

MODEL 381 T-R SWITCH

DESCRIPTION

The B&W Model 381 T-R Switch has been designed for use with 52 or 75 ohm coaxial feed line systems and for operation on the amateur bands 80 thru 10 meters. It can be used advantageously in either low or high power applications.

It is ideally suited for instantaneous break-in on CW-SSB-DSE and AM, where a common antenna is employed for both transmitting and receiving. Circuitry includes a band selector switch, so that a high degree of selectivity, greatest signal-to-noise ratio, and minimum intermodulation effects can be realized on each of the bands within its useable range.

Design features a guard against damage, in case the band selector switch is improperly set to the operating band during transmission. No signal loss will be encountered on any band; rather a substantial gain will be realized with the average type antennas in use.

POWER RATING

The power handling capability of the Model 381 T-R Switch is purely a function of the VSWR present on the feed line at its point of attachment to the T-R Switch. The maximum RF peak voltage permissible across the input circuit is 560 volts.

The RF voltage graph attached indicates voltage development under various conditions of SWR. This graph is based on maximum FCC power rating of 1-KW input. Values given have been calculated on the basis of maximum efficiency, or 70% of 1-KW input.

The graph thus exhibits that more than the legal limit of AM modulated power can be handled with a mismatch of up to 2:1; and a wide margin of safety is provided on CW-SSB and DSE when excessive mismatches of up to 4:1 are encountered.

It is likewise to be noted that more than twice the legal limit of power input can be safely handled on CW-SSB and DSE under ideal SWR conditions of 1.5:1 or better.

INSTALLATION

The Model 381 T-R Switch should be installed close to the transmitter output, with a view toward placement affording the most convenient position for ease in handswitching from one band to another.

A low pass filter should be used for attenuation of harmonics causing television interference (TVI). The low pass filter should be connected in the feed line circuit between the Model 381 and the antenna, preferably as close to the antenna connector terminal of the Model 381 as practicable. B&W Models 425 and 426 for feed lines of 52 and 75 ohms respectively are recommended. A typical installation drawing is attached.

The AC line cord has been fitted with a connector plug for an AC outlet. However, it is intended that this AC line be connected across the primary circuit of your receiver transformer, so that the receiver AC line switch controls not only the receiver but the Model 381 as well. This will provide for operation of the unit only when the receiver is on, so that the T-R Switch will be protected against endless hours of needless operation, should the operator forget to remove the AC line cord and plug from an AC outlet.

IMPORTANT INFORMATION

Don't attempt to use the Model 381 in any type of single ended antenna, nor apply it between the output of the transmitter and an antenna coupling unit employed to match a single wire type antenna or a parallel open type high impedance feed line system for single or multiband operation, UNLESS AN SWR INDICATOR IS USED BETWEEN THE TRANSMITTER OUTPUT AND THE ANTENNA COUPLER, SO THAT THE ANTENNA COUPLER CAN BE ADJUSTED TO REFLECT A MINIMUM SWR.

Hum and noise received along with a desired signal is normally due to the final amplifier of your transmitter. Under SSB operation, cut-off bias should be arranged for and automatically applied through use of an extra set of contacts in the VOR circuit or an externally excited relay during the standby period. When the final amplifier is allowed to idle with resting plate current, it acts as a noise generator.

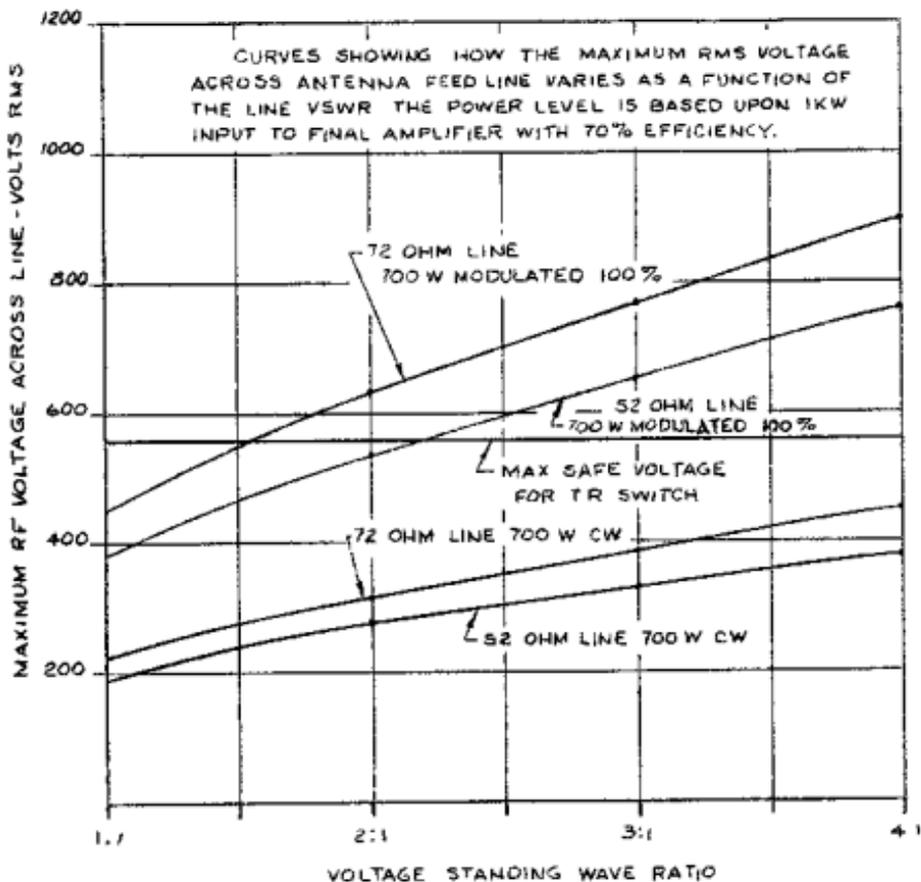
Under AM operation, the hum received along with a signal is due to rectified filament current from the final amplifier. A small amount of fixed bias applied to the final grid circuit will correct this condition.

The Model 381 does not include facilities for receiver silencing during the transmitting cycle. Hence, other normal means of receiver disabling must be employed. These include:

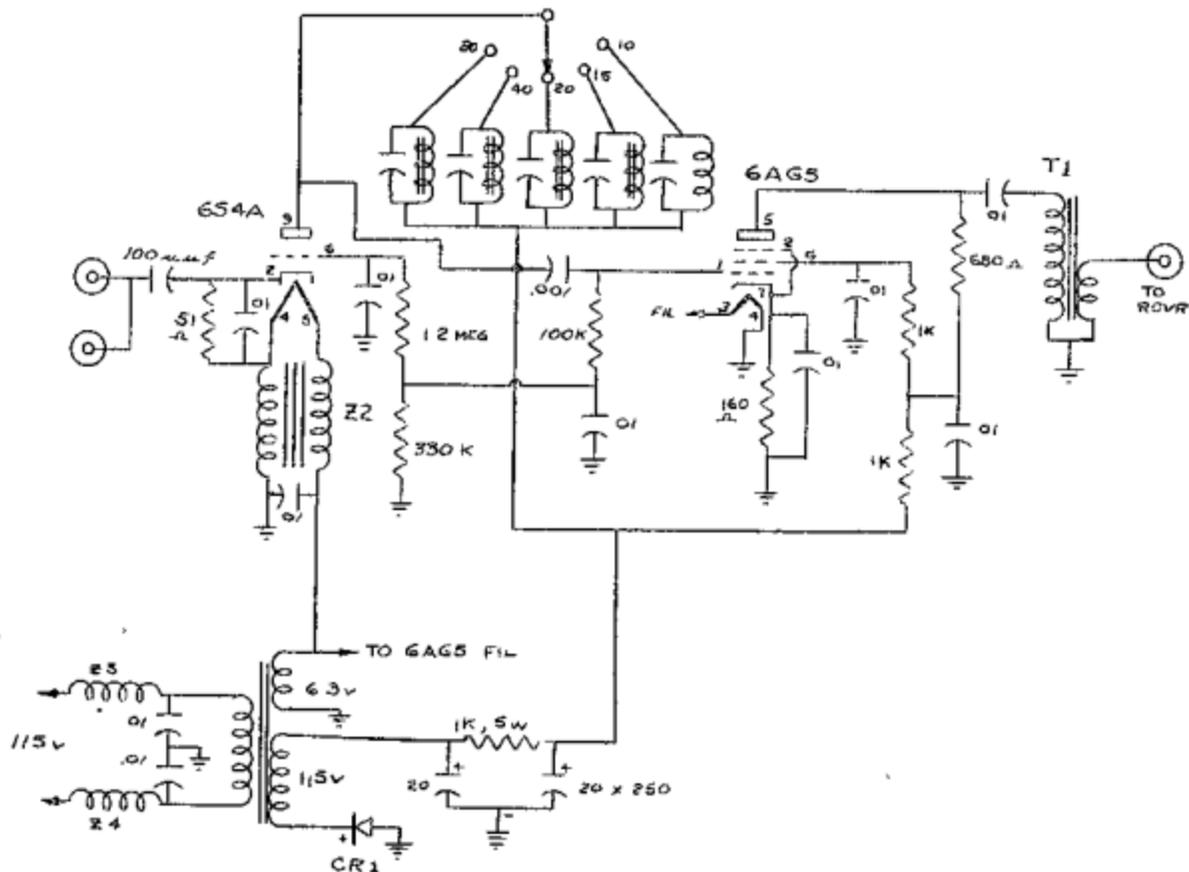
- (1) Use of a small fast-acting relay to break either "B" plus, screen voltage, speaker or phone leads, etc.
- (2) In SSB applications, the extra contacts provided in the voice operated relay are ideal for performing any one or a combination of functions given under paragraph (1) above.
- (3) A small externally excited relay, or the voice operated relay circuit in SSB exciters, may be used to make and break the normal disabling circuit provided in all of the latest type receivers.

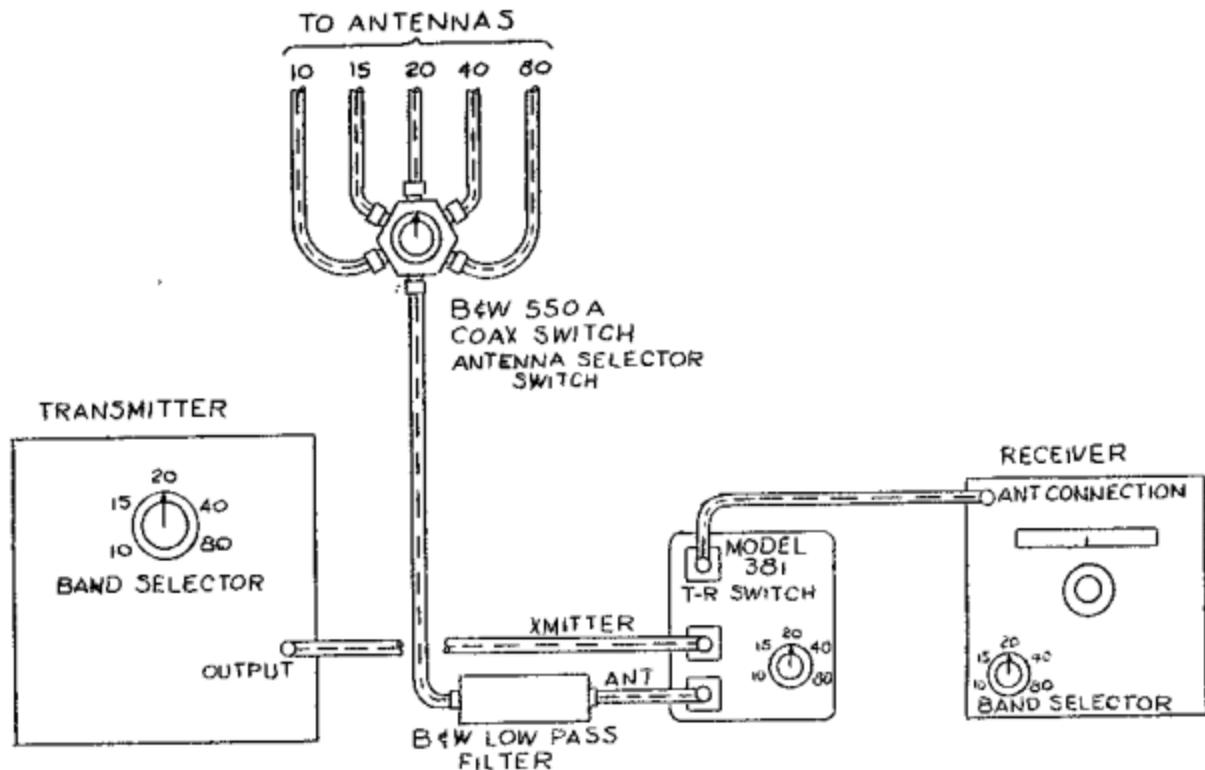
MAINTENANCE

The Model 381 T-R Switch has been designed with a view toward long life with a minimum of maintenance and repair. Should faulty operation develop, it will be found in most instances that cause is due to a faulty tube. For this reason, a set of tubes should be kept on hand in case of emergency. The schematic circuit provided with these instruction sheets has been arranged to give the value of most component parts used. Most of these parts are of standard values and readily available from any electronic parts distributor.



MODEL 381 TR SWITCH SCHEMATIC





TYPICAL INSTALLATION MODEL 381 T-R SWITCH