

HITACHI

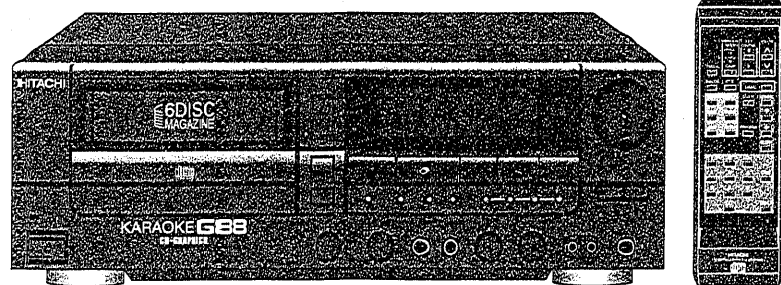
SERVICE MANUAL

TT

No.0001EC

AK-G88

[W,T]



CAUTION

DANGER

Invisible laser radiation when open and interlocks failed or defeated. AVOID DIRECT EXPOSURE TO BEAM.

小心

危險

打開時和連鎖故障或失控時，會有肉眼看不見的鐳射輻射。避免直接曝光。

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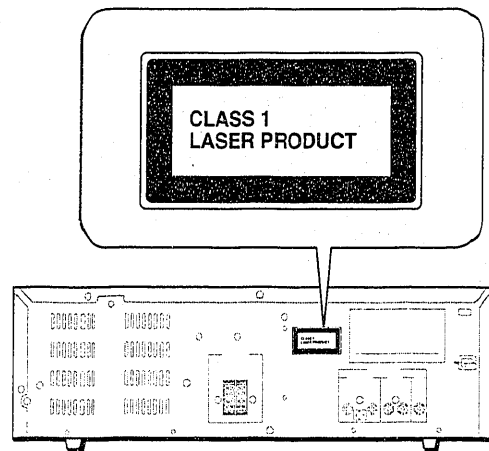
SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

AMUSEMENT KARAOKE PLALYER

DECEMBER 1992

HITACHI TELEVISION (TAIWAN), LTD.

- The caution labels on laser usage
- 鐳射使用警告標籤



Inside of the set is a laser component emitting a laser radiation over the limit for laser class 1.

機件內部有一個鐳射零件，其釋出的鐳射輻射超過一級鐳射限度。

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with \triangle in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

- CD PLAYER SECTION

DISCS USED:	CD/CD-Graphics
Playing time:	Approx. 60 minutes/one side
Diameter:	12 cm/8 cm
SIGNAL FORMAT	
Sampling frequency:	44.1 kHz
Quantization number:	16 bit linear/channel
Transmission bit rate:	4.3218 Mb/second
PICK-UP	
System:	Object lens drive system optical pick-up
Optical source:	Semiconductor laser
- AMPLIFIER SECTION

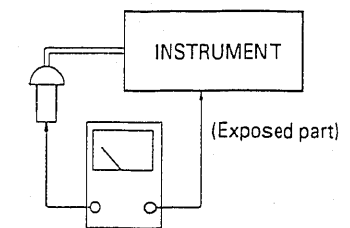
Input sensitivity/Impedance:	MIC 1, MIC 2: 1.5 mV (10 kohms)
	LINE IN: 150 mV (47 kohms)
Output level:	AUDIO OUTPUT: 150 mV
Output Impedance:	External speaker terminals
	Suitable Impedance: 6 to 16 ohms
	Headphones
	Suitable Impedance: 8 to 100 ohms
Audio output:	20 W + 20 W (6 ohms, T.H.D. 1%)
- GENERAL

Image output level:	1 Vp-p/75 ohms
RD output:	UHF Channel 38 (Channel E30-E39 adjustable)
	[UHF Channel C25 (Channel C22-C26 adjustable)]
Aerial input:	75 ohms unbalanced type
Power supply:	AC 110-120V, 200-220V, 230-240V, 50/60Hz (for W)
	AC 110V, 60Hz (for T)
Power consumption:	130 W (for W)
	120 W (for T)
Dimensions:	435 W x 137 H x 420 D (mm)
Weight:	8.6 kg

Check that exposed parts are acceptably insulated from the supply circuit before returning the instrument repaired to the customer.

• Checking method

Power (Operate) switch is set to ON.
Next, measure the resistance value between the both poles of attachment cup (Power supply plug) and the CD OUT terminal of rear plate and check that the resistance value is 500 kohms or more.



Insulation tester (DC 500V)

安全注意事項

操作時請留心下列事項：

1. 本機件中因有許多零件具有與安全性有關之特殊性能，故更換時敬請務必選用日立公司出品的原廠零件，尤其是電源線路區臨界零件更不宜使用其他廠牌產品來替代。線路圖和基板上印有註明△記號者為臨界零件。
2. 修理過後的機件在歸還給顧客之前，技術服務人員務必要徹底檢查，以確保機件操作起來完全安全，沒有觸電之危險。

規格說明

• 鐳射碟播放機部份

使用的碟片： 鐳射唱碟／鐳射影碟
 播放時間： 將近60分鐘／一面
 直徑： 12厘米／8厘米
 信號格式
 取樣頻率： 44.1千赫茲
 量化數： 16位線性／通道
 傳輸位速率： 4.3218兆位／秒
 拾音系統： 目標透鏡驅動系統的光拾音
 光源： 半導體鐳射

• 擴音機部份

輸入靈敏度／阻抗： 麥克風 (MIC 1, MIC 2) : 1.5毫伏 (10千歐姆)
 線路輸入 (LINE IN) : 150毫伏 (47千歐姆)
 音頻輸出 (AUDIO OUT) : 150毫伏
 外部揚聲器接點
 適合阻抗：6到16歐姆
 耳機
 適合阻抗：8到100歐姆
 音頻輸出： 20瓦特+20瓦特 (6歐姆，總諧波失真 T.H.D. 1%)

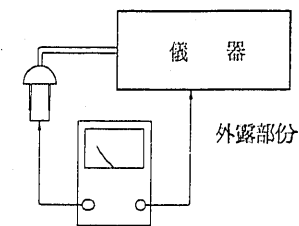
• 總體

畫面輸出水平： 1V_{p-p} / 75歐姆
 射頻 (RF) 輸出： 超高频 (UHF) 頻道 38 (頻道 E30-E39 可調節)
 [超高频 (UHF) 頻道 C25 (頻道 C22-C26 可調節)]
 天線輸入： 75歐姆不平衡型
 電源： 交流電 110-120伏特，200-220伏特，230-240伏特，50/60赫茲 (新加坡，香港，東南亞)
 交流電 110伏特 (臺灣)
 功耗： 130瓦特 (新加坡，香港，東南亞)
 120瓦特 (臺灣)
 尺寸： 435寬×137高×420深 (厘米)
 重量： 8.6公斤

修理過後的儀器在歸還給顧客之前，須確認其外露部份確實與電流絕緣。

• 確認方法

把電源開關設在開的狀態。
 然後測量電源插頭和背板鐳射輸出端兩極間的電阻值，並確認其電阻值是否為500千歐姆或超過500千歐姆。



絕緣測試器 (直流電500伏特)

SERVICE POINT

1. Top Cover (Fig. 1)
Remove 9 screws ① and remove the top cover backwards.
2. CD P.W.B. (Fig. 2 and 3)
(1) After removing the top cover, release 4 screws ② and disconnect connectors A (8 locations). The earth terminal and pin lead wire will be disconnected at the same time.
(2) Disconnect connectors B and C (3 locations). If it needs to remove the CD P.W.B..
3. Front Panel Block (Fig. 3)
After removing the CD P.W.B., release 3 screws ③ and 3 screws ③-1. The LED P.W.B./MIC P.W.B./VR P.W.B./FL P.W.B. will be separated from bottom chassis at the same time.
4. P.T. P.W.B. (Fig. 2)
After removing the CD P.W.B., release 4 screws ④ and also remove the solders of the lead wire from the transformer.
5. MAIN P.W.B. (Fig. 1 and 4)
After removing the transformer, release 2 screws ⑤ on heat sink, 6 screws ⑥⑦ on MAIN P.W.B., 2 screws ⑧ on speaker jack, and disconnect connectors ⑨ (6 locations).
6. LED P.W.B. (Fig. 5)
After removing the front panel block, release the screw ⑩.
7. VR P.W.B. (Fig. 5)
After removing the front panel block, remove the VR knob and hexagonal nut. Then, release the VR P.W.B. backwards.
8. FL P.W.B. (Fig. 6)
After removing the front panel block, release 10 screws ⑩.
9. MIC P.W.B. (Fig. 5)
After removing the front panel block, release 2 screws ⑪ and also remove 4 knobs.
10. MD P.W.B. (Fig. 1 and 4)
(1) After removing the top cover, release 2 screws ⑫, a screw ⑬ and 3 screws ⑭.
(2) Release the solders of power cord, transformer lead wire, and 2 connecting wire ⑮ if it needs to remove MD P.W.B..
11. CD Changer Mechanism (Fig. 4)
After removing the top cover, release 2 screws ⑮.
12. Disengage CD Changer Mechanism (Fig. 7)
(1) Release 2 screws ⑮, and remove ⑯. Push lift cam to the position as shown in Fig. 7, then raise the rail base up.
(2) Pull P rail base out, and remove P1 tray from the set. Use a "-" screwdriver to lift the hook (Part A), then pull out the P rail base from the set.
(3) Remove rail base as followed: (Fig. 8, 9, 10 and 11)
1. Press Arm ⑰ with left little finger and Arm ⑱ with left thumb, then hold the rail base with back of left hand. Release Arm ⑲-1 located on rail base from the P base with right hand, then remove Arm ⑲-2 beside the P base from the rail base.
2. Use left little finger to press Arm ⑰, and back of left hand to hold rail base. Release Arm ⑲-1 located on rail base from the P base with right hand, then remove Arm ⑲-2 beside the P base from the rail base.
3. Use back of right hand to hold the rail base. Release Arm ⑰-1 located on rail base from the P base with left hand, then remove Arm ⑰-2 beside the P base from the rail base.

Place rail base on P base on the order of 3→2→1.
- (4) T/T Base (Fig. 12)
Remove 3 screws ⑰, then disengage T/T base from the P base.
- (5) Installation of Gear (Fig. 13, 14 and 15)
1. Pull P slide rail to the front, then fit P rail base on the top of P base and P slide rail.
2. When P rail base is inserted into P base, and the hook of P rail base in Part A matches with P slide rail, P gear B shall be at the position as shown in the figure of Part B.

3. Fit up P gear B with point B aiming at the direction of P gear A1 and assemble the wheel shafts of P gear A1 and P gear B. Then conjugate P gear B and P gear A1.

(6) CD Changer Mechanism packing status when transporting (Fig. 16)

For assembly or transportation of the set, the rail base and lift cam should be positioned as Fig. 16.

13. Checking the objective lens (Fig. 17)

Handle so that dirt or dust does not adhere to the objective lens in the lens actuator. When the unit has been used for a long time, dust or dirt may adhere to the objective lens. Clean the lens surface using a cotton swab.

14. Cautions when servicing (Fig. 18 and 19)

(1) Semiconductor laser

The semiconductor laser is very sensitive to electrostatic breakdown and surge current. Do not touch the terminals of the semiconductor laser and flexible P.W.B. with your fingers or tools.

Relationship between current and light intensity is shown in Fig. 18. When the threshold current is exceeded, intensity changes steeply.

The threshold current value is a little different depending on individual laser.

(2) Handling of the unit mechanism section (Fig. 19)

When handling the pickup mechanism section or the unit mechanism section, use the grounding ring as shown in Fig. 19. (The grounding ring can be made from a normal lead wire.)

維修重點

1. 上蓋 (TOP COVER) (圖1)

拆下鎖於上蓋的9支螺絲(記號:①),並向後方取出上蓋。

2. 鐳射碟基板 (CD PWB) (圖2和圖3)

移去上蓋之後,拆下鎖於基板上的4支螺絲(記號:②)、8處(記號:A)連接線(CONNECTORS)、接地線及整線夾。如需整個基板取下時,則將再鬆開3處(記號:B)③)連接線。

3. 前面板 (FRONT PANEL) (圖3)

取下鐳射碟基板之後,拆下鎖於前面板上的6支螺絲(記號:③ ③-1),取下面板,同時將LED、麥克風、音量控制、顯示器等基板和底座分離。

4. 變壓器基板 (PT PWB) (圖2)

取下鐳射碟基板之後,拆下鎖於變壓器上的4支螺絲(記號:④)部再將基板上的導線弄開,取下基板。

5. 主基板 (MAIN PWB) (圖1和圖4)

拆下鎖於變壓器上的螺絲之後,再將鎖於散熱片上的2支螺絲(記號:⑤)、主基板上的6支螺絲(記號:⑥⑦)、揚聲器插座上的2支螺絲(記號:⑧)拆下及鬆開6處(記號:①)連接線,然後取下基板。

6. LED基板 (LED PWB) (圖5)

移開前面板之後,拆下鎖於基板上的1支螺絲(記號:⑨),取下基板。

7. 音量控制基板 (VR PWB) (圖5)

移開前面板之後,拔掉音量控制旋鈕和拆下六角螺帽之後,向後取下音量控制基板。

8. 液晶顯示器基板 (FL PWB) (圖6)

移開前面板之後,拆下鎖於基板上的10支螺絲(記號:⑩),取下基板。

9. 麥克風基板 (MIC PWB) (圖5)

移開前面板之後,拆下鎖於基板上的2支螺絲(記號:⑪)和拔掉4個旋鈕,取下基板。

10. MD基板 (MD PWB) (圖1和圖4)

移開上蓋之後,拆下鎖於基板上的2支螺絲(記號:⑫)、1支(記號:⑬)鎖於開關上及3支(記號:⑭)鎖於後背板上的螺絲。如需整個基板取下時,則將再弄開電源線、變壓器導線及鬆開2處(記號:E)連接線。

11. 鐳射碟機架 (CD CHANGER MECHANISM) (圖4)

移開前面板之後,拆下鎖於鐳射碟機架上的2支螺絲(記號:⑮),取下鐳射碟機架。

12. 鐳射碟機架拆解方法 (圖7)

(1) 拆下2支螺絲(記號:⑯),將F取下後,同時將升降盤(LIFT CAM)推至圖中(圖7)所指示位置,使磁軌機座(RAIL BASE)抬高。

(2) 將P磁軌機座(P RAIL BASE)拉出來,然後將P1托盤(TRAY)由機件取下。再以"一"字型螺絲起子將A部的鉤子挑高。將P磁軌機座往前(箭頭方向)抽出。

(3) 拆下磁軌機座可依下述順序進行:(圖8,圖9,圖10和圖11)

1. 以左手小指壓住支撐桿①,以姆指壓住支撐桿②,再以左手背支撐磁軌機座。用右手將固定在磁軌機座側的支撐桿(ARM)③-1取下,再將固定在基座(P BASE)側的支撐桿④-2取下。
2. 用左手小指壓住支撐桿①,用左手背將磁軌機座支撐住。用右手將固定在磁軌機座上的支撐桿②-1取下,再將固定於基座側的支撐桿②-2取下。
3. 用右手背支撐磁軌機座,以左手將固定在磁軌機座的支撐桿①-1取下,再將固定在基座側的支撐桿①-2取下。

將磁軌機座裝置在基座上時,可依上述3→2→1的次序進行。

(4) 鐳射機構 (T/T BASE) (圖12)

拆下3支螺絲(記號:⑰),可取下鐳射機構(T/T BASE)。

(5) 齒輪的嵌合 (圖 1 3, 圖 1 4 和圖 1 5)

1. 將 P 滑動軌道 (P SLIDE RAIL) 拉至最前端, 再將 P 磁軌機座裝在 P 基座及 P 滑動軌道之上。
2. 當 P 磁軌機座插入 P 基座時, A 部的 P 磁軌機座的鉤子和 P 滑動軌道相嵌合, P 齒輪 B 的位置必須和圖中的 B 部相同。
3. 將 P 齒輪 B 的 B 朝向 P 齒輪 A 1 的方向, 同時分別組合 P 齒輪 A 1 和 P 齒輪 B 之輪軸。將 P 齒輪 B 和 P 齒輪 A 1 組合。

(6) 產品運送時, 鐳射碟機架放置狀態 (圖 1 6)

組合機架或搬運整個產品時, 機架上的磁軌機盤和昇降盤位置應如圖 1 6 所示。

13. 檢查透物鏡 (圖 1 7)

勿使透鏡傳動器的透物鏡沾惹灰塵和污垢。機件使用一段長時間後, 灰塵和污垢會附著於物透鏡, 此時則用棉布塊來清潔透鏡表面。

14. 維修注意事項 (圖 1 8 和 1 9)

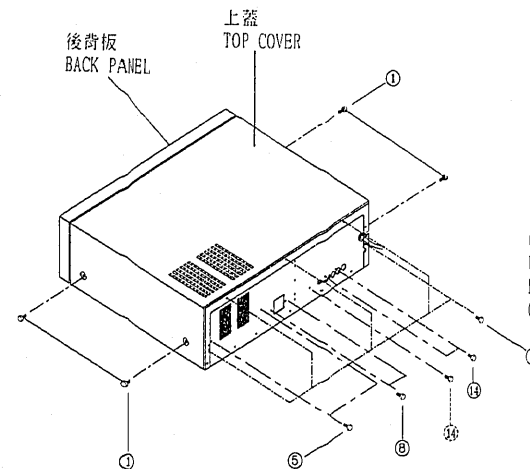
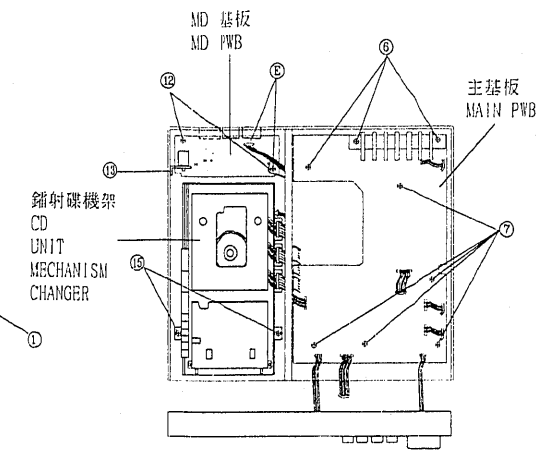
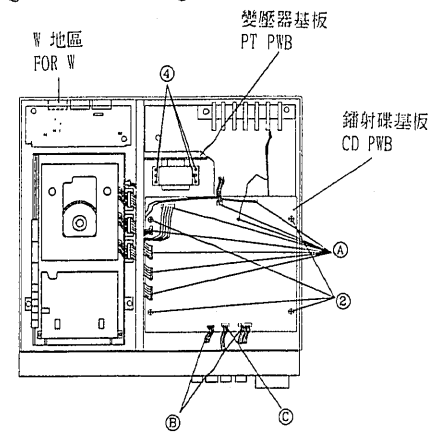
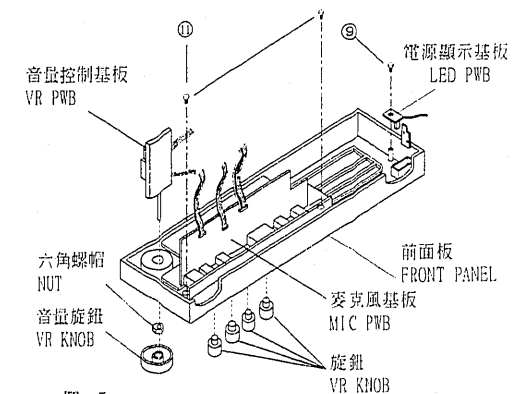
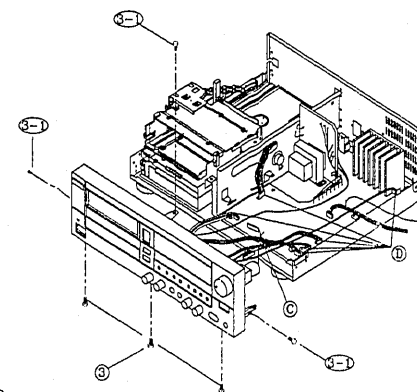
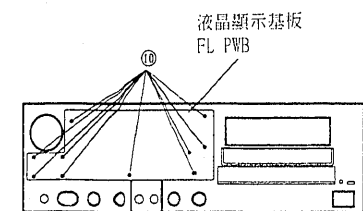
(1) 鐳射半導體

鐳射半導體對於靜電擊穿電流和突波電流相當敏感。因此勿用手指或用工具觸摸鐳射半導體終端或軟性印刷線路板。

電流和光強度的關係請見圖 1 8。當超過臨界電流時, 則強度變化相當大。

(2) 處理鐳射碟機構部份

使用如圖 1 9 的接地環來處理拾音機構部份或鐳射碟機構部份。(可用一般導線做成接地環使用)

圖 1
FIG.1圖 4
FIG.4圖 2
FIG.2圖 5
FIG.5圖 3
FIG.3圖 6
FIG.6

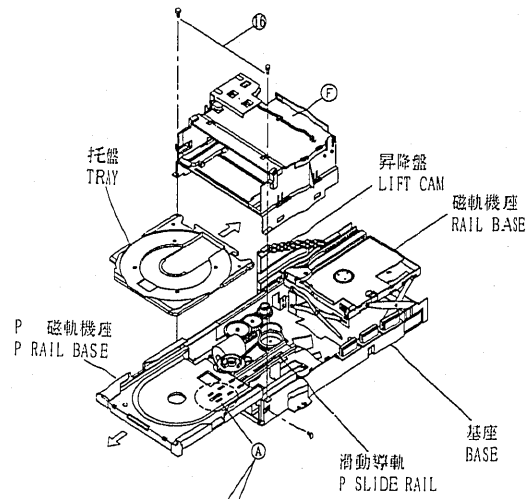


圖 7 FIG. 7

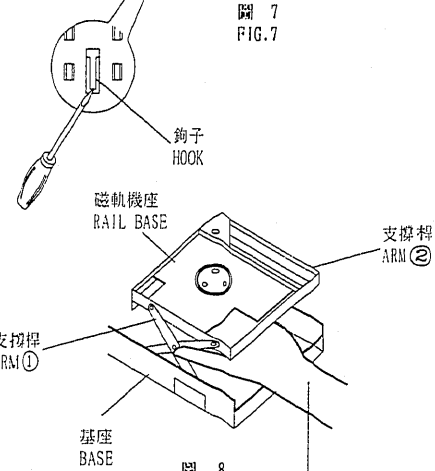


圖 8 FIG. 8

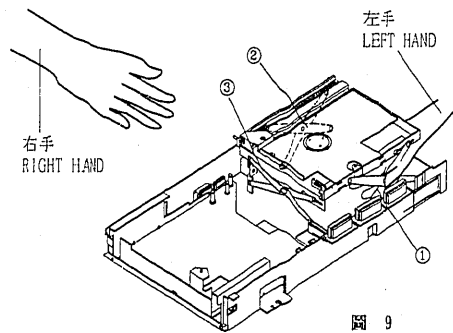


圖 9 FIG. 9

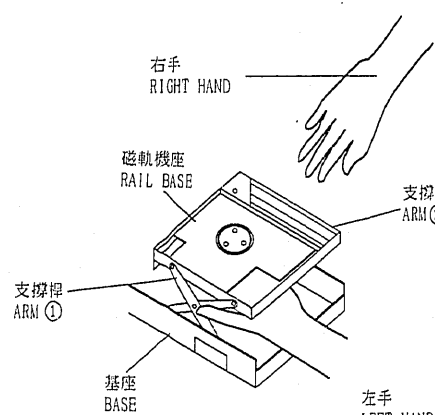


圖 10 FIG. 10

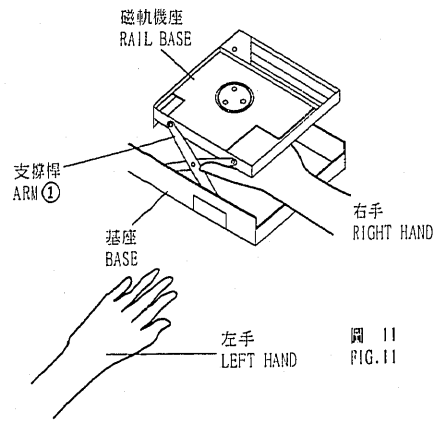


圖 11 FIG. 11

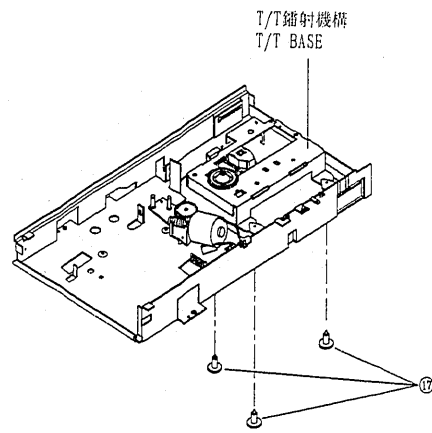


圖 12 FIG. 12

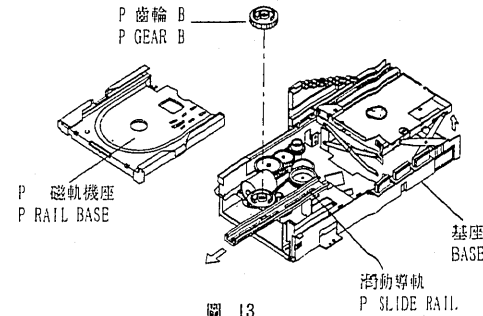


圖 13 FIG. 13

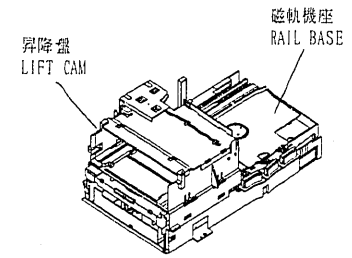


圖 16 FIG. 16

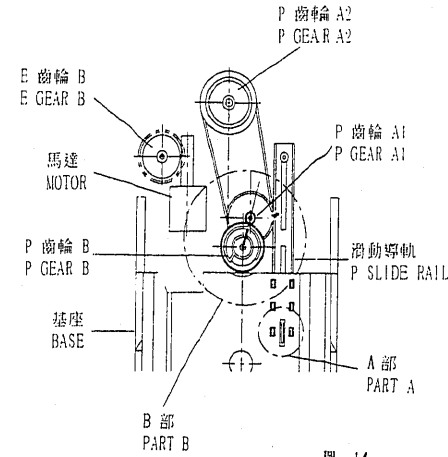


圖 14 FIG. 14

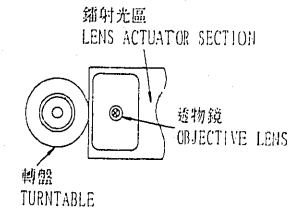


圖 17 FIG. 17

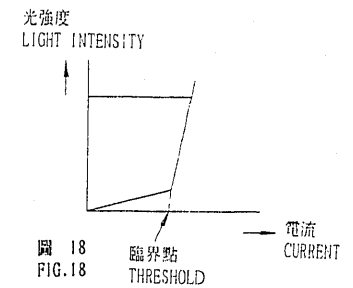


圖 18 FIG. 18

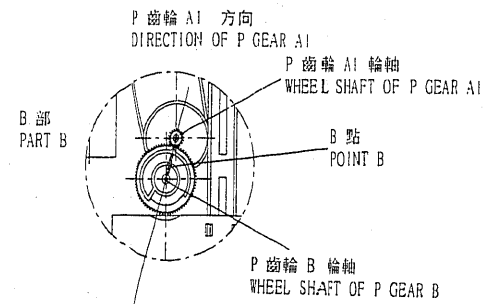


圖 15 FIG. 15

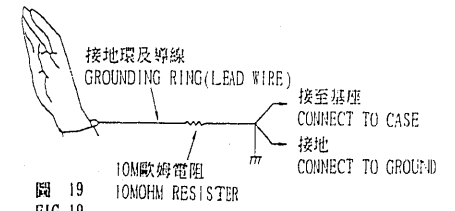
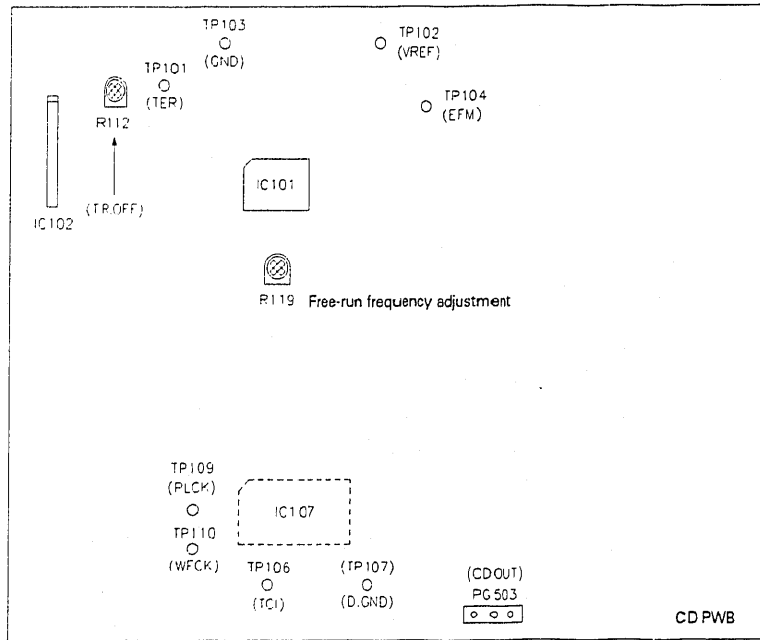


圖 19 FIG. 19

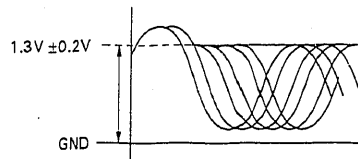
1. CD PLAYER SECTION

- Adjustment points



EFM level measurement

Connect the (+) side of the oscilloscope to TP104 (EFM), (-) side to TP102 (VR) and check that the level is within $1.3V \pm 0.2V$ as shown on the right.



Perform the following steps before starting adjustment.

- (1) Set the function to CD.

No.	Adjustment Item	Disc	Mode	Connection Terminal	Measuring Instrument	Adjustment Point	Remarks
1	Tracking offset adjustment	Not loaded	STOP	TP101 (T.E.R) (+) TP102 (VR center) (-)	Oscilloscope	R112	[Note 1]
2	Free-run frequency adjustment	Not loaded	STOP	TP109 (PLCK) (+) TP107 (D.GND) (-)	Frequency counter	R119	[Note 2]

[Note 1]

- (1) Perform adjustment in the Stop mode.
- (2) Connect the (-) side of oscilloscope to TP102 (VR center), (+) side to TP101 (T.E.R.) and adjust R112 so that the reading is 0 ± 5 mV.

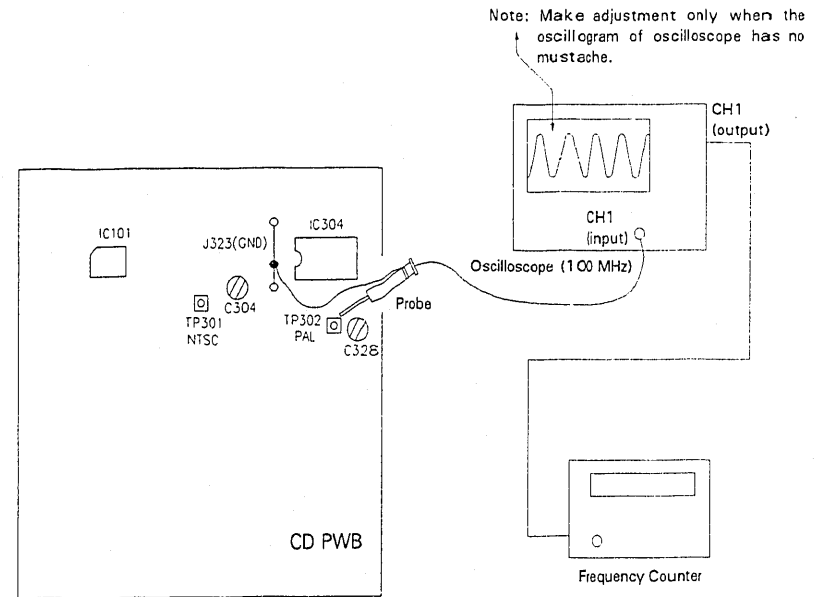
[Note 2]

Refer to the Test mode (set to the normal speed mode).

- (1) Perform adjustment in the Stop mode.
- (2) Connect the (-) side of the frequency counter to TP107 (D.GND), (+) side to TP109 (PLCK) and adjust R119 so that the reading is 4.52 MHz ± 20 KHz.

2. CDG VIDEO SECTION

- Sub carrier frequency adjustment



Perform the following steps before starting adjustment.

- (1) Set the function to CD KARAOKE.

Mode PAL [for W]

No.	Adjustment Item	Disc	Mode	Connection Terminal	Measuring Instrument	Adjustment Point	Remarks
1	Sub carrier frequency adjustment	Not loaded	STOP	TP302 (PAL) (+) J323 (GND) (-)	Oscilloscope and frequency counter	C328	[Note 1]

[Note 1]

- (1) Perform adjustment in the Stop mode.
- (2) Connect the (-) side of oscilloscope to J323 (GND), (+) side to TP302 (PAL) and adjust C328 so that the reading is 4.433619 MHz ± 50 Hz.

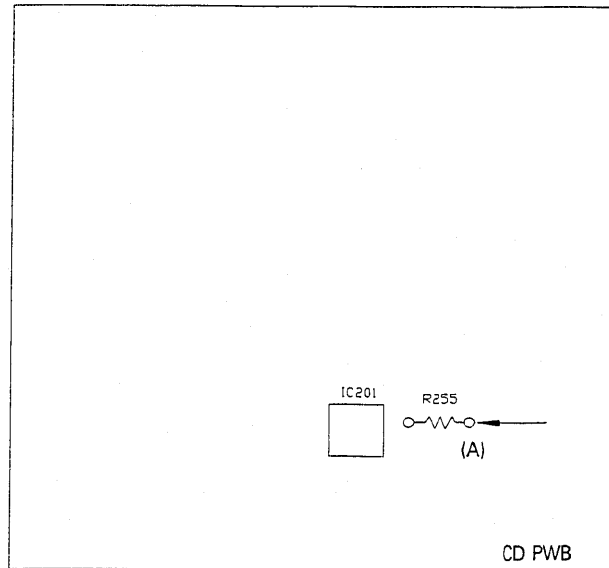
Mode NTSC [for T]

No.	Adjustment Item	Disc	Mode	Connection Terminal	Measuring Instrument	Adjustment Point	Remarks
1	Sub carrier frequency adjustment	Not loaded	STOP	TP301 (NTSC) (+) J323 (GND) (-)	Oscilloscope and frequency counter	C304	[Note 2]

[Note 2]

- (1) Perform adjustment in the Stop mode.
- (2) Connect the (-) side of oscilloscope to J323 (GND), (+) side to TP301 (NTSC) and adjust C304 so that the reading is 3.579545 MHz ± 50 Hz.

3. CD-G TEST MODE



(1) Three types of test signal: Grey scale
Colour bar
Tone vast

(2) Methods of confirming test signal:

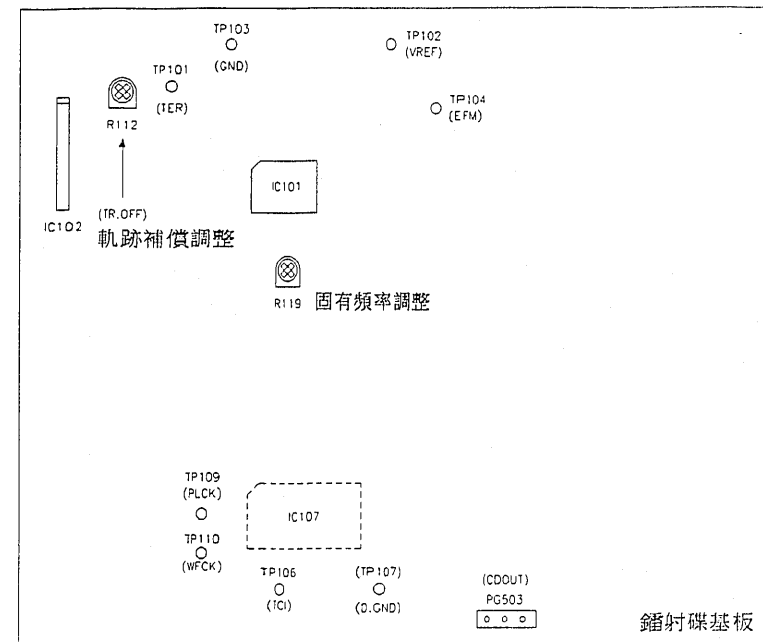
Power OFF: Connect short circuit between test R255 (A) and GND.

Power ON : Test signal is out from video terminal (Video out).
Switch of test signal is controlled by \llcorner , \lrcorner switch.

(3) Turn the power OFF to release test signal.

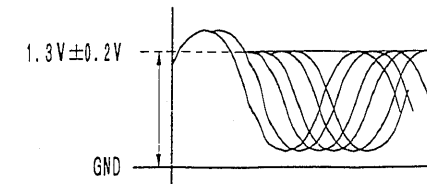
1. 鐳射碟部份

• 調整點



E FM水平測量

把示波器的正端連接至 TP 1 0 4 端子 (E FM)
，負端連接至 TP 1 0 2 端子 (V R) ，然後確認
水平是否如右圖所示，介於 1.3 伏特 \pm 0.2 伏特。



開始調整之前請先執行下列步驟。

(1) 把功能設定在鐳射碟

項次	調整項目	鐳射碟	方式	連接終端	測量儀器	調整點	備註
1	軌跡補償調整	未裝	停止	TP101正端 (T.E.R) TP102負端 (VREF中點)	示波器	R112	[附註1]
2	固有頻率調整	未裝	停止	TP109正端 (PLCK) TP107負端 (D.GND)	頻率計 數器	R119	[附註2]

[附註1]

(1) 在停止狀態時執行調整。

(2) 把示波器的負端連接至 TP 1 0 2 (VREF中點)，正端連接至 TP 1 0 1 (T.E.R)，而後
調整 R 1 1 2 使讀數成爲 0 ± 5 mV。

[附註2]

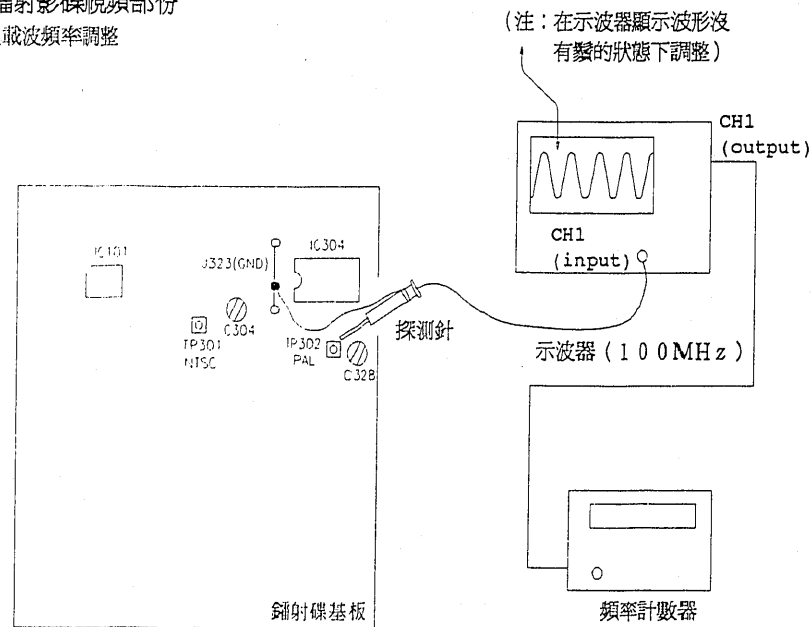
參考測試方式 (設定爲正常速度方式)

(1) 在停止方式時執行調整。

(2) 把頻率計數器的負端連接至 TP 1 0 7 (D.GND)，正端連接至 TP 1 0 9 (PLCK)，調整
R 1 1 9 使讀數成爲 $4.52\text{MHz} \pm 20\text{KHz}$ 。

2. 鐳射影碟視頻部份

- 負載波頻率調整



開始啟動前請先執行下列步驟。

- (1) 把功能設定為鐳射碟卡拉OK (KARAOKE)。
PAL方式 [新加坡, 香港, 東南亞]

項次	調整項目	鐳射碟	方式	連接終端	測量儀器	調整點	備註
1	負載波頻率調整	未裝	停止	TP302正端 (PAL) J323接地 (GND)	示波器和頻率計數器	C328	[附註1]

[附註1]

- (1) 在停止方式下執行調整。
(2) 把示波器的負端連接至 J 3 2 3 接地 (GND)，正端連接至 TP 3 0 2 (PAL)，然後調整 C 3 2 8，使讀數成爲 $4.433619\text{MHz} \pm 50\text{Hz}$ 。

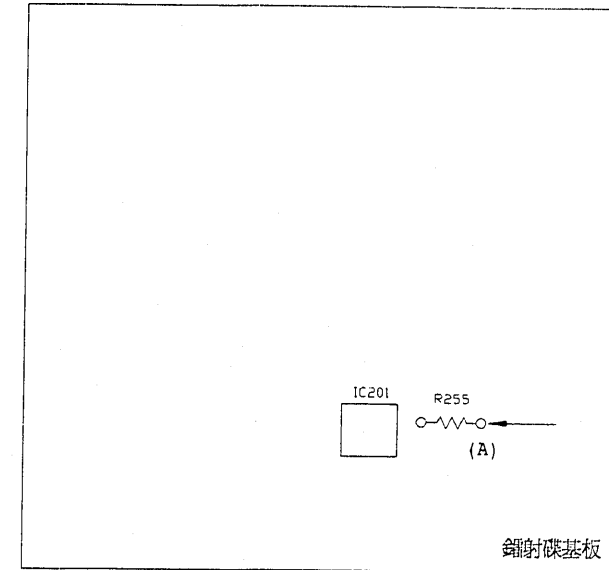
NTSC方式 [臺灣]

項次	調整項目	鐳射碟	方式	連接終端	測量儀器	調整點	備註
1	負載波頻率調整	未裝	停止	TP301正端 (NTSC) J323接地 (GND)	示波器和頻率計數器	C304	[附註2]

[附註2]

- (1) 在停止方式下執行調整。
(2) 把示波器的負端連接至 J 3 2 3 接地 (GND)，正端連接至 TP 3 0 1 (NTSC)，然後調整 C 3 0 4，使讀數成爲 $3.579545\text{MHz} \pm 50\text{Hz}$ 。

3. 鐳射影碟測試方式



- (1) 測試信號有三種：灰色階梯 (GREY SCALE)
色帶 (COLOUR BAR)
色調 (TONE VAST)

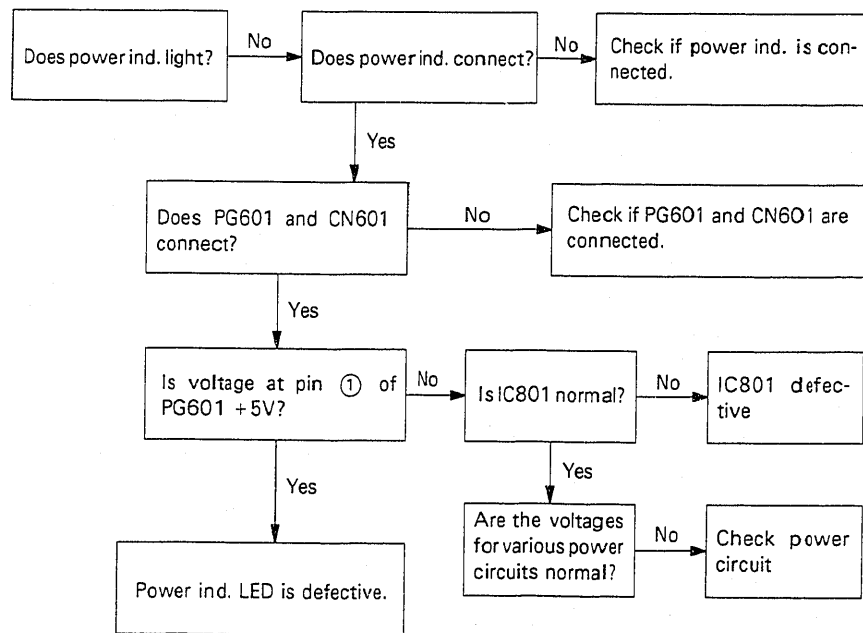
- (2) 測試信號確認方法：

電源關閉：在於 R 2 5 5 (A) 和接地 (GND) 間以線短路連接
電源開啓：測試信號由影像端子出力 (VIDEO OUT)
測試信號的切換由 \llcorner ， \lrcorner 開關控制

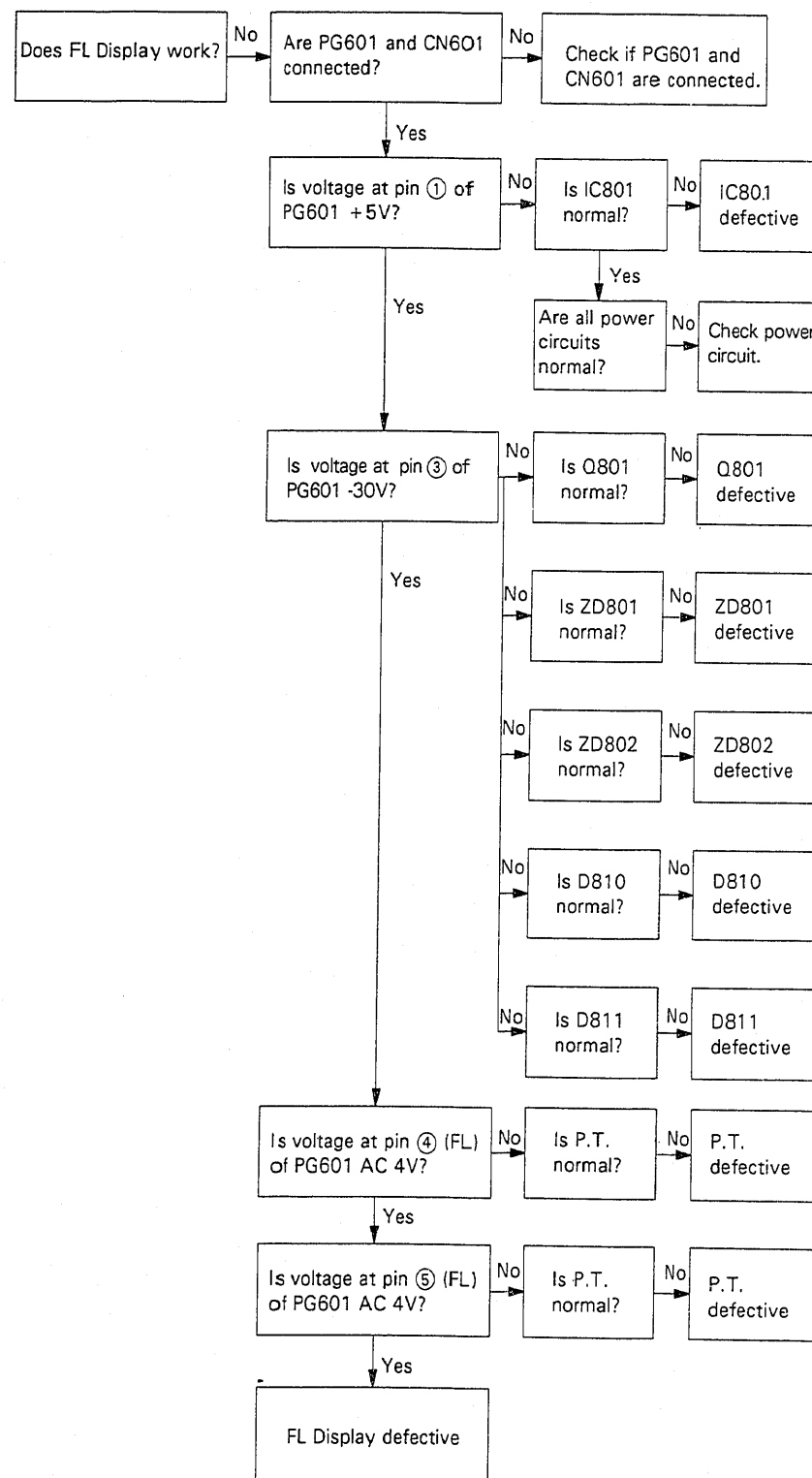
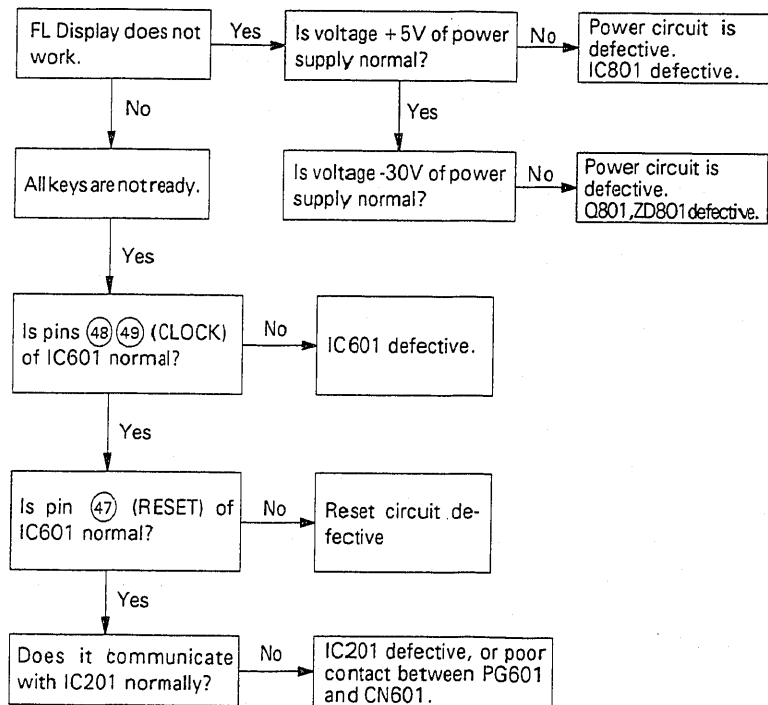
- (3) 解除測試信號只要關閉電源即可。

TROUBLESHOOTING

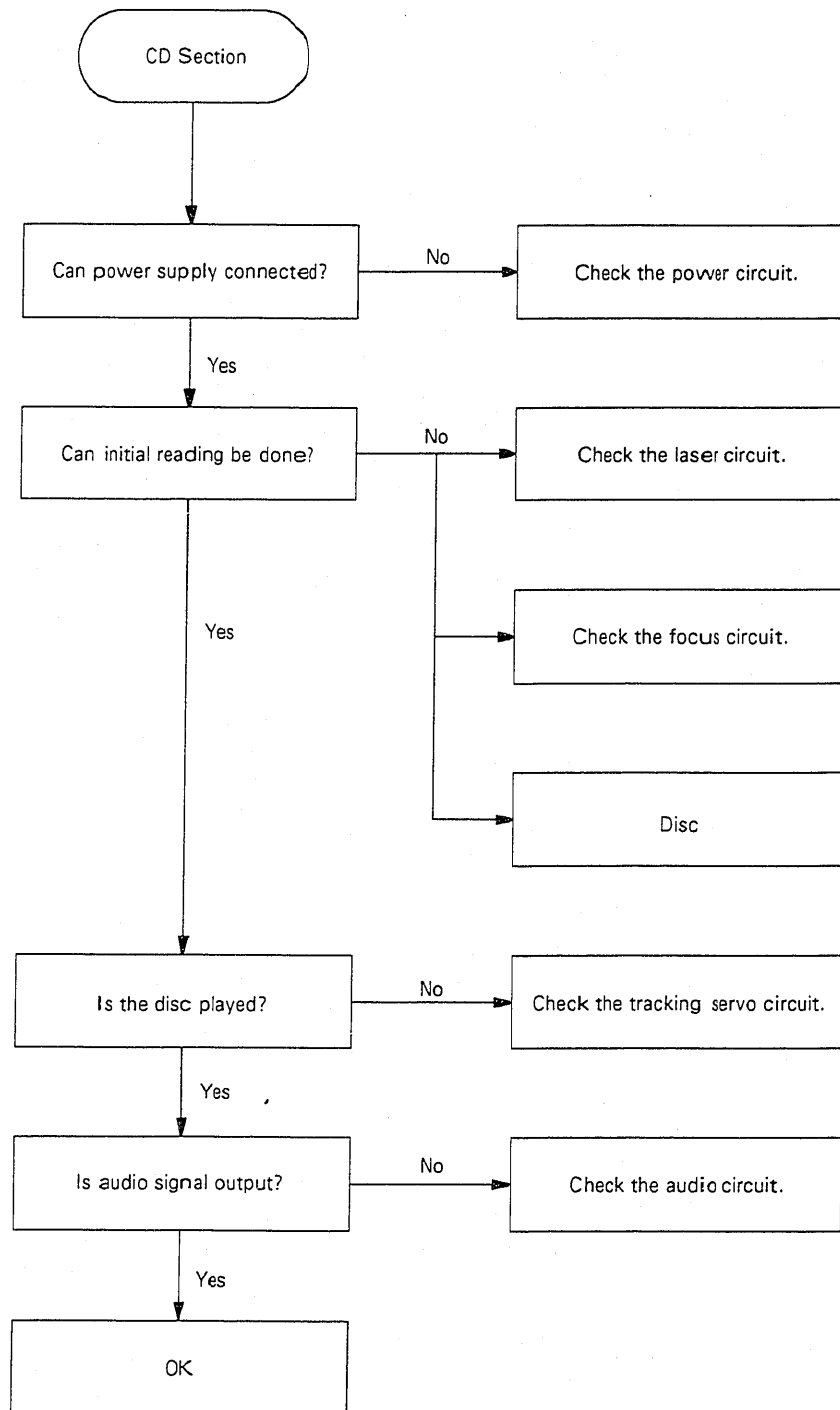
• Check Power Circuit



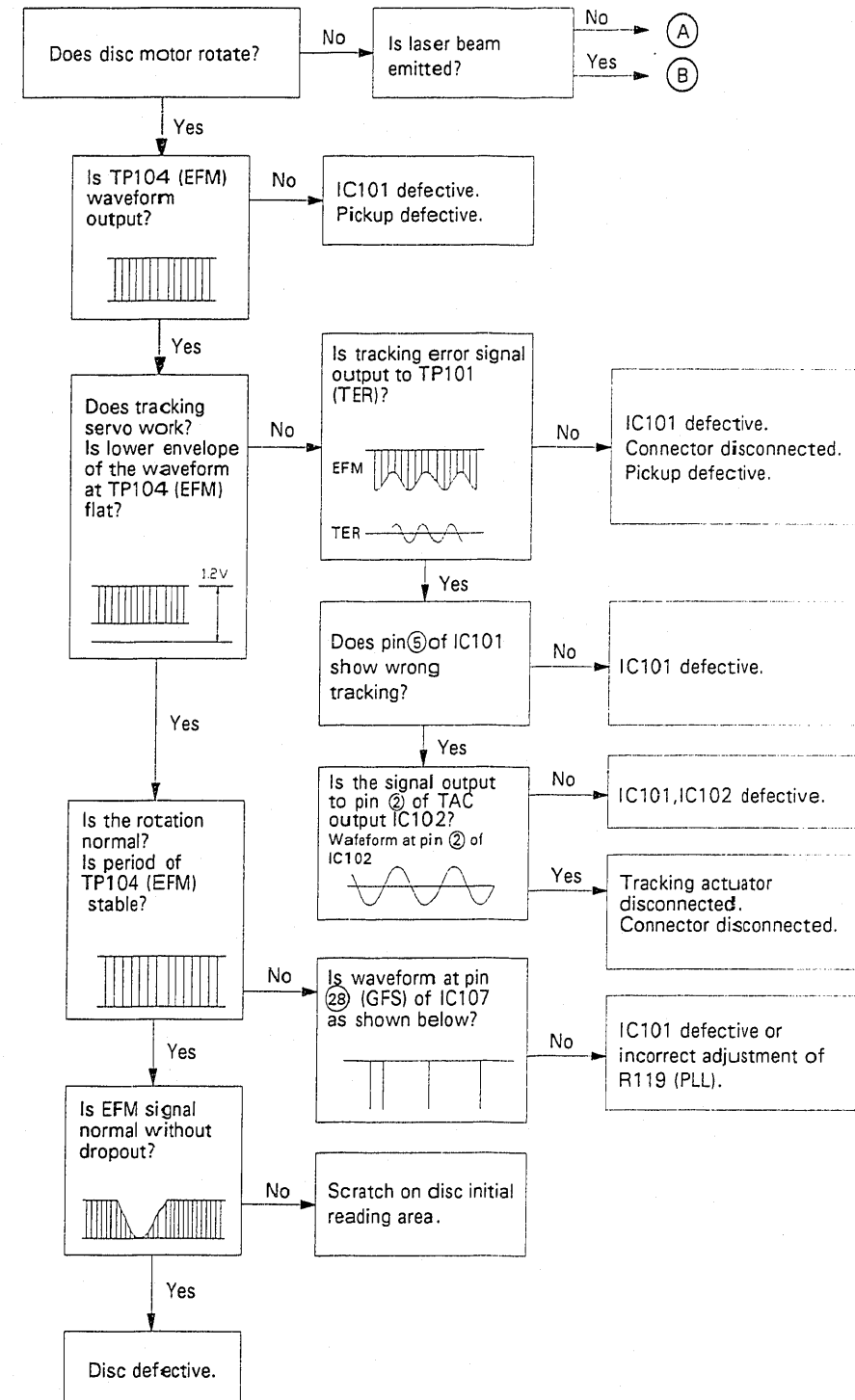
• Troubleshooting for Microprocessor

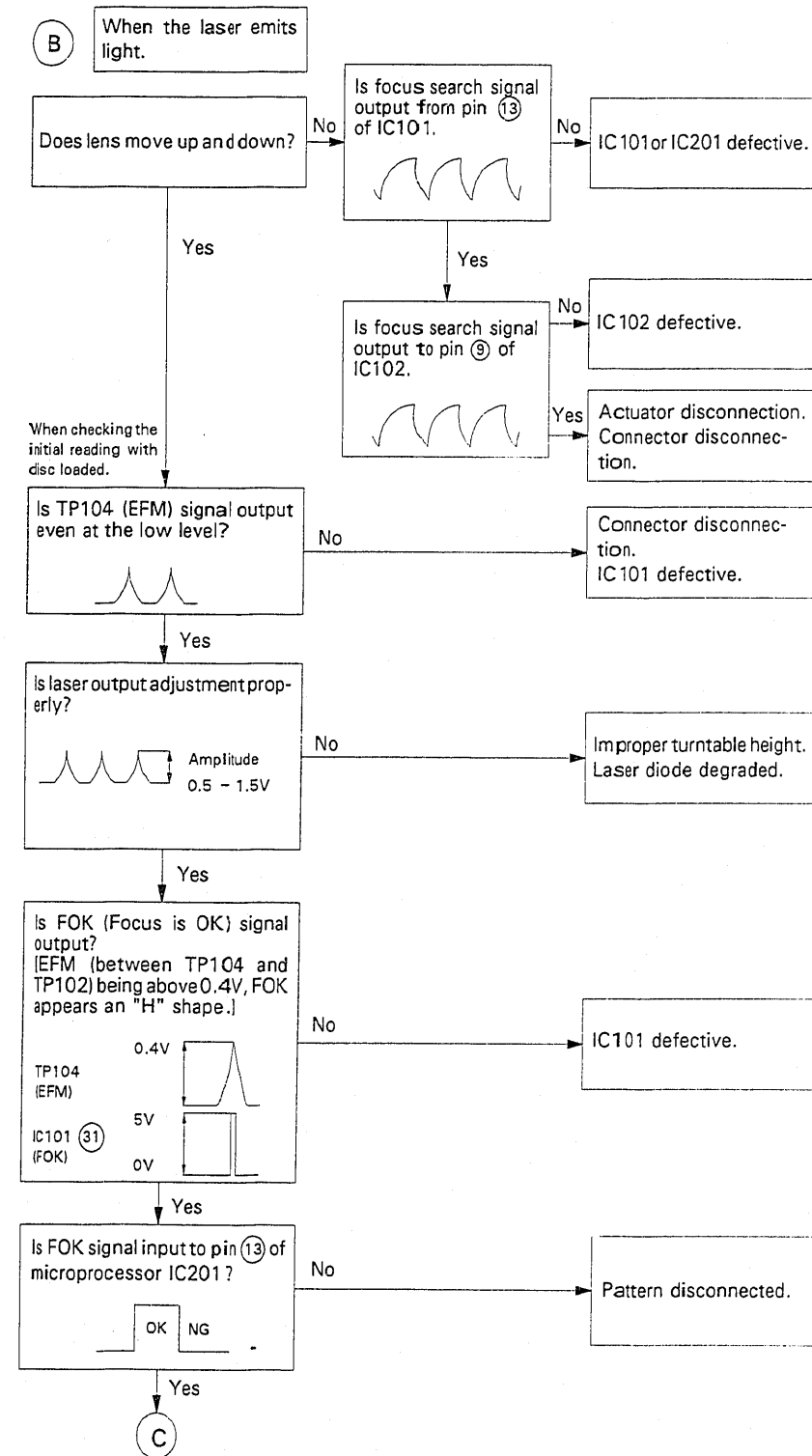
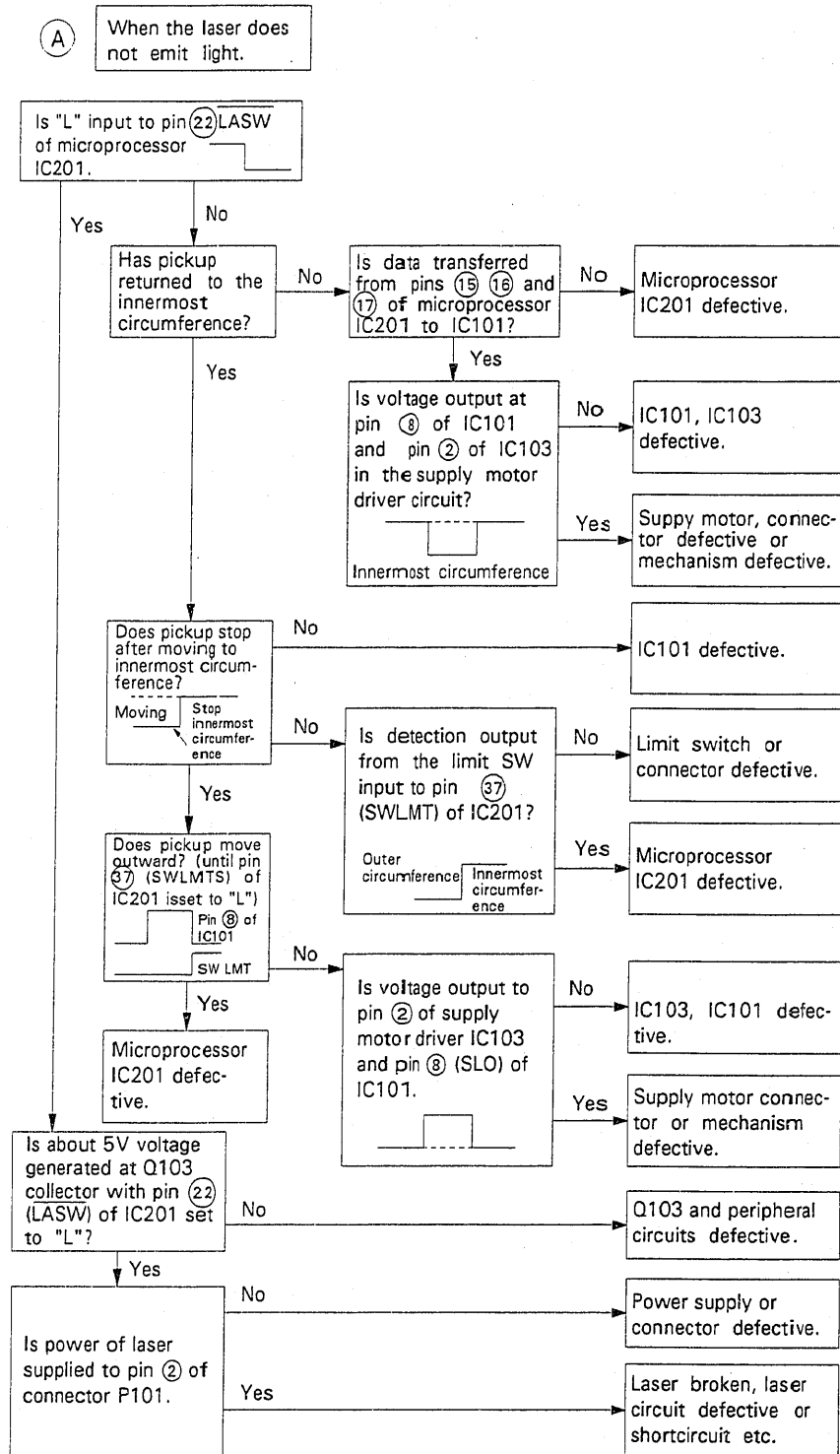


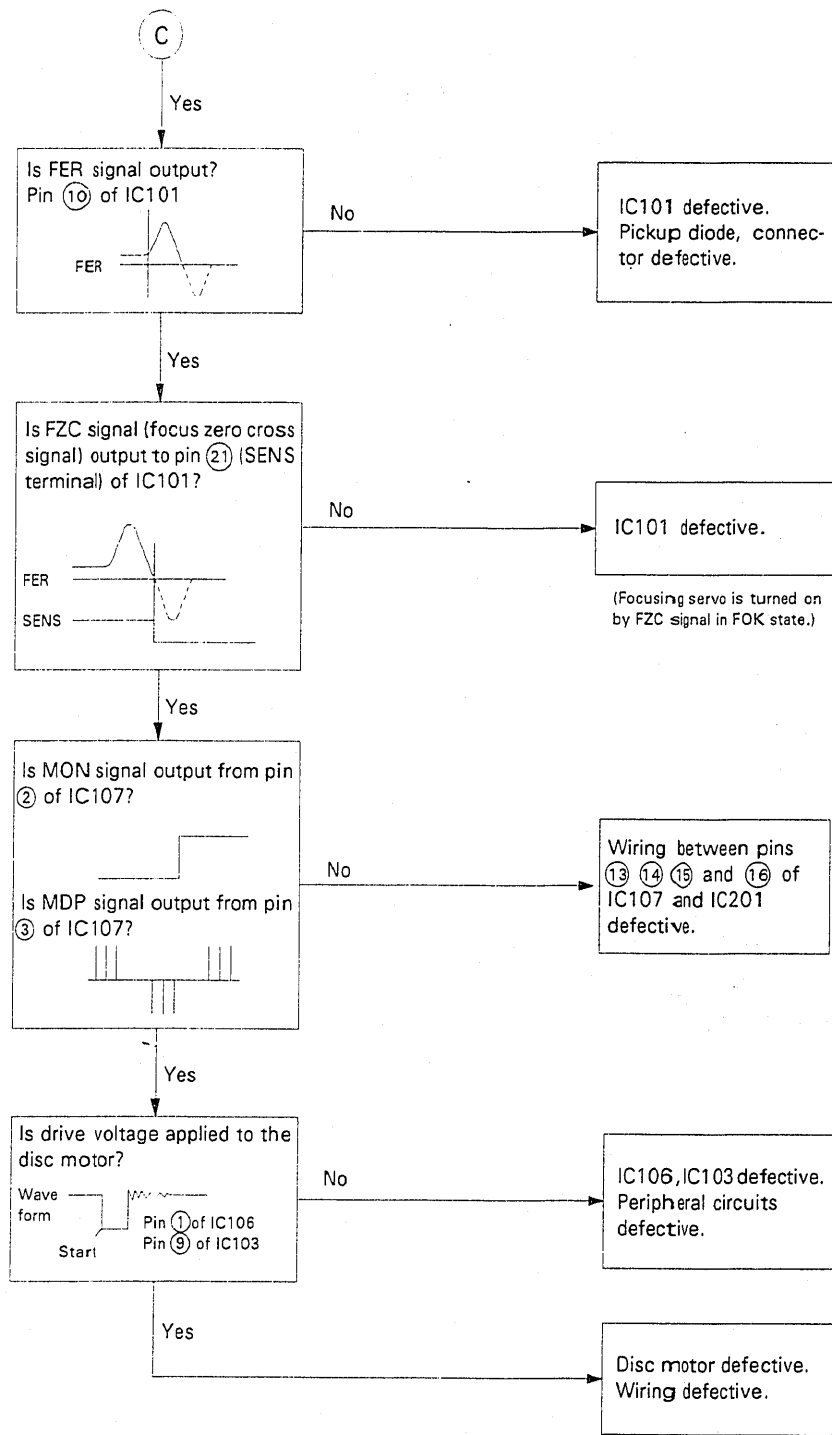
• CD



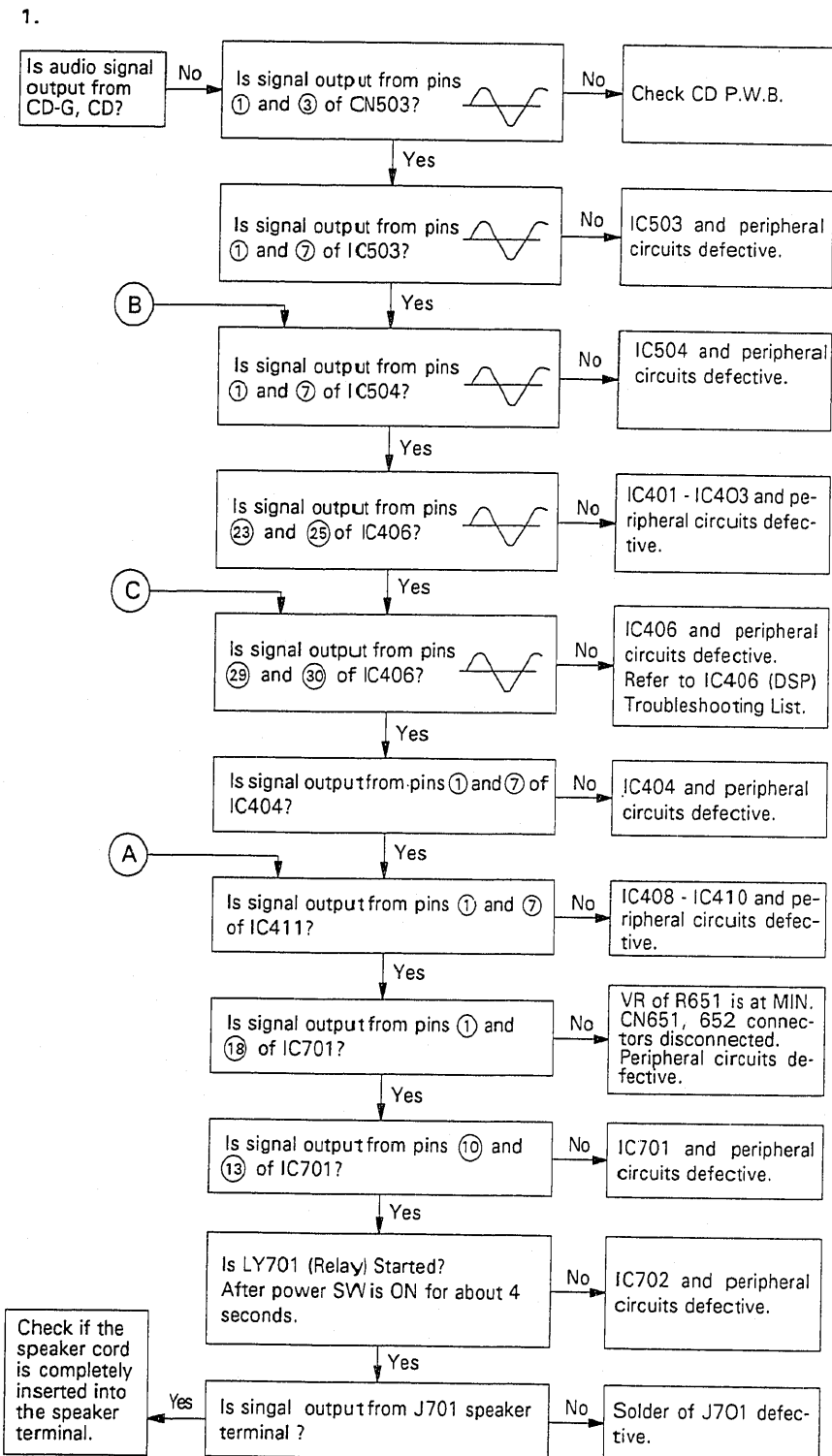
• When the initial reading cannot be done.



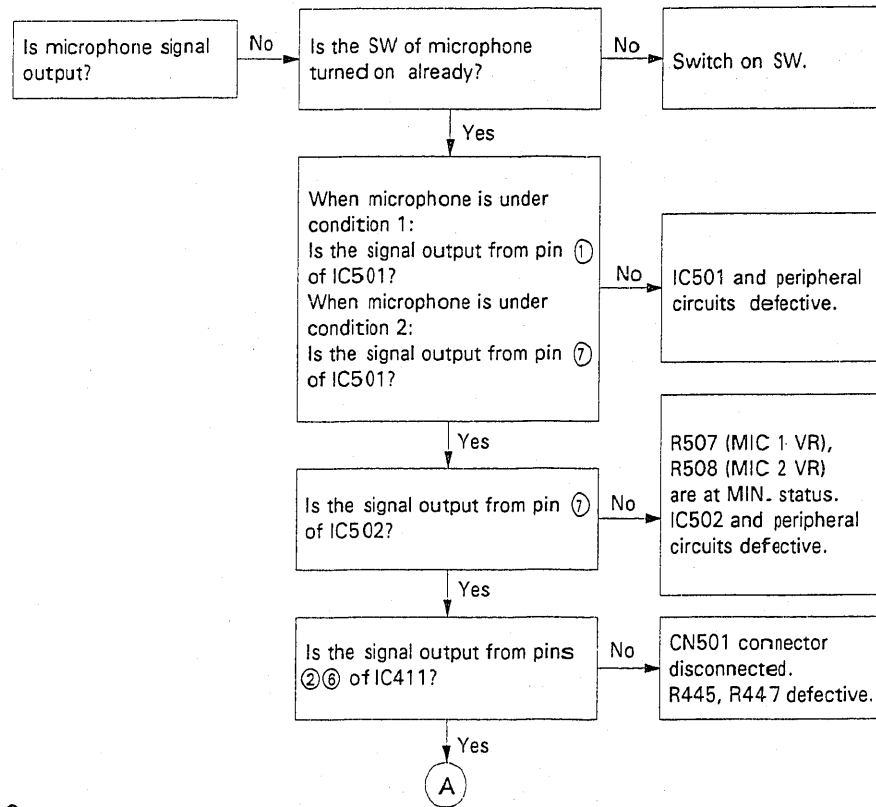




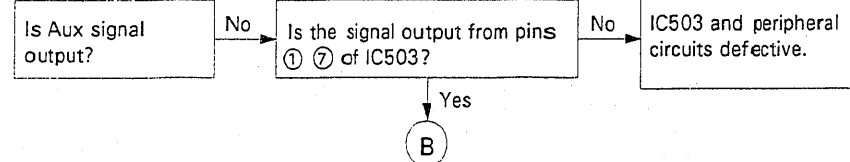
• Check Audio Circuit



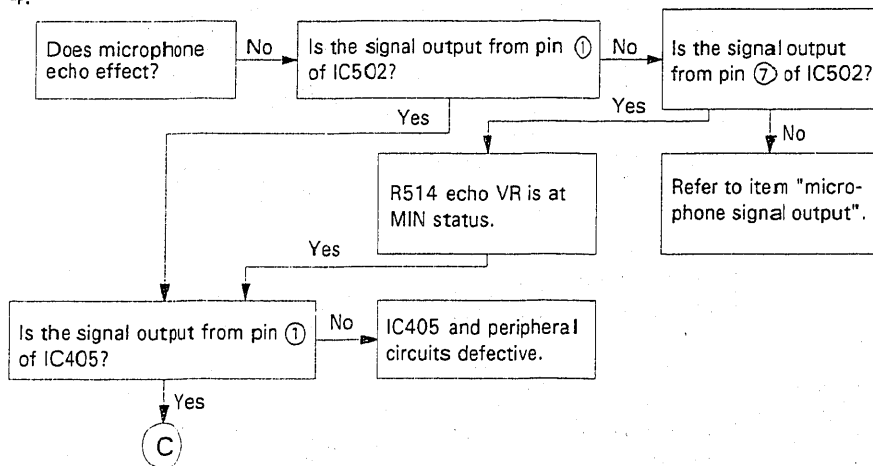
2.



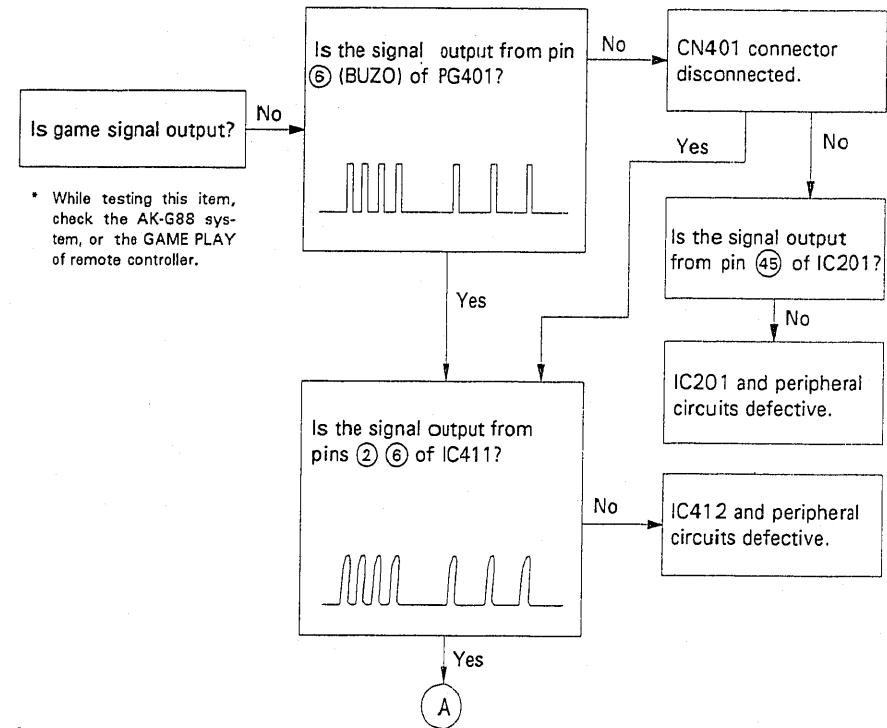
3.



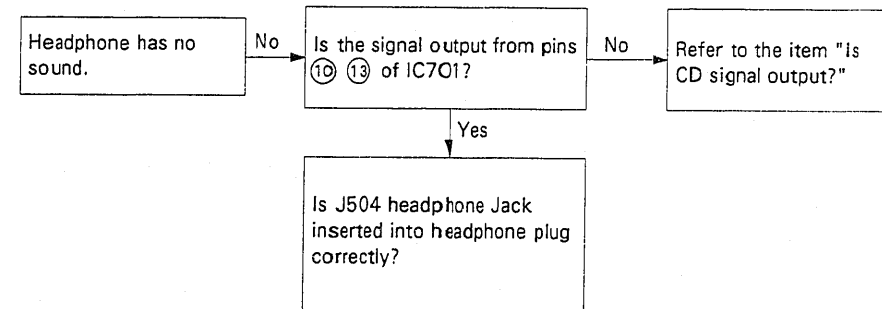
4.



5.

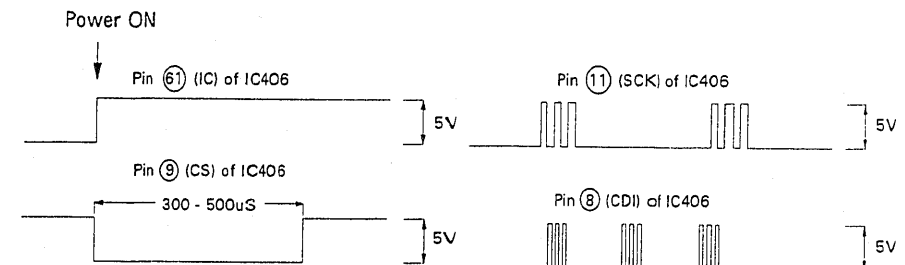


6.



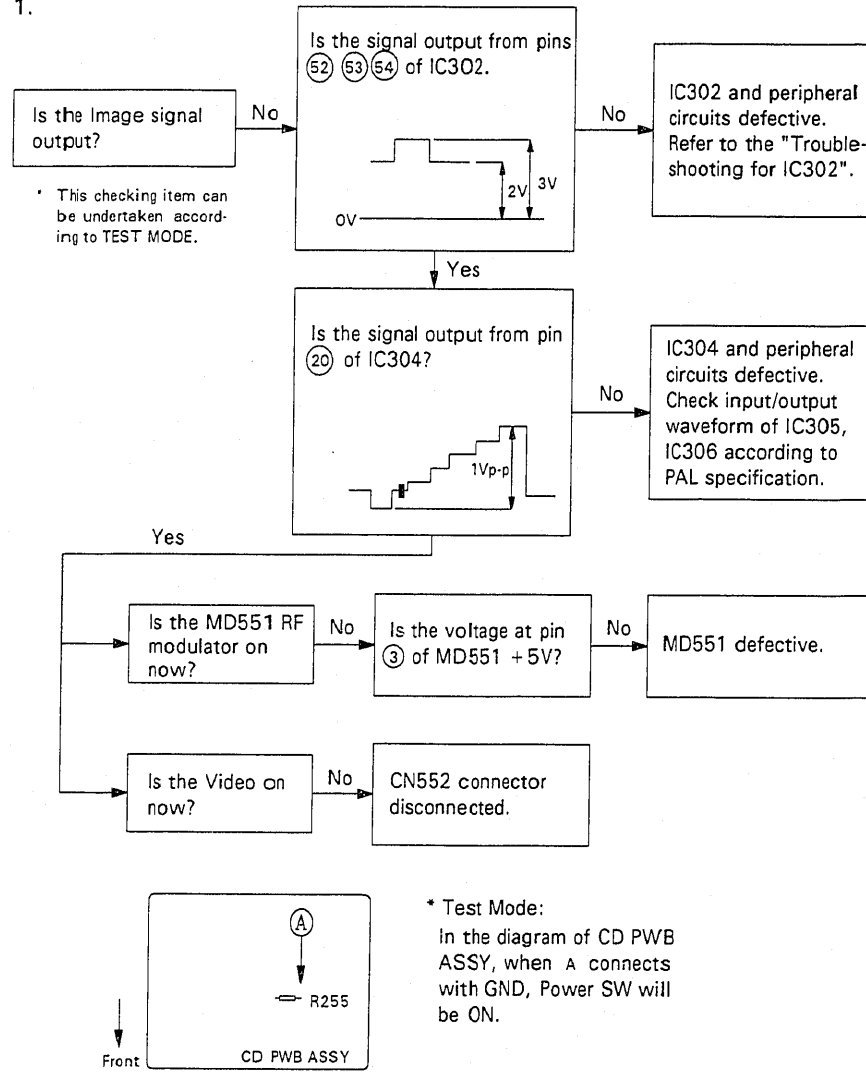
7. Troubleshooting for IC406 (DSP) (Way of checking)

This IC, based on microprocessor (IC201), will react by referring to the data of time constant. If this IC is defective, please check signal according to the following diagram.



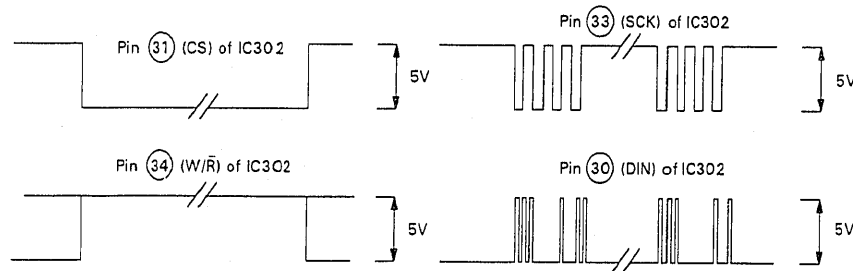
• Check Image Circuit

1.

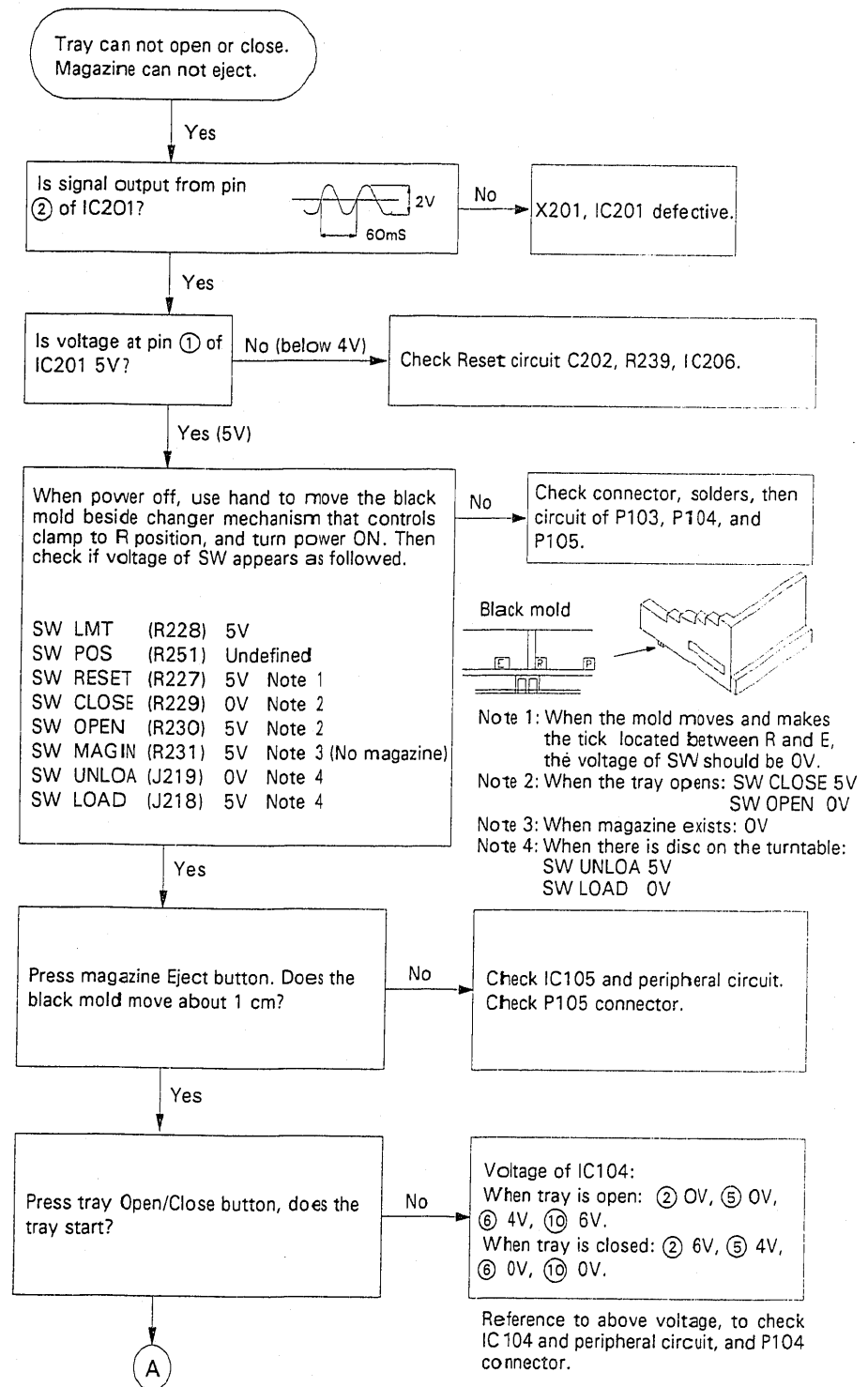


2. Troubleshooting for IC302 (CD-G) (Ways of Checking)

This IC, based on microprocessor (IC201), will react by referring to the data of time constant. If this IC is defective, please check the signal according to the following diagram.



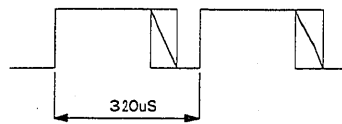
• Check Main Microprocessor



A

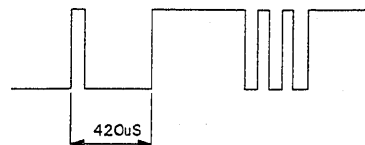
Check wave of terminal IC201. If the wave does not appear, check IC201 and peripheral circuit.

⑳ FL BUSY



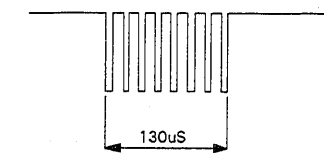
㉑ FL SIN

Normally, it is 0V. Waves appear when pressing the buttons.

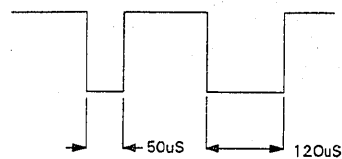


After pressing "CANCEL" button.

㉒ FL CLK

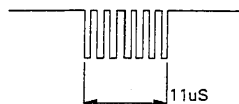


㉓ FL SOUT



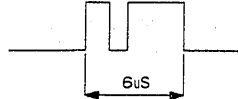
According to the data transmitted to FL tube, the wave will show as above. The above is the signal wave of front FL microprocessor.

㉔ SCK

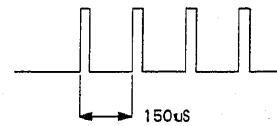


㉕ D OUT

It changes according to different data transmitted.

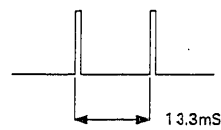


㉖ DSPCS

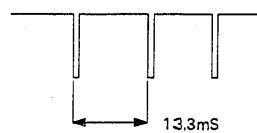


Above is the signal waves of DSP (IC405 YS 205). When press "Surround Mode" of remote controller, the waves will appear.

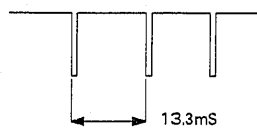
㉗ ㉘ NMI, SCOR



㉙



㉚ SOCK

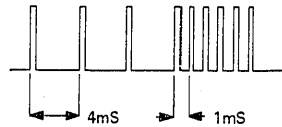


Above waves appear when disc is playing.

㉛ FOK

Focus locks
Focus down stops

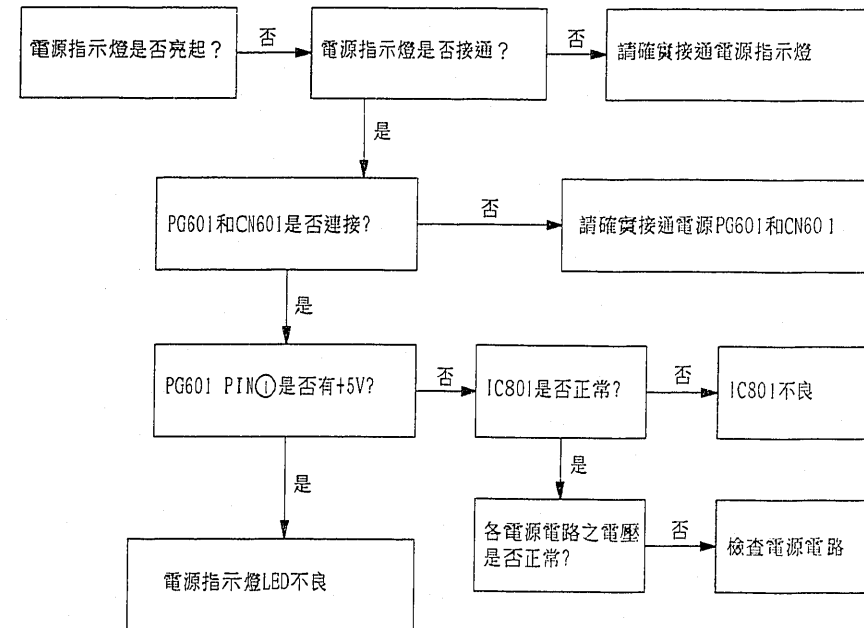
㉜ BUZO



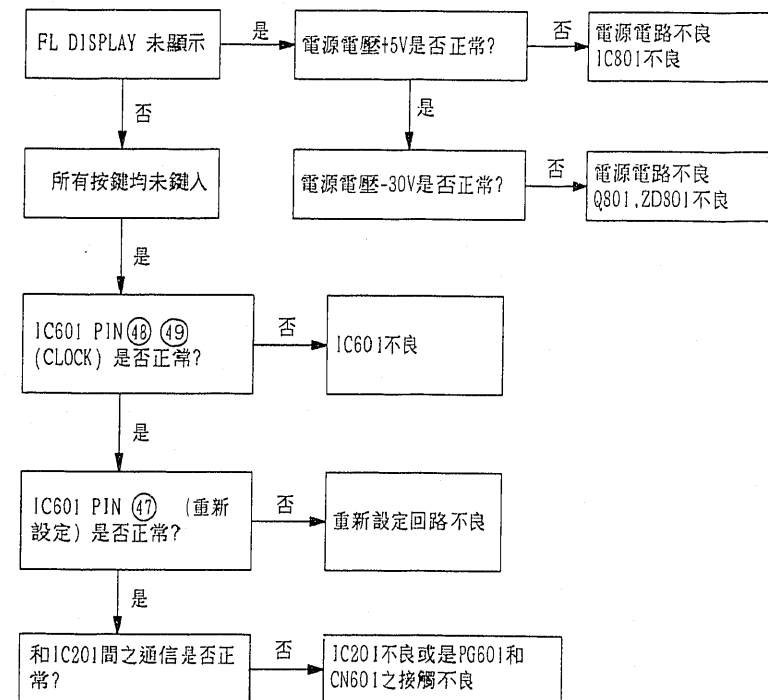
Above waves appear when game is playing.

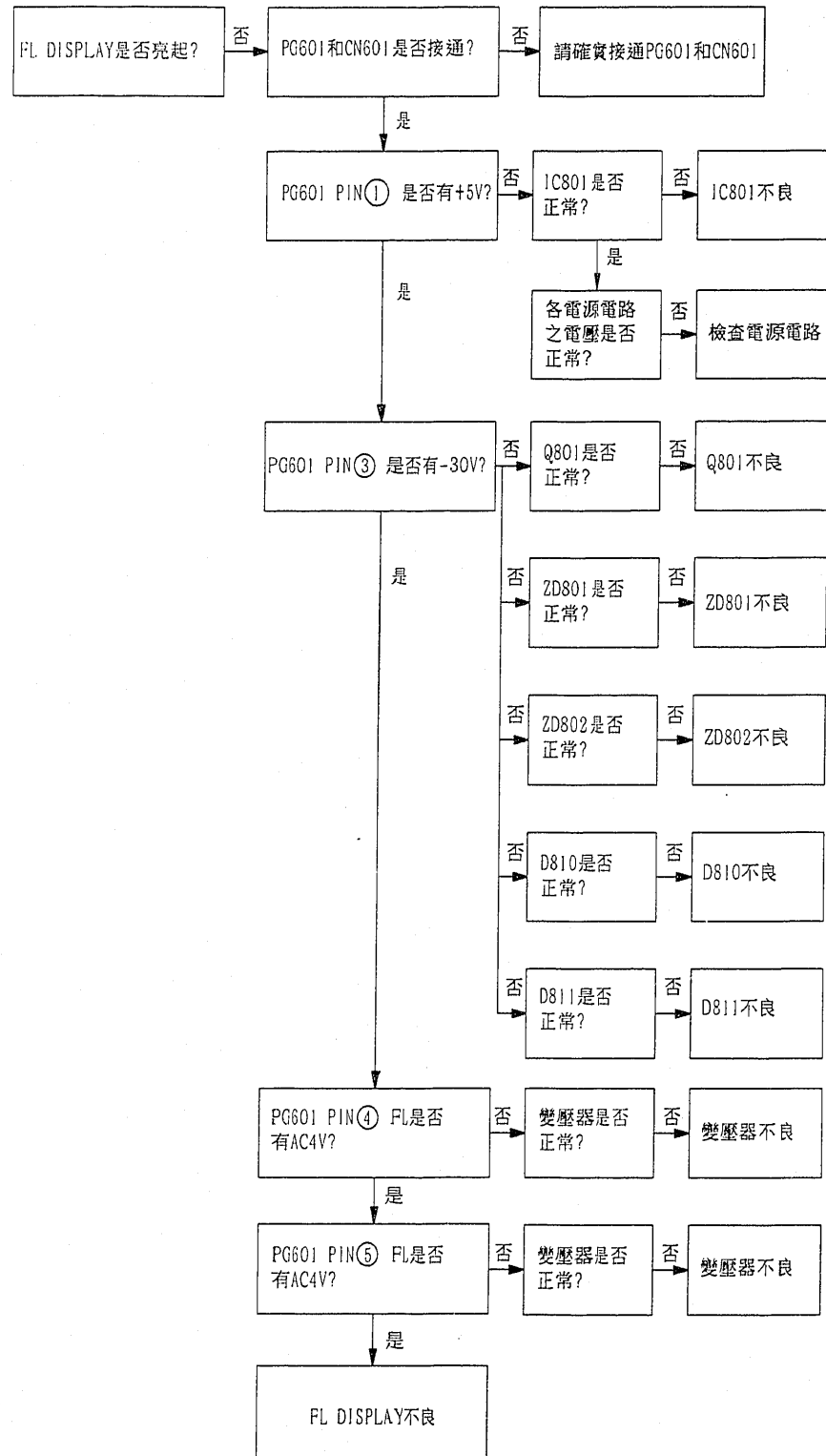
故障尋找

• 檢查電源電路

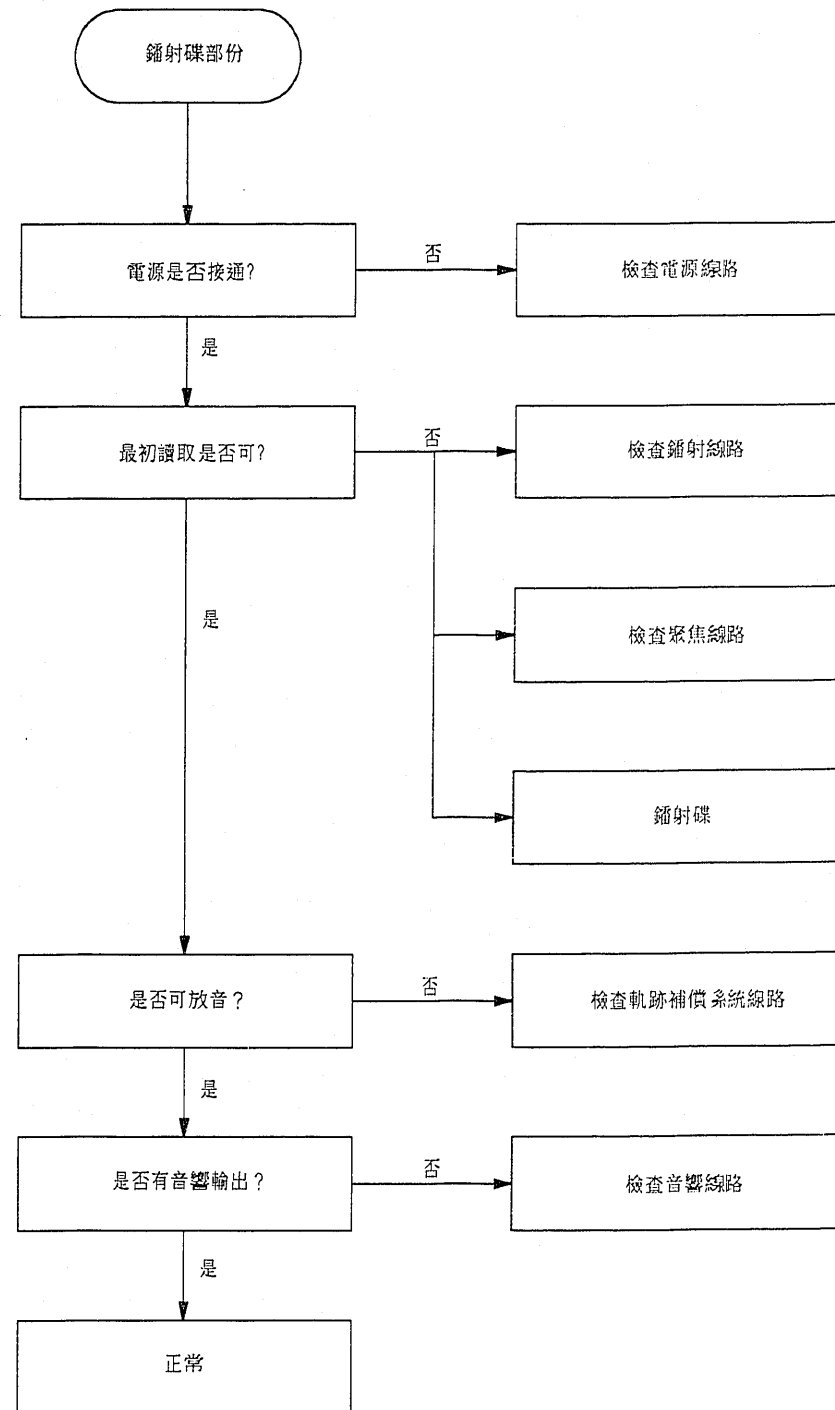


• 微處理器檢查故障表

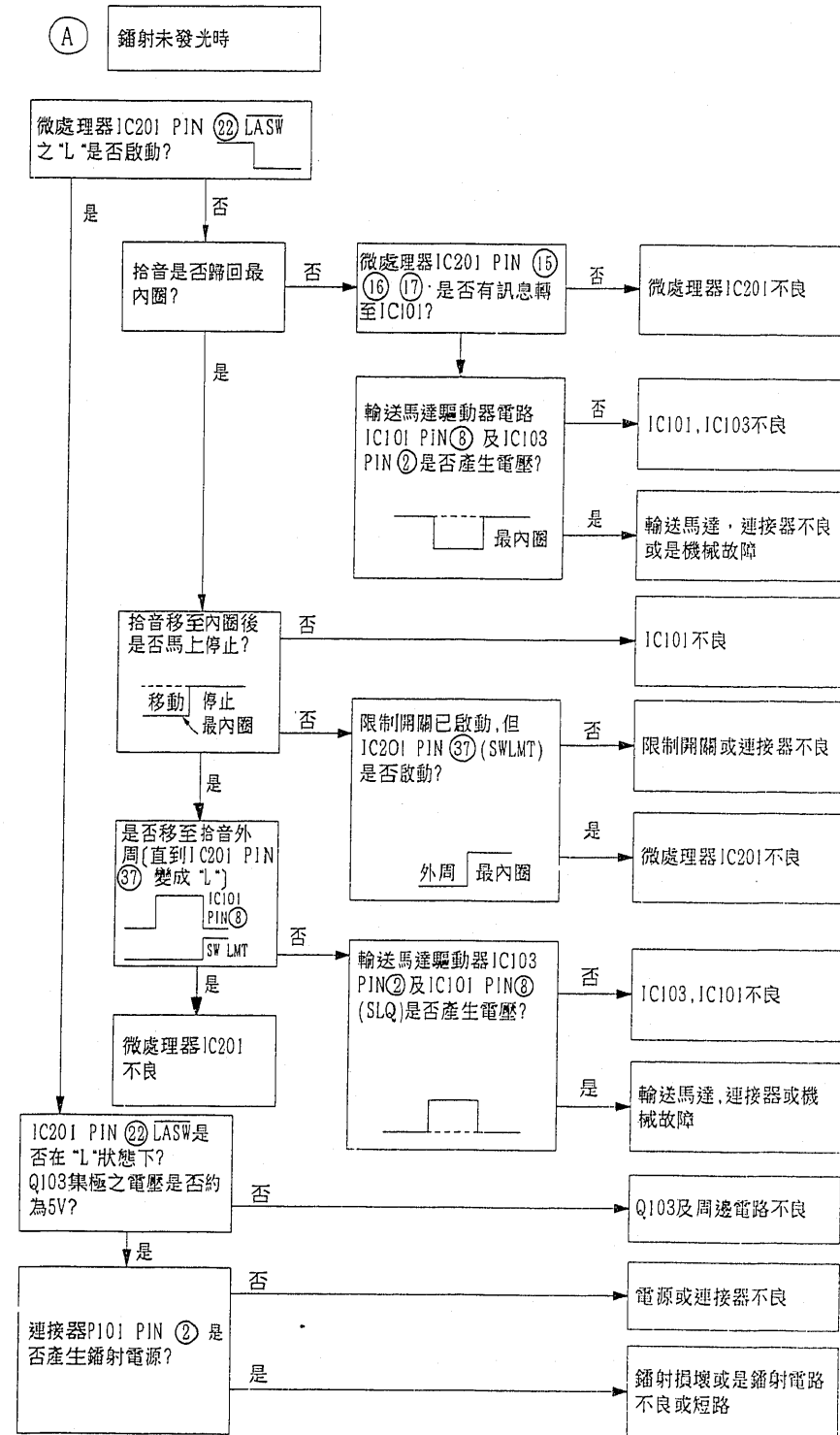
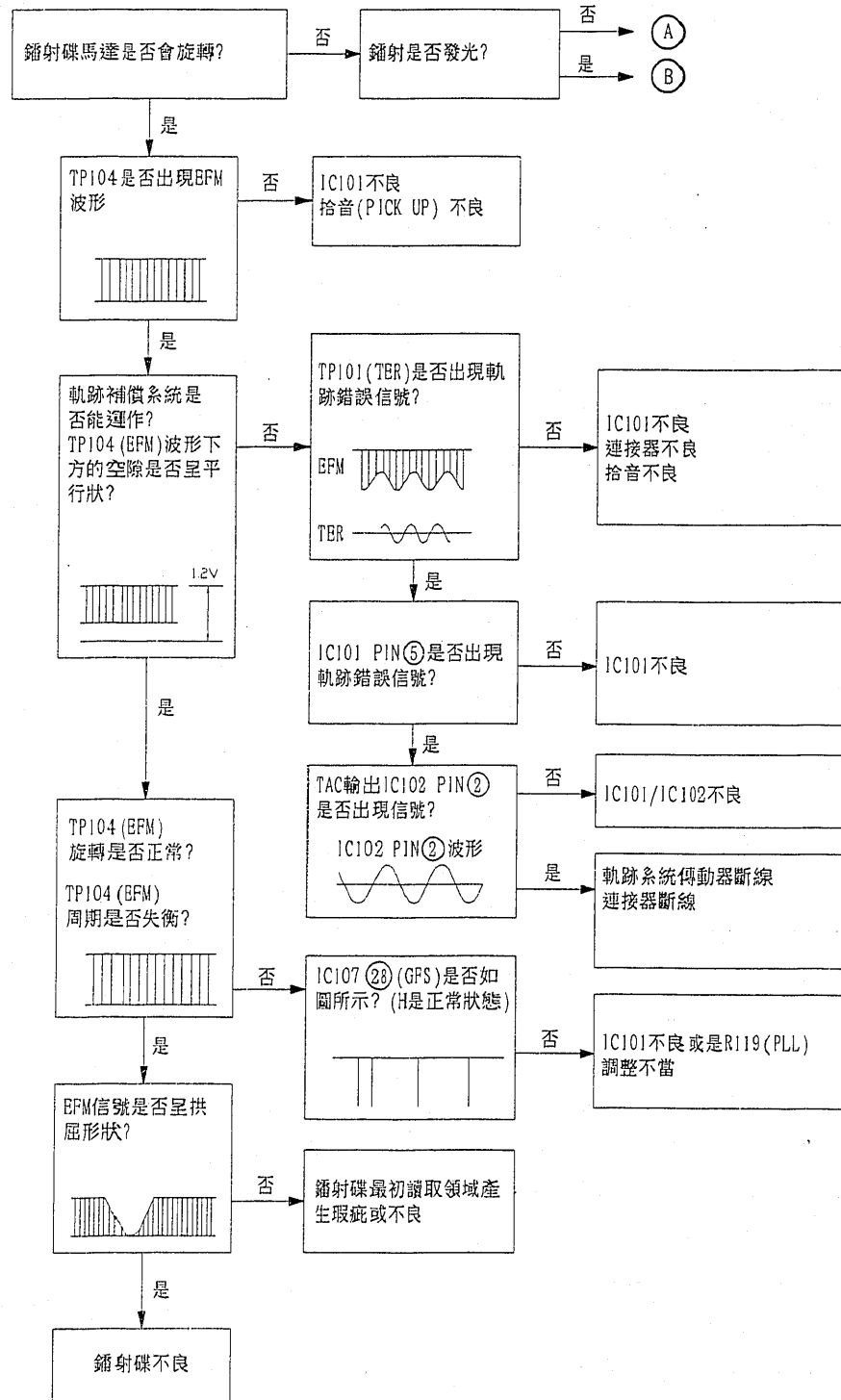


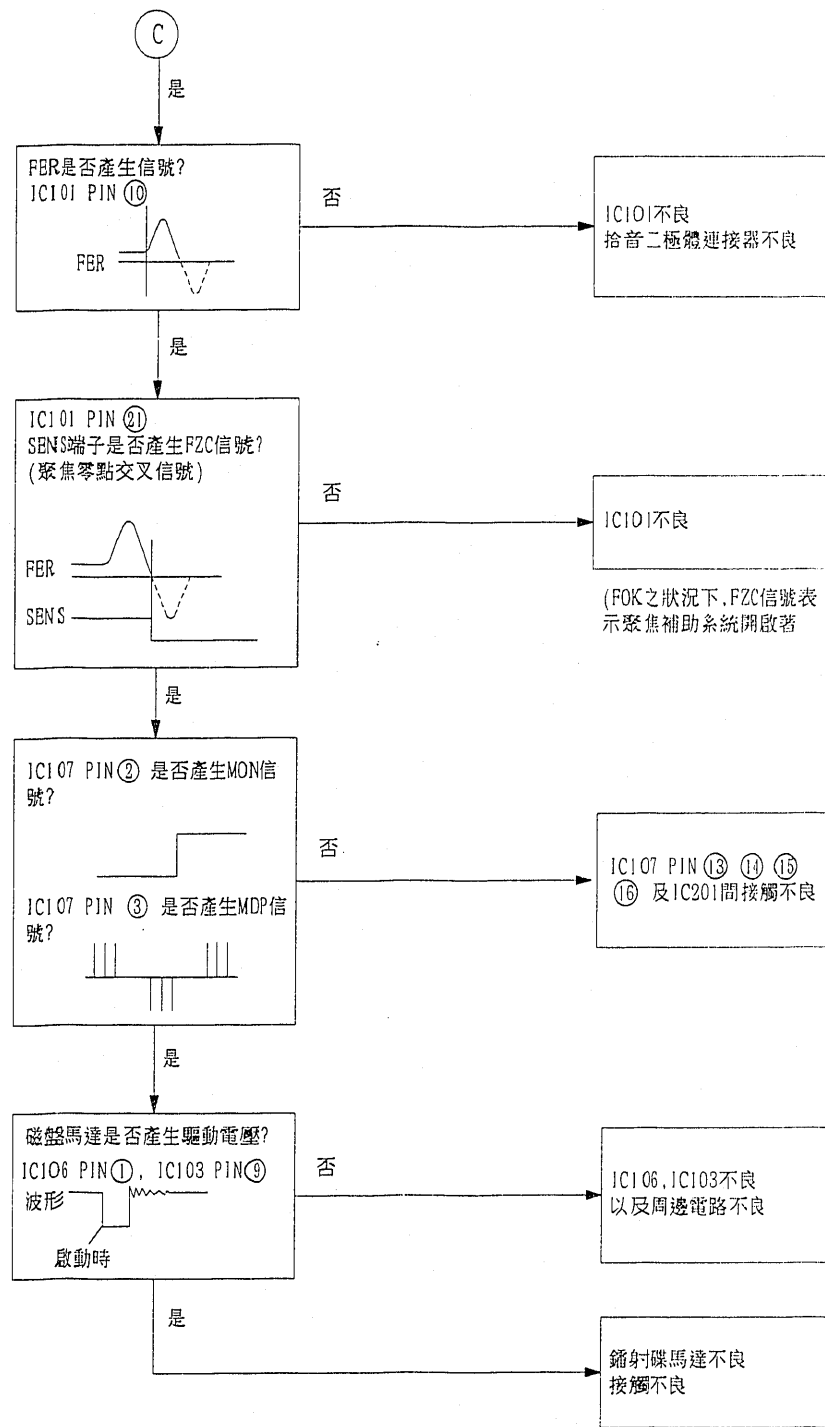
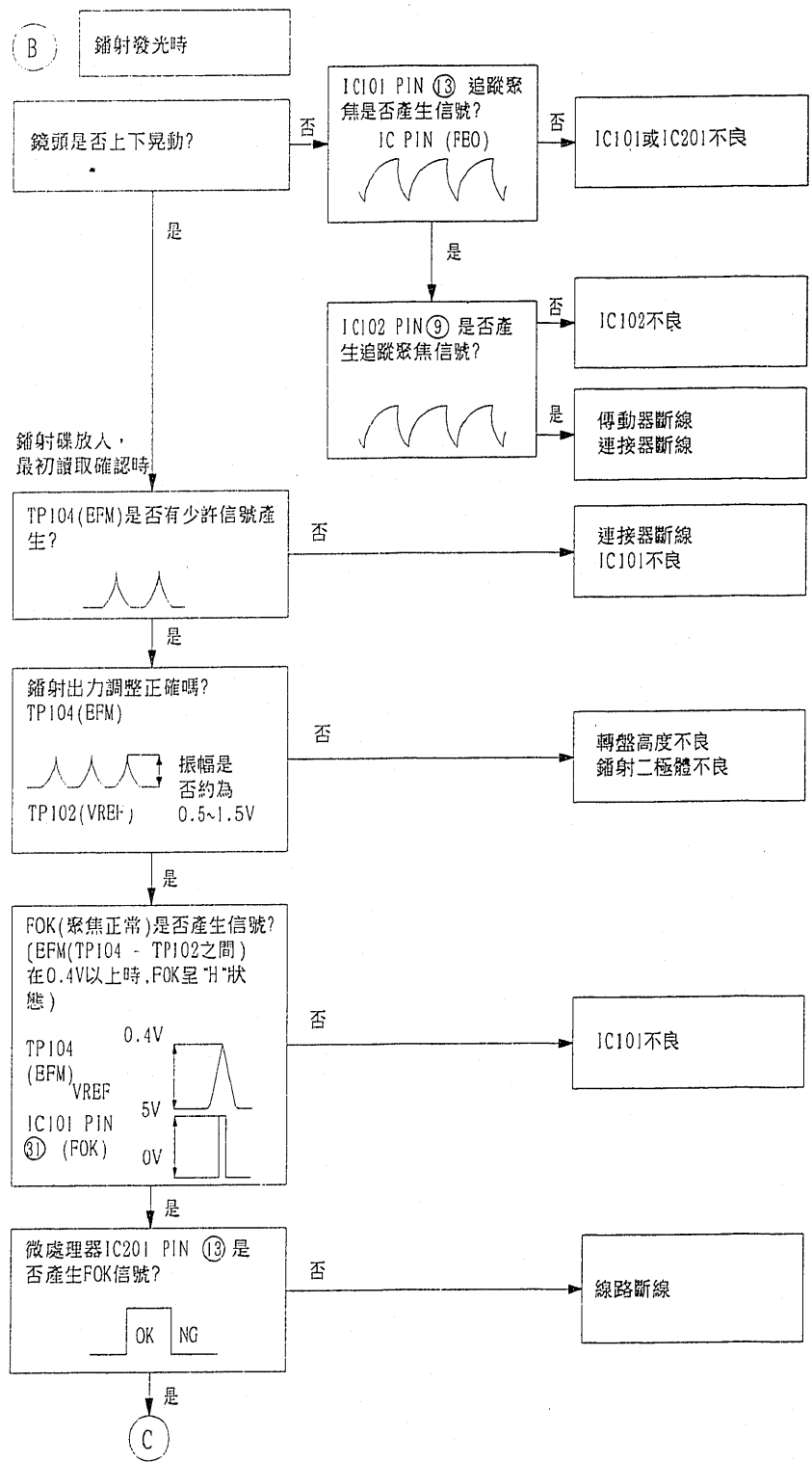


• 鐳射碟

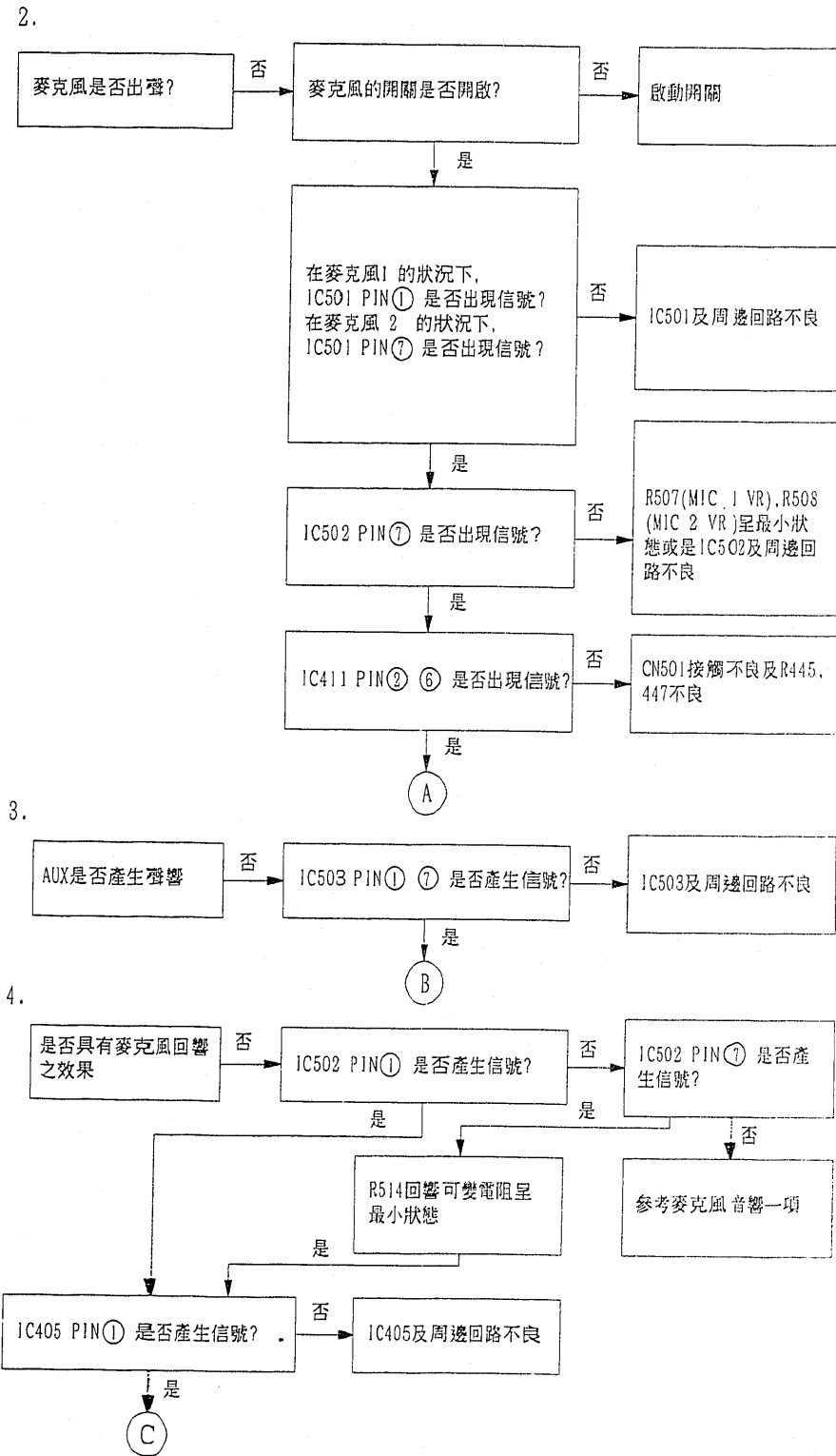
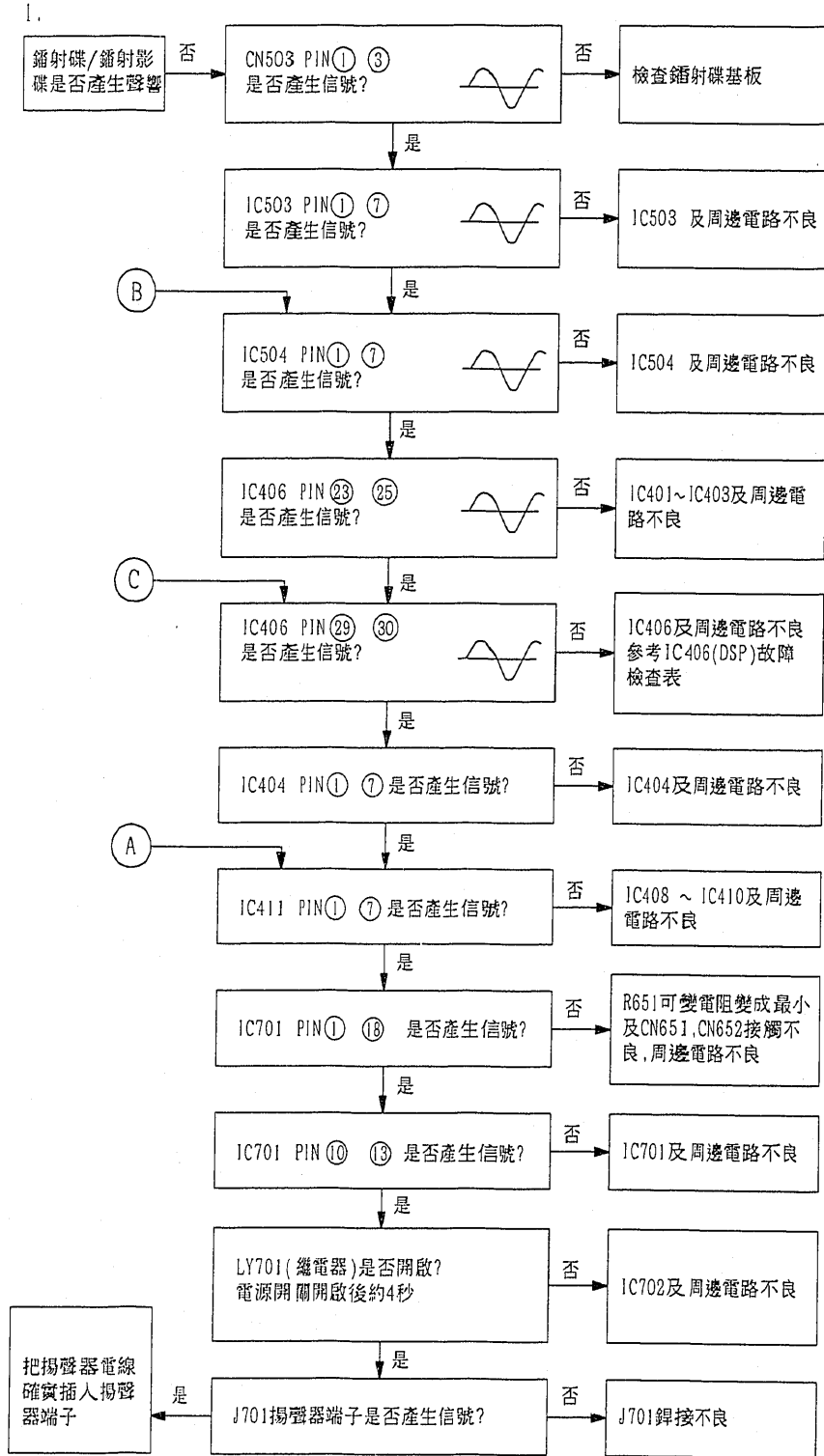


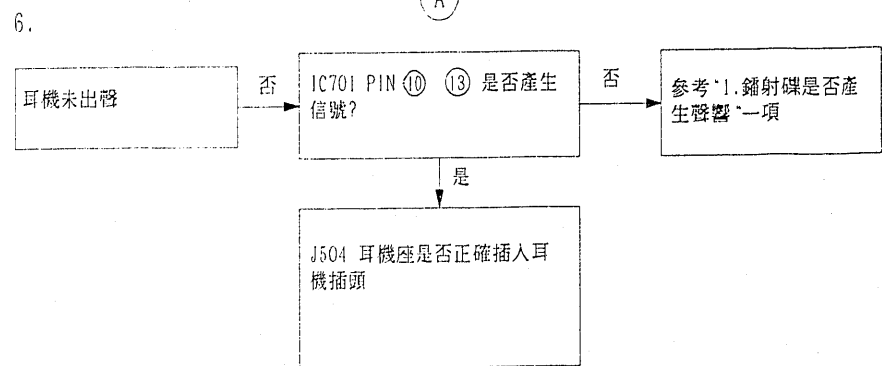
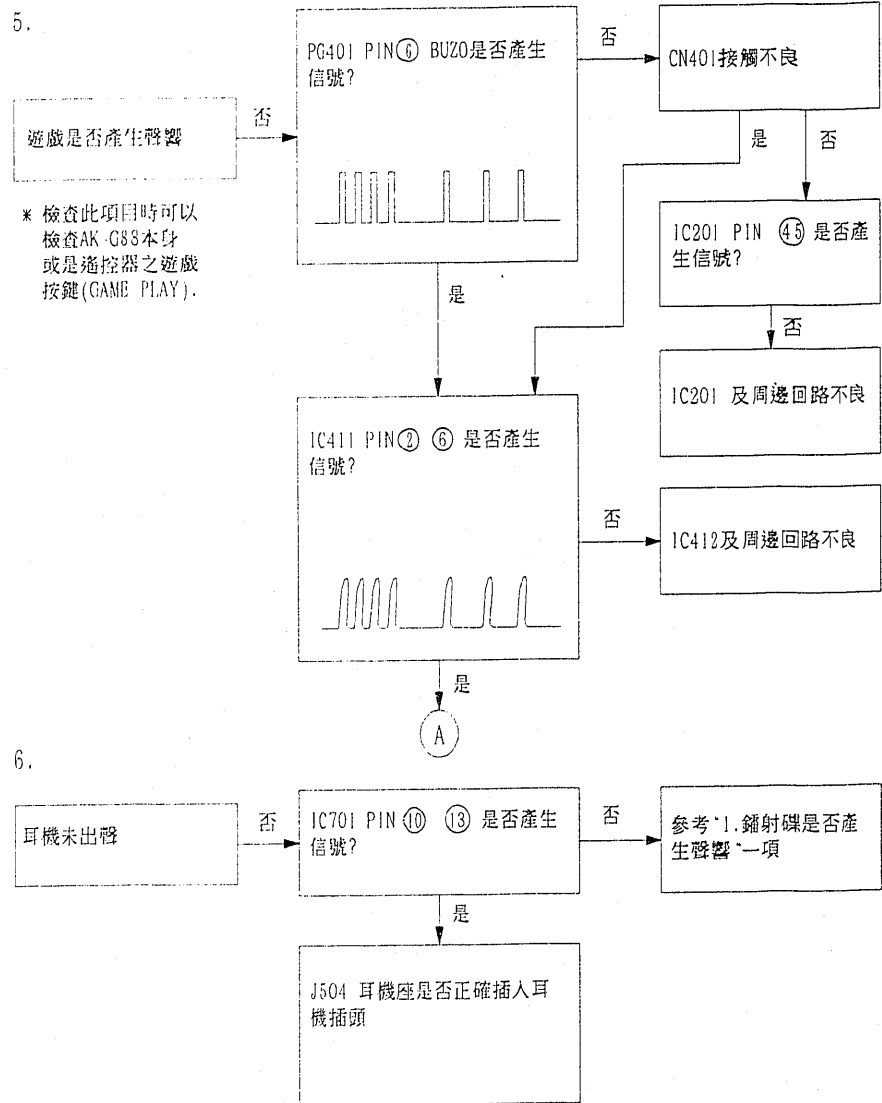
• 最初讀取不可時





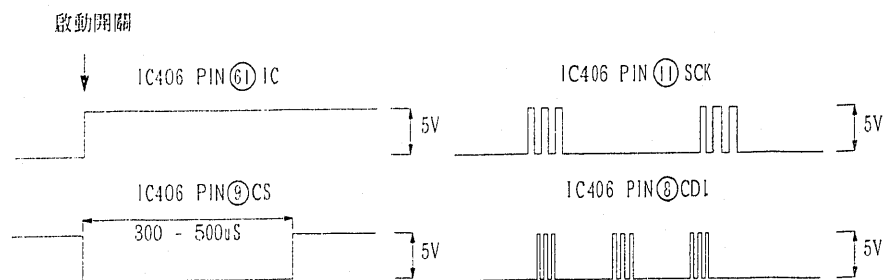
• 檢查音頻電路



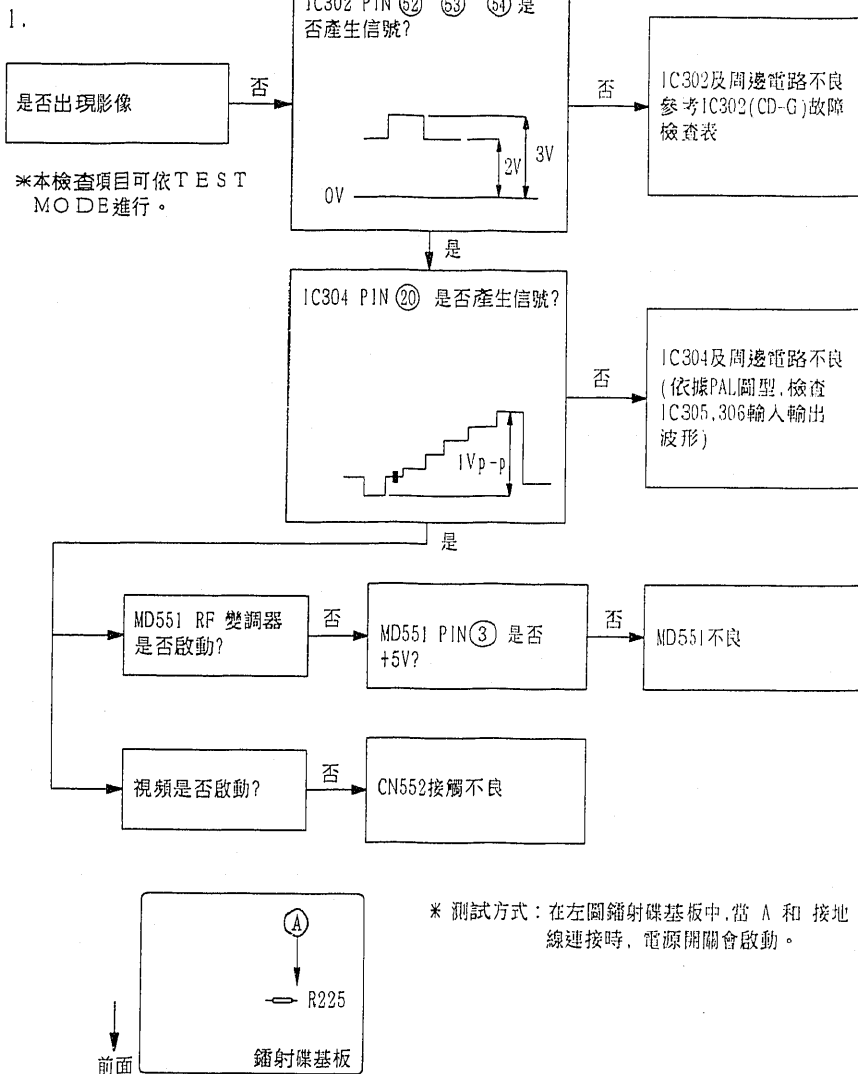


7. 檢查IC406(DSP)故障(檢查方式)

本IC依據微處理器(IC201)而將參考時間常數資料寫入而動作。確定本IC故障時，請依下列圖形信號調查。

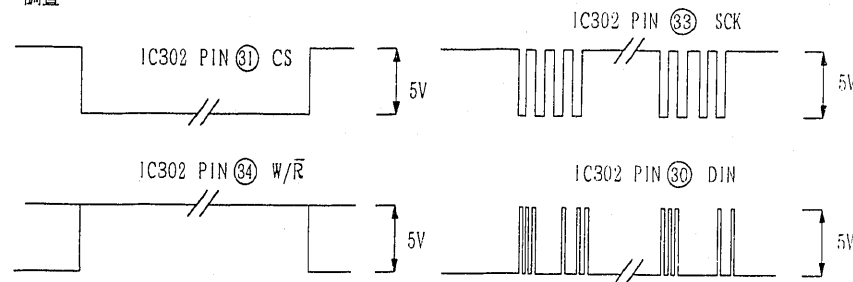


• 檢查影像電路

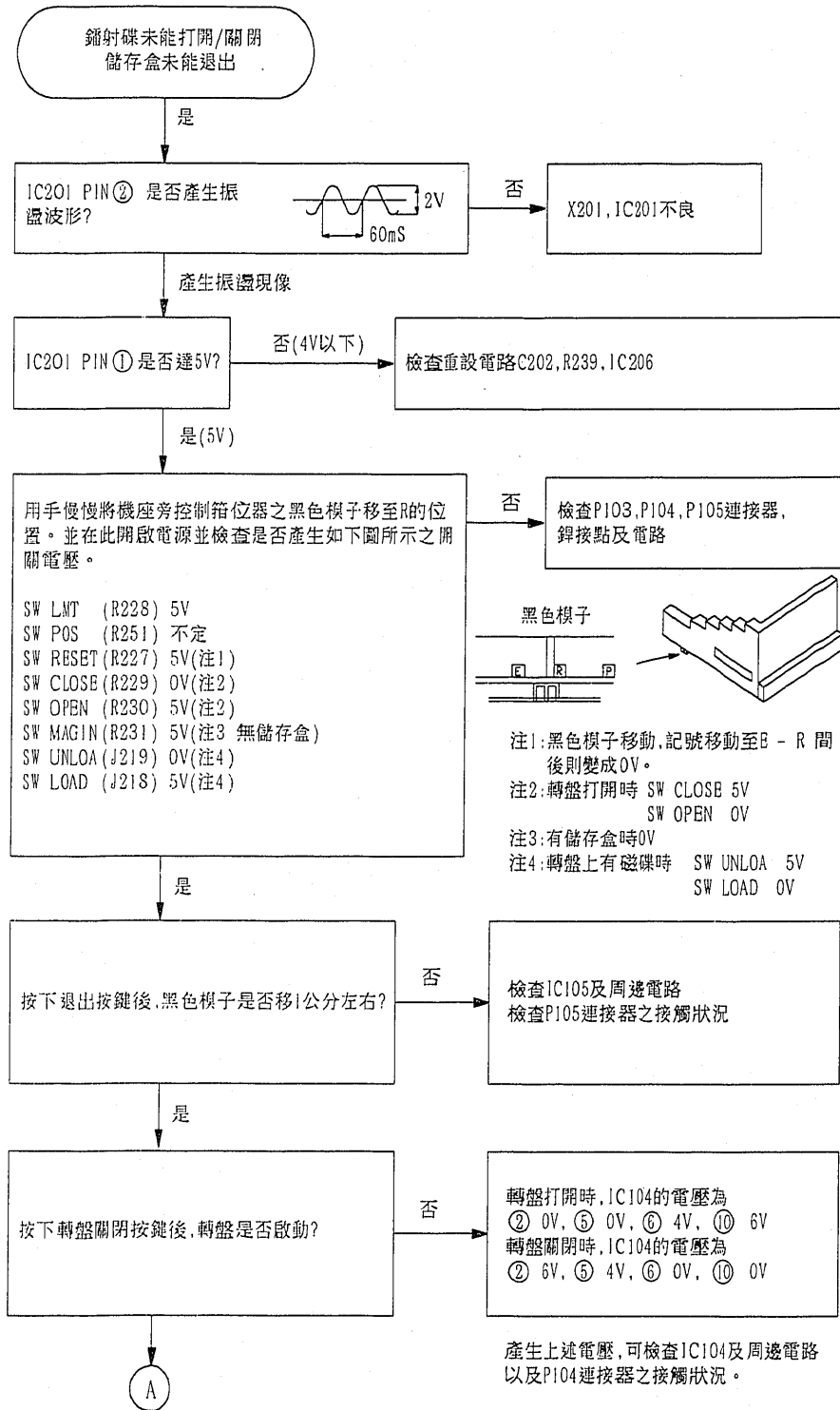


2. 檢查IC302(CD-G)故障(檢查方式)

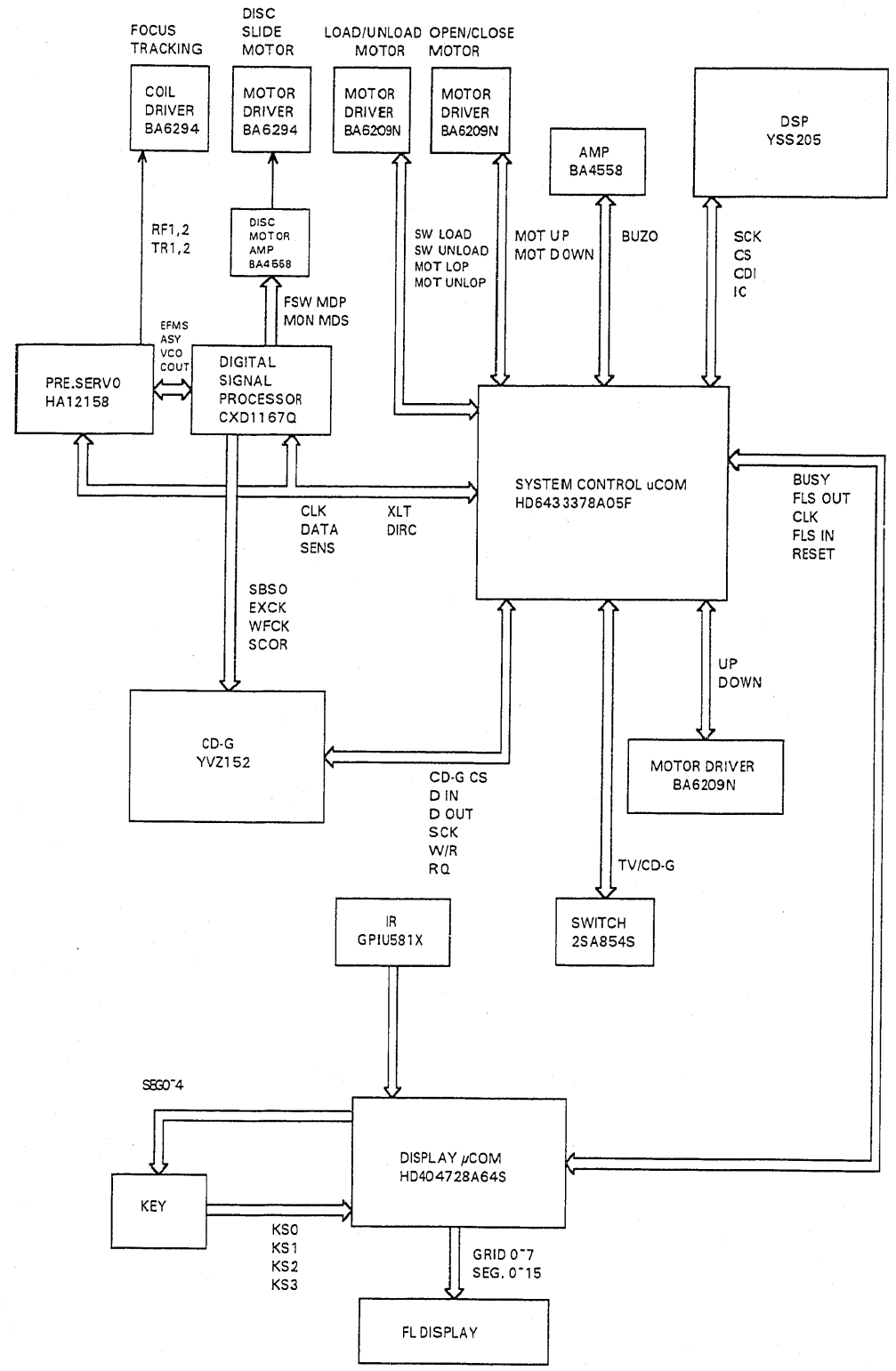
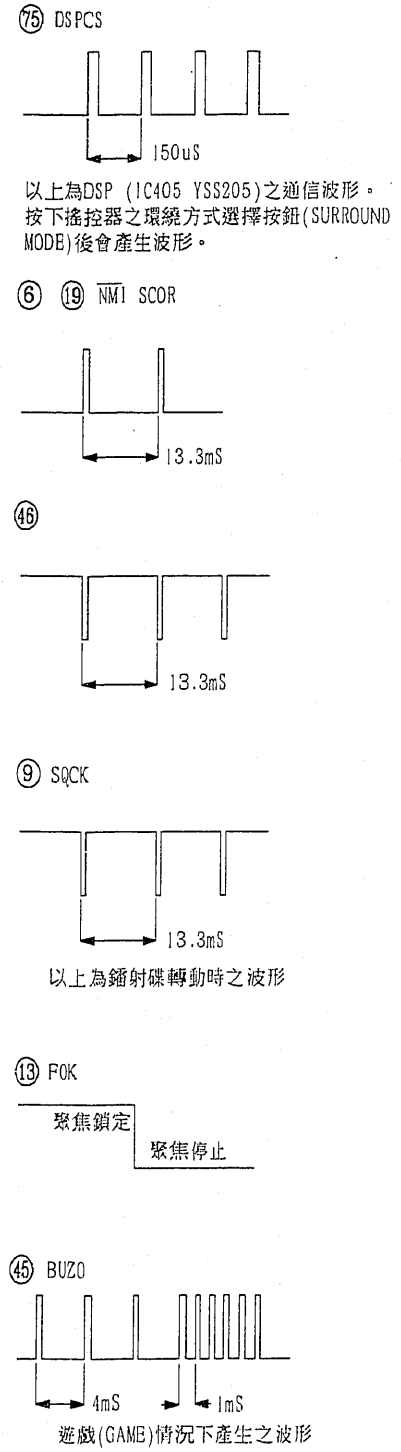
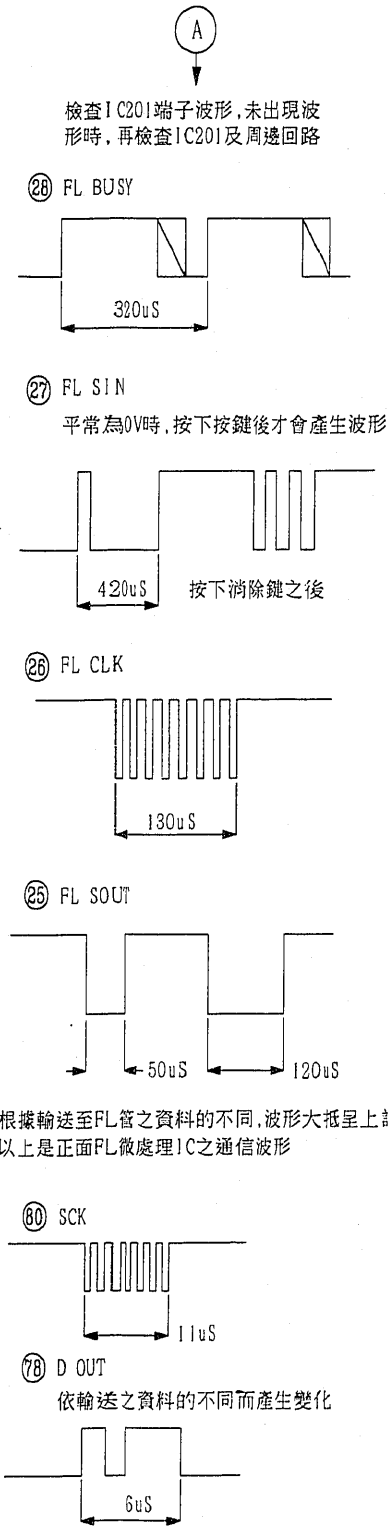
本IC根據微處理器(IC201)而將參考時間常數資料寫入而動作。確定本IC故障時，請依下列圖形信號調查。

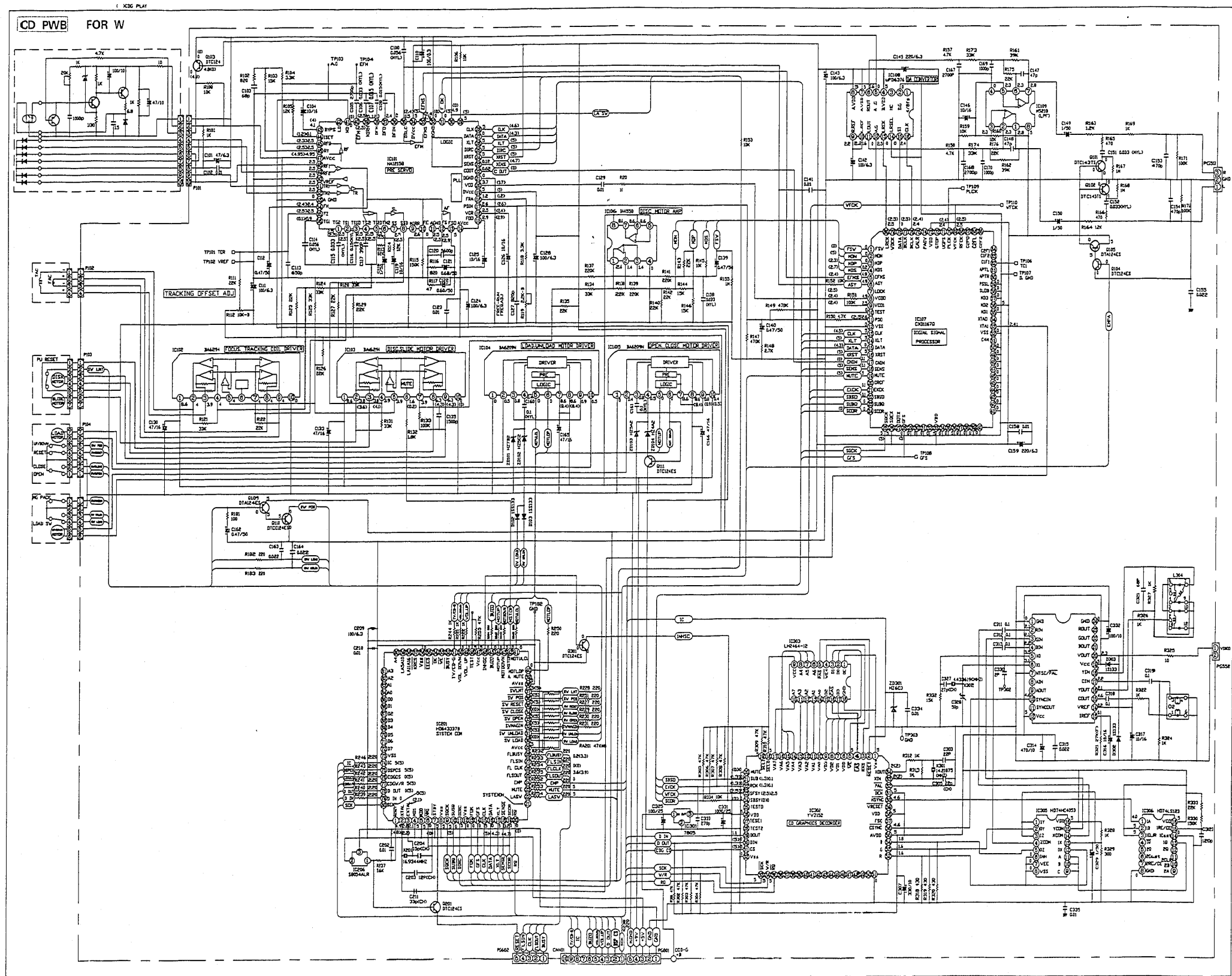


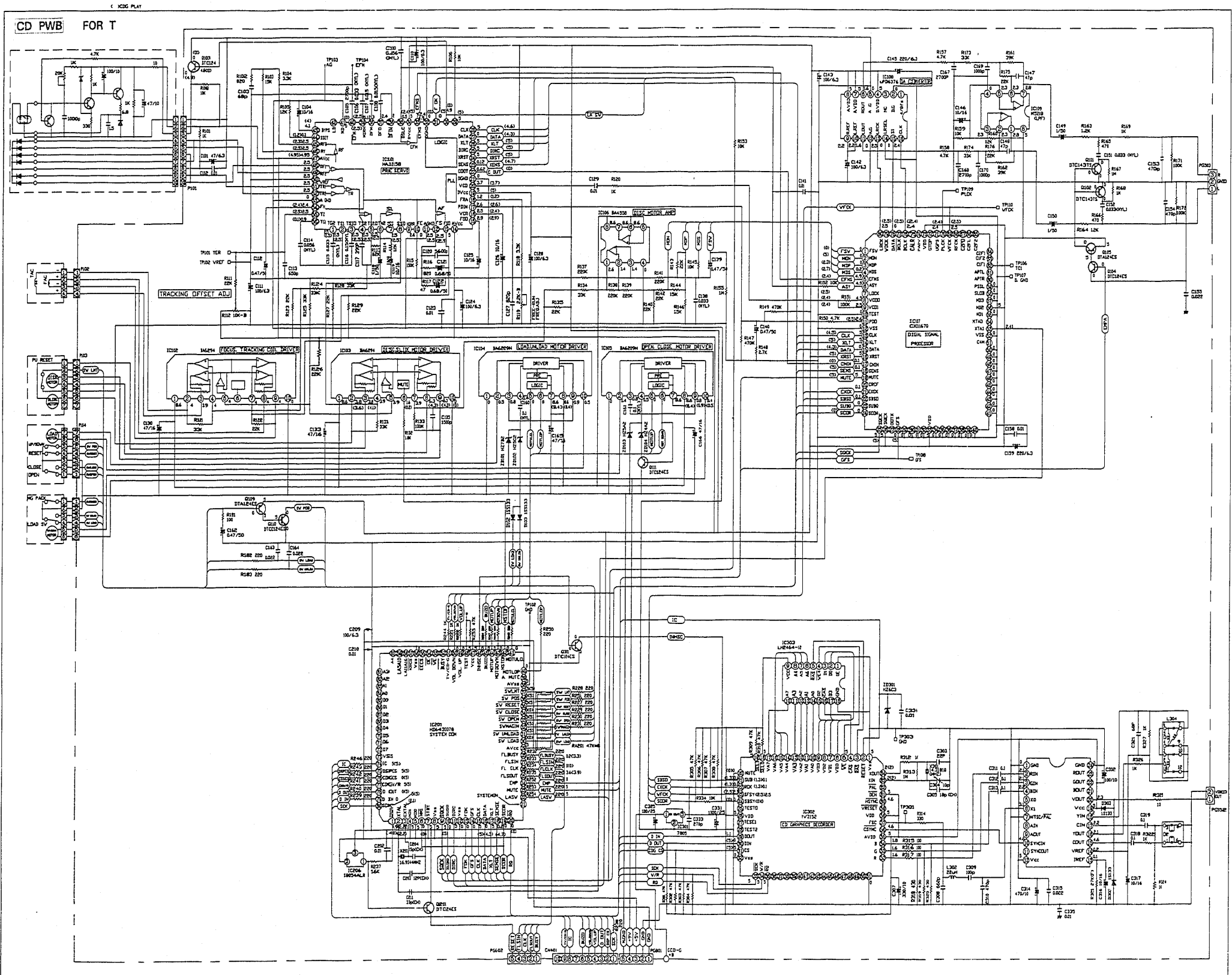
• 主微處理器檢查法



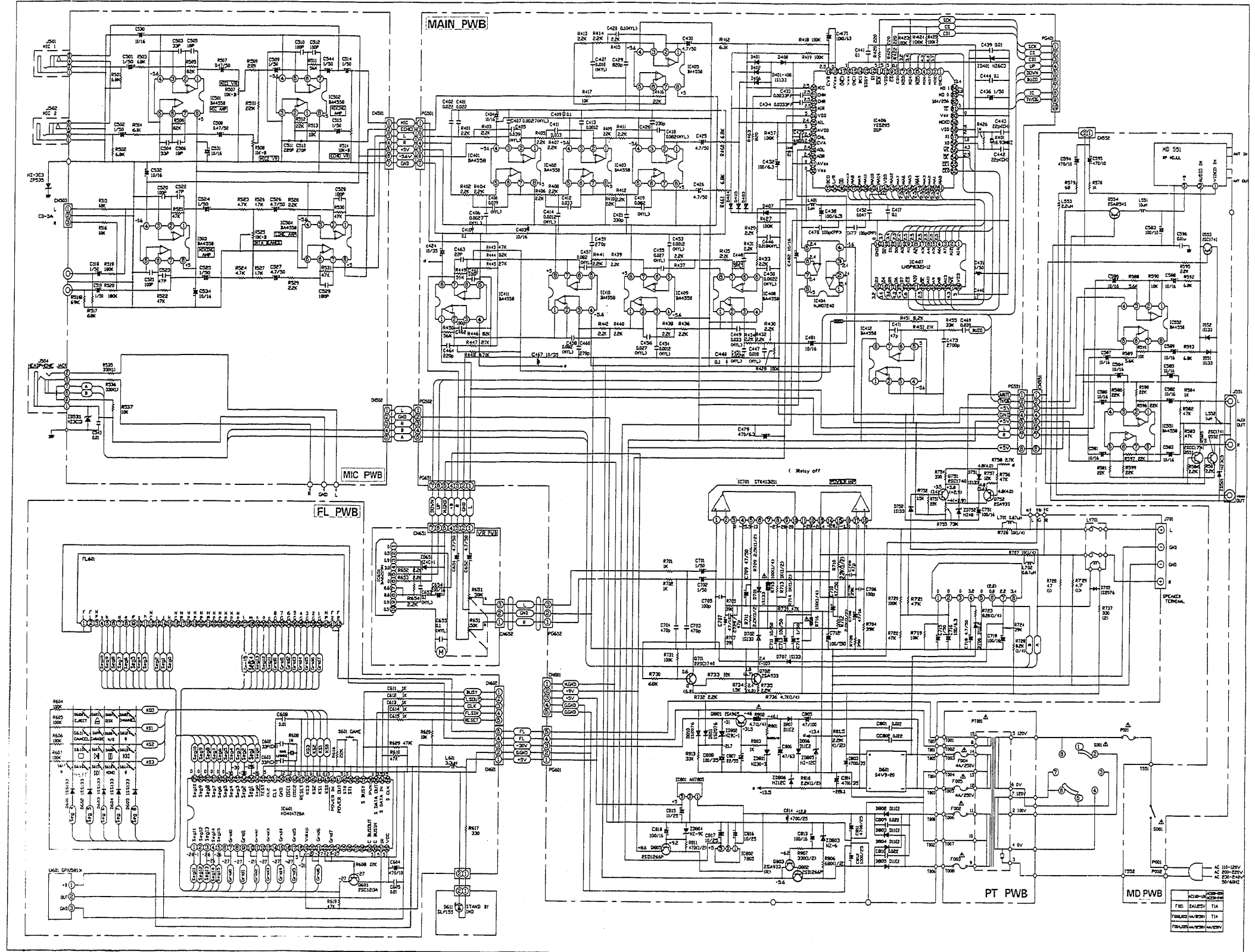
INTERFACE BLOCK DIAGRAM



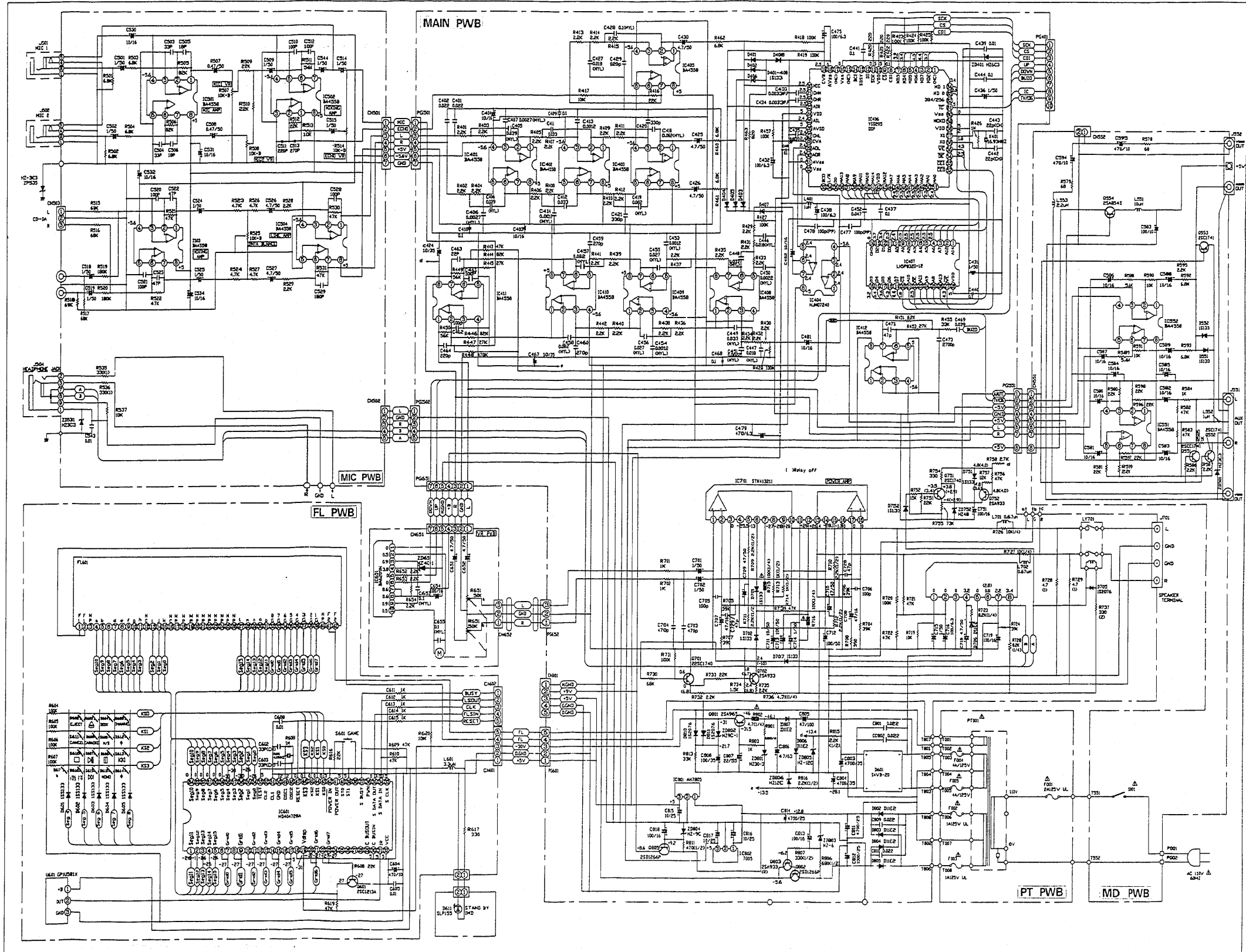




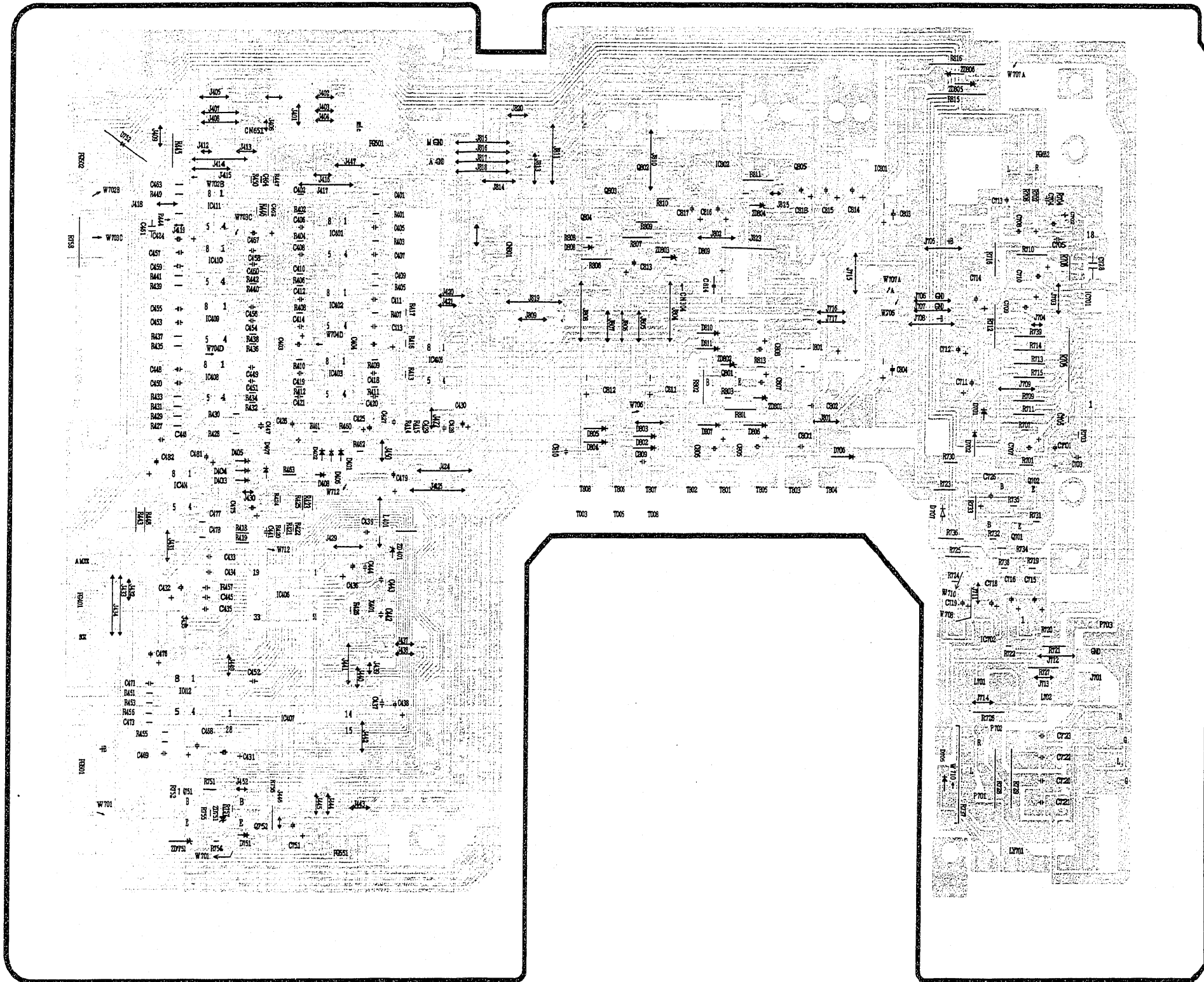
FOR W



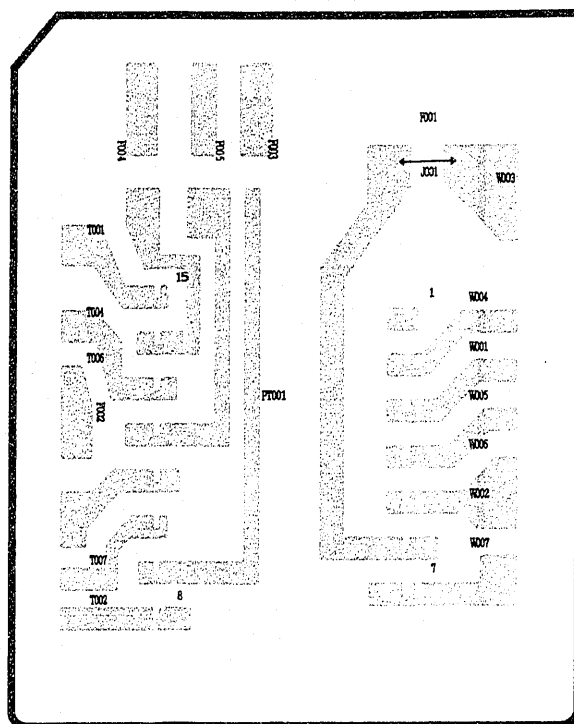
FOR T



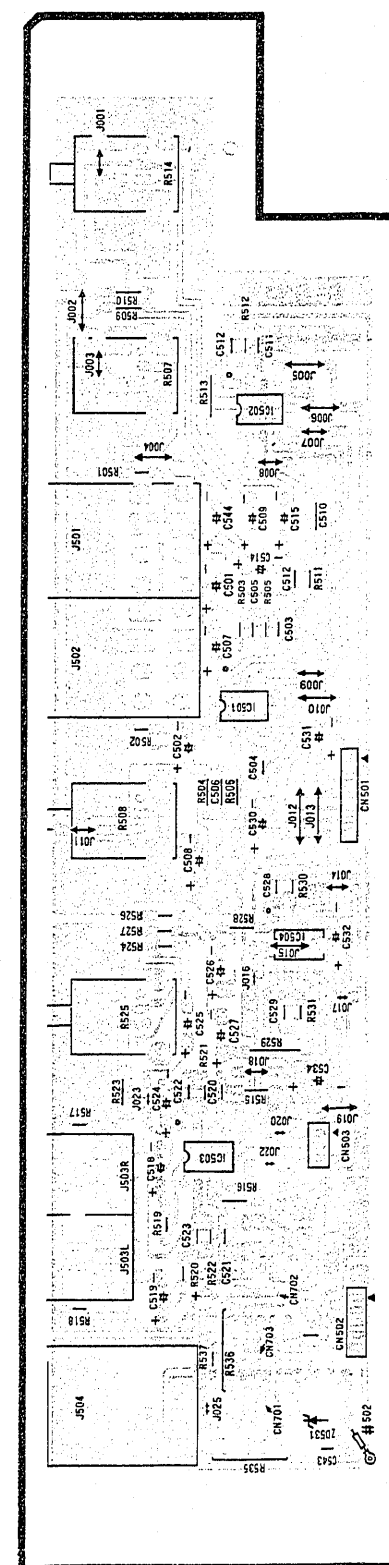
MAIN PWB



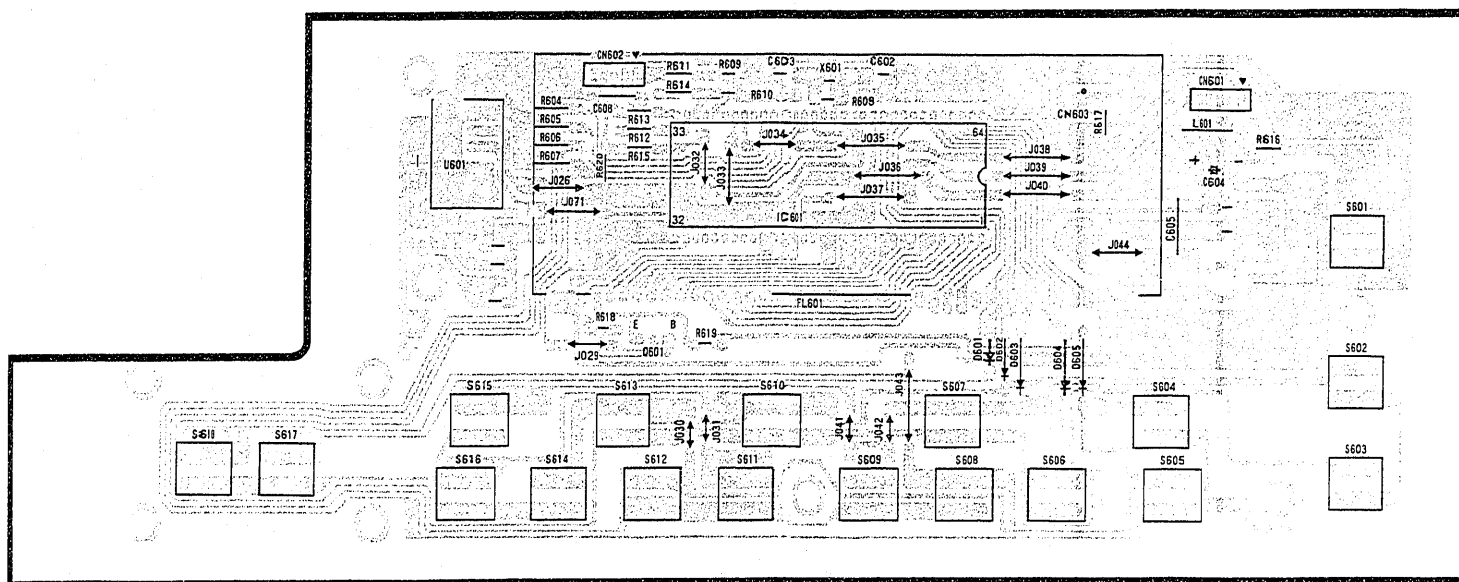
PT PWB



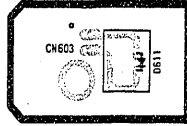
MIC PWB



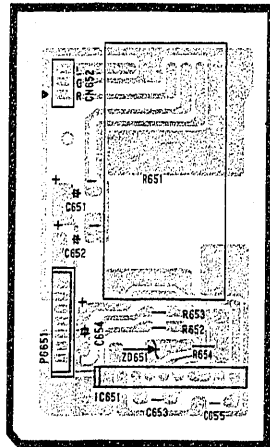
FL PWB



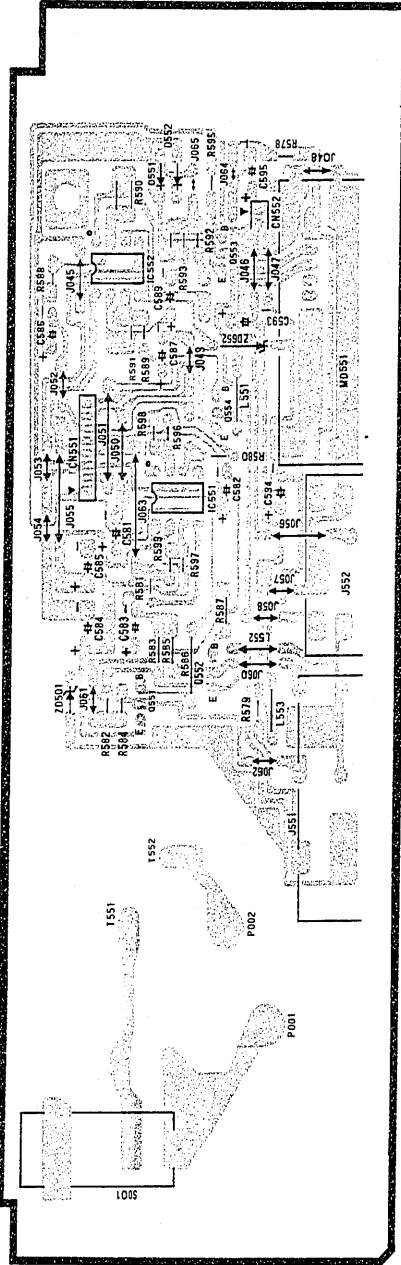
LED PWB



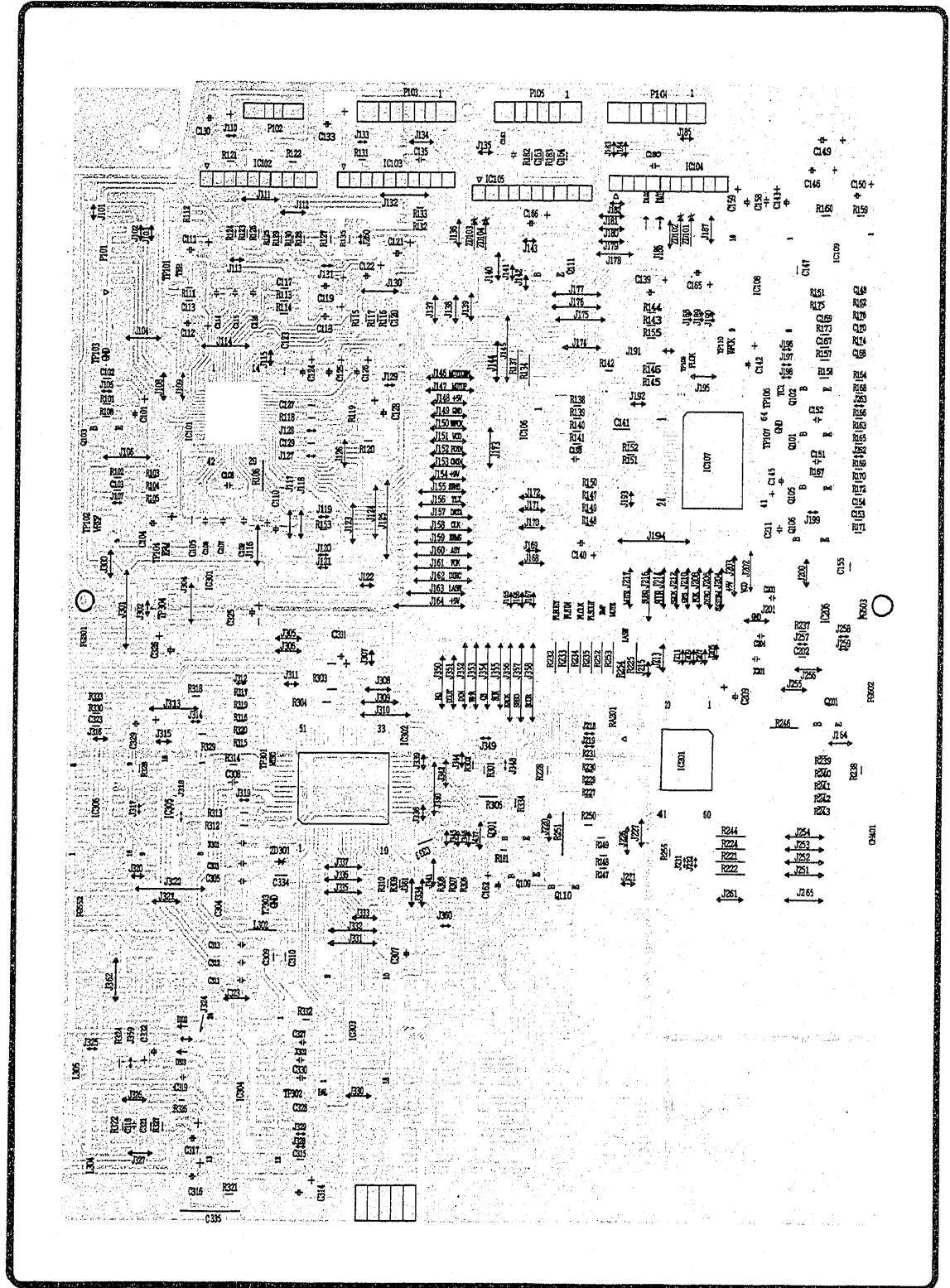
VR PWB



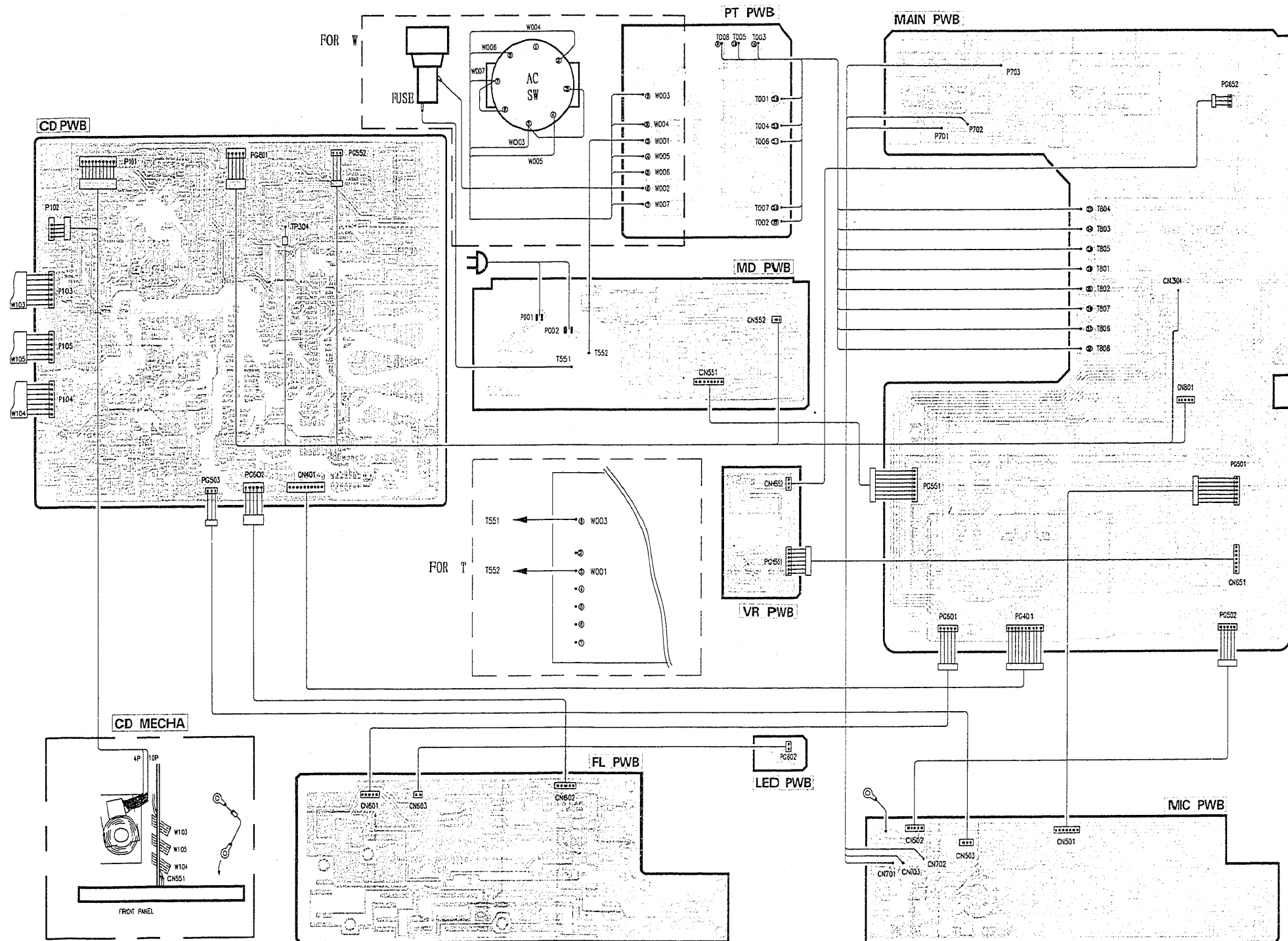
MD PWB



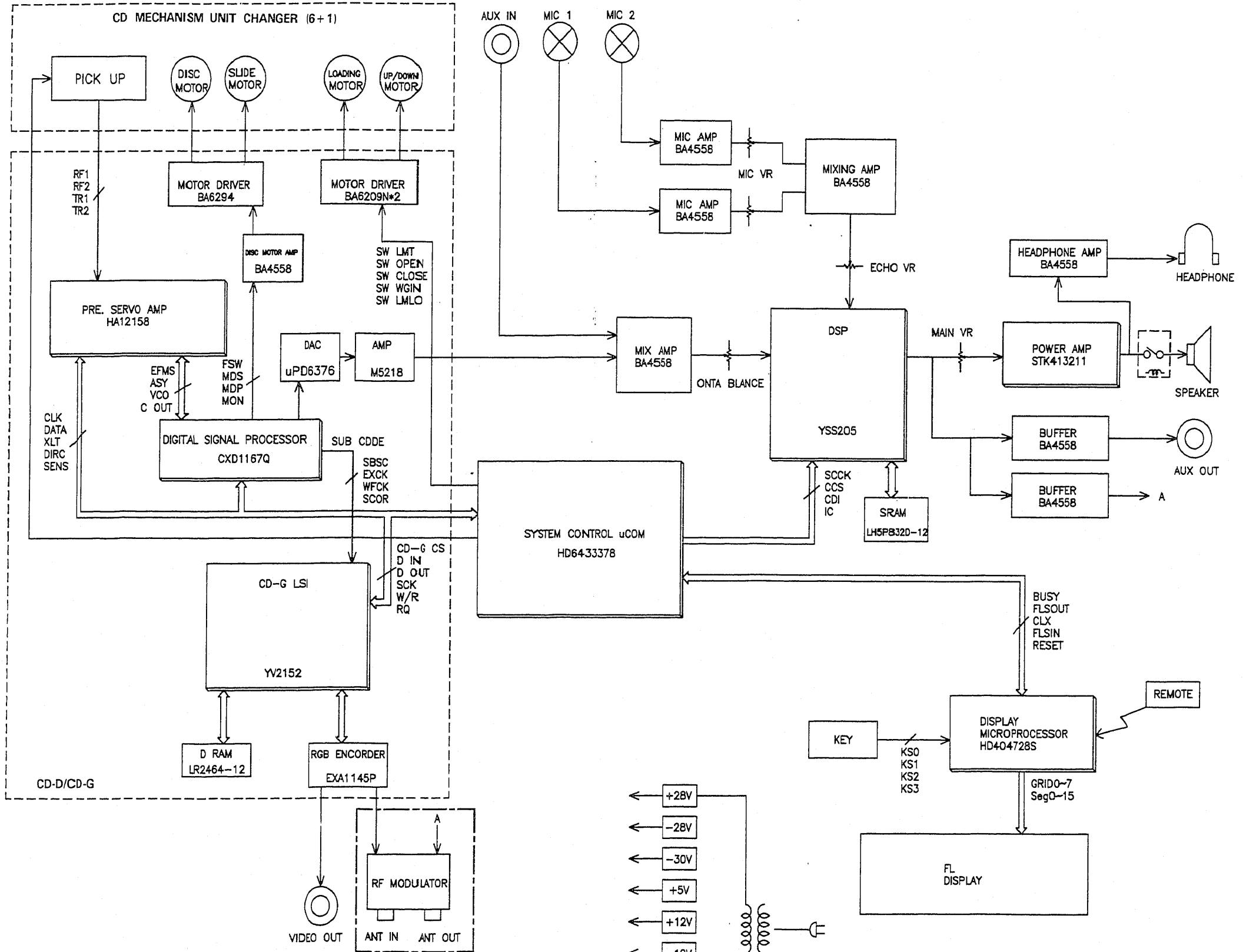
CD PWB



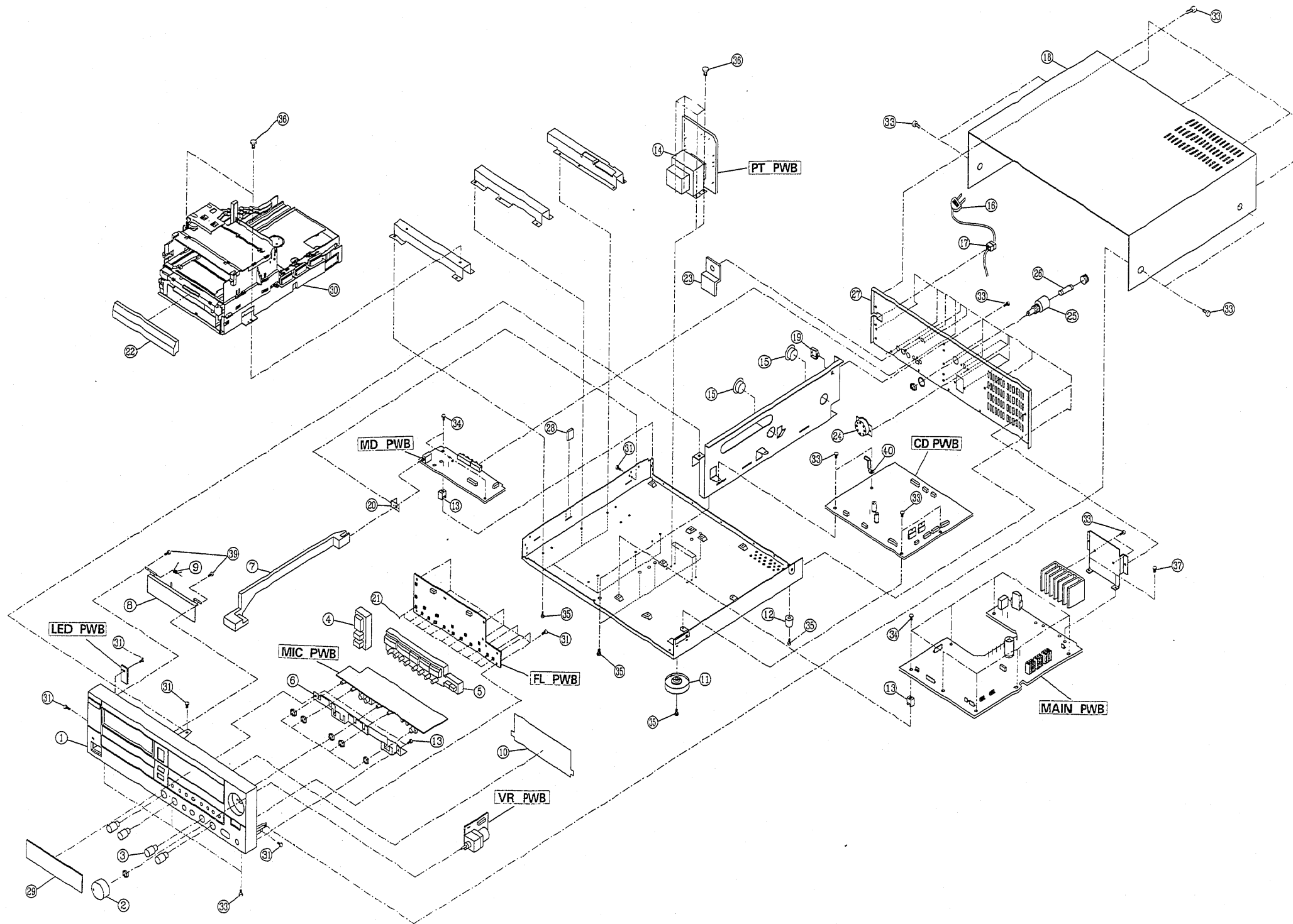
WIRING DIAGRAM 連線圖



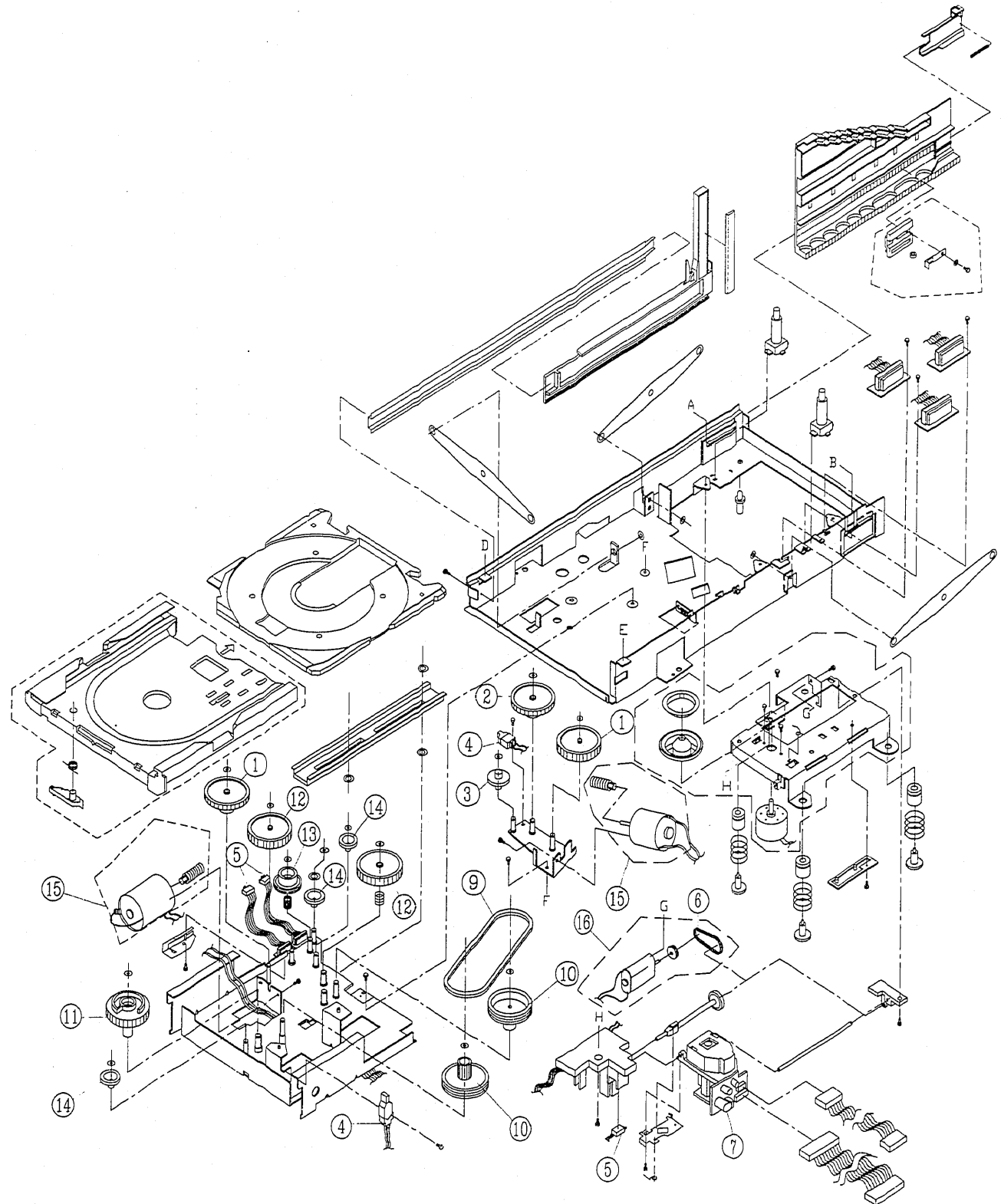
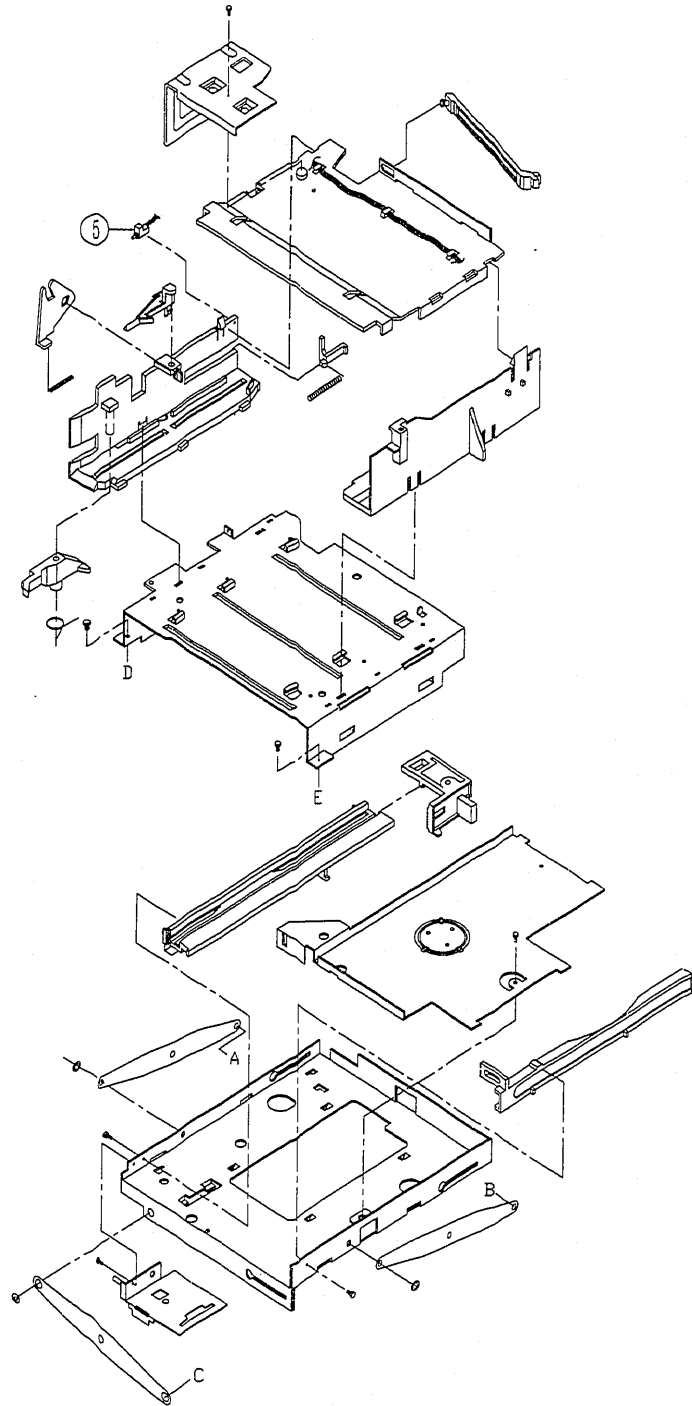
BLOCK DIAGRAM



EXPLODED VIEW 爆炸圖
CABINET 主機



EXPLODED VIEW 爆炸圖
CD UNIT MECHANISM CHANGER 鐳射碟機架



REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS

Capacitors..... CD: Ceramic disk; PF: Polyester film; EL: Electrolytic; PP: Polypropylene;
PR: Paper; TA: Tantalum; TM: Trimmer.
Resistors..... CF: Carbon film; CC: Carbon composition; MF: Metal oxide film.
VR: Variable resistor; WW: Wire wound; FR: Fuse resistor; MG: Metal glazed.
Semiconductors.... TR: Transistor; DI: Diode; ZD: Zener diode; VA: Varistor; TH: Thermistor.
IC: Integrated circuit.

SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
CAPACITORS					
C101	Q800038	EL 47MF 6.3V	C169	0890035	CD 1000PF +-10% 50V
C102	Q890043	CD 0.01MF 1 6V +-20%	C170	0890035	CD 1000PF +-10% 50V
C103	Q890019	CD 68 PF +-5% 50V	C202	0890043	CD 0.01MF +-20% 16V
C104	Q800015	EL 10MF 16V	C203	0890115	CD 12PF +-5% 50V
C105	Q240054	CD 2700PF +-20% 16V	C204	0890116	CD 15PF +-5% 50V
C106	Q880013	PF 0.033MF +-10% 50V	C209	0800047	EL 100MF 6.3V
C107	Q880011	PF 0.015MF +-10% 50V	C211	0890121	CD 33PF +-5% 50V
C108	Q880011	PF 0.015MF +-10% 50V	C303	0890118	CD 22PF +-5% 50V
C109	Q880054	PF 0.056MF +-10% 50V	C304	0283201	TM 10PF (FOR T)
C110	Q800047	EL 100MF 6.3V	C305	0890117	CD 18PF +-5% 50V (FOR T)
C111	Q800047	EL 100MF 6.3V	C305	0890118	CD 22PF +-5% 50V (FOR W)
C112	Q800001	EL 0.47MF 50V	C307	0800343	EL 330MF 10V
C113	Q890033	CD 680PF +-10% 50V	C308	0890033	CD 680PF +-10% 50V (FOR T)
C114	Q880054	PF 0.056MF +-10% 50V	C309	0890022	CD 100PF +-10% 50V (FOR T)
C115	Q880013	PF 0.033MF +-10% 50V	C310	0890031	CD 470PF +-10% 50V (FOR T)
C116	Q880017	PF 0.15MF +-10% 50V	C311	0240224	CD 0.1MF +-10% 25V
C117	Q890029	CD 390PF +-10% 50V	C312	0240224	CD 0.1MF +-10% 25V
C118	Q800003	EL 1MF 50V	C313	0240224	CD 0.1MF +-10% 25V
C119	Q800015	EL 10MF 16V	C314	0800352	EL 470MF 10V
C120	Q240058	CD 5600PF +-20% 16V	C315	0890044	CD 0.022MF +-80-20% 25V
C121	Q2528072	EL 0.68MF +-20% 50V	C316	0800015	EL 10MF 16V
C122	Q2528072	EL 0.68MF +-20% 50V	C317	0800015	EL 10MF 16V
C123	Q890043	CD 0.01MF 1 6V +-20%	C318	0240224	CD 0.1MF +-10% 25V
C124	Q800047	EL 100MF 6.3V	C319	0240224	CD 0.1MF +-10% 25V
C125	Q800015	EL 10MF 16V	C321	0890019	CD 68PF +-5% 50V (FOR W)
C126	Q800015	EL 10MF 16V	C321	0890025	CD 180PF +-10% 50V (FOR T)
C127	Q890034	CD 820PF +-10% 50V	C323	0890023	CD 120PF +-10% 50V (FOR W)
C128	Q800047	EL 100MF 6.3V	C325	0800051	EL 100MF 25V
C129	Q890043	CD 0.01MF 1 6V +-20%	C327	0890119	CD 27PF +-5% 50V (FOR W)
C130	Q800041	EL 47MF 16V	C328	0283203	TM 50PF (FOR W)
C133	Q800041	EL 47MF 16V	C329	0800003	EL 1MF 50V (FOR W)
C135	Q890036	CD 1500PF +-20% 16V	C330	0890052	CD 2PF +-0.25% 50V (FOR W)
C138	Q880013	PF 0.033MF +-10% 50V	C331	0800362	EL 1000MF 25V
C139	Q800001	EL 0.47MF 50V	C332	0800048	EL 100MF 10V
C140	Q800001	EL 0.47MF 50V	C333	0890027	CD 270PF +-10% 50V
C141	Q890043	CD 0.01MF 1 6V +-20%	C334	0890043	CD 0.01MF 16V +-20%
C142	Q800047	EL 100MF 6.3V	C335	0890043	CD 0.01MF 16V +-20%
C143	Q800047	EL 100MF 6.3V	C401	0890044	CD 0.022MF +-80-20% 25V
C145	Q800056	EL 220MF 6.3V	C402	0890044	CD 0.022MF +-80-20% 25V
C146	Q800015	EL 10MF 16V	C403	0800015	EL 10MF 16V
C147	Q890017	CD 47PF +-5% 50V	C404	0800015	EL 10MF 16V
C148	Q890017	CD 47PF +-5% 50V	C405	02750342	MYLAR, FILM 0.039MF +-10% 50V
C149	Q800003	EL 1MF 50V	C406	02750342	MYLAR, FILM 0.039MF +-10% 50V
C150	Q800003	EL 1MF 50V	C407	02740332	MYLAR, FILM 2700PF +-10% 50V
C151	Q880013	PF 0.033MF +-10% 50V	C408	02740332	MYLAR, FILM 2700PF +-10% 50V
C152	Q880013	PF 0.033MF +-10% 50V	C409	0245553M	CK CON 0.1MF +-80-20% 50V
C153	Q890031	CD 470PF +-10% 50V	C410	0245553M	CK CON 0.1MF +-80-20% 50V
C154	Q890031	CD 470PF +-10% 50V	C411	0880013	PF 0.033MF +-10% 50V
C155	Q890044	CD 0.022MF +-80-20% 25V	C412	0880013	PF 0.033MF +-10% 50V
C158	Q890043	CD 0.01MF +-20% 16V	C413	02740312	MYLAR, FILM 1200PF +-10% 50V
C159	Q800056	EL 220MF 6.3V	C414	02740312	MYLAR, FILM 1200PF +-10% 50V
C160	Q880016	PF 0.1MF +-10% 50V	C418	02750362	PF 82000PF 50V
C161	Q880016	PF 0.1MF +-10% 50V	C419	02750362	PF 82000PF 50V
C162	Q800001	EL 0.47MF 50V	C420	0890028	CD 330PF +-10% 50V
C163	Q890044	CD 0.022MF +-80-20% 25V	C421	0890028	CD 330PF +-10% 50V
C164	Q890044	CD 0.022MF +-80-20% 25V	C424	0800018	EL 10MF 50V
C165	Q800041	EL 47MF 16V	C425	0800012	EL 4.7MF 50V
C166	Q800041	EL 47MF 16V	C426	0800012	EL 4.7MF 50V
C167	Q240054	CD 2700PF +-20% 16V	C427	02750322	MYLAR, FILM 0.018MF +-10% 50V
C168	Q240054	CD 2700PF +-20% 16V	C428	0880016	PF 0.1MF +-10% 50V
			C429	0890034	CD 820PF +-10% 50V
			C430	0800012	EL 4.7MF 50V
			C431	0800003	EL 1MF 50V

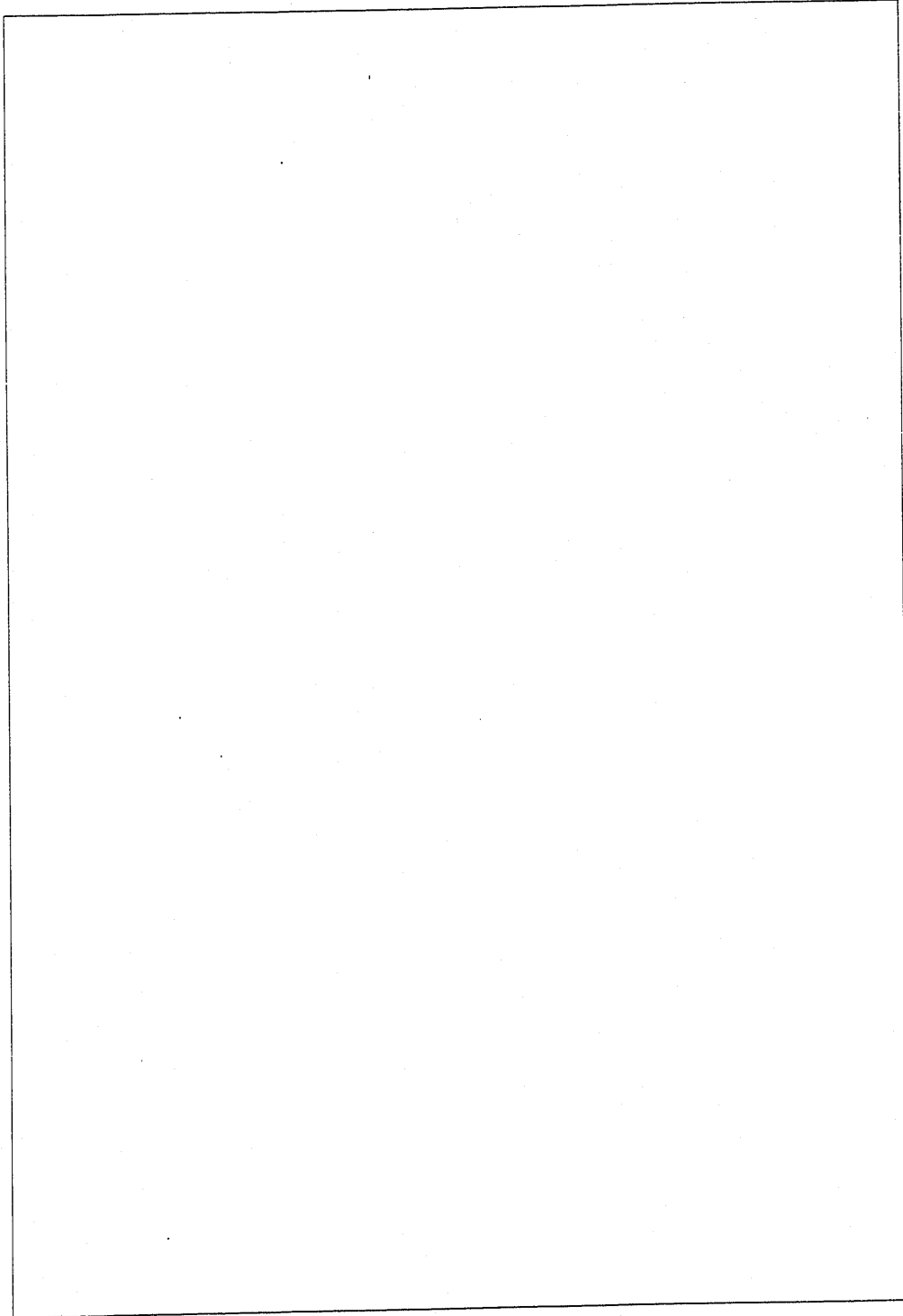
PRODUCT SAFETY NOTE: Components marked with a Δ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
ZD804	2331827	ZD HZ-9C1	RA201	0189061	RESISTOR ARRAY 47K OHM X8
ZD805	2331847	ZD HZ-12C1	U601	2574841	IRU-GP1U581X
ZD806	2331847	ZD HZ-12C1	W103	2975202	7P FLAT CABLE
			W104	2975202	7P FLAT CABLE
			W105	2975201	6P FLAT CABLE
			X201	2949151	CRYSTAL 16.93MHZ
			X301	2168812	CRYSTAL 14.218MHZ (FOR W)
			X301	2168851	CRYSTAL 14.31818MHZ (FOR T)
			X302	2784802	CRYSTAL 4MHZ (FOR W)
			X401	2949151	CRYSTAL 16.93MHZ
			X601	2155323	CERAMIC OSC (4.19MHZ)
			#601	3804117	FL SPACER
			#611	3960403	LED HOLDER
			#703	8671408	SCREW 3X8 DT BIND (FOR HEAT SINK)
			#705	8691408	TAPPING SCREW 3X8 BIND (FOR HEAT SINK)
		FUSES			
Δ F001	2727893	FUSE 2A (FOR T)			
Δ F002	2727742	FUSE T1A 250V (FOR W)			
Δ F002	2727895	FUSE 1A 125V (FOR T)			
Δ F003	2727742	FUSE T1A 250V (FOR W)			
Δ F003	2727895	FUSE 1A 125V (FOR T)			
Δ F004	2727748	FUSE 4A 250V (FOR W)			
Δ F004	2727894	FUSE 4A 125V (FOR T)			
Δ F005	2727748	FUSE 4A 250V (FOR W)			
Δ F005	2727894	FUSE 4A 125V (FOR T)			
		COMPOUND COMPONENTS			CABINET CHASSIS
MD551	2406231	RF MODULATOR (FOR W)	1	4898962	FRONT PANEL ASS'Y
			2	3270862	VOLUME KNOB
			3	3309163	BALANCE VOLUME KNOB
			4	3273281	GAME SWITCH
			5	3273292	MAIN SWITCH
			6	4490791	SWITCH BRACKET
			7	3273271	POWER BUTTON
			8	3821641	MAGAZINE DOOR
			9	3392461	DOOR SPRING
			10	3827681	FL FILTER
			11	3830343	LEG 51
			12	3830301	LEG 21
			13	3802972	PWB HOLDER
			14	2216072	POWER TRANSFORMER (FOR W)
			15	2216073	POWER TRANSFORMER (FOR T)
			16	3875991	PROTECTOR
			17	2706584	POWER CORD
			18	3872271	AC CORD BUSHING
			19	3471471	TOP COVER
			20	3716742	PLASTIC HOLDER
			21	4491361	PSW BRACKET
			22	4407129	FIBER WASHER
			23	3821651	SINGLE DOOR
			24	4490871	RFM SUPPORT
			25	2618053	VOLTAGE SWITCH (FOR W)
			26	2727671	FUSE HOLDER
			27	2727742	FUSE 1A 250V
			28	3490502	REAR PANEL (FOR W)
			29	3490503	REAR PANEL (FOR T)
			30	3804118	SPACER
			31	3827671	BLIND
			32	3372471	TN-2500-106 CD MECHA ASS'Y
			33	8671408	SCREW 3X8 DT BIND
			34	8671608	SCREW 4X8 DT BIND
			35	8679408	SCREW 3X8 DT BIND
			36	8671414	SCREW 3X14 DT BIND
			37	8794440	TAPPING SCREW 3X10 BIND
			38	4522881	SCREW 3X8 CE KNURLED
			39	8671416	SCREW 3X16 DT BIND
			40	8671412	SCREW 3X12 DT BIND
				4159427	SCREW 3X10 WITH WASHER
				3909995	WIRE CLAMP
		COILS			
L302	2227922	CHOKE COIL 22MH (FOR T)			
L304	2150951	LC FILTER			
L305	2150851	LC FILTER (FOR T)			
L305	2150971	LC FILTER (FOR W)			
L401	2228196	CHOKE COIL 1UH			
L551	2227905	CHOKE COIL 10MH			
L552	2228196	CHOKE COIL 1UH			
L553	2227912	CHOKE COIL 2.2MH			
L601	2227914	CHOKE COIL 3.3MH			
L701	2227361	AUDIO TRAP COIL 0.67UH			
L702	2227361	AUDIO TRAP COIL 0.67UH			
LY701	2641341	RELAY QSA-SS-212DM3			
		SWITCHES			
Δ S001	2600551	POWER SWITCH			
S601	2639682	TACT SWITCH			
S602	2639682	TACT SWITCH			
S603	2639682	TACT SWITCH			
S604	2639682	TACT SWITCH			
S605	2639682	TACT SWITCH			
S606	2639682	TACT SWITCH			
S607	2639682	TACT SWITCH			
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S613	2639682	TACT SWITCH			
S614	2639682	TACT SWITCH			
S615	2639682	TACT SWITCH			
S616	2639682	TACT SWITCH			
S617	2639682	TACT SWITCH			
S618	2639682	TACT SWITCH			
		MISCELLANEOUS			
LY701	2641341	RELAY			
FL601	2358542	FLUORESCENCE DISPLAY TUBE			
J501	2679015	MIC JACK	1	3010-02-10	E GEAR B
J502	2679015	MIC JACK	2	3010-02-11	E GEAR C
J503L	2673901	JACK	3	3010-02-12	E GEAR D
J503R	2673902	JACK	4	6401-01-204	REAF SW
J504	2679016	HEADPHONE JACK	5	6402-04-03	PUSH SW
J551	2672802	JACK 3P	6	3005-07-14	FEED M BELT
J552	2673911	JACK 3P VIDEO JACK (FOR T)	7	6901-16-01	PICK UP
J701	2693681	TERMINAL 4P	8	3005-07-305	T/T BASE ASSY

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
9	3010-04-11	P BELT			
10	3010-04-03	P GEAR A			
11	3010-04-04	P GEAR B			
12	3010-05-15	FE GEAR C			
13	3010-05-06	FE GEAR D			
14	3010-05-16	FE GEAR E			
15	3010-02-301	E MOTOR ASS'Y			
16	3005-07-306	FEED MOTOR ASS'Y			
		ACCESSORIES			
1	2573843	REMOTE CONTROL TRANSMITTER			
2	6901-02-01	MAGAZINE ASSY			
3	2733231	MIC			
4	2727893	FUSE 2A			
5	2713223	VIDEO CORD			
6	2977871	RF CABLE			
7	2667922	SEAMENS PLUG			

MEMO



HITACHI