POWER SYSTEMS
750-A PBX POWER PLANT
CHARGE AND DISCHARGE CIRCUIT
WITH RELAY FOR CHARGE CONTROL

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 None.

B. CHANGES IN APPARATUS

B.1 None.

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REVISED APPARATUS

C.1 None.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 On issue 3, figure 4 was a part of figure 3 and the (RHEO) fuse was strapped to the discharge instead of the battery side of the (CHG) fuse.

DEVELOPMENT

1. PURPOSE OF CIRCUIT

1.1 To provide a battery charge and discharge circuit for this plant.

2. WORKING LIMITS

2.1 15-21 volts unregulated.

OPERATION

3. DESCRIPTION

3.1 To charge the PBX battery from a nearby central office over cable conductors or with a copper-oxide rectifier.

3.2 To cause an alarm in the event of blown charge or discharge fuses.

4. CONNECTING CIRCUITS

4.1 Alarm, link, trunk circuits and local ringing circuits.

5. DETAILED DESCRIPTION

5.1 Charging Equipment

The 8 cell (15-21 volt) battery is arranged for charging either from the central office 24V, 36V or 48V battery over cable pairs or from a local 1/2 ampere rectifier operating from the AC house service. The cable pair method is generally used where the PBX is so near a central office that only a few feeders are required to provide a low resistance path to the PBX batteries.

The rectifier is generally used where the cable feeders are not available or where the PBX is remote from a central office so that a large number of conductors would be required for cable pair feed.

5.2 Resistance Charge Control

The charge rate is controlled by a series connected 1/2 ampere, 50 ohm rheostat and a fixed 350 ohm resistor with taps at 0, 50, 150 and 350 ohms. By strapping the resistor taps and adjusting rheostat, the resistance can be varied in small increments from 0-400 ohms.

5.3 Relay Charge Control

During the time a receiver is off the switchhook or an incoming call is being made, ground from the link or trunk circuit over the CT lead operates the (CT) relay to short-circuit the charging resistance, thus increasing the charging rate until the link and trunk circuit are restored to normal.

5.4 Local Ringing Machine

The operation of the (CT) relay also provides battery to operate the relay in the local ringing machine circuit when used.

5.5 Adjustment of Charge

With the resistance short-circuited, the charge rate is set at 1/2 ampere on the rectifier, or from 1/2 to 1 ampere with cable pair feed, depending on the central office voltage and the resistance of conductors. The short is then removed

and the charge rate reduced by means of the resistor and rheostat to about 1/5 of an ampere.

The 1/5 ampere charge is continuous except when the resistance is shorted by the operation of the (CT) relay which increases the charge to the full value of 1/2 to 1 ampere. The high rate is maintained until the restoration of the PBX circuits to normal releases the (CT) relay which removes the short and reduces the current to the low value.

5.6 Grounding Fuses for Exposed Central Office Cable Feeders

When the central office feeders are exposed, the installer inserts the 2 ampere grounding fuses of Figure 3 in these leads. This affords protection in addition to house entrance protection blocks and fuses (usually 7 ampere). In case of a high voltage cross on the exposed feeders, the 1-1/3 or 1/2 ampere charge fuses would blow. If the voltage and current were not sufficient to operate the entrance protection apparatus, the charge fuses might continue to are except that the 2 ampere grounding fuses would blow and ground the line.

AMERICAN TELEPHONE & TELEGRAPH CO.,
DEPT. OF DEVELOPMENT & RESEARCH.
BELL TELEPHONE LABORATORIES, INC.

DEPT. 331-C

CDW
HLM } GG