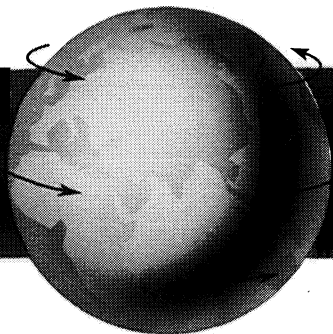




SERVICE BULLETIN

EQUIPMENT TYPE

32V-2

BULLETIN NO.

1

DATE

2-17-56

Page 1 of 2

After recognizing the high order of filtering that it was necessary to incorporate in an amateur transmitter operating in close proximity to television receivers, Collins engineers designed an output network to be used in the 32V-2 which should offer a great deal of attenuation to high order harmonics. In order to do this, it was necessary that an additional "L" section filter be added to the existing pi section. This new section contributes a great deal of filter action, but also offers some disadvantages. The first apparent difficulty noted is the apparent sharpness of tuning on the high frequency bands, particularly 28 mc. It must be recognized that this is inherent in any tuned filter where a high degree of selectivity is needed, and the fact that it does tune so sharply indicates that it is operating properly. Since the impedance across the L section inductance reaches fairly high values so does the voltage, and in certain cases, the addition of modulation to the carrier causes the output capacitor to arc across. It has been found that this voltage can be decreased to a point where this no longer occurs by lowering the inductance of the 28 mc portion of the L section inductor. The decrease in filter action by such a move is slight.

This modification, which is included in the late 32V-2's, is fortunately a simple one and can be readily accomplished by the customer. The task is to change the uppermost tap on L404 so that the inductance will consist of 8 turns from the top end of the coil instead of 11. An examination of this inductance will readily show that it is a simple task to move the lead that goes to the 11th from the top to the 8th.

Another source of difficulty that is occasionally encountered is the failure of the fixed ceramic loading capacitors in the pi section network. Unfortunately, the solution of this problem is not so simple and requires an understanding by the customer of the variables involved.

The pi section network was designed so that when used with the L section, a suitable range of impedances could be satisfactorily matched. The extreme cases were tabulated and the resulting voltages and currents were calculated. These voltages and currents were of such a magnitude as to not exceed the ratings of the components. However, when the customer connects the 32V-2 to an antenna system, frequently the standing waves are of such a nature as to reflect sufficient reactance so that the assigned endpoints of impedances are exceeded. This frequently results in an excess current thru the loading capacitors and subsequent failure.

However, when adequate precautions are taken, this problem can be greatly reduced. These precautions may be described simply by stating that they are directed in such a manner as to insure a flat 52 or 72 ohm line from the 32V-2 to the antenna tuner. The tuning procedure is as follows:



Disconnect the coaxial line from the antenna tuner link and terminate it in a non-inductive resistor whose value is the same as the Z_0 of the coaxial line, and whose power rating is sufficient to dissipate 50 watts or so for prolonged periods. The transmitter should then be tuned and loaded to the proper point in the "Tune" position. The unit should then be momentarily switched to the operate position to see that the final plate current reading is correct. In the event that non-inductive resistors are not available, it is possible to use a 100 watt lamp and obtain a SWR of about 1.5/1 on a 52 ohm line.

The coaxial line should then be connected through a series variable capacitor to the antenna tuner link of 2 or 3 turns. The antenna tuner is resonated with the transmitter and the link reactance tuned out with the coaxial line series capacitor. The feeders should then be moved in equal increments out from the center, with the tuned circuit resonated, until the same loading condition exists that was noted with the dummy load. This will set up the desired condition where the transformation of impedance from the coaxial line is from 52 or 72 ohms to the antenna impedance. If this is done, no standing waves will exist on the coaxial line and the loading capacitors will not be operated at excessively high values of current.