



William Johnson WA2TDR

The Drake R-4 Receiver

Recently I became the owner of a Drake model R-4 receiver. After using it for several months I was impressed enough by its performance to write this review for the benefit of others who may be contemplating the purchase of a new receiver.

The model R-4 receiver is capable of receiving in the SSB, CW, AM and RTTY modes of operation. Its frequency coverage is 3.5 to 4.0 mc, 7.0 to 7.5 mc, 14.0 to 14.5 mc, 21.0 to 21.5 mc, and 28.5 to 29.0 mc, with the crystals supplied. Ten accessory crystal sockets are provided for the coverage of any additional 500 kc ranges between 1.5 and 30 mc with the exception of the 5.0 to 6.0 mc segment. This is one feature that I particularly like as the receiver can never become obsolete if any of the ham band frequencies are shifted. In addition it covers the 160 meter band by using one of the ten accessory crystal positions, or for the VHF enthusiast the accessory crystal selector can be used to provide 5 mc, of continuous coverage for use with VHF converters. Too many equipment manufacturers are omitting the 160 meter band where the Drake Company recognized that the band still belongs to the radio amateurs.

The first if frequency of the R-4 is 5645 kc. The receiver uses a crystal lattice filter at this frequency giving excellent cross modulation and overload characteristics by providing selectivity before the gain producing stages. A tunable passband filter with selectivity switching is used to achieve additional selectivity at the 50 kc intermediate frequency. Four degrees of selectivity are available, with-

out having to purchase additional filters. The passband at the 6 db point on the switchable filters are 0.4 kc for CW, 1.2 for RTTY, 2.4 kc for SSB, and 4.8 kc for AM.

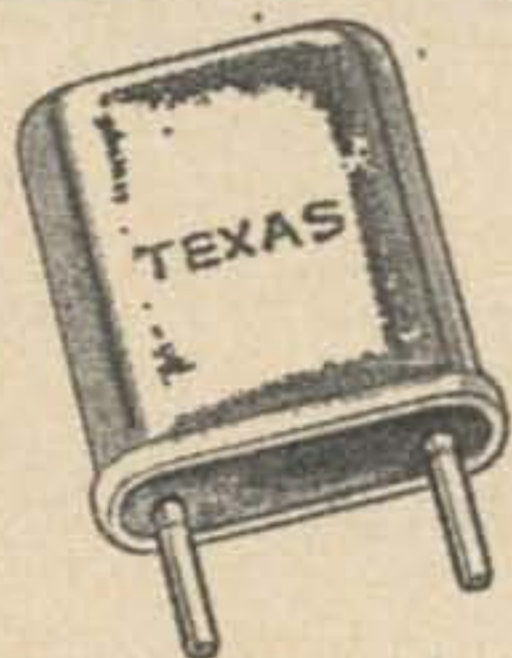
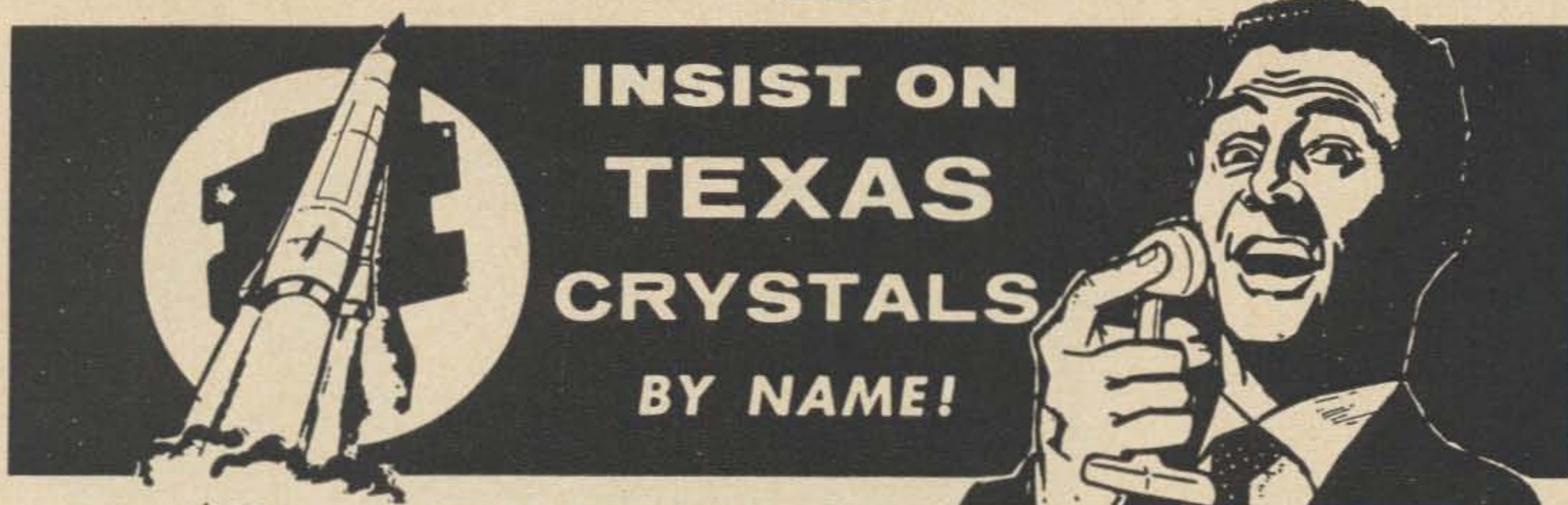
Excellent frequency stability is assured by the use of a permeability tuned oscillator. The specification calls for less than 100 cycles drift after initial warm up. I have found that the stability is in accordance with their specification. The oscillator covers 4955 kc to 5455 kc and is premixed with a switchable crystal controlled oscillator. The output of the pre-mixer is 5645 kc above the frequency of the desired incoming signal. A bandpass coupling transformer between the pre-mixer and the first high frequency mixer attenuates the undesired mixer products.

When the mode switch is in the "SSB/CW" position the output of the 50 kc if amplifier is connected to the input of the product detector. When the mode switch is in the "AM" position the 50 kc local oscillator is disabled and the if signal is detected with a diode, providing AM detection without having to result to zero beating the carrier as required by SSB receivers lacking the additional AM detection system.

The main dial is calibrated in 5 kilocycles divisions and has two scales. The 0 to .500 scale is used for bands 7.000-7.500, 14,000-14.500, 21.000-21.500 etc. and the .500 to 1.000 scale is used for bands 1.500-2.000, 3.500-4.000, 28.500-29.000 etc.

The vernier dial skirt is calibrated in one kilocycle divisions. The scale on the vernier dial is marked 0 to 25. The dial skirt is adjustable by pushing it in slightly and rotating

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it in the desired direction while holding the main tuning knob stationary. After adjusting the dial skirt the 1 kc divisions track across the main dial so that 5 kc on the vernier dial skirt coincides with the 5 kc divisions on the main dial. When the vernier dial skirt is calibrated using the built in 100 kc crystal calibrator the calibration accuracy is better than 1 kc when the main dial is calibrated at the nearest 100 kc point. The tuning dial turns easily without any backlash. The ease of tuning will be appreciated by the VHF operator that tunes across the complete dial when tuning crystal controlled converters.

The specification lists both the image rejection, and the if rejection in the ham bands as more than 60 db. The internal spurious responses in the ham ranges is less than the equivalent of 1 μ v signal on the antenna. I have not found any spurious responses, and have not experienced any image frequency stations in this area appearing in the ham bands.

The specification claims less than 0.5 microvolts for 10 db signal plus noise to noise ratio on all ham bands. I have not measured the sensitivity, but after comparing it with other receivers on the market claiming similar sensitivity it competes with the best money

can buy.

Other features contained in the R-4 are: the noise blanker which can be used on CW, and SSB, as well as AM. The permeability tuned "T" notch filter in the 50 kc if strip. This filter is capable of producing a deep notch which can be tuned across the if eliminating interfering carriers in all modes of operation. The automatic volume control has three positions, ie, off, slow, and fast. The receiver has provisions for muting the rf stage off during transmit. The premixed vfo output is brought to a connector so that the receiver can transceive with the T4X transmitter.

Using the receiver in my two favorite modes of operation, SSB and CW, the R-4 satisfied all my expectations. The features and construction are of the same caliber as the TR3 transceiver and the 2B receiver that earned Drake their present reputation as a manufacturer of amateur products.

The overall dimensions are 5½" high, 10¼" wide, and 12¼" deep.

Incidentally, the new R-4A is identical except for minor production changes including a solid state VFO.

The receiver price is \$379.95 with the matching speaker available at \$19.95.

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