

HAMMARLUND HQ-160



STAR PERFORMER

- ★ **DUAL CONVERSION**—13 tube dual-conversion superheterodyne circuit.
- ★ **FREQUENCY RANGE**—540 KCS to 31 MCS in six bands.
- ★ **SINGLE SIDEBAND**—Separate linear detector for optimum reception of SSB and CW signals.
- ★ **Q-MULTIPLIER**—Permits continuously variable selectivity to meet all operating conditions.
- ★ **BANDSPREAD**—Electrical bandspread tuning with calibrations of 80, 40, 20, 15 and 10 meter bands.
- ★ **BEAT FREQUENCY OSCILLATOR**—Separate stabilized beat-frequency oscillator for SSB and CW reception.
- ★ **STABLE**—Voltage-regulated and temperature-compensated high-frequency oscillator for extra stability.
- ★ **CRYSTAL CONTROL**—2nd conversion oscillator crystal controlled.
- ★ **CRYSTAL CALIBRATOR**—Built-in 100 KC crystal calibrator.
- ★ **DIAL SCALE RESET**—Adjustable calibration of dials on front panel for precise settings.
- ★ **CALIBRATION**—Bandspread dial calibrations every 5 KCS up to 10 MCS. Every 10 KCS from 10 MCS up.
- ★ **AUTO-RESPONSE**—Automatically adjusts audio response to fit receiving conditions.
- ★ **AUTOMATIC NOISE LIMITER**—Minimizes static bursts and ignition interference.
- ★ **CABINET**—Sturdy, modern design with "humanized" front panel layout for easy operation.
- ★ **NOTCH FILTER**—Adjustable notch filter. Up to 60 db attenuation.
- ★ **TUNED CIRCUITS**—14 tuned circuits in 455 KCS IF for improved skirt selectivity.
- ★ **"S" METER**—Calibrated 1 to 9, at approximately 6 db per S unit and above S-9 to plus 40 db.
- ★ **IF OUTPUT JACK**—On rear of chassis.

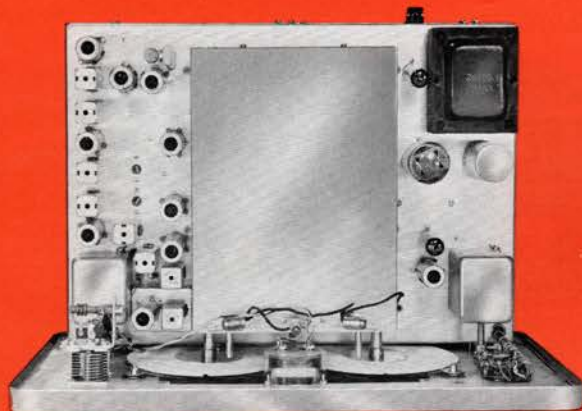
HERE'S a general-coverage communications receiver that has everything—and then some! The HQ-160 is a product of the leading manufacturer of communications receivers and reflects Hammarlund's finest engineering design and production skills. Only Hammarlund, with unsurpassed production and engineering know-how, could wrap up so many features in such a fine quality receiver and sell it for the price of the HQ-160. Truly, the Hammarlund HQ-160 sets a brand-new

standard of value for communications receivers.

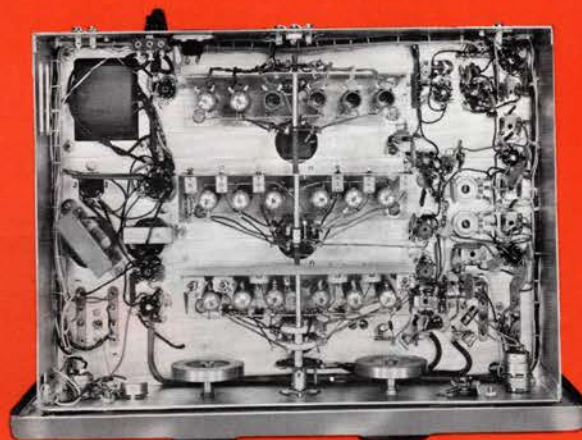
The HQ-160 covers continuously the frequency range of 540 KCS to 31 MCS allowing reception of all popular bands. It is a 13-tube dual conversion superheterodyne receiver with 14 tuned circuits in the IF and crystal controlled 2nd conversion. A notch filter is included to permit attenuation up to 60 db of adjacent, unwanted signals. The notch may be adjusted in depth and moved 5 KCS either side of the desired signal.



HAMMARLUND



TOP VIEW



BOTTOM VIEW

HQ

A new high in dial readability is achieved through more finely calibrated dials plus adjustable scale reset on both dials. The bandspread dial is calibrated every 5 KCS up to 10 MCS and every 10 KCS from 10 MCS up. A built-in 100 KCS crystal calibrator permits fast, accurate calibrations of dials.

Hammarlund receivers have long been world-renowned for their extra sensitivity. The HQ-160 is no exception to this rule. 1.5 μ volt provides a signal-to-noise ratio of 10:1. Few receivers, at any price, can equal this extra-hot performance.

The HQ-160 incorporates the exclusive Hammarlund Auto-Response circuit that automatically adjusts the audio bandpass for best listening under any reception conditions. As the gain of the receiver is increased, the audio output passband is decreased, thus providing the narrow frequency response necessary for "crisping" weak communications. As the gain is turned down, the audio passband broadens for improved AM reception.

So for the short-wave listener, or the amateur, or the commercial listener, there is no finer value in communications receivers than the HQ-160—the receiver that serves as a new standard of value.

GENERAL DESCRIPTION—The HQ-160 Communications Receiver is a table-top model, completely self-contained with regulated power supply for operation on 105-125 volts, 50-60 cps, 100 watts. The power supply is completely filtered to eliminate AC ripple. The cabinet is made of perforated steel for maximum air circulation, while the front panel is of solid steel with aluminum trim in the most modern design.

Much attention has been paid to the design and layout of the HQ-160 front panel. As a result, the HQ-160 is one of the most comfortable receivers to operate. Extra-large tuning knobs permit a real "feel" of the tuning operation, while all controls have been grouped in association with their functions. It doesn't take long to feel right at home with the HQ-160. All calibrations and markings are in high-white on a pleasing gray background permitting top legibility.

The HQ-160 provides continuous tuning, in six bands, from 540 KCS to 31MCS. A TUNING RANGE switch on

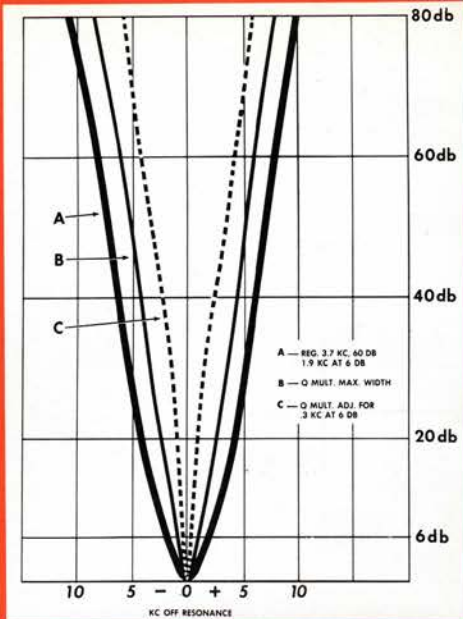
the front panel permits selection of desired band. Antenna requirements for complete frequency coverage is a simple, single wire flat-top, a folded dipole, or doublet antenna. An antenna trimmer capacitor on the front panel allows optimum antenna-to-receiver impedance matching.

CIRCUIT DESIGN—The HQ-160 is a true communications receiver, through and through. The circuit is designed to provide the performance expected of a communications receiver in all respects. Basically, it is a 13-tube superheterodyne with dual conversion, an automatic noise limiter and separate second detector. A 6U8 is used as a linear detector and B.F.O. for SSB and CW.

Stability of a high degree is achieved through the use of a separate mixer (6BE6) and oscillator (6C4). The high sensitivity of the HQ-160 results from a most advanced design RF amplifier making use of modern tube types. This circuitry, while providing high gain, has very low noise, thus achieving "clean" reception on even the weakest signals. The automatic noise limiter is a section of the (6BJ7) which is self-adjusting, minimizing impulse noise such as auto ignition. Though highly efficient in reducing noise, this circuit has no appreciable effect on the desired signal. Another section of the (6BJ7) is employed as a second detector and as an AVC system, while the third section functions as a delayed AVC system for the RF amplifier.

The HQ-160 is very stable after warmup. Low-loss sockets, coil forms, and bandswitch wafers, temperature-compensating capacitors, application of regulated power to the oscillator circuit and the rugged construction of the entire high-frequency oscillator section assembly contribute to the outstanding stability of the HQ-160.

BANDSPREAD—Electrical bandspread tuning is provided for five amateur bands: 80, 40, 20, 15 and 10 meters. A new dial design, whereby the higher frequencies are arranged toward the outer edge of the dial, results in greater scale lengths. The bandspread dial is calibrated every 5 KCS up to 10 MCS and every 10 KCS from 10 MCS up. The HQ-160 bandspread dial also incorporates an arbitrary 0-100 logging scale.



HQ-160 SELECTIVITY

RF SECTION — Outstanding antenna coupling with antenna trimmer capacitor and the high signal-to-noise ratio of the HQ-160 RF amplifier provides excellent pre-selection and high signal for optimum performance. The antenna trimmer capacitor provides antenna matching for maximum transfer of signal from transmission line to front end of receiver.

DUAL CONVERSION — Excellent rejection of image response is achieved in the HQ-160 through dual-conversion of the IF. Dual conversion is provided on the 10, 15 and 20 meter bands. The first conversion produces an intermediate frequency of 3035 KCS and is heterodyned with a crystal-controlled oscillator to the second intermediate frequency of 455 KCS.

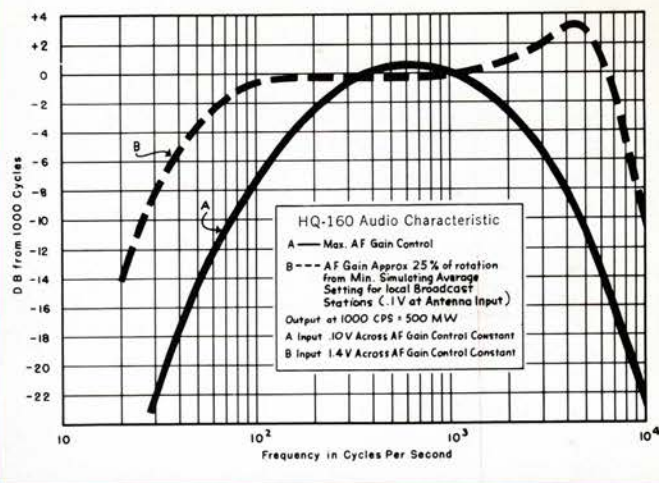
Q-MULTIPLIER — The Q-multiplier is a very important feature in today's crowded radio bands. This feature permits continuously variable selectivity. It minimizes the need for de-tuning from the desired signal in order to eliminate an adjacent signal. A section of the (12AX7) is used in the Q-multiplier.

NOTCH FILTER — A notch filter has also been incorporated in the HQ-160 to further the fine selectivity of the receiver. The notch is adjustable, providing up to 60 db attenuation within ± 5 KCS, with extremely steep side skirts. This razor-sharp notch may be moved above, or below the desired signal by means of a control on the front panel. The notch filter plays an important part in improving all forms of reception by reducing or eliminating adjacent channel interference.

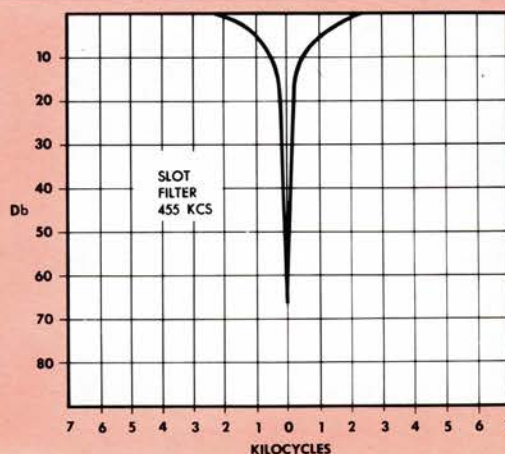
IF AMPLIFIER — 14 tuned circuits in the IF amplifier contribute greatly to the selectivity and sensitivity of the HQ-160. Iron core permeability-tuned transformers improve performance and retain accuracy of alignment.

A super-fast Automatic Volume Control controlling the IF gain plus delayed AVC for RF amplifier provides optimum signal-to-noise ratio and helps to overcome fading and signal strength variations.

S METER — Accurate tuning and accurate signal strength read-outs are easy with the S-meter circuit of the HQ-160. A new meter design provides easier and faster read-



HQ-160 AUDIO CHARACTERISTIC



HQ-160 NOTCH FILTER

ings. The scale is calibrated to 40 db over S-9. The meter is factory-calibrated so a signal of approximately 50 microvolts reads S-9. Each S unit indicates approximately a 6 db increase, equivalent to doubling the signal strength.

AUDIO — The Hammarlund Auto-Response permits the very best listening under all signal conditions, automatically. The Auto-Response circuit employs controlled feedback in the audio circuit. As the audio gain is reduced, the feedback broadens the frequency response of the audio amplifier. When receiving a strong signal, the frequency response of the audio approaches high-fidelity standards. In addition to this broad response, the Auto-Response effectively dampens the speaker response, thus minimizing speaker "hangover." The result on strong signal strength is excellent tone reproduction. When the signal is weak, and the audio gain turned up, the frequency response is cut down to a bandwidth approximately 175 to 2500 cps, thus subduing everything but the actual intelligence of the communication.

The HQ-160 may be used with loudspeaker or ear-phones. A jack is provided on the front panel for ear-phones, while speaker connections are at the rear of the cabinet.

Whatever method of listening you use, you'll find the HQ-160 a masterpiece of performance on AM, SSB and CW reception. It's a true Hammarlund receiver, worthy of the finest name in receivers.



SPECIFICATIONS

FREQUENCY RANGE B.S. CALIBRATION

MAXIMUM AUDIO OUTPUT OUTPUT IMPEDANCE AVC ACTION

VARIABLE SELECTIVITY SENSITIVITY

ANTENNA INPUT ANTENNA COMPENSATOR

BEAT FREQUENCY OSCILLATOR TUBE COMPLEMENT

POWER SUPPLY "S" METER

NOISE LIMITER

FRONT PANEL EQUIPMENT

REAR PANEL EQUIPMENT

DIMENSIONS

540 KCS to 31 MCS continuous tuning in 6 bands.

Dial markings every 5 KCS on 15, 20, 40 and 80 meter bands; every 10 KCS on 10 meter band. Plus 0-100 arbitrary logging scale.

1.0 Watt (Undistorted).

3.2 ohms (RETMA standard).

Operates on RF and IF stages. Provides fast, smooth action. Separate, delayed AVC for RF stage.

One position for AM 4 KCS. Q-Multiplier continuously variable from 100 cps to 2 KCS. An average of 1:5 uvolt produces 10:1 signal-to-noise ratio.

100 ohms nominal.

Permits compensation for loading effects of various type antennas, or balanced transmission line.

Variable from zero beat to ± 2 KCS.

RF Amplifier	6BA6	First AF Amplifier	
Mixer	6BE6	Q-Multiplier	12AX7
HF Oscillator	6C4		
2nd Converter-Crystal Osc.	6BE6	Audio Power Output	6AQ5
1st IF Amplifier	6BA6	Voltage Regulator	OB2
2nd IF Amplifier	6BA6	Rectifier	5U4-GB
Diode Detector, Series		Linear Detector & BFO	6U8
Noise Limiter AVC	6BJ7	Calibrator	6BZ6

105-125 volts, 50-60 cps, 100 watts.

Calibrated 1 to 9 in steps approximately 6 db. Also includes db scale above S-9 to +40 db.

New series type which provides better limiting action with minimum effect on modulation.

M. Tuning and B.S. Tuning Sensitivity (RF Gain)
Audio Gain—ON/OFF Switch Antenna (Compensator)
Function Switch: AVC—MAN—CW/SSB Tuning Range (Band Selector)

Phone Jack Q-Multiplier, Frequency and Selectivity

Slot Freq. Calib.—ON/OFF

CW Tone (BFO Pitch)

Slot Depth

Limiter On-Off Switch

"S" Meter

Send/Rec. Switch

Terminals for speaker connections.

Terminals for antenna and ground connections.

Fuse

External send-receive relay connection

IF Output

10½" H. x 19" W. x 13" D.

For Export

Special Universal Model: 105, 115, 125, 140, 220, and 250 volts, 25-60 cps.

The policy of the Hammarlund Manufacturing Company, Inc. is one of continued improvement in design and manufacture wherever and whenever possible, to provide the highest attainable quality and performance. Hence, specifications, finishes, etc. are subject to change without notice and without assumption by Hammarlund of any obligation or responsibility to provide such features as may be changed, added or dropped from previous production runs of this equipment.



SPEAKER

Matching 6" x 9" speaker. Extended range. 8 watt capacity. Housed in attractive metal cabinet. 9½" wide, 9½" high, 7" deep. (Optional accessory.)



HAMMARLUND

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