



ADDENDA SHEET  
FOR  
MODEL 388-B

↑ 19/208/253

The audio section is exactly identical to the 348-B. The alignment of the 348-B FM section can be followed when aligning the 388-B. The AM alignment is as follows:

1. 455 kHz Alignment

Set tuning to middle of AM band, 1000 kHz. Output from left tape out jack. Input from 455 kHz Generator (modulated to 30% with 400 Hz) to External AM Antenna inputs (shorting bar removed). With 2 mv or less generator output peak the following if cans for maximum output: Z-PC-RF-3 T1 primary and secondary, Z-PC-IF-9 T302 primary and secondary and Z-PC-IF-9 T304 primary (single tuned can). After peaking to maximum remove 455 kHz generator leads and reconnect external Am antenna shorting bar.

2. Oscillator Adjustment

With tuning condenser maximum capacity (fully closed) adjust pointer to extreme left edge of dial (center of pointer aligned with edge of opening). Couple output of AM generator (600 kHz modulated to 60% with 400 Hz) to loopstick with AM coupling loop of Figure AM-1 using mechanical stop for 1" penetration of loopstick. Tune unit to 600 kHz. Attenuate input of r-f signal until signal level is just noticeable on scope (using maximum usable scope sensitivity). Adjust oscillator coil (Z-PC-RF-3 T2) while manually tuning unit for output peak as read on VTVM. Set AM generator to 1600 kHz modulated to 60% with 400 Hz.

Tune unit to 1600 kHz. Adjust oscillator trimmer (Z-AM/FM-9 C-232) for maximum output as read on VTVM using weak r-f input signal.

Repeat the above adjustments of oscillator coil and oscillator trimmer until no further improvement can be made.

3. Antenna Trimmer Adjustment

Set AM generator to 1400 kHz modulated to 60% with 400 Hz. Tune unit to 1400 kHz. Adjust antenna trimmer (Z-AM/FM-9 C230) for maximum output as read on VTVM using weak r-f input signal.

4. AGC Potentiometer Adjustment

Tune unit to 600 kHz. Couple output of AM Generator (600 kHz modulated to 60% with 400 Hz) to loopstick with AM coupling loop removing mechanical stop and using full penetration of coupling loop (5"). Adjust r-f attenuator for 2 kuV input to AM coupling loop. Adjust AGC Potentiometer (Z-PC-RF-3, R-11) for a Tuner Meter Reading of "9". Return AM coupling loop to 1" penetration (using mechanical stop to set penetration) and observe less than a 2 division drop in Tuner meter reading.

5. 600 kHz Measurements

With unit tuned to 600 kHz and AM coupling loop set for 1" penetration set r-f attenuator for an input to the AM coupling loop equivalent to a 10 kuV/M field (Generator output of 500 uV). Note audio output - should be between .3 and .6 volts from tape out jacks. Attenuate r-f input 35 db (equivalent to 178 uV/M field or approx. 8.9 uV). Check audio output which should not drop more than 6 dB from that noted for input equivalent to 10 kuV/M field.

## 6. 1000 kHz Measurements

(a) With unit tuned to 1000 kHz and Am coupling loop set for 1" penetration set r-f attenuator for an input to the AM coupling loop equivalent to a 10 kuV/m field (generator output of 500 uV). Note audio output - should be between .4 and .7 volts from tape out jacks. Attenuate r-f input 35 dB (equivalent to 178 uV/M field or approx. 8.9 uV). Check audio output which should not drop more than 4 dB from that noted for input equivalent to 10 kuV/M field.

(b) Set r-f input to the AM coupling loop equivalent to a 10 kuV/M field. Measure harmonic distortion of audio output. Maximum allowable THD is 2.0%.

## 7. 1400 kHz Measurements

With unit tuned to 1400 kHz and Am coupling loop set for 1" penetration set r-f attenuator for an input to the AM coupling loop equivalent to a 10 kuV/M field (generator output of approx. 620 uV). Note audio output - should be between .5 and .8 volts from tape output jacks. Attenuate r-f input 35 dB (equivalent to 178 uV/M field or approx. 11 uV). Check audio output which should not drop more than 4 dB from that noted for input equivalent to 10 kuV/M field.

## 8. Calibration

(a) With AM coupling loop set for 1" penetration set r-f attenuator for an input to the AM coupling loop equivalent to a 300 uV/M field at 600 kHz. Tune unit to 600 kHz tuning for maximum tuning meter reading. Check calibration of dial pointer - should read 600 kHz  $\pm 10$  kHz.

(b) Repeat above procedure for the following frequencies:

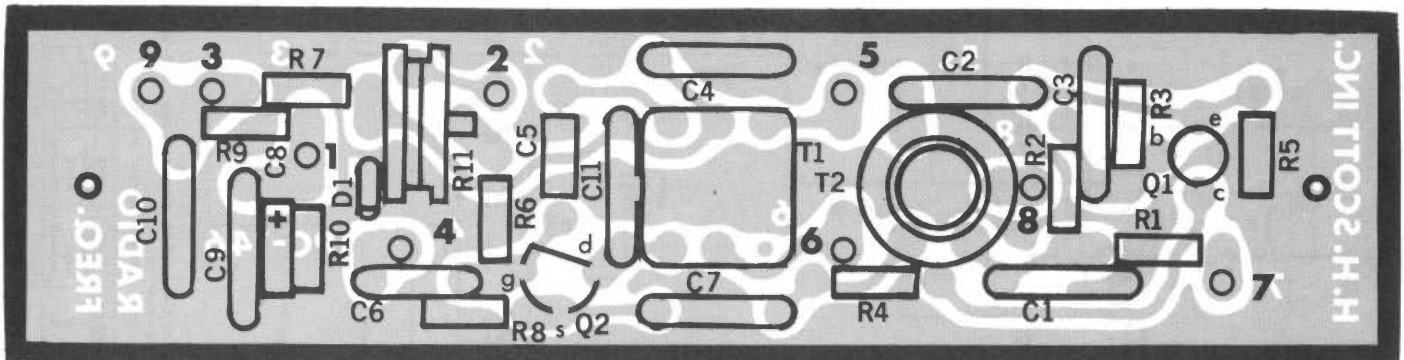
Frequency	Calibration
800 kHz	800 kHz $\pm 10$ kHz
1000 kHz	1000 kHz $\pm 20$ kHz
1200 kHz	1200 kHz $\pm 20$ kHz
1400 kHz	1400 kHz $\pm 10$ kHz
1600 kHz	1600 kHz $\pm 10$ kHz

(c) At 1600 kHz check for a rise and fall of meter indication and audio output as unit is tuned through the r-f signal.

Remove AM coupling loop from loopstick antenna.

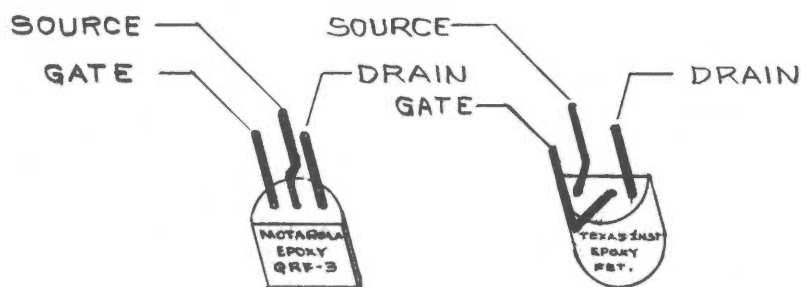
**Q2-QRF-3**

**Q1-QRF-2**

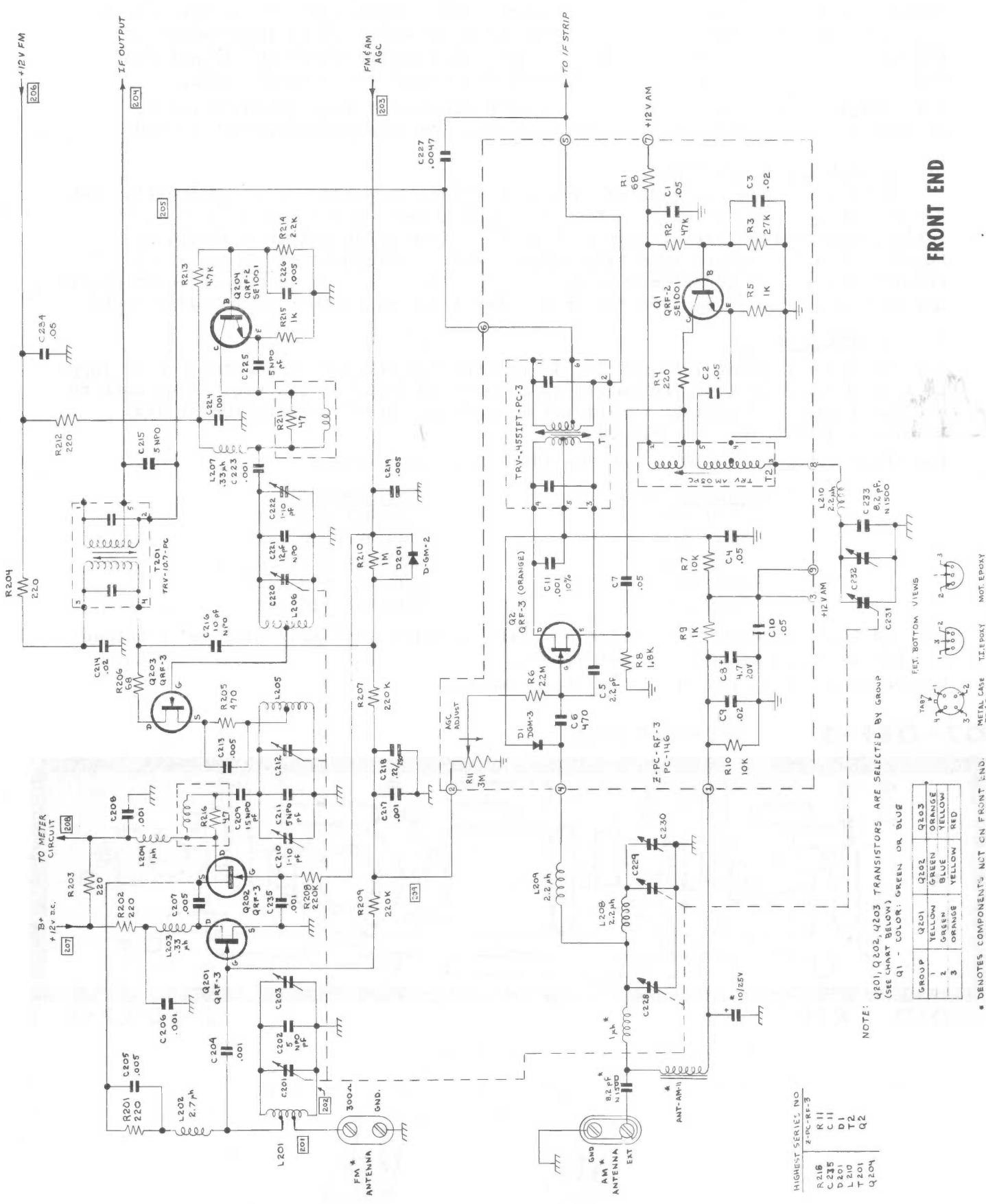


**RADIO FREQ.**

**Z-PC-RF-3 1**



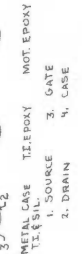
LEAD BENDING FOR Q2



**FRONT END**

NOTE: Q201, Q202, Q203 TRANSISTORS ARE SELECTED BY GROUP (SEE CHART BELOW)

GROUP	Q201	Q202	Q203
1	YELLOW	GREEN	ORANGE
2	ORANGE	BLUE	YELLOW
3	YELLOW	YELLOW	RED



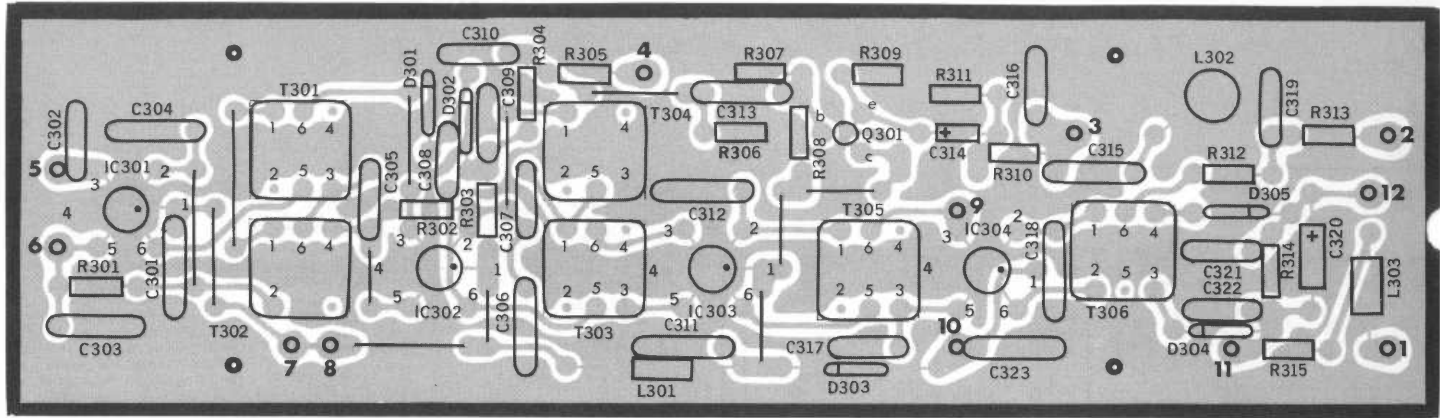
FET BOTTOM VIEWS

\* DENOTES COMPONENTS NOT ON FRONT END.  
 1. SOURCE 2. GATE 3. DRAIN 4. CASE  
 METAL CASE TLE EPOXY NOT EPOXY

HIGHEST SERIES NO

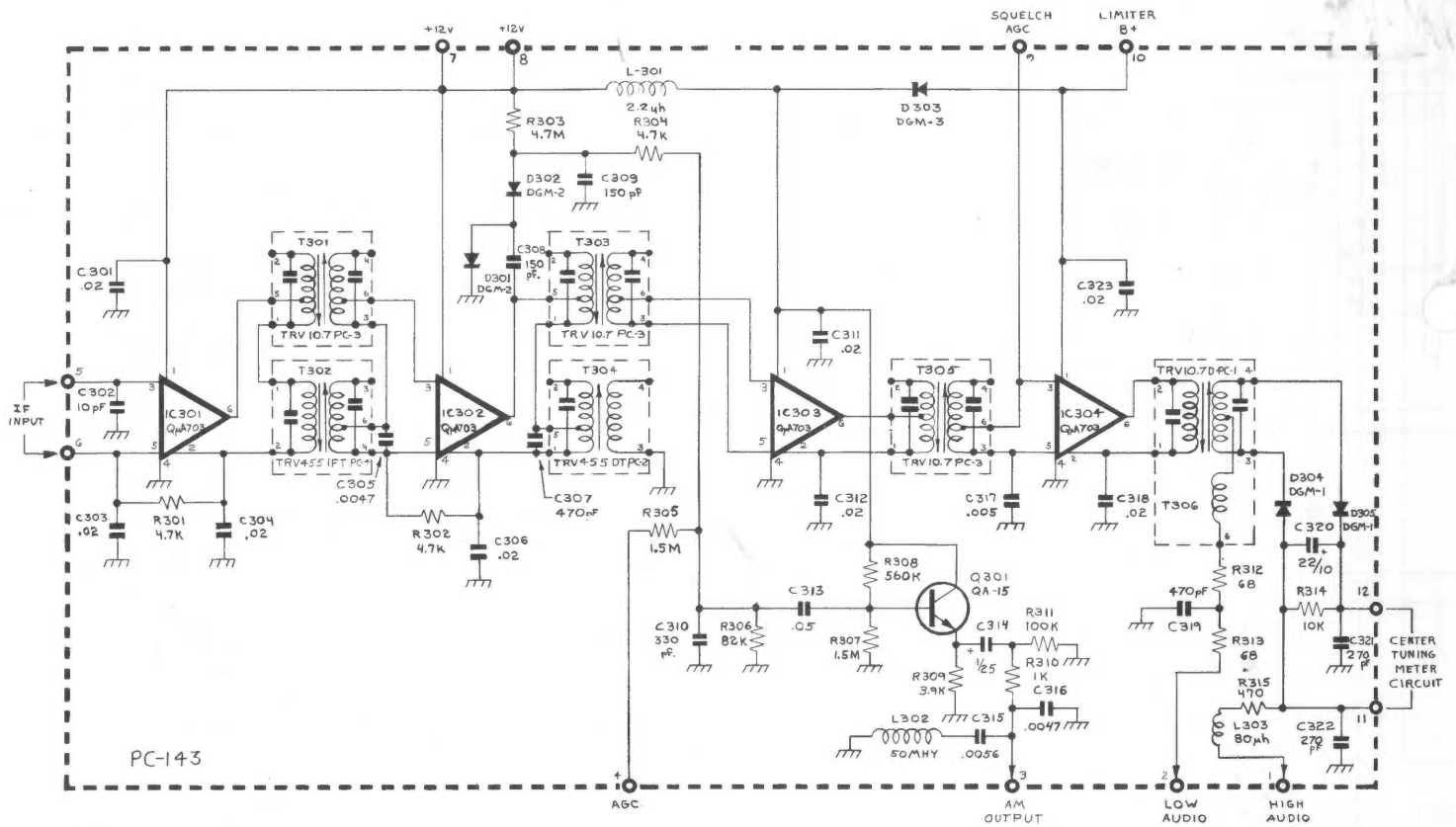
R216	Z-PC-RF-3
R11	
C235	C11
D201	D1
L210	L2
T201	T2
Q204	Q2

**Q301-QA-15**  
**IC301, IC302, IC303, IC304 - Q<sub>M</sub>A-703**

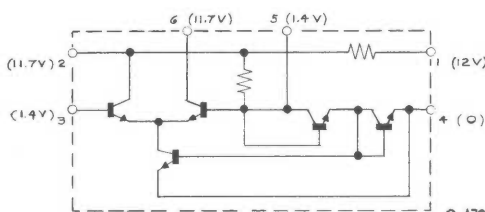


**AM - FM IF AMPLIFIER**

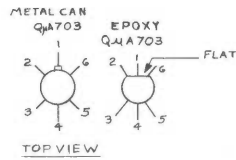
**Z-PC-IF-9 REV. 0**



AM-FMIF AMPLIFIER Z-PC-IF-9



Q<sub>M</sub>A703 CIRCUIT DIAGRAM



TOP VIEW

**NOTES:**

- UNLESS OTHERWISE SPECIFIED:  
 RESISTANCE IN OHMS ± 10%.  
 CAPACITANCE IN PFDs.  
 RESISTORS 1/8 WATT.  
 VOLTS DC ± 5% MEASURED WITH 20KΩ/V.V.O.M
- ARROW-HEADS INDICATE MAIN SIGNAL PATH

HIGHEST SERIES NUMBERS

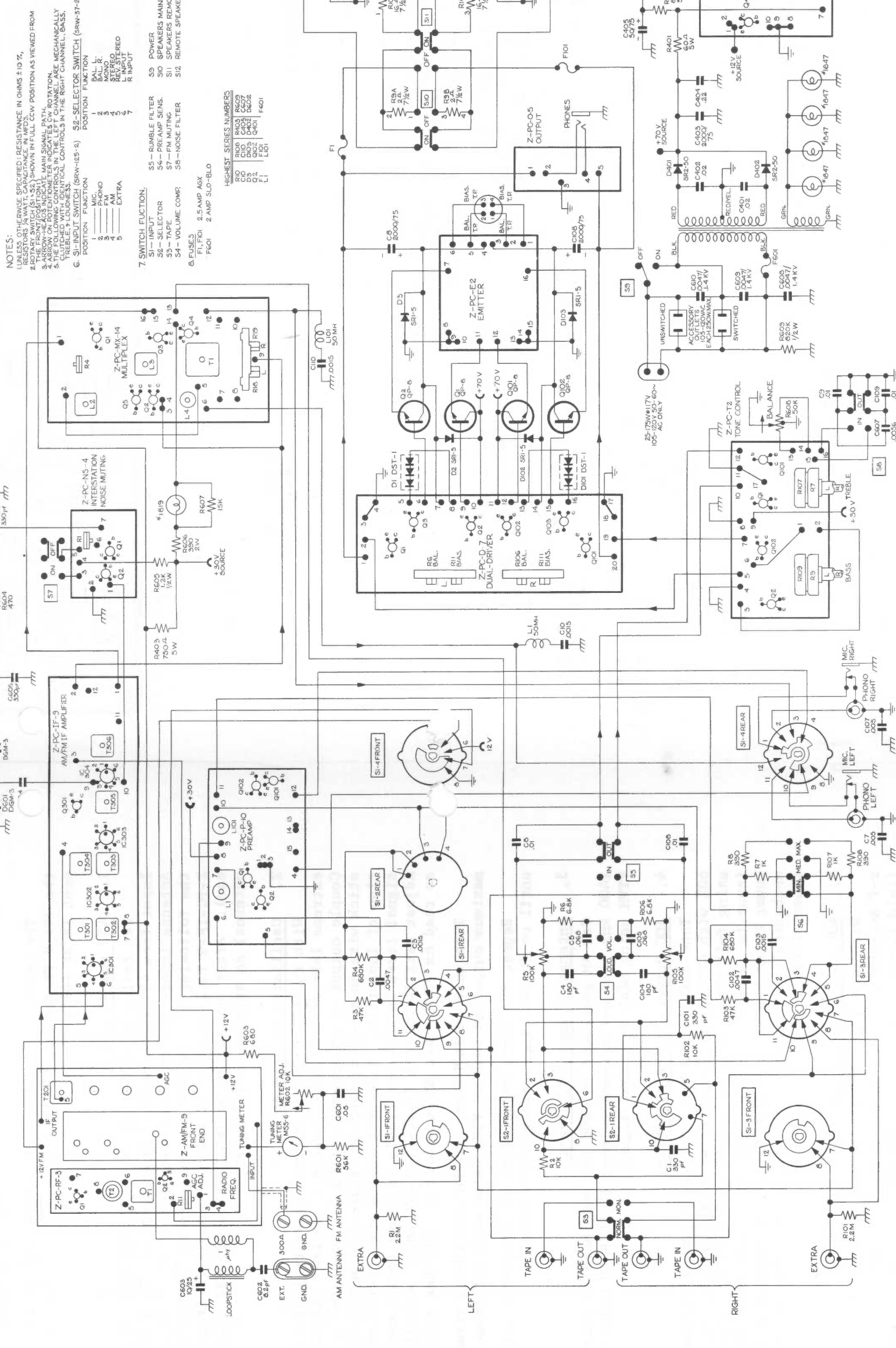
C323	R315
Q301	L303
T306	D305
IC304	

**VOLTAGES**

UNLESS OTHERWISE SPECIFIED: ALL VOLTAGES POSITIVE DC ±1.5% MEASURED WITH 20KΩ/VV Ω.A. 117VAC LINE, 300 ΩHM LOAD ON EXTERNAL ANTENNA TERMINALS, TUNER OFF STATION AND INPUT SWITCH IN 'FM' POSITION. SELECTOR SWITCH IN 'MONO' POSITION. \*VOLTAGES MEASURED UNDER SAME CONDITIONS AS ABOVE ONLY. SELECTOR SWITCH IN 'STEREO' POSITION, AND STEREO SIGNAL FED INTO TUNER. \*\*VOLTAGES MEASURED WITH INPUT SWITCH IN 'EXTRA' POSITION AND NO SIGNAL. \*\*\*VOLTAGES MEASURED WITH FM MUTING SWITCH IN 'ON' POSITION. TUNER OFF STATION. \*\*\*\*INDICATES LOADING BY V.O.M. \*\*\*\*\*VOLTAGES MEASURED WITH SCOPE OR V.T.V.M. SOURCE

Z-AM-FM-5	Q201	10V	0V
Z-AM-FM-5	Q202	0V	1V
Z-AM-FM-5	Q203	0V	1.2V
Z-AM-FM-5	Q204	0V	1.1V
Z-AM-FM-5	Q1	3.6V	2.1V
Z-PC-RF-3	Q1	3.0V	10.3V
Z-PC-RF-3	Q2	0V	8.6V
Z-PC-RF-3	Q3	0V	0.45V
Z-PC-IF-9	IC-301	12V	11.7V
Z-PC-IF-9	IC-302	12V	11.7V
Z-PC-IF-9	IC-303	12V	11.7V
Z-PC-IF-9	IC-304	12.5V	12V
Z-PC-IF-9	IC-304	0V	0V
Z-PC-IF-9	Q301	5.9V	2.7V
Z-PC-NS-4	Q1	0V	13.5V
Z-PC-NS-4	Q2	0V	12.6V
Z-PC-NS-4	Q3	0V	13.5V
Z-PC-NS-4	Q4	0V	3.0V
Z-PC-NS-4	Q5	0V	5.4V
Z-PC-MX-14	Q1	0.5V	7.1V
Z-PC-MX-14	Q2	0.5V	10.1V
Z-PC-MX-14	Q3	0.5V	10.3V
Z-PC-MX-14	Q4	0V	3.0V
Z-PC-MX-14	Q5	0V	8.8V
Z-PC-MX-14	Q1	0.5V	7.1V
Z-PC-MX-14	Q2	0.5V	10.1V
Z-PC-MX-14	Q3	0.5V	10.3V
Z-PC-MX-14	Q4	0V	3.0V
Z-PC-MX-14	Q5	0V	8.8V
Z-PC-P-10	Q1	0.2V	6.5V
Z-PC-P-10	Q2	0.2V	2.6V
Z-PC-T-2	Q1	2.6V	2.2V
Z-PC-T-2	Q2	2.6V	2.5V
Z-PC-T-2	Q3	2.1V	3.5V
Z-PC-D-7	Q1	2.5V	34.9V
Z-PC-D-7	Q2	3.6V	36.5V
Z-PC-D-7	Q3	2.3V	2.8V
Z-PC-D-7	Q101	3.6V	36.5V
Z-PC-D-7	Q102	3.5V	34.5V
Z-PC-D-7	Q103	3.5V	34.5V
Z-PC-PS-7	Q401	12.5V	15.7V
Z-PC-PS-7	Q402	13V	15.7V
POWER TRANSISTORS	Q1, Q101	35.5V	36V
POWER TRANSISTORS	Q2, Q102	0V	35V
POWER TRANSISTORS	Q3, Q103	32.3V	33V
POWER TRANSISTORS	Q401	32.3V	33V

\*\*VOLTAGE (Z-PC-IF-9) TERM. 4 SIGNAL FED TO EXTRA ANTENNA TERMINALS. SELECTOR SWITCH IN 'MONO' POSITION, INPUT SWITCH IN 'FM' POSITION.



**NOTES:**

- UNLESS OTHERWISE SPECIFIED: RESISTANCE IN OHMS ±10%.
- RESISTORS IN PARENTHESIS: CAPACITANCE IN MICROFARADS IN WEDGED POSITION AS VIEWED FROM THE FRONT (POSITION 1), MAIN REARMA, PINS.
- THE FRONT/POSITION 1 MAIN REARMA, PINS.
- ARROW ON POTENTIOMETER INDICATES CW ROTATION.
- THE FOLLOWING CONTROLS IN THE LEFT CHANNEL ARE MECHANICALLY TIED TO THE RIGHT CHANNEL.
- THE FOLLOWING CONTROLS IN THE RIGHT CHANNEL ARE MECHANICALLY TIED TO THE LEFT CHANNEL.
- SI-INPUT SWITCH (SW-2) S2-SELECTOR SWITCH (SW-5) S1 S2

**POSITION FUNCTION:**

1	BAL.
2	MONO
3	F.M.
4	REV. STEREO
5	L INPUT
6	R INPUT
7	EXTRA

**7. SWITCH FUNCTION:**

S1	- INPUT
S2	- RUMBLE FILTER
S3	- SPARKS MAIN
S4	- TUNE
S5	- FM MUTING
S6	- VOLUME COMP.
S7	- NOISE FILTER

**8. FUSES:**

F1, F501	2.5 AMP AXK
F601	2 AMP SLO-BLO

**HIGHEST SERIES NUMBERS:**

IC	IC301	IC302	IC303	IC304
Q	Q1	Q2	Q3	Q4
D	D1	D2	D3	D4
R	R1	R2	R3	R4
F	F1	F2	F3	F4

