

THE FINE PERFORMANCE CHARACTERISTICS OF THE HQ-180 LEND THEMSELVES TO THE MOST CRITICAL MILITARY AND COMMERCIAL SSB REQUIREMENTS.



**GENERAL-
COVERAGE
AT ITS
SSB BEST!**

the **HAMMARLUND** **HQ-ONE-EIGHTY**

- ★ **TRIPLE CONVERSION**—18-tube superheterodyne circuit with automatic noise limiter
- ★ **FREQUENCY RANGE**—Full dial coverage from .54 MCS to 30.0 MCS.
- ★ **BANDSPREAD**—Bandspread calibration for 80, 40, 20, 15 and 10 meter amateur bands.
- ★ **NEW HIGH FREQUENCY CRYSTAL FILTER**—A new version of the renowned Hammarlund Crystal Filter is employed at 3035 KCS to improve selectivity and shape factor of the 1st I.F. amplifier. Employed in triple-conversion ranges.
- ★ **SLOT FILTER**—Razor sharp 1.5 KCS at 6 db. Adjustable ± 5 KCS over passband for better than 40 db attenuation. Additional 20 db attenuation by adjusting slot depth control.
- ★ **SEPARATE VERNIER TUNING**— ± 3 KCS for easy SSB tuning.
- ★ **SEPARATE LINEAR DETECTOR**—Linear product detector for CW and SSB reception, plus normal diode AM detection. First converter crystal controlled for high stability.
- ★ **TUNED IF AMPLIFIER**—Seven selectivity positions provide mechanical filter type selectivity.
- ★ **SELECTABLE SIDEBAND**—Upper, lower, or both sidebands selectable from front panel.
- ★ **BFO CONTROL** ± 2 KCS
- ★ **FAST ATTACK AVC**—Selectable, OFF, SLOW, MEDIUM, FAST decay speeds. AVC obtained from high selectivity 60 KCS IF.
- ★ **CRYSTAL CALIBRATOR**—Built-in 100 KCS crystal calibrator.
- ★ **DIAL SCALE RESET**—Adjustable calibration for frequency dial.
- ★ **AUTOMATIC NOISE LIMITER**—Effective on CW and SSB. Adjustable level.
- ★ **AUTO-RESPONSE**—Exclusive design automatically adjusts audio passband to fit receiving conditions.
- ★ **CABINET**—Modern design featuring super ventilation. Humanized controls.

Professional performance at amateur price

The Hammarlund HQ-180 is designed to meet the modern need of both the commercial and amateur user for a true single-sideband communications receiver of general coverage. The HQ-180 embodies the most modern tuning techniques for optimum performance in the most crowded bands. In addition, the HQ-180 features the extreme sensitivity that has won acclaim for Hammarlund receivers throughout the world. Most important of all, like all Hammarlund receivers, the HQ-180 is designed to provide the dependability and performance the user requires. It is another Hammarlund-quality product.

The HQ-180 offers the user an infinite number of tuning techniques whereby all single sideband conditions can be met. The combination of the slot filter, selectable sideband, tuned IF, bandspread, and separate linear detector makes possible uniquely useful rf passbands that may be employed to tune in the most critical sideband signals, or again, to attenuate adjacent or co-channel interference.

The extreme selectivity of the HQ-180 combined with the inherent Hammarlund sensitivity makes possible clear reception of signals far beyond the capabilities of other receivers in its class. The HQ-180 will provide 10 db signal-to-noise ratio at 1.5 μ volt AM or approximately .5 μ volt CW, or better, depending upon the bandwidth.

Continuous tuning is provided from .54 MCS to 30.0 MCS. Over this frequency range the receiver operates on a single wire flat top, a folded dipole, or doublet antenna. If a shielded lead is desired, a coaxial input is provided for standard coaxial cables.



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CIRCUITRY

The HQ-180 is an 18-tube superheterodyne receiver with triple conversion from 7.85 MCS through 30.0 MCS and dual conversion from .54 MCS through 7.85 MCS.

In the front-end, the HQ-180 utilizes a (6BZ6) tuned RF amplifier and a separate mixer (6BE6) and oscillator (6C4). This combination achieves a high degree of stability, extremely high gain, and a low noise factor. Specifications listed on back page of this brochure list the many possible functions and the complete tube complement.

Throughout the receiver drift after warmup is held to a minimum through the use of low-loss sockets, coil forms and bandswitch wafers, plus temperature-compensating capacitors and the application of regulated power to the oscillator circuit. Drift after a 15-minute warmup is less than 0.01% of frequency.

BANDSPREAD

The HQ-180 incorporates bandspread tuning with direct dial calibration on five amateur bands: 80, 40, 20, 15 and 10 meters. Through the use of two separate dials, optimum read-out and operation is provided. A 0-100 logging arbitrary scale is also included on the bandspread dial.

TRIPLE CONVERSION

Very high image rejection rate is achieved through triple conversion in the IF from 7.85 MCS to 30.0 MCS. The IF frequencies used are 3035 KCS, 455 KCS and 60 KCS. The second IF is hetero-

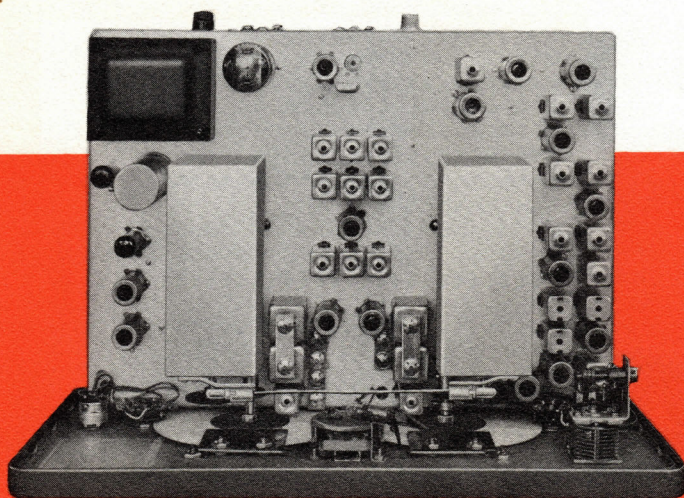
dynded with a crystal-controlled oscillator. The third IF is heterodyned with a high stability oscillator.

IF AMPLIFIER

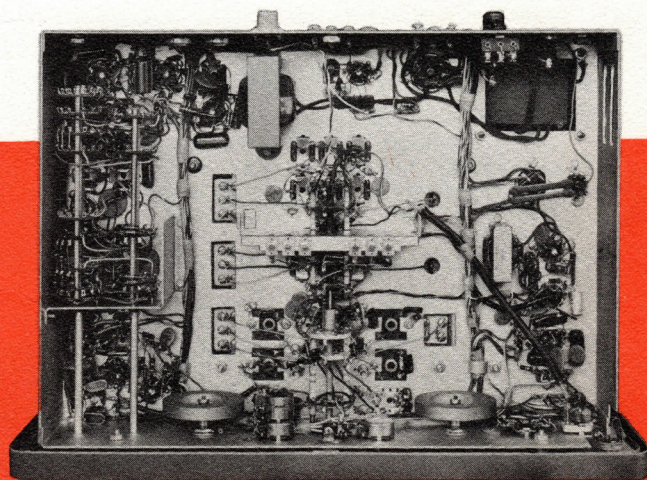
All IF circuits employ iron-core permeability-tuned transformers for high gain and retention of alignment accuracy. The 3035 KCS and 455 KCS IF amplifiers provide eight tuned circuits in three stages of amplification. The 60 KCS IF amplifier contains six tuned circuits and three stages of amplification. The 60 KCS amplifier is employed in both the triple and dual conversion circuits, depending upon the operating band. Selectivity of this amplifier is controlled from the front panel, offering seven selections: 1-2-3 KCS on either sideband, and .5-2-4-6 KCS on both sidebands. The skirt selectivity of this system approaches that of the mechanical filter, without the inherent compromise of the mechanical "ringing". Another front panel control is used to select upper, lower, or both sidebands for fast, simple sideband tuning.

SLOT FILTER

A bifilar "T" trap circuit is used as a slot filter. It is controlled from the front panel, providing a notch of up to 60 db attenuation over the entire range of ± 5 KCS from the center IF (455 KCS) frequency. The slot filter control provides 40 db attenuation, which may be extended to 60 db through the use of the slot depth control at a particular setting. The 6 db width of the slot is approximately 1.5 KCS. An 8:1 vernier control permits accurate frequency adjustment of the slot.



TOP VIEW



BOTTOM VIEW

HQ-180

AVC

The AVC in the HQ-180 is taken from the high selectivity 60 KCS IF. It is an extremely fast-attack delayed AVC that is controllable from the front panel. The control allows selection of OFF-FAST-MEDIUM or SLOW decay time for optimum results on various signal conditions.

AUDIO

The exclusive Hammarlund Auto-Response circuit provides best-suited audio response under all receiving conditions. Auto-Response automatically adjusts the audio passband through a controlled feedback circuit. As the gain is increased, the circuit narrows the audio passband to provide the crisp audio signals necessary for accurate reading under weak signal conditions. As the gain is decreased, the Auto-Response circuit broadens the audio response for enjoyable, better fidelity listening. A (6A5) provides 1.0 watts for maximum undistorted audio output.

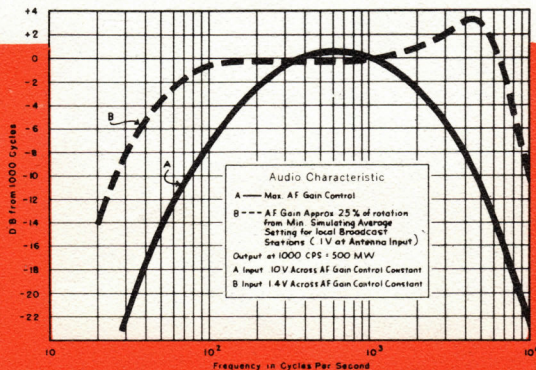
The audio output may be used with either ear-phones or loudspeaker. The phone plug automatically silences the speaker upon insertion. The Auto-Response permits maximum pleasure in listening to AM, SSB, and CW reception.

S-METER

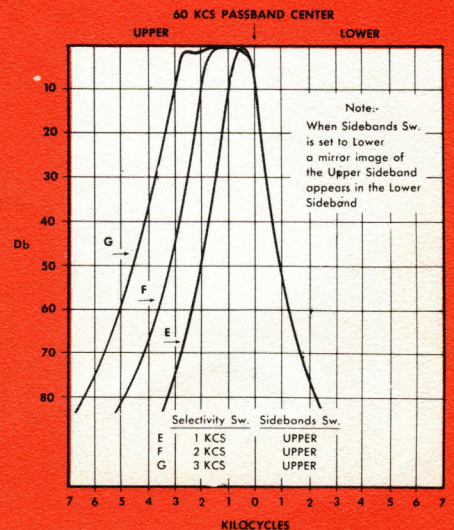
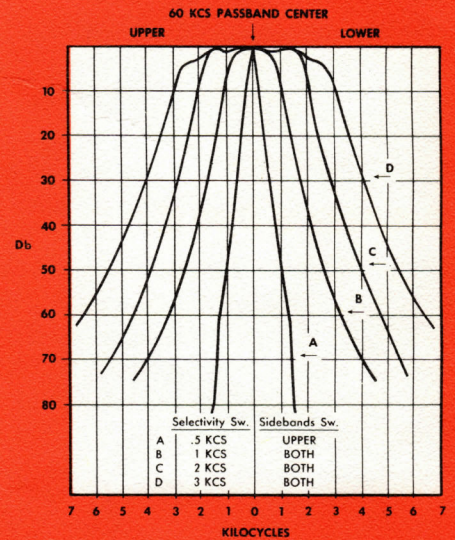
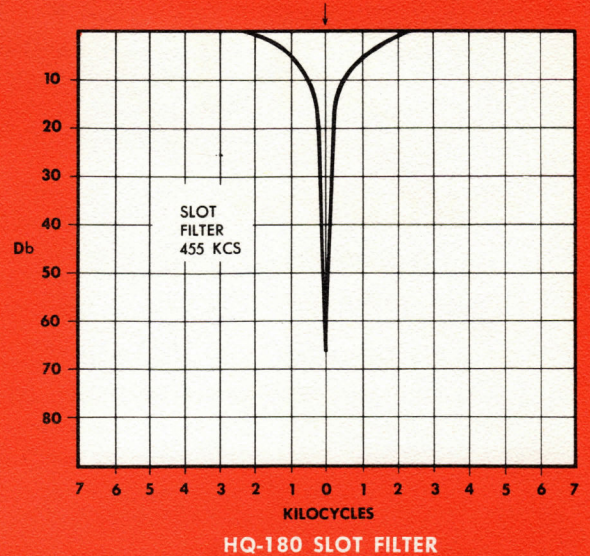
An S-Meter is provided on the HQ-180 for signal-strength read-out, and also as a visual aid in critical tuning. The S-Meter scale is factory-calibrated so a signal of 50 microvolts reads S-9. Calibrations are up to 40 db over S-9. Each S-unit indicates approximately a 6 db increase, equivalent to doubling the signal strength.

SEPARATE VERNIER TUNING

± 3 KCS vernier tuning allows extra-fine pass-band tuning between the 455 KCS IF and the 60 KCS IF for additional selectivity and easy tuning of the desired signal.



AUTO RESPONSE AUDIO PASSBAND



HQ-180

SPECIFICATIONS

- BANDS COVERED:** 10, 15, 20, 40, 80 and 160 meter bands.
- BANDSPREAD CALIBRATION:** Dial markings every 5 KCS on 15, 20, 40 and 80 meter bands; every 10 KCS on 10 meter band; plus arbitrary 0-100 logging scale.
- NO. OF FREQUENCY CONVERSIONS:** Dual from .54 MCS to 7.85 MCS; triple from 7.85 MCS to 30.0 MCS.
- FREQUENCY RANGE COVERED:** .54-1.05 MCS; 1.05-2.05 MCS; 2.05-4.04 MCS; 4.0-7.85 MCS; 7.85-15.35 MCS; 15.35-30.0 MCS.
- OUTPUT IMPEDANCE:** 3.2 ohms (EIA Standard). Audio output: 1.0 watt (undistorted).
- AVC ACTION:** Operates on RF and 3 IF stages. Provides fast charge—adjustable discharge, smooth acting AVC. Delayed AVC applied to the RF stage. Better than .001 second attack time and .01—1—1 second decay time. Off position.
- ADJUSTABLE SELECTIVITY AND SELECTABLE SIDEBANDS:** 6 db bandwidths. Upper sideband 1-2-3 KCS. Lower sideband 1-2-3 KCS. Both sidebands .5-2-4-6 KCS.
- SENSITIVITY:** An average of 1.5 microvolts AM and approximately .7 microvolt on CW produces 10:1 signal-to-noise ratio.
- ANTENNA INPUT:** 72 ohms nominal balance or unbalanced. Provision for separate coaxial lead-in.
- ANTENNA COMPENSATOR:** Permits compensation for loading effects of various type antennas, or balanced transmission line.
- BEAT FREQUENCY OSCILLATOR:** Variable from zero beat \pm 2 KCS.
- SLOT FILTER:** \pm 5 KCS of center frequency. Attenuation over \pm 5 KCS range provides over 40 db. Calibrations every 1 KCS. Maximum attenuation using slot depth control 60 db. 8:1 vernier tuning ratio.
- TUBE COMPLEMENT:**
- | | | |
|----------------------------------|----------------------------|-------------------------|
| 6BZ6 | 6BE6 | 12AU7 |
| RF Amplifier | 2nd Converter. | BFO—"S" Meter Amp. |
| 6BE6 | 6BA6 | 6AV6 |
| Mixer | 60 KCS IF Amp. | 1st AF Amp.—Delayed AVC |
| 6C4 | 6BA6 | 6AQ5 |
| HF Oscillator | 60 KCS IF Amp. | Audio Power Output |
| 6BE6 | 6BV8 | 5U4GB |
| 1st Converter—crystal controlled | 60 KCS IF Amp. AVC-AM Det. | Rectifier |
| 6BA6 | 12AU7 | OA2 |
| 455 KCS Gate | SSB Product Det. | Voltage Regulator |
| 6BA6 | 6AL5 | 6BZ6 |
| 455 KCS IF Amp. | Noise Limiter | Crystal Calibrator |
- POWER SUPPLY:** 105-125 Volts, 50/60 cps. A.C. Power Consumption 120 watts.
- "S" METER:** Calibrated 1 to 9 in steps approximately 6 db each. Also includes db scale above S-9 to plus 40 db. (Meter deflects on all type signals).
- NOISE LIMITER:** Adjustable series-type provides both positive and negative clipping.
- FRONT PANEL EQUIPMENT:**
- | | |
|---|---|
| Main Tuning | Slot. Freq. Calib. |
| Band Spread Tuning | CW Tone (BFO Pitch) |
| Sensitivity (RF Gain): ON/OFF switch | Noise Limiter, adjustable-ON/OFF Switch |
| Selectivity: 0.5-1-2-3 KCS per sideband | AVC, off, slow, medium, fast. |
| Sideband: Upper-Lower-Both | Send-Receive-Calibrate-ON switch |
| Audio Gain | "S" Meter |
| Antenna Compensator | Phone Jack |
| Tuning Range (Band Selector) | Dial Scale Reset |
| Function Switch: AM-SSB/CW | |
- REAR PANEL EQUIPMENT:** Terminal for speaker connections and muting voltage. Terminals for balanced and unbalanced antennas, with separate coaxial connector. Jack for external send/receive relay connections. Fuse.
- DIMENSIONS:** 10½" h x 19" w x 13" d.
Wt. 38 lbs.
Shipping Wt. 45 lbs.

EXPORT & SPECIAL CRYSTAL-CONTROLLED FIXED FREQUENCY MODEL

HQ-180E

Universal model receiver for 115-230 Volts, 50/60 cycles. 50 or 60 cycle clock must be specified when ordering.

HQ-180XE

Universal model of the HQ-180 receiver incorporating 11 fixed-frequency crystals. Six of the crystals are easily interchangeable from the front panel—the balance are located within the cabinet but are readily accessible from the trap-door top. \pm 3 KC vernier tuning control permits compensation for minor frequency variations of the crystals. Designed to operate on 115-230 Volts, 50/60 cycles.



24 HOUR CLOCK-TIMER

Combination clock and automatic timer. Aids in meeting prearranged schedules. Optional extra.



S-200 SPEAKER

Matching HQ-180 electrically and mechanically. Extended range 6" x 9". 8 watt capacity. Housed in attractive metal cabinet.



Established 1910



HAMMARLUND

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A Gianni Scientific Co.

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