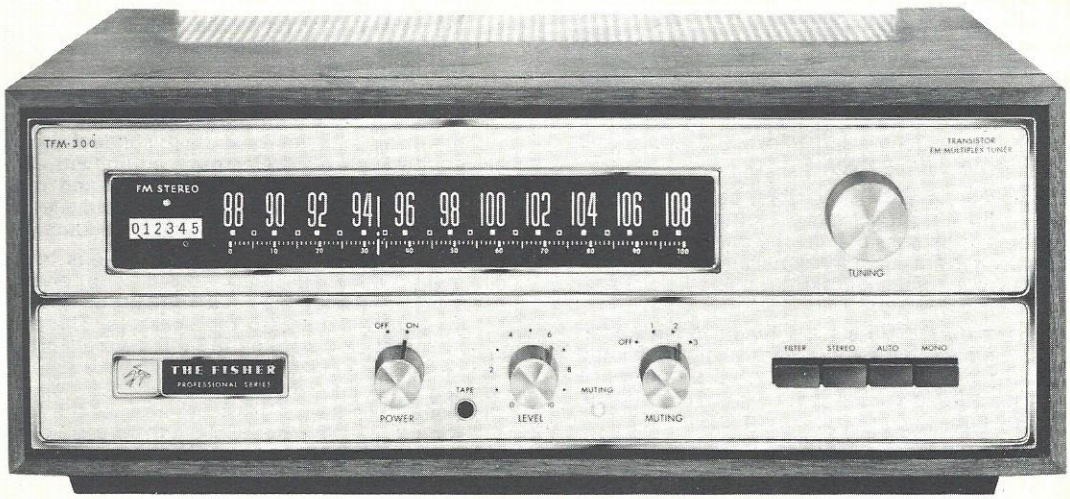
Serial Nos. Beginning 10000

Service Manual

THE FISHER®



TFM-300

CHASSIS SERIAL NUMBERS
BEGINNING 10000

$1.00

FISHER RADIO CORPORATION · LONG ISLAND CITY 1 · NEW YORK

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.

EQUIPMENT AND TOOLS NEEDED

The following are needed to completely test and align this high-fidelity instrument.

Test Instruments

Vacuum-Tube Voltohmmeter DC VTVM
Audio (AC) Vacuum-Tube Voltmeter (AC VTVM)
Oscilloscope (Flat to 100 kc minimum)
Audio (Sine-wave) Generator
Intermodulation Analyzer
Sweep (FM) Generator (88 to 108 mc)
Marker Generator
Multiplex Generator (preferably with RF output — FISHER Model 300 or equal).

Miscellaneous

Adjustable-Line-Voltage Transformer or line-voltage regulator

Load Resistors (2) — 8-ohm, 50-watt (or higher)

Stereo source (Turntable with stereo cartridge or Tape Deck)

Speakers (2) Full-range, for listening tests

Soldering iron (with small-diameter tip). **Fully** insulated from power line.

PRECAUTIONS

Many of the items below are included just as a reminder — they are normal procedures for experienced technicians. Shortcuts 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 many circuit components mounted on it. It is not the wattage of the iron that counts — it is the heat available at the tip. Low-wattage soldering irons will often take too long to heat a connection — pigtail leads will get too hot and damage the part. Too much heat, applied too long, will damage the printed-circuit board. 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 tiplets 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-power linecord — wait 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. This reduces 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. Heat is the greatest enemy of electronic equipment. It can shorten the life of transistors, capacitors and resistors. (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. There is no output transformer — nothing to limit current through the transistors except the fuses. To reduce the possibility of shorts at the speakers, lugs should be used on the exposed ends — 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. Any poor contact or small-size wire, can cause power losses in the speaker system. Use 14 or 16 AWG for long runs of speaker-connecting wiring.

DC-Voltage Measurements—These basic tests of the transistor circuitry are made without the signal generator. Without any signal input measure the circut voltages — as indicated on the schematic. The voltage difference between the base and the emitter should be in the millivolt range — a sensitive DC meter is needed for these readings. A low-voltage range of 1 volt, full scale — or lower — is needed.

Audio-Voltage (gain) Measurements—The schematic and printed-circuit board layout diagrams are used. Input signals are injected at the proper points — found most quickly by using layout of the printed-circuit board instead of the schematic. An AUDIO (AC) VTVM connected to the test points should indicate voltages close to those values shown in the boxes on the schematic. Many of the signal levels in the input stages are only a few millivolts — they can not be read on the AC ranges supplied on most Vacuum-Tube AC/DC Volt-ohmmeters (VTVMs). Even with a 1-volt range a signal level of 100 millivolts (.1 volt) will be the first 1/10 of the meter scale. A reading of 1 millivolt (.001 volt) will hardly even move the meter needle.

TUNING METER CALIBRATION

- Connect FM generator output leads to antenna terminals.
- Set generator output to 100 mV, ±22.5 kc deviation at 400 cps.
- Adjust meter control (on IF printed-circut board) for tuning meter indication of 4.

MUTING CONTROL ADJUSTMENT

- Connect FM generator output leads to antenna terminals and AC VTVM to right or left RCDR jack.
- Set generator and tuner to 98 mc. Modulate generator with 400 cps to ±75 kc deviation.
- Rotate muting-level (behind FISHER nameplate) to maximum counterclockwise (CCW) position.
- Set FM generator output attenuator for 8 uV and make a note of the signal amplitude (AC VTVM reading) at the RCDR jack.
- Push in MUTING pushbutton and adjust muting-level control (on IF printed-circuit board) for a reading 1 to 5 db lower than previously noted. Reduce generator output to zero — no signal (noise) should be at the RCDR jack.
- Increase generator output to 20 uV. Note reading on the AC VTVM.
- Adjust the muting-level control (behind nameplate) until AC VTVM reading decreases 1 to 3 db.
- Set generator output attenuator for 100 uV signal to the antenna terminals. Signal at the RCDR jack should be about the same level as before it was adjusted in the previous step. Reduce generator output to 10 uV. No signal or noise should be at the RCDR jacks.

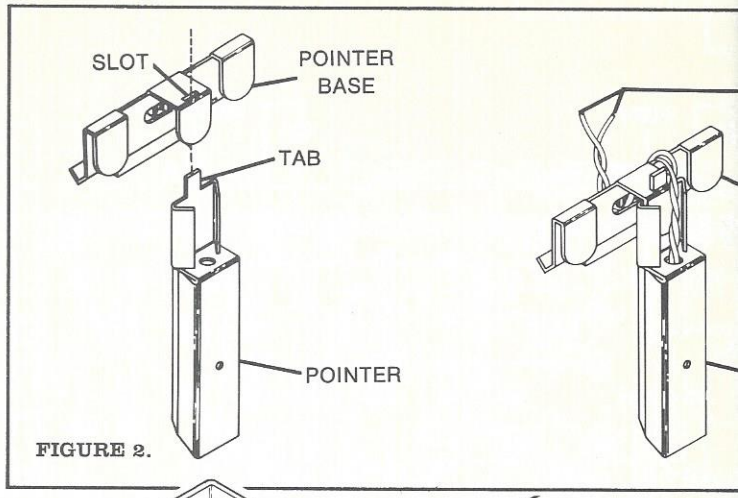
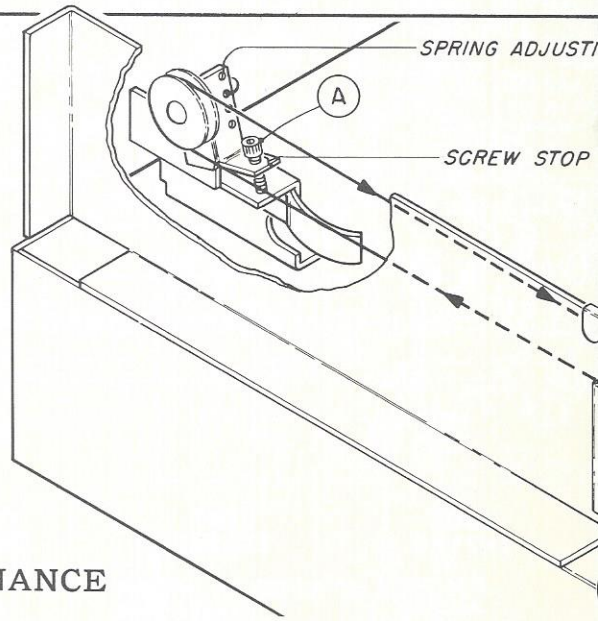


FIGURE 2.



FRONT PANEL MAINTENANCE

1. CLEANING THE DIAL GLASS

(1) Remove the front panel. Disconnect the set from AC power as a precaution. Remove all knobs, but not the pushbuttons. Remove the three hex nuts located at the points occupied by the Volume control, the Selector switch and the Speakers switch. Then lift off the front panel.

(2) Loosen the screws that retain the clips to the dial glass. (When you replace the dial glass, make certain to rest it by placing it firmly against the lower left-hand corner.) Swing the clips aside, and then lift off the glass.

(3) Remove lust with a dry rag. If you wish to clean more thoroughly, ***use a soap and water solution only;*** if you use any stronger cleaning agent, you may damage the markings on the glass.

2. REPLACING DIAL LAMPS

First, disconnect the AC power cord as a precaution. Remove the front panel as described above. The lamps are held in place by spring clips and can be removed with the fingers. Replace with a new lamp from your FISHER Dealer (Part Number I-50441-1).

3. REPLACING THE DIAL POINTER LIGHT

(1) Remove the top of the metal cabinet, after loosening the screws which fasten it in place.

(2) Remove the front panel and dial glass as described in the paragraph above. The two wires from the dial pointer light are connected to two clips on the top chassis, behind the front panel. Remove the wires from the small hook clip on the rear of the pointer base. (See Figure 2.)

(3) Remove the dial pointer (bulb plus metal guard), by sliding it directly upward, as shown in Figure 2.

(4) Slide the new dial pointer (Part No. AS 50451-2) upward, while pressing downward on the pointer base, until the pointer reaches its lower limit. The tab on the pointer should mate with the slot on the pointer base.

(5) Twist the two wires together and slip them through the hook clip on the rear of the pointer base. Be sure to avoid leaving any slack in the wire above the pointer. (See Figure 2.)

(6) Secure the ends of the two wires to the clips by pressing the tip of the wires over the clips.

(7) Replace the dial glass, front panel, and cabinet top.

4. REPLACING THE STEREO BEACON LIGHT

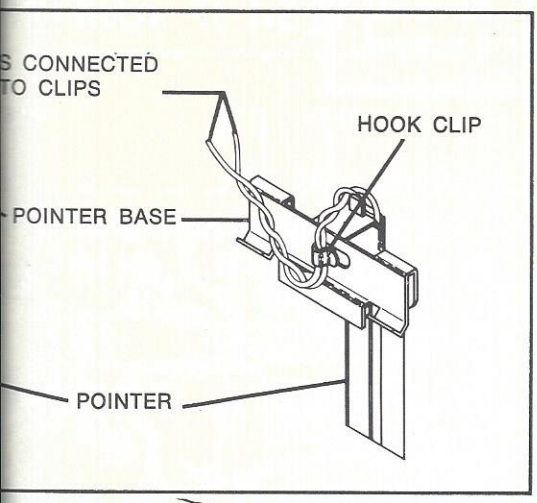
(1) Remove the top of the metal cabinet, after loosening the screws which hold it in place.

(2) Remove the two wires of the STEREO BEACON lamp from the two clips located atop the chassis, behind the front panel.

(3) Remove the bulb (Part No. I50461-3) from the cylinder which houses the STEREO BEACON jewel, and replace it with a new bulb.

(4) Fit the ends of the two wires from the lamp over the clips.

(5) Replace the cabinet top.

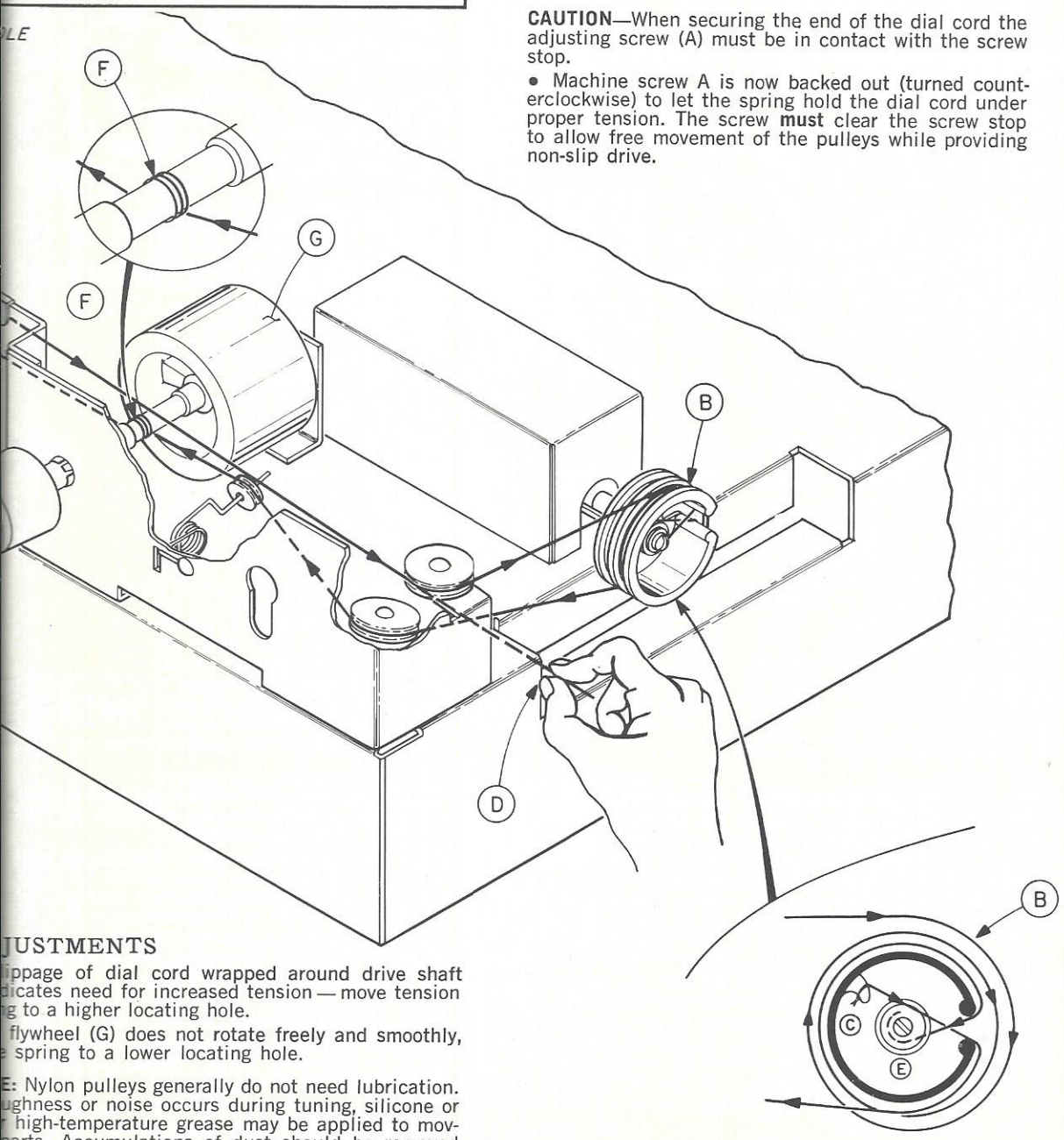


DIAL STRINGING

- Turn tension-relief screw A to maximum clockwise position. With screw A set to its maximum-IN position the dial cord can be pulled as tightly as possible (just before securing the loose end) without stretching the tension spring. This is not an adjustment screw. It is used only for easier dial-cord stringing.
- Rotate tuning-capacitor-drive drum B to its maximum clockwise position, as shown.
- Tie dial cord to ear C (in capacitor-drive drum) as shown in Figure 1. Dial cord goes through slot in drum and is set in the inner groove.
- Thread dial cord around pulleys (as shown) to point D.
- While holding dial cord taut with left hand, rotate the tuning-capacitor-drive drum to its maximum counterclockwise position with the right hand.
- Wrap the end of the dial cord around the body of the machine screw (E) in the hub of the drive drum and tighten. The cord goes under the flat washer.

CAUTION—When securing the end of the dial cord the adjusting screw (A) must be in contact with the screw stop.

- Machine screw A is now backed out (turned counterclockwise) to let the spring hold the dial cord under proper tension. The screw **must** clear the screw stop to allow free movement of the pulleys while providing non-slip drive.



INS230

FIGURE 1.

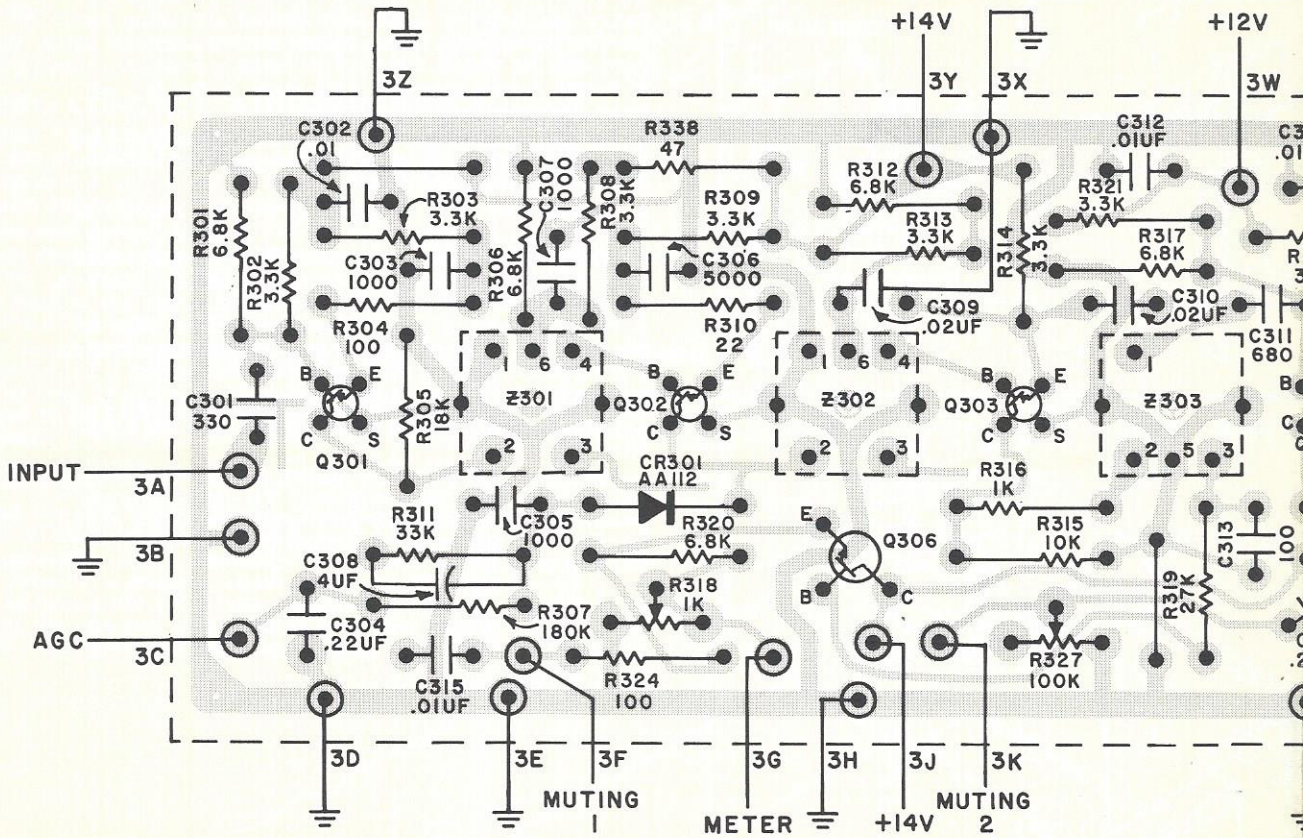
JUSTMENTS

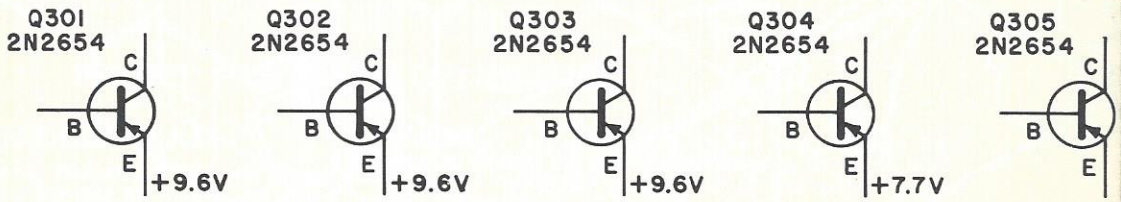
ippage of dial cord wrapped around drive shaft dicates need for increased tension — move tension g to a higher locating hole.

flywheel (G) does not rotate freely and smoothly, spring to a lower locating hole.

E: Nylon pulleys generally do not need lubrication. ughness or noise occurs during tuning, silicone or high-temperature grease may be applied to movparts. Accumulations of dust should be removed e any lubricant is applied. Often cleaning will nate the need for lubrication.

1254 IF AMPLIFIE





ALIGNMENT INSTRUCT

IF ALIGNMENT (General Maintenance)

Set selector switch to FM MONO. MONO pushbutton depressed. HIGH FILTER, LOW FILTER and MUTING switches "OFF" (out position). VOLUME to lowest output (maximum CCW) position.

1—Connect sweep generator output to the insulation of wire connected to front-end TP #1. Connect scope input and DC VTVM (through diode probe—Fig. 1) to lead to collector of Q303, and ground.

NOTE: The connection between the lead of the 1K resistor and the diode probe **must** be as short as possible.

2—Adjust top and bottom slugs of Z1 (front end) for maximum gain and a symmetrical curve (Fig. 2). Keep generator output as low as possible.

3—Connect scope input to the left or right RCDR output jack. Ratio detector curve should be like that in Fig. 3.

IF ALIGNMENT (After part replacement)

Use same switch positions as above.

1—Connect 10.7 mc generator output lead to the collector of Q303. DO NOT use AM or FM modulation.

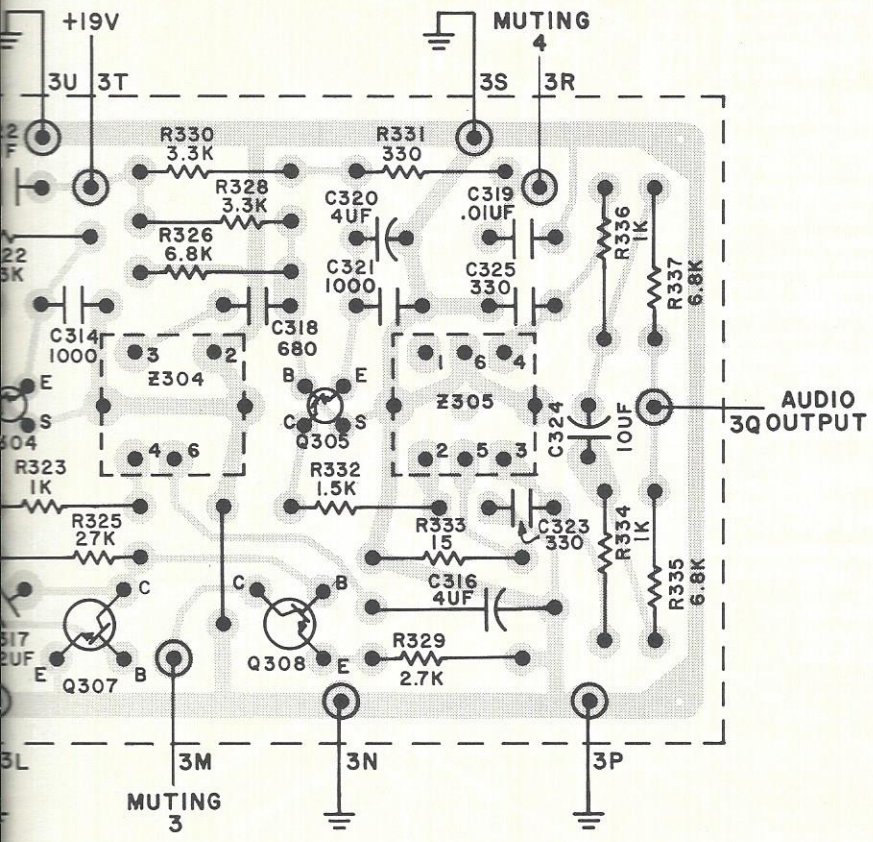
2—Connect DC VTVM across C325 (ratio-detector
Use 100K resistor in series with each lead
NOT ground VTVM.

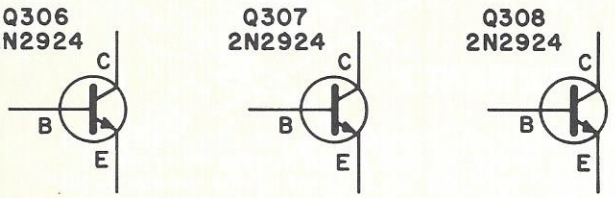
3—Adjust Z303, Z304 bottom cores and Z305 t
bottom cores for maximum DC VTVM readin
adjust generator output during alignment t
DC VTVM reading between 4 and 5.5 volts.

4—Connect DC VTVM and scope to diode probe
Step 1—General Maintenance alignment, a

5—Connect sweep generator to point 3B of IF
fier board. Adjust top and bottom cores of
and Z302, and bottom core of Z303 for ma
gain and a symmetrical curve. (Figure 2.)
generator output during alignment to ke
VTVM reading between —0.5 and —2 volts.

6—Connect sweep-generator output lead to the
ation of the wire going to TP-1 (front end).
top and bottom cores of Z1 for maximum ga
a symmetrical curve on scope. Generator
must be adjusted during alignment to ke
VTVM readings between —0.5 and —1.5 vo
response curve should now be like that in Fi





INS 292

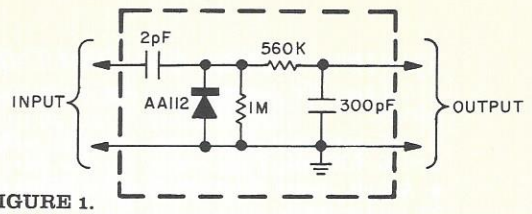


FIGURE 1.

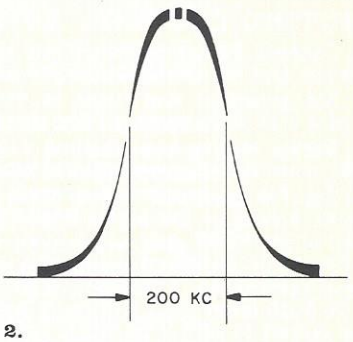


FIGURE 2.

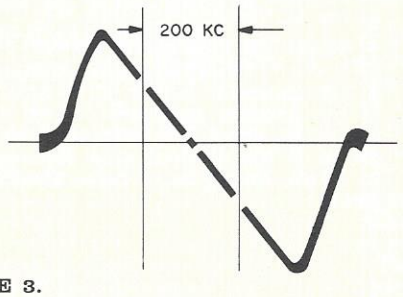


FIGURE 3.

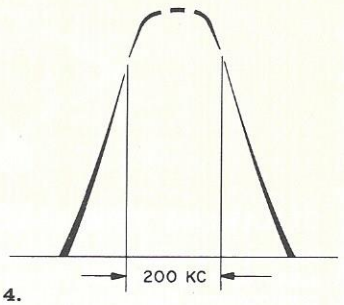


FIGURE 4.

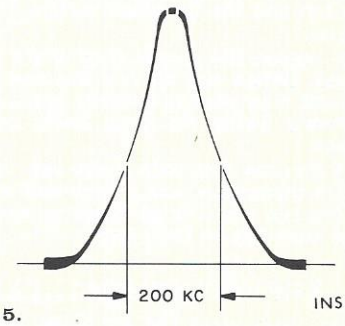


FIGURE 5.

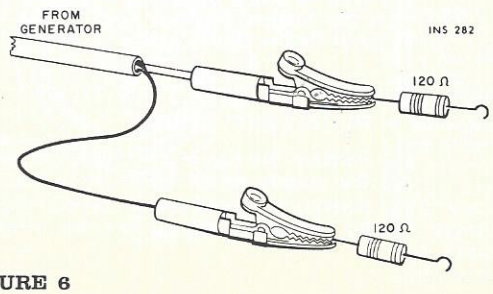


FIGURE 6

ONS

7—Connect scope vertical input to point M1 on the IF-amplifier board and adjust the top core of Z303 for maximum gain and curve like that in Figure 5.

FM FRONT-END ALIGNMENT

NOTE: This step is not necessary unless the circuitry has been disturbed or components replaced.

1—Connect DC VTVM to point M1 on the IF board FM-signal generator (with two 120-ohm composition resistors in series with the leads) to the 300-ohm antenna terminals.

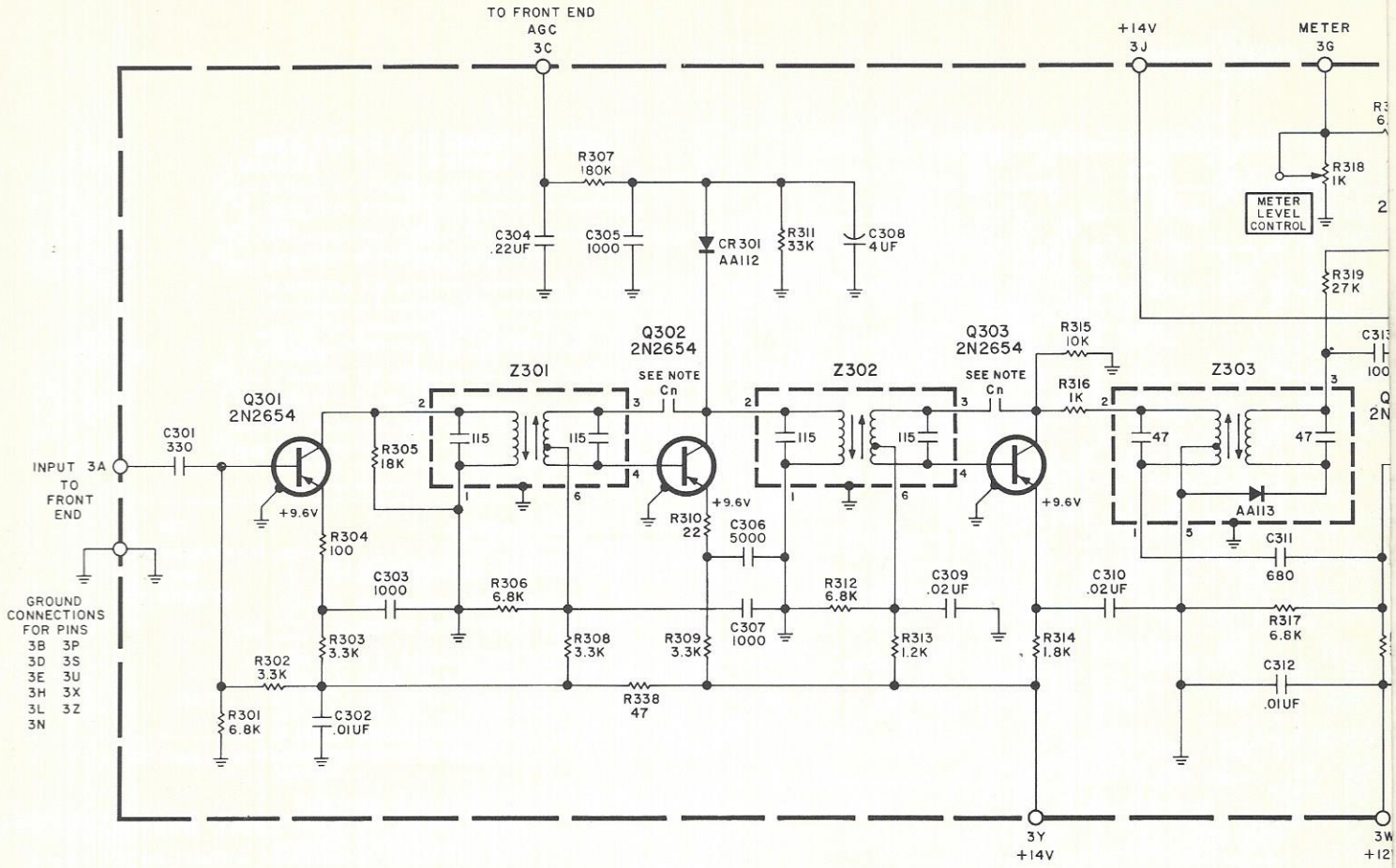
2—Set generator and tuner dials to 90 mc. Adjust the oscillator coil (L5) slug first — then adjust RF coils (L3 and L4) for maximum VTVM reading.

3—Set generator and tuner dials to 106 mc. First adjust the oscillator trimmer (C14) and then the RF trimmers (C5 and C7).

4—Repeat steps 2 and 3 several times until calibration is accurate when VTVM reading is maximum. Use as little generator output as possible.

5—Set generator and tuner dials to 98 mc. Adjust antenna coil (L2) for maximum DC VTVM reading.

P1254 IF AMP

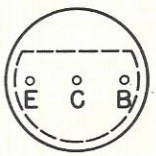


NOTE:
CAPACITORS LABELLED Cn
CONSIST OF 2 PARALLEL STRIPS
ON THE PRINTED CIRCUIT BOARD.

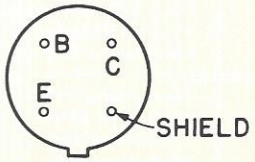
P1254
AW#2354 C

PARTS DE

2N2924
2N2925



2N2654



INS 305

CAPACITORS

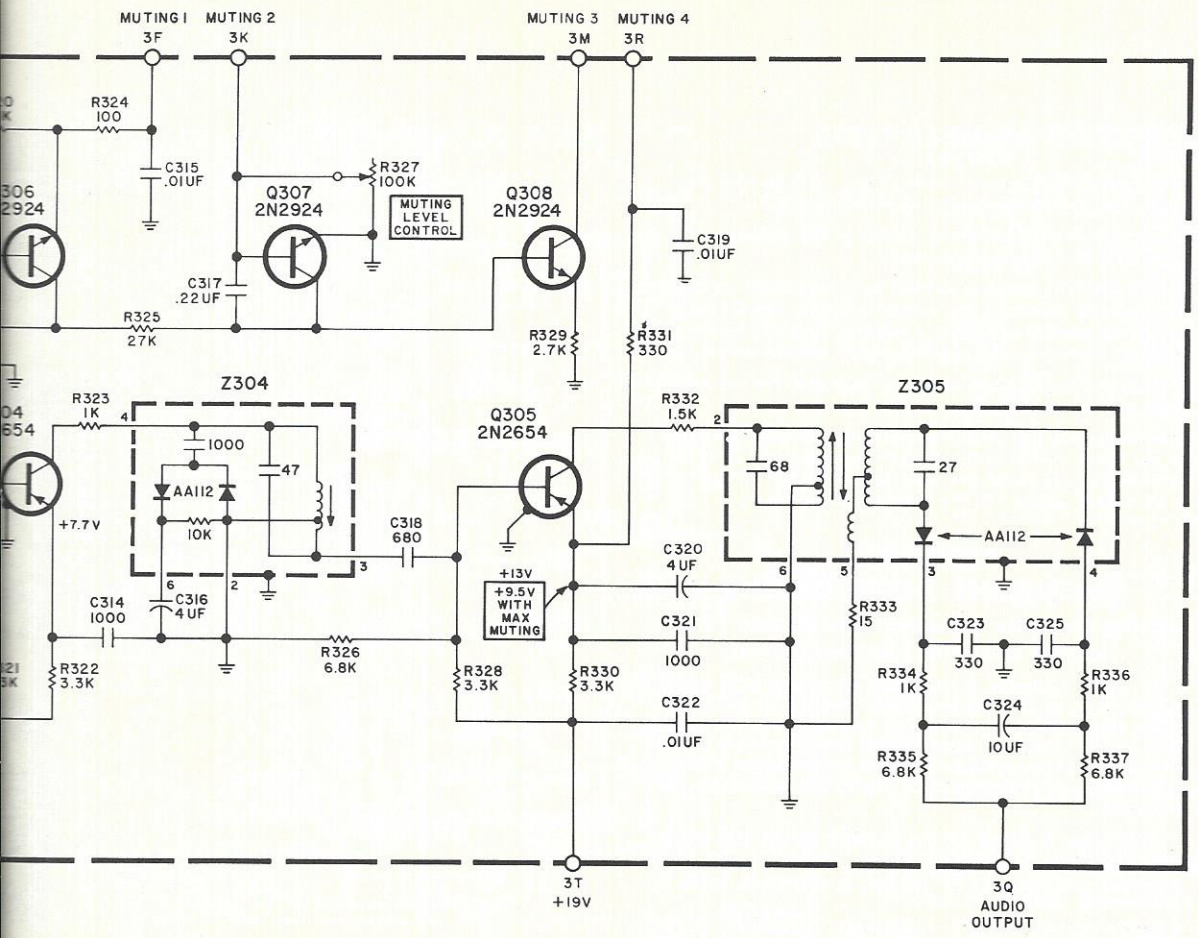
Symbol	Description	Part No.
C301	Ceramic, 330pF, 10% 1000V	C50569-1
C302	Ceramic, .01uF +80-20%, 1000V	C50570-1
C303	Ceramic, 1000pF, 20%, 1000V	C50569-4
C304	Mylar .22uF, 10%, 160V	C50575-2
C305	Ceramic, 1000pF, 20%, 1000V	C50569-4
C306	Ceramic, 5000pF, 20%, 500V	C50567-2
C307	Ceramic, 1000pF, 20%, 1000V	C50569-4
C308	Electrolytic, 4uF, 35V	C50483-1
C309	Ceramic, .02uF +80-20%, 100V	C50073-1
C310	Ceramic, .02uF +80-20%, 100V	C50570-2
C311	Ceramic, 680pF, 20%, 1000V	C50579-2
C312	Ceramic, .01uF, +80-20%, 1000V	C50570-1
C313	Ceramic, 100pF, 10%, N1500, 1000V	C50568-3
C314	Ceramic, 1000pF, 20%, 1000V	C50569-4
C315	Ceramic, .01uf, +80-20% 1000V	C50570-1
C316	Electrolytic, 4uF, 35V	C50583-1
C317	Mylar .22uF, 10%, 160V	C50575-2
C318	Ceramic, 680pF, 10% 1000V	C50569-2
C319	Ceramic, .01uF, +80-20%, 1000V	C50570-1
C320	Electrolytic, 4uF, 35V	C50483-1
C321	Ceramic, 1000pF, 20%, 1000V	C50569-4
C322	Ceramic, 01uF, +80-20%, 1000V	C50570-1
C323	Ceramic, 330pF, 10%, 1000V	C50569-1
C324	Electrol	
C325	Ceramic	

RESISTORS A

Deposited
1/8 watt un
K = Kilohm

Symbol	Descrip
R301	6.8K
R302, 303	3.3K
R304	100
R305	18K
R306	6.8K
R307	180K
R308, 309	3.3K
R310	22
R311	33K
R312	6.8K
R313, 314	3.3K
R315	10K
R316	1K
R317	6.8K
R318	Potentio Mete
R319	27K
R320	6.8K
R321, 322	3.3K

LIFIER



Q403
2N2614
+20.4V

Q406
2N2924

ter circuit.

RUCTIONS

RF output)

ıultiplex unit
ter (Figure 2)
t and the in-
ut the same
etector in the

SCRIPTION LIST

ic, 10uF, 35V C50483-2
330pF, 10%, 1000V C50569-1

D POTENTIOMETERS

rbon in ohms, 5% tolerance,
ss otherwise noted.
M = Megohms.

on

	Part No.
	R12DC682J
	R12DC332J
	R12DC101J
	R12DC183J
	R12DC682J
	R12DC184J
	R12DC332J
	R12DC220J
	R12DC333J
	R12DC682J
	R12DC332J
	R12DC103J
	R12DC102J
	R12DC682J
eter, 1K, 30%,	
Level Control	R50694-3
	R12DC273J
	R12DC682J
	R12DC332J

R323	1K	R12DC102J
R323	100	R12DC101J
R325	27K	R12DC273J
R326	6.8K	R12DC682J
R327	Potentiometer, 100K, 30%, Muting Level Control	R50694-6
R328	3.3K	R12DC332J
R329	2.7K	R12DC272J
R330	3.3K	R12DC332J
R331	330	R12DC331J
R332	1.5K	R12DC152J
R333	15	R12DC150J
R334	1K	R12DC102J
R335	6.8K	R12DC682J
R336	1K	R12DC102J
R337	6.8K	R12DC682J
R338	47	R12DC470J

MISCELLANEOUS

Symbol	Description	Part No.
CR301	Diode A112	V50260-16
Q301, 302, 303	Transistor, 2N2654	TR2N2654
Q304, 305	Transistor, 2N2654	TR2N2654
Q306, 307, 308	Transistor, 2N2924	TR2N2924
Z301, 302	Transformer, IF	ZZ50210-46
Z303	Limiter Coil	ZZ50210-69
Z304	Limiter Coil	ZZ50210-52
Z305	Ratio Detector	ZZ50210-55

-PASS FILTER

ON
C voltage 76 kc.
tage
age with ave on
on Audio ould be ow reading 3.
VTVM ed in Step kc sine
on Audio d be at reading 5.

INPUT 3A TO FRONT END

GROUND CONNECTIONS FOR PINS
3B 3P
3D 3S
3E 3U
3H 3X
3L 3Z
3N

NO CA CO ON

MULTIPLEX DECODER TESTS

- Modulate FM generator with 19 kc, ±6.5 kc deviation. (Use external modulation if necessary.)
- Connect the FM generator output to the antenna terminals of the unit under test.
- With the FM generator set for an output of 25 uV at the antenna terminals the stereo indicator should light up. If the generator output is reduced to 5 uV, at the antenna terminals, the indicator light should remain ON.
- Reduce FM generator output to zero and the indicator light should go OFF.
- If the stereo indicator light does not respond properly to the tests above, readjust the trigger control (R401) until the stereo indicator lamp just turns ON with a 4 uV signal applied to the antenna terminals.

PREFERRED ALIGNMENT INSTRUCTIONS

(Using multiplex generator with RF and 19 kc outputs and with 1 kc modulation)

In Table 1, below, a multiplex generator with an RF output is used. This is the better method of alignment since the multiplex circuitry is connected to the tuner with which it will be used. Check the alignment of the IF stages before making multiplex adjustments. Poor IF alignment can make proper multiplex operation impossible.

This table is based on the FISHER Model 300 multiplex generator. Another alignment procedure, for MPX generators without an RF output, is shown in Table 2.

TEST EQUIPMENT: Multiplex Generator, Audio (AC) Vacuum-Tube Voltmeter (RMS type preferred), Vacuum-Tube Voltohmeter (DC VOM), Oscilloscope (100 kc minimum) with external sweep input.

WARNING: Use only the proper alignment tool to prevent core breakage.

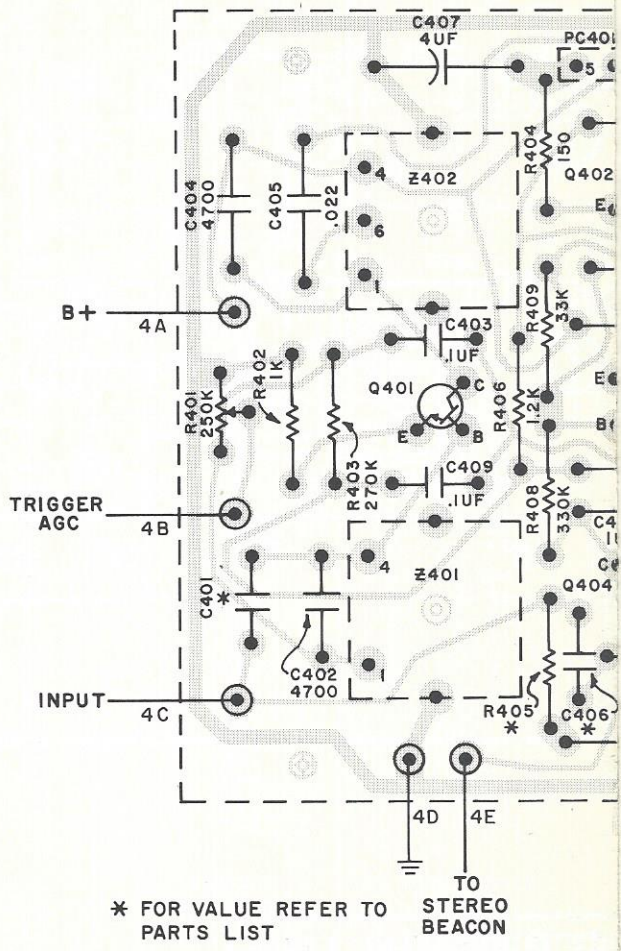
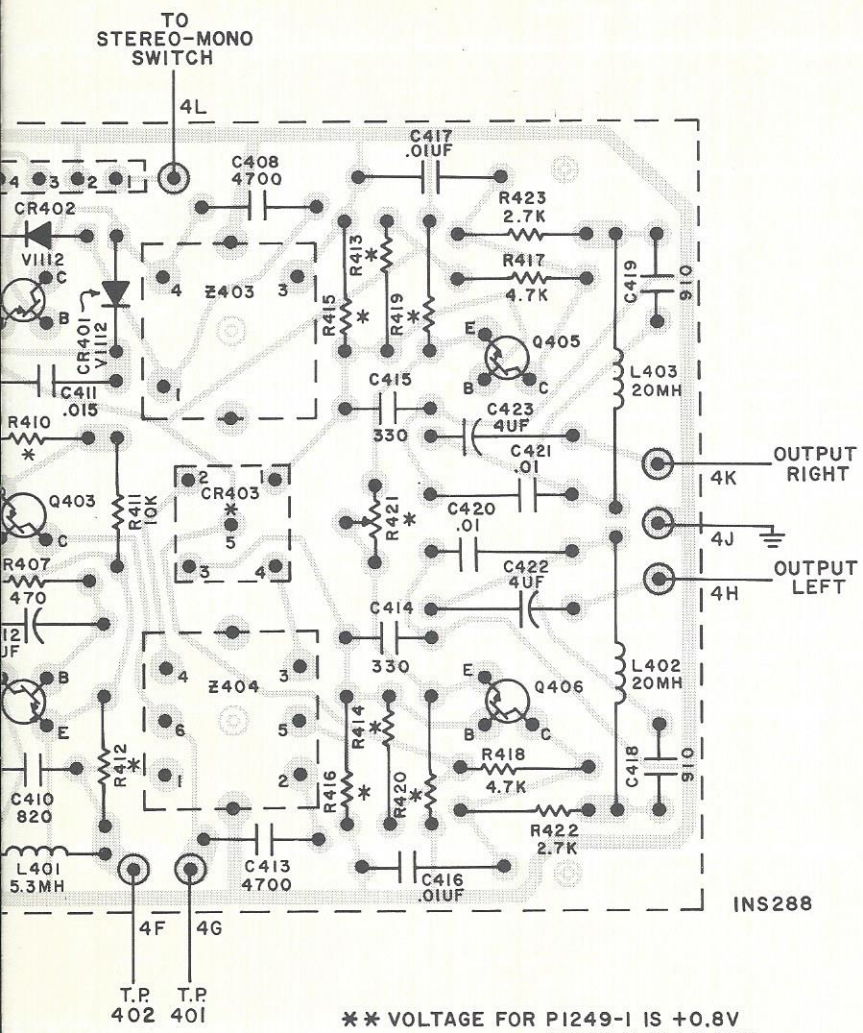


TABLE 1

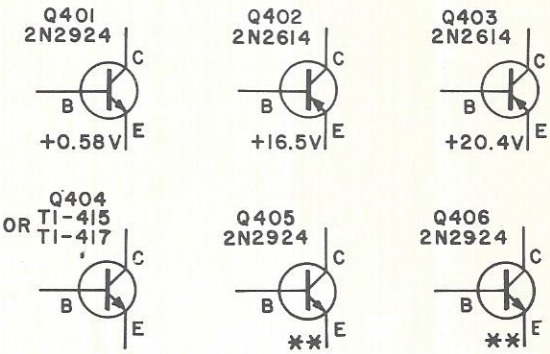
MULTIPLEX-GENERATOR RF OUTPUT CONNECTED TO ANTENNA TERMINALS

STEP	GENERATOR MODULATION	RF DEV.	INDICATOR TYPE AND CONNECTION	ALIGNMENT	
				ADJUST	INDICATION
1	70 to 76 kc (connect external audio generator to SCA input of multiplex generator.)	±25kc	Audio (AC) VTVM input to TP402 with a 10 pF capacitor in series with lead.	--	Read minimum AC voltage between 70 and 76 kc.
2	19 kc pilot only	±6.5	DC VTVM to TP401	Z401, 402, 403 and 404	Maximum AC voltage (38 kc)
3	Composite MPX signal 1 kc on left channel only	±75kc	Audio (AC) VTVM and oscilloscope vertical input to left channel output lug (4H)	Z402	Maximum AC voltage with clean 1 kc sine wave on oscilloscope
4	Composite MPX signal 1 kc on right channel only	±75kc	Same as Step 3	MPX Separation Control (R421)	Minimum reading on Audio (AC) VTVM--should be at least 35db below readin obtained in Step 3.
5	Same as Step 4	±75kc	Audio (AC) VTVM and oscilloscope vertical input to right channel output lug (4K)	--	Same Audio (AC) VTVM reading as obtained in Step 3 (±2db); clean 1kc sine wave on scope.
6	Same as Step 4	±75kc	Same as Step 5		Minimum reading on Audio (AC) VTVM should be at least 35db below reading i Step 5.

MULTIPLEX DECODER



** VOLTAGE FOR P1249-1 IS +0.8V
P1249-2 IS +0.35V



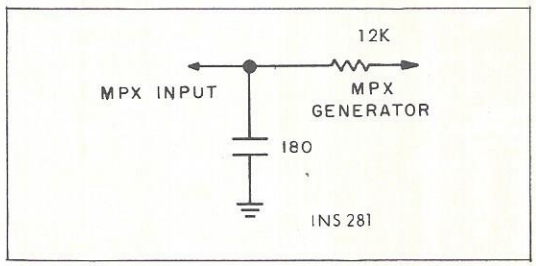


FIGURE 1. Multiplex-alignment hi-pass filter circuit.

ALTERNATE ALIGNMENT INSTRUCTIONS

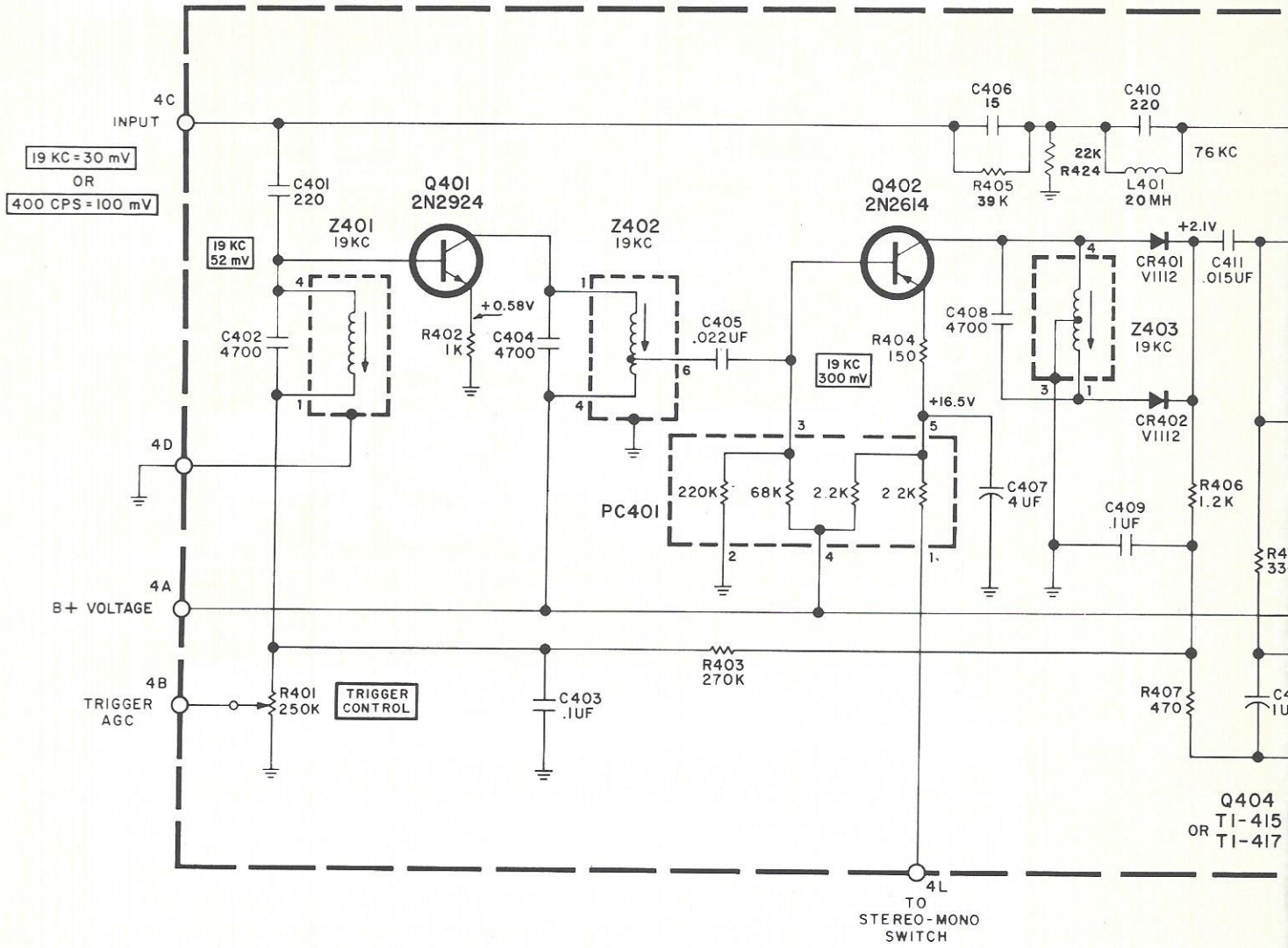
(For multiplex generators without an RF output)

Disconnect the ratio detector from the multiplex unit before using this procedure. A low-pass filter (Figure 2) is used between the MPX generator output and the input to the multiplex circuitry. It has about the same loading effect as the output of the ratio detector in the tuner.

TABLE 2

COMPOSITE OUTPUT OF MULTIPLEX GENERATOR CONNECTED TO INPUT OF MPX DECODER THROUGH LOW-PASS FILTER

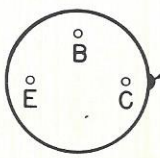
STEP	GENERATOR MODULATION	LEVEL (RMS)	INDICATOR TYPE AND CONNECTION	ALIGNMENT	
				ADJUST	INDICATION
1	70 to 76 kc.	100mV	Audio (AC) VTVM input to TP402 with a 10 pF capacitor in series with lead.	—	Read minimum AC voltage between 70 and 76 kc.
2	19 kc pilot only	50mV	DC VTVM to TP401	Z401, 402, 403 and 404	Maximum AC voltage (38 kc)
3	Composite MPX signal 1 kc on left channel only	300mV	Audio (AC) VTVM and oscilloscope vertical input to left channel output lug (4H)	Z402	Maximum AC voltage with clean 1 kc sine wave on oscilloscope
4	Composite MPX signal 1 kc on right channel only	300mV	Same as Step 3	MPX Separation Control	Minimum reading on Audio (AC) VTVM——should be at least 35db below reading obtained in Step 3.
5	Same as Step 4	300mV	Audio (AC) VTVM and oscilloscope vertical input to right channel output lug	—	Same Audio (AC) VTVM reading as obtained in Step 3 (±2db); clean 1kc sine wave on scope.
6	Same as Step 4	300mV	Same as Step 5	—	Minimum reading on Audio (AC) VTVM should be at least 35db below reading obtained in Step 5.



TI 415
TI 417

2N2924
2N2925

2N2613
2N2614



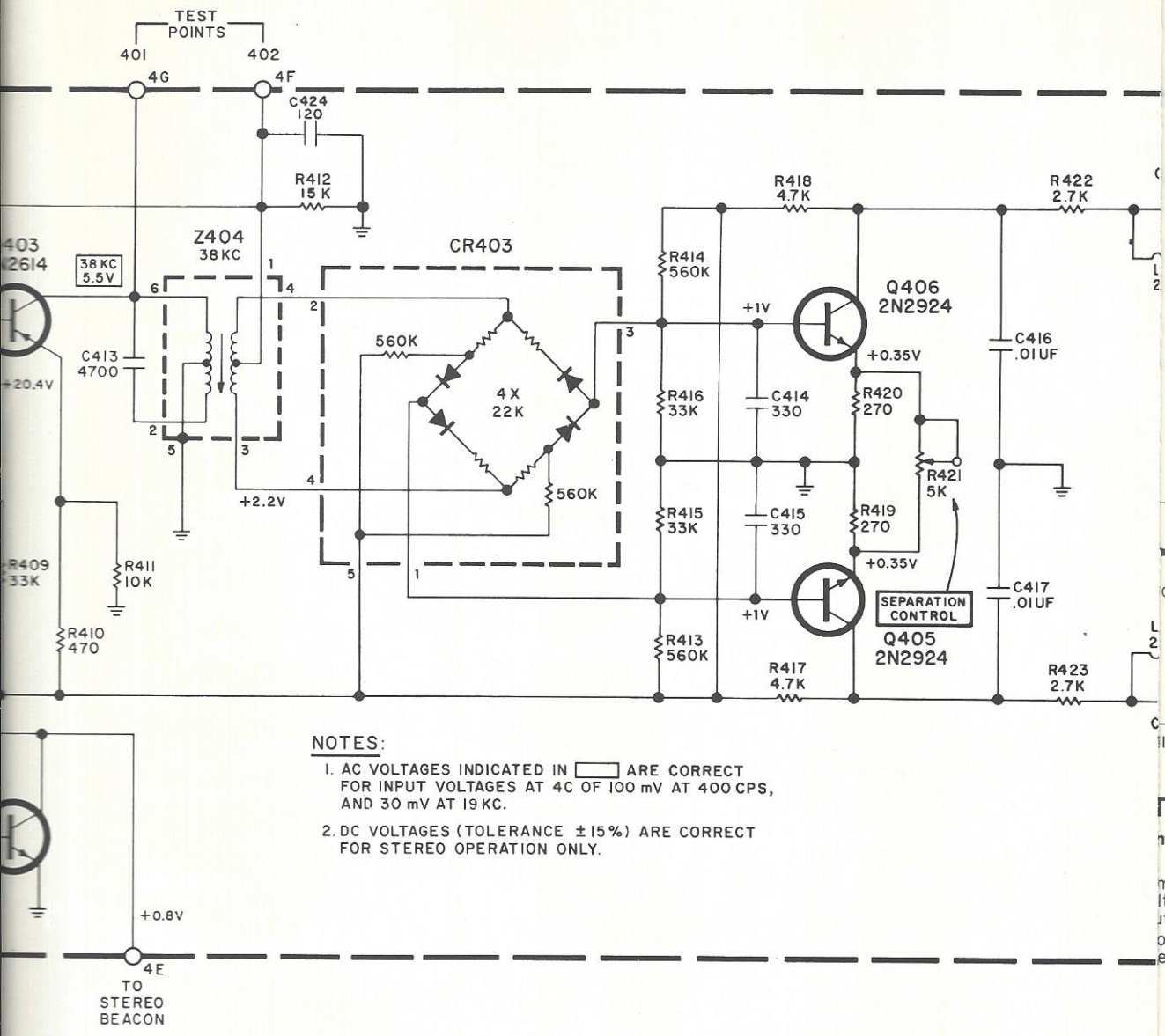
INS 305

PB1249-2 CAPACITORS

Symbol	Description	Part No.
C401	Ceramic, 68pF, 5%, N220	C50568-5
C401	Ceramic, 220pF, 5%, N1500	C50568-6
C402	Mica, Silver, 4700pF, 5%, 100VDC	C50571-2
C403	Mylar, 0.1 uF, 20%, 250V	C50635-1
C404	Polystyrene, 4700pF, 5%, 33V	C50636-23
C405	Mylar, .022uF, 10%, 100V	C50574-1
C406	Ceramic, 15 pF, 10%, P100, 1000V	C50568-14
C407	Electrolytic, 4uF, 35V	C50483-1
C408	Polystyrene, 4700pF, 5%, 33V	C50636-23
C409	Mylar, 0.1uF, 20%, 250V	C50635-1
C410	Polystyrene, 220 pF, 5%, 33V	C50B636-3
C411	Mylar, .015uF, 10%, 100V	C50574-2
C412	Electrolytic, 1uF, 70V	C50483-16
C413	Polystyrene, 4700pF, 5%, 33V	C50636-23
C414, 415	Polystyrene, 33pF, 5%, 33V	C50636-4
C416, 417	Mylar, .01uF, 5%, 100V	C50574-1
C418, 419	Polystyrene, 910 pF, 5%, 33V	C50636-6
C420, 421	Mylar, .01uF, 5%, 100V	C50574-1
C422, 423	Electrolytic, 4uF, 35V	C50483-1
C424	Polystyrene, 220 pF, 5%, 33V	C50B636-8

Symbol
R401
R402
R403
R404
R405
R406
R407
R408
R409
R410
R411
R412
R413, 414
R415, 416
R417, 418

2 MULTIPLEX DECODER



NOTES:

1. AC VOLTAGES INDICATED IN ☐ ARE CORRECT FOR INPUT VOLTAGES AT 4C OF 100 mV AT 400 CPS, AND 30 mV AT 19 KC.
2. DC VOLTAGES (TOLERANCE ±15%) ARE CORRECT FOR STEREO OPERATION ONLY.

S DESCRIPTION LIST

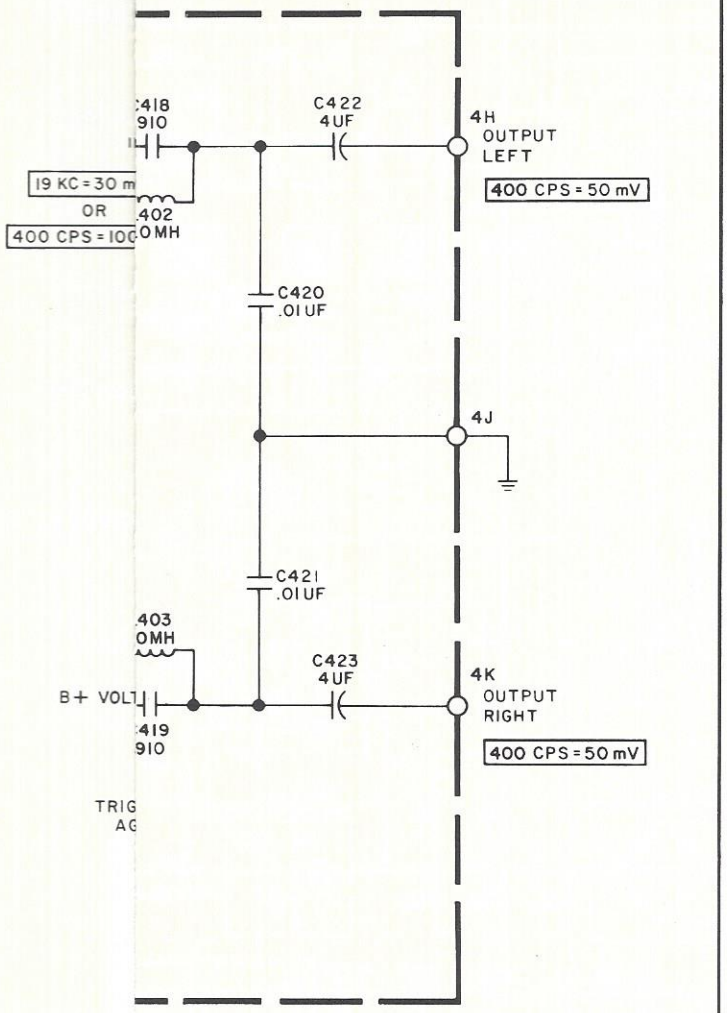
SISTORS AND POTENTIOMETERS

posited carbon in ohms, 5% tolerance,
watt unless otherwise noted.
= Kilohms, M = Megohms

Description	Part No.
Potentiometer, 250K ± 30% Trigger Control	R50694-4
Composition, 1K, 10%, ½W	RC20BF102K
270K	R12DC274J
150	R12DC151J
39K	R12DC393J
1.2K	R12DC122J
470	R12DC471J
330K	R12DC334J
33K	R12DC333J
470	R12DC471J
10K	R12DC103J
15K	R12DC153J
560K	R12DC564J
33K	R12DC333K
4.7K	R12DC472J
R419, 420	270K R12DC271J
R421	Potentiometer, 5K ± 30%, Separation Control R50694-5
R422, 423	2.7K R12DC272J
R424	22K R12DC223J

MISCELLANEOUS

Symbol	Description	Part No.
CR401, 402	Diode 1112	V1112
CR403	Ring Demodulator	V50260-23
L401	Coil, 20 mH	L50334-2
L402, 403	Coil, 20mH	L50334-6
Q401	Transistor 2N2924	TR2N2924
Q402, 403	Transistor 2N2614	TR2N2614
Q404	Transistor IT417	TR9100
Q405, 406	Transistor 2N2924	TR2N2924
PC401	Printed Circuit	PC50B187-21
Z401	Transformer 19Kc	ZZ50210-63
Z402	Transformer 19Kc	ZZ50210-67
Z403	Transformer 19Kc	ZZ50210-64
Z404	Transformer 38Kc	ZZ50210-65



P1249-2
AW#2341B

MAIN CHASSIS

PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C1	Molded, .01 uF, 20%, 600V	C2747
C2	Electrolytic, 3 section A–50uF, 200V B–50uF, 200V C–50uF, 200V	C50180-70
C3	Electrolytic, 50uF, 35V	C50483-4
C4	Ceramic, .02uF, +80–20%, 500V	C50089-4
C5	– Deleted –	
C6	Electrolytic, 200uF, 35V	C50483-7
C7	– Deleted –	
C8	Electrolytic, 1uF, 70V	C50483-16
C9	Electrolytic, 1000uF, 45V	C50180-69
C10	– Deleted –	
C11	Ceramic, .02uF, +80–20%, 500V	C50089-4
C12	Electrolytic, 4uF, 35V	C50483-1
C13	Ceramic, .02uF, +80–20%, 100V	C50095-1
C14	Electrolytic, 4uF, 35V	C50483-1
C15	Ceramic, .02uF, +80–20%, 100V	C50095-1
C16, 17, 18, 19	Electrolytic, 4uF, 35V	C50483-1
C20	Electrolytic, 100uF, 25V	C50483-6
C21	Mylar, .01uF, 5%, 100V	C50574-1

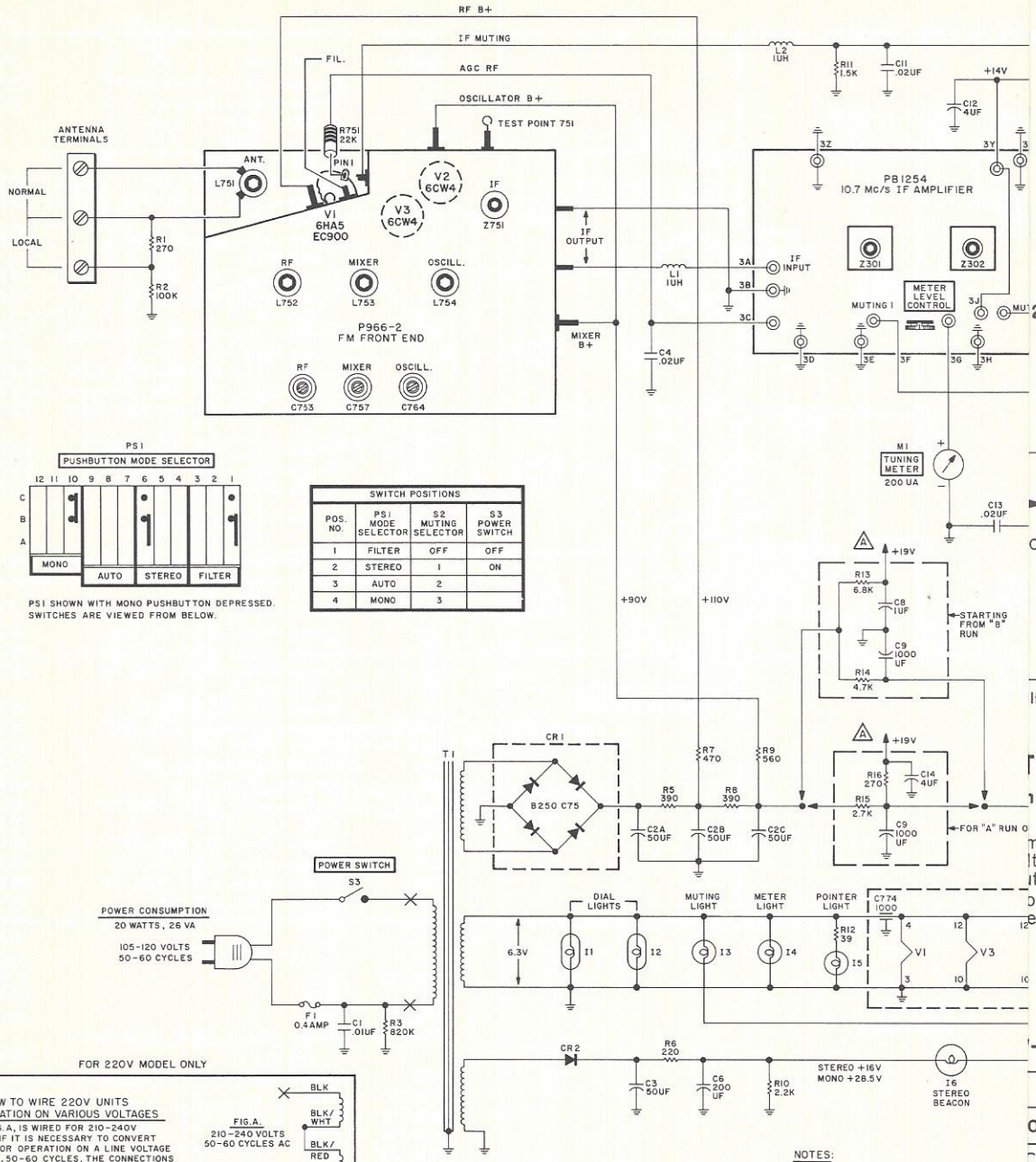
RESISTORS

Deposited carbon, in ohms, 5% tolerance, 1/8-watt unless otherwise noted. K=Kilohm, M =Megohm

Symbol	Description	Part No.
R1	Composition, 270, 10%, ½W	RC20BF271K
R2	Composition, 100K, 10%, ½W	RC20BF104K
R3	Composition, 820K, 10%, ½W	RC20BF824K
R4	– Deleted –	
R5	Wirewound, 390, 5%, 2W	RW200W391J
R6	Composition, 200, 10%, ½W	RC20BF221K
R7	470	R12DC471J
R8	Wirewound, 390, 5%, 2W	RW200W391J
R9	560, 5%, 1/3W	R33DC561J
R10	Composition, 202K, 10%, ½W	RC20BF222K
R11	1.5K, 5%, 1/3W	R33DC152J
R12	Composition, 39, 10%, ½W	RC20BF390K
R13	Composition, 6.8K, 5%, 1W	RC30BF682J
R14	Composition, 4.7K, 10%, 2W	RC40BF472K
R15	Glass, 2.7K, 10%, 3W	RPG3W272K
R16	270	R12DC271J
R17	56K	R12DC563J
R18	560, 5%, 1/3W	R33DC561J
R19, 20	56K	R12DC563J
R21	100K	R12DC104J
R22, 23	22K	R12DC223J
R24A, B	Potentiometer, 100K, Dual, Level Control	R50160-148
R25	– Deleted –	
R26, 27	330K	R12DC334J
R28, 29	47K	R12DC473J
R30, 31	4.7K	R12DC472J
R32, 33	1K	R12DC102J
R34, 35	2.7K	R12DC272J
R36	1K	R12DC102J
R37, 38	220K	R12DC224J

MISCELLANEOUS

Symbol	Description	Part No.
CR1	Rectifier, Selenium	SR50253-2
CR2	Diode, Silicon	V50260-24
F1	Fuse, Line 0.4A, 125V	F950-152
I1, 2	Lamp, Dial	I50441-1
I3	Lamp, Muting Indicator, No. 1847	I50009-7
I4	Lamp, Meter, No. 1847 OF	I50009-8
I5	Lamp, Pointer, part of assembly	AS50451-3
I6	Lamp, Stero Beacon	I50594-1
L1	Choke, 1 Microhenry	L50066-2
M1	Meter, Tuning	M946-213
PS1	Switch, Pushbutton, Mode Selector	S950 A127
S2	Switch, Muting	S950A141
S3	Switch, Power	S50358-5
T1	Transformer, Power	T950-115
Q1, 2	Transistor 2N2924	TR2N2924
	FM Frontend	P966-2
	Printed Circuit Board I.F.	P1254
	Printed Circuit Board MPX	P1249-2
	Dipole Antenna FM	AS50227-1
	Nameplate Holder	A50557
	Muting Indicator Assembly	AS50338-1
	Dress Panel	A950-109
	Insert, Dress Panel Screened (Lower)	AS950-123
	Insert, Dress Panel Screened (Lower)	AS950-124
	Knob, Power, Level, Muting	E50562-1
	Knob, Tuning	E50566-2
	Drive Wheel for Variable	E50588
	Stereo Beacon Lampholder Assembly	AS950-157
	Screws, for Cage & Bottom Cover	H50598-7
	Screw, Dress Panel Mounting	H109S316BBL
	Jack, Tape	J50545
	Dial Glass	N950-125
	Nameplate Insert (Bird)	N50591-1
	Nameplate Insert (Professional Series)	N50591-2



lter circuit.

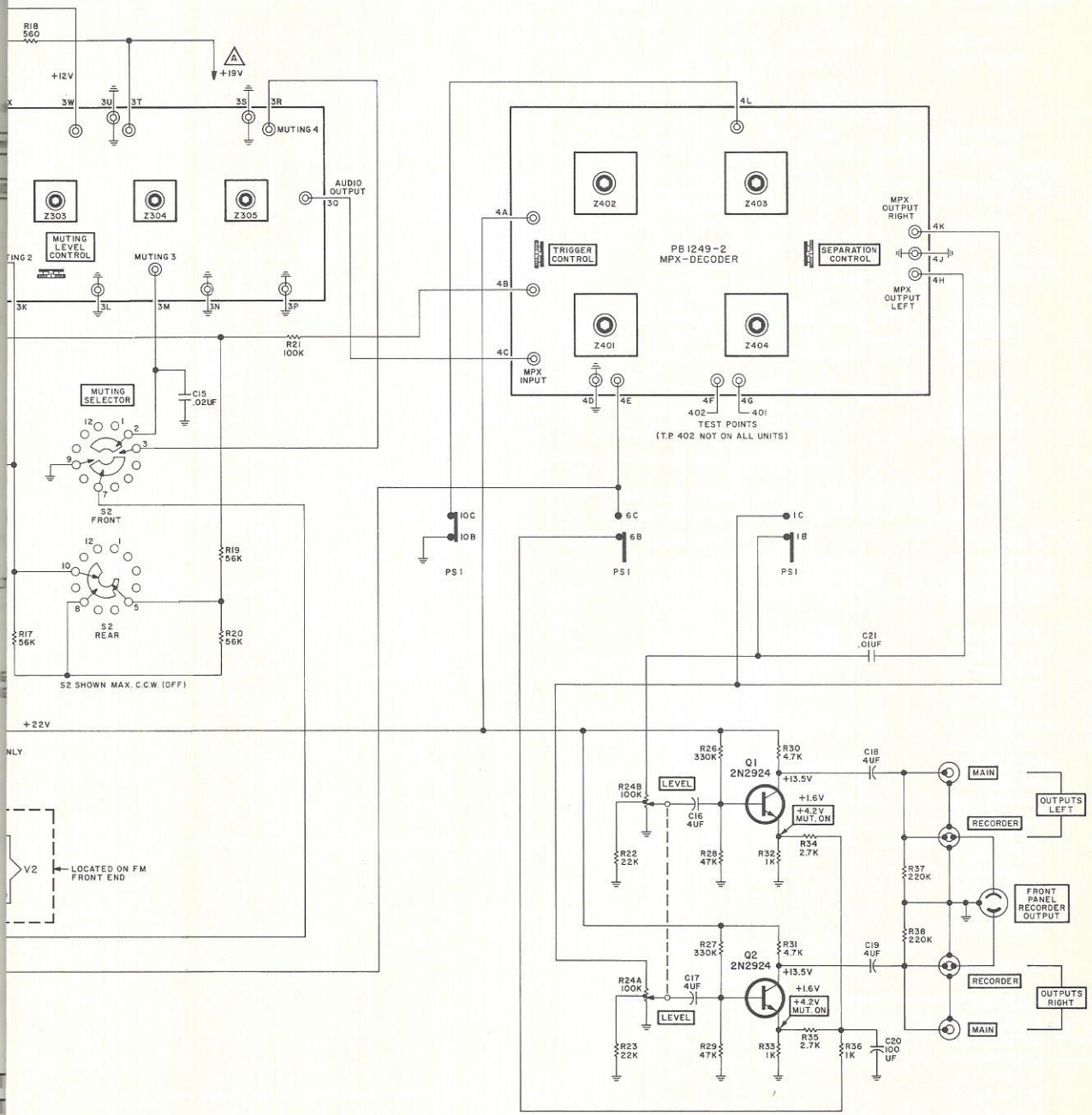
TRUCTIONS

RF output)

multiplex unit
lter (Figure 2)
ut and the in-
out the same
etector in the

-PASS FILTER

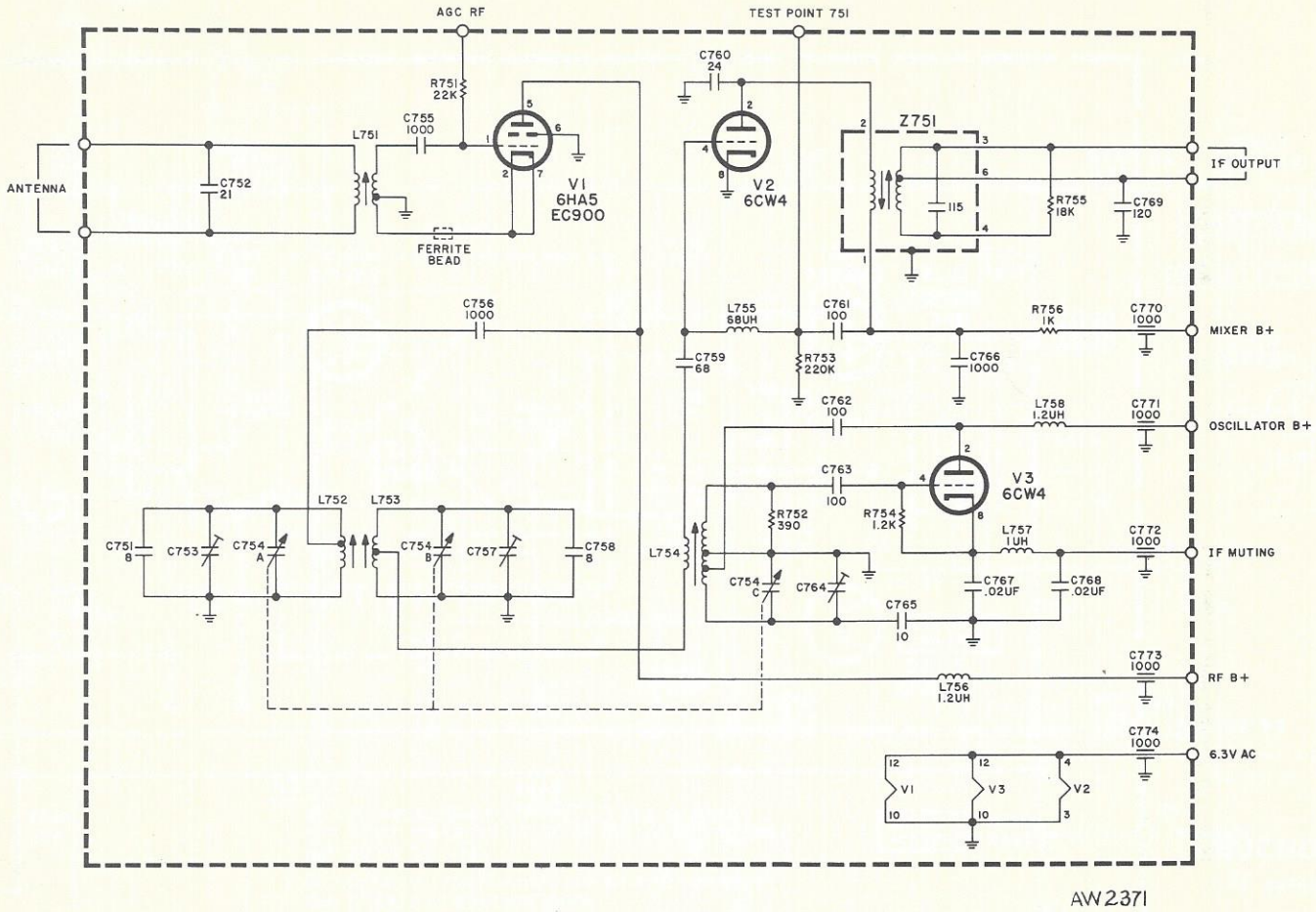
ON
voltage 6 kc.
age
age with ave on
on Audio ould be ow reading 3.
VTVM ed in Step kc sine
on Audio ld be at reading 5.



If replacement parts are out of stock, locally, they may be obtained directly from the Parts Department of FISHER Radio Corporation. They will be shipped "best way", either prepaid or C.O.D. unless otherwise specified.

For instrument-operation information and technical assistance write Richard Hamilton, Customer Service Department, FISHER Radio Corporation, Long Island City, New York 11101.

966-2 FM FRONT END



AW2371

PARTS DESCRIPTION LIST

CAPACITORS

10% Tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value). All capacitors not marked uF are pF (uuf).

Symbol	Description	Part No.
C751	Ceramic, 8, 5%, N10, 1000V	C50070-45
C752	Ceramic 21, 5%, N750, 1000V	C50070-32
C753	Trimmer	C662-123
C754A, B, C	F. M. Variable	C966C117-1
C755, 756	Ceramic, 1000, GMV, 500V	C50089-2
C757	Trimmer	C662, 123
C758	Ceramic, 8, 5%, NP0, 1000V	C50070-45
C759	Ceramic, 68, 5%, N750, 1000V	C50070-35
C760	Ceramic, 24, 5%, N150, 1000V	C50070-8
C761	Ceramic, 100, 5%, N1500, 1000V	C50070-19
C762, 763	Ceramic, 100, N1500, 1000V	C50070-6
C764	Trimmer	C662, 123
C765	Ceramic, 10 ±.5pF, P100, 500V	CC20AJ100D5
C766	Ceramic, 1000, 1000V	C50072-3
C767, 768	Ceramic, .02uF, +80–20%, 100V	C50095-1
C769	Ceramic, 120, N1500, 1000V	C50070-9
C770, 771, 772, 773, 774	Ceramic, Feedthru, 1000, GMV	C592-187

RESISTORS

Deposited Carbon, in ohms, 5% tolerance 1/8-watt. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R751	22K	R12DC223J
R752	390	R12DC391J
R753	220K	R12DC224J
R754	1.2K	R12DC122J
R755	18K	R12DC183J
R756	1K	R12DC102J

MISCELLANEOUS

L751	F. M. Antenna Coil	L966-113
L752	F. M. R. F. Coil	L1034-113
L753	F. M. Mixer Coil	L996-115
L754	F. M. Oscillator Coil Assembly	AS966-107
L755	Choke, .68 Microhenry	L50066-1
L756	Choke, 1.2 Microhenry	L50066-3
L757	Choke, 1 Microhenry	L50066-2
L758	Choke, 1.2 Microhenry	L50066-3
V1	Tube EC900/ 6HA5	V-EC900
V2, 3	Nuvistor 6CW4	V-6CW4
Z751	FM IF Transformer	ZZ50210-45

FISHER RADIO CORPORATION · NEW YORK