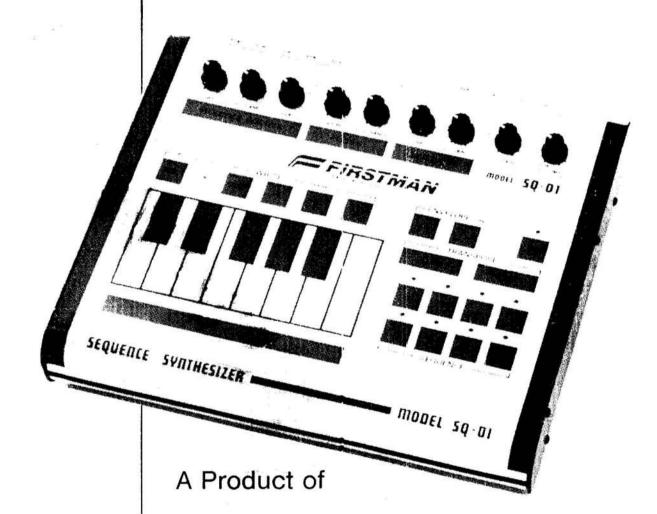


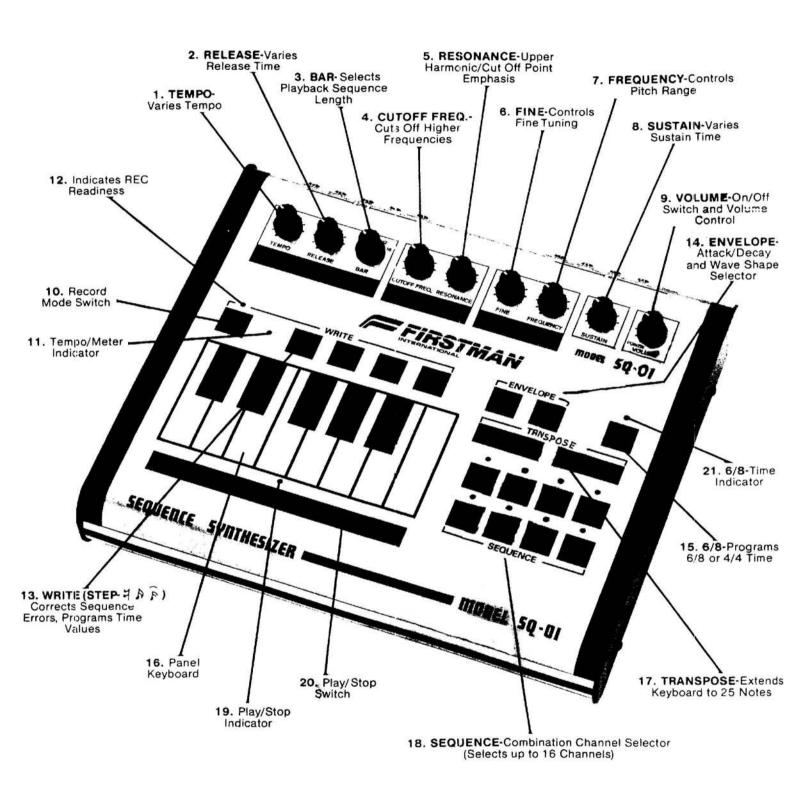
# MULTIVOX

SQ-01 OWNER'S MANUAL



## MULTIVOX CORPORATION OF AMERICA

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## TABLE OF CONTENTS

Introduction														3
Setting Up the SQ-01							·							4
SC-01 Sound Control Functions	S													4
Sequencer Section														5
Sequencer Recording Control F	un	ct	io	ns	S									7
Rear Panel Jack Functions														
Specifications									9	•			1	0
Glossary of Fundamentals of M	usi	c.								•	•		1	0
Instant SQ-01 Operation											•11		1	2
SC-01 Worksheets														

### INTRODUCTION

The MULTIVOX SQ-01 Mini Music Lab SEQUENCE SYNTHESIZER is a monophonic multi-sound producing source (a synthesizer) and a d gital recording device (a computer memory storage sequencer) in one compact control box. The SQ-01 Mini Music Lab is to music what the calculator is to math. A.C. or 12 Volt D.C. power and memory storage backup help make the SQ-01 Mini Music Lab a complete self contained unit, allowing the composer/performer to create sounds and compositions anywhere and record them for immediate or future playback and editing. The ease of operation allows someone with no previous musical background to compose and playback compositions flawlessly.

Performers are able to perform on a synthesizer and program their own accompaniest! Composers are able to compose, edit and store melodies for playback and comparison! Students will have an electronic instructor for sight reading imitation, composition and theory!

**Teachers** will have an aid in music theory instruction, composition and reading! **Everyone** will **now** be able to create music and enjoy the immediate reward of hearing flawless results!

The SQ-01 Mini Music Lab allows standard musical notation to be transferred to simple graphic notation that instructs the programmer/performer to enter a pitch and the length of time that pitch will be held. The music is recorded and stored into any one or all of sixteen possible channels for a possible 1024 note capacity. The seven octave range oscillator, pulse and sawtooth waveform generator, 24 dB low pass filter and envelope controls interact for the infinite sound creation we have come to expect from the finest and most sophisticated synthesizers. Optional BS-01 Bass Pedal Controllers provide a unique automatic controllable bass pedal synthesizer that can transpose complete bass patterns of your creation.

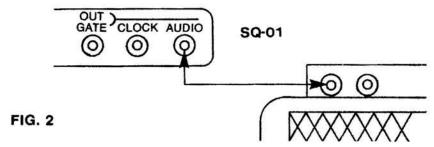
The SQ-01 Mini Music Lab can be interfaced and synchronized with other labs and synthesizers for full Mini Lab ensembles and infinite creative potential.

The SQ-01 Mini Music Lab Sequence/Synthesizer is the result of much thought, care, creativity and invention – Give the simple directions the attention they deserve. This and some creative exploration of your own will reveal the Mini Music Lab to be a musical tool of limitless potential.

The intent of this manual is to instruct you on the use of your SQ-01 Sequence/Synthesizer in the simplest fashion and encourage your creativity by having you discover your Mini Music Lab's potential through experimentation. Experiment with each control as it is described. This manual is written for the novice as well as the pro and therefore many characteristics will be deliberately described in basic as well as electronic music terms.

### SETTING UP THE SQ-01

- Place two AA penlight batteries in the section of the battery compartment, on the underside of the SQ-01 marked Memory Back-Up. Observe polarity markings!
- 2. To operate on D.C. power, place six AA penlight batteries in the battery compartment on the underside of the SQ-01. Observe polarity markings!
- 3. To operate on A.C. power, use the special accessory A.C. adapter supplied with the mini Music Lab. (AVOID DEFECTS CAUSED BY BATTERY LEAKAGE BY REMOVING BATTERIES WHEN NOT IN USE).
- 4. Connect an audio plug from the rear jack marked AUDIO on the SQ-01 to a LOW INPUT jack on your amplifier. Turn the power and volume on the amplifier up after this connection has been made. (Refer to Fig. 2)



5. If you are using powered headsets, place the audio plug from the headsets into the AUDIO jack on the SQ-01. For safety, make sure the headsets are off until the connection is made.

WE WILL DIVIDE THE SQ-01 INTO SOUND SOURCE AND RECORDING CONTROLS. THE SOUND SOURCE SECTION OF THE MINI MUSIC LAB IS A SYNTHESIZER.

## SQ-01 SYNTHESIZER SOUND CONTROL FUNCTIONS

(The numbers next to the functions correspond to Fig. 1 on page 2)

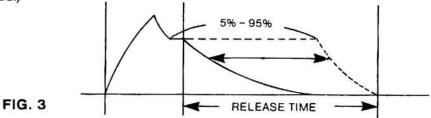
#9 POWER/VOLUME - The Power/Volume knob turns the unit on and controls the volume level.

- #16 PANEL KEYBOARD The Panel Keyboard is a controller for the SQ-01 and is used to play and program pitches. We are listing the controller under 'sound source' controls to aid in experimentation for further controls.
- #6, #7, #17 OSCILLATOR The FREQUENCY control (#7) is used to find the 'broad pitch' or general 'octave range' for the panel keyboard. The FINE control (#6) is used to fine tune or precisely calibrate the actual pitch. Play an 'A' on the keyboard and match it to the identical pitch on another instrument, pitch pipe or tuner. The TRANSPOSE switches (#17) expand the panel keyboard to 25 notes and work relative to one another in either a high or low octave distance.
- \*For convenience we have listed this under OSCILLATOR characteristics due to it's pitch/range control characteristic. (The OSCILLATOR on a synthesizer is the control for pitch or frequency as well as serving as WAVEFORM GENERATOR sound source.)
- #4, #5 FILTER The CUTOFF FREQUENCY (#4) control allows low frequencies to pass while higher frequencies are cut-off. The RESONANCE (#5) control emphasizes upper frequencies or harmonics at the cutoff point in the filtering process. (The FILTER is an important part of synthesis. The FILTER controls can be loosely compared to treble and bass controls on your stereo.) (Setting the CUT-OFF and RESONANCE relative to one another will achieve interesting instrumental and special effects. Experiment with the RESONANCE all the way up and vary the CUT-OFF FREQUENCY control. Notice the 'Wah-Wah' and 'Twang' like effects.) A 24 dB/Octave Low Pass Filter is used in the SQ-01.

#14, #2, #8 ENVELOPE - The ENVELOPE controls vary the time properties of a tone. The time it takes from the initial attack-to the cecay-to the release-to the sustain of a tone constitutes the envelope properties. The ENVELOPE (#14) / switch gives a tone a short attack and long decay. The switch gives a tone a short attack and short decay. (On the SQ-01 the switch produces a sawtooth waveform and the switch produces a pulse waveform from the OSCILLATOR'S waveform generator.)

The RELEASE (#2) knob controls the duration of a tone from 5% to 95% of the release time of the tone. (The RELEASE knob will produce stacatto (short) or tenuto (long) time properties to a

notes value.)



(The \(\tau\) switch in conjunction with the FILTER, RELEASE and SUSTAIN controls is excellent for organ and brass 'like' tones. The \(\tau\) switch in conjunction with the FILTER, RELEASE, and SUSTAIN controls is excellent for piano and string bass 'like' tones. The FILTER, OSCILLATOR, RELEASE and SUSTAIN controls can be varied after a sequence has been recorded. The ENVELOPE switches cannot be varied and must be chosen before recording. \*Before reading on about the SQ-01 Sequencer section it is advised to experiment and become familiar with the controls of the sound source – synthesizer section.

## SEQUENCER SECTION

#### PRELIMINARY INFORMATION:

(The following preliminary information is offered to enhance and enrich your understanding of musical notation and the SQ-01. By referring to the glossary of musical terms and the diagrams offered you will find yourself acquiring music reading skills and understanding. If you lack previous musical notation knowledge some of the information offered in this preliminary section might take some thought and study on your part. In any event, this information is additional and not necessary for your use and enjoyment of the SQ-01.)

The Sequencer section of your Mini Music Lab will hold up to 1024\* notes. Here is how this figure is derived:

Each Bar = 16 notes (in sixteenth note denominations) (Refer to glossary of Musical Terms) Each numerical channel (1,2,3,4) = 4 bars

Each lettered master program channel (A,B,C,D) = 4 numerical channels

16 notes per bar x 4 bars per channel = 64 notes per numerical channel x

4 (numerical) channels per master channel = 256 notes per lettered master channel x

4 (lettered) master program channels = 1024\*

In 4 time, every bar on the SQ-01 stores sixteen notes with every note being a sixteenth note denomination. Since each bar is broken down to sixteenth note value denominations it is necessary to employ some math for music that has different note values as its smallest note value unit. For instance, when a thirty second note is the smallest note value in a piece of music:

(There are) 32 thirty second notes = 1 bar of music

1 SQ-01 bar = 16 notes

(Therefore allow) 2 SQ-01 bars = 1 bar of thirty second notes

(Allow the sixteenth note value switch to represent one thirty second note.)

When a sixty fourth note is the smallest value:

64 sixty fourth notes = 1 bar

1 SQ-01 bar = 16 notes

4 SQ-01 bars = 1 bar of sixty fourth notes

(Allow the sixteenth note value switch to represent one sixty fourth note).

When an eighth note is the smallest note value needed:

(The following examples are not necessary, however, they give you more usable SQ-01 bars for recording).

8 eighth notes = 1 bar

1 SQ-01 bar = 16 notes

1 SQ-01 bar = 2 bars of eighth notes

(Allow the sixteenth note value switch to represent one eighth note).

When a quarter note is the smallest note value needed:

4 quarter notes = 1 bar

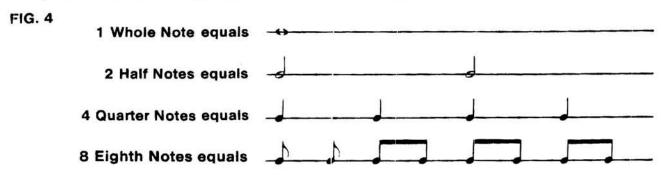
1 SQ-01 bar = 16 notes

16 Sixteenth Notes and so on

1 SQ-01 bar = 4 bars of quarter notes

(Refer to Fig. 4).

### Comparative Table Showing the Relative Value of Notes



(If you are not familiar with rhythmic notation, refer to the glossary of musical terms.)

Although music can be read and programmed into the SQ-01 from standard musical notation, the Mini Music Lab graph paper makes the programming easy even if you do not have music reading skills. Here is how this process is accomplished:

The SQ-01 breaks the duration of tones and silence down to sixteenth notes and sixteenth rests. (These are symbols for the length of time a note or silence is held and is meaningful only in relation to the duration of other notes or rests. See Fig. 4)

This sign over a note is a slur or tie and it ties two or more notes together. If the notes are the same, they sound for the uninterrupted duration of the tied notes. (i.e. a 'C' sixteenth note tied to a 'C' sixteenth note).

(Refer to Glossary)

With the SQ-01 time value programming switches, we use the sixteenth note with the slur  $\widehat{k}$  to combine sixteenth notes for the desired duration. The last sixteenth for this duration is without the slur. (i.e.  $\widehat{j} = \widehat{k} \widehat{k} \widehat{k} \widehat{k}$ ). We combine sixteenth rests for the desired duration of silence. (i.e.  $\widehat{j} + \widehat{j} = \widehat{j}$ ).

On the graph we place a number in the top right hand corner of the square next to the desired symbol to indicate how many times we want that symbol to be programmed into the SQ-01. (i.e. # hit the sixteenth rest four times to equal a quarter rest. Refer to Fig. 5).

When we want to designate low C on the Panel Keyboard we use a (o) in the lower right hand corner of the square.

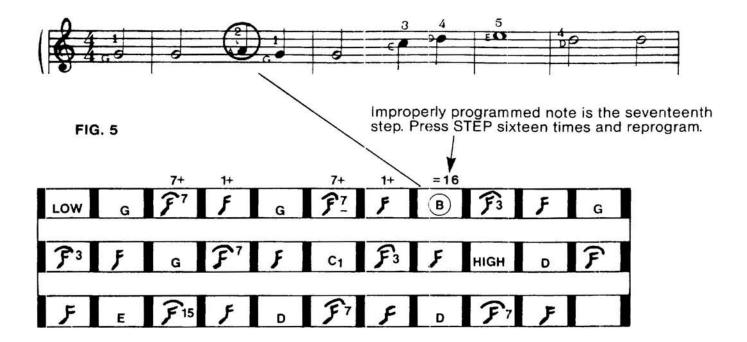
When we want to designate high C on the Panel Keyboard we use a (1) in the lower right hand corner of the square.

When we want to designate a note an octave\* higher or lower we write high or low on the graph to designate which transpose switch to use.

(\*Art octave is eight diatonic scale tones higher or lower -

A diatonic scale is comprised of a whole step/whole step/half step/whole step/whole step/half step -

Every note on a keyboard is a half step apart -)



## SEQUENCER RECORDING CONTROL FUNCTIONS

Refer to Fig. 1 on page 2.

#18 SEQUENCE - The SEQUENCE controls combine to produce sixteen channels: A1, A2, A3, A4, B1, B2, B3, B4, C1, C2, C3, C4, D1, D2, D3, D4. Each channel will store sixty-four notes or four bars and each channel will flow consecutively into one another for longer sequences. Longer sequences should be placed in consecutive numerical and alphabetical order. An eight bar sequence may be recorded on A1 to A2 or A3 to A4. A sixteen bar sequence should be recorded from A1 to A2 to A3 to A4. L.E.D. indicators display which channels are functioning.

#13 WRITE - STEP - ¾ - Å - Å - Ā - The WRITE controls are used for programming the time values of notes. STEP is used to correct errors in programming. Combine the proper amount of sixteenth rests (¾) to equal the duration of the desired rest. Combine the proper amount of slurred sixteenth notes (¾) to equal the duration of the desired note. The last sixteenth note of the desired duration can be a sixteenth note (Å) with no slur. If an error in programming is made count the number of preceding sixteenth notes and rest denominations in the program. Press REC and press STEP until you reach the point where the error was programmed. Program the correct note and time value. (Refer to Fig. 5).

#10 RECORD - The REC switch places the SQ-01 in a record-state. It must be pressed before any programming is done, however, a note will not be recorded until the pitch and time values are programmed. Only four bars can be recorded at a time. TO RECORD:

- 1. Press REC
- 2. Press desired note on PANEL KEYBOARD
- 3. Press time value WRITE switches

#12 RECORD L.E.D. - Indicates RECORD mode is active. The RECORD L.E.D. will automatically go off when a channel is filled. RECORD LED will go out after 4 bars or 64 sixteenth notes when the TIME SIGNATURE is 4 or after 4 bars or 48 sixteenth notes when the TIME SIGNATURE is 5. The RECORD LED will not go out after 2 bars of recorded material, therefore, it is important to count the bars you program.

#1, #2, #3 SEQUENCE CONTROLS - The SEQUENCE controls affect the playback of recorded material. The TEMPO knob (1) speeds up or slows down the sequence from 30 to 300 beats per minute with the beat being a quarter note division. The RELEASE knob (2) varies the duration of a tone after its initial attack during the playback. The BAR knob (3) sets the playback sequence at either 2, 4, 8, 12 or 16 bar intervals. \*If four bars of music are recorded and the knob is set to two bars, only two bars will be played. If two bars of music are recorded and the knob is set to four bars, any previous music recorded will playback after the initial two bars. A two bar interval is the smallest denomination. Therefore, if a one bar sequence is desired, change the note values to fill two bars. A sequence of four quarter notes would now be four half notes, filling the two bars. Channels will automatically and consecutively switch when the knob is set to eight or more bars, therefore, it is important to program in consecutive order. Only 4 bars can be recorded at one time. Generally, the BAR knob serves no function when recording. The exception is, however, desiring to play back 2 bars but recording more than 2 bars while the BAR knob was set on 2. While recording with the BAR knob on 2, any added notes after the initial 2 bars will erase and replace the initial notes. If four bars are recorded while the BAR knob is set on 2 only the last 2 bars will play back. Whether recording 2 or 4 bars, set the BAR knob to 4 for best results.

#11 TEMPO LED - The TEMPO LED flashes to designate tempo as well as meter. The TEMPO LED (11) will flash every third pulse or step in 6/8 and every fourth pulse or step in 4/4.

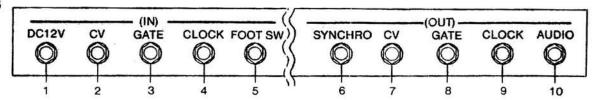
#20 PLAY/STOP - The PLAY/STOP switch is used to playback sequences as well as stop the playback. The L.E.D. (#19) lights when the PLAY mode is active.

#15 6/8 TIME SIGNATURE - The 6/8 switch is used for meters that use an eighth note as the 'unit of beat'. These meters have a pulse 'feel' of three. (i.e. 123 456) The LED above the switch will light when 6/8 meter is active. Press the 6/8 switch for 4/4 meter as well. The LED will be off. This is the normal meter mode for the SQ-01. Use this mode when a quarter note is the unit of beat. This meter has a pulse feel of two or four. (i.e. 12 34 1234)

(Refer to the Glossary of Musical Terms)

## REAR PANEL JACK FUNCTIONS

FIG. 6



(Numbers on the extreme left side of the page and after the jacks described refer to Fig. 6)

#### INPUT JACKS

- 1.DC 12V INPUT JACK The 12V INPUT JACK is to be used only with the accessory SQ-01 12V AC Adapter. This enables the SQ-01 to operate from a standard 110V wall socket.
- 2.CV THE CONTROL VOLTAGE IN jack is for interfacing the SQ-01 with a linear control voltage external controller. An external keyboard, pedalboard synthesizer, etc., will be able to control the pitch of the SQ-01 if the control voltages are compatible (linear).
- 3.GATE THE GATE IN jack is for interfacing the SQ-01 with a positive gate voltage external controller. An external keyboard, pedalboard, synthesizer, etc., will be able to control the triggering and duration of a tone on the SQ-01 if the gate voltages are compatible (positive).
- 2.CLOCK The CLOCK IN jack is for synchronizing the clock or tempo time of this SQ-01 with another SQ-01 unit.
- 5.FOOT SWITCH The FOOT SWITCH-IN jack is for the accessory foot switch as well as synchronizing the PLAY/STOP function of this SQ-01 with other SQ-01 units. The accessory Footswitch allows remote Play/Stop functioning.

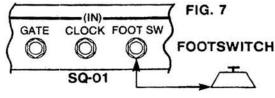
#### **OUTPUT JACKS**

- 6.SYNCHRO The SYNCHRO jack is for synchronizing the Play/Stop function of this SQ-01 with other SQ-01 units. A cable is connected from the SYNCHRO OUT jack on one unit to the FOOTSWITCH jack on another unit.
- 7.CV The CONTROL VOLTAGE OUT jack is for interfacing the SQ-01 with a linear control voltage synthesizer. The PANEL KEYBOARD on the SQ-01 will control the pitch on the synthesizer (0-2V). (The output signals are from the PANEL KEYBOARD only and are not related with the FINE, FREQUENCY nor CV INPUT VOLTAGE functions.)
- 8. GATE The GATE OUT jack is for interfacing the SQ-01 with a positive gate voltage synthesizer. The PANEL KEYBOARD will control the triggering and duration of a tone on an external synthesizer.
- 9. CLOCK The CLOCK OUT jack is for synchronizing the clock or tempo time of this SQ-01 with another SQ-01 unit.
- 10. AUDIO The AUDIO OUT jack is for connecting the SQ-01 to an amplifier or powered headsets, etc.

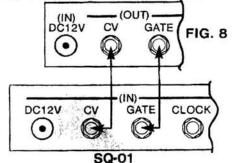
#### EXTERNAL CONNECTIONS

Utilizing the interfacing possibilities the rear panel jacks offer make the SQ-01 a multi-dimensional and multi-purpose musical tool. To use the SQ-01 in the following manners, observe the diagrams and make the necessary connections as indicated using audio cables with ¼" phone plugs.

**FOOTSWITCH CONTROL -** The PLAY/STCP function will be controlled by the footswitch as well as the PLAY/STOP panel switch. (see Fig. 7)



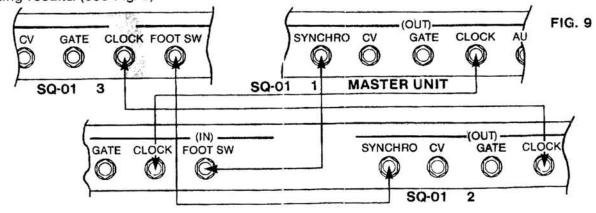
### **BS-01 BASS PEDAL CONTROLLERS**



EXTERNAL BS-01 BASS PEDAL CONTROLLER The pitch and duration of a tone will be controlled by the
BASS PEDAL CONTROLLER as well as the PANEL KEYBOARD. Recorded sequences will automatically be transposed
and restart at the beginning of the sequence by depressing
a bass pedal during playback.

The BS-01 BASS PEDAL CONTROLLER makes the SQ-01 an automatic controllable bass pedal synthesizer that plays and transposes the patterns of your choice. (see Fig. 8)

**MULTIPLE PERFORMANCE** - By making the following connections, ensembles of SQ-01 units can be made and controlled by the controls on the number 1 or master unit. Educational classes, arrangers, orchestrators, composers and performers use this technique with exciting results. (see Fig. 9)



## SPECIFICATIONS

Power Source: AC = Accessory Adaptor

DC = 6 AA Penlight Batteries; 1.5V

For Memory Back-Up Power, 2 AA Penlight Batteries

3V pp Max. Output Power.

1.5W Power Consumption:

> Impedance: 50 Kilo Ohms

Printed Keyboard: 13 Notes in C Scale (1 Octave Range)

Controls on the Sequence = Tempo, Release & Bar Mode Filter = Cut-Off Frequency & Resonance Front Panel:

Oscillator = Fine, Frequency,

Sustain & Volume/On-Off

Write = Record, STEP Switches on the

Front Panel:

A

Envelope = Time = 6/8Transpose = Low & High

Sequence Channels = A, B, C, D, + 1, 2, 3, 4 (Total 16 Channels)

Play/Stop

Memory Consumption: 1024 Notes

> Outputs = Audio, Clock, Gate, CV & Synchro External Jack:

Inputs = Foot Switch, Clock, Gate, CV & DC 12V

Accessories: AC Adaptor, Foot Switch, AC Cord & 2 Batteries

Optional Accessories: Keyboard Controller with 13 Foot Pedals = BS-01

Carrying Case & Stand

354 (W) x 305 (D) x 55 (H) mm. Dimensions:

Weight: 4.8 kgs.

10.5 lbs.

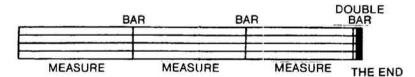
## **GLOSSARY & FUNDAMENTALS** OF MUSIC

#### NOTES:

The symbols in music which indicate the sounds to be played and the length of time they are to be held. They are called by the first seven letters of the alphabet: A— B— C— D— E— F— G.

The five lines and four spaces upon which the notes are written.

Units into which music on the staff is divided -- divided by vertical lines called BARS.



TIME SIGNATURES:

At the beginning of each song you find the treble clef sign ( ) a group of sharps (#) or flats ( b) which designate the key signature, and a number known as the time signature ( 2 3 or 4 ). The top number indicates how many counts or beats in each measure. The bottom number tells what value note receives one count. Example: 3 means 3 quarter notes per measure. "C" is an alternate symbol for 4

#### **NOTE VALUES:**

whole note = 4 counts

d half note = 2 counts

quarter note = 1 count

A price is a price in a

 $\beta$  sixteenth note = 1/4 count

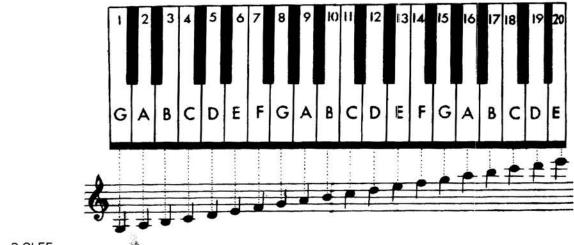
RESTS: Musical signs designating periods of silence.

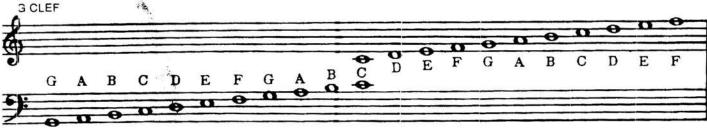
half rest = 2 counts

quarter rest = 1 count

7 eighth rest = 1/2 count

#### **DOTS AND TIES:**





F CLEF

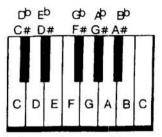
This is called a **SHARP:** # This is called a **FLAT**: b This is called a **NATURAL** (**CANCEL**): b Each black key can be a sharp or flat. A sharp is the black note to the right of the white note and takes its name from the white note, such as F#— C#—etc. A sharp makes a note a half step higher.

A flat is the black note to the left of the white note and likewise takes its name from the white note, such, as Bb — Eb. etc.

A natural cancels a sharp or flat.

## MULTIVOX INSTANT SQ-01 OP

# INSTANT SQ-01 OPERATION MUSIC WORK SHEET



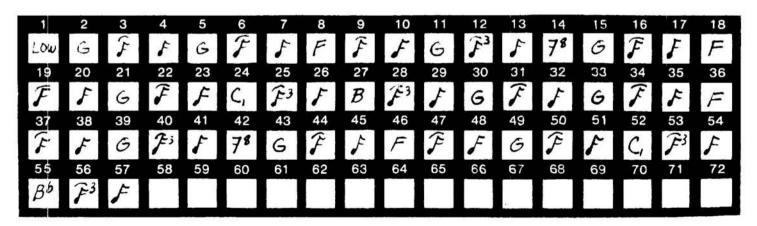
For those who want to begin playing right away and just can't wait to read through an entire manual, here is your instant SQ-01 SEQUENCE SYNTHESIZER manual.

- 1. Adjust the OSCILLATOR, FILTER, ENVELOPE, SUSTAIN and VOLUME controls to your own taste. These controls create the tonal sound.
- 2. Choose your TIME SIGNATURE. LED "on" indicates 6/8. LED "off" indicates 4/4.
- 3. Set BAR knob to 4.
- 4. Select letter and number SEQUENCE channel. (i.e. A-1)
- 5. Press REC (record).
- 6. Press HIGH or LOW (as desired or as indicated on mini music lab graph).
- 7. Press a note on the PANEL KEYBOARD (as desired or as indicated on mini music lab graph). (Co indicates low C on the PANEL KEYBOARD) (C1 indicates high C on the PANEL KEYBOARD)
- 8. Press a time value switch- 3 10 10 (as desired or as indicated on the mini music lab graph).  $2^4$  indicates number of times to press switch.
- 9. Fill 2 or 4 bars of music. To record more than 4 bars repeat procedure 5 and 6 on next consecutively numbered channel. (i.e. A1 tp A2).

#### **PLAYBACK**

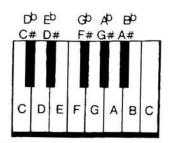
- 1. Set BAR knob to the desired number of bars to be played back (2, 4, 8, 12, 16)
- 2. Adjust TEMPO.
- 3. Press PLAY/STOP switch.





## MULTIVOX

## **MUSIC WORK SHEET**



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