



TRIO

TS-530SP

HF TRANSCEIVER

INSTRUCTION MANUAL



This instruction manual covers TS-530SP and TS-530D. If instructions differ from each other, those are mentioned separately.

Please refer to an instruction corresponding to your type of transceiver.

AFTER UNPACKING

Save the original boxes packing in the event your unit needs to be transported for remote operation, maintenance, or service.

The following explicit definitions apply in this manual. Be sure to read these definitions:

NOTE:

If disregarded, inconvenience only – no damage or personal injury.

CAUTION:

Equipment damage may occur, but not personal injury.

WARNING:

Personal injury may occur – do not disregard.

CAUTION:

Read Operating Manual Section 4. before placing transmitter in service.

WARNING:

HIGH VOLTAGES PRESENT.

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TS-530 SPECIFICATIONS

[GENERAL]

Frequency Range.....	160 m Band 1.8 ~ 2.0 MHz 80 m Band 3.5 ~ 4.0 MHz 40 m Band 7.0 ~ 7.3 MHz 30 m Band 10.1 ~ 10.15 MHz (10.0 MHz WWV) 20 m Band 14.0 ~ 14.35 MHz 17 m Band 18.068 ~ 18.168 MHz 15 m Band 21.0 ~ 21.45 MHz 12 m Band 24.89 ~ 24.99 MHz 10 m Band 28.0 ~ 29.7 MHz
Modes.....	SSB/CW
Frequency Stability.....	Within 1 kHz during the first hour after 1 minute of warmup. Within 100 Hz during any 30 minute period thereafter.
Power Requirement.....	110VAC/120VAC/240VAC, 50/60 Hz
Power Consumption.....	Transmit: 295 watts Receive: 27 watts (with heaters off)
Dimensions.....	333 (13.3) x 133 (5.3) x 333 (13.3) mm (inch)
Weight.....	12.8 kg (28.2 lbs)

[TRANSMITTER]

* Final Power Input.....	TS-530SP 220W PEP for SSB operation 180W DC for CW operation	TS-530D 160W PEP for SSB operation 130W DC for CW operation
Audio Input Impedance.....	500 Ω ~ 50 k Ω	
RF Output Impedance.....	50 Ω ~ 75 Ω	
Carrier Suppression.....	Better than 40 dB	
Sideband Suppression.....	Better than 50 dB	
Spurious Radiation.....	Better than 60 dB	
Harmonic Radiation.....	Better than 40 dB	
Audio Freq. Response.....	400 to 2,600 Hz, within -6 dB	
ALC Input.....	-10V DC Max	
Linear Amp Relay Contact Rating.....	100V DC 1A	

[RECEIVER]

Receiver Sensitivity.....	0.25 μ V at 10 dB S + N/N
Image Ratio.....	Better than 60 dB
IF Rejection.....	Better than 70 dB
Receiver Selectivity	
SSB/CW.....	2.4 kHz (-6 dB), 4.2 kHz (-60 dB) CW Optional Filter YK-88C 500 Hz (-6 dB), 1.5 kHz (-60 dB) YK-88CN 270 Hz (-6 dB), 1.1 kHz (-60 dB) SSB Optional Filter YK-88SN 1.8 kHz (-6 dB), 3.3 kHz (-60 dB)
Notch-filter Attenuation.....	Better than 20 dB (1.5 kHz)
Audio Output Impedance.....	8 ~ 16 Ω
Audio Output.....	1.5W (8 Ω)

NOTE: The circuit and ratings may be changed without notice due to developments in technology.

SECTION 1. INTRODUCTION AND FEATURES

1.1 KENWOOD TS-530

The TS-530 is highly sophisticated solid state Amateur band transceiver employing only three vacuum tubes. Operating on all Amateur bands between 1.8 and 29.7 MHz, this unit is constructed modularly. The TS-530 includes many built-in features usually found as extras on other transceivers. Included are VOX, 25 kHz calibrator, RIT, RF attenuator, and an effective noise blanker. The TS-530 also includes automatic gain control (AGC), automatic level control (ALC), semi-break-in CW with sidetone, a speech processor, speaker and built-in AC power supply. Any complicated electronic device will be damaged if operated incorrectly, and this transceiver is no exception. Please read all of the operating instructions before putting your TS-530 on the air.

1.2 FEATURES

1. Interference-free DX operation

* TUNABLE NOTCH FILTER

Interference is reduced or eliminated using the built-in notch circuit. The TS-530 uses an Audio notch filter.

* IF shift circuit

The IF SHIFT is a circuit to shift IF pass-bandwidth without changing receive frequency. It eliminates interference or adjusts receive frequency characteristic as desired.

* NARROW/WIDE BAND WIDTH selection and optional filters for enhanced operation. NARROW or WIDE CW operation can be selected when using one of two optional filters:

YK-88C (500 Hz) or YK-88CN (270 Hz)

NARROW or WIDE SSB operation can be selected when using the optional YK-88SN (1.8 kHz) filter.

2. WARC bands

The TS-530 fully covers the 160-10m Amateur bands, including the new WARC bands of 10, 18 and 24.5 MHz. The VFO covers at least 50 kHz above and below each 500 kHz band. The optional VFO-230 external digital VFO covers about 100 kHz above and below each band, for MARS and other applications.

3. All-in-one, compact AC Power supply.

4. Advanced circuit design for improved two-signal characteristics. Cleverly designed front-end circuit components and receive circuit system assure excellent two-signal characteristics. Cross-modulation and blocking are reduced.

5. TX final unit uses 6146B's/S2001A.

The final transmitting tubes are: two 6146B's two 6146B's, 6146B's/S200/AS for the TS-530SP; on S2001A for the TS-530D.

Amplified ALC provides clear, strong signals with reduced cross modulation.

6. Variable level noise blanker

Conventional fixed level noise blankers are sometimes less than effective in removing pulsating noise over weak signals or rejecting strong interference signals. This variable level noise blanker is equipped to control the optimum threshold level of the gate pulse amplifier.

7. The speech processor controls the audio compression level and ALC time constant to increase the average audio level and transmit power.

8. XIT (Transmit Incremental Tuning) for fine adjustment of transmit frequency independent of receive frequency.

9. Built-in digital display

Displays accurate frequencies to the 100 Hz order, any band or mode.

10. The controls are arranged on the zinc die-cast front panel for easy operation.

11. A full variety of accessory circuits are provided:

The TS-530 includes:

VOX circuit (available for Semi-Break in), Marker circuit, side-tone oscillator, selectable AGC (OFF, FAST, SLOW) RF Attenuator, CW zero-beat circuit (in the Tune position), HEATER switch, SCREEN GRID switch, and built-in speaker.

SECTION 2. INSTALLATION

2.1 UNPACKING

Remove the TS-530 from its shipping container and packing material and examine it for visible damage. If the equipment has been damaged in shipment, notify the transportation company immediately. Save the boxes and packing material for future shipping or moving.

The following accessories should be included with the transceiver.

1. Instruction Manual (B50-4076-00) 1
2. Plastic Extension Feet with Screws
(J02-0049-14) 2
3. Speaker Plug 1/8" (E12-0001-05) 1
4. 7P DIN Plug (E07-0751-05) 1
5. Fuse TS-530SP (USA) 120V 6A 1
 TS-530SP 220/240V 4A 1
 TS-530SP 120/220V 6/4A... 1 each
 TS-530D 110/220V 6/4A... 1 each

2.2 OPERATING LOCATION

As with any solid state electronic equipment, the TS-530 should be kept from extremes of heat and humidity. Choose an operating location that is dry and cool, and avoid operating the transceiver in direct sunlight. Also, allow at least 3 inches clearance between the back of the equipment to any object. This space allows an adequate air flow from the ventilating fan to keep the transceiver cool.

CAUTION:

Do not operate the radio in an RF Field greater than 6V RF. Receiver damage may occur.

2.3 CABLING (See Figure 2-1.)

■ GROUND

To prevent electric shock, and reduce the possibility of TVI and BCI, connect the transceiver to a good earth ground through as short and heavy a lead as possible. Use ground rods or metal cold water feedline.

NOTE:

A ground connection greater than $1/4 \lambda$ away from the transceiver may be a good DC ground, but NOT an RF ground.

■ ANTENNA

Connect through a 50 ohm antenna feedline to the coaxial connector on the rear panel.

■ KEY

If CW operation is desired, connect a key to the KEY jack. Use shielded line or coaxial cable.

■ POWER CONNECTIONS

Make sure the POWER switch on the front panel is turned off, the stand-by switch is in the REC position, and the line voltage is correct. Then connect the POWER cord to the line source.

■ AC POWER

TS-530SP

For fixed station operation, the unit operates from 120V AC (U.S.A.) or 220V AC/240V AC (Europe), 50/60 Hz power source capable of supplying 280 watts or more.

- 120V AC line model (U.S.A.)

A 6A fuse is used.

If you desire operation on 220V AC or 240V AC, it is necessary to change the power transformer connections and the fuse.

See page 27.

- 120/220V AC line model

This version is equipped with a voltage selector switch on the rear panel. Set the switch to your line voltage and use the correct fuse. 120V setting requires a 6A fuse. 220V setting requires a 4A fuse.

- 220/240V AC line model (Europe)

This destination type is equipped with a voltage selector switch on the rear panel.

A 4A fuse should be used.

Set the switch to your line voltage and use the correct fuse.

NOTE:

- The 220/240V AC model is preset to 220V.
- The 120/220V AC model is preset to 220V.

TS-530D

For fixed station operation, the unit operates either 110 or 220V AC, 50/60 Hz power source.

Check your local line voltage before operation.

The 110VAC setting requires 6A fuse.

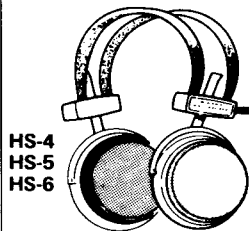
The 220VAC setting requires 4A fuse.

Note:

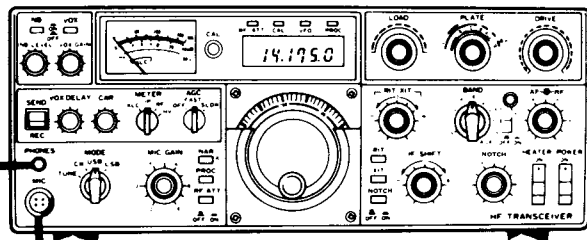
The TS-530D is preset to 110V AC.

Headphones

Use headphones of 4 to 16Ω impedance. The optional HS-4, 5, 6 or 7 headphones best suited for use with the TS-530 Stereo-type phones can also be used.

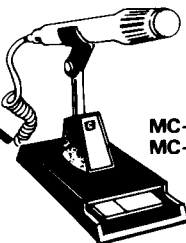


HS-4
HS-5
HS-6

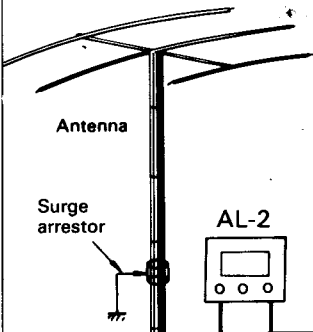
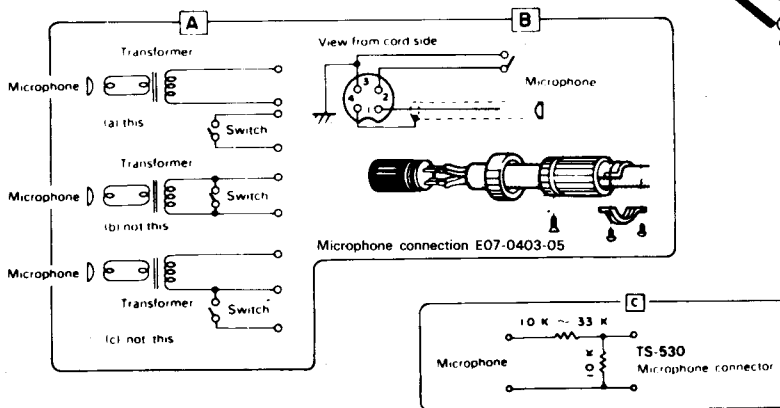


Microphone

Either a low or high impedance microphone (500Ω to 50 kΩ) can be used. The P.T.T. switch should be isolated from the mic circuit (shown in "A"). Use a microphone with a separate switch and MIC line so both P.T.T. and VOX are available.



MC-50
MC-60



Antenna

Surge arrester

AL-2

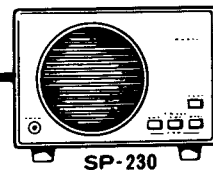
Can be used for TX monitor

Key
For CW operation, connect your key to the KEY jack at the rear. Use shielded cable.



External speaker

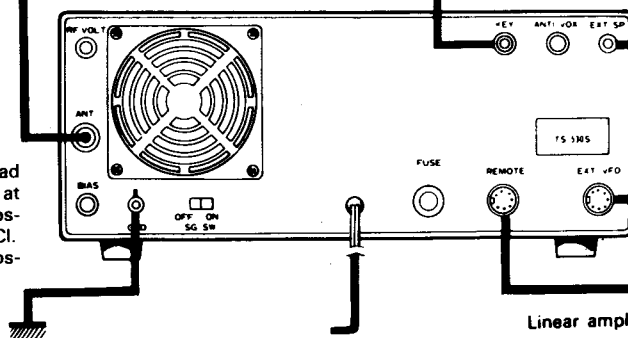
Besides the built-in speaker, an external speaker can also be used. Connect to the rear EXT SP jack using the supplied plug.



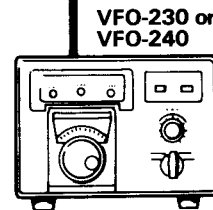
SP-230

GND terminal

It is recommended that a ground lead be connected to the GND terminal at the rear of the set to prevent the possibility of electric shock, TVI and BCI. Use as short and heavy a lead as possible.



Linear amplifier



VFO-230 or
VFO-240

External VFO

AC line source
See page 5, AC POWER

Fig. 2-1 TS-530 Connections

2.4 MICROPHONE

Attach the microphone connector to a suitable microphone, as shown in Figure 2-1. Be sure the microphone PTT switch is separate from the microphone circuit, as shown. It should be noted that a microphone with a 3P plug using a common ground terminal should not be used.

The microphone input is designed for $500\Omega \sim 50k\Omega$ microphones. The choice of microphone is important for good speech quality, and should be given serious consideration. The crystal lattice filter in the transceiver provides all the restriction necessary on audio response, and further restriction in the microphone is not required. It is more important to have a microphone with a smooth, flat response throughout the speech range.

Follow the microphone manufacturer's instructions for connecting the microphone cable to the plug. With many microphones, the push-to-talk switch must be pressed to make microphone audio available. For VOX operation, this unwanted feature may be eliminated, if desired, by opening the microphone case and permanently connecting the contacts which control the microphone audio.

Standard microphone sensitivity is within the range of -50 dB to -60 dB. If a microphone having a higher sensitivity is used, the ALC and compressor circuits will not function properly. In this case, insert in the mike line an attenuator as shown in Fig. 2-1c. A typical MIC gain control setting is 12 o'clock. If you must run this control at 9 o'clock or less, use an attenuator.

2.5 KEY

If CW operation is desired, connect a key to the KEY jack. Use shielded cable, and a standard (mono or 2P) phone plug.

2.6 EXTERNAL SPEAKER AND HEADPHONES

Receive audio output from the TS-530 is 1.5 watts at 4 to 16 ohms. The TS-530 has a built-in speaker jack on the rear panel. The speaker may be an 8-ohm permanent-magnet type, 4 inches or larger. The internal speaker is disconnected when an external speaker is used. Headphones should also be 4 to 16 ohms impedance or greater. When headphones are connected to the front-panel PHONES jack, the speaker is disabled.

2.7 GROUND

To prevent electric shock, and reduce the possibility of TVI and BCI, connect the transceiver to a good earth ground through as short and heavy a lead as possible.

2.8 ANTENNA

Any of the common antenna systems designed for use on the high frequency amateur bands may be used with the TS-530 provided the input impedance of the transmission line is not outside the capability of the bi-output matching network. The transmission line should be coaxial cable. An antenna system which shows a standing wave ratio of less than 2:1 when using 50 or 75 ohm coaxial transmission line, or a system that results in a transmission line input impedance that is essentially resistive, and between 15 and 200 ohms will take power from the transceiver with little difficulty. If openwire or balanced type transmission line is used with the antenna, a suitable antenna tuner with balun is recommended between the transceiver and the feedline. Methods of construction and operating such tuners are described in detail in the ARRL Antenna Handbook, and similar publications. For operation on the 160, 75 and 40 meter bands, a simple dipole antenna, cut to resonance in the most used portion of the bands, will perform satisfactorily. For operation of the transceiver on the 10, 15 and 20 meter bands, the efficiency of the station will be greatly increased if a good directional rotary antenna is used. Remember that even the most powerful transceiver is useless without a proper antenna.

CAUTION:

Protect your Equipment - Use a LIGHTING ARRESTOR. The TRIO AL-2 is recommended.

SECTION 3. CONTROLS AND THEIR FUNCTIONS

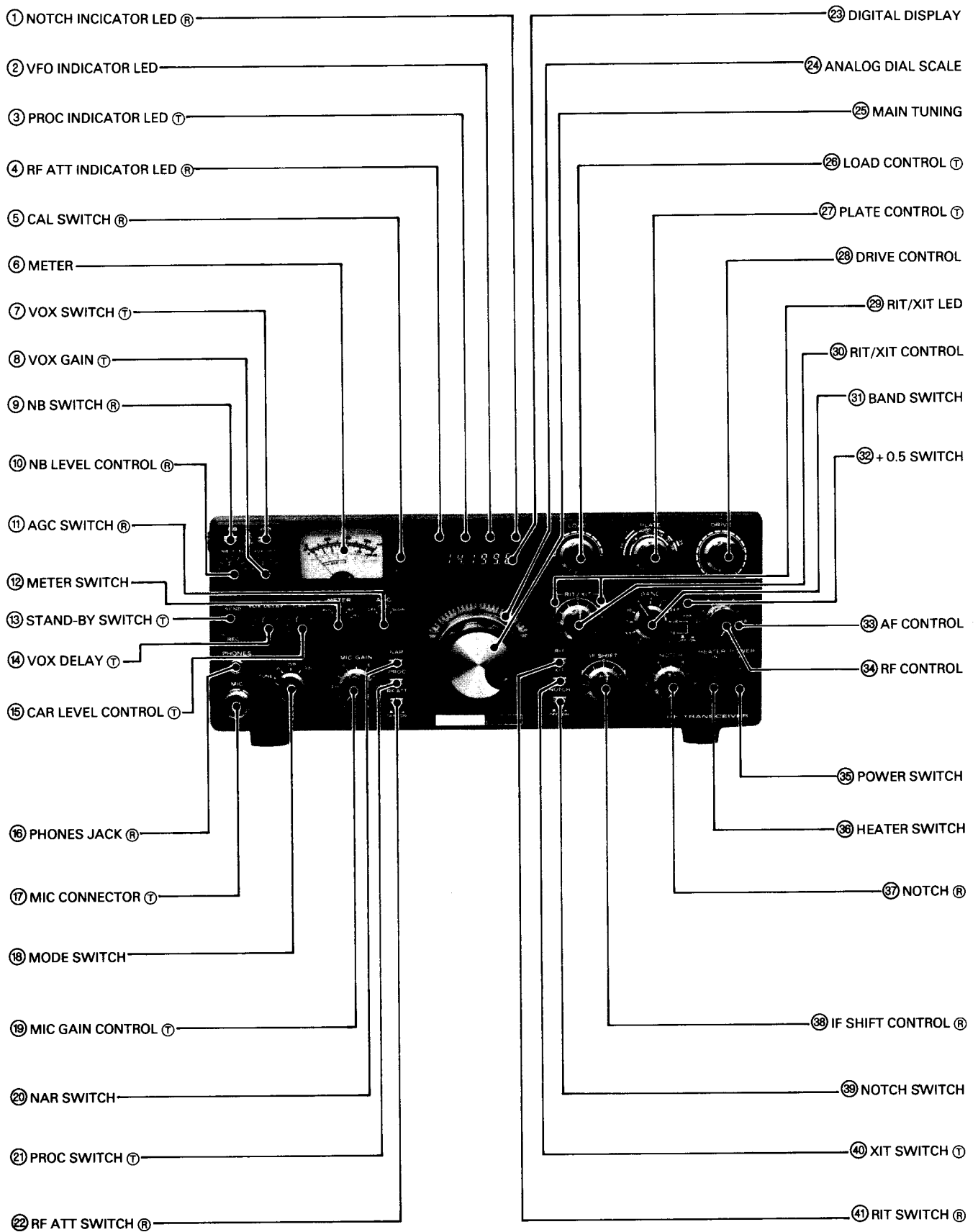


Fig. 3-1 Front Panel View

3.1 FRONT PANEL

The symbol after the part name indicates:

Ⓡ: Active only during reception.

Ⓣ: Active only during transmission.

No symbol: Always active

1. NOTCH INDICATOR LED Ⓡ

This indicator, (light emitting diode), illuminates when the NOTCH circuit is turned ON.

2. VFO INDICATOR

The VFO indicator illuminates when the internal VFO controls transceiver operation. The indicator is not lighted during fixed channel or remote VFO operation.

3. PROC (SPEECH PROCESSOR) INDICATOR Ⓣ

This indicator, (light emitting diode), illuminates when the PROC switch is turned ON.

4. RF ATT INDICATOR Ⓡ

This illuminates when the RF ATT is turned ON.

5. CAL SWITCH (R)

This switch energizes the built-in marker circuit. Receive frequency can be calibrated at 25 kHz intervals using this oscillator.

6. METER

The meter monitors five different functions, depending on METER switch position. In receive the meter is automatically an S-meter, and shows received signal strength on a scale of 0 to 40 dB over S9. In transmit, meter function depends on the position of the METER switch, as described below. This is an average-responding meter, NOT peak-reading.

7. VOX SWITCH Ⓣ

The VOX circuit is readied for voice operated transmit in SSB or semi-break-in CW.

8. VOX GAIN Ⓣ

This controls sensitivity of the VOX (Voice Operated Transmit) circuit.

9. NB SWITCH Ⓡ

With the push switch IN, the noise blanker circuit turned ON reducing pulse-type (ignition) noise. Power-line, radar, QRM and atmospheric "white" noises will not operate the blanker. The noise blanker circuit operating level is adjustable by the noise blanker control.

10. NB LEVEL CONTROL Ⓡ

This control adjusts the noise blanker circuit operation level according to receiving conditions or noise level.

11. AGC SWITCH Ⓡ

This controls the AGC (Automatic Gain Control) circuit:

OFF AGC disabled (no AGC).

FAST Normally used for CW operation.

SLOW Normally used for SSB operation.

12. METER SWITCH

This determines the transmit meter function:

ALC (Automatic Level Control)

Monitors internal ALC voltage, or the ALC voltage feedback from a linear amplifier operated in conjunction with the TS-530. For SSB operation the ALC reading for voice peaks should be within the indicated ALC range. ALC voltage adjustment is made with the MIC control for SSB and with the CAR control for CW.

IP (Plate Current)

In this position the meter monitors final tube plate current. The scale is calibrated from 0 to 350 ma.

RF (Output Power)

This monitors relative output power of the transceiver. There is no meter scale for this position. Normally the reading should be adjusted (with the RF METER control) for a 2/3 scale reading.

HV (High Voltage)

This position monitors the high voltage power supply. The meter scale is calibrated from 0 to 10, indicating 0 to 1000 volts.

13. STAND-BY SWITCH Ⓣ

This two-position lever switch selects:

REC The transceiver is receiving unless the microphone PTT switch, or the VOX circuit is activated.

SEND Locks the unit in transmit.

14. VOX DELAY CONTROL Ⓣ

The DELAY control adjusts the hold time for VOX or break-in CW operation. Adjust for individual preference.

15. CAR LEVEL CONTROL Ⓣ

This controls carrier level during CW operation. Adjust the CAR level so that the ALC meter points to the center of the ALC zone. The ALC meter should not read beyond the ALC zone.

16. PHONES JACK [®]

The headphones jack allows use of a 4 to 16 ohm or greater headphone through a 1/4" phone plug. When phones are used the speaker is disconnected.

17. MIC CONNECTOR [Ⓣ]

The four pin connector allows use of a microphone with PTT Figure 2-1 B shows plug wiring. (Page 6)

18. MODE SWITCH

The mode switch selects type of emission, and TUNE.

TUNE This position provides reduced carrier and shorted key line for transceiver tuning. (Input power to the final section is reduced to prevent tube damage during tune-up.) Use this position to zero-beat an incoming CW signal.

CW Used for CW operation.

USB Used for upper-sideband operation. International Amateur practice dictates the use of USB on and above the 14 MHz band.

LSB Selects lower-sideband. International Amateur practice dictates the use of LSB on and below the 7 MHz band.

19. MIC GAIN CONTROL [Ⓣ]

This control adjusts microphone amplifier gain for SSB operation. Adjust for an on-scale ALC reading on voice peaks.

20. NAR SWITCH [®]

With optional filters installed, the IF bandwidth can be selected by the Narrow Switch. The bandwidth varies with filters being used. For details, refer to Narrow Switch on page 16.

21. PROC (SPEECH PROCESSOR) SWITCH [Ⓣ]

This switch is used during SSB operation. Set the switch to the ON position and the speech processor will be activated, increasing the average talk power.

22. RF ATT SWITCH [®]

With this switch ON, A 20 dB attenuator is inserted in the antenna circuit, protecting the RF amplifier and mixer from overload on strong input signals.

23. DIGITAL DISPLAY

The digital display indicates operating frequency to the nearest 100 Hz.

24. ANALOG DIAL SCALE

The mono-scale permits direct analog frequency readout over the 0 to 500 kHz range, graduated at 1-kHz intervals. Operating frequency equals the dial (in kHz) plus the BAND switch frequency (in MHz). An additional 50 kHz both above and below the 500 kHz range is also covered.

25. MAIN TUNING

This controls the VFO, selecting the transceiver's operating frequency. The indented knob is convenient for quick tuning.

26. LOAD CONTROL [Ⓣ]

This controls the loading of the network between the final section and the antenna. Adjustment is described in Section 4.

27. PLATE CONTROL [Ⓣ]

This controls the plate tuning of the final amplifiers. Calibration is approximate.

28. DRIVE CONTROL

This control tunes the plate tank circuit of the 12 B Y 7A driver as well as the receiver's antenna and mixer coils. In receive the DRIVE control is tuned for maximum sensitivity (maximum S-meter deflection), and in transmit for a maximum ON-SCALE ALC reading. These points occur concurrently. Tuning for one also achieves the other.

29. RIT/XIT INDICATOR

This indicator will light when the RIT switch or XIT switch is ON.

30. RIT/XIT CONTRL

This control allows the receive frequency, transmit frequency or both to be shifted without using the main tuning control. With the RIT switch ON, the RIT circuit is activated to shift only the receive frequency.

With the XIT switch ON, the XIT circuit is activated to shift only the transmit frequency.

When both switches are ON, both frequencies are shifted. The center (O) position equals no shift.

31. BAND SWITCH

The 10-position switch selects all Amateur bands from 1.8 to 29.7 MHz. To select the 28.5 or 29.5 MHz band, push the +0.5 switch ON.

Use the 10 MHz band for WWV reception.

32. +0.5 SWITCH

This switch is used in conjunction with the bandswitch. Depress the switch with the bandswitch set to "28", and the transceiver will operate in the 28.5 MHz band. When the bandswitch is set to "29", the transceiver will operate in the 29.5 MHz band. This switch has no function at any other bandswitch position.

33. AF GAIN [®]

This adjusts receiver audio level. Volume increases clockwise.

34. RF GAIN [®]

This adjusts receiver RF amplifier gain. Turn fully clockwise for maximum gain and a correct S-meter reading.

35. POWER SWITCH

This switches all power to the transceiver.

36. HEATER SWITCH

This switch turns the three transmitting tube filaments ON.

37. NOTCH CONTROL [®]

Turn the NOTCH switch ON to activate the notch filter. Adjust the notch frequency to null beat (carrier interference) signals.

38. IF SHIFT CONTROL [®]

During reception, the effective center frequency of the IF crystal filter can be shifted ± 1.2 kHz facilitating adjustment of tone quality, or eliminating interference from nearby frequencies. For normal operation, set to the center detent position (click stop).

39. NOTCH SWITCH [®]

This switch controls the NOTCH circuit and indicator.

40. XIT SWITCH [Ⓟ]

This push switch activates the XIT (Transmit Incremental Tuning) circuit and the XIT indicator. By adjusting the XIT control, the VFO transmit frequency can be varied ± 2 kHz without changing the receive frequency.

41. RIT SWITCH [®]

This push switch activates the RIT (Receiver Incremental Tuning) circuit, and the RIT indicator. By adjusting the RIT control, the VFO receive frequency can be varied ± 2 kHz, without changing the transmit frequency.

If, both switches are ON, both the transmit and receive frequencies will shift simultaneously.

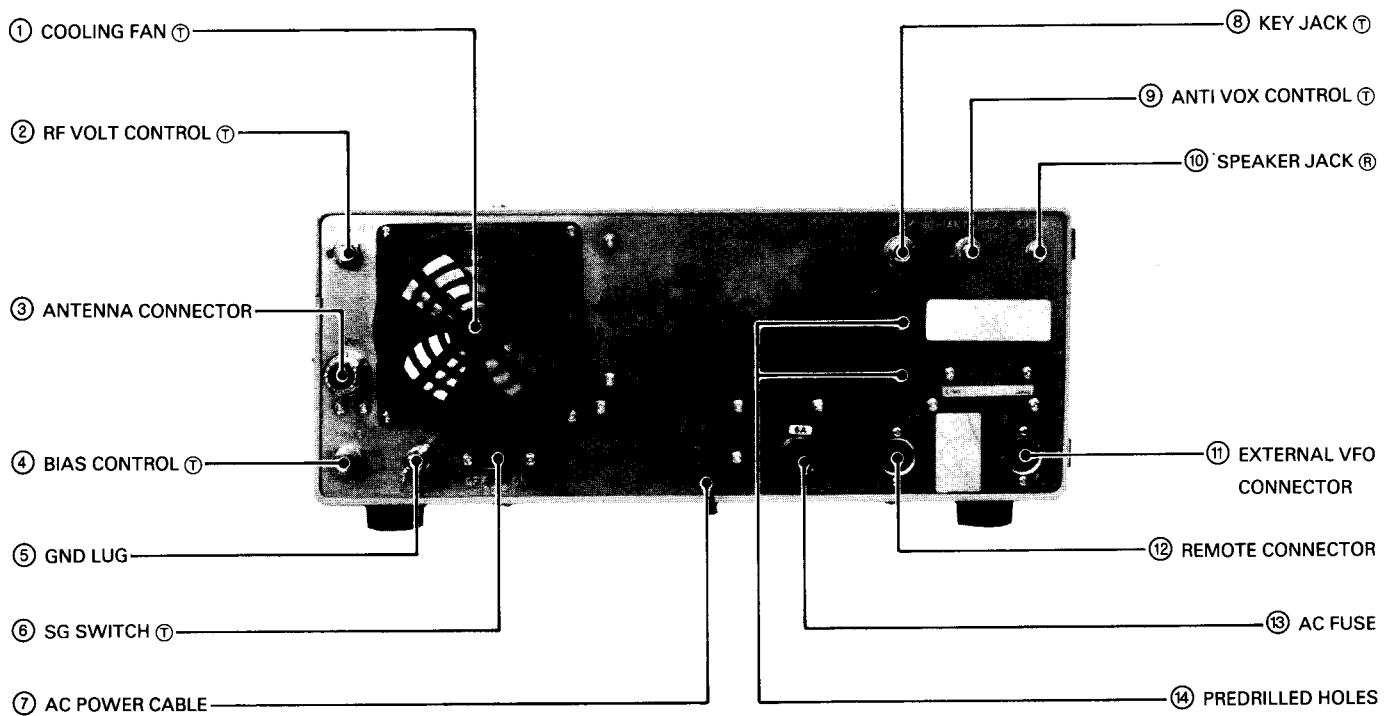


Fig. 3-2 Rear Panel View

3.2 REAR PANEL

1. COOLING FAN (T)

This fan cools the RF amplifier section to insure reliable and efficient operation.

2. RF METER CONTROL (T)

This adjusts the RF output meter reading. Set for 2/3 scale reading during CW transmission.

3. ANTENNA CONNECTOR

This SO-239 coax connector should be attached to a suitable 50Ω antenna for transmitting and receiving.

4. BIAS CONTROL (T)

This adjusts the bias voltage to the transmitting final amplifier tubes. Clockwise rotation increases the idling plate current. Section 4 describes adjustment to 60 ma.

5. GND (GROUND) LUG

To prevent electric shock, as well as RF1 and BC1, connect the transceiver to a good earth ground.

6. SG SWITCH (T)

This slide switch controls the screen grid voltage to the final tubes. For neutralizing, switch OFF. The switch remains ON for normal operation.

7. AC POWER CABLE

This cable is used to connect an AC power source to the transceiver.

8. KEY JACK (T)

Using shielded line, connect a key to this 1/4" phone jack for CW operation. Key open-terminal voltage is approximately -65V.

9. ANTI VOX CONTROL ⊕

Adjust the control to prevent speaker output from tripping the VOX.

10. SPEAKER JACK ®

The receiver audio output can be connected through this jack to an external 4 to 16 ohm speaker. The internal speaker is disconnected when an external speaker is connected.

11. EXTERNAL VFO CONNECTOR

This DIN connector is used to interface the TRIO VFO-230 or VFO-240 external VFO. The interconnecting cable is provided with the VFO.

PIN	FUNCTION	PIN	FUNCTION
1	VFO signal	5	VFO control
2	Relay control (+ on transmit)	6	Display control
3	+9V	7	Ground
4	CW freq. shift control	8	+12V

12. REMOTE CONNECTOR

This connector is used to interconnect a linear amplifier or other accessory item. See page 24 for detail.

13. AC FUSE

This fuse protects the transmitter power supply against short circuits. Never use a higher amperage fuse than specified; it will eventually cause extensive damage. If the fuse blows, try to determine the cause before replacing.

For 110/120 volt operation use a 6 ampere fuse and for 220/240 volt operation, a 4 ampere fuse.

14. PREDRILLED HOLES

These are provided for owner-installed switches or connectors.

* VOLTAGE SELECTOR SWITCH

The 220/240 VAC or 120/220 VAC line model (TS-530SP: for Europe) is equipped with a voltage selector switch on the rear panel. Set this switch for your local line voltage, as required.

SECTION 4. OPERATION

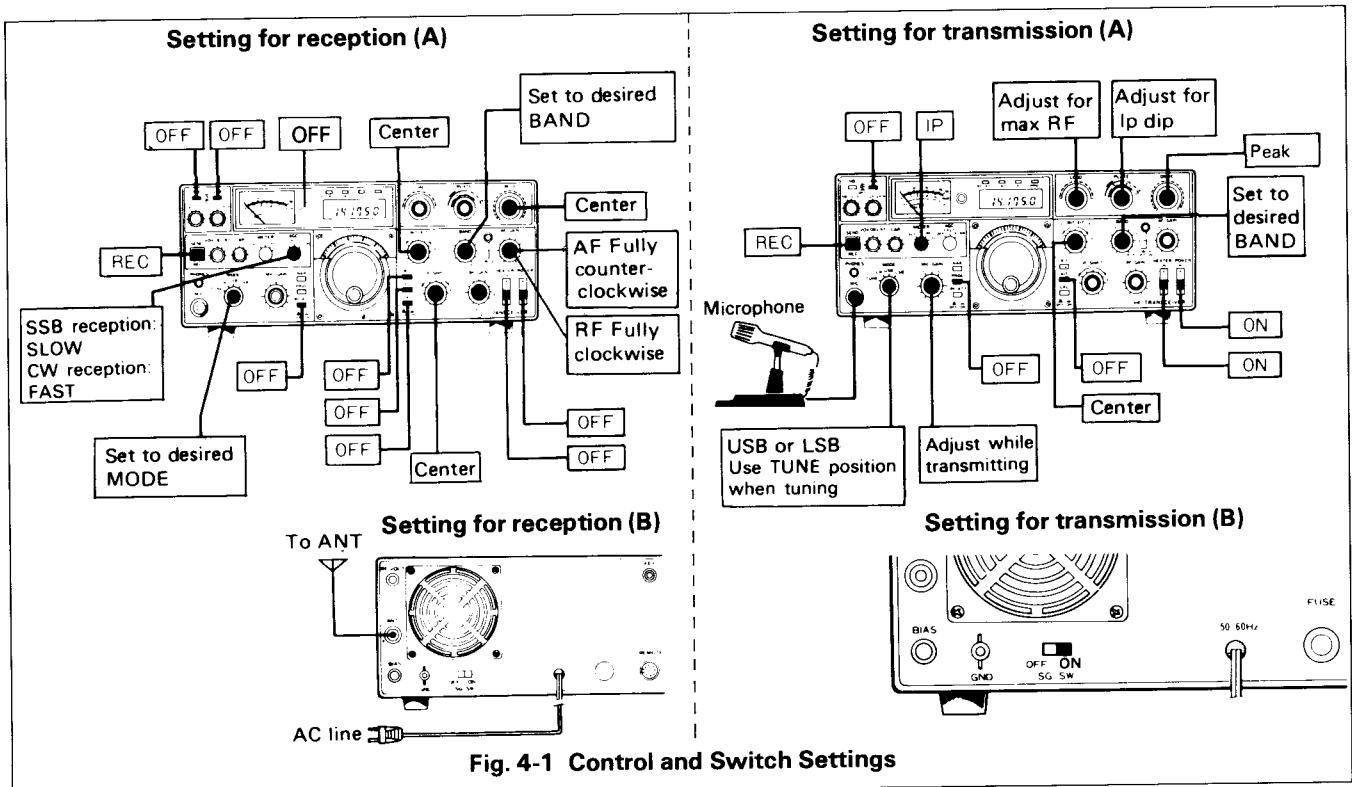


Fig. 4-1 Control and Switch Settings

4.1 RECEPTION (I)

NOTE:

Set the MIC and CAR controls to minimum to prevent accidental transmission before tune-up is completed. The TS-530 must be operated into 50 ohm ~ 75 ohm antenna or dummy load with an SWR less than 2 : 1. Random length wire antennas or light-bulb dummy loads cannot be used.

Conventional half-wave dipoles and beam antennas should only be used at or near their resonant frequency. Exceeding an SWR of 2 : 1 can damage the output stage of the transceiver.

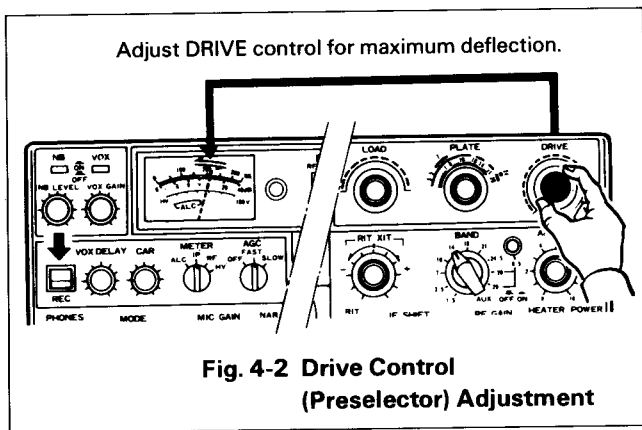


Fig. 4-2 Drive Control (Preselector) Adjustment

(1) Basic Procedures for Receive Operation

With a suitable antenna and microphone or key connected to the transceiver, set the controls as shown in Fig. 4-1.

Turn the POWER switch ON. The meter, dial scale, and VFO indicator will light, indicating the transceiver is operating. Advance the AF GAIN control clockwise until some receiver noise is heard in the speaker. Turn the main tuning dial within the frequency range of the Amateur band chosen until a signal is heard. Tune the signal for clearest reception, and then adjust the DRIVE control for maximum S-meter deflection. (Fig. 4-2)

(2) WWV Reception

Set the band switch to "10" and turn the main tuning control to 10.0 MHz.

4.2 RECEIPTIN (II)

This section covers operation of controls and switches to provide maximum performance from the TS-530.

(1) NOTCH CONTROL

If a single tone such as a CW signal is superimposed on the receive signal, turn the NOTCH ON and adjust the NOTCH control to eliminate or minimize the beat signal. A beat of approximately 1400 Hz can be eliminated at the center position of the control. The NOTCH is effective between 350 and 2600 Hz.

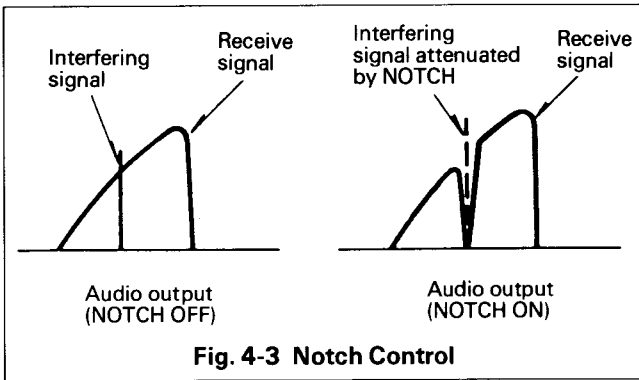


Fig. 4-3 Notch Control

(2) RF ATT SWITCH

The input to the receive RF amplifier is attenuated approximately 20 dB, providing distortion-free reception. This feature may be used in cases of receiver overload, caused either by a strong local signal, or during weak signal reception when a strong adjacent signal may blank the receiver or pump the noise blanker.

(3) RF GAIN CONTROL

RF GAIN is controlled by changing the AGC threshold voltage. Adjust the RF GAIN so the S-meter does not deflect excessively. This also reduces noise during reception. For normal operation, this control should be turned fully clockwise for maximum sensitivity.

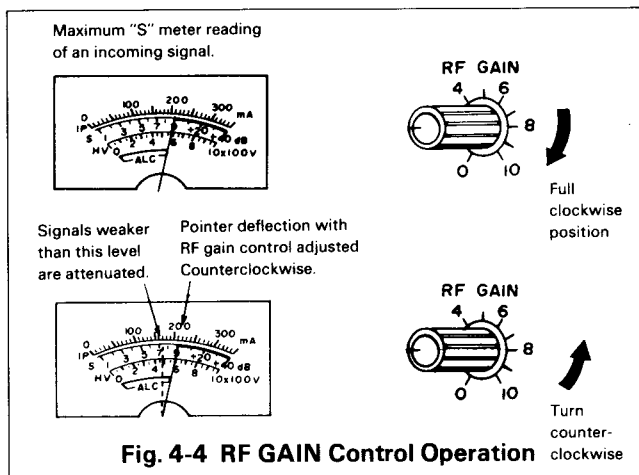


Fig. 4-4 RF GAIN Control Operation

(4) AGC (AUTOMATIC GAIN CONTROL)

Set the AGC switch to the appropriate position: Generally for SSB, SLOW, for CW FAST, and for very weak signals, the AGC may be turned OFF.

Simultaneous Use of the RF GAIN CONTROL and AGC Switch

If a strong signal (such as a local station) appears in the vicinity of the intended receive signal, the S meter may show unusual deflection due to the AGC voltage developed from the strong disturbing signal. If this occurs, turn the RF GAIN down so the meter pointer remains at about the original deflection peak and turn the AGC switch OFF. This will eliminate the unwanted AGC voltage and permit clear reception.

(5) RIT/XIT

First set the RIT/XIT control to center, and turn the RIT switch ON.

The RIT/XIT control allows shifting the receive frequency by approximately ± 2 kHz without changing the transmit frequency.

With the RIT switch ON, the receive frequency can be adjusted by using the RIT control.

With both the RIT and XIT switches ON, both the transmit and receive frequencies can be shifted.

For XIT switch operation, refer to Section 4.4 "Transmission (II)".

NOTE:

When the RIT is ON, transmit frequency is different from the receive frequency. For normal operation, leave the RIT switch OFF. It should be turned ON only when needed.

(6) IF SHIFT

The IF SHIFT control is used to shift the passband of the IF filter without changing receive frequency. By turning this control in either direction, the IF passband is shifted as shown in Fig. 4-3.

The IF SHIFT is effective in eliminating interference when the receive signal is superimposed on nearby signals during operation in both SSB or CW mode.

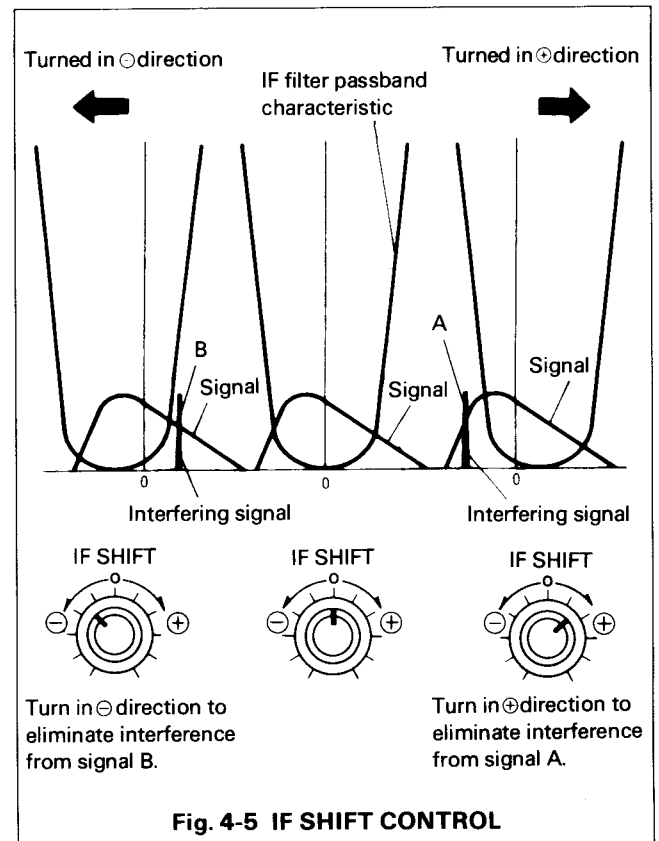


Fig. 4-5 IF SHIFT CONTROL