

# YAMAHA

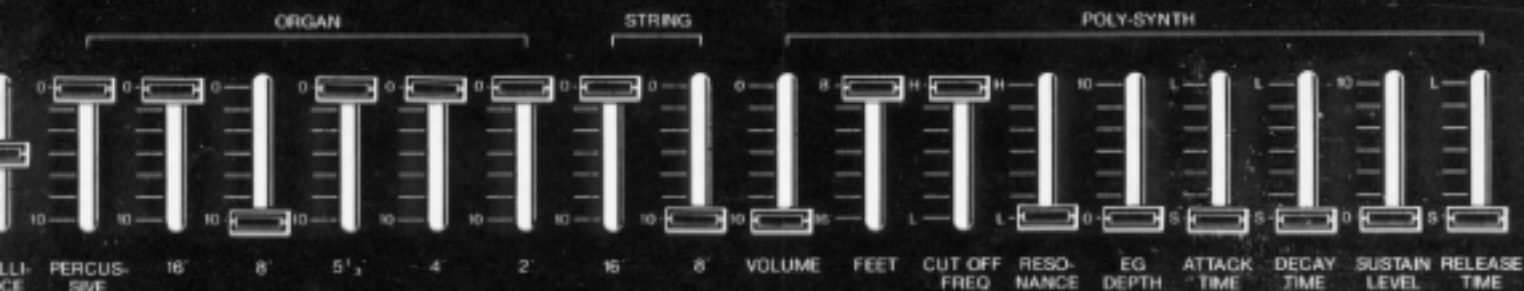
# SK15

SYMPHONIC ENSEMBLE

OPERATING MANUAL

# YAMAHA SK15

SYMPHONIC ENSEMBLE



---

# Introduction

---

*Thank you very much for your purchase of the Yamaha SK15 Symphonic Ensemble. The SK15 offers versatile organ, strings and poly-synth sections that can be used independently or combined for an extensive variety of warm, ensemble-like effects.*

*We urge you to read the contents of this owner's manual carefully in order to make full use of all the SK15's extensive capabilities.*

## CONTENTS

---

	Page
Pre-Use Cautions .....	2
Features and Functions .....	3
Connections .....	5
Operation: OUTPUT/VOICE .....	6
ORGAN/STRING .....	7
POLY-SYNTH .....	8
POLY-SYNTH/EG .....	9
EFFECTS .....	10
Block Diagram/Specifications .....	11
Sound Memo .....	12
Service .....	14

---

# Pre-Use Cautions

---

**Location** Avoid placing your Symphonic Ensemble in direct sunlight or close to a source of heat. It is also important to avoid locations in which the instrument is likely to be subject to vibration, excessive dust, cold or moisture.

**Power Cord** Always grip the power plug directly when unplugging. Removing the power plug from the wall socket by pulling on the power cord can result in damage to or shorting of the power cord.  
Be sure to unplug your Symphonic Ensemble if you will not be using it for an extended period of time.

**Relocation** When moving the Symphonic Ensemble once it has been set up, be sure to disconnect all cords that connect the instrument to other equipment. This will help to prevent accidental damage to or shorting of interconnection cables.

**Connection** Follow the "CONNECTIONS" instructions given on page 5 of this manual carefully when setting up your Symphonic Ensemble.  
Connection errors may lead to serious damage to the Symphonic Ensemble, amplifier and speakers.

**Cleaning** Do not use solvents such as benzine or thinner to clean your Symphonic Ensemble as these may cause discoloration or staining of the instrument's exterior.  
Use a soft, dry cloth.

**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.

# Features and Functions

## OUTPUT

This is essentially a volume control that adjusts the overall output level of the Symphonic Ensemble.

## PITCH

Adjusts the overall pitch of the Symphonic Ensemble permitting easy tuning with other instruments.

## TREMOLO/ENSEMBLE

This is an effects block that offers one-touch selection of delicate tremolo and rich, multi-instrument ensemble effects.

## VOICE

Independent selectors are provided for the ORGAN, STRING and POLY-SYNTH voices. The voices can be selected individually or in any combination.

## VIBRATO

Delay, speed and depth levers offer full control over the vibrato effect. The delay control permits creation of particularly natural-sounding vibrato effects.

## CONTROL BLOCK

The controls in this block determine the timbre and quality of organ, string and poly-synth sounds.

## POLY-SYNTH (STRING)/SLOW ATTACK

When this function is activated, poly-synth and strings sounds begin with a slow, soft attack.

## SUSTAIN (Switch and lever)

Adjusts sustain time (the time it takes for the sound to fade out after the keys are released) of the organ, poly-synth and string sounds.

## BRILLIANCE

Adjusts the overall tonal quality of the organ and string sounds through a range extending from "bright" to "mellow."

## <ORGAN>

### PERCUSSIVE

Adds percussive accent to the attack portion of organ notes.

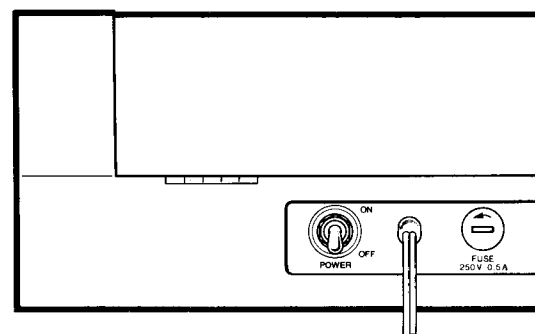
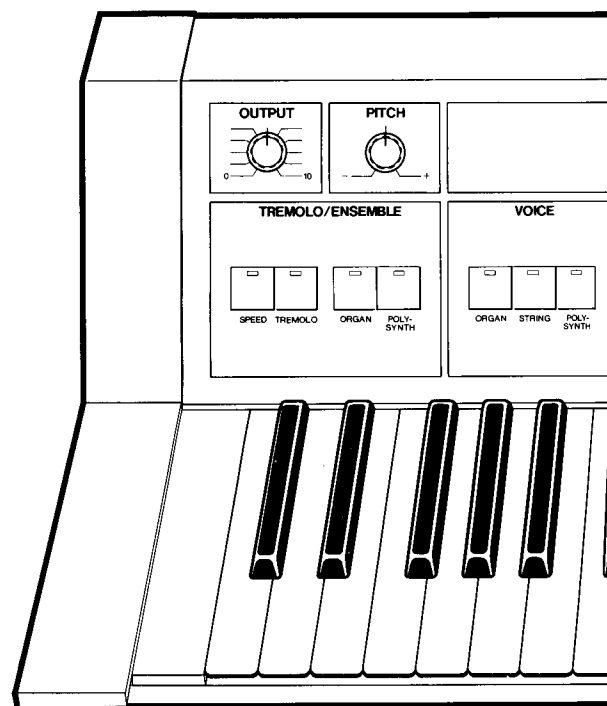
### ORGAN 16' – 2' TONE LEVERS

By adding or subtracting component harmonics using these levers, virtually any type of organ sound can be created.

## <STRING>

### 16', 8' TONE LEVERS

These levers determine the timbre of the string sound.



# Symphonic Ensemble SK15

## <POLY-SYNTH>

### VOLUME

Independently controls the volume of the poly-synth sound.

### FEET

Permits proportionate mixing of the poly-synth 16' and 8' sound sources.

### CUT OFF FREQ

Produces the basic poly-synth sound by determining the cut off frequency of the synthesizer's filter.

### RESONANCE

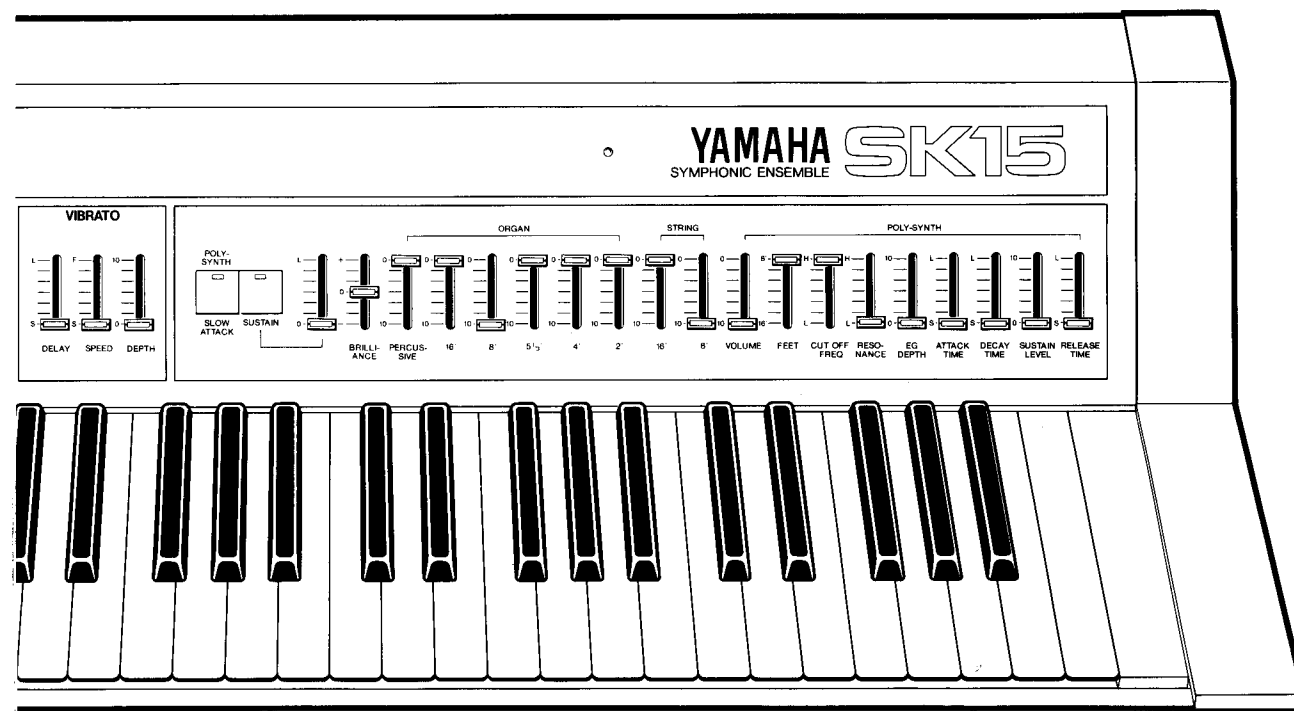
Permits emphasis of frequencies near the filter's outoff point, thereby providing further control over poly-synth sound quality.

### EG DEPTH

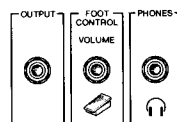
Adjusts the degree to which the envelope generator (EG) affects the filter cutoff frequency.

### ATTACK TIME / DECAY TIME / SUSTAIN LEVEL / RELEASE TIME (Envelope generator controls)

These controls permit creation of time-based variations in the tonal quality of the poly-synth sound.



# YAMAHA



# Connections

- Before turning the unit ON, make sure that the **VOLTAGE SELECTOR** is properly set according to the line voltage in your area.

Since the SK15 does not include a built-in power amplifier, an external keyboard amplifier or power amplifier and speaker(s) must be employed when headphones are not used.

## ① POWER CORD

Plug the SK15 power cord into a convenient AC wall outlet. Maximum power consumption of the SK15 is 30 watts.

- If during normal operation the SK 15's fuse should burn out, a possible malfunction is indicated. Take the instrument to your nearest Yamaha dealer or service station for a thorough checkup as soon as possible.

## ② OUTPUT

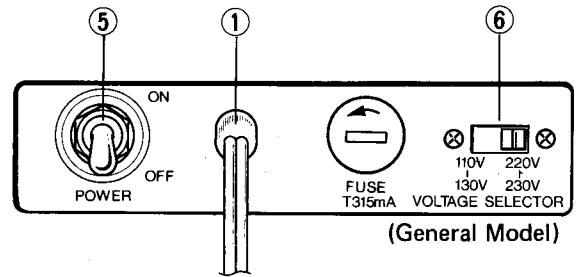
This standard 1/4" phone jack is for connection to an external keyboard amplifier, power amplifier or mixer. The SK15 output specifications are -10 dB/600 ohms, providing compatibility with virtually any conventional keyboard amplifier.

## ③ FOOT CONTROL (VOLUME)

Permits connection of an optional foot controller (FC-3A) for convenient foot control of overall volume.

## ④ PHONES

Accepts a pair of standard stereo or mono headphones, ideally with an impedance of between 8 and 150 ohms.



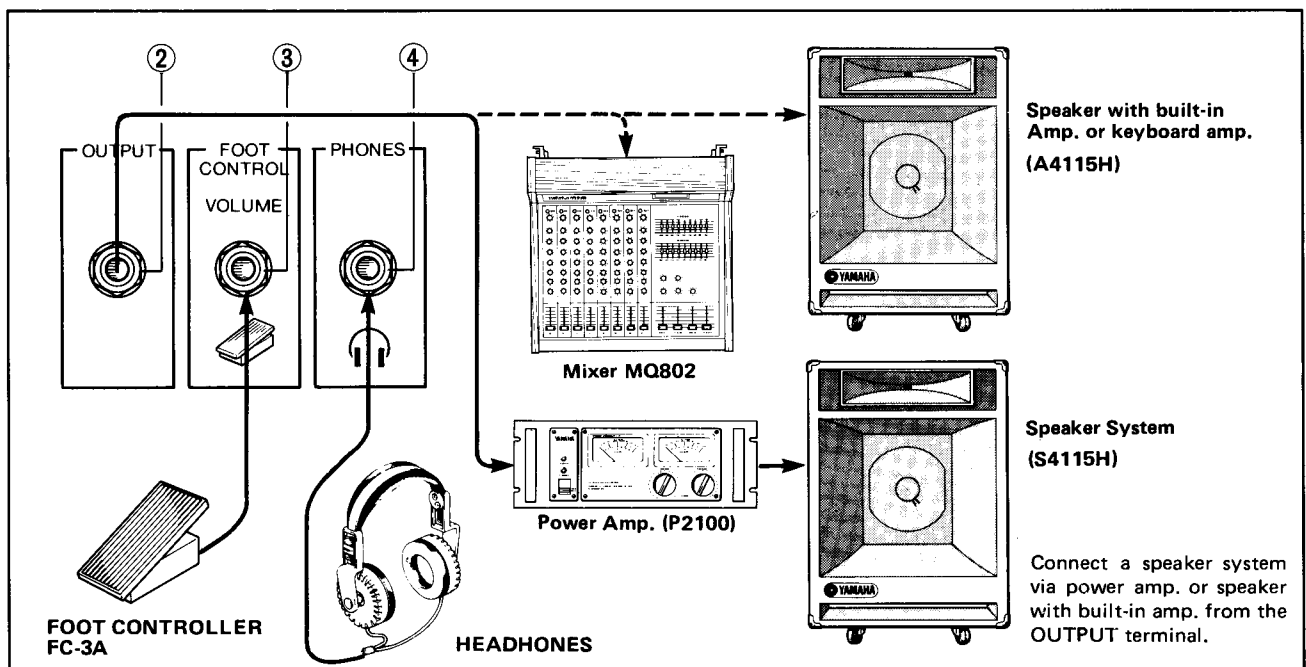
- Once all connections have been made, be sure to double check that no connection errors have been made before turning power to the instrument on. The following section of this manual describes the operation of each control in detail. We suggest that you connect the SK15 to a keyboard amplifier and try out each control as it is described.

## ⑤ POWER

The power switch is located on the instrument's rear panel, adjacent to the power cord. Flipping this switch to the upper position turns power to the unit on, and automatically light the indicators of all the VOICE Selectors on the front panel.

## ⑥ VOLTAGE SELECTOR (General Model only)

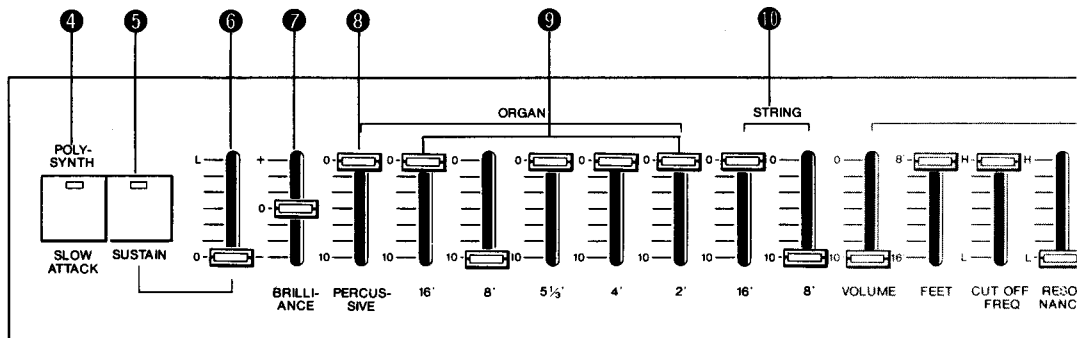
This selector must be set to comply with the AC line voltage in your area. Improper VOLTAGE SELECTOR setting can result in impaired performance and even cause permanent damage to the instrument.





The SK15 organ sound is created by adding varying amounts of the 16' through 2' harmonics. The individual sound controlled by each of these tone levers is a pure tone with no inherent harmonics. Adding these tones at varying levels, however, creates a harmonic relationship that produces the rich, vibrant sound of an organ.

The string sound, on the other hand, is derived from a particularly harmonic-rich sound source. The string sound is especially effective when used with the SK15's ensemble effect.



## <CONTROL BLOCK>

Controls ④ through ⑦, described below, provide general control over the organ, string and poly-synth sound.

### ④ POLY-SYNTH SLOW ATTACK

When this switch is turned on, the initial attack of the sound when a key is pressed is lengthened for a "smooth" effect. The SLOW ATTACK switch affects the string and poly-synth sounds only.

### ⑤, ⑥ SUSTAIN (Switch and lever)

Turning the sustain switch on causes a note played on the keyboard to fade out gradually after the key is released. The length of sustain (the time it takes for the note to fade out) is controlled by the sustain lever.

- The sustain switch and lever affect the organ, string and poly-synth sounds.

### ⑦ BRILLIANCE

Adjusts the tonal color of the organ and string sounds. If this lever is set towards the "+" end of the scale, a bright, crisp sound results. Setting it to the "-" end of the scale produces a softer, rounder sound.

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

## <ORGAN BLOCK>

### ⑧ PERCUSSIVE

Adds a percussive accent to the initial attack of organ sounds created using the organ tone levers ⑨. Set at "0" there is no percussive effect. The more this lever is set towards the "10" end of the scale, the stronger the percussive effect.

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

### ⑨ TONE LEVERS (16' - 2')

These controls permit complete freedom in selecting and proportioning the harmonic components of the organ sound. In the case of each tone lever, a "0" setting produces no output at the respective frequency (harmonic), while a "10" setting produces maximum output.

## <STRING BLOCK>

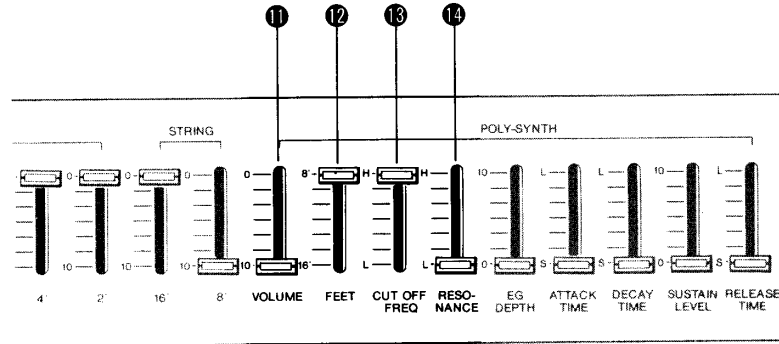
### ⑩ TONE LEVERS (16', 8')

These levers are used to create the desired string sound in essentially the same way as the organ tone levers.



Unlike the organ and string sounds, the poly-synth sound is created by selectively filtering out certain harmonics and emphasizing certain others from a harmonic-rich sound source.

Before studying the functions of the controls, press the POLY-SYNTH VOICE selector and set the poly-synth controls as shown in the illustration below.



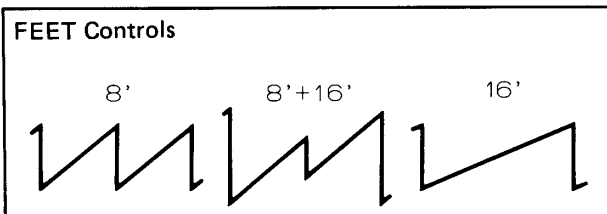
## <POLY-SYNTH BLOCK>

### 11 VOLUME

Controls the overall volume (level) of the poly-synth sound. Since the volume of the poly-synth sound varies according to the settings of the CUT OFF FREQ 13 and RESONANCE 14 levers, etc. the VOLUME lever is generally used to balance the poly-synth volume level with the organ and string sounds.

### 12 FEET

This lever permits proportionate mixing of the poly-synth's 8' and 16' sound sources. If this lever is set fully to the 8' end of the scale, only the 8' sound source is output. At the 16' end of the scale, only the 16' sound source is output. Intermediate setting provide proportionately mixed output from both sound sources.



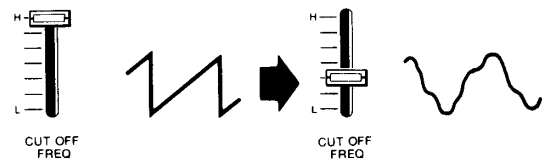
### 13 CUT OFF FREQ

This control is the most important in creating the poly-synth overall sound quality. The farther this lever is set towards the "L" end of the scale, the more upper harmonics are cut off by the internal filter, producing increasingly "round" tonality. Set all the way to the "L" end of the scale, the fundamental frequency may be cut off and no or less sound will be output.

### 14 RESONANCE

Setting this lever to the "H" end of the scale emphasizes those harmonics in the frequency response in the area of the CUT OFF FREQUENCY. The results produced by the RESONANCE control vary largely depending on the setting of the CUT OFF FREQUENCY control, thereby permitting a vast range of tonal variation.

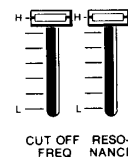
#### CUT OFF FREQUENCY WAVEFORMS



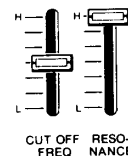
This setting produces a sharp sound.

This setting produces a softer sound.

#### CUT OFF FREQUENCY AND RESONANCE

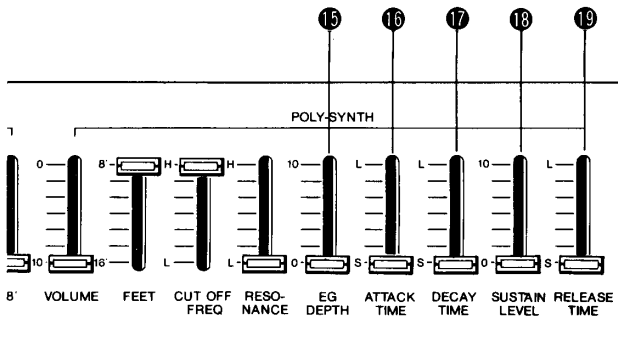


With CUT OFF FREQ control at a high setting, raising the RESONANCE control causes very little change in sound.



If CUT OFF FREQ is moved to a lower setting, a considerable change in sound will occur.

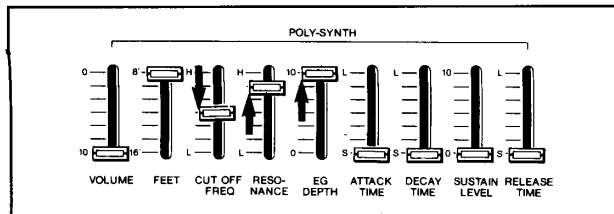
All levers from the EG DEPTH control 15 to the RELEASE TIME control 19 are used to adjust the tonal "shape" of the poly-synth sound from the time it is initiated to the time it cuts off or fades out.



## 15 EG DEPTH

Controls the amount of tonal change produced by the four levers to its right.

- In order to easily ascertain the effect of these controls, set the CUT OFF FREQ lever to its center position, the RESONANCE lever to a high position on its scale, and the EG DEPTH lever to its maximum position. Then try out the EG controls 16 through 19.



## 16 ATTACK TIME

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

## 17 DECAY TIME

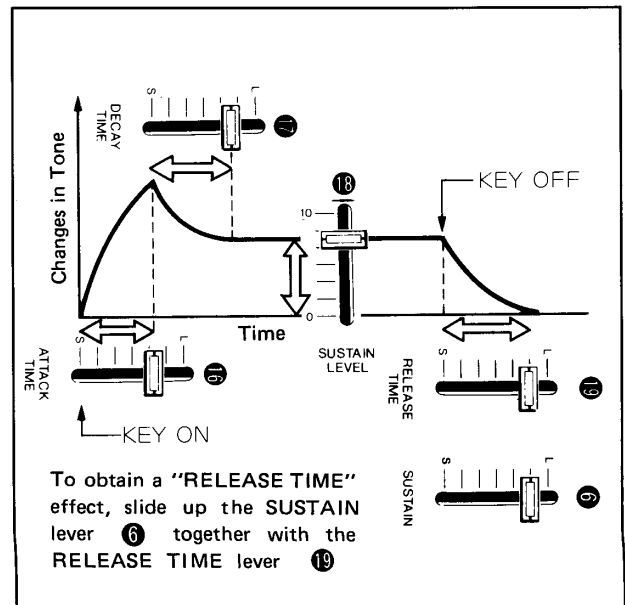
Adjusts the time required for the sound to return to its original tonality after maximum tonal change has been reached as determined by the attack time control.

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

## 18 SUSTAIN LEVEL

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

The effect of the controls described below on the poly-synth filter envelope is illustrated graphically below.

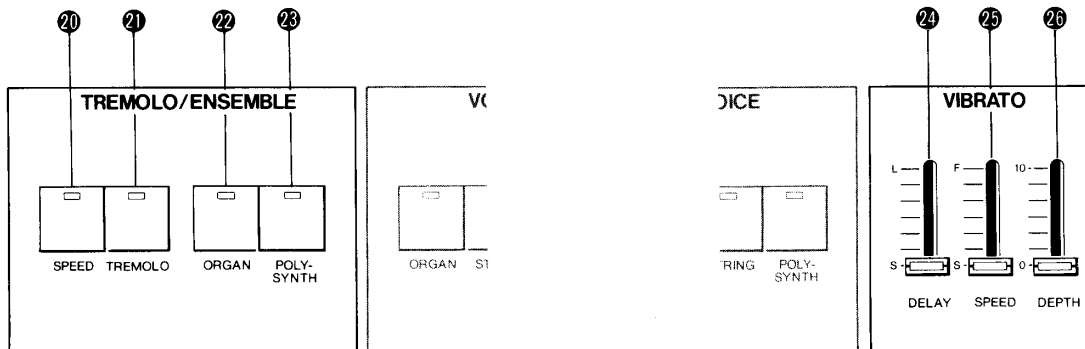


## 19 RELEASE TIME

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

- This lever will produce no effect if the sustain switch 5 is off. For best results, turn the sustain switch 5 on and set the sustain lever 6 (NOT the SUSTAIN LEVEL lever) to the same position as the RELEASE TIME lever.

The SK15 offers high-quality built-in vibrato, tremolo and ensemble effects that provide a broad range of variations on the basic sounds produced by the organ, string and poly-synth sections.



## <TREMLO/ENSEMBLE BLOCK>

The tremolo and ensemble effects can be applied to the organ, string and poly-synth sounds. Both effects, however, cannot be used simultaneously.

### 20 SPEED

Electronically varies the speed of the tremolo effect. If this switch is pressed, the indicator lights and the tremolo speed gradually increases (simulating a mechanical rotating speaker sound), if it is then pressed a second time the indicator goes out and the tremolo speed gradually decreases.

### 21 TREMOLO

Selects either tremolo or ensemble operation. When this switch is pressed and the indicator lights, the tremolo effect is active. If the switch is pressed again, the ensemble effect will become active.

### 22 ORGAN

Turning this switch on applies the tremolo or ensemble effect to the organ sound.

### 23 POLY-SYNTH

Turning this switch on applies the tremolo or ensemble effect to the poly-synth sound.

## <VIBRATO BLOCK>

### 24 DELAY

Determines the length of time between the initiation of a sound (key pressed) and the beginning of the vibrato effect. Set at "S", no delay is produced, while settings toward the "L" end of the scale produce increasingly longer delays.

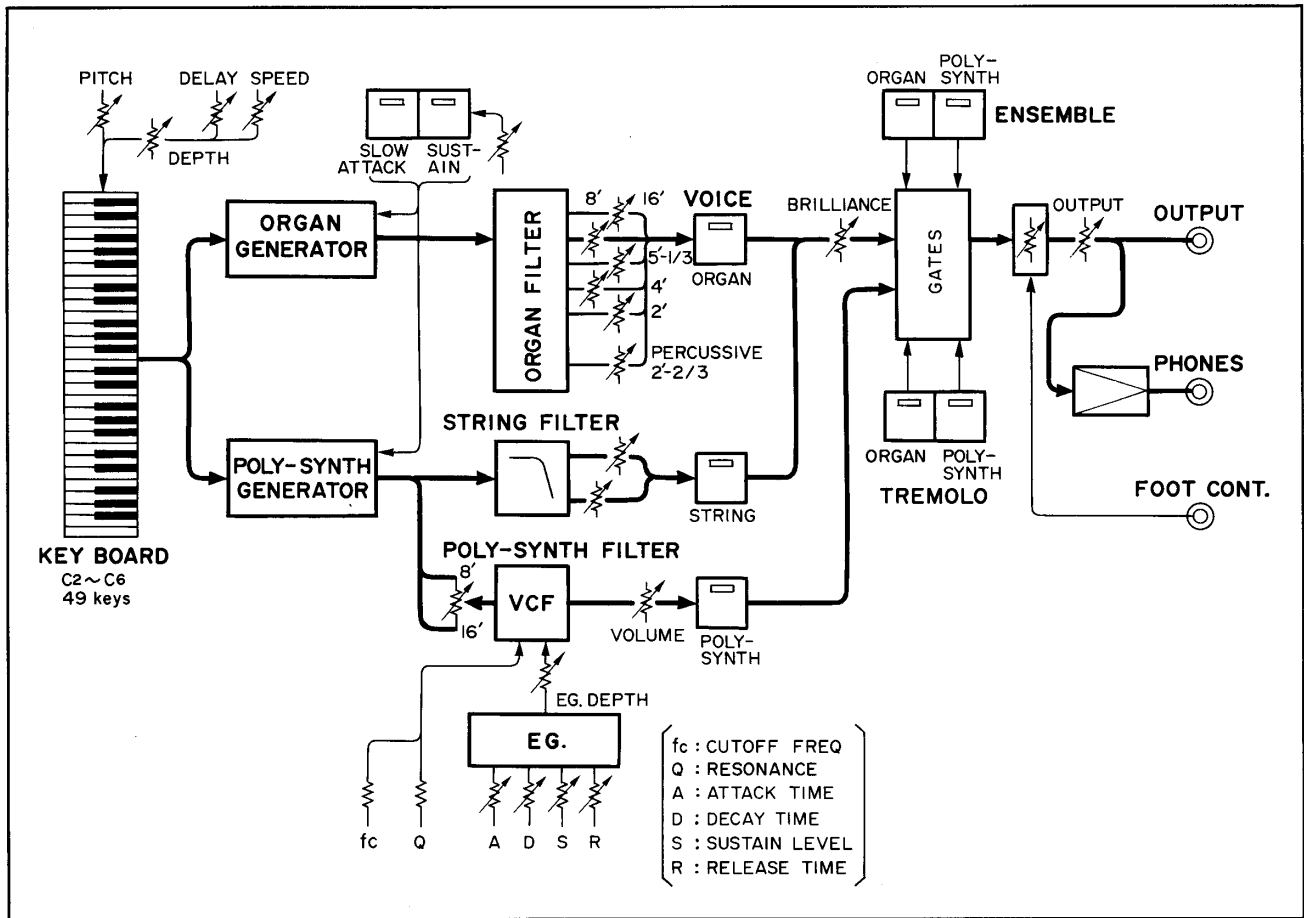
### 25 SPEED

Controls the vibrato speed. Settings towards the "F" end of the scale produce a faster vibrato.

### 26 DEPTH

Controls the strength or amount of vibrato applied to the basic sound. Set to "0", no vibrato is produced. Settings towards the "10" end of the scale produce a deeper vibrato effect.

# Block Diagram/Specifications



## SPECIFICATIONS

**Simultaneous Notes** . . . . . 7 (First note priority)  
**Keyboard** . . . . . 49 keys, C<sub>2</sub> ~ C<sub>6</sub> 4 octaves  
**OUTPUT Section** . . . . . MASTER VOLUME  
**PITCH Section** . . . . . PITCH : 438Hz ~ 450Hz, 8', A<sub>3</sub>  
**TREMORO/ENSEMBLE.** SPEED : ON/OFF  
 TREMORO : ON ; TREMORO/  
 OFF ; ENSEMBLE  
 ORGAN : ON/OFF  
 POLY-SYNTH : ON/OFF  
**VOICE** . . . . . ORGAN : ON/OFF  
 STRING : ON/OFF  
 POLY-SYNTH : ON/OFF  
**VIBRATO** . . . . . DELAY : 0 ~ 2.5sec  
 SPEED : 5 ~ 7Hz  
 DEPTH : 0 ~ 10  
**CONTROLS** . . . . . POLY-SYNTH : SLOW ATTACK  
 SUSTAIN switch : ON/OFF  
 SUSTAIN lever : 0 ~ 2sec  
 BRILLIANCE : + ~ 0 ~ -  
**ORGAN Section** . . . . . PERCUSSIVE : 0 ~ 10  
 Tone Levers : :16', 8', 5'-1/3, 4', 2'  
**STRING Section** . . . . . Tone Levers : :16', 8'

**POLY-SYNTH Section** VOLUME : 0 ~ 10  
 FEET : 8' ~ 16'  
 CUT OFF FREQ : 10 octaves  
 RESONANCE : Q ; 0.5 ~ 10  
 EG DEPTH : 0 ~ 10 octaves  
 ATTACK TIME : 3msec ~ 3sec  
 DECAY TIME : 30msec ~ 30sec  
 SUSTAIN LEVEL : 0 ~ 10  
 RELEASE TIME : 30msec ~ 30sec  
**REAR PANEL** . . . . . PHONES : 8 ~ 150 ohms  
 FOOT CONTROL : FC-3A (option)  
 OUTPUT : -10dBm/600ohms

### OTHERS

#### POWER REQUIREMENTS

U.S. & Canadian models . . . . . 120V, 60Hz 30 watts  
 General model . . . . . Selectable (110 - 130V/220V - 230V)  
 50/60Hz 30 watts

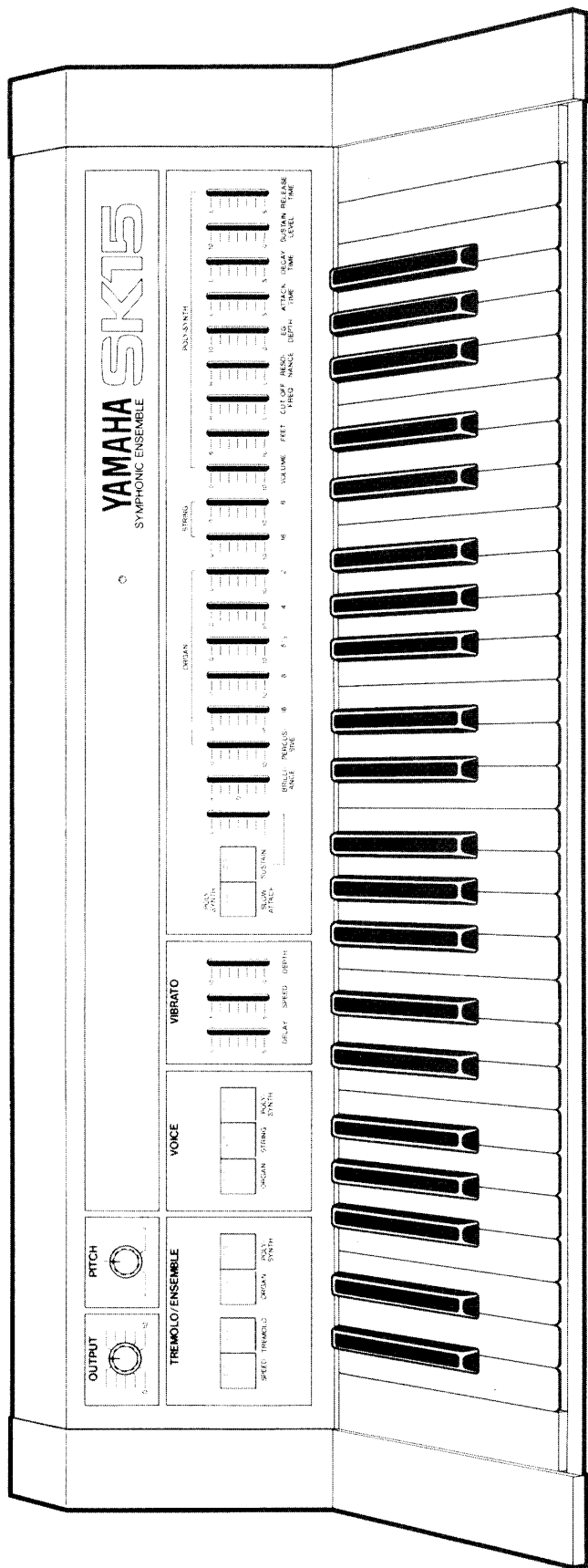
**DIMENSIONS (W x H x D)** . . . . . 818 x 133.5 x 357 (mm)  
 (32-3/16" x 5-1/4" x 14-1/16")

**WEIGHT** . . . . . 10.3kg (22.7 lbs)  
**FINISH** . . . . . Rosewood-grain cabinet

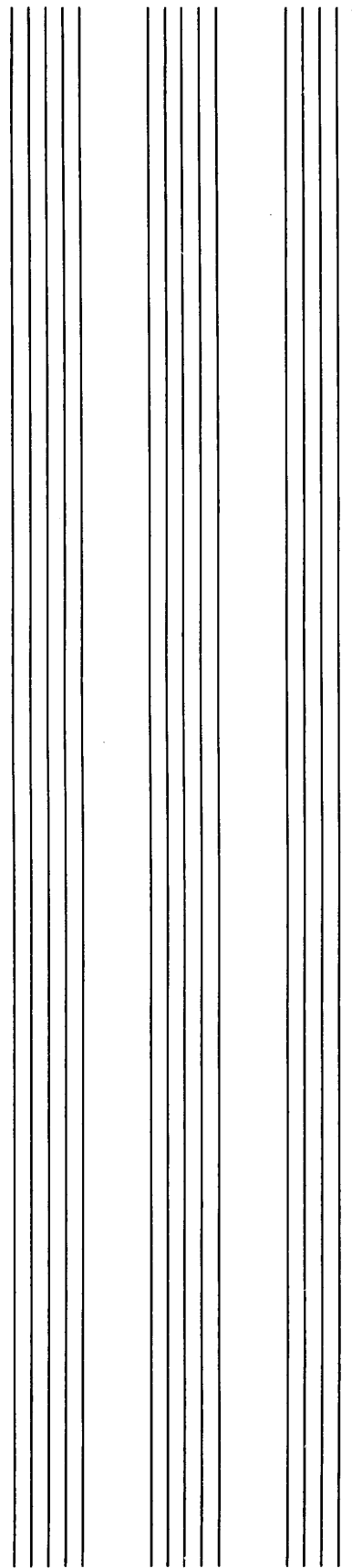
Specifications subject to change due to improvement purpose.



# Sound Memo.



DATE: / /





---

# Service

---

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE! THERE ARE NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO A QUALIFIED SERVICE PERSONNEL.**

## **SERVICE**

The SK15 is supported by Yamaha's worldwide network of qualified dealer service personnel. In the event of a problem, contact your nearest Yamaha dealer or authorized service center.



**OUTPUT**

**PITCH**

**TREMOLO/ENSEMBLE**

SPEED	TREMOLO	ORGAN	POLY-SYNTH
-------	---------	-------	------------

**VOICE**

ORGAN	STRING	POLY-SYNTH
-------	--------	------------

**VIBRATO**

DELAY	SPEED	DEPTH
-------	-------	-------

**POLY-SYNTH**

SLOW ATTACK	SUSTAIN
-------------	---------