



Service Manual

for AM-FM

Music Intercom System - Model 2540-2541

SYSTEM CHECK-OUT PROCEDURE

1. Set all Remote Station Selector Switches to OFF (Center) position.
2. Rotate Master Speaker Volume Control fully clockwise.
3. Turn unit on with ON-OFF Volume Knob and set control two-thirds clockwise. AM and FM Tuning Dial will be illuminated.
4. Set Selector Switch to AM position. Tune in AM radio station and check reception.
5. Set Selector Switch to FM position. Tune in FM radio station and check reception.
6. Rotate Tone Control full range noting increase and decrease in treble and base emphasis.
7. With Radio playing, push all Remote Station Selector Switches on Master to Radio-Intercom (Down) position. Check all Remote Speaker Stations for radio reception. Check operation of all Remote Speaker Volume Controls.
8. Talk from Master to the Remote Speaker Stations by pushing Master Inside Talk-Listen Switch to Talk (Right) position. Check for Intercom operation at all Remote Speakers. Radio should be silenced.
9. Master Inside Talk-Listen Switch to Listen (Left) position to hear reply from Remote Stations. Operation of Talk-Button on Remote Speaker is not required.
10. Return Master Inside Talk-Listen Switch to Center position. Talk from each Remote Speaker Station to Master and other Remotes by depressing Talk-Button on Remote Speaker.
11. With Radio playing push all Remote Station Selector Switches on Master to Listen (Up) position. Talk from each Remote Speaker Station to Master without operating Talk Button of Remote.

NOTE: If Intercom volume level does not override radio, remove Master Unit from wall and adjust R-59 Level Set Control on P.C. board for normal radio listening level with system volume control between one-third to one-half clockwise rotation.
12. Return all Remote Station Selector Switches to Radio-Intercom (Down) or OFF (Center) position. Push Master door Talk-Listen Switch to Talk (Right) position. Check for Intercom operation at Door Remote Speaker.
13. Push Door Talk-Listen Switch to Listen (Left) position. Check Intercom operation at Master from Door Speaker.
14. Connect signal from Record Changer into Phono Jack of Master Set Selector Switch in Phono position and check for phono reception. Intercom will override recorded music.

MASTER STATION DISASSEMBLY INSTRUCTIONS

PARTIAL DISASSEMBLY

1. Turn ON-OFF Volume Control to OFF position.
2. Remove front panel mounting screws.
3. Lift Master unit forward, unplug Antenna lead from wall box terminals. Disconnect power plug (depress tabs and rock slightly) from switch bank assembly.

COMPLETE DISASSEMBLY

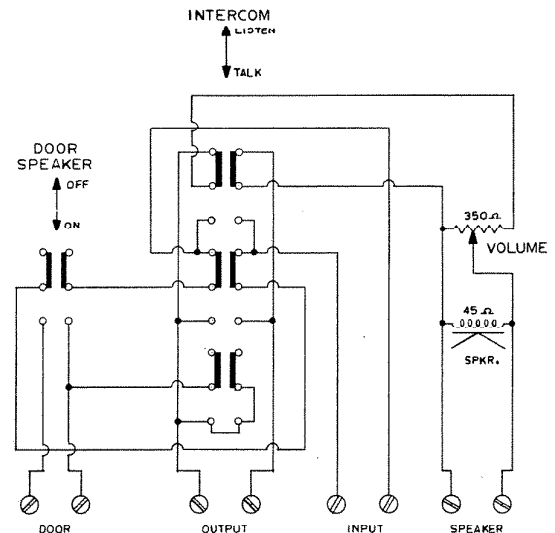
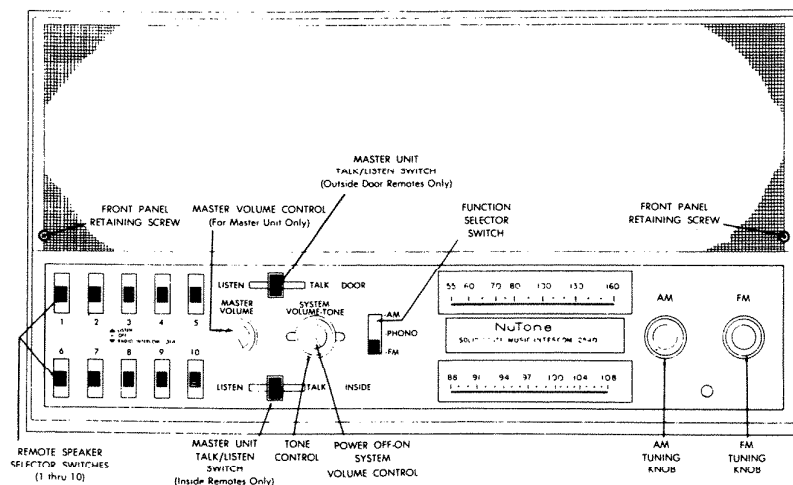
1. Perform Steps 1 through 3 of Partial Disassembly.
2. Pull and remove front panel control and switch knobs.
3. Remove six flat head screws securing chassis to front panel.
4. Unsolder leads from Master speaker terminals.
5. For access to components of the FM Tuner assembly, unsolder covers of Tuner unit.

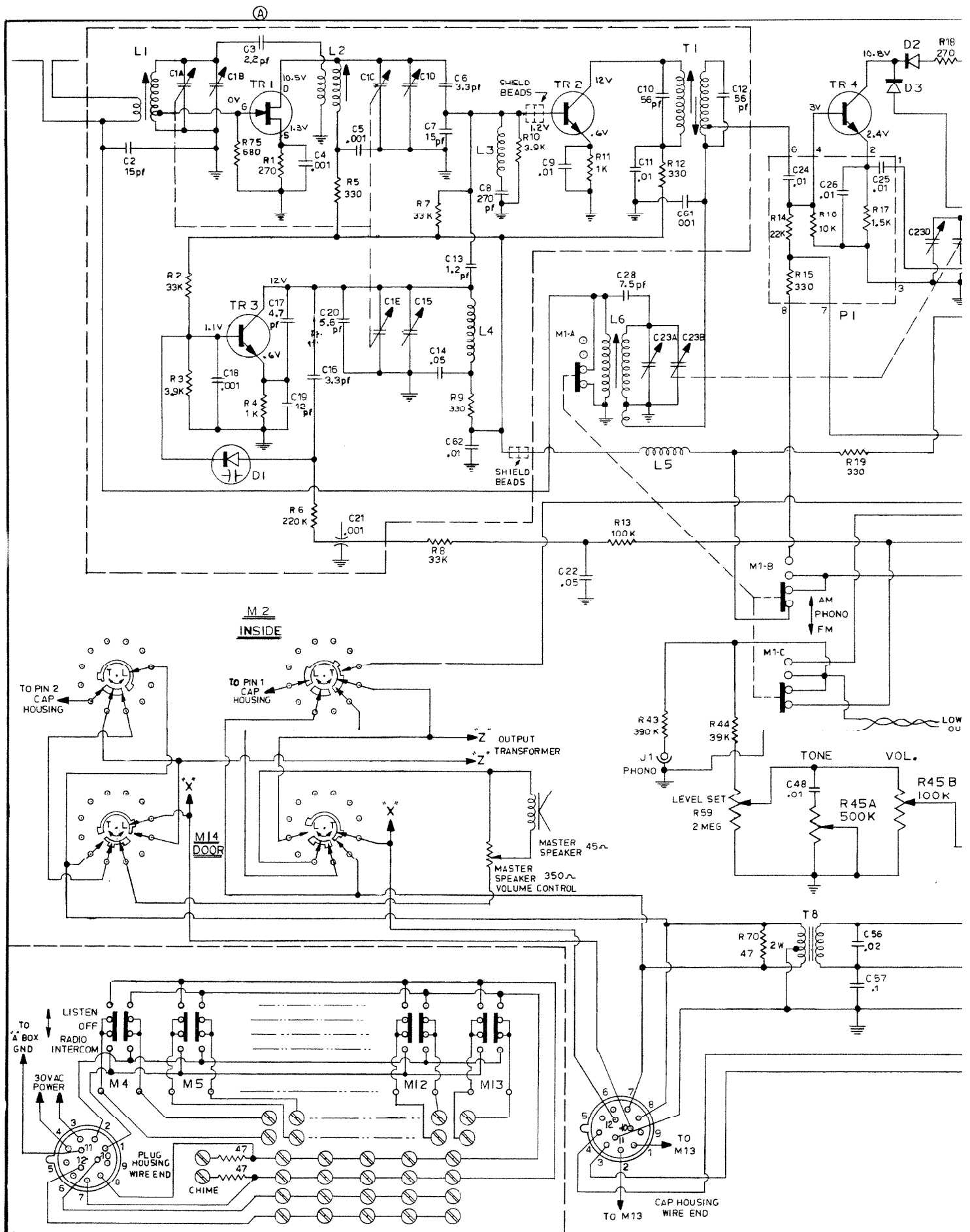
OPERATING AND TESTING — BENCH SERVICE

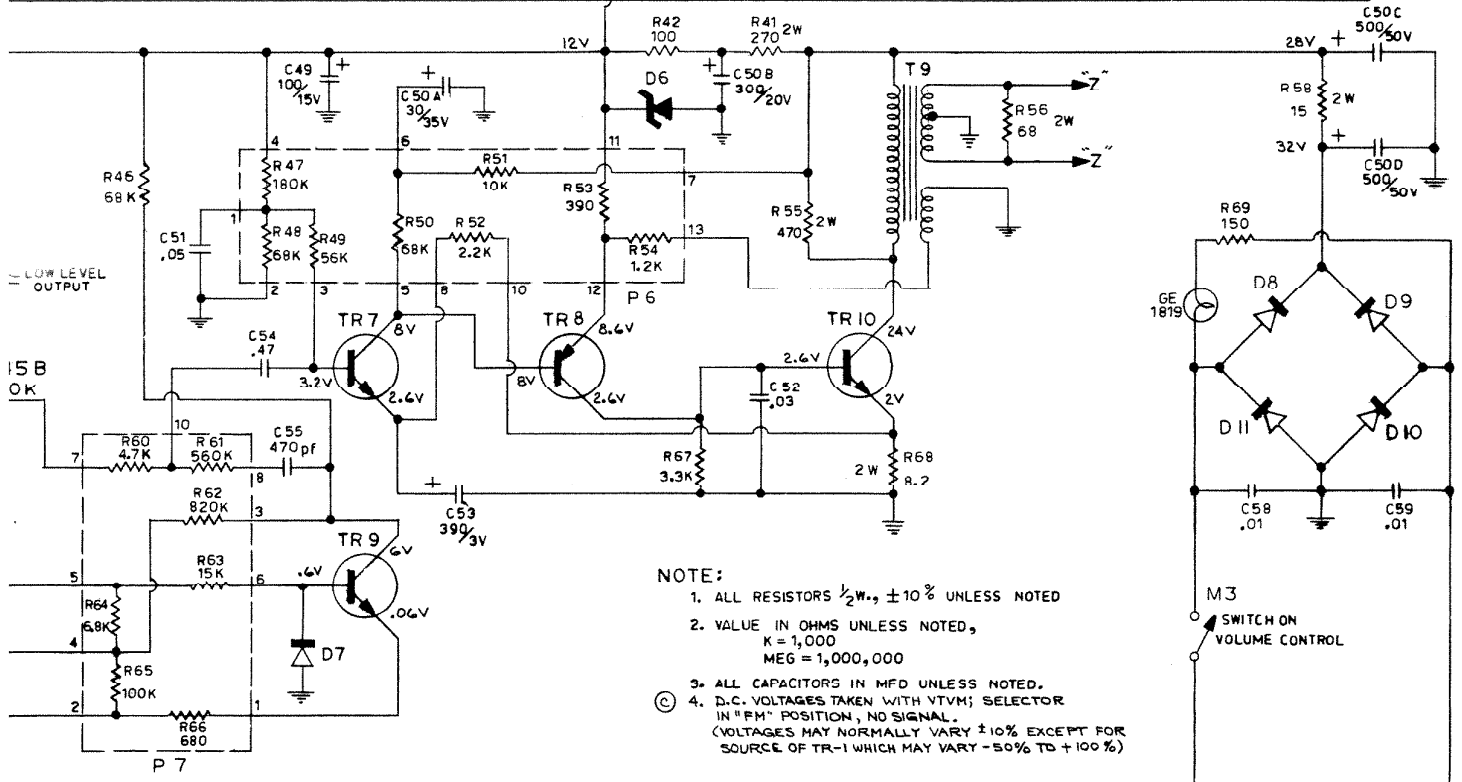
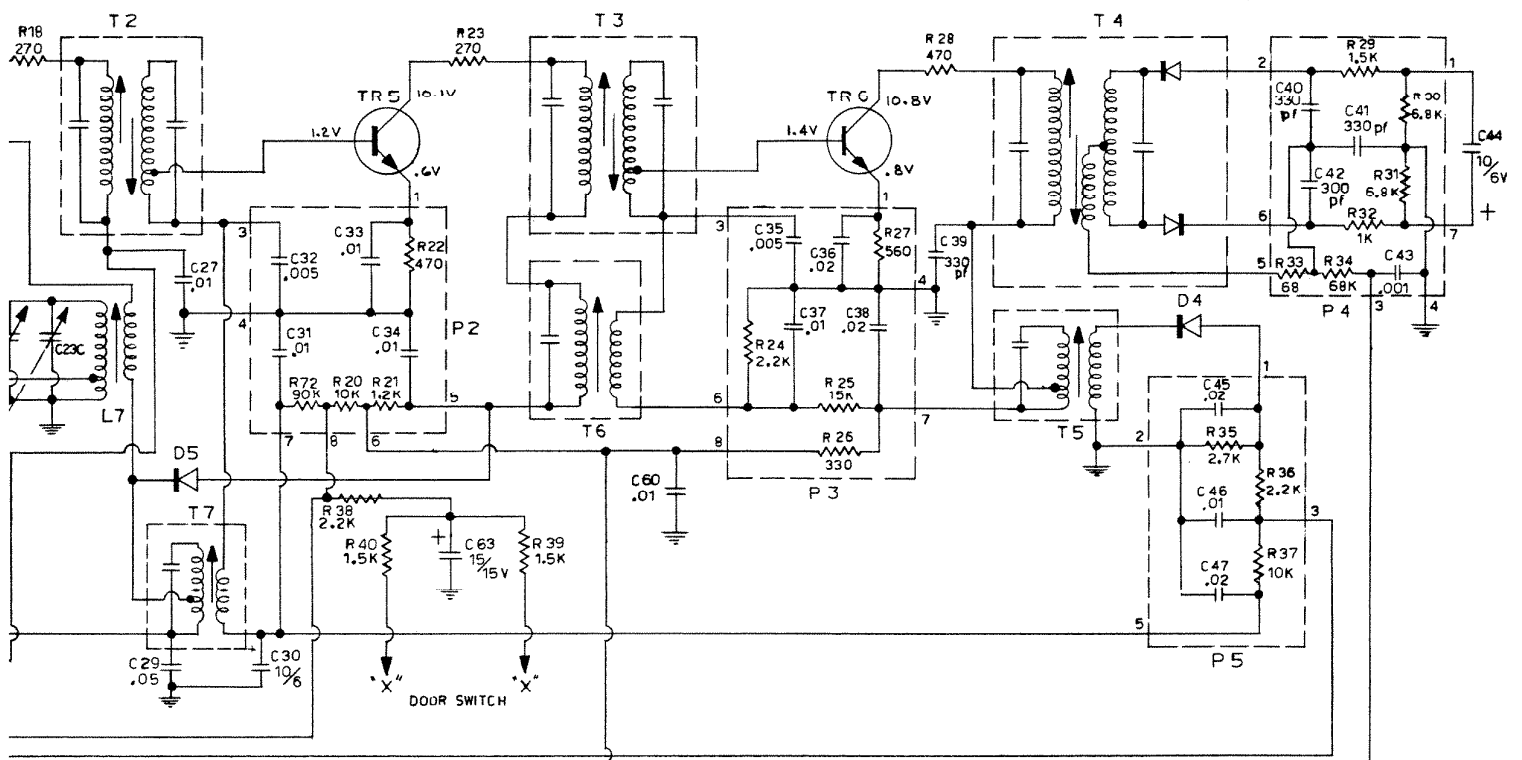
1. To operate unit after removal from wall, attach 30-volt transformer to pins #3 and #4 of plug housing. (Use NuTone No. 40614 30-volt transformer.)
2. Connect an auxiliary 45 ohm speaker to the output contacts Red leads on Talk/Listen switch.
3. To check Intercom operation from Speaker to Master, connect auxiliary speaker to input contact Orange leads on Talk/Listen switch. Talk into auxiliary speaker and observe Intercom reception on Master speaker.

NOTE: As Auxiliary speaker will be in close proximity to Master, proper Intercom operation will be noted by feedback oscillations of speakers.

REMOTE SCHEMATIC 2550 - 2553 - 2556 - 2557

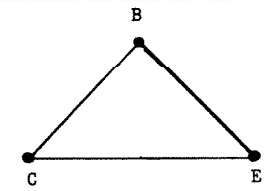
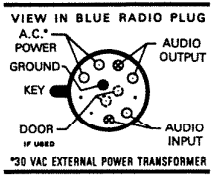






NOTE:

1. ALL RESISTORS $\frac{1}{2}$ W., $\pm 10\%$ UNLESS NOTED
2. VALUE IN OHMS UNLESS NOTED, K = 1,000, MEG = 1,000,000
3. ALL CAPACITORS IN MFD UNLESS NOTED.
4. D.C. VOLTAGES TAKEN WITH VTVM; SELECTOR IN "FM" POSITION, NO SIGNAL. (VOLTAGES MAY NORMALLY VARY $\pm 10\%$ EXCEPT FOR SOURCE OF TR-1 WHICH MAY VARY -50% TO $+100\%$)



ALIGNMENT INSTRUCTIONS

Prealignment Instructions: Volume control should be at a minimum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use standard hex and slotted type alignment tools.

AM RF and IF Alignment — Set selector switch on AM position.

DUMMY ANTENNA	SIG. GEN. COUPLING	SIG. GEN. FREQ.	RADIO DIAL SETTING	CONNECT V T V M	ADJUST	REMARKS
1) .01 mfd.	High side to base of TR-4. Low side to chassis.	455 KC (400 cycle Mod.)	Tuning gang mid-scale.	DC probe to Pin 3 of P5. Com. to chassis.	T6, T7, T5	Adjust for maximum deflection. Keep generator output at minimum to obtain output reading.
2) .01 mfd.	High side to base of TR-4. Low side to chassis.	1620 KC (400 cycle Mod.)	Tuning gang fully open.	DC probe to Pin 3 of P5. Com. to chassis.	C23D	Adjust for maximum deflection.
3) .01 mfd.	High side to base of TR-4. Low side to chassis.	537 KC (400 cycle Mod.)	Tuning gang fully closed.	DC probe to Pin 3 of P5. Com. to chassis.	L7	Adjust for maximum deflection. Repeat steps 2 and 3.
4) 50 mmf.	High side to shield of FM Antenna lead. Low side to chassis.	1400 KC (400 cycle Mod.)	1400 KC	DC probe to Pin 3 of P5. Com. to chassis.	C23A	Adjust for maximum deflection.
5) 50 mmf.	High side to shield of FM Antenna lead. Low side to chassis.	600 KC (400 cycle Mod.)	600 KC	DC probe to Pin 3 of P5. Com. to chassis.	L6	Adjust for maximum deflection. Repeat steps 4 and 5.

FM RF and IF Alignment — Set selector switch on FM position.

Use frequency modulated signal with 450 KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SIG. GEN. COUPLING	SIG. GEN. FREQ.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6) .01 mfd.	High side to base of TR-6. Low side to chassis.	10.7 MC (200-300 KC Sweep)	Point of Non-Interference.	Vert. Amp. to Pin 3 of P4. Low side to chassis.	T4 (Top & Bottom)	Adjust for symmetrical "S" curve (Fig. B).
7) .01 mfd.	High side to base of TR-4. Low side to chassis.	10.7 MC (200-300 KC Sweep)	Point of Non-Interference.	Vert. to emitter of TR-6. Low side to ground.	T2, T3 (Top & Bottom)	Adjust for curve of maximum amplitude and symmetry (Fig. A).
8)	High side to FM ant. Low side to shield of FM ant.	106 MC	106 MC	Vert. Amp. to Pin 3 of P4. Low side to chassis.	C1B, C1D, T1 (Top & Bottom)	Adjust for symmetrical "S" curve (Fig. B). Reduce sweep width if necessary.

Only make following adjustment if unit will not track properly.

9)	High side to FM ant. Low side to shield of FM ant.	108.5	108.5	Vert. Amp. to Pin 3 of P4. Low side to chassis.	C15	Adjust for symmetrical "S" curve (Fig. B). Reduce sweep width if necessary.
10)	High side to FM ant. Low side to shield of FM ant.	87.5	87.5	Vert. Amp. to Pin 3 of P4. Low side to chassis.	L-4	Expand or compress coil for symmetrical "S" curve (Fig. B). Reduce sweep width if necessary. Repeat steps 9 and 10 until no further improvement is noted. Repeat steps 7 and 8.

2540-2541 CHASSIS WITH CALL-OUTS

P.C. BOARD TRANSISTOR TERMINALS

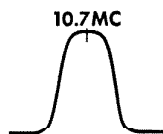


Fig. A

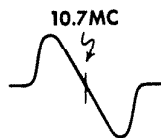
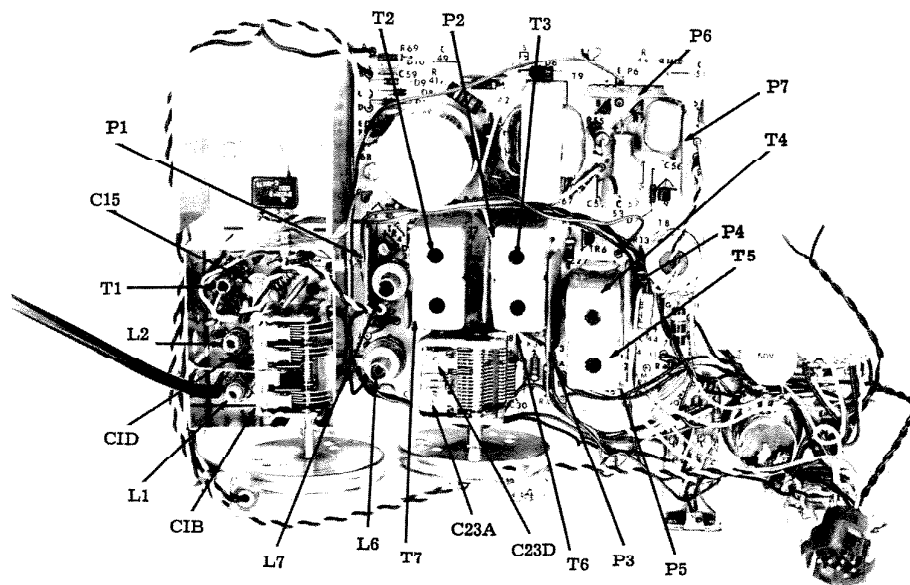
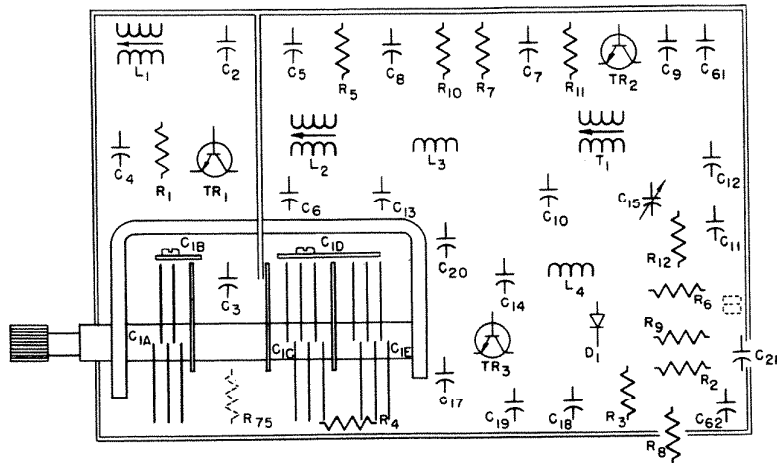
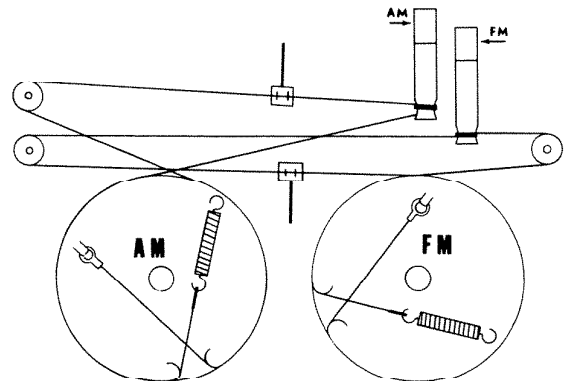


Fig. B





F. M. TUNER



DIAL CORD STRINGING GUIDE

TEMPORARY PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
TRANSISTORS			TRANSFORMERS			RESISTORS		
TR 1	36582	FM RF Amp	T 1	30524	FM IF	R 59	34023	Level Set
TR 2	36578	Mixer	T 2, 3	30567	FM IF	CAPACITORS		
TR 3	36581	FM Oscillator	T 4	30574	Ratio Detector	C 1	35081	Variable FM Tuning
TR 4	36578	FM/AM IF	T 5	30541	AM 3rd IF	C 15	35078	FM Oscillator Trimmer
TR 5	36578	FM/AM IF	T 6	30540	AM 2nd IF	C 21	35061	Feed Thru
TR 6	36578	FM/AM IF	T 7	30542	AM 1st IF	C 23	35079	Variable AM Tuning
TR 7	36580	AF Amp	T 8	30577	Intercom In Put	C 50	35080	4 Section Electrolytic 500/50V 500/50V 300/20V 30/35V
TR 8	36577	Audio Driver	T 9	30576	Audio Out Put	C 53	35068	390/3V Electrolytic
TR 9	36580	Intercom PreAmp	PRINTED CIRCUIT PACK			MISCELLANEOUS		
TR 10	36579	Audio Out Put	P 1	37541	1st FM IF — AM Converter	40614		30V Power Transformer
DIODES			P 2	37538	2nd FM IF — 1st AM IF	31886		Lamp Holder
D 1	35109	A F C	P 3	37539	3rd FM IF — 2nd AM IF	31913		Dial Lamp
D 2	36508	Switching	P 4	37511	FM Detector	34037		Master Volume
D 3	36508	Switching	P 5	37540	AM Detector	40785		Plug Housing Assembly
D 4	36508	AM Detector	P 6	33031	Audio	40781		Cap Housing Assembly
D 5	36508	AM Overload	P 7	33032	Intercom	40751		FM Tuner Assembly
D 6	36539	Zener	SWITCHES			40753		Switch Box Complete
D 7	36553	Clamping	M 1	34581	Function	40736		Front Panel (Copper)
D 8, 9, 10, 11	36564	Silicon Rectifier	M 2	34582	Inside Talk/Listen	40735		Front Panel (White)
COILS			M 3	34038	On/Off Volume (R45)	31889		Knob Tuning
L 1A	30068	Antenna Primary	M 4 - M 13	34580	Remote Station Selector	31888		Knob Speaker
L 1B	30069	FM Antenna	M 14	34528	Door Talk/Listen	31887		Knob Volume
L 1C	30070	Ant. Trap				31604		Knob Tone
L 2A	30071	Mixer				31651		Knob Lever
L 2B	30072	Neutralizing				36029		Master Speaker 45 Ohms
L 3	30062	10.7 MC Trap						
L 4	30063	FM Oscillator						
L 5	30062	RF Choke						
L 6	30573	AM Antenna						
L 7	30067	AM Oscillator						