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REBEL-23+

CITIZENS BAND TRANSCEIVER

SOLID STATE • DC OPERATION

INSTRUCTION MANUAL

COURIER REBEL-23+ SPECIFICATIONS

GENERAL

- * Transistor - 20
- * Diode - 13
- * Self-contained speaker - 3-1/4" round type-8 ohm voice coil
- * Detachable Dynamic Microphone with Press talk - 600 ohm
- * Illuminated Channel Indicator and "S" /RF power meter
- * 50 ohm external antenna impedance
- * Operated from a Nominal 13.8V DC supply (DC 10.8 to 15.6V) - negative or positive ground
- * 23 channel selector switch
- * Volume control with power switch
- * External Speaker and PA jacks
- * Co-axial type antenna connector
- * Under dash mounting bracket
- * Mechanical Filter - 1
- * Squelch control
- * PA Switch

RECEIVER SECTION

- | | |
|-------------------------------|---|
| • Frequency Range (MHz) | 26.965 to 27.255 |
| • Sensitivity | 0.5 μ V/m for 10dB S+N/N ratio at 30 % at 1000 Hz modulation. |
| • Selectivity | 6dB down at \pm 3 KHz; 50dB down at \pm 10 KHz. |
| • Adj. Channel Rejection | Better than 50 dB |
| • Audio Distortion at 1000 Hz | Less than 7% |
| • Spurious Response | 50 dB |
| • Squelch Sensitivity | .5 μ V |
| • Squelch Stop Sensitivity | 630 μ V |
| • Noise Limiter | Series gate |
| • Audio output at 8 ohm | 2.5W (10%) |
| • Intermediate Frequency | 1st IF: 11.275 MHz,
2nd IF: 455 KHz |
| • Hum and Noise | 50dBdown, nominal |

TRANSMITTER SECTION

• Frequency Range (MHz)	26.965 to 27.255
• Power Input at 13.8V DC	5W
• Power Output at 13.8V DC	3W, Nominal
• Modulation (5mV at Mic)	100%
• Emission (Class D Operation)	8A3
• Frequency Tolerance	$\pm 0.005\%$
• Antenna Matching	50 ohms (Nominal)
• Switching	Electronic.
• Modulation Distortion	Less than 7% at 85% modulation at 1000 Hz
• Harmonic Suppression	Better than 50dB down
• Modulation Limiter	Yields high average modulation at average voice levels.



GENERAL DESCRIPTION

RECEIVER

Your REBEL-23+ is designed to receive AM signals in the 26.965 to 27.255 MHz Citizens Band. The circuit is a highly sensitive and selective dual conversion superheterodyne type. Full 23 channels, crystal controlled operation is provided by a frequency-synthesized circuit consisting of 12 crystals.

The receive section includes an "S" Meter for reading signal strength, an adjustable squelch control to eliminate background noise when no signal is being received, an automatic noise limiter to suppress atmospheric and man-made interference, which permits reception of stations that are transmitting slightly off frequency.

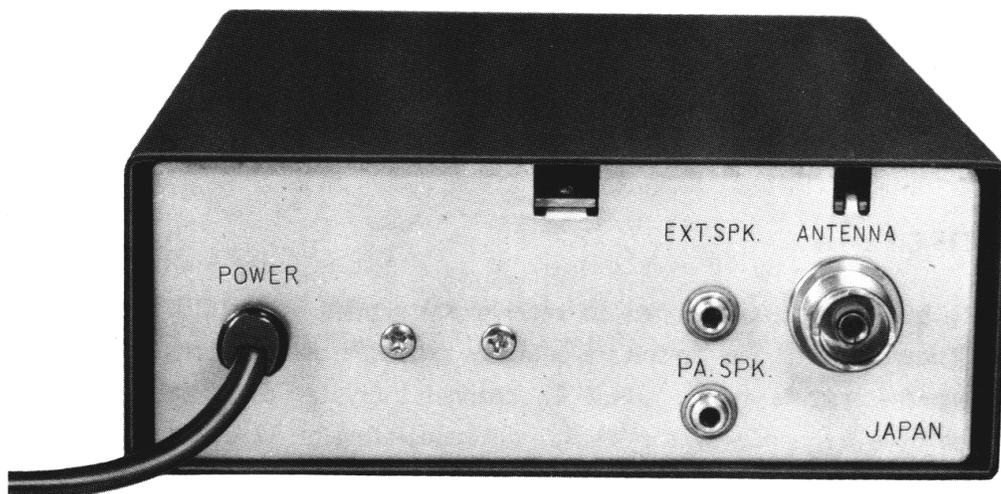
Function of Controls

REBEL-23+

FRONT VIEW



REAR VIEW



MANUFACTURED IN JAPAN EXCLUSIVELY TO THE SPECIFICATIONS OF
FANON / COURIER CORPORATION
PASADENA ● CALIF.
A SUBSIDIARY OF: REDEL INDUSTRIES

FCC LICENSE

Before transmitting with your REBEL-23+ it is essential that you acquire an FCC Class D Citizens Radio Service license. A license application form #505 can be obtained from the Federal Communications Commission, Washington, D.C. 20554 or from the nearest FCC field office listed below.

Complete the form and mail with \$ 20.00 to:

Federal Communications Commission
Gettysburg, Pennsylvania 17325

It is also a requirement to read and know Part 95 of the FCC Rules and Regulations that apply to the operation of a Class D Citizens Band unit. Copies of this regulation can be obtained from the Federal Communications Commission, Washington, D.C. 20554, or from the FCC Field Office nearest your home:

Mobile, Ala. 36602	Boston, Mass. 02109
Anchorage, Alaska 99501	Detroit, Mich. 48226
Los Angeles, Cal. 90014	St. Paul, Minn. 55102
San Diego, Cal. 92101	Kansas City, Mo. 64106
San Francisco, Cal. 94126	Buffalo, N.Y. 14203
San Pedro, Cal. 90731	New York, N.Y. 10014
Denver, Col. 80202	Portland, Ore. 97205
Miami, Fla. 33101	Philadelphia, Pa. 19106
Tampa, Fla. 33606	San Juan, P.R. 00903
Atlanta, Ga. 31402	Beaumont, Tex. 77704
Savannah, Ga. 31502	Dallas, Tex. 75202
Honolulu, Hawaii 96808	Houston, Tex. 77002
Chicago, Ill. 60604	Norfolk, Va. 23510
New Orleans, La. 70130	Seattle, Wash. 98104
Baltimore, Md. 21202	

TRANSMITTER SECTION

The transmitter is designed to transmit AM signals in the 26.965 to 27.255MHz Citizens Band.

Crystal synthesized circuit used in the receive section is common to the transmitter, and provides full 23 channel crystal controlled operation.

Modulation with 100% capability is used with up to 5 watts power input to the final RF stage.

INSTALLATION

POWER CONNECTIONS

Be certain that your Rebel 23+ Power Switch is turned off.

Red and black DC supply cords are to be connected as follows.

1. FOR NEGATIVE GROUND SYSTEMS:

Connect RED Cable to battery terminal plus (+) or ACC terminal of ignition switch, and BLACK Cable to battery terminal minus (−) side or any proper place on the frame of your car.

2. FOR POSITIVE GROUND SYSTEMS:

Connect BLACK Cable to battery terminal minus (−) side or ACC terminal of ignition switch and RED Cable to battery terminal plus (+) side or to any proper place on frame of your car.

The unit may now be installed in its mounting bracket and secured with the two knurled screws.

TRANSCEIVER MOUNTING

Before installing the REBEL-23+ in the car, truck, boat, etc., make certain to select a location which permits the driver to operate the controls of the unit without interfering with his driving functions. The transceiver can be mounted to the underside of the instrument panel or dash board by means of a special bracket that is supplied with the unit. Attach the bracket to the underside of the panel using the bolt, nut and washer (2 pcs. each) which are provided. Secure the transceiver to the bracket by means of the provided thumb screws.

Tilt the unit to a position which will provide the operator with the best view of the front panel, then tighten the thumb screws.

OPERATING PROCEDURE

Operation of the REBEL-23+ is very simple. The unit has 4 external controls; OFF-ON/VOLUME, SQUELCH, PA/CB SWITCH and CHANNEL SELECTOR.

RECEIVING OPERATION

1. Make certain that the REBEL-23+ has both the power and antenna connectors plugged into the unit.
2. Turn the unit ON by rotating the OFF-ON/VOLUME control knob clockwise until a click is heard. The channel indicator light and the "S"/RF power meter light will go on.
3. Set the CHANNEL SELECTOR to the desired channel.
4. Rotate the SQUELCH control COUNTER-CLOCKWISE to "unsquelch" the receiver. CB stations or atmospheric noise should be heard.
5. When there is NO TRANSMISSION adjust the SQUELCH control to the point where the atmospheric noise just cuts out. The audio (voice) should be heard clearly when a transmission is received. If the control is adjusted too far into the "quiet" area, weak signals will not be heard.
6. Adjust the VOLUME control to a comfortable level.
7. The "S" meter will indicate the incoming signal strength.

TO TRANSMIT

1. Make certain your antenna and power connectors are secure.
2. Wait until the desired channel is clear.
3. When the channel is clear, depress the Press-to-talk button on the microphone and speak in a normal voice two to four inches away from the microphone. To receive release the Press-to-talk button. (Transceivers will operate in EITHER a talk or listen mode. When completing a transmission it is essential to release the microphone button so that the unit will return to a receiver position.)

OPERATING CONTROLS

1. OFF-ON/Volume Control — controls output level from the speaker. (SEE FIGURE 1)
When in the full counter-clockwise position it operates as a power switch.
2. Squelch Control — this control is used to block out background noise when no signal is on the channel.
3. PA/CB Switch — when in the P.A. Position, public address operation with a PA speaker is possible. To operate as a P.A. System, press the button on the microphone and speak into it.
The PA/CB Switch can be used regardless of the Citizens Band channel appearing in the channel selector window.
4. Channel Selector Switch — Switch selects any one of 23 Citizens Band channels either for transmit or receive.
Illuminated channel indicator shown the channel number selected by the switch.
5. SIGNAL/RF-Power Meter — automatically indicates strength of the incoming signal in "S" units on the upper scale; and RF-Power relative output level in the transmit mode on the lower scale.
6. External Speaker Jack — connect an 8 or 16 ohm external speaker to the Jack located on the rear panel.

7. External Antenna Socket — for attachment to a coaxial antenna cable terminating in a PL-259 connector.

Caution: Be sure to refer to FCC provisions when using the unit.
(SEE PAGE 4)

8. External Speaker Requirements For Positive Ground.

Caution: Power Switch must be in off position before connecting an external speaker to the REBEL-23+ for PA use, be sure the speaker voice coil connections are not connected in any way to the speaker chassis (completely floating above ground). Shorting of either of the speaker leads to the REBEL 23+ chassis or to the vehicle chassis will burn out the fuse and cause possible damage to the REBEL 23+ components as well as possible damage to the speaker.

9. An 8 to 16 ohm speaker is required for PA operation. Connect the speaker to the EXT PA jack located on the rear panel.

CRYSTAL SYNTHESIS

Your REBEL-23+ comes equipped with crystals for all 23 transmit and receive frequencies of the Citizens Radio Service.

Crystal selection is determined by the “synthesis” technique; that is 12 crystal frequencies are selectively mixed to provide 23 crystal fixed transmit and receive frequencies.

Listed in the table, page 9, you will find which crystals affect each of the specific channel frequencies.

To determine which channels are affected by which crystals locate your transmit or receive channel. The crystal frequency at the **A**-Group of that column, and the crystal frequency at the **B**-Group of that column are the two crystals which determine that channel. For example, channel 6 transmit is determined by the 23.340 and the 14.960 crystals.

Channel	[A] Group	[B] Group	[A] + [B]	[A] + [B] - 11.275 MHz
1	23.290 MHz	14.950 MHz	38.240 MHz	26.965 MHz
2	"	14.960	38.250	26.975
3	"	14.970	38.260	26.985
4	"	14.990	38.280	27.005
5	23.340 MHz	14.950	38.290	27.015
6	"	14.960	38.300	27.025
7	"	14.970	38.310	27.035
8	"	14.990	38.330	27.055
9	23.390 MHz	14.950	38.340	27.065
10	"	14.960	38.350	27.075
11	"	14.970	38.360	27.085
12	"	14.990	38.380	27.105
13	23.440 MHz	14.950	38.390	27.115
14	"	14.960	38.400	27.125
15	"	14.970	38.410	27.135
16	"	14.990	38.430	27.155
17	23.490 MHz	14.950	38.440	27.165
18	"	14.960	38.450	27.175
19	"	14.970	38.460	27.185
20	"	14.990	38.480	27.205
21	23.540 MHz	14.950	38.490	27.215
22	"	14.960	38.500	27.225
23	"	14.990	38.530	27.255

1) Frequency of Transmitter

$$[A] \text{ group} + [B] \text{ group} - 11.275\text{MHz}$$

2) Frequency of Receiver

$$[A] \text{ group} + [B] \text{ group} - \text{Receiver Frequency} = 11.275\text{MHz (1s IF)}$$

$$11.730\text{MHz (2nd OSC)} - 11.275\text{MHz} = 455\text{kHz (2nd IF)}$$

REPLACEMENT PARTS LIST

Symbol	Description	Part Number
TRANSISTORS		
TR1, 2	Transistor 2SC394 (Y)	1080-01
TR13	" 2SC373	296-98-9
TR3, 4, 5, 10, 11, 12, 16, 15, 17	" 2SC839 (F)	1080-20
TR6, 14	" 2SC945 (R)	1080-21
TR7	" 2SC733 (Y)	1080-03
TR8, 9	" 2SC1173 (O)	1080-130
TR18	" 2SC756-2-4	1080-05
TR19	" 2SC1226A (P)	1080-06
TR20	" 2SC735 (O)	1080-07
DIODES		
D 6, 7	Diode CD37 IN4448	1043-10
D3, 4, 5, 10, 11, 12	" IN60	296-42-9
D9	" SRIK-1	1080-08
D1, 13, 2	" IN914	DI-20
D8	Zener Diode CA-092	1080-10
CRYSTALS		
	Crystal 23.290 MHz, HC25/U	1016-126
	" 23.340 MHz "	1016-127
	" 23.390 MHz "	1016-128
	" 23.440 MHz "	1016-129
	" 23.490 MHz "	1016-130
	" 23.540 MHz "	1016-131
	" 14.950 MHz "	1016-132
	" 14.960 MHz "	1016-133
	" 14.970 MHz "	1016-134
	" 14.990 MHz "	1016-135
	" 11.275 MHz "	1016-136
	" 11.730 MHz "	1016-137
	Crystal Socket S-D0105	1042-56
RF COILS AND TRANSFORMERS		
L7	T.V.I. Trap Coil TC-71024	1080-21
L8	Coil (Antenna Filter) NS-1344	1043-26
L9	" (Tx. Matching) TC-71025	1045-24
L10	" (Tx. Final) TC-71029	1080-22
L12	" (Tx. Driver) TC-71023	1080-23
L13	" (Tx. Amplifier) TC-71026	1080-24
L14	" (1mH RF Choke)	CH-4
L1	" (14 MHz Trap) TC-71096	1080-25
L5, 6	" (RF Choke) TC-71096	1080-26
T1	" (Rx. Antenna) TKXN-22160BU	1080-11
T2	" (RF Amplifier) TKXN-22534BU	1080-12

Symbol	Description	Part Number
T3	Coil (First IF) TKAC-22536IE	1080-13
T4	" " TKAC-21165A	1080-14
T5	" (Second IF) YLN-20844BM	1080-15
T6, 7	" " YMC-20845AC	1080-16
T8	" " YMC-20846AC	1080-17
T11	" (Oscillator) KXC023169F	1080-18
T12, 13	" (Tx. 38 MHz Filler) KXC-231702	1080-19
T14	" (Tx. 38 MHz Filler) TKXC-22535BM	1080-20
T15, 16	" (Tx. 27 MHz Filler) KXN-13638HM	1043-22
T17	" (Tx. 27 MHz Filler) KXN-13636BM	1043-23

CERAMIC FILTER

C.F.	Ceramic Filter LF-B6	1079-12
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AUDIO TRANSFORMERS AND CHOKES

L2, 3, 11	Choke (Micro Inductor) LF4 2R2K	1080-27
L4	Choke (Line Filter) 115C	1080-28
T9	Input Transformer 69M	1079-13
T10	Output Transformer N28-7518BM	1079-14

CONTROLS AND INDICATORS

VR4	ON/OFF Volume Control 10K ohm A	1080-29
VR2	Squelch Control 50K ohm B	1080-31
VR3	Semi-Fixed Potentiometer 50K ohm	1080-32
VR1	" " 30K ohm 2P	1079-19
VR6, 7	" " 20K ohm 2P	1042-97
PL1	Pilot Lamp (Clear) White Lens 14V 50mA	1079-54
PL2	" " " Red Lens 14V 50mA	1079-119
M	Meter S/RF	1080-65

CAPACITORS

C11	Capacitor Ceramic 1P ± 0.25 50V	1080-40
C19, 45, 46, 76	" 2P " "	1080-41
C4, 17, 47, 74	" 3P " "	1080-42
C40, 75	" 5P " "	1080-43
C49	" 10P $\pm 10\%$ "	1080-44
C68	" 25P " "	1080-45
C1, 90	" 33P " "	1080-46
C43, 67, 85, 98, 102	" 47P " "	1080-47
C23, 26, 39, 70, 73, 95	" 100P " "	1080-48
C8, 71, 84, 99	" 150P " "	1042-156
C48, 62, 65, 87	" 220P " "	1080-49
C94	" 250P " "	1080-50
C50, 61, 64	" 470P " "	1080-51
C26	" 0.002uF +80-20% 50V	1080-52
C31, 57, 104, 105, 106	" 0.005uF " "	1079-44
C2, 3, 5, 6, 24, 41, 42, 44, 51, 54, 58, 59, 63, 66, 72, 78, 83, 89, 91, 101, 109, 114	" 0.01uF " "	1042-157

Symbol	Description	Part Number
C15, 10, 18, 103, 100, 86, 93, 88, 92, 96, 97	Capacitor Ceramic 0.04uF +80-20% 50V	1079-45
C77	" " 0.1uF " "	1080-53
C58	" " 0.001u F " "	1080-54
C16, 21	Capacitor Mylar 0.04uF " "	1042-163
C38, 60, 33	" " 0.1uF ±10% 50V	1080-55
C81, 82	" " 0.2uF " "	1080-56
C12, 7, 13, 20, 36, 37	" " 0.01uF " "	1042-166
C27, 28, 29, 52, 79, 107, 108	" Electrolytic 0.47uF 16V	1080-22
C25, 32, 56, 53	" " 10uF +100-10% 10V	1080-58
C22	" " 47uF " "	1080-59
C30, 34	" " 100uF " "	1080-60
C70	" " 470uF " "	1042-124
C35, 55	" " 100uF " 16V	1042-127
C14	" " 500pF ±10% 50V	1080-61
C109	" " .001uF " "	1080-95

SWITCHES

S1	Switch, Power ON/OFF, VOLUME CONTROL	1080-29
S2	Switch, Channel SNO-1179	1080-63
S3	Switch, PA/CB	1080-13 6

MISCELLANEOUS

SP	Speaker	1080-62
MIC	Microphone Assembly	CMM-1
	" Hanger	1079-178
F1	Fuse Holder RF-104	1043-133
	Fuse 1.5A	1080-67
	Test Terminal T-41	1080-92
	" N-60	1080-93
	" SR-3P-4	1080-94
J2, 3	Jack EXT SPX & PA	1079-110
J1	Antenna Jack	1079-48

HARDWARE

	Heat Sink	1080-83
	" "	1080-96
	Mounting Bracket	1080-84
	Mtg. Bracket Screw BSBM Ni-3	1080-85
	Channel Selector Knob Assembly	1080-77
	Knob Volume and Squelch	1080-78

STANDARD WARRANTY

Adopted and Recommended by Electronic
Industries Association

FANON/COURIER CORPORATION warrants each new electronic product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part (at the Company's option) in exchange for any part of any unit of its manufacture which under normal installation, use and service disclosed such defect; provided the unit is delivered by the owner to us or to our authorized distributor from whom purchased, or authorized service station, intact, for our examination, with all transportation charges prepaid to our factory, within 90 days from the date of sale to original purchaser and provided that such examination discloses, in our judgment, that it is thus defective.

Written authorization must be obtained before any merchandise is returned to the factory.

This warranty does not extend to any of our electronic products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, unauthorized modifications, or to use in violation of instructions furnished by us, nor units which have been repaired or altered outside of our factory, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

This warranty is in lieu of all warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our electronic products.

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FANON / COURIER CORPORATION

990 S. FAIR OAKS AVE.,
PASADENA, CALIFORNIA 91105

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