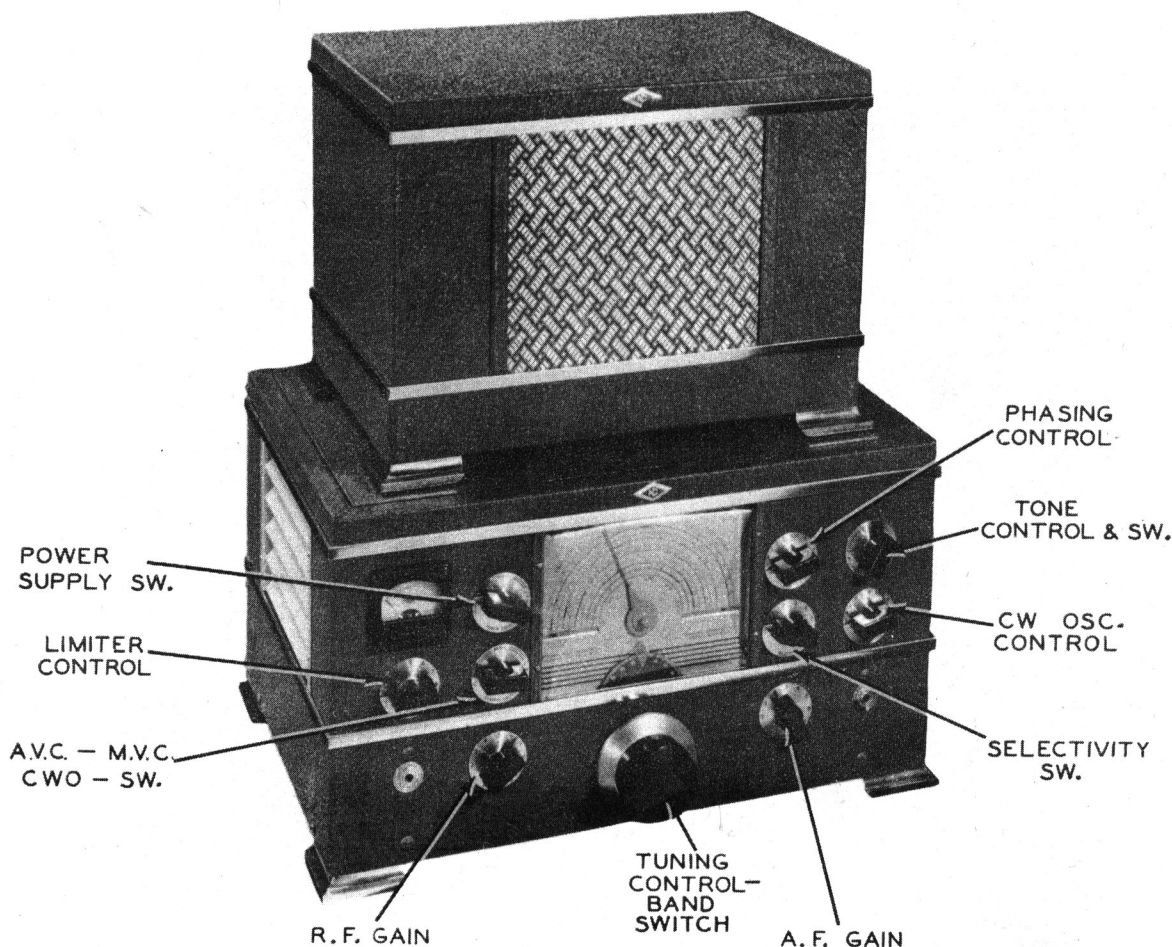


NATIONAL MODELS
NC-2-4ODR, NC-2-4ODT



NATIONAL MODELS
NC-2-4ODR, NC-2-4ODT

NATIONAL MODEL NC-2-4ODR

TRADE NAME	National, Model NC-2-4ODR, NC-2-4ODT		
MANUFACTURER	National Co., Inc., 61 Sherman St., Malden, Mass.		
TYPE SET	AC Operated Communication Six Band Superheterodyne Receiver		
TUBES (TWELVE)	Types, 6SK7 RF Amp., 6K8 Mixer, 6J5 Osc., 6K7 1st IF Amp., 6SK7 2nd IF Amp., 6SL7GT 2nd Det.-Limiter, 6SJ7 CW-Osc., 6V6GT AVC, 6SN7GT AF-Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier.		
POWER SUPPLY	110-120 Volts or 220-240 Volts AC	RATING	.75 Amp. @ 117 Volts AC
TUNING RANGE	480-1040KC, 920-2100KC, 1.68-4.05MC, 3.4-4.05MC, 3.4-7.4MC, 6.9-7.35MC, 6.65-14.6MC, 13.8-14.46MC, 13.9-31MC, 26.9-30.05MC.		

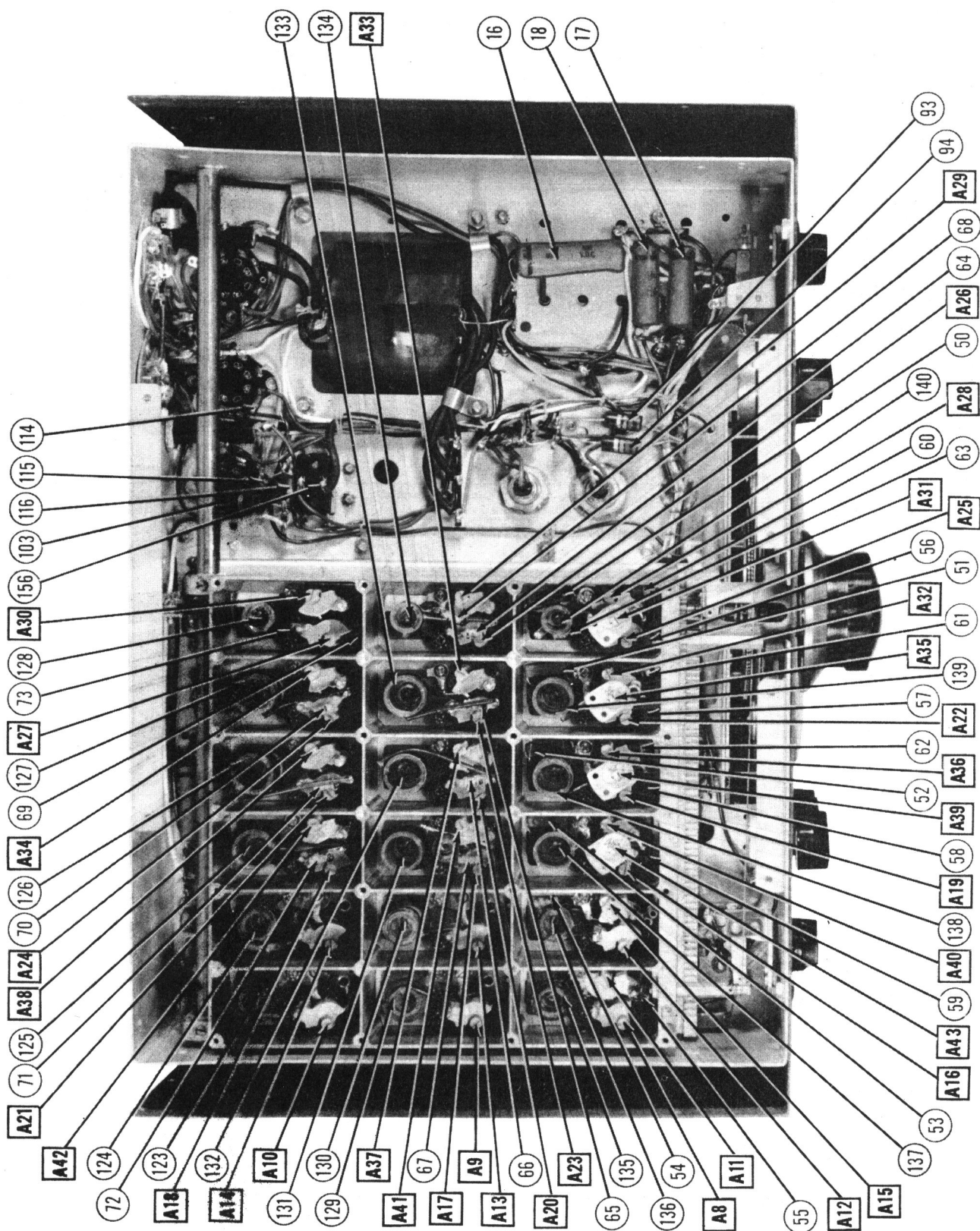
HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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DATE 5/48-#4811-16

SET #41-FOLDER #16



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		NATIONAL PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6X8	6SK7	8N	
2	Mixer	6X8	6X8	8K	
3	1st IF	6X5	6X5	6Q	
4	2nd IF	6X7	6X7	7R	
5	2nd Det.-Lim	6SK7	6SK7	8N	
6	Ch. Osc.	6SL7GT	6SL7GT	8BD	
7	AF Phase Inv.	6SU7	6SU7	7AC	
8	AF Phase Inv.	6SN7GT	6SN7GT	8BD	
9	Power Output	6V6GT	6V6GT	7AC	
10	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	REPLACEMENT DATA			IDENTIFICATION CODES AND INSTALLATION NOTES
		NATIONAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
13A	8 CAP.	01-475-8-8	KR588A	EL-1	Filter-Red
13B	8 475			MK-8	Filter-Red-White
14	40 200	GL450-40	KR530	EL-42	Bias Filter
15	10 50	PR850-10	BR105	TA-510	Inverter Cathode Bypass
16	11 600	684-1	D76P1	TC-1	Power Supply Bypass
17	11 600	684-1	ST-6-1	TC-1	Audio Coupling
18	11 400	484-1	D74P1	TC-1	"
19	11 400	484-1	ST-4-1	TC-1	"
20	11 400	484-1	ST-4-1	TC-1	Bias Network
21	11 400	484-1	D74P1	TC-1	AVC Filter
22	11 400	484-1	ST-4-1	TC-1	Ch. Osc.
23	11 400	484-1	D74P1	TC-1	Screen Bypass
24	11 400	484-1	ST-4-1	TC-1	Audio Coupling
25	11 400	484-1	D74P1	TC-1	Tone Coupling
26	11 400	484-1	ST-6-01	TC-1	Audio Coupling
27	11 400	484-1	D76S1	TC-1	Test Plate Bypass
28	11 400	484-1	ST-6-01	TC-1	2nd IF Plate Decoupling
29	11 400	484-1	D74P1	TC-1	Screen Bypass
30	11 400	484-1	ST-4-1	TC-1	2nd IF Cathode Bypass
31	11 400	484-1	ST-6-01	TC-1	AVC Filter
32	11 400	484-1	D76S1	TC-1	1st IF Plate Decoupling
33	11 400	484-1	ST-4-1	TC-1	1st IF Cathode Bypass
34	11 400	484-1	D74P1	TC-1	AVC Filter
35	11 400	484-1	ST-6-01	TC-1	Conv. Plate Decoupling
36	11 400	484-1	D76S1	TC-1	Conv. Cathode Bypass
37	11 400	484-1	ST-4-1	TC-1	RF Plate Decoupling
38	11 400	484-1	D74P1	TC-1	Screen Bypass
39	11 400	484-1	ST-4-1	TC-1	RF Cathode Bypass
40	11 400	484-1	D74P1	TC-1	AVC Filter
41	11 400	484-1	ST-4-1	TC-1	AVC Filter
42	1000 500	1463-101	M4 5-21	1M-21	AVC Filter
43	250 500	1463-00025	M0 5-325	1M-235	AVC Filter
44	1000 500	1467-001	M4 5-21	1M-21	AVC Filter
45	250 500	1463-00025	M0 5-325	1M-235	AVC Filter
46	1000 500	1468-001	M4 5-21	1M-21	AVC Filter
47	250 500	1463-00025	M0 5-325	1M-235	AVC Filter
48	250 500	1463-00025	M0 5-325	1M-235	AVC Filter
49	5000 300	1467-005	M4 5-25	1M-25	AVC Filter
50	750 500				AVC Filter
51	3000 500				AVC Filter
52	1700 500				AVC Filter
53	900 500				AVC Filter
54	1500 500				AVC Filter
55	250 500				AVC Filter
56	250 500				AVC Filter
57	12 500				AVC Filter
58	18 500				AVC Filter
59	35 500				AVC Filter
60	10 500				AVC Filter
61	10 500				AVC Filter
62	10 500				AVC Filter
63	29 500				AVC Filter
64	38 500				AVC Filter

ITEM No.	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0.000-0.0)	REPLACEMENT DATA			INSTALLATION NOTES
				NATIONAL PART No.	STANCO PART No.	THORNTON PART No.	
118	0.093A	280Ω	12.5 H		C-2305*	T20054*	*Drill new mounting holes.
119	0.093A	280Ω	12.5 H		C-2305*	T20054*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	IMPEDANCE	RATING	REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL PART No.	STANCO PART No.	THORNTON PART No.	
120	9600Ω	7.5A 480V		A-3831	T-22856	A-2901

SPEAKER

ITEM No.	FIELD	VC IMP.	REPLACEMENT DATA			INSTALLATION NOTES
			NATIONAL PART No.	JENSEN PART No.	QUAM PART No.	
121	PM	7.5Ω		ST-120	1046	
122	9-3/4"	7/8"		Mod. P10-S		

R F COILS

ITEM No.	USE	BAND	DC RES.		REPLACEMENT DATA	INSTALLATION NOTES
			PRI.	SEC.	NATIONAL PART No.	
123	Ant. Coil	F	7Ω	3.4Ω		
124	"	E	1.6Ω	.7Ω		
125	"	D	.3Ω	.3Ω		
126	"	C	.3Ω	.2Ω		
127	"	B	.2Ω	.2Ω		
128	"	A	.1Ω	.1Ω		
129	RF Coil	F	32.2Ω	2.9Ω		
130	"	E	14.4Ω	1.4Ω		
131	"	D	7.7Ω	.3Ω		
132	"	C	2.9Ω	.2Ω		
133	"	B	2.9Ω	.2Ω		
134	"	A	.2Ω	.1Ω		
135	Osc. Coil	F	1.2Ω	1.4Ω		
136	"	E	.7Ω	1.3Ω		
137	"	D	.3Ω	.2Ω		
138	"	C	.3Ω	.2Ω		
139	"	B	.6Ω	1.2Ω		
140	"	A	12.3Ω	9.5Ω		
141	Input IF	F	7.8Ω	7.8Ω		
142	Inter. IF	F	7.8Ω	7.8Ω		
143	Output IF	F	7.8Ω	7.8Ω		
144	Osc. Trans	F	1.2Ω	1.2Ω		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					NATIONAL PART No.	THORNTON PART No.	
145	Screw	6-8	0.15	Brown	No. 40		Type 40
146-147	Bayonet	6-8	0.15	Brown	No. 47		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	NATIONAL PART No.	NOTES
148	Switch		On-Off
149	"		B* On-Off
150	"		AVC-MVC-CMO
151	"		Selectivity
152	"		Band
153	Fuse		2 Amp.
154	"		1 Amp.
155	3 Gang Var. Cap.		(31-280MPP) each section
156	Switch		Line voltage (110-120V to 220-240V)

CHASSIS—TOP VIEW

"B"	"	"	"	"
"C"	"	"	"	"
"D"	"	"	"	"
"A"	"	"	"	"
"A"	"	"	"	"
"B"	"	"	"	"
"C"	"	"	"	"
"D"	"	"	"	"
"A"	"	"	"	"

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESIST-ANCE	WATTS	NATIONAL PART No.	IRC PART No.	CAROSTAT PART No.	
74A	500KΩ	$\frac{1}{2}$				
B	Shaft					
75	10KΩ	$1\frac{1}{2}$				
76	10KΩ	$1\frac{1}{2}$				
77A	500KΩ	$\frac{1}{2}$				
B	Shaft					
C	Switch					

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	NATIONAL PART No.	IRC PART No.	
78	1-5 Meg.	1/2	BTS-1.5 Meg.	BTS-470K	Br.-Grn.-Grn. AVC Network
79	470KΩ	1/2	BTS-470K	Y1-V1.-Y1.	Y1-V1.-Y1. AVC Cathode
80	470Ω	1/2	BTS-470	Y1-V1.-Br.	Voltage Dropping
81	47KΩ	1/2	BTS-47K	Red-Red-Br.	Converter Cathode
82	220Ω	1/2	BW-2-220	BTS-47K	Converter Screen Dropping
83	47KΩ	1/2	BTS-47K	Y1-V1.-Or.	Converter Screen Dropping
84	100KΩ	1/2	BTS-100K	Br.-Blk.-Y1.	Bleeder
85	2200Ω	1/2	BTS-2200	Red-Red-Red	Decoupling
86	47KΩ	1/2	BTA-47K	Y1-V1.-Or.	Voltage Dropping
87	47KΩ	1/2	BTS-47K	Y1-V1.-Or.	Converter Grid
88	22KΩ	1/2	BTS-22K	Red-Red-Or.	AVC Network
89	1500Ω	1/2	BTS-2200	Br.-Grn.-Red 1st IF Cathode-See Note	
90	2200Ω	1/2	BTS-470K	Red-Red-Red 1st IF Decoupling	
91	470KΩ	1/2	BTS-470K	Y1-V1.-Y1.	AVC Network
92	100KΩ	1/2	BTS-100K	Br.-Blk.-Red 2nd IF Cathode-See Note	
93	22KΩ	1/2	BTS-22K	Red-Red-Or.	Bleeder
94	22KΩ	1/2	BTS-22K	Red-Red-Or.	Voltage Dropping
95	1000Ω	1/2	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling	
96	2200Ω	1/2	BTS-2200	Red-Red-Red Detector Plate Decoupling	
97	4700Ω	1/2	BTS-4700	Y1-V1.-Red	Detector Cathode
98	22KΩ	1/2	BTS-22K	Red-Red-Or.	Detector Output Load
99	100KΩ	1/2	BTS-100K	Br.-Blk.-Y1.	Limiter Cathode
100	47KΩ	1/2	BTS-47K	Y1-V1.-Or.	Limiter Grid
101	220KΩ	1/2	BTS-220K	Red-Red-Y1.	BFO Plate Load
102	100KΩ	1/2	BTS-100K	Br.-Blk.-Y1.	BFO Screen Dropping
103	220Ω	1/2	BW-2-220	Red-Red-Br.	Output Cathode
104	100KΩ	1/2	BTS-100K	Br.-Blk.-Y1.	Bleeder
105	470KΩ	1/2	BTS-470K	Y1-V1.-Y1.	AVC Network
106	15KΩ	1/2	BTS-15K	Br.-Grn.-Or.	
107	2700Ω	1/2	BT-2-2700	Red-V1.-Red Bias Network	
108	820Ω	1/2	BT-2-820	Gray-Red-Br.	
109	1 Meg.	1/2	BTS-1 Meg.	Br.-Blk.-Grn.	
110	47KΩ	1/2	BTS-47KΩ	Y1-V1.-Or.	AF Plate Load
111	1000Ω	1/2	BTS-1000	Br.-Blk.-Red AF Cathode	
112	47KΩ	1/2	BTS-47K	Y1-V1.-Or.	Phase Inverter
113	470KΩ	1/2	BTS-470K	Y1-V1.-Y1.	Phase Inverter Grid
114	220KΩ	1/2	BTS-220K	Red-Red-Y1.	Output Grid
115	220KΩ	1/2	BTS-220K	Red-Red-Y1.	
116	220KΩ	1/2	BTS-220K	Red-Red-Y1.	

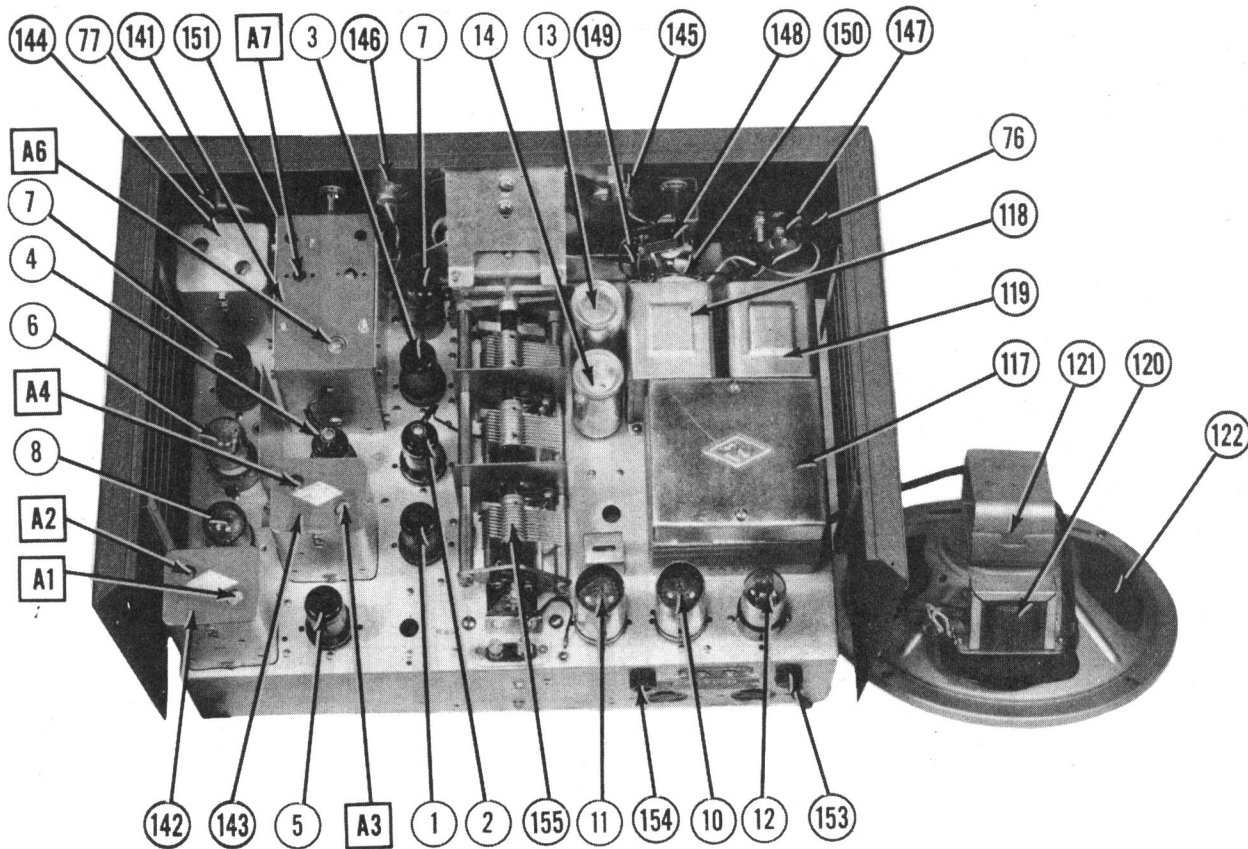
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI	SEC 1	SEC 2	SEC 3	NATIONAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
117	117 AC 800V CT 5.0V AC 8.4V AC ③ 75A ② .093A ① 2.0A ④ 4.7A					P-6165#		
	20V AC							

#This replacement for 117V AC only.

116	220KΩ	2	BTS-220K	REQ-REQ-11.
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Note-This resistor is selected individually for each receiver and should be replaced according





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SK7	OV.	64VAC	2.2VDC	OV.	2.2VDC	60VDC	OV.	200VDC	-
2	6K8	OV.	OV.	197VDC	47VDC	-8VDC§	OV.	6.4VAC	.5VDC	OV.
3	6J5	OV.	OV.	72VDC	117VDC	-8VDC§	OV.	6.4VAC	OV.	-
4	6K7	OV.	OV.	190VDC	60VDC	3.2VDC	OV.	6.4VAC	3.2VDC	OV.
5	6SK7	OV.	OV.	3VDC	OV.	3VDC	60VDC	6.4VAC	190VDC	-
6	6SL7GT	-52VDC	200VDC	-47VDC	-.2VDC	OV.	.3VDC	6.4VAC	OV.	-
7	6SJ7	OV.	OV.	OV.	-3VDC§	OV.	15VDC	6.4VAC	50VDC	-
8	6V6GT	OV.	OV.	OV.	OV.	-25VDC	OV.	6.4VAC	-35VDC	-
9	6SN7GT	OV.	110VDC	4VDC	OV.	90VDC	4VDC	6.4VAC	OV.	-
10	6V6GT	OV.	OV.	182VDC	190VDC	-60VDC§	OV.	6.4VAC	-48VDC	-
11	6V6GT	OV.	OV.	182VDC	190VDC	-60VDC§	-5.5VDC	6.4VAC	-48VDC	-
12	5Y3GT	OV.	240VDC	OV.	400VAC	OV.	400VAC	OV.	240VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SK7	0Ω	.1Ω	470Ω	1 Meg.	470Ω	13KΩ	0Ω	30KΩ	-
2	6K8	0Ω	0Ω	32KΩ	50KΩ	47KΩ	0Ω	.1Ω	240Ω	1.4Ω
3	6J5	0Ω	0Ω	80KΩ	80KΩ	47KΩ	INF.	.1Ω	0Ω	-
4	6K7	0Ω	0Ω	32KΩ	13KΩ	1.5KΩ	0Ω	.1Ω	1.5KΩ	520KΩ
5	6SK7	0Ω	0Ω	1KΩ	1 Meg.	1KΩ	13KΩ	.1Ω	31KΩ	-
6	6SL7GT	3KΩ	30KΩ	30KΩ	47KΩ	0Ω	100KΩ	.1Ω	0Ω	-
7	6SJ7	0Ω	0Ω	0Ω	47KΩ	.2Ω	85KΩ	.1Ω	110KΩ	-
8	6V6GT	0Ω	0Ω	15KΩ	0Ω	1.2 Meg.	15KΩ	.1Ω	2.7KΩ	-
9	6SN7GT	500KΩ	80KΩ	1KΩ	470KΩ	80KΩ	1KΩ	.1Ω	0Ω	-
10	6V6GT	0Ω	0Ω	30KΩ	30KΩ	480KΩ	INF.	.1Ω	2.9KΩ	-
1	6V6GT	0Ω	0Ω	30KΩ	30KΩ	480KΩ	250KΩ	.1Ω	2.9KΩ	-
2	5Y3GT	INF.	30KΩ	INF.	3KΩ	INF.	3KΩ	INF.	30KΩ	-

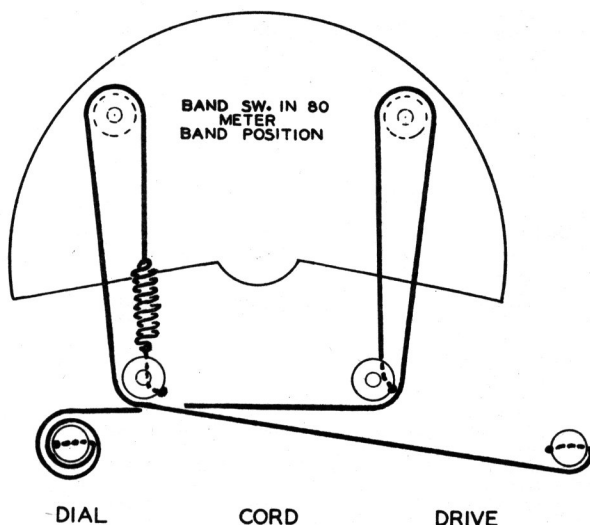
LIMITER CONTROL ON FULL, RF GAIN ON FULL, B+ ON, AF GAIN ON FULL, SELECTIVITY AT #5, TONE CONTROL AT LOW.

TUBES 10, 11 & 12, VOLTAGE AND RESISTANCE READINGS TAKEN IN 10 METER BAND.
*AVC-MVC-CWO SWITCH IN CWO POSITION.

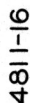
TUBES 1 through 9, VOLTAGE AND RESISTANCE READINGS TAKEN IN BAND E.

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

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



ANTENNA TO RF GRID	14X	600KC
RF GRID TO CONV. GRID	1.5X	600KC
CONVERSION GAIN	25X	IN 600KC OUT 455KC $\pm$ 2%
1st IF TRANSFORMER	.1X	455KC $\pm$ 2%
1st IF TUBE	100X	455KC $\pm$ 2%
2nd IF TRANSFORMER	.6X	455KC $\pm$ 2%
2nd IF TUBE	45X	455KC $\pm$ 2%
3rd IF TRANSFORMER	.3X	455KC $\pm$ 2%
AUDIO	30X	400 $\sim$
OUTPUT	20X	400 $\sim$



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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The stage gain measured values listed above approximate values for an average measurement 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 cementing, pressures, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

ALIGNMENT INSTRUCTIONS - READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

RMA Dummy consists of 200 MFDD cap. In series with 20 microhenry choke with choke shunted by 400 MFDD cap. In series with 400Ω carbon resistor.
 Use 400Ω amp. modulated signal in all Steps of RF Alignment.
 In Steps 4, 7, 10, 12, 14 and 16 it is necessary for correct alignment that the oscillator work above the incoming signal. To check this tune signal generator 910KC above the dial reading of receiver. If image signal is not heard, retune signal generator to original frequency and open oscillator trimmer to next peak. Adjust for maximum output and recheck for image.
 RF Gain control and AF Gain control should be at maximum (setting at 10) and output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for all adjustments.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1 Direct	High side to grid cap. 6K8. Low side to chassis.	Tune for maximum output between 453 & 457KC (unmodulated signal)	F	Tuning cap. fully open.	Across voice coil	A1, A2, A3, A4, A5.	Limiter control should be set at "0" power. supply switch to "ON". control switch to "ON". RF gain control to "10". AF gain control to "10". selectivity control to "5". phasing control to "0". tune control to "0". Adjust CW osc. for Beat note about 400 C. After sig. gen. is tuned to maximum output, adjust A1, A2, A3, A4 & A5 for maximum output. Use minimum signal input in order to avoid overloading.
2 Direct	"	See Remarks.	"	"	"	A6	Set selectivity switch to "1". Detune signal gen. 3 or 4 KC. Adjust A6 for maximum output. Retune sig. gen. for maximum output. (Setting of Step 1).
3 Direct	"	"	"	"	"	A7	Set selectivity switch to "Off". Tune for maximum output and adjust A7 for maximum output. Turn phasing control to 0, selectivity switch to "5" and tune sig. gen. for maximum output. Note meter reading. Turn selectivity switch to "Off". Meter reading should decrease slightly. If an increase is noted Steps 1, 2 & 3 should be repeated as this is an indication of improper IF adjustment.
4 RMA Dummy	High side to ext. ant. post. Low side to chassis.	1.0MC (400Ω amp. mod.)	"	1.0MC	"	A8	Set control switch "MVC" to selectivity switch to "Off". Adjust A8 for maximum output. Check for image per prealignment instructions.
5 "	"	"	"	Tune for maximum output.	"	A9, A10	Adjust for maximum output
6 "	"	500KC	"	500KC	"	A11	Adjust for maximum output Repeat Steps 4, 5 & 6 until no further improvement can be made.
7 "	"	2.0MC	E	2.0MC	"	A12	Adjust for maximum output. Check for image per prealignment instructions.
8 "	"	"	"	Tune for maximum output.	"	A13, A14	Adjust for maximum output
9 "	"	1.0MC	"	1.0MC	"	A15	Adjust for maximum output Repeat Steps 7, 8 & 9 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
10 "	"	4.0MC	D	4.0MC	"	A16	Adjust for maximum output. Check for image per prealignment instructions.
11 "	"	"	"	Tune for maximum output.	"	A17, A18	Adjust for maximum output
12 "	"	7.2MC	C	7.2MC	"	A19	Adjust for maximum output. Check for image per prealignment notes.
13 "	"	"	"	Tune for maximum output.	"	A20, A21	Rock tuning cap. and adjust for maximum output.
14 "	"	14.0MC	B	14.0MC	"	A22	Adjust for maximum output. Check for image per prealignment notes.
15 "	"	"	"	Tune for maximum output.	"	A23, A24	Rock tuning cap. and adjust for maximum output.
16 "	"	30.0MC	A	30.0MC	"	A25	Adjust for maximum output. Check for image per prealignment notes.
17 "	"	"	"	Tune for maximum output.	"	A26, A27	Rock tuning cap. and adjust for maximum output.
18 "	"	30.0MC	"	30.0MC	"	A28	Adjust for maximum output. Check for image per prealignment notes.
19 "	"	"	"	Tune for maximum output.	"	A29, A30	Rock tuning cap. and adjust for maximum output.
20 "	"	27.0MC	"	27.0MC	"	A31	Adjust for maximum output. Repeat Steps 19, 19 & 20 until no further improvement can be made.
21 "	"	14.4MC	"	14.4MC	"	A32	Adjust for maximum output. Check for image per prealignment notes.
22 "	"	14.4MC	"	Tune for maximum output.	"	A33, A34	Rock tuning cap. and adjust for maximum output.
23 "	"	14.0MC	"	14.0MC	"	A35	Adjust for maximum output. Repeat Steps 21, 22 & 23 until no further improvement can be made.
24 "	"	7.3MC	"	7.3MC	"	A36	Adjust for maximum output. Check for image per prealignment notes.
25 "	"	7.3MC	"	Tune for maximum output.	"	A37, A38	Rock tuning cap. and adjust for maximum output.
26 "	"	7.0MC	"	7.0MC	"	A39	Adjust for maximum output. Repeat Steps 24, 25 & 26 until no further improvement can be made.
27 "	"	4.0MC	"	4.0MC	"	A40	Adjust for maximum output. Check for image per prealignment notes.
28 "	"	"	"	Tune for maximum output.	"	A41, A42	Rock tuning cap. and adjust for maximum output.
29 "	"	3.5MC	"	3.5MC	"	A43	Adjust for maximum output. Repeat Steps 27, 28 & 29 until no further improvement can be made.