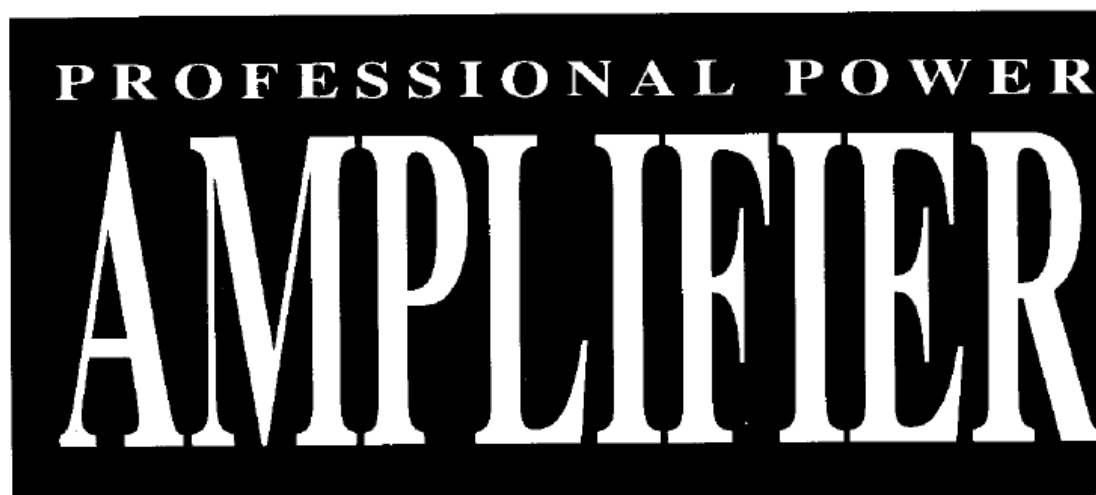


OPERATING MANUAL



MA-320/420/620/920

interM by **INKEL**

Unpacking and Installation

Although it is complicated to install not difficult to operate your stereo amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them.

Please take a great care in unpacking your amplifier and do not discard the carton and packing materials. They may be needed when moving your set required if it ever becomes necessary to return your set for service. Never place the unit near radiators, in front of heating vents, in excessive humid or dusty location to avoid early damage and for your years of quality use.

Connect your complementary components as illustrated in the following page.

Features

- **HIGH RELIABILITY**

To assure absolute long-term reliability, the output section of each channel incorporates Multiple Emitter Power Transistor.

- **SMALL SIZE AND LOWER WEIGHT**

Superior engineering has enabled valuable savings in rack space resulting in improved portability and reduced transport cost.

- **SPEAKER PROTECTION**

Crowbar protection operates independently on each channel in the event of a DC fault condition at the amplifier output, then the protection relay cuts off the primary AC line.

- **ENERGY LIMITERS**

Voltage-current type energy limiters are incorporated for overload protection of the amplifier. Due to the large safe operating area of the output stage, the limiter does not actuate until driving 1.4ohm load at full power.

- **SURGE CURRENT PROTECTION**

These amplifiers provided with output fuses to protect the loudspeakers from surge current.

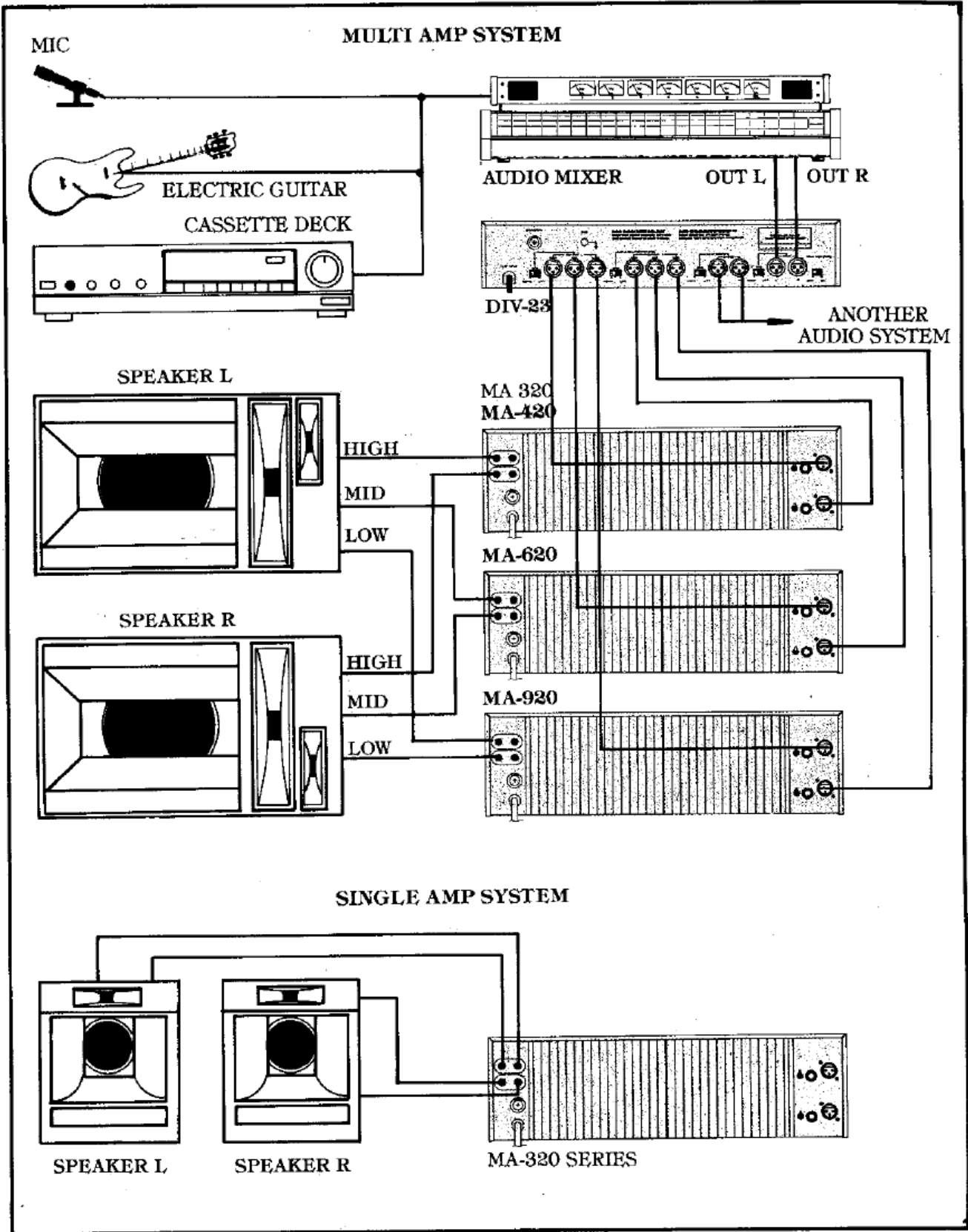
- **BRIDGED MONO FUNCTION**

For more powerful sound, these amplifiers can be used for monoral sound by selecting the mode selector to bridged function. Please refer to BRIDGED MONO operation.

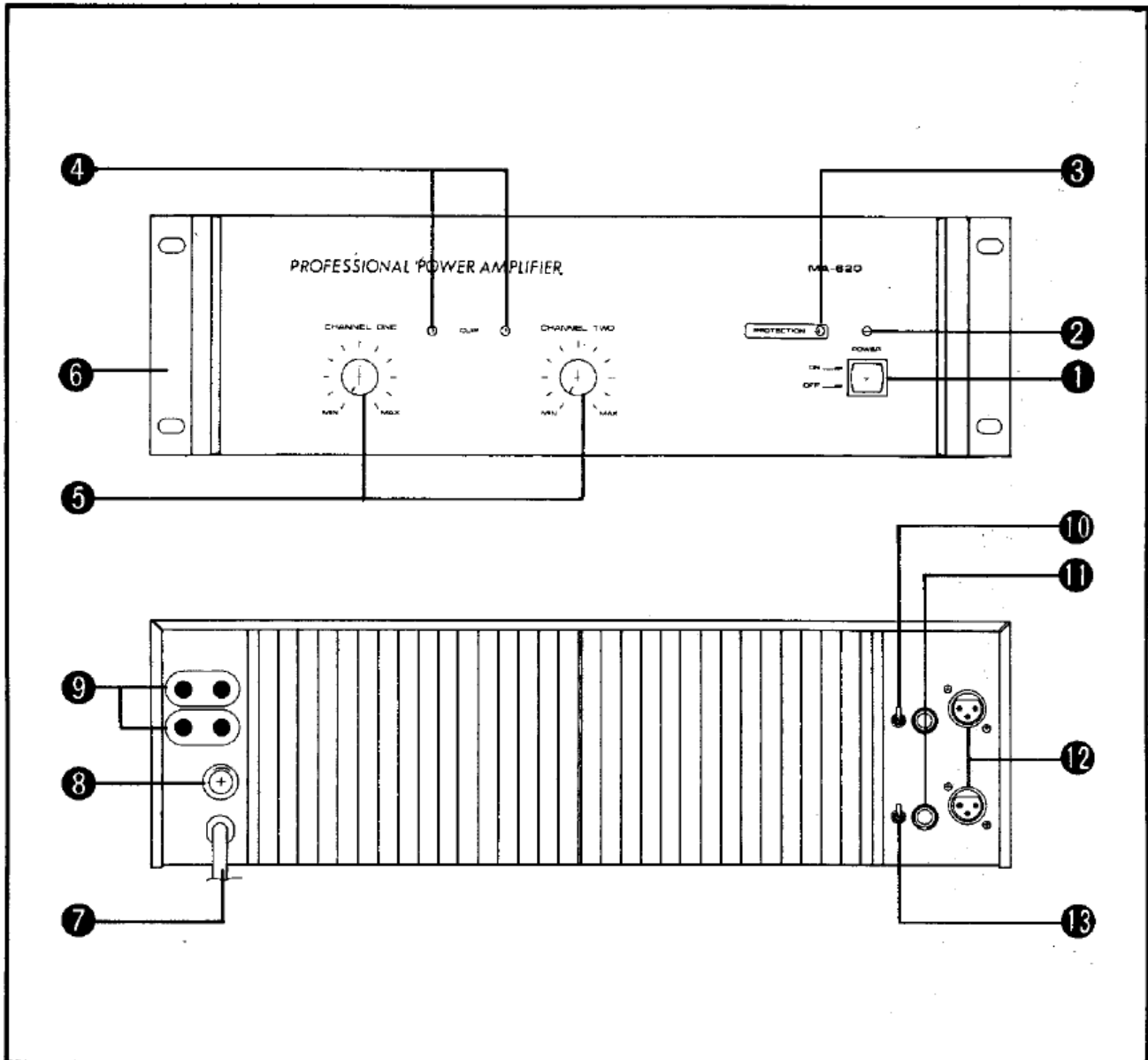
- **SOFT-START SYSTEM (MA-920 ONLY)**

To prevent over current when turn on the amplifier, soft-start circuit is provided on primary power lines.

Connections



Front Panel & Rear Panel Controls



1. POWER SWITCH

To turn amplifier ON or OFF, press the upper or lower of this switch button.

2. POWER INDICATING LED

The LED illuminates when the power is "ON"

3. PROTECTION INDICATOR

Protection LED indicator illuminate red color when the amplifier outputs have the state of fault in the circuit. Normally, protection LED indicator illuminate green color.

4. CLIP INDICATORS

Clip indicator on each channel illuminates when distortion reaches or exceeds approximately 1%, indicating that the amplifier is being driven by excessively high inputs. Then you had better properly adjust level controls.

5. LEVEL CONTROLS

Separate level controls are provided for channel one and channel two input. Clockwise rotation of the controls increases level.

6. HANDLES

You can handle this amplifier easily by using these handles.

7. AC POWER CORD

Plug this AC input cord into AC outlet.

8. FUSE HOLDER

This fuse holder contains AC primary fuse. When fuse is blown out, it should be replaced with the same type just like following table. If it continues to blow, stop replacing fuse and refer servicing to qualified personnel.

Model \ Condition	AC 110V/120V	AC 220V/240V
MA-320	NM 6A/250V	NM 3A/250V
MA-420	TS 8A/250V	TS 4A/250V
MA-620	TS 10A/250V	TS 6A/250V
MA-920	TS 15A/250V	TS 8A/250V

9. OUTPUT TERMINALS

Output terminals are dual five-way binding posts, which are identified as to polarity with a red and a black terminals. We suggest the use of dual banana plugs as a convenient and reliable method of hook-up. Do not parallel the two outputs of each channel by connecting them (together, or parallel them) with any other amplifier output.

10. EARTH LINK SWITCH

This toggle switch provides for separation of "safety" earth and "signal" earth to prevent from hum loops.

11, 12. INPUT CONNECTOR

Input connectors are provided both balanced XLRs and unbalanced phone jacks. Phone jacks take priorities of XLR jacks.

13. MODE SELECTOR

Bridged mono operation is easily by this recessed toggle switch. The input is applied channel one only, and the corresponding front panel gain control is used to set the level. Please note Bridged Mono Operation.

Bridged Mono Operation

1. Set Mode Selector to MONO.
2. Connect a mono input signal to channel one input jack.
3. Connect the speaker load to the two red terminals of each channels. Please confirm the (+) terminal of speaker to channel one and the (-) terminal to channel two.
4. Do not use the black terminals of each channel.
5. Please notice to connect the speaker impedance 8 ohm or above.
6. And adjust the channel one volume not to illuminate the clip LEDs of front panel.

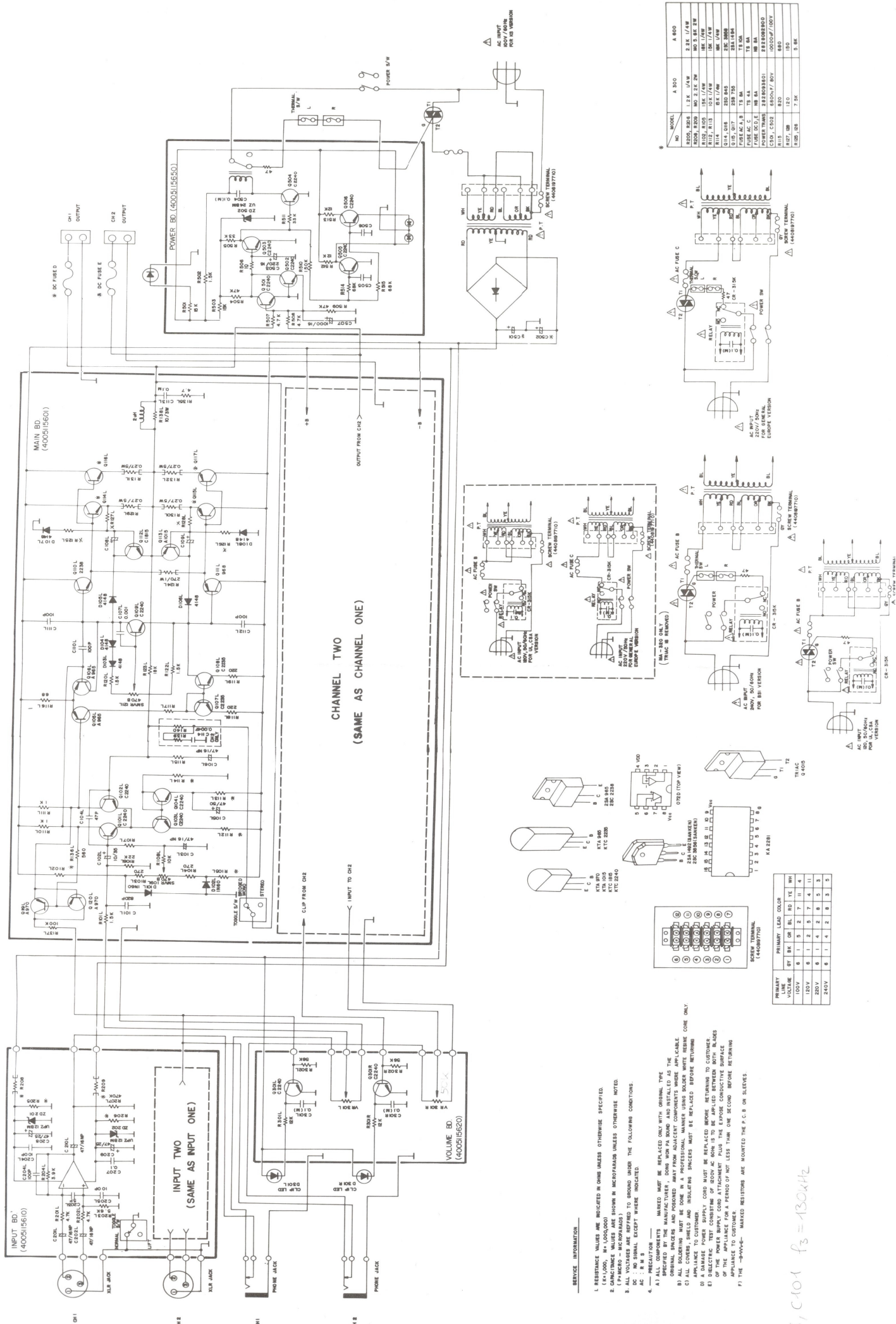
5

Specifications

MODEL	MA-320	MA-420	MA-620	MA-920
Rated Output Power at 8 ohm, 1 KHz (Bridged Mono) at 8 ohm, 1 KHz (Stereo per CH) at 4 ohm, 1 KHz	200W 72W 100W	300W 100W 150W	600W 200W 300W	800W 300W 450W
Total Harmonic Distortion	0.01%			
Frequency Response (-0.5 dB)	20 Hz to 20 KHz			
Signal to Noise Ratio	115 dB			
Input Sensitivity	0.775V			
Input Impedance	15K ohm			
Channel Separation at 1 KHz	88 dB			
Power Requirement (Option)	AC110V/120V/220V/240V 50/60 Hz			
Power Consumption	270W	420W	830W	1220W
Dimensions	483(W) × 89(H) × 385(D) mm		483(W) × 133(H) × 385(D) mm	
Weight (Net)	11 Kg	12 Kg	17.5 Kg	21.5 Kg

NOTE: Specifications and the design subject to change without notice for improvements.

MA-320/420/620 Schematic Diagram



SERVICE INFORMATION

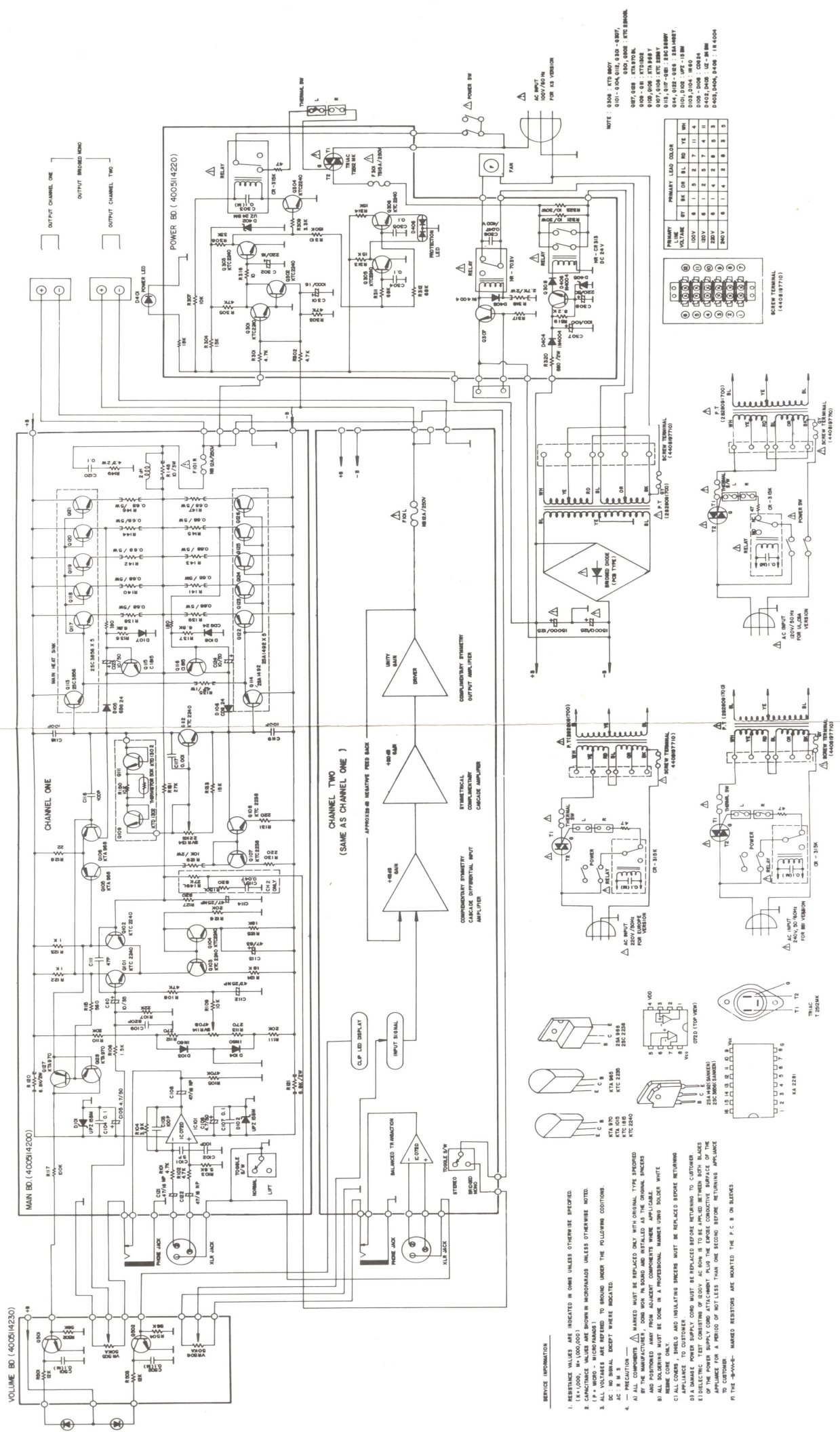
- RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED.
- CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISE NOTED.
- ALL VOLTAGES ARE REFERRED TO GROUND UNLESS OTHERWISE SPECIFIED.
- PRECAUTION — MARKED MUST BE REPLACED WITH ORIGINAL TYPE.
- ALL COMPONENTS MUST BE REPLACED WITH ORIGINAL TYPE UNLESS OTHERWISE SPECIFIED.
- ALL SOLDERING MUST BE DONE IN A PROFESSIONAL MANNER USING SOLDER CORE ONLY.
- ALL COVERS, SHIELD AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING.
- IF A DAMAGE POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING TO CUSTOMER.
- THE POWER SUPPLY CORD ATTACHMENT PLUS THE EXPOSED CONDUCTIVE SURFACE MUST BE TESTED FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURNING APPLIANCE TO CUSTOMER UNLESS OTHERWISE SPECIFIED.
- THE 3-WAY-E- MARKED RESISTORS ARE MOUNTED THE P.C.B. ON SLEEVES.

PRIMARY VOLTAGE	LINE	LEAD	COLOR
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4
250V	8	1	4

R101, C101 $f_3 = 130\text{kHz}$

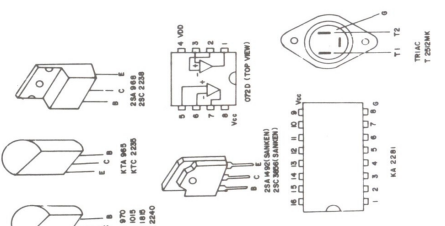
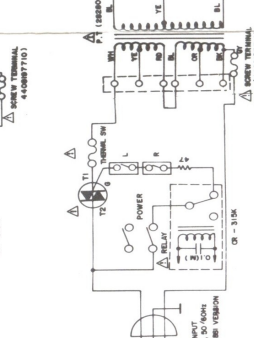
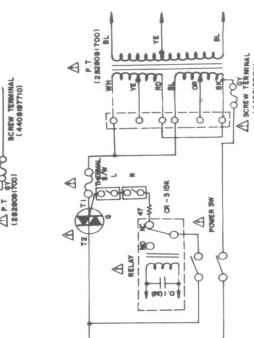
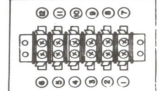
NO.	MODEL	A 300	A 300
2505	R25	1.2K / 1W	2.2K / 1/2W
2506	R26	10K / 1/2W	10K / 1/2W
2507	R27	10K / 1/2W	10K / 1/2W
2508	R28	10K / 1/2W	10K / 1/2W
2509	R29	10K / 1/2W	10K / 1/2W
2510	R30	10K / 1/2W	10K / 1/2W
2511	R31	10K / 1/2W	10K / 1/2W
2512	R32	10K / 1/2W	10K / 1/2W
2513	R33	10K / 1/2W	10K / 1/2W
2514	R34	10K / 1/2W	10K / 1/2W
2515	R35	10K / 1/2W	10K / 1/2W
2516	R36	10K / 1/2W	10K / 1/2W
2517	R37	10K / 1/2W	10K / 1/2W
2518	R38	10K / 1/2W	10K / 1/2W
2519	R39	10K / 1/2W	10K / 1/2W
2520	R40	10K / 1/2W	10K / 1/2W
2521	R41	10K / 1/2W	10K / 1/2W
2522	R42	10K / 1/2W	10K / 1/2W
2523	R43	10K / 1/2W	10K / 1/2W
2524	R44	10K / 1/2W	10K / 1/2W
2525	R45	10K / 1/2W	10K / 1/2W
2526	R46	10K / 1/2W	10K / 1/2W
2527	R47	10K / 1/2W	10K / 1/2W
2528	R48	10K / 1/2W	10K / 1/2W
2529	R49	10K / 1/2W	10K / 1/2W
2530	R50	10K / 1/2W	10K / 1/2W
2531	R51	10K / 1/2W	10K / 1/2W
2532	R52	10K / 1/2W	10K / 1/2W
2533	R53	10K / 1/2W	10K / 1/2W
2534	R54	10K / 1/2W	10K / 1/2W
2535	R55	10K / 1/2W	10K / 1/2W
2536	R56	10K / 1/2W	10K / 1/2W
2537	R57	10K / 1/2W	10K / 1/2W
2538	R58	10K / 1/2W	10K / 1/2W
2539	R59	10K / 1/2W	10K / 1/2W
2540	R60	10K / 1/2W	10K / 1/2W
2541	R61	10K / 1/2W	10K / 1/2W
2542	R62	10K / 1/2W	10K / 1/2W
2543	R63	10K / 1/2W	10K / 1/2W
2544	R64	10K / 1/2W	10K / 1/2W
2545	R65	10K / 1/2W	10K / 1/2W
2546	R66	10K / 1/2W	10K / 1/2W
2547	R67	10K / 1/2W	10K / 1/2W
2548	R68	10K / 1/2W	10K / 1/2W
2549	R69	10K / 1/2W	10K / 1/2W
2550	R70	10K / 1/2W	10K / 1/2W
2551	R71	10K / 1/2W	10K / 1/2W
2552	R72	10K / 1/2W	10K / 1/2W
2553	R73	10K / 1/2W	10K / 1/2W
2554	R74	10K / 1/2W	10K / 1/2W
2555	R75	10K / 1/2W	10K / 1/2W
2556	R76	10K / 1/2W	10K / 1/2W
2557	R77	10K / 1/2W	10K / 1/2W
2558	R78	10K / 1/2W	10K / 1/2W
2559	R79	10K / 1/2W	10K / 1/2W
2560	R80	10K / 1/2W	10K / 1/2W
2561	R81	10K / 1/2W	10K / 1/2W
2562	R82	10K / 1/2W	10K / 1/2W
2563	R83	10K / 1/2W	10K / 1/2W
2564	R84	10K / 1/2W	10K / 1/2W
2565	R85	10K / 1/2W	10K / 1/2W
2566	R86	10K / 1/2W	10K / 1/2W
2567	R87	10K / 1/2W	10K / 1/2W
2568	R88	10K / 1/2W	10K / 1/2W
2569	R89	10K / 1/2W	10K / 1/2W
2570	R90	10K / 1/2W	10K / 1/2W
2571	R91	10K / 1/2W	10K / 1/2W
2572	R92	10K / 1/2W	10K / 1/2W
2573	R93	10K / 1/2W	10K / 1/2W
2574	R94	10K / 1/2W	10K / 1/2W
2575	R95	10K / 1/2W	10K / 1/2W
2576	R96	10K / 1/2W	10K / 1/2W
2577	R97	10K / 1/2W	10K / 1/2W
2578	R98	10K / 1/2W	10K / 1/2W
2579	R99	10K / 1/2W	10K / 1/2W
2580	R100	10K / 1/2W	10K / 1/2W

MA-920 Schematic Diagram



NOTE: 0.008 - KTD 807Y
 0.01 - 0.04 016, 030 - 0.017,
 0.07, 0.22 - KTD 703K, - KTD 808K,
 0.09 - 0.8 - KTD 802Z
 0.05 - 0.05 - KTD 808Y
 0.15, 0.17 - 0.8 - KTD 808Y
 0.04, 0.22 - 0.8 - 2.2A - 0.017,
 0.15, 0.05 - UPE - 1.0 BM
 0.05 - 0.05 - 0.05 F4
 0.05 - 0.05 - 0.2 - 1.0 BM
 0.05, 0.05, 0.10 - 1.0 0.04

PRIMARY LINE VOLTAGE	BY	BL	RD	YE	WH
100V	1	2	7	11	14
220V	1	2	7	4	11
230V	1	4	2	5	3
200V	1	4	2	8	3



- SERVICE INFORMATION**
- RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED. (K=1,000; M=1,000,000)
 - CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISE NOTED.
 - ALL WIRING IS REFERRED TO GROUND UNLESS OTHERWISE NOTED.
 - DC: NO SIGNAL, EXCEPT WHERE INDICATED.
 - PRECAUTIONS:
 - WARRANTY RETURNS MUST BE REPLACED ONLY WITH ORIGINAL TYPE SPECIFIED BY THE MANUFACTURER, OR A NON-PATENTED TYPE INSTALLED AS THE ORIGINAL SPECIES AND POSITIONED AWAY FROM ADJACENT COMPONENTS WHERE APPLICABLE.
 - ALL SOLDERING MUST BE DONE IN A PROFESSIONAL MANNER USING SOLDER WHICH IS APPLICABLE TO CUSTOMER.
 - ALL COVERS, SHIELD AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING TO CUSTOMER.
 - A DAMAGED POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING TO CUSTOMER. THE POWER SUPPLY CORD ATTACHMENT PLUS THE EXPOSED CONDUCTIVE SURFACE OF THE APPLIANCE FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURNING APPLIANCE TO CUSTOMER.
 - THE "P" AND "N" MARKED RESISTORS ARE MOUNTED THE "P" C. B. OR "N" ON SLEEVES.