

YAMAHA

SK30

SYMPHONIC ENSEMBLE

OWNER'S MANUAL

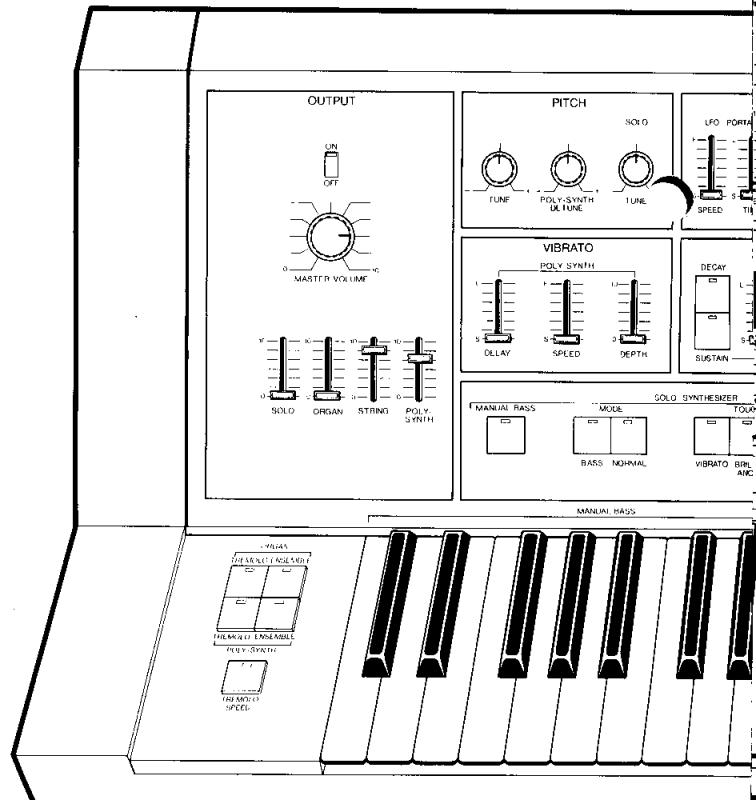


INTRODUCTION • CONTENTS

Thank you very much for your purchase of the Yamaha SK30 Symphonic Ensemble. The SK30 offers a versatile combination of organ, polyphonic synthesizer, solo synthesizer and strings in one portable keyboard. With such features as keyboard touch response and split keyboard modes, the SK30 provides a variety of sounds and the extensive flexibility that previously required the use of several different keyboards. Thus the SK30 is a multi-function instrument which will undoubtedly be of great value to both the professional and amateur keyboardist.

We urge that you read the contents of this Owner's Manual carefully in order to make full use of all the capabilities of the SK30.

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PRE-USE CAUTIONS

Be sure to read the following points carefully before operating your Symphonic Ensemble.

LOCATION

When setting up your Symphonic Ensemble, avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration, excessive dust, cold or moisture.

POWER CORD

In order to prevent damage to or shorting of the power cord, never remove the power plug from the wall socket by pulling on the power cord. Always grip the power plug directly.

If you will not be using your Symphonic Ensemble for an extended period of time, be sure to unplug the power cord.

CLEANING

Do not use solvents such as benzene or thinner to clean

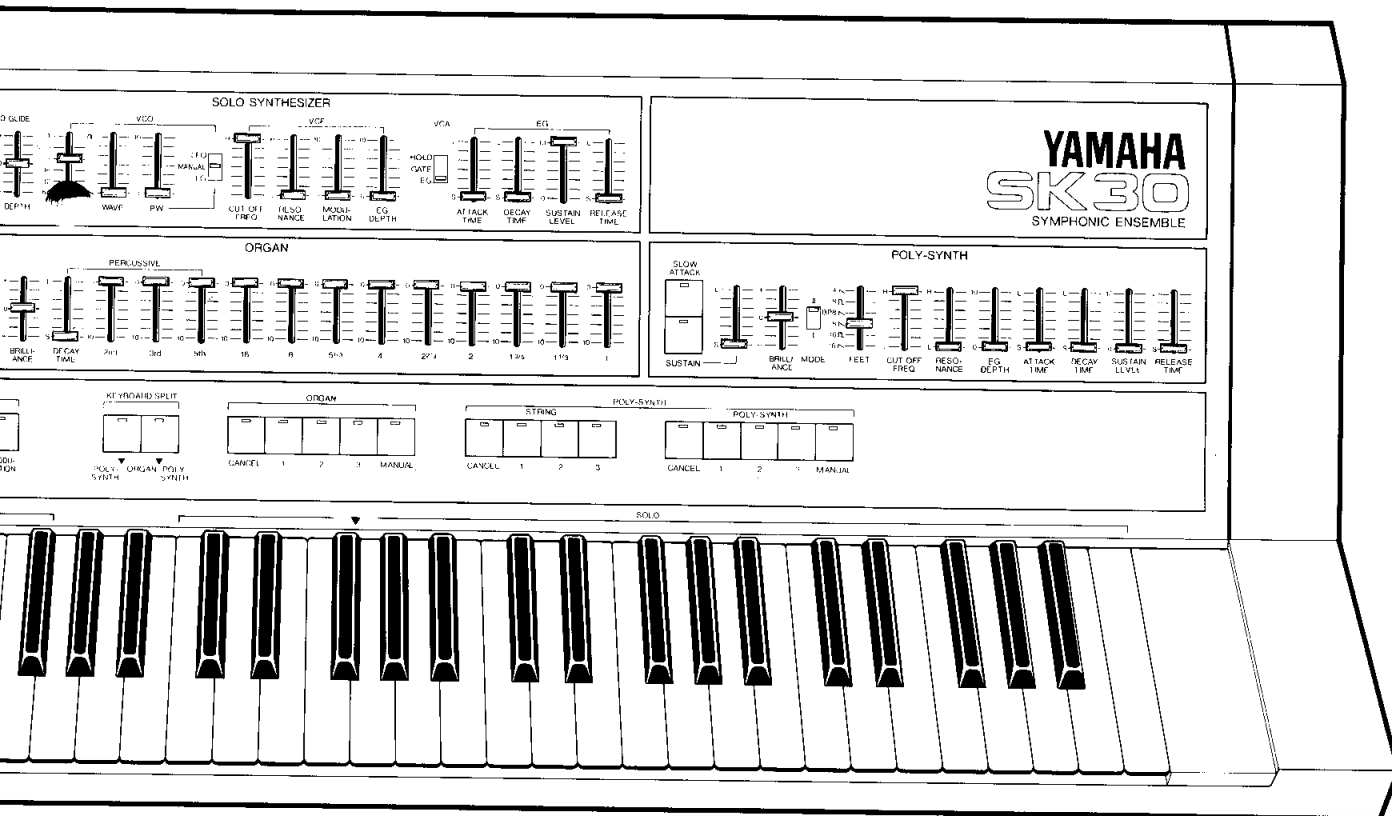
your Symphonic Ensemble as this may cause discoloration or staining of the panel. Use a soft, dry cloth.

CONNECTION

Follow the "Connections" instructions given in this manual carefully when setting up your Symphonic Ensemble. Connection errors could lead to serious damage to the Symphonic Ensemble, amplifier and speakers.

OTHER APPLIANCES

Since your Symphonic Ensemble incorporates a considerable amount of digital circuitry, it is advisable to use it where it will not be influenced by electromagnetic radiation from appliances such as televisions, radios, etc.



SK30 FEATURES AND FUNCTIONS

The SK30 is composed of three basic sections: organ, poly-synth, and solo synthesizer. Additionally, the poly-synth performs two roles—a fully variable polyphonic synthesizer and a preset string synthesizer. Each of these four sound sources can be combined and mixed to any desired balance to create multi-instrument effects.

Keyboard Range and Functions

The SK30 keyboard offers 61 keys covering a full five octave range (C_1 --- C_6). However, by using the split keyboard or manual bass functions, specified sections of the keyboard may be used to cover different ranges according to musical requirements.

In the normal mode of operation, the organ and poly-synth (strings) sections cover the entire five octave, full keyboard range with up to 7-note polyphonic (simultaneous output) capability. In the split keyboard mode, however, the organ and poly-synth (strings) sections are divided to the left and right of the split marker (▼) near the center of the keyboard with full 7-note polyphonic capability for each section.

The range of the solo synthesizer section in the normal mode of operation is from C_3 to C_6 (3 octaves). In the bass mode either the optional pedal keyboard or the lower 19 keys of the manual keyboard are used, covering a range of 1-1/2 octaves (C_1 --- $F_2 \#$). In either mode, solo synthesizer output is single-note, high-note priority format.

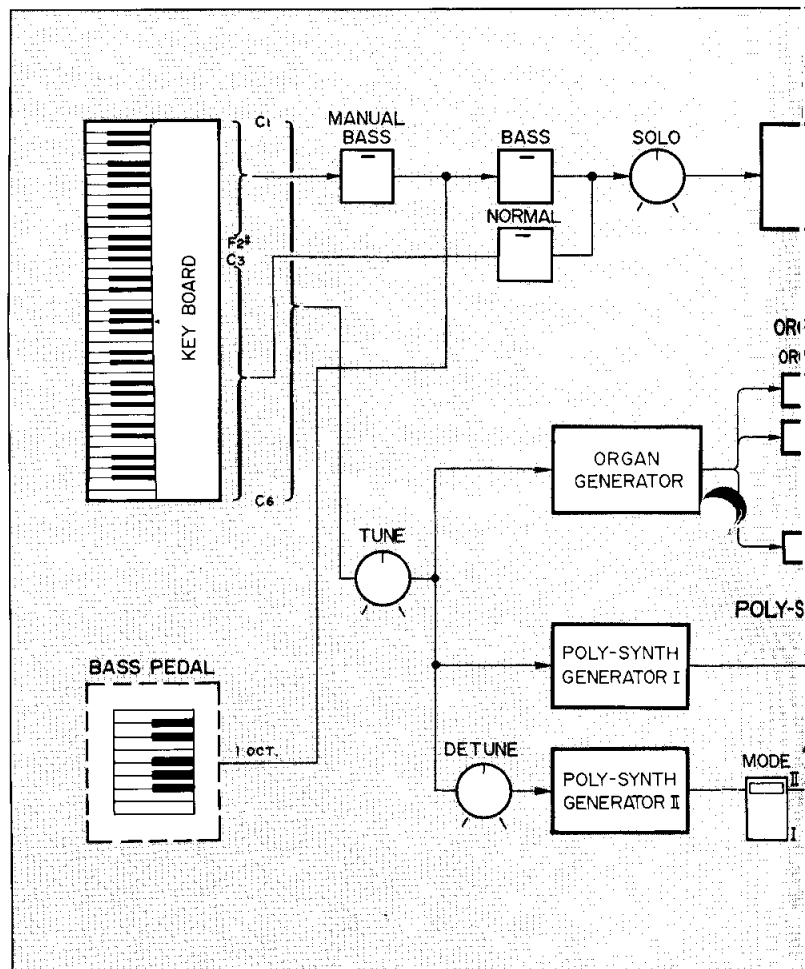
Rear Panel

In addition to a MIXED (all sections) output, the SK30 rear panel offers independent output jacks for the organ, poly-synth (strings) and solo synthesizer sections. Jacks for optional foot controllers for MIXED VOLUME, STRING VOLUME and POLY-SYNTH BRILLIANCE as well as foot switch jacks for SUSTAIN and PORTAMENTO are also provided. In particular, the inclusion of a PEDALS jack for connection to an optional bass foot pedal unit affords greatly improved performance versatility.

Organ and Poly-Synth

The organ, poly-synth and strings sections all offer three preset sounds, permitting one-touch selection of a number of basic sounds in addition to the infinite variety of voices which can be created with the manual controls. Tonal variations, like percussion (for the organ section), brilliance and sustain can be applied to any of these preset sounds. In addition, preset voices from one section can be combined with manually-voiced sounds from another section to achieve a very broad range of variations.

The basic difference between the organ and poly-synth sections is the tonal color of the sound source. Organ sounds are created by adding or subtracting harmonics using the drawbar-type levers. The poly-synth sounds are



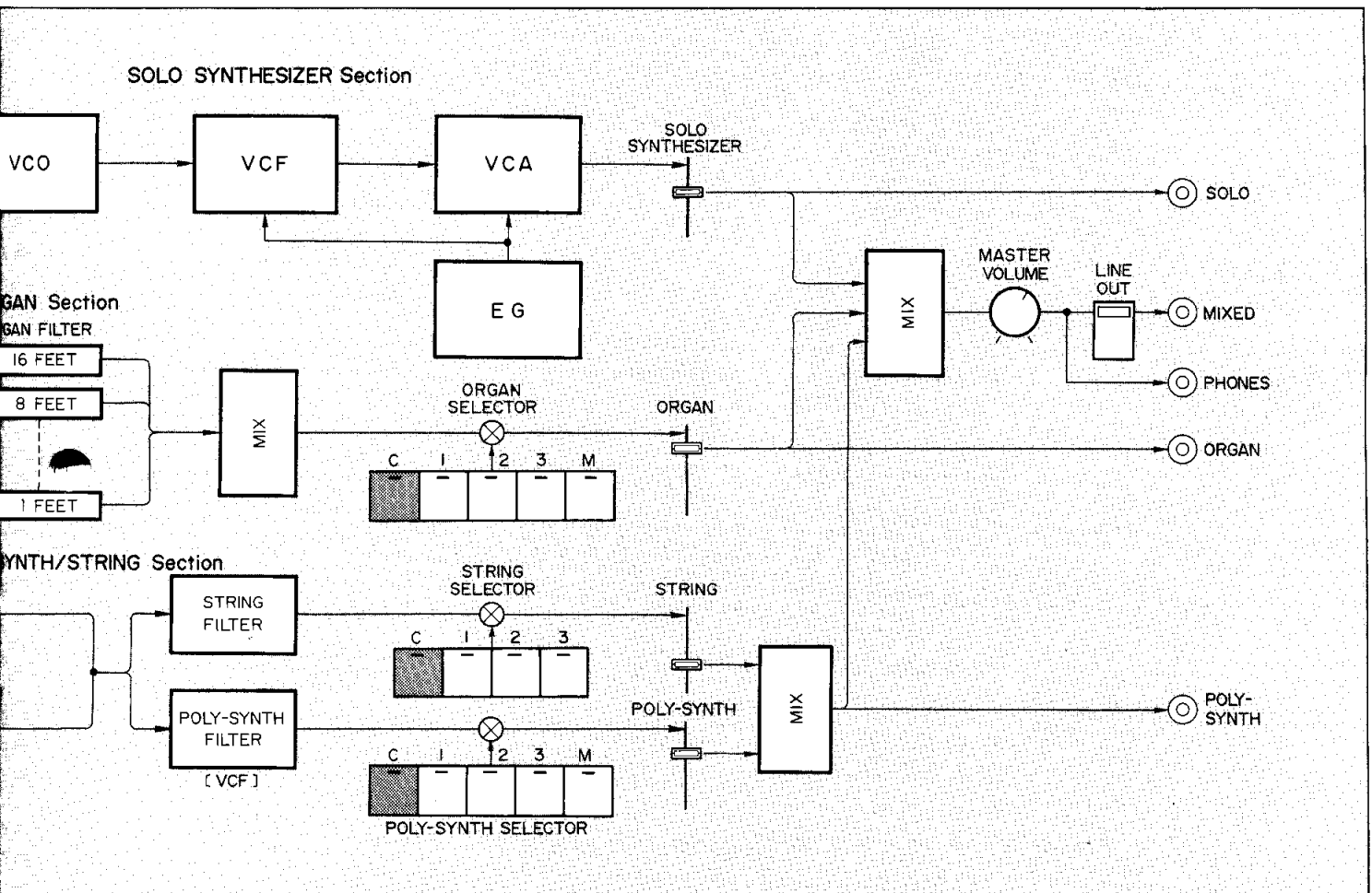
created by passing a harmonic-rich signal through a controllable filter which selectively removes certain harmonics. Since this filter can be controlled directly by the poly-synth envelope generator (ADSR), it is possible to produce sounds which change in tonality as they are played. This permits the production of a variety of voices including brass-like sounds.

Solo Synthesizer

The solo synthesizer has a single voltage controlled oscillator (VCO), and allows full control of pitch, waveform shape, filter (VCF), volume (VCA), and envelope generator (EG) functions. Also the keyboard after-touch response gives the player the ability to add vibrato, modulation and brilliance variations by depressing the keys slightly harder. These features give virtually unlimited variations in sound for a single-note (high-note priority when playing more than one note) performance.

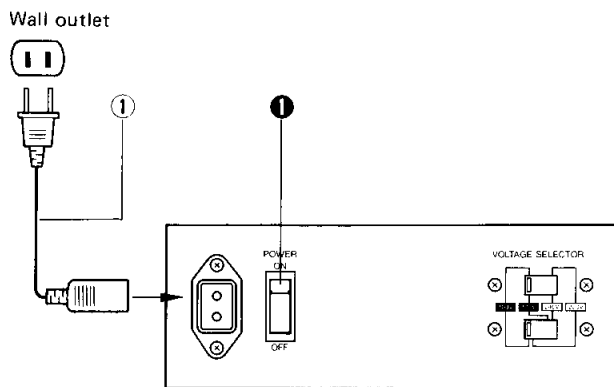
This makes the solo synthesizer section ideal for lead lines, and is especially effective when played simultaneously with the organ or string sections.

As we have seen, the SK30 organ, poly-synth, solo synthesizer and strings sections each have their own particular features and capabilities. This design makes the SK30 a truly versatile multi-keyboard that, with thorough understanding and a little practice, permits the musician to greatly expand the scope of his musical expression. In order to fully understand these capabilities, it is advisable to experiment with the controls of the SK30 as you go through each section of this manual. Be sure to connect your SK30 to a sound system with ample power and wide-range speakers (such as Yamaha EM-150BII and S0410H or S4115H speakers) so that the tonal characteristics of the sounds you create may be fully appreciated.



The SK30 does not incorporate a built-in power amplifier. For this reason, when sound output other than via headphones is required, an external keyboard amplifier or power amplifier and speaker must be used.

Power Supply Connection



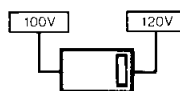
① POWER CORD

The power cord plug is inserted into an AC power socket providing the standard line voltage for your area.

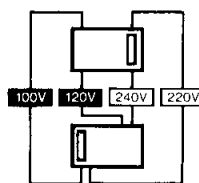
* VOLTAGE SELECTOR

Before turning the unit on, make sure that the rear-panel voltage selector is properly set according to the line voltage in your area.

US & CANADIAN MODELS



GENERAL MODEL



Amplifier / Speaker Connection

OUTPUT BLOCK

Output level from all output block jacks is $-10\text{dBm}/600$ ohms. This level is ideal for direct input to any standard keyboard amplifier.

② MIXED OUTPUT

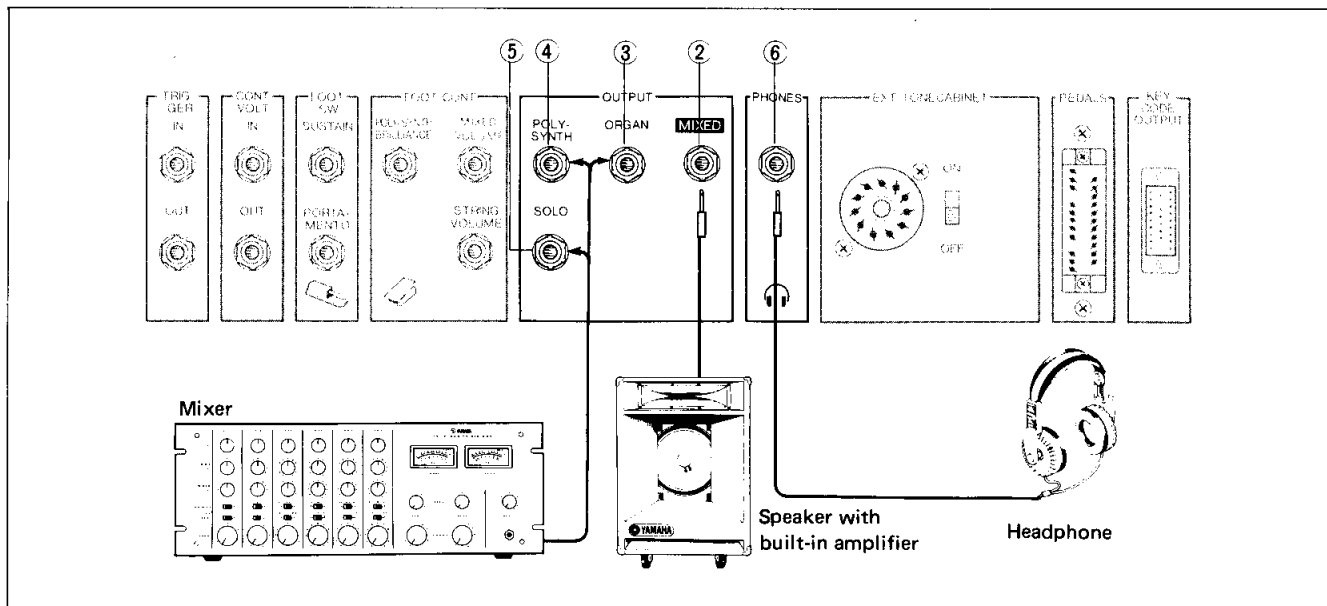
This output is primarily intended for use with a single-channel (monaural) amplifier and speaker. This jack provides output from the organ, poly-synth, strings and solo synthesizer sections. Overall output level can be controlled by the MASTER VOLUME control in the OUTPUT block on the front panel.

③, ④, ⑤ INDIVIDUAL OUTPUTS

Independent organ, poly-synth (strings) and solo synthesizer output jacks are provided for use with an external mixer or multi-channel amplifier and speaker(s). The output levels of these jacks are separately controlled by the independent front-panel OUTPUT block volume levers, but are not affected by the MASTER VOLUME control.

⑥ HEADPHONE JACK

For connection to standard stereo headphones. Headphone jack output is the same combination of organ, poly-synth, strings and solo synthesizer signals as the mixed output jack.



The versatility of the SK30 can be enhanced greatly through the use of various accessory connectors on the rear panel. Bass pedals (BP2), foot controllers (FC-3A, FC-4), an external tone cabinet, and even another Yamaha synthesizer may be interfaced with the SK30 for an even more creative performance.

Option Connections

⑦ KEY CODE OUTPUT

This multi-pin connector carries a digital code representing the notes played on the SK30 keyboard. Connection to a Yamaha polyphonic keyboard equipped with a KEY CODE INPUT will allow that keyboard to be "played" from the SK30 keyboard.

⑧ BASS PEDAL CONNECTOR

The optional BP2 1-octave bass pedal unit attaches to this connector.

⑨ EXTERNAL TONECABINET CONNECTOR

An 11-pin connector and output switch for connection to a Leslie rotating speaker unit (model #715, #815, etc.). When connected to a Leslie speaker, the SK30 front panel tremolo ON/OFF and speed switches directly activate the appropriate Leslie functions.

For details refer to the Tremolo/Ensemble section in this manual.

*** Be sure to turn the EXT TONECABINET output switch off when no Leslie speaker unit is attached.**

FOOT CONTROLLER CONNECTIONS

⑩ MIXED VOLUME

An FC-3A foot controller unit plugged into this jack controls the overall volume of the organ, poly-synth, strings and solo synthesizer sections.

⑪ STRING VOLUME

Permits independent foot volume control of the strings section.

⑫ POLY-SYNTH BRILLIANCE

Permits foot control of poly-synth brilliance (tonal color).

FOOT SWITCH CONNECTIONS

⑬ SUSTAIN

Connecting a foot switch to this jack permits foot operated sustain ON/OFF switching.

*** The function of the sustain foot switch is exactly the same as the front-panel sustain switch ⑩, ⑫. When using a foot switch for sustain control the front-panel sustain switch should be set to ON. The length of sustain is controlled by the front-panel sustain lever ①, ②.**

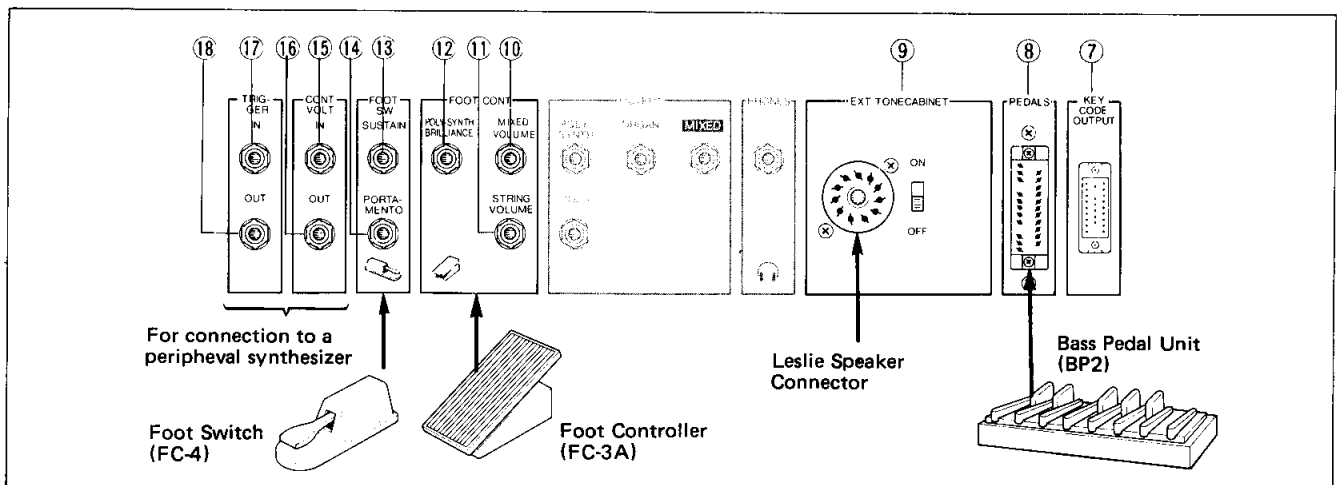
⑭ PORTAMENTO

Permits ON/OFF foot control of solo synthesizer portamento. Portamento length is controlled by the front-panel portamento lever ⑤. If the portamento lever is set all the way to the "S" end of the scale, activating the foot switch will produce no portamento effect.

⑮, ⑯ CONTROL VOLTAGE INPUT/OUTPUT

⑰, ⑱ TRIGGER INPUT/OUTPUT

These connectors allow the SK30 solo synthesizer section to be interfaced with any other Yamaha synthesizer so that the peripheral synthesizer may be "played" from the SK30 keyboard. In this way the performer can add any number of extra oscillators and filters to the solo synthesizer signal to create an even "fatter" solo sound in conjunction with the organ, poly-synth and strings. For details on use of the Control Voltage and Trigger interface jacks, refer to the owner's manual of the optional synthesizer.



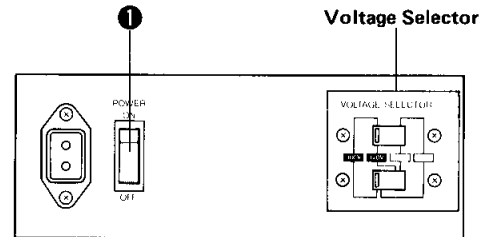
Once all necessary connections have been made, double-check to be sure that no errors have been made. If a connection error goes unnoticed and power to the SK30 is switched on, there is a possibility of damaging both the SK30 and its related power amplifier, speakers, etc.

The following is a block-by-block description of the SK30 control functions. As you read through the manual, try the controls as they are described with the SK30 MIXED output connected to an amplifier and speaker.

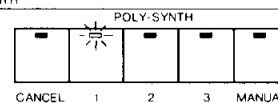
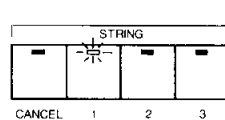
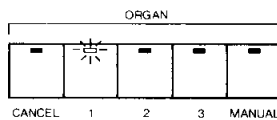
1 POWER SWITCH

The SK30 power switch is located next to the power cord on the rear panel. When the power switch is turned on, the ORGAN 1, STRING 1 and POLY-SYNTH 1 preset buttons will automatically be engaged and their respective indicator lamps will light.

***Be sure the rear-panel voltage selector switch is properly set for the line voltage in your area. Avoid accidental alteration of the voltage selector switch setting.**



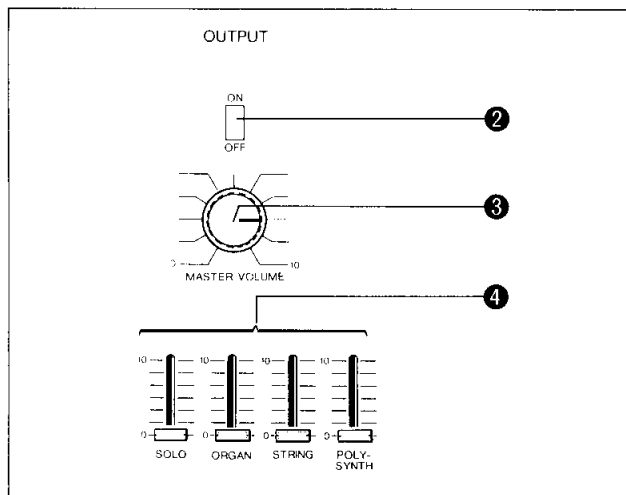
(General model)



Settings shown automatically initiated when power switched ON.

Output Block

In this condition (power switched on) the SK30 is ready to play using the preset organ, poly-synth and string sounds. The level and balance of the preset sounds can be adjusted by the OUTPUT block controls. In order to use the solo synthesizer section, however, an appropriate sound must be set using the solo synthesizer controls.



2 LINE OUT SWITCH

This switch turns output from the MIXED jack on or off. It has no effect on the individual or headphone outputs.

3 MASTER VOLUME CONTROL

Adjusts the volume of the mixed and headphone outputs.

***Output to an external tone cabinet (Leslie speaker) is also adjusted by the master volume control.**

4 SOLO, ORGAN, STRINGS AND POLY-SYNTH VOLUME CONTROLS

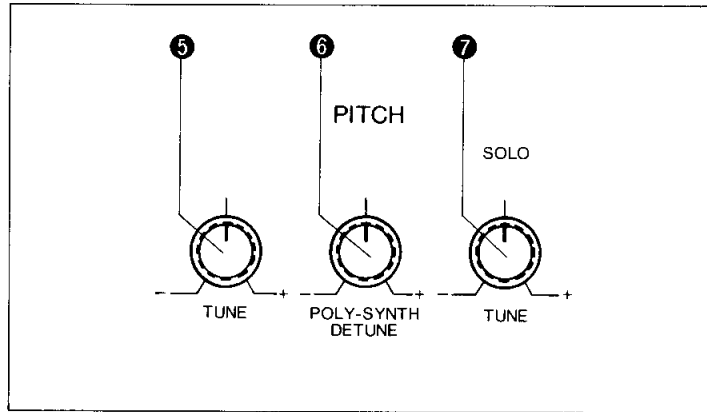
The volume of the solo synthesizer, organ, strings and poly-synth sections are independently adjusted by these controls. They are particularly useful for creating the desired balanced between sections.

Raising the volume levers increases the volume of the respective sections. With the appropriate, volume levers raised, you can play the keyboard using any of the organ, strings and/or poly-synth preset sounds.

If any of the preset group CANCEL buttons are pressed, the sound from the respective section(s) will be cut off regardless of the volume lever setting.

***By setting the solo synthesizer section controls to the basic setting given on the following page, you will be able to use solo synthesizer sound as well as the organ, strings and poly-synth preset sounds.**

This block permits tuning of the individual SK30 sections.



5 TUNE

Adjusts the overall pitch of the organ and poly-synth (strings) sections.

6 POLY-SYNTH DETUNE

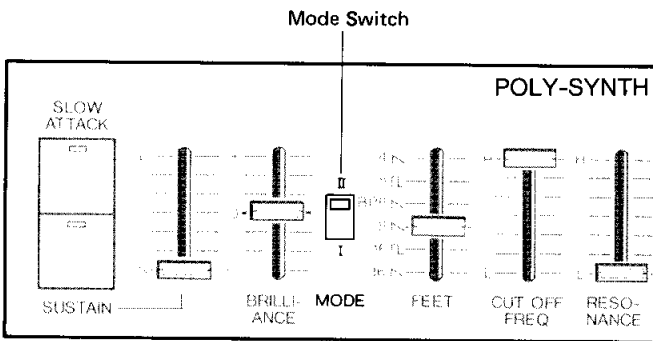
For creating special harmonic effects, this knob is used to offset the tuning of the poly-synth (strings) section.

***Poly-synth detune only functions when the poly-synth MODE switch is in the II position.**

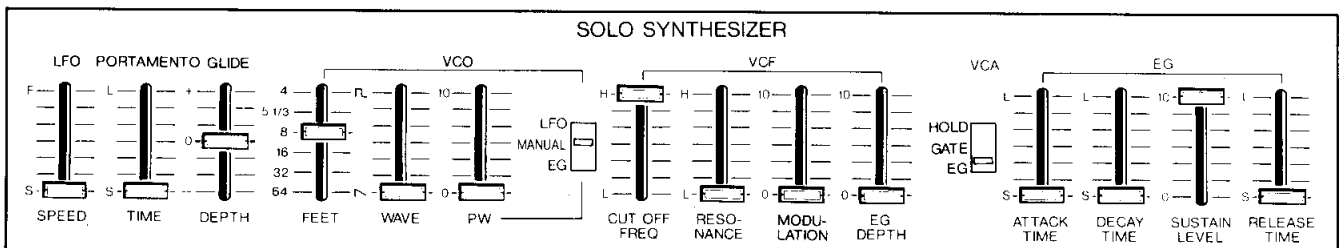
7 SOLO TUNE

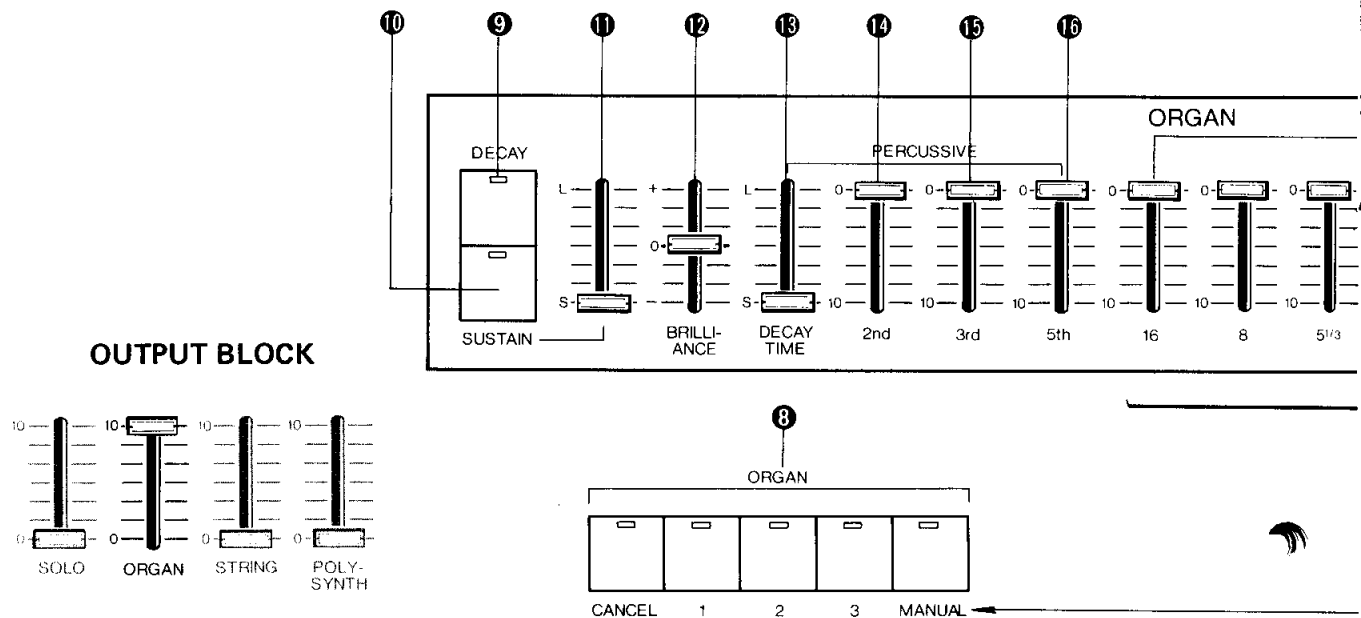
Adjusts the overall pitch of the solo synthesizer section. The TUNE control 5 has no effect on solo synthesizer pitch.

***Sound output from the solo synthesizer section can be obtained by pressing the solo synthesizer NORMAL MODE button and setting the section controls as shown below.**



SOLO SYNTHESIZER BASIC SETTING





With the organ section, you can use the three preset tonalities or set up your own sound using the organ tone levers in the MANUAL mode. Since the preset sounds are determined by internal circuitry simulating settings of the manual tone levers, the organ section DECAY, SUSTAIN and BRILLIANCE controls can be used to add subtle tonal variation to the preset sounds.

8 ORGAN SELECTOR SWITCHES

These switches permit selection of the organ section tonal color. ORGAN 1--3 are preset sounds, and the MANUAL button permits tone variation using the manual tone levers. Pressing the CANCEL button completely cuts off output from the organ section.

the decay switch.

Pressing the decay switch a second time turns this function off.

9 DECAY SWITCH

When the DECAY switch is turned on, the organ section behaves like a percussion instrument. If a note on the keyboard is pressed and held, the sound quickly reaches maximum volume and then fades out (decays). If the keyboard is released during the decay period, the sound is instantly cut off.

10 SUSTAIN SWITCH

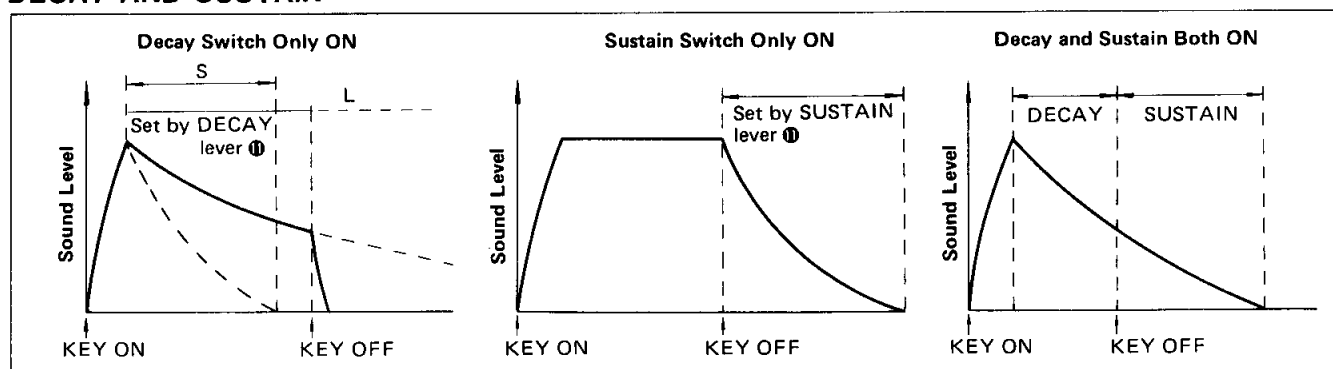
Turning the SUSTAIN switch on causes a note played on the keyboard to fade out gradually after the key is released. Length of sustain is controlled by the lever adjacent to the sustain switch.

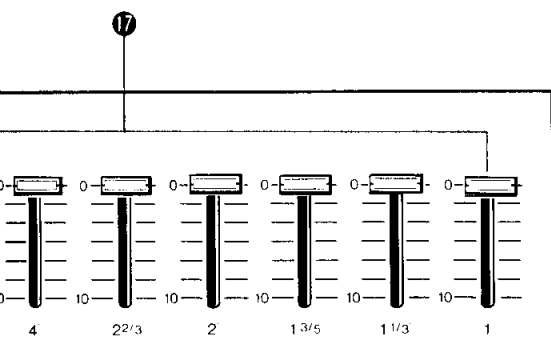
Pressing the sustain switch a second time turns this function off.

The rate of decay is controlled by the lever 11 adjacent to

*** If both the decay switch 9 and sustain switch 10 are turned on, a note played will gradually decay regardless of keyboard attack or release.**

DECAY AND SUSTAIN





MANUAL Tone Levers

11 DECAY, SUSTAIN LEVER

This lever adjusts the length of decay and sustain when the respective functions are used. If this lever is set toward the "L" end of the scale, long, flowing decay or sustain will result.

*** If both decay and sustain functions are switched off, the decay/sustain lever will have no effect on the sound.**

12 BRILLIANCE LEVER

Adjusts tone color. If the brilliance lever is set toward the "+" end of the scale, a bright, crisp sound results. Setting to the "-" end of the scale produces a softer sound.

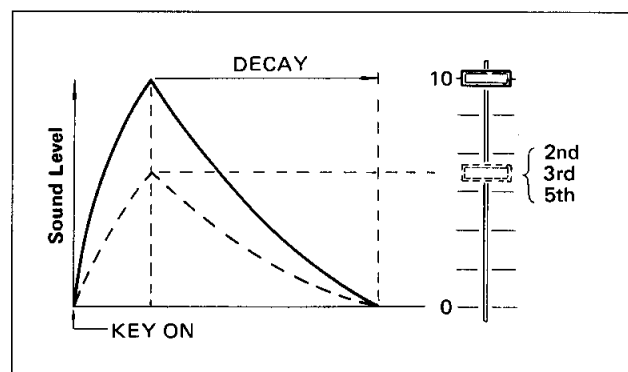
*** Normally, the brilliance control should be set to its center (0, click stop) position. According to changes in the mood of the music it can then be operated to create an appropriately bright or soft atmosphere.**

PERCUSSIVE LEVERS

13 DECAY TIME CONTROL, 14, 15, 16 2ND, 3RD AND 5TH HARMONIC CONTROLS

These controls adjust the tone color of the initial attack of a note thereby permitting production of a variety of percussive effects. The 2nd (second harmonic), 3rd (third harmonic) and 5th (fifth harmonic) levers, when set towards the "10" end of their scales, add the respective harmonics in proportions determined by the setting of the controls to the initial attack of notes played on the keyboard. The DECAY TIME control adjusts the length of decay of the percussive attack.

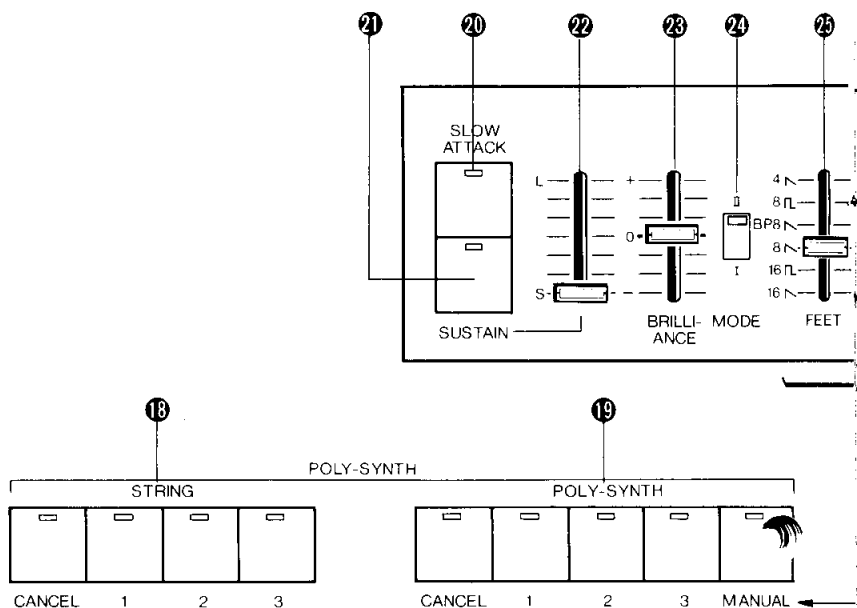
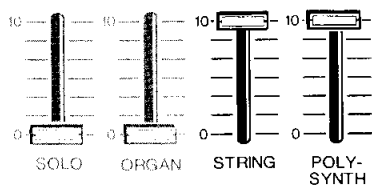
*** No percussive effect is produced if a key is pressed while previously pressed keys are held.**



17 TONE LEVERS (16' -- 1')

These levers become effective when the organ section is set to the manual mode. Ordinarily, the sound of an instrument is determined by the number and type of harmonics that are produced with its fundamental tone. The organ section, however, permits free selection and proportioning of harmonic tones to build up the desired tonal quality. The tone levers provide versatile control of tones from as low as 16' all the way up to 1'.

OUTPUT BLOCK



Poly-synth operating modes include three preset sounds and manual sound control in which front-panel controls permit adjustment of the sound envelope as well as the tonal color. The strings section offers three preset sounds. Since the poly-synth and strings sounds are generated by the same source, some of the poly-synth controls apply to strings as well.

18 STRINGS SELECTOR SWITCHES

Provide a choice of three preset strings sounds. When the power switch is initially turned on, the STRING 1 preset sound is automatically activated. If the CANCEL switch is pressed, output from the strings section is completely cut off.

* If a foot controller is plugged into the STRING jack of the rear panel FOOT CONT section, foot control of strings volume is possible. This facilitates smooth fade-in or fade-out of the string sound while playing.

19 POLY-SYNTH SELECTOR SWITCHES

These switches provide selection of three preset poly-synth sounds as well as a manual mode in which tone color and envelope are determined by settings of the poly-synth section controls. When the power switch is initially turned on, the POLY-SYNTH 1 preset sound is automatically activated. If the CANCEL switch is pressed, output from the poly-synth section is completely cut off.

* If the strings and/or poly-synth cancel switches are turned on (18, 19) no sound output will be produced even if their respective independent volume controls are raised. This makes it convenient to cut off sound from the strings or poly-synth sections without affecting the settings of the volume controls.

21 SLOW ATTACK SWITCH

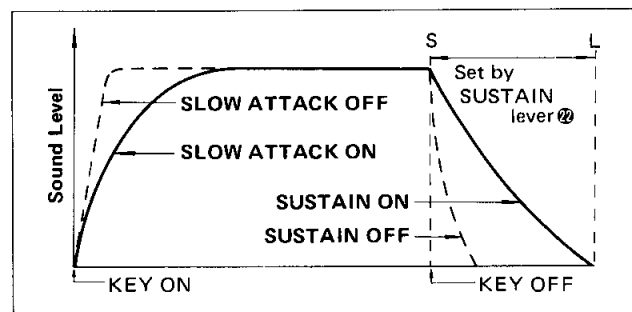
When this switch is turned on, the attack of notes played on the keyboard is delayed.

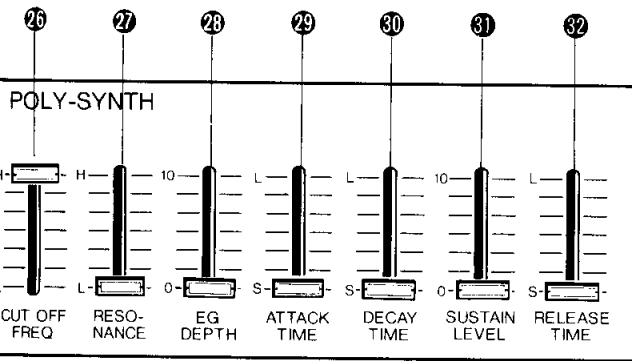
* The SUSTAIN lever 22 has no effect on the slow attack function.

21, 22 SUSTAIN SWITCH AND LEVER

Turning this switch on causes notes played to decay (fade out) slowly once the keyboard is released.

Length of sustain is adjusted by the SUSTAIN lever.

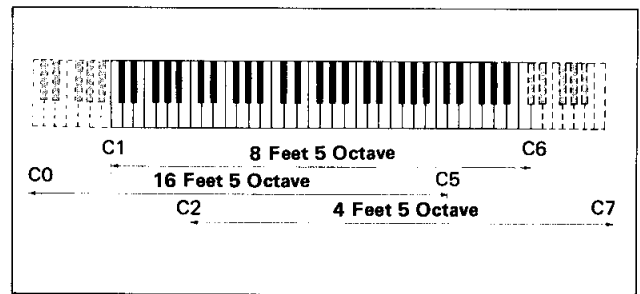






All levers to the right of the poly-synth FEET lever 25 are operative in the poly-synth manual mode only. Even when the poly-synth section is in the manual mode, no sound will be produced if the controls are improperly set. To begin with, set the controls to the positions shown in the illustration to the left and turn the MANUAL switch on.

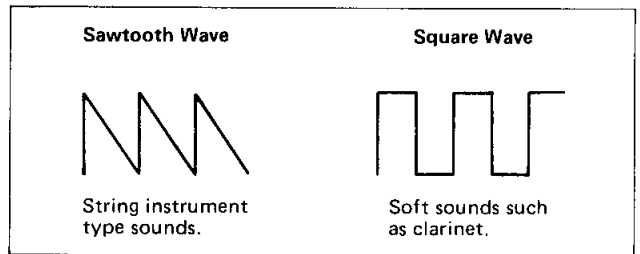
25 FEET SWITCH

Selects tone generator pitch, waveform and filter characteristics. In the 8' position, the keyboard covers a five octave range from C₁ to C₆. In the 16' position the sound is one octave lower, and in the 4' position the sound is one octave higher.



* About Waveform

The tone generator produces either a sawtooth wave () or a square wave (). The sawtooth waveform is most useful for producing string or brass instrument type sounds, while the square wave is ideally suited for producing the softer tones of clarinets, etc.

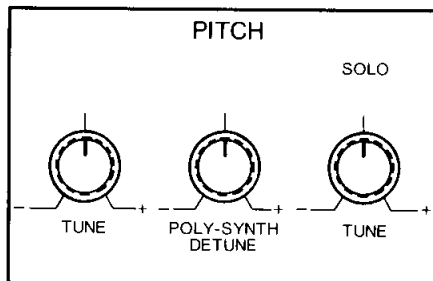


23 BRILLIANCE LEVER

Adjusts tone color. This control functions for both poly-synth and strings sounds. Set towards the "+" end of the scale a bright, crisp sound results. Set towards the "-" end of the scale a softer sound is produced.

24 MODE SWITCH

Selects the poly-synth tone generator. The poly-synth (strings) section incorporates two tone generators, the pitch of one of which can be offset in relation to the other. In mode II both tone generators function. In this mode the pitch of one of the tone generators can be varied with the pitch block TUNE and DETUNE controls to create varied harmonic effects. In mode I only the TUNE control affects tone generator pitch, and no detune effects can be created.



* The slow attack switch 20, sustain switch 21, sustain lever 22, brilliance lever 23 and mode switch 24 all function for both poly-synth and strings sounds, including poly-synth preset sounds.

26 CUTOFF FREQUENCY CONTROL

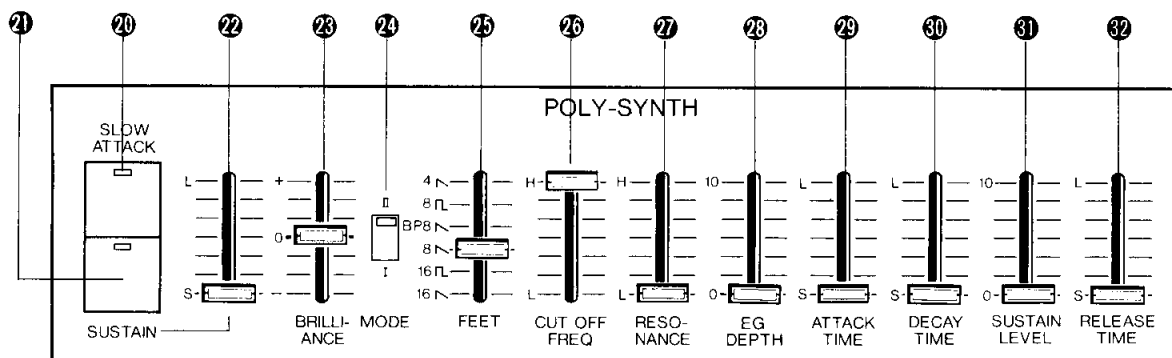
Controls the overall tonal color in the manual mode. As the lever is moved from the "H" end of the scale to the "L" end, more and more of the sound's upper harmonics are cut off producing a rounder, mellower sound. Set all the way to the "L" end of the scale even the fundamental tone is cut off and no sound is produced.

27 RESONANCE

Setting this lever to the "H" end of the scale produces a peak in the frequency response in the area of the cutoff frequency. This permits creation of a variety of sharp, "contrasty" sounds.

Envelope Generator

All levers from the EG DEPTH control 28 to the RELEASE TIME control 32 are used to adjust the tonal "shape" of the sound from the time it is initiated to the time it fades out or cuts off. In order to experiment with the envelope generator controls, set the cutoff frequency lever 26 to approximately the center of its scale.



28 ENVELOPE GENERATOR DEPTH

Controls the amount of tonal change produced by the four levers to its right. Setting to the "10" end of the scale produces a greater variation in tonality. If all the envelope generator levers are set to their minimum positions, no tonal variation will be produced. Set all the levers to their maximum positions and try out their effect one by one.

*The tone color determined by the sustain lever is the same as if it were set to "0" and the adjustment made using the cutoff frequency lever.

29 ATTACK TIME

Adjusts the time between keyboard attack and maximum tonal change in the sound. The more this lever is set to the "L" end of the scale the longer it takes for maximum tonal change to occur.

*Check this out by setting the attack time lever towards the "L" end of the scale and pressing a key.

32 RELEASE TIME

Adjusts the change in tone color that occurs after the keyboard has been released.

*If after setting this lever to the "L" end of the scale no tone variation is heard when the keyboard is released, turn the sustain switch 21 on and set the sustain lever 31 to the same position as the release time lever.

30 DECAY TIME

Adjusts the time required for the sound to return to its original tonality after maximum tonal change has been reached as determined by the attack time control.

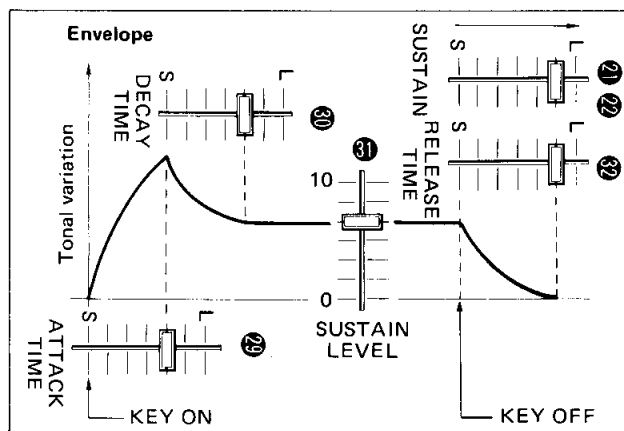
The more this lever is set towards the "L" end of the scale the longer it takes for the sound to return to its initial tonality.

*If both attack time and decay time controls are set to their maximum positions the decay sound is exactly the reverse of the attack sound.

31 SUSTAIN LEVEL

Determines the constant tonal color that continues after the attack and decay functions have ended and the depressed key(s) is held.

Setting the controls described above produces an envelope curve like the one shown below.



*Once a key is pressed and the envelope initiated, pressing other keys produces no envelope effect. Further, if a number of pressed keys are released one by one, the last key released initiates the release time function.

The vibrato function permits addition of delay vibrato (the vibrato effect gradually appears after a key is pressed) to the poly-synth and strings sounds.

33 DELAY

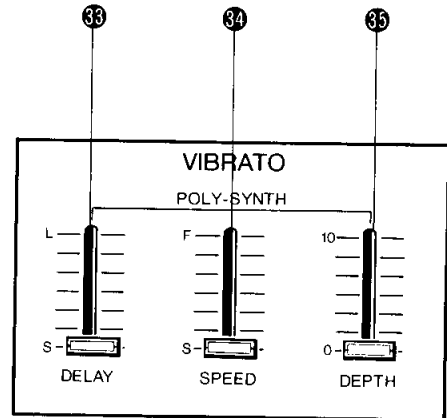
Adjusts the time between keyboard attack and the beginning of the vibrato effect. The more this lever is set toward the "L" end of the scale, the longer it takes for the vibrato effect to begin.

34 SPEED

Determines the speed of the vibrato. Setting toward the "F" end of the scale produces a faster vibrato effect.

35 DEPTH

Determines the strength of the vibrato effect.



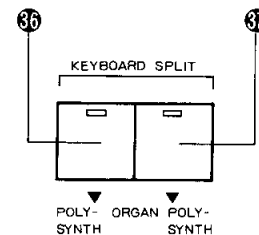
Keyboard Split Block

The keyboard split function divides the organ and poly-synth (strings) sounds to the left and right of the keyboard on either side of the split marker (▼) permitting both sounds to be played with the left and right hands respectively. In the normal mode of operation, the SK30 organ and poly-synth (strings) sections offer 7-note polyphonic capability. In the split keyboard mode, however, this capability is doubled providing 7-note polyphonic capability on the left and right keyboard sections simultaneously.

36, 37 KEYBOARD SPLIT SWITCH

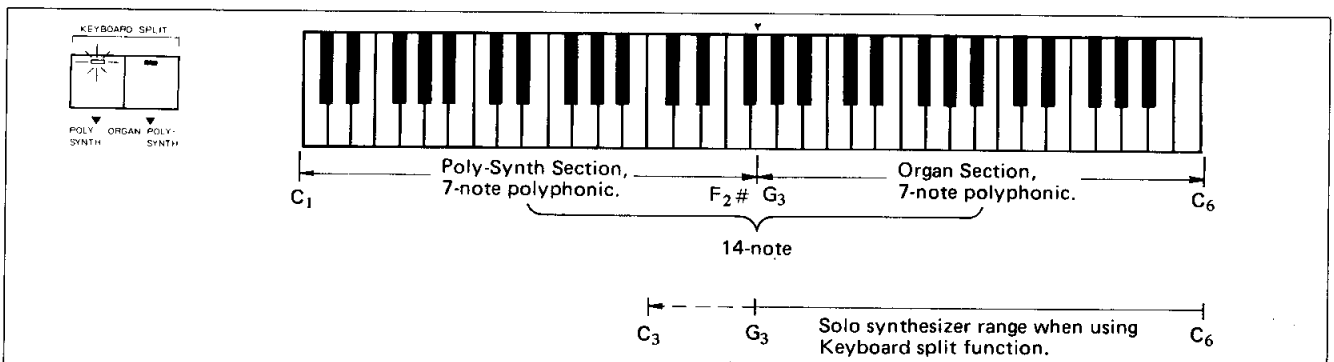
Pressing the keyboard split switch 36 places the organ sound on the right side of the split marker and the poly-synth (strings) sound on the left side of the split marker. Pressing keyboard split switch 37 produces the opposite results. Pressing the switch a second time restores the normal mode of operation.

*When the keyboard split function is used, solo synthesizer output is limited to G₃ --- C₆ on the right side of the split marker.

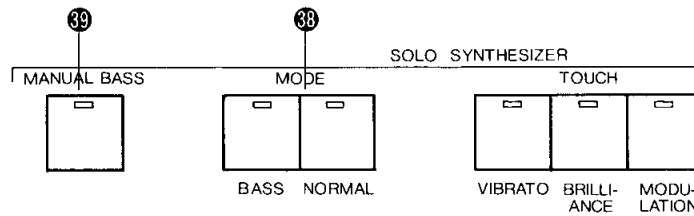
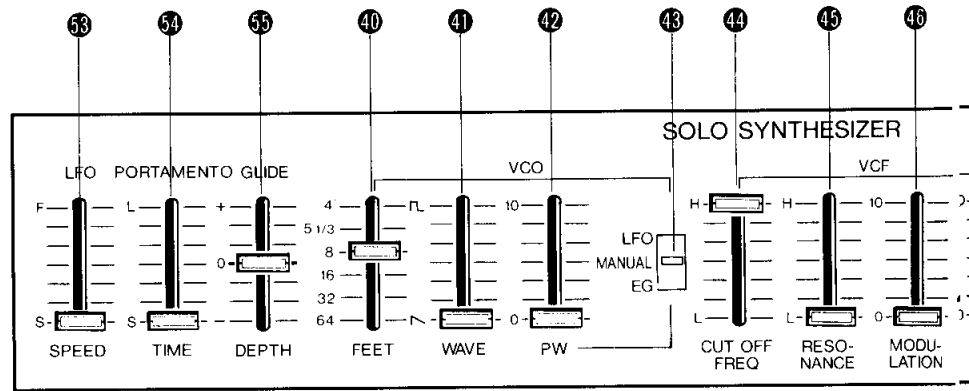
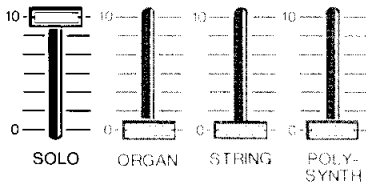


*The keyboard split function and manual bass function cannot be used simultaneously. If the manual bass function is on, and the keyboard split function is switched on, the manual bass function is automatically cancelled.

KEYBOARD SPLIT



OUTPUT BLOCK



The solo synthesizer section uses variable control voltages in VCO, VCF and VCA circuitry to produce changes in pitch, tone color and volume. In order to use the solo synthesizer section it is necessary to make appropriate settings of the controls in each of its blocks. As a starting point, set the solo synthesizer controls to the positions shown above.

38 MODE SELECTOR SWITCHES

If the NORMAL mode is selected, the solo synthesizer can be played on the upper C_3 --- C_6 keys (single note, high note priority). In order to use the optional bass pedal unit (connected to the rear-panel PEDALS connector) select the BASS mode. Selecting the MANUAL BASS mode permits the solo synthesizer to be played on the lowest 19 keys of the keyboard (1-1/2-octave).

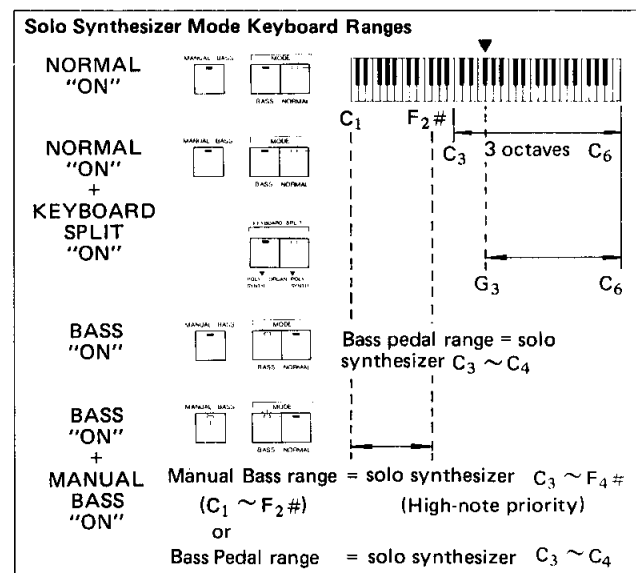
* About High Note Priority

The solo synthesizer provides single note, high note priority output. This means that if a number of keys are pressed simultaneously, only the highest key pressed will be effective. Further if a key is held and a higher key is subsequently pressed, the sound will shift to that of the higher key. If, however, 7 keys are being held, pressing a higher key will produce no shift in sound.

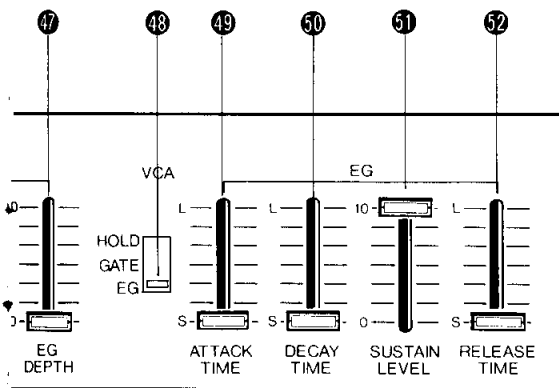
* If the keyboard split function is switched on while the solo synthesizer is being used in the normal mode, solo synthesizer output is limited to the keys on the right of the split marker.

39 MANUAL BASS

If the MANUAL BASS switch is pressed while the solo synthesizer is operating in the bass mode, output will be transferred to the lowest 19 keys of the manual keyboard (equivalent to the C_3 --- F_4 range in the normal mode).



* In the manual bass mode, only the solo synthesizer sound can be produced on the lower 19 keys of the keyboard. In this condition organ and/or poly-synth (strings) will not function in the manual bass range.



■ VCO (Voltage Controlled Oscillator)

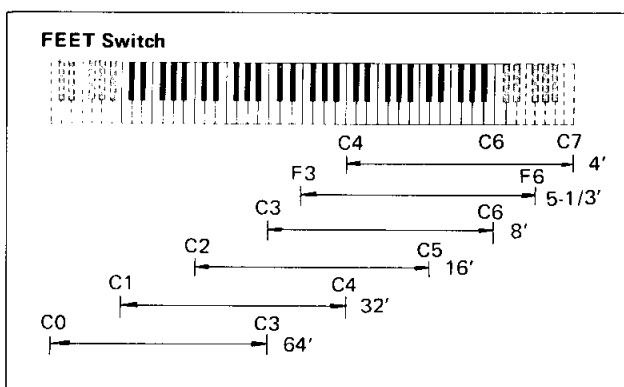
In contrast to the organ section in which tonal color is created by adding harmonic tones with the tone levers, the synthesizer begins with a harmonic-rich waveform and uses filters to remove certain harmonics to create tone color variations.

The VCO is the synthesizer's source of harmonic-rich sound, utilizing control voltages from the keyboard to determine its pitch (this control voltage is available at the rear-panel CONT VOLT OUT jack).

Begin by setting the mode switch to normal.

⑩ FEET SWITCH

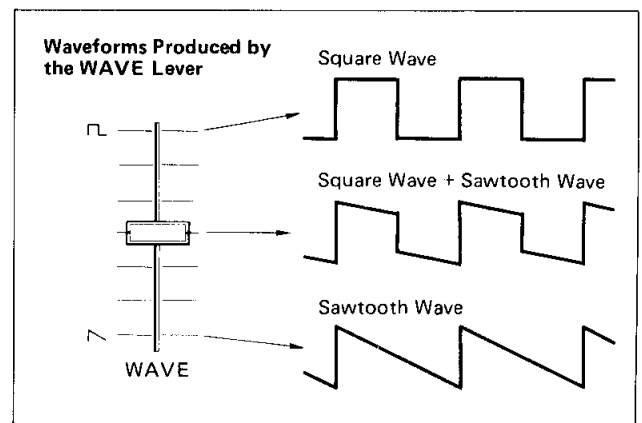
Determines the pitch range of the solo synthesizer. The 8' position provides the standard C₃ to C₆ (C₃ to F₄# in the manual bass mode) range, 5-1/3', a fifth higher, and 4', one octave higher. Similarly 16', 32' and 64' lower the range by one octave each.



④ WAVEFORM SELECTOR

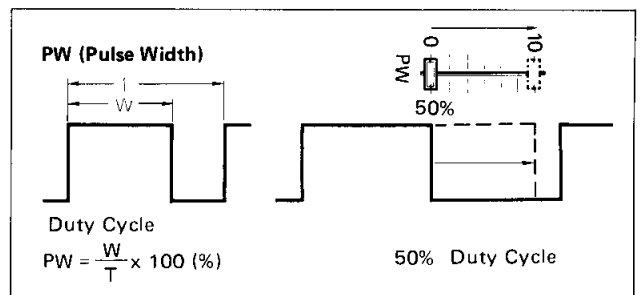
Determines the waveform produced by the VCO. If the WAVE lever is set in the (∩) position, a sawtooth waveform is produced, and if set in the (⌊) position a square wave is produced. Set to the center position a mixture of both waveforms is output.

*At present, the waveform lever should be set in the (∩) position. Press a key and move the WAVE lever back and forth in order to become familiar with the tonal variations it produces. Since the VCF and VCA are not being used at the moment, the sound you hear is that of the VCO only.



⑫ PULSE WIDTH LEVER

Produces tonal variation by altering the pulse width of the VCO square wave output. With this lever in the "0" (50%) position the upper and lower halves of the square wave are the same width. The more the setting is moved toward the "10" (85%) end of the scale the greater the difference between the widths of the upper and lower halves of the waveform.

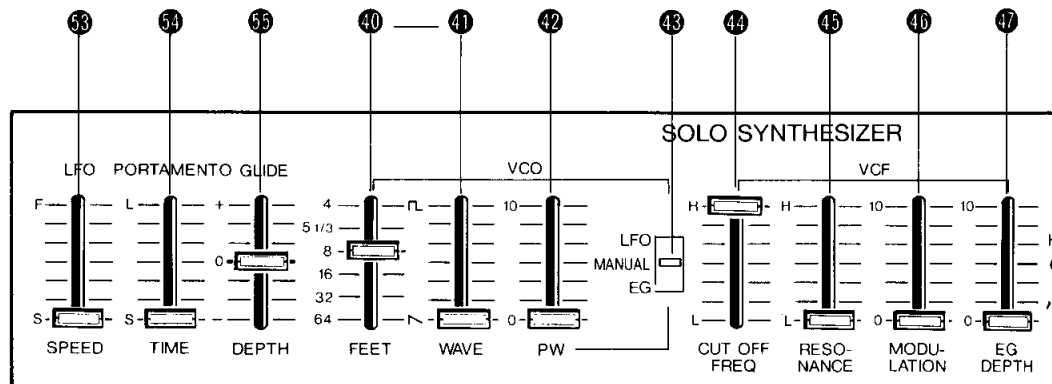


⑬ PULSE WIDTH MODULATION SWITCH

Permits modulation of square wave pulse width via the LFO (Low Frequency Oscillator) or EG (Envelope Generator). With this switch in the MANUAL position, pulse width is affected only by the PW lever ⑫ and is otherwise constant. In the LFO position pulse width is varied at a speed determined by the setting of the LFO lever ⑤. In the EG mode pulse width is determined by the envelope generated by the envelope generator.

Modulation depth in the LFO or EG modes is controlled by the PW lever.

SOLO SYNTHESIZER

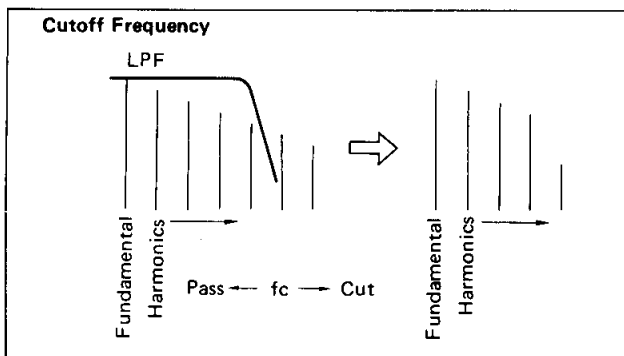


■ VCF (Voltage Controlled Filter)

The waveform produced by the VCO is sent to the VCF. Appropriate adjustment of the VCF controls permits removal of certain harmonics of the VCO waveform, strengthening or “peaking” of certain harmonics, and general control of tonal color.

⊕ CUTOFF FREQUENCY CONTROL

Determines the harmonics to be passed and those to be cut off by the VCF. All harmonics below the cutoff frequency are passed while those above the cutoff frequency are cut off. Moving the CUT OFF FREQ lever toward the “H” end of the scale allows more high harmonics to pass, providing a brighter sound. Setting toward the “L” end of the scale cuts off more high harmonics producing a softer sound.



*The cutoff frequency control is one of the most important controls in determining the tone quality of the produced sound. Try moving it back and forth to get used to the sound variations it produces. Then before going on to the next section, set it to its center position.

⊕ RESONANCE CONTROL

Produces a response peak in the area of the cutoff frequency.

*Try out this control a few times then set it to its center position.

⊕ MODULATION CONTROL

Permits variation of cutoff frequency via the LFO. The more the MODULATION lever is set towards the “10” end of the scale, the greater the degree of cutoff frequency variation.

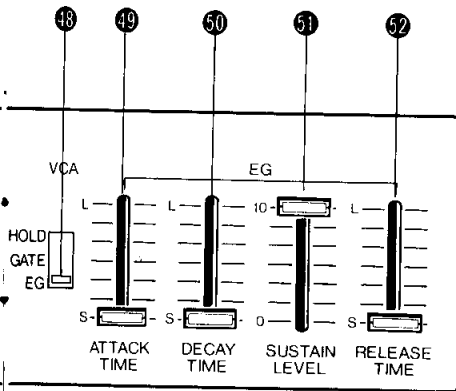
*The speed of modulation is determined by the setting of the LFO lever 53. Raise the MODULATION lever and try out the operation of this function by varying the setting of the LFO control, then set the modulation control to “0” and go on to the next section.

⊕ EG DEPTH

Adjusts the amount of tonal variation between the initiation and end of a note played, with the “shape” of variation determined by the EG controls.

*At present, only the EG sustain lever should be raised. In this condition, as the EG DEPTH lever is set towards the “10” end of the scale the VCF cutoff frequency increases accordingly.

Following is a description of the VCA and EG functions. For now, set the EG DEPTH control to “0”.



■ VCA (Voltage Controlled Amplifier)

Generally, the volume, speed of attack and speed of decay of a music instrument are constant. In a synthesizer, however, these parameters can be freely controlled with the EG (Envelope Generator).

The output from the VCF is sent to the VCA where the volume (level) of the sound is varied by a control voltage from the envelope generator. Appropriate setting of the EG controls permits a wide range of time-based level variation possibilities.

④ VCA SWITCH

Selects the VCA control voltage. If set to the HOLD position, the solo synthesizer sound is continuously output whether a key is pressed or not. In the GATE position, sound is produced at a constant level only when a key is pressed. In the EG position, pressing a key causes the level envelope to vary according to the settings of the EG ADSR controls.

***At present the VCA switch should be set to EG and the sustain lever should be set to "10"—sound is produced when a key is pressed. This condition is the same as if the VCA switch were set to GATE.**

The following is a description of the envelope generator.

■ EG (Envelope Generator)

The envelope generator functions on the basis of keyboard ON/OFF trigger signals. The envelope generated by this section can be used to control various sound parameters in accordance with the settings of the VCA and VCO EG depth levers and the VCO block pulse width modulation switch.

④9 ATTACK TIME

Determines the time between keyboard attack and maximum envelope variation. The more the ATTACK TIME control is set towards the "L" end of the scale, the longer it takes to reach maximum envelope variation after a key is pressed.

④0 DECAY TIME

Determines the time required for the envelope to fall to sustain level, as set by the SUSTAIN LEVEL lever, after maximum envelope variation has been reached. Setting towards the "L" end of the scale produces a longer delay.

***If the sustain level lever is set to maximum, decay time variations are not effective.**

④1 SUSTAIN LEVEL

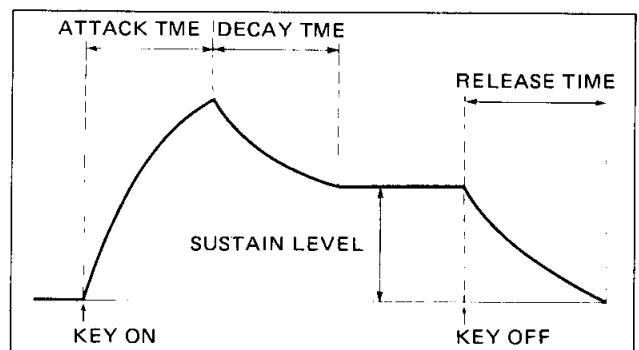
Determines the constant envelope level that continues after the attack and decay functions have ended while a key is held. Setting the SUSTAIN LEVEL lever toward the "10" end of the scale produces a higher sustain level.

④2 RELEASE TIME

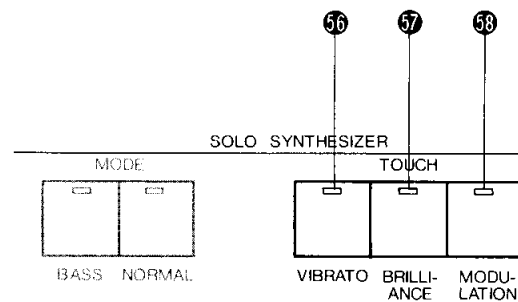
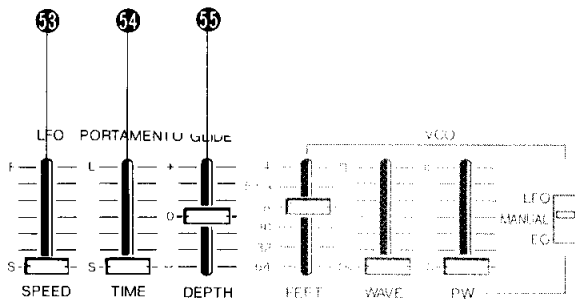
Determines the time required for the envelope to fade out after a key is released. The more the RELEASE TIME lever is set towards the "L" end of the scale the longer it takes for the envelope to fade out.

***The four EG controls are often called ADSR controls. Spend some time becoming familiar with the operation of these controls.**

According to the setting of the ADSR controls, an envelope like the one shown below is produced.



Other Controls



53 LFO (Low Frequency Oscillator)

This control permits variable-speed modulation of several synthesizer sound parameters. Setting towards the "F" end of the scale produces higher speed oscillation.

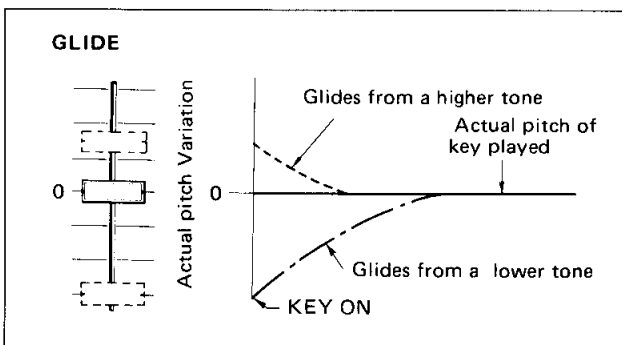
54 PORTAMENTO

Portamento is an effect that causes the sound to "slide" from one note to the next. The PORTAMENTO lever adjusts the speed of this slide. Set towards the "L" end of the scale a longer portamento is produced.

***The portamento effect can be turned on and off using an optional foot switch connected to the rear-panel PORTAMENTO jack. In this case the front-panel PORTAMENTO lever should be set to "L".**

55 GLIDE DEPTH CONTROL

The glide function produces a pitch variation at the very beginning of a note. In the center (click stop) position no glide effect is produced. Setting to the "+" end of the scale produces a glide from a higher tone, while setting to the "-" end of the scale produces a glide from a lower tone.



TOUCH RESPONSE SELECTORS

This function permits the player to create variations in tone color, etc., according to the pressure he places on the keys. Turning these switches on makes the respective functions controllable by keyboard pressure.

56 VIBRATO

Pressing firmly on a key introduces a vibrato effect. Vibrato speed is determined by the LFO control.

57 BRILLIANCE

Pressing firmly on a key raises the VCF cutoff frequency slightly producing a brighter sound.

58 MODULATION

Produces a "wah-wah" effect. The effect is the same as raising the MODULATION lever slightly.

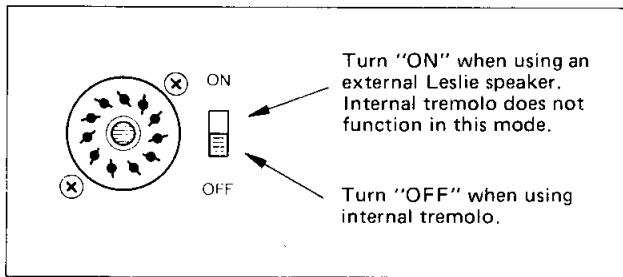
***Since the brilliance and modulation touch response functions are coupled to the VCF block, the sound obtained varies with the setting of the CUT OFF FREQ 44 and RESONANCE 45 controls.**

If the cutoff frequency control is raised too high, the effectiveness of the touch response functions is reduced.

The tremolo and ensemble functions can be used to vary the sound of the organ and poly-synth (strings) sections. When the SK30 is used without an external tone cabinet (Leslie speaker) the ensemble and tremolo functions cannot be used simultaneously (ensemble priority). The ensemble and tremolo effects are present at the rear-panel MIXED output only.

■ Tremolo

This block can be used to control the SK30 internal tremolo circuitry or an external Leslie speaker. If an external Leslie speaker is not being used, be sure to turn the rear-panel EXT TONE CABINET switch off otherwise the internal tremolo function will not be effective. If the external tone cabinet switch is turned on, the SK30 tremolo control signals are sent directly and only to the external speaker unit.



Ⓢ SPEED SWITCH

Electronically varies the speed of the internal tremolo function. If this switch is pressed, the indicator lamp lights and the tremolo speed gradually increases, if this switch is pressed while the indicator lamp is on the tremolo speed gradually decreases.

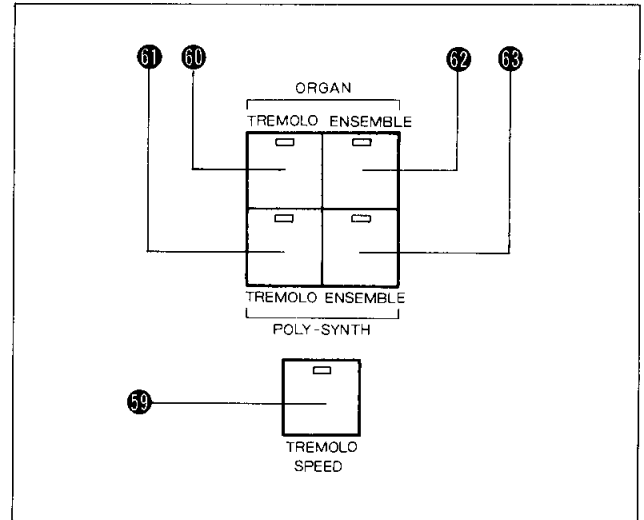
***When the SK30 is connected to an external tone cabinet the SPEED switch acts as a remote speed control.**

Ⓢ ORGAN, Ⓢ POLY-SYNTH TREMOLO SWITCHES

If these switches are pressed, the indicator lamps light and the tremolo effect is introduced to the respective sections. Pressing these switches a second time turns the effect off.

***Turning on the ensemble switches Ⓢ and Ⓢ while the tremolo effect is on causes the tremolo function to be cancelled (ensemble priority).**

***When the rear-panel EXT TONE CABINET switch is on, the tremolo switches act as remote ON/OFF controls for an external Leslie speaker unit.**



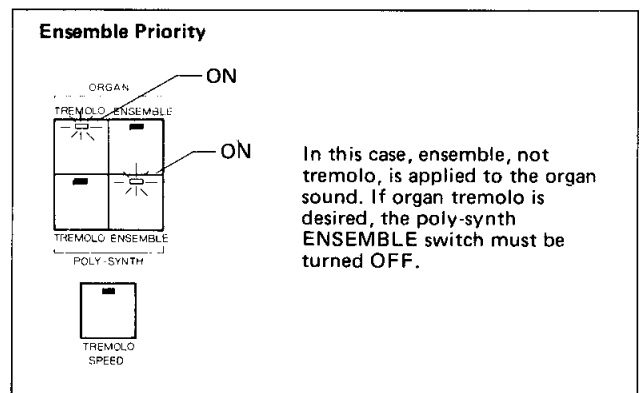
■ Ensemble

The ensemble function uses an electronic delay system to produce a "doubled sound" effect.

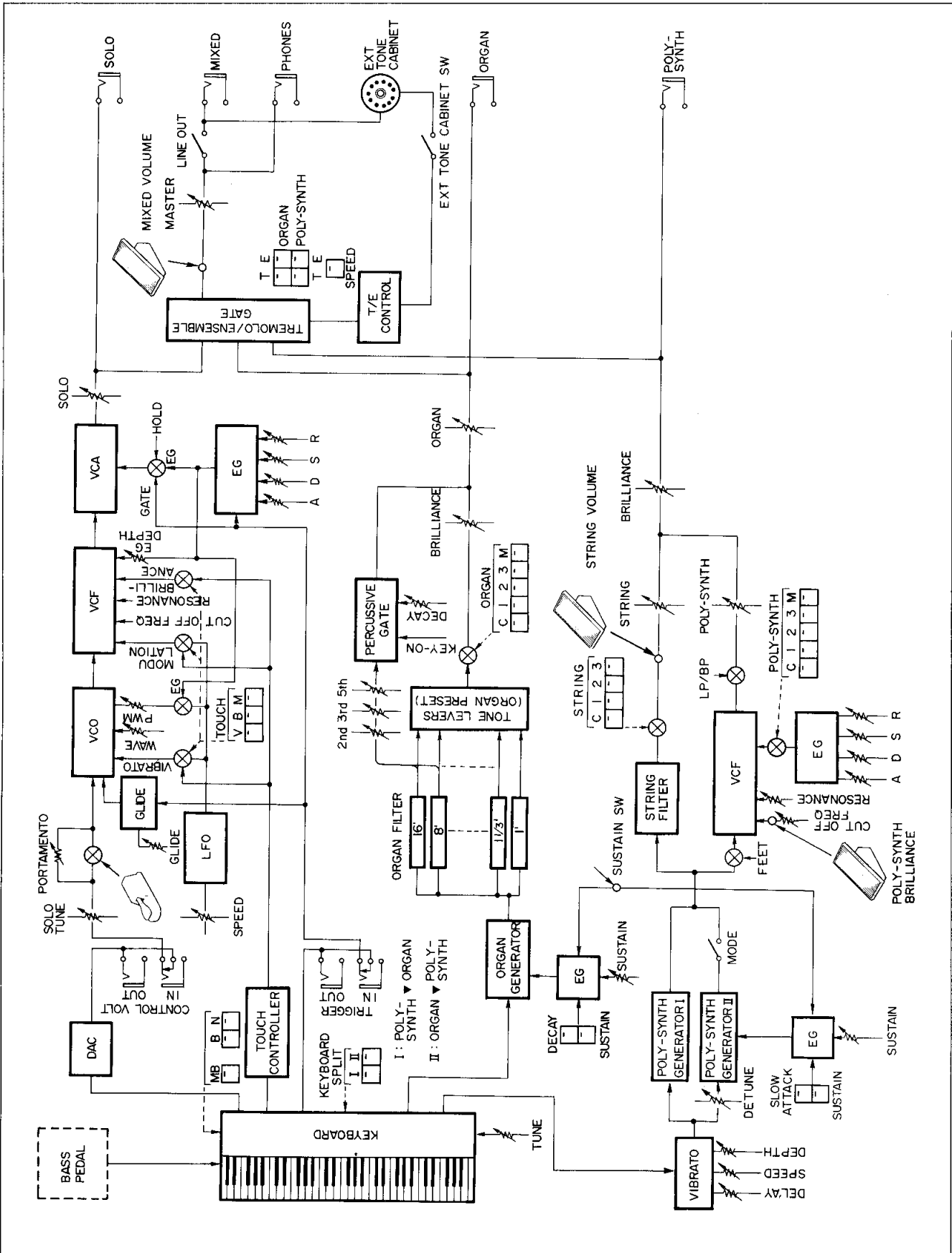
Ⓢ ORGAN, Ⓢ POLY-SYNTH ENSEMBLE SWITCHES

If these switches are pressed, the indicator lamps light and the ensemble effect is introduced to the respective sections. Pressing these switches a second time turns the ensemble function off.

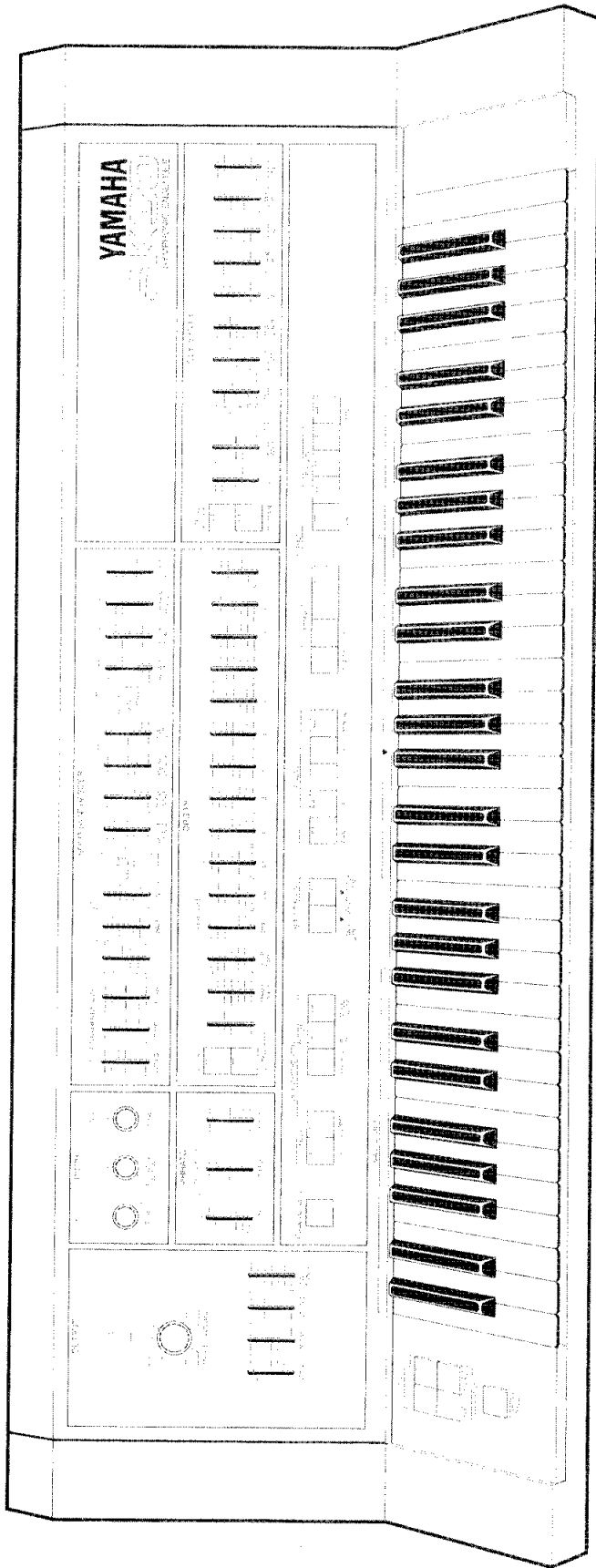
***If the ENSEMBLE switches Ⓢ and Ⓢ are turned on while the tremolo function is on, the tremolo function is automatically cancelled.**



BLOCK DIAGRAM

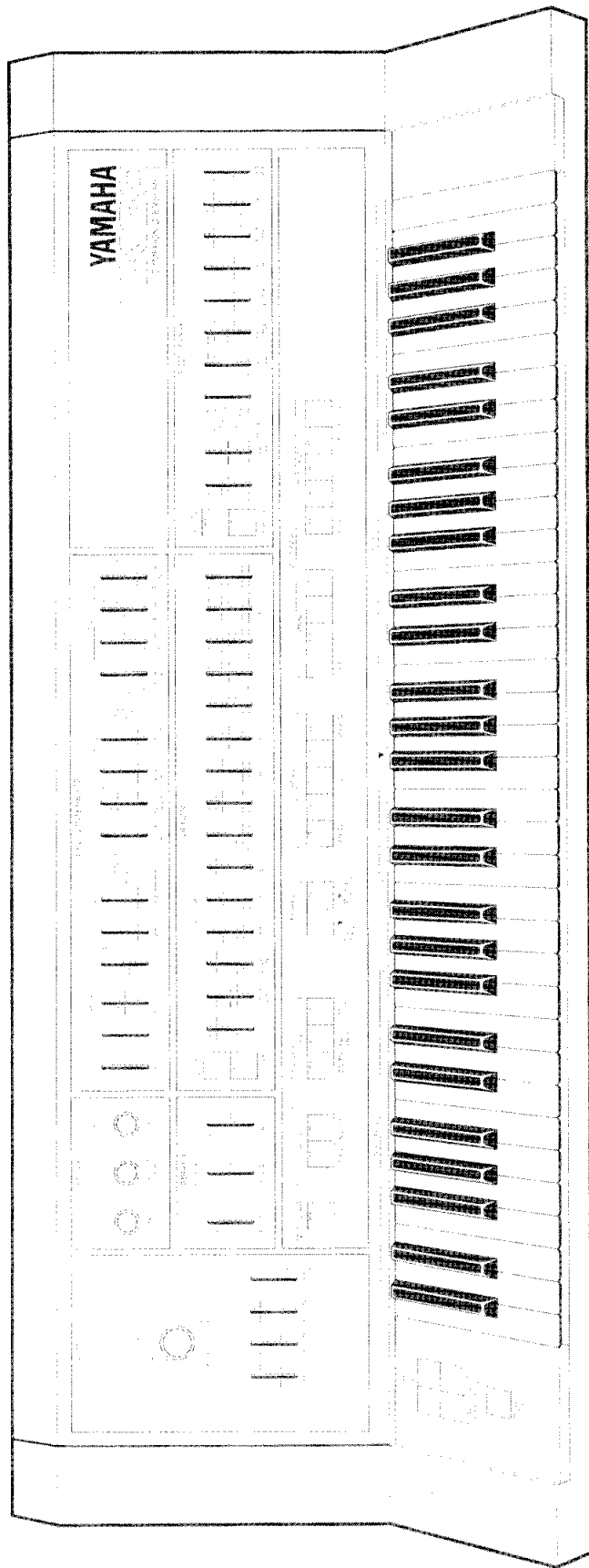


SOUND MEMO



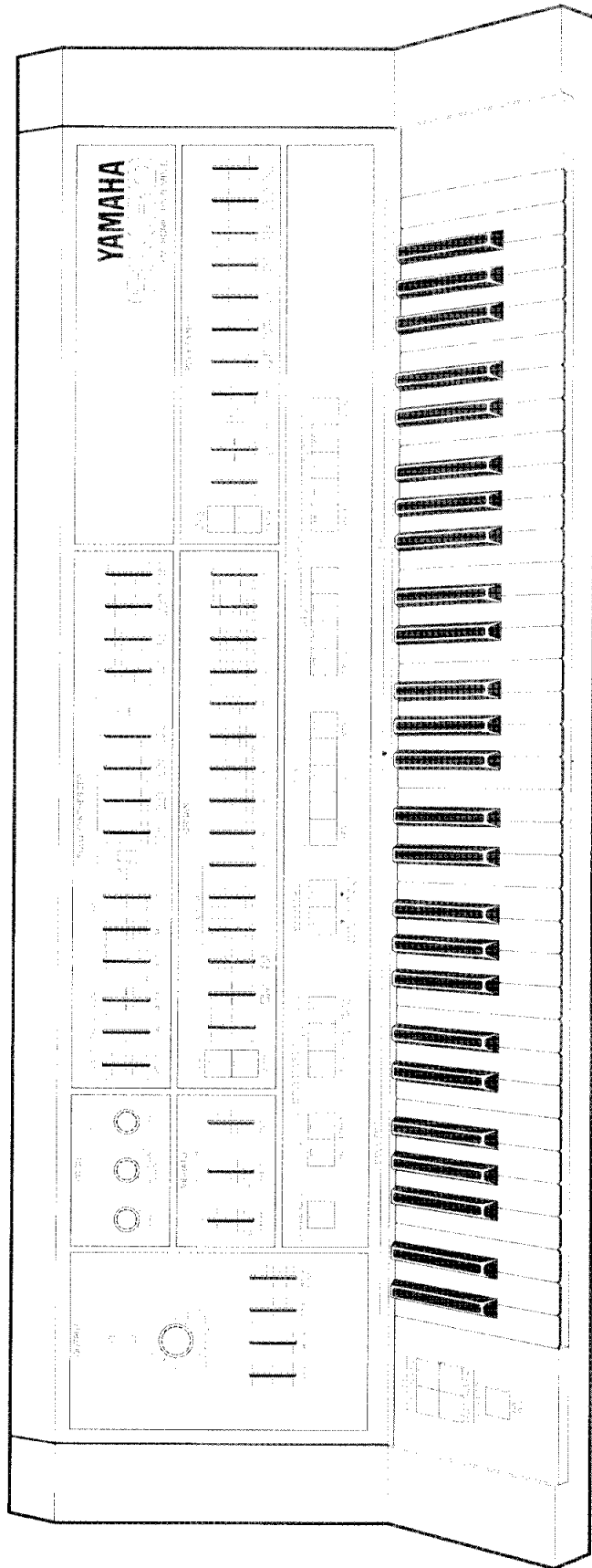
DATE: / /

SOUND MEMO



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SOUND MEMO



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SPECIFICATIONS

KEYBOARD 61 keys C₁ ~ C₆ 5 octaves

OUTPUT section

LINE OUT ON, OFF: MIXED
EXT TONECABINET output OFF

Volume MASTER VOLUME
SOLO/ORGAN/STRING/
POLY-SYNTH volume

PITCH section

TUNE: 438 ~ 450Hz
POLY-SYNTH DETUNE: -20
 $+27$ cents
SOLO TUNE: -500 ~ $+700$ cents

SOLO SYNTHESIZER section (Single-note High-note priority)

LFO SPEED: 0.1 ~ 100Hz
PORTAMENTO 3 sec. max. (C₃ ~ C₆)
GLIDE 70msec. max. (DEPTH +, -)

VCO block

FEET 4', 5-1/3', 8', 16', 32', 64'
WAVE \curvearrowright \rightarrow \square mixable
PW 50 ~ 85% LFO, MANUAL, EG
selectable

VCF block

CUT OFF FREQ Variable range: 10 octaves
RESONANCE Q: 0.5 ~ 10
MODULATION 3 octaves/max.
EG DEPTH 0 ~ 10 octaves

VCA block HOLD, GATE, EG selectable

EG (ENVELOPE GENERATOR)

ATTACK TIME 0.003 ~ 3 sec.
DECAY TIME 0.03 ~ 30 sec.
SUSTAIN LEVEL 0 ~ 10
RELEASE TIME 0.03 ~ 30 sec.

TOUCH

VIBRATO ± 120 cents/8', A₃
BRILLIANCE +5 octaves/max.
MODULATION 6 octaves/max.
MODE NORMAL, BASS
MANUAL BASS

VIBRATO section (POLY-SYNTH & STRING)

DELAY 0 ~ 3.2 sec.
SPEED 5 ~ 7Hz
DEPTH ± 30 cents

ORGAN section

ORGAN selector CANCEL, ORGAN 1, ORGAN 2,
ORGAN 3, MANUAL
DECAY OFF, ON
(0.03 ~ 1.6 sec.) } SUSTAIN
SUSTAIN OFF, ON
(0.03 ~ 1.6 sec.) } Lever
S ~ L
BRILLIANCE ± 7 dB/5kHz (sine wave)
PERCUSSIVE 2nd, 3rd, 5th Lever
DECAY TIME 0.8 sec./max.
Tone Lever 16', 8', 5-1/3', 4', 2-2/3', 2', 1-3/5',
1-1/3', 1'

POLY-SYNTH section

Strings selector CANCEL, STRING 1, STRING 2,
STRING 3
Poly-synth Selector CANCEL, POLY-SYNTH 1, POLY-
SYNTH 2, POLY-SYNTH 3,
MANUAL
SLOW ATTACK OFF: 3 msec. ON: 80msec.
SUSTAIN SUSTAIN switch: ON, OFF
SUSTAIN lever: 0.03 ~ 1.6 sec.
BRILLIANCE ± 12 dB/5kHz (sine wave)
MODE I: one tone generator
II: both tone generator
FEET 4' \curvearrowright , 8' \square , BP8' \curvearrowright , 8' \curvearrowright , 16' \square , 16' \curvearrowright
CUT OFF FREQ 10 octaves
RESONANCE Q: 0.5 ~ 10
EG DEPTH 10 octaves

ATTACK TIME 0.003 ~ 3 sec.
DECAY TIME 0.03 ~ 30 sec.
SUSTAIN LEVEL 0 ~ 10
RELEASE TIME 0.03 ~ 30 sec.

TREMOLO/ENSEMBLE section (ENSEMBLE priority)

TREMOLO ORGAN, POLY-SYNTH switch
SPEED OFF: 0.64Hz, ON: 6.4Hz
ENSEMBLE ORGAN, POLY-SYNTH switch

KEYBOARD SPLIT section

KEYBOARD SPLIT POLY-SYNTH ∇ ORGAN: ON,
OFF
ORGAN ∇ POLY-SYNTH: ON,
OFF
Split between F# and G marked

REAR PANEL

OUTPUT MIXED: 600 Ω , -10dBm
ORGAN, POLY-SYNTH, SOLO
FOOT CONT Foot controller connection
MIXED VOLUME, STRING
VOLUME, POLY-SYNTH
BRILLIANCE
FOOT SW Foot switch connection
SUSTAIN (ORGAN, POLY-
SYNTH), PORTAMENTO (SOLO
SYNTHESIZER)
CONTROL VOLT IN: 0.25 ~ 2V
OUT: 0.19 ~ 3V
TRIGGER IN: 15 ~ 5V OFF, 0 ~ -15V ON
OUT: OFF (14 ~ 10V), ON (1 ~ 0V)
KEY CODE TTL level, Key code data output
PEDALS Bass pedal connection
EXT TONECABINET 11 pins connector, ON/OFF switch
Connectable the LESLIE models
415, 715, 815 or equivalent
(2ch-11 pin type)

USABLE TONES

BASS: OFF 7 notes
BASS: ON 7 notes + 1 note
KEYBOARD SPLIT: ON 7 notes +
7 notes
BASS, KEYBOARD SPLIT: ON
7 notes + 7 notes + 1 note

OTHERS

Power source US and Canadian models
100V, 120V selectable 60Hz
General model
100, 120, 220 or 240V
selectable, 50/60Hz
Power consumption US model 55W
Canadian model 55W
General model 55W
Dimensions (WxHxD) 1089 x 178 x 642mm
(42-3/4' x 7' x 25-1/4')
Weight 22 kg (48.5 lbs)
Finish Rosewoodgrain cabinet
Accessory FC-3A Foot controller
Optional Accessories FC-4 Foot switch pedal
BP2 Bass pedal

* Specifications subject to change without notice.

SERVICE

The SK30 SYMPHONIC ENSEMBLE is supported by Yamaha's worldwide network of factory trained and qualified dealer service personnel. In the event of a problem, contact your nearest Yamaha dealer.

SINCE 1887



YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN