

MEMORYMOOG PLUS SEQUENCER OPERATION

THIS SECTION OF THE MANUAL SHOWS YOU HOW TO USE THE MEMORYMOOG PLUS SEQUENCER. FIRST, THE GENERAL ARCHITECTURE OF THE SEQUENCER IS DISCUSSED. FOLLOWING THIS, A SERIES OF TUTORIALS SHOWS STEP-BY-STEP WHICH BUTTONS TO PUSH TO CREATE, STORE, PLAY, MERGE, GROUP AND LOOP SEQUENCES.

MEMORYMOOG PLUS SEQUENCER ARCHITECTURE

The Memorymoog Plus has two independent sequencers:

1. The polyphonic mode plays from 1 to 6 internal Memorymoog Plus voices, as specified by the performer.
2. The monophonic mode plays an external monophonic instrument connected to the EXTERNAL SYNTHESIZER OUT jacks on the rear of the Memorymoog Plus.

Both sequencers are driven by the same clock and can be used simultaneously.

Either sequencer is programmed/operated by pressing SYSTEM CONTROLLER buttons, and the double-function MODULATION/SEQUENCER buttons. The rear panel SEQUENCER/MIDI jacks provide SEQUENCER START/STOP using a footswitch, CLOCK IN and OUT for master/slave relationships with external drum machines, CLOCK DISABLE (necessary for some brands of drum machines), and CLICK OUT for creating a click track. In order to ensure compatibility with a wide range of drum machines/synchronizers, the clock rate is switchable on the rear panel. (LOW, MED, and HIGH are 96, 192, and 384 cycles per measure respectively. This equates to 24, 48, and 96 cycles per "quarter note.") The new rear panel also houses the MIDI interface section.

There are six sequencer memory locations represented by buttons in the MODULATION/SEQUENCER section labelled 1-6. Each of these memory locations can store both:

- A polyphonic sequence.
- A monophonic sequence.

Three of these locations, buttons 1-3 labelled SEQ/MRG can store a MERGE, a potentially complicated musical pattern comprising several sequences that may themselves be repeated.

The amount of memory available to each sequence depends on the way you store information. Realtime free polyphony combining chords and lines is less memory efficient than entering chords and/or notes in the STEP mode. If you should find that a single sequence does not provide enough memory to hold your song, it is possible to connect two or more sequence memories together to create a longer memory, as we shall see later.

Polyphonic memory is approximately 5250 notes in step mode and 4000 notes in real time. A six note chord does not necessarily take up six

times as much memory as a single note however, since data is compacted. Experience will tell you system limits.

Monophonic memory is 1120 notes in step mode and 560 in real time.

All display "prompts," or messages displayed in the SYSTEM CONTROLLER section are indicated in the tutorials below with quotation marks; e.g. "VOICES 6."

ALL RESPONSES TO SYSTEM CONTROLLER PROMPTS EXCEPT "START" ARE DONE USING THE SYSTEM CONTROLLER KEYPAD.

SEQUENCER TUTORIALS

IN THIS SECTION YOU WILL BE ASKED TO PRESS SWITCHES AND READ THE DISPLAY, WHICH WILL "PROMPT" YOU, TELLING YOU WHAT TO DO. IF THE BUTTON YOU ARE ASKED TO PRESS IS IN THE SEQUENCER SECTION, ITS NAME/NUMBER IN THIS MANUAL WILL BE ENCLOSED BY THE "GREATER THAN, LESS THAN" SYMBOLS LIKE THIS:

<RECORD> THIS MEANS "PRESS THE RECORD SWITCH."

SOMETIMES THE BUTTON TO BE PRESSED IS IN THE SYSTEM CONTROLLER KEYPAD SECTION. BUTTONS IN THIS SECTION WILL BE ENCLOSED BY BRACKETS, LIKE THIS:

[ENTER] THIS MEANS "PRESS THE ENTER SWITCH."

IT IS MOST IMPORTANT TO REMEMBER THIS WHEN DEALING WITH NUMBERED BUTTONS, SINCE NUMBERS 1-6 OCCUR IN TWO SECTIONS OF THE INSTRUMENT. FOR EXAMPLE:

<1> MEANS "PRESS BUTTON 1 IN THE MODULATION/SEQUENCER SECTION."

[1] MEANS "PRESS BUTTON 1 IN THE SYSTEM CONTROLLER SECTION."

SOME MORE EXAMPLES:

[C], [C] "PRESS BUTTON C IN THE SYSTEM CONTROLLER SECTION TWICE."

[ENTER] "PRESS ENTER BUTTON IN SYSTEM CONTROLLER."

<START> "PRESS START/STOP BUTTON IN SEQUENCER SECTION."

<STOP> "PRESS START/STOP BUTTON IN SEQUENCER SECTION."

<3> "PRESS BUTTON 3 IN SEQUENCER SECTION."

[3] "PRESS BUTTON 3 IN SYSTEM CONTROLLER SECTION."

HOW TO RECORD/PLAY A POLYPHONIC SEQUENCE IN REAL TIME: A TUTORIAL

- ACTION:** **PURPOSE/RESULT:**
- [C], [C], [ENTER] Places instrument in the polyphonic "SEQUENCE" mode; see display. (Repeat step if display says "MOOG.")
- (IN SEQUENCE MODE THE LIGHT BY THE SEQUENCE BUTTON COMES ON. Since the sequencer comes on in the polyphonic mode, the MOND light will be OFF when you access the sequencer mode.)
- (RECORD) Enables record mode. (NOTE: If the RECORD light fails to come on, the instrument may have been purposely "disabled" to prevent accidentally recording over valuable sequences. Do a [C], [8], [ENTER] three-switch entry and see if the display says "DISABLED." If it does, you can defeat this by entering 0000 on the keypad and pressing [ENTER]. Now you can record). (If the display says "ENABLED" hit [ENTER], [ENTER] and proceed).
- (1) Selects storage location #1 for your sequence.
- (START) The START light does not come on, but the display prompts you:
- "TEMPO - " Prompts you to enter on the SYSTEM CONTROLLER keypad a tempo between 60 and 240 (in Metronome Marking beats per minute).
- [ENTER] Enters Tempo value currently in display.
- "BEATS - " Prompts you to enter the number of beats per measure. You may change this value, using the SYSTEM CONTROLLER keypad selecting one of the possible values (1,2,3,4,6,8).
- [ENTER] Enters number shown in display as beats per measure.
- "VOICES - " Prompts you to enter the maximum number of Memorymoog voices (notes) you wish to use during the sequence. Use the SYSTEM CONTROLLER keypad to select 1-6 voices.
- [ENTER] Enters number shown in display as number of voices

you wish to use in this sequence. The remaining voices are available to be played from the keyboard during the sequence.

- "START" Display prompts you to press START button.
- (START) The countdown to begin recording starts. The display will count a "measure for nothing" and display will count beats for you, synchronized with audible clicks if you are monitoring CLICK OUT.
- PLAY YOUR SEQUENCE!
- (STOP) Stops recording and defines the point at which a "looped" (repeated) sequence will end (and begin).

Comment: This tutorial reveals some basics necessary to use the sequencer. The keystroke entry [C], [C], [ENTER] "toggles," or alternates the front panel between "MOOG" and "SEQUENCE" modes of operation. The MOOG mode uses the MODULATION/SEQUENCER switches to program modulations. In the SEQUENCE mode, these switches control sequencer functions.

Also, note that in RECORD mode, pushing START the first time causes the display to prompt you, asking for information entered by the SYSTEM CONTROLLER keypad. Push START a second time and the recording process begins. The "measure for nothing" is a "kickoff" to help you feel the tempo. If you are listening to CLICK OUT on the rear panel, you'll hear one measure of clicks before recording starts, and the clicks will continue as you record.

The sequencer comes up in the polyphonic mode (the MONO light is out). If you want to create a monophonic sequence, you must do so with the MONO light on.

HOW IS THE LOOP POINT OF A SEQUENCE DEFINED? By pressing STOP. But it is important to realize that a sequence cannot contain a partial measure, even at its end. If you press STOP late--during the first half of an unwanted measure, the extra time will be dropped and that measure will NOT become part of the sequence.

If you press too late--during the last half of the late measure--enough rests will be added to include this added measure at the end of the sequence. This lets you create a sequence that has rests, or silence at its end before it repeats.

WHAT IF YOUR SEQUENCE IS TOO LONG TO FIT INTO A SINGLE SEQUENCE LOCATION? Connect two or more sequence memories when SEQUENCE and RECORD lights are on: press the LOWER of two numbered buttons FIRST and HOLD IT DOWN, then the HIGHER number LAST (order is important!) Those two memories AND ANY THAT FALL BETWEEN THEM will become one memory, having a "name" that is the lowest number pressed. If you connect memories 1,2, and 3 together, they will collectively become location number "1;" if you try to play sequence 2 (or 3) the display will show "NO SEQ 2" (or 3), indicating that several memories have been connected.

This connection is made firm only after the location has been recorded into.

Now, let's play this poly sequence you have created:

- (RECORD) Necessary to turn RECORD mode off.
- (START) The sequence will play as recorded. It will loop automatically from the point you stopped it during recording.

Comment: It is easy to play a sequence back after you just recorded one, since you are already in the SEQUENCE mode, and have indicated the recording/playback location number. But let's review the general case for playing back a sequence making no prior assumptions:

PLAYBACK A POLYPHONIC SEQUENCE: GENERAL RULES

1. Must be in "SEQUENCE" mode. ([C], [C], [ENTER] if not).
2. SEQUENCE light must be ON. (SEQUENCE) if not.
3. MONO light must be OFF. (MONO) if not.
4. The desired sequence location number must be selected. (1) or (2) or (3), . . . (6).
5. RECORD light must be OFF. (RECORD) if not.
6. Must (START) to begin playback.
7. The RATE knob in the MODULATION/SEQUENCER section does not affect the playback tempo unless the knob is moved, similar to any Memorymoog Plus edit. However, a new tempo for playback can be entered by going to the EDIT mode as follows:

CHANGING PLAYBACK TEMPO: THE EDIT MODE

(Must be in SEQUENCE mode)

- (EDIT) Calls up edit mode.
- (RECORD) Allows "recording" of edits you wish to make in TEMPO, and/or BEATS and VOICES.
- (START) (Begins with prompt for TEMPO.)
- "TEMPO - "
- [USE KEYPAD TO ENTER NUMBER BETWEEN 60 AND 240 FOR TEMPO]
- [ENTER] (Press the ENTER key to enter the new tempo rate.)

"BEATS - "

[ENTER] (Press ENTER to go to next prompt.)

"VOICES - "

[ENTER] (Press ENTER to exit prompts). Exit routine.
RECORD light goes off.

(START) Starts sequence with edited (changed) tempo.

Comment: The most obvious use of the EDIT mode is recording at a slower tempo (e.g. 60), then going to the EDIT mode to speed up the playback. Only the tempo will change--not pitch--unlike a tape recorder.

When playing back any sequence, when you press START, the playback tempo will be determined by the most recent value you entered for tempo when prompted by the display in the RECORD or EDIT modes. If you record at a given tempo, and do not edit (change) that tempo, then recording and playback will be at the same tempo.

The RATE knob works only on playback. Playback tempo is electronically "centered," or given the value you entered on the keypad. If you move the RATE knob, the tempo will be edited and jump to the tempo determined by the RATE knob. So it makes sense to leave the RATE knob physically centered at the "5" position, so you can make a smooth change, rather than a jump in tempo.

While it is certainly possible to edit BEATS and VOICES while in the EDIT mode, this should be done thoughtfully. For instance if you record six voices and edit the VOICES prompt to play back only three, the Memorymoog Plus will follow your instructions explicitly. The instrument cannot possibly anticipate WHICH notes you consider important musically, and the results may be musically unpredictable. Also, if you edit BEATS from a sequence featuring an odd number to playback with an even number, or vice versa, the looping of sequences may be timed peculiarly. New musical uses may be discovered, but the player is advised that editing of BEATS and VOICES for playback be done with awareness of possibly unusual results.

If you choose, you can allocate fewer than 6 voices for a poly sequence and play the remaining voices from the keyboard while the sequence plays. When you leave only 1 voice for the keyboard, it is advisable to press the MONO switch FOUND TO THE LEFT OF THE SYSTEM CONTROLLER SECTION (light ON).

THIS ENDS THE "RECORD/PLAY A POLYPHONIC SEQUENCE" TUTORIAL.

RECORD (REAL TIME)/PLAY A MONOPHONIC SEQUENCE: A TUTORIAL

The monophonic sequencer works with an external monophonic synthesizer. This instrument should be connected to the Memorymoog Plus as follows:

CONNECTING AN EXTERNAL SYNTHESIZER

--Connect Memorymoog Plus V-GATE or S-TRIG output to external synthesizer trigger or gate input.

--Connect Memorymoog Plus CONTROL VOLT output to the oscillator control input of the external synth.

--Put KB OUT switch on Memorymoog Plus ON. (Must be on to drive external synthesizer).

--Depress lowest note (or zero volt key) on the external keyboard. Hit the lowest key on the Memorymoog Plus and tune the R (range) trimmer to zero beats. Hit the highest note on the Memorymoog Plus and tune the S (scale) trimmer to zero beats. Repeat low/high note tuning until satisfactory.

RECORDING THE MONO SEQUENCE

MAKE SURE THE KB OUT LIGHT IS ON FOR ALL PROGRAMS THAT YOU WISH TO USE IN A MONO SEQUENCE. ONLY WHEN THIS LIGHT IS ON CAN AN EXTERNAL INSTRUMENT BE HEARD. TO STORE A PROGRAM WITH THIS LIGHT ON, SEE PAGE 19 OF YOUR OWNER'S MANUAL.

- (MONO) Enable mono sequencer; MONO light ON.
- (RECORD) Go to record mode; RECORD light ON.
- (1...6) Select a storage location for your sequence.
- (START) Starts prompts.
- "TEMPO - " TEMPO prompt displayed in window. Enter tempo in M.M. markings from 60-240 on the SYSTEM CONTROLLER keypad.
- [ENTER] Enters tempo currently displayed.
- "BEATS - " BEATS prompt in display window. Enter the number of beats per measure you desire. Choose from these possibilities: 1,2,3,4,6,8 and enter on the SYSTEM CONTROLLER keypad.
- [ENTER] Enters number shown in display for beats per measure.
- "START - " Display prompts you to press START.
- (START) As before, you get a "measure for nothing" countdown in the display.
- (PLAY MONO SEQUENCE ON MEMORYMOOG PLUS KEYBOARD.)
- (STOP) Hit stop at end of the last measure to stop (also the "loop" point). WE suggest you use footswitch connected to START/STOP jack

on SEQUENCER/MIDI rear panel plate.

PLAYING BACK THE SEQUENCE:

MAKE SURE THE KB OUT LIGHT IS ON.

(RECORD) Leave RECORD mode (light OFF).

(START) Start playback.

PLAYING A MONO SEQUENCE: GENERAL RULES

KB OUT SWITCH ON MEMORYMOOG PLUS MUST BE ON.

1. Must be in SEQUENCE mode. [C], [C], [ENTER] if not.
2. SEQUENCE light must be ON. (SEQUENCE) if not.
3. MONO light must be ON. (MONO) if not.
4. RECORD light must be OFF. (RECORD) if not.
5. Desired sequence location must be selected (1) . . . (6).
6. (START) to begin playback.
7. The RATE knob will affect tempo only if moved, as above.

THIS ENDS THE "RECORD/PLAYBACK MONO SEQUENCE" TUTORIAL.

RECORDING POLY, THEN MONO FOR SIMULTANEOUS PLAYBACK

(Record poly sequence; see above.)

(Connect external synth to SYNTHESIZER OUT jacks.)

Press KB OUT (Light must be ON).

(MONO)* *(Light must be OFF).

(1--6) (Press location number of poly sequence.)

(MONO) (Light must be ON).

(RECORD) Prepare to record mono sequence.

(1--6) Press location number of the mono sequence. This location does not have to have the same number as the poly sequence has.

(START) Display prompts.

"TEMPO - "
 [ENTER] (Accepts current value).

"BEATS - "
 [ENTER] (Accepts current value).

"START"
 (START) Play mono sequence on Memorymoog Plus keyboard while listening to poly sequence.

(STOP) Hit stop when finished.

Comment: You "default" through the prompts, TEMPO, BEATS, by hitting [ENTER], [ENTER]. (NOTE: When you playback a poly and mono sequence simultaneously, the values for the prompts for the poly sequence will be adopted by the mono sequence, so the sequences will stay in sync.) The mono prompts can be programmed if you plan to play the mono sequence by itself, that is, not simultaneously with a poly sequence. But regardless of the prompt values of a mono sequence, it will adopt the prompt values of the poly sequence if you play the two simultaneously.

Poly and mono sequences may be recorded simultaneously, just as you can play both polyphonically--with the Memorymoog Plus--and monophonically--driving an external instrument--simultaneously. You must place each sequencer into RECORD mode, and specify a location for each sequence. Always set up the poly sequence first, then mono. Because going to poly mode clears the playback/record status.

PLAYBACK POLY AND MONO SIMULTANEOUSLY

(RECORD)* *(Light must be OFF.)

(MONO)* *(Light must be OFF to be in poly mode).

(1--6) Storage location of desired poly sequence.

(MONO) (Light must be ON to enable mono sequence selection.)

(1--6) Storage location of desired mono sequence. Poly and mono sequence numbers do not have to be the same.

(START) Combined sequences will repeat indefinitely. During playback of a combined poly/mono sequence, the MONO light will flash.

PROGRAM ADVANCES DURING A SEQUENCE;

TONE COLOR ON-THE-FLY: A TUTORIAL

Program advances are used normally with the Memorymoog Plus to step to new programs by pressing a footswitch. It is possible to include such program advances within a sequence; to make part of the sequence sound one tone color and another part an entirely different sound. This specification of Program advances is done during a special "one-time" playback of the sequence during which you press the "A" (Advance) button, or step on a footswitch connected to the PROGRAM ADVANCE jack on the rear panel.

Program advances stored within a sequence are nothing more than that. Just an indication of when "an advance" is to take place. It is up to the performer to specify WHICH program chain is to be used, and you must also program WHICH programs are in that chain AND IN WHAT ORDER. These are the same program chains used in normal playing, so it is suggested that some chains be dedicated to sequencer use (6-9?), and others for ordinary Program advance use when not in the sequencer mode. Otherwise, changes you make in Program chains while in sequencer mode will affect the other "MOOG" mode.

Let's assume you now have a poly sequence stored in location 1.

Let's see how to use a Program chain of your choice to create Program advances during a sequence:

- [D] Enables entry of a Program chain number.
- [7] "7" is the number (selected from possible 0 to 9) of the program chain that contains the sounds you want to use in this sequence, loaded in the proper order.
- [ENTER] Enters your selection (7); display shows first program in the chain.
- (SEQUENCE)* *(Light must be ON).
- (1) Call up sequence in location 1.
- (EDIT) Goes to EDIT mode.
- (START) Sequence 1 will play back one time. During this playback, press the A (advance) button at the time(s) a Program chain advance (change of sound) is required. With each advance, you will progress to the next sound in program chain number 7 (in this case).
- [D] (Exits this routine.)

TO PLAYBACK A SEQUENCE WITH PROGRAM CHAIN ADVANCES:

- [D] "P" for "play" in display; (if not, [D] again).
- [7] Specifies Program chain number 7.
- [ENTER] (Resets Program chain 7 to its beginning).
- (SEQUENCE) Enable sequence mode.
- (1--6) Call up (one) sequence location from 1-6.
- (RECORD light OFF).
- (START) Sequence 1 plays with Program advances you requested in the order you (previously) specified for the Program Chain selected (7). If you don't know how to load a Program chain, see below:

(LOADING A PROGRAM CHAIN: PROCEDURE)

- [C], [8] This entry reveals the status of system security that prevents unauthorized tampering with program chains. Check the display; if you see:
- "DISABLED" -- enter the factory-supplied code 0000 (or your 4 digit code if you have changed it) and [ENTER].
- "ENABLED" -- [ENTER], [ENTER] and continue:
- [D] "P" for "play" in display (do not want this mode).
- [D] "L" for "load" (leave "L" in display).
- [7] Specific chain number you wish to put into some order. (Choices from 0 to 9).
- [ENTER]
- [xx] Enter, using the keypad the number ("xx") of the first program you want to load into the program chain.
- [ENTER] Records that number (the number in the display.)
- [A] (Hit the A button, to advance to next chain location.)
- [xx] Enter the number of the second program you want to appear in the chain.

[ENTER] Enters that number.

[A] Advance in chain.

REPEAT PROCEDURE TO LIMIT OF 20 PROGRAMS PER PROGRAM CHAIN. Automatic spillover to next higher-numbered program chain will occur. (Can use fewer than 20 programs of course). For final program, no need to [A] to advance.

[D] This step tells the computer where the chain is to end.

IF YOU MAKE AN ERROR LOADING A CHAIN OR WISH TO REPLACE A PROGRAM, SEE YOU OWNER'S MANUAL, PAGE 21.

Comment: It is important to understand how a Program advance occurs within a sequence. Using the routine in this tutorial, you store only advances, NOT calls for specific sounds. For instance, if you have certain sounds in Program Chain 7 that make sense with a sequence, and you now tell that sequence to use Program Chain 8 instead, the Memorymoog Plus will dutifully start at the first Program of Chain 8 and advance when told to. The sounds produced will depend on those found in Chain 8, in whatever order they happen to be.

Also, be aware that you must mechanically enter the desired Program chain you want before playing a sequence. Sequences do not "remember" which Program chain you have in mind. If you tell the Memorymoog Plus to play a sequence without specifying a program chain, it will do so WITHOUT supplying program advances you may have programmed. YOU MUST PRESS [D], ENTER THE PROGRAM CHAIN NUMBER, AND PRESS [ENTER] BEFORE STARTING A SEQUENCE IF YOU WISH TO HAVE PROGRAM ADVANCES DURING THE SEQUENCE.

In short, the Program advances within a sequence are simply advances, not stored program numbers, or linkages to a specific Program chain. They make sense if you set up the appropriate Program Chain and order programs within it. Then you must specify that Program chain before playing the sequence if you want program advances during the sequence.

In fact, you can set up several advances within a sequence and experiment with the programs within the specified program chain afterward. The times that an advance occurs remain, but the specific program the instrument advances TO is up to you.

THIS ENDS THE "PROGRAM ADVANCES DURING THE SEQUENCE; TONE-COLOR ON-THE-FLY" TUTORIAL.

MERGE--GROUPING SEQUENCES: A TUTORIAL

Once you have created several sequences you may wish to "merge" them into a song or composition. It is possible to specify which sequences will be used, their order (numbers may be repeated), and the number of times a sequence "loops," or repeats.

You can create three merges and store them in SEQ/MERGE locations 1-3.

An important facet of creating a merge is specifying the Program chain number that will account for Program advances during the merge. If you run out of Program chain space (20 positions), you will simply spill over into the next higher numbered Program chain. That is, if your merge uses 36 Program advances and you start on chain 7, you will fill all 20 locations of chain 7 and fill 16 of chain 8.

Unlike sequences, however, a merge DOES remember which Program chain to call up. In fact, this is the first piece of information you must specify when making a merge. Since you may spill over into a higher chain, in cases where you might use all three merge locations (1-3), we suggest you use chains 5, 7, and 9 to allow spillover to the next higher chains 6, 8, and 10 respectively. Let's look at the basic format for creating a polyphonic merge:

THE POLYPHONIC MERGE --

(SEQUENCE mode)

(MONO light OFF)

(MERGE) MERGE light ON; (SEQUENCE light OFF.)

(1) Merge location 1 selected (1-3 available).

(RECORD) Record mode.

(START) Begins prompts.

"PRGCHN" Display asks for Program chain number.

[7] Program chain 7 is selected.

[ENTER] Enters number in display (7).

"SEQ" Asks for number of sequence you want played first.

[1] Sequence number 1 selected to appear first.

[ENTER] Enters number in display (1)

"LOOPS" Asks how many times you want the sequence just specified to repeat, or loop (max=9).

[2] (Play it twice).

[ENTER] Enters number in display (2).

"SEQ" Asks which sequence is to be played next.

[4] Selects sequence number 4 to be played next.

[ENTER] Enters number in display (4).

"Loops" Asks how many times to play sequence just specified.

[3] (Play 3 times).

[ENTER] Enters number in display (3).

THE "SEQ--LOOPS" cycle may be repeated 20 times. Obviously sequence numbers can be repeated (in any order). The maximum number that can be entered for "LOOPS" is 9. When you complete this cycle to your satisfaction, then:

(STOP) Display reads "END".

(RECORD) Disable Record mode (light OFF) so you can playback.

THE MONOPHONIC MERGE

If you want the mono merge to synchronize with the poly merge, take care to enter the numbers for "SEQ" and "LOOPS" in mono merge that you did in poly merge. The entry procedure is almost exactly the same as above. For MONO MERGE:

(MONO) Put MONO light ON.

(MERGE) Merge mode enabled.

(RECORD) Record mode enabled.

(1--3) Select mono Merge location (same as poly merge if synchronization is desired).

(START) Prompts "SEQ" and "LOOPS" as in poly merge above. Respond by entering number(s) on keypad and [ENTER].

(STOP) Display reads "END."

(RECORD) (Turn Record light off).

TO VERIFY PLAYBACK OF POLY/MONO MERGE

(START) As a visual aid, during playback of a poly/mono merge, the MONO light will toggle (alternate) ON and OFF. When it is on, the light of the mono sequence location currently playing will be on. When MONO light is off, this is the poly mode; the poly sequence currently playing will come on. By observing the MONO light, you can tell which poly, and which mono sequence is playing at the moment. The sequence mode also exhibits this type of display.

THIS ENDS THE "MERGE--GROUPING SEQUENCES" TUTORIAL.

STEP MODE POLY RECORD/PLAYBACK: A TUTORIAL

In this mode you may enter notes/chords one-at-a-time into the sequencer memory to create a sequence:

Place the switch on the back panel to the STEP position, and connect a footswitch to CLOCK IN. (Or press the STEP switch when told to press footswitch).

Connect CLICK OUT to your amplifier.

Access the "SEQUENCE" mode: [C], [C], [ENTER].

(BE SURE MONO LIGHT IS OFF. IF NOT, (MONO)).

(RECORD) Enables Record mode.

(1--6) Selects a sequence location.

(START) (Prompts)

"TEMPO xx" "xx" value displayed may be any value or character, depending on any previous recordings done. As you use the keypad to key in the new value, verify by watching the display.

[0], [0] Press zero twice; a zero TEMPO value puts the instrument into the STEP mode. It is not necessary to enter 00 for tempo unless you are using the A button in lieu of the footswitch.

[ENTER]
EEE
"BEATS"

Your choice here determines the number of clicks you will hear per measure. In general, select the highest number available for duple time (8), or triple time (6), since

this value can be edited later to a lower beat rate, thereby speeding up the passage. If you enter "4," there will be four clicks per measure; if "8," there will be eight. (Eight clicks per measure).

[8]

[ENTER]

"VOICES"

Enter the number from 1-6 you would like to use.

[6]

Six voices to be used.

[ENTER]

"START"

(START)

THE FOLLOWING IS THE GENERAL ENTRY PROCEDURE:

DEPRESS AND HOLD FIRST CHORD/NOTE.

"MEAS 1"

DEPRESS FOOTSWITCH (OR (STEP)).

RELEASE FIRST CHORD/NOTE.

DEPRESS FOOTSWITCH (OR (STEP)).

REPEAT PROCEDURE FOR NEXT CHORD/NOTE.

Comment: If you repeat the general entry procedure four times, you produce a single bar of 4/4 with eighth notes sounding on the beats, separated by eighth rests--"8 beats" as you programmed in the tutorial. In this case, the CLICK OUT coincides with eighth notes.

Does this mean you can enter an event for each eighth note slot? Yes and no. Yes, if you don't play the same event (chord or note) twice consecutively. If you simply depress the footswitch (or (EDIT)) once for each event, the second of two identical chords will NOT be articulated. That is, IF YOU DO THE FOLLOWING PROCEDURE USING THE SAME CHORD:

(SAME CHORD PROTOCOL)

1. Play/hold (SAME) chord.
2. Depress footswitch or (EDIT).
3. Repeat steps 1-2, eight times.

THEN YOU WILL CREATE A WHOLE NOTE (COMPLETE MEASURE) OF THAT CHORD (8 eighth notes); you will not create eight separately articulated chords. Only when you "leave a space" by depressing the footswitch (or (EDIT)) with NOTHING played on the keyboard do you assure that the next event will receive a new trigger, creating a new articulation.

On the other hand, if a chord is DIFFERENT from its predecessor, articulation will occur as a natural function of the "voice reassignment" Memorymoog Plus keying scheme. THAT IS, IF YOU FOLLOW THIS ROUTINE, USING DIFFERENT CHORDS:

(DIFFERENT CHORD PROTOCOL)

1. Play/hold (DIFFERENT) chord.
2. Depress footswitch or (EDIT).
3. Repeat steps 1-2, eight times.

YOU WILL CREATE EIGHT EIGHTH-NOTE CHORDS--A FULL MEASURE WHEN "BEATS 8" IS SELECTED.

To create eighth-note measures using a repeated chord, program with "BEATS 8" and edit to "BEATS 4" for playback. This effectively doubles the tempo, without actually altering the "TEMPO" prompt value. (Technically, the instrument will indicate that TWO measures will be required.

(STOP) Defines end of sequence.

"END"

REMOVE FOOTSWITCH FROM CLOCK IN INPUT. (CLOCK IN jack must not be in use if internal clock is to be used to playback sequence).

(EDIT) Go to Edit mode in order to enter a playback TEMPO value.

(RECORD) Prepare to record edits.

(START) Prompts.

"TEMPO 00" Current TEMPO value.

ENTER YOUR TEMPO VALUE ON THE KEYPAD, e.g.:

[1], [5], [0] (150)

[ENTER] Enters your value.

"BEATS 8" Current value. Enter 4 to provide playback that is twice as fast as value of 8.

[4]
[ENTER] Enters your value.
"VOICES 6" Current number of voices allocated to sequencer.
[ENTER] Enters current value.
"START"
<START> Starts sequence playback.
<STOP> Stops sequence playback.

TO CHANGE TEMPO OR OTHER PROMPT VALUES, RETURN TO THE EDIT MODE:

<EDIT>
<RECORD>
<START>

AND FOLLOW PROTOCOL AS ABOVE.

THIS ENDS THE "STEP MODE POLY RECORD/PLAYBACK" TUTORIAL.

STEP MODE MONO RECORD/PLAYBACK: A TUTORIAL

ASSUME THAT POLY SEQUENCE HAS BEEN ENTERED USING STEP MODE.

LEAVE FOOTSWITCH IN CLOCK IN JACK ON BACK.

<MONO> Light ON.
<RECORD> Enable record mode.
<1--6> Select a location number.
<START> (Prompts for TEMPO and BEATS as above.
[ENTER], [ENTER]).
"START"
<START> As you depress the footswitch, the polyphonic sequence just recorded will be played back (stepped one event per footswitch depression). At the same time, a monophonic stepped-sequence can be recorded. Enter a mono sequence for the same number of measures as the poly sequence.

(STOP) (When finished.)

(RECORD) Disable Record mode.

(START) Step through sequence with footswitch. To use internal clock to playback sequence(s), see above.

(STOP)

"END"

THIS ENDS THE "STEP MODE MONO RECORD/PLAYBACK" TUTORIAL.

VOICE ALLOCATION: SOME SUGGESTIONS

When you are prompted to enter a value for VOICES, you may choose less than 6 and have voices available to play on the keyboard in conjunction with a sequence.

When you allocate 5 voices to the sequencer and only 1 voice to the keyboard, WHEN YOU ARE READY TO PLAY (AND ONLY IN PLAY MODE) put the MONO switch (upper left control panel) of the Memorymoog Plus ON. This prevents "losing" notes due to what would normally (without using sequencer) be a polyphonic "note robbing" scheme.

TRANSPOSING A POLY SEQUENCE USING THE KEYBOARD

A poly sequence will be transposed by a mono sequence when the MONO light in the MODULATION/SEQUENCER section is ON, and the HOLD light is ON. This is useful if you would like to repeat blues changes, for instance. Play the poly riff in one key. Program the mono sequence to feature I, IV, and V scale degree changes at appropriate timing.

Transposition from the keyboard is possible as well. The MONO light in the SEQUENCER section should be OFF. Put the HOLD light ON after sequence has been called up. Assume that middle C is "zero," or no transposition. Play any interval above/below middle C to cause poly sequence to be transposed. Obviously you do not play the keyboard polyphonically in this mode! In some cases, if you go from using a mono sequence as the transposer, to using the keyboard as the transposer, you will have to toggle HOLD OFF then ON to have the function operate.

MAKING A MONOPHONIC SEQUENCE USING (ALL) THE MEMORYMOOG PLUS OSCILLATORS: A TUTORIAL

It is possible to create a monophonic sequence using all of the Memorymoog oscillators for a powerful monophonic sound. Ordinarily, you might use a poly sequence location on the Memorymoog Plus and CHOOSE to allocate only one voice card by entering the number "1" when prompted for "VOICES." After doing this, you could play monophonically and

create a monophonic sequence that uses only one voice card--limiting you to three oscillators that may sound simultaneously.

To get the powerful sound of many oscillators do the following different procedure:

- [MONO] ON Make sure the MONO switch keyboard mode switch is ON. This is NOT the MONO switch in the SEQUENCER section, but the one to the far left of the control panel.
- <MONO> Light OFF. This IS the one in the SEQUENCER section. Polyphonic mode selected when light is OFF.
- (1) Select a sequence location (1-6).
- <RECORD> Light ON. Enable record mode.
- <MONO> Light ON. Monophonic mode selected.
- (5) Select a sequence location (1-6).
- <RECORD> Light ON. Enable record mode.
- <START> Displays prompts:
- "TEMPO" Enter tempo number on SYSTEM CONTROLLER keypad.
- "BEATS" Enter beats number on SYSTEM CONTROLLER keypad.
- "VOICES" Enter "6" on SYSTEM CONTROLLER keypad, because the intention is to use as many voice cards as possible (6) to provide a massed oscillator sound.
- <START> Countdown starts and you may play sequence.
- (PLAY YOUR SEQUENCE, MONOPHONICALLY)
- <STOP>.

TO PLAY IT BACK . . .

SELECT A MONOPHONIC PROGRAM--MONO LIGHT TO LEFT MUST BE ON.

- <RECORD> Light OFF. Leave record mode, enter playback mode.
- <MONO> Light OFF, MONO switch in SEQUENCER section. Poly mode enabled.
- (1) Select SAME number selected for poly mode

above.

- (MONO) Light ON, MONO switch in SEQUENCER section. Mono mode enabled.
- (5) Select SAME number selected for mono mode above.
- (START) (Memorymoog Plus plays mono line).

Comment:

The number of oscillators used equals the number of VOICE cards specified in the prompt, multiplied by the number of oscillators the program selected calls for. If you use a mono program that uses three oscillators to make sound and specify 6 voices during the prompts, the mono line will use all 18 Memorymoog Plus oscillators.

(END OF TUTORIAL)

TIDBITS

Take note that, with the exception of the procedure outlined in the previous tutorial, a mono sequence will be heard only if an external instrument is connected to the Memorymoog Plus properly, AND only when the KD OUT light is ON. When playing poly and mono sequences together in a merge, take care to reprogram the poly programs to have this light ON if you want to enable the external instrument during a sequence or merge.

SEQUENCER JACKS ON REAR PANEL

START/STOP -- Starts/stops sequencer. A footswitch inserted here acts in lieu of the START/STOP switch on the front panel.

CLOCK IN -- Accepts external clock, such as a clock track recorded on audio tape in the recording studio, or the clock output of a drum machine. This jack works in conjunction with the STEP/LOW/MED/HIGH switch. In the step mode a rising edge advances the clock one step. The other (rate) positions are used to interface to a variety of external devices such as drum machines that may have different clock rates.

CLOCK DISABLE -- Stops yo' clock! Stops the Memorymoog Plus sequencer clock without resetting it to the beginning of a sequence.

CLICK OUT -- Provides an audible click when monitored to assist when you are recording sequences. Clicks are synchronous to beats per measure as programmed by performer.

CLOCK OUT -- Provides a square wave output synchronous with the internal

clock. May be recorded on a single track of a multitrack tape recorder to provide a master clock for synchronizing many sequences performed on the Memorymoog Plus. May be used to drive a drum machine, sequencer, etc.

MIDI CONNECTORS ON REAR PANEL

MIDI IN -- Input for MIDI. Connect the MIDI output of another instrument to this connector if you want the Memorymoog Plus to be slaved to the other instrument.

MIDI THRU -- A simple bypass that provides another version of any signal applied to MIDI IN. This connector allows you to "chain" several instruments without causing a slowdown of keyboard keying information.

MIDI OUT -- Provides Memorymoog Plus keyboard and Program number information to the external world. Connect this output to the MIDI input of an instrument to make the other instrument play the same notes you play on the Memorymoog Plus.

SAVING/LOADING SEQUENCES--CASSETTE TAPE

Sequence/merge data is retained in the Memorymoog Plus memory even when the instrument is turned off. But the need arises to store the MANY sequences and merges that you create; this library can be created using a cassette tape recorder. By now you are probably familiar with this type operation; if not, review page 22 of your owner's manual. The specific procedure for loading sequence data is:

LOADING SEQUENCER DATA

[C], [2], [ENTER] Cassette Load routine.

"B IF SEQ" Press B if you are loading sequencer data. If you wish to load Programs, press anything else on the SYSTEM CONTROLLER.

[B] Tells computer you wish to load sequences. Possible error messages are:

"NO DATA" Indicates you may have started routine before reaching the high-pitched starting cue on the tape. Rewind, play forward listening for cue (take EAR plug out). Stop on cue and start procedure again.

"VOL LOW" Volume too low on tape recorder. Increase volume and try again.

"ERROR" Tape volume may be too high, or there may be a fault in the tape. Try lower volume and/or visually inspect the tape for damage.

A SUCCESSFUL LOAD WILL DISPLAY "LOADED"

SAVING SEQUENCES TO CASSETTE TAPE

[C], [1], [ENTER]

Save routine.

"SAVED"

Indicates successful save to tape.

TO VERIFY THE SAVE:

REWIND TAPE

[C], [3], [ENTER]

Verify routine.

START TAPE

"VERIFIED"

Verifies that a save took place.

"ERROR"

Indicates a problem.

(2-17-84)