



SERVICE MANUAL

ef500p

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WORLD HEADQUARTERS CANADA

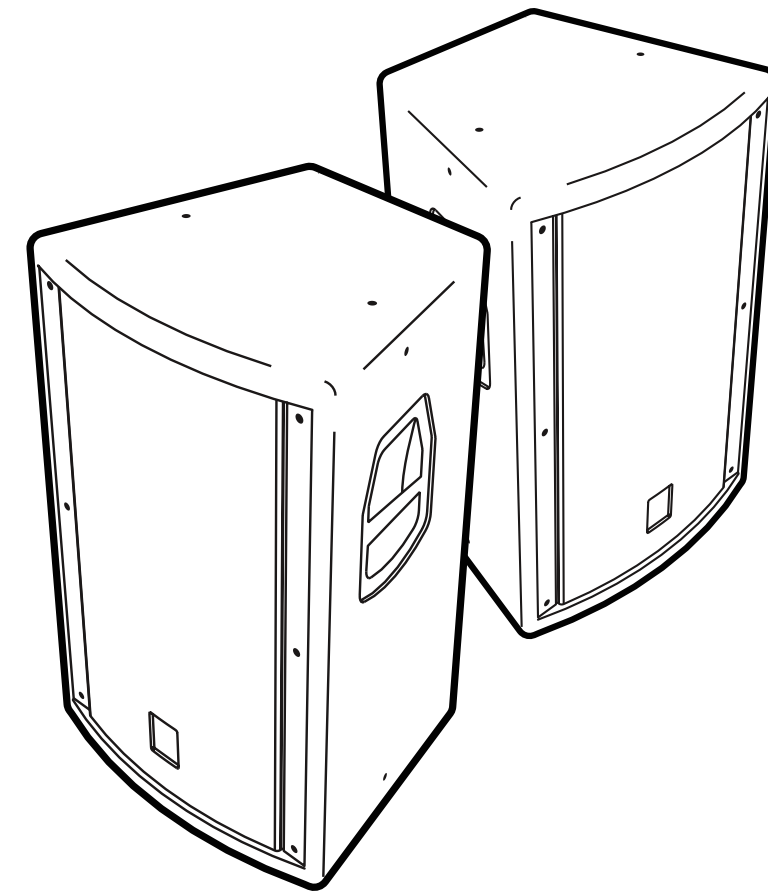
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Quality and Innovation Since 1963
Printed in Canada

IMPORTANT SAFETY INSTRUCTIONS



INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

INSTRUCTIONS RELATIVES AU RISQUE DE FEU, CHOC ÉLECTRIQUE, OU BLESSURES AUX PERSONNES.

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.

AVIS:

N'ENLEVEZ PAS LE COUVERT (OU LE PANNEAU ARRIERE). NE CONTIENT AUCUNE PIECE REPARABLE PAR L'UTILISATEUR.

CONSULTEZ UN TECHNICIEN QUALIFIE POUR L'ENTRETIEN.

Read Instructions:

The **Owner's Manual** should be read and understood before operation of your unit. Please, save these instructions for future reference.

Packaging:

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

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.

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.

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.

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

Power Cord:

The AC supply cord should be routed so that it is unlikely that it will be damaged. If the AC supply cord is damaged **DO NOT OPERATE THE UNIT.**

Service:

The unit should be serviced only by qualified service personnel.

Veillez lire le manuel:

Il contient des informations qui devraient étre comprises avant l'opération de votre appareil. Conservez S.V.P. ces instructions pour consultations ultérieures

Emballage:

Conservez la boite au cas ou l'appareil devait étre retourner pour réparation.

Warning:

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 étre 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 étre prises afin d'éviter que le système de mise à la terre de l'appareil ne soit désengagé.

Hazard:

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.

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

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

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 étre effectués par un opérateur formé ou en utilisant des cordons déjà préparés.

Cordon d'alimentation:

Évitez d'endommager le cordon d'alimentation. **N'UTILISEZ PAS L'APPAREIL** si le cordon d'alimentation est endommagé.

Service:

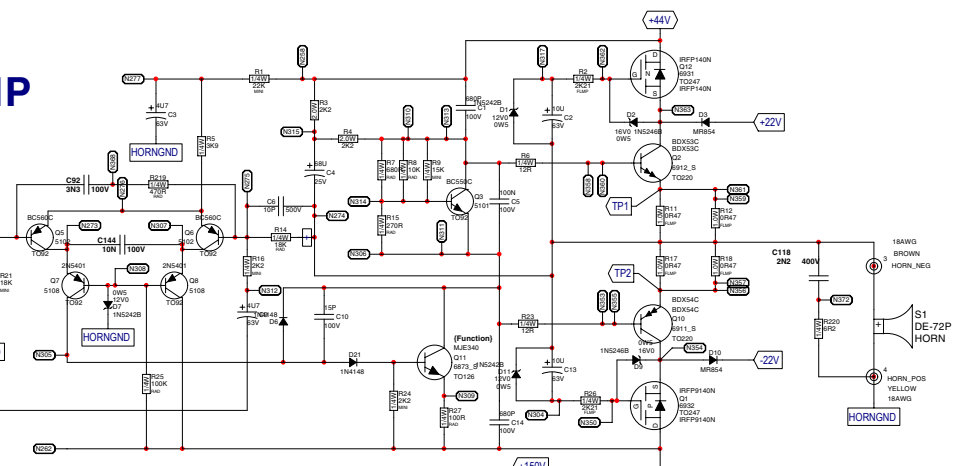
Consultez un technicien qualifié pour l'entretien de votre appareil.

EF500P.xls Parts List 10/7/2002

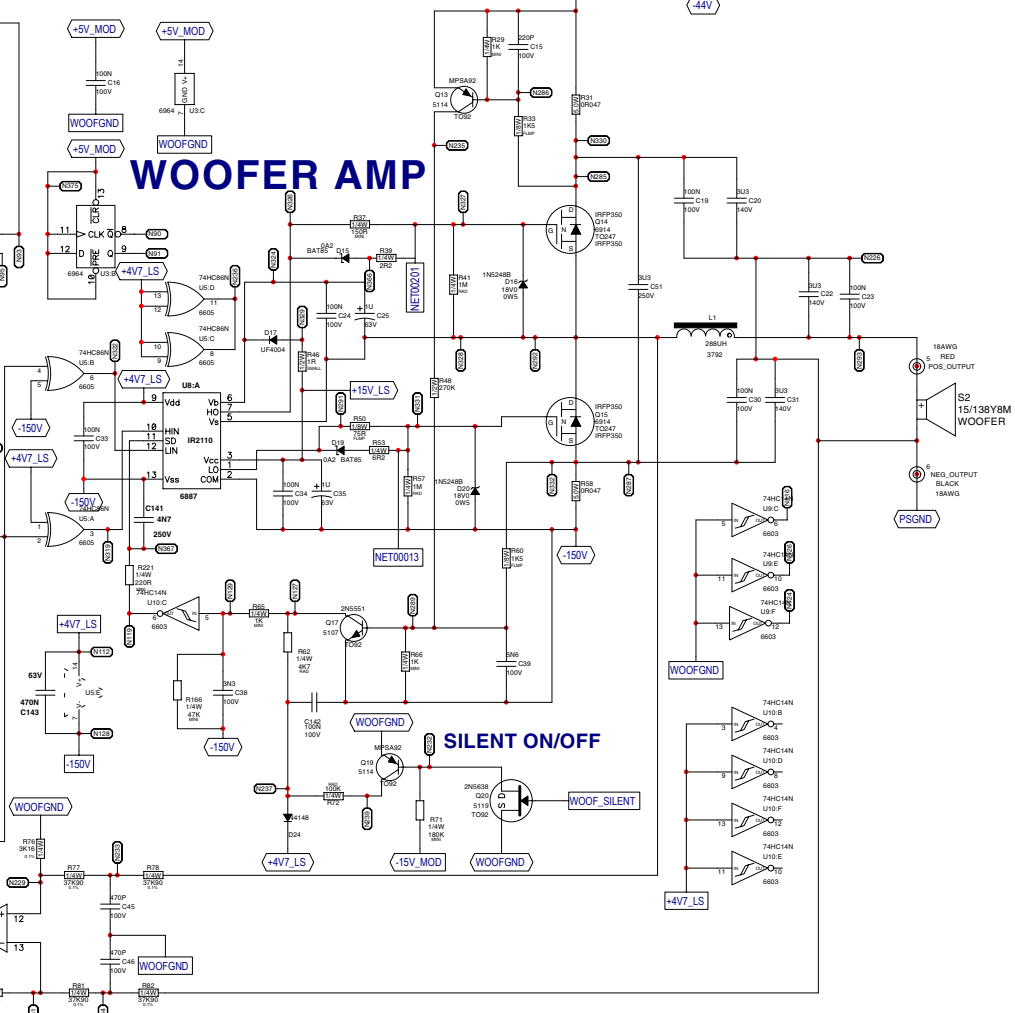
YS #	Description	Qty.	YS #	Description	Qty.	YS #	Description	Qty.
5906	RED 3MM LED 1V9 20MA .4SPCER T&R	1	5281	_10U 16V 20%CAP T&R RAD .2"NP	1	4923	1/4W 680R 5% .2"U T&R RES	1
5907	YEL 3MM LED 1V9 20MA .4SPCER T&R	1	5945	_10U 63V 20%CAP T&R RAD .2"EL	3	4925	1/4W 820R 5% .2"U T&R RES	1
5908	GRN 3MM LED 1V9 20MA .4SPCER T&R	1	5631	_22U 50V 20%CAP T&R 6X7MM .2"EL	4	4934	1/4W 1K 5% .2"U T&R RES	1
6825	1N4148 75V 0A45 DIODE T&R	21	5961	_33U 16V 20%CAP T&R RAD .2"NP	6	4981	1/4W 1K 5%MINI T&R RES	14
6892	UF4004 200V 1A0 DIODE ULTRAFAS	2	5265	_68U 25V 20%CAP T&R RAD .2"EL	1	6110	1/4W 1K0 1%MINI MF T&R RES	3
6438	1N4004 400V 1A0 DIODE T&R	2	5887	2200U 50V 20%CAP BLK 18X27MM EL	2	4996	1/4W 1K070 0.1% *** T&R RES	1
6827	1N5402 200V 3A0 DIODE	8	5912	2200U 63V 20%CAP RADIAL ELECT BULK	2	4585	1/4W 1K2 5%MINI T&R RES	2
6934	MR854 400V 3A0 DIODE FASREC	2	5858	2700U 180V 20%CAP RAD 35X63MM ELS	2	4802	1/4W 1K21 1% T&R RES	1
6421	MR752 200V 6A0 DIODE	4	4537	_10K B LIN 9MM DETENT P25	2	4769	1/4W 1K4 1% T&R RES	4
6733	BAT85 30V 0A2 DIODE SCHTKYT&R	6	4566	_10K B LIN 9MM P25	2	2034	1/8W 1K5 5%FLAME PROOF T&R RES	2
6440	1N750ARL 4V7 0W5 ZENER 5% T&R	3	4546	_50K B LIN 9MM DETENT P25	1	4935	1/4W 1K5 5% .2"U T&R RES	4
6436	1N753ARL 6V2 0W5 ZENER 5% T&R	2	8467	2X2-IB-3/8" FLYING HARDWARE BRACKET	4	4993	1/4W 1K87 1% T&R RES	3
6461	1N5240BRL 10V0 0W5 ZENER 5% T&R	1	8483	ADAPTOR,SPEAKER STAND,METAL,BLACK	1	4683	1.0W 1K8 5% T&R RES	1
6450	1N5242B 12V0 0W5 ZENER 5% T&R	3	8547	PLASTIC FOOT BLACK	4	4946	1/4W 2K 5% .2"U T&R RES	2
6824	1N5246B 16V0 0W5 ZENER 5% T&R	2	8562	CORNER, 3 LEGS, BLACK OXIDE	4	6113	1/4W 2K 5%MINI T&R RES	3
6432	1N5248B 18V0 0W5 ZENER 5% T&R	2	8569	CORNER, 2 LEGS NO LIP BLACK OXIDE	4	4705	2.0W 2K2 5% BLK RES	2
6465	1N5250B 20V0 0W5 ZENER 5% T&R	1	8888	NEOPRENE DRIVER GASKET 4.4 X 4.4	1	6104	1/4W 2K2 5%MINI T&R RES	5
6463	1N5251BRL 22V0 0W5 ZENER 5% T&R	1	3485	CLIP 250X032 18-22AWG RIGHT ANGLE	4	2035	1/4W 2K21 1%FLAME PROOF T&R RES	2
6426	1N5254B 27V0 0W5 ZENER 5% T&R	1	3489	CLIP 250X032 18-22AWG DISCO/INSL	3	6114	1/4W 2K49 1%MINI MF T&R RES	2
6728	MC78L05ACP TO92 P 5V0 REG V4	2	3490	CLIP 250X032 14-16AWG DISCO/INSL	7	6124	1/4W 3K 5%MINI T&R RES	2
6871	MC7915CT TO220 N 15V0 REG V2	1	3682	250 MALE PCB TAB REEL	13	4788	1/4W 3K160 0.1% *** T&R RES	2
6872	MC7815CT TO220 P 15V0 REG V1	1	3921	1/4" JCK PCB MT VERT STER RT SWT	4	4850	1/4W 3K9 5% T&R RES	1
5101	BC550C TO92 NPN TRAN T&R TB	1	3453	XLR MALE PCB MT VERT	1	4774	1/4W 4K12 1% T&R RES	1
5102	BC560C TO92 PNP TRAN T&R TB	3	3925	XLR FEML PCB MT VERT 24MM U-CONT	2	4943	1/4W 4K7 5% .2"U T&R RES	9
5103	MPSA06 TO92 NPN TRAN T&R TA	1	3482	LOWPROFILE FUSEHOLDER 1/4" BUSSMANN	1	4982	1/4W 4K7 5%MINI T&R RES	5
5107	2N5551 TO92 NPN TRAN T&R TA	2	2415	5.0 AMP FAST-BLO .25X1.25 FUSE	1	6141	1/4W 5K6 5%MINI T&R RES	2
5108	2N5401 TO92 PNP TRAN T&R TA	4	2487	7.0 AMP SLO-BLO T&R FUSE	2	4978	1/4W 6K8 5%MINI T&R RES	3
5114	MPSA92 TO92 PNP TRAN T&R TA	2	8536	CAST HANDLE "YORKVILLE" PULSE BLUE	2	4768	5.0W 12K 5% BLK RES	5
5105	MPSA13 TO92 NPN DARL T&R TA	1	8604	10-32 T NUT	4	4940	1/4W 10K 5% .2"U T&R RES	11
5119	2N5638 TO92 NCH JFET T&R TC	2	DE-72P	8R 120W1.4"DRVR B&C PLAST PH	1	4983	1/4W 10K 5%MINI T&R RES	2
6873	MJE340 TO126 NPN TRAN TG	1	8726	3/8-16X11/2 GRD5 FLAT SCKT HD PLAIN	9	6116	1/4W 10K0 1%MINI MF T&R RES	8
6911	BDX54C TO220 PNP TRAN DARL TE	1	3645	AC SOCKET RECEPTACLE WITH 0.250 TAB	1	4979	1/4W 15K 5%MINI T&R RES	3
6912	BDX53C TO220 NPN TRAN DARL TE	1	8392	RED STYLE 1 KNOB	1	4954	1/4W 18K 5% .2"U T&R RES	2
6914	IRFP350 TO247 NCH MFET TM	2	8393	GREY STYLE 1 KNOB	2	6125	1/4W 18K 5%MINI T&R RES	2
6931	IRFP140N TO247 NCH MFET TM	1	8394	GREEN STYLE 1 KNOB	2	6118	1/4W 22K 5%MINI T&R RES	3
6932	IRFP9140N TO247 PCH MFET TM	1	8632	ROUND PUSH BUTTON 1/4" GREY	2	4956	1/4W 27K 5% .2"U T&R RES	2
6804	MC33079P IC QUAD OP AMP	1	3426	8' 3/16 SJT AC LINE CORD REMOVBUICSA	1	4890	1/4W 30K 5% T&R RES	1
6840	MC33078P IC DUAL OP AMP	1	8259D	"Y" LOGO ELITE SERIES LARGE DOMED	1	4941	1/4W 30K 5% .2"U T&R RES	1
6884	NE5532N IC DUAL OP AMP	16	3792	_288UJH COIKE 89T20AWG/77091MAGNTKS	1	4947	1/4W 33K 5% .2"U T&R RES	4
6640	LM311 IC VOLTAGE COMPARATOR	3	6492	1300UH COIL COMMON MODE 4AMP	1	4868	1/4W 36K 5% T&R RES	1
6745	LM13600N IC XCONDUCTANCE AMP	1	22CORE	77091-A7 KOOL-MU TOROID CORE	1	4794	1/4W 37K90 0.1% *** T&R RES	4
6603	74HC14N IC HEX INV SCHMID	2	3543	20 PIN BRKAWAY 90 LOCK .156	1	4878	1/4W 43K 5% T&R RES	1
6605	74HC86N IC QUAD 2INP XOR	1	3549	TRIFURCON TERM .156	8	4927	1/4W 47K 5% .2"U T&R RES	7
6964	74HC74N IC DUAL FLIPFLOP	1	3559	TERM HOUSING 8 CIR .156/RAMP	1	6119	1/4W 47K 5%MINI T&R RES	4
6887	IR2110 IC HILO FET DRIVER	1	3674	9 CIR CABLE HOLDER .098	1	4928	1/4W 56K 5% .2"U T&R RES	1
6858	NSL-32SR2 OPTO-COUPLER LDR	2	8701	4-40 KEPS NUT ZINC	9	4942	1/4W 100K 5% .2"U T&R RES	4
5401	_10P 500V 5%CAP T&R RAD CER.2"NPO	1	8787	8-32 KEPS NUT ZINC	3	4839	1/4W 150K 5% T&R RES	1
5817	_15P 100V 2%CAP T&R RAD CER.2"NPO	1	8602	1/4-20 T NUT	4	4796	1/4W 180K 5%MINI T&R RES	1
5406	_33P 50V 10%CAP BLK BEAD NPO	2	8797	5/16-18 KEPS NUT JS500	1	4679	1/2W 270K 5% T&R RES	1
5203	_47P 100V 2%CAP T&R RAD CER.2"NPO	2	8724	3/8-16 T-NUT (SCREW MOUNT)	1	6135	1/4W 270K 5%MINI T&R RES	1
5199	100P 100V 2%CAP T&R RAD CER.2"NPO	1	3884	SARCON THERMAL GASKET 4.55"X1.00"	1	6127	1/4W 470K 5%MINI T&R RES	1
5410	100P 100V 10%CAP T&R BEAD NPO	1	4004	_9 CIR WAFER W/LCK VT 0.1"	1	4948	1/4W 1M 5% .2"U T&R RES	9
5412	220P 100V 10%CAP T&R BEAD NPO	2	4660	5.0W 0R047 5% BLK RES	2	3535	10" 9C-26AWG RIB 1 W/LCK HDR 098	1
5201	470P 100V 5%CAP T&R RAD CER.2"NPO	5	2005	1.0W 0R47 5%FLAME PROOF T&R RES	4	3696	RELAY 1C 02AMP DC24 006MA PC-S	1
5816	680P 100V 5%CAP T&R RAD CER.2"NPO	4	4682	1/2W 1R 5%PHILIPS SMAL T&R RES	1	3790	EMI FILTER FOR RIBBON CABLE	1
5422	_1N 50V 10%CAP T&R BEAD NPO	2	4911	1/4W 2R2 5% T&R RES	1	3859	1/2 PLASTIC HEX SPACER #4	2
5208	_2N2 400V 5%CAP T&R RAD .2"FLM	2	4813	1/4W 6R2 5% T&R RES	2	15/138Y8M	15" 8R 500WPGM SPEAKER	1
5275	_3N3 100V 5%CAP T&R RAD .2"FLM	3	2010	1/8W 10R0 2%FLAME PROOF T&R RES	4	8667	SHOULDER WASHER SWS-229 LENGTH 1/8	4
5209	_4N7 250V 5%CAP T&R RAD .2"FLM	2	4815	1/4W 12R 5% T&R RES	2	8482	3/8 1D FLAT WASHER	4
6451	_4N7 250V 20%CAP BLK "Y" 10MM AC	1	6134	1/4W 47R 5%MINI T&R RES	1	8818	3/4 OD X 3/8 ID X .080 THICK WASHER	8
5271	_5N6 100V 5%CAP T&R RAD .2"FLM	1	2018	1/8W 75R 2%FLAME PROOF T&R RES	3	8489	1/4-20 SPLIT WASHER ZINC	4
5204	_10N 100V 10%CAP T&R RAD .2"FLM	3	2019	1/8W 100R0 1%FLAME PROOF T&R RES	3	3522	DPDT PUSH SW PCMT V MINI SNAP-	2
5210	_22N 100V 10%CAP T&R RAD .2"FLM	1	4921	1/4W 100R 5% .2"U T&R RES	1	3585	DPDT ROKR SW QUIK 250" AC/PWR IEC65	1
6435	_22N 275V 20%CAP BLK 'X2' 15MM AC	1	4984	1/4W 150R 5%MINI T&R RES	1	3395	THERMO/BRKR-N/CLOSED OPEN@82C	1
5224	_47N 100V 10%CAP T&R RAD .2"FLM	4	4944	1/4W 220R 5% .2"U T&R RES	3	CH1255	EF500P 120VAC POWER TRANSFMR T&R	1
5226	_68N 100V 5%CAP T&R RAD .2"FLM	5	4977	1/4W 220R 5%MINI T&R RES	2			
5212	100N 63V 5%CAP T&R RAD .2"FLM	51	2024	1/8W 249R 2%FLAME PROOF T&R RES	2			
5228	100N 100V 5%CAP T&R RAD .2"FLM	1	4945	1/4W 270R 5% .2"U T&R RES	1			
5314	100N 50V 10%CAP T&R BEAD X7R	2	2025	1/8W 274R 1%FLAME PROOF T&R RES	1			
5229	150N 63V 10%CAP T&R RAD .2"FLM	2	4789	1/4W 324R0 0.1% *** T&R RES	1			
5230	180N 63V 5%CAP T&R RAD .2"FLM	4	2026	1/4W 332R0 1%FLAME PROOF T&R RES	2			
5231	220N 63V 10%CAP T&R RAD .2"FLM	1	4690	1/2W 442R 1% T&R RES	2			
5234	470N 63V 10%CAP T&R RAD .2"FLM	1	2028	1/8W 475R 1%FLAME PROOF T&R RES	2			
5266	680N 250V 20%CAP BLK 'X2' 30MM AC	1	4933	1/4W 470R 5% .2"U T&R RES	2			
5254	_1U 63V 20%CAP T&R 4X7MM .2"EL	1	4980	1/4W 470R 5%MINI T&R RES	2			
5255	_1U 63V 20%CAP T&R RAD .2"EL	2	4799	1/4W 562R 1% T&R RES	2			
5257	_2U2 63V 20%CAP T&R RAD .2"EL	2	5014	1/4W 562R0 0.1% *** T&R RES	2			
5949	_3U3 140V 20%CAP BLK RAD POLY FLM	3	4994	1/4W 590R 1% T&R RES	1			
5951	_3U3 340V 20%CAP BLK RAD POLY FLM	1	2030	1/8W 681R 1%FLAME PROOF T&R RES	4			
5258	_4U7 63V 20%CAP T&R 8X7MM .2"EL	5	4743	1/4W 681R0 0.1% *** T&R RES	2			

M1159.PCB_DATABASE_HISTORY			
MODEL(S):-	EF500P		
#	DATE	VER#	DESCRIPTION OF CHANGE
1	AUG 22 2001	2.00	1st RUN CHANGES FOR VER.2.00
2	D		SEE ATTACHED NOTES ON P.C.B. DATA BASE.
3	SEPT 18 2001	2.00	CHANGE R28 FROM 10K TO 47K AND R34 FROM 33K TO 47K
4	SEPT 20 2001	2.10	PC#6433 R39 6R2 TO 2R2
5	OCT 22 2001	3.00	REPAIR CHASSIS GROUND FOR CSA STANDARD 4mm CLEARANCE.
6			ADD COPPER POURS UNDER ALL OUTPUT DEVICES.
7	NOV 06 2001	3.10	PC#6464 R37 75R TO 150R PC#6469 R130 4K7 TO 2K
8	NOV 29 2001	4.00	MOVED TRACES UNDER 1/4 JACKS #3921
9	D		MOVE R24, ADD D21 AND C144, R27 FROM 47R TO 100R.
10	MAR27/2002	V4.10	CHANGE R208 3K TO JUMPER, R204 3K TO 47K, R206 1K TO 220R, C140 1N5 TO 2N2 AND C91 FROM 680P TO 100N.
11	D		
12	D		
13	D		

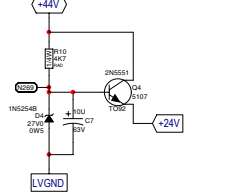
HORN AMP



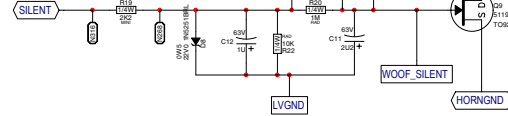
WOOFER AMP



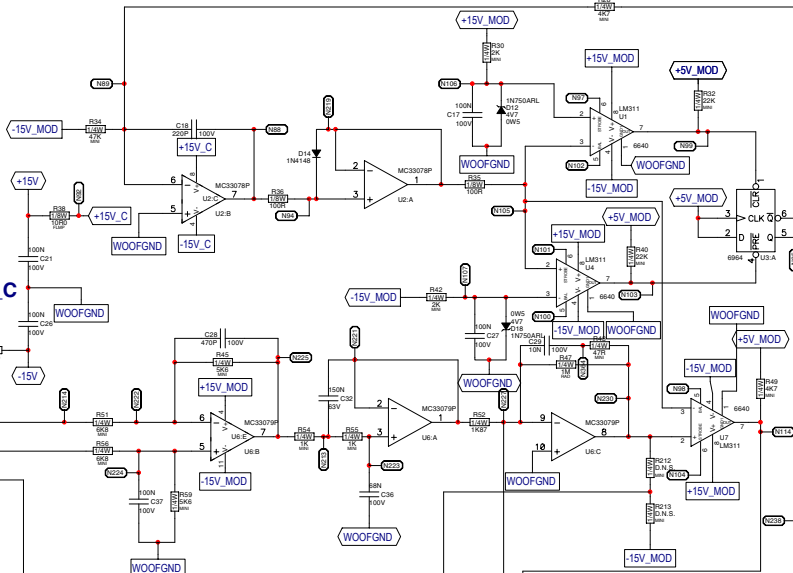
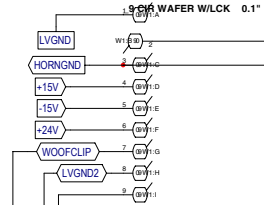
PHANTOM SUPPLY



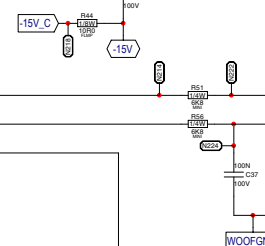
SILENT ON/OFF



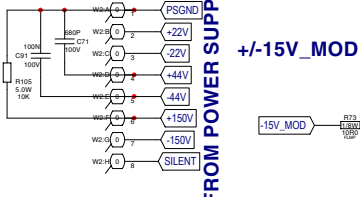
FROM INPUT PCB



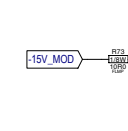
+/-15V_C



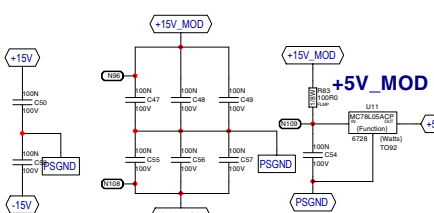
FROM POWER SUPPLY



+/-15V_MOD

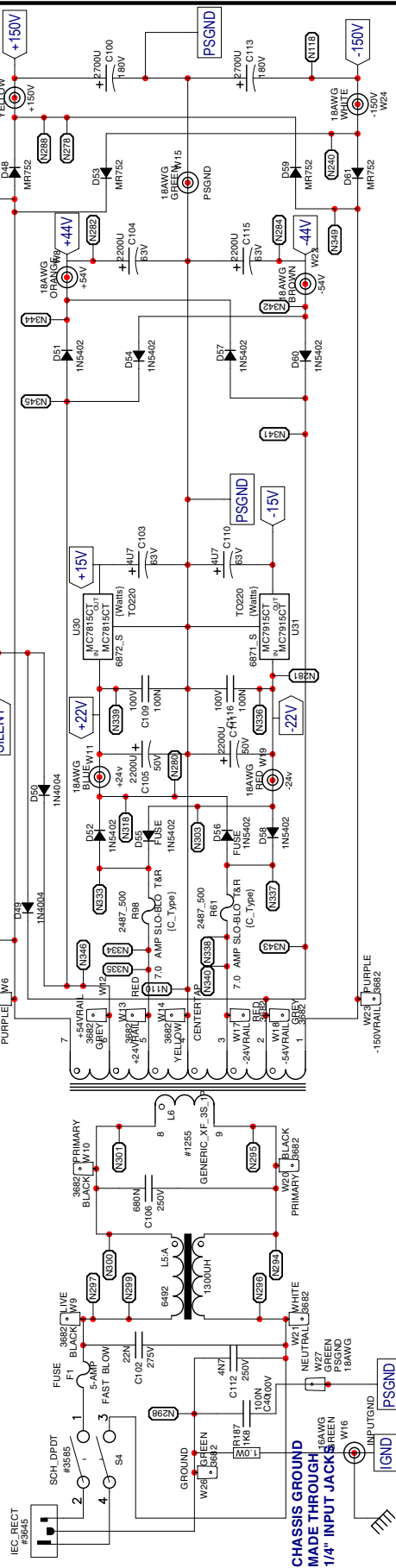


+5V_MOD



POWER SUPPLY

TO POWER AMP PCB

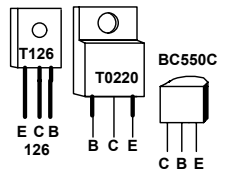


IC: RECT
#8585

CHASSIS GROUND
MADE THROUGH
1/4" INPUT JACKS

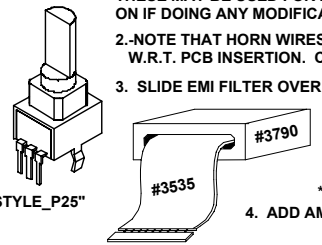
M1159				
MODEL(S):-		EF500P		
#	DATE	VER#	DESCRIPTION OF CHANGE	
1	AUG 22 2001	2.00	1st RUN CHANGES FOR VER.2.00	
2	D	V	SEE ATTACHED NOTES ON DATA BASE.	
3	SEPT 18 2001	2.10	CHANGE R28 FROM 10K TO 4K7 AND R34 FROM 33K TO 47K	
4	SEPT 20 2001	3.00	PC#6453 R39 R92 TO 2R2	
5	OCT 22 2001	3.00	REPOUR CHASSIS GROUND FOR CSA STANDARD 4mm CLEARANCE.	
6	D	V	ADD COPPER POIRS UNDER ALL OUTPUT DEVICES.	
7	NOV 06 2001	3.10	PC#6464 R37 75R TO 150R PC#6469 R130 4K7 TO 2K	
8	NOV 29 2001	4.00	MOVED TRACES UNDER 1/4" JACKS #3921	
9	D	&V4.10	MOVE R24, ADD D21 AND C144, R27 FROM 47R TO 100R.	
10	MAR/27/2002	V4.10	CHANGE R208 3K TO JUMPER, R204 3K TO	
11	D	V	47K, R206 1K TO 220R, C140 1N5 TO 2N2	
12	D	V	AND C91 FROM 680P TO 100N.	
13	D	V	-INVERT BOTH AMP OUTPUT WIRE COLORS-INVERT BOX	
14	APR 1, 2002	4.20	PC#6513 R130 2K TO 1K R123 1K TO 470R	
15	APR 11, 2002	5.00	UPDATE TABS PC#6523 REMOVE COPPER UNDER XFMR	

M1159				
MODEL(S):-		EF500P		
REF	FUNCTION	PART#	KNOB	(NEW)
P1	MAIN GAIN	4537	K	JUNE 5th 2001
P2	MIC GAIN	4566	K	JUNE 5th 2001
P3	BASS TONE	4566	K	JUNE 5th 2001
P4	LINE GAIN	4566	K	JUNE 5th 2001
P5	HORN TONE	4537	K	JUNE 5th 2001
R	F	P	K	N
R	F	P	K	N
R	F	P	K	N
R	F	P	K	N
R	F	P	K	N
R	F	P	K	N

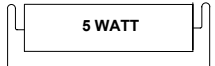


PRODUCTION NOTES

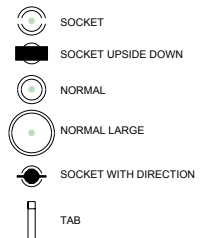
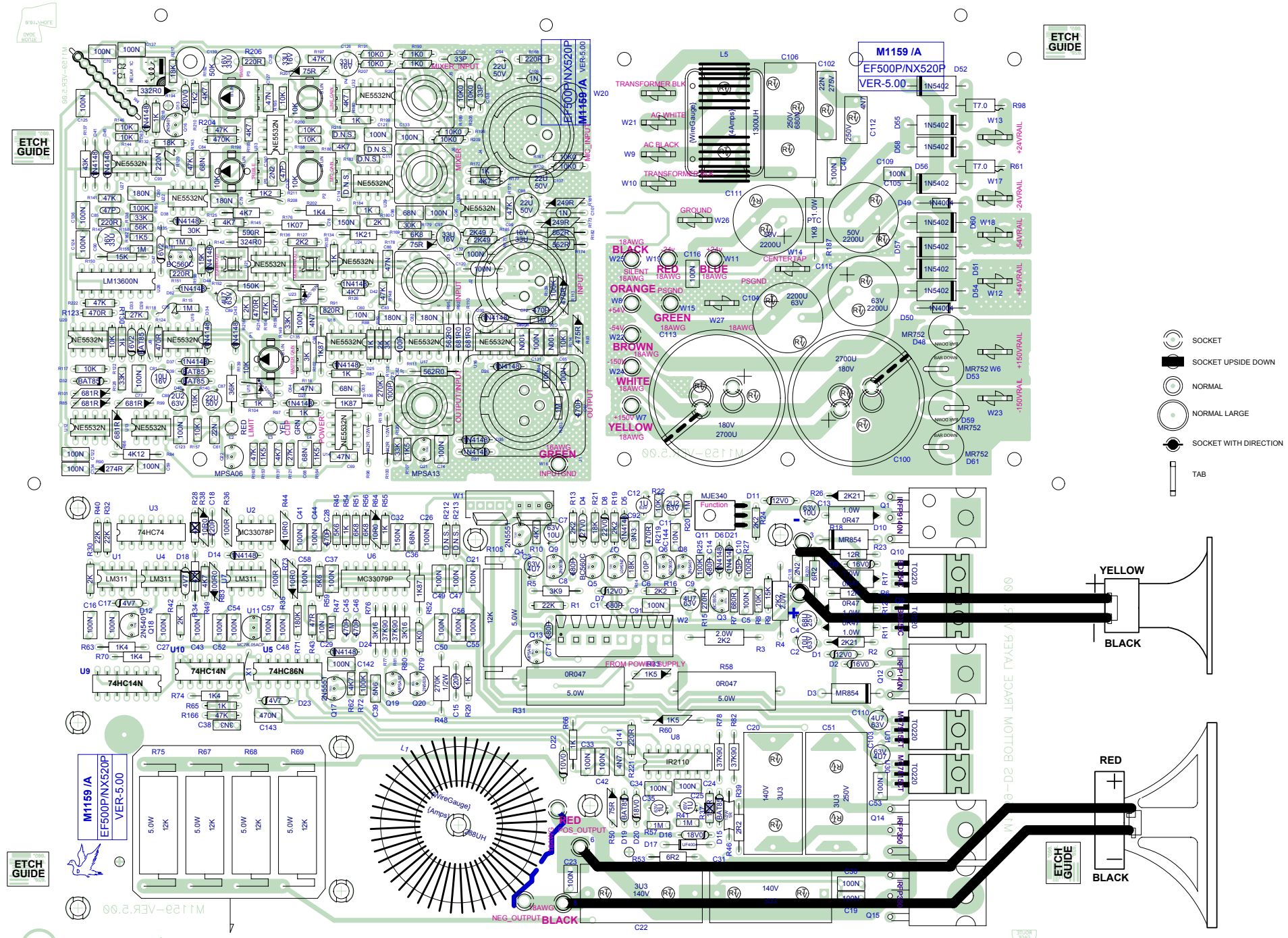
- NOTE THAT THER IS SEVERAL LINES ON THE DSBOTMASK LAYER. THESE MAY BE USED FOR MARCONI TEST POINTS SO HAVE THIS LAYER ON IF DOING ANY MODIFICATIONS.
- NOTE THAT HORN WIRES FOR NX520P AND EF500P ARE OPPOSITE IN COLOR W.R.T. PCB INSERTION. CHECK PROPER LAYOUT FOR CORRECT COLORS
- SLIDE EMI FILTER OVER RIBBON BEFORE INSERTING INTO P.C.B.
- ADD AMPLE RTV UNDER ENTIRE BASE OF OUTPUT COIL L1
- LEADS FOR 5 WATT RESISTORS MUST BE BENT ON THE MACHINE LEAD LOOP MUST NOT BE ABOVE TOP OF RESISTOR



*****IMPORTANT*****
4. ADD AMPLE RTV UNDER ENTIRE BASE OF OUTPUT COIL L1



5 WATT



SEE NOTE 5

ETCH GUIDE

ETCH GUIDE

ETCH GUIDE

We have experienced some failures with the short pilot runs of 520P and EF500P due to an incorrectly mounted resistor on the power board. There are only about a dozen of each of these in each of our market territories. These failures at first sight will seem somewhat intimidating due to the blackening soot which is produced when the resistor arcs out to the printed high voltage rails under the resistor designated R60. The damage looks far worse than it really is and is generally repairable by anyone with basic electronics and soldering skills.

The greatest difficulty with servicing class "D" amplifiers is that most service people have never serviced one before. And, like all things new, they don't like being in unfamiliar water. When you have done a couple of these kinds of amps, you will realize that they are probably easier to repair than their linear counterparts. But there are two dramatic differences to be observed in testing this class of amp. They are:

- 1) You cannot soft start this type of amplifier as it has an error amplifier, which will deny start up at low voltage.
- 2) You must have a load connected to the output upon startup. The amp sends a test pulse upon startup which must be registered in the feedback loop before it will activate the driver chip. If there is no load there is no current in the output, if there is no current, there is no voltage and consequently no feedback pulse.

The good news is that this class of amp will generally not cook off if you failed to repair it and then try to fire it up. It usually just sits there dumbfounded waiting for you to find the missing faulty bits.

The process for repair of units suffering from an R60 arc over is as follows.

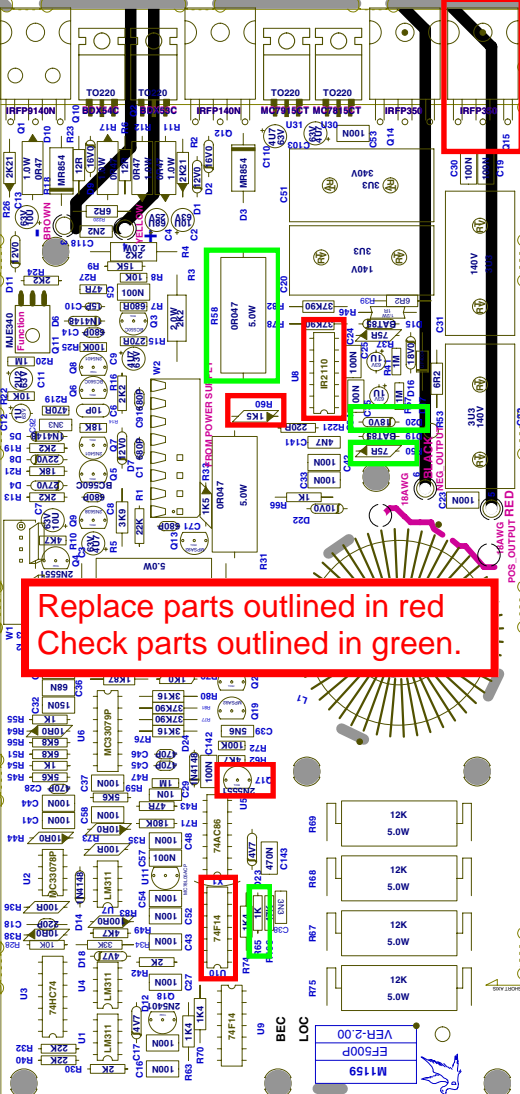
- A) Remove the remains of R60 and clean the soot from the board. Please remember this is a double-sided circuit board with thru plated component holes. Do not use excess force to remove the component leads from their solder holes. They will come out easy enough when you have enough heat on the joint.
- B) Replace the following components : 1) Q15 , IRFP350 2) Q17 , 2N5551 3) U10 , 74HC14N 4) U8 , IR2110 And finally, R60 , 1K5 , which should be installed about ¼" above the board so as not to arc out to the high voltage traces again.
- C) Measure the following parts; just to be sure we don't have any stragglers. 1) R58, .47ohms 2) R50 , 75R 3) R65 , 1K and 4) D20 , 18 volt zener.
- D) Yorkville Part #'s (Q15 = 6914) (Q17 = 5107) (U10 = 6603) (U8 = 6887) (R60 = 2034)

When all the bits have been replaced and the other parts measured, you are ready to fire it up.

Do not forget the startup rules mentioned above and you should have a 95% chance of a first shot success on the job.

Address any further questions to: Guy Beresford (gberesford@yorkville.com) or 905-837-8481 extension 236.

Replace parts outlined in red
Check parts outlined in green.

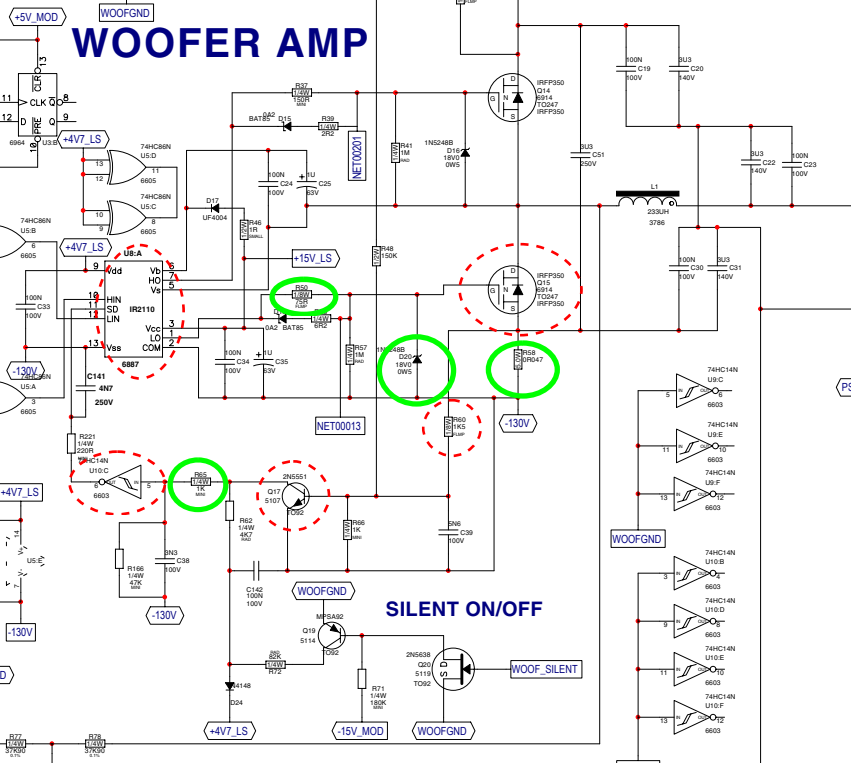


M1159
EF50P
VER-2.00



WOOFERND

WOOFER AMP



+5V_MOD

CLK

Q13

Q12

Q11

Q10

Q9

Q8

Q7

Q6

Q5

Q4

Q3

Q2

Q1

Q0

Q-1

Q-2

Q-3

Q-4

Q-5

Q-6

Q-7

Q-8

Q-9

Q-10

Q-11

Q-12

Q-13

Q-14

Q-15

74HC86N

U5:D

6805

74HC86N

U5:C

6805

74HC86N

U5:B

6805

74HC14N

U10:C

6603

74HC14N

U10:D

6603

74HC14N

U10:E

6603

74HC14N

U10:F

6603

74HC14N

U10:B

6603

74HC14N

U10:D

6603

74HC14N

U10:E

6603

74HC14N

U10:F

6603

74HC14N

U10:G

6603

74HC14N

U10:H

6603

74HC14N

U10:I

6603

74HC14N

U10:J

6603

74HC14N

U10:K

6603

74HC14N

U10:L

6603

74HC14N

U10:M

6603

74HC14N

U10:N

6603

74HC14N

U10:O

6603

74HC14N

U10:P

6603

74HC14N

U10:Q

6603

74HC14N

U10:R

6603

74HC14N

U10:S

6603

74HC14N

U10:T

6603

74HC14N

U10:U

6603

74HC14N

U10:V

6603

74HC14N

U10:W

6603

74HC14N

U10:X

6603

74HC14N

U10:Y

6603

74HC14N

U10:Z

6603

74HC14N

U10:AA

6603

74HC14N

U10:AB

6603

74HC14N

U10:AC

6603

74HC14N

U10:AD

6603

74HC14N

U10:AE

6603

74HC14N

U10:AF

6603

74HC14N

U10:AG

6603

74HC14N

U10:AH

6603

74HC14N

U10:AI

6603

74HC14N

U10:AJ

6603

74HC14N

U10:AK

6603

74HC14N

U10:AL

6603

74HC14N

U10:AM

6603

74HC14N

U10:AN

6603

74HC14N

U10:AQ

6603

74HC14N

U10:AR

6603

74HC14N

U10:AS

6603

74HC14N

U10:AT

6603

74HC14N

U10:AU

6603

74HC14N

U10:AV

6603

74HC14N

U10:AW

6603

74HC14N

U10:AX

6603

74HC14N

U10:AY

6603

74HC14N

U10:AZ

6603

74HC14N

U10:BA

6603

74HC14N

U10:BB

6603

74HC14N

U10:BC

6603

74HC14N

U10:BD

6603

74HC14N

U10:BE

6603

74HC14N

U10:BF

6603

74HC14N

U10:BG

6603

74HC14N

U10:BH

6603

74HC14N

U10:BI

6603

74HC14N

U10:BJ

6603

74HC14N

U10:BK

6603

74HC14N

U10:BL

6603

74HC14N

U10:BM

6603

74HC14N

U10:BN

6603

74HC14N

U10:BO

6603

74HC14N

U10:BP

6603

74HC14N

U10:BQ

6603

74HC14N

U10:BR

6603

74HC14N

U10:BS

6603

74HC14N

U10:BT

6603