

ST-S415

SERVICE MANUAL

AEP Model



SPECIFICATIONS

FM tuner		AM tuner	
Frequency range	87.5 - 108 MHz (50 kHz step)	Frequency range	MW: 531 - 1,602 kHz (9 kHz step) LW: 153 - 279 kHz (1 kHz step)
* Frequency range	FM 1: 65 - 74 MHz FM 2: 87.5 - 108 MHz	Intermediate frequency	450 kHz
Antenna terminals	75 Ω unbalanced	Usable sensitivity	(with AM loop antenna) MW: 300 μ V/m (999 kHz) LW: 1 mV/m (216 kHz)
Intermediate frequency	10.7 MHz	Signal-to-noise ratio	54 dB
Sensitivity	(mono S/N 26 dB) 10.3 dBf, 0.9 μ V/75 Ω (stereo S/N 46 dB) 38.5 dBf, 23 μ V/75 Ω	Harmonic distortion	0.3%
Usable sensitivity	10.3 dBf, 0.9 μ V/75 Ω (IHF)	Selectivity	32 dB
Signal-to-noise ratio	(at 40 kHz deviation) 80 dB (mono) 76 dB (stereo)	General	
Harmonic distortion	WIDE 0.04% (mono); 0.05% (stereo) (at 1 kHz) NARROW 0.06% (mono); 0.08% (stereo)	Power requirements	220 - 230 V AC, 50/60 Hz
Frequency response	30 Hz - 15 kHz (+0.5 dB, -2.0 dB)	Power consumption	12 W
Separation	50 dB (at 1 kHz)	Dimensions	Approx. 430 mm (W) x 85 mm (H) x 295 mm (D) (17 x 3 ³ / ₈ x 11 ³ / ₅ inches)
Selectivity	WIDE 80 dB (at 400 kHz) NARROW 90 dB (at 400 kHz) WIDE 45 dB (at 300 kHz) NARROW 70 dB (at 300 kHz)	Mass	Approx. 2.9 kg (6 lb. 3 oz.)
Output/impedance	600 mV/470 Ω (at 40 kHz deviation)	Accessories supplied	Connecting cord (1) AM loop antenna (1) FM wire antenna (1) EON connecting cord (1)

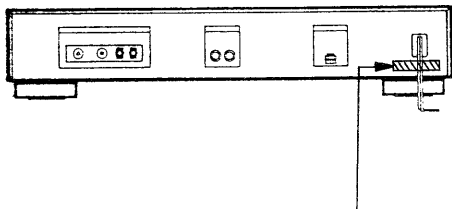
Design and specifications are subject to change without notice.

* The specifications of FM tuner except the frequency range are measured in the FM 2 mode.

FM STEREO FM-AM TUNER
SONY®

MODEL IDENTIFICATION

— BACK PANEL —



4-965-470-6□ (Italian, East European model)
 4-965-470-7□ (AEP model)
 4-965-470-8□ (German model)

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Notes on chip component replacement

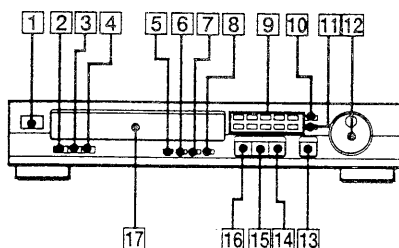
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

This section is extracted from instruction manual.



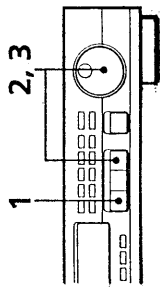
Front Panel

- 1 Power switch (14)
- 2 EON TA button (66)
- 3 EON NEWS/INFO button (66)
- 4 DISPLAY button (52, 64)
- 5 ANT button (34)
- 6 FM MODE button (30)
- 7 BAND button (24, 26, 28)
- 8 MEMORY/NEXT button (44, 50)
- 9 Preset buttons (28, 44, 48)
- 10 TUNE MODE button (24, 26, 48)
- 11 SHIFT button (44, 48)
- 12 TUNING/SELECT knob (16, 20, 22, 24, 26, 32, 34, 36, 38, 40, 48, 50, 54, 70, 72)
- 13 DIRECT button (28)
- 14 ENTER button (16, 20, 22, 32, 34, 36, 38, 40, 42, 50, 54, 70, 72)
- 15 RETURN button (16, 38, 42)
- 16 MENU button (16, 20, 22, 32, 36, 38, 40, 42, 50, 54, 70, 72)
- 17 Display window

(The numbers in parentheses indicate the page(s) where the control is described.)

Preset Tuning

This section shows you how to store and automatically tune in your favorite stations. Each station stored for preset tuning is first assigned a two-character code, consisting of a letter (A-C) followed by a one-digit number (0-9). To tune in a stored station, you simply enter the appropriate two-character code. You can store up to 30 stations.



1



2

TUNING/SELECT



Auto-betel



3

TUNING/SELECT



Y/N Yes



Preset Tuning

Storing Stations Using "Auto-betel select"

"Auto-betel select" is the easiest way to automatically store all FM RDS and FM stations in your broadcast area. The tuner first selects FM RDS stations with the clearest RDS signal from among the FM RDS stations broadcasting the same program and stores them in alphabetical order without redundancy up to 30 stations. Then the tuner stores FM stations other than the FM RDS stations from low to high frequencies. If you want to store FM and MW/LW stations one by one, do the procedure on page 44.

1 Press MENU.

2 Rotate the TUNING/SELECT knob until "Auto-betel" appears and then press ENTER.

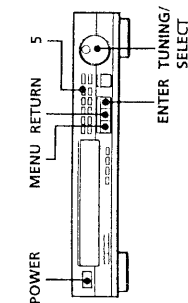
3 Rotate the TUNING/SELECT knob until "Y/N YES" appears and then press ENTER.

The tuner scans and stores all FM RDS and FM stations in the broadcast area. For RDS stations, the tuner first checks for stations broadcasting the same program, then stores only the one with the clearest signal. The selected RDS stations are sorted alphabetically by their Program Service name, then assigned two-character codes. For more details on RDS, see page 58.

After scanning, the display shows the total number of the stored FM RDS stations, and then the station stored in A1 is received.

The following settings will be stored along with the station
ANT (A or B), ANT ATT, IF Band and FM MODE

Preset Tuning



(continued)

If you perform the scanning again
Some of the preset stations may be replaced with new ones depending on the reception quality.

To cancel the scanning

- Perform one of the following procedures.
 - Press RETURN. The scanning stops and the display returns to the "Auto-betel" menu.
 - If you press RETURN again, the display shows the currently received frequency.
 - Press ENTER. The scanning stops and the display shows the currently received frequency.

To tune in stored stations

See page 48.

To erase stored stations one by one

- Press MENU.
- Rotate the TUNING/SELECT knob until "Clear" appears and then press ENTER.
- Rotate the TUNING/SELECT knob until the preset station to be erased appears and then press ENTER. The frequency stored in the specified code is erased and the digit of the preset code disappears.
- Repeat steps 1 through 3 for other stored stations to be erased.

To erase all stored stations at a time

- Turn off the power.
- Hold down 5 and MENU, and press POWER to turn on the power again.

Notes

- If you move to another area, do this procedure again to store the stations for the new broadcast area.
- If you move the antenna after storing stations using "Auto-betel", the stored settings will no longer be valid. If this happens, store the stations again.

Preset Tuning

Storing Stations Manually

This procedure shows you how to select and store FM and MW/LW stations one by one. This procedure is useful if you want to select just which stations to store, and for storing FM stations or FM RDS stations with a very weak signal that may not be stored using "Auto-betel select". If you want to automatically store FM and/or FM RDS station in your broadcast area, do one of the procedures described on pages 36 or 40, depending on which tuner you have.

1 Tune in the desired station.

For details on tuning in stations, see pages 24-28 and 48.

2 Press MEMORY/NEXT.

"MEMORY" appears to show that the tuner is ready to store a station. If the stations is tuned in with the automatic tuning, manual tuning or direct tuning: The lowest vacant code appears. If you want to store the station in that preset code, press ENTER. If you want to specify the other preset code, go to step 3.

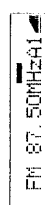
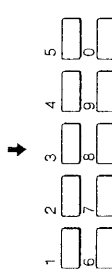
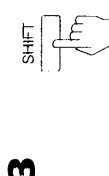
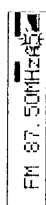
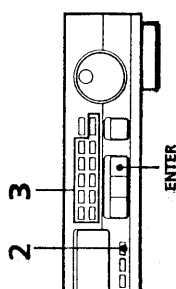
If the station is tuned in with the preset tuning: The preset code of that station blinks. If you want to store the station in the same preset code, press ENTER. If you want to specify the other code, go to step 3.

3 Enter the two-character code under which you want the station stored.

Press SHIFT to select A, B, or C.

The letter you choose appears on the display. Each time you press SHIFT, the letter changes. Then, press a preset button 0-9. The tuner stores the station under the two-character code.

4 Perform steps 1 through 3 for other stations.



Preset Tuning

(continued)

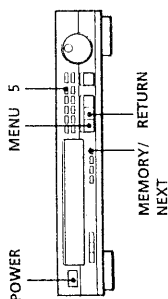
If you make a mistake during entry

Perform steps 2 and 3 again.

To cancel the storing while the MEMORY indicator is lit

- Press RETURN or
- Press MEMORY/NEXT.

The following settings will be stored along with the station
ANT (A or B), ANT ATT, IF Band and FM MODE



If you store a new station in the same code

The previously stored station is erased. Each code can hold only one station.

To tune in stored stations

See page 48.

To erase stored stations one by one

- 1 Press MENU.
 - 2 Rotate the TUNING/SELECT knob until "Clear" appears and then press ENTER.
 - 3 Rotate the TUNING/SELECT knob until the preset station to be erased appears and then press ENTER.
- The frequency stored in the specified code is erased and the digit of the preset code disappears.
- 4 Repeat steps 1 through 3 for other stored stations to be erased.

To erase all stored stations at a time

- 1 Turn off the power.
- 2 Hold down 5 and MENU, and press POWER to turn on the power again.

Notes

- If you move to another area, do this procedure again to store the stations for the new broadcast area.
- The stations remain stored in memory for up to one month after turning the power off.

Preset Tuning

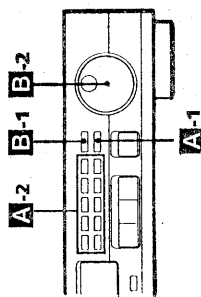
Tuning in Stored Stations **A**

Enter the two-character code of the station you want to listen to.

- 1 First, press **SHIFT** to select **A, B, or C**.

- 2 Press a preset button **0-9**.

The tuner automatically tunes in the station stored under that two-character code.

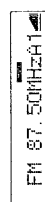
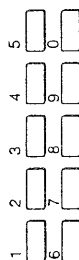


A

1

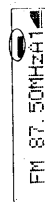


2



B

1



2



Preset Tuning

(continued)

[illegible]

- To modify a name**
Even after pressing the ENTER button, you can change the character. In step 4 or 5, press the MEMORY/NEXT button so that the character to be changed blinks and then perform steps 4 through 7.

- To store the station after assigning the name**

- ### a) Character List

- ## Displaying the Name **A**

You can assign names to stored stations by doing the procedure on page 50. To display the name of a stored station, press **DISPLAY**. Each time you press **DISPLAY**, the display alternates between the station frequency, name, and digital signal meter.

-
- ```

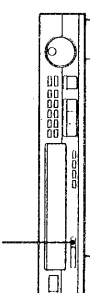
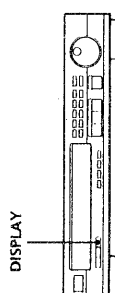
graph LR
 A[Station name] <--> B[Frequency]
 B <--> C[Digital signal meter]
 A --> C

```

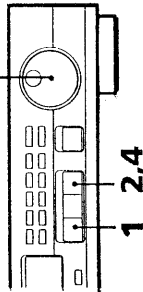
- \* For FM, the digital signal meter displays the strength of the received signal

the strength of the received signal. For best reception, adjust the direction of the antenna until the digital signal meter indicates the signal at its peak strength. When you tune in an AM station, the digital signal meter shows “— dB” and it does not function.

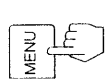
- Notes on the DISPLAY button of the**  
When receiving an RDS station, see page 64  
for use of the DISPLAY button.



2,3

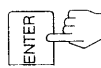
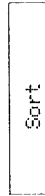


1



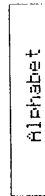
2

TUNING/SELECT



3

TUNING/SELECT



4



## Preset Tuning

(continued)

### How the unit arranges the preset stations

#### "Alphabet":

The unit arranges the preset stations that have station names in alphabetical order. Station names that have a space as the first character are selected first, followed by names starting with an alphabetic character, symbol or numerical digit, in that order.

Preset stations that have no station names are arranged by frequency, from low to high.

#### "Strength":

The unit sorts FM preset stations in order of signal strength, starting with stations that have names, followed by stations that have no names.

The rest of the stations are arranged by frequency, from low to high.

#### "Country":

The unit arranges FM RDS stations that have a PI code (see page 62) in order of country code (1 - 9 and A - F). (Stations that have the same country code are arranged in alphabetical order.)

The rest of the stations are arranged by frequency, from low to high.

#### Note

Since some countries have the same country code (or a certain country has two country codes), stations in different countries may be arranged together.

#### "Band":

The unit sorts FM RDS stations that have names in alphabetical order, followed by FM RDS stations that have no names.

After that, the unit arranges regular FM stations from low to high frequencies, and then arranges the remaining stations in the same manner.

### Sorting the Preset Stations

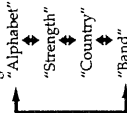
To easily search for a desired preset station, this unit has a preset station sorting function. You can sort the preset stations in alphabetical order ("Alphabet"), in order of signal strength ("Strength"), or according to the reception band ("Band"). In addition, you can sort the preset RDS stations in order of country code ("Country").

1 Press MENU.

2 Rotate the TUNING/SELECT knob until "Sort" appears and then press ENTER. "Select" appears.

3 Rotate the TUNING/SELECT knob until the desired way of sorting appears.

By rotating the knob, the display changes in the following order:



4 Press ENTER. The unit sorts the preset stations in the order you selected and then receives the preset station stored in A1.



## SECTION 2

### TEST MODE

**NOTE :** The preset data will be erased when this test mode is used. Therefore, take down the data before setting this mode and preset the data again after completing operations in this mode.

#### 1. Display Tube Key Check Mode

##### 1-1. Display Tube Check

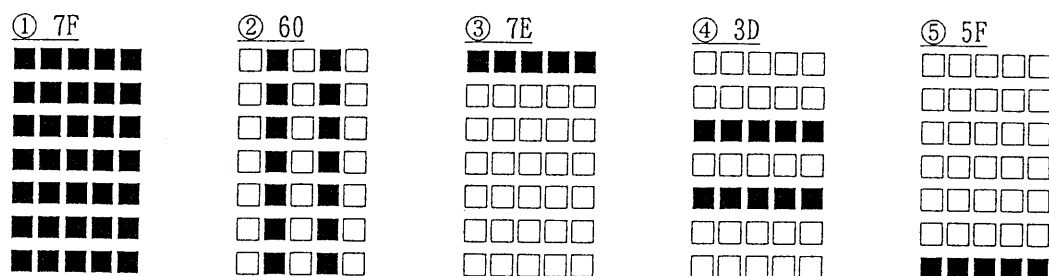
- 1-1-1. Turn OFF the power.
- 1-1-2. While pressing **1** and **MENU** together, turn ON **POWER**.
- 1-1-3. While continuously pressing **1** and **MENU** together, check the following.

Microcomputer version indication (1 sec) → All light up "7F" → Dot area only "60" → Dot area only "7E"  


 ↑  
 Dot area only "5F" ← Dot area only "3D"
 

 ↓

Indication test pattern



\* The indication test patterns from ② to ⑤ are indicated on only even grids.

The display changes every 500 msec.

##### 1-2. Setting the KEY CHECK MODE

- 1-2-1. Release **1** and **MENU**. The KEY CHECK mode will be set.
- 1-2-2. All key numbers will be displayed.  
Key Number : 23
- 1-2-3. Each time the key is pressed, the key number will be counted down.  
Each key will be counted only once, at the first time.
- 1-2-4. When all keys have been pressed, the process will end and the factory preset will be entered.

## 2. Entering the Factory Preset

To skip “1. Display Tube Key Check Mode”, and factory preset:

- (1) Turn OFF the power.
- (2) While pressing [3] and [MENU] together, turn ON [POWER].

## 3. Circuit Check Mode

Set to the reception frequency that the circuit can STEREO RDS stations. (Set the input level to above 70 dB.)

- (1) Turn OFF the power.
- (2) While pressing [4] and [MENU] together, turn ON [POWER].

• The items in the following table will be checked automatically in order every 2 seconds.

| Display    | Items                | DISPLAY  |             | NG                          |
|------------|----------------------|----------|-------------|-----------------------------|
|            |                      | FM RDS   | AM (MW, LW) |                             |
| Tuned      | AST signal =LOW      | OK or NG |             | IC251 NG, RV251 adjustments |
| IF Fra     | IF COUNT OK          | OK or NG | OK or NG    | IC501 NG, T252 adjustments  |
| Sig Level  | SI LEVEL $\geq$ 70dB | OK or NG | OK or NG    | IC221 NG, RV221 adjustments |
| Stereo     | ST signal=LOW        | OK or NG |             | IC301 NG                    |
| RDS Signal | RDS DATA OK          | OK or NG |             | IC801 NG                    |

## 4. Forced RESET

Clears all the RAMs and sets the initial state

- (1) Turn OFF the power.
- (2) While pressing [5] and [MENU] together, turn ON [POWER].
- (3) To return to the preset state, perform the display tube key check mode again.

## SECTION 3

### ELECTRICAL ADJUSTMENTS

#### Precautions in Repairing

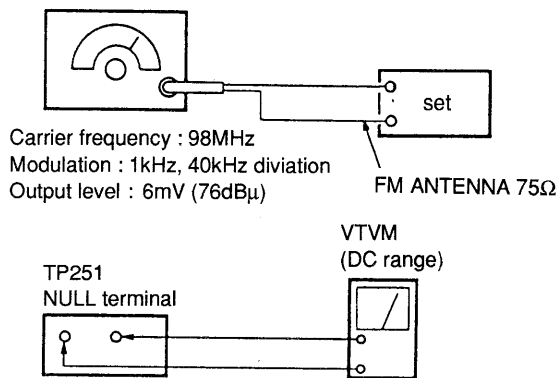
If the front end unit fails, it is difficult to repair the inner circuits, so replace the entire front end unit.

#### FM SECTION

#### FM Discriminator ADJUSTMENT (NULL Adjustment)

Setting :

BAND : FM

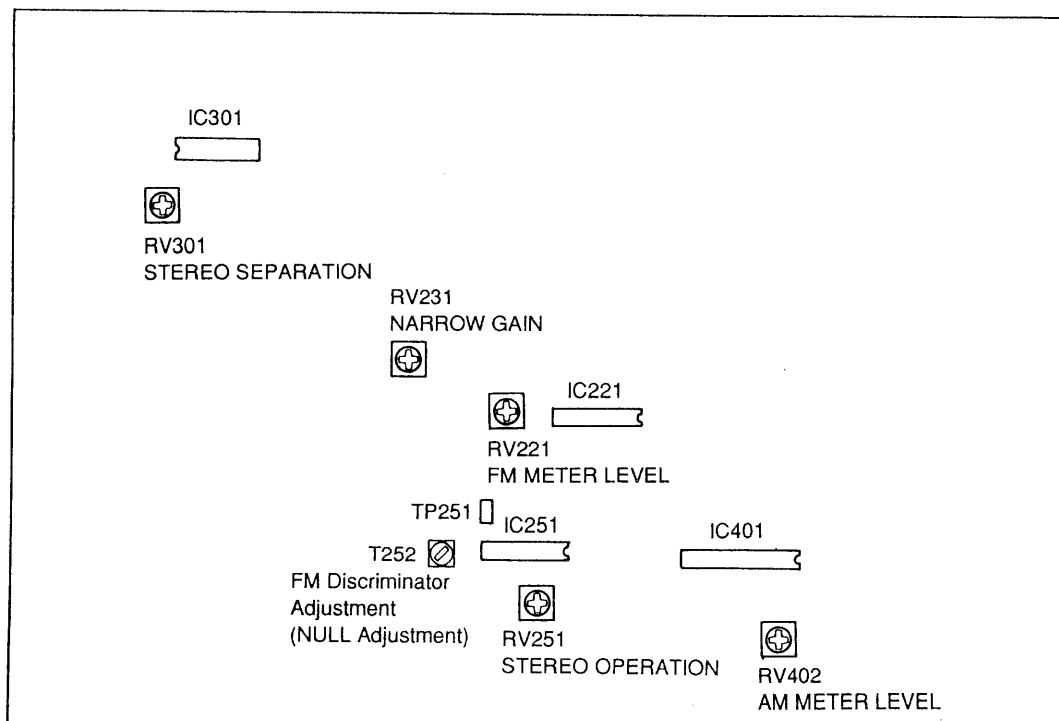


#### Procedure :

1. Tune the set to 98 MHz.
2. Adjust T252 for 0Vdc reading on the VOM.

**Note :** FM Tuning Level adjustment should be made after FM discriminator alignment.

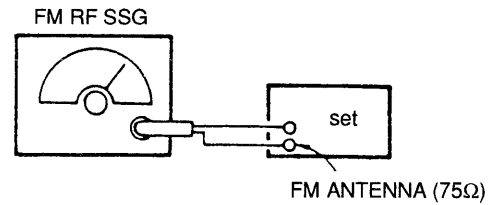
#### Adjustment Location :



#### Stereo Operation Adjustment

Setting :

BAND : FM



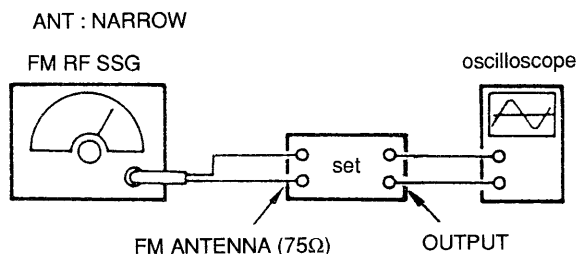
Carrier frequency : 98 MHz  
Modulation : 1kHz, 40kHz deviation  
Output level : 32μV (30 dB)

#### Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV251 so that the STEREO indicator goes on.

## Narrow Gain Adjustment

**Setting :**  
BAND : FM



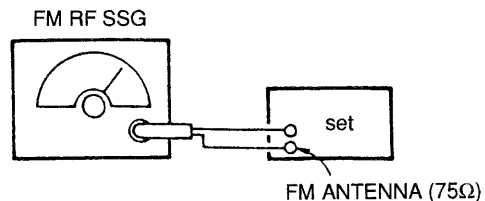
Carrier frequency : 98 MHz  
Modulation : 1kHz, 40kHz deviation  
Output level : 32μV (30 dB)

### Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV231 at the position where the waveform suddenly appears on the oscilloscope (Narrow Gain adj.)

## FM Meter Level Adjustment

**Setting :**  
BAND : FM



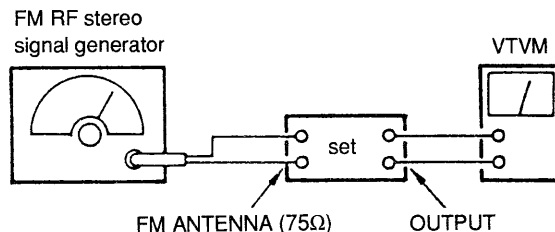
Carrier frequency : 98 MHz  
Modulation : 1kHz, 40kHz deviation  
Output level : 3mV (70 dBμ)

### Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV221 so that 1 to 10 indication bars light up on the signal meter.

## Stereo Separation Adjustment

**Setting :**  
BAND : FM



Carrier frequency : 98 MHz  
Modulation : 1kHz, 40kHz deviation  
Output level : 6mV (76 dBμ)

### Procedure :

| FM stereo<br>Signal generator<br>Output channel | VTVM<br>connection | VTVM<br>reading (dB)                      |
|-------------------------------------------------|--------------------|-------------------------------------------|
| L-CH                                            | L-CH               | Ⓐ                                         |
| R-CH                                            | L-CH               | Ⓑ<br>Adjust RV301 for<br>minimum reading. |
| R-CH                                            | R-CH               | Ⓒ                                         |
| L-CH                                            | R-CH               | Ⓓ<br>Adjust RV301 for<br>minimum reading. |

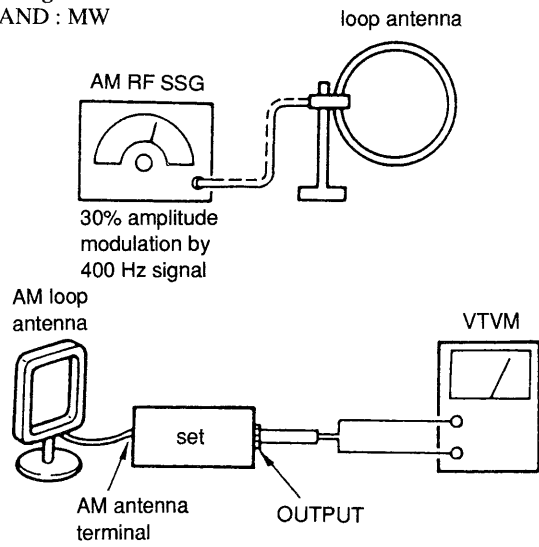
L-CH Stereo separation : Ⓐ — Ⓑ  
R-CH Stereo separation : Ⓒ — Ⓓ

The separations of both channels should be equal.

## AM SECTION

### Setting :

BAND : MW



### AM Meter Level Adjustment

#### Setting :

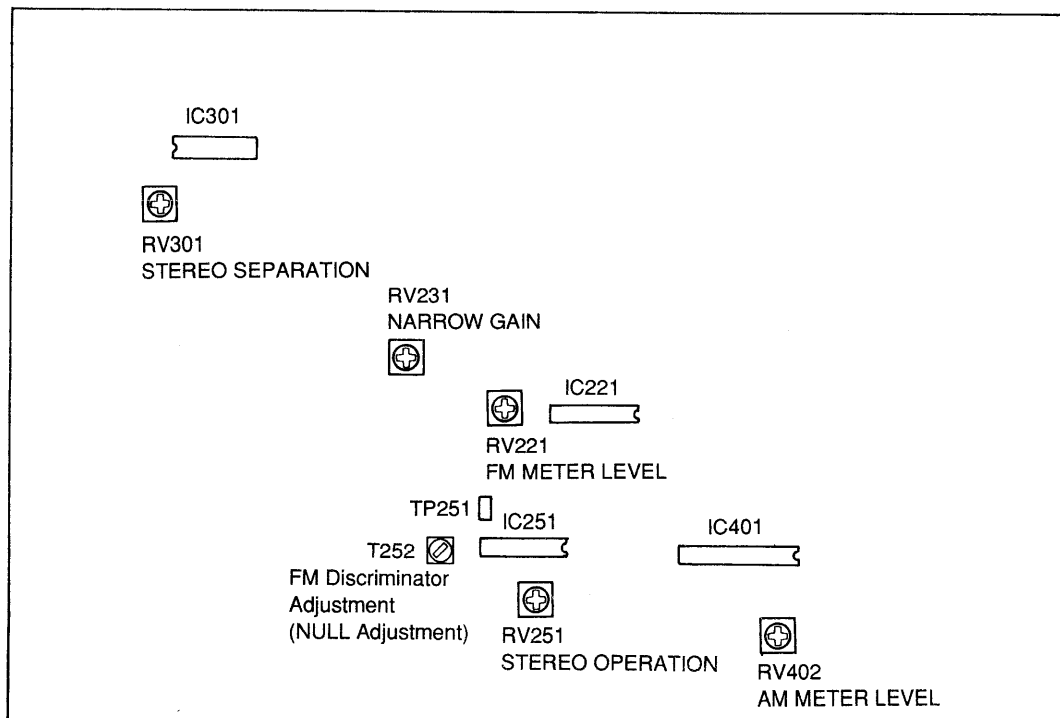
Carrier frequency : 216kHz

Modulation : 400Hz, 30% modulation

#### Procedure :

1. Set AM RF signal generator so that the AM antenna input level becomes 74dB $\mu$ /m (5mV/m).
2. Adjust RV402 so that 1 to 10 indication bars light up on the signal meter.

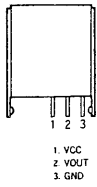
#### Adjustment Location :



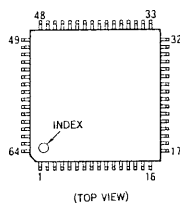
## SECTION 4 DIAGRAMS

### 4-1. SEMICONDUCTOR LEAD LAYOUTS

**GP1U57XB**



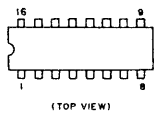
**LC75711E**  
**μPD78014GC-591-AB8**



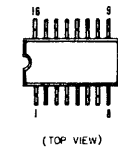
**2SC3112-B**



**LA1235**



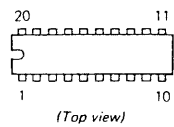
**SAA6579T**



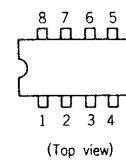
**2SK161-YGR**



**LA1245**



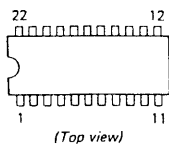
**μPC4558C**



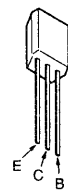
**2SK246-GR3**



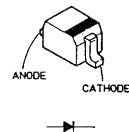
**LA3401**



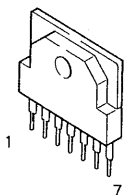
**DTA144ES**  
**DTC114TS**  
**DTC144ES**  
**2SC2669OY-TPE4**



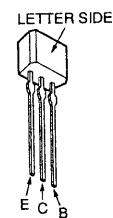
**DTZ6.8C**  
**DTZ27B**  
**1SS355**



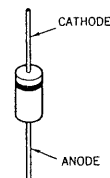
**LA5667**



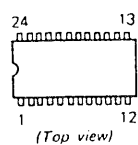
**2SA1175-HFE**  
**2SC2785-HFE**  
**2SC3623A-LK**



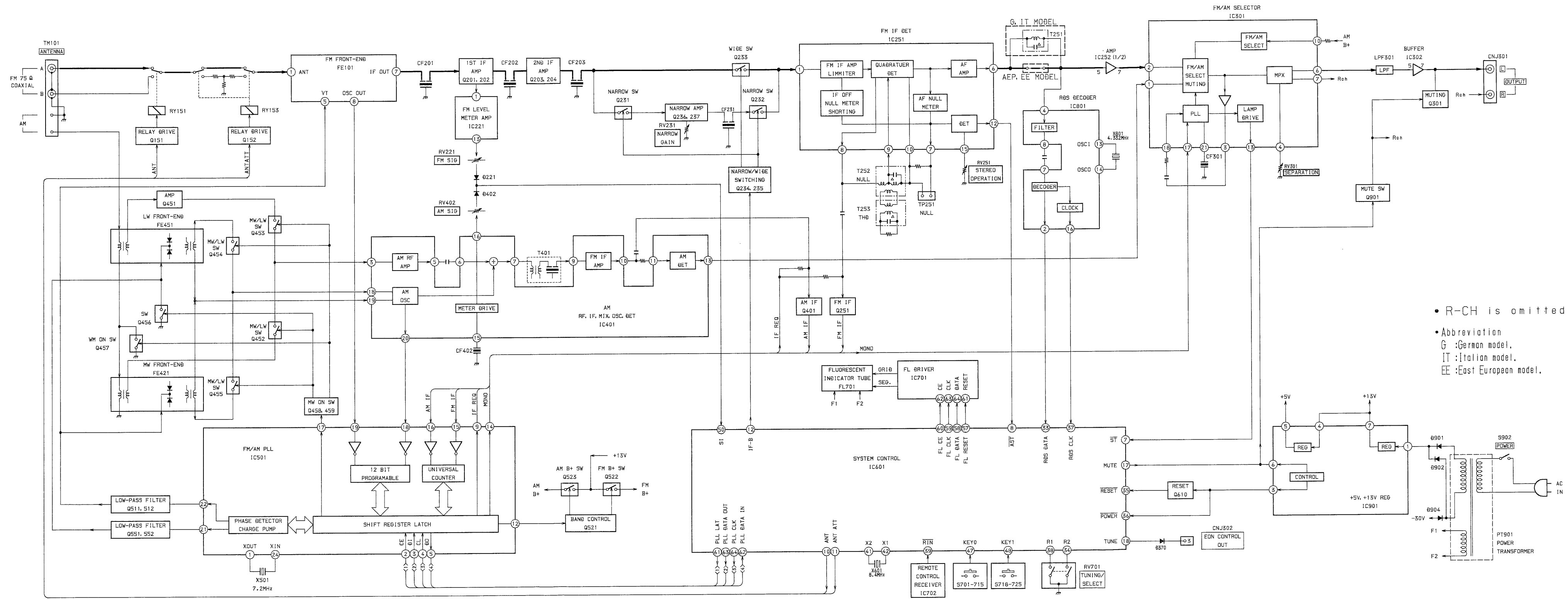
**10E2**



**LC7218-ST**



## 4-2. BLOCK DIAGRAM



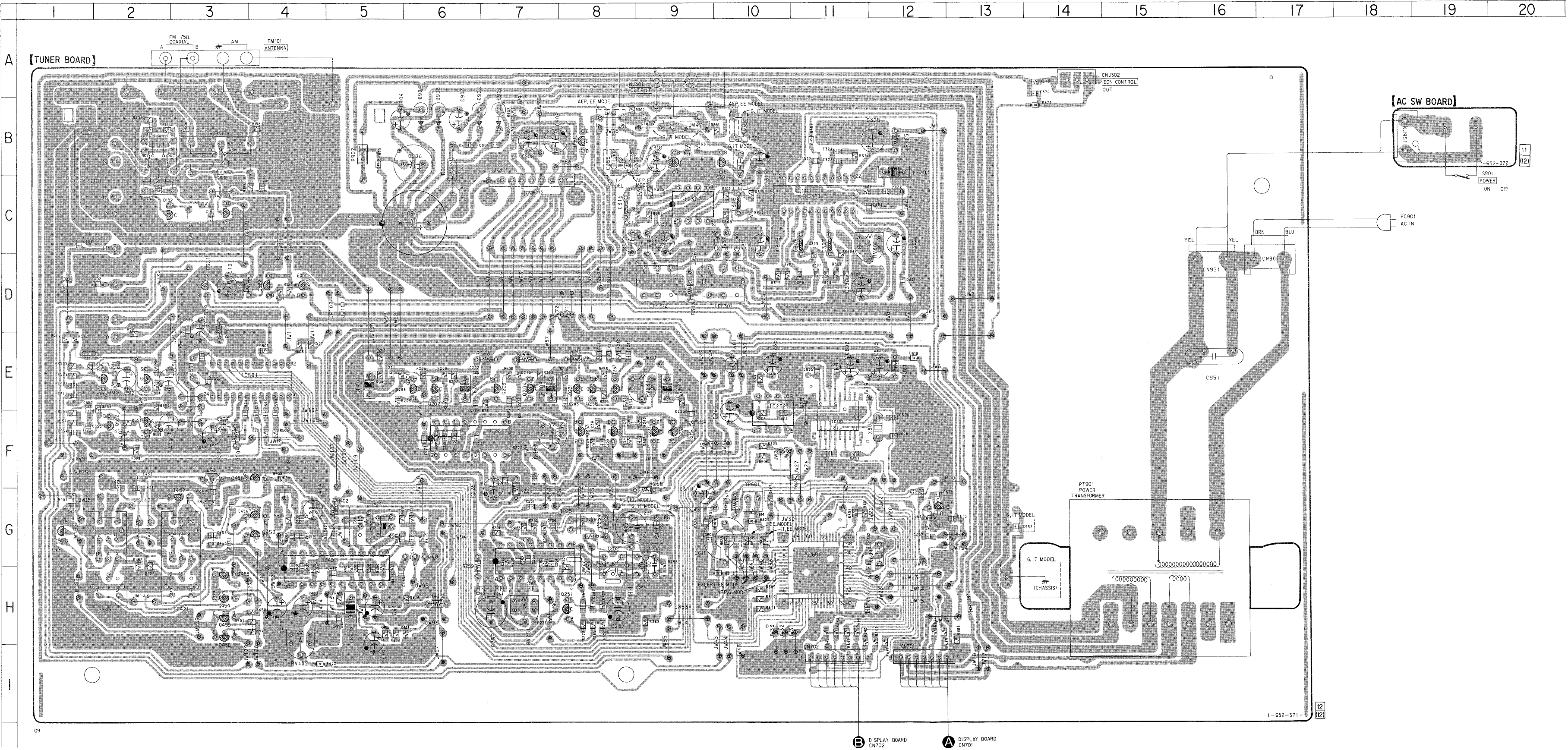
- R-CH is omitted
- Abbreviation  
G : German model.  
IT : Italian model.  
EE : East European model.

4-3. PRINTED WIRING BOARDS — TUNER SECTION —  
• See page 14 for Semiconductor Lead Layouts.

**Note:**  
• —○— : parts extracted from the component side.  
• —■— : Pattern from the side which enable seeing.  
• Abbreviation  
G : German model.  
IT : Italian model.  
EE : East European model.

• Semiconductor Location

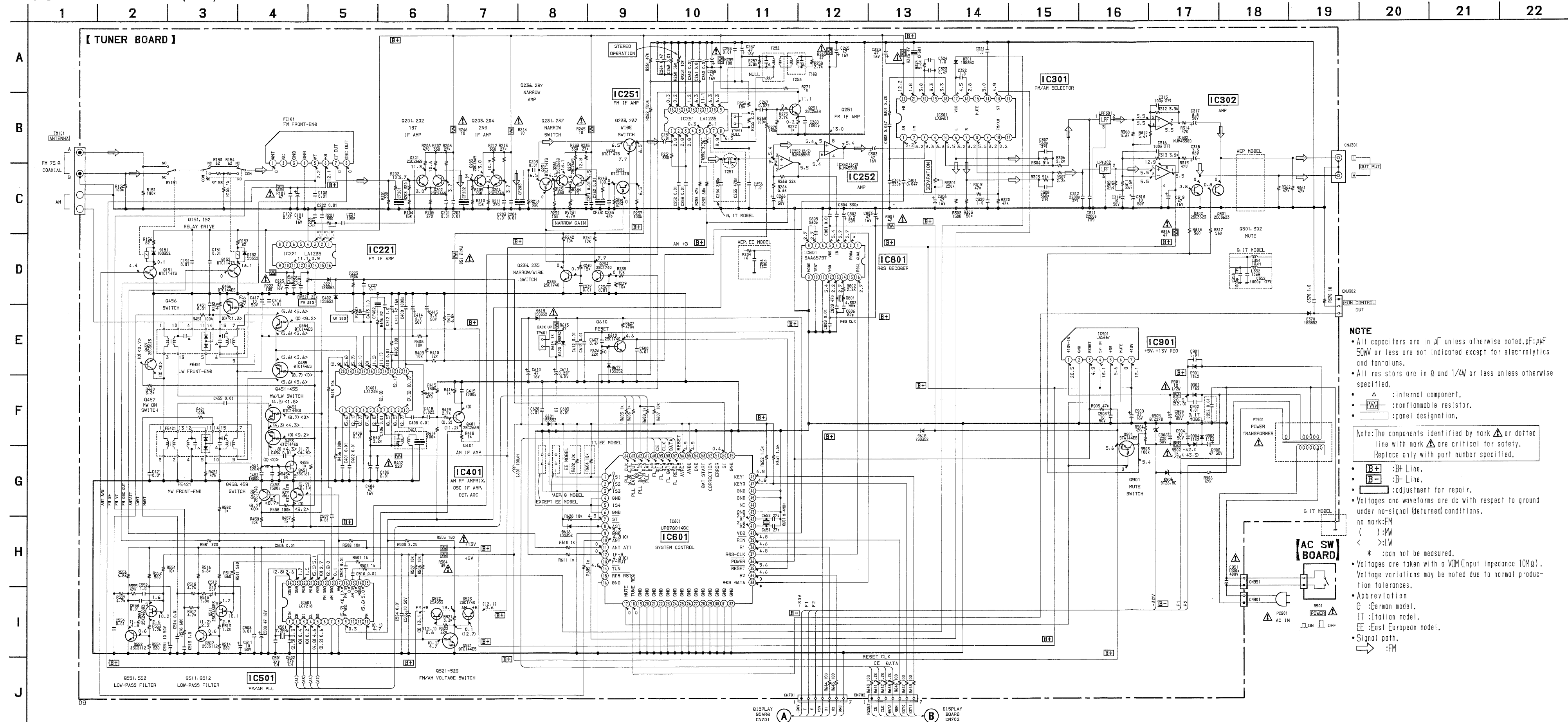
| Ref. No. | Location | Ref. No. | Location |
|----------|----------|----------|----------|
| D151     | B-3      | Q202     | E-6      |
| D152     | C-2      | Q203     | E-7      |
| D221     | F-7      | Q204     | E-7      |
| D301     | B-11     | Q231     | E-8      |
| D370     | B-14     | Q232     | F-9      |
| D402     | I-4      | Q233     | F-8      |
| D601     | G-9      | Q234     | F-8      |
| D616     | H-10     | Q235     | F-9      |
| D617     | G-12     | Q236     | E-8      |
| D618     | E-12     | Q237     | E-8      |
| D619     | G-10     | Q251     | H-8      |
| D620     | G-10     | Q301     | B-10     |
| D901     | A-7      | Q302     | B-9      |
| D902     | A-6      | Q401     | G-6      |
| D903     | A-6      | Q451     | F-3      |
| D904     | A-6      | Q452     | G-4      |
| D905     | B-5      | Q453     | G-4      |
| D906     | H-13     | Q454     | H-3      |
|          |          | Q455     | H-3      |
| IC221    | F-7      | Q456     | G-1      |
| IC251    | G-7      | Q457     | G-3      |
| IC252    | E-10     | Q458     | H-3      |
| IC301    | C-11     | Q459     | H-3      |
| IC302    | C-9      | Q511     | E-2      |
| IC401    | G-4      | Q512     | E-2      |
| IC501    | E-3      | Q521     | D-3      |
| IC601    | G-11     | Q522     | D-4      |
| IC801    | F-11     | Q523     | D-4      |
| IC901    | B-7      | Q551     | F-2      |
|          |          | Q552     | F-2      |
| Q151     | C-3      | Q610     | G-12     |
| Q152     | C-2      | Q901     | B-8      |
| Q201     | E-6      |          |          |



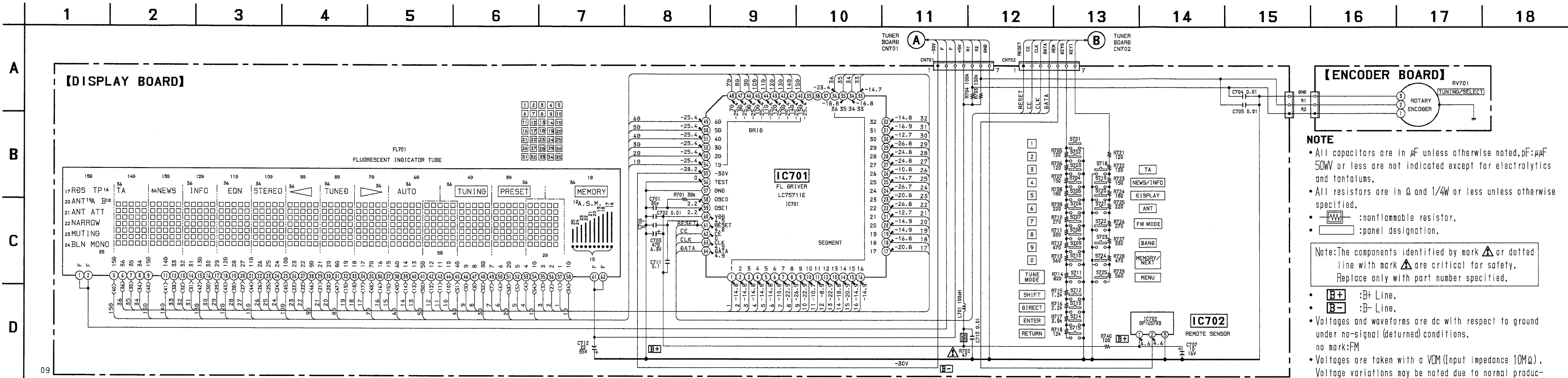


## 4-4. SCHEMATIC DIAGRAM — TUNER SECTION —

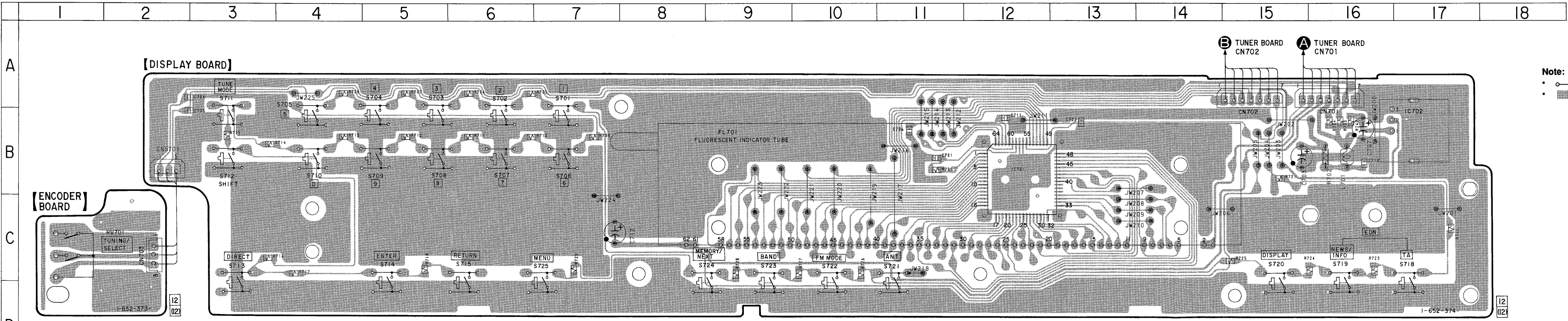
- See page 27 for IC Block Diagrams.
- See page 29 for IC Pin Functions. (IC601)



4-5. SCHEMATIC DIAGRAM — DISPLAY SECTION —

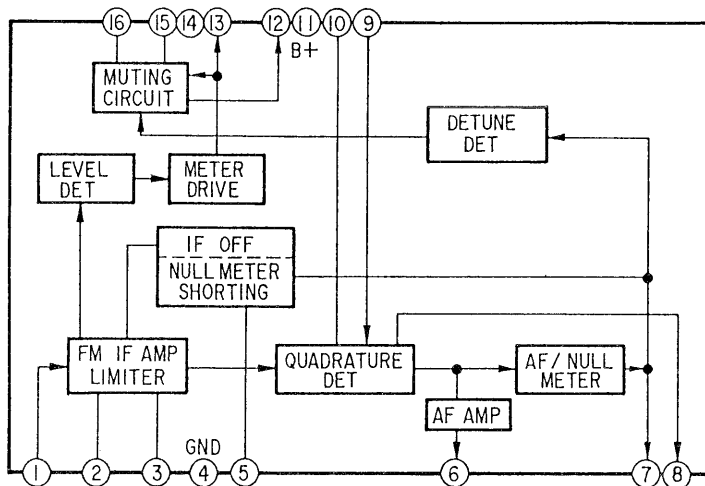


4-6. PRINTED WIRING BOARDS — DISPLAY SECTION —  
• See page 14 for Semiconductor Lead Layouts.

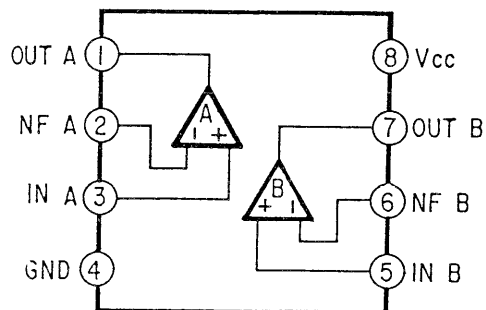


## 4-7. IC BLOCK DIAGRAMS

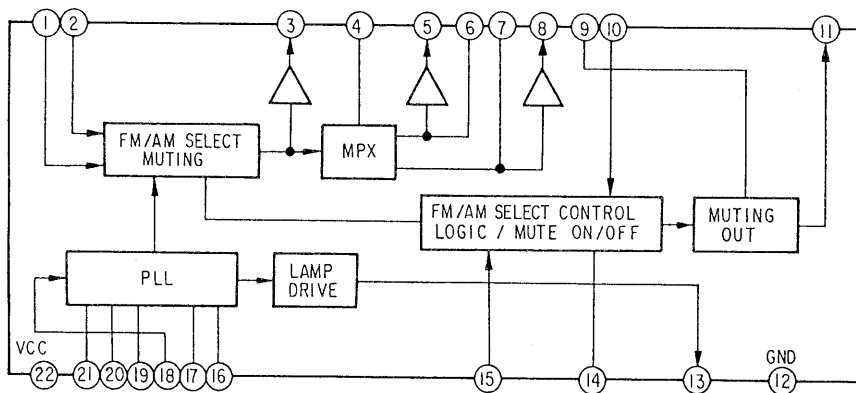
IC221, 251 LA1235



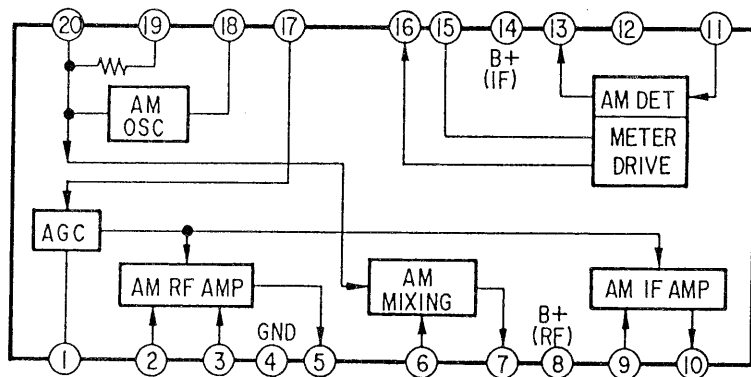
IC252, 302 NJM4558D



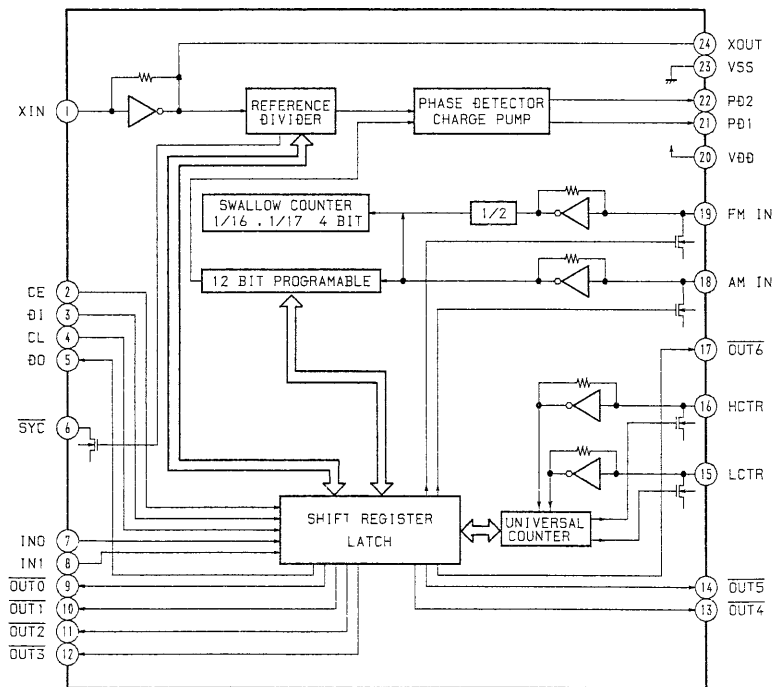
IC301 LA3401



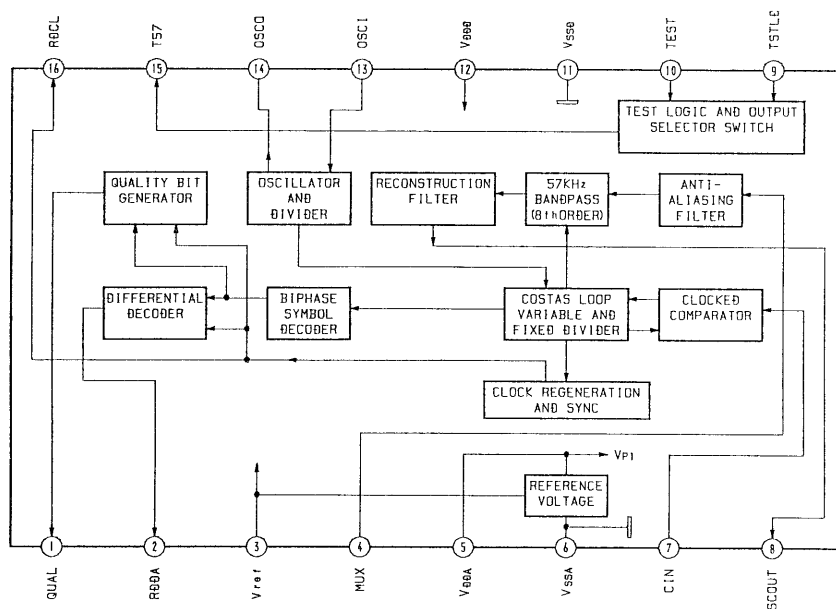
IC401 LA1245



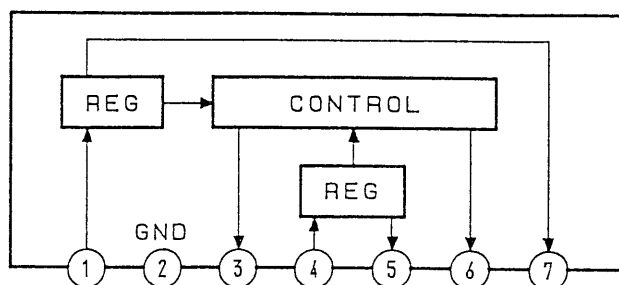
## IC501 LC7218



## IC801 SAA6579T



## IC901 LA5667



#### 4-8. IC PIN FUNCTIONS

##### • IC601 System Control IC ( $\mu$ PD78014GC-591-AB8)

| Pin No.             | Pin Name                | I/O | Function                                                                                                                                                                                                                                                                                          |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
|---------------------|-------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-------------------|---|---|---|---------------|---|---|---|---------------------|---|---|---|
| 1                   | IS1                     | I   | <div>Model detection</div> <table><tr><td></td><td>IS1</td><td>IS2</td><td>IS3</td></tr><tr><td>AEP, German model</td><td>L</td><td>L</td><td>L</td></tr><tr><td>Italian model</td><td>H</td><td>L</td><td>L</td></tr><tr><td>East European model</td><td>H</td><td>L</td><td>H</td></tr></table> |     | IS1 | IS2 | IS3 | AEP, German model | L | L | L | Italian model | H | L | L | East European model | H | L | H |
|                     | IS1                     | IS2 |                                                                                                                                                                                                                                                                                                   | IS3 |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| AEP, German model   | L                       | L   |                                                                                                                                                                                                                                                                                                   | L   |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| Italian model       | H                       | L   |                                                                                                                                                                                                                                                                                                   | L   |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| East European model | H                       | L   | H                                                                                                                                                                                                                                                                                                 |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 2                   | IS2                     | I   |                                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 3                   | IS3                     | I   |                                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 4                   | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 5                   | IS4                     | I   | ANTENNA SELECT input (GND)                                                                                                                                                                                                                                                                        |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 6                   | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 7                   | $\overline{ST}$         | I   | STEREO display detection                                                                                                                                                                                                                                                                          |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 8                   | $\overline{AST}$        | I   | AUTO STOP signal detection                                                                                                                                                                                                                                                                        |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 9                   | VSS                     | —   | System GND                                                                                                                                                                                                                                                                                        |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 10                  | ANT                     | O   | ANT A/B switching                                                                                                                                                                                                                                                                                 |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 11                  | ANT ATT                 | O   | ANT ATT on/off switching                                                                                                                                                                                                                                                                          |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 12                  | IF-B                    | O   | IF BAND wide/narrow switching                                                                                                                                                                                                                                                                     |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 13                  | F-MUT                   | O   | Not used (open)                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 14                  | $\overline{TUN}$        | O   | Not used (open)                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 15                  | $\overline{RDS\ RESET}$ | O   | Not used (open)                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 16                  | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 17                  | $\overline{MUTE}$       | O   | Muting signal output                                                                                                                                                                                                                                                                              |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 18                  | TUN REQ                 | O   | TUNING REQUEST                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 19 to 23            | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 24                  | VSS                     | —   | System GND                                                                                                                                                                                                                                                                                        |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 25 to 32            | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 33                  | RDS-DATA                | I   | RDS DATA input                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 34                  | R2                      | I   | Rotary encoder phase detection                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 35                  | $\overline{RESET}$      | I   | System reset input                                                                                                                                                                                                                                                                                |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 36                  | $\overline{POWER}$      | I   | Power supply on/off monitor                                                                                                                                                                                                                                                                       |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 37                  | RDS-CLK                 | I   | Not used (open)                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 38                  | R1                      | I   | Rotary encoder number of rotations detection                                                                                                                                                                                                                                                      |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 39                  | $\overline{RIN}$        | I   | Remote controller input                                                                                                                                                                                                                                                                           |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 40                  | VDD                     | —   | Power supply (+5V)                                                                                                                                                                                                                                                                                |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 41                  | X2                      | —   | Oscillation signal output (8.38 MHz)                                                                                                                                                                                                                                                              |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 42                  | X1                      | —   | Oscillation signal input (8.38 MHz)                                                                                                                                                                                                                                                               |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 43                  | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 44                  | NC                      | —   | Not used (open)                                                                                                                                                                                                                                                                                   |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 45, 46              | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 47                  | KEY0                    | I   | Key input                                                                                                                                                                                                                                                                                         |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 48                  | KEY1                    | I   | Key input                                                                                                                                                                                                                                                                                         |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 49                  | GND                     | —   | Not used (GND)                                                                                                                                                                                                                                                                                    |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |
| 50                  | SI                      | I   | Signal input                                                                                                                                                                                                                                                                                      |     |     |     |     |                   |   |   |   |               |   |   |   |                     |   |   |   |

| Pin No. | Pin Name     | I/O | Function                                       |
|---------|--------------|-----|------------------------------------------------|
| 51      | ERROR        | —   | Not used (open)                                |
| 52      | CORRECTION   | —   | Not used (open)                                |
| 53      | DAT START    | —   | Not used (open)                                |
| 54      | GND          | —   | Not used (GND)                                 |
| 55      | AVDD         | —   | Analog power supply of the A/D converter (+5V) |
| 56      | AVREF        | I   | Reference voltage of the A/D converter (+5V)   |
| 57      | FL RESET     | O   | Reset for LC75711E                             |
| 58      | FL DATA      | O   | Display data for LC75711E                      |
| 59      | FL CLK       | O   | CLock for LC75711E                             |
| 60      | FL CE        | O   | Latch for LC75711E                             |
| 61      | PLL LAT      | O   | Latch for LC7218                               |
| 62      | PLL DATA IN  | I   | DATA from LC7218                               |
| 63      | PLL DATA OUT | O   | DATA for LC7218                                |
| 64      | PLL CLK      | O   | Clock for LC7218                               |

## SECTION 5

### EXPLODED VIEW

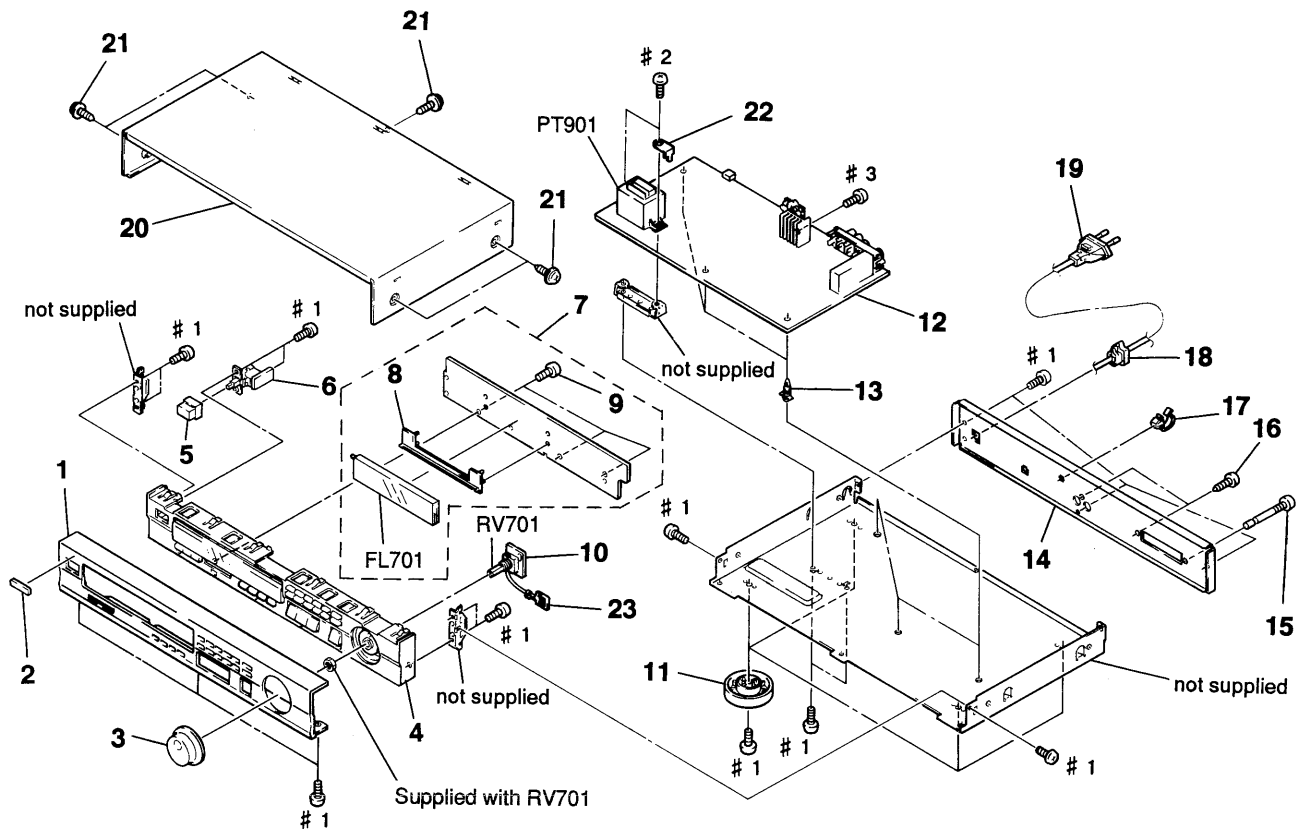
**NOTE:**

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example:  
KNOB, BALANCE (WHITE) ... (RED)

↑                      ↑  
Parts color    Cabinet's color

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation  
G : German model  
IT : Italian model  
EE : East European model

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.



| Ref. No. | Part No. | Description |
|----------|----------|-------------|
|----------|----------|-------------|

|      |              |                             |
|------|--------------|-----------------------------|
| 1    | 4-957-873-31 | PANEL, FRONT                |
| 2    | 4-942-568-01 | EMBLEM (NO. 5), SONY        |
| 3    | 4-965-471-01 | KNOB (DIA. 48)              |
| 4    | X-4944-761-1 | BASE ASSY, PANEL            |
| 5    | 4-917-460-01 | KNOB, POWER                 |
| * 6  | 1-652-372-11 | AC SW BOARD                 |
| * 7  | A-4371-010-A | DISPLAY BOARD, COMPLETE     |
| * 8  | 4-945-292-01 | HOLDER, INDICATION TUBE     |
| 9    | 4-951-620-01 | SCREW (2. 6X8), +BVTP       |
| * 10 | 1-652-373-11 | ENCODER BOARD               |
| 11   | 4-956-885-11 | FOOT (F58175S2W)            |
| * 12 | A-4371-013-A | TUNER BOARD, COMPLETE (AEP) |
| * 12 | A-4371-014-A | TUNER BOARD, COMPLETE (IT)  |
| * 12 | A-4371-015-A | TUNER BOARD, COMPLETE (G)   |
| * 12 | A-4371-016-A | TUNER BOARD, COMPLETE (EE)  |

Remark

| Ref. No. | Part No. | Description |
|----------|----------|-------------|
|----------|----------|-------------|

|       |              |                              |
|-------|--------------|------------------------------|
| * 13  | 3-346-265-31 | HOLDER, PC BOARD             |
| * 14  | 4-965-470-61 | PANEL, BACK (IT, EE)         |
| * 14  | 4-965-470-71 | PANEL, BACK (AEP)            |
| * 14  | 4-965-470-81 | PANEL, BACK (G)              |
| 15    | 3-704-242-01 | SCREW, TERMINAL, + BVTP CLAW |
| 16    | 3-704-515-11 | SCREW (BV/RING)              |
| * 17  | 4-949-235-01 | HOOK                         |
| 18    | 3-703-244-00 | BUSHING, CORD                |
| 19    | 1-575-651-21 | CORD, POWER                  |
| 20    | 4-923-457-01 | CASE                         |
| 21    | 3-704-366-01 | SCREW (CASE) (M3X8)          |
| 22    | 4-957-933-01 | PLATE, GROUND (G, IT)        |
| 23    | 1-690-880-11 | LEAD (WITH CONNECTOR)        |
| FL701 | 1-517-177-21 | INDICATOR TUBE, FLUORESCENT  |
| PT901 | 1-423-525-11 | TRANSFORMER, POWER           |

Remark

**AC SW**      **DISPLAY**

The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
  - Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - -XX, -X mean standardized parts, so they may have some difference from the original one.
  - Color Indication of Appearance Parts Example:  
 KNOB, BALANCE (WHITE) . . . (RED)  

$\uparrow$   
Parts color

$\uparrow$   
Cabinet's color
  - Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- RESISTORS  
 All resistors are in ohms  
 METAL: Metal-film resistor  
 METAL OXIDE: Metal Oxide-film resistor  
 F : nonflammable
  - SEMICONDUCTORS  
 In each case, u:  $\mu$  , for example:  
 uA...:  $\mu$  A..., uPA...:  $\mu$  PA..., uPB...:  $\mu$  PB...,  
 uPC...:  $\mu$  PC..., uPD...:  $\mu$  PD...
  - CAPACITORS  
 uF :  $\mu$  F
  - COILS  
 uH :  $\mu$  H
  - Abbreviation  
 G : German model  
 IT : Italian model  
 EE : East European model

— 32 —



# DISPLAY

# ENCODER

# TUNER

| Ref. No. | Part No.     | Description                           | Remark | Ref. No. | Part No.     | Description              | Remark      |
|----------|--------------|---------------------------------------|--------|----------|--------------|--------------------------|-------------|
| S719     | 1-554-303-21 | SWITCH, TACTILE (NEWS/INFO)           |        | C232     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| S720     | 1-554-303-21 | SWITCH, TACTILE (DISPLAY)             |        | C235     | 1-163-109-00 | CERAMIC CHIP 47PF 5%     | 50V         |
| S721     | 1-554-303-21 | SWITCH, TACTILE (ANT)                 |        |          |              |                          |             |
| S722     | 1-554-303-21 | SWITCH, TACTILE (AUTO TUNING/FM MODE) |        | C236     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
|          |              |                                       |        | C237     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| S723     | 1-554-303-21 | SWITCH, TACTILE (BAND)                |        | C251     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| S724     | 1-554-303-21 | SWITCH, TACTILE (MEMORY/NEXT)         |        | C252     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| S725     | 1-554-303-21 | SWITCH, TACTILE (MENU)                |        | C253     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| *****    |              |                                       |        | C254     | 1-110-335-11 | MYLAR 100PF 5%           | 50V         |
| *        | 1-652-373-11 | ENCODER BOARD                         |        |          |              |                          | (AEP, EE)   |
|          |              | *****                                 |        | C254     | 1-110-341-11 | MYLAR 330PF 5%           | 50V (G, IT) |
|          | 1-690-880-11 | LEAD (WITH CONNECTOR)                 |        | C255     | 1-130-467-00 | MYLAR 470PF 5%           | 50V (G, IT) |
|          |              | < VARIABLE RESISTOR >                 |        | C256     | 1-164-346-11 | CERAMIC CHIP 1uF         | 16V         |
| RV701    | 1-467-703-11 | ENCODER, ROTARY (TUNING/SELECT)       |        | C257     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
| *****    |              |                                       |        | C258     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| *        | A-4371-013-A | TUNER BOARD, COMPLETE (AEP)           |        | C259     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
|          |              | *****                                 |        | C260     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| *        | A-4371-014-A | TUNER BOARD, COMPLETE (IT)            |        | C261     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
|          |              | *****                                 |        | C262     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
| *        | A-4371-015-A | TUNER BOARD, COMPLETE (G)             |        | C263     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |
|          |              | *****                                 |        | C264     | 1-164-005-11 | CERAMIC CHIP 0.47uF      | 25V         |
| *        | A-4371-016-A | TUNER BOARD, COMPLETE (EE)            |        | C265     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
|          |              | *****                                 |        | C266     | 1-124-907-11 | ELECT 10uF 20%           | 50V         |
|          | 4-957-933-01 | PLATE, GROUND (G, IT)                 |        | C267     | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% | 25V         |
|          | 7-682-548-09 | SCREW +B 3X8                          |        | C268     | 1-163-141-00 | CERAMIC CHIP 0.001uF 5%  | 50V         |
|          |              | < CAPACITOR >                         |        | C301     | 1-163-035-00 | CERAMIC CHIP 0.047uF     | 50V         |
| C101     | 1-124-477-11 | ELECT 47uF 20%                        | 25V    | C302     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
| C102     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C303     | 1-163-035-00 | CERAMIC CHIP 0.047uF     | 50V         |
| C103     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C304     | 1-163-129-00 | CERAMIC CHIP 330PF 5%    | 50V         |
| C151     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    |          |              |                          |             |
| C152     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C306     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
| C201     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C307     | 1-130-468-00 | MYLAR 560PF 5%           | 50V         |
| C202     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C308     | 1-130-468-00 | MYLAR 560PF 5%           | 50V         |
| C203     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C311     | 1-130-475-00 | MYLAR 0.0022uF 5%        | 50V         |
| C204     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C312     | 1-130-475-00 | MYLAR 0.0022uF 5%        | 50V         |
| C205     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    |          |              |                          |             |
| C221     | 1-163-117-00 | CERAMIC CHIP 100PF 5%                 | 50V    | C313     | 1-124-907-11 | ELECT 10uF 20%           | 50V         |
| C222     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C314     | 1-124-907-11 | ELECT 10uF 20%           | 50V         |
| C223     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C315     | 1-110-335-11 | MYLAR 100PF 5%           | 50V         |
| C224     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C316     | 1-110-335-11 | MYLAR 100PF 5%           | 50V         |
| C225     | 1-124-477-11 | ELECT 47uF 20%                        | 25V    | C317     | 1-126-962-11 | ELECT 3.3uF 20%          | 50V         |
| C226     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C318     | 1-126-962-11 | ELECT 3.3uF 20%          | 50V         |
| C227     | 1-163-038-00 | CERAMIC CHIP 0.1uF                    | 25V    | C319     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
| C231     | 1-164-232-11 | CERAMIC CHIP 0.01uF                   | 50V    | C320     | 1-164-346-11 | CERAMIC CHIP 1uF         | 16V         |
|          |              |                                       |        | C321     | 1-164-346-11 | CERAMIC CHIP 1uF         | 16V         |
|          |              |                                       |        | C322     | 1-164-346-11 | CERAMIC CHIP 1uF         | 16V         |
|          |              |                                       |        | C323     | 1-164-005-11 | CERAMIC CHIP 0.47uF      | 25V         |
|          |              |                                       |        | C324     | 1-164-346-11 | CERAMIC CHIP 1uF         | 16V         |
|          |              |                                       |        | C325     | 1-124-477-11 | ELECT 47uF 20%           | 25V         |
|          |              |                                       |        | C352     | 1-130-471-00 | MYLAR 0.001uF 5%         | 50V (G, IT) |
|          |              |                                       |        | C353     | 1-130-471-00 | MYLAR 0.001uF 5%         | 50V (G, IT) |
|          |              |                                       |        | C370     | 1-164-346-11 | CERAMIC CHIP 1uF 5%      | 50V         |
|          |              |                                       |        | C401     | 1-164-232-11 | CERAMIC CHIP 0.01uF      | 50V         |

# TUNER

| Ref. No. | Part No.     | Description   | Remark          | Ref. No.      | Part No.     | Description                     | Remark                 |
|----------|--------------|---------------|-----------------|---------------|--------------|---------------------------------|------------------------|
| C402     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C652          | 1-163-237-11 | CERAMIC CHIP                    | 27PF 5% 50V            |
| C403     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C801          | 1-164-232-11 | CERAMIC CHIP                    | 0.01uF 50V             |
| C404     | 1-124-477-11 | ELECT         | 47uF 20% 25V    | C802          | 1-124-925-11 | ELECT                           | 2.2uF 20% 100V         |
| C405     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C803          | 1-124-477-11 | ELECT                           | 47uF 20% 25V           |
| C406     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C804          | 1-163-129-00 | CERAMIC CHIP                    | 330PF 5% 50V           |
| C408     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C805          | 1-163-135-00 | CERAMIC CHIP                    | 560PF 5% 50V           |
| C409     | 1-163-141-00 | CERAMIC CHIP  | 0.001uF 5% 50V  | C806          | 1-163-249-11 | CERAMIC CHIP                    | 82PF 5% 50V            |
| C410     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C808          | 1-163-243-11 | CERAMIC CHIP                    | 47PF 5% 50V            |
| C411     | 1-124-477-11 | ELECT         | 47uF 20% 25V    | C809          | 1-164-232-11 | CERAMIC CHIP                    | 0.01uF 50V             |
| C412     | 1-164-346-11 | CERAMIC CHIP  | 1uF 16V         | C901          | 1-164-232-11 | CERAMIC CHIP                    | 0.01uF 50V             |
| C413     | 1-164-346-11 | CERAMIC CHIP  | 1uF 16V         | C902          | 1-164-232-11 | CERAMIC CHIP                    | 0.01uF 50V             |
| C414     | 1-124-927-11 | ELECT         | 4.7uF 20% 100V  | C903          | 1-124-910-11 | ELECT                           | 47uF 20% 50V           |
| C415     | 1-126-962-11 | ELECT         | 3.3uF 20% 50V   | C904          | 1-124-910-11 | ELECT                           | 47uF 20% 50V           |
| C416     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C905          | 1-124-618-11 | ELECT                           | 2200uF 20% 35V         |
| C417     | 1-124-907-11 | ELECT         | 10uF 20% 50V    | C906          | 1-124-911-11 | ELECT                           | 220uF 20% 50V          |
| C418     | 1-163-037-11 | CERAMIC CHIP  | 0.022uF 10% 25V | C908          | 1-124-907-11 | ELECT                           | 10uF 20% 50V           |
| C419     | 1-163-141-00 | CERAMIC CHIP  | 0.001uF 5% 50V  | C909          | 1-124-477-11 | ELECT                           | 47uF 20% 25V           |
| C421     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | △C951         | 1-161-741-00 | CERAMIC                         | 0.001uF 10% 400V       |
| C451     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | C952          | 1-164-232-11 | CERAMIC CHIP                    | 0.01uF 10% 100V(G, IT) |
| C452     | 1-164-693-11 | CERAMIC CHIP  | 0.0018uF 5% 50V | < FILTER >    |              |                                 |                        |
| C453     | 1-163-145-00 | CERAMIC CHIP  | 0.0015uF 5% 50V | CF201         | 1-567-389-11 | FILTER, CERAMIC                 |                        |
| C454     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CF202         | 1-567-389-11 | FILTER, CERAMIC                 |                        |
| C455     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CF203         | 1-567-389-11 | FILTER, CERAMIC                 |                        |
| C501     | 1-163-237-11 | CERAMIC CHIP  | 27PF 5% 50V     | CF231         | 1-567-107-71 | FILTER, CERAMIC                 |                        |
| C502     | 1-163-237-11 | CERAMIC CHIP  | 27PF 5% 50V     | CF301         | 1-567-250-11 | OSCILLATOR, CERAMIC             |                        |
| C503     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CF402         | 1-527-981-00 | FILTER, CERAMIC                 |                        |
| C504     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | < CONNECTOR > |              |                                 |                        |
| C505     | 1-124-907-11 | ELECT         | 10uF 20% 50V    | CN901         | 1-580-230-11 | PIN, CONNECTOR (PC BOARD) 3P    |                        |
| C506     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CN951         | 1-564-321-11 | PIN, CONNECTOR 2P               |                        |
| C507     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CNJ301        | 1-568-250-11 | JACK, PIN 2P (OUTPUT)           |                        |
| C508     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | CNJ302        | 1-566-212-11 | PIN, CONNECTOR 3P (EON CONTROL) |                        |
| C509     | 1-124-477-11 | ELECT         | 47uF 20% 25V    | < DIODE >     |              |                                 |                        |
| C510     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D151          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C511     | 1-124-907-11 | ELECT         | 10uF 20% 50V    | D152          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C512     | 1-126-962-11 | ELECT         | 3.3uF 20% 50V   | D221          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C513     | 1-164-346-11 | CERAMIC CHIP  | 1uF 16V         | D301          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C514     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D370          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C551     | 1-124-907-11 | ELECT         | 10uF 20% 50V    | D402          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C552     | 1-164-346-11 | CERAMIC CHIP  | 1uF 16V         | D601          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C553     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D616          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C554     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D617          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C603     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D618          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C607     | 1-164-005-11 | CERAMIC CHIP  | 0.47uF 25V      | D619          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C608     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D620          | 8-719-988-62 | DIODE                           | 1SS355                 |
| C610     | 1-124-477-11 | ELECT         | 47MF 20% 25V    | D901          | 8-719-200-02 | DIODE                           | 10E2                   |
| C611     | 1-104-905-11 | DOUBLE LAYERS | 0.22F 5.5V      | D902          | 8-719-200-02 | DIODE                           | 10E2                   |
| C612     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      | D903          | 8-719-200-02 | DIODE                           | 10E2                   |
| C613     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      |               |              |                                 |                        |
| C620     | 1-164-232-11 | CERAMIC CHIP  | 0.01uF 50V      |               |              |                                 |                        |
| C651     | 1-163-237-11 | CERAMIC CHIP  | 27PF 5% 50V     |               |              |                                 |                        |

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

| Ref. No.        | Part No.     | Description                  | Remark | Ref. No.     | Part No.     | Description               | Remark |
|-----------------|--------------|------------------------------|--------|--------------|--------------|---------------------------|--------|
| D904            | 8-719-200-02 | DIODE 10E2                   |        | Q302         | 8-729-141-30 | TRANSISTOR 2SC3623A-LK    |        |
| D905            | 8-719-977-73 | DIODE DTZ27B                 |        | Q401         | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4 |        |
| D906            | 8-719-977-13 | DIODE DTZ6.8C                |        | Q451         | 8-729-231-20 | TRANSISTOR 2SK161-YGR     |        |
| < FRONTEND >    |              |                              |        | Q452         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| FE101           | 1-465-396-11 | FRONT END (3 GANG) (EE)      |        | Q453         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| FE101           | 1-693-212-21 | FRONT END (FTZ) (AEP, G, IT) |        | Q454         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| FE421           | 1-236-462-11 | ENCAPSULATED COMPONENT       |        | Q455         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| FE451           | 1-236-463-11 | ENCAPSULATED COMPONENT       |        | Q456         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| < IC >          |              |                              |        | Q457         | 8-729-141-30 | TRANSISTOR 2SC3623A-LK    |        |
| IC221           | 8-759-812-35 | IC LA1235                    |        | Q458         | 8-729-904-39 | TRANSISTOR DTC114TS       |        |
| IC251           | 8-759-812-35 | IC LA1235                    |        | Q459         | 8-729-119-78 | TRANSISTOR 2SC2785-HFE    |        |
| IC252           | 8-759-145-58 | IC UPC4558C                  |        | Q511         | 8-729-202-67 | TRANSISTOR 2SK246-GR3     |        |
| IC301           | 8-759-801-80 | IC LA3401                    |        | Q512         | 8-729-201-84 | TRANSISTOR 2SC3112-B      |        |
| IC302           | 8-759-145-58 | IC UPC4558C                  |        | Q521         | 8-729-900-89 | TRANSISTOR DTC144ES       |        |
| IC401           | 8-759-812-45 | IC LA1245                    |        | Q522         | 8-729-119-76 | TRANSISTOR 2SA1175-HFE    |        |
| IC501           | 8-759-175-87 | IC LC7218-ST                 |        | Q523         | 8-729-119-78 | TRANSISTOR 2SC2785-HFE    |        |
| IC601           | 8-759-265-43 | IC uPD78014GC-591-AB8        |        | Q551         | 8-729-202-67 | TRANSISTOR 2SK246-GR3     |        |
| IC801           | 8-759-065-98 | IC SAA6579T                  |        | Q552         | 8-729-201-84 | TRANSISTOR 2SC3112-B      |        |
| IC901           | 8-759-820-09 | IC LA5667                    |        | Q610         | 8-729-119-78 | TRANSISTOR 2SC2785-HFE    |        |
| < COIL >        |              |                              |        | Q901         | 8-729-900-65 | TRANSISTOR DTA144ES       |        |
| L351            | 1-410-971-11 | INDUCTOR 10uH (G, IT)        |        | < RESISTOR > |              |                           |        |
| L352            | 1-410-971-11 | INDUCTOR 10uH (G, IT)        |        | △R101        | 1-249-401-11 | CARBON 47 5% 1/4W F       |        |
| L451            | 1-410-979-11 | INDUCTOR 220uH               |        | R151         | 1-216-097-00 | METAL CHIP 100K 5% 1/10W  |        |
| L601            | 1-410-977-11 | INDUCTOR 100uH               |        | R152         | 1-216-097-00 | METAL CHIP 100K 5% 1/10W  |        |
| < FILTER >      |              |                              |        | R153         | 1-216-020-00 | METAL GLAZE 62 5% 1/10W   |        |
| LPF301          | 1-235-164-00 | FILTER, LOW PASS             |        | R154         | 1-216-020-00 | METAL GLAZE 62 5% 1/10W   |        |
| LPF302          | 1-235-164-00 | FILTER, LOW PASS             |        | R155         | 1-216-005-00 | METAL CHIP 15 5% 1/10W    |        |
| < TRANSFORMER > |              |                              |        | R156         | 1-216-023-00 | METAL CHIP 82 5% 1/10W    |        |
| △PT901          | 1-423-525-11 | TRANSFORMER, POWER           |        | R157         | 1-216-023-00 | METAL CHIP 82 5% 1/10W    |        |
| < TRANSISTOR >  |              |                              |        | R201         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q151            | 8-729-904-39 | TRANSISTOR DTC114TS          |        | R202         | 1-216-001-00 | METAL CHIP 10 5% 1/10W    |        |
| Q152            | 8-729-904-39 | TRANSISTOR DTC114TS          |        | R203         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q201            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R204         | 1-216-077-00 | METAL CHIP 15K 5% 1/10W   |        |
| Q202            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R205         | 1-216-035-00 | METAL CHIP 270 5% 1/10W   |        |
| Q203            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R206         | 1-216-041-00 | METAL CHIP 470 5% 1/10W   |        |
| Q204            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R207         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q231            | 8-729-904-39 | TRANSISTOR DTC114TS          |        | R208         | 1-216-083-00 | METAL CHIP 27K 5% 1/10W   |        |
| Q232            | 8-729-904-39 | TRANSISTOR DTC114TS          |        | R209         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q233            | 8-729-904-39 | TRANSISTOR DTC114TS          |        | R210         | 1-216-077-00 | METAL CHIP 15K 5% 1/10W   |        |
| Q234            | 8-729-119-78 | TRANSISTOR 2SC2785-HFE       |        | R211         | 1-216-035-00 | METAL CHIP 270 5% 1/10W   |        |
| Q235            | 8-729-119-78 | TRANSISTOR 2SC2785-HFE       |        | R212         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q236            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R213         | 1-216-083-00 | METAL CHIP 27K 5% 1/10W   |        |
| Q237            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R214         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q251            | 8-729-230-XX | TRANSISTOR 2SC26690Y-TPE4    |        | R221         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
| Q301            | 8-729-141-30 | TRANSISTOR 2SC3623A-LK       |        | △R222        | 1-249-405-11 | CARBON 100 5% 1/4W F      |        |
|                 |              |                              |        | R223         | 1-216-101-00 | METAL CHIP 150K 5% 1/10W  |        |
|                 |              |                              |        | R231         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
|                 |              |                              |        | R232         | 1-216-077-00 | METAL CHIP 15K 5% 1/10W   |        |
|                 |              |                              |        | R233         | 1-216-037-00 | METAL CHIP 330 5% 1/10W   |        |
|                 |              |                              |        | R234         | 1-216-005-00 | METAL CHIP 15 5% 1/10W    |        |

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

# TUNER

| Ref.No. | Part No.     | Description | Remark                | Ref.No. | Part No.     | Description | Remark        |
|---------|--------------|-------------|-----------------------|---------|--------------|-------------|---------------|
| R235    | 1-216-083-00 | METAL CHIP  | 27K 5% 1/10W          | R318    | 1-216-043-00 | METAL CHIP  | 560 5% 1/10W  |
| R236    | 1-216-033-00 | METAL CHIP  | 220 5% 1/10W          | R319    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| R237    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W         | R320    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| R238    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W          | R324    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W |
| R239    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W          | △R325   | 1-249-401-11 | CARBON      | 47 5% 1/4W F  |
| R240    | 1-216-077-00 | METAL CHIP  | 15K 5% 1/10W          | R361    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| R241    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W          | R362    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| R242    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W          | R370    | 1-216-001-00 | METAL CHIP  | 10 5% 1/10W   |
| R243    | 1-216-025-00 | METAL CHIP  | 100 5% 1/10W          | R401    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W |
| △R244   | 1-249-393-11 | CARBON      | 10 5% 1/4W F          | △R402   | 1-249-409-11 | CARBON      | 220 5% 1/4W F |
| △R245   | 1-249-393-11 | CARBON      | 10 5% 1/4W F          | R404    | 1-216-041-00 | METAL CHIP  | 470 5% 1/10W  |
| △R246   | 1-249-393-11 | CARBON      | 10 5% 1/4W F          | R405    | 1-216-025-00 | METAL CHIP  | 100 5% 1/10W  |
| R251    | 1-216-037-00 | METAL CHIP  | 330 5% 1/10W          | R406    | 1-216-023-00 | METAL CHIP  | 82 5% 1/10W   |
| R252    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W          | R408    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R253    | 1-216-093-00 | METAL CHIP  | 68K 5% 1/10W          | R409    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R254    | 1-216-001-00 | METAL CHIP  | 10 5% 1/10W (AEP, EE) | R410    | 1-216-075-00 | METAL CHIP  | 12K 5% 1/10W  |
| R254    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W (G, IT) | R411    | 1-216-069-00 | METAL CHIP  | 6.8K 5% 1/10W |
| R255    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W         | △R412   | 1-247-811-31 | CARBON      | 150 5% 1/4W F |
| R256    | 1-216-079-00 | METAL CHIP  | 18K 5% 1/10W          | R413    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R257    | 1-216-063-00 | METAL CHIP  | 3.9K 5% 1/10W         | R414    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W |
| R258    | 1-216-059-00 | METAL CHIP  | 2.7K 5% 1/10W         | R415    | 1-216-101-00 | METAL CHIP  | 150K 5% 1/10W |
| △R259   | 1-249-405-11 | CARBON      | 100 5% 1/4W F         | R416    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R260    | 1-216-091-00 | METAL CHIP  | 56K 5% 1/10W          | R418    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R261    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W          | R419    | 1-216-059-00 | METAL CHIP  | 2.7K 5% 1/10W |
| R262    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W         | R421    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W |
| R264    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W         | R422    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| △R265   | 1-249-401-11 | CARBON      | 47 5% 1/4W F          | R451    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W |
| R268    | 1-216-081-00 | METAL CHIP  | 22K 5% 1/10W          | R452    | 1-216-089-91 | METAL GLAZE | 47K 5% 1/10W  |
| R269    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W         | R454    | 1-216-121-00 | METAL CHIP  | 1M 5% 1/10W   |
| R270    | 1-216-101-00 | METAL CHIP  | 150K 5% 1/10W         | R455    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R271    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W           | R456    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W |
| R272    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W           | R457    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R273    | 1-216-059-00 | METAL CHIP  | 2.7K 5% 1/10W         | R458    | 1-216-097-00 | METAL CHIP  | 100K 5% 1/10W |
| R301    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W         | R459    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R302    | 1-216-101-00 | METAL CHIP  | 150K 5% 1/10W         | R460    | 1-216-061-00 | METAL CHIP  | 3.3K 5% 1/10W |
| R303    | 1-216-101-00 | METAL CHIP  | 150K 5% 1/10W         | R501    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R304    | 1-216-096-00 | METAL CHIP  | 91K 5% 1/10W          | R502    | 1-216-049-00 | METAL CHIP  | 1K 5% 1/10W   |
| R305    | 1-216-096-00 | METAL CHIP  | 91K 5% 1/10W          | R503    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W |
| R306    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W         | △R504   | 1-249-400-11 | CARBON      | 39 5% 1/4W F  |
| R307    | 1-216-057-00 | METAL CHIP  | 2.2K 5% 1/10W         | △R505   | 1-249-408-11 | CARBON      | 180 5% 1/4W F |
| R308    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W         | R506    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R309    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W         | R507    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R310    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W         | R508    | 1-216-073-00 | METAL CHIP  | 10K 5% 1/10W  |
| R311    | 1-216-067-00 | METAL CHIP  | 5.6K 5% 1/10W         | R511    | 1-216-043-00 | METAL CHIP  | 560 5% 1/10W  |
| R312    | 1-216-063-00 | METAL CHIP  | 3.9K 5% 1/10W         | R512    | 1-216-043-00 | METAL CHIP  | 560 5% 1/10W  |
| R313    | 1-216-063-00 | METAL CHIP  | 3.9K 5% 1/10W         | R513    | 1-216-051-00 | METAL CHIP  | 1.2K 5% 1/10W |
| R314    | 1-216-041-00 | METAL CHIP  | 470 5% 1/10W          | R514    | 1-216-037-00 | METAL CHIP  | 330 5% 1/10W  |
| R315    | 1-216-041-00 | METAL CHIP  | 470 5% 1/10W          | R515    | 1-216-055-00 | METAL CHIP  | 1.8K 5% 1/10W |
| △R316   | 1-249-401-11 | CARBON      | 47 5% 1/4W F          | R516    | 1-216-069-00 | METAL CHIP  | 6.8K 5% 1/10W |
| R317    | 1-216-043-00 | METAL CHIP  | 560 5% 1/10W          | R517    | 1-216-065-00 | METAL CHIP  | 4.7K 5% 1/10W |

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# TUNER

| Ref. No. | Part No.     | Description           | Remark                | Ref. No. | Part No.     | Description                     | Remark                                       |
|----------|--------------|-----------------------|-----------------------|----------|--------------|---------------------------------|----------------------------------------------|
| R518     | 1-216-045-00 | METAL CHIP            | 680 5% 1/10W          | RV251    | 1-241-630-11 | RES, ADJ, CARBON 10K            |                                              |
| R519     | 1-216-065-00 | METAL CHIP            | 4.7K 5% 1/10W         | RV301    | 1-241-768-11 | RES, ADJ, CARBON 220K           |                                              |
| R521     | 1-216-061-00 | METAL CHIP            | 3.3K 5% 1/10W         | RV402    | 1-241-630-11 | RES, ADJ, CARBON 10K            |                                              |
| R522     | 1-216-081-00 | METAL CHIP            | 22K 5% 1/10W          |          |              | < RELAY >                       |                                              |
| R551     | 1-216-073-00 | METAL CHIP            | 10K 5% 1/10W          | RY151    | 1-755-034-11 | RELAY                           |                                              |
| R552     | 1-216-043-00 | METAL CHIP            | 560 5% 1/10W          | RY153    | 1-515-614-11 | RELAY                           |                                              |
|          |              |                       |                       |          |              | < TRANSFORMER >                 |                                              |
| R553     | 1-216-051-00 | METAL CHIP            | 1.2K 5% 1/10W         | T251     | 1-235-126-00 | ENCAPSULATED COMPONENT (G, IT)  |                                              |
| R554     | 1-216-037-00 | METAL CHIP            | 330 5% 1/10W          | T252     | 1-404-845-11 | COIL, DISCRI (PRIMARY)          |                                              |
| R555     | 1-216-089-91 | METAL GLAZE           | 47K 5% 1/10W          | T253     | 1-404-846-11 | COIL, DISCRI (SECONDARY)        |                                              |
| R556     | 1-216-069-00 | METAL CHIP            | 6.8K 5% 1/10W         | T401     | 1-404-713-11 | TRANSFORMER, IF                 |                                              |
| R557     | 1-216-065-00 | METAL CHIP            | 4.7K 5% 1/10W         |          |              | < TERMINAL >                    |                                              |
| R581     | 1-216-033-00 | METAL CHIP            | 220 1/10W             | * TM101  | 1-537-406-11 | TERMINAL BOARD (ANT) (ANTENNA)  |                                              |
| R582     | 1-216-049-00 | METAL CHIP            | 1K 1/10W              |          |              | < TEST PIN >                    |                                              |
| R602     | 1-216-073-00 | METAL CHIP            | 10K 5% 1/10W (EE)     | * TP251  | 1-565-513-11 | PIN, CONNECTOR 2P               |                                              |
| R604     | 1-216-073-00 | METAL CHIP            | 10K 5% 1/10W (IT, EE) | * TP601  | 1-565-513-11 | PIN, CONNECTOR 2P               |                                              |
| R605     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           |          |              | < VIBRATOR >                    |                                              |
| R606     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           | X501     | 1-577-126-21 | VIBRATOR, CRYSTAL (7.2MHz)      |                                              |
| R607     | 1-216-073-00 | METAL CHIP            | 10K 5% 1/10W          | X601     | 1-760-403-21 | VIBRATOR, CRYSTAL (8.4MHz)      |                                              |
| R608     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           | X801     | 1-579-900-21 | VIBRATOR, CRYSTAL (4.332MHz)    |                                              |
| R609     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           |          |              | *****                           |                                              |
| R610     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           |          |              | MISCELLANEOUS                   |                                              |
|          |              |                       |                       |          |              | *****                           |                                              |
| R611     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           | △19      | 1-575-651-21 | CORD, POWER                     |                                              |
| △R613    | 1-249-401-11 | CARBON                | 47 5% 1/4W F          | 23       | 1-690-880-11 | LEAD (WITH CONNECTOR)           |                                              |
| R614     | 1-216-049-00 | METAL CHIP            | 1K 5% 1/10W           | FL701    | 1-517-177-21 | INDICATOR TUBE, FLUORESCENT     |                                              |
| R616     | 1-216-081-00 | METAL CHIP            | 22K 5% 1/10W          | △PT901   | 1-423-525-11 | TRANSFORMER, POWER              |                                              |
| R627     | 1-216-113-00 | METAL CHIP            | 470K 5% 1/10W         |          |              | *****                           |                                              |
| R628     | 1-216-073-00 | METAL CHIP            | 10K 5% 1/10W          |          |              | ACCESSORIES & PACKING MATERIALS |                                              |
| R640     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              | *****                           |                                              |
| R641     | 1-216-057-00 | METAL CHIP            | 2.2K 5% 1/10W         |          |              | 1-501-374-11                    | ANTENNA, LOOP                                |
| R642     | 1-216-057-00 | METAL CHIP            | 2.2K 5% 1/10W         |          |              | 1-501-594-11                    | ANTENNA (FM) (AEP, EE)                       |
| R643     | 1-216-071-00 | METAL CHIP            | 8.2K 5% 1/10W         |          |              | 1-558-271-11                    | CORD, CONNECTION (AUDIO 108cm)               |
| R644     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              | 1-765-383-11                    | CORD (WITH CONNECTOR) (EON)                  |
| R645     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              | 3-758-928-11                    | MANUAL, INSTRUCTION                          |
| R646     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              |                                 | (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (AEP) |
| R647     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              | 3-758-928-41                    | MANUAL, INSTRUCTION                          |
| R648     | 1-216-025-00 | METAL CHIP            | 100 5% 1/10W          |          |              |                                 | (GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP, IT)  |
| R651     | 1-216-053-00 | METAL CHIP            | 1.5K 5% 1/10W         |          |              | 3-758-928-51                    | MANUAL, INSTRUCTION (GERMAN) (G)             |
| R652     | 1-216-053-00 | METAL CHIP            | 1.5K 5% 1/10W         |          |              | 3-758-928-71                    | MANUAL, INSTRUCTION                          |
| △R801    | 1-249-401-11 | CARBON                | 47 5% 1/4W F          |          |              |                                 | (ENGLISH, POLISH, RUSSIAN) (EE)              |
| R802     | 1-216-057-00 | METAL CHIP            | 2.2K 5% 1/10W         | *        | 4-966-660-01 | INDIVIDUAL CARTON               |                                              |
| △R901    | 1-247-727-51 | CARBON                | 10 1/2W F             | *        | 4-966-661-01 | CUSHION                         |                                              |
| △R902    | 1-247-752-11 | CARBON                | 1K 5% 1/2W F          |          |              |                                 |                                              |
| R903     | 1-216-097-00 | METAL CHIP            | 100K 5% 1/10W         |          |              |                                 |                                              |
| R904     | 1-216-089-91 | METAL GLAZE           | 47K 5% 1/10W          |          |              |                                 |                                              |
| R905     | 1-216-089-91 | METAL GLAZE           | 47K 5% 1/10W          |          |              |                                 |                                              |
| R906     | 1-216-089-91 | METAL GLAZE           | 47K 5% 1/10W          |          |              |                                 |                                              |
|          |              | < VARIABLE RESISTOR > |                       |          |              |                                 |                                              |
| RV221    | 1-241-765-11 | RES, ADJ, CARBON 22K  |                       |          |              |                                 |                                              |
| RV231    | 1-241-763-11 | RES, ADJ, CARBON 4.7K |                       |          |              |                                 |                                              |

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|----------|--------------|----------------------------|--------|------|
| *****    |              |                            |        |      |
|          |              | *****                      |        |      |
|          |              | HARDWARE LIST              |        |      |
|          |              | *****                      |        |      |
| #1       | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 IT-3 |        |      |
| #2       | 7-682-548-04 | SCREW +BVTI 3X8 (S)        |        |      |
| #3       | 7-682-548-09 | SCREW +B 3X8               |        |      |