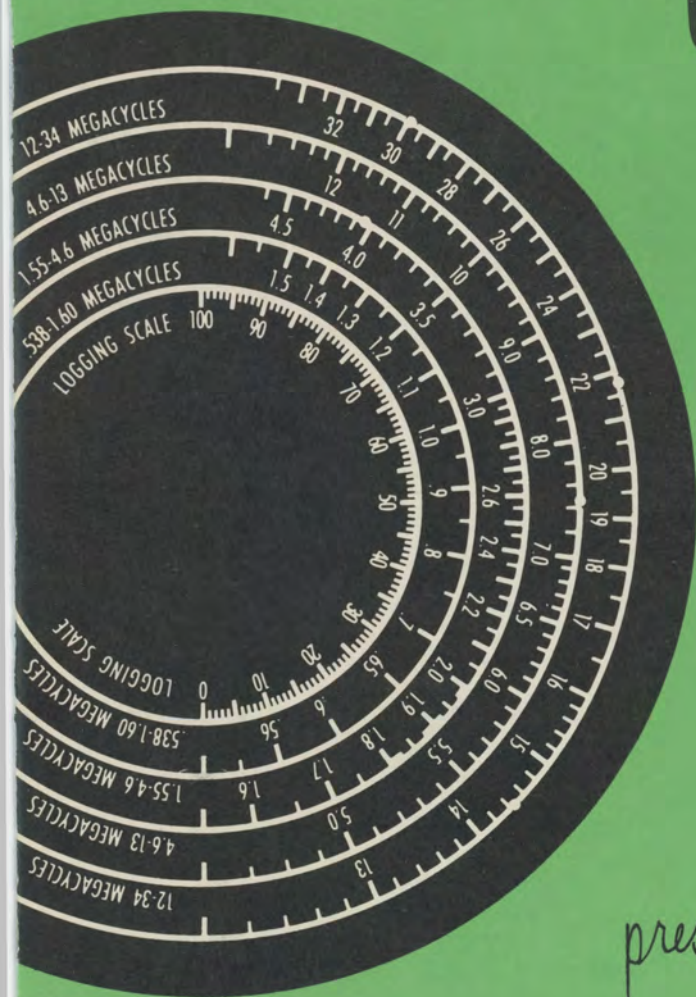


# hallicrafters



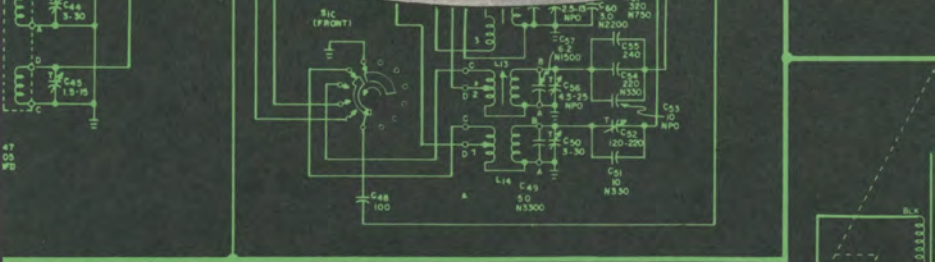
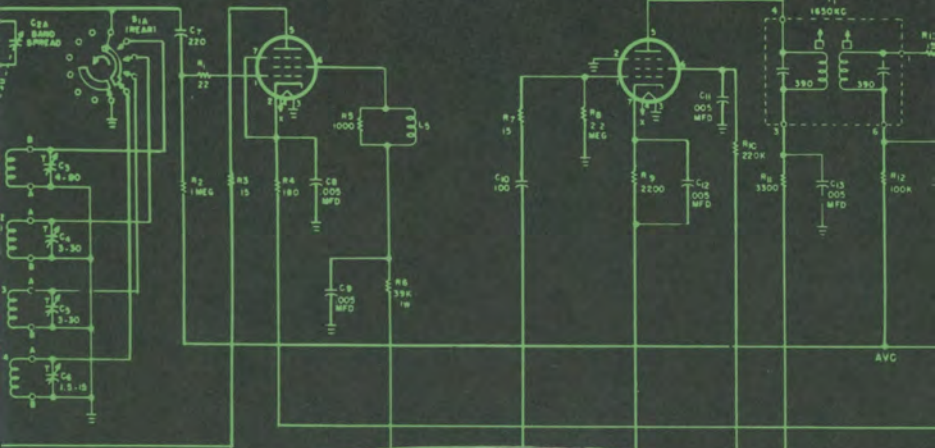
presents

Society of Wireless Pioneers - California Historical Radio Society



# V1 6CB6 RF AMP

# V2 6AU6 1ST MIXER



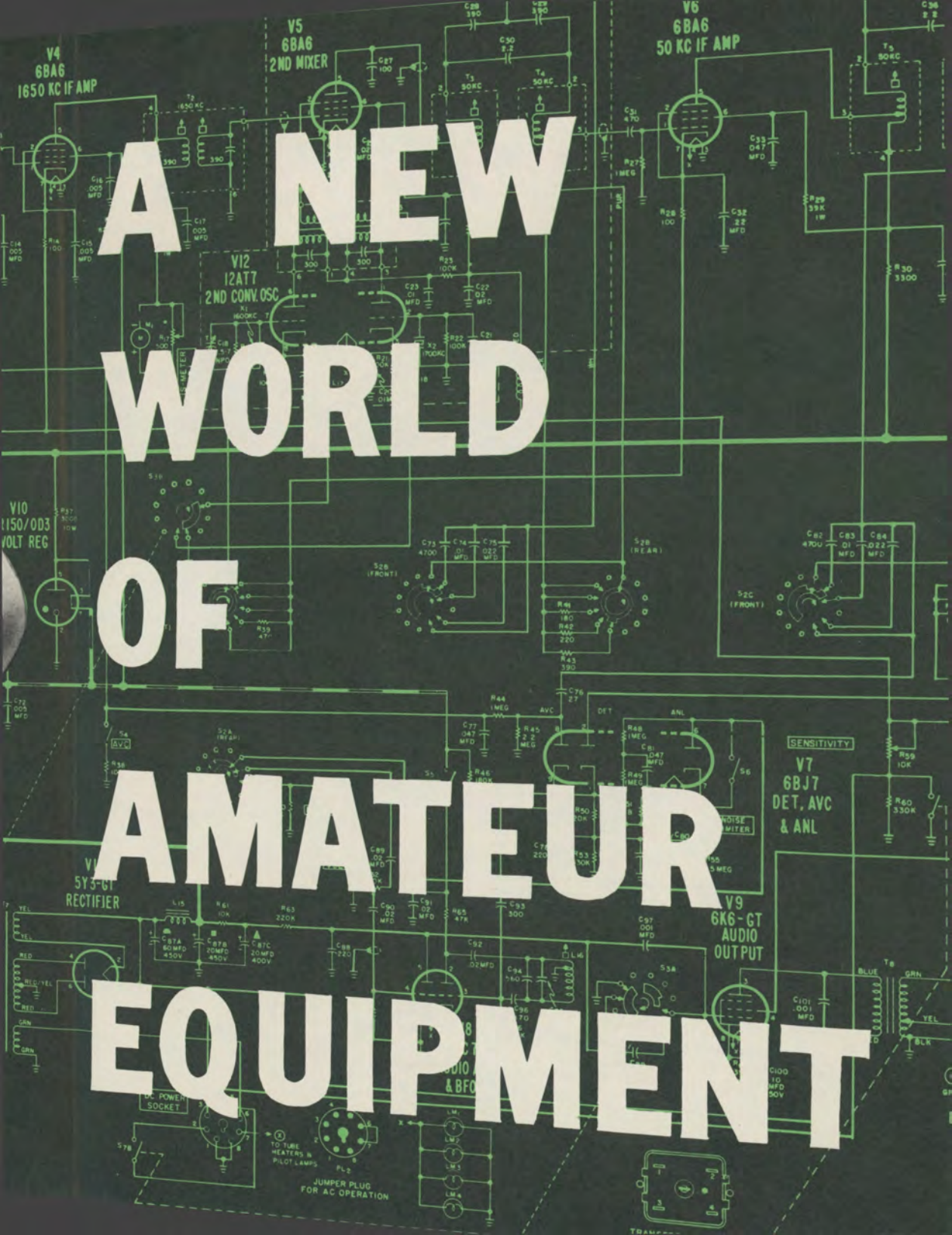
1. RESISTOR VALUES ARE IN OHMS AND 1/2 WATT UNLESS OTHERWISE SPECIFIED.
2. CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED.
3. BAND SELECTOR SWITCH (S1) SHOWN IN BAND 1 POSITION (EXTREME COUNTER-CLOCKWISE); SEE FIG. FOR LOCATION OF SWITCH SECTIONS.
4. SELECTIVITY CONTROL (S2) SHOWN IN BROAD POSITION (EXTREME COUNTER-CLOCKWISE); SEE FIG. FOR LOCATION OF SWITCH SECTIONS.

⏏ CHASSIS GROUND

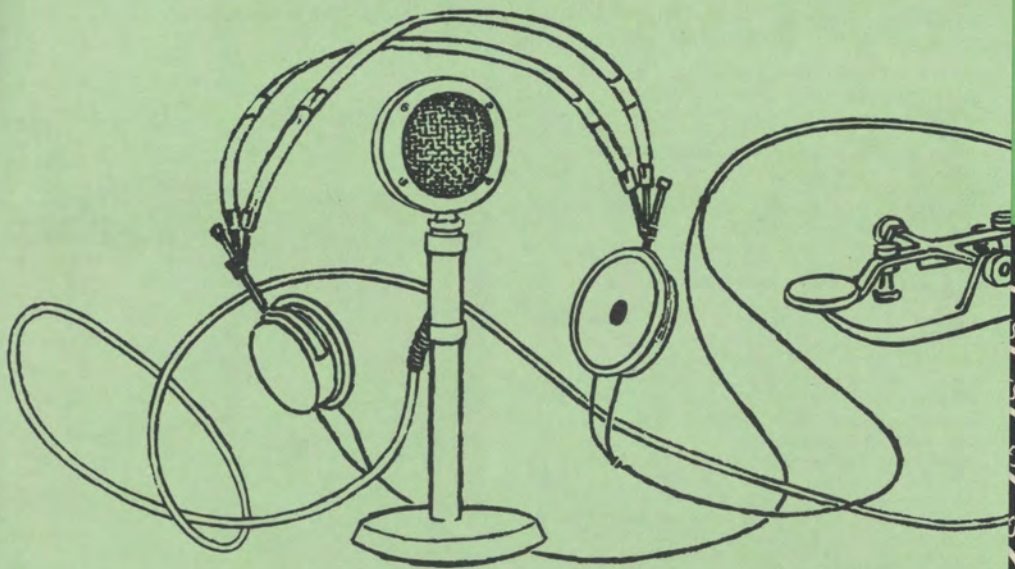


105-125V 50/60 Hz AC





# A NEW WORLD OF AMATEUR EQUIPMENT



As you know, Hallicrafters  
has always been strongly linked  
with pioneer developments in  
Ham Radio.

We know our new line  
will strengthen this relationship  
as it reflects twenty-one years of  
communications leadership.

W. J. Halligan      Buel Halligan, Jr.





## model SX-96

Use Hallicrafters R-46A Speaker

This Hallicrafters double conversion selectable side band receiver offers major improvements in stability by the addition of temperature compensation in the high frequency oscillator circuits and the use of crystal controlled second conversion oscillators. Hallicrafters highly selectable 50 kc i-f system is used in this new precision-built receiver.

**COVERAGE:** Standard Broadcast; 538-1580 kc; Three S/W Bands, 1720 kc-34 Mcs. Band 1: 538 kc-1580 kc — Band 2: 1720 kc-4.9 Mcs — Band 3: 4.6 Mcs-13 Mcs — Band 4: 12 Mcs-34 Mcs.

**TYPE OF CIRCUIT:** Double conversion superheterodyne over the entire frequency range.

**TYPE OF SIGNALS:** AM-CW-SSB.

**FEATURES:** Precision gear drives are used on both main tuning and band spread dials. Double conversion with selectable crystal controlled second oscillators. Selectable side band reception of both suppressed carrier and full carrier transmissions by front panel switch, delayed AVC, CW operation with AVC on or off. Calibrated bandspread, "S" meter, low drift, double conversion superhet.

**CONTROLS:** Sensitivity, band selector, volume, tuning, AVC on/off, noise limiter on/off, AM/CW-SSB, Bandspread, selectivity, pitch control, response (pwr on/off, LSB, USB—2 tone pos.), receive.

**INTERMEDIATE FREQUENCIES:** 1650 kc and 50 kc.

**TUNING ASSEMBLY AND DIAL DRIVE MECHANISM:** Separate 3 section tuning capacitor assemblies for main tuning and bandspread tuning. Circular main tuning dial has 0-100 logging scale. Bandspread dial is calibrated for the 80, 40, 20, 15, and 11-10 meter amateur bands.

**SELECTIVITY:** Five steps. 1. (Broad) 6 db-5 kc 60 db-15 kc — 2. (Broad) 6 db-3 kc 60 db-12 kc — 3. (Broad) 6 db-2 kc 60 db-10 kc — 4. (Broad) 6 db-1.3 kc 60 db-7 kc — 5. (Sharp) 6 db-.5 kc 60 db-5 kc.

**ANTENNA INPUT IMPEDANCE:** Balanced/unbalanced.

**HEADPHONE OUTPUT IMPEDANCE:** 500 ohms.

**AUDIO OUTPUT IMPEDANCE:** 3.2/500 ohms.

**AUTOMATIC NOISE LIMITER:** Series noise limiter operated by toggle switch on front panel.

**CARRIER LEVEL INDICATOR:** Calibrated in "S" units from 1 to 9, decibels to 90 db over S9, microvolts from 1 to 1000 K.

**TUBE COMPLEMENT:** 10 tubes plus 1 rectifier and 1 voltage regulator. 6CB6: r-f amplifier — 6AU6: 1st mixer — 6C4: 1st conv. osc. — 6BA6: 1650 kc i-f amplifier — 6BA6: 2nd mixer — 12AT7: dual crystal second conv. osc. — 6BA6: 50 kc i-f amplifier — 6AL5: detector, AVC, ANL — 6SC7: audio amp. and BFO — 6K6GT: audio output — 6Y3GT: rectifier — VR-150: voltage regulator.

**EXTERNAL CONNECTIONS:** 3.2/500 ohm speaker terminals, terminals for single wire or doublet antenna (external antenna provided), phono jack, AC power cord, socket for DC operation and remote control, audio output terminals, "S" meter electrical adjustment and mounting hole for co-axial cable connector. Phones jack on front panel.

**AUDIO POWER OUTPUT:** 1.5 watts with 10% or less distortion.

**POWER SUPPLY:** 105/125 V. 50/60 cycle AC.

**PHYSICAL DATA:** Gray black steel cabinet with brushed chrome knob trim, patterned silver back plate and red pointers. Piano hinge top. Size 18 3/8" wide x 8 1/2" high x 10 3/8" deep. Shipping weight approximately 43 lbs.

**MODEL SX-96** ..... \$249.95

This new Hallicrafters receiver is destined to be a ham favorite. Smart new styling and feature packed to make this model stand out in its price range.

**COVERAGE:** Broadcast Band 540-1680 kc plus three Short-Wave Bands covers 1680 kc—34 Mc.

**FEATURES:** Over 1000° of calibrated bandspread over the 10, 11, 15, 20, 40 and 80 meter amateur bands on easy-to-read dial. Separate bandspread tuning condenser, crystal filter, antenna trimmer, "S" Meter, one r-f, two i-f stages and new styling.

**CONTROLS:** Antenna tuning, sensitivity, band selector, main tuning, bandspread tuning, volume, tone, standby, selectivity, crystal phasing, noise limiter.

**INTERMEDIATE FREQUENCY:** 455 kc.

**BAND CHANGE MECHANISM:** Ganged rotary wafer switch.

**TUNING ASSEMBLY AND DIAL DRIVE MECHANISM:** Ganged, 3 section tuning capacitor assembly with electrical bandspread. Circular main tuning dial is calibrated in megacycles and has 0-100 logging scale.

**ANTENNA INPUT IMPEDANCE:** Balanced/unbalanced.

**HEADPHONE OUTPUT IMPEDANCE:** 500 ohms.

**AUDIO OUTPUT IMPEDANCE:** 3.2 and 500 ohms. Headphone jack on front panel disables both.

**TUBE COMPLEMENT:** Seven tubes plus one rectifier. 6SG7: r-f amplifier — 6SA7: Converter — 6SG7: 1st i-f amplifier — 6SK7: 2nd i-f amplifier — 6SC7: BFO and audio amplifier — 6K6GT: Audio output — 6H6: ANL-AVC-detector — 6Y3GT: Rectifier.

**EXTERNAL CONNECTIONS:** Terminals for doublet or single wire antenna plus terminals for 3.2 and 500 ohm speakers on rear.

**AUDIO POWER OUTPUT:** 2 watts.

**POWER SUPPLY:** 105/125 V. 50/60 cycle AC.

**PHYSICAL DATA:** Gray black steel cabinet with brushed chrome trim and piano hinge top. Size 18 3/8" wide x 8 1/2" high x 11" deep. Shipping weight approximately 36 lbs.

**MODEL SX-99 (less speaker) . . . . . \$149.95**

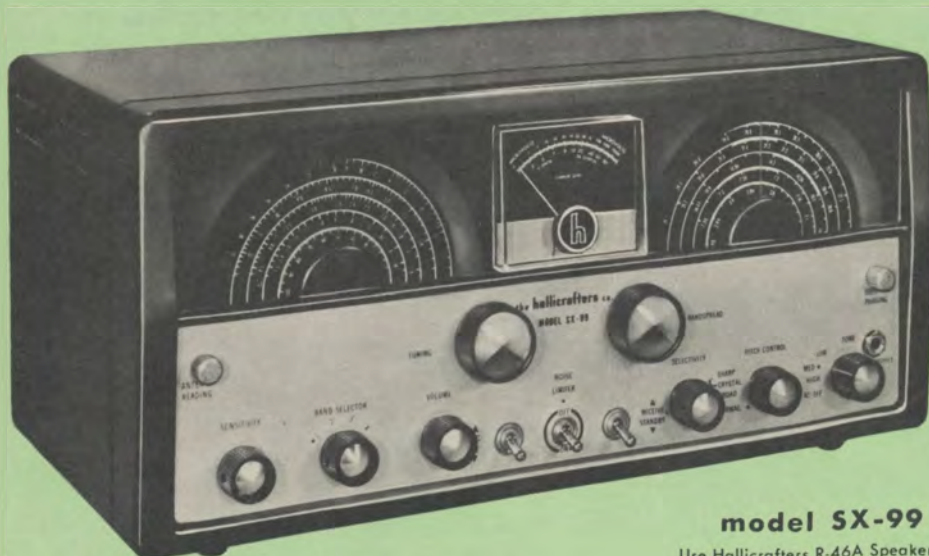


## model R-46A

Precision-built communications speaker

This 10" PM speaker is the matching unit for any Hallicrafters or other receiver having a 3.2 ohm output. Featuring an 80 to 5,000 cycle range and 3.2 ohm speaker voice coil impedance. Gray black steel cabinet measuring 15" wide x 10 7/8" high x 10 7/8" deep, shipping weight 15 lbs.

**MODEL R-46A Speaker . . . . . \$19.95**



## model SX-99

Use Hallicrafters R-46A Speaker

*Precision Built!*



Here is the receiver that went to Clipperton Island and one of the finest to carry the name—"Hallicrafters." A receiver with more features and finer performance per pound of weight—per cubic inch of space—per dollars of cost—than any receiver built.

**COVERAGE:** Full coverage from 535 kc to 33.3 Mcs. in six bands.

**TYPE OF CIRCUIT:** Double conversion superheterodyne over the entire frequency range. Two tuned r-f stages on bands 2-6, one tuned r-f stage on band 1.

**TYPE OF SIGNALS:** AM, CW and SSSC (Single side band suppressed carrier).

**FEATURES:** Dual separate 4 section tuning capacitors. Band Width Control (Selectivity) from 250 cycles to 10 kc. Full precision gear drive for main and bandspread tuning. Exalted B.F.O. for tops in single side band reception. Buffer amplifier in B.F.O. circuit. Amplified and delayed A.V.C. Built-in 500 kc calibration crystal. Second conversion oscillators crystal controlled. Inertia tuning (fly wheels both dials). Calibrated electrical bandspread 160, 80, 40, 20, 15 and 11-10 meters. Logging scales and dial locks on each tuning shaft. Illuminated band-in-use indicator and "S" meter. Outstanding stability plus two r-f stages and eight tuned i-f circuits. A.V.C. operates on CW reception. Local oscillator circuits individually temperature compensated for each band. 50 kc i-f output jack via cathode follower for teletype converter, oscilloscopes, etc.

**CONTROLS:** Main tuning and Bandspread Dial Indicators resetable for maximum calibration accuracy. Six position Band Selector, Volume 0-10 and AC/Off, Band Width (In kc: 10, 5, 2 1/2, 1 1/4, .5 and .250), Pitch (B.F.O. + 5-0-5), Response (Bass Boost, High Fidelity, Normal, Communications), Antenna Trimmer (+ 5-0-5), Sensitivity (0-10). Toggle Switches: Noise Limiter On/Off; A.V.C. On/Off; Calibrator On/Off; Receive/Standby; CW-AM-SSSC.

**SENSITIVITY:** Bands 2-6: 1 microvolt for 1/2 watt output or 1 microvolt for 10 db signal-to-noise ratio. Band 1: 10 microvolts for 1/2 watt output.

**IMAGE REJECTION:** Not less than 80 db on frequencies lower than 20 Mcs. Not less than 60 db on frequencies from 20-30 Mcs.

**SPURIOUS RESPONSE:** (i-f and oscillator tweets): Not less than 80 db except at 1700 kc where it is not less than 50 db.

**CARRIER LEVEL INDICATOR:** Illuminated "S" meter calibrated in both "S" units and microvolts.

**TUBE COMPLEMENT:** Seventeen tubes plus one voltage regulator, one ballast tube and one rectifier.

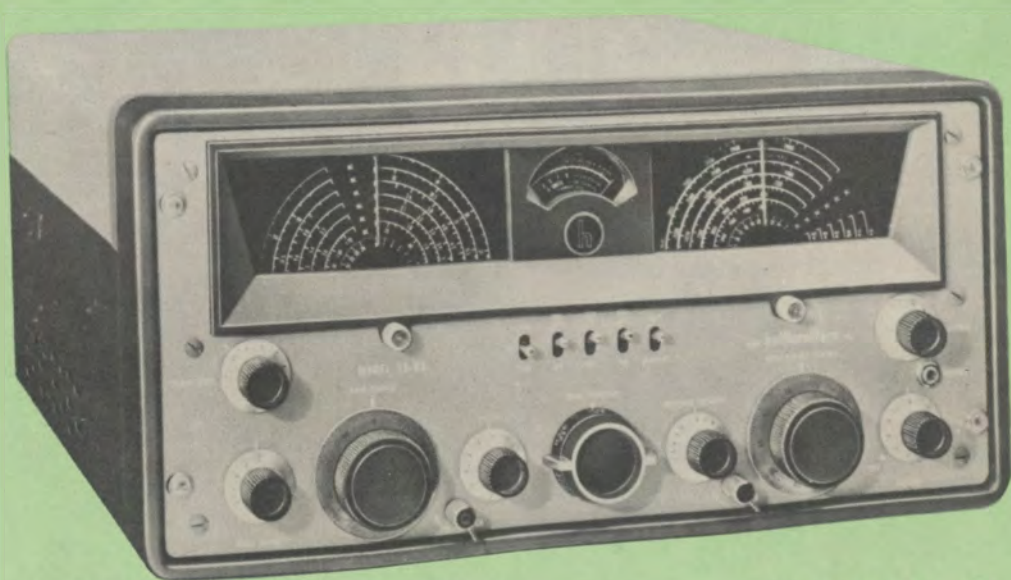
**EXTERNAL CONNECTIONS:** Speaker Terminals 3.2/8/-500-600 ohms; Antenna Terminals 52-600 ohms; AC accessory Socket 117V. at 250 watts; Power Socket (Octal) for external power supply to receiver, such as batteries, and in addition this socket supplies 6.3 volts at 600 ma. and 150 dc at 10 ma. for future accessories; Phono Jack; Fuse holder for AC power circuit.

**AUDIO POWER SUPPLY:** 10 watt inverse feed back and push-pull audio output.

**POWER SUPPLY:** 105/125 V. 50/60 cycles AC.

**PHYSICAL DATA:** Satin black steel cabinet with gray blue front panel and chrome trim. Size 20" x 10 3/8" x 18 1/4" deep (Standard 19" panel for rack mounting). Shipping weight approximately 85 lbs.

**MODEL SX-88** ..... \$675.00



**model SX-88**

Use Hallicrafters R-46A Speaker.

hallicrafters

This newly designed and engineered Hallicrafters receiver has the 10, 11, 15, 20, 40 and 80 meter amateur bands calibrated on large easy-to-read dial. Over 1000° of calibrated bandspread for better selectivity on ham bands. Husky, full sized unit features separate bandspread tuning condenser and built-in PM 5" speaker.

**COVERAGE:** Broadcast band 540-1680 kc plus three S/W bands 1680 kc-34 Mc.

**FEATURES:** Bandspread calibrated in over 1000° on 10, 11, 15, 20, 40 and 80 meter amateur bands. One r-f, two i-f and separate bandspread tuning condenser. Temperature compensated oscillator, audio response to 10,000 cycles and built-in speaker.

**CONTROLS:** Sensitivity, band selector, tuning, bandspread, volume, AVC, noise limiter, AM/CW, on-off/tone, pitch control, standby/receive.

**INTERMEDIATE FREQUENCY:** 455 kc.

**BAND CHANGE MECHANISM:** Ganged rotary wafer switch.

**TUNING ASSEMBLY AND DIAL DRIVE ASSEMBLY:** Ganged, 3 section tuning capacitor assembly with electrical bandspread. Circular main tuning dial is calibrated in megacycles and has O-100 logging scale.

**ANTENNA INPUT IMPEDANCE:** Balanced/unbalanced.

**HEADPHONE OUTPUT IMPEDANCE:** High impedance.

**AUDIO OUTPUT IMPEDANCE:** Voice coil impedance 3.2 ohms. High impedance headset output.

**TUBE COMPLEMENT:** Seven tubes plus rectifier: 6SG7: r-f amplifier — 6SA7: converter — 6SK7: 1st i-f amplifier — 6SK7: 2nd i-f amplifier — 6SC7: BFO and audio amplifier — 6K6GT: audio output — 6H6: ANL, AVC, and detector — 5Y3GT: Rectifier.

**EXTERNAL CONNECTIONS:** Terminals for single or doublet antenna on rear. External antenna provided. Headphone jack on front.

**AUDIO POWER OUTPUT:** 2 watts.

**POWER SUPPLY:** Model S-85: 105/125 V. 50/60 cycles AC/Model S-86: 105/125 V. 50/60 cycles AC/DC.

**PHYSICAL DATA:** Gray-black steel cabinet with brushed chrome trim and red pointers. Piano hinge top. Size 18 1/2" wide x 8 7/8" high x 10" deep. Shipping weight approximately 36 lbs.

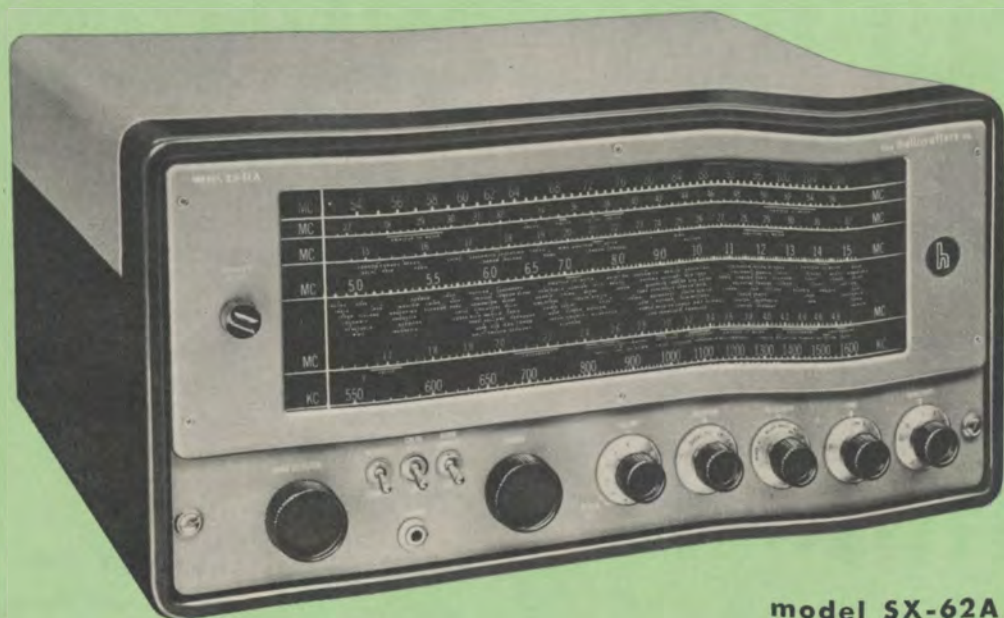
**MODEL S-85 or S-86 . . . . . \$119.95**



**model S-85, S-86**

*Prized Right!*





## model SX-62A

Use Hallicrafters R-46A Speaker.

Here is the world's finest receiver for the all-wave listener. Unequaled in coverage and performance on all bands—Standard Broadcast, Short-Wave or FM.

**COVERAGE:** Standard Broadcast from 550 kc through 1620kc, three Short-Wave bands 1.62 Mc—32Mc and FM from 27 Mc to 109 Mc.

**FEATURES:** Single tuning control covers wide-vision dial with one band lighting at a time. A 500 kc crystal calibration oscillator built-in to check dial pointer accuracy. Temperature compensated, voltage regulated. Audio flat 50—15,000 cycles; 10 watt push-pull audio output.

**CONTROLS:** Band Selector 550 kc—1620 kc, 1.62 Mc—4.9 Mc, 4.9 Mc—15 Mc, 15 Mc—32 Mc, 27 Mc—56 Mc, 54 Mc—109 Mc. Receive/Standby, Calibration Ocs. On/Off, Noise Limiter, Tuning, AF Gain, Phono/FM/AM/CW, six-position selectivity, Four-position Tone, RF Gain, Calibration Reset.

**INTERMEDIATE FREQUENCIES:** Bands 1, 2, 3 and 4: 455 kc. Bands 5 and 6: 10.7 Mcs.

**TYPE OF SIGNALS:** Bands 1, 2, 3 and 4: AM/CW. Bands 5 and 6: AM/FM/CW.

**BAND CHANGE MECHANISM:** Six position ganged rotary wafer switch.

**TUNING ASSEMBLY AND DIAL DRIVE MECHANISMS:** Ganged, 8 section, ball bearing tuning capacitor assembly. Smooth acting inertia tuning control. Thirteen inch slide rule dial, each band individually illuminated. Crystal cali-

bration switch and dial pointer reset on front panel.

**ANTENNA INPUT IMPEDANCE:** 52 to 600 ohms.

**HEADPHONE OUTPUT IMPEDANCE:** High impedance.

**AUDIO OUTPUT IMPEDANCE:** 3.2/8/500.

**AUTOMATIC NOISE LIMITER:** Series diode.

**TUBE COMPLEMENT:** Fourteen tubes plus voltage regulator and rectifier. (2) 6AG5: RF Amp. — 7F8: Conv. — 6SK7: IF Amp. — 6SG7: IF Amp. — 6SG7: IF Amp. — 6SG7: FM Limiter and AM Det. — 6H6: FM Det. — 6H5: BFO — 6H6: ANL — 6SL7: Phase Inverter — (2) 6V6: Push-pull audio output. — 6C4: Calibration Osc. — VR-150: Regulator — 5U4G: Rectifier.

**EXTERNAL CONNECTIONS:** Terminals for doublet or single wire antenna on rear. 3.2/8/500—ohm audio outputs. External antenna provided. Phone jack, socket for external power and remote control connections. Phone jack on front panel.

**AUDIO POWER OUTPUT:** 10 watts maximum.

**POWER SUPPLY:** 105/125 V. 50/60 cycles AC.

**PHYSICAL DATA:** Satin black steel cabinet with light gray front panel and chrome trim. Top opens on piano hinge. Size 20" wide x 10 1/2" high x 16" deep.

**MODEL SX-62A** .....\$349.95



model S-53A

Thousands of these precision-built Hollicrafters receivers have proved their value with outstanding performances around the world. Unquestionably one of the finest built, it offers maximum performance while occupying minimum space. Several steps above the S-38D and tops in its price field.

**COVERAGE:** Standard Broadcast from 540-1630 kc plus four Short-Wave bands over 2.5—31 and 48—54.5 Mc.

**FEATURES:** Large easy-to-read overseas dial with international stations clearly marked. Electrical bandspread and logging scale. Five inch built-in PM speaker, jacks for headphones plus phonograph jack. Temperature compensated to reduce fading due to frequency shift. Two stages of i-f.

**CONTROLS:** Main tuning in Mc, separate electrical bandspread with 0-100 logging scale plus Mc calibration for 48—54.5 Mc band, receive/standby switch, band selector 540—1630 kc; 2.5—6.3 Mc; 6.3—16 Mc; 14—31 Mc; and 48—54.5 Mc, AM/CW switch, sensitivity phono control, noise limiter switch, on-off/volume, two position tone switch.

**INTERMEDIATE FREQUENCY:** 455 kc.  
**BAND CHANGE MECHANISM:** Five position rotary wafer switch.

**TUNING ASSEMBLY AND DIAL DRIVE MECHANISM:** Separate 2 section tuning capacitor assemblies for main tuning and bandspread tuning. Overseas dial. Bandspread tuning calibrated for 48—54.5 Mc.

**ANTENNA INPUT IMPEDANCE:** Balanced/unbalanced.

**HEADPHONE OUTPUT IMPEDANCE:** 15 ohms.

**AUDIO OUTPUT IMPEDANCE:** Five inch PM speaker and low impedance output for headset.

**TUBE COMPLEMENT:** Seven tubes plus one rectifier: 6C4: Osc. — 6BA6: Mixer — (2) 6BA6: IF Amplifier — 6H6: Det., AVC and ANL — 6SC7: BFO and AF amp. — 6K6GT: Output — 5Y3GT: Rectifier.

**EXTERNAL CONNECTIONS:** Phonograph jack, headphone tip jacks, speaker/phones switch, and terminals for 'doublet or single wire antenna on rear. External antenna provided.

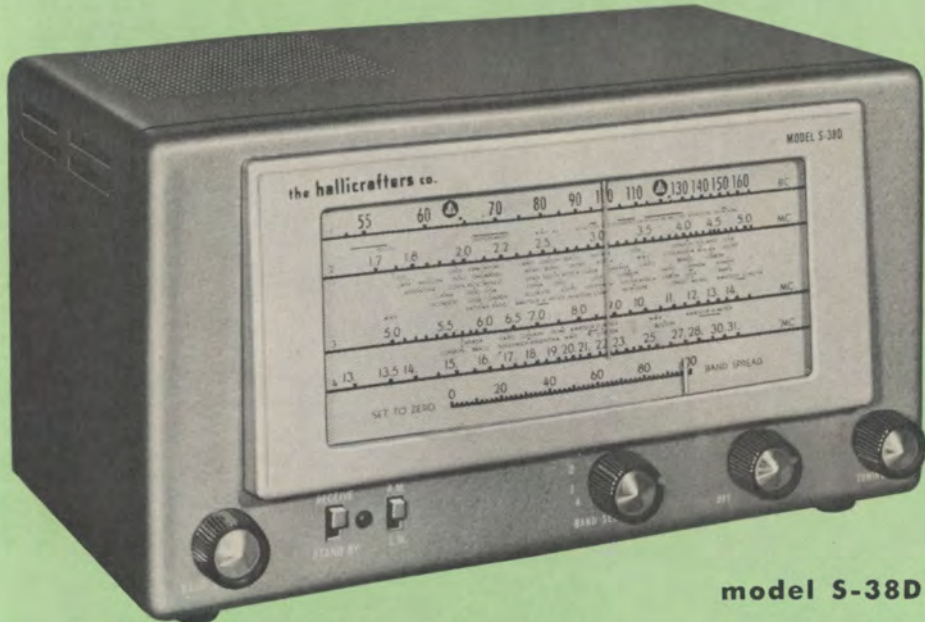
**AUDIO POWER OUTPUT:** One watt.

**POWER SUPPLY:** 105/125V. 50/60 cycle AC.

**PHYSICAL DATA:** Sturdy satin black steel cabinet with brushed chrome trim. Top opens on piano hinge. Size 12 $\frac{1}{8}$ " wide x 7" high x 7 $\frac{3}{4}$ " deep. Shipping weight 19 lbs.

**MODEL S-53A** ..... \$89.95





**model S-38D**

This famous Hallicrafters' radio, now with smart new styling, amazes even the experts with its superior performance. Featuring the same skillful engineering found in much higher priced communications sets make the S-38D ideal for the Short-Wave listener or new radio amateur.

**COVERAGE:** Standard Broadcast from 540-1650 kc plus international reception on 3 Short-Wave Bands covering 1650 kc—32 Mc.

**FEATURES:** Large easy-to-read overseas dial with stations clearly marked. Oscillator for reception of code and electrical bandspread. Separate tuning control and built-in 5" PM speaker.

**CONTROLS:** Tuning dial, separate electrical bandspread dial with 0-100 scale, receive/standby switch, on-off/volume, AM/CW switch, band selector 540-1650 kc, 1.65-5Mc, 5-14.5 Mc, 13.5-32Mc.

**INTERMEDIATE FREQUENCY:** 455 kc.

**BAND CHANGE MECHANISM:** Four position rotary wafer switch.

**TUNING ASSEMBLY AND DIAL DRIVE MECHANISM:** Two section tuning gang with electrical bandspread. Vernier driven circular dial. Bandspread dial marked 0-100.

**AUDIO OUTPUT IMPEDANCE:** Five inch PM speaker and low impedance output for headset.

**TUBE COMPLEMENT:** Four tubes plus one rectifier: 12SA7: converter — 12SG7: IF amplifier and BFO — 12SQ7 or 12SQ7GT/G: detector and audio amplifier — 50L6GT: audio output — 35Z5GT: rectifier.

**EXTERNAL CONNECTIONS:** Phone tip jacks and terminals for single wire or doublet antenna, switch for speaker or headphones on rear. External antenna provided.

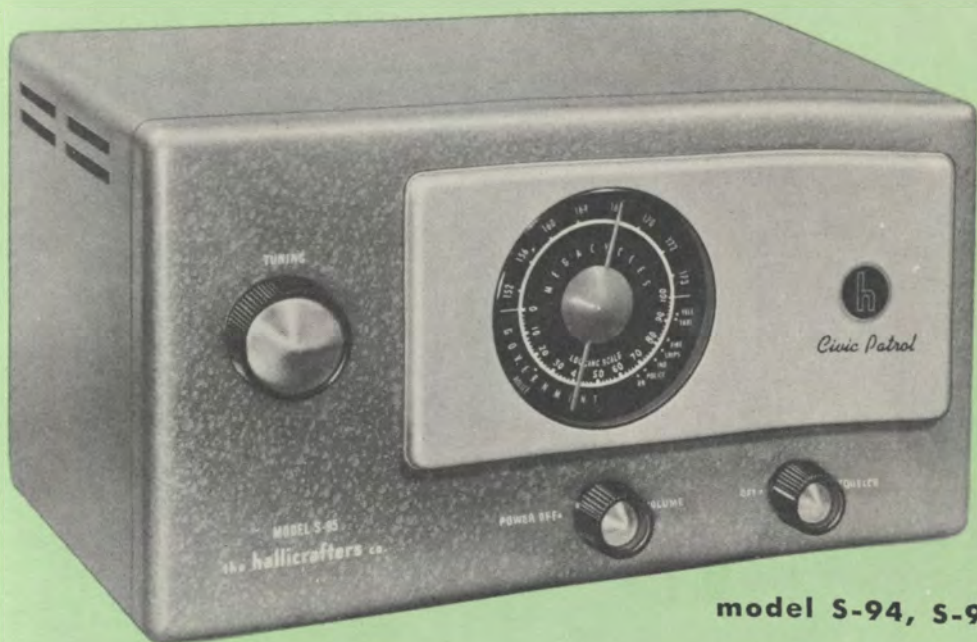
**AUDIO POWER OUTPUT:** One Watt.

**POWER SUPPLY:** 105/125 V. 50/60 cycle AC/DC. Line cord (87D1566) for 220 V. AC/DC operation available.

**PHYSICAL DATA:** Gray steel cabinet with silver dial frame and knob trim. Size 12 7/8" wide x 7" high x 7 1/4" deep. Shipping weight 13 lbs.

**MODEL S-38D** ..... \$49.95

**LINE CORD (87D1566) for 220 V.** ..... \$ 2.00



**model S-94, S-95**

Two new high performance receivers replacing the popular Hallicrafters S-81 and S-82. Compact, easy-to-operate and covers police, fire, taxicab, bus, railroad, private telephone mobile, forestry and other industrial and emergency-service communications operating within models' frequencies. Newly engineered FM chassis provides low frequency drift and high signal-to-noise ratio.

**COVERAGE:** S-94: 30-50 Mc — S-95: 152-173 Mc.

**FEATURES:** Super sensitive, greatly increased audio power output plus extremely reliable adjustable built-in relay squelch system to silence entire audio system until signal is received. Low noise grounded grid r-f amplifier, separate high gain d.c. amplifier for squelch system, wide impedance range antenna input system for excellent performance with any antenna. Low oscillator radiation, greater frequency stability, sensitivity under  $1\frac{1}{2}$  microvolts, 2 i-f stages for extra sensitivity, and built-in 5" PM speaker.

**CONTROLS:** Tuning with special logging scale assuring accuracy in logging or relocating stations. On-off/volume, squelch/off.

**INTERMEDIATE FREQUENCY:** 10.7 Mc.

**TUNING ASSEMBLY AND DIAL DRIVE ASSEMBLY:** Ganged, 2 section tuning capacitor assembly. Circular dial calibrated in megacycles and principal service channels. O-100 logging scale.

**ANTENNA INPUT IMPEDANCE:** Balanced/unbalanced.

**HEADPHONE OUTPUT IMPEDANCE:** 100 ohms.

**AUDIO OUTPUT IMPEDANCE:** Five inch PM speaker. Low impedance headset output.

**TUBE COMPLEMENT:** Eight tubes plus one rectifier: 6AB4: Grounded grid low noise r-f amplifier — 12AT7: High frequency oscillator/mixer — (2) 12BA6: 1st and 2nd i-f amplifier — 12AL5: Ratio detector — 6BH6: Audio amplifier — 50L6GT: Audio output — 12AU7: Squelch — Selenium rectifier.

**EXTERNAL CONNECTIONS:** Phone tip jacks and terminals for single or twin lead antenna, switch for speaker/headphones on rear. External antenna provided.

**AUDIO POWER OUTPUT:** 1.5 watts, maximum.

**POWER SUPPLY:** 105/125 V. 50/60 cycle AC/DC. Mobile operation possible with external power converter.

**PHYSICAL DATA:** Gray steel cabinet with silver trim panel and red pointer. Size  $12\frac{7}{8}$ " wide x 7" high x  $7\frac{1}{4}$ " deep. Shipping weight approximately  $12\frac{1}{2}$  lbs.

**MODEL S-94 or S-95 . . . . . \$59.95**

**JACK C. ARBUCKLE**

2330 KERN ST.

FRESNO 1, CALIF.