YAMAHA

FS-500/FS-300

YAMAHA ELECTONE®

Owner's Manual

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WELCOME TO THE MUSICAL WORLD OF YAMAHA

We are delighted to have you as a member of an ever increasing group of proud Yamaha Electone™ Owners. We are confident that your purchase of the FS-500/FS-300 Electone™ will mark the beginning of a lifelong partnership of musical creativity, relaxation and pleasure.

The Yamaha FS-500/FS-300 represents the very latest in technology and, what we at Yamaha believe to be, the dawning of a new age in the Music Industry. The combination of Digital and FM (Frequency Modulation) technologies has made it possible for Yamaha engineers to provide sounds of amazing clarity and authenticity as well as an interactive responsiveness between you the performer, and your new Electone™ that is almost beyond belief. When you add these outstanding features to an advanced Memory system, the resultant FAM (Frequency Modulation and Advanced Memory System) technology is undoubtedly destined to become the benchmark by which all others will be measured.

The Yamaha design concepts of increased responsiveness to the polished performer's needs, and a reduced complexity for those having only a limited amount of time to invest, have reached new horizons in the FS-500/FS-300. So, whatever your level of skill may be, your Yamaha Electone™ stands ready to accommodate you.

Please read this manual carefully in order that you may become familiar with the many unique features available to you. While every effort has been made to provide an instrument that is both responsive and easy to play, it is only through study and experimentation that you will be able to utilize your new Electone™ to its fullest potential.

NOTICE: This manual contains information **vital** to the proper installation, operation and maintenance of your Yamaha Electone™. Many of the functions and effects incorporated in the FS-500/FS-300 are totally new, and several interact with each other.

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.

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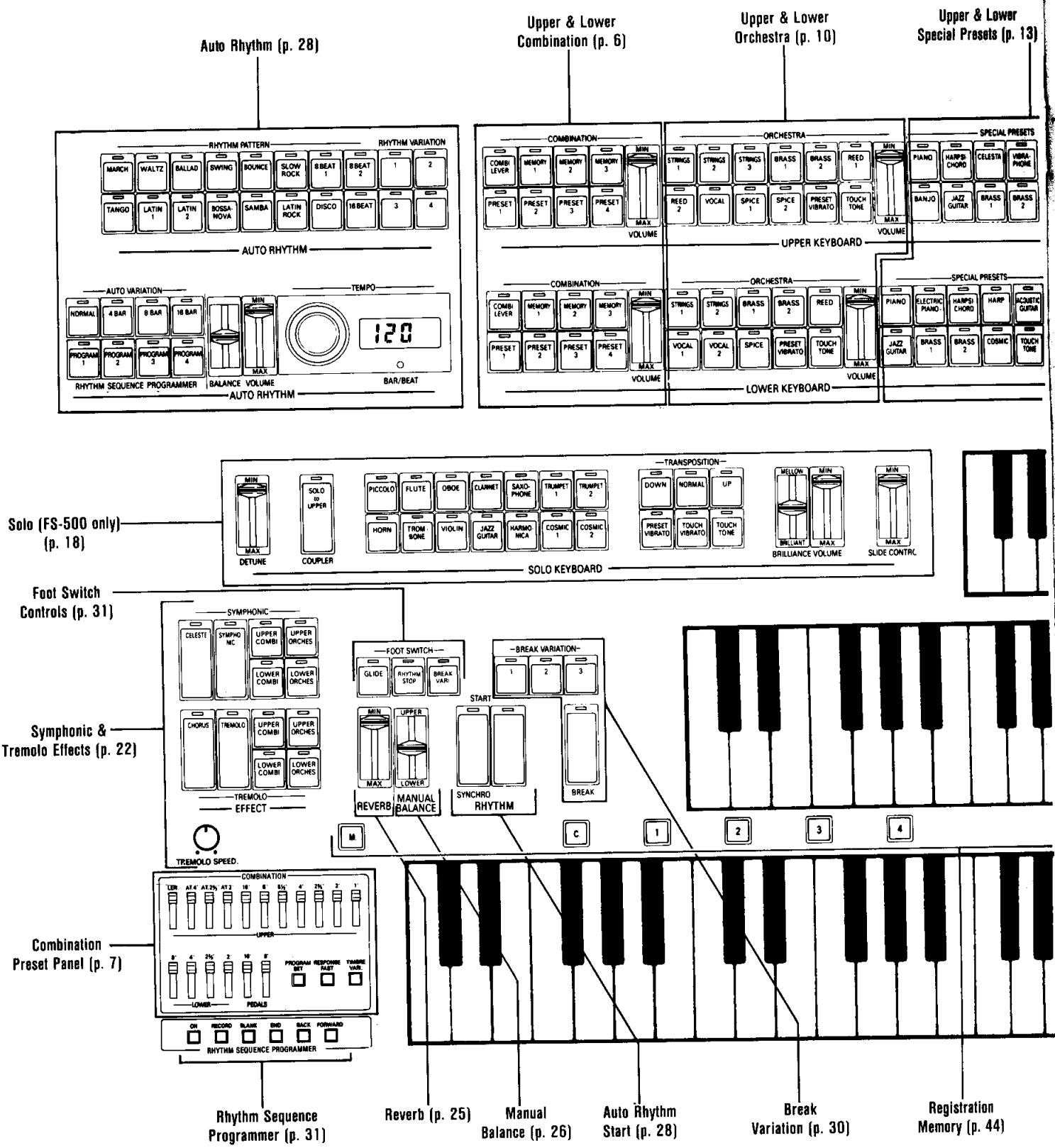
YAMAHA ELECTONE™



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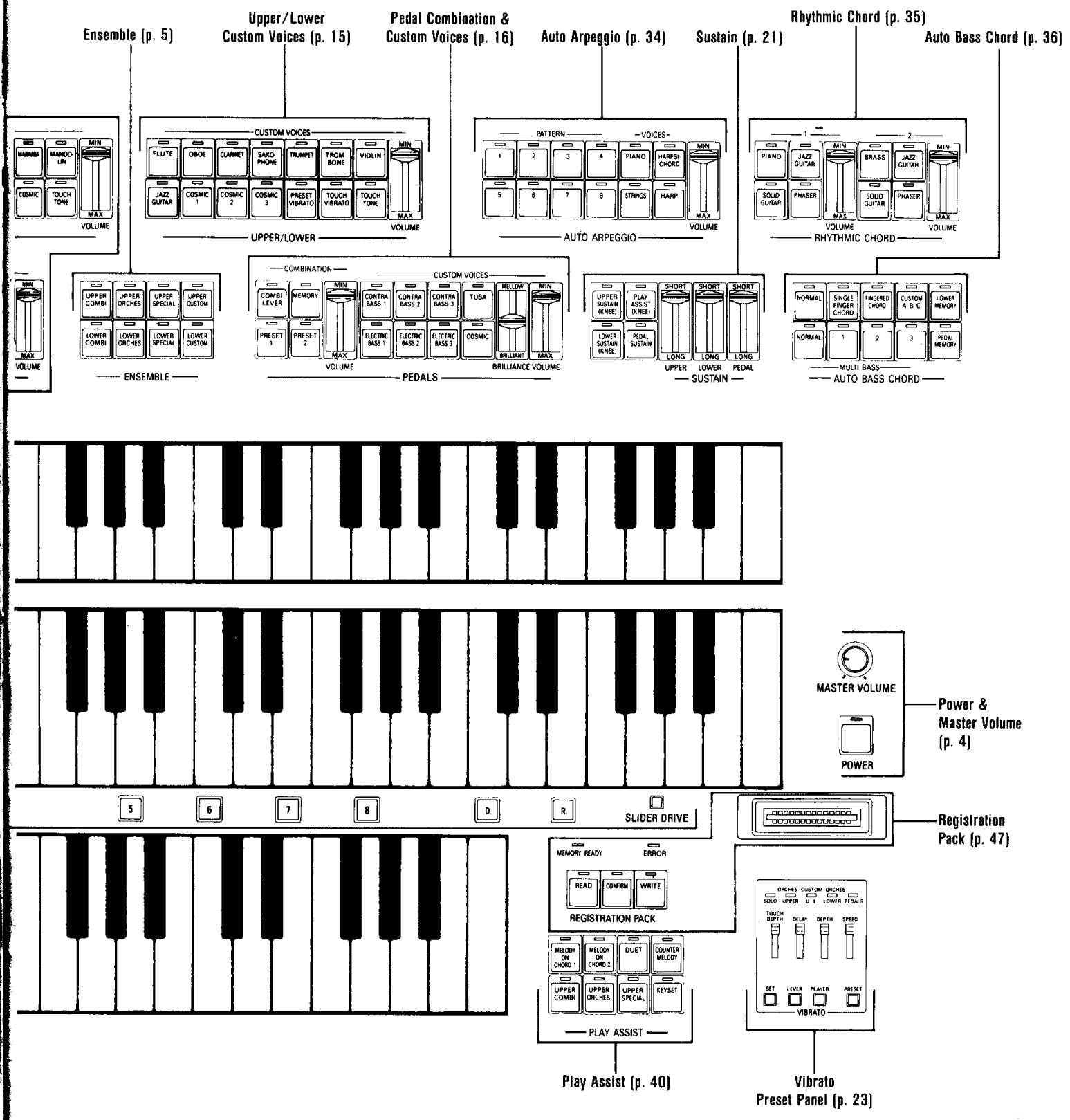
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GETTING ACQUAINTED WITH YOUR ELECTONE™

We know that you're anxious to get started! But...Have you read the INSTALLATION AND MAINTENANCE sections? If not, this is the time to do so, and you can find those sections on pages 55 and 56.

Now that you've read the Installation and Maintenance sections, let's begin. If we seem to start from a point that seems overly basic, please be patient. We will get to the study of individual effects and controls right after we satisfy your urge to play something...anything at all...just to reassure yourself that you are the master of this new purchase, and that you did select wisely.

First, a few basic controls must be identified.

- The POWER SWITCH located on your right must be on. Naturally, the A/C plug has to be plugged in too!

- The MASTER VOLUME CONTROL should be turned clockwise to a position where the white mark is vertical. (Too much volume may bring the neighbors before you're ready.) You may want to change this setting from time to time.

- Your Electone™ has an EXPRESSION PEDAL which must be pushed down slightly in order that the music you're about to produce can be heard.

- Now press one of the square white buttons located between the keyboards (numbered 1 through 8) and watch the controls "spring into action" as your new Electone™ sets itself. You can change these preset sounds to suit your own taste...But we'll get into that in detail later.

Now, play something.

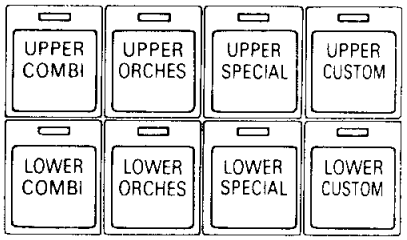
Push a different button and play a few measures. Try still another...and continue until you've sampled all eight buttons at least once. And, this is only the beginning!

Aren't you glad that you made the decision to purchase an FS Series Electone™?

Now that you're sure that you're in control...let's examine each of the controls and effects, one by one.

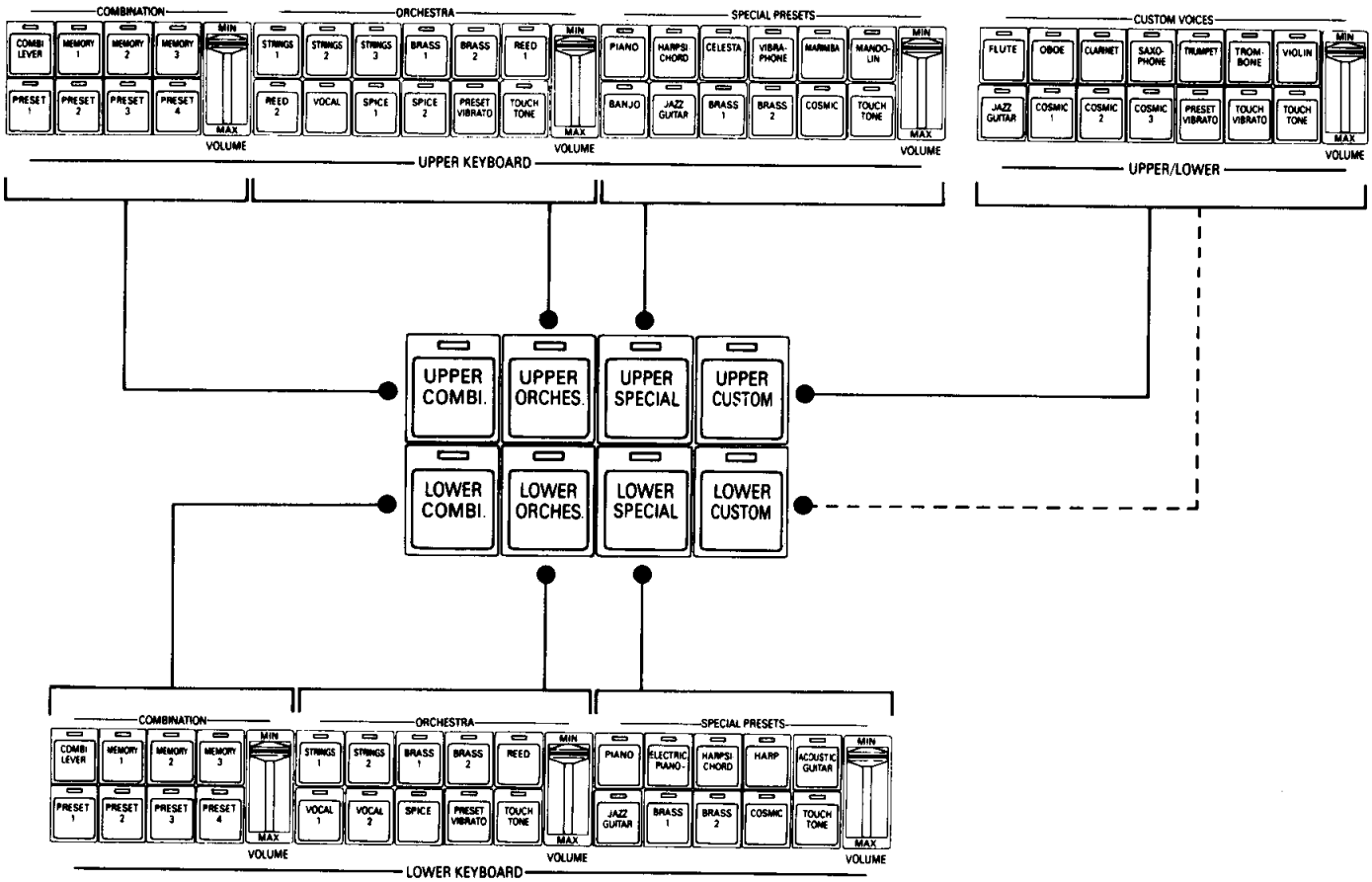
FEATURE BY FEATURE EXPLANATION

ENSEMBLE SECTION



The ENSEMBLE SECTION is extremely important, as it centrally controls the voice sections for the Upper and Lower Keyboards, making it easy to quickly change, add or blend instruments during a performance. Both the Upper and the Lower Keyboards have four voice sections available, (Combination, Orchestra, Special Presets, and Custom Voices*) each with its own independent sliding volume control. The ENSEMBLE SECTION allows you to instantly select or cancel any of the voices from the various Upper and Lower Keyboard voice sections.

As the diagram below illustrates, the upper row of selectors corresponds to the voice sections of the Upper Keyboard, while the lower row of selectors corresponds to the Lower Keyboard voice sections. In addition, the outline of each of the selectors in the ENSEMBLE section utilizes the same color as its corresponding voice selectors, making it easy for you to quickly locate any voice section on the control panel.

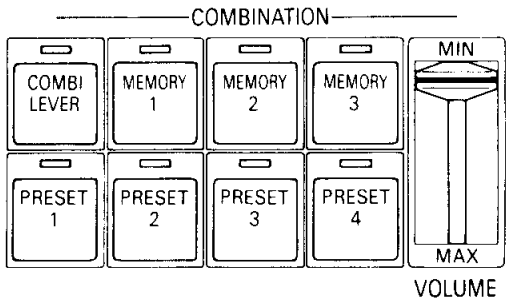


*Custom Voices can be selected for use on **either** the Upper or the Lower Keyboard, but not on both simultaneously.

VOICE SECTIONS

The following pages explain the various Voice Sections and their corresponding effects available on your Electone™. Be sure to press the black RESET (R.) button (located between the Upper and Lower Keyboards) to clear the control panel before beginning any of these operations.

Upper And Lower Keyboards Combination (Green)



Early electronic keyboard instruments incorporated in their design "Flute" voices that, by common usage, became almost synonomous with "Organ Sound." As these instruments became more "orchestral", confusion between the traditional sounding "Organ" Flute and the "Orchestral" Flute began to pose an ever increasing problem.

Yamaha's engineers have responded to this problem by assigning the organ-type flutes to the COMBINATION section (named COMBINATION because they are usually **combined** with each other in common usage). These voices have been removed from the main control panel and relocated in the PRESET PANEL (under the sliding cover to the left of the Lower Keyboard). Accordingly, the FLUTE found in the CUSTOM VOICE section (and the Solo Keyboard FLUTE on the FS-500) is an Orchestral Flute.

A section like the one pictured above has been provided for **both** the Upper Keyboard and the Lower Keyboard. The selectors in these sections (outlined in green) are used to obtain various "organ" sounds. To utilize them, please move the sliding volume control for the COMBINATION sections **downward** and press **either** the UPPER COMBI or LOWER COMBI button in the ENSEMBLE section.

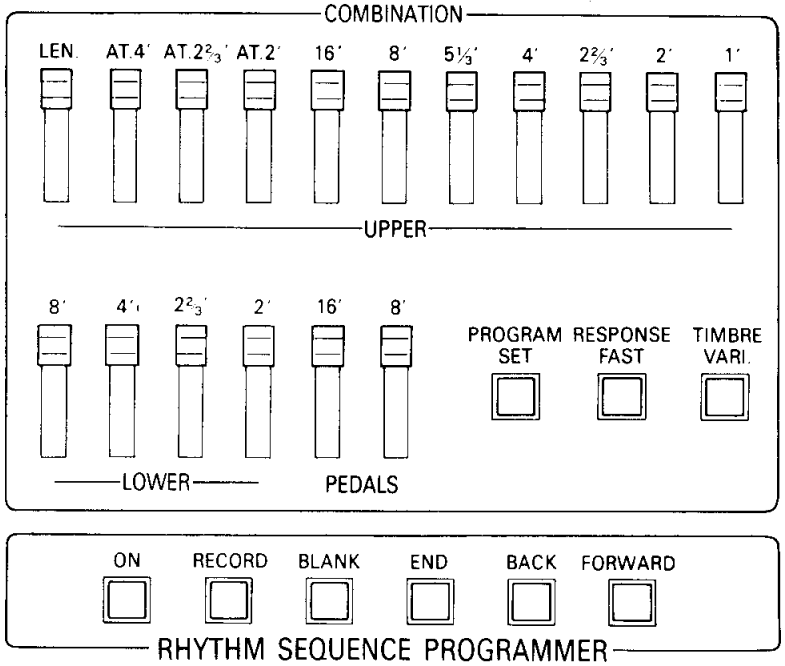
For your convenience, four of the most frequently requested "organ" sounds have been programmed into your Electone™ for each keyboard, and can be obtained by pressing one of the selectors labeled PRESET (1, 2, 3 or 4).

Note: These PRESETS **cannot** be changed.

For added versatility, we have also provided you with three MEMORY selectors for both keyboards, which can be used to store your favorite "organ" sounds (created by using the miniature tone levers and buttons found in the COMBINATION section of the PRESET PANEL). Then, without having to adjust the levers while performing, you can instantly recall these sounds with the touch of a single button. (For information on how to operate the MEMORY function, please refer to page 8.)

The COMBI. LEVER selector allows you to use the tone levers manually. This raises the number of possible simultaneous player-set combinations to four for both keyboards.

PRESET PANEL



These controls are located on the PRESET PANEL to the left of the Lower Keyboard.

As you can see, the PRESET PANEL comprises two sections: one for the RHYTHM SEQUENCE PROGRAMMER and another for the COMBINATION SECTION. The controls for each section are located within the corresponding white line border. The RHYTHM SEQUENCE PROGRAMMER will be discussed later in detail, but, for now, let's talk about the COMBINATION SECTION.

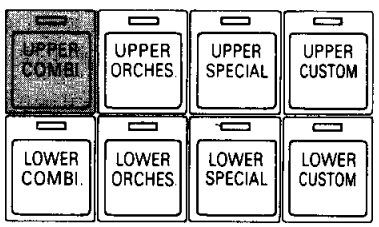
You will notice that all of the white tone levers have numbers written above them. Each of these levers can be used alone or in any combination. When you pull the levers toward you, the volume increases. Conversely, the volume decreases as you push the levers away from you.

Since each lever can be placed at any of three click-stop (volume) positions (or at any interval **between** the click-stops) you can combine separate voices to create a wide variety of "organ" sounds. These click stops can also be used as "reference" points, making it easy to recall a favorite registration.

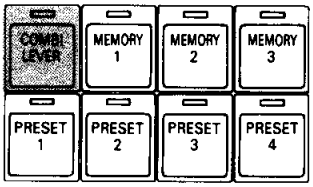
The following example will assist you in understanding the operation of the COMBINATION SECTION:

1) Press the black RESET (R) button (located between the Upper and Lower Keyboards) to clear the control panel.

2) In the ENSEMBLE SECTION, press the UPPER COMBI button. (Be sure that it is the only button illuminated in the upper row. Press the UPPER ORCHESTRA button to turn off that light.)



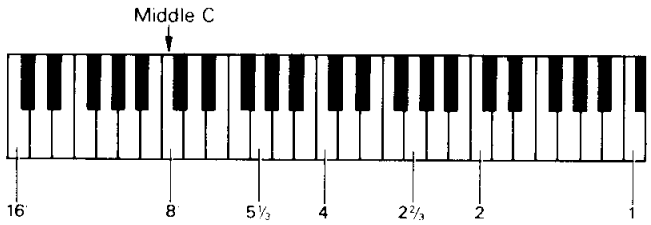
3) Press the COMBI LEVER button in the UPPER COMBINATION section.



4) Move the sliding Volume control downward.

5) While holding a note on the Upper Keyboard, move some of the white tone levers for that keyboard toward you. The following illustration shows the various pitches that are created by the different levers when middle C is pressed.

(Sound intervals for the levers when middle C is pressed.)

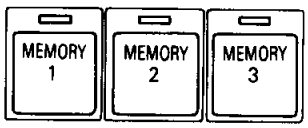


Attack And Attack Length Levers

The green ATTACK levers produce Combination-type sounds having a very fast attack and an adjustable decay. These voices are normally used in conjunction with the white COMBINATION levers to add a percussive effect. The amount of decay (the length of time that these notes will sound) is controlled by the LENGTH lever.

Note: The "sounding time" starts with the first key pressed. Pressing additional keys **may not** produce ATTACK sounds if all the other keys on that keyboard have not been released.

Memory 1, 2, 3



These three buttons will enable you to store into MEMORY any registration created by using these levers (including the RESPONSE FAST and TIMBRE VARI buttons), and instantly recall it with the touch of a single button. To become familiar with the operation of this function, please try the following example:

1) Using these levers, create a sound that you would like stored in MEMORY.

2) Then, simultaneously press the red PROGRAM SET button **and** one of the three MEMORY buttons on the control panel for the appropriate keyboard. The red indicator light will now flash briefly, confirming that your registration has been stored in MEMORY.

3) For your protection, YAMAHA has provided a battery back-up system to insure that registrations stored in MEMORY cannot be erased (unless a new registration is later stored in the same memory), **even** if the power is turned off or the Electone™ is unplugged.

Response Fast

When this feature is used, a keying "click" (actually a very fast attack) will be added to each note played when using the COMBINATION voices. This effect is very useful in simulating the sounds and musical styles of some of the well-known organists. This button will be illuminated when the feature is being used.

Timbre Variation

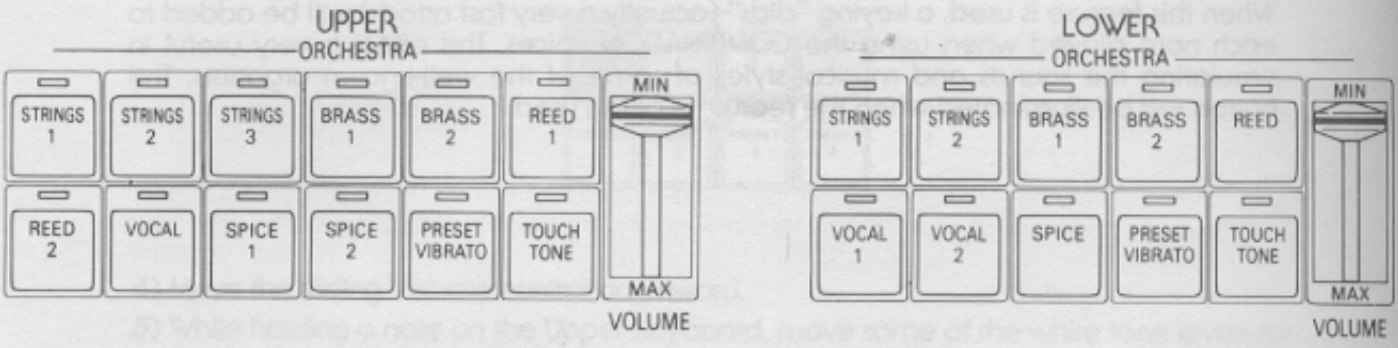
TIMBRE (tone color) is generally defined as the attribute that enables the listener to identify the instrument producing the sound. The TIMBRE of any sound is the result of the mixing of any number of frequencies in varying proportions.

The TIMBRE VARI control included in the design of your Electone™ affects only the Upper and Lower COMBINATION voices at the 16', 8' and 4' pitch only. It does **not** modify the PEDAL COMBINATION section or any other voice found on the Electone™.

When the control is "OFF," the 16', 8' and 4' tone levers are "bright" and contain several high harmonics. When the control is "ON" (button illuminated) a smoother, more mellow tone is produced.

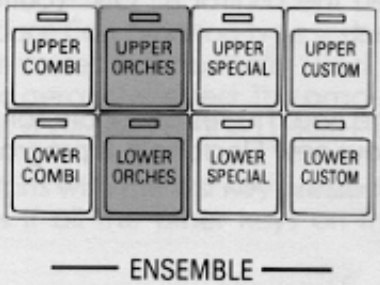
The decision as to which of the two modes available for these voices is left up to you. This effect, like all others on your new Electone™, is programmable.

ORCHESTRA (Blue)



These selectors (outlined in blue) are used to re-create the sounds of the major instrumental sections of an orchestra, including Strings, Brass and Reeds. In addition, choir effects (VOCAL) and pipe organ/theater organ (SPICE) sounds are also provided. To familiarize yourself with the operation of this section, please try the following example:

1) Press the black RESET (R.) button (located between the Upper and Lower Keyboards) and you will notice that the UPPER and LOWER ORCHESTRA sections are **automatically** selected in the ENSEMBLE section.



2) Select one of the ten instruments found in the UPPER ORCHESTRA SECTION.

3) Move the sliding volume control down. Now, when you press a note on the UPPER Keyboard, you will hear the sound that you selected in step #2. To appreciate the tremendous versatility of your Electone™, take this opportunity to listen to the remaining nine sounds in this section, as well as those found in the Lower Orchestra Section.

You may have noticed that the SYMPHONIC EFFECT was automatically turned on when the STRING 2 and VOCAL buttons were pressed. To make your Electone™ easy to operate, and to make each voice as authentic as possible, YAMAHA has preset effects (such as Vibrato, Symphonic, Attack, Sustain, Detune, Slide, etc.) into each voice, where appropriate. Of course, should you desire, these effects can be manually over-ridden at any time.

Preset Vibrato

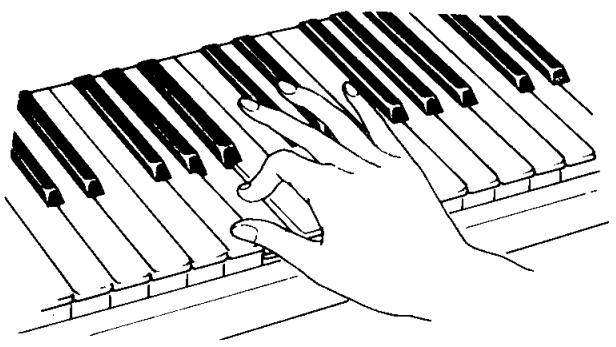
The most suitable Vibrato setting for each individual voice, has been preset for you at our factory, and will be produced automatically when a voice is selected. The red indicator light on the PRESET VIBRATO button will illuminate to confirm that you are using the factory setting.

However, should you desire a Vibrato setting that is different from the one provided by the factory, please turn to page 23 where this procedure is explained.

Touch Tone

To allow the performer the ultimate in musical expression YAMAHA proudly introduces "TOUCH TONE." This feature converts the Upper and Lower Keyboards (Solo Keyboard also on FS-500) from "static" to "active" status, responding to each and every nuance in your touch as never before. In this way, the keyboards themselves play an active role in the texturing of sounds. While at first it may seem confusing and, perhaps difficult to become accustomed to, in a relatively short time you will appreciate the benefits derived from having this increased responsiveness and additional control.

TOUCH TONE is automatically turned on when the RESET button is pressed, and the light on each of the TOUCH TONE selectors will illuminate to confirm that TOUCH TONE is in use. However, should you desire, your Electone™ can be easily transformed back to a "standard" keyboard by pressing each of the TOUCH TONE selectors (located in the lower right corner of the UPPER ORCHESTRA, LOWER ORCHESTRA, UPPER SPECIAL PRESETS, LOWER SPECIAL PRESETS, UPPER/LOWER CUSTOM VOICES and SOLO KEYBOARD [FS-500 only] sections) to turn the feature (and corresponding lights) off.



Depending on how you play the keyboard, TOUCH TONE can be activated in two ways:

1) INITIAL TOUCH CONTROL (Velocity Sensitive) causes a change in volume and timbre (tone) in proportion to the amount of pressure exerted when you **first strike** the keyboard. To understand this concept perhaps more fully, think of how the sound of a piano changes, depending upon how hard you strike a note.

2) AFTER TOUCH CONTROL (Pressure Sensitive) causes similar changes when, after striking the keys, you exert further **downward** (not lateral) pressure on them.

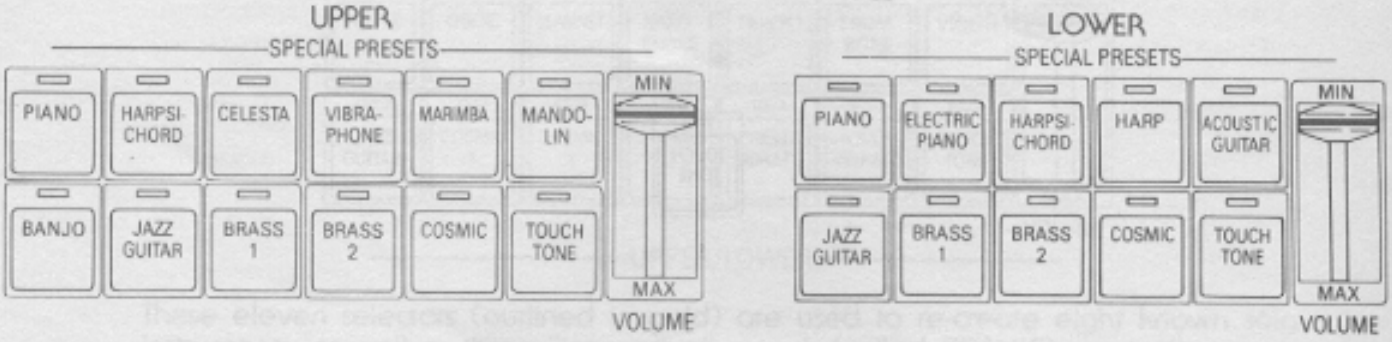
NOTE: The degree of change differs from voice to voice.

The following chart illustrates which type(s) of Touch Control is available for each of the Upper and Lower Voice Sections:

VOICE SECTION	INITIAL (VELOCITY)	AFTER (PRESSURE)
Combination	NO	NO
Orchestra	YES	YES
Special Presets	YES	NO
Custom Voices	YES	YES
Solo Keyboard	YES	YES

Please note that Touch Tone is not available for the Pedal Keyboard.

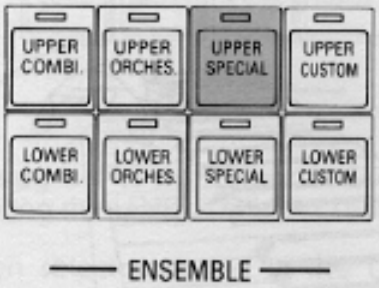
SPECIAL PRESETS (Orange)



These selectors (outlined in orange) are used to re-create some of the more percussive sounds of the orchestra, such as PIANO, HARPSICHORD, and VIBRAPHONE, as well as some specially-voiced BRASS and COSMIC sounds. In order to familiarize yourself with the operation of this section, please take a few moments to try the following example:

1) Press the black RESET (R.) button (located between the Upper and Lower Keyboards) to clear the control panel.

2) In the ENSEMBLE section, press the UPPER SPECIAL button. (Be sure that it is the only button illuminated in the upper row. Press the UPPER ORCHESTRA button to turn off that light.)



3) Select one of the eleven instruments found in the UPPER SPECIAL section.

4) Move the sliding volume control down.

When you press a key on the UPPER Keyboard, you will now hear the sound that you selected in Step #3. To appreciate the tremendous versatility of your Electone™, take this opportunity to listen to the remaining ten sounds in this section, as well as those found in the Lower Special Presets Section.

Touch Tone

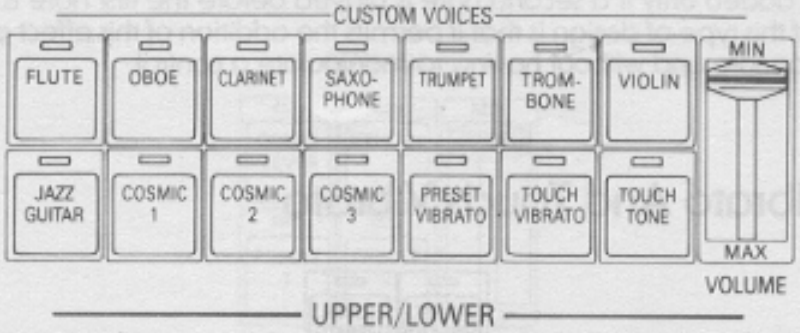
This selector makes INITIAL Touch Control available for all of the voices in this group. To refresh your memory, INITIAL touch control causes volume and tone changes when you first strike the keyboard. The degree of change differs for each of the voices.

Twin Mallet/Double Picking Effect

This effect is included in the design of the MARIMBA and MANDOLIN voices. Playing only one note at a time provides a reiteration of sound. To obtain the most authentic reproduction of the instrument you have selected, play **two** notes at the same time.

A "twin mallet" effect (alternating between the highest and lowest note) will be produced for the MARIMBA, while a "Double Picking" effect will be provided for the MANDOLIN. More than two notes may be played, if desired.

CUSTOM VOICES (Gold)



These eleven selectors (outlined in gold) are used to re-create eight known solo instruments, as well as three "innovative" sounds (called COSMIC) most often associated with electronic synthesizers. Since these are solo instruments, only one note may be played at any given time.* To familiarize yourself with the operation of this section, please try the following example:

1) Press the black RESET (R.) button (located between the Upper and Lower Keyboards) to clear the control panel.

2) In the ENSEMBLE SECTION, press the UPPER CUSTOM button. (Be sure that it is the only button illuminated in the upper row. Press the UPPER ORCHESTRA button to turn off that light.)

You have a choice of using either the Upper or Lower Keyboard (but not both simultaneously) for producing the UPPER/LOWER CUSTOM VOICES.

3) Select one of the eleven selectors found in the UPPER/LOWER CUSTOM Voice Section.

4) Move the sliding volume control down.

When you press a note on the Upper Keyboard, you will now hear the sound that you selected in Step #3. To appreciate the tremendous versatility of your Electone™ take this opportunity to listen to the remaining ten sounds in this section.

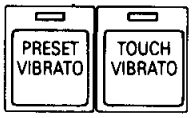
*With the CUSTOM VOICES, only one note at a time can be played.

1) When CUSTOM VOICES are used alone (not combined with another voice section on the same keyboard) and more than one note is played, the last note pressed will be heard.

2) When CUSTOM VOICES are combined with another voice section on the same keyboard, and more than one note is pressed, the CUSTOM VOICES will automatically play the note farthest to the right.

Please note that Trombone and Cosmic 1, 2, and 3 already have a "slide" effect programmed into them. This effect is dependent upon "player" technique" in that the slide effect will be added **only** if a second note is played before the first note is released. The advantage of this type of design is that it permits the addition of this effect **only** when you feel it is appropriate and without having to manipulate a control.

Preset Vibrato And Touch Vibrato



The most suitable Vibrato setting for each individual voice has been preset for you at our factory, and will be produced automatically when a voice is selected. The red indicator light on the PRESET VIBRATO button will illuminate to confirm that you are using the factory setting.

However, should you prefer a Vibrato setting that is different than the one provided by the factory, please turn to page 23 where this procedure is explained.

As an added feature, VIBRATO may also be obtained for CUSTOM VOICES, by using TOUCH VIBRATO. In a sense, this is like AFTER TOUCH CONTROL (see page 12) but, instead of affecting volume and tone, it affects VIBRATO DEPTH. (The Vibrato SPEED is preset.)

Simply press the TOUCH VIBRATO button (this automatically cancels the PRESET VIBRATO), and when you wish to add the Vibrato effect, exert further **downward** pressure on the keys. By increasing or decreasing the downward pressure, the VIBRATO DEPTH can be proportionally increased and decreased.

Touch Tone

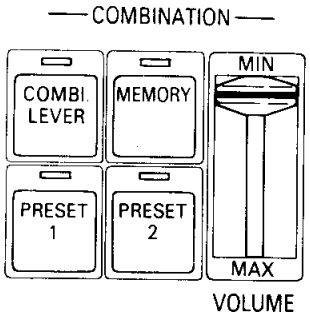
This selector makes both INITIAL and AFTER Touch Control available for all of the voices in this group. To refresh your memory, INITIAL Touch Tone causes volume and tone changes when you first strike the keyboard. AFTER Touch Tone causes similar changes when, after striking the keys, you exert further **downward** pressure on them. The degree of change differs for each of the voices.

Pedal Keyboard

The PEDAL KEYBOARD of your YAMAHA Electone™ is used to provide most of the bass sounds. Only one note at a time can be played. (Should more than one pedal be pressed, the note farthest to the right will have priority.) The selection of voices for this keyboard can be found in two sections (COMBINATION and CUSTOM VOICES), both of which are discussed below.

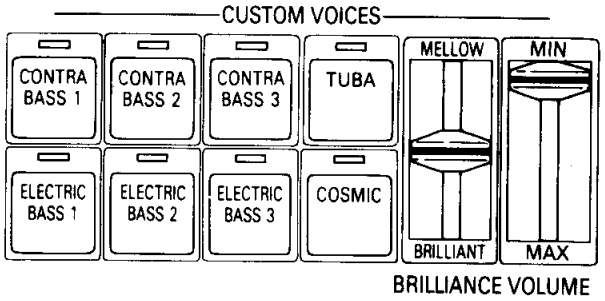
It is possible to use both sections simultaneously. However, because they are not controlled by the ENSEMBLE Section, if you want to use one section by itself, be sure that the VOLUME slider for the other section is in the "MINIMUM" position.

COMBINATION (Green)



These selectors (outlined in green) are used to obtain "organ-type" bass sounds, and operate in much the same way as the UPPER and LOWER COMBINATION Sections (see page 6). One major difference here is that it is not necessary to select a button in the ENSEMBLE section. Sound can be obtained merely by pressing one of the four selectors and by moving the VOLUME slider downward.

CUSTOM VOICES (Gold)



The sounds of other known bass instruments, such as CONTRA BASS, TUBA and ELECTRIC BASS (as well as the synthesizer-like COSMIC sound) can be obtained by pressing one of the eight voice selectors (outlined in gold) and by moving the VOLUME slider downward.

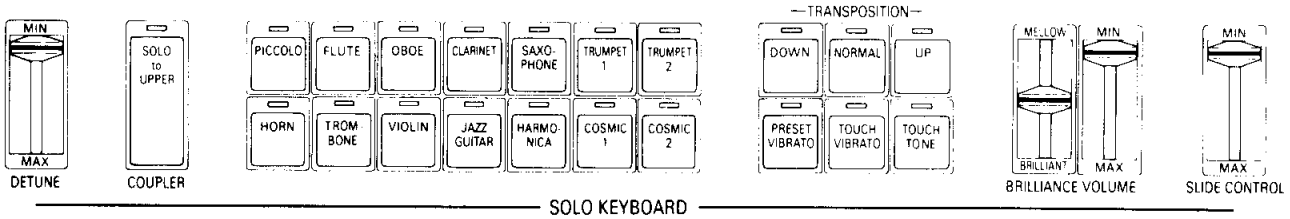
Brilliance

The PEDAL CUSTOM VOICE section also features a BRILLIANCE control to further "personalize" these instrumental sounds. This variable control, depending on its position, will emphasize either higher or lower harmonics. As a result, the sound will be more mellow or more brilliant.

The center position provides a sound that is suitable for most purposes. Should you desire a more mellow sound, move this lever up. For a more brilliant sound, move the lever down.

Solo Keyboard
(FS-500 Only)

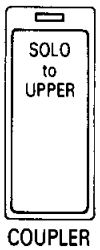
SOLO VOICES (Gold)



To create an added dimension of sound, and to further expand its versatility, YAMAHA has included a 37-note SOLO KEYBOARD on your Electone™ FS-500. Fourteen different SOLO VOICES are available for use on the Solo Keyboard, and, like the CUSTOM VOICES, only one note may be played at any given time. When more than one note is pressed, the note which was played last will have priority.

Take a few moments to listen to each of the available voices, remembering that, because the SOLO KEYBOARD is not controlled by the ENSEMBLE SECTION, you must pull the VOLUME slider toward you to hear the sounds. Don't forget, also, that Vibrato (and, in some cases, the Slide effect) has already been incorporated into each voice, when appropriate.

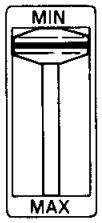
Solo To Upper Coupler



When this control is "ON", the Solo Keyboard voices and effects are playable (along with those voices normally available) on the Upper Keyboard. However, when the Solo Keyboard Voices are played on the Upper Keyboard, the keying priority changes from "last note priority" (last note played) to "high note priority" meaning that the note farthest to the right (highest) will be heard.

The Solo Keyboard will function normally and produce the selected sound (with the last note played having priority) even when the COUPLER effect is ON. However, both keyboards cannot produce the Solo Voice simultaneously. When both the Upper and Solo Keyboard are played at the same time, the Solo Keyboard will have priority.

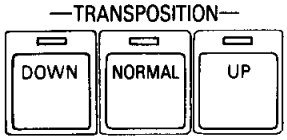
Detune



DETUNE

The sound of the your Electone™ is sometimes enhanced when the pitch of the SOLO KEYBOARD is slightly higher than that of the other keyboards. This control enables that slight pitch variance. When the sliding control is in the MINIMUM position, the SOLO KEYBOARD is "in tune" with the other keyboards. As you move the control closer to you, the pitch of the SOLO KEYBOARD is raised.

Transposition



Each voice on the SOLO KEYBOARD is programmed in its most natural register (octave). However, by using the three TRANSPOSITION selectors, you can change from this "Normal" octave. To raise the pitch one octave, press the button labeled "UP". Conversely, to lower the pitch one octave, press the "DOWN" button.

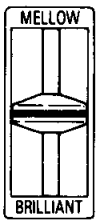
Preset Vibrato And Touch Vibrato

The PRESET VIBRATO and TOUCH VIBRATO for the Solo Keyboard operate in exactly the same way as for the Custom Voices. For specifics, please refer to page 16 .

Touch Tone

INITIAL and AFTER Touch Tone are available for use with the Solo Voices. To refresh your memory, INITIAL Touch Tone causes volume and tone changes when you **first strike** the keyboard. AFTER Touch Tone causes similar changes when, after striking the keys, you exert further downward pressure on them. As before, the degree of change differs for each of the voices.

Brilliance

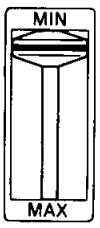


BRILLIANCE

Your Solo Keyboard also features a BRILLIANCE control to further "personalize" these instrumental sounds. This variable control, depending on its position, will emphasize either higher or lower harmonics. As a result, the sound will be more mellow or more brilliant.

The center position provides a sound that is suitable for most purposes. Should you desire a more mellow sound, move this lever away from you. Conversely, for a more brilliant sound, move this lever towards you.

Slide Control

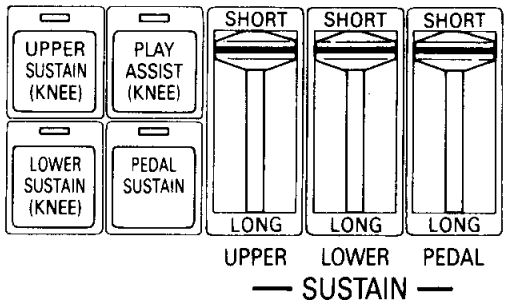


SLIDE CONTROL

This control will add a "SLIDE" (portamento) effect to all SOLO KEYBOARD voices, and is continuously variable, permitting the performer to set the amount desired. The SLIDE effect is dependent upon "player technique" in that this effect will be added **only** if a second note is played before the first note is released. The advantage of this type of design is that it permits the addition of the SLIDE effect **only** when you feel it is appropriate and without having to manipulate a control.

OTHER EFFECTS AND CONTROLS

Sustain



The SUSTAIN function allows a gradual fade out of sound after the keys have been released. It can be utilized with any voice on either the Upper, Lower, or Pedal Keyboard (or any combination of the three), and is controlled by using the three buttons and three variable sliding controls.

Try the following example to become familiar with the operation of this function.

1) Choose one keyboard to which you would like to add sustain, and select the corresponding button: UPPER SUSTAIN, LOWER SUSTAIN, or PEDAL SUSTAIN. (These three buttons can also be used simultaneously).

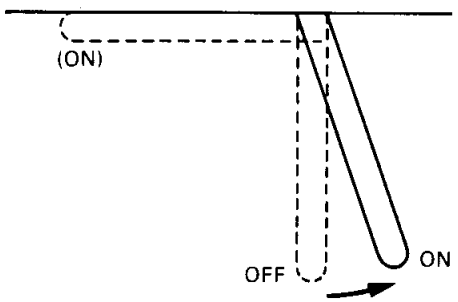
   NOTE: The SUSTAIN effect cannot be added to the CUSTOM VOICES or the SOLO KEYBOARD VOICES.

2) By using the appropriate slider control, adjust the amount of SUSTAIN desired. When the slider is in the uppermost position, the SUSTAIN is completely off. As the control is moved downward, the amount of SUSTAIN is gradually increased.

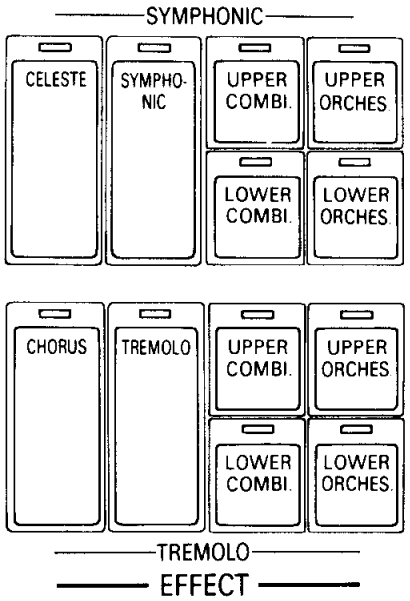
   Certain voices, such as HARP, for example, already have SUSTAIN programmed into them. In these cases, the appropriate sliding control and corresponding selector can be used to manually override the preset amount by increasing or decreasing it to suit your taste.

Knee Lever Control

The KNEE LEVER (located beneath the keyboards) can be used to turn the SUSTAIN function for the UPPER and LOWER Keyboards (not PEDAL or SOLO) "ON" or "OFF." To operate, press either or both the UPPER SUSTAIN and/or LOWER SUSTAIN button(s), adjust the sliders to your taste, and move the KNEE LEVER to the right. Hold the lever in this position for as long as you desire SUSTAIN, and release the lever when you want to turn it off.



Symphonic And Tremolo Effects



Symphonic Effect

This feature, when applied to any voice, produces a "symphony-like" effect. It gives the impression that more than one of the same instrument (each with very slightly different timbre and pitch) are playing the same musical passage. It can be applied to either or both the COMBINATION or ORCHESTRA sections of either or both the UPPER and LOWER Keyboard.

Your Yamaha FS-500/FS-300 creates this effect electronically by dividing the sounds that you assign to the SYMPHONIC (fast) or CELESTE (slow) speed into several separate channels. These individual channels are "delayed" (shifted in phase), then re-combined to produce the impression that a large number of instruments are involved.

Several voices incorporate this effect as a part of their design. If this effect **is** included, the appropriate indicator light **will** be turned ON. It is always possible to manually override this preset condition to suit your personal taste.

Tremolo Effect

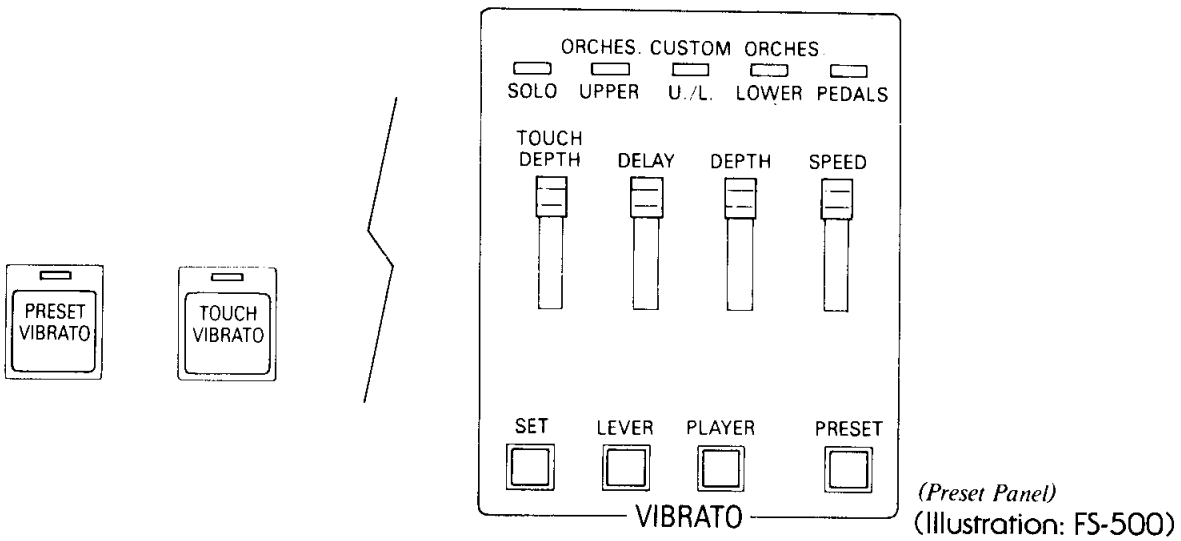
TREMOLO is a cyclic variation in the **amplitude** (volume) of a sound. This effect is frequently developed by placing a drum-type baffle in front of a stationary speaker. As the drum (baffle) rotates, the sound escapes from an opening in one side of the drum. Since the drum is rotating, the amount of sound being projected toward the listener is constantly changing. This results in the change in volume perceived by the ear.

The Electone™ FS-500/FS-300, representing the very latest in technology, has eliminated the need for motors, belts and moving parts, and generates this effect **electronically.** The TREMOLO EFFECT can be applied only to the UPPER and LOWER COMBINATION and ORCHESTRA Sections. To add this effect to one or more of these sections, first press the controls(s) for that section and the corresponding indicator lamp will illuminate. Then select the desired speed: CHORUS (a slow speed), TREMOLO (a fast speed) or "OFF" (no animation; neither the CHORUS nor TREMOLO lights is illuminated).

A VARIABLE SPEED CONTROL (located between the Upper and Lower Keyboards) is provided so that you may adjust the TREMOLO (fast) speed to suit your personal taste. (Note: The VARIABLE SPEED CONTROL cannot be entered into any MEMORY).

IMPORTANT: The TREMOLO and SYMPHONIC effects are electronically interlocked and cannot be used simultaneously by the same Voice Section.

Vibrato



(Preset Panel)
(Illustration: FS-500)

VIBRATO is a variation in pitch...a fluctuation above and below whatever note is being pressed. The VIBRATO DEPTH control regulates how far above and below the given pitch, while the VIBRATO SPEED control regulates how fast this fluctuation takes place. When imitating a soloist, it is often desirable to allow the pitch to remain constant for a short time and then to add the vibrato effect. This effect can be automatically produced for you by using the VIBRATO DELAY control, which regulates the amount of time it takes for the vibrato to be activated after the note is pressed.

Where appropriate, a suitable VIBRATO setting (including Delay, Depth and Speed) has been factory programmed for **each individual voice.** VIBRATO is available with the UPPER and LOWER ORCHESTRA, the UPPER/LOWER and PEDAL CUSTOM VOICES, and the SOLO KEYBOARD VOICES (FS-500 only). It will be obtained automatically if the PRESET VIBRATO button for that section **and** the PRESET button (located on the Preset Panel) are both illuminated. (VIBRATO is not available for the COMBINATION or SPECIAL PRESETS sections).

The Preset vibrato can also be obtained by selecting the TOUCH VIBRATO button as well. The difference here, however, is that the Vibrato does not come in automatically; you must exert further downward pressure on the key to activate the Vibrato. The harder you press, the greater the VIBRATO DEPTH becomes.

Should you prefer a setting other than the one provided by the factory, the PLAYER button (located on the PRESET PANEL) will allow you to use your preference instead of the PRESET VIBRATO. You can store your VIBRATO preference into Memory for any individual voice by following the procedure outlined below.

Storing Your Vibrato Preference Into Memory

1) Determine whether you wish to store a PRESET VIBRATO or a TOUCH VIBRATO into Memory and press the appropriate button. (Be sure the corresponding lamp is illuminated.)

   NOTE: Touch Vibrato is available only on the Upper/Lower Custom Voices and the Solo Keyboard (FS-500 only).

2) Press the LEVER button (Preset Panel). The indicator lamp will flash indicating that the Vibrato Memory is ready to receive your preferred setting.

3) Select and press the instrument for which you'd like to set your preferred VIBRATO.

At this time, the indicator light for the corresponding voice section will light (inside the Preset Panel) and the LEVER lamp will stop flashing.

As the illustration shows, Vibrato can only be stored in Memory for the instruments found in the following groups:

Solo Voices (FS-500 only)
Upper and Lower Orchestra
Upper/Lower Custom Voices
Pedal Custom Voices*

*Step 1 above is not necessary for storing Vibrato for the Pedal Custom Voices.

4) Using the DELAY, DEPTH and SPEED sliders, adjust the Vibrato setting to suit your personal taste.

You may want to press a note so that you can hear the Vibrato as you set these controls. It is generally easier to set the Vibrato while producing a sound. (If no sound occurs, check to see if the VOLUME slider for that section was moved downward [away from the MINIMUM position] and if the corresponding button was pressed in the ENSEMBLE section.)

If you are using TOUCH VIBRATO, the VIBRATO DEPTH is controlled with the TOUCH DEPTH slider.

5) Once you have determined your preferred VIBRATO setting, you can store that setting in Memory for that particular voice by pressing the LEVER button while holding the SET button.

A) Subsequently the PLAYER button light will flash briefly, indicating that your setting has been stored in Memory, and the indicator light for that Voice Section will go out.

B) For your protection, YAMAHA has provided a battery back-up system to insure that the VIBRATO settings that you have stored in Memory cannot be erased (unless a new setting is later programmed for that voice), even if the power should be turned off or the Electone™ is unplugged.

6) Now, when you want your preferred setting, press the PLAYER button and it will be recalled. In the same way, press the PRESET button for the factory setting.

Combining Preset And Player Vibrato

In your performance, you may want to change from "PLAYER" Vibrato to "PRESET" Vibrato within any given selection. However, it is inconvenient to continually be reaching to the Preset Panel and manually changing from PLAYER to PRESET status. Yamaha, realizing this, designed a method for you to obtain both types of Vibrato (PLAYER and PRESET) by simply leaving the PLAYER button on.

To accomplish this, we must perform the following two steps:

1) First, replace **all** (previous) PLAYER settings with PRESET (factory) settings, by pressing the PRESET button while holding the SET button.

You will notice that the PLAYER button lamp will flash briefly and then remain illuminated. This indicates that **all** PLAYER settings (Upper, Lower, Pedal, and Solo) have been erased, and the PRESET setting has been put in its place. (Please note that the factory settings are now stored in both the PRESET and the PLAYER positions.)

2) Select the instrument(s) whose Vibrato you wish to change and store your preferred setting by following steps 3 through 5 (above) for each of these instruments.

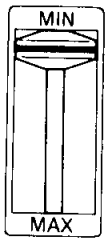
Now, if the PLAYER button is left ON, you will obtain the factory Vibrato setting, **except** for those voices which you have altered in step #2.

Reverb

"REVERB" is an abbreviation that, through common usage, has become an accepted shortening of the word "Reverberation." Reverberation is somewhat like "echo," in that it involves the reflection (bouncing back) of sound. "Reverb" sounds are neither direct nor are they exact reflections of the original sounds; therefore, when they are mixed with the original sound a very unique type of tone coloration occurs.

Cathedrals, concert halls, etc., have a considerable amount of "natural reverberation," and, while some natural reverberation exists almost everywhere, the sound absorbent (non-reflective) nature of the furnishings found in the average home will make the amount of natural reverb available too small to be effective.

To compensate for the lack of natural reverberation in the home, and to provide a broad range of reverb effects, Yamaha has included a REVERB system in the design of your Electone™.



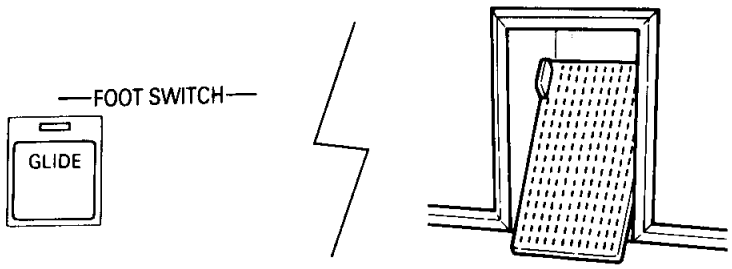
REVERB

The REVERB control (located on the panel to the left of the Upper Keyboard) is continuously variable, increasing in intensity as the control is pulled toward you. Every environment will require a slightly different amount of REVERB depending upon room size, amount of sound-absorbent furnishings involved, and, sometimes, the type of music being played.

Please remember that the REVERB effect modifies the sound of **all** voices (except rhythm). Experiment with this control using a variety of voices and playing styles in order that you may find the settings that are most useful and pleasing to you.

NOTE: The "sound absorbent" nature of home furnishings will also affect the "Brilliance" of your registrations, having a "muffling" effect. While the REVERB and BRILLIANCE controls have different functions, both effects may be used to restore the crispness to your performance and to add a feeling of presence and added dimension.

Glide

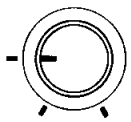


This effect permits the performer to lower the pitch of all voice sections associated with the Upper and Lower Keyboards by approximately 1/2 step. (It **does not** affect the Pedal or Solo Keyboards Voices). In addition to the lowering of the pitch, the GLIDE effect also interrupts the VIBRATO effect.

You can add the GLIDE effect by using the FOOT SWITCH located on the left side of the Expression Pedal. With the FOOT SWITCH pressed to the left, the pitch will be lowered. When the FOOT SWITCH is released, the pitch (and the VIBRATO, if in use) will return to normal.

This effect is particularly useful in the simulation of natural instruments that are customarily played using a "glide" effect such as a Trombone, Guitar, Violin ("Fiddle"). Take this opportunity to try it a few times, to become accustomed to its operation.

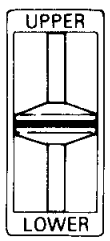
Pitch Control



PITCH
CONTROL

The PITCH CONTROL (located on the auxiliary/headphone jack panel beneath the Lower Keyboard) can be used to change the pitch (tuning) of your Electone™. When the mark on the control is aligned with the mark on its mounting panel, your Electone™ will be tuned to the International Standard Pitch (A=440HZ). Turning this control clockwise will raise the pitch (make it sharp), while turning it counter-clockwise will lower the pitch (make it flat). When playing along with records, tapes, radio or other instruments, some adjustment of this control may be required.

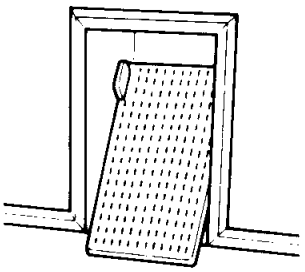
Manual Balance



MANUAL
BALANCE

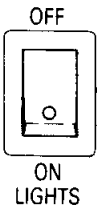
This variable control (located on the panel to the left of the Upper Keyboard) is helpful when you want to adjust the relative balance between the volume of the Upper and Lower Keyboards without changing your registration. Simply adjust the control to indicate which keyboard you would like to be the loudest. The volume for the Upper Keyboard increases when it is moved toward the UPPER position, while the volume for the Lower Keyboard increases when it is moved toward the LOWER position.

Expression Pedal



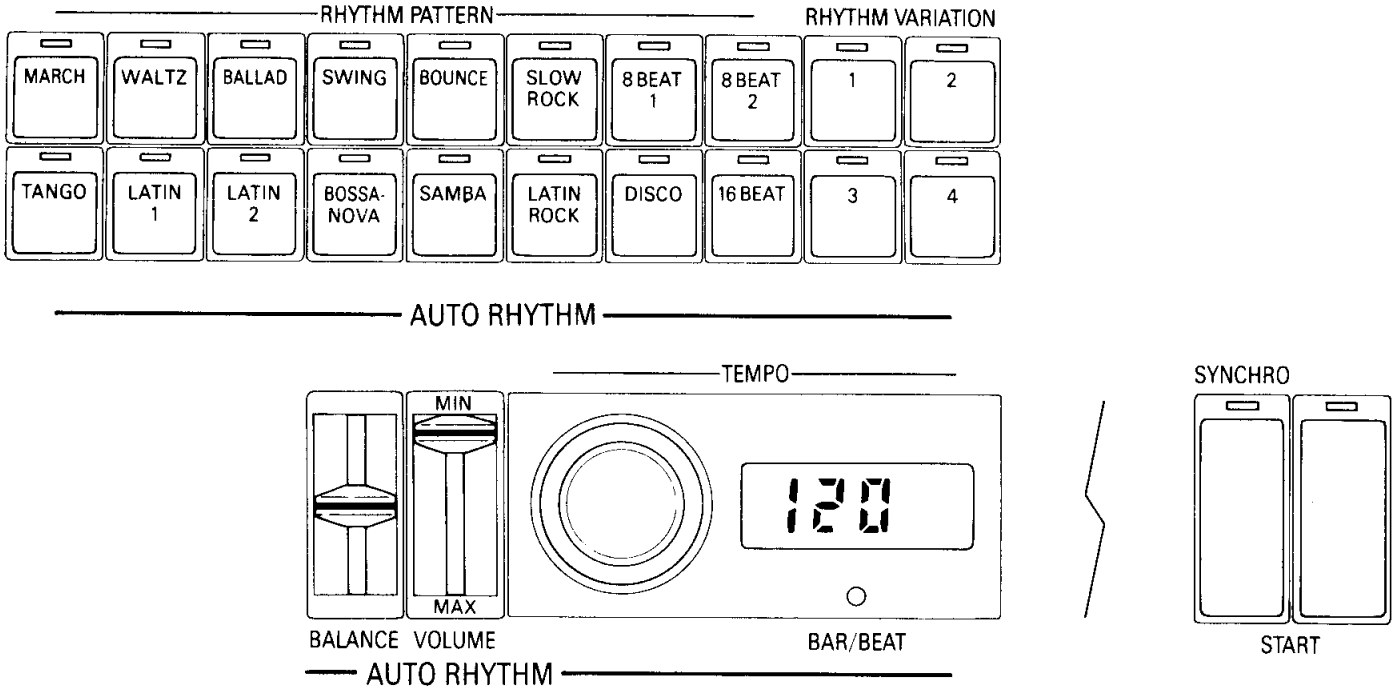
The Expression Pedal has also been referred to as a "volume pedal" or a "swell shoe," and all are essentially correct. This pedal is used to vary the overall volume level of the **entire** Electone™ during a performance. The volume level will increase when you press down with the toes of your right foot on the pedal. To decrease the volume, press down with your heel.

Panel Light



To turn on the PANEL LIGHTS, simply press the LIGHT switch (located on your right beneath the Lower Keyboard).

Auto Rhythm Unit



Rhythm Patterns And Variations

The Auto Rhythm Unit of your Electone™ features a variety of authentic percussion sounds. These sounds are actual recorded instruments stored digitally using a process called Full Wave Memory (FWM). These percussion instrument memories are then combined to form 16 basic RHYTHM PATTERNS (or styles) and four different variations of each permitting a total of **64** different patterns.

Follow the simple step-by-step procedure outlined below, which describes the operation of your Auto Rhythm Unit.

1) Select and press one of the 16 Rhythm Patterns and one of the 4 Variations.
2) Move the sliding VOLUME control downward.
3) Press the START button on the right.

Subsequently, the Rhythm and Variation selected in Step #1 above will begin. Take this opportunity to listen to the other possibilities.

Start And Synchro Start

There are two ways to activate your Auto Rhythm Unit. When the START button is turned on, the rhythm will begin immediately, from the first beat. When using SYNCHRO START, (left selector) the rhythm will wait for you to press either a Lower Keyboard or Pedal note, and then it will begin from the first beat. This feature allows the rhythm to be synchronized with you...starting only when you do.

Rhythm Tempo Control

The detent-type rotary TEMPO control is used to regulate the speed of the Auto Rhythm Unit. To increase the speed, turn it clockwise. To decrease the speed, turn the control counter-clockwise. The Digital Display will numerically indicate the **exact** tempo of the Auto Rhythm Unit (in number of beats per minute) at any given time.

At the beginning of some printed music, you might note an indication similar to the following:

M.M. ♩ = 120

This is called a "Metronome Marking" and it indicates the **suggested** tempo for that selection: in this case, 120 beats per minute. Simply set the rhythm tempo to this setting (or as close as possible). Naturally, you may vary from this suggested speed, and most probably will, especially when learning a song for the first time.

Downbeat Indicator Light

Below the numbers in the Digital Display window, you will find the DOWNBEAT INDICATOR LAMP, which, once the rhythm has been activated, will flash at the first beat (downbeat) of each measure. In addition, when SYNCHRO START is in use, that lamp will act as a silent visual metronome, indicating the exact tempo until the rhythm is started.

This feature, in addition to the Digital Display (explained below), enables you to get a good idea of the rhythm speed without having to produce any sound.

Rhythm Balance Control

This control allows you to adjust the relative balance between the different percussion (rhythm) instruments to suit your particular taste. The central position approximates the optimum levels found in live performances. The BALANCE control permits a considerable amount of change in volume of several of the percussion instruments, tailoring the sounds to the taste of the performer. As the slider is moved downward, the drums are emphasized, while the opposite setting emphasizes the cymbals and other higher pitched percussive instruments.

Digital Display

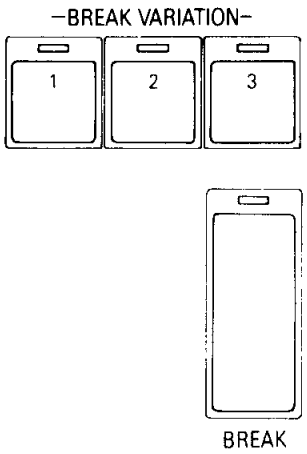
The Digital Display is extremely useful, as it serves various functions.

1) Tempo
   Before the Auto Rhythm Unit is activated, the rhythm tempo will be displayed in number of beats per minute. If the tempo should be changed after the Auto Rhythm Unit has been started, the new tempo will be indicated on the display as the TEMPO CONTROL is being turned. The approximate range of available speeds is from 40 to 340 beats per minute.

2) Bar-Beat Display
   Once the rhythm has been started, the display will then indicate which measure you are in (left half), as well as which beat of that measure (right half) for up to 256 continuous measures. From that point, the DIGITAL DISPLAY will automatically continue counting from measure #1.

3) Rhythm Sequence Programmer
   The Digital Display also provides assistance when using the Rhythm Sequence Programmer, by indicating the bar about to be programmed. For specific information, please turn to page 32.

Break Variations



During a live performance, a drummer will occasionally change from the basic pattern and add a slight variation, or BREAK, to provide interest. The BREAK VARIATION buttons accomplish this task. Try the following example, to familiarize yourself with the operation of this function:

1) Start the Auto Rhythm Unit.

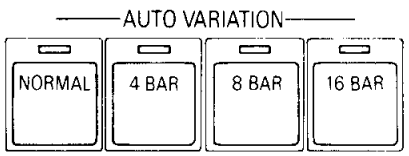
2) Select one of the three BREAK VARIATION buttons. A total of 48 different Break Variation patterns (16 Rhythms x 3 Patterns each) can be produced.

3) Press the "BREAK (ON)" button. Once activated, the BREAK VARIATION will begin immediately, providing up to one full measure of the "fill-in" pattern. The Break Variation will continue until the end of that measure, and will automatically return to the original rhythm at the start of the next measure. Should you desire a longer BREAK pattern, hold the "BREAK (ON)" button.

Producing An Introduction

The BREAK VARIATION function can also be used to create a rhythmic INTRODUCTION. To accomplish this, select a rhythm and BREAK VARIATION and press the "BREAK (ON)" button. Then, when the rhythm is activated with the START (not SYNCHRO START) selector the BREAK VARIATION will begin as an introduction. Please note that during that time the measure portion (left half) of the Bar/Beat indicator will read "0".

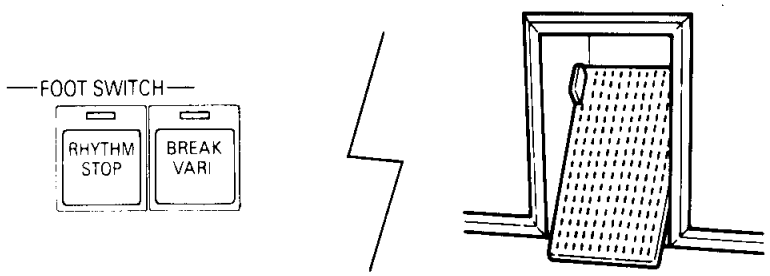
Auto Variation



The NORMAL button allows the selection and playing of any continuous rhythm. However, in addition to "fill-ins," a live drummer will also add variations to the rhythm pattern at regular intervals, to coordinate with the "natural breaks" (or phrases) in music. These generally occur at 4 Bar, 8 Bar or 16 Bar intervals.

To further add a more "human-like" quality to your Auto Rhythm Unit, YAMAHA has provided AUTO VARIATION, which will automatically add the selected BREAK VARIATION every 4th, 8th or 16th measure.

Foot Switch Controls



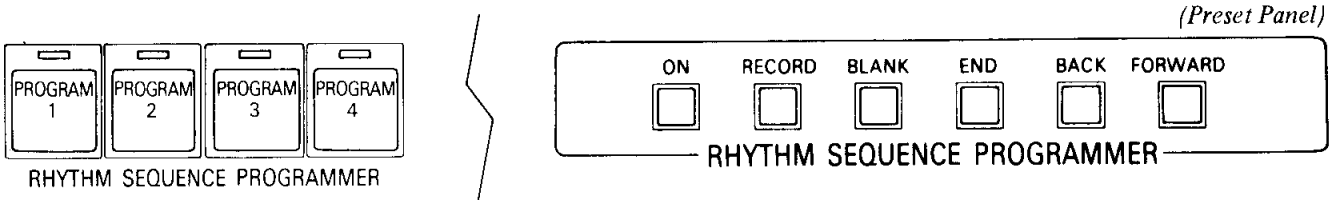
By using the FOOT SWITCH (located at the rear left of the Expression Pedal), you can start or stop the rhythm accompaniment, or change to a Break Variaton whenever you wish, without having to remove your hands from the keyboard.

1) RHYTHM STOP button:
If this button is selected and the FOOT SWITCH is moved to the left, the Rhythm will stop. At that time the DIGITAL DISPLAY will numerically indicate the tempo. If the FOOT SWITCH is activated again, the rhythm will re-start from the first beat of the first measure.

2) BREAK VARIATION button:
When this button is selected, the Break Variation will begin at the time the FOOT SWITCH is pushed to the left. As previously noted, once activated, the BREAK VARIATION will continue until the end of that measure and will automatically return to the original rhythm at the start of the next measure. If a longer break is desired, simply hold the FOOT SWITCH to the left.

3) GLIDE button:
The FOOT SWITCH can also be used to add a GLIDE effect, as discussed previously on page 26.

Rhythm Sequence Programmer



The RHYTHM SEQUENCE PROGRAMMER is a Memory system that makes it possible for you to "program" a sequence of rhythms and breaks (and even silent [Blank] measures, if you want them) before you actually begin to play. When you use this feature, and start the Auto Rhythm Unit, your "pre-recorded" (memorized) program will be played back exactly the way you arranged it.

The RHYTHM SEQUENCE PROGRAMMER provides two major performer benefits. First, it allows you to concentrate on other aspects of your playing instead of having to make quick and often distracting changes by hand. Second, you can enjoy a much wider range of drum accompaniment patterns, making your music sound "alive."

The following example was designed to assist you in learning how to operate the Rhythm Sequence Programmer. Although it is not necessary, we suggest that you turn your Auto Rhythm Unit on so that you can listen to the patterns as you store them into Memory.

1) Select and press PROGRAM 1.
   This step determines which Memory will be used to store your rhythm sequence. As many as 64 measures of rhythm accompaniment can be programmed into each of the 4 programs.

2) Press the Rhythm Sequence Programmer "ON" button (Located on the Preset Panel).
   The lamp will light, signifying that the programmer is now ready for you to begin programming. You will also note that the Digital Display reads (1), which indicates that measure 1 is **waiting to be programmed.** (If no number appears in the Digital Display, check to be sure that you have selected a program.)

3) Enter your desired rhythm sequence into the program according to the following guidelines:

   A) MEASURE CAPACITY: Select only one rhythm and one variation, or one Break Variation for each measure. The Rhythm Sequence Programmer will **not** store tempo settings.

   B) USE OF THE RECORD BUTTON: Only the red RECORD button can be used to enter the patterns into the program. Once you have selected the proper rhythm setting, press the RECORD button for each measure of that setting that you wish to store. The Digital Display indicates the **bar about to be programmed,** so that each time that you press the RECORD button, you will notice that the display will advance by one digit.

   - STORING A BREAK VARIATION: To store a BREAK VARIATION, you must hold the "BREAK (ON)" button while pressing the RECORD button.

   - STORING SILENT MEASURES: If you desire a measure without any rhythm, you must hold the white BLANK button and press the RECORD button.

   - DISPLAY READS (F): If 64 measures have been stored in Program 1, (F) will appear on the Digital Display, indicating that that program is Full. If you need additional measures to complete your selection, press PROGRAM 2 and add the remaining measures.

   - REVISING PORTIONS OF A PROGRAM: The BACK and FORWARD buttons are used to locate portions of a program that you wish to change. While watching the Digital Display, use these buttons until the digits appear that correspond to the measure number(s) that you want to revise. Then, by using the RECORD button as described above, make the desired changes.

   - PROTECTING YOUR PROGRAM: For your protection, YAMAHA has provided a battery back-up system to insure that rhythm sequences stored in Memory cannot be erased (unless a new sequence is programmed in the same Memory), even if the power is turned off or the Electone™ is unplugged.

4) Once you have completed programming, press the green END button, which signals the end of your program. The Digital Display will return to the tempo indication, and playback of that program is now possible.

5) When the Auto Rhythm Unit is activated, the rhythm sequence that was stored in Memory will be played back from the first measure.

   - PLAYBACK: When the playback reaches the end of your program, it will return again to the first measure, continuing in this manner indefinitely until the Auto Rhythm Unit is turned off.

- COMBINING MORE THAN ONE PROGRAM: When two or more Programs have been used in programming one selection or a medley of tunes, they can be played back in sequence. Simply press the programs used, start the rhythm, and you will automatically obtain consecutive playback of these programs starting from the program farthest to the left. (Note: Up to 256 measures of programmed rhythm accompaniment is possible by using all 4 programs).

- ADDING BREAK VARIATIONS: BREAK VARIATIONS can be added manually at any time during playback of a program.

6) From time to time, you may want to write the contents of a rhythm sequence on paper for later use. Many methods have been used, but the following format seems to be the most convenient, because you write down **only those measures where a change is required.** Please remember that this is merely a suggestion, so use whatever method is most comfortable for you. A brief example of what a typical written program might look like follows:

DIGITAL READOUT	1	4	5	7	8
RHYTHM OR BREAK	SWING	DISCO	BLANK	BREAK	END
VARIATION	1	3		2	

The top line (Digital Readout) shows in which measures a change is to be made. You need only to select the appropriate buttons for that measure and then press the RECORD button repeatedly until the Digital readout matches the number in the next column of the program, continuing in this manner until the entire contents of your program have been stored.

To gain additional experience, let's try programming the above **written** sequence into PROGRAM 1 of your RHYTHM SEQUENCE PROGRAMMER. After turning the Programmer "ON" and selecting PROGRAM 1, please follow the step-by-step procedure outlined below:

1) For measure #1, select a Swing rhythm, with Rhythm Variation 1. Now press the red RECORD button (one time for each measure) until the Digital Readout reaches 4. (In this case, you would press it three times.)

2) When the Digital Readout reads "4," we must change the rhythm to Disco, Rhythm Variation 3.

   As before, press the red RECORD button until the Digital Readout reads "5."

3) When the Digital Readout reads "5," we are asked to program BLANK (silent) measures until the Digital Readout reads "7."

   Remember: To program a BLANK measure you must hold the white BLANK button down while pressing the RED RECORD button.

4) After having recorded the two silent measures, our Digital Readout reads "7." Now, we are requested to program Break Variation #2.

   Select Break Variation #2, and remember that to program it, we must hold the "BREAK (ON)" button while pressing the red RECORD BUTTON.

5) That moves our Digital Readout up to "8," and we are asked to finish the program by pressing the END button here.