speed of attack. The tone qualities thus obtained are transferred and fixed in the tone module's 26 fixed volumes by the tone module setting box.


With the GX-1 you can produce natural, rich sound by having two tones combined for each key of the Upper and Lower Manuals as well as the Pedal Board. Consequently, there are two tone modules set for each tone selector. Today, the tone modules set most often use standard tone qualities, but you can reach the limits of your musical imagination, and even create your very own tone qualities, by removing the standard tones (tone modules) and replacing them with other ones. This is a revolutionary innovation from previous electronic organ and makes it a special attraction of the GX-1.

FIGURE 1

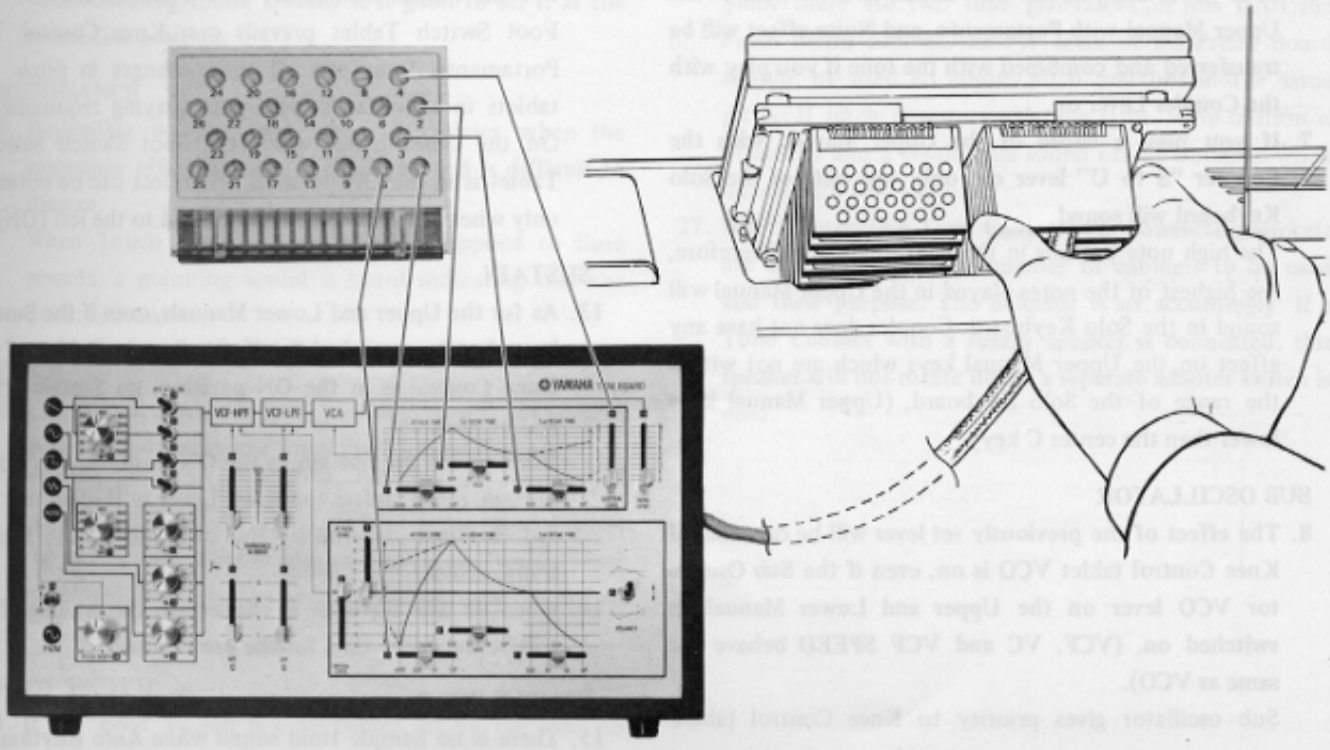
Brass Row Sound



After 10 ms | After 20 ms | After 500 ms | After 1,000 ms

## TONE BOARD

Tones can be created at will, with control of such structural elements as interval, tone color and volume. In the GX-1 a great many elements which comprise tones are put together into 26 elements, each of which is controlled on the Tone Board, and the tones created by the Tone Module Setting Box.



KEYBOARD

1. **Only one note will sound if you strike more than two notes in the Solo Keyboard and Pedal Board.**
   Both Solo Keyboard and Pedal Board give priority to the higher note. Only the higher note will sound when you press two notes or more.
2. **Only 8 notes will sound if you strike more than 9 notes in the Upper and Lower Manuals.**
   You can strike up to 8 notes at a time on the Upper and Lower Manuals, but if you strike 9 notes or more, the extra notes do not make any sound.
   The same result occurs regardless of whether the combination of tones is increased with Coupler Lever or Mixing Lever.
3. **When the Solo Keyboard and the Portamento Keyboard are played simultaneously, the Portamento prevails and the Solo Keyboard will not give any sound.**

PRESET TONE

4. **To combine two tones it is necessary to set the Mixing Lever in the middle center click stop position even when the two preset tone selector buttons are lit.**
   When the mixing Lever is set to either row I or row II, sound will come out only from that side. Set the lever and combine rows I and II in the right proportion.
5. **The Solo Keyboard's preset tone only gives out one sound.**
6. **When you play the Lower Manual with the Coupler "U to L" lever on, you can also obtain in it the tone of the Upper Manual with Portamento, and Noise effect will be transferred and combined with the tone if you play with the Coupler Lever on.**
7. **If you play a chord of the Upper Manual with the Coupler "S to U" lever on, only one note of the Solo Keyboard will sound.**
   The high note prevails in the Solo Keyboard. Therefore, the highest of the notes played in the Upper Manual will sound in the Solo Keyboard. Coupler does not have any effect on the Upper Manual keys which are not within the range of the Solo Keyboard, (Upper Manual keys lower than the center C key).

SUB OSCILLATOR

8. **The effect of the previously set lever will be cancelled if Knee Control tablet VCO is on, even if the Sub Oscillator VCO lever on the Upper and Lower Manuals is switched on. (VCF, VC and VCF SPEED behave the same as VCO).**
   Sub oscillator gives priority to Knee Control tablet. When this tablet is on, the effect of the Sub Oscillator of the corresponding lever can not be attained without setting the Knee lever on. There is no effect produced when the Foot Switch is on and when the Upper and Lower Sub OSC Cancel red lamps of the Foot Selectors are lit. The Solo Keyboard's Sub Oscillator also makes the "2nd" tablet of Touch Response prevail over the previous lever.
9. **The function switch of the Sub Oscillator will not be effective unless it is set at a click stop position.**
   The function switch should be set according to the waveform indicator. Otherwise, Sub Oscillator effect will be impossible to obtain.
10. **The sub oscillator function has no effect if it is set only at S/H.**
    The sub oscillator's function is set at S/H only when the Auto Rhythm has started and the rhythm pattern of the sample hold conforms with the preset tones; at this time the red lamp lights up.
11. **When the Solo-sub oscillator lever of the sub oscillator on the Upper and Lower Manuals is set on the Solo side, the position of the key pressed in the Solo controls the speed of the sub oscillator on the Upper and Lower Manuals.**

PORTAMENTO

12. **When the Portamento Tablet Switch of the Knee Control is in the ON position, there is no effect even when the Portamento lever is pushed in.**
    For the Portamento effect on the Upper and Solo the Foot Switch Tablet prevails over Knee Control. The Portamento lever sets all time changes in pitch. Set tablets in accordance with your playing requirements. On the other hand, when the Foot Switch Selector Tablet is in the ON position, the effect can be obtained only when the Foot Switch is pressed to the left (ON).

SUSTAIN

13. **As for the Upper and Lower Manuals, even if the Sustain lever has been pushed in, if the Sustain Tablet of the Knee Control is in the ON position, no Sustain effect will be obtained.**
    Note: With the Sustain in the ON position, there is no Sustain effect unless the Knee Lever is Pushed in. The Sustain lever determines the duration of the trailing sound effect.
14. **When no Sustain lever is connected, the trailing effect will be the decay time for the preset tones.**

SAMPLE HOLD

15. **There is no Sample Hold sound when Auto Rhythm has**

**not started even if the Solo Keyboard's Sample Hold Switch is in the ON position.**

Sample Hold is only possible when Auto Rhythm has started and the Rhythm being produced corresponds to the Rhythm Pattern of the Sample Hold.

However, set the speed with which sound is produced be means of the Auto Rhythm's Tempo Volume.

16. **Even when the Sample Hold Tablet Switch is in the OFF position, if the Sample Hold's VCF and VCO levers are pulled toward the player the Sample Hold effect will be obtained in the tones of the Solo Keyboard. The Sample Hold's VCF and VCO levers affect tone in the Solo Keyboard and, consequently, when Sample Hold is not being used, the VCF and VCO lever should be in the OFF position.**

RING MODULATOR

17. **There is no effect if only the Speed and Level lever of the Solo Keyboard's Ring Modulator are connected.**

There is no Ring Modulator effect in the Solo Keyboard if the modulation lever is not pushed in deep enough to cause modulation.

When the Keyboard tablet switch is in the ON position, the position of Keys pressed in the Solo Keyboard will alter the speed of the Ring Modulation.

BRILLIANCE

18. **The range of variations of the Brilliance Lever is considerable and, therefore, you should be most careful when selecting tones. Usually it is good to set it at the center line position.**

RESONANCE

19. **Depending on the tone, there are times when the resonance effect has too little depth and is difficult to discern.**

When Touch Response resonance is applied to flute sounds, a pulsating sound is heard indicating that the effect is available.

PITCH

20. **The Solo Keyboard's Pitch Envelope is not obtained if only the 2nd Decay and Final Pitch are pushed in.**

The Pitch Envelope's 2nd Decay and Final Pitch are changes which occur after pressure is withdrawn from the key, so no effect is obtained unless the Sustain lever is pushed in to the extent of causing some degree of trailing.

FOOT SWITCH

21. **If the Foot Switch is only turned on by the foot no control is possible.**

In order to be able to control with the Foot Switch, choose the corresponding lever from the Foot Switch Selector and turn it on.

NOISE

22. **The Noise effect on the Upper Manual cannot be obtained with the color lever only. The Color Lever of the Noise effect should be used jointly with said effect's VCO and VCF levers.**

AUTO RHYTHM

23. **Rhythm can not obtained with only the buttons of Auto Rhythm's Variations A and B.**

Auto Rhythm's Variations A and B are sounds produced from a combination of previous rhythms. Remember to choose the desired rhythm with the Rhythm Selector Switch.

EXP. DYNAMIC RANGE COMPRESSOR

24. **By slightly pressing the Expression Pedal the pertinent Sound U is emitted from the Upper Manual if the Expression Dynamic Range Switch is on.**

PRESET BOARD

25. **There are times when a sound not desired is obtained while playing, even after sounds in all Keyboards have been tuned with the Preset Board.**
26. **Even when mixed in row II only, Pedal Board sounds can produce wave motion and throw pitch out of tune.**

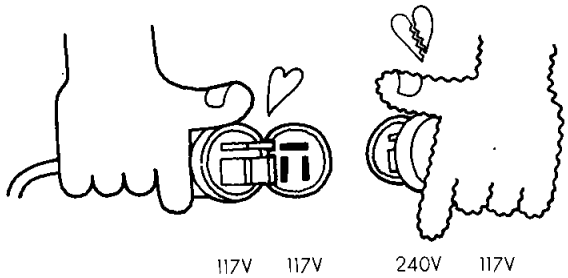
Since there are two tone generators in row II of the Pedal Board sounds, the PII' lever of the Preset Board should be used to adjust pitch and obtain the same pitch. If pitch is not exactly the same, wave motion is produced and a stable bass sound can be obtained when mixed with row I sounds.

27. **When connecting Tone Cabinets the connecting sockets are determined by the number of cabinets to be used and their purpose. The Selector is set accordingly. If a Tone Cabinet with a rotary speaker is connected, this speaker will not rotate unless a separate adapter switch is used.**

# Care of Your Electone

In general, treat your Electone with the same care you would any fine musical instrument. The following points are suggested for optimum enjoyment.

1. Use only proper line voltage. Consult your Yamaha serviceman for changes.




**Special Instructions for British Standard Model**

As the colours of the wires in the mains lead of the apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured GREEN-and-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-and-YELLOW.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

**IMPORTANT**

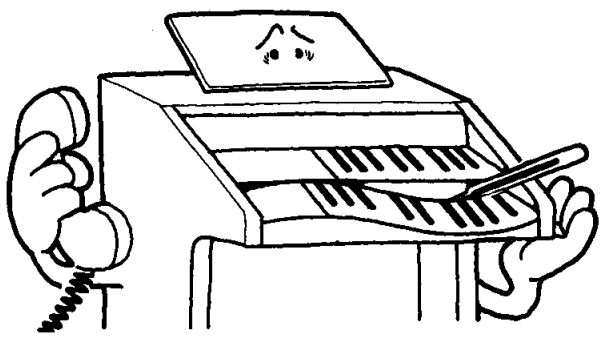
THE WIRES IN THE MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

| | |
|---|---|
| GREEN-AND-YELLOW: | EARTH |
| BLUE: | NEUTRAL |
| BROWN: | LIVE |

**WARNING:**

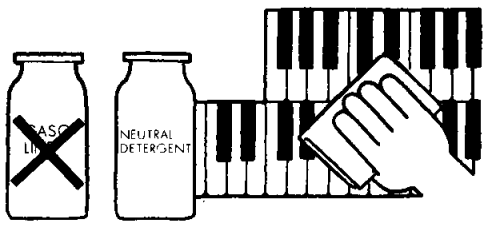
THIS APPARATUS MUST BE EARTHED.

2. Never touch the inside parts yourself.

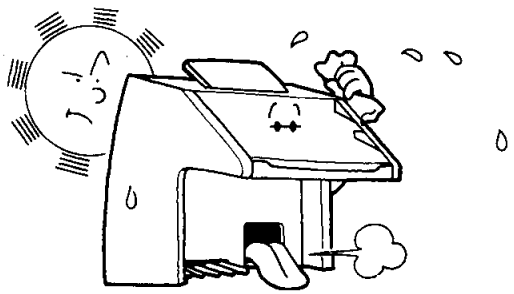


3. Always shut off the power after playing.

4. Clean keys, etc. with a damp cloth only. Never use solvents such as gasoline; they will damage the finish.




5. Shield the cabinet from direct sunlight, humidity and heat to protect the finish and joints.



# Specifications

**Divisions**
- Upper Manual: 61 keys C ~ c4
- Lower Manual: 61 keys C ~ c4
- Pedals: 25 keys C1 ~ c
- Solo Manual: 37 keys c1 ~ c4
- Portamento Manual: c1 ~ c4

**Oscillator**
- Upper Manual: 2 successions with 8 notes
- Lower Manual: 2 successions with 8 notes
- Pedal: 2 successions with 1 note
- Solo Manual: 1 succession with 1 note

(Common-Portamento Key)

**Tone Selector**
- Upper Manual: 10
- Lower Manual: 10
- Pedal: 10
- Solo Manual: 10

**Preset Tone Module Numbers**
- Upper Manual: 20 (presetable as tuning)
- Lower Manual: 20 ( –do.– )
- Pedal: 20 ( –do.– )
- Solo Manual: 10 ( –do.– )

**Control Lever, Switch**
- Pitch Bend : Upper
- " : Lower
- " : Pedal
- Coupler : L to U
- " : U to L
- " : L to P
- " : S to U
- Sustain : Upper
- " : Lower
- " : Pedal
- Overtone : UI - 1.2.4.5.6.8
- " : UII - 1.2.3.4.7.8
- " : LI - 1.2.4.5.6.8
- " : LII - 1.2.3.4.7.8
- " : PI - 1/2.1.2.5/2.3.4
- " : PII - 1/2.1.3/2.2.7/2.4
- " : S - 1/8.1/2.1.2.4.8
- Preset Tone : Upper 10 presetable as tuning
- " : Lower 10 presetable as tuning
- " : Pedal 10 presetable as tuning
- " : Solo 10 presetable as tuning
- Volume : Upper
- " : Lower
- " : Pedal
- Brilliance : Upper
- " : Lower
- " : Pedal
- Resonance : Upper
- " : Lower
- " : Pedal
- Mixing : Upper
- " : Lower
- " : Pedal
- Reverb : Upper and Lower
- " : Solo
- Total Volume
- Manual Balance

**Solo Control Lever, Switch**
- Sample/Hold : Rhythm Pattern Selector Switch
- : SD,CB,MA,HH,CY1, CY2,BD,LC,HC,BO
- : VCF
- : VCO
- : Sample/Hold switch
- : Sample indicator lamp
- Ring Modulator
- : Oscillator
  - .Level
  - .Speed
  - .Keyboard
- : Noise level
- : Noise color
- : Normal Modulation
- Envelope: Attack Time
  - Sustain
- Pitch Envelope
- : Initial Pitch
- : 1st Decay
- : 2nd Decay
- : Final Pitch
- Tone : Brilliance
- : Resonance
- Sub Oscillator
- : Function
- : Speed
- : VCA
- : VCF
- : VCO
- Overtone : 1/8.1/2.1.2.4.8
- Volume : Mini-Max
- Portamento
- Knee Control
- : Solo Portamento
- Solo Touch Response
- : 1st touch
  - Attach Time
  - Initial Pitch
- : 2nd touch
  - Pitch
  - Brilliance
  - Volume
  - Sub Osc
  - Speed
  - VCO
  - VCA
- : 3rd touch
  - Vibrato
  - Wah-wah
  - Resonance

**Upper Sub-controller**
- Touch Responce : Resonance
- : Wah-wah
- : Vibrato
- Noise : VCF
- : VCO
- : Color
- Sub Oscillator : Solo
- : Function
- : Speed
- : VCA
- : VCF
- : VCO
- Knee Control : Upper Portamento
- : Upper Sustain
- : Sub Oscillator VCO, VCF, VCA, Speed

**Lower Sub Controler**
- Sub Oscillator : Solo
- : Function
- : Speed
- : VCA
- : VCF
- : VCO
- Knee Control : Lower Sustain
- : Sub Oscillator VCO, VCF, VCA, Speed

**Foot Switch Control Selector**
- Foot Switch : Sub Osc Cancel Upper, Lower
- : Rhythm Stop
- : Portamento Solo, Upper

**Preset Board**
- Tuning : Upper
- : Lower
- : Pedal
- : Solo
- Wave Motion : Upper
- : Lower
- : Pedal II
- : Pedal II'
- Overtone Preset Selector SW

**Other**
- Overtone Preset Button 1.2.3.4.c
- Expression Dymanic Range Compressor U.L.P.S.R.
- Exp. Pedal
- Exp. Switch
- Knee Lever

**Auto-Rhythm**
- 14 rhythms x 4 variations
- Rhythm Selector
  - March-I March-II Swing
  - Waltz Slow-Rock
  - Jazz Rock I
  - Jazz Rock II Tango
  - Beguine Mambo
  - Bossanova Samba I
  - Samba II Rhumba
- Variation: A.B.
- Image control
- Tempo
- Swinger
- Volume
- Balance
- Start
- Synchro-Start

**Power Consumption** : 420W
**Power Source** : 50/60Hz, AC
**Dimensions**
- Body Width : 160cm (63")
- Height : 114cm (44-2/3")
- Depth : 80cm (31-1/2")
- Weight : 300kg (677 lbs)
- Bench Width : 146cm (57-1/3")
- Height : 67 ± 4cm(26-1/3"±1-1/2")
- Depth : 66 ± 4cm(26" ± 1-1/2")
- Weight : 60kg (132 lbs)
- Pedal Weight : 27kg (60 lbs)

*Specifications subject to change without notice.*

SINCE 1887 YAMAHA

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