Solid State Tubes for
Collins Radio Receivers
75S-1, 75S-3/3A, 75S-3B/C

RECEIVER TUBESTER
DESCRIPTIONS

CIRCUITS: The Tubester circuits use an FET, MOSFET or bipolar transistor and a high voltage transistor in a cascode, direct coupled or AC coupled amplifier or oscillator-amplifier configuration, as detailed on page 4, following. The devices chosen are the finest state-of-the-art for their function. For example, the 3N204 used as the ST108 RF Amplifier input is a dual-gate MOSFET, back-to-back diode protected, low-noise, extremely low feedback capacitance device ideally suited for applications which previously only vacuum tubes could fulfill. The other devices used were selected for their function with equal care.

All but three of the receiver Tubesters operate at less than ½ watt input, and the circuits are completely enclosed in their plastic cases. The ST203 and ST204 must run at about 1 watt input to provide oscillator drive to the transmitter in Transceive; their high voltage power transistors protrude from the case tops and have heat sinks attached. The ST101 Audio Output uses two power transistors with four heat sinks to dissipate about 5 watts; the assembly mounts neatly to the chasis with a strip of double-sided tape (see cover photo).

The two accessories included with the Tubester Sets are a plug-like Mute Jack Adapter and a Clip-on Capacitor that reset the AGC threshold with the RF and IF Tubesters installed.

PERFORMANCE: The Tubester sets make the Collins receivers entirely solid state. The "instant on" characteristic is at first startling, and remains a real pleasure; so nice to be able quickly to take a quick look at the band! The receiver is instantly on and instantly stable, requiring only one or two seconds after turn-on to reach "long term" stability.

The RF, IF and Mixer Tubesters have slightly higher gain than the tubes replaced; the resulting improvement in over-all gain is of particular value to the 75S-1 receiver, and to the 75S-3 on the higher bands. The Tubester oscillators hold the injections to the mixers tightly within specifications. The receivers are quieter, and extensive side-by-side tests give the Tubester-equipped receivers a definite improvement in signal-to-noise ratio.

All Collins published specifications are met with the Tubesters installed with the exception that the maximum audio power output available is one watt; this was a design choice as to how much heat to dissipate in the ST101 Audio Output Tubesters. The audio gain and sensitivity remain the same; the audio output is ample loud speaker volume for all ordinary operating environments, and the decrease in maximum-available audio power is rarely noticed.

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 32 watts with Tubesters. The fuse may be replaced with a ½ Ampere Slo-Blo if desired.

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

ALIGNMENT TOUCH-UP: The Tubesters match their tube counterparts very closely, and the realignment needed for peak performance is merely to touch up the RF and Oscillator tuned circuit trimmers. The VFO, band-pass IF transformer, filter and IF sections of the receiver need not be touched. While all alignments are in accord with your Collins manual, step-by-step instructions are given in the Tubester Installation Manual for your convenience. No special skill, special tools or external equipment are required, and all of the alignment points are readily accessible beneath the cabinet lid.

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.