37 TELETYPEWRITER AUTOMATIC SEND-RECEIVE (ASR)

DATA STATION ARRANGEMENT — "DATA-PHONE®"

DESCRIPTION

1. GENERAL

1.01 This section provides a general description of the features and characteristics of the Model 37 Automatic Send-Receive (ASR) Teletypewriter (TTY) Data Station for DATA-PHONE service (Figure 1). For more detailed information on the sets and components comprising the data station, refer to the section reference listing in Part 4.

1.02 The 37 ASR TTY data station includes all of the components, and provides all of the features, of the 37 Keyboard Send-Receive (KSR) TTY data station. In addition, the 37 ASR TTY data station provides the capability of sending and receiving messages using communications tape. Refer to Section 592-801-101 for a description of the KSR TTY data station.

1.03 The standard 37 ASR TTY data station includes a 37 ASR Set, a 103H-type Data Set, and an 804P-type Data Auxiliary Set. Other data sets, such as the 103A-, 103G-, and 113A-type may also be used.

1.04 The 37 ASR TTY is a heavy duty set that functions with the ASCII (United States of America Code for Information Interchange) and operates with a data set having EIA (Electronics Industries Association) Specification RS-232B interfacing.

1.05 The TTY-data set interface is the same as that in the 37 KSR TTY data station and is described in Section 592-801-101.

1.06 Messages are transmitted and received at the speed of 150 words per minute. The station provides an alternate voice-data capability with transfer between voice and vice versa.

1.07 References to left or right, front or rear, top or bottom, etc, apply to the terminal in its normal position as viewed by the operator in front of the terminal.
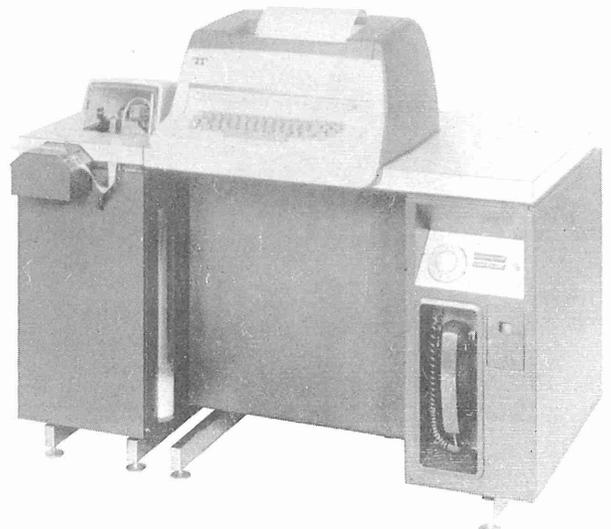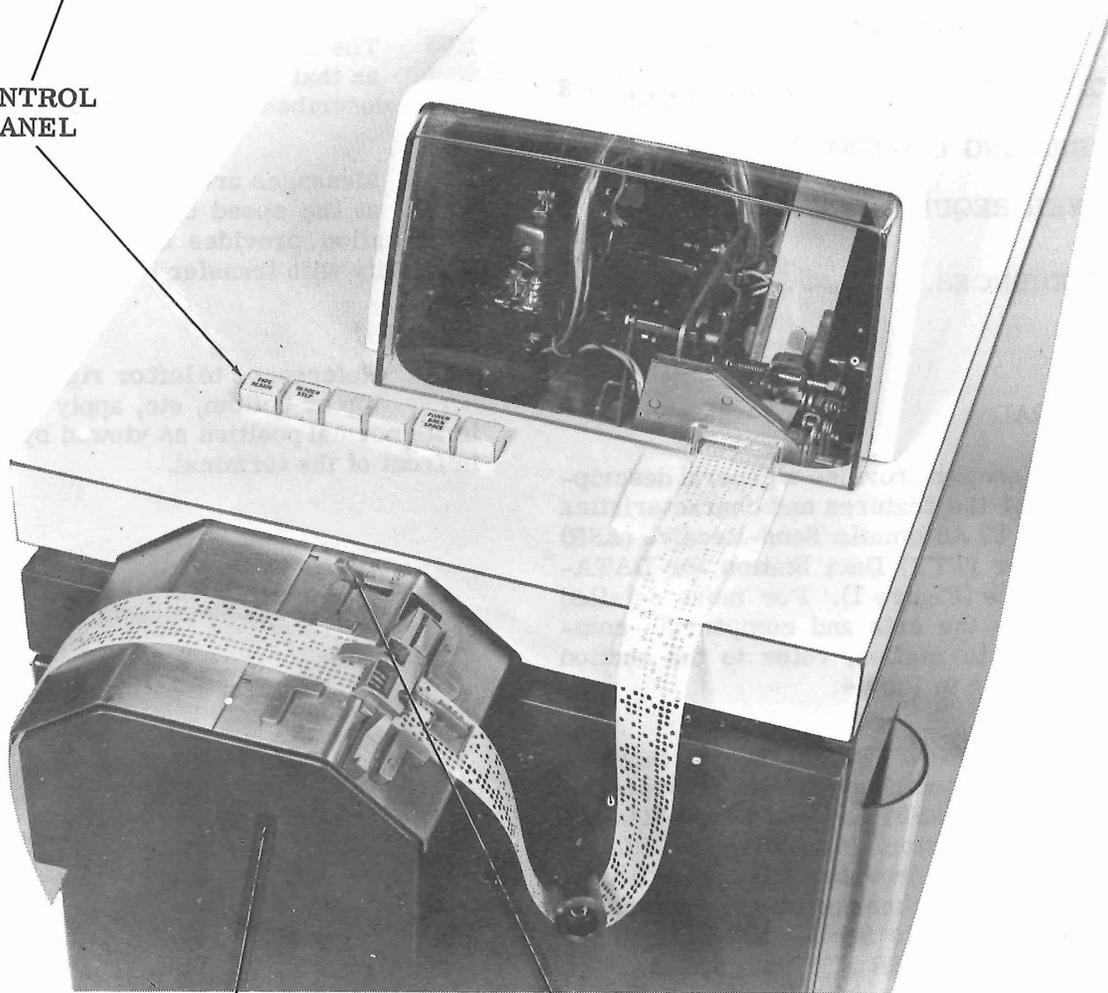

Figure 1 - Model 37 ASR TTY Data Station

TAPE ALARM	READER STEP			PUNCH BACK SPACE	

CONTROL PANEL

READER UNIT

CONTROL LEVER (RUN-STOP-FREE)

Figure 2 - Tape Module Controls

2. STATION FEATURES

2.01 Since the 37 ASR TTY data station includes a complete 37 KSR TTY, the features listed and described in Section 592-801-101 apply. In addition, the following features are provided with the addition of the separate tape module (Figure 2) in this station.

(1) A 150 wpm, 10-unit code tape reader, controlled locally or on-line.

(2) A nontyping reperforator operating at 150 wpm with a 10-unit code and controlled locally or on-line.

(3) On-line transmission disable control.

(4) Tape alarm indicators.

(5) A variety of optional tape handling devices including power winders/unwinders.

2.02 The on-line reperforator and reader control features permit automatic turn-on and turn-off, in response to line signals, of the reperforator and reader.

2.03 When the control character DC 1 is received, the reader is turned on automatically, provided it is properly loaded with tape and the control lever is in the RUN or STOP position (Table C). Receipt of the control character DC 3 will turn the reader off.

2.04 The control character DC 1 will automatically turn-off a reader that reads this character in the tape.

2.05 When the control character DC 2 is received, the reperforator is automatically turned-on to receive messages. The control character DC 4, when received, turns the reperforator off.

2.06 The transmission disable feature is provided for on-line blind and unblind control of the reader and keyboard. At the beginning of each connection, transmission from both the reader and keyboard is disabled until the ACK character is received. Transmission will be disabled afterwards if the NAK character is detected.

3. STATION ARRANGEMENT

COMPONENTS

3.01 The standard and alternate components used in the 37 ASR TTY station for DATA-PHONE service are listed in Table A.

TABLE A

STATION COMPONENTS

STANDARD COMPONENT	ALTERNATE COMPONENT
Typing Unit (friction feed)	Typing Unit (sprocket feed) Variety of Typeboxes
Teletypewriter Base	—
Typing Unit Cover and Pan	—
Keyboard (including reset mechanism)	—
Electrical Service Units (including control panel, answer-back assembly, and circuit card sets)	—
Teletypewriter Table (double-compartment with facilities in right-side door for data set and attendant set mounting)	Double-compartment table without facilities (blank right-side door) for mounting attendant set.
	Single-compartment table in narrow or shallow depths providing no facilities for mounting the data set or attendant set.

TABLE A (continued)

STATION COMPONENTS

STANDARD COMPONENT	ALTERNATE COMPONENT
Motor Units	—

Tape Module Cabinet	Tape module cabinet equipped with one of the following:
	   a. Tape Winder
	   b. Tape Winder/Unwinder
	Tape Storage Bin

Nontyping Reperforator	—
Tape Reader	—

Attendant Set
   Telephone Handset
   One of 4 Alternate Dialing Features
	Alternate Dialing Features:
	   1. Rotary Dial
	   2. "TOUCH-TONE®" Dial
	   3. Rotary and Card Dialer
	   4. TOUCH-TONE and Card Dialer

Data Set 103H1	Data Set 103A or Data Set 103G

3.02   A brief description of the components included in the tape module is provided in the following paragraphs. For a description of the remaining station components, refer to Section 592-801-101 or to the description sections listed in Part 4.

(1)   Nontyping Reperforator: This electromechanical receive-only unit fully perforates 8-level tape. It is equipped with the off-line backspace and manual interfering tape feed-out features. See Figure 3.
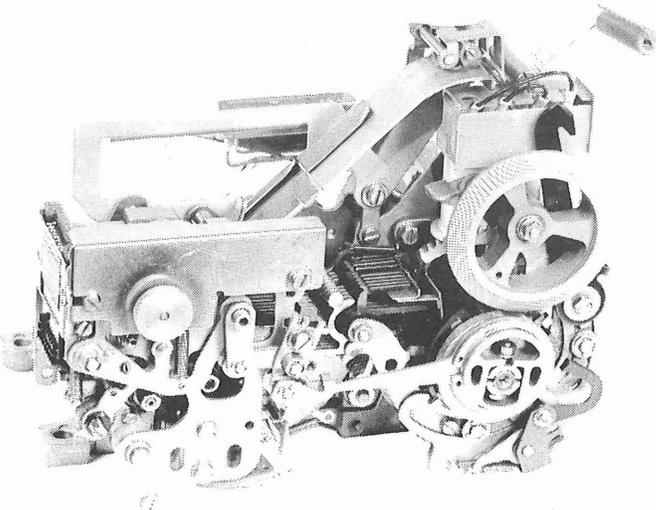

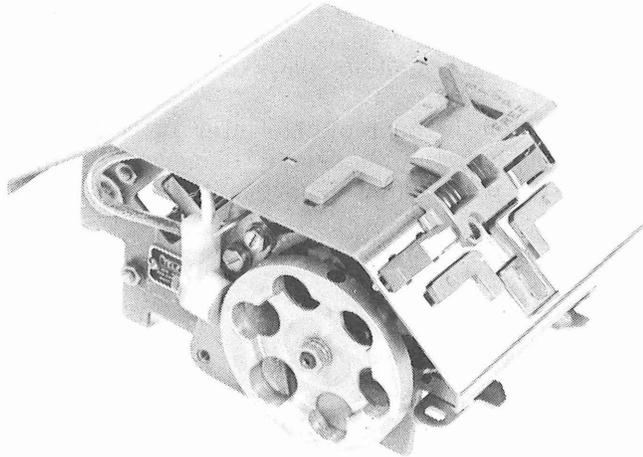Figure 3 - Nontyping Reperforator

Figure 4 - Tape Reader

(2)   Tape Reader: This electromechanical sending unit senses fully perforated 8-level tape. It is equipped with a manual control lever, the reader step feature, and tight-tape and tape-out alarm sensors. Refer to Figure 4 and Table C.

(3)   Motor Units: Separate synchronous-type motor units provide the power for operating the reperforator and tape reader.

(4)   Electrical Service Unit: Provides the electronic circuitry for operating the reperforator and tape reader. It intercon-

nects with a similar electrical service unit in the KSR Set.

(5) Tape Module Cabinet: This cabinet provides mounting and control facilities for the reperforator, tape reader, electrical service unit, and motor units.

OPERATING CONTROLS

3.03   The controls necessary for operating the 37 ASR TTY station are located on the control panel above the keyboard (Figure 5 and Table B), the tape module panel (Figure 2 and Table C), and the attendant set (Figure 6 and Table D).

READER AUTO	KBD LOCAL	PRINTER LOCAL	READER LOCAL	PUNCH LOCAL	PUNCH ON	PAPER ADVANCE

LOCAL RETURN	INTRPT	PROCEED	HERE IS	KBD EOL	ALARM	PTR EOL

Figure 5 - Control Panel

TABLE B

CONTROL PANEL OPERATING CONTROLS

CONTROL (Refer to Figure 5)	FUNCTION
READER AUTO	When this key is depressed, the associated lamp lights and the station is conditioned for on-line control of the reader. When the key is depressed again, the light goes out and the on-line reader control feature is disabled. (Both the reader and typing unit must be on-line or off-line together for this feature to be effective.)
KBD LOCAL	When this key is depressed, the associated lamp lights, the typing unit motor starts, and the keyboard is placed in the off-line (local) mode.
PRINTER LOCAL	When this key is depressed, the associated lamp lights, the typing unit motor starts, and the typing unit is placed in the off-line (local) mode. When the key is depressed again, the typing unit is placed on-line.
READER LOCAL	When this key is depressed, the associated lamp lights, the reader motor is started, and the reader is placed in the off-line (local) mode. When the key is depressed again, the lamp goes out, the motor stops, and the reader is placed in the on-line mode.
PUNCH LOCAL	When this key is depressed, the associated lamp lights and the non-typing reperforator (punch) is placed in the off-line (local) mode. The punch selector may be blinded or not depending on the state of the PUNCH ON key. Depressing the key again turns off the light and restores the reperforator to the idle condition.
PUNCH ON	When this key is depressed, the associated lamp lights and the reperforator selector is unblinded. Depressing the key again turns the lamp off and causes the reperforator selector to be blinded. For local operation of the reperforator, the PUNCH ON key must be depressed after PUNCH LOCAL is depressed.

TABLE B (continued)

CONTROL PANEL OPERATING CONTROLS

CONTROL (Refer to Figure 5)	FUNCTION
PAPER ADVANCE	Paper is fed out of the typing unit for as long as this key is held depressed. This is a local function only, and has no effect on the distant station.
LOCAL RETURN	When this key is depressed, the typing unit carriage returns to the left margin. This is a local function only, and has no effect on the distant station.
INTRPT (Interrupt)	When momentarily depressed, this key causes a timed (380 to 750 millisecond) spacing signal (break) to be sent on-line. It is used by the receiving station to interrupt transmission from a sending station when operating in the half-duplex mode.
PROCEED	This lamp lights when the station is ready for sending (it will light when an ACK character is received, and will turn off when a NAK character or interrupt signal is received). If it is turned off by a NAK character, either the receipt of an ACK character or manual operation of the PROCEED key will relight the lamp. The lamp turns off when a data call is completed.
HERE IS	When momentarily depressed, this key starts the local answer-back mechanism which causes a stored series of characters (such as station identification) to be sent.
KBD EOL (Keyboard End of Line)	This lamp is lighted by a character counter and indicates that sufficient characters have been perforated in tape to produce a line of characters on page copy. The counter counts down on backspace and is reset on carriage return.
ALARM	When lighted, this lamp indicates a low-paper supply condition or that a character has been received with incorrect vertical parity. The lamp can be turned off by depressing the ALARM key.
PRT EOL (Printer End of Line)	This lamp lights to indicate the end of a printed line (adjustable for any length of line suitable to the typing unit). The light goes off when a new line is started.

TABLE C

TAPE MODULE OPERATING CONTROLS

CONTROL (Refer to Figure 2)	FUNCTION
TAPE ALARM	This lamp lights whenever the reperforator tape supply is depleted, or when the tape in the reader is tight, twisted or bunched.
READER STEP	This key advances the tape through the reader one character each time the key is depressed.
PUNCH BACKSPACE	This key backspaces the tape in the reperforator one character each time the key is depressed.
RUN-STOP-FREE	This control lever on the tape reader permits normal operation of the unit in the RUN position and turn-off in the STOP position. In the FREE position, the feed wheel is free and tape may be pulled through the unit without opening the tape lid. When the automatic reader start feature is activated, transmission can occur with the control lever in either the RUN or the STOP position, but not in the FREE position. Operation is possible with the control lever in STOP since, in this mode, the unit is controlled by external electronic circuitry.

TABLE D

ATTENDANT SET CONTROLS

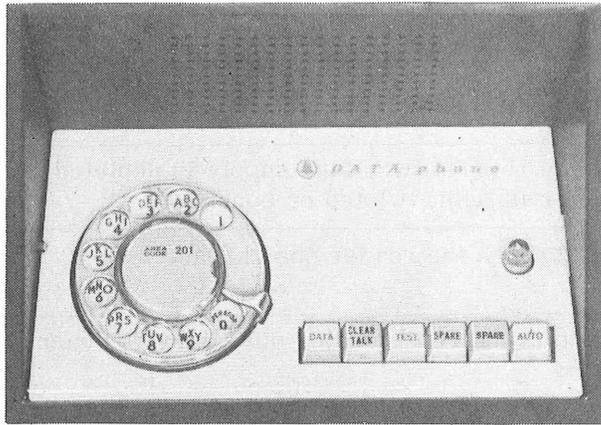| CONTROL (Refer to Figure 6)	FUNCTION
DATA	When this key is depressed, the associated lamp lights indicating that the station is in the data mode. In this condition, the telephone mode will not operate (even if the handset is not on the switchhook). The data mode can be changed only by depressing the CLEAR/TALK key.
CLEAR/TALK	When depressed, this key clears (disconnects) a data call. The associated lamp lights for the duration of the clearing cycle. The station disconnects after the data portion of the call is cleared unless the handset is off its switchhook, in which case the call is placed in the telephone mode. This key (when depressed) also stops any actions initiated by a previously depressed DATA or TEST key, and turns off their associated lamp.
TEST	When this key is depressed, the associated lamp lights and the data set is conditioned for remote testing from a data test center.
AUTO	This key operates independently from the other keys. When the key is depressed, the associated lamp lights and the station is placed in condition for automatic answering. The AUTO answer mode is effective only when the station is ready to receive a call; for example, when paper supply is adequate.
LOUDSPEAKER	Call progress tones (dial tone, busy tone, etc,) are heard in this speaker when "hands free" calls are made.
VOLUME CONTROL	This control regulates speaker volume.

Figure 6 - Attendant Set (Rotary Dialer)

POWER REQUIREMENTS

3.04   The 37 ASR TTY station requires approximately 550 watts of 117v ±10 percent, 60 Hz ac power. In the station idle mode (motors off), the data set remains energized. The telephone mode is usable even when an ac power failure situation exists at the station but the card dialer, where one is provided, is not operative.

4.   REFERENCES

4.01   The following publications pertain to the 37 ASR TTY station:

TITLE

ASR SET	NUMBER
General Description and Operation	574-302-100
Installation	574-302-200
Field Maintenance Practice	579-400-3xx
Removal and Replacement of Components	574-302-702

MOTOR UNIT	
Description and Principles of Operation	570-220-100
Adjustments	570-220-700
Lubrication	570-220-701

TYPING UNIT	
Description and Principles of Operation	574-320-100
Adjustments	574-320-700
Lubrication	574-320-701
Disassembly and Reassembly	574-320-702

KEYBOARD AND BASE ASSEMBLY	NUMBER
Description and Principles of Operation	574-321-101
Adjustments	574-321-703
Lubrication	574-321-704
Disassembly and Reassembly	574-321-705

ELECTRICAL SERVICE UNIT	
Description and Operation	574-322-101

TABLE	
Description and Principles of Operation	574-323-101
Adjustments	574-323-703

ANSWER-BACK UNIT	
Description and Principles of Operation	574-325-100
Adjustments	574-325-700
Lubrication	574-325-701

TYPING UNIT COVER AND PAN	
Description and Principles of Operation	574-326-101
Adjustments	574-326-703
Lubrication	574-326-704

NONTYPING REPERFORATOR	
General Description and Operation	574-329-100
Adjustments	574-329-700
Lubrication	574-329-701

TAPE READER	
Description and Principles of Operation	592-801-100
Adjustments	592-801-700
Lubrication	592-801-701

TAPE MODULE CABINET	
Description and Operation	574-327-100
Adjustments	574-327-700
Lubrication	574-327-701

DATA SETS	
Identification and Operation (103A-Type)	591-014-100
Description and Operation (103G-Type)	591-026-100
Description and Operation (103H-Type)	591-027-100

STATION	
Bell System Catalog	—
Installation	591-801-201
KSR Data Station Description	592-801-101