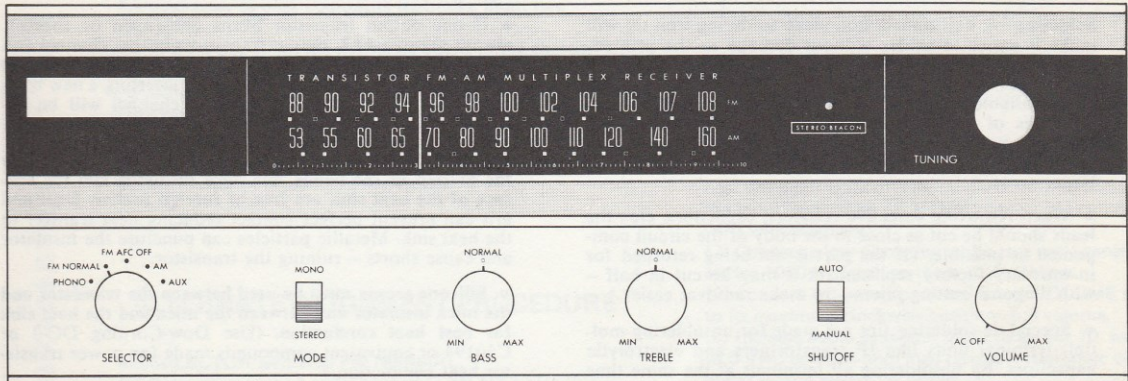


Service Manual

THE FISHER®

Consoles



22R™

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)
Audio Vacuum-Tube Voltmeter
(10-mV AC scale)
Oscilloscope (Flat to 100 kHz Minimum)
Audio (Sine-Wave) Generator
Intermodulation Distortion Analyzer
Harmonic Distortion Analyzer
AM/FM Signal Generator
Multiplex Generator (preferably with RF
output — FISHER Model 300 or equal)

10.7-MHz Sweep Generator
455-kHz Sweep Generator
Line Voltage Autotransformer
or Voltage Regulator
2 — Load Resistors, 4 or 8 Ohm, 50 Watt
2 — Full Range Speakers for Listening Tests
Stereo Source — Turntable or Tape Recorder
for Listening Tests
Soldering Iron with Small Tip
Fully Insulated from Power Line
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

REMOVING THE CHASSIS FROM CABINET

- (1) Disconnect the console's AC power cord.
- (2) Remove the cabinet's bottom panel—if any—and rear panel and disconnect the interlock. Disconnect the power, audio and antenna cables from the jacks on the chassis. Label each cable with its associated jack designation to make replacement easier later.
- (3) Gently pull all knobs off the front-panel control shafts. Remove the hex nuts from the control shafts and lift off the front panel.
- (4) Remove the two sheet metal screws from the top corners of the chassis mounting board.
- (5) Remove the two keps nuts (combination washer and nut) from the bottom corners of the chassis mounting board. Ease the chassis and the mounting board out of the cabinet from the rear.
- (6) Remove the four keps nuts which hold the chassis to the mounting board.
- (7) To replace the chassis, follow the reverse of the preceding instructions. Make certain the front panel is flush against the cabinet top before tightening the sheet metal screws and keps nuts which hold the chassis mounting board in the cabinet.

DIAL STRINGING

- (1) Remove the chassis from the cabinet and remove the front panel (refer to Removing The Chassis).
- (2) Remove the dial cord from under the tabs on the rear of the dial pointer and remove the pointer from the set.
- (3) Remove the four sheet metal screws which hold the dial glass panel to the brackets on the left side and right front of the chassis. Pull the dial glass panel to the left and tilt the panel down as far as the leads allow.
- (4) Rotate the tuning capacitor drive drum to its maximum counterclockwise position.
- (5) Tie the end of the dial cord to the end of the small spring. Fasten the spring to the ear inside the bottom of the drive drum (see start view).
- (6) Run the dial cord through the slot in the drive drum and set the cord in the underside of the inner groove.
- (7) Wrap 2 full turns of the dial cord around the tuning shaft (detail view).
- (8) Guide the dial cord around pulleys A and B.
- (9) Rotate the tuning capacitor drive drum to its maximum clockwise position, allowing the dial cord to follow the groove in the drive drum.
- (10) Pull the dial cord taut and place it in the underside of the outer groove of the drive drum.
- (11) Wrap 1¼ turns of the dial cord around the drive drum. (see finish view). 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, making certain that the drive drum is in the fully clockwise position.
- (12) Replace the dial glass panel and secure with the 4 sheet metal screws removed previously.
- (13) 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.
- (14) Replace the chassis in the cabinet (refer to Removing The Chassis).

REPLACING STEREO BEACON LAMP

- (1) Remove the chassis from the cabinet (refer to Removing The Chassis).
- (2) Pry the plastic lamp holder from the lamp mount. Unsolder the leads from the lamp holder. Solder the leads to rear terminals on the new lamp holder. Place new lamp holder in the mount.
- (3) Replace the chassis in the cabinet (refer to Removing The Chassis).

REPLACING DIAL LAMPS

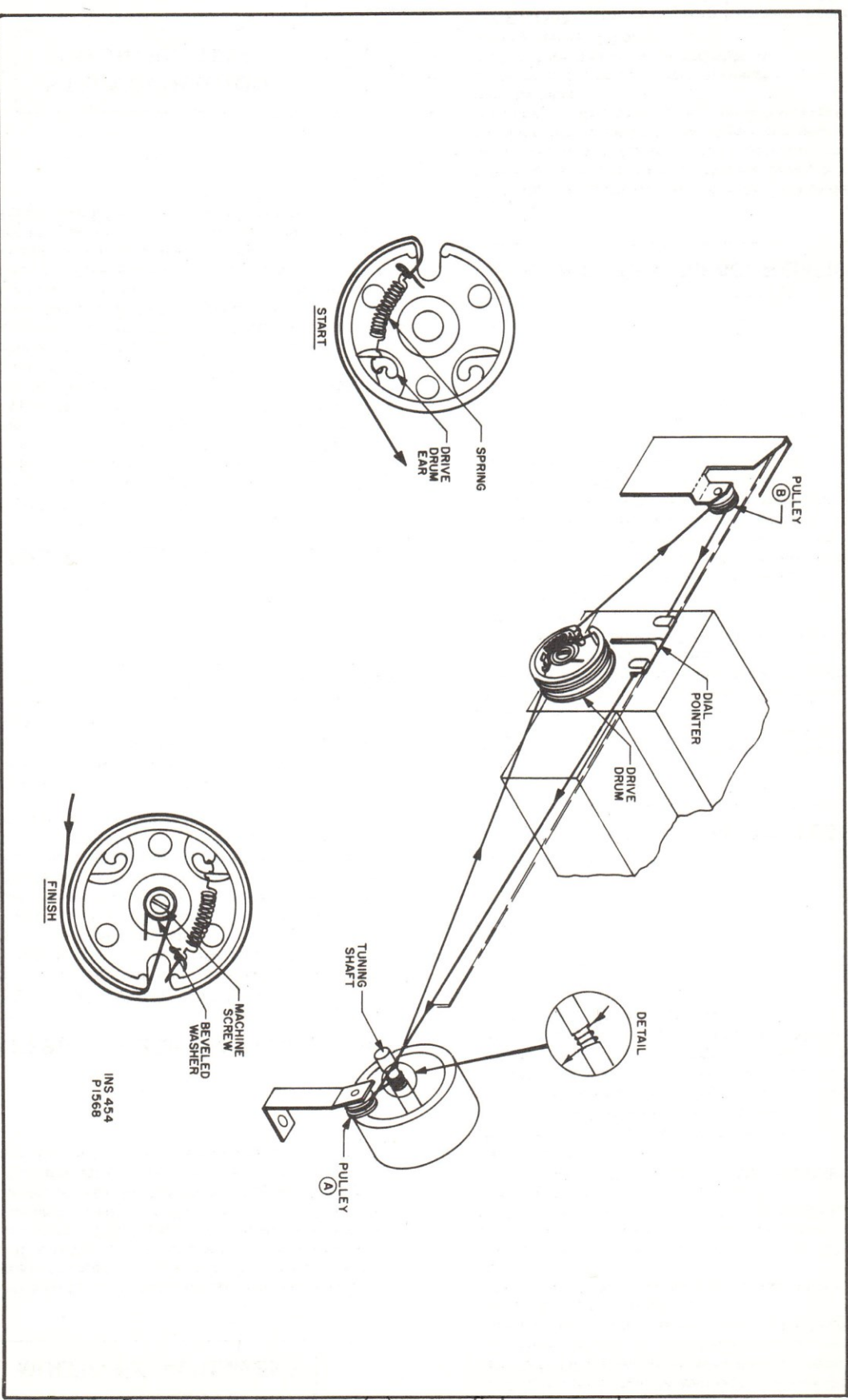
- (1) Disconnect AC power cord.
- (2) Gently pull all knobs off the front panel control shafts. Remove the hex nuts from the control shafts and lift off the front panel.
- (3) Snap out the defective lamp from the spring clip. Place the new lamp in the socket making certain that the unpainted side of the lamp faces the edge of the dial glass.
- (4) Replace the front 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 front panel control shafts. Remove the hex nuts from the control shafts and lift off the front panel.
- (3) If there are foam-cushion strips located at the ends of the dial glass, remove them.
- (4) Loosen the screws that hold the retaining clips to the dial glass. Swing the clips aside and lift off the dial glass.
- (5) Remove dust with a dry cloth. If you wish to clean more thoroughly, use only plain lukewarm water; any stronger 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 front panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

CLEANING FRONT PANEL

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



INS 454
P1568

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 the use with multiplex generators not having an RF output is also given.

PREFERRED ALIGNMENT PROCEDURE

Set SELECTOR switch to FM NORMAL.

- (1) Connect RF output of multiplex generator to the FM NORM antenna terminals. Set TUNING dial pointer to RF frequency of multiplex generator.
- (2) Connect output of audio generator, set for 1 kHz (kc), to the external modulation input of 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).
- (3) Ground pin 4C on the multiplex board to the chassis.
- (4) Follow procedures given in Table 1 below.
- (5) 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 NORMAL.

- (1) Connect output of audio generator, set for 1 kHz (kc), to the external modulation input of 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).
- (2) 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.
- (3) Ground pin 4C on the multiplex board to the chassis.
- (4) Follow procedures given in Table 1 below.
- (5) After alignment is complete, disconnect multiplex generator and resistor, and reconnect lead going to pin 4B on the multiplex board. Disconnect pin 4C from the chassis.

INTERMODULATION DISTORTION TEST

Set BASS and TREBLE controls to their center positions. Set MODE switch to STEREO and SELECTOR switch to AUX. Unplug AC power cord.

- (1) Connect an 8-ohm, 25-watt resistor across the L MAIN SPKRS 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.
- (2) Connect IM-analyzer generator output to the L AUX IN jack.
- (3) Connect AC power cord and rotate VOLUME control to its maximum clockwise position—full volume.
- (4) Increase IM-analyzer generator input to set for 4 watts output (4.5 VAC across 8-ohm load resistor). AFTER ONE FULL MINUTE OF WARM-UP TIME, PROCEED TO NEXT STEP.
- (5) IM meter reading should be 1.0% or less.
- (6) Repeat preceding steps for right channel.

NOTE: If any of the preceding instructions are different from those supplied with the IM-analyzer instruction manual, it is best to follow those in the manual. If a load resistor of 25-watt rating is built into the IM analyzer, a separate load resistor is not required.

HARMONIC DISTORTION TEST

Set BASS and TREBLE controls to their center positions. Set MODE switch to STEREO and SELECTOR switch to AUX. Unplug AC power cord.

- (1) Connect an 8-ohm, 25-watt resistor across the L MAIN SPKRS 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.
- (2) Connect a low-distortion audio sine wave generator, set for 1000 Hz (cps), to the L AUX IN jack.
- (3) Connect AC power cord and rotate VOLUME control to its maximum clockwise position—full volume.
- (4) Increase audio generator input to set for 10 watts output (8.0 VAC across 8-ohm load resistor). Harmonic distortion meter should read 1.0% or less.
- (5) 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:

- (1) Measure the power output of one channel at a time.
- (2) Limit the measurement period to 10 minutes with a load resistance of 8 ohms.

WARNING: If the power output of both channels must ever be measured simultaneously, use a load of 4 to 8 ohms 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.

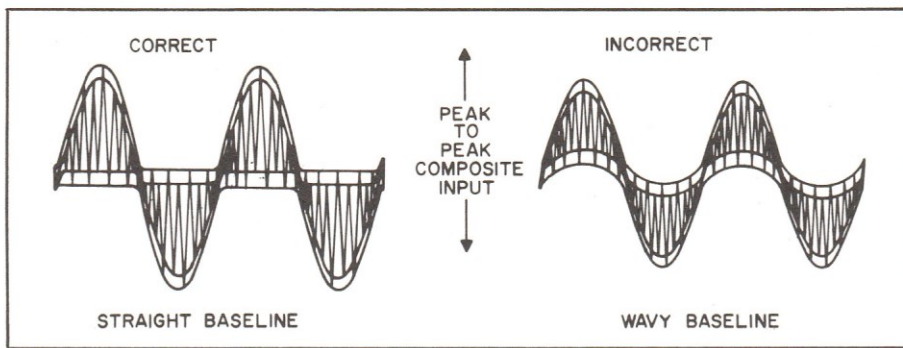


Figure 1. Composite Input To Multiplex Decoder.

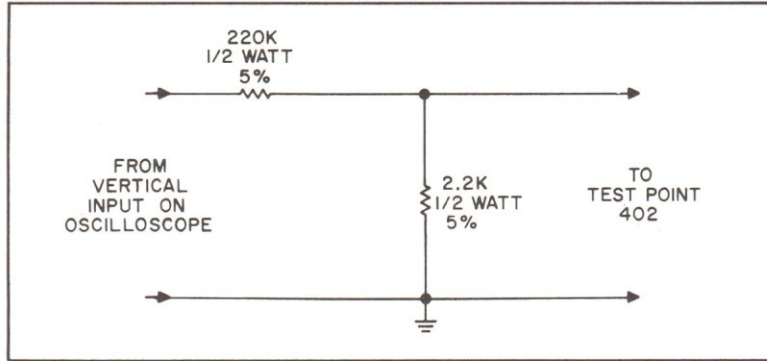


Figure 2. Voltage Divider Probe.

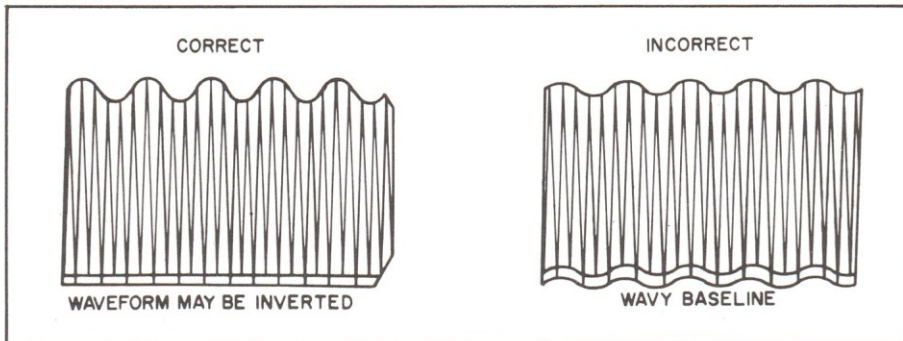


Figure 3. Waveform At Test Point 402.

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 ± 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 ± 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

bration and maximum gain are obtained. Keep the generator output as low as possible during all adjustments.

FM IF ALIGNMENT

Set SELECTOR switch to FM NORMAL. Set MODE switch to MONO.

- (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 2 on test socket.

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 observe IF response curve. Use as low a generator output as possible.
- (4) Align top and bottom cores of 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 for maximum gain and symmetry (Figure 2).
- (6) Connect scope to Test Point 1 on test socket.
- (7) Align top and bottom cores of Z303 on IF amplifier for maximum gain and symmetry (see Figure 4).
- (8) After alignment, reconnect Test Point 501 on front end to ground.

AM RF ALIGNMENT

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

Set SELECTOR switch to AM.

- (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.

NOTE: Moving dial pointer will make realignment of FM front end necessary.

- (2) Connect an AM generator through a 220-pF capacitor to pin 5H on the AM RF board; generator ground to chassis.
- (3) Connect a scope and an AC VTVM to either the L or R RCDR OUT jack.
- (4) Set AM generator frequency and TUNING dial pointer to 600 kHz (kc). Use 30% modulation with 400 Hz (cps)

and keep the generator output as low as possible during the alignment procedure.

- (5) Align AM oscillator coil (Z502) core for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.
- (6) Set AM generator frequency and TUNING dial pointer to 1400 kHz (kc). Adjust AM oscillator trimmer (C511) for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.
- (7) Repeat Steps 4, 5 and 6 until accurate dial calibration and maximum gain are obtained.
- (8) Disconnect AM generator and reconnect to AM antenna terminal; generator ground to chassis.
- (9) Set AM generator frequency and TUNING dial pointer to 600 kHz (kc).
- (10) Align AM mixer coil (Z501) and adjust the position of the small coil on the end of the ferrite loop antenna for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.

NOTE: To adjust the antenna coil, melt the wax holding the small coil to the end of the ferrite loop antenna. Shift the coil back and forth for maximum audio indication. To secure the coil in position, re-melt the wax holding the pointer to the coil (kc).

- (11) Set the AM generator frequency and TUNING dial pointer to 1000 kHz (kc).
- (12) Adjust AM mixer trimmer (C508) and AM antenna trimmer (C502) for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.
- (13) Repeat Steps 9, 10, 11 and 12 until accurate dial calibration and maximum gain are obtained.

AM IF ALIGNMENT

Set SELECTOR switch to AM.

- (1) Connect short jumper wire between pin 5H on AM RF board and ground.
- (2) Connect 455-KHz (kc) sweep generator to Test Point 601 on the 455-KHz IF amplifier board. Connect scope's vertical input to Test Point 4 on test socket.
- (3) Adjust generator output voltage and frequency to observe IF response curve. Use as low a generator output as possible.
- (4) Align top and bottom cores of Z601 and Z602 and core of Z603 for maximum gain and symmetry (similar to Figure 3).
- (5) Repeat alignment several times until accurate dial calibration and maximum gain are obtained. Keep the generator output as low as possible during all adjustments.

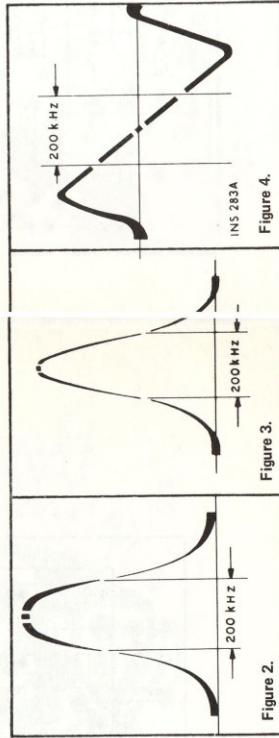


Figure 2.

Figure 3.

Figure 4.

FM FRONT END ALIGNMENT

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

Set SELECTOR switch to FM NORMAL.

- (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.

NOTE: Moving dial pointer will make realignment of AM RF board necessary.

- (2) Connect an FM generator to the FM NORM antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator (see Figure 1).
- (3) Connect a scope and an AC VTVM to either the L or R RCDR OUT jack.
- (4) Set generator frequency and TUNING dial pointer to 90 MHz (Mc). Modulate generator with 400 Hz (cps) ± 5% (kc) deviation. Use as low a generator output as possible.
- (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 AM generator frequency and TUNING dial pointer to 100 MHz (Mc).
- (7) Adjust FM oscillator trimmer (C507) first—then adjust the FM RF trimmer (C503) and the mixer trimmer (C506) for maximum reading on AC VTVM and maximum waveform amplitude and symmetry.
- (8) Repeat alignment several times until accurate dial cali-

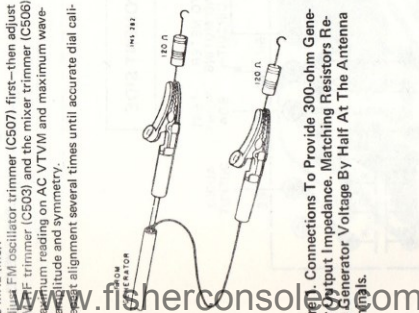


Figure 1. Connections To Provide 300-ohm Generator Output Impedance. Matching Resistors Reduce Generator Voltage By Half At The Antenna Terminals.

- (6) After alignment, disconnect jumper between pin 5H and ground.

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 TR8007/3 integrated circuit used in some models of the 10.7-MHz amplifier contains the equivalent of 10 transistors, 7 diodes and 11 resistors.

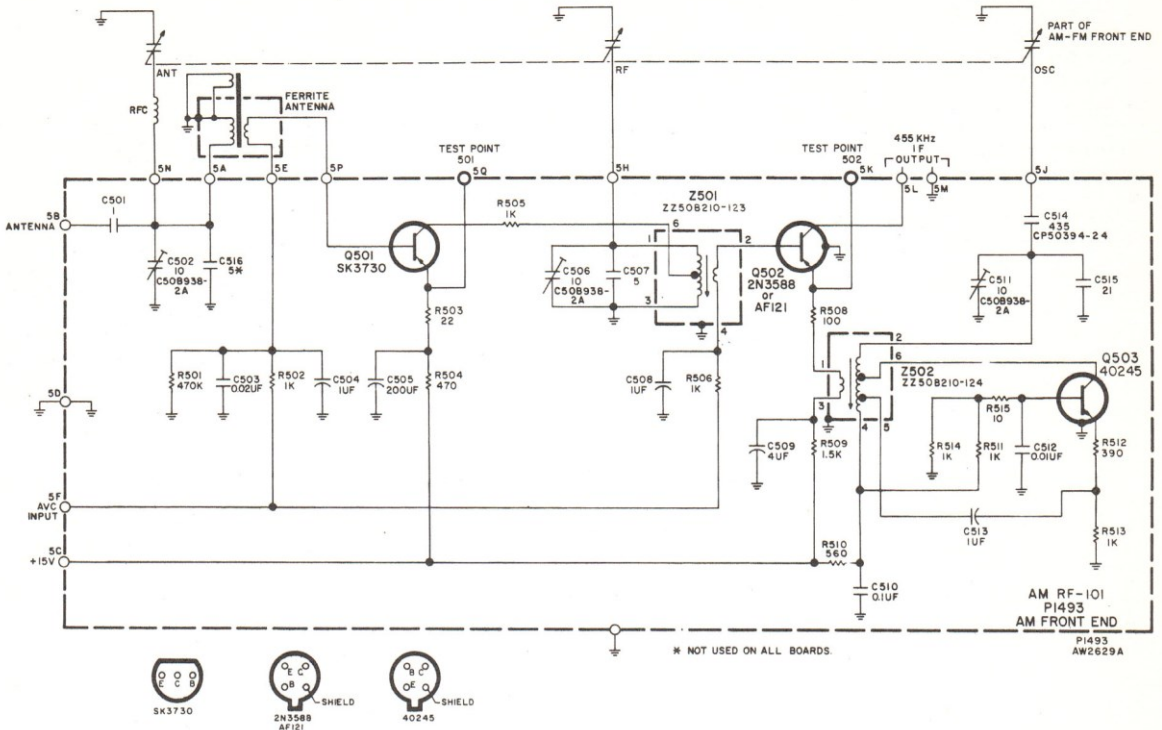
Both the uA703E and the TR8007/3 integrated circuits are high-reliability devices and should require a minimum of servicing. However, troubles may occur that will require diagnosis of these devices. In such an event, the integrated circuits should be serviced the same as a transistor. The preferred troubleshooting 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.

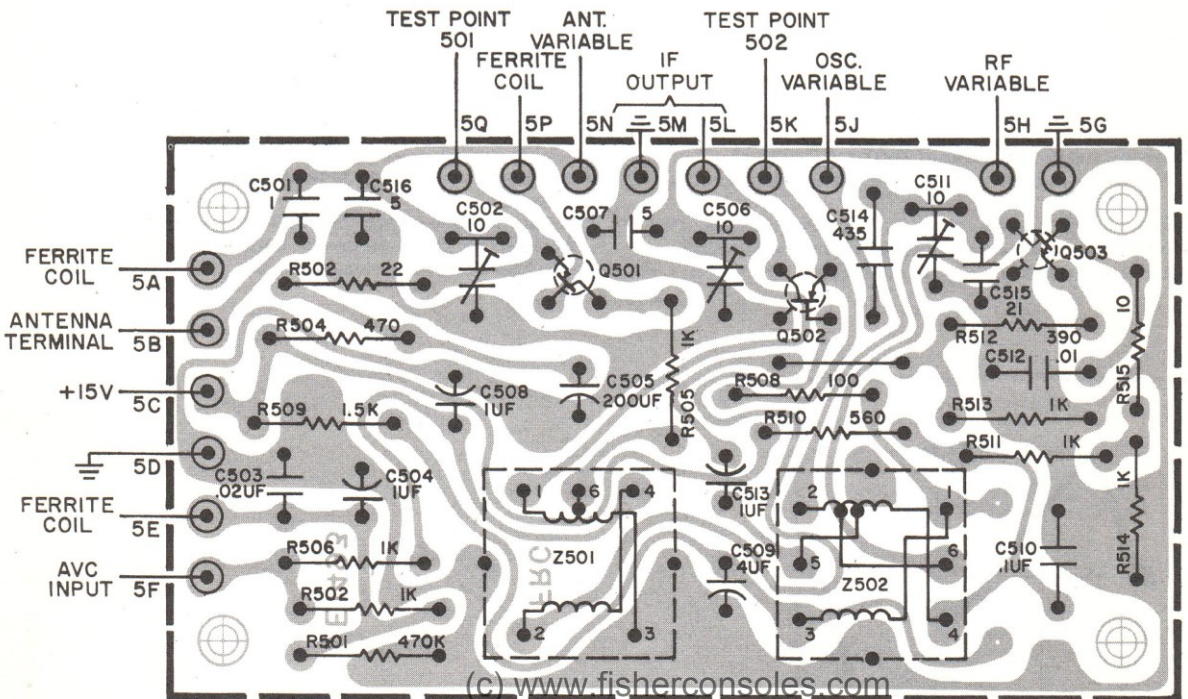
When replacing an integrated circuit, the following precautions should be observed:

- (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.

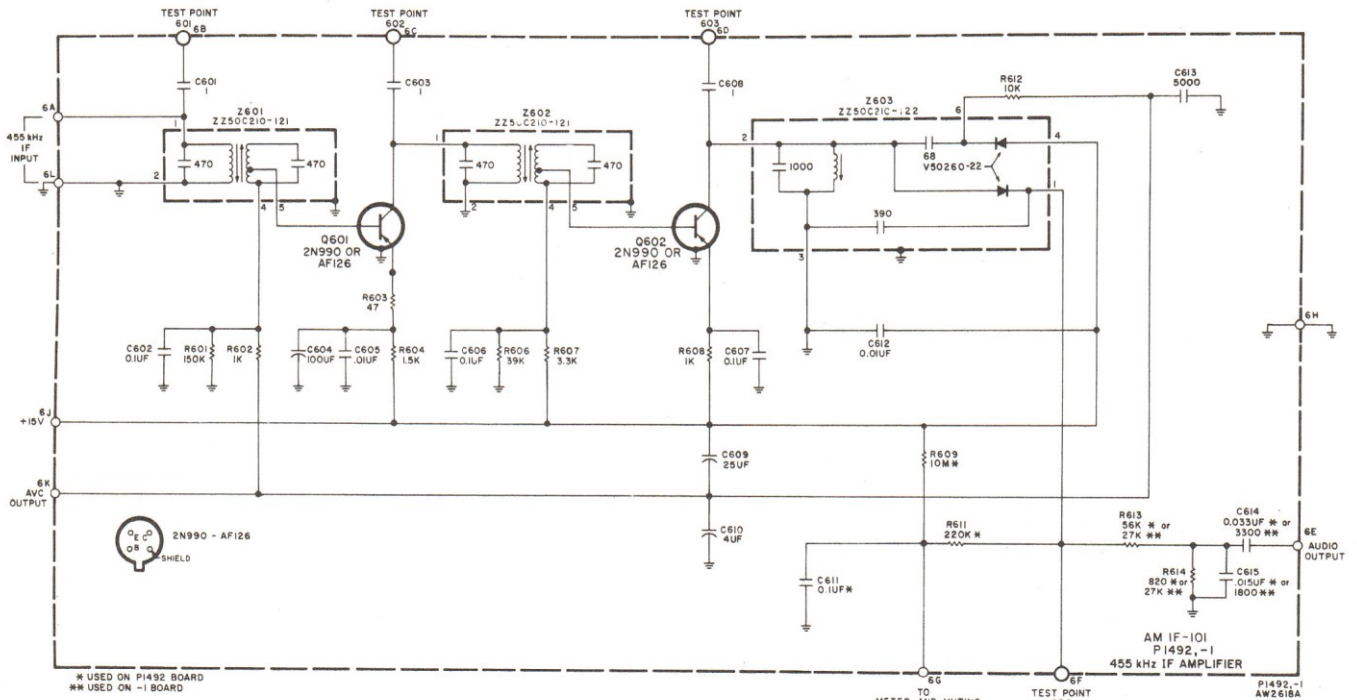
1493 AM RF



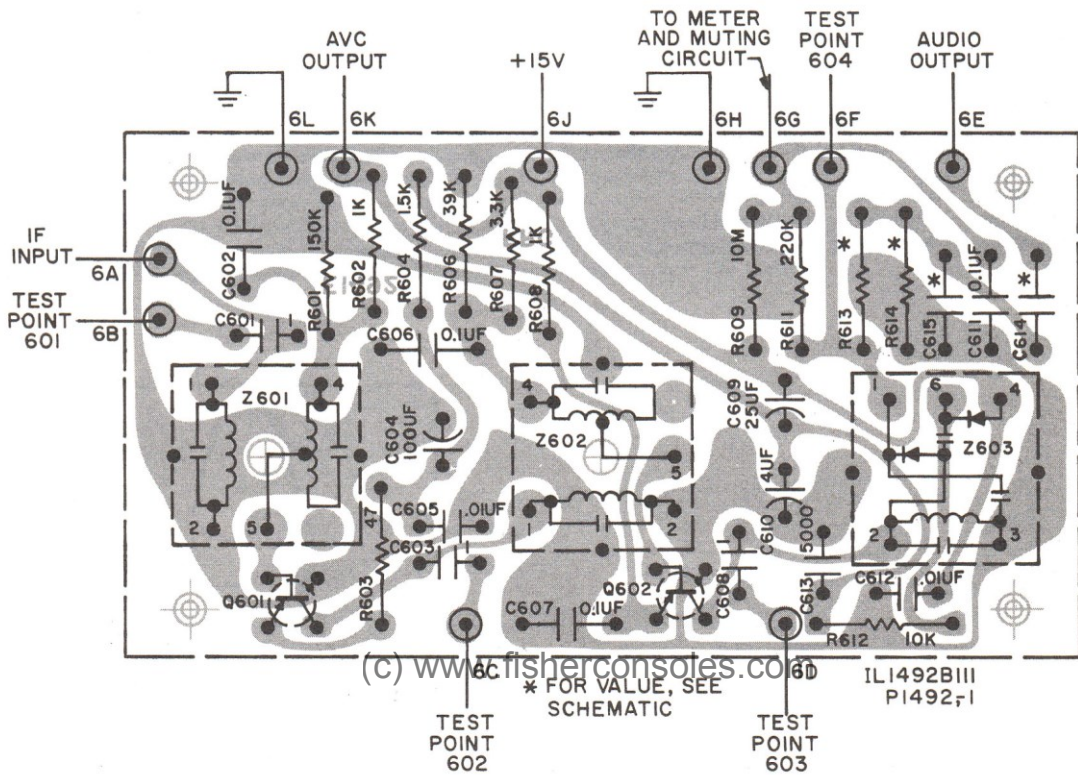
BOARD VIEWED FROM COMPONENT SIDE



1492 455 kHz IF AMPLIFIER

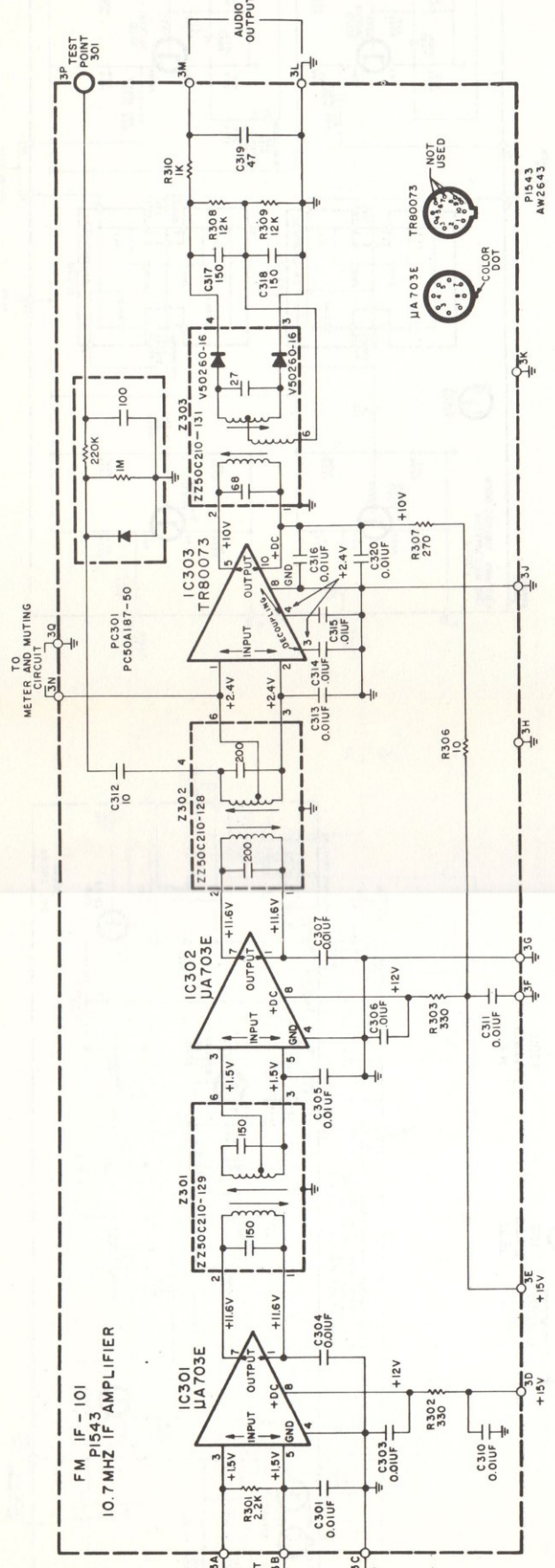


BOARD VIEWED FROM COMPONENT SIDE

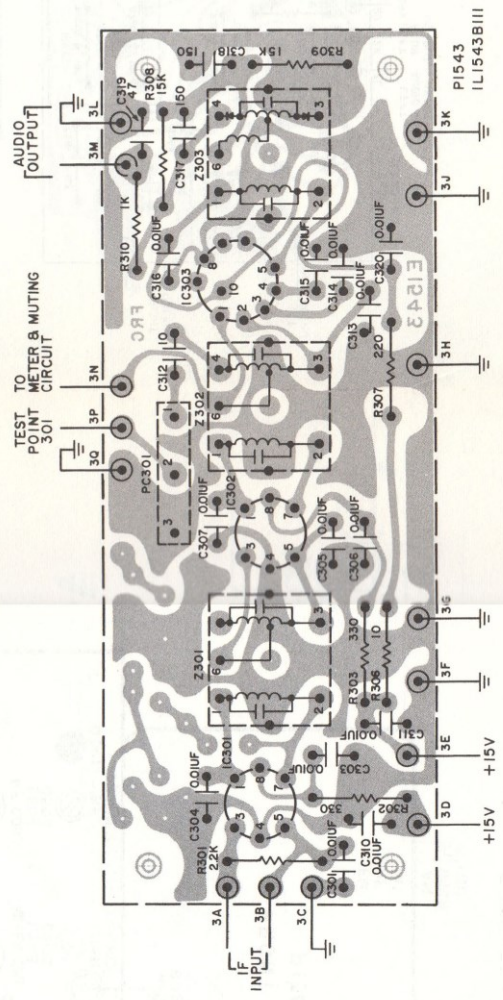


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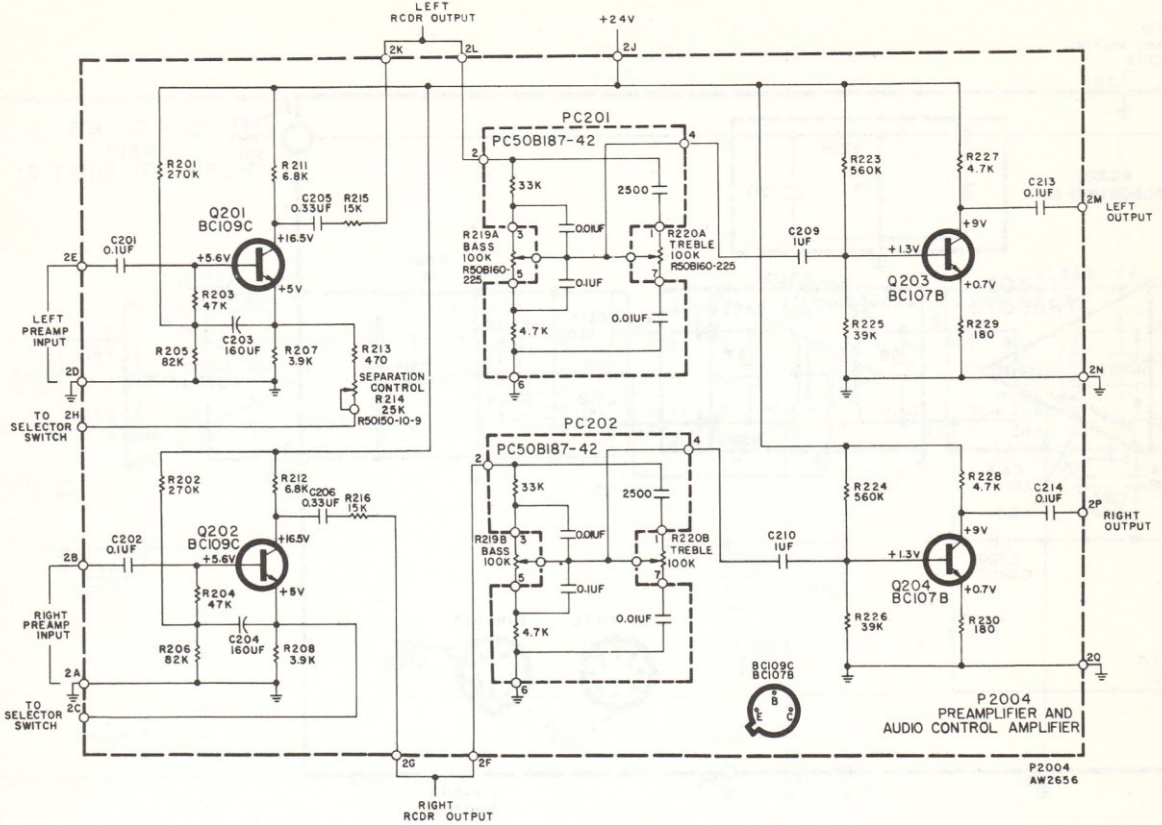
1543 10.7 MHz IF AMPLIFIER



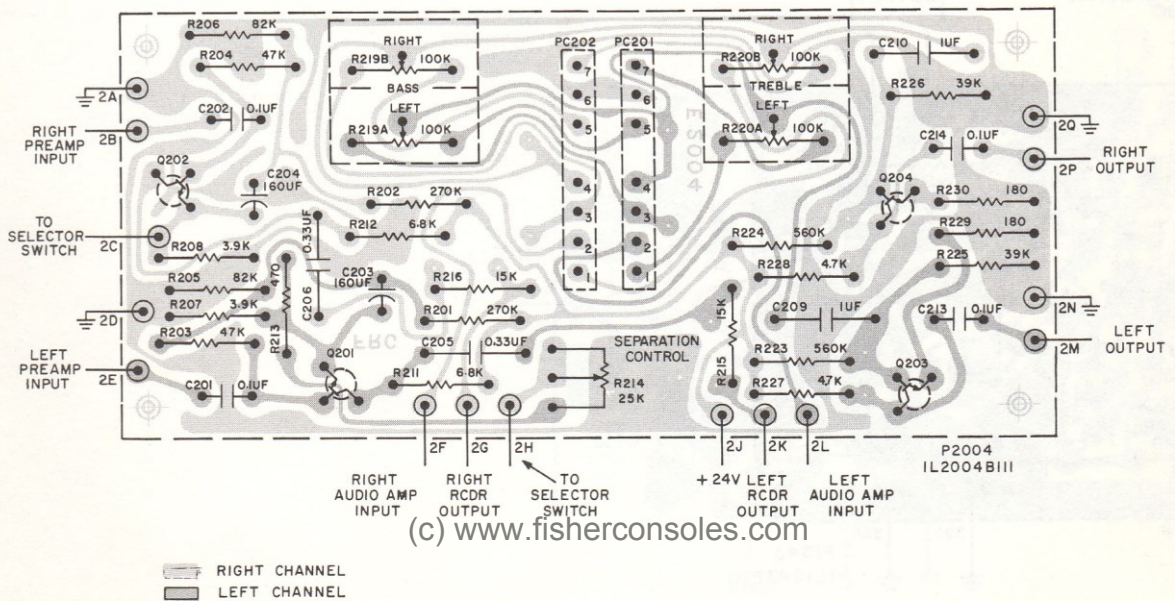
BOARD VIEWED FROM COMPONENT SIDE



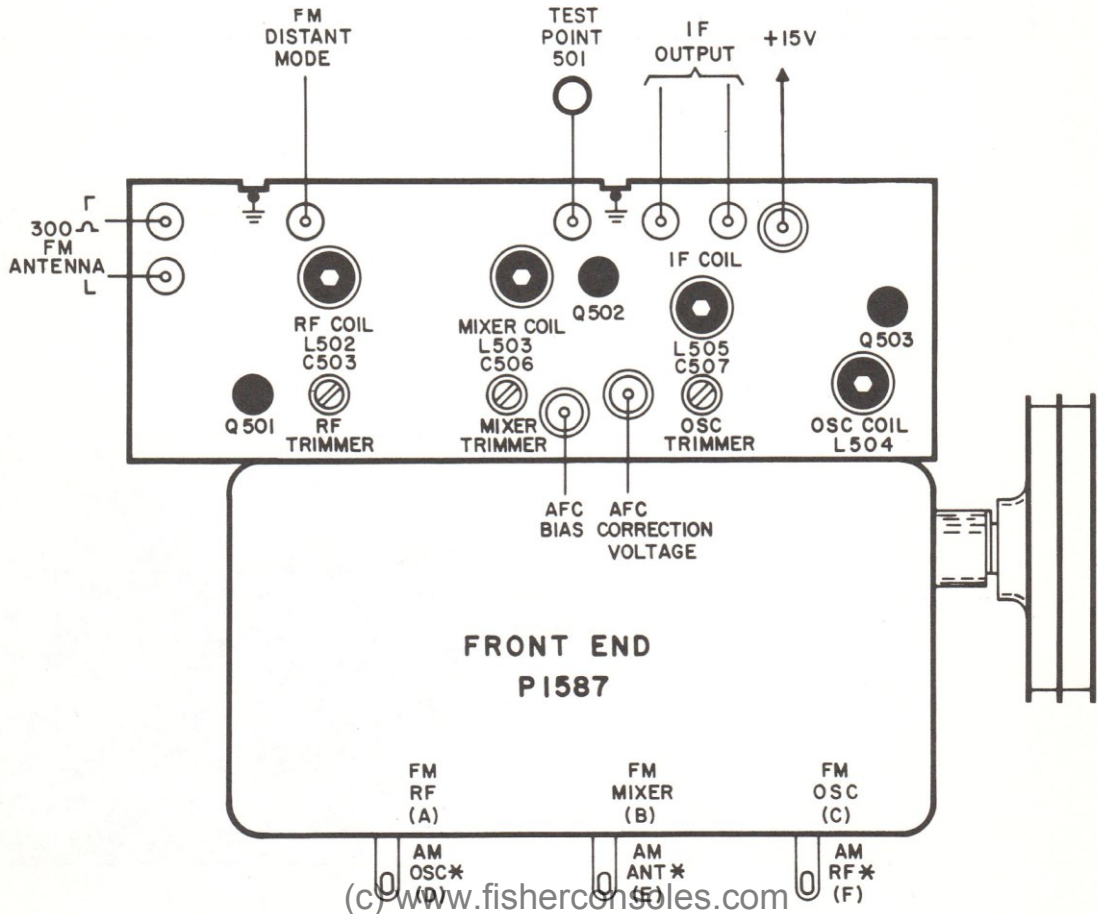
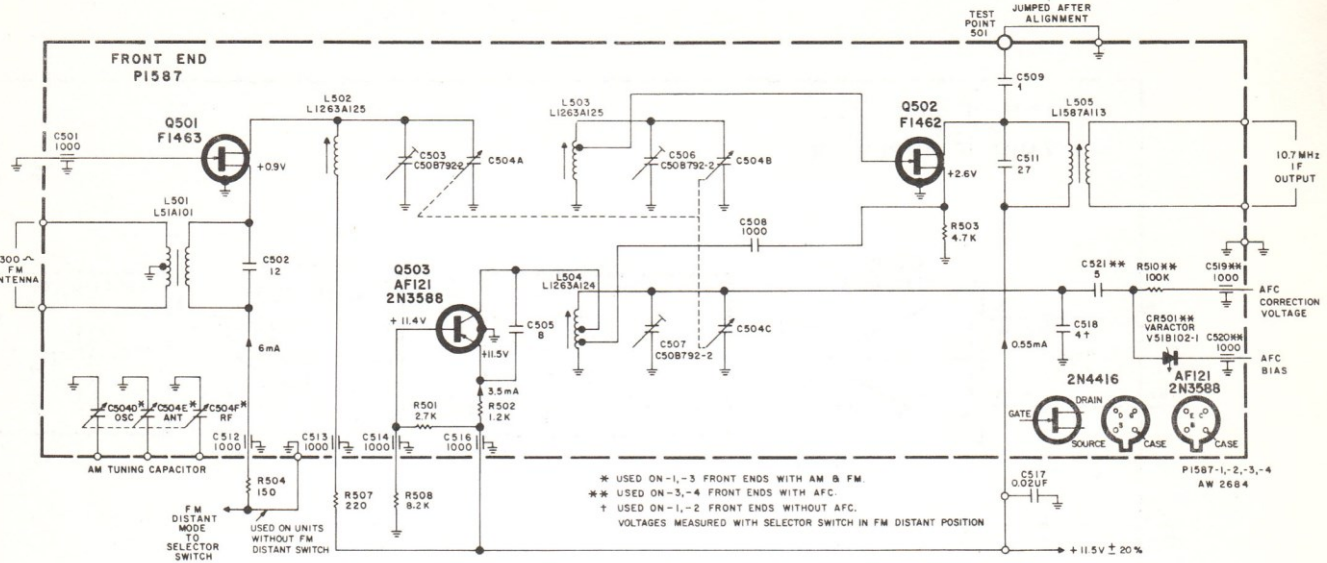
2004 PREAMPLIFIER AND AUDIO CONTROL AMPLIFIER



BOARD VIEWED FROM COMPONENT SIDE



1587 AM-FM FRONT END

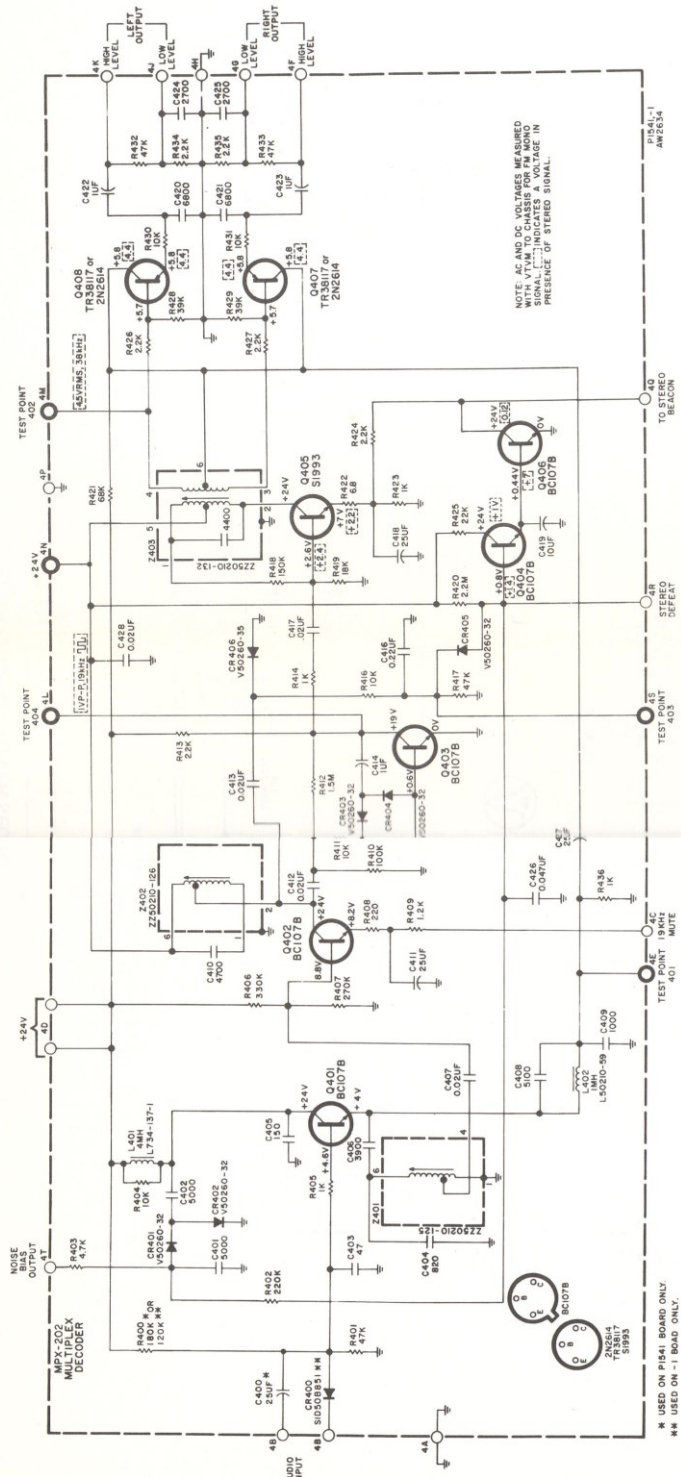


(c) www.fisherconsole.com

* USED ON -1, -3 FRONT ENDS

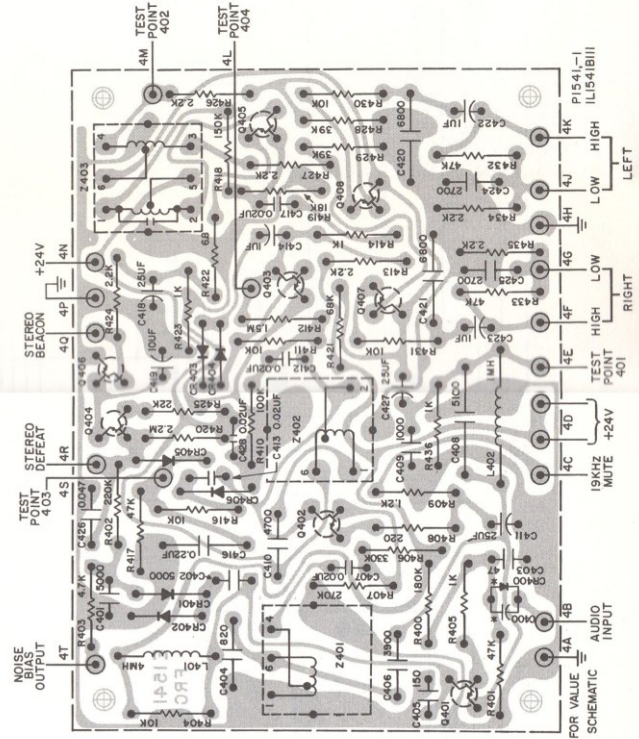
INS 450

154 MULTIPLEX DECODER



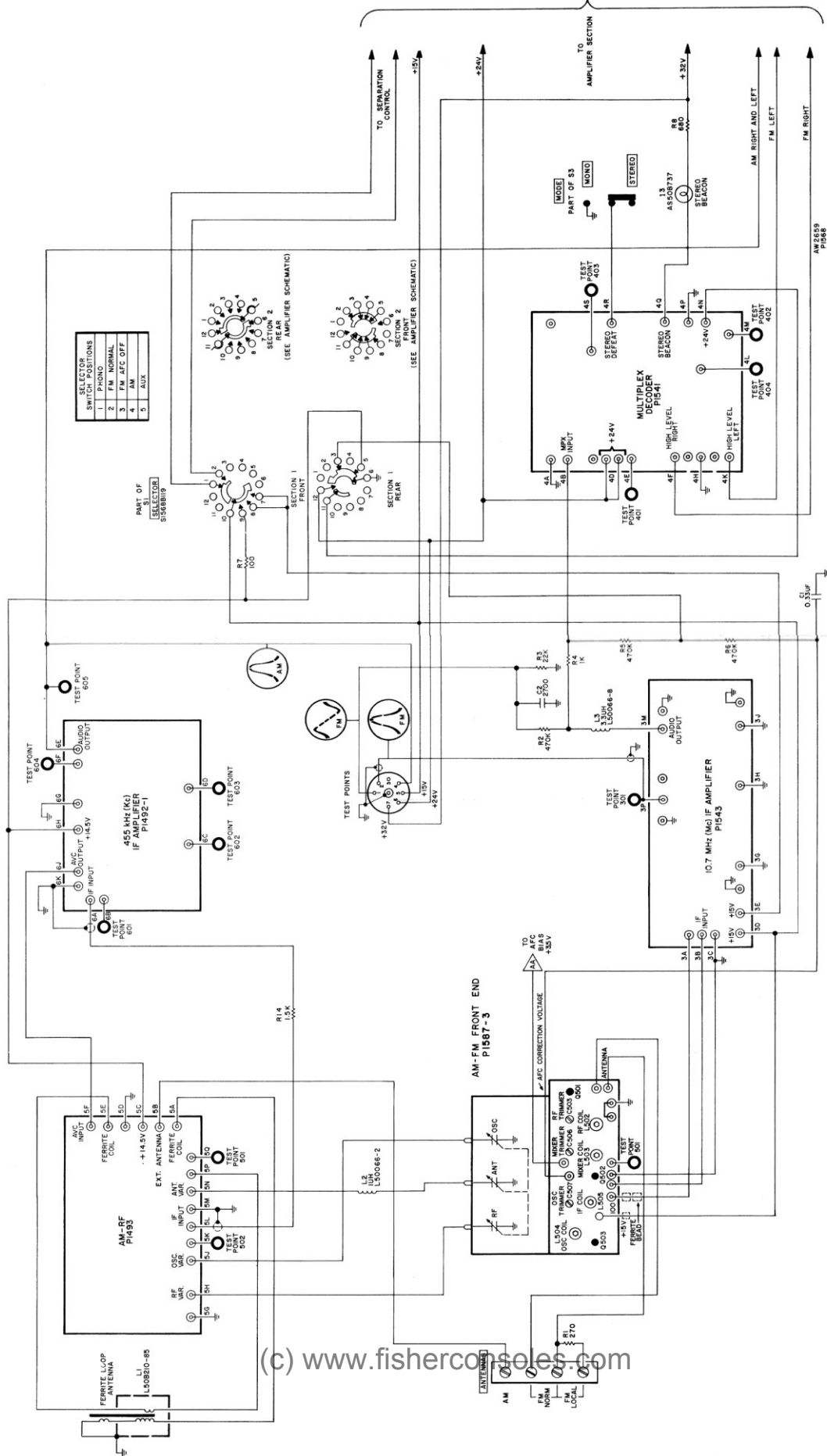
* M USED ON P1541 BOARD ONLY.
 ** M USED ON -1 BOARD ONLY.

BOARD VIEWED FROM COMPONENT SIDE



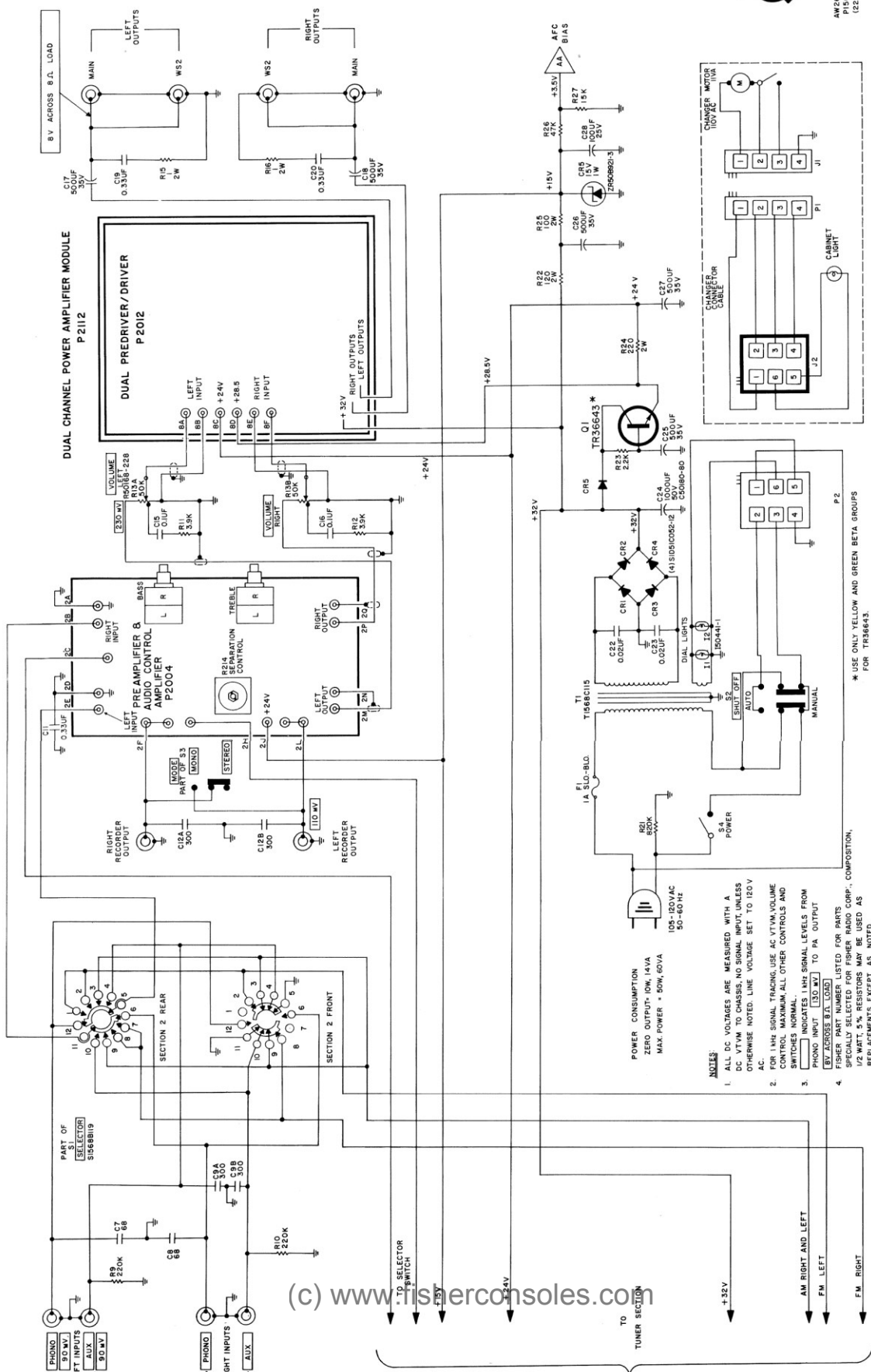
* FOR VALUE SEE SCHEMATIC

MAIN CHASSIS—TUNER SECTION



SELECTOR SWITCH POSITIONS
1. PHONO
2. NORMAL
3. FM AFC OFF
4. AM
5. AUX.

MAIN CHASSIS—AMPLIFIER SECTION



POWER CONSUMPTION
ZERO OUTPUT—10W, 10VA
MAX. POWER—50W, 50VA

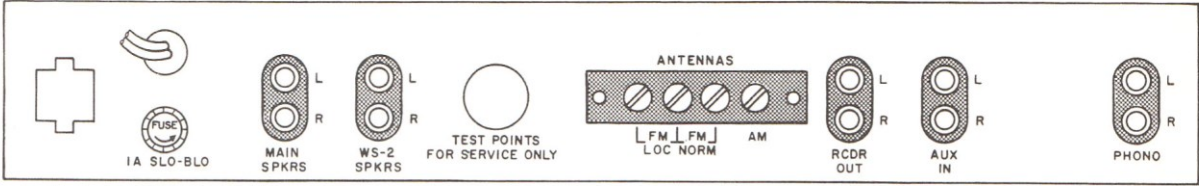
- NOTES:
1. ALL DC VOLTAGES ARE MEASURED WITH A DC VTVM TO CHASSIS, NO SIGNAL INPUT, UNLESS OTHERWISE NOTED. LINE VOLTAGE SET TO 120V
 2. ALL 1MH SIGNAL TRIMMERS USE AC VTVM VOLUME CONTROL. MAXIMUM ALL OTHER CONTROLS AND SWITCHES NORMAL.
 3. SWITCHES INDICATES 1MH SIGNAL LEVELS FROM PHONO INPUT [30 MW] TO PA OUTPUT [BY ACROSS B.J. LOAD]
 4. FISHER PART NUMBER LISTED FOR PARTS SPECIALLY SELECTED FOR THIS MODEL COMP. COMPOSITION, REPLACEMENTS, EXCEPT AS NOTED.

* USE ONLY YELLOW AND GREEN BETA GROUPS FOR TR36643.



AN5271
P1558
(22P)

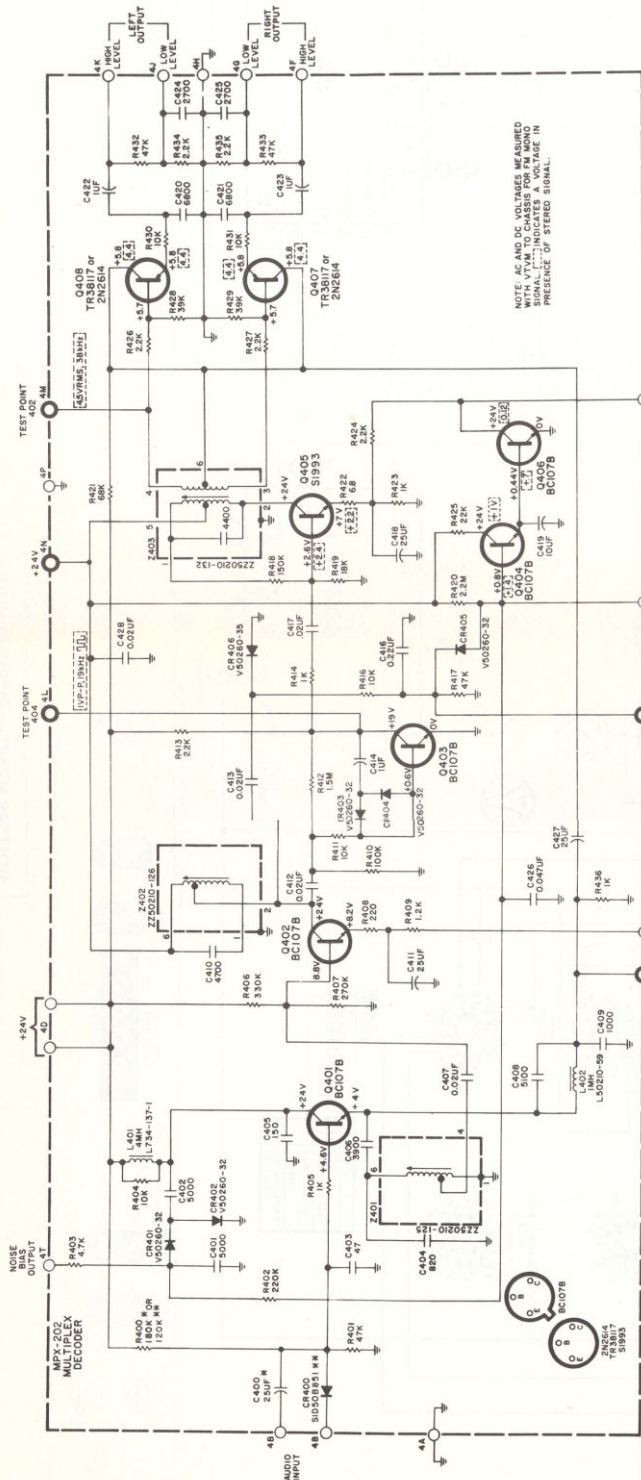
COMPONENT INTERCONNECTIONS



IL1568C135

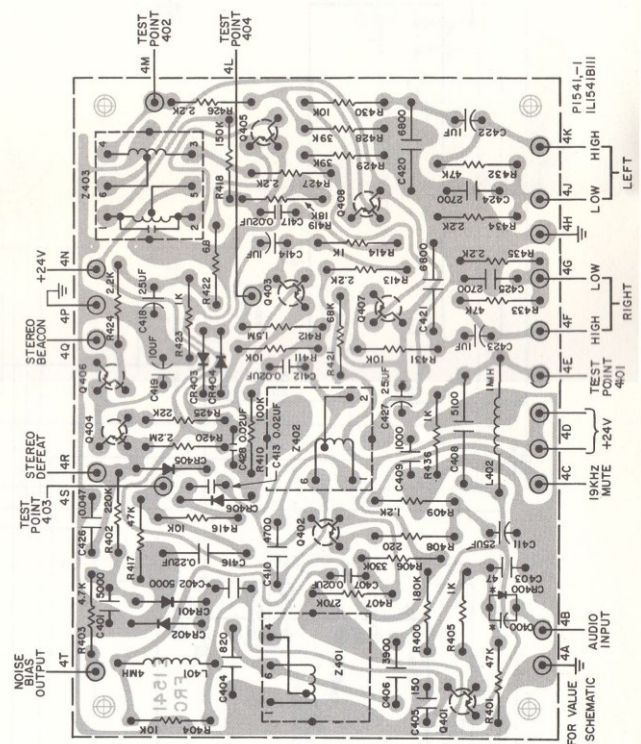
SERVICE NOTES

1541 MULTIPLEX DECODER



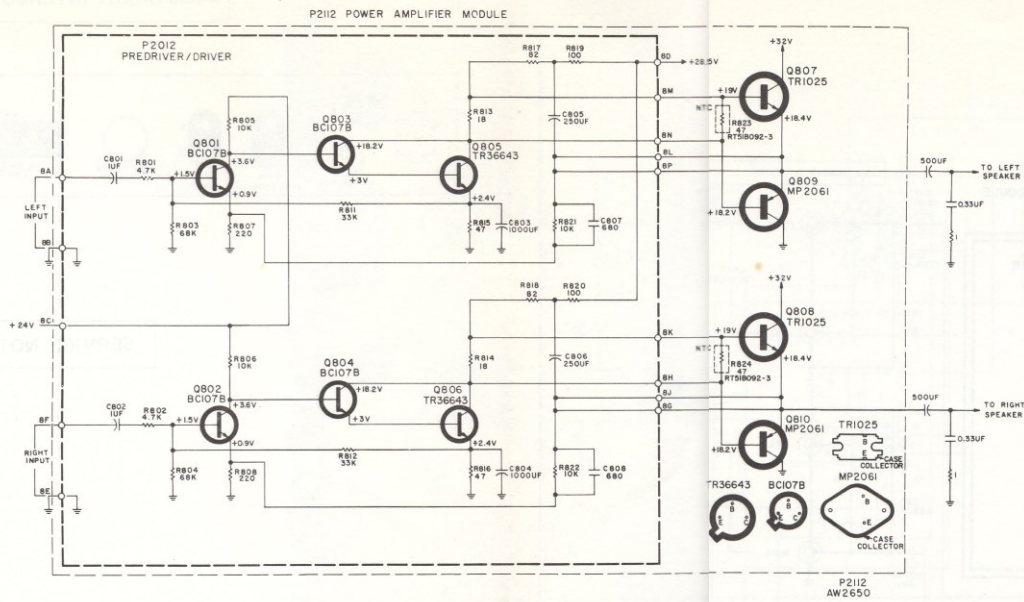
M USED ON P1541 BOARD ONLY
 MN USED ON -1 BOARD ONLY

BOARD VIEWED FROM COMPONENT SIDE

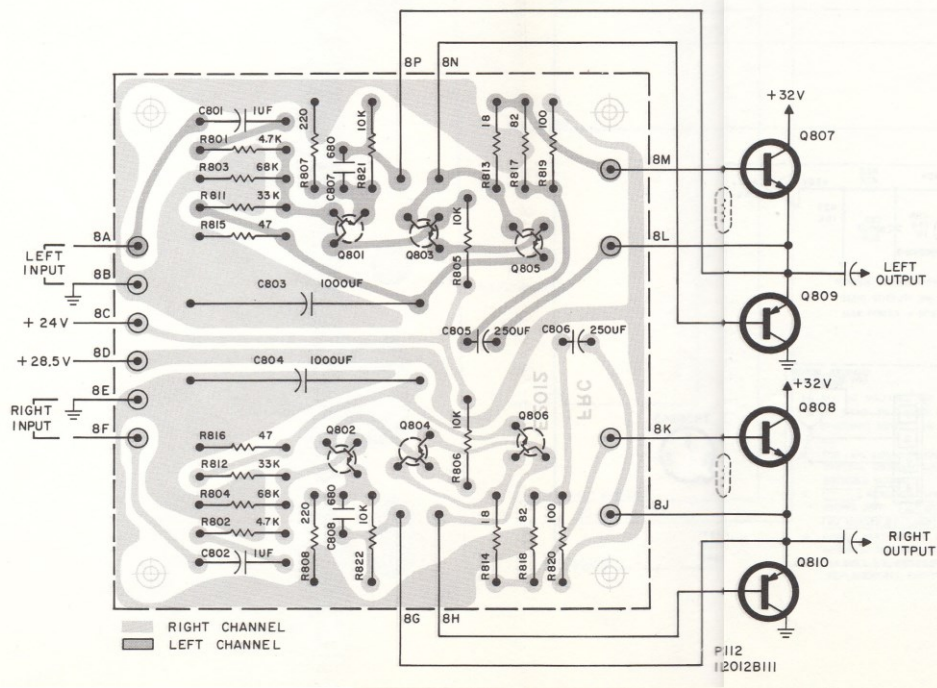


* FOR VALUE SEE SCHEMATIC

2112 DUAL CHANNEL POWER AMPLIFIER MODULE

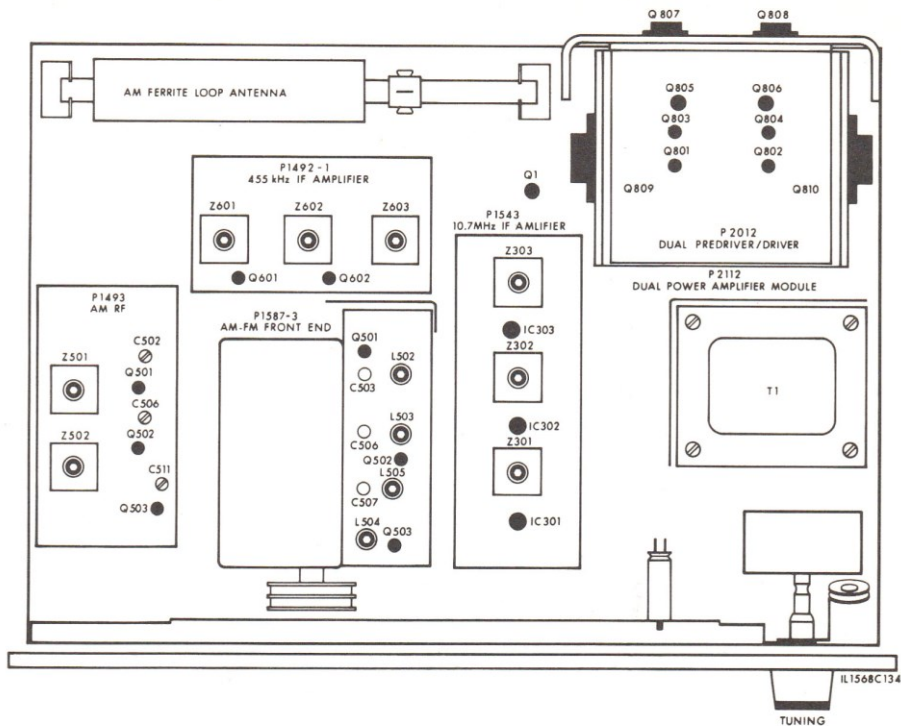


BOARD VIEWED FROM COMPONENT SIDE

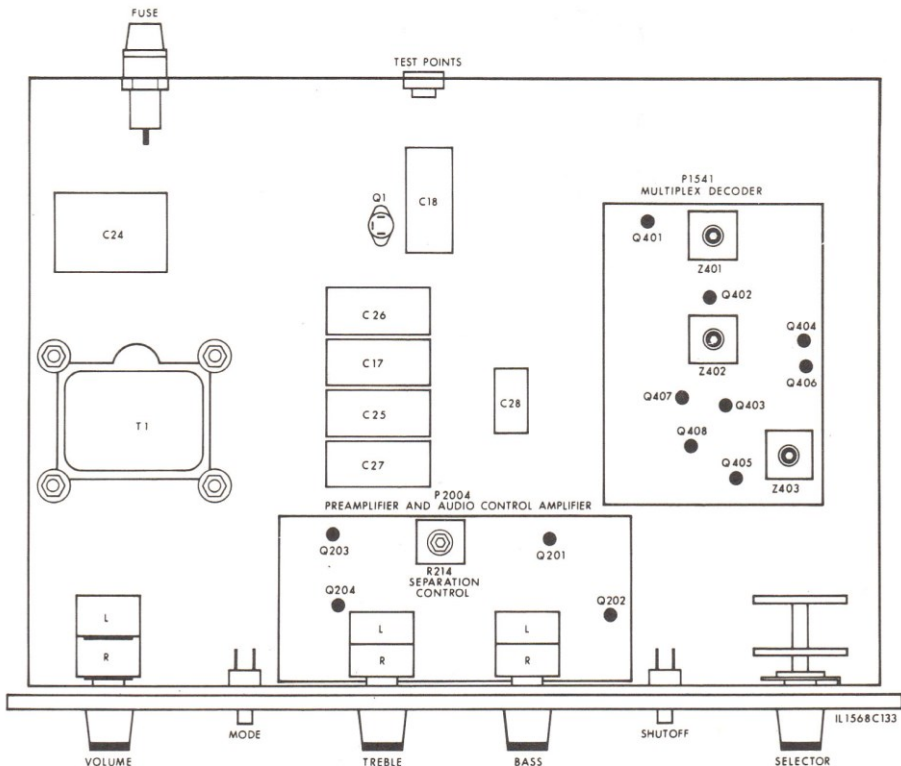


CHASSIS LAYOUT

TOP



BOTTOM



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