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**Courier 23 Plus Owner's Manual**

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**Thank you for any support you can give.**

Congratulations! You are now the proud owner of a new Courier 23 Plus with features never available before. Please read the instructions carefully to derive the maximum efficiency and pleasure from your unit.

# OPERATING HANDBOOK

FOR THE

# Courier 23 Plus

CITIZEN'S BAND TRANSCEIVER



## SPECIFICATIONS

### Receiver

**Sensitivity** — .15 uv for 10 db S+N at 30% modulation  
**Selectivity** — Better than 3 kc @ 6 db down  
**Squelch** — Adjustable, will awaken with carrier of .1 uv  
**Noise Limiter** — Automatic floating series; operated on all peaks  
**IF Frequency** — Dual conversion, 6 MHz & 455 KHz  
**Direct Image** — Better than 60 db  
**Audio Output** — 3.5 watts minimum into 4" weather-proof speaker  
**Frequency Range** — 26.965 to 27.255 MHz

### Transmitter

**Power Input** — 5 watts  
**Power Output** — Minimum 3.5 watts  
**Modulation** — AM — 100%  
**Emission** — 8A3  
**Hum & Noise** — at least 40 db down  
**Harmonic Suppression** — Better than 55 db down  
**Antenna Match** — 30-100 OHMS (pi network)  
**Carrier Stability** — Better than  $\pm .005\%$   
**Frequency Range** — 26.965 to 27.255 MHz

### Tube Complement

V1 - 6GH8 — Synthesizer  
V2 - 6GH8 — Mixer, 6 MHz oscillator  
V3 - 12BA6 — Driver  
V4 - 6BQ5 — RF Power Amplifier  
V5 - 6BS8 — Cascode RF Amplifier  
V6 - 12BE6 — 2nd Conversion, crystal oscillator  
V7 - 12BA6 — IF amplifier; squelch DC amp.  
V8 - 6EU7 — Microphone amp; AF amplifier  
V9 - 6BQ5 — AF Power output; modulator  
V10 - 12BA6 — 2nd IF amplifier, S meter control  
V11 - 6CW4 — Mixer (1st conversion)

### Diodes

1N295 — Detector  
1N34 — RF Indicator  
1N662 — Squelch Clamp  
200 PIV — Bias rectifier  
2 - 600 PIV — Power supply rectifier  
1N662 — Noise Limiter  
600 PIV — Modulation Sampler  
2 - 200 PIV — Relay rectifiers

Made in U.S.A.

## GENERAL

**Cabinet:** Heavy Gauge Steel. Chrome plated.  
Size: 4 $\frac{1}{4}$ "H x 12 $\frac{3}{8}$ "W x 7 $\frac{1}{2}$ "D.

**Front Panel:** Stainless Steel

**Chassis:** Cadmium Plated Steel

**Controls:** All operating controls are mounted on front panel. Adjustments are located on rear side of cabinet.

**Power:** Operates from 117VAC 50/60 cycles and 12VDC. Transistorized power supply on 12VDC operates with negative ground vehicles only. Power consumption is 70 watts @ 117 VAC; 5 amps @ 12VDC. Two separate plug-in cords are provided: one for 117VAC supply, the other for the 12VDC supply.

**Microphone:** Ceramic noise-cancelling type with hang-up clip, connector and retractable cord.

Complete with mounting brackets, power cables, manual, and warranty card.

The Courier 23 Plus is a complete Citizens' Band two-way radio station and may be employed for any communications purpose covered by Volume VI Part 95 - Citizens Radio Service of FCC Rules and Regulations. Although licensing is required, which consists mainly of making application to the FCC, no examination is necessary. Transmission with this

equipment must not be attempted until authorization in the form of a license has been received from the FCC. The Courier 23 Plus has been designed for the person who wants full coverage on the Citizens Band Channels 26.965 to 27.255 MCS on both receive and transmit. No need for buying any accessories other than the antenna.

# FUNCTION OF CONTROLS

## S - RF METER

When in the receive position, the meter indicates strength of incoming signal. In the transmit position, the meter measures relative RF output.

## NOISE LIMITER SWITCH

Helps eliminate noise in mobile use. Provides the listener with a clear undistorted signal even when the noise level is quite high.

## SQUELCH/STAND-BY

The squelch control enables you to cut out background noise. The unit remains silent until a signal is received on the channel to which the set is tuned.

When the control is rotated fully counterclockwise, the unit is in standby position.

## VOLUME/ON - OFF SWITCH

In the fully counterclockwise position control turns power off. Clockwise rotation adjusts volume of incoming signals. Outgoing signals are not affected.

## TUNING KNOB & DIAL

Tuning knob simultaneously selects both receive and transmit crystals of the desired channel.

The selected channel is indicated in the illuminated window.

## MODULATION INDICATOR

Neon light glows brighter as the modulation of the outgoing signal is increased. Light blinks at approx. 80% modulation level.

## PA - CB SWITCH

In the CB position, the outgoing signal is delivered directly to the antenna.

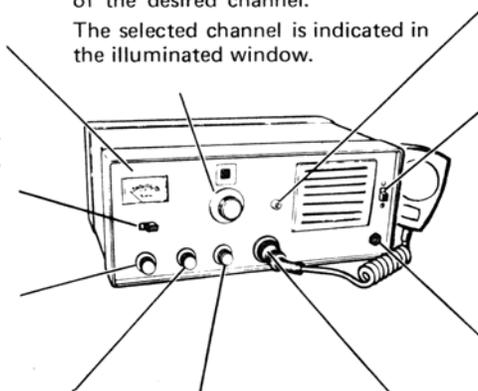
In the PA position, the signal is transferred to phone jack on rear of unit for use with external speaker.

## PHONE JACK

A headset or auxiliary speaker may be plugged into phono jack cutting out the built-in speaker. Connect to 3.2 ohm ext. speaker for best results.

## MICROPHONE JACK

A polarized receptacle for the microphone.



## BANDSPREAD

Reception from on-channel transmitting stations will normally be heard with maximum clarity and volume. Adjust bandspread control for optimum reception of transmissions broadcast slightly off frequency.

# OPERATING INSTRUCTIONS

Select desired channel by rotating tuning knob in either direction. Selected channel will appear in window.

Leave NOISE LIMITER in "off" position unless noise level is high. To eliminate unwanted ignition impulse noises switch to "on" position. In base station use of noise limiter may not be required. Enjoy the ultimate in audio clarity by switching to the "off" position.

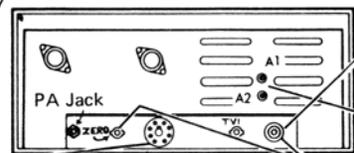
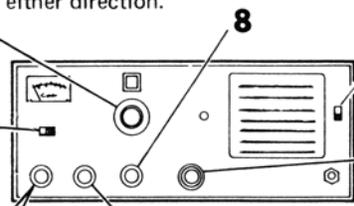
Turn Squelch control fully clockwise.

Squelch control can be set to cut out annoying background noise between received signals. Set volume control a bit higher than normal; adjust the control in a counterclockwise direction until the background noise disappears. An incoming signal overcomes the Squelch.

Select correct power cord for voltage source to be used. With power turned off, attach power cord to set. In mobile use check that battery voltage does not exceed 14.8 volts. Readjust regulator if voltage is excessive.

**INSTRUCTION FOR PA OPERATION:** Follow steps 1 & 2 above. Turn volume control to its lowest point. Put switch in PA position. Plug speaker into phone jack on rear of unit. (Speaker should be equipped with an 8 ohm L-pad to act as a volume control. Volume control on front of unit will not regulate PA speaker volume.) Turn set on. Depress microphone button and talk. Speaker volume can be controlled with the L-pad. Use 4 ohm horn type weatherproof speaker for mobile installation.

Adjust incoming signal to its peak by rotating bandspread control in either direction.



Disconnect the antenna. Zero the meter, with the unit in receive position, by adjusting the control on rear of cabinet.

4 Put switch in CB position.

1 Plug in microphone. Note key position. Tighten connector securely. Transmitter may not operate if connection is poor.

7 Turn set on with volume control knob. Meter and channel selector window will light. Turn the volume up until a rushing noise is heard on the speaker.

3 Connect antenna (or dummy load).

11 Reconnect the antenna. Select an unused channel. Push the microphone button and adjust A1 for maximum reading on the S-RF meter. Then adjust A2 for maximum reading. Continue light adjustments on A1 and A2 until you reach a maximum reading.

**NOTE:** For best results for mobile peaking, use Courier Port - a -Lab test unit as follows:

- Plug Port-a-Lab's antenna into its tip jack, and pull out full length.
- Set SELECTOR control to RFS position.
- Push microphone button to transmit.
- Turn RF LEVEL control to get indication. For ex: 5 on FIELD STRENGTH SCALE.
- RELATIVE FIELD STRENGTH SCALE is only used to check antenna radiation patterns or to peak transmitters to maximum power. Readings are RELATIVE POWER and DO NOT show true power.

**NOTE:** TVI-Trap is located on the rear panel. If TV interference is experienced when you are transmitting, adjust the TVI Trap with a hexagonal tuning rod until the interference is eliminated or reduced. A 6MHz trap and 37 MHz trap are also provided to reduce extraneous interference.

# INSTALLATION

**MOUNTING** — The unit may be installed in any mobile (12 volt negative ground system only) or base location. It should be mounted in an upright position, or as near to upright as possible.

Plan the location of your equipment to be installed **BEFORE** starting installation. Mistakes that have to be corrected are time consuming and costly. A well planned installation contributes considerably to the performance and ease of maintenance of the equipment.

**ANTENNA** — Your choice of antenna type should be determined by location and service conditions under which equipment will be used.

In general, ground plane type antennas serve local communications very well. Greater distances are more suitably covered by a colinear type.

Remember, the better care you take with your antenna system installation, the better your transmission and reception will be. Use RG58 or RG8 coaxial cable cut in lengths with multiples of 12 feet only.

**VENTILATION** — Special note should be paid to placement of the unit, in order to provide adequate ventilation. Do not block vent holes on top and bottom of cabinet. Excessive heat, due to poor placement may damage components. Careful planning will contribute to efficient, trouble-free service.

## OPERATING HINTS

**MICROPHONE** — Hold microphone at an angle of approx. 45°, about 1" to 2" away, press button and speak in a normal clear voice. Do not shout into microphone as distortion will result on the air.

**MAXIMUM POWER INPUT** — FCC regulations limit maximum power input of the transmitter. You are responsible for the check and maintenance of operation within the limits prescribed.

Except for the adjustments described herein, your transceiver has been completely aligned and adjusted at the factory. Further adjustments are not necessary.

**Note:**

TVI Trap is located on the rear panel. If TV interference is experienced when you are transmitting, adjust the TVI Trap with a hexagonal tuning rod until the interference is eliminated or reduced.

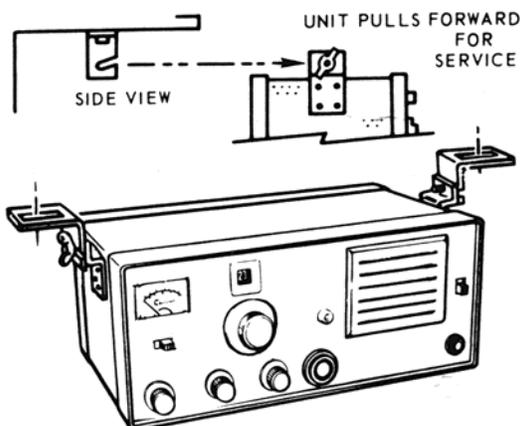
## MAINTENANCE

**MAINTENANCE** — Except for the adjustments described herein, your transceiver has been completely aligned and adjusted at the factory. Further adjustments are not necessary inside the transceiver.

Your transceiver has been designed to give you dependable, efficient service. For optimum operation of your equipment, install and handle with care. The finest equipment will not perform efficiently if installed and operated improperly.

**MAINTENANCE**, therefore, is limited to replacement of tubes and crystals. The chassis is easily pulled out by removing the screws holding it to case.

**Note:** If fuse blows, under no circumstances should larger size be used. Damage may occur to parts, thereby voiding your warranty.

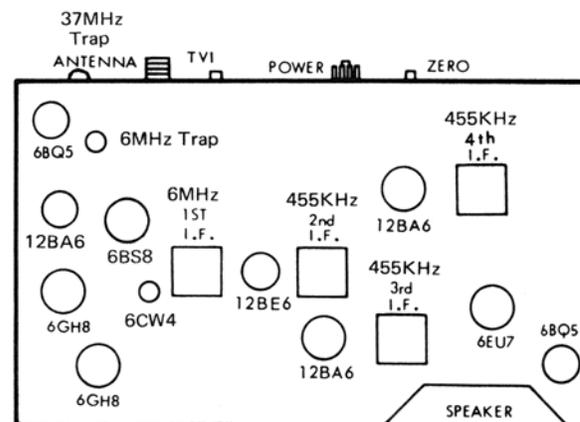


**MICROPHONE** — Install the microphone bracket in an easy to reach location. Be certain to plug microphone connector in securely and tighten firmly.

**Note:** In some locations, reception may be improved by connecting a ground wire (ordinary copper wire) from chassis to a cold water pipe or outside ground rod.

## MAINTENANCE CONT'D

**NOTE:** WHILE CHASSIS IS IN OPEN POSITION BE CAREFUL NOT TO DISTURB ANY COIL ASSEMBLIES, AS THEY MAY AFFECT CRITICAL CALIBRATIONS WITHIN THE SET.



## SERVICE

Your transceiver is readily serviced through our dealer organizations. If difficulty is experienced, return the set to your dealer for service. Further information if desired, will be available through your dealer or directly from:

**Courier Communications, Inc.**

**439 FRELINGHUYSEN AVE., NEWARK, N.J. 07114**  
A SUBSIDIARY OF WHITTAKER CORPORATION

You must obtain Authorization from COURIER prior to returning your unit to the factory for service.

## NOTICE

COURIER reserves the right to make changes and or modifications without prior notice.

Modification in design, by anyone except COURIER will void the warranty and the set will not be serviced or warranted.

# *Courier* Port-a-Lab



has the **ANSWERS** to your  
**RF measurement questions!**

In either **BASE** or **FIELD** location  
**YOU CAN NOW CHECK:**

- STANDING WAVE RATIO
  - RF POWER (TRUE) TO 50 WATTS!
  - MODULATION PERCENTAGE
  - MODULATION DISTORTION BY MONITOR
  - RELATIVE FIELD STRENGTH
- †MANY OTHER OUTSTANDING FEATURES

**All functions at the flip of a switch!**  
**For Amateur and Technician alike.**

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