

■ SEMI-BREAK-IN OPERATION

The TS-830S has a built-in side-tone oscillator to permit semi-break-in operation, besides the normal CW operation. During semi-break-in operation, the transceiver is set in transmit mode when the key is depressed, and returns to receive mode when the key is released. For semi-break-in operation, place the STANDBY switch to REC and turn the VOX GAIN control ON. Adjust the DELAY control for your preference.

4.5 FIXED CHANNEL OPERATION

A fixed channel is available for common use on all bands by installing a crystal in the socket on the PLL unit (X50-1680-00). The crystal frequency can be computed by the following formula:

Crystal Frequency (MHz) = 5.5 MHz - X + Operating Frequency (MHz).

X = Band Switch frequency (1.5, 3.5, etc.)

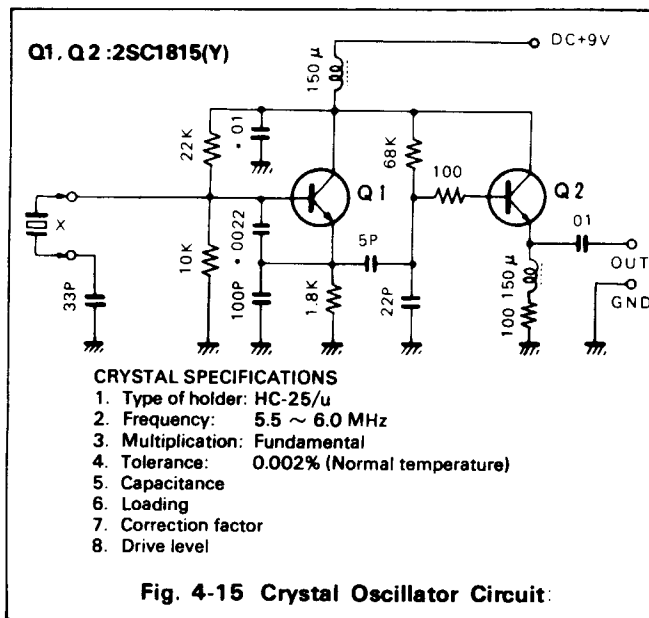
Crystal specifications: See Fig. 4-15

NOTE:

TRIO-KENWOOD does not supply crystals.

The shift set circuit CW frequency between transmit and receive, and the RIT/XIT circuit are not effective in FIXED CHANNEL OPERATION.

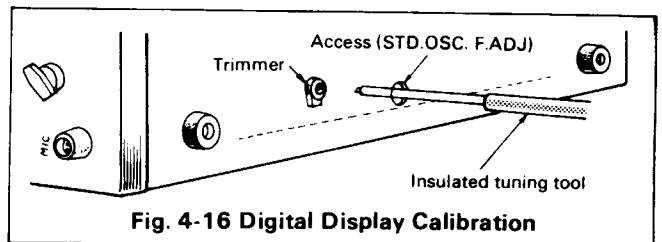
To use the fixed frequency oscillator, depress the FIX push switch.



4.6 DIGITAL DISPLAY CALIBRATION

Connect the antenna and set the BAND switch to WWV. Turn the main tuning dial to receive 10 MHz WWV. Adjust the dial until a low-frequency beat is heard. Next, turn the MIC control to the CAL position and a marker signal will be superimposed on the WWV signal. A double beat (two beat signals of high and low frequencies) will now be heard. Adjust the IF shift for low AF response.

While receiving this double beat, adjust the Standard oscillator trimmer through the reference frequency adjustment access opening (on the bottom of the TS-830S) so the two beats are heard as a single beat. Repeat this procedure 2 or 3 times. This completes calibration of the Digital Display. After calibration turn of the CAL switch.



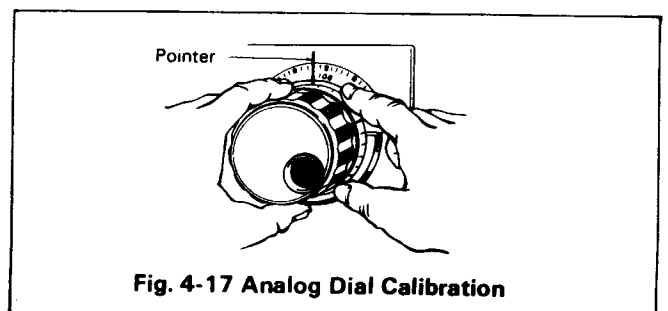
4.7 ANALOG DIAL CALIBRATION

The dial scale is graduated at 1 kHz intervals. One revolution of the main dial covers 25 kHz. To calibrate the scale, turn the MIC control to the CAL position. Zero-beat in either SSB or CW mode. Hold the main tuning knob from rotating and slip the calibration ring to the nearest major (5 kHz) graduation.

The dial is now calibrated.

NOTE:

For exact frequency, read the Digital Display.



SECTION 5. OPTIONAL ACCESSORIES

5.1 OPTIONAL ACCESSORIES

The following optional accessories are available for use with the TS-830S.

■ REMOTE VFO

VFO-230:

The VFO-230 digital VFO provides maximum efficiency and flexibility for all operating conditions, including split-frequency operation, by combining a 20 Hz step digital VFO with five memories.

VFO-240:

The VFO-240 is an all solid-state VFO with high stability, designed to match the TS-830S in design and performance.

The T-F switch makes it possible to check the transmit frequency while in the receiving mode.

■ ANTENNA TUNER

AT-230:

The AT-230 antenna tuner includes the three new bands and such functional features as a through-line wattmeter, SWR meter and antenna selector switch.

■ EXTERNAL SPEAKER

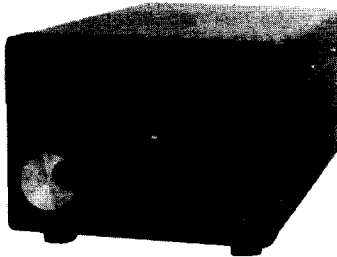
SP-230:

The SP-230 is a low-distortion speaker with selectable frequency response for high intelligibility in any mode. The frequency response is determined by the built-in audio filters, which are effective in improving signal-to-noise ratio under certain interference conditions, or when receiving weak signals.

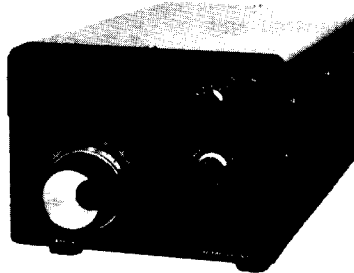
■ LINEAR AMPLIFIER

TL-922A:

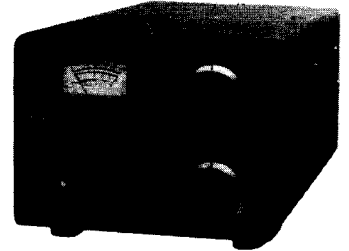
The TL-922A is an HF linear amplifier operating at maximum legal power, and employing a pair of 3-500Z high performance transmitting tubes.



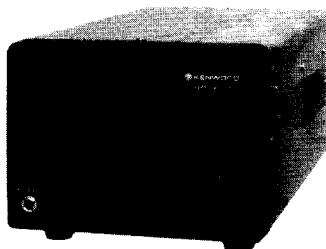
VFO-230



VFO-240



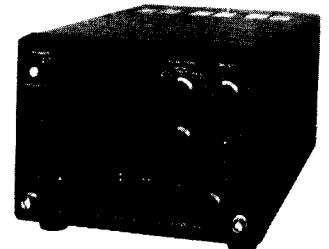
AT-230



SP-230



TL-922A



SM-220 (with BS-8)

■ STATION MONITOR

SM-220:

Based on a wide-frequency-range oscilloscope (up to 10 MHz), the SM-220 station monitor features, in combination with a built-in two-tone generator, a wide variety of waveform-observing capabilities. An optional feature is the BS-8, a unique pan-display capability.

■ PHONE PATCH

PC-1: (Available only where phone patch operation is legal.)

Hybrid phone patch with VU meter for null and audio gain measurements.

The PC-1 Phone Patch provides connection between a transceiver and a telephoen line.

Providing excellent performance, it is designed with high isolation between receive input and transmit output.

Its compact design permits easy installation in a limited space.

Simply plugs in to the transceiver.

■ HEAD PHONES

HS-4: 8 Ω communications headphones.

HS-5: Deluxe 8 Ω headphone set.

HS-6: Deluxe 12.5 Ω lightweight headphone set.

■ MICROPHONE

MC-50: Desk Microphone (50 k Ω /500 Ω)

MC-35S: Noise Cancelling Hand Microphone (50 k Ω)

MC-30S: Noise Cancelling Hand Microphone (500 Ω)

■ FILTER

* YG-455C: 500 Hz CW filter for 455 kHz IF

YG-455CN: 250 Hz CW filter for 455 kHz IF

* YK-88C: 500 Hz CW filter for 8.83 MHz IF

YK-88CN: 270 Hz CW filter for 8.83 MHz IF

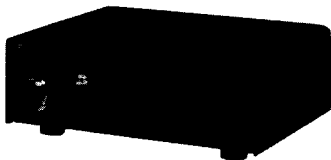
* Recommended filter pair.

■ DIGITAL WORLD CLOCK

HC-10:

The HC-10 is a highly advanced world clock with dual display which can memorized 10 world major cities and 2 additional regions.

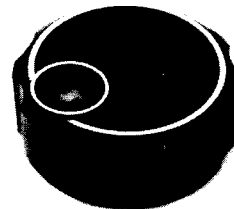
■ KB-1 : DELUXE FLYWHEEL VFO TUNING KNOB



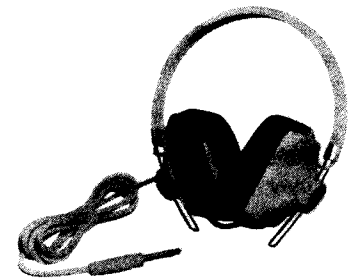
PC-1



HC-10



KB-1



HS-4



HS-5



HS-6



MC-50



MC-30S

5.2 INSTALLATION OF ACCESSORIES

■ REMOVING THE CABINET (See Fig. 5-1)

Figure 5-1 illustrates cabinet removal. Remove the eight top-cover and eight bottom-cover screws and lift away the panels.

NOTE:

This product uses metric hardware.

CAUTION:

The speaker lead is attached to the chassis, so be careful when removing the top cover.

The lead can be unplugged, if necessary.

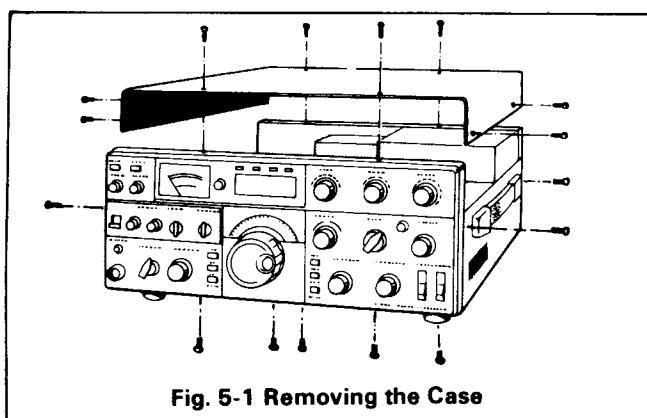


Fig. 5-1 Removing the Case

■ OPTIONAL FILTER INSTALLATION

- Using a number 2 Phillips screwdriver, remove the top cover (eight screws). Unplug the speaker and set the cover aside.
- Remove the bottom cover (eight screws).
- Remove the eight screws holding the IF unit X48-1290-00 and swing the printed-circuit board over.
- Using a 45-W (or less) soldering pencil, clear the six holes for the filter, if they are filled with solder.
- YK-88C, CN: there is no polarity to the filter. Install the filter into its position on the IF unit. Solder the two mounting tabs and the four input and output pins to the circuit boards.
Solder sparingly, and heat the connections only long enough to insure a good solder joint. Don't overheat the filter or circuit board.
YG-455C, CN:
Install the filter into its position on the IF unit. Tighten the two nuts, and solder the four input and output pins to the circuit boards.
- Carefully inspect your soldering. Be certain that all pins are actually soldered, and that you have not soldered across any spots on the board or between any of the pins on the filter. Clip the pins flush to the board.

- Replace the IF unit. Make certain no wires will be pinched underneath the board. Replace the eight screws.
- Move the connector as illustrated from CW1 to CW2 ~ CW4.
- Reinstall the bottom cover. Reconnect the speaker lead, and reinstall the top cover.
- Apply power and verify your work. Filter installation is now complete.

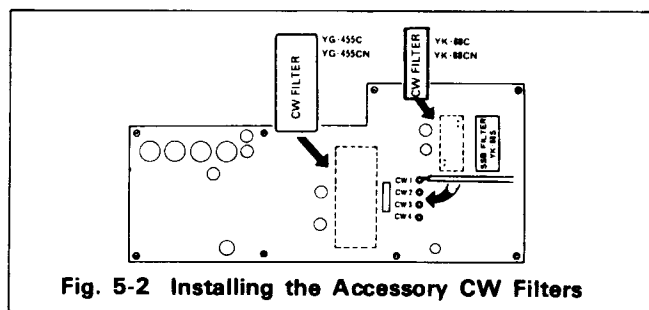
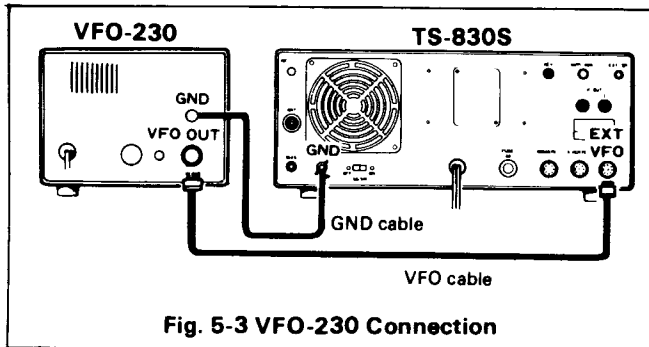


Fig. 5-2 Installing the Accessory CW Filters

Optional Filter (s)	Terminal	Total Passband	Receiver Characteristics
Installed None		2.4 kHz	Same as SSB and Wide CW. Variable Bandwidth Tuning (VBT) adjusts passband from 2.4 kHz to 500 Hz, retaining shape factors of built-in 2.4-kHz filters in first (8.83-MHz) IF and second (455-kHz) IF.
YK-88C (500 Hz) in 8.83-MHz IF	CW2	500 Hz	General-purpose CW filter. VBT not fully effective.
YK-88CN (270 Hz) in 8.83-MHz IF	CW2	270 Hz	Narrow CW filter, with general-purpose shape factor. VBT not fully effective.
YG-455C (500 Hz) in 455-kHz IF	CW3	500 Hz	Very sharp CW filter. VBT not fully effective.
YG-455CN (250 Hz) in 455-kHz IF	CW3	250 Hz	Very sharp, very narrow CW filter. VBT not fully effective.
YK-88C and YG-455C	CW4	500 Hz	Excellent selectivity. Very sharp passband. Maximum VBT flexibility, which adjusts passband from 500 Hz to 150 Hz. Best overall combination.
YK-88CN and YG-455C (Combination not recommended)	CW4	270 Hz	Excellent selectivity and narrow passband, but VBT not flexible (too narrow on one side of passband).
YK-88C and YG-455C (Combination not recommended)	CW4	250 Hz	Excellent selectivity and very sharp, narrow passband. VBT not flexible (too narrow on one side of passband).
YK-88CN and YG-455CN	CW4	250 Hz	Optimum selectivity, most sharp and most narrow lowest noise floor, best dynamic range. However, greatest filter insertion loss and very little VBT range (adjusts no wider than 250 Hz) ...not good for contest operation or "tuning around", but excellent for high-speed CW schedules requiring narrowest, sharpest passband.

■ **VFO-230 OR VFO-240 CONNECTION (Fig. 5-3)**

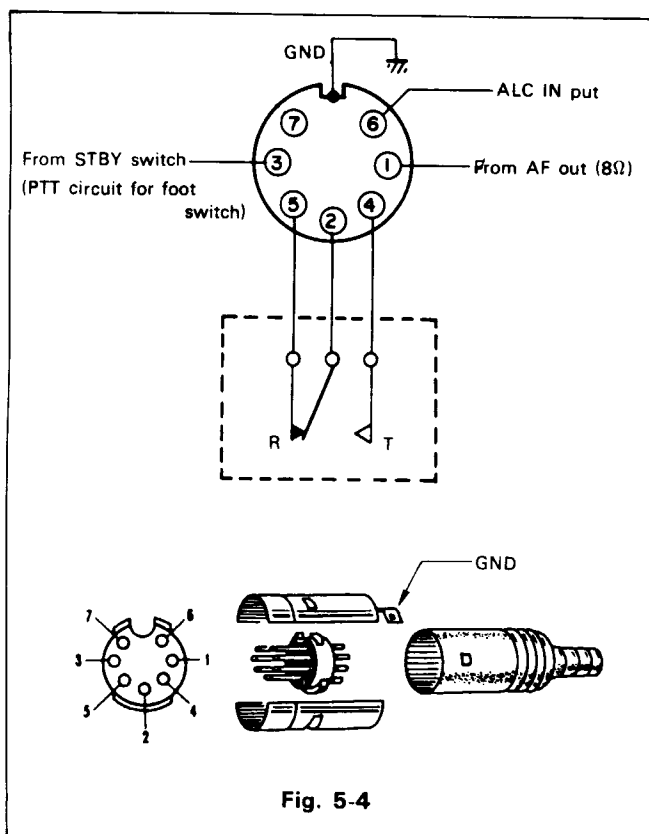
Connect the VFO-230 or VFO-240 as shown in Fig. 5-3. You will enjoy advanced operation including split-frequency capability by combining a 20 Hz step digital VFO with five memories (VFO-230).



■ **ACCESSORY CONNECTIONS**

Fig. 5-4 shows the REMOTE connector. This DIN plug can be used for attaching a linear amplifier or other external accessories to the transceiver. Always use shielded line for all functions.

NOTE:
ALWAYS use shielded line for all connections.



PIN	FUNCTION	PIN	FUNCTION
1	Speaker output	5	Normally closed (relay contact)
2	Relay common terminal (NOT grounded)	6	ALC input ALC threshold level approx. -6V
3	PTT line	7	No connection
4	Normally opened (relay contact)		

■ **OPERATION WITH A LINEAR AMPLIFIER**

Operation with a linear amplifier. Refer to Fig. 5-4, TS-830S internal wiring.

- Pin 6 ALC input
Connector metal shell Ground
 - Pin 2 Ground to connector metal shell and control line braid.
 - Pin 4 Control line center conductor.
- Use shielded line for both ALC and RL (control line).

■ **SSTV OR AFSK OPERATION**

The TS-830S will adapt very well to slow scan television or AFSK RTTY operation. For SSTV, the only cabling required are connections between the MIC connector of the TS-830S and the camera output, and between the SPEAKER jack and the monitor input.

When transmitting, adjust the transmitter output so that final input power is less than 100W (less than 125 mA Ip), or for approximately 1/2 of normal output power. for AFSK, connect the T.U. output to the MIC input, and speaker output to the T.U. input.

■ **PHONE PATCH OPERATION**

The PC-1 Phone Patch can be used with the TS-830S.

Recommended settings are:

- PC-1 RX Gain 4
- TX Gain 4
- Null as necessary
- TS-830S Vox Gain 1
- AF Gain 4
- Mic Gain 5
- Anti Vox Max

Most other phone patches will work satisfactorily without any modification to the radio, requiring only an external speaker connection, and that the Mic line be run through the patch.