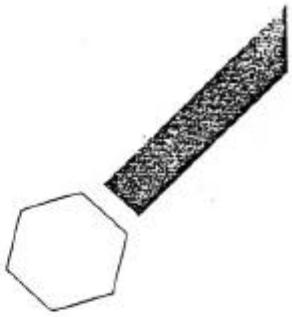
SDS 7



DUAL SAMPLE MODULE

Service Manual

SIMMONS
Alban Park, Hatfield Road, St. Albans, Herts. AL4 0JJ
Telephone: (0727) 36191 (5 lines) Telex: 291316 HEXDRM G.

SERVICING INFORMATION

SDS DSM

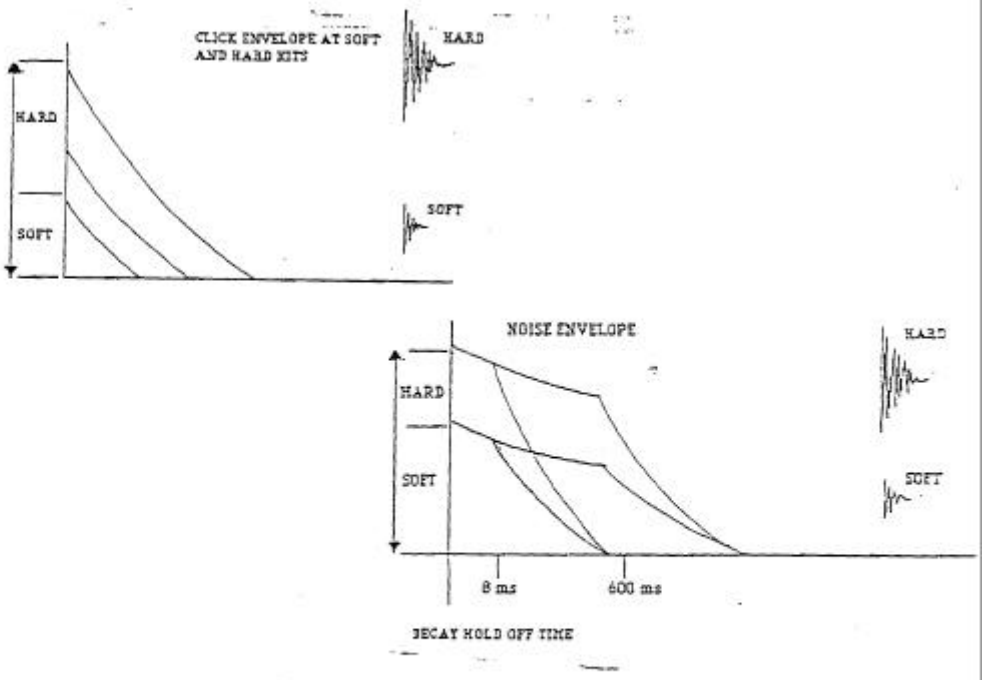
The SDS DSM consits of 4 sound generating circuits, these are:

1. Digital 1
2. Digital 2
3. Noise
4. Click

Noise and click circuits

The noise and click are mixed together and fed into one of the filter poles of IC21, both noise and click have an amplitude control which is generated in the hybrid. The click has a fixed click envelope generator consisting of D5 R36 C10 and part of IC3. The amount signal is used to open the filter, the VCA of IC21 is already opened at this point by envelopes 1 or 2 or both.

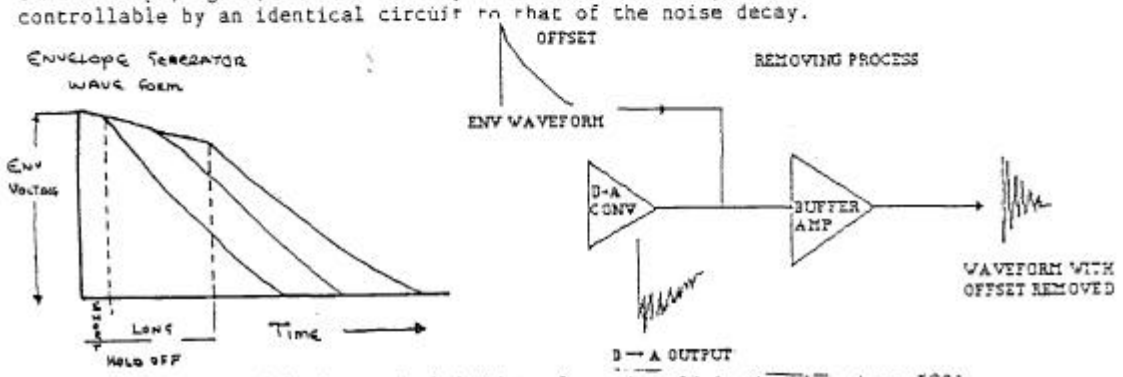
The noise is again controlled by the hybrid. This time however the decay has two envelope generator curves, the first is formed by C14, R405, the second is formed by C14, R405, IC4, R52, the point at which the second decay curve is started is controlled by the hybrid, ½ of IC10 and ½ IC8. IC10 and IC8 form a voltage controlled mono stable. The hold off range is between 8ms approx and 600 milliseconds. The noise output levels at IC5 Pin 9 are 3.8v approx click output IC22 Pin 8 7v approx.



DIGITAL SOUND CIRCUITS

The digital circuits are identical, except the second envelope has a threshold control formed by IC2 Pins 12, 13 and 14. The threshold reference voltage comes from hybrid Pin 39, this ensures a pre-determined input level is reached before the second envelope starts to charge up and DAC 2 gives an output. The digital sound generator/consists of $\frac{1}{2}$ IC10 DAC 1 eprom IC19 IC17 IC18 and the VCO formed by $\frac{1}{2}$ IC12, TR2. The VCO is free running if D7 is low. The VCO runs on turn on but no sound is made because envelope 1 is low; assuming no one has hit the pad during power up. IC17 and IC18 count up and depending upon which part of the sample size switch SW1 is closed, D7 will conduct forcing IC12 Pin 5 high - so stopping the VCO. The envelope is fed into DAC1 Pin 14. This produces a sound waveform which follows the envelope. The only problem is that the output contains a large amount of DC which could cause distortion if not corrected. To do this, a proportion of the envelope is added to the sound waveform and because of the inversion which takes place inside DAC 1 the resulting output from IC10 contains very little or no DC.

The envelope, again, has two envelope curves, the first pre-set,the second controllable by an identical circuit to that of the noise decay.



The signal is routed back to the hybrid to form the click signal and to IC21 mixer circuit,the amount of signal which imerges from IC21 is controlled by Pin 19 of the hybrid. As explained earlier, the counters are stopped and the mono stables have timed out. So when an input signal is received, IC2 Pin 7 goes high (this could be a signal so low in level that no sound would come out). This trips the anti splat circuit IC11. This generates the card reset signal and also stops the incoming signal re-triggering the circuits, which would result in crunchy beginnings to sounds. The VCO has two control voltage inputs. One is a pre-set level called Pitch, this and the second signals voltage level depends on the value stored in the relevant kit number. This second signal called bend is derived from its channels envelope and the amount depends upon how hard the drum is struck and level again stored in memory.

THE FILTER

The filter has two main control signals plus an extra one for the click. The click signal is of a short duration whereas the filter frequency is again a preset signal from the hybrid, the value of which is stored in mem ory. The second sweep is derived from the envelopes of channels 1 and 2 which are mi and the amount of sweep is again controlled by the hybrid. The hybrid contains demux of 16 channels and also tranconductance op ampsand relevant sample and holds. It is not possible to repair a damaged hybrid so a replacement must be used should the original malfunction.

There are 2 versions of the D.S.M, one is used for Snare, Toms and effects the other is for bass. It has values which suit the trigger wave forms generated by the bass pad.

There is one extra bit of circuitry with values to suit the two applications, that is the minimum dynamic level D402 and R26. The function of this circuit is that if the drum was struck very softly the circuit would trigger and as already mentioned, no sound would come out. This is because of threshold levels in the dacs and VCA etc. So to overcome this problem the reset pulse is used to start to charge envelope 1 to a very small degree to allow the circuit to overcome the offsets of the circuit.

The LED driver consists of a amplifier and an envelope $\frac{1}{2}$ IC1, this allows the LED to respond to very low level signals and very short ones.

Here is a list of relevant signals and pulse widths, these are only approxima as they v:ry slightly from module to module.

At max trigger levels, IE. Envelopes are at least 4v amplitude.

Click output IC22 Pin 8 approx 7v P.P.
Noise output IC5 Pin 9 approx 3.8v P.P.
Digital output levels 1 IC10 Pin 8 approx 1.75v depending upon sample.
Digital out level IC10 Pin 14 approx 1.5v depending upon sample.
Decay hold off 1 IC7 Pin 6 approx 8ms to 600ms.
Decay hold off 2 IC7 Pin 10 approx 8ms to 600ms.
Noise decay hold off Ic8 Pin 6 approx 22ms to 600ms.
Anti splat length IC11 Pin 10 approx 96ms (bass) 35ms (Snare) approx.

NOTE

It is possible to play a 32K eprom but it would entail cutting Pin 27 on the eproms and joining it to 13, 14 or IC18 depending on which channel is being modified and then leaving SW1 open for that channel NOT recommended unless you know what you are doing.

When Fault Finding

Step 1 is to check supply voltages on the board itself.
Step two, make sure both levels and sensitivity pots are turned up.
Step three, make sure the board is being triggered.

AMENDMENT TO SDS7 MANUAL 15 May 1984

OUTPUT PIN CONNECTION ON SERIAL NOS. 0-250 ARE THE SAME AS THE OLD SDS5 ie. PIN 1 and 2 GROUND

PIN 3 HOT (SIGNAL)

THIS HAS NOW BEEN CHANGED

FROM SERIAL NOS. 250 AND ONWARDS ALL ARE WIRED:

PIN 1 and 3 GROUND

PIN 2 HOT

SPECIFICATION

Sequencer Trig IN. .2v - 15v 2ms positive pulse

maximum trigger occurs at approx 10v

Pad Trig IN. 30mv.-500mv

maximum trigger occurs at approx. 450mv

Pin 2 Hot

Power IN. *

Internally tapped 100v 115v 220v 240v 50VA . 50/60HZ

Unpacked weight * 6KG

Dimensions including knobs 320mm x 145mm x 445mm

Program memory capability	20K Bytes
Module digital source snare & bass	8K Bytes
" " " tom toms	16K Bytes
" " " cymbals & hi hats	32K Bytes

Memory Dump 2 x 8K blocks
Kit No. 1 - 39 / 40 - 79 .5 sec/block

Mix O/P (max. level))	2v P-P into 1K **
L + R O/P)	
Individual O/P	600mv P-P into 1K **

* 5 modules fitted

** maximum trigger +O/P level

To be used in conjunction with the DSM circuit diagram.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Module totally dead	Not plugged in correctly One of the eproms in backwards. Short circuit component EG. IC's	Clean fingers and check keyway. Replace as it will have been damaged. Trace and replace
Trigger LED only and noise	Anti-splat not functioning IE. No reset for counters etc.	Trace and replace dame ged components.
Only first channel works	Threshold incorrect for second sample or no eprom fitted or fault in envelopes or counter circuits U/S or value stored too low.	Check value and circu Fit Eprom correctly. Replace faulty parts Set value high enough to let VCO run.
Only second channel works	Fault in envelope Fault in counter etc or no eprom fitted. Value stored is too low.	As above.
Module works but sound dull.	Filter circuits faulty. Wrong value stored in memory Pitch or sweep.	Check values and circuitry.
No noise.	Noise not getting to board from noise source. Noise circuit fault	Trace to find where ceases Repair faulty compone
One of the channels plays a sample more than once.	Check dil switches and or diodes in the VCO jamming circuit	
One channel only plays ½ a sample.	Again, check switch positions.	

N.B It is important that the ventilation slots on either side of the unit are not blocked when in use.

HIHAT AND CYMBAL INSTALLATION - SDS7

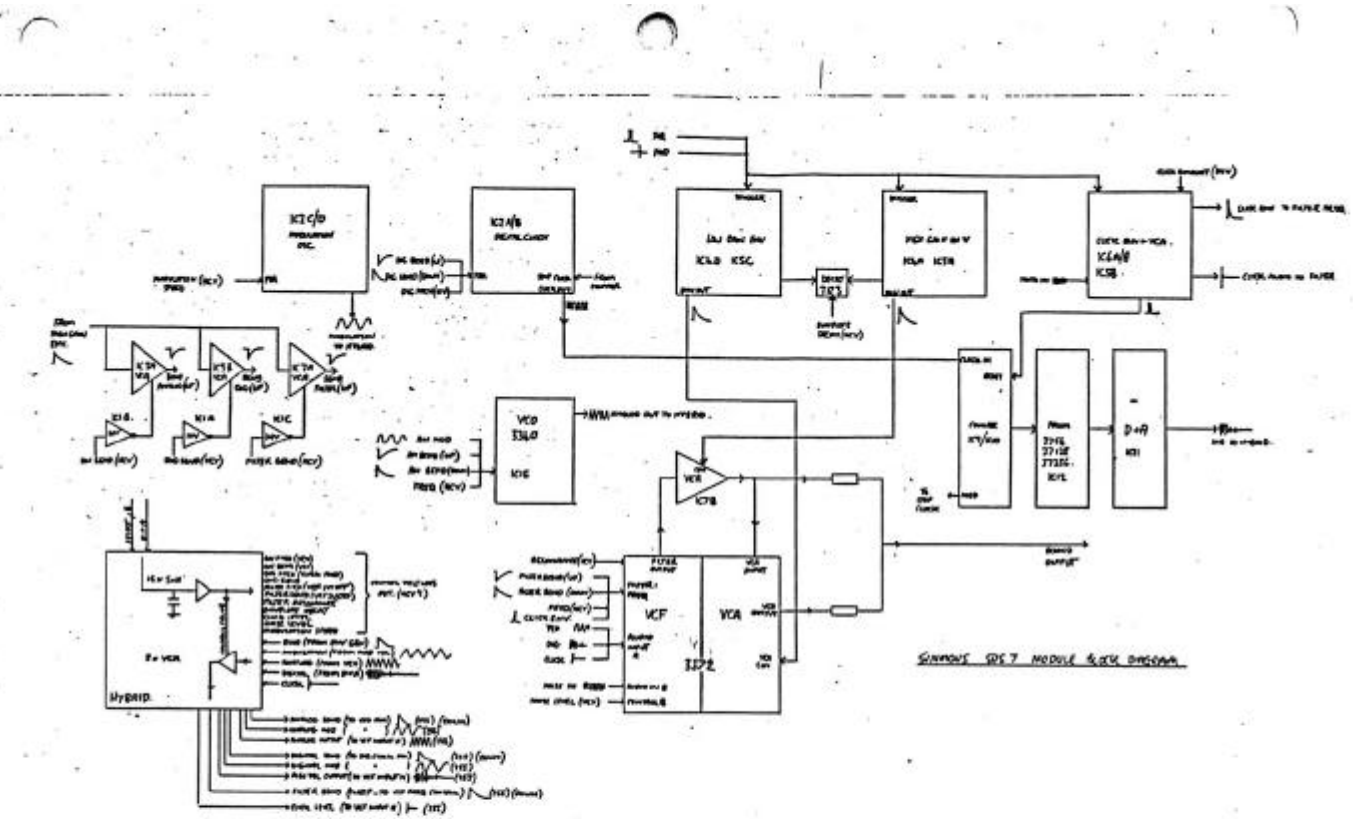
All modules in the SDS7 can fit into any of the 12 channel slots. However certain channels have been programmed in the factory to accept specific modules. These are as follows:-

CH 1 - BASS
CH 2 - SNARE
CH 3 - TOM TOM
CH 4 - TOM TOM
CH 5 - TOM TOM
CH 6 - HI HAT
CH 7 - SHORT CRASH CYMBAL
CH 8 - CRASH CYMBAL
CH 9 - RIDE CYMBAL
CH 10 - 2ND BASS
CH 11 - TOM TOM
CH 12 - TOM TOM

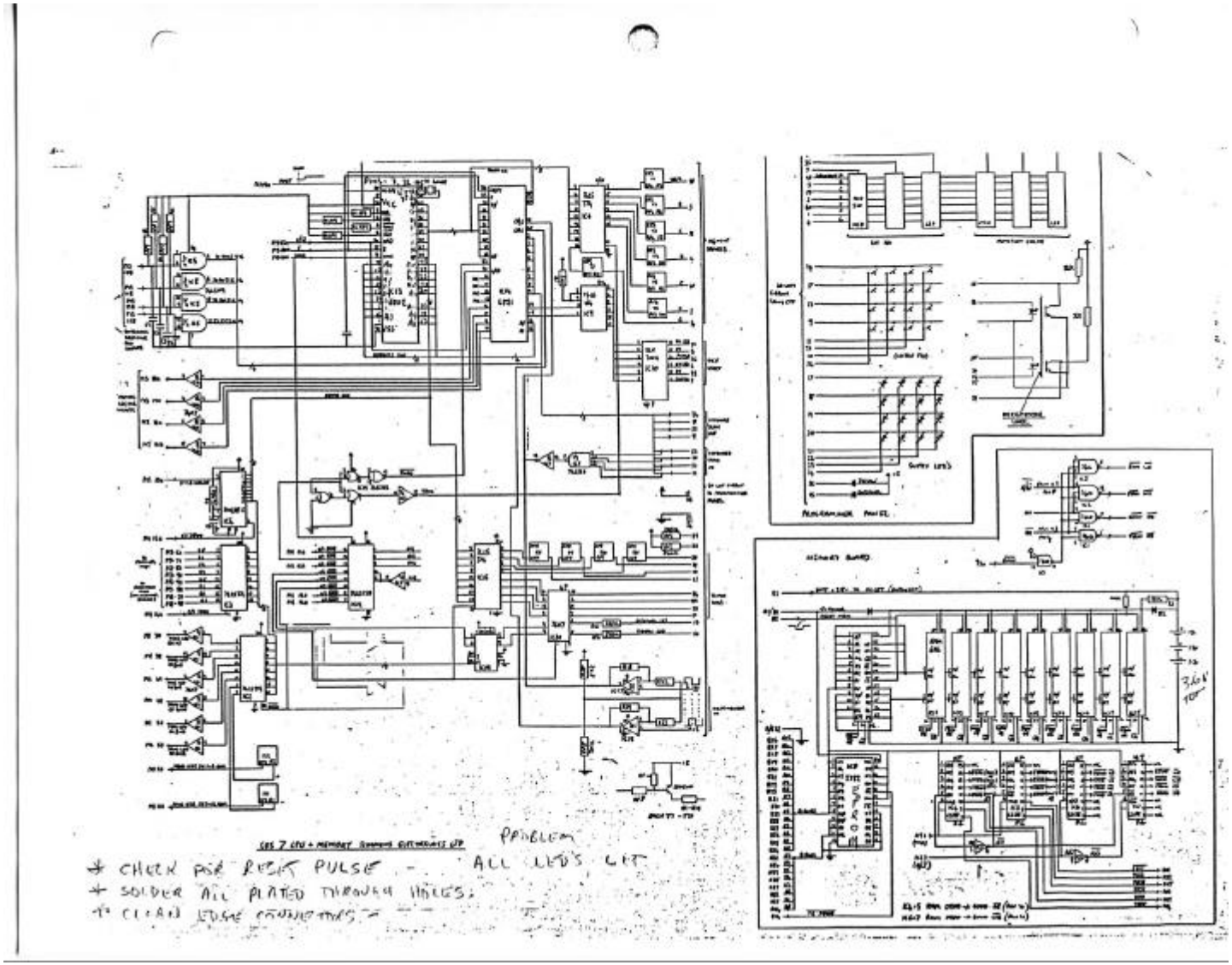
It is recommended that these channels are used as it will save programming the channels from scratch.

FITTING INSTRUCTIONS

Remove front panel by loosening the four black thumb screws. Slide the module down the card guide and gently push the module into the edge connector, making sure that the locating slot lines up with the black key positioned in the edge connector
REPLACE FRONT PANEL

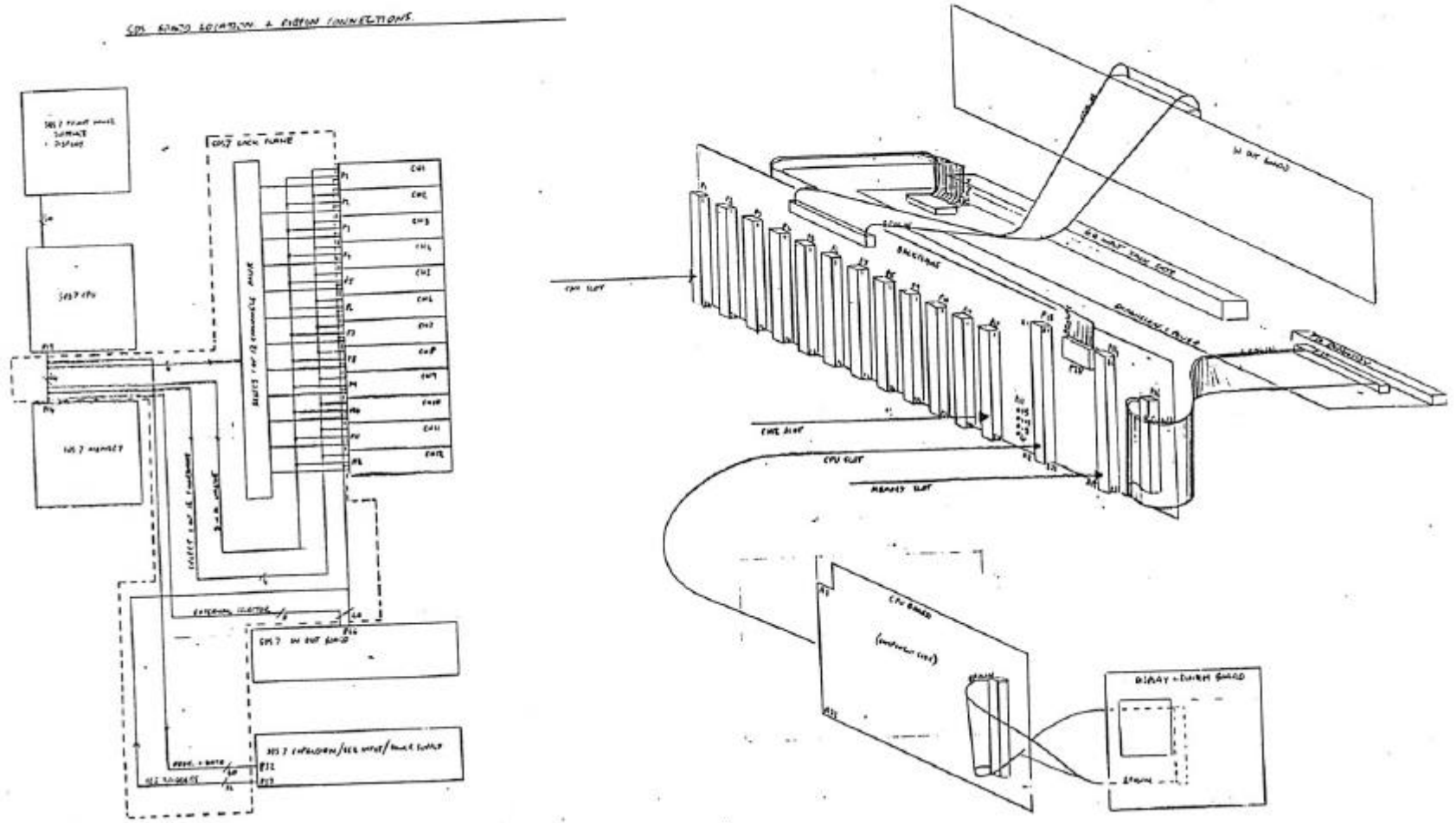


SIMMONS SDS 7 MODULE BLOCK DIAGRAM

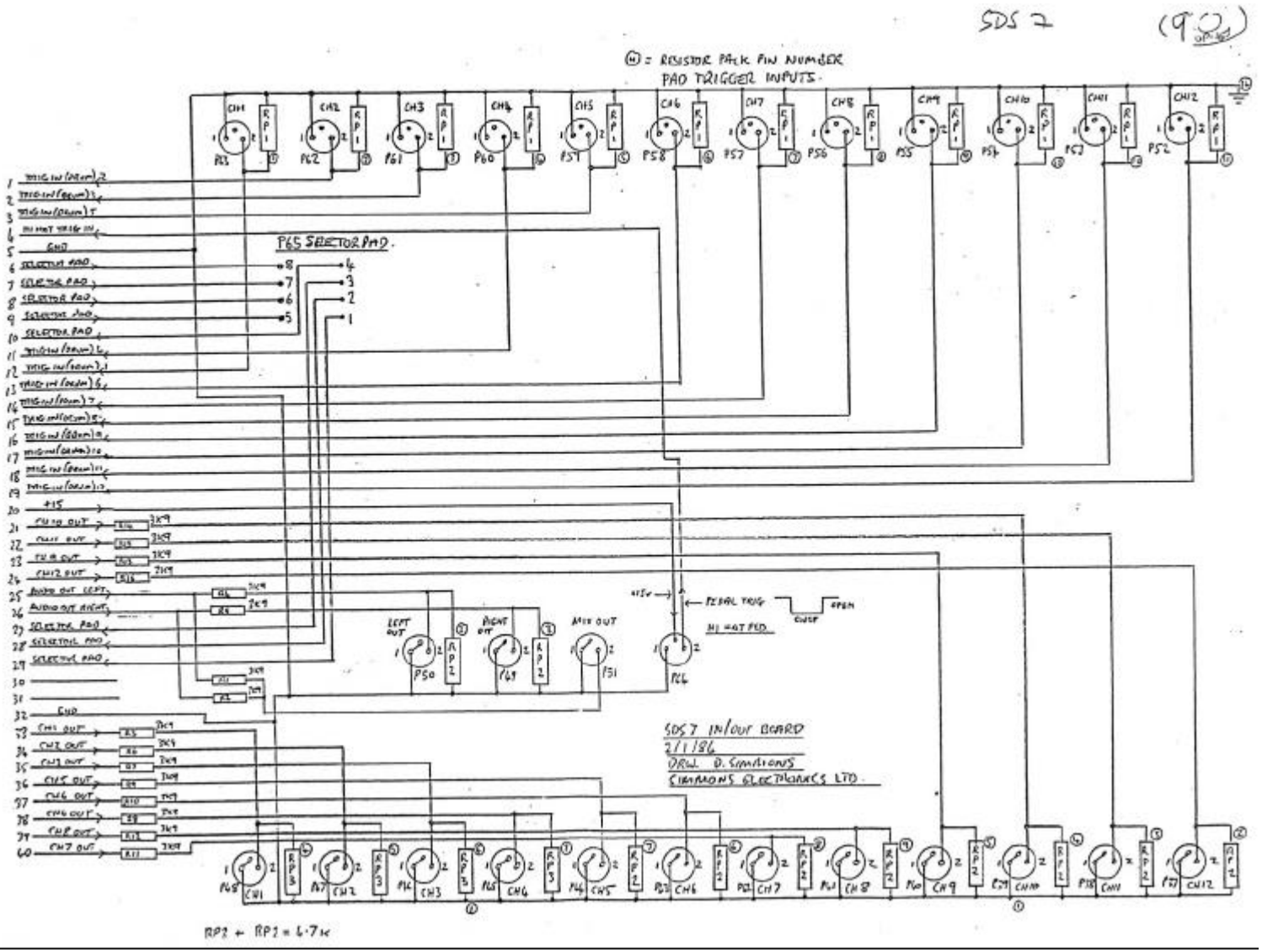


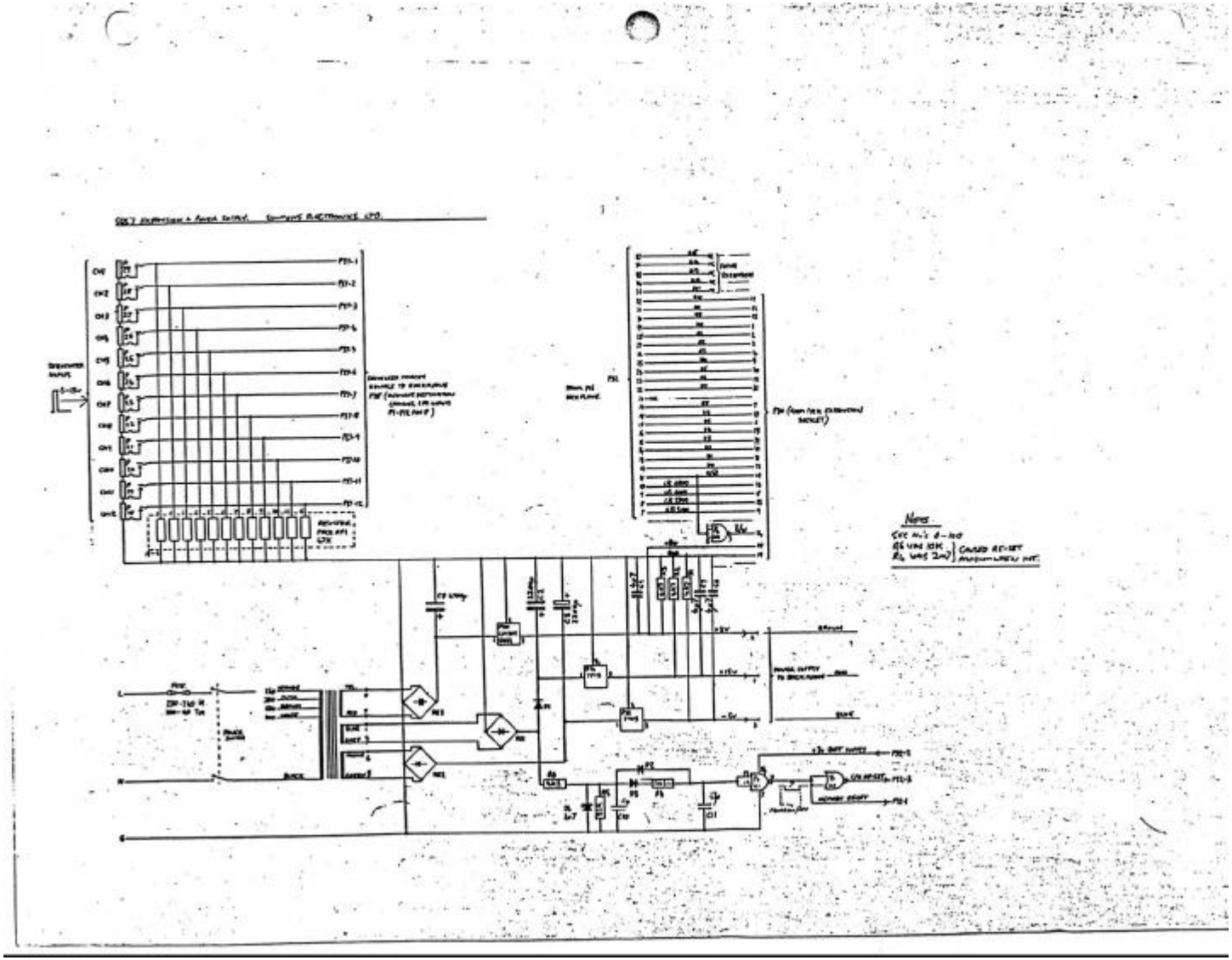
PROBLEM

* CHECK FOR RESET PULSE - ALL LED'S LIT
* SOLDER ALL PLATED THROUGH HOLES.
* CLEAN EDGE CONNECTIONS

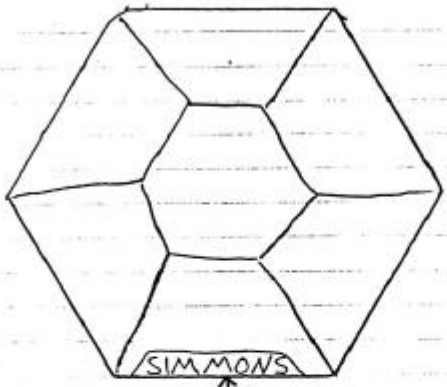


SDS 7 (90)


(H) = RESISTOR PACK PIN NUMBER
PAD TRIGGER INPUTS.
CH1
CH2
CH3
CH4
CH5
CH6
CH7
CH8
CH9
CH10
CH11
CH12
P65 SELECTOR PAD.
SELECTOR PAD
GND
+15
CH1 OUT
CH2 OUT
AUDIO OUT LEFT
AUDIO OUT RIGHT
LEFT OUT
RIGHT OUT
MIX OUT
PEDAL TRIG
HI HAT PED
SDS7 IN/OUT BOARD
2/1/86
DRW. D. SIMMONS
SIMMONS ELECTRONICS LTD.
RP2 + RP1 = 4.7K

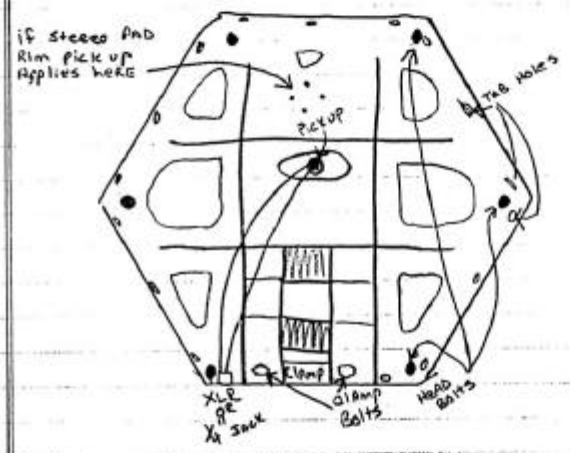


New Style SDS9 & SDS7
TO REMOVE SHELL



INSERT SCREWDRIVER HERE AND PRY UP.

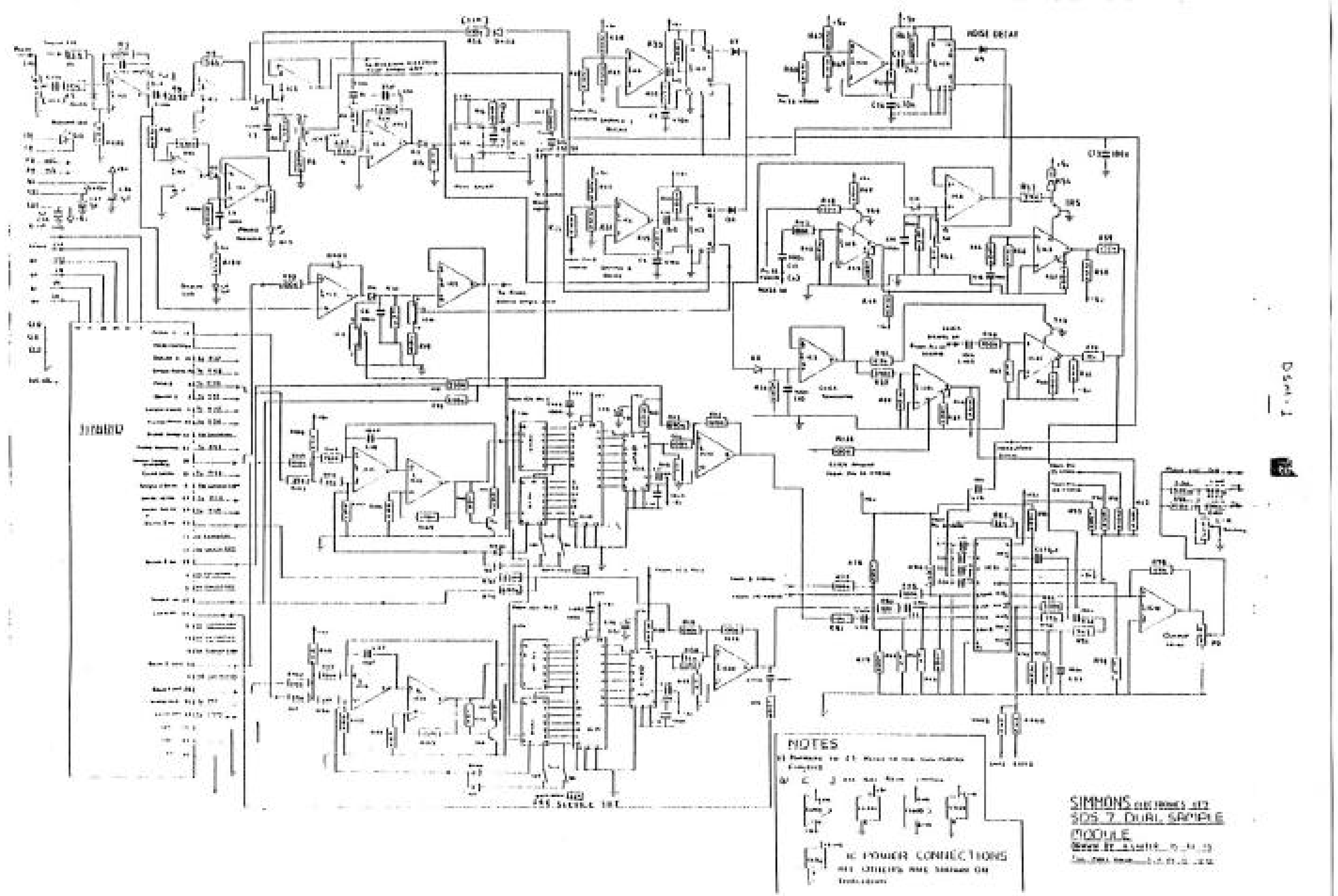
INSIDE PAD



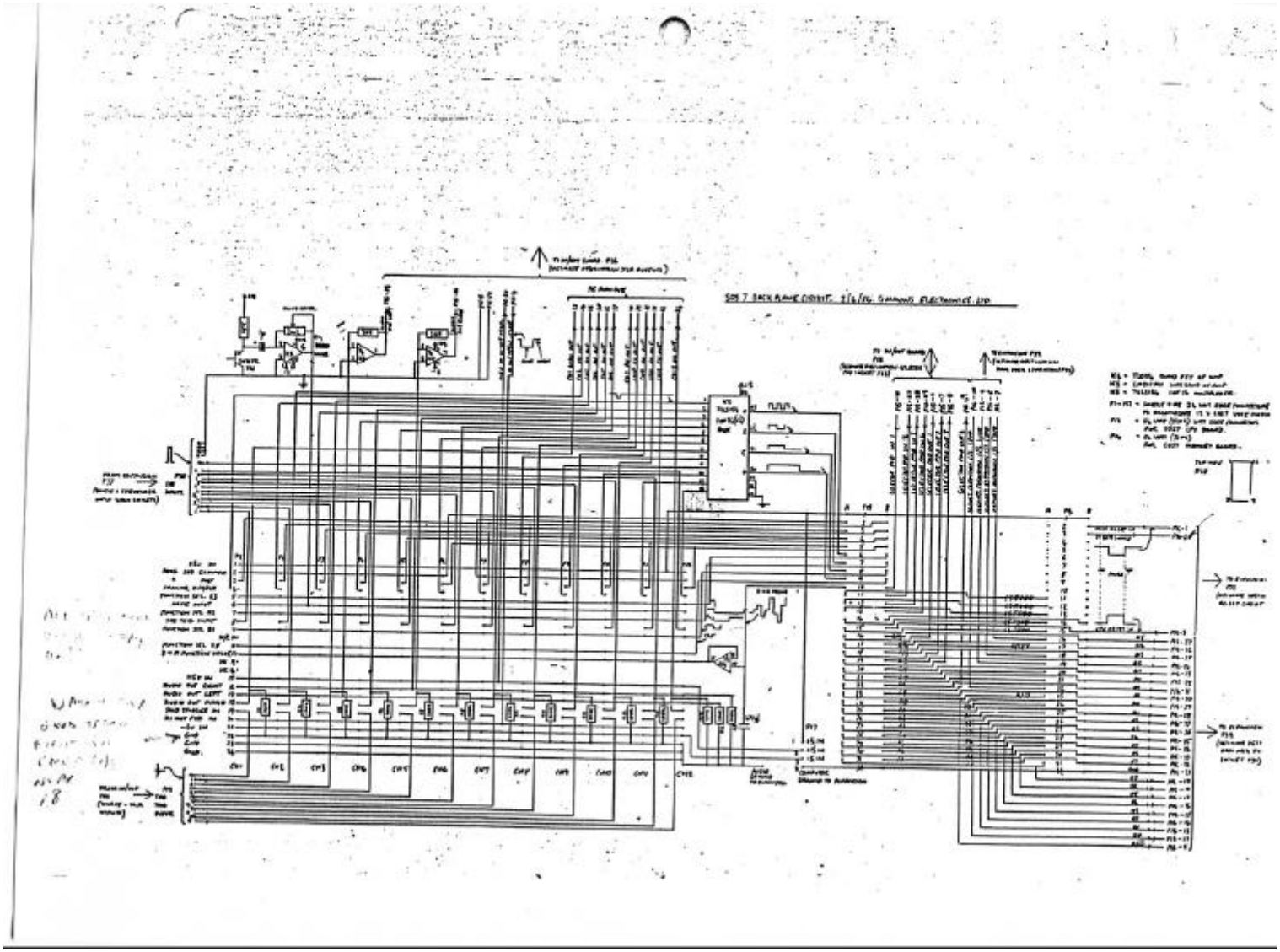
PAD REPAIRS

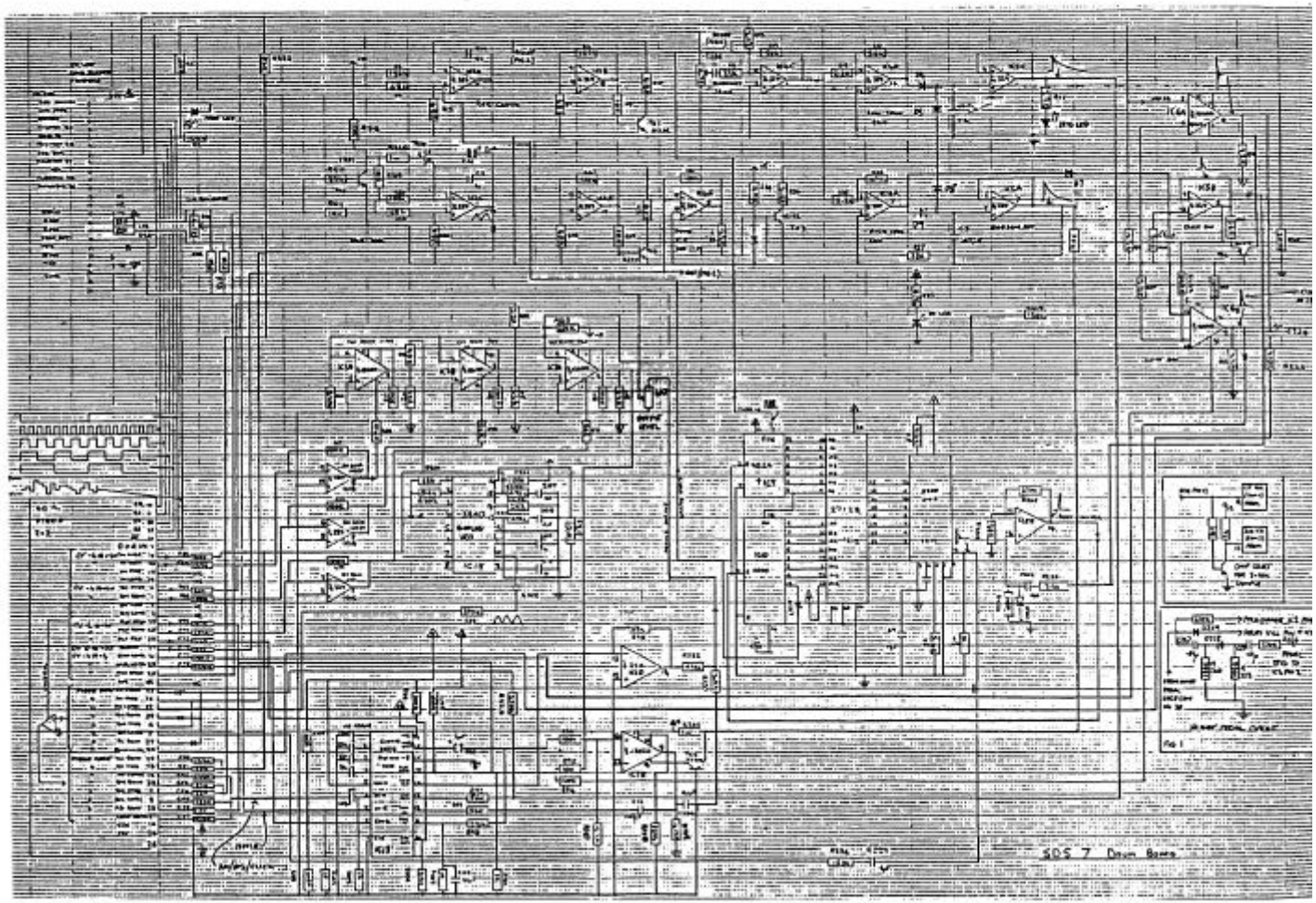
New Style SDS9 and SDS7

To remove the shell, insert a screwdriver between the shell and rim over the hole where the tom arm inserts. Very carefully pry the shell up, do not lift the shell like the opposite side is a hinge. Pull the shell up evenly all the way around. Once the shell is removed all the parts of the pad may be accessed easily. To change a pick up, pull the old pick up off by prying it up with a screwdriver and clean the old glue off the wood. after cleaning apply an even coat of contact cement to the wood and pick up. Wait 10 minutes press the pick up to the wood. To replace a clamp, the head must be removed. 6 bolts hold the head to the rim. Remove the bolts and while holding the rim with your fingers push the head out with your thumbs. 2 bolts hold the clamp to the rim. Remove them and replace the clamp. Before installing the shell after the repairs have been made, be sure all the RTV has been removed from the holes in the rim and from the tabs on the shell. Apply new RTV in the holes of the rim and install the shell. An easy way to install the shell is to start with the side opposite the logo. Then work the sides in and use a screwdriver to push the last part in by installing it between the rim and shell. Then clean any excess RTV on the sides and your done.


NOISE DECAY
NOTES
IC POWER CONNECTIONS
SIMMONS
SDS 7 DUAL SAMPLE
MODULE

DSM-1




SDS 7 Drum Boards