

# Service Manual

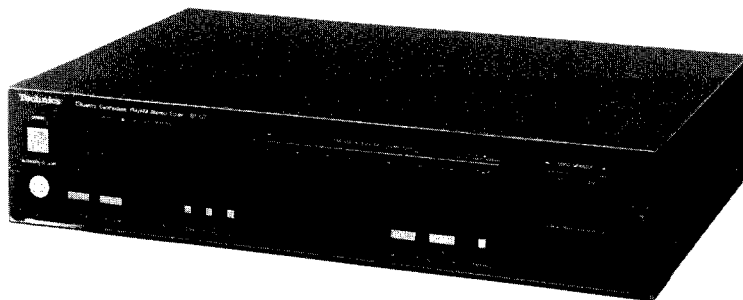
Tuner

## ST-G7

**QUARTZ** Synthesizer  
FM/AM Stereo Tuner

Color

(K) ...Black Type  
(S) ...Silver Type



Color	Area
(K)(S)	[E] ...Scandinavia and Switzerland
(K)(S)	[EK] ...United Kingdom
(K)(S)	[XA] ...Southeast Asia, Oceania, Africa, Middle Near East and Central South America
(K)(S)	[XL] ...Australia
(K)(S)	[EH] ...Holland
(K)(S)	[EB] ...Belgium
(K)(S)	[EF] ...France
(K)(S)	[PC] ...European Audio Club
(K)(S)	[PA] ...Far East PX
(K)(S)	[PE] ...European Military
(K)(S)	[EGA]...F.R. Germany

## SPECIFICATIONS

(DIN 45 500)

### ■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz
	87.525~108.025 MHz (+25 kHz shift)
Sensitivity	1.2 $\mu$ V (IHF, usable)
S/N 30 dB	1.1 $\mu$ V (75 $\Omega$ )
S/N 26 dB	1.0 $\mu$ V (75 $\Omega$ )
S/N 20 dB	0.9 $\mu$ V (75 $\Omega$ )
IHF 46 dB stereo quieting sensitivity	28 $\mu$ V/75 $\Omega$
Total harmonic distortion	
MONO	0.01%
STEREO	0.02%
Dynamic range	116 dB
Frequency response	4 Hz~18 kHz, +0.2 dB~ -0.5 dB
Alternate channel selectivity	
normal $\pm$ 400 kHz	55 dB
super narrow $\pm$ 200 kHz	25 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	105 dB
IF rejection at 98 MHz	110 dB
Spurious response rejection at 98 MHz	110 dB
AM suppression	70 dB
Stereo separation	
1 kHz	65 dB
10 kHz	50 dB
Carrier leak	
19 kHz	-70 dB
38 kHz	-70 dB
Channel balance (250 Hz~6,300 Hz)	$\pm$ 1.0 dB
Limiting point	0.75 $\mu$ V

### Bandwidth

IF amplifier

180 kHz

FM demodulator

1000 kHz

### Antenna terminals

75 $\Omega$  (unbalanced)

### ■ AM TUNER SECTION

#### Frequency range

(For Europe, South Africa and Australia)

522~1629 kHz (9 kHz-step)

530~1620 kHz (10 kHz-step)

(For Saudi Arabia and others)

531~1620 kHz (9 kHz-step)

530~1620 kHz (10 kHz-step)

#### Sensitivity (S/N 20 dB)

20  $\mu$ V, 280  $\mu$ V/m

#### Selectivity ( $\pm$ 9 kHz)

55 dB

#### Image rejection at 999 kHz

40 dB

#### IF rejection at 999 kHz

65 dB

### ■ GENERAL

#### Output voltage

0.6V

#### Power consumption

11W

#### Power supply

AC 50 Hz/60 Hz, 110V/120V/220V/240V

#### Dimensions (W×H×D)

430 × 97 × 76 mm

(16-15/16" × 3-13/16" × 3-7/8")

#### Weight

4.1 kg (9 lb.)

• Specifications are subject to change without notice for further improvement.

• Weights and dimensions shown are approximate.

# Technics

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Matsushita Electric Industrial Co., Ltd.  
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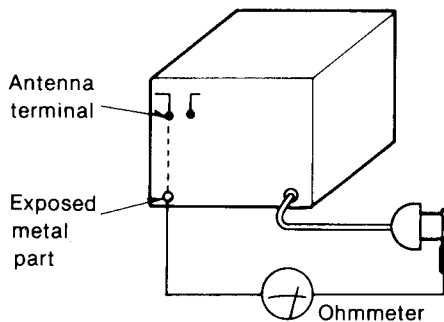
## SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### INSULATION RESISTANCE TEST

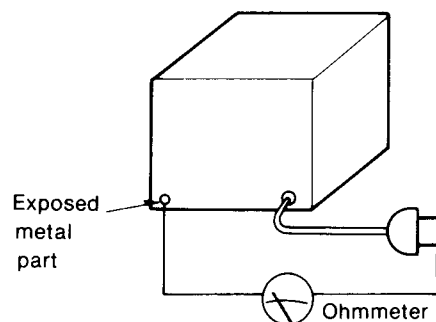
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance =  $3M\Omega - 5.2M\Omega$



(Fig. B)

Resistance = Approx  $\infty$

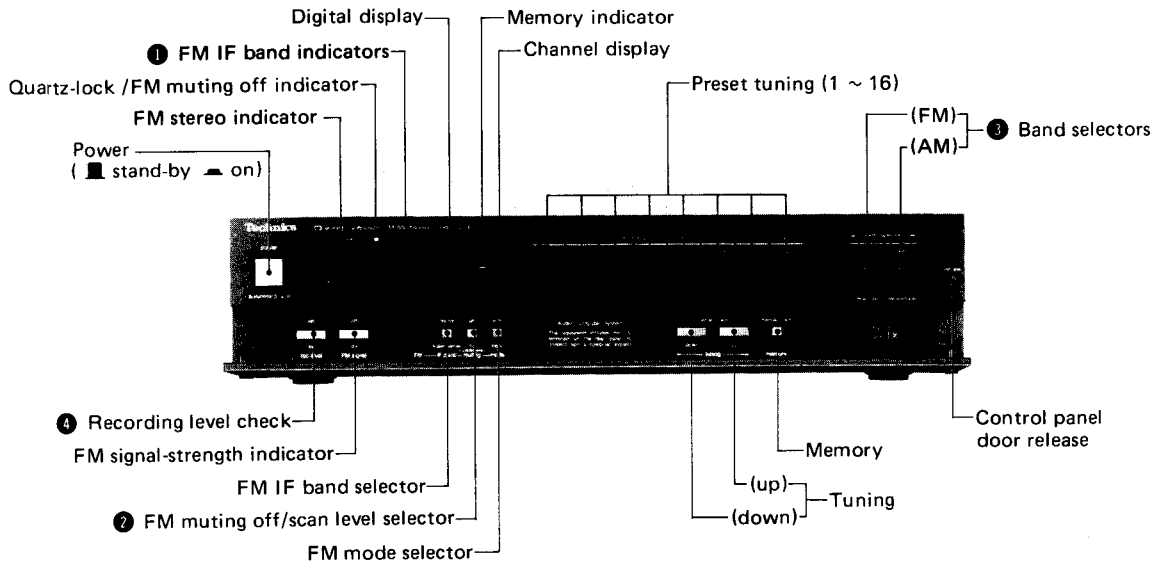
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

## FEATURES

- Newly developed LSI successfully incorporating both digital (signal control) and analog (linear & signal transmission) circuits in one body.
- Extra-wide dynamic range of 116 dB (1 kHz), low distortion of 0.01% (1 kHz), and stereo separation of 65 dB (1 kHz).
- Linear detector and linear demodulation digital detector circuits.
- Self-computing RF tuning circuit capable of receiving desired station under the best conditions.
- FM-IF automatic IF band selecting function.
- Input/output terminal for personal computer connection.
- Multi-function LCD intensive display.
- Reference signal 0.33 kHz record checking signal output function.

## LOCATION OF CONTROLS

### Front Panel



#### 1 FM IF band indicators (FM auto IF)

**normal** /

This indicator will illuminate if the signal is strong and there is little effect from interference.

**super narrow** /

This indicator will illuminate if the signal is weak and/or there is interference.

The illumination of the left and/or right parts of the indicator indicates that interference waves are present within  $\pm 300$  kHz (left: -, right: +) of the tuned frequency.

#### 2 FM muting off/scan level selector (muting)

This selector is used when releasing the FM broadcast muting function and when setting the scan level for FM broadcasts.

##### Releasing the muting function (off)

In mountainous areas, etc., where broadcast waves are weak, breakup in the sound can be lessened by lightly pressing the button. When this is done, the function is released only for the station being received.

However, when a tuning button is pressed to begin scanning, the former scan level will be used.

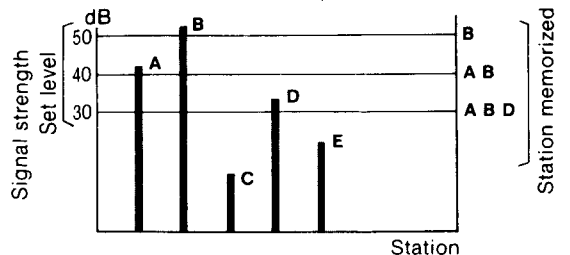
##### Setting the scan level (scan level)

This level setting is effective only for the automatic preset memory and auto tuning.

When the button is held down, "dB" will be displayed and the numbers 30, 40, and 50 will be displayed in order.

When the desired level is reached, release the button. The higher the level, the more noise is reduced. Stations with good reception can use "a high level", but stations below the set level cannot be received.

In order to receive these station, the level has to be reset.



#### 3 Band selectors (band selector)

**FM:**

Press this button to listen to an FM broadcast.

**+25 kHz:**

The displayed FM frequency can be shifted by +0.025 MHz (+25 kHz) in order to precisely align with the frequency of the FM broadcast station.

If the FM button is pressed until the final digit of the frequency display is a small "5", the FM frequency will shift +0.025 MHz (+25 kHz).

To return to the original indication, press until the final small "5" digit disappears.

**AM:**

Press this button to listen to an AM broadcast.

**allocation:**

A frequency step of either AM 9 kHz or AM 10 kHz can be selected. Set to the appropriate position for your locality. When the AM button is pressed slightly longer and then released when the "AL10" indication illuminates, the AM frequency "step" will change to 10 kHz.

To return to the original 9 kHz, press the AM button slightly longer, and then release it when the "AL9" indication illuminates.

#### 4 Recording-level check button (rec level)

This button is to be used for adjustment of the recording level when recording an FM broadcast.

When this button is pressed, the microcomputer functions to emit a reference signal of precisely 333 Hz from the output terminals of this unit. The word "CAL" (calibration) and then, soon thereafter, "0.33 kHz" will be shown by the digital display.

##### Adjustment of the recording level

Use the input-level control(s) of the tape deck to make the adjustment while watching the recording-level meters.

##### For VU meters and level meters:

Adjust so that the indication is about +2 VU or +2 dB.

##### For peak-level meters:

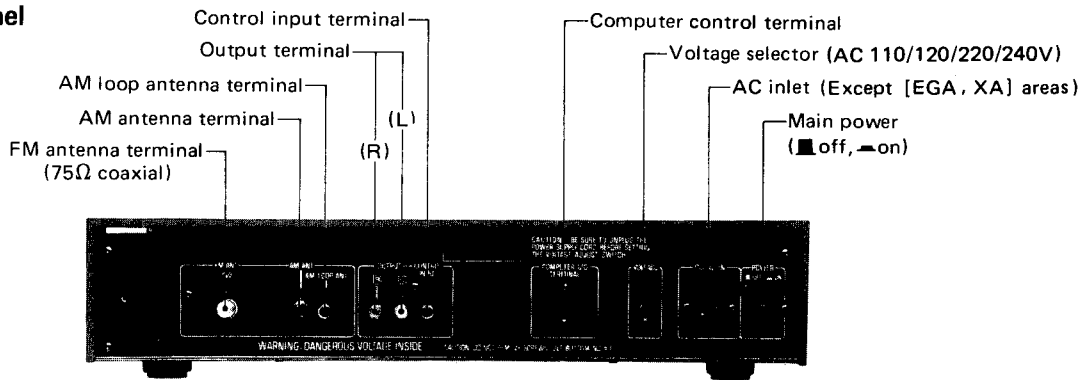
Adjust so that the indication is about -2 dB.

##### Notes:

1) Because the ideal recording level is apt to vary depending upon the program source and the characteristics of the tape deck, the adjustment should be made by also considering those factors.

2) Don't press the operation buttons of this unit during a recording. If they are pressed, the recorded sound may be disturbed.

• Rear Panel



## HOW TO OPERATE

• Listening to radio broadcasts

- 1 Turn the amplifier on, and prepare it for listening to radio broadcasts.

**Important!**



This antenna must be installed to receive AM broadcasts.

### 4-2 Station selection by using the tuning buttons:

- 1 Press either "FM" or "AM".
- 2 Press the left button to change the frequency downward, and press the right button to change the frequency upward.

• Auto tuning



Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.

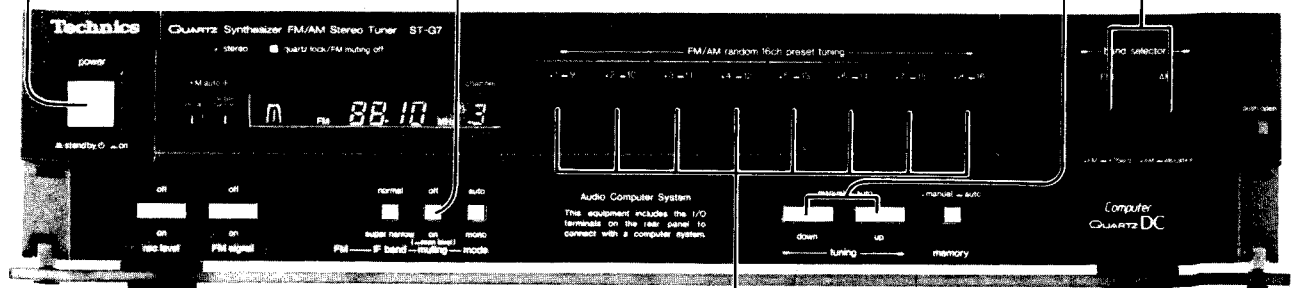
• Manual tuning



Press the button momentarily (the frequency will change each time the button is pressed) and tune to the desired station.

- 3 Adjustment to FM broadcast signal strength is possible for automatic tuning.  
Press and hold the button.  
(Will change to dB indication.)  
Release the button when the desired scan level indication (30, 40 or 50 dB) is displayed.  
(When the scan level is set, it will return to frequency display.)

- 2 Power: "on" (off → on)

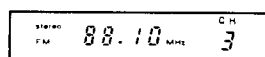


### 4-1 Station selection by using preset tuning buttons:

• To select the front channels (CH 1~8):

Press momentarily.

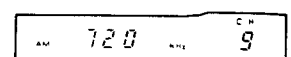
Frequency stored in the memory and channel number are displayed.



• To select the back channels (CH 9~16):

Press slightly longer.

Frequency stored in the memory and channel number are displayed.



● **How to preset radio broadcast frequencies**


This unit is used to preset as many as 16 radio broadcast frequencies: FM/AM random presetting. After broadcast frequencies have been preset as described below, any desired station can be quickly and easily selected by simply touching one button.

■ **Memory presetting**

There are two types of memory presetting: automatic and manual. Select whichever is preferred.



● **Automatic memory presetting**

Beginning at the frequency indicated by the digital display, the FM broadcasting stations and AM broadcasting stations will be automatically preset to "channels" 1 through 16 for FM and 9 through 16 for AM, respectively. Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

**Important!**  
 This antenna must be installed to receive AM broadcasts.

■ **Before memory presetting**

Each button is used to preset two stations.

<p>Presetting front channels (CH 1~8)</p>  Press momentarily.	<p>Presetting back channels (CH 9~16)</p>  Press slightly longer.
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● **Manual memory presetting**

Stations can be freely preset to any desired channel.

④ **Press the appropriate tuning button to tune to the desired broadcast.**

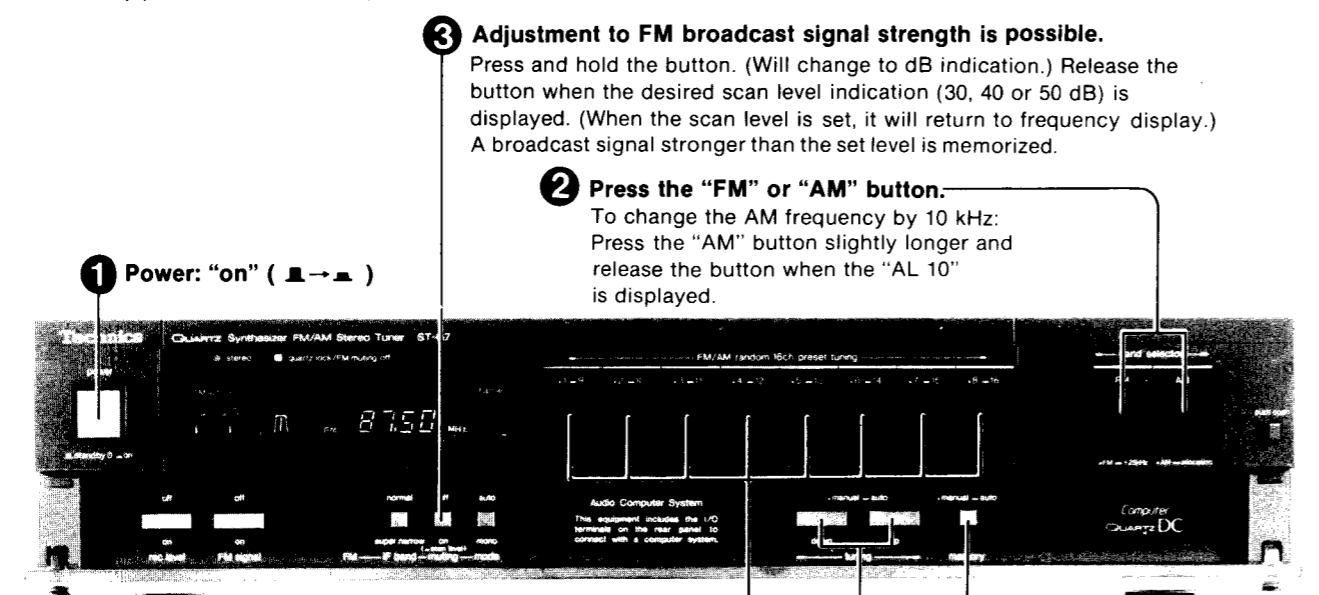
- **Auto tuning**  
 Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.
- **Manual tuning**  
 Press the button momentarily and tune to the desired station (the frequency will change each time the button is pressed).

③ **Adjustment to FM broadcast signal strength is possible for automatic tuning.**

Press and hold the button. (Will change to dB indication.) Release the button when the desired scan level indication (30, 40 or 50 dB) is displayed. (When the scan level is set, it will return to frequency display.)

② **Press the "FM" or "AM" button.**

To change the AM frequency by 10 kHz: Press the "AM" button slightly longer and release the button when the "AL 10" is displayed.



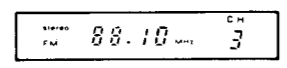
① **Power: "on" ( )**

③ **Adjustment to FM broadcast signal strength is possible.**  
 Press and hold the button. (Will change to dB indication.) Release the button when the desired scan level indication (30, 40 or 50 dB) is displayed. (When the scan level is set, it will return to frequency display.) A broadcast signal stronger than the set level is memorized.

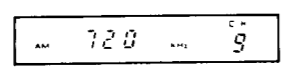
② **Press the "FM" or "AM" button.**  
 To change the AM frequency by 10 kHz: Press the "AM" button slightly longer and release the button when the "AL 10" is displayed.

⑥ **Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the station memory file sheet.**

**To check the front channels (CH 1~8):**  
 Press momentarily. Frequency stored in the memory and channel number are displayed.



**To check the back channels (CH 9~16):**  
 Press slightly longer. Frequency stored in the memory and channel number are displayed.



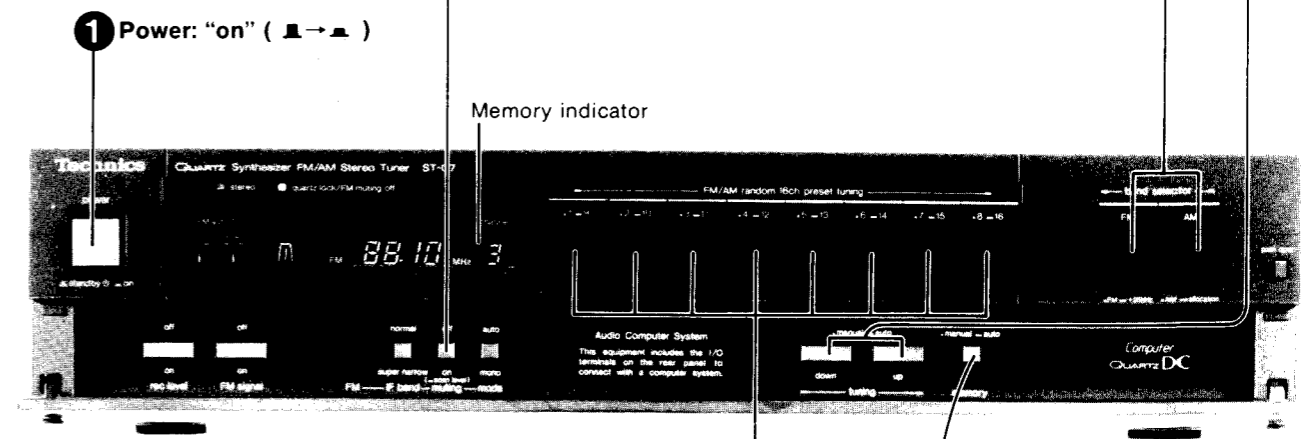
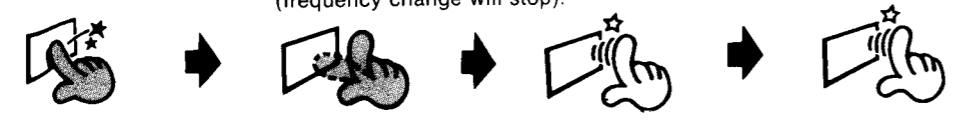
⑤ **Press. When the frequency indication begins to change, release.**



(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order. Note that the channel display illuminates each time a broadcast station is preset in the memory, thus indicating which "channel" has been preset.)

④ ● **To preset FM broadcasting stations: Set to 87.50 MHz.**  
 ● **To preset AM broadcasting stations: Set to 522 kHz (or 530 kHz).**

- ① Press the button and hold slightly (frequency will change continuously).
- ② Release it at 87.50 MHz for FM or 522 kHz (or 530 kHz) for AM, and then press the button again momentarily (frequency change will stop).
- ③ Press the button momentarily (frequency will change each time the button is pressed), and tune to one of the above frequencies.



① **Power: "on" ( )**

Memory indicator

⑥ **While the memory indicator is illuminated, press the button of the desired channel.**

● **To preset channels 1 through 8:**  
 Press the button momentarily, and then release. (Preset channel number is displayed on the channel display.)

● **To preset channels 9 through 16:**  
 Press the button slightly longer, and then release. (Preset channel number is displayed on the channel display.)

⑤ **Press momentarily, and then release.**  
 (The memory indicator will illuminate for approximately 4 seconds.)



**Note:**  
 If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically. To stop the automatic memory presetting, once again press either the "up" button or the "down" button.

When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.

**Note:**  
 1. If the memory indication illumination stops before you press the button, once again repeat step (5) and then step (6).  
 2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

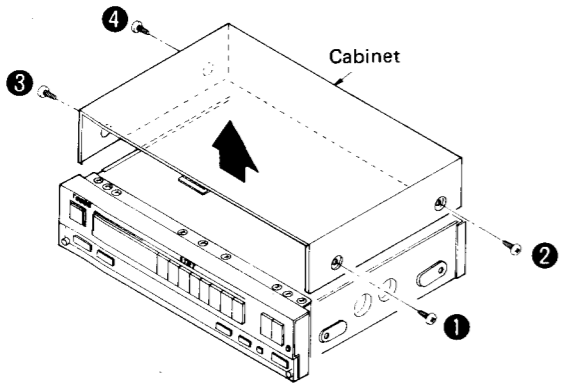
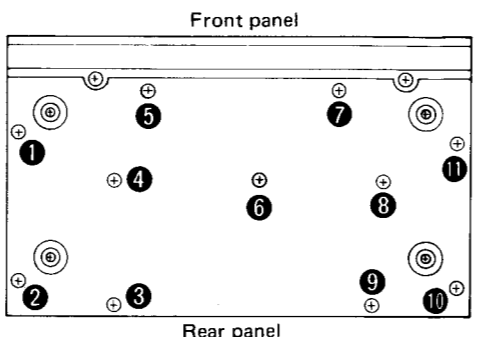
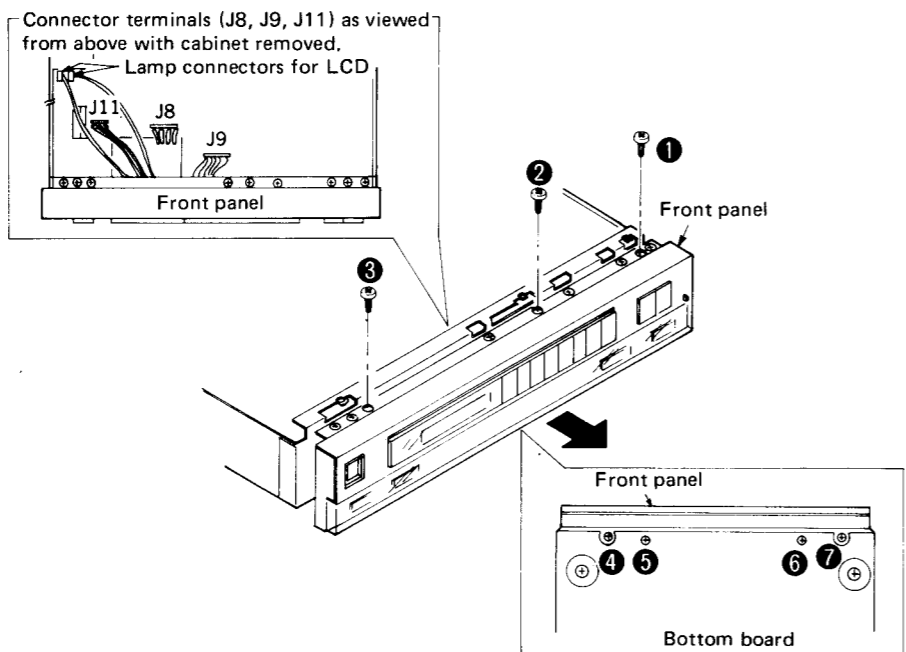
⑦ **Enter the name (call sign, etc.) of the preset broadcasting station on the station memory file sheet.**

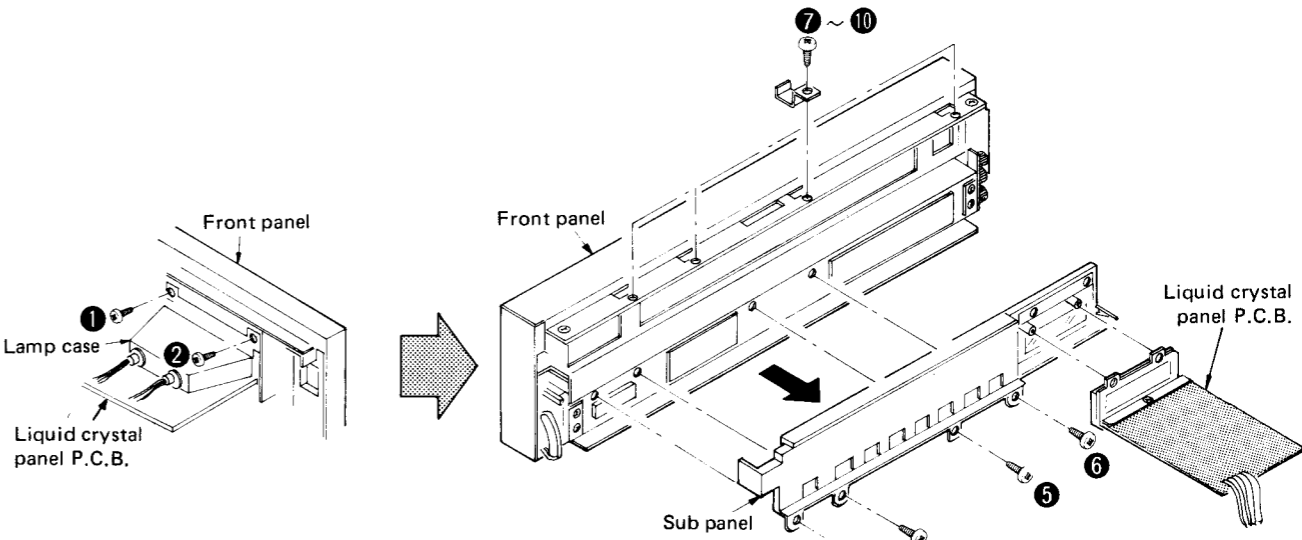
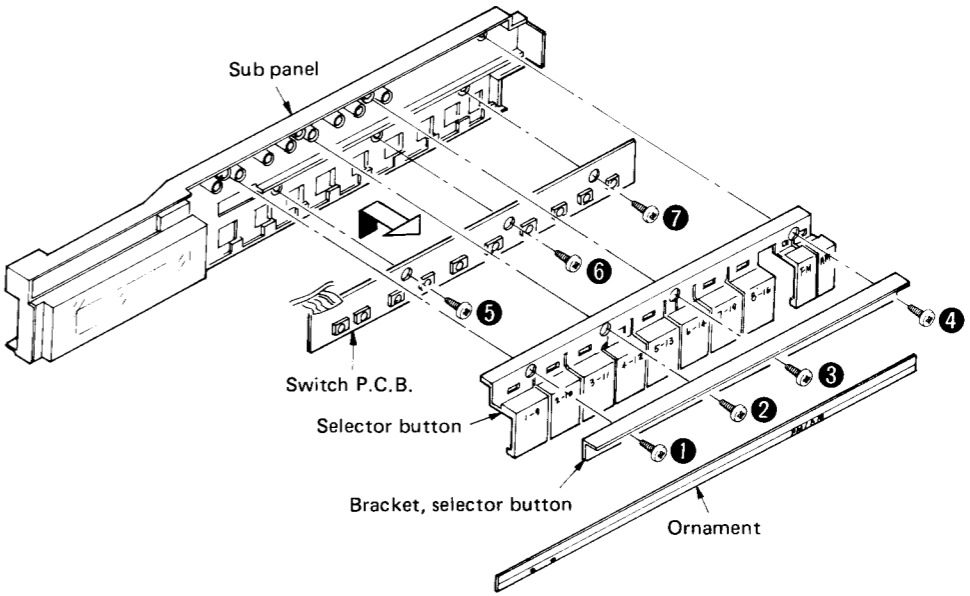
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (2) through (7).

## BEFORE REPAIR AND ADJUSTMENT

The power switch of this unit is located on the secondary side of power transformer. So, be sure to disconnect the power cord from the socket before starting the repair work. Also, when repairing the digital circuit, disconnect the power cord and then short-circuit across the gold capacitors (C920, C921, 2.3 V 3.3F) with a resistor (10 ohms, about 1 W) to discharge the voltage.

## DISASSEMBLY INSTRUCTIONS

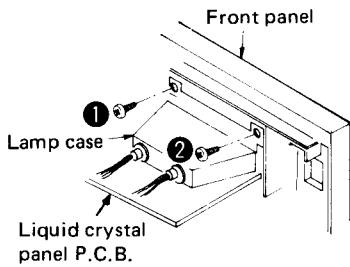
<p><b>Ref. No. 1</b></p> <p><b>Procedure 1</b></p>	<p><b>How to remove the cabinet</b></p> <ul style="list-style-type: none"> <li>Remove the 4 setscrews. (1 ~ 4)</li> </ul> 	<p><b>Ref. No. 2</b></p> <p><b>Procedure 2</b></p>	<p><b>How to remove the bottom board</b></p> <ul style="list-style-type: none"> <li>Remove the 11 setscrews. (1 ~ 11)</li> </ul> 
<p><b>Ref. No. 3</b></p> <p><b>Procedure 1 → 3</b></p>	<p><b>How to remove the front panel</b></p> <ol style="list-style-type: none"> <li>Pull out the 5 connectors. (J8, J9, J11 and 2 lamp connectors)</li> <li>Remove the 7 setscrews. (1 ~ 7)</li> </ol> 		

<p><b>Ref. No. 4</b></p> <p><b>Procedure 1 → 3 → 4</b></p>	<p><b>How to remove the sub panel</b></p> <ul style="list-style-type: none"> <li>Remove the 8 setscrews. (3 ~ 10)</li> </ul> <ol style="list-style-type: none"> <li>Remove the 2 setscrews. (1, 2)</li> <li>Remove the lamp case and liquid crystal panel P.C.B.</li> </ol> 	
<p><b>Ref. No. 5</b></p> <p><b>Procedure 1 → 3 → 4 → 5</b></p>	<p><b>How to remove the switch P.C.B.</b></p> <ol style="list-style-type: none"> <li>Remove the ornament.</li> <li>Remove the 4 setscrews. (1 ~ 4)</li> <li>Remove the 3 setscrews. (5 ~ 7)</li> </ol> 	

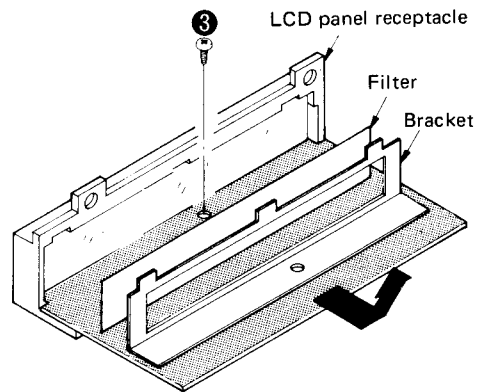
**Ref. No. 6**  
**How to remove the LCD panel**

**Procedure**  
1 → 3 → 6

1. Remove the 2 setscrews (①, ②)
2. Remove the lamp case and liquid crystal panel P.C.B.



- Remove the 1 setscrew. (③)

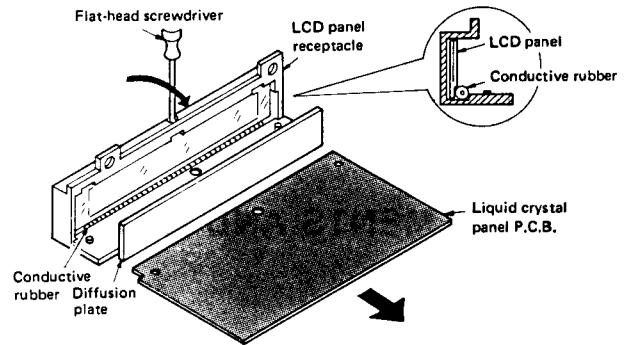


**Ref. No. 7**  
**How to remove the glass door**

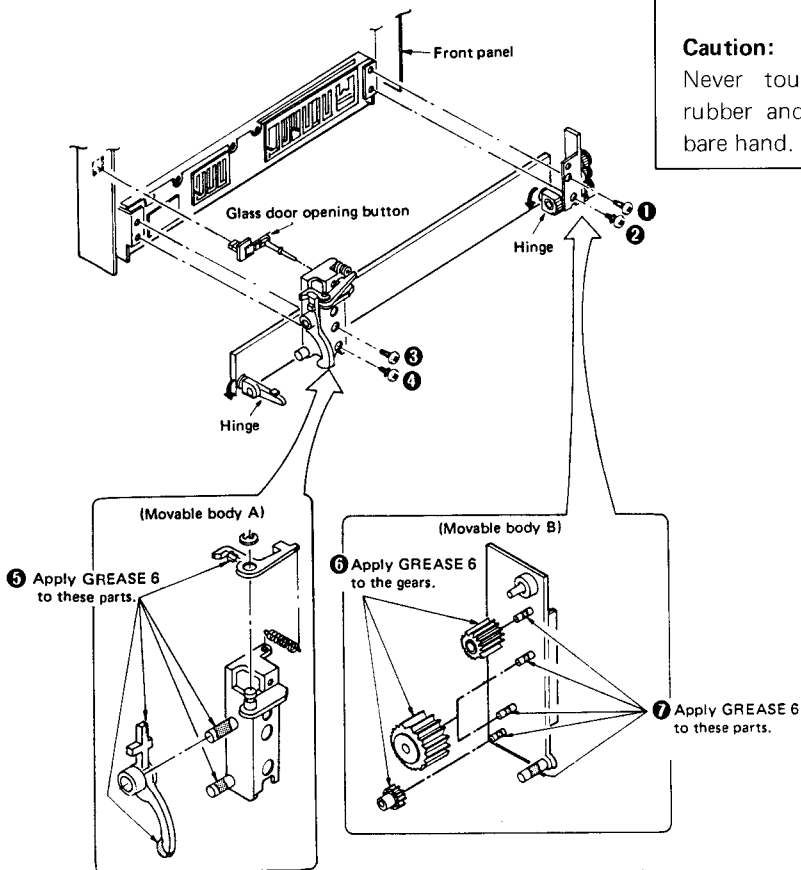
**Procedure**  
1 → 3 → 7

1. Remove the 4 setscrews. (① ~ ④)
2. Turn the glass door hinge counter-clockwise (↺).
3. When disassembling or assembling the movable bodies A & B, apply GREASE 6 to the parts shown in ⑤ ~ ⑦.

- Remove the diffusion plate and liquid crystal panel P.C.B. from the LCD panel receptacle.



**Caution:**  
Never touch the LCD panel, electrode, conductive rubber and liquid crystal panel P.C.B. electrode with bare hand.



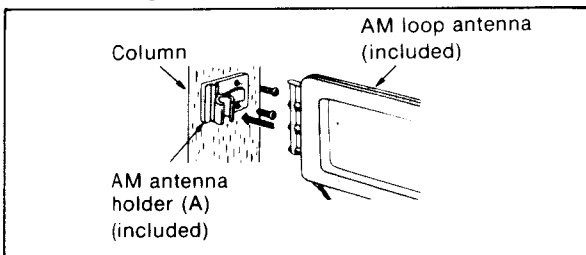
## ■ HOW TO USE THE AM LOOP ANTENNA

Find the best reception position for the FM antenna, and then fix it in place on a wall, the rack, or the unit.

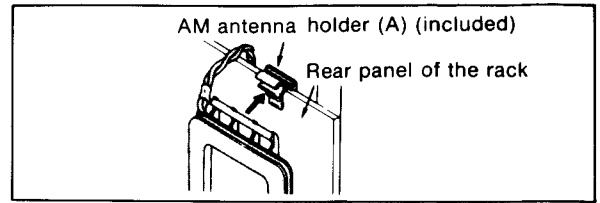
Pay attention to the following points when attaching the antenna.

- 1) Find the height and direction of the antenna where reception is best and then fix it vertically to the wall, rack, etc.
- 2) Do not attach it horizontally (to do so would impair reception).
- 3) Do not attach it close to metal surfaces, power cords, or speaker wires (to do so would result in noise).
- 4) Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

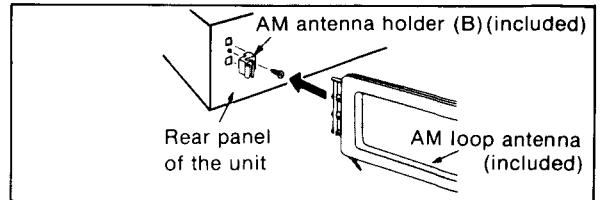
1. When attaching the antenna to a wall, column.



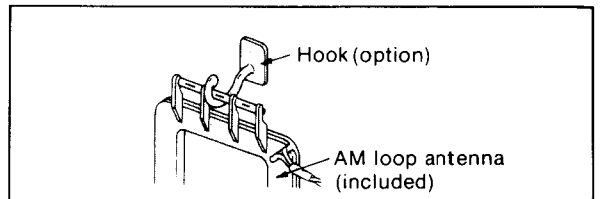
2. When attaching the antenna to the rack.



3. When attaching the antenna to the unit.



4. If a hook is used (if the holder can't be attached by screws)



## ■ MEASUREMENTS AND ADJUSTMENTS

### AM ADJUSTMENT

#### \* Setting and Equipment used

1. AC electronic voltmeters (EVM).
2. AM signal generator (AM-SG).
3. Set Band selector to "AM (allocation 9 kHz)" position.
4. Maintain line voltage at rated voltage.
5. Output of signal generator should be no higher than necessary, to obtain an output reading.
6. Use a non-metal screwdriver for the adjustment.

Step No.	AM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
<b>AM-IF ADJUSTMENT</b>						
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input) (Refer to Fig. 1)	450 kHz 30% Mod. with 400 Hz)	Frequency of non-interference	Connect AC EVM or scope to "OUTPUT" terminals.	T201 (AM 1 st IFT)	* Adjust the input frequency and adjustment points so that the output becomes maximum.
<b>AM-RF ADJUSTMENT</b>						
2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input) (Refer to Fig. 1)	<b>Except [XA] area</b> 522 kHz <b>[XA] area</b> 531 kHz (30% Mod. with 400 Hz)	<b>Except [XA] area</b> 522 kHz <b>[XA] area</b> 531 kHz	Connect AC EVM or scope to "OUTPUT" terminals.	L203 (ANT Coil)	1. Adjust for maximum output. 2. Adjust core of L203 by screwdriver.
3		612 kHz (30% Mod. with 400 Hz)	612 kHz	Connect AC EVM or scope to "OUTPUT" terminals.	L202 (ANT Coil)	1. Adjust for maximum output. 2. Adjust core of L202 by screwdriver.
4		1503 kHz (30% Mod. with 400 Hz)	1503 kHz	Connect AC EVM or scope to "OUTPUT" terminals.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat steps (2, 3) and (4) until the frequency correctly matches the frequency display.



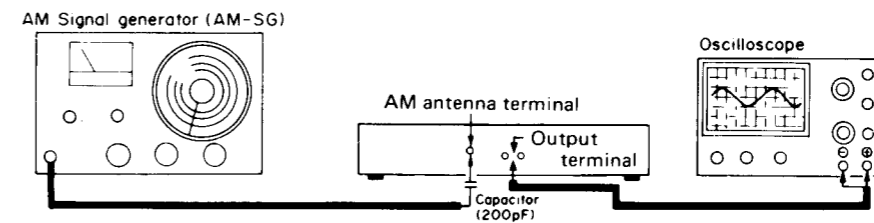
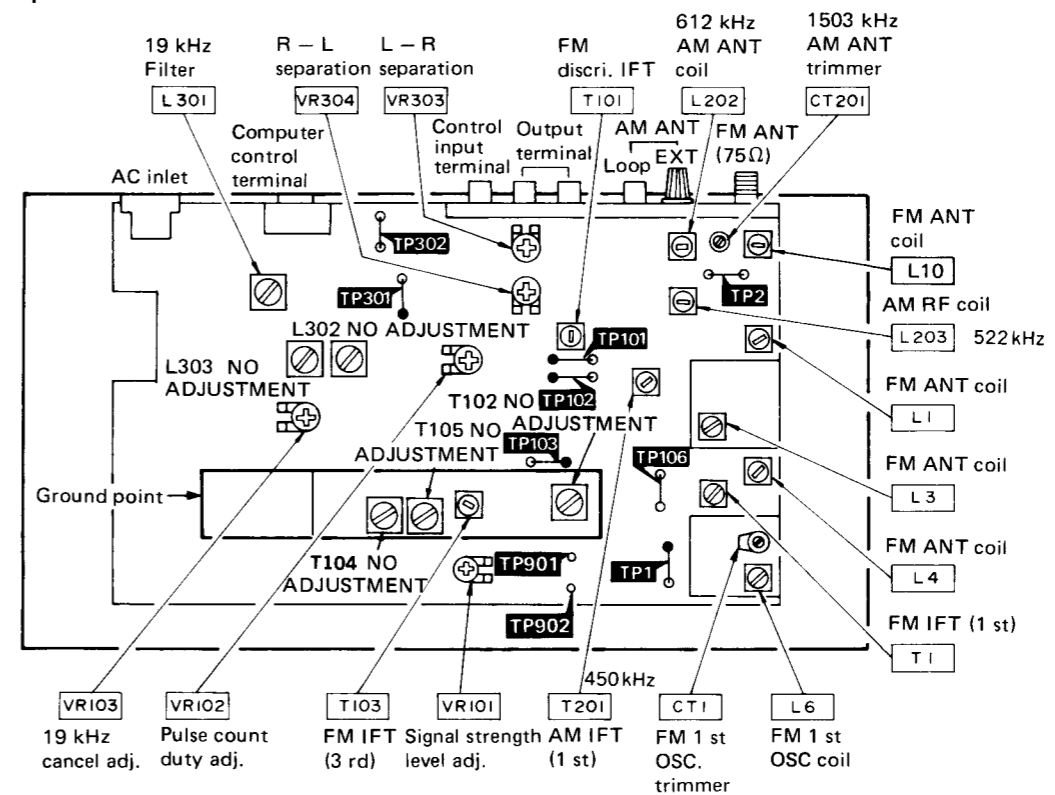
Note: FM IFT (2nd) [T102], FM 2nd IF filter [T104, T105] and FM DET filter [L302, L303] have been already adjusted, and require no adjustment.

## FM ADJUSTMENT

Step No.	FM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
<p><b>* Setting and Equipment used.</b></p> <ol style="list-style-type: none"> <li>1. FM signal generator (FM-SG).</li> <li>2. Distortion analyser.</li> <li>3. Oscilloscope</li> <li>4. AC and DC electronic voltmeters (EVM).</li> <li>5. Frequency counter (19 kHz and 108 MHz measurable).</li> <li>6. Set band selector to "FM" position.</li> <li>7. Set FM mode selector to "mono" position.</li> <li>8. Other setting are the same as in AM adjustment.</li> <li>9. Set IF band selector to "normal" position.</li> </ol> <p><b>* Preparation of FM signal generator (FM-SG)</b></p> <ol style="list-style-type: none"> <li>1. The standard input of the set is 60 dB (1 mV), 400 Hz, 100% modulation (Because of attenuation, using coaxial cables, SG output must be 6 dB plus. That is, when input 60 dB SG output is to be 66 dB.)</li> </ol> <p><b>* When the frequency is changed, muting is automatically turned on.</b> So, be sure to turn it off by the FM muting off/scan level selector switch. Also, make sure that the FM IF band is at "normal".</p>						
<b>FM MONO DISTORTION ADJUSTMENT</b>						
5		100.10 MHz (100% Mod. with 400 Hz)	100.10 MHz	Connect DC VEM between TP101 and TP102 through choke coil. (Refer to Fig. 2)	T101 (Discr. IFT)	1. Adjust T101 core so that voltage measured in signal mode is 0 mV in 300 mV range.
6	Connect FM-SG to FM antenna terminal. (Apply 60 dB to antenna terminal.)	100.10 MHz (0% Mod. with 400 Hz)	100.10 MHz	Connect AC EVM between TP103 and ground. (Refer to Fig. 3)	T103 (FM 3rd IFT)	1. Adjust for maximum output. 2. Adjust core of T103 by screwdriver.
7		100.10 MHz (0% Mod. with 400 Hz)	100.10 MHz	Connect DC VEM between TP302 and ground. (Refer to Fig. 4.)	VR102 (Pulse count duty adj.)	1. Adjust VR102 so that voltage measured in signal mode is 0 mV in 300 mV range.
<p>Short-circuit between TP901 and TP902 by jumper wire only during FM-RF adjustment, and be sure to open the circuit during adjustment other than FM-RF.</p> <p style="text-align: center;"><b>FM-RF ADJUSTMENT</b></p>						
8	Connect FM-SG to FM antenna terminal referring to Fig. 5. (Weak input)	87.50 MHz (100% Mod. with 400 Hz)	87.50 MHz	1. Short-circuit between TP901 and TP902 by jumper wire. 2. Connect DC EVM between TP1 (+) and Ground.	L6 (OSC Coil)	1. Adjust L6 for 3.0V reading on DC EVM.
9	Connect FM-SG to FM antenna terminal referring to Fig. 6. (Weak input)	90.10 MHz (100% Mod. with 400 Hz)	90.10 MHz	Connect scope to "OUTPUT" terminals.	L10 (ANT Coil) L1 (ANT Coil) L3 (ANT Coil) L4 (ANT Coil) T1 (FM 1st IFT)	1. Add weak input so that noise is included in the output wave form. 2. Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 7). 3. Repeat the steps (8), (9) and (10) until the frequency correctly matches the frequency display.
10		106.10 MHz (100% Mod. with 400 Hz)	106.10 MHz	Connect scope to "OUTPUT" terminals.	CT1 (OSC Trimmer)	
<b>PILOT CANCEL ADJUSTMENT</b>						
11	Connect FM-SG to FM antenna terminal referring to Fig. 8. (Apply 60 dB to antenna terminal.) (Pilot 10% Mod. stereo signal.)	100.10 MHz (0% Mod. with 400 Hz) (L + R)	100.10 MHz	Connect scope between TP301 and Ground.	L301 (Pilot filter) VR103 (Pilot Cancel)	Make the adjustments so that the output waveform is minimum referring to Fig. 9.
<b>STEREO DISTORTION ADJUSTMENT</b>						
12	Connect FM-SG to FM antenna terminal referring to Fig. 10. (Apply 60 dB to antenna terminal.) (Pilot 10% Mod. stereo signal.)	100.10 MHz (90% Mod. with 400 Hz) (L or R mode)	100.10 MHz	Connect distortion analyser to "OUTPUT" terminals of the set through low-pass filter. (fc = 15 kHz ~ 19 kHz)	T1 (FM 1st IFT) T103 (FM 3rd IFT)	Adjust T1 and T103 core so that distortion of right and left channels are minimized.

Step No.	FM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
<b>SEPARATION ADJUSTMENT</b>						
13	Connect FM-SG to FM antenna terminal referring to Fig. 11. (Apply 60 dB to antenna terminal.) (Pilot 10% Mod. stereo signal.)	100.10 MHz (90% Mod. with 1 kHz) (L or R mode)	100.10 MHz	Connect AC EVM to "OUTPUT" terminals of the set through low-pass filter. (fc = 15 kHz ~ 19 kHz)	VR303, VR304 (Separation)	1. Adjust VR303 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode. 2. Adjust VR304 so that L output is minimized when stereo modulator is in R (R ch modulation) mode.
<b>SIGNAL STRENGTH LEVEL ADJUSTMENT</b>						
14	Connect FM-SG to FM antenna terminal. (Apply 50 dB to antenna terminal.)	100.10 MHz (30% Mod. with 400 Hz)	100.10 MHz		VR101 (Signal strength level)	1. Change LCD display from frequency to dB by pressing the FM signal button. 2. Adjust VR101 so that 50 dB is indicated. 3. Make sure that the signal strength level is 22 ~ 38 dB when the input is 30 dB.

• Adjustment points



[Fig. 1] [Abb. 1]

adjusted, and require no

, 400 Hz, 100%  
axial cables. SG  
t 60 dB SG

omatically turned on.  
ff/scan level selector switch.  
ormal".

**ADJUSTING PROCEDURE**

Adjust T101 core so that  
voltage measured in signal  
mode is 0 mV in 300 mV  
range.

Adjust for maximum output.  
Adjust core of T103 by  
screwdriver.

Adjust VR102 so that  
voltage measured in  
signal mode is 0 mV in  
300 mV range.

Adjust L6 for 3.0V  
reading on DC EVM.

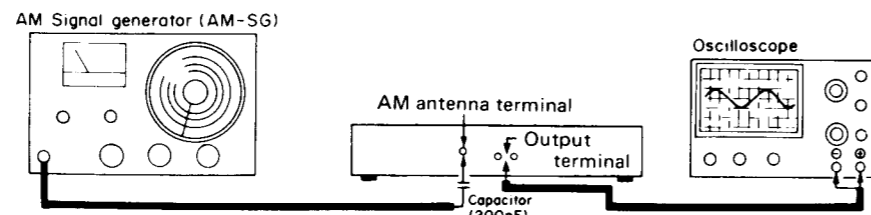
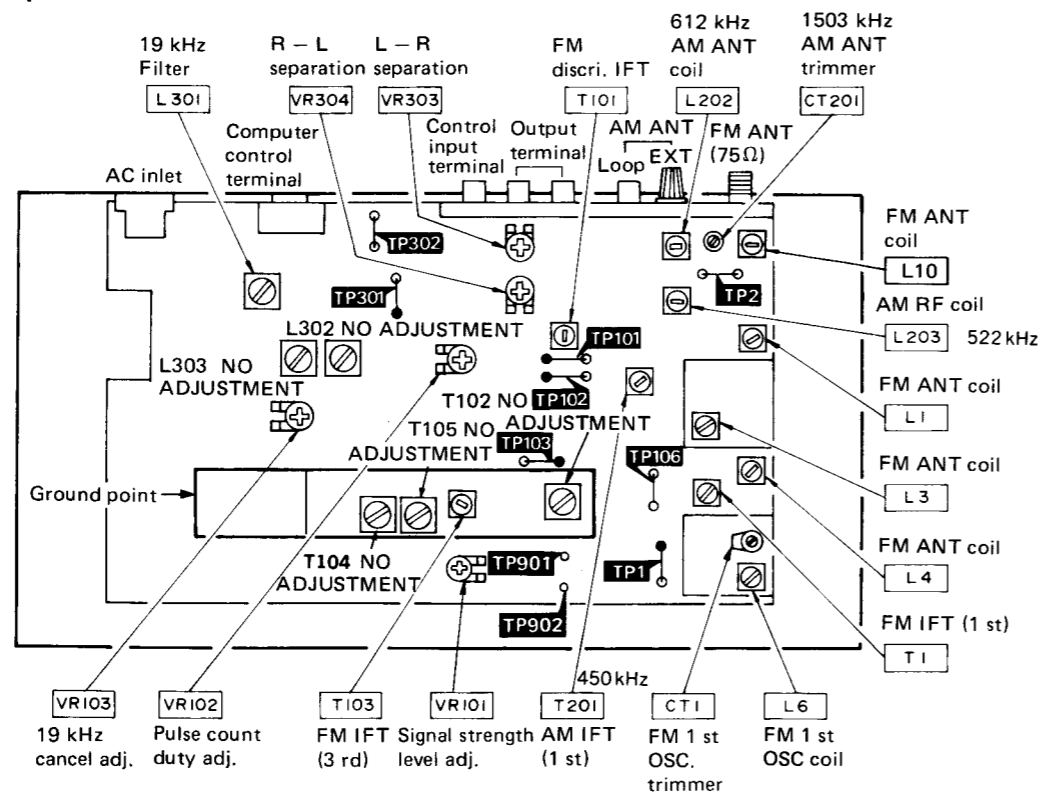
Add weak input so that  
noise is included in the  
output wave form.  
Make the adjustment so that  
the output wave form is  
vertically symmetrical. (Fig. 7).  
Repeat the steps (8), (9) and  
(10) until the frequency cor-  
rectly matches the frequency  
display.

Make the adjustments so that  
the output waveform is  
minimum referring to  
Fig. 9.

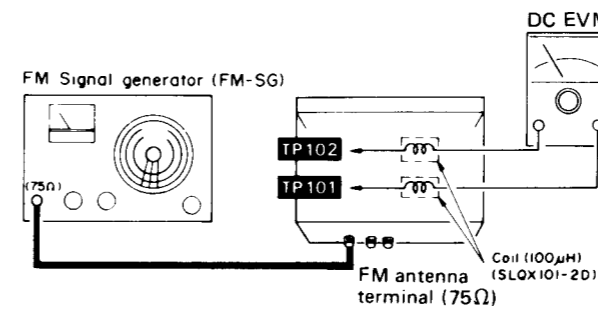
Adjust T1 and T103 core so that  
distortion of right and left  
channels are minimized.

Step No.	FM SIGNAL GENERATOR		DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CONNECTION	FREQUENCY				
<b>SEPARATION ADJUSTMENT</b>						
13	Connect FM-SG to FM antenna terminal referring to Fig. 11. (Apply 60 dB to antenna terminal.) (Pilot 10% Mod. stereo signal.)	100.10 MHz (90% Mod. with 1 kHz) (L or R mode)	100.10 MHz	Connect AC EVM to "OUTPUT" terminals of the set through low-pass filter. (fc = 15 kHz ~ 19 kHz)	VR303, VR304 (Separation)	1. Adjust VR303 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode. 2. Adjust VR304 so that L output is minimized when stereo modulator is in R (R ch modulation) mode.
<b>SIGNAL STRENGTH LEVEL ADJUSTMENT</b>						
14	Connect FM-SG to FM antenna terminal. (Apply 50 dB to antenna terminal.)	100.10 MHz (30% Mod. with 400 Hz)	100.10 MHz		VR101 (Signal strength level)	1. Change LCD display from frequency to dB by pressing the FM signal button. 2. Adjust VR101 so that 50 dB is indicated. 3. Make sure that the signal strength level is 22 ~ 38 dB when the input is 30 dB.

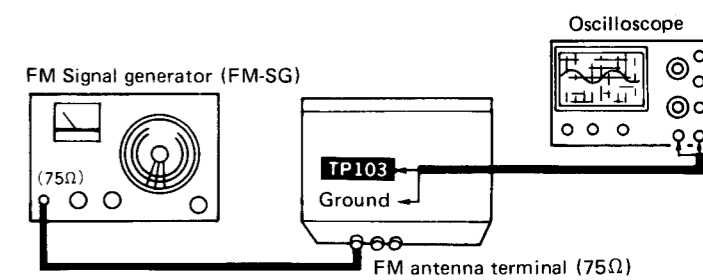
• Adjustment points



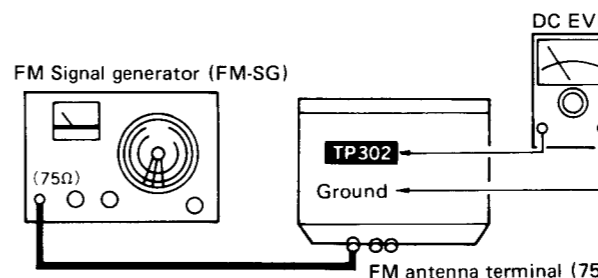
[Fig. 1] [Abb. 1]



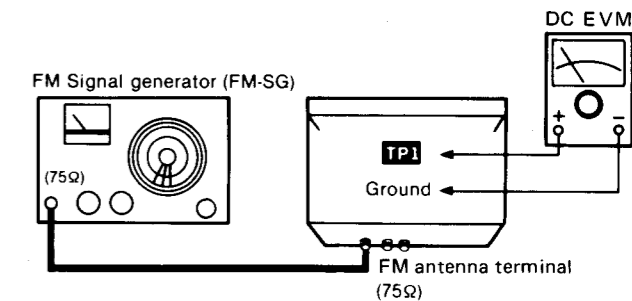
[Fig. 2] [Abb. 2]



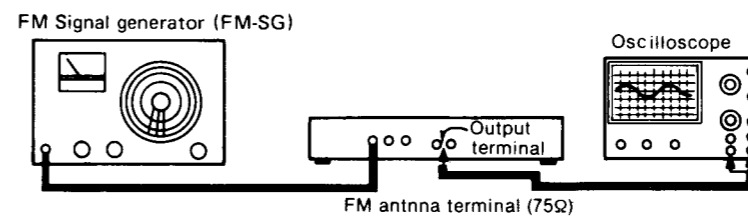
[Fig. 3] [Abb. 3]



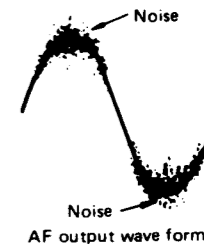
[Fig. 4] [Abb. 4]



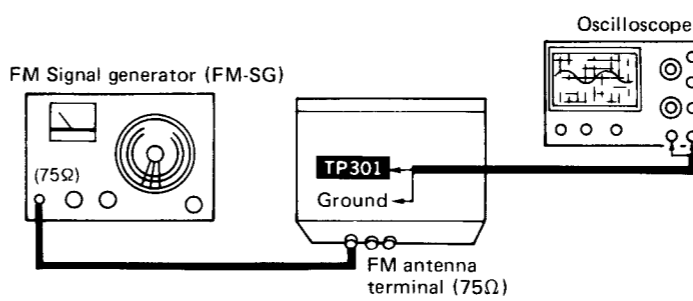
[Fig. 5] [Abb. 5]



[Fig. 6] [Abb. 6]



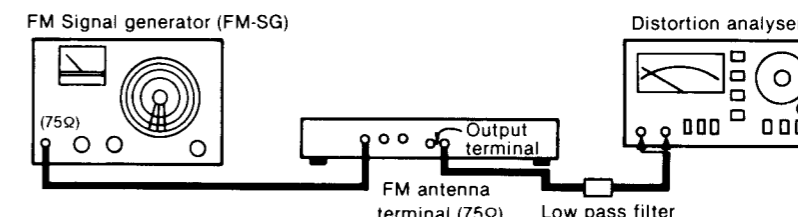
[Fig. 7] [Abb. 7]



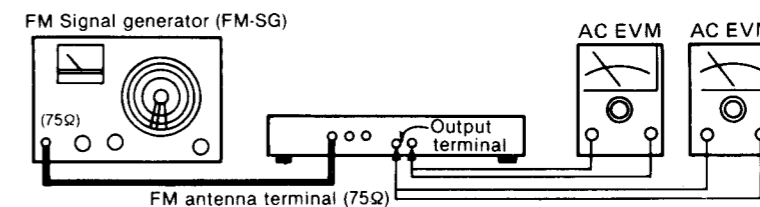
[Fig. 8] [Abb. 8]



[Fig. 9] [Abb. 9]



[Fig. 10] [Abb. 10]



[Fig. 11] [Abb. 11]

■ FUNCTION OF TERMINAL (MPX IC301 • AN7471S)

Pin No.	Function	Pin No.	Function
1	Pilot cancel signal "output"	13 ~ 16	Not used in this unit
2	6.5V	17	VCO stop control "input"
3	Pilot cancel signal "input"	18	VCO auto/monaural control "input"
4	Phase compensation of PLL circuit "input"	19	VCO OSC frequency adjustment "input"
5	Standard voltage "input"	20	Inner standard voltage "output"
6	Composite signal "input"	21	Low pass filter of PLL compensation "input"
7	Composite signal "output"	22, 23	Low pass filter of PLL circuit "output"
8	Ground	24	19 kHz monitor and stereo indicator drive "output"
9	Sampling pulse (L ch) "output"	25	Stereo/monaural control "input"
10	L-90° Sampling pulse (R ch) "output"	26	Stereo signal detector low pass filter "input"
11	Sampling pulse (R ch) "output"	27, 28	Pilot signal cancel low pass filter "input"
12	R-90° Sampling pulse (R ch) "output"		

■ FUNCTION OF TERMINAL (PLL CONTROLLER IC902 • MN1291)

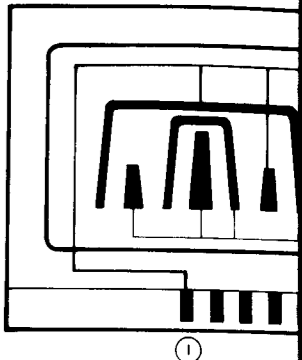
Pin No.	I/O	Mark	Description of terminal	Waveforms No.
1	—	—	Not used in this unit	—
2	OUTPUT	DA01	Digital → analog conversion signal output of input signal terminal 39.	①
3 ~ 6	—	—	Not used in this unit	—
7	INPUT	AD13	Analog → digital conversion of FM-RF tuning voltage (auto track) input signal.	②
8	INPUT	AD12	Analog → digital conversion of FM station tuning voltage.	③
9	INPUT	AD11	Analog → digital conversion of electric field strength level input.	④
10, 11	—	—	Not used in this unit	—
12	INPUT	Vref	Reference voltage input of digital → analog conversion circuit. (5 V)	—
13	—	—	Not used in this unit	—
14	OUTPUT	ADO	Analog → digital conversion output of data of input terminals 7, 8 or 9.	⑤
15	—	Vss	Ground for PLL	—
16	—	—	Not used in this unit	—
17	INPUT	CP	Input of pulse waveform for the beginning and the end of each data of input signal terminal 39.	⑥
18	—	—	Not used in this unit	—
19	OUTPUT	P02	PLL phase comparison output.	—
20	—	—	Not used in this unit	—
21	OUTPUT	DET	PLL lock detection output.	⑦
22 ~ 24	—	—	Not used in this unit	—
25	OUTPUT	F03	1 kHz output for LCD drive and for VCO auto adjustment of MPX circuit.	⑧
26 ~ 28	—	—	Not used in this unit	—
29	INPUT	X1	Connecting terminal for crystal oscillator.	—
30	INPUT	X2	The crystal connected is at 8.55 MHz	—
31, 32	—	—	Not used in this unit	—
33	OUTPUT	PSC OUT	Terminal to put out frequency dividing ratio changeover signal to prescaler.	⑨
34	—	—	Not used in this unit	—
35	—	Vss	Ground	—
36	INPUT	FM IN	FM station (VCO) input, frequency-divided to 1/32 and 1/33 by prescaler.	—
37	INPUT	AM IN	AM OSC input	—
38	INPUT	VDD	Power supply terminal (5 V)	—
39	INPUT	SBI	PLL frequency setting and digital → analog conversion setting signal input.	⑩
40	INPUT	SBT	Signal input of reference clock for data transfer of input signal terminal 39.	⑪
41	—	—	Not used in this unit	—
42	INPUT	AVDD	Power supply terminal (5 V)	—

■ FUNCTION OF TERMINAL (MICRO COMPUTOR IC903 • MN1554STD)

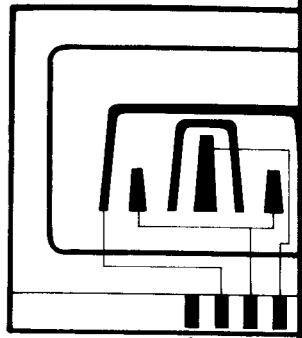
Pin No.	I/O	Mark	Description of terminal	Waveforms No.	Pin No.	I/O	Mark	Description of terminal	Waveforms No.												
1	INPUT	CE1	Power failure detection. Detected with input at "L". 	—	35	INPUT	AD	Analog → digital converted signal is put in from IC902 terminal 14.	⑫												
2, 3	—	—	Not used in this unit	—	36	INPUT	SD	This input terminal detects the reception of an auto tuned. 2.5V with a broadcast received, and 0V without receiving a broadcast. 	—												
4	INPUT	CE2	Power failure reset detection. Detected with input at "L". 	—	37	—	—	Not used in this unit	—												
5	INPUT	INT	Interrupt request signal input terminal. Signal from control input terminal is put in. Detected with input at "L". 	—	38	OUTPUT	KO9	Diode matrix key scan signal output	—												
6	OUTPUT	SBT	Signal output of transfer reference clock for LCD drive. (5 V after reference clock output) 	—	39	OUTPUT	HBL	Hi-blend, High frequency cutting command output during weak input signal reception.	—												
7	OUTPUT	SBO	Reference frequency output. (Data output)	⑬	40 ~ 42	—	—	Not used in this unit	—												
8	OUTPUT	SBI	Microcomputer reset. Reset with input at "L".	—	43	OUTPUT	DT OUT	Data output to personal computer.	—												
9	INPUT	RST	Signal output for key scan	⑭	44	OUTPUT	RF ATT	Gain control output of RF amplifier.	—												
10 ~ 17	OUTPUT	K00 ~ KO7	Pulse waveform output for the beginning and the end of each data.	⑮	45 ~ 52	—	—	Not used in this unit	—												
18	OUTPUT	CP	Not used in this unit	—	53	INPUT	OSC1	Connection terminals of ceramic oscillator. Oscillating frequency is 2 MHz.	—												
19 ~ 24	—	—	Not used in this unit	—	54	INPUT	OSC2	Not used in this unit	—												
25	INPUT	VDD	Power supply terminal	—	55, 56	—	—	Not used in this unit	—												
26	—	—	Not used in this unit	—	57	—	Vss	Ground terminal	—												
27	—	—	Not used in this unit	—	58	OUTPUT	A	FM/AM/REC selector <table border="1"> <tr> <td></td> <td>FM</td> <td>AM</td> <td>REC</td> </tr> <tr> <td>A</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>B</td> <td>1</td> <td>1</td> <td>0</td> </tr> </table> 		FM	AM	REC	A	0	1	0	B	1	1	0	—
	FM	AM	REC																		
A	0	1	0																		
B	1	1	0																		
28	OUTPUT	333 Hz	Reference signal output for record level check.	⑯	59	OUTPUT	B	Not used in this unit	—												
29 ~ 32	INPUT	K10 ~ K13	Key input from external key matrix.	⑰	60	—	—	Not used in this unit	—												
33	INPUT	VDD	Power supply terminal	—	61	OUTPUT	IF	Normal/Super narrow select for FM IF signal flow (output "L" (0V) → FM IF band is super narrow output "H" (4V) → FM IF band is normal)	—												
34	INPUT	ST	Stereo detection. Stereo signal with input at "L". 	—	62	—	—	Not used in this unit	—												
					63	OUTPUT	MONO	Stereo/Monaural switching signal. (Monaural → 5V, Stereo → 0V)	—												
					64	OUTPUT	MUTE	Output terminal to eliminate shock noise in case of PLL lock failure. When CE terminal is at low level, the output to this terminal is at high level. 	—												

■ FUNCTION OF TERMINAL (MICRO COMPUTOR IC904 • MN1554STD)

● COMMON



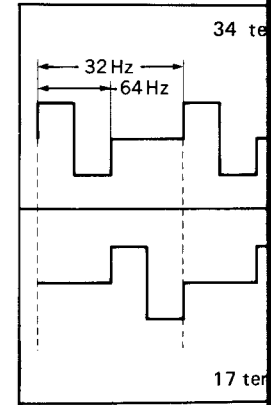
● SEGMENT



Terminal No. of IC904	34	10	21	20
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● Common output waveform

Terminals, 34 and 17 always waveforms are shown below.



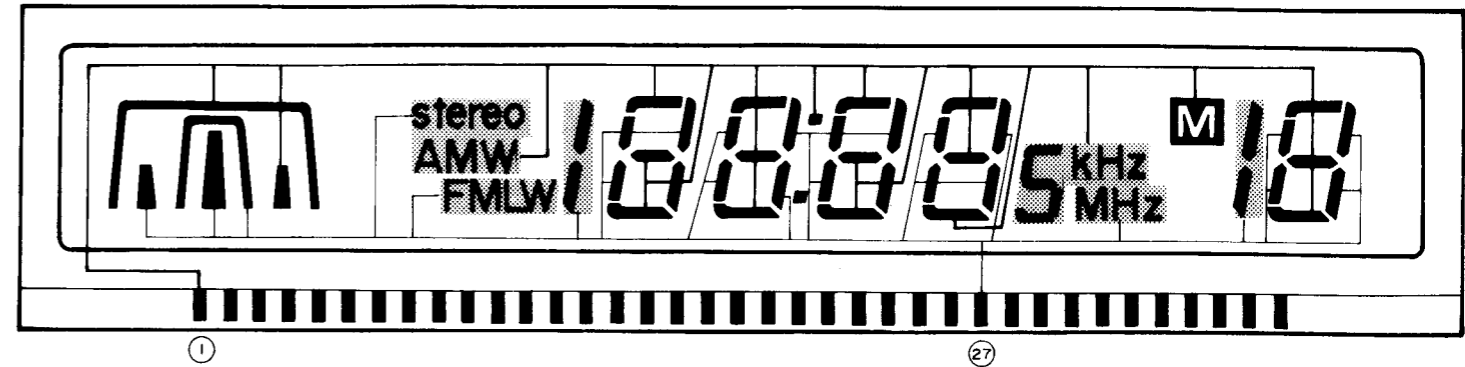
(NOTE) For the output waveform of each segment, the potential difference from that of COM terminal waveform is measured. So, do not connect the ground wire of other equipment to the oscilloscope. Otherwise, IC904 will break down.

## FUNCTION OF TERMINAL (MICRO COMPUTOR IC903 • MN1554STD)

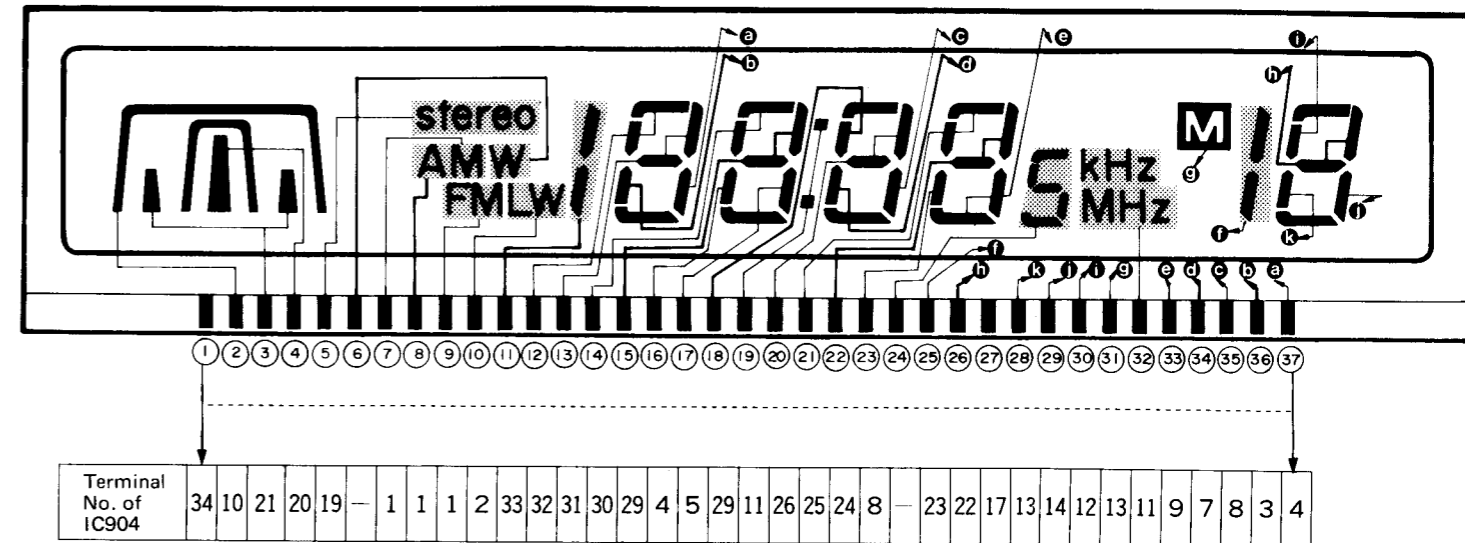
Pin No.	I/O	Mark	Description of terminal	Waveforms No.	Pin No.	I/O	Mark	Description of terminal	Waveforms No.												
1	INPUT	CE1	Power failure detection. Detected with input at "L". 	—	35	INPUT	AD	Analog → digital converted signal is put in from IC902 terminal 14.	17												
2, 3	—	—	Not used in this unit	—	36	INPUT	SD	This input terminal detects the reception of a auto tuned. 2.5V with a broadcast received, and 0V without receiving a broadcast. 	—												
4	INPUT	CE2	Power failure reset detection. Detected with input at "L". 	—	37	—	—	Not used in this unit	—												
5	INPUT	INT	Interrupt request signal input terminal. Signal from control input terminal is put in. Detected with input at "L". 	—	38	OUTPUT	KO9	Diode matrix key scan signal output	—												
6	OUTPUT	SBT	Signal output of transfer reference clock for LCD drive. (5V after reference clock output) 	—	39	OUTPUT	HBL	Hi-blend. High frequency cutting command output during weak input signal reception.	—												
7	OUTPUT	SBO	Reference frequency output. (Data output)	12	40	—	—	Not used in this unit	—												
8	OUTPUT	SBI	Microcomputer reset. Reset with input at "L".	—	43	OUTPUT	DT OUT	Data output to personal computer.	—												
9	INPUT	RST	Microcomputer reset. Reset with input at "L".	—	44	OUTPUT	RF ATT	Gain control output of RF amplifier.	—												
10	OUTPUT	KO0	Signal output for key scan	13	45	—	—	Not used in this unit	—												
17	OUTPUT	KO7			52	—	—	—	Not used in this unit	—											
18	OUTPUT	CP	Pulse waveform output for the beginning and the end of each data.	14	53	INPUT	OSC1	Connection terminals of ceramic oscillator. Oscillating frequency is 2 MHz.	—												
19	—	—	Not used in this unit	—	54	INPUT	OSC2		—												
24	—	—	Not used in this unit	—	55, 56	—	—	Not used in this unit	—												
25	INPUT	VDD	Power supply terminal	—	57	—	Vss	Ground terminal	—												
26	—	—	Not used in this unit	—	58	OUTPUT	A	FM/AM/REC selector <table border="1"> <tr> <td></td> <td>FM</td> <td>AM</td> <td>REC</td> </tr> <tr> <td>A</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>B</td> <td>1</td> <td>1</td> <td>0</td> </tr> </table>		FM	AM	REC	A	0	1	0	B	1	1	0	—
	FM	AM	REC																		
A	0	1	0																		
B	1	1	0																		
27	—	—	Not used in this unit	—	59	OUTPUT	B	—	—												
28	OUTPUT	333 Hz	Reference signal output for record level check.	15	60	—	—	Not used in this unit	—												
29	INPUT	K10	Key input from external key matrix.	16	61	OUTPUT	IF	Normal/Super narrow select for FM IF signal flow output "L" (0V) → FM IF band is super narrow output "H" (4V) → FM IF band is normal	—												
32	INPUT	K13			62	—	—	—	Not used in this unit	—											
33	INPUT	VDD	Power supply terminal	—	63	OUTPUT	MONO	Stereo/Monaural switching signal. (Monaural → 5V, Stereo → 0V)	—												
34	INPUT	ST	Stereo detection. Stereo signal with input at "L". 	—	64	OUTPUT	MUTE	Output terminal to eliminate shock noise in case of PLL lock failure. When CE terminal is at low level, the output to this terminal is at high level. 	—												

## FUNCTION OF LIQUID CRYSTAL PANEL

### COMMON

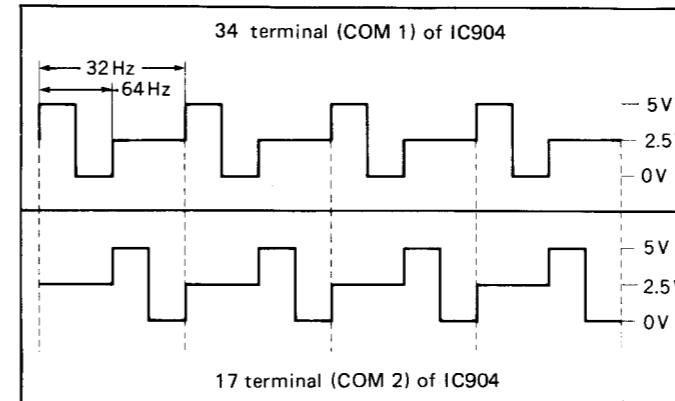


### SEGMENT

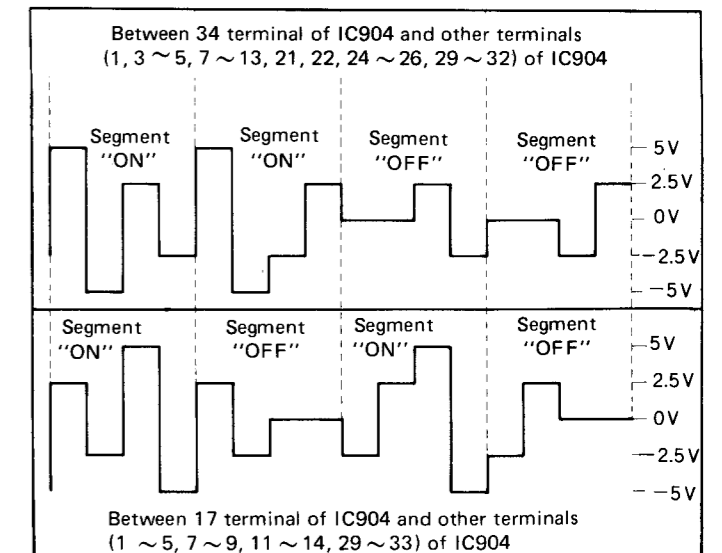


### Common output waveforms of IC904 (LCD drive)

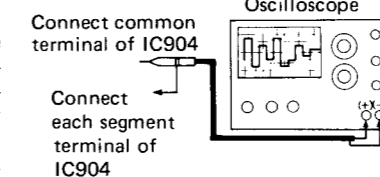
Terminals, 34 and 17 always deliver outputs whose waveforms are shown below.



### Segment output waveforms of IC904 (LCD drive)



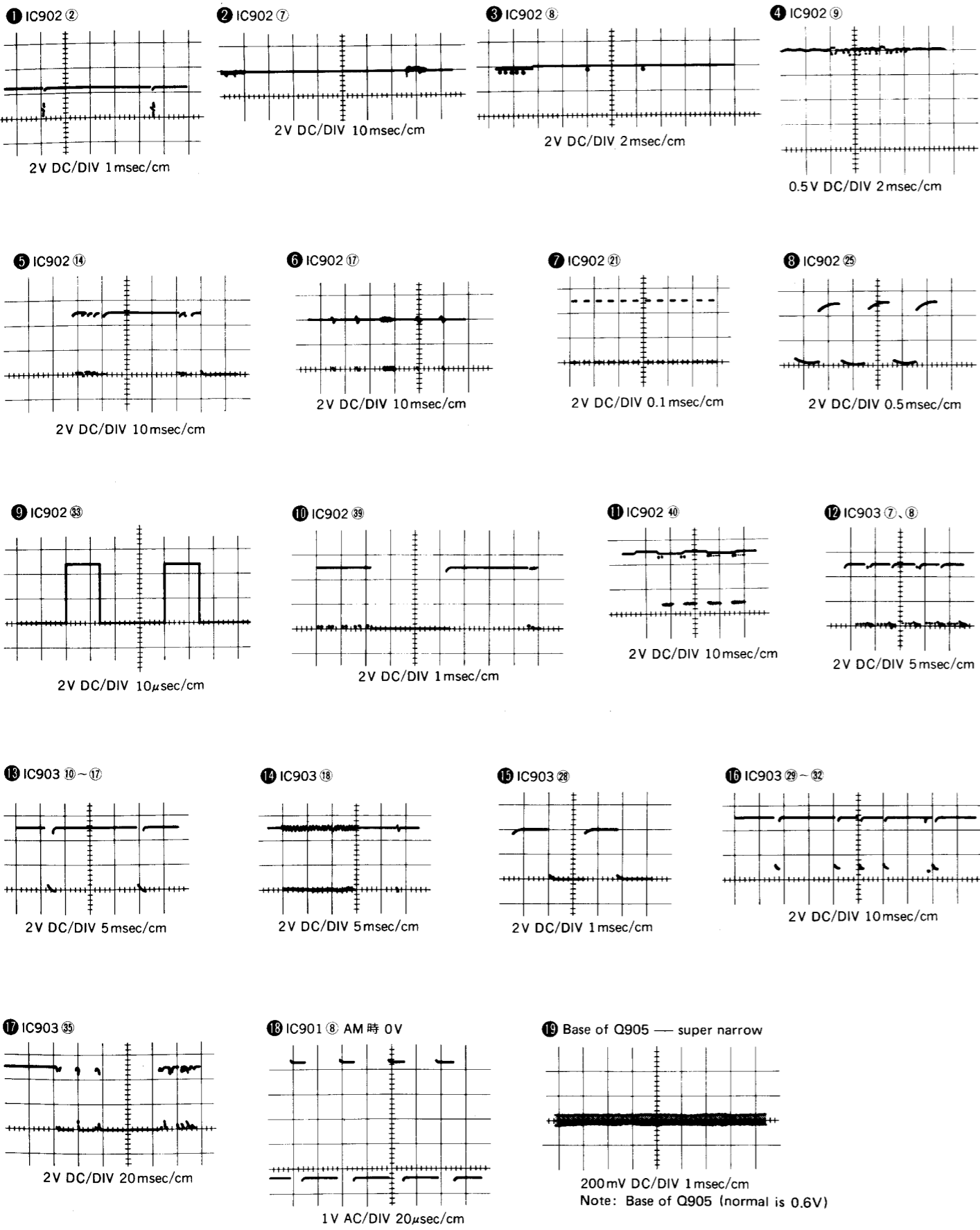
### How to measure the waveform of each segment



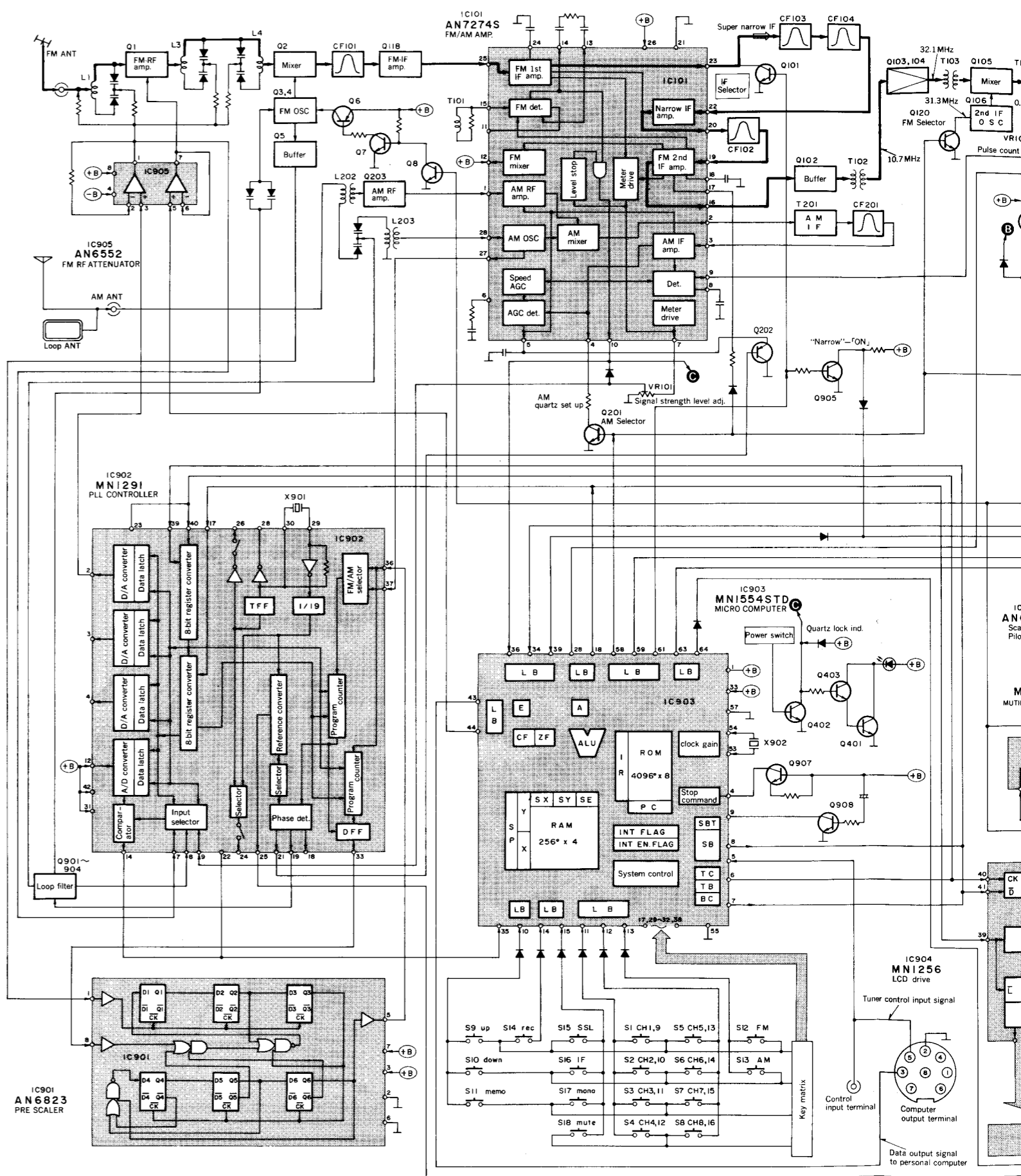
### (NOTE)

For the output waveform of each segment, the potential difference from that of COM terminal waveform is measured. So, do not connect the ground wire of other equipment to the oscilloscope. Otherwise, IC904 will break down.

WAVEFORMS (Instantaneous measurement)



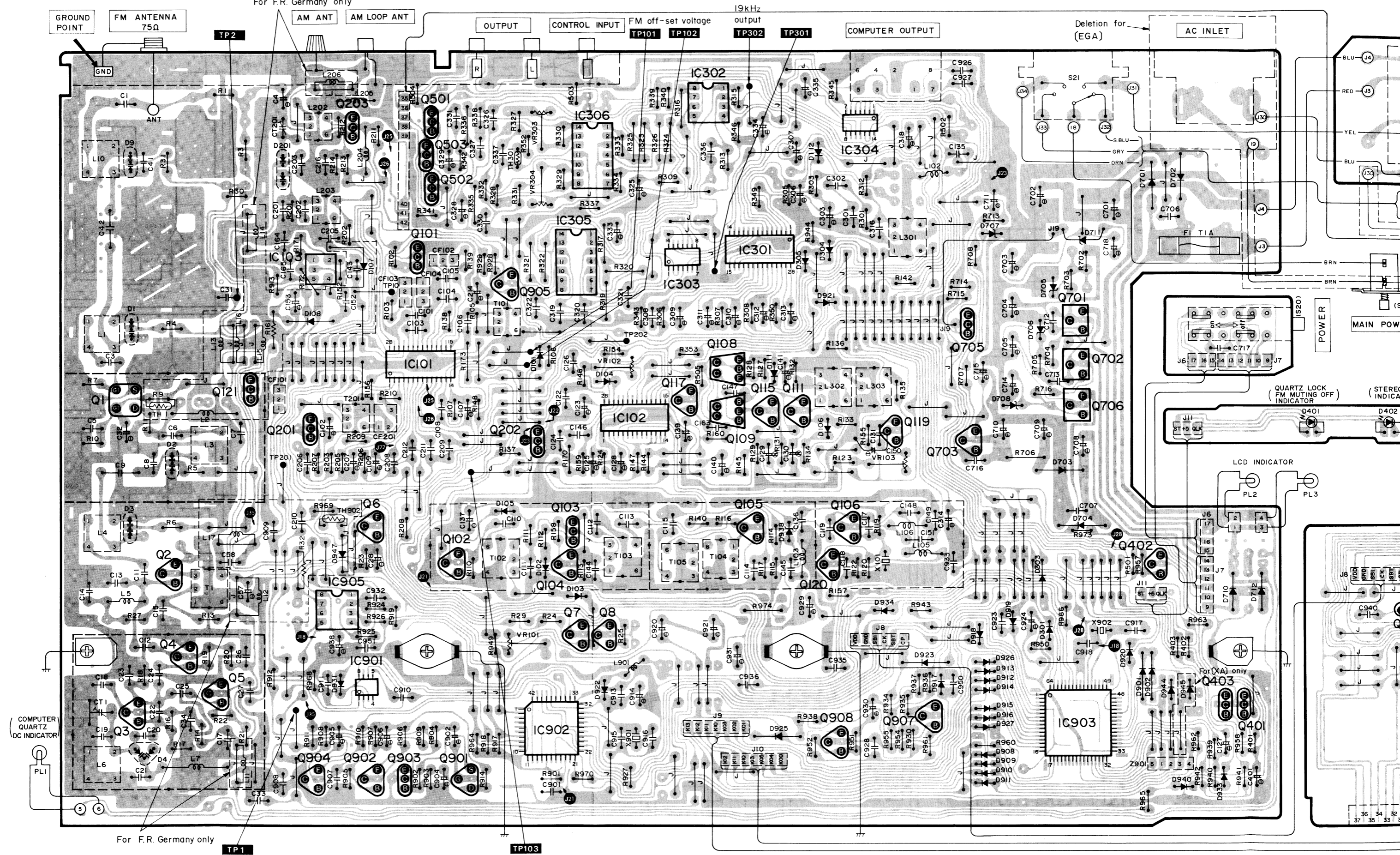
BLOCK DIAGRAM

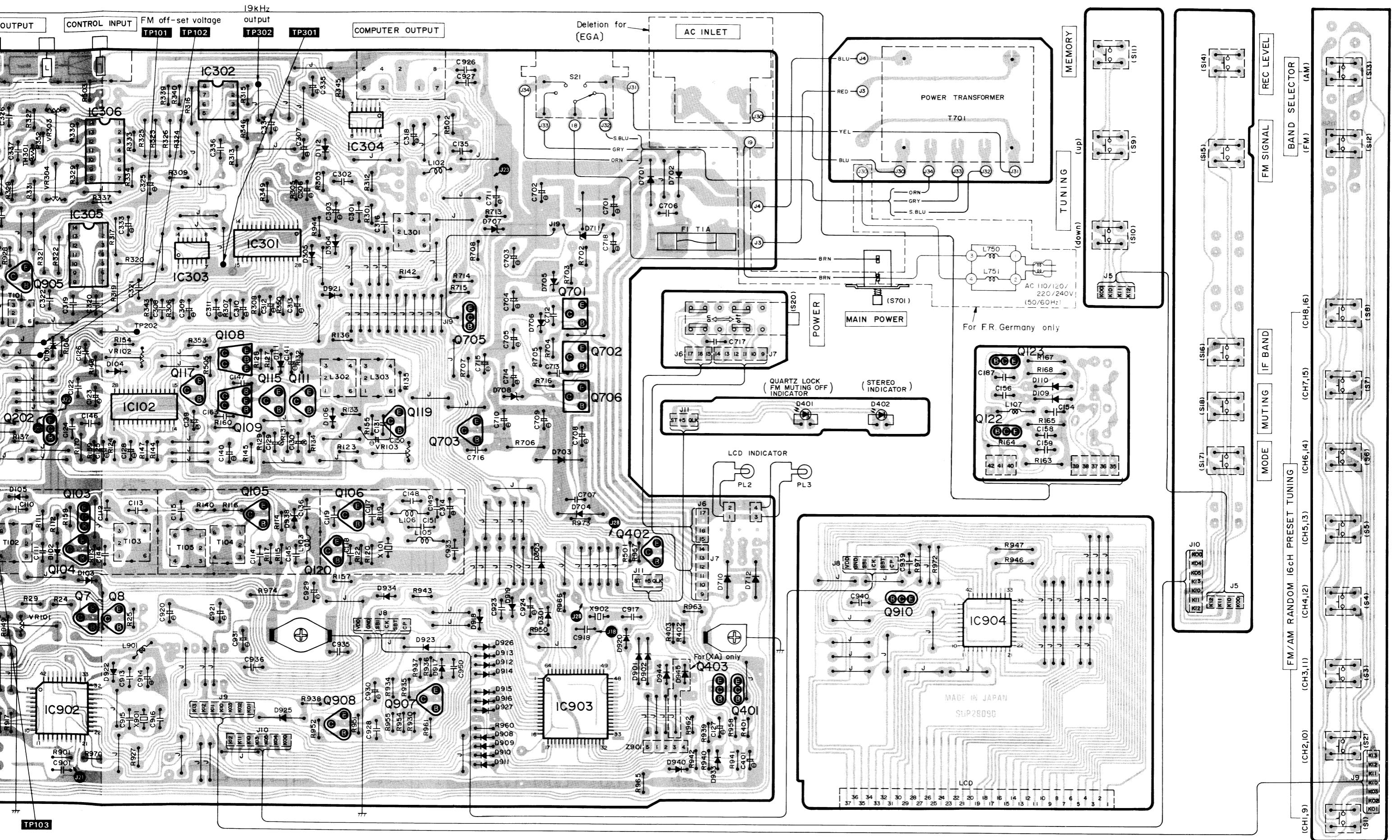




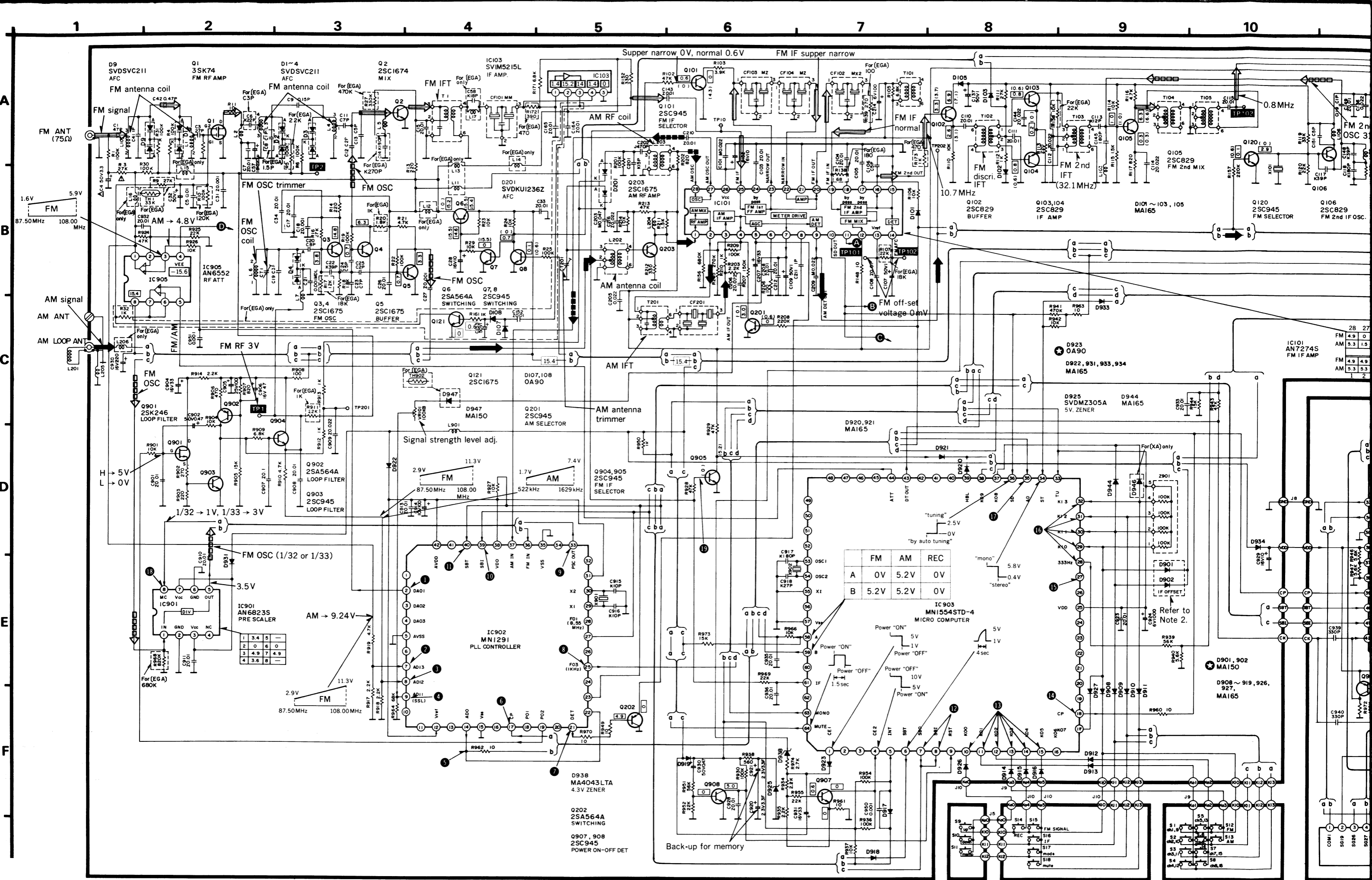
# CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

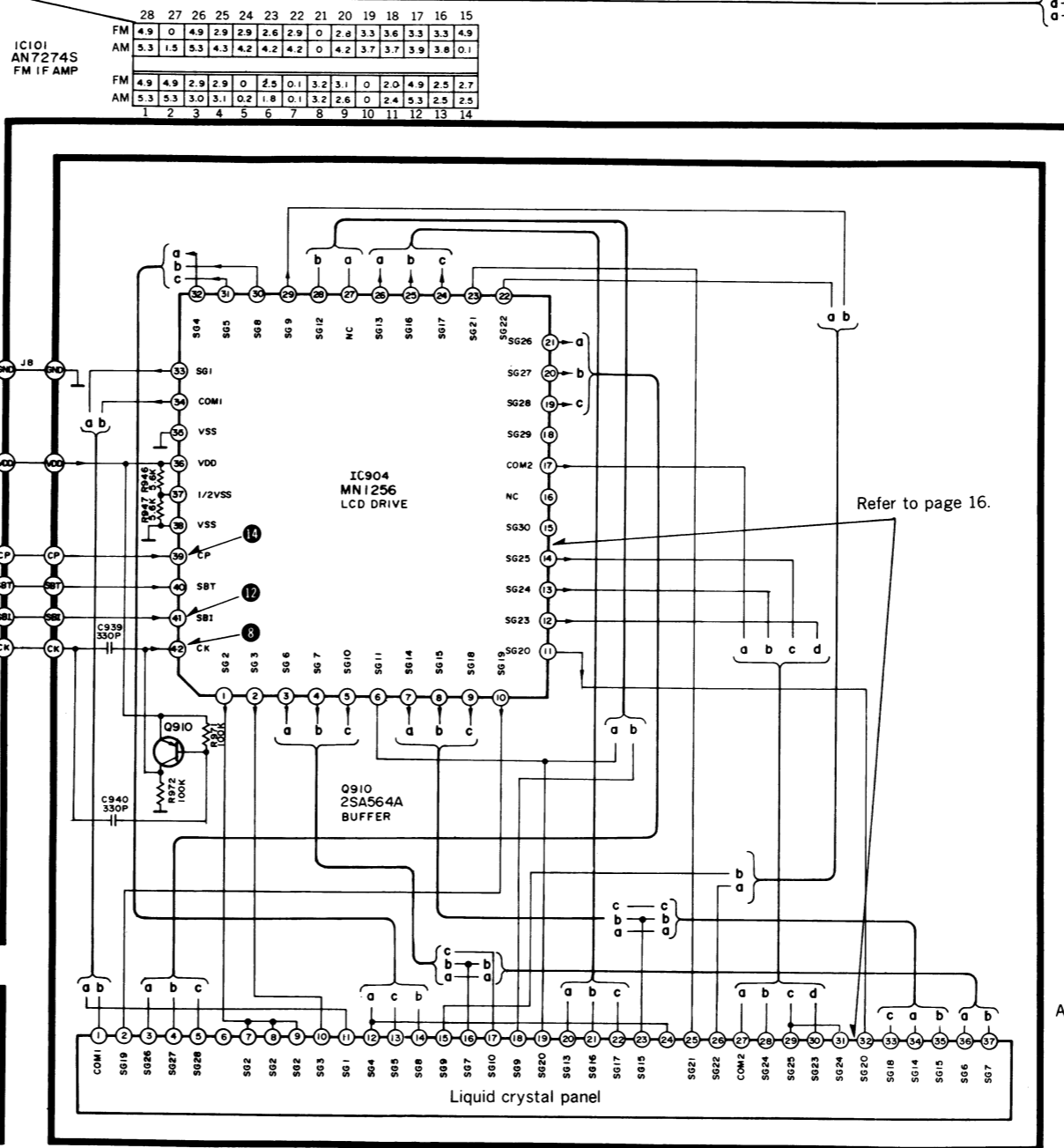
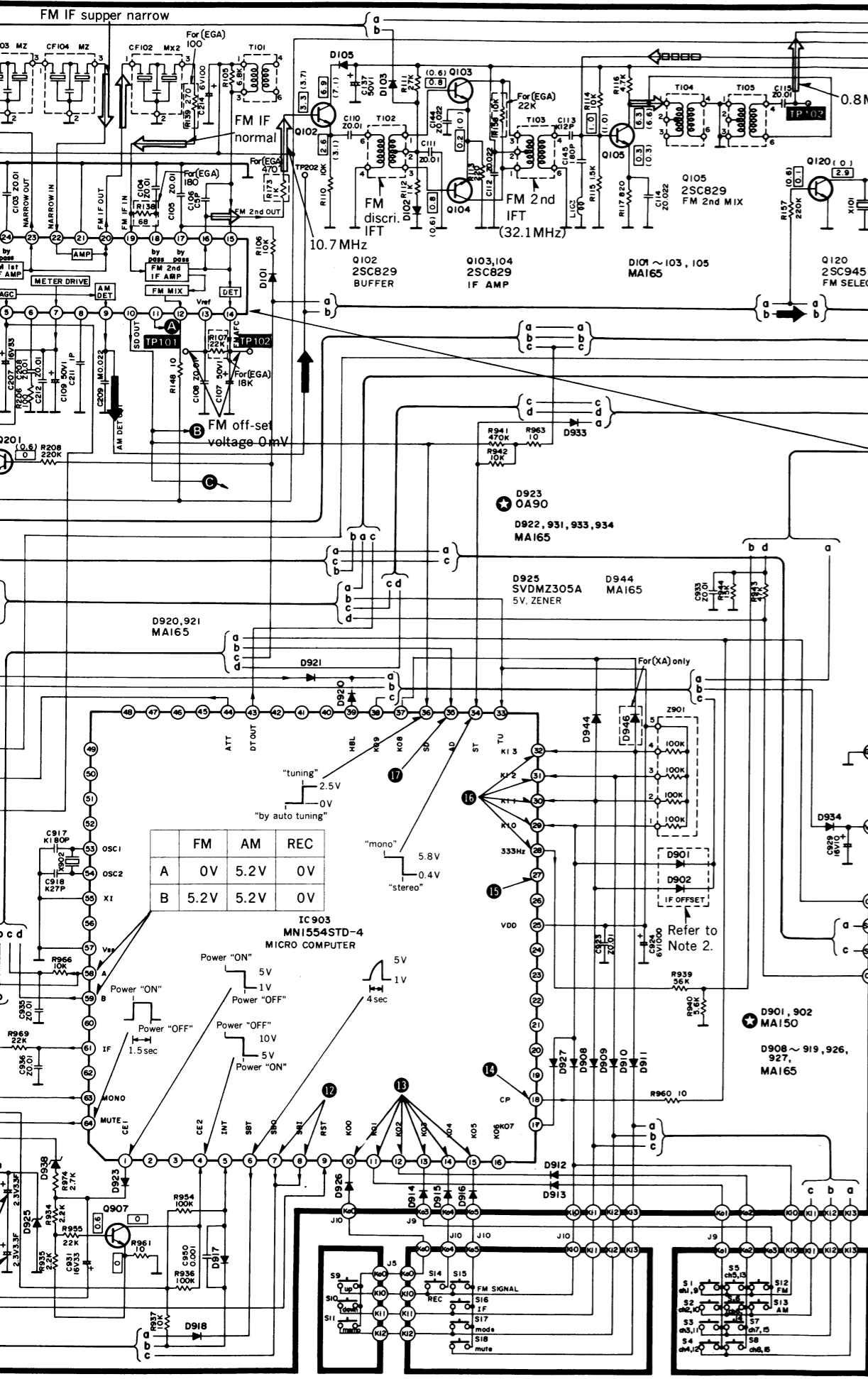
For F.R. Germany only

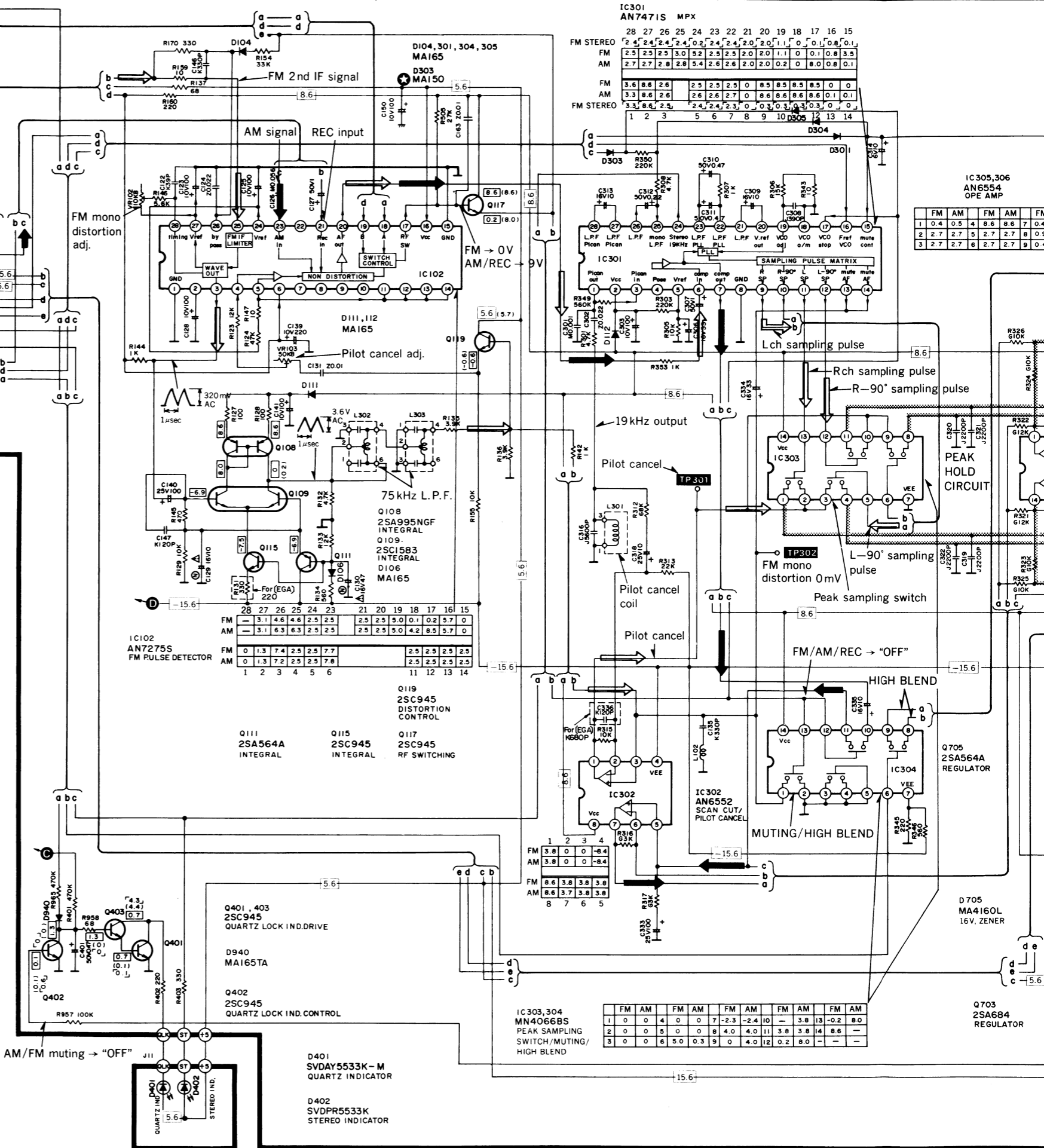
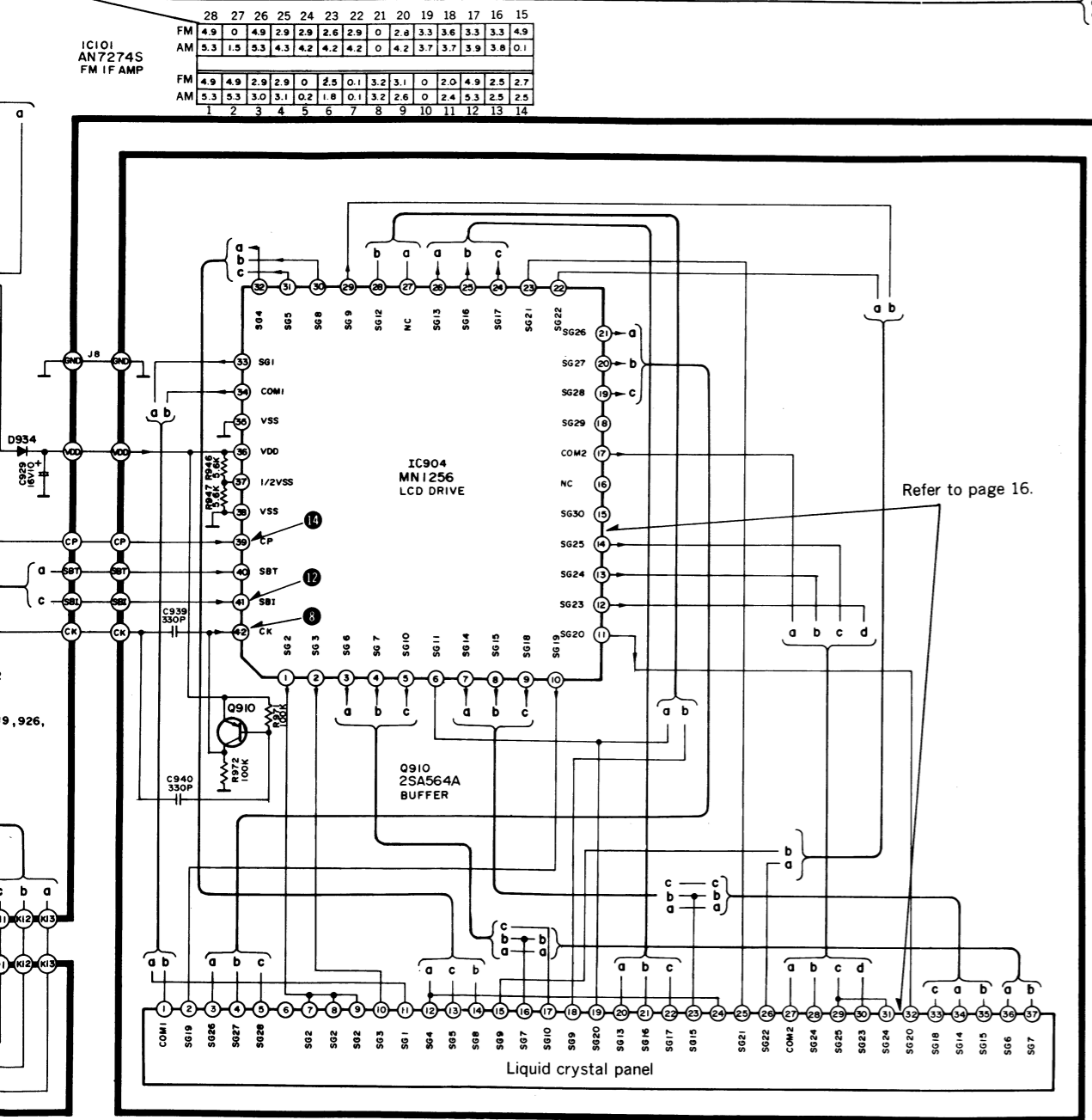
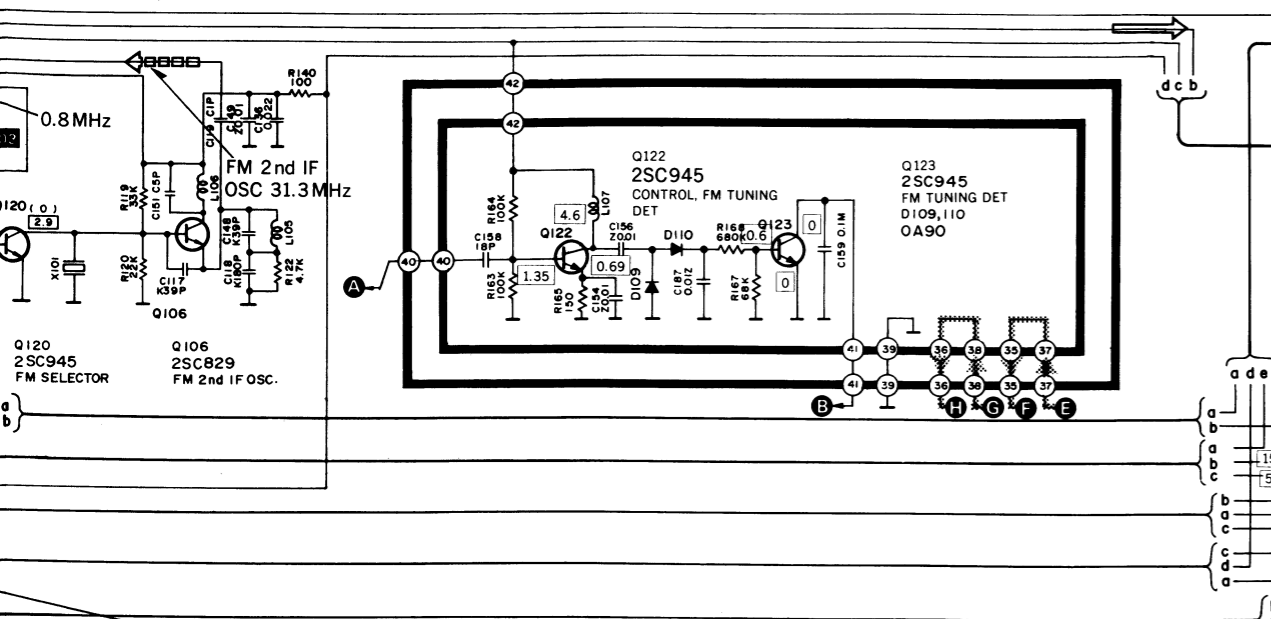


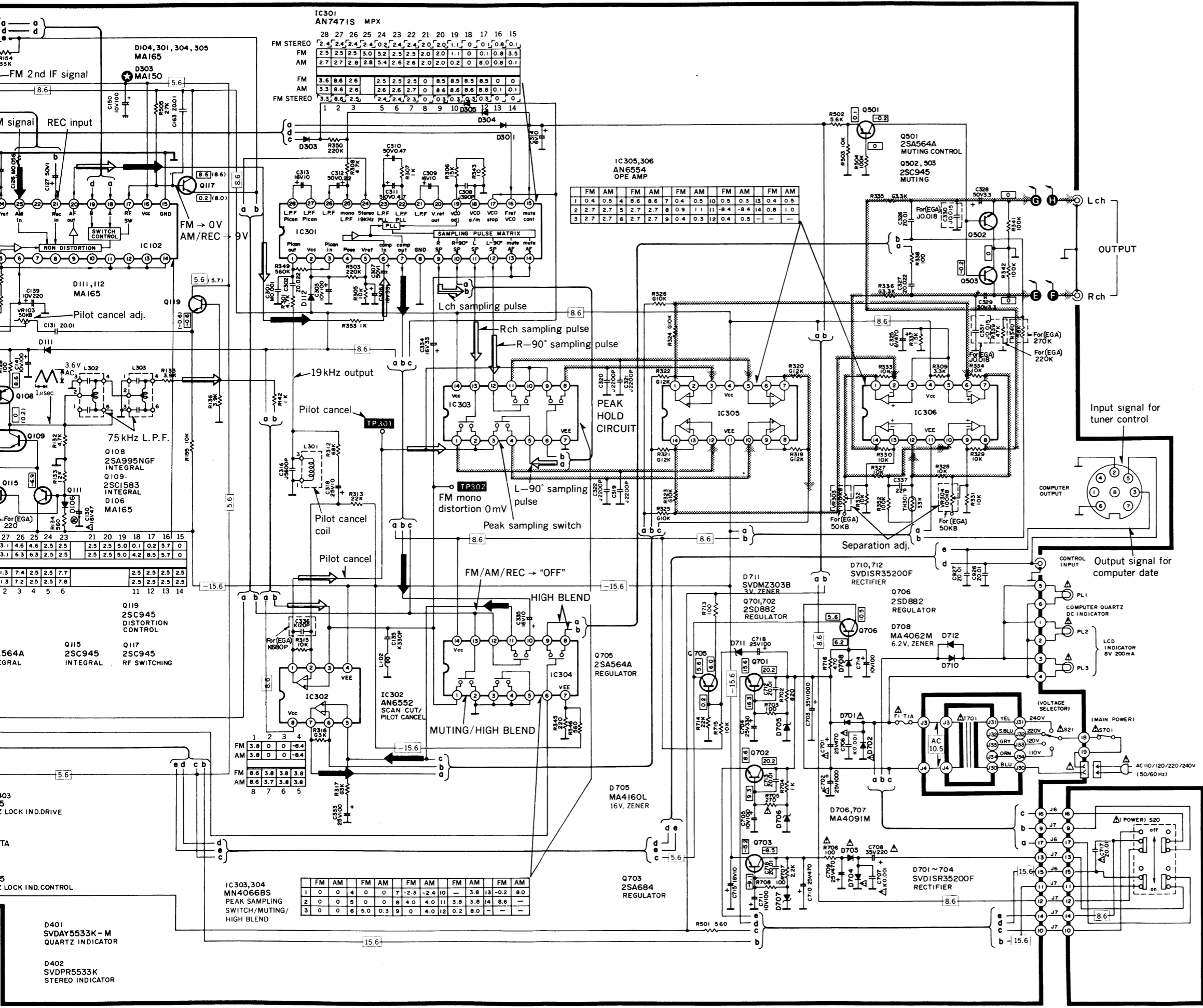












**SCHEMATIC DIAGRAM**

(This schematic diagram may be modified at any time with the development of new technology.)

\* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. with  $\star$  mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part please use the part No. in the replacement part list.

- Note 1:**
- S1 ~ S8** : Preset tuning switch.  
FM 1 ch ~ 8 ch, AM 9 ch ~ 16 ch.
  - S9** : Tuning (up) switch. (manual  $\leftrightarrow$  auto)  
[up: tuning to higher frequency]
  - S10** : Tuning (down) switch. (manual  $\leftrightarrow$  auto)  
[down: tuning to lower frequency]
  - S11** : Memory switch. (manual  $\leftrightarrow$  auto)
  - S12** : FM selector switch.
  - S13** : AM selector switch.
  - S14** : Recording level check switch.
  - S15** : FM signal strength level call switch.
  - S16** : FM IF band selector switch.  
(normal  $\leftrightarrow$  super narrow)
  - S17** : FM mode switch. (auto  $\leftrightarrow$  mono)
  - S18** : FM muting switch. (off  $\leftrightarrow$  scan level)
  - S20** : Power switch in "on" position.
  - S21** : Voltage selector switch in "220V" position.  
110V  $\leftrightarrow$  120V  $\leftrightarrow$  220V  $\leftrightarrow$  240V

14. **S701** : Main power switch in "on" position.  
Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

\* Figures in  $\square$  stand for DC voltage in FM signal (monaural) reception mode.  
\* Figures in  $\Gamma$  stand for DC voltage in FM stereo signal reception mode.  
\* Figures in  $( )$  stand for DC voltage in AM signal reception mode.  
\* Figures in  $< >$  stand for DC voltage in FM-IF super narrow condition mode.

- FM signal  $\square$  FM OSC  $\square$
- AM signal  $\Gamma$  AM OSC  $\Gamma$
- AF signal lines  $\dots$
- Positive voltage lines and negative voltage lines.  $\text{---}$
- Important safety notice: Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- The waveforms 1 ~ 19. Refer to page 17.

**Note 2:**

**Use of ceramic filters in pairs**

The ceramic filters (CF101 ~ CF104) for FM-IF circuit are available in four ranks. For this machine, be sure to use the ceramics of the same rank in a pair. At repairing and replacement, pay close attention to the diodes (D901, D902) for use as different diodes must be used depending on each rank of the ceramic filters.

Color marking

RANK (Color)	D901	D902	CENTER FREQUENCY
Black	X	O	10.65 MHz
Red	X	X	10.70 MHz
Blue	O	X	10.67 MHz
Orange	O	O	10.73 MHz

Note: O Mark Diode is used.  
X Mark Diode is not used.

TERMINAL GUIDE OF TRANSISTORS, IC'S AND DIODES

<p>AN6823S 8 Pin MN4066BS 14 Pin AN7274S AN7275S 28 Pin AN7471S</p>	<p>2SA564, 2SA684, 2SA995, 2SC829, 2SC945, 2SC1674, 2SC1675</p>	<p>MN1256 40 Pin MN1291 42 Pin MN1554STD 64 Pin</p>
<p>SVIM5215L</p>	<p>2SC1583</p>	<p>2SD882</p>
<p>2SK246</p>	<p>3SK74L1</p>	<p>SVDSVC211</p>
<p>SVDAY5533K, SVDPR5533</p>	<p>SVD1SR35200F</p>	<p>SVDMZ305A, SVDMZ303B</p>
<p>OA90, MA150, MA165</p>	<p>MA4160L, MA4043L, MA4062M, MA4091M</p>	<p>AN6552 8 Pin AN6554 14 Pin</p>

RESISTORS, CAPACITORS & REPLACEMENT PARTS LIST

Notes:

- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
- Important safety notice: Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
- The "S" mark is service standard parts and may differ from production parts.
- The unit of resistance is OHM ( $\Omega$ ).  
K = 1000 $\Omega$ , M = 1000k $\Omega$
- The unit of capacitance is MICROFARAD ( $\mu$ F)  
P = 10<sup>-6</sup>  $\mu$ F
- $\text{\textcircled{K}}$ -marked parts are used for black only, while  $\text{\textcircled{O}}$ -marked parts are for silver type only.
- Part other than  $\text{\textcircled{K}}$  and  $\text{\textcircled{O}}$ -marked are used for both black and silver type.
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
- The parenthesized numbers in the column of description stand for the quantity per set.

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA : Electrolytic	OJ : 6.3V	1H : 50V DC	C : $\pm 0.25\mu$ F
ECCD : Ceramic	1A : 10V	2H : 500V DC	J : $\pm 5\%$
ECKD : Ceramic	1C : 16V	2R3 : 2.3V DC	K : $\pm 10\%$
ECQM : Polyester	1E : 25V		Z : $+80\%$ , $-20\%$
ECQP : Polypropylene	1H : 50V		M : $\pm 20\%$
EECW : Liquid electrolyte double layer capacitor	50 : 50V		
ECG : Ceramic	1V : 35V		

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	J : $\pm 5\%$
ERO : Metal film	S2 : 1/4W	G : $\pm 2\%$
	S1 : 1/2W	

RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R1	ERDS2TJ104	100K	R11	ERDS2TJ100	10
R3	ERDS2TJ273	27K	R13, 14	ERDS2TJ221	220
R4	ERDS2TJ104	100K		ERDS2TJ273	27K
R5 [EGA] only	ERDS2TJ223	22K	R17 [EGA] only	ERDS2TJ183	18K
R5 [EGA] except	ERDS2TJ104	100K	R17 [EGA] except	ERDS2TJ123	12K
R6, 7	ERDS2TJ104	100K	R18	ERDS2TJ182	1.8K
R9 [EGA] except	ERDS2TJ273	27K	R19	ERDS2TJ104	100K
R10 [EGA] only	ERDS2TJ124	120K	R20 [EGA] only	ERDS2TJ102	1K
R10 [EGA] except	ERDS2TJ104	100K	R20 [EGA] except	ERDS2TJ182	1.8K

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R21	ERDS2TJ472	4.7K	R207	ERDS2TJ154	150K
R22	ERDS2TJ104	100K	R208	ERDS2TJ224	220K
R23, 24	ERDS2TJ103	10K	R209	ERDS2TJ104	100K
R25	ERDS2TJ104	100K	R210	ERDS2TJ102	1K
			R211	ERDS2TJ152	1.5K
R27 [EGA] only	ERDS2TJ474	470K	R212	ERDS2TJ331	330
R27 other	ERDS2TJ334	330K	R213	ERDS2TJ473	47K
			R214	ERDS2TJ103	10K
R29	ERDS2TJ103	10K	R301	ERDS2TJ472	4.7K
R30, 31	ERDS2TJ104	100K	R303	ERDS2TJ224	220K
R32 [EGA] only	ERDS2TJ102	1K	R305	ERDS2TJ103	10K
R102	ERDS2TJ473	47K	R306	ERDS2TJ153	15K
R103	ERDS2TJ392	3.9K	R307	ERDS2TJ102	1K
			R308	ERDS2TJ472	4.7K
R105	ERDS2TJ682	6.8K	R309	ERDS2TJ332	3.3K
R106	ERDS2TJ103	10K	R312	ERDS2TJ683	68K
			R313	ERDS2TJ223	22K
R107 [EGA] only	ERDS2TJ183	18K	R315	ERDS2TJ103	10K
R107 [EGA] except	ERDS2TJ223	22K	R316, 317	ERO25CKG3001	3K
			R319, 320	ERO25CKG1202	12K
R110	ERDS2TJ103	10K	R321, 322	ERO25CKG1202	12K
R111	ERDS2TJ273	27K	R323, 324	ERO25CKG1002	10K
R112	ERDS2TJ102	1K	R325, 326	ERO25CKG1002	10K
R113	ERDS2TJ103	10K	R327, 328	ERDS2TJ103	10K
R114	ERDS2TJ152	1.5K	R329, 330	ERDS2TJ103	10K
R115	ERDS2TJ472	4.7K			
R116	ERDS2TJ821	820	R331, 332	ERDS2TJ103	10K
R117	ERDS2TJ821	820	R333, 334	ERDS2TJ103	10K
R119	ERDS2TJ333	33K	R335, 336	ERO25CKG3301	3.3K
R120	ERDS2TJ223	22K	R337	ERDS2TJ152	1.5K
R122	ERDS2TJ472	4.7K	R338	ERDS2TJ101	100
R123	ERDS2TJ123	12K			
R124	ERDS2TJ473	47K	R339 [EGA] only	ERDS2TJ224	220K
R127, 128	ERDS2TJ101	100	R339 [EGA] except	ERDS2TJ473	47K
R129	ERDS2TJ103	10K	R340 [EGA] only	ERDS2TJ274	270K
			R340 [EGA] except	ERDS2TJ563	56K
R131 [EGA] only	ERDS2TJ221	220			
R131 [EGA] except	ERDS2TJ331	330	R341, 342	ERDS2TJ104	100K
			R343	ERDS2TJ100	10
R132	ERDS2TJ472	4.7K	R345	ERDS2TJ221	220
R133	ERDS2TJ123	12K	R346	ERDS2TJ561	560
R134	ERDS2TJ561	560	R349	ERDS2TJ564	560K
R135, 136	ERDS2TJ392	3.9K	R350	ERDS2TJ224	220K
R137	ERDS2TJ680	68	R352	ERDS2TJ104	100K
			R353	ERDS2TJ102	1K
R138 [EGA] only	ERDS2TJ181	180	R401	ERDS2TJ474	470K
R138 [EGA] except	ERDS2TJ680	68	R402	ERDS2TJ221	220
			R403	ERDS2TJ331	330
R139 [EGA] only	ERDS2TJ101	100	R501	ERDS2TJ561	560
R139 [EGA] except	ERDS2TJ271	270	R502	ERDS2TJ562	5.6K
			R503	ERDS2TJ103	10K
R140	ERDS2TJ101	100	R504	ERDS2TJ104	100K
R142	ERDS2TJ102	1K	R505	ERDS2TJ273	27K
R144	ERDS2TJ102	1K	R702	ERDS2TJ821	820
R145	ERDS2TJ471	470	R703	ERDS2TJ101	100
R146	ERDS2TJ562	5.6K	R704	ERDS2TJ102	1K
R147, 148	ERDS2TJ100	10	R705	ERDS1FJ271	270
R152	ERDS2TJ331	330			
R154	ERDS2TJ333	33K	R706	ERD25FJ101	100
R155	ERDS2TJ103	10K	R707	ERDS2TJ222	2.2K
R156	ERDS2TJ684	680K	R708	ERDS2TJ101	100
			R713	ERDS2TJ101	100
R157	ERDS2TJ224	220K	R714	ERDS2TJ223	22K
			R715	ERDS2TJ103	10K
R158 [EGA] only	ERDS2TJ223	22K	R716	ERDS1FJ471	470
R158 [EGA] except	ERDS2TJ103	10K	R901	ERDS2TJ103	10K
			R902	ERDS2TJ271	270
R159	ERDS2TJ100	10	R903	ERDS2TJ221	220
R160	ERDS2TJ682	68K			
R161 [EGA] only	ERD25FJ102	1K	R904	ERDS2TJ103	10K
R163, 164	ERD25TJ104	100K	R905	ERDS2TJ153	15K
R165	ERD25FJ151	150	R906	ERDS2TJ471	470
R167	ERD25TJ683	68K	R907	ERDS2TJ821	820
R168	ERD25TJ684	680K	R908	ERDS2TJ101	100
R170	ERD25FJ331	330	R909	ERDS2TJ682	6.8K
R171	ERDS2TJ682	6.8K	R910	ERDS2TJ472	4.7K
R172 [EGA] only	ERD25FJ471	470	R911 [EGA] only	ERDS2TJ102	1K
R172 [EGA] except	ERD25FJ391	390	R911 [EGA] except	ERDS2TJ223	22K
R173 [EGA] only	ERD25FJ471	470	R912, 913	ERDS2TJ102	1K
R173 [EGA] except	ERD25FJ102	1K	R914	ERDS2TJ222	2.2K
			R917, 918	ERDS2TJ222	2.2K
R201	ERDS2TJ104	100K	R919	ERDS2TJ472	4.7K
R202	ERDS2TJ821	820	R924	ERDS2TJ473	47K
R203	ERDS2TJ222	2.2K	R925	ERDS2TJ223	22K
R205	ERDS2TJ274	270K	R926, 927	ERDS2TJ103	10K
R206	ERDS2TJ101	100	R928, 929	ERDS2TJ473	47K
			R930	ERDS2TJ104	100K
			R934, 935	ERDS2TJ222	2.2K
			R936	ERDS2TJ104	100K
			R937	ERDS2TJ103	10K
			R938	ERDS2TJ561	560
			R939	ERDS2TJ563	56K
			R940	ERDS2TJ562	5.6K
			R941	ERDS2TJ474	470K
			R942	ERDS2TJ103	10K

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R943	ERDS2TJ473	47K	R952	ERDS2TJ223	22K
R944	ERDS2TJ153	15K	R954	ERDS2TJ104	100K
R946, 947	ERD25FJ562	5.6K	R955	ERDS2TJ223	22K
			R957	ERDS2TJ104	100K
R949	ERDS2TJ100	10	R958	ERDS2TJ680	68
R950	ERDS2TJ102	1K	R960, 961	ERDS2TJ100	10
R951	ERDS2TJ563	56K	R962, 963	ERDS2TJ100	10

CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1	ECCD1H470KC	47P	C103, 104	ECKD1H103ZF	0.01
C3	ECCD1H270KC	27P	C105	ECKD1H103ZF	0.01
C4	ECEA1HU3R3	3.3	C106	ECCD1H050CC	5P
C5	ECKD1H102MDL	0.001	C107	ECEA1HU010	1
			C108	ECKD1H103ZF	0.01
C6 [EGA] only	ECCD1H030CC	3P	C109	ECEA1HU010	1
C6 [EGA] except	ECCD1H220KC	22P	C110, 111	ECKD1H103ZF	0.01
			C112	ECKD1H223ZF	0.022
C7	ECKD1H103ZF	0.01	C113	ECCD1H120KC	12P
			C114	ECKD1H223ZF	0.022
C8 [EGA] only	ECCD1H1R5CC	1.5P	C115	ECKD1H103ZF	0.01
C8 [EGA] except	ECCD1H010CC	1P	C117	ECCD1H390KC	39P
			C118	ECCD1H181K	180P
C9	ECGN5R15K	15P	C119	ECCD1H010CC	1P
C11	ECCD1H070CC	7P	C122	ECCD1H390KC	39P
C13	ECCD1H050CC	5P	C123	ECEA1AU101	100
			C124	ECKD1H223ZF	0.022
C14 [EGA] only	ECCD1H271K	270P	C125	ECEA1AU101	100
C14 [EGA] except	ECCD1H181K	180P			
C15	ECKD1H103ZF	0.01	C126	ECQM1H563KV	0.056
C17	ECKD1H103ZF	0.01	C127	ECEA1HU010	1
C18	ECKD1H102ZF	0.001	C128	ECEA1HU101	100
C19	ECCD1H030CC	3P	C129	ECEA1CN	

f. No.	Part No.	Value	Ref. No.	Part No.	Value
24	ERDS2TJ472	4.7K	R207	ERDS2TJ154	150K
	ERDS2TJ103	100K	R208	ERDS2TJ224	220K
	ERDS2TJ104	10K	R209	ERDS2TJ104	100K
[EGA] only	ERDS2TJ474	470K	R210	ERDS2TJ102	1K
	ERDS2TJ334	330K	R211	ERDS2TJ152	1.5K
		R212	ERDS2TJ331	330	
	R213	ERDS2TJ473	47K		
	R214	ERDS2TJ103	10K		
	R301	ERDS2TJ472	4.7K		
	R303	ERDS2TJ224	220K		
	R305	ERDS2TJ102	10K		
	R306	ERDS2TJ153	15K		
	R307	ERDS2TJ102	1K		
R308	ERDS2TJ472	4.7K			
R309	ERDS2TJ332	3.3K			
R312	ERDS2TJ683	68K			
R313	ERDS2TJ223	22K			
R315	ERDS2TJ103	10K			
R316, 317	ERDS2TJ103	10K			
R319, 320	ERDS2TJ103	10K			
R321, 322	ERDS2TJ103	10K			
R323, 324	ERDS2TJ103	10K			
R325, 326	ERDS2TJ103	10K			
R327, 328	ERDS2TJ103	10K			
R329, 330	ERDS2TJ103	10K			
R331, 332	ERDS2TJ103	10K			
R333, 334	ERDS2TJ103	10K			
R335, 336	ERDS2TJ103	10K			
R337	ERDS2TJ152	1.5K			
R338	ERDS2TJ101	100			
R339 [EGA] only	ERDS2TJ224	220K			
R339 [EGA] except	ERDS2TJ473	47K			
R340 [EGA] only	ERDS2TJ274	270K			
R340 [EGA] except	ERDS2TJ563	56K			
R341, 342	ERDS2TJ104	100K			
R343	ERDS2TJ100	10			
R345	ERDS2TJ221	220			
R346	ERDS2TJ561	560			
R349	ERDS2TJ564	560K			
R350	ERDS2TJ224	220K			
R352	ERDS2TJ104	100K			
R353	ERDS2TJ102	1K			
R401	ERDS2TJ474	470K			
R402	ERDS2TJ221	220			
R403	ERDS2TJ331	330			
R501	ERDS2TJ561	560			
R502	ERDS2TJ562	5.6K			
R503	ERDS2TJ103	10K			
R504	ERDS2TJ104	100K			
R505	ERDS2TJ273	27K			
R702	ERDS2TJ821	820			
R703	ERDS2TJ101	100			
R704	ERDS2TJ102	1K			
R705	ERDS1FJ271	270			
R706	ERD25FJ101	100			
R707	ERDS2TJ222	2.2K			
R708	ERDS2TJ101	100			
R713	ERDS2TJ101	100			
R714	ERDS2TJ223	22K			
R715	ERDS2TJ103	10K			
R716	ERDS1FJ471	470			
R901	ERDS2TJ103	10K			
R902	ERDS2TJ271	270			
R903	ERDS2TJ221	220			
R904	ERDS2TJ103	10K			
R905	ERDS2TJ153	15K			
R906	ERDS2TJ471	470			
R907	ERDS2TJ821	820			
R908	ERDS2TJ101	100			
R909	ERDS2TJ682	6.8K			
R910	ERDS2TJ472	4.7K			
R911 [EGA] only	ERDS2TJ102	1K			
R911 [EGA] except	ERDS2TJ223	22K			
R912, 913	ERDS2TJ102	1K			
R914	ERDS2TJ222	2.2K			
R917, 918	ERDS2TJ222	2.2K			
R919	ERDS2TJ472	4.7K			
R924	ERDS2TJ473	47K			
R925	ERDS2TJ223	22K			
R926, 927	ERDS2TJ103	10K			
R928, 929	ERDS2TJ473	47K			
R930	ERDS2TJ104	100K			
R934, 935	ERDS2TJ222	2.2K			
R936	ERDS2TJ104	100K			
R937	ERDS2TJ103	10K			
R938	ERDS2TJ561	560			
R939	ERDS2TJ563	56K			
R940	ERDS2TJ562	5.6K			
R941	ERDS2TJ474	470K			
R942	ERDS2TJ103	10K			

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R943	ERDS2TJ473	47K	R952	ERDS2TJ223	22K
R944	ERDS2TJ153	15K	R954	ERDS2TJ104	100K
R946, 947	ERD25FJ562	5.6K	R955	ERDS2TJ223	22K
R949	ERDS2TJ100	10	R957	ERDS2TJ104	100K
R950	ERDS2TJ102	1K	R958	ERDS2TJ680	68
R951	ERDS2TJ563	56K	R960, 961	ERDS2TJ100	10
			R962, 963	ERDS2TJ100	10

### CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1	ECCD1H470KC	47P	C103, 104	ECKD1H103ZF	0.01
C3	ECCD1H270KC	27P	C105	ECKD1H103ZF	0.01
C4	ECEA1HU3R3	3.3	C106	ECCD1H050CC	5P
C5	ECKD1H102MDL	0.001	C107	ECEA1HU010	1
C6 [EGA] only	ECCD1H030CC	3P	C108	ECKD1H103ZF	0.01
C6 [EGA] except	ECCD1H220KC	22P	C109	ECEA1HU010	1
C7	ECKD1H103ZF	0.01	C110, 111	ECKD1H103ZF	0.01
C8 [EGA] only	ECCD1H1R5CC	1.5P	C112	ECKD1H223ZF	0.022
C8 [EGA] except	ECCD1H010CC	1P	C113	ECCD1H120KC	12P
C9	ECGN5R15K	15P	C114	ECKD1H223ZF	0.022
C11	ECCD1H070CC	7P	C115	ECKD1H103ZF	0.01
C13	ECCD1H050CC	5P	C117	ECCD1H390KC	39P
			C118	ECCD1H181K	180P
			C119	ECCD1H010CC	1P
			C122	ECCD1H390KC	39P
			C123	ECEA1HU010	100
			C124	ECKD1H223ZF	0.022
			C125	ECEA1HU010	100
			C126	ECQM1H563KV	0.056
			C127	ECEA1HU010	1
			C128	ECEA1HU010	100
			C129	ECEA1CN100S	10
			C130	ECEA1CN470S	47
			C131	ECKD1H103ZF	0.01
			C135	ECCD1H331K	330P
			C136	ECKD1H223ZF	0.022
			C137	ECEA1HU010	1
			C139	ECEA1HU021	220
			C140	ECEA1EU101	100
			C141	ECEA1AU101	100
			C143	ECKD1H103ZF	0.01
			C144	ECKD1H223ZF	0.022
			C145	ECCD1H181K	180P
			C146	ECCD1H331K	330P
			C147	ECCD1H121K	120P
			C148	ECCD1H390KC	39P
			C149	ECKD1H103ZF	0.01
			C150	ECEA1HU010	100
			C151	ECCD1H050CC	5P
			C152 [EGA] only	ECKD1H103ZF	0.01
			C153 [EGA] only	ECEA1HU010	1
			C154	ECKD1H103ZF	0.01
			C156	ECKD1H103ZF	0.01
			C158	ECCD1H180KC	18P
			C159	ECQM1H104KV	0.1
C101	ECQM1H223KV	0.022			
C102	ECEA1CU100	10			

### INTEGRATED CIRCUITS

Ref. No.	Part No.	Description
IC101	AN7274S	FM IF Amp.
IC102	AN7275S	FM Pulse Detector
IC103	SVIM5215L	FM IF
IC301	AN7471S	MPX
IC302, 905	AN6552	Scan Cutoff/Cancel, RF ATT
IC303, 304	MN4066BS	Peak Sampling Switch/Muting/High Blend
IC305, 306	AN6554	Ope Amp.
IC901	AN6823S	Pre-Scaler
IC902	MN1291	PLL Controller
IC903	MN1554STD-4	Micro Computer
IC904	MN1256	LCD Drive

### TRANSISTORS

Ref. No.	Part No.	Description
Q1	3SK74-L1	FM RF Amp.
Q2	2SC1674-M	Mix
Q3-5, 203	2SC1675-L	FM OSC, Buffer
Q6, 111, 202, 501	2SA722-S	Switching
Q7, 8, 101, 115, 117, 119, 120, 122, 123, 201, 401-403, 502, 503, 903-905, 907, 908	2SC945-Q	Switching
Q102-106	2SC829-C	Buffer, IF Amp. FM Mix. FM IF OSC
Q108	2SA995N-G	Integral
Q109	2SC1583-G	Integral
Q121 [EGA] only	2SC1675-L	Integral

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R964	ERDS2TJ683	68K	R966 [EGA] only	ERDS2TJ684	680K
R965	ERDS2TJ474	470K	R966 [EGA] except	ERDS2TJ824	820K
R966	ERDS2TJ103	10K			
R969	ERDS2TJ100	10			
R970	ERD25TJ104	100K			
R971, 972	ERD25TJ153	15K			
R973	ERD25FJ272	2.7K			
R974					

### CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C163, 164	ECKD1H103ZF	0.01	C336 [EGA] except	ECCD1H121K	120P
C165	ECKD1H103ZF	0.01			
C187	ECKD1H103ZF	0.01			
C201	ECCD1H150KC	15P	C337	ECCD1H220KC	22P
C202	ECQP1471JZ	470P	C401	ECEA1HUR47	0.47
C203	ECQM1H473KV	0.047	C701	ECEA1EU471	470
C205, 206	ECKD1H223ZF	0.022	C702	ECEA1EU102	1000
C207	ECEA1CU330	33	C703	ECEA1VU102	1000
C208	ECKD1H103ZF	0.01	C704	ECEA1EU331	330
C209	ECQM1H223KV	0.022	C705	ECEA1AU101	100
C210	ECKD1H103ZF	0.01	C706, 707	ECKD2H102ZF	0.001
C211	ECCD1H010CC	1P	C708	ECEA1VU221	220
C212	ECCD1H103ZF	0.01	C709, 710	ECEA1EU471	470
C214	ECEA1U101	100			
C216	ECKD1H223ZF	0.022	C711	ECEA1AU101	100
C301	ECQM1H102KV	0.001	C712, 713	ECKD1H103ZF	0.01
C302	ECKD1H223ZF	0.022	C714	ECEA1AU101	100
C303	ECEA1AU101	100	C715	ECEA1CU100	10
C306	ECEA1CU330	33	C716, 717	ECKD1H103ZF	0.01
C307	ECEA1HU010	1	C718	ECEA1EU101	100
C308	ECQP1391JZ	390P	C901	ECKD1H103ZF	0.01
C309	ECEA1CU100	10	C902	ECEA50MR47R	0.47
			C904	ECEA1CU330	33
			C905	ECEA1EU101	100
			C906	ECEA1CU470	47
			C907	ECQM1H104KV	0.1
			C908	ECKD1H103ZF	0.01
			C909	ECKD1H223ZF	0.022
			C910, 911	ECKD1H103ZF	0.01
			C913	ECKD1H103ZF	0.01
			C914	ECEA1AU101	100
			C915, 916	ECCD1H100KC	10P
			C917	ECCD1H181K	180P
			C918	ECCD1H270KC	27P
			C920, 921	EECW2R3A3R3	3.3
			C923	ECKD1H103ZF	0.01
			C924	ECEA1U102	1000
			C926, 927	ECKD1H103ZF	0.01
			C928	ECKD1H103ZF	0.01
			C929	ECEA1CU100	10
			C930	ECEA1HUR47	0.47
			C931	ECEA1CU330	33
			C932, 933	ECKD1H103ZF	0.01
			C935, 936	ECKD1H103ZF	0.01
			C938	ECEA1CU221	220
			C939, 940	ECCD1H331K	330
			C950, 951	ECKD1H102ZF	0.001
			C328, 329	ECEA1HU3R3	3.3
			C330, 331	ECQM1H183JV	0.018
			C330, 331 [PA, PE, PC] only	ECQM1H273JV	0.027
			C330, 331 [EGA, PA, PE, PC] except	ECQM1H153JV	0.015
			C333	ECEA1EU101	100
		</			

Value	Ref. No.	Part No.	Value
68K	R969	ERDS2TJ223	22K
70K	R970	ERDS2TJ100	10
10K	R971, 972	ERD25TJ104	100K
	R973	ERDS2TJ153	15K
80K	R974	ERD25FJ272	2.7K

Value	Ref. No.	Part No.	Value
0.01	C336 [EGA] except	ECCD1H121K	120P
0.01			
0.01			
15P	C337	ECCD1H220KC	22P
470P	C401	ECEA1HUR47	0.47
0.047	C701	ECEA1EU471	470
0.07	C702	ECEA1EU102	1000
0.022	C703	ECEA1VU102	1000
33	C704	ECEA1EU331	330
0.01	C705	ECEA1AU101	100
0.022	C706, 707	ECKD2H102ZF	0.001
0.01	C708	ECEA1VU221	220
1P	C709, 710	ECEA1EU471	470
0.01			
100	C711	ECEA1AU101	100
0.022	C712, 713	ECKD1H103ZF	0.01
0.001	C714	ECEA1AU101	100
0.022	C715	ECEA1CU100	10
100	C716, 717	ECKD1H103ZF	0.01
33	C718	ECEA1EU101	100
1	C901	ECKD1H103ZF	0.01
390P	C902	ECEA50MR47R	0.47
10	C904	ECEA1CU330	33
	C905	ECEA1EU101	100
0.47	C906	ECEA1CU470	47
0.22	C907	ECEA1H104KV	0.1
10	C908	ECKD1H103ZF	0.01
5600P	C909	ECKD1H223ZF	0.022
10	C910, 911	ECKD1H103ZF	0.01
2200P	C913	ECKD1H103ZF	0.01
2200P	C914	ECEA1AU101	100
470	C915, 916	ECCD1H100KC	10P
0.01	C917	ECCD1H181K	180P
0.022	C918	ECCD1H270KC	27P
3.3	C920, 921	EECW2R3A3R3	3.3
0.018	C923	ECKD1H103ZF	0.01
	C924	ECEA0JU102	1000
0.027	C926, 927	ECKD1H103ZF	0.01
	C928	ECKD1H103ZF	0.01
	C929	ECEA1CU100	10
0.015	C930	ECEA1HUR47	0.47
	C931	ECEA1CU330	33
	C932, 933	ECKD1H103ZF	0.01
	C935, 936	ECKD1H103ZF	0.01
100	C938	ECEA1CU221	220
33	C939, 940	ECCD1H331K	330
10	C950, 951	ECKD1H102ZF	0.001
680P			

Ref. No.	Part No.	Description
	SLD4P81	FM Antenna Choke
	SLQAN40G1-P	Choke
	SLQZ12G1-D	Choke
	SLO4P35	FM OSC
	SLA4P81	FM Antenna Choke
	SLQZ12G1-D	Choke
	SLQX101-2D	Choke
	ELEA821KA	Choke
	SLA2B1-P	AM Antenna
	SLO2B7-P	AM OSC
	SLQZ12G1-D	Choke
	SLM1C57-Z	19kHz Filter
	SLM1C85-P	FM Detector Filter
	SLM1C83-P	FM Detector Filter
	SLM1C87-P	FM Detector Filter
	SLM1C81-P	FM Detector Filter
	SLQX400-D	Choke

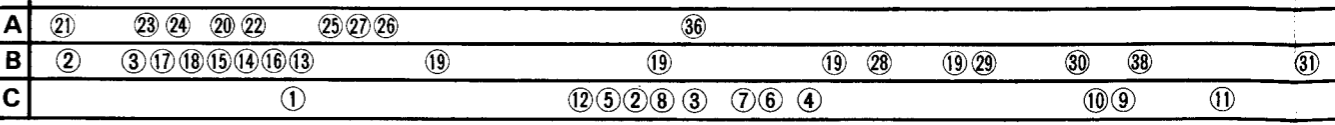
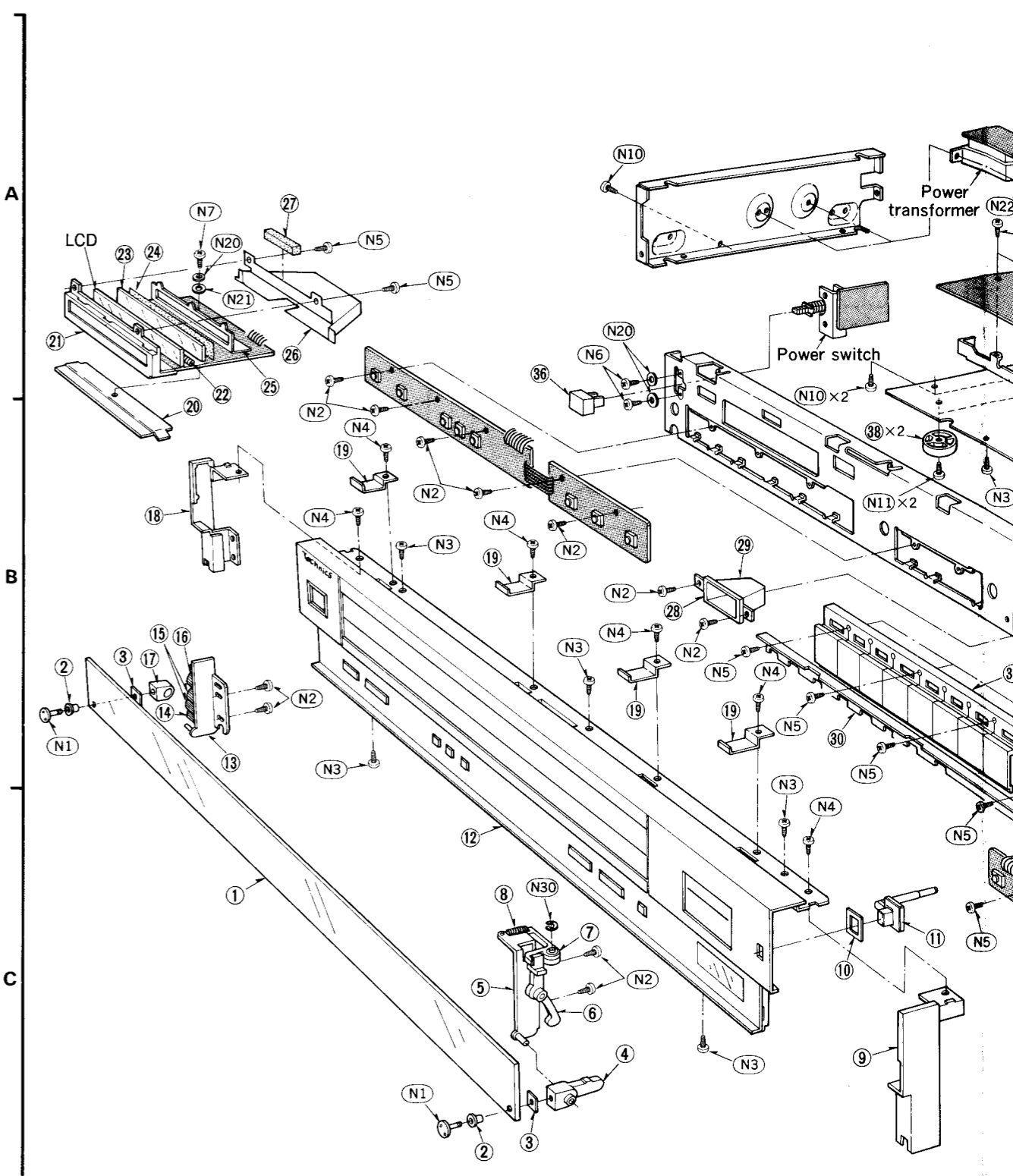
Value	Ref. No.	Part No.	Value
		ECV1ZW06X32E	Trimmer, FM OSC
		ECRHA010A11	Trimmer, AM OSC

Ref. No.	Part No.	Description
<b>TRANSFORMERS</b>		
T1	SLI4C109	FM IF
T101	SLI4B515-Z	FM IF
T102	SLI4C115-P	FM IF
T103	SLI4C117-P	FM IF
T104	SLI4C123-P	FM IF
T105	SLI4C125-P	FM IF
T201	SLI2B103-M	AM IF
T701	SLT5K167-H	Power Source
<b>CERAMIC FILTERS</b>		
CF101 [EGA] except	SVFE107MM-A	FM, 10.7 MHz, (Red)
	SVFE107MM-B	FM, 10.675 MHz (Blue)
	SVFE107MM-C	FM, 10.725 MHz (Orange)
	SVFE107MM-D	FM, 10.650 MHz (Black)
CF102 [EGA] except	SVFE107MX2-A	FM, 10.7 MHz, (Red)
	SVFE107MX2-B	FM, 10.675 MHz (Blue)
CF103, 104 [EGA] except	SVFE107MX2-C	FM, 10.725 MHz (Orange)
	SVFE107MX2-D	FM, 10.650 MHz (Black)
	SVFE107MZ2-B	FM, 10.675 MHz (Blue)
	SVFE107MZ2-C	FM, 10.725 MHz (Orange)
CF101 - 104 [EGA] only	SVFE107MZ2-D	FM, 10.650 MHz (Black)
	SVFE107MZ2-A	FM, 10.7 MHz, (Red)
	SVFE107MZ2-B	FM, 10.675 MHz (Blue)
	SVFE107MZ2-C	FM, 10.725 MHz (Orange)
CF201	SVFSFP450HT	AM, 450kHz
<b>CRYSTALS</b>		
X101	SVQ49U313-D	31.3MHz
X901	SVQ49U855-D	8.55MHz
X902	SVFCSA200MK	2MHz
<b>VARIABLE RESISTORS</b>		
VR101	EVN58AA00B15	dB Ind. Adjustment, 100kΩ (B)
VR102	EVN58AA00B14	Pulse Count Adjustment, 10kΩ (B)
VR103	EVN58AA00B54	Pilot Cancel Adjustment, 50kΩ (B)
VR303, 304 [EGA] only	EVN58AA00B54	Sparation Adjustment, 50kΩ (B)
VR303, 304 [EGA] except	EVN58AA00B15	Sparation Adjustment, 100kΩ (B)
<b>THERMISTERS</b>		
TH1 [EGA] only	ERTD2ZHL333S	33kΩ
TH301	ERTD2ZHL333S	33kΩ
TH902 [EGA] only	ERTD2ZHL332S	3.3kΩ
<b>COMPONENT COMBINATION</b>		
Z901	EXBP84104K	100kΩ (X4)
<b>LIQUID CRYSTAL PANEL</b>		
LCD	EDD092C31A2E	FM IF Band. Signal, Frequency Display
<b>LAMPS</b>		
PL1	XAMS4S150B	Computer Quartz DC Ind. (8V, 1.0A)
PL2, 3	XAMS11S150	LCD Ind. (8V, 200mA)
<b>FUSE</b>		
F1	XBA2C10TRO	250V, T 1.0A
<b>SWITCHES</b>		
S1 - 18	SSG13	CH1 - 8, FM, AM, Tuning Power Source
S20	SSH183	AM, Tuning Power Source
S21	SSR187	Voltage Selector
S701	SSH1057	Main Power Source

Ref. No.	Part No.	Description
<b>CABINET and CHASSIS PARTS</b>		
1	SGU187	Tinted Glass (1)
2	SHG6131	Rubber (2)
3	SHR9575	Spacer (2)
4	SUB51-2	Hinge, Right (1)
4	SUB51	Hinge, Right (1)
5	SUE23-1	Holder, Tinted Glass (1)
6	SUB57	Hinge, Tinted Glass (1)
7	SUB55	Hinge, Tinted Glass (1)
8	SUS223	Spring, Tinted Glass (1)
9	SGXTG7-SN	Ornament (1)
9	SGXTG7-KN	Ornament (1)
10	SHG6129	Spacer, Button (1)
11	SBC639-1	Button, Tinted Glass (1)
11	SBC639	Button, Tinted Glass (1)
12 [PA, PE] only	SGWTG7-SP	Front Panel, Ass'y (Silver Type) (1)
12 [other]	SGWTG7-SE	Front Panel, Ass'y (Silver Type) (1)
12 [PA, PE] only (K)	SGWTG7-KP	Front Panel, Ass'y (Black Type) (1)
12 [other]	SGWTG7-KE	Front Panel, Ass'y (Black Type) (1)
13	SUE25-1	Holder, Tinted Glass (1)
14	SUB63	Gear (1)
15	SUB59	Gear (2)
16	SUB65	Gear (1)
17	SUB53-2	Hinge, Left (1)
17	SUB53	Hinge, Left (1)
18	SGXTG7-SN1	Ornament (1)
18	SGXTG7-KN1	Ornament (1)
19	SUW2143	Bracket (4)
20	SUW2826	Bracket, L.C.D. (1)
21	SHR9715	Case, L.C.D. (1)
22	SHG519	Rubber, L.C.D. (1)
23	SDU225-2	Tinted Cover, L.C.D. (1)
24	SDU242-1	Filter, L.C.D. (1)
25	SUW2145	Bracket, L.C.D. (1)
26	SMP367	Case, L.C.D. (1)
27	SHG6354	Rubber (1)
28	SHG6351	Rubber (1)
29	SMP369	Case (1)
30	SUW2823	Bracket, Button (1)
31	SBC637-2	Button, Preset Tuning (1)
31	SBC637-4	Button, Preset Tuning (1)
32	SGTG7-SN	Transparent Cover (1)
32	SGTG7-KN	Transparent Cover (1)
33	SGX7627	Ornament (1)
34	SHR415	Lock Pin (2)
35	SGKTG7-SN	Ornament (1)
35	SGKTG7-KN	Ornament (1)
36	SBC627	Button, Power Switch (1)
37 [E]	SKUTG7-SE	Bottom Board (1)
37 [EK]	SKUTG7-SK	Bottom Board (1)
37 [PA, PE]	SKUTG7-SL	Bottom Board (1)
37 [other]	SKUTG7-SX	Bottom Board (1)
38	SKL247-2	Foot (4)
39	SJS6513	Socket, DIN (1)
40	SJS9230	Socket, Power Source (1)
41	SJF8611N	Terminal Board (1)
42	SGPTG7-SL	Rear Panel (1)
[EGA, XL] only		
42 [other]	SGPTG7-SE	Rear Panel (1)
43	SKCTG7-SE	Cabinet (1)
43	SKCTG7-KE	Cabinet (1)
44	SMN1919	Bracket, Tap Switch (1)
45	SBC527	Button, Tap Switch (1)
46	SHR127	Bushing, AC Cord (1)
[EGA, XL] only		
47 [XL]	RJA79ZA-K	AC Cord (1)
47 [EGA]	SJA153	AC Cord (1)
47 [other]		
48	SJT347	Holder, Fuse (2)
49 [EGA]	SMC1015	Shield Cover (1)
50 [EGA] only	SMX681	Insulation Plate (2)

Ref. No.	Part No.	Description
<b>SCREWS</b>		
N1	SNE2083-1	Tapping (Silver Type) (2)
N1	SNE2083	Tapping (Black Type) (2)
N2	XTB3 + 8BFZ	Tapping, φ3×8 (15)
N3	XTB3 + 8BFZ	Tapping, φ3×8 (7)
N4	XTB3 + 8BFZ	Tapping, φ3×8 (10)
N5	XTB3 + 8GFZ	Tapping, φ3×8 (14)
N6	XSN3 + 6S	φ3×6 (2)
N7	XSN3 + 8S	φ3×8 (1)
N8	XTB3 + 8F	Tapping, φ3×8 (2)
N9	XTBS3 + 8BFZ1	Tapping with Detent, φ3×8 (3)
N10	XTB3 + 8BFZ	Tapping, φ3×8 (15)
N11	XTB3 + 12BFZ	Tapping, φ3×12 (4)
N12	SNE2053	(1)
N13	SNE2095-4	(Silver Type) (4)
N13	SNE2095-5	(Black Type) (4)
N14	XSN3 + 6BVS	φ3×6 (2)
N15 [EGA]	XTB3 + 8BFZ	Tapping, φ3×8 (4)
<b>WASHERS</b>		
N20	XWA3B	Spring, φ3 (3)
N21	XWG3	Plain, φ3 (1)
N22	XWT4	Plain, φ4 (2)
N23	XWA3BFZ	Spring, φ3 (4)
<b>STOP RING</b>		
N30	XUC3FT	Type E (1)
<b>ACCESSORIES</b>		
A1 [EK]	SFDAC05G02	AC Cord (1)
A1 [PA, PE]	SJA168	AC Cord (1)
A1 [E, EH, EB, EF, PC, XA]	SFDAC05E02	AC Cord (1)
A2	SJP2249	Cord, Stereo Pin-Type Connection (1)
A3 [EGA] only	SSA901	FM Antenna Cord (1)
A3 [other]	SSA267-1	FM Antenna Cord (1)
A4 [EGA] except	TJB525102	Plug, 300Ω — 75Ω Impedance Conversion (1)
A5 [EGA]	SJSA68-1	Plug, F-Type/Ring (Large) (1)
A6 [EGA] except	SJSA74	Plug, Coaxial, (w/Bind Band) for "5C-2V" (1)
A7 [XA, PC] only	SJP5213-1	Plug Adaptor, AC Power (1)
A8 [PA, PE] only	RJP120ZBS	Plug Adaptor, AC Power (1)
A9	SSA611-1	AM Loop Antenna Holder (B), Loop Antenna (1)
A10	SMA231	Antenna Holder (A), Loop Antenna (1)
A11	SMA233-1	Antenna Holder (1)
A12	XTN3 + 10AFZ	Screw, Loop Antenna Holder (2)
A13 [EGA]	SQF12215	Instruction Book (1)
A13 [PA, PE]	SQF12124	Instruction Book (1)
A13 [other]	SQF12123	Instruction Book (1)
<b>PACKING PARTS</b>		
P1	SPP699	Polyethylene Bag (1)
P1	SPP649	Polyethylene Bag (1)
P2 [XL] only	SPS3519-1	Pad, Left Side (1)
P2 [other]	SPS3519-3	Pad, Left Side (1)
P3 [XL] only	SPS3521-3	Pad, Right Side (1)
P3 [other]	SPS3521-5	Pad, Right Side (1)
P4 [EF]	SPG4934	Carton Box (1)
P4 [XL]	SPG4918	Carton Box (1)
P4 [EK]	SPG4917	Carton Box (1)
P4 [EK]	SPG4933	Carton Box (1)
P4 [other]	SPEG4915	Carton Box (1)
P4 [other]	SPG4919	Carton Box (1)
P5	SGK1413	Label (2)

EXPLODED VIEW

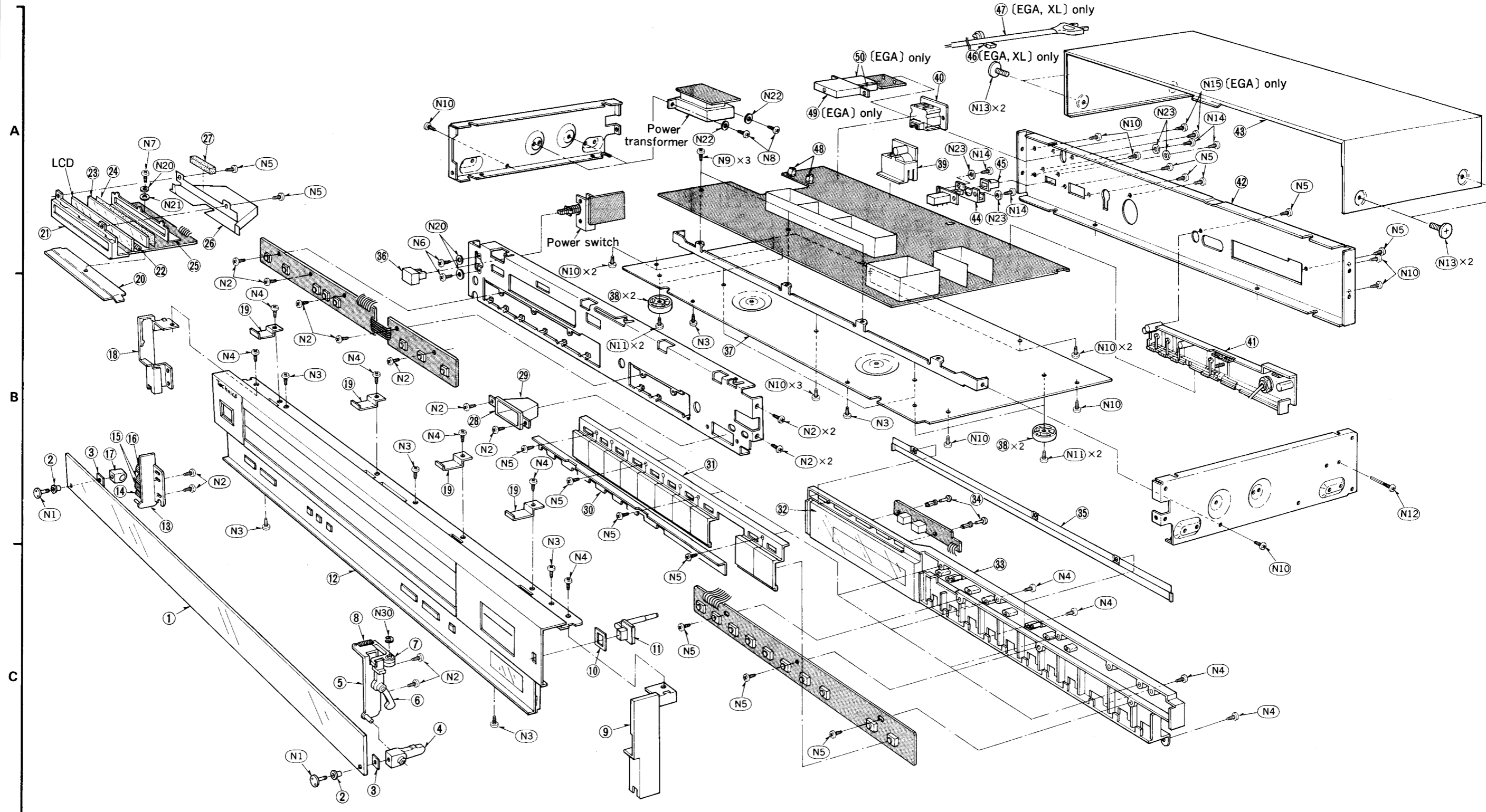


\* [E] is available in Scandinavia and Switzerland.  
 \* [EK] is available in United Kingdom.  
 \* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.  
 \* [XL] is available in Australia.  
 \* [EGA] is available in F. R. Germany.

\* [EH] is available in Holland.  
 \* [EB] is available in Belgium.  
 \* [EF] is available in France.  
 \* [PC] is available in European Audio Club.  
 \* [PA] is available in Far East PX.  
 \* [PE] is available in European Military.

EXPLODED VIEW

Part No.	Description	Quantity
NE2083-1	Tapping (Silver Type)	(2)
NE2083	Tapping (Black Type)	(2)
FB3 + 8BFZ	Tapping, $\varnothing 3 \times 8$	(15)
FB3 + 8BFZ	Tapping, $\varnothing 3 \times 8$	(7)
FB3 + 8BFZ	Tapping, $\varnothing 3 \times 8$	(10)
FB3 + 8GFZ	Tapping, $\varnothing 3 \times 8$	(14)
SN3 + 6S	$\varnothing 3 \times 6$	(2)
SN3 + 8S	$\varnothing 3 \times 8$	(1)
FB3 + 8F	Tapping, $\varnothing 3 \times 8$	(2)
FB3 + 8BFZ1	Tapping with Detent, $\varnothing 3 \times 8$	(3)
FB3 + 8BFZ	Tapping, $\varnothing 3 \times 8$	(15)
FB3 + 12BFZ	Tapping, $\varnothing 3 \times 12$	(4)
NE2053		(1)
NE2095-4	(Silver Type)	(4)
NE2095-5	(Black Type)	(4)
SN3 + 6BVS	$\varnothing 3 \times 6$	(4)
FB3 + 8BFZ	Tapping, $\varnothing 3 \times 8$	(2)
VA3B	Spring, $\varnothing 3$	(3)
VG3	Plain, $\varnothing 3$	(1)
VT4	Plain, $\varnothing 4$	(2)
VA3BFZ	Spring, $\varnothing 3$	(4)
IC3FT	Type E	(1)
ES		
DAC05G02	AC Cord	(1)
A168	AC Cord	(1)
DAC05E02	AC Cord	(1)
P2249	Cord, Stereo Pin-Type Connection	(1)
A901	FM Antenna Cord	(1)
A267-1	FM Antenna Cord	(1)
B525102	Plug, 300 $\Omega$ --- 75 $\Omega$ Impedance Conversion	(1)
SA68-1	Plug, F-Type/Ring (Large)	(1)
SA74	Plug, Coaxial, (w/Bind Band) for "5C-2V"	(1)
P5213-1	Plug Adaptor, AC Power	(1)
P120ZBS	Plug Adaptor, AC Power	(1)
A611-1	AM Loop Antenna Holder (B), Loop Antenna	(1)
A231	Holder (B), Loop Antenna	(1)
A233-1	Holder (A), Loop Antenna	(1)
N3 + 10AFZ	Screw, Loop Antenna Holder	(2)
F12215	Instruction Book	(1)
F12124	Instruction Book	(1)
F12123	Instruction Book	(1)
RTS		
P699	Polyethylene Bag	(1)
P649	Polyethylene Bag	(1)
S3519-1	Pad, Left Side	(1)
S3519-3	Pad, Left Side	(1)
S3521-3	Pad, Right Side	(1)
S3521-5	Pad, Right Side	(1)
G4934	Carton Box	(1)
G4918	Carton Box	(1)
G4917	Carton Box	(1)
G4933	Carton Box	(1)
G4915	Carton Box	(1)
G4919	Carton Box	(1)
K1413	Label	(2)



A	21	23	24	20	22	25	27	26	36	48	49	50	40	39	44	45	46	47	43	42		
B	2	3	17	18	15	14	16	13	19	19	28	19	29	30	38	31	37	32	34	38	35	41
C	1	12	5	2	8	3	7	6	4	10	9	11	33									

- \* [E] is available in Scandinavia and Switzerland.
- \* [EK] is available in United Kingdom.
- \* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- \* [XL] is available in Australia.
- \* [EGA] is available in F. R. Germany.
- \* [EH] is available in Holland.
- \* [EB] is available in Belgium.
- \* [EF] is available in France.
- \* [PC] is available in European Audio Club.
- \* [PA] is available in Far East PX.
- \* [PE] is available in European Military.



# QUARTZ Synthesizer

## FM/AM Stereo Tuner

# ST-G7

DEUTSCH

- This booklet contains the specifications and adjusting procedures for ST-G7, written in German, French and Spanish.
- File this manual together with the ST-G7 service manual (Order No. HAD84062801C9).
- Das vorliegende Büchlein enthält die technische Daten und Justierverfahren für den ST-G7 in deutscher, französischer und spanischer Sprache.
- Bewahren Sie das Büchlein zusammen mit der Bedienungsanleitung für den ST-G7 auf (Bestell-Nr. HAD84062801C9).
- Cette brochure contient les spécifications et les procédures de mises au point pour le ST-G7, écrites en allemand, en français et en espagnol.
- Classer ce manuel en même temps qu'avec le manuel de service du ST-G7 (N° d'ordre: HAD84062801C9).
- Este librito contiene la especificaciones y procedimientos de ajuste para ST-G7, escritos en alemán, francés y español.
- Guardar este manual juntamente con el manual de servicio de ST-G7 (Pedido N.º. HAD84062801C9).

## DEUTSCH

### ■ TECHNISCHE DATEN

(Die technischen Daten können infolge von Verbesserungen ohne Ankündigung geändert werden.)

#### (DIN 45 500)

##### ■ UKW-TUNERTEIL

<b>Wellenbereich</b>	87,50 ~ 108,00 MHz
	87,525~108,025 MHz (+25 kHz shift)
<b>Eingangsempfindlichkeit</b>	1,2 $\mu$ V (nutzbar nach IHF)
<b>S/R 30 dB</b>	1,1 $\mu$ V (75 $\Omega$ )
<b>S/R 26 dB</b>	1,0 $\mu$ V (75 $\Omega$ )
<b>S/R 20 dB</b>	0,9 $\mu$ V (75 $\Omega$ )
<b>Stereoumschaltswelle bei 46 dB nach IHF</b>	28 $\mu$ V/75 $\Omega$
<b>Gesamtklirrfaktor</b>	
<b>Mono</b>	0,01%
<b>Stereo</b>	0,02%
<b>Dynamikbereich</b>	116 dB
<b>Frequenzgang</b>	4 Hz ~ 18 kHz (+0,2 dB ~ -0,5 dB)
<b>Trennschärfe bei Störsender</b>	
<b>normal <math>\pm</math>400 kHz</b>	55 dB
<b>super narrow <math>\pm</math>200 kHz</b>	25 dB
<b>Einfangverhältnis</b>	1,0 dB
<b>Spiegelfrequenz-Dämpfung bei 98 MHz</b>	105 dB
<b>ZF-Dämpfung bei 98 MHz</b>	110 dB
<b>Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz</b>	110 dB
<b>MW-Unterdrückung</b>	70 dB
<b>Übersprechdämpfung</b>	
<b>1 kHz</b>	65 dB
<b>10 kHz</b>	50 dB
<b>Trägerrest</b>	
<b>19 kHz</b>	-70 dB
<b>38 kHz</b>	-70 dB

<b>Kanalabweichung (250 Hz ~ 6300 Hz)</b>	$\pm$ 1,0 dB
<b>Begrenzereinsatz</b>	0,75 $\mu$ V
<b>Bandbreite</b>	
<b>ZF-Verstärker</b>	180 kHz
<b>UKW-Demodulator</b>	1000 kHz
<b>Antennenanschluß</b>	75 $\Omega$ (unsymmetrisch)

##### ■ MW-TUNERTEIL

<b>Wellenbereiche</b>	
<b>(für Europa, Südafrika und Australien)</b>	
522~1629 kHz (9-kHz-schritte)	
530~1620 kHz (10-kHz-schritte)	
<b>(für Saudi-Arabien und die übrigen Länder)</b>	
531~1620 kHz (9-kHz-schritte)	
530~1620 kHz (10-kHz-schritte)	
<b>Eingangsempfindlichkeit (S/R 20 dB)</b>	20 $\mu$ V, 290 $\mu$ V/m
<b>Trennschärfe (<math>\pm</math>9 kHz)</b>	55 dB
<b>Spiegelfrequenz-Dämpfung bei 999 kHz</b>	40 dB
<b>ZF-Dämpfung bei 999 kHz</b>	65 dB

##### ■ ALLGEMEINE DATEN

<b>Ausgangsspannung</b>	0,6 V
<b>Leistungsaufnahme</b>	11W
<b>Netzspannung</b>	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
<b>Abmessungen (B×H×T)</b>	430 × 97,1 × 276 mm
<b>Gewicht</b>	4,1 kg

### ■ MESSUNGEN UND JUSTIERUNGEN

#### AM (MW)-EINSTELLUNG

##### \* Einstellungen und zu benutzende Geräte

1. Elektronisches Voltmeter für Wechselstrom.
2. AM (MW)-Meßsender (AM-SG).
3. Bereichsschalter . . . . . AM
4. AM (MW)-Wellenverteilungs-Wahlschalter auf Position "9 kHz" stellen.
5. Netzspannung auf ihrem Sollwert halten.
6. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
7. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.

Nr.	AM (MW)-MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHVERFAHREN
	ANSCHLUSS	FREQUENZ				
<b>AM(MW)-ZF-ABGLEICH</b>						
1	AM-MO über 200 pF Kondensator an den AM-Antennenanschluß anschließen, wie in Abb. 1 gezeigt. (Starker Eingang.)	450 kHz (450 Hz Modulat., 30%)	Kein Empfang	Wechselstrom-Voltmeter oder Oszillograph über den Ausgang "OUTPUT" anschließen.	T201 (1. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so justieren, daß der Ausgang den maximalen Wert erreicht.
<b>AM (MW)-HF-ABGLEICH</b>						
2	AM-MO über 200 pF Kondensator an den AM-Antennenanschluß anschließen, wie in Abb. 1 gezeigt. (Schwacher Eingang.)	522 kHz (400 Hz Modulat., 30%)	522 kHz	Wechselstrom-Voltmeter oder Oszillograph über den Ausgang "OUTPUT" anschließen.	L203 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L203 mit einem Schraubendreher justieren.
3		612 kHz (400 Hz Modulat., 30%)	612 kHz		L202 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L202 mit einem Schraubendreher justieren.
4		1503 kHz (400 Hz Modulat., 30%)	1503 kHz		CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (2), (3) und (4) wiederholen, bis die Frequenz genau mit der Skalanzeige übereinstimmt.

**FM (UKW)-EINSTELLUNG**

Anmerkung: UKW 2. ZFT (T102), UKW 2. ZF Filter (T104, T105) und UKW DET Filter (L302, L303) sind bereits justiert und bedürfen keiner Abstimmung.

- Einstellungen und zu benutzenden Geräte**
  - UKW-Meßsender (FM-SG)
  - Klirrfaktor-Meßbrücke.
  - Oszillograph.
  - Elektronische Voltmeter für Wechsel- und Gleichstrom.
  - Signalfrequenzmesser (meßbar für 19 kHz und 108 MHz)
  - Bereichsschalter . . . . . FM
  - Den UKW-Betriebsartenschalter in die "mono"-Position stellen.
  - Die anderen Einstellungen sind gleich wie bei der MW-Justierung.
  - Den ZF-Bandwahlschalter in die "normal"-Position stellen.
- Vorbereitung des UKW-Meßoszillators (UKW-MO)**

Die Normal-Eingangsleistung dieses Gerätes beträgt 60 dB (1 mV), 400Hz, 100% Modulation. (Wegen der Dämpfung bei Verwendung von Koaxialkabeln, muß die MO-Ausgangsleistung 6 dB oder mehr betragen: d.h. wenn die Eingangsleistung 60 dB beträgt, muß der MO-Ausgang 66 dB betragen.)

  - Beim Ändern der Frequenz wird die Stummabstimmung (Muting) automatisch eingeschaltet. Daher ist sie unbedingt auszuschalten, indem der UKW-Stummabstimm-Aus/SCAN-Pegel-Wahlschalter auf OFF gestellt wird. Zudem ist sicherzustellen, daß der UKW-ZF-Bandwahlschalter auf NORMAL eingestellt ist.

Nr.	FM (UKW)-MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHVERFAHREN
	ANSCHLUSS	FREQUENZ				
<b>ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO</b>						
5	UKW-MO an den UKW-Antennenanschluß anschließen. (60 dB an den Antenneneingang anlegen.)	100,10 MHz (400 Hz Modulat., 100%)	100,10 MHz	Ein Gleichstrom-Voltmeter zwischen <b>TP101</b> und <b>TP102</b> über eine Drosselspule anschließen, wie in Abb. 2.	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Zustand 0 mV im 300 mV Bereich beträgt.
6		100,10 MHz (400 Hz Modulat.)	100,10 MHz	Ein Oszillograph zwischen <b>TP103</b> und Masse anschließen, wie in Abb. 3.	T103 (UKW 3. ZFT)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von T103 mit einem Schraubendreher justieren.
7				Wechselstrom-Voltmeter zwischen <b>TP302</b> und Masse anschließen, wie in Abb. 4.	VR102 (Impulszahlungs-Betriebsjustierung)	VR102 so justieren, daß die im Signalzustand gemessene Spannung im 300 mV-Bereich 0 mV beträgt.
<b>UKW-HF-ABGLEICH</b>						
<p><b>TP901</b> mit einer Kurzschlußbrücke an <b>TP902</b> kurzschließen (nur während der UKW-HF-Justierung), und diese Kurzschlußbrücke für alle anderen Justierungen entfernen.</p>						
8	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 5 gezeigt. (Schwacher Eingang)	87,50 MHz (400 Hz Modulat., 100%)	87,50 MHz	1. <b>TP901</b> mit einer Kurzschlußbrücke an <b>TP902</b> kurzschließen. 2. Gleichstrom-Voltmeter zwischen <b>TP1</b> und Masse anschließen.	L6 (Osc. Spule)	1. L6 auf eine Anzeige am Gleichstrom-Röhrenvoltmeter von 3,0 V abstimmen.

Nr.	FM (MW)-MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHVERFAHREN
	ANSCHLUSS	FREQUENZ				
<b>UKW-HF-ABGLEICH</b>						
<p>• <b>TP901</b> mit einer Kurzschlußbrücke an <b>TP902</b> kurzschließen (nur während der UKW-HF-Justierung), und diese Kurzschlußbrücke für alle anderen Justierungen entfernen.</p>						
9	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 6 gezeigt. (Schwacher Eingang)	90,10 MHz (400 Hz Modulat., 100%)	90,10 MHz	Oszillograph über den Ausgang "OUTPUT" anschließen.	L10 (Ant. Spule) L1 (Ant. Spule) L3 (Ant. Spule) L4 (Ant. Spule) T1 (UKW 1. ZFT)	1. Einen schwachen Eingang anlegen, bei dem Geräusch in der Ausgangswellenform enthalten ist. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 7) 3. Die Einstellung von (8), (9) und (10) wiederholen, bis die Frequenz mit der Skala übereinstimmt.
10		106,10 MHz (400 Hz Modulat., 100%)	106,10 MHz		CT1 (Osc. Trimmer)	
<b>PILOTSIGNALUNTERDRÜCKUNGSJUSTIERUNG</b>						
11	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 8 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal.)	100,10 MHz (400 Hz Modulat., 0%) (L + R)	100,10 MHz	Oszillograph zwischen <b>TP301</b> und Masse anschließen.	L301 (Pilot-Filter) VR103 (Pilotsignalunterdrückungs-Justierung)	Die Justierung so vornehmen, daß die Ausgangswellenform minimal wird, wie in Abb. 9 gezeigt.
<b>STEREOVERZERRUNGSJUSTIERUNG</b>						
12	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 10 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal)	100,10 MHz (90% Mod mit 400 Hz) (L- oder R-Betrieb)	100,10 MHz	Verzerrungs-Analysator durch Tiefpassfilter an "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz — 19 kHz)	T1 (Pilotsignalunterdrückungs-Justierung) T103 (Impulszahlungs-Betriebsjustierung)	Den Kern von T1 und T103 so abgleichen, daß die Verzerrung des rechten Kanals minimal ist.
<b>TRENNUNGSJUSTIERUNG</b>						
13	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 11 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal)	100,10 MHz (1 kHz Modulat., 100%) (L- oder R-Betrieb)	100,10 MHz	Wechselstrom-Röhrenvoltmeter durch Tiefpassfilter an die "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz — 19 kHz)	VR303 VR304 (Trennungs-Justierung)	1. VR303 so justieren daß der R-Ausgang minimal wird, wenn der Stereo-Modulator im L-Zustand (L-Kanal-Modulation) ist. 2. VR304 so justieren, daß der L-Ausgang minimal wird, wenn der Stereo-Modulator im R-Zustand (R-Kanal-Modulation) ist.
<b>SIGNALSTÄRKEPEGELJUSTIERUNG</b>						
14	UKW-MO an den UKW-Antennenanschluß anschließen. (50 dB an den Antennenanschluß anlegen.)	100,10 MHz (400 Hz Modulat., 30%)	100,10 MHz	—	VR101 (Signalstärkepegel)	1. Die Flüssigkristallanzeige von Frequenz ±0 dB durch Drücken der UKW-Signaltaste ändern. 2. VR101 so abgleichen, daß 50 dB angezeigt wird. Überprüfen, daß der Signalstärkepegel 22 — 38 dB beträgt, wenn die Eingangsleistung 30 dB beträgt.

**FRANÇAIS**

**CARACTÉRISTIQUES**

(Sujet à changement sans avertissement préalable.)

(DIN 45 500)

**SECTION SYNTONISATEUR FM**

- Gamme de fréquence** 87,50~108,00 MHz  
87.525~108.025 MHz (+25 kHz shift)
- Sensibilité** 1,2 µV (IHF utilisable)
- S/B 30 dB** 1,1 µV (75Ω)
- S/B 26 dB** 1,0 µV (75Ω)
- S/B 20 dB** 0,9 µV (75Ω)
- Sensibilité stéréo au seuil de 46 dB, IHF** 28 µV/75Ω

- Distorsion harmonique totale**
- MONO** 0,01%
- STEREO** 0,02%
- Portée dynamique** 116 dB
- Réponse de fréquence** 4 Hz~18 kHz, +0,2 dB~ -0,5 dB
- Sélectivité alternée par canal**
- normal ±400 kHz** 55 dB
- super narrow ±200 kHz** 25 dB
- Taux de capture** 1,0 dB

FM (MW)-MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHVERFAHREN
ANSCHLUSS	FREQUENZ				
<b>UKW-HF-ABGLEICH</b>					
Nr. ● <b>TP901</b> mit einer Kurzschlußbrücke an alle anderen Justierungen entfernen. <b>TP902</b> kurzschließen (nur während der UKW-HF-Justierung), und diese Kurzschlußbrücke für					
9	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 6 gezeigt. (Schwacher Eingang)	90,10 MHz (400 Hz Modul., 100%)	90,10 MHz	L10 (Ant. Spule) L1 (Ant. Spule) L3 (Ant. Spule) L4 (Ant. Spule) T1 (UKW 1. ZFT)	1. Einen schwachen Eingang anlegen, bei dem Geräusch in der Ausgangswellenform enthalten ist. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 7) 3. Die Einstellung von (8), (9) und (10) wiederholen, bis die Frequenz mit der Skala übereinstimmt.
10		106,10 MHz (400 Hz Modul., 100%)	106,10 MHz	CT1 (Osc. Trimmer)	
<b>PILOTSIGNALUNTERDRÜCKUNGSJUSTIERUNG</b>					
11	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 8 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal.)	100,10 MHz (400 Hz Modul., 0%) (L + R)	100,10 MHz	L301 (Pilot-Filter) VR103 (Pilotsignalunterdrückungsjustierung)	Die Justierung so vornehmen, daß die Ausgangswellenform minimal wird, wie in Abb. 9 gezeigt.
<b>STEREOVERZERRUNGSJUSTIERUNG</b>					
12	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 10 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal)	100,10 MHz (90% Mod mit 400 Hz) (L-oder R-Betrieb)	100,10 MHz	T1 (Pilotsignalunterdrückungsjustierung) T103 (Impulszahlungs-Betriebsjustierung)	Den Kern von T1 und T103 so abgleichen, daß die Verzerrung des rechten Kanals minimal ist.
<b>TRENNUNGSJUSTIERUNG</b>					
13	UKW-MO an den UKW-Antennenanschluß anschließen, wie in Abb. 11 gezeigt. (60 dB an den Antennenanschluß anlegen.) (Pilot 10% Mod. Stereo-Signal)	100,10 MHz (1 kHz Modul., 100%) (L-oder R-Betrieb)	100,10 MHz	VR303 VR304 (Trennungsjustierung)	1. VR303 so justieren daß der R-Ausgang minimal wird, wenn der Stereo-Modulator im L-Zustand (L-Kanal-Modulation) ist. 2. VR304 so justieren, daß der L-Ausgang minimal wird, wenn der Stereo-Modulator im R-Zustand (R-Kanal-Modulation) ist.
<b>SIGNALSTÄRKEPEGELJUSTIERUNG</b>					
14	UKW-MO an den UKW-Antennenanschluß anschließen. (50 dB an den Antennenanschluß anlegen.)	100,10 MHz (400 Hz Modul., 30%)	100,10 MHz	VR101 (Signalstärkepegel)	1. Die Flüssigkristallanzeige von Frequenz ±0dB durch Drücken der UKW-Signaltaste ändern. 2. VR101 so abgleichen, daß 50 dB angezeigt wird. Überprüfen, daß der Signalstärkepegel 22 - 38 dB beträgt, wenn die Eingangsleistung 30 dB beträgt.

## FRANÇAIS

### ■ CARACTÉRISTIQUES

(Sujet à changement sans avertissement préalable.)

#### (DIN 45 500)

##### ■ SECTION SYNTONISATEUR FM

<b>Gamme de fréquence</b>	87,50~108,00 MHz	<b>Distorsion harmonique totale MONO</b>	0,01%
	87,525~108,025 MHz (+25 kHz shift)	<b>STEREO</b>	0,02%
<b>Sensibilité S/B 30 dB</b>	1,2 µV (IHF utilisable)	<b>Portée dynamique</b>	116 dB
<b>S/B 26 dB</b>	1,1 µV (75Ω)	<b>Réponse de fréquence</b>	4 Hz~18 kHz, +0,2 dB~-0,5 dB
<b>S/B 20 dB</b>	1,0 µV (75Ω)	<b>Sélectivité alternée par canal normal ±400 kHz</b>	55 dB
<b>Sensibilité stéréo au seuil de 46 dB, IHF</b>	0,9 µV (75Ω)	<b>super narrow ±200 kHz</b>	25 dB
	28 µV/75Ω	<b>Taux de capture</b>	1,0 dB

<b>Rejection d'image à 98 MHz</b>	105 dB	<b>SECTION SYNTONISATEUR AM</b>
<b>Rejection FI à 98 MHz</b>	110 dB	<b>Gamme de fréquence</b>
<b>Rejection de réponse parasite à 98 MHz</b>	110 dB	(Pour l'Europe, l'Afrique du Sud et l'Australie)
<b>Suppression AM</b>	70 dB	522~1629 kHz (9 kHz par palier)
<b>Séparation stéréophonique</b>		530~1620 kHz (10 kHz par palier)
<b>1 kHz</b>	65 dB	(Pour l'Arabie Saoudite et les autres pays)
<b>10 kHz</b>	50 dB	531~1620 kHz (9 kHz par palier)
<b>Fuite de porteuse</b>		530~1620 kHz (10 kHz par palier)
<b>19 kHz</b>	-70 dB	<b>Sensibilité (S/B 20 dB)</b>
<b>38 kHz</b>	-70 dB	20 µV, 290 µV/m
<b>Equilibrage de canaux (250 Hz~6,300 Hz)</b>	±1,0 dB	<b>Sélectivité (±9 kHz)</b>
<b>Point de limite</b>	0,75 µV	55 dB
<b>Largeur de bande</b>		<b>Réjection d'image à 999 kHz</b>
<b>Amplificateur FI</b>	180 kHz	65 dB
<b>Démodulateur FM</b>	1000 kHz	<b>DIVERS</b>
<b>Bornes d'antenne</b>	75Ω (asymétrique)	<b>Tension de sortie</b>
		0,6 V
		<b>Consommation</b>
		11W
		<b>Alimentation</b>
		CA 50 Hz/60 Hz, 110V/120V/220V/240V
		<b>Dimensions (L×H×Pr)</b>
		430 × 97,1 × 276 mm
		<b>Poids</b>
		4,1 kg

### ■ MESURAGES ET RÉGLAGES

#### RÉGLAGE DE AM

##### \* Réglage et équipement utilisé

1. Voltmètres électronique de courant alternatif et de courant continu.
2. Générateur de signaux AM (AM-SG)
3. Sélecteur de gamme . . . . . AM
4. Régler le sélecteur d'attribution AM sur la position "9 kHz step".
5. Conserver la tension du secteur à la tension nominale.
6. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire pour obtenir une lecture de sortie.
7. Utiliser un tournevis non-métallique pour le réglage.

GÉNÉRATEUR AM		FRÉQUENCE D'AFFICHAGE PAR PRÉRÉGLAGE	PRÉPARATIFS	ÉLÉMENTS RÉGLÉS	PROCÉDURE DE RÉGLAGE
BRANCHEMENT	FRÉQUENCE				
<b>RÉGLAGE DE IF-AM</b>					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 100 pF. Commun au châssis. (Entrée sous-puissante) (Se référer à la Fig. 1.)	450 kHz (modulé à 30% par 400 Hz)	Point sans signal	T201 (Transfor. FI) T202 (Transfor. FI)	1. Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
2		522 kHz (modulé à 30% par 400 Hz)		L203 (Bobine Ant.)	1. Régler au maximum du signal de sortie. 2. Régler le noyau ferrite de L203 à l'aide d'un tournevis.
3	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200 pF. Commun au châssis (Entrée faible) (Se référer à la Fig. 1)	612 kHz (modulé à 30% par 400 Hz)		L202 (Bobine Ant.)	1. Régler au maximum du signal de sortie. 2. Régler le noyau ferrite de L202 à l'aide d'un tournevis.
4		1503 kHz (Modulé à 30% par 400 Hz)		CT201 (Trimmer Ant.)	1. Régler au maximum du signal de sortie. 2. Refaire les étapes (2), (3) et (4) jusqu'à ce que la fréquence s'aligne correctement avec l'affichage du cadran.

#### RÉGLAGE DE FM

Nota: Le 2ème transformateur de fréquence intermédiaire FM (T102), le 2ème filtre de fréquence intermédiaire FM (T104, T105) et le filtre de détection FM (L302, L303) ont déjà été mis au point et ne nécessitent donc aucun réglage.

##### \* Réglage et équipement utilisé

1. Générateur de signaux FM (FM-SG)
  2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
  3. Etalonneur de distorsion.
  4. Oscilloscope.
  5. Voltmètres électronique de courant alternatif et de courant continu.
  6. Sélecteur d'entrée sur la position "FM".
  7. Placer le sélecteur de mode FM sur la position "mono".
  8. Les autres réglages sont les mêmes que pour la mise au point de l'amplitude modulée (AM).
  9. Régler le sélecteur de bande de fréquence intermédiaire sur la position "normal".
- \* **Préparatifs pour le générateur de signaux FM (FM-SG).**
1. L'entrée normale de l'appareil est de 60 dB (1 mV), 400 Hz, modulation de 100%. (Du fait de l'atténuation, utiliser des câbles coaxiaux. La sortie du générateur de signaux devra être de plus de 6 dB. C'est-à-dire, que lorsque l'entrée est de 60 dB, la sortie du générateur de signaux devra être de 66 dB.)
  - \* Lorsque la fréquence est modifiée, l'accord silencieux est automatiquement mis en marche. Aussi, s'assurer de mettre hors circuit avec le commutateur-sélecteur du niveau "OFF/SCAN" (Hors circuit/Exploration) d'accord silencieux FM (modulation de fréquence). En outre, s'assurer que la bande de fréquence intermédiaire (IF) FM soit sur "NORMAL".

GLEICHVERFAHREN  
 zschlußbrücke für  
 en schwachen Eingang  
 egen, bei dem Geräusch in  
 Ausgangswellenform  
 halten ist.  
 einstellen, daß die  
 gangswellenform vertikal  
 metrisch wird. (Abb. 7)  
 Einstellung von (8), (9)  
 (10) wiederholen, bis die  
 quenz mit der Skala  
 einstimmt.

rierung so vornehmen,  
 Ausgangswellenform  
 l wird, wie in Abb. 9

rn von T1 und T103  
 icken, daß die  
 ung des rechten  
 minimal ist.

03 so justieren daß der  
 gsgang minimal wird,  
 n der Stereo-Modulator  
 -Zustand (L-Kanal-  
 ulation) ist.  
 04 so justieren, daß der  
 gsgang minimal wird,  
 n der Stereo-Modulator  
 -Zustand (R-Kanal-  
 ulation) ist.

lüssigkristallanzeige  
 reuzenz ±0 dB durch  
 ken der UKW-Signal-  
 ändern.  
 01 so abgleichen, daß  
 B angezeigt wird. Über-  
 n, daß der Signalstärke-  
 22 - 38 dB beträgt,  
 die Eingangsleistung  
 3 beträgt.

0,01%  
 0,02%  
 116 dB

z, +0,2 dB ~ -0,5 dB

55 dB  
 25 dB  
 1,0 dB

Rejection d'image à 98 MHz	105 dB	<b>SECTION SYNTONISATEUR AM</b> <b>Gamme de fréquence</b> (Pour l'Europe, l'Afrique du Sud et l'Australie) 522~1629 kHz (9 kHz par palier) 530~1620 kHz (10 kHz par palier) (Pour l'Arabie Saoudite et les autres pays) 531~1620 kHz (9 kHz par palier) 530~1620 kHz (10 kHz par palier) <b>Sensibilité (S/B 20 dB)</b> 20 µV, 290 µV/m <b>Sélectivité (±9 kHz)</b> 55 dB <b>Réjection d'image à 999 kHz</b> 40 dB <b>Réjection FI à 999 kHz</b> 65 dB <b>DIVERS</b> <b>Tension de sortie</b> 0,6 V <b>Consommation</b> 11W <b>Alimentation</b> CA 50 Hz/60 Hz, 110V/120V/220V/240V <b>Dimensions (L×H×Pr)</b> 430 × 97,1 × 276 mm <b>Poids</b> 4,1 kg
Rejection FI à 98 MHz	110 dB	
Rejection de réponse parasite à 98 MHz	110 dB	
Suppression AM	70 dB	
Séparation stéréophonique		
1 kHz	65 dB	
10 kHz	50 dB	
Fuite de porteuse		
19 kHz	-70 dB	
38 kHz	-70 dB	
Equilibrage de canaux (250 Hz~6,300 Hz)	±1,0 dB	
Point de limite	0,75 µV	
Largeur de bande		
Amplificateur FI	180 kHz	
Démodulateur FM	1000 kHz	
Bornes d'antenne	75Ω (asymétrique)	

**MESURAGES ET RÉGLAGES**

**RÉGLAGE DE AM**

- \* Réglage et équipement utilisé
1. Voltmètres électronique de courant alternatif et de courant continu.
  2. Générateur de signaux AM (AM-SG)
  3. Sélecteur de gamme . . . . . AM
  4. Régler le sélecteur d'attribution AM sur la position "9 kHz step".
  5. Conserver la tension du secteur à la tension nominale.
  6. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire pour obtenir une lecture de sortie.
  7. Utiliser un tournevis non-métallique pour le réglage.

GÉNÉRATEUR AM		FRÉQUENCE D'AFFICHAGE PAR PRÉRÉGLAGE	PRÉPARATIFS	ÉLÉMENTS RÉGLÉS	PROCÉDURE DE RÉGLAGE
BRANCHEMENT	FRÉQUENCE				
<b>RÉGLAGE DE IF-AM</b>					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 100 pF. Commun au châssis. (Entrée sous-puissante) (Se référer à la Fig. 1.)	450 kHz (modulé à 30% par 400 Hz)	Point sans signal	T201 (Transfor. FI) T202 (Transfor. FI)	1. Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
2		522 kHz (modulé à 30% par 400 Hz)	522 kHz	L203 (Bobine Ant.)	1. Régler au maximum du signal de sortie. 2. Régler le noyau ferrite de L203 à l'aide d'un tournevis.
3	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200 pF. Commun au châssis (Entrée faible) (Se référer à la Fig. 1)	612 kHz (modulé à 30% par 400 Hz)	612 kHz	L202 (Bobine Ant.)	1. Régler au maximum du signal de sortie. 2. Régler le noyau ferrite de L202 à l'aide d'un tournevis.
4		1503 kHz (Modulé à 30% par 400 Hz)	1503 kHz	CT201 (Trimmer Ant.)	1. Régler au maximum du signal de sortie. 2. Refaire les étapes (2), (3) et (4) jusqu'à ce que la fréquence s'aligne correctement avec l'affichage du cadran.

**RÉGLAGE DE FM**

Nota: Le 2ème transformateur de fréquence intermédiaire FM (T102), le 2ème filtre de fréquence intermédiaire FM (T104, T105) et le filtre de détection FM (L302, L303) ont déjà été mis au point et ne nécessitent donc aucun réglage.

- \* Réglage et équipement utilisé
1. Générateur de signaux FM (FM-SG)
  2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
  3. Etalonneur de distorsion.
  4. Oscilloscope.
  5. Voltmètres électronique de courant alternatif et de courant continu.
  6. Sélecteur d'entrée sur la position "FM".
  7. Placer le sélecteur de mode FM sur la position "mono".
  8. Les autres réglages sont les mêmes que pour la mise au point de l'amplitude modulée (AM).
  9. Régler le sélecteur de bande de fréquence intermédiaire sur la position "normal".
- \* Préparatifs pour le générateur de signaux FM (FM-SG).
1. L'entrée normale de l'appareil est de 60 dB (1 mV), 400 Hz, modulation de 100%. (Du fait de l'atténuation, utiliser des câbles coaxiaux. La sortie du générateur de signaux devra être de plus de 6 dB. C'est-à-dire, que lorsque l'entrée est de 60 dB, la sortie du générateur de signaux devra être de 66 dB.)
  - Lorsque la fréquence est modifiée, l'accord silencieux est automatiquement mis en marche. Aussi, s'assurer de mettre hors circuit avec le commutateur-sélecteur du niveau "OFF/SCAN" (Hors circuit/Exploration) d'accord silencieux FM (modulation de fréquence). En outre, s'assurer que la bande de fréquence intermédiaire (IF) FM soit sur "NORMAL".

N°	GÉNÉRATEUR FM		FRÉQUENCE D'AFFICHAGE PAR PRÉRÉGLAGE	PRÉPARATIFS	ÉLÉMENTS RÉGLÉS	PROCÉDURE DE RÉGLAGE
	BRANCHEMENT	FRÉQUENCE				
<b>RÉGLAGE DE LA DISTORSION FM EN MONO</b>						
5	Raccorder le générateur de signaux FM à la borne d'antenne FM. (Niveau de sur sortie du générateur 60 dB.)	100,10 MHz (modulé à 100% par 40 Hz)	100,10 MHz	Brancher le voltmètre électronique à C.C. aux bornes TP101 et TP102, en se référant à la Fig. 2.	T101 (Transfor. FI discr.)	Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soit de 0 mV dans la gamme des 300 mV.
6		100,10 MHz (modulé à 0% par 400 Hz)		Brancher l'oscilloscope aux bornes TP103 et à la masse, en se référant à la Fig. 3.	T103 (3ème transformateur de fréquence intermédiaire FM.)	1. Régler au maximum du signal de sortie. 2. Régler le noyau ferrite de T103 à l'aide d'un tournevis.
7				Brancher le voltmètre électronique à C.C. aux borne TP302 et à la masse, en se référant à la Fig. 4.	VR102 (Réglage pour l'utilisation du comptage d'impulsion)	Ajuster VR102 de telle sorte que la tension mesurée sur le mode de signal soit de 0 mV sur une plage de 300 mV.
<b>RÉGLAGE DE RF-FM</b>						
Court-circuiter entre TP901 et TP902 avec un fil de connexion seulement pendant le réglage FM-RF (Modulation de fréquence - Haute fréquence) et s'assurer d'ouvrir le circuit pendant un réglage autre que FM-RF.						
8	Raccorder le générateur de signaux FM à la borne d'antenne FM, en se référant à la Fig. 5. (Entrée faible)	87,50 MHz (modulé à 100% par 400 Hz)	87,50 MHz	1. Court-circuiter entre TP901 et TP902 avec un fil de connexion. 2. Branchem le voltmètre électronique à C.C. aux borne TP1 et à la masse.	L6 (bobine oscillatrice)	1. Ajuster L6 pour une lecture de 3,0V sur le voltmètre électronique à C.C.
9	Raccorder le générateur de fréquences FM à la bobine d'antenne FM, en se référant à la Fig. 6.	90,10 MHz (modulé à 100% par 400 Hz) Entrée faible	90,10 MHz	Oscilloscope sur prise de sortie du tuner.	L10 (bobine ANT.) L1 (bobine ANT.) L3 (bobine ANT.) L4 (bobine ANT.) T1 (1er transformateur de fréquence intermédiaire FM.)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que la forme de l'onde de sortie soit verticalement symétrique. (Voir Fig. 7) 3. Refaire les réglages (8), (9) et (10) jusqu'à ce que la fréquence corresponde correctement avec l'échelle du cadran.
10	(Entrée faible)	106,10 MHz (Modulé à 100% par 400 Hz) Entrée faible	106,10 MHz		CT1 (Trimmer OSC.)	
<b>ADJUSTEMENT DE L'ANNULATION DE SYNCHRONISATION</b>						
11	Brancher un générateur de signaux FM à la borne d'antenne FM, en se référant à la Fig. 8. (Appliquer 60 dB à la borne d'antenne.) (Signal stéréo de modulation pilote de 10%.)	100,10 MHz (modulé à 0% par 400 Hz) (G + D)	100,10 MHz	Brancher oscilloscope aux bornes TP301 et à la masse.	L301 (Filtre pilote) VR103 (Ajustement de l'annulation de synchronisation)	Effectuer le réglage de telle sorte que l'onde de sortie au départ soit au minimum, en se référant à la Fig. 9.
<b>RÉGLAGE DE LA DISTORSION STEREO</b>						
12	Brancher un générateur de signaux FM à la borne d'antenne FM, en se référant à la Fig. 10. (Appliquer 60 dB à la borne d'antenne.) (Signal stéréo de modulation pilote de 10%)	100,10 MHz (modulé à 90% par 400 Hz) (Mode G ou D)	100,10 MHz	Brancher le filtre passe-bande (fc = 15kHz ~ 19kHz) à la borne de sortie "OUTPUT" de l'appareil par un mesureur de distorsion à courant alternatif.	T1 (1er transformateur de fréquence intermédiaire FM.) T103 (3ème transformateur de fréquence intermédiaire FM.)	Ajuster le noyau T1 et T103 de telle sorte que la distorsion des canaux de droite et de gauche soit réduite au minimum.
<b>RÉGLAGE DE LA SÉPARATION DES CANAUX</b>						
13	Brancher un générateur de signaux FM à la borne d'antenne FM, en se référant à la Fig. 11. (Appliquer 60 dB à la borne d'antenne.) (Signal stéréo de modulation pilote de 10%.)	100,10 MHz (modulé à 100% par 1kHz) (Mode G ou D.)	100,10 MHz	Brancher le filtre passe-bande (fc = 15kHz ~ 19kHz) à la borne de sortie "OUTPUT" de l'appareil par un mesureur de C.A.	VR303 VR304 (Séparation)	1. Ajuster VR303 de telle sorte que la sortie de droite soit réduite au minimum lorsque le modulateur stéréo est sur le mode de gauche (modulation du canal de gauche). 2. Ajuster VR304 de telle sorte que la sortie de gauche soit réduite au minimum lorsque le modulateur stéréo est sur le mode de droite (modulation du canal de droite).

Nº	GÉNÉRATEUR FM		FRÉQUENCE D'AFFICHAGE PAR PRÉRÉGLAGE	PRÉPARATIFS	ÉLÉMENTS RÉGLÉS	PROCÉDURE DE RÉGLAGE
	BRANCHEMENT	FRÉQUENCE				
<b>INDICATEUR D'INTENSITÉ DES SIGNAUX FM</b>						
14	Brancher un générateur de signaux FM à la borne d'antenne FM. (Appliquer 50 dB à la borne d'antenne.)	100,10 MHz (modulé à 30% par 400 Hz)	100,10 MHz		VR101	<ol style="list-style-type: none"> <li>1. Changer l'affichage à cristaux liquides en appuyant sur la touche de signaux FM.</li> <li>2. Régler VR101 de façon à ce que 50 dB soit indiqué.</li> <li>3. S'assurer que le niveau d'intensité des signaux soit de 22 ~ 38 dB lorsque l'entrée est de 30 dB.</li> </ol>

## ESPAÑOL

### ■ ESPECIFICACIONES

(Estas especificaciones están sujetas a cualquier cambio sin previo aviso.)

<b>(DIN 45 500)</b>		<b>Equilibrio de canales 250 Hz~6 300 Hz</b>	±1,0 dB
		<b>Punto de límite</b>	0,75 µV
<b>■ SECCION PARA SINTONIZADOR FM</b>		<b>Ancho de banda</b>	
		<b>Amplificador FI</b>	180 kHz
		<b>Demodulador FM</b>	1000 kHz
<b>Gama de frecuencias</b>		<b>Bornes de antena</b>	
87,50~108,00 MHz			75Ω (no equilibrado)
<b>Sensibilidad</b>			
87.525~108.025 MHz (+25 kHz shift)			
1,2 µV (IHF, utilizable)			
<b>Señal a ruido 30 dB</b>			
1,1 µV (75Ω)			
<b>Señal a ruido 26 dB</b>			
1,0 µV (75Ω)			
<b>Señal a ruido 20 dB</b>			
0,9 µV (75Ω)			
<b>Sensibilidad de acallamiento estereo de 46 dB IHF</b>			
28 µV/75Ω			
<b>Distorsión armónica total</b>			
<b>MONO. (MONO)</b>			0,01%
<b>ESTEREO (STEREO)</b>			0,02%
<b>Gama dinámica</b>			116 dB
<b>Respuesta de frecuencia</b>			4 Hz~18 kHz, +0,2 dB~-0,5 dB
<b>Selectividad alternada de canal</b>			
normal ±400 kHz			55 dB
super narrow ±200 kHz			25 dB
<b>Relación de captura</b>			1,0 dB
<b>Rechazo de imagen a 98 MHz</b>			105 dB
<b>Rechazo de F.I. a 98 MHz</b>			110 dB
<b>Rechazo de respuesta espuria a 98 MHz</b>			110 dB
<b>Supresión AM</b>			70 dB
<b>Separación estereofónica</b>			
1 kHz			65 dB
10 kHz			50 dB
<b>Fuga de onda portadora</b>			
19 kHz			-70 dB
38 kHz			-70 dB
		<b>■ SECCION PARA SINTONIZADOR AM</b>	
		<b>Gama de frecuencias</b>	
		(Para países europeos, Africa del Sur y Australia)	522~1629 kHz (9 kHz pasos)
			530~1620 kHz (10 kHz pasos)
		(Para Arabia Saudita y demás países)	531~1620 kHz (9 kHz pasos)
			530~1620 kHz (10 kHz pasos)
<b>Sensibilidad (Relación de señal a ruido de 20 dB)</b>			20 µV, 290 µV/m
<b>Selectividad (±9 kHz)</b>			55 dB
<b>Rechazo de imagen a 999 kHz</b>			40 dB
<b>Rechazo de F.I. a 999 kHz</b>			65 dB
<b>■ GENERAL</b>			
<b>Voltaje de salida</b>			0,6V
<b>Consumo de energía</b>			11W
<b>Alimentación de energía</b>			CA 50 Hz/60 Hz, 110V/120V/220V/240V
<b>Dimensiones (An.×Al.×Prof.)</b>			430 × 97,1 × 276 mm
<b>Peso</b>			4,1 kg

### ■ MEDICIONES Y AJUSTES

#### AJUSTE DE AM

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1. Voltímetros electrónicos de CA (VTVM).</li> <li>2. Generador de señales AM (AM-SG)</li> <li>3. Poner selector FM-AM en posición "AM".</li> <li>4. Poner selector de asignación AM en posición "9 kHz pasos".</li> </ul> | <ul style="list-style-type: none"> <li>5. Mantener voltaje de línea a voltaje nominal.</li> <li>6. La salida de generador de señales no debe ser mayor que la necesaria para obtener una lectura de salida.</li> <li>7. Para el ajuste use un destornillador no metálico.</li> </ul> |
|---|--|

Nº	GENERADOR DE SEÑALES AM		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
<b>AJUSTE IF-AM</b>						
1	Conectar AM-SG terminal de antena AM a través de capacitor 200 pF. Común a chasis. (Entrada potente.) (Referir a la Fig. 1.)	450 kHz (Mod. 30% con 400 Hz)	Punto de no interferencia.	Conectar VTVM de CA u osciloscopio a terminales de "OUTPUT"	T201 (IFT 1)	Ajuste la frecuencia de entrada y el punto de ajuste de manera que la salida se convierta en máxima.
<b>AJUSTE RF-AM</b>						
2	Conectar AM-SG a terminal de antena AM a través de capacitor 200 pF. Común a chasis. (Entrada débil) (Referir a la Fig. 1) .)	522 kHz (Mod. 30% con 400 Hz)	522 kHz	Conectar VTVM de CA u osciloscopio a terminales de "OUTPUT".	T203 (Bobina ANT AM)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de L203 con destornillador.
3		612 kHz (Mod. 30% con 400 Hz)			612 kHz	L202 (Bobina ANT AM)
4		1503 kHz (Mod. 30% con 400 Hz)	1503 kHz	CT201 (Trimer de ANT AM)	1. Ajustar para salida máxima. 2. Repetir pasos (2), (3) y (4) hasta que la frecuencia se adapte correctamente a la escala del cuadrante.	

#### AJUSTE DE FM

**Nota: 2º TFI FM (T102), filtro de 2º FI FM (T104, T105) y filtro DET FM (L302, L303) han sido ya ajustados y no requiere ajuste.**

Nº	GENERADOR DE SEÑALES FM		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
<b>AJUSTE DE DISTORSION FM MONO</b>						
5	Conectar SG-FM a terminal de antena FM. (Aplicar 60 dB a terminal de antena)	100,10 MHz (Mod 100% con 400 Mz)		Conectar VTVM CC entre terminal <b>TP101</b> y <b>TP102</b> través de bobina de choque, refiriendo a Fig. 2.	T101 (Discri. IFT)	Ajustar núcleo de T101 de manera que voltaje medido en modalidad de señal sea 0 mV en gama de 300mV.
6	Conectar SG-FM a terminal de antena FM. (Aplicar 60 dB a terminal de antena)	100,10 MHz (Mod 0% con 400 Hz)	100,10 MHz	Conectar el osciloscopio entre <b>TP103</b> y Tierra, refiriendo a Fig. 3.	T103 (3er. TFT)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de T103 con destornillador.
7				Conectar VTVM CA a centro <b>TP302</b> y Tierra, refiriendo a Fig. 4.	VR102 (Ajuste de empleo de conteo)	Ajuste VR102 de manera que voltaje medido en modalidad de señal sea 0 mV en gama de 300 mV.
<b>AJUSTE RF-AM</b>						
Cortocircuite entre <b>TP901</b> y <b>TP902</b> mediante hilo de puente sólo durante ajuste de FM-RF, y asegúrese de abrir el circuito durante ajuste otro que FM-RF.						
8	Conectar SG-FM a terminal de antena FM refiriendo a Fig. 5. (Entrada débil)	87,50 MHz (Mod. 100% con 400 Hz)	87,50 MHz	1. Cortocircuite entre <b>TP901</b> y <b>TP902</b> mediante hilo de puente. 2. Conectar VTVM CA a centro <b>TP1</b> y Tierra.	L6 (Bobina OSC)	1. Ajustar L6 para lectura de 3.0V en DC VTVM.

Nº	GENERADOR DE S	
	CONEXION	FRECUENCIA
<b>● Cortocircuite entre TP ajuste otro que FM-RF</b>		
9	Conectar FM-SG a terminal de antena FM refiriendo a Fig. 6. (Entrada débil)	
10		
11	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 8. (Aplicar 60 dB a terminal de antena.) (Señal estereofónica Mod. 10% piloto.)	
12	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 10. (Aplicar 60 dB a terminal de antena.) (Señal estereofónica Mod. 10% piloto.)	
13	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 11. (Aplicar 60 dB a terminal de antena.) (Señal estereofónica Mod. 10% piloto.)	
14	Conectar FM-SG a terminal de antena de FM. (Aplicar 50 dB a terminal de antena.)	

### ■ CIRCUITS TO

● Power supply cir

No	GENERADOR DE SEÑALES AM		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
<b>AJUSTE IF-AM</b>						
1	Connectar AM-SG terminal de antena AM a través de capacitor 200 pF. Común a chasis. (Entrada débil.) (Referir a la Fig. 1.)	450 kHz (Mod. 30% con 400 Hz)	Punto de no interferencia.	Conectar VTVM de CA u osciloscopio a terminales de "OUTPUT"	T201 (IFT 1)	Ajuste la frecuencia de entrada y el punto de ajuste de manera que la salida se convierta en máxima.
<b>AJUSTE RF-AM</b>						
2	Conectar AM-SG a terminal de antena AM a través de capacitor 200 pF. Común a chasis. (Entrada débil) (Referir a la Fig. 1.)	522 kHz (Mod. 30% con 400 Hz)	522 kHz	Conectar VTVM de CA u osciloscopio a terminales de "OUTPUT".	T203 (Bobina ANT AM)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de L203 con destornillador.
3		612 kHz (Mod. 30% con 400 Hz)	612 kHz		L202 (Bobina ANT AM)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de L202 con destornillador.
4		1503 kHz (Mod. 30% con 400 Hz)	1503 kHz		CT201 (Trimer de ANT AM)	1. Ajustar para salida máxima. 2. Repetir pasos (2), (3) y (4) hasta que la frecuencia se adapte correctamente a la escala del cuadrante.

No	GENERADOR DE SEÑALES AM		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
<b>AJUSTE RF-FM</b>						
● Cortocircuite entre TP901 y TP902 mediante hilo de puente sólo durante ajuste de FM-RF, y asegúrese de abrir el circuito durante ajuste otro que FM-RF.						
9	Conectar FM-SG a terminal de antena FM refiriendo a Fig. 6. (Entrada débil)	90,10 MHz (Mod. 100% con 400 Hz) Entrada débil.	90,10 MHz	Conectar osciloscopio a terminales "OUTPUT" del aparato.	L10 (Bobina ANT) L1 (Bobina ANT) L3 (Bobina ANT) L4 (Bobina ANT) T1 (1 er. TFI)	1. Añadir entrada débil de manera que ruido se incluya en la forma de onda de salida. 2. Hacer el ajuste de manera que la forma de onda de salida sea verticalmente simétrica. (Fig. 7) 3. Repetir los pasos (5), (6) y (7) hasta que la frecuencia se adapte correctamente a la escala del cuadrante.
10		106,10 MHz (Mod. 100% con 400 Hz) Entrada débil	106,10 MHz		CT1 (Trimer OSC)	
<b>AJUSTE DE EMPLEO DE CONTEO</b>						
11	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 8. (Aplicar 60 dB a terminal de antena.) (Señal estéreo/piloto. Mod. 10% piloto.)	100,10 MHz (Mod. 0% con 400 Hz) (L-R)	100,10 MHz	Conectar el osciloscopio a entre TP301 y Tierra.	L301 B.P.F. (Filtro piloto.) VR103 (Ajuste de cancelación de Piloto FM)	Hacer el ajuste de manera que la forma de onda de salida sea mínima refiriendo a la Fig. 9.
<b>AJUSTE DE DISTORSION DE ESTEREO</b>						
12	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 10. (Aplicar 60 dB a terminal de antena.) (Señal estéreo/piloto. Mod. 10% piloto.)	100,10 MHz (Mod 90% con 400 Hz) (Modalidad L o R)	100,10 MHz	Conectar analizador de distorsión a terminales "OUTPUT" (salida) del aparato a través de filtro pasabajos. (fc = 15kHz ~ 19kHz)	T1 (1 er. TFI) T103 (Ajuste de empleo de conteo)	Ajustar núcleo T1 y T103 de manera que se minimice distorsión de canales derecho e izquierdo.
<b>AJUSTE DE SEPARACION</b>						
13	Conectar FM-SG a terminal de antena de FM refiriendo a la Fig. 11. (Aplicar 60 dB a terminal de antena.) (Señal estéreo/piloto. Mod. 10% piloto.)	100,10 MHz (Mod. 100% con 1 kHz) (Modalidad L o R)	100,10 MHz	Conectar VTVM CA a terminales "OUTPUT" (salida) del aparato a través de filtro pasabajos. (fc = 15kHz ~ 19kHz)	VR303 VR304 (Separación)	1. Ajustar VR303 de manera que la salida D se minimice cuando el modulador estéreo esté en la modalidad I (modulación de canal I). 2. Ajustar VR304 de manera que la salida I se minimice cuando el modulador estéreo esté en la modalidad D. (modulación de canal D.)
<b>AJUSTE DE NIVEL DE INTENSIDAD DE SEÑAL</b>						
14	Conectar FM-SG a terminal de antena de FM. (Aplicar 50 dB a terminal de antena.)	100,10 MHz (Mod. 30% con 400 Hz)	100,10 MHz		VR101 (Nivel de intensidad de señal)	1. Cambiar presentación de LCD de frecuencia oprimiendo el botón de ±0 dB señal FM. 2. Ajustar VR101 de manera que se indiquen 50 dB. 3. Asegurarse de que el nivel de intensidad de señal sea 22 ~ 38 dB cuando la entrada es 30 dB.

**AJUSTE DE FM**

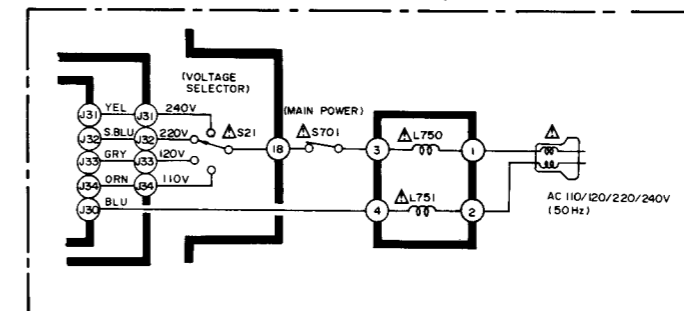
Nota: 2º TFI FM (T102), filtro de 2º FI FM (T104, T105) y filtro DET FM (L302, L303) han sido ya ajustados y no requiere ajuste.

GENERADOR DE SEÑALES FM		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
CONEXION	FRECUENCIA				
<b>AJUSTE DE DISTORSION FM MONO</b>					
5	100,10 MHz (Mod 100% con 400 Hz)	100,10 MHz	Conectar VTVM CC entre terminal TP101 y TP102 través de bobina de choque, refiriendo a Fig. 2.	T101 (Discri. IFT)	Ajustar núcleo de T101 de manera que voltaje medido en modalidad de señal sea 0 mV en gama de 300mV.
	6		100,10 MHz (Mod 0% con 400 Hz)	Conectar el osciloscopio entre TP103 y Tierra, refiriendo a Fig. 3.	T103 (3er. TFI)
7		Conectar VTVM CA a centro TP302 y Tierra, refiriendo a Fig. 4.		VR102 (Ajuste de empleo de conteo)	Ajuste VR102 de manera que voltaje medido en modalidad de señal sea 0 mV en gama de 300 mV.
<b>AJUSTE RF-AM</b>					
● Cortocircuite entre TP901 y TP902 mediante hilo de puente sólo durante ajuste de FM-RF, y asegúrese de abrir el circuito durante ajuste otro que FM-RF.					
8	Conectar SG-FM a terminal de antena FM refiriendo a Fig. 5. (Entrada débil)	87,50 MHz (Mod. 100% con 400 Hz)	87,50 MHz	L6 (Bobina OSC)	1. Cortocircuite entre TP901 y TP902 mediante hilo de puente. 2. Conectar VTVM CA a centro TP1 y Tierra. 1. Ajustar L6 para lectura de 3.0V en DC VTVM.

**CIRCUITS TO BE CHANGED AND THE AREA**

● Power supply circuit

For [EGA] area only



# Service Manual

Tuner

## ST-G7

**Supplement**

 **QUARTZ Synthesizer**  
FM/AM Stereo Tuner

Color

(K)...Black Type  
(S)...Silver Type

Please file and use this supplement manual together with the service manual for Model No. ST-G7, Order No. HAD84062801C9 and HAD84092900A1.

Color	Areas
(K) (S)	[M] .....U.S.A.
(K) (S)	[MC]....Canada.
(K) (S)	[E] .....All European areas except United Kingdom.
(K) (S)	[EK]....United Kingdom.
(K) (S)	[EH]....Holland.
(K) (S)	[EB]....Belgium.
(K) (S)	[EF]....France.
(K) (S)	[EGA]..F.R. Germany.
(K) (S)	[XA]....Asia, Latin America, Middle Near East and Africa.
(K) (S)	[XL]....Australia.
(K) (S)	[PC]....European Audio Club.
(K) (S)	[PA]....Far East PX.
(K) (S)	[PE]....European Military.

**Notes:**

- This supplement has been issued to inform you that IC101 and D101 have been changed in units having serial number suffixes "B" or later to improve the unstable AM function at a low temperatures. (Refer to "How to read the serial number" on page 2.).
- Part No. of IC has been changed but the function is equivalent.

### CHANGES

#### REPLACEMENT PARTS LIST

Notes: Part numbers are indicated on most mechanical parts. Please use this part number for parts order.

Ref. No.	Change of Parts No.		Description	Remarks
	OLD	NEW		
<b>INTEGRATED CIRCUIT</b>				
IC101	AN7274S	AN7274NS	I.C. FM IF AMP.	Change
<b>DIODE</b>				
D101	MA165	MA700A	DIODE	Change

# Technics

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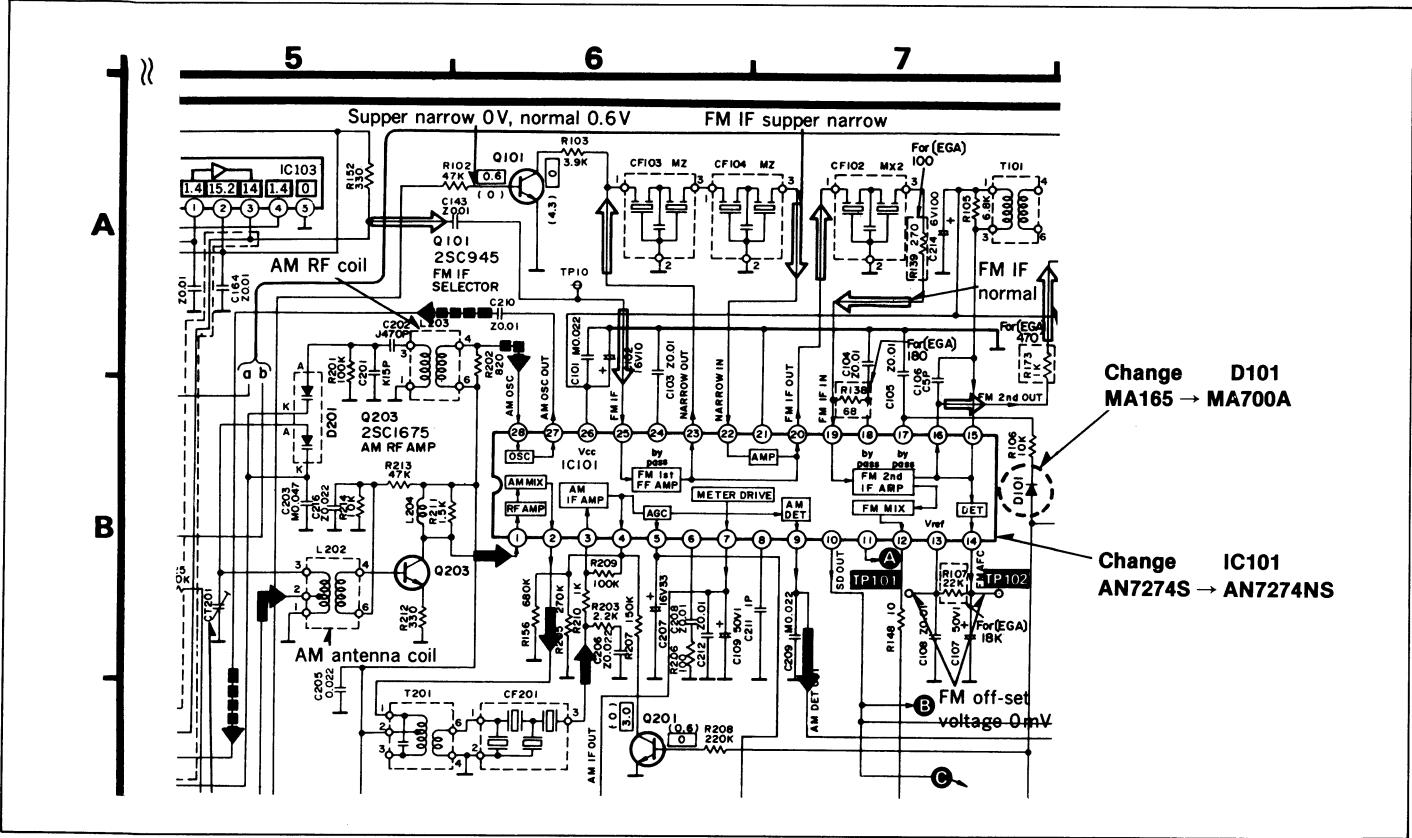
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# SCHEMATIC DIAGRAM

Note: IC101 and D101 have been changed to improve the efficiency.



## How to read the serial number

