MOBILE RADIO

INSTRUCTIONS
FOR
Porta•Mobile II™
BATTERY INDICATOR KIT 19A130975G1
(OPTION 2131)

LB130455B
(DF8413)

TABLE OF CONTENTS

DESCRIPTION

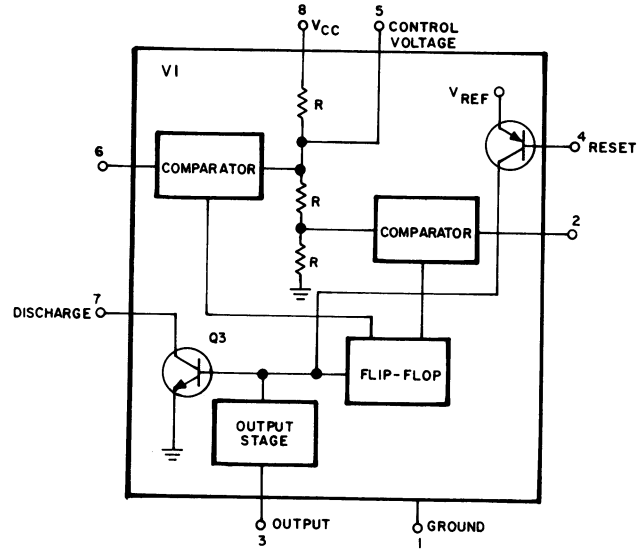
Battery Indicator Kit 19A130915G1 is used with Porta•Mobile II portable to monitor the battery voltage during the transmit cycle. The Battery Indicator causes the LED transmit indicator to flash at a rate proportional to the battery voltage. When the battery is fully charged, 10 volts or greater, the LED transmit indicator will be on continuously. The battery voltage dropping below 10 volts causes the indicator to flash, getting slower as the battery discharges. When the battery voltage reaches approximately 8 Volts the indicator will go completely out indicating the battery needs recharging.

CIRCUIT ANALYSIS

When the battery voltage is 10 volts or greater, transistor Q2 is biased on, holding LED transmit indicator CR701 on continuously during the transmit cycle. The battery voltage dropping below 10 volts causes Q2 to turn off and start CR701 flashing at a rate proportional to the battery voltage.

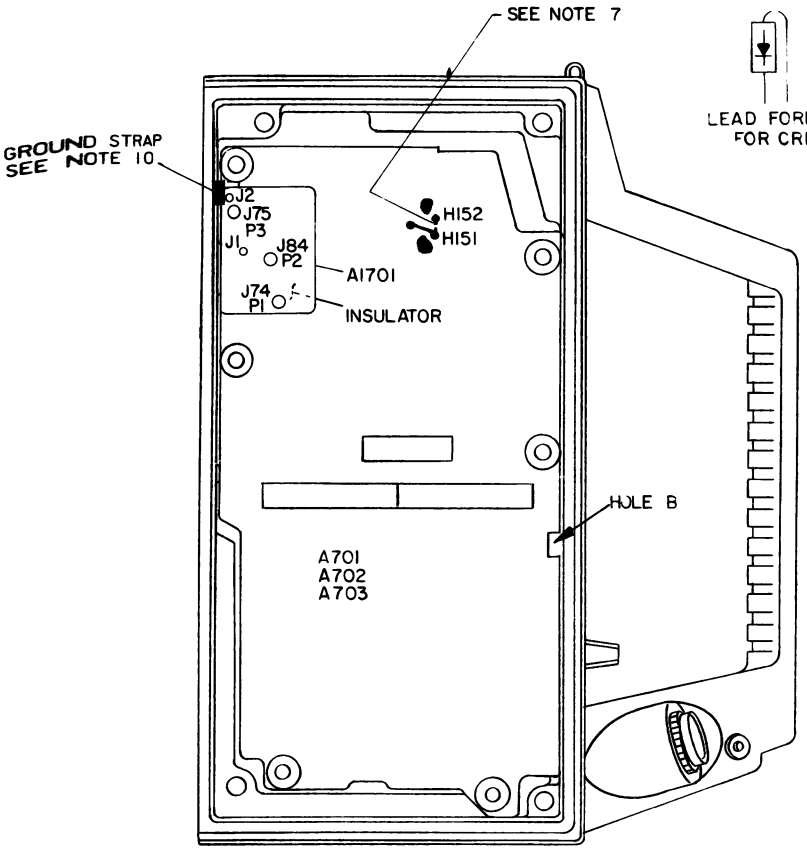
Transistor Q1 is biased on by a 5.4 reference voltage and the battery voltage. The voltage on the collector of Q1 is proportional to the reference voltage and the battery voltage, and regulates the charge rate of capacitor C1.

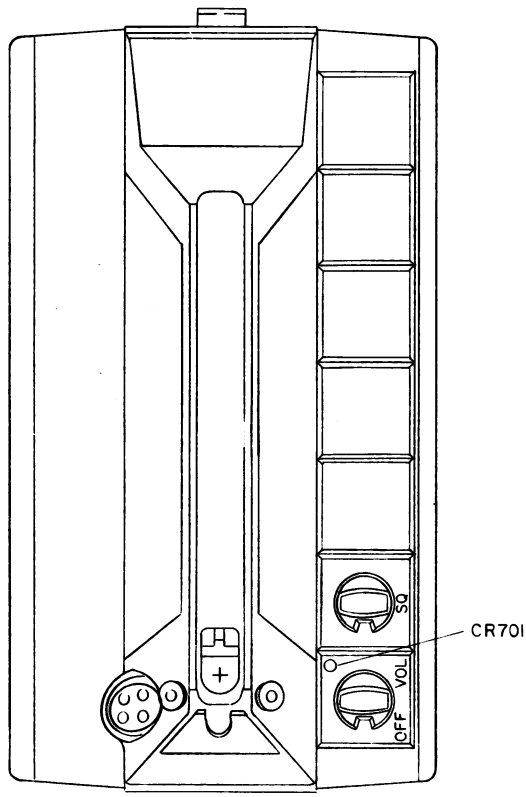
When capacitor C1 charges, a comparator circuit in integrated circuit U1 causes the flip-flop to switch states (See Figure 1). Transistor Q3 of U1 will conduct and CR701 will light. Transistor Q3 conducting discharges C1. Capacitor C1 discharging causes a comparator circuit to steer the flip-flop back to the initial state turning Q3 and CR701 off and restarting the cycle.

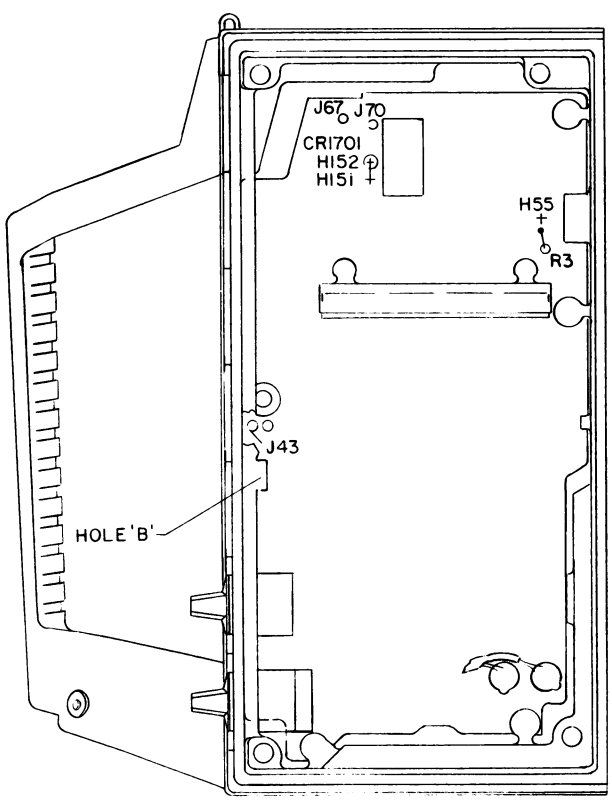


RC-3165

Figure 1 - Typical IC Block Diagram







INSTRUCTIONS:

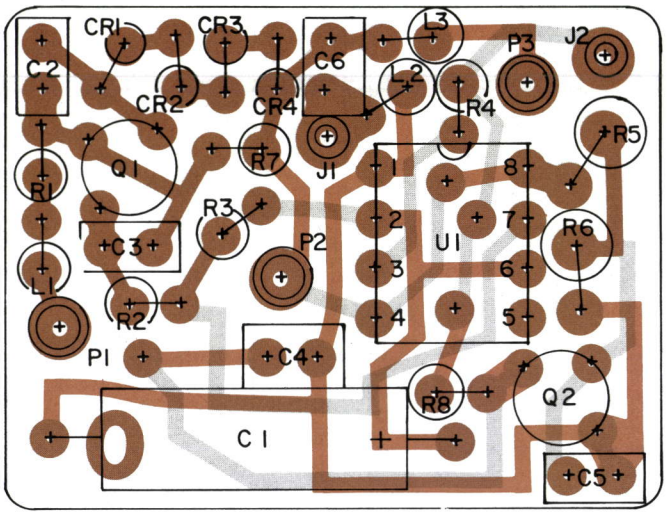
1. REMOVE FRONT AND BACK COVERS IF PRESENT.
2. ASSEMBLE BATTERY INDICATOR BOARD A1701 (CALLED FOR ON INDEX) AND INSULATOR (PART OF KIT PL19A130975G1) TO J74, J75 & J84 ON SYSTEMS BOARD AS SHOWN.
3. ON SYSTEMS, REMOVE P704 (CR701 VIOLET LEAD) FROM J70 AND ASSEMBLE ON J43.
4. REMOVE R3 (RESISTOR) FROM SYSTEMS BOARD AND DISCARD.
5. ASSEMBLE PLUG ON T28-V WIRE FROM A1701-J2 (BATTERY INDICATOR) TO J43 ON SYSTEMS BOARD. ROUTE WIRE THRU 'HOLE B'.
6. ASSEMBLE PLUG ON T28-WBK WIRE FROM A1701-J1 (BATTERY INDICATOR) TO J67 ON SYSTEMS BOARD. ROUTE WIRE THRU 'HOLE B'.
7. CUT RUN BETWEEN H151 & H152 ON SOLDER SIDE OF SYSTEMS BOARD BOARD AND ADD CR1701 AS SHOWN ON COMPONENT SIDE.
8. ASSEMBLE FRONT AND REAR COVERS IF REQUIRED.
9. FOR CONTROL WIRE CLAMPING INFORMATION REFER TO DRAWING 19D423115 NOTE 7.
10. TRIM GROUND STRAP AS REQUIRED TO PREVENT SHORT WITH J2.

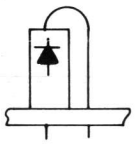
(19D423756, Rev. 5)

INSTALLATION INSTRUCTIONS

BATTERY INDICATOR 19A130975G1

Issue 3

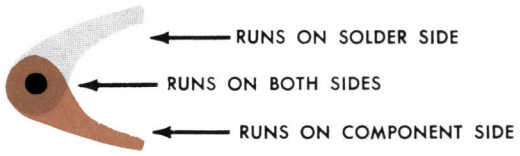




TYPICAL CR1–CR4

CONNECTION CHART		
FROM	TO	WIRE
P4	P5	T28-V
P6	P7	T28-WBK

(19C327908, Rev. 0)
(19C321358, Sh. 2, Rev. 0)
(19C321358, Sh. 3, Rev. 0)



OUTLINE DIAGRAM

BATTERY INDICATOR 19A130975G1

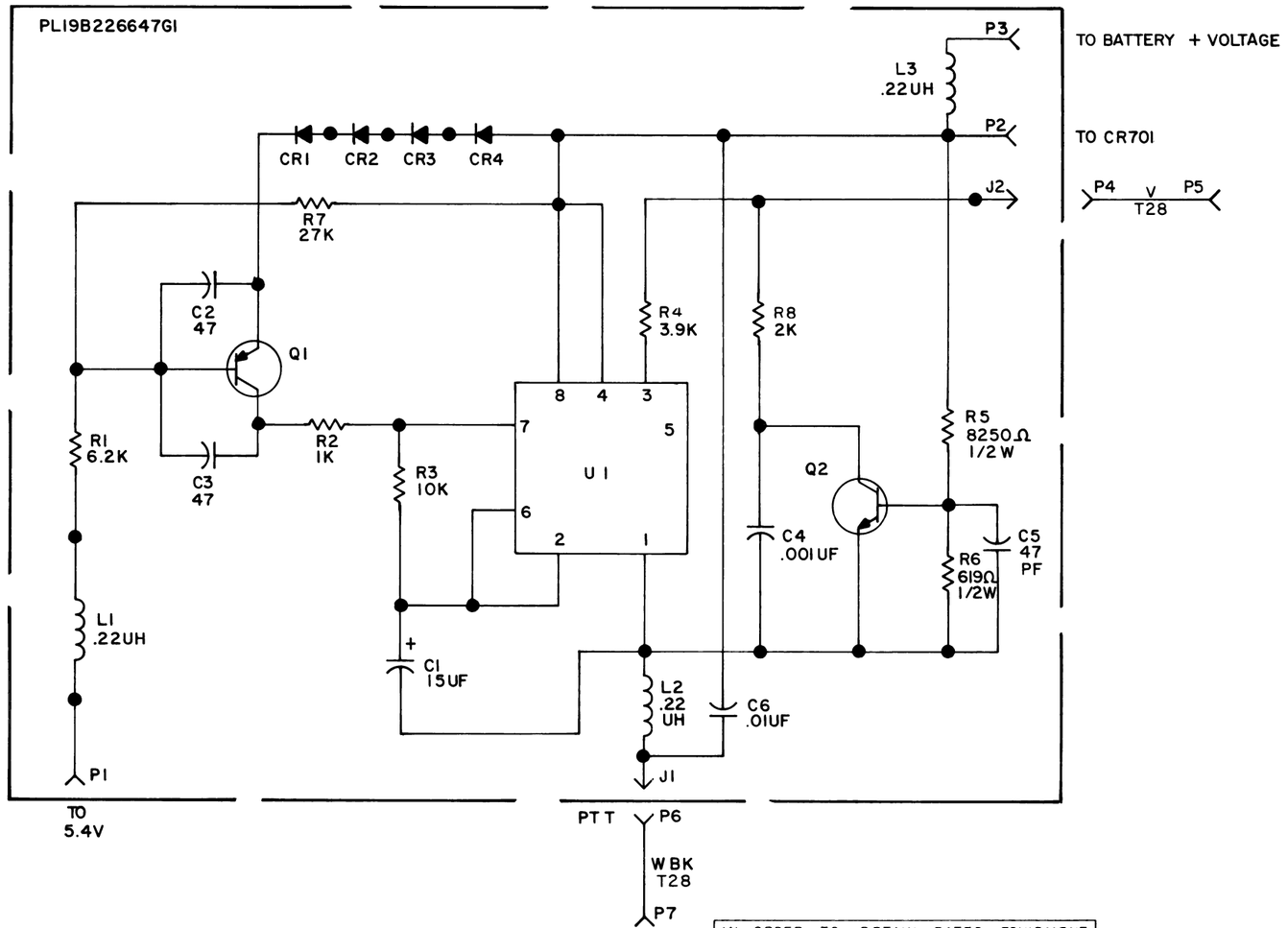
PARTS LIST

LBI-30454

BATTERY INDICATOR KIT
19A130975G1

SYMBOL	GE PART NO.	DESCRIPTION
A1701		COMPONENT BOARD 19B226647G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	5496267P14	Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C2 and C3	19A116114P2053	Ceramic: 47 pf ±5%, 100 VDCW; temp coef -80 PPM.
C4	19A116192P13	Ceramic: 1000 pf ±10%, 50 VDCW; sim to Erie 8121-A050-W5R-102K.
C5	19A116114P2053	Ceramic: 47 pf ±5%, 100 VDCW; temp coef -80 PPM.
C6	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 thru CR4	19A115250P1	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J1 and J2		(Part of component board 19A130399G1).
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1 thru L3	19B209420P105	Coil, RF: 0.22 µh ±10%, 0.14 ohms DC res max; sim to Jeffers 4416-5.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1 thru P7	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q2	19A115910P1	Silicon, NPN; sim to Type 2N3904.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R152P622J	Composition: 6200 ohms ±5%, 1/4 w.
R2	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.
R3	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.
R4	3R152P392J	Composition: 3900 ohms ±5%, 1/4 w.
R5	19C314256P28251	Metal film: 8250 ohms ±1%, 1/4 w.
R6	19C314256P26190	Metal film: 619 ohms ±1%, 1/4 w.
R7	3R152P273J	Composition: 27,000 ohms ±5%, 1/4 w.
R8	3R152P202J	Composition: 2000 ohms ±5%, 1/4 w.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U1	19A116968P1	Linear, Dual In Line 8 Pin Mini Dip package; sim to Signetics NE555CV.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1701	19A115100P1	Silicon; sim to Type 1N458A.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



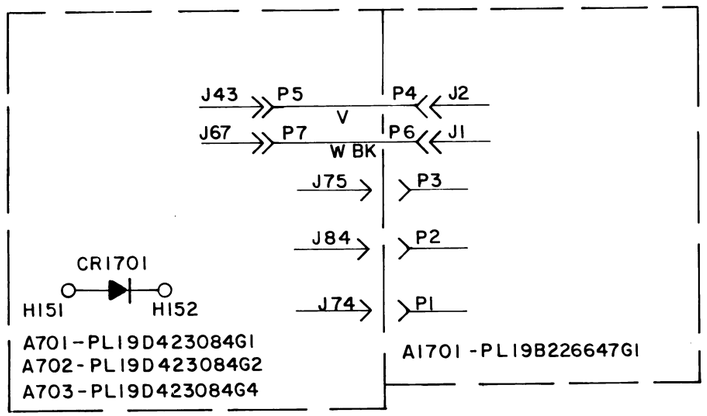
ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF=MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH=MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

(19C321614, Rev. 2)

SCHEMATIC DIAGRAM & PARTS LIST

BATTERY INDICATOR 19A130975G1



IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

(19A136614, Rev. 3)

INTERCONNECTION DIAGRAM

BATTERY INDICATOR 19A130975G1