Teleton

SERVICE MANUAL
MW/FM Stereo Receiver
MODEL TFS-55

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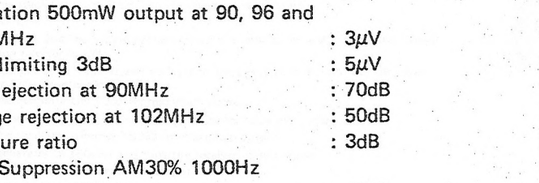


SPECIFICATIONS

–AM Band–

Range	: 510–1605KHz
Antenna Sensitivity for S/N 20dB at 600, 1000 and 1400kHz	: 200μV/m
S/N ratio at 1mV/m	: 35dB
AGC figure of merit	: 50dB
Distortion at reference output 30% Mod. at 5mV and 100mV	: 2%
IF rejection at 600kHz	: 50dB
Image reiection at 1400 kHz	: 60dB

–FM Band–

Range	: 87.5–104MHz
IHF Sensitivity at 90, 96 and 104 MHz with 500mW	: 3μV
Sensitivity for 30dB S/N 22.5kHz deviation 500mW output at 90, 96 and 102MHz	: 3μV
FM limiting 3dB	: 5μV
IF Rejection at 90MHz	: 70dB
Image rejection at 102MHz	: 50dB
Capture ratio	: 3dB
AM Suppression AM30% 1000Hz FM22.5kHz 400Hz	: 40dB

–FM STEREO Band–

Stereo indicator sensitivity	: 10μV
Separation at 1100μV (Use 38kHz filter) at 400Hz	: 35dB

–AUDIO–

Input Impedance	
Phono MAG,	:> 50kohm
Phono X'tal	:> 400kohm
AUX	:> 50kohm
Tape	:> 50kohm
Output power (1%THD) both ch.	: 16W
Music power	: 30W
Power Band width	: 20–20000Hz
Fidelity Band width	: 20–20000Hz
Minimum Volume hum (AUX)	: 1mV
Maximum Volume Hum (AUX) Bass Treble, Flat	: 10mV
Bass cut at 100Hz	: 12dB
Treble cut at 10kHz	: 12dB
Bass Boost at 10kHz and 100Hz	: ±12dB
Compensation (Loudness on) at 100Hz	: 10dB±3dB

ALIGNMENT INSTRUCTION

1. FM CIRCUIT

1-1. Test Equipment Required:

FM band signal generator	: 400 Hz.30% modulation(22.5kHz deviation) 300 ohm output
FM IF sweep generator	: 10.7 MHz±500 kHz
VTVM	: Low range AF
Oscilloscope	: High sensitivity general purpose

Accurate audio generator (to 100kHz)
FM Stereo signal generator : for MPX tests

1-2. IF Amplifier Alignment:

Note:
a. For safety, the output should be connected to loudspeaker or equivalent resistance loads.
b. Set the panel controls as follows.
FUNCTION selector to FM.
FM AFC switch to OFF.
FM MUTING switch to OFF.
VOLUME control at fully counter-clockwise, or minimum output position.
c. The IF sweep generator is connected to the test point 1 (R301).

Step	Adjust	Input Connection	Output Connection	Wave Form
1	T301, T302 T303, T304 (primary)	TP_1	TP-2	Best V Curve
2	T304 (Secondary)	TP_1	TP-3	Best S Curve

"TP-2" is TR304 collector.
"TP-3" is at the ratio detector output.

SCHEMATIC DIAGRAM

NOTE:
1) FUNCTION SWITCH SHOWN IN FM POSITION.
2) AFC ON, LOUDNESS OFF, MODE STEREO, AND MUTING ON POSITION.
3) ALL RESISTANCE VALUES ARE INDICATED IN OHM(×10³ OHM), (M=10⁶ OHM).
4) ALL CAPACITANCE VALUES ARE INDICATED IN μF (P=10⁻⁶μF).

1-3. FM Tuner pack:

The FM tuner may require alignments when the signals are distorted or when the sensitivity has been lowered.

Set the FUNCTION selector to FM. AFC switch to OFF and MUTING switch to OFF. In the steps to follow, the FM signal generator is set for 400Hz 30% (22.5KHz dev.) modulation. For the output indication, the V.T.V.M. and the scope in parallel are connected to the RIGHT and LEFT speaker jacks.

Step 1 Set the generator output to 87.5 MHz. and variable capacitor counter - clockwise. Adjust the coil L 106 for maximum output.

Step 2 Set the generator output to 104.5 MHz and variable capacitor clockwise. Adjust the trimmer TC 103 for maximum output.

Step 3 Set the generator output to 90 MHz. and tune the receiver to this signal. Adjust the coils L102 and L104 for maximum output.

Step 4 Set the generator output to 103 MHz, and tune the receiver to this signal. Adjust the trimmers TC101 and TC102 for maximum output.

Step 5 Repeat the alignments in Steps 1, 2, 3 and 4.

Note:

In the above alignments, do not forget to keep the generator output level as low as possible for the best results.

1-4. FM Stereo(Separation alignment)

1-4-1 Test Equipments and Condition

- FM Signal Generator : 300 ohm unbalanced dummy 98MHz 1mV 60dB input
- FM Multiplex Modulator Set side
- Function Switch : FM
- VR : Alignment
- Balance : Center alignment
- TRE. BASS : Center
- Loudness FM Muting FM AFC : Off
- Mode : Stereo

1-4-2 Alignment of Stereo Modulator

- 19kHz Pilot Signal : 7.5kHz(10%)
- L+R Main Signal : 67.5kHz(90%)

Before put abovementioned modulation, adjust 19kHz Phase-alignment certainly. (Measuring Equipment)

1-4-3 Alignment Procedure

When abovementioned preparation completed, tune the set for muximum output.

(Note: Set R402; 1kohm semi-fixed VR to center position)

a) Separation Alignment

Adjust T401 core to light stereo indicator lamp, after tuning muximum output with (L+R) +19kHz modulated signal.

Adjust T401 and T402 cores for maximum output in L side with (L-R)+19kHz modulated signal.

Observing wave forms on oscilloscope with L+19kHz modulation, then change modulation to R+19kHz, if the wave form is normal(no clip, no small peak),

Adjust R402 (1k ohm)to minimize output wave forms.

Next, adjust it so as R side output minimum with L+19kHz modulated wave.

When the difference of L and R separation is more than 6dB, tune T402 finely to lessen the difference of separation between L and R.

If the wave form is abnormal in L side with L+19kHz, and the separation is unbalance, adjust again for I.F. and test for MPX circuit.

After alignment completed, fix T401, T402 with locking paint.

2. AM & LW CIRCUIT

2-1. Test Equipment Required.

AM standard signal generator covering the 460kHz IF band and the medium wave band. The modulation is set to 400Hz, 30%.

(If available, a sweep generator for the 460KHz band will speed up the alignment.)

VTVM : Low range AF

Oscilloscope : general purpose

2-2. IF Amplifier Alignment

Note:

a. For safety, the output should be connected to loudspeakers or equivalent resistance loads.

b. Set the panel controls as follows:
FUNCTION Selector to AM
MODE switch(FM STEREO MONO switch) to MONO
VOLUME control at fully clockwise

c. The modulated 460KHz. signal is connected to test point TP-9 (TR4 Base), and should be kept at a low level consistent with good measurement.

Step 1. Connect the VTVM to the Speaker terminal (either channel)

Step 2. Adjust the IF transformers T301 and T306 for maximum indication.

2-3. AM Tuning Circuit

The panel control setting is the same as for the IF amplifier tests. The VTVM (and scope) connection is the same as for the IF amplifier tests.

Step 1. Set the generator to 505kHz and connect to the AM Ant. terminal. Set the variable capacitor fully counterclockwise.

Step 2. Adjust the oscillator coil T202 for maximum output.

Step 3. Set the generator to 1650kHz and variable capacitor fully clockwise.

Step 4. Adjust the oscillator trimmer TC204 for maximum output.

Step 5. Set the generator to 600kHz and tune the receiver to this signal.

Step 6. Adjust the coil L202 for maximum output.

Step 7. Set the generator to 1400kHz and tune the receiver to this signal.

Step 8. Adjust the trimmer TC204 for maximum output. Repeat the steps 1 through 8 until no improvement is obtained.

2-4. LW Tuning Circuit

The panel control setting and the VTVM connection are the same as for AM IF Amplifier Alignment except function selector to LW.

Step 1. Set the generator to 145kHz and connect to the LW Ant. terminal. Set the variable capacitor fully counter-clockwise.

Step 2. Adjust the oscillator coil T201 for maximum output.

Step 3. Set the generator to 290kHz and variable capacitor fully clockwise.

Step 4. Adjust the oscillator trimmer TC203 for maximum output.

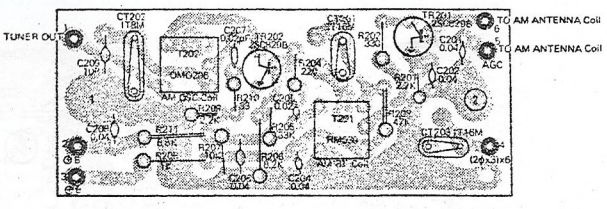
Step 5. Set the generator to 160kHz and tune the receiver to this signal.

Step 6. Adjust the coil L201 for maximum output.

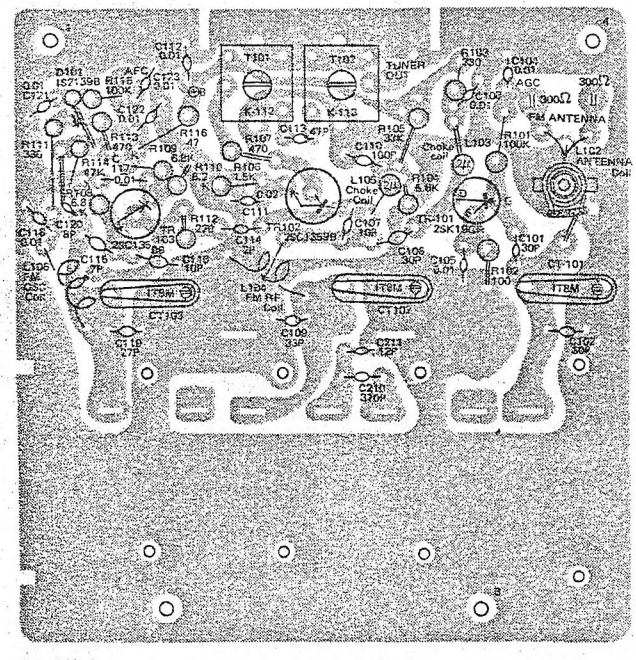
Step 7. Set the generator to 250kHz and tune the receiver to this signal.

Step 8. Adjust the trimmer TC201 for maximum output. Repeat the steps 1 through 8 until no improvements is obtained.

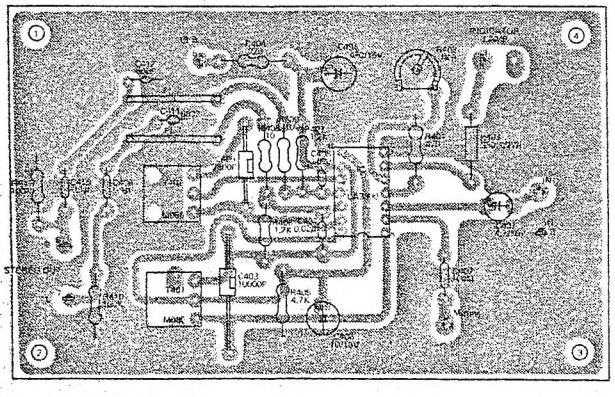
AM TUNER P.C. BOARD



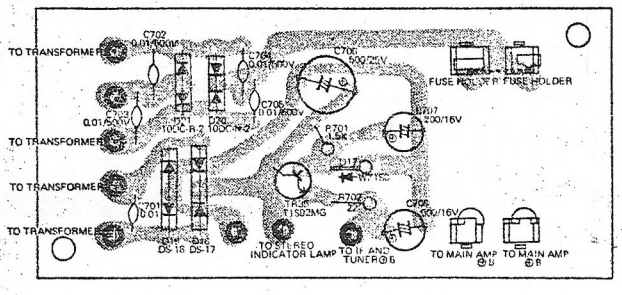
FM TUNER P.C. BOARD



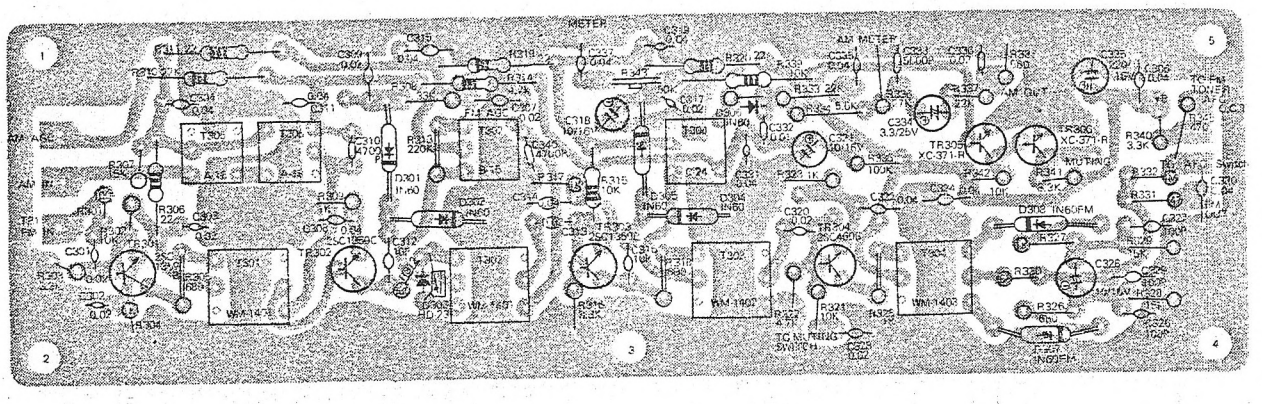
MPX P.C. BOARD



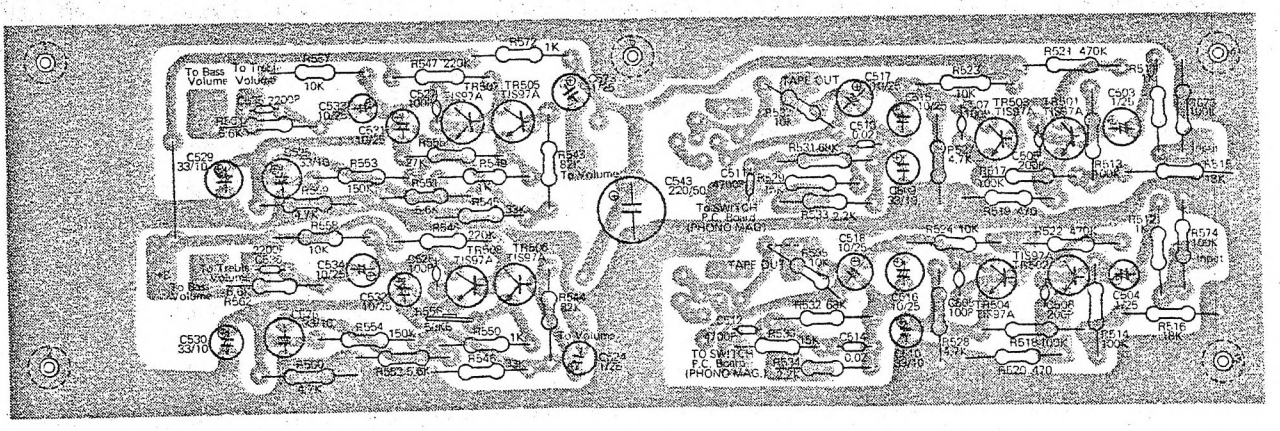
POWER SUPPLY P.C. BOARD



IF P.C. BOARD



PRE AMP P.C. BOARD



MAIN AMP P.C. BOARD