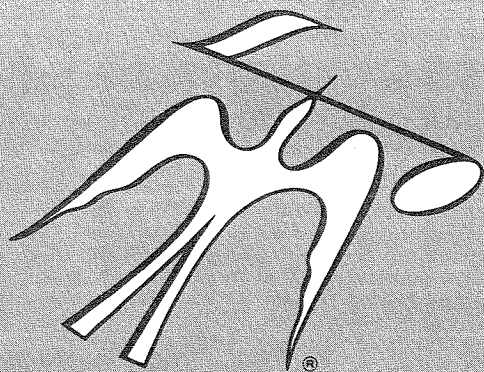
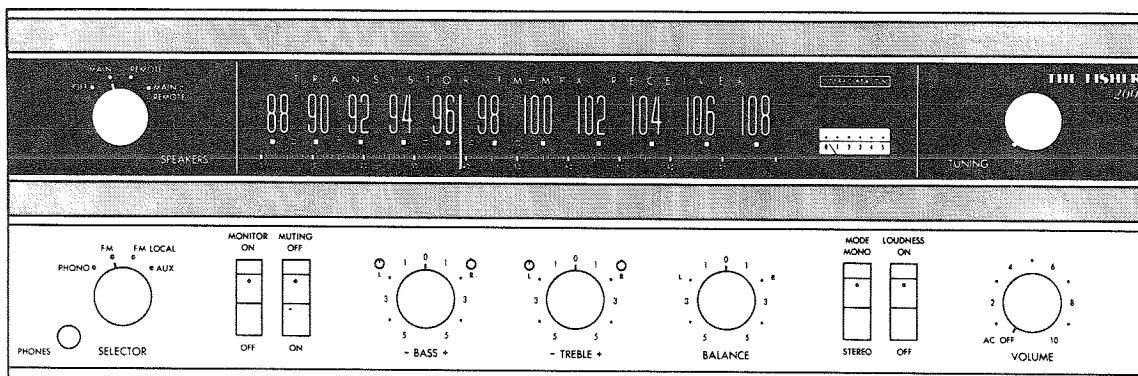


# Service Manual

# THE FISHER®



# 200-T™

CHASSIS SERIAL NUMBERS  
BEGINNING 10001

PRICE \$1.00

**CAUTION:** This is a FISHER precision high-fidelity instrument. It should be serviced only by qualified personnel — trained in the repair of transistor equipment and printed circuitry.

### TEST EQUIPMENT REQUIRED

The following are needed to completely test and align modern high-fidelity instruments such as amplifiers, tuners and receivers.

Vacuum-Tube Voltohmmeter (100-mV DC scale)	10.7-MHz Sweep Generator
Audio Vacuum-Tube Voltmeter (10-mV AC scale)	455-kHz Sweep Generator
Oscilloscope (Flat to 100 kHz Minimum)	Line Voltage Autotransformer or Voltage Regulator
Audio (Sine-Wave) Generator	2 — Load Resistors, 4 or 8 Ohm, 50 Watt
Intermodulation Distortion Analyzer	2 — Full Range Speakers for Listening Tests
Harmonic Distortion Analyzer	Stereo Source — Turntable or Tape Recorder for Listening Tests
AM/FM Signal Generator	Soldering Iron with Small Tip Fully Insulated from Power Line
Multiplex Generator (preferably with RF output — FISHER Model 300 or equal)	Suction Desoldering Tool

### PRECAUTIONS

Many of these items are included just as a reminder—they are normal procedures for experienced technicians. Short-cuts can be taken but often they cause additional damage — to transistors, circuit components or the printed-circuit board.

**Soldering**—A well-tinned, hot, clean soldering iron tip will make it easier to solder without damage to the printed-circuit board or the many circuit components mounted on it. It is not the wattage of the iron that counts — it is the heat available at the tip. Some 50-watt irons reach temperatures of 1,000° F — others will hardly melt solder. Small-diameter tips should be used for single solder connections — larger pyramid and chisel tips are needed for larger areas.

- When removing defective resistors, capacitors, etc., the leads should be cut as close to the body of the circuit component as possible. (If the part is not being returned for in-warranty factory replacement it may be cut in half — with diagonal-cutting pliers — to make removal easier.)
- Special de-soldering tips are made for unsoldering multiple-terminal units like IF transformers and electrolytic capacitors. By unsoldering all terminals at the same time the part can be removed with little chance of breaking the printed-circuit board.
- Always disconnect the chassis from the power line when soldering. Turning the power switch OFF is not enough. Power-line leakage paths, through the heating element, can destroy transistors.

**Transistors**—Never attempt to do any work on the transistor amplifiers without first disconnecting the AC linecord and waiting until the power supply filter-capacitors have discharged.

- Guard against shorts — it takes only an instant for a base-to-collector short to destroy that transistor and possibly others direct-coupled to it. (In the time it takes for a dropped machine screw, washer or even the screwdriver, to glance off a pair of socket terminals (or between a terminal and the chassis) a transistor can be ruined.)
- DO NOT bias the base of any transistor to, or near, the same voltage applied to its collector.
- DO NOT use an ohmmeter for testing transistors. The voltage applied through the test probes may be higher than the base-emitter breakdown voltage of the transistor.

**Output Stage and Driver — Replacements for output and**

**driver transistors, if necessary, must be made from the same beta group as the original type. The beta group is indicated by a colored dot on the mounting flange of the transistor. Be sure to include this information, when ordering replacement transistors.**

- If one output transistor burns out (open or shorts), always remove ALL output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All output transistors in one channel will be destroyed if the base-biasing circuit is open on the emitter end.
- When mounting a replacement power transistor be sure the bottom of the flange, the mica insulator and the surface of the heat sink are free of foreign matter. Dust and grit can prevent perfect contact reducing heat transfer to the heat sink. Metallic particles can puncture the insulator and cause shorts — ruining the transistor.
- Silicone grease must be used between the transistor and the mica insulator and between the mica and the heat sink for best heat conduction. (Use Dow-Corning DC-3 or C20194 or equivalent compounds made for power transistor heat conduction.)
- Use care when making connections to speakers and output terminals. Any frayed wire ends can cause shorts that may burn out the output transistors — they are direct-coupled to the speakers. To reduce the possibility of shorts at the speakers, lugs should be used on the exposed ends or at least the ends of the stranded wires should be tinned to prevent frayed wire ends. The current in the speakers and output circuitry is quite high. Poor contacts or small size wire can cause power losses in the speaker system. Use 14 or 16 AWG for long runs of speaker wiring.

**Voltage Measurements**—Voltage measurements are made with the line voltage adjusted to 117 volts and all readings are  $\pm 10\%$ . All voltages are DC, measured with a VTVM to ground, with no signal input unless otherwise noted.   indicates 1-kHz audio voltages, measured with an audio AC VTVM to ground at various points from the phono input to the power amplifier output.

**Alignment Procedures** — Replacement of transistors and components in the front end, IF amplifier and multiplex decoder will normally not require realignment of these circuits. Realignment of these circuits, unless absolutely necessary, is not recommended. Do not attempt a realignment unless the required test equipment is available and the alignment procedure is thoroughly understood.

BECAUSE ITS PRODUCTS ARE SUBJECT TO CONTINUOUS IMPROVEMENT, FISHER RADIO CORPORATION RESERVES THE RIGHT TO MODIFY ANY DESIGN OR SPECIFICATION WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION.

## SERVICE PROCEDURES

### DIAL STRINGING

- (1) Disconnect AC power cord.
- (2) Remove the screws which hold the top cover to the chassis and lift off the top cover.
- (3) Gently pull all knobs off the control panel shafts. Remove the hex nuts from the control shafts and lift off the control panel.
- (4) Remove the hex nut spacer which holds the dial glass panel to the bracket on the left side of the chassis.
- (5) Remove the two sheet metal screws which hold the dial glass panel to the bracket on the right front of the chassis. Pull the dial glass panel to the left and tilt the panel down as far as the leads allow.
- (6) Remove the dial cord from under the tabs on the rear of the dial pointer and remove the pointer from the set.
- (7) Rotate the tuning capacitor drive drum to its maximum counterclockwise position.
- (8) Tie the end of the dial cord to the end of the small spring. Fasten the spring to the ear inside the left bottom of the drive drum (see start view).
- (9) Run the dial cord through the slot in the drive drum and set the cord in the underside of groove 1.
- (10) Guide the dial cord over pulley A and wrap 2 full turns of the cord around the tuning shaft (detail view).
- (11) Guide the dial cord around pulleys B and C.
- (12) Rotate the tuning capacitor drive drum to its maximum clockwise position, allowing the dial cord to follow the grooves in the drive drum.
- (13) Pull the dial cord taut and place it in the underside of groove 5 of the drive drum (see finish view). Wrap 1 full turn of the cord around the drive drum.
- (14) Run the dial cord through the slot in the drive drum and under the beveled washer. Tighten the machine screw to hold the dial cord.
- (15) Replace the dial glass panel and secure with the hex nut spacer and two sheet metal screws removed previously.
- (16) Place the dial cord over and under the tabs on the rear of the dial pointer. Replace the dial pointer on the top of the dial glass panel.
- (17) Replace the control panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.
- (18) Replace the top cover on the chassis and secure with the screws removed previously.

### REPLACING STEREO BEACON LAMP

- (1) Disconnect AC power cord.
- (2) Remove the screws which hold the top cover to the chassis and lift off the top cover.
- (3) Pry the plastic lamp holder from the lamp mount. Unsolder the leads from the lamp holder. Solder the leads to the rear terminals on the new lamp holder. Place the new lamp holder in the mount.
- (4) Replace the top cover on the chassis and secure with the screws removed previously.

### REPLACING METER LAMP

- (1) Disconnect AC power cord.
- (2) Remove the screws which hold the top cover to the chassis and lift off the top cover.
- (3) Gently push in on the lamp and turn it counterclockwise to disengage it. Remove the metal lamp shade.
- (4) Place the new lamp in the socket, push in gently and turn it clockwise to lock it in place. Slide the metal lamp shade onto the lamp so that the unshaded portion of the lamp faces the meter.
- (5) Replace the top cover on the chassis and secure with the screws removed previously.

### REPLACING DIAL LAMPS

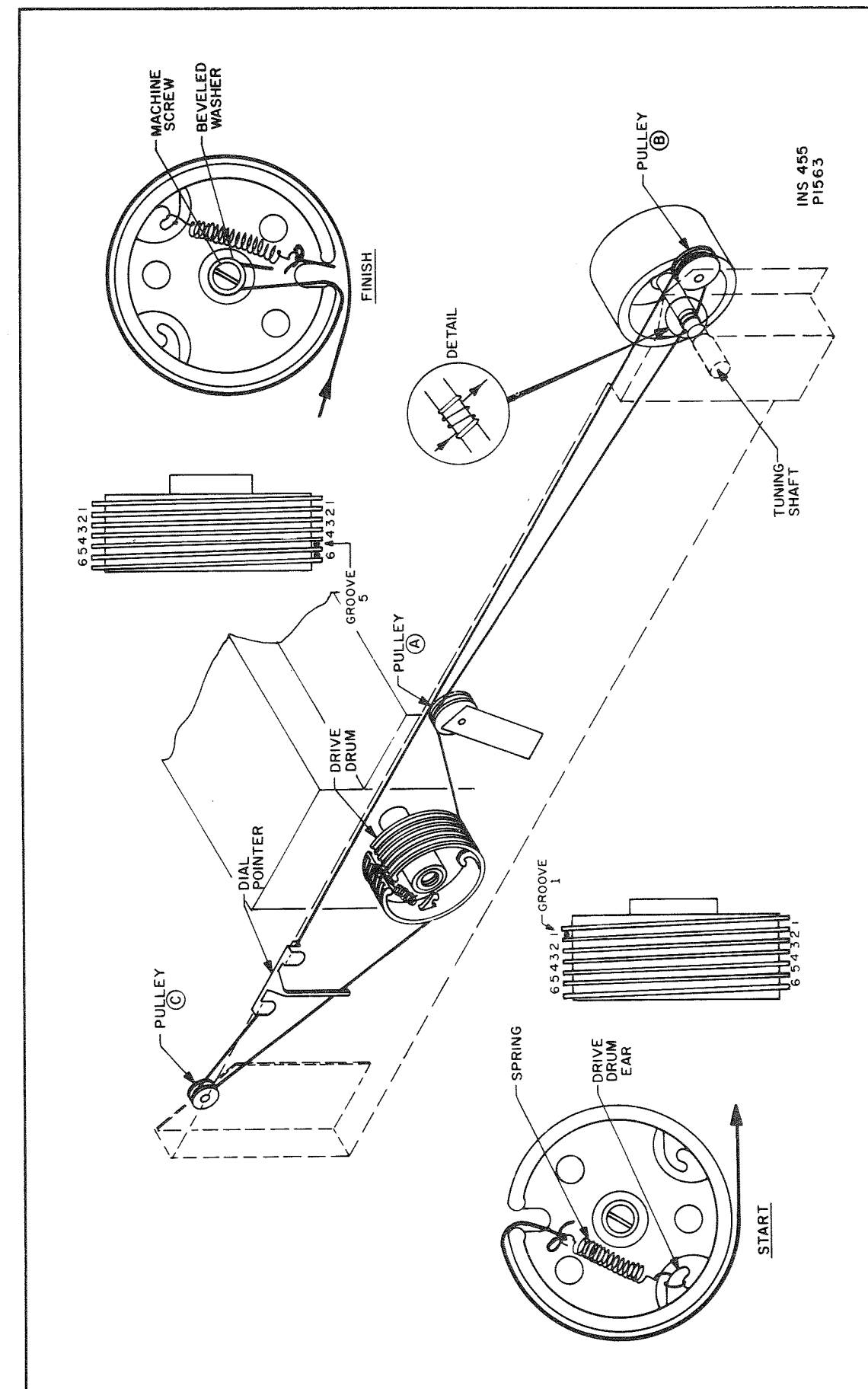
- (1) Disconnect AC power cord.
- (2) Gently pull all knobs off the control panel shafts. Remove the hex nuts from the control shafts and lift off the control panel.
- (3) Snap out the defective lamp from the spring clip. Place the new lamp in the socket making sure that the unpainted side of the lamp faces the edge of the dial glass.
- (4) Replace the control panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

### CLEANING DIAL GLASS

- (1) Disconnect AC power cord.
- (2) Gently pull all knobs off the control panel shafts. Remove the hex nuts from the control shafts and lift off the control panel.
- (3) If there are foam cushion strips located at the ends of the dial glass, carefully remove them from the clips.
- (4) Loosen the screws which hold the retaining clips to the dial glass. Swing the clips aside and lift off the dial glass.
- NOTE:** The glass is held from behind by adhesive rubber strips; use a gentle prying force at the ends to free the glass.
- (5) Remove dust with a dry cloth. If you wish to clean more thoroughly, use only plain lukewarm water; any stronger cleaning agent may damage the markings on the glass.
- (6) Replace the dial glass and position it down and towards the left of the chassis front. Swing the retaining clips back into place and tighten the retaining-clip screws. Replace the foam-cushion strips, if removed previously.
- (7) Replace the control panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

### CLEANING CONTROL PANEL

**WARNING:** Use only plain lukewarm water and a freshly laundered, soft, lint-free cloth to clean the control panel.



## SERVICE PROCEDURES

### MULTIPLEX ALIGNMENT

Two methods of aligning the multiplex decoder are given. The preferred procedure uses a multiplex generator with RF and 19 kHz (kc) outputs and with 1 kHz (kc) modulation, such as the FISHER Model 300 Multiplex Generator. This is the better method of alignment since the front end and IF stages are also checked through the use of this procedure. An alternate procedure for use with multiplex generators not having an RF output is also given.

#### PREFERRED ALIGNMENT PROCEDURE

Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to OFF.

- Connect RF output of multiplex generator to the FM ANT. antenna terminals. Set TUNING dial pointer to RF frequency of multiplex generator.
- Connect output of audio generator, set for 1 kHz (kc), to the external modulation input of the multiplex generator and to the external sync input of an oscilloscope. Connect the vertical input of the scope to pin 4B on the multiplex board and adjust the output of the multiplex generator for 1.4 volts peak-to-peak composite multiplex input (see Figure 1).
- Ground pin 4C on the multiplex board to the chassis.
- Follow procedures given in Table 1 below.
- After alignment is complete, disconnect pin 4C from the chassis.

**NOTE:** Check the alignment of the IF amplifier before aligning the multiplex decoder. Poor IF alignment can make proper multiplex adjustment impossible.

#### ALTERNATE ALIGNMENT PROCEDURE

Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to OFF.

- Connect output of audio generator, set for 1 kHz (kc), to the external modulation input of the multiplex generator and to the external sync input of an oscilloscope. Connect the vertical input of the scope to the composite output of the multiplex generator and adjust the output of the multiplex generator for 2 volts peak-to-peak composite multiplex output (see Figure 1).
- Disconnect the lead going to pin 4B on the multiplex board. Connect the output of the multiplex generator through a 15K ohm resistor to pin 4B on the multiplex board.
- Ground pin 4C on the multiplex board to the chassis.
- Follow procedures given in Table 1 below.
- After alignment is complete, disconnect multiplex generator and resistor, and reconnect the lead going to pin 4B on the multiplex board. Disconnect pin 4C from the chassis.

### INTERMODULATION DISTORTION TEST

Set BALANCE, BASS and TREBLE controls to their center positions. Set SELECTOR switch to AUX and SPEAKERS switch to MAIN. Set MONITOR switch to ON, MODE switch to STEREO and LOUDNESS switch to OFF. Unplug AC power cord.

- Connect a 4-ohm, 50-watt resistor across the LEFT SPKRS MAIN terminals. In parallel with the load resistor, connect the input leads of an IM (Inter-Modulation) distortion analyzer and the input leads of an AC VTVM capable of reading 0.1 volts with accuracy.
- Connect a low-distortion audio sine wave generator, set for 1000 Hz (cps), to the L MON IN jack.
- Connect AC power cord and rotate VOLUME control to its maximum clockwise position—full volume.
- Increase audio generator input to set for 20 watts output (7.29 VAC RMS across 4-ohm load resistor). AFTER

ONE FULL MINUTE OF WARM-UP TIME, PROCEED TO NEXT STEP.

- IM meter reading should be 0.8% or less.
- Repeat preceding steps for right channel.

**NOTE:** If any of the preceding instructions are different from those in the IM-analyzer instruction manual, it is best to follow those in the manual. If a load resistor of 50-watt rating is built into the IM analyzer, a separate load resistor is not required.

### HARMONIC DISTORTION TEST

Set BALANCE, BASS and TREBLE controls to their center positions. Set SELECTOR switch to AUX and SPEAKERS switch to MAIN. Set MONITOR switch to ON, MODE switch to STEREO and LOUDNESS switch to OFF. Unplug AC power cord.

- Connect a 4-ohm, 50-watt resistor across the LEFT SPKRS MAIN terminals. In parallel with the load resistor, connect the input leads of a harmonic distortion analyzer and the input leads of an AC VTVM capable of reading 0.1 volts with accuracy.
- Connect a low-distortion audio sine wave generator, set for 1000 Hz (cps), to the L MON IN jack.
- Connect AC power cord and rotate VOLUME control to its maximum clockwise position—full volume.
- Increase audio generator input to set for 20 watts output (8.9 VAC RMS across 4-ohm load resistor). Harmonic distortion meter should read 0.8% or less.
- Repeat preceding steps for right channel.

### POWER OUTPUT MEASUREMENT

The output amplifier of this unit is designed to deliver its full-rated power with program material (voice or music) into 4- to 16-ohm loads for an indefinite period of time. When a constant audio tone is used as a signal to measure the continuous RMS power output, the following precautions must be taken:

- Measure the power output of one channel at a time.
- Limit the measurement period to 10 minutes with a load resistance between 4 and 16 ohms.

**WARNING:** If the power output of both channels must ever be measured simultaneously, use a load of 4 to 8 ohms per channel and limit measurements to a period not longer than 3 minutes for a 4-ohm load and not longer than 5 minutes for an 8-ohm load.

### PREDRIVER/DRIVER OUTPUT ADJUSTMENT

Set BALANCE, BASS and TREBLE controls to their center positions. Set SELECTOR switch to AUX and SPEAKERS switch to MAIN. Set MONITOR switch to ON, MODE switch to STEREO and LOUDNESS switch to OFF. Unplug power cord.

- Connect a 4-ohm, 50-watt resistor across the LEFT SPKRS MAIN terminals. In parallel with the load resistor, connect the vertical input leads of an oscilloscope and harmonic distortion analyzer.
- Connect an audio sine wave generator, set for 1000 Hz (cps), to the L AUX HIGH jack.
- Connect AC power cord and rotate VOLUME control to its maximum clockwise position—full volume.
- Increase generator output until sine wave on scope just starts to clip. Adjust Center Voltage Adjust Pot. R813 on the left predriver/driver board for equal clipping on the positive and negative half cycles of the signal with minimum reading on the harmonic distortion meter.
- Repeat preceding steps for right channel.

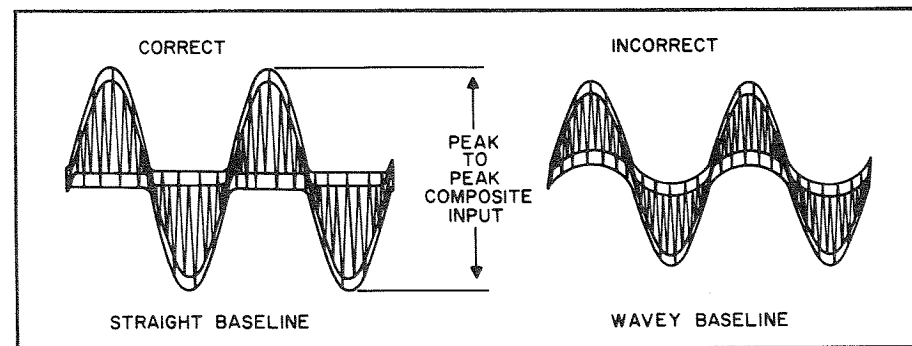


Figure 1. Composite Input To Multiplex Decoder.

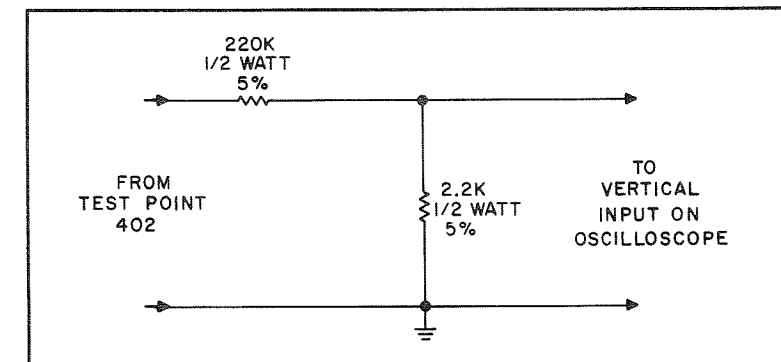


Figure 2. Voltage Divider Probe.

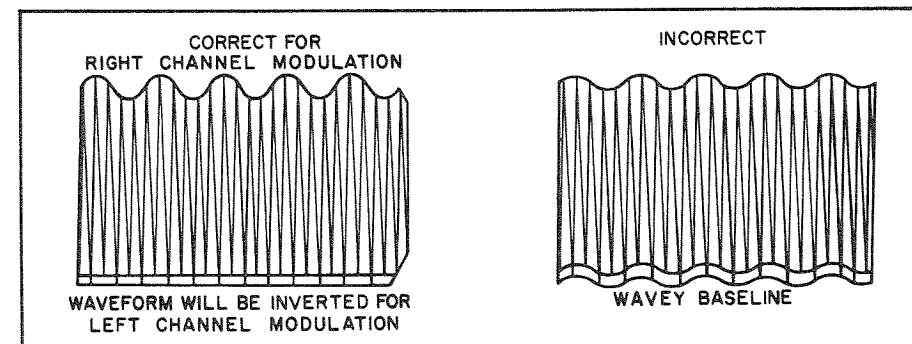


Figure 3. Waveform At Test Point 402.

TABLE 1. MULTIPLEX ALIGNMENT

STEP	Multiplex Generator Modulation	Indicator Type And Connection	Alignment	
			Adjust	Indication
1	Composite MPX signal modulated with 1 kHz (kc) on left channel only.	DC VTVM to Test Point 403.	Z401, Z402	Maximum reading on DC VTVM; approximately 3 VDC. Stereo Beacon should light.
2	Same as Step 1.	AC VTVM to left channel RCDR OUTPUT jack; scope thru voltage divider probe (see Figure 2) to Test Point 402.	Z403	Maximum waveform amplitude while maintaining straight baseline (see Figure 3) and maximum reading on AC VTVM. Record reading.
3	Same as Step 1.	AC VTVM to right channel RCDR OUTPUT jack.	Separation Control	Minimum reading on AC VTVM; at least 30 db below that recorded in Step 2. Record reading.
4	Composite MPX signal modulated with 1 kHz (kc) on right channel only.	Same as Step 3.	—	Same reading $\pm 2$ DB on AC VTVM as recorded in Step 2.
5	Same as Step 4.	AC VTVM to left channel RCDR OUTPUT jack.	—	Same reading $\pm 2$ db on AC VTVM as recorded in Step 3.*

\* **NOTE:** If equal readings cannot be obtained in Steps 3 and 5, readjust Separation Control to make both readings approximately the same and 30 db below the readings in Steps 2 and 4.

## SERVICE PROCEDURES

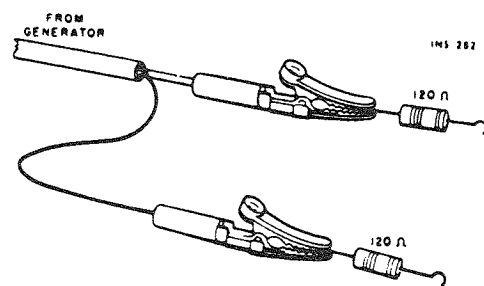
### FM FRONT END ALIGNMENT

**NOTE:** FM IF alignment must be performed before starting this procedure.

Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to OFF.

(1) Set TUNING dial pointer to zero (0) calibration mark on the logging scale. If the dial pointer does not coincide with the 0 at the extreme end of the knob rotation, reposition the pointer assembly on the dial cord and cement the pointer in place to prevent slippage.

(2) Connect an FM generator to the FM ANT. antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator (see Figure 1).



**Figure 1. Connections To Provide 300-ohm Generator Output Impedance. Matching Resistors Reduce Generator Voltage By Half At The Antenna Terminals.**

(3) Connect a scope and an AC VTVM to either the L or R RCDR jack.

(4) Set FM generator frequency and TUNING dial pointer to 90 MHz (Mc). Modulate generator with 400 Hz (cps)  $\pm 75$  kHz (kc) deviation. Use as low a generator output as possible.

**NOTE:** Use the tuning meter during alignment and adjust the generator output voltage to keep the meter reading between 2 and 4.

(5) Align FM oscillator coil (L504) core first—then align the FM RF coil (L502) and the FM mixer coil (L503) cores for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.

(6) Set FM generator frequency and TUNING dial pointer to 106 MHz (Mc).

(7) Adjust FM oscillator trimmer (C507) first— then adjust the FM RF trimmer (C503) and the FM mixer trimmer (C506) for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.

(8) Repeat alignment several times until accurate calibration and maximum gain are obtained. Keep the generator output as low as possible during all adjustments.

### FM IF ALIGNMENT

Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to OFF.

(1) Disconnect Test Point 501 on front end from ground. (2) Connect 10.7-MHz (Mc) sweep generator to Test Point 501 on the front end. Connect scope's vertical input to Test Point 301 on the 10.7-MHz (Mc) IF amplifier board.

**NOTE:** Connect ground lead of generator to ground near Test Point 501 and ground of scope to chassis ground.

(3) Adjust generator output voltage and frequency to obtain IF response curve. Use as low a generator output as possible.

(4) Align core of IF transformer L505 on front end for maximum gain and symmetry (see Figure 2).

(5) Align top and bottom cores of Z301 and Z302 on IF amplifier board for maximum gain and symmetry (Figure 2).

(6) Connect scope to L or R RCDR jack.

(7) Align top and bottom cores of Z303 on IF amplifier board for maximum gain and symmetrical response (see Figure 3).

(8) Set generator to 10.7 MHz (Mc) with no sweep. Increase generator output voltage to 200 mV. Adjust FM Meter Adjust Pot. R702 on meter and muting board for tuning meter reading of 5.

(9) Align core of Z701 on meter and muting board for maximum reading on tuning meter. Reduce generator output to maintain meter reading between 2 and 3 during this alignment.

(10) After alignment, reconnect Test Point 501 on front end to ground.

(11) Connect DC VTVM to pin 3 on the rear panel Test Points socket.

(12) Connect an FM generator to the FM ANT. antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator (see Figure 1). Connect AC VTVM to L or R RCDR jacks.

(13) Set FM generator frequency and TUNING dial pointer

to 100 MHz (Mc). Modulate generator with 400 Hz (cps)  $\pm 75$  kHz (kc) deviation; set generator for 1 mV output. Tune for maximum audio output on AC VTVM.

(14) Slightly realign top and bottom cores of Z303 on IF amplifier board for reading of 0 VDC on DC VTVM.

generator output until audio signal just disappears from scope. Tuning meter should read between 3 and 4.

### SERVICING INTEGRATED CIRCUITS

Integrated circuits are used in the tuner section of this unit to provide the theoretical maximum of AM suppression and limiting. The uA703E integrated circuit used in the 10.7-MHz FM IF amplifier and in the meter and muting circuit contains the equivalent of 5 transistors and 2 resistors. The TR80073 integrated circuit used in some models of the 10.7-MHz amplifier contains the equivalent of 10 transistors, 7 diodes and 11 resistors.

Both the uA703E and the TR80073 integrated circuits are high-reliability devices and should require a minimum of servicing. However, troubles may occur that will require servicing of these devices. In such an event, the integrated circuits should be serviced the same as a transistor. The preferred troubleshooting procedure is to first isolate the trouble to one stage using AC signal tracing methods. Once the suspected stage is located, the integrated circuit can be checked by measuring the DC voltages at the input and output pins of the integrated circuits using a DC VTVM. These DC voltages are the most accurate indications of the operating conditions of the integrated circuit.

**WARNING:** Do not use an ohmmeter to check continuity with the integrated circuit on the printed circuit board; forward biasing the internal junctions within the integrated circuit may burn out the transistors.

When replacing an integrated circuit, the following precautions should be observed:

(1) Do not replace a defective integrated circuit until the cause of the trouble is found. All external resistors, capacitors and transformers should be checked first to prevent the replacement integrated circuit from failing immediately due to a trouble in the connecting components.

(2) Solder and unsolder each lead separately using a pliers or other heat sink on the lead to prevent damage from excessive heat.

(3) Check that the leads of the replacement integrated circuits are connected to the correct locations on the printed circuit board before turning the set on.

### FM TUNING METER CALIBRATION

Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to OFF.

(1) Connect an FM generator to the FM ANT. antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator (see Figure 1).

(2) Connect scope and AC VTVM to L or R RCDR jack. (3) Set FM generator frequency and TUNING dial pointer to 90 MHz (Mc). Modulate generator with 400 Hz (cps)  $\pm 22.5$  kHz (kc) deviation; set generator output voltage to 4  $\mu$ V. Tune for maximum audio output on scope and AC VTVM.

(4) Increase generator output to 100  $\mu$ V. Slightly readjust core of Z701 on meter and muting board for maximum reading on tuning meter.

(5) Increase generator output to 50 mV and adjust FM Meter Adjust Pot. R702 on meter and muting board for meter reading of 5.

### FM MUTING TEST

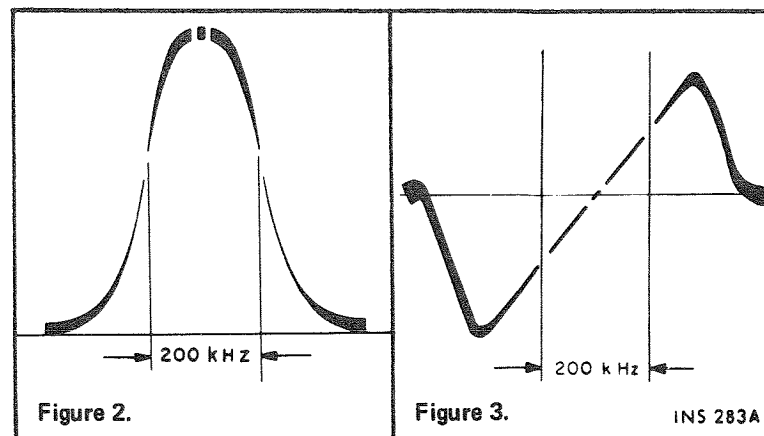
Set SELECTOR switch to FM, MODE switch to STEREO and MUTING switch to ON.

(1) Connect an FM generator to the FM ANT. antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator (see Figure 1).

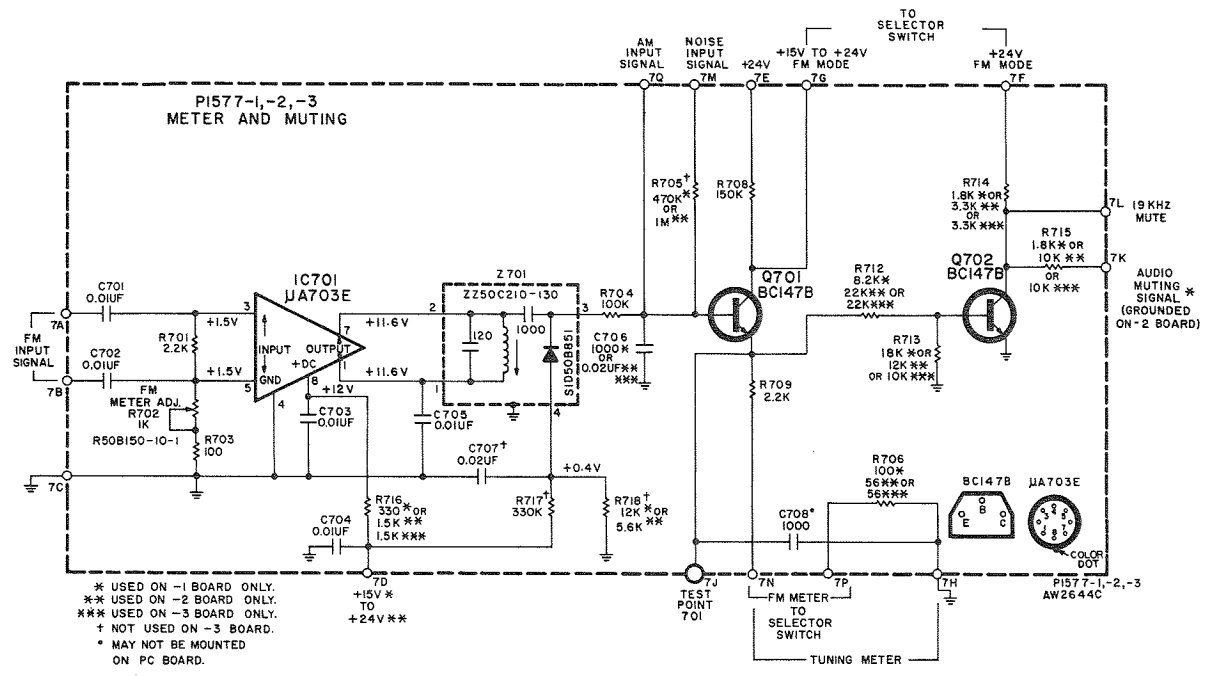
(2) Connect scope to L or R RCDR jack.

(3) Set FM generator frequency and TUNING dial pointer to 90 MHz (Mc). Modulate generator with 400 Hz (cps)  $\pm 22.5$  kHz (kc) deviation; set generator output for 1 mV.

(4) Observe audio signal on scope and slowly reduce FM

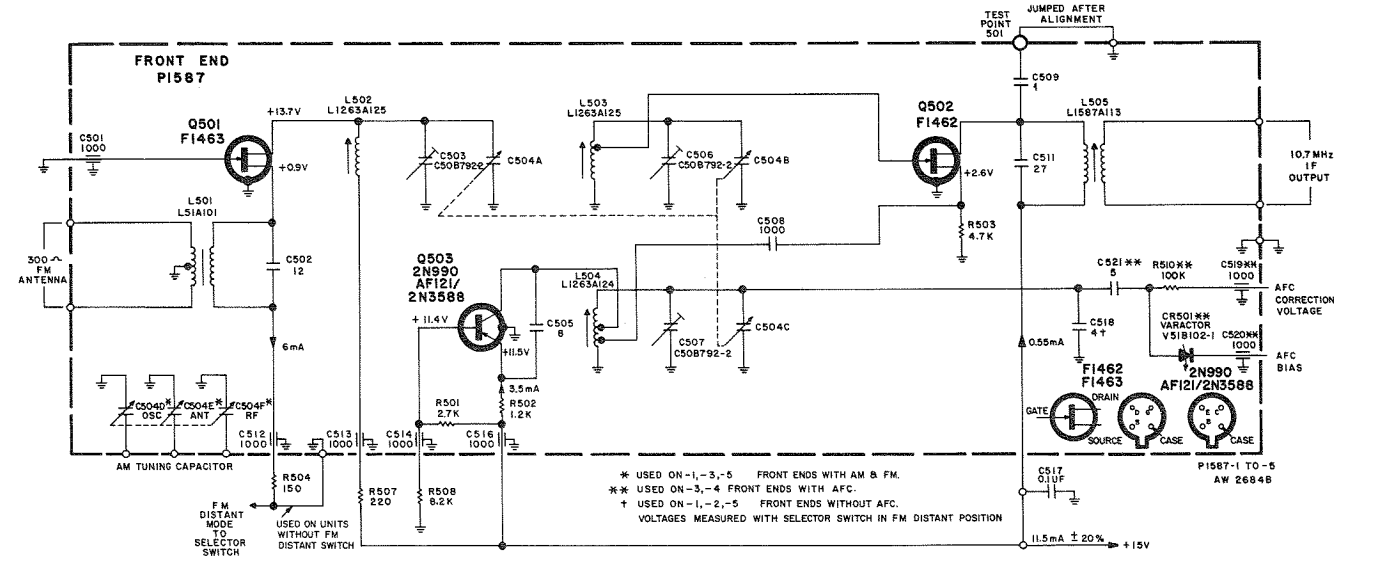


**1577-2 METER AND MUTING**



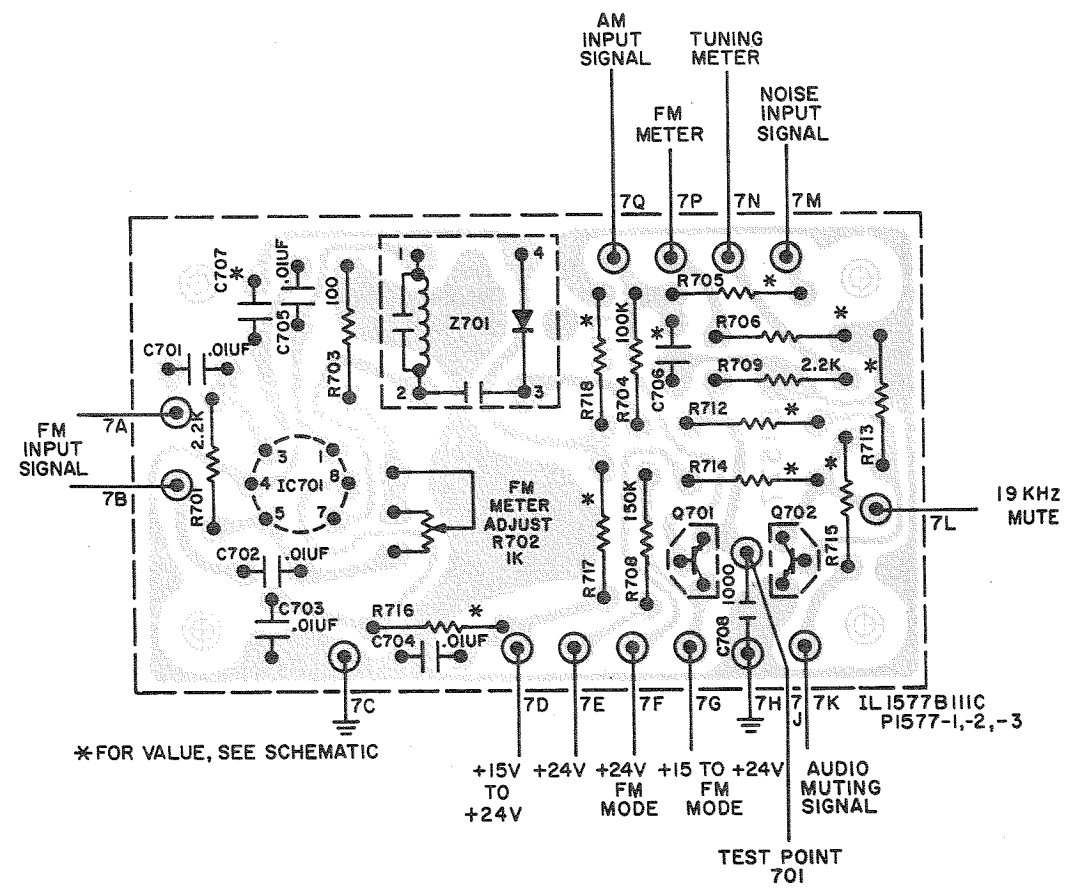
\* USED ON -1 BOARD ONLY.  
 \*\* USED ON -2 BOARD ONLY.  
 \*\*\* USED ON -3 BOARD ONLY.  
 † NOT USED ON -3 BOARD.  
 ‡ MAY NOT BE MOUNTED ON PC BOARD.

**1587-2 FM FRONT END**

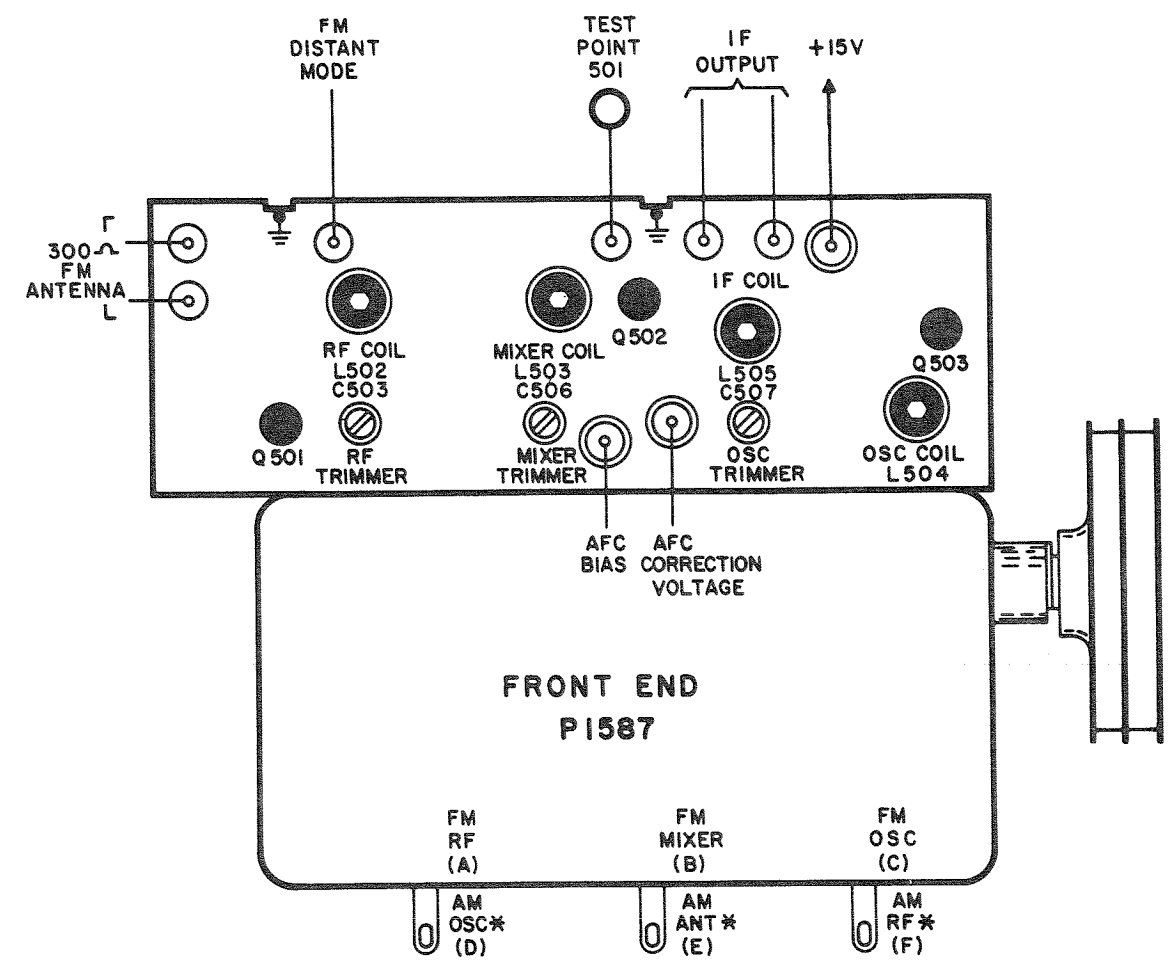


\* USED ON -1, -3, -5 FRONT ENDS WITH AM & FM.  
 \*\* USED ON -3, -4 FRONT ENDS WITH AFC.  
 † USED ON -1, -2, -5 FRONT ENDS WITHOUT AFC.  
 ‡ VOLTAGES MEASURED WITH SELECTOR SWITCH IN FM DISTANT POSITION

**BOARD VIEWED FROM COMPONENT SIDE**

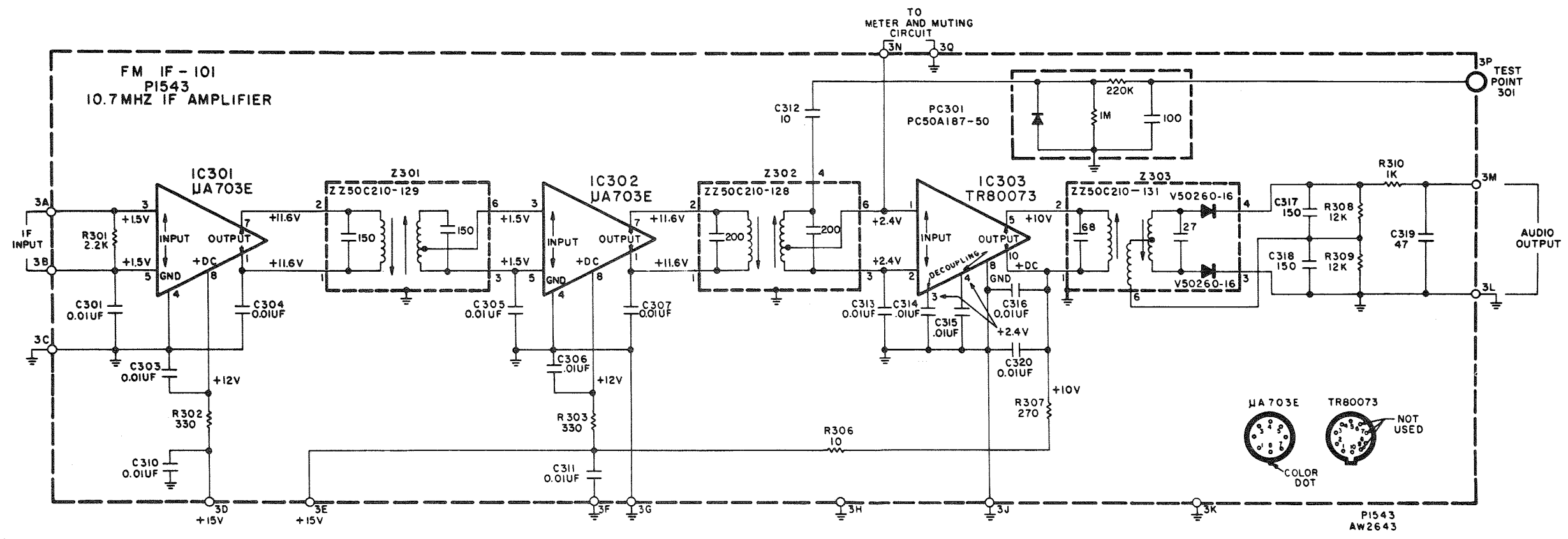


\* FOR VALUE, SEE SCHEMATIC

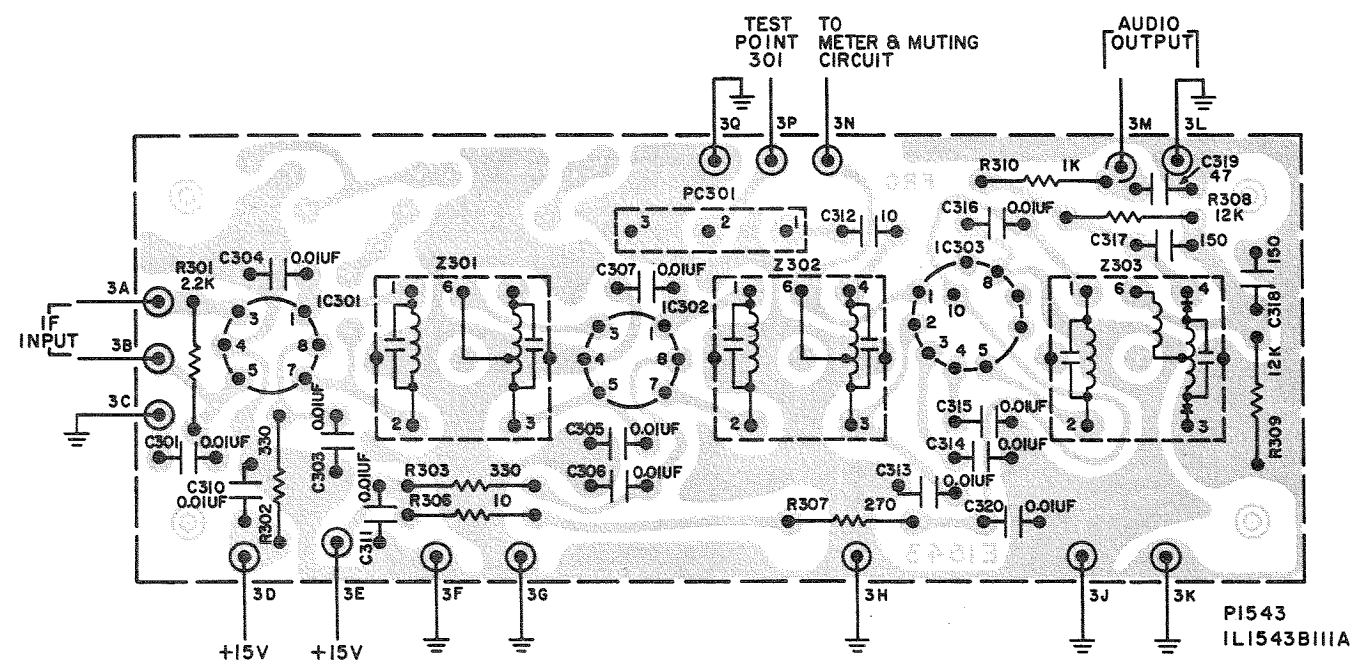


\* USED ON -1, -3 FRONT ENDS

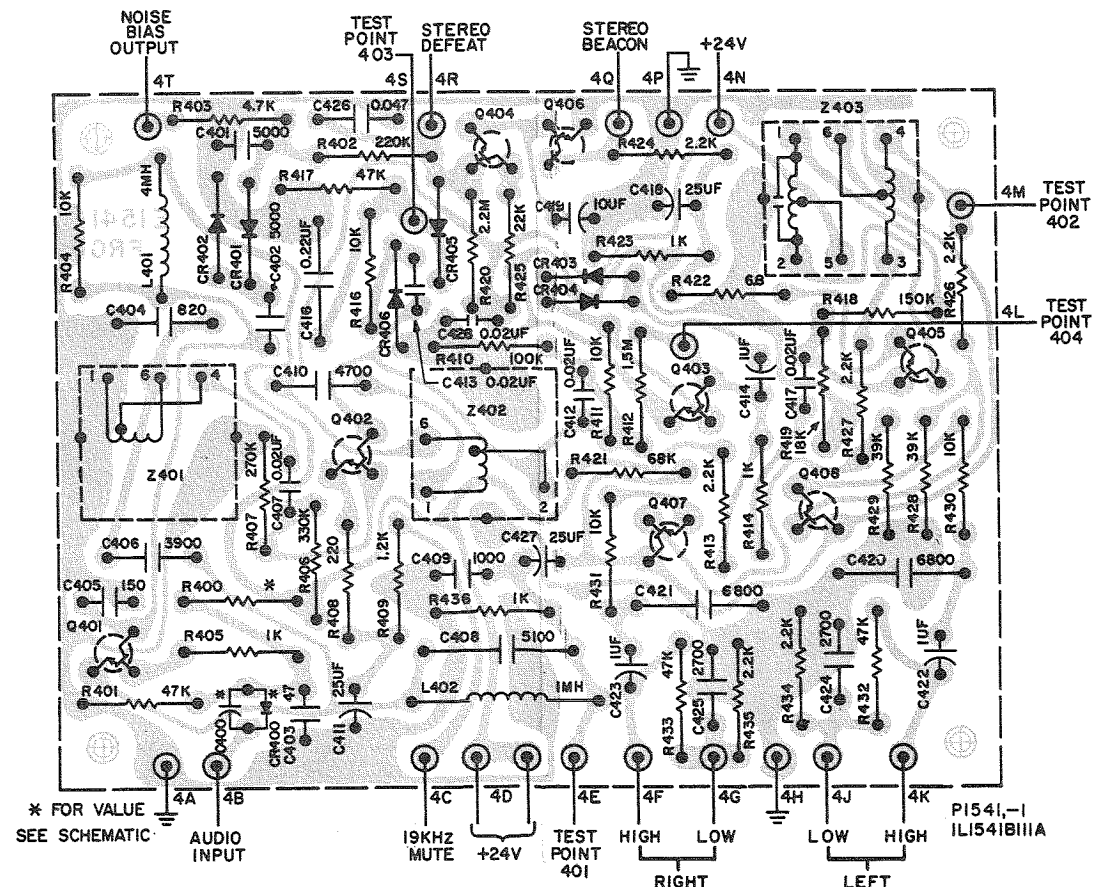
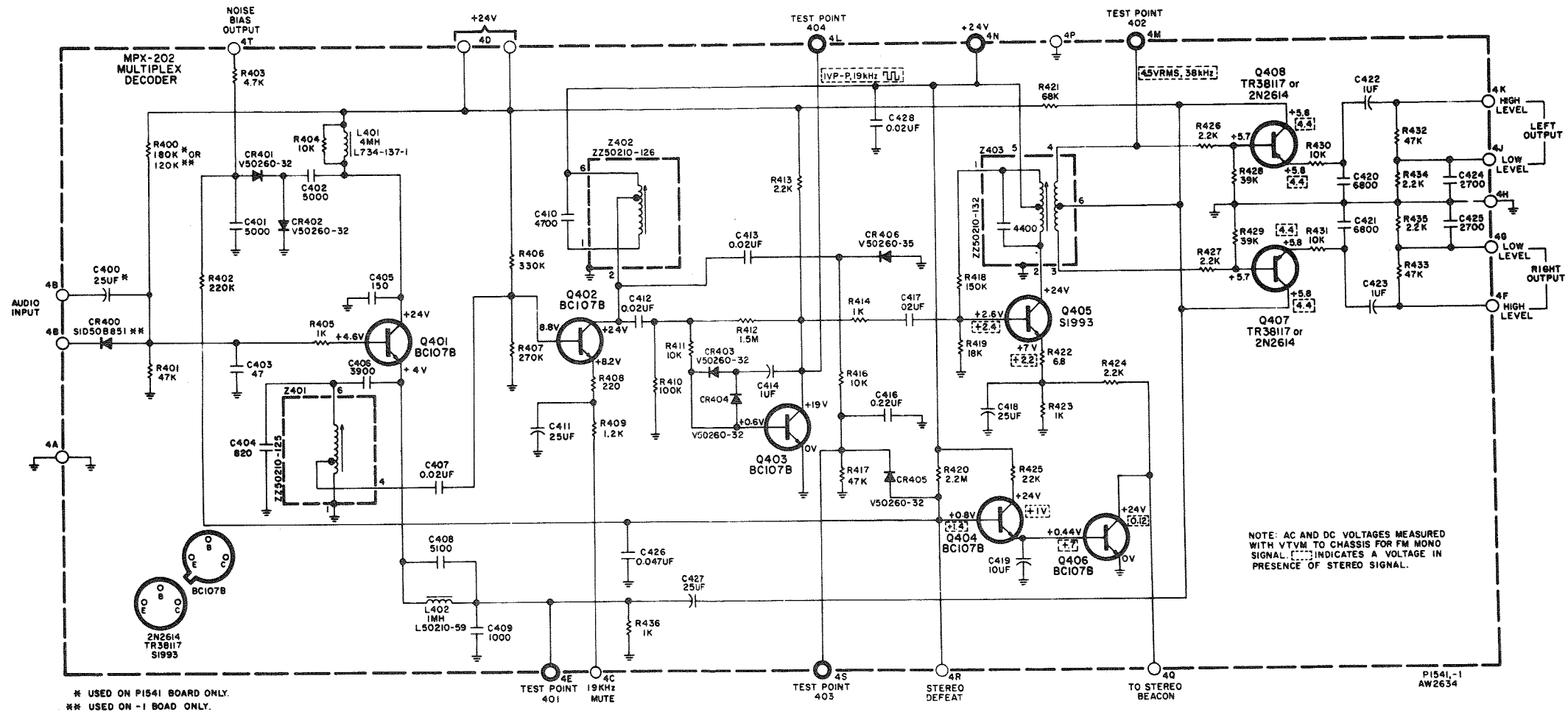
# 1543 10.7 MHz IF AMPLIFIER



# BOARD VIEWED FROM COMPONENT SIDE



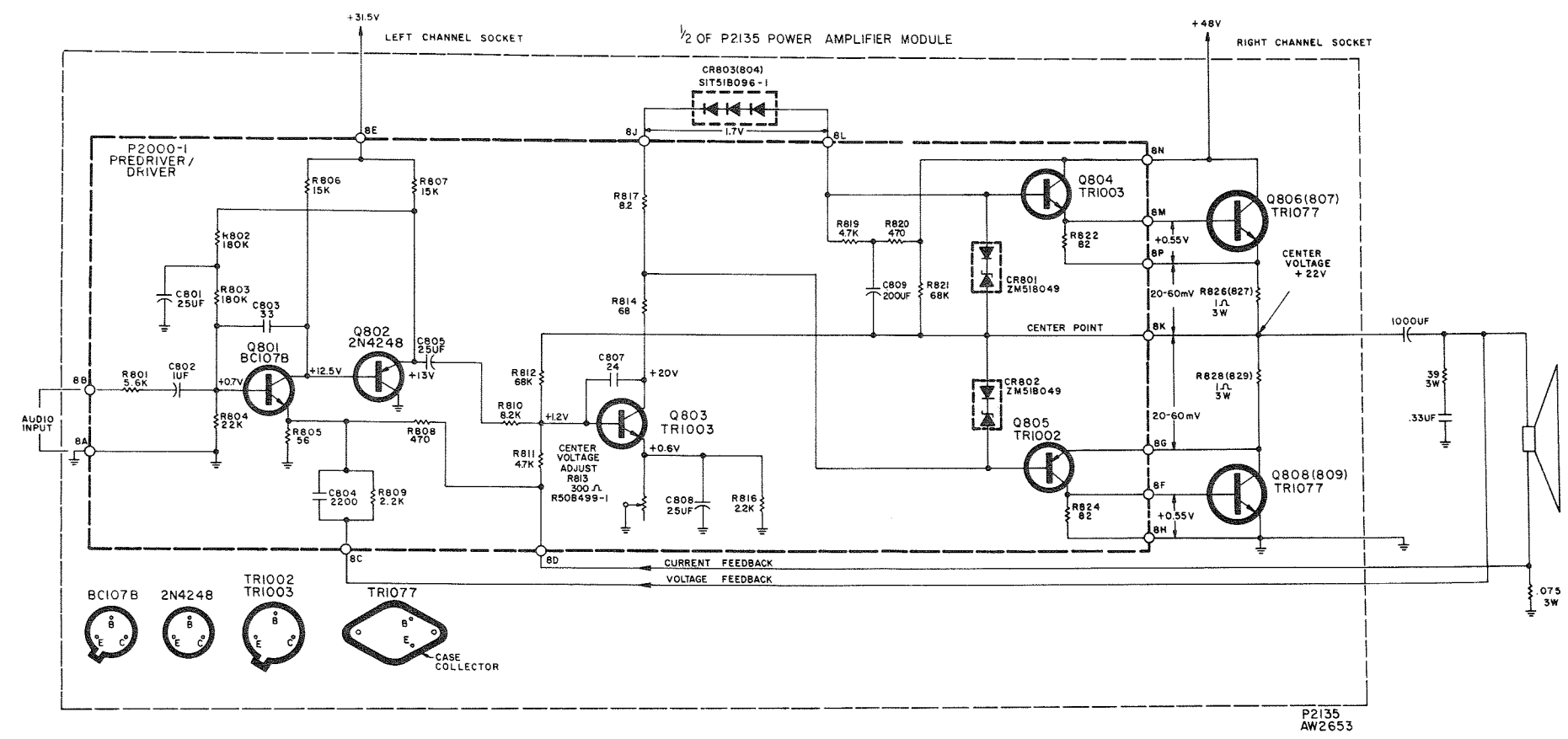
# 1541-1 MULTIPLEX DECODER



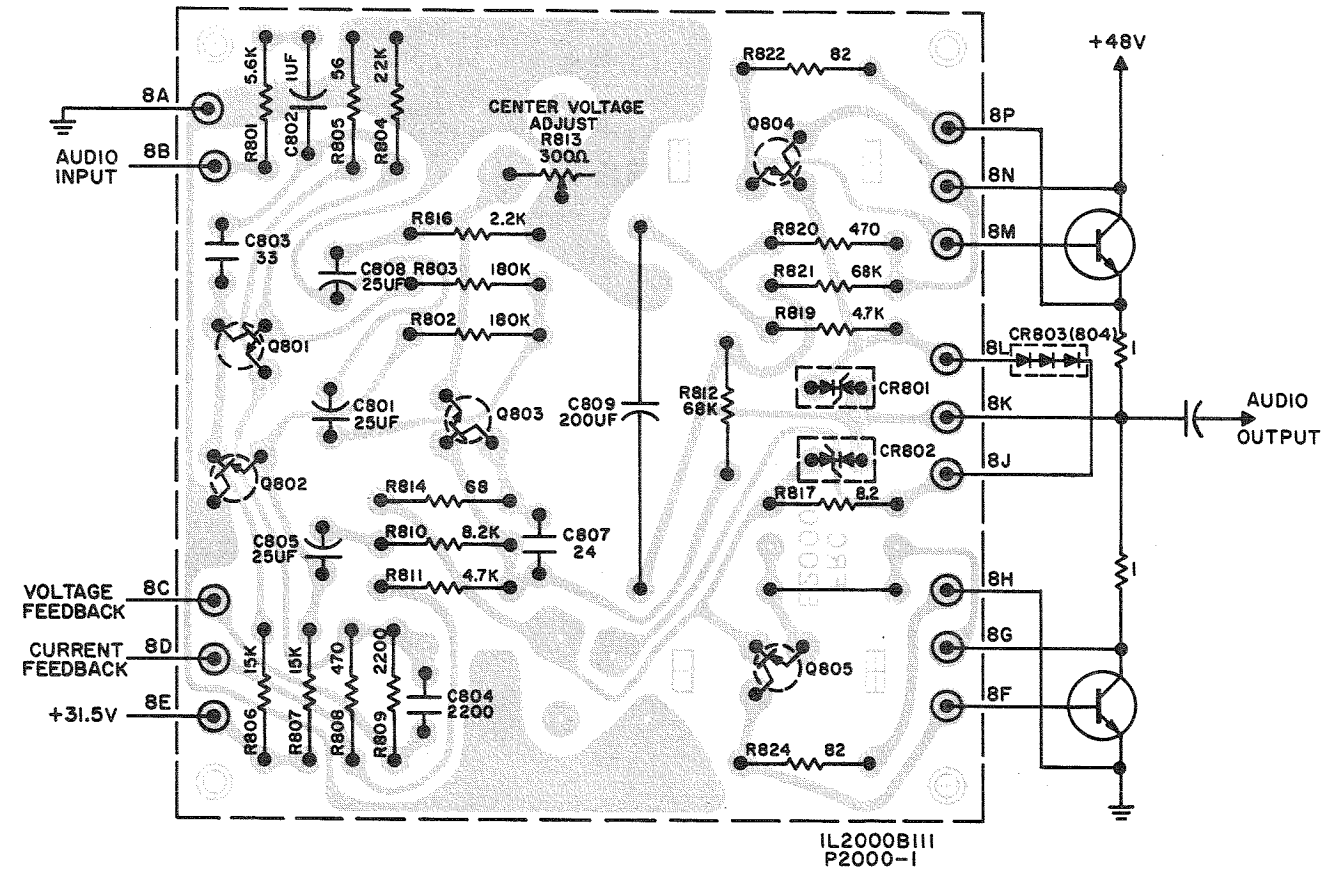
BOARD VIEWED FROM COMPONENT SIDE



2135 DUAL CHANNEL POWER AMPLIFIER MODULE



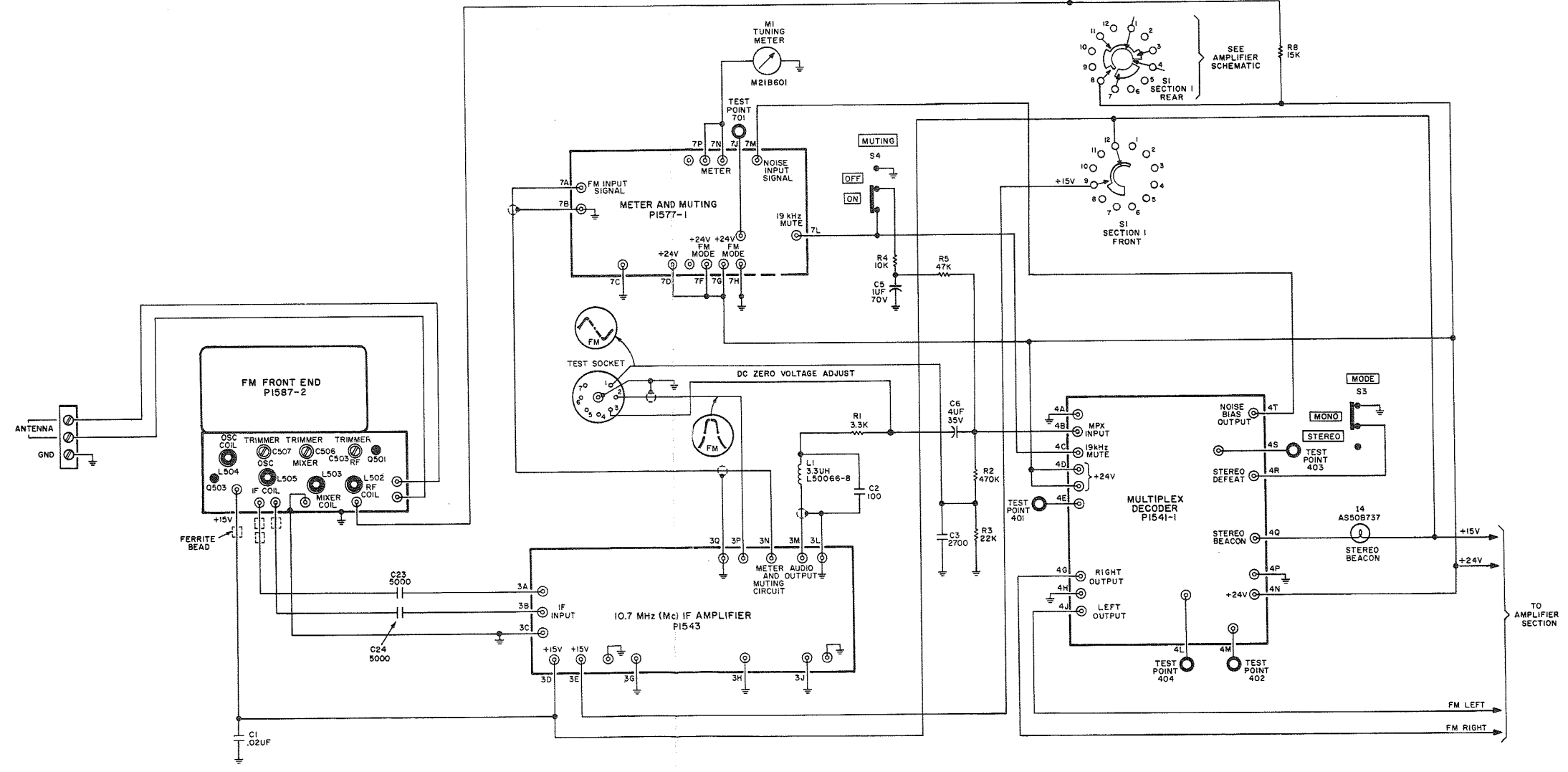
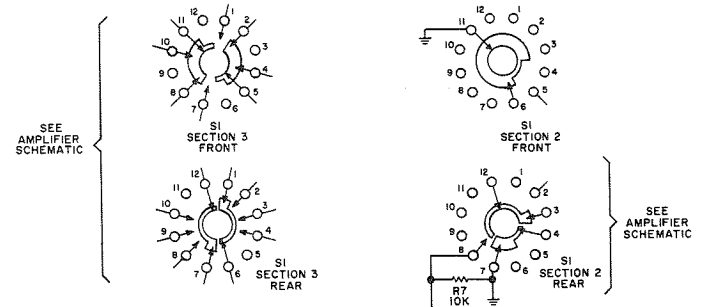
BOARD VIEWED FROM COMPONENT SIDE



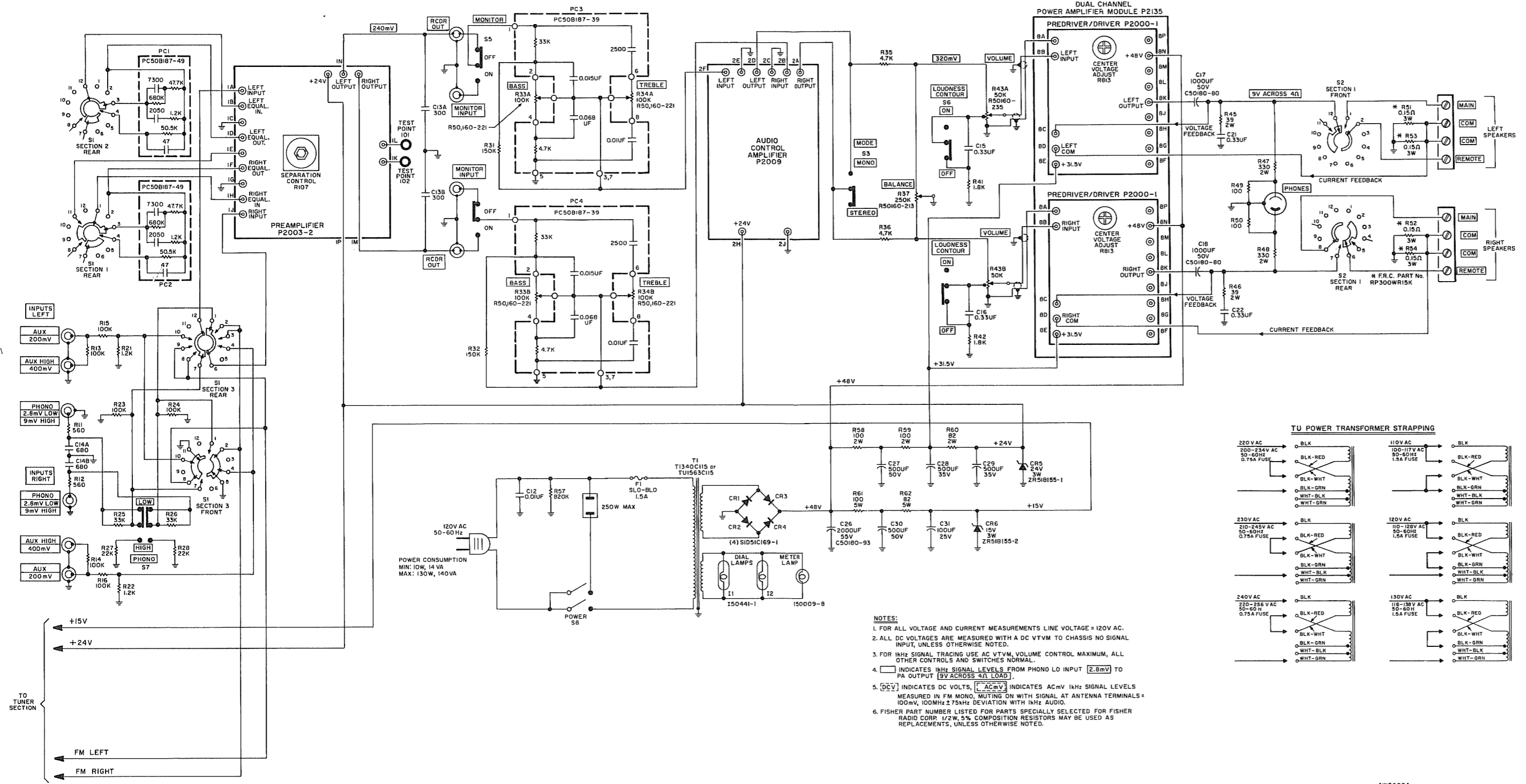
# MAIN CHASSIS-TUNER SECTION

**SWITCH POSITIONS**

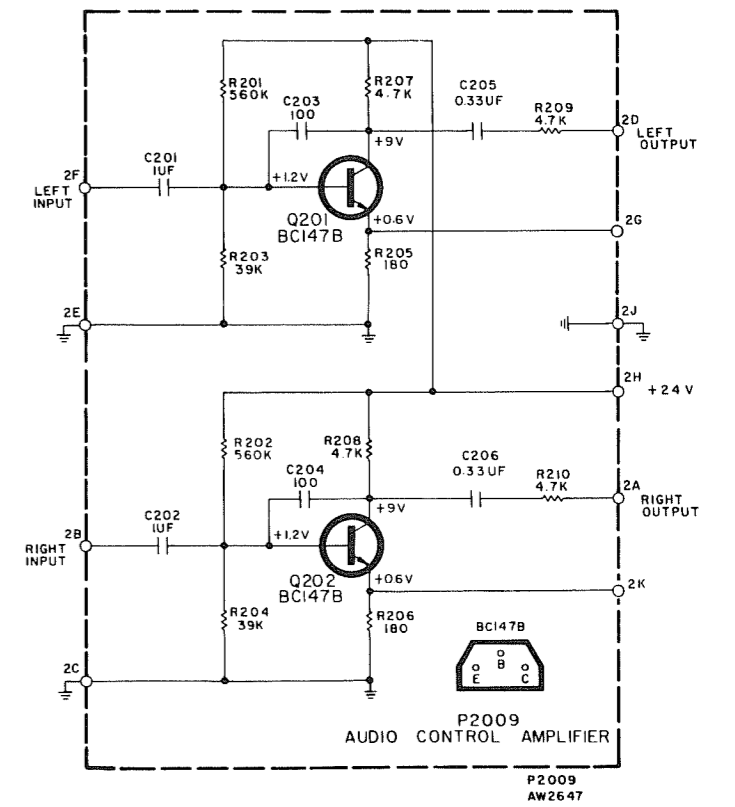
POS. NO.	S1 SELECTOR SWITCH	S2 SPEAKERS SWITCH
1	PHONO	OFF
2	FM NORMAL	MAIN
3	FM LOCAL	REMOTE
4	AUX	MAIN + REMOTE



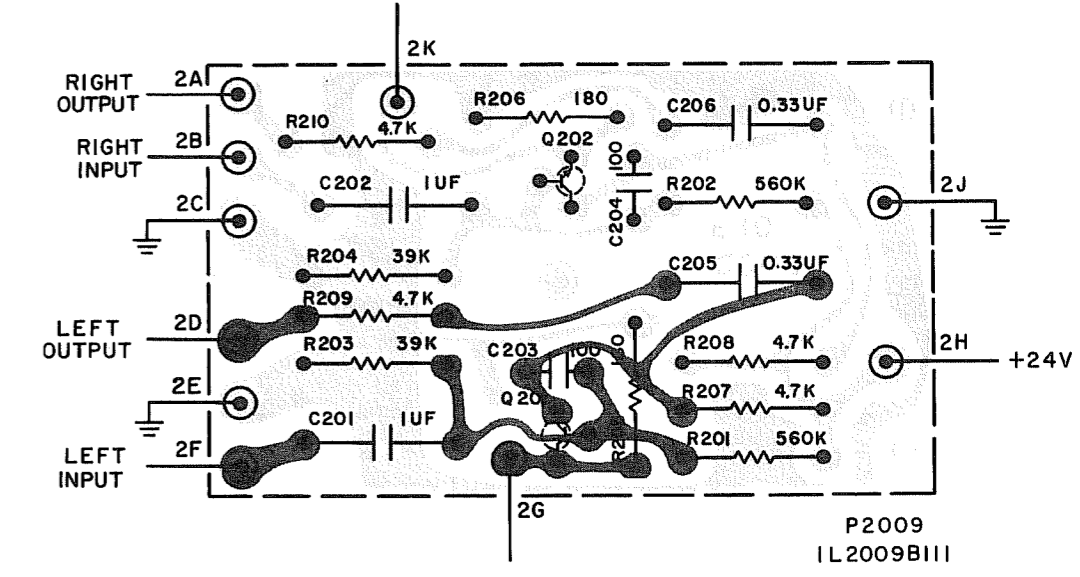
**MAIN CHASSIS-AMPLIFIER SECTION**



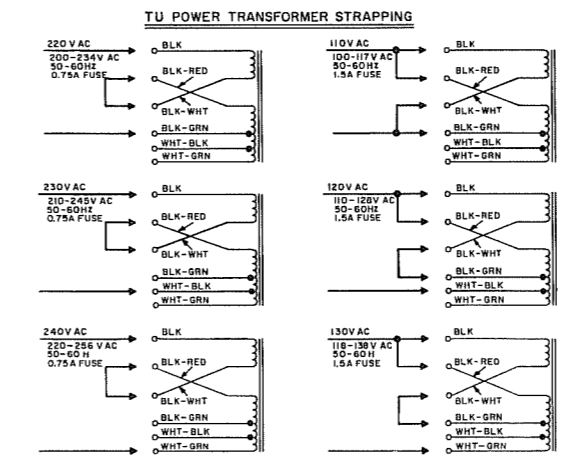
**2009 AUDIO CONTROL AMPLIFIER**



**BOARD VIEWED FROM COMPONENT SIDE**

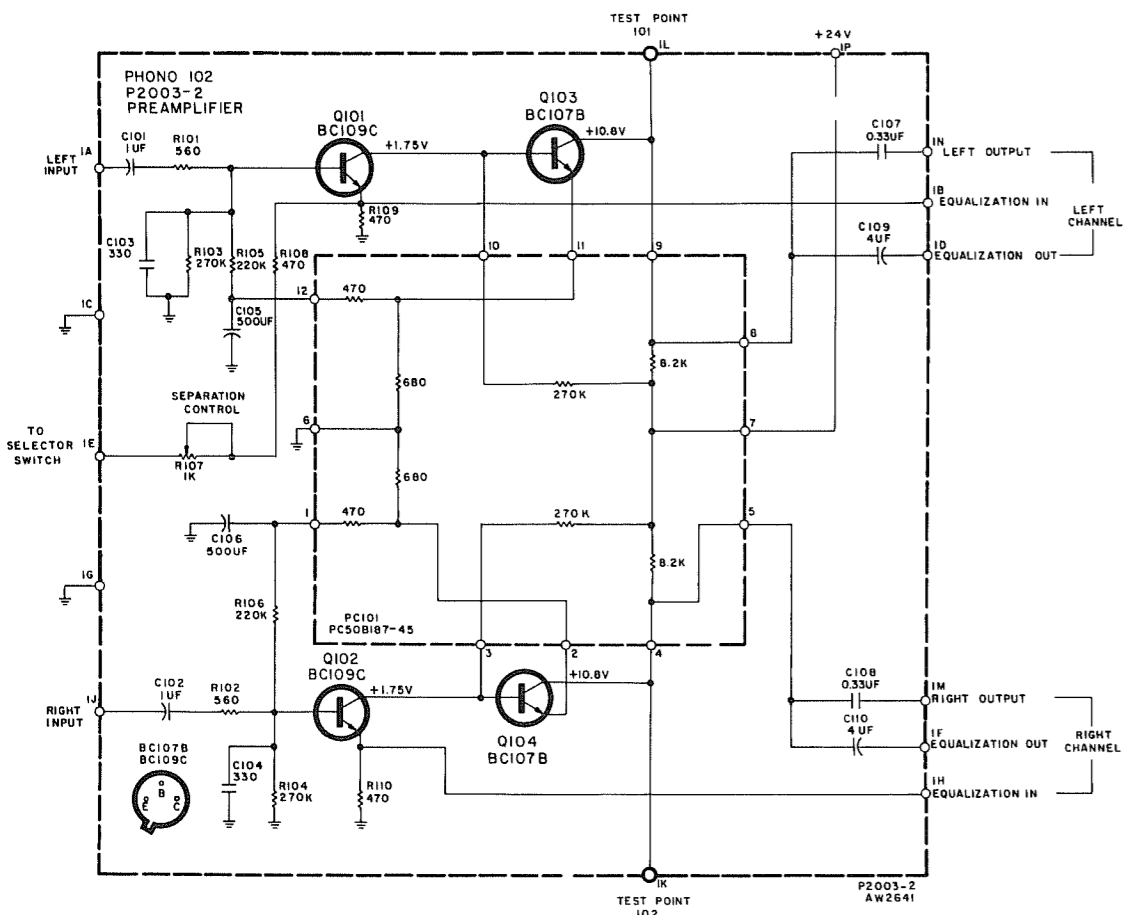


RIGHT CHANNEL  
LEFT CHANNEL

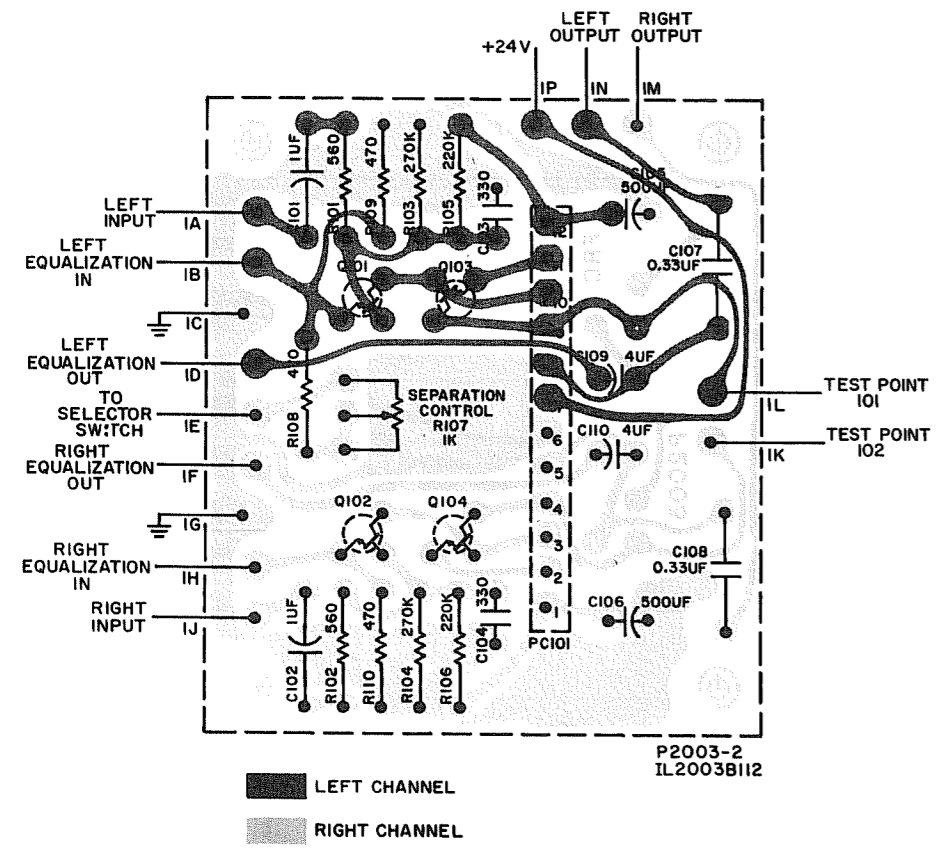


AW2692A  
P1563  
2007

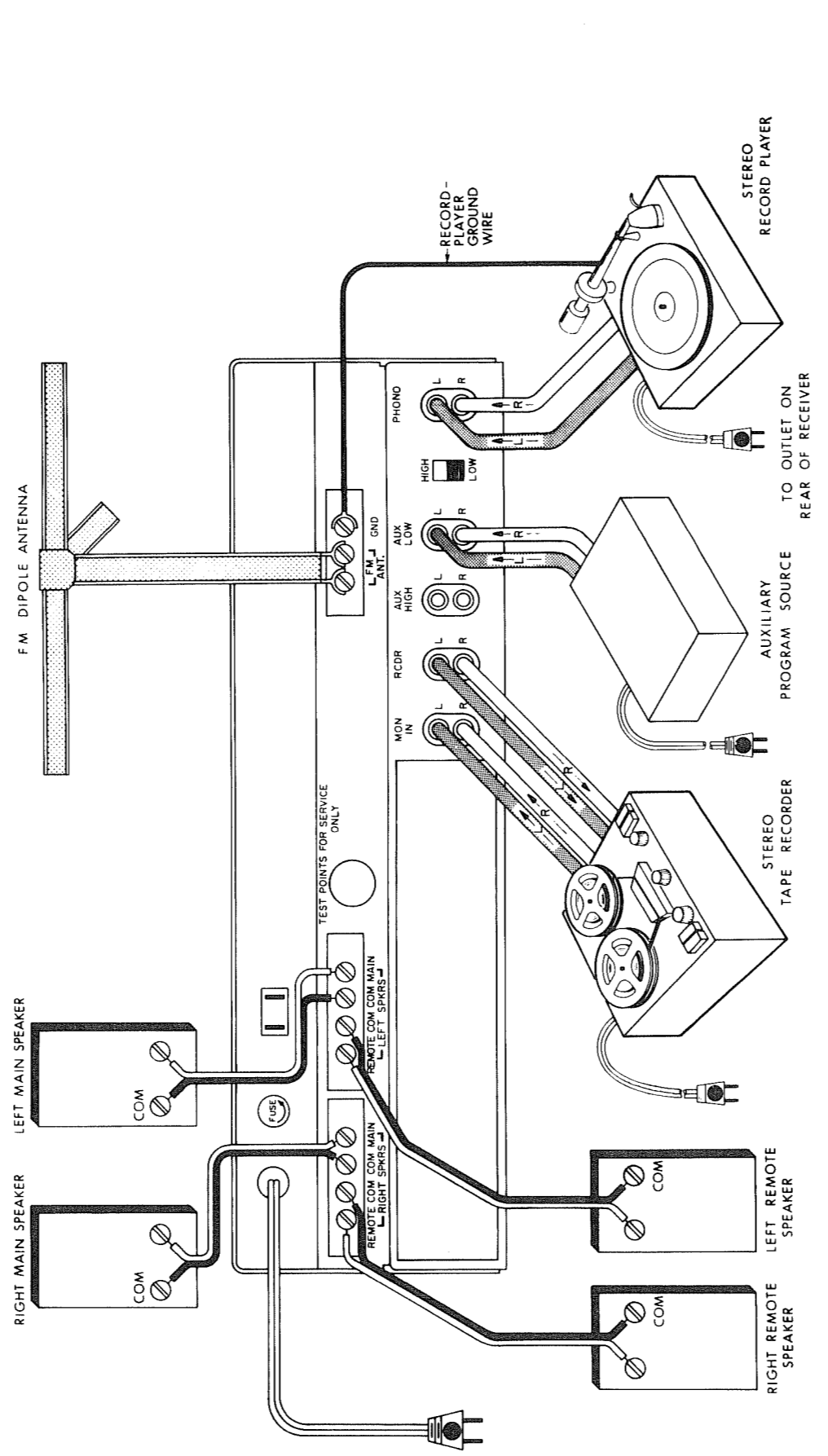
**2003-2 PREAMPLIFIER**



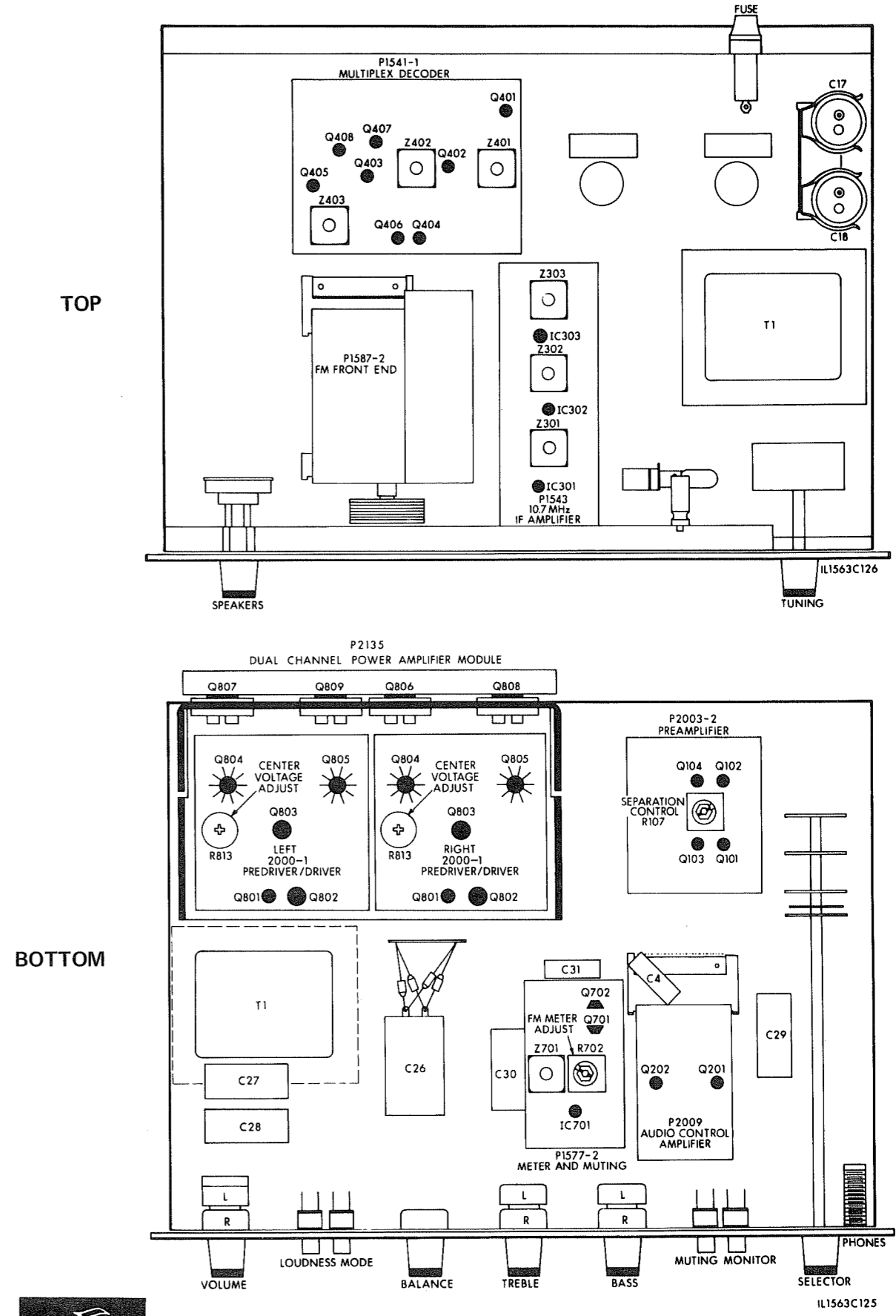
**BOARD VIEWED FROM COMPONENT SIDE**



**COMPONENT CONNECTIONS**



**CHASSIS LAYOUT**



**FISHER RADIO CORPORATION · NEW YORK**

