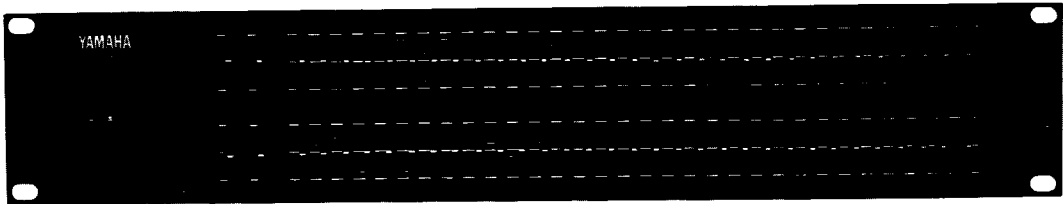


# GRAPHIC EQUALIZER

# Q2031A

## SERVICE MANUAL



Q2031A

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## IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

## SPECIFICATIONS

<b>FREQUENCY RESPONSE</b>	0 ± 0.5dB, 20Hz ~ 20kHz	<b>HIGH PASS FILTER</b> (Rolloff Frequency)	12dB/octave (20Hz ~ 200Hz)
<b>TOTAL HARMONIC DISTORTION</b>	Less than 0.1% @ +4dB, 20Hz ~ 20kHz	<b>POWER REQUIREMENTS</b>	
<b>HUM &amp; NOISE</b>	–96dB (LEVEL Control at maximum and all Equalizer Controls at flat)	U.S. & Canadian models	120V, AC60Hz
<b>MAXIMUM VOLTAGE GAIN</b>	+24dB: Input level sw at –20dB Output level sw at +4dB	General model	110/120/220/240V, AC50/60Hz
<b>EQUALIZER CONTROLS</b>	31 band (1/3 octave) Center Frequencies 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k, 10k, 12.5k, 16k, 20kHz Variable Range ±12dB/±6dB	<b>POWER CONSUMPTION</b>	
<b>PEAK LED INDICATORS</b>	Light up when the output level reaches 3dB below clipping.	U.S. & Canadian models	25W
		General model	25W
		<b>DIMENSIONS (W x H x D)</b>	480 mm x 88 mm x 298 mm (18-7/8" x 3-1/2" x 11-3/4")
		<b>WEIGHT</b>	4.8 kg (10.6 lbs.)

### INPUT SPECIFICATIONS

INPUT Connectors	INPUT Level Switch	Input Impedance	Source Impedance	Sensitivity* (At Maximum Gain)	Input Level		Connectors**
					Nominal Level	Maximum Before Clipping	
INPUT (A, B)	+4dB	15k ohms	600 ohm LINES	+4dB (1.23V)	+4dB (1.23V)	+20dB (7.75V)	XLR-3-31 Type Phone Jack
	–20dB			–20dB (77.5mV)	–20dB (77.5mV)	–4dB (489mV)	

### OUTPUT SPECIFICATIONS

OUTPUT Connectors	OUTPUT LEVEL Switch	Output Impedance	Load Impedance	Output Level		Connectors**
				Nominal Level	Maximum Before Clipping	
OUTPUT (A, B)	+4dB	150 ohms	600 ohm Lines	+4dB (1.23V)	+20dB (7.75V)	XLR-3-32 Type
			10k ohm Lines		+18dB (6.16V)	Phone Jack
	–20dB	150 ohms	600 ohm Lines	–20dB (77.5mV)	–4dB (489mV)	XLR-3-32 Type
			10k ohm Lines		–6dB (388mV)	Phone Jack

\* The input level required to obtain the nominal output level.

\*\* XLR-type connectors are balanced. Phone jacks are unbalanced.

◦ 0dB is referenced to 0.775V RMS.

■総合仕様

周波数特性	20Hz～20kHz 0 ± 0.5dB
全高調波歪率	0.1%以下 (20Hz～20kHz @ + 4dB)
ハム & ノイズ	－96dB Input Level control→ maximum equalizer→flat( 0 dB)
最大電圧利得	0 dB( LEVEL SW ; INPUT －20dB, OUTPUT －20dB) + 24dB( LEVEL SW ; INPUT －20dB, OUTPUT + 4 dB) －24dB( LEVEL SW ; INPUT + 4 dB, OUTPUT －20dB) 0 dB( LEVEL SW ; INPUT + 4 dB, OUTPUT + 4 dB)
イコライザーコントロール	31バンド(1/3オクターブ) (中心周波数 20、25、31.5、40、50、63、80、100、 125、160、200、250、315、400、500、 630、800、1k、1.25k、1.6k、2k、2.5k 3.15k、4k、5k、6.3k、8k、10k、12.5k 16k、20kHz 可変範囲 ± 12dB/± 6dB( Range Switchにて 切り替え)

ピークインジケータ	クリッピングの3dB手前で点灯
ハイパスフィルター (ローloff周波数)	12dB/oct. 20Hz～200Hz( HPFコントロールにて 設定)
電源	AC100V 50/60Hz
消費電力	18W
寸法(W×H×D)	480×88×298mm
重量	4.8kg

●入力仕様

入力端子	INPUT LEVEL 切替スイッチ	入 力 インピーダンス	ソ ー ス インピーダンス	感 度 * (最大ゲイン時)	入 力 レ ベ ル		使用コネクタ **
					規定レベル	最大ノンクリップレベル	
INPUT (A, B)	+ 4 dB	15k ohms	600ohm LINES	+ 4 dB(1.23V)	+ 4 dB(1.23V)	+ 20dB(7.75V)	XLR-3-31タイプ
	－20dB			－20dB(77.5mV)	－20dB(77.5mV)	－ 4 dB(489mV)	ホーンジャック

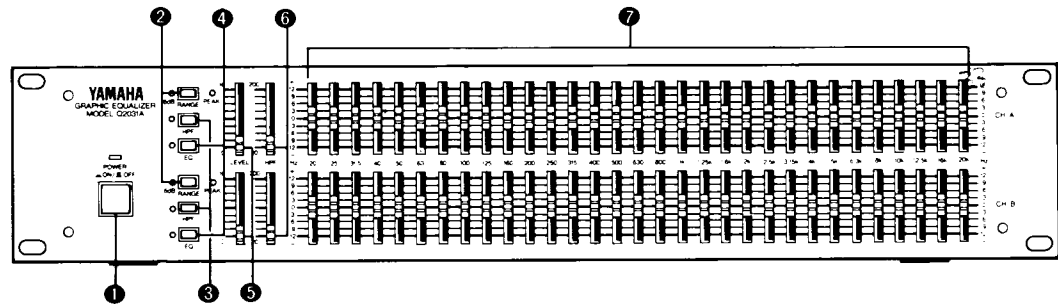
●出力仕様

出力端子	OUTPUT LEVEL 切替スイッチ	出 力 インピーダンス	負 荷 インピーダンス	出 力 レ ベ ル		使用コネクタ **
				規定レベル	最大ノンクリップレベル	
OUTPUT(A, B)	+ 4 dB	150ohms	600ohm Lines	+ 4 dB(1.23V)	+ 20dB(7.75V)	XLR-3-32タイプ
			10kohm Lines		+ 18dB(6.16V)	ホーンジャック
	－20dB	150ohms	600ohm Lines	－20dB(77.5mV)	－ 4 dB(489mV)	XLR-3-32タイプ
			10kohm Lines		－ 6 dB(388mV)	ホーンジャック

\* 規定出力レベルを得るために必要な入力レベルを示す。  
\*\* XLRタイプコネクタは平衡、ホーンジャックは不平衡。  
● 0 dB=0.775Vr.m.s.

## ■ PANEL LAYOUT (パネルレイアウト)

### ● Front Panel (フロントパネル)

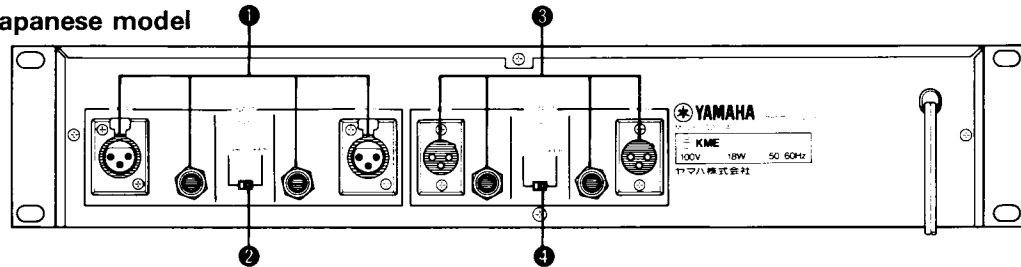


- ① POWER switch
- ② RANGE switches
- ③ HPE (High Pass Filter) switches
- ④ EQ switches
- ⑤ LEVEL controls
- ⑥ HPF (High Pass Filter) controls
- ⑦ Equalizer Boost/Cut controls

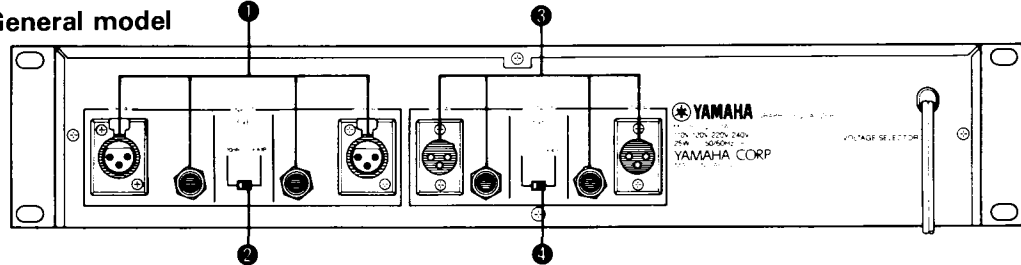
- ① POWERスイッチ
- ② RANGE切替スイッチ
- ③ HPFスイッチ
- ④ EQスイッチ
- ⑤ LEVELコントロール
- ⑥ HPFコントロール
- ⑦ イコライザーコントロール

### ● Rear Panel (リアパネル)

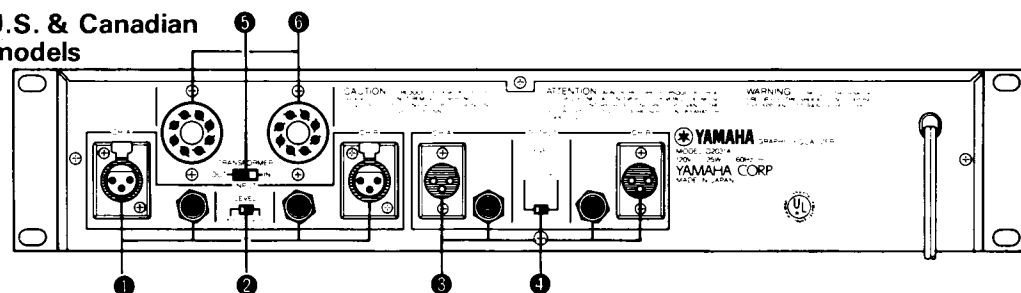
#### ● Japanese model



#### ● General model



#### ● U.S. & Canadian models

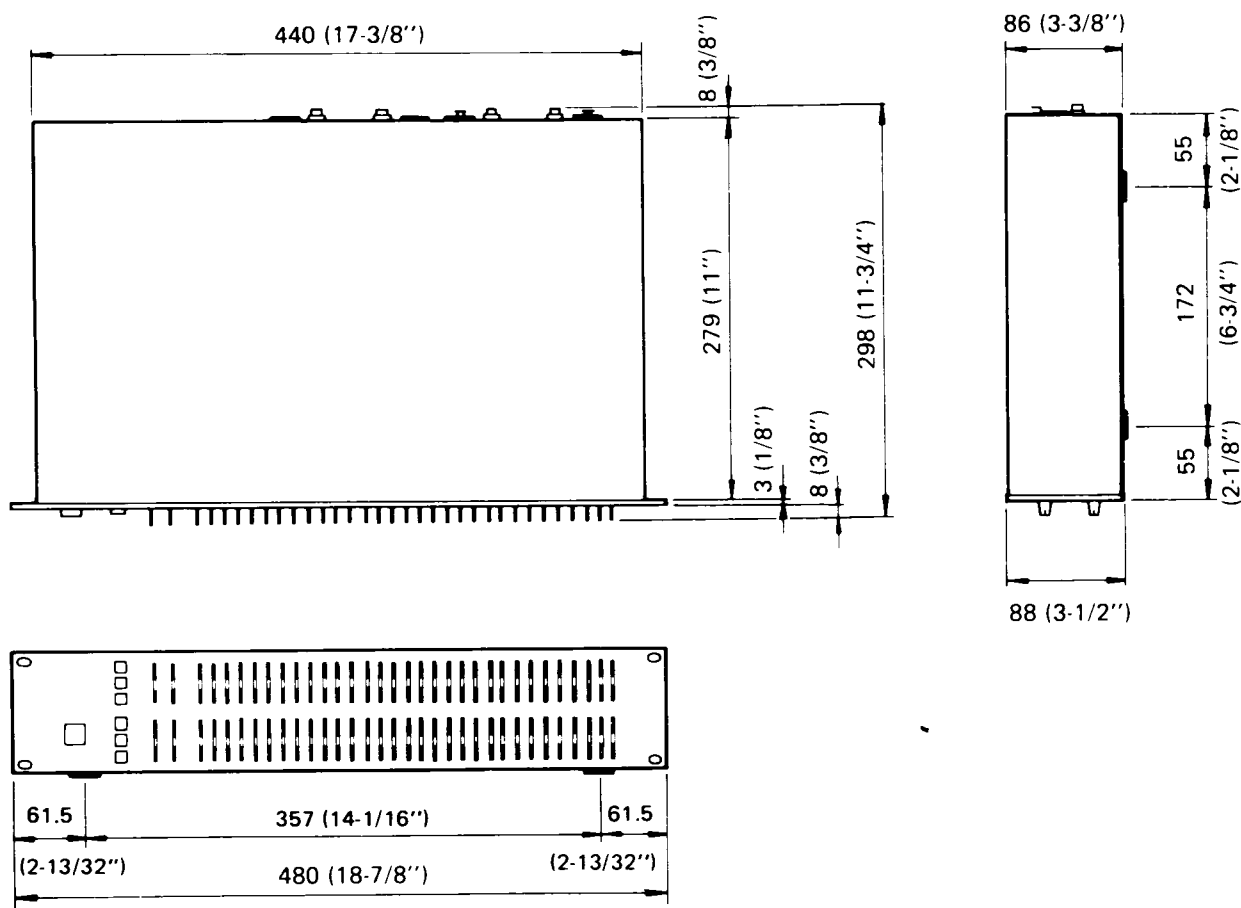


- ① INPUT Connectors
- ② INPUT LEVEL Switch
- ③ OUTPUT Connectors
- ④ OUTPUT LEVEL Switch

- ① INPUT端子
- ② INPUT LEVEL切替スイッチ
- ③ OUTPUT端子
- ④ OUTPUT LEVEL切替スイッチ

- U.S. & Canadian models only
- ⑤ TRANSFORMER In/Out Switch
- ⑥ Input Transformer Octal Sockets
- ⑦ Internal Output Transformer (Optionals)

■DIMENSIONS (寸法図)

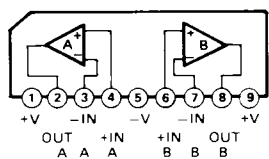


Units : mm (Inch)  
(単位)

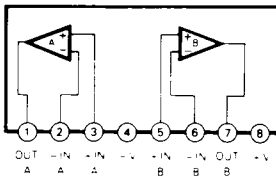
Q2031A

■IC BLOCK DIAGRAM (IC ブロック図)

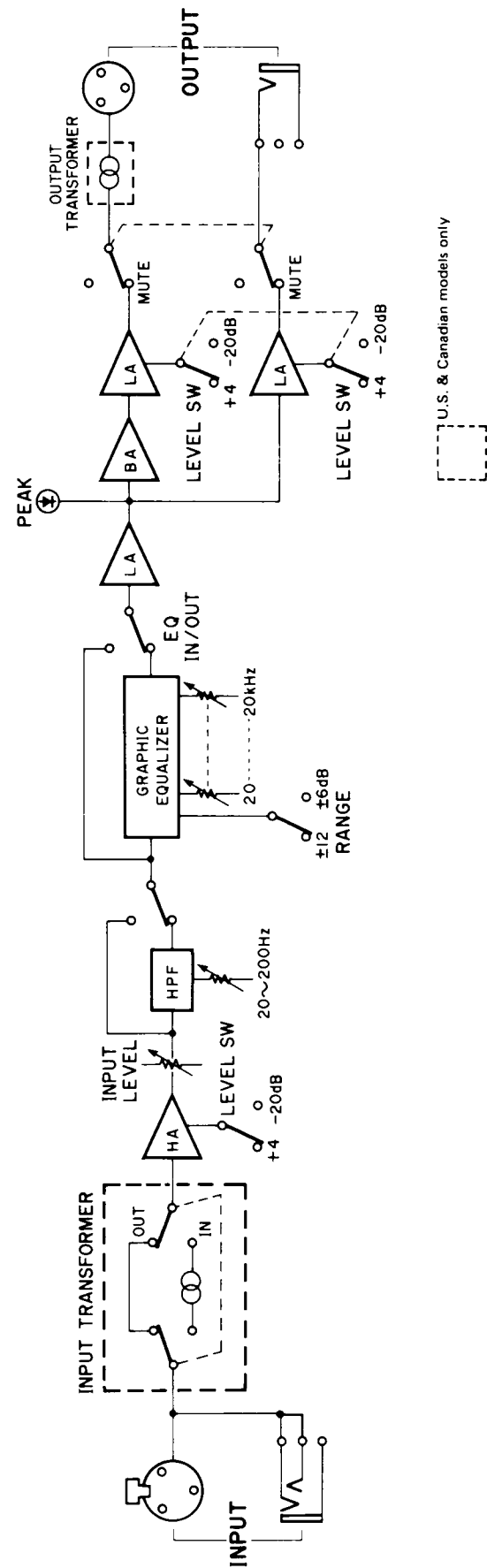
- NJM2043SE (XX808720)
  - NJM4559S (IX802340)
  - AN6551 (IG034700)
- Dual Operational Amplifier



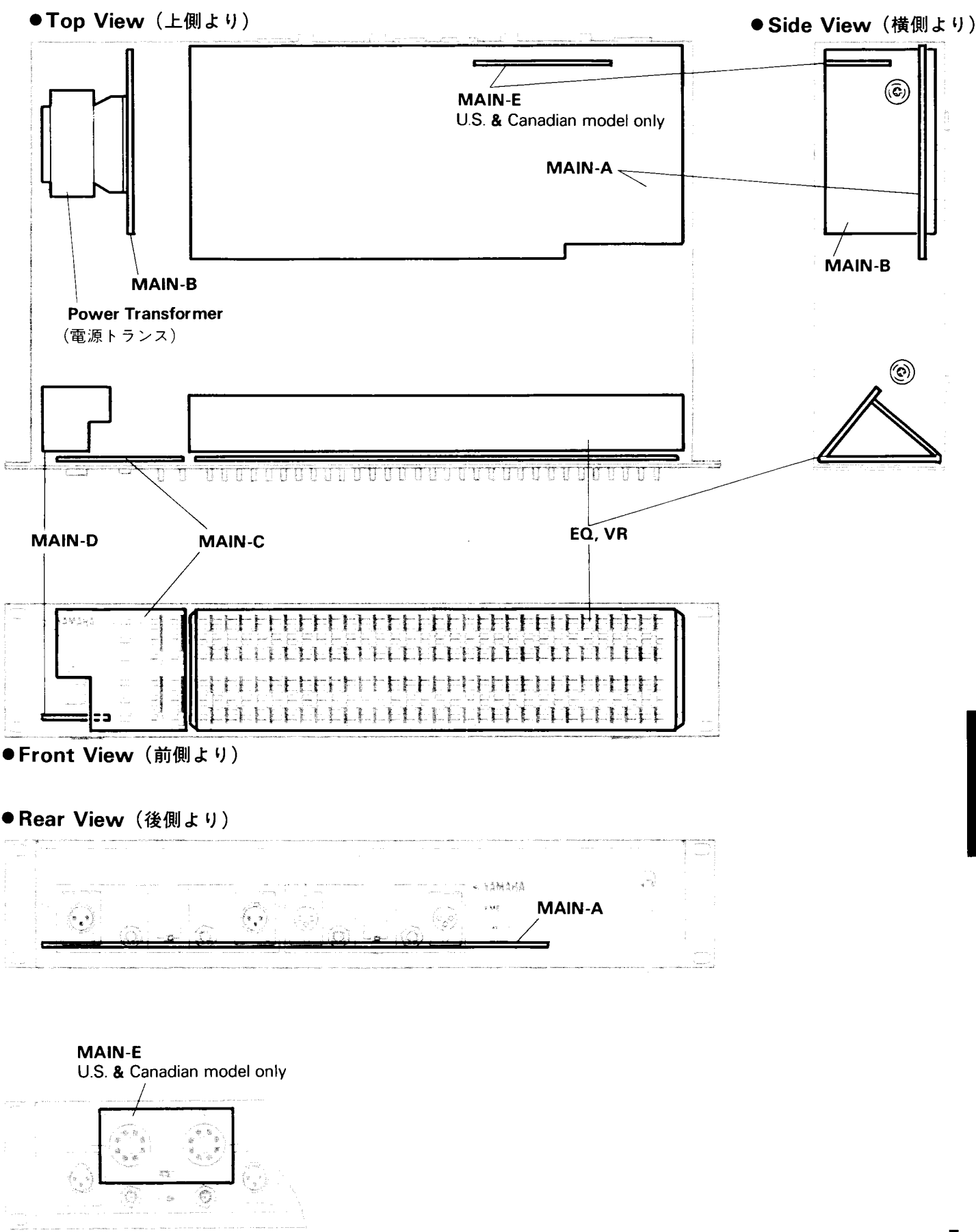
- M5216L (XB419001)
- Dual Operational Amplifier



■BLOCK DIAGRAM (ブロックダイアグラム)



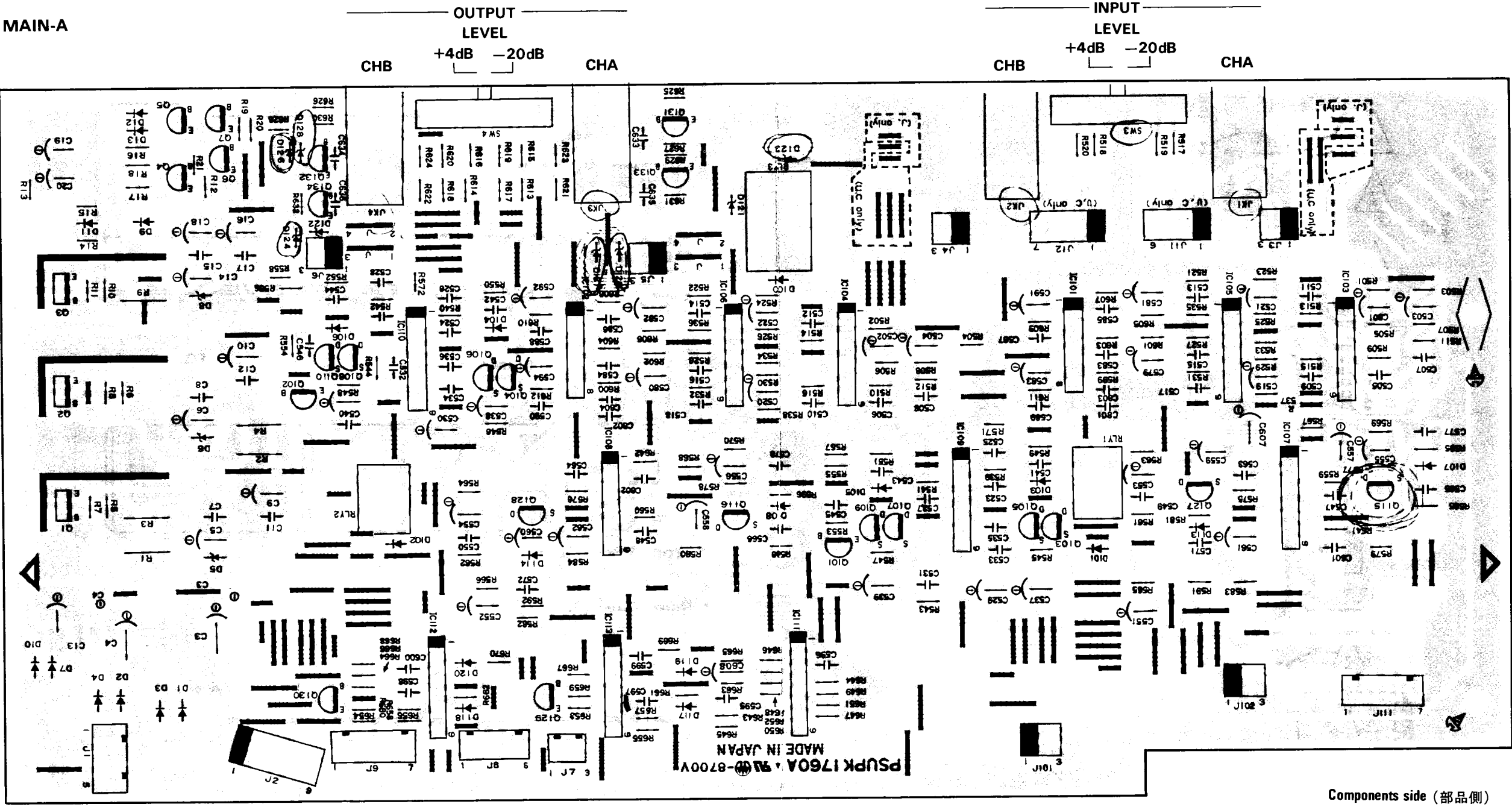
■CIRCUIT BOARD LAYOUT (ユニットレイアウト)



■CIRCUIT BOARDS (シート基板図)

●MAIN Circuit Board

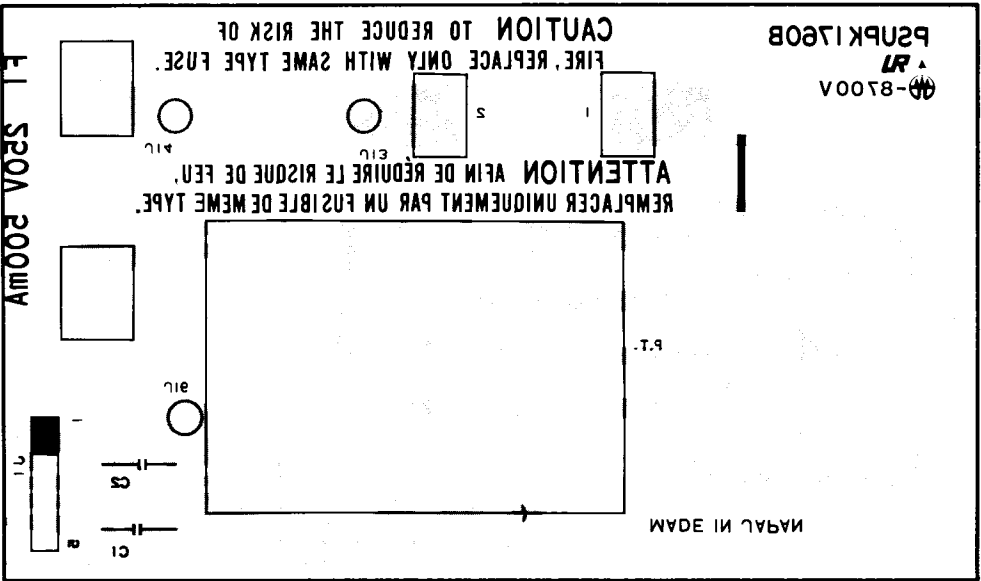
● MAIN-A



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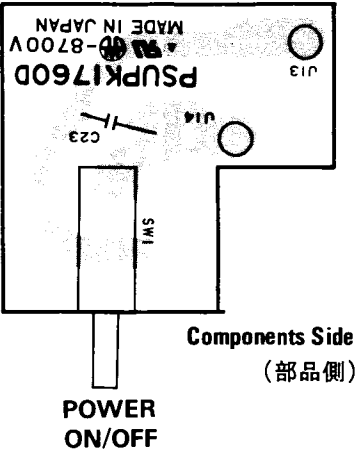


● MAIN-B

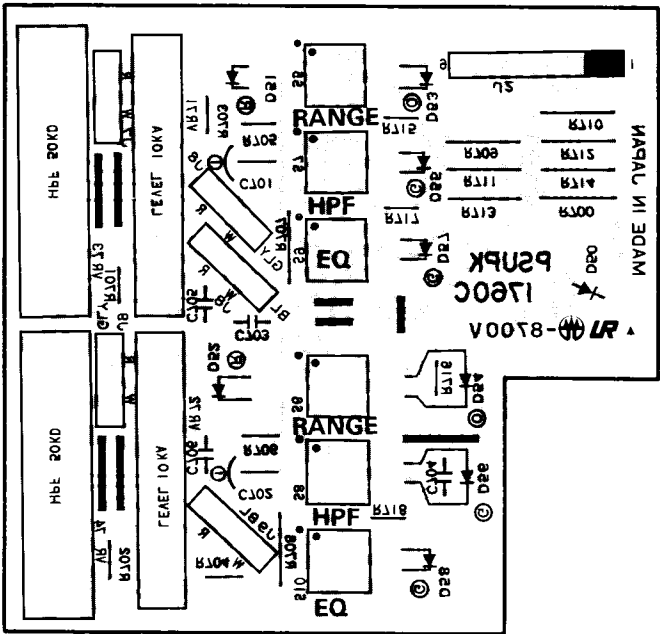


Pattern side (パターン側)

● MAIN-D

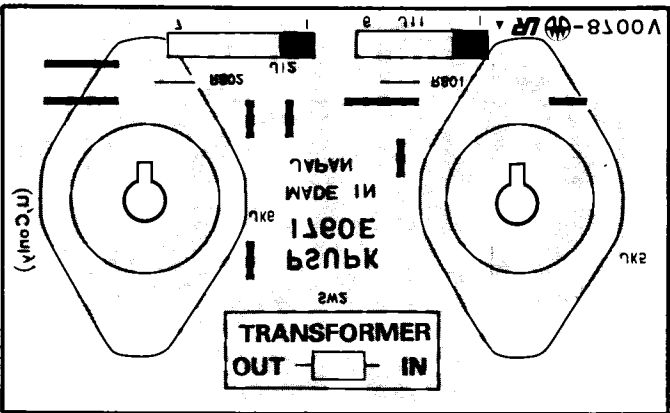


● MAIN-C



Pattern side (パターン側)

● MAIN-E (U.C. only)



Pattern side (パターン側)

- |                  |  |
|------------------|--|
| 1. IC            | IC 101, 102: M5216L (XB419001) OP AMP                      |
|                  | IC 103-110: NJM2043SE (XX808720) OP AMP                    |
|                  | IC 111-113: AN6551 (IG034700) OP AMP                       |
| 2. Transistor    | Q 1, 3: 2SD2012 (IX803230)                                 |
|                  | Q 2: 2SB1375 (VE759400)                                    |
|                  | Q 4, 5: 2SC1740S (IC990170)                                |
|                  | Q 6, 7, 101, 102: 2SA933R (IX607150)                       |
|                  | 129-134: 2SD1915T (IX803460)                               |
| 3. FET           | Q 103-110, 115: 2SK170BL-TA (IE102410)                     |
|                  | Q 116, 127, 128: 2SK170BL-TA (IE102410)                    |
| 4. Diode         | D 1-4, 7, 9: RLIN4003-NO2 (IX802730)                       |
|                  | D 10: 1SS178 (IX802720)                                    |
|                  | D 11-13, 100-108, 113, 114, 117-120: 1SS119-04T (XX808790) |
| 5. Zener Diode   | D 5, 6, 8: MA4160M (IF008620)                              |
| 6. LED           | D 50: RE (POWER) (IX803250) LN246RPH                       |
|                  | D 51, 52: RE (PEAK) (IF003740) LN222RPH                    |
|                  | D 53, 54: OR (RANGE) (IF002190) LN422YPH                   |
|                  | D 55-58: GR (HPF, EQ) (IF002180) LN322GPH                  |
| 7. Fuse Resistor | R 1, 2: (HX804410) ERD2FCJ150P                             |
|                  | R 3, 4: (HX804400) ERD2FCJ6R8P                             |
|                  | R 9: (HX802610) ERD2FCJ4R7P                                |
| 8. Noise Killer  | C 1, 2, 23: J (FX800450) ECKW2H103ZF7                      |
|                  | C 1, 2: U,C,E (FX800450) ECKW2H103ZF7                      |
|                  | C 23: U,C,E (HX803430) ECKDNS103ZV                         |
| 9. Switch        | SW 1: (POWER) (KX800680) SSH1057                           |
|                  | SW 2: (TRANSFORMER) (KX801450) PSSSK21 /U,C                |
|                  | SW 3, 4: (LEVEL) (KX801430) PSSK20                         |
|                  | S 5-10: (RANGE, HPF, EQ) (KX801440) PSSHK89                |
| 10. Slide Pot.   | VR 71, 72: (LEVEL) (HX804430) PSVS251BA14                  |
|                  | VR 73, 74: (HPF) (HX804420) PSVS252BD54                    |
| 11. Phone Jack   | JK 1, 2, 3, 4: (OUTPUT INPUT) (LX800770) SJJ134B           |
| 12. Reley        | RLY 1, 2: (KX801470) PSSYK13                               |
|                  | RLY 3: (KX801460) PSSYK12                                  |
| 13. Fuse         |  |

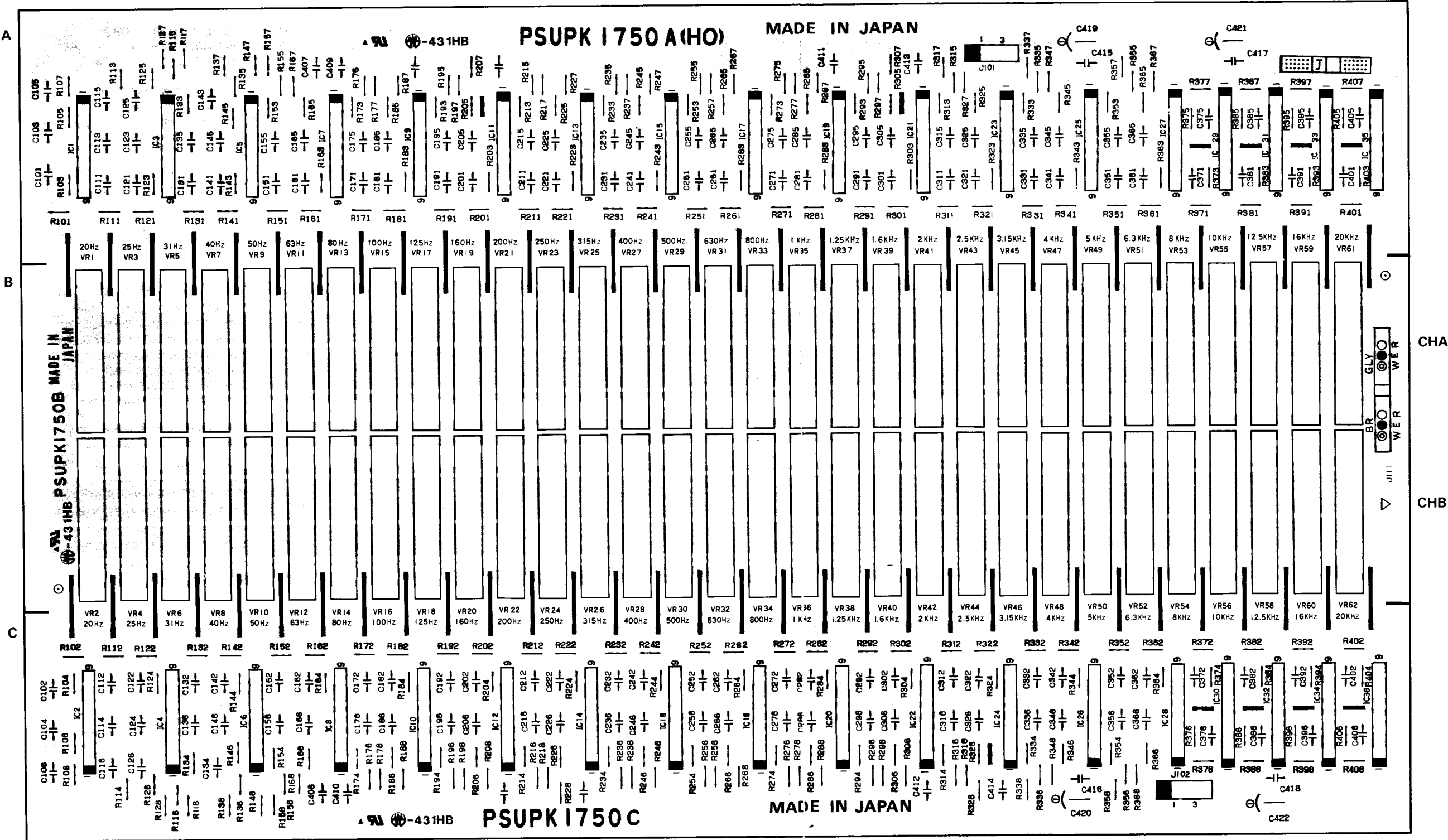
Spec.	F1
Japanese	T 0.25A 250V
U.S. Canadian	T 0.25A 250V
European	T 0.2A 250V

- |                  |                                     |
|------------------|-------------------------------------|
| 14. Octal Socket | JK 5, 6: 8P (LX801590) PSJSK11 /U,C |
| 15. Connector    |                                     |

MAIN A-J1	↔	MAIN B-J1
MAIN A-J2	↔	MAIN C-J2
MAIN A-J3	↔	XLB Connector (CH A-INPUT)
MAIN A-J4	↔	XLB Connector (CH B-INPUT)
MAIN A-J5	↔	XLB Connector (CH A-OUTPUT)
MAIN A-J6	↔	XLB Connector (Ch B-OUTPUT)
MAIN A-J7	↔	MAIN C-J7
MAIN A-J8	↔	MAIN C-J8
MAIN A-J9	↔	MAIN C-J9
MAIN A-J11	↔	MAIN E-J11 (U,C model only)
MAIN A-J12	↔	MAIN E-J12 (U,C model only)
MAIN A-J101	↔	EQ, VR-J101
MAIN A-J102	↔	EQ, VR-J102
MAIN A-J111	↔	EQ, VR-J111

●EQ, VR Circuit Board

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Components side (部品側)

- 1. IC  
IC 1-28: AN6551 (IG034700) OP AMP  
IC 29-36: NJM4559S (IX802340) OP AMP
- 2. Slide Pot.  
VR 1-62: (HX804440) PSVS251BW25

3. Connector	
EQ, VR-J101	MAIN A-J101
EQ, VR-J102	MAIN A-J102
EQ, VR-J111	MAIN A-J111

## CHECKS & ADJUSTMENTS

### 1. Standard test conditions

Voltage Power	Adjustment and electric response test	J	AC 100V ± 1V 50Hz	
		U, C	AC 120V ± 1V 60Hz	
		X	AC 230V ± 1V 50/60Hz	
	General test	J	AC 100V ± 1V 60Hz	
		U, C	AC 120V ± 1V 60Hz	
		X	AC 220/240V 50/60Hz	
Front panel			Rear panel	
RANGE SW		OFF (12dB)	LEVEL SW	+4dB (IN/OUT)
HPF SW		OFF		
EQ SW		ON		
			TRANSFORMER SW	OUT (U/C)
Level Control		max (10 graduate)		
HPF Control		max (200Hz)		
EQ Control		flat		
Standard Input		Bal. IN 1kHz +4dBm (1.23V)		
load	Bal. OUT	600 Ω (0.25W)		
	UN Bal.	10K Ω (0.25W)		
Standard Output		+4dBm (1.23V)		
Standard Output Terminal		Bal. OUT		

## 2. Adjustment

NO	ITEM	TEST TERMINAL		LEVEL SW		TEST CONDITIONS		STANDARD			UNIT	
		IN	OUT	IN	OUT			MIN	CENTER	MAX		
1	MAXIMUM OUTPUT LEVEL	Bal.	Bal.	+ 4	+ 4	f = 1kHz		+ 20	—	—	dBm (v)	
		Unbal.	Unbal.			Measure output at 0.1% distortion.		+ 18	—	—		
		Bal.	Bal.	— 20	— 20	Vary input level to this unit.		— 4	—	—		
		Unbal.	Unbal.					— 6	—	—		
2	BAND LEVEL CONTROL	Bal.	Bal.	+ 4	+ 4	f = indication of each band	UP	+ 10	+ 12	+ 14	dB	
						When one element is moved. * Note 1	DOWN	— 10	— 12	— 14		
3	LIGHTING LEVEL	Bal.	Bal.	+ 4	+ 4	f = 1kHz Measure output level.		Lights	+ 17	+ 18	+ 19	dBm
4	FREQUENCY RESPONSE	Bal.	Bal.	+ 4	+ 4	1kHz as a standard	Input + 4dBm	20Hz	— 1	0	+ 1	dB
								20kHz	— 1	0	+ 1	
				— 20	— 20		Input — 20dBm	20Hz	— 1.5	0	+ 1.5	dB
								20kHz	— 1.5	0	+ 1.5	
5	TOTAL HARMONIC DISTORTION	Bal.	Bal.	+ 4	+ 4	● RANGE SW ON ● H.P.F SW ON ● H.P.F Control 20 Output +14dBm	20Hz	—	—	0.1	%	
							1 kHz	—	—	0.1		
							20kHz	—	—	0.1		

NO	ITEM	TEST TERMINAL		LEVEL SW		TEST CONDITIONS		STANDARD			UNIT
		IN	OUT	IN	OUT			MIN	CENTER	MAX	
6	NOISE LEVEL	Bal.	Bal.	+ 4	+ 4	Terminate at input terminals;  BAL : 600 Ω UNBAL : 150 Ω	DIN AUDIO	—	—	—94	dBm
							IHF-A	—	—	—98	
		Unbal.	Unbal.	—20	—20		DIN AUDIO	—	—	—104	
							IHF-A	—	—	—108	
7	GAIN	Bal.	Bal.	+ 4	+ 4	• Input  f = 1kHz, +4dBm	+ 2	+ 4	+ 6	dBm	
		Unbal.	Unbal.				+1.5	+3.5	+5.5		
8	MAXIMUM GAIN	Bal.	Bal.	—20	+ 4	• Input f = 1kHz, —20dBm • Measure input/output gain.	22	24	26	dB	
9	HPF RESPONSE	Bal.	Bal.	+ 4	+ 4	• HPF SW ON • f = 1kHz as a standard	HPF Vol. min 20Hz	—6.0	—3.0	0	dB
						HPF Vol. max 200Hz	—6.0	—3.0	0		

**\* Note 1**

Even when the measurement does not satisfy standard, if it is due to a band-pass “fo” deviation and following conditions are met, that measurement is acceptable.

- ① The “fo” deviation is within  $\pm 5\%$  of the indicated frequency.  
 ② The level control variation at “fo” satisfies the standard.

## ■ 検査と調整

### 1. 標準試験状態

電源電圧	調整及び電氣的 特性検査	AC 100V $\pm$ 1V 50Hz	
	一 般 検 査	AC 100V $\pm$ 1V 60Hz	
フロントパネル		リアパネル	
RANGE SW	OFF (12dB)	LEVEL SW	+4dB (IN/OUT)
HPF SW	OFF		
EQ SW	ON		
Level Vol.	max (10目盛)		
HPF Vol.	max (200Hz)		
EQ Vol.	flat		
標準入力		Bal. IN 1kHz +4dBm (1.23V)	
負 荷	Bal. OUT	600 $\Omega$ (0.25W以上)	
	UN Bal.	10K $\Omega$ (0.25W以上)	
標準出力		+4dBm (1.23V)	
標準出力端子		Bal. OUT	

## 2. 調整

No.	項 目	測 定 端 子		LEVEL SW		測 定 条 件		規 格			単位	
		IN	OUT	IN	OUT			MIN	CENTER	MAX		
1	最大出力レベル	Bal.	Bal.	+ 4	+ 4	f = 1kHz	0.1%歪時の出力を測定  本機への入力レベルを可変	+20	—	—	dBm (v)	
		Unbal.	Unbal.			+18		—	—			
		Bal.	Bal.	-20	-20	-4		—	—			
		Unbal.	Unbal.			-6		—	—			
2	バンドレベル コントロール	Bal.	Bal.	+ 4	+ 4	f = 各Bandの表示f	UP	+10	+12	+14	dB	
						I素子可動時 ※注意I	DOWN	-10	-12	-14		
3	PEAK LED Ind.点灯レベル	Bal.	Bal.	+ 4	+ 4	f = 1kHz 出力レベル測定	点灯時	+17	+18	+19	dBm	
4	周 波 数 特 性	Bal.	Bal.	+ 4	+ 4	1kHz を基 準と する。	入力 +4dBm	20Hz	-1	0	+1	dB
								20kHz	-1	0	+1	
				-20	-20		入力 -20dBm	20Hz	-1.5	0	+1.5	dB
								20kHz	-1.5	0	+1.5	
5	全高調波歪率	Bal.	Bal.	+ 4	+ 4	・ RANGE SW ON ・ HPF SW ON ・ HPF VOL 20 出力+14dBm	20Hz	—	—	0.1	%	
							1 kHz	—	—	0.1		
							20kHz	—	—	0.1		

No.	項 目	測 定 端 子		LEVEL SW		測 定 条 件		規 格			単位
		IN	OUT	IN	OUT			MIN	CENTER	MAX	
6	ノイズレベル	Bal.	Bal.	+ 4	+ 4	・入力端子 BAL : 600Ω UNBAL : 150Ω にて ターミネイト	DIN AUDIO	—	—	—94	dBm
							IHF-A	—	—	—98	
		Unbal.	Unbal.	—20	—20		DIN AUDIO	—	—	—104	
							IHF-A	—	—	—108	
7	利 得	Bal.	Bal.	+ 4	+ 4	・入力  f = 1kHz, +4dBm		+ 2	+ 4	+ 6	dBm
		Unbal.	Unbal.					+ 1.5	+ 3.5	+ 5.5	
8	最大利得	Bal.	Bal.	—20	+ 4	・入力 f = 1kHz, —20dBm ・入出力ゲインを測定		22	24	26	dB
9	HPF特性	Bal.	Bal.	+ 4	+ 4	・HPF SW ON ・f = 1kHz 基準	HPF Vol. min 20Hz	—6.0	—3.0	0	dB
						HPF Vol. max 200Hz	—6.0	—3.0	0		

## ※注意1

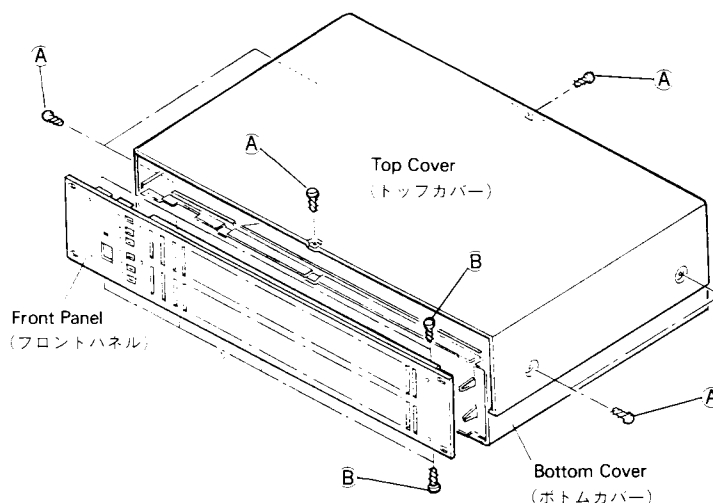
バンドパスの  $f_0$  ズレにより、規格を満足しない場合は、

①  $f_0$  が表示周波数の  $\pm 5\%$  以内であること。

②  $f_0$  においてレベルコントロールの変化量が規格を満足のこと。  
 であれば、合格とする。



## ■DISASSEMBLY PROCEDURE (分解手順)



(Fig. 1)

### 1. Removal of Top Cover

- Remove the 6 bind tapping screws ① (3 x 6), the top cover can be removed. (Fig. 1)

### 2. Removal of Front Panel

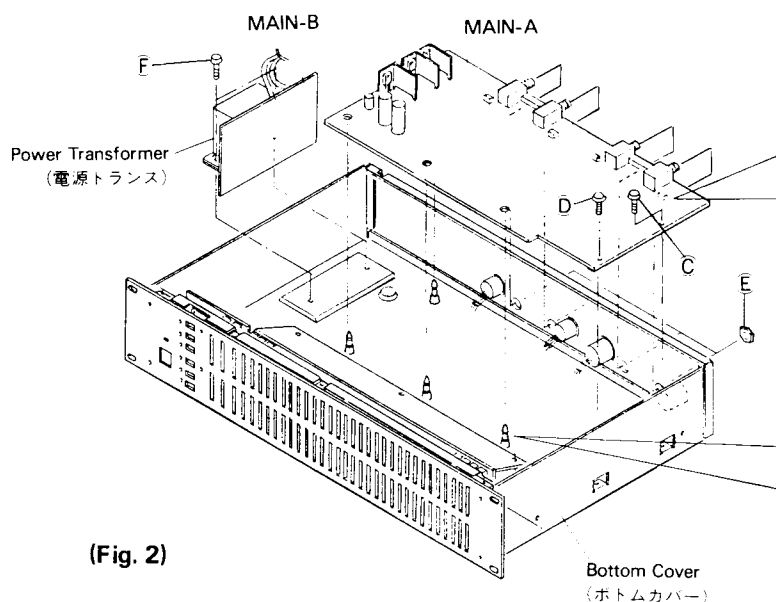
- Remove the top cover. (Refer to 1)
- Remove the 7 bind tapping screws ② (3 x 6), the front panel can be removed. (Fig. 1)

### 1. トップカバーの外し方

- ・バインドタッピングネジ ① (3 x 6) 6本を外し、外します。(Fig. 1)

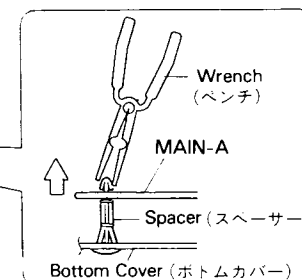
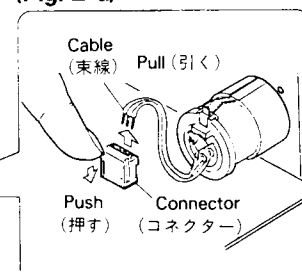
### 2. フロントパネルの外し方

- ・トップカバーを外します。(1項参照)
- ・バインドタッピングネジ ② (3 x 6) 7本を外し、外します。(Fig. 1)



(Fig. 2)

(Fig. 2-a)



(Fig. 2-b)

### 3. Removal of MAIN-A Circuit Board

- Remove the top cover. (Refer to 1)
- Remove the bind head screw ③ (3 x 8) and blase washer head screw ④ (3 x 8). (Fig. 2)
- Remove the 4 nuts ⑤. (Fig. 2)
- While pushing the connector, pull the 4 cables out. (Fig. 2-a)  
(U,C model = 6 cables)
- While pushing a hook of the spacer by such a wrench, remove the MAIN-A circuit board out from the bottom cover. (Fig. 2-b)

### 3. MAIN-Aシートの外し方

- ・トップカバーを外します。(1項参照)
- ・バインド小ネジ ③ (3 x 8) と B W ヘッド小ネジ ④ (3 x 8) を外します。
- ・六角ナット ⑤ 4個を外します。(Fig. 2)
- ・コネクタを押しながら、束線を引き抜きます。(4ヶ所) (Fig. 2-a)
- ・スペーサーをペンチでつまみながらボトムカバーから MAIN-Aシートを外します。(Fig. 2-b)

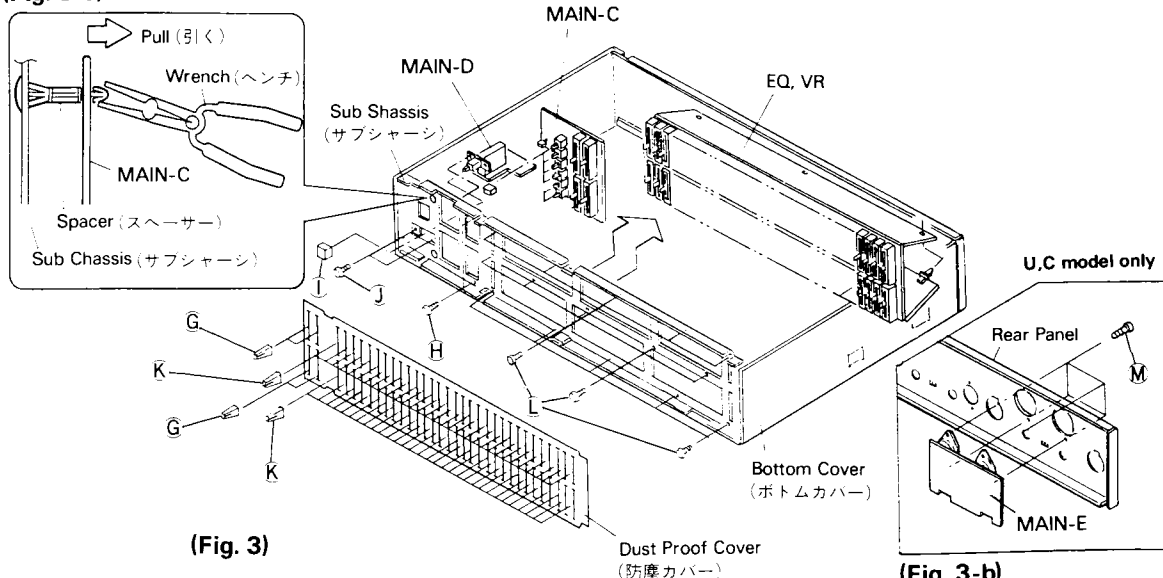
#### 4. Removal of MAIN-B Circuit Board

- Remove the top cover. (Refer to 1)
- Remove the 2 blade washer head screws ⑤ (3 x 6). (Fig. 2)
- Take the MAIN-B circuit board out of the unit with the power transformer. (Fig. 2)

#### 4. MAIN-Bシートの外し方

- トップカバーを外します。(1項参照)
- BWヘッド小ネジ⑤(3×6)2本を外し、電源トランスと共に外します。(Fig. 2)

(Fig. 3-a)



(Fig. 3)

(Fig. 3-b)

#### 5. Removal of MAIN-C Circuit Board

- Remove the top cover. (Refer to 1)
- Remove the front panel. (Refer to 2)
- Pull out the 4 knobs ⑥. (Fig. 3)
- Remove the 2 pan head screws ④ (2 x 3). (Fig. 3)
- While pushing a hook of the spacer by such a wrench, remove the MAIN-C circuit board out from the sub chassis. (Fig. 3-a)

#### 5. MAIN-Cシートの外し方

- トップカバーを外します。(1項参照)
- フロントパネルを外します。(2項参照)
- ツマミ⑥4個を引き抜きます。(Fig. 3)
- ナベ小ネジ④(2×3)2本を外します。
- スペーサーをペンチでつまみながら、サブシャーシからMAIN-Cシートを外します。(Fig. 3-a)

#### 6. Removal of MAIN-D Circuit Board

- Remove the top cover. (Refer to 1)
- Remove the front panel. (Refer to 2)
- Pull out the knob ① (Fig. 3)
- Remove the 2 pan head screws ① (3 x 6), the MAIN-D circuit board can be removed. (Fig. 3)

#### 6. MAIN-Dシートの外し方

- トップカバーを外します。(1項参照)
- フロントパネルを外します。(2項参照)
- ツマミ①を引き抜きます。(Fig. 3)
- ナベ小ネジ①(3×6)2本を外し、外します。(Fig. 3)

#### 7. Removal of MAIN-E Circuit Board (U,C Only)

- Remove the top cover. (Refer to 1)
- Remove the 4 bind head screws ③ (3 x 6), the MAIN-E circuit board can be removed. (Fig. 3-b)

#### 7. MAIN-Eシートの外し方

- MAIN-Eシートは、U.S.とカナダ仕向けのみ。

#### 8. Removal of EQ, VR Circuit Board

- Remove the top cover. (Refer to 1)
- Remove the front panel. (Refer to 2)
- Pull out the 62 knobs ⑧ and remove the dust proof cover. (Fig. 3)
- Remove the 15 pan head screws ② (2 x 3), the EQ, VR circuit board can be removed. (Fig. 3)

#### 8. EQ, VRシートの外し方

- トップカバーを外します。(1項参照)
- フロントパネルを外します。(2項参照)
- ツマミ⑧62個を引き抜き、防塵カバーを外します。(Fig. 3)
- ナベ小ネジ②(2×3)15本を外し、外します。(Fig. 3)

# GRAPHIC EQUALIZER

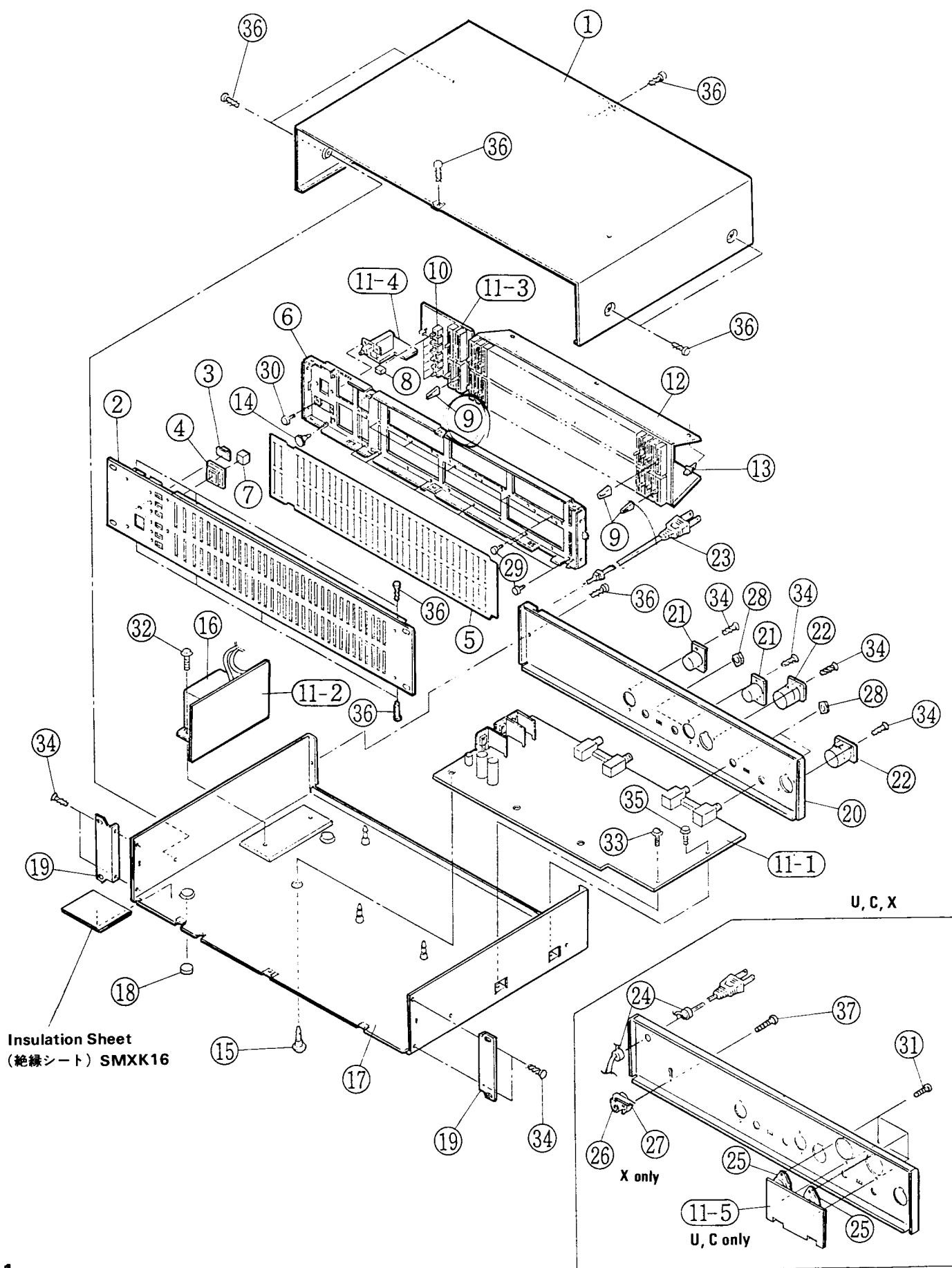
# Q2031A

## PARTS LIST

### Notes DESTINATION ABBREVIATIONS

J : Japanese model	A : Australian model
U : U.S. model	E : European model
C : Canadian model	D : West German model
X : General model	B : British model
M : South African model	I : Indonesian model
H : North European model	

# **OVERALL ASSEMBLY (総組立)**



# OVERALL ASSEMBLY (総組立)

Ref. No.	Part No.	Description	部品名	Remarks	ランク
1	AX804680	Top Cover	トッカバー		
2	AX804690	Front Panel	フロントパネル		
3	CX806990	LED Cover	LEDカバー		
4	CX807000	Escutcheon Switch	SWエスカッション		
5	CX807010	Dust Proof Cover	防塵カバー		
6	AX804700	Sub Chassis	サブシャーシ		
7	CB812380	Push Button	プッシュボタン	POWER	01
8	CX800110	Push Button	プッシュボタン	RANGE, HPF, HQ	02
9	CX807020	Knob, Slide Volume	スライドラック		
10	AX804710	Holder, LED	LEDホルダー		
11-1	NX806410	Circuit Board	MAIN-A		
11-1	NX806450	Circuit Board	MAIN-A		
11-1	NX806500	Circuit Board	MAIN-A		
11-1	NX806550	Circuit Board	MAIN-A		
11-2	NX806420	Circuit Board	MAIN-B		
11-2	NX806460	Circuit Board	MAIN-B		
11-2	NX806510	Circuit Board	MAIN-B		
11-2	NX806560	Circuit Board	MAIN-B		
11-3	NX806430	Circuit Board	MAIN-C		
11-3	NX806470	Circuit Board	MAIN-C		
11-3	NX806520	Circuit Board	MAIN-C		
11-3	NX806570	Circuit Board	MAIN-C		
11-4	NX806440	Circuit Board	MAIN-D		
11-4	NX806480	Circuit Board	MAIN-D		
11-4	NX806530	Circuit Board	MAIN-D		
11-4	NX806570	Circuit Board	MAIN-D		
11-5	NX806490	Circuit Board	MAIN-E		
11-5	NX806540	Circuit Board	MAIN-E		
12	NX804480	Circuit Board	EQ, VR		
13	CX807030	Spacer	PSHRK959		
14	CX807040	Spacer	PSHRK960		
15	CX807050	Spacer	PSHRK961		
16	GX801660	Power Transformer	PSLTK5L24-W		
16	GX801670	Power Transformer	PSLTK5L25-W		
16	GX801680	Power Transformer	PSLTK5L26-W		
16	GX801690	Power Transformer	PSLTK5L27-W		
17	AX804720	Bottom Cover	PSKUX260		
18	CX800770	Foot	SKLK1		
19	AX804730	Angle Bracket	PSKXK4		
20	AX804740	Rear Panel	PSGPK530A		
20	AX804750	Rear Panel	PSGPK530-1A		
20	AX804760	Rear Panel	PSGPK530-2A		
21	LB302540	Cannon Connector, XLB-3-32	SJSK9-1		
22	LB302320	Cannon Connector, XLB-3-31	SJSK8-1		
23	MG001820	AC Cord	PSJA8		
23	NX800190	AC Cord	PSJAK4		
23	NX800200	AC Cord	PSJAK5		
24	XX806460	Cord Strain Relief	SHR127		
25	LX801590	Octal Socket	PSJSK11		
26	LX801600	Voltage Selector	PSSRK26		
27	AX804770	Angle, Voltage Selector	SMN1912-1		
28	EX800082	Hexagonal Nut	φ12 FCM3BL		
29	EA320036	Pan Head Screw	2.0X3 FCMRL		
30	EA300066	Pan Head Screw	3.0X6 ZMC2Y		
31	ED330066	Bind Head Screw	3.0X6 FCM3BL		
32	EX600750	Blase Washer Head Screw	3.0X6 FCM33G		
33	EX600760	Blase Washer Head Screw	3.0X8 FCM33G		
34	EO130086	Flat Head Tapping Screw	3.0X8 FNM33G		
35	EO300086	Bind Head Screw	3.0X8 ZMC2Y		
36	EI330086	Bind Tapping Screw	3.0X8 FCM3BL		
37	ED330146	Bind Head Screw	3.0X14 FCM3BL		

\* : New Parts (新規部品) NR

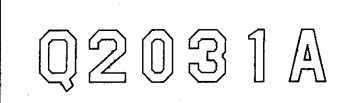
ランク : Japan Only

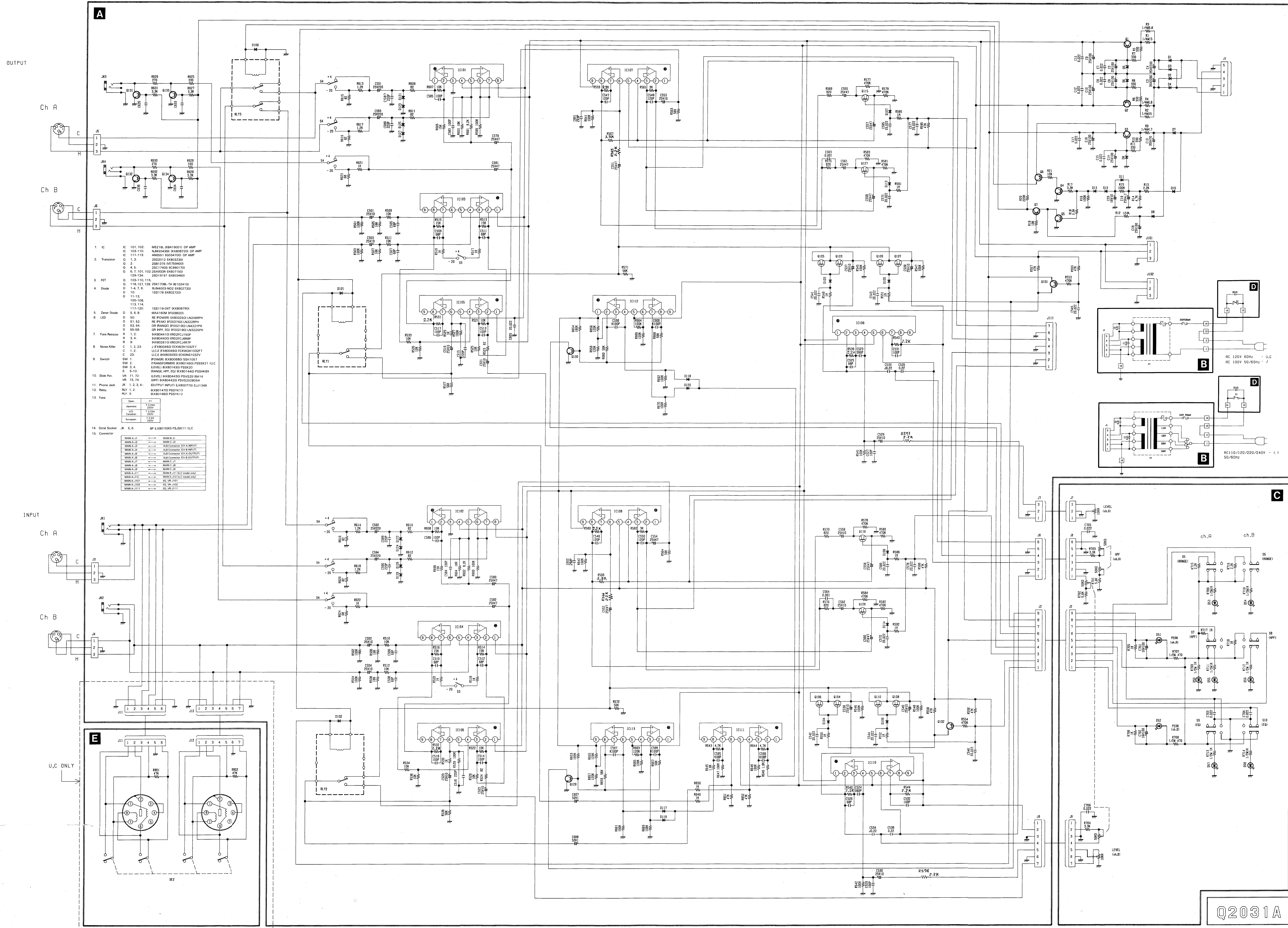
Ref. No.	Part No.	Description	部 品 名	Remarks	ランク
	NX806410	Circuit Board	MAIN-A	J	
	NX806420	Circuit Board	MAIN-B	J	
	NX806430	Circuit Board	MAIN-C	J	
	NX806440	Circuit Board	MAIN-D	J	
	NX806450	Circuit Board	MAIN-A	U	
	NX806460	Circuit Board	MAIN-B	U	
	NX806470	Circuit Board	MAIN-C	U	
	NX806480	Circuit Board	MAIN-D	U	
	NX806490	Circuit Board	MAIN-E	U	
	NX806500	Circuit Board	MAIN-A	C	
	NX806510	Circuit Board	MAIN-B	C	
	NX806520	Circuit Board	MAIN-C	C	
	NX806530	Circuit Board	MAIN-D	C	
	NX806540	Circuit Board	MAIN-E	C	
	NX806550	Circuit Board	MAIN-A	E.X	
	NX806560	Circuit Board	MAIN-B	E.X	
	NX806570	Circuit Board	MAIN-C	E.X	
	NX806580	Circuit Board	MAIN-D	E.X	
	NX804480	Circuit Board	EQ, VR		
	NX806410	Circuit Board	MAIN-A	J	
	NX806420	Circuit Board	MAIN-B	J	
	NX806430	Circuit Board	MAIN-C	J	
	NX806440	Circuit Board	MAIN-D	J	
	NX806450	Circuit Board	MAIN-A	U	
	NX806460	Circuit Board	MAIN-B	U	
	NX806470	Circuit Board	MAIN-C	U	
	NX806480	Circuit Board	MAIN-D	U	
	NX806490	Circuit Board	MAIN-E	U	
	NX806500	Circuit Board	MAIN-A	C	
	NX806510	Circuit Board	MAIN-B	C	
	NX806520	Circuit Board	MAIN-C	C	
	NX806530	Circuit Board	MAIN-D	C	
	NX806540	Circuit Board	MAIN-E	C	
	NX806550	Circuit Board	MAIN-A	E.X	
	NX806560	Circuit Board	MAIN-B	E.X	
	NX806570	Circuit Board	MAIN-C	E.X	
	NX806580	Circuit Board	MAIN-D	E.X	
	IG034700	IC	AN6551	OP AMP	03
	XX808720	IC	NJW2043SE	OP AMP	06
	XB419001	IC	W5216L	OP AMP	03
	IC990170	Transistor	2SC1740S		03
	IX607150	Transistor	2SA933R		03
	IX803460	Transistor	2SD1915T		01
	IX803230	Transistor	2SD2012		02
	VE759400	Transistor	2SR1375		
	IE102410	FET	2SK170BL		03
	XX808790	Diode	1SS119-04T		01
	IX802720	Diode	1SS178		01
	IX802730	Diode	RLIN4003-N02		01
	IF008620	Zener Diode	MA4160M		01
	IF002180	LED	LN322GPH		02
	IF002190	LED	LN422YPH		02
	IF003740	LED	LN222RPH		02
	IX803250	LED	LN246RPH		02
	HX802610	Fuse Resistor	ERD2FCJ4R7P		01
	HX804400	Fuse Resistor	ERD2FCJ6R8P		
	HX804410	Fuse Resistor	ERD2FCJ150P		
	FX800450	Noise Killer	ECKW2H103ZF7		
	HX803430	Noise Killer	ECKDMS103ZV		
	KX801430	Slide Switch	PSSSK20		
	KX801440	Push Switch	PSSHK89		
	KX800680	Power Switch	SSH1057		
	KX801450	Slide Switch	PSSSK21		
	HX804420	Slide Pot.	PSVS252BD54		
	HX804430	Slide Pot.	PSVS251RA14		
	LX800770	Phone Jack	SJJ134B		
	KX801460	Reley	PSSYK12		
	KX801470	Reley	PSSYK13		
	KB000990	Fuse	XBA2E05MS5		
	KX801480	Fuse	XBA2F05MU2		
	KB000700	Fuse	XBA2C05TRO		
	LX801590	Octal Socket	PSJSK11		
	LB302340	Cannon Conector, XLB-3-32	SJSK9-1		

[illegible]









## PRINTING THE SERVICE MANUAL

The PDF of this service manual is not designed to be printed from cover to cover. The pages vary in size, and must therefore be printed in sections based on page dimensions.

### NON-SCHEMATIC PAGES

Data that does NOT INCLUDE schematic diagrams are formatted to 8.5 x 11 inches and can be printed on standard letter-size and/or A4-sized paper.

### SCHEMATIC DIAGRAMS

The schematic diagram pages are provided in two ways, full size and tiled. The full-sized schematic diagrams are formatted on paper sizes between 8.5" x 11" and 18" x 30" depending upon each individual diagram size. Those diagrams that are LARGER than 11" x 17" in full-size mode have been tiled for your convenience and can be printed on standard 11" x 17" (tabloid-size) paper, and reassembled.

#### TO PRINT FULL SIZE SCHEMATIC DIAGRAMS

---

If you have access to a large paper plotter or printer capable of outputting the full-sized diagrams, output as follows:


- 1) Note the page size(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your large format printer. Confirm that the printer settings are set to output the indicated page size or larger.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

#### TO PRINT TILED VERSION OF SCHEMATICS

---

Schematic pages that are larger than 11" x 17" full-size are provided in a 11" x 17" printable tiled format near the end of the document. These can be printed to tabloid-sized paper and assembled to full-size for easy viewing.



If you have access to a printer capable of outputting the tabloid size (11" x 17") paper, then output the tiled version of the diagram as follows:


- 1) Note the page number(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your printer. Confirm that the plotter settings are set to output 11" x 17", or tabloid size paper in landscape (  ) mode.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

#### TO PRINT SPECIFIC SECTIONS OF A SCHEMATIC

---

To print just a particular section of a PDF, rather than a full page, access the Graphics Select tool in the Acrobat Reader tool bar.

- 1) To view the Graphics Select Tool, press and HOLD the mouse button over the Text Select Tool which looks like: . This tool will expand to reveal additional tools. Choose the Graphics Select tool by placing the cursor over the button on the far right that looks like: .
- 2) After selecting the Graphics Select Tool, place your cursor in the document window and the cursor will change to a plus (+) symbol. Click and drag the cursor over the area you want to print. When you release the mouse button, a marquee (or dotted lined box) will be displayed outlining the area you selected.
- 3) With the marquee in place, go to the file menu and select the "Print..." option. When the print window appears, choose the option under the section called "Print Range" which says "Selected Graphic".

Select OK and the output will print only the area that you outlined with the marquee. 

(continued >)