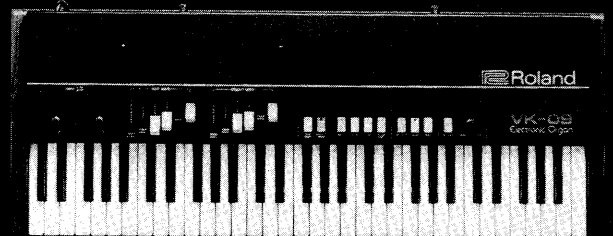


VK-09

Operation Manual

 Roland



The Roland VK-09 presents a dramatic step forward in evolving the ultimate portable organ. For the first time, two completely independent sets of drawbars are used to accurately reproduce both the sounds of the original tone wheel organs and the classic combo organs. These sets may be used separately or mixed together, providing more flexibility than would even be offered by two separate organs, to create the precise organ style needed for each individual musical number. The VK-09's complete set of sophisticated organ features make it the most flexible yet affordable portable organ ever available.

Harmonic Percussion is available on the 2nd and 3rd harmonics of both drawbar sets and includes both Loud/Soft and Fast/Slow Decay options. A self-contained Chorus Vibrato section faithfully recreates the sound of rotating speakers without the added size and weight. The Chorus Vibrato section includes On/Off and Fast/Slow FET pushbutton controls (with optional footpedal speed selection), and features Serial motion to change speed gradually, just as the original mechanical speaker boxes did.

Organ Sustain is included, with both a rotary Sustain length control and an FET pushbutton On/Off switch, allowing the Sustain length to be preset and introduced with precision. A special Gate output is provided to

allow the VK-09's tonal flexibility and Sustain functions to be interfaced with a solo synthesizer such as the Roland SH-09 to produce a wide variety of polyphonic synthesizer sounds.

The VK-09's excellent keyboard has a velvety touch, silent operation, proper key travel depth, and covers a comfortable 61 notes, 5 octaves from C to C. Self-cleaning, gold-plated key contacts are used to provide the ultimate in reliable, maintenance free operation. The entire keyboard may be matched to any tuning reference with a single master Tune control.

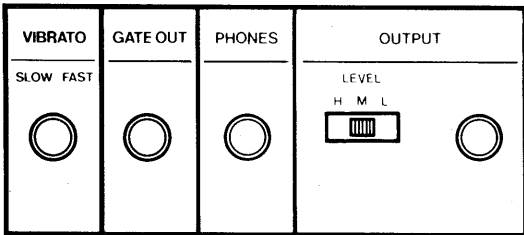
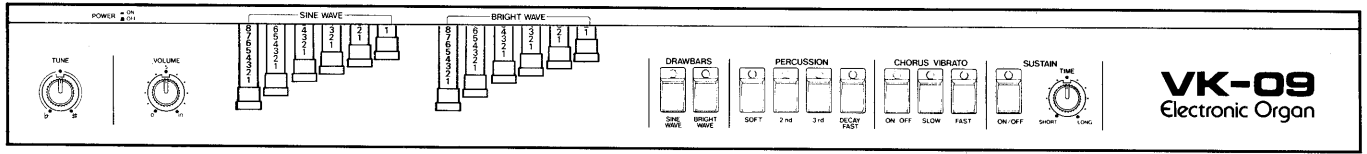
A self-contained headphone monitor amplifier and stereo Headphone Output jack make practice possible, even on the road. A separate phone jack Output with a three position level selector is provided to permit the use of any conventional amplification. Both Outputs are controlled by a rotary master Volume control.

The VK-09 measures only 34.8(W) x 4.2(H) x 13.5(D) inches and weighs only 19.8 pounds. The sound, flexibility and sophistication of the VK-09 will solidly support solo organ playing and its low retail price makes it a practical addition to multi-keyboard setups where an addition of this quality and dependability was never before affordable.

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Front and Back Panel Layout



Control Descriptions

Power On/Off Switch

This push-On/push-Off switch controls the flow of A.C. power to the VK-09. The power must be switched On for the VK-09 to perform any function. When first switched On,

the LEDs for both the Sine Wave Drawbar and Slow Chorus Vibrato FET selectors will light, providing a visual check of the Power On function.

Tune Control

This knob controls the overall pitch of the VK-09. The tuning range is ± 50 cents, with A=442 at the center position of the Tune control.

Volume Control

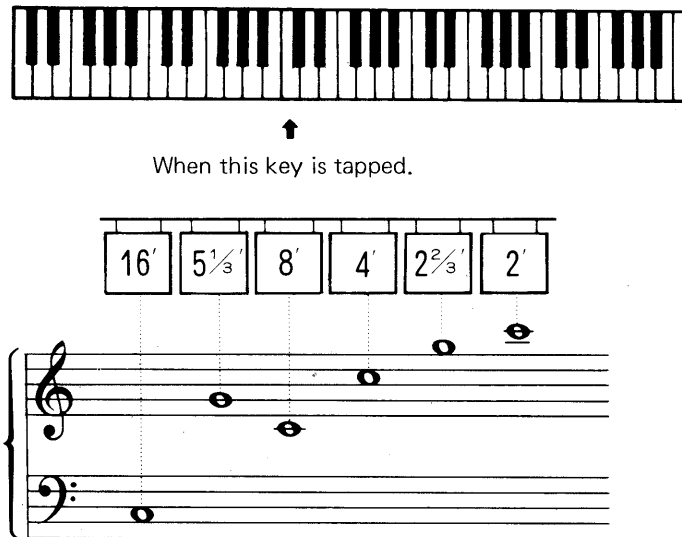
The Volume knob determines the final signal level present at both the VK-09 Output jack for standard amplification and at the Phones Output jack for any stereo headphones.

Sine Wave Drawbars

These six drawbars each individually present a classic Sine Wave tone color and may be mixed together to faithfully recreate the sound of the original Tone Wheel organs. Each drawbar is a different pitch and is numbered and color coded to assist in identification and control. Each drawbar is fully 'Off', or silent, when fully pressed in toward the back of the unit, increasing in volume as the drawbar is

drawn forward to full volume. Whole numbers '1' to '8' on the top of each drawbar indicates its volume level, and click stops are included at each one-half increment to give positive action and control. The relationships of the six drawbar pitches are shown in Figure 1. Details on their use are given in the Operation section of this manual.

Figure 1



Bright Wave Drawbars

These six drawbars each individually present a classic Bright tone color and may be mixed together to faithfully recreate the sound of the classic Combo organs. They function in precisely the same way as the Sine Wave

drawbars — only their basic tone color is different. Refer to Figure 1 and the Operation section of this manual for more specific details.

Drawbar Selectors

Two color coded FET selector switches allow the selection of the Sine Wave (white selector) or Bright Wave (red selector) drawbar sets or a mixture of the two as the tone color source of the VK-09 sound. Each switch features a red LED On/Off status indicator and silent FET touch-on/touch-off switching. To select either

drawbar set, press the corresponding switch. To select both drawbar sets at the same time, press both switches at the same time. These selectors may be used to recall Sine and Bright drawbar settings as three presets: Sine alone, Bright alone, and Sine and Bright together.

Percussion Section

This section introduces pitched accents to add interest and clear articulation to notes. The white '2nd' and '3rd' selectors introduce accents pitched the same as the 4' and 2 2/3' drawbars, respectively. The Orange Soft selector lowers the volume level of the har-

monic Percussion in relation to the drawbar settings also used. The Yellow Decay Fast selector shortens the time needed for the harmonic Percussion notes to fade to silence, resulting in a sound with more punch.

Chorus Vibrato Section

This section applies and controls the VK-09's internal Chorus Vibrato effect, simulating the sound of a rotating mechanical speaker system through any conventional amplification. The Orange On/Off FET selector introduces the effect at a slow or fast rate, indicated by the integral LED indicator on either the Slow or Fast FET selector.

The Slow and Fast FET selectors determine

the rate of the Chorus Vibrato effect. Press either the Slow or Fast rate selector switch to select that rate and cancel the other. Actual changes in rate are gradual, featuring Serial motion in the same manner as the traditional mechanical rotating speakers. It is also possible to switch between the Slow and Fast Chorus Vibrato rates by using an optional Roland DP-2 pedal.

Sustain Section

The Sustain section of the VK-09 can be used to add a gradual release to the end of each organ note. Sustain is introduced by lightly touching the Orange On/Off FET switch, lighting its integral LED status indicator. A

separate rotary Time control determines the time necessary for notes to fade from full volume to silence from the moment the key is released.

The VK-09 may be monitored through any conventional amplification, but the needs of the instrument and of the individual musician should both be considered in choosing ideal amplification. To achieve maximum sound quality, the VK-09's amplification should reproduce all of the instrument's sounds faithfully with a minimum of added distortion and coloration. A variety of quality P.A.'s, combo amps and component amplification systems will fill this need, but there are several items to consider.

Amplification and speakers with a wide frequency response are necessary to faithfully reproduce the VK-09's full range of organ tone colors and pitches. It is best to avoid equipment and speakers designed to suit the sound of a particular instrument such as a guitar or bass guitar. Vocal P.A.'s may be suitable, but sometimes have a narrow frequency response that will limit the tone color flexibility of the organ. Use of the equalization available on the P.A.'s input channels may adequately correct this problem.

The VK-09 is fully polyphonic and when playing rich, full chords can produce a strong output signal. Amplification for the VK-09 should be capable of accepting this signal without breaking up or distorting and still provide sufficient final volume levels. The Output on the back panel of the VK-09 includes a Level selector that may be switched between L (-24 dBm), M (-12 dBm) and H (0 dBm) to assist in matching the Output level to external amplification. Begin by setting the Output level selector to its 'M' position and the front panel volume control to between '5' and '7' to obtain the best signal-to-noise ratio and allow room to adjust the level.

Most problems with amplification distortion are a result of overdriving its preamp section.

When using amplification with high and low gain inputs, the one with the most headroom is usually the best choice. Amplification with variable input attenuation should be stepped down far enough to allow sufficient headroom for your richest, fullest chords. You may check both of the above alternatives by using all drawbars, fully drawn, with percussion. Chords played with this setting will provide a demanding test — listen carefully for any fuzziness or other evidences of distortion and adjust accordingly.

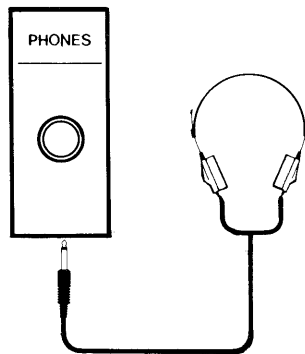
Reverb can add significantly to the tone and total effect of the VK-09. Reverberation is the time needed for a sound to fade away to silence as it bounces around a room. Organs are often associated with performances in a large hall (with a lot of reverb) and/or with rotating speaker amplification with self-contained spring reverb units, therefore reverb should be considered when determining your total sound. Reverb also has the effect of softening the sound, effecting perceptions of tone color. Reverb units built into amplification may serve the purpose for the VK-09 as long as they can cope with the rich signal without distortion. Otherwise, external reverb is easily available with units such as the BOSS RX-100 Reverb Box which may be used either mono-in/mono-out or stereo-in/stereo-out in your amplification chain.

The VK-09 will appear at one speaker only unless a 'Y' cable or junction box such as the Roland J-5 is used. **IMPORTANT NOTE:** Begin with the volume level on your VK-09 at Zero, and the hi-fi at normal or lower than normal levels. By gradually raising the VK-09 level and using caution as you change instrument settings you can easily avoid high level sounds that might otherwise damage sensitive hi-fi equipment.

Headphone Amplification

The VK-09 provides self-contained headphones amplification for any conventional

stereo headphones through a ¼ inch stereo phone jack on the back panel.



HEADPHONES (RH-10)

The volume may be controlled by the volume knob.

Gate Output

A keyboard Gate output is provided on the back panel to allow the interfacing of the VK-09 with synthesizers such as the Roland SH-09. The keyboard Gate is an on/off switching function produced by the keyboard using the same logic as the harmonic Percussion. The keyboard Gate connection

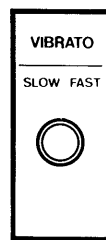
follows the industry standard positive voltage Gate to allow connection to all other major brands, giving the VK-09 the maximum flexibility and potential for growth and innovation. Specific interfacing applications are detailed in the Interfacing section of this manual.



External Control Connection

A ¼ inch jack socket is provided for the connection of an optional Roland DP-2 Damper

Pedal to allow remote switching of the Chorus Vibrato's rate between Slow and Fast speeds.



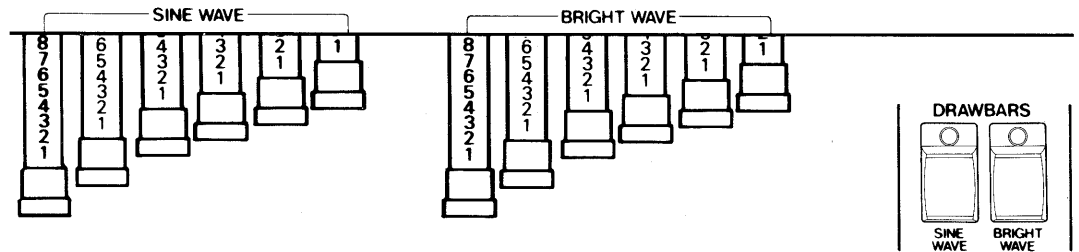
PEDAL SWITCH (DP-2)

The best way to gain firm artistic control of the VK-09 is through a systematic study of each function and it's effect on the total sound. Prepare by connecting the VK-09 to suitable amplification, setting the rotary Tune and Volume controls to their 12 o'clock positions, and pushing all drawbars 'In' (towards the back of the unit).

When the VK-09 is first switched 'On' at the Power switch on the left of the front panel, the Sine Wave Drawbar selector and the Slow

Chorus Vibrato Speed selectors will automatically be selected, indicated by red LED indicators within those FET switches. All of the other eight FET switches will remain 'Off', with their LEDs extinguished. This automatic switching to a commonly used, relatively neutral setting is both a convenience and a form of insurance in case you should forget to set these switches when the instrument is first switched 'On' for performance.

Drawbars



The VK-09 employs drawbars to provide the performer a wide range of highly personalized artistic control over the tone color of his sound. Two distinctly different drawbar sets are employed, with different tone colors that may be used separately or mixed as needed. Begin with a general review of drawbar theory and practice using the Sine Wave drawbar set, already automatically selected.

Drawbars date back centuries to the use of organ stops and are a very effective way to control tone color through additive synthesis. A basic 'fundamental' establishes the pitch of the note heard while a mix of different higher pitches ('harmonics') determine that note's tone color.

The VK-09's set of six Sine Wave drawbars each has the same classic Tone Wheel organ tone color. Individual drawbars are each numbered '1' through '8' in whole numbers as they are drawn towards you, increasing the volume of that particular drawbar's pitch. The drawbars are active in any position and change in volume smoothly over their length, but click stops have been added at every one-half increment to provide positive action and tactile information for setting and changing settings.

The third drawbar is white and labelled 8' (pronounced 'eight foot') and is the Fundamental (First Harmonic) of the drawbar harmonic series. It is normal or unison in pitch when compared to a piano. The white 4' and 2' drawbars provide 'superoctave' pitches one and two octaves above the Fundamental, respectively. The brown 16' drawbar is a 'suboctave' pitch one octave below the natural

fundamental and is an artificial harmonic designed to add depth and richness. These four unison drawbars all relate accurately to keys played on the keyboard.

The two remaining drawbars each sound a 'G' in relation to a 'C' played on the keyboard (and sounded by the 16', 8', 4' and 2' unison drawbars). The brown 5 1/3' drawbar sounds a Perfect Fifth above the 16' suboctave pitch and the black 2 2/3' drawbar sounds a Perfect Fifth above the 4' drawbar. These two drawbars are not to be played alone (which would result in a transposition) or with a unison drawbar of about the same loudness (which would result in the sound of two notes traveling in parallel fifths). They should be used with one or more unison drawbars of great enough strength so that these drawbars cease to be heard individually and merely serve to modify the tone color of the unison drawbars. If properly used, these two drawbars are among the organists most valuable resources for obtaining a variety of rich tone colors.

The pitch relations of the six drawbars are further illustrated in Figure 1.

Take time to experiment with various combinations of the Sine Wave drawbars. When satisfied, touch the red Bright Wave FET switch located in the Drawbar selector section, switching the Sine Wave set 'Off' and the Bright Wave set 'On'. Repeat your experiments with these drawbars — the principles are exactly the same, but the basic tone color for each individual drawbar in this set is brighter, recreating the sound of the classic Combo organs and suggesting different musical styles.

Try each of the following sample drawbar settings with each of the two drawbar sets. Play each with various styles and pitch ranges – these have a significant effect on the perception of the total sound. The numbers refer to all six drawbars in a set, moving from left to right, and are divided into suboctave

and harmonic series groupings for a clear understanding and visual accuracy. Remember that these settings are ultimately designed to be used with combinations of the Percussion, Chorus Vibrato and Sustain controls and may seem slightly bland in this context.

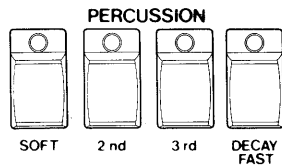
Figure 2

Example #1	88 8888	Example #6	80 8808
#2	88 8080	#7	54 7878
#3	80 6806	#8	88 8800
#4	00 6888	#9	80 8000
#5	88 8000	#10	80 0000

By pressing BOTH the Sine Wave and Bright Wave Drawbar selector switches at the same time, you may use both drawbar sets at the same time for even more creative control over the sound. Experiment with mixing the various examples from above, such as placing Example #1 in the Bright Wave drawbars and providing further support to the bass tones by

using Example #5 with the Sine Wave drawbars. Note that this gives you three options which you may select instantly as pushbutton presets: the Sine Wave set alone, the Bright Wave set alone, or the Sine Wave and Bright Wave sets mixed. Finish this section by experimenting with your own settings, noting any you find promising for later reference.

Percussion



This section introduces pitched accents to add interest and clear articulation to notes. The white '2nd' and '3rd' selectors introduce accents pitched the same as the 4' (2nd Harmonic) and 2 2/3' (3rd Harmonic) drawbars, respectively.

Percussion is normally used in conjunction with drawbars, but set all drawbars at '0' for now to allow the harmonic Percussion to be clearly heard. When any key is pressed, either or both of the Harmonics selected begin instantly then fade gradually to silence with a note shape similar to a piano note. Harmonic Percussion is activated with traditional organ logic now more familiar to synthesizer players: Percussion is activated on notes played immediately after all keys are lifted on the keyboard. Legato playing will result in Percussion on the first note of the phrase only, detached playing will result in percussion on

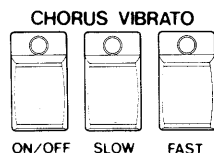
all notes cleanly detached from preceding ones. With practice this gives creative control over which notes are accented.

The Orange Soft selector lowers the volume level of the harmonic Percussion in relation to the drawbar settings used. In addition to providing a different musical balance, this can also be used to avoid unwanted distortion if the external amplification is being overdriven.

The Yellow Decay Fast selector shortens the time needed for the harmonic Percussion notes to fade to silence, resulting in a sound with more punch.

Experiment with adding harmonic Percussion to various drawbar settings, such as Examples #2 and #10 in Figure 2. Example #10 with Percussion is quite useful for soloing and comping, but is very bland without.

Chorus Vibrato



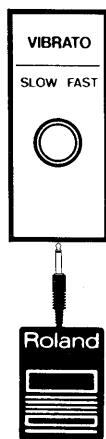
This section applies and controls the VK-09's internal Chorus Vibrato effect, simulating the sound of a rotating mechanical speaker system through any conventional amplification. In addition to effecting the perceptions of tone color, motion and thickness, the VK-09 Chorus Vibrato influences pitch, simulating

the pitch changes introduced by the doppler effect of the rotating speaker in the mechanical boxes. The Orange On/Off FET selector introduces the effect at a slow or fast rate, indicated by the integral LED indicator on either the Slow or Fast FET selector.

Chorus Vibrato (cont.)

One of these two rates is always selected, regardless of the On/Off status of the effect itself. When the VK-09's power is first switched On, the Slow Chorus Vibrato rate is automatically selected but the effect itself is left switched Off. Press either the Slow or Fast rate selector switch to select that rate and cancel the other. Actual changes in rate

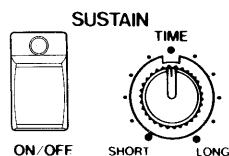
are gradual, featuring Serial motion in the same manner as the traditional mechanical rotating speakers. It is also possible to switch between the Slow and Fast Chorus Vibrato rates by using an optional Roland DP-2 pedal. When switching with the DP-2, the FET rate selectors on the control panel are still operative and indicate the rate selected.



Take time to return to the example drawbar settings' in Figure 2 and experiment with the Slow and Fast Chorus Vibrato rates. Try each setting with each rate, changing rates occasionally while playing at cadences or where

chords are held. You will find that creative use of Chorus Vibrato has a marked effect on the vitality of those settings you have already become familiar with.

Sustain



The Sustain section of the VK-09 can be used to add a gradual release to the end of each organ note. Normally, organ notes begin and end instantly the moment that any key is pressed and released, respectively. When Sustain is introduced, each note begins instantly but fades gradually to silence from the moment that the key is released.

Sustain is introduced by lightly touching the Orange On/Off FET switch, lighting its integral LED status indicator. A separate rotary Time control determines the time necessary for notes to fade from full volume to silence

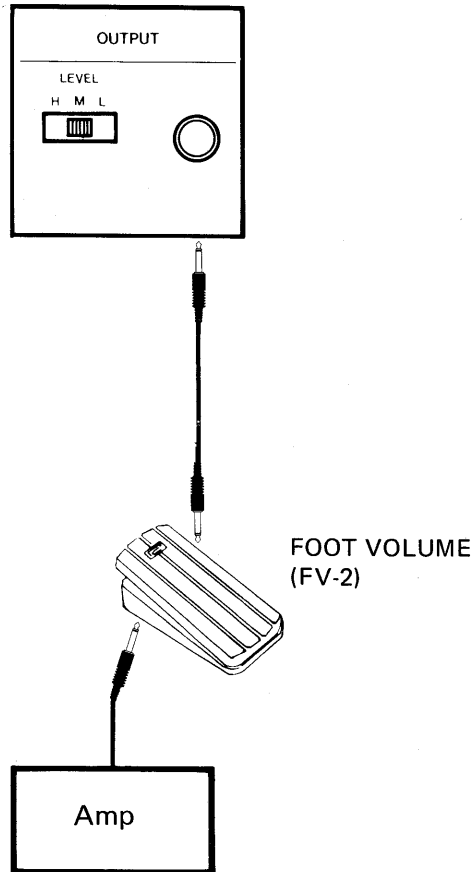
from the moment the key is released. Use the Time control to preset the most desirable Sustain length for any particular musical number, then use the Orange On/Off switch to introduce Sustain instantly whenever needed. By experimenting with various drawbar settings and Sustain length, it is possible to achieve many effects including bell like sounds.

Sustain is also very useful when interfacing the VK-09 with an external synthesizer to produce polyphonic synthesizer sounds. Use just enough Sustain length to allow a natural sounding synthesizer envelope release.

Volume Pedal

You may find the addition of a volume pedal to your VK-09 to be very helpful, acting as a traditional organ swell pedal. The Roland FV-2 mono-in/mono-out volume pedal is strongly recommended not only for its durability and quiet operation but because of its Minimum Volume control. This control lets

you set a Minimum Volume that the pedal will allow to pass when your heel is fully to the floor — eliminating the problem of accidentally dropping your sound out entirely and also increasing the effective pedal range between the volume extremes you use.



Interfacing capability is a striking advantage of the VK-09, giving it the ability to expand in many directions and to virtually customize itself to a performer's needs. The VK-09 may be interfaced with any solo synthesizer such as the Roland SH-09, combining Additive and Subtractive synthesis to achieve exceptionally flexible polyphonic synthesizer sounds.

Interfacing capability not only allows great artistic freedom and choice but allows an involved keyboard setup with a wide variety of complex sounds to be built up gradually as money becomes available. Building a system this way provides the performer with an instrument immediately, lets him become more familiar with each instrument as he builds gradually, and allows him to purchase absolute top quality instruments such as the Roland VK-09 and SH-09 at each step of the way instead of buying a more expensive instrument which often compromises quality and flexibility in order to be more comprehensive. You may feel confident that the VK-09 quality and expansion options will always be able to fit your changing and expanding musical needs.

The VK-09 is designed to interface with a solo synthesizer having both a positive voltage Gate input and an External Audio input. For our examples, the VK-09 will be interfaced with the Roland SH-09 synthesizer — the VK-09 providing the basic pitch and tone selections and the keyboard Gate signal, and the SH-09 using its Voltage Controlled Filter, Voltage Controlled Amplifier, Envelope and Modulator sections.

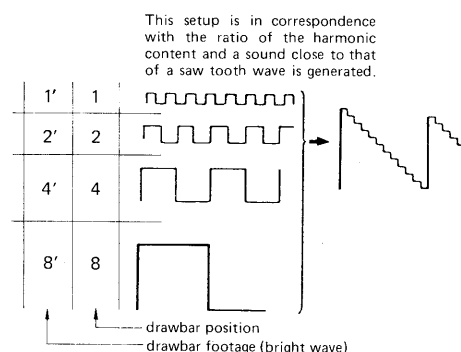
Two connections must be made between the VK-09 and SH-09 to interface the two. Connect the VK-09 audio Output to the External Audio Input of the SH-09. This may

remain connected constantly, defeating when necessary with the EXT slider in the SH-09 Audio Mixer section. Next, connect the VK-09 keyboard Gate Output to the SH-09 Gate Input to control synthesizer functions from the VK-09 keyboard. It is suggested that you tape the two connection cords together about three inches from the SH-09 back panel to allow the two instruments to be connected and disconnected easily and keep the Gate connection within reach if it is accidentally dropped. To play the SH-09 as a separate instrument, merely pull the SH-09 Gate Input jack out far enough to break the switch connection in that jack, leaving it resting partially within the jack socket for easy re-connection.

The most flexible connection solution is to send the VK-09 audio Output signal to an A/B footswitch and route the two outputs to normal amplification and to the External Input of the SH-09. This setup allows the two instruments to be alternately interfaced and used normally as separate instruments by pressing one switch, moving one jack, and one slider.

The VK-09's audio Output mixes a pure waveform from each of its drawbar sliders in a form of additive synthesis to provide different waveforms for the synthesizer to process. The VK-09/SH-09 Woodwind patch shown uses a single slider to provide a Square wave. The VK-09/SH-09 Brass patch uses a combination of drawbars to provide a Staircase wave, very similar to the sawtooth wave normally used for synthesizing brass patches. Each interface patch using more than one drawbar is actually building a custom waveform within the VK-09 for the SH-09 to process.

Figure 3

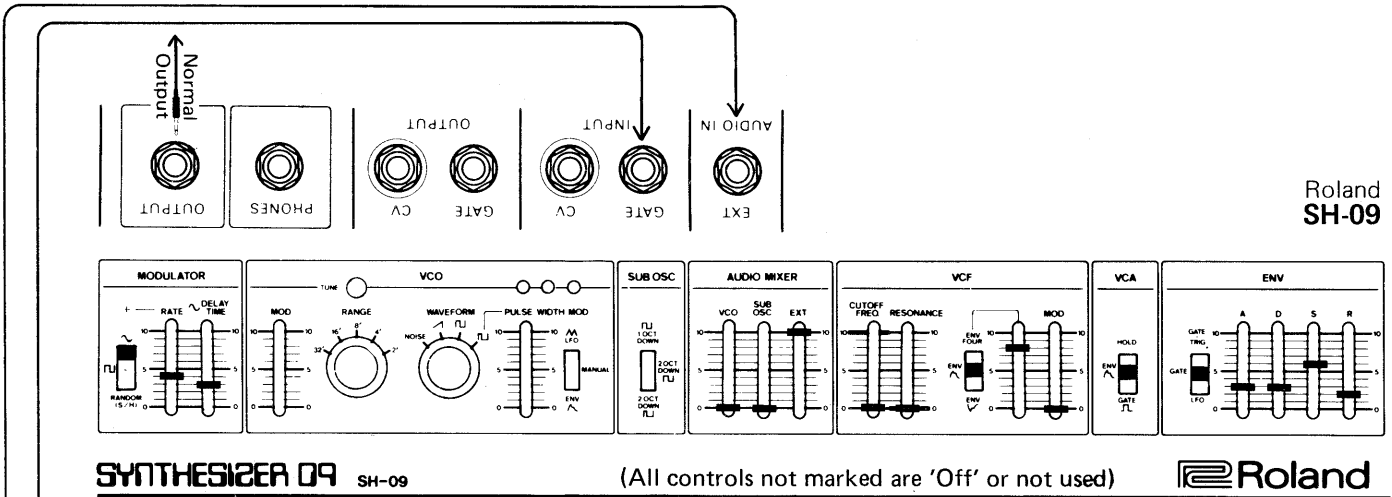


The VK-09 audio Output is still effected by all its internal effects including Percussion, Chorus Vibrato and Sustain. It is best to keep the Sustain 'On' and set just long enough to cover the length of the SH-09 Release.

The synthesizer controls and their functions are described in detail in the SH-09 owners manual. This combination is played from the

VK-09 keyboard, using detached playing techniques for best results. A blank patch sheet is included here for the VK-09/SH-09 combination. Photocopy it for use with the actual instruments or to work out in advance how interfacing might suit your musical needs.

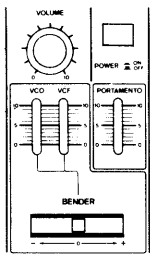
WOODWIND & BRASS



Roland
SH-09

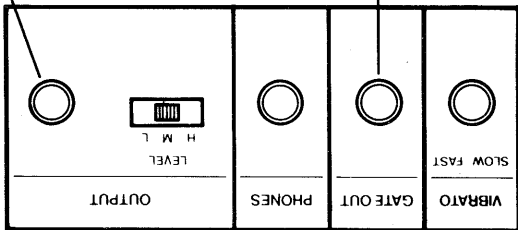
SYNTHESIZER 09 SH-09

(All controls not marked are 'Off' or not used)

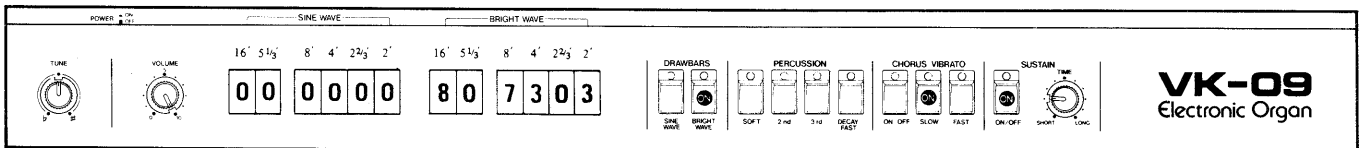


TOUCH the bottom key of the SH-09 once to cancel the effect of the internal keyboard control of the VCF.

- The patch as show gives a brass section sound.
- To get a woodwind sound, change the Bright Wave drawbars to 80 0000.
- SH-09 VCF Mod and VK-09 Chorus Vibrato 'ON' are interesting options.
- Use reverb on SH-09 output it available.



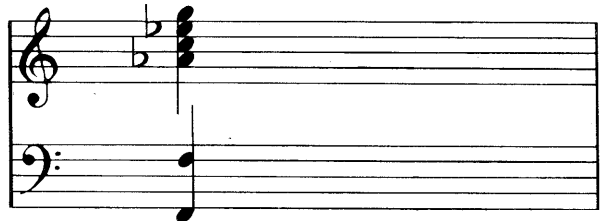
(← Notice Output Level position M, Master Volume '10')



(All FET switches OFF unless marked ON.)

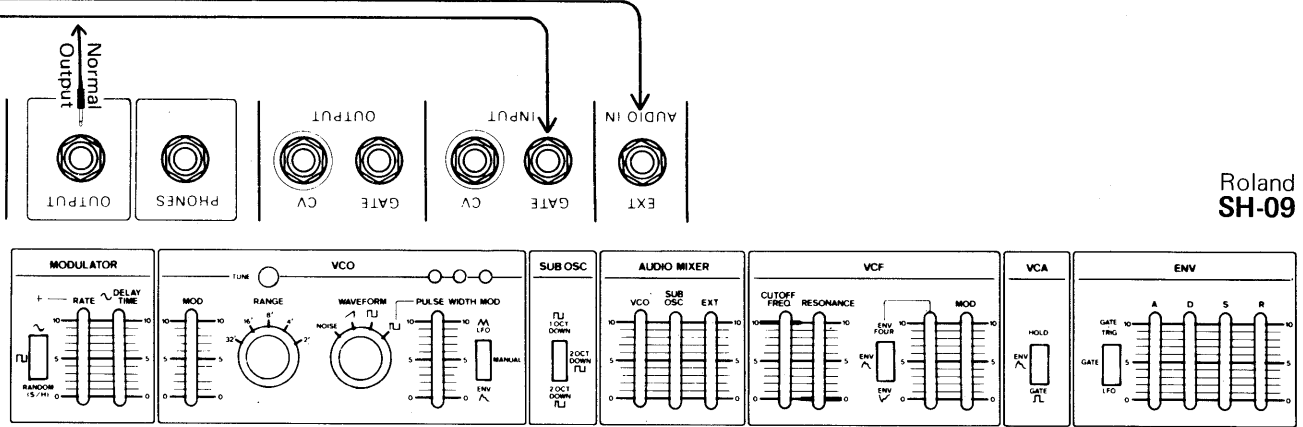
Patch designed for block chords. Try a full chord in the right hand and octaves in the left hand.

Example (use rhythmic chord work) →



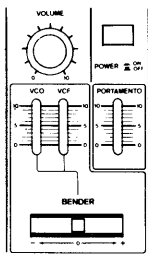
ELECTRIC PIANO

Roland
SH-09



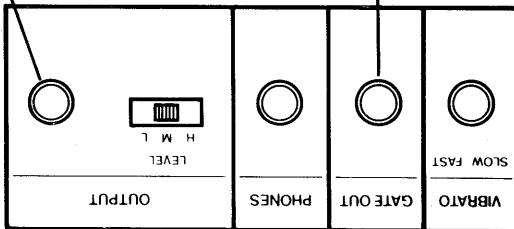
SYNTHESIZER 09 SH-09

(All controls not marked are 'Off' or not in use)

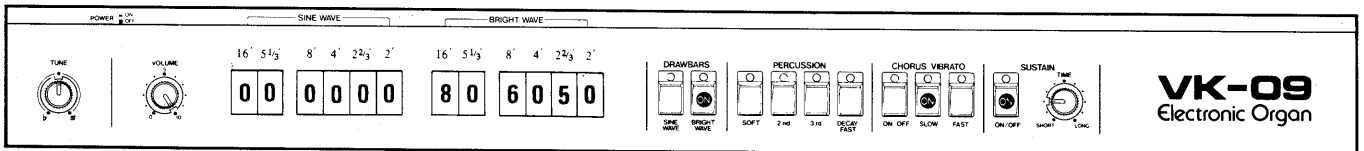


TOUCH the bottom key of the SH-09 once to cancel the effect of the internal keyboard control of the VCF.

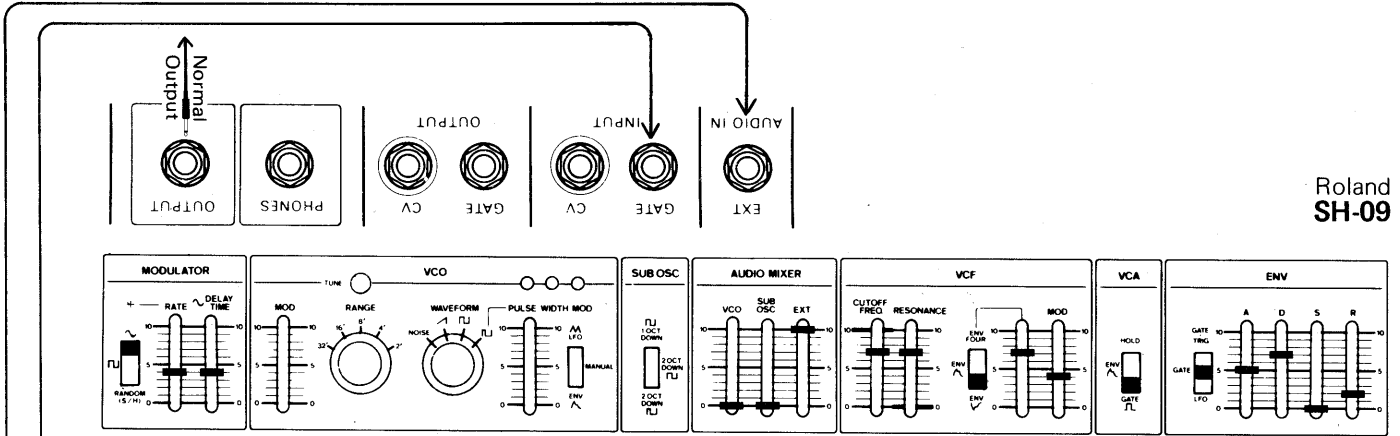
- Add VCF Mod of '5' to add tremolo.
- Switch Chorus 'ON' for an interesting effect.
- If you want to remove the harmonic sound of the 'fine', change 2 2/3' drawbar to '0' setting.



(←Notice Output Level position M, Master Volume '10')



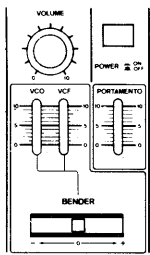
(All FET switches OFF unless marked ON.)



Roland SH-09

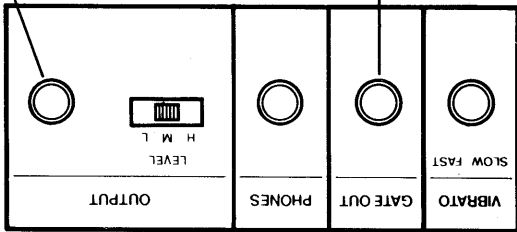
SYNTHESIZER 09 SH-09

(All controls not marked are 'Off' or not used)

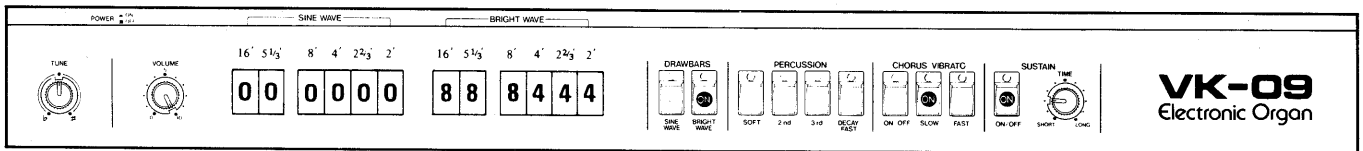


TOUCH the bottom key of the SH-09 once to cancel the effect of any internal keyboard VCF control.

- Comp block chords, holding some long enough for the delayed effects.
- Try cancelling the VCF Mod Slider.
- Try switching the Chorus 'ON'.



(← Notice Output Level position M, Master Volume '10')

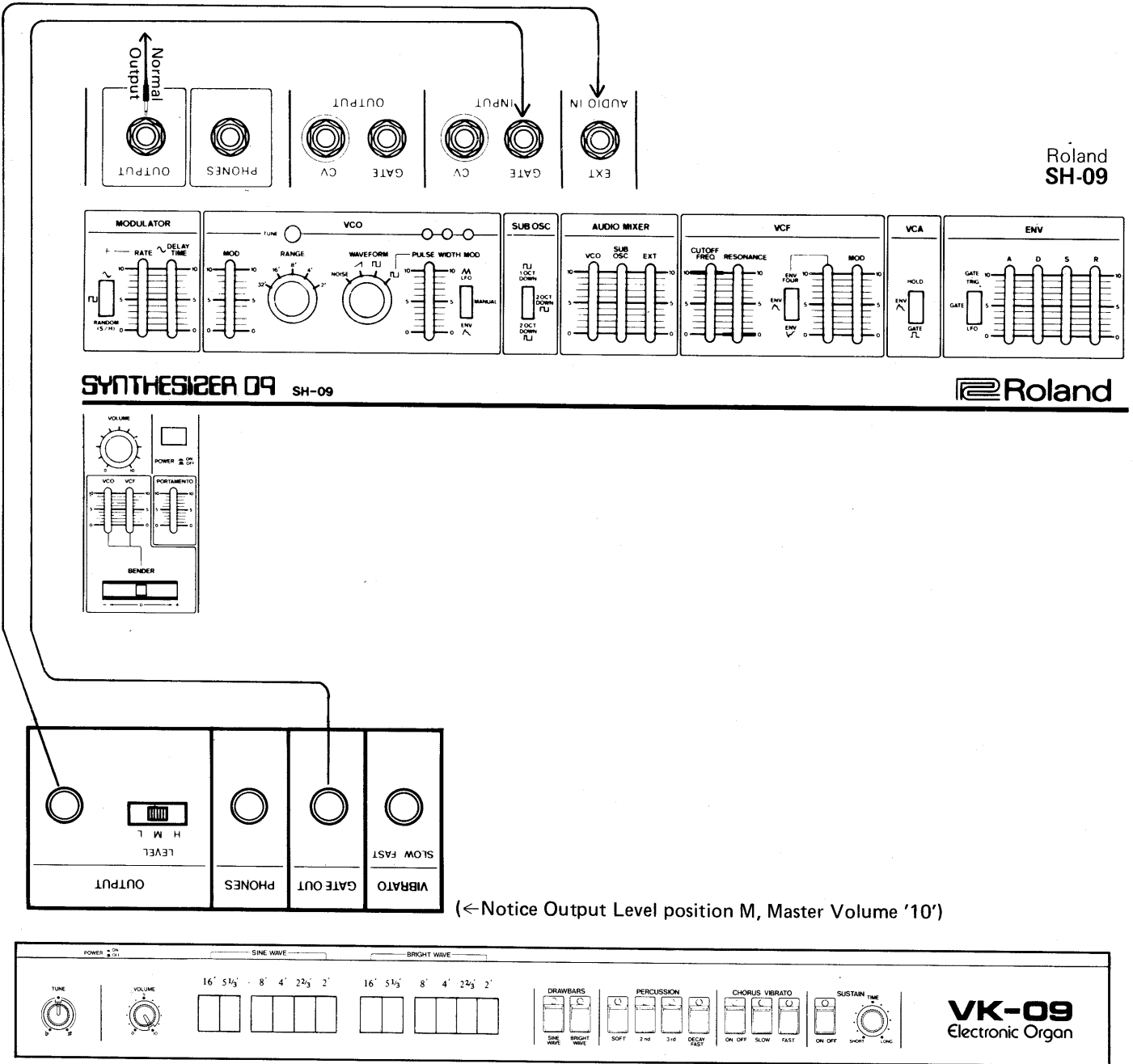


(All FET switches OFF unless marked ON.)

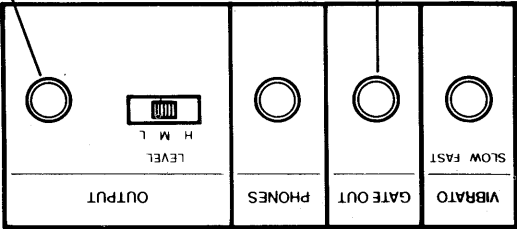
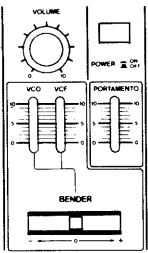
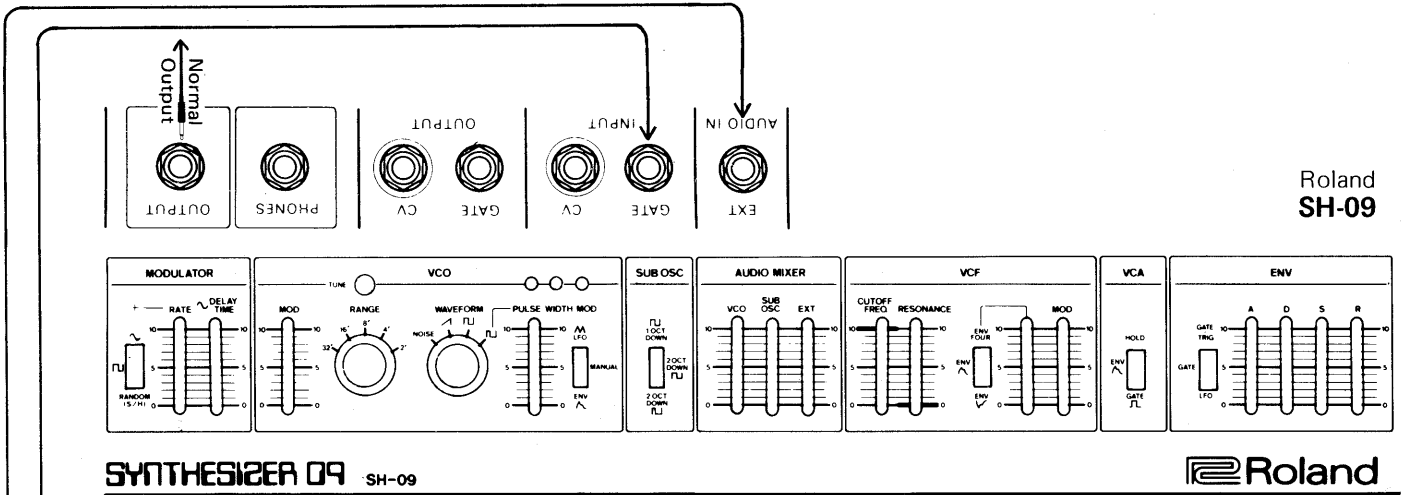
Normally play detached, but also try changing the bass while holding the right hand:

Put a clean beak in at each *

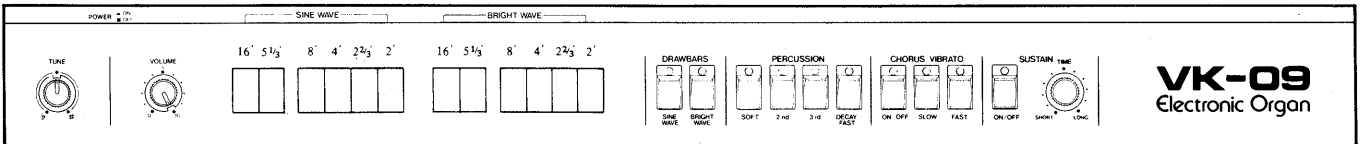




(All FET switches OFF unless marked ON.)

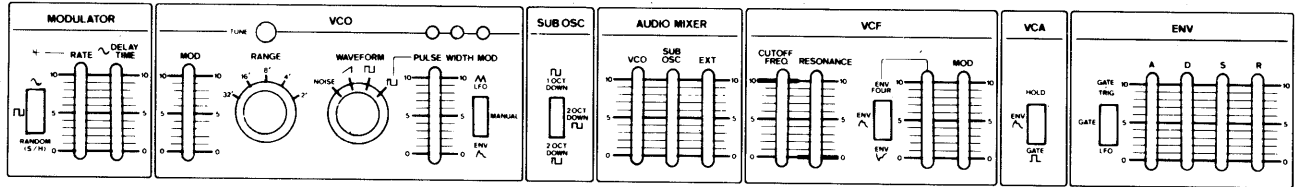


(←Notice Output Level position M, Master Volume '10')



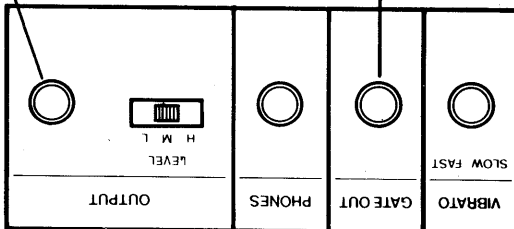
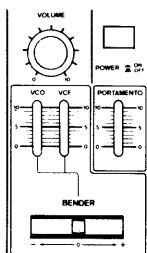
(All FET switches OFF unless marked ON.)

Roland
SH-09

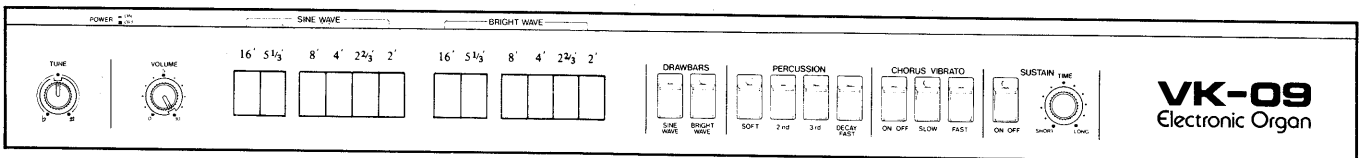


SYNTHESIZER 09 SH-09

Roland



(← Notice Output Level position M, Master Volume '10')



VK-09
Electronic Organ

(All FET switches OFF unless marked ON.)

Specifications

18

Keyboard	61 Keys; C ₁ ~ C ₆
Drawbars	Sine Wave 16', 5-1/3', 8', 4', 2-2/3', 2' Bright Wave 16', 5-1/3', 8', 4', 2-2/3', 2'
Drawbar Select Switch	Sine Wave Bright Wave
Percussion	2nd 3rd Soft Decay Fast
Chorus Vibrato	ON/OFF Switch Slow Fast
Sustain	ON/OFF Switch Time Control
Master Volume	
Tune	±50 cents
Power Switch	(with LED indicator)
REAR PANEL	
Outputs	Output Jack, Output Level L/M/H (-24dBm/-12dBm/0dBm) Headphone Jack (8Ω: Stereo) Gate Output Jack (OFF: OV/ON: +15V)
Ext Control	Vibrato, Slow/Fast Select Footswitch Jack (DP-2)
Dimensions	892(W)×106(H)×347(D)mm
Power Consumption	12W
Weight	9kg
Accessories	Music stand 2.5m connection cord (LP-25)

*Specifications subject to change without notice.

