

J86839B INTERRUPTER
30-, 60-, AND 120-IPM
OPERATING METHODS

1. GENERAL

1.01 This section describes the operation of the J86839B interrupter which provides regular and reserve 30-, 60-, and 120-ipm interrupted signaling as required by No. 1 TSPS remote installations.

1.02 Instructions are based on SD-81818-01. For detailed description of the operation of individual circuits, refer to the corresponding circuit description.

1.03 For more detailed information on the operation and maintenance of individual equipment or apparatus, refer to the appropriate Bell System Practice. All relays should be adjusted, when required, in accordance with the BSP sections and the circuit requirements tables on the circuit drawings.

1.04 Routine checks should be made during a period when they will cause the least interference with service.

1.05 Before removing or inserting a plug-in unit, set the OFF-0 or OFF-1 key to the ON position required to remove input power so as to prevent possible damage to the unit.

Caution 1: *The plant includes automatically controlled equipment. Care should be exercised to prevent transfer to the interrupter on which work is being done. Before starting work on an interrupter, set the OFF-0 or OFF-1 key to ON position as required to prevent automatic transfer and to disconnect input power to the unit to be worked on. When the work is completed, restore the circuits to normal.*

Caution 2: *Before checking circuits which contain electrolytic capacitors, refer to Section 032-110-501.*

2. TOOLS AND TEST APPARATUS

CODE OR SPEC. NO.	DESCRIPTION
TOOLS	
—	C Screwdriver
TEST APPARATUS	
KS-3008	Stopwatch
KS-14510	Volt-Ohm-Milliammeter
KS-16887 L1	Wedge
SD-40953 — TP41	Extension CARD
1TE-9536	CORD, 1 conductor, 12 feet long, equipped with one ITE-2174 test pick end and one ITE-8507 Alligator clip

3. DESCRIPTION

3.01 The J86839B interrupter provides 30-, 60-, and 120-ipm interrupted loop signaling for remote installations. Transistorized 30-, 60-, and 120-ipm timing circuits drive relays which provide the actual interruptions. The driven relays in turn drive 30-, 60-, and 120-ipm follow relays which feed the system.

3.02 For reliable service, the plant includes duplicate interrupters. Regular and reserve relays in the interrupters have their make contacts in parallel. Through an interlock of the T0 and T1 transfer relays, only the follow relays feeding the load are operating. During normal operation, the plant is under system control and power is on both groups of relays (0 and 1) but only one group carries the load. If either the regular or reserve interrupter fails,

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the other interrupter is automatically switched in and an alarm is transmitted to the system. A manual transfer supersedes system control. The control panel and fuses are part of the miscellaneous circuits.

4. OPERATION

STEP	PROCEDURE
1	Install the A and B fuses at the remote PDF frame. <i>Requirement:</i> There shall be -48 volts at the -48 volt test battery jack and at the B0 fuse.
2	Operate the NOR key. <i>Requirement:</i> OFF NOR and PWR OFF lamps extinguished.
3	Operate the OFF-1 key. <i>Requirement:</i> OS-1, PWR OFF, and OFF NOR lamps lighted.
4	Operate the OFF-0 key. <i>Requirement:</i> The OS-0 lamp lighted and the OS-1 lamp extinguished.

5. ROUTINE CHECKS

STEP	PROCEDURE
1	Operate the NOR key. <i>Requirement:</i> The OFF NOR and PWR OFF lamps extinguished.
2	Operate the OFF-1 key. <i>Requirement:</i> OS-1, PWR OFF, and OFF NOR lamps lighted. <i>Requirement:</i> The 30-1, 60-1, and 120-1 relays are released. The 30-0, 60-0, and 120-0 relays are pulsing at 30-, 60-, and 120-ipm respectively.

Note: The 30-ipm relays are operated for a short interval (0.25 second) and released

for a long interval (1.75 seconds). The 60- and 120-ipm relays have equal operate and release times. Count the 60-ipm relay for 1/2 minute (30 counts) for coarse adjustment, 1 minute (60 counts) for (medium adjustment), and 2 minutes (120 counts) for fine adjustment. The count should be made as the relay closes. Adjust R3 FREQ ADJ potentiometer located on the 120-ipm card for correct count. CW rotation of R3 increases frequency and decreases period.

STEP	PROCEDURE
3	Block relays 30-0, 60-0, and 120-0 nonoperated in turn. <i>Requirement:</i> IFO relay releases after a short delay in each case.
4	Block relays 30-0, 60-0, and 120-0 operated in turn. <i>Requirement:</i> IFO relay releases after a short delay in each case.
5	Operate the OFF-0 key. <i>Requirement:</i> OS-0 lamp lighted and OS-1 lamp extinguished. <i>Requirement:</i> The 30-0, 60-0, and 120-0 relays are released and the 30-1, 60-1, and 120-1 relays are pulsing. If the interrupter is properly adjusted, the count should be 60. (See note following Step 3.)
6	Block relays 30-1, 60-1, and 120-1 nonoperated in turn. <i>Requirement:</i> IF1 relay releases after a short delay in each case.
7	Block relays 30-1, 60-1, and 120-1 operated in turn. <i>Requirement:</i> IF1 relay releases after a short delay in each case.
8	Operate the NOR key. <i>Requirement:</i> OS-0, PWR OFF, and OFF NOR lamps extinguished.

STEP	PROCEDURE
9	Block relay P1 operated and short terminal strip (TS) A, Terminals 30-31 momentarily. <i>Requirement:</i> Relay ST operates and releases.
10	Unblock relay P1 and block P0, momentarily short TS A, Terminals 33-34. <i>Requirement:</i> Relay S0 operates and releases.
11	Unblock P0 and block P1. Momentarily short TS A, Terminals 35-36. <i>Requirement:</i> Relay S1 operates and releases.
12	Operate the OFF-1 key. Connect the alligator clip of the 1TE-9536 cord to -48 volts. Touch contact in the caps of the A0-A5, B0-B5 fuses. <i>Requirement:</i> Relay FA1 operates each time.

6. TROUBLES

6.01 Failure of an interrupter is indicated by the system. Failure of a dc input fuse will cause the PWR OFF lamp in the plant to light and transmit a fuse alarm signal to the TSPS alarm circuit.

TROUBLE CHART

6.02 The possible causes of trouble in a unit and the action to be taken are given in the following trouble chart. In addition to the action specified, check for loose or open connections or short circuits due to foreign matter lying across associated wiring terminals. See Section 032-173-301 for testing and handling of semi-conductors.

TROUBLE CHART

TROUBLE	POSSIBLE CAUSE
Inoperative	No dc input voltage. *Component failure in 120-ipm card.
Incorrect Frequency	R3 FREQ ADJ potentiometer out of adjustment.
30-ipm relay running at 120-ipm	*Component failure in 60-ipm card.
30-ipm relay inoperative (60-ipm and 120-ipm relays running normally)	No dc input voltage to 30-ipm card. *Component failure in 30-ipm card.
Output Erratic	Loose connections or foreign matter on printed board or wiring terminals. *Capacitors and semiconductors are most likely to fail.