

TOSHIBA

DIGITAL SYNTHESIZER STEREO TUNER

ST-530



SPECIFICATIONS

■ General Data

Power Supply: 220V – 50 Hz for Europe
 240V – 50 Hz for United Kingdom & Australia

Power Consumption: 14W

System Dimensions (mm): 420(W) x 96(H) x 320(D)

System Weight: 5.0 kg

■ Tuner

Micro computer controlled frequency synthesizer tuning

Frequency Range: FM 87.5 – 108.5 MHz
 422 channel

LW 146 – 281 kHz
 136 channel

MW 522 – 1611 kHz
 1090 channel

SW 5.9 – 6.3 MHz
 81 channel

Memory: 8 channels each band
 (FM/SW/MW/LW)

Functions: Auto tuning (FM 100 kHz,
 MW 9 kHz step)
 Manual scanning
 FM +50 kHz shifting reception

* FM Tuner Section

Sensitivity (IHF): 1.9 μ V (10.8 dBf)

Harmonic Distortion: 1 kHz MONO 0.15%
 STEREO 0.25%

S/N: MONO 72 dB
 STEREO 68 dB

Frequency Response: 30 – 15 kHz \pm 1.0 dB

Selectivity (IHF): 75 dB (\pm 400 kHz)

Image Rejection: 70 dB

IF Rejection: 90 dB

Capture Ratio: 1.0 dB

Spurious Response: 90 dB

AM Suppression: 55 dB

Stereo Separation: 45 dB (at 1 kHz)

* MW Tuner Section

Receiving Frequency: 522 – 1611 kHz (1 kHz step)

Sensitivity: 300 μ V/m

Selectivity: 30 dB

Image Rejection: 40 dB

S/N: 50 dB

* LW Tuner Section

Receiving Frequency: 146 – 281 kHz (1 kHz step)

Sensitivity: 250 μ V/m

Image Rejection: 50 dB

S/N: 45 dB

* SW Tuner Section

Receiving Frequency: 5.9 – 6.3 MHz (5 kHz step)

Sensitivity: 30 μ V/m

Image Rejection: 25 dB

S/N: 40 dB

Specifications are subject to change without notice.

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1. OPERATING CONTROLS

FRONT VIEW

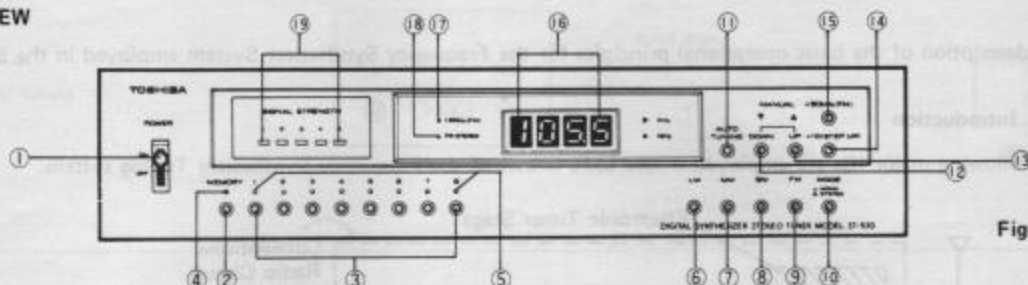


Figure 1.

- **power switch ①**
When the power switch is turned on, a frequency will be shown immediately in the display. This frequency will be the same as the last tuned station before power was turned off.
- **radio band selector buttons**
Choose your program source by pressing one of these function buttons:
 - ⑥ - lw: for LW radio broadcasts
 - ⑦ - mw: for MW radio broadcasts
 - ⑧ - sw: for SW radio broadcasts
 - ⑨ - fm: for FM radio broadcasts
- **memory push-button ②**
To store the frequency of any desired station in the memory, first press this button. The memory indicator lamp ④ directly above this button lights up to indicate that the memory is ready to accept the frequency, but note that this is a rather short period (approx 5 seconds).
- **preset tuning buttons (1 - 8) ③**
Once the memory button ② has been pressed, press one these buttons immediately afterward to store the frequency of the desired station in the memory. To recall the frequency at a later date, simply press the corresponding tuning button.
- **mode (mono/stereo) ⑩**
Excessive noise in an FM stereo broadcast may be reduced by switching over to "mono". Otherwise leave in the "stereo" position.

RADIO TUNING

- **auto tuning ⑪**
For tuning in the FM and MW bands, press this button to "scan" the frequencies automatically. The scanning motion will stop once a broadcast station is tuned.
- **manual down ⑫**
The frequency is changed (reduced) one step at a time every time this button is pressed. If the button remains depressed, the frequency will change continuously until the button is released again.

- **manual up ⑬**
The frequency is likewise increased stepwise by this manual up button, the change being continuous if the button remains depressed.
- **x10 push-button ⑭**
By pressing this button, and then either the manual up ⑬ or manual down ⑫ button immediately afterward, the tuned frequency may be changed at the 10 digit rather than at the unit digit, thereby speeding up the tuning process, particularly in the MW band.
- **+50 kHz push-button ⑮**
FM frequencies may be "fine-tuned" by pressing this button. +50 kHz is added to the displayed frequency.

INDICATORS

- **digital frequency ⑯**
The tuned frequency in all 4 bands (LW/MW/SW/FM) is displayed here in digital form.
- **+50 kHz indicator lamp ⑰**
Lights up when the +50 kHz button is pressed to shift the tuned FM frequency by +50 kHz (fine tuning).
- **fm stereo indicator lamp ⑱**
Lights up when an FM stereo station has been tuned.
- **memory indicator lamp ④**
This LED lamp lights up for approx 5 seconds only when the memory button ② is pressed. Presetting of the desired station must be performed before this lamp goes out.
- **preset indicator lamps (1 - 8) ⑤**
When setting a station into the memory, and when selecting that station at a later date, the LED indicator lamp corresponding to the pressed preset tuning button ③ will light up.
- **signal level ⑲**
These LED lamps light up from left to right, the stronger stations being indicated by more lamps. If 4 or 5 lamps fail to come on for a local station, check Aerial connections and direction.

First press the desired radio band selector button.

■ Automatic Tuning

- (1) For FM or MW radio stations, press the auto tuning button ①. The displayed frequency will shift automatically, and stop when the frequency of the next station is tuned.

Note 1. If the next station is a rather weak (remote) station, the frequency display will not stop, but proceed to the next sufficiently strong station. Weaker stations must be tuned manually (see below).

Note 2. Automatic tuning does not operate in the LW or SW bands.

- (2) To proceed to another station, simply press the auto tuning button ① again.

■ Manual Tuning

- (1) Press the manual down ② or manual up ③ button, and keep it depressed to shift the displayed frequency toward the desired station frequency. When close to the desired frequency, release the button, and then press again in single steps to tune into the frequency.
- (2) When the x10 button ④ is pressed with the manual down or manual up button, the displayed frequency will shift in steps of tens rather than units (i.e. shift speed increased by 10). This is particularly useful in speeding up tuning operations in the MW band.
- (3) Note that the x10 push-button is reset automatically when the manual up or down button is released. In order to continue in x10 tuning mode, it is necessary to press the x10 push-button again before using the manual up or down button.

■ Reset Tuning

The major feature of the ST-530 is the digital synthesizer tuner section and the capacity to memorize 8 separate stations in each of the 4 bands (i.e. a total of 32 stations). Once a station is preset in the memory, it may be tuned accurately and immediately whenever desired by a single push-button operation.

- (1) First check the official broadcasting frequencies of the desired stations (up to 8 stations in each band), or else simply tune directly to the stations as described above by automatic or manual tuning.
- (2) After confirming that the station is accurately tuned, press the memory push-button ②. The memory indicator lamp ④ above it will light up (for approximately 5 seconds) to indicate that the memory is ready to store the frequency.
- (3) Immediately press one of the preset tuning buttons ③ while the memory indicator lamp is still on. If it goes out before the desired preset tuning button can be pressed, simply press the memory button again.
- (4) Repeat the above process for all other stations to be stored in the memory (maximum of 8 stations per band).
- (5) Any of these preset stations may then be tuned in again at any later date by simply pressing the relevant memory button (with desired radio band selector button switched on).

Note 1. If there is a prolonged power failure of more than one day, memory contents will be lost. In this case the preset tuning operations will have to be repeated.

Note 2. In strong signal areas, MW auto-tuning may result in slight detuning (by 9 kHz). In such cases, use manual tuning.

REAR VIEW

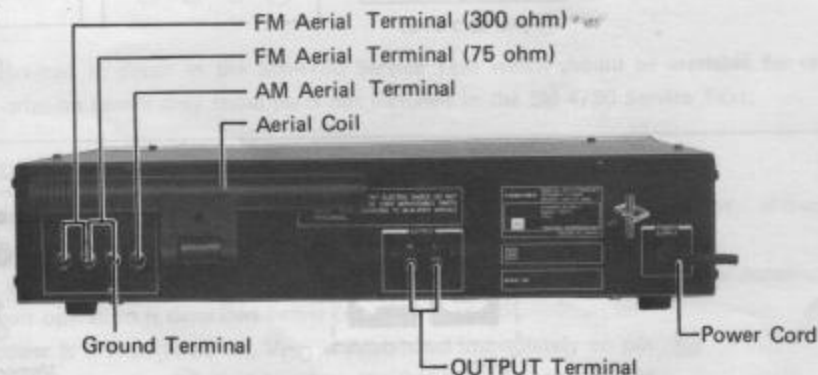


Figure 2.

3. TECHNICAL POINTS

ST-530 Synthesizer System

* A description of the basic operational principles for the Frequency Synthesizer System employed in the ST-530.

[1] Introduction

The following major ICs are employed in the basic circuit of the Frequency Synthesizer Tuning system.

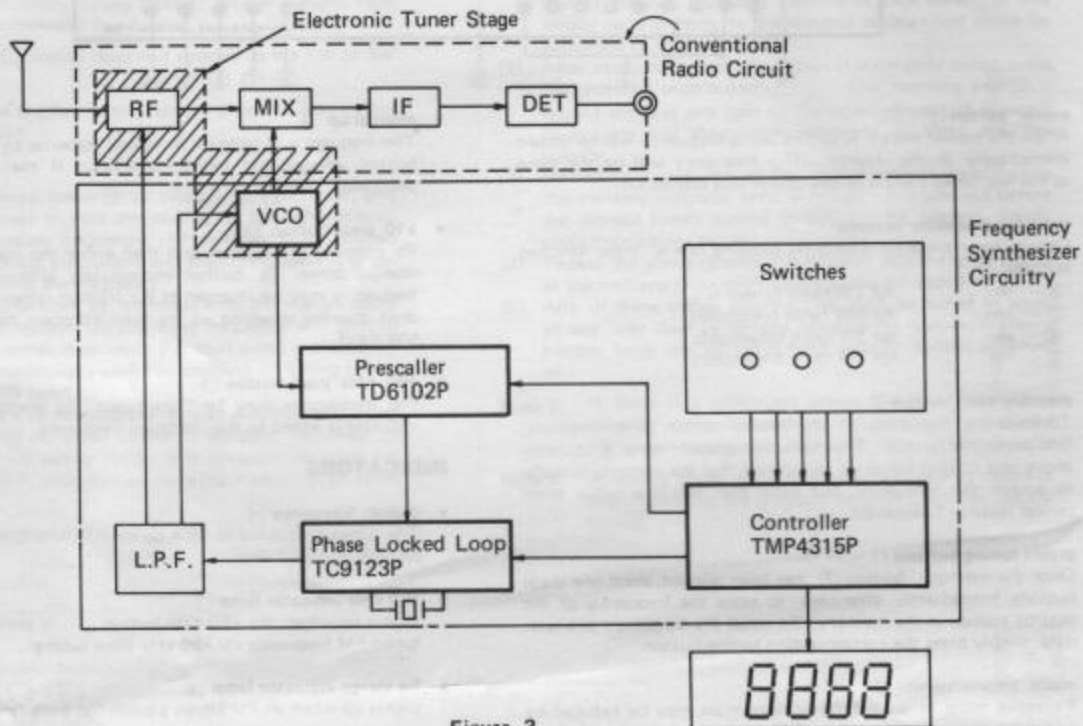


Figure 3.

This circuit is described in detail in the SM-4750 Service Text which should be available for reference purposes. Note that this description covers only those parts not included in the SM-4750 Service Text.

[2] Frequency Display Mode

The TMP-4315P controller is an LSI developed specifically for clock-equipped FM/MW/SW/LW frequency synthesizer tuners.

Since the major display mode of this LSI is "time display", it is necessary to make a conversion to "frequency display". The circuit operation is described below (see Figs. 4 and 5).

- (1) When the power is first switched on, V_{DD} is established immediately on pin ④② of IC207.
- (2) The voltage applied to pin ②③ is delayed by the R224/C218 time constant.
- (3) During this period, all outputs become "H" level, resulting in the voltage at OT3, ①⑨ changing as shown in Fig. 5.
- (4) The pin ①⑨ output is applied to IC213 where a slightly delayed signal is obtained from the 2 AND GATE circuits and appears at output pin ⑩ of IC213.
- (5) This output signal is passed through IC210 where its polarity is inverted prior to being returned to one of the gates in IC213.
- (6) The timing signals being issued from pin ②⑨ of IC207 are applied to one of the gates in IC213 resulting in an AND output.

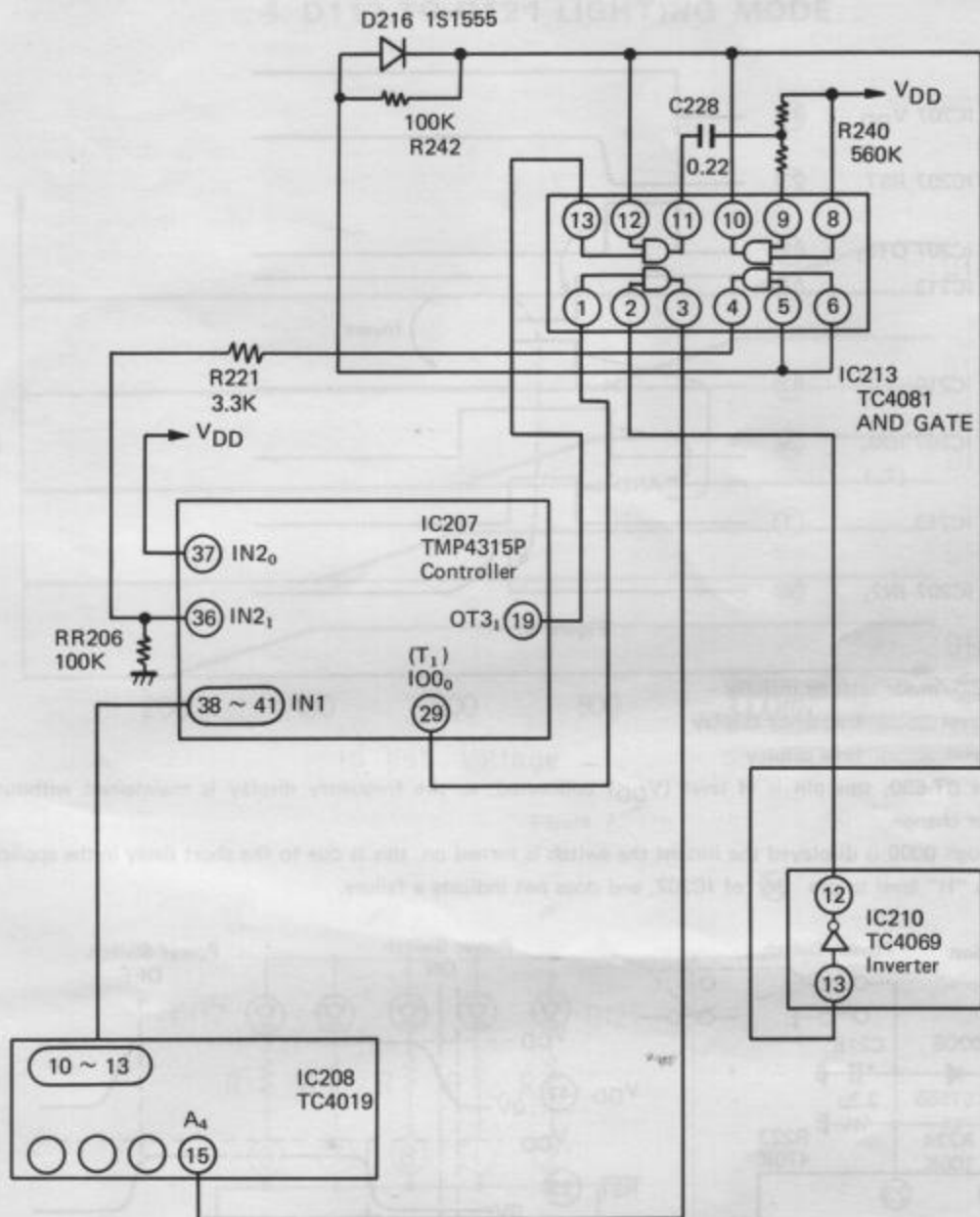


Figure 4.

- (7) The output from pin ③ of IC213 is applied to pin ⑮ of IC208. When this input pin detects switching operation data, the data is applied to pin ⑮ A₄, the output signal appearing at pin ⑬. This output is then applied to pin ⑳ of IC207, thereby activating the start of the basic controller "time display" mode with the time about to be displayed in the D101 and D102 LEDs.
- (8) However, the rising pulse on pin ⑩ of IC213 is passed via R242 (100K), C229 (0.047) and R221 (3.3K) to pin ⑳ of IC207, resulting in this terminal being switched to "H" level. In this case, the controller operates in the following way.
- (9) Time display changes to frequency display for 5 seconds, and then changes automatically to the display mode determined by pin ⑳.

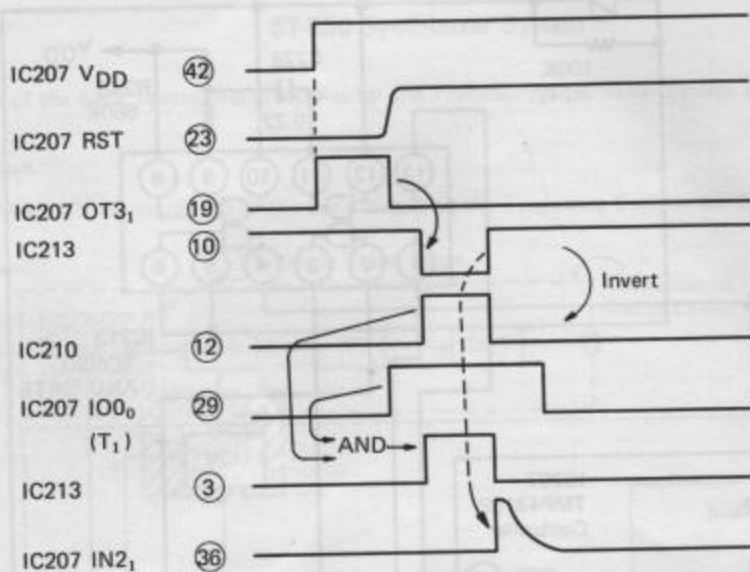


Figure 5.

- (10) Pin 37 mode settings include:—
 "H" level frequency display
 "L" level time display

In the ST-530, this pin is H level (V_{DD}) connected, so the frequency display is maintained without any further change.

Although 0000 is displayed the instant the switch is turned on, this is due to the short delay in the application of the "H" level to pin 36 of IC207, and does not indicate a failure.

[3] Initialization

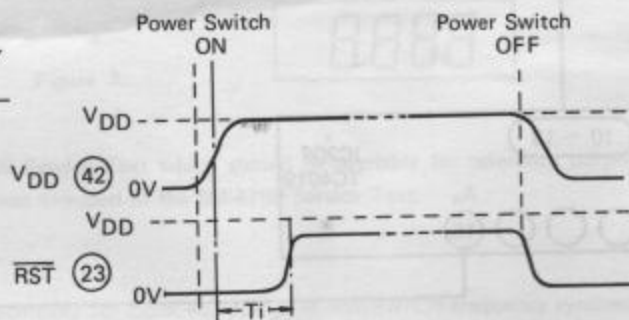
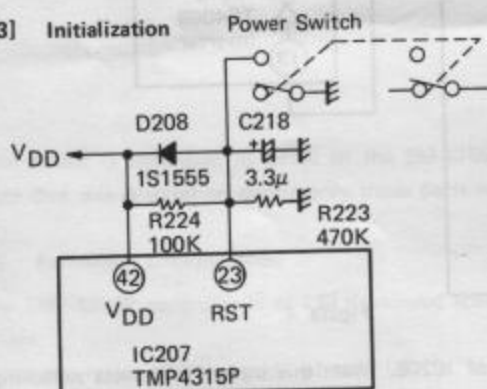


Figure 6.

- To initialize the IC207 LSI, it is essential that the voltages applied to pins 42 and 23 rise according to the timing shown in Fig. 6 above.
- If this timing is disrupted and pin 23 voltage becomes positive, digits displayed will become completely meaningless and further operation will become impossible. If, however, voltage is again applied according to the above time relation, normal operation will be restored.
- If the power switch is turned on, off, and then on again within about 1 second, the RST voltage may possibly exceed the V_{DD} voltage. To avoid this, the C218 capacitor is shorted when the power switch is turned off. If, however, this discharge operation should happen to fail, normal functioning may no longer be possible.

4. D117 TO D121 LIGHTING MODE

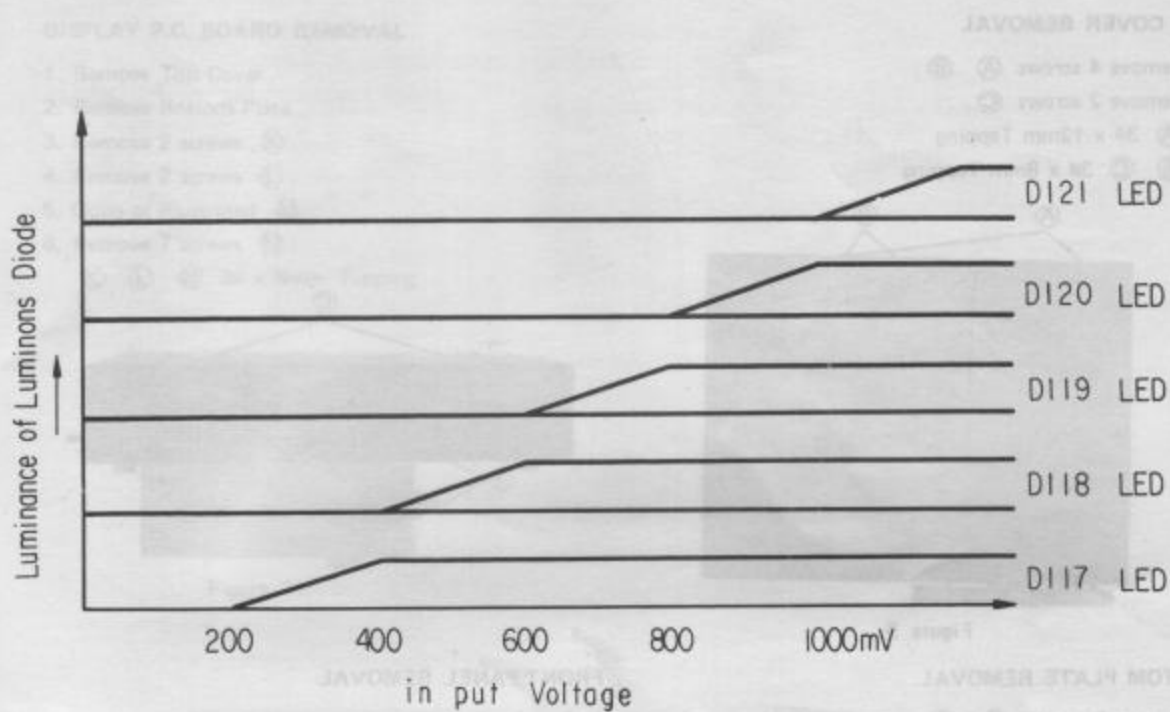


Figure 7.

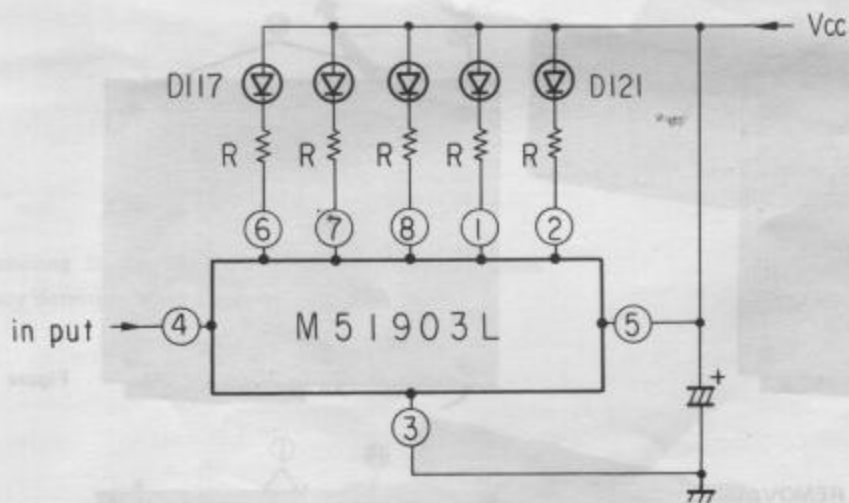


Figure 8.

5. DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Remove 4 screws (A) (B).
 2. Remove 2 screws (C).
- (A) 3 ϕ x 12mm Tapping
(B) (C) 3 ϕ x 8mm Tapping

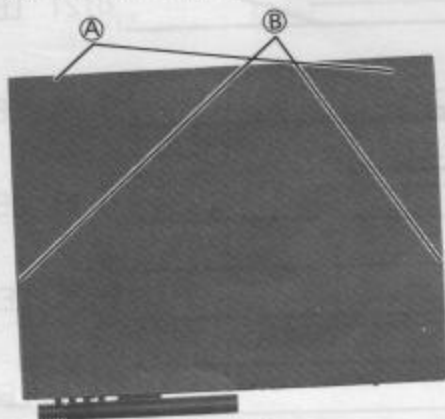


Figure 9.



Figure 10.

BOTTOM PLATE REMOVAL

1. Remove 8 screws (D) (E).
- (D) 3 ϕ x 8mm
(E) 3 ϕ x 8mm Tapping

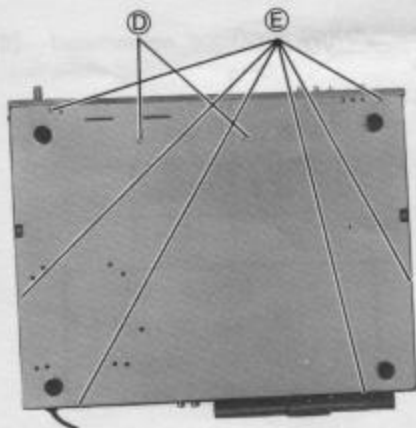


Figure 11.

FRONT PANEL REMOVAL

1. Remove Top Cover.
 2. Remove Bottom Plate.
 3. Remove 1 Knob (F).
 4. Remove 2 screws (G).
- (G) 3 ϕ x 12mm Tapping

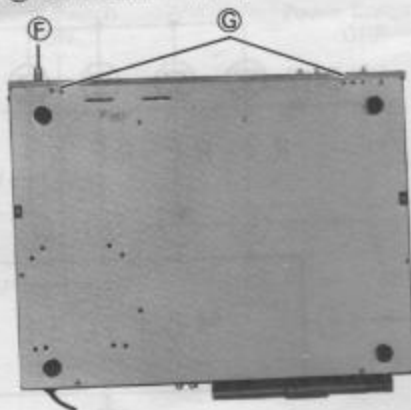


Figure 12.

SYNTHESIZER P.C. BOARD REMOVAL

1. Remove 3 screws and 1 Rivet (H) (I) (J).
- (H) 3 ϕ x 50mm Tapping
(I) 3 ϕ x 8mm
(J) 3 ϕ x 5.5mm Rivet

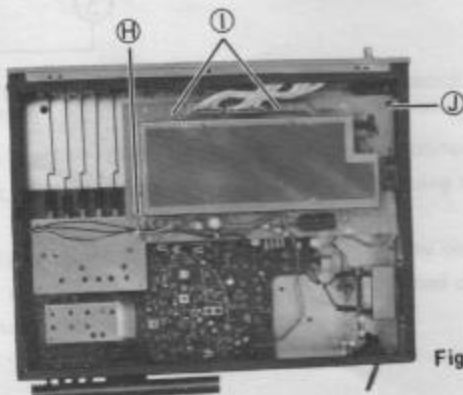


Figure 13.

DISPLAY P.C. BOARD REMOVAL

1. Remove Top Cover
2. Remove Bottom Plate
3. Remove 2 screws (K).
4. Remove 2 screws (L).
5. Open as illustrated (M).
6. Remove 7 screws (N).

(K) (L) (N) 3ø x 8mm Tapping

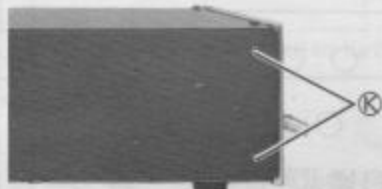


Figure 14.

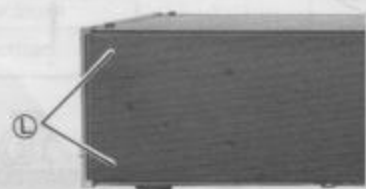


Figure 15.

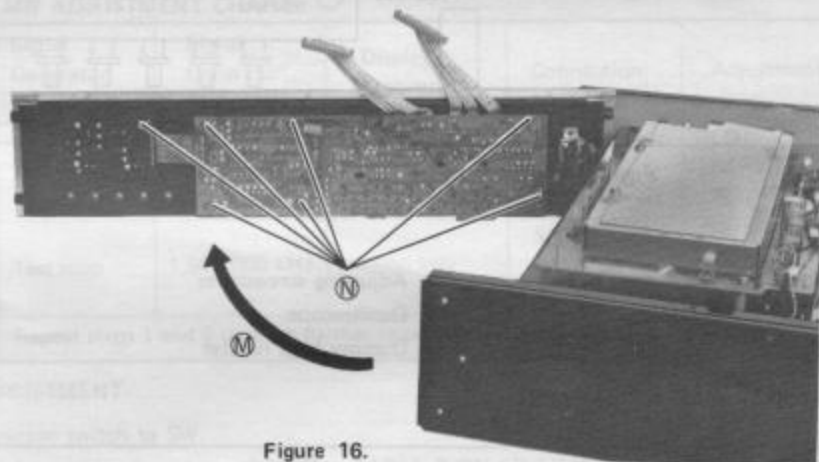


Figure 16.

Removing Display P.C. Board as illustrated will allow ready detection when servicing.



Figure 17.

12. ADJUSTMENTS

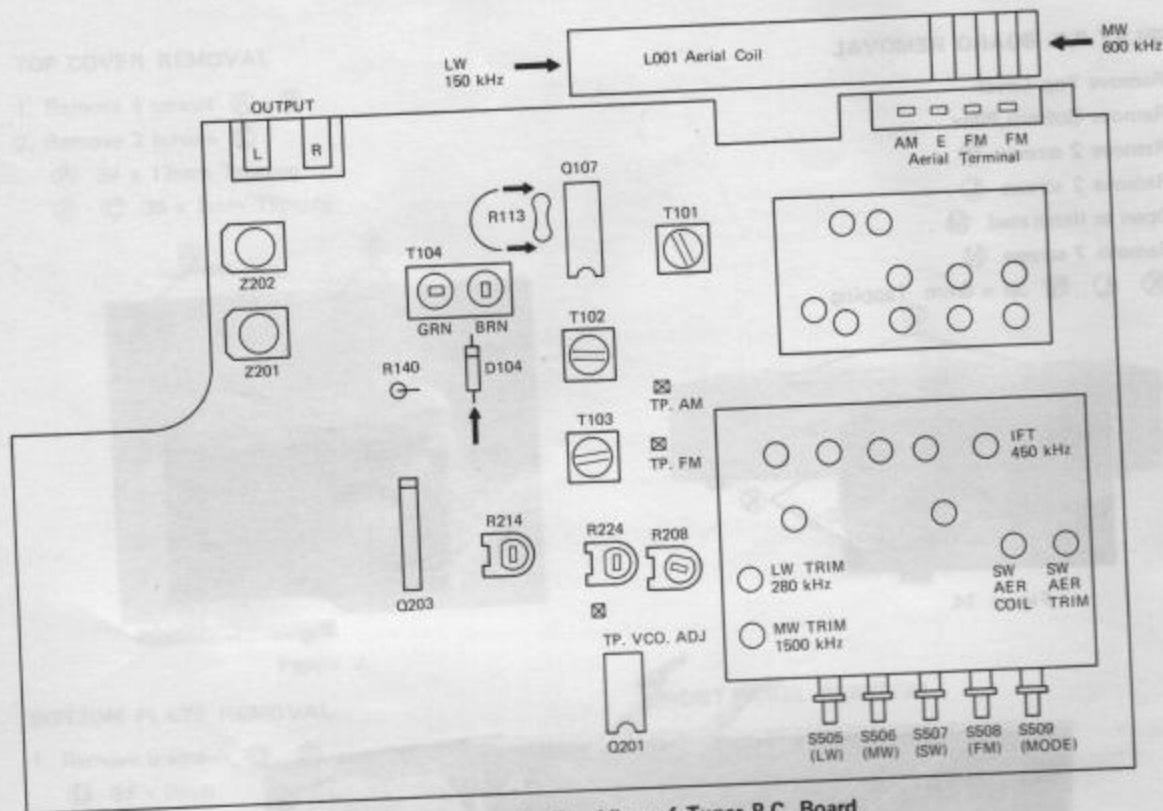


Figure 18. Top View of Tuner P.C. Board

AM ADJUSTMENT

Test equipments/Tools required

1. Signal generator (with frequency counter)
2. Sweep generator
3. Test loop Aerial
4. Adjusting screwdriver
5. Oscilloscope
6. Dummy load resistor

IF ADJUSTMENT/STOP SIGNAL ADJUSTMENT

Step	Adjustment	Remark
IF Response	T103	Pluck out core to the full.
	T101 T104	Adjust for scope pattern with specified marker (450 kHz) as illustrated in Fig.(a)
	T103	Adjust for scope pattern with specified marker (450 kHz) as illustrated in Fig.(b)

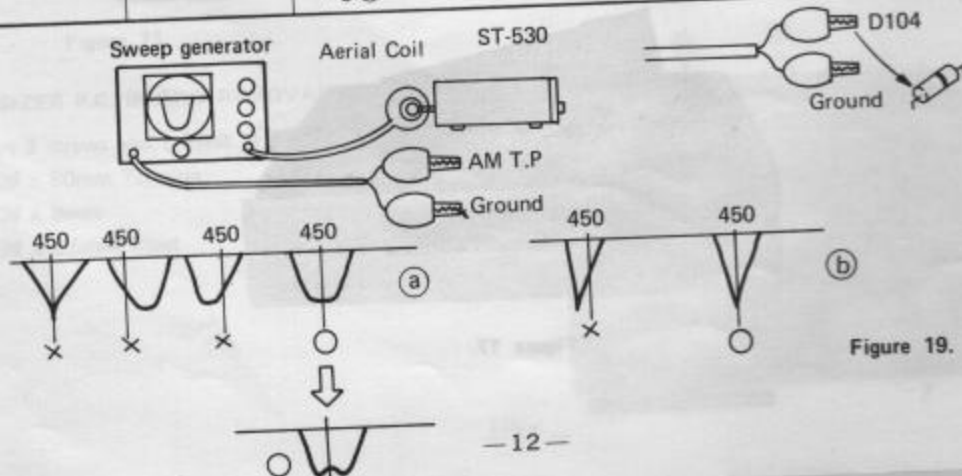


Figure 19.

■ LW ADJUSTMENT

1. Set Function switch to LW.
2. Set signal generator frequency as listed in TABLE 1 LW ADJUSTMENT CHART.
3. Proceed as outlined in the TABLE 1 LW ADJUSTMENT CHART.

TABLE 1 LW ADJUSTMENT CHART

Step	Signal Generator Connection	Signal Generator Frequency	Display Frequency	Connection	Adjustment	Remarks
1	Test loop	150.000 kHz	150 kHz	VTVM across OUTPUT terminal	L001 (LW) LEFT SIDE	Adjust for Maximum
2	Test loop	280.000 kHz	280 kHz	VTVM across OUTPUT terminal	LW AER Trim	Adjust for Maximum
3	Repeat steps 1 and 2 until no further improvement is noticed.					

■ MW ADJUSTMENT

1. Set Function switch to MW.
2. Set signal generator frequency as listed in TABLE 2 MW ADJUSTMENT CHART.
3. Proceed as outlined in the TABLE 2 MW ADJUSTMENT CHART.

TABLE 2 MW ADJUSTMENT CHART

Step	Signal Generator Connection	Signal Generator Frequency	Display Frequency	Connection	Adjustment	Remarks
1	Test loop	600.000 kHz	600 kHz	VTVM across OUTPUT terminal	L001 (MW) RIGHT SIDE	Adjust for Maximum
2	Test loop	1,500.000 kHz	1500 kHz	VTVM across OUTPUT terminal	MW AER Trim	Adjust for Maximum
3	Repeat steps 1 and 2 until no further improvement is noticed.					

■ SW ADJUSTMENT

1. Set Function switch to SW.
2. Set signal generator frequency as listed in TABLE 3 SW ADJUSTMENT CHART.
3. Proceed as outlined in the TABLE 3 SW ADJUSTMENT CHART.

TABLE 3 SW ADJUSTMENT CHART

Step	Signal Generator Connection	Signal Generator Frequency	Display Frequency	Connection	Adjustment	Remarks
1	Dummy load AM Aerial	5.900 MHz	5.9 MHz	VTVM across OUTPUT	SW AER Coil	Adjust for Maximum
2	Terminal	6.300 MHz	6.3 MHz	VTVM across OUTPUT	SW AER Trim	Adjust for Maximum
3	Repeat steps 1 and 2 until no further improvement is noticed.					

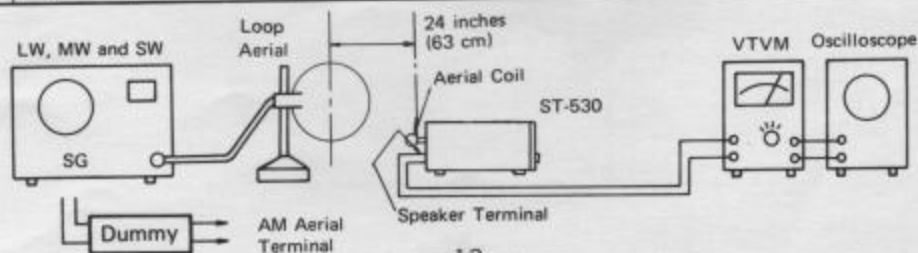

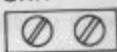


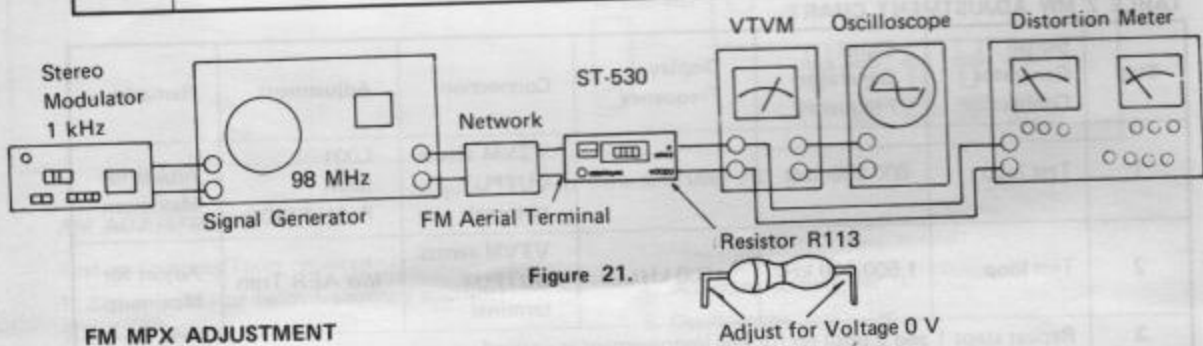
Figure 20.

■ FM IF ADJUSTMENT

1. Set Function switch to FM.
2. Set signal generator frequency as listed in TABLE 4 FM IF ADJUSTMENT CHART.
3. Proceed as outlined in the TABLE 4 FM IF ADJUSTMENT CHART.

TABLE 4 FM-IF ADJUSTMENT CHART

Step	Signal Generator Connection	Signal Generator Frequency	Display Frequency	Meter or Oscilloscope Connection	Adjustment	Remarks
1	Connect FM signal generator to FM Aerial Terminal. Connect the modulator to signal generator.	98.000 MHz 66 dB	98 MHz	Connect Tester to Resistor R113	T104 BRN 	Adjust for R113 Voltage 0 V
2				VTVM across Speaker	T104 GRN 	Adjust for Minimum Distortion
3	Repeat steps 1 and 2.					



FM MPX ADJUSTMENT

1. Frequency Counter
2. Signal Generator
3. Stereo Modulator
4. 300 ohm Dummy Aerial

Free-running Frequency Adjustment	Connect a frequency to the Test Point (VCO) and Adjust the R224 for 76 kHz reading counter with no-signal input.
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PILOT CANCEL ADJUSTMENT

Signal Generator Frequency	Switch Position	Display Frequency	Connection		Adjustment	Remarks
			Input	Output		
98.000 MHz (60 dB)	Function FM Push Mode STEREO STEREO LED Lighting	98.00 MHz	Connect Signal Generator to 300 ohm Aerial Terminal. Connect Stereo Modulator to Signal Generator. Set modulator signal to Pilot (19 kHz) only.	Connect VTVM to OUTPUT Terminal. Connect Oscilloscope to VTVM.	R208	Adjust for Pilot Signal Minimum.

SEPARATION ADJUSTMENT

Signal Generator Frequency	Switch Position	Display Frequency	Connection		Adjustment	Remarks
			Input	Output		
98.000 MHz (60 dB)	Function FM Push Mode STEREO STEREO LED Lighting	98.00 MHz	Connect Signal Generator to 300 ohm Aerial Terminal. Connect Stereo Modulator to Signal Generator.	Connect VTVM to OUTPUT Terminal. Connect Oscilloscope to VTVM.	R214	Stereo Modulator Switch L Position. Adjust so the OUTPUT of Rch is minimum as compared with Lch.
Set Stereo Modulator Switch to R position and observe the Lch and Rch.						

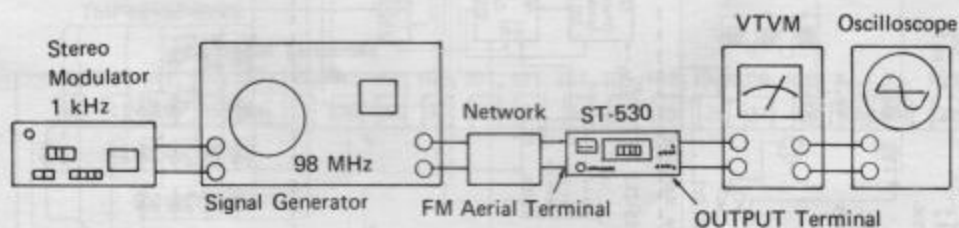


Figure 22.

7. BLOCK DIAGRAM

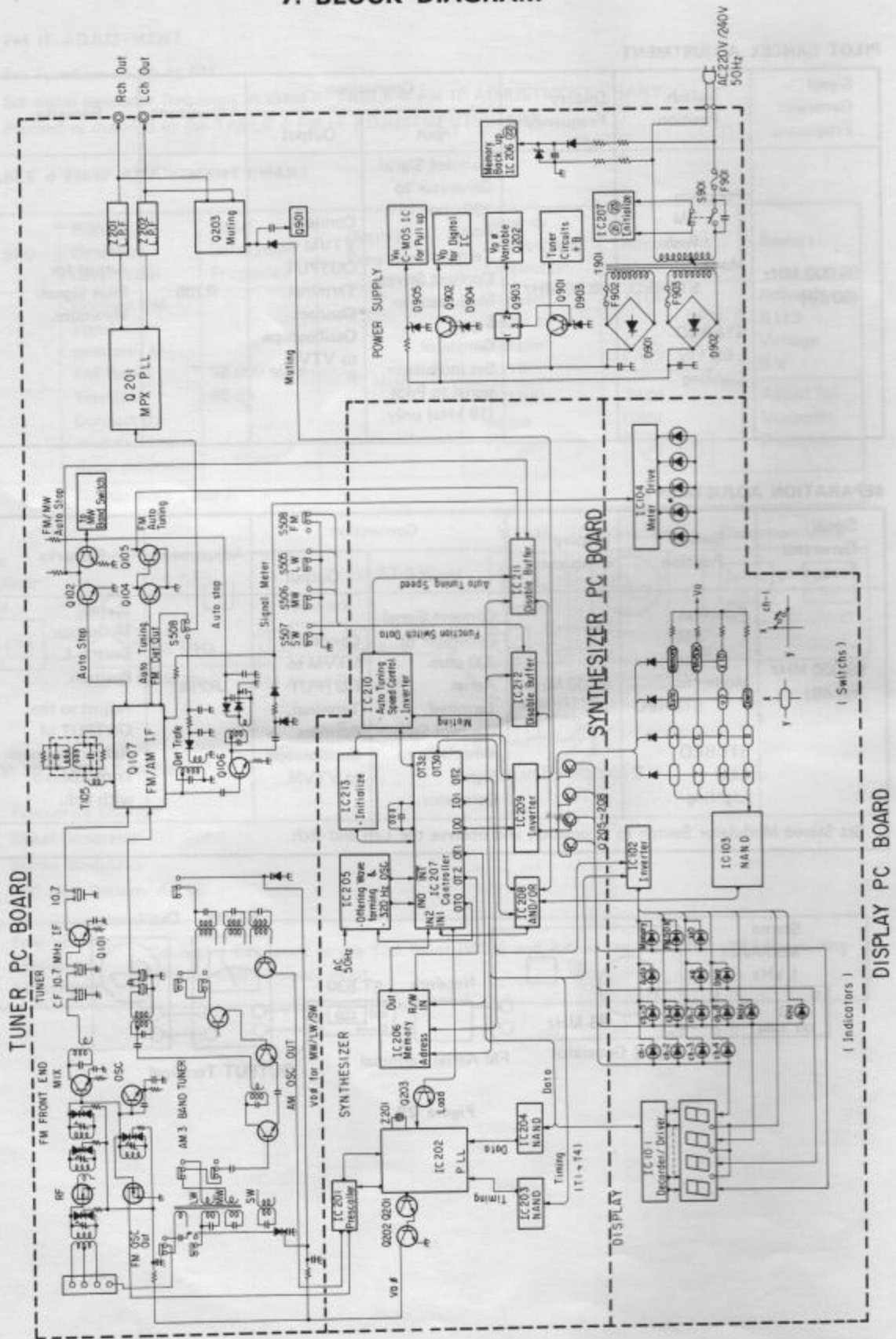
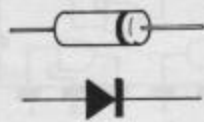


Figure 23.

8. EXTERNAL APPEARANCE OF TRANSISTOR IC'S AND DIODES



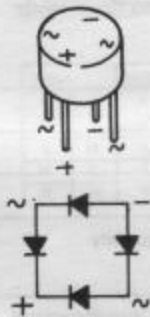
1N60

1S1555
1S246202Z5.6A
02Z8.2A
05Z8.2U
02Z15A

AR2433D-RED

PG5531T-GRN
PR5531T-RED

GL-9PR2



WL02M

2SC1815
2SC1923

2SA561

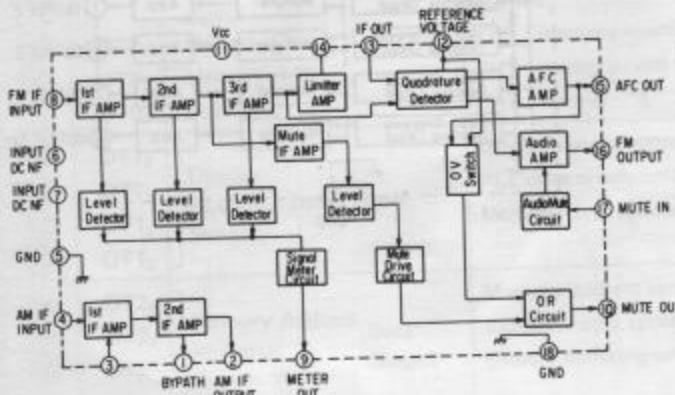
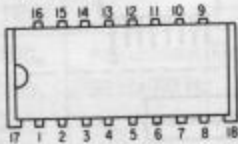


2SA509

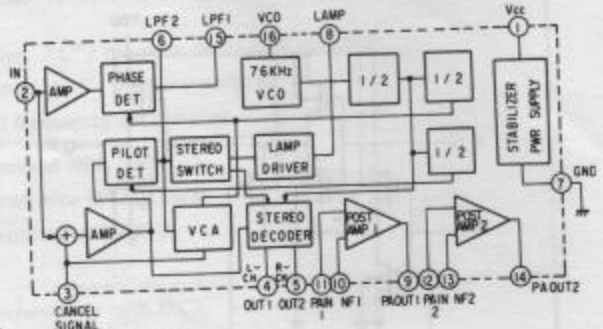


2SD234

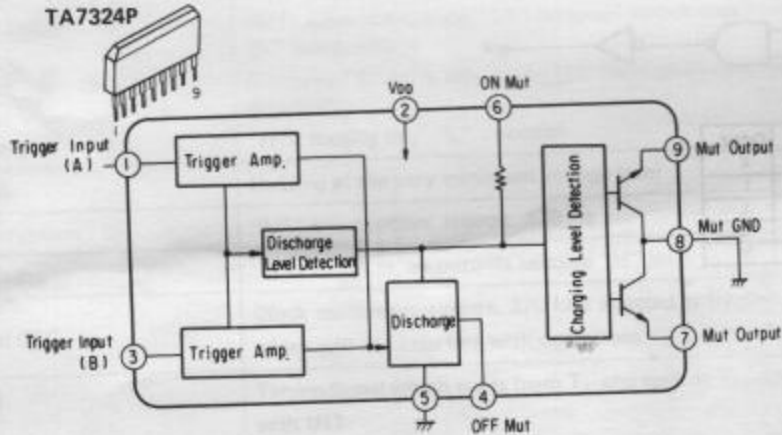
HA11211



TA7624P

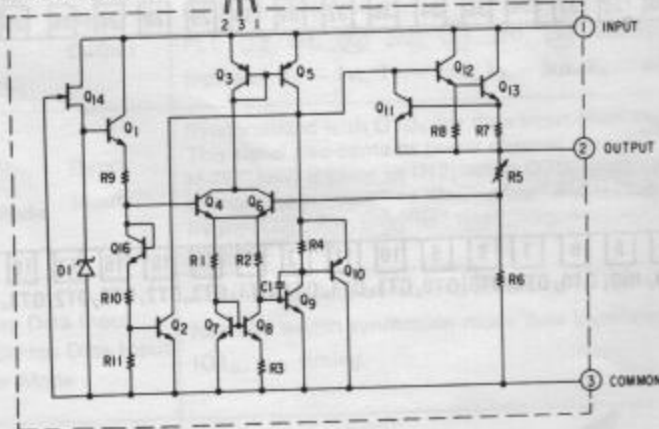


TA7324P



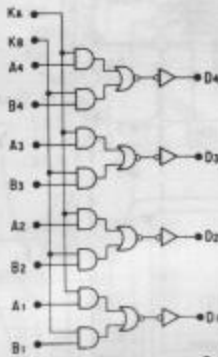
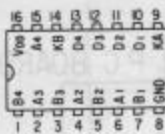
TA78L012P

EQUIVALENT CIRCUIT



Pin No.	Symbol	Function	Remarks	H..... High Level L..... Low Level
①	TEST	—	Should be connected to VDD	
②	IN0 ₀	Adjustment Timer	"H" : Min. Down Count, "L" : Hour Up Count	
③	IN0 ₁	50 Hz/60 Hz	"H" : 50 Hz "L" : 60 Hz	
④	IN0 ₂	AC IN	For Timer	
⑤	IN0 ₃	INT	Interruption Frequency Input	
⑥	OT0 ₀	Speed Control	"L" level when normal, "H" level when speed control input ^{③⑨} applied.	
⑦	OT0 ₁	Memory CE	"H" : memory inactive "L" : memory read/write possible	
⑧	OT0 ₂	Memory R/W	"H" : memory read out "L" : memory write in	
⑨	OT0 ₃	PLL Load	"H" : normal "L" : frequency data change	
⑩	OT1 ₀	} Display Data Output Memory	Display data synchronized with IO0 ₀ ~ 3 PLL data synchronized with OT3 ₀ (load) Memory data synchronized with OT0 ₁	
⑪	OT1 ₁			
⑫	OT1 ₂			
⑬	OT1 ₃			
⑭	OT2 ₀	} Memory Address Indicator Display Blanking	Memory address synchronized with OT0 ₁ Indicator data synchronized with IO0 ₀ Display blanking when ⑩ ~ ⑬ are 0 with ⑰ at "H".	
⑮	OT2 ₁			
⑯	OT2 ₂			
⑰	OT2 ₃			
⑱	OT3 ₀	Data Select	"H" : control key data, "L" : function switch data synthesizer mode INT synchronized	
⑲	OT3 ₁	Power ON Output	Normally "L" level, changes to "H" level when auto timer sleep switch on	
⑳	OT3 ₂	Muting	"H" : muting on, "L" : normal	
㉑	GND	Earth	Holding at the very minimum voltage level	
㉒	INT	Interruption	"L" : interruption, approx. 370 Hz	
㉓	RST	Initialize	"L" : initialize, all outputs become "H" level	
㉔	X _{IN}	X'tal OSC	Clock oscillation, approx. 370 kHz selected as frequency which will not interfere with operations.	
㉕	X _{OUT}			
㉖	IO0 ₃	} Digit Timing	Timing Signal which starts from T ₁ and ends at T ₄ , synchronized with INT.	
㉗	IO0 ₂			
㉘	IO0 ₁			
㉙	IO0 ₀			
㉚	IO1 ₃	} Memory Address PLL Digit Indicator Function Key	Memory ㉓ ㉔ digit designation, ㉕ ㉖ band designation, OT0 ₁ synchronization. PLL ㉗ 1st, ㉘ 2nd, ㉙ 3rd, ㉚ 4th digit OT0 ₃ synchronization. Indicator T ₁ - 1st, T ₂ - 2nd, T ₃ - 3rd, T ₄ - 4th synchronization	
㉛	IO1 ₂			
㉜	IO1 ₁			
㉝	IO1 ₀			
㉞	IN2 ₃	} Memory PLL Indicator Mode	Synchronized with OT0 ₁ for data input from external memory. This signal also contains preset channel data. If "H" level applied to IN2 ₁ while OT0 ₁ is also at "H" level, display changes from "time" to "frequency" and then display mode designated by pin ㉟. Pin ㉟ "H" level: frequency display, "L" level: time display.	
㉟	IN2 ₂			
㊱	IN2 ₁			
㊲	IN2 ₀			
㊳	IN1 ₃	} Control Key Data Input Function Switch Data Input Synthesizer Mode	Control key data transferred according to T ₁ ~ T ₄ timing, while function switch synthesizer mode data transferred according to IO1 _{0, 1, 3} timing.	
㊴	IN1 ₂			
㊵	IN1 ₁			
㊶	IN1 ₀			
㊷	VDD	VDD	+5V	

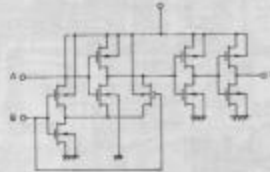
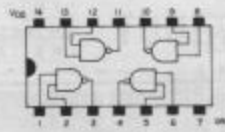
TC 4019P



$D = A \cdot KA + B \cdot KB$

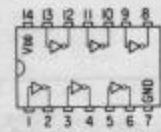
INPUT				OUT
A	KA	B	KB	D
L	L	L	L	L
L	L	L	H	L
L	L	H	L	L
L	L	H	H	H
L	H	L	L	L
L	H	L	H	H
L	H	H	L	L
L	H	H	H	H
H	L	L	L	L
H	L	L	H	L
H	L	H	L	L
H	L	H	H	H
H	H	L	L	H
H	H	L	H	H
H	H	H	L	H
H	H	H	H	H

TC 4011



INPUT		OUTPUT
A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

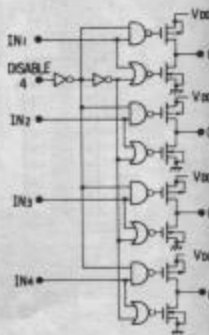
TC 4069UBP



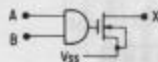
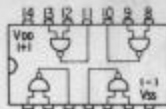
(1/6 TC-4069UBP)

INPUT	OUTPUT
A	X
L	H
H	L

TC 5012P



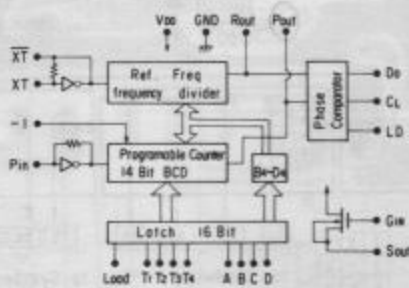
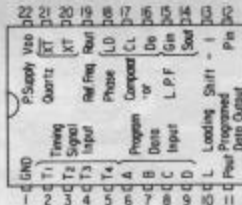
TC 5029P



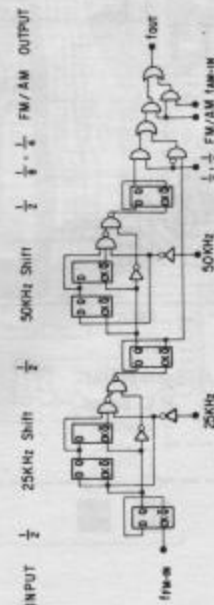
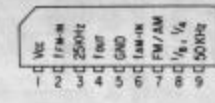
INPUTS		OUTPUT
B	A	X
L	L	HZ
L	H	HZ
H	L	HZ
H	H	L

HZ: High Impedance

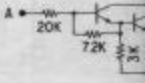
TC 9123P



TD 6102P



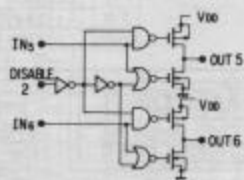
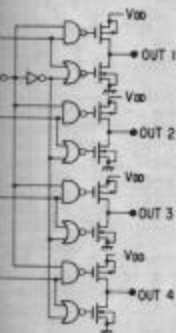
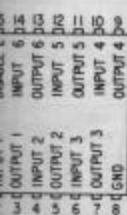
TD 62105P



INPUT		OUTPUT
A	X	
L	HZ	
H	L	

HZ: High Imp

C 5012P



DISABLE INPUT	DIS. 4	DIS. 2	INPUT	OUTPUT
L	L	L	L	L
L	L	H	H	H
L	H	*	HZ	HZ
H	L	*	HZ	HZ
H	H	*	HZ	HZ

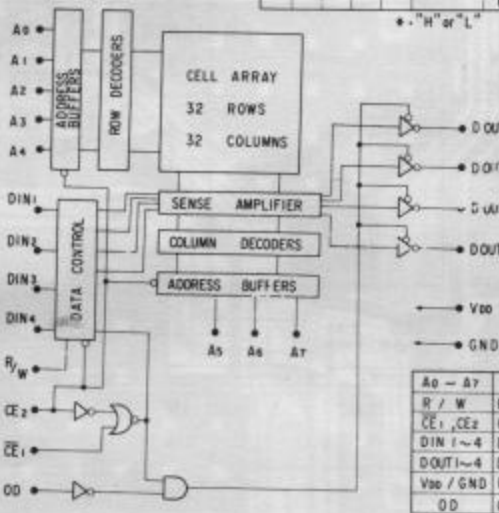
* "H" or "L"
 * OUTPUT 1~4 High Impedance
 ** OUTPUT 5, 6
 *** OUTPUT 1~6

TC 5501P



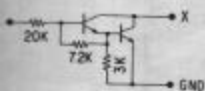
CE1	CE2	R/W	OD	DIN	A0~A7	Oper1	OPERATION
H	*	*	*	*	Changing	High Impedance	Precharging
*	L	*	*	*	Changing	↑	Precharging
L	H	L	H	H/L	Stable	↑	Write "H/L"
L	H	L	L	H/L	Stable	READ H/L	Write / Read "H/L"
L	H	H	L	*	Stable	READ H/L	Read Cycle

* "H" or "L"



A0 - A7	ADDRESS INPUTS
R / W	READ/WRITE INPUT
CE1, CE2	CHIP ENABLE
DIN 1~4	DATA INPUT
DOUT1~4	DATA OUTPUT
Vcc / GND	POWER SUPPLY
OD	OUTPUT DISABLE

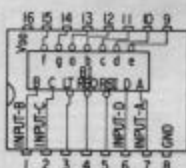
TD 62105P



INPUT	OUTPUT
A	X
L	HZ
H	L

HZ - High Impedance

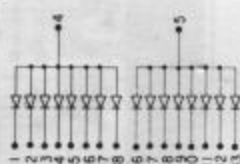
TD 34247AP



BI or RBO --- Blanking Input or Ripple Blanking Output
 LT --- Lamp Test Input
 RBI --- Ripple Blanking Input

FUNCTION	INPUT							OUTPUT							NOTE
	LT	RBI	D	C	B	A	BI/RBO	a	b	c	d	e	f	g	
0	H	H	L	L	L	L	H	ON	ON	ON	ON	ON	ON	OFF	1
1	H	X	L	L	L	H	H	OFF	ON	ON	OFF	OFF	OFF	OFF	1
2	H	X	L	L	H	L	H	ON	ON	OFF	ON	ON	OFF	ON	2
3	H	X	L	L	H	H	H	ON	ON	ON	ON	OFF	OFF	ON	3
4	H	X	L	H	L	L	H	OFF	ON	ON	OFF	OFF	ON	ON	4
5	H	X	L	H	L	H	H	ON	OFF	ON	ON	OFF	ON	ON	5
6	H	X	L	H	H	L	H	OFF	OFF	ON	ON	ON	ON	ON	6
7	H	X	L	H	H	H	H	ON	ON	ON	OFF	OFF	OFF	OFF	7
8	H	X	H	L	L	L	H	ON	ON	ON	ON	ON	ON	ON	8
9	H	X	H	L	L	H	H	ON	ON	ON	OFF	OFF	ON	ON	9
10	H	X	H	L	H	L	H	OFF	OFF	OFF	ON	ON	OFF	ON	10
11	H	X	H	L	H	H	H	OFF	OFF	ON	ON	OFF	OFF	ON	11
12	H	X	H	H	L	L	H	OFF	ON	OFF	OFF	OFF	ON	ON	12
13	H	X	H	H	L	H	H	ON	OFF	OFF	ON	OFF	ON	ON	13
14	H	X	H	H	H	L	H	OFF	OFF	OFF	ON	ON	ON	ON	14
15	H	X	H	H	H	H	H	OFF	OFF	OFF	OFF	OFF	OFF	OFF	15
RBI	X	X	X	X	X	X	L	OFF	OFF	OFF	OFF	OFF	OFF	OFF	2
RBI	H	L	L	L	L	L	L	OFF	OFF	OFF	OFF	OFF	OFF	OFF	3
LT	L	X	X	X	X	X	H	ON	ON	ON	ON	ON	ON	ON	4

TLG 325



9. P.C. BOARD PARTS LOCATIONS AND

TUNER & POWER SUPPLY P.C. BOARD (BOTTOM VIEW)

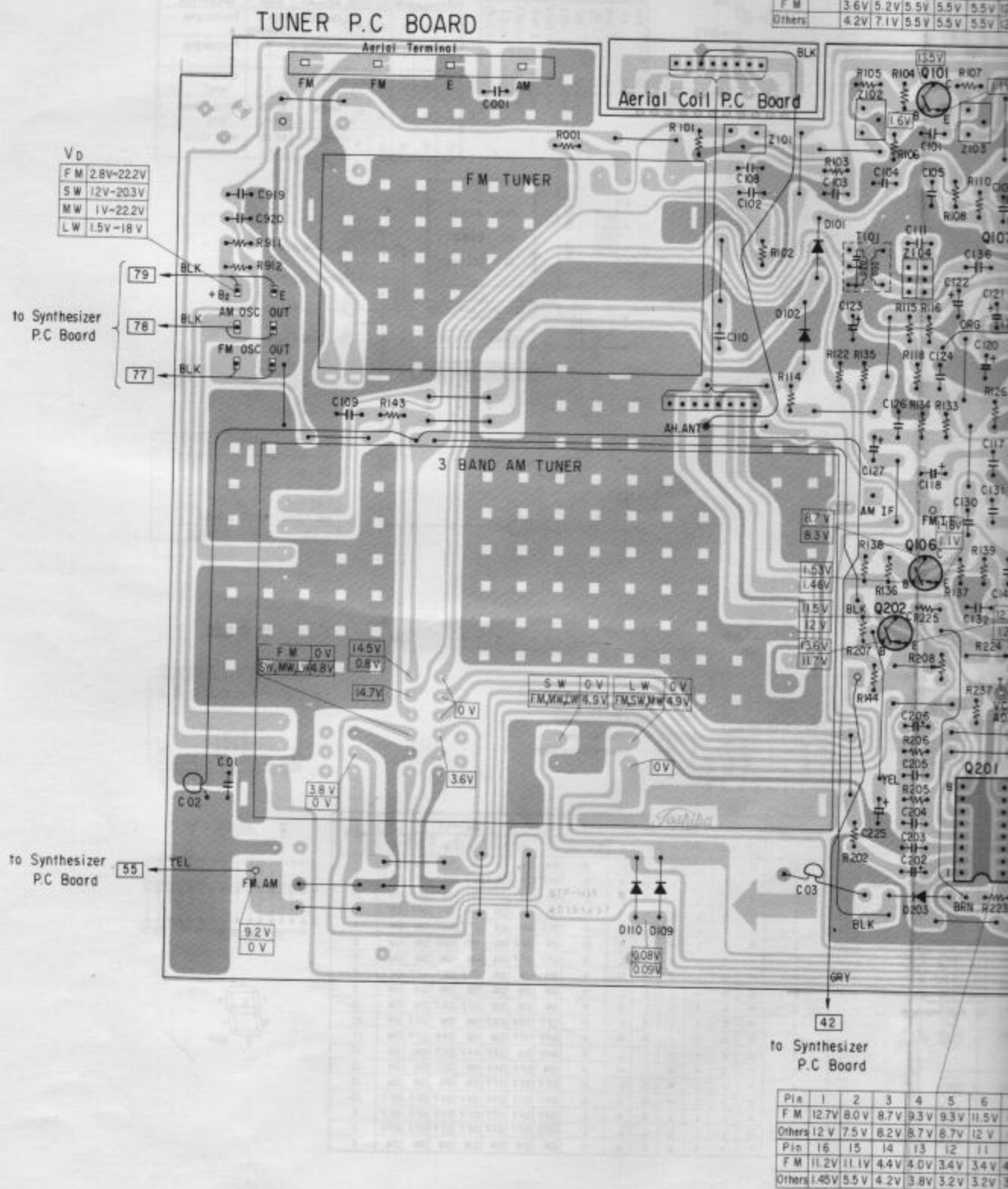


Figure 24

DISPLAY & SYNTHESIZER P.C. BOARD (BOTTOM VIEW)

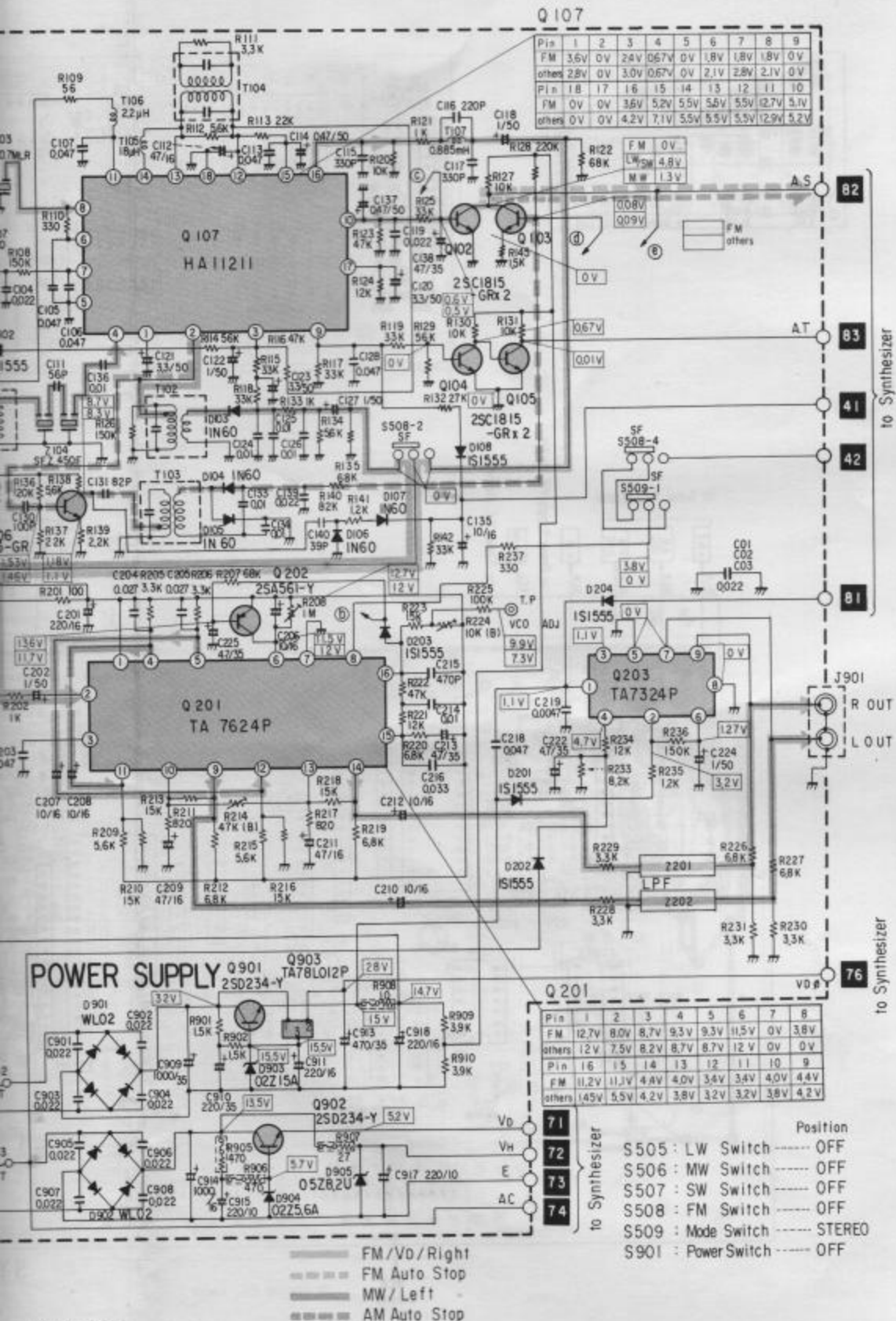


Figure 25.

DISPLAY & SYNTHESIZER P.C. BOARD (BOTTOM VIEW)

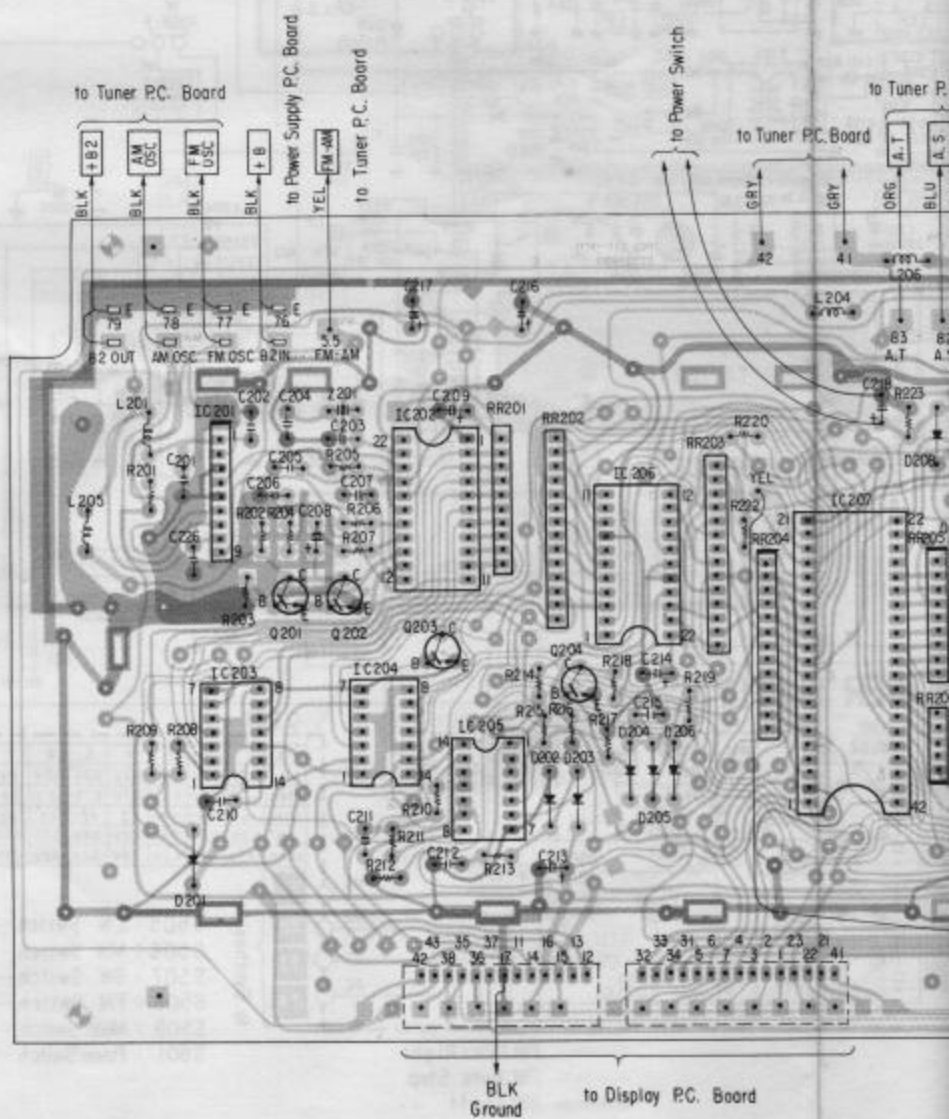
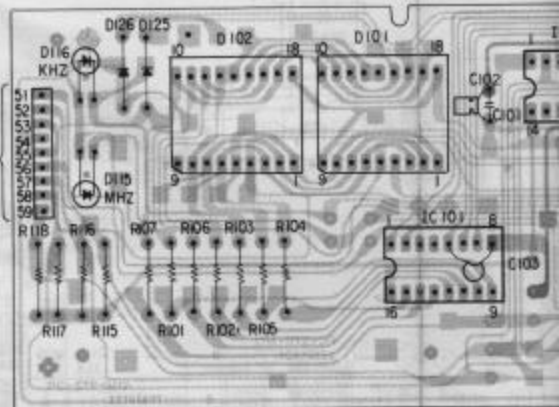
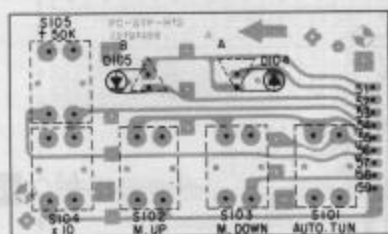


Figure 26

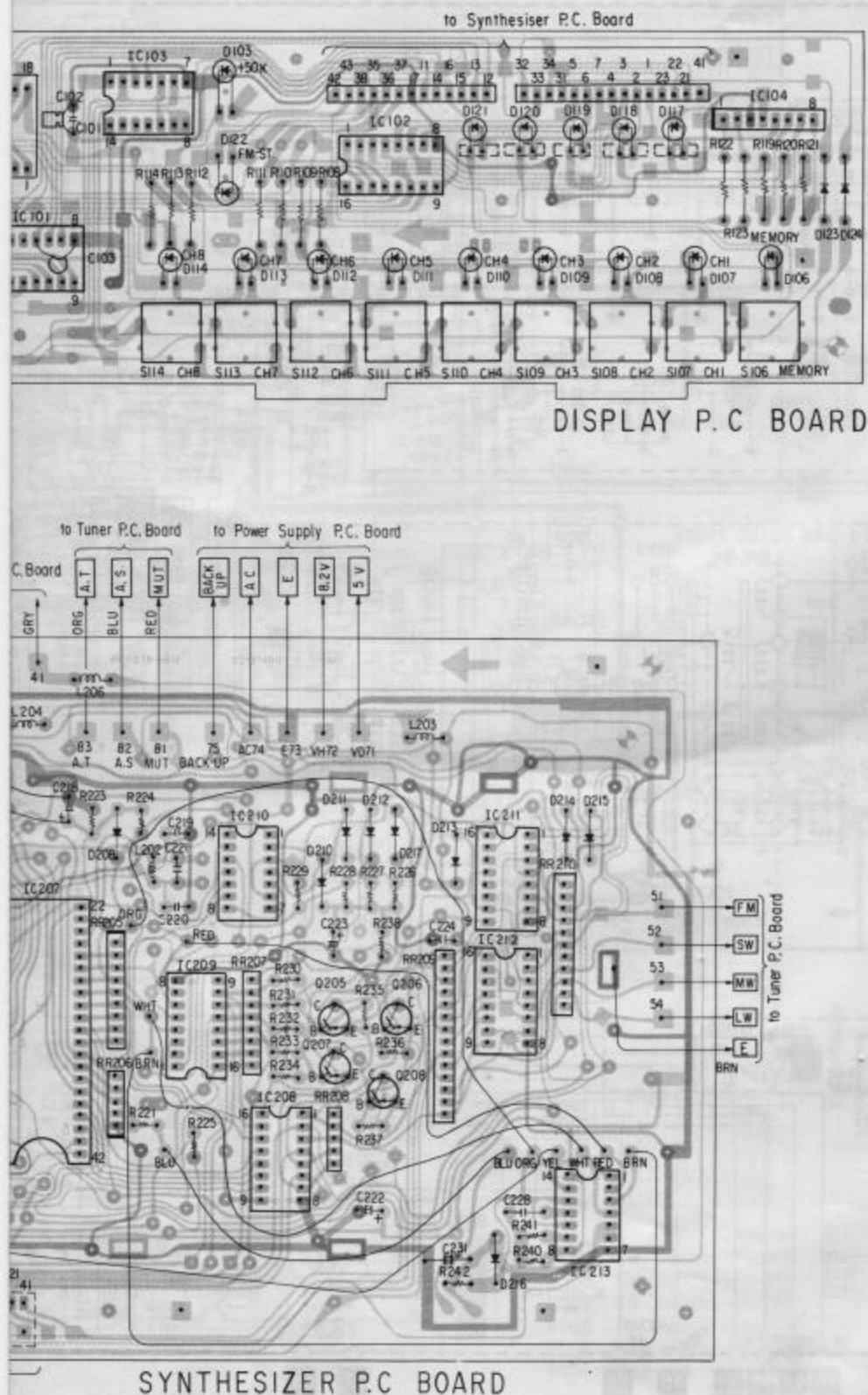


Figure 26.

SCHEMATIC DIAGRAM (DISPLAY & SYNTHESIZER SECTION)

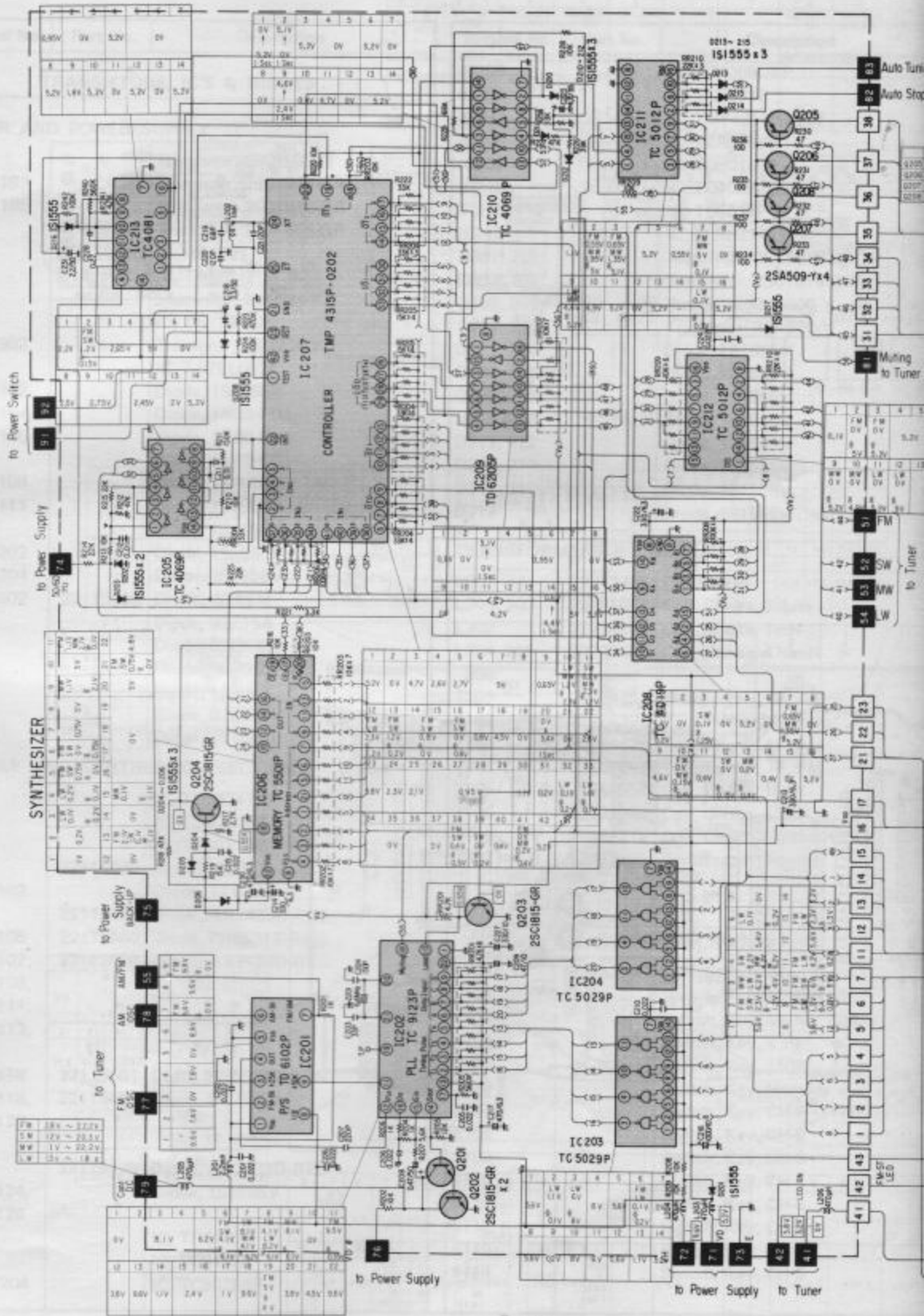
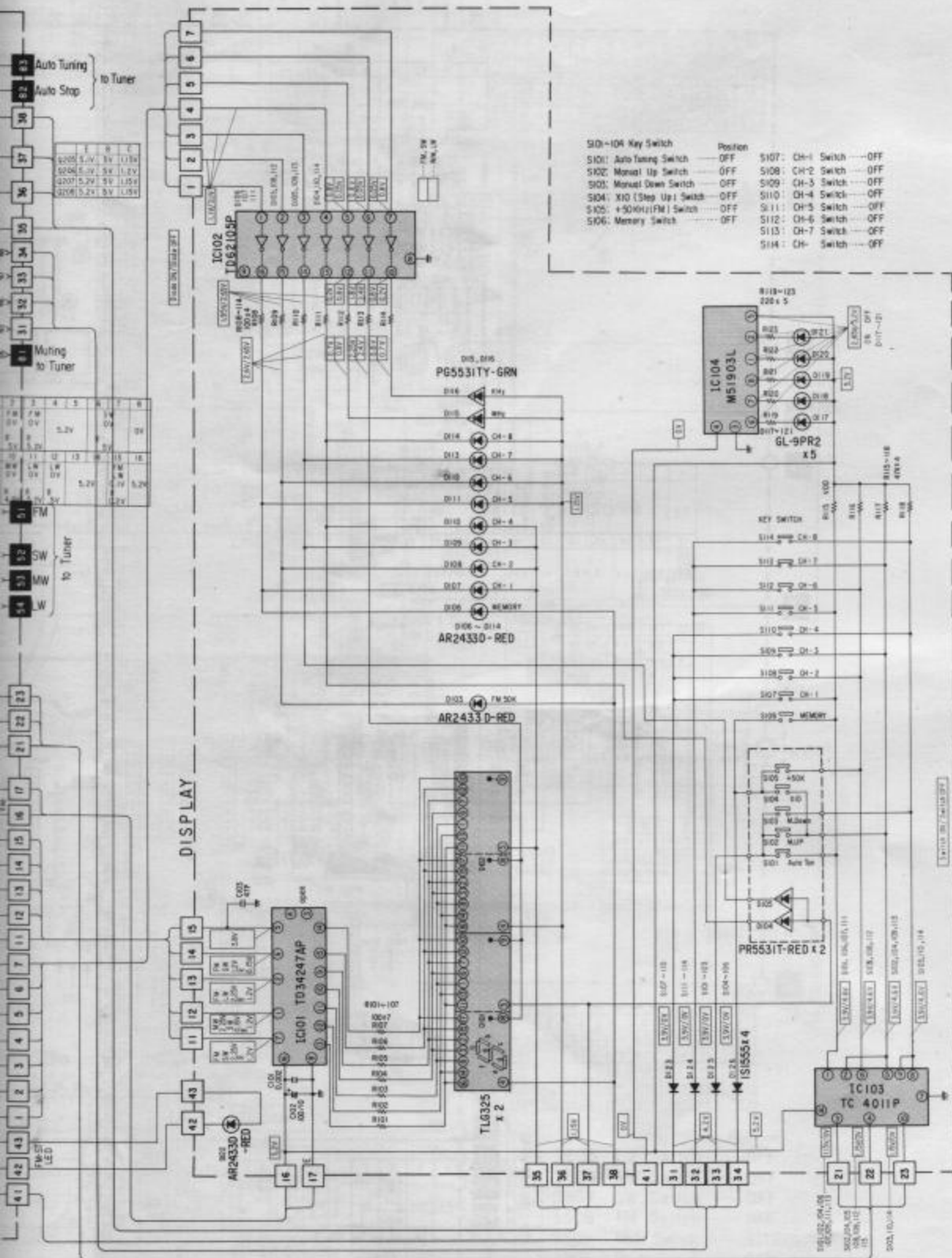


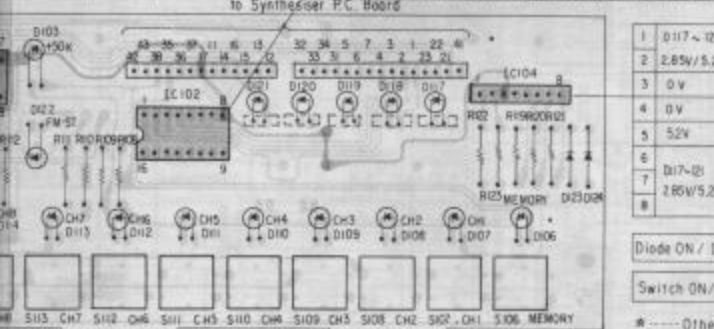
Figure 27.



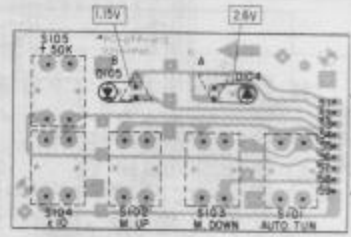
- SI0-104 Key Switch Position
- SI01: Auto Tuning Switch --- OFF
 - SI02: Manual Up Switch --- OFF
 - SI03: Manual Down Switch --- OFF
 - SI04: X10 (Step Up) Switch --- OFF
 - SI05: +50KHz(FM) Switch --- OFF
 - SI06: Memory Switch --- OFF
 - SI07: CH-1 Switch --- OFF
 - SI08: CH-2 Switch --- OFF
 - SI09: CH-3 Switch --- OFF
 - SI10: CH-4 Switch --- OFF
 - SI11: CH-5 Switch --- OFF
 - SI12: CH-6 Switch --- OFF
 - SI13: CH-7 Switch --- OFF
 - SI14: CH- Switch --- OFF

Figure 27.

4	5	6	7	1	2	3	4	5	6	7	8
S102, 104 105, 108 113	S102, 104 109, 113	S105, 108 112	0V	D106, 107 111	D103, 108 112	D105, 109 113	D104, 110 114	FM SW 0.8V	FM SW 0.55V	FM SW 0.8V	0V
1.15V/0.1V	3.9V/4.6V	3.9V/4.6V		1.1V/0.1V	1.1V/0.1V	1.1V/0.1V	1.1V/0.1V	0.05V	0.8V		
11	12	13	14	9	10	11	12	13	14	15	16
			5.2V	FM SW 0.8V	FM SW 1.8V	FM SW 0.2V	D104, 110 114	D105, 109 113	D103, 108 112	D106, 107 111	
				0.2V	2.4V	0.8V	1.95V/2.60V	1.95V/2.60V	1.95V/2.65V	1.95V/2.60V	



DISPLAY P.C. BOARD

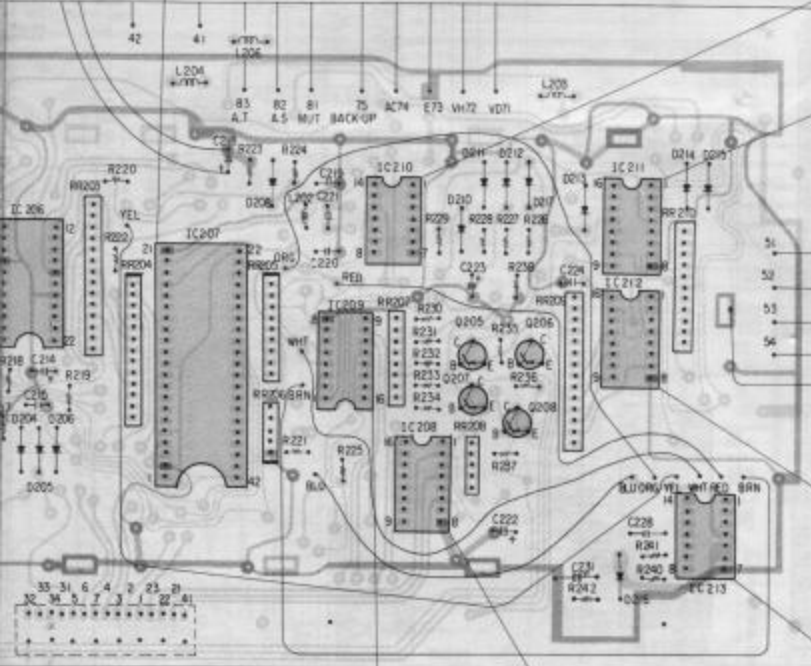


- 1 D117-121
- 2 2.65V/5.2V
- 3 0V
- 4 0V
- 5 5.2V
- 6 D17-21
- 7 2.65V/5.2V
- 8

Diode ON / Diode OFF
Switch ON / Switch OFF
★ --- Others

11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FM SW 1.1V	5.2V	0V	4.7V	2.6V	2.7V	5V	0.65V	LW MW 1.2V	LW MW 2.3V	LW MW 2.5V	FM SW 0.8V	FM SW 0.8V	FM SW 0.8V	FM SW 0.8V	FM SW 0.8V	FM SW 0.8V	0.8V	4.3V	0V	5.4V	0V
1.1V								0.2V	2.3V	1.2V	1.2V	0.2V	0V	0V	0V	0V	0V	0V	0V	0V	0V
22	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
4.8V	2.6V	3.8V	2.3V	2.1V	0.95V			1.1V	0.2V	0.1V	1.1V										
										0.2V	0.1V										

1	2	3	4	5	6	7
0V	5.1V	5.2V	0V	5.2V	0V	5.2V
0V	5.2V	0V	5.2V	0V	5.2V	0V
8	9	10	11	12	13	14
4.6V	0V	0.4V	4.7V	0V	5.2V	0V
0V	2.4V	1.5V	0V	0V	0V	0V



1	2	3	4	5	6	7	8
FM SW 0.8V	FM SW 0.8V	FM SW 0.8V	5.2V	0.55V	FM SW 0.8V	FM SW 0.8V	0V
1.1V	1.35V	3.5V	5.1V	5.1V	0.1V	0.1V	0V
9	10	11	12	13	14	15	16
LW MW 4.4V	4.9V	5.1V	0V	5.2V	0V	0.1V	5.2V
★	★	★	★	★	★	★	★
5.2V	5.2V	5.1V	1.5V				

	E	B	C
Q205	5.1V	5V	1.5V
Q206	5.1V	5V	1.2V
Q207	5.2V	5V	1.0V
Q208	5.2V	5V	1.5V

1	2	3	4	5	6	7	8
0.1V	FM SW 0V	FM SW 0V	0.2V	5V	0V	0V	0V
★	★	★	★	★	★	★	★
5.2V	5.2V	5.2V	5.2V	5.2V	5.2V	5.2V	5.2V
9	10	11	12	13	14	15	16
LW MW 0V	LW MW 0V	LW MW 0V	LW MW 0V	5.2V	0.1V	3.2V	0.2V
★	★	★	★	★	★	★	★
5.2V	4.9V	5.2V	5V				

1	2	3	4	5	6	7
0.95V	0V	5.2V	0V			
8	9	10	11	12	13	14
5.2V	1.8V	5.2V	0V	5.2V	0V	5.2V

2	3	4	5	6	7
FM SW 1.2V	2.65V	5V	0V		
★	★	★	★	★	★
0.15V					
9	10	11	12	13	14
2.75V	2.45V	2V	5.2V		

1	2	3	4	5	6	7	8
0.8V	0V	5.1V	0V	0.95V	0V		
★	★	★	★	★	★	★	★
1.5V							
9	10	11	12	13	14	15	16
0V	4.2V	0.6V	4.4V	5V	3.8V		
★	★	★	★	★	★	★	★
1.5V							

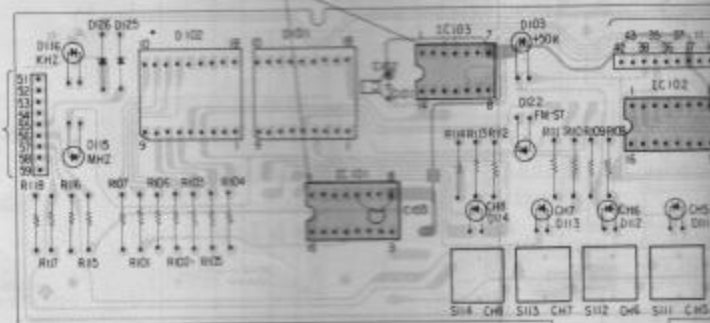
1	2	3	4	5	6	7	8
LW MW 4.4V	0V	0.1V	0V	5.2V	0V	FM SW 0.8V	FM SW 0.8V
★	★	★	★	★	★	★	★
5.2V		1.25V				0.3V	0.2V
9	10	11	12	13	14	15	16
FM SW 0.8V	0.4V	0.4V	0.4V	0.4V	0V	5.2V	
★	★	★	★	★	★	★	★
0.4V		0.15V	0.4V				

Figure 28.

DISPLAY & SYNTHESIZER P.C. BOARD (VOLTAGES OF MEASURING POINTS)

1	2	3	4	5	6	7	8
MW 2.25V 1.5V 2.25V 2V	FM 1.2V 1.2V 1.2V	—	—	58V	FM 1.2V 1.2V 2.25V	FM 1.2V 1.2V 2.25V	0V
9	10	11	12	13	14	15	16
—	—	—	—	—	—	—	5.2V

1	2	3	4	5	6
S105, 106 0V, 1.1V	S102, 104 106, 113	S101, 102 04, 06 07, 09 11, 113 113	S102, 104 05, 108 09, 112 113	S102, 104 109, 113	S105, 108 112
3.3V/4.6V	3.3V/4.6V	1.15V/0V	1.15V/0V	3.3V/4.6V	3.3V/4.6V
8	9	10	11	12	13
S105, 110, 114	S103, 110 114	—	—	—	—
3.3V/4.6V	1.15V/0V	—	—	—	—



1	2	3	4	5	6	7	8	9	10	11
0V	8.1V	6.2V	FM 5W 4.1V	5W 8.1V	FM 4.1V	MW 8.1V	FM 1.2V	MW 8.1V	FM 9.5V	—
12	13	14	15	16	17	18	19	20	21	22
3.8V	9.6V	1.1V	2.4V	1V	9.6V	FM 3V	3.8V	4.5V	9.6V	—
—	—	—	—	—	—	—	—	—	—	—

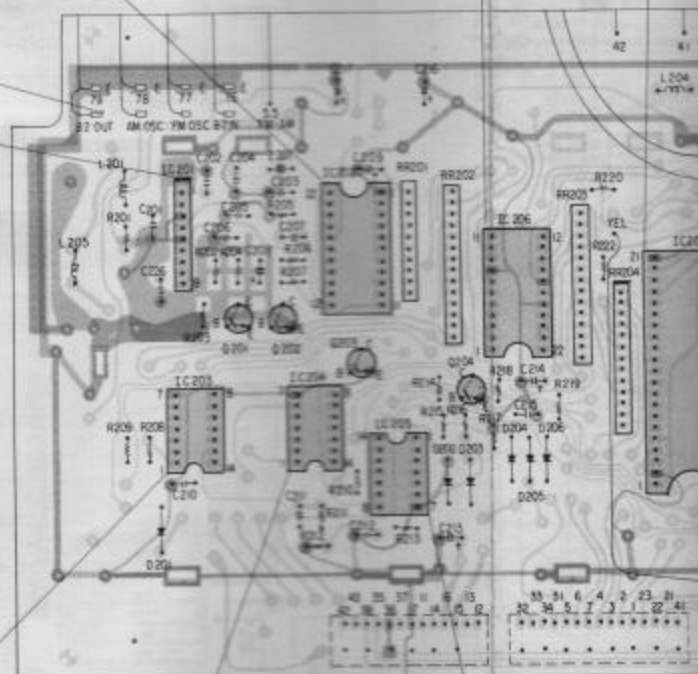
1	2	3	4	5	6	7	8	9	10	11
1V	0.2V	FM 1.1V	FM 1.2V	FM 1.2V	FM 1.2V	FM 1.2V	FM 1.2V	MW 1.1V	5V	FM 1.1V
12	13	14	15	16	17	18	19	20	21	22
0V	FM 1.1V	0V	0.1V	—	—	—	—	5V	0.75V	8.8V
—	—	—	—	—	—	—	—	—	—	—

1	2	3	4
5.2V	0V	4.7V	2.5V
22	23	24	25
2.6V	3.8V	2.3V	2.1V

X-Vp	FM	2.8V ~ 22.2V
	SW	1.2V ~ 20.3V
	MW	1V ~ 22.2V
	LW	1.5V ~ 18V

1	2	3	4	5	6	7	8	9
9.6V	7.4V	0V	7.8V	0V	8.9V	FM 5.4V	9.6V	FM 9.4V
—	—	—	—	—	—	—	—	—

	E	B	C
Q201	0.6V	1.1V	8Vp
Q202	0V	0.6V	8Vp
Q203	0V	0V	0.65V
Q204	0V	—	0V



1	2	3	4	5	6	7
5.6V	LW 1.1V	LW 6V	8V	3.6V	FM 0.1V	0V
8	9	10	11	12	13	14
5.6V	0.2V	8V	5V	5.6V	1.1V	5.2V

1	2	3	4	5	6	7
5.6V	1.1V	1.1V	2.2V	5.6V	0V	—
8	9	10	11	12	13	14
5.6V	1.2V	4V	4.2V	5.4V	2.3V	5.2V

1	2	3	4	5	6	7
2.7V	FM 5W 1.2V	2.65V	0V	0V	—	—
8	9	10	11	12	13	14
2.5V	2.75V	2.45V	2V	5.2V	—	—

Figure 28.

SCHEMATIC DIAGRAM (OVERALL)

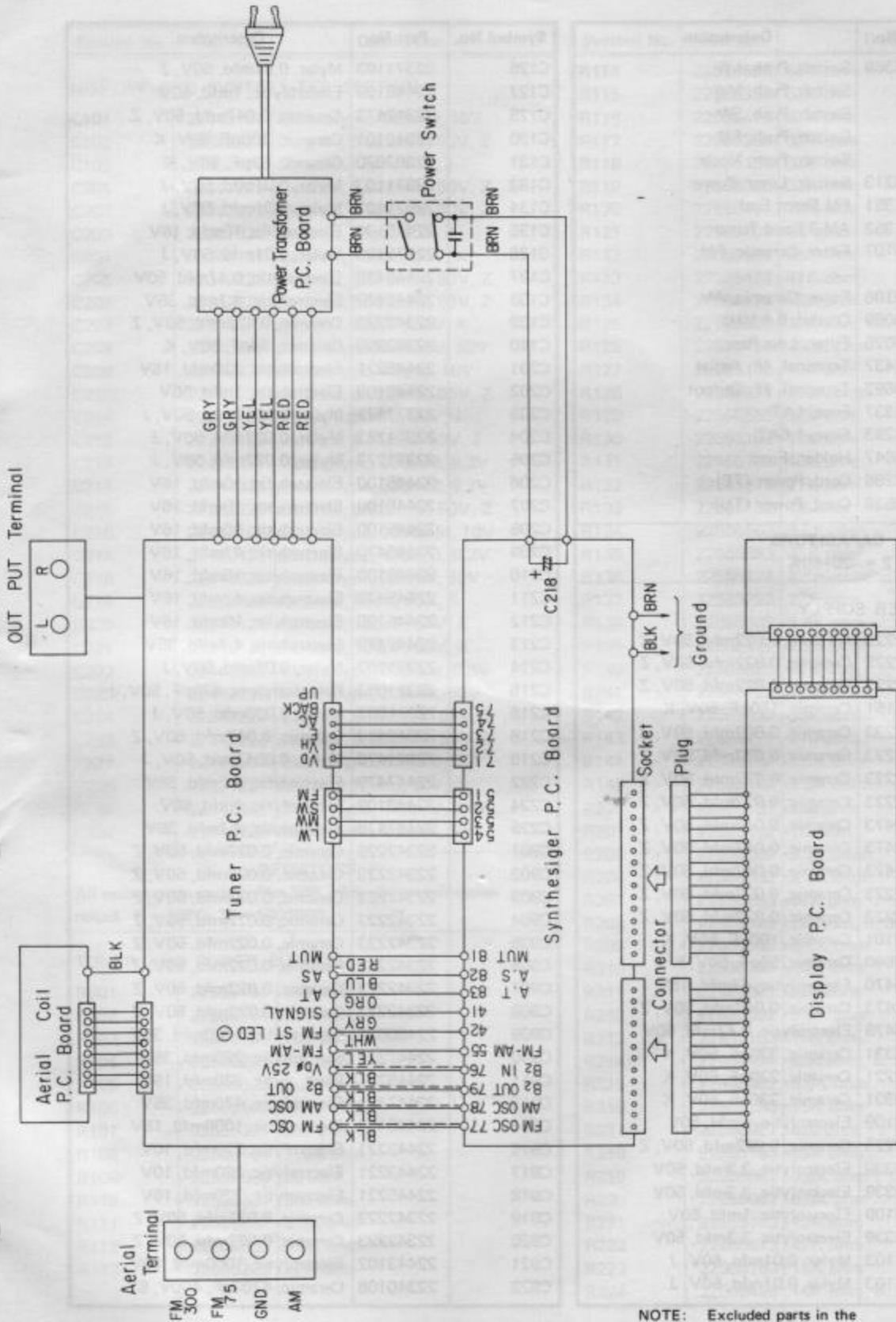


Figure 30.

NOTE: Excluded parts in the Parts List are not available as replacement parts.

10. CABINET EXPLODED VIEW

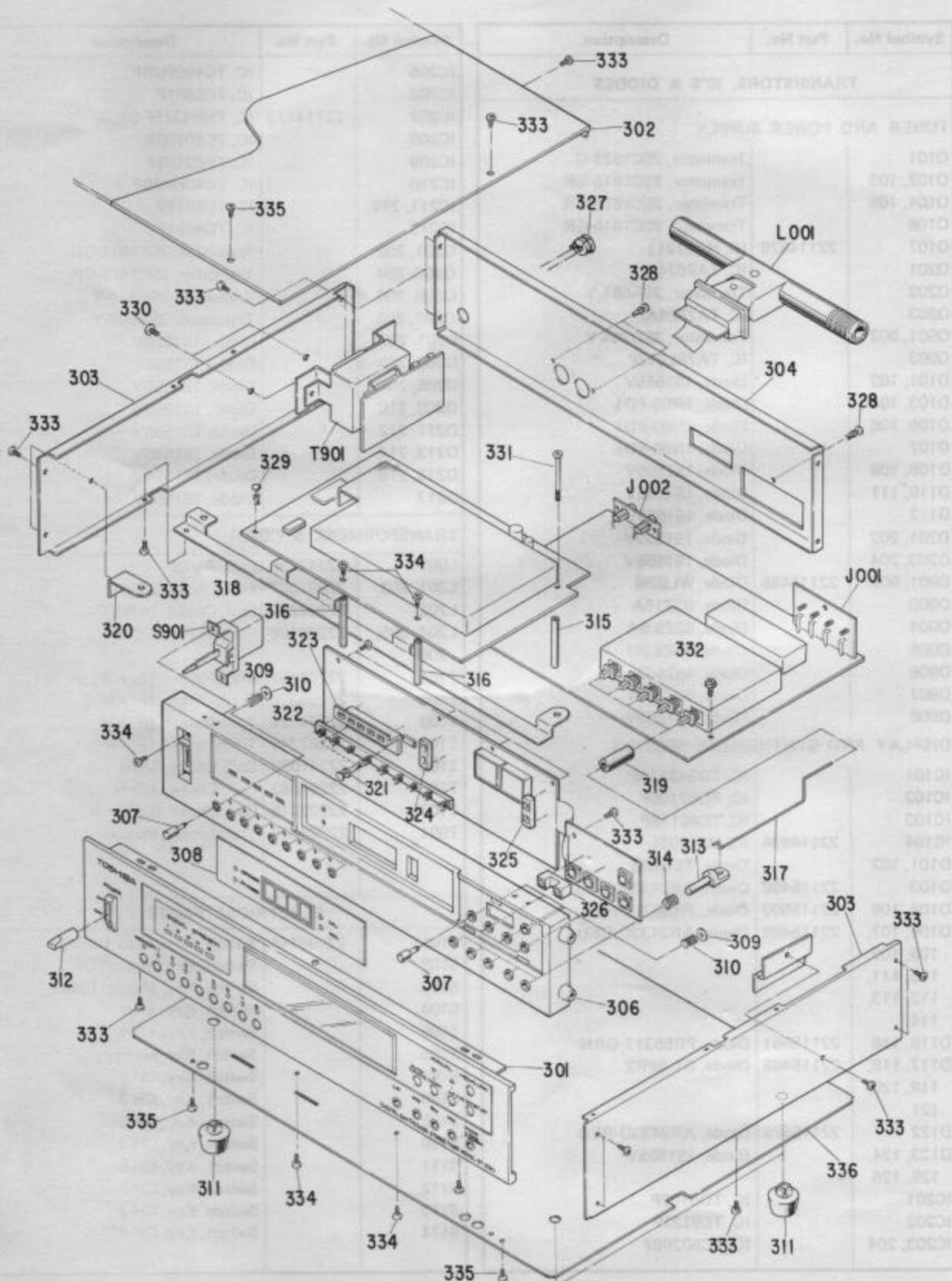


Figure 29.

11. PARTS LIST

Symbol No.	Part No.	Description
TRANSISTORS, IC'S & DIODES		
TUNER AND POWER SUPPLY		
Q101		Transistor, 2SC1923-O
Q102, 103		Transistor, 2SC1815-GR
Q104, 105		Transistor, 2SC1815-GR
Q106		Transistor, 2SC1815-GR
Q107	22114626	IC, HA11211
Q201		IC, TA7624P
Q202		Transistor, 2SA561-Y
Q203		IC, TA7324AP
Q901, 902		Transistor, 2SD234-Y
Q903		IC, TA78L012P
D101, 102		Diode, 1S1555V
D103, 104		Diode, 1N60-FD1
D105, 106		Diode, 1N60-FD1
D107		Diode, 1N60-FD1
D108, 109		Diode, 1S1555V
D110, 111		Diode, 1S1555V
D112		Diode, 1S1555V
D201, 202		Diode, 1S1555V
D203, 204		Diode, 1S1555V
D901, 902	22115485	Diode, WL02M
D903		Diode, 02Z15A
D904		Diode, 02Z5.6A
D905		Diode, 05Z8.2U
D906		Diode, 1S2462
D907		Diode, 02Z8.2A
D908		Diode, 1S1555V
DISPLAY AND SYNTHESIZER SECTION		
IC101		IC, TD34247AP
IC102		IC, TD62105P
IC103		IC, TC4011BP
IC104	22114634	IC, M51903L
D101, 102		Diode, TLG325
D103	22115499	Diode, AR2433D-RED
D104, 105	22115500	Diode, PR5531T-RED
D106, 107, 108, 109, 110, 111, 112, 113, 114	22115499	Diode, AR2433D-RED
D115, 116	22115501	Diode, PR5531T-GRN
D117, 118, 119, 120, 121	22115469	Diode, GL-9PR2
D122	22115499	Diode, AR2433D-RED
D123, 124, 125, 126		Diode, 1S1555V
IC201		IC, TD6102P
IC202		IC, TC9123P
IC203, 204		IC, TC5029BP

Symbol No.	Part No.	Description
IC205		IC, TC4069UBP
IC206		IC, TC5501P
IC207	22114773	IC, TMP4315P-0202
IC208		IC, TC4019BP
IC209		IC, TD62105P
IC210		IC, TC4069UBP
IC211, 212		IC, TC5012P
IC213		IC, TC4081P
Q201, 202		Transistor, 2SC1815-GR
Q203, 204		Transistor, 2SC1815-GR
Q205, 206		Transistor, 2SA509-Y
Q207, 208		Transistor, 2SA509-Y
D201, 202		Diode, 1S1555V
D203, 204		Diode, 1S1555V
D205, 206		Diode, 1S1555V
D208, 210		Diode, 1S1555V
D211, 212		Diode, 1S1555V
D213, 214		Diode, 1S1555V
D215, 216		Diode, 1S1555V
D217		Diode, 1S1555V
TRANSFORMERS & COILS		
L001	22242736	Coil, Aerial
L201, 203	22291082	Coil, Choke, 2.2 μ H
L202	22232204	Coil, Choke, 1mH
L204, 205, 206	22230106	Coil, Choke, 470mH
T101	22264757	Transformer, IF, AM
T102	22266326	Transformer, IF, AM
T103	22264626	Transformer, IF, AM
T104	22267349	Transformer, IF, FM
T105	22241050	Coil, Choke, 18 μ H
T106	22291082	Coil, Choke, 2.2 μ H
T107	22232219	Coil, Choke, 0.885mH
T901	22223635	Transformer, Power
ELECTRICAL PARTS		
S101	22195145	Switch, Key, Auto Tuning
S102		Switch, Key, Manual UP
S103		Switch, Key, Manual Down
S104		Switch, Key, x 10
S105		Switch, Key, +50K
S106		Switch, Key, Memory
S107		Switch, Key, CH-1
S108		Switch, Key, CH-2
S109		Switch, Key, CH-3
S110		Switch, Key, CH-4
S111		Switch, Key, CH-5
S112		Switch, Key, CH-6
S113		Switch, Key, CH-7
S114		Switch, Key, CH-8

OUT PUT Terminal

L R

Aerial Coil

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
S505	22195369	Switch, Push, LW	C126	22371103	Mylar, 0.01mfd, 50V, J
S506		Switch, Push, MW	C127	22448109	Electrolytic, 1mfd, 50V
S507		Switch, Push, SW	C128	22342473	Ceramic, 0.047mfd, 50V, Z
S508		Switch, Push, FM	C130	22349101	Ceramic, 100pF, 50V, K
S509		Switch, Push, Mode	C131	22362820	Ceramic, 82pF, 50V, K
S901	22195213	Switch, Lever, Power	C133	22371103	Mylar, 0.01mfd, 50V, J
Z001	22131351	FM Front End	C134	22371103	Mylar, 0.01mfd, 50V, J
Z002	22131352	AM 3 Band Tuner	C135	22445100	Electrolytic, 10mfd, 16V
Z101, 102, 103	22153107	Filter, Ceramic, FM	C136	22371103	Mylar, 0.01mfd, 50V, J
Z104	22153106	Filter, Ceramic, AM	C137	22448478	Electrolytic, 0.47mfd, 50V
Z201	22153069	Crystal, 6.4 MHz	C138	22447479	Electrolytic, 4.7mfd, 35V
Z202, 203	22135025	Filter, Low Pass	C139	22342223	Ceramic, 0.022mfd, 50V, Z
J001	22162437	Terminal, 4P, Aerial	C140	22362390	Ceramic, 39pF, 50V, K
J002	22163692	Terminal, 2P, Output	C201	22445221	Electrolytic, 220mfd, 16V
F901	22144337	Fuse, 1AT	C202	22448109	Electrolytic, 1mfd, 50V
F902, 903	22144293	Fuse, 1.6AT	C203	22371472	Mylar, 0.0047mfd, 50V, J
	22165047	Holder, Fuse	C204	22371273	Mylar, 0.027mfd, 50V, J
E1	22176286	Cord, Power (TE)	C205	22371273	Mylar, 0.027mfd, 50V, J
E1	22176536	Cord, Power (TU)	C206	22445100	Electrolytic, 10mfd, 16V
CAPACITORS			C207	22445100	Electrolytic, 10mfd, 16V
J = ±5%, K = ±10%, Z = -20+80%			C208	22445100	Electrolytic, 10mfd, 16V
TUNER AND POWER SUPPLY			C209	22445470	Electrolytic, 47mfd, 16V
C01	22342223	Ceramic, 0.022mfd, 50V, Z	C210	22445100	Electrolytic, 10mfd, 16V
C02	22342223	Ceramic, 0.022mfd, 50V, Z	C211	22445470	Electrolytic, 47mfd, 16V
C03	22342223	Ceramic, 0.022mfd, 50V, Z	C212	22445100	Electrolytic, 10mfd, 16V
C001	22349151	Ceramic, 150pF, 50V, K	C213	22447479	Electrolytic, 4.7mfd, 35V
C101	22342223	Ceramic, 0.022mfd, 50V, Z	C214	22371103	Mylar, 0.01mfd, 50V, J
C102	22342223	Ceramic, 0.022mfd, 50V, Z	C215	22321053	Polypropylene, 470pF, 50V, J
C103	22342223	Ceramic, 0.022mfd, 50V, Z	C216	22371333	Mylar, 0.033mfd, 50V, J
C104	22342223	Ceramic, 0.022mfd, 50V, Z	C218	22342473	Ceramic, 0.047mfd, 50V, Z
C105	22342473	Ceramic, 0.047mfd, 50V, Z	C219	22371472	Mylar, 0.0047mfd, 50V, J
C106	22342473	Ceramic, 0.047mfd, 50V, Z	C222	22447479	Electrolytic, 4.7mfd, 35V
C107	22342473	Ceramic, 0.047mfd, 50V, Z	C224	22448109	Electrolytic, 1mfd, 50V
C108	22342223	Ceramic, 0.022mfd, 50V, Z	C225	22447479	Electrolytic, 4.7mfd, 35V
C109	22342223	Ceramic, 0.022mfd, 50V, Z	C901	22342223	Ceramic, 0.022mfd, 50V, Z
C110	22349101	Ceramic, 100pF, 50V, K	C902	22342223	Ceramic, 0.022mfd, 50V, Z
C111	22362560	Ceramic, 56pF, 50V, K	C903	22342223	Ceramic, 0.022mfd, 50V, Z
C112	22445470	Electrolytic, 47mfd, 16V	C904	22342223	Ceramic, 0.022mfd, 50V, Z
C113	22342473	Ceramic, 0.047mfd, 50V, Z	C905	22342223	Ceramic, 0.022mfd, 50V, Z
C114	22448478	Electrolytic, 0.47mfd, 50V	C906	22342223	Ceramic, 0.022mfd, 50V, Z
C115	22349331	Ceramic, 330pF, 50V, K	C907	22342223	Ceramic, 0.022mfd, 50V, Z
C116	22362221	Ceramic, 220pF, 50V, K	C908	22342223	Ceramic, 0.022mfd, 50V, Z
C117	22349331	Ceramic, 330pF, 50V, K	C909	22460031	Electrolytic, 1000mfd, 35V
C118	22448109	Electrolytic, 1mfd, 50V	C910	22447221	Electrolytic, 220mfd, 35V
C119	22342223	Ceramic, 0.022mfd, 50V, Z	C911	22445221	Electrolytic, 220mfd, 16V
C120	22448339	Electrolytic, 3.3mfd, 50V	C913	22447471	Electrolytic, 470mfd, 35V
C121	22448339	Electrolytic, 3.3mfd, 50V	C914	22445102	Electrolytic, 1000mfd, 16V
C122	22448109	Electrolytic, 1mfd, 50V	C915	22443221	Electrolytic, 220mfd, 10V
C123	22448339	Electrolytic, 3.3mfd, 50V	C917	22443221	Electrolytic, 220mfd, 10V
C124	22371103	Mylar, 0.01mfd, 50V, J	C918	22445221	Electrolytic, 220mfd, 16V
C125	22371103	Mylar, 0.01mfd, 50V, J	C919	22342223	Ceramic, 0.022mfd, 50V, Z
			C920	22342223	Ceramic, 0.022mfd, 50V, Z
			C921	22443102	Electrolytic, 1000mfd, 10V
			C922	22340108	Ceramic, 4700pF, 400V, S

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
DISPLAY AND SYNTHESIZER SECTION					
C101	22443101	Electrolytic, 100mfd, 10V	R114	22555563	56K ohm
C102	22342223	Ceramic, 0.022mfd, 50V, Z	R115	22555333	33K ohm
C103	22362470	Ceramic, 47pF, 50V, J	R116	22555473	47K ohm
C201	22342223	Ceramic, 0.022mfd, 50V, Z	R117	22555333	33K ohm
C202	22342223	Ceramic, 0.022mfd, 50V, Z	R118	22555333	33K ohm
C203	22361330	Ceramic, 33pF, 50V, J	R119	22555333	33K ohm
C204	22349151	Ceramic, 150pF, 50V, K	R120	22555103	10K ohm
C205	22342223	Ceramic, 0.022mfd, 50V, Z	R121	22555102	1K ohm
C206	22342223	Ceramic, 0.022mfd, 50V, Z	R122	22555683	68K ohm
C207	22349221	Ceramic, 220pF, 50V, K	R123	22555473	47K ohm
C208	22448478	Electrolytic, 0.47mfd, 50V	R124	22555123	12K ohm
C209	22443470	Electrolytic, 47mfd, 10V	R125	22555333	33K ohm
C210	22342223	Ceramic, 0.022mfd, 50V, Z	R126	22555154	150K ohm
C211	22371103	Mylar, 0.01mfd, 50V, J	R127	22555103	10K ohm
C212	22342103	Ceramic, 0.01mfd, 50V, Z	R128	22555224	220K ohm
C213	22442331	Electrolytic, 330mfd, 6.3V	R129	22555563	56K ohm
C214	22442331	Electrolytic, 330mfd, 6.3V	R130	22555103	10K ohm
C215	22342223	Ceramic, 0.022mfd, 50V, Z	R131	22555103	10K ohm
C216	22443102	Electrolytic, 1000mfd, 10V	R132	22555273	27K ohm
C217	22442471	Electrolytic, 470mfd, 6.3V	R133	22555102	1K ohm
C218	22448339	Electrolytic, 3.3mfd, 50V	R134	22555562	5.6K ohm
C219	22362680	Ceramic, 68pF, 50V, K	R135	22555683	68K ohm
C220	22349121	Ceramic, 120pF, 50V, K	R136	22555124	120K ohm
C221	22349121	Ceramic, 120pF, 50V, K	R137	22555223	22K ohm
C222	22442331	Electrolytic, 330mfd, 6.3V	R138	22555562	5.6K ohm
C223	22448229	Electrolytic, 2.2mfd, 50V	R139	22555222	2.2K ohm
C224	22342223	Ceramic, 0.022mfd, 50V, Z	R140	22555823	82K ohm
C226	22342223	Ceramic, 0.022mfd, 50V, Z	R141	22555122	1.2K ohm
C227	22443331	Electrolytic, 330mfd, 10V	R142	22555333	33K ohm
C228	22371224	Mylar, 0.22mfd, 50V, J	R143	22555271	270 ohm
C230	22442471	Electrolytic, 470mfd, 6.3V	R144	22555152	1.5K ohm
C231	22448229	Electrolytic, 2.2mfd, 50V	R145	22555152	1.5K ohm
RESISTORS					
All resistors are carbon film 1/4W, ±5%, unless otherwise noted. K = 1000, M = 1000000					
TUNER AND POWER SUPPLY					
R001	22555101	100 ohm	R201	22555101	100 ohm
R102	22555101	100 ohm	R202	22555102	1K ohm
R103	22555101	100 ohm	R205	22555332	3.3K ohm
R104	22545223	22K ohm	R206	22555332	3.3K ohm
R105	22555332	3.3K ohm	R207	22555683	68K ohm
R106	22555102	1K ohm	R208	22658499	1M ohm, B, Semi-fixed Variable
R107	22555331	330 ohm	R209	22555562	5.6K ohm
R108	22555154	150K ohm	R210	22555153	15K ohm
R109	22555560	56 ohm	R211	22555821	820 ohm
R110	22555331	330 ohm	R212	22555682	6.8K ohm
R111	22555332	3.3K ohm	R213	22555153	15K ohm
R112	22555562	5.6K ohm	R214	22658494	50K ohm, B, Semi-fixed Variable
R113	22555223	22K ohm	R215	22555562	5.6K ohm
			R216	22555153	15K ohm
			R217	22555821	820 ohm
			R218	22555153	15K ohm
			R219	22555682	6.8K ohm
			R220	22555682	6.8K ohm
			R221	22555123	12K ohm
			R222	22555473	47K ohm
			R223	22555153	15K ohm
			R224	22658498	10K ohm, B, Semi-fixed Variable

Symbol No.	Part No.	Description
R225	22555104	100K ohm
R226	22555682	6.8K ohm
R227	22555682	6.8K ohm
R228	22555332	3.3K ohm
R229	22555332	3.3K ohm
R230	22555332	3.3K ohm
R231	22555332	3.3K ohm
R233	22555822	8.2K ohm
R234	22555123	12K ohm
R235	22555122	1.2K ohm
R236	22555154	150K ohm
R237	22555331	330 ohm
R901	22555152	1.5K ohm
R902	22555152	1.5K ohm
R905	22500114	470 ohm, Fusible
R906	22500114	470 ohm, Fusible
R907	22500118	27 ohm, Fusible
R908	22500130	10 ohm, Fusible
R909	22555392	3.9K ohm
R910	22555392	3.9K ohm
R911	22555682	6.8K ohm
R912	22555682	6.8K ohm
R913	22563475	4.7M ohm, 1/2W
R914	22563475	4.7M ohm, 1/2W
R915	22563475	4.7M ohm, 1/2W
R916	22563475	4.7M ohm, 1/2W

DISPLAY AND SYNTHESIZER SECTION

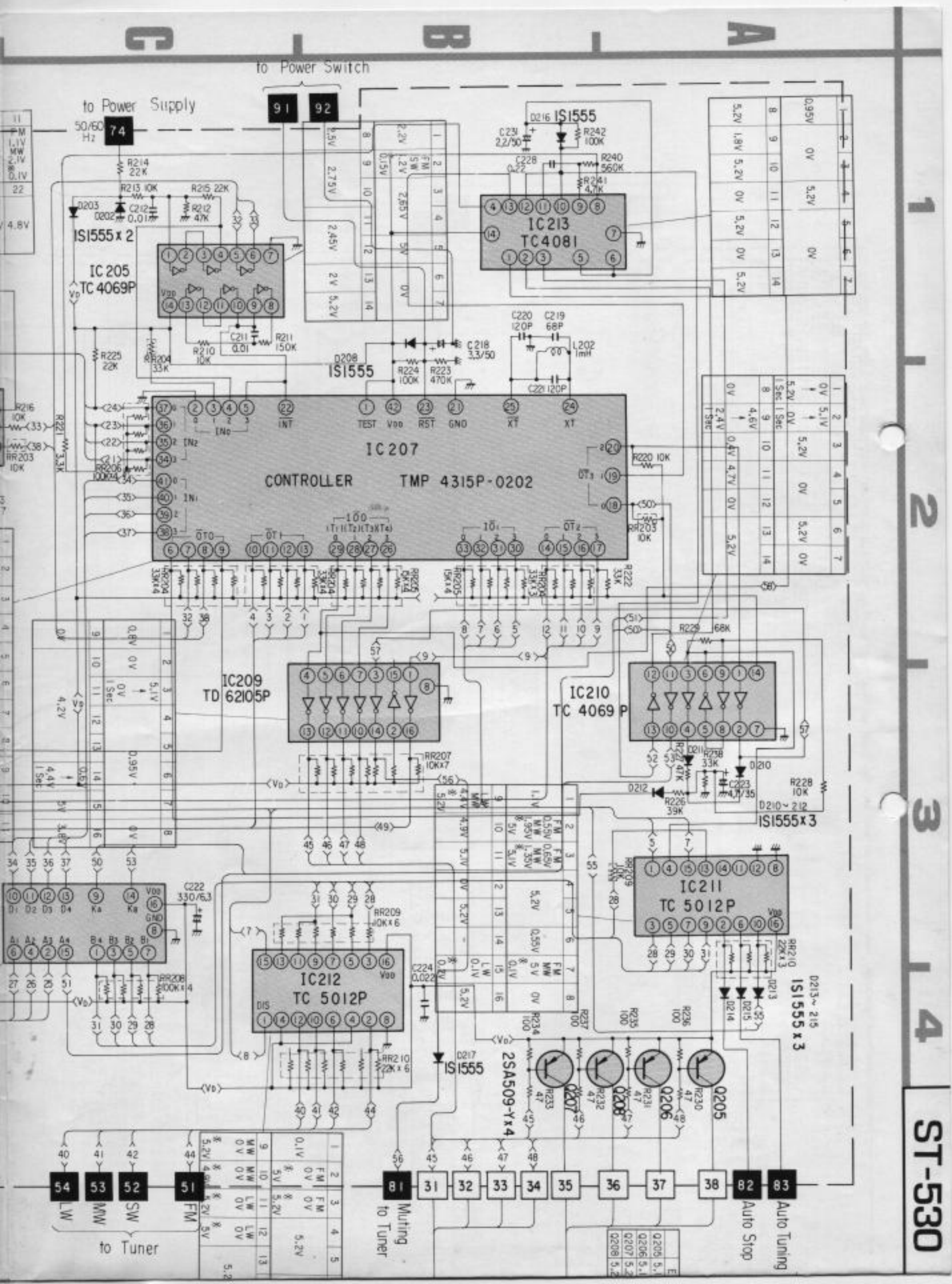
R101	22545101	100 ohm
R102	22545101	100 ohm
R103	22545101	100 ohm
R104	22545101	100 ohm
R105	22545101	100 ohm
R106	22545101	100 ohm
R107	22545101	100 ohm
R108	22545101	100 ohm
R109	22545101	100 ohm
R110	22545101	100 ohm
R111	22545101	100 ohm
R112	22545101	100 ohm
R113	22545101	100 ohm
R114	22545101	100 ohm
R115	22545473	47K ohm
R116	22545473	47K ohm
R117	22545473	47K ohm
R118	22545473	47K ohm
R119	22545221	220 ohm
R120	22545221	220 ohm
R121	22545221	220 ohm
R122	22545221	220 ohm
R123	22545221	220 ohm
R201	22555102	1K ohm
R202	22555103	10K ohm

Symbol No.	Part No.	Description
R203	22555123	12K ohm
R204	22555102	1K ohm
R205	22555564	560K ohm
R206	22555102	1K ohm
R207	22555562	5.6K ohm
R208	22555103	10K ohm
R209	22555103	10K ohm
R210	22555103	10K ohm
R211	22555154	150K ohm
R212	22555473	47K ohm
R213	22555103	10K ohm
R214	22555223	22K ohm
R215	22555223	22K ohm
R216	22555103	10K ohm
R217	22555272	2.7K ohm
R218	22555473	47K ohm
R219	22555153	15K ohm
R220	22555103	10K ohm
R221	22555332	3.3K ohm
R222	22555333	33K ohm
R223	22555474	470K ohm
R224	22555104	100K ohm
R225	22555223	22K ohm
R226	22555393	39K ohm
R227	22555473	47K ohm
R228	22555103	10K ohm
R229	22555683	68K ohm
R230	22555470	47 ohm
R231	22555470	47 ohm
R232	22555470	47 ohm
R233	22555470	47 ohm
R234	22555101	100 ohm
R235	22555101	100 ohm
R236	22555101	100 ohm
R237	22555101	100 ohm
R238	22555333	33K ohm
R240	22555564	560K ohm
R241	22555472	4.7K ohm
R242	22555104	100K ohm

C = Common, I = Individual

RR201	22540267	4.7K ohm x 9 Network, C
RR202	22540270	10K ohm x 7 Network, I
RR203	22540270	10K ohm x 7 Network, I
RR204	22540268	33K ohm x 12 Network, C
RR205	22540385	15K ohm x 8 Network, C
RR206	22540263	100K ohm x 4 Network, C
RR207	22540266	10K ohm x 7 Network, C
RR208	22540263	100K ohm x 4 Network, C
RR209	22540270	10K ohm x 7 Network, C
RR210	22540264	22K ohm x 10 Network, C

Symbol No.	Part No.	Description
CABINET PARTS		
301	22821468	Panel Ass'y
302	22712392	Cover, Top
303	22712395	Side Plate
304	22712394	Jack Plate (TE)
	22712414	Jack Plate (TU)
306	22712391	Back Plate
307	22835094	Knob, Key Push
308	22848302	Dial Plate
309	25764565	Nylon Washer
310	25772519	Spring, Key Switch
311	22828070	Foot
312	22824313	Knob, Lever Power
313	22835095	Knob, Push
314	25772524	Spring, Push Knob
319	22755254	Joint
322	22758159	Spacer, LED (D106 ~ 114)
323	22758160	Spacer, LED (D117 ~ 121)
324	22758161	Spacer, LED (D103, 122)
325	22758162	Spacer, LED (D115, 116)
326	22758163	Spacer, LED (D104, 105)
327	25845528	Nylon Bush
328	22705020	Rivet, Plastic, 3 ϕ x 4.5mm
329	22705022	Rivet, Plastic, 3 ϕ x 5.5mm
330	22707009	Screw, 4 ϕ x 8mm (BLK)
331	22707419	Screw, PAN Tapping, 3 ϕ x 50mm
332	22701436	Screw, PAN, 3 ϕ x 8mm
333	22701326	Screw, Tapping, 3 ϕ x 8mm
334	22701325	Screw, BID, 3 ϕ x 8mm
ACCESSORIES		
	22124452	Aerial, Feeder
	22170109	Cord, Connection
	22902334	Owner's Manual



1	0.95V
2	0V
3	5.2V
4	0V
5	5.2V
6	0V
7	5.2V
8	1.8V
9	5.2V
10	0V
11	5.2V
12	0V
13	5.2V
14	0V

1	0V
2	5.1V
3	5.2V
4	0V
5	5.2V
6	0V
7	5.2V
8	1.5V
9	4.6V
10	0.4V
11	4.7V
12	0V
13	5.2V
14	0V

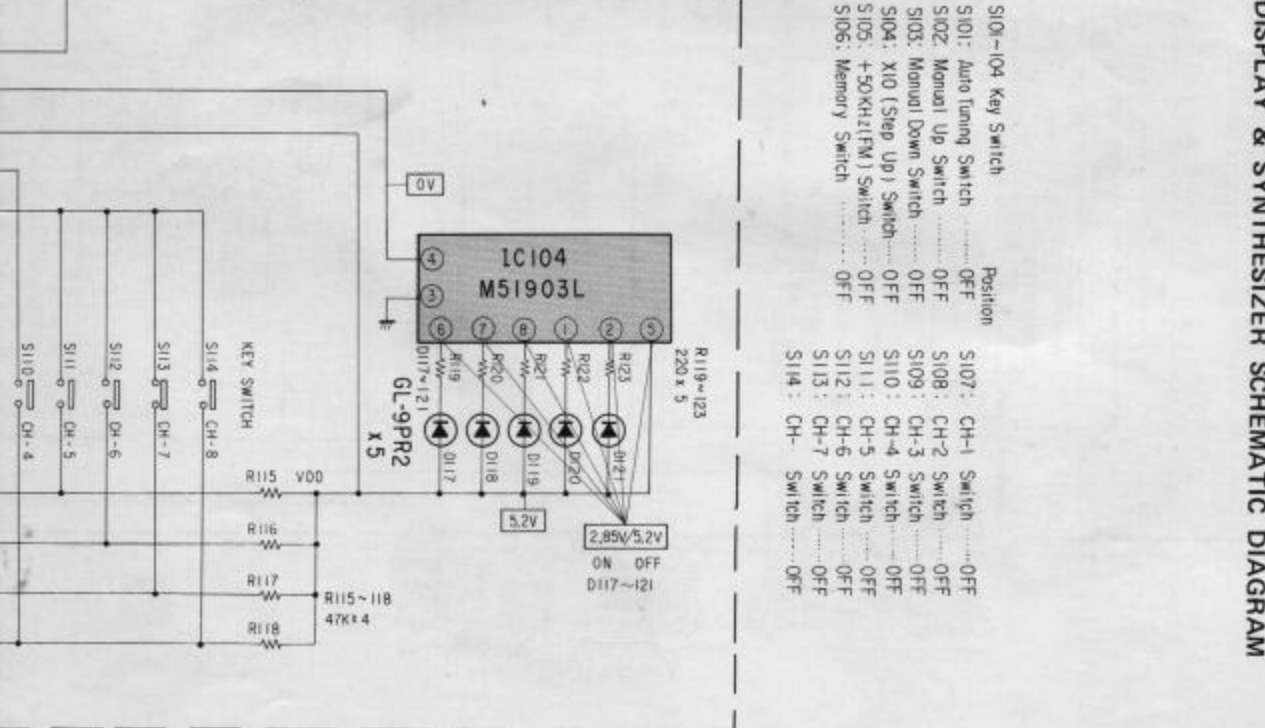
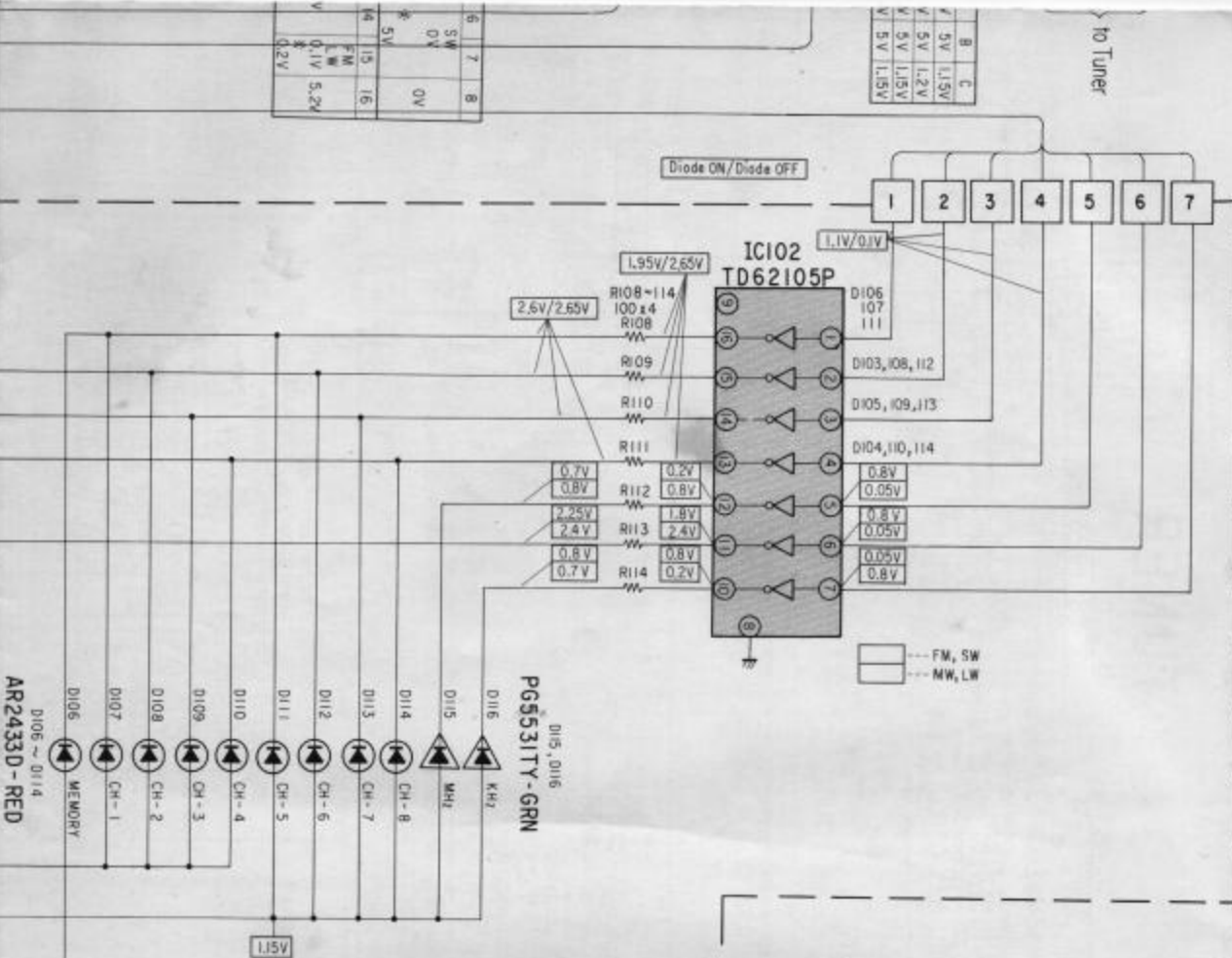
1	0V
2	5.1V
3	5.2V
4	0V
5	5.2V
6	0V
7	5.2V
8	1.5V
9	4.6V
10	0.4V
11	4.7V
12	0V
13	5.2V
14	0V

1	0V
2	5.1V
3	5.2V
4	0V
5	5.2V
6	0V
7	5.2V
8	1.5V
9	4.6V
10	0.4V
11	4.7V
12	0V
13	5.2V
14	0V

1	0V
2	5.1V
3	5.2V
4	0V
5	5.2V
6	0V
7	5.2V
8	1.5V
9	4.6V
10	0.4V
11	4.7V
12	0V
13	5.2V
14	0V

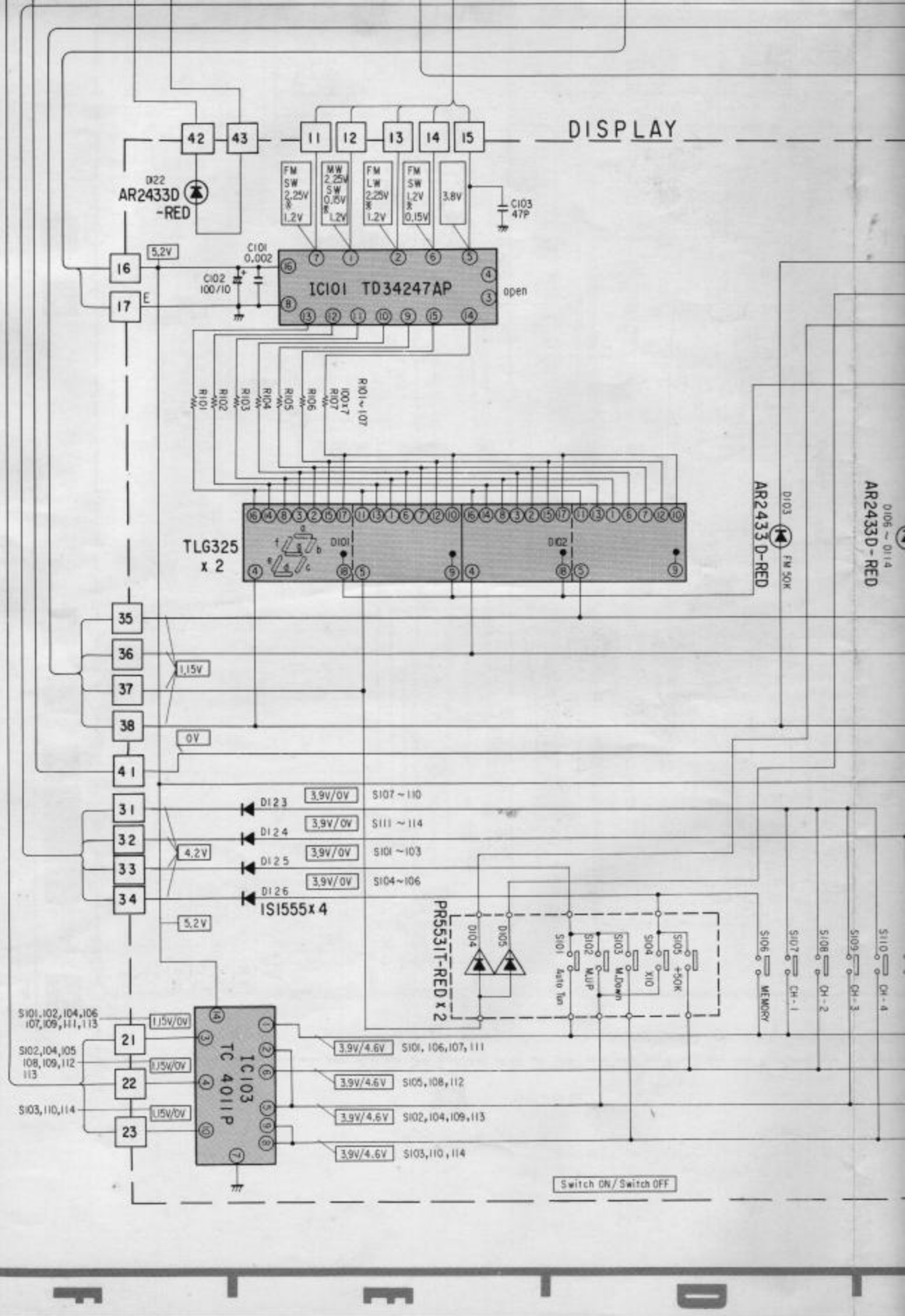
1 2 3 4 ST-530

DISPLAY & SYNTHESIZER SCHEMATIC DIAGRAM



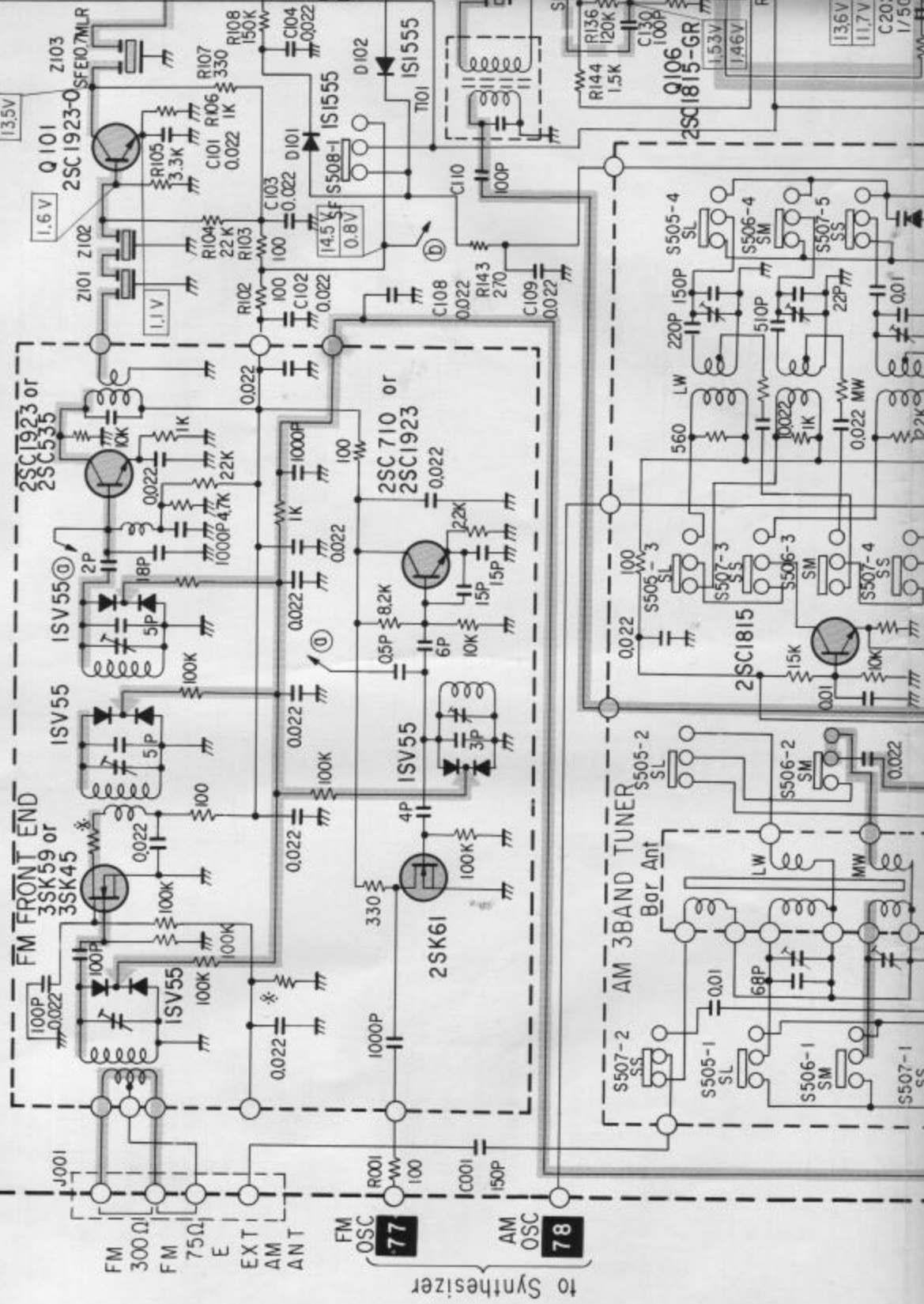
- | | | | |
|----------------------------|----------|-------------------|-----|
| S101: Auto Tuning Switch | Position | S107: CH-1 Switch | OFF |
| S102: Manual Up Switch | OFF | S108: CH-2 Switch | OFF |
| S103: Manual Down Switch | OFF | S109: CH-3 Switch | OFF |
| S104: X10 (Step Up) Switch | OFF | S110: CH-4 Switch | OFF |
| S105: +50KHz(FM) Switch | OFF | S111: CH-5 Switch | OFF |
| S106: Memory Switch | OFF | S112: CH-6 Switch | OFF |
| | | S113: CH-7 Switch | OFF |
| | | S114: CH- Switch | OFF |

5
6
7
18



TUNER & POWER SUPPLY SCHEMATIC DIAGRAM

TUNER

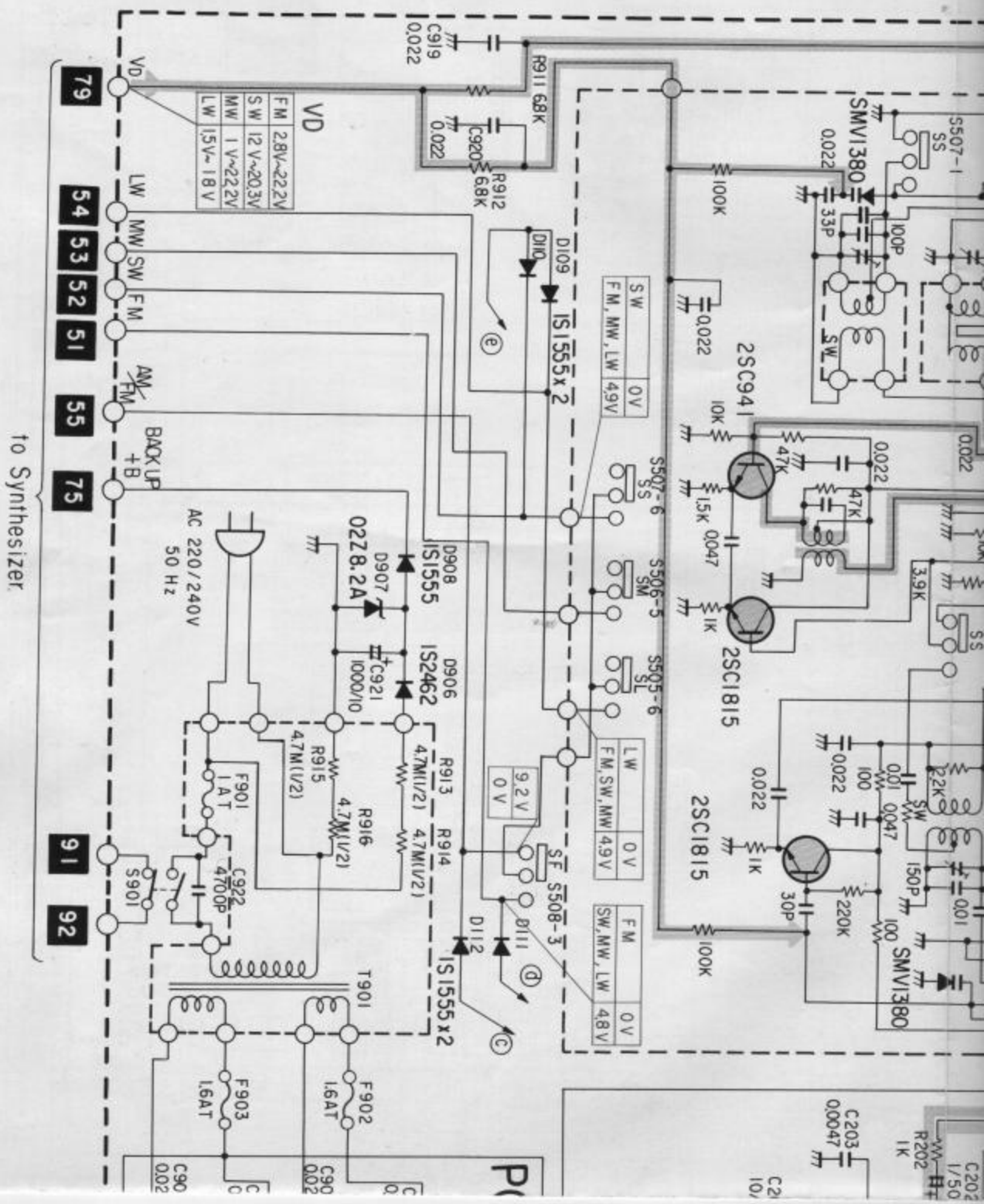


to Synthesizer

A

B

C



1 2 3 4

F

E

D

P

C202
1/50
R202
1K
C203
0.0047
C2
10

Model No.	Part Name	Part No.	Part Name	Part No.
20000	...	20000
20001	...	20001
20002	...	20002
20003	...	20003
20004	...	20004
20005	...	20005
20006	...	20006
20007	...	20007
20008	...	20008
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20096	...	20096
20097	...	20097
20098	...	20098
20099	...	20099
20100	...	20100

TOSHIBA CORPORATION
 2-1, GINZA 5-CHOME, CHUO-KU, TOKYO 104, JAPAN