

ST-88

AEP,
UK and USA Model



For Service Manuals Contact
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FM STEREO/ FM-AM TUNER

SPECIFICATIONS

Fm Tuner Section

Tuning range: 87.5 to 108 MHz

Antenna: 300 ohms balanced

Intermediate frequency: 10.7 MHz

Usable sensitivity: 2.2 μ V (IHF)
1.7 μ V (S/N = 30 dB)

S/N ratio: 65 dB

Capture ratio: 2.5 dB

Selectivity: 50 dB (IHF)

Image rejection: 45 dB

Spurious rejection: 75 dB

A-m suppression: 45 dB

Frequency response: 30 Hz to 15 kHz \pm 2 dB

Harmonic distortion: Mono; 0.5 % at 400 Hz 100 % Mod.
Stereo; 0.8 % at 400 Hz 100 % Mod.

Fm Stereo separation: greater than 36 dB at 400 Hz

A-m Tuner Section

Tuning range: 530 to 1,605 kHz

Antenna: Built-in bar antenna with external
antenna provision

Intermediate frequency: 455 kHz (USA and AEP Model)
468 kHz (UK Model)

Sensitivity: 48 dB/m, built-in antenna
100 μ V, external antenna

19 kHz, 38 kHz suppression: 45 dB

S/N ratio: 50 dB

Image rejection: 40 dB at 1,000 kHz
45 dB at 1,400 kHz

I-f rejection: 30 dB at 1,000 kHz

Harmonic distortion: 0.8 %

General

Power requirements: 120 V, 60 Hz ac (USA Model)
110, 127, 220, 240 V 50/60 Hz ac
(AEP and UK Model)

Power consumption: 10 W

Dimensions: 128 (w) x 232 (h) x 210 (d) mm
5 $\frac{1}{16}$ (w) x 9 $\frac{1}{8}$ (h) x 8 $\frac{1}{4}$ (d) inches

Net weight: approx. 2.7 kg (5 lb 15 oz)

Shipping weight: approx. 3.2 kg (7 lb 1 oz)

SONY[®]

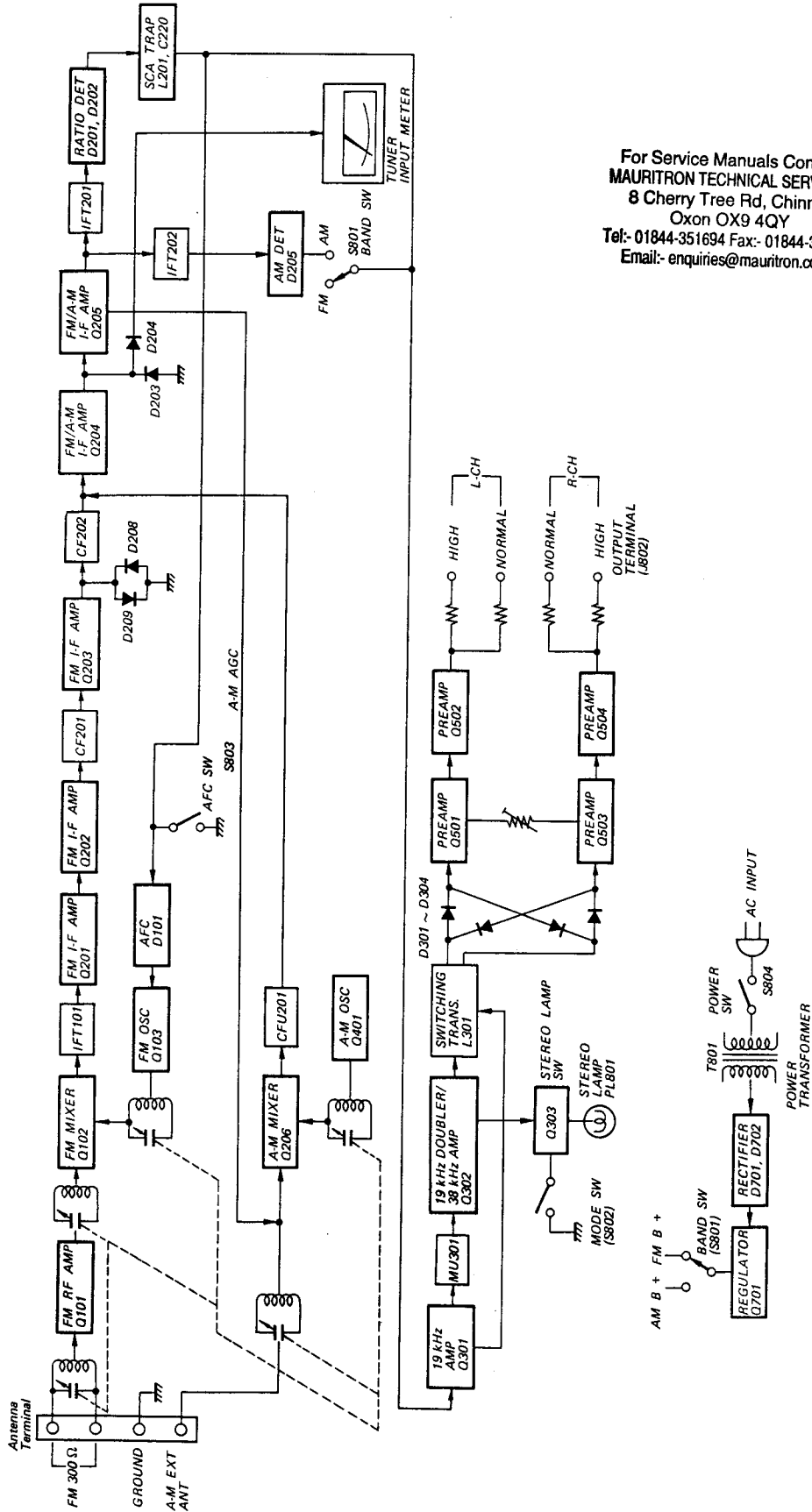
SERVICE MANUAL

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TECHNICAL DESCRIPTION

1-1. BLOCK DIAGRAM



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SECTION 2

DISASSEMBLY AND REPLACEMENT

Note: All screws in this service manual are Phillips type (cross recess), unless otherwise specified.
(-): slotted head

2-1. WOODEN CASE REMOVAL

1. Remove the four screws (P 4 x 16) securing the wooden case to the chassis along with the rubber feet.
2. Remove the two screws as shown in Fig. 2-1.

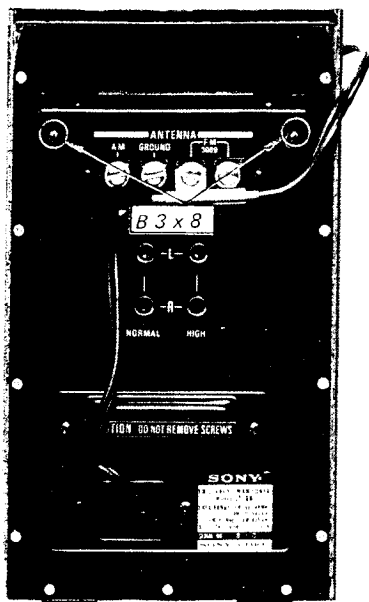


Fig. 2-1. Wooden case removal

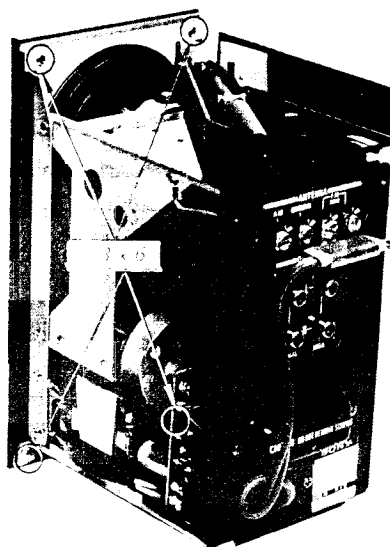


Fig. 2-2. Front panel removal (1)

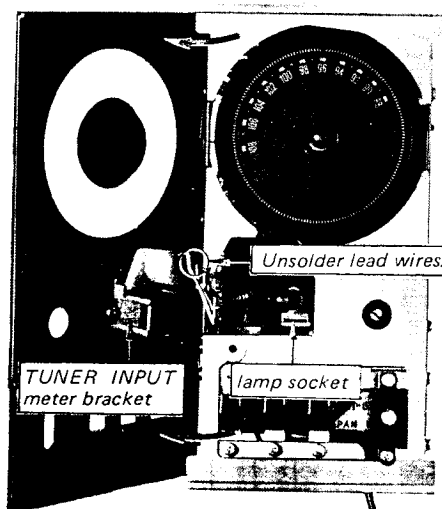


Fig. 2-3. Front panel removal (2)

2-2. FRONT PANEL REMOVAL

1. Remove the wooden case as described in Procedure 2-1.
2. Pull out the tuning knob.
3. Remove the four screws securing the front panel to the chassis as shown in Fig. 2-2.
4. Remove the front panel in the arrow direction shown in Fig. 2-3.
5. Unsolder the two lead wires from the TUNER INPUT meter and pull out the lamp socket from the TUNER INPUT meter bracket as shown in Fig. 2-3.

2-3. FRONT SUBCHASSIS REMOVAL

1. Remove the wooden case and the front panel as described in Procedures 2-1 and 2-2.
2. Remove the nine screws (A) as shown in Fig. 2-4 and Fig. 2-5.
3. Pull off the STEREO lamp from the grommet.

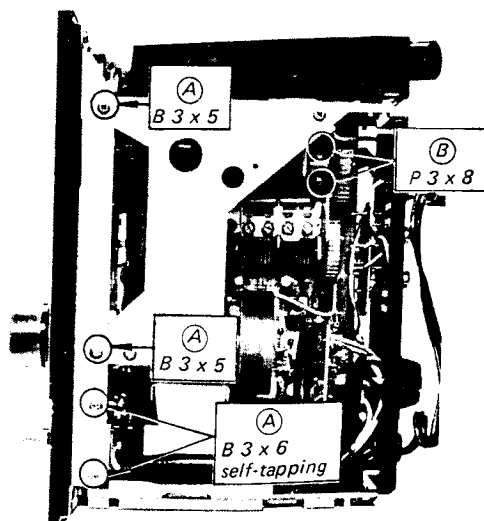


Fig. 2-4. Front subchassis removal

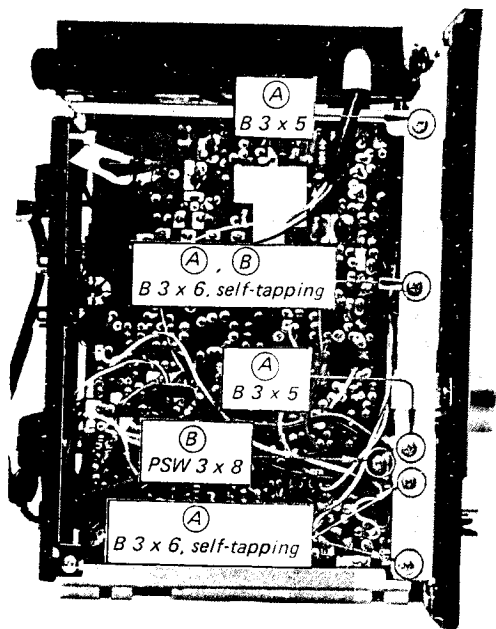


Fig. 2-5. Front subchassis removal (2)

2-4. FM (A-M) FRONT-END/I-F AMP/MPX AND PREAMPLIFIER BOARD REMOVAL

1. Remove the wooden case as described in Procedure 2-1.
2. Unsolder the ribbon antenna at the fm (a-m) front-end/i-f amp/MPX and preamplifier board as shown in Fig. 2-6.
3. Remove the rear panel in the arrow direction by loosening the three screws (C) as shown in Fig. 2-6.
4. Loosen the two screws (B) as shown in Fig. 2-4.

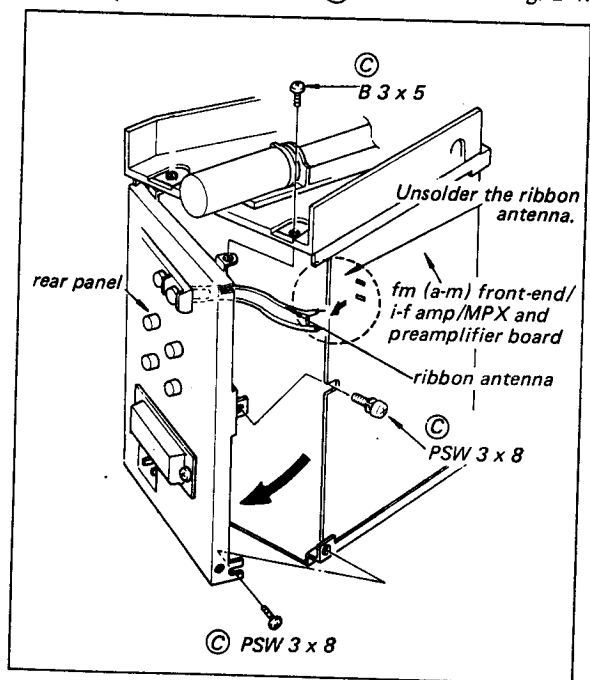


Fig. 2-6. Fm (a-m) front-end/i-f amp/MPX and preamplifier board removal

5. Remove the two screws (B) as shown in Fig. 2-5.
6. Carefully remove the board from the chassis taking care not to break the lead wires.

2-5. POWER SUPPLY BOARD REMOVAL

1. Remove the wooden case as described in Procedure 2-1.
2. Unsolder the three lead wires (red, white and black) connecting the power supply board and the fm (a-m) front-end/i-f amp/MPX and preamplifier board.
3. Unsolder the ribbon antenna as shown in Fig. 2-6.
4. Loosen the three screws (C) as shown in Fig. 2-6.
5. Carefully open the rear panel in the arrow direction shown in Fig. 2-6 taking care not to break the lead wires.
6. Remove the two screws (B 3 x 5) securing the power supply board.

2-6. DIAL CORD RESTRINGING

1. Remove the wooden case, front panel and front subchassis as described in Procedures 2-1, 2-2 and 2-3.
2. Make a loop of the dial cord as shown in Fig. 2-7.
3. Make a knot and hook a spring to the dial cord and then fasten the knot as shown in Fig. 2-8.
4. Loosen the two screws securing the dial scale ass'y to the tuning drum shaft and remove the dial scale ass'y.
5. Hook the spring to the tab on the dial scale ass'y and string the dial cord around the dial scale ass'y and the tuning shaft in numerical order as shown in Fig. 2-9 and 2-10.
6. Install the dial scale ass'y to the tuning drum shaft and fix a dial scale set screw temporarily.
7. Set the AFC switch to OFF.
8. Tune the set to the local fm station by turning the tuning shaft.
9. Loosen the dial scale set screw and turn the dial scale ass'y to the position where the fm pointer on the dial front glass indicates the local fm station's carrier frequency.
10. Fix the two dial scale set screws.
11. Make sure that the correct dial calibration is also done at a-m mode.

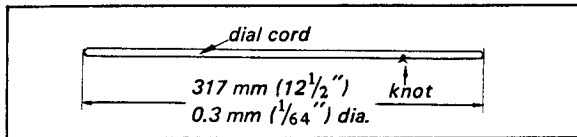


Fig. 2-7. Dial cord

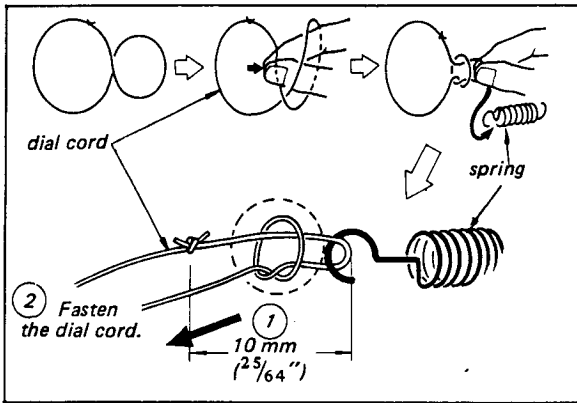


Fig. 2-8. Finish point of dial cord

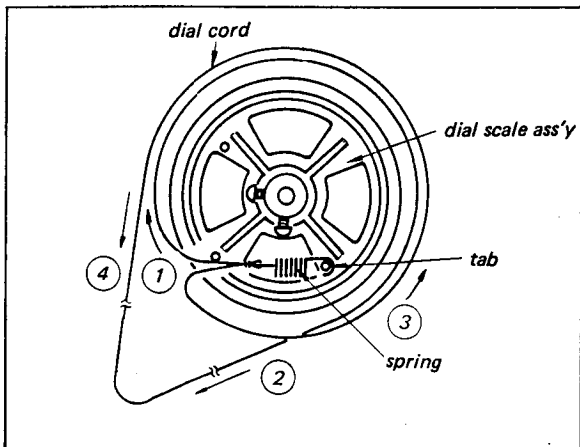


Fig. 2-9. Dial cord restringing (Back View)

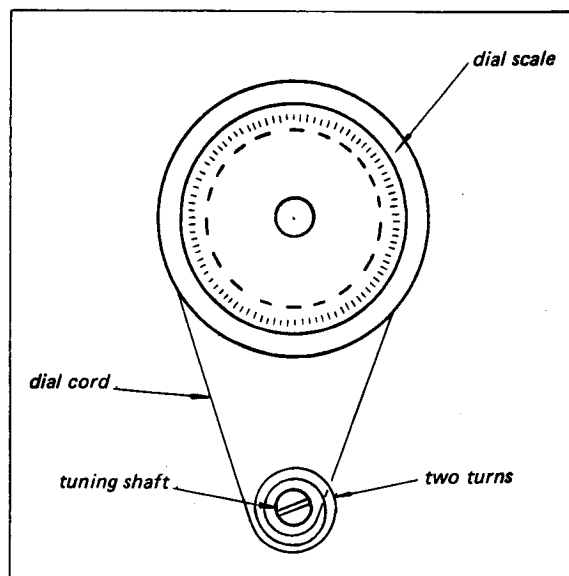


Fig. 2-10. Dial cord restringing (Front View)

2-7. DIAL LAMP REPLACEMENT

1. Remove the wooden case and front panel as described in Procedures 2-1 and 2-2.
2. Slide the lamp socket forward to permit removal of lamp as shown in Fig. 2-11.
3. Unscrew the lamp from the socket and install a new one and push the socket back to its original place.

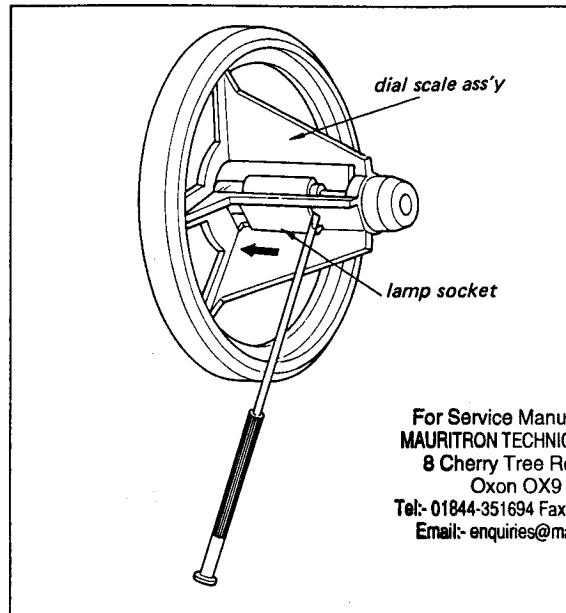


Fig. 2-11. Dial lamp removal

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2-8. TUNER INPUT METER REPLACEMENT

1. Remove the wooden case and front panel as described in Procedures 2-1 and 2-2.
2. Unsolder the two lead wires and remove the two screws as shown in Fig. 2-12.
3. Install a new one.

2-9. BAND, MODE, AFC AND POWER SWITCH REPLACEMENT

1. Remove the wooden case and front panel as described in Procedures 2-1 and 2-2.
2. Remove the two screws securing each switch to the chassis as shown in Fig. 2-13.
3. Unsolder the switch lead wires.
4. Install a new one.

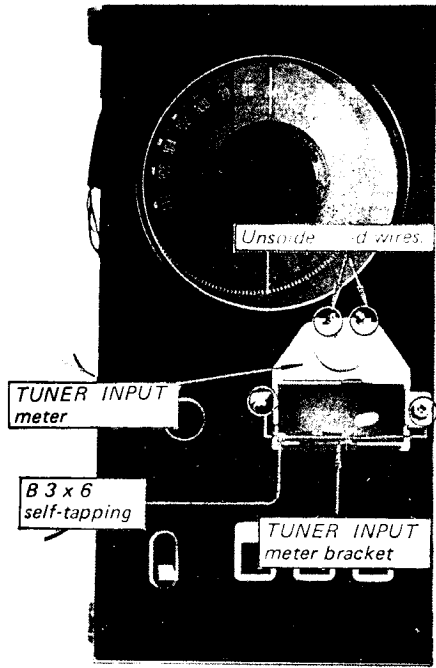


Fig. 2-12. Tuner input meter replacement

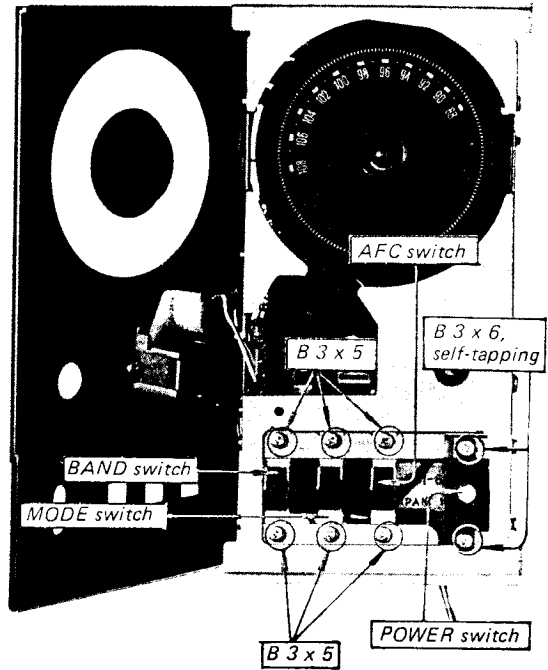


Fig. 2-13. BAND, MODE, AFC and POWER switch replacement

2-10. CHASSIS LAYOUT

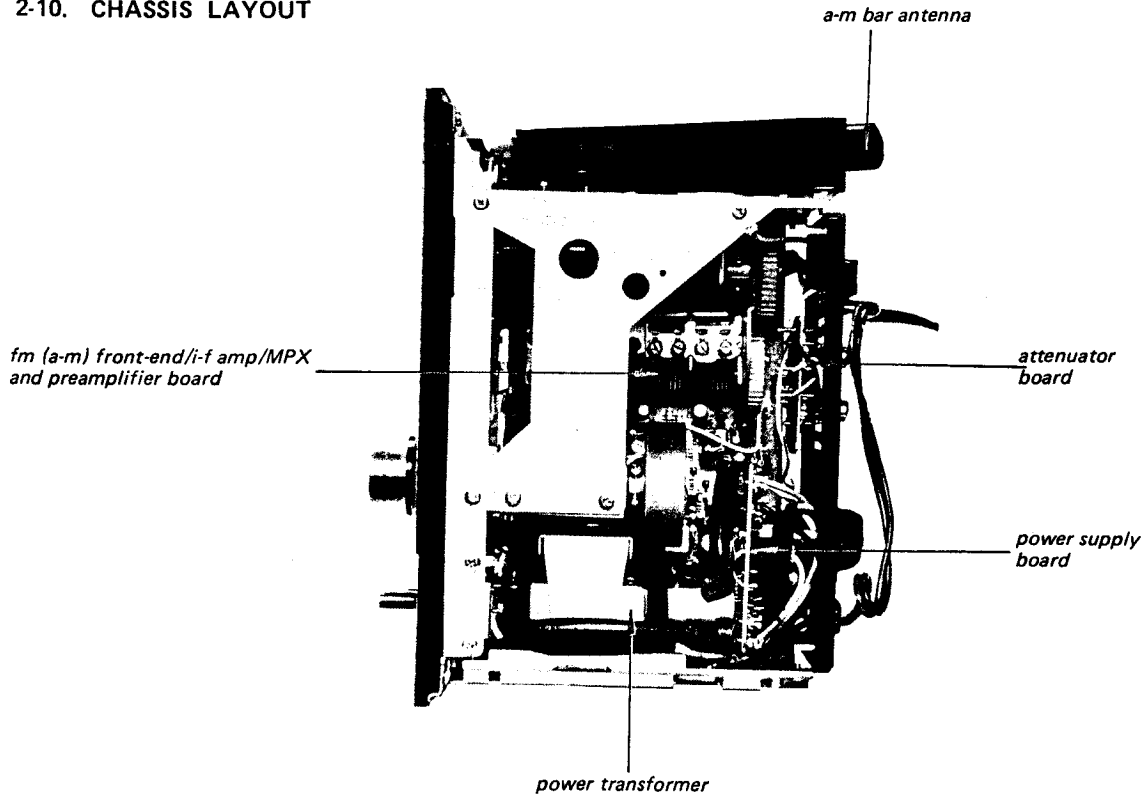


Fig. 2-14. Chassis layout

ALIGNMENT AND ADJUSTMENT

3-1. FM I-F AND DISCRIMINATOR ALIGNMENT

CAUTION

The ceramic filters in the fm i-f circuit are selected according to their specified center frequencies and color coded as shown in Fig. 3-1 and listed in Table 3-1. Check the color code of the filters to identify the same center frequency when replacing any of these filters.

TABLE 3-1.
FM I-F CERAMIC FILTERS

| Part No. | Color | Specified Center Freq. |
|--------------|--------|------------------------|
| 1-527-220-11 | red | 10.70 MHz |
| 1-527-220-21 | blue | 10.67 MHz |
| 1-527-220-31 | orange | 10.73 MHz |
| 1-527-220-41 | black | 10.64 MHz |
| 1-527-220-51 | white | 10.76 MHz |

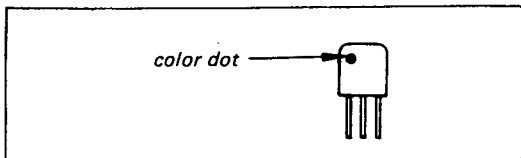


Fig. 3-1. Color dot on ceramic filter

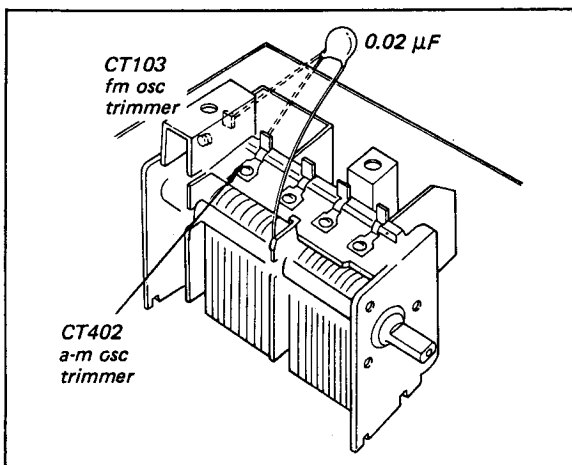


Fig. 3-2. Interruption of fm or a-m local oscillator operation

Note: Local oscillator should be killed when performing this alignment. To stop the local oscillator operation, shunt the oscillator capacitor with a 0.02 µF capacitor as shown in Fig. 3-2.

Signal Generator Method

Test Equipment Required

1. Signal generator capable of generating a 10.7 MHz a-m/fm signal.
2. Oscilloscope
Vertical sensitivity . . . 100 mV/cm minimum
3. Ac VTVM
4. Alignment tools

Preparation:

1. Connect the input cable of the oscilloscope with alligator clips to R229 and ground on the fm (a-m) front-end/i-f amp/MPX and preamplifier board, and solder a 0.02 µF capacitor across these clips as shown in Fig. 3-3.
2. Connect the output cable of the generator across CV102 on the fm (a-m) front-end/i-f amp/MPX and preamplifier board through a 0.02 µF coupling capacitor as shown in Fig. 3-4.

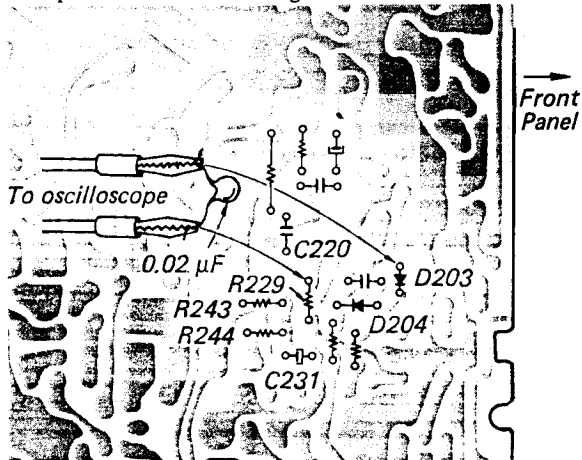


Fig. 3-3. Fm discriminator output connection

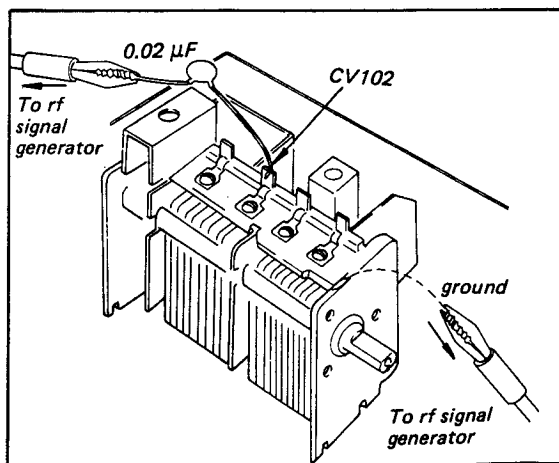


Fig. 3-4. 10.7-MHz signal injection

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Procedure:

1. With the equipment connected as shown in Fig. 3-5, set the signal-generator controls as follows:

Frequency Specified frequency of ceramic filter.
See Table 3-1.
Modulation Fm, 400 Hz, 100 %
(75 kHz)
Output level 1,000 μ V (60 dB)

2. Set the tuner switches as follows:

BAND switch FM
MODE switch MONO
AFC switch OFF

3. Adjust the signal generator frequency slightly to obtain a maximum output, and then change the signal generator modulation to a-m, 400 Hz 30 %.

4. If the discriminator transformer IFT201 is not aligned correctly, 400 Hz ripple will be observed as shown in Fig. 3-6.

5. Turn the secondary side core (green) of discriminator transformer IFT201 (see Fig. 3-10) with an alignment tool to obtain a minimum indication on the oscilloscope as shown in Fig. 3-6.

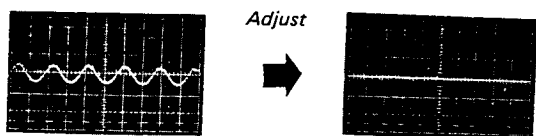


Fig. 3-6. Fm discriminator alignment output response.

Note: Turn the core carefully and slowly because the output appearing on the oscilloscope jumps up and down when turning the core. This might cause difficulty in determining the point of minimum output. Also, at both extreme positions of the top core, decreased output will be observed. The real null point should be obtained in the middle of the

core thread length, and maximum output occurs at each side of the true null point.

6. Change the signal generator modulation to fm, 400 Hz 100 %.
7. Turn the core of fm IFT101 and primary side core (brown) of discriminator transformer IFT201 (see Fig. 3-10) to obtain the maximum output.

3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT

Note: Before starting this alignment, the fm i-f and discriminator alignment should be performed.

Test Equipment Required

1. Fm signal generator
2. Ac VTVM
3. Oscilloscope
4. Alignment tools

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Preparation:

1. Connect the equipment as shown in Fig. 3-7.
2. Set the tuner switches as follows:

BAND switch FM
MODE switch MONO
AFC switch OFF

Signal Generator Method

Follow the procedures given in Table 3-2 when performing this alignment with an fm signal generator. Be sure that the dial is mechanically calibrated.

Off-the-Air Signal Method

Accurate dial calibration, and a frequency coverage test can also be performed by utilizing off-the-air local fm signals. However, before performing the following procedure, be sure that the dial is mechanically calibrated.

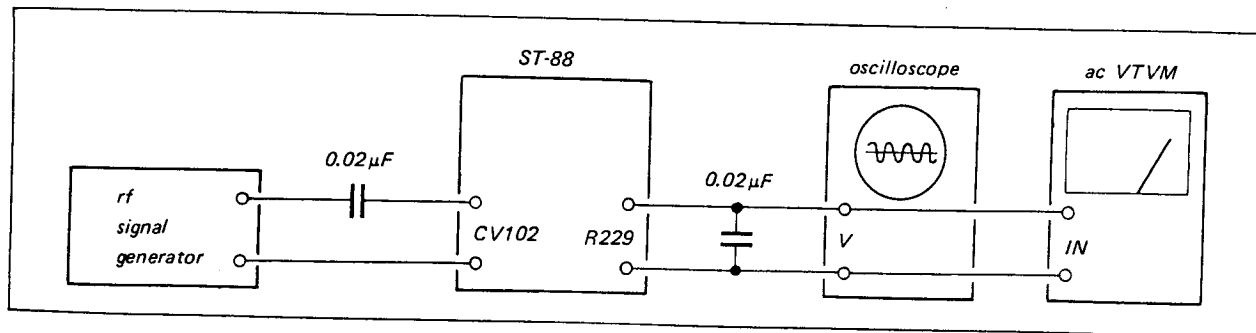


Fig. 3-5. Fm i-f and discriminator alignment test setup by rf signal generator

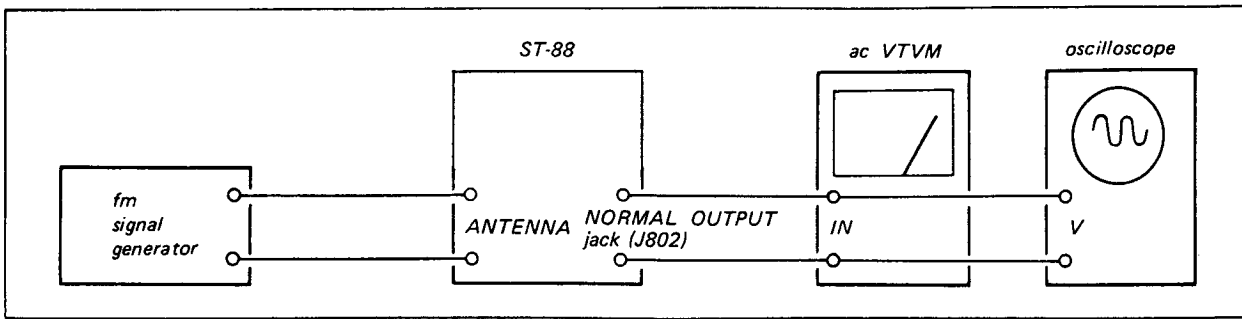


Fig. 3-7. Fm frequency coverage and tracking alignment test setup

TABLE 3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT

| FREQUENCY COVERAGE ALIGNMENT | | | SG Coupling Direct SG Output Level . . 400 Hz, 100 % mod; as low as possible | | |
|------------------------------|--------------|-----------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------|
| Step | SG Frequency | Dial Indication | Ac VTVM Connection | Adjust | Indication |
| 1 | 87.5 MHz | 87.5 MHz | NORMAL OUTPUT jack (J802) | OSC coil L103 See Fig. 3-10. | Maximum VTVM reading |
| 2 | 108 MHz | 108 MHz | | OSC trimmer CT103 See Fig. 3-10. | |
| TRACKING ALIGNMENT | | | SG Coupling Direct SG Output Level . . 400 Hz, 100 % mod; as low as possible | | |
| 1 | 87.5 MHz | 87.5 MHz | NORMAL OUTPUT jack (J802) | Antenna coil L101 RF coil L102 See Fig. 3-10. | Maximum VTVM reading |
| 2 | 108 MHz | 108 MHz | | Antenna trimmer CT101 RF trimmer CT102 See Fig. 3-10. | |

3-3. FM STEREO SEPARATION ADJUSTMENT

Procedure:

Test Equipment Required

1. Fm stereo signal generator
2. Ac VTVM
3. Oscilloscope

Preparation:

1. Remove the wooden case as described in Procedure 2-1 on page 2.
2. Connect the test equipment as shown in Fig. 3-8, then set the fm stereo signal generator controls as follows:

Carrier frequency . . . 98 MHz
 Output level 1,000 μ V (60 dB)
 Mode Stereo
 Audio (400 Hz) Mod . 67.5 kHz (90 %)
 Pilot (19 kHz) Mod . . 7.5 kHz (10 %)

Note: 75 kHz (100 %) if the metering indicates total modulation (audio-pilot).

1. Precisely tune the set to the carrier frequency of stereo signal generator, then turn the top core of switching transformer L301 (see Fig. 3-10) to obtain maximum output at the left channel. Note that this adjustment has a close relationship with stereo distortion.
2. Record the output level of the left channel when the stereo signal generator input selector is set to the left channel.
3. Switch the stereo signal generator input selector to the right channel and read the residual signal level in the left channel.
4. The output-level to residual-level ratio represents the separation. Adjust separation adj. control RV501 (see Fig. 3-10) for minimum residual level. Check the right channel for separation. Usually, about an 8 to 9 dB difference in channel separation exists. Readjust RV501 for minimum difference between left- and right-channel separation. While

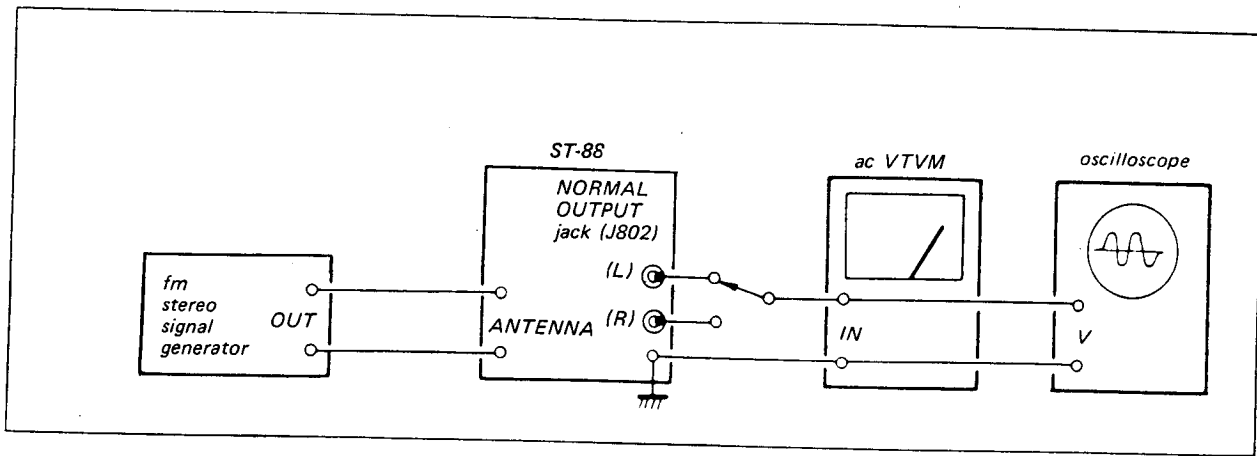


Fig. 3-8. Fm stereo separation adjustment test setup

doing this, remember that the output level also changes according to the setting of RV501.

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3-4. A-M I-F STRIP ALIGNMENT

Note: The a-m i-f transformers (CFU201 and IFT202) are shipped from the factory with all adjustments set for correct operation. Therefore no adjustment is required in field service.

3-5. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT

Preparation:

Set BAND switch to AM.

Signal Generator Method

Test Equipment Required

1. Signal generator

2. Loop antenna

3. Ac VTVM or oscilloscope

Procedure:

With the equipment connected as shown in Fig. 3-9, follow the procedures given in Table 3-3 when performing this alignment with an a-m signal generator.

Off-the-Air Signal Method

Accurate dial calibration, and a frequency-coverage and tracking test can also be performed by utilizing off-the-air local a-m signals. However, before performing the following procedure, be sure that the dial is mechanically calibrated.

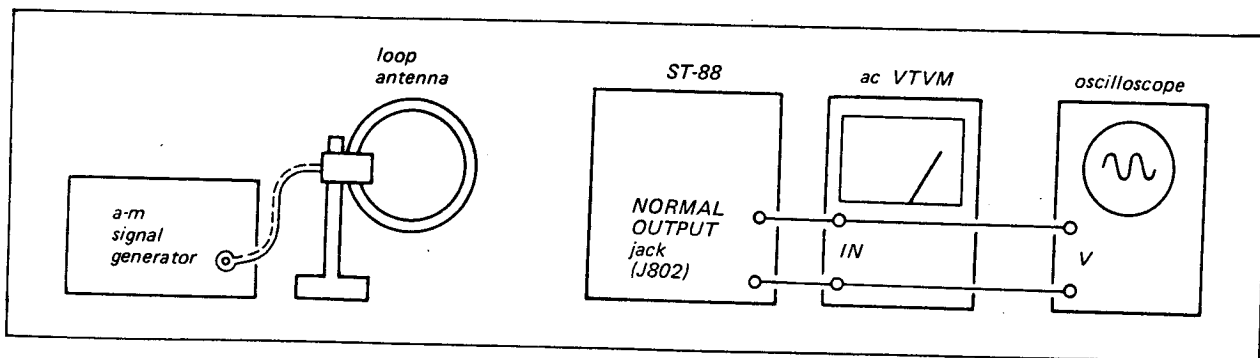


Fig. 3-9. A-m frequency coverage and tracking alignment test setup

TABLE 3-3. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT

| FREQUENCY COVERAGE ALIGNMENT | | SG Coupling Loop antenna SG Output Level . . 400 Hz, 30 % mod; as low as possible | | | |
|------------------------------|--------------|------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------|----------------------|
| Step | SG Frequency | Dial Indication | Ac VTVM Connection | Adjust | Indication |
| 1 | 550 kHz | 550 kHz | NORMAL OUTPUT jack (J802) | OSC coil L402 See Fig. 3-10. | Maximum VTVM reading |
| 2 | 1,600 kHz | 1,600 kHz | | OSC trimmer CT402 See Fig. 3-10. | |
| TRACKING ALIGNMENT | | SG Coupling Loop antenna SG Output Level . . 400 Hz, 30 % mod; as low as possible | | | |
| 1 | 600 kHz | Tune to the SG signal. | NORMAL OUTPUT jack (J802) | Position of bar antenna L401 | Maximum VTVM reading |
| 2 | 1,400 kHz | | | Antenna trimmer CT401 See Fig. 3-10. | |

Adjustment Parts Location:

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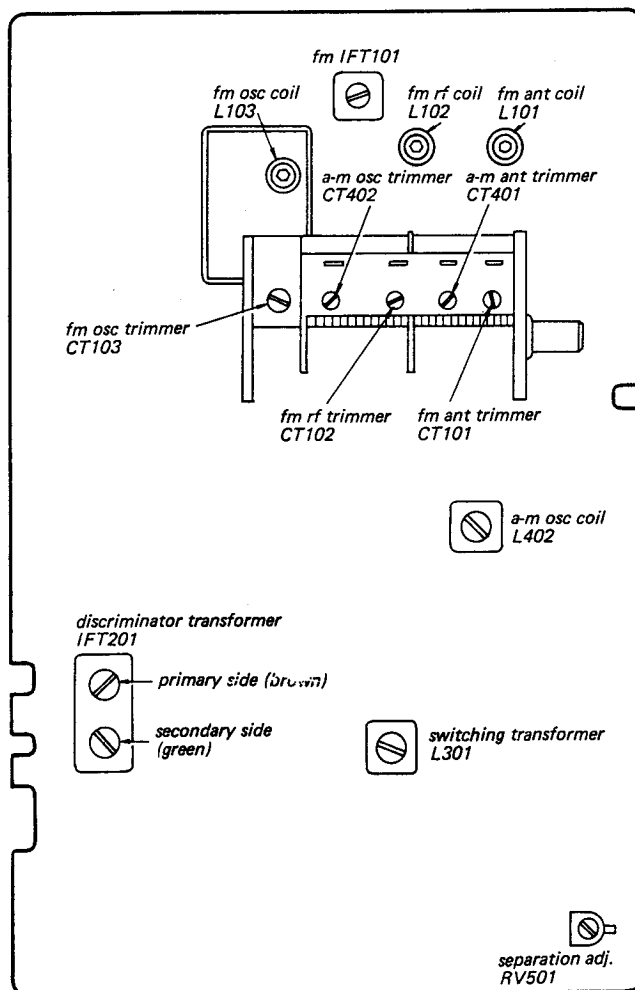


Fig. 3-10. Adjustment parts location

SECTION 4
REPACKING

Note: AEP Model (Serial No. 900,001 and later)
UK Model (Serial No. 400,001 and later)
USA Model (Serial No. 800,001 and later)

The original shipping carton and packing materials are the ideal containers for shipping the unit. However to secure the maximum protection, the set must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.

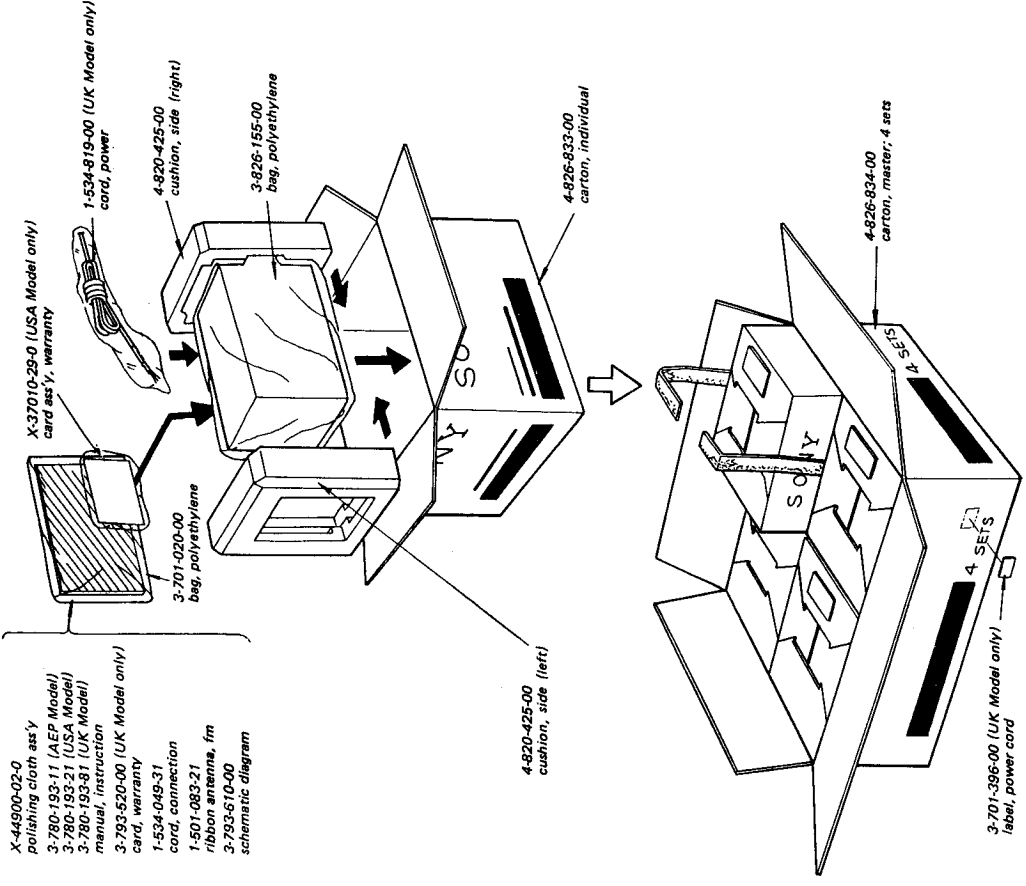


Fig. 4-1. Repacking

MEMO

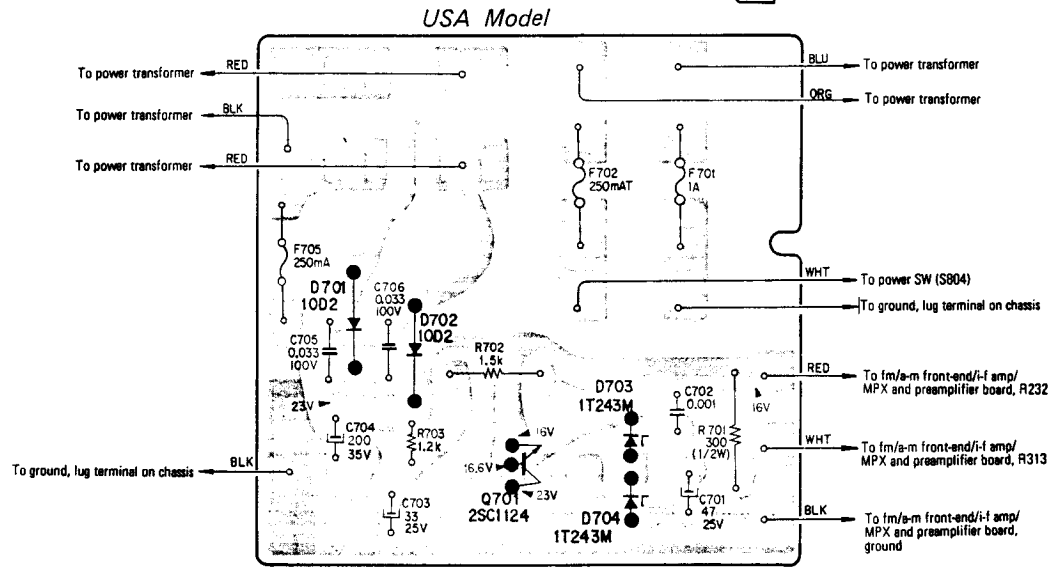
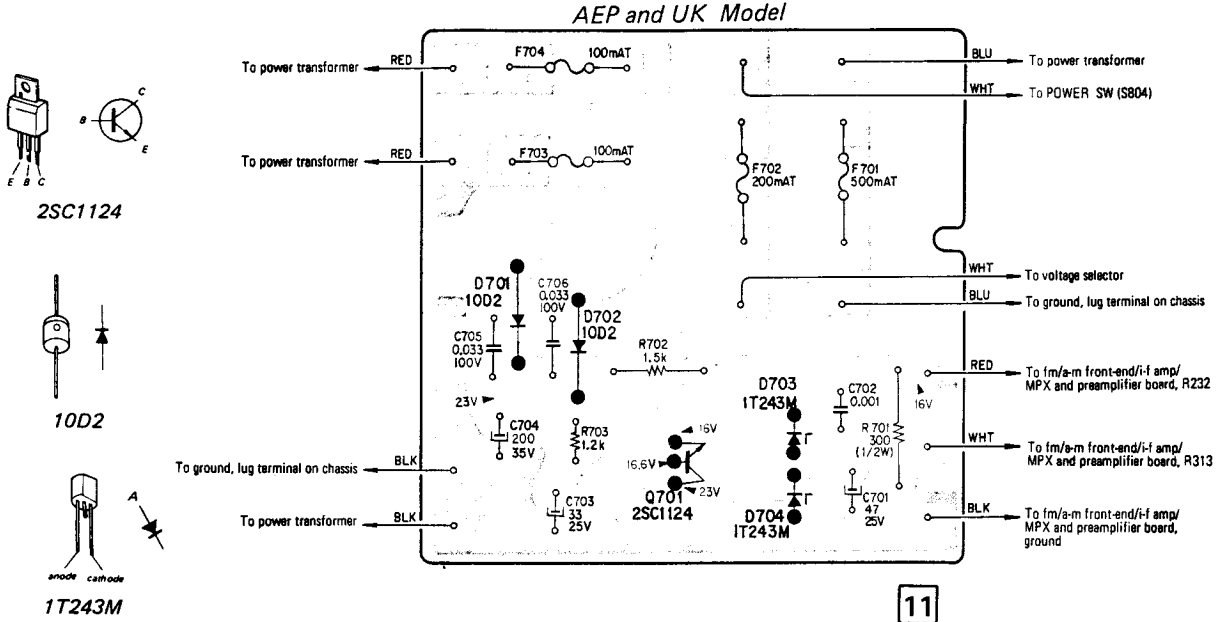
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SECTION 5 DIAGRAMS

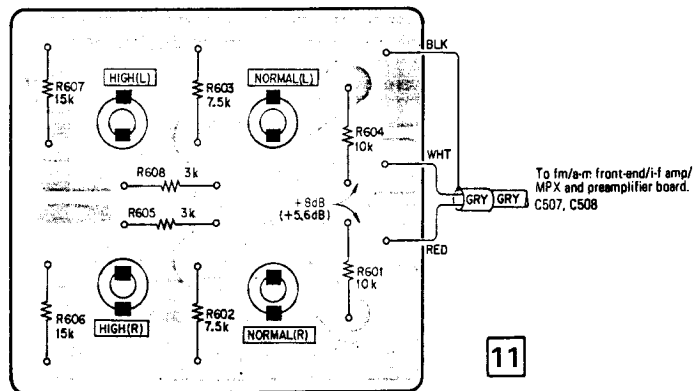
Note: AEP Model (Serial No. 900,001 and later)
UK Model (Serial No. 400,001 and later)
USA Model (Serial No. 800,001 and later)

5-1. MOUNTING DIAGRAM – Power Supply and Attenuator Boards – – Conductor Side –

[Power Supply Board]



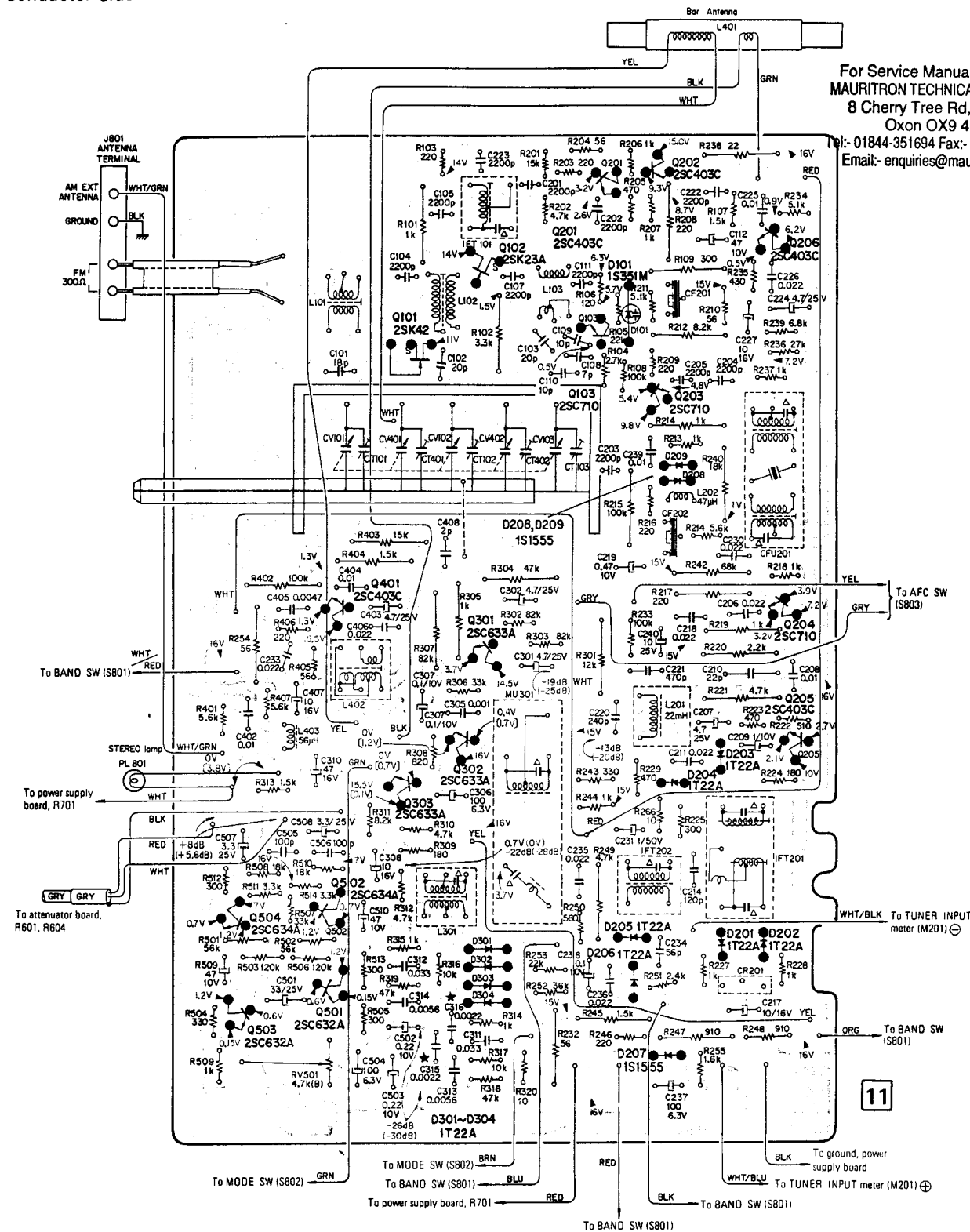
[Attenuator Board]



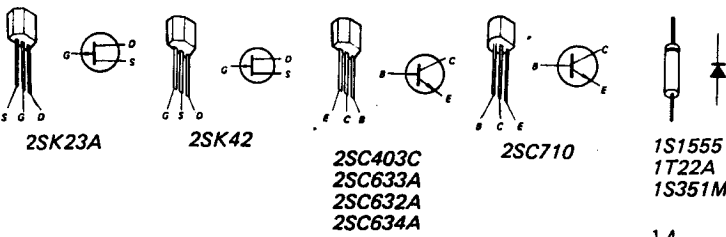
5-2. MOUNTING DIAGRAM – Fm (A-m) Front-End/I-F Amp/MPX and Preamp Board –
 – Conductor Side –

Transistors and
Adjustment
Parts Location

| |
|--------|
| Q202 |
| Q201 |
| IFT101 |
| Q206 |
| Q102 |
| L101 |
| L103 |
| L102 |
| Q103 |
| Q101 |
| Q203 |
| CT101 |
| CT401 |
| CT102 |
| CT402 |
| Q401 |
| Q204 |
| Q301 |
| L402 |
| Q205 |
| Q302 |
| Q303 |
| IFT201 |
| Q502 |
| Q504 |
| L301 |
| Q501 |
| Q503 |
| RV501 |



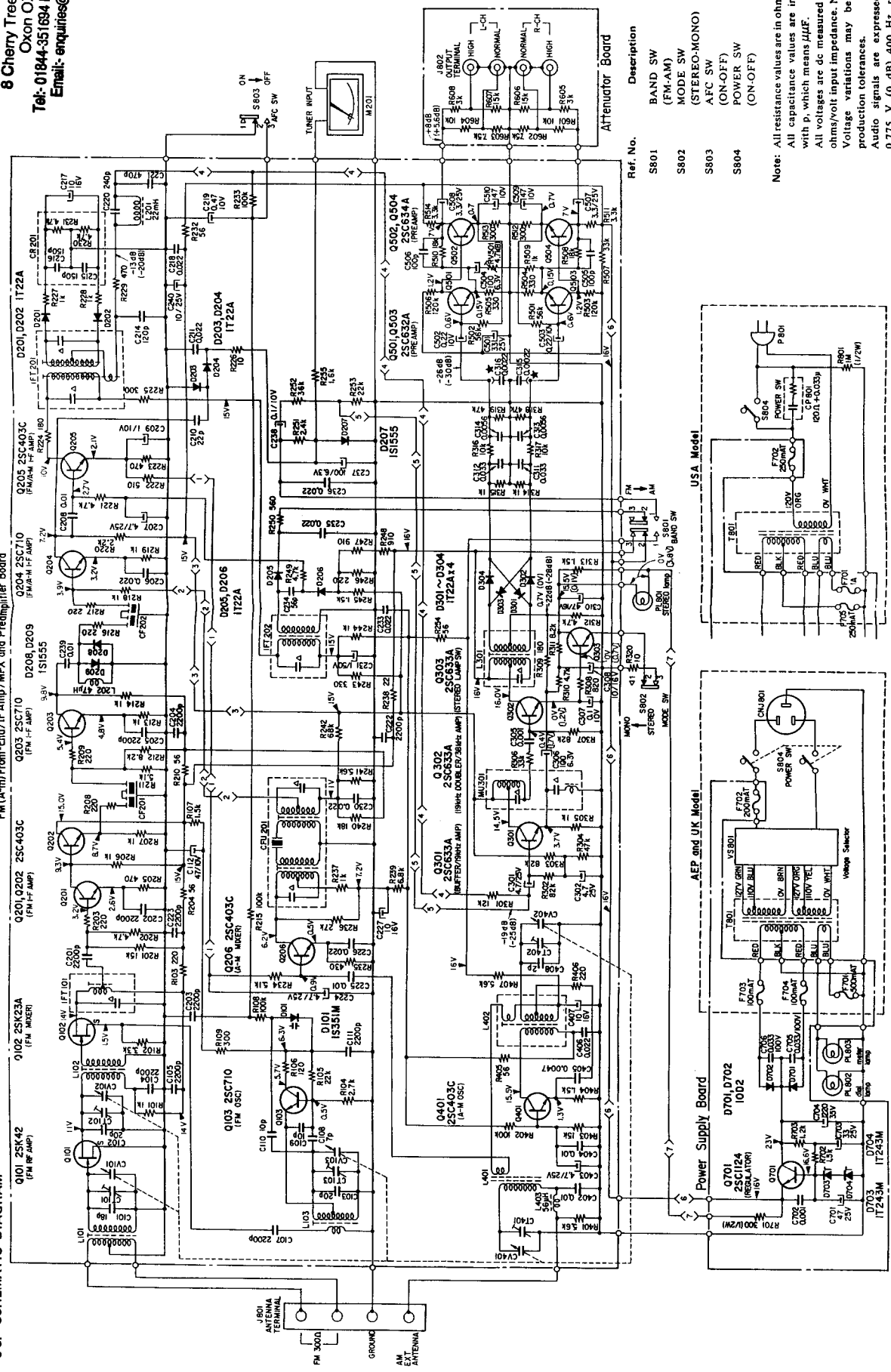
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 Oxon OX9 4QY
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 Email: enquiries@mauratron.co.uk



Note: Audio signals are expressed in "dB" referred to 0.775 V(0 dB) 400 Hz, receiving fm rf signal of 98 MHz [1000 μV (60 dB), 75 kHz (100% Mod.)].
 [:] : stereo operation
 (.. dB) : .. dB

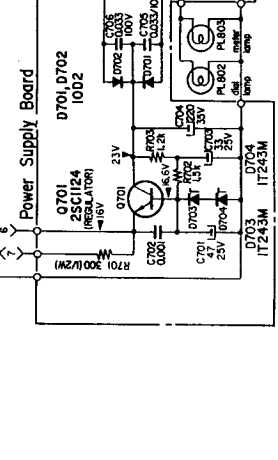
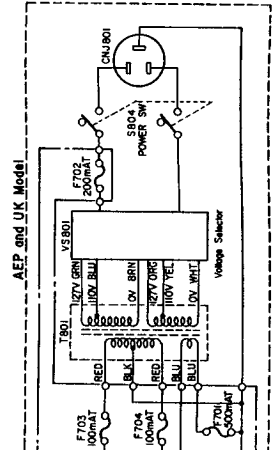
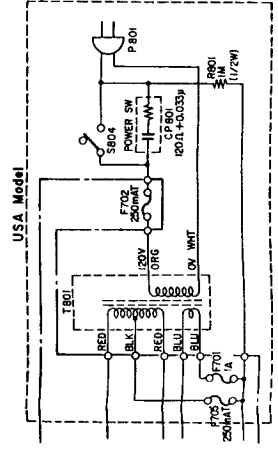
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5-3. SCHEMATIC DIAGRAM



| Ref. No. | Description | Position |
|----------|-----------------------|----------|
| S801 | BAND SW (FM-AM) | FM |
| S802 | MODE SW (STEREO-MONO) | STEREO |
| S803 | AFC SW (ON-OFF) | ON |
| S804 | POWER SW (ON-OFF) | OFF |

Note: All resistance values are in ohms, k = 1,000 M = 1,000 k.
 All capacitance values are in μ F except as indicated with p, which means pF.
 All voltages are dc measured with a VOM having 20 k ohms/volt input impedance. No signal in.
 Voltage variations may be noted due to normal production tolerances.
 Audio signals are expressed in "dB" referred to 0.775 V (0 dB) 400 Hz, receiving fm rf signal of 98 MHz [1,000 μ V (60 dB), 75 kHz (100%) Mod.].
 (- dB) : stereo operation
 * : C315 and C316 are for USA. Model only
 Capacitors marked Δ are built in each transformer.

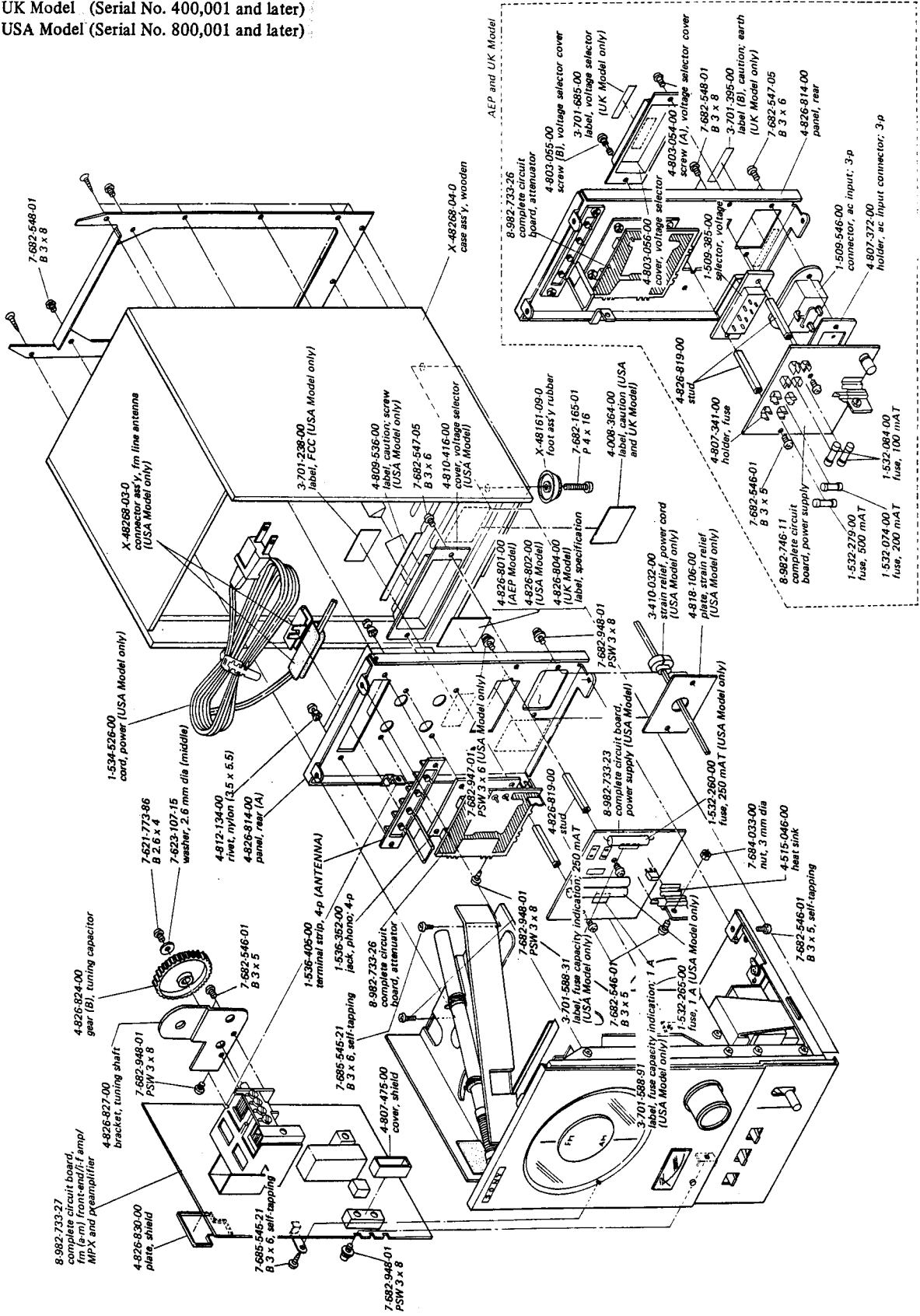


SECTION 6

EXPLODED VIEWS

Note: All screws are Phillips type (cross recess type) unless otherwise indicated.
(-): slotted head

Note: AEP Model (Serial No. 900,001 and later) (1)
UK Model (Serial No. 400,001 and later)
USA Model (Serial No. 800,001 and later)



ELECTRICAL PARTS LIST

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|--------------------------------|-------------------------------------------------|--------------------|
| COMPLETE CIRCUIT BOARDS | | |
| 8-982-733-27 | fm (a-m) front-end/i-f amp/MPX and preamplifier | |
| 8-982-733-26 | attenuator | |
| 8-982-733-23 | power supply (USA Model) | |
| 8-982-746-11 | power supply (AEP and UK Model) | |
| SEMICONDUCTORS | | |
| Q101 | FET | 2SK42 |
| Q102 | FET | 2SK23A |
| Q103 | transistor | 2SC710 |
| Q201 | transistor | 2SC403C |
| Q202 | transistor | 2SC403C |
| Q203 | transistor | 2SC710 |
| Q204 | transistor | 2SC710 |
| Q205 | transistor | 2SC403C |
| Q206 | transistor | 2SC403C |
| Q301 | transistor | 2SC633A |
| Q302 | transistor | 2SC633A |
| Q303 | transistor | 2SC633A |
| Q401 | transistor | 2SC403C |
| Q501 | transistor | 2SC632A |
| Q502 | transistor | 2SC634A |
| Q503 | transistor | 2SC632A |
| Q504 | transistor | 2SC634A |
| Q701 | transistor | 2SC1124 |
| D101 | diode | 1S351M |
| D201 | diode | 1T22A |
| D202 | diode | 1T22A |
| D203 | diode | 1T22A |
| D204 | diode | 1T22A |
| D205 | diode | 1T22A |
| D206 | diode | 1T22A |
| D207 | diode | 1S1555 |
| D208 | diode | 1S1555 |
| D209 | diode | 1S1555 |
| D301 | diode | 1T22A |
| D302 | diode | 1T22A |
| D303 | diode | 1T22A |
| D304 | diode | 1T22A |
| D701 | diode | 10D2 |
| D702 | diode | 10D2 |
| D703 | diode | 1T243M |
| D704 | diode | 1T243M |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|------------------------------------------|--------------------------------|---------------------------------------------------------------------------|
| TRANSFORMERS, COILS AND INDUCTORS | | |
| CFU201 | 1-403-150-00 | IFT (USA and AEP Model only) |
| CFU201 | 1-403-830-00 | IFT, (UK Model only) |
| IFT101 | 1-403-914-00 | IFT, fm |
| IFT201 | 1-403-913-00 | transformer, discriminator |
| IFT202 | 1-403-149-00 | IFT, a-m |
| L101 | 1-401-541-00 | coil, fm antenna |
| L102 | 1-405-599-00 | coil, fm rf |
| L103 | 1-405-598-00 | coil, fm osc |
| L201 | 1-407-418-00 | inductor, 22 mH shielded |
| L202 | 1-407-165-00 | inductor, micro; 47 μ H |
| L301 | 1-425-688-00 | transformer, switching |
| L401 | 1-401-542-00 | bar antenna, a-m |
| L402 | 1-405-486-00 | coil, a-m osc |
| L403 | 1-407-166-00 | inductor, micro; 56 μ H |
| MU301 | 1-425-687-00 | MPX unit |
| T801 | { 1-442-094-00 1-442-095-00 | { transformer, power (USA Model) transformer, power (AEP and UK Model) |

CAPACITORS

All capacitance values are in μ F, except as indicated with p, which means μ F.

| | | | | | |
|------|--------------|---------|-------------|------|----------------|
| C101 | 1-102-953-11 | 18 p | $\pm 5\%$ | 50 V | ceramic |
| C102 | 1-102-958-11 | 20 p | $\pm 5\%$ | 50 V | ceramic |
| C103 | 1-101-973-11 | 20 p | $\pm 5\%$ | 50 V | ceramic |
| C104 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C105 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C106 | | ----- | | | |
| C107 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C108 | 1-102-875-11 | 7 p | $\pm 0.5\%$ | 50 V | ceramic |
| C109 | 1-101-978-11 | 10 p | $\pm 0.5\%$ | 50 V | ceramic |
| C110 | 1-101-978-11 | 10 p | $\pm 0.5\%$ | 50 V | ceramic |
| C111 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C112 | 1-121-352-11 | 47 | | 10 V | electrolytic |
| C201 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C202 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C203 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C204 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C205 | 1-102-257-11 | 2,200 p | $\pm 20\%$ | 50 V | ceramic |
| C206 | 1-105-677-12 | 0.022 | $\pm 10\%$ | 50 V | mylar |
| C207 | 1-121-395-11 | 4.7 | | 25 V | electrolytic |
| C208 | 1-105-673-12 | 0.01 | $\pm 10\%$ | 50 V | mylar |
| C209 | 1-127-023-11 | 1 | | 10 V | solid aluminum |
| C210 | 1-102-959-11 | 22 p | $\pm 5\%$ | 50 V | ceramic |
| C211 | 1-101-924-11 | 0.022 | $\pm 20\%$ | 25 V | ceramic |
| C212 | | ----- | | | |
| C213 | | ----- | | | |
| C214 | 1-102-816-11 | 120 p | $\pm 5\%$ | 50 V | ceramic |
| C215 | | ----- | | | |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|-----------------|-----------------|-----------------------------------------------|
| C216 | | ----- |
| C217 | 1-121-651-11 | 10 16 V electrolytic |
| C218 | 1-101-924-11 | 0.022 $\pm 20\%$ 25 V ceramic |
| C219 | 1-127-022-11 | 0.47 10 V solid aluminum |
| C220 | 1-107-140-11 | 240 p $\pm 10\%$ 50 V silvered mica |
| C221 | 1-102-824-11 | 470 p $\pm 5\%$ 50 V ceramic |
| C222 | 1-102-257-11 | 2,200 p $\pm 20\%$ 50 V ceramic |
| C223 | 1-102-257-11 | 2,200 p $\pm 20\%$ 50 V ceramic |
| C224 | 1-121-395-11 | 4.7 25 V electrolytic |
| C225 | 1-105-673-12 | 0.01 $\pm 10\%$ 50 V mylar |
| C226 | 1-105-677-12 | 0.022 $\pm 10\%$ 50 V mylar |
| C227 | 1-121-651-11 | 10 16 V electrolytic |
| C228 | | ----- |
| C229 | | ----- |
| C230 | 1-101-924-11 | 0.022 $\pm 20\%$ 25 V ceramic |
| C231 | 1-121-391-11 | 1 50 V electrolytic |
| C232 | | ----- |
| C233 | 1-105-677-12 | 0.022 $\pm 10\%$ 50 V mylar |
| C234 | 1-101-884-11 | 56 p $\pm 5\%$ 50 V ceramic |
| C235 | 1-105-677-12 | 0.022 $\pm 10\%$ 50 V mylar |
| C236 | 1-105-677-12 | 0.022 $\pm 10\%$ 50 V mylar |
| C237 | 1-121-413-11 | 100 6.3 V electrolytic |
| C238 | 1-127-019-11 | 0.1 10 V solid aluminum |
| C239 | 1-101-923-11 | 0.01 $\pm 20\%$ 25 V ceramic |
| C240 | 1-121-398-11 | 10 25 V electrolytic |
| C301 | 1-121-395-11 | 4.7 25 V electrolytic |
| C302 | 1-121-395-11 | 4.7 25 V electrolytic |
| C303 | | ----- |
| C304 | | ----- |
| C305 | 1-105-661-12 | 0.001 $\pm 10\%$ 50 V mylar |
| C306 | 1-121-413-11 | 100 6.3 V electrolytic |
| C307 | 1-127-019-11 | 0.1 10 V solid aluminum |
| C308 | 1-121-651-11 | 10 16 V electrolytic |
| C309 | | ----- |
| C310 | 1-121-409-11 | 47 16 V electrolytic |
| C311 | 1-105-679-12 | 0.033 $\pm 10\%$ 50 V mylar |
| C312 | 1-105-679-12 | 0.033 $\pm 10\%$ 50 V mylar |
| C313 | 1-105-670-12 | 0.0056 $\pm 10\%$ 50 V mylar |
| C314 | 1-105-670-12 | 0.0056 $\pm 10\%$ 50 V mylar |
| C315 | 1-105-665-12 | 0.0022 $\pm 10\%$ 50 V mylar (USA Model only) |
| C316 | 1-105-665-12 | 0.0022 $\pm 10\%$ 50 V mylar (USA Model only) |
| C401 | | ----- |
| C402 | 1-105-673-12 | 0.01 $\pm 10\%$ 50 V mylar |
| C403 | 1-121-395-11 | 4.7 25 V electrolytic |
| C404 | 1-105-673-12 | 0.01 $\pm 10\%$ 50 V mylar |
| C405 | 1-102-102-11 | 0.0047 $\pm 20\%$ 50 V ceramic |
| C406 | 1-105-677-12 | 0.022 $\pm 10\%$ 50 V mylar |
| C407 | 1-121-651-11 | 10 16 V electrolytic |
| C408 | 1-102-935-11 | 2 p ± 0.25 p 50 V ceramic |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|-----------------|-----------------|------------------------------|
| C501 | 1-121-404-11 | 33 25 V electrolytic |
| C502 | 1-127-020-11 | 0.22 10 V solid aluminum |
| C503 | 1-127-020-11 | 0.22 10 V solid aluminum |
| C504 | 1-121-413-11 | 100 6.3 V electrolytic |
| C505 | 1-102-973-11 | 100 p $\pm 5\%$ 50 V ceramic |
| C506 | 1-102-973-11 | 100 p $\pm 5\%$ 50 V ceramic |
| C507 | 1-121-392-11 | 3.3 25 V electrolytic |
| C508 | 1-121-392-11 | 3.3 25 V electrolytic |
| C509 | 1-121-352-11 | 47 10 V electrolytic |
| C510 | 1-121-352-11 | 47 10 V electrolytic |
| C701 | 1-121-410-11 | 47 25 V electrolytic |
| C702 | 1-105-661-12 | 0.001 $\pm 10\%$ 50 V mylar |
| C703 | 1-121-404-11 | 33 25 V electrolytic |
| C704 | 1-123-063-11 | 220 35 V electrolytic |
| C705 | 1-105-719-12 | 0.033 $\pm 10\%$ 100 V mylar |
| C706 | 1-105-719-12 | 0.033 $\pm 10\%$ 100 V mylar |
| CV101,102 | 1-151-265-00 | capacitor, tuning |
| 103,401,402 | | |
| CT101,102 | | |
| 103,401,402 | | |

RESISTORS

All resistance values are in Ω , $\pm 5\%$, $\frac{1}{4}$ W and carbon type unless otherwise indicated.

| | | |
|------|--------------|-------|
| R101 | 1-244-673-11 | 1 k |
| R102 | 1-244-685-11 | 3.3 k |
| R103 | 1-242-657-11 | 220 |
| R104 | 1-242-683-11 | 2.7 k |
| R105 | 1-242-705-11 | 22 k |
| R106 | 1-242-651-11 | 120 |
| R107 | 1-242-677-11 | 1.5 k |
| R108 | 1-242-721-11 | 100 k |
| R109 | 1-244-660-11 | 300 |
| R201 | 1-242-701-11 | 15 k |
| R202 | 1-242-689-11 | 4.7 k |
| R203 | 1-242-657-11 | 220 |
| R204 | 1-242-643-11 | 56 |
| R205 | 1-242-665-11 | 470 |
| R206 | 1-242-673-11 | 1 k |
| R207 | 1-242-673-11 | 1 k |
| R208 | 1-244-657-11 | 220 |
| R209 | 1-242-657-11 | 220 |
| R210 | 1-242-643-11 | 56 |
| R211 | 1-242-690-11 | 5.1 k |
| R212 | 1-244-695-11 | 8.2 k |
| R213 | 1-242-673-11 | 1 k |
| R214 | 1-244-673-11 | 1 k |
| R215 | 1-244-721-11 | 100 k |

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| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|-----------------|-----------------|--------------------|
| R216 | 1-242-657-11 | 220 |
| R217 | 1-244-657-11 | 220 |
| R218 | 1-242-673-11 | 1 k |
| R219 | 1-244-673-11 | 1 k |
| R220 | 1-244-681-11 | 2.2 k |
| R221 | 1-244-689-11 | 4.7 k |
| R222 | 1-242-666-11 | 510 |
| R223 | 1-242-665-11 | 470 |
| R224 | 1-242-655-11 | 180 |
| R225 | 1-242-660-11 | 300 |
| R226 | 1-242-625-11 | 10 |
| R227 | 1-242-673-11 | 1 k |
| R228 | 1-242-673-11 | 1 k |
| R229 | 1-242-665-11 | 470 |
| R230 | | ----- |
| R231 | | ----- |
| R232 | 1-244-643-11 | 56 |
| R233 | 1-242-721-11 | 100 k |
| R234 | 1-242-690-11 | 5.1 k |
| R235 | 1-242-664-11 | 430 |
| R236 | 1-242-707-11 | 27 k |
| R237 | 1-242-673-11 | 1 k |
| R238 | 1-244-633-11 | 22 |
| R239 | 1-242-693-11 | 6.8 k |
| R240 | 1-244-703-11 | 18 k |
| R241 | 1-242-691-11 | 5.6 k |
| R242 | 1-244-717-11 | 68 k |
| R243 | 1-242-661-11 | 330 |
| R244 | 1-242-673-11 | 1 k |
| R245 | 1-244-677-11 | 1.5 k |
| R246 | 1-242-657-11 | 220 |
| R247 | 1-244-672-11 | 910 |
| R248 | 1-242-672-11 | 910 |
| R249 | 1-244-689-11 | 4.7 k |
| R250 | 1-242-667-11 | 560 |
| R251 | 1-242-682-11 | 2.4 k |
| R252 | 1-242-710-11 | 36 k |
| R253 | 1-242-705-11 | 22 k |
| R254 | 1-244-643-11 | 56 |
| R255 | 1-242-678-11 | 1.6 k |
| R301 | 1-244-699-11 | 12 k |
| R302 | 1-242-719-11 | 82 k |
| R303 | 1-242-719-11 | 82 k |
| R304 | 1-244-713-11 | 47 k |
| R305 | 1-244-673-11 | 1 k |
| R306 | 1-242-709-11 | 33 k |
| R307 | 1-244-719-11 | 82 k |
| R308 | 1-242-671-11 | 820 |
| R309 | 1-242-655-11 | 180 |
| R310 | 1-242-689-11 | 4.7 k |
| R311 | 1-242-695-11 | 8.2 k |
| R312 | 1-242-689-11 | 4.7 k |
| R313 | 1-242-677-11 | 1.5 k |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|---------------------|-----------------|--------------------------------------------|
| R314 | 1-242-673-11 | 1 k |
| R315 | 1-242-673-11 | 1 k |
| R316 | 1-242-697-11 | 10 k |
| R317 | 1-242-697-11 | 10 k |
| R318 | 1-242-713-11 | 47 k |
| R319 | 1-242-713-11 | 47 k |
| R320 | 1-242-625-11 | 10 |
| R401 | 1-242-691-11 | 5.6 k |
| R402 | 1-244-721-11 | 100 k |
| R403 | 1-244-701-11 | 15 k |
| R404 | 1-244-677-11 | 1.5 k |
| R405 | 1-242-643-11 | 56 |
| R406 | 1-242-657-11 | 220 |
| R407 | 1-242-691-11 | 5.6 k |
| R501 | 1-242-715-11 | 56 k |
| R502 | 1-242-715-11 | 56 k |
| R503 | 1-242-723-11 | 120 k |
| R504 | 1-242-661-11 | 330 |
| R505 | 1-242-661-11 | 330 |
| R506 | 1-242-723-11 | 120 k |
| R507 | 1-242-709-11 | 33 k |
| R508 | 1-242-703-11 | 18 k |
| R509 | 1-242-673-11 | 1 k |
| R510 | 1-242-703-11 | 18 k |
| R511 | 1-242-685-11 | 3.3 k |
| R512 | 1-242-660-11 | 300 |
| R513 | 1-242-660-11 | 300 |
| R514 | 1-242-685-11 | 3.3 k |
| R601 | 1-244-697-11 | 10 k |
| R602 | 1-244-694-11 | 7.5 k |
| R603 | 1-244-694-11 | 7.5 k |
| R604 | 1-244-697-11 | 10 k |
| R605 | 1-244-684-11 | 3 k |
| R606 | 1-244-701-11 | 15 k |
| R607 | 1-244-701-11 | 15 k |
| R608 | 1-244-684-11 | 3 k |
| R701 | 1-202-560-11 | 300 ± 5 % ½ W composition |
| R702 | 1-244-677-11 | 1.5 k |
| R703 | 1-242-675-11 | 1.2 k |
| R801 | 1-202-645-11 | 1 M ± 5 % ½ W composition (USA Model only) |
| RV501 | 1-222-773-00 | 4.7 k, adjustable (separation adj.) |
| SWITCHES | | |
| S801,802 } 803 } | 1-514-521-21 | lever (AFC, MODE, BAND) |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|----------------------|-----------------|--------------------------------------------------------------------------|
| S804 | 1-514-817-61 | lever (POWER) (AEP and UK Model) |
| | 1-516-023-00 | lever (POWER) (USA Model) |
| FILTERS | | |
| CF201,202 | 1-527-220-11 | fm (i-f), ceramic 10.70 MHz (red) |
| | 1-527-220-21 | fm (i-f), ceramic 10.67 MHz (blue) |
| | 1-527-220-31 | fm (i-f), ceramic 10.73 MHz (orange) |
| | 1-527-220-41 | fm (i-f), ceramic 10.64 MHz (black) |
| | 1-527-220-51 | fm (i-f), ceramic 10.76 MHz (white) |
| MISCELLANEOUS | | |
| CNJ801 | 1-509-546-00 | connector, ac input; 3-p (AEP and UK Model only) |
| CP801 | 1-231-057-00 | encapsulated component, 120 Ω + 0.033 μ F (USA Model only) |

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> |
|-----------------|-----------------|----------------------------------------------|
| CR201 | 1-231-175-00 | encapsulated component |
| F701 | 1-532-265-00 | fuse, 1 A (USA Model) |
| | 1-532-279-00 | fuse, 500 mA (AEP and UK Model) |
| F702 | 1-532-074-00 | fuse, 200 mA (AEP and UK Model) |
| | 1-532-260-00 | fuse, 250 mA (USA Model) |
| F703,704 | 1-532-084-00 | fuse, 100 mA (AEP and UK Model only) |
| F705 | 1-532-260-00 | fuse, 250 mA (USA Model only) |
| J801 | 1-536-405-00 | terminal strip, 4-p (ANTENNA) |
| J802 | 1-536-352-00 | jack, phono; 4-p |
| M201 | 1-520-125-00 | meter, TUNER INPUT |
| P801 | 1-534-526-00 | cord, power (USA Model) |
| PL801 | 1-518-170-31 | lamp, stereo 4.5 V/40 mA |
| PL802 | 1-518-012-00 | lamp, dial 8 V/0.15 A |
| PL803 | 1-518-011-16 | lamp, meter; 8 V/0.15 A |
| VS801 | 1-509-385-00 | selector, voltage (AEP and UK Model only) |
| | 1-517-021-00 | socket, meter lamp |
| | 1-536-353-00 | terminal post, U shaped (single) |

For Service Manuals Contact
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