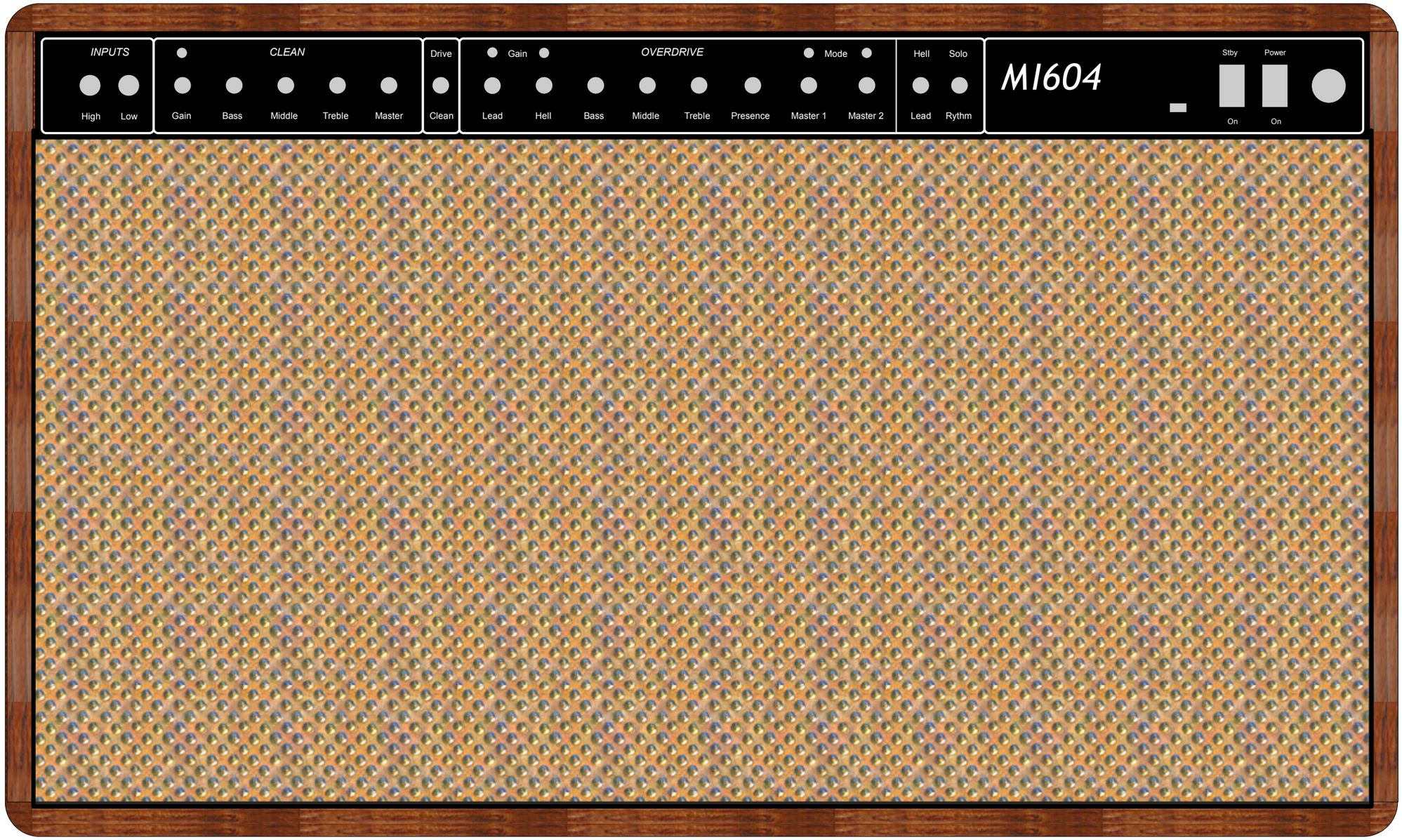
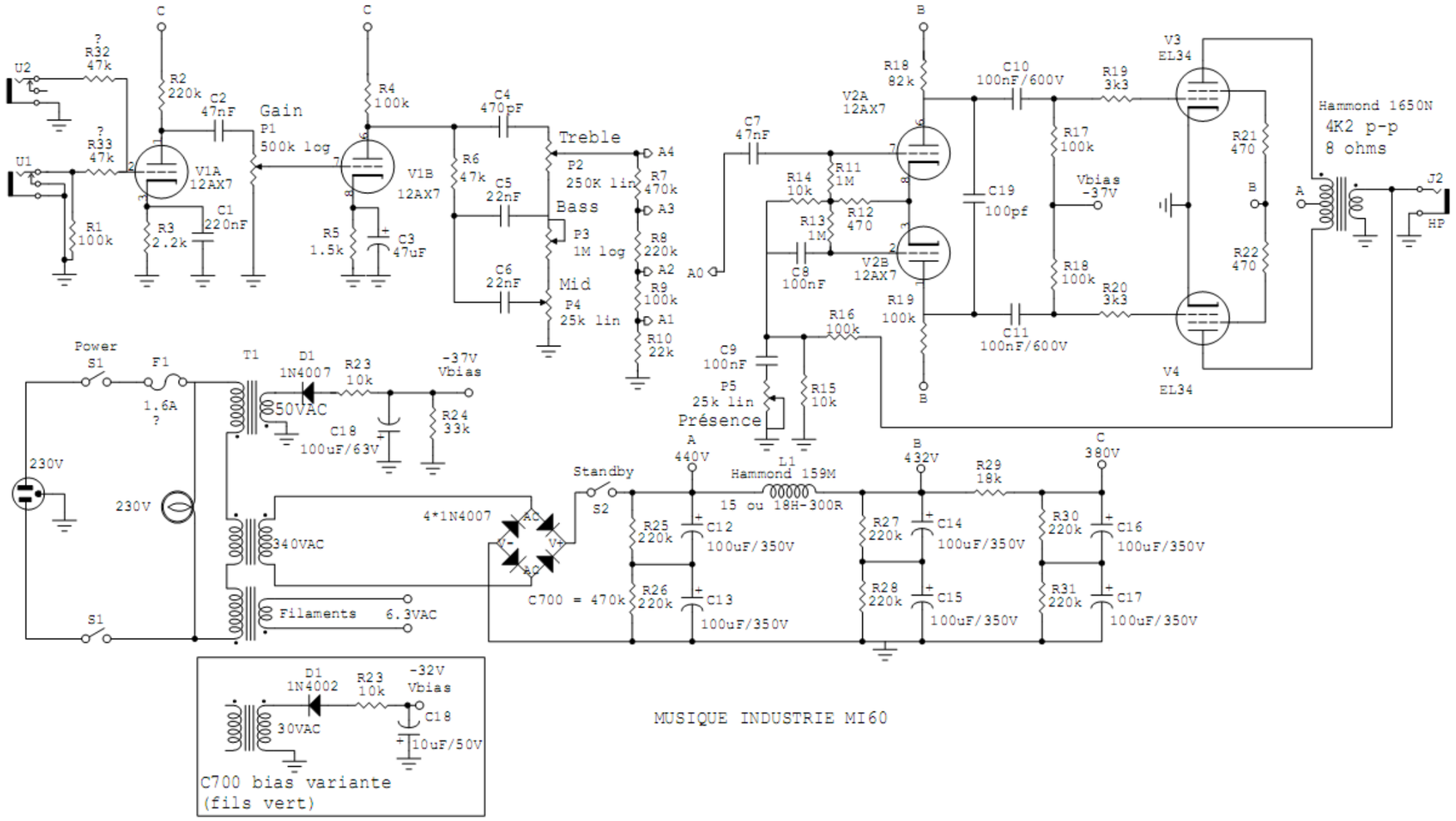
Projet *MI604*

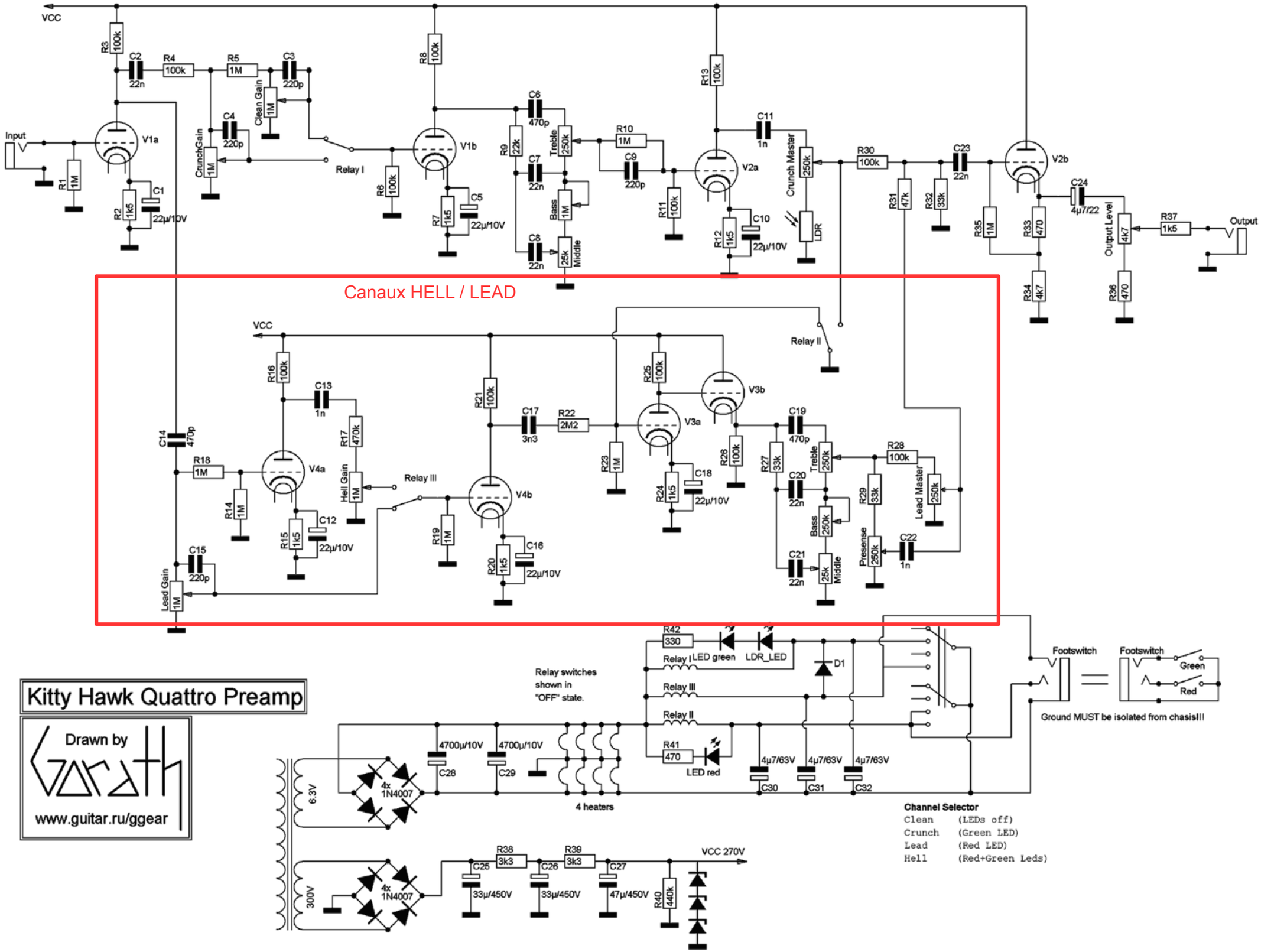


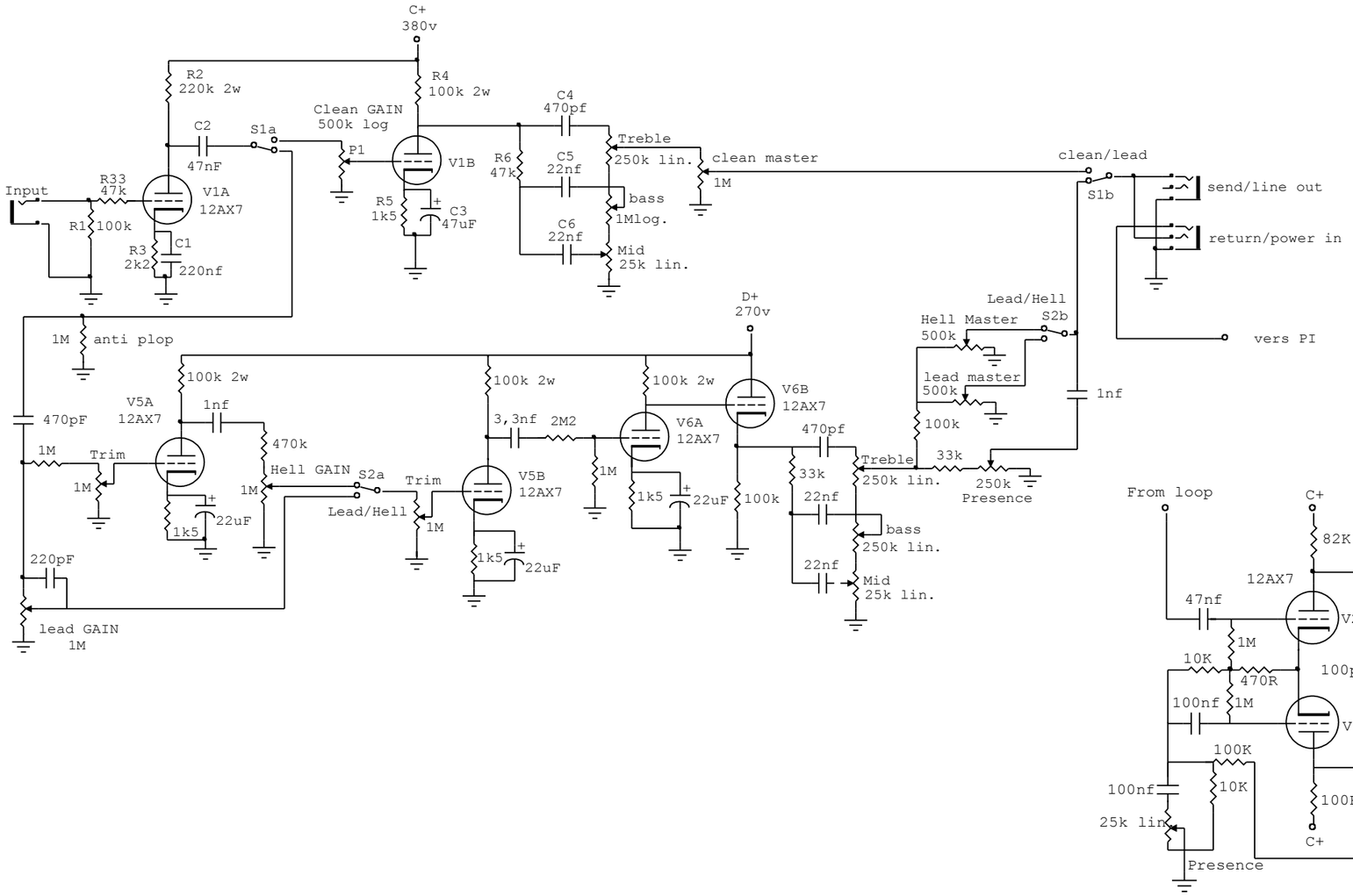
Dossier de conception d'un ampli guitare inspiré de l'ampli Musique Industrie MI60 et de l'overdrive du préampli Quattro Pro Kitty Hawk

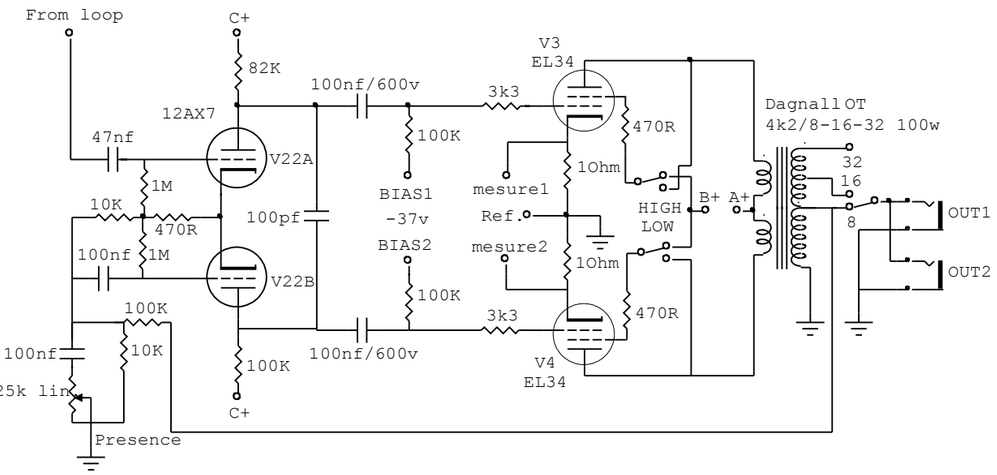
Schéma original du MI60

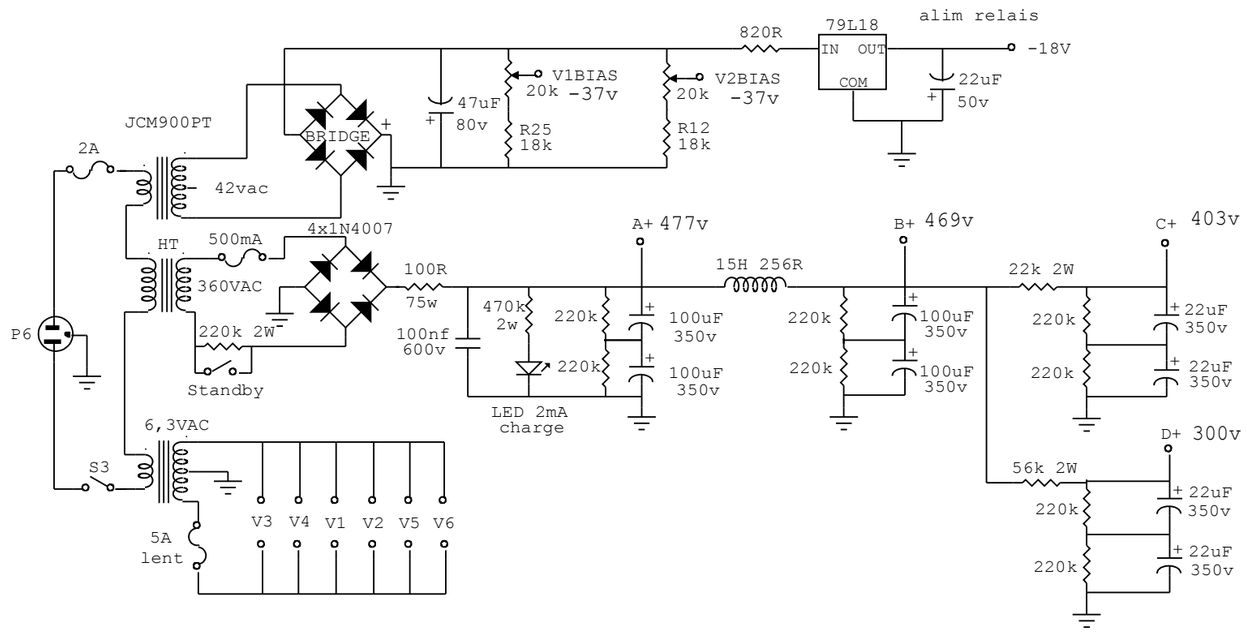


MUSIQUE INDUSTRIE MI60


Canaux HELL / LEAD
VCC
R3 100k
C2 22n
R4 100k
R5 1M
C3 220p
Clean Gain 1M
C4 220p
CrunchGain 1M
Input
V1a
R1 1M
R2 1k5
C1 22µ/10V
Relay I
R6 100k
R8 100k
V1b
R7 1k5
C5 22µ/10V
C6 470p
R9 22k
C7 22n
Treble 250k
Bass 1M
C8 22n
25k Middle
R10 1M
C9 220p
R11 100k
R13 100k
V2a
R12 1k5
C10 22µ/10V
C11 1n
Crunch Master 250k
LDR
R30 100k
R31 47k
R32 33k
C23 22n
V2b
R35 1M
R33 470
R34 4k7
C24 4µ7/22
Output Level 4k7
R36 470
R37 1k5
Output
R16 100k
C13 1n
R17 470k
C14 470p
R18 1M
V4a
R14 1M
R15 1k5
C12 22µ/10V
Hell Gain 1M
Relay III
C15 220p
Lead Gain 1M
R19 1M
V4b
R20 1k5
C16 22µ/10V
R21 100k
C17 3n3
R22 2M2
R23 1M
R25 100k
V3b
V3a
R26 100k
C18
R24 1k5
22µ/10V
C19 470p
R27 33k
C20 22n
Bass 250k
C21 22n
25k Middle
Treble 250k
R28 100k
R29 33k
Presense 250k
C22 1n
Lead Master 250k
Relay II
Kitty Hawk Quattro Preamp
Drawn by
Garath
www.guitar.ru/ggear
Relay switches shown in "OFF" state.
R42 330
Relay I
LED green
LDR_LED
D1
Relay III
Relay II
R41 470
LED red
4700µ/10V
C28
4700µ/10V
C29
4µ7/63V
C30
4µ7/63V
C31
4µ7/63V
C32
6.3V
4x 1N4007
4 heaters
300V
4x 1N4007
R38 3k3
R39 3k3
C25 33µ/450V
C26 33µ/450V
C27 47µ/450V
R40 440k
VCC 270V
Footswitch
Footswitch
Green
Red
Ground MUST be isolated from chasis!!!
Channel Selector
Clean (LEDs off)
Crunch (Green LED)
Lead (Red LED)
Hell (Red+Green Leds)







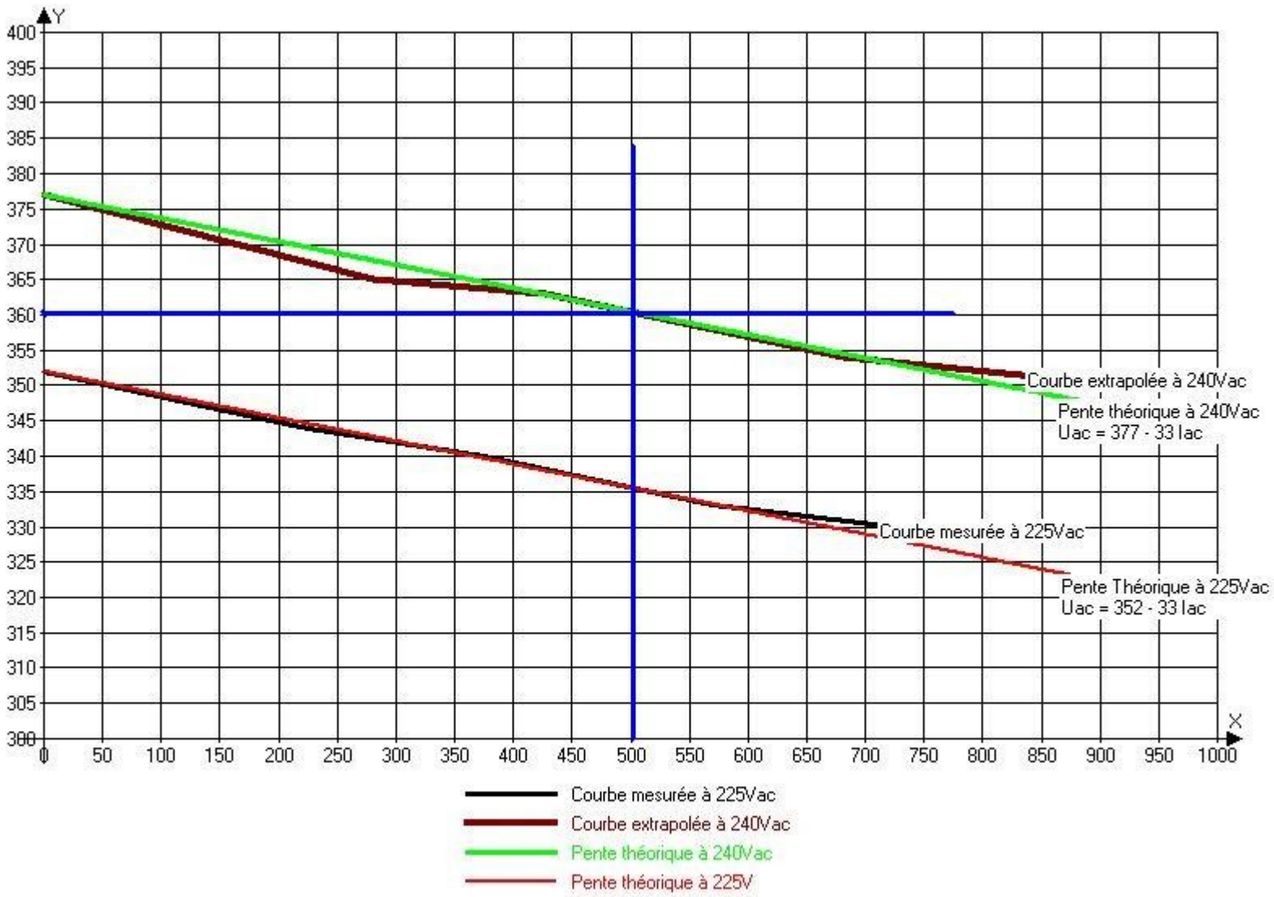
Les voltages sont indiqués en consommation à vide calculés avec 240v au primaire.

Voltages de référence du MI60 :

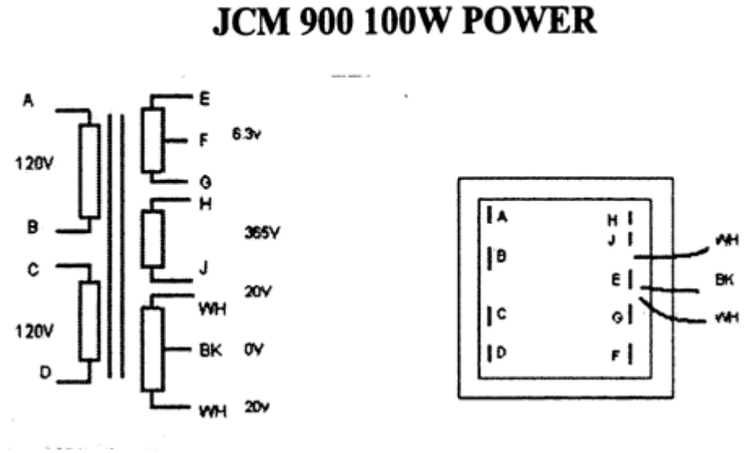
	Référence 230v	Référence variac 220v
A+	475v	438v
B+	468v	432v
C+	415v	386v

MI604	**MI604 schematic**
V1 - 20/11/2007	Schéma de principe - JFD

Transformateur d'alimentation : Dagnall T5826 équipant les marshall JCM900 et JCM2000



Created with a trial version of Advanced Grapher - http://www.alentum.com/agrapher/



Svetlana

EL34
Power Pentode

ABSOLUTE MAXIMUM RATINGS

Cathode-heater maximum DC voltage	+-120v
Allowable spot temperature on envel.	250 degrees C
Plate voltage, DC (at idle)	825 v
Plate voltage, DC, in triode connection	510 v
Screen voltage, DC, at idle	510 v
Control grid voltage, DC, at idle	-120 v
Cathode current, DC, at idle	165 mA
Plate dissipation, peak or idle	26 watts
Screen grid dissipation, peak or idle	8.5 watts
Control grid resistance, fixed bias	200k ohms

Push-pull class B tetrode connection, fixed bias

Plate voltage	500v DC
Screen voltage, both tubes	400v DC (750-ohm series resistor)
Plate current, idle	60 mA
Plate current, full power	250 mA
Grid bias	-36 v DC
Load resistance, plate-to-plate	4000 ohms
Output power	70 watts
Total harmonic distortion at 70w out	5%

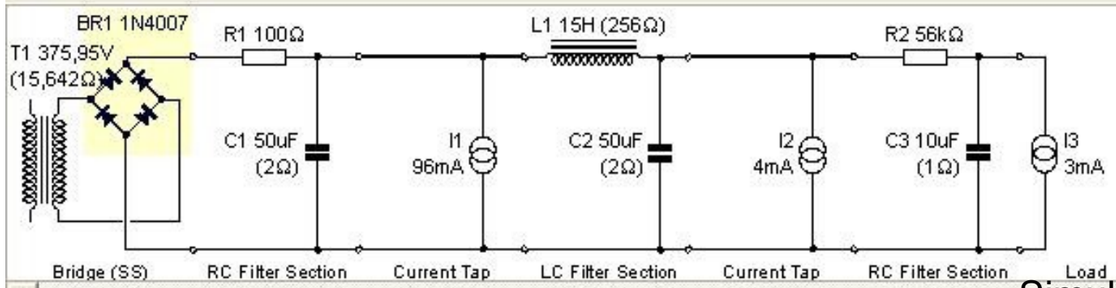
PHILIPS **EL 34**

R_{g2}	=		750			750	Ω [1]
V_{g1}	=		-36			-39	V
V_{g3}	=		0			0	V
V_i	=	0	25,8	25,8	0	23,4	23,4 V_{eff}
R_{aa}	=	-	4	5	-	11	11 kΩ
V_{ba}	=	500	500	475	800	800	750 V
V_a	=	495	475	450	795	775	725 V
V_{bg2}	=	400	400	375	400	400	375 V
I_a	=	2x30	2x125	2x102	2x25	2x91	2x84 mA
I_{g2}	=	2x4	2x25	2x25	2x3	2x19	2x19 mA
W_o	=	0	70	58	0	100	90 W
d_{tot}	=	-	5	6	-	5	6 %

Operating conditions class AB
Caractéristiques d'utilisation classe AB
Betriebsdaten Klasse AB

PSU Designer II [D:\Program Files\Duncan Amplification\Power Supply Designer 2\MI60\mi60zazman.psu] *

File Options Help



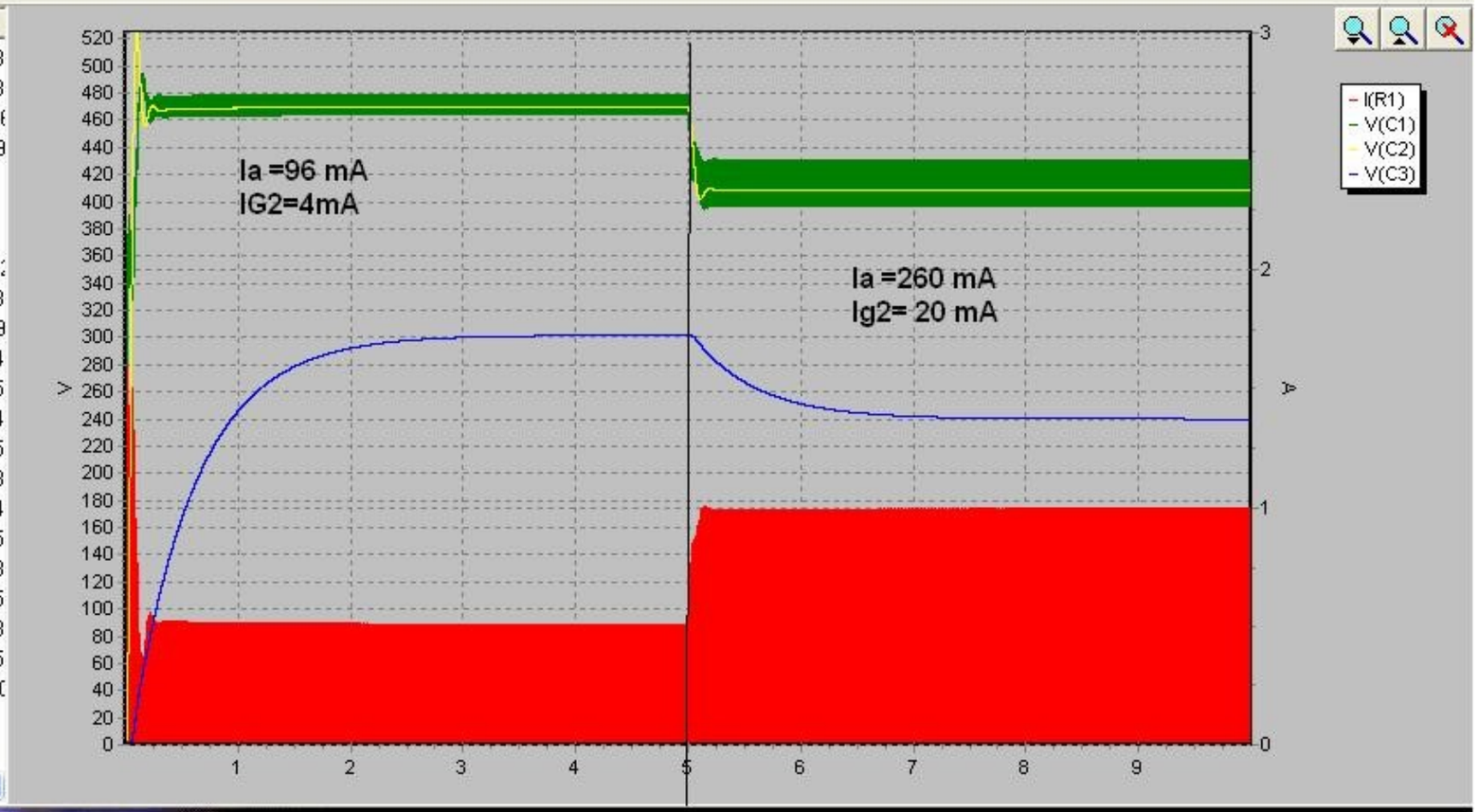
R1 = 100 Ohm / 50W mini

Prendre type SH ou RH50
popé sur le chassis

Simulation PP EL34

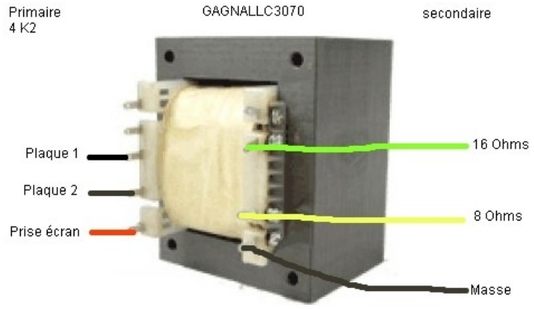
Simulate For 10 000 ms after a reporting delay of 0 S

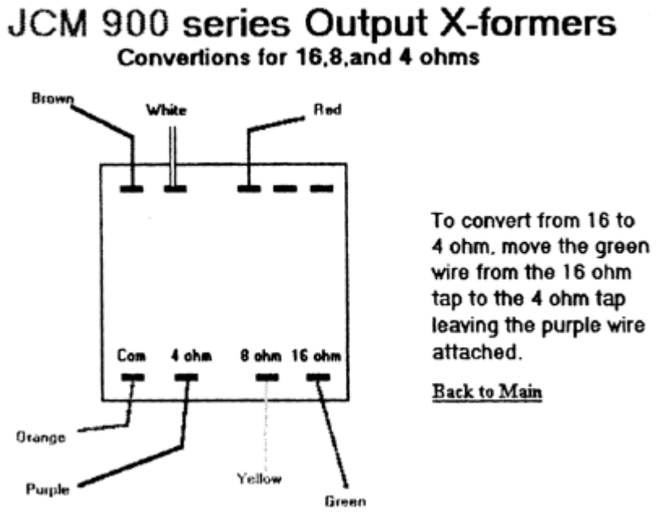
Result	Min	Max	
I(BR1)	-245,21u	3,0078	3
I(C1)	-569,74m	2,8979	3
I(C2)	-80,656m	465,85m	54(
I(C3)	-2,9999m	5,9460m	8,9
I(I1)	96m	96m	
I(I2)	4m	4m	
I(I3)	0	3m	
I(L1)	-68,462m	473,68m	54:
I(R1)	-245,21u	3,0078	3
I(R2)	0	8,9460m	8,9
I(T1)	-1,6736	3,0078	4
V(BR1)	-524,37	1,0711	5
V(C1)	70,876m	494,93	4
V(C2)	-11,992m	525,65	5
V(C3)	-15,000m	301,68	3
V(I1)	70,876m	494,93	4
V(I2)	-11,992m	525,64	5
V(I3)	-15,000m	301,68	3
V(L1)	-107,35	404,25	5
V(R1)	-24,521m	300,78	3
V(R2)	0	500,97	5
V(T1)	-526,09	526,17	1,(



Simulation complete, elapsed time 3,56 seconds

Transformateur de sortie : Dagnall C3070 équipant les marshall JCM900 et JCM2000

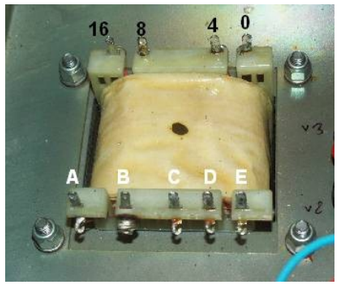




Mesures transfo C3070 Marshall JCM900 4101 – 100w

En Ohms

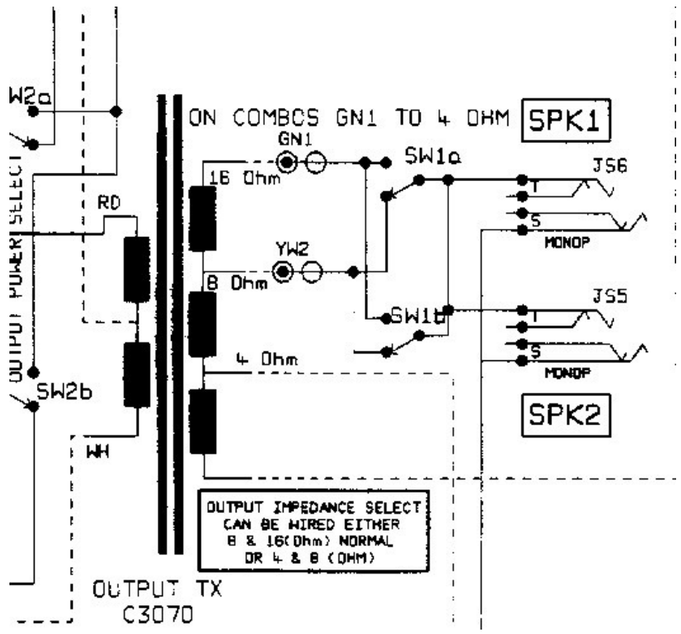
	A	B	C	D	E
A		Isolé	25,3	7,3	9,3
B			Isolé	Isolé	Isolé
C				32,5	16,2
D					16,6
E					

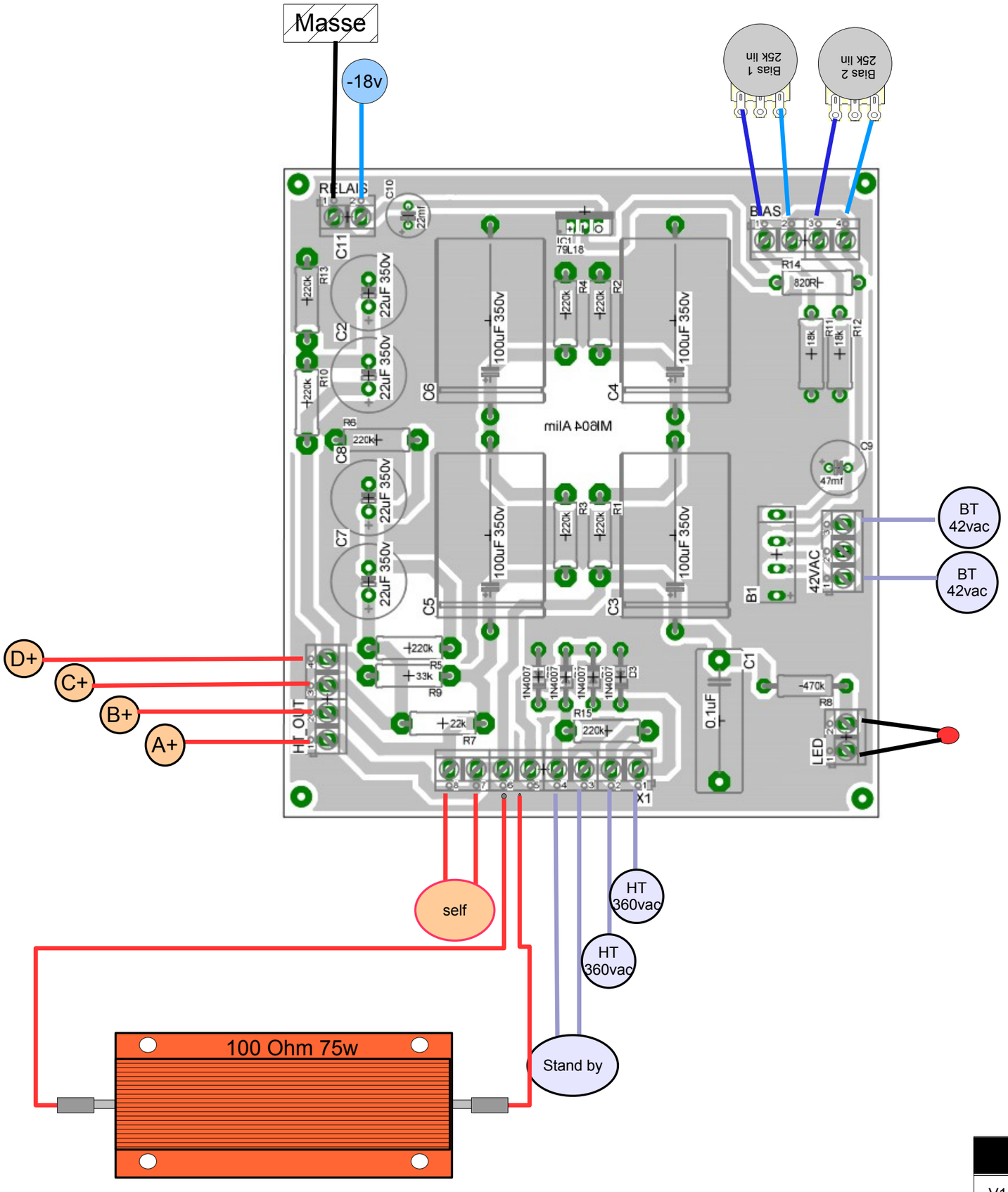


Branchement d'origine	
C	-> plaque 1
D	-> plaque 2
E	-> Prise écran

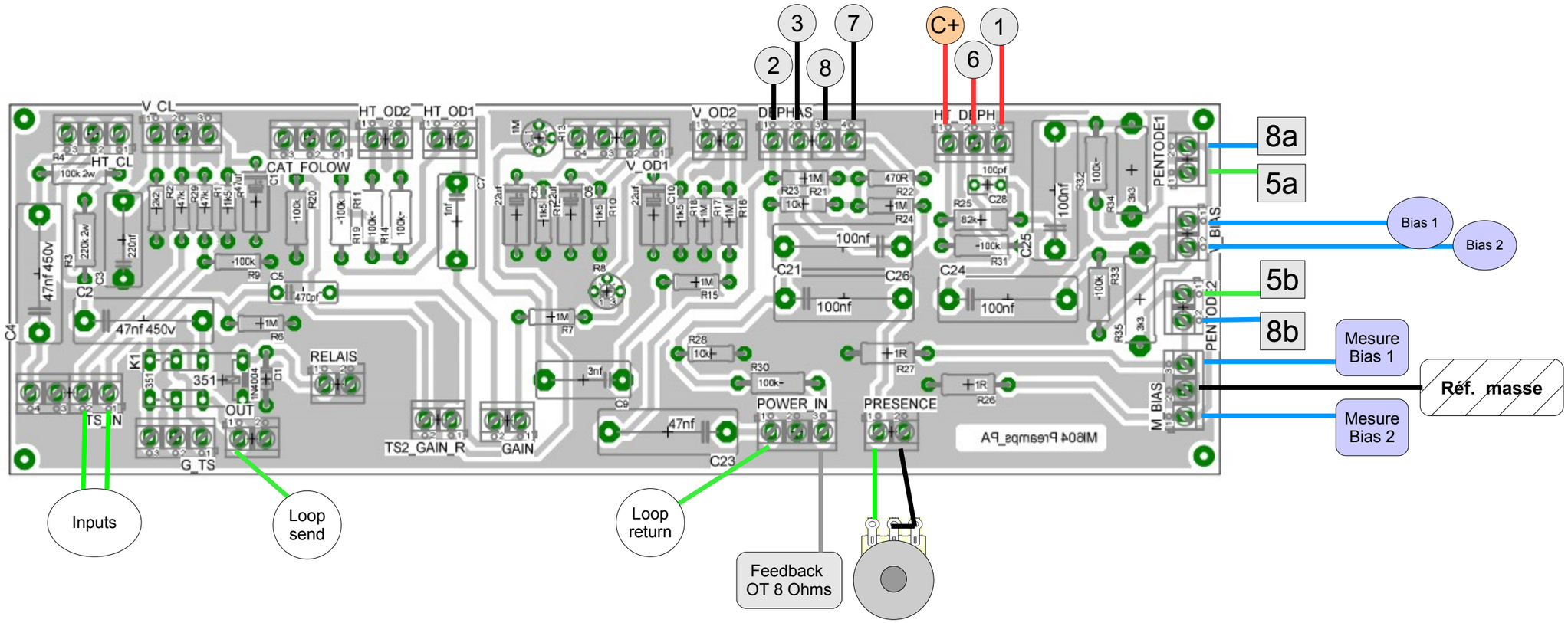
•Mesures de rapport d'impedances (electro suite gold) :
• sortie 4 Ohms : 57,8 arrondis à 58v -> 2,82v soit 2k05
• sortie 8 Ohms : 57,8 arrondis à 58v -> 4v soit 2k04
• sortie 16 Ohms : 57,8 arrondis à 58v -> 5,63v soit 2k05

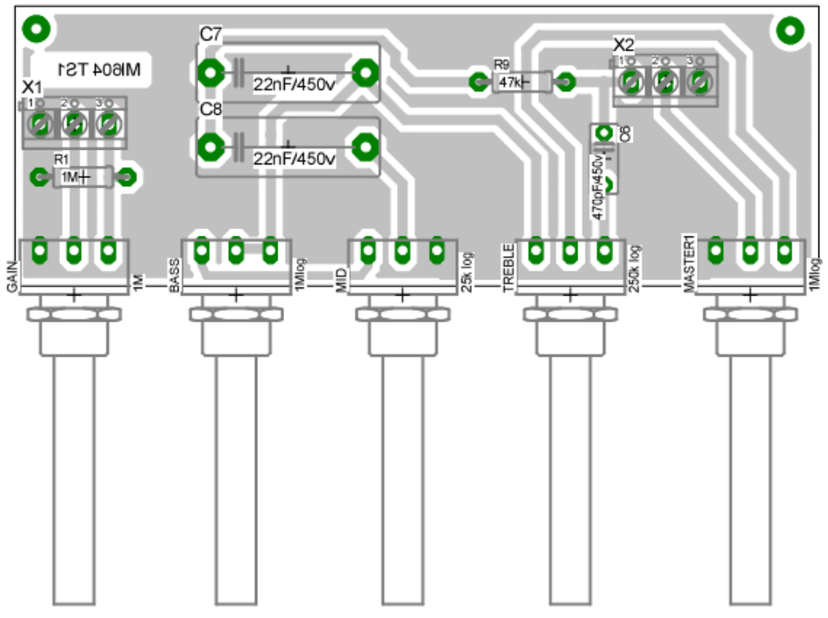
En utilisant une charge de 8 Ohms sur la sortie 4 Ohms du transformateur, on multiplie par deux la charge au primaire, ce qui donne entre 4k09 et 4k24, donc utilisable dans le projet MI60 (OT d'origine à 4k2/8Ohms). On pourra donc utliser respectivement les sorties 4, 8 et 16 Ohms avec des charges de 8, 16, et 32 Ohms pour une puissance maximale admissible de 100w.

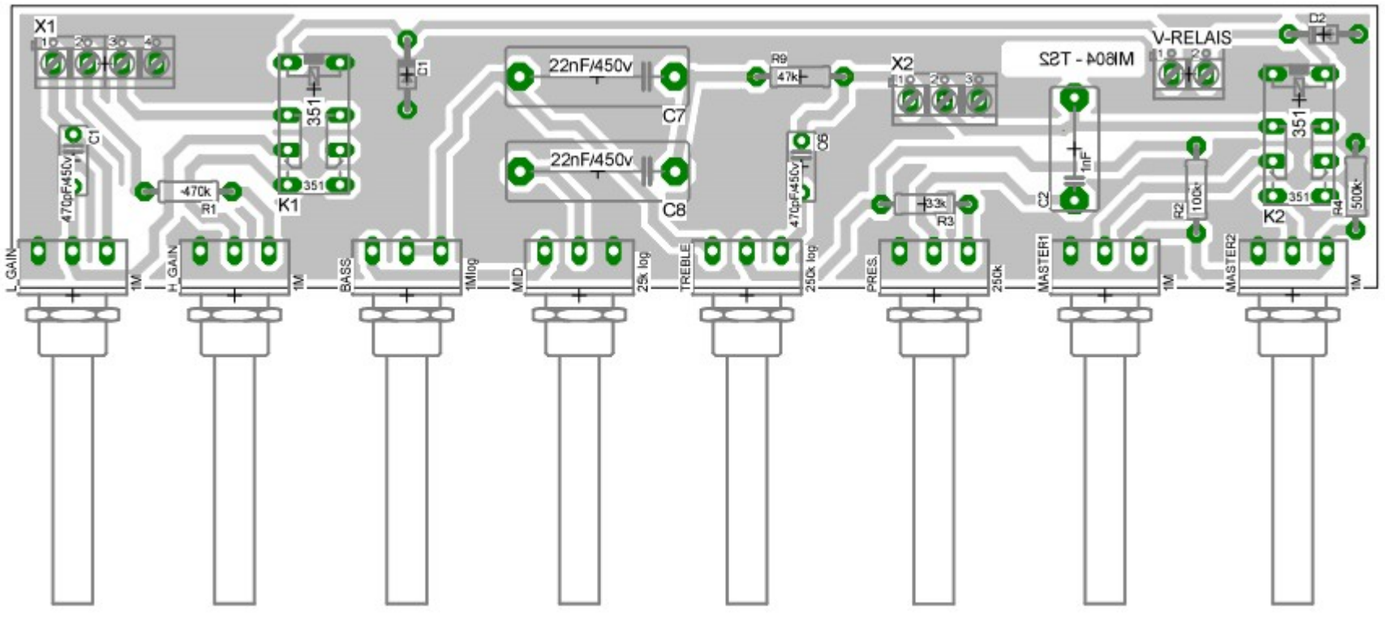




MI604	HT Bias & relay power supply
V1 - 20/11/2007	Layout PCB - JFD

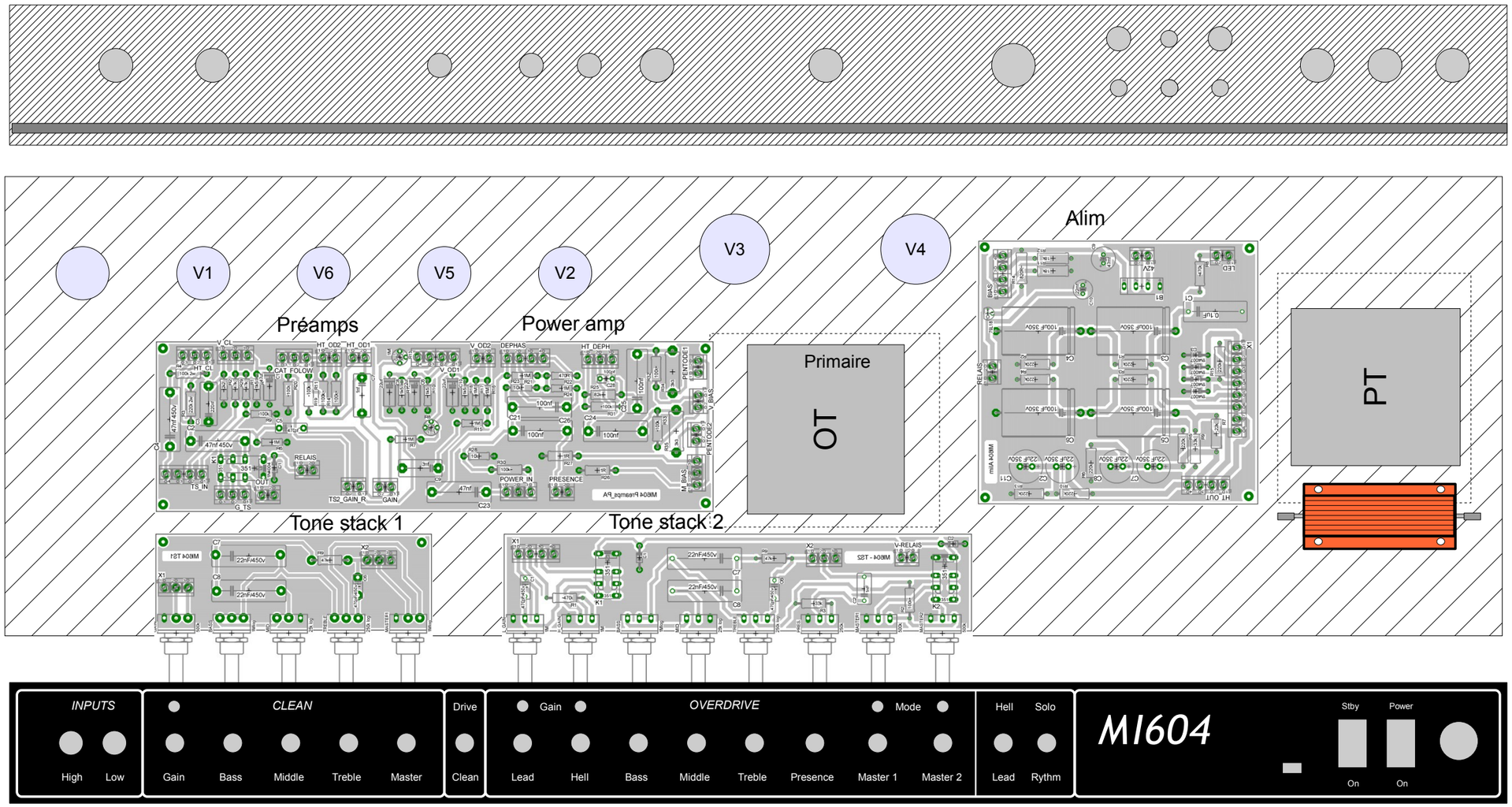






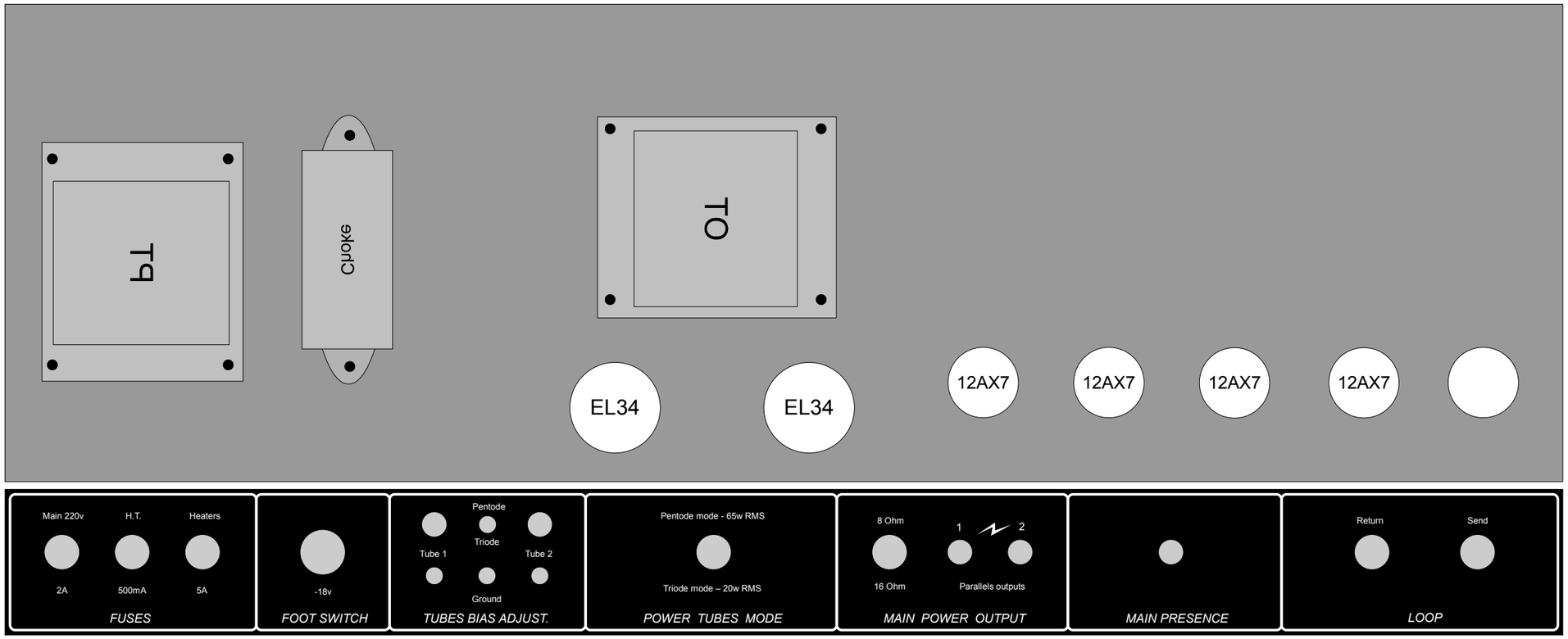
MI604	Tone stacks preamp – PI - PA
V1 - 20/11/2007	Layout PCB - JFD

AGENCEMENT INTERIEUR CHASSIS



MI604	Interieur chassis
V2 - 28/12/2007	

EXTERIEUR CHASSIS



MI604	Exterieur chassis
V2 - 25/11/2007	