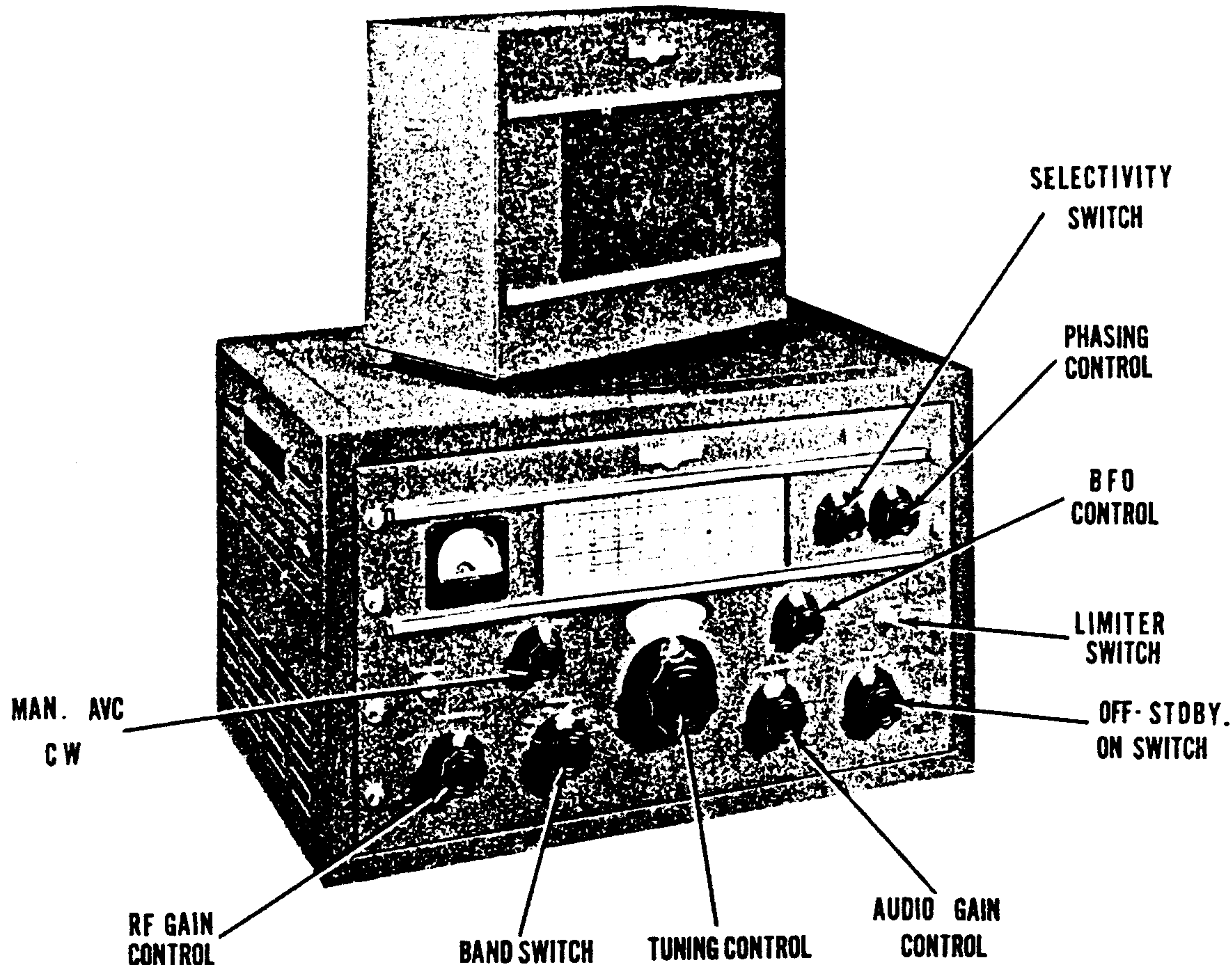


COLLINS
MODEL 75A-1



COLLINS
MODEL 75A-1

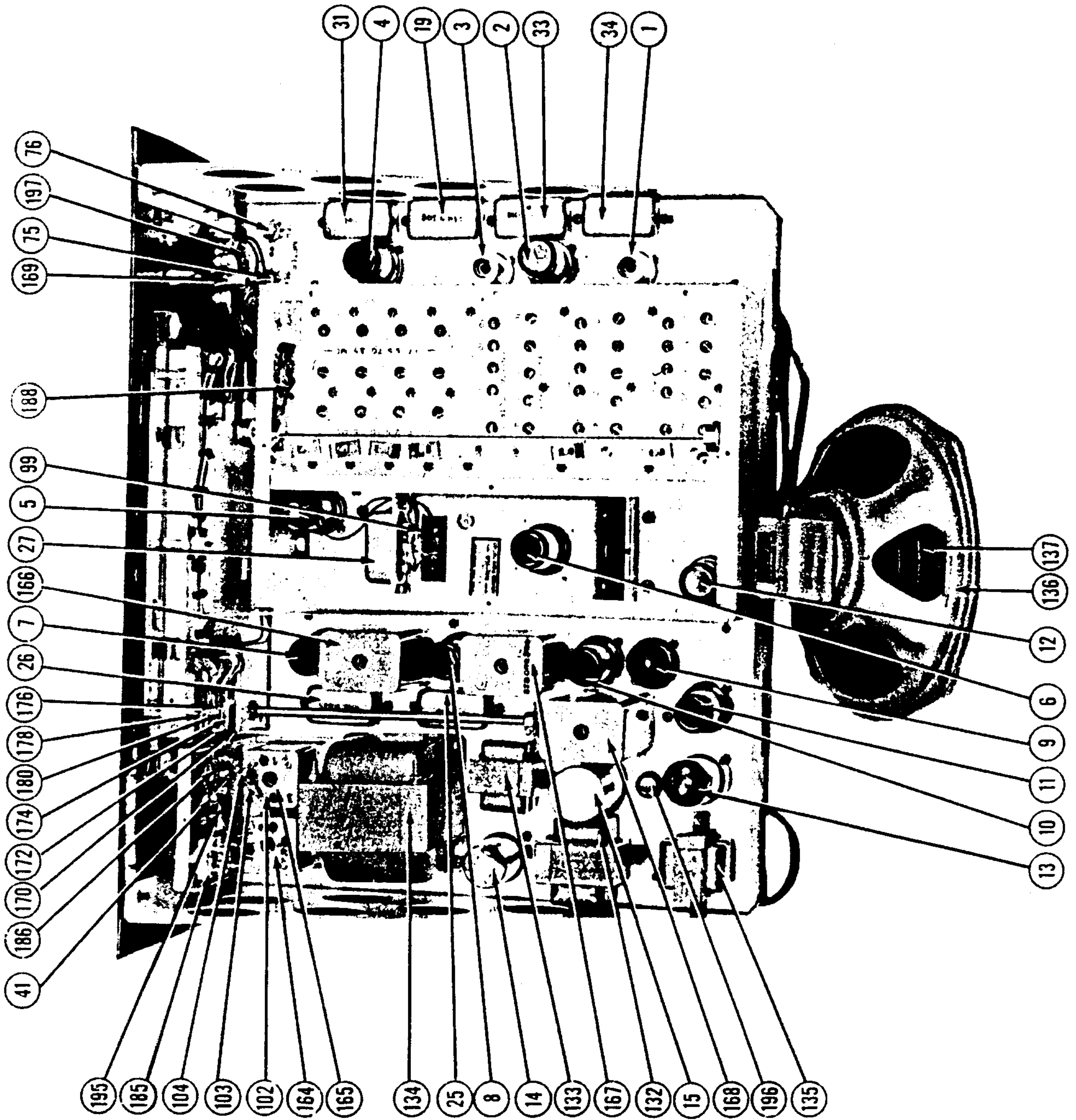
COLLINS MODEL 75A-1

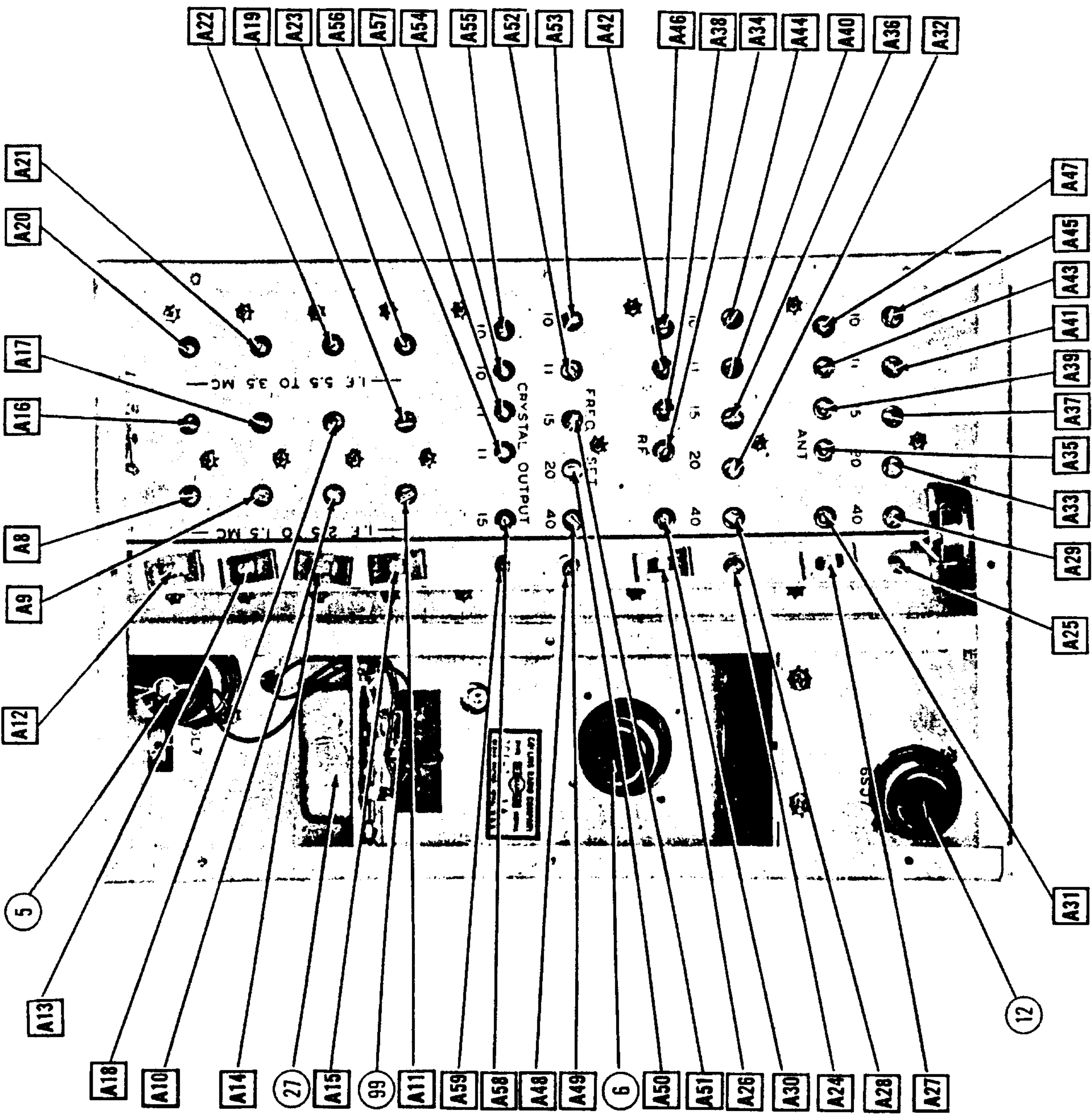
TRADE NAME	Collins, Model 75A-1
MANUFACTURER	Collins Radio Co., Cedar Rapids, Iowa
TYPE SET	AC Operated Commercial Type Superheterodyne Receiver
TUBES(FOURTEEN)	Types, 6AK5 RF Amp., 6SA7 1st Mixer, 6AK5 XTAL Osc., 6SK7 IF Amp., 6L7 2nd Mixer, 6SJ7 Osc., (2) 6SG7 IF Amp., 6H6 Det.-Limiter, 6SJ7 AVC, 6SJ7 BFO, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.80 Amp. @ 117 Volts AC
TUNING RANGE	- 3.2-4.2MC, 6.8-7.8MC, 14.0-15.0MC, 20.8-21.8MC, 26.0-28.0MC, 28.0-30.0MC

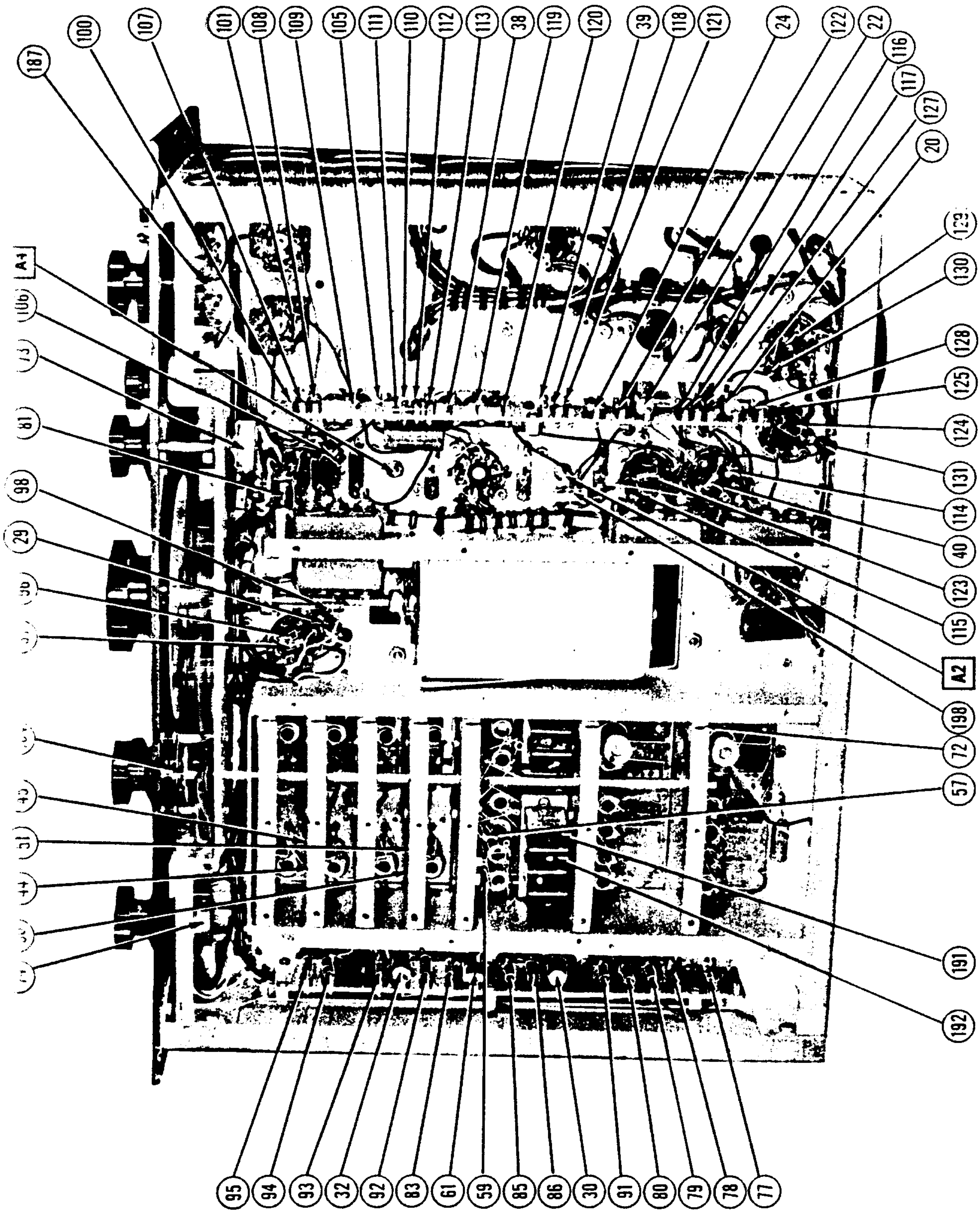
HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

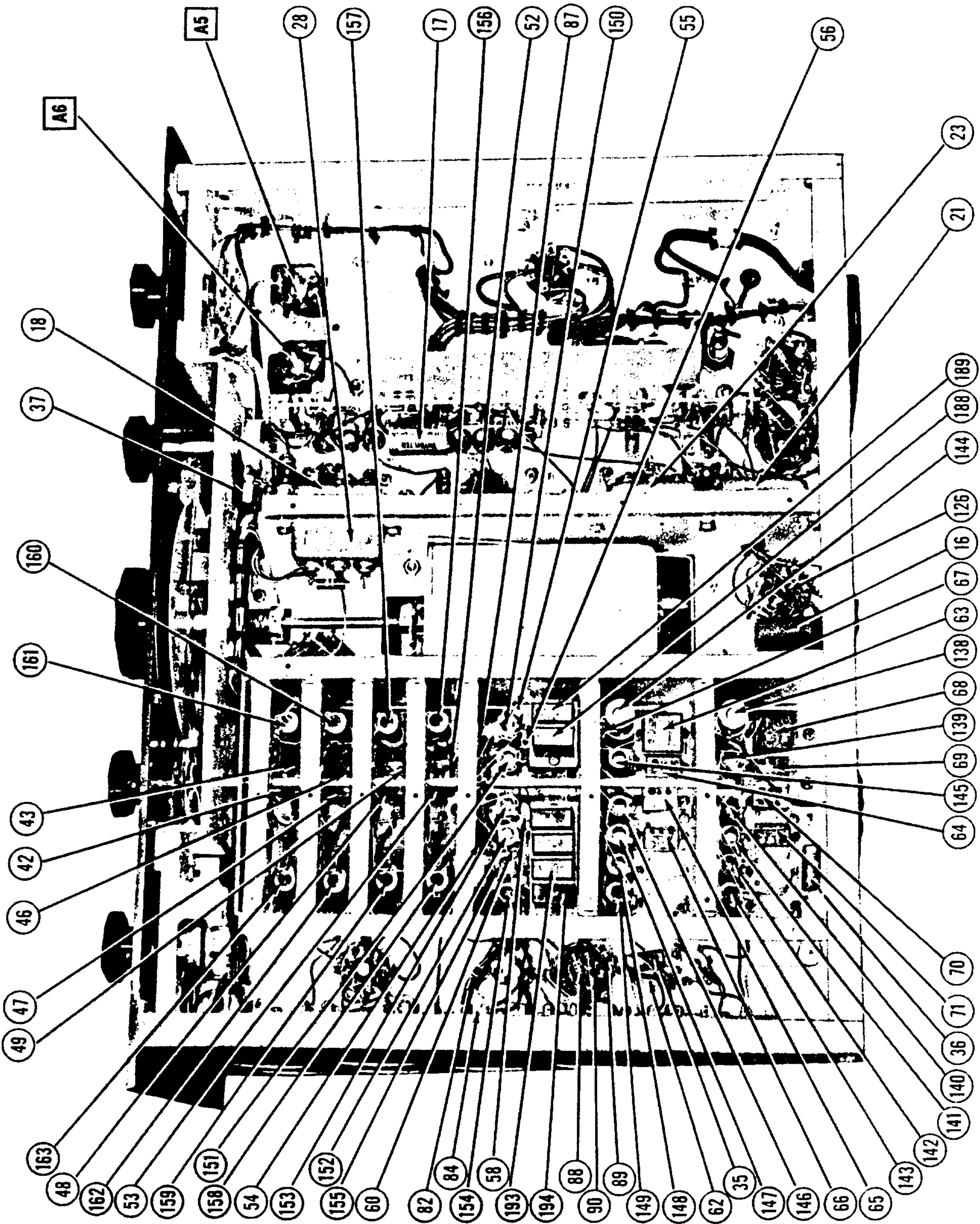
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS (CONTINUED)

PARTS LIST AND DESCRIPTIONS (CONTINUED)

ITEM No.	USE	REPLACEMENT DATA			INSTALLATION NOTES
		COLLINS PART No.	STANDARD REPLACEMENT	AMA BASE TYPE	
1	RF Amp.	6AK5	6AK5	7B	
2	1st Mixer	6SA7	6SA7	6R	
3	Crystal Osc.	6AK5	6AK5	7B	
4	IF Amp.	6SK7	6SK7	2N	
5	2nd Mixer	6L7	6L7	7	
6	Oscillator	6SJ7	6SJ7	8N	
7	IF Amp.	6X4	6X4	8BK	
8	IF Amp.	6X4	6X4	8BK	
9	Det. & Limiter	6H6	6H6	7	
10	AVC	6SJ7	6SJ7	8N	
11	BFO	6SJ7	6SJ7	8N	
12	Audio Amp.	6V6GT	6V6GT	7AC	
13	Power Output	6V6GT	6V6GT	7AC	
14	Rectifier	5Y3GT	5Y3GT	5	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES
		COLLINS PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
15A	40 CAP.	1B3100900	DY-2x40-450	EL-240	4F8J	Filter
16	40		M-12-150	UT-121	FRS-150-12	AF Cathode Bypass
17	150	1B3100800	M-10-50	TA-510	FRS-50-10	RF Gain Control Bypass
18A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	IF Grid Filter
B	1					Filament Bypass
C	1					IF Cathode Bypass
19A	1	556301640	XDR6-3X.1	BP-316	630-1-1-1-1	1st Mixer Plate Decoup.
B	1					IF Cathode Bypass
C	1					Audio Coupling
20	.01	931000500	S-6-01	TC-11	684-01	BFO Screen Bypass
21A	1	956301640	XDR6-2X.1	BP-216	630-1-1-1	AF Screen Bypass
B	1					AVC Filter
C	1					Audio Filter
22	.01	931000500	S-6-01	TC-11	684-01	Det. Cathode Bypass
23A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	Audio Coupling
B	1					IF Cathode Bypass
C	1					IF Screen Bypass
24	150	931000100	S-4-1	TC-1	484-1	IF Plate Decoup.
25A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	2nd Mixer Plate Decoup.
B	1					IF Screen Bypass
C	1					IF Plate Decoup.
26A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	RF Bypass Pwr. Supply
B	1					Fil. Bypass
C	1					2nd Mixer Screen Bypass
27A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1	RF Bypass Pwr. Supp.
B	1					2nd Mixer Cathode Bypass
C	1					RF Bypass Pwr. Supply
28A	1	956301640	XDR6-2X.1	BP-216	630-1-1-1	RF Gain Control Bypass
B	1					IF Screen Bypass
C	1					IF Plate Decoup.
29	150	931000100	S-4-1	TC-1	484-1	IF Plate Decoup.
30	.01	931000500	S-6-01	TC-11	684-01	1st Mixer Plate Decoup.
31A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	XTAL Osc. Plate Decoup.
B	1					XTAL Osc. Screen Bypass
C	1					RF Screen Bypass
32	.01	931000500	S-6-01	TC-11	684-01	RF Plate Decoup.
33A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	1st Mixer Cathode Bypass
B	1					RF Cathode Bypass
C	1					AVC Filter
34A	1	956301640	XDR6-3X.1	BP-316	630-1-1-1-1	Tone Comp.
B	1					Det.-RF Filter-Cer.
C	1					BFO Coupling Cer.
35	.01	931000500	S-6-01	TC-11	684-01	Fixed Trimmer Cer.
36	.01	931000500	S-6-01	TC-11	684-01	"
37	2000	909000500	PM.5-22	1FM-22	1467-002	"
38	350	913008200	MO.5-34	1FM-34	1468-COL35	"
39	350	913008200	MO.5-34	1FM-34	1468-00035	"
40	1	916419400	MO.5-34	1FM-34	1468-00035	"
41	3	917100600	MO.5-45	MS-45	1469-00005	"
42	51	912029700	MO.5-55	MS-55	1468-000005	"
43	330	935012600				"
44	1	916419400				"
45	5	913010000				"

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		COLLINS PART No.	IRC PART No.	
100	2200Ω	RC30BF222K	BTA-2200	Req.-Red-Red 2nd Mixer Plate Decoupling
101	330KΩ	RC20BF334K	BTS-330K	Or.-Or.-Yl. IF Primary Shunt
102	100KΩ	RC20BF104K	BTS-100K	Br.-Blk.-Yl. Selectivity Control
103	22KΩ	RC20BF223K	BTS-22K	Req.-Red-Or. Selectivity Control
104	4700Ω	RC20BF472K	BTS-4700	Yl.-Vl.-Red Selectivity Control
105	330Ω	RC20BF331K	5W-330	Or.-Or.-Yl. 2nd IF Cathode
106	18KΩ	RC30BF183K	BTA-18K	Br.-Or.-Yl. 2nd IF Screen Bleeder
107	22KΩ	RC30BF223K	BTA-22K	Req.-Red-Or. 2nd IF Screen
108	10KΩ	RC20BF103K	BTS-10K	Req.-Red-Red 2nd IF Plate Decoupling
109	10KΩ	RC20BF103K	BTS-10K	Br.-Blk.-Or. AVC Network
110	560Ω	RC20BF561K	BTS-560	Grn.-Blue-Br. 3rd IF Cathode
111	220KΩ	RC20BF224K	BTS-220K	Req.-Red-Yl. Bias Network
112	330KΩ	RC30BF334M	BTA-330K	Or.-Or.-Yl. 3rd IF Screen Dropping
113	120KΩ	RC30BF124K	BTA-120K	Br.-Red-Yl. 3rd IF Plate Decoupling
114	470KΩ	RC20BF474K	BTS-470K	Yl.-Vl.-Yl. AVC Network
115	470KΩ	RC20BF474K	BTS-470K	Yl.-Vl.-Yl. Diode Load
116	2200Ω	RC20BF222K	BTS-2200	Req.-Red-Red AVC Tube Bias
117	220KΩ	RC30BF224K	BTA-220K	Req.-Red-Yl. AVC Tube Bias
118	470KΩ	RC20BF474M	BTS-470K	Yl.-Vl.-Yl. Diode Load
119	10KΩ	RC20BF103K	BTS-10K	Br.-Blk.-Or. Diode RF Filter
120	47KΩ	RC20BF473M	BTS-47K	Yl.-Vl.-Or. Diode Load
121	330KΩ	RC20BF334M	BTS-330K	Or.-Or.-Yl. Limiter Filter
122	100KΩ	RC20BF104K	BTS-100K	Br.-Blk.-Yl. Limiter Filter
123	470KΩ	RC20BF474K	BTS-470K	Yl.-Vl.-Yl. Limiter Load
124	100KΩ	RC30BF104K	BTA-100K	Br.-Blk.-Yl. BFO Plate Load
125	330KΩ	RC30BF334K	BTA-330K	Or.-Or.-Yl. BFO Screen Dropping
126	1000Ω	RC20BF102M	BTS-1000	Br.-Blk.-Red AF Cathode
127	220KΩ	RC30BF224K	BTA-220K	Req.-Red-Yl. AF Plate Load
128	1.2 Meg.	RC30BF125K	BTA-1.2 Meg.	Br.-Red-Grn. AF Screen Dropping
129	470KΩ	RC20BF474K	BTS-470K	Yl.-Vl.-Yl. Output Grid
130	330Ω	RC30BF331K	BTA-330	Or.-Or.-Br. Output Cathode
131	2200Ω	RC40BF222K	BT-2-2200	Req.-Red-Red Output Transformer Shunt

FILTER CHOKE

ITEM NO.	RATINGS	REPLACEMENT DATA			INSTALLATION NOTES
		TOTAL DIRECT CURRENT	INDUCTANCE IN CURRENT	COLLINS PART NO.	
132	94Ω	3 Henries	C-23031	C-2975	
133	300Ω	5 Henries	C-13554	C-2975	

*Drill one new mounting hole. *Drill new mounting holes. #Mount vertically.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		COLLINS PART No.	STANCOR PART No.	THORDARSON PART No.	
134	117V AC 700VA	SEC. 1 5.0V AC SEC. 2 0.4V AC SEC. 3 2.0A @ 4.5A	11274	P-4080*	

*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		COLLINS PART No.	STANCOR PART No.	THORDARSON PART No.	
135	3400Ω	DC RES. PRI. SEC. 3.9Ω 270Ω .5Ω 22Ω	11271	T22846	

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA			INSTALLATION NOTES
		COLLINS PART No.	JENSEN PART No.	QUAM PART No.	
136	VC IMP. 3.9Ω	271000200	ST-115		
137	VC IFA 11/16"	NOT READILY REPLACEABLE	COMPLETE SPEAKER UNIT		

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES	
	CAP.	VOLT	COLLINS PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.		CORNEILL DUBILIER PART No.
43	500	500	935012600		MS-45	1469-00005	SRSQ5	Fixed Trimmer
47	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
48	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
49	330	500	935012600		MS-55	1468-00005	SW5V5	IF Coupling Cer.
50	1	500	916415400		MS-45	1469-00005	SRSQ5	Fixed Trimmer
51	5	500	913010000		MS-45	1469-00005	SRSQ5	Fixed Trimmer
52	330	500	935012600		1FM-31	1468-00001	SW5T1	XTAL Osc. Coupling
53	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	Fixed Trimmer Cer.
54	100	500	935010700		1FM-31	1468-00001	SW5T1	
55	350	500	913008100		1FM-31	1468-00001	SW5T1	
56	150	500	913001700		1FM-31	1468-00001	SW5T1	
57	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
58	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
59	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
60	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
61	100	500	935010700		1FM-31	1468-00001	SW5T1	Osc. Feedback
62	100	500	935010700		1FM-31	1468-00001	SW5T1	RF Coupling
63	620	500	935420300		1FM-31	1468-00001	SW5T1	Fixed Trimmer
64	250	500	912325310		1FM-325	1468-00025	SW5T25	
65	100	500	935010700		1FM-31	1468-00001	SW5T1	
66	51	500	912029700	MOS 5-45	MS-45	1469-00005	SRSQ5	
67	10	500	912410310		MS-41	1468-00001	SW5Q1	
68	250	500	935420300		1FM-325	1468-00025	SW5T25	
69	620	500	912325310		1FM-31	1468-00001	SW5T1	
70	100	500	935010700		MS-45	1469-00005	SRSQ5	
71	51	500	912029700	MOS 5-45	MS-41	1468-00001	SW5Q1	
72	10	500	912410310		1FM-31	1468-00001	SW5T1	
153	100	500	935010700		1FM-31	1468-00001	SW5T1	AVC Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST.	WATTS	COLLINS PART No.	IRC PART No.	CLAROSTAT PART No.		
72	50K Ω	1/2	376313200	D13-133	M-60-Z	Audio Gain Control	
73	50K Ω	1/2	Not Req.	A	Not Req.	Attach to 73A per instructions	
74	10K Ω	1/2	376403700	D16-116	M-30-V	RF Gain Control	
75	50K Ω	1/2	Not Req.	A	Not Req.	Attach to 74A per instructions	
76	100K Ω	1/2	376375400	D11-108	M-8-S	*S* Meter Sensitivity Control	
77	500 Ω	1/2	Not Req.	A	Not Req.	Attach to 75A per instructions	
78	500 Ω	1/2	376375300	D11-103	M-5-S	*S* Meter zero adjust	
79	500 Ω	1/2	Not Req.	A	Not Req.	Attach to 76A per instructions	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA				IDENTIFICATION CODES
	RESISTANCE	WATTS	COLLINS PART No.	IRC PART No.			
77	10K Ω	1/2	RC20BF103K	BTS-10K	Br.-Blk.-Or. AVC Network		
78	220 Ω	1/2	RC20BF221K	BW-2-20	Red-Red-Br. RF Cathode		
79	68K Ω	1/2	RC30BF683K	BTA-68K	Blue-Gray-Or. RF Screen Dropping		
80	10K Ω	1/2	RC30BF103K	BTA-10K	Br.-Blk.-Or. RF Plate Decoupling		
81	22 Ω	1/2		BW-2-2.2	Series Pilot Light		
82	100K Ω	1/2	RC20BF104K	BTS-100K	Br.-Blk.-Yl. Crystal Oscillator Grid		
83	470 Ω	1/2	RC20BF471M	BTS-470	Yl.-Vl.-Br. Crystal Oscillator Cathode		
84	470 Ω	1/2	RC20BF471M	BTS-470	Yl.-Vl.-Br. Crystal Oscillator Cathode		
85	22K Ω	1/2	RC30BF223K	BTA-22K	Red-Red-Or. Crystal Oscillator Cathode		
86	2200 Ω	1/2	RC20BF222K	BTA-2200	Red-Red-Red. Crystal Oscillator Screen Dropping		
87	330 Ω	1/2	RC20BF331K	BW-2-330	Crystal Oscillator Plate Decoupling		
88	330K Ω	1/2	RC20BF334K	BTS-330K	Or.-Or.-Br. Crystal Oscillator Plate Decoupling		
89	10K Ω	1/2	RC20BF221K	BTS-100K	Br.-Blk.-Yl. 1st Mixer Injection Grid		
90	220 Ω	1/2	RC20BF221K	BW-2-220	Red-Red-Br. 1st Mixer Cathode		
91	15K Ω	1/2	RC30BF153K	BTA-15K	Br.-Grn.-Red 1st Mixer Screen Dropping		
92	2200 Ω	1/2	RC20BF222K	BTA-2200	Red-Red-Red 1st Mixer Screen Dropping		
93	10K Ω	1/2	RC20BF103K	BTA-10K	Br.-Blk.-Or. AVC Network		
94	10K Ω	1/2	RC30BF104K	BTA-100K	Br.-Blk.-Yl. 1st IF Screen Dropping		
95	2200 Ω	1/2	RC20BF222K	BTA-2200	Red-Red-Red 1st IF Plate Decoupling		
96	520 Ω	1/2	RC20BF521K	BW-2-520	Gray-Red-Or. 2nd Mixer Cathode		
97	330 Ω	1/2	RC20BF331K	BW-2-330	Or.-Or.-Br. 2nd Mixer Cathode		
98	22K Ω	1/2	RC30BF223K	BTA-22K	Red-Red-Or. 2nd Mixer Screen Dropping		
99	3300 Ω	1/2	RC20BF332M	BTS-3300	Or.-Or.-Red Oscillator Decoupling		

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	COLLINS PART No.	MEISSNER PART No.
138	Ant. Coil 80M	< 1 Ω	< 1 Ω	5031318002	
139	" " 40M	< 1 Ω	< 1 Ω	5031297001	
140	" " 20M	< 1 Ω	< 1 Ω	5031296001	
141	" " 15M	< 1 Ω	< 1 Ω	5031296001	
142	" " 11M	< 1 Ω	< 1 Ω	5031295001	
143	" " 10M	< 1 Ω	< 1 Ω	5031300001	
144	RF Coil 80M	< 1 Ω	< 1 Ω	5031319002	
145	" " 40M	< 1 Ω	< 1 Ω	5031297001	
146	" " 20M	< 1 Ω	< 1 Ω	5031296001	
147	" " 15M	< 1 Ω	< 1 Ω	5031295001	
148	" " 11M	< 1 Ω	< 1 Ω	5031295001	
149	" " 10M	< 1 Ω	< 1 Ω	5031300001	
150	Crystal Coil				
151	" " 20M	< 1 Ω	< 1 Ω	5031299001	
152	" " 15M	< 1 Ω	< 1 Ω	5031299001	
153	" " 11M	< 1 Ω	< 1 Ω	5031298001	
154	" " 10M	< 1 Ω	< 1 Ω	5031298001	
155	Var. IF Coil				
156	" " 10M	1 Ω	1 Ω	5031298001	
157	" " 10M			5031317002	
158	" " 20M	1 Ω	1 Ω	5031317002	
159	" " 20M	2 Ω	2 Ω	5031294001	
160	2nd Mixer	1 Ω	1 Ω	5031317002	
161	" " 20M	2 Ω	2 Ω	5031294001	
162	" " 20M	2 Ω	2 Ω	5031294001	
163	Crystal Filter				
164	Trans. Input IF	5.5 Ω	5.5 Ω	278005800	
165	Inter. IF	2 Ω	2 Ω	278005900	
166	Output IF	2 Ω	2 Ω	278002800	
167	BFO Trans.	2 Ω	2 Ω	278002900	
168	BFO Trans.	2 Ω	2 Ω	278002700	

< - Equals less than.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					COLLINS PART No.	MEISSNER PART No.	
169	Bayonet	6-8	0.25	Blue	262-3230-00		Type 44 "9" Meter Dial
170	Midget Flange	6	0.2		262-0023-00		Type 328
171	" "	6	0.2		262-0023-00		Type 328
172	" "	6	0.2		262-0023-00		Type 328
173	" "	6	0.2		262-0023-00		Type 328
174	" "	6	0.2		262-0023-00		Type 328
175	" "	6	0.2		262-0023-00		Type 328
176	" "	6	0.2		262-0023-00		Type 328
177	" "	6	0.2		262-0023-00		Type 328
178	" "	6	0.2		262-0023-00		Type 328
179	" "	6	0.2		262-0023-00		Type 328
180	" "	6	0.2		262-0023-00		Type 328
181	" "	6	0.2		262-0023-00		Type 328
182	" "	6	0.2		262-0023-00		Type 328
183	" "	6	0.2		262-0023-00		Type 328 60,40,20,15 Meter Dial

MISCELLANEOUS

ITEM No.	PART NAME	COLLINS PART No.	NOTES	
			COLLINS PART No.	NOTES
184	Switch Section	269102100		Band (RF) Mixer, Variable IF, 2nd Mixer, Crystal
185	Switch	259003300		Band (Pilot Light, Harmonic Selector) Limiter
186	" "	259003400		XTAL Filter (Selectivity)
187	" "	259005400		Off-Fil.-B+
188	Crystal	291292300		MAN-AVC-CW
189	" "	291292300		60M
190	" "	291292500		40M
191	" "	291292400		20M
192	" "	291292800		15M
193	" "	291292600		11M
194	" "	291292700		10M
195	Fuse	291292200		Filter
196	Phone Jack	264407000		3AG
197	Trimmer	917100700		Receptacle
		917100600		AB, A9, A10, A11, A24, A25, A28, A29, A32, A33, A43, A49, A50, A51, A52, A53
				A16, A17, A18, A19, A36, A37, A40, A41, A44, A45.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The IF Frequency for this receiver is the exact frequency of the crystal filter and will be within 1 or 2KC of 500KC. Turn receiver on and connect output of signal generator to grid cap of 6L7. Set "MAN-AVC-CW" switch on AVC and turn selectivity switch to #4 position. Tune signal generator to approximately 500KC and adjust for maximum deflection on "S" meter. This is the exact frequency of the crystal therefore the signal generator should not be changed during the IF alignment in Step 1.

To set pointer turn tuning control completely counter-clockwise, then clockwise until the two zeros on the vernier dial coincide with the vertical red reference line. Set pointer to last reference mark at low frequency end of dial.

RF Gain control should be completely clockwise, output of signal generator should be attenuated to a maximum reading of "S" 9 on the "S" meter. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1 .1 MFD.	High side to grid cap. of 6L7. Low side to chassis.	See pre-alignment notes.	80 meter band.	High freq. end of dial.	"S" meter (see pre-alignment notes)	A1,A2, A3,A4, A5	Set selectivity switch to "0" position adjust for maximum deflection of "S" meter attenuate output of signal generator to keep meter below an "S" 9 reading.
2 .1 MFD.	"	Detune signal generator to low freq. side until "S" meter reading drops 1 "S" unit from peak reading.	"	"	"	A6	Set selectivity switch to #1 position. Phasing control should be lined up with index line. Adjust for maximum deflection of "S" meter attenuating sig. gen. output to maintain meter reading below "S" 9 reading. Check correct alignment by switching selectivity switch from #1 position to "0" position. "S" meter reading should not change appreciably.
3 .1 MFD.	"	Set to exact crystal freq. as in Step 1.	"	"	"	A7	Set "MAN-AVC-CW" switch to "CW". Set selectivity switch to #4 position. BFO control should be aligned with reference line under the letters BFO. Adjust for zero beat. Rotate BFO control 180° to either side of zero reference line. The tone should change an equal amount either side. If not rotate control until highest pitch is obtained. Loosen set screw and turn knob 90° left or right of zero reference line. Tighten set screw and align control to zero reference line. Adjust A7 for zero beat. Check to see if knob is rotated 180° on shaft per Step 4.
4 400Ω carbon resistor	High side to term. 1 of ant. terminal strip. Low side to chassis.	3700KC	"	Tune for zero beat with BFO control aligned with zero reference line.	"	"	Turn BFO knob to +1. Retune receiver to zero beat. If dial indicates 1KC less than previous reading the knob is set correctly. If dial indicates 1KC more loosen set screw and rotate knob 180°. Turn selectivity control to "0" position.
5 .1 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	2.5MC	"	3.2MC	"	A8,A9, A10,A11	Turn "MAN-AVC-SW" switch to "AVC". Adjust for maximum deflection.
6 .1 MFD.	"	1.5MC	"	4.2MC	"	A12,A13 A14,A15	Adjust for maximum deflection. Repeat Steps 5 and 6 until no further improvement can be made.
7 .1 MFD.	"	5.5MC	10 meter Band	28.0MC	"	A16,A17, A18,A19	Adjust for maximum deflection.
8 .1 MFD.	"	3.5MC	"	30.0MC	"	A20,A21, A22,A23	Adjust for maximum deflection. Repeat Steps 7 and 8 until no further improvement can be made.
9 400Ω carbon res.	High side to terminal 1 of Ant. Term. Strip. Low side to chassis.	Approx. 4.1MC. Adjust for maximum deflection on "S" meter.	80 meter Band	4.1MC	"	A24,A25	Adjust for maximum deflection.
10	"	Approx. 3.3MC. Adjust for maximum deflection	"	3.3MC	"	A26,A27	Adjust for maximum deflection. Repeat Steps 9 and 10 until no further improvement can be made.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
11	"	"	Approx. 7.7MC. Adjust for maximum deflection.	40 meter Band	7.7MC	"	A28,A29	Adjust for maximum deflection.
12	"	"	Approx. 6.9MC. Adjust for maximum deflection.	"	6.9MC	"	A30,A31	Adjust for maximum deflection. Repeat Steps 11 and 12 until no further improvement can be made.
13	"	"	Approx. 14.9MC. Adjust for max. deflection.	20 meter Band	14.9MC	"	A32,A33	Adjust for maximum deflection.
14	"	"	Approx. 14.1MC. Adjust for max. deflection.	"	14.1MC	"	A34,A35	Adjust for maximum deflection. Repeat Steps 13 and 14 until no further improvement can be made.
15	"	"	Approx. 21.7MC. Adjust for max. deflection.	15 meter Band	21.7MC	"	A36,A37	Adjust for maximum deflection.
16	"	"	Approx. 20.9MC. Adjust for max. deflection.	"	20.9MC	"	A38,A39	Adjust for maximum deflection. Repeat Steps 15 and 16 until no further improvement can be made.
17	"	"	Approx. 27.9MC. Adjust for max. deflection.	11 meter Band	27.9MC	"	A40,A41	Adjust for maximum deflection.
18	"	"	Approx. 26.1MC. Adjust for max. deflection.	"	26.1MC	"	A42,A43	Adjust for maximum deflection. Repeat Steps 17 and 18 until no further improvement can be made.
19	"	"	Approx. 29.9MC. Adjust for max. deflection.	10 meter Band	29.9MC	"	A44,A45	Adjust for maximum deflection.
20	"	"	Approx. 28.1MC. Adjust for max. deflection.	"	28.1MC	"	A46,A47	Adjust for maximum deflection. Repeat Steps 19 and 20 until no further improvement can be made.

CRYSTAL FREQUENCY ADJUSTMENT

If the vernier dial calibration is correct for the majority of the bands but incorrect for one or two of the others use the following instructions.

This adjustment should only be made after the 500KC IF channel and beat frequency oscillator have been accurately adjusted as in Steps 1, 2, 3 and 4.

If a secondary frequency standard is available set it for 100KC operation and calibrate it against WWV.

Connect output of signal generator to antenna terminal board and tune in a harmonic of the 100KC signal in the band which is off calibration. 3.7MC for 80 meters, 7.3MC for 40 meters, 14.5MC for 20 meters, 21.3MC for 15 meters, 27MC for 11 meters, and 29MC for 10 meters. Set "MAN-AVC-CW" switch on "CW" and align BFO knob with zero reference line. Adjust crystal padders as listed below for the various bands, A48 for 80 meters, A49 for 40 meters, A50 for 20 meters, A51 for 15 meters, A52 for 11 meters and A53 for 10 meters, to pull the frequency of the crystal to the correct dial setting on the vernier dial.

If all the bands are off an equal amount and it is impossible to pull the crystals to the dial setting, align all the crystals on a frequency that can be reached, ie, 1/2KC or so higher or lower on each band, then loosen the set screws in the flexible coupler to the VFO and set the dial on the correct figure after which, turn the VFO shaft until the signal is zero beat. Then tighten set screws.

If no secondary frequency standard is available, an ordinary signal generator can be used. Tune the signal generator to 500KC and beat 30th harmonic with WWV at 15MC. The same procedure outlined above can be followed using the 500KC harmonics of the signal generator. Useful harmonics are 4MC for 80 meters, 7MC for 40 meters, 15MC for 20 meters, 21MC for 15 meters, 27MC for 11 meters, 29MC for 10 meters.

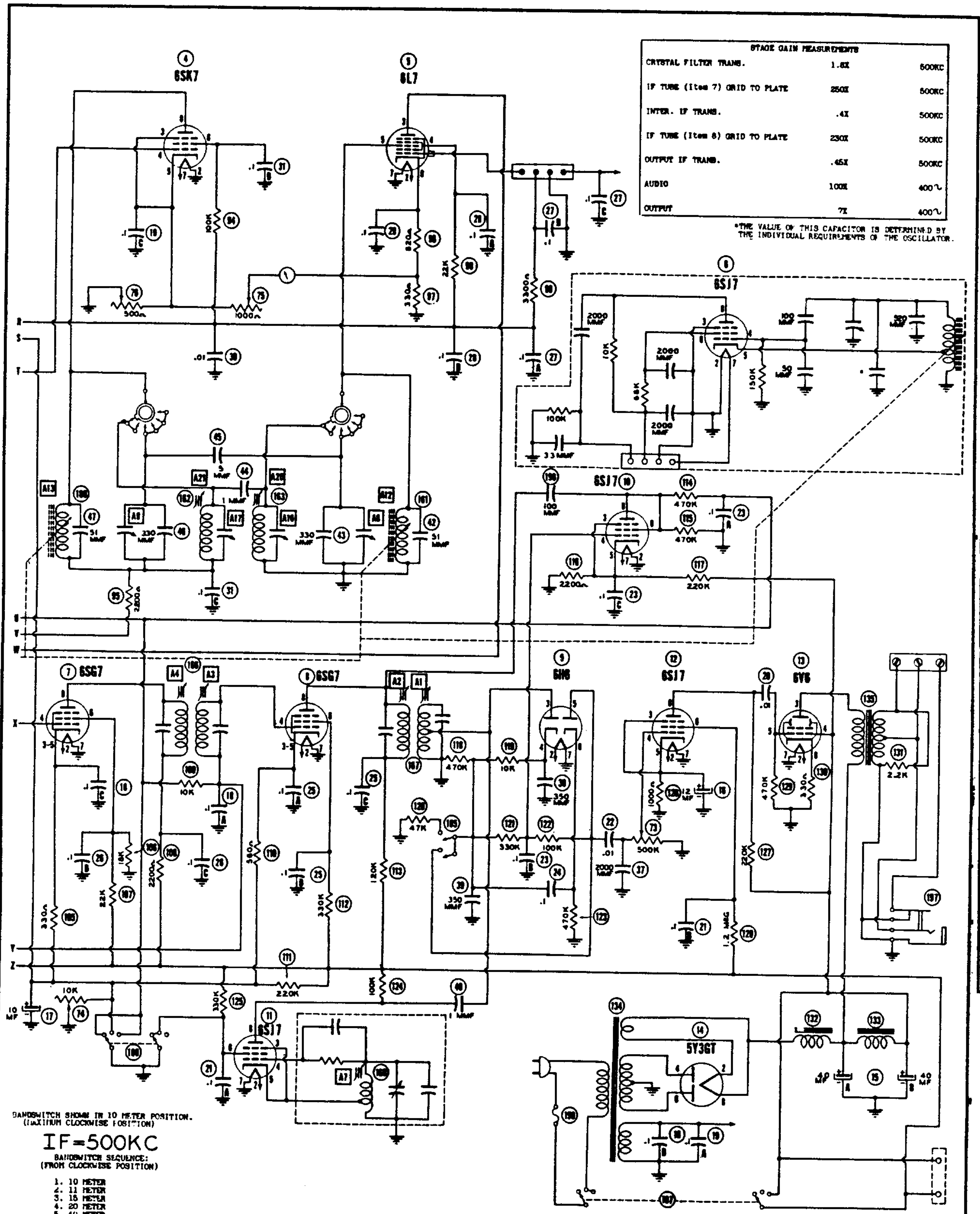
CRYSTAL HARMONIC ADJUSTMENT

It is unlikely that there will ever be a need for adjusting the crystal harmonic selector circuits since this adjustment is not critical, however, in event some component has been replaced, they may be adjusted in the following manner.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
21	"	"	"	10 meter	"	DC probe of VTVM to Pin 5 of 6SA7. Common lead to chassis.	A54, A55	Short Pin 6 of 6SA7 to chassis. Adjust for maximum deflection.
22	"	"	"	11 meter	"	"	A56, A57	Adjust for maximum deflection.
23	"	"	"	15 meter	"	"	A58	"
24	"	"	"	20 meter	"	"	A59	"

There is no adjustment necessary for 40 and 80 meters. CAUTION: Under no circumstances, while making the above adjustments should A48, A49, A50, A51, A52 or A53 be changed as this will change the frequency of the crystal.

Should trouble develop in the variable frequency oscillator the unit should be returned to the factory for servicing.



STAGE GAIN MEASUREMENTS		
CRYSTAL FILTER TRANS.	1.6X	500KC
IF TUBE (Item 7) GRID TO PLATE	250X	500KC
INTER. IF TRANS.	.4X	500KC
IF TUBE (Item 8) GRID TO PLATE	230X	500KC
OUTPUT IF TRANS.	.45X	500KC
AUDIO	100X	400~
OUTPUT	7X	400~

*THE VALUE OF THIS CAPACITOR IS DETERMINED BY THE INDIVIDUAL REQUIREMENTS OF THE OSCILLATOR.

BANDSWITCH SHOWN IN 10 METER POSITION.
(MAXIMUM CLOCKWISE POSITION)

IF = 500KC
BANDSWITCH SEQUENCE:
(FROM CLOCKWISE POSITION)

1. 10 METER
2. 11 METER
3. 15 METER
4. 20 METER
5. 40 METER
6. 80 METER

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. MAN-AVC-CW switch on "MAN" position. Selectivity switch on "0".

VOLTAGE AND RESISTANCE READINGS TAKEN WITH:
 BANDSWITCH IN 80 METER POSITION
 AVC ON
 B+ SWITCH ON
 LIMITER IN
 SELECTIVITY AT 0

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cop
1	6AK5	0V.	1.7VDC	0V.	6.6VAC	180VDC	115VDC	1.7VDC	-	-
2	6SA7	0V.	6.6VAC	230VDC	110VDC	-.5VDC§	2.7VDC	0V.	0V.	-
3	6AK5	-6VDC§	9.5VDC	0V.	6.6VAC	215VDC	175VDC	9.5VDC	-	-
4	6SA7	0V.	0V.	2.4VDC	0V.	2.4VDC	75VDC	6.6VAC	225VDC	-
5	6L7	0V.	6.6VAC	240VDC	130VDC	0V.	2.3VDC	0V.	8VDC	0V.
6	6SJ7	0V.	0V.	0V.	-6VDC§	0V.	150VDC	6.6VAC	165VDC	-
7	6SQ7	0V.	6.6VAC	1.8VDC	0V.	1.8VDC	95VDC	0V.	230VDC	-
8	6SQ7	0V.	6.6VAC	1.3VDC	0V.	1.3VDC	50VDC	0V.	65VDC	-
9	6H6	0V.	6.6VAC	0V.	.5VDC	0V.	225VDC	0V.	.3VDC	-
10	6SJ7	0V.	0V.	2.2VDC	0V.	2.2VDC	0V.	6.6VAC	0V.	-
* 11	6SJ7	0V.	0V.	0V.	-6VDC§	0V.	70VDC	6.6VAC	65VDC	-
12	6SJ7	0V.	6.6VAC	1VDC	0V.	1VDC	25VDC	0V.	70VDC	-
13	6V6GT	0V.	6.6VAC	250VDC	240VDC	0V.	240VDC	0V.	12VDC	-
14	5Y3GT	0V.	265VDC	0V.	370VAC	0V.	370VAC	0V.	265VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

*TAKEN IN CW POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cop
1	6AK5	1 Meg.	230Ω	0Ω	.1Ω	40KΩ	100KΩ	230Ω	-	-
2	6SA7	0Ω	.1Ω	32KΩ	45KΩ	350KΩ	220Ω	0Ω	100KΩ	-
3	6AK5	110KΩ	850Ω	0Ω	.1Ω	32KΩ	55KΩ	850Ω	-	-
4	6SK7	0Ω	0Ω	200Ω	1 Meg.	200Ω	130KΩ	.1Ω	32KΩ	-
5	6L7	0Ω	.1Ω	32KΩ	50KΩ	4Ω	200Ω	0Ω	940Ω	100KΩ
6	6SJ7	0Ω	0Ω	0Ω	150KΩ	0Ω	100KΩ	.1Ω	43KΩ	-
7	6SG7	0Ω	.1Ω	350Ω	1 Meg.	350Ω	50KΩ	0Ω	32KΩ	-
8	6SG7	0Ω	.1Ω	500Ω	1 Meg.	500Ω	360KΩ	0Ω	160Ω	-
9	6H6	0Ω	.1Ω	1.5Ω	510KΩ	950KΩ	130KΩ	0Ω	480KΩ	-
10	6SJ7	0Ω	0Ω	2000Ω	850KΩ	2000Ω	500KΩ	.1Ω	500KΩ	-
* 11	6SJ7	0Ω	0Ω	.2Ω	100KΩ	.2Ω	360KΩ	.1Ω	130KΩ	-
12	6SJ7	0Ω	.1Ω	1KΩ	500KΩ	1KΩ	1.2 Meg.	0Ω	250KΩ	-
13	6V6GT	0Ω	.1Ω	30KΩ	30KΩ	510KΩ	30KΩ	0Ω	310Ω	-
14	5Y3GT	INF.	30KΩ	INF.	120Ω	INF.	110Ω	INF.	30KΩ	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
 ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

- 1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
- 2 - Socket connections are shown as bottom views.
- 3 - Measured values are from socket pin to common negative.
- 4 - Line voltage maintained at 117 volts for voltage readings.
- 5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
- 6 - RF and AF gain controls at maximum, no signal applied for voltage measurements.

