



Technical Manual

STEREO PHONO EQUALIZER RHQ10

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Specifications

- Input (Sensitivity/
Impedance)..... MM: 2.5mV/47 kohms 100pF
MC: 0.3mV/100 ohms
- RIAA (Accuracy)..... 20-20,000Hz, ±0.1dB
- Output Level Fixed 1: 0.775V/100 ohms
(Rated at 0.3mV input)
Variable/Fixed 2:
0.775V/100 ohms
(Rated at 0.1mV Input)
- Total Harmonic
Distortion (20-20kHz).. 0.005%
- Signal-to-Noise Ratio
(IHF A Network)..... MM: 90dB
MC: 75dB
- Overload
(THD 0.5%, 1kHz) MM: 30dB
MC: 30dB
- Crosstalk (20-20kHz) 80dB
- Power Requirement..... 120V/60Hz,220V/
50Hz,240V/50Hz
- Power Consumption 18 watts
- Dimensions (overall)..... 470 (W) × 76 (H) × 332 (D) mm
18-1/2" × 3" × 13-1/16"
- Weight (Net)..... 6.8kg/14.96 lbs.

- Specifications and design subject to possible modification without notice.

Serial No. Beginning

SYMBOL	PARTS NO.	DESCRIPTION
E-1169 PCB ASSEMBLY		
C101, C102	044 #S160V101J	CAP, STYROL 105-060
C105, C106	041 35BGF470M	CAP, ELEC. 35V470UF
C107, C108	041 35BGF470M	CAP, ELEC. 35V470UF
C109, C110	044 #S160V22J	CAP, STYROL 105-056
C111, C112	044 #S160V22J	CAP, STYROL 105-056
C113, C114	041 50BGF010M	CAP, ELEC. 50V1UF
C115, C116	041 25BGF100M	CAP, ELEC. 25V100UF
C117, C118	041 25BGF100M	CAP, ELEC. 25V100UF
C121, C122	044 S63V10000F	CAP, STYROL424-41003
C125, C126	041 35BGF470M	CAP, ELEC. 35V470UF
C127, C128	041 35BGF470M	CAP, ELEC. 35V470UF
C201, C202	041 35BGF100M	CAP, ELEC. 35V100UF
C203, C204	041 35BGF100M	CAP, ELEC. 35V100UF
C205, C206	044 #S160V22J	CAP, STYROL 105-056
C207, C208	044 #S160V22J	CAP, STYROL 105-056
C209, C210	041 50BGF010M	CAP, ELEC. 50V1UF
C213, C214	044 S160V6800F	CAP, STYROL 425-46802
C215, C216	041 25BGF100M	CAP, ELEC. 25V100UF
C217, C218	041 35BGF470M	CAP, ELEC. 35V470UF
C219, C220	041 35BGF470M	CAP, ELEC. 35V470UF
C221, C222	041 35BGF470M	CAP, ELEC. 35V470UF
C223, C224	041 25BGF47M	CAP, ELEC. 25V47UF
C225, C226	041 35BGF470M	CAP, ELEC. 35V470UF
C301, C302	041 25BGF47M	CAP, ELEC. 25V47UF
C303, C304	044 #S160V101J	CAP, STYROL 105-060
C305, C306	041 50BGF100M	CAP, ELEC. 50V100UF
C307, C308	041 50BGF100M	CAP, ELEC. 50V100UF
C309, C310	044 #S160V22J	CAP, STYROL 105-056
C311, C312	044 #S160V22J	CAP, STYROL 105-056
C313, C314	041 50BGF010M	CAP, ELEC. 50V1UF
C319, C320	041 50BGF100M	CAP, ELEC. 50V100UF
C321, C322	041 50BGF100M	CAP, ELEC. 50V100UF
C323, C324	041 25BGF47M	CAP, ELEC. 25V47UF
C325, C326	041 50BGF470M	CAP, ELEC. 50V470UF
C327, C328	041 50BGF470M	CAP, ELEC. 50V470UF
C901, C902	041 LGS1H472MHS	CAP, ELEC. 50V4700UF
C903, C904	041 LGS1H472MHS	CAP, ELEC. 50V4700UF
C911	041 U50V2R2	CAP, ELEC. 50V2. 2UF
C912, C913	041 U50V100	CAP, ELEC. 50V100UF
C914	041 U50V100	CAP, ELEC. 50V100UF
D101, D102	034 IN4148	DIODE
D103, D104	034 IN4148	DIODE
D105, D106	034 IN4148	DIODE
D107, D108	034 IN4148	DIODE
D109, D110	034 KB269	DIODE
D113, D114	034 RD24FB	DIODE
D115, D116	034 RD24FB	DIODE
D201, D202	034 IN4148	DIODE
D203, D204	034 IN4148	DIODE
D205, D206	034 IN4148	DIODE
D207, D208	034 IN4148	DIODE

SYMBOL	PARTS NO.	DESCRIPTION
D209, D210	034 KB265	DIODE
D213, D214	034 RD33FB	DIODE
D215, D216	034 RD33FB	DIODE
D301, D302	034 IN4148	DIODE
D303, D304	034 IN4148	DIODE
D305, D306	034 IN4148	DIODE
D307, D308	034 IN4148	DIODE
D309, D310	034 KB269	DIODE
D313, D314	034 RD39FB	DIODE
D315, D316	034 RD39FB	DIODE
D901, D902	034 BR84	DIODE
D903	034 RD12EB	DIODE
D904, D905	034 IN4148	DIODE
D906	034 1N4003	DIODE
Q101, Q102	033 2SD786-RS	TRANSISTOR
Q103, Q104	033 2SD786-RS	TRANSISTOR
Q105, Q106	033 2SD786-RS	TRANSISTOR
Q107, Q108	033 2SD786-RS	TRANSISTOR
Q109, Q110	033 2SD786-RS	TRANSISTOR
Q111, Q112	033 2SD786-RS	TRANSISTOR
Q113, Q114	033 2SB737-RS	TRANSISTOR
Q115, Q116	033 2SB737-RS	TRANSISTOR
Q117, Q118	033 2SB737-RS	TRANSISTOR
Q119, Q120	033 2SB737-RS	TRANSISTOR
Q121, Q122	033 2SB737-RS	TRANSISTOR
Q123, Q124	033 2SB737-RS	TRANSISTOR
Q125, Q126	033 2SA1016K-F	TRANSISTOR
Q127, Q128	033 2SC2362K-F	TRANSISTOR
Q129, Q130	033 2SA1016K-F	TRANSISTOR
Q131, Q132	033 2SC2362K-F	TRANSISTOR
Q137, Q138	033 2SD600K-EF	TRANSISTOR
Q139, Q140	033 2SB631K-EF	TRANSISTOR
Q141, Q142	033 2SD600K-EF	TRANSISTOR
Q143, Q144	033 2SB631K-EF	TRANSISTOR
Q145, Q146	033 2SC536K-F	TRANSISTOR
Q147, Q148	033 2SC2274K-F	TRANSISTOR
Q201, Q202	033 2SD786-RS	TRANSISTOR
Q203, Q204	033 2SD786-RS	TRANSISTOR
Q205, Q206	033 2SD737-RS	TRANSISTOR
Q207, Q208	033 2SD737-RS	TRANSISTOR
Q209, Q210	033 2SA1016K-F	TRANSISTOR
Q211, Q212	033 2SC2362K-F	TRANSISTOR
Q213, Q214	033 2SA1016K-F	TRANSISTOR
Q215, Q216	033 2SC2362K-F	TRANSISTOR
Q221, Q222	033 2SD600K-EF	TRANSISTOR
Q223, Q224	033 2SB631K-EF	TRANSISTOR
Q225, Q226	033 2SD600K-EF	TRANSISTOR
Q227, Q228	033 2SB631K-EF	TRANSISTOR
Q301, Q302	033 2SC2362K-F	TRANSISTOR
Q303, Q304	033 2SC2362K-F	TRANSISTOR
Q305, Q306	033 2SA1016K-F	TRANSISTOR

SYMBOL	PARTS NO.	DESCRIPTION
Q307, Q308	033 2SA1016K-F	TRANSISTOR
Q309, Q310	033 2SA1016K-F	TRANSISTOR
Q311, Q312	033 2SC2362K-F	TRANSISTOR
Q313, Q314	033 2SA1016K-F	TRANSISTOR
Q315, Q316	033 2SC2362K-F	TRANSISTOR
Q321, Q322	033 2SD600K-EF	TRANSISTOR
Q323, Q324	033 2SB631K-EF	TRANSISTOR
Q325, Q326	033 2SD600K-EF	TRANSISTOR
Q327, Q328	033 2SB631K-EF	TRANSISTOR
Q329, Q330	033 2SC536K-F	TRANSISTOR
Q331, Q332	033 2SC2274K-F	TRANSISTOR
Q901	033 2SA608K-F	TRANSISTOR
Q902	033 2SC2362K-F	TRANSISTOR
Q903, Q904	033 2SC2274K-F	TRANSISTOR
R101, R102	054 VSH473	R, METAL 47K
R103, R104	054 VSH511	R, METAL 510R
R105, R106	054 VSH101	R, METAL 100R
R107, R108	054 VSH560	R, METAL 56R
R113, R114	054 MK21K21FECZ	R, METAL 1% 1.21K
R115, R116	054 MK21K21FECZ	R, METAL 1% 1.21K
R117, R118	054 MK21K21FECZ	R, METAL 1% 1.21K
R119, R120	054 MK21K21FECZ	R, METAL 1% 1.21K
R121, R122	054 MK2475RFECZ	R, METAL 1% 475R
R123, R124	054 MK2475RFECZ	R, METAL 1% 475R
R125, R126	054 MK2221RFECZ	R, METAL 1% 221R
R127, R128	054 MK2221RFECZ	R, METAL 1% 221R
R129, R130	054 MK233K2FECZ	R, METAL 1% 33.2K
R135, R136	054 MK2154RFECZ	R, METAL 1% 154R
R139, R140	054 VSH332	R, METAL 3.3K
R141, R142	054 MK2010RFECZ	R, METAL 1% 10R
R143, R144	054 MK2010RFECZ	R, METAL 1% 10R
R147, R148	054 VSH752	R, METAL 7.5K
R151, R152	054 MK26K81FECZ	R, METAL 1% 6.81K
R153, R154	054 MK26K81FECZ	R, METAL 1% 6.81K
R205, R206	054 MK21K21FECZ	R, METAL 1% 1.21K
R207, R208	054 MK21K21FECZ	R, METAL 1% 1.21K
R209, R210	054 MK21K21FECZ	R, METAL 1% 1.21K
R211, R212	054 MK21K21FECZ	R, METAL 1% 1.21K
R213, R214	054 MK2274RFECZ	R, METAL 1% 274R
R215, R216	054 MK2274RFECZ	R, METAL 1% 274R
R217, R218	054 MK247K5FECZ	R, METAL 1% 47.5K
R219, R220	054 MK2475RFECZ	R, METAL 1% 475R
R221, R222	054 MK2154RFECZ	R, METAL 1% 154R
R223, R224	054 MK2475RFECZ	R, METAL 1% 475R
R225, R226	054 MK2100RFECZ	R, METAL 1% 100R
R227, R228	054 MK21K21FECZ	R, METAL 1% 1.21K
R229, R230	054 MK251K1FECZ	R, METAL 1% 51.1K
R231, R232	054 MK2475KFECZ	R, METAL 1% 475K
R233, R234	054 MK2100KFECZ	R, METAL 1% 100K
R235, R236	054 MK2100RFECZ	R, METAL 1% 100R
R239, R240	054 MK2010RFECZ	R, METAL 1% 10R

SYMBOL	PARTS NO.	DESCRIPTION
R241, R242	054 TMK2010RFECZ	R, METAL 1% 10R
R243, R244	054 TMK2001KFECZ	R, METAL 1% 1K
R247, R248	054 TMK2001KFECZ	R, METAL 1% 1K
R249, R250	054 VSH101	R, METAL 100R
R301, R302	054 VSH101	R, METAL 100R
R303, R304	054 VSH223	R, METAL 22K
R305, R306	054 TMK21K21FECZ	R, METAL 1% 1.21K
R307, R308	054 TMK21K21FECZ	R, METAL 1% 1.21K
R309, R310	054 TMK21K21FECZ	R, METAL 1% 1.21K
R311, R312	054 TMK21K21FECZ	R, METAL 1% 1.21K
R313, R314	054 TMK2475RFECZ	R, METAL 1% 475R
R315, R316	054 TMK2475RFECZ	R, METAL 1% 475R
R317, R318	054 TMK247K5FECZ	R, METAL 1% 47.5K
R319, R320	054 TMK24K75FECZ	R, METAL 1% 4.75K
R321, R322	054 TMK2562RFECZ	R, METAL 1% 562R
R323, R324	054 TMK2274RFECZ	R, METAL 1% 274R
R325, R326	054 TMK2562RFECZ	R, METAL 1% 562R
R327, R328	054 TMK2100RFECZ	R, METAL 1% 100R
R329, R330	054 TMK2010KFECZ	R, METAL 1% 10K
R331, R332	054 TMK2100RFECZ	R, METAL 1% 100R
R335, R336	054 TMK2010RFECZ	R, METAL 1% 10R
R337, R338	054 TMK2010RFECZ	R, METAL 1% 10R
R339, R340	054 VSH473	R, METAL 47K
R341, R342	054 VSH101	R, METAL 100R
R343, R344	054 TMK23K32FECZ	R, METAL 1% 3.32K
R345, R346	054 TMK23K32FECZ	R, METAL 1% 3.32K
R901	054 TMK26K81FECZ	R, METAL 1% 6.81K
R902, R903	054 TMK2825RFECZ	R, METAL 1% 825R
R904	054 TMK2100KFECZ	R, METAL 1% 100K
R905	054 TMK2221KFECZ	R, METAL 1% 221K
R906	054 TMK268K1FECZ	R, METAL 1% 68.1K
R907	054 TMK22K1FECZ	R, METAL 1% 22.1K
R908	054 TMK28K25FECZ	R, METAL 1% 8.25K
R909	054 TMK282K5FECZ	R, METAL 1% 82.5K
R910	054 TMK23K32FECZ	R, METAL 1% 3.32K
R911	054 TMK2221RFECZ	R, METAL 1% 221K
RY901, 902	063 RY24W-KJ	RELAY
VR201, 202	151 C-4410A01	VR 50K
	017 C-4401A02	SUB HEAT SINKER
	066 PK4-32A00T	1P PIN JACK
	068 C-3683#5	WRAPPING TERMINAL
	069 C-4411A00	SHORT LINK
	069 C-4412A00	2P PIN SOCKET
	069 4TR-2538#8	BUSS BAR

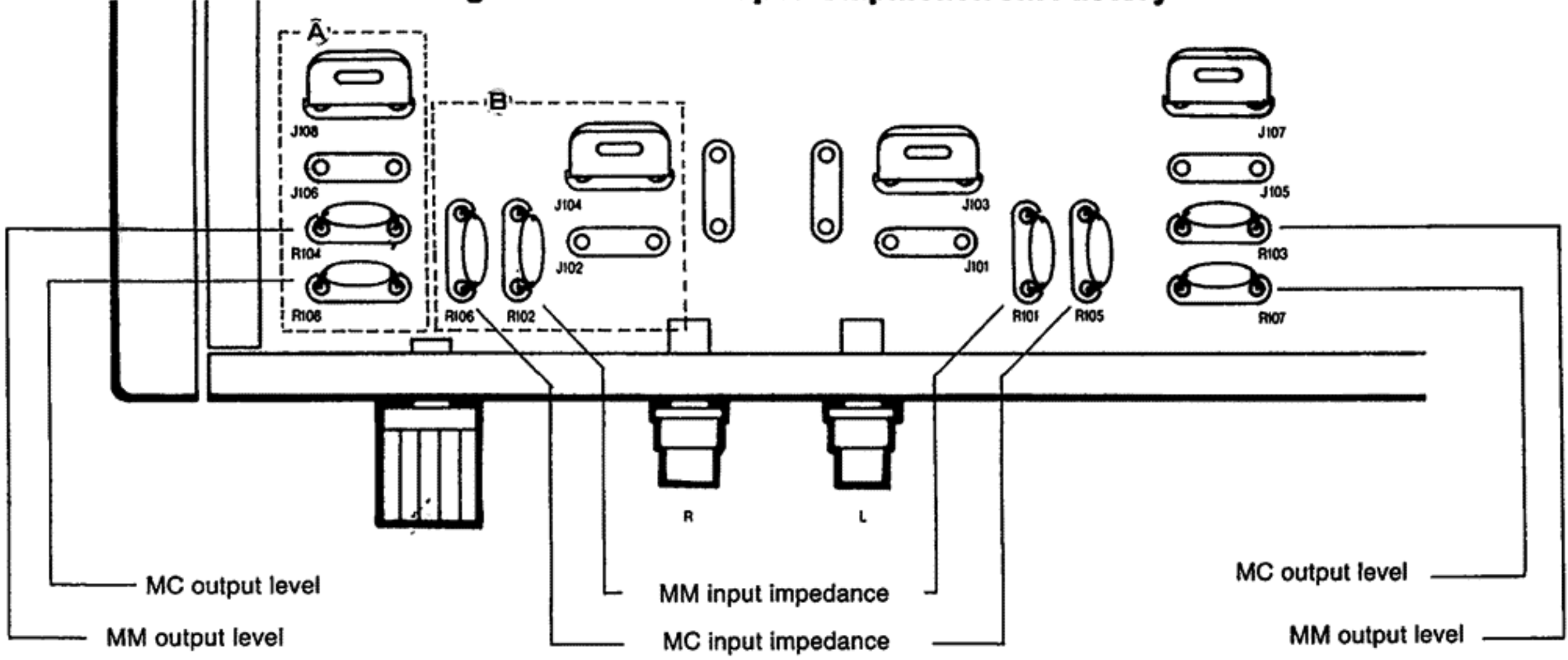
SYMBOL	PARTS NO.	DESCRIPTION
	E-1170 PCB ASSEMBLY	
	034 TNR9G391K	METAL OXIDE VARISTOR
	044 DE7150F472M	SPARK KILLER
	069 C-4411A00	SHORT LINK
	069 C-4412A00	PCB JACK SOCKET
	OTHERS	
	011 PK2-02A00	FRONT PANEL
	012 PK4-14A00	KNOB 33F
	012 PK4-15A00	KNOB 33F
	012 PK4-16A00	PUSH BUTTON 15X15
	013 PK2-26B00T	SUB CHASSIS
	013 PK3-04B00T	BOTTOM BOARD
	013 PK3-08B00T	SIDE CHASSIS
	013 PK3-27B00T	ORNAMENTAL BOARD SUPPORT
	013 PK4-28A00T	PCB SUPPORT
	014 PK3-05A00	TOP COVER
	014 PK3-24A00T	ORNAMENTAL SIDE BOARD
	015 PK2-06A00T	FRONT CHASSIS
	015 TRP-559	PRINTED REAR CHASSIS
	019 C-670#16	FELT 62F

SYMBOL	PARTS NO.	DESCRIPTION
	019 C-670T#17	FELT 56F
	019 C-857#26	FELT 38X6
	019 C-857#32	FELT 240X10
	019 C-857#33	FELT 400X10
	019 C-2095#22	NEOPLAN SPONGE 140X8 2T
	019 C-4307A02	PVC CAP
	019 C-4335A02	VOLTAGE SELECTOR COVER
	019 C-4406A01	PREVENTIONAL VIBRATION SHEET
	019 PK4-07A00T	METAL FOOT
	019 PK4-18A00T	KNOB RING
	019 PK4-19B00T	BUTTON RING
	019 PK4-41A00	SHIELD SHEET
	019 PK4-42A00	VOLTAGE SELECTOR COVER
	019 JHG-010	RCA PIN JACK CAP
	022 T-1038M01	POWER TRANSFORMER
	061 C-4176A01	POWER SW
	069 PK4-25A00T	EARTH TERMINAL
	069 4TR-2786	AC INLET
	081 PK4-37A00	PACKING
	081 PK4-38A02	INSIDE CARTON

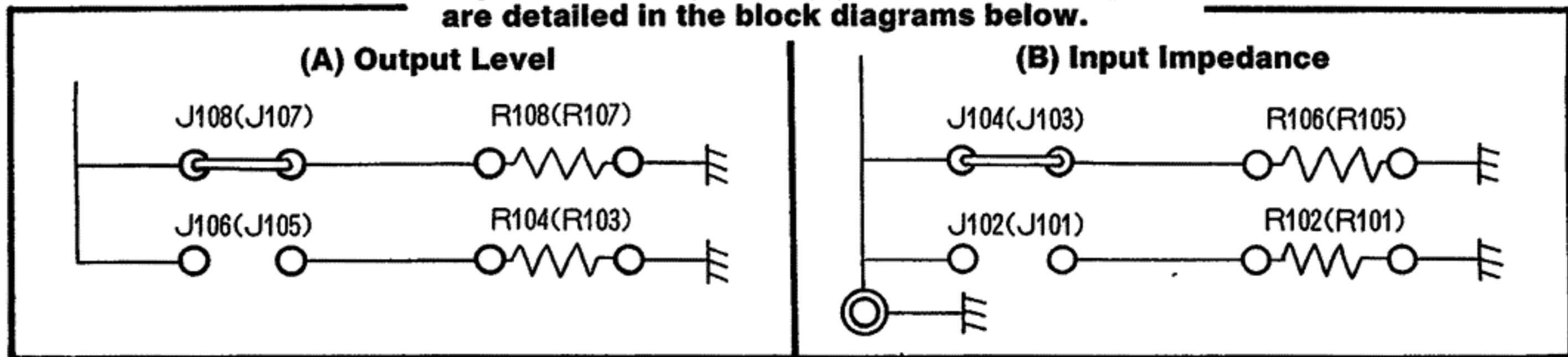
Input Level Setting

When shipped from the factory, the unit has been preset, with four short pins, for use with MC cartridges, and appropriate standard values have been set for input impedance. (Fig. 1)

Figure 1: Condition upon Shipment from Factory

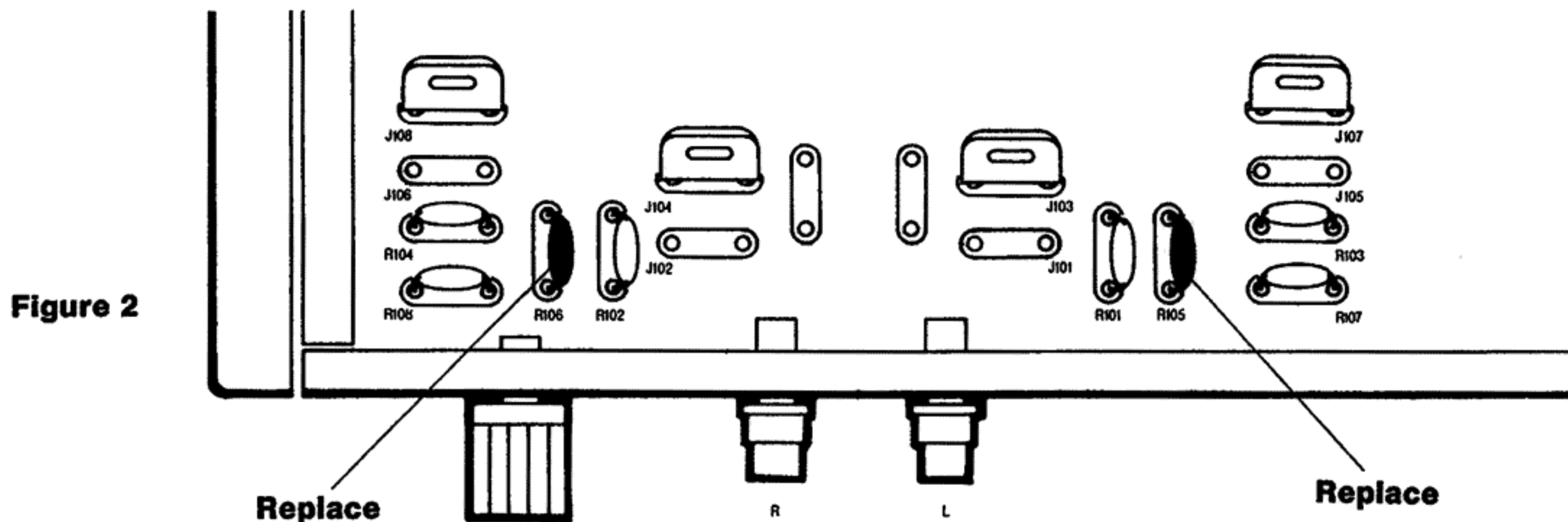


Signal lineages (A) and (B) in the above diagram are detailed in the block diagrams below.



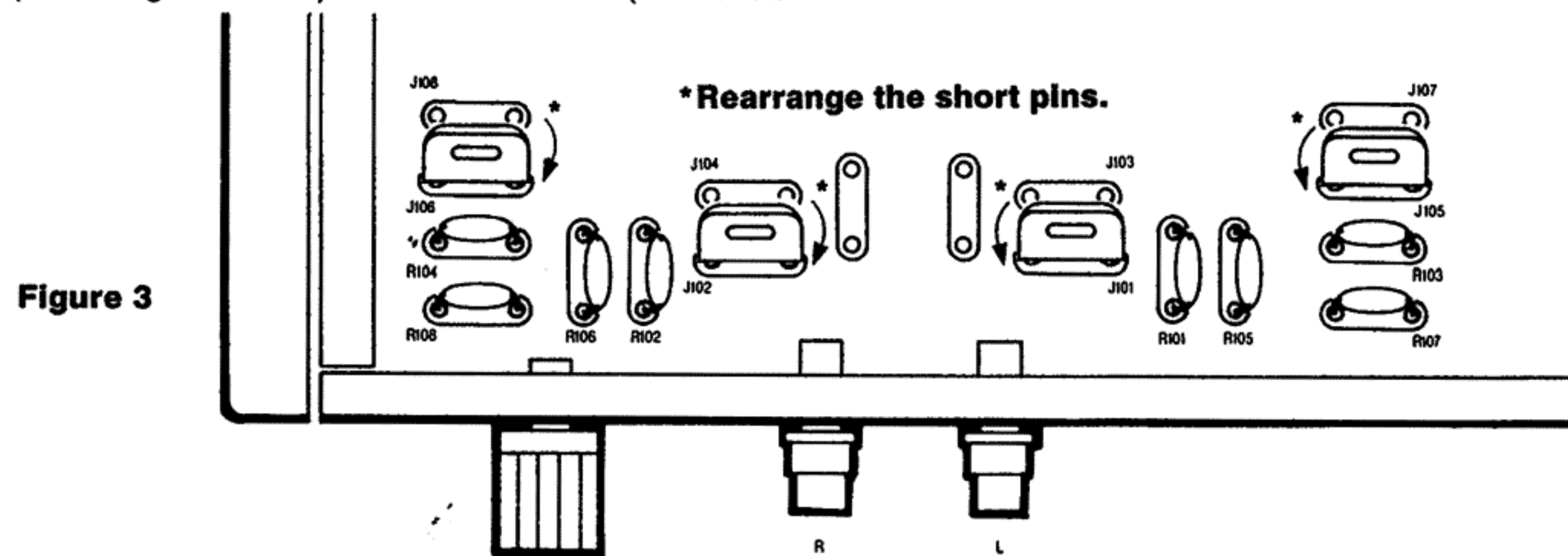
In the event that input impedance for some MC-type cartridges depart considerably from 100 ohms, the resistance values used on PC board points R106 (for the right channel) and R105 (for the left channel) could

be replaced with resistance values appropriate for the input impedance of the cartridge you wish to use. A high-quality resistor must be used, and its quality must match that of the resistor in current use. (Fig. 2)



When using an MM cartridge, or an MC cartridge with a high sensitivity similar to that of an MM cartridge, pull out the short pins from PC board points J108 and J104 (for the right channel) and J107 and J103 (for the left

channel), and insert these pins respectively into points J106 and J102 (for the right channel) and J105 and J101 (for the left channel) near the rear panel. (Fig. 3)



Standard setting

Approx 0.3mV*/100 ohms for MC cartridges

* Consider this setting to support a range of 0.2-0.5mV.

Setting Table

PC board	Function	Factory setting MC type 0.3mV/100Ω	Dealer settings		
			Free input impedance setting for MC type	MM type	
Right channel	J108	Selects MC (output)	Short pin	Short pin	Open
	J106	Selects MM (output)	Open	Open	Short pin
	J104	Selects MC (impedance)	Short pin	Short pin	Open
	J102	Selects MM (Impedance)	Open	Open	Short pin
	R106	Sets MC input impedance	100Ω	Replace	100Ω

*When making settings for MM types, the usual impedance being 47kΩ, 2.5mV output (for 2-3mV range), the job can be completed by simply rearranging the short pins. There is no need to change the resistance.

PC board	Function	Factory setting MC type 0.3mV/100Ω	Dealer settings		
			Free input impedance setting for MC type	MM type	
Left channel	J107	Selects MC (output)	Short pin	Short pin	Open
	J105	Selects MM (output)	Open	Open	Short pin
	J103	Selects MC (impedance)	Short pin	Short pin	Open
	J101	Selects MM (Impedance)	Open	Open	Short pin
	R105	Sets MC input impedance	100Ω	Replace	100Ω

Output Setting

Two sets of output terminals are provided on the rear panel of the RHQ-10. These terminals have the following characteristics:

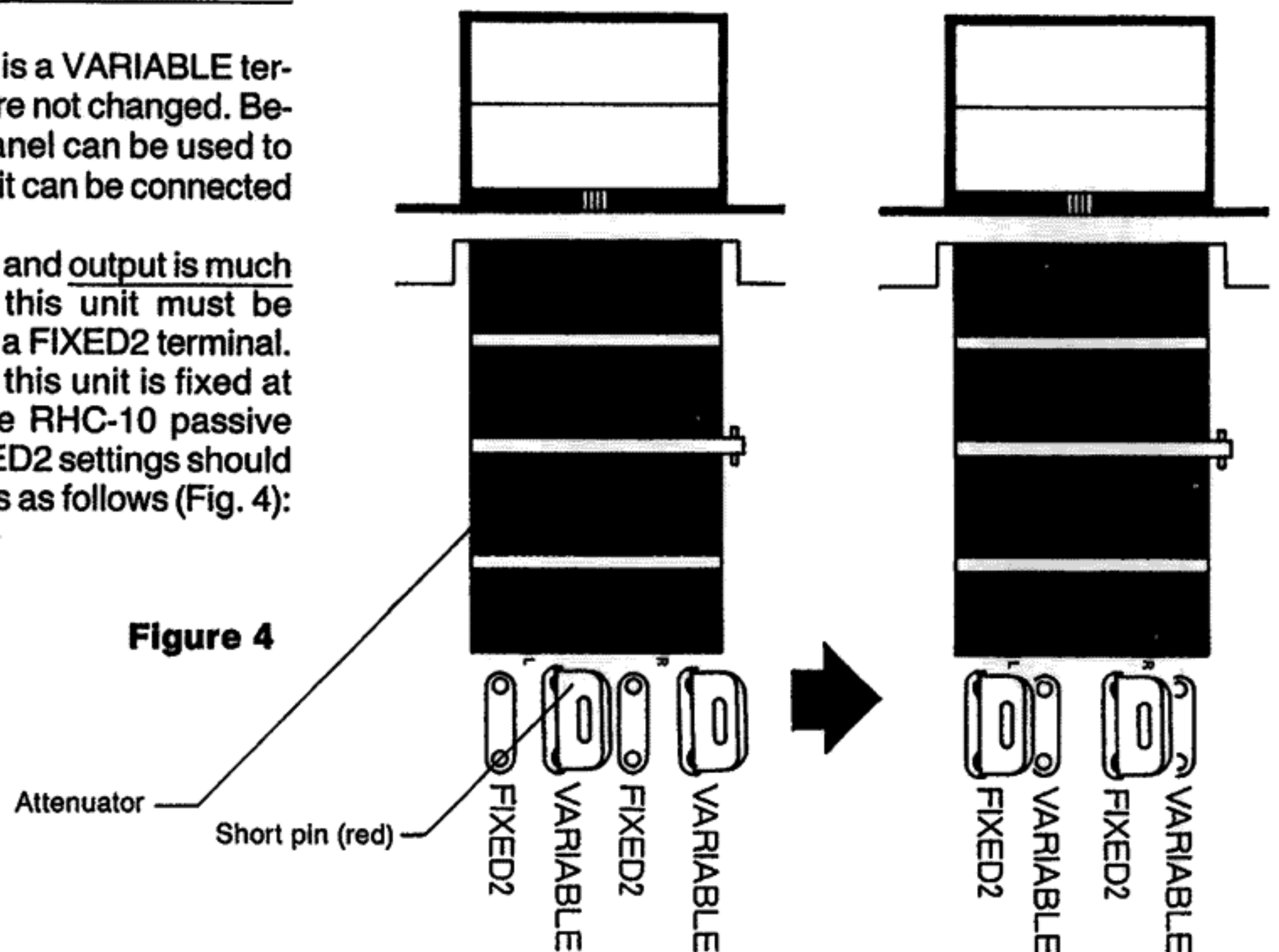
FIXED1 Used for output to the passive controller RHC-10 or a normal control amplifier. Output from this unit is maximum 0.775V/100Ω. In this case, the signal inside this unit does not pass through the attenuator.

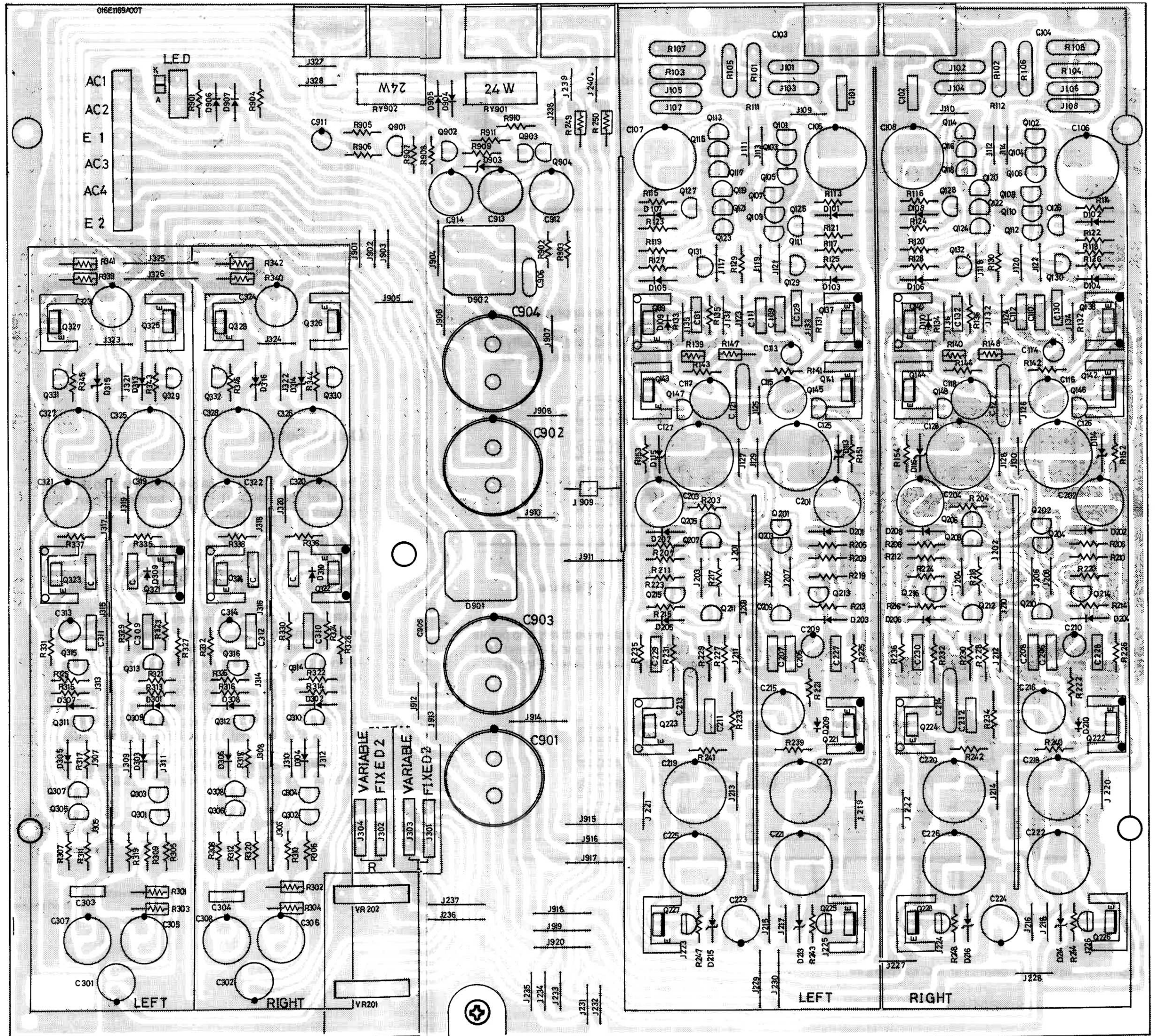
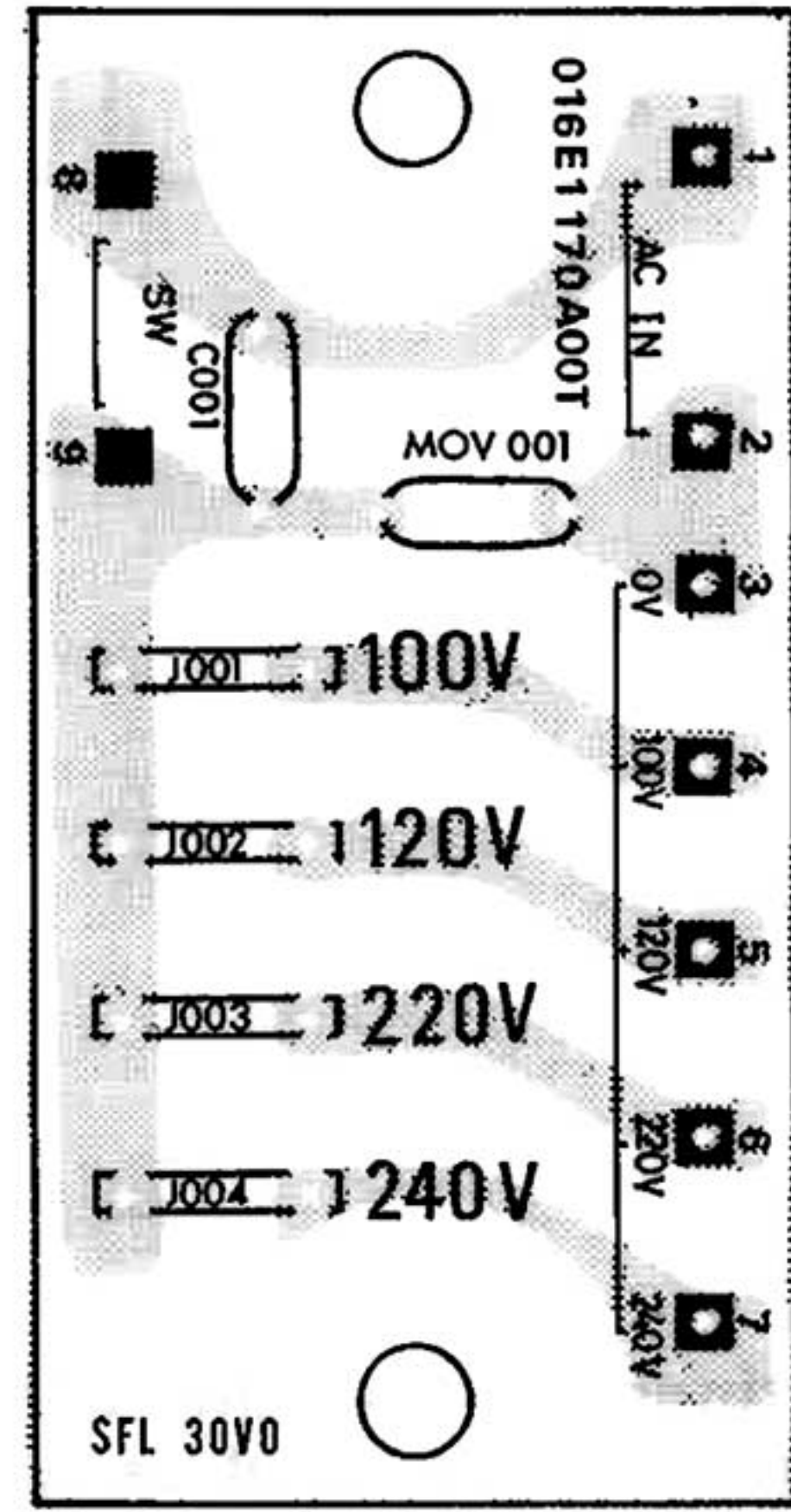
VARIABLE/FIXED2 This terminal is a VARIABLE terminal when settings inside the unit are not changed. Because the attenuator on the front panel can be used to attenuate output, output from this unit can be connected directly into a power amplifier.

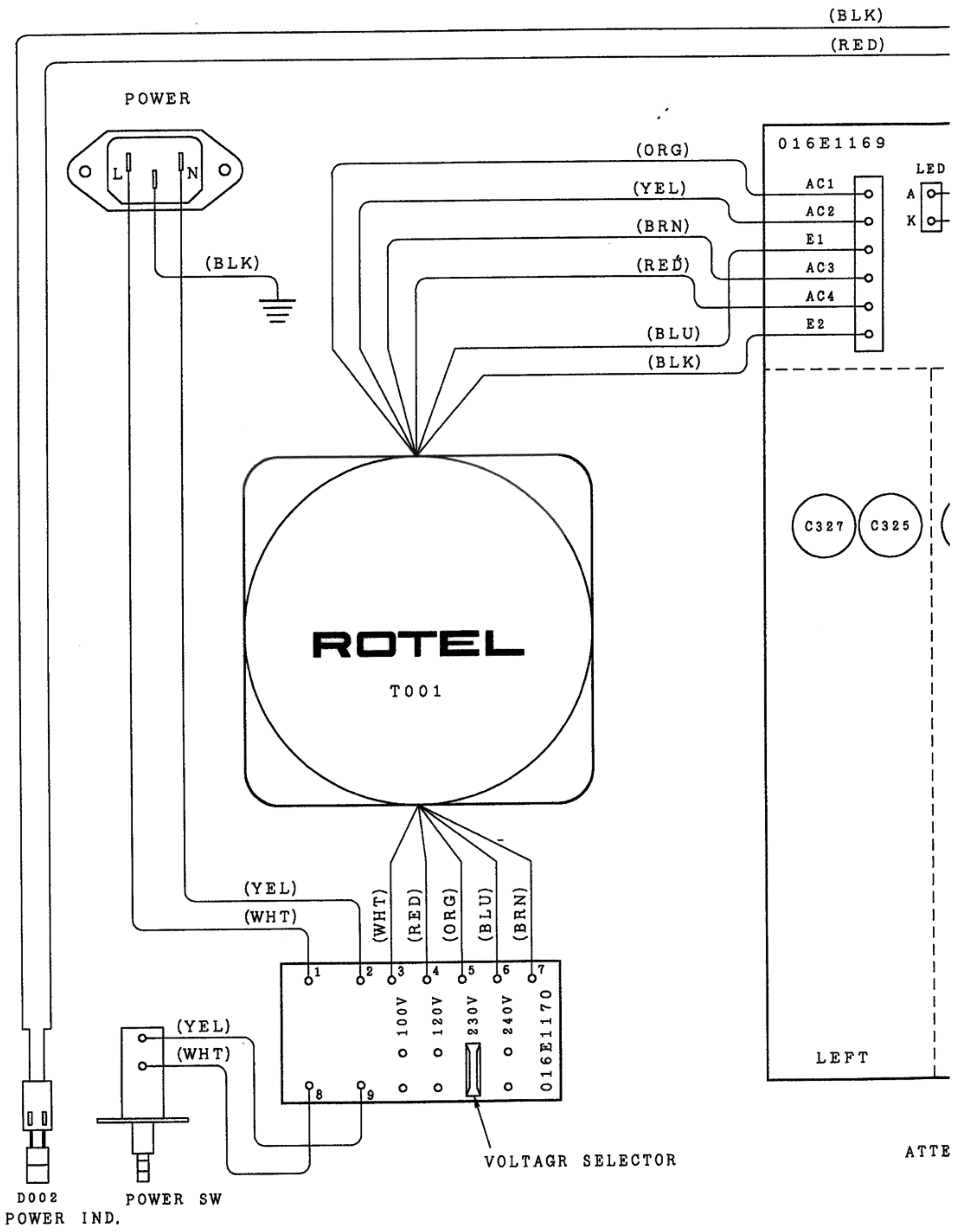
If the cartridge used is an MC type and output is much less than 0.3mV, settings inside this unit must be changed and this terminal becomes a FIXED2 terminal. As a FIXED2 terminal, output from this unit is fixed at 0.775V/100Ω and connected to the RHC-10 passive controller or a control amplifier. FIXED2 settings should be made by authorized Rotel dealers as follows (Fig. 4):

● Changing settings so that the VARIABLE/FIXED2 terminal can be used as a FIXED2 terminal

Two red short pins on the PC board toward the rear of the attenuator are moved from VARIABLE to FIXED2.

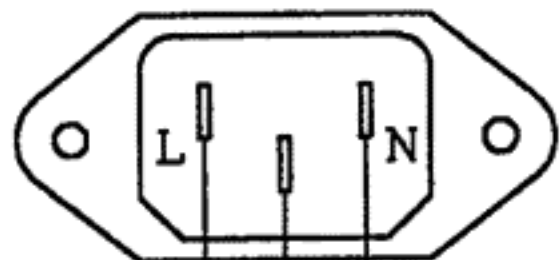




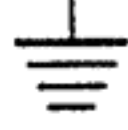


(BLK)
(RED)

POWER



(BLK)



(ORG)

(YEL)

(BRN)

(RED)

(BLU)

(BLK)

016E1169

AC1

AC2

E1

AC3

AC4

E2

LED

A

K

ROTEL

T001

C327

C325

(YEL)

(WHT)

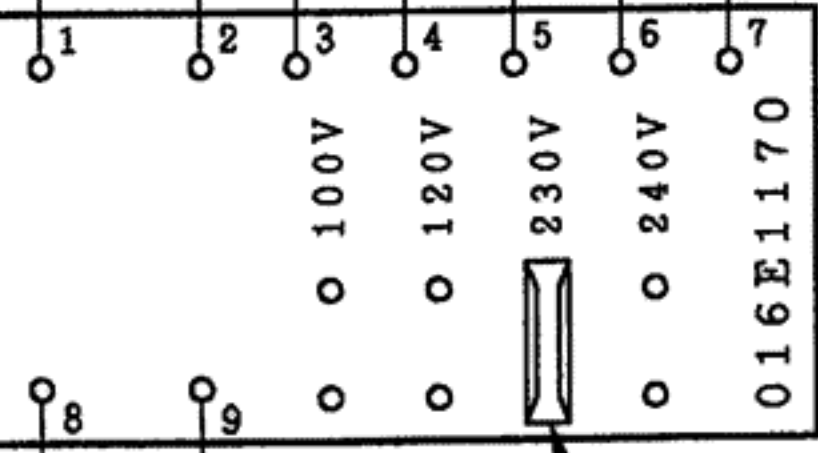
(WHT)

(RED)

(ORG)

(BLU)

(BRN)



016E1170

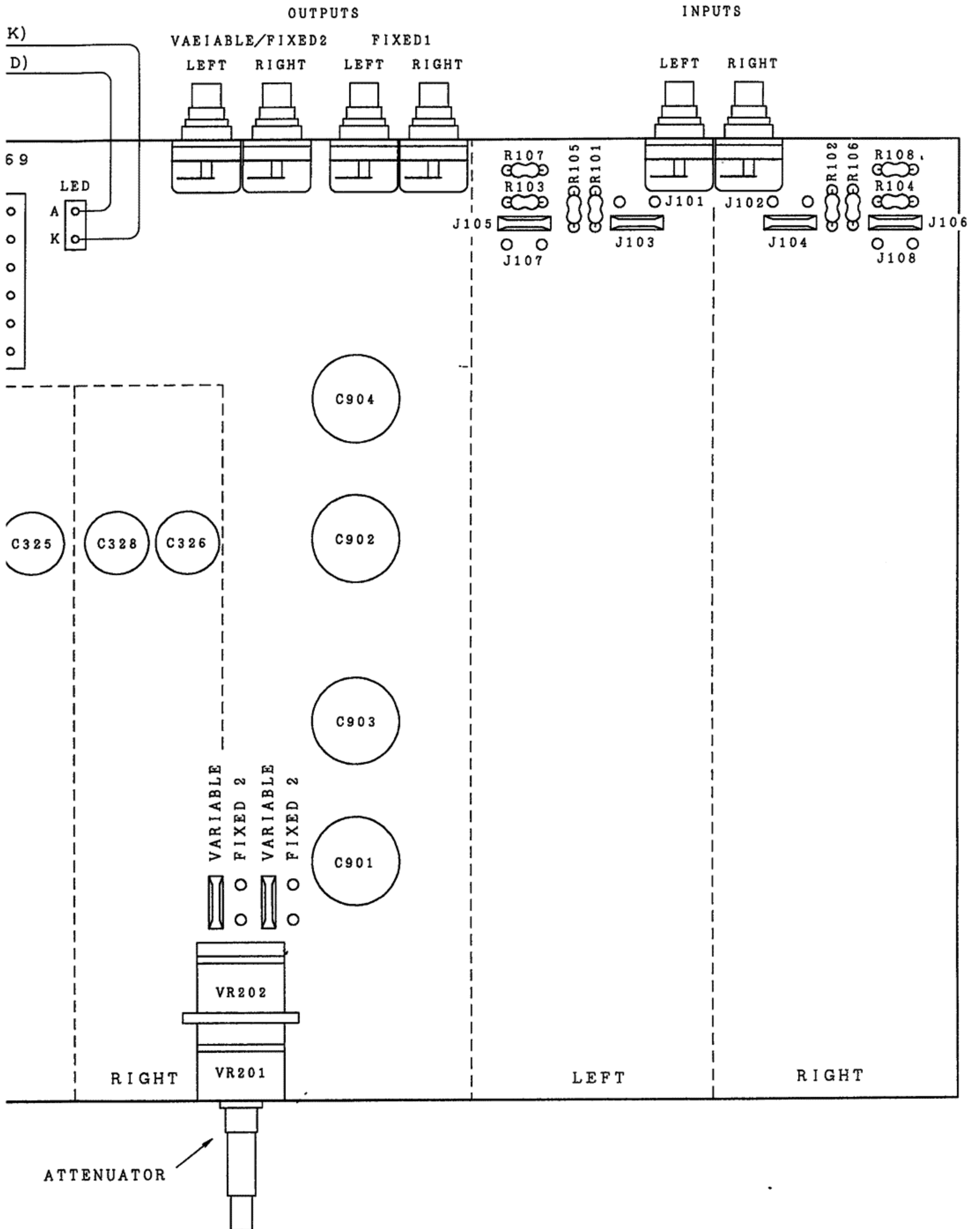
VOLTAGE SELECTOR

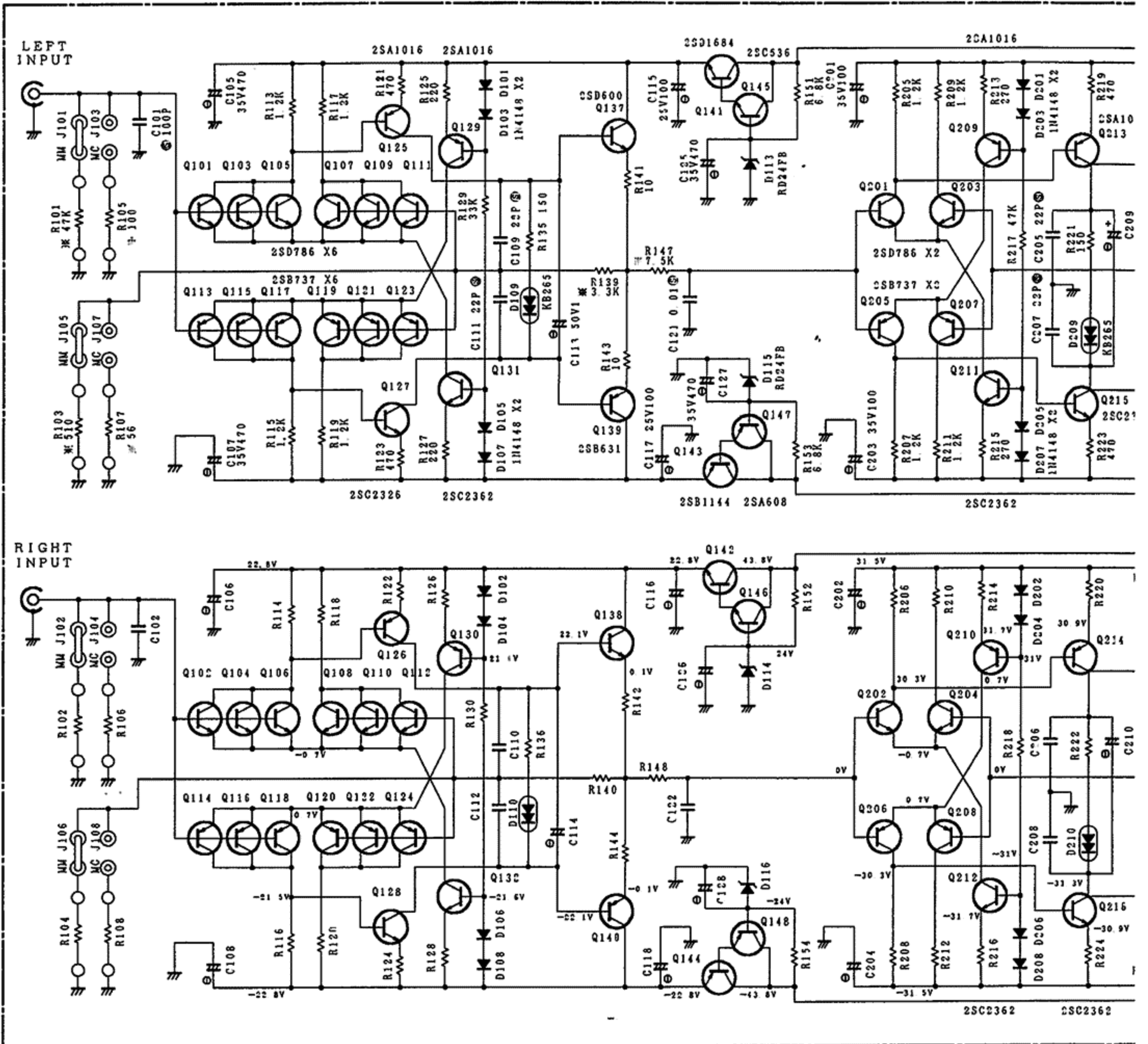
LEFT

ATTE

D002
POWER IND.

POWER SW



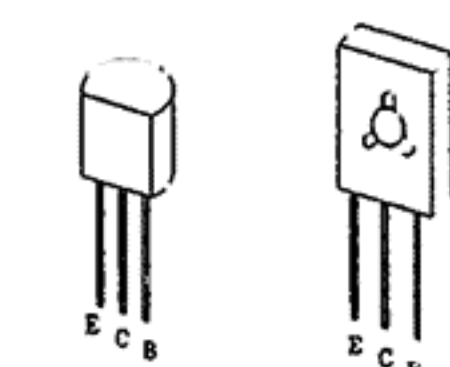


INSTRUCTIONS FOR SERVICE PERSONNEL

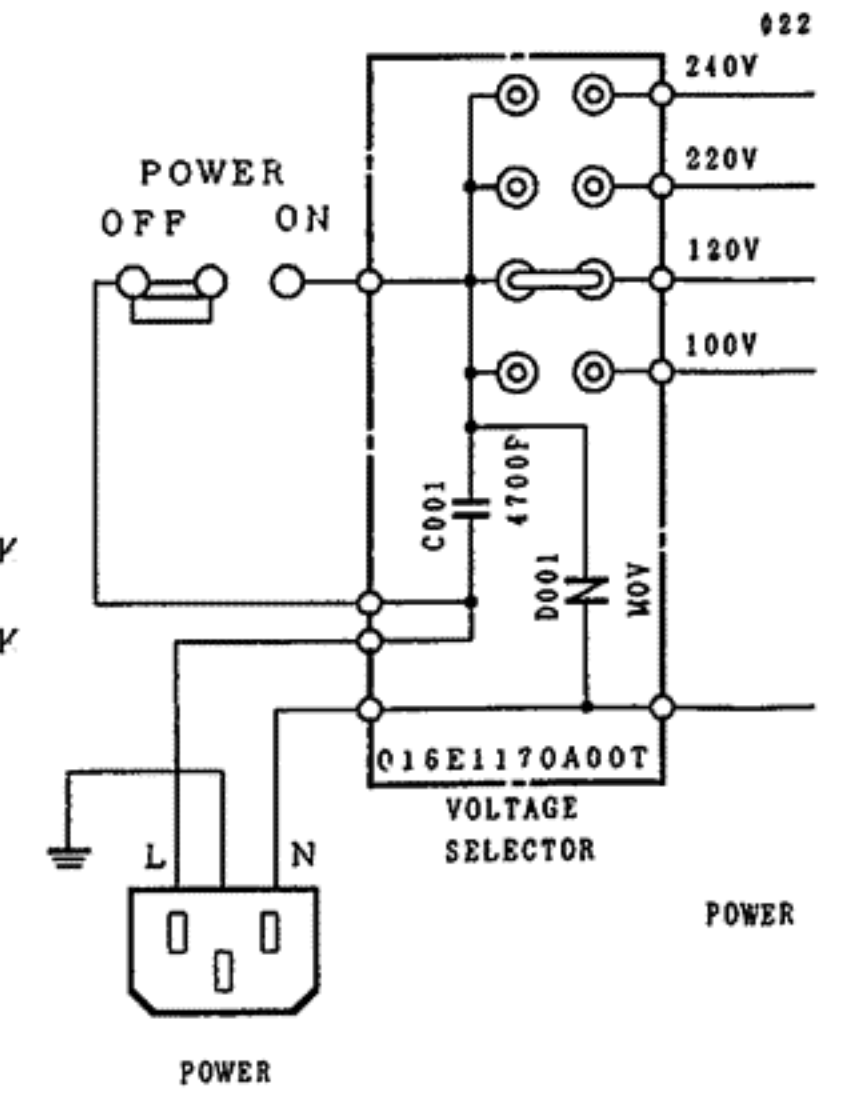
- 1) TO USE ONLY REPLACEMENT PARTS THAT HAVE THE CRITICAL CHARACTERISTICS RECOMMENDED BY MANUFACTURER.
- 2) TO MAKE LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

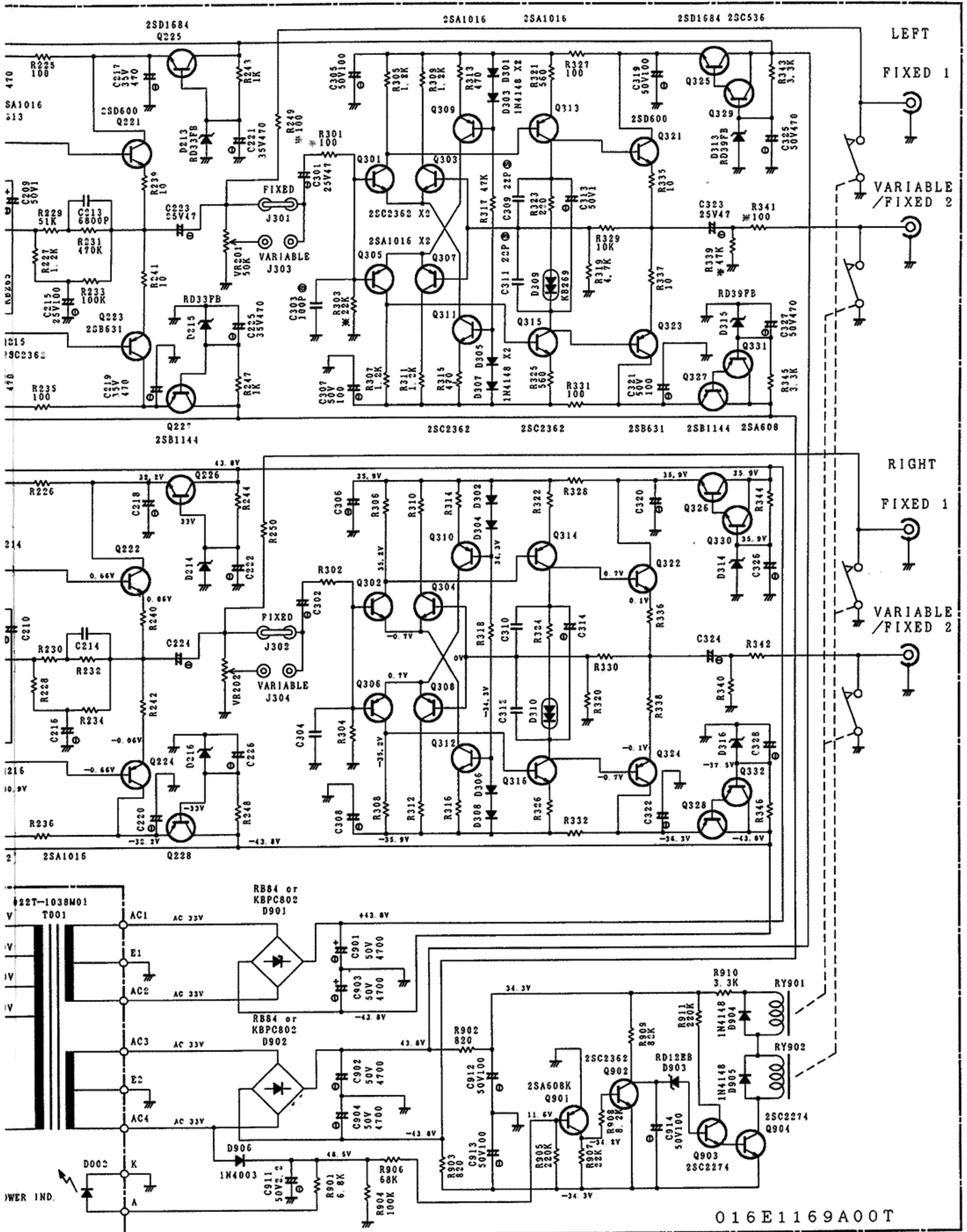
NOTES

- 1) NONMARKED RESISTORS IN OHMS 1/4W.
- 2) NONMARKED CAPASITORS IN MICRO FARADS.
- 3) VOLTAGES MEASURED WITH "VTVM" WITH NO SIGNAL INPUT.
- 4) * MARKED RESISTORS ARE VISHAY TYPE



2SA608	2SB631	V
2SA1016	2SB1144	F
2SB737	2SD600	F
2SC2362	2SD1684	K
2SC536		F
2SD786		F





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