

SERVICE MANUAL

The Fisher®

4020

4060

4025

474

495

674

895

**4/2-Channel
Stereo Receiver**

WORLD LEADER IN HIGH QUALITY STEREO

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REQUIRED TEST EQUIPMENT

The following test equipment is required to test and align the Receiver:

- Line Voltage Autotransformer or Voltage Regulator
- Four (4) Load Resistors, 8-ohms, 50 Watts (Minimum Rating)
- AC DC Multimeter
- Low-Distortion AM-FM Signal Generator
- Accurately Calibrated AC Voltmeter
- 10.7 MHz Sweep Generator
- Oscilloscope (Flat to 100 kHz Minimum)
- Multiplex Generator
- Low-Distortion Audio Sine-Wave Generator
- 455 kHz Sweep Generator
- Harmonic Distortion Analyzer

CAUTION: This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistorized equipment and printed circuitry.

HARMONIC DISTORTION CHECK

To perform the harmonic distortion check proceed as follows:

CAUTION: Measure one channel at a time. Limit Full Power On periods to five minutes. Use a load resistor with a rating of at least 50 watts.

- (1) Set BASS and TREBLE controls flat, SELECTOR switch to AUX 1, and POWER/SPKRS switch to AC OFF.
- (2) Connect a low distortion sine wave signal generator between L AUX FRONT IN jack and chassis ground. Set the generator output at 1000 Hz, minimum output.
- (3) Connect an 8-ohm load resistor between L MAIN SPKR and COM terminals. Connect an AC VTVM,

scope, and harmonic distortion analyzer across the 8-ohm load.

- (4) Set the POWER/SPKRS switch to 2-CH. Set FRONT BALANCE (or VOLUME/BALANCE) control(s) to full LEFT position. Turn VOLUME control slowly up to maximum.

(5a) For Models 4020/4025/474/495, adjust the generator output until the VTVM indicates 9 volts RMS. The distortion analyzer should indicate less than 1% harmonic distortion.

(5b) For Models 4060, 674, 895, adjust the generator output until the VTVM indicates 11 volts RMS. The distortion analyzer should indicate less than 1% harmonic distortion.

6. Repeat steps 3 through 5b for RIGHT FRONT channels.

TUNER ALIGNMENT

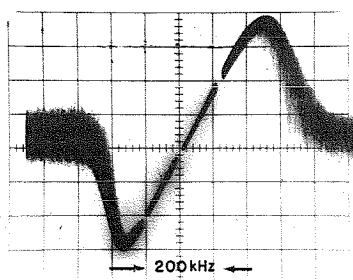
FM ALIGNMENT—FM MUTING OFF MODE to 2-CH, SELECTOR to FM, VOLUME to MIN, TAPE MONITOR OFF.

Maintain generator output as low as possible for suitable indication.

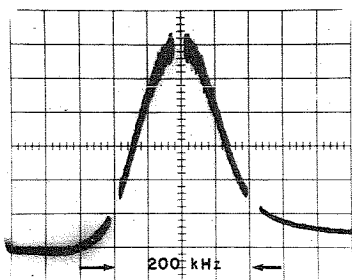
ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
Note: The FM IF circuit utilizes a non-tunable ceramic filter which establishes the IF bandpass. To insure symmetrical tuning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7 MHz as in conventional LC circuits.				
1. IF ALIGNMENT	Connect to 10.7 MHz sweep through 2 pF capacitor and 22K resistor to TP1 (FM IN). Connect ground lead to rear of chassis. Markers are not required.	Position of non-interference.	Scope vertical input to TP2 (FM OUT). Ground lead to rear of chassis.	Short FM oscillator variable capacitor (section nearest L4) with a clip lead. Detune T9 by turning core up (CCW). Adjust T5, T3, T2, T1, for curve as shown in photograph. Repeat as required to obtain best shape. Adjust T9 for best shape (widest bandpass, not for max amplitude).
2. PRELIMINARY DETECTOR ALIGNMENT	Readjust generator output to 100 uV. Reduce output amplitude as much as possible throughout this procedure.		Scope vert input through a 100K resistor to TP3 (DISCRI).	Adjust T7 top and bottom for best gain and symmetry. S-curve should appear as shown in photograph.
Note: 120-ohm composition resistors in series with each lead from the RF generator match the 50-ohm output to the 300-ohm input impedance. Generator output voltage is reduced to one-half at antenna terminals. Signal voltages specified in this table are generator output levels, not antenna voltages.				
3. FRONT END ALIGNMENT		Tuning knob fully CCW.		Center dial pointer on 0 and cement it in place.
4.	Connect FM RF generator through two 120-ohm resistors to FM ANT screw terminals. Set generator to position of non-interference near 90 MHz, modulate with 400 Hz to provide ± 75 kHz deviation. Output amplitude should be sufficient to provide a reading of 3 on receiver front panel meter.	Position of non-interference near 90 MHz.	Receiver front panel meter. Note: To ensure that meter is not indicating a local broadcast station connect scope for step 5, below.	Adjust L4 for maximum gain. Adjust L2, then L7 for maximum gain. Repeat the two steps above as required.
5.	Change generator setting to position of non-interference near 106 MHz.	Position of non-interference near 106 MHz.		Adjust TC3 for maximum gain. Adjust TC1, then TC2, for maximum gain. Repeat the two steps above as required.
6. FINAL DETECTOR ALIGNMENT	As above, except set to position of non-interference near 100 MHz. Set output amplitude to 1 mV (500 mV at receiver antenna terminals).	Position of non-interference near 100 MHz.	Distortion meter to RCDR OUT jack. DC VTVM through 100K resistor to TP3 (DISCRI).	Adjust top core of T7 for zero point on 0.1 scale. Adjust bottom core of T7 for minimum distortion (should be below 1%) on distortion meter.
7. FM OUTPUT	As above (100 MHz), deviation set to ± 22.5 kHz.	Position of non-interference near 100 MHz.	VTVM and scope to RCDR OUT jack.	Adjust VR1 (FM Level Adjust) for 350 mV at RCDR OUT jack.

TUNER ALIGNMENT (CONT'D)

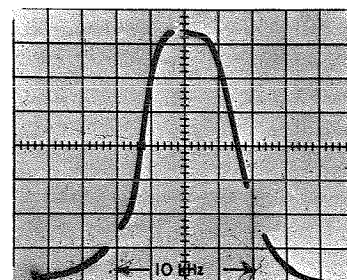
ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
8. SIGNAL STRENGTH (0-5) METER ADJUSTMENT	As above; set amplitude of generator output to 1 Millivolt.	Position of non-interference near 100 MHz.	Receiver Signal Strength (0-5) Meter.	Adjust VR5 (FM Meter Drive Adjust) so the front panel meter reads 4.
9. CENTER CHANNEL METER ADJUSTMENT (4060 only)			Receiver Center Channel (Arrows) Meter.	Slowly tune receiver above, then below generator signal. Needle should go from center (on signal) to right (above signal), then to left (below signal). Meter should remain centered when not near signal. If meter does not perform as described above, repeat steps 2 through 6 to produce properly shaped curves in IFs and Detector, as shown in photographs.
10. MUTING LEVEL ADJUSTMENT	Same except generator output set to 16 μ V.		VTVM and scope to RCDR OUT jack.	Set MUTING ON-OFF switch on receiver front panel to ON. Adjust VR6 (Muting Adjust) until generator output signal overcomes MUTING (until signal shows on scope).
11. STEREO SEPARATION			Move VTVM and scope to TP5 (19 kHz) and GND. Move VTVM and scope to TP6 (38 kHz).	Set VR2 (Separation adjust) to the middle of its rotation. Adjust L6 and L9 (19 kHz) for maximum output. Adjust L7 for maximum.
12.	Change amplitude of 19 kHz modulation to 8%, and modulate with 400 Hz. Main signal (Left) amplitude should be sufficient to produce 42 kHz deviation.		Scope and VTVM to Right RCDR OUT jack.	Adjust L9 for maximum output. If L9 requires more than $\frac{1}{2}$ turn, readjust L6, then L9 several times, to get best settings for maximum. Adjust VR2 for minimum.
13.	As above, except 19 kHz amplitude to produce 3.75 kHz deviation.		Move scope and VTVM to Left RCDR OUT jack.	Adjust VR7 so the STEREO-BEACON just lights. Reduce amplitude of modulation until the STEREOBEACON just goes out. Note the amount of deviation. Increase the deviation until the light comes ON again. The STEREOBEACON should light and go out between 3 and 4.



FM DETECTOR



FM IF



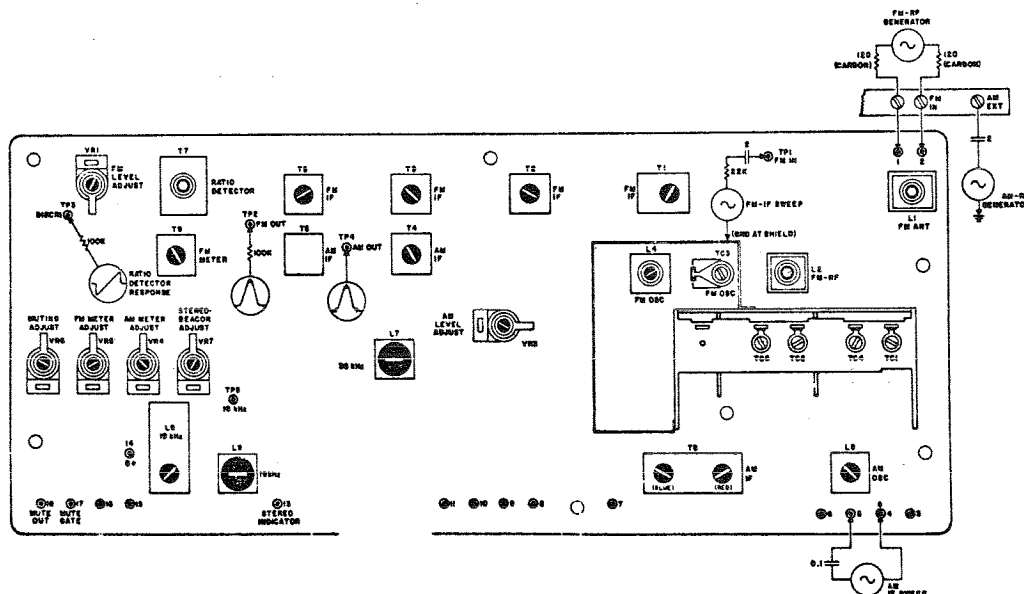
AM IF

TUNER ALIGNMENT (CONT'D)

AM ALIGNMENT—SAME FRONT PANEL SETTINGS as FM ALIGNMENT EXCEPT SELECTOR SET to AM

Maintain generator output as low as possible for suitable indication.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM IF	Connect 445 kHz sweep generator to AM EXT ANT terminals. Note: After each adjustment reduce generator output as required to keep front panel m meter near 2.5.	Position of non-interference.	Scope vertical input to TP4 (AM OUT).	Adjust T8 for maximum gain. Adjust T4 for maximum gain. Repeat above two steps as required.
2. AM RF	Connect RMAM generator to antenna terminals and set output position of non-interference near 550 kHz, modulated 30% with 1 kHz audio, amplitude 5 mV.	Position of non-interference near 550 kHz.	Scope and VTVM to RCDR OUT jack.	Adjust L8 (AM Osc) for maximum.
3.	Change the RF output frequency to position of non-interference near 1,600 kHz.	Position of non-interference near 1,600 kHz.		Adjust TC5 for maximum.
4.	Reset the output frequency to position of non-interference near 600 kHz.	Position of non-interference near 600 kHz.		Repeat steps 2 and 3, above for maximum at both 600 and 1,400 kHz.
5.	Reset output to 1,400 kHz.	Position of non-interference near 1,400 kHz.		Remove tape from ferrite antenna case and adjust slide for maximum gain signal. Repeat steps 4 and 5.
6. AM OUTPUT	Reset generator output to position of non-interference near 1,000 kHz, amplitude 5 mV.	Position of non-interference near 1,000 kHz.		Adjust VR3 (AM Output) for 315 mV.
7. AM SIGNAL STRENGTH METER (0-5) ADJUSTMENT	Reset generator output to position of non-interference near 1,000 kHz, amplitude 5 mV.	Position of non-interference near 1,000 kHz.	Receiver Signal Strength (0-5) meter.	Adjust VR4 (AM Meter Adjust) so that signal meter reads 4.



CHASSIS PARTS LIST

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
	Cabinet (4020/4025)	9403023	S5	POWER/SPKRS switch (4060/674/895)	2617351
	Cabinet (474/495)	9403022	T 1	Power Transformer (4020/4025/474/495)	2217731
	Cabinet (4060)	9403919	T1	Power Transformer (4060)	2217711
	Cabinet (674/895)	9403025	T1	Power Transformer (674/895)	2217741
	Washer, square, for cabinet assembly	4370451	C001	Capacitor, ceramic, 4700 pF	0243873
	Screw, for above	4504582	C002	Capacitor, electrolytic, 2200 UF, 63V	0250131
	Front Panel (4020)	3242773	C005	Capacitor, electrolytic, 100 UF, 50V	1252831
	Front Panel (4025)	3242777	R001	Resistor, 2.7 M	0139005
	Front Panel (474)	3242771	R003, 004	Resistor, 470, 1/2W (PHONES)	0134369
	Front Panel (495)	3242721	F001	Fuse, 2 A, 125V, (POWER, 4020/4025/474/495)	FL51313-13
	Front Panel (4060)	3242921	F001	Fuse, 2.5 A, 125V (POWER 4060/674/895)	FL51313-28
	Front Panel (674)	3242922	F002	Fuse, 3 A, 125V, pigtail slo blow (Lamp ckt.)	FL51313-14
	Front Panel (895)	3280791	F003	Fuse, 2 A, 125V (OUTPUT)	FL51313-29
	Dial Glass (4020/4025)	3198692		Fuseholder	2727241
	Dial Glass (474/495)	3198691		Jack, PHONES	2677061
	Dial Glass (4060)	3198671		Antenna, AM, Ferrite, incl. mtg. bracket	2757126
	Dial Glass (674/895)	3198671		Terminal Strip, Antenna	2687353
	Knob, Tuning (4020/4025/4060)	3280791		Terminal Strip, Speakers	2687321
	Knob, Tuning (474/495/674/895)	3280795		Terminal Strip, I/O, 6 RCA jacks	2677131
	Knob, SELECTOR, MODE, (4020/4025/4060)	3280802		Terminal Strip, I/O, 8 RCA jacks	2677161
	Knob, SELECTOR, MODE, (474/495/674/895)	3290906		Terminal Strip, DISC OUT jack	2677181
	Knob, VOLUME, BALANCE, FRONT (4020/4025/4060)	3218722		AC Outlet	2657211
	Knob, VOLUME, BALANCE, FRONT (474/495/674/895)	3218752		Line cord	2740241
	Knob, VOLUME, BALANCE, REAR (4020/4025/4060)	3281751		Spring, meter retaining (4020/4025/474/495)	3337103
	Knob, VOLUME, BALANCE, REAR (474/495/674/895)	3281723		Pulley, dial cord (metal, 3-1/2") (4020/4025/474/495)	3346045
	Pushbutton, LOUDNESS, MUTING (4020/4025/4060)	EK20046-3		Spring, for above	4564711
	Pushbutton, LOUDNESS, (474/495/674/895)	EK20046-4		Spring, tuning backlash assembly (4060/674/895)	0662084
	Tuning Shaft assembly (4020/4025/474/495)	4561482		Lamp Chassis, less lamps (4020/4025/474/495)	2518786
	Tuning Shaft assembly (674/895)	4381051		Lamp Chassis, less lamps (674/895)	3918751
	Tuning Shaft Assembly (4060)	4566071		Lamp Board, less lamps (4060)	3918729
	Dial Pointer (4020/4025/474/495)	3386671	Printed Circuit Boards Complete (incl. components)		
I9	Dial Pointer, w/lamp (4060/674/895)	3386441			
I9	Lamp, only for above	2767094			
M101	Tuning Meter (4020/4025)	2577122			
M101	Tuning Meter (474/495)	25577129			
M101	Tuning Meter (4060/674/895)	2787302			
M102	Center Channel Meter (4060)	2787301			
I5-8, I10	Lamp, Dial and Meter, fuse type, 6.3V, 250 mA	2767201			
	Lamp, STEREOBEACON, 8V, 30 mA	2767333			
I1-4	Lamp, MON, 2-CH, SQ, 4-CH, 6.3V, 65 mA	2767116			
	Lamp holder (rubber)	2720022		Tuner (4020/4025/474/495)	2519198
S7	POWER/SPKRS switch (4020/4025/474/495)	2617352		Tuner (4060/674/895)	2519196
				Preamp/Control/SQ (4020/4025/474/495)	2519662
				Preamp/Control (674/895)	2519631
				SQ (674/895)	2519641
				Preamp/Control/SQ (4060)	2579531
				Power Supply/Amp (4020/4025)	2519523
				Power Supply/Amp (474/495)	2519661
				Power Supply/Amp (4060)	2519521
				Power Supply/Amp (674/895)	2519522

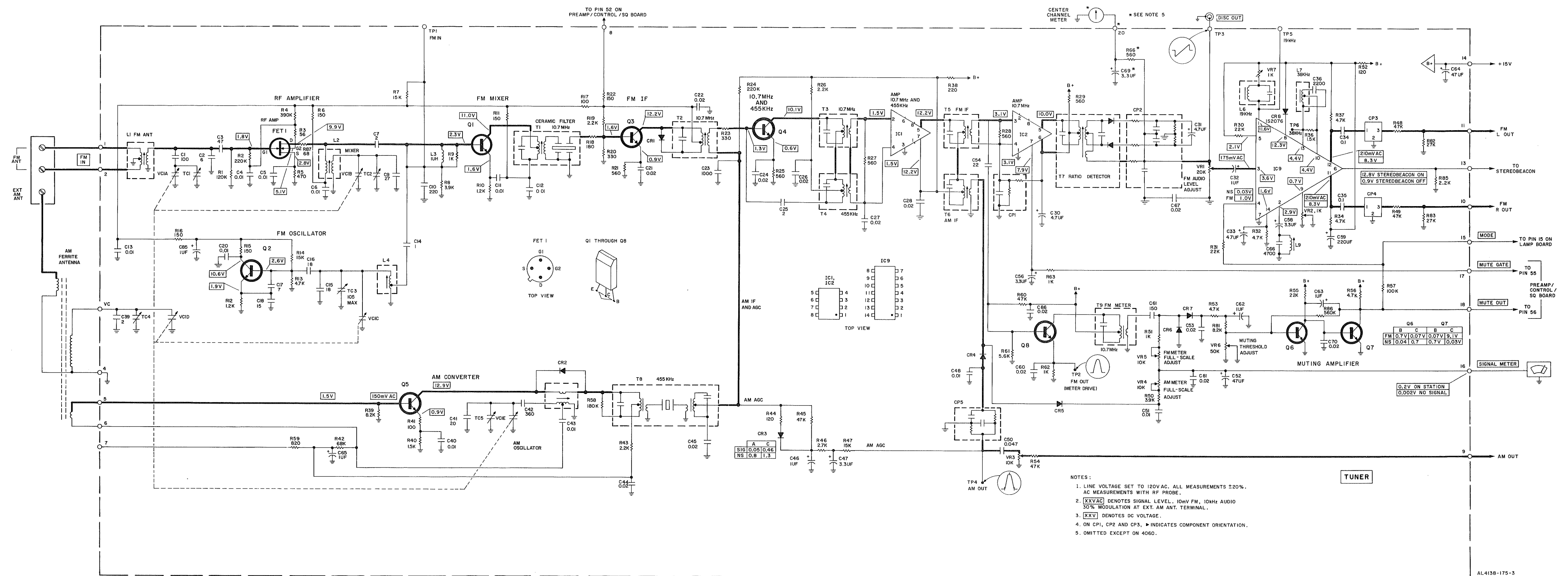
Note: Chassis mounted components may also be listed on the parts list of the circuit with which they function electrically.

TUNER PARTS LIST

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C1	Ceramic, 100 pF	0248724	Q1	Transistor, NPN, 2SC535 (B)	0573510
C2	Ceramic, 6 pF	0246416	Q2	Transistor, NPN, 2SC461 (B)	0573507
C3	Ceramic, 47 pF	0248676	Q3, 4, 8	Transistor, NPN, 2SC460 (B)	0573486
C4, 5, 6, 11, 12, 13, 20	Ceramic, 0.01 uF	1245017	Q5	Transistor, NPN, 2SC454 (B)	0573491
C7, 25, 39	Ceramic, 2 pF	0248632	Q6, 7	Transistor, NPN, 2SC458 (C)	2320063
C9	Ceramic, 27 pF	0246450	R1	120K	0114283
C10	Ceramic, 220 pF	0248362	R2, 24	220K	0114289
C14, 85	Ceramic, 1 pF	0248631	R3	56	0114059
C15, 16	Ceramic, 18 pF	0248176	R4	390K	0114295
C17	Ceramic, 7 pF	0246417	R5	470	0114147
C18	Ceramic, 15 pF	0246444	R6, 11, 15, 16, 22	150	0114135
C21, 22, 24, 26, 27, 28, 44, 45, 53, 60, 67, 70, 81, 86	Ceramic, 0.02 uF	1245018	R7, 14, 47	15K	0114205
C23	Mylar, 1000 pF	1274011	R8, 50	3.9K	0114175
C30, 31, 33	Electrolytic, 4.7 uF, 50V	1252815	R9, 51, 62, 63	1K	0114161
C32, 46, 62	Electrolytic, 1 uF, 50V	1252811	R10, 12	1.2K	0114163
C33, 65, 85	Electrolytic, 1 uF, 50V	1252811	R13, 32, 34, 37, 53, 56	4.7K	0114177
C34, 35	Mylar, 0.1 uF	1276011	R17, 41	100	114131
C36	Polystyrene, 2200 pF	0228343	R18	180	RC07BF181J
C40, 43, 48, 51	Mylar, 0.01 uF	1275011	R19, 26, 43, 85	2.2K	0114169
C41	Ceramic, 20 pF	0248667	R20, 23	330	0114143
C42	Polystyrene, 360 pF	0228324	R21, 25, 27, 28, 29, 66	560	0114149
C47, 56, 58, 69	Electrolytic, 3.3 uF, 50V	1252813	R30, 31, 55	22K	0114209
C50	Mylar, 0.047 uF	1275015	R36, 40	1.5K	0114165
C52, 64	Electrolytic, 47 uF, 16V	1252525	R38	220	0114139
C54	Ceramic, 22 pF	0248668	R39, 81	8.2K	114183
C59	Electrolytic, 220 uF, 16V	1252532	R42	68K	0114221
C61	Ceramic, 150 pF	0248728	R44, 52	120	0114133
C66	Polystyrene, 4700 pF	0221513	R45, 48, 49, 59, 60	47K	0114217
CP1	Encapsulated Circuit, Filter	0186022	R46	2.7K	0114171
CP2	Encapsulated Circuit, Filter	0186041	R57	100K	0114281
CP3, 4	Encapsulated Circuit, Deemphasis Network	0186051	R58	180K	0114287
CP5	Encapsulated Circuit, Audio filter	0186031	R59	820	0114153
CR1, 2, 3, 8	Diode, IS2076	2337011	R61	5.6K	0114179
CR4, 5	Diode, IN34A	0575022	R82, 83	27K	0114211
CR6, 7	Diode, IN60P	0575019	R86	560K	RC07BF564J
FET 1	FET, 3SK45	2327431	R87	33K	0114213
IC1	Integrated Circuit, 10.7/455, HA1201	2327312	T1	Ceramic Filter, 10.7 MHz	2154172
IC2	Integrated Circuit, 10.7 HA1202	2327411	T2, 5	Transformer, 10.7 MHz	0322203
IC9	Integrated Circuit, MPX, HA1115W	2327422	T3	Transformer, 10.7 MHz	2154199
L1	FM Antenna, Coil	2134411	T4	Transformer, 455 kHz	2154161
L2	FM Rf, Coil	2134419	T6	Transformer, 455 kHz	2154122
L3	Choke, 1 uH	2227081	T7	Ratio Detector	2140242
L4	FM Oscillator, Coil	2134416	T8	Transformer, 455 kHz	2154183
L6	19 kHz, Coil	2134392	T9	Transformer, FM Meter	2140155
L7	38 kHz, Coil	2134373	TC3	Capacitor, Trimmer, 105 uH	0283121
L8	AM Oscillator, Coil	2134431	VC1	Capacitor, Gang, FM/AM	0281169
L9	19 kHz, Coil	2134371	VR1	Resistor, Variable, 20K	0151281

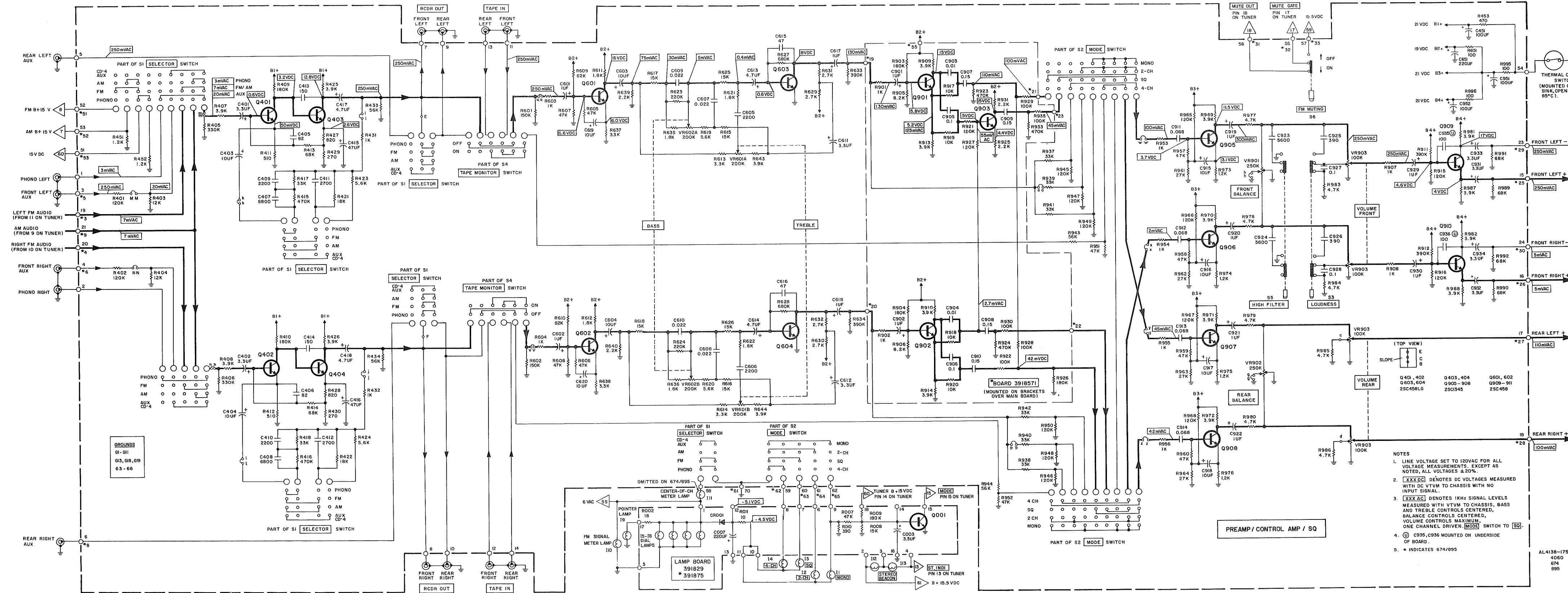
All resistors are Deposited Film, 5%, 1/4W unless otherwise noted.
K = Kilohm

TUNER SCHEMATIC (All Models)



- NOTES:
1. LINE VOLTAGE SET TO 120V AC. ALL MEASUREMENTS $\pm 20\%$.
AC MEASUREMENTS WITH RF PROBE.
 2. [XXVAC] DENOTES SIGNAL LEVEL, 10mV FM, 10kHz AUDIO
30% MODULATION AT EXT. AM ANT. TERMINAL.
 3. [XXV] DENOTES DC VOLTAGE.
 4. ON CP1, CP2 AND CP3, * INDICATES COMPONENT ORIENTATION.
 5. OMITTED EXCEPT ON 4060.

PREAMPLIFIER/CONTROL/ SQ



Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C401, 402, 611, 612, 931 thru 934	Electrolytic, 3.3 uF, 50V	1252813	R413, 414, 989 thru 992	68K	0114221
C403, 404, 603, 604, 619, 620, 915 thru 918	Electrolytic, 10 uF, 25V	1252621	R415, 416, 923, 924, 933	470K	0114297
C405, 406	Ceramic, 82 pF	0248722	R417, 418, 937 thru 942	33K	0114267
C407, 408	Mylar, 6800 pF	1274016	R423, 424, 619, 620	5.6K	0114179
C409, 410, 605, 606	Mylar, 2200 pF	1274013	R427, 428	820	0114153
C411, 412	Mylar, 2700 pF	1274014	R429, 430	270	0114141
C413, 414	Ceramic, 150 pF	0248728	R431, 432, 603, 604, 901, 902, 907, 908, 953 thru 956	1K	0114161
C415, 416	Electrolytic, 47 uF, 16V	1252525	C601, 602, 617, 618, 901, 902, 919, 920, 921, 922, 929, 930	Electrolytic, 1 uF, 50V	CE22342-2
C417, 418, 613, 614	Electrolytic, 4.7 uF, 50V	1252815	C607 thru 610	Mylar, 0.022 uF	1275013
C451, 951	Electrolytic, 100 uF, 50V	1252831	R601, 602	470	0114147
C601, 602, 617, 618, 901, 902, 919, 920, 921, 922, 929, 930	Electrolytic, 1 uF, 50V	CE22342-2	R605 thru 608, 951, 952, 957	150K	0114285
C607 thru 610	Mylar, 0.022 uF	1275013	C905, 906, 927, 928	47K	0114217
R453	470	0114147	C907 thru 910	Mylar, 0.1 uF	1276011
R601, 602	470	0114147	C911 thru 914	Mylar, 0.068 uF	1275016
R605 thru 608, 951, 952, 957	150K	0114285	C923, 924	Mylar, 5600 pF	1274035
R609, 610	82K	0114223	C925, 926	Polystyrene, 390 pF	0228325
R611, 612, 621, 622, 635, 636	1.8K	0114167	C935, 936	Ceramic, 100 pF	0248724
R613, 614, 637, 638	3.3K	0114173	Q401, 402	Transistor, NPN, 2SC4581G (D)	2327254
R615 thru 618, 915, 916, 921, 927, 935	15K	0114205	Q403, 404, 905 thru 908	Transistor, NPN, 2SC1345 (E)	0114289
R632, 624	220K	0114289	Q601, 602, 901, 902, 903, 909, 910	Transistor, NPN, 2SC458 (C)	0114301
R627, 628	680K	0114301	Q603, 604	Transistor, NPN, 2SC4581G (C)	0114171
R629 thru 632	27K	0114295	R003 thru 006	Composition, 470	0134369
R633, 634, 911, 912	390K	0114295	R401, 402, 915, 916, 921, 927, 935	120K	0114283
R639, 640	2.2K	0114169	R403, 404	12K	0114203
R925, 931	8.2K	114183	R405, 406	330K	0114293
R905, 906	8.2K	114183	R407, 408	3.9K	0114175
R947 thru 950	70K	0114201	R425, 426, 643, 644, 909, 910, 913, 914, 969 thru 972, 981, 982, 987, 988	100	0114131
R961 thru 964	27K	RC07BF273J	S1, 2	Switch, SELECTOR, MODE	2617333
R977 thru 980, 983, 986	4.7K	0114177	S3 thru 6	Switch, TAPES MONITOR, LOUDNESS, FM MUTING, HIGH FILTER	2637491
VR601A, B, 602A, B	Potentiometer, dual, 200K	0151710			
VR901, 902	Potentiometer, 250K	0151706			
VR903	Potentiometer, 100K	0155252			
R409, 410, 903, 904, 926	180K	0114287			
R411, 412	510	0114148			

All resistors are Deposited Film, 5%, 1/4W unless otherwise noted.
K = Kilohm

4060/674/895 PARTS LIST

(CONTINUED)

LAMP BOARD (4060 Only)

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C003	Electrolytic, 3.3 uF, 50V	1252813	R007	47K	0114217
C007	Electrolytic, 220 uF, 10V	0252332	R008	15K	0114205
CR001	Diode, IS2076 (1-2)	2337011	R009	180K	0114287
Q001	Transistor, NPN, 2SC458 (C)	2320063	R010	390	0114145
R002	18	1114047	R011	10	0114041

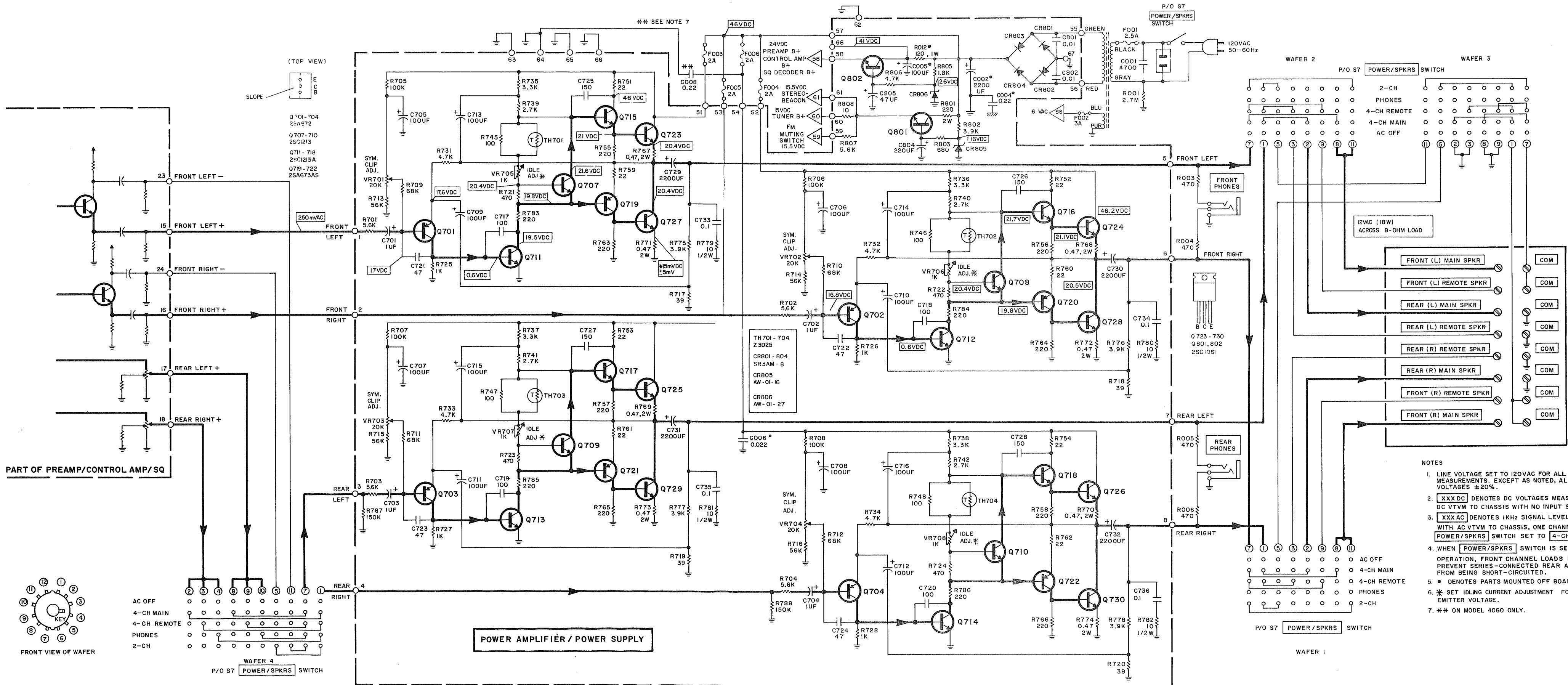
All resistors are Deposited Film, 5%, 1/4W unless otherwise noted.
K = Kilohm

POWER AMPLIFIER

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C002	Electrolytic, 2200 uF, 35V	0250137	R717 thru 720	39	0114055
C004	Ceramic, 0.22 uF	0276011	R721 thru 724	39	0114145
C005	Electrolytic, 100 uF, 50V	0252831	R725 thru 728	1K	0114161
C701 thru 704	Electrolytic, 1 uF	0252861	R731 thru 734, 806	4.7K	0114177
C705 thru 716	Electrolytic, 100 uF, 50V	1252831	R735 thru 738	3.3K	0114173
C717 thru 720	Ceramic, 100 pF	0248724	R739 thru 742	2.7K	0114171
C721 thru 724	Ceramic, 47 pF	0248676	R745 thru 748	100	RC078F101J
C725 thru 728	Ceramic, 150 pF	0248728	R751 thru 754, 759, thru 762	22	0114049
C729 thru 732	Electrolytic, 2200 uF, 35V	1252742	R755 thru 758, 763 thru 766, 783 thru 786	220	0114139
C733 thru 736	Mylar, 0.1 uF	1276011	R767 thru 770, 771 thru 774	Wirewound, 0.47, 2W	RP3WR47K
C801, 802	Ceramic, 0.01 uF	0245408	R775 thru 778	3.9K	0114175
C804	Electrolytic, 220 uF, 25V	1252632	R779 thru 782, 808	10, 1/4W	0134289
C805	Electrolytic, 4.7 uF, 50V	1252825	R787, 788	150K	0138205
CR801 thru 804	Diode, SR3AM-8	2337111	R801	Metal Oxide Fixed Film, 220, 2W	0119525
CR805	Diode, Zener, AW01-16	2337065	R802	3.9K, 1/4W	0134380
CR806	Diode, Zener, AW01-27	2327079	R803	680, 1/4W	0134371
Q701 thru 704	Transistor, PNP, 2SA672 (C)	2327263	R805	1.8K, 1/4W	0134376
Q707 thru 710	Transistor, NPN, 2SC1213 (C)	2327333	TH701 thru 704	Thermistor, 23D25	0676041
Q711 thru 718	Transistor, NPN, 2SC1213A (C)	2327293	VR701 thru 704	Potentiometer, 20K	0151281
Q719 thru 722	Transistor, NPN, 2SA673A (C)	2327387	VR705, 706	Variable, 1K	0151282
Q723 thru 730, 801, 802	Transistor, NPN, 2SC1061 (C) Q	2327153			
R001, 012	120, 2W	RS200W121J			
R701, 702, 807	5.6K	0114169			
R703, 704	2.2K	0138129			
R705 thru 708	100K	0114281			
R709 thru 712	68K	0114221			
R713 thru 716	56K	0114219			

All resistors are Deposited Film, 5%, 1/4W unless otherwise noted.
K = Kilohm

4060/674/895 SCHEMATIC

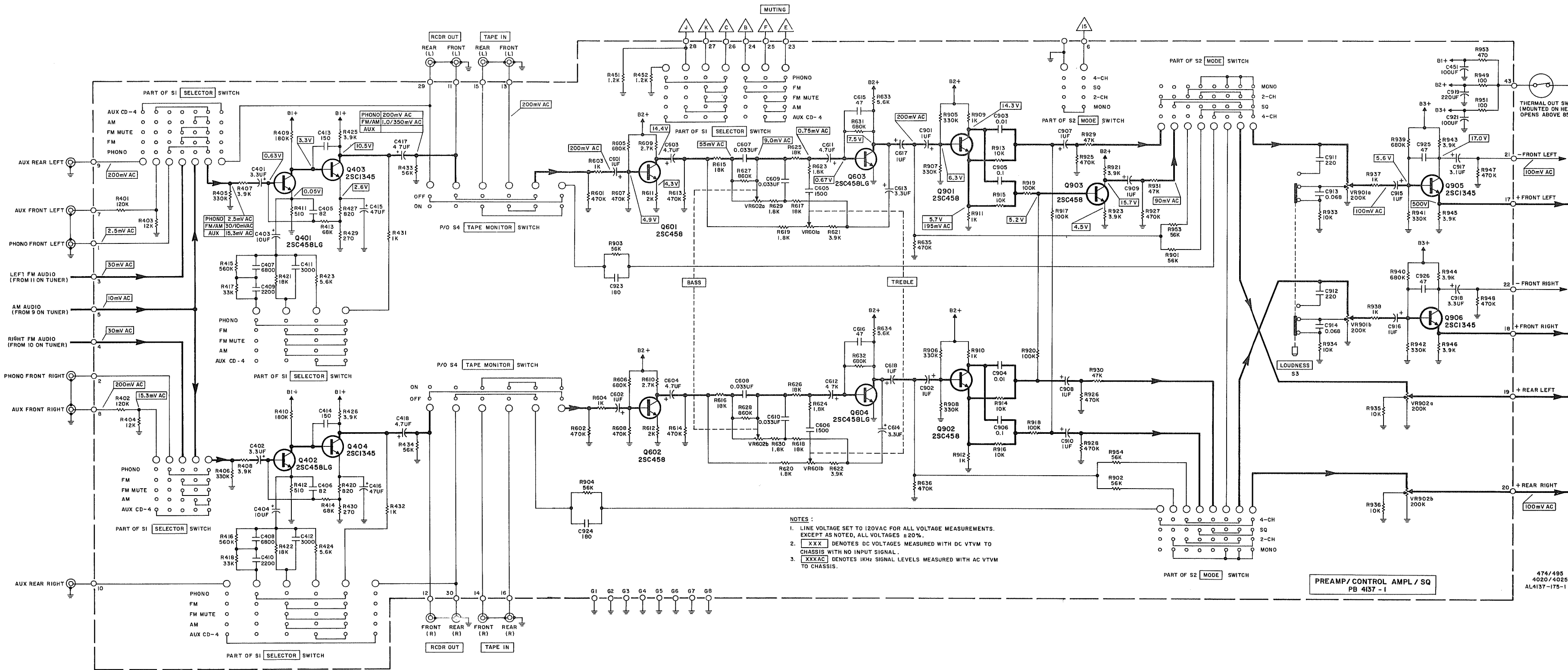


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4020/4025/474/495 SCHEMATIC

4020/4025/474/495 PARTS LIST

PREAMPLIFIER/ CONTROL / SQ



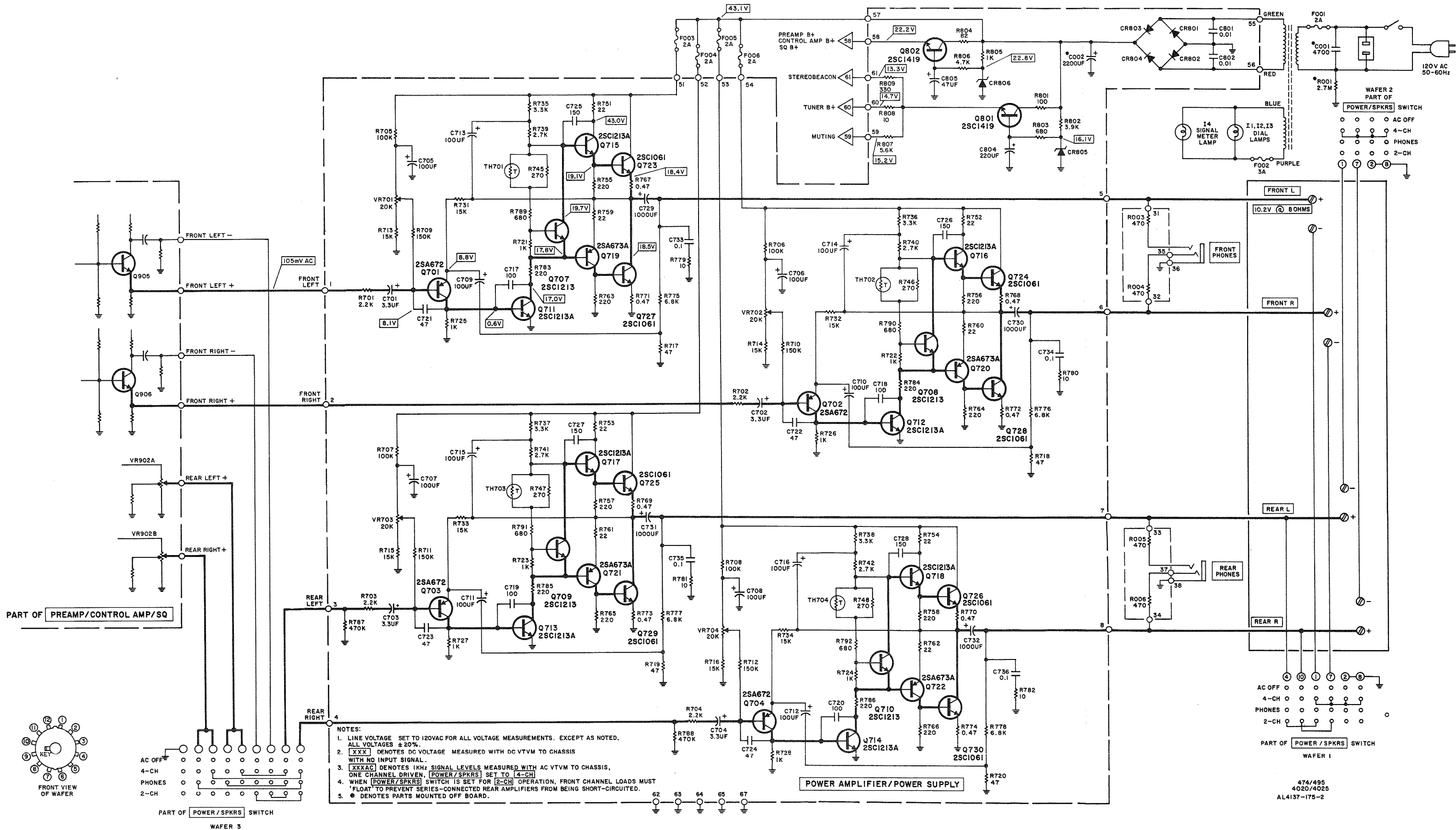
- NOTES:
1. LINE VOLTAGE SET TO 120VAC FOR ALL VOLTAGE MEASUREMENTS. EXCEPT AS NOTED, ALL VOLTAGES $\pm 20\%$.
 2. XXXX DENOTES DC VOLTAGES MEASURED WITH DC VTVM TO CHASSIS WITH NO INPUT SIGNAL.
 3. XXXXX DENOTES 1KHz SIGNAL LEVELS MEASURED WITH AC VTVM TO CHASSIS.

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C401, 402, 613, 614	Electrolytic, 3.3 uF, 50V	1252813	R421, 422, 615, 616, 617, 618, 625, 626	18K	0114207
C403, 404	Electrolytic, 10 uF, 25V	1252621	R423, 424, 633, 634	5.6K	0114179
C405, 406	Ceramic, 82 pF	0248727	R427, 428, 633, 634	820	0114153
C407, 408	Mylar, 6800 pF	1274016	R429, 430, 633, 634	270	0114141
C409, 410	Mylar, 2200 pF	1274013	R431, 432, 603, 604, 909 thru 912, 937, 938	1K	0114161
C411, 412	Mylar, 3000 pF	1274243	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C413, 414	Ceramic, 150 pF	0248728	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C415, 416	Electrolytic, 47 uF, 16V	1252525	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C417, 418, 603, 604, 909 thru 912, 937, 938	Electrolytic, 4.7 uF, 50V	1252815	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C451, 921	100 uF, 50V	1252831	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C601, 602, 611, 618, 901, 902, 907, 908, 909, 910, 915, 916, 917, 918, 925 thru 928, 947, 948	Electrolytic, 1 uF, 50V	1252811	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C605, 606	Mylar, 1500 pF	1274012	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C607 thru 610	Mylar, 0.033 uF	1275014	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C615, 616, 925, 926	Ceramic, 47 pF	0248676	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C903, 904	Mylar, 0.01 uF	1275011	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C905, 906	Mylar, 0.1 uF	1276011	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C911, 912	Mylar, 220 pF	0228319	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C913, 914	Mylar, 0.068 uF	1275016	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C919	Electrolytic, 2200 uF	1252632	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
C923, 924	Ceramic, 180 pF	0248730	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
Q401, 402	Transistor, NPN, 2SC458LG (D)	2327254	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
Q403, 404	Transistor, NPN, 2SC1345 (E)	2327363	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
Q601, 602, 901, 902, 903, 905, 906	Transistor, NPN, 2SC458 (C)	2320063	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
Q603, 604	Transistor, NPN, 2SC458LG (C)	2320073	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R401, 402	120K	0114283	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R403, 404	12K	0114203	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R405, 406, 905, 906, 907, 908, 941, 942	330K	0114293	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R409, 410	180K	0114287	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R411, 412	510	0114148	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R413, 414	68K	0114421	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R415, 416	560K	0114299	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		
R417, 418	33K	0114213	R433, 434, 607, 608, 613, 614, 635, 636, 917, 918, 925 thru 928, 947, 948		

All resistors are Deposited Film, 5%, 1/4W unless otherwise noted.
K = Kilohm

474/495
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AL4137-175-1

4020/4025/474/495 SCHEMATIC

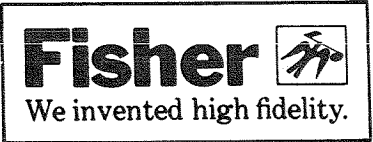
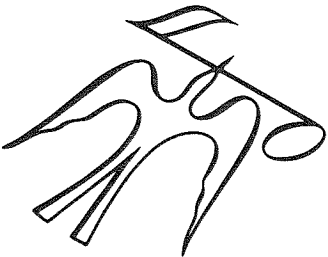


4020/4025/474/495 PARTS LIST

POWER AMPLIFIER

Ref. Des.	Description	Part Number	Ref. Des.	Description	Part Number
C701 thru 704	Electrolytic, 3.3 uF, 50V	1252813	R721 thru 728	1K	0134373
C705 thru 716	Electrolytic, 100 uF, 50V	1252831	R735 thru 738	3.3K	0114173
C717 thru 720	Ceramic, 100 pF	0246464	R739 thru 742	2.7K	0114171
C721 thru 724	Ceramic, 47 pF	0248676	R745 thru 748	270	RC20BF271J
C725 thru 728	Ceramic, 150 pF	0248728	R751 thru 754, 759 thru 762	22	0114049
C729 thru 732	Electrolytic, 1000 uF, 35V	1252741	R755 thru 758, 763 thru 766, 783 thru 786	220	0114139
C733 thru 736	Mylar, 0.1 uF	1276011	R767 thru 774	Wirewound, 0.47, 2W	RP3WR47J
C801, 802	Ceramic, 0.01 uF	0245408	R775, 776	6.8K	0114181
C804	Electrolytic, 220 uF	1252632	R779 thru 782, 808	Composition, 10, ½W	0134289
C805	Electrolytic, 47 uF	1252825	R787, 788	470K	0138217
CR801 thru 804	Diode, SR3AM-8	2337111	R801	Metal Oxide Fixed Film, 100, 2W	0111410
CR805	Diode, Zener, AW01-16	2337065	R802	Composition, 3.9K, ½W	0134380
CR806	Diode, Zener, AW01-22	2337063	R803	Composition, 680, ½W	0134371
Q701 thru 704	Transistor, PNP, 2SA672 (C)	2327263	R804	Composition, 82, ½W	0134300
Q707 thru 710	Transistor, NPN, 2SC1213 (C)	2327333	R805	Composition, 1K, ½W	0134373
Q711 thru 718	Transistor, NPN, 2SC1213A (C)	2327293	R806	4.7K	0114177
Q719 thru 722	Transistor, PNP, 2SA673A (C)	2327283	R807	5.6K	0114179
Q723 thru 730	Transistor, NPN, 2SC1061 (C)	2327153	R809	330, ½W	RC20BF331J
Q801, 802	Transistor, NPN, 2SC1419 (C)	2327593	VR701 thru 704	Potentiometer, 20K	0151281
R701 thru 704	2.2K	0114169			
R705 thru 708	100K	0114281			
R709 thru 712	150K	0114285			
R713 thru 716, 731 thru 734	15K	0114205			
R717 thru 720	47	0114057			

All resistors are Deposited Film, 5%, ½W unless otherwise noted.
K = Kilohm



FISHER RADIO • 11-40 45th ROAD • LONG ISLAND CITY • NEW YORK 11101