Oberheim

Strummer™

patent pending

owners manual

Purchase Date _____

Price _____

Software Version no._____

Memory Size _____

you are reading p/n 117022.c

- The Strummer™ is the first of the new generation of the Oberheim Perf/X, "**Perf**ormance E**X**pansion" MIDI modules.

- The Strummer takes MIDI notes and chords that are played on a **keyboard** and changes them into the way they would be played on a **guitar**. You have control over all settings. You set strum rate and direction, lead enhancement, chord voicing, and arpeggiation patterns and 28 other parameters.

- The Strummer has 96 presets including 64 permanently in ROM from the factory and 32 user presets in RAM for your custom programs.

- The Strummer can record short phrases or "riffs" and play them back when triggered from the keyboard. You select a "trigger key", play the riff and then press stop. If you press the "trigger key" again at the end, the riff is looped and starts vamping (repeating) until stop is pressed. These "riffs" are stored globally and can be used at any time from any preset!

- The Strummer has dynamic MIDI control over a number of it's parameters. Strum speed can be varied by velocity as can the number of notes used in a chord. You can even program chords "on the fly" using "Chord Capture". Once a chord is 'captured' it is held globally until a new one is captured.

- The Strummer fully supports System Exclusive allowing external storage and remote editing of Strummer programs.

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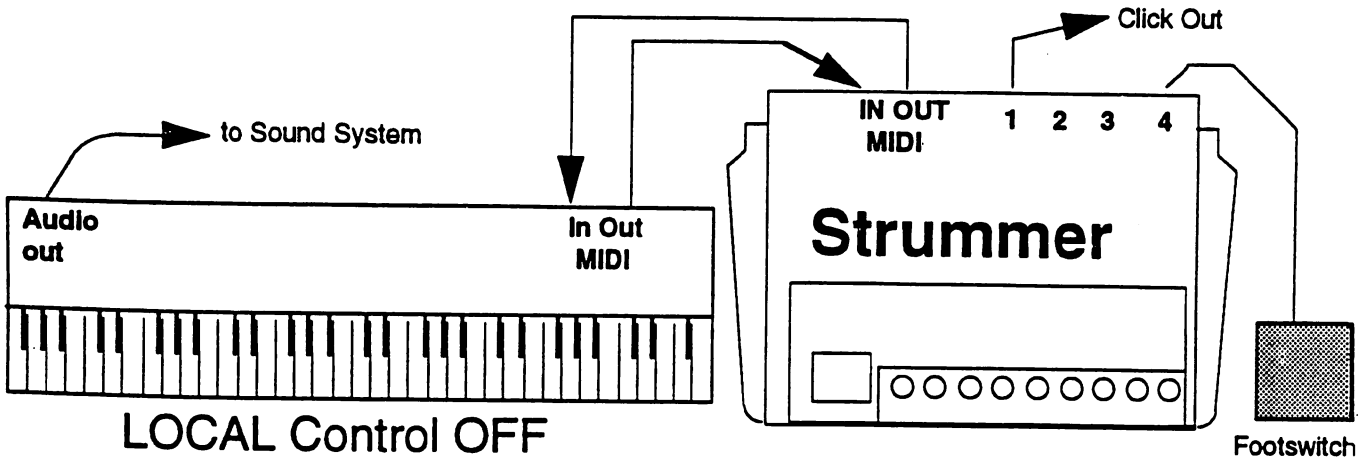
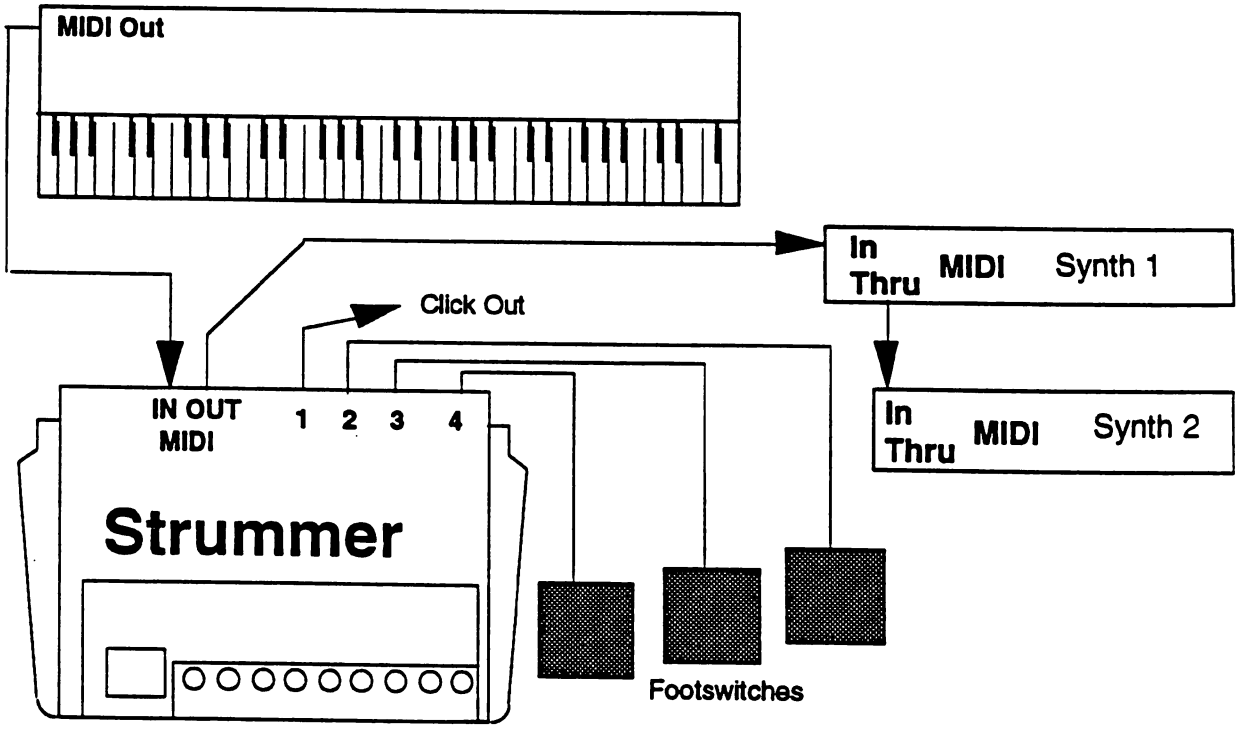
Credits:
Software..... David Billen
Hardware..... Oberheim Engineering
Beta Testing & User Advocates
..... Henry Juszkiewicz & Todd Grace
Manual..... Richard Bugg

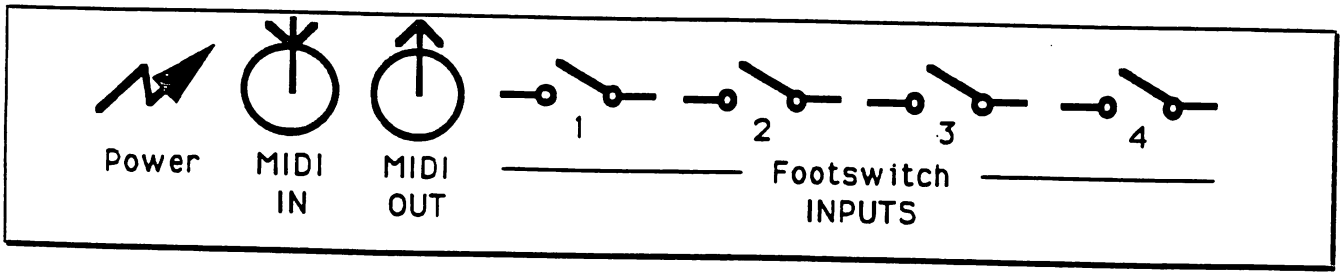
Using the Strummer with a single synth (Local Control Off):



or with several synthesizers:



Rear Panel Connections



Power Supply, (9VDC / 200mA, center +) 2.1mm plug, 11.5mm barrel
MIDI In (from controller)
MIDI Out (to synth's)
1. Metronome Audio Out
-or- Repeat Inhibit Footswitch 1 (see parameter 28)
2. Bypass Footswitch 2
3. Chord Capture Off Footswitch 3
4. Record/Play Footswitch 4

the controls...

The Strummer has 9 buttons on the front panel and uses four jacks on the rear panel as footswitch inputs and a click output. These buttons are:

Left Arrow
Changes the number in the display to a lower value.

Right Arrow
Changes the displayed number to a higher value.

ENTER
This button is used to "Enter" a new value or to select a parameter to edit (see Preset and EDIT Parameter).

Bypass
When Bypass is ON (LED lit), the MIDI IN is connected directly to the MIDI out / thru jack.

MIDI Input Channel Select

This selects the MIDI channel the Strummer uses as an input. Notes and data on all other MIDI channels are sent directly to the out/thru jack unaltered. (see Appendix 1 "Strummer Details")

PRESET

When PRESET is ON the display will show the current Strummer preset. To change presets, use the Right & Left arrow buttons to select the new preset number. The numbers will flash to show the new preset is ready to be selected. Press ENTER to go to the new preset. If you want to cancel and stay at the current preset, just press the PRESET button again. The display will stop flashing and will show the current preset.

Edit Parameter

When Edit Parameter is selected, the display first shows the current parameter number. Use the Right/Left Arrow buttons to select a parameter number to edit. Once you have selected the parameter to change, press ENTER. The middle "dot" in the display (labeled "Value") will light and the display will now show the present value of this parameter (see the Parameters listing, page 28). If you change a parameter you must save the preset or the edit will be lost when you select a new preset.

Tempo, (Internal)

When using the Strummer's internal clock, you use Tempo to set the clock speed. The number shown in the display is the number of milliseconds between 64th notes. (OK, we know this is a bit weird but it was done so we could fit the full tempo range on to the 2 digit display.) If you get as confused by this as I do, just remember

The smaller the number, the faster the tempo.

(see page 22 for a conversion chart of tempo numbers to MM)

Tempo, (MIDI Clock)

The Strummer will automatically lock to external MIDI Clock. If MIDI Clock is sent to the Strummer MIDI In, it will over ride the Tempo Setting. If MIDI Clock stops, the Strummer continues at close to the same tempo.

Record/STOP

This is the button used to record "riffs".

To RECORD a Riff

1. Press Record, the display shows "SL" for Select key. The next MIDI note number the Strummer receives on it's input channel will be used as the "Trigger Key".

2. As soon as a note has been received, the display changes to "PL" for PLay riff. The Strummer will record as many notes as remaining memory allows. Controller data is not recorded. Pitch Bend will be recorded only if parameter 30 "Riff Bend" is ON. Do not try to start the Riff on the Trigger Key.

3. To end a "riff" you have two choices.
   a.) If you want the riff to LOOP, press the "Trigger Key" again in tempo. When it is triggered, the riff will repeat until you hit the STOP button on Strummer.

   b.) If you want the riff to Stop after playing once, press STOP.

If you run out of memory while recording a riff, the Strummer will drop back into preset mode. If you are out of memory and try to enter Record, the Strummer will display FL (for FULL) as soon as you have SeLected a Trigger Key.

The number of riffs you can record depends on the tempo and number of notes played. On average, you can get more than 25 riffs each with more than 10 notes, or 1 riff with more than 350 notes, or a single riff with 2 notes that are 20 minutes apart.

To ERASE a Riff

1. Press Record.
2. SeLect the Trigger Key for the riff you want to erase.
3. Press Record again. Make sure that you don't have any MIDI data coming into the Strummer or you will wind up recording a new riff.

To PLAY a Riff

1. Press the Trigger Key recorded for that Riff.
2. To stop playback, Press STOP or ENTER.

If a Riff contains a key that has been used as a Trigger Key for another Riff, the Strummer will start playing that Riff as soon as it comes to that key. It will NOT go back and finish the first Riff.

Port 1 (Global parameter 28)

The first phone jack on the back, next to the MIDI out is marked 1. This is "Port 1" and can be used as a footswitch INPUT or as the Click OUTPUT.
Use Global parameter 29 to make your choice.

1. Press EDIT Parameter
2. use the arrow keys to select parameter 28
3. Press ENTER
4. Use the arrow keys to select either;
   PD = jack is used for "Repeat Inhibit" pedal input
   CL = jack is used for "Click" output
5. Press ENTER
6. Press PRESET to leave Edit Mode

The footswitch inputs are designed for an Oberheim FS-7 or equivalent. The FS-7 is a momentary switch wired between the tip and sleeve of a mono 1/4"phone plug. It doesn't matter if the switch is normally open or closed. As long as it is connected BEFORE power is turned on, the Strummer will figure out which type it is and respond correctly.

Port 2

The second phone jack on the back, marked 2, is Bypass. It is the same as pressing the Bypass button on the front panel.

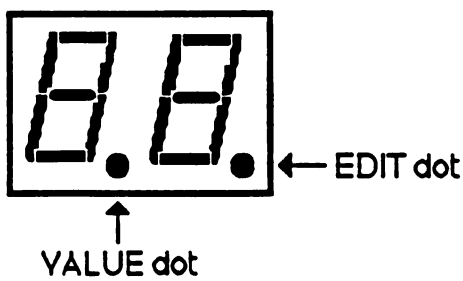
Port 3

The third phone jack on the back, marked 3, is Chord Capture on/off. The footswitch will only work on Presets with Chord Capture on (parameter 10)

Port 4

The fourth phone jack on the back, marked 4 is Record/STOP. It is the same as pressing the RECORD/STOP button on the front panel.

Display: 2 digits & 2 dots



the Strummer Display

The Strummer display has two numeric digits and two "dots".

When the PRESET LED is on, the numbers in the display are the current preset.

Flashing numbers are used to alert you that a new preset is being selected, but is not yet active. Press ENTER to select the new preset, or press PRESET to stay at the current preset. The numbers will stop flashing and will display the current preset.

When the EDIT PRESET LED is on, the numbers are used to show both the parameter number and value of that parameter. When you first press the EDIT PRESET button, the number in the display is a Parameter number. Pressing ENTER changes the display to show the value of that parameter. The VALUE dot (in the bottom center of the display) comes on to remind you that you are looking at a Value setting for the Parameter you've selected. To see the Parameter number again, Press ENTER (see Changing Parameters in the next section).

If you change the value of a parameter, the EDIT dot comes on to show you that you have changed the setting for that parameter. If you press ENTER, the new value will be used for the parameter (see Changing Parameters in the next section).

Before we start using the Strummer, it might help to know how to edit the Parameters and how to save those changes.

How to EDIT the Parameters

Changing Parameters:

1 Press "EDIT PRESET" button
>The display is now showing a Parameter number.

2 Use the "RIGHT ARROW" and "LEFT ARROW" push buttons to select the parameter you want to change.
>The display shows the current parameter number.

3 Once you get to the parameter you want to change, Press "ENTER".
>The display now shows the current VALUE for the selected parameter. The VALUE dot (lower center of the display) comes on to show that you are looking at the parameter VALUE.

4 Use the "RIGHT ARROW" and "LEFT ARROW" buttons to select the new value for the parameter.
>As soon as you change the value, the EDIT dot will come on to show that you are changing the value setting.

• NOTE: IF YOU CHANGED THE VALUE and WANT TO PUT IT BACK WHERE IT WAS, BUT YOU CAN'T REMEMBER WHAT IT WAS, PRESS "EDIT" **before** doing anything else. This will take you out of VALUE without changing the parameter.

5 The new value will not take effect until you Press "ENTER".
>The display will now show the Parameter number.
The VALUE dot goes off since the display is now showing the Parameter Number, and the EDIT dot is now off since you have completed an edit.

Saving Preset

Once you have edited a Strummer Preset, you can save it to the USER PRESET area (Presets 65 to 96).

• If you select a new preset without saving your edits, all changes will be lost.

1. Press "EDIT PRESET".
2. Use the "RIGHT ARROW" key to select "PF" (Preset Function).
3. Press "ENTER" to select Save Preset function
   >The display will show "SP"
4. Press "ENTER".
   >The display will show the last user preset number selected. The PRESET LED will flash as a caution signal that you are about to store a preset.

• You must press **ENTER to save** your preset. If you press the PRESET button you will still be in the edited preset, but your changes will NOT have been saved.

5. Use the "RIGHT ARROW" and "LEFT ARROW" push buttons to select a Strummer Preset number for this program.
   >The display shows the Preset number selected.

• IMPORTANT: The old settings for this preset number will be erased when the new program is stored.

6. Press ENTER to save preset.
   >The display shows PF. (because you are still in EDIT Parameter)
7. Press Preset to leave the EDIT mode.
   > The display now shows the new preset number.

• If the display shows the OLD Preset number, you didn't press ENTER. You can still save your edit by pressing the Edit Preset button and starting with step 3 above.

A guided tour of the Factory Presets:

The Strummer has 64 Factory Presets, this is a list of the first 20. The remainder are variations using the Strummer keyboard split. Presets 21 to 40 are active above the split, presets 41 to 64 work below the split point. The split point is at MIDI note number 60 (middle C).

As part of our guided tour, we will look at one parameter in each preset as an example of things you can change. Remember, if you want to keep a change, you must save the preset in the user preset area (presets 65 to 96).

To begin, make sure you system is connected properly (see Setup) and that your controller's MIDI output channel, the Strummer MIDI In, and your synth are all set to the same MIDI channel.

The Strummer will sound best if you follow a couple of guidelines for selecting sounds or when creating your own. Avoid using patches that are too "fat", and ones with too big of an attack click– these sound good if you are playing one note at a time, but when you stack up six notes, like the strummer does, it can drown you in MIDI soup. The same limits apply for synth sounds with a lot of internal processing (reverb & dsp). In general it will be the patches that sound a bit "thin" when played solo that will sound best strummed in a chord.

Factory Presets

01:	Folk Guitar	12
02:	Rock Guitar, BARRE Chords	12
03:	Lullaby Acoustic	13
04:	12 String	13
05:	Plucked Guitar with Chord Capture	13
06:	Space Guitar	14
07:	Jazz 9th	14
08:	1 Note Barre Chords	14
09:	Open strummer	14
10:	5ths Guitar	14
11:	The Bug	15
12:	Two Channel Open Guitars	15
13:	Folk Guitar 7th	15
14:	Power Chords	15
15:	Low Acoustic	15
16:	Inverted 12 String	15
17:	Predictable Strum	16
18:	Jazz 9th Barre Chords	16
19:	Chord Capture & Octave (fast note repeat)	16
20:	Closed Strummer	16

Preset 01: Folk Guitar • changing the strum rate parameter 00

Use an Acoustic Guitar patch on the synth and select preset 01 on the Strummer. Press Bypass on the Strummer (the Bypass LED comes On) and play a three note chord. Now press Bypass again (LED Off) and play the same three note chord. Welcome to strumming.

Your three note cord has been converted to a guitar chord as played on all six strings. The appropriate notes have been doubled and depending on the chord played one or more notes have been transposed up or down an octave. With this preset, the guitar is playing open chords transposed to play only on the first 5 frets.

The newly formed chord is then sent one note at a time, with a slight delay between notes just as if it had been "strummed" on a guitar.

If you want to change the strum rate, all you have to do is Edit a single parameter.

1. Press EDIT PRESET.
2. Use the Right/Left arrows to select 00 (Strum Rate)
3. Press ENTER (note the VALUE LED comes on)
4. Use the RIGHT/LEFT ARROWS to select the new Strum Rate.
   oF= OFF (no strum), 01 (fastest rate) to 99 (slowest)

Preset 02: Rock Guitar, BARRE Chords •setting up barre chords parameter 08

Use an Electric Guitar sound on the synth and select Strummer preset 02. As you play up and down the keyboard you will notice that the chords follow the octave you are playing.

Your chord is converted into a "barre" chord, notes are only transposed if they are "out of reach" for that position on a guitar neck. The Strummer uses the lowest note of your chord as the root and places the remaining notes on the higher strings in order. The range is not restricted by the Strummer allowing you to have an 8 octave guitar neck if you want.

To change the type of guitar chord the Strummer uses, all you have to change is a single parameter.

1. Press EDIT PRESET.
2. Use the RIGHT/LEFT ARROWS to select 08 (Chord Transposition Type)
3. Press ENTER (note the VALUE LED comes on)
4. Use the RIGHT/LEFT ARROWS to select the new Chord Type.
   oF= OFF (use chord as played on keyboard),
   01 (Open Chord, transposed as if played on the first 5 frets),
   02 (Barre Chord, takes lowest note played on keyboard and uses it as the root of the chord. Lo E string plays the root with the rest of the notes assigned to the higher strings. Sounds the new chord in same range as played on keyboard.),
   03 (Spread Chord, inverts and transposes chord as necessary to play each note a fifth apart. Sounds the new chord in same range as played on keyboard.)

Preset 03: Lullaby Acoustic • next channel assignment parameter 24

Use an Acoustic Guitar patch on the synth and select preset 03 on the Strummer. You will notice the "Multi Channel Out" LED comes on. If you have a second synth (or are using a multi-timbral synth), set-up a second sound up to respond to MIDI channel 2.

All notes and chords played are "Echoed" on MIDI channel 2 using arpeggiation table no. 4. The Strummer can use additional channels to send echos, to send just chords, or just single notes. This is called the "Next" channel. You can use all 16 MIDI channels if you like. This preset also uses "Chord Sustain" (see next).

If you want to change the Multi Channel Out signal, or turn it off, you need to edit parameter 24 "Next Channel Assignment".

1. Press EDIT PRESET.
2. Use the RIGHT/LEFT ARROWS to select 24 (Next Channel Assignment)
3. Press ENTER (note the VALUE LED comes on)
4. Use the RIGHT/LEFT ARROWS to select the new Next Channel Assignment.
   oF= OFF (no Multi Channel Out),
   01 (Chords sent on Next Channel),
   02 (single notes sent on Next Channel),
   03 (Echo's/Arpeggiation sent on Next Channel),
   04 (same notes and chords as main channel, but with velocity inverted. The softer you play, the louder the Next Channel.)

Preset 04: 12 String •chord sustain parameter 11

Use an Acoustic Guitar patch on the synth and select preset 04 on the Strummer.

This effect is created by using a fast Echo (parameter 20) transposed up 1 octave (parameter 22) with Chord Sustain on (parameter 11). The speed of the echo is set by Repeat Rate (parameter 19).

To see the interaction between these parameters, try changing each one in turn.

Parameter 20, The number of times a note will repeat
Parameter 22, The Echo Transposition
Parameter 11, Chord Sustain (Holds each chord until the next one is played.)
Parameter 19, Repeat Rate

Preset 05: Plucked Guitar with Chord Capture
•strum mute 06 & velo thresh 05

Use an Electric Guitar sound with a long sustain on the synth and select Strummer preset 05. This preset uses Chord Capture (parameter 10). If you have a footswitch (Oberheim FS-7 or equivalent) you can plug it into jack 3 and use it to turn Chord Capture On and Off (this only works on presets that are programmed for Chord Capture).

Even though your synth patch has a long sustain, the output of the Strummer is a short tone, like palm muting on a guitar. Parameter 06 (Strum Mute) gives the Strummer this control over the synth.

Strum Mute allows you to program the Strummer to Mute chords in a variety of ways. You can use the split point (parameter 26) or the velocity threshold (parameter 05) or even alternate chords as the trigger to cause a mute.

Try setting Velocity Threshold (parameter 05) to 63, and Strum Mute (parameter 06) to 02. This will mute chords below m.forte (medium volume) but will sustain everything played louder.

Preset 06: Space Guitar •Arpeggiation patterns parameter 07

Space Guitar use Arpeggiation table number 1 plus Echo. To change the pattern, use parameter 07, Arpeggio Pattern. Changing the "Echo" rate is done from parameter 19, Repeat Rate.

The repeat rate value is the number of MIDI clock ticks between echoed notes, so a larger number means a slower echo.

Preset 07: Jazz 9th •Deviation parameter 07

If you play a simple E minor chord using preset 07, you will hear an F# (the 9th) on top. The Strummer uses parameter 09 "Deviation" to play a note that is always a fixed number of 1/2 steps above the lowest key. In this case, 14 semitones. If you change parameter 09 to 10 (10 semitones), the interval becomes a minor 7.

Preset 08: 1 Note Barre Chords •Chord Velocity Effect parameter 14

Preset 8 uses "Chord Capture". When you play a chord, the Strummer "captures" the chord and uses it to play new chords when you play single notes. The Strummer treats single notes as the lowest note of the chord and transposes accordingly.

A second effect is also in use on this preset. Depending on how hard you play a single note, you get more notes. Parameter 14 "Chord Velocity Effect" determines how many notes are played. Parameter 05 "Velocity Threshold" is used to set the level when this starts working.

Preset 09: Open strummer •Chord Capture parameter 10

This is another preset that uses "Chord Capture". Try playing a chromatic scale scale up the keyboard. This preset is the opposite of no. 20.

Preset 10: 5ths Guitar •Echo Transposition parameter 22

5ths Guitar uses parameter 22 "Echo Transposition" to play a second note an octave and a fifth above each key pressed. The repeat rate (parameter 19) is fast

enough so you don't hear it as a discrete echo. Imagine being able to take a 12 string guitar and tune the 2nd string in each pair up a 5th.

Preset 11: The Bug •Chord Capture with slow Strum

Preset 11 is an examples of the range of the Strummer. Chord Capture is on and the Strum rate is set to it's slowest value (99). Try playing a Maj.7 chord and then wandering around the keyboard with single notes.

Preset 12: Two Channel Open Guitars •Multi-channel out (by parameter 24)

When you select preset 12, the Multi-channel Out LED comes On. Two Channel Open Guitars uses the Strummer's ability to send different things on more than one MIDI channel at a time.

We have set parameter 24 "Next Channel Assignment" to send chords on the next MIDI channel above Strummer's MIDI channel. Of course if you have Strummer set to MIDI channel 16, we wrap around so that the next channel used is no. 1.

The factory setting for the "Number of Next" (parameter 25) is one. If you change to a number higher than 1, the note assignments going to the Next Channel are rotated. Try setting it to 3 and using very different sounds on the next three MIDI channels so you can hear the effect clearly. If you play the same three note chord several times, you will hear the notes move between sounds as Strummer rotates channels used for each note in turn.

Preset 13: Folk Guitar 7th

Just like our Jazz 9th preset, this one uses parameter 09 "Deviation". This time we have a minor 7th (10 semitones) programmed.

Preset 14: Power Chords

This is another electric guitar preset. We are using Chord Capture (parameter 10) and Chord Transposition Type (parameter 8) to create those metal power chords.

Preset 15: Low Acoustic

By setting parameter 13 "Chord High String" to 4, the Strummer uses only the 1st 4 strings for chords. Parameter 16 "Note Low String" is set to 2 so the Strummer uses only the first 2 strings for individual notes.

Preset 16: Inverted 12 String

Where preset 04 used a fast echo up 1 octave to create a 12 string guitar, this preset transposes down 1 octave. Parameter 22 "Echo Transposition" is set to 00 for down 1 octave. (A value of 12 is "No Transpose", and 24 is "Up 1 octave".)

Preset 17: Predictable Strum •Chord Low String parameter 12

As in preset 15, we are using the Chord Low String and Chord High String (parameters 12 and 13) to limit the chords strummed to only 4 strings. Combined with a slower strum rate, it makes it easier to follow from the keyboard.

Preset 18: Jazz 9th Barre Chords

This time we've changed Chord Transposition Type (parameter 08) to Barre Chords. The 9th above the lowest key comes from parameter 09 "Deviation".

Preset 19: Chord Capture & Octave (fast note repeat)

With preset 19, we have combined chord capture with a fast repeat transposed up an octave. The parameters involved are;

10	Chord Capture
19	Repeat Rate
20	Max Repeat
22	Echo Transposition

Preset 20: Closed Strummer

And the last of our tour is Closed Strummer. This is the opposite of the Open Strummer preset. By now you should have a good feeling for what the Strummer does and how to program it. Have fun.

Abbreviations used by the Strummer:

Ab	Above Split point
bL	beLow Split point
CL	CLick out
FL	Riff memory FULL
oF	OFF
on	ON
Pd	Pedal
PF	Preset Function
PL	PLay Riff
SL	SeLect Trigger Key
SP	Save Preset

Parameter List

No	Name	VALUE	Function
00	Strum Rate	oF, (01-99)	oF (OFF, no Strum) 01 (Fastest)-99 (Slowest)
01	Strum Velocity	oF, on	Chords above velocity threshold (parm. 05) are strummed
02	Velocity Average	oF, on	Uses the average velocity of input for chord.
03	Lead Enhancement	oF, on	Accents 1st note of chord (assumes root position)
04	Strum Direction	oF, (01-03)	oF (OFF) 01 (chords below split are strummed down){parm26} 02 (chords below velocity threshold are strummed down) {parm05} 03 (chords above velocity threshold are strummed down)
05	Velocity Threshold	(01-99)	Sets threshold for all velocity dependent parameters. No. = MIDI Velocity value
06	Strum Mute	oF, (01-04)	oF (OFF) 01 (chords below split are muted){parm26} 02 (chords below velocity threshold are muted) {parm05} 03 (chords above velocity threshold are muted) {parm05} 04 (chords are muted on alternate strums)
07	Arpeggio Pattern (see Arpeggiation table pages 20 & 21)	oF, (01-07)	Selects arpeggio table NOTE: Repeat Max {Parameter no. 20} must be set to 1 or larger for the Arpeggiation to sound. also Decay Rate {parameter 18} and Repeat Rate {parameter 19}
08	Chord Transposition Type	oF, (01-03)	oF (chord strummed unaltered) 01 (Open chord: as played on first 5 frets) 02 (Barre chord: Assumes root position, takes lowest note on chord and places it on the lo E string and barres) 03 (Spread chord: Transposes notes for a minimum of 7 semiTones (P5th) between notes)

09	Deviation	oF, (01-23)	oF (OFF) 01 (adds a new note above the lowest note in the chord) Range is in semi-tones from 1 to 23. Deviation is added to chord BEFORE transposition .
10	Chord Capture	oF, (01-02)	oF (OFF) 01 (Complex:Last chord played is used as basis for constructing a chord when a single note is played. Chord form is transposed and inverted to a range that surrounds the single note) 02 (Simple: Single note is always the lowest note of chord)
11	Chord Sustain	oF, on	Sends controller #64 (pedal) down when a chord is played. Each new chord causes pedal up/pedal down cycle.
12	Chord Low String	(01-06)	The lowest string used for a chord 01 (Lo E) 02 (A) ... 06 (Hi E)
13	Chord High String	(01-06)	The highest string used for a chord. 01 (Lo E) 02 (A) ... 06 (Hi E)
14	Chord Velocity Effect	oF, on	Uses Velocity Threshold {param05} If over threshold all notes in chord are played. Chords played softer than threshold have more notes subtracted the softer the chord is played.
15	Note Transposition	oF, on	Transposes all notes (not just chords)into range of guitar strings.
16	Note Low String	(01-06)	The lowest string used for note Transposition {parm15} 01 (Lo E) 02 (A) ... 06 (Hi E)
17	Note High String	(01-06)	The highest string used for note Transposition {parm15} 01 (Lo E) 02 (A) ... 06 (Hi E)

18	Decay Rate	oF, (01-99)	The decay amount value is subtracted from the velocity value of each note when echoed or arpeggiated (see parm.20)
19	Repeat Rate	(01-99)	Number of MIDI Clock pulses between repeated notes.(see parm.07) Runs from Tempo value or MIDI Clock (if present). 01 (fastest repeats) 24 (= Tempo value) 99 (slowest repeats)
20	Max Repeat	oF, (01-99)	The maximum number of times a note will repeat when echoed (see {parm07})
21	Max Voices	(01-12)	The maximum number of notes in a chord that will be echoed or arpeggiated.
22	Echo Transposition	(00-24)	Transposition in semi tones 00 (-1 octave) 12 (no transpose) 24 (+1 octave)
23	Delay Sustain	oF, on	Holds controller #64 (sustain) on while notes are echoed
24	Next Channel Assignment	oF, (01-04)	oF (OFF) 01 (chords sent out next channel) 02 (notes sent on next channel) 03 (echoes go out next channel) 04 (sends inverted velocity out next channel)
25	Number of Next	(01-16)	The total number of "next" channels used. When greater than1, notes rotate assignments with each note going to a new channel. Assignment wraps back to the first "next" channel and the rotation continues.
26	Keyboard Split	oF, (01-99)	MIDI note no. of the split point. Split occurs above this number. Used by other parameters (see parm. 27) The split only effects incomming notes and does not change notes from riffs, echos, or arpeggios.
27	Keyboard Split Direction	bL, 01, Ab	bL Strummer passes notes unaltered Below split point 01 Strummer ignores notes Above split Ab Reverses Strum direction Above split point while strumming normally below split.

Global Parameters

NOTE: Global parameters are NOT saved as part of a Preset. They are retained in memory by the battery.

28	Port 1 assign	CL, Pd	Used to set Jack no. 1 to either; CL (Click Output (Metronome)) Pd (Pedal Input (Echo Off))
29	Preset Change Channel	oF, (01-99)	oF (Strummer ignores program change commands) 01 to 16 (receives pgm. change on MIDI channel. nn) 17 to 99 (uses MIDI controller nn to set Strummer pgm. Uses MIDI In channel)
30	Riff Bend	oF, on	Records Pitch Bend in Riff
31	Chord Detect	(01-40)	Sets the window to decide between notes and chords. Notes played faster are interpreted as part of a chord, unless a note off is received. Default value is 20 mSec.
32	All Notes OFF filter	on, oF	Removes MIDI "All Notes Off" message from active channel. Some older keyboards send this message when all keys are up, truncating echos and riffs.

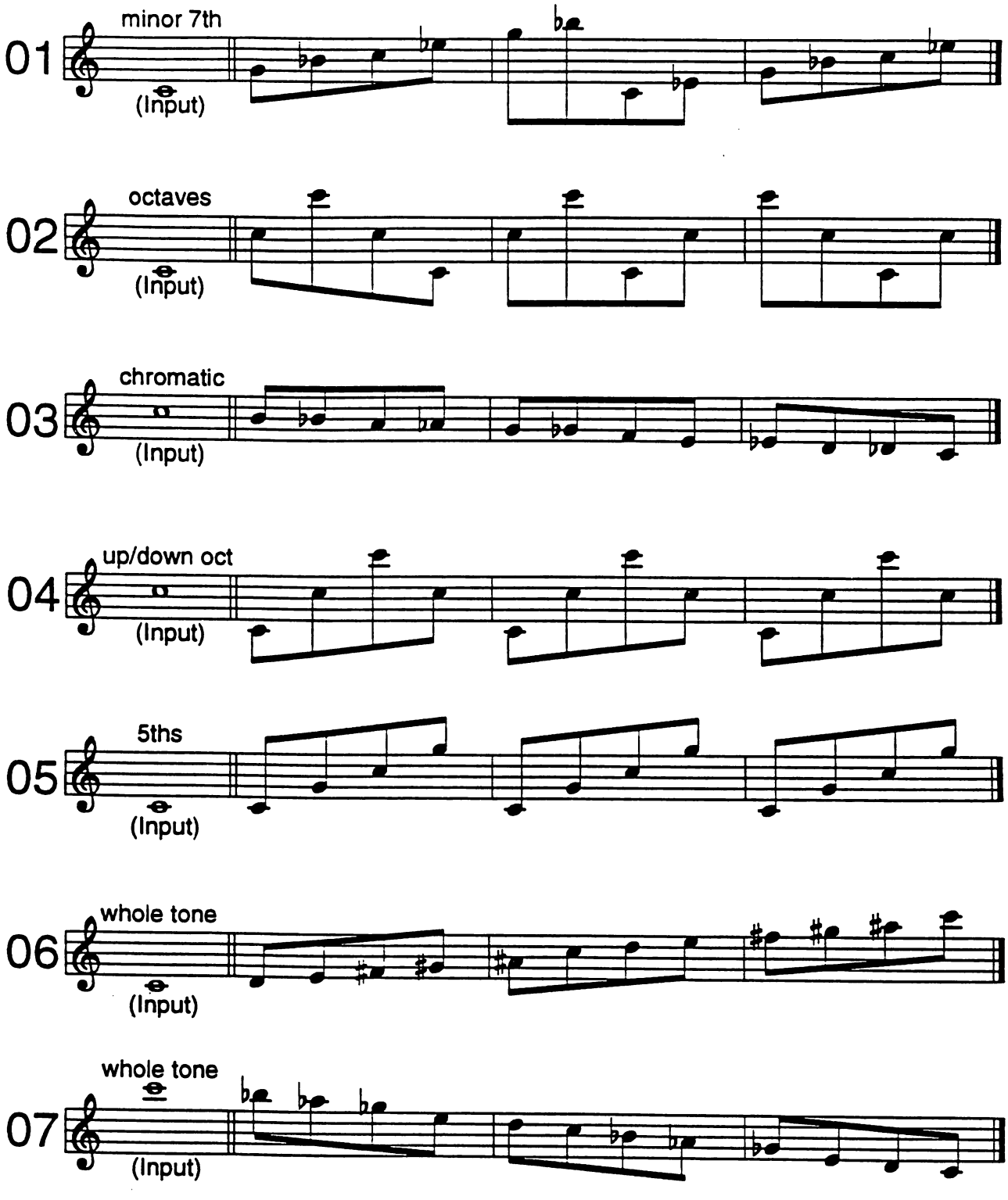
PRESET FUNCTION

PF	Preset Function	SP, 01	SP (Save Preset, Prompts for Preset number) 01 (Send PRESET SysExe)

Strummer Parameter 07, Arpeggiation Table

	1	2	3	4	5	6	7	8	9	10	11	12
o F	–	–	–	–	–	–	–	–	–	–	–	–
01 "minor7"	5th	-7th	Oct.	Oct&-3rd	Oct& 5th	Oct& -7th	root	-3rd	5th	-7th	Oct.	Oct& -3rd
02 "Octaves"	Oct.	2oct.	Oct.	root	Oct.	2oct.	root	Oct.	2oct.	Oct.	root	Oct.
03 "Chromatic"	Dn -2nd	Dn 2nd	Dn -3rd	Dn 3rd	Dn 4th	Dn dim5	Dn 5th	Dn -6th	Dn 6th	Dn -7th	Dn 7th	Dn Oct.
04 "Up/Dn "	Dn Oct	root	Oct	root	Dn Oct	root	Oct	root	Dn Oct	root	Oct	root
05 "5ths"	root	5th	Oct	Oct& 5th	root	5th	Oct	Oct& 5th	root	5th	Oct	Oct& 5th
06 "Whole Tone Up"	2nd	3rd	Aug4	Aug5	Aug6	Oct.	Oct& 2nd	Oct& 3rd	Oct& Aug4	Oct& Aug5	Oct& Aug6	2oct
07 "Whole Tone Dn"	Dn 2nd	Dn 3rd	Dn Aug4	Dn Aug5	Dn Aug6	Dn Oct.	Dn Oct& 2nd	Dn Oct& 3rd	Dn Oct& Aug4	Dn Oct& Aug5	Dn Oct& Aug6	Dn 2oct

Strummer Parameter 07, Arpeggiation Table



Advance applications and details

the tempo table:

TEMPO=mm

12	208
13	192
14	179
15	167
16	156
17	147
18	139
19	132
20	125
21	119
22	114
23	109
24	104
25	100
26	96
27	93
28	89
29	86
30	83
31	81
32	78
33	76

34	74
35	71
36	69
37	68
38	66
39	64
40	63
41	61
42	60
43	58
44	57
45	56
46	54
47	53
48	52
49	51
50	50
51	49
52	48
53	47
54	46
55	45

56	45
57	44
58	43
59	42
60	42
61	41
62	40
63	40
64	39
65	38
66	38
67	37
68	37
69	36
70	36
71	35
72	35
73	34
74	34
75	33
76	33
77	32

78	32
79	32
80	31
81	31
82	30
83	30
84	30
85	29
86	29
87	29
88	28
89	28
90	28
91	27
92	27
93	27
94	27
95	26
96	26
97	26
98	26
99	25

For the mathematically adventurous, you can calculate tempo using the formula:

$$\frac{60}{(\text{(Strummer TEMPO) X.001)} \times 24} = \text{mm (beats per minute)}$$

Sending and Receiving Presets using MIDI System Exclusive.

The Strummer can send and receive individual presets using MIDI System Exclusive. At Oberheim we have a saying "Never put anything in a computer you can't lose". Since the the Strummer is a computer, it is a good idea to keep a record of your custom presets somewhere. You could write each parameter down on paper, or you can use MIDI System Exclusive and your sequencer to store a preset with the sequence that was created using it.

To SEND SYSEXE

1. Select the preset you want to save.
2. Press EDIT and use the RIGHT ARROW to get to PF (Preset Function).
3. Press ENTER.

4. Use the RIGHT ARROW to select 01 (for Send 1 Preset).
5. Press ENTER. The Strummer will now send the current preset out using System Exclusive. It will take less than 1 second to send a preset.

IMPORTANT NOTE: The Strummer only sends 1 preset at a time. You must save each individual preset one at a time using the steps above. You only need to save preset numbers 65 to 96 (the 32 user presets). The other presets are permanently in ROM and can not be erased (even if the Strummer's battery goes dead).

To RECEIVE SYSEXE

The Strummer automatically receives System Exclusive messages sent to it. Incoming Sysex is put in the edit buffer the same way changes are made if you entered all the values manually.

Because the Strummer treats a Sysexe patch the same as an edit, it doesn't matter what preset you are on when the message is received. However; **You must SAVE the new settings** or they will be lost when you change presets.

Please note: Just like sending sysexe, the Strummer only receives one preset at a time. You must save each preset received in the Strummer's user area (presets 65 to 96) if you want to keep the new settings. Yes, I have just said the same thing twice. That's because it's important.

Software Version Number & Memory Size

Every time the Strummer is turned ON, the first numbers shown in the display are the Software Version Number. These flash by in about half a second, followed by the Memory Size equally fast before stopping on the current Preset number. The Software Version shown should be 2.4 or larger. The stock memory will show 08 with the expanded memory displaying 32.

Your Perf/X comes stock with 8K of RAM (Random Access Memory). It can be expanded to 32K of RAM allowing longer riff's to be recorded. While the procedure is relatively simple, caution against static electricity must be exercised to avoid destroying your unit. The services of qualified tech should be used to change the memory chip. In case of problems occuring after a memory expansion, Oberheim will make the sole determination as to the correctness of the procedure and the cause of any failures in circuitry.

To expand the memory, replace the memory chip inside the Perf/X with a 32K x 8 low power static RAM (SRAM) with a speed of 150nS or better. (The Hitachi part number for this is a UM62256A-15L. Other brands will work fine. The "generic" part number is a 62256.)

IF YOU HAVE PROBLEMS

What to do when things get weird...

If things have gotten totally out of hand, the Strummer seems to have had a nervous breakdown, MIDI is locked up, and things don't work like they used to... you can always do a Master Reset.

There are two types of Master Reset, Reset, and Cold Boot.

1. **Reset:** With power on, press the RIGHT ARROW, LEFT ARROW, and ENTER buttons simultaneously. This resets Strummer without erasing Global Parameters or Riffs.

2. **Cold Boot:** YOU WILL LOSE ALL USER PRESETS.

With power OFF, press the RIGHT ARROW, LEFT ARROW, and ENTER buttons simultaneously. This completely resets Strummer, erasing ALL user presets, all Global Parameters and all Riffs. The factory settings will be restored to the machine and you can start over.

Things that can look like a problem, but aren't...

*** Chord Detect (parameter 31)

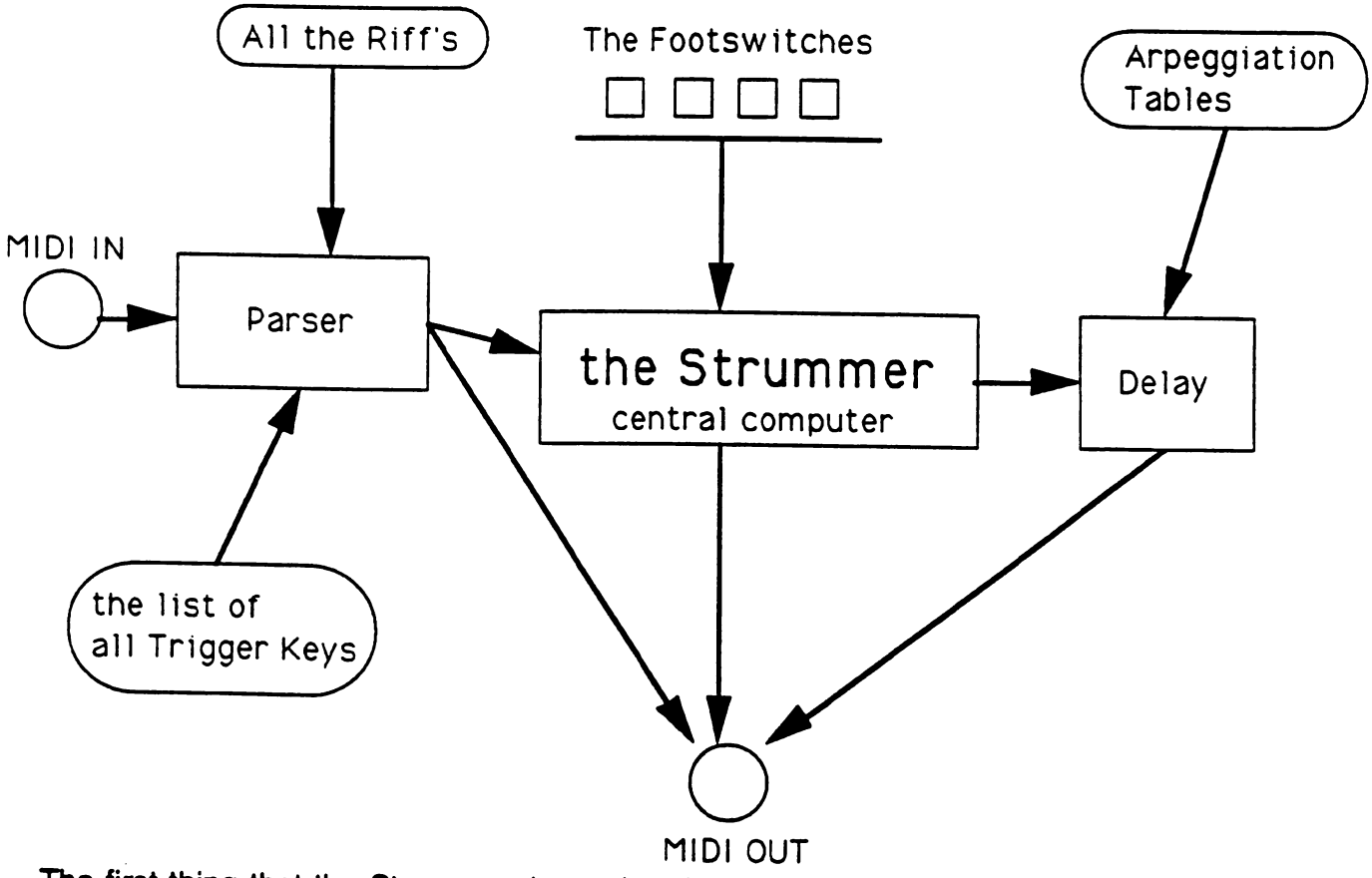
The Strummer has to decide if the incoming MIDI notes are part of a chord, or if they are supposed to be a single line. The Chord Detect parameter sets a time limit on how long the Strummer will wait before deciding. If you feel like there is a delay in what you are playing through the Strummer, try setting this parameter to a smaller number. If you make the value too small, the Strummer will never find a chord whatever you play. The factory default (a good place to start) is 20 (mSec).

*** Because the strummer can use a number of synth voices trying to assign notes to all six "strings", you may have situations where, due to your synth's dynamic allocation algorithm, extreme note stealing occurs. This can sound like notes being cutoff in their prime or abruptly muted. That is exactly what is happening. Try using a split to help "pre-allocate" voices for the synth. Or get more synths (we recommend Oberheim).

Specifications

How the Strummer spends it's time.

David, the programmer for the Strummer, thought you might like to know what goes on inside the little plastic box you've purchased.



The first thing that the Strummer does when it receives a MIDI message is to look at the channel number. The Parser (the Strummer's MIDI Traffic Cop) will immediately pass any messages that aren't on the Strummers MIDI In channel directly to the MIDI OUT.

If the message is on the right MIDI In channel, the Strummer next checks to see if it is a Trigger Key for a riff. If it is, the Strummer starts playing the riff. If the note isn't a Trigger Key, it gets sent to a section of the program David calls STRUMMER. This is where the work of setting chord voicing, strum arpeggiation and direction gets done.

The result gets sent to the MIDI Out. If the preset has a Delay programmed, the appropriate notes get sent to the DELAY section of Strummer, which then waits until the prescribed time and sends them on to the MIDI Out.

MIDI details

The Strummer can be set to receive on any of the 16 MIDI channels. On power on, it remembers the last channel selected. A Master Reset will set the MIDI Input to channel 1.

The Strummer can send on any of the MIDI channels and can be programmed to send on more than one at a time. The MIDI Out jack also acts as a MIDI Thru and will echo all messages, not on the selected channel, unaltered.

The Strummer can send and receive all MIDI note numbers from 0 to 127.

The Strummer can send and receive the full MIDI Velocity range from 0 to 127.

The Strummer doesn't use After Touch, but will echo that data to the MIDI Out/Thru unaltered.

The Strummer responds to MIDI Program Change commands from 00 to 127. The range is from 01 to 96 (01hex to 60hex). Hex 01 = Strummer 01. Program change commands out of range are treated as the closest valid number (example: hex 00 yields pgm 01, hex 7F yields pgm 96). Response to MIDI Program Change commands can be defeated. In addition, the Strummer can be programmed to make program changes in response to a controller number in the range of 17 to 99 on the MIDI In channel. A value of less than 1 yields pgm 01, a value greater than 96 yields 96.

The Strummer sends and receives MIDI Clock.

System Exclusive Format:

The MIDI System Exclusive message from the Strummer is in the format of Header, Parameter Values, and then Close. There is no checksum or error correction. The Strummer will however ignore out of range data.

Only the current preset is sent. The Strummer can only receive one preset at a time. Incoming SysExe data is placed in the edit buffer and must be saved in the user preset area (Preset number 65 to 96).

F0 hex	Start of MIDI System Exclusive message
10 hex	Oberheim ID
08 hex	Perf/X ID
04 hex	Strummer ID

data 29 bytes in the range of 00 hex to 63 hex

F7 hex End of MIDI System Exclusive message

The next page is an example of a SysExe dump from Strummer factory preset no. 01.

Example SysExe dump from Strummer-
byte count is in decimal, **data & valid range IN HEX ($)**

byte	data	field name	valid range
1	F0	Start System Exclusive	F0
2	10	Oberheim ID	10
3	08	Device Type = Perf/X	08
4	04	Perf/X= Strummer	04
5	01	Preset Number	01
6	14	Strum Rate	00 to 63
7	00	Strum Velocity	00 to 01
8	01	Velocity Average	00 to 01
9	00	Lead Enhancement	00 to 01
10	00	Strum Direction	00 to 03
11	01	Velocity Threshold	01 to 63
12	00	Strum Mute	00 to 04
13	00	Arpeggio Pattern	00 to 07
14	01	Chord Transposition Type	00 to 03
15	00	Deviation	00 to 17
16	00	Chord Capture	00 to 02
17	00	Chord Sustain	00 to 01
18	01	Chord Low String	01 to 06
19	06	Chord High String	01 to 06
20	00	Chord Velocity Effect	00 to 01
21	00	Note Transposition	00 to 01
22	01	Note Low String	01 to 06
23	06	Note High String	01 to 06
24	14	Decay Rate	00 to 63
25	18	Repeat Rate	01 to 63
26	00	Max Repeat	00 to 63
27	06	Max Voices	01 to 0C
28	0C	Echo Transposition	00 to 18
29	00	Delay Sustain	00 to 01
30	00	Next Channel Assignment	00 to 04
31	01	Number of Next	01 to 10
32	00	Keyboard Split	00 to 63
33	00	Keyboard Split Direction	00 to 01
34	F7	END OF SYSTEM EXCLUSIVE	80 to F7*

*Any Status Byte except System Real Time, will end a SysExe message.

WARRANTY (Non-Transferable)

This device is warranted by Oberheim to the original retail purchaser to be free from defects in materials and workmanship for a period of 1 year from the date of the original retail purchase subject to the limitations contained in this warranty. Warranty service is effective and available to the original purchaser only, and only upon completion and return of the Oberheim Warranty Registration card within 15 days of the date of purchase.

YOUR PROOF OF PURCHASE OR SALES RECEIPT MUST BE SUBMITTED WITH ALL REQUESTS FOR WARRANTY COVERAGE.

To obtain service under this warranty, the product must, upon discovery of the defect, be properly packed and shipped to Oberheim or its designated service agent.

WHAT IS NOT COVERED

Before purchasing and using, the owner shall determine the suitability of the product for his/her intended use, the owner assumes all risk and liability whatsoever in connection therewith. Oberheim shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use or inability to use the product.

The warranty provides only the benefits specified and does not cover defects or repairs needed as a result of acts beyond the control of Oberheim including but not limited to:

1. Damage caused by abuse, accident or negligence.
2. ANY tampering, alteration or modification of the product's serial number, mechanical or electronic components.
3. Failure to operate the product in strict accordance with the procedures in the Owners Manual.
4. Repairs performed by unauthorized persons.
5. Damage caused by fire, smoke, falling objects, water or liquids or natural events such as rain, earthquakes, floods, lightning, tornadoes, storms, etc.
6. Damage caused by operation on improper voltages.

This warranty is VOID if the product has been electronically or mechanically modified, altered or tampered with in any way.

How to Obtain Warranty Service

In the event of a malfunction, notify your nearest Authorized Oberheim Dealer. Only Authorized Oberheim Centers may perform warranty service. Oberheim disclaims liability for defects or damage caused by unauthorized service persons. If there is no Authorized Oberheim Service Center in your area, you or your dealer should contact Oberheim for information and for authorization to return the device for repair (see "Returning for repair").

Returning for repair

If you need to send your unit back for repair; Call the Oberheim Technical Support Hot line: 1-800-765-4629 for an RMA number and the address of the Oberheim repair station nearest you. YOU MUST HAVE AN RMA NUMBER !

1. Use the original box or equivalent packing method. The freight company will refuse to pay for damages to an improperly packed shipment.

2. Ship freight Pre-Paid and insured. Oberheim will not accept freight collect shipments under any circumstances and will refuse delivery.

Without the RMA number on the address label, your shipment will be refused.

3. Enclose your name, address, and a daytime phone number along with as detailed a description of the problem as you can make. In the case of obscure problems this may be our primary method of determining the trouble so please be specific.

Warranty Registration:

You must fill out and return the enclosed warranty registration card for your warranty to be valid. If the warranty card is missing, you can photo copy this page and fill in the section below. Please return it along with a copy of your sales receipt to:

Oberheim
13345 Saticoy Street
North Hollywood, CA 91605

Name (First): (Last)
Phone Number (area code): (no.)
Street Address
City State Zip Code

Dealer Name
Perf/X model Purchase Price

Which of the following best describes you?

- Producer/Engineer ☐
- Songwriter ☐
- Touring Musician ☐
- Local Musician ☐
- Hobbyist ☐
- Other ☐

Approximately how much do you spend annually on music equipment?

- $100 – $1,000 ☐
- $1,000 – $5,000 ☐
- more than $5,000 ☐

We would also like to know your planned uses and would welcome any comments you would like to make. Call the Technical Support Hot line at 1-800-765-4629 (818-503-8997 outside of the United States) or send EMAIL to Oberheim on the PAN network.

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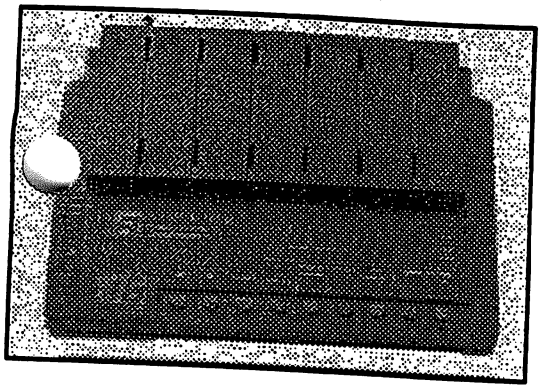

Strummer

For years, keyboard players have been trying (without success) to emulate guitar techniques on their samplers and synthesizers. The simple fact is that this is virtually impossible... That is until now.

Introducing the new Oberheim "Strummer." The "Strummer" listens to chords played on your MIDI keyboard and plays them back to your MIDI sound source (Synthesizer or Sampler) just as they would be played from a guitar. Not only will the chord voicings be correct, but the chords can actually be "Strummed!"

With the "Strummer," you can even change the speed and direction of your "Strums" just by changing the way you play your MIDI keyboard. Also, "Strummer" has the ability to distinguish the difference between chords and single notes allowing you to send chords out on one MIDI channel (Distorted Guitar Sound for example) while your single notes are sent out on a different channel (i.e. Solo Sound).

"Strummer is really a blast to play rvitla It you're having trouble playillg convincing guitar parts on your kevboard, you really can't afford to pass this thing up."

-MarkVail, KEYBOARD Magazine

Your keyboard may have a great guitar sound, but can you play a great guitar part? Yes. The Oberheim Strummer will transform your keyboard playing into a stunning and convincing performance featuring realistic guitar articulation.

By looking at such factors as the range of the guitar, the number of notes being played, chord position, and the velocity of the performance, Strummer can transform the incoming MIDI data out into performance data emulating that of a real guitarist. Performance data may be delayed, echoed, harmonized, transposed and sent back out on multiple MIDI channels.

In addition to control over strum direction and speed, the Strummer also features Chord Capture for real time single finger chords. Individual picking patterns and riffs may be assigned to a single key, for real time performance playback. You can even control the number of "strings" being strummed via keyboard velocity.

The "Strummer" includes features such as:

MIDI Delay (Echo).
Adjustable Delay and Decay Rates.
Multiple MIDI Channel Output.
Velocity Switching.

Keyboard Splitting.
Chord Voicing Variations.
Arpeggiation.
Chord Capture (Adjustable Single Finger Chords).
Transposition of MIDI Delays (Great for MIDI Harmonizing).
Ability to synchronize to MIDI Timing Clocks (External Sync).
MIDI Program Change.
Supports MIDI Sysex for storage of user defined patches.

Brought to you by Gibson Guitars and the WebGuys.