

# ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE									
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120 $\mu$ sawtooth voltage in scope for horizontal deflection.									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS	ADJUST	REMARKS
7	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	10.7 MC (Freq. Mod)	FM	Tuning cap. fully open.	Across voice coil	A1, A2	Adjust for maximum output.	A1, A2	Adjust for maximum output.
8	.01MFD High side to pin 7 (Grid) of 6BE6. Low side to chassis.	10.7 MC (Freq. Mod)	"	"	"	A3, A4	Adjust for maximum output.	"	"
9	.01MFD High side to terminal AM ant. Low side to chassis.	1720 KC	"	"	"	A5	Adjust for maximum output.	"	"
10	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	535 KC	"	Tuning cap. fully closed.	"	A6	Adjust for maximum output. Repeat steps 3 and 4.	"	"
11	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	1500 KC	"	Tune for maximum output.	"	A7, A8	Adjust for maximum output.	"	"
12	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	800 KC	"	"	"	A9, A10	Adjust for maximum output. Repeat steps 5 & 6 until no further improvement can be made.	"	"
FM IF ALIGNMENT USING AM SIGNAL GENERATOR VTM AND OUTPUT METER									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS	ADJUST	REMARKS
13	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	10.7 MC (Unmod.)	FM	Tuning cap. fully open.	D.C. Probe to point B.	A11	Adjust for maximum deflection.	"	"
14	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	10.7 MC (Unmod.)	"	"	D.C. Probe to point B.	A12	Adjust for zero deflection. Tune signal generator above and below 10.7 MC and note reading on VTM. If these two readings are not equal, adjust A11 until they are equal.	"	"
15	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	10.7 MC (400 mod. @ 30%)	FM	Tuning cap. fully open.	Across voice coil	A13, A14	Solder a 10000 carbon resistor across primary of radio detector transformer (158). Adjust A13 & A14 for maximum output.	"	"
16	.01MFD High side to pin 4 (Grid) of 6S7. Low side to chassis.	10.7 MC (400 mod. @ 30%)	"	"	"	A15, A16	Adjust for maximum output. Remove 10000 shunting resistor. Continue with FM-IF alignment in step 11.	"	"

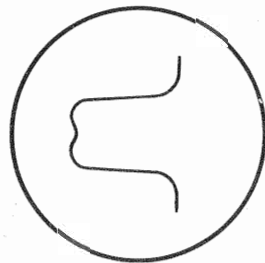


FIG. 1

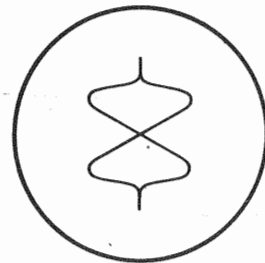
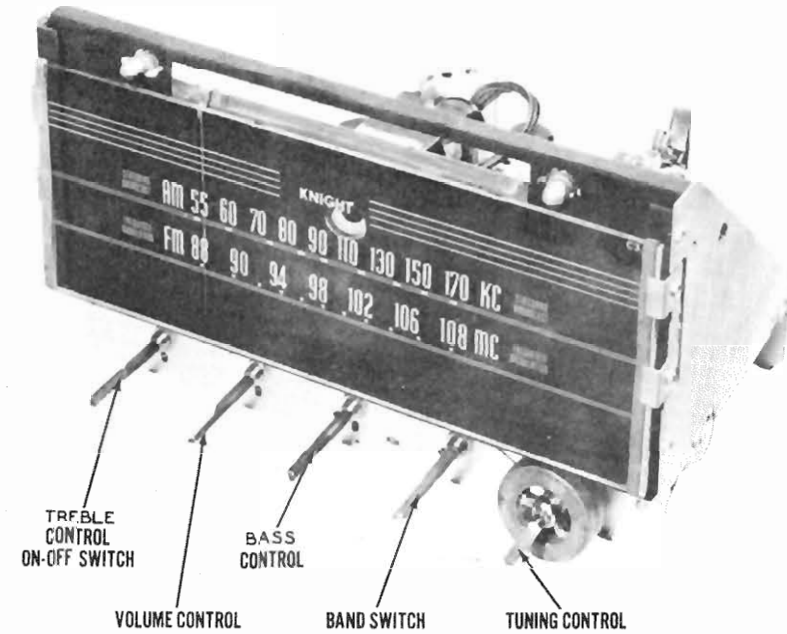


FIG. 2

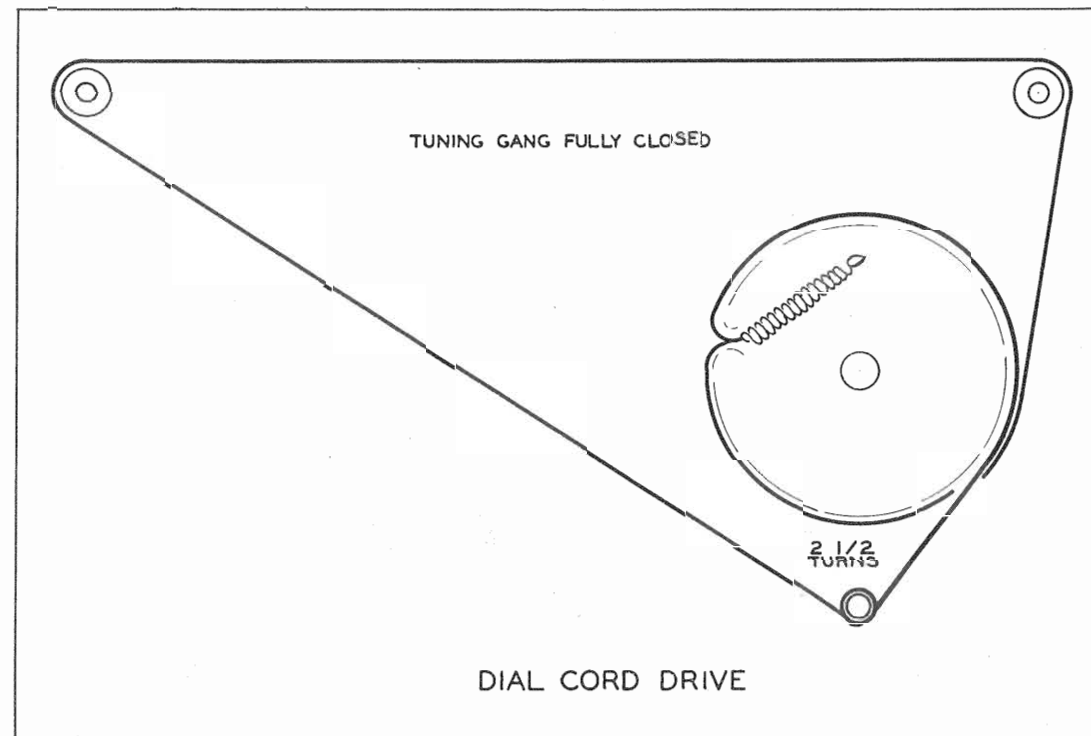
## PHOTOFACT\* Folder

## KNIGHT MODELS 19F492, 19F497, 19F498



Model 19F497

TRADE NAME Knight, Models 19F492, 19F497, 19F498  
 SUPPLIER Allied Radio Corp., 833 West Jackson Blvd., Chicago 7, Illinois  
 TYPE SET AC Operated AM-FM Superheterodyne Receiver with Loop Antenna  
 TUBES (NINETEEN) Types 6BA6 FM RF Amp., 6BA6 AM RF Amp., 6C4 FM Osc., 6BE6 AM Converter, 6SG7 1st IF Amp., 6SH7 FM 2nd IF Amp., 6AL5 FM Det., 6J5 AM-DET-AVC, 6SQ7 AF Amp., 6U5/6G5 Tuning Indicator, 6J5 AF Amp., 6J5 Phase Inverter (4)  
 6V6GT Power Output, (2) 5Y3GT Rectifier.  
 POWER SUPPLY 105-125 Volts AC  
 TUNING RANGE—BROADCAST 535-1720 KC  
 RATING 1.25 Amp. @ 117 Volts AC  
 FREQ. MOD. 88-108 MC

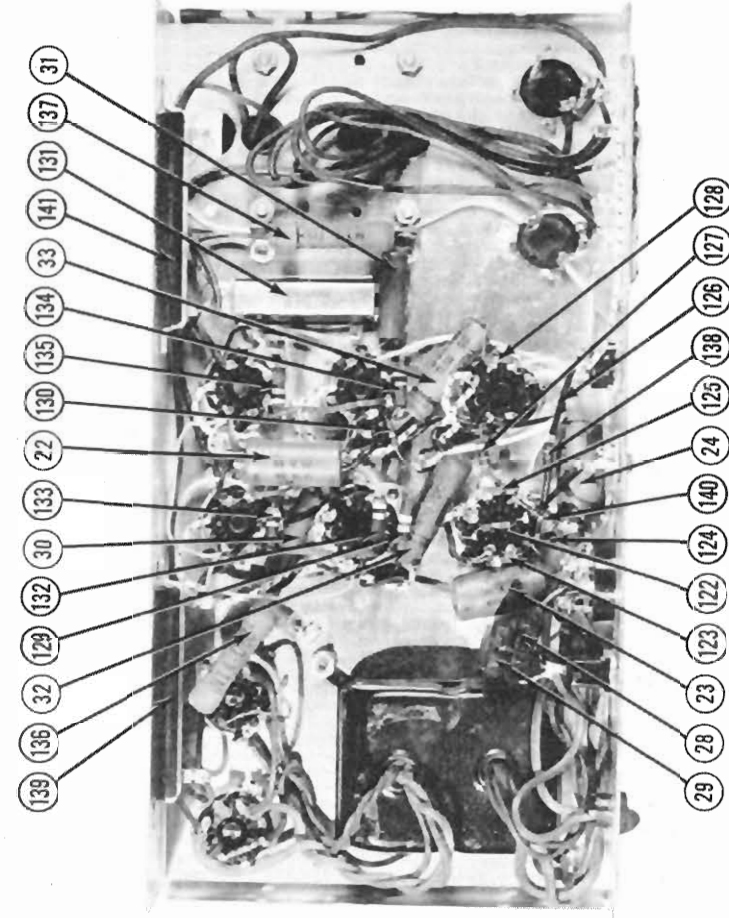
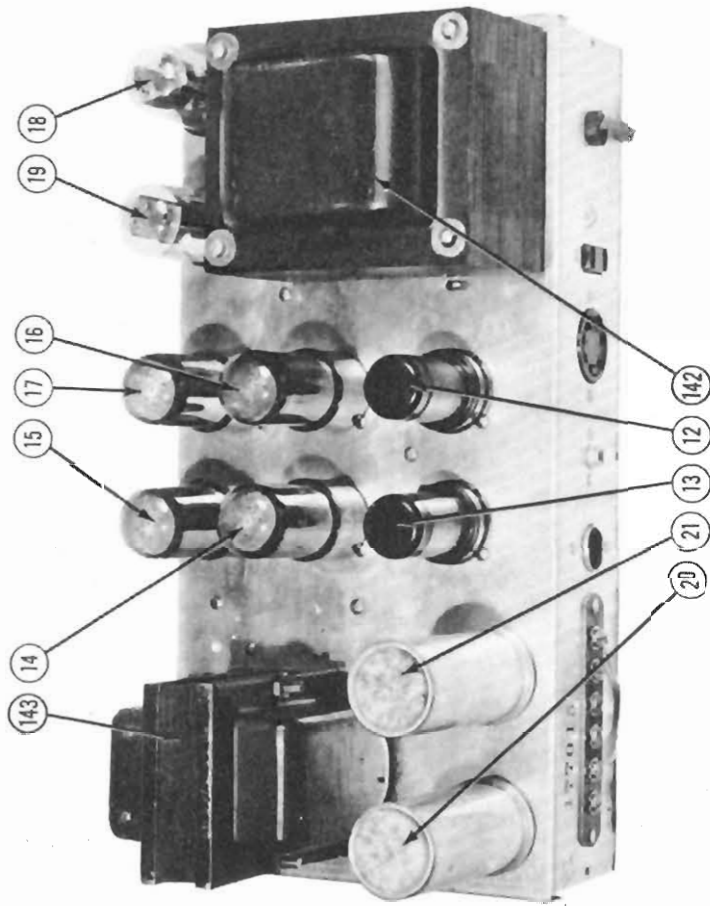


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 DATE 3/49 496-11 SET #58 FOLDER #11

## KNIGHT MODELS 19F492, 19F497, 19F498



ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT									
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial. Attenuate output of signal generator to maintain output meter reading of .5 watt.									
AM ALIGNMENT									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS		
1	.01MFD High side to pin 4 (Grid) of 6857. Low side to chassis.	455KC	AM (Clockwise)	Tuning cap. fully open.	Across voice coil	A1, A2	Adjust for maximum output.		
2	.05MFD High side to front AM stat. of tuning cap. Low side to chassis.	455KC	"	"	"	A3, A4	Adjust for maximum output.		
3	.50MFD High side to external AM ant. terminal. Low side to chassis.	1720KC	"	"	"	A5	Adjust for maximum output.		
4	.50MFD " " " " " "	535KC	"	Tuning cap. fully closed	"	A6	Adjust for maximum output. Repeat steps 3 and 4.		
5	.50MFD " " " " " "	1500KC	"	Tune for maximum output	"	A7, A8	Adjust for maximum output.		
6	.50MFD " " " " " "	600KC	"	"	"	A9, A10	Adjust for maximum output. Repeat steps 5 & 6 until no further improvement can be made.		
FM IF ALIGNMENT USING AM SIGNAL GENERATOR VTA AND OUTPUT METER									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECTION	ADJUST	REMARKS		
7	.01MFD High side to pin 4 (Grid) of 6857. Low side to chassis.	10.7 MC (Unmod.)	FM	Tuning cap. fully open.	D.C. Probe to point B.	A11	Adjust for maximum deflection.		
8	.01MFD " " " " " "	10.7 MC (Unmod.)	"	"	D.C. Probe to point B.	A12	Adjust for zero deflection. Tune signal generator above and below 10.7 MC and note reading on VTVM. If these two readings are not equal, adjust A11 until they are equal.		
9	.01MFD High side to pin 4 (Grid) of 6857. Low side to chassis.	10.7 MC (400 mod. @ 30%)	FM	Tuning cap. fully open.	Across voice coil	A13, A14	Solder a 1000Ω carbon resistor across primary of ratio detector transformer (188). Adjust A13 & A14 for maximum output.		
10	.01MFD High side to front FM stat. cap. Low side to chassis.	10.7 MC (400 mod. @ 30%)	"	"	"	A15, A16	Adjust for maximum output. Remove 1000Ω shunt-py resistor. Continue with FM-RF alignment in step 11.		

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE									
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120 V. sawtooth voltage in scope for horizontal deflection.									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECTION	ADJUST	REMARKS		
.01MFD	High side to pin 4 (Grid) of 6857. Low side to chassis.	10.7 MC (Freq. Mod)	FM	Tuning cap. fully open.	Vertical input to point B. Ground to chassis.	A11, A13, A14	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.		
.01MFD	High side to pin 7 (Grid) of 6857. Low side to chassis.	10.7 MC (Freq. Mod)	"	"	"	A15, A16	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.		
.01MFD	" " " " " "	10.7 MC (Freq. Mod)	"	"	Vertical input to point B. Ground to chassis.	A12	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per Fig. 2. Continue with FM-RF alignment in step 11.		
FM RF ALIGNMENT									
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECTION	ADJUST	REMARKS		
270Ω Carbon resistor	High side to FM ant. terminal A2. Low side to chassis.	108.5 MC (Unmod.)	FM	Tuning cap. fully open.	D.C. Probe to point B.	A17	Adjust for maximum deflection.		
270Ω Carbon resistor	" " " " " "	87.5 MC (Unmod.)	"	Tuning cap. fully closed	"	FM Osc. coil (153)	Expand or compress coil slightly for maximum deflection. Repeat steps 11 & 12 until no further improvement can be made.		
270Ω Carbon resistor	" " " " " "	108 MC (Unmod.)	"	Tune for maximum deflection.	"	A18, A19	Rock tuning cap. and adjust for maximum deflection.		
270Ω Carbon resistor	" " " " " "	88 MC (Unmod.)	"	"	"	FM RF coil (151) & FM ant. (149)	Expand or compress coil slightly for maximum deflection. Repeat steps 13 & 14 until no further improvement can be made.		

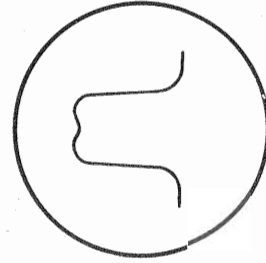


FIG. 1

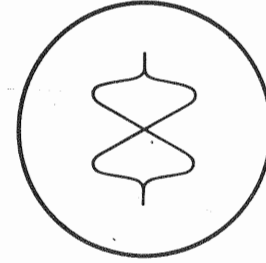
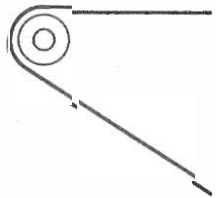


FIG. 2

TRADE NAME Knight,  
SUPPLIER Allied I  
TYPE SET AC Oper  
TUBES (NINETEEN) Type  
Convert  
6837 AF  
6V6GT P  
POWER SUPPLY 105-1  
TUNING RANGE—BROADC

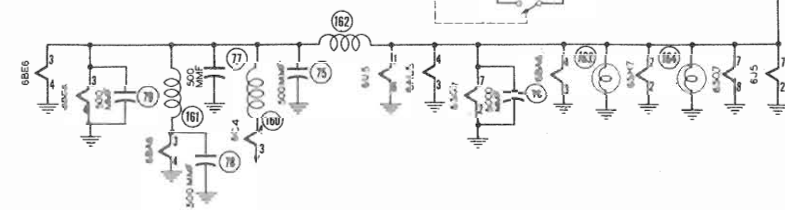
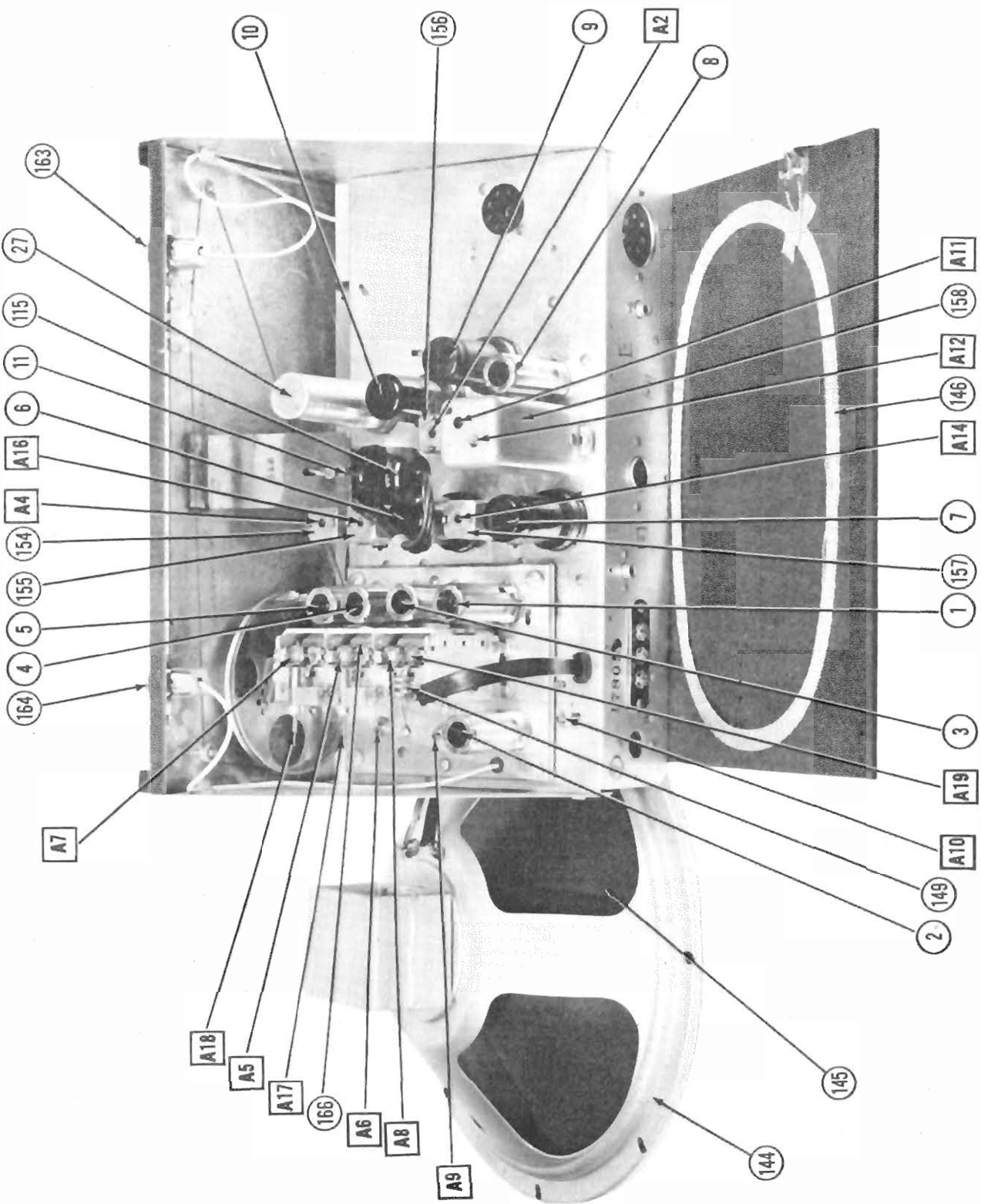


TREBLE  
CONTROL  
ON-OFF SWITCH

HOW

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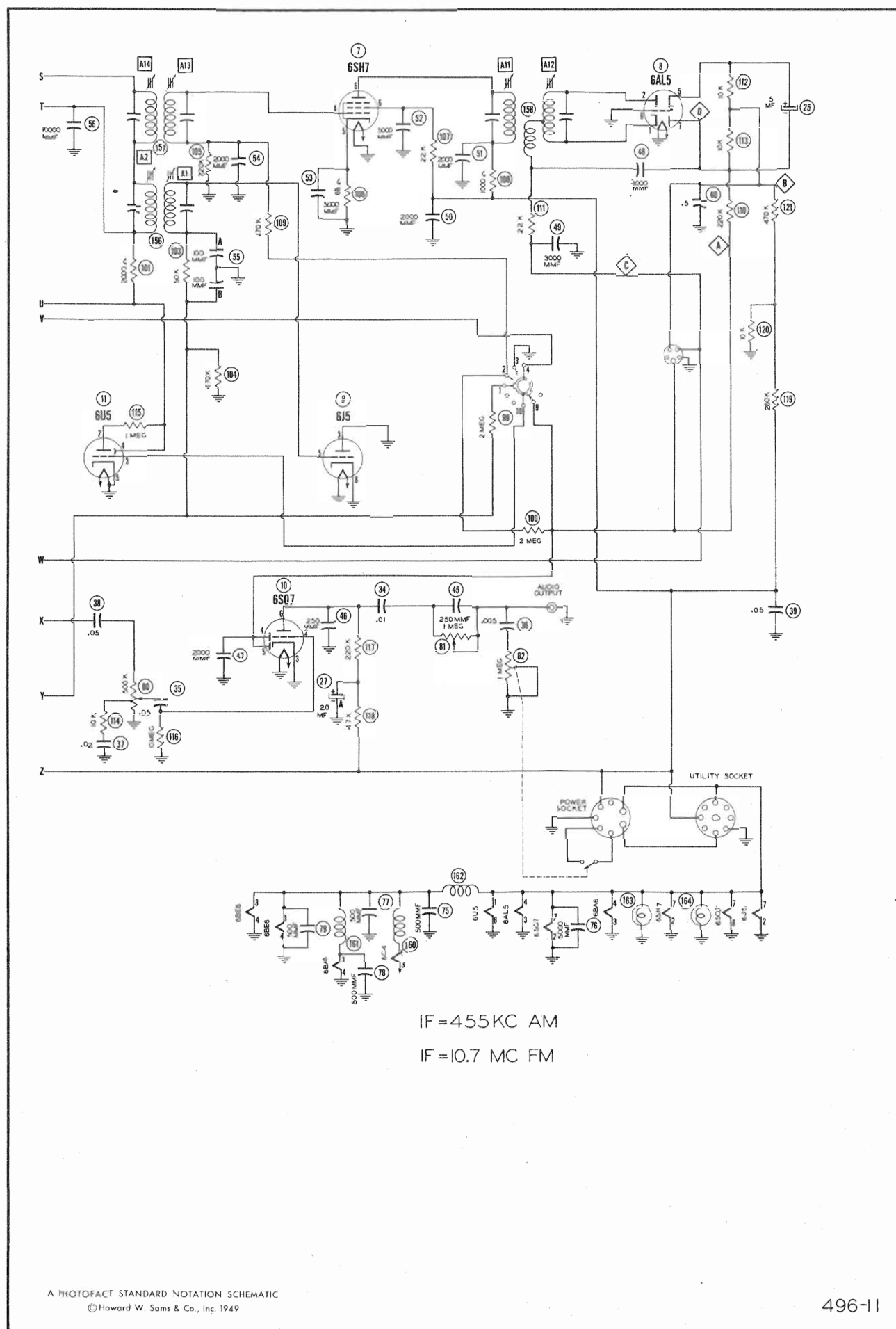
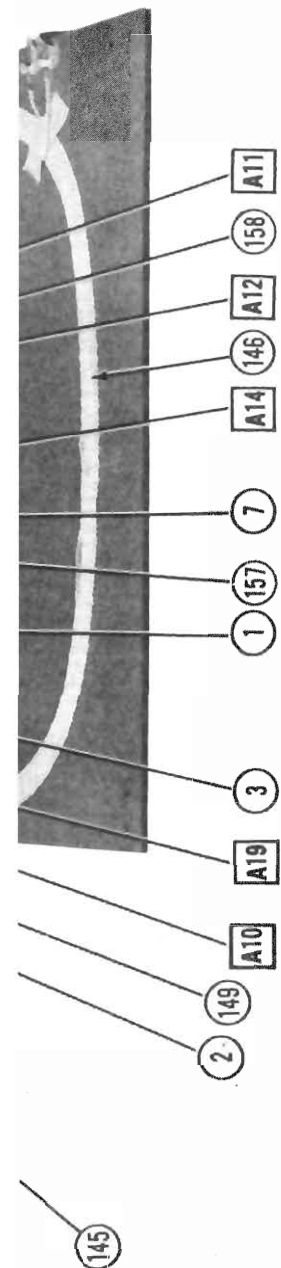
PHOTOFACT<sup>®</sup> F  
TRADE MARK



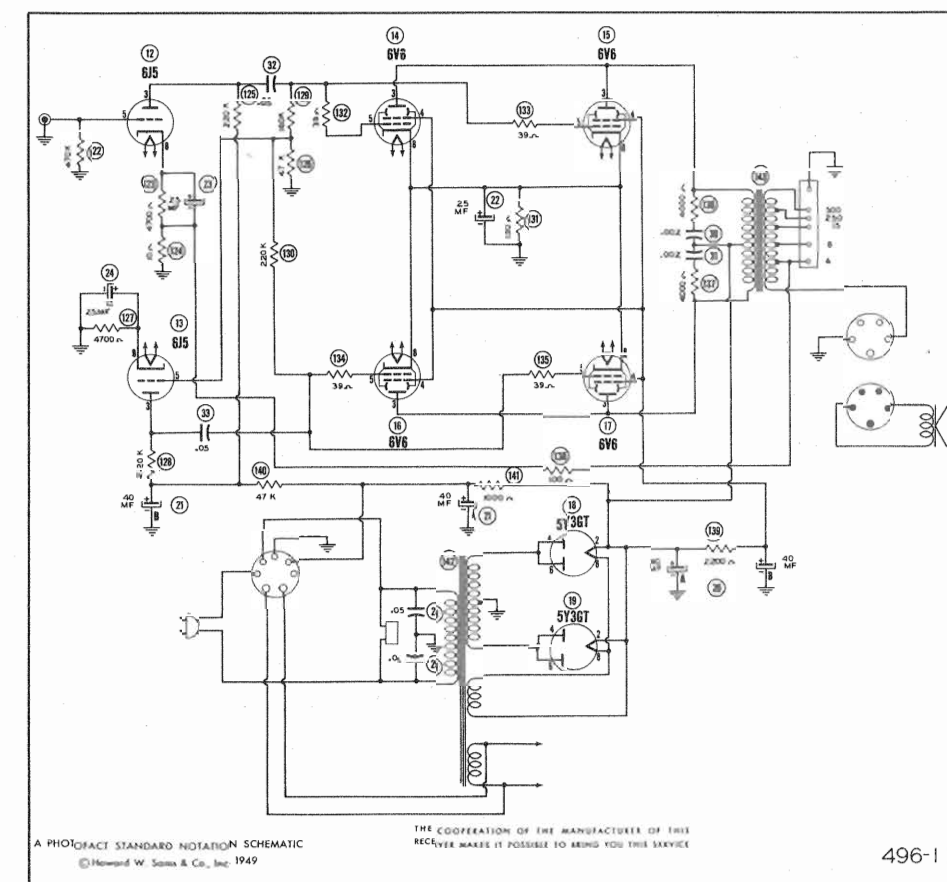
IF = 10.7 MC FM

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496-11



496-11

# STAGE GAIN MEASUREMENTS

RF GRID-CONV GRID	80X	600KC
CONV GAIN	15X	IN 600KC OUT 455KC
IN IF TRANS	.6X	455KC
IF TUBE	180X	455KC
OUT IF TRANS	.6X	455KC
AUDIO	40X	400~
AUDIO	10X	400~
OUTPUT	20X	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 and 3-volt battery bias substituted for measurement.

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  $\pm 10\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		INSTALLATION NOTES
		KNIIGHT PART No.	RMA BASE TYPE	
1	FM RF AMP.	6BA6	7BK	
2	AM RF AMP.	6BA6	7BK	
3	FM Mixer	6BE6	9C4	
4	FM Converter	6BE6	7CH	
5	1st IF Amp.	6BE6	9C4	
6	2nd IF Amp.	6BE6	9C4	
7	FM Detector	6BE6	9C4	
8	AF Det.-AFC	6BE6	9C4	
9	AF Amp.	6BE6	9C4	
10	AF Amp.	6BE6	9C4	
11	AF Amp.	6BE6	9C4	
12	AF Amp.	6BE6	9C4	
13	Phase Inverter	6BE6	9C4	
14	Power Output	6BE6	9C4	
15	Power Output	6BE6	9C4	
16	Power Output	6BE6	9C4	
17	Rectifier	6BE6	9C4	
18	Rectifier	6BE6	9C4	
19	Rectifier	6BE6	9C4	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		KNIIGHT PART No.	IRC PART No.	
98	10000	BTS-1000	BTS-1000	Br.-Blk.-Red.
99	2 Meg.	BTS-2.2 Meg.	BTS-2.2 Meg.	AVC Net.
100	2 Meg.	BTS-2.2 Meg.	BTS-2.2 Meg.	1st IF Decoupling.
101	20000	BTS-2200	BTS-2200	Blue-Gray-Blk.
102	80K	BTS-47K	BTS-47K	Diode Filter. See note.
103	50K	BTS-47K	BTS-47K	2nd IF Grid.
104	470K	BTS-47K	BTS-47K	2nd IF Grid.
105	220K	BTS-220K	BTS-220K	2nd IF Grid.
106	80K	BTS-47K	BTS-47K	2nd IF Grid.
107	220K	BTS-220K	BTS-220K	2nd IF Grid.
108	1000	BTS-1000	BTS-1000	2nd IF Grid.
109	220K	BTS-220K	BTS-220K	2nd IF Grid.
110	220K	BTS-220K	BTS-220K	2nd IF Grid.
111	220K	BTS-220K	BTS-220K	2nd IF Grid.
112	10K	BTS-10K	BTS-10K	2nd IF Grid.
113	10K	BTS-10K	BTS-10K	2nd IF Grid.
114	10K	BTS-10K	BTS-10K	2nd IF Grid.
115	1 Meg.	BTS-1 Meg.	BTS-1 Meg.	2nd IF Grid.
116	1 Meg.	BTS-1 Meg.	BTS-1 Meg.	2nd IF Grid.
117	220K	BTS-220K	BTS-220K	2nd IF Grid.
118	47K	BTS-47K	BTS-47K	2nd IF Grid.
119	200K	BTS-200K	BTS-200K	2nd IF Grid.
120	10K	BTS-10K	BTS-10K	2nd IF Grid.
121	470K	BTS-470K	BTS-470K	2nd IF Grid.
122	470K	BTS-470K	BTS-470K	2nd IF Grid.
123	4700K	BTS-4700K	BTS-4700K	2nd IF Grid.
124	10K	BTS-10K	BTS-10K	2nd IF Grid.
125	220K	BTS-220K	BTS-220K	2nd IF Grid.
126	47K	BTS-47K	BTS-47K	2nd IF Grid.
127	4700K	BTS-4700K	BTS-4700K	2nd IF Grid.
128	240K	BTS-240K	BTS-240K	2nd IF Grid.
129	100K	BTS-100K	BTS-100K	2nd IF Grid.
130	220K	BTS-220K	BTS-220K	2nd IF Grid.
131	130K	BTS-130K	BTS-130K	2nd IF Grid.
132	39K	BTS-39K	BTS-39K	2nd IF Grid.
133	39K	BTS-39K	BTS-39K	2nd IF Grid.
134	39K	BTS-39K	BTS-39K	2nd IF Grid.
135	39K	BTS-39K	BTS-39K	2nd IF Grid.
136	4000K	BTS-4000K	BTS-4000K	2nd IF Grid.
137	4000K	BTS-4000K	BTS-4000K	2nd IF Grid.
138	100K	BTS-100K	BTS-100K	2nd IF Grid.
139	220K	BTS-220K	BTS-220K	2nd IF Grid.
140	47K	BTS-47K	BTS-47K	2nd IF Grid.
141	1000K	BTS-1000K	BTS-1000K	2nd IF Grid.

Note: Items 103, 55A & B are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA		MERIT PART No.
	PRI.	SEC. 1	SEC. 2	KNIIGHT PART No.	STANCOR PART No.	
142	117 VAC 570 VCT 5.0 VAC 6-4VAC	1.25A 1.0A 4.0A 5.5A		B18-077	P-6185 * #	P-2955 *

\*Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING			REPLACEMENT DATA		INSTALLATION NOTES
	IMPEDANCE	DC RES.		KNIIGHT PART No.	STANCOR PART No.	
143	5000Ω CT	21.6Ω CT	B15-037	A-3800 #	Y22870 #	A-3131 # Drill new mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		KNIIGHT PART No.	SOLAR PART No.	
55A	100 300	1468-0001	1468-0001	RF Diode Filter.
55B	100 300	1468-0001	1468-0001	RF Diode Filter.
56	10000 300	1467-01	1467-01	1st IF Screen Bypass
57	10000 300	1467-01	1467-01	1st IF Cathode Bypass
58	2000 300	1467-02	1467-02	RF Bypass Power Sup.
59	2000 300	1467-02	1467-02	Conv. Plate Decoupling
60	100 500	1468-0001	1468-0001	Osc. Grid Cap.
61	15 500	1468-0001	1468-0001	Fixed Trimmer. Cer.
62	5 500	1468-0001	1468-0001	Mixer Screen Bypass
63	1500 300	1467-0015	1467-0015	* Cathode Bypass
64	1500 300	1467-0015	1467-0015	* Cathode Bypass
65	2 300	1468-0001	1468-0001	Mixer Grid Cap. Cer.
66	100 300	1467-0015	1467-0015	RF Bypass. Cer. See Note 2
67	1500 300	1467-0015	1467-0015	RF Bypass. Cer.
68	20 300	1468-0004	1468-0004	Osc. Feedback. Cer.
69	40 500	1468-0004	1468-0004	Osc. Grid Cap. Cer.
70	40 500	1467-0015	1467-0015	RF Screen Bypass. Cer.
71	1500 300	1467-0015	1467-0015	RF Cathode Bypass. Cer.
72	1500 300	1467-0015	1467-0015	RF Bypass Power Sup.
73	1500 300	1467-0015	1467-0015	RF Coupling. Cer.
74	1500 300	1467-0015	1467-0015	AVC Filter. Cer.
75	500 300	1468-0006	1468-0006	RF Coupling. Cer.
76	500 300	1468-0006	1468-0006	Filament Bypass. Cer.
77	500 300	1468-0006	1468-0006	* See Note 2
78	500 300	1468-0006	1468-0006	* See Note 2
79	500 300	1468-0006	1468-0006	* See Note 2

Note 1. Items 55A, 55B and 143 are combined into one unit.

Note 2. Not used in all models.

CONTROLS

ITEM No.	RATING	REPLACEMENT DATA		INSTALLATION NOTES
		KNIIGHT PART No.	CLAROSTAT PART No.	
80A	500K	D13-1330	T-78	Volume Control tapped @ 100K.
80B	500K	D13-1330	T-78	Attach to 80A per instructions.
81A	1 Meg.	D11-137	M-61-S	Bass Control.
81B	1 Meg.	D11-137	M-61-S	Attach to 81A per instructions.
82A	1 Meg.	D13-137	M-63-2	Treble Control.
82B	1 Meg.	D13-137	M-63-2	Attach to 82A per instructions.

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		KNIIGHT PART No.	IRC PART No.	
83	1000K	BTS-1000	BTS-1000	Antenna Loading.
84	470K	BTS-470K	BTS-470K	AM RF Grid.
85	100K	BTS-100K	BTS-100K	* Cathode.
86	22K	BTS-22K	BTS-22K	* Screen.
87	150K	BTS-150K	BTS-150K	Parasitic Suppressor.
88	22K	BTS-22K	BTS-22K	AM Oscillator Grid.
89	15K	BTS-15K	BTS-15K	FM Converter Screen.
90	470K	BTS-470K	BTS-470K	FM RF Grid.
91	68K	BTS-68K	BTS-68K	* Cathode.
92	22K	BTS-22K	BTS-22K	* Screen.
93	22K	BTS-22K	BTS-22K	Mixer Injector Grid.
94	15K	BTS-15K	BTS-15K	* Cathode.
95	15K	BTS-15K	BTS-15K	* Screen.
96	47K	BTS-47K	BTS-47K	* Oscillator Grid.
97	1000K	BTS-1000	BTS-1000	Plate Decoupling.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATINGS	REPLACEMENT DATA		INSTALLATION NOTES
		KNIIGHT PART No.	JENSEN PART No.	
144	FIELD	V.C. IMP.	ST-102	
145	11 1/2	V.C. DIA.	MOD.P12-S 1246	

R F COILS

ITEM No.	USE	REPLACEMENT DATA		MEISSNER PART No.
		DC RES.	KNIIGHT PART No.	
146	AM Loop Ant.	.82	C5-027	
147	AM Ant. Load	.02	B2-423	
148	FM Dipole	.02	A5-010	
149	FM Ant. Coil	.02	N2-411	
150	FM RF Coil	.02	B2-409	
151	FM RF Coil	.02	N2-412	
152	FM Osc. Coil	.02	A2-410	14-1060
153	FM Osc. Coil	.02	N2-413	
154	1st IF	.10	N2-414	16-6678
155	1st IF	.10	N2-415	
156	2nd IF	.10	N2-414	16-6678
157	2nd IF	.10	N2-415	
158	Ratio Det.	.50	C2-278	
159	RF Plate Choke	1.50	A2-402	
160	Fil. Choke	.50	N2-416	
161	Fil. Choke	.50	N2-416	
162	Fil. Choke	.50	N2-416	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	REPLACEMENT DATA		INSTALLATION NOTES
				BEAD COLOR	KNIIGHT PART No.	
163	Bayonet	6-8V	0.15A	Brwn.		Type # 47
164	Bayonet	6-8V	0.15A	Brwn.		Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	KNIIGHT PART No.	NOTES
165	Switch	A12-102	Band (40-537 MF, 40-533MF, 24-517 MF)
166	3 Gang Var. Cap.	B6-070	BC Osc. Adjustment.
167	Padder	C13518	FM Osc. Adjustment.
168	Primmer	N20-022	FM Osc. Adjustment.
169	Trimmer	N20-022	FM RF Adjustment.