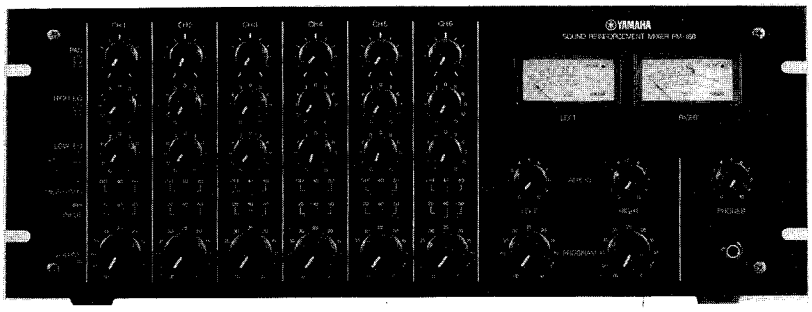
SERVICE MANUAL

PM-170•180

SOUND REINFORCEMENT MIXER



SINCE 1887 YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

006347

100Ⓟ Printed in Japan 9.81

■PM-170 SPECIFICATIONS

Frequency Response	± 0.5dB @50 ~ 15KHz $^{+0.5}_{-3}$dB @20 ~ 30KHz
Total Harmonic Distorsion (T.H.D)	0.5% or less @+24dBm 30 ~ 20KHz 0.15% or less @+24dBm 100 ~ 10KHz
Ham and Noise	−120dBm (Equivalet Input Noise) @20 ~ 20KHz −66dBm (Master & Channel VR, Input Level SW −50dBm) @20 ~ 20KHz
Maximum Voltage Gain	PGM OUT 66dB AUX IN 36dB
Maximum Input Level	+9dBm @−20dBm Input Level SW −21dBm @−50dBm Input Level SW
Crosstalk	−60dB @1KHz
Equalization	LOW ± 15dB @100Hz HIGH ± 15dB @10KHz
Hight-pass Filter	−12dB/Oct @40Hz & 80Hz
Input	6 x Input L & R x Aux In
Out Put	L & R x Program Out A L & R x Program Out B Head Phone
Controls	6 x Panpot 6 x Input Level SW (−50/−40/−20dBm) 6 x Channel Volume L & R x AUX IN Volume L & R x Master Program Volume Program Out Level Switch (+4/−20dBm) Head Phone Volume
Power Requirements	110, 117, 130, 220 or 240V. AC, 50/60Hz 15W (117V, 0.2A CSA Model)
Dimensions (WxHxD)	48 x 18.2 x 25.3 cm (18-7/8 x 7-1/8 x 10")
Weight	8 (kg) (17.6 lbs)

INPUT SPECIFICATIONS

CONNECTION	Impedance		SENSITIVITY *	INPUT LEVEL		CONNECTOR**
	ACTUAL	NOMINAL SOURCE	(at Max Gain)	NOMINAL	MAX. before Clip	IN CONSOLE
INPUT (1 ~ 6) level sw−50	20 KΩ	150Ω ~600Ω MICS&LINES	−62dBm (0.6mV)	−50dBm (2.5mV)	−21dBm (69mV)	PHONE JACK
−40	30 KΩ	600Ω ~10kΩ	−52dBm (2.0mV)	−40dBm (7.8mV)	−11dBm (218mV)	
−20	35 KΩ	MICS & LINES	−32dBm (20mV)	−20dBm (78mV)	+9dBm (2.18V)	
AUX IN L, R	30 KΩ	5 KΩ LINES	−32dBm (20mV)	−20dBm (78mV)		PHONE JACK

OUTPUT SPECIFICATIONS

CONNECTION	Impedance		POWER OUTPUT LEVEL		CONNECTOR**
	ACTUAL	NOMINAL LOAD	NOMINAL	MAX. before Clip	IN CONSOLE
PGM OUT A (L, R)	5Ω	600Ω	+4dBm (1.23V)	+24dBm (12.3V)	PHONE JACK
level sw−20	100Ω	600Ω	−20dBm (78mV)	0dBm (775mV)	
PGM OUT B (L, R)	5Ω	600Ω	+4dBm (1.23V)	+24dBm (12.3V)	PHONE JACK
HEADPHONES	4.7Ω	8Ω	−10dBm (250mV)	+4dBm (1.23V)	STEREO PHONE JACK

*This is the level required to produce an out put of +4dBm (1.23V)

■PM-180 SPECIFICATIONS

Frequency Response	± 0.5dB @50 ~ 15KHz $^{+0.5}_{-3}$dB @20 ~ 30KHz
Total Harmonic Distorsion (T.H.D)	0.5% or less @+24dBm 30 ~ 20KHz 0.15% or less @+24dBm 100 ~ 10KHz
Ham and Noise	−123dBm (Equivalet Input Noise) @20 ~ 20KHz −69dBm (Master − VR, Channel − VR, Input Level SW −50dBm) @20 ~ 20KHz
Maximum Gain	PGM OUT 66dB AUX IN 36dB
Maximum Input Level	+9 dBm @−20dBm Input Level SW −21dBm @−50dBm Input Level SW
Crosstalk	−60dB @1KHz
Equalizer	LOW ± 15dB @100Hz HIGH ± 15dB @10KHz
Hight-pass Filter	−12dB/Oct @40Hz & 80Hz
Input	6 x Input L & R x Aux In
Out Put	L & R x Program Out A L & R x Program Out B Head Phone
Controls	6 x Panpot 6 x High Pass Filter (Off/40/80Hz) 6 x Input Level SW (−50/−40/−20dBm) 6 x Channel Volume L & R x Aux In Volume L & R x Master Program Volume Program Out Level Switch (+4/−50dBm) Head Phone Volume
Power Requirements	110, 117, 130, 220 or 240V. AC, 50/60Hz 15W (117V, 0.2A CSA Model)
Dimensions (WxHxD)	48 x 18.2 x 25.3 cm (18-7/8 x 7-1/8 x 10")
Weight	9 (kg) (19.8 lbs)

INPUT SPECIFICATIONS

CONNECTION	Impedance		SENSITIVITY *	INPUT LEVEL		CONNECTOR **
	ACTUAL	NOMINAL SOURCE	(at Max Gain)	NOMINAL	MAX. before Clip	IN CONSOLE
INPUT (1 ~ 6)	8 5 0Ω	150Ω ~ 600Ω	−62dBm (0.6mV)	−50dBm (2.5mV)	−21dBm (69mV)	XLR− 3 −31
level sw−50						
−40	3 KΩ	MICS & LINES	−52dBm (2.0mV)	−40dBm (7.8mV)	−11dBm (218mV)	
−20	5 KΩ		−32dBm (20mV)	−20dBm (78mV)	+ 9 dBm (2.18V)	
AUX IN (L, R)	3 0 KΩ	5 KΩ LINES	−32dBm (20mV)	−20dBm (78mV)		PHONE JACK

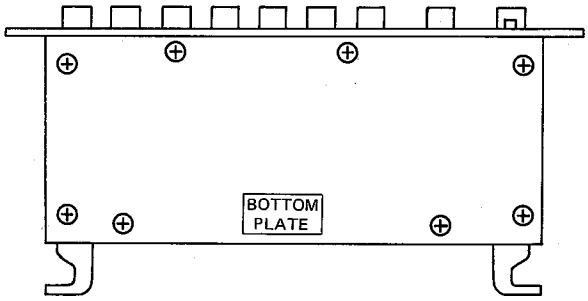
OUTPUT SPECIFICATIONS

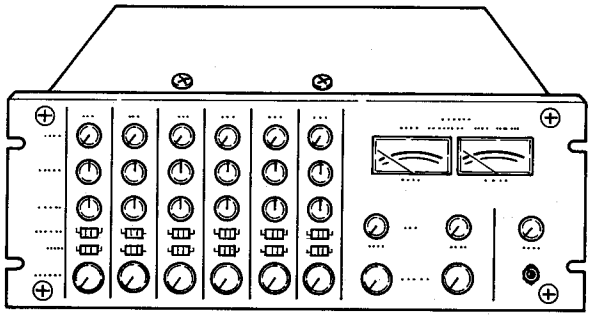
CONNECTION	Impedance		POWER OUTPUT LEVEL		CONNECTOR **
	ACTUAL	NOMINAL LOAD	NOMINAL	MAX. before Clip	IN CONSOLE
PGM OUT A (L, R)	1 2 0Ω	6 0 0Ω	+ 4 dBm (1.23V)	+24dBm (12.3V)	XLR-3-32
level sw−50	8 0Ω	6 0 0Ω	−50dBm (2.5mV)	−30dBm (25mV)	
PGM OUT B (L, R)	5Ω	6 0 0Ω	+ 4 dBm (1.23V)	+24dBm (12.3V)	PHONE JACK
HEADPHONES	4.7Ω	8Ω	−10dBm (250mV)	+ 4 dBm (1.23V)	STEREO PHONE JACK

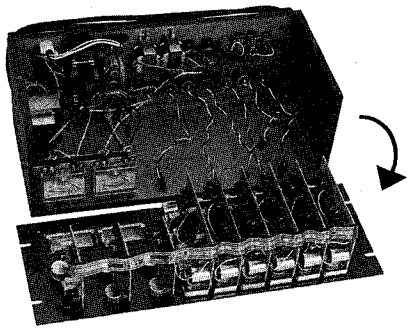
* This is the level required to produce an out put of + 4 dBm (1.23V)

** ALL XLR connections are balanced and transeformer-isolated, FLOATING. Phone jacks are unbalanced.

■HOW TO REMOVE THE PLATES







1. Remove the bottom plates (⊕x 8)
2. Remove the control panels (Panel ⊕ x 4, Upper coated plate ⊕ x 2)

■CONTROL AND TEST REQUIREMENTS FOR THE PM-170.180

1-1. Gain

When required values are set to the levels shown in Table 1 and a –50dBm/1KHz signal is fed to the INPUT jack; the output levels should be those shown in Table 2. (The PGM output terminal should be with a 600-ohm load.)

The difference in level between L and Rch should be within 2dB.

2-1. AUX IN

When a –20dBm/1KHz signal is fed to the AUX IN jack, while the controls in 1-1 are kept (the UX VOLUME needed to be maximal), the PGM OUT jack should obtain an output of +16dBm ± 2dB.

1-3. Distortion

When the output level is +4dBm, while the controls in 1-1 are kept, the distortion factor should be within 0.3% (PM-180) and within 0.5% (PM-170), respectively.

Table 1

Volume	1~ 6ch	Maximum
High, Low–EQ	1~ 6ch	Center
Input Level SW	1~ 6ch	–50dBm
Panpot	1~ 6ch	Center
Master Volume	L & R	Maximum
Aux Volume	L & R	Minimum
Out Level SW		+4dBm
Phone Volume		Minimum
High Pass Filter		OFF

Table 2

Input Level SW	PGM OUT A	PGM OUT B
–50	+16 ± 2dBm	+16 ± 2dBm
–40	+ 6 ± 2dBm	+ 6 ± 2dBm
–20	–14 ± 2dBm	–14 ± 2dBm

1-4. Frequency characteristics

With the controls in 1-1 kept and a 1KHz signal as the reference, the frequency characteristics should be ±3dB (50Hz) and within ± 1/3dB (15KHz), respectively.

1-5. Tone control

When the tone control knob is adjusted, while the controls in 1-1 are kept, the tone control characteristics should meet the levels shown in Table 3.

All of the references should be those of 1KHz at the FLAT (center) and the input levels are stably constant.

Table 3

EQ	100Hz	1KHz	10KHz
HIGH, LOW Center			
HIGH, LOW, MAX	+14 ± 3dB	+1 ± 3dB	+14 ± 3dB
HIGH, LOW, MIN	−14 ± 3dB	−1 ± 3dB	−14 ± 3dB

1-6. Hight-pass filter

When the Hight-pass filter is switched over to the 40Hz, 80Hz, while the controls in 1-1 are maintained, the output levels at 50Hz and 100Hz should be identical with those shown in Table 4. (The reference should be 0dBm/1KHz output)

Table 4

PM-170

HPF. SW	1KHz	50Hz	100Hz
40Hz	50Hz 0 dBm	−4 ± 2.0dBm	
30Hz	100Hz 0 dBm		−4 ± 2.0dBm

PM-180

40Hz	50Hz 0 dBm	−4 ± 1.5dBm	
80Hz	100Hz 0 dBm		−4 ± 1.5dBm

1-7. Maximum output

When a 1KHz signal is enlarged until its output waveform clips itself (distortion factor being 3%), while the controls in 1-1 kept, the level of output should be greater than +24dBm.

1-8. VU meter

With the controls in 1-1 kept, and the PGM OUT set to +4dB, the VU meter indication should be 0 ± 1VU.

1-9. PGM OUT B

With the controls in 1-1 kept, and the PGM OUT A set to obtain an output of +4dBm, the PGM OUT B should have an output of +4dBm ± 1dBm.

1-10. Output changeover switch

With the PGM OUT A's output switched over to the +4dBm, and the PGM OUT A terminal set to obtain an output of +4dBm, the output levels, when the switch is changed over to −20dBm (PM-170) and −50dBm (PM-180), should be identical eith −20 ± 3dBm and −50 ± 3dBm, respectively.

1-11. HEADPHONE

With the controls in 1-1 kept, connect and 8 Ω load resistance to the HEADPHONE terminal, and then set the HEADPHONE VOLUME to the maximum level. In this case, both ends of the load resistance should obtain an output of −1 ± 3dBm by feeding an input of −50dBm/1KHz from the INPUT terminal.

1-12. Seperation

In the controls in 1-1, maximize the CHANNEL VOLUME of the channel for measurement alone, while setting those of other channels to the minimum level. At the same time, turn over the PAN VOLUME to the L side to control the output level to +4dBm. In this case, the R side of the PGM OUT should have a signal level of less than −46dBm. (The same signal level should be obtained when the PAN VOLUME is turned over to the R side.)

1-13. Noise level

With the controls in 1-1 kept, the noise level of the PGM OUT A should be less than −37dBm (PM-170) and less than −40dBm (PM-180), respectively. When the CHANNEL VOLUME of the measurement channel alone is controlled to the maximum level and those of other channels to the minimum, the noise levels should be less than −45dBm (PM-170) and less than −50dBm (PM-180), respectively. When both the HIGH-EQ and LOW-EQ are set to the maximum levels, the level of noise should be less than −20dBm. (The POWER SW is to be changed over to the side with the smaller noise level.)

1-14. Residual noise level

When the MASTER PGM VOLUME is controlled to the minimum, the noise level of the PGM OUT terminal should be less than −70dBm. When the MASTER PGM VOLUME is set to the maximum and the CHANNEL VOLUME set to the minimum, the level of noise is less than −55dBm.

1-15. LED flashing level (only for the PM-180)

With the controls in 1-1 kept, adjust the LED (light-emitting diode) of the meter to start flashing in the +14dBm ± 1dBm range by means of a fixing VR of the LED sheet. After the adjustment is over, fix down the VR with enamel.

2. Stability

2-1. The models should operate stably against the voltage fluctuation within ±10% of the specified level.

2-2. The models should operate stably within an ambient temperature range of 0° C ~ 55° C.

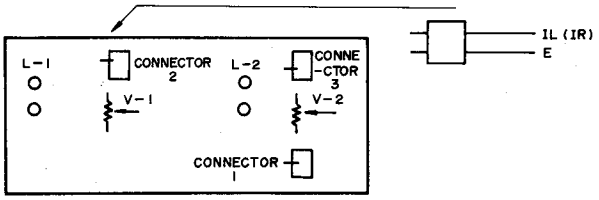
3. Measuring instruments

3-1. The output impedance of an oscillator should be less than 600Ω, and the distortion factor be less than 0.05%.

3-2. The input impedance of such measuring instruments as oscilloscope and voltmeter should be smaller than 100KΩ.

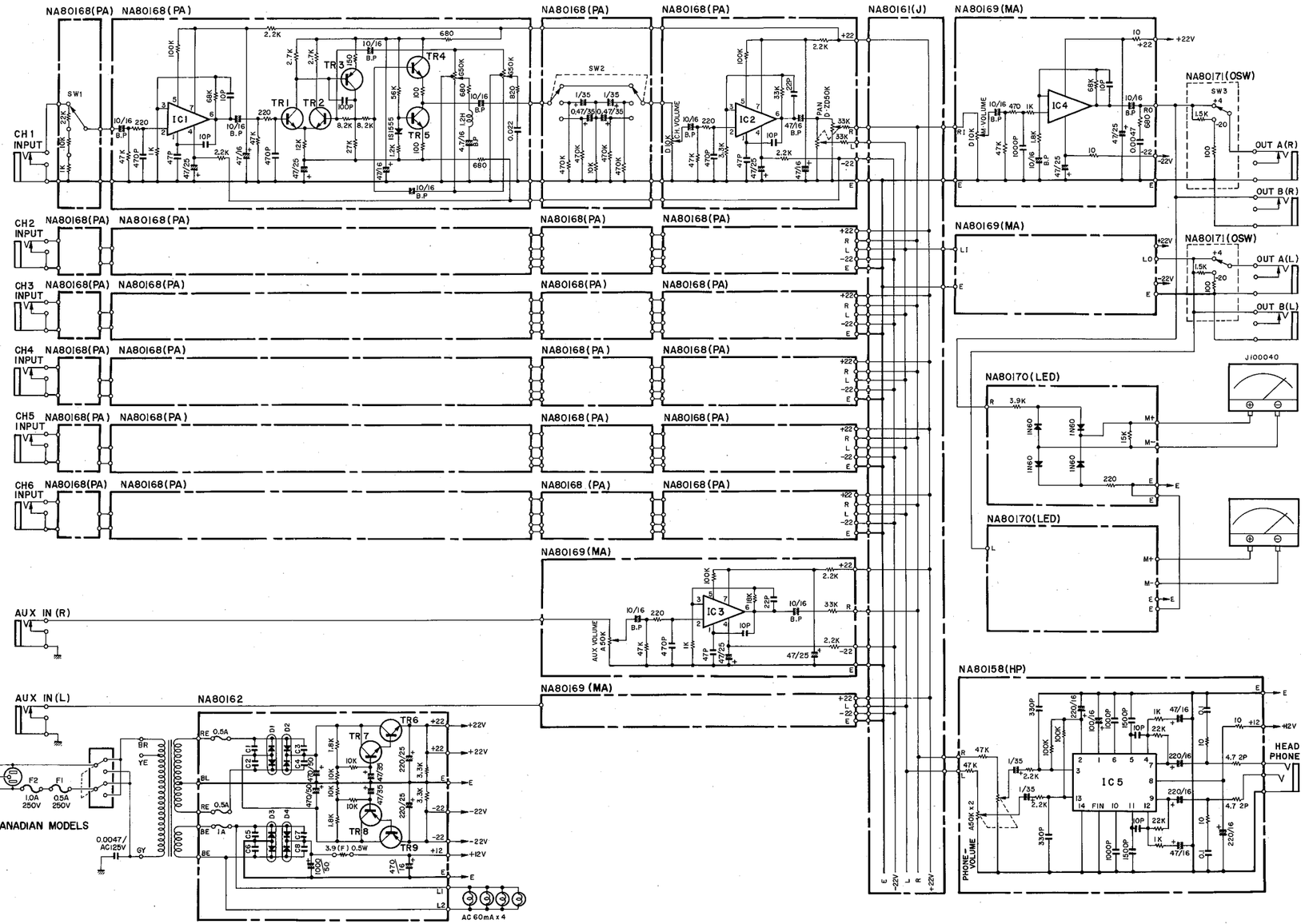
Control of the peak indicator's LED flashing level (only for the PM-180)

Although the peak indicator is adjusted to start flashing at the +14dBm ± 1dBm level, it can be further controlled, when necessary, in the +4dBm ~ +24dBm range.



To control the LED flashing level of the peak indicator, connect the LED to L-1 and L-2, and feed a 1KHz signal between the connector 2's (3's) IL and E (IR-E), thereby adjusting the flash-starting level with a semi-fixed volume controller V-1, B47K (V-2).

■PM-170 SCHEMATIC DIAGRAM



TA7136P IC 1. 2. 3		NE80100			2SC1681 2SA561 2SC734			2SB596 (R) Tr9			10DC-2 D2, 4	
TA7203P					2SD526 (R) Tr6		Cathode Anode	10DC-2R D1, 3				

1. Transistors

Tr1,2,4,5	2SC1681 (BL)
Tr3,8	2SA 561 (Y)
Tr6	2SD 526 (R)
Tr7	2SC 734 (Y)
Tr9	2SB 596 (R)

2. Integrated Circuits

IC1,2,3	TA7136P
IC4	NE80100
IC5	TA7203P

3. Diodes

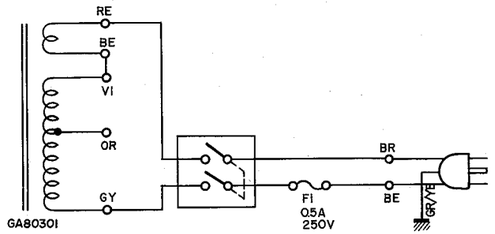
Di1,3	10DC-2R
Di2,4	10DC-2

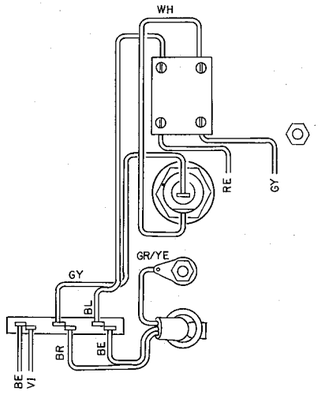
4. Switch

SW1	Input Level SW
SW2	High Pass Filter SW
SW3	Output Level SW
SW4	Power SW

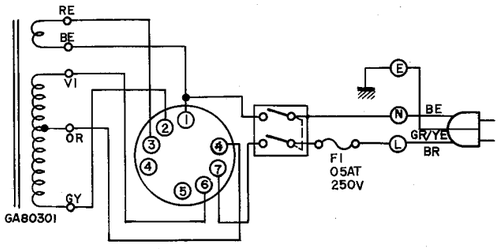
■PM-170 POWER CIRCUIT ARRANGEMENT

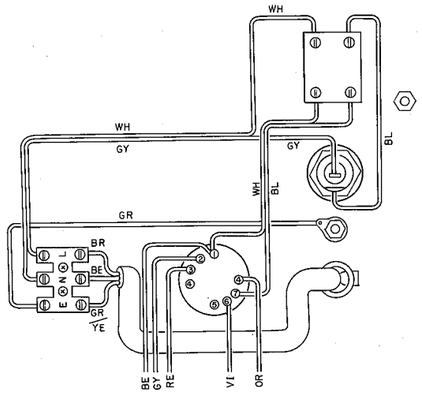
■ FOR AUSTRALIAN MODEL





■ FOR BS/NORTH EUROPEAN MODELS





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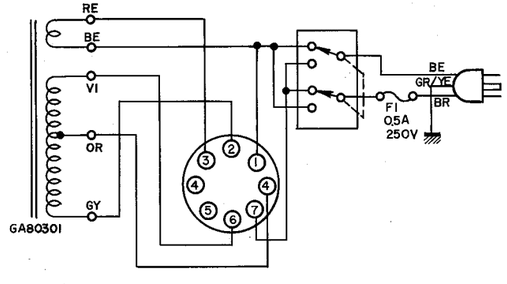
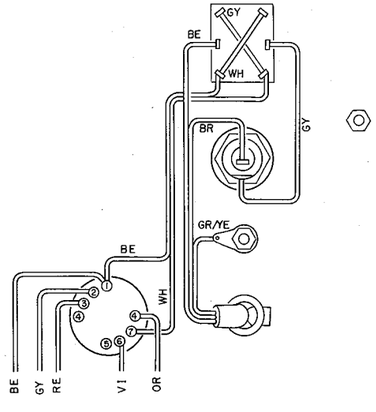
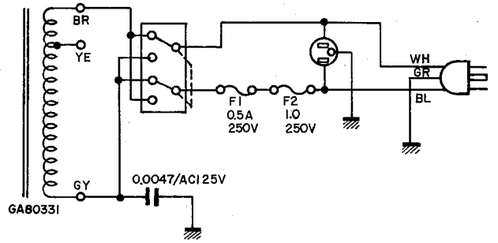
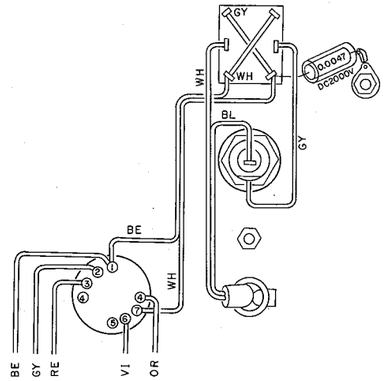


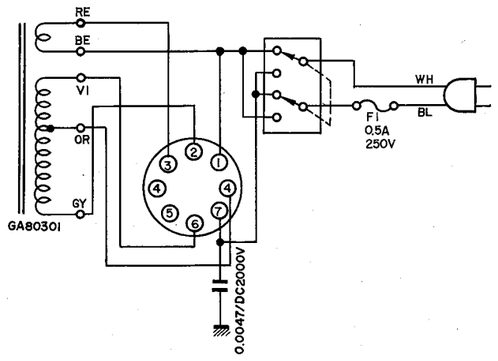


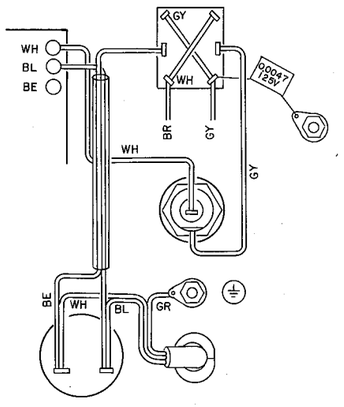
■ FOR US/CANADIAN MODELS



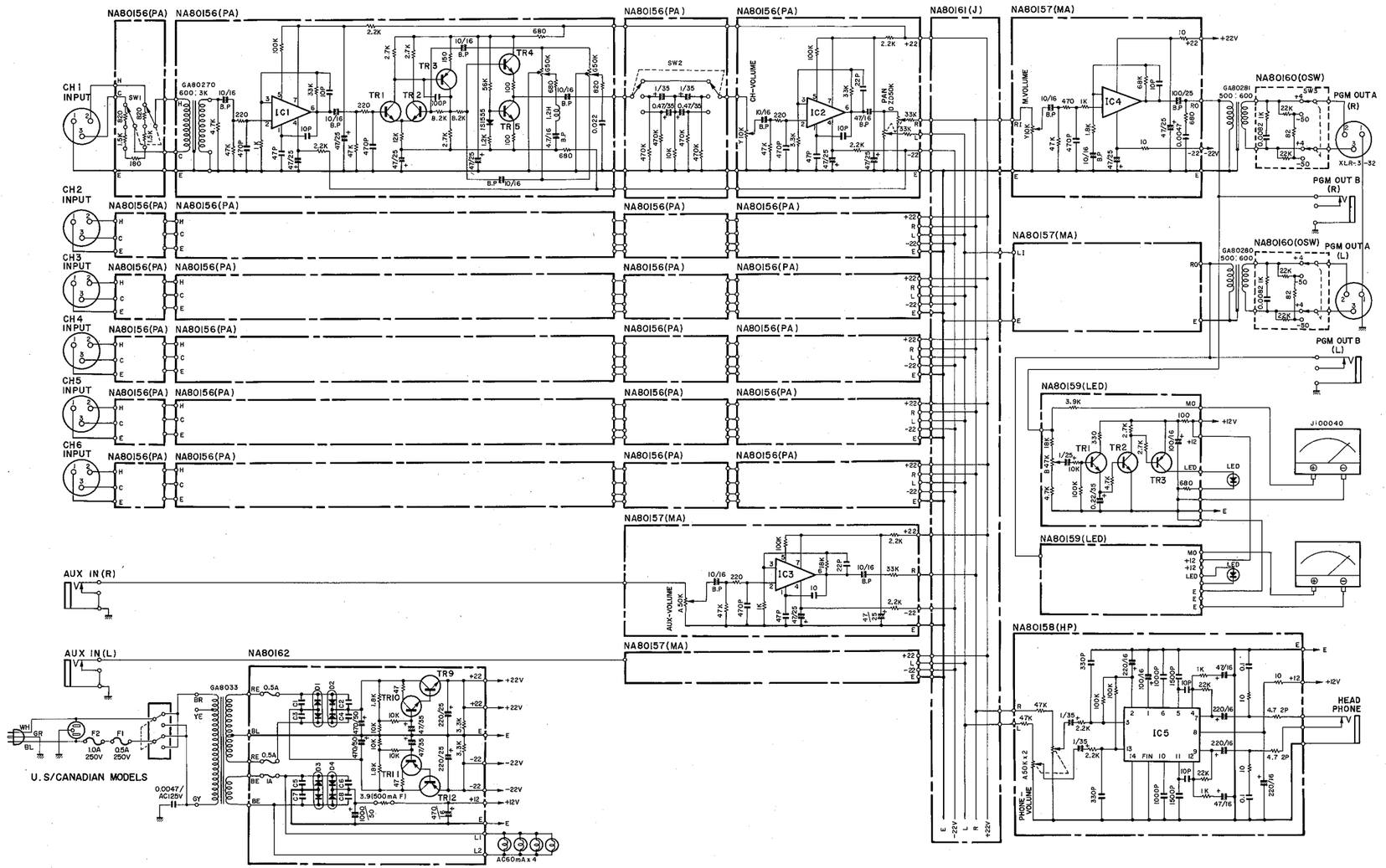


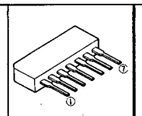
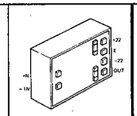
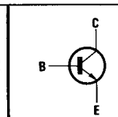
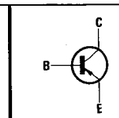
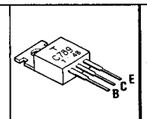
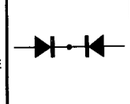
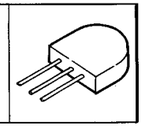
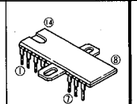
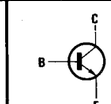
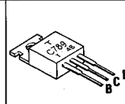
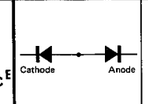
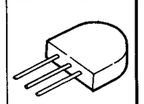
■ FOR GENERAL MODEL





■PM-180 SCHEMATIC DIAGRAM



TA7136P		NE80100			2SC1681 2SA561 2SC734			2SB596 (R) Tr12			10DC-2 D2, 4	
TA7203P			2SD526 (R) Tr9			10DC-2R D1, 3						

1. Transistors

Tr1,2,4,5,6,7	2SC 1681 (BL)
Tr3,8,11	2SA 561 (Y)
Tr9	2SD 526 (R)
Tr10	2SC 734 (Y)
Tr12	2SB 596 (R)

2. Integrated Circuits

IC1,2,3	TA7136P
IC4	NE80100
IC5	TA7203P

3. Diodes

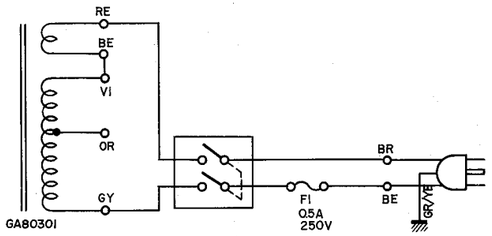
Di1,3	10DC-2R
Di2,4	10DC-2

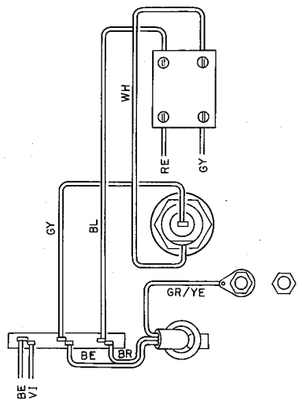
4. Switch

SW1	Input Level SW
SW2	High Pass Filter SW
SW3	Output Level SW
SW4	Power SW

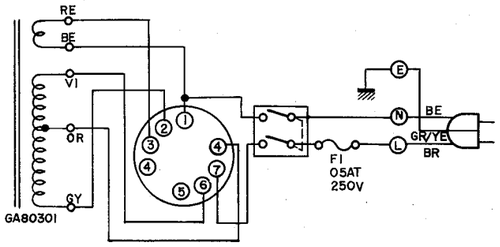
■PM-180 POWER CIRCUIT ARRANGEMENTS

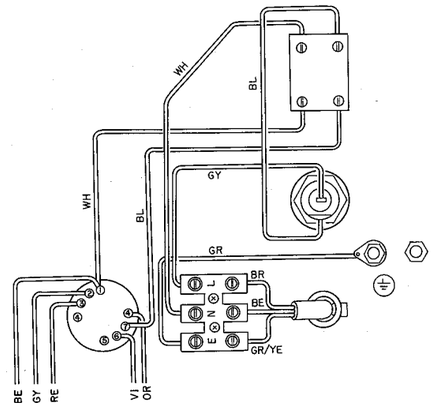
■ FOR AUSTRALIAN MODEL



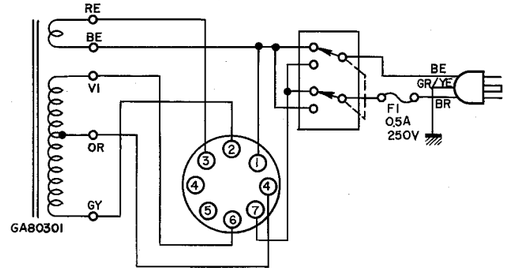


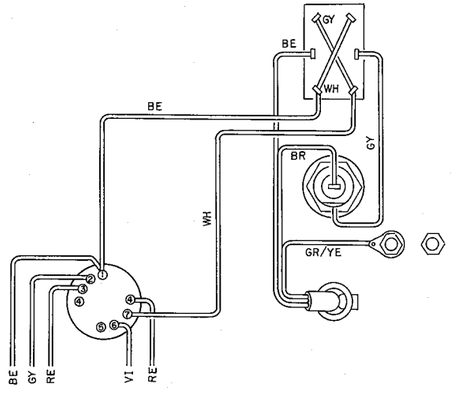
■ FOR BS/NORTH EUROPEAN MODELS



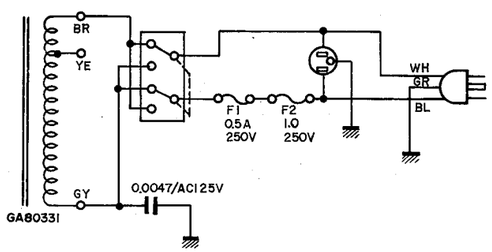


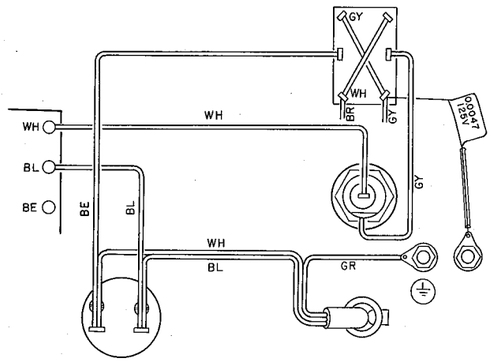
■ FOR SOUTH AFRICAN MODEL



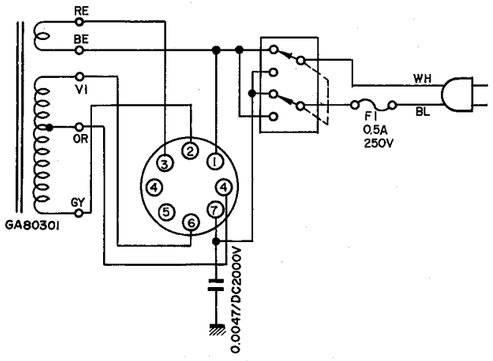


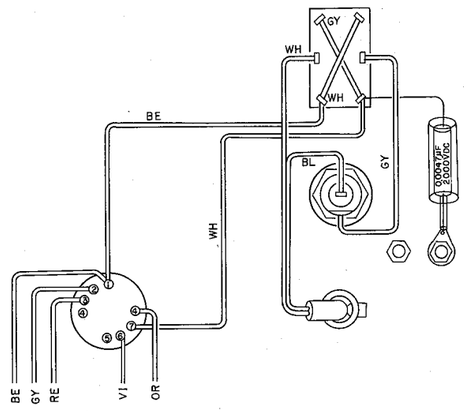
■ FOR US/CANADIAN MODELS



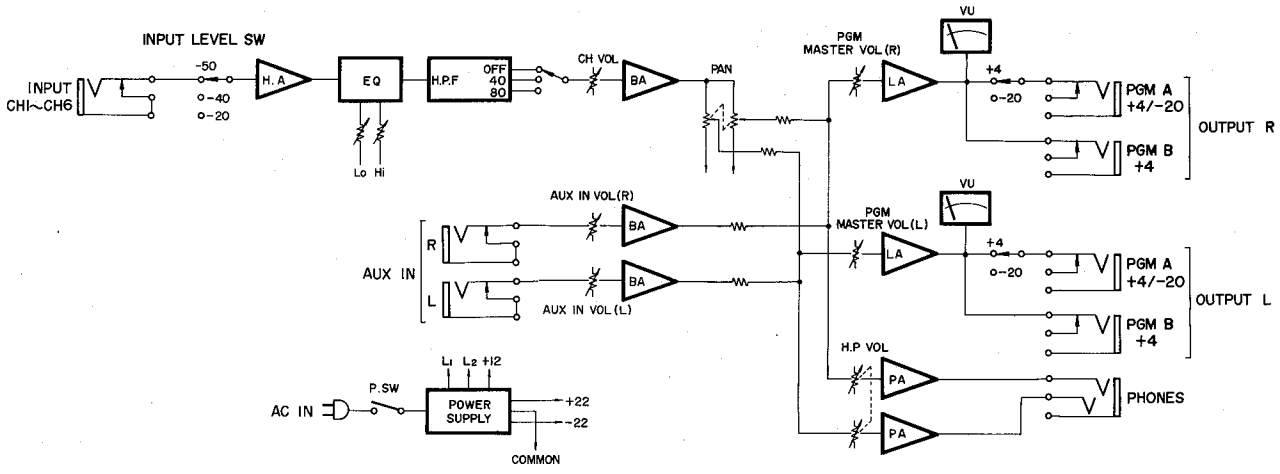


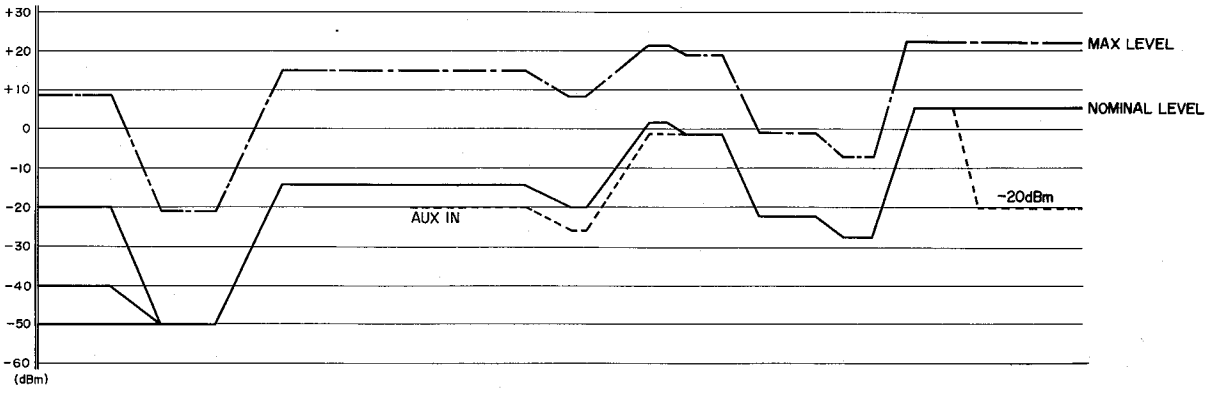
■ FOR GENERAL MODELS





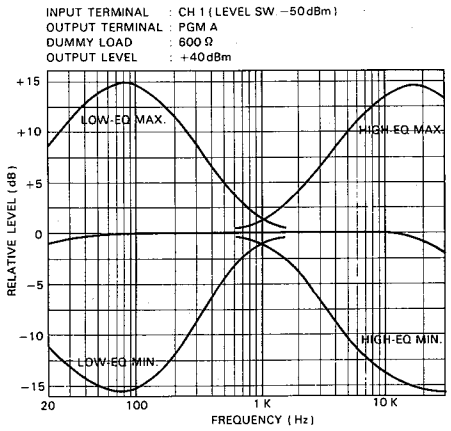
■PM-170 BLOCK & LEVEL DIAGRAM



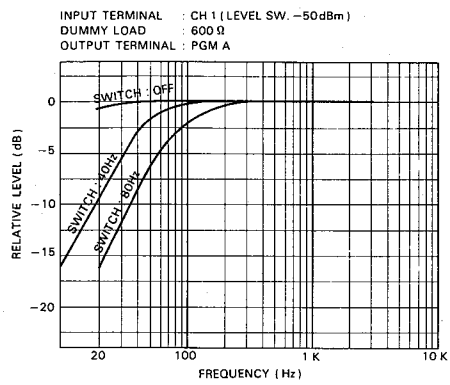


■FREQUENCY RESPONSE

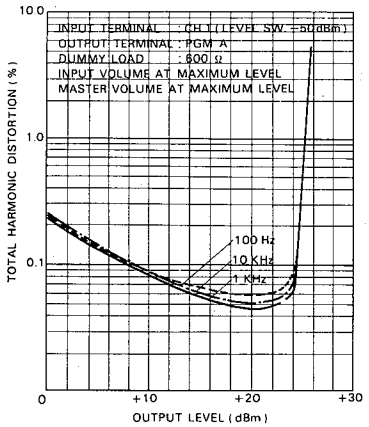
Frequency Response



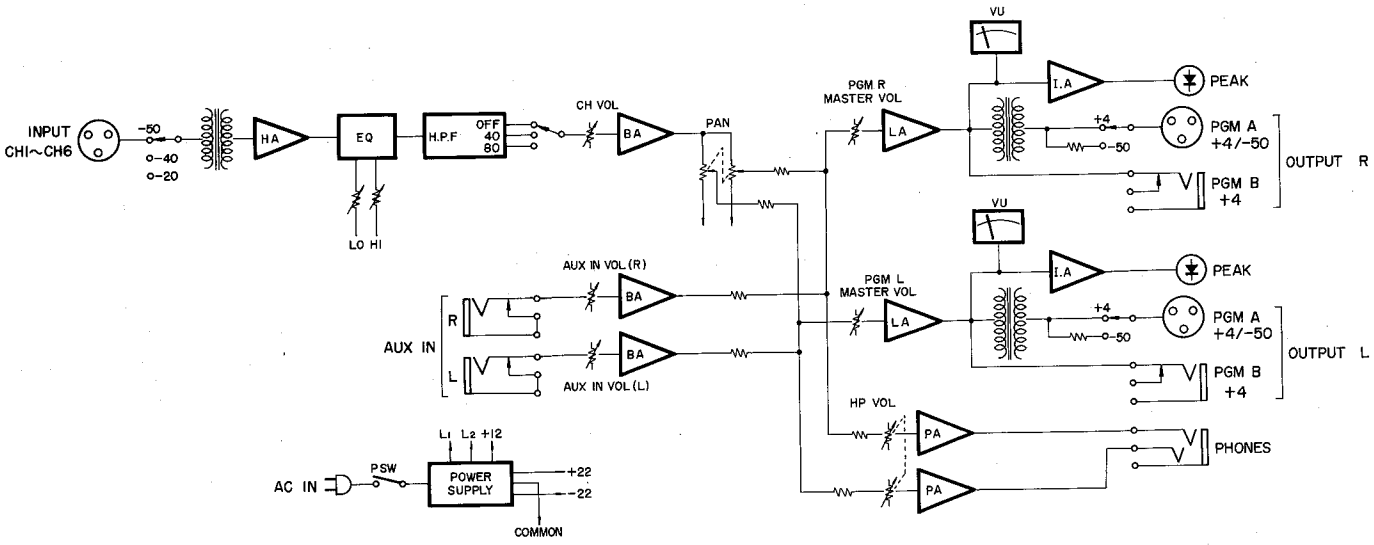
Hight-pass Filter

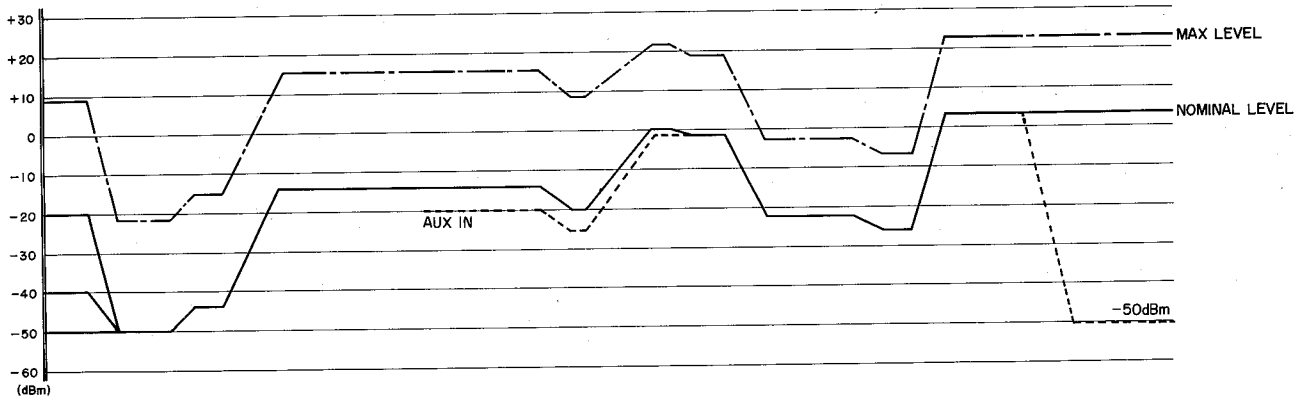


Total Harmonic Distortion



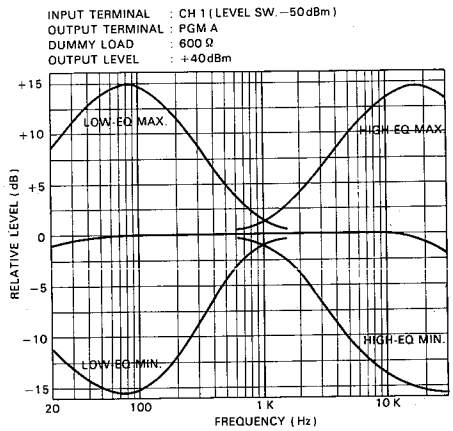
■PM-180 BLOCK & LEVEL DIAGRAM



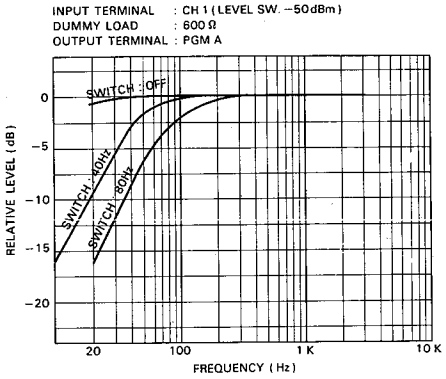


■FREQUENCY RESPONSE

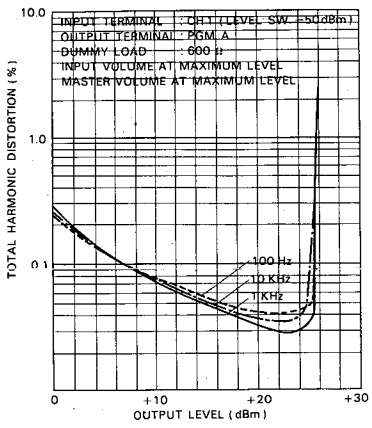
Frequency Response



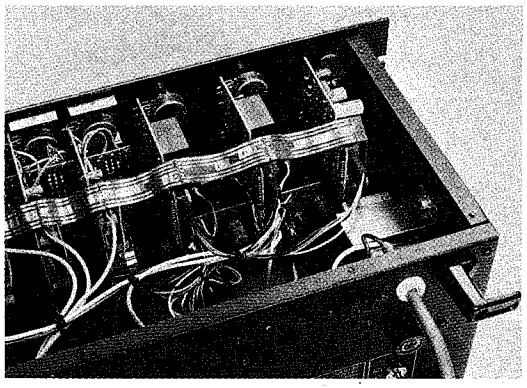
Hight-pass Filter



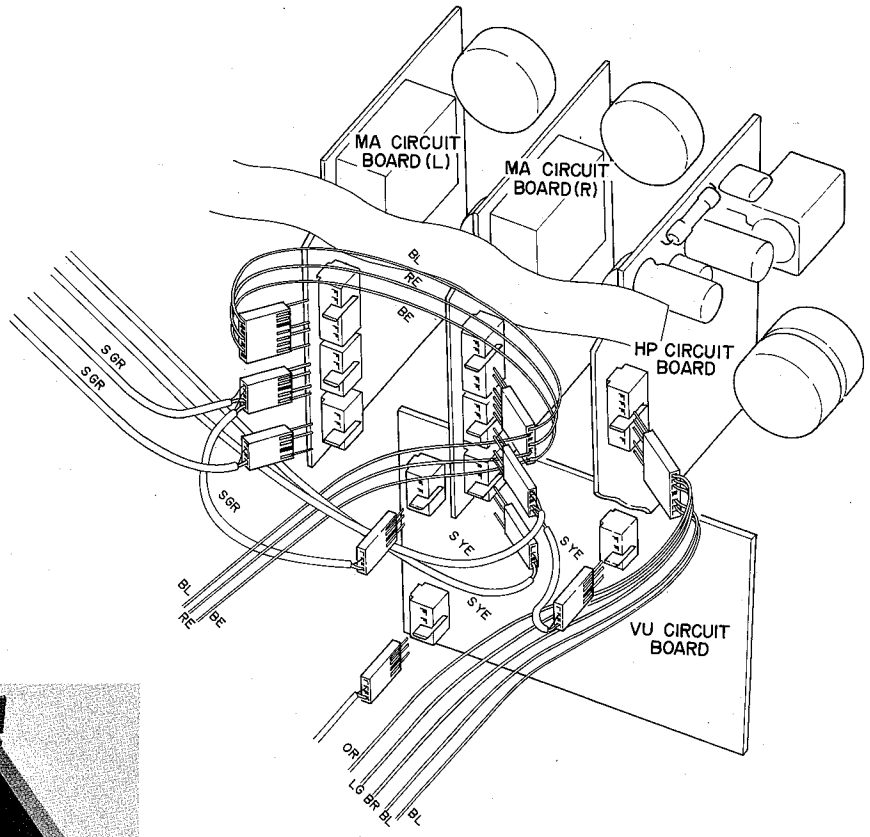
Total Harmonic Distortion



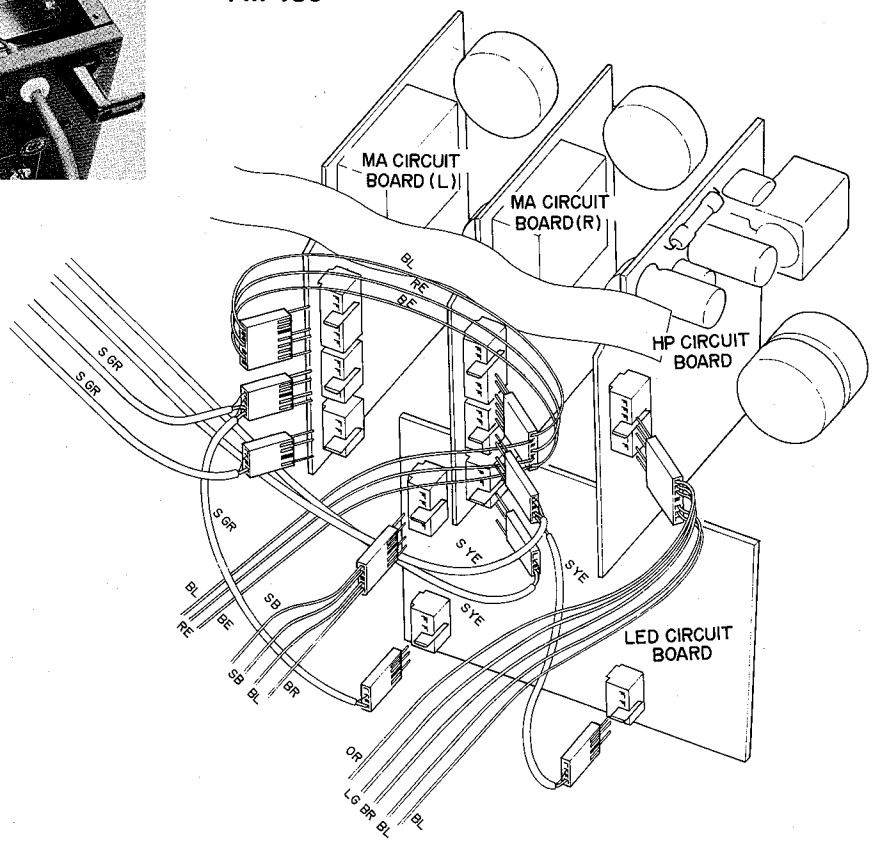
■CONNECTING DIAGRAM



PM-170

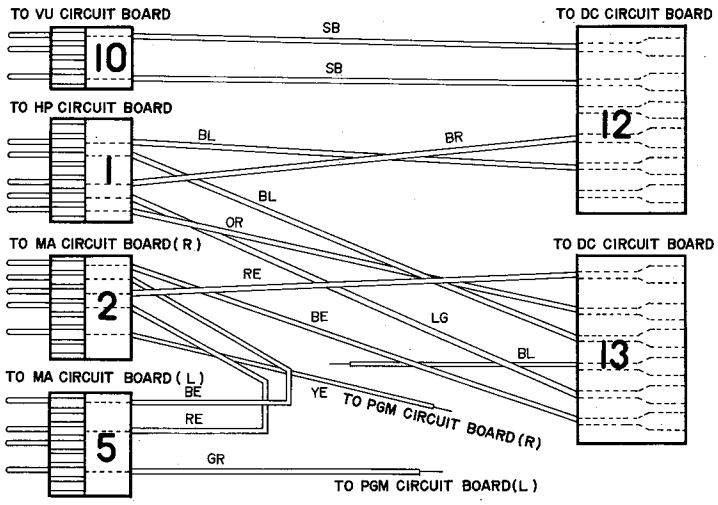


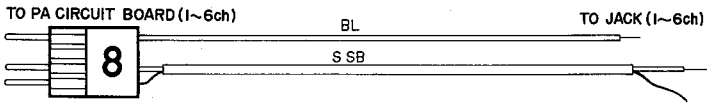
PM-180

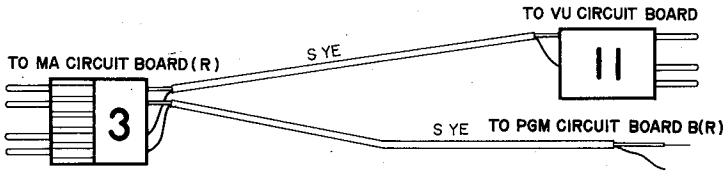


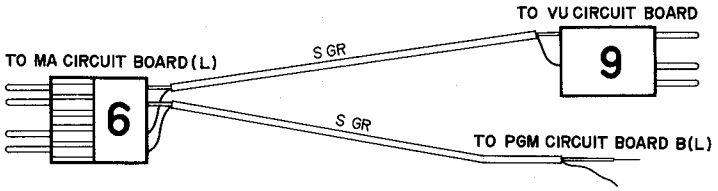
■PM-170 CIRCUIT DIAGRAM

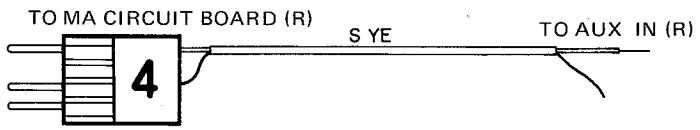
Connectors are noted temporarily for the service manual, and these connected with those connector nember the circuit board.

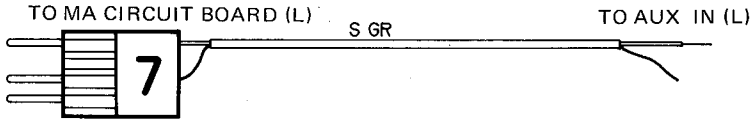






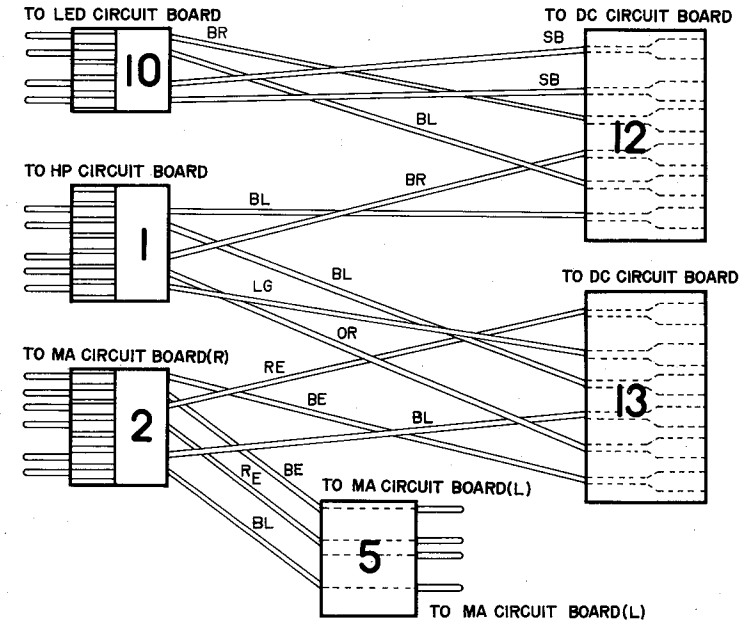


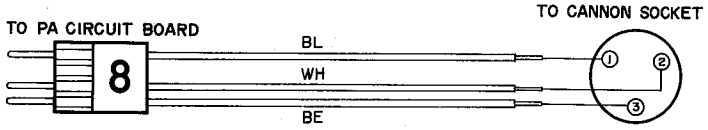


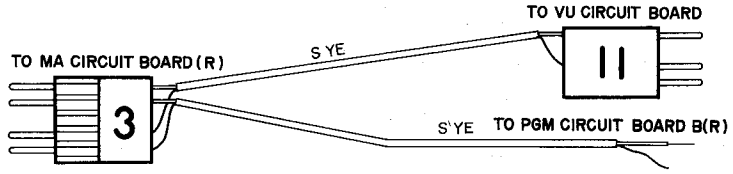


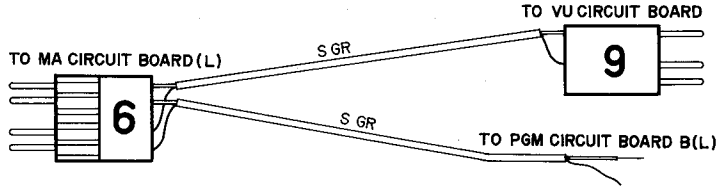
Connectors are noted temporarily for the service manual, and these connected with those connector nember the circuit board.

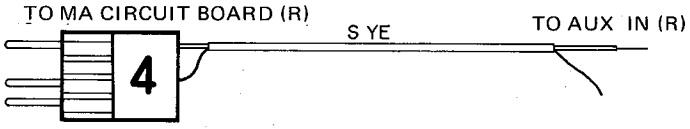
■PM-180 CIRCUIT DIAGRAM

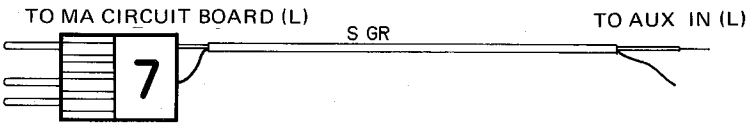








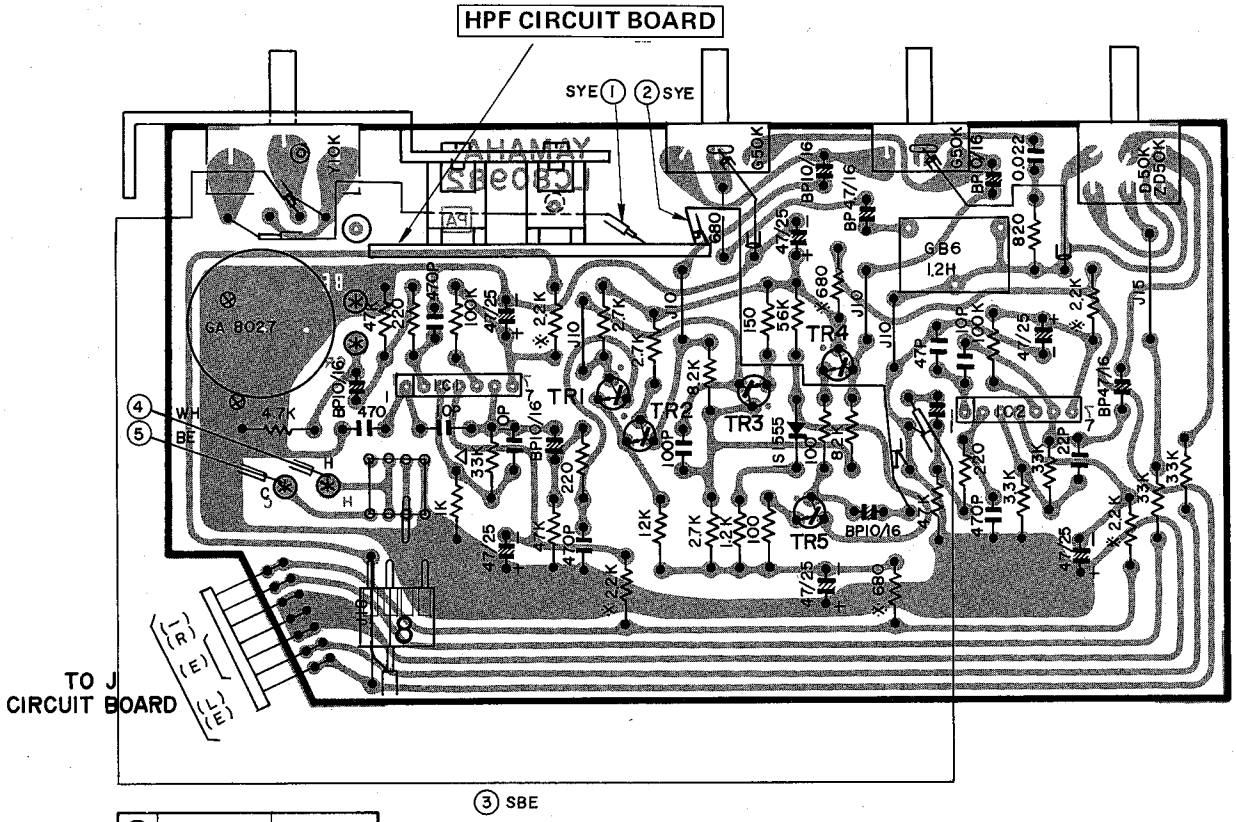




■CIRCUIT BOARD

J Circuit Board (NA80161)

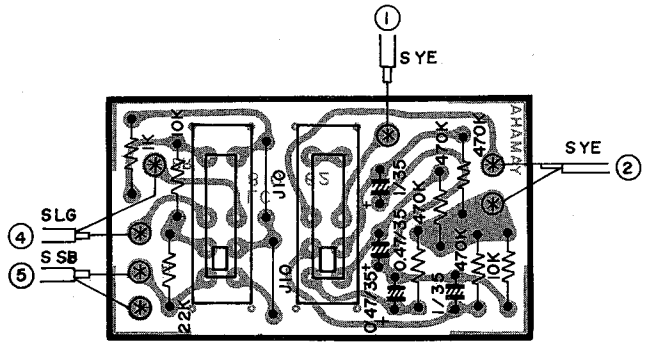
PA Circuit Board (PM-170 NA80168) (PM-180 NA80156)



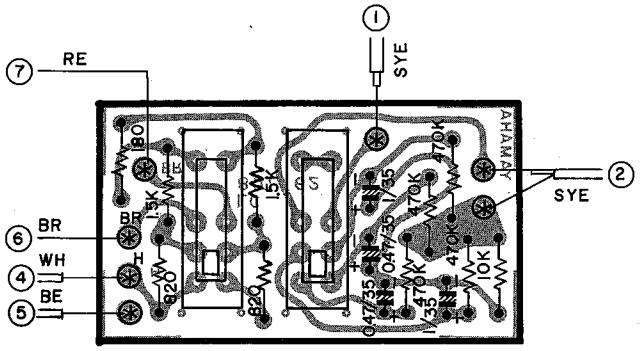
⊗	PM-170	CUT
◎	PM-170	D10K
△	PM-170	68K

Make 7 mm to 8 mm of clearance between resister and wire with varnish tube.

HPF Circuit Board (PM-170 NA80168) (PM-180 NA80156)

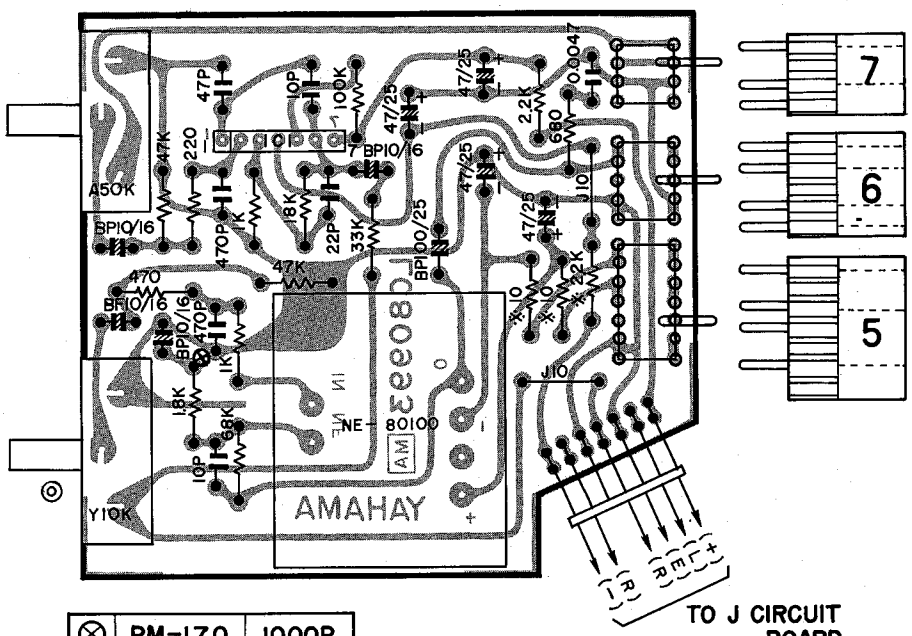


PM-170



PM-180

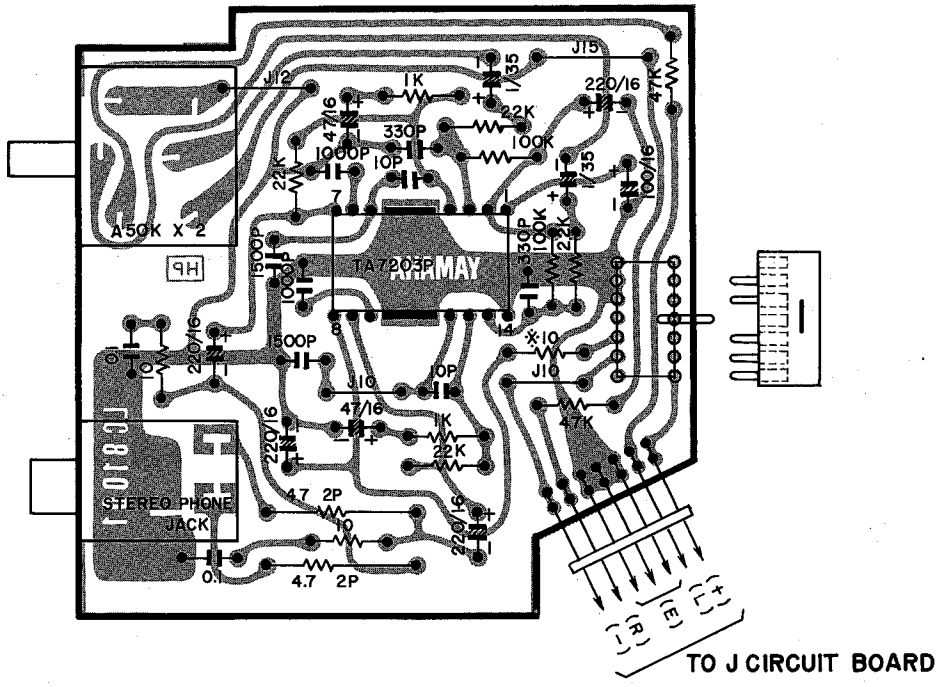
MA Circuit Board (PM-170 NA80169)
(PM-180 NA80157)



⊗	PM-170	1000P
◎	PM-170	D10K

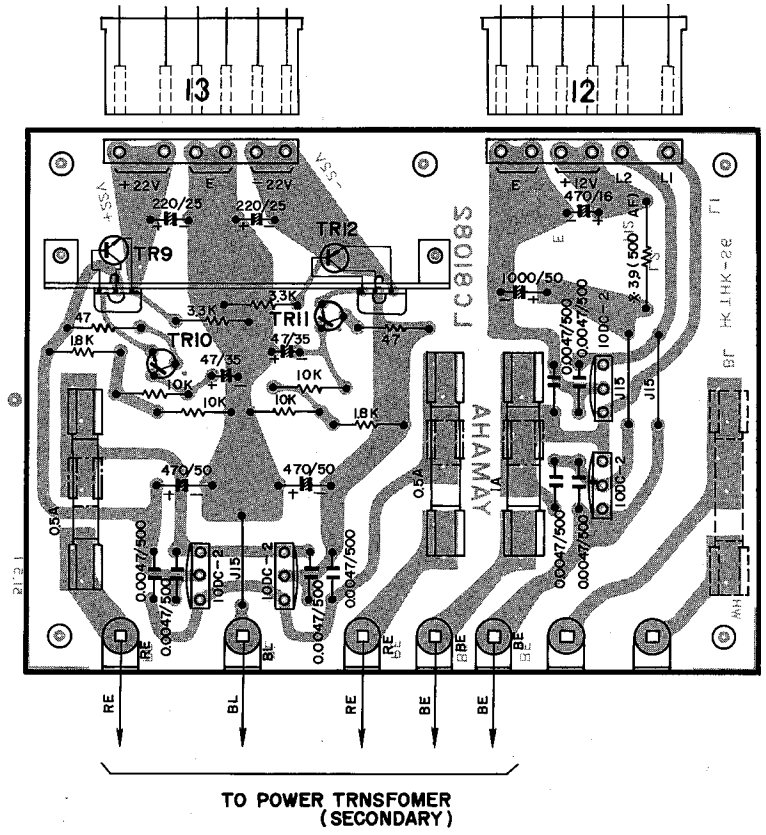
Make 7 mm to 8 mm of clearance between resister and wire with varnish tube.

HP Circuit Board (NA80158)



Objective end of connector, refer to the Circuit Diagram P.16, 17.

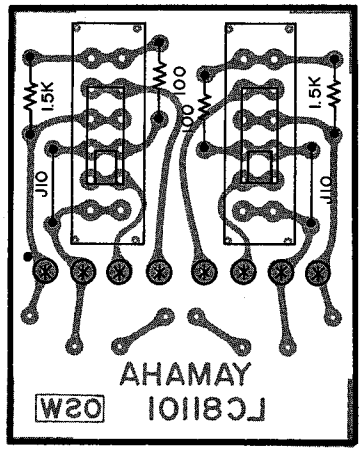
DC Circuit Board (NA80163)
(NA80164)
(NA80162)



	Circuit No.	Fuse		
For General, South African, Australian models	NA80162	250V	0.5AT	2
			1AT	1
For U.S/Canadian models	NA80163	250V	0.5AT	2
			1AT	2
For B.S/North European models	NA80164	Ⓢ fuse 250V	0.5AT	2
			1AT	1

Objective end of connector, refer to the Circuit Diagram P.16, 17.

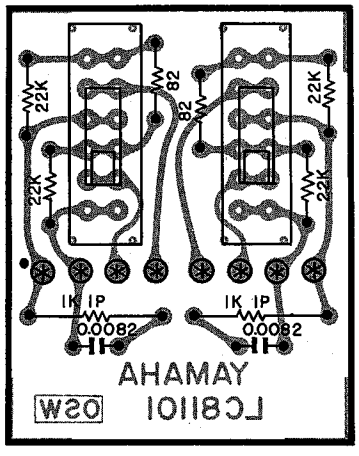
OSW Circuit Board (PM-170 NA80171)
(PM-180 NA80160)



PM-170

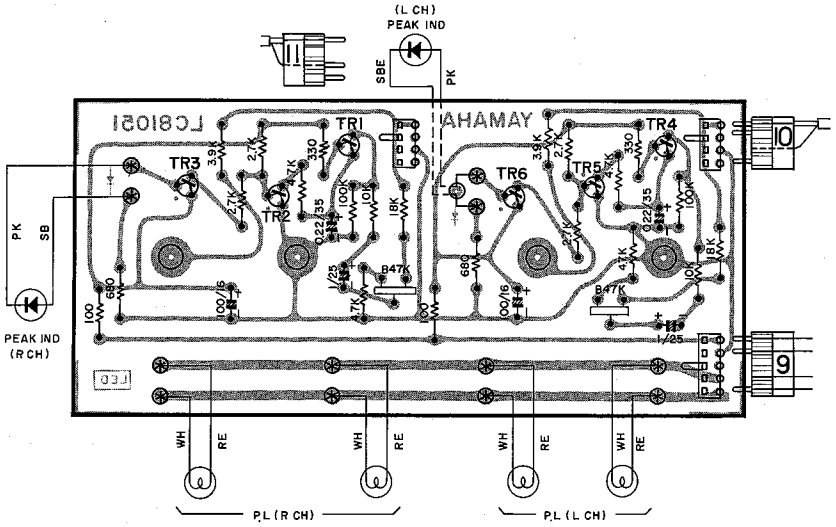
PM-180	
GR	OUT PUT TRANS
BE	OUT PUT TRANS
BE	PGM OUT (3)L
WH	PGM OUT (2)L
WH	PGM OUT A(2)R
BE	PGM OUT A(3)R
BE	OUT PUT TRANS(R)
GR	OUT PUT TRANS(R)

PM-170	
SGR	PGM OUT B(L)
SLG	PGM OUT A(L)
SOR	PGM OUT A(R)
SYE	PGM OUT B(R)

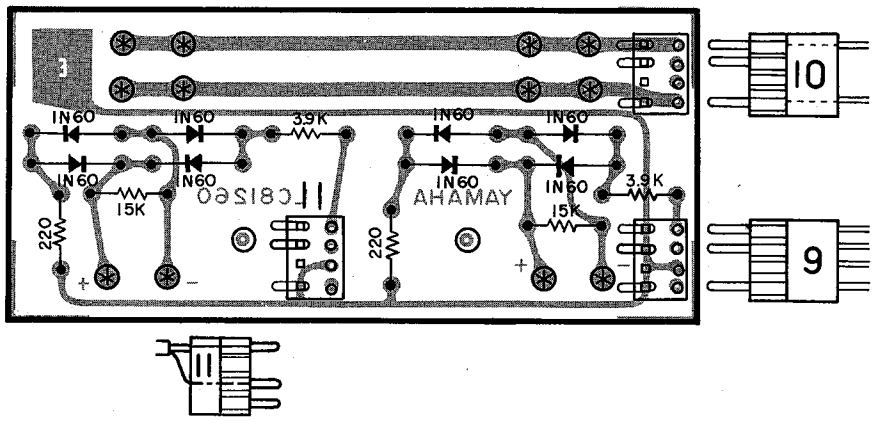


PM-180

LED Circuit Board (PM-180 NA80159)

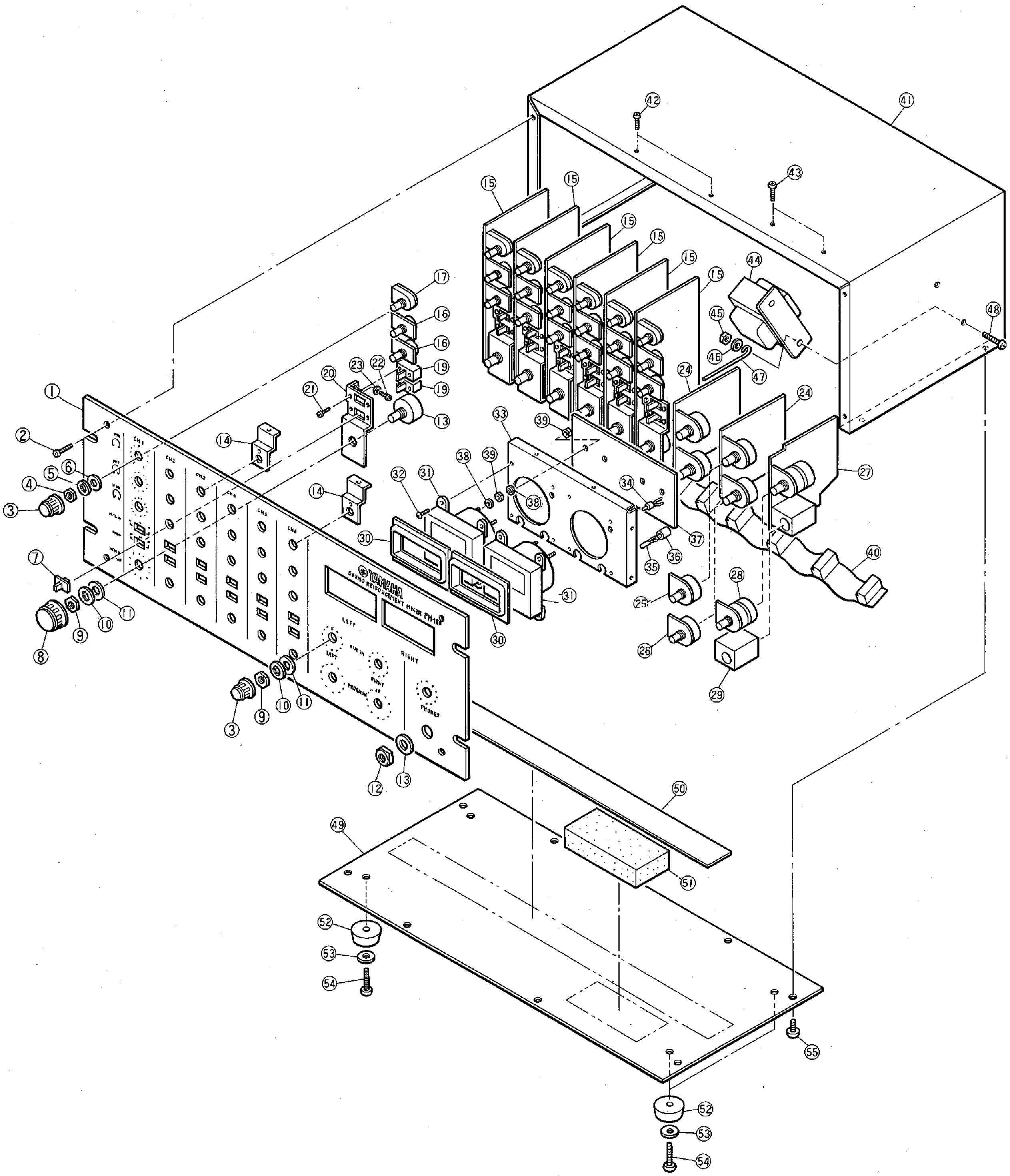


VU Circuit Board (PM-170 NA80170)



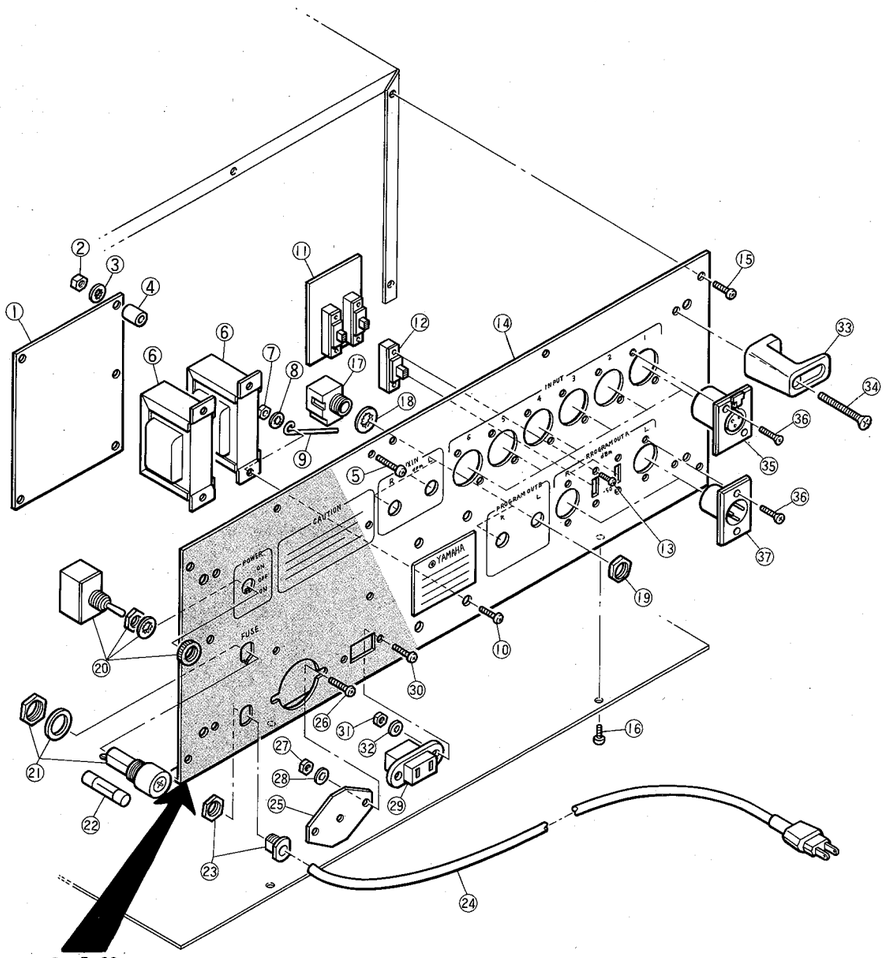
Objective end of connector, refer to the Circuit Diagram P.16, 17.

PARTS LIST

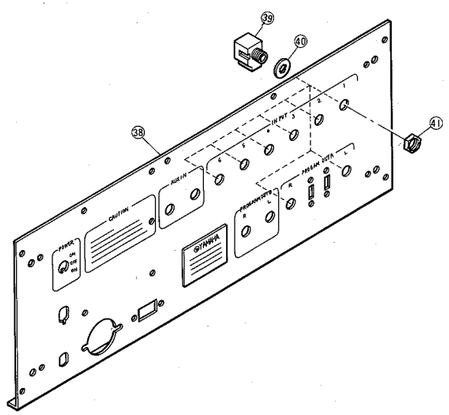


Ref. No.	Parts No.	Description		Remarks	Common Models	
1	30 54 00 BA 80 15 10	Front Panel	パ ネ ル		PM-170	
1	30 54 00 BA 80 11 70	–do.–	〃		PM-180	
2	40 10 00 ED 34 00 80	Binding Head Screw M4 x 8	バインド小ネジM4×8	FCM-BL		
3	30 54 00 CB 80 63 60	Knob	ツ マ ミ			
4		For Variable Resistor M7	特殊六角ナットM7			
5		–do.– A7S	歯 付 座 金	ZMC2-Y		
6		–do.– φ7	特 殊 平 座 金			
7		Knob HIGH-PASS, INPUT For Slide Switch				
8	30 54 00 CB 80 63 70	Knob				
9		For Variable Resistor M8	特殊六角ナットM8			
10	40 10 00 EV 41 00 80	–do.– A8S	歯付座金 A8S	ZMC2-Y		
11		–do.– φ8	特殊平座金 φ8			
12	30 56 00 CB 06 20 10	Phone Nut #06201	ホーンナット#06201	EM-90		
13	40 10 00 EK 00 23 70	Fiber Washer 4S	ファイバーワッシャー			
14	30 54 00 AA 80 30 60	Fixing Metal	ケース固定用			
15	30 54 00 NA 80 16 80	PA Circuit Board	P A シ ー ト		PM-170	
15	30 54 00 NA 80 15 60	–do.–	〃		PM-180	
		HPF Circuit Board	H P F シ ー ト			
16	40 10 00 HS 31 01 00	Variable Resistor 16φ G50K	ボリューム16φG50K			
17	40 10 00 HS 31 00 90	–do.– D50K + ZD50K	ボリューム D50K＋ZD50K			
18	40 10 00 HS 32 03 90	–do.– 24φ D10K	ボリューム24φD10K		PM-170	
18	40 10 00 HS 32 03 80	–do.– 24φ Y10K	ボリューム Y10K		PM-180	
19	40 10 00 KA 40 03 60	Slide Switch	スライドスイッチ			
20	30 54 00 AA 80 30 30	Switch	スイッチ取付金具			
21	40 10 00 EA 03 00 50	⊕ Pan Head Screw M3 x 5	⊕ナベ小ネジM3×5	ZMC2-Y		
22	40 10 00 EA 02 60 50	–do.– M2.6 x 5	〃 M2.6×5	–do.–		
23	40 10 00 EV 41 00 30	For Variable Resistor 3φ A3S	歯付座金3φA3S	–do.–		
24	30 50 00 NA 80 16 90	MA Circuit Board	M A シ ー ト		PM-170	
24	30 54 00 NA 80 15 70	–do.–	〃		PM-180	
25	40 10 00 HS 32 02 10	Variable Resistor 24φ A50K	ボリューム24φA50K			
26	40 10 00 HS 32 03 90	–do.– 24φ D10K	ボリューム24φD10K		PM-170	
26	40 10 00 HS 32 03 80	–do.– 24φ Y10K	ボリューム24φY10K		PM-180	
27	30 54 00 NA 80 15 80	HP Circuit Board	H P シ ー ト			
28	40 10 00 HS 32 03 60	Variable Resistor 24φ A50 x 2	ボリューム24φA50×2			
29	40 10 00 LB 30 03 70	Head Phone Jack				
30	30 54 00 CB 80 63 50	Meter Excursion #80635	メーターエスカッション			
31	40 10 00 Ji 00 04 00	VU Meter #00040	V U 計		PM-180	
	40 10 00 Ji 00 05 30	–do.– #00053	〃		PM-170	
32	40 10 00 Ei 03 00 80	Binding Tapping Screw 3 x 8	バインドタッピングネジ 2種 3×8	ZMC2-Y		
33	30 54 00 AA 80 30 50	Meter Panel #80305	メーターパネル		PM-180	
	30 54 00 AA 80 31 10	–do.– #80311	〃		PM-170	
34	30 54 00 MZ 80 16 50	LED Ass'y #80165	LED ASS' Y		PM-180	
35	40 10 00 JB 00 02 30	Lamp with Lead Wire #00023	リード付ランプ			
36	30 54 00 CB 06 86 20	Lamp Holder #06862	ランプホルダー			
37	30 54 00 NA 80 15 90	LED Circuit Borad	L E D シ ー ト		PM-180	
37	30 54 00 NA 80 17 00	VU Circuit Board	V U シ ー ト		PM-170	
38	40 10 00 EV 41 00 40	Teethed Locked Washer A4S	歯 付 座 金	ZMC2-Y	PM-180	
38	40 10 00 EV 41 00 30	–do.– A4S		–do.–	PM-170	
39	40 10 00 EV 10 00 40	Hexagonal Nut M4	六 角 ナ ッ ト	–do.–	PM-180	

Ref. No.	Part No.	Description			Remarks	Common Models	
39	40 10 00 EV 03 00 60	⊕Pan Head Screw	M3 x 6	ナベ小ネジ	ZMC2-Y	PM-170	
40	30 54 00 NA 80 00 10	J Circuit Board		J シート			
41	30 54 00 AA 80 30 40	Case	# 80304	ケース			
42	40 10 00 EA 33 00 60	Pan Head Screw	M3 x 6	ナベ小ネジ	FCM-BL		
43	40 10 00 EA 33 00 60	–do.–	M3 x 6	〃	–do.–		
44	40 10 00 GA 80 33 10	Power Transformer		電源トランス	For US/Canadian models		
44	40 10 00 GA 80 30 10	–do.–		〃	For General, South African, Australian, BS/North European models.		
45	40 10 00 EV 10 00 40	Hexagonal M4		六角ナット	ZMC2-Y		
46	40 10 00 EV 20 30 40	Plain Washer	ϕ 4	平座金	FCM-BL		
47	30 54 00 AA 01 14 90	Wire Stopper	#01149	束線止メ			
48	40 10 00 ED 34 01 00	Binding Head Screw	M4 x 10	バインド小ネジ	FCM-BL		
49	30 54 00 AA 80 30 80	Bottom Plate	#80308	底板			
50	30 54 00 CB 80 64 40	Insulation Plate		絶縁板			
51	30 54 00 CB 80 64 20	Circuit Board Holder	#80642	シート押え			
52	30 54 00 CB 80 12 70	Leg (Black)	#80127	ゴム足			
53	40 10 00 EV 20 30 40	Plain Washer	ϕ 4	平座金	FCM-BL		
54	40 10 00 EA 34 01 00	Pan Head Screw	M4 x 10	ナベ小ネジ	–do.–		
55	40 10 00 EA 33 00 60	–do.–	M3 x 6	〃	–do.–		



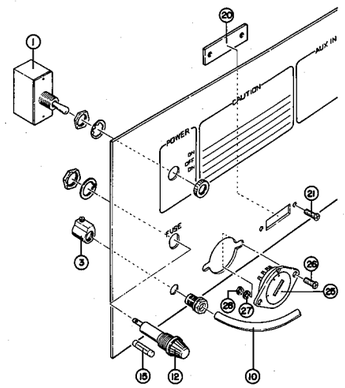
See P. 29



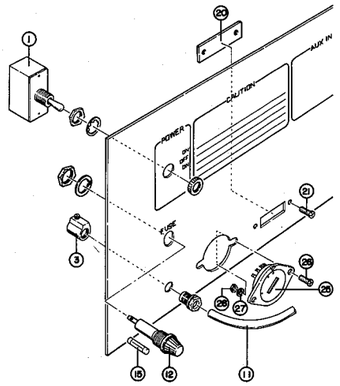
Ref. No.	Parts No.	Description		Remarks	Common Models	
1	30 54 00 NA 80 16 20	DC Circuit Board	D C シ ー ト	For General, Australian, South African models		
1	30 54 00 NA 80 16 30	—do.—	〃	For US/Canadian models		
1	30 54 00 NA 80 16 40	—do.—	〃	For BS/North European models		
2	40 10 00 EV 10 00 30	Hexagonal Nut M3	六 角 ナ ッ ト	ZMC2-Y		
3	40 10 00 EV 41 00 30	Theethed Locked Washer A3S	歯 付 座 金	—do.—		
4	30 56 00 CB 01 09 80	Spacer #01098	ス ペ ー サ ー			
5	40 10 00 EA 33 01 60	Pan Head Screw M3 x 16	ナ ベ 小 ネ ジ	ZCM-BL		
6	40 10 00 GA 80 28 10	Output Transformer	アウトプットトランス		PM-180	
7	40 10 00 EV 10 00 40	Hexagonal M4	六 角 ナ ッ ト	ZMC2-Y	PM-180	
8	40 10 00 EV 41 00 40	Theethed Locked Washer A4S	歯 付 座 金	ZMC2-Y	PM-180	
9	30 54 00 AA 01 14 90	Wire Stopper #01149	束 線 止 メ		PM-180	
10	40 10 00 EA 34 01 00	Pan Head Screw M4 x 10	ナ ベ 小 ネ ジ	FCM-BL	PM-180	
11	30 54 00 NA 80 17 10	OSW Circuit Board	O S W シ ー ト		PM-170	
11	30 54 00 NA 80 16 00	—do.—	〃		PM-180	
12	40 10 00 KA 40 02 60	Slide Switch	ス ラ イ ド S W			
13	40 10 00 EA 33 00 50	Pan Head Screw M3 x 8	ナ ベ 小 ネ ジ	FCM-BL		
14	30 54 00 AA 80 31 20	Back Panel	バ ッ ク パ ネ ル	For General, Australian, South African models	PM-170	
14	30 54 00 AA 80 39 90	—do.—	〃	For US/Canadian models	PM-170	
15	40 10 00 EA 33 00 60	Pan Head Screw M3 x 6	ナ ベ 小 ネ ジ	FCM-BL		
16	40 10 00 EA 33 00 60	—do.—	〃	—do.—		
17	40 10 00 LB 20 06 30	Ear Phone Jack #20063	イヤホーンジャック			
18	40 10 00 EV 41 00 90	Theethed Locked Washer A9S	歯 付 座 金 1	ZMC2-Y		
19	30 56 00 CB 06 20 10	Phone Nut #06201	ホ ー ン ナ ッ ト			
33	30 54 00 CB 82 25 70	Cord Colum #02257	コード巻付コラム			
34	40 10 00 EB 34 02 50	Flat Head Screw M4 x 25	皿 小 ネ ジ	FCM-BL		
35	40 10 00 LB 30 01 50	Cannon Socket #30015	キャノンソケット		PM-180	
36	40 10 00 EM 13 00 60	Round Head Wooden Screw	丸皿タッピングネジ	FNM3-3g	—do.—	
37	40 10 00 LB 30 01 60	Cannon Socket #30016	キャノンソケット		—do.—	
38	30 54 00 AA 80 31 20	Back Panel #80312	バ ッ ク パ ネ ル		PM-170	
39	41 00 00 LB 20 06 30	Ear Phone Jack #20063	イヤホーンジャック		—do.—	
40	40 10 00 EV 41 00 90	Theethed Locked Washer A9S	歯 付 座 金	ZMC2-Y	—do.—	
41	30 56 00 CB 06 20 10	Phone Nut #06201	ホ ー ン ナ ッ ト		—do.—	

■PM-170

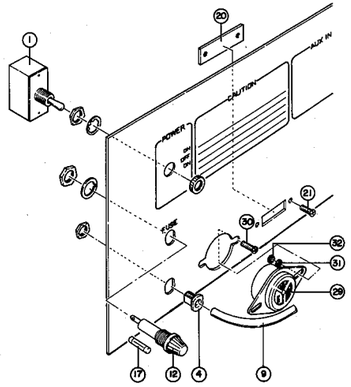
General model



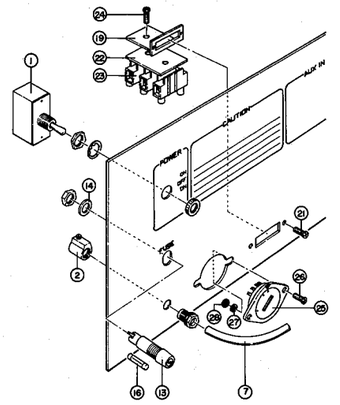
South African model



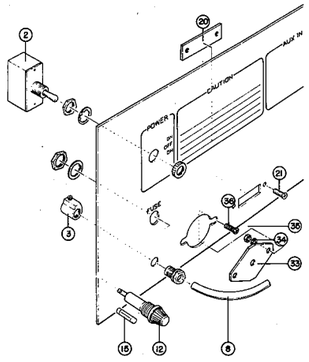
US/Canadian models



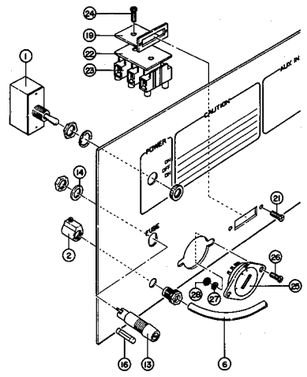
North European model



Australian model

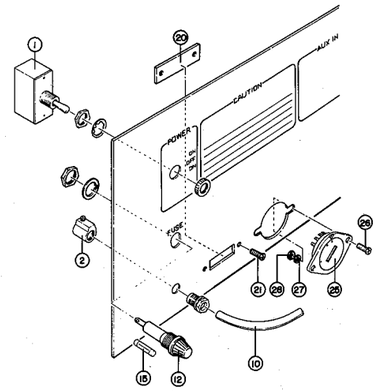


BS model

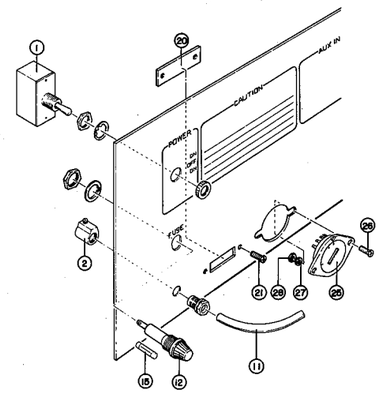


■PM-180

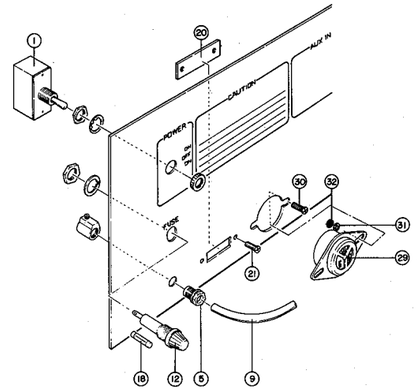
General model



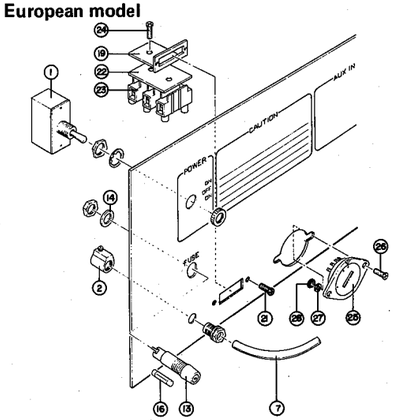
South African model



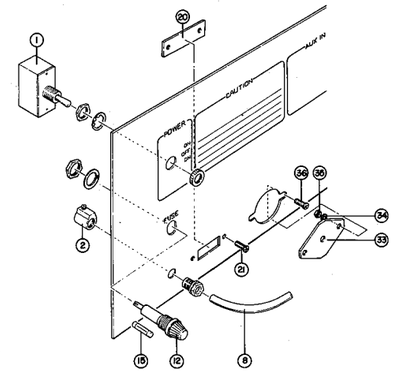
US/Canadian models



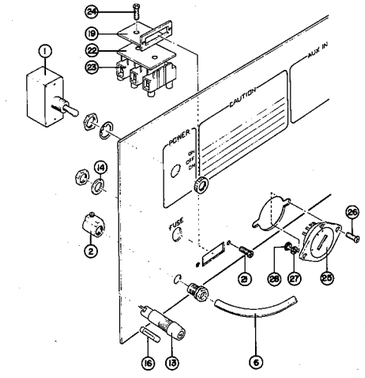
North European model



Australian model



BS model



Ref. No.	Parts No.	Description		Remarks	Common Models	
1	40 10 00 KA 30 02 10	Toggle Switch	ドクルスイッチ			
2	40 10 00 KA 30 00 10	–do.–	ドクルスイッチ			
3	40 10 00 CB 07 06 90	Cord Stopper	コードストッパー			
4	40 10 00 CB 80 68 50	–do.–	〃		PM-170	
5	40 10 00 CB 07 06 90	–do.–	〃		PM-180	
6	40 10 00 MD 00 02 40	AC Cord	電源コード			
7	40 10 00 MD 00 04 50	–do.–	〃			
8	40 10 00 MG 00 05 00	–do.–	〃			
9	40 10 00 MG 00 02 70	–do.–	〃			
10	40 10 00 MG 00 02 30	–do.–	〃			
11	40 10 00 MD 00 00 60	AC Cord	〃			
12	40 10 00 LB 20 04 80	Fuse Holder	ヒューズ・ホルダー			
13	40 10 00 LB 20 05 90	–do.–	〃			
14	40 10 00 AA 03 15 80	Fuse Holder Washer	ヒューズホルダーワッシャー			
15	40 10 00 KB 00 03 10	Fuse 0.5A 250V	ヒューズ0.5A 250V			
16	40 10 00 KB 00 07 10	Fuse Miniature 0.5AT 250V	ミニヒューズ 0.5AT 250V			
17	40 10 00 KB 00 01 15	UL Fuse 0.5A 250V	ULヒューズ 0.5A 250V		PM-170	
18	40 10 00 KB 00 03 10	Fuse 0.5A 250V	ヒューズ0.5A 250V		PM-180	
19	30 54 00 AA 80 27 20	Blind Fold Plate (For AC Socket)	ACコンセント盲板			
20	30 54 00 AA 01 10 20	–do.–	〃			
21	40 10 00 EA 30 06 70	Pan Head Screw M3 x 6	ナベ小ネジ		FCM-BL	
22	30 54 00 CB 80 60 40	Insulation Plate	絶縁板			
23	40 10 00 LA 00 10 40	Terminal	ボイボ端子			
24	40 10 00 EA 30 20 20	Pan Head Screw M3 x 8	ナベ小ネジ			
25	40 10 00 LB 20 02 50	Voltage Selector	電圧切換器			
26	40 10 00 EA 30 08 70	Pan Head Screw M3 x 8	ナベ小ネジM3×8		FCM-BL	
27	40 10 00 EW 31 30 20	Teethed Locked Washer A3S	歯付座金		ZMC2-Y	
28	40 10 00 EY 11 30 20	Hexagonal Nut M3	六角ナット		ZMC2-Y	
29	40 10 00 LB 30 02 50	AC Socket 3P	ACコンセント			
30	40 10 00 EA 30 06 70	Pan Head Screw M3 x 6	ナベ小ネジM3×6		FCM-BL	
31	40 10 00 EW 31 30 20	Teethed Locked Washer A3S	歯付座金		ZMC2-Y	
32	40 10 00 EY 11 30 20	Hexagonal Nut M3	六角ナット		–do.–	
33	30 54 00 AA 02 43 10	Blind Fold Plate (For Voltage Selector)	電圧切換盲板			
34	40 10 00 EW 31 30 20	Teethed Locked Washer A4S	歯付座金		ZMC2-Y	
35	40 10 00 EY 11 30 20	Hexagonal Nut M3	六角ナット		–do.–	
36	40 10 00 EA 30 08 70	Pan Head Screw M3 x 8	ナベ小ネジM3×8		FCM-BL	

Ref. No.	Parts No.	Description		Remarks	Common Models	
	30 54 00 NA 80 16 10	J Circuit Board	J シート			
	30 54 00 NA 80 16 80	PA Circuit Board (HPF Circuit Board)	PAシート (HPFシート)		PM-170	
	30 54 00 NA 80 15 60	—do.—	〃		PM-180	
	40 10 00 iA 05 61 20	Transistor 2SA561 (Y)	トランジスター 2SA561(Y)			
	40 10 00 iC 16 81 10	—do.— 2SC 1680	〃 2SC1680			
	40 10 00 iG 00 13 30	IC TA7136P	IC TA7136P			
	40 10 00 iF 00 00 40	Diode IS1555	ダイオード I31555			
	40 10 00 HS 31 01 00	Variable Resistor 16φ G50K	16φボリューム G50K			
	40 10 00 HS 31 00 90	—do.— D10K + ZD50K	16φボリューム D10K+ZD50K			
	40 10 00 HS 31 03 90	—do.— D10K	〃 D10K		PM-170	
	40 10 00 HS 32 03 80	—do.— Y10K	〃 Y10K		PM-180	
	40 10 00 KA 40 03 60	Slide Switch	スライドスイッチ			
	40 10 00 FP 15 54 70	Tantalum Capacitor 0.47μ/35	タンタルコン 0.47μ/35			
	40 10 00 FP 15 61 00	—do.— 1.0μ/35	〃 1.0 μ/35			
	40 10 00 GB 06 51 20	Filter Coil 1.2H	フィルターコイル 1.2H			
	40 10 00 GA 80 27 00	Input Transformer	インプットトランス			
	40 10 00 LB 10 01 60	CIS keying Pin	CISキーイングピン			
	40 10 00 LB 40 01 10	CIS Sockets SE 4P	CIS4P サイドエントリー雌型			
	40 10 00 LB 60 15 10	CIS Socket Top	CIS基板用雄接触子			
	30 54 00 AA 80 30 30	SW Holder Plate	スイッチ取付金具			
	40 10 00 EA 03 00 50	Pan Head Screw M3 x 5	ナベ小ネジ	MZC2-Y		
	40 10 00 EA 02 60 50	—do.— M2.6 x 5	〃	—do.—		
	40 10 00 EV 41 00 30	Teethed Locked Washer A3S	歯付座金	—do.—		
	30 54 00 NA 80 16 90	MA Circuit Board	MA シート		PM-170	
	30 54 00 NA 80 15 70	—do.—	〃		PM-180	
	40 10 00 iC 00 13 30	IC TA7136P	IC TA7136P			
	30 54 00 NE 80 10 00	IC Module	IC モジュール			
	40 10 00 HS 32 02 10	Variable Resistor 24φ A50K	24φボリュームA50A			
	40 10 00 HS 32 03 90	—do.— D10K	〃 D10K		PM-170	
	40 10 00 HS 32 03 80	—do.— Y10K	〃 Y10K		PM-180	
	40 10 00 LB 10 01 60	CIS Keying Pin	CISキーイングピン			
	40 10 00 LB 60 15 10	CIS Socket Top	CIS基板用雄端子			
	40 10 00 LB 40 01 10	CIS Socket S,E 4P	CIS4Pサイドエントリー雌コネクター			
	40 10 00 LB 50 00 50	—do.— 5P	5P 〃			
	40 10 00 LB 60 13 70	—do.— 7P	7P 〃			
	30 54 00 NA 80 15 80	HP Circuit Board (LC-81001)	HP シート (LC−81001)			
	40 10 00 iG 00 13 40	IC TA7203P	IC TA7203P			
	40 10 00 HS 32 03 60	Variable Resistor 24φ A50 x 2	24φボリュームA50×2			
	40 10 00 HL 32 34 70	Metal Oxide Film Resistor 4.7Ω 2W	酸化金属皮膜抵抗 4.7Ω 2W			
	40 10 00 FP 15 61 00	Tantalum Capacitor V35	タンタルコン 1/35			
	40 10 00 LB 10 01 60	CIS Keying Pin	CISキーイングピン			
	40 10 00 LB 60 13 70	CIS Socket S,E 7P	CIS7Pサイドエントリー雌型コネクター			
	40 10 00 LB 60 15 10	CIS Socket Top	CIS7P 基板用雄接触子			
	40 10 00 LB 30 03 70	Headphone Jack	ヘッドホーンジャック			
	40 10 00 NA 80 16 20	DC Circuit Board	DC シート	For General, Australian, South African models		
	40 10 00 NA 80 16 30	—do.—	〃	For US/Canadian models		

Ref. No.	Parts No.	Description			Remarks	Common Models	
	40 10 00 NA 80 16 40	DC Circuit Board		〃	For BS/North European models		
	40 10 00 iA 05 61 70	Transistor	2SA561 (Y)	トランジスター 2SA561(Y)			
	40 10 00 iB 05 96 20	—do.—	2SB596 (R)	〃 2SB596(R)			
	40 10 00 iC 07 34 20	—do.—	2SC734 (Y)	〃 2SC734(Y)			
	40 10 00 iD 05 26 10	—do.—	2SD526 (R)	〃 2SD526(R)			
	40 10 00 iH 00 01 40	Diode	10DC-2	ダイオード10DC-2			
	40 10 00 iH 00 01 50	—do.—	10DC-2R	〃 10DC-2R			
	40 10 00 HW 11 33 90	Fuse Resistor	3.9Ω 500mA	ヒューズ抵抗 3.9Ω 500mA			
	40 10 00 KB 00 03 30	Fuse	1A 250V	ヒューズ1A 250V 耐ラッシュ			
	40 10 00 KB 20 05 70	Fuse Fixture Pin		ヒューズ受けピン			
	40 10 00 KB 00 03 10	Fuse	0.5A 250V	ヒューズ0.5A250V 耐ラッシュ			
	40 10 00 LB 60 13 80	Connector Plug	6P	コネクターピン6P			
	30 54 00 BA 80 11 60	Heat Sink		放熱板			
	30 54 00 CB 07 28 80	Bush		ブッシュ			
	40 10 00 iL 00 02 70	Base	AC229	ベースAC229			
	40 10 00 EA 02 60 60	⊕ Pan Head Screw	M2.6x6	⊕字穴付ナベ小ネジ	ZMC2-Y		
	40 10 00 EA 03 00 60	⊕ Pan Head Screw	M3 x 6	⊕字穴付ナベ小ネジ	—do.—		
	30 54 00 NA 80 17 10	OSW Circuit Board		OSWシート		PM-170	
	30 54 00 NA 80 16 00	—do.—		〃		PM-180	
	40 10 00 HL 31 61 00	Metal Oxide Filum Capacitor	1K 1W	酸化金属皮膜抵抗1kw			
	30 54 00 NA 80 17 00	VU Meter		VCメーター		PM-170	
	40 10 00 iF 00 06 20	Diode	IN60	ダイオード IN60		—do.—	
	40 10 00 LB 10 01 60	CIS Keying Pin		CISキーイングピン		—do.—	
	40 10 00 LB 40 00 80	CIS Socket	T, E 4P	CIS4Pトップエントリー雌型コネクター		—do.—	
	30 54 00 NA 80 15 90	LED Circuit Board		LEDシート		PM-180	
	40 10 00 FP 15 52	Tantalum Capacitor	0.22/35	タンタル 0.22/35		—do.—	
	40 10 00 HT 41 01 80	Variable Resistor	B47K	ソリッドVRB47K		—do.—	
	40 10 00 iA 05 61 20	Transistor	2SA561 (Y)	トランジスター 2SA561(Y)		—do.—	
	40 10 00 iC 16 81 20	—do.—	2SC1681 (BC)	トランジスター 2SC1681(BC)		—do.—	
	40 10 00 LB 10 01 60	CIS Keying Pin		CISキーイングピン			
	40 10 00 LB 40 00 80	CIS Socket	T, E 4P	CIS4Pトップエントリー雌型コネクター		—do.—	
	40 10 00 LB 00 70	—do.—	5P	5P 〃		—do.—	