

## I DESCRIPTION

The 353C Mechanical Filter Plug-In Adapter is a unit about the size of an i-f transformer, containing a Collins Mechanical Filter, two i-f amplifier tubes and an octal plug for inserting the unit into the socket of the first fixed i-f amplifier tube in the Collins 75A-1 Receiver. This adapter enables a Collins Mechanical Filter to be installed in the Collins 75A-1 Receiver with no modification to the receiver. At any time the adapter may be removed and the receiver returned to its original condition. The 353C Adapter will not work in any other receiver.

The adapter schematic is shown in Figure 1. The plug (P201) is inserted into the socket of the 6SG7 first fixed i-f tube (V6) in the receiver. The 6SA6 (V201) in the adapter replaces the 6SG7 removed from the receiver and drives a Mechanical Filter (FL201), which may be considered as an electrical band-pass filter with a voltage step down of 10 to 1 (A more detailed description of the filter is given in Part IV). The filter is followed by a 6AU6 (V202), which compensates for the loss in the filter, and is connected into the plate circuit of the tube the adapter replaces.

The gain of the adapter is the same as that of the tube replaced, but the selectivity of the Mechanical Filter is added to the receiver. The adapters are available in two bandwidths, 1.4 and 3.1 kc; the two are referred to as Types 353C-14 and 353C-31 Mechanical Filter Plug-In Adapters, respectively.

## II INSTALLATION

The installation procedure consists simply of replacing one receiver tube with the adapter unit. Refer to Figure 2 to locate the 6SG7 first fixed i-f amplifier tube (V6) and remove it. Plug the adapter into the vacant tube socket. The lead capacity in the adapter may differ slightly from that of the tube removed, so, if necessary, repeak the i-f transformers on either side (T2 and T3) and reset the "S" meter. This is the same procedure that would be followed when any tube in the i-f strip is replaced. If necessary, carefully realign the entire receiver, as outlined in the 75A-1 Instruction Book, to be sure of obtaining the best results from the Mechanical Filter Plug-In Adapter.

## III OPERATION

The operating controls will function as before, but for some types of reception a slightly different tuning technique is suggested to take advantage of the improved selectivity. Tuning procedure, and the unique advantages of the Mechanical Filter are outlined in the following paragraphs for the common types of amateur signals.

A. CW - The 353C-14 Adapter should be used for CW reception. Signals are tuned in the normal manner, but even without the crystal filter, the receiver will have true single-signal response. Transmitter drift or chirp may become more noticeable because of the increased selectivity of the receiver. The crystal filter may be used in conjunction with the Mechanical Filter for interference problems.

B. AM Phone - The 353C-31 Adapter should be used for phone reception. The adapter selectivity is wide enough to pass only one sideband and the carrier of a phone signal. So, in tuning a signal, the receiver should be detuned from the center of the signal until the "S" meter reading begins to drop off. The receiver is now tuned to one sideband and the carrier. If detuned any further, the carrier will drop out of the passband, and the sideband will remain an unintelligible "monkey chatter". At this point the receiver will sound very noisy, since the AVC voltage will be reduced and the receiver gain will be at maximum. To eliminate interference on one side of the signal, tune to the other sideband. If the interference is present on both sidebands or if the signal is undergoing heavy fading, local carrier reinsertion may be used. The signal is detuned in either direction to a point where the modulation just becomes unintelligible. Then the RF GAIN is backed off, the BFO switched on, and the AUDIO GAIN set to maximum. The BFO knob is rotated slowly until the modulation becomes readable. The RF GAIN is used to control volume, and the AUDIO GAIN always left at maximum.

C. Single Sideband - The 353C-31 Adapter should be used for single-sideband suppressed-carrier reception. Set the AUDIO GAIN to maximum, the MAN-AVC-CW switch to MAN, and adjust the RF GAIN for comfortable volume. The station should be tuned for maximum volume and the BFO switched on. Rotate the BFO knob until the modulation becomes intelligible. For subsequent operation the BFO may be left in the same position and the station tuned in as if it were transmitting a full carrier.

D. FSK Teletype - The 353C-14 should be used for FSK Teletype reception. The signal is tuned in by the normal procedure, but the position of the signal in the bandpass of the receiver is much less critical than before.