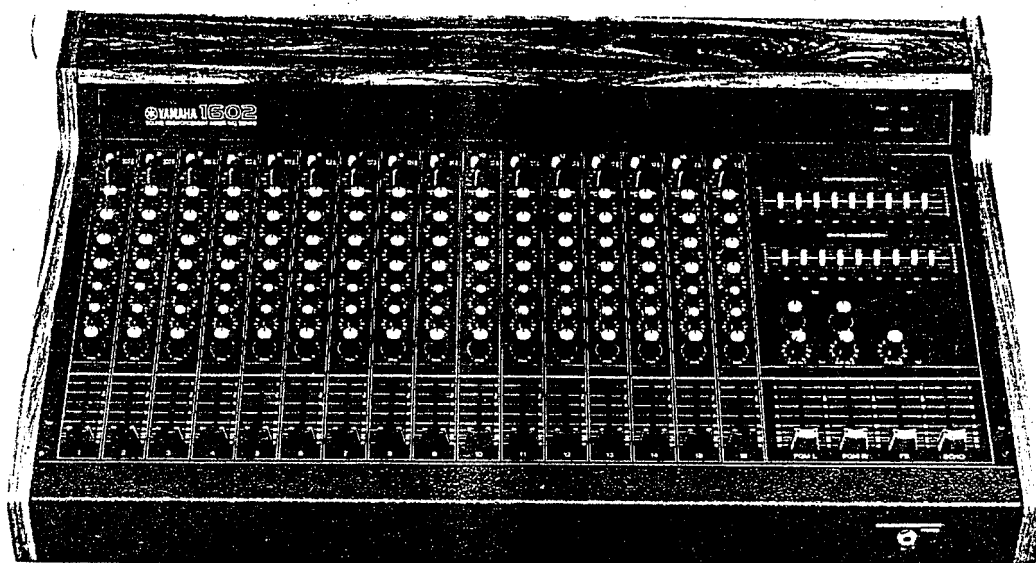


MQ802 MQ1202/MQ1602

SERVICE MANUAL



MQ1602

CONTENTS

CONTROLS AND FUNCTIONS	1	LEVEL DIAGRAM	14
SPECIFICATIONS	3	BLOCK DIAGRAM	15
INPUT/OUTPUT SPECIFICATIONS	4	GROUND CIRCUIT DIAGRAM	16
DIMENSIONS	4	SCHEMATIC DIAGRAM	17
DISASSEMBLY	5	WIRING	18
CHECK SPECIFICATIONS	7	MULTI-CONNECTOR PIN CONNECTION	19
CIRCUIT BOARDS	10		

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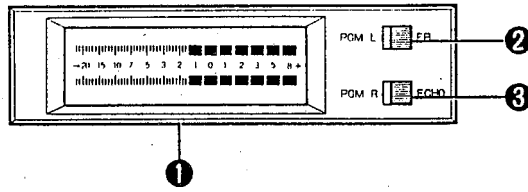
YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

2800 ☐ Printed in Japan 4.81

CONTROLS AND FUNCTIONS

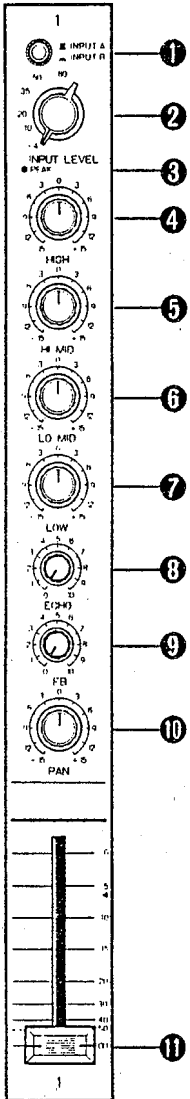
BAR GRAPH METER



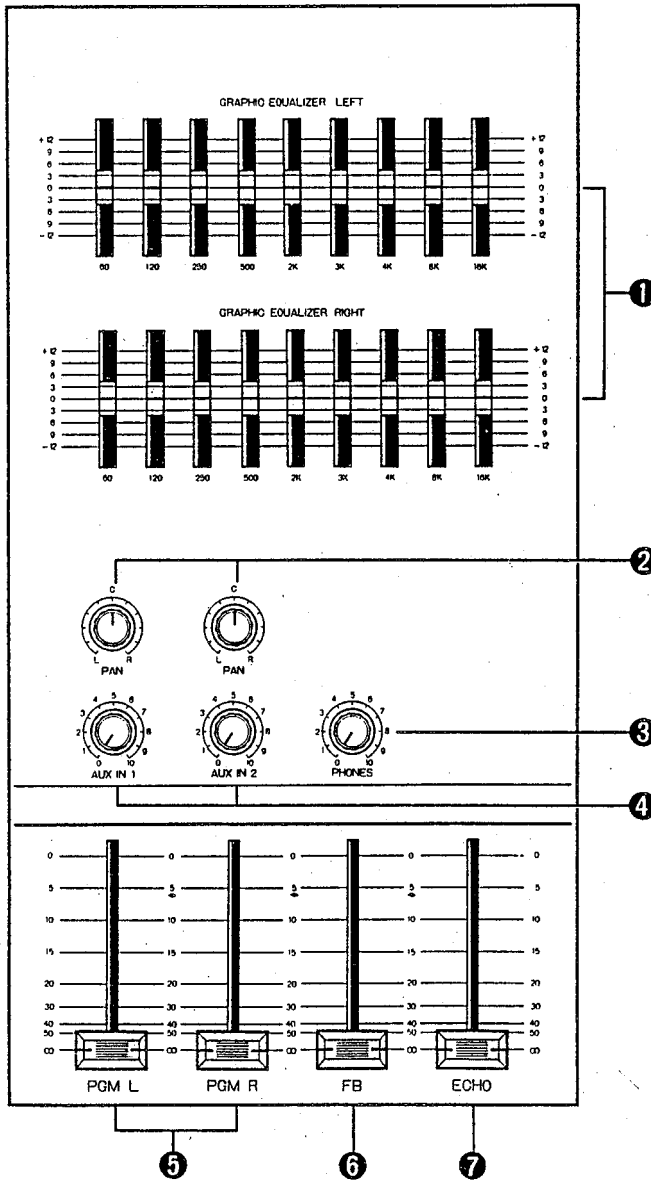
BAR GRAPH METER

- ① Bar graph meter
- ② PGM L/FB select switch
- ③ PGM R/ECHO select switch

INPUT



MASTER & GEO



INPUT (MQ802 CH1 ~ 8
MQ1202 CH1 ~ 12
MQ1602 CH1 ~ 16)

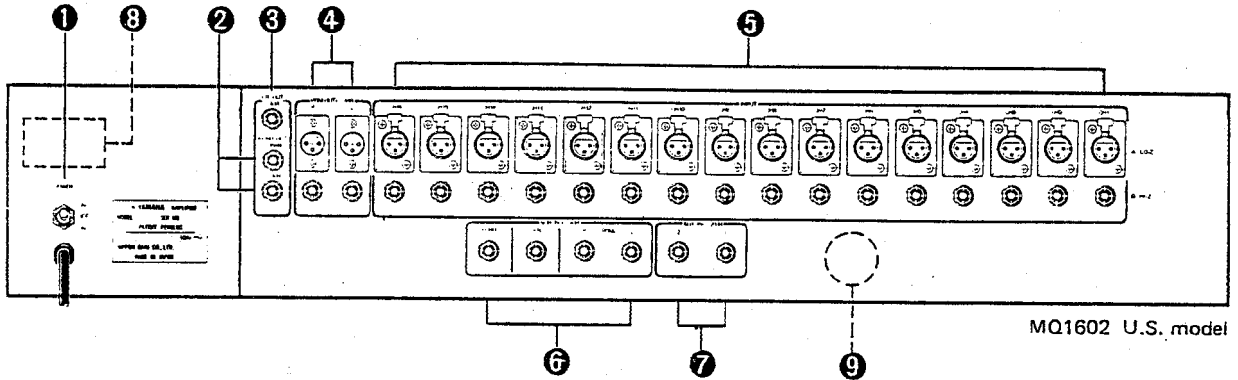
- ① INPUT A/B switch
- ② INPUT LEVEL switch
- ③ PEAK indicator
- ④ HIGH equalizer
- ⑤ HI MID equalizer
- ⑥ LO MID equalizer
- ⑦ LOW equalizer
- ⑧ ECHO volume
- ⑨ FB volume
- ⑩ PAN (panpot)
- ⑪ Channel fader

MASTER & GEO

- ① GRAPHIC EQUALIZER
- ② PAN (panpot)
- ③ PHONES volume
- ④ AUX IN 1/2 volume
- ⑤ PGM L/R master fader
- ⑥ FB master fader
- ⑦ ECHO master fader

KNOB	COLOR
INPUT LEVEL	Black
FB	Ivory
ECHO	Blue
PHONES	Ivory
AUX IN 1, 2	Gray
EQ (HIGH, HI MID, LO MID, LOW)	Green
PAN	Orange
G EQ	Ivory
MA. FADER	Red
CH. FADER	Black

REAR PANEL



REAR PANEL

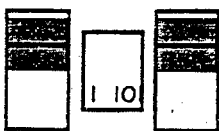
- ① POWER switch
- ② ECHO OUT · -20dB/+4dB
- ③ FB OUT · +4dB
- ④ PGM OUT · +4dB
- ⑤ INPUT (A LO-Z, B HI-Z)
- ⑥ SUB IN · +4dB
- ⑦ AUX IN · -20dB
- ⑧ Voltage selector (General model)
- ⑨ Multi-connector (MQ1602 General model only)

FOR GENERAL MODEL

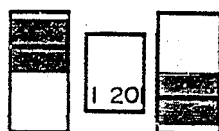
⑧ Voltage selector

If voltage in your area is:	90 - 110 volts	108 - 132 volts	198 - 242 volts	216 - 264 volts
Set voltage selector to:	100V	120V	220V	240V

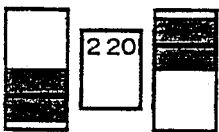
100V area



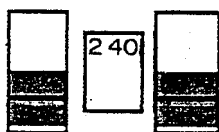
120V area



220V area

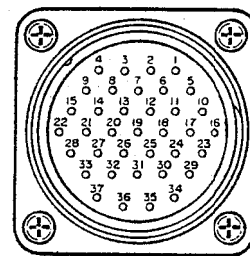


240V area



CAUTION: THIS EQUIPMENT MAY BE DAMAGED IF OPERATED WITH THE LINE VOLTAGE SELECTOR SET TO AN INCORRECT POSITION.

⑨ Multi-connector (MQ1602 only)



Pin connection

MULTI CONNecTOR PIN NO.	CH NO.	XLR PIN NO.	MULTI CONNecTOR PIN NO.	CH NO.	XLR PIN NO.
1	CH1	2	20	COMMON SHIELD	
2	CH1	3	21	CH9	2
3	CH2	2	22	CH9	3
4	CH2	3	23	CH10	2
5	CH3	2	24	CH10	3
6	CH3	3	25	CH11	2
7			26	CH11	3
8	CH4	2	27	CH12	2
9	CH4	3	28	CH12	3
10	CH5	2	29	CH13	2
11	CH5	3	30	CH13	3
12	CH6	2	31		
13	CH6	3	32	CH14	2
14	CH7	2	33	CH14	3
15	CH7	3	34	CH15	2
16	CH8	2	35	CH15	3
17	CH8	3	36	CH16	2
18	COMMON SHIELD		37	CH16	3
19	COMMON SHIELD				

SPECIFICATIONS

MQ1602

Frequency Response (@600Ω, +4dB)	20Hz ~ 20kHz	+1/-3 dB
	70Hz ~ 10kHz	+0/-0.5 dB
Total Harmonic Distortion	Less than 0.5%	
	20Hz ~ 20kHz, @600Ω, +4dB	
	70Hz ~ 15kHz, @600Ω, +14dB	

Hum & Noise*	(20Hz ~ 20kHz, Rs = 150Ω INPUT LEVEL switch "-60")	
	Equivalent input noise	
INPUT A	-126dB	
INPUT B	-122dB	
Residual output noise	-94dB	all faders → down
	-65dB	Master fader → nominal**
		all CH faders → down
	-62dB	Master fader → nominal** one CH fader → nominal**

Maximum Output	+18dB T.H.D. less than 1%
----------------	---------------------------

Maximum Voltage Gain (INPUT LEVEL switch "-60")	INPUT → PGM OUT	76dB
	INPUT → FB OUT	76dB
	INPUT → ECHO OUT (+4dB)	82dB
	INPUT → ECHO OUT (-20dB)	58dB
	AUX IN → PGM OUT	36dB
	SUB IN → each output (except ECHO OUT -20dB)	6dB

Equalization	Channel Equalizer	
	LOW	± 15dB Shelving
	LO MID	± 15dB Peaking
	HI MID	± 15dB Peaking
	HIGH	± 15dB Shelving
	GRAPHIC EQUALIZER	± 12dB

Crosstalk (1kHz)	Adjacent INPUTs	Less than -60dB
	PGM, FB, ECHO outputs	Less than -60dB

INPUT Controls (MQ802 CH1 ~ 8 MQ1202 CH1 ~ 12 MQ1602 CH1 ~ 16)	INPUT A/B switch
	PEAK indicator (LED is turned on when pre-fader level reaches 3dB below clipping.)
	INPUT LEVEL switch
	Equalizer (HIGH, HI MID, LO MID, LOW)
	ECHO volume
	FB volume
	PAN
	Channel fader

AUX IN Controls (1, 2)	AUX IN volume PAN
------------------------	----------------------

OUTPUT Controls	PGM fader (L, R) FB fader ECHO fader PHONES volume
-----------------	---

GRAPHIC EQUALIZER	9 bands (L, R) (60, 120, 250, 500, 1k, 2k, 4k, 8k, 16kHz)
-------------------	--

Meter	Bar graph meter (PGM L/FB, PGM R/ECHO)
-------	---

POWER switch	U.S. & Canadian models ON/OFF/ON (polarity reversible type) General model ON/OFF
--------------	---

Power Requirements	U.S. & Canadian models 12V, 50/60Hz General model 110, 120, 220 or 240V, 50/60Hz
--------------------	---

Power Consumption	MQ802	U.S. model 24W Canadian model 28VA General model 24W
	MQ1202	U.S. model 27W Canadian model 31VA General model 27W
MQ1602	U.S. model 30W Canadian model 34VA General model 30W	

Dimensions (W x H x D)	MQ802	528 x 171 x 546.4mm (20-3/4" x 6-3/4" x 21-1/2")
	MQ1202	668 x 171 x 546.4mm (26-1/4" x 6-3/4" x 21-1/2")
	MQ1602	808 x 171 x 546.4mm (31-7/8" x 6-3/4" x 21-1/2")

Weight	MQ802	13kg (28.7 lbs)
	MQ1202	16kg (35.3 lbs)
	MQ1602	19kg (41.9 lbs)

* Measured with 6dB/oct filter @12.47kHz equivalent to a 20kHz filter with infinite dB/oct attenuation.

** Nominal level is 6dB below maximum.

• 0dB is referenced to 0.775V r.m.s.

• Specification subject to change without notice.

INPUT / OUTPUT SPECIFICATIONS

INPUT CHARACTERISTICS

CONNECTION	INPUT LEVEL SWITCH	ACTUAL LOAD IMPEDANCE	FOR USE WITH NOMINAL	SENSITIVITY** (at MAX. GAIN)	INPUT LEVEL		CONNECTOR***	
					NOMINAL	MAX. before CLIP		
INPUTS (MQ802 CH1 ~ 8 MQ1202 CH1 ~ 12 MQ1602 CH1 ~ 16)	A (Lo-Z)	-60dB*	800Ω	50 ~ 250Ω microphones or 600Ω line level sources	-72dB (0.19mV)	-60dB (0.78mV)	-30dB (24.5mV)	XLR-3-31 type *MQ1602 General model XLR-3-31 type & multiconnector
		-50dB	800Ω		-62dB (0.62mV)	-50dB (2.5mV)	-20dB (78mV)	
		-35dB	800Ω		-47dB (3.5mV)	-35dB (13.8mV)	-5dB (436mV)	
		-20dB	1.2kΩ		-32dB (19.5mV)	-20dB (78mV)	+10dB (2.45V)	
		-10dB	2.3kΩ		-22dB (61.5mV)	-10dB (245mV)	+20dB (7.75V)	
	+4dB	2.6kΩ	-8dB (309mV)	+4dB (1.23V)	+24dB (12.3V)			
	B (Hi-Z)	-60dB	25kΩ	50 ~ 50kΩ microphones or 600Ω line level sources	-72dB (0.19mV)	-60dB (0.78mV)	-30dB (24.5mV)	
		-50dB	25kΩ		-62dB (0.52mV)	-50dB (2.5mV)	-20dB (78mV)	
		-35dB	25kΩ		-47dB (3.5mV)	-35dB (13.8mV)	-5dB (436mV)	
		-20dB	27kΩ		-32dB (19.5mV)	-20dB (78mV)	+10dB (2.45V)	
-10dB		49kΩ	-22dB (61.5mV)		-10dB (245mV)	+20dB (7.75V)		
+4dB	54kΩ	-8dB (309mV)	+4dB (1.23V)	+24dB (12.3V)				
AUX IN (1, 2)		25kΩ	600Ω lines	-32dB (19.5mV)	-20dB (78mV)	+24dB (12.3V)	Phone jack	
SUB IN PGM (L, R) FB, ECHO		1kΩ	600Ω lines	-2dB (616mV)	+4dB (1.23V)	+24dB (12.3V)	Phone jack	

OUTPUT CHARACTERISTICS

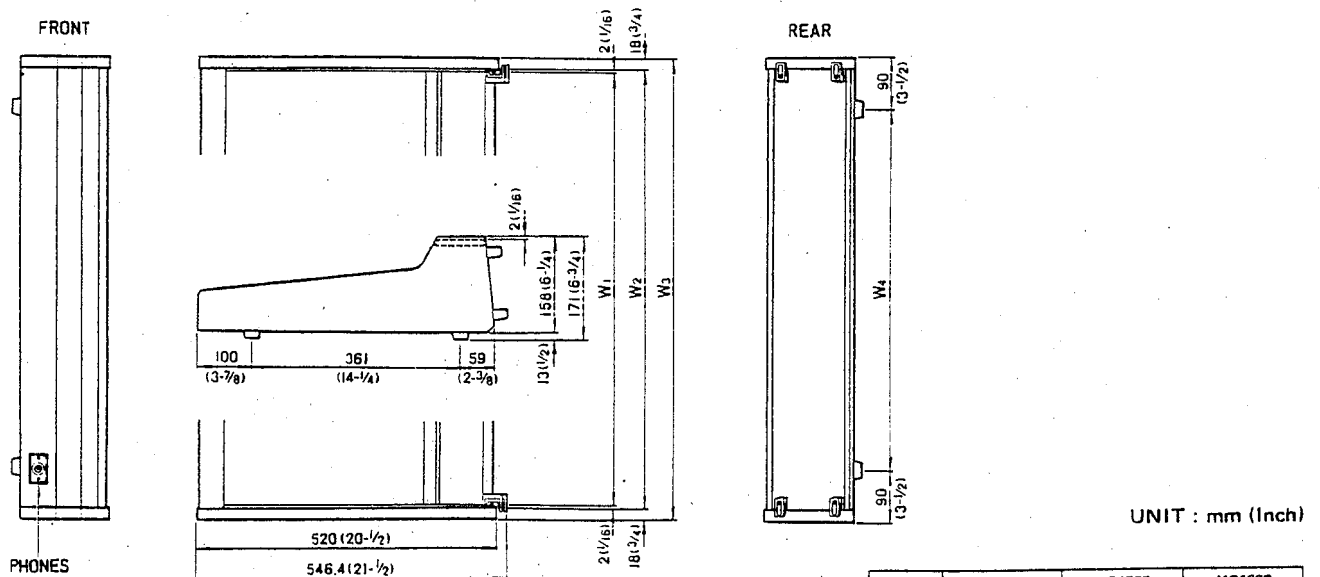
CONNECTION	ACTUAL SOURCE IMPEDANCE	FOR USE WITH NOMINAL	OUTPUT LEVEL		CONNECTOR***
			NOMINAL	MAX. before CLIP	
PGM OUT (L, R)	130Ω	600Ω lines	+4dB (1.23V)	+18dB (6.2V)	XLR 3-32 type & Phone jack
FB OUT ECHO OUT (+4) ECHO OUT (-20)	130Ω	600Ω lines	+4dB (1.23V) +4dB (1.23V) -20dB (78mV)	+18dB (6.2V) +18dB (6.2V) -6dB (388mV)	Phone jack
PHONES	33Ω	8Ω phones	-6dB (388mV)	+2dB (976mV)	Stereo phone jack

* 0dB is referenced to 0.775V r.m.s.

** Sensitivity is the level required to produce a nominal output of +4dB (1.23V) or the specified nominal output level if other than +4dB.

*** All XLR connectors are floating (balanced channel inputs) and transformer-isolated. TRS phone jacks are unbalanced, with separate audio common and chassis ground connections (except headphone jacks, wired Tip = Left, Ring = Right, Sleeve = Common).

DIMENSIONS



WEIGHT: MQ802 13kg (28.7 lbs)
MQ1202 16kg (35.3 lbs)
MQ1602 19kg (41.9 lbs)

	MQ802	MQ1202	MQ1602
W ₁	488 (19-1/4)	628 (24-3/4)	768 (30-1/4)
W ₂	492 (19-3/8)	632 (24-7/8)	772 (30-3/8)
W ₃	528 (20-3/4)	668 (26-1/4)	808 (31-7/8)
W ₄	308 (12-1/8)	448 (17-5/8)	588 (23-1/8)

DISASSEMBLY

1. Bottom board removal

Remove 12 screws ① through ⑫ in Fig. 1, and remove the bottom board.

- * Before turning the unit upside down (placing it on its control panel), make sure to turn each channel fader and master fader to 0(max) position.

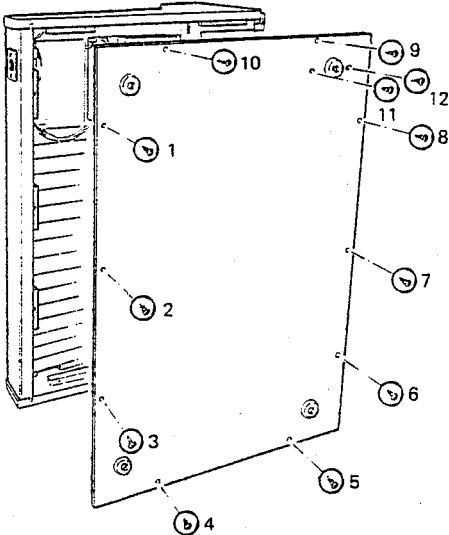


Fig. 1

2. IN circuit board removal

- Remove the connector attached to JB circuit board and disconnect the flat cable which is connected to IN circuit board.
- Pull out each channel knob.
- Remove the hexagonal nuts of INPUT LEVEL and PAN, and IN circuit board can be removed.

- * When carrying out an energizing check with IN circuit board removed from the control panel, make sure to connect the connector to JB circuit board. Without the connector, the ground on the input side of IN circuit board is caused to float, resulting in instability.

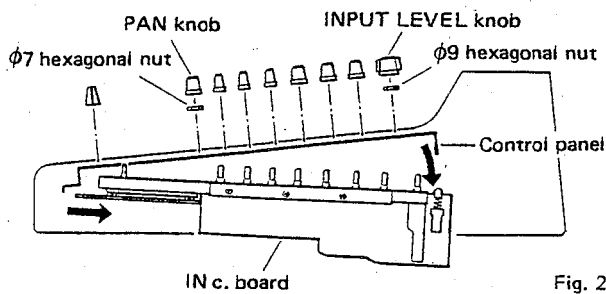


Fig. 2

3. DH circuit board removal

- Remove the connectors C001 through C004 and C203.
- Remove the screw of the heat sink (① in Fig. 3) and three circuit board holders, and then remove DH circuit board.

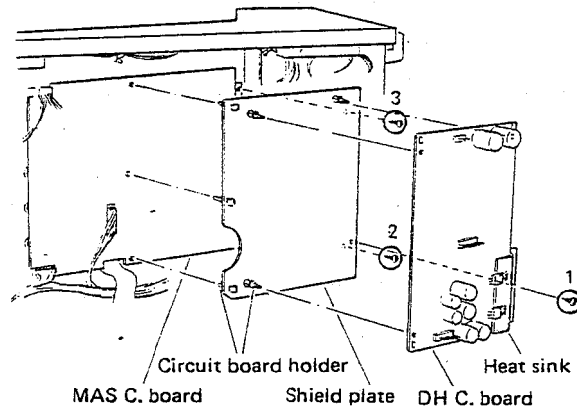


Fig. 3

4. MAS circuit board removal

- Remove two screws securing the shield plate (② and ③ in Fig. 3) and the circuit board holders, and the shield plate can be removed.
- Remove the connectors C201, 202, 204 and 205.
- Remove four screws (① through ④ in Fig. 4), AUX IN 1, 2, PAN and PHONES knobs and hexagonal nuts from the control panel, and then remove MAS circuit board.

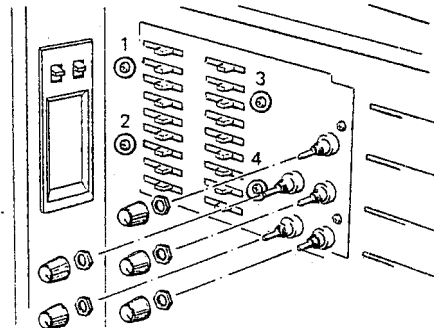


Fig. 4

5. LA circuit board removal

- Remove connectors C301, 302 and C201.
- Pull out each master fader knob, remove two screws (① and ② in Fig. 5) and then remove LA circuit board.

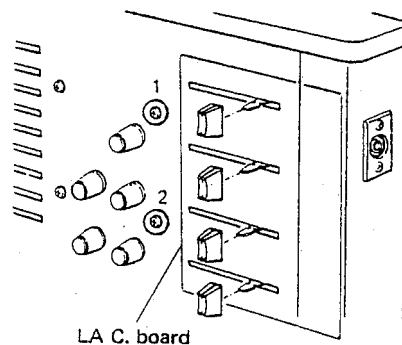


Fig. 5

6. Power supply unit removal

- a. Remove the connector C401 and disconnect the ground wire.
- b. Remove four screws (① through ④ in Fig. 7) from the power supply panel and remove the power supply unit.

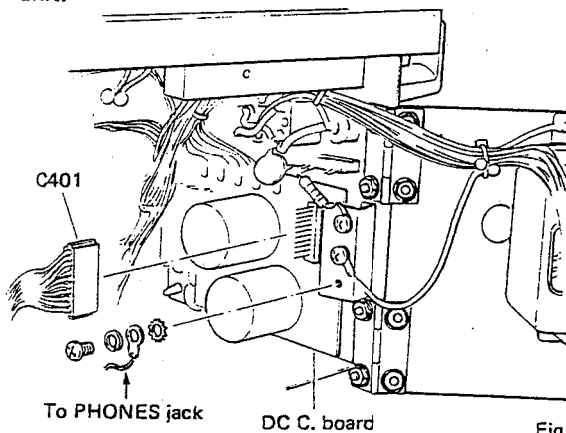


Fig. 6

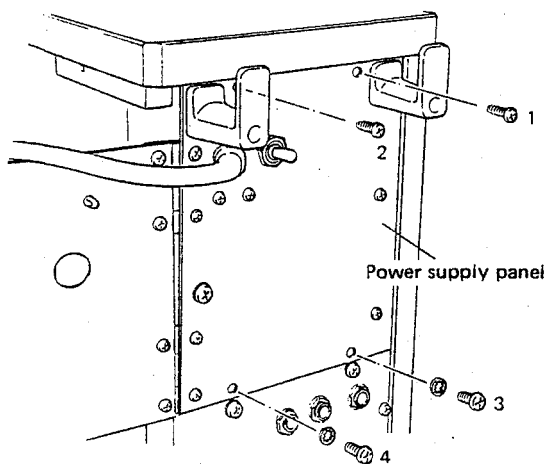


Fig. 7

7. Meter ass'y removal

- a. Remove the power supply unit.
- b. Remove two rear panel screws (① and ② in Fig. 8) and then remove the shield plate.
- c. Remove the connector connected to the meter ass'y.
- d. Remove two plastic rivets (① and ② in Fig. 9), and the meter ass'y can be removed.

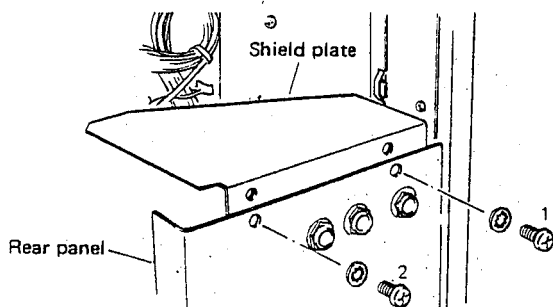


Fig. 8

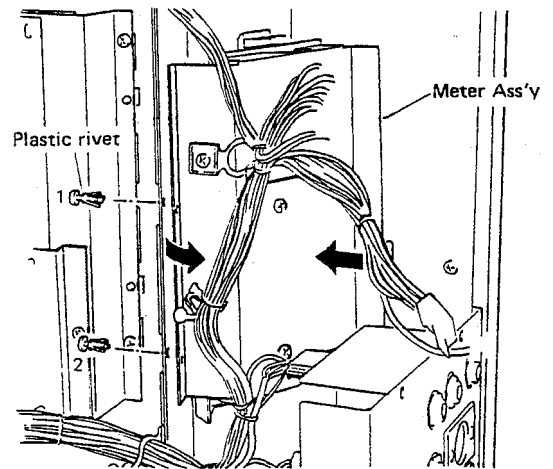


Fig. 9

8. Rear panel removal

- a. Remove all connectors which are connected to each circuit board of the rear panel.
- b. Remove five rear panel screws (① through ⑤ in Fig. 10) and remove the rear panel.

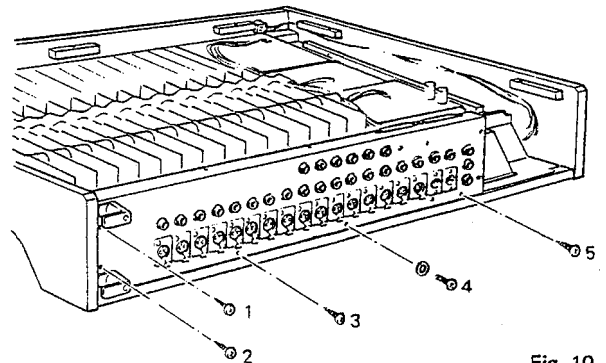


Fig. 10

* The ground of each circuit board is grounded to the rear panel through the phone jack. When carrying out an energizing check with the unit disassembled, make sure that each ground is correctly grounded. If the connector of J1 circuit board (C1) is removed, the grounds of MAS circuit board and IN circuit board are caused to float, resulting in instability. Also if the connectors of JO circuit board (C1, 2) are removed, the same thing occurs with the ground of LA circuit board.

■ CHECK SPECIFICATIONS

- Use an oscilloscope and an AC/dB meter with an input impedance of over 500kΩ for the measurement, and an oscillator with an output impedance less than 10Ω.
- Set the controls to the positions as given in Table 1 unless otherwise specified.
- Connect an oscillator as shown in Fig. 1 for measurement.
- Measure the noise level through L.P.F. of 12.47kHz, -6dB/oct.
- Perform measurement with the following load resistance connected to each output connector.

Each output *each* 600Ω
 PHONES out 8Ω (more than 5W)
 x 2 (stereo)

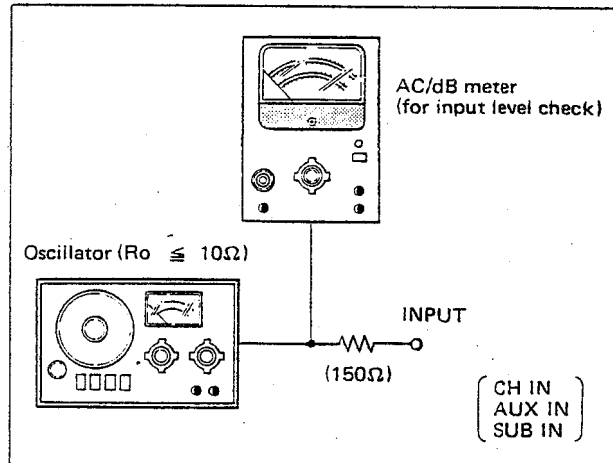


Fig. 1

Step	Check item	Set position of control & switch	Measurement conditions	Specifications	Remarks
1	Gain	Table 1	Apply a 1kHz sine wave signal as given in Tables 2 & 3 to each INPUT jack.	Output level specified in Tables 2 & 3.	<ul style="list-style-type: none"> • The difference in level must be within 2dB between; the INPUT channels for all the outputs. PGM L and PGM R of each channel, and XLR and phone jack. • The difference in gain between INPUT A (LO-Z) and B (HI-Z) must be within 2dB.
2	Frequency response	Table 1	Apply 20Hz ~ 20kHz sine wave signals to the INPUT jack.	Frequency response: 20Hz $+1$ -3 dB, 20kHz $+1$ -3 dB with 1kHz as a standard.	<ul style="list-style-type: none"> • PGM (L, R), FB, ECHO • The same applies to INPUT B.
3	Equalizer response	Table 1 ECHO → min.	Apply a sine wave signal with a frequency given in Table 4 to each INPUT jack.	Variation specified in Table 4 with output level obtained when EQ control at center as a standard.	Fig. 2
4	Graphic equalizer response	Table 1	Apply a -76dBm sine wave signal to CH1 INPUT and set each knob of graphic equalizer to the maximum and minimum positions one by one. (Specified frequencies: 60, 120, 250, 500, 1k, 2k, 4k, 8k, 16kHz)	Variation range: +12±1.5dB, -12±1.5dB at specified frequency with output level obtained when the control at center(o) as a standard.	Fig. 3
5	Separation	Table 1 Measurement ch PAN → L	Apply a 1kHz sine wave signal (about -69dBm) to INPUT jack so that the output of PGM OUT L is +7dBm.	Leakage level of PGM OUT R: less than -53dBm (separation 60dB)	<ul style="list-style-type: none"> • The same leakage level at PGM OUT L with PAN → R
6	PEAK indicator	Table 1 Channel fader → min.	Apply a 1kHz sine wave signal to each INPUT jack.	PEAK indicator turned on input level: -33±2dBm	
7	Distortion	Table 1 Channel fader, FB volume, ECHO volume, Master fader → nominal position (i.e. -6dB from the maximum position)	Apply a 1kHz sine wave signal (about -54dBm) to each INPUT JACK so that the output level is +10dBm.	Total harmonic distortion (T.H.D.): less than 0.2%	<ul style="list-style-type: none"> • PGM (L, R), FB, ECHO • The same applies to INPUT B.
8	Maximum output power	Table 1 Each fader, volume → nominal position	Apply a 1kHz sine wave signal (about -46dBm) to CH 1 INPUT jack.	PGM(L,R), FB, ECHO: +18dBm output with T.H.D. less than 1%. PHONES: 0dBm output with T.H.D. less than 1%.	

Step	Check item	Set position of control & switch	Measurement conditions	Specifications	Remarks
9	PEAK meter (Bar graph meter)	Table 1 Each fader, volume → nominal position	Apply a 1kHz sine wave signal (about -80dBm) to INPUT jack so that the output level is +4dBm.	PEAK meter indication: 0±1dB	PGM (L,R), FB, ECHO
10	Noise level	Table 1 Channel fader, FB, ECHO volume of the measurement channel only → max	Short the input jack with 150Ω.	PGM (L,R), FB: less than -48dBm ECHO: less than -42dBm	<ul style="list-style-type: none"> With INPUT B, noise level of PGM L must be less than -44dBm. Even when not conforming to the specification, less than -125dBm of equivalent input noise is also acceptable.
11	Residual noise	Table 1	Set channel fader, FB and ECHO volume to the minimum position.	PGM (L,R), FB: less than -58dBm ECHO: less than -52dBm	
			Set Master fader to the minimum position.	PGM (L,R), FB, ECHO: less than -90dBm	
			Set PHONES volume to the minimum position.	PHONES: less than -95dBm	
12	Multi connector	Table 1	Apply a 1kHz, -76dBm sine wave signal to each pin of Multi connector.	0±2dBm output at PGM OUT when the corresponding channel fader is turned to max.	Table 5 • Input and output must be of the same phase.

• Table 1

Knob	Set position
• CH INPUT	
INPUT A/B switch	A (LO-Z)
INPUT LEVEL switch	-60
EQ (HIGH, HI MID, LO MID, LOW)	Center (Only measurement: Boost or Cut)
ECHO Volume	Only measurement channel: max. All others: min.
FB Volume	Only measurement channel: max. All others: min.
PAN	Center
Channel fader	Only measurement channel: max. All others: min.
• MASTER	
PGM fader (L, R)	max.
FB fader	max.
ECHO fader	max.

Knob	Set position
• AUX IN (1, 2)	
AUX IN Volume (1, 2)	Only measurement channel: max. All others: min.
PAN	Center
• PHONES (L, R)	
PHONES Volume	Only measurement channel: max. All others: min.
• GRAPHIC EQUALIZER (L, R)	
60 ~ 16K knobs	Center (Only measurement: Boost or Cut)

• Table 2 CH INPUT

INPUT LEVEL SWITCH	INPUT LEVEL	OUTPUT							
		PGM L	PGM R	FB	ECHO (-20)	ECHO (+4)	PHONES L	PHONES R	
	-60	-76	0±2	0±2	0±2	-18±2	+6±2	-10±2	-10±2
	-50	-76	-10±2	-	-	-	-	-	-
	-35	-76	-25±2	-	-	-	-	-	-
	-20	-36	0±2	-	-	-	-	-	-
	-10	-36	-10±2	-	-	-	-	-	-
	+ 4	-36	-24±2	-	-	-	-	-	-

(UNIT: dBm)

• Table 3 AUX IN, SUB IN

INPUT	INPUT LEVEL	OUTPUT			
		PGM L	PGM R	FB	ECHO (+4)
AUX IN (1, 2)	-36	0±2	0±2	-	-
SUB IN	PGM L	-6	0±2	-	-
	PGM R	-6	-	0±2	-
	FB	-6	-	-	0±2
	ECHO	-6	-	-	0±2

(UNIT: dBm)

• Table 4

Set position	Frequency							
	LOW	LO MID	HI MID	HIGH	100Hz	500Hz	3kHz	10kHz
+15	0	0	+15	+12±2	-	-	+12±2	
-15	0	0	-15	-12±2	-	-	-12±2	
0	+15	0	0	-	+15±2	-	-	
0	-15	0	0	-	-15±2	-	-	
0	0	+15	0	-	-	+15±2	-	
0	0	-15	0	-	-	-15±2	-	

(UNIT: dB)

• Channel Equalizer Frequency Response Curves (Maximum Boost and Cut)

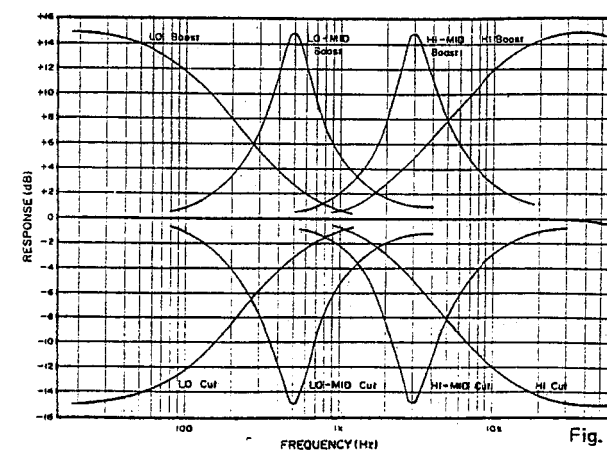


Fig. 2

• Table 5

CH INPUT	Multi connector pin No.		CH INPUT	Multi connector pin No.		Multi connector ground
	XLR pin No.			XLR pin No.		
	2 (Hot)	3 (Cold)		2 (Hot)	3 (Cold)	
CH1	1	2	CH9	21	22	18 19 20
CH2	3	4	CH10	23	24	
CH3	5	6	CH11	25	26	
CH4	8	9	CH12	27	28	
CH5	10	11	CH13	29	30	
CH6	12	13	CH14	32	33	
CH7	14	15	CH15	34	35	
CH8	16	17	CH16	36	37	

• Graphic Equalizer Frequency Response Curves (Maximum Boost and Cut)

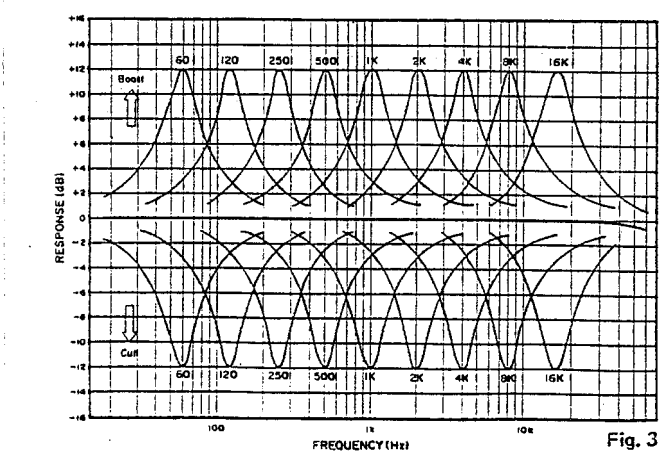
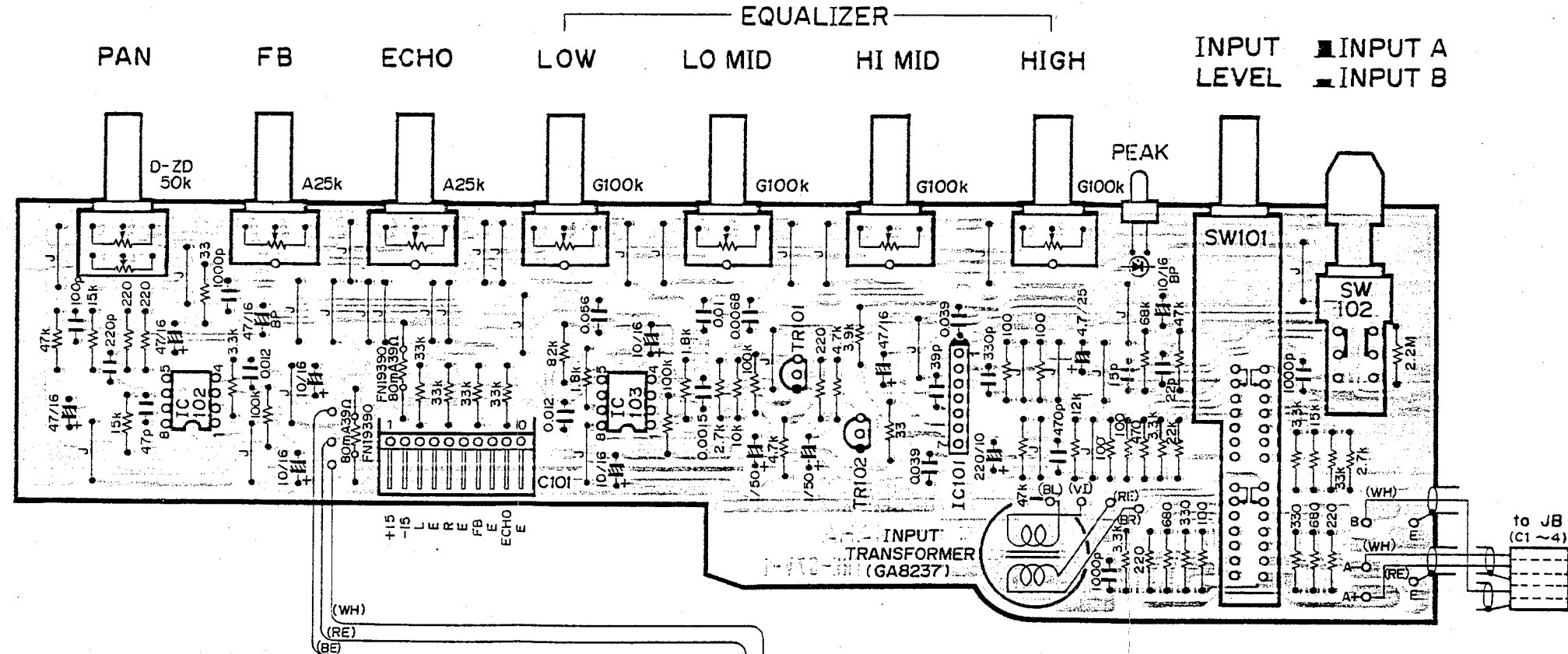


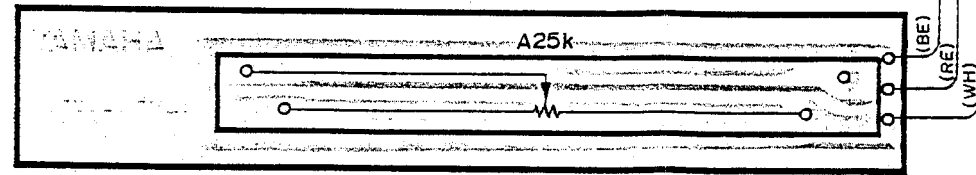
Fig. 3

CIRCUIT BOARDS

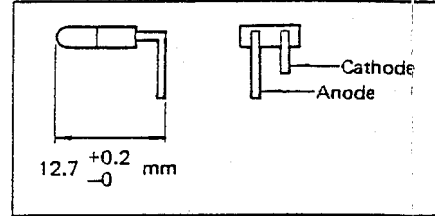
• IN C. Board (NA80748) parts side



CHANNEL FADER



LED installation



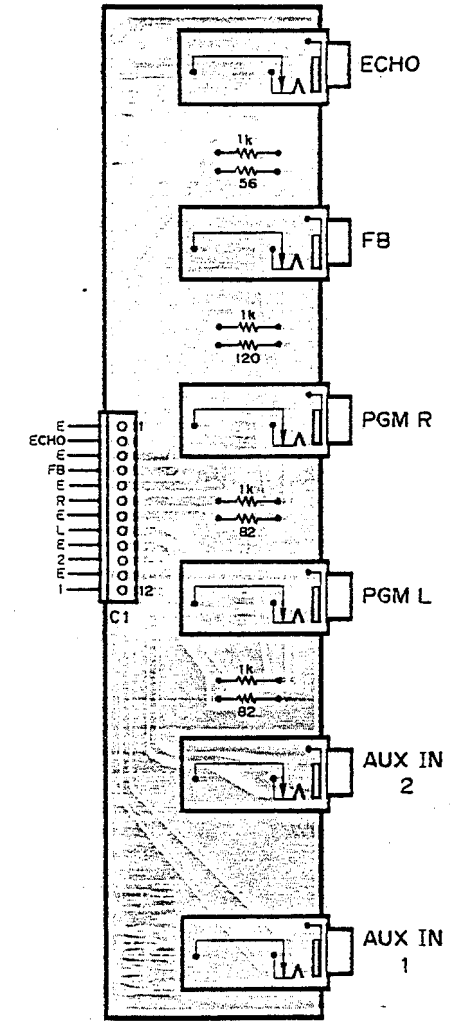
WIRE COLOR ABBREVIATIONS

- BL ▶ Black
- BR ▶ Brown
- RE ▶ Red
- OR ▶ Orange
- YE ▶ Yellow
- GR ▶ Green
- BE ▶ Blue
- VI ▶ Violet
- GY ▶ Gray
- WH ▶ White
- GG ▶ Light Green
- SB ▶ Light Blue
- PK ▶ Pink

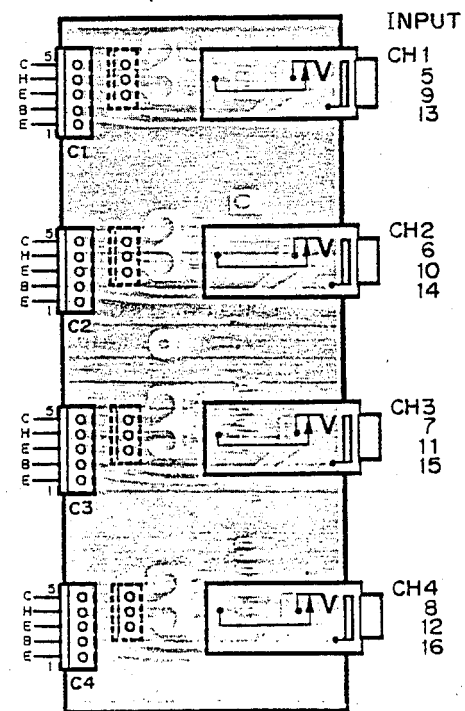
No.	Description	Part No.
IC101	M5214L	G034900
IC102, 103	NJM4558DV	G001390

No.	Description	Part No.
TR101	2SC2320 (E,F)	IC232010
TR102	2SA999 (E,F)	IA099910

• JI C. Board (NA80754)
pattern side



• JB C. Board
(except MQ1602 General model NA80768)
MQ1602 General model NA80769)
Parts side



HOW TO READ OPPOSITE-SIDE VIEW SKETCH

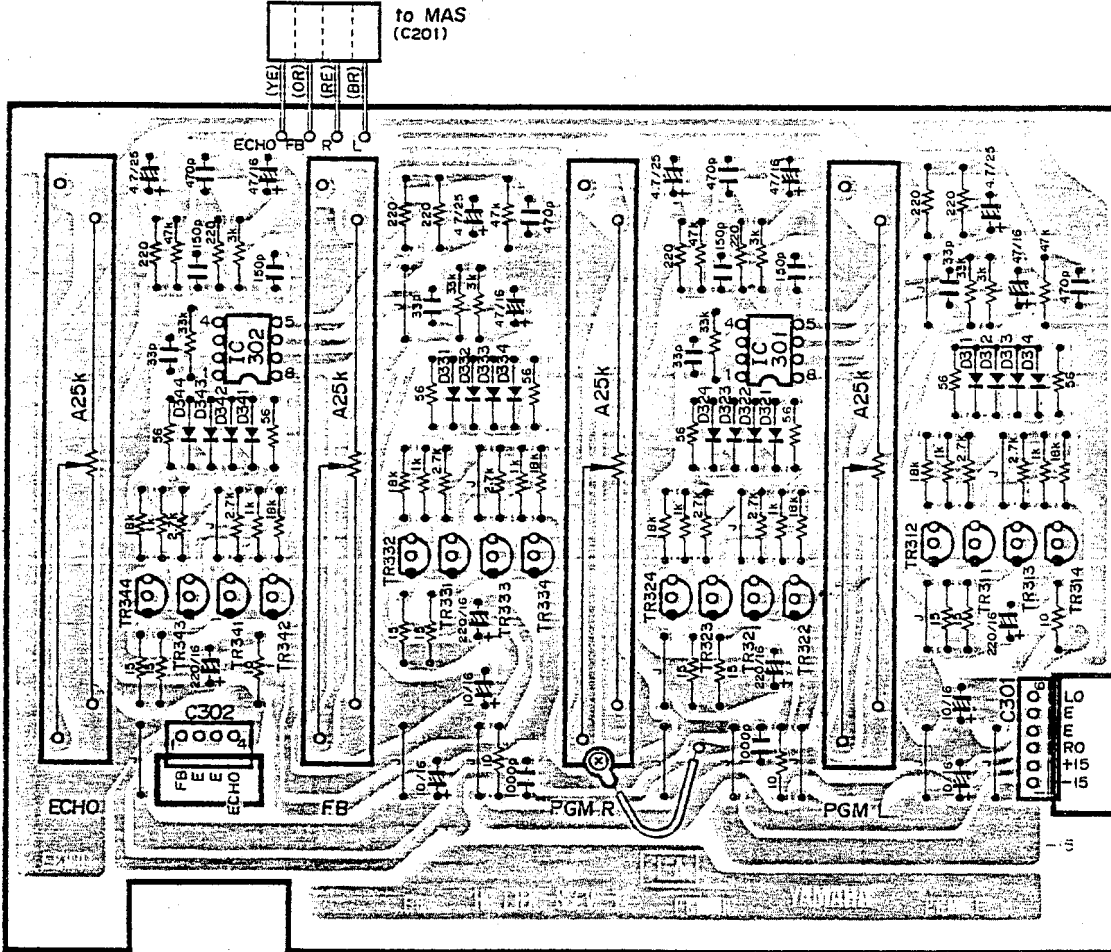
The symbol marks are printed on the pattern side of MAS and LA circuit boards.

Each symbol mark represents as follows:

- (1) number : IC pin No., connector pin No.
- (2) ——— : Resistor
- (3) —●— : Jumper wire
- (4) [Symbol] : Transistor (Black mark shows emitter.)
- (5) [Symbol] : Electrolytic capacitor (Thicker mark shows negative side.)
- (6) letter : Connector No.
- (7) [Symbol] : Connector (Black mark shows No. 1 pin.)

• LA C. Board (NA80756)

pattern side



Transistors

No.	Description	Part No.
TR311, 312 321, 322 331, 332 341, 342	2SC2320 (E,F)	IC232010
TR313, 314 323, 324 333, 334 343, 344	2SA999 (E,F)	IA099910

ICs

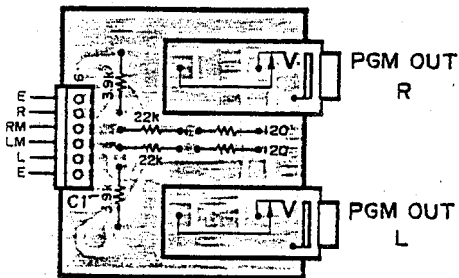
No.	Description	Part No.
IC301, 302	NJM4558	IG001390

Diodes

No.	Description	Part No.
All diodes	1S1555	IF000040

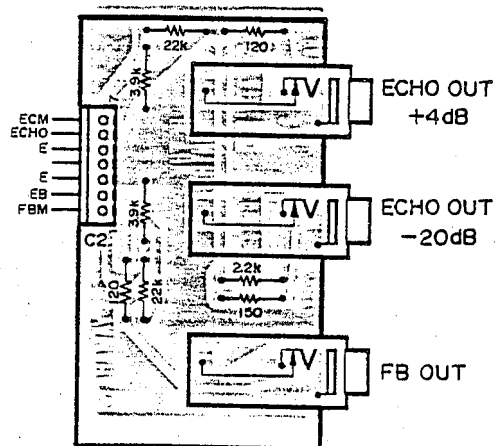
• JO C. Board 1/2 (NA80753)

parts side

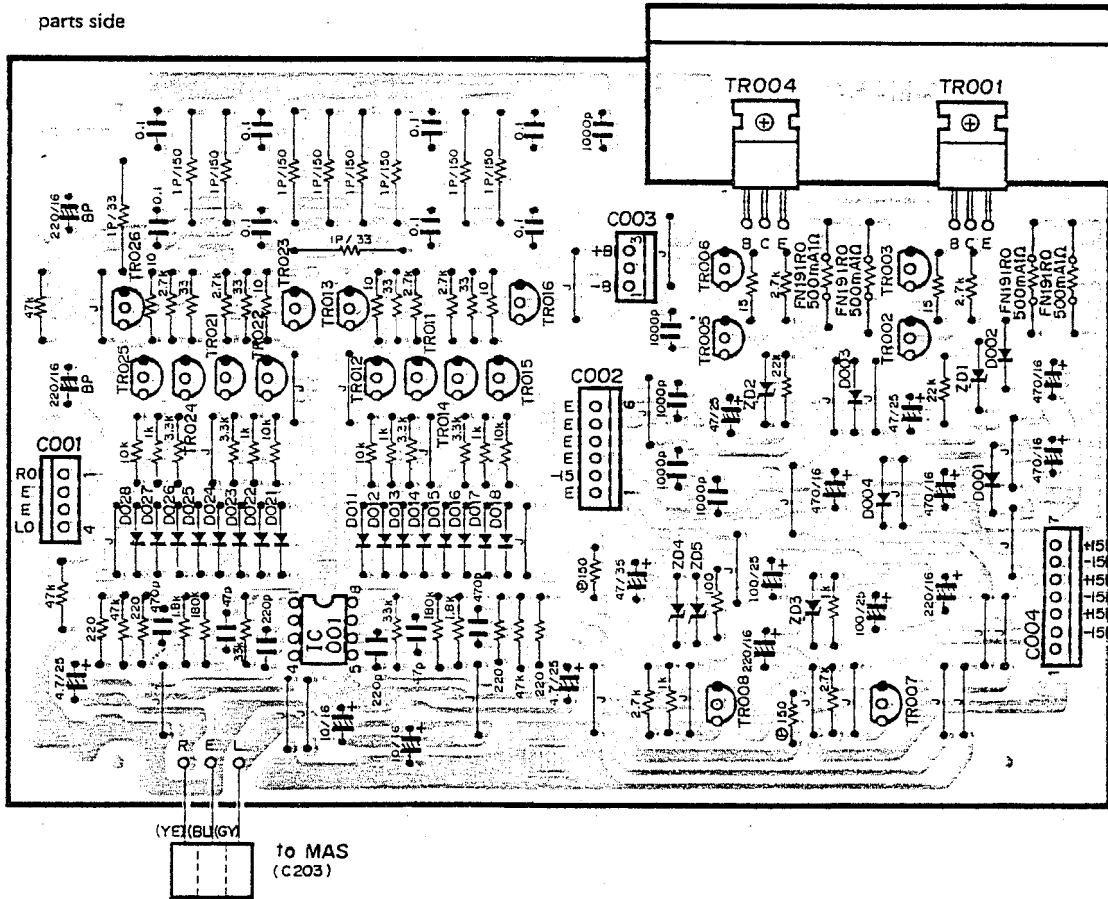


• JO C. Board 2/2 (NA80753)

parts side



• DH C. Board (NA80755)
parts side



Transistors

No.	Description	Part No.
TR001	2SD526 (O,Y)	•D052630
TR002, 003, 007, 011, 012, 021, 022	2SC2320 (E,F)	•C232010
TR004	2SB596 (O,Y)	•B059630
TR005, 006, 008, 014, 015, 024, 025	2SA999 (E,F)	•A099910
TR013, 023	2SD438	•D043800
TR016, 026	2SB560	•B056000

ICs

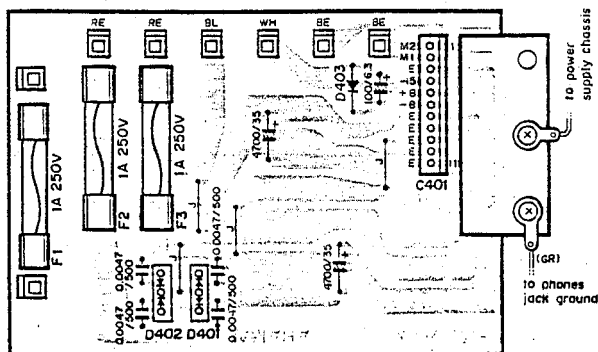
No.	Description	Part No.
IC001	NJM4558DV	•G001390

Diodes

No.	Description	Part No.
D001 ~ 004	W03B	•H000720
D011 ~ 018	1S1555	•F000040
D21 ~ 028		
ZD1 ~ 4	WZ162	•F000650
ZD5	WZ150	•F000780

• DC C. Board (U.S. & Canadian models NA80751)
(General model NA80752)

parts side



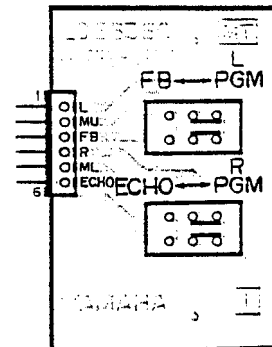
Diodes

No.	Description	Part No.
D401	1D221	•H000790
D402	1D2C1	•H000780
D403	1S1555	•F000040

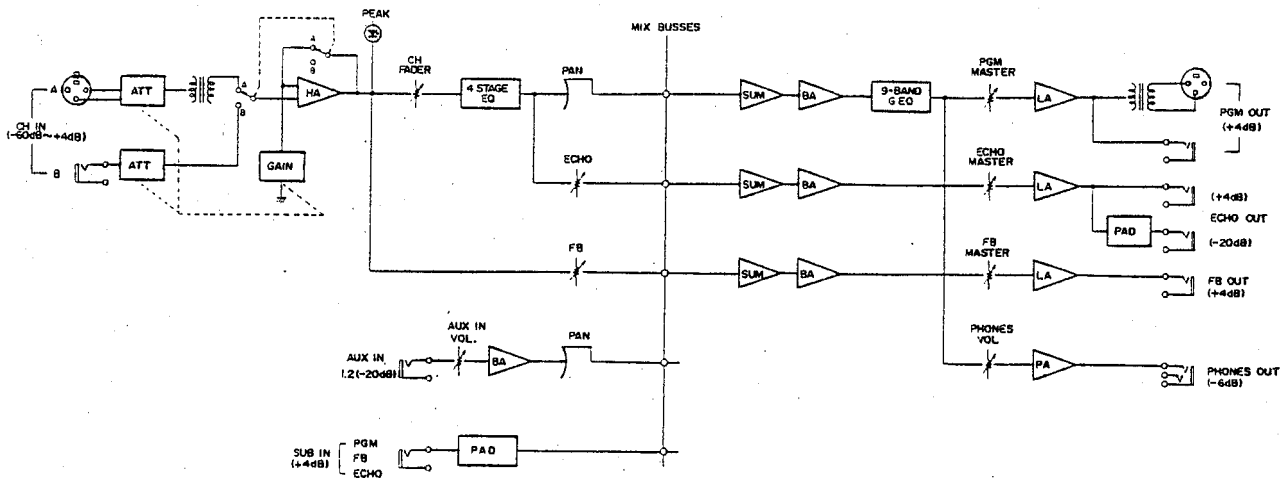
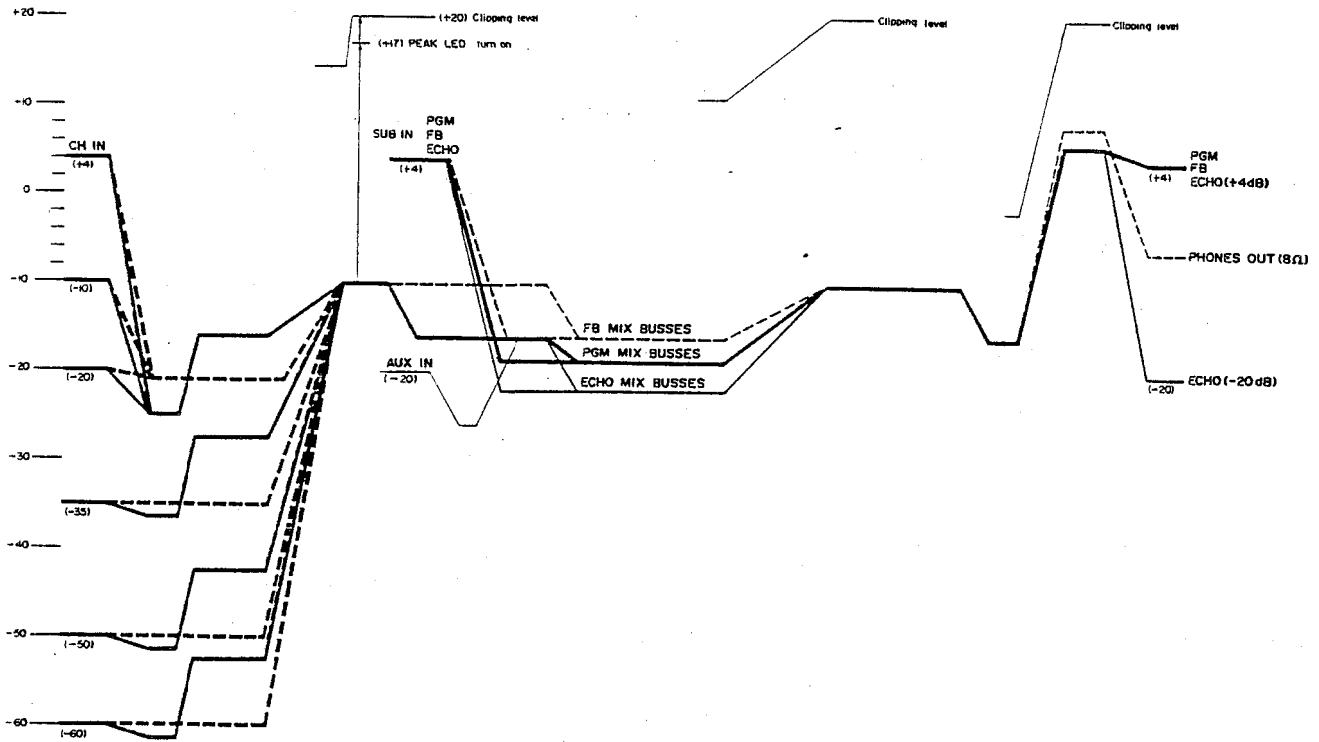
Fuses

Model	F1 ~ 3	Part No.
U.S. & Canadian models	1A 250V	K8001060
General model	T1A 250V	K8000730

• MT C. Board (NA80757)
pattern side

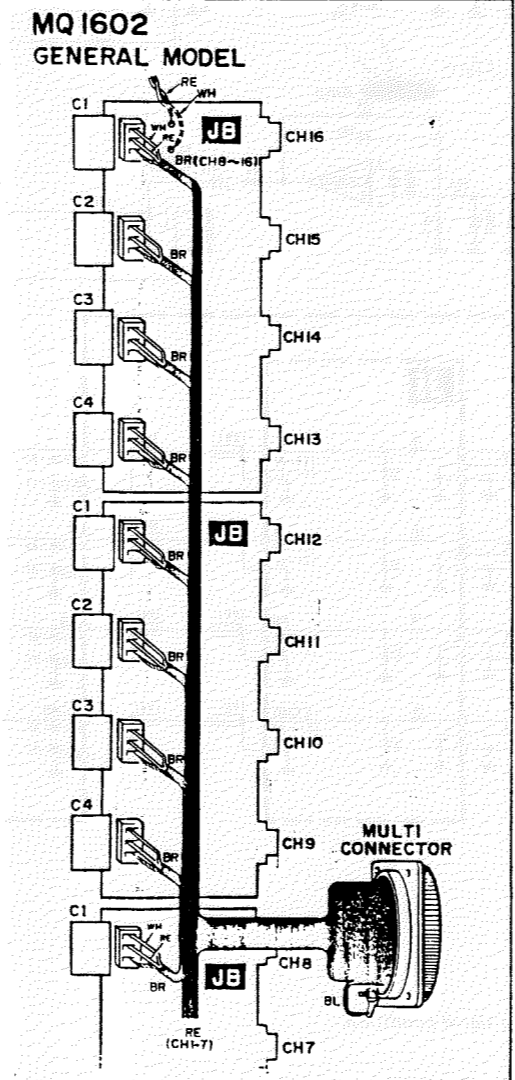
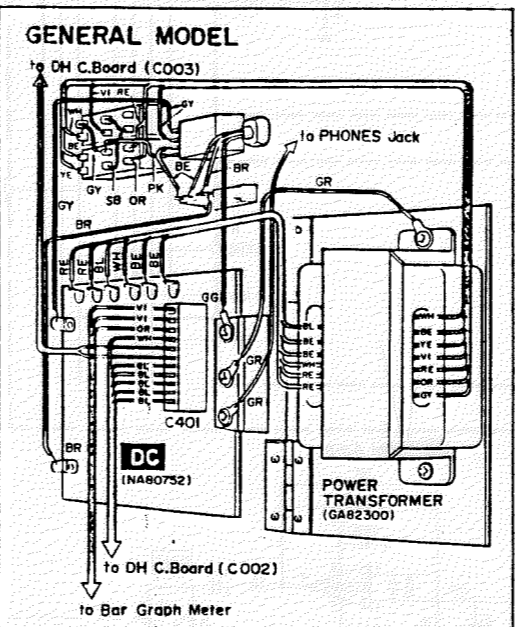
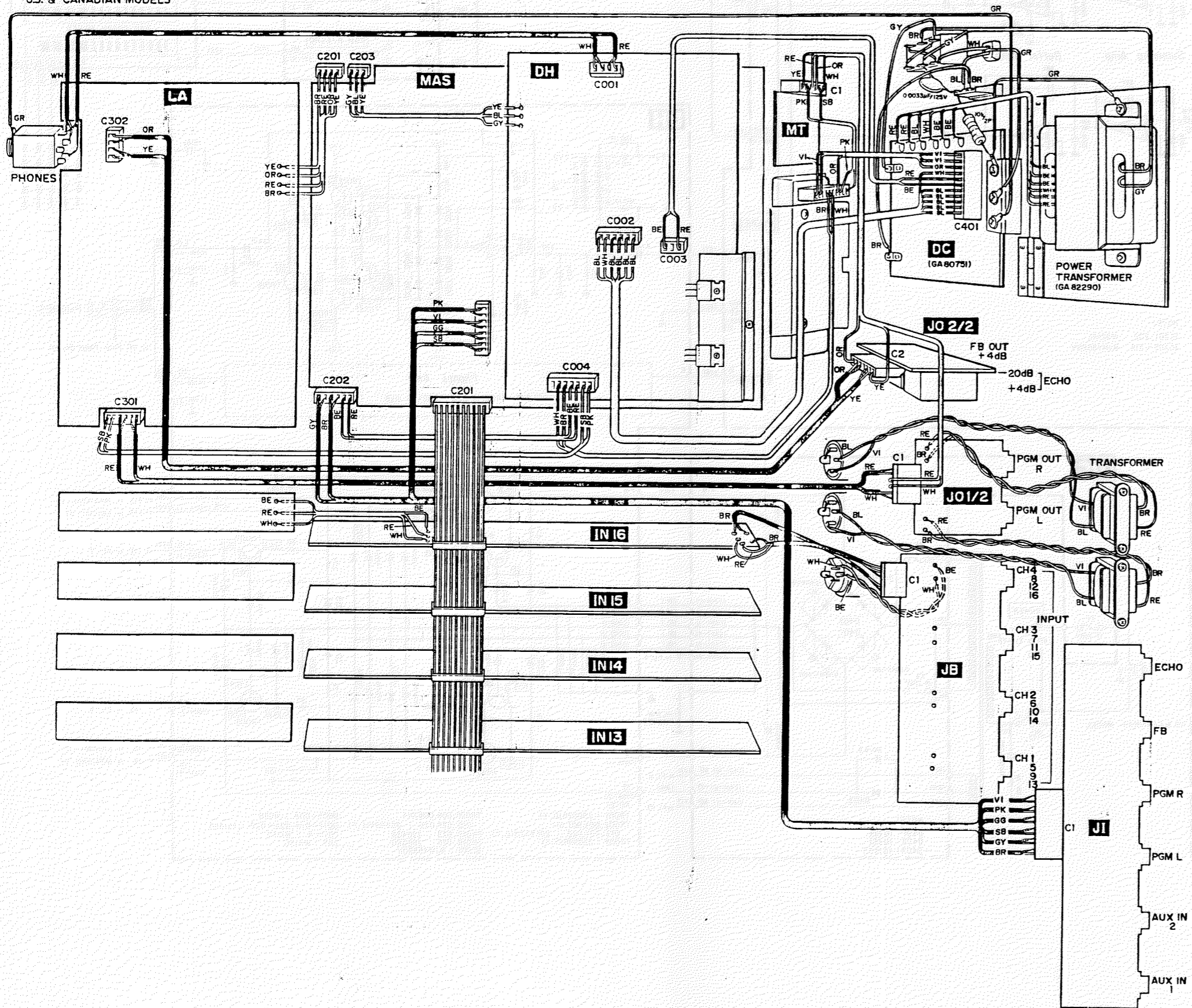


LEVEL DIAGRAM



WIRING

U.S. & CANADIAN MODELS



MULTI CONNECTOR PIN CONNECTION

• Multi connector

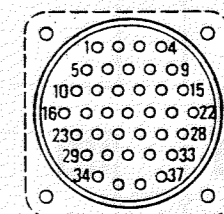
PIN No.	Color		PIN No.	Color	
1	Red	CH1	20	Black	G
2	White		21	Red	CH9
3	Red	CH2	22	White	CH10
4	White		23	Red	
5	Red	CH3	24	White	CH11
6	White		25	Red	CH12
7	NC		26	White	CH13
8	Red	CH4	27	Red	CH14
9	White		28	White	CH15
10	Red	CH5	29	Red	CH16
11	White		30	White	
12	Red	CH6	31	NC	
13	White		32	Red	
14	Red	CH7	33	White	
15	White		34	Red	
16	Red	CH8	35	White	
17	White		36	Red	
18	Black	G	37	White	
19	Black	G			

• Color identification:
 Black Vinyl wire
 Red, white Each core of double-core shielding wire.

• How to connect multi-connector (accessory) and cable
 MQ1602 general model is provided with a multi-connector as an accessory.
 Connect the multi-connector and the cable referring to the following figure and steps of procedure.

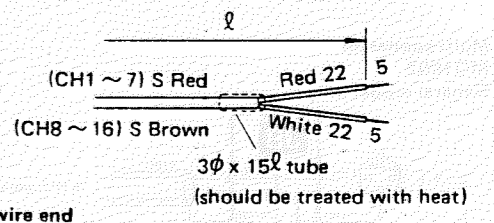
1. Put the cable through the end bell. If the clamp is found loose, use a sleeve.
2. Strip the cover off the wire 6 ~ 8mm from its end and solder it to the contact. Solder is already provided in the hole of the contact to facilitate the work which must be carried out within a short time not to allow extra flux or solder to flow out of the hole.
3. Fit the end bell on to the contact and secure it with four screws.
4. Fix the cable by tightening the clamp screw.

Arrangement of connector pins

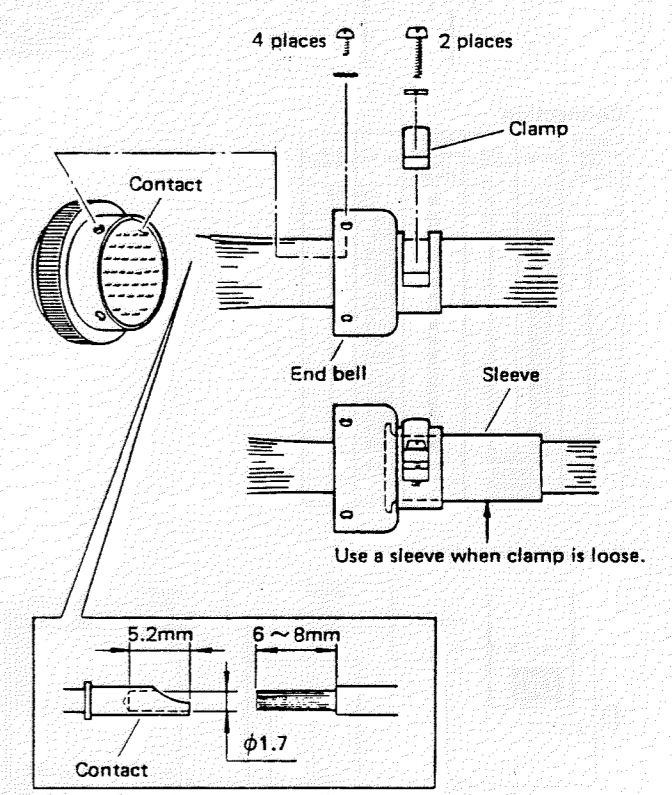
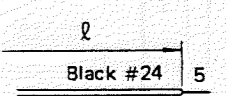


- Prepare the end of the wire as shown below and solder it to each pin of the connector.

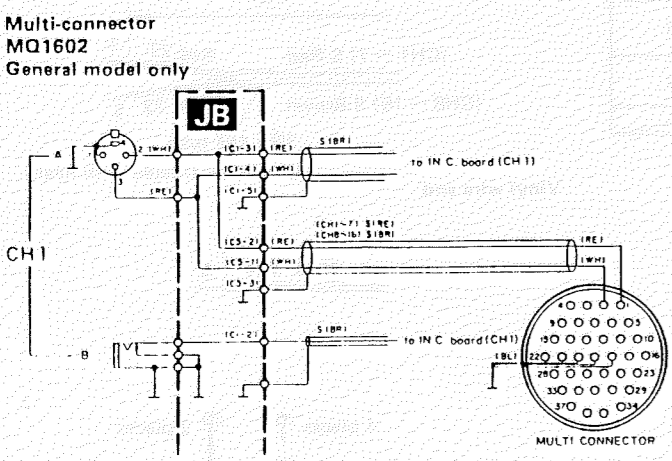
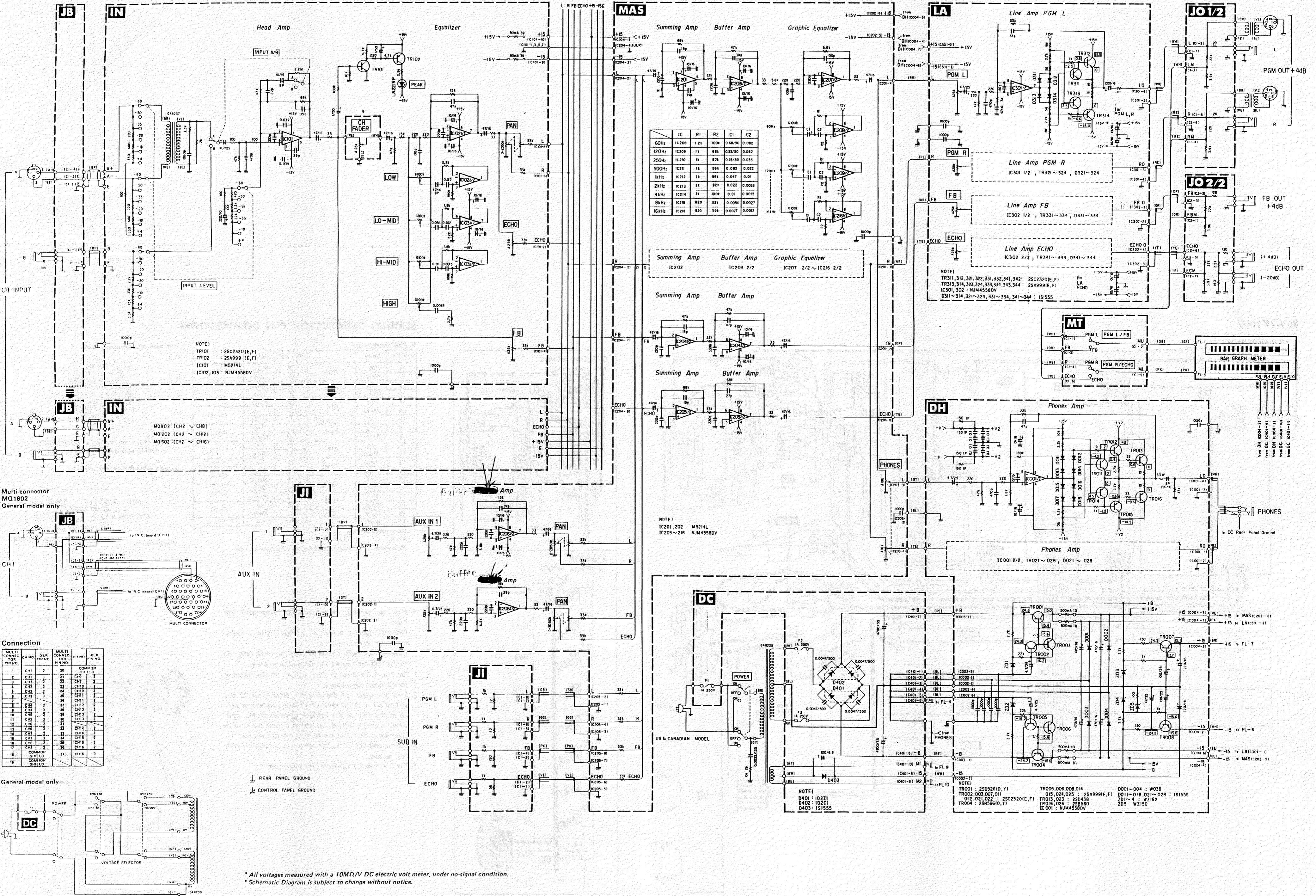
Double-core shielding wire end



Vinyl wire end

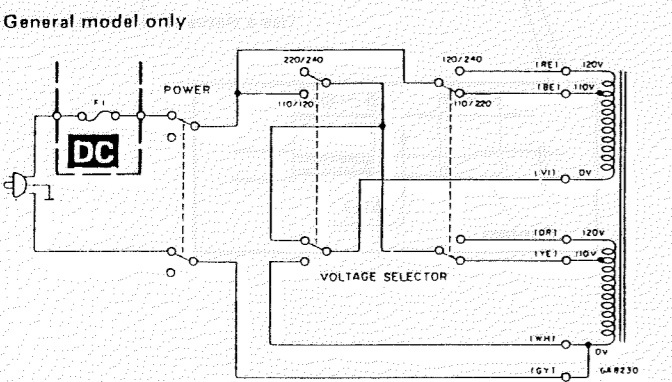


SCHEMATIC DIAGRAM



Connection

MULTI CONNECTOR PIN NO.	CH NO.	ALR PIN NO.	MULTI CONNECTOR PIN NO.	CH NO.	ALR PIN NO.
1	CH1	1	21	CH18	21
2	CH2	2	22	CH19	22
3	CH3	3	23	CH20	23
4	CH4	4	24	CH21	24
5	CH5	5	25	CH22	25
6	CH6	6	26	CH23	26
7	CH7	7	27	CH24	27
8	CH8	8	28	CH25	28
9	CH9	9	29	CH26	29
10	CH10	10	30	CH27	30
11	CH11	11	31	CH28	31
12	CH12	12	32	CH29	32
13	CH13	13	33	CH30	33
14	CH14	14	34	CH31	34
15	CH15	15	35	CH32	35
16	CH16	16	36	CH33	36
17	CH17	17	37	CH34	37
18	COMMON SHIELD	18	38	CH35	38
19	COMMON SHIELD	19	39	CH36	39



* All voltages measured with a 10MΩ/V DC electric volt meter, under no-signal condition.
 * Schematic Diagram is subject to change without notice.

PARTS LIST

MQ802/MQ1202/MQ1602

EXPLODED

■ CONTENTS

EXPLODED VIEW (CONTROL PANEL)	1
PARTS LIST	2
EXPLODED VIEW (REAR PANEL)	4
PARTS LIST	5
EXPLODED VIEW (POWER SUPPLY)	6
PARTS LIST	7

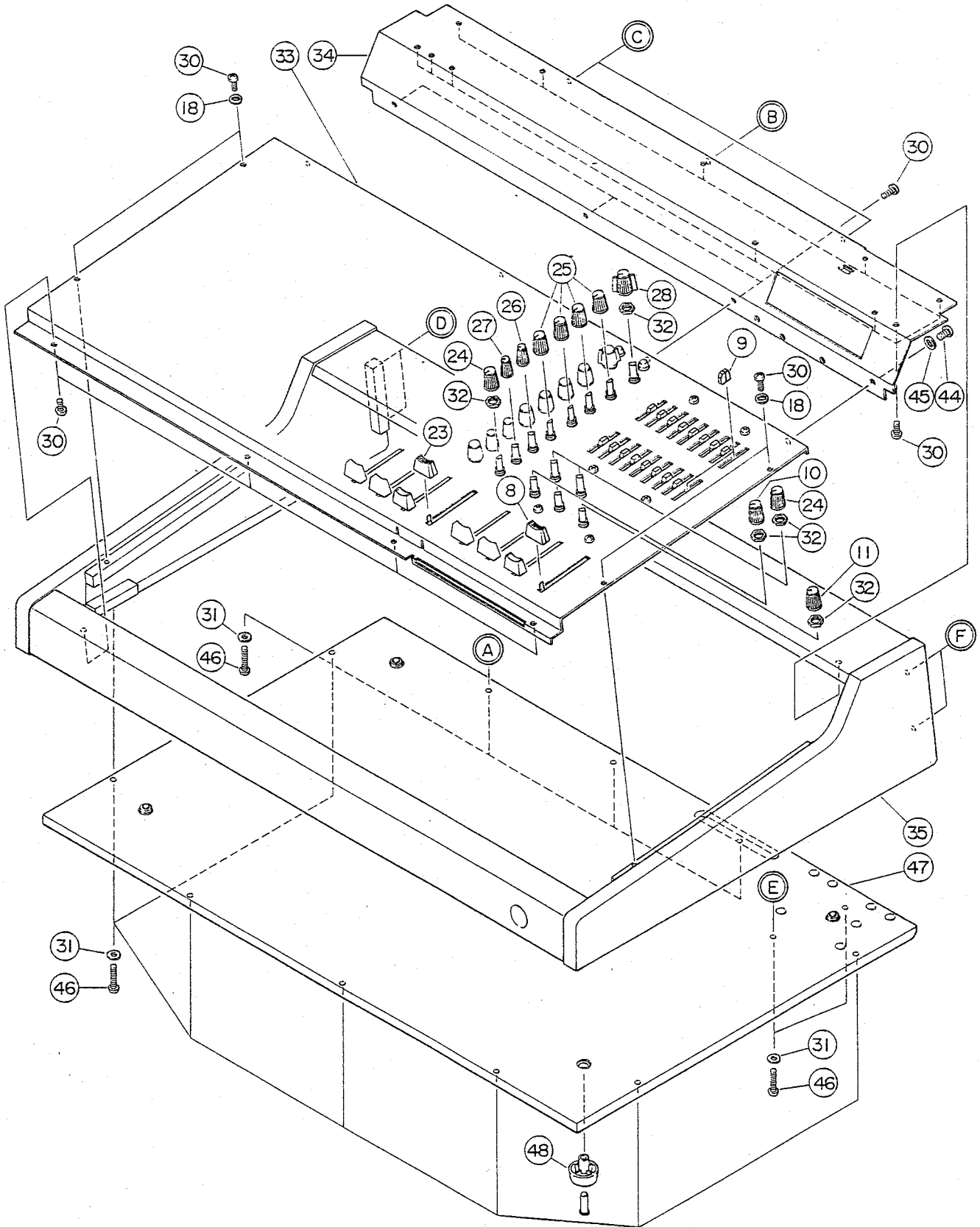
SINCE 1887

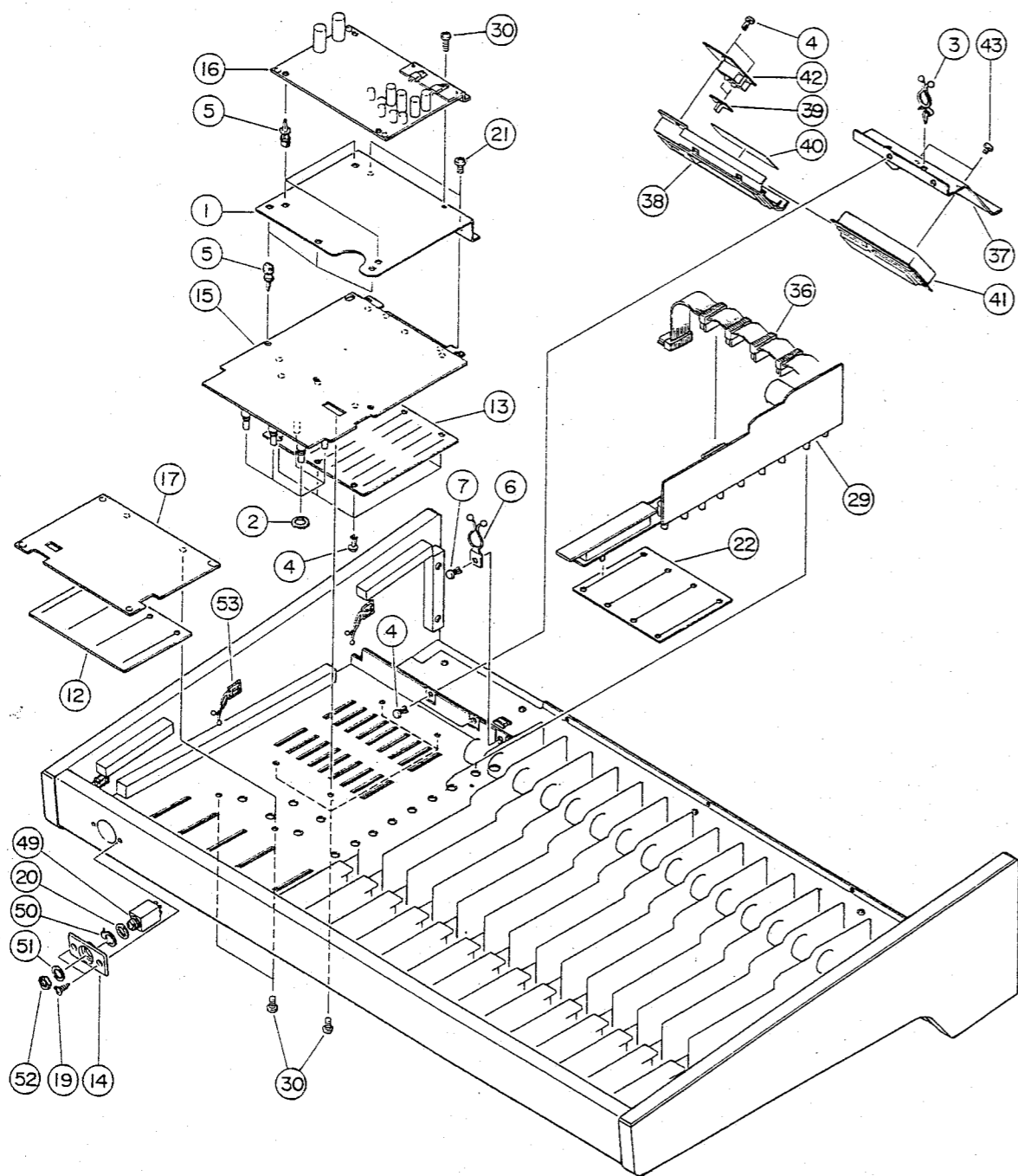


YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

EXPLODED VIEW (CONTROL PANEL)
EXPLODED





PARTS LIST

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
1	AA:81:69:80	Shield Plate	シールド板(大)			
2	AA:80:49:50	Spacer	スペーサー			
3	CB:03:54:30	Cable Clip	ケーブルクリップ			
4	CB:06:88:80	Plastic Rivet	プラスチックリベット			
5	CB:81:78:10	PC Support	PC サポート			
6	CB:81:89:10	Cable Clip	ケーブルクリップ			
7	CB:81:89:20	Plastic Rivet	プラスチックリベット			
8	CB:81:22:60	Knob	ツマミ	Red	MA.FADER	
9	CB:81:21:60	"	"	Ivory	GEQ	
10	CB:81:59:30	"	"	Gray	AUX IN 1,2	

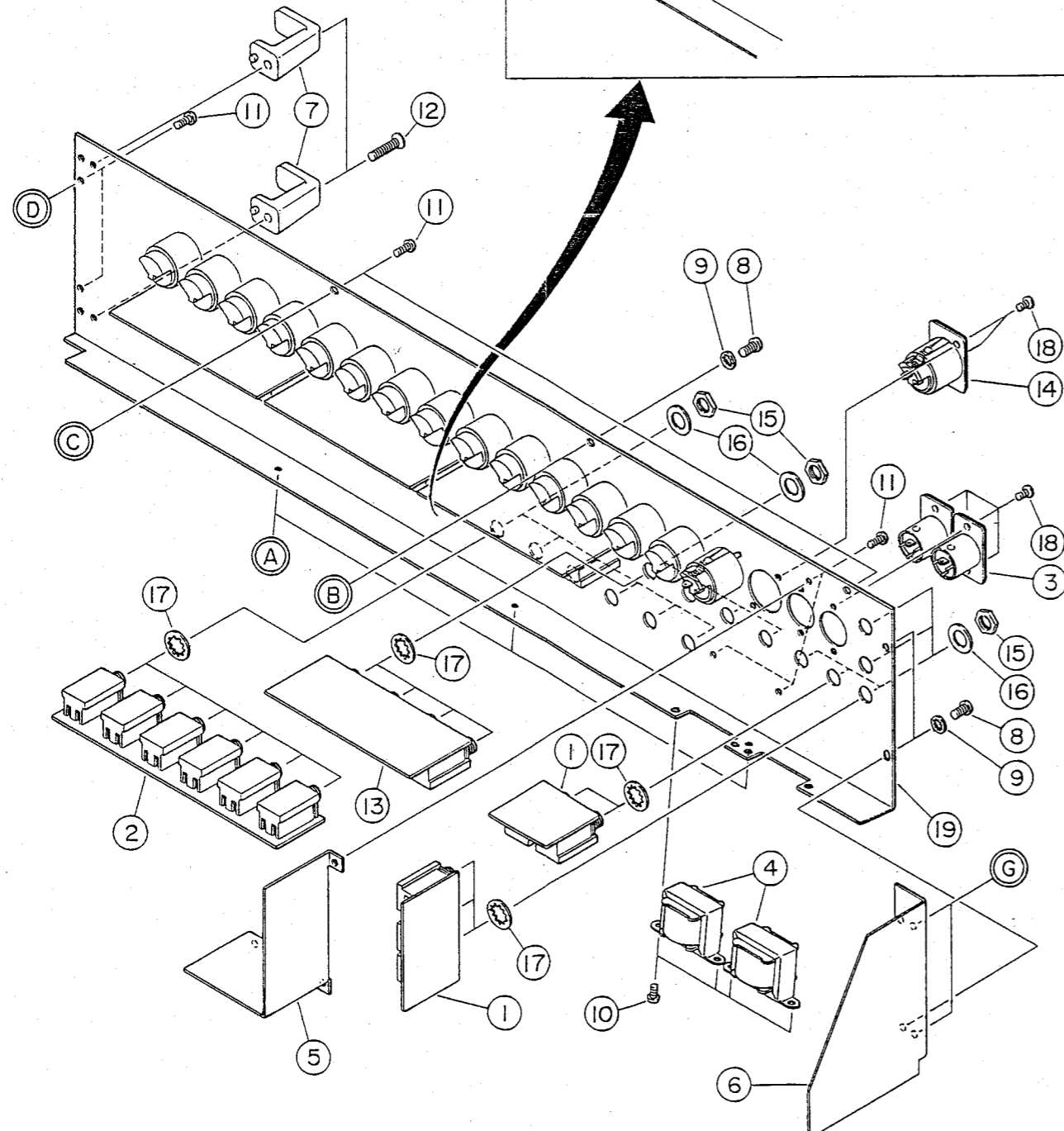
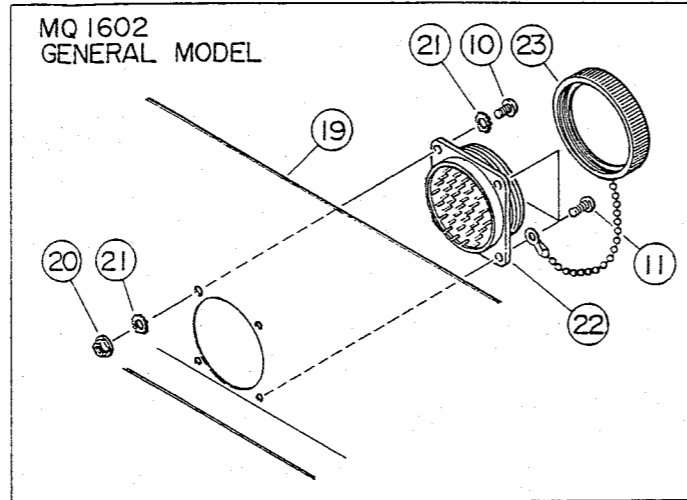
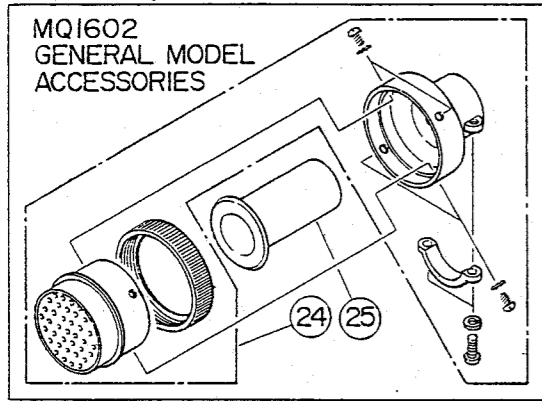
* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
11	CB:81:59:40	Knob	ツマミ	Ivory	PHONES	
12	CB:81:60:00	Dust Proof Cover	防塵クロス		MA	M512
13	CB:81:87:80	"	"		EQ	
14	CB:81:58:70	Headphone Panel	ヘッドフォンパネル			
15	NA:80:74:90	MAS C. Board	M A S シート	#8618		
16	NA:80:75:50	DH C. Board	D H シート	#8634		
17	NA:80:75:60	LA C. Board	L A シート	#8635		
18	EV:41:30:30	Toothed Lock Washer	歯付座金	A3S		
19	ER:33:11:30	Oval Head Wood Screw	丸皿木ネジ	3.1x13 FCM-B2		
20	EV:41:00:90	Toothed Lock Washer	歯付座金	A9S ZMC2-Y		
21	Ei:33:00:40	Bind Tapping Screw	バインドタッピングネジ	3x4 FCM-B2		
22	CB:81:59:90	Dust Proof Cover	防塵クロス		CH	M512
23	CB:02:38:30	Knob	ツマミ	Black	CH.FADER	
24	CB:81:59:10	"	"	Orange	PAN	
25	CB:81:59:20	"	"	Green	EQ	
26	CB:81:59:50	"	"	Blue	ECHO	
27	CB:81:59:60	"	"	Ivory	FB	
28	CB:81:59:70	"	"	Black	INPUT LEVEL	
29	NA:80:74:80	IN C. Board	I N シート	#8617		
30	Ei:33:01:00	Bind Tapping Screw	バインドタッピングネジ	3x10 FCM-B2		
31	EV:20:30:40	Flat Washer	平座金	4S ZMC2-B2		
32	EZ:30:70:10	Hexagonal Nut	特殊六角ナット	M7 FCM-B2		
33	AA:81:68:90	C. Panel	C パネル			MQ1602
	AA:81:69:00	"	"			MQ1202
	AA:81:69:10	"	"			MQ802
34	AA:81:69:20	M. Panel	M パネル			MQ1602
	AA:81:69:30	"	"			MQ1202
	AA:81:69:40	"	"			MQ802
35	DC:82:53:00	Cabinet	外装組立			MQ1602
	DC:82:54:00	"	"			MQ1202
	DC:82:55:00	"	"			MQ802
36	MZ:80:94:20	Flat Cable Ass'y	フラットケーブル Ass'y			MQ1602
	MZ:80:94:10	"	"			MQ1202
	MZ:80:94:00	"	"			MQ802
37	AA:81:69:90	Meter Sub Chassis	メーターサブシャーシ			
38	CB:81:87:40	Meter Escutcheon	メーターエスカッション			
39	CB:80:52:30	Knob	ツマミ			
40	CB:81:89:30	Meter Filter	メーターフィルター			
41	Ji:00:12:10	Bar Graph Meter	バーグラフメーター			
42	NA:80:75:70	MT C. Board	M T シート	#8636		
43	ED:33:00:40	Bind Screw	バインド小ネジ	3x4 FCM-B2		
44	ED:34:00:80	"	"	4x8 FCM-B2		
45	EV:41:30:40	Toothed Lock Washer	歯付座金	A4S ZMC2-B2		
46	Ei:33:02:50	Bind Tapping Screw	バインドタッピングネジ	3x25 FCM-B2		
47	DA:80:63:50	Bottom Board	底板集積			MQ1602
	DA:80:63:60	"	"			MQ1202
	DA:80:63:70	"	"			MQ802
48	CB:81:88:90	Leg	プラスチック脚			
49	LB:20:15:40	Phone Jack	フォンジャック			
50	AA:81:36:40	Lug	J K アースラグ			
51	LX:20:00:10	Flat Washer	特殊平座金	9S		
52	LX:20:00:60	Hexagonal Nut	特殊六角ナット	M9		
53	CB:81:88:80	Cable Clip	ケーブルクリップ			

* New Parts (新規部品)

EXPLODED

EXPLODED VIEW(REAR PANEL)



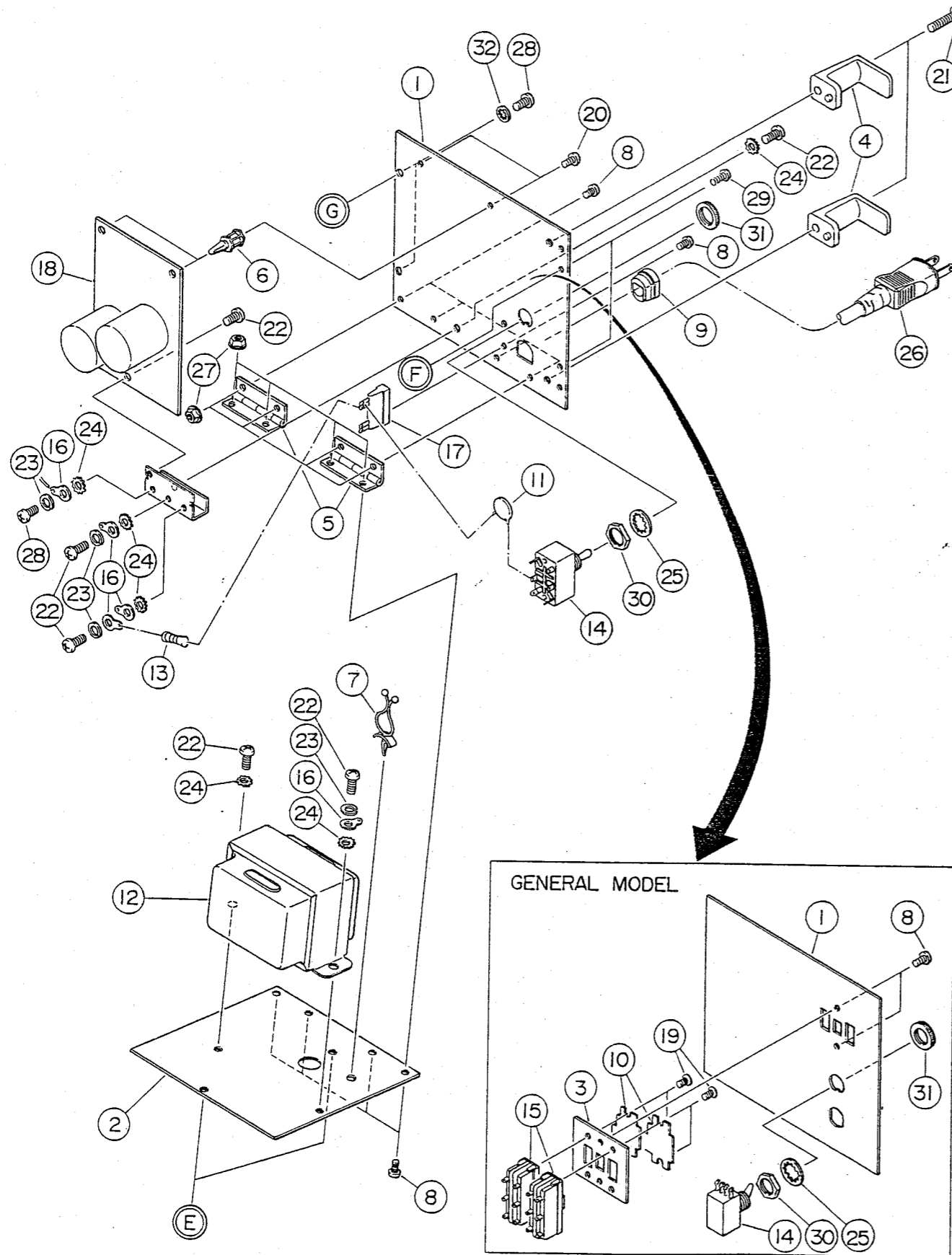
PARTS LIST

J: Japanese model C: Canadian model
U: US model G: General model

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
1	NA:80:75:30	JO C. Board	#8632	J O シート		
2	NA:80:75:40	JI C. Board	#8633	J I シート		
3	LB:30:11:00	Cannon Socket	HA16R-3P	キャノンソケット	PGM OUT	
4	GA:82:56:00	Output Transformer		アウトプットトランス		
5	AA:81:70:40	Shield Plate		シールド板 (中)		
6	AA:81:70:50	"		" (小)		
7	CB:02:25:70	Cord Reel		コード巻付コラム		
8	ED:34:00:80	Bind Screw	4x8 FCM-Bx	バインド小ネジ		
9	EV:40:30:40	Toothed Lock Washer	A4S	歯付座金		
10	ED:33:00:60	Bind Screw	3x6 FCM-Bx	バインド小ネジ		
11	Ei:33:01:00	Bind Tapping Screw	3x10 FCM-Bx	バインドタッピングネジ		
12	EB:34:02:50	Flat Head Screw	4x25 FCM-Bx	皿小ネジ		
13	NA:80:76:80	JB C. Board	#8703	J B シート		
"	NA:80:76:90	"	#8703	"	MQ1602	G
14	LB:30:10:90	Cannon Socket	HA16PR-3S	キャノンソケット	INPUT	
15	LX:20:00:60	Hexagonal Nut	M9 FNM3	特殊六角ナット		
16	LX:20:00:10	Flat Washer	9S FNM3	特殊平座金		
17	EV:41:00:98	Toothed Lock Washer	A9S ZMC2-Y	歯付座金		
18	EM:23:00:60	Oval Head Tapping Screw	3x6 FNM3	丸皿タッピングネジ		
19	AA:81:70:00	Rear Panel		リアパネル	MQ1602	J,U,C
"	AA:81:70:10	"		"	"	G
"	AA:81:70:20	"		"	MQ1202	
"	AA:81:70:30	"		"	MQ802	
20	EV:10:80:30	Flange Nut	M3	フランジナット	MQ1602	G
21	EV:42:30:30	Toothed Lock Washer	B3S FCM-Bx	歯付座金	MQ1602	G
22	LB:60:40:90	Multiconnector Receptacle		マルチコネクタ レセプタクル	MQ1602	G
23	LB:60:41:00	Multiconnector Cap		マルチコネクタ ダストカバー	MQ1602	G
24	LB:60:41:90	Multiconnector Plug		マルチコネクタ プラグ	MQ1602 Accessories	G
25	LB:60:42:00	Multiconnector Sleeve		マルチコネクタ スリーブ	MQ1602 Accessories	G

* New Parts (新規部品)

EXPLODED VIEW(POWER SUPPLY)
EXPLODED



PARTS LIST

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
*	NB 81:76:30	Power Supply Unit	電源ユニット			J
*	NB 81:76:40	"	"			U
*	NB 81:76:50	"	"			C
*	NB 81:76:60	"	"			G
1	AA 81:70:60	Panel, Power Supply	電源パネル			J,U,C
*	AA 81:70:70	"	"			G
2	AA 81:70:80	Chassis, Power Supply	電源シャーシ			
3	AA 81:36:00	Sub Panel, Slide Switch	スライドSWサブパネル			G
4	CB 02:25:70	Cord Reel	コード巻付コラム			
5	AA 81:76:40	Hinge	蝶番			
6	CB 03:54:10	Support	タッピングサポート			
7	CB 03:54:30	Cable Clip	ケーブルクリップ			J,U,C
*	CB 81:68:50	"	"			G
8	ED 33:00:60	Bind Screw	3x6 FCM-Bℓ	バインド小ネジ		
9	CB 03:28:40	Cord Stopper	コードストッパー			G
*	CB 80:68:50	"	"			J,U,C
10	CB 81:60:60	Voltage Selector Panel	文字板		M512	G
11	FZ 00:21:60	Ceramic Capacitor	0.0033μF/AC125V	セラコン		J,U,C
12	GA 82:28:00	Power Transformer	電源トランス			J
*	GA 82:29:00	"	"			U,C
*	GA 82:30:00	"	"			G
13	HL 32:71:00	Metal Oxide Film Resistor	10kΩ 2P	酸化膜抵抗		J,U,C
14	KA 30:02:10	Toggle Switch	S-7B	トグルスイッチ	Power	J
*	KA 30:03:50	"	S-7B	"	"	U
*	KA 30:04:40	"	S-7B-7	"	"	C
*	KA 30:03:70	"	CASTELCO	"	"	G
15	KA 40:07:40	Slide Switch	スライドスイッチ	Voltage Selector		G
16	LA 00:02:90	Lug	φ4	アースラグ		J,U,C
17	LA 00:07:60	Terminal		カラー端子板		
18	NA 80:75:00	DC C. Board	#8631	D C シート		J
*	NA 80:75:10	"	#8651	"		U,C
*	NA 80:75:20	"	#8652	"		G
19	EB 33:00:60	Flat Head Screw	3x6 FCM-Bℓ	皿小ネジ		G
20	Ei 33:50:80	Bind Tapping Screw	3.5x8 FCM-Bℓ	バインドタッピングネジ		
21	EB 34:02:50	Flat Head Screw	4x25 FCM-Bℓ	皿小ネジ		
22	ED 34:01:00	Bind Screw	4x10 FCM-Bℓ	バインド小ネジ		
23	EV 30:30:40	Spring Lock Washer	4S ZMC2-Bℓ	パネ座金		
24	EV 42:30:40	Toothed Lock Washer	84S ZMC2-Bℓ	歯付座金		
25	EV 41:01:20	"	A12S ZMC2-Y	"	SW Accessories	
26	MG 00:06:10	AC Cord		電源コード		J
*	MG 00:02:70	"		"		U,C
*	MG 00:04:50	"		"		G
27	EV 10:80:30	Flange Nut	M3 ZMC2-Y	フランジナット		
28	ED 34:00:80	Bind Screw	4x8 FCM-Bℓ	バインド小ネジ		
29	Ei 33:01:00	Bind Tapping Screw	3x10 FCM-Bℓ	バインドタッピングネジ		
30	EZ 51:20:10	Hexagonal Nut	M12	特殊六角ナット	SW Accessories	
31	BB 80:04:80	Nut	M12	丸ナット	SW Accessories	
32	EV 41:30:40	Toothed Lock Washer	A4S ZMC2-Bℓ	歯付座金		

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
	NA:80:74:80	IN C. Board	#8617	I N シート		
	NA:80:74:90	MAS "	#8618	M A S シート		
	NA:80:75:00	DC "	#8631	D C シート		J
	NA:80:75:10	DC "	#8651	"		U,C
	NA:80:75:20	DC "	#8652	"		G
	NA:80:75:30	JO "	#8632	J O シート		
	NA:80:75:40	JI "	#8633	J I シート		
	NA:80:75:50	DH "	#8634	D H シート		
	NA:80:75:60	LA "	#8635	L A シート		
	NA:80:75:70	MT "	#8636	M T シート		
	NA:80:76:80	JB "	#8703	J B シート		
	NA:80:76:90	JB "	#8703	"	MQ1602	G
	iG:00:13:90	IC	NJM4558DV	I C OP. Amp.		
	iG:03:49:00	"	M5214L	"	±35V PRE. AMP	
	iA:09:99:10	Transistor	2SA999 (E,F)	トランジスタ		
	iB:05:60:00	"	2SB560	"		
	iB:05:96:30	"	2SB596	"		
	iC:23:20:10	"	2SC2320 (E,F)	"		
	iD:04:38:00	"	2SD438	"		
	iD:05:26:00	"	2SD526	"		
	iF:00:00:40	Diode	1S1555	ダイオード		
	iF:00:06:50	Zener Diode	WZ162	ツェナーダイオード		
	iF:00:07:80	"	WZ150	"		
	iF:00:31:70	LED Red	LN221RP	L E D PEAK IND.		
	iH:00:02:80	Diode	1D2C1	ダイオード		
	iH:00:02:90	"	1D2Z1	"		
	iH:00:07:20	"	WQ3B	"		
	Ji:00:12:10	Bar Graph Meter		バーグラフメーター		
	KA:30:02:10	Toggle Switch	S-7B	トグルスイッチ	Power	J
	KA:30:03:50	"	S-7B	"	"	U
	KA:30:03:70	"	CASTELCO	"	"	G
	KA:30:04:40	"	S-7B-7	"	"	C
	KA:40:06:00	Slide Switch		スライドスイッチ	METER	
	KA:40:07:40	"		"	Voltage Selector	G
	KA:50:15:10	Rotary Switch		ロータリースイッチ	INPUT LEVEL	
	KA:80:26:40	Push Switch		プッシュスイッチ	INPUT A/B	
	HS:31:10:20	Variable Resistor	A25kΩ	可変抵抗器	FB.ECHO	
	HS:31:13:50	"	A25kΩ	"	AUX VOL.	
	HS:31:13:60	"	D-ZD50kΩ	"	AUX PAN	
	HS:31:13:70	"	A10kΩ × 2	"	PHONES	
	HS:31:13:80	"	G100kΩ	"	EQ	
	HS:31:13:90	"	D-ZD50kΩ	"	PAN	
	HQ:23:01:20	Slide Variable Resistor	G100kΩ C.C	スライドVR	GEQ	
	HQ:40:01:60	"	A25kΩ	"	FADER	

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
	GA:82:28:00	Power Transformer		電源トランス		J
	GA:82:29:00	"		"		U,C
	GA:82:30:00	"		"		G
	GA:82:37:00	Input Transformer		インプットトランス		
	GA:82:56:00	Output Transformer		アウトプットトランス		
	NB:81:76:30	Power Supply Unit		電源ユニット		J
	NB:81:76:40	"		"		U
	NB:81:76:50	"		"		C
	NB:81:76:60	"		"		G
	MG:00:02:70	AC Cord		電源コード		U,C
	MG:00:04:50	"		"		G
	MG:00:06:10	"		"		J
	MZ:80:94:00	Flat Cable Ass'y		フラットケーブル Ass'y	MQ802	
	MZ:80:94:10	"		"	MQ1202	
	MZ:80:94:20	"		"	MQ1602	
	KB:00:03:30	Fuse	1A 250V	ヒューズ		J
	KB:00:03:40	"	1.5A 250V	"		J
	KB:00:07:30	"	T1A 250V	"		G
	KB:00:10:60	"	1A 250V	"		U,C
	HW:79:51:50	Plate Resistor	1/4P 150Ω	プレート抵抗		
	HW:99:31:00	Fuse Resistor	500mA 1Ω	ヒューズ抵抗		
	HW:99:43:90	"	80mA 39Ω	"		
	HL:31:43:30	Metal Oxide Film Resistor	33Ω 1P	酸化金抵抗		
	HL:31:51:50	"	150Ω 1P	"		
	HL:32:71:00	"	10kΩ 2P	"		
	FL:63:71:00	BP Capacitor	10μF/16V	BP ケミコン		
	FL:63:74:70	"	47μF/16V	"		
	UK:33:82:20	"	220μF/16V	"		
	FM:92:94:70	Electrolytic Cap.	4700μF/35V	ケミコン		
	FZ:00:21:60	Ceramic Capacitor	0.0033μF/AC125V	セラコン		J,U,C
	LB:10:05:00	Phone Jack		フォンジャック	INPUT OUTPUT	
	LB:20:15:40	"		"	PHONES	
	LB:30:10:90	Cannon Socket	HA16PR-3C	キャノンソケット	INPUT	
	LB:30:11:00	"	HA16R-3P	"	PGM OUT	
	LB:60:40:90	Multiconnector Receptacle		マルチコネクタレセプタクル	MQ1602	G
	LB:60:41:00	Multiconnector Cap		マルチコネクタニグレストカパニ	"	G
	LB:60:41:90	Multiconnector Plug		マルチコネクタプラグ	MQ1602 Accessories	G
	LB:60:42:00	Multiconnector Sleeve		マルチコネクタスリーブ	MQ1602 Accessories	G
	LB:20:15:30	Fuse Holder Pin		ヒューズ受け金具		
	LB:90:61:00	Connector	10P	コネクタ	Side Entry	
	LB:30:07:30	Connector Base Pin	3P	ベースピン	Top Entry	
	LB:40:05:70	"	4P	"	"	
	LB:60:29:40	"	6P	"	"	

* New Parts (新規部品)

