



Tubester Sets 75S-1, -3, -3A, -3B, -3C

DESCRIPTIONS: Tubesters ("toob'-sters") are transistor circuits in plastic cases with pin bases matching miniature tube sockets. Each Tubester type performs the active element function of a vacuum tube, or of the two sections of a dual element tube, in a particular radio circuit. The Tubester may be simply "plugged in" and used interchangeably with the tube in the socket position for which it is labeled.

The Tubester circuits use an FET, MOSFET or bipolar transistor and a high voltage bipolar transistor in a cascode, direct coupled or AC coupled amplifier or oscillator-amplifier configuration. Three of the Tubesters use power transistors equipped with heat sinks: The Heterodyne Oscillator section of ST203 and the Cathode Follower section of ST204 drive the transmitter when cabled for Transceive; each draws about 1 watt input. The ST101(A,B) Audio Output has two power transistors with four heat sinks to dissipate about 5 watts; the power transistor assembly mounts neatly to the chassis with a strip of double-sided tape. The other receiver Tubester types draw less than $\frac{1}{2}$ watt power input per section.

Two small accessory items are included with the Tubester Sets: A plug-like Mute Jack Adapter containing a resistor that resets the AGC threshold with the RF and IF Tubesters installed, and a Clip-on Capacitor that improves the AGC "hang" characteristic.

PERFORMANCE: The Tubester sets make the Collins receivers entirely solid state. The "instant on" characteristic is at first startling, and remains a real pleasure. The receiver is instantly on and instantly stable, requiring only one or two seconds after turn-on to reach the unequalled long-term stability that is characteristic of these receivers.

The RF, Mixer and IF Tubesters have slightly higher gain than the tubes they replace. The oscillator injections to the mixers and product detector are tightly within specifications. Extensive side-by-side listening tests with two 75S-3B receivers, equipping them alternately with Tubesters and tubes, give the Tubesters a slight but definite edge in sensitivity and signal-to-noise. AGC action remains adequate, and the manual RF gain control response is essentially unchanged.

Users report and we agree that the receivers "sound better" with the Tubesters. This subjective improvement is due to a combination of less abrupt AGC compression of the SSB envelope; a slightly better product detector-BFO injection in the ST201; and a tiny bit of tinkering we couldn't resist in the frequency response of the first audio ST105.

All Collins published specifications are met with the Tubester-equipped receivers, with the exception that the maximum audio power output is one watt. This was a design choice as to how much heat to dissipate in the ST101 (A,B) Audio Output Tubesters. The audio gain and sensitivity remain the same, and the one watt output provides ample loud speaker volume for all but extremely noisy environments.

POWER INPUT REDUCTION: With Tubesters the power transformer gets barely warm after several hours of operation. Power inputs to our 75S-3C measure 70 watts with tubes, just 30 watts with Tubesters. The fuse may be replaced with a $\frac{1}{2}$ Ampere Slo-Blo if desired.

EXPECTED LIFE: The Tubesters are rated for continuous duty, and no precautions need be followed in operating the Tubester-equipped receivers. All components operate well within their voltage and power ratings, and their life expectancy is unlimited.

INSTALLATION: The Tubesters simply plug-in to replace the tubes. No modification of the receiver is needed or recommended.