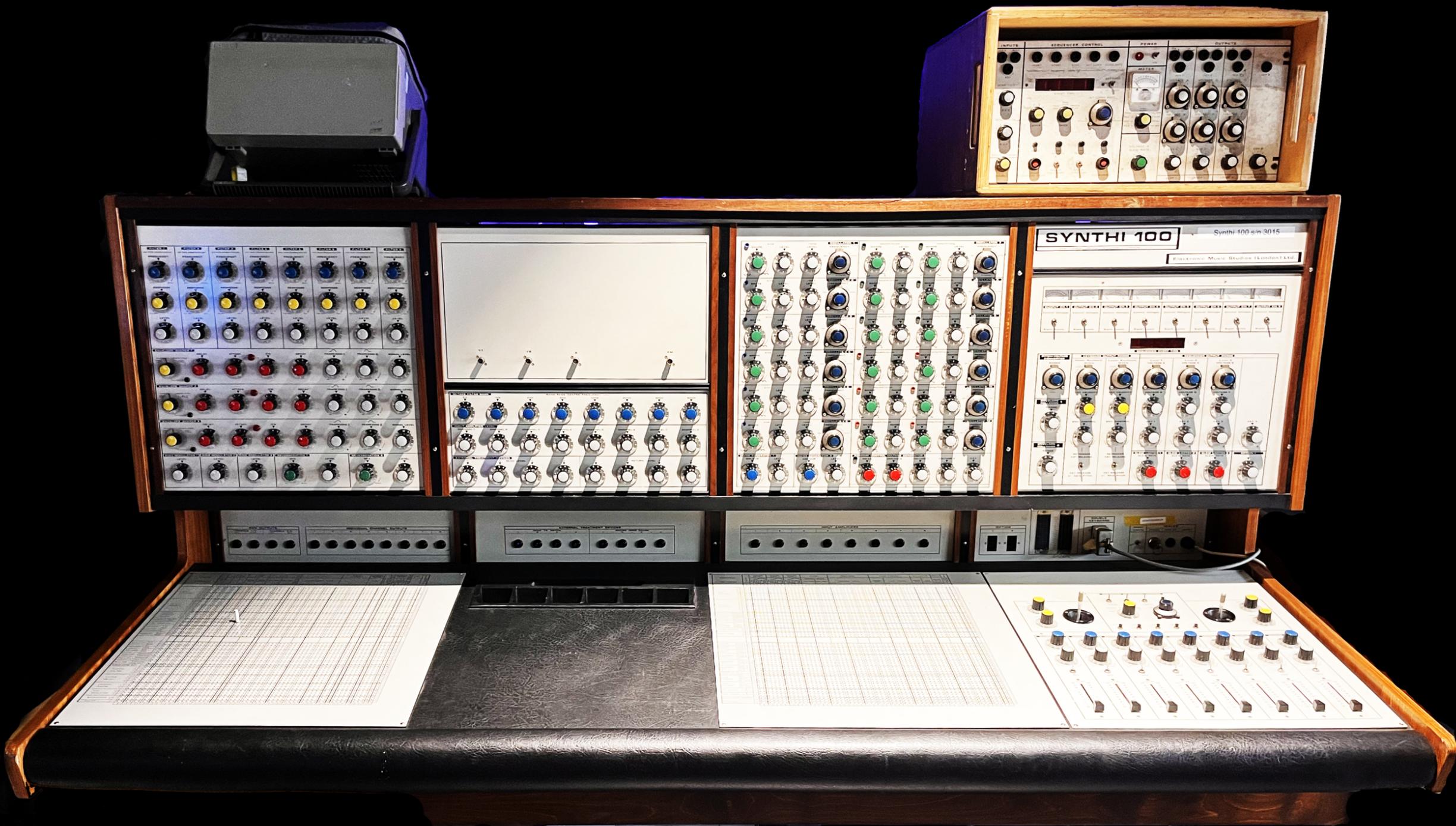


# THE PETE TOWNSHEND EMS SYNTHI 100

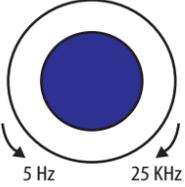
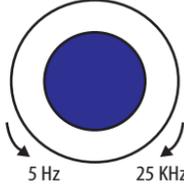
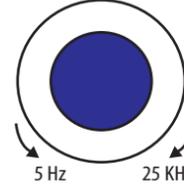
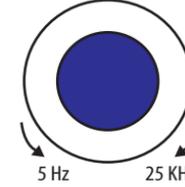
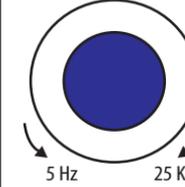
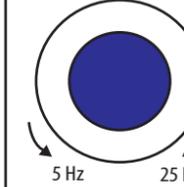
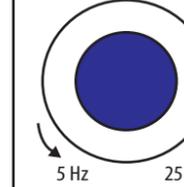
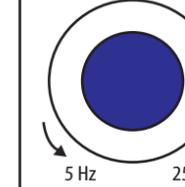
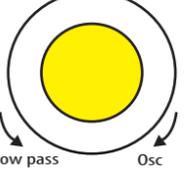
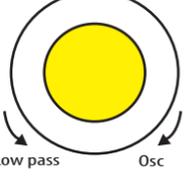
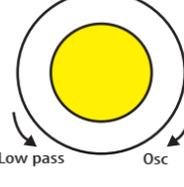
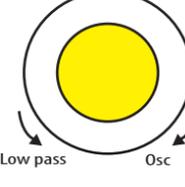
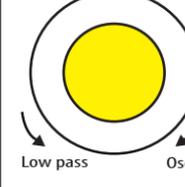
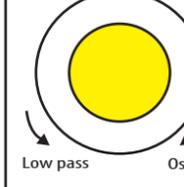
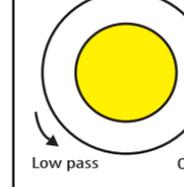
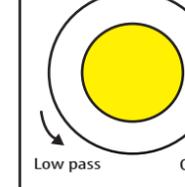
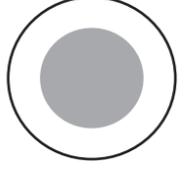
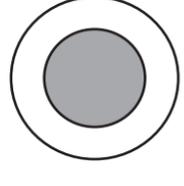
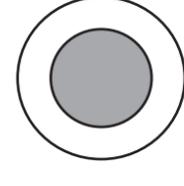
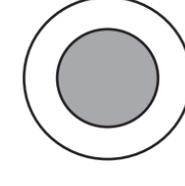
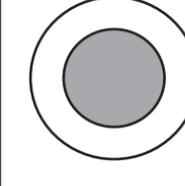
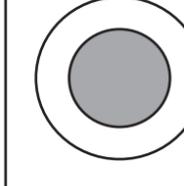
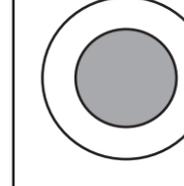
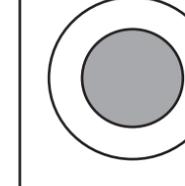


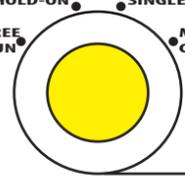
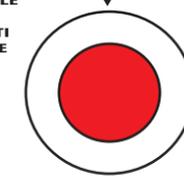
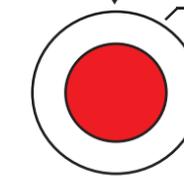
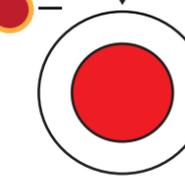
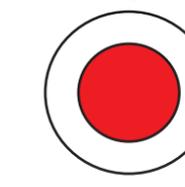
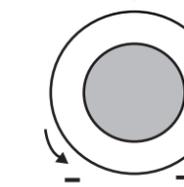
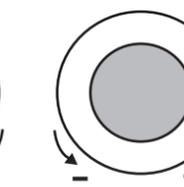
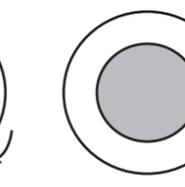
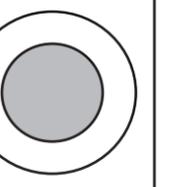
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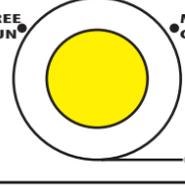
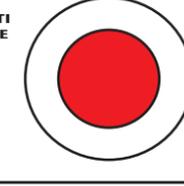
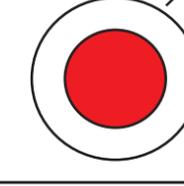
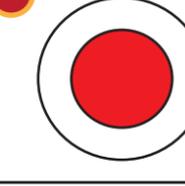
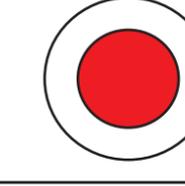
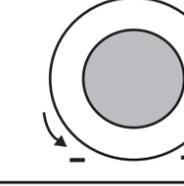
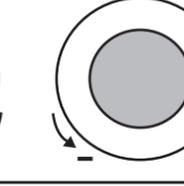
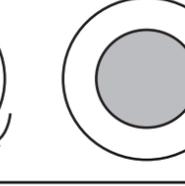
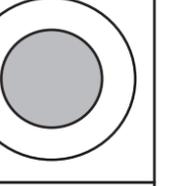
composed by Matthew Jefferies

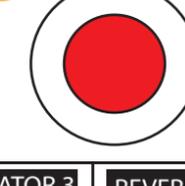
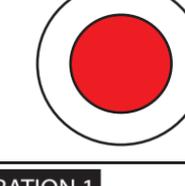
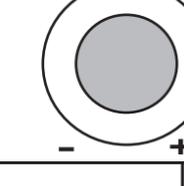
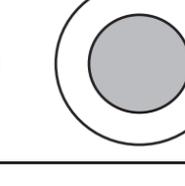
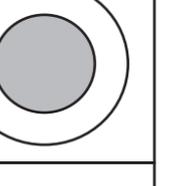
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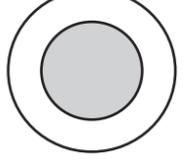
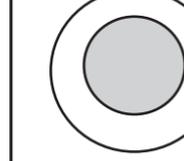
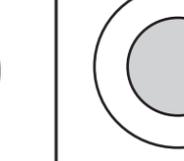
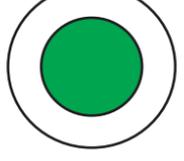
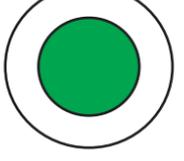
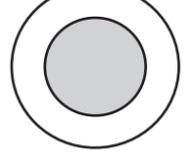
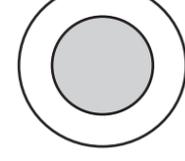
## FILTERS - ENVELOPES - RING MODULATORS - REVERBERATION

FILTER 1	FILTER 2	FILTER 3	FILTER 4	FILTER 5	FILTER 6	FILTER 7	FILTER 8
LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.	LOW PASS / RESONATOR / OSC.
<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>
							
5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz	5 Hz    25 KHz
<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>	<b>RESPONSE</b>
							
Low pass    Osc	Low pass    Osc	Low pass    Osc	Low pass    Osc	Low pass    Osc	Low pass    Osc	Low pass    Osc	Low pass    Osc
<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>
							

ENVELOPE SHAPER 1							
	<b>DELAY</b>	<b>ATTACK</b>	<b>ON</b>	<b>DECAY</b>	<b>TRAPEZOID I</b>	<b>TRAPEZOID II</b>	<b>SIGNAL LEVEL</b>
							
HOLD-ON FREE RUN		SINGLE CYCLE MULTI CYCLE			TRAPEZOID I	TRAPEZOID II	

ENVELOPE SHAPER 2							
	<b>DELAY</b>	<b>ATTACK</b>	<b>ON</b>	<b>DECAY</b>	<b>TRAPEZOID I</b>	<b>TRAPEZOID II</b>	<b>SIGNAL LEVEL</b>
							
HOLD-ON FREE RUN		SINGLE CYCLE MULTI CYCLE			TRAPEZOID I	TRAPEZOID II	

ENVELOPE SHAPER 3							
	<b>DELAY</b>	<b>ATTACK</b>	<b>ON</b>	<b>DECAY</b>	<b>TRAPEZOID I</b>	<b>TRAPEZOID II</b>	<b>SIGNAL LEVEL</b>
							
HOLD-ON FREE RUN		SINGLE CYCLE MULTI CYCLE			TRAPEZOID I	TRAPEZOID II	

RING MODULATOR 1	RING MODULATOR 2	RING MODULATOR 3	REVERBERATION 1	REVERBERATION 2
<b>LEVEL</b>	<b>LEVEL</b>	<b>LEVEL</b>	<b>MIX</b>	<b>MIX</b>
				
				

# PETE TOWNSHEND EMS SYNTHI 100

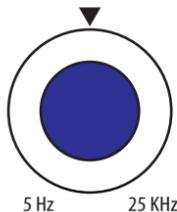
## TOP LEFT BUCKET

### FILTERS - ENVELOPES - RING MODULATORS - REVERBERATION

#### FILTER 1

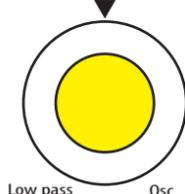
LOW PASS / RESONATOR / OSC.

#### FREQUENCY



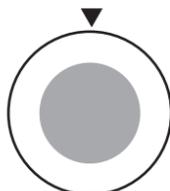
A LoPass filter is used to attenuate or 'cut off' the higher frequencies of the audio that passes through it. The Frequency knob is used to adjust the cut off frequency. When the knob is full CW the signal passes through unchanged. As you turn the knob CCW it will start to reduce the top end and as you turn more CCW you will hear the cut off frequency lower until you will only hear the low frequencies until you will only hear any signal below 5Hz.

#### RESPONSE



The Response control has 3 settings. When full CCW the filter acts as described above. When it is set to 5 or 6 the filter will cut the low frequencies as well the high frequencies which results in a 'band' shaped filter response. When the Response control is set fully CW it will self oscillate and produce an audible tone. The frequency of this tone can be adjusted by the Frequency control.

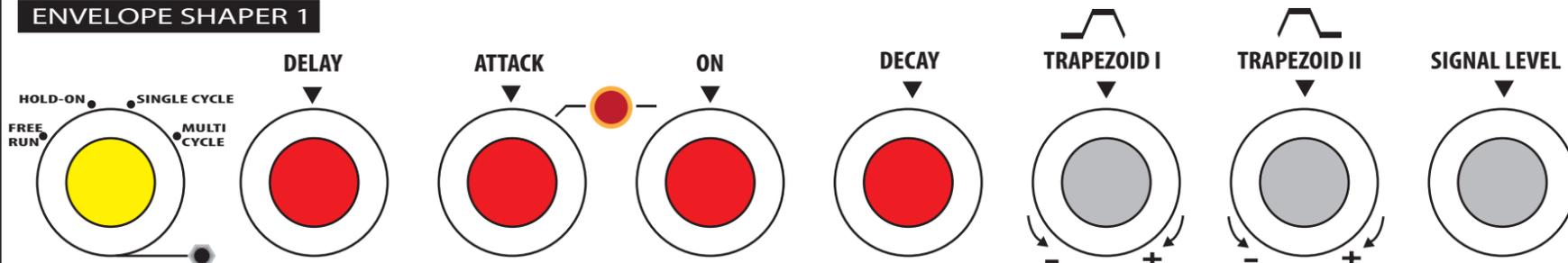
#### LEVEL



The Level control allows the resulting output signal (or self oscillation) to be turned up or down in volume.

QUICK EXAMPLE: connect h3 to A. Connect d2 to A5 etc ect need to be at machine to write this bit

#### ENVELOPE SHAPER 1



The envelope shaper is a tool which allows you to control by the use of a control voltage other controls. For example you can control the volume of an audio signal to have a fast or slow attack and or control the decay of the volume when you release the key or trigger.

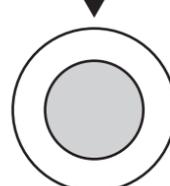
\*\*Need to get hands on to finish this section

Attack blah blag  
blah blah  
ect  
ect

QUICK EXAMPLE: connect h3 to A. Connect d2 to A5 etc ect need to be at machine to write this bit

#### RING MODULATOR 1

#### LEVEL

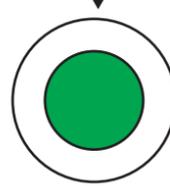


The Ring Modulator is a circuit that takes 2 signals and multiplies them together to produce very complex sounds. Make note that higher volume inputs will produce distortion. Use the level control to adjust final output level.

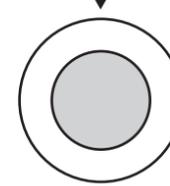
QUICK EXAMPLE: connect h3 to A. Connect d2 to A5 etc ect need to be at machine to write this bit

#### REVERBERATION 1

#### MIX



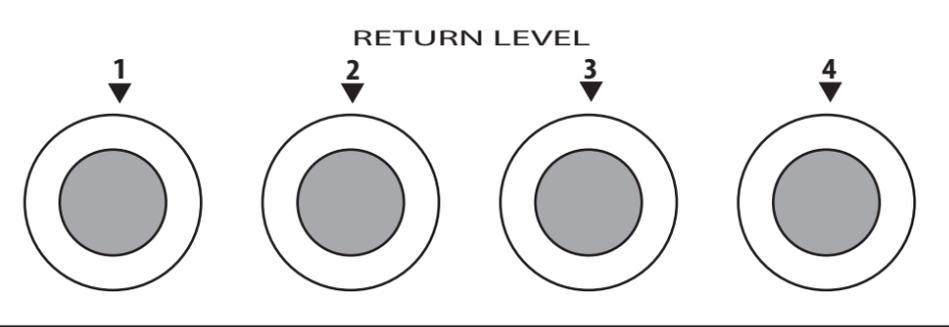
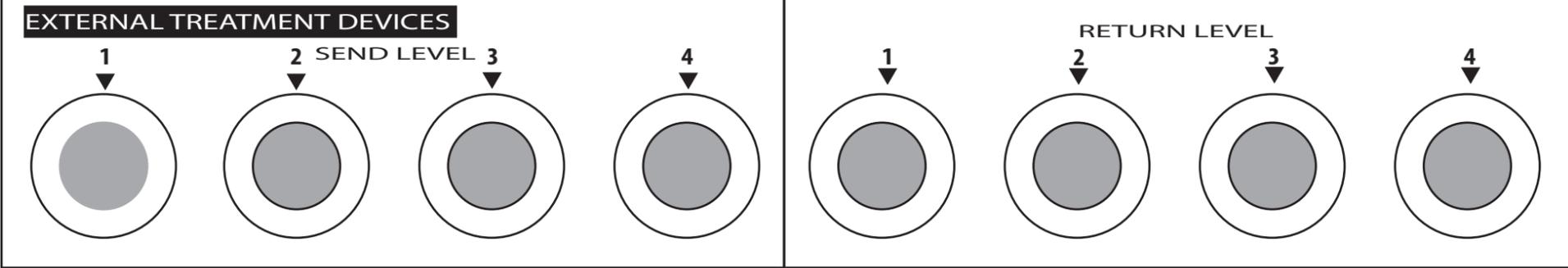
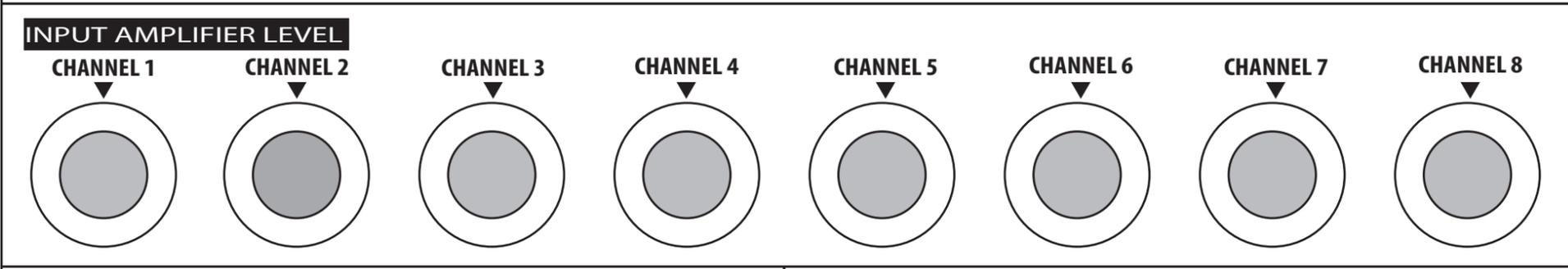
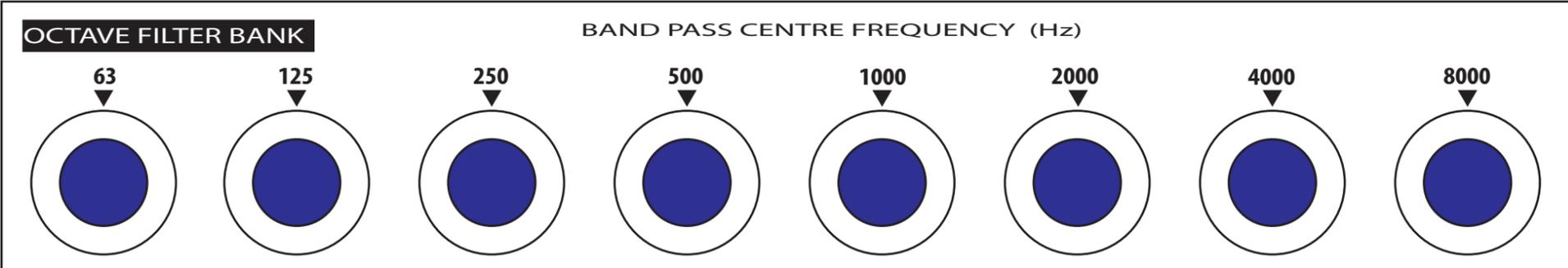
#### LEVEL



The Reverberation is produced by the use of spring reverbs. When the Mix control is fully CCW the audio signal will be dry and as you turn the control CW it will introduce more of the spring reverb effect until when fully CW only the spring will be heard.

QUICK EXAMPLE: connect h3 to A. Connect d2 to A5 etc ect need to be at machine to write this bit

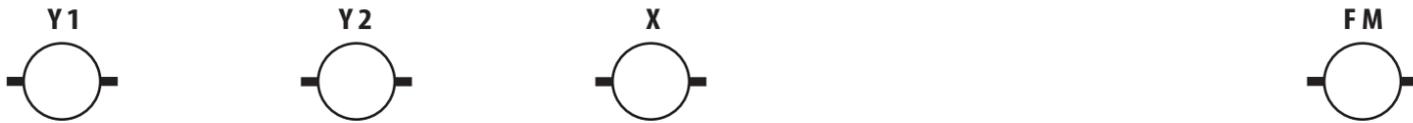
**PETE TOWNSHEND EMS SYNTHI 100**  
**TOP 2nd BUCKET**  
**OCTAVE FILTER BANK - INPUT AMPLIFIERS - SEND/RETURN**



# PETE TOWNSHEND EMS SYNTHI 100

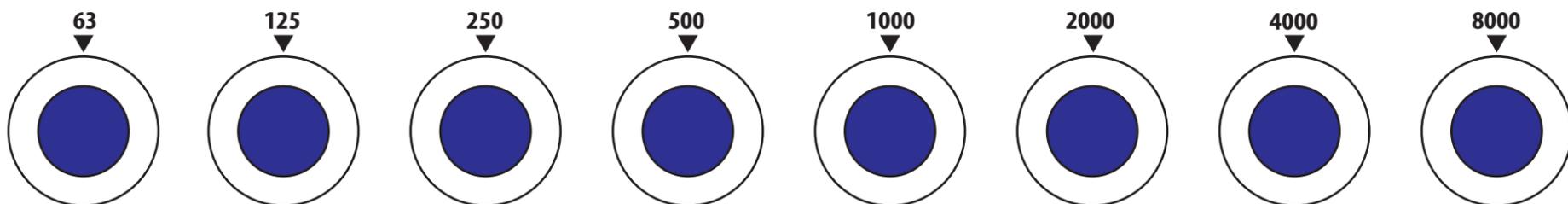
## TOP 2nd BUCKET

### OCTAVE FILTER BANK - INPUT AMPLIFIERS - SEND/RETURN

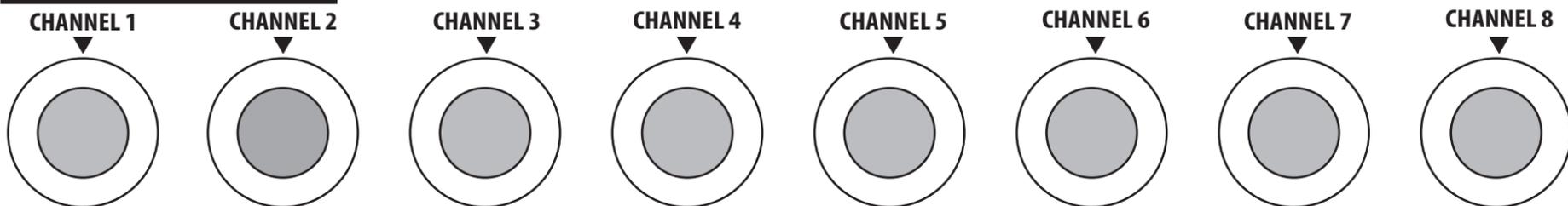


#### OCTAVE FILTER BANK

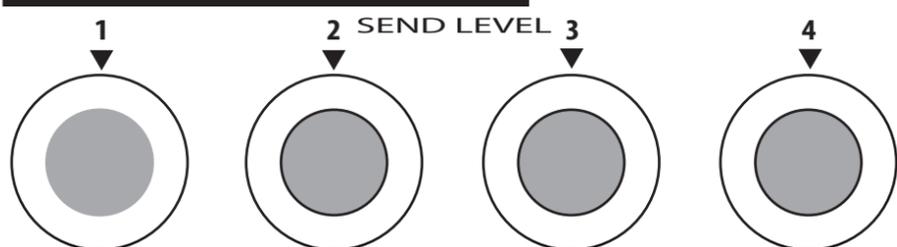
BAND PASS CENTRE FREQUENCY (Hz)



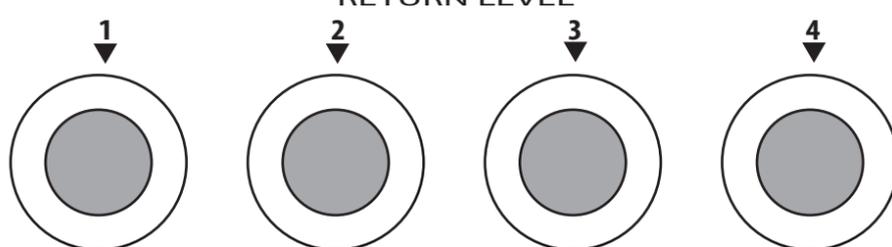
#### INPUT AMPLIFIER LEVEL



#### EXTERNAL TREATMENT DEVICES



#### RETURN LEVEL



# PETE TOWNSHEND EMS SYNTHI 100

## TOP 3 BUCKET

### OSCILLATORS - NOISE GENERATORS - RANDOM CONTROL VOLTAGE

<p><b>OSCILLATOR 1</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 7</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>OSCILLATOR 2</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 8</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>OSCILLATOR 3</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 9</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>OSCILLATOR 4</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 10</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>OSCILLATOR 5</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 11</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>OSCILLATOR 6</b></p> <p>sine</p> <p>SHAPE LEVEL LEVEL FREQUENCY</p>	<p><b>OSCILLATOR 12</b></p> <p>square / pulse</p> <p>SHAPE LEVEL SHAPE LEVEL FREQUENCY</p>				
<p><b>NOISE GENERATOR 1</b></p> <p>COLOUR LEVEL</p>	<p><b>NOISE GENERATOR 2</b></p> <p>COLOUR LEVEL</p>	<p><b>RANDOM CONTROL VOLTAGE GENERATOR</b></p> <p>MEAN VARIANCE VOLTAGE 1 VOLTAGE 2 KEY</p>			
		TIME BETWEEN SELECTIONS		OUTPUT RANGE	

# PETE TOWNSHEND EMS SYNTHI 100

## TOP 3 BUCKET

### OSCILLATORS - NOISE GENERATORS - RANDOM CONTROL VOLTAGE

**OSCILLATOR 1**

sine

SHAPE

LEVEL

ramp

LEVEL

FREQUENCY

10Hz 10KHz

5 = 320 Hz

**OSCILLATOR 7**

square / pulse

SHAPE

LEVEL

ramp / triang.

SHAPE

LEVEL

FREQUENCY

10Hz 10KHz

5 = 320 Hz

**NOISE GENERATOR 1**

COLOUR

LEVEL

Lo High

**NOISE GENERATOR 2**

COLOUR

LEVEL

Lo High

**RANDOM CONTROL VOLTAGE GENERATOR**

MEAN

VARIANCE

VOLTAGE 1

VOLTAGE 2

KEY

TIME BETWEEN SELECTIONS

OUTPUT RANGE

- +

# PETE TOWNSHEND EMS SYNTHI 100

## TOP 3 BUCKET

### METERS - PITCH TO VOLTAGE CONVERTORS - KEYBOARD RANGE - SEQ RANGE

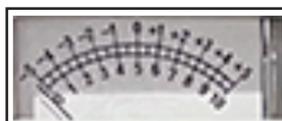
<b>OUTPUT CH.1</b>	<b>OUTPUT CH.2</b>	<b>OUTPUT CH.3</b>	<b>OUTPUT CH.4</b>	<b>OUTPUT CH.5</b>	<b>OUTPUT CH.6</b>	<b>OUTPUT CH.7</b>	<b>OUTPUT CH.8</b>
Control Voltages	Control Voltages	Control Voltages	Control Voltages	Control Voltages	Control Voltages	Control Voltages	Control Voltages
Signal Levels	Signal Levels	Signal Levels	Signal Levels	Signal Levels	Signal Levels	Signal Levels	Signal Levels

**SEQUENCER EVENT TIME**

PITCH>VOLTAGE CONVERTOR	KEYBOARD OUTPUT RANGE		SEQUENCER OUTPUT RANGE			
<b>RANGE</b>  1V/Oct	<b>Upper Keyboard PITCH</b>  1V/Oct	<b>Lower Keyboard PITCH</b>  1V/Oct	<b>Layer 1 VOLTAGE A</b> 	<b>Layer 2 VOLTAGE C</b> 	<b>Layer 3 VOLTAGE E</b> 	
<b>ENVELOPE FOLLOWER 1</b> <b>RANGE</b>  - +	<b>KEY VELOCITY</b>  - +	<b>KEY VELOCITY</b>  - +	<b>VOLTAGE B</b> 	<b>VOLTAGE D</b> 	<b>VOLTAGE F</b> 	
<b>ENVELOPE FOLLOWER 2</b> <b>RANGE</b>  - +	<b>ENV CONTROL</b>  - +	<b>ENV CONTROL</b>  - +	<b>KEY 1</b>  - +	<b>KEY 2</b>  - +	<b>KEY 3</b>  - +	<b>KEY 4</b>  - +
	<b>RETRIGGER KEY RELEASE</b>  KEY RELEASE or NEW PITCH	<b>RETRIGGER KEY RELEASE</b>  KEY RELEASE or NEW PITCH	<b>SLEW LIMITER 1</b> <b>SLEW RATE</b>  1mS 1 S	<b>SLEW LIMITER 2</b> <b>SLEW RATE</b>  1mS 1 S	<b>SLEW LIMITER 3</b> <b>SLEW RATE</b>  1mS 1 S	<b>OPTION 1</b> 

# PETE TOWNSHEND EMS SYNTHI 100 TOP 3 BUCKET

## METERS - PITCH TO VOLTAGE CONVERTORS - KEYBOARD RANGE - SEQ RANGE



**OUTPUT CH.1**

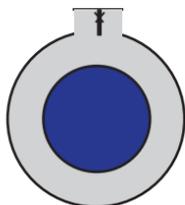
Control Voltages



Signal Levels

**PITCH>VOLTAGE  
CONVERTOR**

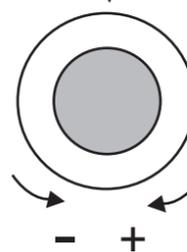
RANGE



1V/Oct

**ENVELOPE  
FOLLOWER 1**

RANGE



- +

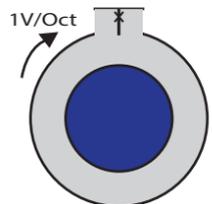


**SEQUENCER EVENT TIME**

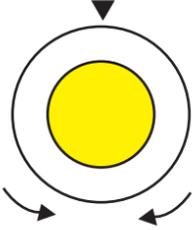
**KEYBOARD OUTPUT RANGE**

Upper Keyboard

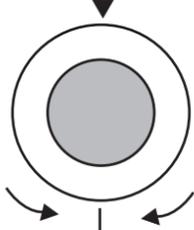
**PITCH**



**KEY VELOCITY**



**ENV CONTROL**



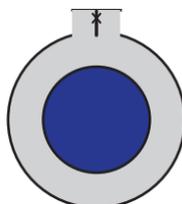
RETRIGGER  
KEY RELEASE



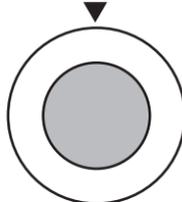
KEY RELEASE  
or NEW PITCH

**SEQUENCER OUTPUT RANGE**

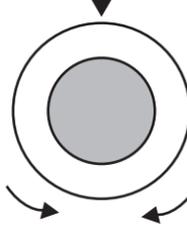
Layer 1  
**VOLTAGE A**



**VOLTAGE B**

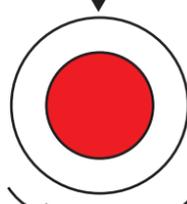


**KEY 1**



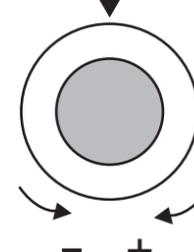
**SLEW LIMITER 1**

**SLEW RATE**

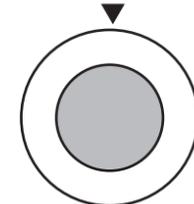


1mS 1 S

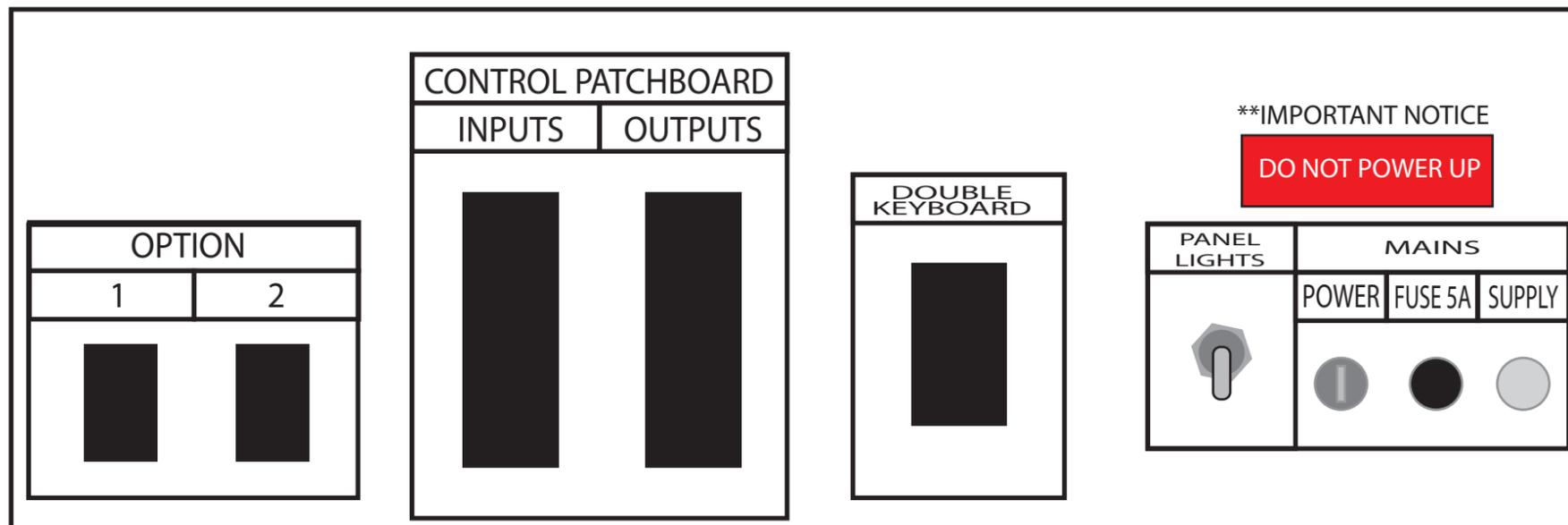
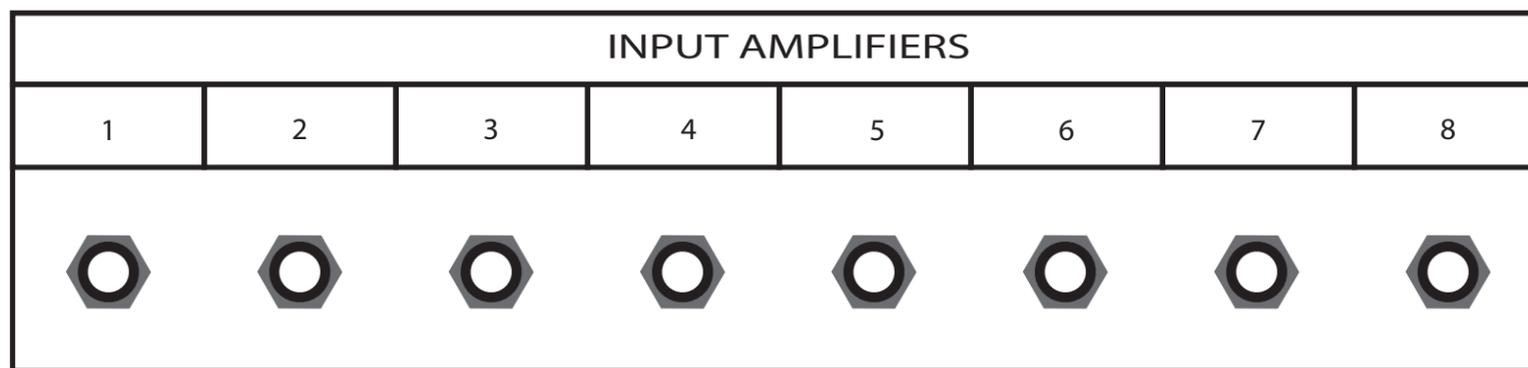
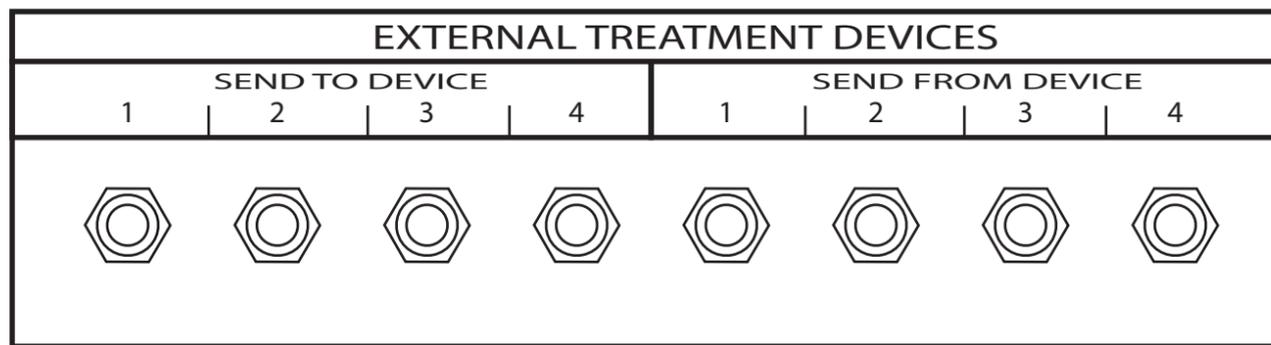
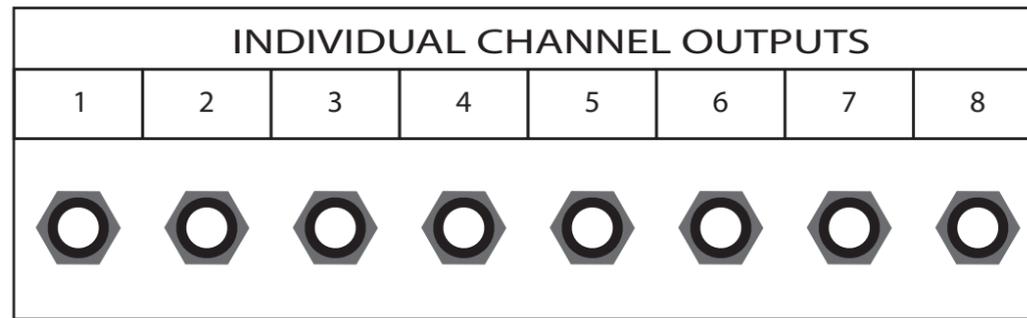
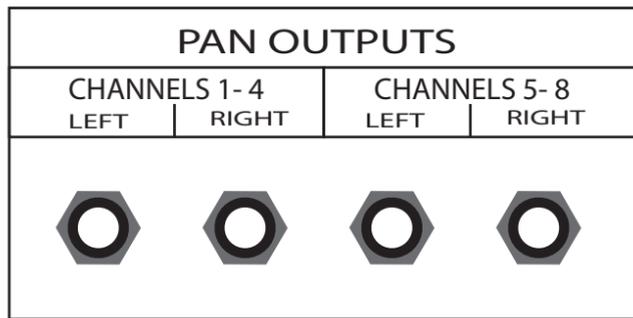
**KEY 4**



**OPTION 1**



# PETE TOWNSHEND EMS SYNTHI 100 MID SECTION 1/4" JACK CONNECTIONS - MULTI PIN CONNECTIONS



# PETE TOWNSHEND EMS SYNTHI 100

## MID SECTION

### 1/4" JACK CONNECTIONS - MULTI PIN CONNECTIONS

#### INDIVIDUAL CHANNEL OUTPUTS

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---



#### PAN OUTPUTS

CHANNELS 1-4	
LEFT	RIGHT

CHANNELS 5-8	
LEFT	RIGHT



#### EXTERNAL TREATMENT DEVICES

SEND TO DEVICE				SEND FROM DEVICE			
1	2	3	4	1	2	3	4



#### INPUT AMPLIFIERS

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---



#### CONTROL PATCHBOARD

INPUTS	OUTPUTS
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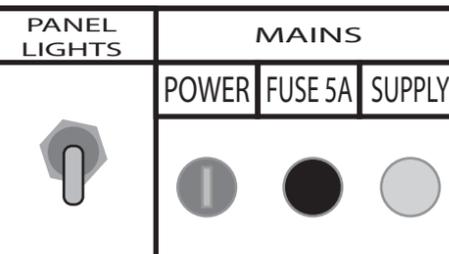


#### DOUBLE KEYBOARD



\*\*IMPORTANT NOTICE

DO NOT POWER UP



#### OPTION

1	2
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