OPERATING MANUAL

PROFESSIONAL POWER

AMPLIFIER

MA-320/420/620/920

interM by INKEL

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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.

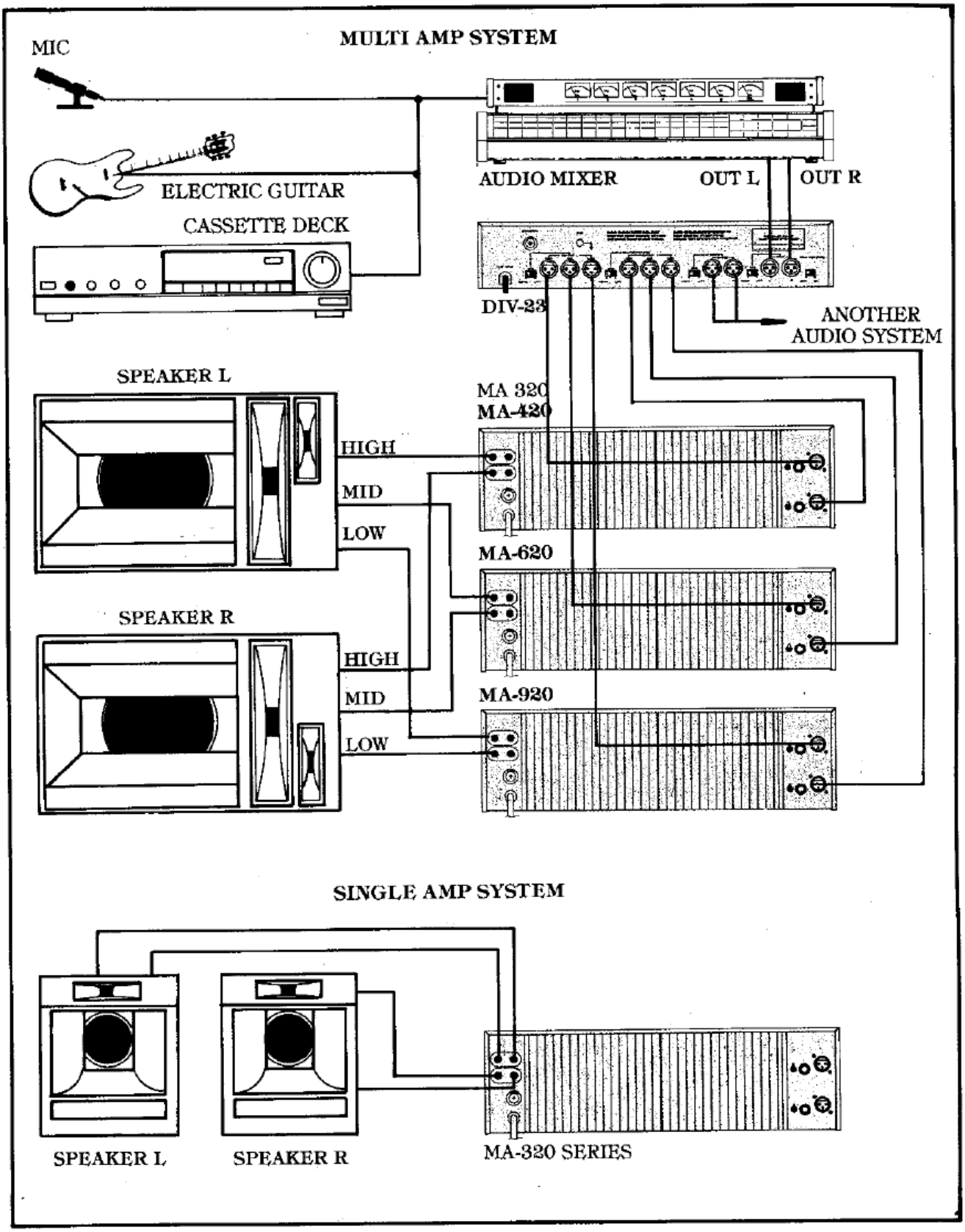
- ENERGY LIMITERS
  Voltage-current type energy limiters are incorporated for overload protection of the amplifier. Due to the large safe operating area of the output stage, the limiter does not actuate until driving 1.4ohm load at full power.

- SURGE CURRENT PROTECTION
  These amplifiers provided with output fuses to protect the loudspeakers from surge current.

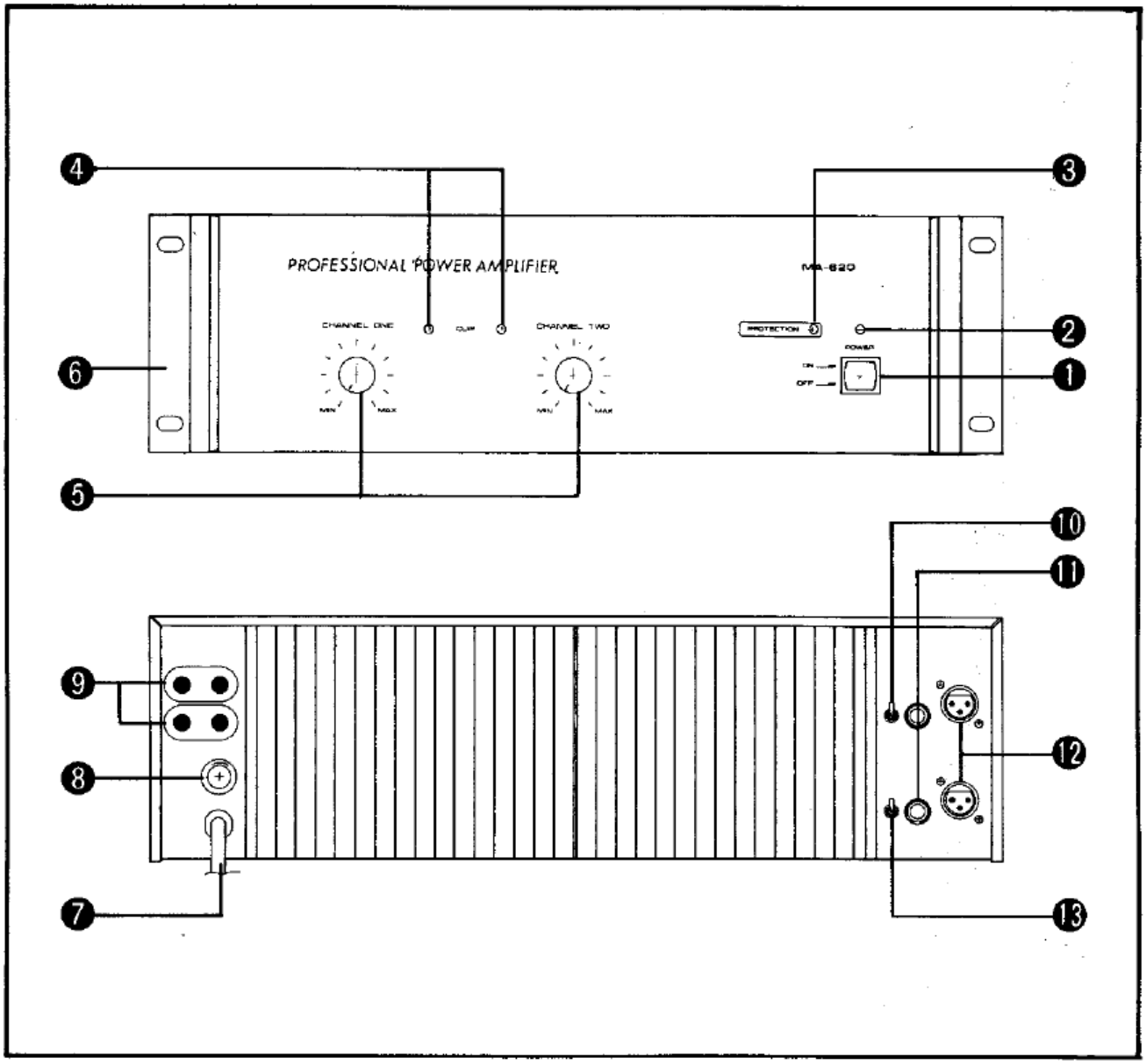
- BRIDGED MONO FUNCTION
  For more powerful sound, these amplifiers can be used for monoral sound by selecting the mode selector to bridged function. Please refer to BRIDGED MONO operation.

- 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.

Condition / Model	AC110V/120V	AC220V/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 priorites 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.

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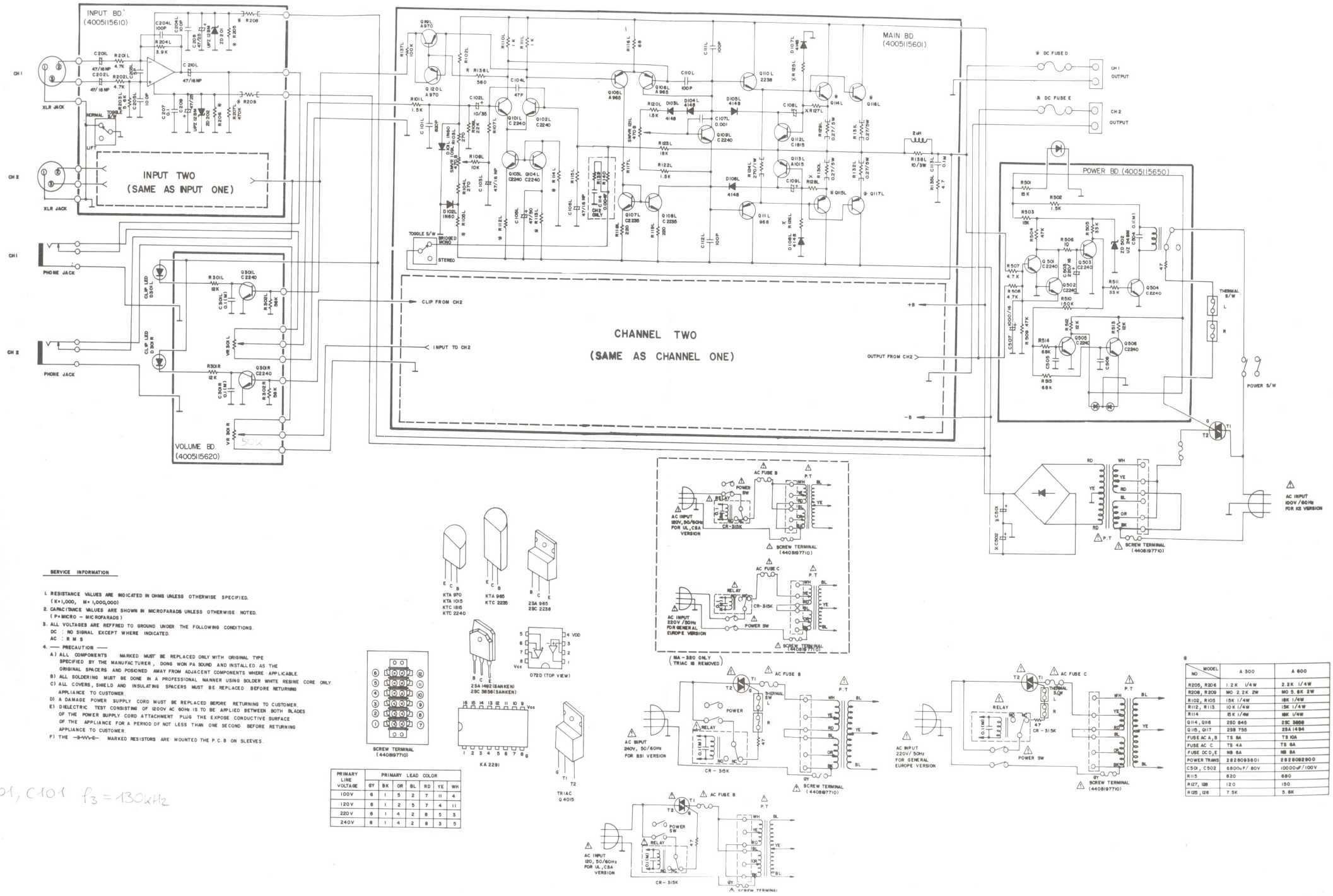
Specifications

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

1. RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED.
   (K=1,000, M=1,000,000)
2. CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISE NOTED.
   (P=MICRO – MICROFARADS)
3. ALL VOLTAGES ARE REFFRED TO GROUND UNDER THE FOLLOWING CONDITIONS.
   DC : NO SIGNAL EXCEPT WHERE INDICATED.
   AC : R M S
4. —— PRECAUTION ——
   A) ALL COMPONENTS MARKED MUST BE REPLACED ONLY WITH ORIGINAL TYPE SPECIFIED BY THE MANUFACTURER, DONG WON PA SOUND AND INSTALLED AS THE ORIGINAL SPACERS AND POSIONED AWAY FROM ADJACENT COMPONENTS WHERE APPLICABLE.
   B) ALL SOLDERING MUST BE DONE IN A PROFESSIONAL MANNER USING SOLDER WHITE RESINE CORE ONLY.
   C) ALL COVERS, SHIELD AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.
   D) A DAMAGE POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING TO CUSTOMER.
   E) DIELECTRIC TEST CONSISTING OF 1200V AC 60Hz IS TO BE APPLIED BETWEEN BOTH BLADES OF THE POWER SUPPLY CORD ATTACHMENT PLUG THE EXPOSE CONDUCTIVE SURFACE OF THE APPLIANCE FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURNING APPLIANCE TO CUSTOMER.
   F) THE —WWW— MARKED RESISTORS ARE MOUNTED THE P.C.B ON SLEEVES.

PRIMARY LINE VOLTAGE	PRIMARY LEAD COLOR						
	GY	BK	OR	BL	RD	YE	WH
100V	6	1	5	2	7	11	4
120V	6	1	2	5	7	4	11
220V	6	1	4	2	8	5	3
240V	6	1	4	2	8	3	5

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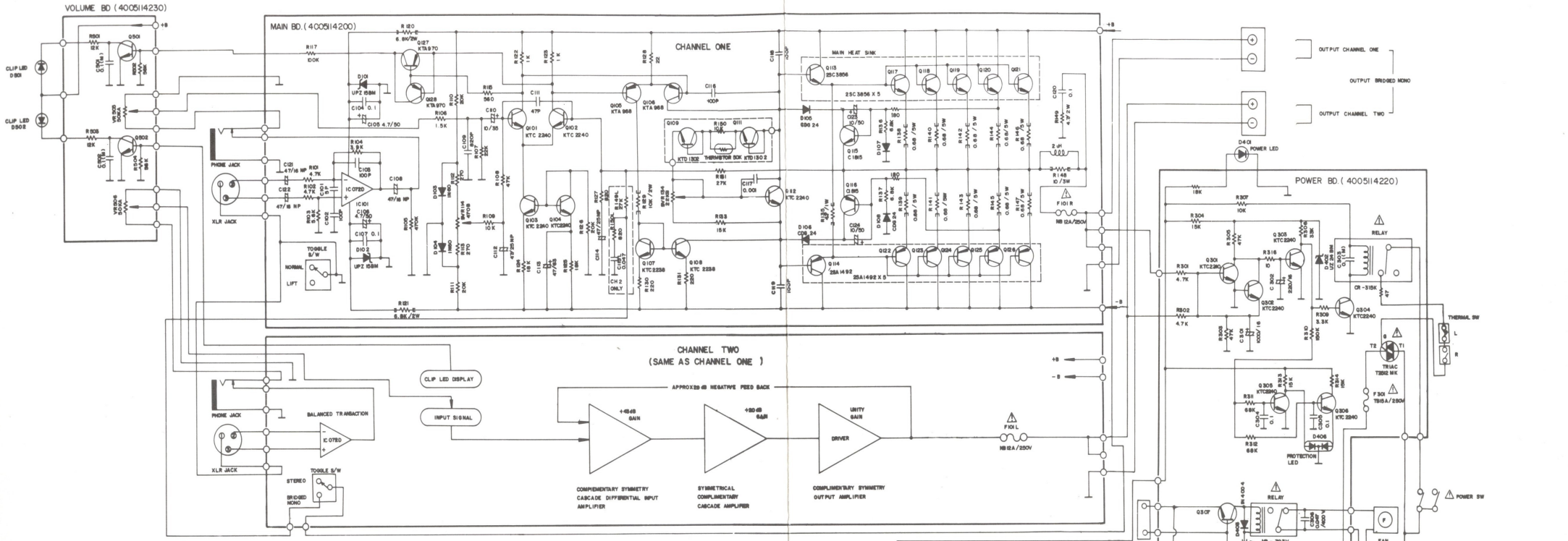
NO / MODEL	A 300	A 600
R205, R206	1.2K 1/4W	2.2K 1/4W
R208, R209	MO 2.2K 2W	MO 5.6K 2W
R102, R105	15K 1/4W	18K 1/4W
R112, R113	10K 1/4W	15K 1/4W
R114	15K 1/4W	18K 1/4W
Q114, Q116	2SD 845	2SC 3856
Q115, Q117	2SB 755	2SA 1494
FUSE AC A, B	T8 8A	T8 10A
FUSE AC C	T8 4A	T8 6A
FUSE DC D, E	MB 8A	MB 8A
POWER TRANS	2822093601	2822092900
C501, C502	6800uF/80V	10000uF/100V
R115	820	680
R127, 128	120	150
R125, 126	7.5K	5.6K

R101, C101 $f_3 = 130$ KHz

MA-920 Schematic Diagram



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   F) THE -S-W-E- MARKED RESISTORS ARE MOUNTED THE P.C. B ON SLEEVES.

KTA 970 KTA 1015 KTC 1815 KTC 2240

KTA 965 KTC 2235

2SA 968 2SC 2238

2SA1492(SANKEN) 2SC3856(SANKEN)

072D (TOP VIEW)

KA 2281

TRIAC T 2512MK

PRIMARY LINE VOLTAGE	PRIMARY LEAD COLOR					
	GY	BK	OR	BL	RD	YE	WH
100V	6	1	5	2	7	11	4
120V	6	1	2	5	7	4	11
220V	6	1	4	2	8	5	3
240V	6	1	4	2	8	3	5

NOTE : Q308 : KTD 880Y
Q101 - Q104, Q112, Q301 - Q307, Q501, Q502 : KTC 2240BL
Q127, Q128 : KTA 970 BL
Q106 - Q111 : KTD1302
Q105, Q109 : KTA 965 Y
Q107, Q108 : KTC 2238 Y
Q113, Q117 - Q121 : 2SC 3856Y
Q114, Q122 - Q126 : 2SA1492 Y.
D101, D102 : UPZ - 15 BM
D103, D104 : IN 60
D105 - D108 : CD624
D402, D405 : UZ - 24 BM
D403, D404, D406 : 1N 4004