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**Lafayette HA-240 Owner's Manual**

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# Lafayette

Model HA-240

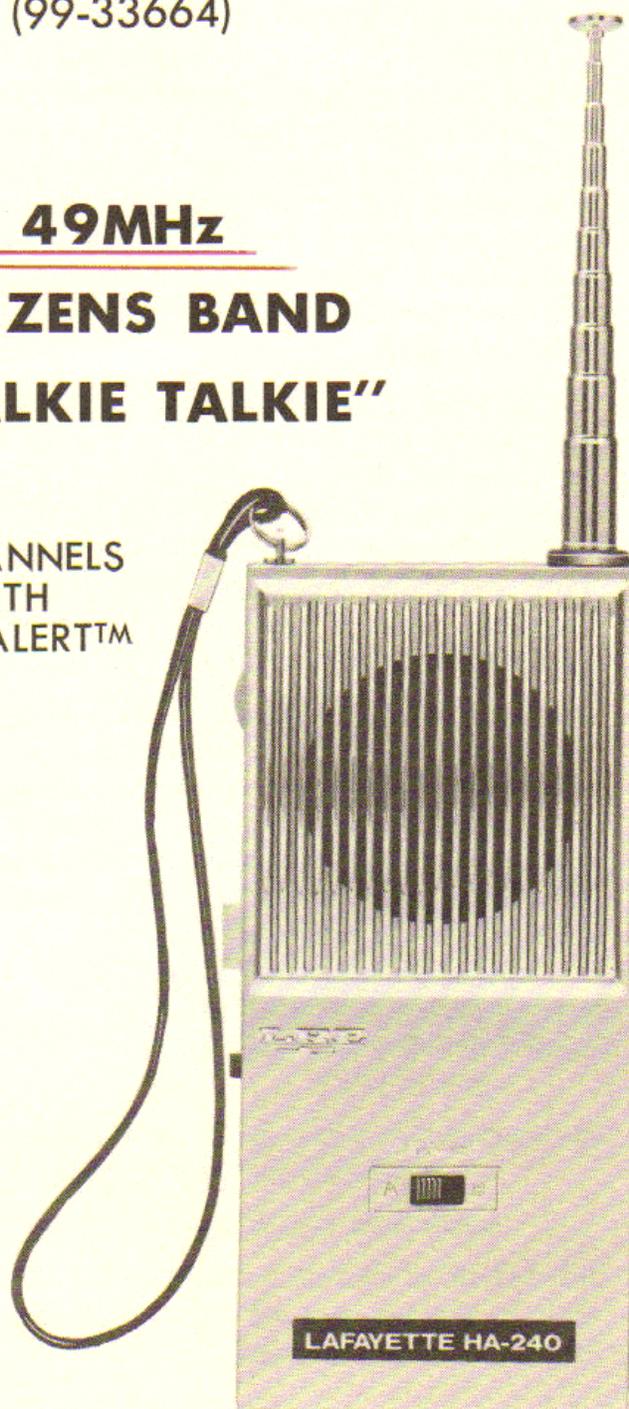
(99-33664)

49MHz

**CITIZENS BAND**

**"WALKIE TALKIE"**

2 CHANNELS  
WITH  
CALL ALERT™



**OPERATING MANUAL**

## GENERAL

Your new Lafayette HA-240 is a compact hand-held unit designed for short-range two-way radio communication in the 49 MHz Citizens Band.

Housed in a rugged metal case, the HA-240 comprises a fully miniaturized transmitter and receiver – both crystal controlled for precise, dependable operation. Equipped with 8 transistors, the unit employs a sensitive superheterodyne receiver circuit and a two-stage transmitter which employs the audio section of the receiver for modulation purposes during transmission. Other receiver features include push pull audio for high output and undistorted sound, and AGC (automatic gain control) to prevent overloading on strong signals and maintain uniform sound output. A tone call alert circuit is also incorporated to aid in establishing communication with other units.

The HA-240 may be operated without any license on any two of five frequencies in the 49 MHz Band, the input to the final RF stage being limited to 100 milliwatts as prescribed in Part 15 of FCC Regulations. Unless otherwise ordered, the unit is normally supplied with crystals for operation on 49.860 MHz. Additional matched pairs of crystals (transmit and receive) are available for operation on any of the other channels.

Although built to withstand a certain amount of abuse, the unit should be treated with the care normally accorded to electronic equipment. Always protect the unit against dirt and water. If the unit is treated with reasonable care, the only maintenance likely to be needed to maintain peak performance is the replacement of the battery when necessary.

## TECHNICAL SPECIFICATIONS

FREQUENCY OF OPERATION .....	Any 2 channels of five frequencies in 49 MHz band. Plug-in crystals.*
TRANSMITTER .....	Crystal-controlled. 100 mw input power to RF STAGE. Meets FCC regulations Part 15.
RECEIVER .....	Crystal-controlled super-heterodyne.
TRANSMIT-RECEIVE SWITCHING .....	Push-to-Talk method
INTERMEDIATE FREQ. (receiver) .....	455 KHz
<u>TRANSISTORS</u> .....	<u>Total 9</u>
POWER SUPPLY .....	9 Volt DC battery**

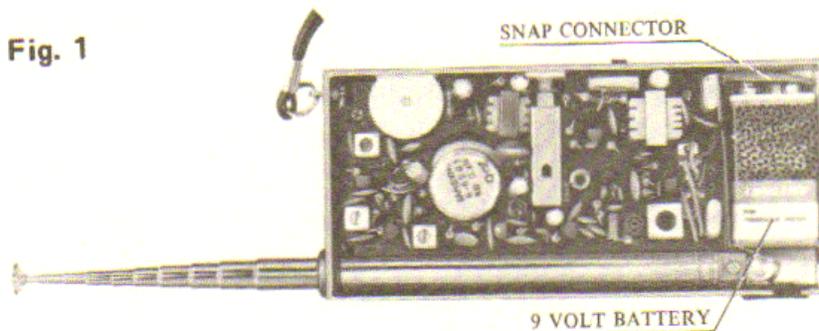
\*Unit is normally supplied with 49.860 MHz crystals.

\*\*Not included.

## BATTERY INSTALLATION

1. Remove the back cover of the unit (remove one large screw) exposing the battery compartment in the lower section of the unit (See Fig. 1)

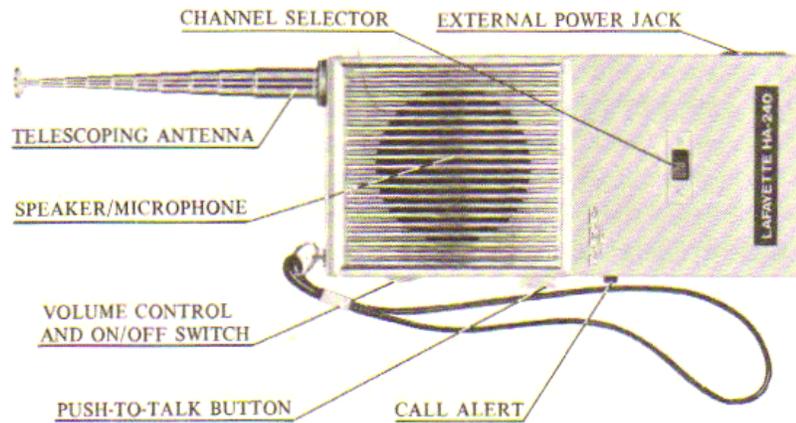
Fig. 1



2. Attach the snap connector to the 9 volt battery and place the battery in position as shown.
3. Replace the back cover and secure with screw.

**IMPORTANT:** Do not leave a battery in the HA-240 when the unit is not used for long periods of time. This will avoid battery leakage and possible damage to the unit.

## OPERATING INSTRUCTIONS



1. Place call alert switch in NORM. position.
2. Extend the telescoping whip antenna to its full length. Avoid bending the slim top section of the antenna when extending or collapsing it. To extend the antenna, grasp the button-shaped tip and extend the antenna partially. Next, grasp the center sections and extend the lower sections fully. Extend the top sections by pulling gently on tip.

To collapse the antenna, grasp the center sections and collapse the lower sections first, then the remainder, with the slim top section pushed in by pressing on the tip with the index finger.

3. Turn volume control in an upward direction to switch unit on. Set the channel selector to "A" and increase volume until background noise is heard.
4. HA-240 is equipped with a combined speaker/microphone which is located behind the grille on the unit.

To transmit, with the call alert switch in the NORM. position, hold the unit so that the grille is 3 to 4 inches away from your lips and fully depress the push-to-talk button. Speak clearly and at a normal level.

When you have completed your message, release the button.

**NOTE:** When one unit is transmitting, it is not possible for this unit to hear any messages directed to it. Do not, therefore, attempt to talk until the other station has finished transmitting.

### **CALL ALERT**

Tone call alert should be used solely in establishing communication with other units. The frequency of the built-in tone oscillator is factory adjusted to 2 KHz. To initiate a call, place the call alert switch in the **CALL** position. Depress the push-to-talk button for 1 or 2 seconds duration. Release pressure on the push-to-talk button and return call alert switch to the **NORM.** position. Wait for reply.

**FAILURE TO RETURN CALL ALERT SWITCH TO THE NORM. POSITION WILL PREVENT YOU FROM RECEIVING REPLY OR FURTHER CALLS AS THE RECEIVER IS INOPERATIVE WHEN THE CALL ALERT SWITCH IS IN THE CALL POSITION.**

### **CHANNEL SELECTOR**

This switch enables you to select either of two frequencies of operation. In one position, position A is selected; in the other position, B is selected. The actual channels on which the unit is able to operate are determined by the frequencies of the crystals inserted in the unit. As mentioned previously, most units are equipped with crystals for operation on 49.860 MHz inserted in the "A" position. If you decide to insert additional crystals for another channel, a record should be kept of the channel and its corresponding position in the transceiver to avoid confusion when using the channel selector switch.

### **OPERATING RANGE**

The HA-240 has been factory-adjusted to provide optimum performance within the power limits prescribed by the FCC for units of this type. Its operating range will vary with surrounding conditions and will generally fall into one of the following categories:

**ADVERSE CONDITIONS** (In or around buildings, with poor line-of-sight) – Under such conditions range may be restricted to several hundred yards.

**NORMAL CONDITIONS** (Line-of-sight conditions, with few intervening obstacles) – Range may extend up to 1 mile or more.

**FAVORABLE CONDITIONS** (Over flat terrain with no obstructions and no interference or noise) – Range may extend up to two miles.

## FREQUENCY OF OPERATION

The HA-240 transceiver may be operated on any two of 5 frequencies in the 49 MHz Citizens Band. Both receiver and transmitter are crystal-controlled, and are normally equipped with 49.860 MHz crystals unless otherwise ordered. Additional matched pairs of crystals (transmit and receive) may be ordered for operation on other channels.

Note that the crystal in the receiving section of the unit is used for the oscillator and is therefore 455 KHz lower than the actual frequency of operation. However, when ordering, you need only specify the stock number and channel for which crystals are required.

## ADDING NEW CHANNEL CRYSTALS

To insert additional crystals in the transceiver, simply remove the back cover (one large screw) and insert the new crystals in the places shown in Figure 2.

**IMPORTANT:** Be sure to insert the receiving (R) and transmitting (T) crystals in their proper location. If their positions are reversed, the unit will transmit on one frequency and receive on another, both of which will be outside the 49 MHz Band.

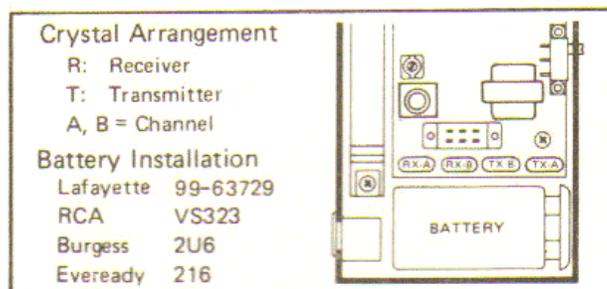


Fig. 2

SAME OSCILLATOR USED FOR TX AND RX - BUT ARE CRYSTAL SPECS. DIFFERENT.

### CRYSTAL CHART

When ordering crystals, specify stock numbers for each transmit (TX) and receive (RX) crystal desired.

LOADING CAPACITANCE IS 62 PF FOR TX & RX

Frequency [MHz]	62 PF Stock No. <del>62 PF</del>	
	TX	RX
49.830	46-49505	46-50503
49.845	46-49513	46-50511
49.860*	46-49521	46-50529
49.875	46-49539	46-50537
49.890	46-49547	46-50545

\*Normally supplied with unit.

### BATTERY REPLACEMENT

Any of the batteries listed below by manufacturer and type number may be used if inserted into battery compartment according to instructions:

MANUFACTURER	9 VOLT DRY BATTERY
Eveready	216
Burgess	2U6
RCA	VS323
Lafayette	99-63729

## **OPERATION ON 117 VOLTS 50/60 Hz AC**

The HA-240 may be operated from 117 volts 50/60 Hz AC when used with an AC adaptor (available as an optional accessory at extra cost). Although this restricts mobility to a certain extent, it does provide battery conservation in those cases where one unit is used as a base station. The unit is equipped with a special jack at the side into which the AC adaptor plug is inserted for AC operation.

## **SERVICE AND MAINTENANCE**

If trouble is experienced with the unit, we recommend that you check the followings:

1. Check battery for weak or discharged condition. Replace if necessary.
2. Make sure the channel selector is set to the position in which crystals have been inserted (The unit is normally supplied with crystals in position A only).
3. If trouble is experienced with transmission, make sure you are depressing the push-to-talk button fully. Also, the antenna must be fully extended for proper operation.
4. Make sure crystals are firmly seated. Check the frequencies or channel markings. Make sure crystals (T & R) are inserted in their proper positions and not reversed.
5. If checks above fail to disclose the trouble, do not attempt repairs or adjustments yourself. The unit should be serviced only by a qualified radio technician. Whenever possible, we recommend that you return a defective unit to the store from which it was purchased.

## **RETURNING THE UNIT FOR SERVICE**

In the event that repair is necessary (either in or out of warranty), we recommend that you return the unit to the store from which it was purchased. In most cases this will be your fastest and most efficient method of obtaining service.

If you wish to ship the unit to our main service center, please read the instructions which follow.

## **SHIPPING INSTRUCTIONS**

Pack the unit very carefully to avoid damage in transit, preferably in its original carton. If the original carton is not available, use a sturdy carton with at least 6 inches of crumpled newspaper or other packing material packed tightly around the unit to avoid any chance of damage in shipment. Be sure to use strong cord on raps around carton. If this unit is being returned under warranty, it must be accompanied by a copy of the original sales ticket or shipping documents to establish date of purchase. Also, include with the unit a letter explaining exactly what difficulties you have encountered (remember to add extra First Class postage and indicate on the outside of the carton that First Class Mail is enclosed). Ship by prepaid express if possible and mark **ELECTRONIC EQUIPMENT ..... FRAGILE**. Clearly address the carton as follows:

SERVICE DIVISION  
LAFAYETTE RADIO ELECTRONICS CORP.  
150 Engineers Road  
Hauppauge, L. I., N. Y. 11787

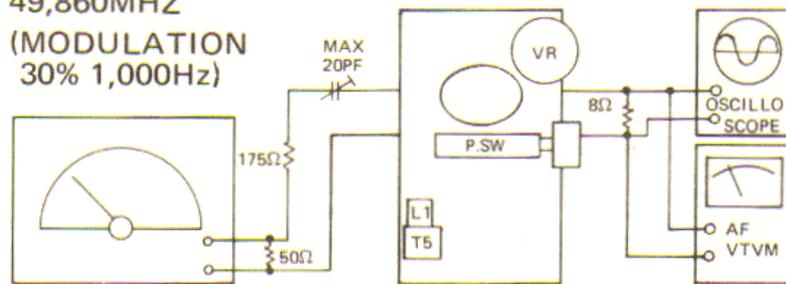
## HA-240

### RECEIVER ALIGNMENT

RF SIGNAL GENERATOR

49,860MHZ

(MODULATION  
30% 1,000Hz)



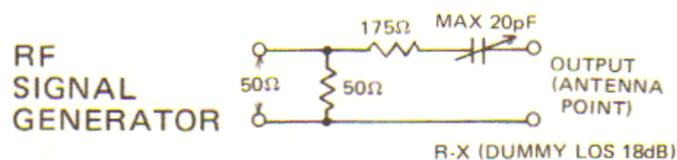
### ADJUSTMENT PROCEDURE

STEP	GENERATOR SIGNAL	ADJUST
1. SENSITIVITY ALIGNMENT	49,860 MHZ 24dB INPUT	T1, T2, T3, T4, FOR MAX OUTPUT
2. MAX SENSITIVITY ALIGNMENT	49,860 MHZ 24dB INPUT	630mV OUT PUT R12 FOR ADJUST
3. REPEAT STEPS 1 AND 2		
4. S + N/N	49,860 MHZ 30dB INPUT	MORE THAN 10dB

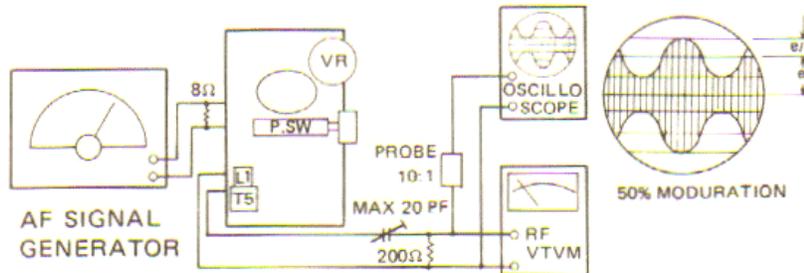
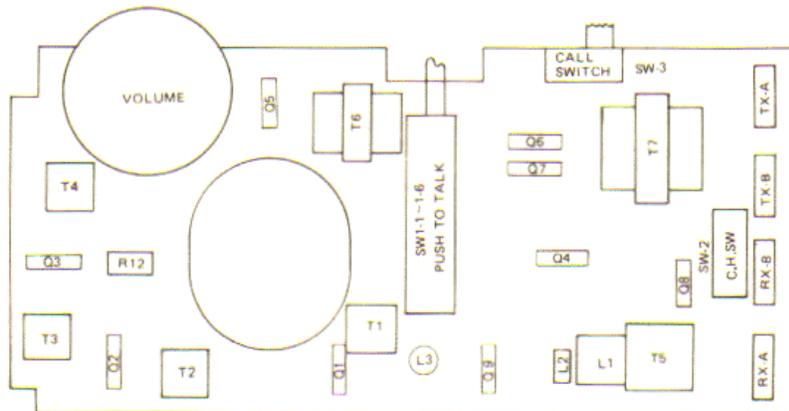
### EQUIPMENT REQUIRED

1. RF SIGNAL GENERATOR
2. OSCILLO SCOPE
3. RF VTVM
4. AF SIGNAL GENERATOR
5. 8Ω DUMMY LOAD
6. AF. VTVM
7. T-X DUMMY ANTENNA
8. R-X DUMMY ANTENNA

### DUMMY ANTENNA CIRCUIT



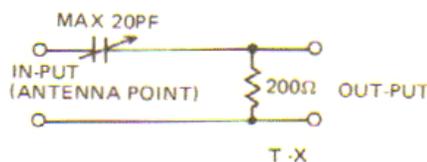
# HA-240 TRANSMITTER ALIGNMENT LOCATION OF ADJUSTMENT POINTS



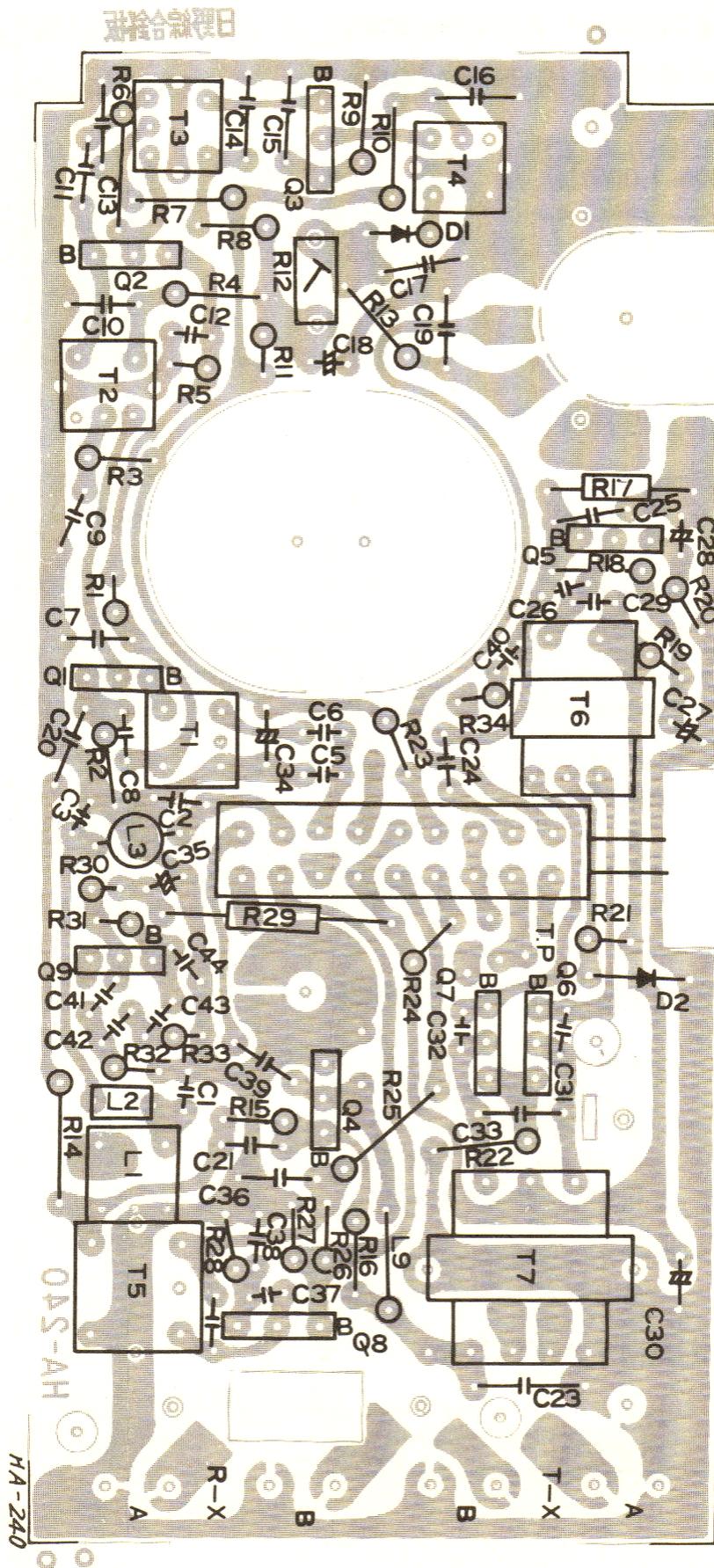
## ADJUSTMENT PROCEDURE

STEP	MODURATION INPUT	ADJUST
1. RF ALIGNMENT	NO INPUT	T5.L3.L1 FOR MAX OUT PUT
2. POWER ALIGNMENT	NO INPUT	T5 FOR 600mV VTVM
3. REPEAT STEPS 1 and 2		
4. MODURATION ALIGNMENT	3.0mV IN PUT	MORE THAN 50%
5. CALL CHECK	SW-3 ON	MORE THAN 80%

## DUMMY ANTENNA CIRCUIT



HA-240



HA-240

04S-AH

日新電機

