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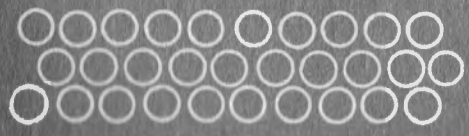
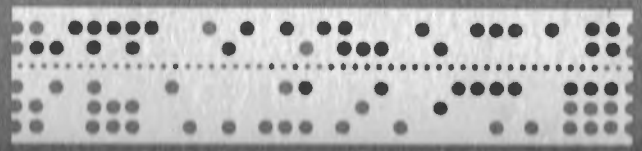
TELEGRAPH CIRCUIT MAINTENANCE

83B3

PRIVATE LINE TELETYPEWRITER SELECTIVE CALLING SYSTEM





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REFERENCE MANUAL

for the

83B3 TELETYPEWRITER SELECTIVE CALLING SYSTEM

American Telephone & Telegraph Co.
Long Lines Department
Traffic Operating Engineer
Business Services Group

November 1967

FOREWORD

This manual has been prepared as reference material for use by those who train customer personnel in the operation of an 83B3 Teletypewriter Selective Calling System and may be modified and supplemented by an individual customer training manual.

TABLE OF CONTENTS

GENERAL DESCRIPTION

The 83B3 Teletypewriter Selective Calling System is a private line service which uses model No. 28 teletypewriter equipment.

The general operation of the system is based on the use of two letter codes permitting automatic selection of station equipment and automatic start of station equipment.

The 83B3 System operates on a Half Duplex (single service) basis — i.e., machines may send and receive, but not simultaneously. The system may operate at 60, 75 or 100 words per minute.

One station on a line is assigned as the Control; all other stations are referred to as Outlying Stations. Keys, lamps and alarms are provided to indicate station conditions. The Control Station operates the same as an Outlying Station but has additional responsibilities and functions to permit observation and control of the station and line operation.

Major features of the 83B3 System are as follows:

- Sequential automatic transmitter start arrangement
- Automatic station selection—single, multiple, group or broadcast address
- Circuit assurance on both transmitter start codes and station selection codes
- Circuit supervision and control provided by a lamp and key panel at the Control Station

CODES

TRANSMITTER START CODE (TSC)

The TSC is a two character code which is automatically generated by the equipment at the Control Station. The codes are transmitted in a pre-determined sequence to search each station on the line for available messages. This searching cycle is known as polling. Normally, TSCs do not print.

CALL DIRECTING CODE (CDC)

A CDC is comprised of two characters of the alphabet immediately followed by one LTRS (letters) character. The LTRS character is necessary as a timing function. The transmission of a CDC preceding the message text determines the destination of the message.

Station CDCs

Each station is assigned an individual CDC. Upon recognizing its CDC, the station equipment turns on to receive the message.

Broadcast CDCs

A single CDC may be assigned to activate all stations on a line to receive the same message simultaneously.

Group CDCs

A single CDC may be assigned to activate a specified group of stations on a line to receive the same message simultaneously.

ANSWERBACK CODES

V (No Traffic) Response

When a polled station has no messages to send, that station's Control Unit will answer with a V (no traffic) response. The V (no traffic) response conditions the TSC equipment to continue polling. Normally, this V is a nonprinting character.

V Answerback

Upon receipt of its station CDC, the called machine turns on and sends a printed V character answerback to the line indicating the station is on and ready to receive transmission. Receipt of the V answerback from a destination station allows the originating station to continue sending CDCs or the End of Address code. On Group or Broadcast codes, only one station is arranged to provide the V answerback.

END OF ADDRESS CODE (LOCKOUT CODE)

CAR RET LINE FEED LTRS, sent in that order, indicates the end of directing codes, i.e. no further machine selection is required. Upon receipt of the CAR RET LINE FEED LTRS, the selected machine(s) is ready to receive and the nonselected machine(s) is locked out.

END OF MESSAGE AND END OF TRANSMISSION CODE

FIGS H LTRS must terminate the message text. The upper case (FIGS) H commonly prints as a number symbol (#). The use of this code performs two functions:

As an End of Message Code, FIGS H LTRS disconnects the sending and all receiving machines and also places all machines into the select-nonprint condition to permit them to respond to subsequent CDCs or to TSCs.

As an End of Transmission Code, FIGS H LTRS signals the Transmitter Start Control equipment to poll the next station in sequence.

NOTE: While FIGS H LTRS is the standard End of Message code, the code NNNN may be used for this function. Where furnished, the usage is identical to FIGS H LTRS.

MACHINE CODE INFORMATION

The typing units of the model No. 28 teletypewriters are equipped to be in either a print or a nonprint condition and either a select or a nonselect condition.

Either of the first pair may occur with either of the second pair resulting in four selective calling conditions.

Select — Nonprint — The teletypewriters are in this condition when the line is idle. Each teletypewriter is ready to respond to its own code.

Select — Print — The selected teletypewriter has responded to its code and awaits the incoming message.

Nonselect — Print — The selected teletypewriter(s) on receipt of a CAR RET LINE FEED LTRS (End of Address Code), prints all line transmission until receipt of the End of Message code.

Nonselect — Nonprint — The nonselected teletypewriter(s) is placed in this condition by the CAR RET LINE FEED LTRS and will respond only to the End of Message code.

CONTROL STATION

NO. 28 AUTOMATIC SEND/RECEIVE (ASR)

One Automatic Send/Receive (ASR) station on the line is selected as the Control. This station sends and receives messages in the same manner as any ASR Outlying Station. The ASR Station Control Unit, Message Preparation, Format, Sample Messages and Tape Transmission details for the Control Station ASR are the same as described under the Outlying Station ASR.

TRANSMITTER START CONTROL

General

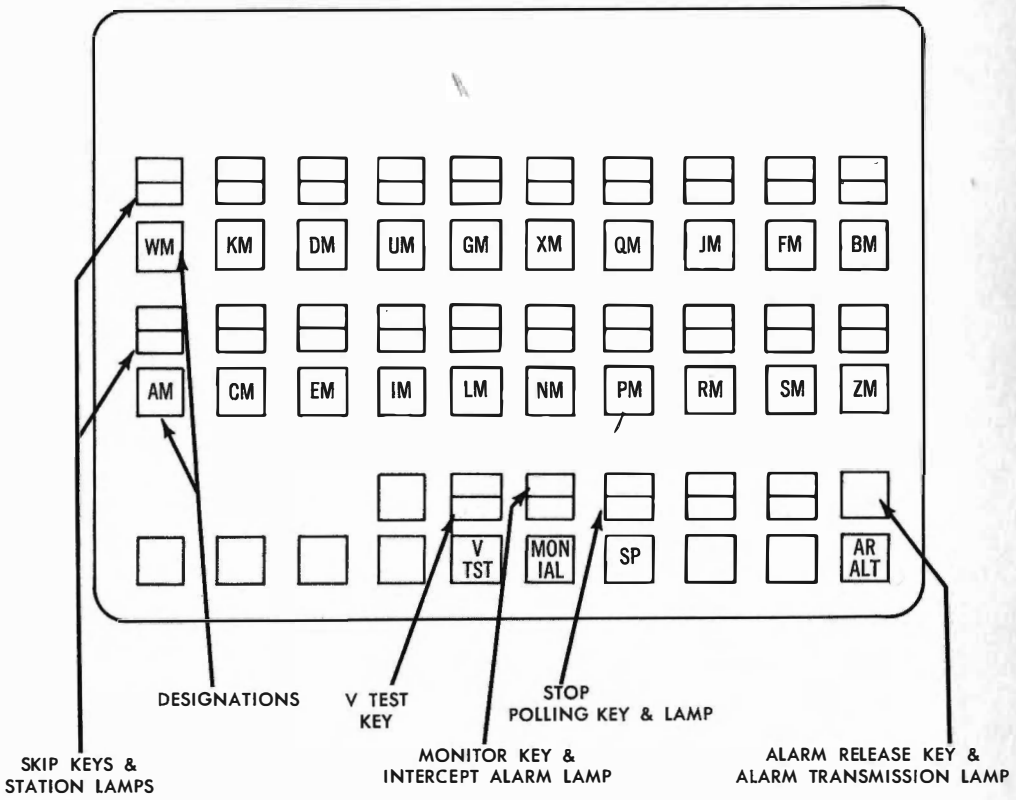
In addition, Transmitter Start Control equipment is provided to continually poll all stations on the line for available transmission. A station ready to send, begins transmitting upon receipt of its TSC. At the end of transmission, the next station in sequence is polled. A station with no messages to send responds to its TSC with a V (no traffic) response. Upon receipt of this V response, the next station in sequence is polled.

A slow polling feature is provided during an idle line period. If a complete rotation is made without a message being originated, a 3.5 second delay is inserted between successive station polls. When the next message is originated, the line reverts to the normal speed of polling.

NOTE: Momentary operation of the Alarm Release key at the Control Station will also return the slow poll feature back to normal.

TRANSMITTER START CONTROL

Key & Lamp Panel



Key and Lamp Panel

The TSC key and lamp panel permits the Control Station to observe and regulate the flow of traffic. The panel is generally mounted above the right side of the ASR. Functions of the keys and lamps are as follows:

SKIP Key and STATION Lamp

A combined SKIP (locking twist) key and STATION lamp is provided to correspond with each TSC on the line.

Horizontal Position—Normal—each station is polled in turn for transmission.

Vertical Position — Operated — the station will be skipped in the polling sequence.

The STATION lamp lights momentarily as the station is polled, remains lighted if the station responds with transmission and is extinguished upon completion of transmission.

It lights steadily when a station fails to send a V response after the V TST key has been operated.

Designation Row

A printed station identification which is located beneath each row of SKIP keys and STATION lamps.

SP (Stop Polling) Key and Lamp

A (locking twist) key and lamp.

Horizontal Position—Normal—polling cycle is activated.

Vertical Position—Operated—stops all line polling and lights the associated lamp. If the key is operated during message transmission, transmission will continue until the end of the message. When the key is returned to normal, polling will resume with the first station on the polling cycle.

AR (Alarm Release) Key and ALT (Alarm Transmission) Lamp

A combined (nonlocking pushbutton) key and lamp.

Momentary operation of the key silences the audible alarm. It extinguishes the lamp if the alarm condition has been corrected. Until the alarm is removed by depressing the AR key, no further messages may be transmitted. Operation of the AR key will also change the slow polling cycle to normal. The lamp lights momentarily on line interruptions or when a station fails to send a V (no traffic) response. It lights steadily when a station fails to send a V response after the V TST key has been operated.

V TST (V Test) Key and Lamp

A combined (locking twist) key and lamp.

Horizontal Position—Normal—stations are polled in the normal sequence.

Vertical Position—Operated—used to identify a station which is not responding properly to its TSC. When operated, the lamp lights steadily.

MON (Monitor) Key and IAL (Intercept Alarm) Lamp

A combined (locking twist) key and lamp to operate with the Intercept Arrangement, where provided.

Horizontal Position—Normal—tape machine is connected only on interception of a transmission. The IAL lamp lights and a buzzer sounds.

Vertical Position—Operated—a tape machine is connected to copy all line signals. The lamp lights steadily.

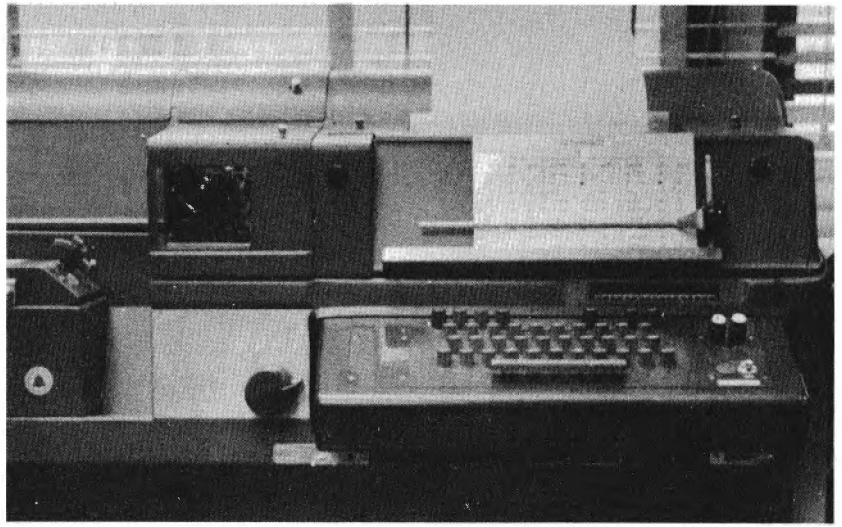
OUTLYING STATION

No. 28 AUTOMATIC SEND/RECEIVE (ASR)

A detailed description of this machine is covered in the manual, "How to Operate the No. 28 Automatic Send-Receive Teletypewriter on Private Line Service".

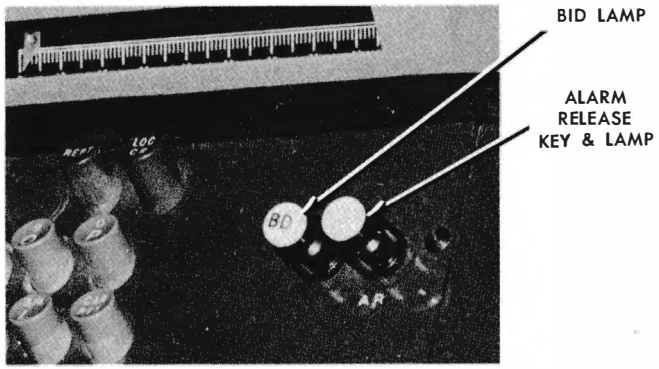
An ASR may be used at either a Control Station or an Outlying Station and has four basic functions:

- Prepare messages on tape copy
- Receive messages on page copy
- Transmit messages by tape using the tape reader
- Transmit messages directly on the line by using the keyboard



28 ASR

ASR STATION CONTROL UNIT



ASR Station Control Unit

The following lamp, and combined key and lamp unit are mounted in the teletypewriter to the right of the keyboard.

BD (Bid) Lamp — A white lamp which lights when a tape is inserted in the tape reader; the keyboard control knob is in the "T" position; the tape readswitch is operated to RUN. It is extinguished when the tape has been completely transmitted.

AL (Alarm) Lamp and AR (Alarm Release) Key — A combined lamp and (nonlocking pushbutton) key. The red lamp is mounted in the key. The lamp lights during an alarm condition. Momentary operation of the key releases the alarm condition and extinguishes the lamp if the alarm condition has been cleared. Until the alarm is removed by depressing the AR key, no further messages may be transmitted.

NOTE: While not common, a 28 ASR may be installed to permit direct keyboard sending. The keys and lamps will be the same as described for the No. 28 KSR.

Message Preparation

In the preparation of a tape message, it is of the utmost importance that functional codes be included correctly and in their proper sequence.

A number of LTRS characters should be punched in the tape preceding the first CDC. The LTRS characters have no function other than to allow ease of tape handling.

The originating station's CDC is omitted since the 83B3 provides for automatic connection of the sending station at the start of transmission.

The destination of a message is determined by the CDC(s) that is punched at the beginning of each tape. Each CDC must be followed immediately by a LTRS character. The LTRS character functions as a timing element to allow the receiving machine to acknowledge (V answerback) readiness to receive further transmission.

The End of Address code (CAR RET LINE FEED LTRS) is perforated in the tape immediately following the last CDC LTRS to lock out the unselected stations.

The End of Message code (FIGS H) is perforated following message text to disconnect all connected stations and condition the Transmitter Start Control equipment to poll the next station. When a single tape message is being prepared for transmission, it is necessary to punch at least 7 LTRS characters following the FIGS H. If several messages are to be prepared for transmission in a continuous (untorn) tape, a minimum of 3 LTRS characters are required between the FIGS H and the start of the next message. The last message must have at least 7 LTRS characters following FIGS H.

NOTE: Reference in this manual to "continuous tape" indicates more than one complete message on a tape. A complete message includes the CDCs, the End of Address code, the text and the End of Message code. "Torn tape" indicates only one complete message on each tape.

Format

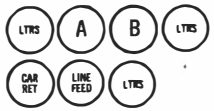
Procedure For Tape Preparation	Purpose
1. LTRS characters	Ease of handling the tape.
2. CDC LTRS for each destination station	Selects the equipment at the destination station(s) to receive the message. LTRS character following each CDC is required as a timing function.
3. CAR RET LINE FEED LTRS	Places selected machines in a nonselect-print condition and nonselected machines in a nonselect-nonprint condition.
4. Message Text	Text of message will vary according to customer requirements. It may include addressee, department, location, message number, time, date, text and signature.
5. CAR RET LINE FEEDS LTRS	Positions all connected machines to the left margin and allows space between messages.
6. FIGS H 7 LTRS	Turns off all connected machines and conditions the Transmitter Start Control equipment to poll the next station. At least seven LTRS characters should follow the FIGS H to assure that the FIGS H has been transmitted.

NOTE: A minimum of 3 LTRS are required following the FIGS H between messages on continuous tape preparation.

Sample Messages

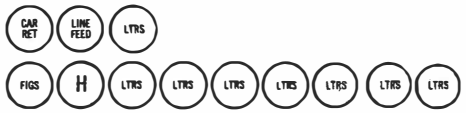
Tape Preparation	Originator's Page Copy (at the time of transmission)

Single Address (a message directed to one other station)



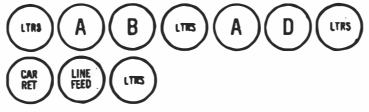
ABV
(FUNCTIONAL — NO PRINTING)

TEXT — TEXT



(FUNCTIONAL — NO PRINTING)
#

Multiple Address (a message directed to more than one other station)



ABVADV
(FUNCTIONAL — NO PRINTING)

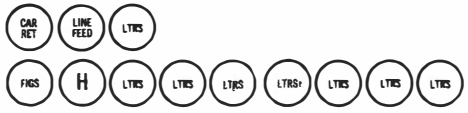
TEXT — TEXT

(FUNCTIONAL — NO PRINTING)
#

Group Message (a message directed to a specified group of stations on a line)

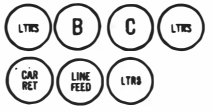
AEV
(FUNCTIONAL — NO PRINTING)

TEXT — TEXT



(FUNCTIONAL — NO PRINTING)
#

Broadcast Message (a message directed to all stations on a line)



BCV
(FUNCTIONAL — NO PRINTING)

TEXT — TEXT

(FUNCTIONAL — NO PRINTING)
#

Tape Transmission

One of the following tape transmitting procedures is available, depending on individual customer requirements.

CONTINUOUS TAPE

- Open tape gate (readswitch in STOP position)
- Insert tape in tape reader with a LTRS character (preceding the first CDC) placed over the sensing pins
- Hold tape firmly in place—close tape gate
- Place tape readswitch in RUN position
  BD lamp lights

Upon receipt of station's TSC, transmission starts. At the end of the message, FIGS H is transmitted and machines are disconnected.

BD lamp remains lighted until the last FIGS H is transmitted.

NOTE: The bid is automatic—the station must wait for the receipt of its next TSC for each new message.

TORN TAPE

- Open tape gate (readswitch in STOP position)
- Insert tape in tape reader with a LTRS character (preceding the first CDC) placed over the sensing pins
- Hold tape firmly in place—close tape gate
- Place tape readswitch in RUN position
  BD lamp lights

Upon receipt of station's TSC, transmission starts. At the end of the message, FIGS H is transmitted and machines are disconnected.

BD lamp is extinguished

NOTE: When a LTRS remnant or a second message remains in the tape reader, the AL lamp lights. If the attendant fails to remove the tape and release the alarm condition, the station responds with a V (no traffic) response to its successive TSCs.

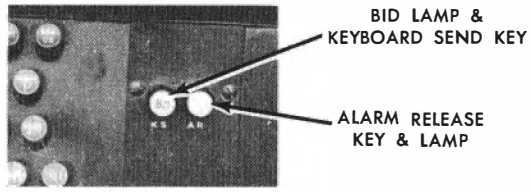
NO. 28 KEYBOARD SEND/RECEIVE (KSR)

A detailed description of this machine is covered in the manual "How to Operate the No. 28 Keyboard Send/Receive Teletypewriter on Private Line Service."

The KSR may be used at an Outlying Station and its functions are as follows:

- Transmit messages directly on the line by using the keyboard
- Receive messages on page copy

KSR STATION CONTROL UNIT



KSR Station Control Unit

The following unit, consisting of two combined keys and lamps, is mounted in the teletypewriter to the right of the keyboard.

KS (Keyboard Send) Key and BD (Bid) Lamp — A combined key (nonlocking pushbutton) and lamp. Operation of the key places a bid to send on the line. The lamp lights when the key is depressed and remains lighted until receipt of the station's TSC.

AL (Alarm) Lamp and AR (Alarm Release) Key — A combined lamp and key (nonlocking pushbutton). The lamp and a buzzer alarm are activated when the station or the line is in an alarm condition. Momentary operation of the key silences the buzzer and extinguishes the lamp if the alarm condition has been cleared.

They are also activated upon receipt of the station's TSC when the KS key has been depressed.

Message Construction

When typing directly to the line from the keyboard, it is of the utmost importance that functional codes be typed correctly and in their proper sequence.

One LTRS character, preceding CDCs, is typed to establish a busy line condition.

The originating station's CDC is omitted since the 83B3 provides for automatic connection of the sending station at the start of transmission.

The destination of a message is determined by the CDCs that are typed at the start of transmission. No LTRS character should follow any CDC. After each CDC is typed the attendant waits for the V answerback to print. Any attempt to send a LTRS character may result in a garbled answerback.

The End of Address code (CAR RET LINE FEED LTRS) is typed immediately following the last CDC to lock out the unselected stations.

The End of Message code (FIGS H) is typed following message text to disconnect all connected stations and condition the Transmitter Start Control equipment to poll the next station.

Procedure for Direct Keyboard Transmission	Purpose
1. One (1) LTRS character	Transmitter start equipment at the Control Station recognizes this as traffic and establishes a busy line condition.
2. CDC for each destination station	Selects the equipment at the destination station(s) to receive the message. No LTRS character should follow the CDC.

3. CAR RET LINE FEED LTRS	Places selected machines in a nonselect-print condition and nonselected machines in a nonselect-nonprint condition.
4. Message Text	Text of message will vary according to customer requirements. It may include addressee, department, location, message number, time, date, text and signature.
5. CAR RET LINE FEEDS LTRS	Positions all connected machines to the left margin and allows space between messages.
6. FIGS H	Turns off all connected machines and conditions the Transmitter Start Control equipment to poll the next station.

Keyboard Transmission

- Depress the KS button
  BD lamp lights
- Upon receipt of the station's TSC
  BD lamp is extinguished
  AL lamp lights—Buzzer sounds
- Depress the AR button
  AL lamp is extinguished—Buzzer is silenced

Typing must begin within 20 seconds after receipt of TSC

- Type one LTRS character
- Type destination(s) CDC—Pause after each CDC to await answerback
- Type CAR RET LINE FEED LTRS
- Type message text
- Type CAR RET LINE FEEDS LTRS
- Type FIGS H LTRS
  AL lamp lights—Buzzer sounds
- Depress AR button
  AL lamp is extinguished—Buzzer is silenced

ALARMS

OUTLYING STATION

Cause	Indication	Action
1. Invalid CDC or no LTRS character separating CDCs in the tape or Omission of the End of Address code; equipment attempts to read text as a CDC or Tape correctly coded but the receiving station is not functioning properly	While attempting to connect on a CDC: — No V answerback following CDC — Tape reader is stopped — AL lamp is lighted — Buzzer sounds (where provided) After 3.5 seconds, a FIGS H LTRS is automatically sent by the Control Station equipment: — Buzzer is silenced (where provided) — AL lamp remains lighted	— Open tape gate — Remove and analyze tape — Depress AR key to extinguish AL lamp — Retype message if an error has been made in coding procedure (CDC or no CAR RET LINE FEED LTRS following last CDC) or reset the tape at the beginning if the message is properly coded

NOTE: If no answerback is received by a valid CDC and that CDC is part of a multiple address message, it may not be feasible to hold up transmission to the remaining addressees. The attendant should retype the message and omit the unresponsive CDC.

Cause	Indication	Action
2. Torn Tape or Open Tape Gate or Raised Taut Tape Lever	— Buzzer sounds (where provided) — BD lamp is extinguished After 3.5 seconds, a FIGS H LTRS is automatically sent by the Control Station equipment: — Buzzer is silenced (where provided) — AL lamp is lighted	— Open tape gate — Remove and analyze tape — Depress AR key to extinguish AL lamp — Retype tape, if torn, or reset tape on a LTRS character preceding CDCs
3. Less than 6 LTRS characters following FIGS H (End of Message code cannot be transmitted) or Omission of FIGS H at the end of a message	— Tape reader stops — BD lamp is extinguished — Machine has not disconnected After 3.5 seconds a FIGS H LTRS is automatically sent by the Station Control equipment: — Machine is disconnected — Buzzer sounds (where provided) — AL lamp is lighted	— Depress AR key to extinguish AL lamp and silence buzzer alarm

Cause	Indication	Action
4. Torn Tape arrangement: LTRS remnant remains in tape reader or a second message follows on a single tape	— BD lamp remains lighted — AL lamp is lighted	— Open tape gate—Remove tape BD lamp is extinguished — Depress AR key to extinguish AL lamp If a second message is on the single tape, reset the second message for transmission
5. Open line condition	— Tape reader stops if station is sending — BD lamp remains lighted — AL lamp flashes — Buzzer sounds (where provided)	— Open tape gate—Remove and reset tape at beginning of the message — Depress AR key— *In case of a momentary open,* AL lamp is extinguished, buzzer is silenced and the alarm condition is cleared *If open line condition persists,* (visual and audible alarm returns) notify the Telephone Company. When the line closes (alarm clears), depress AR key to extinguish the AL lamp and silence the buzzer alarm

CONTROL STATION

Outlying Station alarm conditions also apply to the Control Station. In addition, the following alarms are associated with the Transmitter Start Control Key and Lamp Panel.

1. NO RESPONSE TO THE TSC

The polled station fails to respond to its TSC with either a message transmission or a V (no traffic) response:

After 3.5 seconds:

— ALT lamp lights momentarily

— Buzzer sounds momentarily

— Polling resumes

NOTE: When necessary, depress the AR key to extinguish the ALT lamp and silence the buzzer.

The attendant immediately operates the V TST key to identify the unresponsive station on its next poll.

If the station is still in trouble:

— Polling ceases

— STATION lamp lights steadily

— ALT lamp lights steadily

— Buzzer sounds

The attendant restores the V TST key to the normal position:

— Polling resumes

— Buzzer is silenced

— AR key is depressed to extinguish ALT lamp

— SKIP key of the station in trouble is operated

— An attempt is made to send a message to the skipped station advising that it is on "skip"

— Trouble is reported to Telephone Company

If the trouble has cleared:

— The attendant returns the V TST key to its normal position.

2. LINE INTERRUPTION

When a line is idle for 3.5 seconds, (20 seconds for manual station) a FIGS H LTRS is automatically sent on the line by the Control Station equipment:

— ALT lamp lights momentarily

— Buzzer sounds

Polling resumes and alarms are automatically extinguished. No action is required.

* * *

OPTIONAL FEATURES

The Optional Features section of this manual describes some of the additional equipment and arrangements which may be associated with an 83B3 System. Features covered are as follows:

- Intercept
- Message Addresser
- Relay Arrangements
- Emergency Operation
- Double Polling
- Business Machines
- 1A High Speed Data Selective Calling System
- Compatability With The 83B2 System

INTERCEPT

A No. 28 Receive Only Typing Reperforator (ROTR) will be installed at the Control Station to receive undelivered messages. The Control Station Transmitter Start Control equipment is arranged to connect the ROTR when a called station fails to return a V answerback within 3.5 seconds (20 seconds for manual operation). As the ROTR connects, an M answerback prints immediately following the unresponsive CDC on the originator's page copy. The originating machine continues to send. No lamp or audible alarm indication will appear at the Outlying Stations. At the Control Station, an alarm condition exists as the message is received on the ROTR—

- ALT lamp lights
- IAL lamp lights
- Buzzer sounds

The attendant depresses the AR button to extinguish ALT lamp and silence the buzzer. The IAL lamp remains lighted until the intercepted message is completed.

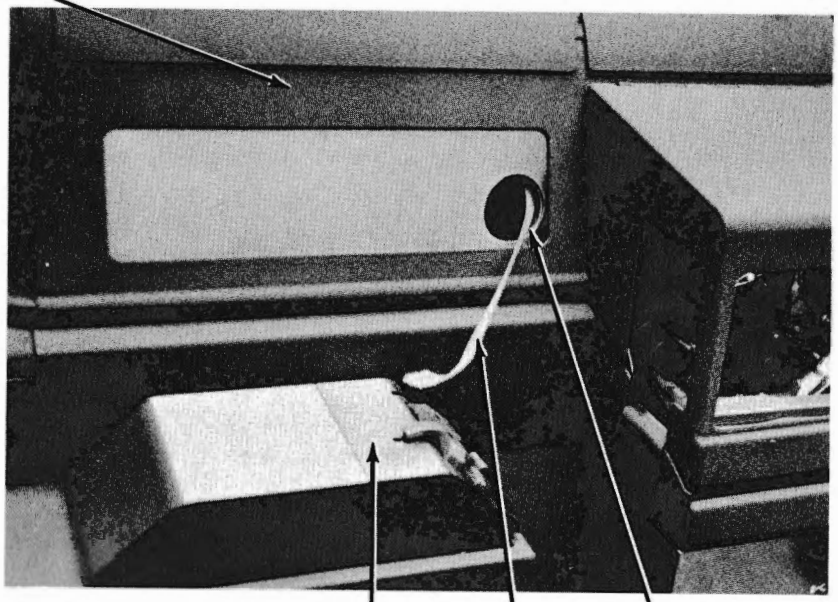
The intercept ROTR will also connect in the event an End of Address code is sent without a preceding CDC. Control Station alarms and corrective procedure are the same as above; however no M answerback is printed on the originator's copy.

Customer procedures will vary regarding corrective action required. The message may be either corrected and resent by the originator or by the attendant at the intercept location.

The intercept ROTR may also be used as a monitor machine by operating the MON (Monitor) key on the Control Station Key and Lamp Panel. The ROTR will then copy *all* line signals. The IAL lamp associated with the MON key lights to indicate the machine is in the monitor condition. No alarms accompany the monitoring feature.

The ROTR may be mounted on a table or mounted in the upper left side of the 28 ASR cabinet. Detailed description of the ROTR is covered in the manual "How to Operate the No. 28 Reperforator/Transmitter and the No. 28 Receive Only Typing Reperforator on Private Line Service".

INTERCEPT ROTR — TABLE MOUNTED

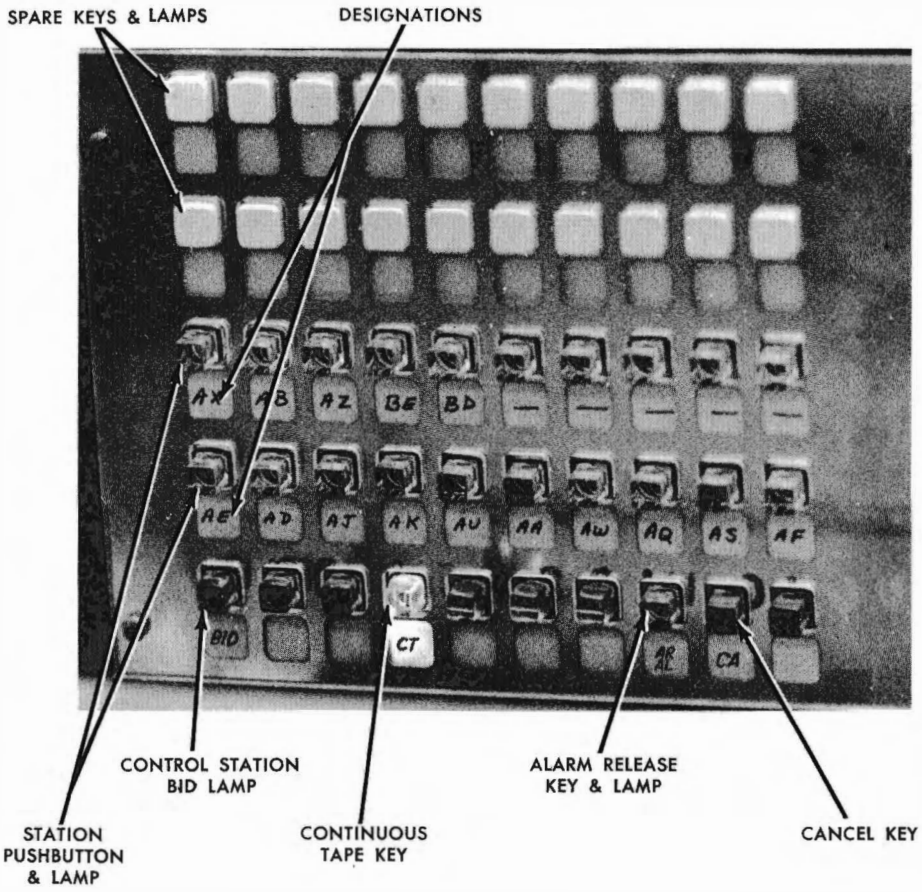


INTERCEPT ROTR — ASR MOUNTED

MESSAGE ADDRESSER

The pushbutton Message Addresser is used to transmit CDCs thus eliminating the necessity for punching the codes in the tape. Message Addressers may be provided at any 28 ASR station but will not be installed at 28 KSR stations.

The Control or Outlying Station Control Unit may be located in the Message Addresser unit instead of to the right of the keyboard.



STATION CONTROL & MESSAGE ADDRESSER KEY & LAMP PANEL

Functions of the keys and lamps are as follows:

STATION Button and Lamp — A combined (non-locking) pushbutton and lamp assigned for each station CDC. Depressing the button selects the desired station and lights the STATION lamp. The lamp is extinguished at the start of tape transmission.

Designation Row — Identifies the station associated with the STATION button and lamp.

CA (Cancel) Key — A (non-locking) pushbutton provided to permit restoring the equipment in case a STATION button is depressed in error. To be effective, this key must be operated *before* receipt of the station TSC.

CT (Continuous Tape) Key and Lamp — A combined (locking twist) key and lamp.

Horizontal Position—Normal—tape lockout feature used with non-coded continuous tape arrangement. The bid to send is ineffective if no STATION pushbuttons have been depressed for an upcoming message prior to the transmission of the End of Message code on the message being transmitted.

Vertical Position—Operated—used to bypass the tape lockout feature and permit transmission of tapes which have CDCs punched in the tape. Operation of the key lights the associated lamp.

NOTE: If a complete message transmission has been made without any station selection being made for the next message on a continuous tape, the attendant should operate the tape readswitch to the FREE or the STOP position, depress the desired pushbuttons and operate the tape readswitch to RUN.

Operating Procedure:

- Place the message tape in the tape reader with the readswitch in FREE or STOP position
- Select desired station(s)
  STATION lamp(s) lights
- Place the readswitch in the RUN position
  BD lamp lights

On receipt of the station's TSC,

- CDC(s) is sent
  A LTRS character is automatically inserted after each CDC
- Answerback(s) is received
- End of Address code is automatically transmitted after the last pushbutton code is sent and before the message tape is transmitted
- Message tape starts
  STATION lamp(s) is extinguished
- End of Message code is transmitted
  FIGS H LTRS should be punched at the end of every message on continuous message tape. If FIGS H LTRS is not included on single tape transmission or the last message on a continuous tape, the FIGS H LTRS is automatically sent by the Transmitter Start Control equipment after 3.5 seconds.

NOTE: Where multiple lines exist, one Message Addresser may contain multiple line codes. Station selection procedure is the same as described above. The Message Addresser equipment recognizes the requirement to select stations on a line other than the originator's and will automatically insert a relay CDC which will turn on relay equipment.

If the called station fails to respond with a V answerback, an alarm condition exists; there is no further selection or transmission. To correct the condition the attendant should:

- Operate the tape readswitch to FREE or STOP position
- Depress the AR key to extinguish the AL lamp

Single Address Message—

- Remove message tape and attempt to send later

Multiple Address Message—

- Re-select desired stations
  Either omit the unresponsive station and send to that station later as a single address message, or make a second attempt to send the message to all stations.

RELAY ARRANGEMENTS

One station on the system is assigned as a relay station to function as an interconnection of two or more 83B3 lines. Either manual or automatic relay may be provided. The manual relay station uses a Receive Only Typing Reperforator (ROTR) as a tape receiver and Tape Reader as a tape sender. The automatic relay arrangement uses combined Reperforator-Transmitter (RT) units to receive and automatically send tapes to destination stations.

Two common CDC coding procedures for relay purposes follow:

Non-duplicate CDC—A CDC used on one line is not repeated on another line.

Procedure for Message Preparation	Purpose
CDC(s) for originating line station(s)	To connect desired station(s) on originator's line.
CDC for relay station	To connect tape machine which will copy subsequent CDC(s) and complete message transmission.
CDC(s) for "off line" station(s)	To connect desired station(s) on a line other than the originator's. Connection is made when the message is re-sent (relayed) by the relay station. CDCs following relay CDC will be transmitted without hesitating for a V answerback. Answerback for these stations are received during retransmission.
CAR RET LINE FEED LTRS	To place all selected machines in a nonselect-print condition and all unselected machines in a nonselect-nonprint condition. The code is effective on the originator's line during the originator's transmission and on the "off line" during transmission from the relay station.

Duplicate CDC—A CDC is valid on more than one line.

Procedure for Message Preparation	Purpose
CDC(s) for originating line station(s)	To connect desired station(s) on originator's line.
CDC for relay station	To connect tape machine which will copy subsequent CDC(s) and complete message transmission.
CAR RET LINE FEED LTRS	To place all selected machines on originator's line in a nonselect-print condition and all unselected machines in a nonselect-nonprint condition.
CDC(s) for "off line" station(s)	To connect desired station(s) on a line other than the originator's. Connection is made when the message is re-sent (relayed) by the relay station.
CAR RET LINE FEED LTRS	To place all selected machines on the "off line" in a nonselect-print condition and all unselected machines in a nonselect-nonprint condition.

NOTE: The last two steps are repeated for each additional "off line" group required. The relay station CDC should be added to each CDC group except the last one.

The relay station code, with its answerback, will permit transmission of subsequent CDCs without stopping for V answerbacks; however, if a CDC following the relay code is recognized as valid, the machine assigned that code will turn on and send the V answerback resulting in a machine turned on in error or a garbled tape.

EMERGENCY OPERATION

The Control Station may be equipped with an "emergency operation" feature to permit line operation even though the Transmitter Start Control equipment is disabled. The attendant should operate the SP (Stop Polling) key on the Station Control Unit and the keyboard control knob to the K position which will place the teletypewriter in the print condition. TSCs may then be transmitted from the keyboard. A V (no traffic) response or start of transmission will occur. The machine copies all line signals.

One of the Outlying Stations may be designated to function as a "back-up" Control Station in case of complete failure at the Control Station. This station will be equipped with an MS (Manual Send) key. When it is necessary to take over on an emergency basis, the keyboard control knob is operated to the K position and the MS key is momentarily operated to place the machine in a print condition. TSCs may then be transmitted from the keyboard. A V (no traffic) response or start of transmission will occur. The machine copies all line signals. Since all connected stations, including the "back-up station", are disconnected when the End of Message code is sent, the MS key must be re-operated after every FIGS H.

DOUBLE POLLING

This option may be used to provide circuit assurance or to provide deferred sending at selected stations on the line.

- For circuit assurance, each station on the line is arranged to send the second time it is polled.
- The deferred sending option is used to allow some stations on the line to send on a first poll and others to send only when they are polled on a second cycle.

BUSINESS MACHINES

An interface arrangement is provided for the interconnection of an 83B3 System and customer provided business machines. Control functions on the service may be assumed by the business machine or Bell System selector equipment.

1A HIGH SPEED DATA SELECTIVE CALLING SYSTEMS

The 1A High Speed Data Selective Calling System is a voice grade line tape-to-tape system. It operates at a basic speed of 1050 words per minute and can be arranged to accept and deliver messages on an 83B3 System. This interconnection is accomplished by use of speed converters.

COMPATABILITY WITH THE 83B2 SYSTEM

An 83B3 Outlying Station may be added to an existing 83B2 line. An existing 83B2 Control Station may be replaced by an 83B3 Control Station without replacing existing 83B2 Outlying Stations.