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WORLD HEADQUARTERS
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Quality and Innovation Since 1963

Printed in Canada

AP4020

PROFESSIONAL SERIES

MODEL TYPE: YS4020

SERVICE MANUAL

IMPORTANT SAFETY INSTRUCTIONS

This lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Ce symbole d'éclair avec tête de flèche dans un triangle équilatéral est prévu pour alerter l'utilisateur de la présence d'un « voltage dangereux » non-isolé à proximité de l'enceinte du produit qui pourrait être d'ampleur suffisante pour présenter un risque de choque électrique.

CAUTION *AVIS*

RISK OF ELECTRIC SHOCK DO NOT OPEN

RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

The exclamation point within an equilatereal triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est prévu pour alerter l'utilisateur de la présence d'instructions importantes dans la littérature accompagnant l'appareil en ce qui concerne l'opération et la maintenance de cet appareil.

S2125A

FOLLOW ALL INSTRUCTIONS

Instructions pertaining to a risk of fire, electric shock, or injury to a person

***CAUTION*: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).**

NO USER SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Read Instructions: The Owner's Manual should be read and understood before operation of your unit. Please, save these instructions for future reference and heed all warnings.

Clean only with dry cloth.

Packaging: Keep the box and packaging materials, in case the unit needs to be returned for service.

Warning: To reduce the risk or fire or electric shock, do not expose this apparatus to rain or moisture. *Do not use this apparatus near water!*

Warning: When using electric products, basic precautions should always be followed, including the following:

Power Sources

Your unit should be connected to a power source only of the voltage specified in the owners manual or as marked on the unit. This unit has a polarized plug. Do not use with an extension cord or receptacle unless the plug can be fully inserted. Precautions should be taken so that the grounding scheme on the unit is not defeated. An apparatus with CLASS I construction shall be connected to a Mains socket outlet with a protective earthing ground. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

Hazards

Do not place this product on an unstable cart, stand, tripod, bracket or table. The product may fall, causing serious personal injury and serious damage to the product. Use only with cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the product. Follow the manufacturer's instructions when installing the product and use mounting accessories recommended by the manufacturer. Only use attachments/accessories specified by the manufacturer

Note: Prolonged use of headphones at a high volume may cause health damage on your ears.

The apparatus should not be exposed to dripping or splashing water; no objects filled with liquids should be placed on the apparatus.

Terminals marked with the "lightning bolt" are hazardous live; the external wiring connected to these terminals require installation by an instructed person or the use of ready made leads or cords.

Ensure that proper ventilation is provided around the appliance. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

Power Cord

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. The AC supply cord should be routed so that it is unlikely that it will be damaged. Protect the power cord from being walked on or pinched particularly at plugs. If the AC supply cord is damaged DO NOT OPERATE THE UNIT. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle. The mains plug of the power supply cord shall remain readily operable.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Service

The unit should be serviced only by qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

SUIVEZ TOUTES LES INSTRUCTIONS

Instructions relatives au risque de feu, choc électrique, ou blessures aux personnes

AVIS:* AFIN DE REDUIRE LES RISQUE DE CHOC ELECTRIQUE, N'ENLEVEZ PAS LE COUVERT (OU LE PANNEAU ARRIERE) *NE CONTIENT AUCUNE PIECE

REPARABLE PAR L'UTILISATEUR.

CONSULTEZ UN TECHNICIEN QUALIFIE POUR L'ENTRETIENT

Veuillez Lire le Manuel: Il contient des informations qui devraient êtres comprises avant l'opération de votre appareil. Conservez. Gardez S.V.P. ces instructions pour consultations ultérieures et observez tous les avertissements.

Nettoyez seulement avec le tissu sec.

Emballage: Conservez la boite au cas ou l'appareil devait être retourner pour réparation.

Avertissement: Pour réduire le risque de feu ou la décharge électrique, n'exposez pas cet appareil à la pluie ou à l'humidité. *N'utilisez pas cet appareil près de l'eau!*

Attention: Lors de l'utilisation de produits électrique, assurez-vous d'adhérer à des précautions de bases incluant celle qui suivent:

Alimentation

L'appareil ne doit être branché qu'à une source d'alimentation correspondant au voltage spécifié dans le manuel ou tel qu'indiqué sur l'appareil. Cet appareil est équipé d'une prise d'alimentation polarisée. Ne pas utiliser cet appareil avec un cordon de raccordement à moins qu'il soit possible d'insérer complètement les trois lames. Des précautions doivent êtres prises afin d'eviter que le système de mise à la terre de l'appareil ne soit désengagé. Un appareil construit selon les normes de CLASS I devrait être raccordé à une prise murale d'alimentation avec connexion intacte de mise à la masse. Lorsqu'une prise de branchement ou un coupleur d'appareils est utilisée comme dispositif de débranchement, ce dispositif de débranchement devra demeurer pleinement fonctionnel avec raccordement à la masse.

Risque

Ne pas placer cet appareil sur un chariot, un support, un trépied ou une table instables. L'appareil pourrait tomber et blesser quelqu'un ou subir des dommages importants. Utiliser seulement un chariot, un support, un trépied ou une table recommandés par le fabricant ou vendus avec le produit. Suivre les instructions du fabricant pour installer l'appareil et utiliser les accessoires recommandés par le fabricant. Utilisez seulement les attachements/accessoires indiqués par le fabricant

Note: L'utilisation prolongée des écouteurs à un volume élevé peut avoir des conséquences néfastes sur la santé sur vos oreilles. .

Il convient de ne pas placer sur l'appareil de sources de flammes nues, telles que des bougies allumées.

L'appeil ne doit pas être exposé à des égouttements d'eau ou des éclaboussures et qu'aucun objet rempli de liquide tel que des vases ne doit être placé sur l'appareil.

Assurez que lappareil est fourni de la propre ventilation. Ne procédez pas à l'installation près de source de chaleur tels que radiateurs, registre de chaleur, fours ou autres appareils (incluant les amplificateurs) qui produisent de la chaleur.

Les dispositifs marqués d'une symbole "d'éclair" sont des parties dangereuses au toucher et que les câblages extérieurs connectés à ces dispositifs de connection extérieure doivent être effectivés par un opérateur formé ou en utilisant des cordons déjà préparés.

Cordon d'Alimentation

Ne pas enlever le dispositif de sécurité sur la prise polarisée ou la prise avec tige de mise à la masse du cordon d'alimentation. Une prise polarisée dispose de deux lames dont une plus large que l'autre. Une prise avec tige de mise à la masse dispose de deux lames en plus d'une troisième tige qui connecte à la masse. La lame plus large ou la tige de mise à la masse est prévu pour votre sécurité. La prise murale est désuète si elle n'est pas conçue pour accepter ce type de prise avec dispositif de sécurité. Dans ce cas, contactez un électricien pour faire remplacer la prise murale. Évitez d'endommager le cordon d'alimentation. Protégez le cordon d'alimentation. Assurez-vous qu'on ne marche pas dessus et qu'on ne le pince pas en particulier aux prises. N'UTILISEZ PAS L'APPAREIL si le cordon d'alimentation est endommagé. Pour débrancher complètement cet appareil de l'alimentation CA principale, déconnectez le cordon d'alimentation de la prise d'alimentation murale. Le cordon d'alimentation du bloc d'alimentation de l'appareil doit demeurer pleinement fonctionnel.

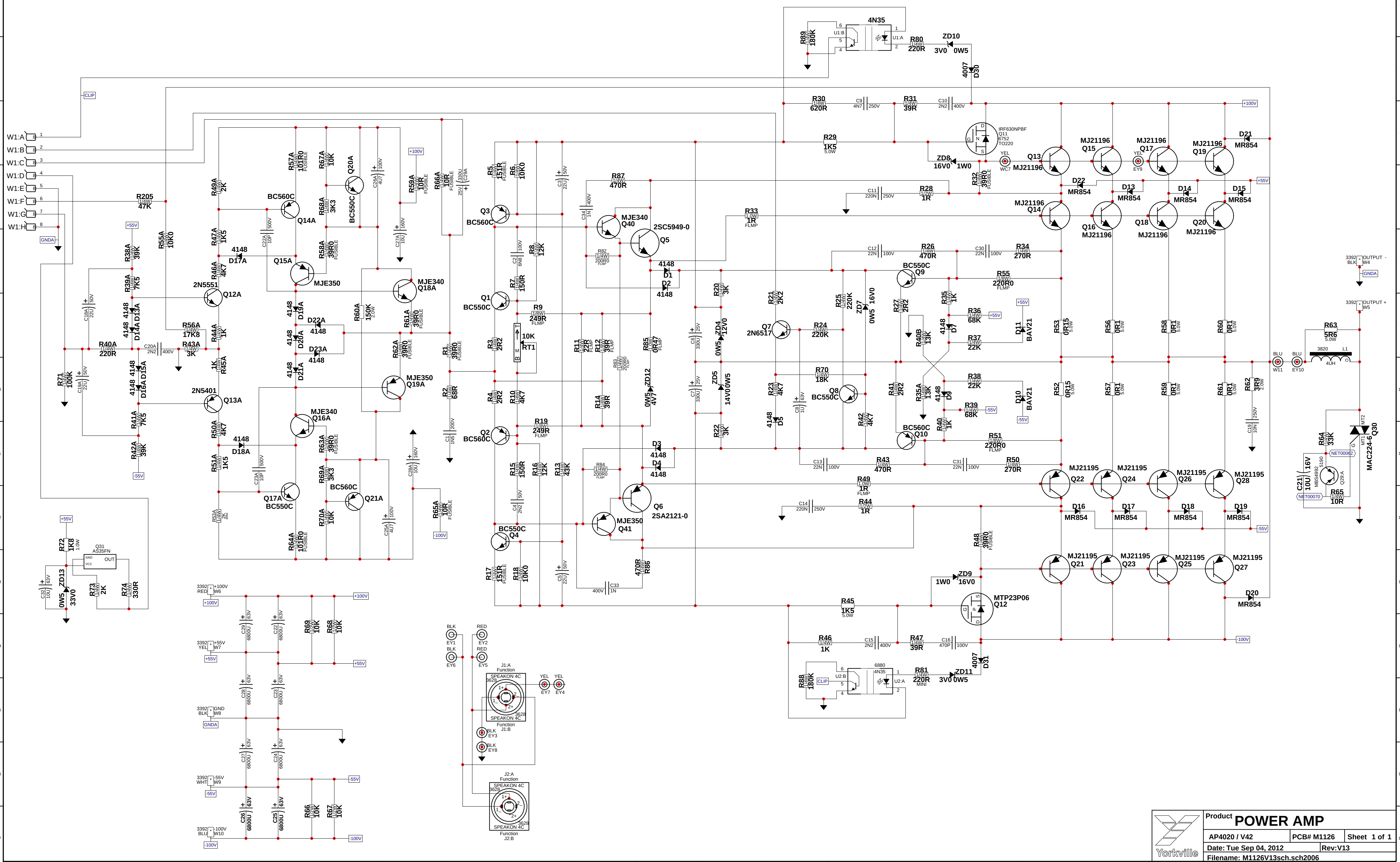
Débranchez cet appareil durant les orages ou si inutilisé pendant de longues périodes.

Service

Consultez un technicien qualifié pour l'entretien de votre appareil. L'entretien est nécessaire quand l'appareil a été endommagé de quelque façon que se soit. Par exemple si le cordon d'alimentation ou la prise du cordon sont endommagés, si il y a eu du liquide qui a été renversé à l'intérieur ou des objets sont tombés dans l'appareil, si l'appareil a été exposé à la pluie ou à l'humidité, si il ne fonctionne pas normalement, ou a été échappé.

AP4020 Parts List 11/9/2012

YS #	Description	Qty.	YS #	Description	Qty.	YS #	Description	Qty.	YS #	Description	Qty.
6478	AS35FN-TO92 TEMPERATURE SENSOR	2	4520	_10K TRIM POT	2	4867	1/4W 270R 5% T&R RES	2	8719	8-32 X 3/4 FILLISTER PHIL MS JS500	2
5906	RED 3MM LED 1V9 20MA.4SPCER T&R	3	2448	15.00 AMP CIRCUIT BREAKER	1	4986	1/4W 270R 5%MINI T&R RES	2	8815	8-32 X 3/4 PAN PH TAPTITE JS500	5
5908	GRN 3MM LED 1V9 20MA.4SPCER T&R	3	3820	___4UH COIL 14AWG ZOBEL HORIZONTAL	2	4855	1/4W 330R 5% T&R RES	2	8809	10-32 X 1/4 PAN PH TAPTITE JS500	4
6419	BRIDGE 35A 400V WIRE LEAD GI3504	2	3485	CLIP 250X032 18-22AWG RIGHT ANGL	4	4821	1/4W 470R 5% T&R RES	2	8749	10-32 X 1/2 QDX PH TAPTITE JS500	14
6425	BAV21 200V 0A25 DIODE T&R	4	3486	CLIP 250X032 22-18AWG DISCO-LOK	14	4980	1/4W 470R 5%MINI T&R RES	9	8740	5/16-18 X 3 GRD 5 HEX BOLT JS500	1
6825	1N4148 75V 0A45 DIODE T&R	51	3489	CLIP 250X032 18-22AWG DISCO/INSL	3	4891	1/4W 620R 5% T&R RES	2	8869	8-18 X 1/2 THRD CUTTING FOR PLASTIC	4
6438	1N4007 1000V 1A0 DIODE T&R	11	3490	CLIP 250X032 14-16AWG DISCO/INSL	4	5019	1/4W 620R 5%MINI T&R RES	2	8731	10-16 X 5/8 TYPE B HEX W/SLOT JS500	12
6934	MR854 400V 3A0 DIODE FASREC	20	3601	RING TERMINAL 16AWG WIRE & #8 SCREW	2	4981	1/4W 1K 5%MINI T&R RES	16	3570	14 PIN SCKT CLOSED FRAME DIP ONLY	1
6432	1N5248B 18V0 0W5 ZENER 5% T&R	2	3618	STAR RING TERMINAL14-16AWG #10SCREW	4	4854	1/4W 1K2 5% T&R RES	1	8663	11/64 NYLON SPACER (MICRO PLASTIC)	66
6433	1N5257B 33V0 0W5 ZENER 5% T&R	3	3410	RED:LEFT/BLACK:RIGHT BIND POST TPP5	1	4718	5.0W 1K5 5% BLK RES	4	3751	SNAP IN 5/16 SPACER RICHCO	3
6439	1N5225B 3V0 0W5 ZENER 5% T&R	6	3415	RED:RIGHT/BLACK:LEFT BIND POST TPP5	1	4988	1/4W 1K5 5%MINI T&R RES	6	3743	SNAP ON 0.5" SPACER RICHCO	10
6440	1N750ARL 4V7 0W5 ZENER 5% T&R	5	3918	1/4" JCK PCB MT HORZ SLIM W/SCREW	2	4791	1/4W 1K54 1% T&T RES	4	3851	1/2 PCB PLASTIC SPACER	4
6450	1N5242B 12V0 0W5 ZENER 5% T&R	2	3628	SPKON 4C PCB MT VERT 250TAB GRY #4	2	4683	1.0W 1K8 5% T&R RES	2	3417	6-32 SCREW TERMINAL PC MNT SNAP-IN	1
6463	1N5251BRL 22V0 0W5 ZENER 5% T&R	1	3922	XLR FEML PCB MT HORZ THIN SNAP-IN	2	4808	1/4W 2K 5% T&R RES	4	8657	6-32 X 3/8" HEX SPACER ALUMINUM	2
6465	1N5250B 20V0 0W5 ZENER 5% T&R	2	4069	JST XH CONNECTOR: CONTACT	2	6113	1/4W 2K 5%MINI T&R RES	2	8629	10-32 X 1/4 SPACER PHENOLIC	8
6486	1N5244B 14V0 0W5 ZENER 5% T&R	2	4070	JST XH CONNECTOR: 2 CIRCUIT HOUSING	1	4847	1/4W 2K2 5% T&R RES	2	3859	1/2 PLASTIC HEX SPACER #4	2
6824	1N5246B 16V0 0W5 ZENER 5% T&R	2	4056	2 CIR XH-HEADER 0.098IN	1	6124	1/4W 3K 5%MINI T&R RES	6	3502	NYLON FLAT WASHER OD.158ID.110H.070	2
6429	1N4747A 20V0 1W0 ZENER 5% T&R	1	2328	8 CIR XH-HEADER 0.098IN	4	4826	1/4W 3K3 5% T&R RES	2	8667	SHOULDER WASHER SWS-229 LENGTH 1/8	4
6822	1N4745A 16V0 1W0 ZENER 5% T&R	4	2329	12 CIR XH-HEADER 0.098IN	2	6136	1/4W 3K3 5%MINI T&R RES	2	3511	#6 FLAT WASHER NYLON	2
5101	BC550C TO92 NPN TRAN T&R TB	14	3035	PATCH 08 22AWG 05.0 XH FLAT	1	4982	1/4W 4K7 5%MINI T&R RES	18	8485	#6 SPLIT WASHER ZINC	4
5102	BC560C TO92 PNP TRAN T&R TB	14	3036	PATCH 08 22AWG 09.0 XH FLAT	1	4887	1/4W 7K5 5% T&R RES	5	8818	3/4 OD X 3/8 ID X .080 THICK WASHER	2
5103	MPSA06 TO92 NPN TRAN T&R TA	3	3037	PATCH 12 22AWG 15.0 XH FLAT	1	4663	1/2W 8K2 5% T&R RES	2	3517	NYLON WASHER #8 0.062	4
5107	2N5551 TO92 NPN TRAN T&R TA	2	3451	EYELET SMALL 0.089 OD PLATED	14	4990	1/4W 8K2 5%MINI T&R RES	2	8850	#10 INT TOOTH LOCKWASHER BO	4
5108	2N5401 TO92 PNP TRAN T&R TA	4	9198	FAN 80MM X 80MM 40CFM 12VDC	1	4762	1/4W 9K760 0.1% *** T&R RES	8	8921	#3MM ID3.2MM OD7.0MM THICK 5MM	4
6854	2N6517 TO92 NPN TRAN TA	2	7584	SQUARE-CUT O RING FOR AP AIR FILTER	1	4629	1/2W 10K 5% T&R RES	8	3705	4P3T SLID SW PCMT H	1
5105	MPSA13 TO92 NPN DARL T&R TA	1	8432	AP SERIES AIR GRILL BLACK PLASTIC	1	4800	1/4W 10K0 1% T&R RES	4	3436	DPDT PUSH SW PCMT H BREAK B4 MAKE	3
5106	MPSA63 TO92 PNP DARL T&R TA	1	8434	AP SERIES PLASTIC HANDLE PAIR	1	4829	1/4W 10K 5% T&R RES	2	3587	DPDT ROKR SW QUIK 250"AC/PWR ON-OFF	1
6814	MJF6668 T221D PNP TRAN DARL TJ	1	3894	HEATSINK TO-220 W/TAB BLACK ANODIZE	8	4983	1/4W 10K 5%MINI T&R RES	4	3392	250 MALE TAB .2IN T&R	14
6815	MJF6388 T221D NPN TRAN DARL TJ	2	3501	B52200F006 COMP WASH #4 SMALL	23	6116	1/4W 10K0 1%MINI MF T&R RES	15	3682	250 MALE PCB TAB REEL	22
6873	MJE340 TO126 NPN TRAN TG	6	3803	NYLON SECUR-A-TACH MINI PLASTIC TIE	1	4856	1/4W 12K 5% T&R RES	4	CH1196	XFMR:AP4020 / V42	1
6874	MJE350 TO126 PNP TRAN TG	6	3810	4" NYLON CABLE TIE	10	4901	1/4W 13K 5% T&R RES	4			
6752	MTP10N15L TO220 NCH MFET TN	2	3827	SQUARE BUMPER BUTTON BLACK	11	5008	1/4W 14K7 1% T&R RES	2			
6933	MTP23P06 TO220 PCH MFET TN	2	3852	STICK ON CABLE WRAP ANCHOR	1	4830	1/4W 15K 5% T&R RES	12			
6909	MJ21196 TO3 NPN TRAN TH	16	8433	KNOB AP SERIES PLASTIC	2	4771	1/4W 17K8 1% T&R RES	2			
7004	2SA2121-0 TO3P PNP TRAN TK	2	8661	KNOB BUTTON FLAT GREY	3	6125	1/4W 18K 5%MINI T&R RES	2			
7005	2SC5949-0 TO3 NPN TRANSISTOR TK	2	3468	8' 3/16 SJT AC LINE CORD STRIP 17"	1	4832	1/4W 22K 5% T&R RES	4			
6910	MJ21195 TO3 PNP TRAN TH	16	3821	STRAIN RELIEF HEYCO #1200	1	6118	1/4W 22K 5%MINI T&R RES	1			
6840	MC33078P IC DUAL OP AMP	5	8261	GE VELVET/MATTE LEXAN .007"X12"X24"	0.348	4833	1/4W 27K 5% T&R RES	1			
6745	LM13600N IC XCONDUCTANCE AMP	2	8701	4-40 KEPS NUT ZINC	20	4840	1/4W 33K 5% T&R RES	3			
5190	MBS4992 TO92 8V5 DIAC T&R	2	8793	4-40 HEX NUT ZINC	3	4853	1/4W 39K 5% T&R RES	4			
6517	BTB24-600 TO220AB 25A TRIAC 600V	2	8760	6-32 KEPS NUT TIN PLATED	64	4878	1/4W 43K 5% T&R RES	2			
6880	4N35 OPTO-COUPLER	4	8800	6-32 KEPS NUT ZINC	4	6119	1/4W 47K 5%MINI T&R RES	7			
6489	__5R 20% THERM-SURGR NTC KNK LEADS	2	8854	6-32 X 1/4" O.D. HEX NUT ZINC CLEAR	4	4835	1/4W 56K 5% T&R RES	4			
5401	_10P 500V 5%CAP T&R RAD CER.2NPO	4	8720	#8 SPRING NUT	2	6139	1/4W 62K 5%MINI T&R RES	2			
5203	_47P 100V 2%CAP T&R RAD CER.2NPO	2	8797	5/16-18 KEPS NUT JS500	1	4836	1/4W 68K 5% T&R RES	4			
5410	100P 100V 10%CAP T&R BEAD NPO	2	3797	TO-247 THERMO CONDUCTIVE PAD	4	5007	1/4W 78K7 1% T&R RES	2			
5197	220P 100V 2%CAP T&R RAD CER.2NPO	1	3846	TO220 THERMO PAD LARGE HOLE 56359B	4	4586	1/4W 82K 5%MINI T&R RES	2			
5412	220P 100V 10%CAP T&R BEAD NPO	13	3916	TO3 SIL-PAD REPLACES MICA	32	4838	1/4W 100K 5% T&R RES	2			
5201	470P 100V 5%CAP T&R RAD CER.2NPO	2	4124	SILPAD 1500ST 1.100 X0.820 BERQUIST	4	6120	1/4W 100K 5%MINI T&R RES	2			
5206	__1N 400V 5%CAP T&R RAD .2FLM	4	8432P	LOGO HOT STAMPED ON PLASTIC GRILL	1	4851	1/4W 120K 5% T&R RES	2			
5273	__1N5 200V 5%CAP T&R RAD CER.2NPO	2	4597	22AWG STRAN TC WIR JMP	23	4790	2.0W 150K 5%10MM BODY T&R RES	2			
5208	__2N2 400V 5%CAP T&R RAD .2FLM	6	4599	22AWG SOLID SC WIR T&R JMP	71	4949	1/4W 180K 5% .2"U T&R RES	4			
5426	__2N2 50V 10%CAP T&R BEAD Y5R	2	5299	24AWG SOLID SC WIR RAD JMP	24	4886	1/4W 200K 5% T&R RES	1			
5209	__4N7 250V 5%CAP T&R RAD .2FLM	2	4745	5.0W 0R1 5% BLK RES	12	6126	1/4W 220K 5%MINI T&R RES	6			
6451	__4N7 250V 20%CAP BLK 'Y' 10MM AC	1	4749	5.0W 0R15 5% BLK RES	4	6127	1/4W 470K 5%MINI T&R RES	2			
5272	__6N8 100V 5%CAP T&R RAD .2FLM	2	2005	1.0W 0R47 5%FLAME PROOF T&R RES	2	4844	1/4W 1M 5% T&R RES	1			
5834	_10N 400V 10%CAP BLK RAD POLY FLM	2	2006	1.0W 1R 5%FLAME PROOF T&R RES	4	4948	1/4W 1M 5% .2"U T&R RES	1			
5210	_22N 100V 10%CAP T&R RAD .2FLM	11	4677	1/2W 1R 5% T&R RES	4	4951	1/4W 4M7 5% .2"U T&R RES	2			
6435	_22N 275V 20%CAP BLK 'X2' 15MM AC	2	4688	1/2W 2R2 5% T&R RES	3	6132	1/4W 8M2 5%MINI T&R RES	2			
5226	_68N 100V 5%CAP T&R RAD .2FLM	4	4911	1/4W 2R2 5% T&R RES	8	4751	1/4W 22M 5% T&R RES	4			
5212	100N 63V 5%CAP T&R RAD .2FLM	4	4748	2.0W 3R9 5% T&R	2	3604	21" 14C-28AWG DIP HDR CABLE .05"	1			
5228	100N 100V 5%CAP T&R RAD .2FLM	3	4733	5.0W 5R6 5% BLK RES	2	3700	RELAY 2C 01AMP DC24 015MA PC-S	1			
5314	100N 50V 10%CAP T&R BEAD X7R	2	2009	1/4W 10R 2%FLAME PROOF T&R RES	2	3721	RELAY 1A 16AMP DC24 022MA PC-C	1			
5229	150N 63V 10%CAP T&R RAD .2FLM	4	2037	1/4W 10R FUSIBLE T&R RES	6	8870	#4 X 1/4 PAN PH TYPE A ZINC	2			
5231	220N 63V 5%CAP T&R RAD .2FLM	2	4605	1/8W 10R 5% T&R RES	1	8729	#4 X 3/8 FLAT QUAD TYPE A JS500 BLK	4			
5882	220N 250VDC 10%CAP BLK RAD PLY FLM	4	4875	1/4W 10R 5% T&R RES	2	9975	#4 X 1/2 PAN PHIL TYPE A B.O.& WAX	4			
5234	470N 63V 10%CAP T&R RAD .2FLM	4	4930	1/4W 10R 5% .2"U T&R RES	1	8799	#6 X 1/4 PAN PH TYPE B JS500	2			
5255	__1U 63V 20%CAP T&R RAD .2EL	3	2039	1/4W 22R0 FUSIBLE T&R RES	2	8865	4-40 X 5/16 PAN PH MS JS500	2			
5258	__4U7 63V 20%CAP T&R 8X7MM .2EL	2	2016	1/6W 39R 2%FLAME PROOF T&R RES	2	8742	4-40 X 3/8 PAN PH TAPTITE JS500	2			
5269	__4U7 100V 20%CAP T&R RAD LESR2	6	2041	1/4W 39R0 FUSIBLE T&R RES	14	8861	4-40 X 3/8 PAN PH MS JS500	8			
5282	_10U 16V 20%CAP T&R 5X7MM .2NP	2	4899	1/4W 39R 5% T&R RES	6	8741	4-40 X 1/2 PAN PH MS JS500	3			
5629	_10U 160V 20%CAP BLK 10X13MM EL	4	4811	1/4W 68R 5% T&R RES	2	8871	4-40 X 5/8 PAN PH MS JS500	12			
5945	_10U 63V 20%CAP T&R RAD .2EL	2	2044	1/4W 100R0 FUSIBLE T&R RES	4	8902	4-40 X 3/4 PAN PHIL MS B/O & WAX	4			
5260	_22U 50V 20%CAP T&R RAD .2EL	8	4984	1/4W 150R 5%MINI T&R RES	4	8832	6-32 X 1/4 PAN PH TAPTITE JS500	3			
5961	_33U 16V 20%CAP T&R RAD .2IN NP	8	2045	1/4W 150R FUSIBLE T&R RES	4	8801	6-32 X 3/8 PAN PH TAPTITE JS500	4			
5267	100U 25V 20%CAP T&R RAD .2EL	3	2021	1/4W 200R0 1%FLAME PROOF T&R RES	6	8829	6-32 X 3/8 FLAT PH TAPTITE BO#C HEA	24			
5630	330U 25V 20%CAP BLK 10X13MM EL	6	2023	1/6W 220R0 1%FLAME PROOF T&R RES	4	8761	6-32 X 1/2 PAN PHIL MS ZINC CLEAR	64			
5621	470U 63V 20%CAP BLK 12X25MM EL	5	4857	1/4W 220R 5% T&R RES	2	8796	6-32 X 5/8 PAN PH TAPTITE ZINC	2			
5895	6800U 63V 20%CAP BLK 25X50MM	16	4977	1/4W 220R 5%MINI T&R RES	7	8830	6-32 X 7/8 PAN PH MS JS500	2			
4390	_10K AUD 16MM DETENT P22	2	2024	1/6W 249R 2%FLAME PROOF T&R RES	12	8999	8-32 X 5/8 PAN PH TAPTITE JS500	17			


Product POWER AMP
AP4020 / V42
PCB# M1126
Sheet 1 of 1
Date: Tue Sep 04, 2012
Rev:V13
Filename: M1126V13sch.sch2006
Yorkville

M1126 AP4020 / V42

BlankSize - 14700x10800

Score

BlankSize - 14700x10800

Top Assy M1126 V13

Pcb Mech M1126 V13

SOCKET

SOCKET UPSIDE DOWN

NORMAL

NORMAL LARGE

SOCKET WITH DIRECTION

TAB

PUNCH ORIGIN

INSERT ORIGIN

M1126 V13

AP4020
M1126 1/2
V13

M1126 2/2
AP4020
V13

BRIDGE

RED 2.5"
RED 13"
BLK 4"
BLK 14"
BLK 4"
BLK 24"
YEL 3.5"
YEL 24"

DO NOT STUFF WIRES OR SPEAKON JACKS FOR SERVICE BOARDS.

FOR PRODUCT V42 DO NOT STUFF WIRES IN EY2, EY4, EY6, AND EY8.

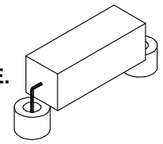
SEE LAYOUT DOCUMENTATION

Zoz COPPER

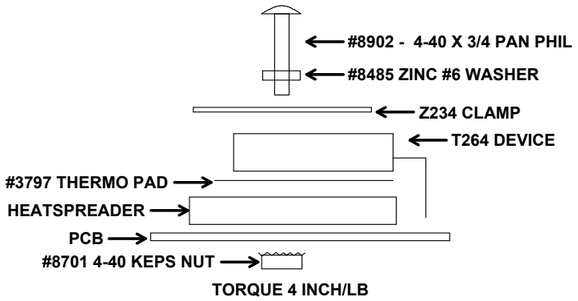
SEE LAYOUT DIAGRAM

M1126V13 PRODUCTION NOTES

1. MOUNTING DETAILS FOR 5W ADD #8629 SPACERS ONLY ON 5 WATT RESISTORS R29 AND R45. ENSURE SPACERS ARE UNDER RESISTOR BODY ENOUGH TO RAISE IT OFF THE BOARD SURFACE.

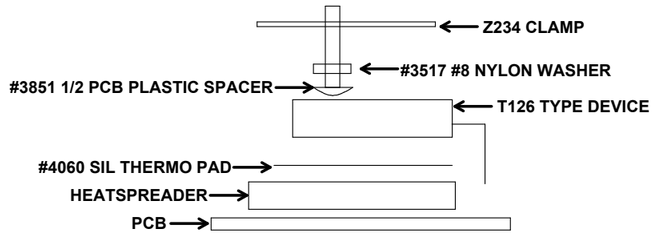


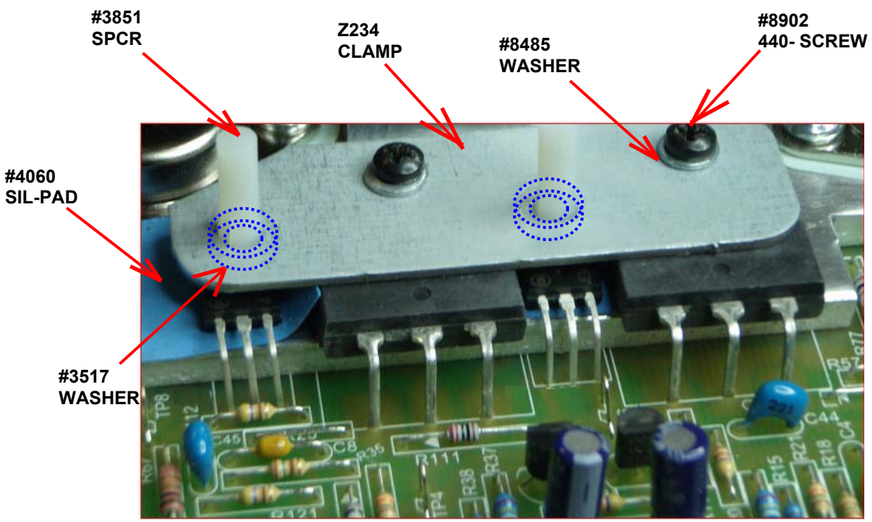
2. MOUNTING HARDWARE FOR Q5 AND Q6.



TORQUE 4 INCH/LB

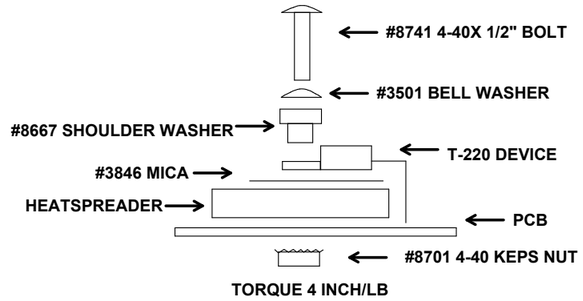
3. MOUNTING HARDWARE FOR Q40 AND Q41.





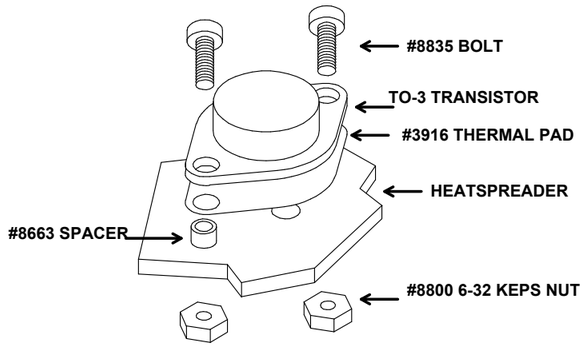
CLAMP DETAIL - SEE NOTES 2 AND 3.

4. MOUNTING HARDWARE FOR Q11,Q12



TORQUE 4 INCH/LB

5. MOUNTING HARDWARE FOR TO3 OUTPUTS

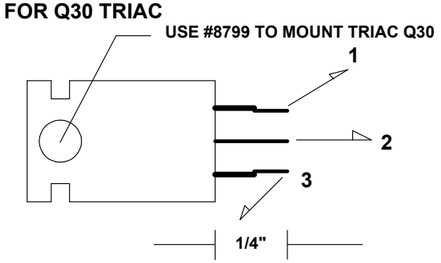


INITIAL TORQUE FOR TO-3'S IS 8 INCH/LB

FINAL TORQUE AFTER HEATSINK HAS COOLED FROM WAVE SOLDER IS 6 INCH/LB

6. USE #2006 SMALL BODY 1R 1W FOR R33 AND R49.

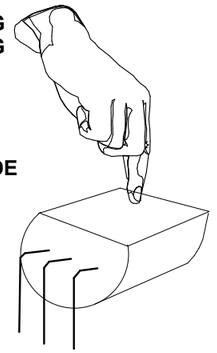
7. MOUNTING DETAILS FOR Q30 TRIAC



BEND DOWN 1/4" FROM BODY OF THE TRANSISTOR

IMPORTANT: AFTER MOUNTING DEVICE DO NOT CUT LEGS
BEND LEGS IN DIRECTION SHOWN
IT IS IMPRATIVE THAT LEG MARKED 2 AND 3 ARE BENT FLAT AGAINST THE COPPER SURFACE.

8. TAB WIRE COLOURS: W6 RED 16AWG W7 YEL 16AWG
W8 BLK 16AWG W9 WHT 16AWG
W10 BLU 16AWG W5 OUTPUT +
W4 OUTPUT -



9. Q31 IS HAND INSERTED AND BENT OVER WITH FLAT SIDE UP AS SHOWN.

10. DO NOT STUFF WIRES FOR MODEL V42 IN EY1, EY6, EY5, AND EY2. IN AREA INDICATED ON BOARD 2/2

SEE LAYOUT DIAGRAM

M1126 Database History			
MODEL(S):-		AP4020	
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	NOV/10/97	1.01	PC#5520 R35A 16K->20K ZD7 20V->16V
3	NOV/19/97	1.10	ROUTING ADDED. HOLE SIZE CHANGES
4	DEC/04/97	1.20	PC#5533 R36,R39 68K->47K. R40B/R35A 20K->16K
5	.	.	R31 47R->39R C10 680p->2n2. C8 2u2->1u
6	JAN/13/98	1.30	PC#5550 R36,R39 68K->47K. R40B,R35A 16K->13K
7	JAN/27/98	2.00	PC#5577 D21 MOVED. X31,X35 ADDED
8	JUN/19/98	2.01	PC#5567 C10,C15,C20A TO PT#5427 2n2
9	OCT/06/98	3.00	TRACE CHANGES TO ELIMINATE SHORTS PC#5729
10	.	.	X5,X6 MOVED
11	JAN/27/99	4.00	PC#5908 U1,U2 4N35->TLP621
12	JUN/11/99	5.00	ONE OF THREE SPEAKON JACKS DELETED
13	JUN/13/99	.	U1,U2 TLP621->4N35. SPKON PCB MOVED FOR SHEAR
1	AUG/12/99	6.00	CORRECT BRIDGED JACK TO A
2	MAY/31/01	7.00	PC#6381 ADD C33/C34,R86/R87 PC#6385 C2,C4 1n->2n2
3	SEP/2004	8.00	PC#6435 C33,C34 220p AXIAL->1n RADIAL. C2 2n2->6n8
4	.	.	PC#6438 ADD R88,R89
5	JAN/24/02	8.10	PC#6506 ZD10,ZD11 4V7->3V0
6	D	8.20	PC#6514 Q13->Q20 #6900->#6909. Q21->Q28 #6927->#6910
7	D	.	R5,R17 249FP->150RFP. R13 22K->43K. ZD5 12V->14V0
8	MAY/16/03	8.30	PC#6607 C10,C15,C20A #5427->#5208 2n2 400V
9	SEP/2004	9.00	REDO SOLDERMASK
10	21/JUN/06	9.10	PC#7083 Q11 MTP10N15SL TO IRF630NPBF
11	17/OCT/06	10.00	CONVERT TO PCAD2002
12	01/NOV/07	11.00	CHANGE CONNECTOR W1 PADS TO OVAL PER PC#7362
13	11/MAR/08	.	PC#7076, REPLACE #6989 & #6990 WITH #7004 & #7005
1	05/FEB/2010	12.00	PC#7935: C25A,C26A CHG YS#5259 TO YS#5269 4U7 100V
2	D	V	PC#7916 - ADD PICTURE TO PDF FOR TO3P MTG PLATE
3	09MAY2012	V13	DS no EYE, Al tabs, update GG
4	D	V	N
5	D	V	N
6	D	V	N
7	D	V	N
8	D	V	N
9	D	V	N
10	D	V	N
11	D	V	N
12	D	V	N
13	D	V	N

BC550C
BC560C

C B E
TO-92

2N5401
2N5551
MPSA06
MPSA13
MPSA43
MPSA56
MPSA63

TO-92 IN OUT REF

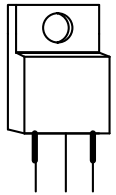
2N5401
2N5551
MPSA06
MPSA13
MPSA43
MPSA56
MPSA63
MBS4942

N/C
MT2 MT1

2N5401
2N5551
2N6517
MPSA13
MPSA43
MPSA56
MPSA63

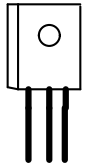
E B C
TO-92

IRF830
MTP12P10
MTP10N15L
IRL2910
IRF5210
MTP2P50E
MTP8P20
IRF720
MTP23P06
IRF822
IRF4905



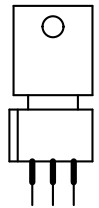
G D S

BD139
BD237
BD238
MJE340
MJE350
MJE271
MJE270
BD140



E C B

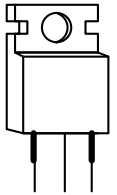
BF872
BF871
2N6556
2N6553



B C E

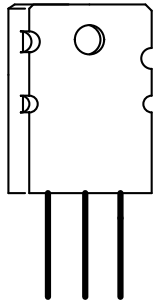
BD139
BD139
BD139

MAC224



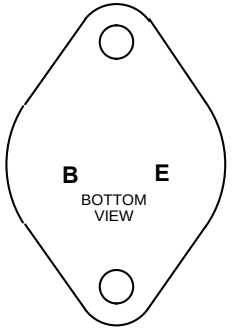
B C E MT1
G MT2

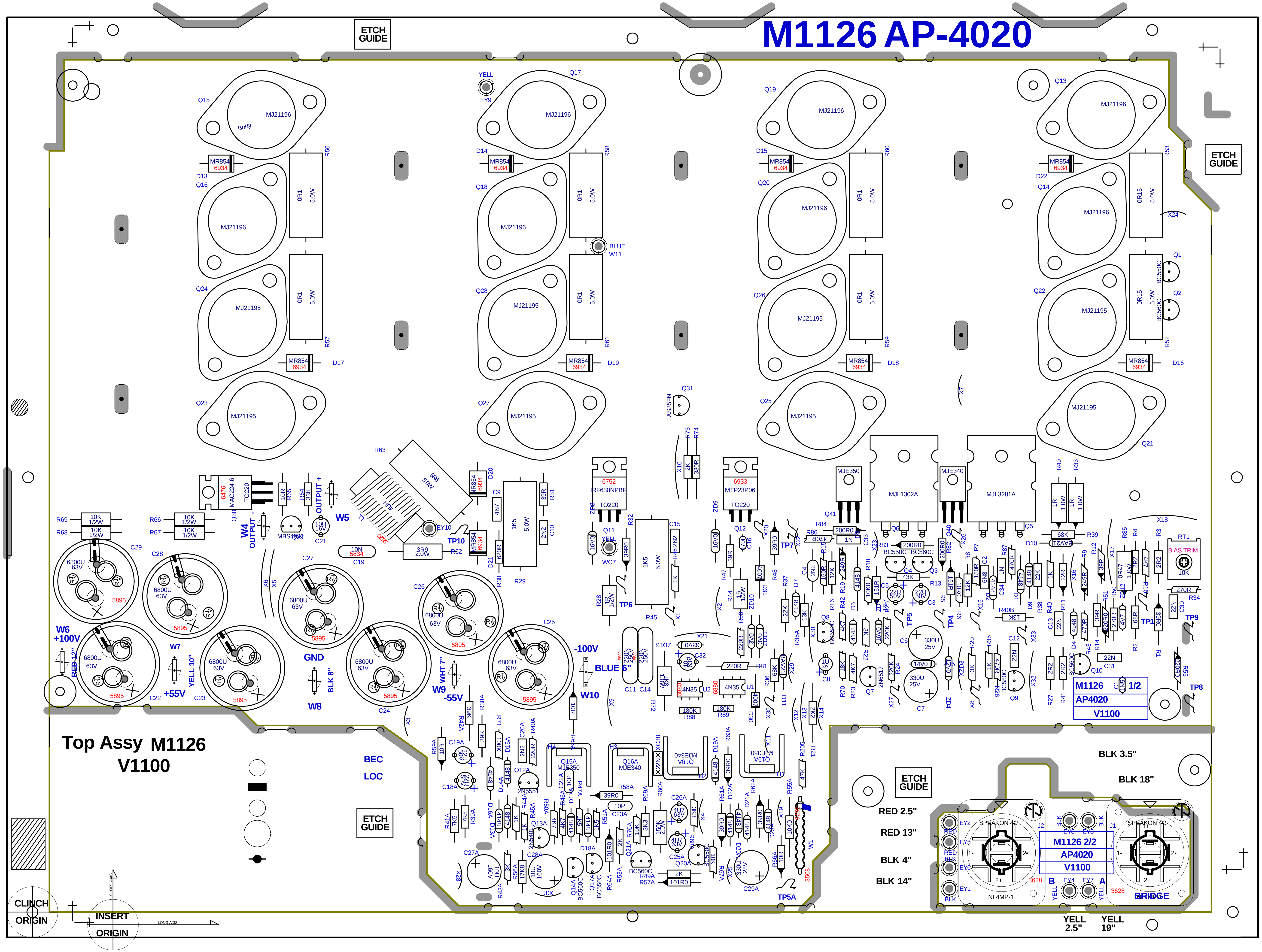
MJL21194
MJL1302A
MJL3281A
MJL21193
2SA2121-0
2SC5949-0

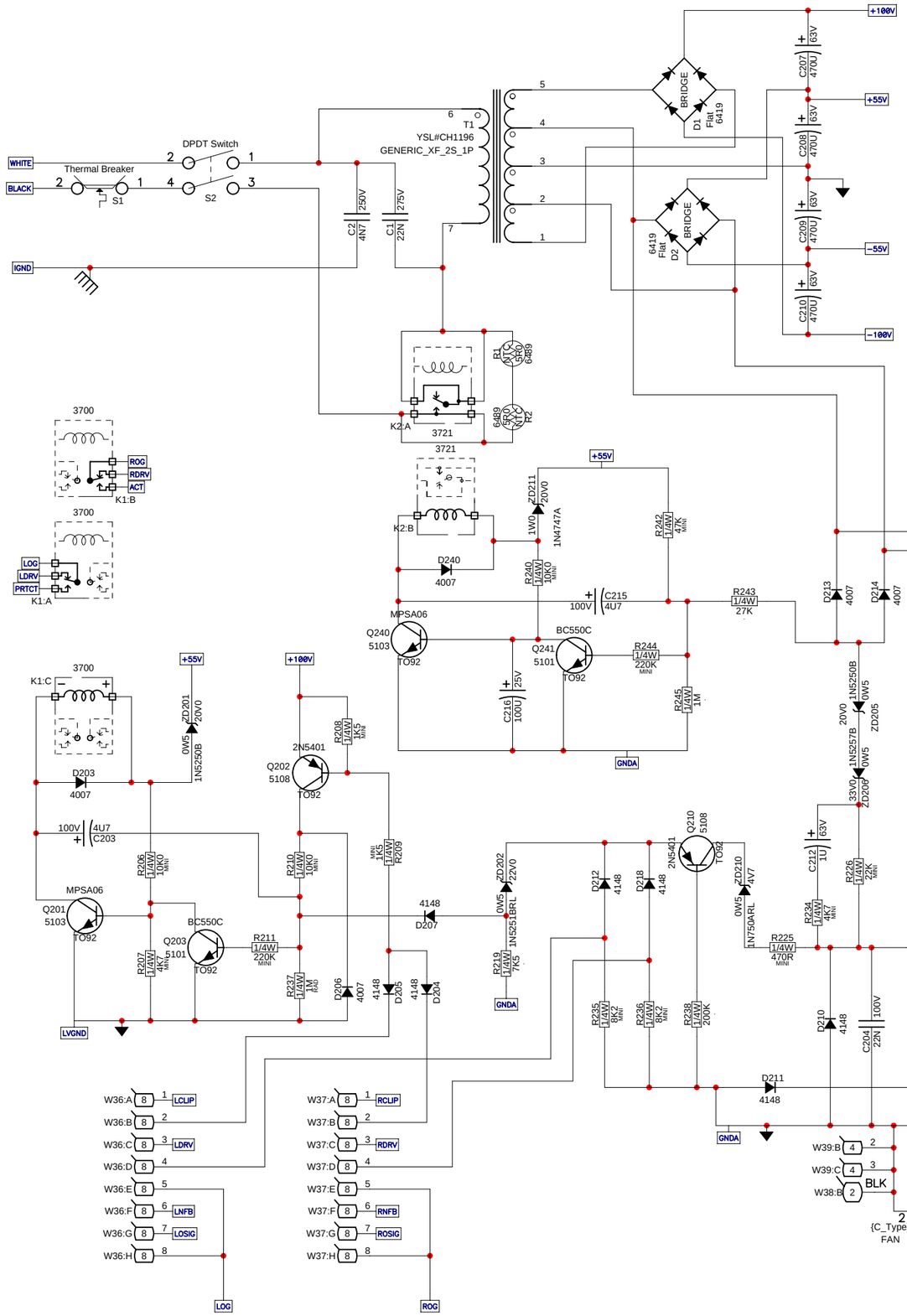


B C E

MJE11025
MJE11025
MJ21195
MJ21196

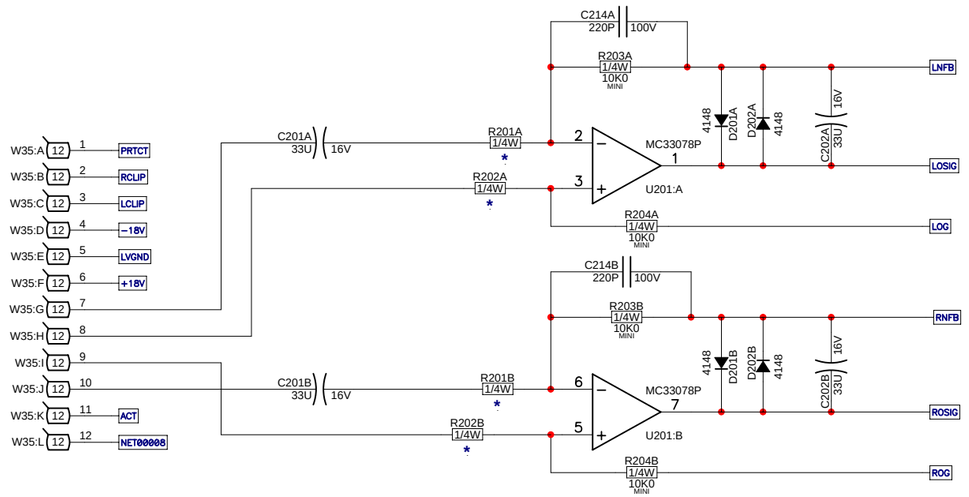



M1126 AP-4020
Top Assy M1126
V1100
ETCH GUIDE
BEC
LOC
CLINCH ORIGIN
INSERT ORIGIN
W4 OUTPUT -
OUTPUT +
W5
W6 +100V
W7
+55V
GND
W8
W9 -55V
-100V
W10
BLUE 6"
RED 12"
YELL 10"
BLK 8"
WHT 7"
M1126 1/2
AP4020
V1100
M1126 2/2
AP4020
V1100
BIAS TRIM
BLK 3.5"
BLK 18"
RED 2.5"
RED 13"
BLK 4"
BLK 14"
YELL 2.5"
YELL 19"
SPEAKON 4C
BRIDGE
NL4MP-1



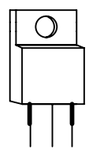
*** NOTE**

	AP4020 - M1127	V42-M1138
R201A R201B	10K0 10K0	12K1 12K1
R202A R202B	10K0 10K0	12K1 12K1



2N6517
2N5401
2N5551
MPSA06
MPSA13
MPSA43
MPSA56
MPSA63

MJF6388
MJF6668

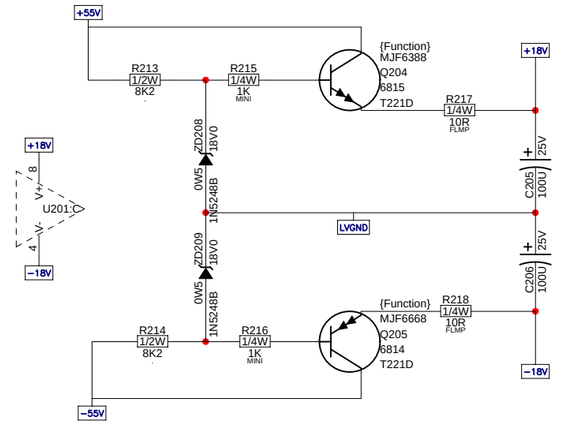


B C E
TO-221D

E B C
TO-92

BC550C
BC560C

C B E
TO-92



X8013 Database History

MODEL(S):- **AP4020 / V42**

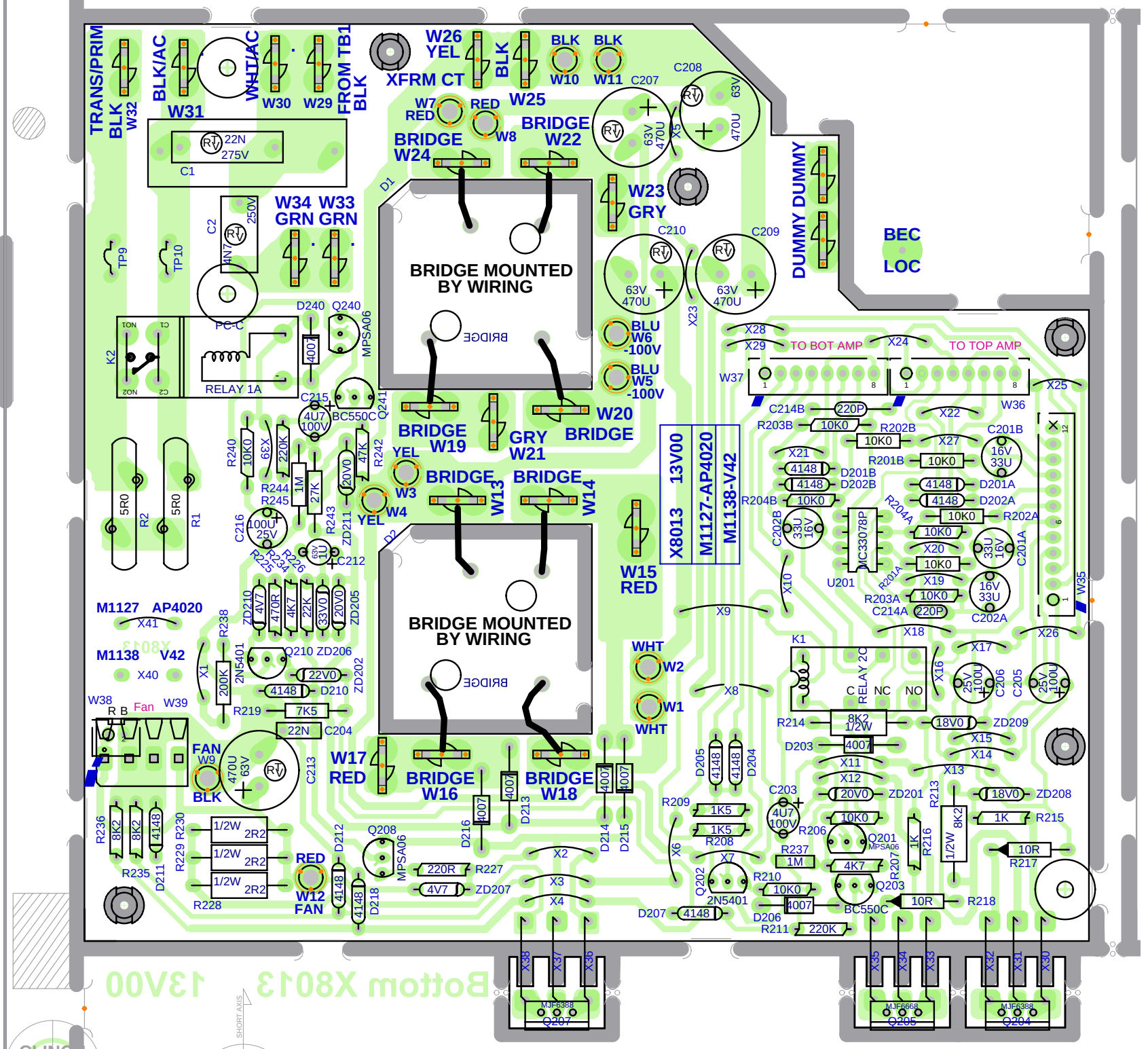
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	.	.	R232 150R->270R R233 270R ->470R
3	NOV/13/97	1.01	PC#5514 R232 270R->470R.
4	NOV/25/97	2.00	PC#5532 DELETE TRIAC ADD RELAY. R233 2R0->10R
5	.	.	ZD208,ZD209 20V->18V. U201 TL072->33078
6	DEC/12/97	3.00	UPDATE FOR AP4040
7	JAN/21/98	4.00	PC#5578 CORRECT SPACING FOR R228,R229, R230
8	.	.	PC#5579 REDO AC FOR 4N7. ADD DUMMY TABS FOR CE
9	MAR/27/98	5.00	PC#5649 ADD SURGISTORS. DELETE R233
10	JUL/15/98	5.10	PC#5797 R235/236 10K->8K2, ZD202 27V->22V
11	.	.	ZD210 6V2->4V7, ZD212 REPLACED BY JUMPER
12	OCT/27/99	6.00	PC#5695 ADD TP9, TP10 ENLARGE SOME TRACES
13	APR/06/00	7.00	PC#6218 PADS AND HOLES FOR RELAY UPDATED
1	DEC/19/01	8.00	BRIDGE MOUNTING CHANGED
2	JAN/15/02	9.00	NEW SOLDERMASK FOR TABS
3	FEB/13/03	10.00	MOVE TRACES AWAY FROM WC6 (POTENTIAL SHORT)
4	MAY/10/05	11.00	REDO SOLDERMASK FOR 0.030
5	SEP/2005	12.00	CONVERT TO PCAD2002
6	03-JUN-2009	13.00	CREATE X8013, M1127 FOR AP4020 AND M1138 FOR V42
7	.	.	PC#7718,ONLY FOR V42. CHANGE R201A,R201B,R202A
8	.	.	R202B FROM 10K0 TO #4773 12K1 1% 1/4W
9	.	.	PER PCs 7718 and 7738
10	03-FEB-2010	.	PC7935: Change C203, C215 from #5259 to #5269 GG
11	D	V	N
12	D	V	N
13	D	V	N

Yorkville

Product **AP4020 / V42**

Sheet1	PCB# .	Sheet 1 of 1
Date: Wed Feb 03, 2010	Rev:13V00	YsType:.
Filename: X8013V1300sch.sch2002		

M1127 AP4020



Top Assy X8013 13V00

SEE LAYOUT DOCUMENTATION

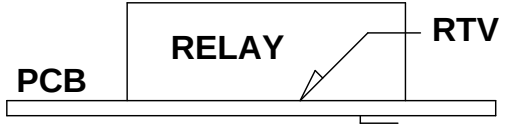
SEE LAYOUT DIAGRAM

PRODUCTION NOTES:

M1127 AP4020

1 FOR C1 USE 22N FOR NORTH AMERICAN AND 680N FOR EURO.

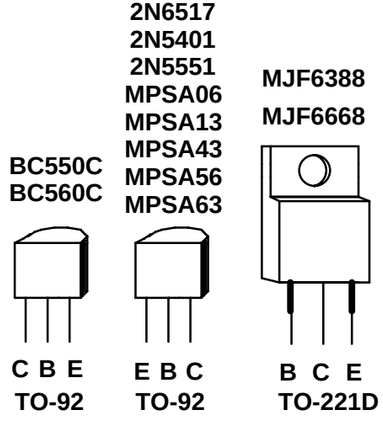
2 ADD RTV UNDER RELAY AND BEND LEADS FLAT TO PCB.



SEE LAYOUT DIAGRAM

X8013 Database History			
MODEL(S):-	AP4020 / V42		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	.	.	R232 150R->270R R233 270R ->470R
3	NOV/13/97	1.01	PC#5514 R232 270R->470R.
4	NOV/25/97	2.00	PC#5532 DELETE TRIAC ADD RELAY. R233 2R0->10R
5	.	.	ZD208,ZD209 20V->18V. U201 TL072->33078
6	DEC/12/97	3.00	UPDATE FOR AP4040
7	JAN/21/98	4.00	PC#5578 CORRECT SPACING FOR R228,R229, R230
8	.	.	PC#5579 REDO AC FOR 4N7. ADD DUMMY TABS FOR CE
9	MAR/27/98	5.00	PC#5649 ADD SURGISTORS. DELETE R233
10	JUL/15/98	5.10	PC#5797 R235/236 10K->8K2, ZD202 27V->22V
11	.	.	ZD210 6V2->4V7. ZD212 REPLACED BY JUMPER
12	OCT/27/99	6.00	PC#5695 ADD TP9, TP10 ENLARGE SOME TRACES
13	APR/06/00	7.00	PC#6218 PADS AND HOLES FOR RELAY UPDATED
1	DEC/19/01	8.00	BRIDGE MOUNTING CHANGED
2	JAN/15/02	9.00	NEW SOLDERMASK FOR TABS
3	FEB/13/03	10.00	MOVE TRACES AWAY FROM WC6 (POTENTIAL SHORT)
4	MAY/10/05	11.00	REDO SOLDERMASK FOR 0.030" SPREAD
5	SEP/2005	12.00	CONVERT TO PCAD2002
6	03-JUN-2009	13.00	CREATE X8013, M1127 FOR AP4020 AND M1138 FOR V42
7	.	.	PC#7718,ONLY FOR V42. CHANGE R201A,R201B,R202A
8	.	.	R202B FROM 10K0 TO #4773 12K1 1% 1/4W
9	.	.	PER PCs 7718 and 7738
10	03-FEB-2010	.	PC7935: Change C203, C215 from #5259 to #5269 GG
11	D	V	N
12	D	V	N
13	D	V	N

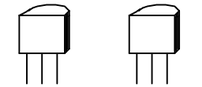
PIN CONFIGURATION

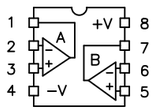


*** NOTE:**
M1128 - FOR R34 NAD R47 USE #4821 470R
M1133 - FOR R34 AND R47 USE #4808 2K

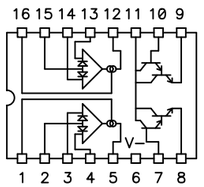
2N5401
2N5551
MPSA06
MPSA13
MPSA43
MPSA56
MPSA63

BC550C
BC560C

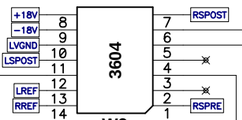


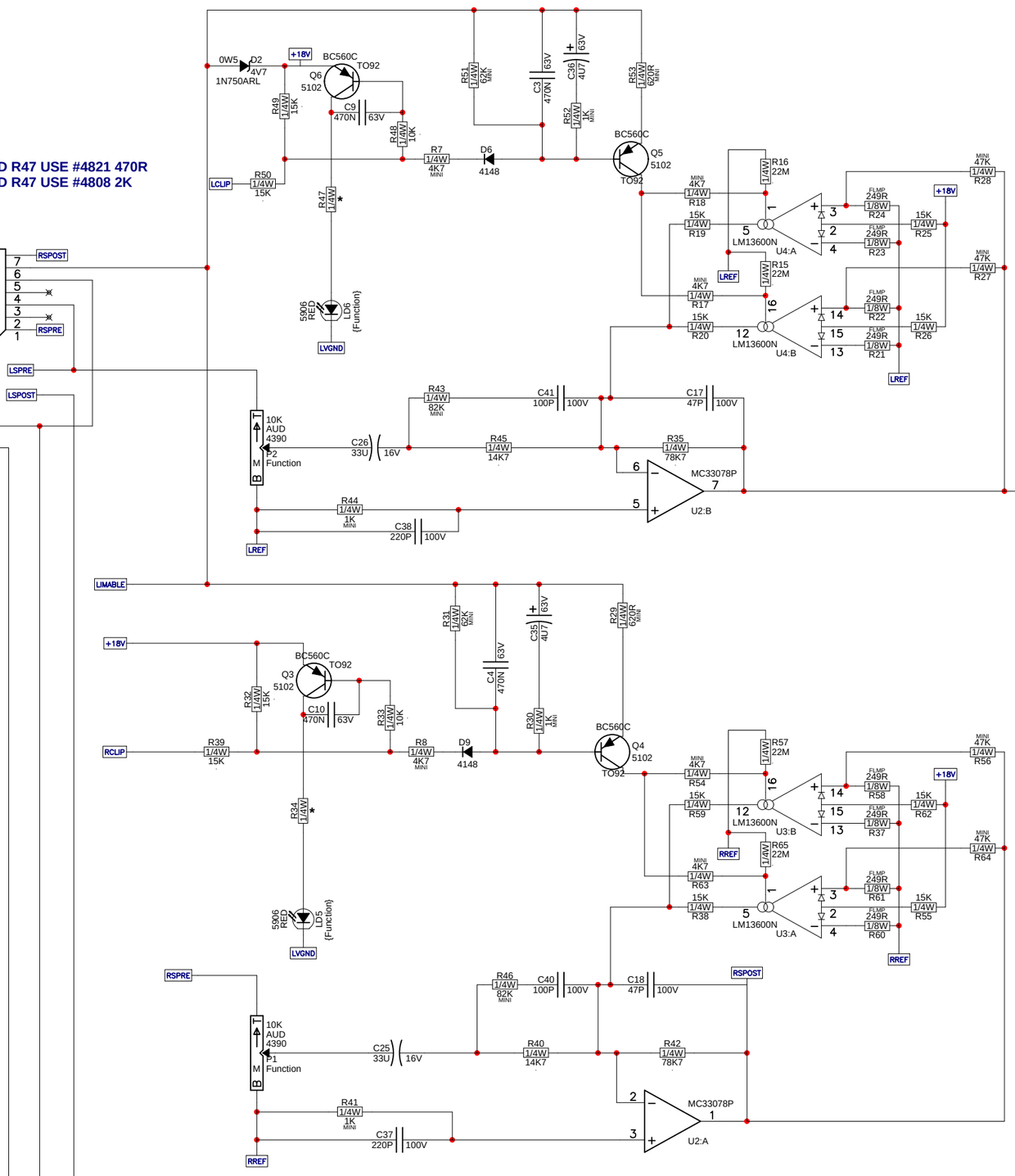


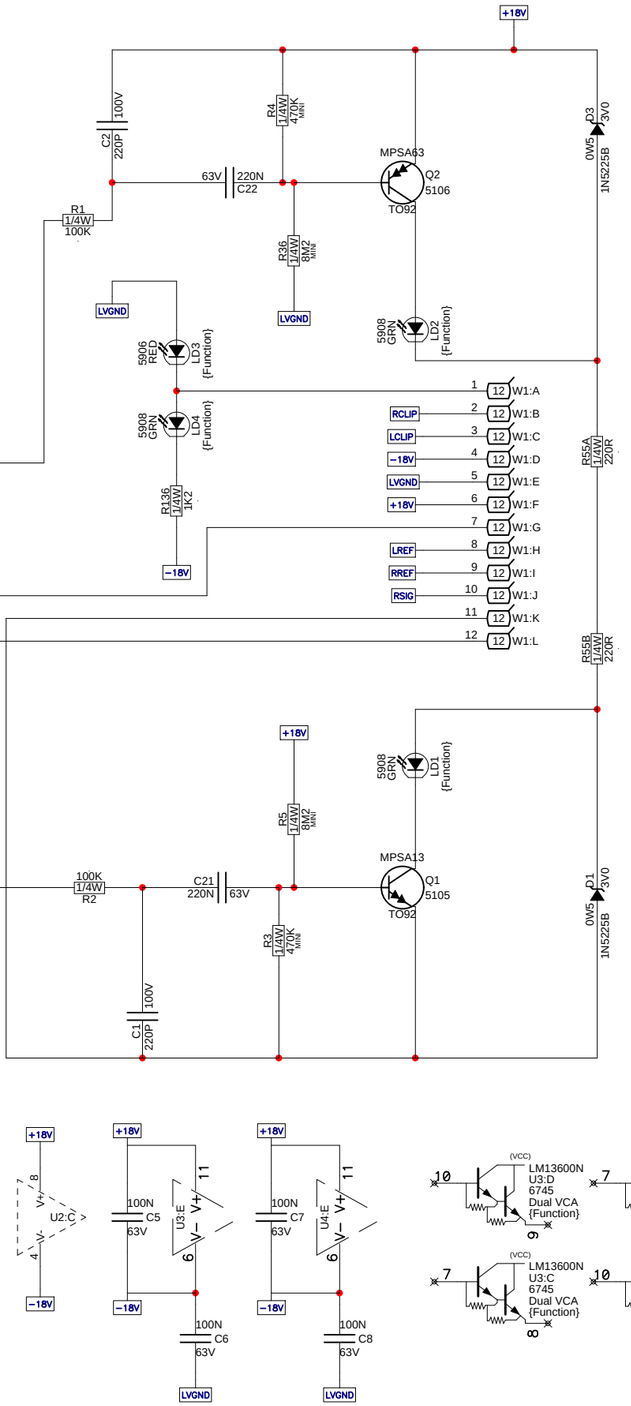
6840_PC



6745_PC

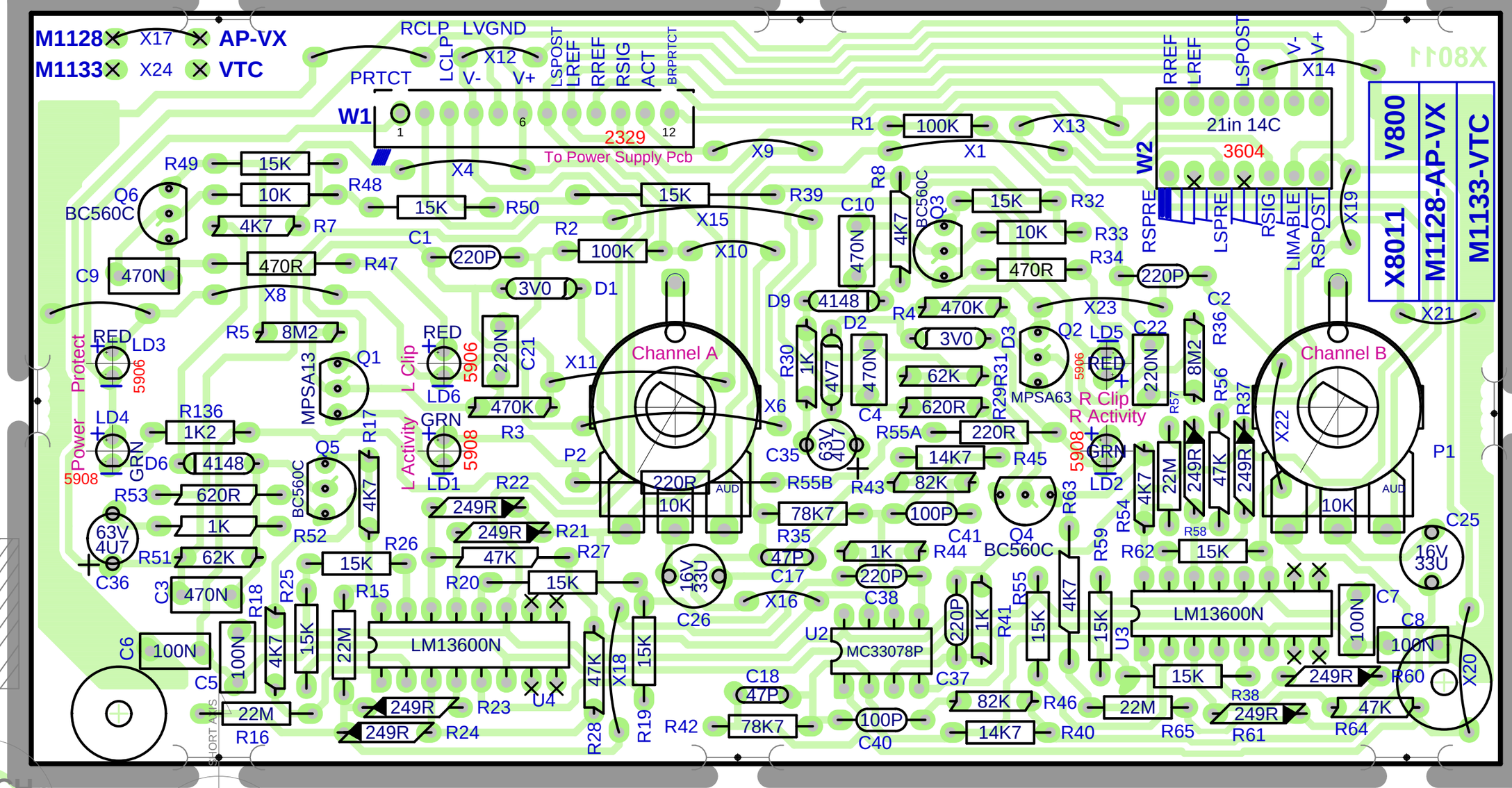






Yorkville	Product **AP-VX-VTC POT PCB**	
	POT PCB	**PCB# X8011** **Sheet 1 of 1**
	Date: Fri May 29, 2009	**Rev:8V00**
	Filename: X8011V800sch.sch2002	

M1128 AP-VX



BlankSize - 14000x11000

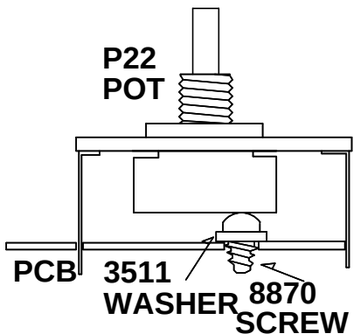
StepAndRepeat - X2@6.875Y3@3.300

SEE LAYOUT DOCUMENTATION

SEE LAYOUT DIAGRAM

X8011 PRODUCTION NOTES - M1128 AP/VX

1.



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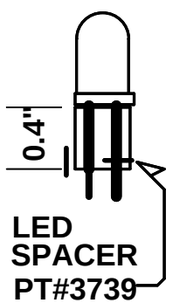


SEE LAYOUT DIAGRAM

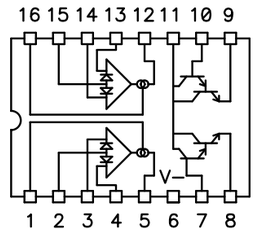
X8011 PCB_DATABASE_HISTORY			
MODEL(S):-	AP4020 AND AP4040/VX2400 AND VX2402/V42 AND V44		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	APR/17/98	2.00	#5664 RIBBON CABLE CONNECTIONS CHANGED FOR
3	.	.	PROTECT CIRCUIT
4	DEC/09/98	3.00	PC#5736 TRACES CHANGED POT SUPPORT SCREWS
5	.	.	ADDED
6	NOV/20/01	3.10	PC#6466 LD7,LD8 NSL28AA->NSL32SR2
7	JUL/09/02	4.00	PC#6401 PARTS MOVED NEAR P2
8	OCT/25/02	4.10	PC#6568 R44/R41 10K->1K
9	APR/15/05	5.00	PC#6873 REDO SOLDERMASK
10	JUN/05/06	6.00	PC#7138:GT:CONVERT TO PCAD2002. CHANGE OPTO
11	.	.	LIMITER TO 13600 #6745 LIMITERS FOR ROHS
12	.	.	REPLACE C3,C4,C9 AND C10 WITH #5234 470N 63V
13	.	.	REPLACE R31 AND R51 WITH #6139 62K 1/4W
1	.	.	REPLACE R4 WITH #6127 470K 1/4W
2	JUN/23/08	7.00	Removed shear, solder update, std board size
3	28-MAY-2009	8.00	CREATE X8011, M1128 FOR AP, VX AND M1133 FOR VTC
4	.	.	PC#7717, 7718 - M1133,V42 AND V44 CHANGE R34
5	.	.	AND R47 FROM 470R TO 2K #4808
6	D	V	N
7	D	V	N
8	D	V	N
9	D	V	N
10	D	V	N
11	D	V	N
12	D	V	N
13	D	V	N

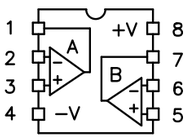
X8011 DRILL HISTORY			
MODEL(S):-	AP4020 AND AP4040/VX2400 AND VX2402/V42 AND V44		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	D	V	N
2	D	V	N
3	D	V	N
4	D	V	N
5	D	V	N
6	D	V	N

X8011 PENDING CHANGES		
MODEL(S):-	AP4020 AND AP4040/VX2400 AND VX2402/V42 AND V44	
#	PC#	PENDING CHANGE
1	PC	X
2	PC	X
3	PC	X
4	PC	X
5	PC	X
6	PC	X

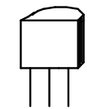
*PLACE IMPLEMENTED CHANGES INTO BOARD HISTORY

LEAD/PIN REFERENCE



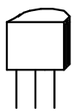


BC550C
BC560C

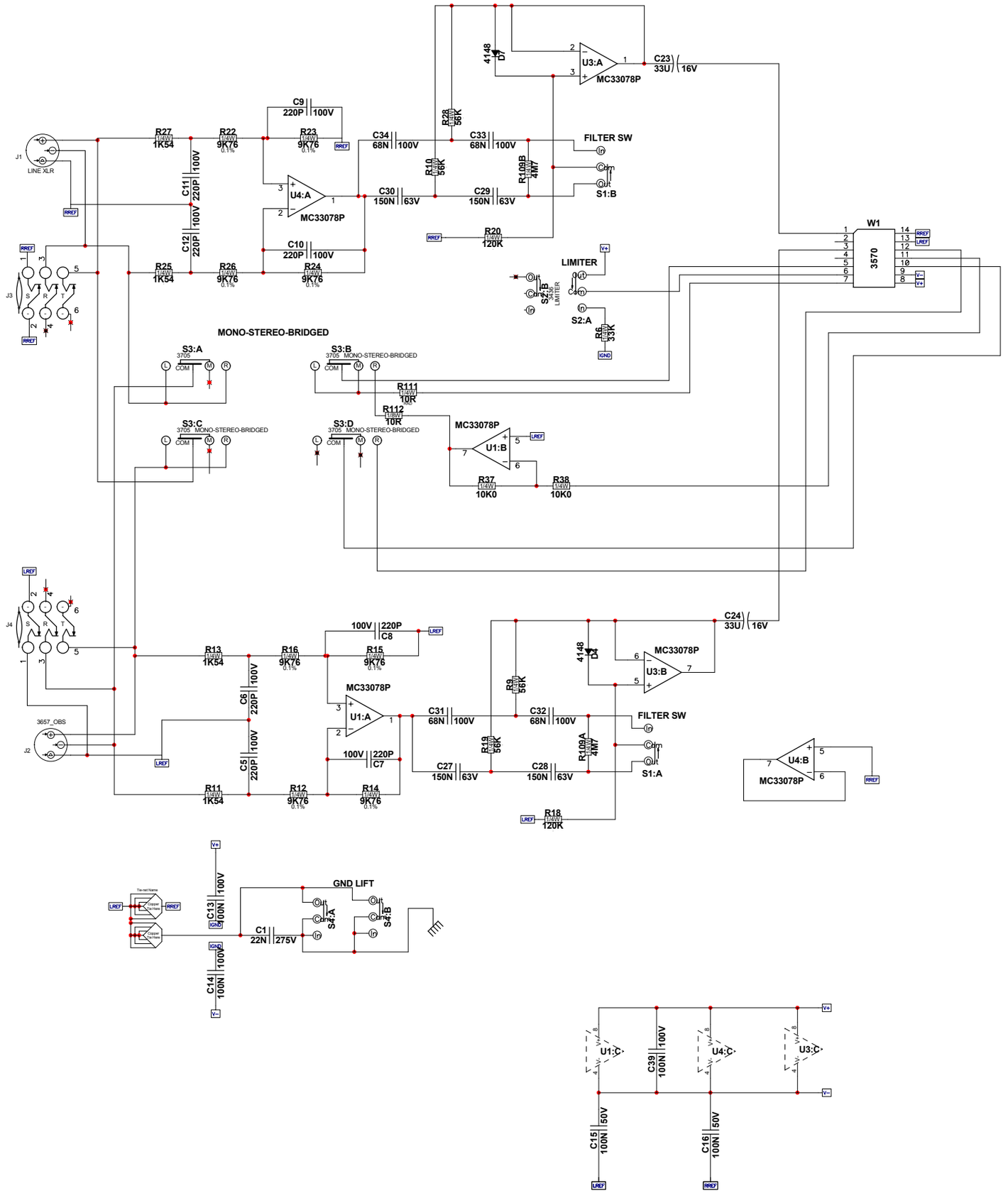


C B E
TO-92

2N5401
2N5551
MPSA06
MPSA13
MPSA43
MPSA56
MPSA63



E B C
TO-92



M1129 Database History			
MODEL(S):-		AP2020 AP4020 AP4040 AM1CE	
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	NOV/97	2.00	SWITCH NETS RREF WITH LREF AND RSPRE WITH LSPRE AT 14 PIN CONNECTOR. INPUT TO NONINVERTING
3	.	.	CHANGE C27, C29, C28, C30 TO 150N
4	DEC/02/97	.	PC#5694 PINS 10-12 OF MC2 CONNECTED TO BRG SWT
5	APR/16/98	3.00	ISOLATE PIN OF S3
6	JUL/01/98	4.00	PC#6436 REPLACE R119 (10K0) WITH JUMPER X119
7	SEP/06/01	4.10	PC#6873 REDO SOLDERMASK
8	APR/15/05	5.00	CONVERT TO PCAD2002, PC#6944:ROUTE GAUGE,
9	JUL/2005	6.00	PC#6914:ADD TARGETS
10	AUG-15-2005	.	
11	D	V	N
12	D	V	N
13	D	V	N

M1129.sch_schematic-DATABASE_HISTORY			
MODEL(S):-		AP4020 / AP4040 / AP2020 / AM1CE	
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/1997	1.00	FIRST PRODUCTION
2	NOV/12/97	2.00	REVERSED INPUT POLARITY. MODIFIED FOR AP2020
3	DEC/02/97	.	C27, C28, C29, C30 TO 150n
4	APR/22/98	2.10	PC#5694 ADD NETS BRPRTCT, LVGND-28 TO BRG SW
5	SEP/06/01	2.20	DELETE R119
6	JUL/2005	3.00	CONVERT TO PCAD2002
7	D	V	N
8	D	V	N
9	D	V	N
10	D	V	N
11	D	V	N
12	D	V	N
13	D	V	N

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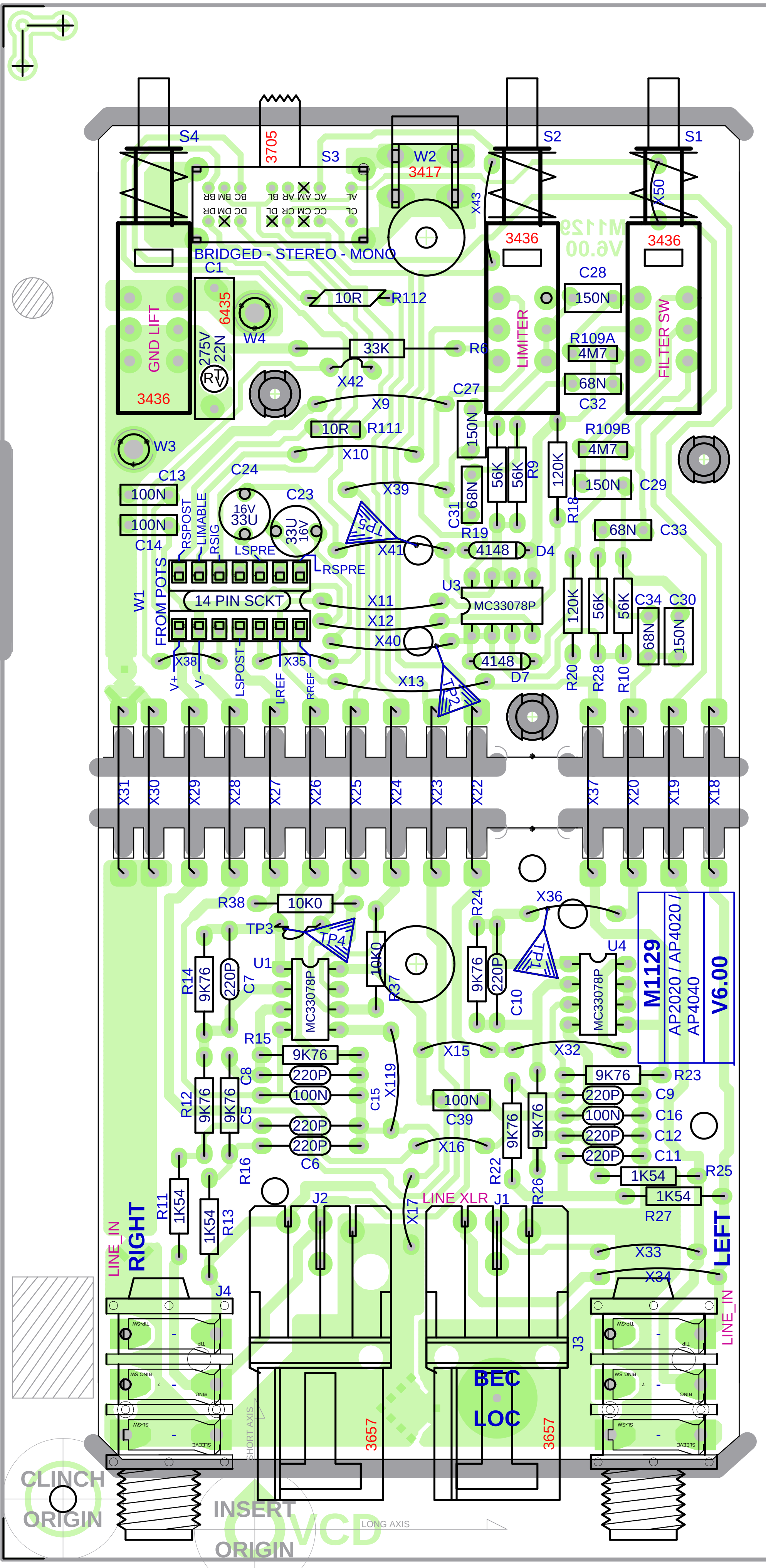
Product {Drawing Number}

{Title}	PCB# M1129	Sheet 1 of 2
Date: Tue May 02, 2006	Rev: v6.00	
Filename: M1129-6v00.sch2002		


S4
3705
S3
W2
3417
S2
S1
X43
X50
BC BM BR
AC AM AR BL
AL
DC DM DR
CC CM CR DL
CL
M1129
V6.00
3436
BRIDGED - STEREO - MONO
C1
C28
150N
10R
R112
6435
GND LIFT
W4
LIMITER
FILTER SW
275V
22N
33K
R6
R109A
4M7
68N
C32
X42
X9
C27
R111
150N
R109B
W3
X10
C13
C24
100N
C23
X39
56K
R9
120K
150N
C29
C14
16V
33U
R18
C31
68N
C33
RSPOST
LIMABLE
RSIG
LSPRE
RSPRE
X41
R19
4148
D4
W1
FROM POTS
14 PIN SCKT
U3
MC33078P
X11
X12
X40
C34
C30
X38
X35
V+
V-
LSPOST
LREF
RREF
X13
TP2
D7
R20
R28
R10
X31
X30
X29
X28
X27
X26
X25
X24
X23
X22
X37
X20
X19
X18
R38
10K0
TP3
TP4
R24
X36
TP1
U4
U1
R14
9K76
220P
C7
10K0
R37
C10
M1129
AP2020 / AP4020 /
AP4040
V6.00
R15
X119
X15
X32
R12
C8
C5
C15
100N
C39
R23
C9
C16
C12
C11
C6
X16
R22
R26
R16
1K54
R25
R11
R13
J2
LINE XLR
J1
X17
R27
LINE_IN
RIGHT
X33
X34
LEFT
J4
J3
BEC
LOC
3657
SHORT AXIS
CLINCH
ORIGIN
INSERT
ORIGIN
LONG AXIS

M1129.sch_schematic-DATABASE_HISTORY			
MODEL(S):-	AP4020 / AP4040 / AP2020 / AM1CE		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/1997	1.00	FIRST PRODUCTION
2	NOV/12/97	2.00	REVERSED INPUT POLARITY. MODIFIED FOR AP2020
3	DEC/02/97	.	C27, C28, C29, C30 TO 150n
4	APR/22/98	2.10	PC#5694 ADD NETS BRPRTCT, LVGND-28 TO BRG SW
5	SEP/06/01	2.20	DELETE R119
6	JUL/2005	3.00	CONVERT TO PCAD2002
7	D	V	N
8	D	V	N
9	D	V	N
10	D	V	N
11	D	V	N
12	D	V	N
13	D	V	N

M1129 DRILL HISTORY			
MODEL(S):-	AP2020/AP4020/AP4040/AM1CE		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	APR-03-2003	V06	N
2	AUG-15-2005	V07	CONVERT TO PCAD2002
3	D	V	N
4	D	V	N
5	D	V	N
6	D	V	N

M1129 Database History			
MODEL(S):-	AP2020 AP4020 AP4040 AM1CE		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	OCT/97	1.00	FIRST PRODUCTION
2	NOV/97	2.00	SWITCH NETS RREF WITH LREF AND RSPRE WITH
3	.	.	LSPRE AT 14 PIN CONNECTOR. INPUT TO NONINVERTING
4	DEC/02/97	.	CHANGE C27, C29, C28, C30 TO 150N
5	APR/16/98	3.00	PC#5694 PINS 10-12 OF MC2 CONNECTED TO BRG SWT
6	JUL/01/98	4.00	ISOLATE PIN OF S3
7	SEP/06/01	4.10	PC#6436 REPLACE R119 (10K0) WITH JUMPER X119
8	APR/15/05	5.00	PC#6873 REDO SOLDERMASK
9	JUL/2005	6.00	CONVERT TO PCAD2002, PC#6944:ROUTE GAUGE,
10	AUG-15-2005	.	PC#6914:ADD TARGETS
11	D	V	N
12	D	V	N
13	D	V	N

M1129 PENDING CHANGES		
MODEL(S):-	AP2020/AP4020/AP4040/AM1CE	
#	PC#	PENDING CHANGE
1	PC	X
2	PC	X
3	PC	X
4	PC	X
5	PC	X
6	PC	X

*PLACE IMPLEMENTED CHANGES INTO BOARD HISTORY

M1129 PRODUCTION NOTES

1 FOR XLR #3657 USE SCREW PT#8829
UP THROUGH THE BOTTOM

2 FOR M1129B VX1200/2400/J/2402
DO NOT STUFF X40 AND X41
ADD WIRES IN BOARD ASSEMBLY

SERVICE BULLETIN

AP4020 & AP4040

Quick Fix for M1146 & M1126

To speed up the servicing of the AP4020 or AP4040 on your bench, Yorkville Sound's service department has developed a method to replace the components most likely to fail when a M1146 amplifier board requires service.

This Quick Fix kit contains the procedure, assembly drawings, and components to perform the Quick Fix to a M1146 or M1126 board.

It should be understood that the person using this procedure knows how to test resistors, diodes, and transistors to determine if they are defective. This procedure is not intended to be a substitute for one's lack of electronic capability.

Before starting, look at the board for repair and locate the version number. It is very important that you follow the procedure for the appropriate circuit board version number.

A complimentary service manual for the AP4020 power amplifier is supplied with this M1146KIT.

STEP 1. Locate the assembly drawing for the version number printed on the M1146 or M1126 circuit board to be serviced.

STEP 2. Remove all of the transistors coloured RED on the assembly drawing.

STEP 3. Measure and remove any of the diodes coloured BLUE on the assembly drawing that may be damaged. Replace a 1N4732A 1W 4V7 zener (#6459) ZD12 along with a series 0.5 ohm R85 resistor.

STEP 4. Rotate the trim pot RT1 fully counter - clockwise as in figure 1. Inspect and replace any resistors that look burnt. Measure all of the resistor values coloured YELLOW on the assembly drawing. The value that you measure may not be exactly what is shown on the assembly drawing but if the resistor doesn't look damaged it should measure within + or – 5% of the printed value.

Canada
Voice: (905) 837-8481
Fax: (905) 837-8746

U.S.A.
Voice: (716) 297-2920
Fax: (716) 297-3689

www.yorkville.com

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Yorkville Sound Inc.
4625 Witmer Industrial Estate
Niagara Falls, New York
14305 USA

SERVICE BULLETIN

AP4020 & AP4040

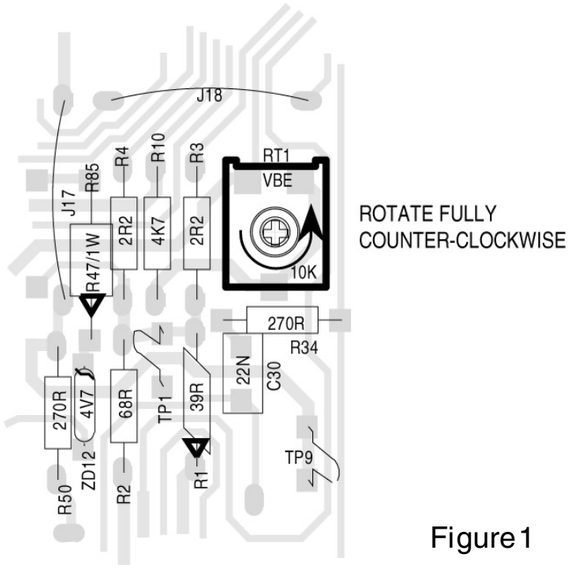

Figure 1

STEP 5. Measure the resistor coloured GREEN. The measured value should measure within + or – 5% value listed in the table below. Replace any resistor that measured beyond the + or – 5% value listed in the table below.

RESISTOR NUMBER	PRINTED VALUE	CORRECT *MEASURED* VALUE
R10	4K7	**-5%** 3K08 3K25 **+5%** 3K41

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STEP 6. Measure across the pair of test points shown in the component layout listed in the table below. If the measured value is not within + or – 10% of the value listed in the table then replace the resistors shown in the table below.

TEST POINTS	LAYOUT REFERENCE	CORRECT *MEASURED* VALUE	LAYOUT REFERENCE
R10	4K7	**-10%** 15ohm **+10%** 17ohm 19ohm	R11, R12, R14

STEP 7. Measure the resistors coloured ORANGE. Since the value of these resistors is 0.1 ohm, your ohmmeter will measure the higher series resistance of the test leads if the resistor is OK. If the resistor is damaged your ohmmeter will read a very high resistance (an open circuit). Replace any damaged resistors.

STEP 8. Measure the output TO–3 transistors (Q13 to Q28) to determine if any are damaged. Mark any damaged transistors with a marking pen.

STEP 9. Replace any output transistors that you have marked as being damaged. Replace any diodes that you have found to be damaged. Replace all of the red transistors that were removed.

STEP 10. Inspect the traces on the circuit board for any that have 'fused' open or looklike they got very hot. Bridge and solder a piece of wire over any damaged traces.

AFTER YOU HAVE REPLACED ALL OF THE NECESSARY COMPONENTS INSPECT THE REPAIRED BOARD FOR ANY MISSING PARTS, CORRECT VALUES IN THE CORRECT POSITION AND THAT ALL COMPONENTS ARE SOLDERED.

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14305 USA

SERVICE BULLETIN

AP4020 & AP4040

Testing Repaired Circuit Boards

Now that you have rebuilt the M1146 or M1126 circuit board. It is just as important to properly power up the board. If the sinewave doesn't look right check the signal at test point (1) to ensure that the voltage amplifier isn't distorting the signal. If there is still a damaged part on the board instantly turning it on could blow up the board and you would be back where you started.

Connect the power wires and ground to the power supply. Connect a digital multimeter to test pins 8 and 9 to measure the bias quiescent current and place a scope probe on the speaker output. Be sure to turn the quiescent current trimpot RT1 fully counter clockwise.

Now using a variac slowly turn up the AC main voltage while monitoring the quiescent voltage and the speaker output trace on the scope. Watching these two test points is a good indicator of the health of the board. If you have a second multimeter connect it up from the speaker output to test point 4 or 5. As you variac up also check these DC battery voltages to ensure that they both increase in voltage to approximately +12 or –12 vdc.

If the board looks OK after variacing up to 120vac then slowly turn up the bias (RT1 trimpot) to obtain 3 to 5 millivolts of bias voltage on test points 8 and 9. Check the speaker output with a 1KHZ sinewave with no load. If this looks good place the minimum rated load (4 Ohm for M1126, 2 Ohm for M1146) on the speaker output and increase the sinewave amplitude to the point of clipping. If the signal looks free of oscillation, place a short across the speaker posts. The amplifier should go into protect mode after 1/10 of a second. Remove the short and the sinewave will appear 6 seconds later.

Reassemble the complete amplifier and run just clipping music or pink noise into the minimum rated speaker load for that model of amplifier. Let the amplifier heat up for 20 minutes. This will check the thermal mounting of the transistors and for any weak parts not caught during troubleshooting.

If the amplifier passes this test the product is ready to return to the customer.

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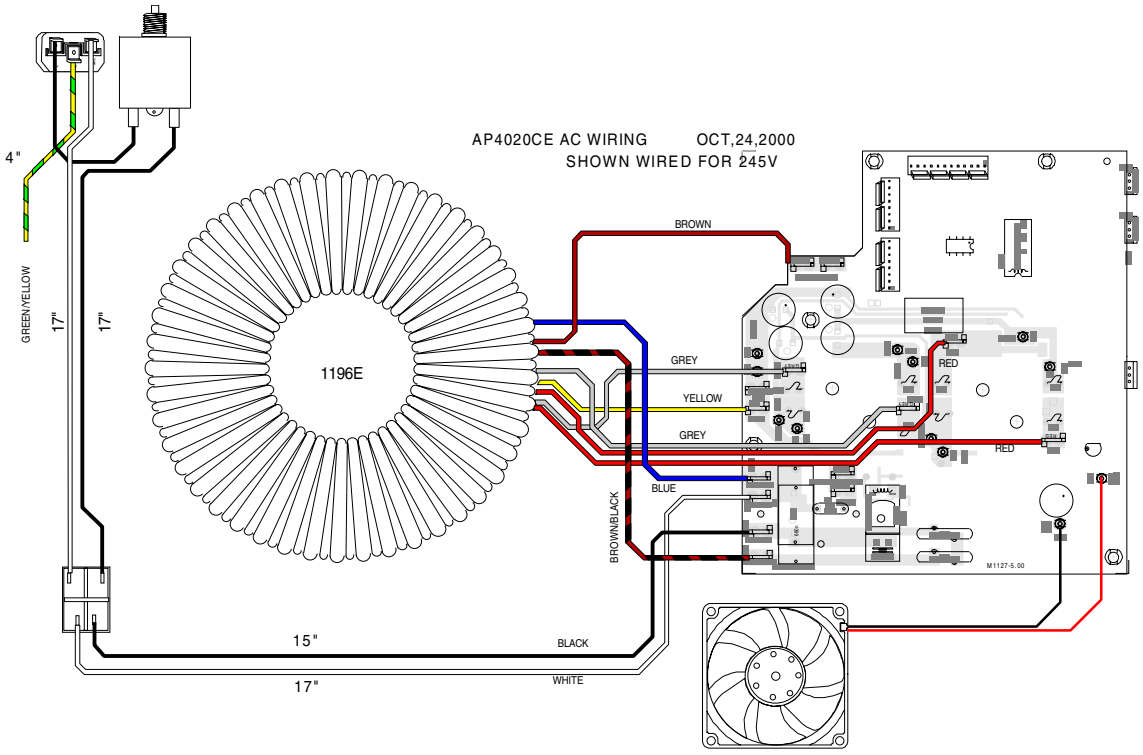
AP4020CE AC WIRING OCT,24,2000
SHOWN WIRED FOR 245V
4"
GREEN/YELLOW
17"
17"
1196E
BROWN
GREY
YELLOW
GREY
BLUE
BROWN/BLACK
RED
RED
15"
17"
BLACK
WHITE
M1127-5.00