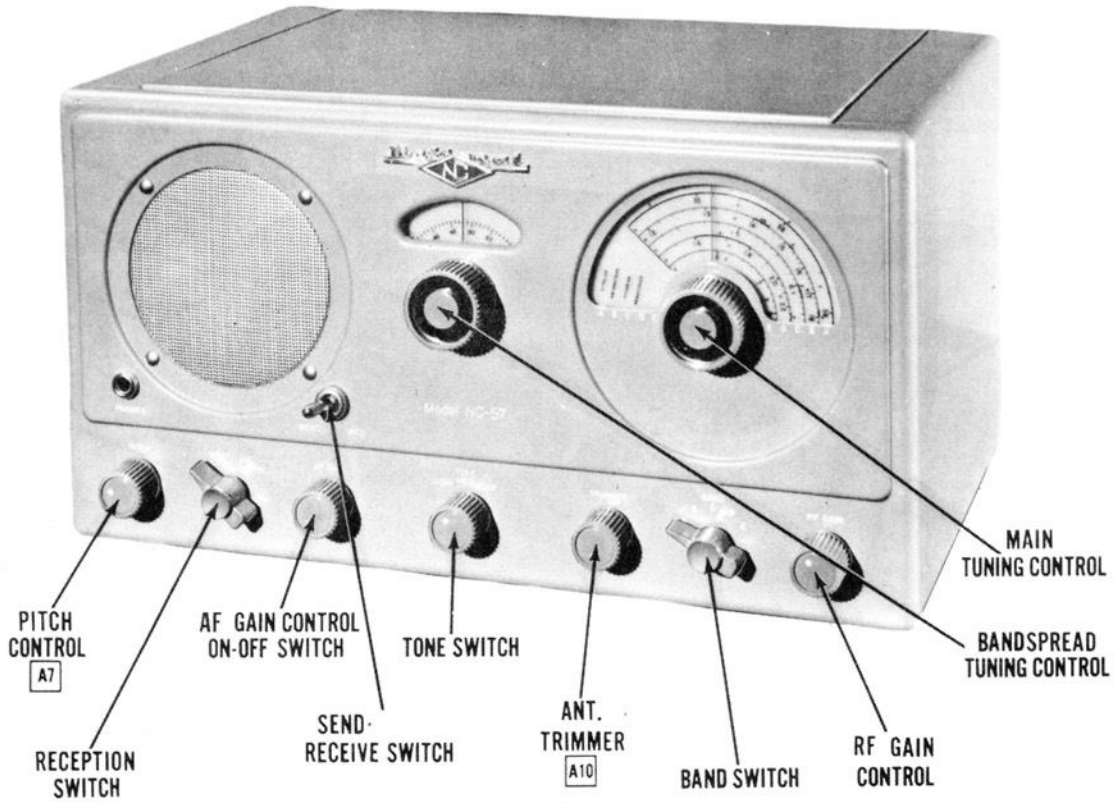
NATIONAL MODEL
NC-57



NATIONAL MODEL NC-57

TRADE NAME	National, Model NC-57
MANUFACTURER	National Co., Inc., 61 Sherman St., Malden, Mass.
TYPE SET	AC or Battery Operated Multi-Band Commercial Type Superheterodyne Receiver
TUBES (NINE)	Types, 6SG7 RF Amp., 6SB7Y Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6H6 Det.-AVC-ANL, 6SL7GT AF Amp.-BFO, 6V6GT Power Output, OD3/VR-150 Voltage Reg., 5Y3GT Rectifier.
POWER SUPPLY	105-130 Volts AC or 6.3 Volts & 250 Volts DC RATING .67 Amp. @ 117V AC
TUNING RANGE-BROADCAST	560-1550KC SHORT WAVE Band "A" 35.0-54.0MC, Band "B" 12.0-35.0MC, Band "C" 4.4-12.0MC, Band "D" 1.55-4.4MC

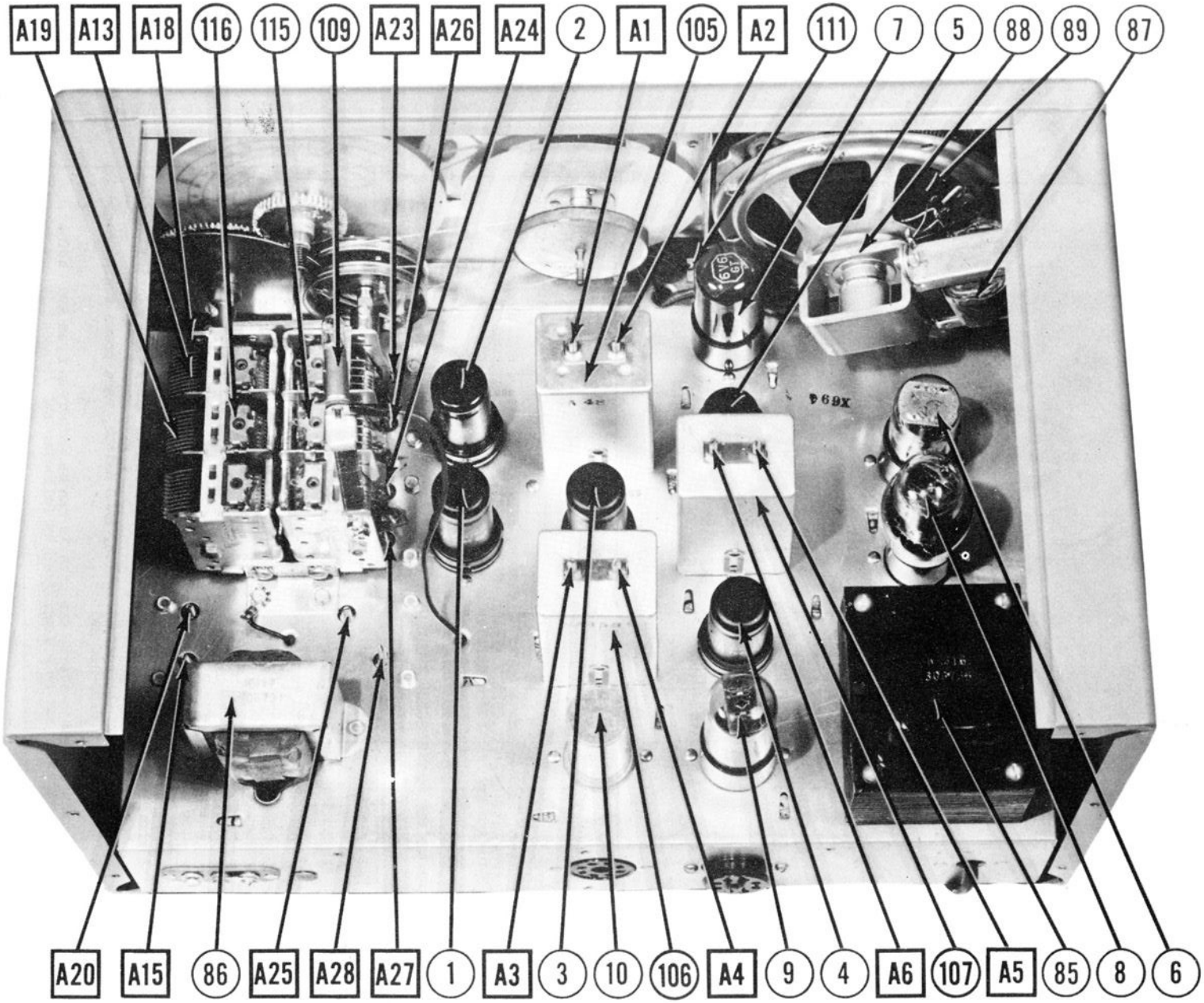
DISASSEMBLY INSTRUCTIONS

1. Remove the top and back piece of the cabinet by releasing the ten drive screws at the back which fasten the piece to the chassis and cabinet wrap around.
2. Remove the bottom cover of the receiver which is held in place by four drive screws.
3. Remove the four mounting feet at the bottom of the receiver. These feet are fastened by means of a screw and speed nut arrangement.
4. Unsolder the two loudspeaker leads to the output tube (6V6GT/G). A red lead is soldered to Pin 4 and a blue lead to Pin 3.
5. Remove all knobs from the front of the Receiver. All knobs, with the exception of the main tuning and bandspread tuning knobs, are mounted on flatted shafts by set screws. Replacing the knobs to their original position is assured by use of the flatted shafts.
6. Remove the retaining nuts on the control switch, BAND switch, bandspread tuning control, main tuning control and the SEND-REC switch.

After completing the six steps above, the chassis can be withdrawn from the cabinet. Reassembly of the receiver can be accomplished by following the disassembly procedure in reverse order.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

DATE 10/48-#4818-14 SET #48-FOLDER #14


A19
A13
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A20
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A6
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A5
85
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6

NATIONAL MODEL
NC-57 PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8FK	
2	Converter	6SB7Y	6SB7Y	9R	
3	1st IF Amp.	6SG7	6SG7	8BK	
4	2nd IF Amp.	6SG7	6SG7	8BK	
5	Det.-AVC-ANL	6H6	6H6	7Q	
6	AF Amp.-BFO	6SL7GT	6SL7GT	8BD	
7	Power Output	6V6GT	6V6GT	7AC	
8	Voltage Reg.	OD3/VR-150	OD3/VR-150	4AJ	
9	Rectifier	5Y3GT	5Y3GT	5T	

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: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	10	450		AF22J	UP1145	DY-2x10-450	EL-210	▲ Filter
B	10	450						◪ "
11	25	50		PRS50/25	BR255	M-25-50	TA-525	Cathode Bypass
12	20	25		PRS25/25	BR202A	M-25-25	TA-25	" "
13	.01	600		684-01	DT6S1	MPH-6-01	TC-11	Line Filter
14	.01	400		484-01	DT4S1	ST-4-01	TC-11	Voltage Reg. Bypass
15	.1	400		484-.1	DT4P1	ST-4-1	TC-1	Tone Comp.
16	.01	400		484-01	DT4S1	ST-4-01	TC-11	Audio Coupling
17	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
18	.01	300		484-01	DT4S1	ST-4-01	TC-11	BFO Coupling
19	.1	400		484-.1	DT4P1	ST-4-1	TC-1	Limiter Filter
20	.01	400		484-01	DT4S1	ST-4-01	TC-11	2nd IF Screen Bypass
21	.1	400		484-.1	DT4P1	ST-4-1	TC-1	2nd IF Cathode Byp.
22	.01	400		484-01	DT4S1	ST-4-01	TC-11	AVC Filter
23	.01	400		484-01	DT4S1	ST-4-01	TC-11	" "
24	.01	600		684-01	DT6S1	ST-6-01	TC-11	1st IF Plate Decoup.
25	.01	600		684-01	DT6S1	ST-6-01	TC-11	1st IF Screen Bypass
26	.1	400		484-.1	DT4P1	ST-4-1	TC-1	1st IF Cathode Bypass
27	.01	600		684-01	DT6S1	ST-6-01	TC-11	AVC Filter
28	.01	600		684-01	DT6S1	ST-6-01	TC-11	Conv. Plate Decoup.
29	.01	400		484-01	DT4S1	ST-4-01	TC-11	Conv. Screen Bypass
30	.1	400		484-.1	DT4P1	ST-4-1	TC-1	RF Bypass
31	.01	400		484-01	DT4S1	ST-4-01	TC-11	RF Screen Bypass
32	.01	400		484-01	DT4S1	ST-4-01	TC-11	RF Cathode Bypass
33	2200	500		1467-002	1W5D2	MW.5-22	1FM-22	Output Plate Byp.-Note
34	1000	500		1467-001	1W5D1	MW.5-21	1FM-21	Audio Coupling
35	300	500		1468-003	5W5T3	MO.5-33	1FM-33	AF Plate Bypass
36	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
37	270	500		1468-00025	5W5T25	MO.5-325	1FM-325	BFO Grid Cap.
38	220	500						Fixed Trimmer
39	100	500		1469-0001	5R5T1	MOS.5-31	MS-31	Osc. Grid Cap.
40	100	500		1469-0001	5R5T1	MOS.5-31	MS-31	Fixed Padder
41	510	500						" "
42	1300	500						" "
43	4300	500						" "
44	5	300		1468-000005	5W5V5	MO.5-55	MS-55	RF Coupling-Cer.
45	5	300		1468-000005	5W5V5	MO.5-55	MS-55	" " "
46	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Fixed Padder
47	1000	500		1467-001	1D5D1	MW.5-21	1FM-21	RF Plate Decoup.
48	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling
49	100	500		1469-0001	5R5T1	MO.5-31	1FM-31	Fixed Padder
50	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	AVC Filter

Note-Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
51A	500KΩ	½		D13-133	M-60-Z	AF Gain Control
B	Shaft			A	Not Req.	Attach to 51A per Instructions
C	Switch			41	SW-A	" " " " "
52	10KΩ	2			43-10M	RF Gain Control

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: MEISSNER PART No.
	Band				
90	Ant.Coil E	2.5Ω	5.2Ω		
91	" " D	1Ω	1.5Ω		
92	" " C	1Ω	0Ω		
93	" " B	0Ω	0Ω		
94	" " A	0Ω	0Ω		
95	RF Coil E	.5Ω	5.2Ω		
96	" " D	26.2Ω	1.5Ω		
97	" " C	5Ω	0Ω		
98	" " B	2.2Ω	0Ω		
99	" " A	0Ω	0Ω		
100	Osc.Coil E		2Ω		
101	" " D		.5Ω		
102	" " C		0Ω		
103	" " B		0Ω		
104	" " A		0Ω		
105	1st IF	2.2Ω	1Ω		
106	2nd IF	2Ω	2Ω		
107	3rd IF	2Ω	2Ω		
108	B.F. Osc. Coil		4.8Ω		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
109	Bayonet	6-8	0.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	NATIONAL PART No.	NOTES
110	Switch		Band
111	"		Send-Receive
112	"		Tone
113	"		Control
114	Var. Cap.		A10
115	3 Gang Var.Cap.		Band Spread
116	" " " "		Main Tuning

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	NATIONAL PART No.	IRC PART No.	
53	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
54	150KΩ	½		BTS-150K	Br.-Grn.-Yl. RF Grid
55	220Ω	2			Red-Red-Br. RF Cathode
56	1000Ω	½		BTS-1000	Br.-Blk.-Red RF Screen
57	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Decoup.
58	68KΩ	2		BT-2-68K	Blue-Gray-Or. Voltage Dropping
59	33Ω	½			Or.-Or.-Blk. Parasitic Suppressor
60	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Osc. Grid
61	3900Ω	½		BTS-3900	Or.-White-Red Conv. Screen
62	1000Ω	½		BTS-1000	Br.-Blk.-Red Conv. Plate Decoup.
63	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
64	1200Ω	½		BTS-1200	Br.-Red-Red 1st IF Cathode
65	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st IF Screen
66	1000Ω	½		BTS-1000	Br.-Blk.-Red 1st IF Plate Decoup.
67	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
68	220Ω	½			Red-Red-Br. 2nd IF Cathode
69	2200Ω	½		BTS-2200	Red-Red-Red 2nd IF Screen
70	2200Ω	½		BTS-2200	Red-Red-Red Series "S" Meter
71	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode Load
73	220KΩ	½		BTS-220K	Red-Red-Yl. " "
74	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. ANL Network
75	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
76	10KΩ	½		BTS-10K	Br.-Blk.-Or. CWO Osc. Plate
77	10KΩ	½		BTS-10K	Br.-Blk.-Or. CWO Osc. Grid
78	2700Ω	½		BTS-2700	Red-Vi.-Red AF Cathode
79	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
80	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
81	330Ω	2		BW-2-330	Or.-Or.-Br. Output Cathode
82	4700Ω	½		BTS-4700	Yl.-Vi.-Red Tone Comp.
83	22KΩ	½		BTS-22K	Red-Red-Or. Output Trans. Primary Shunt
84	3900Ω	10		AB-4000	Voltage Dropping-See Note

Note-Some models use two 1800Ω 2 W. resistor in series in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	NATIONAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
85	117V AC @ .67A	620V CT .1A DC	5.3V AC @ 2.0A	6.8V AC @ 2.35A	K-316	P-6335	T22R04	P-2952#

#Drill new mounting holes

FILTER CHOKE

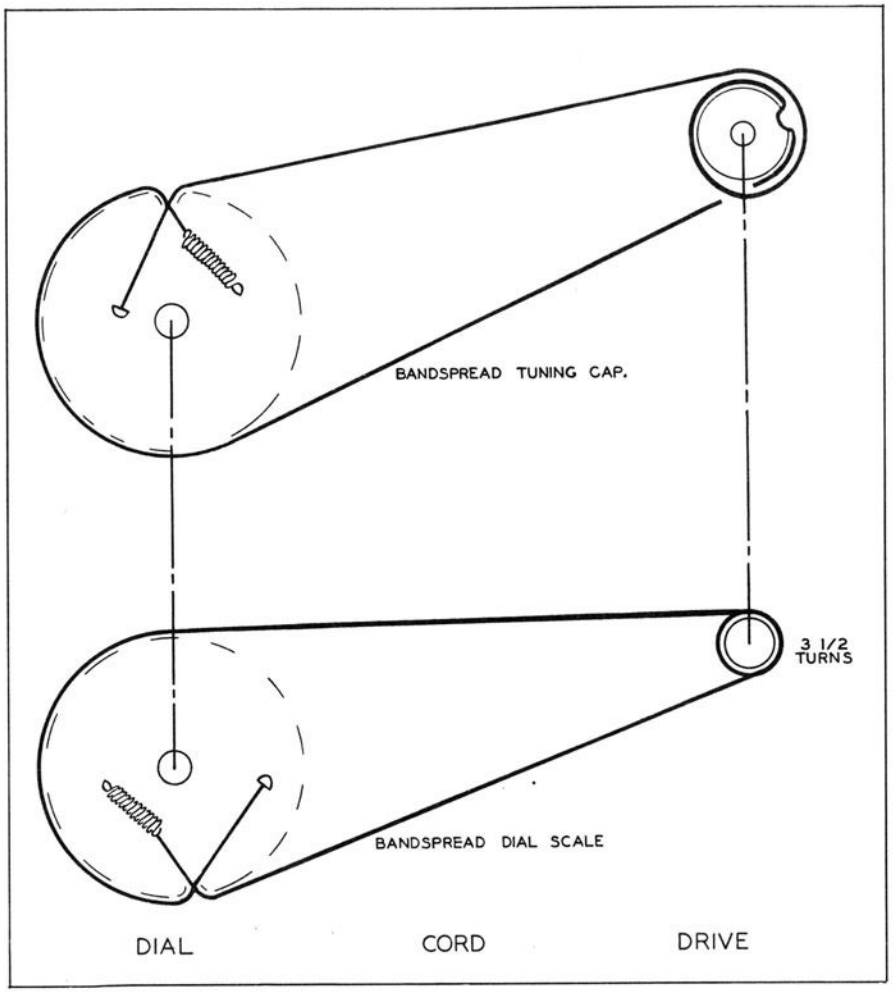
ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ∿	NATIONAL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
86	.1 A.	265Ω	8 Henries	K-317	C-1705	T-20C53		

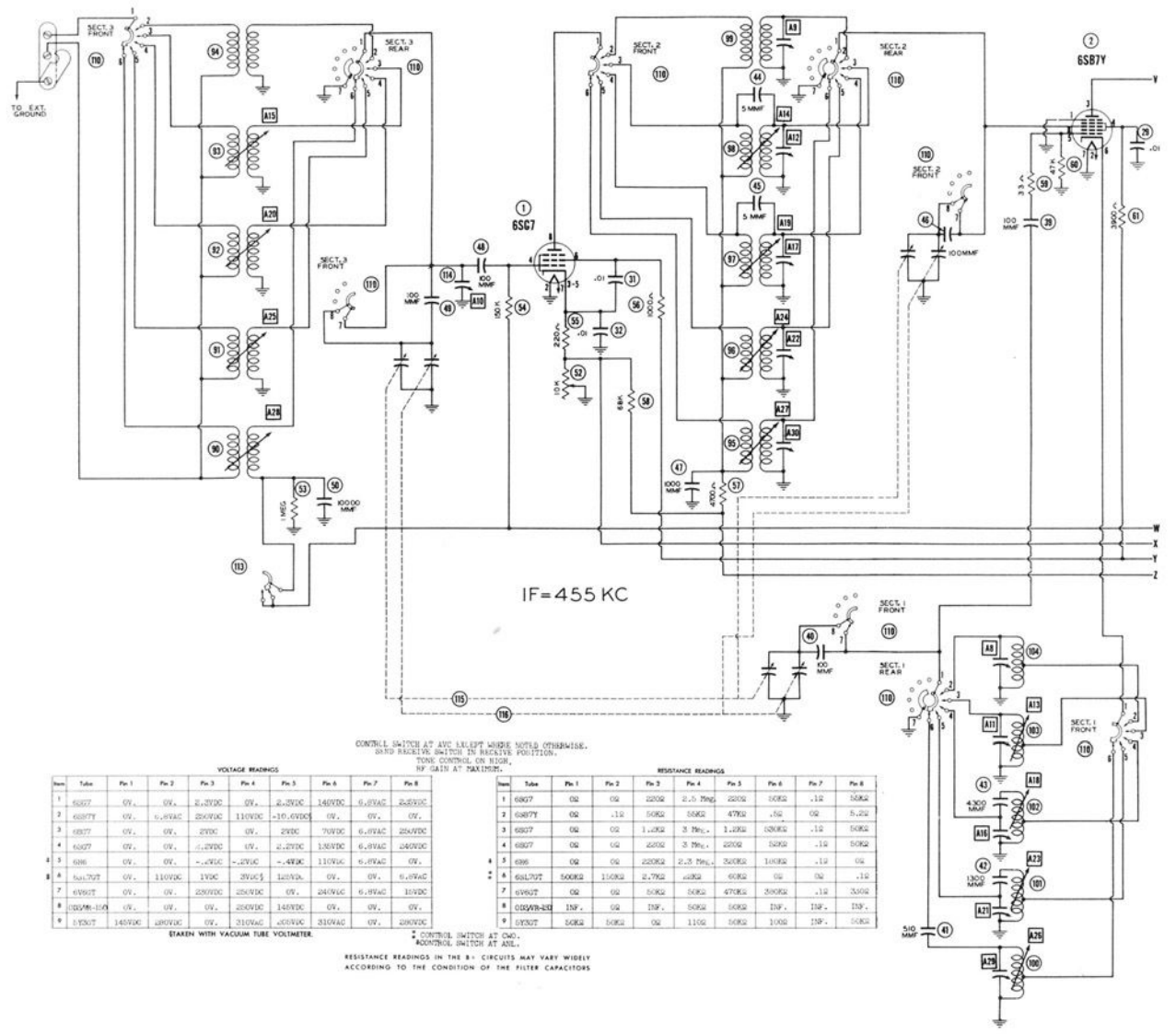
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		NATIONAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
87	4000Ω	3.4Ω	600Ω	.4Ω	NE-189	A-3850	T22S46	A-2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL PART No.	JENSEN PART No.	QUAM PART No.	
88	FIELD PM	VC IMP. 3.4Ω		ST-107 Mod. P5-V	5A15	
89	CONE DIA. 4-5/8"	VC DIA. 9/16"				





CONTROL SWITCH AT AVC EXCEPT WHERE NOTED OTHERWISE.
SAND RECEIVE SWITCH IN RECEIVE POSITION.
TONE CONTROL ON HIGH.
RF GAIN AT MAXIMUM.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	2.2VDC	0V.	2.2VDC	140VDC	6.8VAC	2.2VDC
2	6SB7Y	0V.	6.8VAC	250VDC	110VDC	-10.6VDC	0V.	0V.	0V.
3	6SB7Y	0V.	0V.	2VDC	0V.	2VDC	70VDC	6.8VAC	2VDC
4	6SG7	0V.	0V.	1.2VDC	0V.	2.2VDC	130VDC	6.8VAC	.040VDC
5	6B6	0V.	0V.	-.2VDC	-.2VDC	-.4VDC	110VDC	6.8VAC	0V.
6	6SL7GT	0V.	110VDC	1VDC	3VDC	120VDC	0V.	0V.	6.8VAC
7	6V6GT	0V.	0V.	250VDC	250VDC	0V.	240VDC	6.8VAC	10VDC
8	0D3/VR-150	0V.	0V.	0V.	250VDC	140VDC	0V.	0V.	0V.
9	5Y3GT	140VDC	280VDC	0V.	310VAC	300VDC	310VAC	0V.	280VDC

STAKEN WITH VACUUM TUBE VOLTMETER.

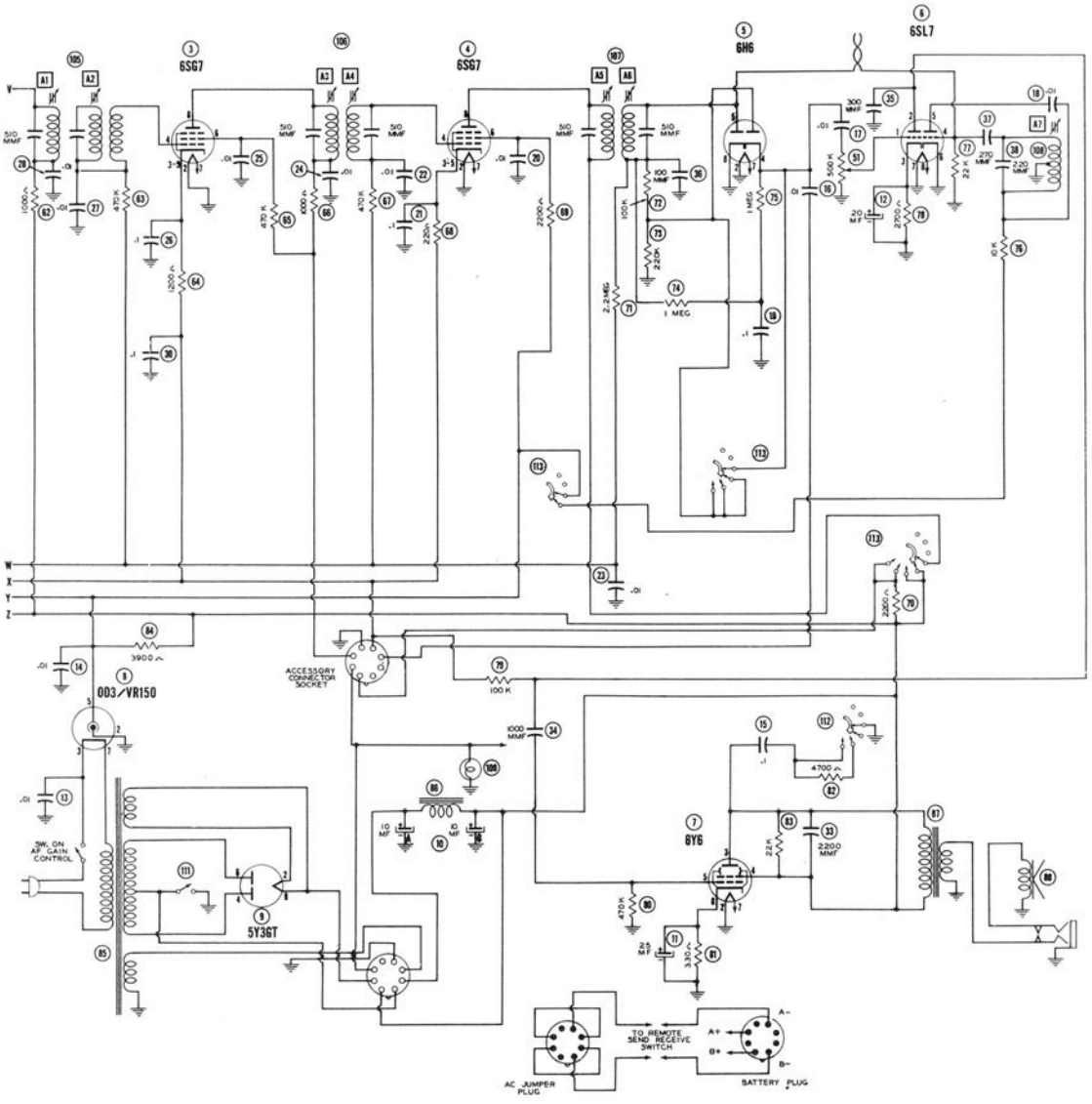
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	220Ω	2.5 Meg.	220Ω	50KΩ	.1Ω	50KΩ
2	6SB7Y	0Ω	.1Ω	50KΩ	50KΩ	47KΩ	.5Ω	0Ω	5.2Ω
3	6SG7	0Ω	0Ω	1.2KΩ	3 Meg.	1.2KΩ	50KΩ	.1Ω	50KΩ
4	6SG7	0Ω	0Ω	220Ω	3 Meg.	220Ω	50KΩ	.1Ω	50KΩ
5	6B6	0Ω	0Ω	220KΩ	2.5 Meg.	330KΩ	100KΩ	.1Ω	0Ω
6	6SL7GT	500KΩ	100KΩ	2.7KΩ	.2KΩ	60KΩ	0Ω	0Ω	.1Ω
7	6V6GT	0Ω	0Ω	50KΩ	50KΩ	470KΩ	300KΩ	.1Ω	350Ω
8	0D3/VR-150	INF.	0Ω	INF.	50KΩ	50KΩ	INF.	INF.	INF.
9	5Y3GT	50KΩ	50KΩ	0Ω	110Ω	50KΩ	100Ω	INF.	50KΩ

* CONTROL SWITCH AT CWO.
*CONTROL SWITCH AT ANL.

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 1,000 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 + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Controls should be set as follow, except where otherwise noted: Bandspread dial to "Set". Control switch to "MVC", RF Gain at maximum, Tone switch to "High", & AF Gain at "Maximum". Attenuate output of sign. gen. to just obtain an output reading. Use an insulated alignment screwdriver for all adjustments.

To set dial turn tuning cap. fully closed and loosen the set screw in coupling on tuning cap. shaft. Turn dial until last line at low frequency end of dial is under the pointer and tighten set screw.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	Direct	High side to center stator of tuning cap. Low side to chassis.	455KC	Band "E"	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output.
2	"	"	455KC (Unmodulated)	"	"	"	A7	Control switch to "CWO". Loosen set screw on collar of "Pitch" control shaft, and remove knob and shaft from cabinet. Adjust A7 for zero beat thru hole in cabinet. Replace knob with white dot at midscale. Place collar with set screw directly opposite stop and tighten making certain that position of pitch control does not change from midscale.
3	300Ω carbon res.	High side to left ant. terminal. Low side to center ant. terminal with link disconnected.	54.0MC	Band "A"	54MC	"	A8	Adjust for maximum output. Tune sig. gen. to 53.1MC. If signal is not heard retune sig. gen. to 54MC and close A8 to next peak. Adjust for maximum output and recheck for image.
4	"	"	"	"	Tune for maximum output.	"	A9,A10	Rock tuning cap. and adjust for maximum output.
5	"	"	34.0MC	Band "B"	34MC	"	A11	Adjust for maximum output. Tune sig. gen. to 33.1MC. If signal is not heard, retune sig. gen. to 34MC and close A11 to next peak. Adjust for maximum output and recheck for image.
6	"	"	"	"	Tune for maximum output.	"	A12, A10	Rock tuning cap. and adjust for maximum output.
7	"	"	12.0MC	"	12MC	"	A13, A14, A15	Adjust for maximum output. Repeat Steps 5, 6 & 7 until no further improvement can be made.
8	"	"	"	Band "C"	"	"	A16	Adjust for maximum output. Tune sig. gen. to 12.9MC. If signal is not heard, retune sig. gen. to 12MC and open A16 to next peak. Adjust for maximum output and recheck for image.
9	"	"	"	"	Tune for maximum output.	"	A17, A10	Rock tuning cap. and adjust for maximum output.
10	"	"	4.4MC	"	4.4MC	"	A18, A19, A20	Adjust for maximum output. Repeat Steps 8, 9 and 10 until no further improvement can be made.
11	"	"	"	Band "D"	"	"	A21	Adjust for maximum output. Tune sig. gen. to 5.3MC. If signal is not heard, retune sig. gen. to 4.4MC and open A21 to next peak. Adjust for maximum output and recheck for image.
12	"	"	"	"	Tune for maximum output.	"	A22, A10	Rock tuning cap. and adjust for maximum output.
13	"	"	1.6MC	"	1.6MC	"	A23	Adjust for maximum output.
14	"	"	"	"	Tune for maximum output.	"	A24, A25	Bandspread dial to "zero". Adjust A24 & A25 for maximum output. Return bandspread dial to "Set". Repeat Steps 11, 12, 13 & 14 until no further improvement can be made.
15	"	"	.6MC	Band "E"	.6MC	"	A26,A27 A28	Bandspread dial to "Zero". Adjust A26, A27 & A28 for maximum output. Return bandspread dial to "Set".
16	"	"	1.5MC	"	1.5MC	"	A29	Adjust for maximum output.
17	"	"	"	"	Tune for maximum output.	"	A30, A10	Rock tuning cap. and adjust for maximum output. Repeat Steps 15, 16 & 17 until no further improvement can be made.

STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	2X	600KC
RF GRID TO CONVERTER GRID	5X	600KC
CONVERSION GAIN	14X	IN 600KC OUT 455KC
1st IF TRANSFORMER	.4X	455KC
1st IF TUBE	30X	455KC
2nd IF TRANSFORMER	.5X	455KC
2nd IF TUBE	150X	455KC
3rd IF TRANSFORMER	.7X	455KC
AUDIO	25X	400 ∿
OUTPUT	12X	400 ∿

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. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.