



The Swan SW-140 monoband 40m HF rig shown here is one of the gold coloured units that were first produced when Herb Johnson began manufacturing amateur radios. Designed for mobile, portable or fixed station use. Introductory price, in 1962, was \$275.00 US available from your dealer.

TECHNICAL SPECIFICATIONS....

120 Watts PEP from a 6DQ5 PA tube.

#### TUBE COMPLIMENT

- V1- 6DQ5 P.A.
- V2- 12BY7 Driver
- V3- 12BE6 Trans. Mixer
- V4- 12AU6 VFO
- V5- 6BA6 Receiver Amplifier
- V6- 12BE6 Receiver Mixer
- V7- 6BZ6 1st IF
- V8- 6BA6 2nd IF
- V9- 7360 Balanced Modulator
- V10- 6V6GTA AF Output
- V11- 12AU7 Microphone Amp
- V12- 12AX7 Product Detector
- V13- 6BA6 Carrier Osc.
- V14- 0D3 Voltage Regulator
- V15- 12AV6 A.F. Osc.

#### SPECIFICATIONS.

Frequency Range: 7.2 to 7.35 Mhz

High Frequency crystal lattice filter, 3Kc nominal bandwidth. Unwanted sideband down approximately 40 db. Carrier suppression approximately 50 db. Receiver selectivity also determined by crystal filter.

Receiver sensitivity less than 1 microvolt at 50 ohms input impedance for signal-plus-noise / noise ratio of 6 db.

Transmits automatically on receiving frequency.

Mechanical, electrical, and thermal stability expectionally high. Oscillators are voltage regulated

and temperature compensated.

Controls include: Main tuning, Volume, Carrier Balance, Mic. Gain, Exciter Tuning, P.A. Tune, P.A. Load, T-R Switch, Supply On-Off Switch, and Tune Switch.

Microphone Jack (1/4") provides for push-to-talk operation.

Transmits on AM, (single sideband with carrier) with carrier power of approximately 25 watts.

Audio response essentially flat from 300 to 3000 cycles on both receive and transmit.

Meter reads P.A. cathode current, 300 ma. full scale.

Size: 13 1/4" wide, 5 5/8" high, 11" deep.

Weight: 11 pounds.

## POWER SUPPLY

The original SW-140 as advertised in July 1962 recommended a matching 12 VDC power supply for \$100.00. Homebrew, Heathkit, or Collins power supplies can be used with some modifications.

## TRANSMITTER

When transmitting, audio from a high impedance microphone is amplified in the two triode sections of V11, a 12AU7. This signal is used to modulate the 5.7726 Mc (changes in later models) signal generated by the crystal controlled carrier oscillator V13. Modulation and carrier suppression are taken care of in the 7360 balanced modulator, V9. This gives a rated carrier suppression of about 50db. The two sidebands are fed into a crystal lattice type filter having a 3 Kc nominal bandwidth, and the upper sideband passes through and is amplified in V7, a 6BA6. The sideband suppression is rated at 40db, and the filter is made up of four crystals and a centre tapped inductor.

VFO output is mixed with the upper sideband signals in the 12BE6 mixer V3. The VFO frequency is higher than the sideband frequency, and since the difference is used, the sideband is inverted after conversion to 7.2 to 7.35 Mc. A lower sideband signal appears at the grid of V2, the 12BY7 driver. The plates of the two mixers, V2 and V3, are both tuned by the front panel Exciter Control. The two stages are tuned by a single butterfly capacitor, one side for each stage. A neutralized sweep tube, V1, a 6DQ5, is the rf amplifier, and the pi-network output is designed for a 50 ohm load.

## RECEIVER

The receiver section begins with the 6BA6 rf amplifier, and as the input stage is tuned with the PA Tune control and the PA Load control, the plate circuit is then tuned with the Exciter Tune capacitor control, which is switched from the transmitter section. Once set for transmitting, it

need not be re-set for receiving. The volume control adjusts the cathode of the rf amplifier, and there is no AGC circuit. Signals from the 6BA6 are mixed in the 12BE6 mixer tube, and fed into the crystal filter. This yields a selectivity of about 3 Kc, at 6 db. Signals are detected in a triode detector, V12, a 12AX7, which are fed from two 6BA6 IF amplifiers, 1/2 V7 and V8 and the carrier oscillator V13. The detected audio is amplified in one triode section of V12, and then in V10, a 6V6. A 3 to 4 ohm output is furnished for an external speaker.

#### SALES INFO....

The SW-140 sold for \$275.00 US in the summer of 1962. It was complete with a mobile mounting bracket and manual. The 120 volt power supply had to be home brewed or another brand was used. A Heath HP-20 or a Collins AC model # 516F-2 is recommended.