

# 24CM INTERDIGITAL FILTER

An almost essential piece of equipment in any ATV station is a good quality bandpass filter. This is needed in the transmitter output to ensure that any signals present, other than the wanted one, will be suppressed. At the receiver input, such a filter will attenuate unwanted signals (it's amazing how much rubbish can be found when using a "wide open" receiver) and will help the overall system noise performance by restricting the receiver bandwidth.

The design shown in Fig.1 is excellent for our purposes and is taken from "Radio Communication" (Jan 1976) with thanks to the RSGB. The unit is made from brass which should be accurately machined according to the dimensions shown. Although "N" type connections are shown in the illustration, it may be easier to use BNC sockets. Square flanged sockets may be mounted as shown or the screw threaded types may be used. A better arrangement for connecting the centre pin to the line is to drill and tap the filter side walls to accept the socket, this enables the socket centre pin to reach the line.

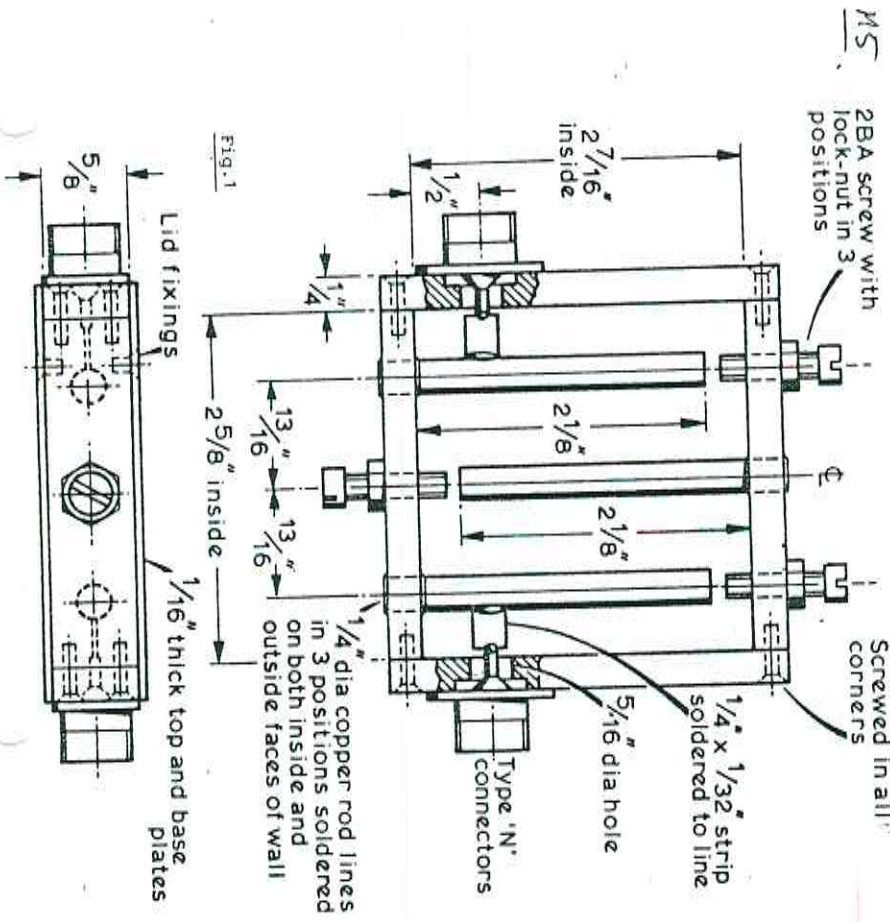


Fig. 1

The elements are shortened quarter-wave lines tuned by capacitors made from 2BA screws. Alignment is best carried out using a sweep generator, but in the absence of one (if the filter is built carefully as described), tuning up can be done using the station 1.4Ghz converter and a small signal source or received amateur signal centred in the middle of the required passband. With the source some distance away and the filter connected in the aerial feed to the converter, peak the centre tuned circuit for maximum. Now the other two may be adjusted for maximum signal (minimum insertion loss) although these may be actually adjust for correct symmetry and are best set either by using test signals at around +/- 15Mhz from the centre of the filter's passband, or with sweep equipment. This procedure should be made with the filter "isolated" between two pieces of thin coaxial cable approximately 20-50ft long which act as buffer attenuators.

The insertion loss is small (typically less than 0.5db) and so virtually no loss of output power should be observed when the filter is put directly in the output of the transmitter. The typical response from a correctly aligned filter is shown in Fig.2. The filter may be aligned to cover any segment between 1240 and 1320Mhz.

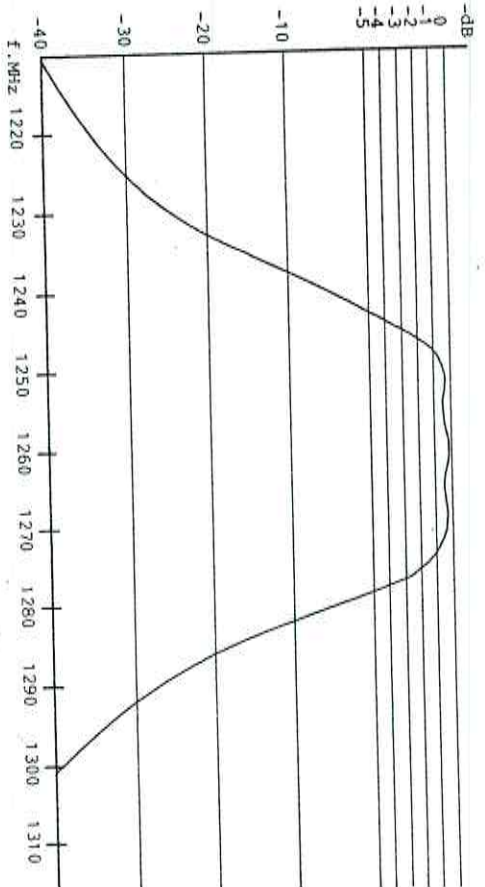


Fig. 2

TYPICAL INTERDIGITAL BANDPASS FILTER RESPONSE

With grateful acknowledgement to the RSGB for permission to print this design.

*PIBARS: PEINPPLAAR EN 1/4" COPPER BUIS.  
MESSING SCHROEVEN  
BNC CONNECTORS*

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