SERVICE MANUAL

INTEGRATED STEREO AMPLIFIER
SANSUI AU-919

SPECIFICATIONS:

Power output
Min. RMS, both channels driven, from 10 to 20,000 Hz, with no more than 0.005% total harmonic distortion
100 watts per channel into 8 ohms

Load impedance ........................................... 8 ohms

Total harmonic distortion (POWER AMP IN)
less than 0.008% at or below rated min. RMS power output

Intermodulation distortion (70 Hz: 7 kHz: 4 kHz S/N ratio)
less than 0.035% at or below rated min. RMS power output

Rise time .................................................. 0.5 sec

Frequency response (at 1 watt) (POWER AMP IN)
DC to 500,000 Hz ±3 dB

Damping factor (1 kHz, both channels driven)
100 into 8 ohms

RIAA curve deviation (PHONO, 20 Hz to 20 kHz)
+0.2 dB, -0.2 dB

Input sensitivity and impedance (input, for rated power output)
PHONO-1 (MC) ........................................ 0.3 mV/10 ohms

(Max. input capability: 30 mV at 1 kHz, less than 0.01% total harmonic distortion)

PHONO-1, 2 (MM) .................................. 2.5 mV/47 kohms

(Max. input capability: 350 mV at 1 kHz, less than 0.01% total harmonic distortion)

AUX, TUNER, TAPE PLAY .................................. 150 mV/47 kohms

POWER AMP IN ........................................ 1 V/47 kohms

Output level and impedance (1,000 Hz)
TAPE REC (pin jack) .................................... 1.0 mV into 47 ohms

PREAMP OUT ............................................. 1 V into 47 kohms

Channel separation (1 kHz, at rated power output)
PHONO-1 (MC) ........................................ 70 dB
PHONO-1, 2 (MM) ........................................ 75 dB
AUX, TUNER, TAPE PLAY .................................. 80 dB

Hum and noise (short-circuit, A-network)
PHONO-1 (MC) ........................................ 14 dB
PHONO-1, 2 (MM) ........................................ 90 dB
AUX, TUNER, TAPE PLAY .................................. 100 dB

Controls
BASS .................................................. ±6 dB (50 Hz)

Tone selector ........................................... ±6 dB (15 kHz)

TREBLE ............................................... ±8 dB (1 kHz)

Tone selection ........................................ 5 kHz, 6 kHz

SUBSONIC ........................................ -3 dB (16 Hz), 6 dB/dec

MUTING .................................................. -20 dB

Power requirements
Power voltage ........................................ 100, 120, 220, 240V (50/60 Hz)

Power consumption ........................................ 8 watts

Rated impedance ........................................ 480 ohms

Dimensions .................................................. 430 mm (16-1/2") W

168 mm (6-5/8") H

428 mm (16-7/8") D

Weight .................................................. 21.4 kg (47.2 lbs net)

23.8 kg (52.5 lbs) packed

* Design and specifications subject to changes without notice for improvements.

Sansui
SANSUI ELECTRIC CO., LTD.
1. BLOCK DIAGRAM

2. CIRCUIT DESCRIPTION

2-1. MC Head Amp and Phono Equalization Circuit

MC HEAD AMP (F-2833)

DC Equalizer AMP (F-2835)
Differential DC+DC (DCX) DC

Input 20mV 100KΩ

Output 400mV 500Ω

Input 20mV 100KΩ

Output 400mV 500Ω
• MC Head Amp and Phono Equalization Circuit (Refer to Fig. 2)  
  The circuit configuration from MC head Amp to output of power amp stage used in AU-919 is a fully push-pull DC amp with direct coupled input-capacitor-less DC amplifier. In order to ignore the time constant with ogging or leading phase caused by input capacitor, FET input circuits are employed. By this, higher slew-rate and low-noise factor can be obtained.

1) MC (Moving Coil) type cartridge generally requires head amp to boost up weak signal from the stylus. The pre-amp section of AU-919 includes this head amp and conventional phono equalizer circuit for MM (Moving Magnet) type cartridge. MC type cartridge provides high frequency performance and excellent tonal quality, but its output voltage from stylus is as low as approx. 0.1mV, the MC head amp or step-up transformer is needed as mentioned above. To ensure the outstanding performance in tone quality and signal-to-noise ratio(S/N), AU-919 employs the head amp which meets with these requirements. The circuit configuration of MC head amp in AU-919 is input-capacitor-less (ICL) direct coupled complementary circuit using low-noise and high gain FETs of Pch and Nch in parallel connection on both channels. The requirements of MC head amp are to provide a enough S/N ratio and gain to connect the MC head amp to conventional phono equalizer. (approximately 28dB for MC cartridge with output impedance, 10 ohms). As high gain can be obtained equivalently by connecting low-noise & high gain FET in parallel, remarkable S/N ratio and gain(gm) can be obtained.

The relation between noise and gm of FET is indicated as shown below:

\[ \text{em} = 4.4 \times \text{KT} \times \frac{1}{T} \times \frac{1}{B} \times \frac{1}{R} \]

Where:
- em = Noise voltage
- K = Boltzman constant
- T = Absolute temperature
- B = Band width
- R = Channed resistance of FET (+ 1/\mu m)

2) Phono equalizer circuit
  The channel resistance R of FET is equal to 1/\mu m. By this, when FETs are connected in parallel, the total gm becomes higher and S/N ratio is excessively improved.

On AU-919, -14dB of total noise level under equivalent input is obtained. The circuit as shown in Fig. 2-1 uses ICL construction with total six low-noise Dual-FETs per channel (in case of using rank 2 of the FET) in parallel push-pull connection, and Diamond differential DC(DD/DC) circuit with fully push-pull transistor in output stage of the pre-amp section.

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d) Operation and Features of Diamond Differential DC(DD/DC) Circuit (Refer to Fig. 2-2)  
  1) Features
     a) The DD/DC circuit has been developed based on Sansui's latest electronic technology and our sound policy which have been living in our tradition since a series of Sansui AU-517 & AU-717. That is, the performance of this AU-919 is positively pursued and improved in dynamic characteristics as well as in static characteristics.
     b) By improving open-loop characteristics to perform NF properly and providing sufficient current margin for this circuit, TIM (Transit Indetermination Modulation) distortion has been able to be reduced.

  2) NFB and TIM distortion
     As shown in Fig. 2-3, in a conventional power amplifier, an NF signal delay due to the constant of impedance element, and it is operated with an input signal. As by this lagging, the phase of NF signal does not coincide with that of input signal, it is not possible to feedback the signal instantaneously containing transient components such as music with various harmonics. As a result, it brings TIM distortion which the waveform of output signal clips instantaneously. For this reason, the input signal cannot be purely amplified and distortion is incurred.

     Taking into consideration on TIM distortion and NFB, they are essentially enhancement of better sound quality in dynamic characteristics, also NF is very effective for following points.
     1) Improvement of non-linear distortion.
     2) Stabilization of output signal temperature drift, caused by current fluctuations, and fluctuation of power source voltage.
     3) Reduction of amplifier noise.
     4) Improvement of input and output impedance.

On the other hand, Fig. 2-4 below shows the change of the required current to provide NFB. Thin Fig. shows that it is necessary to increase the required current in order to increase the NFB and that the more open-loop characteristics becomes narrow, the more the required current becomes large. This means that if ample current margin is not available, TIM distortion will be arired.

3. Prevention of TIM distortion
   The prevention methods of TIM distortion are as follows:
   1) To minimize NFB amount
   2) To apply local feedback to the voltage amplification stage in order to improve main feedback.
   3) To apply current as much as possible into the voltage amplification stage.
   4) To connect a filter so that a transient input signal does not enter into the input stage beyond response of the amplifier.

   This AU-919 adopts the abovementioned methods 1) to 5), also the DD/DC circuit is designed to achieve the subject above (Item 3). As shown in Fig. 3-4, when figuring out currents values required for each voltage amplification stage of the amplifier, assuming that the most severe case (an input which is large enough to operate the amplifier and contains infinite frequency components) is applied to the amplifier, it is found that large current is required for second and its following stages of this section. Therefore, AU-919 also provides the DD/DC circuit to prevent annoying TIM distortion.

4. Operation of Diamond Differential DC Circuit for Large Current Drive
   DD/DC circuit which is one of methods to prevent TIM distortion can supply an amplifier itself with large current required.

   1) Fig. 2-7 shows the fundamental circuit of DD/DC section. The voltage differential circuit consists of TR07 and TR09 as well as TR11 and TR13. On the other hand, the current differential circuit consists of TR08 and TR12. Therefore, AU-919 also provides the DD/DC circuit to prevent annoying TIM distortion.

The complementary circuit in Fig. 2-5 consists of TR07 and TR13 and two input signals into these TR07 and TR13 are not amplified and are only, where a larger signal including positive (+) side component into TR07 and negative (-) side into TR13 is applied to the inputs, the circuit functions and outputs only half wave with large amount of current each other from two outputs. TR09 and TR11 perform the turns function in Fig. 2-7, and the input signals are combined each other with half wave, so that TR19 and TR21 in next stage operate as a push-pull function and large current is able to be freed.
### 3. ADJUSTMENTS

**Notes:**
1. Lev'l Volume ................................ Minimum
2. Room Temperature .............................. 18°C ~ 24°C
3. When replacing some parts or circuit board, refer to description in REMARKS.
4. For this adjustment, run the unit for more than 3 minutes after the power is switched ON.

#### 3.1. MC Head Amp (F-2833) Adjustment (See Fig. 3-1 & 3-4)

<table>
<thead>
<tr>
<th>STEP</th>
<th>SUBJECT</th>
<th>MEASURE OUTPUT</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Voltage Adj.</td>
<td>L-ch + side</td>
<td>Between chassis (GND) and one of Drains of FET10, FET7, FET6, FET09, FET11 (between GND and [ in Fig. 3-1])</td>
<td>VR03 (L-Ch) F-2833</td>
<td>+10V ±1V</td>
</tr>
<tr>
<td>2</td>
<td>R-ch + side</td>
<td>Between chassis (GND) and one of Drains of FET02, FET04, FET06, FET08, FET08, FET10, FET12 (between GND and [ in Fig. 3-1])</td>
<td>VR04 (R-Ch) F-2833</td>
<td>-10V ±1V</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>L-ch — side</td>
<td>Between chassis (GND) and one of Drains of FET13, FET15, FET17, FET19, FET21, FET23 (between GND and [ in Fig. 3-1])</td>
<td>VR05 (L-Ch) F-2833</td>
<td>0V ±1V</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>R-ch — side</td>
<td>Between chassis (GND) and one of Drains of FET14, FET16, FET18, FET20, FET22, FET24 (between GND and [ in Fig. 3-1])</td>
<td>VR06 (R-Ch) F-2833</td>
<td>0V ±1V</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Balance adj.</td>
<td>in case of using distortion-meter</td>
<td>Minimum distortion</td>
<td>VR01 (L-Ch) VR02 (R-Ch) F-2833</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Balance adj. in step 5 with distortion meter.
  1. Feed sine-wave signal, 1 kHz to PHONO-1.
  2. Connect distortion meter to TAPE-REC input terminal and set output level of TAPE-REC to 20 Vrms by adjusting audio oscillator output.
  3. Add 10 ohm, 1/4W, across output terminal of audio oscillator to have impedance matching.
- Balance adjust, without distortion meter.
  1. VR01 . . . . . Set VR01 to 2/3 position from max. point.
  2. VR02 . . . . . Set VR02 to 2/3 position from min. point.

#### 3.2. Equalizer (F-2835) Adjustment (See Fig. 3-2)

<table>
<thead>
<tr>
<th>STEP</th>
<th>SUBJECT</th>
<th>MEASURE OUTPUT</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC0V Adj.</td>
<td>Between GND &amp; common joint of R66, R99 (between GND and [ in Fig. 3-2]</td>
<td>VR01 (L-Ch) F-2835</td>
<td>DC 0V ±50 mV</td>
<td>Before turning ON power switch, set VR01 &amp; VR02 to center position.</td>
</tr>
<tr>
<td>2</td>
<td>DC0V Adj.</td>
<td>Between GND &amp; common joint of R66, R70</td>
<td>VR02 (R-Ch) F-2835</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.3. Flat Amp (F-2841) Adjustment (See Fig. 3-3)

<table>
<thead>
<tr>
<th>STEP</th>
<th>SUBJECT</th>
<th>MEASURE OUTPUT</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC0V Adj.</td>
<td>Between GND &amp; TEST POINT from emitter of TR14 through R44 (TEST POINT between [ &amp; [ in Fig. 3-3])</td>
<td>VR03 (L-Ch) F-2841</td>
<td>DC 0V ±10 mV</td>
<td>Before turning ON power switch, set VR01 &amp; VR02 to center position.</td>
</tr>
<tr>
<td>2</td>
<td>DC0V Adj.</td>
<td>Between GND &amp; TEST POINT from emitter of TR14 through R44 (TEST POINT between [ &amp; [ in Fig. 3-3])</td>
<td>VR04 (R-Ch) F-2841</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.4. Driver Circuit (F-2839) Adjustment (See Fig. 3-3/3-4)

<table>
<thead>
<tr>
<th>STEP</th>
<th>SUBJECT</th>
<th>MEASURE OUTPUT</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC0V Adj.</td>
<td>Speaker terminal (L-Ch) (see Fig. 3-3)</td>
<td>VR01 (L-Ch) F-2839</td>
<td>DC 0V ±1 mV</td>
<td>Before turning ON power switch, set VR01 &amp; VR02 to center position.</td>
</tr>
<tr>
<td>2</td>
<td>DC0V Adj.</td>
<td>Speaker terminal (R-Ch) (see Fig. 3-3)</td>
<td>VR02 (R-Ch) F-2839</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bias current Adj.</td>
<td>Between emitters of power transistors, TR705 &amp; TR706 (between [ &amp; [ in Fig. 3-4)</td>
<td>VR03 (L-Ch) F-2839</td>
<td>DC 20 mV ±1 mV</td>
<td>Before turning ON power switch, set VR03 &amp; VR04 fully counter-clockwise. This bias current adjustment converts current value into voltage by Ohms’ Law.</td>
</tr>
<tr>
<td>4</td>
<td>Bias current Adj.</td>
<td>Between emitters of power transistors, TR706 &amp; TR708 (between [ &amp; [ in Fig. 3-4)</td>
<td>VR04 (R-Ch) F-2839</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- When replacing FETs on F-2833 there are six kinds of FET: 2SK163 (P type) and 2SK184 (N type) on F-2833, MC Head Amp Circuit Board. When replacing some of FETs, use same rank of the 2SK163 and 2SK184 as a pair per one channel. Also, total quantities of FETs per one channel are determined depending upon the respective FET ranks having slightly different gain (pin).
- Total quantities of 2SK163 and 2SK184 per one channel due to different ranks. |
4. PARTS LOCATION & PARTS LIST

4-1. F-2839 Driver Amp Circuit Board  (Stock No. 757991)
Conductor Side

Since some of capacitors and resistors are omitted from parts list in this Service Manual, refer to the Common Parts List for capacitors & resistors which was appended previously to each Sansui Manual.

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4-2. F-2833 MC Head Amp Circuit Board
(Stock No. 7610321)

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Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>2001-66</td>
<td>031756</td>
<td>2N3904 B</td>
<td>1A-10</td>
</tr>
<tr>
<td>2001-66</td>
<td>031755</td>
<td>2N3904 A</td>
<td>1A-10</td>
</tr>
<tr>
<td>351-1</td>
<td>031151</td>
<td>2N3904 C</td>
<td>1A-10</td>
</tr>
<tr>
<td>351-1</td>
<td>031152</td>
<td>2N3904 D</td>
<td>1A-10</td>
</tr>
<tr>
<td>1-37</td>
<td>031153</td>
<td>2N3904 E</td>
<td>1A-10</td>
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Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-66</td>
<td>031756</td>
<td>2N3904 B</td>
<td>1A-10</td>
</tr>
<tr>
<td>2001-66</td>
<td>031755</td>
<td>2N3904 A</td>
<td>1A-10</td>
</tr>
<tr>
<td>351-1</td>
<td>031151</td>
<td>2N3904 C</td>
<td>1A-10</td>
</tr>
<tr>
<td>351-1</td>
<td>031152</td>
<td>2N3904 D</td>
<td>1A-10</td>
</tr>
<tr>
<td>1-37</td>
<td>031153</td>
<td>2N3904 E</td>
<td>1A-10</td>
</tr>
</tbody>
</table>
4.6. F-2841 Flat Amp Circuit Board (Stock No. 7596641)

Conductor Side

Parts List

<table>
<thead>
<tr>
<th>Parts No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
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<tbody>
<tr>
<td>TR11, 12</td>
<td>0300140.1</td>
<td>2SC1845 E. U</td>
<td>18.2B</td>
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<tr>
<td>TR13, 14</td>
<td>0300145.1</td>
<td>2SC1845 E. U</td>
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<tr>
<td>TR15, 16</td>
<td>0300150.1</td>
<td>2SC1845 E. U</td>
<td>18.2B</td>
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</tbody>
</table>

4.7. F-2844 Power Supply Circuit Board for pre-amp section (Stock No. 7503001)

Conductor Side

Parts List

<table>
<thead>
<tr>
<th>Parts No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR1</td>
<td>0300252.1</td>
<td>2SC3375 D. E</td>
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</tr>
<tr>
<td>TR2</td>
<td>0300254.1</td>
<td>2SC1400 B1 E. U</td>
<td>1</td>
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<td>TR3</td>
<td>0300255.1</td>
<td>2SC677 D. E</td>
<td>1</td>
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<tr>
<td>TR4</td>
<td>0300256.1</td>
<td>2SC750 D. E</td>
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<td>TR5</td>
<td>0300257.1</td>
<td>2SC3755 F. G</td>
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<td>TR6</td>
<td>0300258.1</td>
<td>2SC4799 F. G</td>
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Parts No. | Stock No. | Description | Position |
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<thead>
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<tbody>
<tr>
<td>D</td>
<td>0311100.1</td>
<td>1800152</td>
<td>1</td>
</tr>
<tr>
<td>Zener D</td>
<td>0316510.1</td>
<td>RC204 B</td>
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</table>

Parts No. | Stock No. | Description | Position |
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<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0300190.1</td>
<td>0.1uf 100V F.C.</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>0300191.1</td>
<td>0.05uf 100V M.C.</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>0300192.1</td>
<td>0.002uf 100V M.C.</td>
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<tr>
<td>C</td>
<td>0300193.1</td>
<td>0.001uf 100V M.C.</td>
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<tr>
<td>C</td>
<td>0300194.1</td>
<td>0.0001uf 100V M.C.</td>
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Parts No. | Stock No. | Description | Position |
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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>0300195.1</td>
<td>180100152</td>
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4-8. F-2834 Input Terminal Circuit Board
Conductor Side

<table>
<thead>
<tr>
<th>Parts No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 01.02</td>
<td>0290105</td>
<td>1MO 1/3W C.R.</td>
<td>1</td>
</tr>
<tr>
<td>R 03.04</td>
<td>0290105</td>
<td>1MO 1/3W C.R.</td>
<td>1</td>
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<tr>
<td>R 07.08</td>
<td>0290106</td>
<td>100K 1/3W C.R.</td>
<td>2</td>
</tr>
<tr>
<td>R 09.10</td>
<td>0290105</td>
<td>1MO 1/3W C.R.</td>
<td>2</td>
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<tr>
<td>R 11.12</td>
<td>0290105</td>
<td>1MO 1/3W C.R.</td>
<td>2</td>
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<tr>
<td>2200520</td>
<td>4P Input Terminal (TUNER, AUX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200630</td>
<td>4P Input Terminal (PHONE-1, 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200650</td>
<td>4P Input Terminal (TAPE-1, 2)</td>
<td></td>
<td></td>
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</tbody>
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4-9. F-2838 Circuit Board between Pre & Main amp
Conductor Side

4-10. F-2846 Muting, Jump, Tone Defeat Circuit Board
Conductor Side

<table>
<thead>
<tr>
<th>Parts No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>C 01.02</td>
<td>0515100</td>
<td>10uF 50V E.C</td>
<td>B</td>
</tr>
<tr>
<td>C 03.04</td>
<td>0515100</td>
<td>10uF 50V E.C</td>
<td>B</td>
</tr>
<tr>
<td>R 01.02</td>
<td>0290105</td>
<td>1MO 1/3W C.R.</td>
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<tr>
<td>R 03.04</td>
<td>0290106</td>
<td>6.8K 1/3W C.R.</td>
<td>A</td>
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<tr>
<td>R 05.06</td>
<td>0290172</td>
<td>4.7K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>R 07.09</td>
<td>0280122</td>
<td>2.2K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>R 09.10</td>
<td>0280103</td>
<td>62K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>R 11.12</td>
<td>0290100</td>
<td>103K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>VR01</td>
<td>1013702</td>
<td>1250K0 (M.I.)</td>
<td>A</td>
</tr>
<tr>
<td>S 01</td>
<td>1171120</td>
<td>Lever Switch, Muting</td>
<td>A</td>
</tr>
<tr>
<td>S 02</td>
<td>1171120</td>
<td>Lever Switch, Jump</td>
<td>B</td>
</tr>
<tr>
<td>S 03</td>
<td>1171120</td>
<td>Lever Switch, Tone Defeat</td>
<td>B</td>
</tr>
<tr>
<td>S 04</td>
<td>1171120</td>
<td>Lever Switch, Equalizing Filter</td>
<td>B</td>
</tr>
<tr>
<td>2411570</td>
<td>4P Connector</td>
<td></td>
<td></td>
</tr>
</tbody>
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4-11. F-2842 Tone Control Circuit Board
Conductor Side

<table>
<thead>
<tr>
<th>Parts No.</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 01.02</td>
<td>0690062</td>
<td>0.33uF 100V</td>
<td>B</td>
</tr>
<tr>
<td>C 03.04</td>
<td>0690016</td>
<td>0.004uF 100V</td>
<td>B</td>
</tr>
<tr>
<td>R 01.02</td>
<td>0280103</td>
<td>56K 1/3W C.R.</td>
<td>A</td>
</tr>
<tr>
<td>R 03.04</td>
<td>0290106</td>
<td>6.8K 1/3W C.R.</td>
<td>A</td>
</tr>
<tr>
<td>R 05.05</td>
<td>0280172</td>
<td>4.7K 1/3W C.R.</td>
<td>A</td>
</tr>
<tr>
<td>R 07.09</td>
<td>0290122</td>
<td>2.2K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>R 09.10</td>
<td>0280103</td>
<td>62K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>R 11.12</td>
<td>0290100</td>
<td>103K 1/3W C.R.</td>
<td>B</td>
</tr>
<tr>
<td>VR01</td>
<td>1013702</td>
<td>250K0 (M.I.)</td>
<td>A</td>
</tr>
<tr>
<td>S 01</td>
<td>1171120</td>
<td>Lever Switch, Tone Control</td>
<td>B</td>
</tr>
<tr>
<td>S 02</td>
<td>1171120</td>
<td>Lever Switch, Tone Control</td>
<td>B</td>
</tr>
<tr>
<td>S 03</td>
<td>1171120</td>
<td>Lever Switch, Tone Control</td>
<td>B</td>
</tr>
<tr>
<td>S 04</td>
<td>1171120</td>
<td>Lever Switch, Tone Control</td>
<td>B</td>
</tr>
<tr>
<td>2411250</td>
<td>4P Connector</td>
<td></td>
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</table>
4-12. F-2843 Turn-over Circuit Board
Conductor Side

![Circuit Board Diagram]

Parts List

<table>
<thead>
<tr>
<th>P/N</th>
<th>Stock No.</th>
<th>Description</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>01:01</td>
<td>06890651</td>
<td>0.12µF 100V M.C.</td>
</tr>
<tr>
<td>C</td>
<td>01:02</td>
<td>06890658</td>
<td>0.25µF 100V M.C.</td>
</tr>
<tr>
<td>C</td>
<td>01:06</td>
<td>06890659</td>
<td>0.01µF 100V M.C.</td>
</tr>
<tr>
<td>C</td>
<td>01:08</td>
<td>06890643</td>
<td>0.036µF 100V M.C.</td>
</tr>
<tr>
<td>C</td>
<td>01:13</td>
<td>06892302</td>
<td>3000µF 125V P.C.</td>
</tr>
<tr>
<td>R</td>
<td>02:01</td>
<td>0290105</td>
<td>1MΩ 1/3W R</td>
</tr>
<tr>
<td>R</td>
<td>02:02</td>
<td>0290105</td>
<td>1MΩ 1/3W R</td>
</tr>
<tr>
<td>R</td>
<td>02:03</td>
<td>0290105</td>
<td>1MΩ 1/3W R</td>
</tr>
<tr>
<td>R</td>
<td>02:05</td>
<td>0290105</td>
<td>1MΩ 1/3W R</td>
</tr>
<tr>
<td>S</td>
<td>01:01</td>
<td>1131410</td>
<td>Push Switch, Tone Selector</td>
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</table>

4-13. F-2928 Rectifier Circuit Board
Conductor Side

![Circuit Board Diagram]

Parts List

<table>
<thead>
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<th>P/N</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>01:01</td>
<td>0310340</td>
</tr>
<tr>
<td>D</td>
<td>03:04</td>
<td>0310340</td>
</tr>
<tr>
<td>C</td>
<td>01:01</td>
<td>0680108</td>
</tr>
<tr>
<td>F</td>
<td>01:01</td>
<td>0431220</td>
</tr>
<tr>
<td>F</td>
<td>02:01</td>
<td>0431320</td>
</tr>
<tr>
<td>F</td>
<td>02:02</td>
<td>0432220</td>
</tr>
<tr>
<td>F</td>
<td>02:03</td>
<td>0434060</td>
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<tr>
<td>F</td>
<td>03:01</td>
<td>0431240</td>
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4-14. F-2836 Tape Playback Circuit Board

Parts List

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<tr>
<th>P/N</th>
<th>Stock No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>S</td>
<td>01:01</td>
<td>1131400</td>
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<tr>
<td></td>
<td>2411570</td>
<td>2.5AMP Connector</td>
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<td>2411590</td>
<td>6P Connector</td>
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4-15. F-2837 Tape-copy Switch Circuit Board

Parts List

<table>
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<tr>
<th>P/N</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1102760</td>
<td>Rotary Switch, Tape Rec</td>
</tr>
<tr>
<td></td>
<td>2411590</td>
<td>5P Connector</td>
</tr>
</tbody>
</table>

Abbreviations

<table>
<thead>
<tr>
<th>C.R.</th>
<th>S.R.</th>
<th>C.E.</th>
<th>B.P.E.C.</th>
<th>C.C.</th>
<th>M.C.</th>
<th>O.C.</th>
<th>P.C.</th>
<th>T.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Resistor</td>
<td>Solid Resistor</td>
<td>Electrolytic Capacitor</td>
<td>Bi-Polar Electrolytic Capacitor</td>
<td>Ceramic Capacitor</td>
<td>Mica Capacitor</td>
<td>Oil Capacitor</td>
<td>Polystyrene Capacitor</td>
<td>Tantalum Capacitor</td>
</tr>
<tr>
<td>Cement Resistor</td>
<td>Metal Film Resistor</td>
<td>Fusing Resistor</td>
<td>Non-Inflammable Resistor</td>
<td>Mylar Capacitor</td>
<td></td>
<td></td>
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</table>
5. OTHER PARTS

5-1. Front View

5-2. Top View
6. REPLACEMENTS & REPAIR NOTES

6-1. Power Supply Circuit Board, F-2844 for pre-amp section (refer to pictures on page 9. 10)
1) Remove bottom plate 15
2) Take off a screw for installing F-2844
3) The circuit board, F-2844 can be easily off by detaching double-faced adhesive tape just on the back of point (A).

2. Power Supply Circuit Board, F-2845 for power amp section
1) Take off 8 screws (b, c, d, e, f, g, h, i) fixing the taps of electrolytic capacitors of C705, C703, C704, C706 with the circuit board.
2) Disconnect a grey wire soldered only on GND tag, (f).
3) Plug out two orange wires from plug socket, “k”, on the circuit board.

3. Protector Circuit Board, F-2840 and Rectifier Circuit Board, F-2928
1) Remove bottom plate first.
2) Take off 5 screws (l, m) for installing the rear panel and the panel will be easily off.
3) Then take off 4 screws (n, o) installing F-2840 board, and the F-2840 with F-2928 board can be off. (The board, F-2840, can be separated from F-2928 by removing two screws, {p}.)

4. Power transistors
1) Remove bottom plate.
2) Take 4 screws (q, r, s, t) off for installing heat sink and disconnect wires {u, v}, then pull the heat sink out of bottom side.

6-2. Repair notes
1) Turn level volume down or power switch off, when inserting or disconnecting shielded cable with plug into/out of input terminals on rear panel of AU-919.
Otherwise, power driver transistor(s) or speaker would be defective due to clicks occurred by the contact inside the female plug.
2) If you replace the defective power transistor(s), check all other transistors on driver amp circuit board, F-2839.
3) When dismounting heat sink, check or repair of equalizer amp circuit board, F-2833 can be made, as the circuit board is held with heat sink together by two screws.
4) There are six kinds of ranks (K2, L1, L2, M1, M2, N) of both FETs, 2SK163 and 2SJ44 respectively on MC head amp circuit board, F-2833, and the circuitry on the board is parallel-connected complementary arrangement using PNP (2SK163) and NPN type (2SJ44) FET.
When you replace either 2SK163 or 2SJ44, please note the following instructions referring to the list on page 3
1. Use same rank of all FETs on one channel.
2. Each rank of FET determines the total gain in quantity per one channel, therefore, total quantity of FET on one channel is dependent upon the rank, due to slightly different gm. even in the same name FET.
* As to total quantities of 2SK163 and 2SJ44 per one channel, refer to the list on page 3.

7. NOTES/ When using external system selector for switching audio components—receivers, amplifiers, decks and loudspeakers, etc.

Please consider the following notes when using the external system selector with this AU-919 having wide-spread frequency range extended to 500 kHz and high slew rate, 200V/μsec.
1) To avoid hum-noise, blow of power or driver transistors, connect firmly an earth wire between turntable, the external system selector and this AU-919.
2) Do not connect earth wire commonly between outer shielded side (GND) of pin cord (or outer side of female pin plug of input terminal of AU-919) and GND terminal(s) of the system selector.
3) After the above connection, confirm that oscillation noise or annoying noise dose not come from loudspeakers, if possible, that additionally it does not make oscillation through wide bandwidth 10 MHz or more oscilloscope.
8. SCHEMATIC DIAGRAM /8-1. Pre/Main Section