𝄞 ARP

Sequencer Owner's Manual

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1. Introduction

The sequencer is a device which has been around almost as long as synthesizers. Before keyboards were developed that could accurately control a VCO, sequencers were used to create patterns of pre-tuned pitches. They were primarily used for avant-garde composition and for easily identifiable logos for various companies, TV news programs, and the like. One of the earliest synthesizers ever made, the RCA Mark II, is still in operation at Columbia University and is essentially one giant sequencer.

ARP introduced its first sequencer in 1970. Called the Model 1027, this sequencer is part of the ARP 2500 modular line. During the last few years, this sequencer has been used to great effect by musicians like Joe Walsh and Pete Townshend (remember the cascading sounds in "Break the Mirror" from the "Tommy" film?).

These earlier sequencers were better for studio work than for live performance. The new ARP Sequencer has incorporated many new live performance features, like the dual-quantizer, instant Start/Stop, fully switched programming, and foot pedal activation. These features make the new ARP Sequencer as useful on stage as it is in the studio.

In describing the basic operation principles of the ARP Sequencer, we will assume that you have already read the owner's manual for your ARP synthesizer and are conversant with basic synthesizer terminology. In order for you to understand the material in this Sequencer Owner's Manual, you must have an understanding of voltage control and basic synthesizer theory. Any of the ARP synthesizer owner's manuals contain this information. Be sure you understand it thoroughly before attempting to get started with the Sequencer.

When you have mastered the ARP Sequencer, you will find that it opens up hundreds of channels for new musical exploration. Learning to use a sequencer is an exciting and exhilarating experience. Your ARP Sequencer should give you many years of flawless performance and provide a satisfying and broadening musical experience.

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11. What Is A Sequencer?
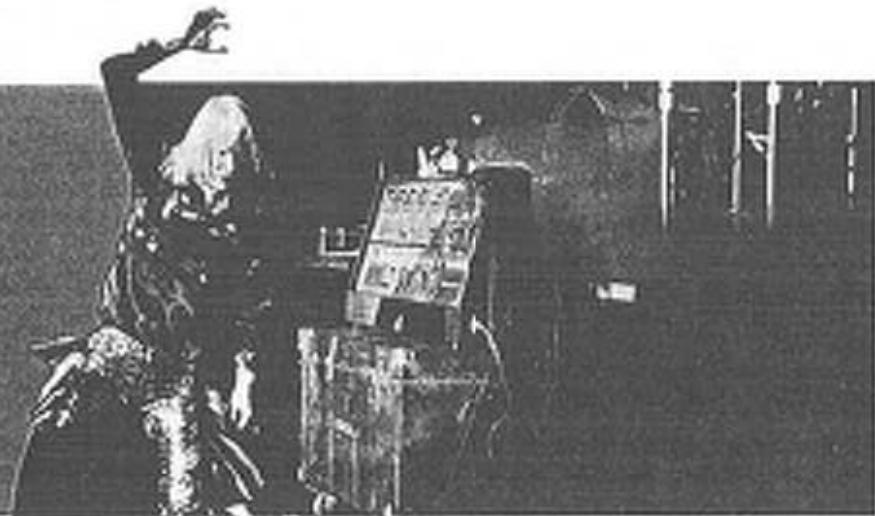
A sequencer is simply a control device. Like other control devices (LFO's, foot pedals, etc.), the sequencer cannot produce sound by itself. It must be attached to a synthesizer.

When the sequencer has been properly attached to a synthesizer, it can be used instead of the keyboard. While the sequencer has literally hundreds of musical applications, its primary use is to create "sequences" of predetermined pitches. It creates sequences of pitches by creating sequences of control voltages which in turn control the VCOs in your synthesizer.

The ARP Sequencer is essentially an automatic 16 position stepping switch. For each step the sequencer can produce a control voltage which can be adjusted by one of the 16 slide controls. So, a series of 16 preset pitches can be programmed. Various gate signals, used to trigger the envelope generator in your synthesizer, are also available from the sequencer. The sequencer contains its own VCO which is used to determine the stepping speed of the sequencer. The speed of this VCO will determine how fast the sequence of notes you have set up will be played back.

III. Getting Started

Packed with your sequencer you will find three 3' patch cords, a foot switch, and a warranty card. Be sure to send in your warranty card immediately so that you will have full protection under the warranty and so that you will receive updated information and announcements from the factory.

Before you hook your sequencer up to your ARP synthesizer, it will help to try a few silent experiments and familiarize yourself with several of the sequencer's features. Plug in your sequencer and turn on the power switch. The red pilot light on the switch should go on and other panel lights may go on also. Set the controls on the front panel exactly as shown in Diagram 1.

Find the area of the front panel that has the three slide controls and push button (A) for the Clock Oscillator. Push the Clock Start/Stop button (A) and notice that you can start and stop the sequencing. With the clock running, move the CLOCK FREQ control (B) up and down and observe that the stepping speed changes with the position of the slider.

Stop the clock again by pressing the CLOCK START/STOP button (A), and observe which of the 16 position lights is on. Now

press the RESET button (C) and note that the sequencer jumps to position 1. Press the STEP button (D) a few times and the sequencer will advance one stop each time. Experiment with the STEP, RESET, and CLOCK START/STOP push buttons until you thoroughly understand their operation.

Next, locate the SKIP/OFF/RESET slide switch (E). Move this switch to the skip position and start the clock. Now move the first GATE ASSIGN switch from the center position to the bottom position. Notice that the sequence now skips postion 1 and goes directly from position 16 to position 2. Move the GATE ASSIGN switch 2 down also, and the sequencer will skip both the first and second positions. Try moving other GATE ASSIGN switches down to get a feeling for the "SKIP" function.

Return all the GATE ASSIGN switches to the middle position. Change the setting of the SKIP/OFF/RESET switch to "RESET." With the clock running, drop GATE ASSIGN switch 9 to the bottom position. Note that the sequencer counts up to 8, then resets. Drop GATE ASSIGN switch 5 and notice that the count shortens to 4 steps. Notice that if more than one GATE ASSIGN switch is in the

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lower position, the sequencer will reset upon encountering the first switch in the series. Move the SKIP/OFF/RESET switch back to "OFF," and the sequencer will resume normal 16 step operation. Return all the GATE ASSIGN switches to the middle position.

Next, find the SEQUENTIAL/RANDOM switch (G). With the sequencer clock running, move this switch to the "RANDOM" position. Notice that the normal sequential stepping changes to random jumping from one position to another. Observe, however, that the stepping is still very rhythmical and still determined by the CLOCK FREQ control. If you watch the lights for a while, you will see that the sequence of stepping does not follow any pattern and is truly random. Try skipping a few positions as you did earlier and notice that this function still works in the random mode. When you try to reset the sequencer using the ASSIGN switches, you'll note that the sequencer will return to position 1 instead of any position where the GATE ASSIGN switch has been put in the lower position. When you have finished experimenting with the RANDOM mode, return the switch (G) to "SEQUENTIAL." Return all other switches to their original positions.

Now locate the switch labeled "16/1 - 8/2" (H). With the clock running, move this switch to the "8/2" position. You'll see that two lights go on for each step. If you slow the CLOCK FREQ down for a closer look at what is happening, you should see that the two lights move in parallel and that one is always in the first eight positions and the other in positions 9 through 16. You'll notice from the panel graphics directly above the lights that the first 8 positions are grouped together by a long arrow indicated by the letter "A." Similarly, positions 9 through 16 are grouped together and called

DIAGRAM 1

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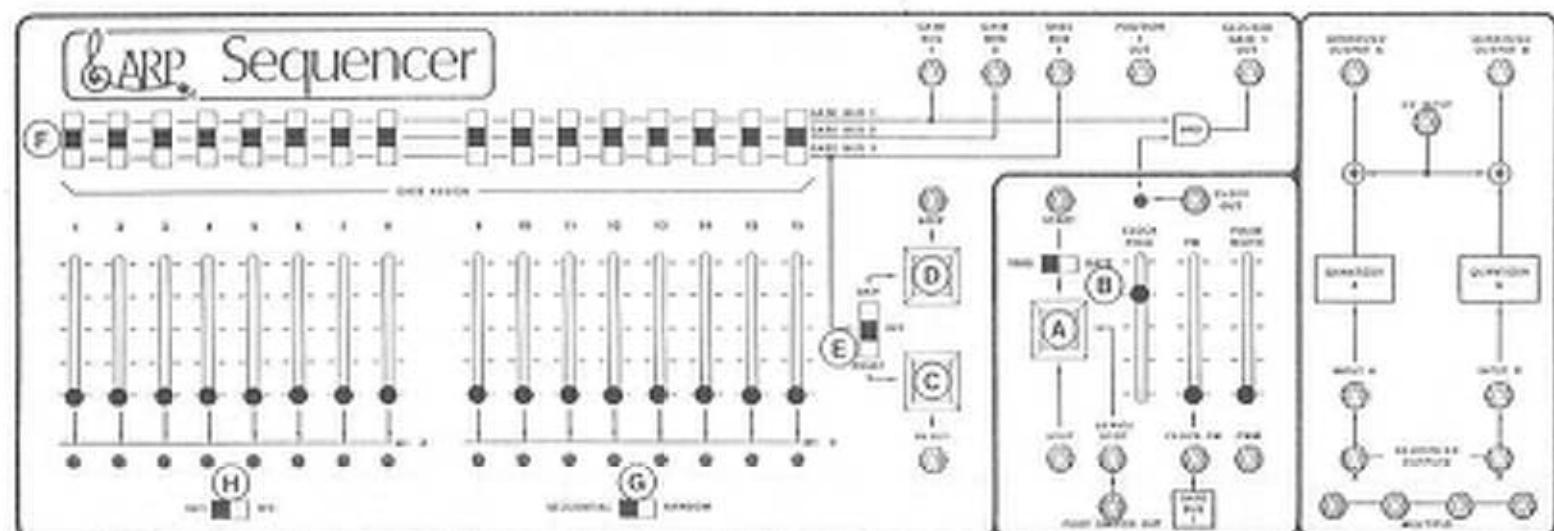
"B." Essentially, the "8/2" mode has broken your 16 step sequence into two separate 8 step sequences. Move the SKIP/OFF/RESET switch to "RESET" and lower GATE ASSIGN switch 5. Notice that both sections of the sequencer count only four steps. Raise GATE ASSIGN switch 5, and lower switch 13. You'll see that this has exactly the same effect. Try experimenting with the "RESET" and "SKIP" functions until you are completely familiar with the operation of the "8/2" counting. Be sure to keep the CLOCK FREQ low enough so that you can observe what is going on. When you have finished, return all the switches to the original position.

Now plug the foot switch supplied with your sequencer into the appropriate jack on the back panel. Notice that depressing the foot switch has the same effect as pushing the CLOCK START/STOP switch. Later you will learn how many other functions can be accomplished with the foot switch by using patch cords.

IV. Hooking Up To Your Synthesizer

Now that you have learned a little about the operation of your sequencer's stepping controls and functions, it's time to connect the sequencer to your synthesizer and begin making music.

The hook-up for the ARP Axxe and Odyssey are the same. For the simplest hook-up, you will need two patch cords. Connect one patch cord between the sequencer jack labelled "QUANTIZED OUTPUT A" and the jack on the rear panel of your synthesizer labeled "CV IN." Connect the other patch cord between the sequencer jack labeled "CLOCK OUT" and the synthesizer jack labeled "GATE IN." Diagram 2) illustrates these connections.

DIAGRAM 2
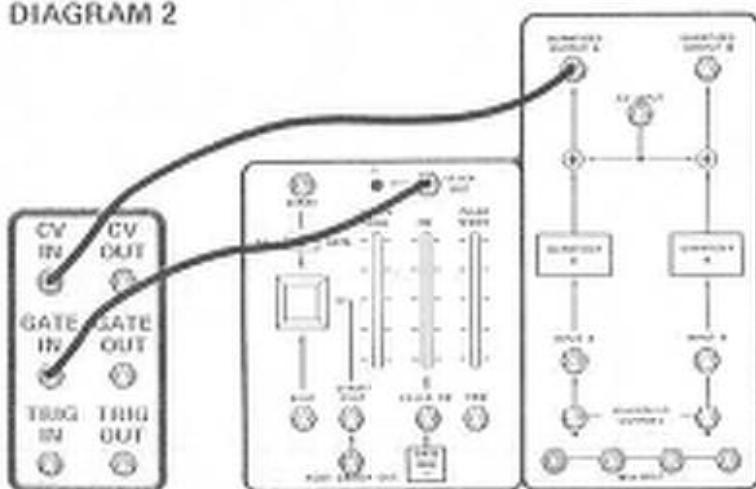
If you own an ARP 2600, we will start by connecting the sequencer QUANTIZED OUTPUT "A" jack and CLOCK OUT jack to the KBD CV jack on VCO 1 and the S/H GATE jack respectively. These connections are illustrated in Diagram 3. Set the switches and controls on the 2600 exactly as shown, paying particular attention to the switch directly above the S/H GATE jack.

DIAGRAM 3

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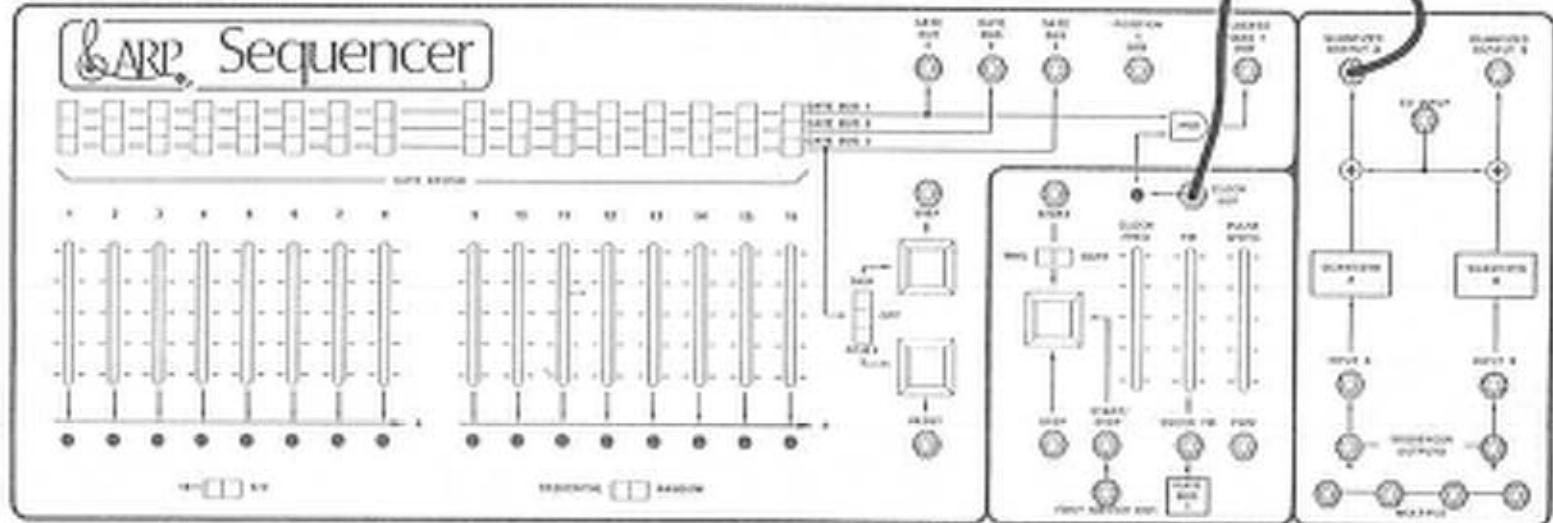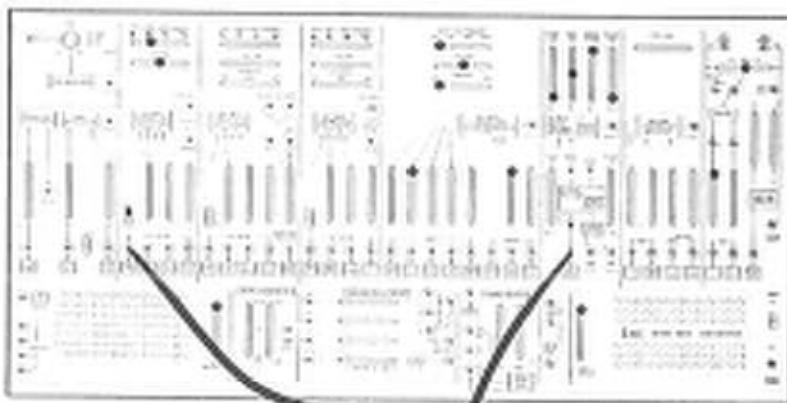
If you are using an AXXE or ODYSSEY, set the controls on the panels as shown in Diagrams 4 or 5. Hook the AXXE or ODYSSEY up to an amplifier and speaker. Set the volume so that the volume is listenable when you open the VCF FREQ slider. Bring the VCF FREQ slider back down when you have adjusted the volume.

DIAGRAM 4
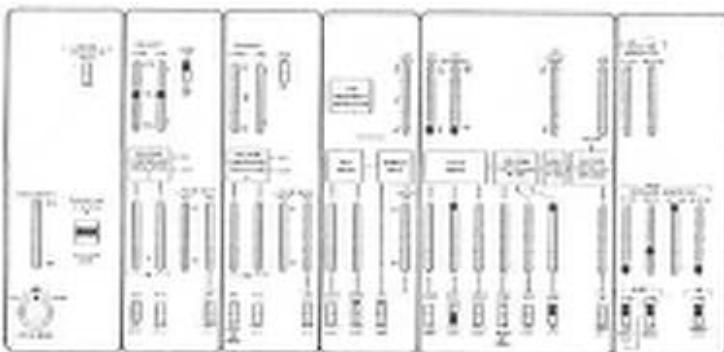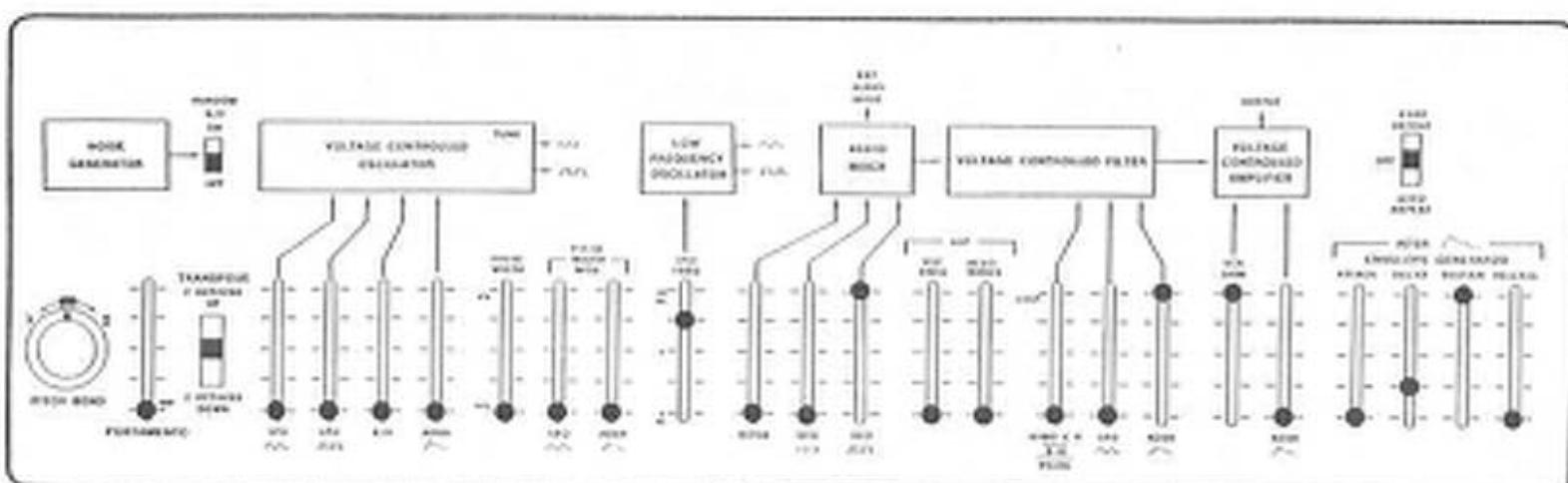
DIAGRAM 5

V. Experiments

The first series of experiments is designed to get you familiar with the tuning of a repetitive sequence.

1.

TUNING A SEQUENCE

Start by setting all the controls on your sequencer as shown back in Diagram 1. Stop the CLOCK and press "RESET" so that the sequencer is waiting in position 1. Now open the VCF FREQ control on your synthesizer so that you can hear the continuous sound of the oscillator. Slowly raise the position 1 slide control on the sequencer. You will hear the pitch of the tone rise in precise chromatic semitones. You will notice that the range of this control is exactly two octaves from the bottom to the top. Bring the Position 1 slider back down when you have finished experimenting.

Now advance the sequencer to position 2 by depressing the "STEP" button once. Notice that the position 2 slider is now active and that it behaves exactly as the position 1 did. You will note that the position 1 slider does not have any effect when the sequencer is not in position 1.

Starting at the bottom, raise the position 2 slider until the tone has gone up a major 3rd (4 semitones). Press the "RESET" button and the "STEP" button alternately to hear the two notes of the major third. Now advance the sequencer to position 3, and counting from the bottom of the slider, advance the position 3 slider 7 semitones to make a major 5th. Hit "RESET" and then "STEP" twice to hear all three notes of the major triad you have just tuned. Continue tuning all 16 steps to play the sequence shown in this musical example:

1   2   3   4   5   6   7   8

9   10   11   12   13   14   15   16

When you have finished, step through the whole sequence manually to check it against the music.

Now close the VCF FREQ control so that the sound disappears. Now start the sequencer CLOCK and the 16 notes you programmed should be played back automatically. Try adjusting the CLOCK FREQ control on the sequencer to make the sequencer go faster and slower. Try hitting the "RESET" button in the middle of the sequence. Notice that the sequencer will return to position 1 at any time. Notice also that hitting the "STEP" button will cause the sequencer to advance one position, even when the CLOCK is also running.

2.

USING THE POSITION GATE SWITCHES

Set the SKIP/OFF/RESET switch to "SKIP." Move various GATE ASSIGN switches to the lowest position and notice how the rhythmic and melodic effect of the sequence changes as you skip different notes of the sequence. By eliminating all the major thirds from the sequence, for instance, you can change the modality of the sequence so that it can be considered either major or minor.

When you have finished experimenting with the "SKIP" function, change to "RESET" and observe the effect of the sequence when it is shortened. Notice, for instance, that by resetting after 3 steps (GATE ASSIGN switch 4 down) you create triplets. By raising switch 4 and lowering 5, you change to a 4/4 rhythm.

When you have finished experimenting with the RESET function, change the SEQUENTIAL/RANDOM switch to RANDOM. You will now be hearing the same 16 notes, but in random order. Change to the SKIP function and you can eliminate any notes from the sequence using the GATE ASSIGN switches.

3.

CLOCK FM

As you will recall from earlier discussions, the CLOCK in the sequencer is actually a VCO similar to the VCOs in your synthesizer. It is designed, however, to operate only at subaudio frequencies. The CLOCK FM input on the sequencer works in much the same way as the FM inputs on the VCO in your synthesizer. The CLOCK FM input on your sequencer is normally connected through the jack to the output of GATE BUS 1. The output of GATE BUS 1 will be

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either zero volts or +10 volts, depending on whether the GATE ASSIGN switch for each position is set to GATE BUS 1 or not. In other words, if the sequencer is in position one and the GATE ASSIGN switch for position one is up, then a +10 volt signal will appear on GATE BUS 1. If the GATE ASSIGN switch is in any other position, then GATE BUS 1 will show zero volts.

Start with all the GATE ASSIGN switches in the middle position. Raise the CLOCK FM slide attenuator half-way up. Start the CLOCK and set the CLOCK FREQ for a fairly slow tempo. Now the first four GATE ASSIGN switches up to GATE BUS 1. Notice that the sequencer steps through those positions about twice as fast as through the others. Try to adjust the CLOCK FM slider so that the first four positions are exactly twice as fast as the others. Then move different combinations of GATE ASSIGN switches to the GATE BUS 1 position to get different rhythmic effects.

Using the method described above, try modifying the sequence you have tuned to create the following rhythm:

Now raise the CLOCK FM slider a little higher so that the positions assigned to GATE BUS 1 will step three times faster than normal. This adjustment can be facilitated by assigning the first three positions to GATE BUS 1, skipping 4, assigning 5 through 7, skipping 8, and so on. This arrangement will produce a triplet rhythm where the first three positions take the same time as the 4th does by itself.

Set the SKIP/OFF/RESET switch to "RESET." Put the 5th GATE ASSIGN switch to the low position and observe that the resultant four note sequence can still be modified rhythmically by setting the various GATE ASSIGN switches to either GATE BUS 1 or the middle (GATE BUS 2) positions.

Try different rhythms and different combinations of GATE ASSIGN switches. Notice that the SKIP function still works and that any note in the sequence can still be eliminated by "skipping."

4. USING GATE ASSIGN FOR ACCENTS

Set all the GATE ASSIGN switches up to the GATE BUS 1 position and close the CLOCK FM slider. Now remove the patch cord from the CLOCK OUT jack and plug it into the jack marked CLOCKED GATE 1 OUT. Set the release time on your synthesizer's envelope generator about half way up. Now start the sequencer CLOCK. Aside from the longer release time, you should not notice any difference at this point. Now start moving GATE ASSIGN switches back to the middle position. Notice that you will not get a new attack on a note unless the GATE ASSIGN switch is on GATE BUS 1. If you move all the GATE ASSIGN switches to the middle position, there will be no sound at all. Try it! Try bringing the GATE ASSIGN switches back up one at a time. Try using the GATE ASSIGN switches, along with the RESET and SKIP functions to create some interesting rhythms.

5.
CLOCK PULSE WIDTH

Just like the VCO on your synthesizer, the CLOCK in your sequencer produces a pulse wave output of variable duty cycle. You may recall the following illustration from your synthesizer owners' manual:

UPPER PORTION +10V

LOWER PORTION 0V   ONE CLOCK CYCLE
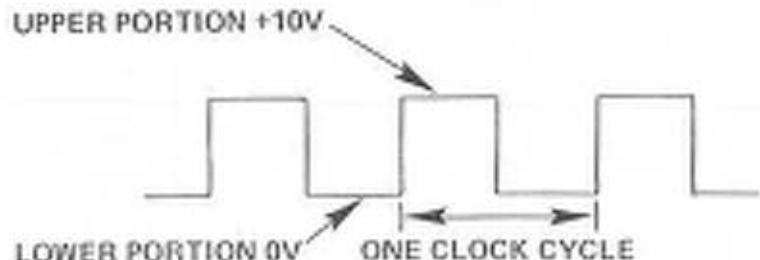
During each cycle of the clock, the CLOCK OUT is at +10v for a portion of the cycle, and then drops back to 0 volts for the remainder of the cycle. If the ratio of the high portion to the low portion is very small, the waveform is said to be a "narrow pulse," and if the high portion and low portion are equal, then the waveform is said to be a "square wave."

The PULSE WIDTH slider on the sequencer allows you to vary the width of the CLOCK from very narrow to very wide. Remove the patch cord from the CLOCK GATE 1 OUT jack and return it to the CLOCK OUT jack. Move the Release time (R) on your synthesizer's envelope generator to minimum, Start CLOCK and set the CLOCK FREQ for a fairly slow tempo. Now vary the setting of the PULSE WIDTH control from bottom to top. Notice that the notes change from staccato to legato. Note particularly that the

PULSE WIDTH control does not effect the tempo, only the duration of the sound.

Like the VCOs in your synthesizer, the PULSE WIDTH can also be voltage controlled. An input jack, marked PWM, is provided for this purpose. With the sequencer running, set the PULSE WIDTH slider almost all the way down so that you are hearing very short staccato notes. Plug one end of a patch cord into the jack marked "PWM." Plug the other end into the jack marked GATE BUS 1. All the GATE ASSIGN switches should be in the middle position at this point. Now raise the GATE ASSIGN switches one at a time to the GATE BUS 1 position and notice that as you do so, the notes corresponding to these switches become long instead of staccato.

Alternatively, you can use the foot switch to select either long or short notes. Remove the patch cord from the GATE BUS 1 jack and plug it into the FOOT SWITCH OUT jack. Plug a dummy plug or one end of another patch cord into the START/STOP jack so that the foot switch will not also start and stop the clock. Now when you depress the foot switch, a positive voltage is applied to the PWM input which lengthens the duty cycle of the Clock pulse. You might wish to try using the foot switch with the CLOCK FN input and the STEP AND RESET jacks while you are experimenting with the foot switch.

6.
TRIG/GATE SWITCH

Remove all the patch cords and dummy plugs except the two

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patch cords connecting the sequencer to the synthesizer. Set up the usual sequence so that you can start and stop the clock with the foot switch. Turn the TRIG/GATE switch to GATE. Notice that the clock will now run only when you are holding down either the START/STOP button or the foot switch. If you supply a +10v GATE signal from your synthesizer to the START jack on the sequencer, the CLOCK will run only as long as the +10 volts is present. With the TRIG/GATE switch in the TRIG position, a signal applied to the START input would start the clock. The clock would then continue to run until a pulse is applied to either the STOP or the START/STOP inputs.

8. CV INPUT JACK

The CV INPUT jack allows you to "transpose" the melodic line set up on your sequencer by using the keyboard on your synthesizer. Saving the patch set up in 5.7, connect another patch cord from the CV OUT jack on your synthesizer to the CV INPUT jack on the sequencer. The voltage from your synthesizer keyboard will now be added to the outputs of the sequencer, thereby transposing the preset melodic pattern.

7. POSITION 1 OUT JACK

The POSITION 1 OUT jack puts out a pulse each time the sequencer steps to position one. Get all the controls as shown in Diagram 2 again. Connect a patch cord from the jack marked "STOP" to the jack marked "POSITION 1 OUT." Start the clock by pressing the START/STOP button. The sequencer will go around once and then stop automatically when it reaches the first position. The pulse that the "POSITION 1 OUT" jack puts out when the sequencer comes around to position 1 stops the clock. Take another patch cord and connect it between the "TRIG OUT" jack on your synthesizer and the "START" jack on the sequencer. You will now be able to start the clock any time you hit a key on the keyboard. The sequencer will cycle through one complete count and then stop on position 1.

9. SEQUENCER OUTPUTS

In the lower right hand corner of your sequencer you will find two output jacks labeled SEQUENCER OUTPUTS. Set up the patch shown in Diagram 2 once more, and hit the RESET button. You will recall that by moving the slider for position 1 up and down, you get a chromatic scale. Now remove the patch cord from "QUANTIZED OUTPUT A" and plug it into the SEQUENCER OUTPUT jack just above the MULTIPLE. You will note two changes in response to moving the position 1 slider. First, the pitch moves continuously, rather than in semitone intervals. Secondly, the pitch range of the slider is much greater—approximately 10 octaves vs. 2 octaves for the QUANTIZED OUTPUT.

Because the SEQUENCER OUTPUTS are continuous and very wide range, they are not recommended for determining pitch. You

will find it very tricky to tune an accurate melodic line with the SEQUENCER OUTPUTS. The wide range of these outputs can be very useful for other effects, however.

Move the patch cord back to the QUANTIZED OUTPUT A. Set up the patch shown in Diagram 6. Set the ATTACK and RELEASE sliders on your synthesizer's envelope generator to minimum and set the SUSTAIN control to maximum. Note that the sequencer is set for 8/2 operations. When you start the clock, an eight note sequence will be heard. The pitches of the eight note sequence are of course determined by the settings of the first eight sliders. The second eight sliders (9 - 16) are connected to the PWM input and hence will

determine whether notes will be short or long. The higher the slider setting, the more sustained the note. Slow down the clock, if necessary, to observe the effect carefully.

Alternatively, you can use the SEQUENCER OUTPUT to control the brightness of the sound for each pitch, thereby creating accents. This patch can be created easily on a 2600 by simply connecting the SEQUENCER OUTPUT to the VCF control input. On an AXXE or ODYSSEY, the sequencer can be connected to the VCF by plugging an appropriate cable into the FOOT PEDAL jack and raising the FOOT PEDAL attenuator on the panel of the synthesizer. Patches for this effect can be found later in this book.
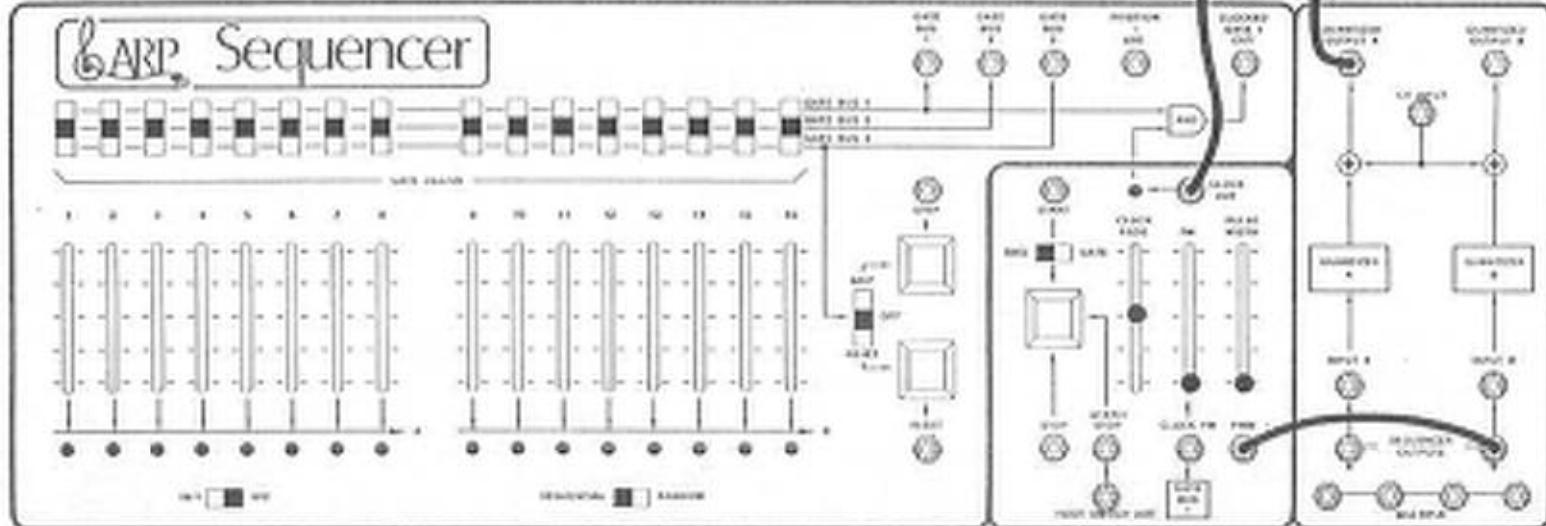
Panel Control Description Chart

POSITION GATE ASSIGNMENT SWITCHES. These switches channel a gate signal to one of three bus line outputs. These outputs can be connected (via patch cords) to control filters, amplifiers, or envelope inputs to create accents, syncopation, etc.

POSITION TUNING SLIDERS. Use these for tuning individual steps of the sequence in either the 2 octave quantized range or the 10 octave unquantized range.

POSITION LEDS (Light Emitting Diodes). These denote to which step (16/1) mode or steps (8/2) mode the sequencer has advanced for quick visual tracking.

16/1 AND 8/2 MODE SWITCH. This switch allows the sequencer to step 16 times and then reset automatically; or step the "A" bank 8 times in parallel with the "B" bank, for harmonies, sequences of two-note intervals and other uses.
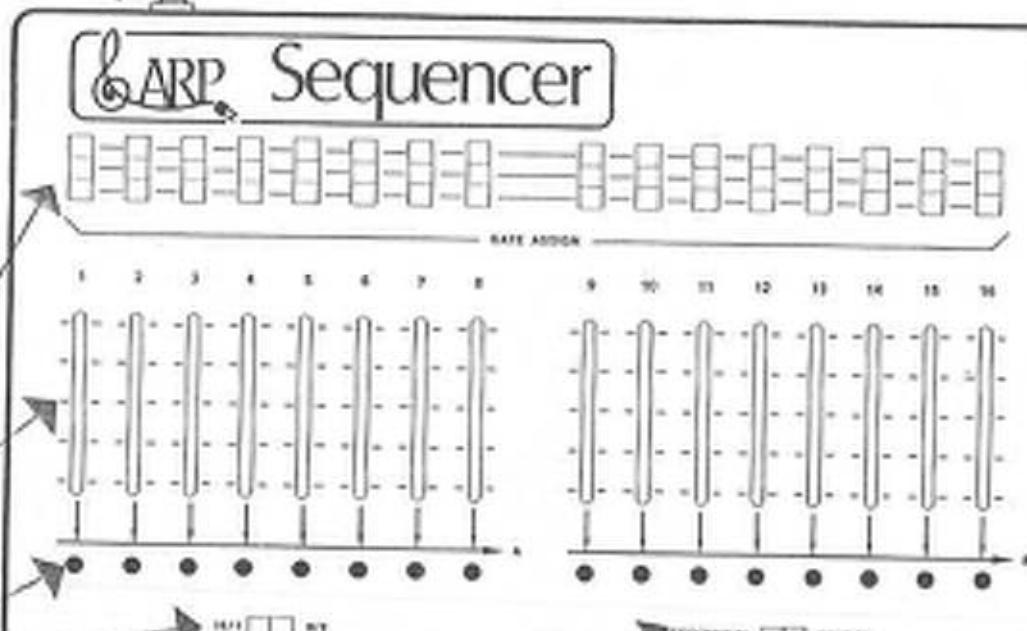
SEQUENTIAL/RANDOM SWITCH. Allows clock to advance to each successive position or sets clock "strike" positions randomly, much like a sample and hold on a synthesizer.

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GATE OUT JACKS (FROM GATE ASSIGNMENT SWITCHES). Connect these to filter control inputs, or other inputs of synthesizer for variety of musical or rhythmic effects.

POSITION ONE OUT. Use for accent on first beat, or use to trigger another sequence.

CLOCKED GATE ONE OUT. Use this into filter or amplifier control input. Sharpen articulation with Pulse Width(PW) sliders on clock.

QUANTIZED OUTPUT. Plug this into CV input of oscillator. Position sliders will tune oscillators in musical ½ steps using this output.

CV IN. Establishes voltage reference for sequencer. Plug keyboard CV output into this jack for control of oscillator from keyboard.

QUANTIZER INPUTS. When a patch cord is plugged into these jacks, the connection from the sequencer outputs is temporarily disconnected. The quantizer can then be used separate from the sequencer.

SEQUENCER OUTPUTS. An unquantized voltage useful for opening or closing VCFs and VCAs, or use it to tune oscillators for a 10 octave range.

SKIP/RESET SWITCH. Automatically skips or resets when used with Gate Bus 3. These functions may also be accomplished with external control inputs, or manually, with buttons.

CLOCK CONTROLS. Jacks permit patching into clock to control speed, START/STOP, stepping and pulse width of clock. Pulse width can be used to affect release time of the envelope generator.

MULTIPLE JACKS. Allows you to divide one output into three for control of several functions at once. Can also be used to mix three inputs to one output.

VI. Patches

No doubt by this time you have discovered many new sound textures using your sequencer and your own imagination. The following patches are designed to help you create even more effects so that you can experiment further and upgrade your own knowledge of the characteristics of the sequencer.

Refer to Section IV, HOOKING UP TO YOUR SYNTHESIZER, then patch the appropriate connections on your sequencer to your synthesizer.

Odyssey owners may use the Axxe patches; hookups and slider positions are the same.

Please note that all slides not illustrated should be all the way down, or all the way to the left on the 2600. Switch positions not indicated will have no affect on the sound output.

FIVE EASY STEPS FOR AN INSTANT SEQUENCE

These five steps were designed to help you set a basic sequence, very quickly. You should keep this format in mind whenever you set up a sequential patch, even after you are experienced in the manipulation of the controls.

Step 1. Interface the sequencer with your synthesizer as described in Section IV.

Step 2. Set the controls on your sequencer as follows:
   a. 16/1 sequential mode
   b. stop clock
   c. push reset button

Step 3. Set up the patch on the synthesizer that you wish to be sequenced.

Step 4. Open filter or amplifier so that you can hear the oscillator that you are tuning. Tune each position, step by step until you have completed the desired pattern.

Step 5. Hit the start/stop button, and go!
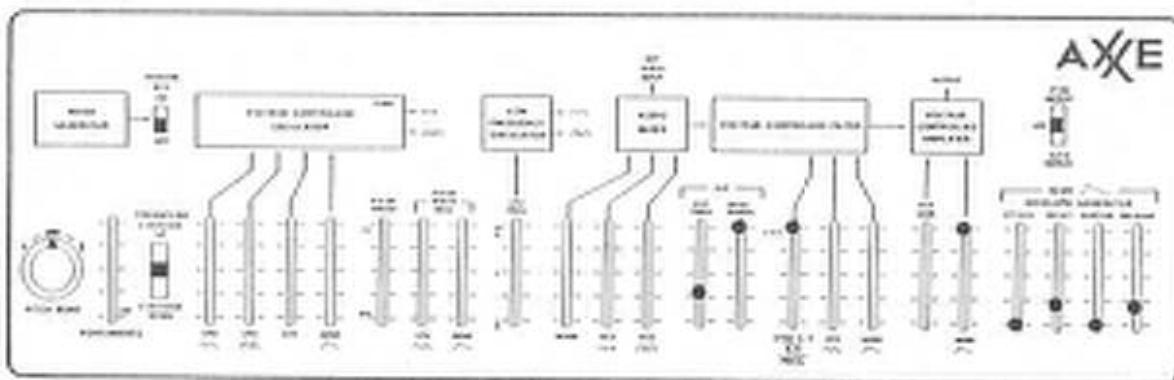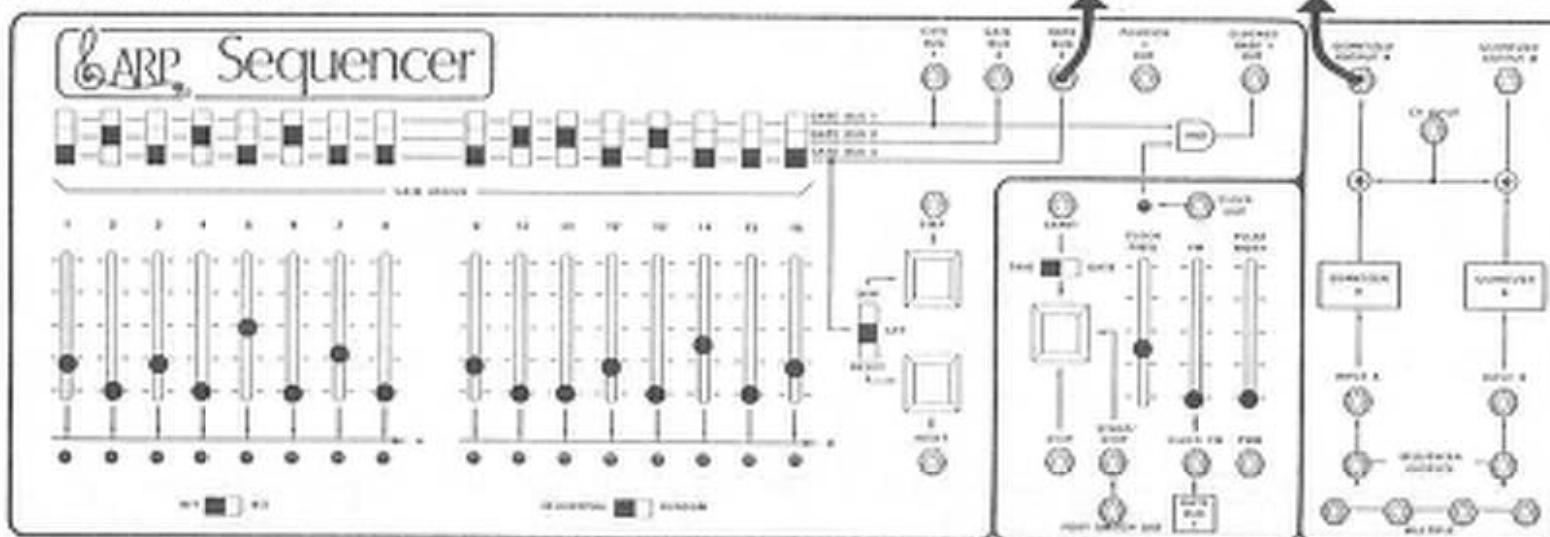
18

1. Song of the Congo

TO GATE IN

TO CV IN

ARP Sequencer

2. Heavy Bass Sequence

3. Boogie Bass Line

TO GATE IN TO CV IN TO CV OUT

ARP Sequencer

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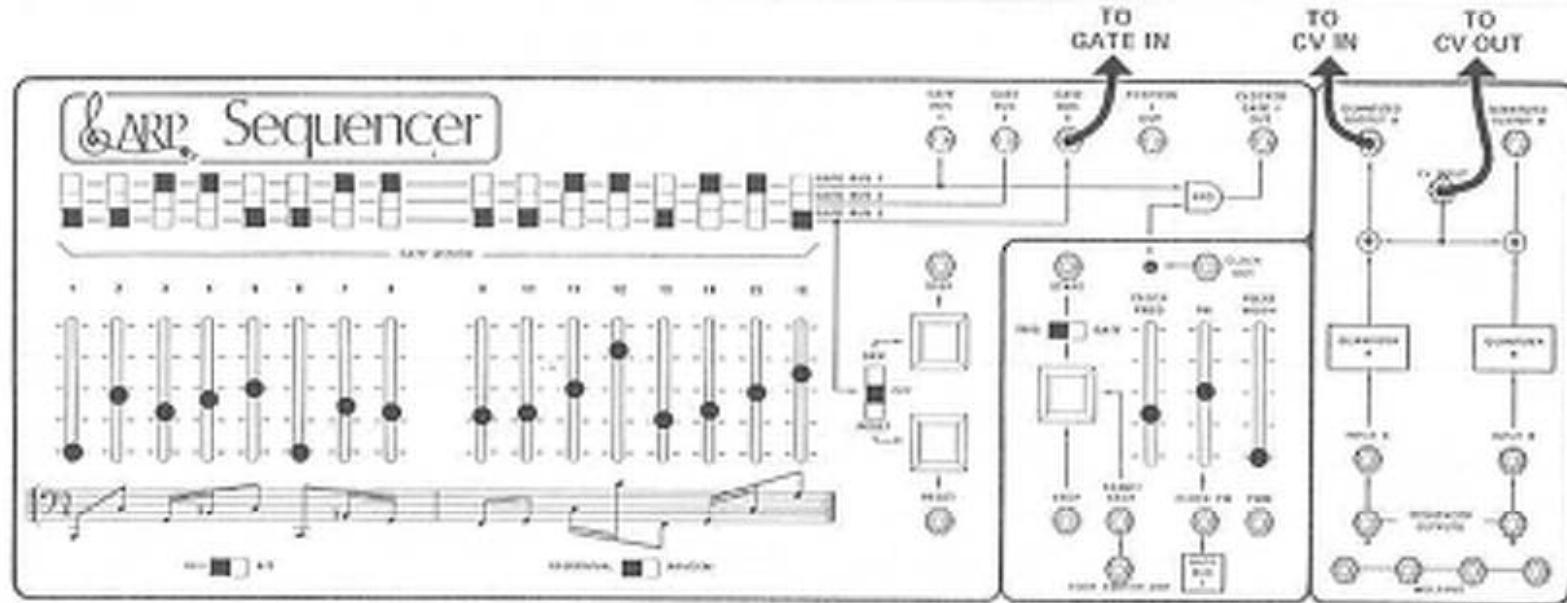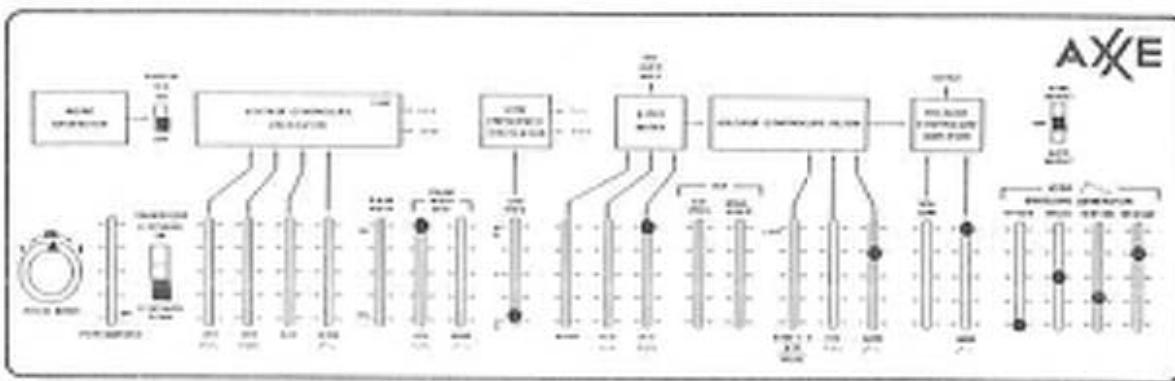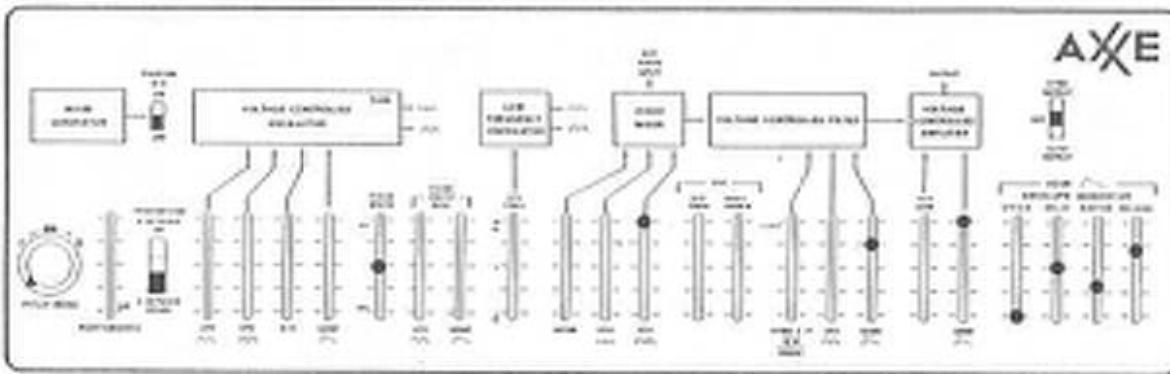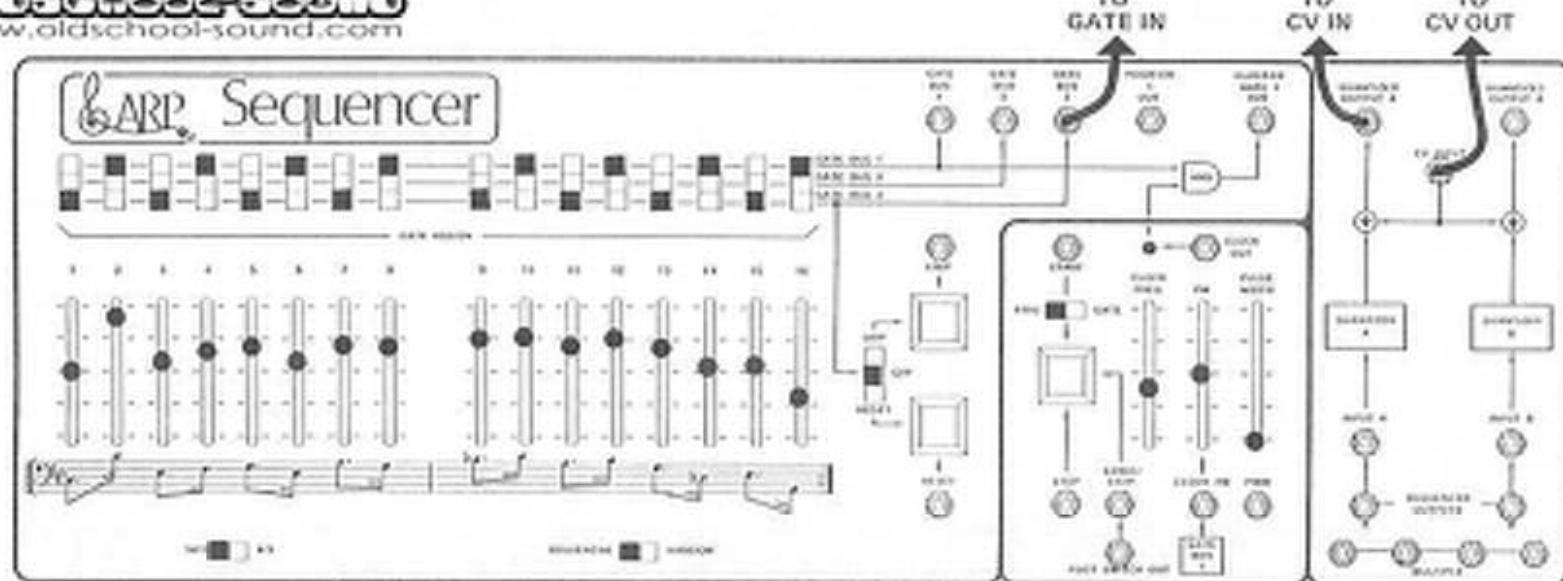
4. Cascading Arpeggios

TO GATE IN   TO CV IN   TO CV OUT
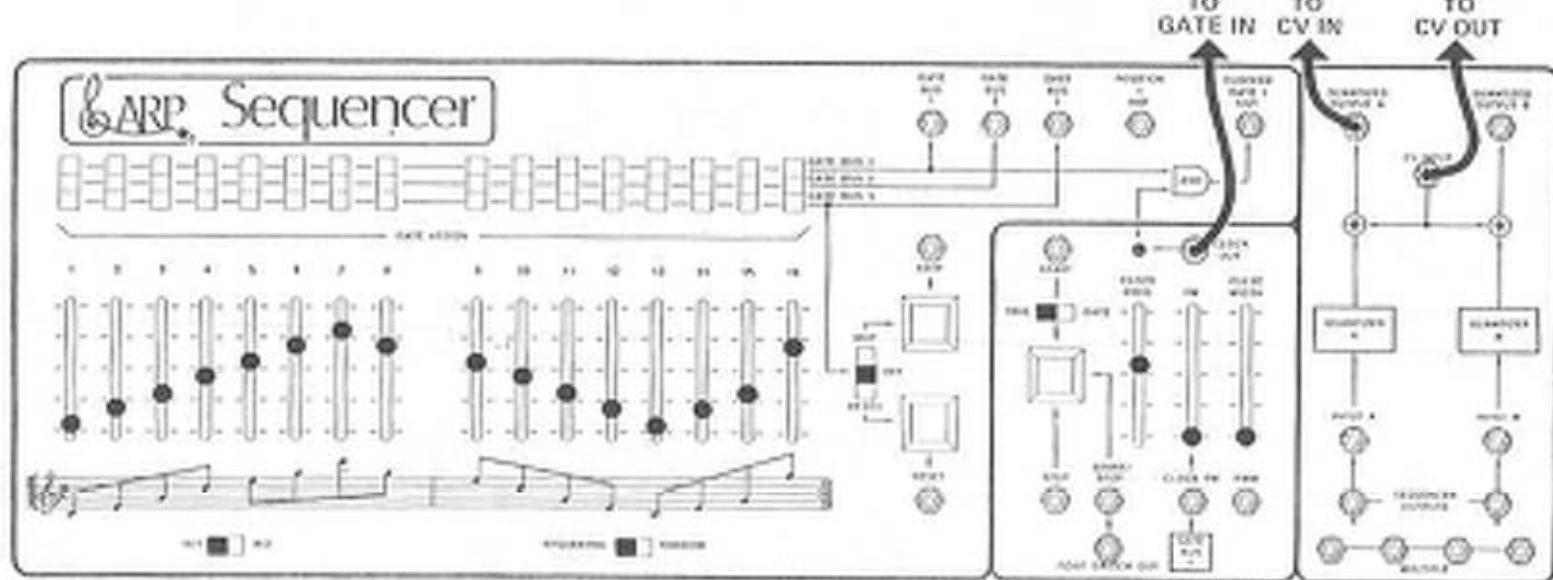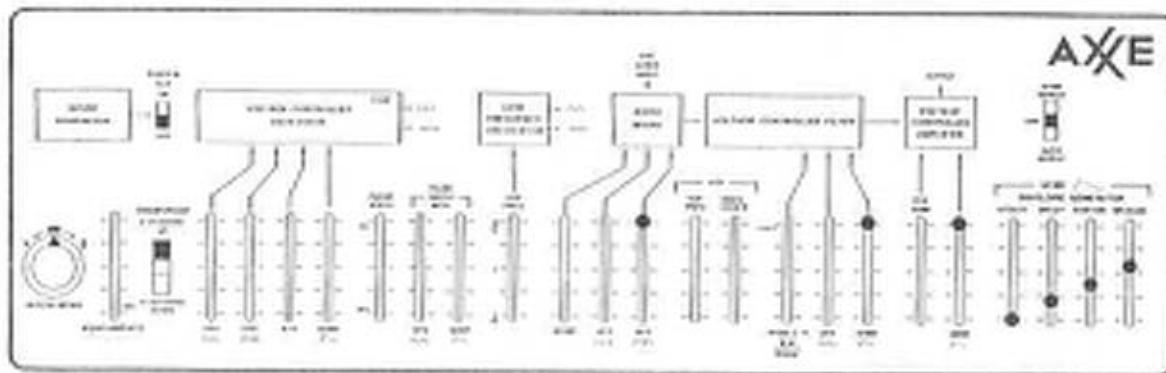
5. Superstar Bass Line


TO GATE IN   TO CV IN   TO CV OUT
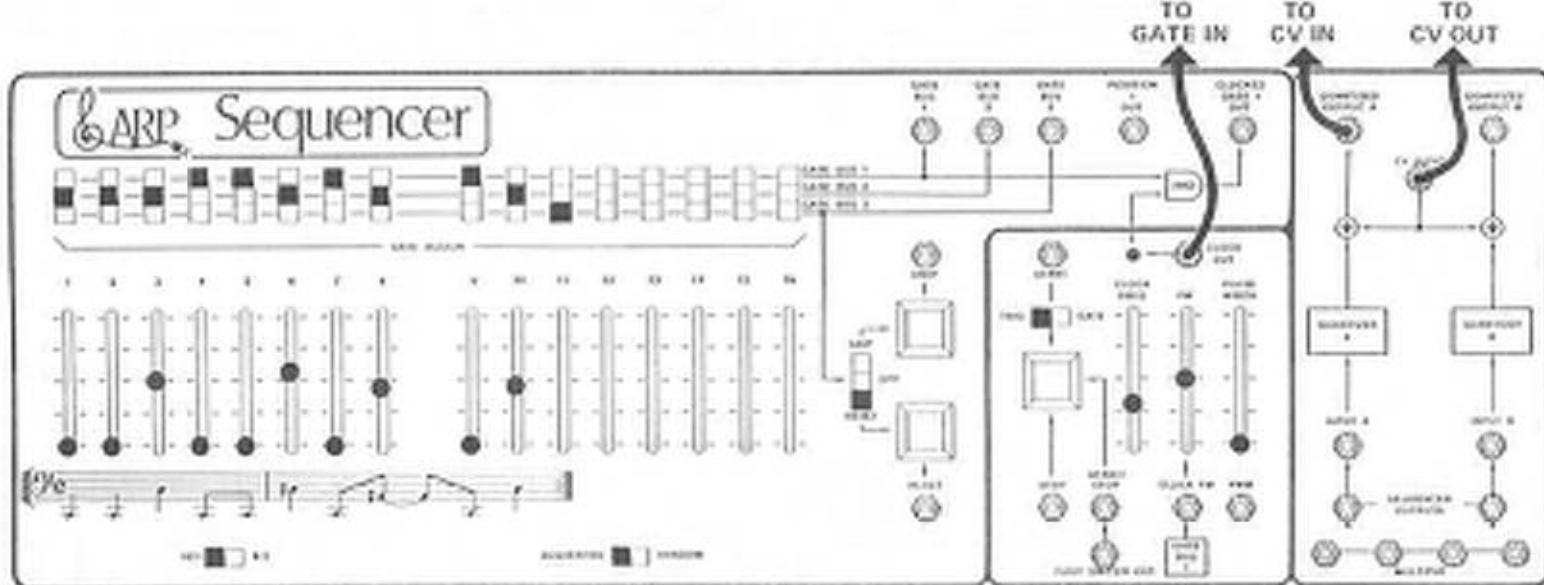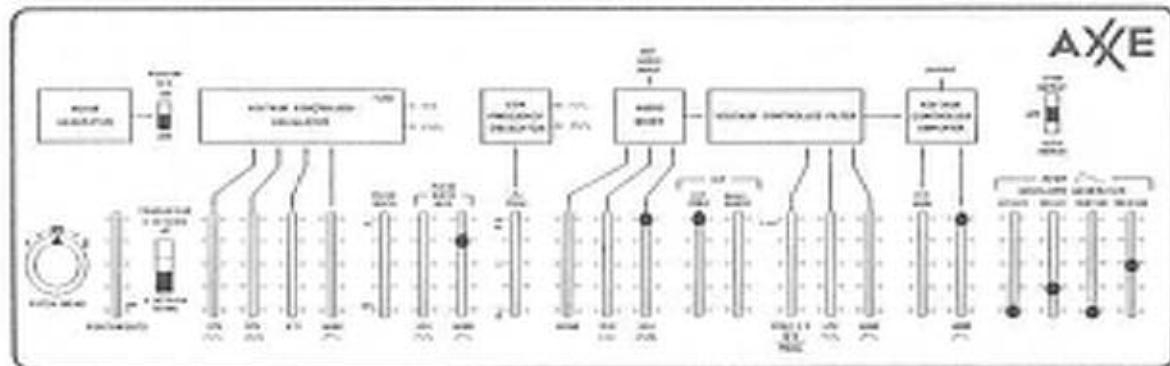
6. Superstar
Bass Line
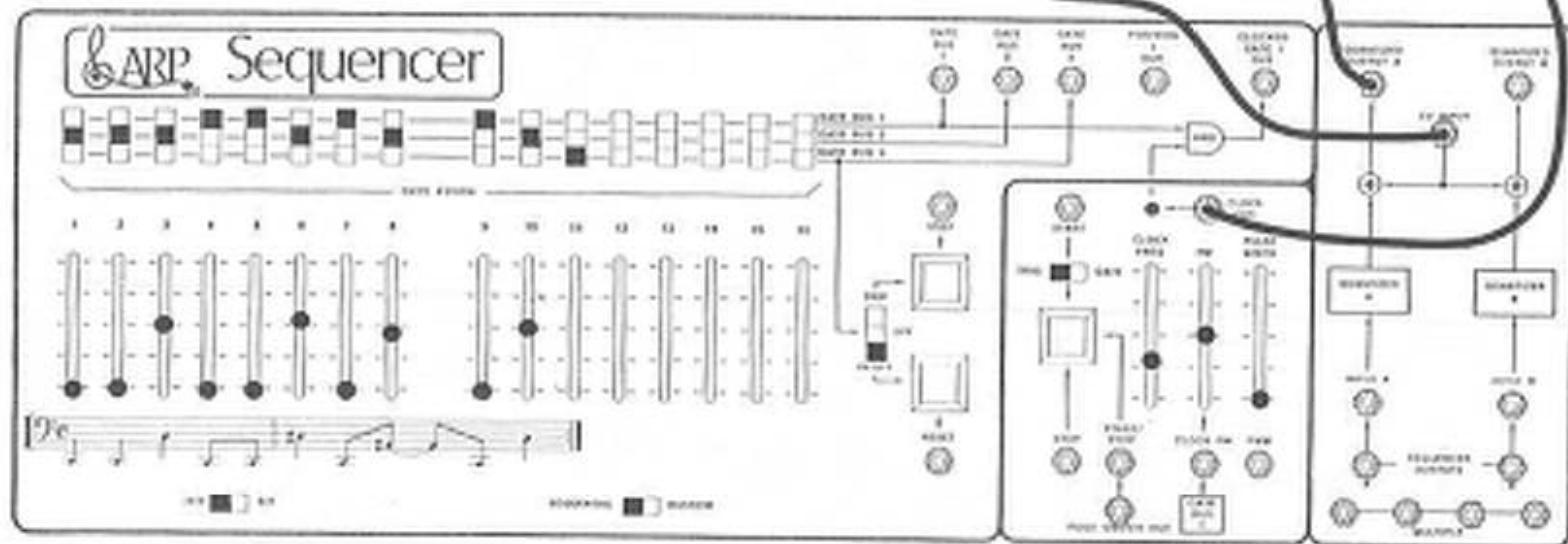
7. Sequenced Resonance

Tune VCOs to a triad.
(This actually controls the filter
in steps—a very desirable
alternative to "sweeping" the
filter.)
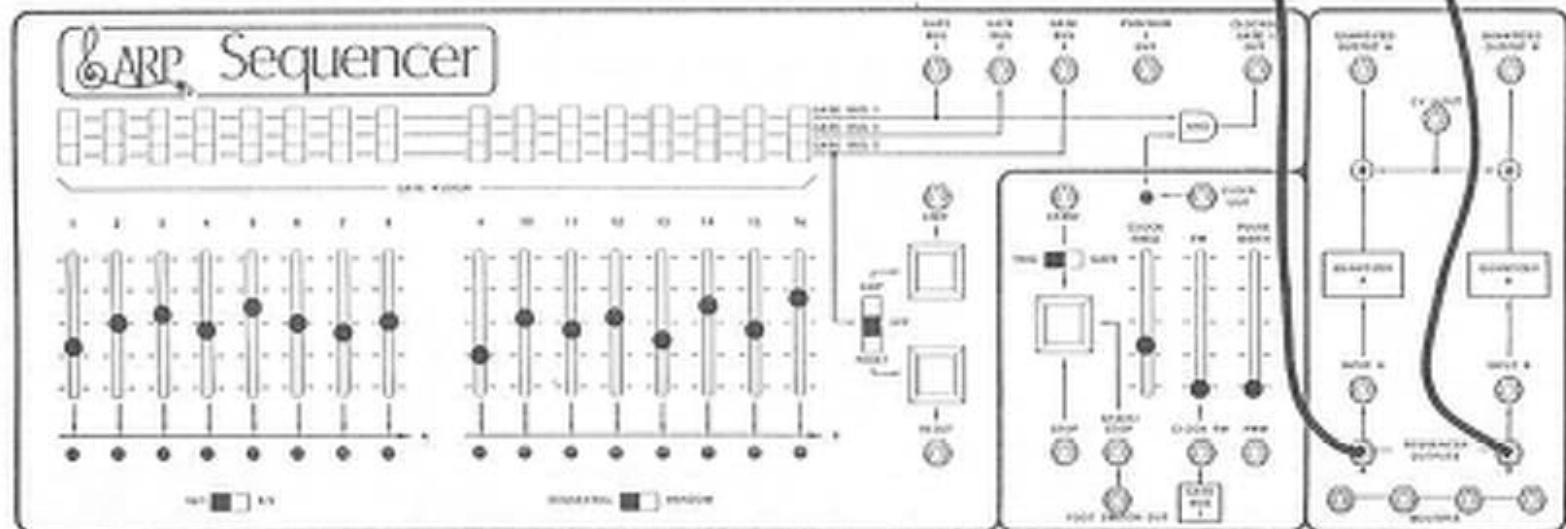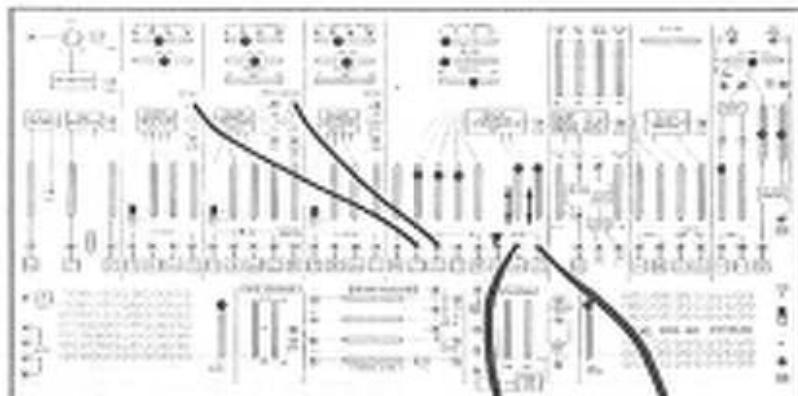
8. Quantized String Line

Tune VCO 1 & 2 to unison, slightly out of tune.

OLDSCHOOL-SOUND
www.oldschool-sound.com
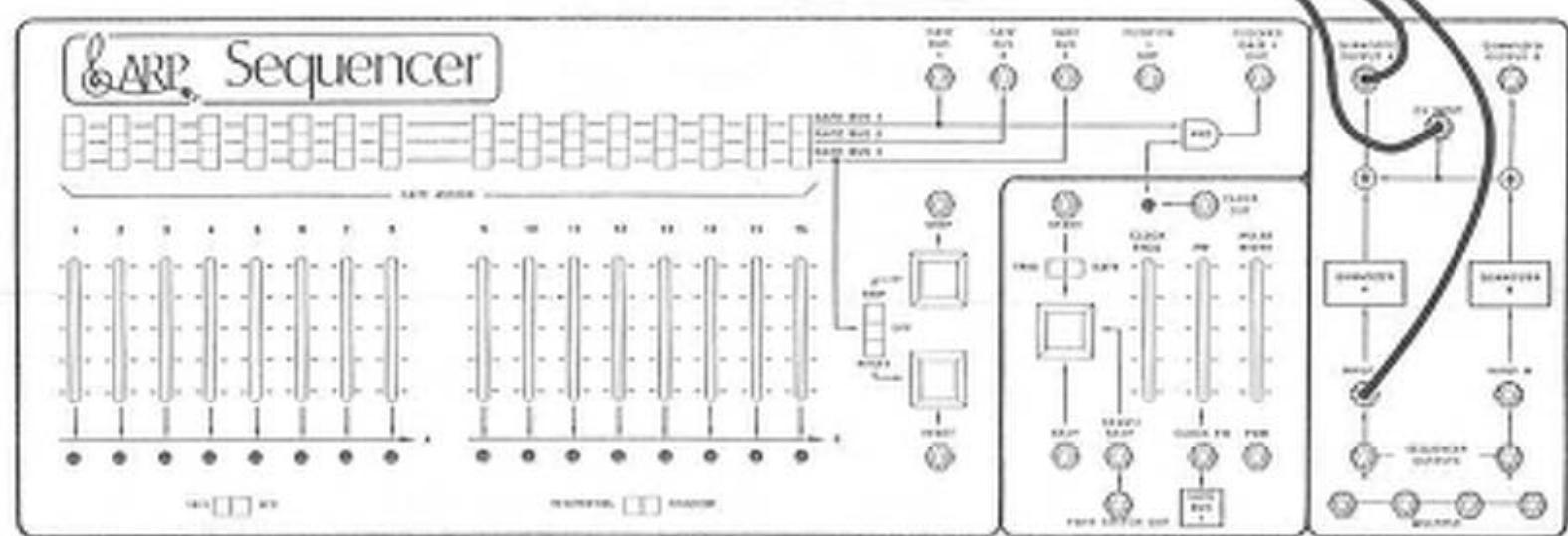
9. Exhilarating Arpeggios

Tune VCO 1 & 2 to unison.

Tune positions with MODE switch in 16/1 position, Then switch to 8/2.
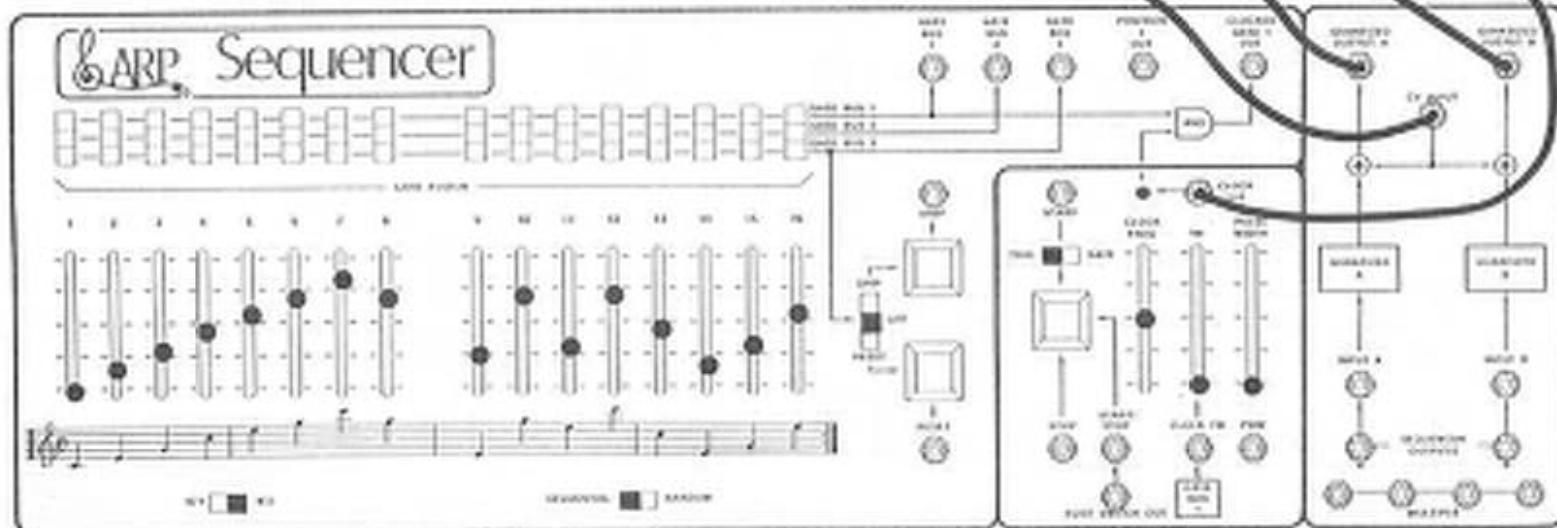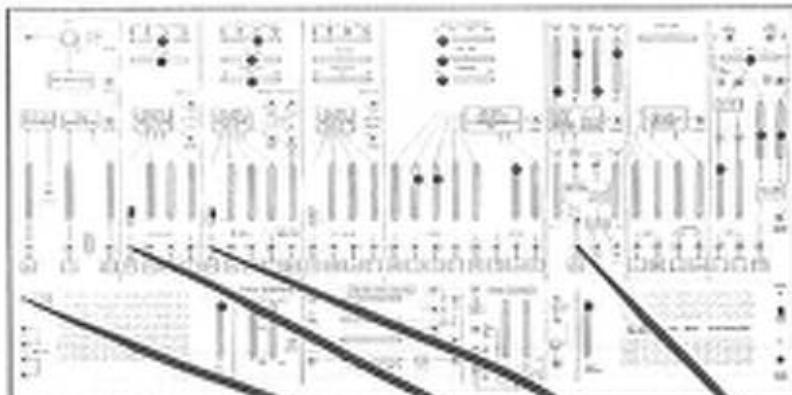
10. Restless Natives

Play different notes on keyboard
for different pitched cowbell.
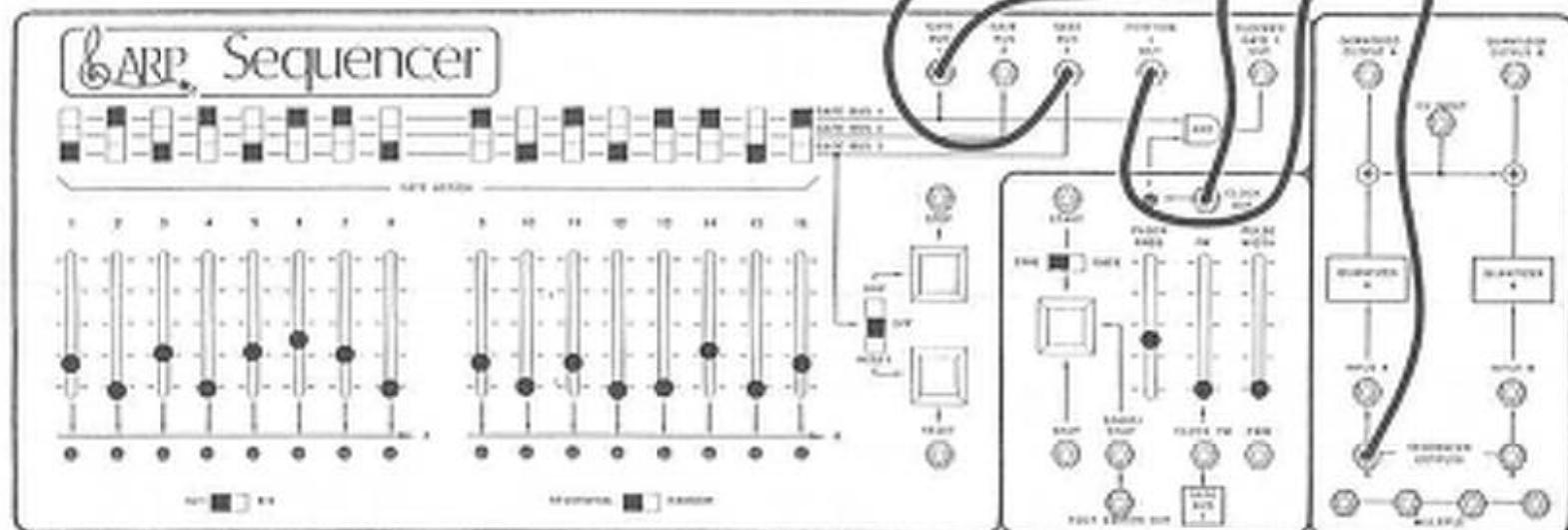
# 11. Using the Sequencer as a Waveform Generator

With the help of an external audio oscillator, you can change the sequencer into a unique waveform generator. With it, you can add or subtract any or all of the individual harmonics that you wish. Experiment by raising or lowering the position tuning sliders.
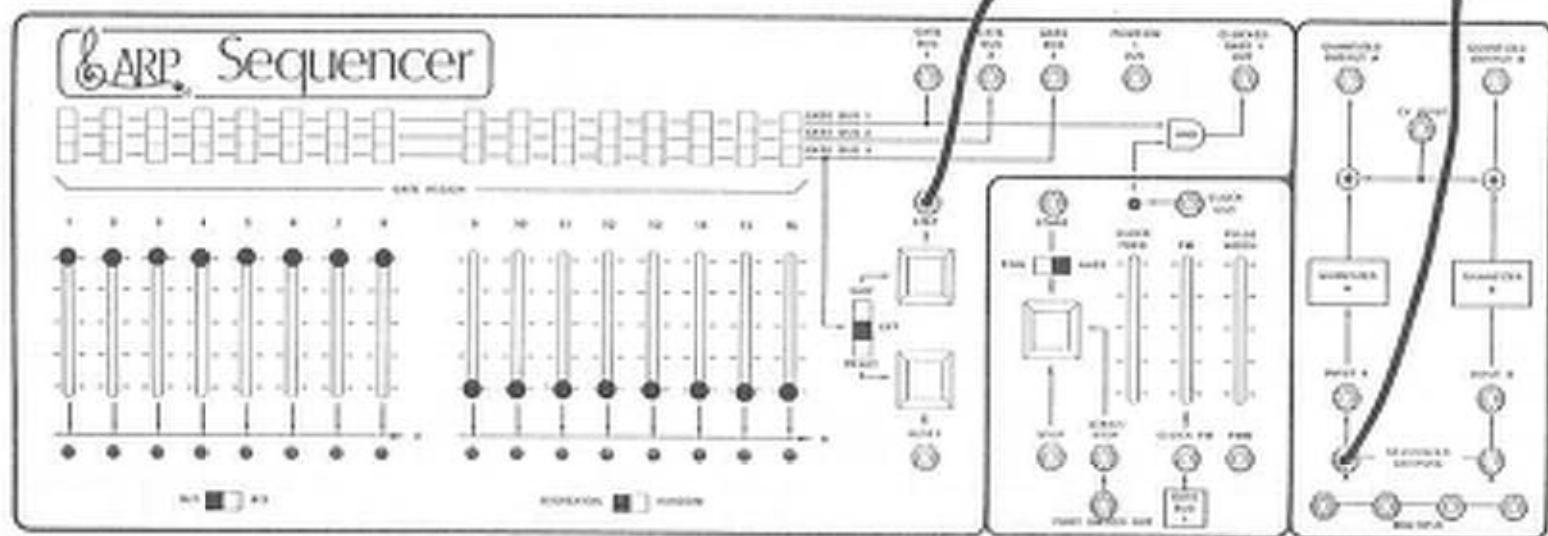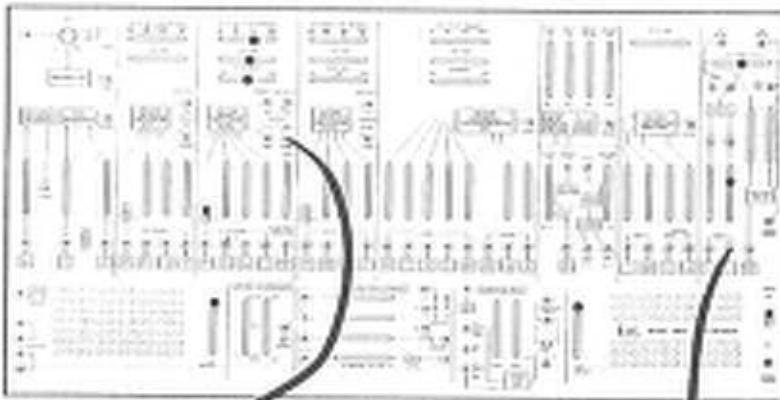
12. Special Odyssey Patch No. 1

These two Odyssey patches utilize the fact that the "PEDAL" jack can act like a control input, and thus can be channeled to the VCF or VCO 2, without affecting the keyboard CV. You will need a male ¼" phone jack to a male "mini" phone jack cord.

Tune VCOs 1 and 2 an octave apart.

TO
GATE IN

TO PEDAL
JACK
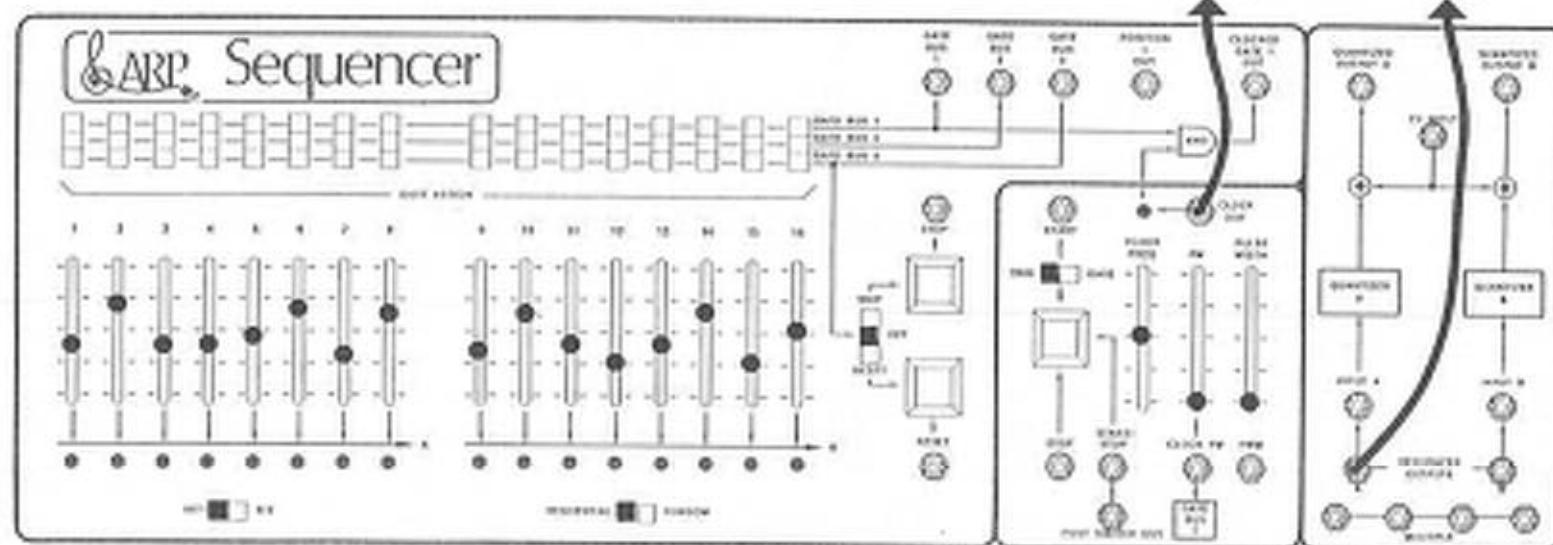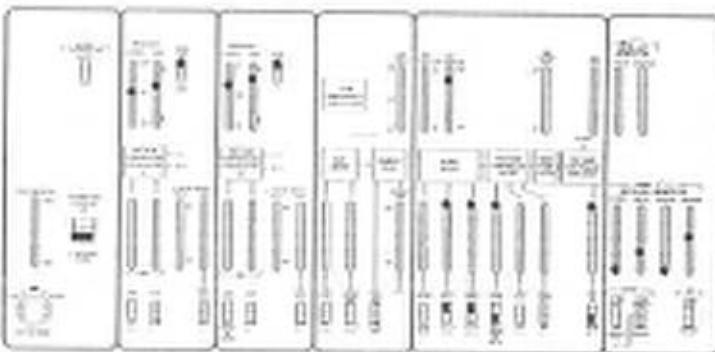
13. Special Odyssey Patch No. 2
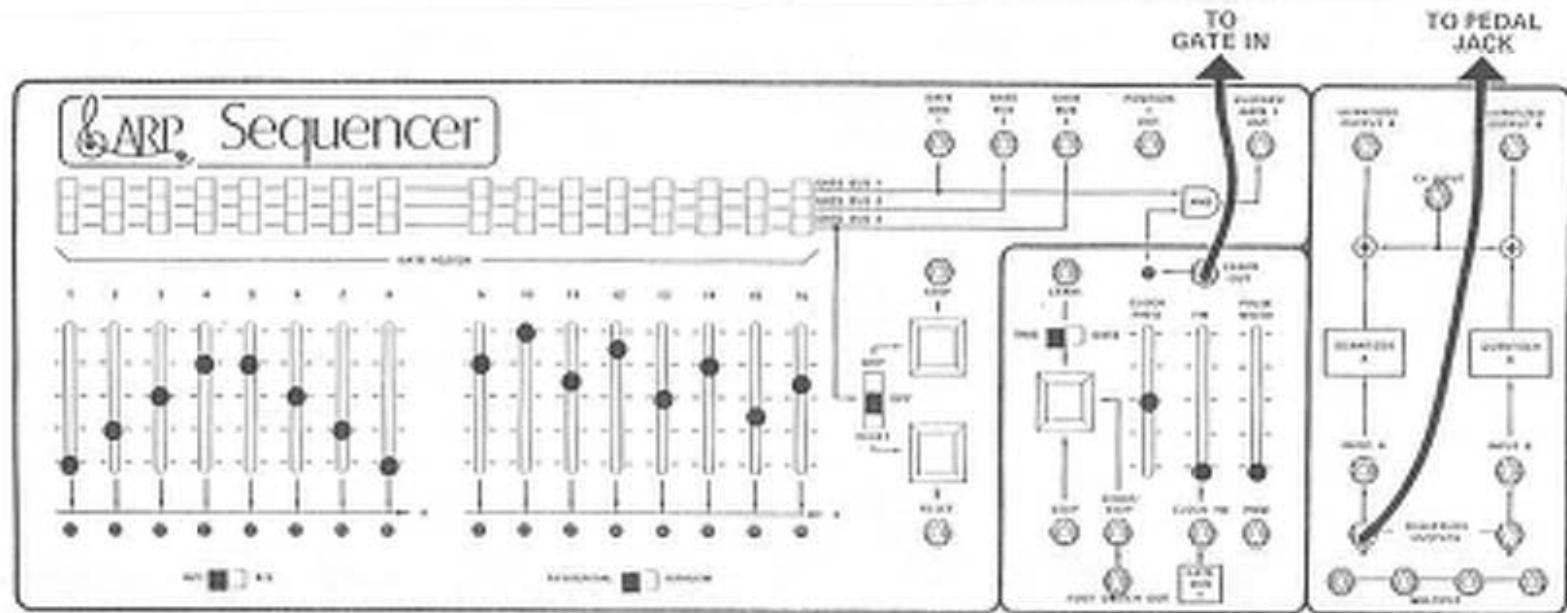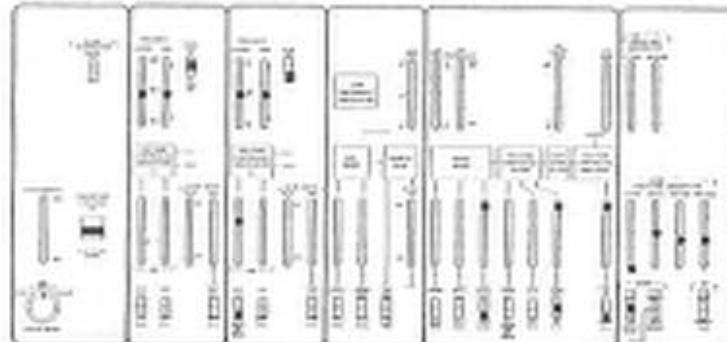
VII. Stacking Two Sequencers

For best results in this section, it is recommended that these patches be used in conjunction with the ARP 2600.

Basically, there are two ways to connect two sequencers: series and parallel. The series connection allows the first sequencer to turn on the second, then turn itself off. Essentially, they alternate their control of the synthesizer. In the parallel arrangement, both sequencers are operating at the same time, working together to achieve an effect. Here, the sequencers are interfaced with each other, usually a little differently than with the series method.

Patch 1 indicates the connection for achieving 32 positions from two 16 note sequencers. Set up the patch as shown in the diagram. Raise position gate 16 to gate bus 1 on each sequencer. Then advance (depress STEP button) the sequencer to position 16. The clock frequency can be set differently for each sequencer because sequencer "A" turns on sequencer "B" when position 16 is reached by "A." "A" then turns itself off. The clock frequency of each sequencer should be adjusted so that rhythmic cadence is kept when

you are using this patch in a musical context. Both clocks do NOT have to run at the same speed, however, and interesting results can be achieved in this manner.

Now raise position gate switches 4 and 10 on sequencer "A" and switches 2 and 14 on sequencer "B" to gate bus 1 position. Drop position 16 to gate bus 2 or 3 on each sequencer. As you learned earlier in this manual, more than one GATE ASSIGNMENT SWITCH can be raised to the GATE BUS 1 position. Once the sequencers are set up this way, manually step sequencer "A" to position 4. This will turn on sequencer "B" until it reaches position 2; then "A" will advance to position 10; then "B" will advance to position 14; then "A" will advance through 16 and continue on to position 4. You still have 32 notes, but now sections of each sequencer are used alternately.

Now set the GATE ASSIGNMENT SWITCHES as before with just position 16 used on both "A" and "B." When B's TRIGGER/GATE switch is changed to TRIGGER ("A" still is GATE position)

"B" will count it's sequence 16 times. "A" will advance ONE position for every 16 counts of "B." "A" will transpose the key of B's starting note 16 times until A counts to position 16 when it will count through it's sequence ONCE and then repeat this whole set of events. Using the RANDOM position will add excitement to the way this patch performs. Also, you can place sequencer A's clock into TRIGGER mode and leave sequencer B in GATE mode. The reverse effect has now been set up—just follow the earlier instructions to get this patch cooking!

For operation in the parallel mode, PATCH 2 illustrates a unique melodic effect. Set up the tuning as illustrated and start "B" with the START button. This will also start "A." Changing and cascading harmonies are possible in this manner when the two sequences are operating with different reset positions. If sequencer A's CLOCK OUT light is on all the time when this patch is operating, it means that "A" is turned on IN ADDITION to being stepped (slaved to B). Simply depress the START button and the CLOCK OUT light will follow the beat of B's clock.

We can't show you all the possibilities but when your imagination takes over, you'll easily see the unlimited versatility and applications of multiple sequencer events. If you have any further questions, see your nearest ARP dealer or contact the CUSTOMER SERVICE department at the ARP factory.

1. Series Interface


B ARP Sequencer
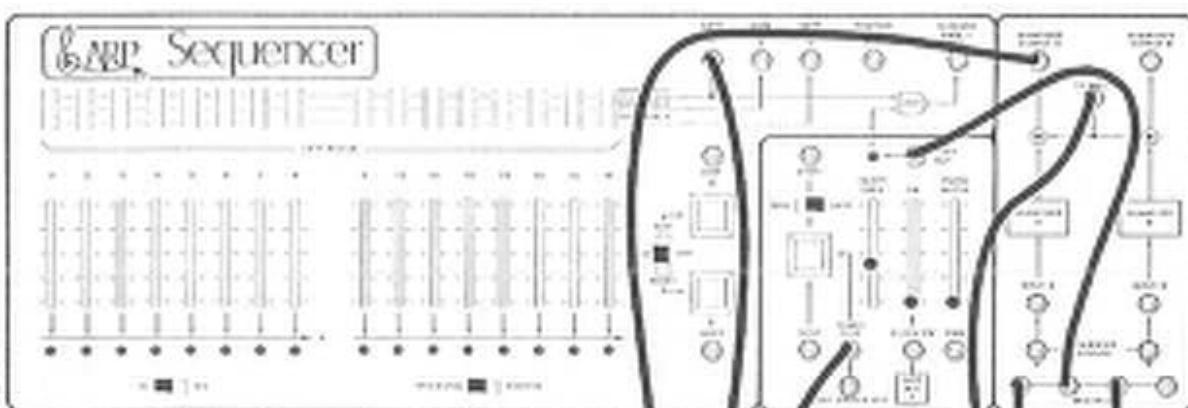
TO KBD
CV IN

FROM KBD
CV OUTPUT

TO
GATE IN
OR
S/H GATE

A ARP Sequencer

2. Parallel Interface

KBD CV IN
TO VCO 1

KBD CV
OUTPUT

TO S/H GATE
INPUT

KBD CV IN
TO VCO 2
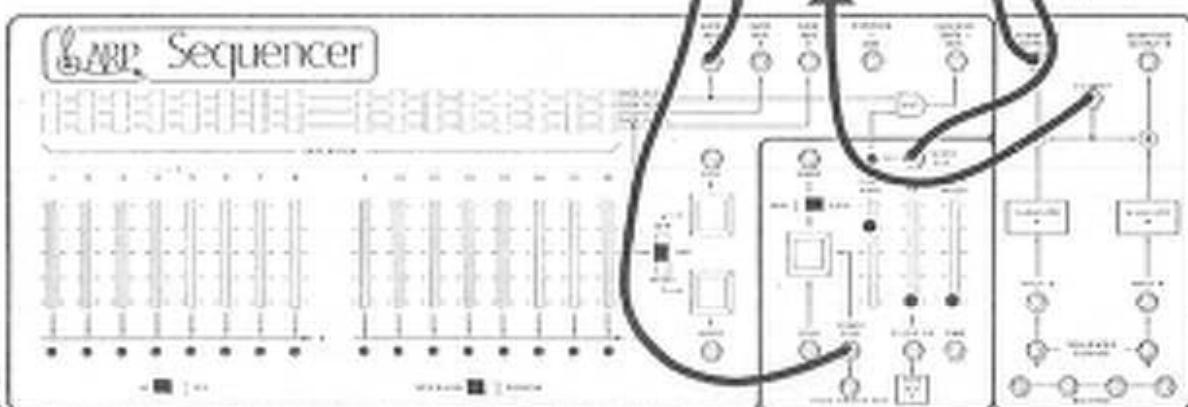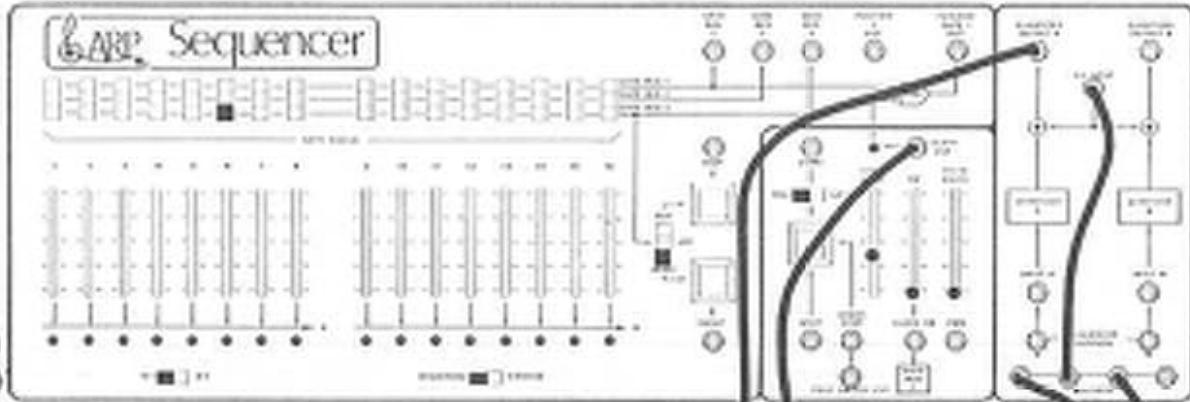
OLDSCHOOL-SOUND
www.oldschool-sound.com
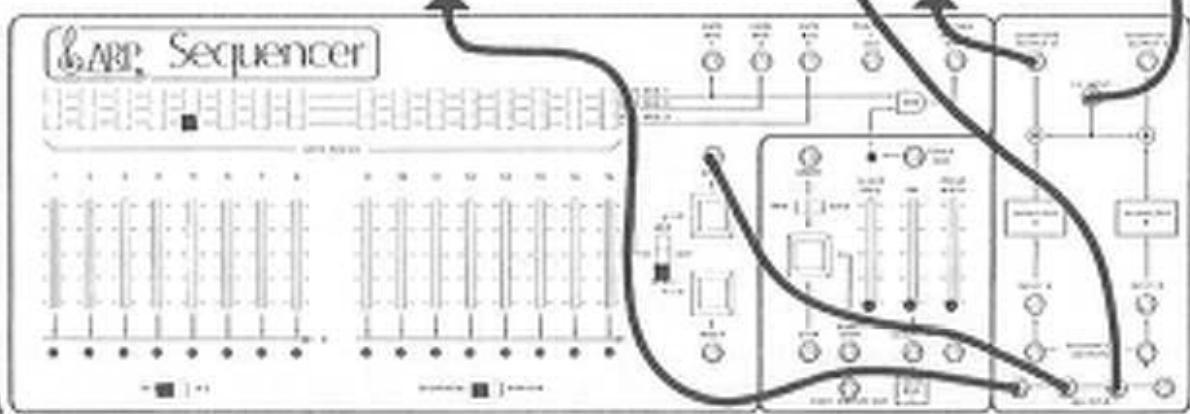
Specifications

SEQUENCER

Number of positions 16

Maximum (unquantized) control voltage output . . . . +12V

Maximum Gate output voltage . . . . +14V

16 X 1 Mode . . . . Channels A and B are common

8 X 2 Mode . . . . Channels A and B are separate

Step, Reset, Start, Stop and
Start/Stop jack inputs . . . . Accepts +3 V to +10 V Gate

CLOCK

Type . . . . Voltage Controlled

Pulse Width . . . . 10% to 100% (less 5 msec.)

PWM (Pulse Width Modulation)
Input jack . . . . Accepts 0 to +10 volts

Frequency Range . . . . 0.2 Hz. to 100 Hz.

FM Input Sensitivity . . . . 2V/OCT max.

Clock Output . . . . +14 V pulse wave

Warm Up Drift 0

QUANTIZER

Function . . . . "Rounds off" voltages to nearest
1/12 V (semitone)

Maximum Input Voltage (A & B) . . . . +10V

Maximum Quantized CV Output (A & B) . . . . +2V

Range . . . . 2 octaves

PHYSICAL CHARACTERISTICS

Weight . . . . 8 lbs.

Size . . . . L. 22 5/8", W. 8", H. 6"

Materials . . . . Aluminum chassis, walnut end blocks, G-10
glass/epoxy printed circuit boards, L.E.D.s used throughout

OPERATING POWER REQUIREMENTS

Line voltage . . . . 100 - 130 V AC

Line frequency . . . . 50 - 60 Hz.

Operating power . . . . 20 watts