

8. ADJUSTMENTS

Before starting adjustment, make sure that the dial pointer indicates the left hand end of the frequency scale (the lowest frequency position) when the tuning knob is turned fully counter-clockwise.

8.1 ADJUSTMENT OF FM SECTION

Caution:

Do not touch the IF transformers (T1 ~ T5) in the AM-FM IF assembly.

FM front end

Switch positions:

FUNCTION switch: FM MONO

MPX NOISE FILTER switch: OFF

FM MUTING switch: OFF

Connection of instruments:

FM signal generator (FM SG): Connect to the FM ANTENNA terminals through a 300-ohm dummy antenna.

AC voltmeter (with the maximum indication of about 1V): Connect to the FIXED L terminal.

Adjustment

1. Position the dial pointer of the TX-9500 at 90MHz.
2. Set the FM SG's output to 90MHz, 10dB with 100% modulation by 400Hz.
3. Adjust T5 so that the AC voltmeter reads a maximum.
4. Reset the TX-9500's dial pointer and the FM SG's output frequency to 106MHz (leaving the output level and degree of modulation as it is).
5. Adjust TC5 so that the AC voltmeter reads a maximum.
6. Reset the TX-9500's dial pointer and the FM SG's output frequency to 90MHz (leaving the output level and degree of modulation as it is).
7. Adjust T1, T2, T3 and T4 so that the AC voltmeter reads a maximum.
8. Reset the TX-9500's dial pointer and the FM SG's output frequency to 106MHz (leaving the output level and degree of modulation as it is).
9. Adjust TC1, TC2, TC3 and TC4 so that the AC voltmeter reads a maximum.
10. Repeat 1 to 9 until the AC voltmeter reads almost the same indications for 90MHz and 106MHz.
11. Resetting the FM SG's output level to 10dB, adjust T6 so that the AC voltmeter reads a maximum.

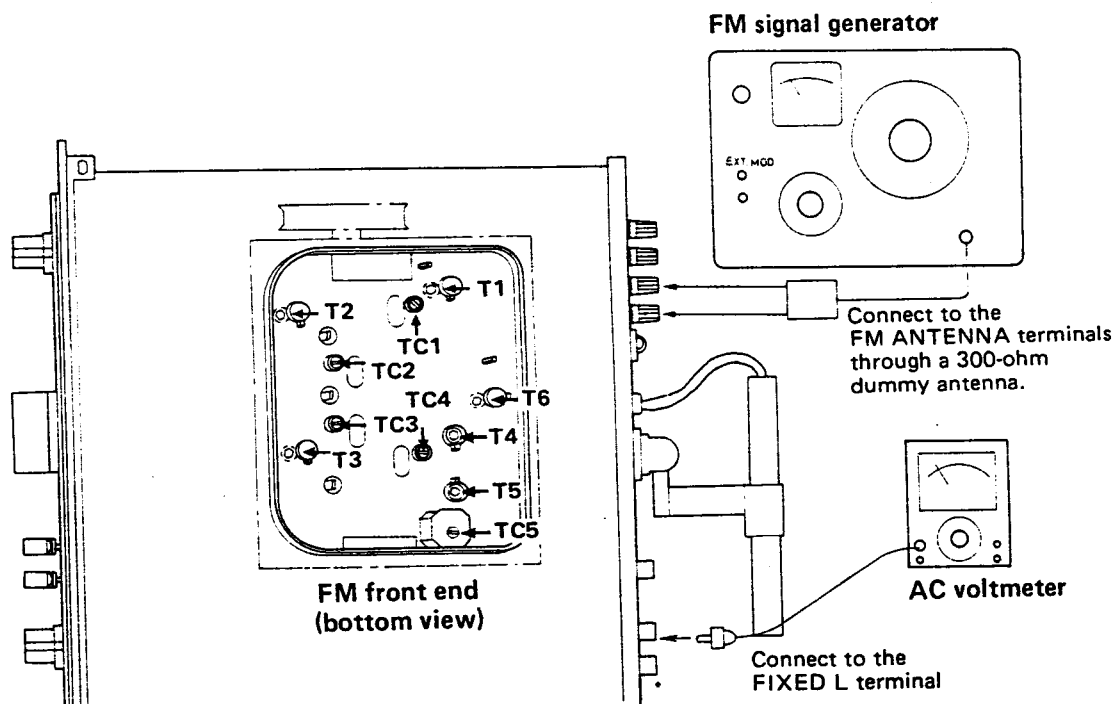


Fig. 7

Muting circuit

Switch positions:

FUNCTION switch: FM MONO
MPX NOISE FILTER switch: OFF
MUTING switch: OFF

Connection of instruments:

FM signal generator (FM SG): Connect to the FM ANTENNA terminals through a 300-ohm dummy antenna.

AC voltmeter (with the maximum indication of about 1V): Connect to the FIXED L terminal.

Distortion meter: Connect to terminal No.12 of the AM-FM IF assembly.

Adjustment

1. Turn VR1 fully counterclockwise.
2. Setting the TX-9500 to a condition, by reducing the FM SG's output level (less than -6dB) or detuning the TX-9500, such that it is receiving no input signals, adjust the primary (lower) core of T6 so that the TUNING meter points to the center of the scale.

3. Resetting the FM SG's output level to 60dB, adjust the secondary (upper) core of T6 so that distortion becomes minimum.
4. Set the FM SG's output to 98MHz, 20dB with 100% modulation by 400Hz.
5. Tune the TX-9500 to 98MHz (Make a fine tuning looking at the TUNING meter).
6. Set the MUTING switch at "1."
7. Turn VR1 clockwise slowly and stop it just when the AC voltmeter abruptly indicates 0V.
8. Reset the MUTING switch "OFF".
9. Setting the TX-9500 to a condition, by reducing the FM SG's output level (less than -6dB), such that it is receiving no input signals, adjust the primary (lower) core of T6 so that the TUNING meter points to the center of the scale.
10. Repeat 8 to 9 for several times.
11. Resetting the FM SG's output level to 100dB, adjust VR2 so that the SIGNAL meter points to "5."

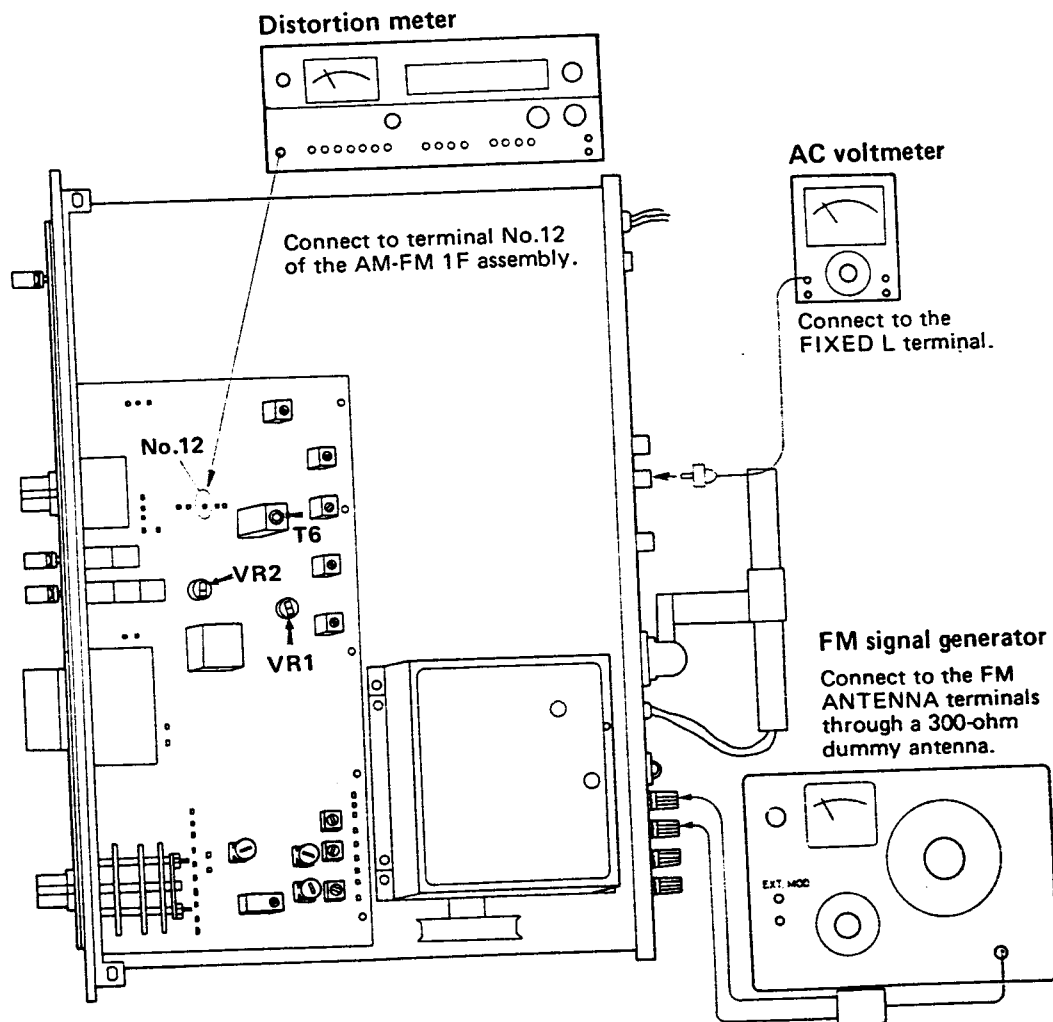


Fig. 8

FM MPX circuit**Switch positions:**

FUNCTION switch: FM AUTO

MPX NOISE FILTER: switch: OFF

MUTING switch: OFF

Connection of instruments:

FM signal generator (FM SG): Connect to the FM ANTENNA terminals through a 300-ohm dummy antenna.

MPX signal generator (MPX SG): Connect to the "external modulation" terminals of FM SG.

AC voltmeter: Connect to the FIXED L terminal.

Oscilloscope: Connect the horizontal and vertical input terminals respectively to the MPX SG's PILOT OUT terminal and No.11 terminal of the MPX assembly through a probe.

Adjustment

1. Set the FM SG's output to 98MHz, 60dB with 0% modulation.
2. Tune the TX-9500 to 98MHz. (Make a fine tuning looking at the TUNING meter.)
3. Adjust VR1 so that the Lissajous' figure developed on the oscilloscope screen becomes stationary.
4. Reset the FM SG's output to 98MHz, 60dB with external modulation and make the MPX SG generate the pilot and R channel signals.
5. Adjust VR2 so that the AC voltmeter reads minimum.

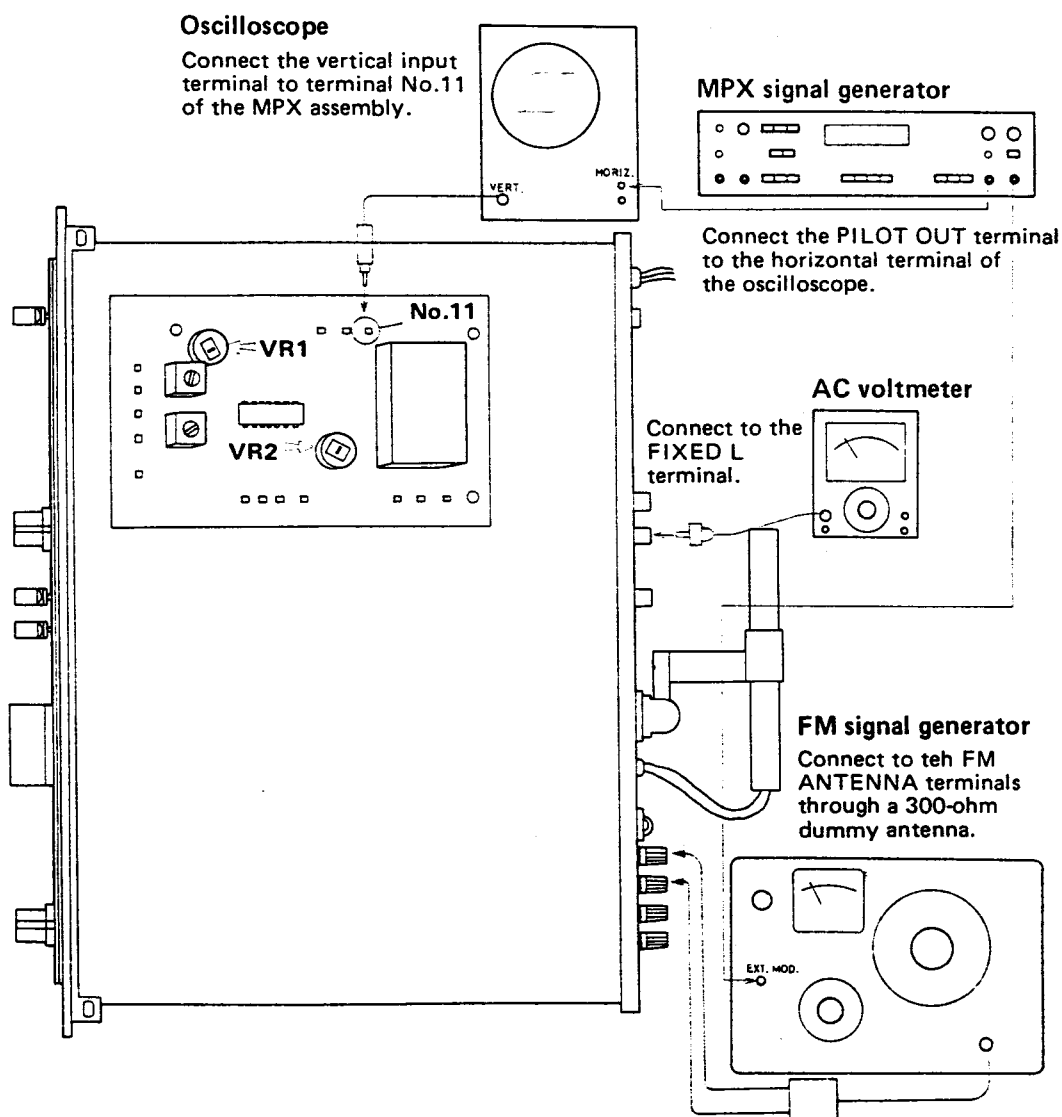


Fig. 9

8.2 ADJUSTMENT OF AM SECTION

Adjustment of IFT

Switch positions:

FUNCTION switch: AM

Connection of instruments:

Sweep generator (400kHz ~ 500kHz): Connect the output terminal to No.2 terminal of the AM-FM IF assembly.

Oscilloscope: Connect the vertical input terminal to the FIXED L terminal and the horizontal input terminal to the sweep generator's time axis output terminal.

Adjustment

1. Set the sweep generator output level to 80dB.
2. Adjust F5 and T9 so that the figure developed on the oscilloscope becomes laterally symmetrical with the axis of symmetry at 455kHz and it has a maximum amplitude as well.

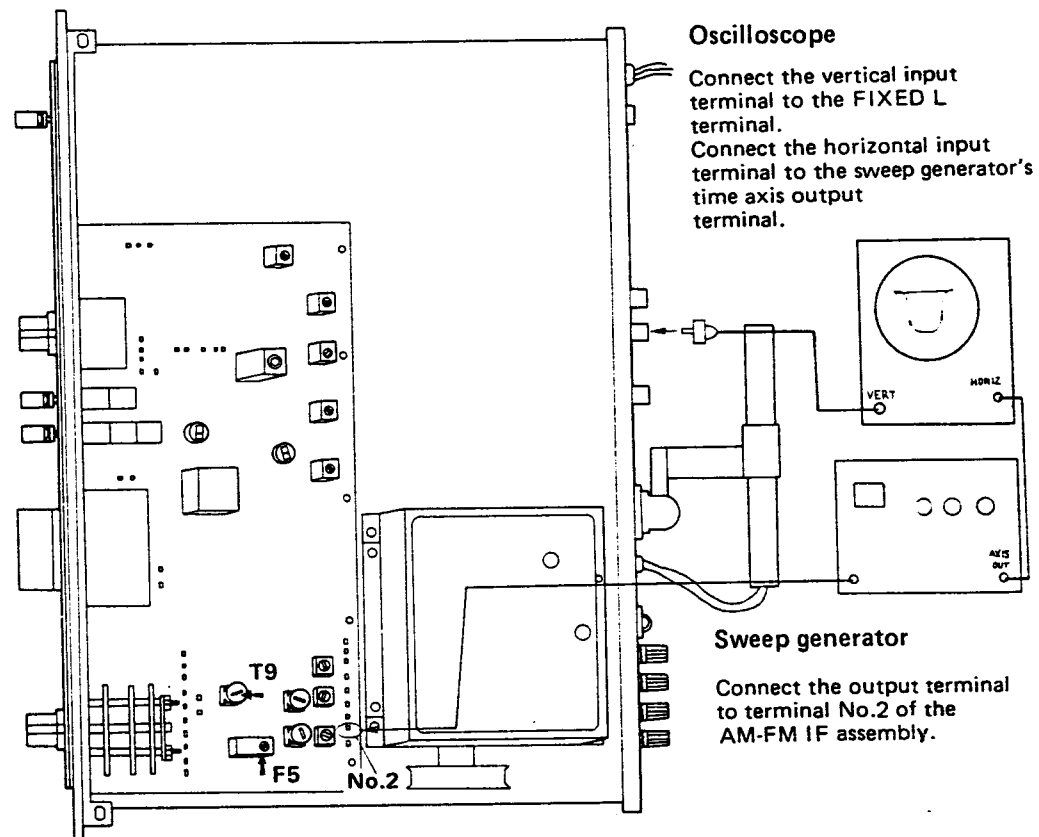


Fig. 10

• Tracking adjustment

Switch position:

FUNCTION switch: AM

Connection of instruments:

AM signal generator (AM SG): Connect to the AM ANTENNA terminals through a 1k-ohm resistor.

AC voltmeter: Connect to the FIXED L terminal.

Adjustment

1. Position the TX-9500's dial pointer at 600kHz.
2. Set the AM SG's output to 600kHz, 30dB with 30% modulation by 400Hz.

3. Adjust the cores of T8, T7 and the bar antenna so that the AC voltmeter reads maximum.
4. Reset the TX-9500's dial pointer and the AM SG's output frequency to 1,400kHz (leaving the output level and degree of modulation as it is set).
5. Adjust TC1, TC2 and TC3 so that the AC voltmeter reads maximum.
6. Repeat 1 to 5 until the AC voltmeter reads almost the same indications for 600kHz and 1,400kHz.

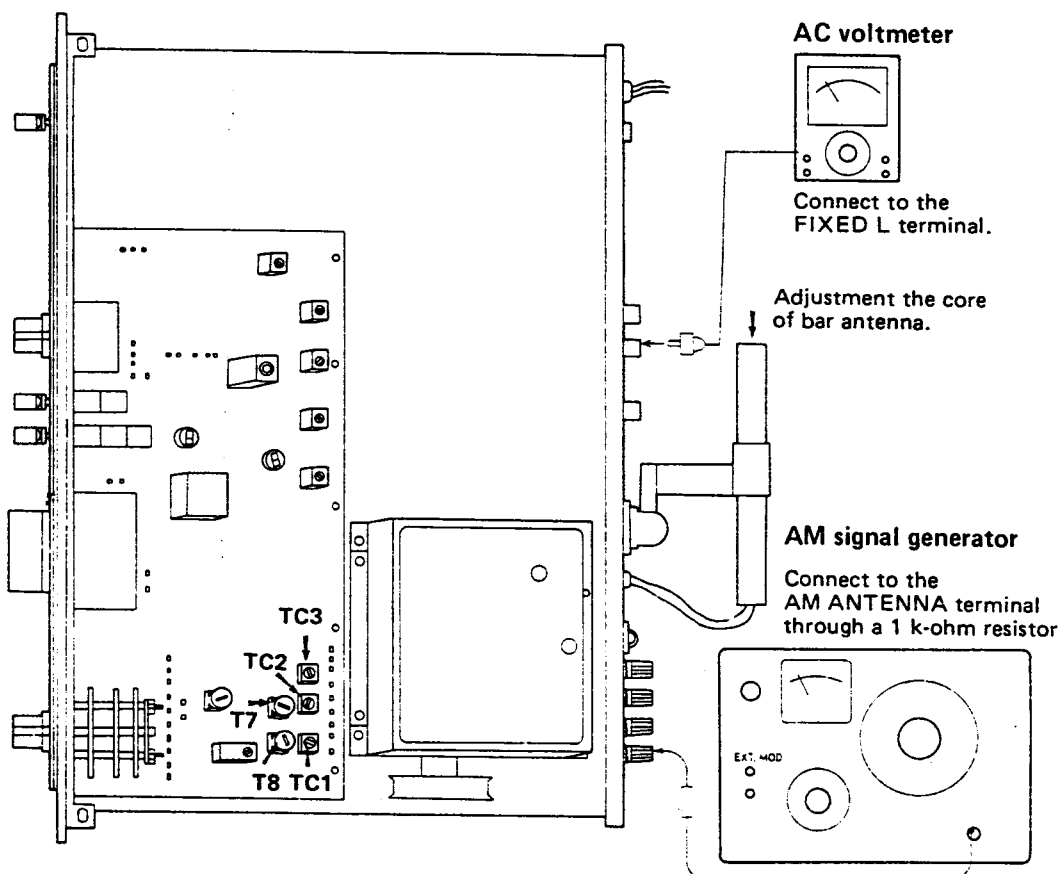


Fig. 11

8.3 ADJUSTMENT OF AUDIO FREQUENCY OSCILLATOR

Switch position:

FUNCTION switch: REC LEVEL CHECK

Connection of instrument:

AC voltmeter: Connect to the FIXED L terminal.

1. Make sure that the AC voltmeter deflects intermittently.
2. Adjust VR1 so that the AC voltmeter reads half of the rated output.*

*The output level of audio signal when the TX-9500 is receiving FM signals of 60dB with 100% 400Hz modulation.

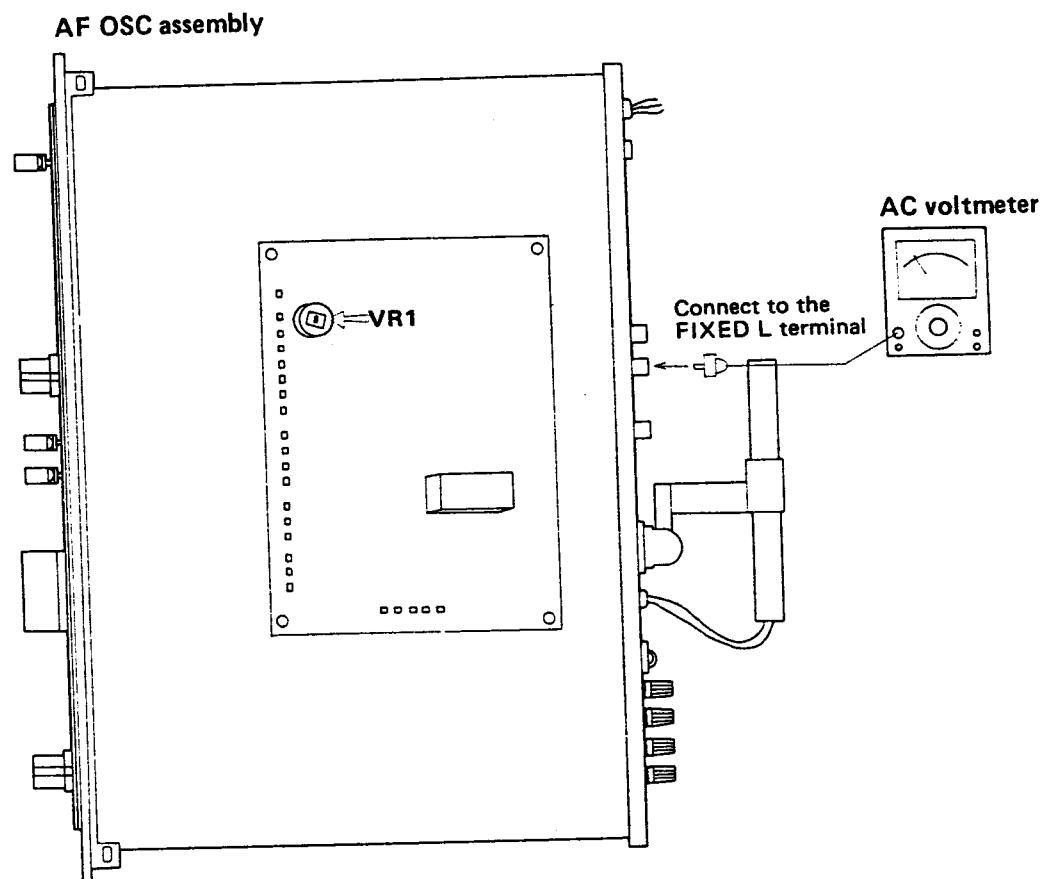


Fig. 12

9. DIAL CORD STRINGING

1. Set the tuning capacitor to maximum capacitance, fully clockwise.
2. Fasten one end of the cord to the protrusion on the tuning drum and lead it round pulleys A, B and C.
3. Wind the cord 3 turns round the tuning shaft and run it round pulley D.
4. Wind the cord 2 turns round the dial pulley and tie the end to the spring while tensioning the spring slightly.
5. Confirm that dial stringing moves smoothly. If so, cut the unnecessary portion of string.
6. Turn the tuning knob fully counterclockwise and fix the dial pointer to string so that it indicates low end on the dial scale.

