

Quality. Uncompromised.

ROTEL®

PUBLIC ADDRESS AMPLIFIER WITH AM/FM TUNER

QA-100

INSTRUCTION MANUAL

WARNING
TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS APPLIANCE TO
RAIN OR MOISTURE

Write your SERIAL NUMBER here.

The number is located near the name
plate on the rear panel.

AUG. 11, 1986

PRECAUTIONS

To ensure maximum safety, please carefully follow the instructions below:

1. Check the power source

Plug the unit only into a power source whose voltage and frequency ratings match those given in the instruction manual.

2. Power cord

The unit is provided with a 3-core type a.c. line cord with a grounding wire. Insert the plug only into a 3-conductor outlet (containing grounding wire) of 120V/60Hz. Or if a 3-conductor outlet is not available, use an adaptor, connecting the grounding wire to a grounding screw on a wall, etc. Insert or unplug the a.c. line cord only after making certain the unit's power switch is turned off, to prevent shock noise from damaging the speakers.

3. Ventilation

To offset heat generated by the unit, it is necessary to provide ample ventilation around the unit. Avoid blocking or impeding the ventilation holes on the unit. To prevent unnecessary problems, install the unit on a place free from any vibrations, direct sunlight, humidity or dust circulation.

4. Do not open the cabinet

The unit has been completely factory adjusted. To avoid electric shock or harm to the human body or to the unit, never open the cabinet.

5. If the unit gets wet or foreign matter enters

In case the unit gets wet or any water or foreign matter gets into the cabinet, immediately disconnect the a.c. line cord, and consult your dealer or qualified electrician.

6. Instruction manual

Keep the instruction manual near the unit, and record the serial number (found on the rear panel) on the cover.

SWITCHES, CONTROLS AND OPERATION

(1) Power Button

Depress this button to turn on power. Pressing it a second time will turn off power.

(2) Power Indicator

Glow when the power is turned on, indicating that the unit is in operation.

(3) Microphone Jack (MIC 1)

An input terminal used to connect a high impedance microphone with standard type plug to the unit. On the rear panel of the unit are screw-type MIC 1 terminals. Since the MIC jack on the front panel takes priority over the rear MIC terminals, the MIC jack on the front panel should not be connected with a microphone plug when the MIC 1 terminals on the rear panel are in use.

(4) MIC 1, 2 Level Controls

These controls regulate the input levels from microphones connected to the respective MIC terminals. Rotate each knob clockwise to raise the input level, and counterclockwise to reduce it. Turning the knob

fully counterclockwise (to position "0") cuts all input from microphone.

(5) AUX Level Control

This knob regulates the level of input from any equipment connected to the AUX jack on the rear panel, such as chimes, tape deck, rhythm box, synthesizer, etc. Rotate the knob clockwise to raise the level and counterclockwise to reduce it. Turning the knob fully counterclockwise (to position "0") cuts all input from above equipment.

(6) PHONO/TUNER Level Control

This knob regulates the level of input from the tuner section of the unit, or connected record player. Rotate the knob clockwise to raise the level of input from the built-in tuner, and counterclockwise to raise the level of input from the record player. At midposition ("0"), input from either source is cut. This control operates on either tuner or record player, not both at once; signals cannot be mixed.

(7) MASTER Volume Control

This knob controls at one time the combined signals coming from MICs 1, 2, AUX, and PHONO/TUNER. Rotate the knob clockwise to raise the overall level of those signals together, and rotate it counterclockwise to reduce it. Turning the knob fully counterclockwise (to "0" position) cuts all inputs.

Note that this control should be used at position "5" or higher. If the master volume control is set lower than "5", the separate con-

trols for MIC, AUX or PHONO/TUNER set higher may cause "clipping" of input signals and increased distortion in sound.

(8) BASS/TREBLE Tone Controls

These are rotary controls that regulate the balance of tone of input signals coming from MICs 1, 2, AUX, or PHONO/TUNER. BASS regulates the low frequency range and TREBLE the high frequency range. Rotate the respective knobs to the right to increase the response, and to the left to decrease it.

BASS is effective in reducing low-frequency noise produced by record warpage, and TREBLE reduces the scratch noise on a record or the hiss on a tape. Also use these controls to compensate for acoustic conditions.

(9) Tuning Dial

This knob tunes in the desired AM or FM broadcast station. Use the lower half of the knob for AM band, and the upper half for FM band reception. Rotate the knob to bring the pointer on the knob to the desired position on the frequency scale around the knob.

(10) AM/FM Selector

For selecting receiving frequency bands. Set the selector to AM to receive AM stations, and to FM for FM stations. Set at FM AFC position to prevent tuning drift due to frequency deviation. Generally, when receiving FM stations, first set the selector to FM and tune in to the desired station; then set the selector to FM AFC. When not

using the tuner function, turn selector to OFF.

(11) Ferrite-bar Antenna

This is a built-in antenna for use in AM broadcast reception. Erect the bar towards you, and position it where the reception is optimal.

(12) Antenna Input Terminals

Use the terminals labeled 300Ω when parallel feeder is used, and the terminals labeled 75Ω for coaxial cable. The AM terminal is used to connect external antenna when sufficient electric field strength cannot be obtained with the built-in ferrite bar antenna.

(13) TUNER Output Jack

This is a tuner output jack for RCA pin plug. It transmits signal from the built-in tuner independently, without mixing. To mute tuner, short-circuit the jack with shorting plug.

(14) PRE OUT Terminal

Output from the preamplifier section appears at this terminal. Use this terminal when operating unit's preamplifier section separately, or when coupling the unit with separate power amplifier.

(15) MAIN IN Terminal

Terminal for feeding signal into the unit's main amplifier section. Use when operating main amplifier section, or when coupling the unit with separate preamplifier.

(16) Main Amplifier SEPARATE/UNITE Switch

This switch permits either separate use of main amplifier section or

combined use of main amplifier section with preamplifier section. In SEPARATE position, the main amplifier section is disconnected from the preamplifier section so that you can use the main amplifier section separately. In the UNITE position, the preamplifier and the main amplifier sections are connected. In the UNITE position, the MAIN IN terminal cannot be used.

(17) PHONO Input Jack

This is a phonograph input terminal for RCA pin plug. When using stereo phonograph, use Y-adaptor for RCA plug connection.

Note: The PHONO input jack is for record player with MM type cartridge. Plug player with ceramic or crystal cartridge into the AUX jack.

(18) AUX Input Jack

This is an auxiliary input jack for RCA pin plug.

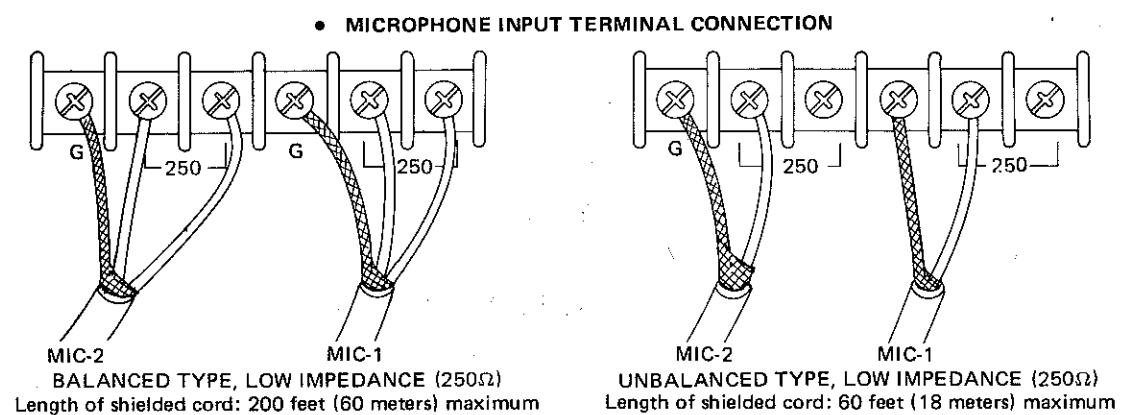
(19) GND Terminal

This terminal is the connection for grounding wire of record player, etc., to reduce inter-equipment hum noise or induction noise, or to prevent static electricity.

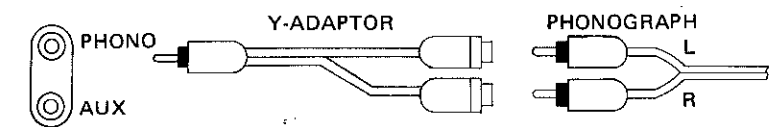
(20) Music Muting Terminals

Short-circuiting GND and S terminals will immediately cut input signals at AUX and PHONO/TUNER (and signal from built-in tuner). Remove the short-circuit to regain state already established by front panel controls. This function is effective in interrupting music signals to insert announcement, etc. by means of microphones.

(21) Microphone Input Terminals



• PHONO INPUT JACK CONNECTION WHEN USING STEREO PHONOGRAPH



These are screw-type microphone input terminals. The 3 right-hand terminals are for MIC 1 connections, and the 3 left-hand terminals are for MIC 2 connections. Both MIC 1 and MIC 2 connections can be made simultaneously. These terminals have been already adjusted to accept low impedance (250 Ohms) balanced or unbalanced microphone. The stranded wire from the microphone should be hooked up to G terminal.

(22) Speaker Terminals

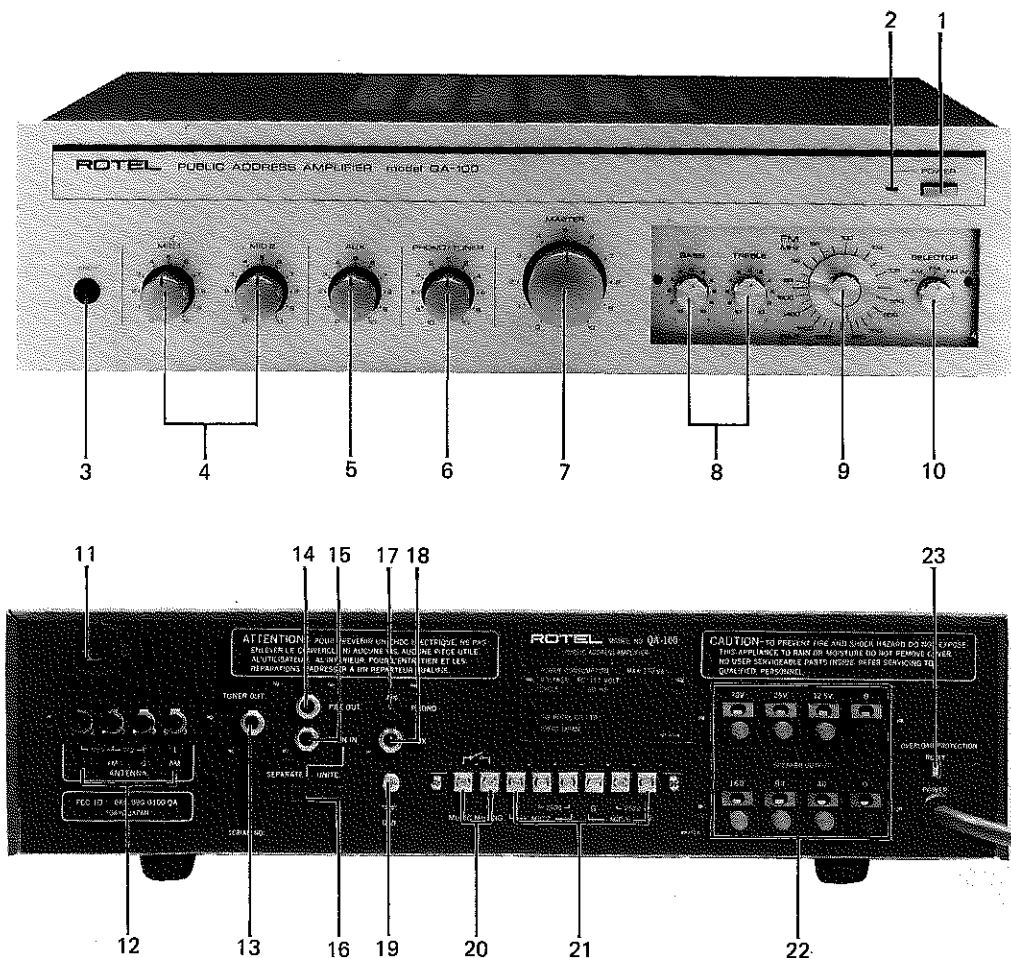
Unit is provided with 2 sets of speaker terminals; one for low im-

pedance use, and the other for high impedance or constant voltage use. For low impedance use, 0, 4, 8, and 16 ohm terminals are available. For high impedance or constant voltage use, 0, 12.5, 25, and 70 volt terminals are available.

Terminals are screw-knob type. Loosen the knob, and the hole above it will open. Insert the bared end of speaker cable into the hole, and then tighten the knob so that the cable is securely fixed. (Refer to "CONSIDERATIONS FOR PA SPEAKER LAYOUT for details on use of these speaker terminals.)

(23) Overload Protection Reset Button

This button resets the built-in protection device, which would cut the output when main amplifier section is overloaded because of mismatching of speaker impedance, etc. If the protection device is activated to prevent the unit from being damaged, remove the cause of overload, and press the Overload Protection Reset button to start normal operation.



USING RACK MOUNTING BRACKETS

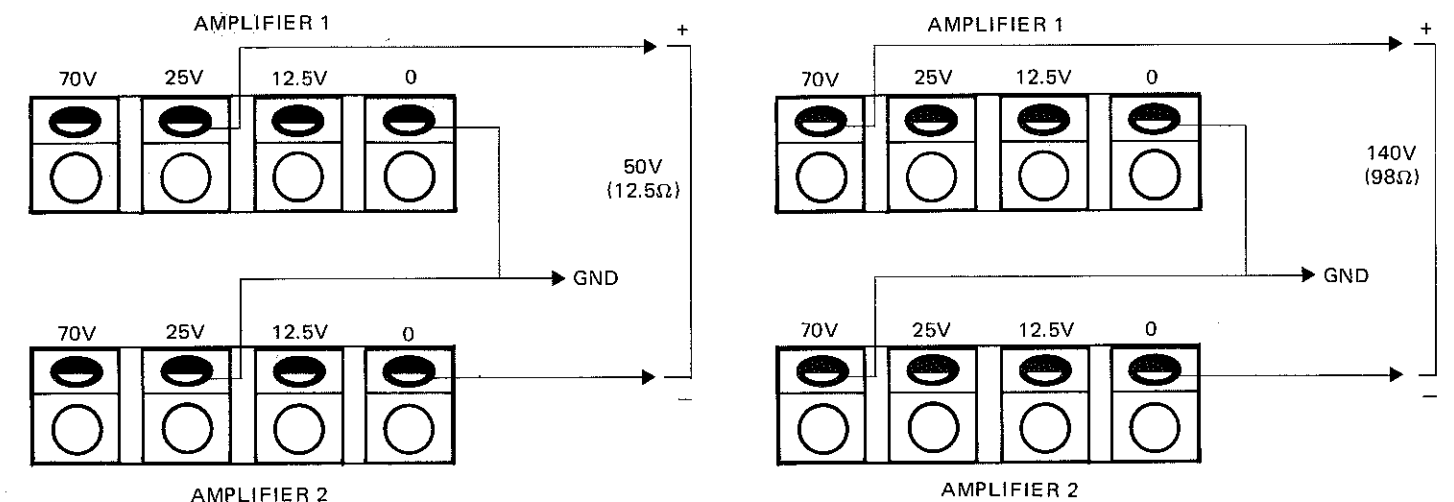
The unit is mountable into a 19-inch rack. When rack-mounting the unit, remove screws near the front panel at both sides of the cabinet, and install the rack-mounting brackets supplied with the screws. The unit can also be placed in upright position for wall mounting. For that purpose, remove screws on the bottom plate of the unit, and install suitable brackets with the screws.

CONNECTING SPEAKERS IN SERIES

If two PA music amplifier units are connected in series, the same speaker system can be driven with double power output. When using 2 units in series, for example, set the SEPARATE/UNITE switch on amplifier "1", which will be used for source control, to UNITE position, and set the SEPARATE/UNITE switch on amplifier "2", whose main amplifier section alone will be used, to SEPARATE

position. Connect PRE OUT terminal on amplifier "1" to MAIN IN terminal on amplifier "2" using RCA pin cord. (See figure for speaker cable connections in series combination of amplifiers.)

Note: When amplifiers are connected in series, the 0V terminal on amplifier "2" cannot be used as grounding terminal. Never attempt to ground the terminal.



CONSIDERATIONS FOR PA SPEAKER LAYOUT

SPEAKER CONNECTIONS

In connecting speakers to a public address amplifier it is important to present the amplifier with the load impedance it is designed to handle. Failure to do this can cause overheating and component failure. In many cases problems can take months to appear in the form of reduced reliability and unnecessary service calls. A load impedance that is too low is especially bad. You should strive to have a load impedance of not less than 70% of the chosen amplifier output impedance. For example, do not connect a 4 Ohm speaker to the 8 Ohm output. Driving a load of higher impedance than rated amplifier output is not as serious, but results in a power loss proportional to the mismatch and should be avoided. For example, driving a 16 Ohm load through the 8 Ohm output will result in a 50% loss in power. The high impedance mismatch should be kept to less than 200%, especially if it is anticipated that more than 50% of the rated amplifier power will be required.

There are two methods of connecting groups of speakers to the amplifier. Firstly, using the low impedance (i.e. 4, 8, 16 Ohm) outputs. This is preferable where: —

- Runs are short (less than 200 ft. [70 m]).
- Few horns or speakers are to be used (i.e. typically 4-8)
- Same sound levels are required at each speaker.
- Low impedance also provides slightly better fidelity and frequency response.

High impedance or constant voltage is the second method and is preferable where: —

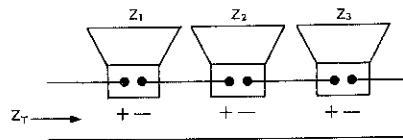
- The runs are long and line losses are to be avoided.
- Many speakers are to be used.
- Different sound levels are required at different locations, for example indoor speakers and outdoor horns.
- Future expansion possibilities require flexibility in wiring layout.

The following is a more detailed discussion of these two methods.

LOW IMPEDANCE CONNECTION

The speakers must be connected so as to present a combined impedance equal to the selected amplifier output impedance, i.e. 4, 8, 16 Ohms. The connections should be arranged in a series/parallel combination to achieve this according to the following formulae. The impedance should be between 70% and 200% of the output impedance selected. If the amplifier is to be driven anywhere near its full rated output the impedance should be well within these tolerances.

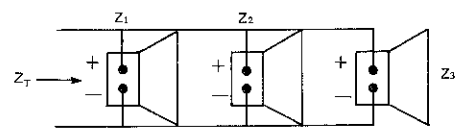
Series — Connected Speakers



$$Z_T = Z_1 + Z_2 + Z_3 + \dots + Z_N$$

where Z_T = total combined load impedance
and Z_N = individual speaker impedance

Parallel — Connected Speakers

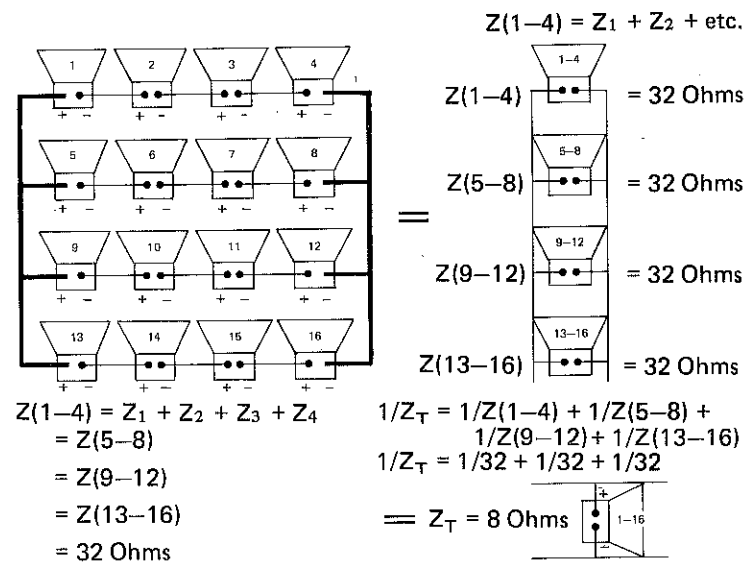


$$Z_T = \frac{1}{1/Z_1 + 1/Z_2 + 1/Z_3 + \dots + 1/Z_N}$$

SERIES/PARALLEL COMBINATIONS

In larger systems it will be necessary to combine series and parallel connections to obtain the necessary impedance. The rules for calculating the total effective impedance is to divide the entire circuit into individual small series of parallel sub-circuits and apply the foregoing rules to them.

The following is an example using 16 x 8 Ohm speakers. Each schematic is an impedance equivalent to its predecessor but has been simplified.



As can be seen, a problem arises if one more speaker must be added at some future date, as all the connections must be changed. This is not much of a problem if only a few speakers are involved, but if the network is extensive, the problem is significant. In addition, failure of one speaker can take out a number of associated units.

HIGH IMPEDANCE OR CONSTANT VOLTAGE (25V & 70V) SYSTEMS

The high impedance or constant voltage method of impedance matching uses a high impedance amplifier output which is transformed down to 8 Ohms by an impedance matching transformer at each individual speaker. The big advantages of this approach as compared to low impedance are: —

- Reduced line losses and ability to use smaller wire gauges. This is due to the higher voltage and reduced current in the speaker lines.
- Much simpler impedance matching procedures and connections.

Constant voltage is a misnomer in that the amplifier does not always produce 70V. Rather, the amplifier output impedance is set at such a level that, irrespective of its rated power, it will produce 70.7 volts output at full power. Thus a 10 Watt amplifier optimum load would have an impedance of 500 Ohms ($V^2/P = 70.7^2/10$), a 40 Watt amp would be 126 Ohms and 100 Watt amp, 50 Ohms:

Multiple transformer taps allow the impedance at each speaker to be adjusted individually to give a total matched load. Because of the high impedance arrangement, the system is easier to impedance match and is also inherently less susceptible to problems caused by mismatching.

The transformer taps are marked in Watts instead of Ohms (usually 4, 2, 1, 1/2). Again, it should be borne in mind that these levels of power output are only achieved when the transformer is working at 70.7 volts. The transformers are connected in parallel. A good match is obtained by ensuring that the total of all tap settings fits into the range of 40-80% of rated amplifier output. 80% is chosen to allow for transformer insertion loss. It is also good practice not to drive the amplifier to 100% of its capacity.

Examples are shown below. For simplicity it is assumed that all tap settings are the same at each speaker.

For a 40 Watt amplifier the range 40-80% is equivalent to 16-32 Watts. Therefore:

- 6 speakers x 4 Watt taps each = 24W Good match
- 4 speakers x 1 Watt taps each = 4W Poor match
- 20 speakers x 1 Watt taps each = 20W Good match
- 20 speakers x 4 Watt taps each = 80W Very poor match—overload
- 30 speakers x 1 Watt taps each = 30W Good match

NOTE:

None of the above tap settings guarantee the actual sound levels through each speaker. This is as much a function of the master volume control as the tap setting. The setting simply defines the maximum power consumed by an 8 Ohm speaker if presented with 70.7 volt input. In the case of a small number of speakers, it is always preferable to use a higher tap setting and reduced the sound level by turning down the master volume control. In calculating the amplifier rating needed for a typical music/paging system using speakers distributed in an office environment, a good rule of thumb is to allow about 1W per speaker and space speakers at 1 1/2 X ceiling height. For noisy areas, or where the volume level required is higher, more power is required.

PHASING

When using multiple speakers in a sound system installation, it is advisable to phase the speakers in order to reduce the cancellation effect caused by improper phasing. Speakers out of phase will lose up to one-half of their normal volume and will operate with poor tonal characteristics.

For speakers facing in the same general direction, the speakers are in phase when all speaker cones move in the same direction when an equal signal is applied. With two speakers facing each other, proper phasing is achieved when the cone of one speaker moves inward while the cone of the other speaker moves outwards.

If speakers are unmarked, or not the same model, the following procedure will allow fast and simple phasing.

- Connect one side of a flashlight battery to one of the speaker terminals.
- Momentarily contact the other speaker terminal to the other side of the battery.
- Note direction of cone movement (inward or outward).
- Mark the speaker terminal that corresponds to the positive side of the battery.
- Repeat the same procedure for each successive speaker, making sure that the direction of cone movement is the same for each case.
- If the speaker cones are all to move in the same direction, connect the marked terminals to each other and the unmarked terminals to each other. If the cones are to move in opposite directions, as is the case when two speakers are facing each other, connect the marked terminal of each speaker to the unmarked terminal of each speaker.

POWER LOSS IN LONG LINES

For long lines the power loss in the lines ($I^2 R$) becomes a significant factor. The power supplied by the amplifier is effectively reduced by the line loss. For a 0.5 db loss in sound pressure the total wire resistance must be limited to 6% of speaker impedance. The following table shows the calculated two wire cable lengths permissible for a number of wire sizes in feet. For a 1 db loss, the lengths may be doubled. For 2 db loss, multiply by 4.4.

AWG Size	Resistance (Ohms/1000 Feet)	Low-Impedance			High-Impedance Systems		
		4Ω	8Ω	16Ω	100W/70.7V 12 1/2W/25V (50Ω)	50W/70.7V 6 1/4W/25V (100Ω)	25W/70.7V 3 1/8W/25V (200Ω)
14	2.50	48	96	190	600	1,200	2,400
16	4.02	30	60	90	370	740	1,500
18	6.39	19	38	76	230	460	920
20	10.1	12	24	48	150	300	600
22	16.2	7	14	28	93	190	380

TECHNICAL SPECIFICATIONS

AMPLIFIER SECTION

Power Output	100 watts
Frequency Response . . . . .	.50 Hz—10 KHz, +1.5 dB, -3 dB
Hum and Noise	
MIC 1 Input (front: 50 kΩ) . . . . .	.54 dB below rated output
MIC 1 Input (rear: 250Ω) . . . . .	.50 dB below rated output
MIC 2 Input . . . . .	.50 dB below rated output
AUX Input . . . . .	.78 dB below rated output
PHONO Input . . . . .	.65 dB below rated output
Sensitivity	
MIC Input . . . . .	.09 mV/250 ohms 2.5 mV/50 kohms
AUX Input . . . . .	.150 mV
PHONO Input . . . . .	.3 mV
Outputs	4, 8, 16 ohms 12.5V (1.56 ohms), 25V (6.25 ohms), 70V (49 ohms)
Inputs . . . . .	.2 MIC (low-impedance), 1 MIC (high impedance), 1 AUX (high impedance, high level), 1 PHONO (for magnetic PHONO)
Controls . . . . .	.2 MIC VOLUME, 1 AUX VOLUME, 1 TUNER/PHONO VOLUME, MASTER VOLUME, BASS and TREBLE

Tone Control Action

BASS	+5 dB, -12 dB (100 Hz)
TREBLE	+5 dB, -12 dB (10 kHz)

TUNER SECTION (at TUNER OUTPUT)

Frequency Range . . . . .	.AM: 535—1605 kHz FM: 87.4—108.5 MHz
Sensitivity . . . . .	.AM: 500 μV for 20 dB quieting FM: 4 μV for 30 dB quieting
Distortion . . . . .	.AM: 1.5%, MOD 30% 400 Hz FM: 0.8%, MOD 100% 400 Hz
Hum and Noise . . . . .	.AM: 40 dB FM: 60 dB
Output . . . . .	.AM: 220 mV, MOD 30% 400 Hz (at TUNER OUT) FM: 400 mV, MOD 100% 400 Hz

MISCELLANEOUS

Power Requirement	120V AC/60 Hz
Power Consumption . . . . .	.270 VA
Dimensions . . . . .	.430 (W) x 110 (H) x 290 (D) mm (w/o rack mounting bracket) 16-15/16" x 4-5/16" x 11-13/32"
Weight . . . . .	.95 kg/20.9 lbs.

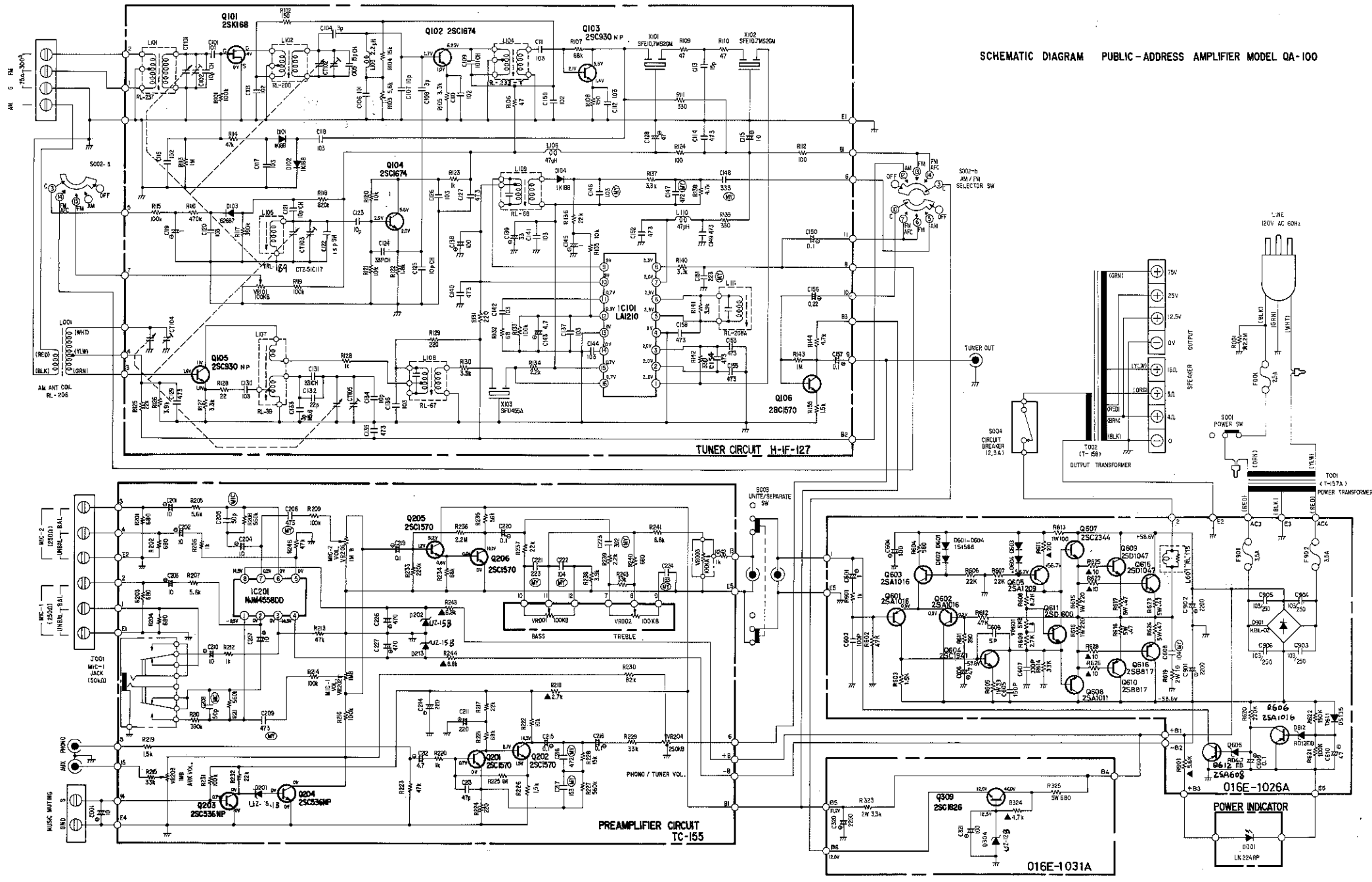
- Specifications and features subject to possible modification without notice.

REPAIR PARTS LIST

Schematic Location	Computer No.	Description
TRANSISTORS, DIODES AND IC'S		
Q101	TR50000139	2SK168-F
Q102	TR30000133	2SC1674/LC1674 (K, L)
Q103	TR30000339	2SC930 (E) S
Q104	TR30000133	2SC1674/LC1674 (K, L)
Q105	TR30000339	2SC930 (E) S
Q106	TR30000327	2SC1570/71GH/2SC536G
Q201-206	TR30000327	2SC536G/2SC1570/71GH
Q309	TR30000029	2SC1826 (O, Y)
Q601-603	TR10000023	2SA1016 (G, H)
Q604	TR30000169	2SC1941 (K, L)
Q605	TR10000217	2SA1209-ST
Q606	TR10000023	2SA1016 (G, H)
Q607	TR30000303	2SC2344 (D, E)
Q608	TR10000138	2SA1011 (E, D)
Q609	TR40000045	2SD1047 (D, E)
Q610	TR20000040	2SB817 (D, E)
Q611	TR40000069	2SD600K (E, F)
Q612	TR10000126	2SA608K (F, G)
Q615	TR40000045	2SD1047 (D, E)
Q616	TR20000040	2SB817 (D, E)
D001	DD40000095	LN224R
D101, 102	DD10000111	1K188
D103	DD50000080	034 ISV72
D104	DD10000111	1K188
D201	DD20000200	UZ-5.1 (B)
D202, 203	DD20000193	UZ-15B (M, H)
D304	DD20000016	UZ-12B (M, H)
D601, 602	DD10000100	IN4148
D603, 604	DD10000100	IN4148
D605	DD20000200	UZ-5.1 (B)
D611	DD10000068	DS135D/IN4003
D612	DD20000016	UZ-12B (M, H)
D901	DD10000020	KBL-02
IC101	IC00001358	031 LA-1210
IC201	IC00000019	NJM4558DD
VARIABLE RESISTORS		
VR101	RV20000168	5BM 100KB
VR201	RV10000871	051 C3324 1MB, MIC-1
VR202	RV10000871	Volume 051 C3324 1MB, MIC-2
VR203	RV10000871	051 C3324 1MB, AUX Volume
VR204	RV10000901	051 C3827 250KB, PHONO/TUNER Volume
VR601	RV20000272	08-301 5KB
VR001	RV10000895	051 C3826 100KB BASS Control
VR002	RV10000895	051 C3826 100KB TREBLE Control
VR003	RV10000833	051 C3825 100KA MASTER Volume
COILS AND TRANSFORMERS		
L001	LB02060000	RL-206, BAR ANT. Assembly
L101	LC01990004	RL-199, Coil FM ANT.
L102	LC02000000	RL-200, Coil FM RF
L103	LM00000073	2.2UH TRL-239, Micro Inductor
L104	LC02330000	RL-233T, FM IF Coil
L105	LC21890003	TRL-189, FM OSC Coil
L106	LM00000024	47UH TRL-236, Micro Inductor
L107	LC10390002	RL-39T, AM OSC Coil
L108	LC10670000	RL-67T, AM IFT
L109	LC10680004	RL-68, AM IFT
L110	LM00000024	47UH TRL-236, Micro Inductor
L111	LC22081005	RL-208A-T
L601	LC01150002	RL-115, Anti-Parasitic Coil
T001	PT21101049	T-157AF-T, Power Transformer
T002	PT00000163	T-158, Output Transformer

Schematic Location	Computer No.	Description
OTHERS		
X101, 102	LF00000166	SFE10, 7MS2GA (RED)
X103	LF00000210	SFU455A
F901, 902	FU12000112	Fuse 250V 3.5A UL
S001	SH40000120	SH40000120 Power Switch C-3600B-T
S002	SH30000274	Function Switch 061C-3190
S003	SH20000046	6P Slide Switch SS-13-8
S004	LY00000101	Breaker With Support 063 C-4140A09
	FS20000080	QA-100 Front Panel Assembly
	KB10000286	Knob 012 C-3406A#1
	KB10000361	Knob 012 C-3407A#1 33F
	KB10001175	Knob 012 4NG-10 15F
	KB10001187	Knob 012 4NG-7 30F
	KB10001199	Knob 012 4NG-8 15F
	KB20000106	Push Button 012 C-3372#1
	AU00000579	Upper Cover 014 4NG-13

SCHEMATIC DIAGRAM PUBLIC-ADDRESS AMPLIFIER MODEL QA-100



OWNER'S WARRANTY

This warranty covers ROTEL QA-100 Tuner/amplifiers.

This equipment is warranted to be free from defects for one year with respect to material and labour from date of purchase by original purchaser under conditions of normal use and service. The warranty covers component parts and shop labour at authorised service stations only. Outside labour charges are not included.

This warranty does not apply to breakage of any kind of equipment, or any of the component parts have been damaged through accident or alteration, abuse or misuse or to any damage caused by fire, flood or other Act of God.

This warranty is in lieu of all warranties expressed or implied and of all obligations or liabilities on its part in connection with the sale of this machine.

In the event of equipment failure, contact your dealer who will advise you, or forward the unit prepaid to one of the service depots listed below. Include a description of the problems and a return address. Sales receipt must accompany the unit to validate the purchase date and hence warranty.

TITRE DE GARANTIE DU CLIENT

Cette garantie couvre ROTEL QA-100.

Cet équipement est garanti être libre de tous défauts, pour une année en ce qui concerne le matériel et le travail, à partir de la date d'achat par l'acheteur original, et sous conditions normales d'utilisation et de service.

Cette garantie ne couvre pas le bris d'aucune façon, ni l'équipement ni aucune de ses parties endommagés par accident, modifications, abus ou mauvais emploi, ou tout autre dommage causé par le feu, l'inondation ou tout autre cas de force majeure. Cette garantie remplace toute autre garantie expirée ou impliquée, et toute obligation ou responsabilité liée à la vente de cet appareil.

Si des réparations ou des ajustements s'avèrent nécessaires, consulter votre distributeur qui vous renseignera, ou retourner l'appareil défectueux à un des dépôts de service autorisés désignés ci-dessous. Joindre une note indiquant la nature du problème et votre adresse de retour. Inclure la facture pour confirmer la date d'achat et la validité de la garantie.

CANADIAN AGENT: BURTEK MARKETING INC., 3879 East 2nd Ave,
Burnaby, B.C. V5C 3W7

Ontario Rep: VICOM ENTERPRISES, 3868 Chesswood Dr., Downsview,
Ont, M3J 2W6

Quebec & Maritimes: S.GREENE AGENCIES INC., 8255 Mountain Sights,
Ste, 405, Montreal, Quebec, H4P 2B5

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MN10001764