Service Manual
FM/AM Stereo Receiver
SA-626
[PA], [PE], [PC]
SA-626(K)
[PC]

The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.

Areas:
* [PA] is available in far East PX.
* [PE] is available in European Military.
* [PC] is available in European Audio Club.

Please use this manual together with the service manual for Model No. SA-626 [M, MC] Order No. SD8101-1832.

Specification
(Specifications are subject to change without notice for further improvement.)

The following items are different from those shown in the operating instructions.

<table>
<thead>
<tr>
<th>Input sensitivity</th>
<th>Output voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHONO</td>
<td>0.35 mV (2.5 mV IHF '66)</td>
</tr>
<tr>
<td>TAPE 1 REC/PLAY</td>
<td>18 mV (180 mV IHF '66)</td>
</tr>
<tr>
<td>TAPE 2 REC/PLAY</td>
<td>15 mV (150 mV IHF '66)</td>
</tr>
<tr>
<td>TAPE 2 REC OUT</td>
<td>150 mV</td>
</tr>
</tbody>
</table>

Power consumption: 625W
Power supply: AC 50 Hz/60 Hz
110V/120V/220V/240V

Dimensions (W-H-D): 430 x 120 x 380 mm
(16-15/16" x 4-23/32" x 14-31/32")

Weight: 11.1 kg
(24.5 lb.)

Technics
Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan
MEASUREMENTS AND ADJUSTMENTS

- Adjustment points
### Setting of controls and instruments to be used.

- Before the adjustment, VR601, VR602, VR603 and VR604 should be turned to counterclockwise direction.

### AMPLIFIER ADJUSTMENT

<table>
<thead>
<tr>
<th>No.</th>
<th>ADJUSTMENTS</th>
<th>DC VOLTMETER CONNECTION</th>
<th>PARTS ADJUSTED</th>
<th>ADJUSTING PROCEDURE</th>
</tr>
</thead>
</table>
| 1   | Clamp voltage | (L channel) Between TP603 and TP602 (minus probe) (R channel) Between TP603 and TP604 (minus probe) | VR603 (L channel) VR604 (R channel) | * Turn I<sub>0</sub> semi-fixed resistors VR601, VR602 to minimum, (counterclockwise direction)  
* Adjust VR603 (L ch) and VR604 (R ch) to approx. 0.5mV after one minute warm-up time. |
| 2   | I<sub>c</sub> | (L channel) Between TP601 and TP602 (minus probe) (R channel) Between TP603 and TP604 (minus probe) | VR602 (L channel) VR602 (R channel) | * Adjust VR601 (L ch) and VR602 (R ch) to approx. 8 ~ 12mV after one minute warm-up time. |

### ADJUSTMENT OF VOLTAGE APPLIED TO THE TONE VOLUME MOTOR

- Do not apply input signal to the set.

<table>
<thead>
<tr>
<th>No.</th>
<th>ADJUSTMENTS</th>
<th>DC VOLTMETER CONNECTION</th>
<th>PARTS ADJUSTED</th>
<th>ADJUSTING PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Voltage applied to the motor</td>
<td>Between A and B</td>
<td>VR701</td>
<td>Make the tone volume up down at low speed, and adjust so that the average voltage is 3.3V between A and B.</td>
</tr>
</tbody>
</table>

* Set FM/AM allocation selector to "FM 0.2MHz/AM 10kHz" position.

### AM TUNER ADJUSTMENT

**Note:** AM OSC coil (L202) and AM 2nd IFT (T202) have been already adjusted, and require no adjustment.

**Setting and Equipment used**

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM SG)
3. Maintains line voltage at 120 volts.
4. Output of signal generator should be no higher than necessary to obtain an output reading.
5. Pull the AM ferrite-bar antenna (L201) outward.

### AM SIGNAL GENERATOR

<table>
<thead>
<tr>
<th>Step No.</th>
<th>CONNECTION</th>
<th>FREQUENCY</th>
<th>DISPLAY FREQUENCY</th>
<th>PREPARATIONS</th>
<th>PARTS ADJUSTED</th>
<th>ADJUSTING PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Common to chassis (Powerful input)</td>
<td>450kHz (30% Mod. with 400Hz)</td>
<td>Frequency of non-interference</td>
<td>Connect AC VTVM or scope to &quot;Speaker&quot; terminals of the set.</td>
<td>T201 (AM 1st IFT)</td>
<td>Adjust the input frequency and adjustment points so that the output becomes maximum.</td>
</tr>
</tbody>
</table>

### AM-IF ADJUSTMENT

1. Adjust L5 so that voltage measured by DC voltmeter is 4.1V.
2. Adjust CT1 so that voltage measured by DC voltmeter is 16.0V.

### ANALOG FREQUENCY METER ADJUSTMENT

* Set broadcast selector to "FM" position.

<table>
<thead>
<tr>
<th>No.</th>
<th>FREQUENCY</th>
<th>PREPARATIONS</th>
<th>PARTS ADJUSTED</th>
<th>ADJUSTING PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>87.9MHz</td>
<td>Connect DC VTVM to terminal.</td>
<td>L5 (FM OSC Coil)</td>
<td>Adjust L5 so that voltage measured by DC voltmeter is 4.1V.</td>
</tr>
<tr>
<td>3</td>
<td>107.9MHz</td>
<td>Connect DC VTVM to terminal.</td>
<td>CT1 (FM OSC Trimmer)</td>
<td>Adjust CT1 so that voltage measured by DC voltmeter is 16.0V.</td>
</tr>
<tr>
<td>4</td>
<td>100.1MHz</td>
<td>VR103 (Frequency meter)</td>
<td>Adjust VR103 so that the frequency meter indicates 100.1MHz (Refer to Fig. 15).</td>
<td></td>
</tr>
</tbody>
</table>
### AM-RF Adjustment

**Step No.**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Frequency</th>
<th>Preparation</th>
<th>Parts Adjusted</th>
<th>Adjusting Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Signal</td>
<td>1100 kHz</td>
<td>Connect DC VTVM to <code>S</code> terminal.</td>
<td>CT202 (AM OSC Trimmer)</td>
<td>1. Adjust CT202 so that the frequency meter indicates 1100 kHz. (Refer to Fig. 14) 2. If it is not adjustable, set the frequency to 530 kHz and adjust L202 (AM OSC Coil) so that the voltage of <code>S</code> is 1.2 ± 0.05V. 3. Next, set the frequency to 1500 kHz and make sure that the range is within that of Fig. 15. If it is not within the range, perform the adjustment of steps 1 and 3 again.</td>
</tr>
<tr>
<td>Connect AM-SG to AM antenna terminal through 200 pF capacitor. Common to chassis. (Weak input)</td>
<td>610 kHz (30% Mod. with 400 Hz)</td>
<td>Connect AC VTVM to <code>S</code> terminals of the set.</td>
<td>L201 (ANT Coil)</td>
<td>1. Adjust for maximum output. 2. Adjust ferrite core of L201 by screwdriver.</td>
</tr>
<tr>
<td>Connect AM-SG to AM antenna terminal through 200 pF capacitor. Common to chassis. (Weak input)</td>
<td>1500 kHz (30% Mod. with 400 Hz)</td>
<td>Connect AC VTVM to “Speaker” terminals of the set.</td>
<td>CT201 (ANT Trimmer)</td>
<td>1. Adjust for maximum output. 2. Repeat steps (6) and (7) until the frequency correctly matches the dial display.</td>
</tr>
</tbody>
</table>

### FM Tuner Adjustment

**Equipment used**

1. FM signal generator (FM-SG)
2. Stereo modulator
3. Distortion analyser
4. Oscilloscope
5. AC and DC electronic voltmeters (VTVM).
6. Frequency counter (19 kHz and 108 kHz measurable).
7. FM 300 Ω dummy antenna (Fig. 16).

**Setting of controls**

1. Set IF band selector to “normal” position.
2. Set broadcast selector to “FM” position.
3. Other setting are the same as in AM adjustment.

### FM SIGNAL GENERATOR

<table>
<thead>
<tr>
<th>Connection</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Signal</td>
<td>Frequency of non-interference</td>
</tr>
</tbody>
</table>

**Preparation of FM signal generator (FM-SG)**

1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 300 Ω FM dummy antenna.
3. The standard input of the set is 70 dB (1 mV), 400 Hz 100% modulation (Because of using dummy antenna, SG output must be 12 dB or less of the IFI). That is, when input is 70 dB, SG output is to be 72 dB.

### FM-IF Adjustment

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connection</th>
<th>Frequency</th>
<th>Preparation</th>
<th>Parts Adjusted</th>
<th>Adjusting Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>No-Signal</td>
<td>Frequency of non-interference</td>
<td>Connect DC VTVM between <code>TP08</code> and <code>T106</code> through choke coil. (Refer to Fig. 17)</td>
<td>T101 (Discr. IFT)</td>
<td>Adjust T101 core so that voltage measured in signal mode is 0 V in 300 mV range.</td>
</tr>
</tbody>
</table>

### FM-RF Adjustment

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connection</th>
<th>Frequency</th>
<th>Preparation</th>
<th>Parts Adjusted</th>
<th>Adjusting Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>No-Signal</td>
<td>87.9 MHz</td>
<td>Connect DC VTVM to <code>S</code> terminal.</td>
<td>L5 (OSC Coil)</td>
<td>Adjust L5 (OSC Coil) to 4.1 V.</td>
</tr>
<tr>
<td>10</td>
<td>Connect FM-SG to FM antenna terminal through 300 Ω FM dummy antenna.</td>
<td>90.1 MHz (100% Mod. with 400 Hz weak input)</td>
<td>Connect scope to “Speaker” terminals of the set.</td>
<td>L2 (RF DET Coil 1st) L3 (RF DET Coil 2nd) L1 (ANT Coil) T1 (FM IFT)</td>
<td>1. Add weak input so that noise is included in the output wave form. 2. Make the adjustment so that the output wave form is vertically symmetrical. Refer to Fig. 18. 3. Repeat the steps (10) and (11) until the frequency correctly matches the broadcast frequency display.</td>
</tr>
<tr>
<td>11</td>
<td>Connect FM-SG to FM antenna terminal through 300 Ω FM dummy antenna. (Apply 60 dB to antenna terminal)</td>
<td>106.1 MHz (100% Mod. with 400 Hz)</td>
<td>Connect scope to “Speaker” terminals of the set.</td>
<td>CT1 (OSC Trimmer)</td>
<td>1. Set the FM muting/FM mode switch to “on/auto” and then check step (8) in no signal mode. 2. If it is deflected, readjust of T101. 3. Adjust T102 core so that distortion of right and left channels are minimized.</td>
</tr>
</tbody>
</table>

### FM Mono Distortion Adjustment

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connection</th>
<th>Frequency</th>
<th>Preparation</th>
<th>Parts Adjusted</th>
<th>Adjusting Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Connect FM-SG to FM antenna terminal through 300 Ω FM dummy antenna. (Apply 60 dB to antenna terminal)</td>
<td>100.1 MHz (100% Mod. with 400 Hz)</td>
<td>Connect distortion analyser to “Speaker” terminals of the set.</td>
<td>T101, T102 (Discr. IFT)</td>
<td>1. Set the FM muting/FM mode switch to “on/auto” and then check step (8) in no signal mode. 2. If it is deflected, readjust of T101. 3. Adjust T102 core so that distortion of right and left channels are minimized.</td>
</tr>
<tr>
<td>Step No.</td>
<td>FM SIGNAL GENERATOR</td>
<td>DISPLAY FREQUENCY</td>
<td>PREPARATIONS</td>
<td>PARTS ADJUSTED</td>
<td>ADJUSTING PROCEDURE</td>
</tr>
<tr>
<td>---------</td>
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</tr>
<tr>
<td></td>
<td>CONNECTION</td>
<td>FREQUENCY</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 13      | Connect FM-SG to FM | 100.1MHz         | Connect AC VTVM or scope to "Speaker" terminals of the set. | VR101 (Muting level) | 1. Set the FM muting/FM mode switch to "off/mono".  
2. With the FM muting/FM mode switch set to "on/auto" adjust VR101 so that the output is given with muting condition released. |
|         | antenna terminal    | (100% Mod. with 400Hz) |               |                |                     |
| 14      | through 300Ω FM     | 100.1MHz         | Signal meter LED | VR102 (Meter level) | Adjust VR102 while observing the signal meter LED so that the indicator at 5th is about to turn on. |
|         | dummy antenna. (Apply 16dB to antenna terminal) |               |              |                |                     |
|         | (Apply 45dB to antenna terminal) |               |              |                |                     |
| 15      | Connect FM-SG to FM | 100.1MHz         | Connect frequency counter to TP301 terminal. | VR302 (VCO) | 1. Set the FM muting/FM mode switch to "on/auto".  
2. Adjust VR302 to 19kHz ± 30Hz. |
|         | antenna terminal    | (Non-modulated) |               |                |                     |
|         | through 300Ω FM     | 100.1MHz         |               |                |                     |
|         | dummy antenna. (Monaural signal) |               |              |                |                     |
| 16      | Connect FM-SG to FM | 100.1MHz         | Connect distortion analyzer to "Speaker" terminals of the set. | T1 (IFT) | 1. Set the FM muting/FM mode switch to "on/auto".  
2. Re-adjust the already adjusted T1 within ± 90° from the preset core position so that the distortion of L ch is minimized.  
3. Re-check the steps 8, 12 and 13. |
|         | antenna terminal    | (100% Mod. with 400Hz) |               |                |                     |
|         | through 300Ω FM     | 100.1MHz         |               |                |                     |
|         | dummy antenna. (Pilot 10% Mod. stereo signal) | | | | |
| 17      | Connect FM-SG to FM | 100.1MHz         | Connect AC VTVM to "Speaker" terminals of the set. | VR301 (Separation) | 1. Set the FM muting/FM mode switch to "on/auto".  
2. Adjust VR301 so that R output is minimized when stereo modulator is in L (L ch modulation) mode and that L output is minimized in R mode. |
|         | antenna terminal    | (100% Mod. with 1kHz) |               |                |                     |
|         | through 300Ω FM     | 100.1MHz         |               |                |                     |
|         | dummy antenna. (Pilot 10% Mod. stereo signal) | | | | |

**FM MPX PILOT (VCO) ADJUSTMENT**

- **Signal Meter LED (Light Emitting diode) Indicator Adjustment**
- **Stereo Distortion Adjustment**
- **Separation Adjustment**

[Fig. 14] (When 1100kHz)  
[Fig. 15] (When 107.9MHz)  
[Fig. 16] 300Ω FM Dummy Antenna  
[Fig. 17]  
[Fig. 18] AF output wave form
12. **S913**: FM/AM allocation selector switch in "FM 0.2 MHz/AM 10kHz" step position.

13. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

* Figures in \( \square \) stand for DC voltage in FM signal reception mode.
* Figures in \( \bigcirc \) stand for DC voltage in AM signal reception mode.
* \( \square \) marked terminal: 5V or 0V output.

14. Transistor and IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.

15. Signal lines:
- \( \rightarrow \) FM signal
- \( \rightarrow \) AM signal
- \( \rightarrow \) Audio frequency signal
- \( \rightarrow \) Positive voltage lines

**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for safety. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

- **Terminal guide of transistors and IC’s**

<table>
<thead>
<tr>
<th>Device Code</th>
<th>Device Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV1/PC108C</td>
<td>SV1/123NS</td>
<td>AN6876</td>
</tr>
<tr>
<td>SV1/PC1161C</td>
<td>SV1/123NS</td>
<td></td>
</tr>
<tr>
<td>SV1/PD4035C</td>
<td>SV1/123NS</td>
<td></td>
</tr>
<tr>
<td>SV1/74LS47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV1/74LS47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV1/74LS47</td>
<td></td>
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</tr>
<tr>
<td>SV1/74LS47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Additional icons**

1. **Gate 1**
2. **Gate 2**
3. **Drain**
4. **Source**
5. ** Drain**
6. **Gate**
7. **Source**
8. **Gate**
9. **Source**
B

Signal level
SCHEMATIC DIAGRAM

MODEL SA-626

(Notes 1:
1. S1-1 ~ S1-3: Phono input selector switch in "off" position.
2. S2-1 ~ S2-4: Tuner input selector switch in "on" position.
3. S3-1 ~ S3-3: Aux input selector switch in "off" position.
5. S502: Volume "up" switch.
7. S902: AM tuner selector switch.
10. S905: Memory set switch.
    S907 - 1 ch, S907 - 2 ch, S908 - 3 ch
    S909 - 4 ch, S910 - 5 ch, S911 - 6 ch
    S912 - 7 ch
12. S913: FM/AM allocation selector switch in "FM 0.2MHz/AM 10kHz" step position.
13. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

* Figures in [ ] are for DC voltage in FM signal reception mode.

Use caution when using the information in this document.
Notes 2:
1. **S4-1, S4-2**: Tape monitor switch in "source" position.
   - **source**: tape
2. **S5-1 ~ S5-6**: Tape monitor and rec mode switch in "Tape 1 and dubbing 2 ▸ 1" position.
   - **tape 1 and dubbing 2 ▸ 1**: tape 2 and dubbing 1 ▸ 2
3. **S6-1 ~ S6-4**: Rec mode switch in "source" position.
   - **source**: dubbing
4. **S7-1, S7-2**: Audio muting switch in "0 dB" position.
   - **0 dB**: -20 dB
5. **S8-1, S8-2**: Loudness switch in "off" position.
   - **off**: on
6. **S9-1 ~ S9-4**: Operation switch in "straight DC" position.
   - **straight DC**: via tone
7. **S10-1, S10-2**: Subsonic filter switch in "off" position.
   - **off**: on
8. **S11-1, S11-2**: High filter switch in "off" position.
   - **off**: on
9. **S12-1, S12-2**: FM/mode/muting switch in "FM auto/muting on" position.
   - **FM auto/muting on**: FM mono/muting off
10. **S13-1, S13-2**: Auto scan switch in "on (auto)" position.
    - **on (auto)**: off (manual)
11. **S14-1, S14-2**: Main speaker switch in "on" position.
    - **on**: off (manual)
12. **S15-1, S15-2**: Remote speaker switch in "off" position.
13. **S16**: Power source switch in "on" position.
14. **Signal line**: Positive voltage lines
   - **Audio frequency signal**:

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The shaded area on this schematic diagram incorporates special features important for safety. When servicing it, it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.
Voltage applied to the motor