5 WATT 23 CHANNEL AM
25 WATT 46 CHANNEL SSB
SSB/AM CITIZEN'S BAND
MARINE/MOBILE TRANSCEIVER

MODEL CB-2569

INSTRUCTION HANDBOOK

RAY JEFFERSON
PHILADELPHIA, PENNSYLVANIA

DIVISION OF JETRONIC INDUSTRIES

A. INTRODUCTION

Your new CB-2569 is a combination SSB/AM receiver-transmitter designed and engineered for licensed class "D" operation on any of 69 channels designated as Citizens Band frequencies by the Federal Communications Commission.

You are required to read and understand Part 95 of the F. C. C. regulations prior to operation of this unit.

Copies of Parts 95 Manual Ⅵ covering regulations for Citizens Band Radio Service are available for $3.50 by writing to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

You are required to complete F. C. C. form 505 and submit it to the Federal Communications Commission in order to receive your license to operate this unit. Part 95 of the F. C. C. regulations will be violated if you operate this transceiver on the air prior to receipt of your license.

WE RECOMMEND THAT YOU READ SECTION L WARNING ON SERVICING YOUR TRANSCEIVER PRIOR TO OPERATION.

B. DESCRIPTION

The Model CB-2569 employs 37 transistors in both the receiver and transmitter to provide reliable communication in the 27 megahertz Citizens Band.

A single 23-position channel selector provides simultaneous selection of 69 transmit and receive frequencies when used with mode switch.

All receive and transmit crystals for 69 Channels are supplied.

Other outstanding features in your new CB-2569 are variable squelch for noise cancellation, automatic gain control, high sensitivity receive circuit, 100% modulation limited, external speaker jack, press-to-talk dynamic microphone with coiled retractable cord, 5 watt PA and compact light construction.

A combination relative "S/RF" meter is front panel mounted.

The CB-2569 can be used with both negative or positive grounded electrical systems.

C. THEORY OF SINGLE SIDEBAND

SSB (Single Sideband) is relatively new in Citizens Band Communications but has been highly effective in commercial, amateur and military usage for many years. It is a superior means of wireless communications allowing transmissions of greater distances with a minimum amount of interference and noise. There are two types of single sideband transmissions, USB (Upper Sideband) and LSB (Lower Sideband). These might be described as half signals and due to the narrow band-width required, will travel over greater distance at lower power than ordinary AM signals. Figure 1 below illustrates USB and LSB signals and the reference carrier line.

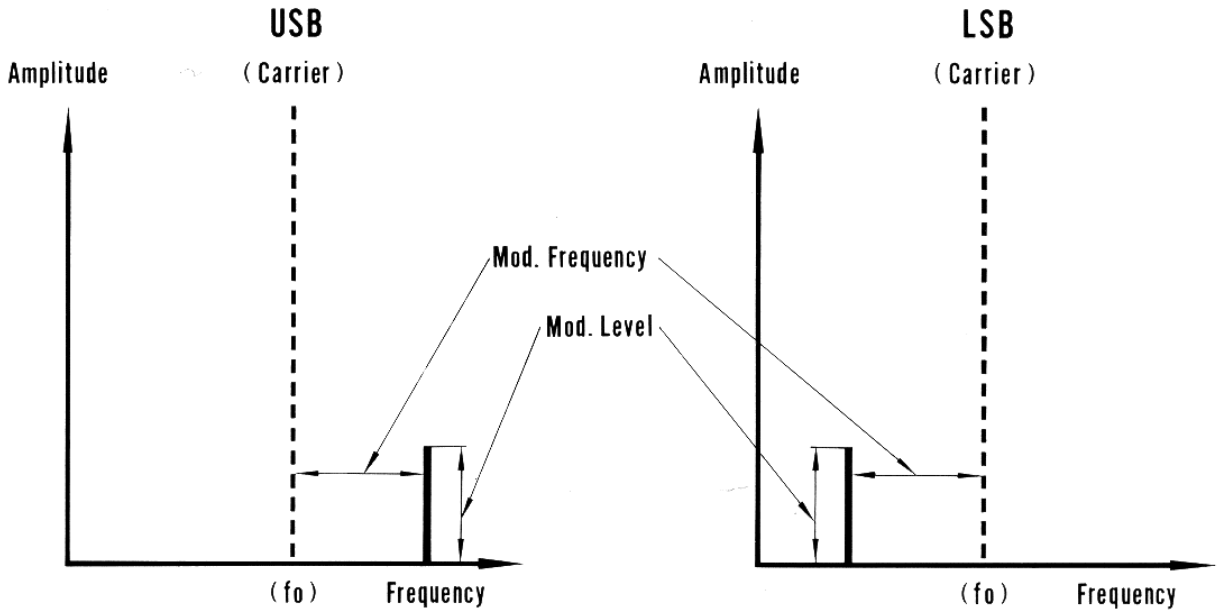


Figure 1

In the actual transmission of either USB or LSB, the carrier is removed. All of the modulation for a transmission is concentrated either Upper or Lower sideband. In the receiver, the carrier is reconstructed and the intelligence or modulated voice is then detected, amplified and converted into an audible sound heard at the speaker.

AM (Amplitude Modulation) has been the standard method of Citizens Band B reception and transmission for many years and most of the existing transceivers being used today are AM. Technically, Amplitude Modulation is Double Sideband (DSB). In this method of operation, a carrier is transmitted which is modulated or interrupted by voice on both positive and negative sides as represented by figure 2.

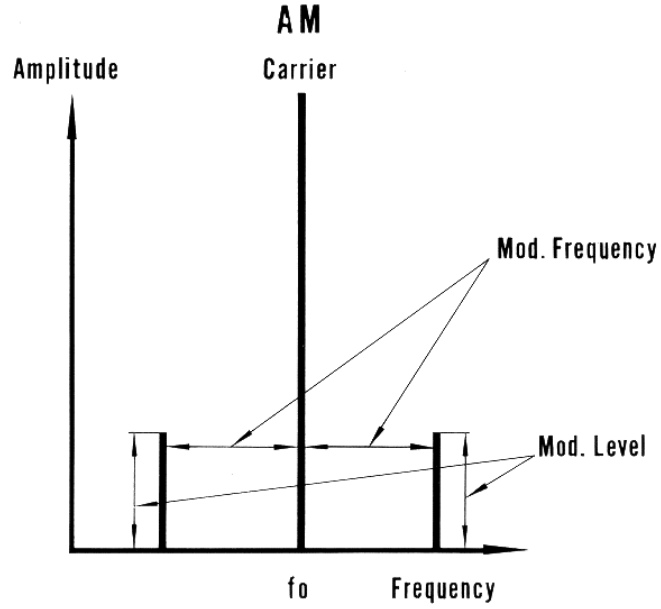


Figure 2

D. COMPATIBILITY

This Model CB-2569 is designed to be completery compatible with all current modes of Class D operation, including single sideband, (upper or lower), double sideband, or conventional AM and is equipped with separate transmitter cricuitry to provide high level AM transmissions and true SSB transmissions. The receiver section is also capable of receiving AM and SSB. The mode of operation for both receiver and transmitter sections is automatically selected by the mode selector switch.

E. FEATURES

1. 3-Mode operation for AM (Amplitude Modulation), USB (Upper Sideband) and LSB (Lower Sideband).
2. 3-Way versatility for Mobile, Base station and Portable.
3. Frequency synthesized circuit. Full crystals supplied to transmit and receive on all 23 Citizens Band Channels.
4. Full 25-Watt P. E. P. Input SSB and 5-Watt Input AM (FCC Maximum).
5. Single conversion superheterodyne receiver with crystal filter for SSB. Dual conversion superheterodyne receiver with ceramic filter for AM.
6. Variable squelch plus Noise Blanker circuit for SSB and automatic noise limiter for AM.
7. Use as a Public Address amplifier.
8. RF Output and signal strength meter.
9. Can be used for either negative and positive ground.
10. Compact in size but ruggedly designed.

F. FUNCTION OF CONTROLS

1. Volume Control and On-Off Switch:
   The volume control adjusts the level of sound output from the speaker when receiving. With a click turn (clockwise) of the volume control the set is turned on. A further clockwise turn increases the volume and a counterclockwise turn will decrease volume and turn off the set with a click. The volume control does not affect transmitting output.

2. Channel Selector:
   The switch on the front panel selects both the transmitter and receiver frequencies simultaneously. Make sure the number is the desired channel.

3. Squelch Control:
   The squelch control is designed to reduce excessive noise (such as high line interference, ignition noise, etc.). This control must be set when only noise, no signal is heard. Turn the control fully counterclockwise and increase the volume until noise or a signal is heard. When only noise is present, turn the squelch control clockwise until the noise is blanked out.

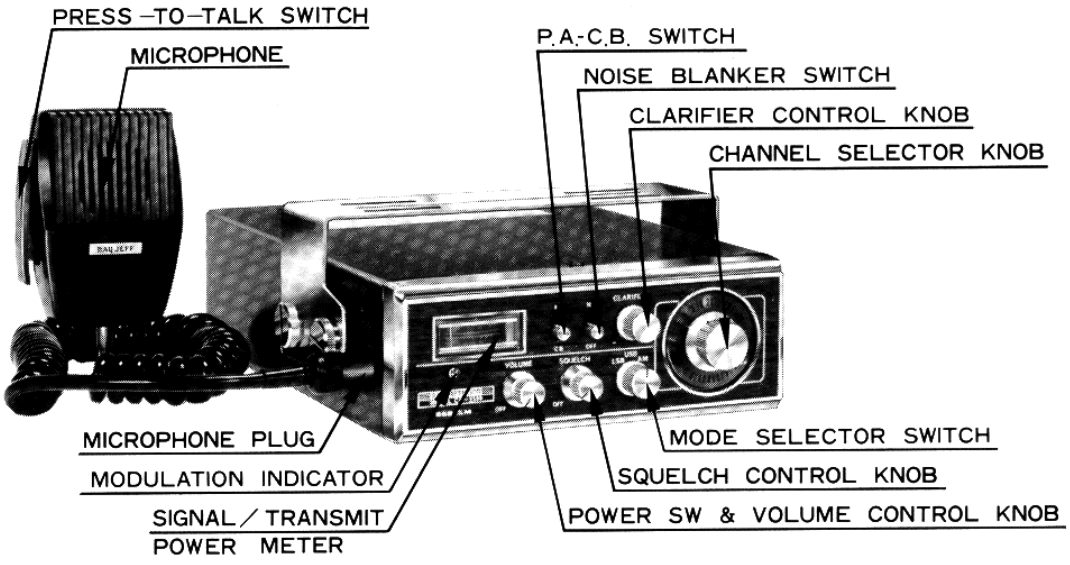
4. Mode Selector:
   This switch is for mode of operation and allows selection of conventional AM operation or SSB operation on either upper or lower sideband. In order to communicate with another transceiver, you must use the same operating mode.

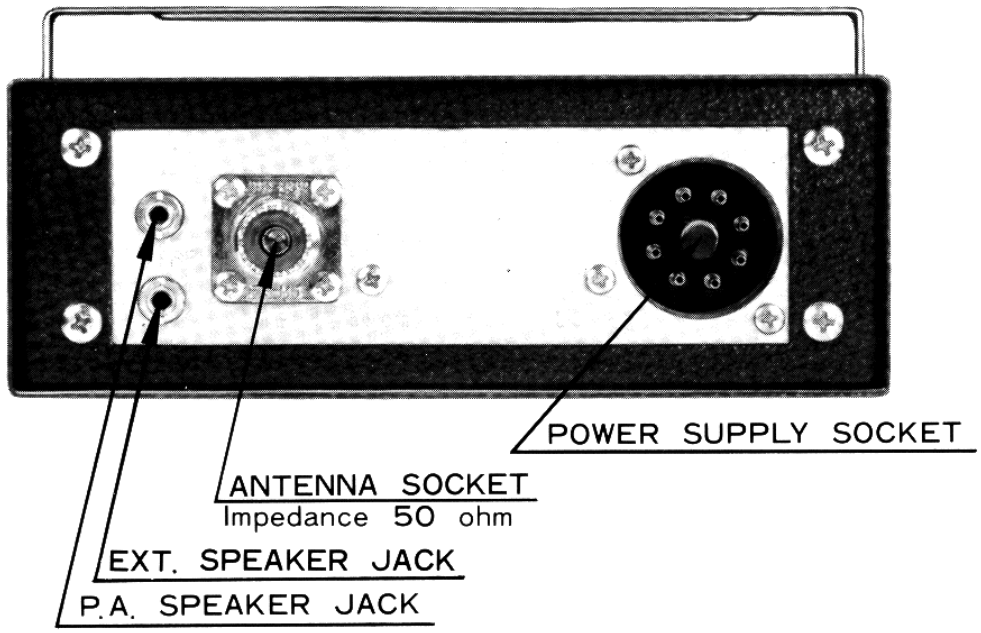
5. Clarifier Control :
   Allows a slight variation of receive frequency above and below the actual channel frequency. This operation is similar to a fine tuning control, and while it is primarily intended for SSB operation, it also allows precise adjustment in the AM mode. The setting of this control is somewhat critical in the SSB mode.
   Listening to the receiving voice, you must set the control carefully to the point where the receiving voice is most clear. This setting is to meet your receiving frequencies with transmitting frequencies from the other party. If it is not properly adjusted, the signals you receive will be distorted. Receiving and transmitting frequency tolerance will move slightly due to channel change, mode change (USB or LSB) and changing of the other party so that you must set the control on all such occasions. You should also set the control depending on the condition of power source, temperature and humidity. As noted before, voice tone of SSB is more shrill than AM and not as clear as AM voice. Operators on SSB may find that it will take a little more practice to become familiar with voice tones.

6. Noise Blanker Switch:
   This switch activates a very effective type of noise elimination circuit. Generally in mobile use, the noise blanker is usually left on due to the higher noise levels encountered. In base station operation, the individual situation determines the need.

7. PA-CB Switch:
   Push up for PA operation - push down for CB operation. Make sure you have connected an 8 ohm speaker to the 3.5 mm mini jack (PA) at the rear of the unit.

8. Press-To-Talk Switch:
   The press-to-talk switch provided on the microphone controls voice transmission. It sends your voice as long as it is depressed and receives the other party's voice when in the released position. When transmitting, speak clearly in a normal voice level with your mouth about 1 to 2 inches away from the microphone.





G. MARINE/MOBILE INSTALLATION

The location of the equipment aboard the boat should be chosen with the following in mind.

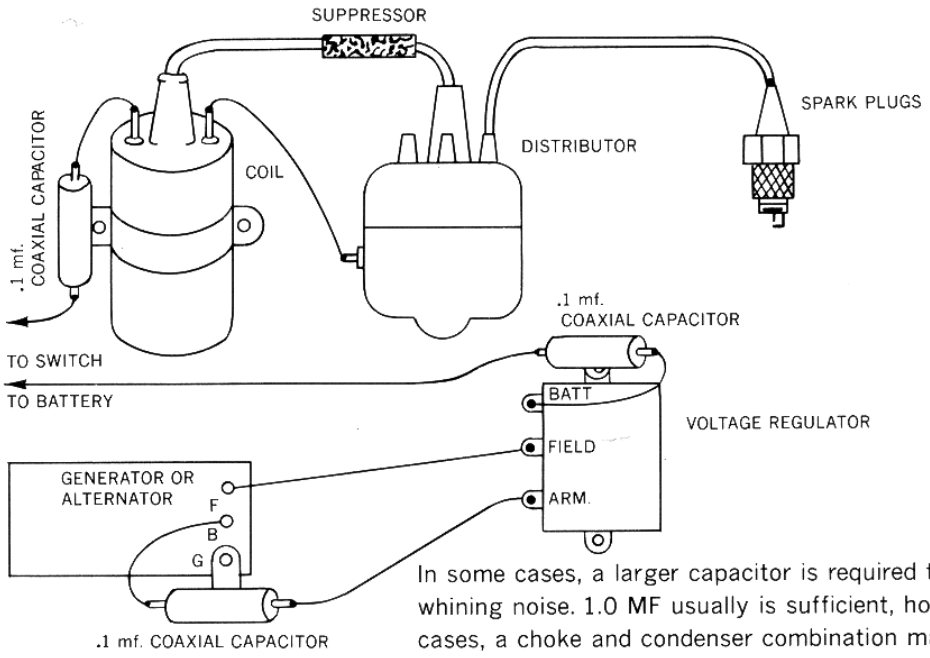
1. Convenience of operation
2. Protected location (from salt spray and weather)
3. Antenna should be mounted, as high on the boat as practical for greatest range. It should preferably be the highest object on the boat.

The FG-CB antenna (available from your Ray Jefferson Dealer) does not require any special grounding such as a ground plate on the hull.

Mounting brackets are furnished that permit you to mount the set on a shelf or on the cabin overhead. The wires from the power cord must be connected directly to the ship's battery for best results; not to switches, common terminals, ammeter or circuit breakers. If more wire is needed, install a terminal block and use #10 or #12 GA wire to complete the battery connections. The red wire is positive and the other is negative.

H. MOBILE INSTALLATION

A location in the car or truck should be chosen carefully for convenience of operation and non-interference with normal driving functions. Mounting may be under the dash or instrument panel or any place a secure installation can be made. Additional perforated straps or brackets may be used as desired. The 12 volt cable may be connected to any convenient terminal but preferably to the ignition switch to prevent unauthorized persons from operating your unit. With this method the unit only operates when your key is turned on. Engine ignition interference should not be a problem and vehicles equipped with standard broadcast radios will often have enough suppression to reduce ignition interference. If interference is present, any skilled auto radio repairman should be able to eliminate it for you.



In some cases, a larger capacitor is required to suppress the whining noise. 1.0 MF usually is sufficient, however in stubborn cases, a choke and condenser combination may be required.

BASIC NOISE SUPPRESSION FOR GASOLINE ENGINES

I. ANTENNA INSTALLATION

1. Base Station:
   When the CB-2569 is used as a base station, any Citizen Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type will provide greater coverage and, since it is essentially non-directional, it is ideal in base station to mobile operation. From base station to base station, or point to point operation, a directional beam will give greater distance even under adverse conditions. The range of the transceiver depends basically on the height of the antenna and, whenever possible, select the highest location within regulation.
   Generally a maximum of 26 feet of lead-in cable should be used due to line losses. However, a desirable antenna location may justify the loss in extra lead-in length.

2. Mobile/Marine Antennas:
   The Ray Jefferson Model FG-CB is designed especially for marine use. It is 72″ high, made of white fiberglass with center loading coil permanently sealed from the marine environment. No need for an elaborate ground system and works well on fiberglass, wood or metal boats.

3. Mobile Automotive Antennas:
   A vertical whip antenna is best suited for mobile use. A non-directional antenna must be used for best results in any case. The base loaded whip antenna will normally provide effective communication. For greater range and more reliable operation, a full quarter-wavewhip should be used. Either of these antennas use the metal car body as a ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

J. GENERAL OPERATING INSTRUCTIONS

1. CAUTION:
   DO NOT KEY TRANSMITTER UNLESS ANTENNA IS CONNECTED
   Before operating this transceiver, check to see if the proper connections have been made on power cable, antenna system and that the correct cables have been used. To transmit, press the press-to-talk switch and hold it down. Speak directly into microphone. Release this switch to receive. Actual receive and transmitting power should be monitored by watching the SIGNAL-TRANSMIT POWER METER. Select the channel on which you wish to operate by rotating the Channel Selector Switch to the desired channel. The microphone should be held approximately 1 to 2 inches away from your mouth. Use a normal speaking voice. Speak slowly and clearly. Talking louder does not increase transmitting power and only causes distortion. You will notice the SIGNAL-TRANSMIT POWER METER moving as you transmit. This indicates that you are transmitting. Always release the microphone switch when you complete your transmission. For best receiving results, observe the "SIGNAL" meter.
2. Per FCC rules Volume VI Part 95 Subpart C Para.
   41d 1-3 channels 1-8 and 10-23 may be used for communications between units of the same station. Channels 10-15 and 23 may be used for communications between units of different stations. Channel 9 may only be used for emergency communication. Channel 11 can also be used as a calling channel.
3. Ray Jefferson recommends that you study Subpart D of Part 95 Station Operating Requirements.

K. SPECIFICATIONS FOR CB-2569

General :

35 Transistor, 2 FET, 64 Diode, 1 LED, 1 Varistor and 1 Thermistor Synthesizer System 23 Channel All Crystal Controlled Dual (AM) and Single (SSB) Conversion Superheterodyne Receiver with RF Amplifier, Variable Squelch Control plus Noise Blanker circuit for SSB and Automatic Noise Limiter for AM.
3-Mode operation for AM, USB and LSB
RF Output and Signal Strength Meter
PA & External Speaker jack, Modulation Indicator and Illuminated Channel Indicator
Crystal Filter 8.25 MHz and Ceramic Filter 455 KHz
Operation Press to Talk System at Microphone
Compact Size $6\frac{9}{16}$"W × $2\frac{7}{16}$"H × $8\frac{13}{16}$"D

Receiver :

Sensitivity	0.5 μV at 10 dB S/N
Selectivity	2.7 KHz (SSB) and 7.0 KHz (AM) at −6 dB
	10 KHz at −60 dB
Image Rejection	50 dB
Squelch Range	1 μV to 20 μV
Intermediate Frequency	8.25 MHz and 455 KHz
Clarifier Range	±600 Hz
Audio Power Output	3W (10% Distortion) 5 W Max.
Frequency Tolerance	±0.0015 %

Transmitter :	RF Power Output	12 W P.E.P. (SSB) 3 W to 4 W (AM) Max.
	Frequency Tolerance	±0.0015%
	Attenuation	More than 50 dB
	Carrier Suppression	More than 40 dB
	Antenna Impedance	50 ohm
	Frequency Response	300 Hz to 2700 Hz
	Current Drain	1.5 A
Power Source :	DC 12.6—13.8 V Negative or Positive Ground	
Accessories :	Mounting Bracket	1 pc.
	Screw for Bracket	1 sets
	Dynamic Microphone	1 pc.
	Microphone Hanger	1 pc.
	Spare Fuse	2 pcs.
	Power Source Cord with Plug	1 pc.
	Instruction Handbook	1 copy

L. WARNING ON SERVICING YOUR TRANSCEIVER

The technical information, diagrams and charts provided in this manual are supplied for the use of a qualified holder of a first or second-class radio telephone license in servicing this transceiver.

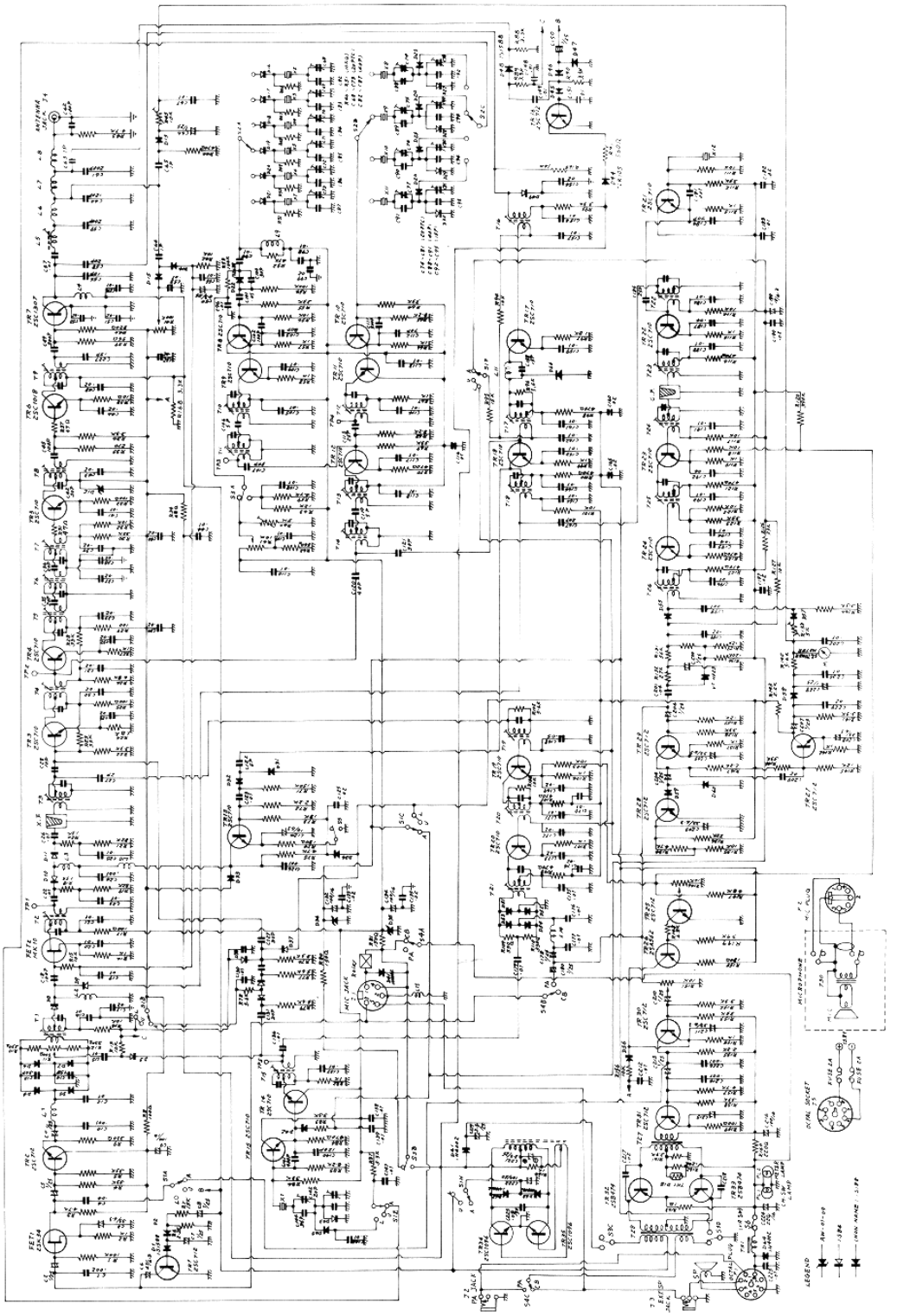
It is the user's responsibility to see that this unit is operating at all times in accordance with the F. C. C. Citizens radio service regulations.

If you install your own transceiver, do not attempt to make any transmitter tuning adjustments, crystal or component changes. These adjustments are prohibited by the F. C. C. rules, unless you hold a first or second-class radio telephone license, or are in the presence of a person holding such a license.

A Citizens Band or Amateur license is not sufficient.

Ray Jefferson hereby certifies that this equipment has been designated, manufactured and furnished in accordance with Volume VI Part 95 of the F. C. C. rules and regulations as amended effective May, 1974 for class D Citizens Band Operation, and is type accepted.

M. SCHEMATIC DIAGRAM MODEL CB-2569



Subject to change the above circuit diagram
and components without notice for improvements.

N. PARTS LIST

SYMBOL No.	NAME OF PARTS	DESCRIPTION
TR 1	Transistór	2SC712-C
2	Transistor	2SC712-C
3	Transistor	2SC710-D
4	Transistor	2SC710-D
5	Transistor	2SC710-D
6	Transistor	2SC1018
7	Transistor	2SC1307
8	Transistor	2SC710-D
9	Transistor	2SC710-D
10	Transistor	2SC710-D
11	Transistor	2SC710-D
12	Transistor	2SC710-D
13	Transistor	2SC710-D
14	Transistor	2SC710-D
15	Transistor	2SC710-D
16	Transistor	2SC712-C
17	Transistor	2SC710-D
18	Transistor	2SC710-D
19	Transistor	2SC710-D
20	Transistor	2SC710-D
21	Transistor	2SC710-D
22	Transistor	2SC710-D
23	Transistor	2SC710-D
24	Transistor	2SC710-D
25	Transistor	2SC712-D
26	Transistor	2SC562-O
27	Transistor	2SC712-C
28	Transistor	2SC712-C
29	Transistor	2SC712-C
30	Transistor	2SC712-C
31	Transistor	2SC712-C
32	Transistor	2SB474
33	Transistor	2SB474
34	Transistor	2SC1096-3ZM
35	Transistor	2SC1096-3ZM
FET 1	Field Effect Transistor	2SK34-C
2	Field Effect Transistor	MK-10-D

SYMBOL No.	NAME OF PARTS	DESCRIPTION
D 1	Diode	1S1588
2	Diode	1S188-FM
3	Diode	1S84
4	Diode	1S188-FM
5	Diode	1S188-FM
6	Diode	1S188-FM
7	Diode	1S188-FM
8	Diode	1S84
9	Diode	1S84
10	Diode	1S84
11	Diode	1S84
12	Zener Diode	AW01-09
13	Diode	1S188-FM
14	Diode	1S188-FM
15	Diode	1S188-FM
16	Diode	1S84
17	Diode	1S84
18	Diode	1S84
19	Diode	1S84
20	Diode	1S84
21	Diode	1S84
22	Variable Capacitance Diode	1S2688
23	Diode	1S188-FM
24	Diode	1S188-FM
25	Diode	1S188-FM
26	Diode	1S188-FM
27	Diode	1S84
28	Diode	1S84
29	Diode	1S84
30	Diode	1S84
31	Diode	1S188-FM
32	Diode	1S188-FM
33	Diode	1S188-FM
34	Diode	1S188-FM
35	Zener Diode	AW01-09
36	Zener Diode	AW01-09
37	Diode	1S84
38	Diode	1S84
39	Diode	1S84
40	Diode	1S84
41	Diode	1N4002
42	Diode	1S188-FM

SYMBOL No.	NAME OF PARTS	DESCRIPTION
D 43	Diode	1S84
44	Light Emitting Diode	TLR105
45	Diode	1S188-FM
46	Diode	1S188-FM
47	Diode	1S188-FM
48	Diode	1S1588
49	Diode	1S84
50	——— Unused ———	———
51	Diode	1S188-FM
52	Diode	1S188-FM
53	Diode	1S188-FM
54	Diode	1S188-FM
55	Diode	1S188-FM
56	Diode	1S188-FM
57	Diode	1S188-FM
58	Diode	1S188-FM
59	Diode	1S188-FM
60	Diode	1S188-FM
61	Diode	1N4002
62	Diode	1N4002
63	Diode	1N4002
64	Diode	1N4002
65	Diode	1S188-FM
66	Diode	1S188-FM
V 1	Varistor	HV-23 GYL
Th 1	Thermistor	D-1E
L 1	Micro Inductor	LF1-330K
2	Micro Inductor	LF1-330K
3	Micro Inductor	LF1-151K
4	Choke Coil	42683
5	Transmitter Final Coil	42573
6	Filter Coil	43499
7	Filter Coil	43499
8	Filter Coil	43499
9	Micro Inductor	LF1-151K
10	Micro Inductor	LF1-330K
11	Choke Coil	L00416

SYMBOL No.	NAME OF PARTS	DESCRIPTION
L 12	——— Unused ———	———
13	——— Unused ———	———
14	Micro Inductor	LF1-330K
15	Choke Coil	YZ-038P
16	Choke Coil	YZ-038P
T 1	8.25 MHz Coil (1)	TKAC-21793HB
2	8.25 MHz Coil (2)	TKAC-21793HB
3	8.25 MHz Coil (3)	TKAC-21793HB
4	8.25 MHz Coil (4)	TKAC-21794HB
5	Transmitter Mixer Coil (1)	KXC-7343CDE
6	Transmitter Mixer Coil (2)	KXC-7343CDE
7	Transmitter Mixer Coil (3)	KXC-7343CDE
8	Transmitter Buffer Coil (1)	42572
9	Transmitter Buffer Coil (2)	42572
10	45 MHz Coil (1)	TKXC-23017A
11	45 MHz Coil (2)	TKXC-23017A
12	10 MHz Coil	TKAC-21793HB
13	35 MHz Coil (1)	TKXC-23477F
14	35 MHz Coil (2)	TKXC-23477F
15	8 MHz Coil	TKAC-21793HB
16	Receiver Antenna Coil	KXN-1669BZ
17	Receiver RF Coil	KXC-7343CDE
18	Receiver Mixer Coil	TKAC-21794HB
19	SSB IFT (1)	TKAC-21794HB
20	SSB IFT (2)	TKAC-21795HB
21	SSB IFT (3)	TKAC-21793HB
22	AM Mixer Coil	TKAC-21794HB
23	AM IFT (1)	YOC-15403F
24	AM IFT (2)	YOE-15404AJK
25	AM IFT (3)	ROC-15001N
26	AM IFT (4)	YMC-15002A
27	Input Transformer	5006
28	Output Transformer	00-5026 SSB
29	DC-DC Oscillator Transformer	T00255
30	Mike Transformer	Inside of Mike
31	Choke Transformer	CH-5201
XF	Crystal Filter	YF-8250E
CF	Ceramic Filter	CFU-455GI

SYMBOL No.	NAME OF PARTS	DESCRIPTION
X 1	Crystal HC-25/u	8.2485 MHz
2	Crystal HC-25/u	15.282 MHz
3	Crystal HC-25/u	15.2987 MHz
4	Crystal HC-25/u	15.3154 MHz
5	Crystal HC-25/u	15.332 MHz
6	Crystal HC-25/u	15.3487 MHz
7	Crystal HC-25/u	15.3654 MHz
8	Crystal HC-25/u	10.595 MHz
9	Crystal HC-25/u	10.615 MHz
10	Crystal HC-25/u	10.625 MHz
11	Crystal HC-25/u	10.635 MHz
12	Crystal HC-18/u	7.7965 MHz
R 41	Semi-Fixed Resistor	FR-107C 100K
45	Semi-Fixed Resistor	FR-102Y 10K
60	Semi-Fixed Resistor	FR-102Y 5K
61	Clarifier Control	PR-16 27F B10K
133	Semi-Fixed Resistor	FR-102Y 5K
146	Squelch Control	PR-16 27F B10K
151	Volume Control	P01021
S1A~H	Mode Switch	P01022
S2A~C	Channel Switch	P00840
S3A~D	Relay	MAT4BL
S4A~C	PA-CB Switch	SMD-32-14K
S 5	Noise Blanker Switch	SMD-22-14K
J 1	Microphone Jack	CS-250
2	PA Jack	P00250
3	Ext. SP Jack	P00250
4	Antenna Connector	SO-239
5	Octual Socket	SI-1107
P 1	US Plug	SI-0507
PL 1	Pilot Lamp	TE-5 14V 35mA
M	S/RF Meter	H1234-12C-12H
MIC.	Microphone	DM-1391
SP	Speaker	107D
TP1~5	Test Point	P00749
	Printed Circuit Board (A)	W01374
	Printed Circuit Board (B)	W01156

RAY JEFFERSON

LIMITED WARRANTY

MODEL CB-2569

During the first 90 days, we will repair the Model CB-2569, free of charge, if defective is material or workmanship. This limited warranty service is available by simply returning the CB-2569, freight prepaid to our factory service center at Main and Cotton Sts., Philadelphia, Penna. Ray Jefferson disclaims all responsibility for consequential damages.

RAY JEFFERSON
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