

INSTRUCTION BOOK

FOR

SKY COURIER

MODEL RE-1

RADIO RECEIVING EQUIPMENT



the hallicrafters *co.*
CHICAGO, ILL., U. S. A.

SKY COURIER MODEL RE-1

GENERAL DESCRIPTION

The Model RE-1 receiver is a semi-portable radio receiver operating from either its self contained batteries or a 115-volt alternating or direct current source of power. The receiver covers a frequency range extending from 550 kilocycles to 19 megacycles which takes in the broadcast band and a good deal of the short wave band. A built in antenna, which is unreeled from its reel when in use, is carried in a recess in the back plate of the receiver.

INSTALLATION

UNPACKING - Remove the receiver from the carton and inspect it carefully for any damages or shortages. In case of damage, a claim should be filed immediately with the transportation company.

ANTENNA - The antenna terminal strip is located on the rear chassis apron. Its two screw type terminals are marked A. and G. The antenna used is connected to the A. terminal and a well grounded lead, if it aids reception, should be connected to the terminal marked G.

An antenna suitable for general all around reception is coiled up in a recessed portion of the back plate of the receiver. It must be unreeled and strung out in more or less a straight line to be most effective. All or part of this antenna may be used, depending on the receiving conditions where the set is used. In general, the stronger the signals the shorter the antenna required.

A good serviceable antenna for use in a permanent location is the conventional Marconi or inverted "L" type of antenna. This antenna should be approximately 75 feet long overall including the lead-in to the set. Its length is not critical, but it should be erected as high and as free from surrounding objects as possible.

PORTABLE USE - The Model RE-1 receiver can generally be operated in any location, because of its self contained power supply. Some locations may require the use of an out-door antenna to overcome shielding effects presented by steel framed buildings and the like. Interference generated by local electrical apparatus will also demand that a longer and more efficient antenna be used to keep the signal to noise ratio high. Keep in mind that battery life is limited and the set will operate equally well on battery or power line supply so it is highly advisable to make use of the latter whenever possible. NOTE: When the set is operated from its internal battery supply, the plug on the line cord located in the compartment in the rear of the cabinet must be in the receptacle provided. Note that the plug will go into the socket only one way since it is polarized. Do not force it in backwards as the set will only operate where this plug is inserted correctly.

POWER LINE USE - The receiver will operate from any alternating current or direct current power source with a line voltage of 110 to 125 volts. The line cord is located in the rear compartment of the cabinet and is reached by swinging the cover plate to the side after loosening the thumb screw. Remove the plug from the socket in the chassis of the receiver and plug it into an outlet. Cautions: Be sure that the outlet supplies the voltage specified above. As for all AC/DC receivers the plug may have to be turned around in its socket before the receiver will operate from a direct current supply. Allow a few seconds for the set to warm up after turning it on. If it will not operate then reverse the plug and it will begin to function.

OPERATION

After connecting up the receiver as described under INSTALLATION, the set will be ready for use. Reading from left to right, the front panel controls and their functions are as follows:

BANDSPREAD TUNING - This control is used in conjunction with the MAIN TUNING control on the short wave bands to provide the fine tuning required on the higher frequencies. The band spread scale contains 100 divisions equally spaced to be used in conjunction with the logging scale on the calibrated dial for logging purposes. This permits the operator to retune the receiver to a station by merely setting the dials to the positions recorded in his log for that station.

BAND SWITCH - This control sets the range of frequencies over which the set will tune. The numbers correspond to the BAND numbers shown on the calibrated dial. For example, when the band switch is set at position #1 the scale bearing the frequencies .55 to 1.6 megacycles is being used.

MAIN TUNING - The main tuning control selects the frequency of reception. The frequency of reception is read directly from the receivers dial when the band-spread dial is set at the zero mark on its scale. The outer-most scale on the main tuning dial is divided into 100 divisions and is used as the logging scale. This scale reading plus the band spread scale reading provides the log position. For example, if a signal is received with the main tuning dial indicator set at the 50 division mark and the band spread dial indicator is set at the 60 division mark, it is logged as 50.6 and the station may be relocated again by setting the receiver at this position.

VOLUME - The volume control is equipped with the power switch for the set. When this control is turned to the extreme left, the switch clicks and disconnects the power from the receiver circuits whether the set is operating from its batteries or from an external power source. To turn on the set, simply turn the control to the right until the switch clicks. After allowing a reasonable amount of time for the set to warm-up, set the control for the desired volume.

Note: When operating from a 110/125 volt direct current source, it may be necessary to turn the line plug around in the wall socket before the set will operate.

ALIGNMENT AND SERVICE

EQUIPMENT REQUIRED -

- (1) Signal generator covering 455 KC. to 20 MC. and equipped to provide a 400 cycle modulated signal.
- (2) Non-metallic screw driver.
- (3) Output meter.
- (4) 0.1 mfd. condenser.
- (5) 100 mmfd. condenser.
- (6) 25 ohm non-inductive resistor.
- (7) 400 ohm non-inductive resistor.

I-F ALIGNMENT -

- (1) Connect the "hot" lead of the signal generator to the stator of the front section of the gang condenser through the 0.1 mfd. condenser. Connect the ground lead of the generator to the ground terminal on the antenna terminal strip.

CAUTION - Do not ground the chassis of the receiver directly, make all ground connections to the G terminal of the terminal strip.

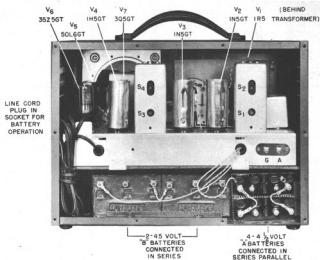
- (2) Connect the output meter across the speaker terminals.
- (3) Turn on the receiver and set the VOLUME control at maximum volume.
- (4) Set the BAND SWITCH at BAND 2. and set the MAIN TUNING dial at approx. 7 MC.
- (5) Set the signal generator at 455 KC. and turn on the 400 cycle modulation.
- (6) Adjust i-f transformer slugs S_1 , S_2 , S_3 and S_4 for maximum output. Refer to the rear view of the receiver for location of the slug adjustments.

R-F ALIGNMENT -

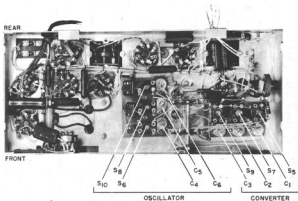
- (1) Connect the "hot" lead of the signal generator to the antenna terminal through the dummy antenna specified in the chart. Leave the ground lead of the generator connected to the ground terminal of the antenna terminal strip.
- (2) Leave the output meter connected as for i-f alignment.
- (3) Set the VOLUME control for maximum volume.
- (4) Set the BAND SWITCH, MAIN TUNING dial, signal generator, trimmer condenser, and slug adjustments as follows:

SET BAND SWITCH	USE DUMMY ANT.	SET RECEIVER & SIGNAL GENERATOR	SET TRIMMER FOR MAX. OUTPUT	SET SLUG FOR MAX. OUTPUT
1	100 mmfd. condenser and 25 ohm resistor	1500 KC.	C_1 and C_4	-
1		600 KC.	-	S_5 and S_6
2		7 MC.	C_2 and C_5	-
2		3 MC.	-	S_7 and S_8
3	400 ohm resistor	18 MC.	C_3 and C_6	-
3		9 MC.	-	S_9 and S_{10}

NOTE: Refer to rear and bottom views of the receiver for location of adjustment screws.



REAR VIEW—COVER REMOVED



BOTTOM VIEW OF CHASSIS

CAUTION: Remove run-down batteries from their compartment to avoid corrosion resulting from the deteriorating cells.

LIST OF REPLACEABLE PARTS.

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR.'S. PART NO.
R ₁	RESISTOR, 100,000 ohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant. Same as R ₁₂	Oscillator grid return for tube V ₁	ASA	RC10AE104M
R ₂	RESISTOR, 4,700 ohm \pm 10%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant	Decoupling for tube V ₁	ASA	RC10AE472K
R ₃	RESISTOR, 22,000 ohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant	Plate load for tube V ₂	ASA	RC10AE223M
R ₄	RESISTOR, 470,000 ohm \pm 10%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant. Same as R ₁₁ , R ₁₅	Grid return for tube V ₃	ASA	RC10AE474K
R ₅	RESISTOR, 2 megohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant.	Grid return for tube V ₂	ASA	RC10AE205M
R ₆	RESISTOR, 10 megohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant.	Grid return for tube V ₄	ASA	RC10AE106M
R ₇	RESISTOR, 3.3 megohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant.	A-V-C decoupling	ASA	RC10AE335M
R ₈	RESISTOR, 47,000 ohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant.	Diode load for tube V ₄	ASA	RC10AE473M
R ₉	RESISTOR, variable, 500,000 ohm \pm 20%, bushing 3/8-32 x $\frac{1}{4}$ " long, shaft 5/8" long x $\frac{1}{4}$ " dia., includes DPST toggle action switch on rear of control	VOLUME control	CT type 125	25A090
R ₁₀	RESISTOR, 10,000 ohm \pm 20%, $\frac{1}{4}$ watt, carbon, insulated, humidity resistant	Primary loading for transformer T ₁	ASA	RC10AE103M
R ₁₁	RESISTOR, same as R ₄	Plate load for tube V ₄	.	.

LIST OF REPLACEABLE PARTS.

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR.'S. PART NO.
R ₁₂	RESISTOR, same as R ₁	Decoupling for tube V ₄		
R ₁₃	RESISTOR, two sections, section #1 (R ₁₃) 80 ohms \pm 5%, 2.5 watts, wire wound; section #2 (R ₁₄) 220 ohms \pm 5%, 6.5 watts, wire wound; 5 solder lug terminals	Surge voltage stabilizing for tube V ₆ Filament voltage dropping for tubes V ₅ and V ₆	U type X-1500	24A834
R ₁₅	RESISTOR, same as R ₄	Grid return for tubes V ₅ and V ₇		
R ₁₆	RESISTOR, 680 ohms \pm 10%, $\frac{1}{2}$ watt, carbon, insulated, humidity resistant	Filament voltage divider for battery operation	ASA	RC10AE651K
R ₁₇	RESISTOR, 270 ohm \pm 10%, $\frac{1}{2}$ watt, carbon, insulated, humidity resistant	Shunt for filament of tube V ₄	ASA	RC10AE271K
R ₁₈	RESISTOR, 47 ohm \pm 10%, $\frac{1}{2}$ watt, carbon, insulated, humidity resistant	Cathode bias for tube V ₅	ASA	RC21AE470K
R ₁₉	RESISTOR, 330 ohm \pm 10%, $\frac{1}{2}$ watt, carbon, insulated, humidity resistant	Shunt for filament of tube V ₇	ASA	RC10AE331K
C ₁	CAPACITOR, adjustable, min. cap. 4 mmfd., max. cap. 20 mmfd., ceramic dielectric, solder lug terminals and mtg.; same as C ₂ , C ₃ , C ₄ , C ₅ , C ₆	Trimmer for transformer T ₁	CRL type 820	44A118
C ₂	CAPACITOR, same as C ₁	Trimmer for transformer T ₂		
C ₃	CAPACITOR, same as C ₁	Trimmer for transformer T ₃		
C ₄	CAPACITOR, same as C ₁	Trimmer for transformer T ₄		
C ₅	CAPACITOR, same as C ₁	Trimmer for transformer T ₅		
C ₆	CAPACITOR, same as C ₁	Trimmer for transformer T ₆		
C ₇	CAPACITOR, fixed 390 mmfd. \pm 5%, 500 V. D-C working, mica dielectric, humidity resistant	Padder transforme T ₄	ASA	CM20D391J

LIST OF REPLACEABLE PARTS (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR.'S. PART NO.
C ₈	CAPACITOR, fixed, 1500 mmfd. \pm 10%, 500 V. D-C working, mica dielectric, humidity resistant	Padder for transformer T ₅	ASA	CM30E1L5K
C ₉	CAPACITOR, fixed, 3900 mmfd. \pm 10%, 500 V. D-C working, mica dielectric, humidity resistant	Padder for transformer T ₆	ASA	CM32E1992K
C _{10A}	CAPACITOR, 2 sections, ganged, section #1 (C _{10A}) min. cap. 39.7 mmfd., max. cap. 353.4 mmfd., air dielectric, section #2 (C _{10B}) min. cap. 33.9 mmfd., max. cap. 353.3 mmfd., air dielectric; bandspread (C _{11A} and C _{11B}) consists of a single rotor plate for each section; three 6-32 NC-2x9/32" spade bolts mount assembly (2 on front frame 7/8" apart, 1 centered on rear frame 2-1/8" from front frame); a stamped sheet metal pulley 2-1/8" O.D. is fixed to the main gang and bandspread gang shafts.	Transformers T ₁ , T ₂ , T ₃ main tuning Transformers T ₄ , T ₅ , T ₆ main tuning Transformers T ₁ , T ₂ , T ₃ band-spread tuning Transformers T ₄ , T ₅ , T ₆ band-spread tuning	OM Special	48C125
C _{10B}				
C _{11A}				
C _{11B}				
C ₁₂	CAPACITOR, fixed, .05 mfd. - 10 + 40%, 600 V. D-C working, paper dielectric, molded case, Same as C ₁₉	A-V-C by-pass	MIC type 346	46AM503J
C ₁₃	CAPACITOR, fixed, .01 mfd. - 10 + 40%, 600 V. D-C working, paper dielectric, molded case. Same as C ₃₂	D-C voltage block between chassis and ground	MIC type 342	45AG103J
C ₁₄	CAPACITOR, fixed, 20 mmfd. \pm 20%, 500 V. D-C working, ceramic dielectric, - 0.00075 mmfd./mmfd./degree Cent. temp. coeff.	Trimmer for transformer T ₃ secondary	ASA	OC 20UK200M

LIST OF REPLACEABLE PARTS - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR'S. PART NO.
C15	CAPACITOR, fixed, .006 mfd. $\pm 20\% + 60\%$, 400 V. D-C working, paper dielectric, molded case. Same as C24	Coupling between oscillator inductance and plate circuit of tube V ₁	ASA	CN36A602
C16	CAPACITOR, fixed, .25 mfd. $\pm 10 + 40\%$, 200 V. D-C working, paper dielectric, molded case	Filament by-pass for tube V ₁	MIC type 342	46AE254J
C17	CAPACITOR, fixed, .1 mfd. $\pm 10 + 40\%$, 400 V. D-C working, paper dielectric, molded case. Same as C25	Filament by-pass for tube V ₁	MIC type 342	46AF104J
C18	CAPACITOR, fixed, .47 mfd. $\pm 20\%$, 500 V. D-C working, mica dielectric, humidity resistant	Coupling between oscillator inductance and oscillator grid circuit of tube V ₁	ASA	CM20A470M
C19	CAPACITOR, same as C ₁₂	Plate circuit by-pass	SC	49A001
C20	CAPACITOR, fixed, 2.5 mfd. $\pm 20\%$, 500 V. D-C working, bakelite dielectric, molded body. Same as C ₂₄	Coupling between oscillator and converter	Special	
C21	CAPACITOR, fixed, .02 mfd. $\pm 10 + 40\%$, 200 V. D-C working, paper dielectric, molded case	Grid return by-pass for tube V ₂	MIC type 342	46AE203J
C22	CAPACITOR, fixed, 220 mfd. $\pm 20\%$, 500 V. D-C working, mica dielectric, humidity resistant. Same as C26	Coupling between tubes V ₂ and V ₃	ASA	CM20A221M
C23	CAPACITOR, fixed, 100 mfd. $\pm 20\%$, 500 V. D-C working, mica dielectric, humidity resistant	Diode load r-f by-pass for tube V ₄	ASA	CM20A101M
C24	CAPACITOR, same as C ₁₅	A-F coupling between detector circuit and 1st audio amplifier section of tube V ₄		
C25	CAPACITOR, same as C ₁₇	Plate circuit decoupling for tube V ₄		

LIST OF REPLACEABLE PARTS - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONT'R'S. PART NO.
C26	CAPACITOR, same as C22	Plate circuit r-f by-pass for tube V ₄	ASA	CM4LB602
C27	CAPACITOR, fixed, .006 mfd. \pm 10%, 400 V. D-C working, mica dielectric, humidity resistant. Same as C28	Coupling between tube V ₄ and V ₅		
C28	CAPACITOR, same as C27	Plate circuit equalizer for tubes V ₅ and V ₇		
C29	CAPACITOR, 3 section unit, 4 prong plug-in type dry electrolytic; section #1 (C ₂₉) 40 mfd. - 10 \pm 50%; 150 V. D-C working;	Filament circuit by-pass for battery operation	IC	43A072
C30	section #2 (C ₃₁) 40 mfd. - 10 \pm 50%; 150 V. D-C working; section #3 (C ₂₉) 100 mfd. 10 \pm 65%, 50 V. D-C working, terminal #1 common to all sections	Output filter capacitor for A-C/D-C operation	type P-I	
C31		Input filter capacitor for A-C/D-C operation		
C32	CAPACITOR, same as C13	Line filter for A-C/D-C operation		
C33	Not used.			
C34	CAPACITOR, same as C20	Coupling between transformers T ₃ and T ₆ on band #3		
T ₁	TRANSFORMER, R-F, 3 unit assembly; unit #1 (T ₁) 550-1600 KC., universal windings primary and secondary, Hollowax #2012 impregnation, variable iron core adjustment; unit #2	Coupling between antenna and tube V ₁ on band #1	GU	51C661
T ₂	mary, single layer winding secondary, Hollowax #2012 impregnation, variable iron core adjustment; unit #3 (T ₃) 7.0 - 19.0 MC., single layer windings primary and secondary, Hollowax #2012 impregnation, variable iron core adjustment; assembly mounted on a bakelite board 3" long x 1-3/4" wide x 1/16" thick with 2 mtg. holes 1" apart centered on the board; coils wound on bakelite form 1" long x 1/2" O.D.	Coupling between antenna and tube V ₁ on band #2	type 30-5226-2	
T ₃		Coupling between antenna and tube V ₁ on band #3		

LIST OF REPLACEABLE PARTS - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MPG. CODE	CONTR.'S. PART NO.
T4	TRANSFORMER, R-F, 3 unit assembly; unit #1 (T ₄) 550-1600 KC, universal windings primary and secondary, Hallowax #2012 impregnation, variable iron core adjustment unit #2 (T ₄) 2.8 - 7.8 MC., single layer windings, Hallowax #2012 impregnation, variable iron core adjustment; unit #3 (T ₄) 7.0 - 19.0 MC., single layer interwoven primary and secondary, Hallowax #2012 impregnation, variable iron core adjustment; assembly mounted on a XP bakelite board 3" long x 2-3/8" wide x 1-1/16" thick with 2 mtg. holes 1" apart centered on the board; coils wound on bakelite form 1" long x 3/4" O.D.	Oscillator inductances for band #1 Oscillator inductances for band #2 Oscillator inductances for band #3	GU type 30-5223-2	51C660
T7	TRANSFORMER, I-F, 455 KC., fixed trimmer capacitors, variable iron core tuning, shielded assembly	Coupling between tubes V ₁ and V ₂	GU type 30-5223-2	50B152
T8	TRANSFORMER, I-F, 455 KC., fixed trimmer capacitors, variable iron core tuning, shielded assembly	Coupling between tubes V ₃ and V ₄	GU type 30-5224-2	50B153
T9	TRANSFORMER, A-F; primary to match a 8000 ohm 300GT tube plate load, tapped to match a 2500 ohm 50L6GT tube plate load; secondary to match 2.3 ohm voice coil; metal case covered with corite wax except on mounting surface; two single hole mtg. feet with 1-3/4" mtg. centers.	Coupling between tube V ₅ or V ₇ and speaker	F Special	55A064

LIST OF REPLACEABLE PARTS - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR.'S. PART NO.
CH ₁	CHUCK, filter, 2250 turns of #35 wire wound on a $\frac{1}{2}$ " x $\frac{1}{2}$ " metal core, rated at 50 millimperes, entire unit dipped in black cor-ite wax except for mtg. surface; two single hole mtg. feet with 2-1/16" mtg. centers.	Plate voltage inductance for A-C/D-C line operation	F Special	554052
CH ₂	CHUCK, R-F, 37 turns of #22 SCE universal winding, air core, inductance 46 microhenries	R-F filter for filament of tube V ₁	GU type 30-5233-2	53B059
SW _{1A}	SWITCH, 2 section, 3 positions, bakelite wafers, mounted by a 3/8-32 bushing $\frac{1}{4}$ " long, shaft 7/8" long	<div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> Converter stage transformer primary selector Converter stage transformer secondary selector Oscillator stage transformer primary selector Oscillator stage transformer secondary selector </div>	OM Special	60A182
SW _{1B}				
SW _{1C}				
SW _{1D}				
SW _{2A}	SWITCH, DPST, located on the rear or re-sistor R ₉	<div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> A-C/D-C line switch Battery power supply switch </div>	CN type 1720	88A143
SW _{2B}				
TS ₁	TERMINAL STRIP, two terminals brass solder lugs with 6-32 x 3/8" binding head metal screws, mounted with centers 3/4" apart on a XP brown bakelite strip 2" long x 11/16" wide x 1/16" thick, 2 mtg. holes with centers 1-11/16" apart; marked "A" and "G"	Antenna and ground connections		
LS ₁	SPKAKER; 5 inch semi moisture proof cone; 4.25 ounce field P.M.; 3-ohm voice coil; 8" long insulated leads soldered to speaker terminals at one end and a cinch plug (type #2724) at other end; includes a special mtg. plate 4-5/8"x5-1/4" with three 7/16" dia. mtg. holes; mtg. centers 4" x 3-1/16" x 4-1/2"	Loudspeaker	CRI type X-1241	85C024

LIST OF REPLACEABLE PARTS - (Cont'd.)

REF. SYMBOL	NAME OF PART AND DESCRIPTION	FUNCTION	MFG. CODE	CONTR.'S. PART NO.
V ₁	TUBE, pentagrid converter, type 1R5	Oscillator and converter	RCA	90X1R5
V ₂	TUBE, r-f amplifier pentode, type 1N5GT	1st I-F amplifier	RCA	90X1N5GT
V ₃	TUBE, same as V ₂	2nd I-F amplifier		
V ₄	TUBE, diode high-mu triode, type 1H5GT	Detector and 1st audio amplifier	RCA	90X1H5GT
V ₅	TUBE, beam power amplifier, type 50L5GT	Audio power amplifier for A-C/D-C operation	RCA	90X50L5GT
V ₆	TUBE, half-wave high-vacuum rectifier, type 35Z5GT	Rectifier for A-C/D-C operation	RCA	90X35Z5GT
V ₇	TUBE, beam power amplifier, type 3Q5GT	Audio power amplifier for battery operation	RCA	90X3Q5GT

BATTERY REPLACEMENT

- Replace "B" batteries with Burgess #5308 or equivalent.
- Replace "A" batteries with four Burgess #2370 Standard Terminal Type or two Burgess G3 Plug Type or equivalent.

INDEX TO PARTS MANUFACTURERS

<u>CODE</u>	<u>MANUFACTURER</u>	<u>ADDRESS</u>
ASA	Any manufacturer meeting the American Standard Association specification	
CN	Cinch Mfg. Co.	Chicago, Ill.
CRI	Crescent Industries	Chicago, Ill.
CRL	Centralex	Milwaukee, Wis.
CT	Chicago Telephone Supply Co.	Elkhart, Ind.
F	The Franklin Transformer Mfg. Co.	Minneapolis, Minn.
GU	E. I. Guthman Co.	Chicago, Ill.
IC	Industrial Condenser Corp.	Chicago, Ill.
MIC	Micamold Radio Corporation	Brooklyn N. Y.
OM	Oak Mfg. Co.	Chicago, Ill.
RCA	R. C. A. Mfg. Co. Inc.	Harrison, N. J.
SC	Stackpole Carbon Company	St. Marys, Pa.
U	Utah Radio Products Co.	Chicago, Ill.

GUARANTEE

This receiver is guaranteed to be free from any defect in workmanship and material that may develop within a period of ninety (90) days from date of purchase, under the terms of the standard guarantee, as designated by the Radio Manufacturers Association. Any part or parts that prove defective within this period will be replaced without charge when subjected to examination at our factory, providing such defect, in our opinion, is due to faulty material or workmanship, and not caused by tampering, abuse or normal wear. All such adjustments to be made F.O.B. the factory.

Should this receiver require any adjustments, your dealer or distributor has complete technical service in-

formation, or the factory will be glad to assist you in any problem direct.

Should it be necessary to return any part or parts to the factory, a "Return Material Permit" must be obtained in advance by first writing the Adjustment Department, who will issue due authorization under the terms of the guarantee.

The Hallicrafters Co. reserves the right to make changes in design or add improvements to instruments manufactured by them, without incurring any obligation to install the same in any instrument previously purchased.

All Hallicrafters receivers are built under patents of Radio Corporation of America and Hazeltine Corporation.

