

TEAC[®]



SERVICE MANUAL

D-500

MULTI D/A CONVERTER

NOTES

- Parts marked with * require longer delivery time.
- \triangle Parts marked with this sign are safety critical components. They must always be replaced with identical components — refer to the TEAC Parts List and ensure exact replacement.
- PC boards shown viewed from parts side.

注意

1. プリント基板図は部品面が示されています。
2. *印の部品は納期が若干かかります。あらかじめご了承ください。
3. \triangle 印は安全規格重要部品です。交換するときは必ずティアック指定の部品を使用して下さい。

1 SPECIFICATIONS

仕 様

<AUDIO>

Number of Channels 2

Frequency Response

0 - 20,000 Hz ± 0.3 dB

(Sampling Frequency: 44.1 kHz)

0 - 22,000 Hz ± 0.3 dB

(Sampling Frequency: 48 kHz)

0 - 15,000 Hz ± 0.3 dB

(Sampling Frequency: 32 kHz)

Signal-to-Noise Ratio Better than 110 dB
(1 kHz)

Dynamic Range Better than 100 dB (1 kHz)

Harmonic Distortion Less than 0.0016 %
(1 kHz)Channel Separation Better than 110 dB
(1 kHz)Sampling Frequency 48 kHz, 44.1 kHz,
32 kHzD/A Converter 16-bit 4 D/A Converters +
ZDII + Noise ShaperFilter 8-times oversampling 25-bit digital
filter + 3rd-order Butterworth analog
filter

Inputs - Digital

Digital Audio Interface Format

Coaxial: 0.5 Vp-p/75 ohms x 2

Optical: x 2

Outputs - Analog 2 V rms (Fixed, L/R) x 1

Digital 0.5 Vp-p/75 ohms

(Coaxial) x 1

<GENERAL>

Power Requirements

100 - 120 V/220 - 240 V

AC, 50/60 Hz, 14 W (General Export
model)

120 V AC, 60 Hz, 14 W

(U.S.A./Canada model)

220 V AC, 50 Hz 14 W

(Europe model)

Dimensions (W x H x D)

225 x 138 x 400 mm

(8-7/8" x 5-7/16" x 15-3/4")

Weight (net) 6 kg (13.25 lbs.)

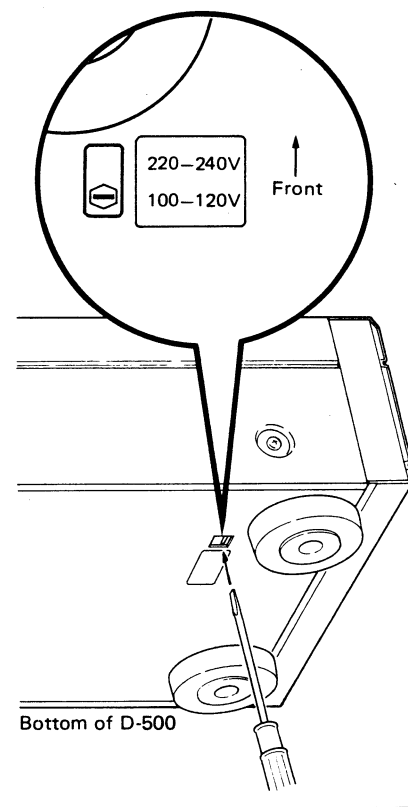
• Improvements may result in specification
or feature changes without notice.• Specifications were determined using a
sampling frequency of 44.1 kHz except as
noted.

■ Voltage Conversion

(For general export models only)

If it is necessary to change the voltage set-
ting of the unit to match your area, pro-
ceed as follows:

1. DISCONNECT THE POWER LINE CORD.
2. Using a screwdriver, set the switch to the
required voltage setting.



<オーディオ>

オーディオチャンネル数 2 チャンネル

周波数特性 0 - 15,000Hz ± 0.1 (32kHz)
0 - 20,000Hz ± 0.1 (44.1kHz)
0 - 22,000Hz ± 0.1 (48.0kHz)

SN比 110dB以上

ダイナミックレンジ 100dB以上(1kHz)

高周波歪率 0.0016%以下(1kHz)

チャンネルセパレーション 110dB以上

出力 ● アナログ

2Vrms

● デジタル

0.5Vp-p/75 Ω (COAXIAL)

入力 ● COAXIAL x 2 (COAXIAL 1/2)

0.5Vp-p/75 Ω

● OPTICAL x 2 (OPTICAL 3/4)

-15 - -21dBm

D/Aコンバーター 16ビット・4DAC + ZD-II サーク
ット

フィルター 8倍オーバー・サンプリング・25
ビット・デジタル・フィルター +
ノイズ・シェイパー + 3次パワ
ース・フィルター

<一般>

電源

100V AC 50/60Hz

消費電力

14W

外形寸法(W x H x D)

225 x 138 x 400mm

重量

6 kg

<付属品>

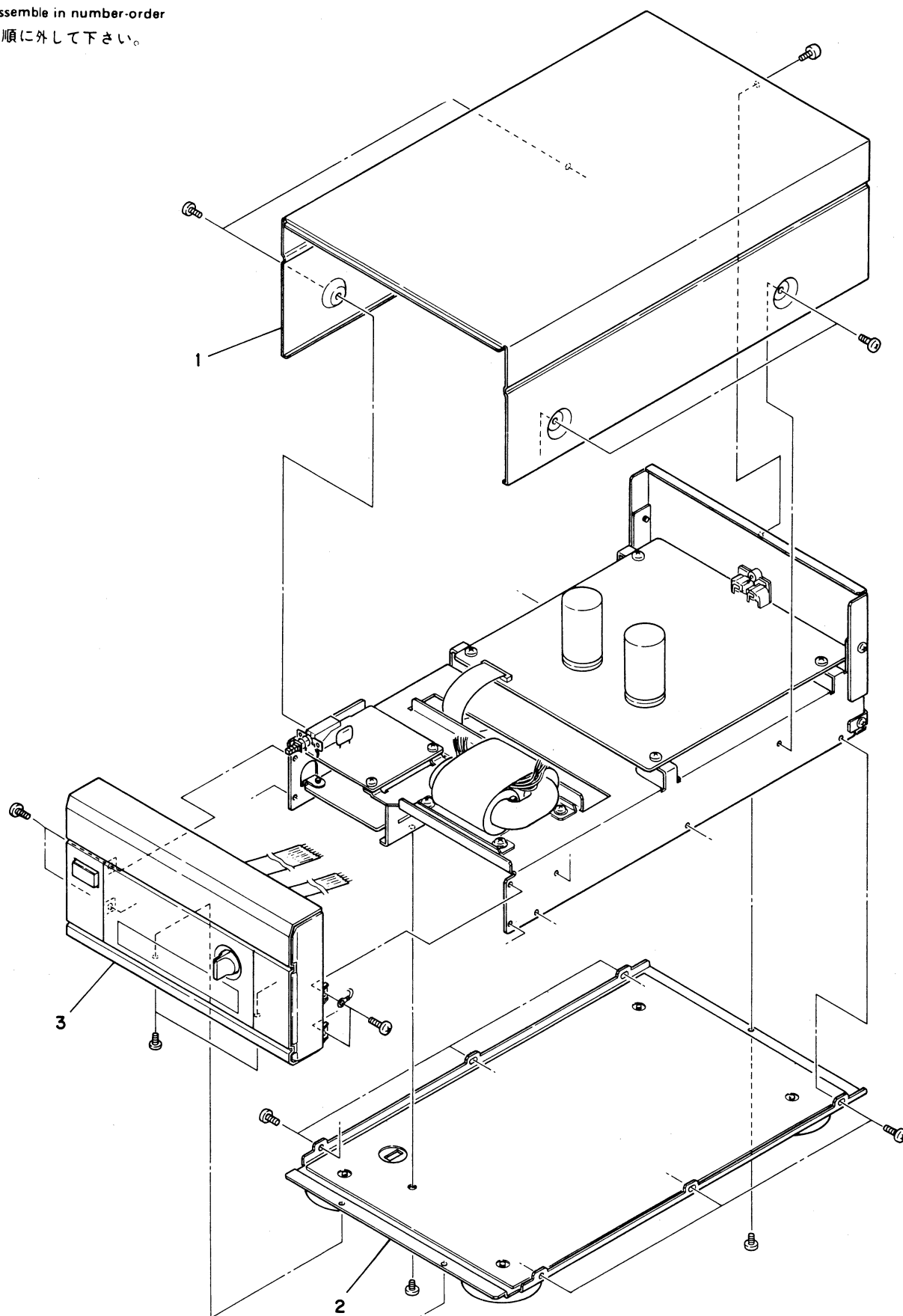
● 取扱説明書 x 1

2 REMOVAL OF EXTERNAL COMPONENTS

外装部品の外し方

Disassemble in number-order

番号順に外して下さい。



3 ADJUSTMENT AND CHECKS

調整と確認

3-1. Distortion Adjustment

1. Connect a 20 kHz low-pass filter (Sosin Model 0652 or equivalent) and a distortion meter (Shibasoku 725B or equivalent) to the L/R LINE OUT of the D-500.
2. Connect either the P-500 with a test disc loaded or a digital signal generator to any of the DIGITAL INPUTs 1-4 of the D-500, and play a 1 kHz, 0 dB signal on the test disc or have the generator issue that signal.
3. Use a jumper wire to short-circuit test point P3 on the AUDIO PCB, and first adjust V1 (for L ch) V2 (for R ch) then fine-adjust V3 (for L ch) / V4 (for R ch) for best distortion reading (less than 0.002%).
Maximum allowance : 0.003%
4. Remove the jumper from test point P3.

3-2. Output Level Adjustment

1. Connect a AC voltmeter to the D-500's LINE OUT.
2. Check to see test point P3 is open.
3. Apply 1 kHz, 0 dB signal coming from the P-500 or a signal generator to any of the DIGITAL INPUT's 1-4 of the D-500.
4. Adjust V5 (for L ch) and V6 (for R ch) until the voltmeter reads 2 Vrms.
Allowable limit range : 2 Vrms \pm 0.1 Vrms

3-3. Output Offset Adjustment

1. Connect a DC voltmeter to the D-500's LINE OUT.
2. Check to see test point P3 is open.
3. Apply a " no-signal " from the P-500 or signal generator to any of the DIGITAL INPUTs 1-4 of the D-500.
4. Adjust V7 (for L ch) and V8 (for R ch) until the voltmeter reads 0 V \pm 1 mV.
Allowable limit range : 0 V \pm 10 mV

3-1. 歪率の調整

1. LINE OUT端子の L/R チャンネルに 20 kHz ロー・パス・フィルター (Sosin 0652 相当) , および歪率計 (シバソク 725B 相当) を接続する.
2. D-500 の DIGITAL IN 端子 1~4 のいずれかに P-500 (CD DRIVE UNIT - CD TEST DISC 使用) またはデジタル・シグナル・ジェネレーターを接続し, 1 kHz, 0 dB の信号を入力する.
3. AUDIO PCB のテスト端子 P3 を線材などでショートし, 歪率が最良 (0.002% 以下) となるように V1 (L ch) / V2 (R ch) で粗調整し, V3 (L ch) / V4 (R ch) で微調整する.
規格 : 0.003% 以下
4. AUDIO PCB のテスト端子 P3 をオープンにする.

3-2. 出力レベルの調整

1. LINE OUT端子に AC ボルトメーターを接続する.
2. AUDIO PCB のテスト端子 P3 がオープンである事を確認する.
3. D-500 の DIGITAL IN 端子 1~4 のいずれかに P-500 (CD DRIVE UNIT - CD TEST DISC 使用) またはデジタル・シグナル・ジェネレーターを接続し, 1 kHz, 0 dB の信号を入力する.
4. ACボルトメーターが 2 Vrms になるよう V5 (L ch) / V6 (R ch) を調整する.
規格 : 2 Vrms \pm 0.1 Vrms

3-3. 出力オフセットの調整

1. LINE OUT端子に DC ボルトメーターを接続する
2. AUDIO PCB のテスト端子 P3 がオープンである事を確認する.
3. D-500 の DIGITAL IN 端子 1~4 のいずれかに P-500 (CD DRIVE UNIT - CD TEST DISC 使用) またはデジタル・シグナル・ジェネレーターを接続し, 無信号を入力する.
4. DCボルトメーターが 0 V \pm 1 mV となるように V7 (L ch) / V8 (R ch) を調整する.
規格 : 0 V \pm 10 mV

3-4. S/N Ratio Check

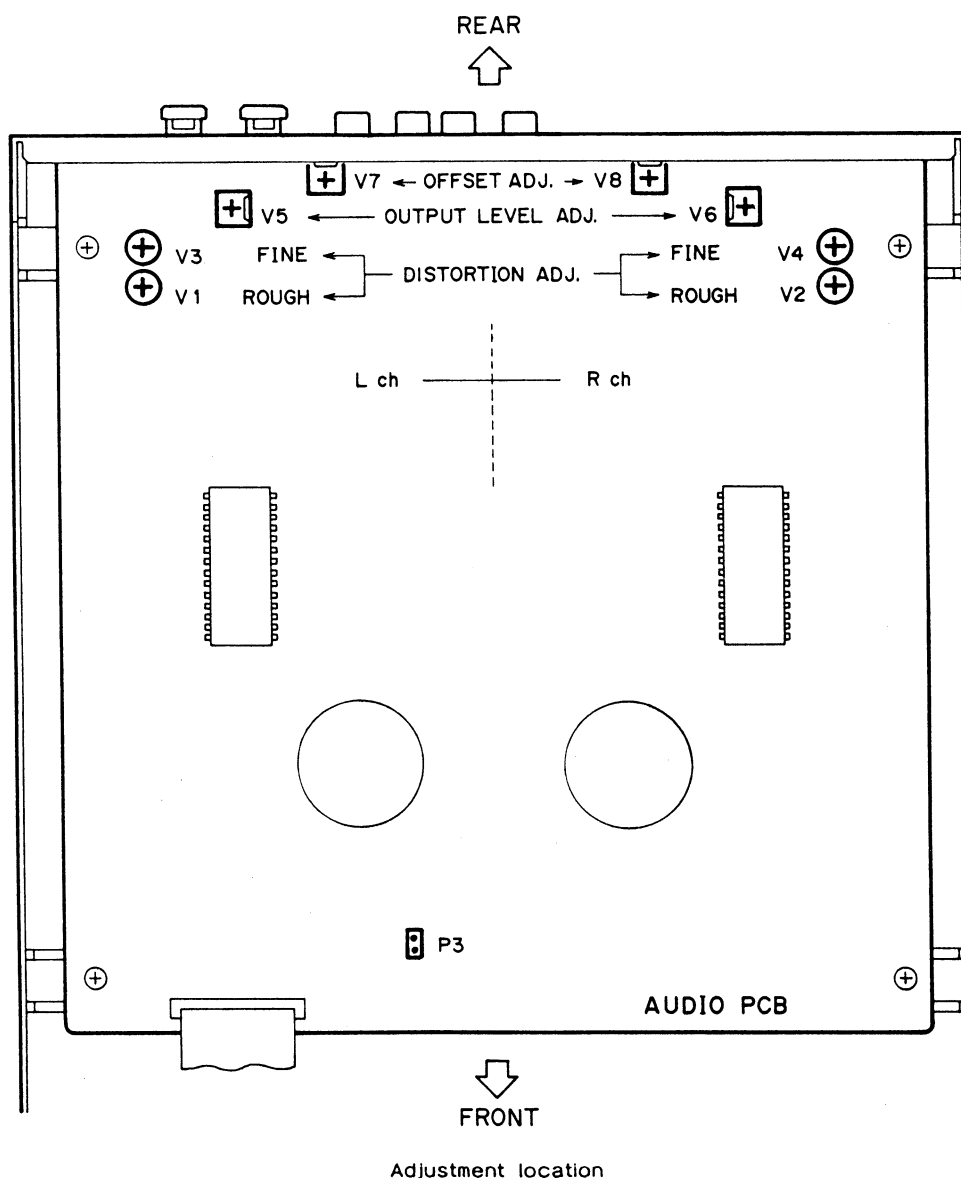
1. Connect a 20 kHz low-pass filter (Sosin Model 0652 or equivalent) and a distortion meter (Shibasoku 725B or equivalent) to the L/R LINE OUT of the D-500.
2. Check to see test point P3 is open.
3. Apply 1 kHz, 0 dB signal coming from the P-500 or a signal generator to any of the DIGITAL INPUT's 1-4 of the D-500.
4. Note the reading on the distortion meter.
Then, apply " NO-SIGNAL " to again read the meter.
Compare the two readings. The difference should be about 107 dB.

Minimum allowance : 100dB

3-4. S/N 比の確認

1. LINE OUT端子の L/R チャンネルに 20 kHz ロー・パス・フィルター (Sosin 0652 相当), および歪率計 (シバソク 725B 相当) を接続する.
2. AUDIO PCB のテスト端子 P3 がオープンである事を確認する.
3. D-500 の DIGITAL IN 端子 1~4 のいずれかに P-500 (CD DRIVE UNIT - CD TEST DISC 使用) またはデジタル・シグナル・ジェネレーターを接続し, 1 kHz, 0 dB の信号を入力する.
4. 入力信号 1 kHz, 0 dB に対して無信号時に 107 dB 程度であることを確認する.

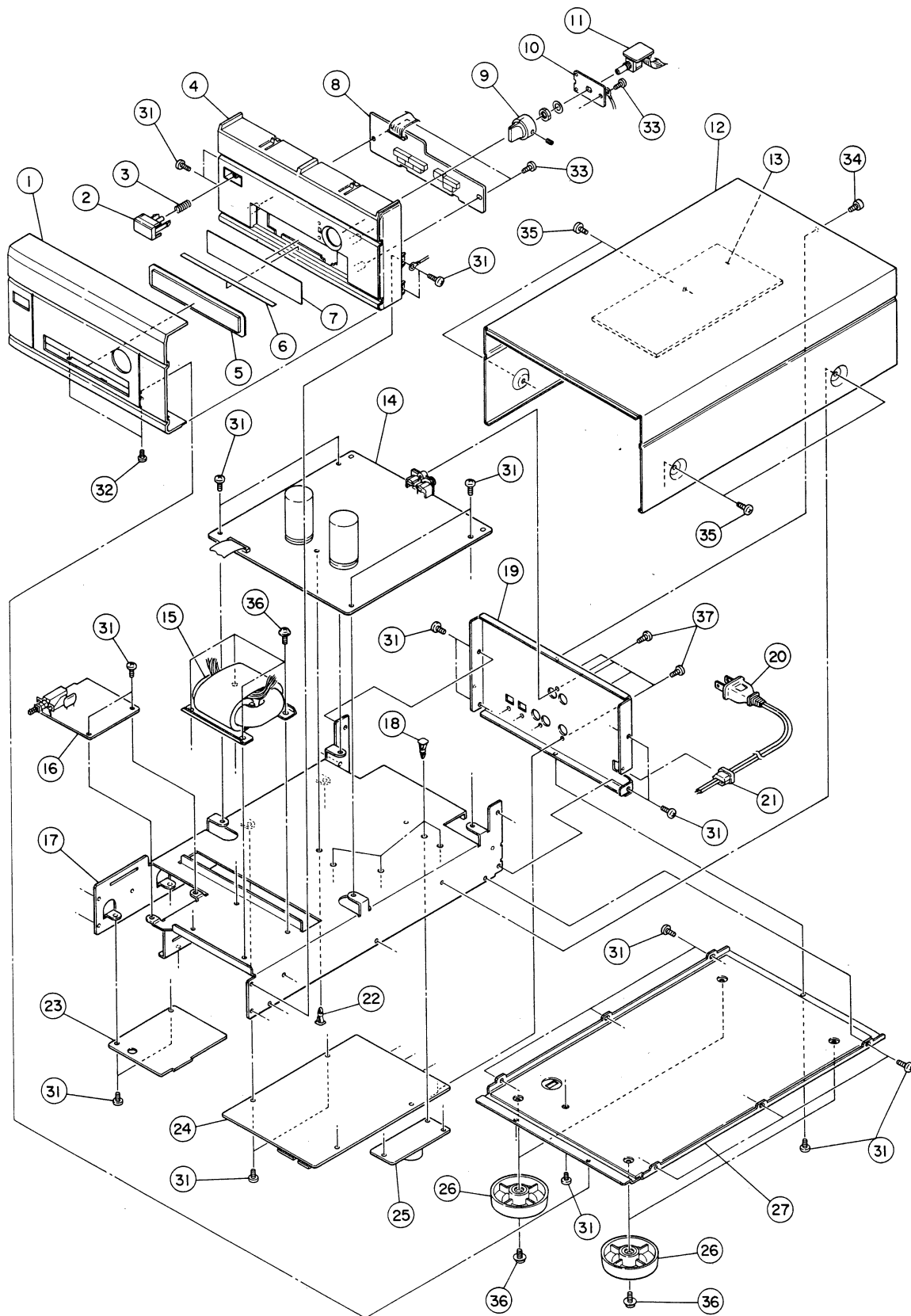
規格 : S/N 100 dB 以上



4 EXPLODED VIEWS AND PARTS LIST

分解図とパーツ・リスト

EXPLODED VIEW



EXPLODED VIEW

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1	*5801288900	FRONT PANEL	
2	*5801068000	POWER KNOB ASSY	
3	*5801070200	SPRING, POWER	
4	*5801289000	PANEL, SUB	
5	*5801252600	ACRYLIC WINDOW ASSY	
6	*5801346300	SHEET, BLIND	
7	*5801302000	INDICATOR	
8	*5200295600	FRONT PCB ASSY	Ref. pages 9 & 10
9	5801174200	KNOB, ROTARY	
10	*5801289200	BRACKET, ROTARY SWITCH	
11	*5200295800	INPUT SELECTOR PCB ASSY	Ref. pages 9 & 10
12	*5801203900	BONNET	
13	*5800893200	SHEET, DUMPER	
14	*5200295200	AUDIO PCB ASSY	Ref. pages 9 & 10
15	△ 5320058100	TRANSFORMER, POWER [J,US,C]	
	△ 5320058200	TRANSFORMER, POWER [E,GE]	
16	*5200298400	SWITCH PCB ASSY	Ref. pages 9 & 10
17	*5801288600	CHASSIS, MAIN	
18	*5787008300	SUPPORT, PCB RSPLS-10L L-TYPE	
19	*5801289100	PANEL, REAR	
20	△ *5350015400	CORD, AC OFC [J]	
	△ *5350010700	CORD, AC UL SPT-2 [US,C]	
	△ *5350010800	CORD, AC UL SPT-1 [GE]	
	△ *5350011700	CORD, AC CEE CLASS-2 [E]	
21	*5317003400	BUSHING 2271	
22	*5787008200	SUPPORT, PCB RSPLS-8L L-TYPE	
23	*5200295700	VOLTAGE SELECTOR PCB ASSY [GE]	Ref. pages 9 & 10
	*5200295710	VOLTAGE SELECTOR PCB ASSY [E]	Ref. pages 9 & 10
24	*5200295300	DIGITAL PCB ASSY [J,GE]	Ref. pages 8 & 10
	*5200295310	DIGITAL PCB ASSY [US,C]	Ref. pages 8 & 10
	*5200295320	DIGITAL PCB ASSY [E]	Ref. pages 8 & 10
25	*5200295500	FILTER PCB ASSY	Ref. pages 9 & 10
26	5801252400	FOOT ASSY	
27	*5801288700	CHASSIS, BOTTOM [EXCEPT GE]	
	*5801288800	CHASSIS, BOTTOM [GE]	
31	*5783033006	SCREW, BIND S-TITE M3X6	
32	*5780022606	SCREW, BIND M2.6X6 (NI BLK)	
33	*5783603008	SCREW, BIND P-TITE M3X8	
34	*5783613008	SCREW, C-TITE M3X8 (NI BLK)	
35	*5800612400	SCREW, M3X8 (BLK) ; BONNET	
36	*5783074008	SCREW, CUP PAN S-TITE M4X8	
37	*5783543008	SCREW, BIND P-TITE M3X8 (NI BLK)	

INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	*5700115400	OWNER'S MANUAL [J]	
	*5700115500	OWNER'S MANUAL [EXCEPT J]	

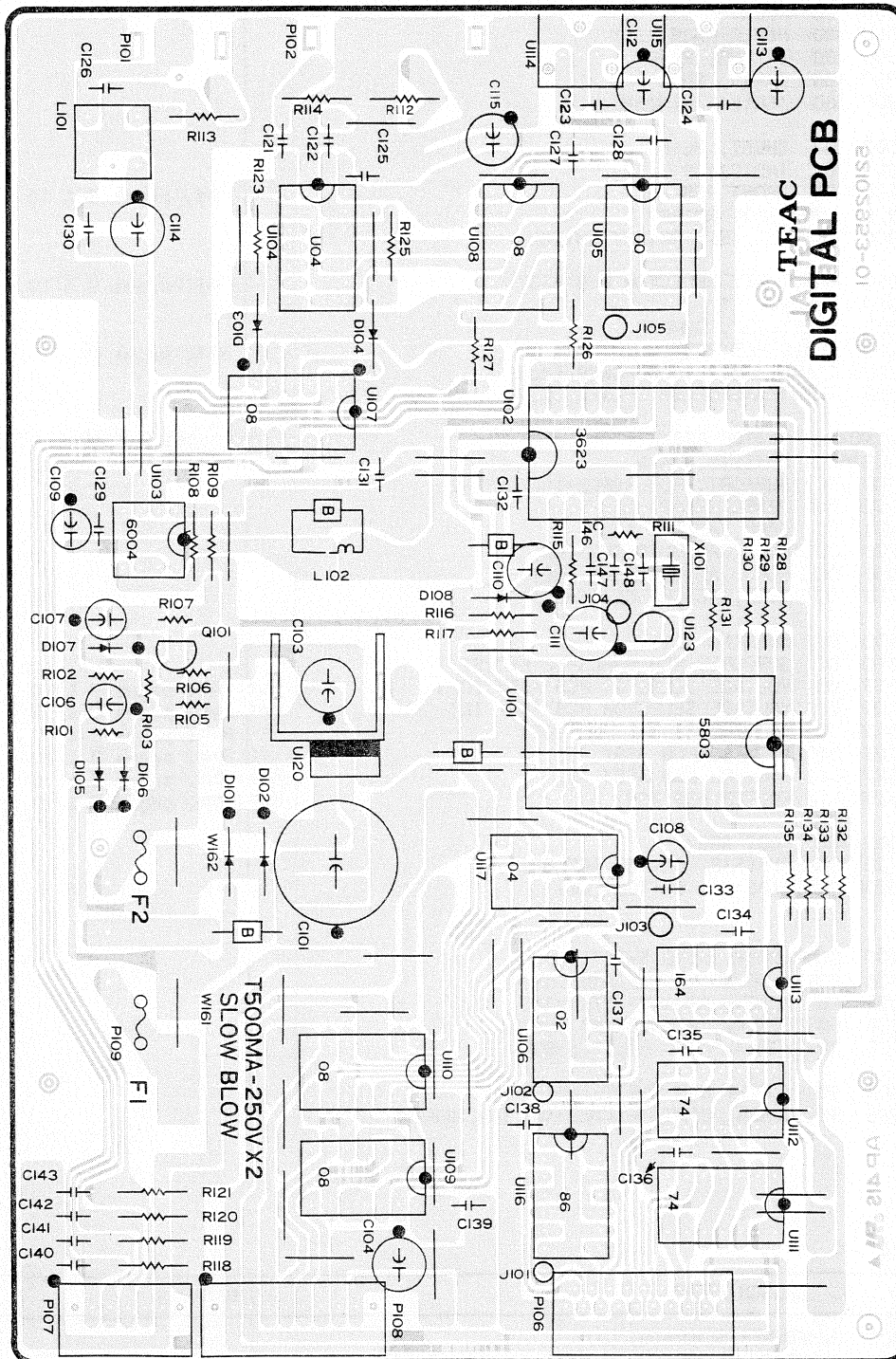
Parts marked with *require longer delivery time.

[J]:JAPAN [US]:U.S.A. [C]:CANADA
[E]:EUROPE [GE]:GENERAL EXPORT

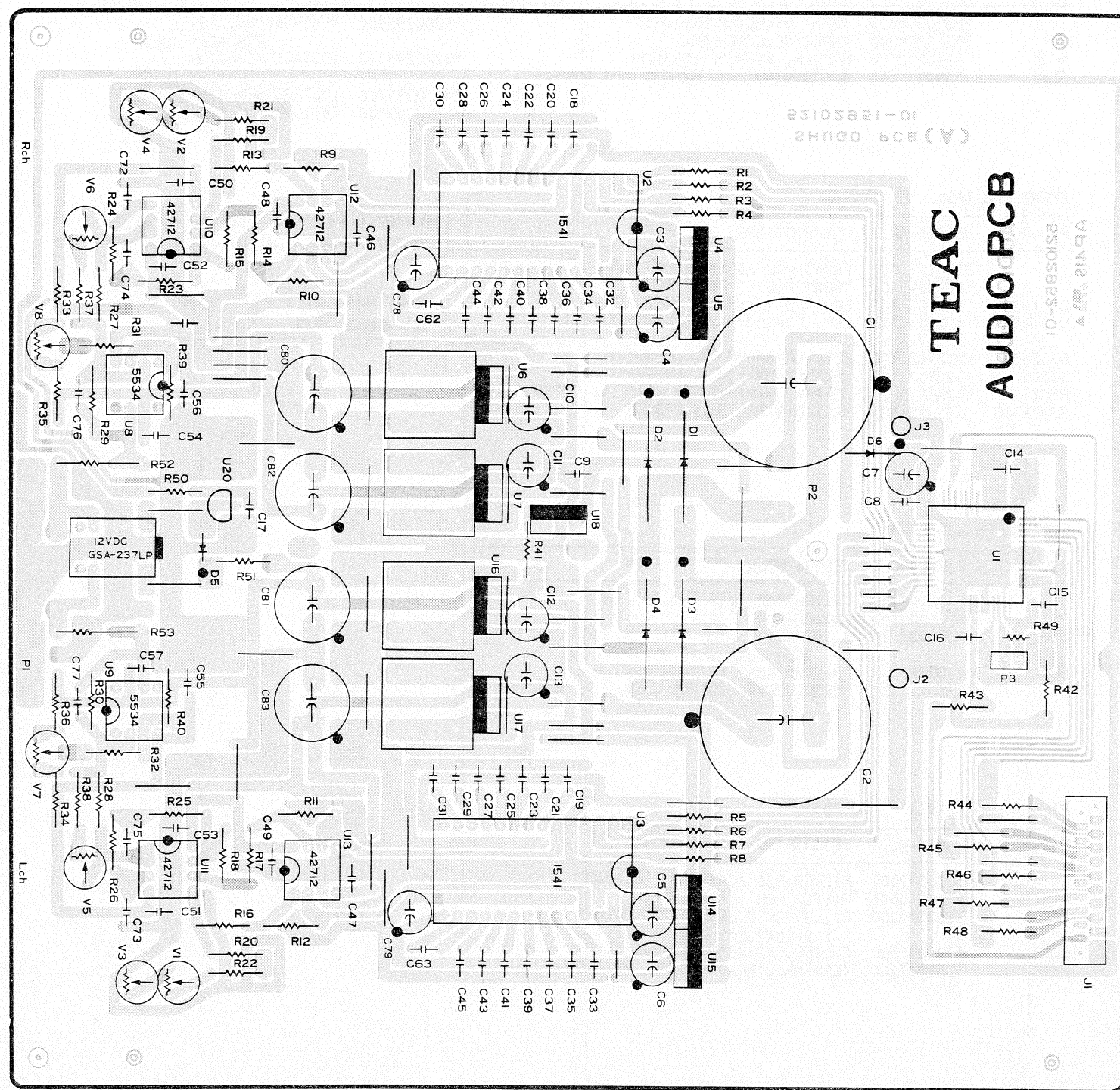
5 PC BOARDS AND PARTS LIST

基板図とパーツ・リスト

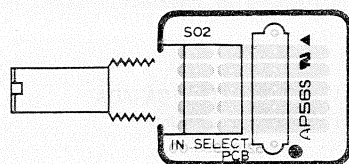
DIGITAL PCB ASSY



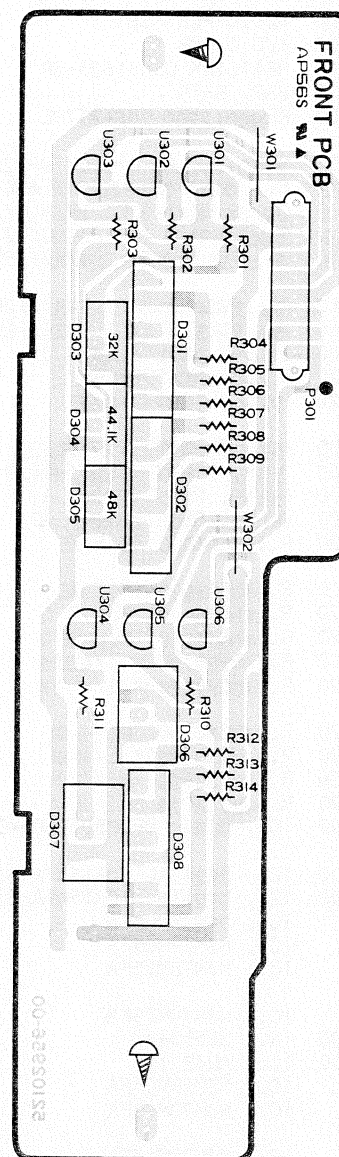
AUDIO PCB ASSY



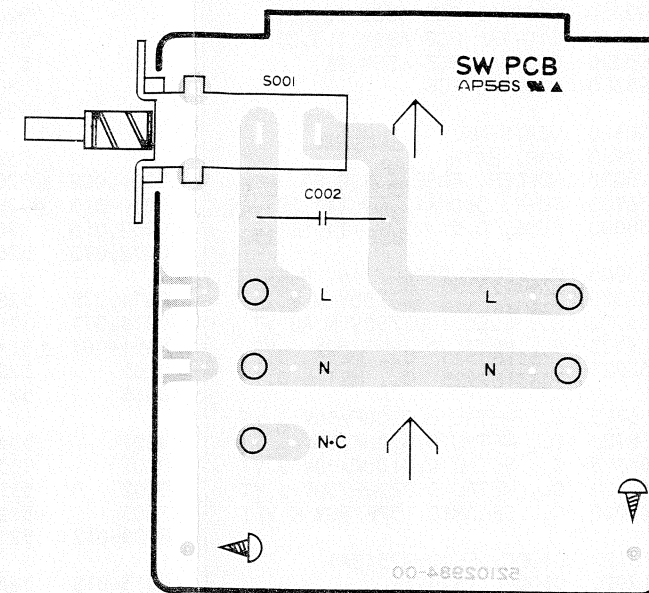
IN SELECT PCB ASSY



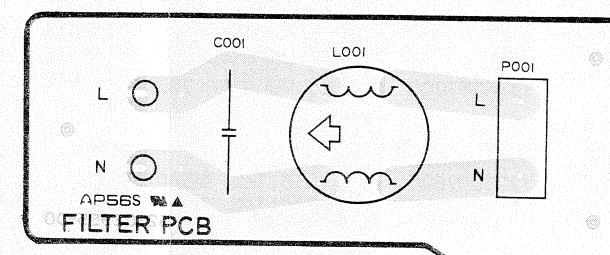
FRONT PCB ASSY



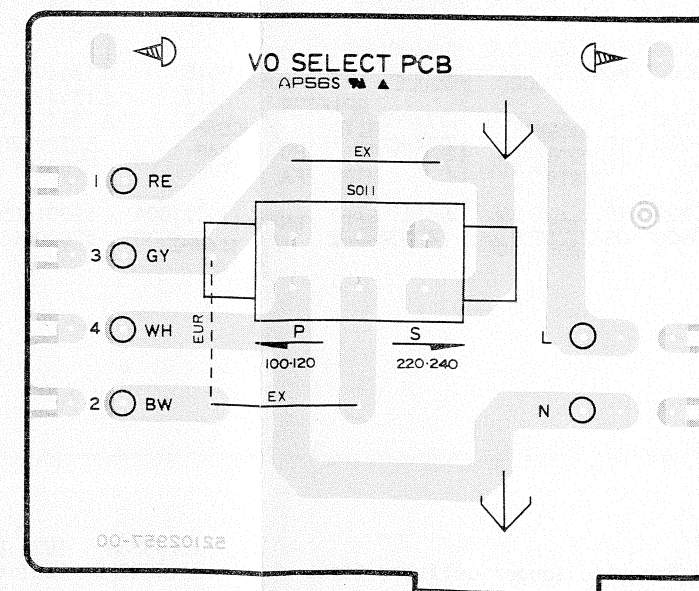
SW PCB ASSY



FILTER PCB ASSY



VO SELECT PCB ASSY



DIGITAL PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295300	DIGITAL PCB ASSY [J,GE]
	*5200295310	DIGITAL PCB ASSY [US,C]
	*5200295320	DIGITAL PCB ASSY [E]
	*5210295300	DIGITAL PCB
	*5800990100	HEATSINK
	*5801302800	BAR, BATH
	*5332015800	HOLDER, FUSE [US,C,E]
	△ 5307036700	FUSE, 500MA/250V (T) [US,C]
	△ 5041138000	FUSE, 0.5A/250V (T) [E]
C101	△ 5260433000	C., ELEC 2200UF/16V M PH VR
C106	5260461320	C., ELEC 3.3UF/50V M AU VT
C107	5260461720	C., ELEC 10UF/50V M AU VT
C121, 122	5263168323	C., METAL 0.22MF/50V J VT
C123-126	5263167923	C., METAL 0.1MF/50V J VT
C127-134	5263166723	C., METAL 0.010UF/50V J VT
C135-142	5263166723	C., METAL 0.010UF/50V J VT
C143	5263166723	C., METAL 0.010UF/50V J VT
C146	5263167123	C., METAL 0.022UF/50V J VT
C147, 148	5173447000	C., CERAMIC 15PF/50V K VFT
D101, 102	△ 5224018120	DIODE, FE1D-G23(TA)
D103, 104	5224012920	DIODE, 1S2473
D105-107	5224017820	DIODE, MA165P-TA5
D108	5224012920	DIODE, 1S2473
L101	5320046300	TRANSFORMER, PLL TC1027-04
P101	5330512700	JACK, PIN 1P YKB11-0400
P102	5330513400	JACK, PIN 2P YKC21-0430
P106	5336299900	CONN., SOCKET 00-8370-197
P107	5336257500	CONN., PULG 5P 52011-0510
P108	5336257800	CONN., PULG 8P 52011-0810
P109	5336333300	CONN., PULG 5219-03A
Q101	5230780920	SI.TR. 2SC2603F
U101	5220089600	IC., DIGITAL SM5803APT
U102	5220090500	IC., DIGITAL YM3623B
U103	5220057500	IC., DIGITAL M74HC6004P
U104	5220040900	IC., DIGITAL UPD74HCU04C
U105	5220065900	IC., DIGITAL HD74HC00P
U106	5220066100	IC., DIGITAL HD74HC02P
U107-110	5220066300	IC., DIGITAL HD74HC08P
U111, 112	5220067600	IC., DIGITAL HD74HC74P
U113	5220071500	IC., DIGITAL HD74HC164P
U114, 115	5292210000	MODULE, OPTICAL SEND GPIF32R
U116	5220068200	IC., DIGITAL HD74HC86P
U117	5220066200	IC., DIGITAL HD74HC04P
U120	△ 13447943	IC., NJM78M05FA
U123	5232259220	TR., DIGITAL UN4111 (TA)
X101	5347010900	OSC., CRYSTAL 16.934MHZ

AUDIO PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295200	AUDIO PCB ASSY
	*5210295200	AUDIO PCB
	*5730021000	HEATSINK OSH-1625-SP
	*5801302800	BAR, BATH
	5290012700	RELAY, 12V G5A-237PL
	5355189200	CABLE, FLAT PI.25M19-120
C001,002	△ 5262013810	C., ELEC 3300UF/35V AUDIO
C010-013	5260474010	C., ELEC 220UF/25V M PZ
C062,063	5265262124	C., STYROL 470PF/160V J
C072,073	5263283110	C., POLYESTER 750PF/125V J
C074,075	5263284510	C., POLYESTER 3000PF/125V J
C076,077	5263283810	C., POLYESTER 1500PF/125V J
D001-004	△ 5143018000	DIODE, U05E 2.5A/400V
D005	5224017820	DIODE, MA165P-TA5
D006	5224012920	DIODE, 1S2473
J001	5340007900	HOLDER, WIRE 19P 5062
P001	5330513500	JACK, PIN 2P YKC21-0429
P002	5336333300	CONN., PULG 5219-03A
P003	5122354000	CONN., PULG 3022-02AD
R009-012	5241065020	R., METAL 1.5K F Z
R013-018	5241066920	R., METAL 9.1K F Z
R019-020	5241066620	R., METAL 6.8K F Z
R021-026	5241065220	R., METAL 1.8K F Z
R027-028	5240529120	R., PSNB 8.2K 1/4 J
R029-030	5240527520	R., PSNB 1.8K 1/4 J
R031-032	5240531720	R., PSNB 100K 1/4 J
R033-036	5240529120	R., PSNB 8.2K 1/4 J
R037-038	5240528520	R., PSNB 4.7K 1/4 J
R039-040	5240526920	R., PSNB 1K 1/4 J
U001	5220088300	IC., DIGI. UPD65031GC-433
U002	5220092500	IC., DIGITAL TDA1541A SI
U003	5220092500	IC., DIGITAL TDA1541A SI
U004	△ 13447943	IC., NJM78M05FA
U005	△ 13447961	IC., NJM79M05FA
U006	△ 13447948	IC., NJM78M15FA
U007	△ 13447966	IC., NJM79M15FA
U008,009	5220444100	IC., NE5534AN
U010-013	5220443000	IC., AD42712
U014	△ 13447943	IC., NJM78M05FA
U015	△ 13447961	IC., NJM79M05FA
U016	△ 13447948	IC., NJM78M15FA
U017	△ 13447966	IC., NJM79M15FA
U018	△ 13447943	IC., NJM78M05FA
U020	5232257820	IC., DIGITAL UN4211 (TA)
V001,002	5280181102	R., TRIMMER 1KB H.
V003,004	5280180502	R., TRIMMER 100 OHM/B H.
V005-008	5280021101	R., TRIMMER 4.7KB H.

INPUT SERECTER PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295800	INPUT SELECTER PCB ASSY
	*5210295800	INPUT SELECTER PCB
P021	5340000500	HOLDER, WIER 5P CDP1905
S021	5301206400	SWITCH, ROTARY SRBM14

FRONT PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295600	FRONT PCB ASSY
	*5210295600	FRONT PCB
D301,302	5225023100	LED, LD-701YY
D303-305	5225011200	LED, LD-001YY(YEL)
D306,307	5225025300	LED, LD-603YY
D308	5225023100	LED, LD-701YY
P301	5340000800	HOLDER, WIRE 8P CDP1908
U301-306	5232257820	TR., DIGITAL UN4211 (TA)

SWITCH PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200298400	SWITCH PCB ASSY
	*5210298400	SWITCH PCB
C002	△ 5267704100	C., SPARK KILLER 0.0047UF/250V
S001	△ 5300051900	SWITCH, PUSH 1-2
	5730007500	COVER, CAPACITOR SB-1417

FILTER PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295500	FILTER PCB ASSY
	*5210295500	FILTER PCB
C001	△ 5267704000	C., SPARK KILLER 0.0047UF/250V
L001	△ 5292806300	FILTER, NOISE FK0B16MH13
P001	5327007200	TERMINAL, WRAP 2P

VOLTAGE SELECTOR SWITCH PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*5200295700	VOLTAGE SELECTOR PCB ASSY [GE]
	*5200295710	VOLTAGE SELECTOR PCB ASSY [E]
	*5210295700	VOLTAGE SELECTOR PCB
S011	△ 5302109400	SWITCH, VOLTAGE SELECTOR DPDT(B)

As regards the resistors and capacitors, refer to the circuit diagrams and the PCB ass'y drawings contained in this manual.

標準の抵抗：コンデンサーは省略してあります。回路図及び基板図を参照してください。

Parts marked with *require longer delivery time.

[J]:JAPAN [US]:U.S.A. [C]:CANADA
[E]:EUROPE [GE]:GENERAL EXPORT

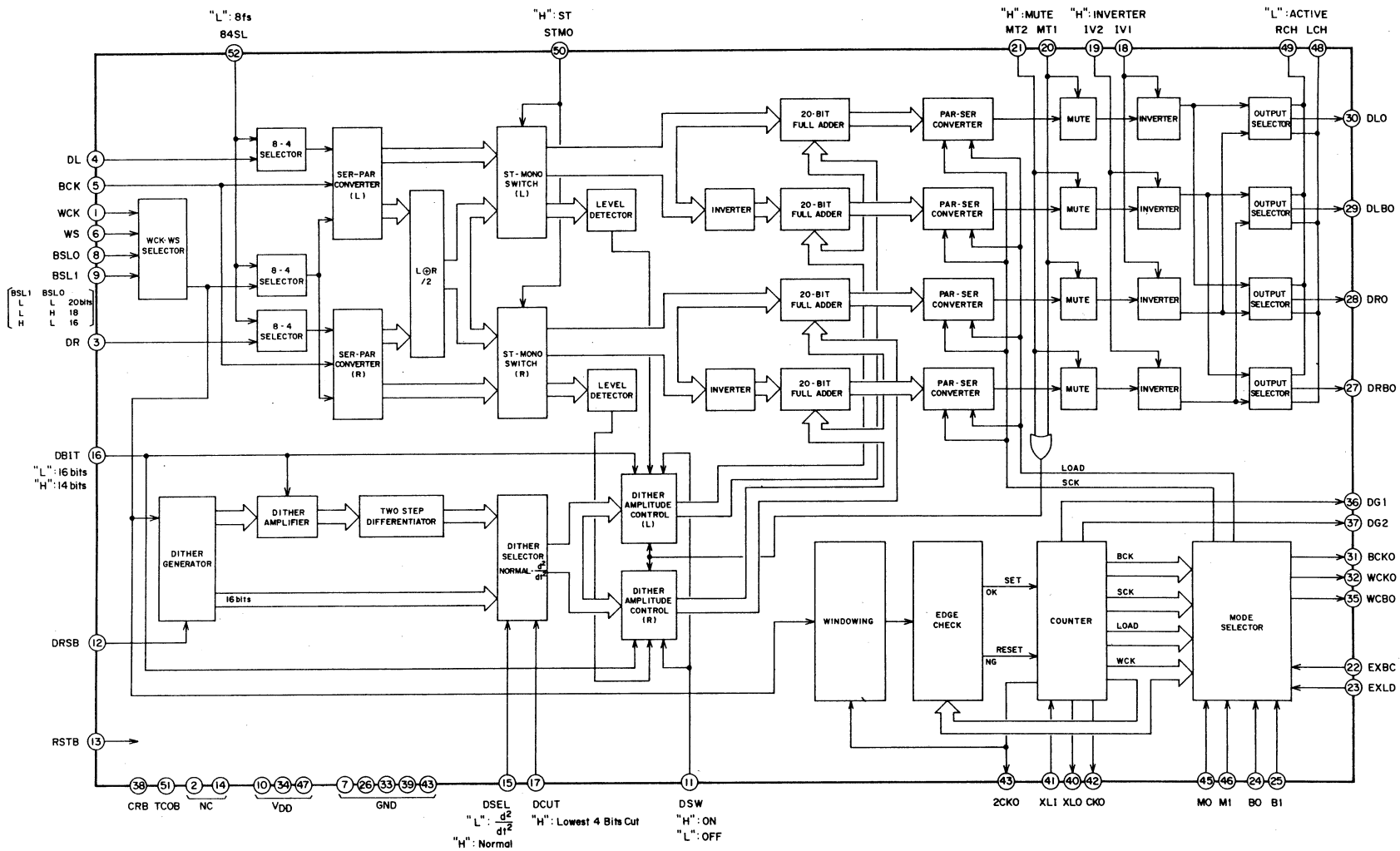
Parts marked with *require longer delivery time.

[J]:JAPAN [US]:U.S.A. [C]:CANADA
[E]:EUROPE [GE]:GENERAL EXPORT

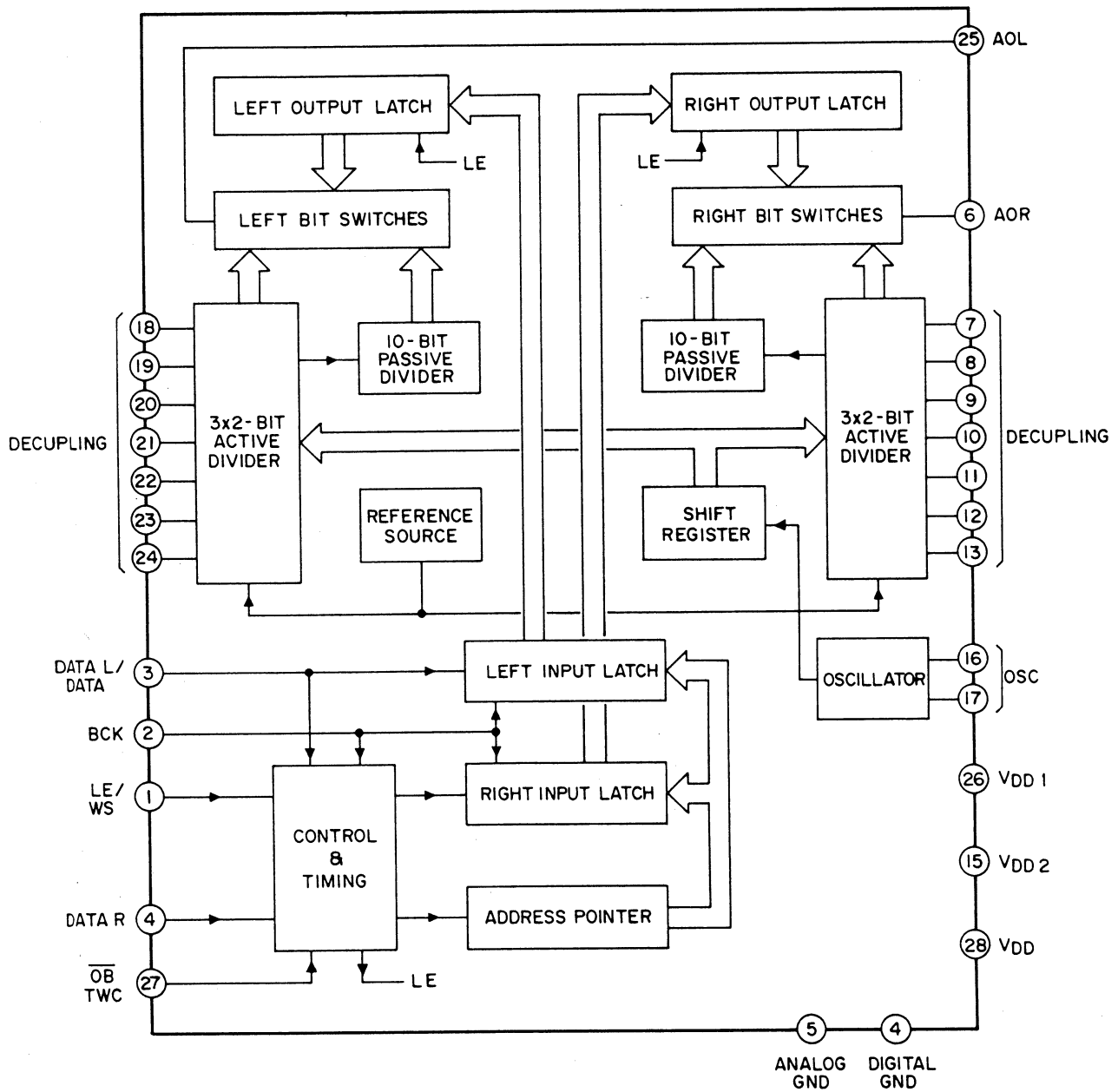
6 IC BLOCK DIAGRAMS

IC ロック・ダイヤグラム

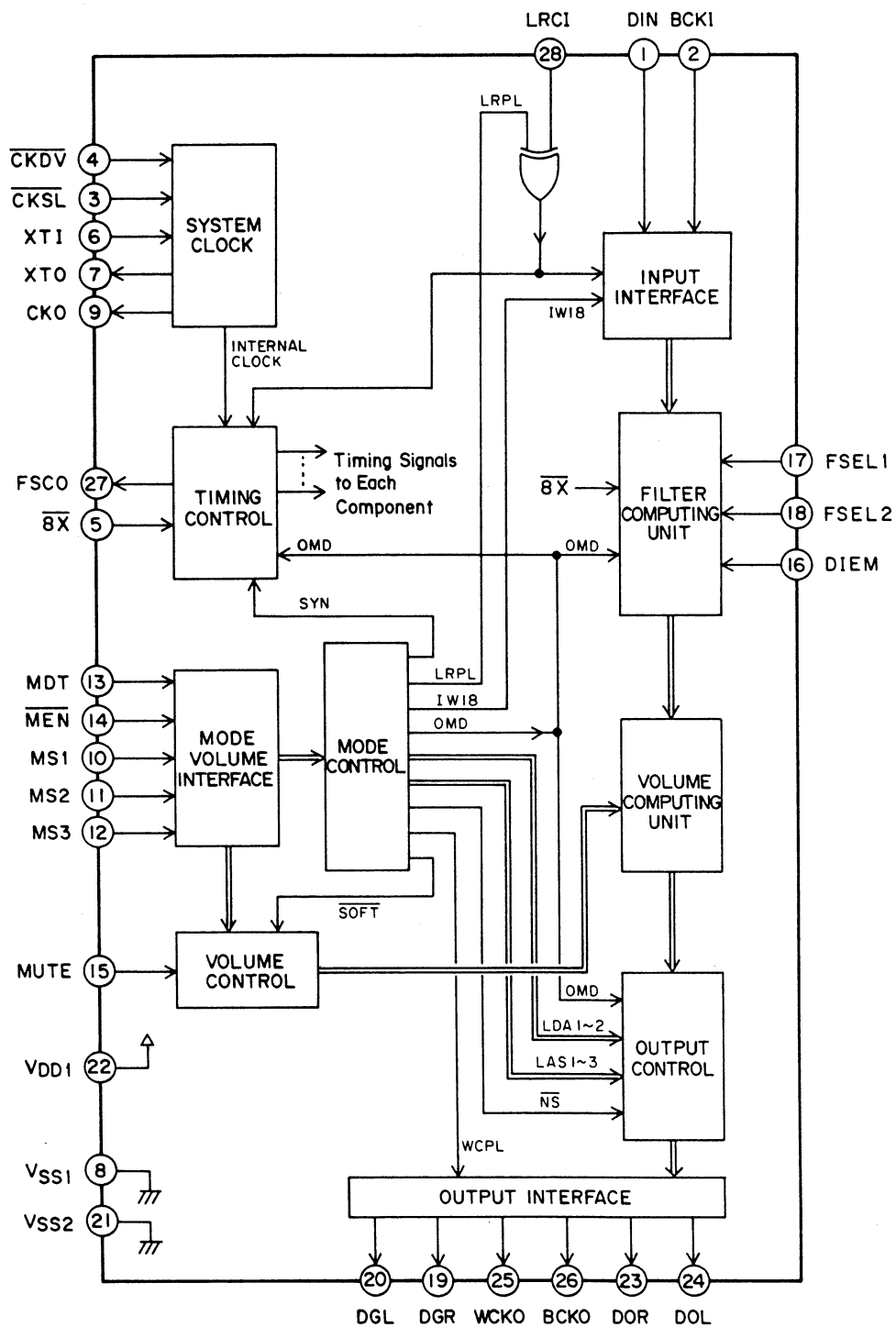
JPD650316C-433



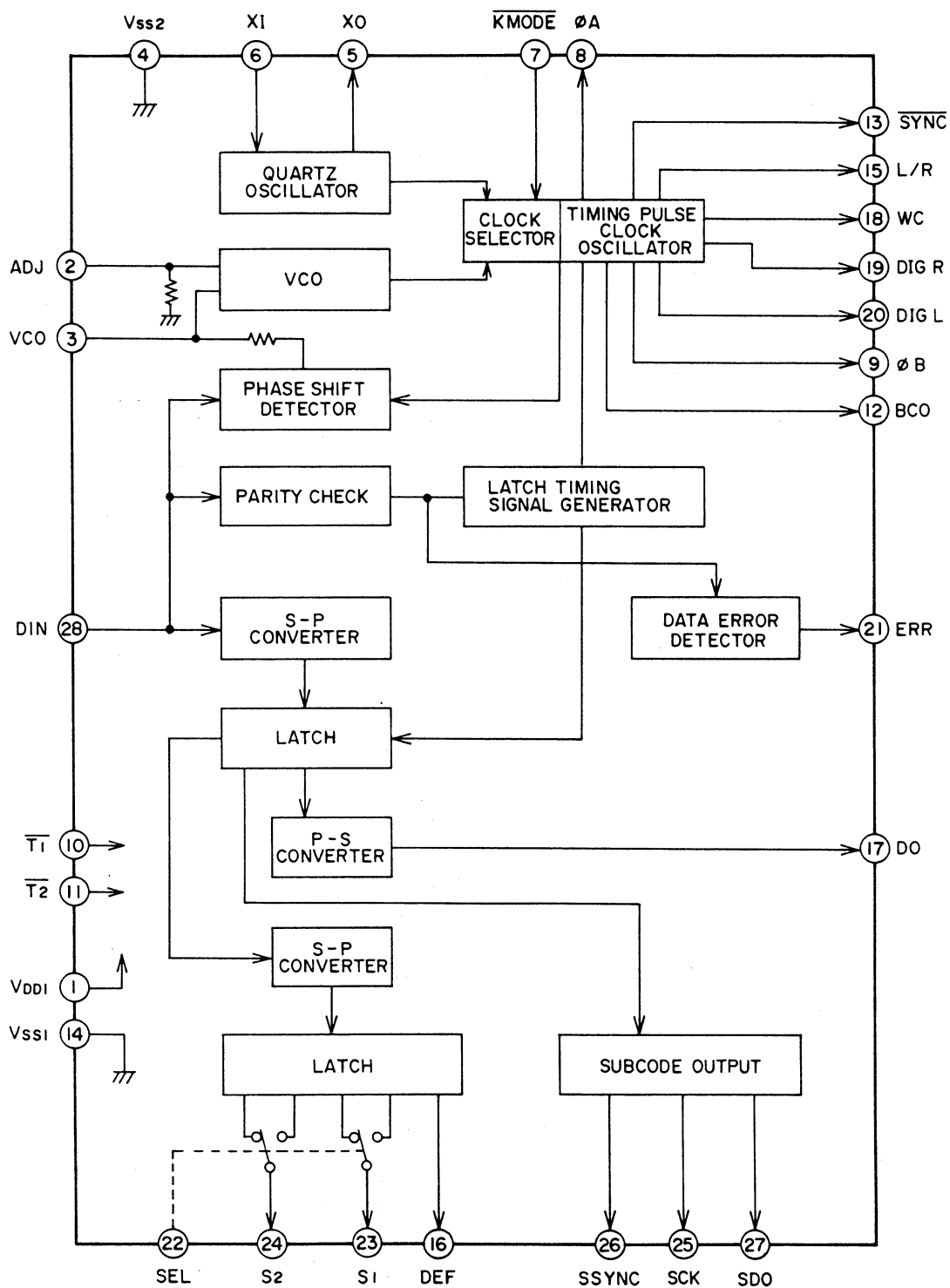
TDA1541A S1



SM5803APT

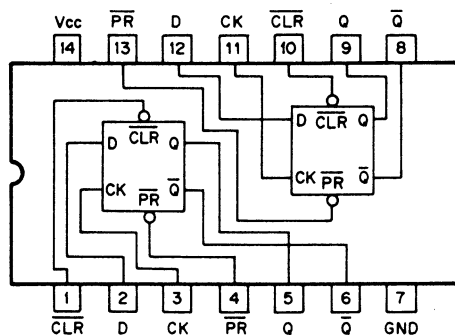


YM3623B



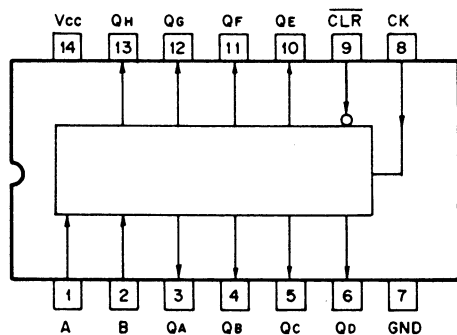
HD74HC74P

DUAL D-TYPE FLIP-FLOP



HD74HC164P

8-BIT SHIFT REGISTER (S-IN, P-OUT)



TEAC SCHEMATIC DIAGRAM D-500

1 2 3 4 5 6 7

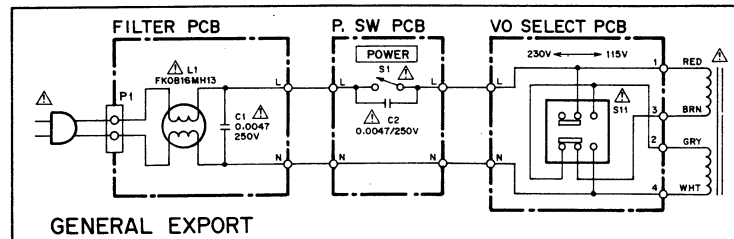
A

AUDIO PCB

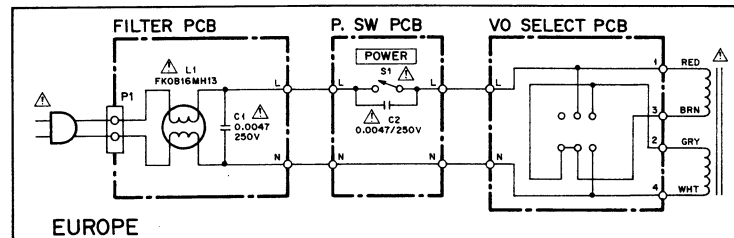
U1 μ PD650316C-433
U2, U3 TDA1541AS1
U4 NJM78M05
U5 NJM79M05
U6 NJM78M15
U7 NJM79M15
U8, U9 NJM5534
U10~U13 AD42712
U14 NJM78M05
U15 NJM79M05
U16 NJM78M15
U17 NJM79M15
U18 NJM78M05
U20 UN4211
D1~D4 U05E
D6 IS2473

From
DIGITAL PCB P106

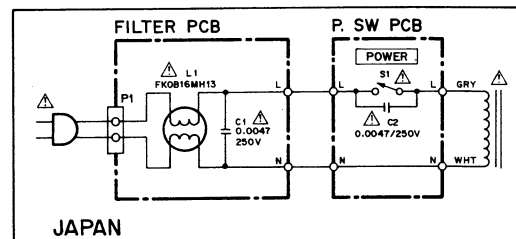
B



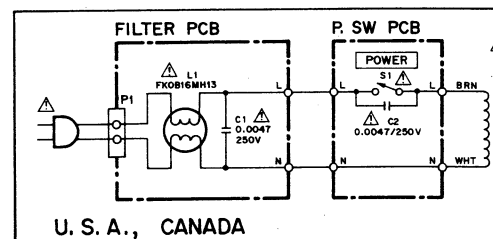
C



D



E



INSTRUCTIONS FOR SERVICE PERSONNEL
BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

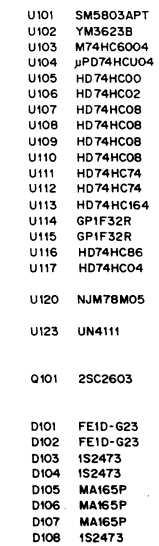
NOTES

- Resistor values are in ohms (k=kilo-ohms, M=megohms).
- Capacitor values are in microfarads (μ =microfarads).
- Parts marked with this sign are safety critical components. They must always be replaced with identical components refer to the appropriate parts list and ensure exact replacement.

注意

- 抵抗の単位は Ω (k=k Ω , M=M Ω)です。
- コンデンサの単位は μ F (μ = μ F)です。
- Δ マークのある部品は安全重要部品です。交換するときは必ずティアック指定の部品を使用してください。

D-500
MULTI D/A CONVERTER
1st Issue : December 1989



1. 抵抗の単位は Ω ($k = k\Omega$, $M = M\Omega$) です。
2. コンデンサの単位は μF ($p = pF$) です。
3. Δ マークのある部品は安全重要部品です。
交換するときは必ずティアック指定の部品を使用してください。

1st Issue ; December 1989