RINGING FEEDERS
INSTALLATION, CONNECTION AND DISTRIBUTION
CUSTOMER EQUIPMENT

1. GENERAL

1.01 This section describes the general distribution requirements and methods of connecting ringing feeders to PBXs, key equipments, key telephone systems, and other circuits requiring ringing current. It also includes definitions of the terms used in connection with these feeders.

1.02 It is important that assignments and connections to ringing feeders be made as described herein to avoid overloading a feeder, and to prevent possible interference with other functions of the central office ringing machine.

1.03 Ringing feeder assignments will appear on the service order or will be furnished by the assignment center.

2. DEFINITIONS

2.01 For the purposes of this section the following definitions shall apply.

2.02 **Ringing Feeder:** A ringing feeder consists of one or more pairs of conductors supplying ringing current and ringing ground from the central office to one or more units of equipment located at subscribers' premises. Ringing feeders shall employ paired conductors to the point of use. This rule applies whether or not the ground is required for ringing purposes.

2.03 There are two general types of ringing feeders. The type most generally used supplies continuous ringing current and is called a "continuous ringing feeder." The other, generally used on small dial type PBXs, supplies ringing current which is periodically interrupted to form a ringing period alternately with a silent period and is called a "machine ringing feeder." Battery is usually supplied during the silent period.

2.04 **Ringing Leads Circuit:** The circuit in the central office for supplying ringing current and ringing ground to PBXs and station equipment is called a ringing leads circuit. The ringing current is usually supplied through a fuse on the fuse board to three resistance lamps which are designated A, B, and C, together with the associated fuse number. The lamps and associated ringing ground are wired to terminal strips on the central office distributing frame and the terminals are designated to correspond with the resistance lamps.

Note: In certain small offices, ringing fuses are omitted.

2.05 **Ringing Supply Circuit:** A ringing supply circuit consists of one of the three lamps A, B, or C of a ringing leads circuit and its associated ringing ground. A ringing supply circuit is terminated on one pair of terminals at the distributing frame and may be multipled by means of straps to two additional adjacent pairs of terminals. A ringing supply circuit may be cross-connected to a bunching block. The load on one ringing supply circuit shall not exceed ten units of equipment as defined in 2.12 and 2.13. The number of cable pairs which may be connected to one ringing supply circuit may be any number from 1 to 10.

Note: In offices with large ringing machines (over 1/2 amp. capacity), the lamps designated A, B, and C are usually Nos. 12G or 13G. The use of these lamps in offices with small machines (1/2 amp. or less), in the event of a trouble ground on a ringing feeder, could overload the machine to the extent that a complete failure of ringing power would result. To avoid this failure, Nos. 12D or 13D lamps are usually used in offices with small machines. Because PBXs with ringdown tie trunks require more ringing power than can be obtained through Nos. 12D or 13D lamps, ringing feeders to these PBXs shall be equipped with No. 74A heat coils at the central office instead of lamps. Each No. 74A heat coil shall be considered the same as one ringing supply circuit. **Care should be exercised while working on or near ringing feeders equipped with No. 74A heat coils as a short circuit or ground cross will cause the heat coil to operate.**

2.06 **Ringing Supply Branch:** A ringing supply branch is one of the three adjacent (strapped) pairs of terminals associated with one ringing supply circuit, where this method of termination is used at the central office distributing frame. For assignment purposes these terminals may be referred to as lugs A, B, and C (or 1, 2, and 3). For example, the second pair of strapped terminals associated with lamp B of fuse 12, may be referred to as lamp 12B lug B (or 2) or as branch 12BB (or 12B2). When an individual pair of terminals is assigned as a **branch,** the load on the branch shall not exceed 3 units of equipment.

2.07 **Bunching Block:** A bunching block is a terminal strip, strapped as required, provided when it is necessary to furnish ringing current from one ringing supply circuit (or branch) to several different PBXs or other units of equipment, over more than one cable pair; or when several pairs are needed to provide the required conductivity for one PBX. Each bunching block, where provided, is designated serially "PBX GEN. BB-." The pairs of terminals on each bunching block are numbered from 1 up and are also designated to correspond to the associated lamp on the fuse board.

2.08 **Individual Ringing Feeder:** An individual ringing feeder is one central office ringing supply circuit assigned exclusively for use at a building, a floor of a building, an equipment line-up, etc., to supply ringing current and ringing ground for up to a maximum of ten units of equipment at one location. Usually only one cable pair is required, although additional pairs may be multipled to obtain the necessary conductivity. An individual ringing feeder must be assigned to each No. 740, No. 750, or No. 755 dial PBX not provided with local ringing equipment.

2.09 **Centralized Ringing Feeder Panel:** A centralized ringing feeder panel is an 11-pair terminal (GA or equivalent) provided at the main distributing point in a building, a floor of a building, or in a customer's premises to facilitate ringing supply distribution to a maximum of ten units of equipment at the same location. The tip terminals are strapped together as are all of the ring terminals. An individual ringing feeder is connected to the first pair of terminals, and the remaining pairs are available for terminating the ringing leads of the equipment to be served. Where soldering type terminal strips are used at a distributing point, a terminal strip of a similar type may be used as a centralized ringing feeder panel. The terminals may be strapped in ten-pair groups and the individual ringing feeder wire connected to the strapped side of the strip. The opposite ends of the terminals can then be used for the ringing leads to the units of equipment.

2.10 **Ringing Leads:** Ringing leads are that part of a ringing feeder from the cable terminal, or centralized ringing feeder panel, to the resistance lamp(s) of the unit(s) of equipment (2.12) to which ringing current is supplied.

2.11 **Emergency Ringing Feeder:** An emergency ringing feeder is a ringing feeder arranged to provide an auxiliary source of ringing supply, through a transfer key, and may be provided for essential services when specified by local instructions. It may be a separate feeder installed for this purpose and maintained on a stand-by basis, or it may be a multiple of another existing feeder regularly serving up to 10 units of equipment.

2.12 **Unit of Equipment:** A unit of equipment, unless otherwise specified, is the amount of equipment which may be supplied with ringing current from the equipment side of one ringing leads resistance lamp (2.10). In general, whenever a ringing feeder is required, a resistance lamp is shown on the

circuit drawing together with a note specifying the number of circuits which may be connected to one lamp. For example, on the No. 100 key equipment drawing, a note reads "Provide one 12B lamp for 7 buzzers." The lamp may or may not be an integral part of the equipment. When the resistance lamp is not an integral part of the equipment, it is provided by the installer. For example, a manual cord PBX position comes equipped with a lamp, whereas the installer provides the lamp (11A KTU) for a No. 1A key telephone system. Each item of equipment listed below is equivalent to one unit of equipment.

(a) Manual cord PBX.—Each position.

(b) Cordless PBX.—Each PBX.

(c) No. 101 key equipment—Each position. (See Note 1.)

(d) No. 2 order turret—Each installation.

(e) Long line circuits used with PBXs (Typical SD-66060-01, SD-66474-01)—5 circuits, or less.

(f) 1A key telephone system—Each installation of an 11A KTU.

(g) Ringdown private line stations—5 or less, individual stations equipped with individual ringing keys. (See Note 2.)

(h) Buzzer or ringer circuits—5 or less, individual buzzer or ringer circuits using 20-cycle ringing current, operated as annunciators or alarm buzzers or bells. (See Note 3.)

Note 1: An installation consisting of a group of individual positions of key equipment through which lines are multipled is called an equipment line-up. Count one unit of equipment for each position when the number of positions is less than 5. When the number of positions is 5 or more, consideration may be given to providing one individual ringing feeder for the entire line-up, especially if the majority of lines are ringdown private lines.

Note 2: Where a group of ringdown private lines are operated by one individual from the same location, any number of private line ringing keys may be considered as one unit of equipment, provided a ringing feeder lamp is installed at that location.

Note 3: Five circuits have been arbitrarily selected to avoid the necessity of tracing wiring to determine the existing load. On new installations and where the existing load is known, a maximum of 7 No. 4 type buzzers or low impedance bells, or 5 No. 7 type buzzers or bells, may be considered as one unit of equipment.

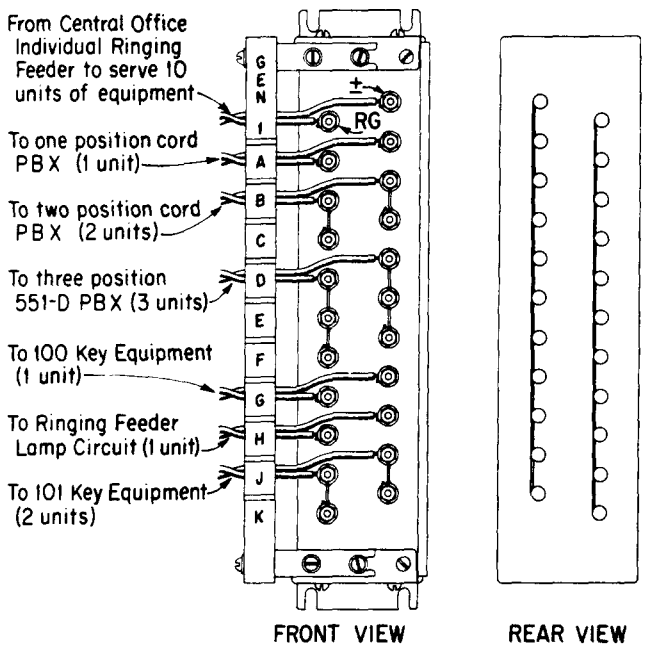


Fig. 1—Typical Arrangement Showing the Termination and Strapping of Ringing Leads at a Centralized Ringing Feeder Panel on Customer's Premises

2.13 No. 740, No. 750, and No. 755 type dial PBXs shall be considered as 10 units of equipment, as covered in 2.08.

3. METHOD OF CONNECTION

3.01 Ringing leads serving PBXs, key equipments, etc., normally equipped with resistance lamps, shall be connected to the ringing leads terminals of the equipment in accordance with the circuit drawing or as specified in the Bell System Practice covering the type of equipment being supplied. These terminals may be designated GEN or may be numerical designations on a MISC terminal strip. Where no designation appears, connect the ringing current lead to the right (ring) binding post and the ringing ground to the left (tip) binding post, as shown in Figs. 1 and 2.

3.02 Ringing leads serving a key telephone system require the installation of a key telephone unit equipped with a resistance lamp for the operation of ringers, a-c buzzers, ringing relays, etc. The installer shall wire the ringing supply in accordance with the circuit drawings for the particular equipment.

3.03 Ringing leads serving other station equipment, such as private and leased line ringing keys, and buzzer, annunciator, or auxiliary signal circuits, etc., operating from a ringing feeder, should be provided with a resistance lamp circuit for each 5 or less such circuits, so that trouble on one unit of equipment will not seriously affect the ringing supply to other units of equipment on the same feeder. The resistance lamp circuit(s) may consist of a key telephone unit(s) mounted in the apparatus cabinet or in a 105A apparatus box near-by, or a resistance lamp and H715 Bryant lamp receptacle together with a six pair terminal strip mounted in the terminal box, or an equivalent arrangement in accordance with local instructions. A 12B resistance lamp, or equivalent, shall be used with this arrangement unless otherwise specified in the work order or other local instruction. See Fig. 2.

Connections to Centralized Ringing Feeder Panel

3.04 In buildings where a centralized panel is provided to facilitate distribution to the various units of equipment in the same building, or on the same floor, the following method shall apply:

3.05 As stated in 2.09, an individual ringing feeder shall be connected to the first pair of terminals on the strip. This pair shall be designated 1 for the first panel installed, 2 for the second panel, etc.

3.06 The following ten pairs shall be designated A to K (omitting I to avoid confusing it with the numeral 1 on records). The lettered terminals of this terminal strip are strapped to the first terminal (either internally or externally), hence providing convenient terminals for ten units of equipment. See Fig. 1.

3.07 Connect each individual unit of equipment to a separate pair of lettered terminals at the centralized ringing feeder panel.

3.08 Where more than one unit of equipment is served by a single pair of wires, e.g., a two-position PBX, or an equipment line-up of less than 5 positions of key equipment, strap an equivalent number of lettered terminals to indicate this use and thus prevent possible overloading of the ringing supply feeder. See Fig. 1.

3.09 Multiple PBXs, or an equipment line-up consisting of more than 5 units of equipment, should be considered for an individual ringing supply feeder or a method of supply other than from a building or floor centralized ringing supply panel. This will conserve lettered terminals for individual units.

3.10 Where the units of equipment in an equipment line-up are served by individual cables, each unit of equipment shall be connected to a separate lettered terminal at the centralized panel.

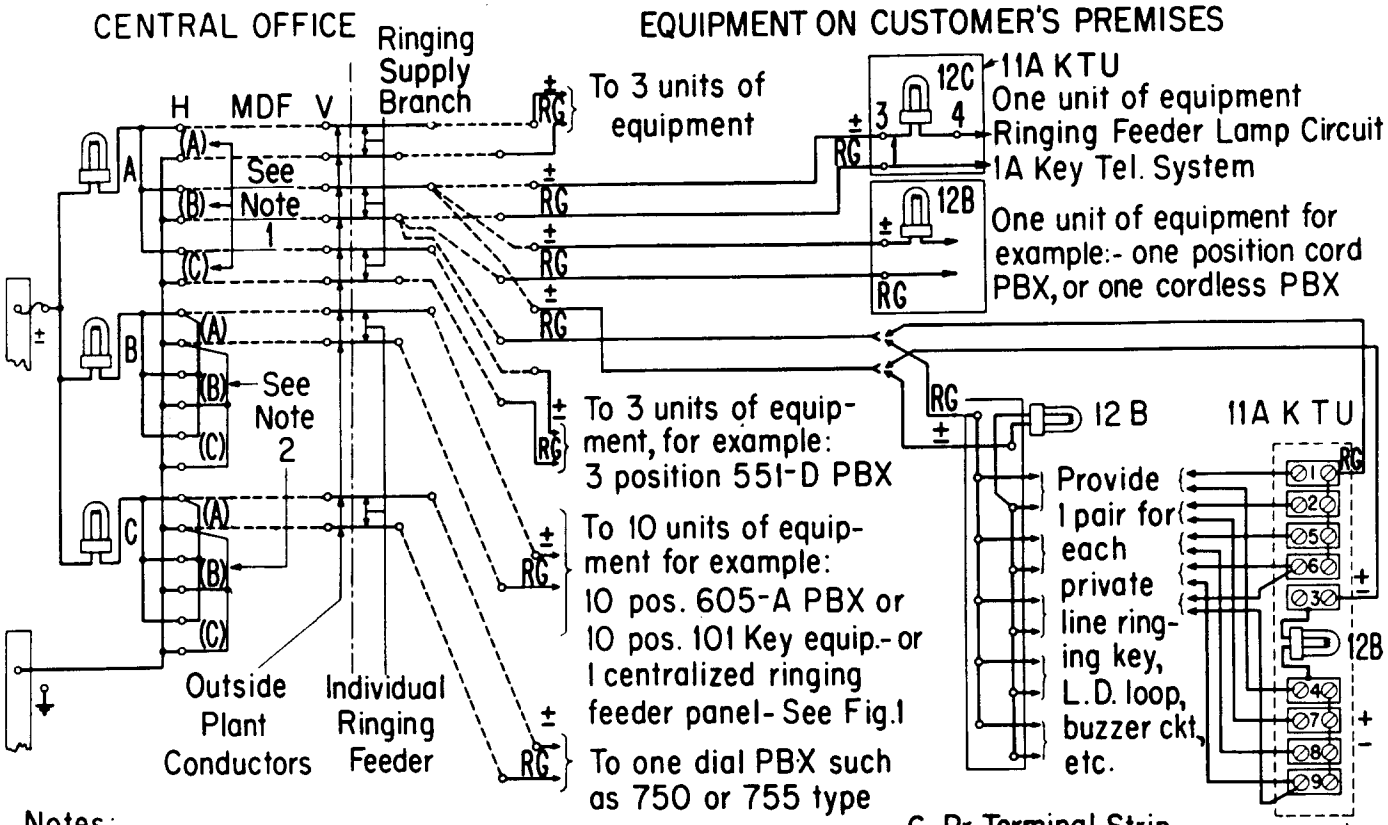
3.11 No connection shall be made to a ringing feeder or centralized ringing feeder panel unless covered by a service or work order, or other authorization from the assignment center.

3.12 When all terminals in a centralized ringing feeder panel are used, report the matter in accordance with local instructions.

Connections to Ringing Feeder Lamp Circuit Provided for Partial Units of Equipment

3.13 When an 11A key telephone unit or a resistance lamp circuit is required, as per 3.02 and 3.03, it shall be provided by the installer. This lamp shall be connected to the ringing feeder or centralized ringing feeder panel and is considered a unit of equipment.

3.14 The equipment side of the ringing feeder lamp circuit may then be loaded with partial units of equipment, such as ringing keys, buzzers, ringers, etc. See 2.12.



Notes:

1. Designations in ( ) are for reference only and do not appear on M.D.F.
2. Terminals are shown strapped on jumper side at H.M.D.F. to indicate that these lamps are fully loaded; therefore, lugs B and C should not be assigned.

Fig. 2