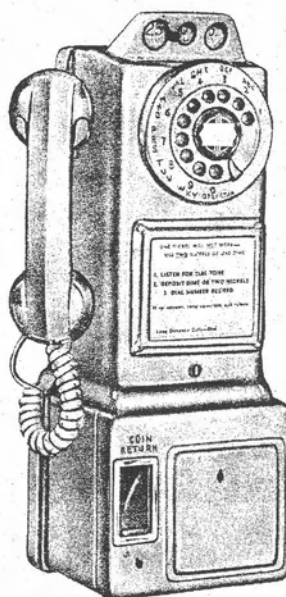


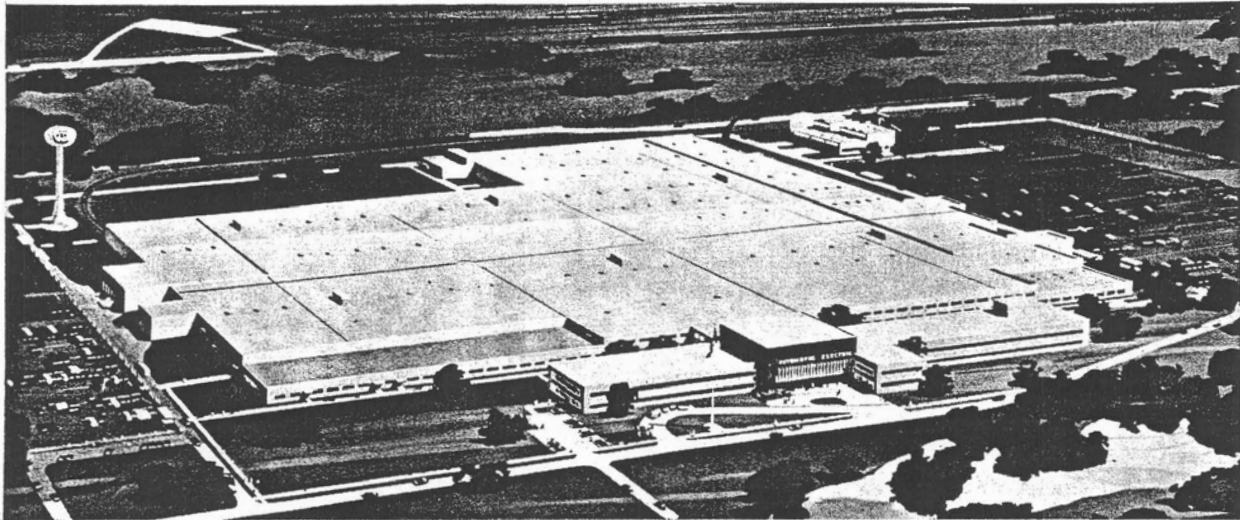
MODERN DIAL PAYSTATION SERVICES



Technical Bulletin 945-956

AUTOMATIC ELECTRIC

SUBSIDIARY OF
GENERAL TELEPHONE & ELECTRONICS **GT&E**



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MODERN DIAL PAYSTATION SERVICES

1. INTRODUCTION

1.01 Paystations are coin operated telephones installed in convenient locations for use by the general public. The telephone instruments used at the various paystation locations are similar in appearance, however, the paystation service may differ. Paystation service includes the method of initiating a call, collection and return of coins, and operator access to the calling station.

1.02 This bulletin describes the various types of paystation services, operation, paystation central-office equipment, and selection of paystation service. This bulletin does not describe, in detail, the complete physical or electrical components of the paystation instruments as these details are contained in the following Automatic Electric Company Technical Bulletins.

- (a) Semi-Postpay Paystation Service, Technical Bulletin 470-919.
- (b) Local Prepay Paystation Service, Technical Bulletin 470-920.
- (c) Prepay Paystation Service, Technical Bulletin 470-918.

There is also another paystation service, called Postpay paystation service. This service was used with the manual type telephone instrument and manual central-office equipment (not a modern service and rarely used), and is not described in this bulletin.

2. PAYSTATION SERVICES

2.01 In the early days of Telephony, telephone calls between parties were completed through a switchboard with the assistance of an operator. With this system, the operator was also able to supervise the collection of charges for the services rendered. With the introduction of the automatic (dial operated) telephone, the services of an operator were not required, except on toll calls, therefore an efficient and economical method of initiating calls and collecting charges from paystations was required. At the present time there are several methods by which this is accomplished. These are called paystation services and are described in the following paragraphs.

Prepay Service

2.02 This service is the most modern of the paystation services and at the present time the most familiar to paystation users in large cities.

2.03 A Prepay paystation requires a deposit of one or more coins to initiate a call. The coin mechanism will collect or refund coins when actuated by coin-control-type central-office equipment. The following coin collect and refund operations are completely automatic when local outgoing calls are made from the station:

2.03-a Coins are returned automatically when a busy signal is encountered but only after the handset is placed "on hook".

2.03-b Coins are collected upon the completion of a local call, after the handset is placed "on hook".

2.03-c Coins are returned after the handset is placed "on hook", when no answer is received from the called station.

2.03-d For outgoing toll calls from the Prepay paystation telephone, operation of the coin mechanism is partially automatic and partially under control of a toll operator. The initial coins are returned automatically (in some areas) when a toll operator answers a call dialed to the toll board. After the operator answers a call from a Prepay paystation telephone, she assumes control of the coin mechanism for collect or refund functions.

2.04 When a conversation is completed and the paystation telephone handset is placed "on hook", operator's disconnect will cause the mechanism to drop the deposited coins into the coin receptacle. If a call cannot be completed by reason of a busy line or no answer, the operator can cause deposited coins to be returned by operating a positional coin-return key.

2.05 If there appears to be an error in the number or value of coins being deposited, the operator can return the coins for redeposit by operating the positional coin-return key. If the number of coins required for a long-distance call exceeds the capacity of the coin hopper, the operator can operate the positional

coin collect key to make a partial collection before asking for the balance.

2.06 It has been common practice for a toll operator, dialing an inward collect call to a Prepay paystation telephone via a coin-type toll switching trunk, to control the collection of coins by operating a coin-collect key on the toll position. However, later designs of toll switching trunk equipment provide for automatic collection of coins with the paystation handset on the hook when the operator disconnects from the toll switching trunk jack.

2.07 There are two methods for providing the user with dial tone:

- (1) Prescribes that dial tone be withheld from the calling coin telephone until a coin or coins have been deposited.
- (2) Provides for a dial tone to the user immediately after the central-office equipment has been seized upon lifting the handset from its hook before deposit of coins.

2.08 Plan 1 has the potential for unfavorable user reaction. If coins are deposited and no dial tone is returned, due to no circuit caused by a congestion of traffic in the central office, or because the coin telephone is out of order, there is no way of returning coins; thus, user may lose his deposit. It is conceivable that consecutive attempts by a number of users in emergencies could cause the coin mechanism in the telephone to be jammed, thus requiring a repair man to clear the instrument.

2.09 Plan 2, advocated by Automatic Electric Company, provides for dial tone to the coin telephone when a circuit is completed to the central office after removal of the handset. This assures that coins deposited can be returned if the call is abandoned. In "two nickel or one dime" telephones, if the first nickel is deposited and call is abandoned for lack of a second nickel, the first coin will be returned automatically. If the user waits for dial tone before depositing coins, he may be confident of completing his call. If no dial tone is received, he can assume the line is out of order and he should not deposit coins.

2.10 Success or failure of either plan depends upon proper use of paystation telephones. Instruction cards, easy to read and understand, are essential.

2.11 Prepay paystation service can be subdivided into various groups.

2.11-a Paystations served by equipment associated with a toll board in the same office area.

2.11-b Paystations served by equipment in offices remote from the toll office.

2.11-c Paystations in C.D.O.'s (community dial office) or other unattended offices.

2.12 Paystations served by equipment associated with a toll board in the same office area are assigned to a segregated group of line equipments, served by a separate group of linefinders and first selectors (figure 1). The trunks between the linefinders and selectors are equipped with relay groups known as paystation repeaters or paystation trunks. On local outgoing calls, these relay groups alone control the coin mechanism in the telephones. Toll calls require the auxiliary services of a separate group of coin-type CLR trunks to the toll board from the segregated group of first selectors, and certain operator controls as previously described.

2.13 Toll board position and cord equipment provide the means of control by which the operator can effect collection or refund of coins at the station via the coin-type CLR trunk, through the paystation repeater and the line to the station.

2.14 Figure 1 also shows the facilities for extending an inward toll call from the toll board to the paystation, through coin-type toll switching trunks (which may also be used for switching calls to non-coin lines). These coin-type trunks represent current practice for providing automatic coin collect after the inward collect call has been completed; disconnect by the operator causes the toll switching trunk circuit to impress collect battery on the coin mechanism of the called paystation. Earlier designs required the operator to initiate the collect operation by operating a coin-collect key. The coin-return key on the toll position is used to manually control the return of coins when necessary.

2.15 The source of power used to control the telephone coin mechanism consists of batteries or a rectifier which will supply 110 volts d-c of negative and positive potential with reference to ground.

2.16 The coin mechanism in the telephone consists of a two-coin electro-magnet, polarized by a permanent magnet for operation of a center-pivoted armature which is linked mechanically to a center-pivoted vane at the bottom of the coin hopper. The application of

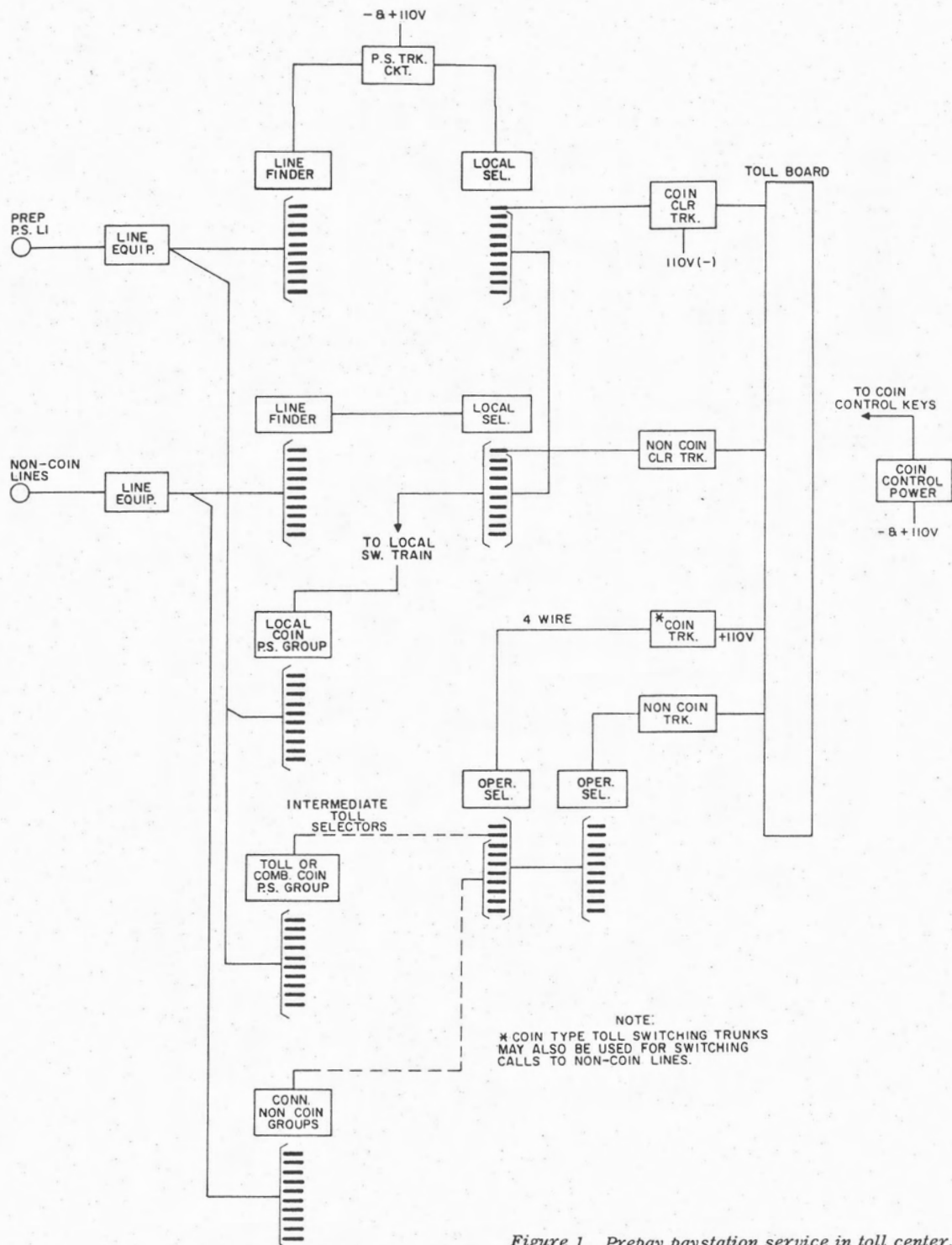


Figure 1. Prepay paystation service in toll center.

negative or positive 110 volts d-c to the connected line results in the tipping of the hopper vane in opposite directions, permitting deposited coins to fall into the coin receptacle or into the return chute as required. No attempt will be made here to describe the details of this mechanism, since such details have been described in other publications.

2.17 In a multi-office exchange where prepay service is offered, the operating methods are the same as previously described. For control of the coin mechanisms in paystations served by remote offices, however, some additional facilities are required in the central office, because the combined resistance of an inter-office trunk and the paystation loop from

the remote office is generally too great to permit sufficient operating current to flow from the central office 110 volt source for operation of the paystation coin magnets.

2.18 The facilities provided by Automatic

Electric Company consist of coin CLR trunks and toll switching trunk circuits (figure 2) which will receive the coin-control power from the toll office and impress local coin-control power on the line. These trunk circuits are referred to as "coin-battery repeating" types which permit the use of two-wire trunks between a remote office and the toll office - unlike three wire trunks (in which the third wire is used to control the remote office equipment for coin collect or refund functions).

2.19 There are some conditions under which it may be desirable to provide Prepay paystation service to a few stations in a C.D.O. or sub-office (unattended) where the paystation calls are predominately toll calls or local calls to the main office. If cable pairs or other line facilities of suitable loop resistance are available to the main office, the paystations may be connected directly to line equipment in the main office paystation group (see paragraph 2.12) and no special equipment is required at the remote office.

2.20 If the distance between offices is great, it may be necessary to use a trunk circuit or carrier facility to maintain a satisfactory quality of voice frequency transmission

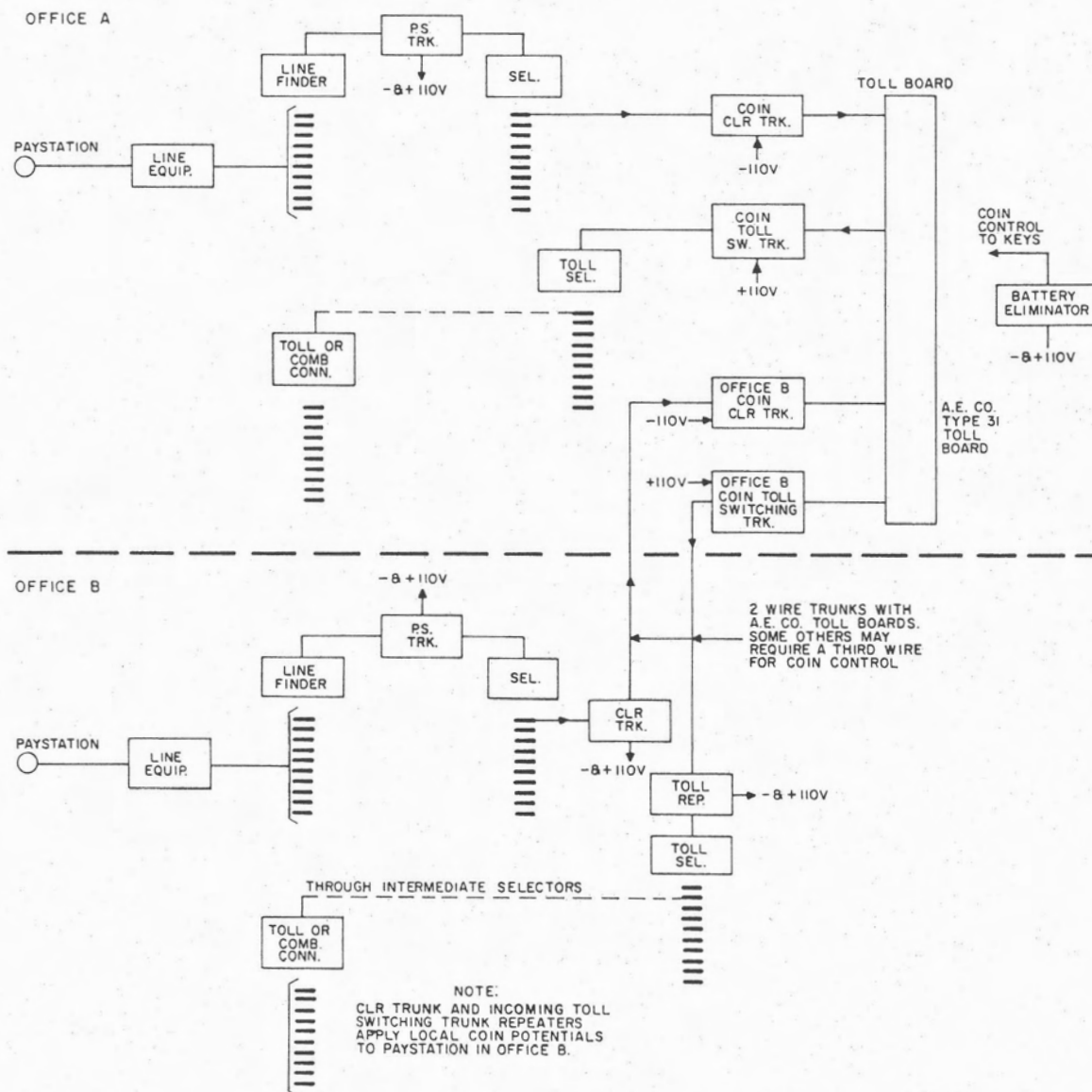


Figure 2. Multi-office Prepay paystation plan.

and accurate pulsing (switching) and supervisory signals on each trunk to be effective for paystation use, these trunk circuits or carrier facilities must have provisions to extend coin collect, coin return, and re-ring signals. This can be accomplished by either of two methods, namely the E and M signaling method or the IN-BAND method.

Prepay Paystations Utilizing E and M Signaling Facilities

3.22 When interoffice trunk or carrier facilities with E and M signaling facilities are used, the collection and refunding of coins deposited at paystations served by an end office can be controlled over a single channel. Dialing, supervision, and coin control are accomplished over this single channel.

Main Office

2.23 Coin controls are converted in the central office paystation, CLR or toll switching trunk circuit to an arbitrary number of d-c pulses (identical to dial pulses) which are transmitted to the end office by E and M signaling. These pulses are received at the end office, counted and reconverted to standard loop type controls.

2.24 Figures 3 and 4 are the trunk terminations at the main office and end office, respectively. Through the conventional line-finder, paystation repeater, and selector, a subscriber making a toll call from a paystation in the end office, seizes the local termination (figure 4), which, in turn, seizes the carrier channel and signals the main office (figure 3), causing relay operation therein to light the line lamp.

2.25 The operator, on answering the call, causes an answer supervisory signal to be returned to the end office. Usually this signal initiates an automatic refund operation, returning (in some areas) the initially deposited coin to the subscriber. In some metropolitan areas, however, the initially deposited coin is not returned, but is retained to apply on the total charge. An option is therefore provided for elimination of the refund operation, if so desired.

2.26 After the details of the call have been recorded, and charges determined, the operator proceeds to extend the call and instruct the subscriber to deposit the required coins. Upon satisfactory completion of the call, the operator operates her positional coin-collect key. For the coin-collect operation, off-hook supervision is required.

2.27 Referring to figure 3 - the main office termination - the operation of the positional coin-collect key energizes the associated coin-collect relay (CC) in the trunk; thus connecting ground potential to a specific control on the bank of rotary switch (PS), and operating a slave relay (CF) that causes the switch to step, relay-interrupted, to this contact. At each step, the associated interrupter relay (INT) closes a ground pulse to the M lead, to send a coin-control pulse to the end office (means are provided to limit the pulse ratio of these pulses to 58 per cent break, and speed to 10-12 pulses per second). When the switch wipers reach the contact that was previously marked, a control relay operates to prevent sending of further pulses, and causes the rotary switch to step, self-interrupted, to its home position.

2.28 At the beginning of the coin-collect operation, a termination is closed to the transmission pair, and this is maintained until the rotary switch returns to its normal position. This circuit is so arranged that only one cycle of this coin-control operation will occur for each operation of the positional coin-control key; to repeat the operation, it is necessary to release the key momentarily and then reoperate it.

2.29 The positional coin-control key must be held operated in order to receive the supervisory indication that coin collect or refund has been performed at the paystation. Satisfactory operation of the collect mechanism in the paystation causes an on-hook signal, which is translated into the conventional coin supervisory indication (low-resistance ground in the coin-collect relay path) at the operator position. To insure that collection has been made, as indicated by the lighting of the positional coin-supervisory lamp, the operator must momentarily release, and then reoperate, the positional coin-control key; on this operation of the key, the lamp should remain dark.

End Office

2.30 At the end office (figure 4) the coin-control pulses received over the trunk signal lead (E) will cause the pulse-repeating relay (PI) to step the associated pulse-counting switch (CS) to the bank terminal that corresponds to the number of pulses received, (in figure 4, this is shown as terminal 3). The coin-collect relay connected to this terminal operates to indirectly close +110 volt potential to the line, required to operate the coin mechanism at the paystation. The pulse-counting switch also serves to insure adequate time

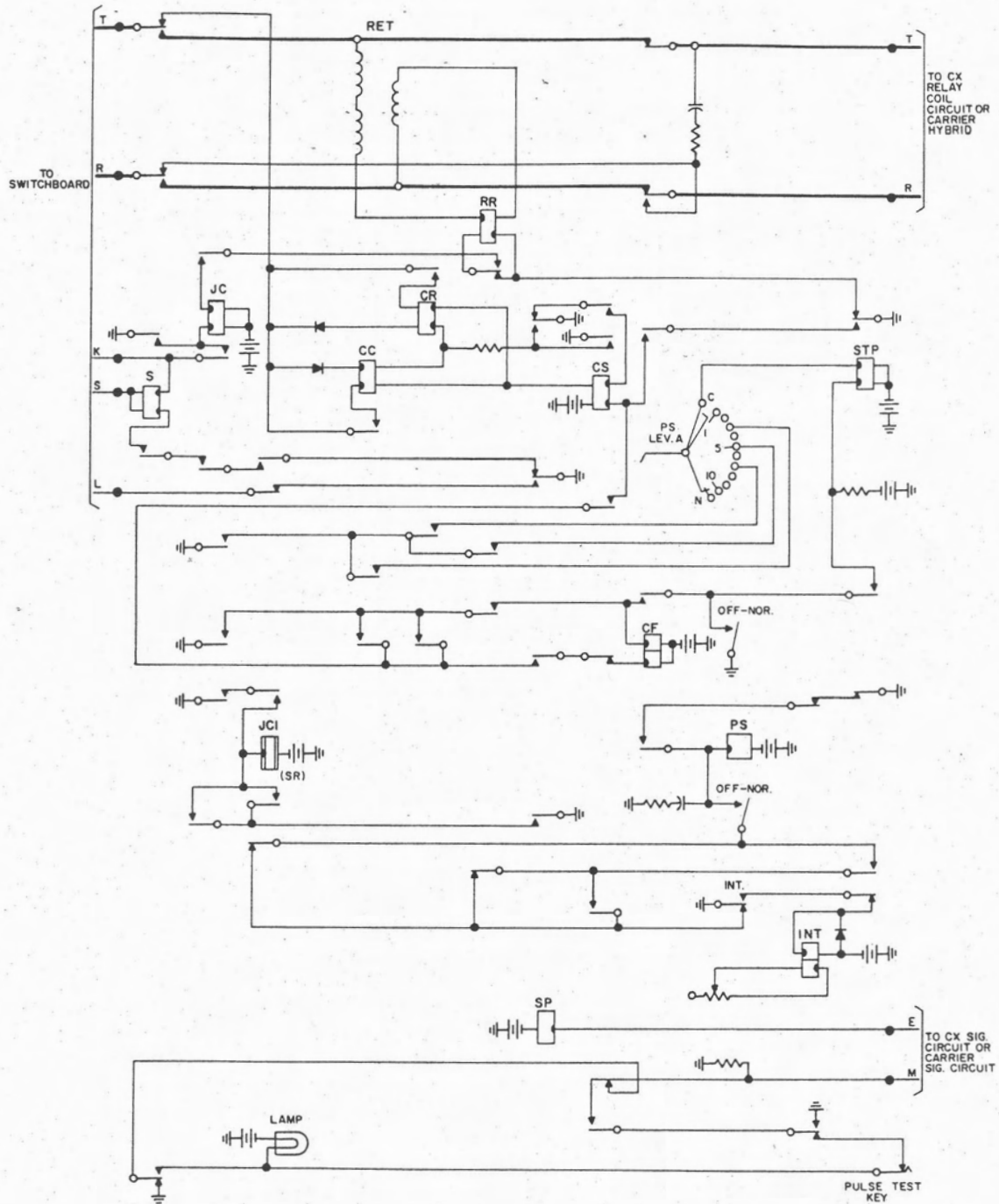


Figure 3. CLR trunk termination at the main office, full Prepay, E and M signaling.

for closure of the coin control potential to the line; this is accomplished by holding the coin-control relay operated while the switch "homes" - self-interrupted to its eighth contact, and then steps the two remaining steps at a slower rate of 120 impulses per minute.

2.31 The coin-return operation is accomplished in a similar manner, except that in this case the coin-return relay (CR) in the main office operates, to mark a different point on the bank of the rotary switch. In figure 3, this is shown as terminal 7; this will permit seven pulses to be outpulsed to the end office, where they will be counted and converted to close -110 volt coin potential to the line and refund coins at the paystation.

2.32 As a third function of this equipment, ring control is accomplished by marking a different terminal (shown as terminal 5, in figure 3) under control of the ringing key, to send the corresponding number of pulses. Thus, operation of the ring key will cause five pulses to be transmitted to the end office, and there counted and "converted" to conventional loop ringing.

Calls to Paystations

2.33 A toll switching trunk is available to make use of the same method of coin and ring controls for completing calls to paystations at the end office. The regular signal channel is used first, for dialing the switches to the called paystation terminal. After seizure of the line terminal, the signal channel is used for coin and ring control, as described above. Before coin-control is effective, answer supervision is required. Ring-control is effective on either off-hook or on-hook supervision.

2.34 When this toll switching trunk is released, a cycle of coin-collect control is performed automatically, to collect the coins if an operator has inadvertently neglected to perform the collection before releasing. (This feature is not required in the CLR trunk, since it is provided in the regular paystation repeater circuit.)

Limitations

2.35 Since the above-described method of coin operation is effective only during periods when off-hook supervision is received from the end office, this equipment cannot be used with certain types of carriers which do not permit pulsing against an off-hook condition. Similarly, it is not recommended for application in common-control-type end offices where,

once a connection is established, supervisory relays will not respond to pulsing.

2.36 In offices, where toll trains are not provided, a special connector group (or groups), equipped with connectors arranged for sequential-pulse coin-control of the type herein discussed, will provide means of collecting or refunding coins on calls to paystations. Although this arrangement requires that all paystations be in this special connector group (or groups), it permits the use of a common group of trunks for both coin and non-coin service. It does not require modification of associated incoming trunks, but replacement or modification of the trunk equipment in the attended office is required, to add the pulse-generating control equipment. To handle calls from paystations a new CLR trunk identical to the one described herein, or an adapter to the existing outgoing access of a two-way trunk, is required.

2.37 Where toll trains are provided, the toll trunks in the end office must be replaced, and a new CLR trunk, or an adapter to an existing circuit, is required for calls from paystations. Paystations need not be restricted to special connector groups in this case.

IN-BAND Coin Control

2.38 Recently, another method of coin control called IN-BAND Coin Control has been developed. This method is similar in operation to that of coin control over E and M signaling facilities. This new method permits the coin and ring control signals to be sent between the toll switchboard and remote office over the same facilities used for voice. Frequencies within the voice band are used for signaling and coin control.

Local Prepay Service

2.39 With the Local prepay service, the coin telephone functions as a Prepay paystation on local dial calls and initiation of toll calls, that is, a coin deposit is required before dialing can occur and coins are automatically returned when a busy line or no answer condition is encountered. On toll calls, the initial deposit is automatically refunded when operator answers, and the collection of toll charges is similar to that of Semi-postpay service (paragraph 2.57), that is, after completing a connection the operator requests the deposit of coins which drop onto gongs, into the coin receptacle. The coins, as in Semi-postpay service, are not returnable.

2.40 Local prepay service is usually used where only a few paystations are required, therefore, the lines serving Local prepay paystations can be assigned to any line group (figure 5) but will be terminated on auxiliary relay circuits (line adapters). These adapters precede the standard line equipment and use -110 volts d-c to control the automatic coin return and coin mechanism reset functions. Regular 48 volt central-office battery provides the voltage source for the collect function. This is a customary and usual supervisory application of the central-office battery, not requiring any special connections between the battery and line adapter.

2.41 In the Local prepay system only -110 volts d-c is required, whereas in the toll prepay instruments both minus and plus 110 volt independent sources are employed. The -110 volt potential can be obtained by using a -60 volt booster battery to supplement -48 volt central-office battery. It may be desirable, however, to employ a rectifier supplying -110 volts from commercial power, or from some other available source.

2.42 The coin mechanism in the telephone is arranged to collect deposited coins with reversed battery (48 volts) from the local connector as soon as the called party answers. At the termination of the local call, with the

paystation receiver placed "on hook", the line adapter impresses -110 volts on the paystation line to restore the mechanism to normal. The -110 volt source is also employed for the automatic return of coins when the caller makes a call to the operator or encounters either a busy line, or no answer condition.

2.43 The coin telephone instrument used for Local prepay service contains a combination of electrical and mechanical components. The 48 volt collect magnet is used to trip a locking detent, which releases the trap vane for directing coins into the coin receptacle. The 110 volt refund magnet (responsive to a pulse of -110 volts d-c) will operate the vane to the opposite position, for return of coins, and will hold it in the coin-return position as long as -110 volts is impressed on the line. The trap vane will restore to its horizontal position under spring loading, and lock in normal position, when the -110 volts is removed from the line.

2.44 The coin mechanism is returned to normal position after each call by the application of a pulse of -110 volts to the line from the special adapter.

2.45 On inward calls, the coin mechanism always operates to the collect position by reverse battery (48 volt) from the connector

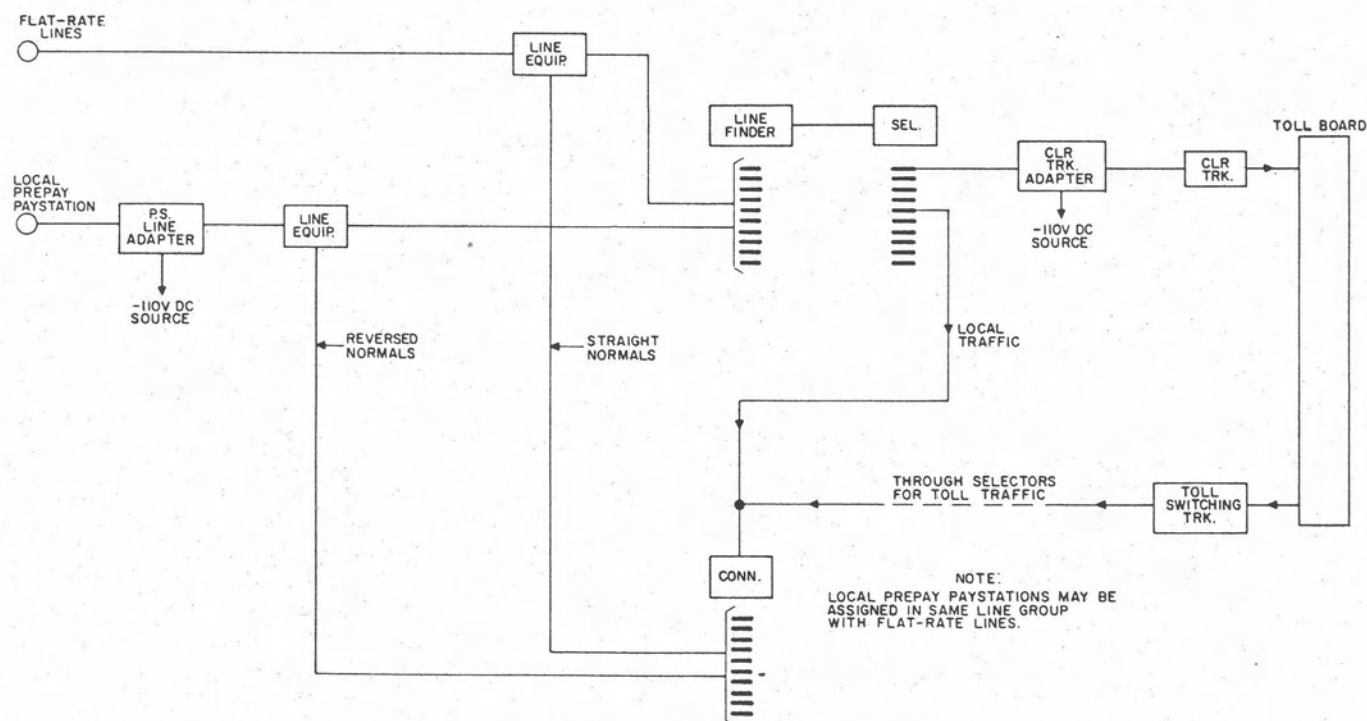


Figure 5. Typical trunking and equipment arranged for Local Prepay paystation service.

back bridge contacts through reversed normals to the line. Upon completion of the inward calls, the line adapter automatically impresses -110 volts on the line to restore coin mechanism to normal position.

2.46 To insure ample current supply to the 110 volt magnet, spring contacts to an auxiliary relay in the ringer box connect both line conductors together to provide the lowest possible resistance path from the central office for the -110 volt operating current. This auxiliary relay does not operate on 48 volts because of a series neon tube which will not break down on that voltage. The neon tube also prevents a normal leak to ground.

2.47 Because the Local prepaid paystation operation is similar to Semi-postpay operation for toll calls, coin and non-coin service can be provided over regular toll trunks; this provides a less costly arrangement for a small group of paystations. It also permits the same procedure for initiating a toll call as for a Prepaid paystation.

2.48 With the handset off-hook, dial tone from the local central office is returned. This assures a clear circuit to central-office equipment before coins are deposited. The dialing circuit is blocked until a dime or two nickels are properly deposited. Following the dialing of the toll operator code, and as soon as a CLR trunk is seized, the original coin deposit is automatically returned; the coin mechanism inside the paystation telephone then reoperates (by reverse battery) to the collect position, under control of the (special) CLR trunk. A class-of-service tone is transmitted to the operator when she accepts the call. The operator establishes a connection with the distant station, and then requests deposit of the coins required to cover the toll charges. The coins drop over the coin signal gongs into the coin receptacle, and cannot be returned; this method is comparable to Semi-postpay paystation operation.

2.49 At the termination of an outgoing toll call, the line adapter functions to reset the coin mechanism to normal when the handset is replaced "on hook".

2.50 In most installations the Local prepaid paystations are assigned to line equipments in the same linefinder group, or groups, with regular station lines. The paystations and the other stations assigned to the common group will, therefore, use a common group of trunks to the toll board for toll service. Because standard CLR trunk equipments are not designed to operate coin mechanisms in Local

prepaid paystations, auxiliary equipment is required to supply the following additional features:

2.50-a Automatically return the initial coin deposit, as soon as the CLR trunk is seized.

2.50-b Restore the coin mechanism to the collect position after the return operation has been completed, so coins subsequently deposited as requested by the operator will drop into the coin receptacle.

2.51 The coin return is accomplished within the adapters (auxiliary relays) by impressing a timed pulse of -110 volt current on the trunk toward the paystation. This is followed by a reversal of 48-volt battery supply to reset coin mechanism to the collect position.

2.52 The CLR trunk adapter includes a tone detector which will recognize the paystation tone connected to the line equipments that are assigned for paystation use. Upon detection of the tone, the adapter circuit is conditioned to perform the operations described above. In new installations, this can be accomplished by projecting ground into this unit via a fourth conductor, thus eliminating the need for the tone detector.

2.53 When a regular station is connected to the CLR trunk, there will be no tone supplied; therefore, the adapter will not impress the -110 volt current back on the line but will complete the connection through to the regular CLR trunk, to signal the operator. The 48-volt battery supply to the calling line will, however, be reversed, just as it would be for a connection to another local line.

2.54 For normal complements of CLR trunks, adapters may economically be added to all CLR trunk equipments. When the number of CLR trunks required is unusually large, it may be found desirable to group paystations separately, and give them access to only a portion of the CLR trunks, to which adapters are then applied. An engineering analysis of the individual situation should be made to determine the best procedure.

2.55 It should be noted that combined groups of coin and non-coin lines present a problem in offices connecting with Bell CAMA (Centralized Automatic Message Accounting) equipment, as the CAMA operator has no way to receive class-of-service tone from paystations. It is therefore, necessary to block paystation calls from access to CAMA trunks.

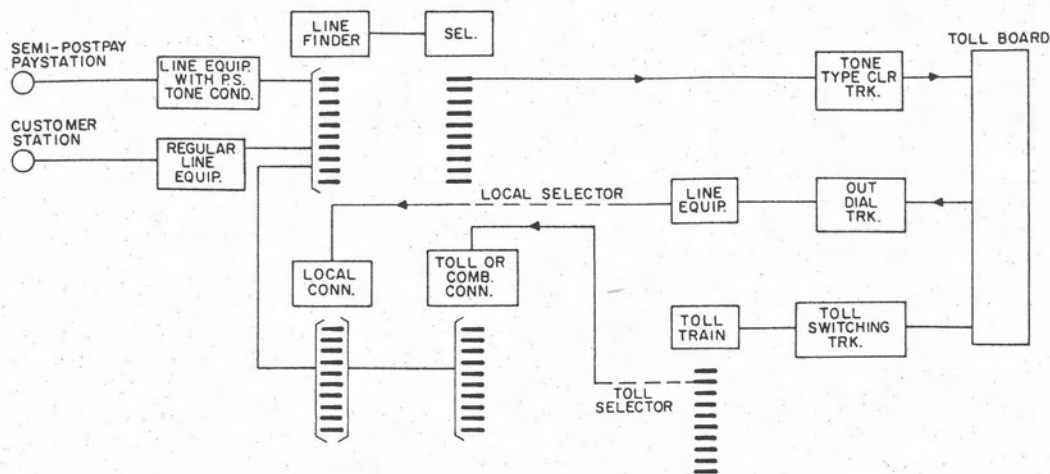


Figure 6. Semi-postpay station in toll office.

Where SATT (Strowger Automatic Toll Ticketing) equipment is employed, the identifying operator will receive class-of-service tone, and can advise the paystation user to dial the long-distance operator for long-distance calls, instead of using the SATT code. It is possible, with proper central-office equipment, to block individual paystations or groups of paystations from reaching CAMA or SATT trunks. This latter arrangement is probably the most satisfactory because it eliminates the possibility of unauthorized SATT or CAMA calls.

2.56 The cost of Local prepay paystation service is sufficiently less than the cost of full Prepay service to make it attractive for installation in tributary offices. Its advantages

appear to justify its application in many locations, especially in small exchanges where toll traffic from the paystations is light (heavy toll traffic in some locations may, however, necessitate full Prepay service). It is also possible to convert a Semi-postpay paystation to Local prepay type if it should appear advantageous to upgrade the existing service being rendered by Semi-postpay operation.

Semi-Postpay Paystation Service

2.57 The Semi-postpay paystation was developed as an economical method of providing public dial telephone service in either attended (figure 6) or unattended (figure 7) offices.

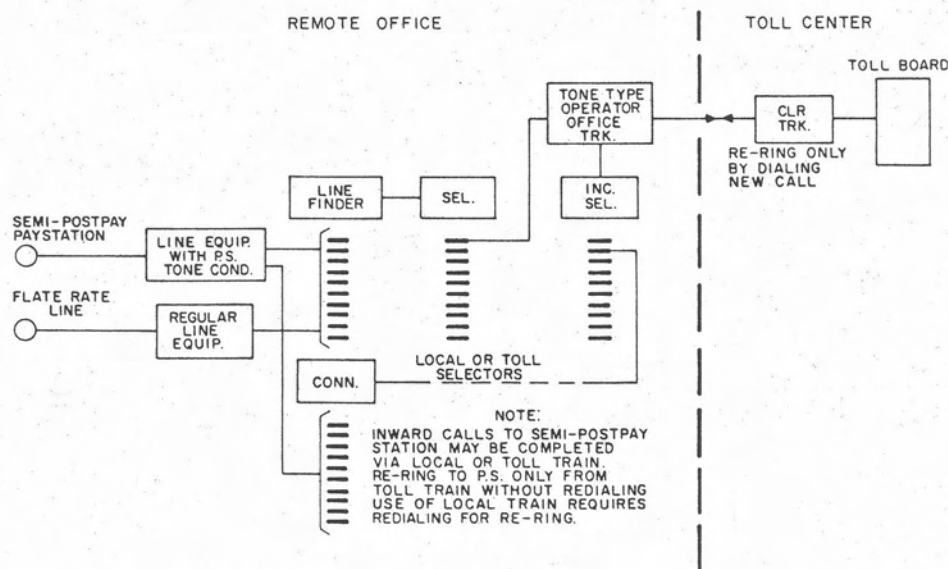


Figure 7. Semi-postpay stations in remote office (unattended).

2.58 For many years Semi-postpay paystation service was most widely used by independent telephone companies because it provided public coin telephone convenience at a reasonable cost which could be justified by the revenue received.

In recent years, as stated previously, the Prepay paystation service has become the modern service because of improved coin-collect and return facilities. The operational differences between Semi-postpay and Prepay paystation services have become annoying and noticeable to users who encounter both types of service. Failure of the user to read the instruction card on a Semi-postpay paystation instrument leads to delays, loss of calls, and also to loss of coins. Loss of coins and calls occurs because the called party cannot hear or very faintly hears the calling party until the calling party deposits the correct amount of coins. The calling party must deposit the coins promptly to avoid the possibility of the called party deciding the caller has abandoned the call. If the calling party has deposited one nickel and the called party hangs up before the second nickel is deposited, both the call and the coin will be lost. The calling party receives no indication that the called party has hung up.

2.59 The Semi-postpay paystation service is described in the following paragraphs so a comparison can be made between this and the Local prepay and Prepay systems.

2.60 With Semi-postpay paystation service no special central-office equipment is required, except for a means of identifying a paystation to toll operators. This identification is usually provided by a tone projected over the trunk to the operator when she answers a call. For this purpose, the line circuits assigned to Semi-postpay paystations (figure 6) are equipped with tone condensers which supply a tone over the "C" lead to the CLR (combined line and recording) trunk by having control relays to impress the tone momentarily on the trunk to the operator, when the call is answered.

2.61 The Semi-postpay paystation may be assigned to any tone-equipped lines in the office because the coin-telephone traffic mixes with other traffic from stations assigned in the same group.

2.62 The connector terminals assigned to paystation telephones should be in the preferred series of numbers for toll purposes. The 9000 series is the preferred assignment, followed by the 8000 and 7000 series. Other connector terminals are sometimes used when

the preferred groups are used for other trunking considerations. This is important in toll service to operators trying to complete inward collect calls.

2.63 The mechanism in the Semi-postpay set is operated by two polarized relays. For local calling, the user simply dials the desired station; at the time the called station answers, a reversal of the regular exchange battery will operate one of the polar relays, to place a short on the transmitter and a shunt on the receiver circuit of the calling paystation. The caller faintly hears the called party but cannot reply, until a coin is deposited. The coin trips a spring to remove both the shunt and the short from the circuit of the paystation, thus clearing both the transmission and receiver paths for two-way conversation. At the end of the conversation, the central-office battery is restored to normal polarity, and the second polar relay in the paystation restores the mechanism to its normal condition.

2.64 This method of operation requires prompt deposit of a coin, to avoid the possibility of the called party deciding that the caller has abandoned the call.

2.65 No charge is made for calls to special-service operators, such as Information, Repair, etc. The trunk circuits to the special-service desks do not reverse battery when the attendant answers; therefore, no coin deposit is required. It is also generally possible for paystation users to call telephone company official stations without charge; the connectors in the group which serve these official numbers will not return reverse battery to the calling line from terminals on levels assigned to official stations.

2.66 The CLR trunks to the toll board do not reverse battery to the paystation telephone when the operator answers the call. The polar relays in the telephone do not operate, so a clear transmission path is established. All coins deposited drop onto the signal gongs for operator supervision, then directly into the coin receptacle. No coins can be returned.

2.67 If toll trunks are arranged for re-ring, it is possible to re-ring the calling paystation at the end of a conversation. If no re-ring feature is provided, it is necessary for the operator to initiate a new call by dialing the station number to request an additional charge for overtime conversation.

2.68 Inward calls to the Semi-postpay station may be completed via either the local or the toll train. In the latter case, the paystation

may be rerung without redialing; use of the local train, however, requires redialing for re-ring.

2.69 In unattended offices (figure 7), the operator's office trunks are provided with tone-control relays. These relays project the identity tone of the paystation line to the toll operator at the time the operator answers the call. Otherwise there is no special equipment required in either the remote office or at the toll center. (To re-ring a paystation, in this case, the operator must redial the call.)

3. SELECTING PAYSTATION SERVICES

3.01 The selection of a paystation service in a particular area is governed by various factors.

3.02 The primary consideration, when selecting paystation service, is the user. At the present time, most of the users of paystations are people located in large cities or areas, or transients to and from large areas. This type of user is usually well acquainted with the operation of a Prepay paystation and usually not acquainted with the operation of the Local prepay or Semi-postpay service. For

this reason, primary consideration should be given to Prepay paystation service. In areas where the paystation traffic is mostly local, the Local prepay paystation service may be satisfactory because the physical operation of this type of a paystation service is almost identical to that of the Prepay paystation, thus causing no user inconvenience. Semi-postpay service can be used to its best advantage in remote localities where the paystations are not frequented by users from large cities or transients. Before selecting Semi-postpay service, some consideration should be given to the rapid enlargements of remote areas. With the rapidly increasing housing developments, the so-called remote areas are disappearing.

3.03 Another consideration that must be taken into account, is the central office facilities. It may be less expensive to install Prepay paystation service initially than to convert at a later date.

3.04 Another consideration is the revenue realized as opposed to installation cost. If so desired, Automatic Electric Company Sales Engineers will assist in the selection of paystation service or advise on feasibility of conversion.

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