SWAN SW-140 TRANSCEIVER

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 Detecter
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 approximatly 40 db. Carrier suppression approximately 50 db. Receiver selectivity also determined by crystal filter.
Receiver sensitivity less than 1 microvolt at 50 ohms input impedence for signal-plus-noise / noise ratio of 6 db.
Transmits automatically on receiving frequency.
Mechanical, electrical, and thermal stability exeptionally high. Oscillators are voltage regulated and temperature compensated.
Controls include: Main tuning, Volume, Carrier Balance, Mic. Gain, Exiter 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 approximatly 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 nomial 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 reciver 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 contol 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 yeilds 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 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.