

## AIR TIME CIRCUIT

### MJ AND MK MOBILE TELEPHONE SYSTEMS

### EQUIPMENT DESIGN REQUIREMENTS

### RADIO SYSTEMS

#### 1. GENERAL

##### SCOPE

**1.01** This specification, together with the supplementary information listed herein, covers the equipment design requirements to be used in the engineering and installation of the MJ and MK Mobile Telephone System air time circuit. The air time circuit permits the measurement of individual customer air time usage. (See Fig. 1.) Each customer line is provided with a register which records the line-busy time in tenths of minutes. A delay relay is provided which delays the start of timing for a fixed time, between 15 seconds and 2 minutes. An alarm circuit activates the central office alarm circuits should the timer, which is common to all air time registers, fail to operate. The equipment is designed for relay rack mounting near the control terminal.

**1.02** This specification is reissued to:

- (a) Add J41648B, Lists 2 through 7.

- (b) Rate J41648C, Lists 3 and 4 Mfr Disc.

- (c) Add J41648D, Lists 3 and 4.

The above changes are in agreement with SD-2R107-01, Issue 3A.

##### DESCRIPTION

**1.03** The air time meter uses a 117-volt 60-Hz synchronous motor timer which provides one contact closure to -48 volts every 6 seconds. Each subscriber line is equipped with a TDR (time delay relay) and an AT (air time) register.

**1.04** When used with a large mobile telephone system, the TDR timing is started by the ground on the S lead which is applied when the customer crosspoints are closed by the crossbar switch in the control terminal. When the TDR operates, a path is completed from the motor timer contact to the subscriber air time register, which will be operated every 6 seconds until the call is terminated and the TDR is released.

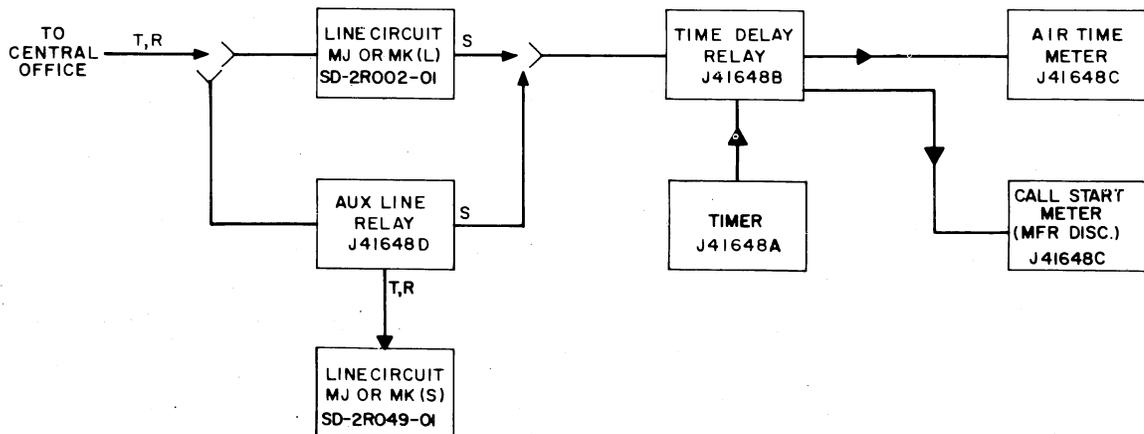


Fig. 1—Block Diagram of Air Time Circuit

**1.05** When used with the small mobile telephone system, an auxiliary line relay assembly must be used. The auxiliary line relay is wired between the central office line circuit and the control terminal line circuit. The auxiliary line relay operates on current in the tip lead during ringing, and loop current after answer, or when originating a call. When operated, a transistor is turned on which grounds the S lead, which starts the TDR timing. When the TDR operates, a path is completed from the motor timer contact to the subscriber air time register, which will be operated every 6 seconds until the call is terminated and the TDR is released.

**1.06** Power requirements are shown in Table A.

## 2. SUPPLEMENTARY INFORMATION

806-000-000—Numerical Index of Equipment Design, Performance Requirements and Engineering Information—Radio Systems  
 800-600-000—Checking List—General Equipment Requirements  
 806-157-150—Equipment Engineering Requirements for Large MJ Mobile Radio Telephone  
 806-158-150—Equipment Engineering Requirements for Small MJ Mobile Radio Telephone  
 405-000-000—Numerical Index — Division 405  
 Current Drain Data—SD-2R023-02

## 3. DRAWINGS

WE J drawings should be ordered by referring to the prefix and base number and requesting the current dash (—) number.

J41648A( )—Timer Assembly  
 J41648B( )—Timer Delay Relay Assembly

J41648C( )—Message Register Assembly  
 J41648D( )—Auxiliary Line Relay Assembly  
 ED-2R025-30—Auxiliary Line Relay Printed Circuit Assembly  
 ED-2R026-30—Air Time Alarm Circuit Assembly  
 SD-2R023-01—Keysheet  
 SD-2R107-01—Air Time Circuit

## 4. EQUIPMENT

**J41648A—AT&T Co Std—Timer Assembly (See Fig. 2)**

Equipment—J41648A( )

**List 1**—Assembly, wiring, and equipment for one timer assembly.

**J41648B—AT&T Co Std—Time Delay Relay Assembly (See Fig. 3)**

Equipment—J41648B( )

**List 1**—Assembly, wiring, and equipment for one time delay assembly.

**List 2**—Apparatus required in addition to list 1 for a 15-second delay in air time measurement start.

**List 3**—Apparatus required in addition to list 1 for a 30-second delay in air time measurement start.

**List 4**—Apparatus required in addition to list 1 for a 45-second delay in air time measurement start.

**List 5**—Apparatus required in addition to list 1 for a 60-second delay in air time measurement start.

**List 6**—Apparatus required in addition to list 1 for a 90-second delay in air time measurement

TABLE A

EQUIPMENT CODE	POTENTIAL	MAX CURRENT DRAIN PER CODE mA	EXTERNAL FUSE REQUIRED PER UNIT A
J41648A	—48Vdc	170	1-1/3
	110V, 60 Hz Protected	3	1-1/3 Min
J41648B	—48Vdc	120	1-1/3
J41648C	—48Vdc	170	1-1/3
J41648D	—48Vdc	200	1-1/3

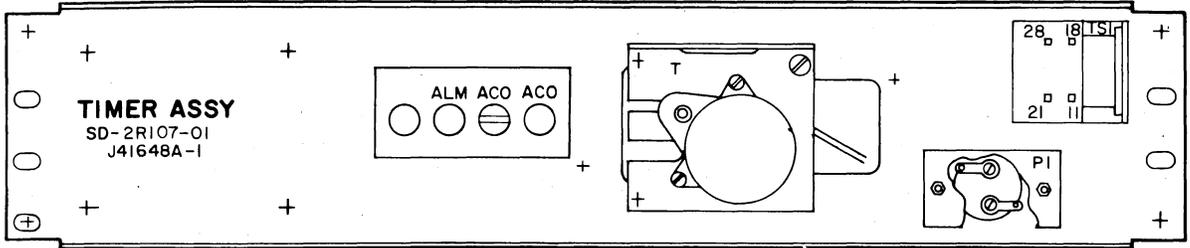


Fig. 2—J41648A

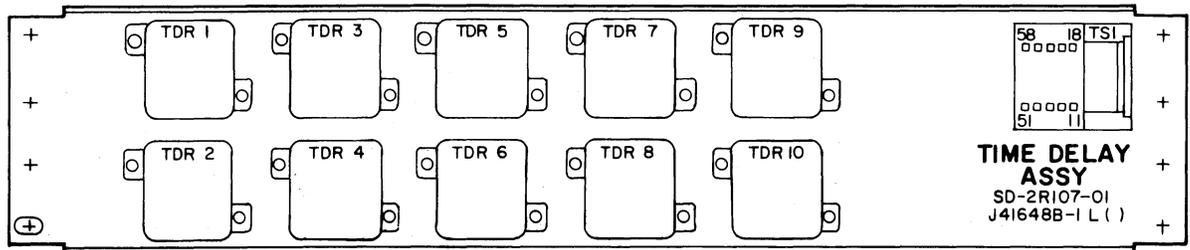


Fig. 3—J41648B

start.

**List 7**—Apparatus required in addition to list 1 for a 120-second delay in air time measurement start.

**J41648C—AT&TCo Std—Message Register Assembly (See Fig. 4)**

Equipment—J41648C( )

**List 1**—Assembly, wiring, and equipment required for a panel equipped with ten air time registers.

**List 2**—Wiring and equipment required in addition

to list 1 for an additional ten air time registers.

**J41648D—AT&TCo Std—Auxiliary Line Relay Assembly (See Fig. 5)**

Equipment—J41648D( )

**List 1**—Assembly, wiring, and equipment for one auxiliary line relay panel wired for 45 line circuits and equipped with one printed wiring board for the first five line circuits.

**List 2**—Equipment required in addition to list 1 to provide an additional five line circuits (maximum eight).

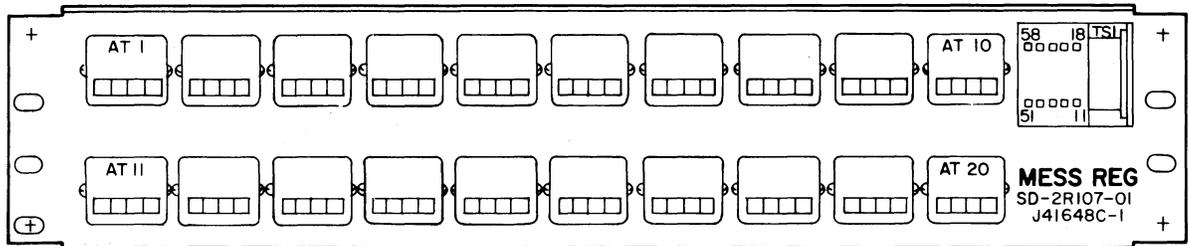


Fig. 4—J41648C

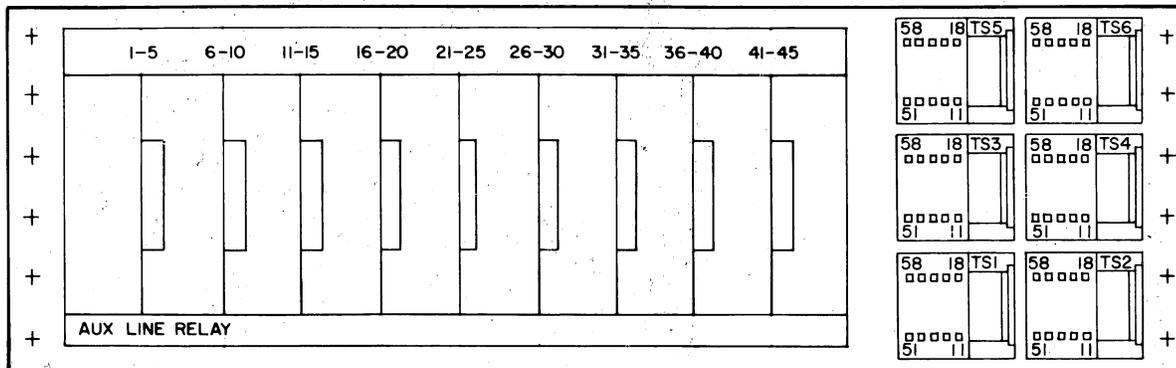


Fig. 5—J41648D L1, Eight L2 Shown

**List 3**—Brackets required in addition to list 1 to mount panel on bulb angle relay rack equipped with 10-inch guardrail.

**List 4**—Brackets required in addition to list 1 to mount panel on bulb angle or channel type relay rack with 12-inch guardrail.

The above equipment has been replaced as indicated. Where A&M Only items appear, the issues shown are those of the issue in which the rating was first applied.

**5. GENERAL NOTES**

**List of A&M Only and Mfr Disc. Equipment**

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J41648C,L3 & L4	Mfr Disc.	1	—

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