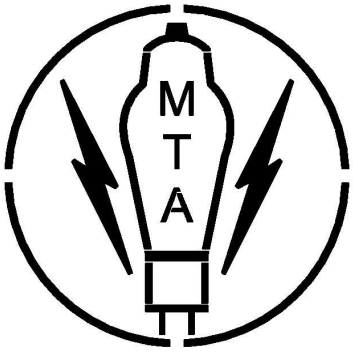
Operating Manual
Mellow Tone Amps
Universal 6N1P Preamp
“The Rocket”
v2.0



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Letter Of Introduction	V2.0	Oct/25

Date_____

Purchaser_____

Product **Universal 6N1P Preamp**

Serial No **2.0 – _____**

Thank You for choosing the **"The Rocket"** Preamp! Please take the time to go over the Operating Manual and if building the Kit version, watch the build videos - YouTube - Mellow Tone Amps.

Important! Always check the Store Listing for the most current Addendum. The information contained in the Addendum brings your build up to the most current version.

Should you have a question, problem or just need a kick in the pants, feel free to send us an email mellowtoneamps@protonmail.com

Our Prime Objective is to build a SIMPLE, but GREAT sounding SE (single ended) Pure Class A (zero feedback) Quasi Dual Mono Preamp.

But never forget the SECOND Objective – which is to have FUN!

If at some point you're getting tired and making mistakes or NOT having Fun, put down the soldering iron (turn it off) and walk away from the work bench. I guarantee you'll come back to it FRESHER and ready to do your best work!

Cheers,

James (Jim) Lambton, President
Mellow Tone Amps Ltd.

!!!WARNING!!!
Please actually read this!

Tube amplifiers can have very high heat and voltages present. Which are fire, burn, and shock hazards. Use extreme CAUTION when working around them. Read and carefully follow the recommendations in this build manual.

If you are unsure of how to operate this amplifier safely, please contact the manufacturer at mellowtoneamps@protonmail.com

Caution!!! Capacitors can hold a LETHAL charge, always discharge them before working on any Electronic Equipment

Never use the amplifier with a damaged power cord.

Do not operate the amplifier in moist or wet conditions.

Do not operate the amplifier if chassis is open or damaged.

Always turn the volume to zero before powering on the amplifier.

Do not place flammable items on or around the amplifier.

Do not operate the amplifier in an enclosed space.

Do not operate the amplifier without adult supervision if small children or pets are present.

Never leave the amplifier on and unattended.

Never use tubes that are damaged, untested, unknown, or not listed as compatible in the manual.

If significant smell, sparks, heat, or flames are present.
Unplug immediately.

Features & Specifications	**V2.0**	**Oct/25**

- Universal Power Transformer (110Vac – 240Vac)
- Fuse Protection On Transformer Primary & Secondary
- Choke Filtered Quasi Dual Mono Power Supply
- 6.3 Vac Filament Supply
- Two Switchable RCA Inputs
- Single RCA Output
- Switchable Cathode Bypass For Gain & Linearity
- High Gain & Low Noise
- Large Number Of Compatible V1 (Preamp) Tubes
- Easy To Solder Dual Sided PCB With 2oz Copper Traces
- "Sandwich" Construction For High Rigidity
- Blue ALPS RK27 Volume Potentiometer
- Short Signal Paths

Compatible Tubes	V1: 6N1P / 6N1P-EV / 6N23P / 6DJ8 / 6922 / 6BQ7 / 6BZ7 / 6CG7 / 6GU7 / 6N6P V2: 6N6P
Tubes Used In Testing	Voskhod Rocket 6N1P-EV & NEVZ 6N6P
Signal To Noise Ratio	69 dB @ 1 Khz
Input Impedance	100 Kohm nominal
Output Impedance	310 Ohms @ 1/2 volume
Power Consumption	24 W

Max Input	**Max Output**
4.3 Vrms Bypass OUT	43.2 Vrms Bypass OUT
2.5 Vrms Bypass IN	43.6 Vrms Bypass IN

Input Sensitivity Into 220 Kohm Load @ 1 Khz

Input	Output			Gain
1 Vrms	Bypass OUT	10.6 Vrms	20.50 dBv	10.6
	Bypass IN	18.5 Vrms	25.34 dBv	18.5

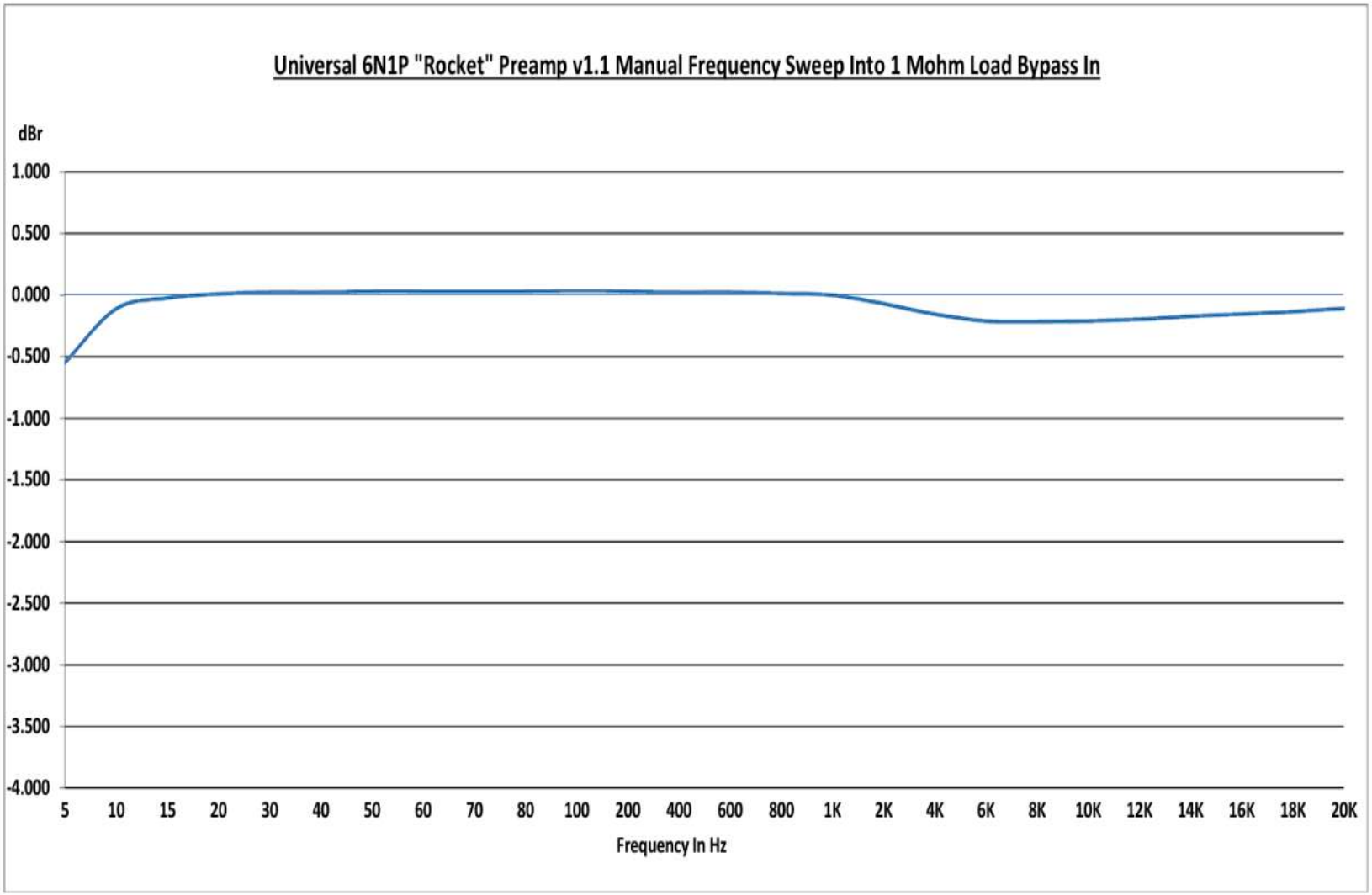
Total Harmonic Distortion

Frequency	40 Hz	1 KHz	10 KHz
THD Bypass OUT	0.040 % / -68 dBr	0.033 % / -69 dBr	0.031 % / -70 dBr
THD Bypass IN	0.057 % / -65 dBr	0.051 % / -66 dBr	0.049 % / -66 dBr

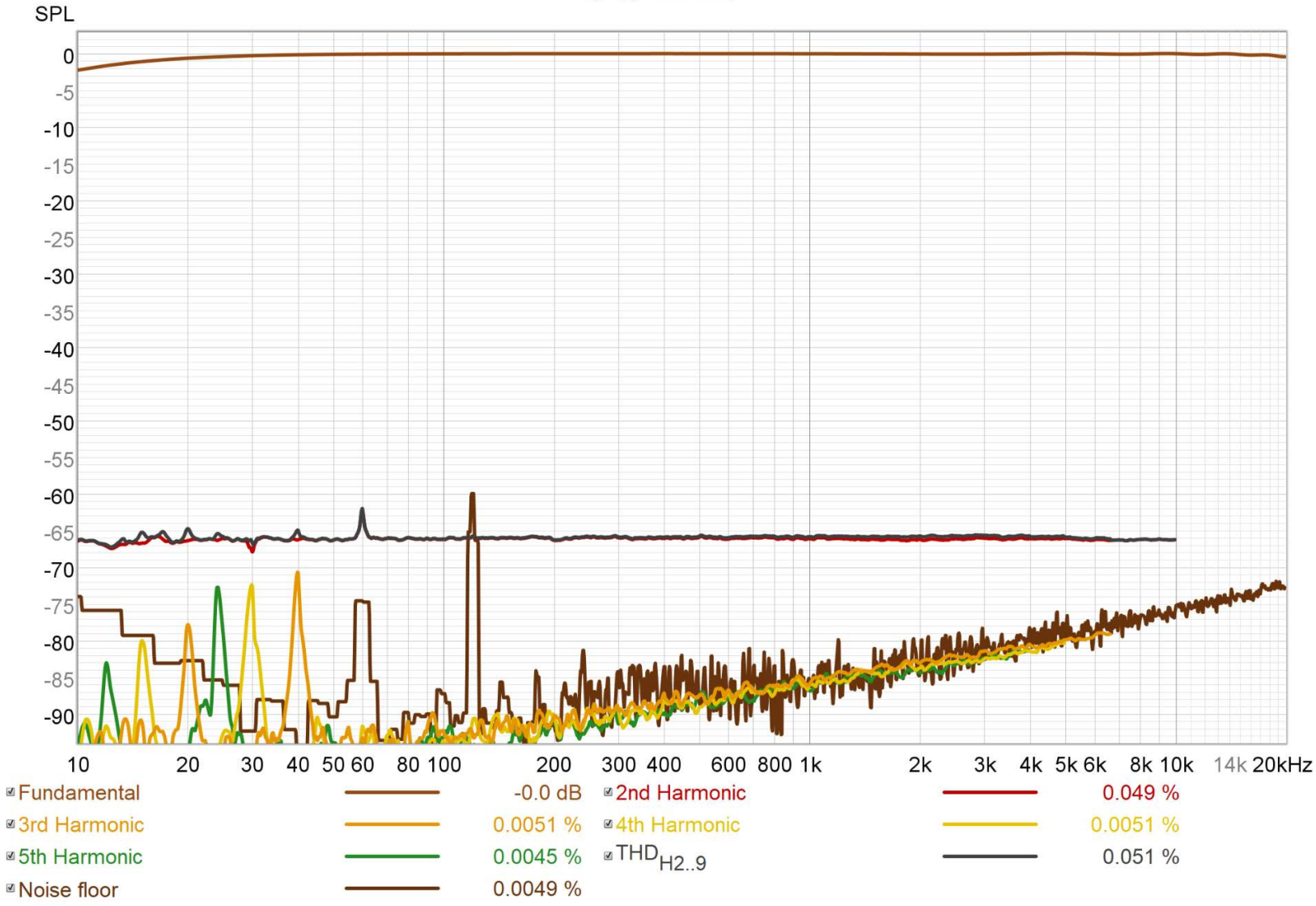
Frequency Response Into 1 Mohm Load (Bypass IN)

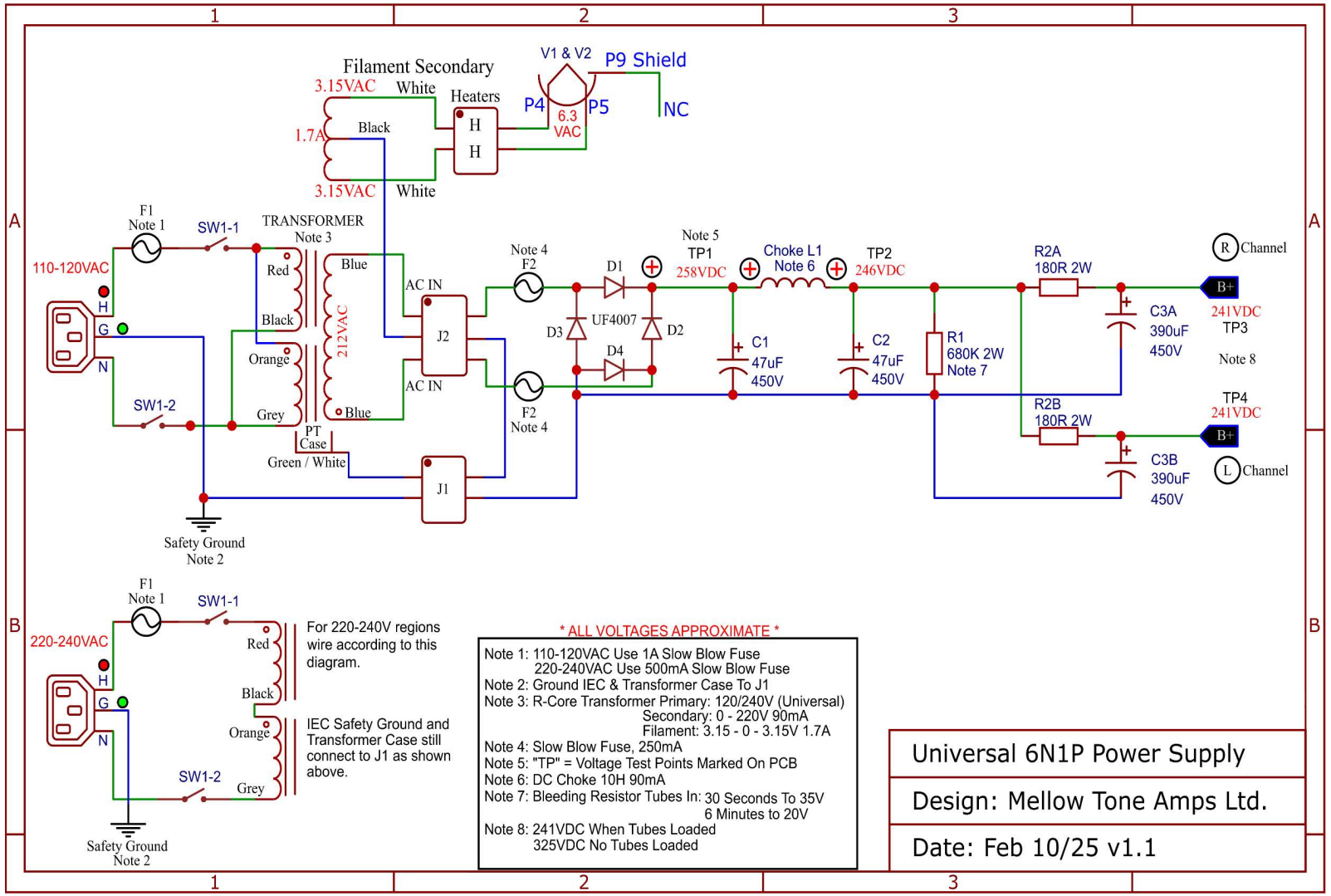
Full Frequency Response	10Hz - 20 KHz	+/-0.252 dB
Low Frequency Response	40 Hz	+0.023 dBr
Mid Frequency Response	1 Khz	0.000 dBr
High Frequency Response	20 KHz	-0.107 dBr

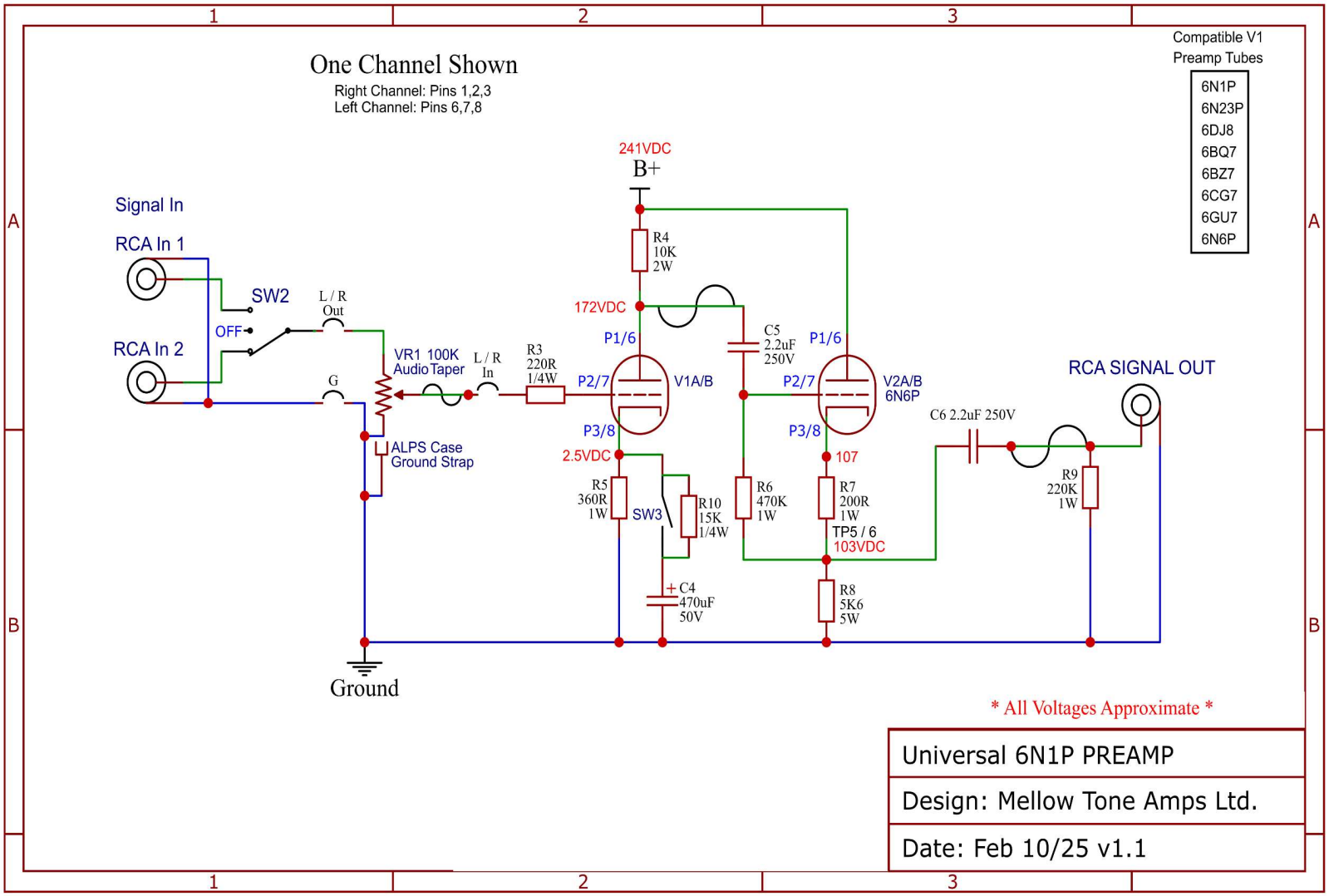
Operating Guide	**v2.0**	**Oct/25**
First Steps	1. Break in tube sockets with dummy tube if you have one. 2. Carefully install tubes in correct sockets, V1: 6N1P/ 6N1P-EV / 6N23P / 6DJ8 / 6922 / 6BQ7 / 6BZ7 / 6CG7 / 6GU7/ 6N6P V2: 6N6P 3. Plug in power cord. 4. Plug in RCA inputs and output. 5. Turn volume to zero, counter clockwise (that's to the left ↺). 6. Set selector switch to correct input (toggle faces live input). 7. Turn on **The Rocket** and let it warm up for 1 minute. 8. Turn on the rest of your system. 9. Watch for sparks, smoke, fire, and great sound (only partly joking). 10. Check for noise with volume at zero, then check at 1/4 volume. 11. If all good, listen to some great music.	
Cathode Bypass ON	Switch Cathode Bypass to ON for maximum gain by sending your AC electrons around the cathode resistor. Note: If starting the amplifier with the switch "OFF", wait one minute before switching to ON or you may hear a "pop" sound.	
Cathode Bypass OFF	Switch Cathode Bypass to OFF for lower gain, higher linearity.	
Sound Shaping	Tube rolling in V1 gives you the option to significantly change the sonics of your preamplifier. That's because V1 is the voltage gain tube and will have the most influence on your sound. And as we all know, **"The Tubes Are The Amplifiers!"**	
Pro Tips	• Locating your preamplifier away from electronic noise will reduce your total noise floor. • Full output from signal source, will often give the best signal to noise ratio. • If volume range is limited, turn down the signal source to give better volume control. • Don't drop your tubes, it will annoy them (They will get all bent out of shape). And if you're really unlucky, they will break. • Don't use junk, untested, or incompatible tubes. (See First Steps #9 for possible results). • Use quality RCA patch cords, not coat hangers. (Quality cables do not require a dump truck full of cash, just don't buy the cheapest).	
Cleaning	1. Switch off and unplug power cord. 2. Carefully remove tubes. (Place them somewhere safe). 3. Use only 99% Isopropyl alcohol and clean micro fibre cloth. 4. Apply alcohol sparingly to micro fibre cloth and wipe down any surfaces that need to be cleaned, while avoiding the edges of the top and bottom plates. And avoid cleaning the labels on the back and bottom.	
Replacing Primary Fuse	1. Switch off and unplug power cord. 2. Use mini slot screw driver, remove fuse holder from IEC power inlet. 3. Spare fuse may be in the holder, if not refer to rear label for correct fuse. 4. Replace and re-install fuse holder in IEC power inlet.	


Universal 6N1P "Rocket" Preamp v1.1 Manual Frequency Sweep Into 1 Mohm Load Bypass In
dBr
1.000
0.500
0.000
-0.500
-1.000
-1.500
-2.000
-2.500
-3.000
-3.500
-4.000
5
10
15
20
30
40
50
60
70
80
100
200
400
600
800
1K
2K
4K
6K
8K
10K
12K
14K
16K
18K
20K
Frequency In Hz

Universal 6N1P Rocket Preamp V1.1 REW Distortion Graph Into 27 Kohm Load Measured @ 1KHz
(Bypass IN)




Filament Secondary
3.15VAC
White
Heaters
V1 & V2
P9 Shield
P4
6.3 VAC
P5
NC
1.7A
Black
H
H
3.15VAC
White
F1
Note 1
SW1-1
TRANSFORMER
Note 3
110-120VAC
H
G
N
Red
Black
Orange
Grey
Blue
212VAC
Blue
PT Case
Green / White
SW1-2
AC IN
J2
AC IN
J1
Note 4
F2
F2
Note 4
D1
D3
UF4007
D2
D4
Note 5
TP1
258VDC
Choke L1
Note 6
TP2
246VDC
C1
47uF
450V
C2
47uF
450V
R1
680K 2W
Note 7
R2A
180R 2W
R2B
180R 2W
C3A
390uF
450V
C3B
390uF
450V
R Channel
B+
241VDC
TP3
Note 8
TP4
241VDC
B+
L Channel
Safety Ground
Note 2
220-240VAC
For 220-240V regions wire according to this diagram.
IEC Safety Ground and Transformer Case still connect to J1 as shown above.
* ALL VOLTAGES APPROXIMATE *
Note 1: 110-120VAC Use 1A Slow Blow Fuse
220-240VAC Use 500mA Slow Blow Fuse
Note 2: Ground IEC & Transformer Case To J1
Note 3: R-Core Transformer Primary: 120/240V (Universal)
Secondary: 0 - 220V 90mA
Filament: 3.15 - 0 - 3.15V 1.7A
Note 4: Slow Blow Fuse, 250mA
Note 5: "TP" = Voltage Test Points Marked On PCB
Note 6: DC Choke 10H 90mA
Note 7: Bleeding Resistor Tubes In: 30 Seconds To 35V
6 Minutes to 20V
Note 8: 241VDC When Tubes Loaded
325VDC No Tubes Loaded
Universal 6N1P Power Supply
Design: Mellow Tone Amps Ltd.
Date: Feb 10/25 v1.1


One Channel Shown
Right Channel: Pins 1,2,3
Left Channel: Pins 6,7,8
Compatible V1
Preamp Tubes
6N1P
6N23P
6DJ8
6BQ7
6BZ7
6CG7
6GU7
6N6P
Signal In
RCA In 1
RCA In 2
SW2
OFF
L / R
Out
G
VR1 100K
Audio Taper
L / R
In
R3
220R
1/4W
241VDC
B+
R4
10K
2W
172VDC
P1/6
P2/7
V1A/B
P3/8
2.5VDC
C5
2.2uF
250V
P1/6
P2/7
V2A/B
6N6P
P3/8
107
ALPS Case
Ground Strap
R5
360R
1W
SW3
R10
15K
1/4W
+C4
470uF
50V
R6
470K
1W
R7
200R
1W
TP5 / 6
103VDC
R8
5K6
5W
C6 2.2uF 250V
R9
220K
1W
RCA SIGNAL OUT
Ground
* All Voltages Approximate *
Universal 6N1P PREAMP
Design: Mellow Tone Amps Ltd.
Date: Feb 10/25 v1.1

Parts List	Universal 6N1P "Rocket" Preamp	v2.0 Oct/25

	Qty	Power Supply	Description	Product Number	Plan #
	1	Universal R-Core PT	pri:115v/230v sec:0-220v fil 3.15-0-3.15	R20-TS14327	
	1	Transformer Cover	black (2 sides + 1 lid)		
	1	IEC inlet	c/w fuse & switch (safe type)	AC-14-F16A KCD4	
	1	PCB	Univ 9 Pin Preamp 09/25	v2.0	
	1+1	Fuse (1 spare incl)	Slow Blow x 20mm	1A (120vac) / 500mA (220vac)	
	2	Fuse	Slow Blow x 20mm	250mA	
	4	Diode	1A 1000V	UF4007	
	1	Choke	Triad 10H 90mA	C7X	
	2	Capacitor	radial	47uF 450v	C1&2
	2	Capacitor	snap in (d30 x h45mm)	390uF 450v	C3a,b
	1	Resistor	metal film 1%	680k 2w	R1
	2	Resistor	metal film 1%	180r 2w	R2a,b
		Preamp			
	2	socket	ceramic pcb mount	9 pin	
	6	RCA female jacks	high quality isolated ground		
	2	Switch	DPDT (on-off-on) mini pcb	NKK B23AP	SW1,2
	2	Resistor	metal film 1%	220r .25w	R3
	2	Resistor	metal film 1%	10k 2w	R4
	2	Resistor	metal film 1%	360r 1w	R5
	2	Resistor	metal film 1%	470k 1w	R6
	2	Resistor	metal film 1%	200r 1w	R7
	2	Resistor	metal film 1%	5k6 5w	R8
	2	Resistor	metal film 1%	220k 1w	R9
	2	Resistor	metal film 1%	15k .25w	R10
	2	Capacitor	radial	470uf 50v	C4
	4	Capacitor	axial - Vishay MKT1813	2.2uF 250v	C5, 6
	1	Blue Alps Potentiomet	100K Dual Gang (stereo) audo taper		
	1	Alps	PCB - blue		
	1	Knob	Solid Aluminum (30 x 22 x 6mm)	black	
	1	PCB Top Plate			
	1	PCB Bot Plate			
	1	PCB Front Plate			
	1	PCB Back Plate			
	2	PCB Side Plates			
	4	Corner Blocks	3D Printed ASA Black		
	7	RCA Shaft Spacers	3D Printed ASA Black	4.4mm high	
	2	RCA Setting Tool	3D Printed ASA Black		
	4	Feet	3D Printed ASA Black		
	1	Wire/Connectors/Heatshrink/Hardware Pack			

Hardware & Wire List	Universal 6N1P "Rocket" Preamp	v2.0 Oct/25

	Qty	Description	Product Number	Notes
	4	O-ring nitrile 5x14x24mm		
	4+1	brass standoff - male/female	10mm	
	8	brass standoff - female/female	55mm	
	2	pcb fuse holders		including covers
	7+1	blue pcb junction 2p		
	1	blue pcb junction 3p		
	2	aligator clips - medium (35mm)		check for red & black
	2+2	female spade - med (3/16")		include clear plastic sleaves
	1+1	ring terminals - small (3mm)		
	2	machine screw m3 x 8mm flat hd	black	IEC
	4	machine screw m3 x 12mm flat hd	black	cover lid
	2	machine screw m3 x 6mm flat hd	small head type	fuse holder
	26+2	machine screw m3 x 8mm truss hd		
	4+1	machine screw m3 x 12mm truss hd		
	24+2	machine screw m3 x 16mm HEX truss hd		
	16+1	square nut m3		
	2+1	flange nut x m3		
	2+1	nylock nut m3		
	1	washer m3	oversized	
	1	3M scrubber 2 x 2"		

	16"	hookup wire - yellow/green	18awg stranded (for IEC ground to J1)	
	3"	hookup wire - green	20awg solid	
	12"	hookup wire - yellow	22awg stranded	
	18"	hookup wire - white (braided)	22awg stranded	
	18"	hookup wire - red (braided)	22awg stranded	
	3"	heat shrink - green	2.4mm	
	6"	heat shrink - white	2.4mm	
	6"	heat shrink - red	2.4mm	
	3"	heat shrink - white	3.2mm	
	3"	heat shrink - red	3.2mm	
	3"	heat shrink - yellow	3.2mm	
	3"	heat shrink - black	3.2mm	
	3"	heat shrink - white	4.8mm	
	3"	heat shrink - red	4.8mm	
	5"	heat shrink - black	10.0mm (flat)	

Troubleshooting		**v2.0**	**Oct/25**
Issue:	**Resolution:**		
Amp Does Not Turn On	• Check power cord is undamaged and connected at both ends. • If power light on rear of amplifier is unlit, remove the fuse from the back, test and replace. (1A Slow Blow For 110-120 Vac, 500mA Slow Blow For 220-240 Vac) • If power light is lit, but the tubes do not lamp (glow from filaments) and no sound is produced. Replace tubes with known good ones. If issue unresolved, internal 250mA fuses may need to be replaced and the amp should be brought to a professional for servicing to identify the reason the fuses blew.		
No Sound	• Check the amplifier is powered on. • Check input selection switch is facing the correct set of inputs and is not in the centre detente position. • Check signal source is properly powered on, volume is turned up, and source cable is undamaged. Replace with other signal source and cable to rule out. • Check ALPS Volume Pot is turned to a normal listening volume, and that knob is not loose or spinning freely. • Ensure output is properly connected and that the rest of the system is configured and working correctly. • Ensure tubes are lamping (glow from filaments). • Re-seat the tubes, clean the pins if signs of oxidization are present. • Replace tubes with known good ones. • If unresolved, bring amp in for servicing.		
Noise	• Test other components in system individually to narrow down the source of the noise. • Wireless sources such as Bluetooth or WIFI may introduce electronic noise if placed close to the amplifier. Power off these devices or move them further away to see if the noise is affected. • Ensure all audio cables and RCA jacks are clean and not oxidized. Clean with electrical contact cleaner if necessary. • Ensure tube pins and socket receivers are clean and making good electrical contact. • Replace tubes one at a time with known good tubes and try to identify which tube is noisy. • If unresolved, bring amp in for servicing.		
Distorted Sound	• Check if tubes installed in correct sockets. • Ensure compatible tubes are being used. • Reduce input signal.		
Smoke, Smell, Fire	• Unplug the amplifier and bring in for servicing.		
Music Sounds Bad	• Get better music.		