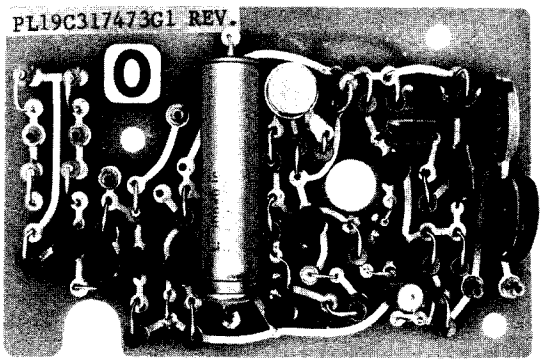
MOBILE RADIO

MASTR PROGRESS LINE

CARRIER CONTROL TIMER BOARD 19C317473-G1
WITH CARRIER CONTROL TIMER KITS 19A127875-G1 thru -G6



CARRIER CONTROL TIMER

SPECIFICATIONS *

TIMING CYCLE:	
Standard	1 Minute
Optional	Adjustable from 15 seconds to 5 minutes
INPUT:	13.6 Volts @ 100 mA Maximum 60 mA Nominal
SILICON TRANSISTORS:	9
DIMENSIONS (H X W X D):	2 1/4" X 3 1/2" X 7/8"

No listing

OPTIONS

Option No.	GE Part No.	Application
7347	19A127875-G1	MASTR Professional Mobile
7348	19A127875-G2	MASTR ROYAL Professional Mobile
8306	19A127875-G3	MASTR Executive Mobile
8307	19A127875-G4	MASTR ROYAL Executive Mobile
8308	19A127875-G5	MASTR Executive Station
8309	19A127875-G6	MASTR ROYAL Executive Station
7349	19B209358-P112	Modification for adjustable timing cycle

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

TABLE OF CONTENTS

DESCRIPTION

General Electric Carrier Control Timer Models 19A127875-G1 through -G6 were designed to shut off the transmitter after a one minute timing cycle, and to alert the operator that the transmitter is off by means of an alarm tone in the speaker.

The transmitter can be turned on again by releasing and rekeying the push-to-talk switch on the microphone. An optional potentiometer is available that permits the timing cycle (transmitter keyed time) to be adjusted from 15 seconds to 5 minutes.

The Carrier Control Timer can be used with all MASTR combinations except the three or four frequency MASTR Executive Tubed Mobiles or Stations.

INSTALLATION

For field installation of the Carrier Control Timer, refer to the appropriate installation instruction as listed in the Table of Contents.

CIRCUIT ANALYSIS

The Carrier Control Timer consists of a voltage switch (Q1 and Q2), a timing circuit (Q3 and Q4), a transmitter keying circuit (Q5 and Q6), a multivibrator (Q7 and Q9), and a transistor switch (Q8). The timer is supplied with a continuous +13.6 Volts.

Pressing the push-to-talk switch on the microphone ground J2 on negative ground units or J1 on positive ground units causing Q1 to turn on. Q1 turning on causes Q2 to turn on applying +13.6 volts to voltage regulator VR1. R4, VR1, and C1 regulates the voltage to +10 volts. When voltage is applied to the base of Q6 through R12 and R11, Q6 turns on keying the transmitter. At the same time voltage is applied to the base of Q8 through R14 and CR8 causing Q8 to turn on. Q8 turning on grounds the base of Q7 to keep the multivibrator from running.

The instant voltage is applied to R6, C2 starts changing through R6. Timing transistors Q3 and Q4 operate as a compound-connected emitter-follower. As C2 slowly charges up, the output voltage of the emitter follower rises proportionally. At the end of the timing cycle, the charge on C2 is sufficient to cause the emitter-follower output to exceed the breakdown voltage of zener diode VR2, turning on Q5. When Q5 turns on, its collector potential drops to near ground potential, turning off Q6 and Q8. Turning off Q6 opens the PTT ground path and switches off the transmitter.

Turning off Q3 allows the 700-Hz multivibrator to start. The output at J6 is applied to the base of the receiver audio output stage which in turn alerts the operator that the transmitter has been turned off. The transmitter can be keyed again by releasing and repressing the PTT switch. Releasing the PTT switch turns off the alarm tone to the speaker and also allows C2 to discharge rapidly through R5 to reset the timing cycle. R21 is used to adjust the alarm tone level at the speaker.

On a standard unit, the timing cycle (Transmitter Keyed Time) will be one minute. When the option is factory-installed, the timer board is shipped with the timing cycle set for one minute. For field installation, holes are provided in the printed circuit board so R6 can be directly replaced with the potentiometer. Instructions for setting the potentiometer are contained in the adjustment section below. R6 may also be replaced by a resistor of a different value. Decreasing the value of R6 decreases the timing cycle, while increasing the value of R6 increases the timing cycle.

MAINTENANCE

DISASSEMBLY

To gain access to the carrier control timer, refer to the appropriate Installation Diagram for the location of the timer board.

ADJUSTMENT

Timing Cycle Adjustment

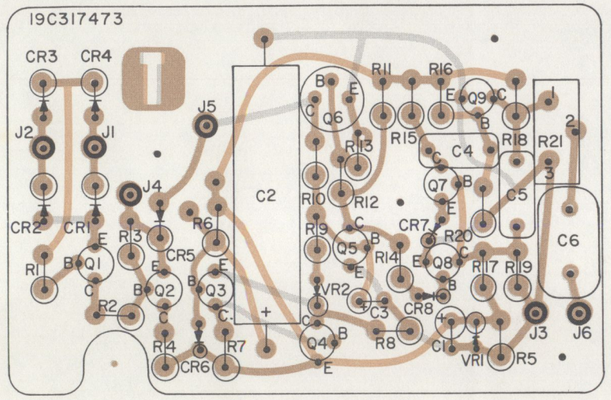
If the carrier control timer is equipped with the optional potentiometer, the potentiometer may be adjusted as follows:

1. Key the transmitter into a 50-ohm load. Keep the transmitter keyed until the carrier control timer unkeys the transmitter and the alarm tone is heard in the speaker.
2. Then, adjust the potentiometer (19B209358-P112) for more resistance if a longer timing cycle is desired, or decrease the resistance of the potentiometer if a shorter timing cycle is desired.

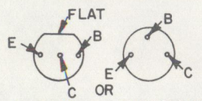
Alarm Tone Adjustment

Repeat Step 1 of Timing Cycle Adjustment. Adjust potentiometer R21 for an alarm tone level as desired.

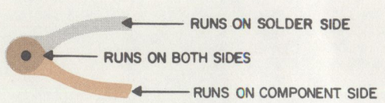
OUTLINE DIAGRAM



LEAD IDENTIFICATION
FOR Q1 THRU Q9

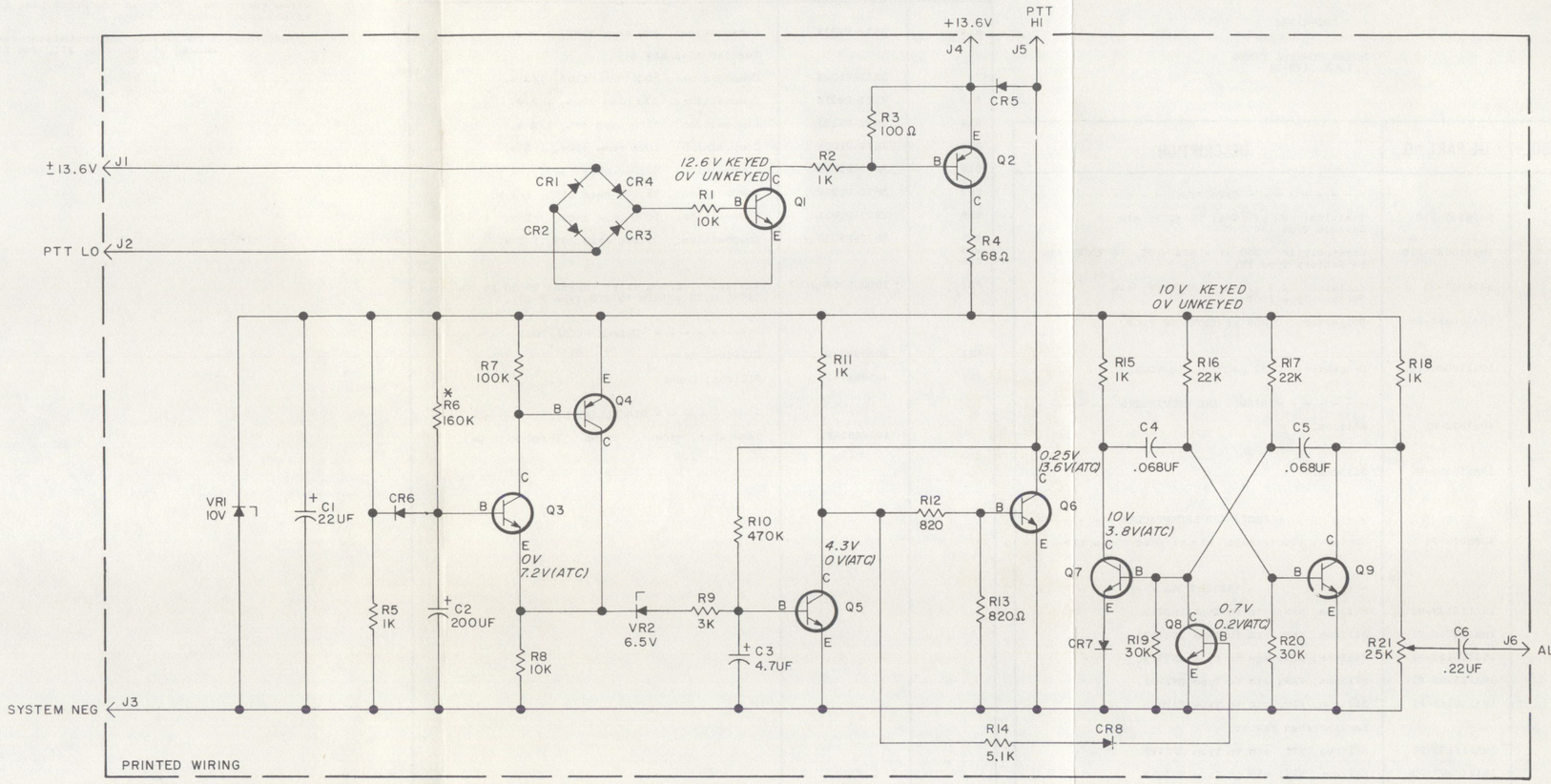


NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.



(19B219092, Rev. 0)
(19B216971, Sh. 1, Rev. 1)
(19B216971, Sh. 2, Rev. 1)

SCHEMATIC DIAGRAM



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.

ALL RESISTORS ARE 1/2 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.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PLI9C317473GI	A

(19D413628, Rev. 2)

* THE VALUE SHOWN FOR R6 IS FOR A ONE MINUTE TIME CYCLE. IF R6 IS REPLACED BY POTENTIOMETER 19B209358P112 (OPTION 7349) THE TIMING CYCLE CAN BE VARIED FROM 15 SECONDS TO 5 MINUTES.

VOLTAGE READINGS

READINGS ARE MEASURED TO MAIN CHASSIS GROUND WITH A 20,000 OHM-PER-VOLT METER. READINGS WITH NO LEGEND TAKEN DURING TIMING CYCLE. READINGS FOLLOWED BY (ATC) TAKEN AFTER TIMING CYCLE.

SCHEMATIC & OUTLINE DIAGRAM

CARRIER CONTROL TIMER BOARD
19C317473-G1

Issue 2

PARTS LIST

LBI-4137A

CARRIER CONTROL TIMER
19C317473-G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - CAPACITORS - - - - - - - - -
C1	5496267-P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C2	19A115680-P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TT.
C3	5496267-P5	Tantalum: 4.7 µf ±20%, 10 VDCW; sim to Sprague Type 150D.
C4 and C5	19A116680-P6	Polyester: 0.068 µf ±20%, 50 VDCW.
C6	19A116080-P9	Polyester: 0.22 µf ±20%, 50 VDCW.
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 thru CR5	4037822-P1	Silicon.
CR6 thru CR8	19A115250-P1	Silicon.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J1 thru J6	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q2	19A115768-P1	Silicon, PNP; sim to Type 2N3702.
Q3	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q4	19A115768-P1	Silicon, PNP; sim to Type 2N3702.
Q5*	19A115362-P1	Silicon, NPN; sim to Type 2N2925.
		Earlier than REV A:
	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q6	19A115300-P3	Silicon, NPN; sim to Type 2N3053.
Q7 thru Q9	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R2	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R3	3R77-P101K	Composition: 100 ohms ±10%, 1/2 w.
R4	3R77-P680J	Composition: 68 ohms ±5%, 1/2 w.
R5	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R6*	3R77-P164J	Composition: 0.16 megohm ±5%, 1/2 w.
		Earlier than REV A:
	3R77-P184J	Composition: 0.18 megohm ±5%, 1/2 w.
R7	3R77-P104K	Composition: 0.10 megohm ±10%, 1/2 w.
R8	3R77-P103K	Composition: 10,000 ohms ±10%, 1/2 w.
R9	3R77-P302J	Composition: 3000 ohms ±5%, 1/2 w.
R10*	3R77-P474K	Composition: 0.47 megohm ±10%, 1/2 w.
		Earlier than REV A:
	3R77-P684K	Composition: 0.68 megohm ±10%, 1/2 w.
R11*	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
		Earlier than REV A:
	3R77-P152K	Composition: 1500 ohms ±10%, 1/2 w.
R12*	3R77-P821K	Composition: 820 ohms ±10%, 1/2 w.
		Earlier than REV A:
	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R13	3R77-P821K	Composition: 820 ohms ±10%, 1/2 w.
R14	3R77-P512J	Composition: 5100 ohms ±5%, 1/2 w.
R15	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R16	3R77-P223K	Composition: 22,000 ohms ±10%, 1/2 w.
R17	3R77-P223K	Composition: 22,000 ohms ±10%, 1/2 w.
R18	3R77-P102K	Composition: 1000 ohms ±10%, 1/2 w.
R19 and R20	3R77-P303J	Composition: 30,000 ohms ±5%, 1/2 w.
R21	19B209358-P107	Variable, carbon film: approx 75 to 25,000 ohms ±10%, 0.25 w; sim to CTS Type X-201.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - -
VR1	4036887-P11	Silicon, Zener.
VR2	4036887-P6	Silicon, Zener.
		- - - - - - - - MISCELLANEOUS - - - - - - - - -
	4036555-P1	Insulator, washer: nylon. (Used with Q6).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - To compensate for transistor variation.
Changed Q5, R6, R10, R11, and R12.

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and GE Part Number.

Service parts may be obtained from Authorized GE Communication Equipment Service Stations or through any GE Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. GE Part Number for component
2. Descripiton of part
3. Model number of equipment
4. Revision letter stamped on unit

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-4138A

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY ● LYNCHBURG, VIRGINIA 24502

GENERAL ELECTRIC

DF-4805

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