# TRACE ELLIOT SERVICE MANUAL NO. SM00017 ISSUE 1

Date: Product Code : Model No : Technical File No :

October 28, 1996 T0100 V-Type Pre-Amp TE00017

Issued by:

Trace Elliot Limited. Blackwater Trading Estate The Causeway, Maldon Essex CM4 4GG.



V-Type

#### **V TYPE PREAMPLIFIER**

V Type preamplifier is used in the following units:-

V-type head - 220 watt all valve amp, head.

V-type combo - 250 watt hybrid 15" combo.

V-type rack mount 1u all valve preamplifier.

### **TECHNICAL SPECIFICATIONS**

Inputs	Passive bass	Impedance 1M OHM Input range 25mV to 1.5V (peak-peak)
	Active bass	Impedance 100K OHMS Input range 25mV to 6.0V (peak-peak)
	Effects return	Impedance greater than 1M OHM Nominal input level OdBu (0.775VRMS)
Outputs	Effects send	Impedance less than 1K OHM Nominal level OdBu
	Line output (Head and combo)	Impedance 8K OHMS Nominal level OdBu (0.775VRMS) Maximum level +4dBu (3V RMS)
	Line output (Rack mount)	Impedance 25K OHMS Nominal level OdBu (0.775V RMS) Maximum level + 20dBu (14VRMS)
	DI output	600ohms balanced Nominal level OdBu (pins 2 and 3)
Frequency response		-3dB at 22Hz and 25kHz
Sensitivity	Passive input	13mV
	Active input	56mV

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#### **V** TYPE CIRCUIT DESCRIPTION

Input SK1/SK2

SK1 and SK2 are the instrument inputs to the V type pre-amplifier. A signal entering SK1 is passed to the first stage via R1 with R2 in parallel. Resistor R3 is to decouple any D.C. appearing on the input to ground.

A signal entering SK2 is passed to the first stage via R2, again with R3 as a D.C. path to ground. This time, however, R1 has one end connected to ground via the switched contract on SK1. This provides a high degree of attenuation to input 2 for use with active or high output basses, with the combination of R2 and R1 acting as a potential divider across the input.

First stage (effects loop).

The first stage consists of one half of V1 which is a "cathode follower" stage to provide a low impedance output to feed the effects loop. R7 is there to decouple any D.C. to ground. SKBB1 and SKBB2 form a serial effects loop with the switching contacts on SKBB2 (effects return) providing the "break" into the circuit. Therefore SKBB2 can also be used as a "line in".

The signal from the effects return is passed via C27 (D.C. blocking) to the second half of V1.

Second stage (Tone network).

The tone circuit forms the anode load for the second half of V1. C3 and RV4 form the treble circuit, C4 and RV2 form the bass circuit and C5 and RV3 form the mid range circuit. RV3 incorporates a pull switch which switches C6 into the mid circuit and C5 out. This alters the point at which the mid range circuit works, upwards to about 2kHz. R12 and R13 provide D.C. paths to ground from the mid-shift contacts to reduce switching noise.

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#### Deep and bright switches.

The deep switch (SW1) provides a MID and TREBLE cut to accentuate the bass response by shorting out R11 and bringing C7 into the tone network.

The bright switch (SW3) brings C8 into circuit placing it in parallel with the top half of the gain control RV1. This creates a high-pass filter with a shallow roll off to accentuate the high frequency response. This function is disabled when the gain control is at a maximum as the capacitor is then by-passed. R14 is used to decouple any D.C. on the switch to ground.

#### Third stage.

The output from the tone network is fed from RV4 to RV1 (gain control) and then directly into the first half of V2. This is a gain stage to bring the signal up to a suitable level to drive a power amplifier.

The signal is then fed directly into the second half of V2 which is a "cathode follower" stage. this provides slightly less than unity gain but is designed to give a low impedance output to drive a power amplifier. The output signal is passed via C11 to the volume control RV5 and then onto the output jack socket SKBB3. This is only true for the rack mount version. In the head and combo the signal from RV5 pin 2 is passed directly to the power-amp. section, and a fixed level signal is taken from RV5 pin 3 to the line out socket. This is attenuated by a potential divider network of R38 and R39 to give a line level signal output.

#### D.I. output

A pre-eq D.I. signal is taken from the junction of R8 and R9 in the anode circuit of the second half of V1 before the signal is passed through the tone network, via C13.

The post-eq D.I. signal is passed via C12 from the output (cathode) of V2.

SW4 selects each of these signals with R21 and R22 providing a D.C. path to ground. The signal is then attenuated by the potential divider of R23 and R24 to provide a suitable level for the I.C.. The signal enters the inverting input of I.C. 1 via C14 and R25. The output on pin 1 of this half of the I.C. is passed via C16 and R33 to provide the negative or anti-phase D.I. signal on pin 3 of the XLR (SK5). The signal from pin 1 also enters the inverting input of the second half of I.C 1 which re-inverts it to give the inphase (positive) D.I. signal on pin 2 of SK5. C18 is present for high frequency stability.

D.C. biasing for I.C. 1 comes from the potential dividers of R29 an R27 and R8 with R26 which halve the +33V supply to provide the reference points for the signals. SW5 isolates the ground connection pin 1 on SK5 to eliminate earth loops when connected to external equipment.

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#### Pre-amp power supply.

In the rack mount version all supplies are derived from a single torroidal transformer. This provides 250V A.C. for the HT lines, bridge rectified and smoothed by C19, C20 and C21. R36 is present to stop any signal from HT2 getting onto HT1 which could cause feedback problems. It also provides 6.3V AC for the valve heaters and 40V A.C rectified and smoothed by C22 for the I.C. supply. This is regulated by a BC549 transistor, a 33v zener diode and a 5K6 resistor with C23 for smoothing purposes.

The same transformer is used in the combo version in conjunction with a larger torroidal to supply power to the output stage.

In the Head version the large mains transformer used for the phase splitter and output valves is also used for all the pre-amp. supplies.

#### Mains on indication

For the head and combo versions a 6.5V A.C. lamp is used for "mains on" indication. Power for this is derived directly from the 6.3V heater supply.

For the rack mount version, the 6.3V heater supply is rectified by D9 and D10 to supply a D.C. voltage to the LED built into the mains on switch. R40 is used as the current limiting resistor.

# C12-PCB-VTYP-PREx1.

# V-TYPE RACK MOUNT PREAMP MAIN BOARD. ISSUE 1 INSERTION LIST. ANDY EWEN 11/8/98.

PCB     PC00008     ISSUE 2     73-PCB-PC00020     1       PCB     PC00020     2     SKV1     SKV2       ZENER DIODE 27V     72-D-BZX55C27V     1     ZD1       DIODE     72-D-IN4007     10     DI-D10       RES 2.5W 4K7     72-RC100K-2W     4     R8     R10     R17     R20       RES 1/2W 10K     72-RC10K-5W     2     R9     R36     R2     R20     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100K     2     R2     R5     R2     R20     R4     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100R     72-RM100K     1     R40     R2     R2     R5       RES 1/4W 100R     72-RM100K     1     R24     R2     R36     R2 <t< th=""><th></th><th>LIST. ANDY EWEN 11/</th><th></th><th></th></t<>		LIST. ANDY EWEN 11/		
VALVE PCB     C12-PCB-PC00020     2     SKV1 SKV2       ZENER DIODE 27V     72-D-BZXS5C27V     1     ZDI       DIODE     72-D-IN4007     10     D1-D10       RES 2.5W 4K7     72-RWW4K7-2.5W     1     R35       RES 1/2W 100K     72-RC100K-2W     4     R8 R10 R17 R20       RES 1/2W 10K     72-RC10K-5W     2     R9 R36       ZERO OHM LINK     72-RCZERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100K     1     R40       RES 1/4W 100R     72-RM100K     1     R14       RES 1/4W 100K     72-RM100K     1     R14       RES 1/4W 100K     72-RM100K     1     R14       RES 1/4W 100K     72-RM150K     1     R23       RES 1/4W 10K     72-RM150K     1     R1       RES 1/4W 10K     72-RM17K     1     R1       RES 1/4W 30K     72-RM17K     1     R1       RES 1/4W 30K     72-RM506R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R3	DESCRIPTION	PART CODE	QTY	WHERE USED
ZENER DIODE 27V     72-D-BZX55C27V     1     ZD1       DIODE     72-D-IN4007     10     D1-D10       RES 2.5W 4K7     72-RC100K-2W     1     R35       RES 2W 100K     72-RC100K-2W     4     R8 R10 R17 R20       RES 1/2W 10K     72-RC10K-5W     2     R9 R36       ZERO OHM LINK     72-RCZERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100R     1     R40       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 100K     72-RM10M     1     R14       RES 1/4W 10K     72-RM10K     1     R24       RES 1/4W 10K     72-RM110K     1     R24       RES 1/4W 10K     72-RM110K     1     R23       RES 1/4W 1K5     72-RM150K     1     R14       RES 1/4W 1K5     72-RM17K     1     R1       RES 1/4W 330K     72-RM30K     1     R13       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R14 </td <td>PCB PC00008 ISSUE 2</td> <td>73-PCB-PC00008</td> <td>1</td> <td></td>	PCB PC00008 ISSUE 2	73-PCB-PC00008	1	
DIODE     72-D-IN4007     10     D1-D10       RES 2.SW 4K7     72-RWW4K7-2.SW     1     R35       RES 2W 100K     72-RC100K-2W     4     R8 R10 R17 R20       RES 1/2W 10K     72-RC10K-SW     2     R9 R36       ZERO OHM LINK     72-RC10K-SW     2     R9 R36       RES 1/4W 100K     72-RM100K     2     R2 R5       RES 1/4W 100K     72-RM100R     1     R40       RES 1/4W 100K     72-RM100R     1     R14       RES 1/4W 100K     72-RM100K     1     R23       RES 1/4W 100K     72-RM100K     1     R14       RES 1/4W 10K     72-RM10K     1     R23       RES 1/4W 10K     72-RM10K     1     R14       RES 1/4W 10K     72-RM10K     1     R14       RES 1/4W W 1K     72-RM10K     1     R14       RES 1/4W W7K     72-RM30K     1     R13       RES 1/4W 7K     72-RM30K     1     R11       RES 1/4W 30K     72-RM560K     1     R37       RES 1/4W 560	VALVE PCB	C12-PCB-PC00020	2	SKV1 SKV2
RES 2.5W 4K7     72-RWW4K7-2.5W     1     R35       RES 1/2W 100K     72-RC100K-2W     4     R8 R10 R17 R20       RES 1/2W 10K     72-RC10K-5W     2     R9 R36       ZERO OHM LINK     72-RC2ERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100R     1     R40       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 100R     72-RM100R     1     R41       RES 1/4W 10K     72-RM10M     1     R14       RES 1/4W 10K     72-RM170K     1     R12       RES 1/4W 10K     72-RM17K     3     R6 R16 R18       RES 1/4W 1K5     72-RM17K     1     R1       RES 1/4W 1M     72-RM17K     1     R1       RES 1/4W 330K     72-RM47K     8     R25-R32       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 866     72-RM5K6     1     R37       RES 1/4W 860     72-C10-63VER     2     C14 C1	ZENER DIODE 27V	72-D-BZX55C27V	1	ZD1
RES 2W 100K     72-RC100K-2W     4     R8 R10 R17 R20       RES 1/2W 10K     72-RC10K-5W     2     R9 R36       ZERO OHM LINK     72-RCZERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100R     1     R40       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 100K     72-RM100R     1     R41       RES 1/4W 100K     72-RM10M     1     R14       RES 1/4W 100K     72-RM150K     1     R23       RES 1/4W 100K     72-RM17K     1     R1       RES 1/4W 100K     72-RM17K     1     R1       RES 1/4W 100K     72-RM17K     1     R1       RES 1/4W 27K     72-RM27K     1     R1       RES 1/4W 27K     72-RM560R     2     R33 R34       RES 1/4W 560R     72-C10-63VER     2     C14 C15<	DIODE	72-D-IN4007	10	D1-D10
RES 1/2W 10K     72-RC10K5W     2     R9 R36       ZERO OHM LINK     72-RCZERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100K     2     R2     R5       RES 1/4W 100K     72-RM100R     1     R40       RES 1/4W 100K     72-RM100K     1     R24       RES 1/4W 100K     72-RM100K     1     R24       RES 1/4W 100K     72-RM150K     1     R23       RES 1/4W 150K     72-RM150K     1     R23       RES 1/4W 150K     72-RM150K     1     R14       RES 1/4W 150K     72-RM150K     1     R12       RES 1/4W 305K     72-RM150K     1     R1       RES 1/4W 305K     72-RM27K     1     R1       RES 1/4W 305K     72-RM500K     1     R13       RES 1/4W 560R     72-RM560K     1     R37       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560     72-RM560R     2     R33 R34       RES 1/4W 560     72-RM560R     2     C14 C	RES 2.5W 4K7	72-RWW4K7-2.5W	1	R35
ZERO OHM LINK     72-RCZERO     24     As marked (leave out links near SKV1 & SKV2)       RES 1/4W 100K     72-RM100K     2     R2 R5       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 10K     72-RM10M     1     R14       RES 1/4W 10M     72-RM10M     1     R14       RES 1/4W 10M     72-RM155     3     R6 R16 R18       RES 1/4W 11S0K     72-RM155     3     R6 R16 R18       RES 1/4W 11M     72-RM175     8     R23-R32       RES 1/4W 11M     72-RM175     8     R23-R32       RES 1/4W 10K     72-RM175     8     R25-R32       RES 1/4W 330K     72-RM47K     8     R25-R32       RES 1/4W 560R     72-RM47K     8     R25-R32       RES 1/4W 560R     72-RM560R     1     R11       RES 1/4W 860     72-RM560R     2     R33 R34       RES 1/4W 860     72-RM560R     2     C14 C15       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C10-63VER     2	RES 2W 100K	72-RC100K-2W	4	R8 R10 R17 R20
near SKV1 & SKV2       RES 1/4W 100K     72-RM100K     2     R2 R5       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 10M     72-RM10K     1     R41       RES 1/4W 10M     72-RM10K     1     R14       RES 1/4W 10M     72-RM10K     1     R14       RES 1/4W 10K     72-RM150K     1     R23       RES 1/4W 1K5     72-RM17K     1     R1       RES 1/4W 1M     72-RM17K     1     R1       RES 1/4W 1M     72-RM17K     1     R1       RES 1/4W 27K     72-RM17K     1     R1       RES 1/4W 306K     72-RM30K     1     R13       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560R     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 8K2     72-RM5K6     1     R37       RES 1/4W 8K2     72-C1-63VER     2     C14 C15       CAP 1uF POLY BOX     72-C10-35VER     2     C16 C17	RES 1/2W 10K	72-RC10K5W	2	R9 R36
RES 1/4W 100K     72-RM100K     2     R2 R5       RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 10K     72-RM10K     1     R24       RES 1/4W 10K     72-RM10M     1     R14       RES 1/4W 150K     72-RM10K     1     R14       RES 1/4W 150K     72-RM1K5     3     R6 R16 R18       RES 1/4W 1M     72-RM30K     1     R1       RES 1/4W 1M     72-RM30K     1     R1       RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 330K     72-RM30K     1     R13       RES 1/4W 47K     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM560R     1     R37       RES 1/4W 8K2     72-RM560R     2     C14 C15       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C100-63VER     2     C16 C17 <t< td=""><td>ZERO OHM LINK</td><td>72-RCZERO</td><td>24</td><td>As marked (leave out links</td></t<>	ZERO OHM LINK	72-RCZERO	24	As marked (leave out links
RES 1/4W 100R     72-RM100R     1     R40       RES 1/4W 10K     72-RM10K     1     R24       RES 1/4W 10M     72-RM10M     1     R14       RES 1/4W 150K     72-RM150K     1     R23       RES 1/4W 1K5     72-RM1K5     3     R6 R16 R18       RES 1/4W 1M     72-RM17K     1     R1       RES 1/4W 1M     72-RM330K     1     R13       RES 1/4W 300K     72-RM330K     1     R13       RES 1/4W 47K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     1     R11       RES 1/4W 560R     72-RM560R     1     R37       RES 1/4W 5K6     72-RM560R     1     R37       RES 1/4W 8K2     72-RM8K2     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF POLY BOX     72-C1-63VER     2     C14 C15       CAP 100F ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uf E				near SKV1 & SKV2)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	RES 1/4W 100K	72-RM100K	2	R2 R5
RES 1/4W 10M     72-RM10M     1     R14       RES 1/4W 150K     72-RM150K     1     R23       RES 1/4W 1K5     72-RM1K5     3     R6 R16 R18       RES 1/4W 1M     72-RM1M     7     R3 R4 R7 R12 R15 R21 R22       RES 1/4W 30K     72-RM30K     1     R1       RES 1/4W 30K     72-RM47K     8     R25-R32       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 566     72-RM560R     2     R33 R34       RES 1/4W 8K2     72-RM560R     1     R37       RES 1/4W 8K2     72-RM560R     2     R33 R34       RES 1/4W 8K2     72-RM560R     1     R37       RES 1/4W 8K2     72-RM560R     2     R33 R34       RES 1/4W 8K2     72-RM560R     2     R16       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 10uF ELEC RADIAL     72-C1-63VER     2     MOD ACROSS R28 & R29	RES 1/4W 100R	72-RM100R	1	R40
RES 1/4W 150K     72-RM150K     1     R23       RES 1/4W 1K5     72-RM1K5     3     R6 R16 R18       RES 1/4W 1M     72-RM1M     7     R3 R4 R7 R12 R15 R21 R22       RES 1/4W 27K     72-RM27K     1     R1       RES 1/4W 330K     72-RM30K     1     R13       RES 1/4W 300K     72-RM47K     8     R25-R32       RES 1/4W 560R     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     1     R37       RES 1/4W 8K2     72-RM5K6     1     R37       RES 1/4W 8K2     72-C10-35VER     2     MOD ACROSS R28 & R29       -     -     -     -     - <td< td=""><td>RES 1/4W 10K</td><td>72-RM10K</td><td>1</td><td>R24</td></td<>	RES 1/4W 10K	72-RM10K	1	R24
RES 1/4W 1K5     72-RM1K5     3     R6 R16 R18       RES 1/4W 1M     72-RM1M     7     R3 R4 R7 R12 R15 R21 R22       RES 1/4W 27K     72-RM27K     1     R1       RES 1/4W 30K     72-RM330K     1     R13       RES 1/4W 30K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560     72-RM560R     2     R33 R34       RES 1/4W 560     72-RM560R     1     R37       RES 1/4W 8K2     72-RM560R     1     R37       RES 1/4W 8K2     72-RM8K2     1     R19              CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF POLY BOX     72-C1-63VER     2     MOD ACROSS R28 & R29       + ve legs nearest IC1.     72-C10-63VER     2     C16 C17       CAP 100uF ELEC RADIAL     72-C100-63VER     1     C22       CAP 100uP CER DISC     72-C100P-100VCD2     2	<b>RES 1/4W 10M</b>	72-RM10M	1	R14
RES 1/4W 1M     72-RM1M     7     R3 R4 R7 R12 R15 R21 R22       RES 1/4W 27K     72-RM27K     1     R1       RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM560R     1     R37       RES 1/4W 8K2     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 100F ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 100F ELEC RADIAL     72-C100-63VER     1     C22       CAP 100P OLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100N-250VP     1<	RES 1/4W 150K	72-RM150K		R23
RES 1/4W 27K     72-RM27K     1     R1       RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM566     1     R37       RES 1/4W 5K6     72-RM566     1     R37       RES 1/4W 8K2     72-RM8K2     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-63VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C100-63VER     2     C16 C17       CAP 10uF ELEC RADIAL     72-C100-63VER     2     C16 C17       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-50VCD     1     C3       CAP 200P Polystyrene     72-C20P-630VPA	RES 1/4W 1K5	72-RM1K5	3	R6 R16 R18
RES 1/4W 330K     72-RM330K     1     R13       RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM5K6     1     R37       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R19       CAP 10F POLY BOX     72-C1-250VP     1     C2       CAP 10F FLEC RADIAL     72-C1-63VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C10-63VER     2     C16 C17       CAP 100F ELEC RADIAL     72-C10-63VER     1     C22       CAP 100P OLY BOX     72-C1000-50VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2	<b>RES 1/4W 1M</b>	72-RM1M	7	R3 R4 R7 R12 R15 R21 R22
RES 1/4W 47K     72-RM47K     8     R25-R32       RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF POLY BOX     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C10-63VER     2     C16 C17       CAP 10uF ELEC RADIAL     72-C10063VER     1     C22       CAP 100N POLY BOX     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C1000-53VFR     1     C22       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 220F ELEC AXIAL	RES 1/4W 27K	72-RM27K	1	R1
RES 1/4W 560K     72-RM560K     1     R11       RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM5K6     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-63VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C10-63VER     2     C16 C17       CAP 10uF ELEC RADIAL     72-C100-63VER     1     C22       CAP 100uF ELEC RADIAL     72-C1000-63VER     1     C22       CAP 100uF ELEC RADIA     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-630VPA     1     C3       CAP 200P Polystyrene     72-C20P-630VPA     1     C3       CAP 220F ELEC AXIAL     72-C22-450VEA     2     C20 C21	RES 1/4W 330K	72-RM330K	1	R13
RES 1/4W 560R     72-RM560R     2     R33 R34       RES 1/4W 5K6     72-RM5K6     1     R37       RES 1/4W 8K2     72-RM8K2     1     R19       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C1-250VP     1     C2       CAP 10uF ELEC RADIAL     72-C1-03VER     2     MOD ACROSS R28 & R29       +ve legs nearest IC1.     72-C10-63VER     2     C16 C17       CAP 10uF ELEC RADIAL     72-C100-63VER     1     C22       CAP 1000uF ELEC RADIA     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-630VPA     1     C3       CAP 200P Polystyrene     72-C20P-630VPA     1     C3       CAP 220F ELEC AXIAL     72-C22+50VEA     2     C20 C21       CAP 220P POLY BOX     72-C470-63VER     2     C20 C10	RES 1/4W 47K	72-RM47K	8	R25-R32
RES 1/4W 5K6   72-RM5K6   1   R37     RES 1/4W 8K2   72-RM8K2   1   R19     CAP 1uF POLY BOX   72-C1-250VP   1   C2     CAP 1uF ELEC RADIAL   72-C1-63VER   2   C14 C15     CAP 10uF ELEC RADIAL   72-C10-35VER   2   MOD ACROSS R28 & R29     +ve legs nearest IC1.   +ve legs nearest IC1.   +ve legs nearest IC1.     CAP 100F ELEC RADIAL   72-C10-63VER   2   C16 C17     CAP 100uF ELEC RAD.   72-C1000-63VER   1   C22     CAP 100n POLY BOX   72-C100N-250VP   5   C4 C24 C25 C26 C27     CAP 100P CER DISC   72-C100P-100VCD2   2   C18 C28     CAP 100P CER DISC   72-C100P-50VCD   1   C8     CAP 200P Polystyrene   72-C200P-630VPA   1   C3     CAP 22uF ELEC AXIAL   72-C22N-400VP   2   C12 C13     CAP 200P Polystyrene   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RADIAL   72-C470-63VER   1   C23     CAP 470n POLY BOX   72-C470-63VER   1   C23     CAP 470N POLY BOX   72-C470-63VER   1	RES 1/4W 560K	72-RM560K	1	R11
RES 1/4W 8K2   72-RM8K2   1   R19     CAP 1uF POLY BOX   72-C1-250VP   1   C2     CAP 1uF ELEC RADIAL   72-C1-63VER   2   C14 C15     CAP 10uF ELEC RADIAL   72-C10-35VER   2   MOD ACROSS R28 & R29     +ve legs nearest IC1.   +ve legs nearest IC1.   +ve legs nearest IC1.     CAP 10uF ELEC RADIAL   72-C10-63VER   2   C16 C17     CAP 100uF ELEC RAD.   72-C1000-63VER   1   C22     CAP 100n POLY BOX   72-C1000-250VP   5   C4 C24 C25 C26 C27     CAP 100P CER DISC   72-C100P-100VCD2   2   C18 C28     CAP 100P CER DISC   72-C150P-50VCD   1   C8     CAP 200P Polystyrene   72-C200P-630VPA   1   C3     CAP 22uF ELEC AXIAL   72-C22+450VEA   2   C20 C21     CAP 22u POLY BOX   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RADIAL   72-C470-63VER   1   C23     CAP 470N POLY BOX   72-C470N-250VP   1   C11     CAP 470N POLY BOX   72-C470N-250VP   1   C11     CAP 470N POLY BOX   72-C470N-250VP   1	RES 1/4W 560R	72-RM560R	2	R33 R34
CAP 1uF POLY BOX     72-C1-250VP     1     C2       CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29 +ve legs nearest IC1.       CAP 10uF ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uF ELEC RAD.     72-C1000-63VER     1     C22       CAP 1000 POLY BOX     72-C100N-63VER     1     C22       CAP 1000 POLY BOX     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P POlystyrene     72-C200P-630VPA     1     C3       CAP 200P Polystyrene     72-C22-450VEA     2     C20 C21       CAP 22N POLY BOX     72-C22N-400VP     2     C12 C13       CAP 470uF ELEC RADIAL     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 470N POLY BOX     72-C47N-100VP     1     C11       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 47N POLY BOX     72-C47N-400VP     <	RES 1/4W 5K6	72-RM5K6	1	R37
CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29 +ve legs nearest IC1.       CAP 10uF ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uF ELEC RAD.     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-50VCD     1     C8       CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 220F ELEC AXIAL     72-C22-450VEA     2     C20 C21       CAP 22N POLY BOX     72-C22N-400VP     2     C12 C13       CAP 470F ELEC RADIAL     72-C47-63VER     2     C9 C10       CAP 470uF ELEC RADIAL     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470-63VER     1     C11       CAP 470N POLY BOX     72-C47N-100VP     1     C11       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP	RES 1/4W 8K2	72-RM8K2	1	R19
CAP 1uF ELEC RADIAL     72-C1-63VER     2     C14 C15       CAP 10uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29 +ve legs nearest IC1.       CAP 10uF ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uF ELEC RAD.     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-50VCD     1     C8       CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 220F ELEC AXIAL     72-C22-450VEA     2     C20 C21       CAP 22N POLY BOX     72-C22N-400VP     2     C12 C13       CAP 470F ELEC RADIAL     72-C47-63VER     2     C9 C10       CAP 470uF ELEC RADIAL     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470-63VER     1     C11       CAP 470N POLY BOX     72-C47N-100VP     1     C11       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP				
CAP 10uF ELEC RADIAL     72-C10-35VER     2     MOD ACROSS R28 & R29 +ve legs nearest IC1.       CAP 10uF ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uF ELEC RAD.     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C100P-50VCD     1     C8       CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 22uF ELEC AXIAL     72-C22N-400VP     2     C12 C13       CAP 22N POLY BOX     72-C47-63VER     1     C23       CAP 470uF ELEC RADIAL     72-C470-63VER     1     C23       CAP 470uF ELEC RADIAL     72-C470-63VER     1     C23       CAP 470uF ELEC RAD.     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470-100VP     1     C11       CAP 470N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP	CAP 1uF POLY BOX	72-C1-250VP	1	C2
+ve legs nearest IC1.       CAP 10uF ELEC RADIAL     72-C10-63VER     2     C16 C17       CAP 1000uF ELEC RAD.     72-C1000-63VER     1     C22       CAP 100N POLY BOX     72-C100N-250VP     5     C4 C24 C25 C26 C27       CAP 100P CER DISC     72-C100P-100VCD2     2     C18 C28       CAP 100P CER DISC     72-C150P-50VCD     1     C8       CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 22uF ELEC AXIAL     72-C22-450VEA     2     C10 C20       CAP 22N POLY BOX     72-C22N-400VP     2     C12 C13       CAP 470uF ELEC RADIAL     72-C477-63VER     2     C9 C10       CAP 470uF ELEC RADIAL     72-C470N-250VP     1     C11       CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 1uF ELEC RADIAL	72-C1-63VER	2	C14 C15
CAP 10uF ELEC RADIAL   72-C10-63VER   2   C16 C17     CAP 1000uF ELEC RAD.   72-C1000-63VER   1   C22     CAP 100N POLY BOX   72-C100N-250VP   5   C4 C24 C25 C26 C27     CAP 100P CER DISC   72-C100P-100VCD2   2   C18 C28     CAP 150P CER DISC   72-C150P-50VCD   1   C8     CAP 200P Polystyrene   72-C200P-630VPA   1   C3     CAP 22uF ELEC AXIAL   72-C22-450VEA   2   C10 C21     CAP 22N POLY BOX   72-C22N-400VP   2   C12 C13     CAP 47uF ELEC RADIAL   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RAD.   72-C470-63VER   1   C23     CAP 470N POLY BOX   72-C47N-100VP   1   C11     CAP 47N POLY BOX   72-C47N-400VP   2   C5 C7     CAP 4N7 POLY BOX   72-C47N-400VP   1   C6	CAP 10uF ELEC RADIAL	72-C10-35VER	2	MOD ACROSS R28 & R29
CAP 1000uF ELEC RAD.72-C1000-63VER1C22CAP 100N POLY BOX72-C100N-250VP5C4 C24 C25 C26 C27CAP 100P CER DISC72-C100P-100VCD22C18 C28CAP 150P CER DISC72-C150P-50VCD1C8CAP 200P Polystyrene72-C200P-630VPA1C3CAP 22uF ELEC AXIAL72-C22-450VEA2C20 C21CAP 22N POLY BOX72-C22N-400VP2C12 C13CAP 47uF ELEC RADIAL72-C47-63VER1C23CAP 470uF ELEC RAD.72-C470-63VER1C11CAP 47N POLY BOX72-C47N-100VP1C1CAP 47N POLY BOX72-C47N-400VP2C5 C7CAP 4N7 POLY BOX72-C4N7-400VP1C6				+ve legs nearest IC1.
CAP 100N POLY BOX72-C100N-250VP5C4 C24 C25 C26 C27CAP 100P CER DISC72-C100P-100VCD22C18 C28CAP 150P CER DISC72-C150P-50VCD1C8CAP 200P Polystyrene72-C200P-630VPA1C3CAP 22uF ELEC AXIAL72-C22-450VEA2C20 C21CAP 22N POLY BOX72-C22N-400VP2C12 C13CAP 47uF ELEC RADIAL72-C47-63VER2C9 C10CAP 470uF ELEC RAD.72-C470-63VER1C23CAP 470N POLY BOX72-C470N-250VP1C11CAP 47N POLY BOX72-C47N-100VP1C1CAP 47N POLY BOX72-C47N-400VP2C5 C7CAP 4N7 POLY BOX72-C4N7-400VP1C6	CAP 10uF ELEC RADIAL	72-C10-63VER	2	C16 C17
CAP 100P CER DISC   72-C100P-100VCD2   2   C18 C28     CAP 150P CER DISC   72-C150P-50VCD   1   C8     CAP 200P Polystyrene   72-C200P-630VPA   1   C3     CAP 22uF ELEC AXIAL   72-C22-450VEA   2   C20 C21     CAP 22N POLY BOX   72-C22N-400VP   2   C12 C13     CAP 47uF ELEC RADIAL   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RAD.   72-C470-63VER   1   C23     CAP 470N POLY BOX   72-C47N-100VP   1   C11     CAP 47N POLY BOX   72-C47N-100VP   1   C1     CAP 47N POLY BOX   72-C47N-400VP   2   C5 C7     CAP 4N7 POLY BOX   72-C4N7-400VP   1   C6	CAP 1000uF ELEC RAD.	72-C1000-63VER	1	C22
CAP 150P CER DISC72-C150P-50VCD1C8CAP 200P Polystyrene72-C200P-630VPA1C3CAP 22uF ELEC AXIAL72-C22-450VEA2C20 C21CAP 22N POLY BOX72-C22N-400VP2C12 C13CAP 47uF ELEC RADIAL72-C47-63VER2C9 C10CAP 470uF ELEC RAD.72-C470-63VER1C23CAP 470N POLY BOX72-C470N-250VP1C11CAP 47N POLY BOX72-C47N-100VP1C1CAP 47N POLY BOX72-C47N-400VP2C5 C7CAP 4N7 POLY BOX72-C4N7-400VP1C6	CAP 100N POLY BOX	72-C100N-250VP	5	C4 C24 C25 C26 C27
CAP 200P Polystyrene     72-C200P-630VPA     1     C3       CAP 22uF ELEC AXIAL     72-C22-450VEA     2     C20 C21       CAP 22N POLY BOX     72-C22N-400VP     2     C12 C13       CAP 47uF ELEC RADIAL     72-C47-63VER     2     C9 C10       CAP 470uF ELEC RAD.     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 100P CER DISC	72-C100P-100VCD2	2	C18 C28
CAP 22uF ELEC AXIAL   72-C22-450VEA   2   C20 C21     CAP 22N POLY BOX   72-C22N-400VP   2   C12 C13     CAP 47uF ELEC RADIAL   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RAD.   72-C470-63VER   1   C23     CAP 470n POLY BOX   72-C470N-250VP   1   C11     CAP 47N POLY BOX   72-C47N-100VP   1   C1     CAP 47N POLY BOX   72-C47N-400VP   2   C5 C7     CAP 4N7 POLY BOX   72-C4N7-400VP   1   C6	CAP 150P CER DISC	72-C150P-50VCD	1	C8
CAP 22N POLY BOX   72-C22N-400VP   2   C12 C13     CAP 47uF ELEC RADIAL   72-C47-63VER   2   C9 C10     CAP 470uF ELEC RAD.   72-C470-63VER   1   C23     CAP 470N POLY BOX   72-C470N-250VP   1   C11     CAP 47N POLY BOX   72-C47N-100VP   1   C1     CAP 47N POLY BOX   72-C47N-400VP   2   C5 C7     CAP 4N7 POLY BOX   72-C4N7-400VP   1   C6	CAP 200P Polystyrene	72-C200P-630VPA	1	C3
CAP 47uF ELEC RADIAL     72-C47-63VER     2     C9 C10       CAP 470uF ELEC RAD.     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 22uF ELEC AXIAL	72-C22-450VEA	2	C20 C21
CAP 470uF ELEC RAD.     72-C470-63VER     1     C23       CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 22N POLY BOX	72-C22N-400VP	2	C12 C13
CAP 470N POLY BOX     72-C470N-250VP     1     C11       CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 47uF ELEC RADIAL	72-C47-63VER	2	C9 C10
CAP 47N POLY BOX     72-C47N-100VP     1     C1       CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 470uF ELEC RAD.	72-C470-63VER	1	C23
CAP 47N POLY BOX     72-C47N-400VP     2     C5 C7       CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 470N POLY BOX	72-C470N-250VP	1	C11
CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 47N POLY BOX	72-C47N-100VP	1	C1
CAP 4N7 POLY BOX     72-C4N7-400VP     1     C6	CAP 47N POLY BOX	72-C47N-400VP	2	C5 C7
CAP 100uF ELEC RAD. 72-CAP-100400V 1 C19	CAP 4N7 POLY BOX	72-C4N7-400VP	-	
	CAP 100uF ELEC RAD.	72-CAP-100400V	1	C19

<b>TRANSISTOR BC549C</b>	72-TBC549C	1	TR1
8-WAY SOCKET	72-SOCKET-8W	1	FOR IC1
IC RC4558P	72-IC-RC4558P	1	IC1
POT A 1MEG	73-POT-A1M	1	P1
POT A 250K	73-POT-A250K	2	P2 P4
POT A 25K	73-POT-A25K	1	P5
POT A25K PULL SWITCH	73-POT-A25K-PS	1	P3
MINI TOGGLE SWITCH	73-SWT-M-TGL-PCB	4	SW1 SW3 SW4 SW5
2-WAY HEADER 0.1"	72-HEAD-2W	2	HP1 & HP4 (SEE NB1)
8-WAY HEADER 0.2"	72-HEAD-8W	1	PL1
XLR PLUG NEUTRIK	73-XLR-PCB-M-N	1	XLR1
JACK SOCKETS	72-SKT-JCKBNBG	2	SK1 SK2
FLYLEAD	C00-FLY-HEATER-X	1	From PL2 on both PC00020's
			to HP4 & HP1
SIGNAL LEAD	LOOM-00275	1	From L/0(V) to PC00009
SIGNAL LEAD	LOOM-00273	1	From send/return to PC00009
LED WIRES	LOOM-00274	1	From LED LEGEND to LED

<u>N.B.1</u> The two 2-way headers are fitted with their small face to the left. This is with the pots facing you and on the racky version, leave out HP2 & HP3 as these are fitted on the two PC00020's.