

The TS-830S is a high-performance, very affordable, HF SSB/CW transceiver with every conceivable operating feature built in for 160 through 10 meters (including the three new bands). The TS-830S combines a high dynamic range with variable bandwidth tuning, IF shift, and an IF notch filter, as well as very sharp filters in the 455 kHz second IF. Its optional VFO-230 digital VFO provides five memories.

160–10 Meters, Including Three New Bands

The TS-830S covers all amateur frequencies between 1.8 and 29.7 MHz, including the new 10, 18, 24.5 MHz bands. It receives WWV on 10 MHz, for checking the calibration of the highly accurate digital display. Transmit and receive modes include LSB, USB, and CW.

Wide Receiver Dynamic Range

The TS-830S receiver section has a very wide dynamic range with impressive IMD rejection characteristics, resulting in increased immunity to strong, local signals. Its 3SK73 MOS FET RF amplifier operates at a low level of amplification, for improved IMD characteristics. A higher level of amplification is not required because of the balanced mixer's low noise figure, produced by 2SK125 junction FETs. A dual resonator is provided for each band. The result is a very sensitive receiver section with excellent dynamic range and a low noise level.

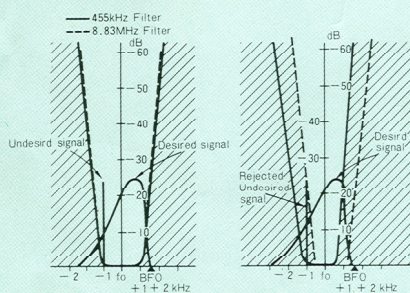
VBT – Variable Bandwidth Tuning

With the inclusion of the VBT (variable bandwidth tuning) circuit capable of varying continuously the IF filter passband width, optimum IF bandwidth may be established relative to varying conditions of interference.

IF passband shift and VBT are independently adjustable. Therefore, it is possible to change only the IF passband width while the center frequency of the IF passband remains unchanged, or, while maintaining the passband width established by VBT, shift the passband (center frequency) of the filter to an optimum point with the IF shift.

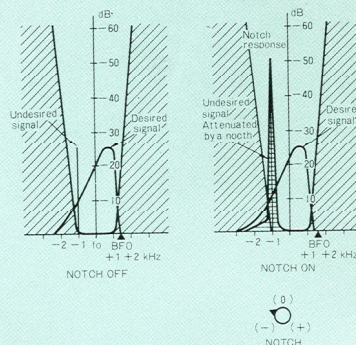
Combined application with an IF notch may also be used.

How VBT (Variable bandwidth tuning) works



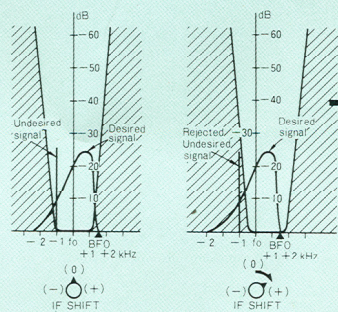
- Passbands of both the 8.83 MHz and 455 kHz IF filters are made to intersect, in an equivalent sense, to obtain a narrow-bandwidth filter response. See how the unwanted signal is rejected from the passband thus obtained.
- In cases where interference from adjacent signals isn't too serious, signal-to-noise ratio may be improved by narrowing proportionally the IF passband width, as the noise content theoretically varies with bandwidth.
- The variable bandwidth tuning (VBT) filter circuit in the TS-830S is so designed that the center frequency of the passband may be set to the desired point (by adjusting or by an IF shift), irrespective of the amount of bandwidth changed.

How the IF notch works



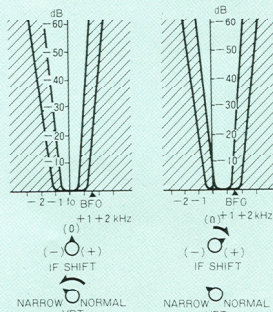
- The tunable notch filter in the TS-830S offers a satisfactorily sharp notch response.

How an IF shift works



- Shown here is an undesired signal being rejected by upshifting (+) the IF passband. Elimination of undesired signals by an IF shift is simple in operation.
- In CW, coupled with RIT, a variable pitch is obtainable; in SSB, the signal may be tuned to suit your requirement.

Combined activation of IF shift and VBT



- Since the variable bandwidth tuning (VBT) filter and IF shift are separately adjustable in the TS-830S a highly sophisticated unwanted signal rejection technique may be employed: first an appropriate bandwidth is selected by the variable bandwidth tuning and then an optimum tuning point is determined by means of an IF shift. It is particularly effective in CW and RTTY when, by narrowing passband width by means of the VBT, the center frequency of the passband is aligned to the frequency of the desired signal by an IF shift.
- It is of course possible to fix the center frequency of the passband established by IF shifting and, according to the interference condition at the moment, the passband width is further altered by means of the VBT.

IF Notch Filter

The tunable notch filter in the TS-830S is a high-Q active circuit in the 455 kHz second IF. Sharp, deep notch characteristics will eliminate a strong interfering carrier within the passband of the receiver section.