

NO.80-B AND NO.200-B ORDER TURRETS  
DESCRIPTION

**1. GENERAL**

1.01 This section describes the No.80-B and No.200-B Order Turrets and associated equipment which have been standardized to meet customer's service requirements for jack and lamp turret equipment to permit several attendants to answer or originate telephone calls on a common group of central office, P.B.X. extension or private lines.

1.02 The equipment consists of two major parts, the turret or turrets mounted on supporting tables furnished by the Telephone Company or supplied by the customer, and the line circuit relay equipment which mounts in an apparatus cabinet located elsewhere on the same premises.

**2. TURRET EQUIPMENT**

(A) Appearance

2.01 The turrets are of the 4-position double face type with two positions and a common jack multiple in each face, and are designed as compactly as possible. All exposed woodwork is finished mahogany walnut. The turrets are designed to mount on standard supporting tables or may be located on tables furnished by the customer.

2.02 In each face of the turret is a centrally located jack panel containing the jack, lamp and designation strip equipment for the terminated lines. The No.80-B turret has a single panel, accommodating four rows of 20 lines each, while the No.200-B turret has a double panel, each accommodating five rows of 20 lines each. The lines number from left to right and from the bottom up. One strip of jacks, one strip of lamps and lamp sockets equipped with white lamp caps, and one designation strip comprise the face equipment for 20 lines. The lamp functions as a combined "Line and Busy" lamp, flashing as an incoming call signal, and lighting steadily as a busy indication.

2.03 On either side of the jack panels are located the cords and cord circuit keys for the two positions in the turret face. The cord circuit keys are of the 3-position lever type; locking in the upward direction as the talking position and non-locking in the downward direction as the ringing position. Additional key spaces adjacent to the cord circuit keys provide mounting space for the conference connection keys, when provided.

2.04 In the first turret, the "odd" face is equipped with the "Buzzer" and "Fuse Alarm" keys, and the "Fuse Alarm" lamp which are centrally located above the jack panel. The keys are of the 2-position rotary locking and indicating type. In multiple turrets the drillings are equipped with apparatus blanks.

2.05 Where out dialing is required, a dial is provided for each position located directly above the cord circuit keys.

#### (B) Cord, Telephone and Buzzer Equipment

2.06 The cord and telephone circuit equipment for the four positions in the turret is completely contained within the turret. Mounting space is also available for the conference circuit equipment, where required. Access to this equipment, and to the jack and lamp panels for maintenance, is obtained by removing the top of the turret and lowering either or both face panels, which are hinged at the lower edge.

2.07 The first turret only is equipped with a No.4-B buzzer as an auxiliary signal. The buzzer is mounted inside the turret.

#### (C) Terminals

2.08 The terminal strips on which the cabling from the jacks and lamps is terminated, are mounted on a framework suspended below the body of the turret, and are protected against accidental damage by removable protection panels. In addition to the line terminals, a miscellaneous terminal strip is provided on which are terminated the position battery, ground and generator supply leads, together with the miscellaneous leads. There are six conductors per line, namely T, R, S, J, and L and L1 corresponding to tip, ring, sleeve, jack contact, lamp and lamp battery. Normally, the first turret is cabled to the apparatus cabinet and each multiple turret is cabled to the preceding turret.

#### (D) Supporting Table

2.09 The standard supporting table furnished by the Telephone Company is designed for universal use with all standard order turrets. It is of the split top variety with a cutout for the turret. The top is faced with black phenol fiber, and all exposed woodwork is finished mahogany walnut. The customer may, if he so desires, furnish his own supporting tables, properly constructed and cut out to receive the turrets.

#### (E) Operator's Telephone Equipment

2.10 The operator's telephone equipment may consist of a plug ended hand set, or a chest transmitter set.

### 3. APPARATUS CABINET

3.01 The standard 28-plate wood apparatus cabinet, finished in mahogany walnut, is used to house the relay equipment associated with the turret installation. The cabinet contains a relay rack on which are mounted the various shop wired units. The relay units are associated with the line circuits by cross-connections run between the unit terminal strips and the common terminal strips on which the line and equipment cables are terminated. An "Emergency Generator" key and a "Battery" cut-off key are mounted in the upper door mouldings above the lift-out panel.

3.02 The apparatus cabinet will accommodate 100-line circuits, so that No.200-B turret installations involving over 100 lines will require the provision of two cabinets. In that case, end panels are provided only at the outer ends of the assembly, a separator panel being provided between the two cabinets to facilitate the running of cross-connections.

### 4. CIRCUIT UNITS

4.01 The circuit apparatus associated with the order turrets is furnished in the form of shop wired units arranged for mounting in the apparatus cabinet. The units are as follows:

- |            |                  |  |
|------------|------------------|--|
| Unit No.1, | Drawing ME-69023 | - Fuse panel unit - feeder and position battery supply fuses |
| Unit No.2, | " ME-69023       | - Fuse panel unit - line and flashing circuit fuses          |
| Unit No.3, | " ME-69023       | - Generator lamp and fuse alarm unit                         |

Unit No.4, Drawing ME-69023 - Generator Lamp unit "B"

Unit No.5, " ME-69023 - Line and flashing circuit unit

4.02 Unit No.5, which is usually furnished fully equipped for 20 lines and one flashing circuit, may also be obtained fully wired but partially equipped for 5, 10 or 15 line circuits and the associated flashing circuit. The partially equipped unit is used, where required, for the last line group of the installation, in order to provide the line relay equipment in multiples of 5 lines.

## 5. BATTERY SUPPLY

5.01 The battery power for the operation of the order turret circuits will usually be obtained from an 8-cell battery associated with a P.B.X. switchboard on the same premises, or from a centralized battery. In other cases, the source of power may be a local 8-cell storage battery floated over cable pairs.

5.02 Ringing current for the buzzer and telephone circuits will be obtained over cable pairs from the central office in accordance with standard practice.

## 6. CIRCUITS

6.01 The following table is a list of the circuit drawings used with the No.80-B and No.200-B order turrets. For ready reference, drawings MS-69025 and the schematic portion of MST-69018 are included in this section.

<u>Title</u>	<u>Drawing No.</u>
Schematic Circuits	MS-69025
Line and Flashing Circuits	MST-69023
Opr.Tel.; Cord and Misc.Turret Ckts.	MST-69018
Battery and Ringing Circuits	MT-69023
Miscellaneous Circuits	MT-69024

## 7. GENERAL DESCRIPTION OF CIRCUIT OPERATION

(A) Line and Flashing Circuit for Terminating Central Office, P.B.X. Extension and Private Lines - MST-69023

7.01 This circuit is used for two-way terminating service between a No.80-B or No.200-B order turret and a central office, P.B.X.; or private line station, key equipment, order

table or other order turret. It is arranged to provide a maximum of 12 appearances of the "Line and Busy" lamp.

7.02 When an incoming call is connected to the line and ringing current is applied, the relay equipment operates to connect the flashing circuit to the lamp lead, flashing the "Line and Busy" lamp as an incoming call signal. The auxiliary buzzer signal is furnished from, and by the operation of the flashing circuit, as follows:

7.03 The connection of the flashing circuit to the line lamp lead of one or more line circuits causes the flashing circuit relays to operate and release in sequence, supplying regularly interrupted ground to flash and "Line and Busy" lamps. During the time of the flashing circuit operation, the buzzer is operated steadily unless interrupted by the operation of the "Buzzer" key.

7.04 The incoming call is answered at a turret position by inserting a cord circuit plug into the associated line jack. This connects the cord circuit through to the line and causes the line circuit to release the flashing circuit and to light the "Line and Busy" lamp steadily as a busy signal. The line is then in the talking or holding condition, depending upon whether the associated cord circuit key is in the talking or the normal position.

7.05 The attendant disconnects from the line by removing the cord circuit plug from the jack. This releases the line circuit relays, extinguishing the "Line and Busy" lamp.

7.06 Outgoing calls are originated by inserting a cord circuit plug into the line jack, lighting the "Line and Busy" lamp as a busy signal. On a central office or P.B.X. line the attendant operates the cord circuit key to the talking position and dials or passes the desired number, depending upon the connecting equipment. On a private line the attendant signals the distant party by operation of the cord circuit key to the ringing position and then establishes the talking connection by operating the key to the talking position.

7.07 To recall the central office or P.B.X. attendant on a line to these equipments, the attendant removes and re-inserts the plug in the line jack several times, signalling the distant attendant.

7.08 If the "Battery" key is operated, ground is disconnected from all circuits at the installation, which is rendered completely inoperative.

(B) Operator's Telephone, Cord and Auxiliary Signal Circuits -  
Drawing MST-8901B

- 7.09 The cord circuit is used to provide a means of connecting the attendant's telephone to a line terminated in the turret.
- 7.10 Each turret position is equipped with two cord circuits connecting to the associated telephone circuit by key operation. Where desired, a conference or three-way connection circuit may also be provided, as outlined below.
- 7.11 The auxiliary signal circuits are provided in the first turret only, and are arranged to furnish an auxiliary buzzer signal on incoming calls under control of the "Buzzer" key, and audible and visual "Fuse Alarm" signals under control of the "Fuse Alarm" key.
- 7.12 Cord and Telephone Circuits: When a cord circuit plug is inserted into the jack associated with a central office or P.B.X. extension line in response to an incoming call signal, a supervisory bridge is connected across the line and the line circuit functions to light the "Line and Busy" lamp as previously described. The operation of the cord circuit key to the talking position connects the operator's telephone circuit across the line, establishing the talking connection.
- 7.13 When a cord circuit plug is inserted into a private line jack in response to an incoming call signal, the line circuit is caused to function as above. Under this condition, however, a battery feed retardation coil is substituted for the supervisory bridge and ringing current is made available at the ringing position of the cord circuit key for signalling purposes.
- 7.14 The restoral of the cord circuit key to normal disconnects the attendant's telephone from the line, but the supervisory bridge or battery feed coil remains across the line until the plug is disconnected from the jack.
- 7.15 When an outgoing call is to be originated over a central office or P.B.X. extension line, a cord circuit plug is inserted into the line jack and the key is operated to the talking position. The line circuit functions as previously described. The attendant then dials or passes the desired number. For a dial call, the operation of the position dial opens the operator's talking connection which remains open until the dial returns to normal.

7.16 When an outgoing call is to be originated over a private line, a cord circuit plug is inserted into the line jack and the associated cord circuit key is operated to and from the ringing position, signalling the distant party. The operation of the cord circuit key to the talking position then establishes the talking connection.

7.17 The two cord circuit keys for the position are wired, in series to prevent the connection of the attendant's telephone set to more than one line at a time, except when the conference connection circuit is provided.

7.18 Where the conference or three-way connection circuit is provided, the operation of the conference key bridges both cord circuits, through condensers, to the attendant's telephone circuit. If both cord circuit plugs are connected to central office or P.B.X. extension lines, the two cords connected in this manner form, with the attendant, a three-way conference circuit. However, if either or both cords are connected to private line jacks, the circuit functions to open the bridging connection, interrupting the three-way connection.

7.19 Auxiliary Signal Circuits: When an incoming call is connected to any line, the operation of the associated flashing circuit connects generator to the buzzer circuit, furnishing an auxiliary buzzer signal, unless interrupted by operation of the "Buzzer" key.

7.20 The operation of any fuse on an apparatus cabinet fuse panel lights the "FA" lamp and operates the buzzer as a fuse alarm signal. The buzzer may be silenced by operation of the "Fuse Alarm" key but the lamp remains lighted until the operated fuse is replaced.