DATA SET 202D TYPE

TRANSMITTER-RECEIVER

IDENTIFICATION AND OPERATION

1. GENERAL

1.01 Data set 202D type (Fig. 1) is designed for DATA-PHONE and private line service. It is a transmitting-receiving data terminal to be installed on the customer's premises.

1.02 The data set provides a means on a 2- or 4-wire switched network or private line basis for voice-band transmission and reception of serial digital information originated by certain business machines.

Note: On all switched network applications and some private line applications a data auxiliary set 804A type (Fig. 2) is required for control and talk purposes.

All unassigned keys of the data auxiliary set 804A type should be blocked. (Use P-12A858 blocking ring.)

1.03 Data set 202D type can transmit to and/or receive from data sets 202A, B, C, D, or data set 3A.

1.04 The data set TEST button (Fig. 2) is not functional when data auxiliary set 804A type is used.

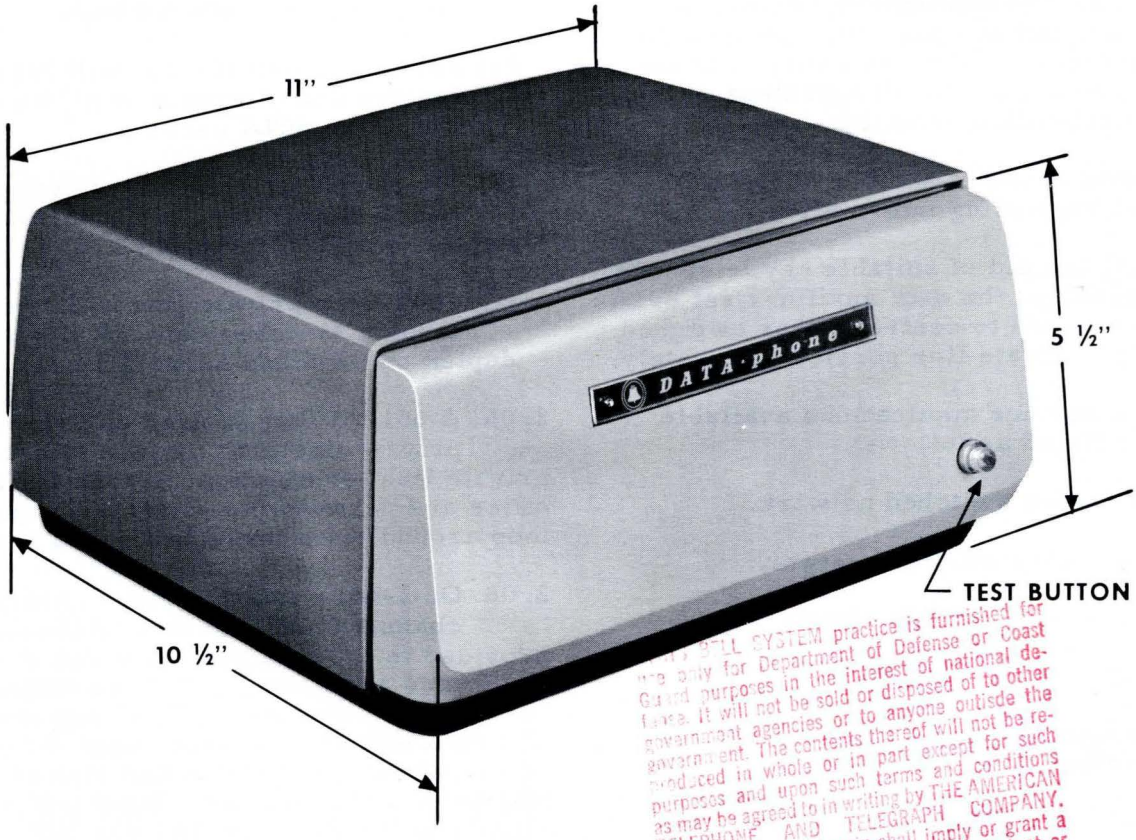


Fig. 1 - Data Set 202D Type

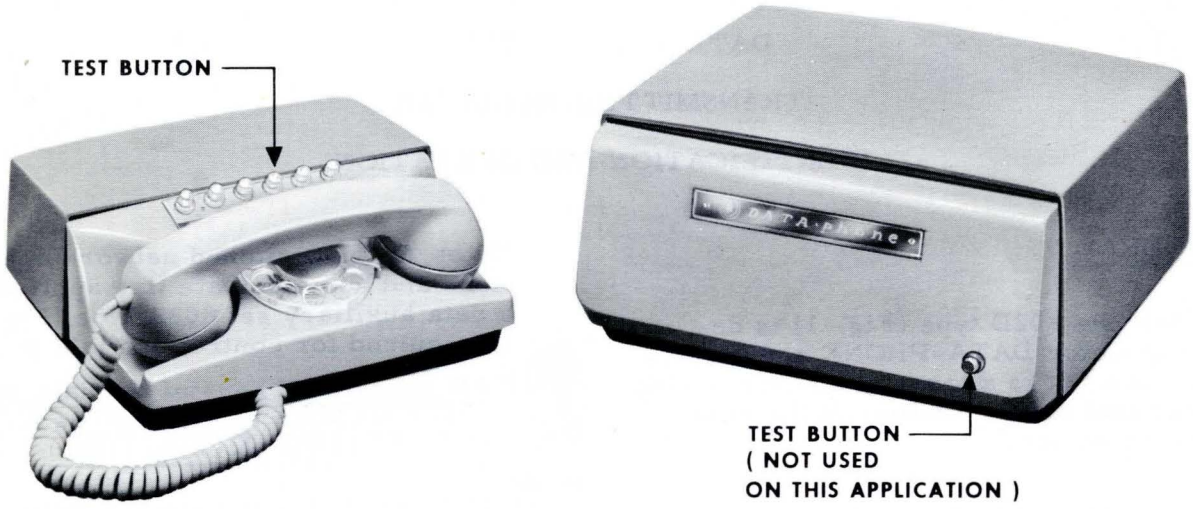


Fig. 2 - Data Set 202D Type with Data Auxiliary Set 804A Type

2. IDENTIFICATION

2.01 Data set 202D type can be used in a range of service applications. The selected service application dictates the type and amount of apparatus required for each installation. Certain features of the data set remain uniform regardless of the service application selected.

2.02 Table A shows service applications and supporting information.

2.03 With the aid of suitable key telephone circuitry, the data auxiliary set 804A type can be used to control either switched network or private line service alternately.

2.04 The service applications available are listed as follows:

(a) Two-wire switched network.

(b) Four-wire switched network.

(1) Common battery signaling.

(2) E and M signaling.

(c) Two-wire private line without alternate switched network line.

(d) Two-wire private line without talk feature and alternate switched network line (no 804A used).

(e) Two-wire private line with alternate switched network line.

(f) Four-wire private line without alternate switched network line.

(g) Four-wire private line without talk feature and alternate switched network line (no 804A used).

(h) Four-wire private line with one alternate switched network line (half duplex on switched network line).

(i) Four-wire private line with two alternate switched network lines (full duplex on switched network lines).

2.05 A 6017AP key is used on 4-wire private line installations to provide a private line termination towards the central office and permits the customer to perform loop around tests through the data set.

2.06 On 2-wire applications, a reverse channel unit (data unit 1A1) can be provided in the data set to furnish circuit assurance and low-speed coordinating signals between customer's business machines. The data unit is a reverse channel transceiver whose input and output appear on the interface of the data set. Input and output signals of the data unit 1A1 are EIA type (positive voltage for an ON condition and a negative voltage for an OFF condition).

TABLE A
SERVICE APPLICATION AND SUPPORTING INFORMATION

	SERVICE APPLICATIONS ↓	DATA SET TYPE (202D) SEE NOTE	TRANSMISSION SPEED BITS/SEC	MOUNTING CORD REQUIRED (5-1/2 FOOT)	PROVISION FOR AUTOMATIC ANSWERING	PROVISION FOR AUTOMATIC CALLING UNIT	TYPE OF CONTROL DATA AUXILIARY SET REQUIRED	OTHER ASSOCIATED CONTROL APPARATUS REQUIRED					POWER SUPPLY REQUIREMENTS FOR ASSOCIATED CONTROL APPARATUS		OTHER SUPPORTING INFORMATION AND REFERENCE MATERIAL
								KEY TELEPHONE UNITS				MISC			
								AMT	TYPE	AMT	TYPE				
SWITCHED NETWORK	2-WIRE (HALF DUPLEX)	D1 OR D2	UP TO 1200	CHANGE OUT TO D34B-61	YES	YES	804A1	NOT APPLICABLE		NOT APPLICABLE		NOT APPLICABLE	NOT APPLICABLE		REFERENCE: CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
	4-WIRE (FULL DUPLEX)	D1	UP TO 1600	CHANGE OUT TO D34B-61	YES	YES	804A1	COMMON BAT. SIG		E AND M SIG		NOT APPLICABLE	COMMON BAT. SIG	E AND M SIG	REFERENCE: CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								1	219A	1	219A		20-26V DC SIGNAL	20-26V DC SIGNAL	
								2	229B	2	229B		20-26V DC TALK	20-26V DC TALK	
								1	243A	1	255A			45-50V DC SIGNAL	
								-	-	-	-			105V± AC 20~ RING	
PRIVATE LINE	2-WIRE WITH TALK BUT WITHOUT ALTERNATE SWITCHED NETWORK FEATURE (HALF DUPLEX)	D1 OR D2	UP TO 1800	CHANGE OUT TO D34B-61	YES	NOT APPLICABLE	804A1	1‡	3A	1†	232B	†KS-15900,L1 INTERRUPTER	20-26V DC SIGNAL 20-26V DC TALK †10V AC 60 CYCLE AC MOTOR SUPPLY 105V± AC 20 CYCLE RING		REFERENCE: CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								1	15D	-	-				
								1	17B	-	-				
								1	219A	-	-				
								3	220A	-	-				
	2-WIRE WITHOUT TALK FEATURE (HALF DUPLEX)	D1 OR D2	UP TO 1800	D6AA-61 (FURNISHED)	YES	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		NOT APPLICABLE		NOT APPLICABLE	NOT APPLICABLE		REFERENCE: CD- AND SD-1D049 - DATA SET 202D TYPE
	2-WIRE WITH TALK AND ALTERNATE SWITCHED NETWORK FEATURE (HALF DUPLEX)	D1 OR D2	UP TO 1800 LIMITED TO 1200 WHEN SWITCHED NETWORK LINE IS USED	CHANGE OUT TO D34B-61	YES	NOT APPLICABLE	804A1	1	3A	-	-	NOT APPLICABLE	20-26V DC SIGNAL 20-26V DC TALK 105V± AC 20 CYCLE RING		DO NOT USE SWITCHED NETWORK LINE FOR REGULAR TELEPHONE SERVICE. USE FOR DATA CALLS ONLY. REFERENCE: CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								2	15D	-	-				
								1	17B	-	-				
								1	219A	-	-				
								5	220A	-	-				
	4-WIRE WITH TALK BUT WITHOUT ALTERNATE SWITCHED NETWORK FEATURE (FULL DUPLEX)	D1	UP TO 1800	CHANGE OUT TO D34B-61	YES	NOT APPLICABLE	804A1	1*	15D	1†	232B	6017AP KEY † KS-15900,L1 INTERRUPTER	20-26V DC SIGNAL 20-26V DC TALK †10V AC 60 CYCLE AC MOTOR SUPPLY 105V± AC 20 CYCLE RING		REFERENCE: CD- AND SD-1D020 - LINE AND TEST CIRCUIT CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								1‡	30A	1	248A				
								1*	220A	-	-				
								1	220A	-	-				
								2	229B	-	-				
	4-WIRE WITHOUT TALK FEATURE (FULL DUPLEX)	D1	UP TO 1800	D6AA-61 (FURNISHED)	YES	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		NOT APPLICABLE		6017AP KEY	NOT APPLICABLE		REFERENCE: CD- AND SD-1D020 - LINE AND TEST CIRCUIT CD- AND SD-1D049 - DATA SET 202D TYPE
	4-WIRE WITH TALK AND ALTERNATE SWITCHED NETWORK FEATURE ONE SWITCHED NETWORK LINE (FULL DUPLEX) HALF DUPLEX ON SWITCHED NETWORK LINE	D1	UP TO 1800 LIMITED TO 1200 WHEN SWITCHED NETWORK LINE IS USED	CHANGE OUT TO D34B-61	YES	NOT APPLICABLE	804A2	1*	15D	1	248A	6017AP KEY † KS-15900,L1 INTERRUPTER	20-26V DC SIGNAL 20-26V DC TALK †10V AC 60 CYCLE AC MOTOR SUPPLY 105V± AC 20 CYCLE RING		DO NOT USE SWITCHED NETWORK LINE FOR REGULAR TELEPHONE SERVICE. USE FOR DATA CALLS ONLY. REFERENCE: CD- AND SD-1D020 - LINE AND TEST CIRCUIT CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								1‡	30A	1†	232B				
								1*	220A	1	251A				
								1	220A	-	-				
								5	229B	-	-				
	4-WIRE WITH TALK AND ALTERNATE SWITCHED NETWORK FEATURE TWO SWITCHED NETWORK LINES (FULL DUPLEX)	D1	UP TO 1800 LIMITED TO 1200 WHEN SWITCHED NETWORK LINE IS USED	CHANGE OUT TO D34B-61	YES NOT AVAILABLE ON ALTERNATE SWITCHED NETWORK LINES	NOT APPLICABLE	804A2	1*	15D	9	229B	6017AP KEY †KS-15900,L1 INTERRUPTER	20-26V DC SIGNAL 20-26V DC TALK †10V AC 60 CYCLE AC MOTOR SUPPLY 105V± AC 20 CYCLE RING		DO NOT USE SWITCHED NETWORK LINES FOR REGULAR TELEPHONE SERVICE. USE FOR DATA CALLS ONLY. REFERENCE: CD- AND SD-1D020 - LINE AND TEST CIRCUIT CD- AND SD-1D049 - DATA SET 202D TYPE CD- AND SD-1D041 - DATA AUX SET 804A TYPE CD- AND SD-1D061 - DATA SET APPLICATIONS
								1‡	30A	1†	232B				
								1	219A	1	248A				
								1*	220A	2	251A				
								1	220A	-	-				

NOTE: THE FOLLOWING DATA SET FEATURES REMAIN UNIFORM REGARDLESS OF THE SERVICE APPLICATION:

(A) MODULATION TECHNIQUE, FM SERIAL (VOICE-BAND).

(B) MARK FREQUENCY: 1200 ±20 CPS.

(C) SPACE FREQUENCY: 2200 ±20 CPS.

(D) INTERFACE SIGNAL: EIA VOLTAGE OR 202A OR 202B TYPE (OPTIONAL AS REQUIRED).

(E) POWER REQUIREMENT: 3-WIRE, 60 ±0.5 CPS, 117 VOLT AC.

(F) POWER CORD: KS-14932,L16 3-CONDUCTOR (10 FOOT LONG).

(G) ROOM TEMPERATURE-HUMIDITY LIMITS: +50 TO 120 F AT 20 TO 95%.

* REQUIRED ONLY WHEN NONSELECTIVE INCOMING AND MANUAL OUTGOING SIGNALING IS USED.

† REQUIRED ONLY WHEN INTERRUPTED VISUAL AND AUDIBLE SIGNALING IS DESIRED.

‡ REQUIRED ONLY WHEN LOCKED IN SIGNALING IS DESIRED.

2.07 Data set 202D can be obtained with reverse channel (202D2) or without reverse channel (202D1). The data unit 1A1 (reverse channel) can later be added or removed as required. Fig. 3 shows mounting detail for the data unit. (Refer to Section 592-016-300 for connections.)

Note: The data set nameplate (Fig. 4) should be restenciled when addition or removal is made.

2.08 The business machine cord is connected to the data set at the interface connector (Fig. 4). The business machine connection cord (50 feet maximum length) must be furnished by the customer. Interface leads presented at this connector are numbered and designated as indicated in Table B.

Note: The business machine cord must be equipped with a Cinch DB19604-432 plug or equivalent to connect to the data set interface connector.

2.09 A ringer mounted in the data auxiliary set 804A type (Fig. 2) provides audible signals on incoming calls.

Note: When a louder ring is required substitute an external high impedance ringer for the data auxiliary set ringer. (See Section 592-016-400.)

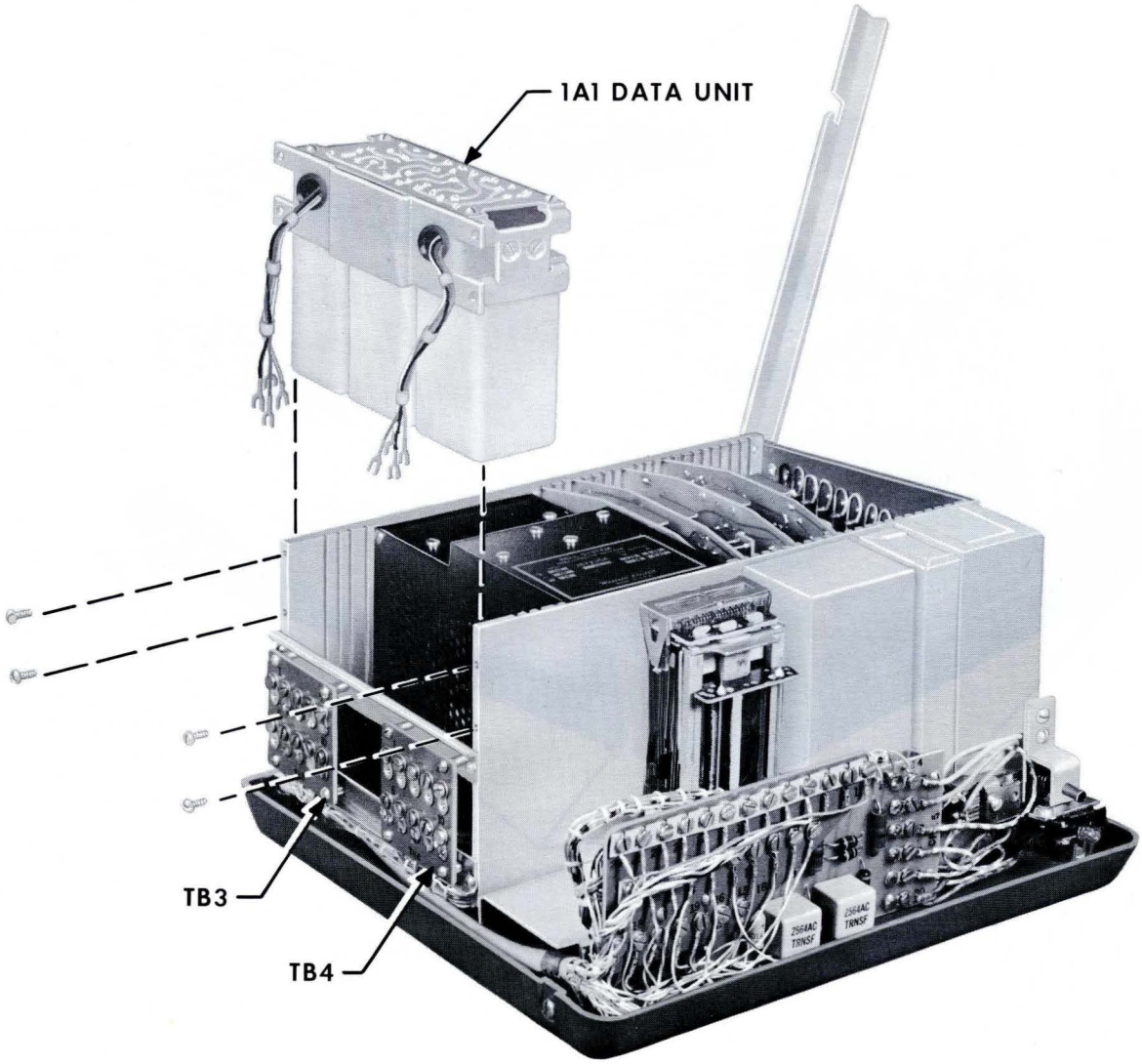


Fig. 3 - Mounting Detail for 1A1 Data Unit

3. COVER REMOVAL AND REPLACEMENT PROCEDURE

THINK Before attempting cord changeout verify that power cord has been disconnected.

3.01 Removal

(1) Loosen but do not remove the four captive cover screws located around the base pan (Fig. 4).

(2) Remove cover by pulling straight up.

3.02 Replacement

(1) Position cover retaining wedges so they may easily receive the cover lugs.

(2) Lower cover and cover lugs over the captive wedges.

(3) Check that cover lugs are engaged with cover wedges.

(4) Tighten captive cover screws.

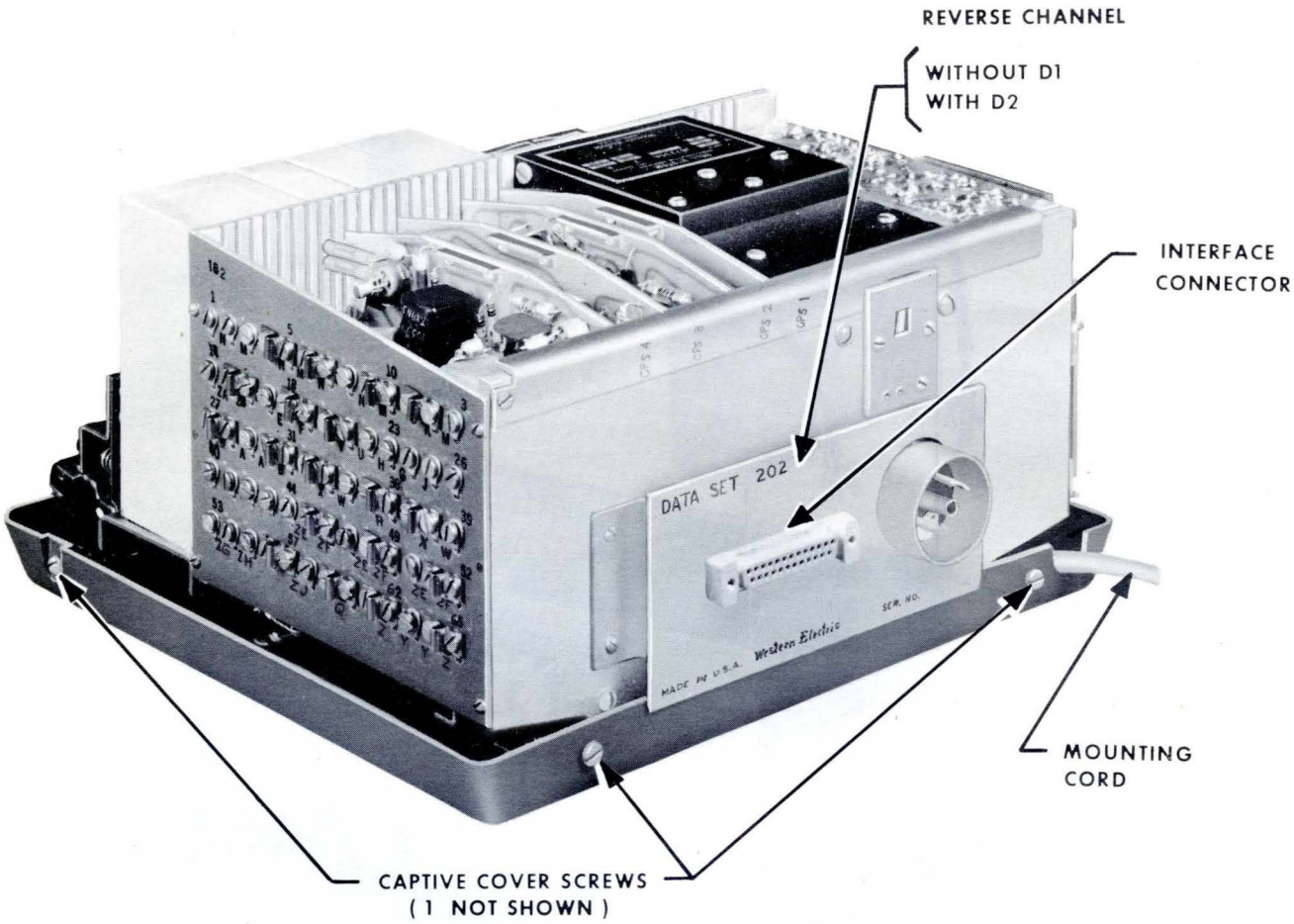


Fig. 4 - Data Set 202D2 - Rear View

TABLE B
INTERFACE LEAD IDENTIFICATION

Interface Connector Pin Number (See Fig. 4)	EIA Standard Designations	Lead Designations	Function
1	AA	Protective Ground	Common to signal and ac power service ground.
2	BA	Transmitted Data	Customer data presented to data set.
3	BB	Received Data	Data output presented to business machine.
4	CA	Request to Send	When business machine places this lead in ON condition, data set is placed in transmit condition. When placed in OFF condition, data set is placed in receive condition.
5	CB	Clear to Send	Signals business machine that data may be transmitted.
6	CC	Data Set Ready	Signals business machine when data set is in the data mode.
7	AB	Signal Ground	Common to frame ground and ac power service ground.
8	CF	Data Carrier Detector	Signals business machine that data carrier is being received.
9	+P	+ Voltage	Power supply (+18 volts).
10	-P	- Voltage	Power supply (-18 volts).
11	SA	Supervisory Transmitted Data	Provides means of transmitting low speed coordinating signals to data transmitting end of connection.
12	SB	Supervisory Received Data	Provides means of receiving low speed coordinating signals and circuit assurance signal.
13	Not used		
14	Not used		
15	Not used		
16	Not used		
17	Not used		
18	Not used		
19*	RR	Remote Release	When opened by business machine, terminates call. Must be connected to CD lead for data set to go to data mode.
20	CD	Data Terminal Ready	Business machine applies an ON condition for auto answer and to allow data set to go to data mode. An OFF condition disconnects data data set from line.
21*	RY	Ready	Closed to CD lead by business machine when automatic answering of incoming calls is desired.
22	CE	Ring Indicator 1	Signals business machine that an incoming call is being received.
23*	R12	Ring Indicator 2	Signals business machine that an incoming call is being received.
24	Not used		
25	Not used		

* For 202A or 202B type interface.

4. CORD CHANGEOUT PROCEDURE

4.01 When it is required to changeout mounting cord (see Table A), proceed as follows:

Before attempting cord changeout, verify that power cord has been disconnected.

(1) Remove data set cover. (See 3. Cover Removal and Replacement Procedure.)

(2) Loosen terminal screws at TB1 and remove the spade-tipped leads of the mounting cord.

(3) Disconnect stay cord hook from data set chassis and remove cord.

(4) Attach stay cord hook of new cord.

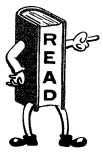
(5) Connect spade-tipped leads of new cord to terminals of TB1. (Refer to Section 592-016-400 for cord connection assignment.)

5. OPERATION

5.01 Data set 202D type can be used to transmit and receive data alternately on 2-wire operation or simultaneously on 4-wire operation. The business machine determines whether the set is used to transmit and/or receive.

Note: On 2-wire applications when data set is used as a transmitter, the receive side of the set monitors the transmitted data.

5.02 Operating procedures of the data set and associated control equipment vary with the service applications.



Business machine operation is not described in Bell System Practices.

5.03 The following operating procedures are described by service application.

Note: It is assumed that correct option wiring of the data set and associated control equipment has been made for each service application.

5.04 Two- or Four-Wire Switched Network with Data Auxiliary Set 804A1

Originating and Answering a Data Call

(1) The calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and establishes connection to the distant terminal (called station) in the normal telephone manner.

(2) At the called station, ringing current will ring the bell and operate circuitry in the data set. The business machine is signaled that an incoming call is present. After one complete ringing cycle, attendant at called station should depress TALK key and take handset off hook (TALK lamp comes on and ringing trips).

(3) Calling and called attendants reach voice agreement as to nature of data call (which station will transmit, which station will receive, etc).

(4) Both attendants agree to go to data mode by one of the following methods:

Note: If called data station is arranged for automatic answer, called station performs answer and data mode functions automatically. Calling attendant performs data mode functions manually.

(a) If the called station is a data set 202A, 202B, or 3A, both stations may go into data mode simultaneously by operating and releasing DATA keys (DATA lamps come on) and hanging up.

(b) If the called station is a data set 202C or 202D, the called station must operate and release DATA key first (DATA lamp comes on and TALK lamp remains on) and hang up. At this time, the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key (DATA lamp comes on, TALK lamp remains off) and hangs up.

Note: If it becomes necessary to return to talk mode and then again return

to data mode, both stations should take handsets off hook, depress TALK keys, and proceed as previously described in Steps 3 and 4.

Test Operation

(1) The data test center calls the customer and instructs him to momentarily depress data auxiliary set TEST key (TEST lamp comes on) and then hang up.

Note: If at any other time the TEST button is accidentally operated while handset is off hook and TALK key is operated, the data set will lock in test mode. Release by restoring handset to on hook and reoperating TEST key.

(2) Test center drops line (data set remains in test mode) and again initiates call to data set (in test mode data set will answer automatically).

Note: Customer should disregard momentary ring when test center calls data set.

(3) Test center performs required test.

(4) Test center drops data set out of test mode and releases line.

5.05 Two- and Four-Wire Private Line with Data Auxiliary Set 804A1 without Alternate Switched Network Line

Originating and Answering a Data Call

Note: The transmit and/or receive condition of the data set is controlled by the business machine.

(1) The calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and signals called station by momentarily depressing the RING key (RING lamp does not come on). Audible and visual signals at called station are provided by one of the following optional methods.

Note: On 4-wire applications with selective signaling systems, the calling customer can signal the called customer by dialing the code number of the called station.

(a) Bell and RING lamp operate at interrupted rate until call is answered.

(b) Bell and RING lamp operate steadily until call is answered.

(2) Attendant at called station depresses TALK key and takes handset off hook (TALK lamp comes on, ringing trips, and RING lamp goes out).

(3) Calling and called attendants reach voice agreement as to nature of data call.

(4) Both attendants agree to go to data mode by one of the following methods.

Note: If called data station is arranged for automatic answer, called station performs answer and data mode functions automatically. Calling attendant performs data mode functions manually.

(a) If the called station is a data set 202A, 202B, or 3A, both stations may go into data mode simultaneously by operating and releasing DATA keys (DATA lamps come on) and hanging up.

(b) If the called station is a data set 202C or 202D, the called station must operate and release DATA key first (DATA lamp comes on and TALK lamp remains on) and hang up. At this time the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key (DATA lamp comes on, TALK lamp remains off) and hangs up.

Note: If it becomes necessary to return to talk mode and then again

return to data mode, both stations should take handsets off hook, depress TALK keys and proceed as previously described in Steps 3 and 4.

Test Operation

Note: It is assumed that arrangements have been made to provide access to the data test center for private line testing.

(1) The data test center calls the customer and instructs him to momentarily depress data auxiliary set TEST key (TEST lamp comes on) and then hang up.

Note: If at any other time the TEST button is accidentally operated while handset is off hook and TALK key is operated, the data set will lock in test mode. Release by restoring handset to on hook and reoperating TEST key.

(2) Test center drops line (data set remains in test mode) and again initiates call to data set (in test mode, data set will answer automatically).

Note: Customer should disregard momentary ring when test center calls data set.

(3) Test center performs required test.

(4) Test center drops data set out of test mode and releases line.

5.06 Private Line without Data Auxiliary Set 804A Type (No Talk Feature)

Note: The transmit or receive condition of the data set is controlled by the business machine.

Originating and Answering a Data Call

(1) All data set functions are controlled by the business machine and require no manual operation by an attendant.

Test Operation

(1) The data test center calls the customer at an adjacent telephone set and instructs him to momentarily depress the data set TEST key (TEST lamp comes on).

Note: If TEST key is accidently operated by the customer at any other time, the data set will lock in test mode. In this case, release test mode by disconnecting data set power cord momentarily.

(2) Data test center has control of data set and can make required test.

(3) Data test center drops data set out of test mode and releases line.

5.07 Two- and Four-Wire Private Line with Data Auxiliary Set 804A Type (with Alternate Switched Network Line)

Originating and Answering a Data Call on Private Line

Note 1: Any two stations using the private line will appear idle on the switched network line to any other station.

Note 2: The transmit and/or receive condition of the data set is controlled by the business machine.

Note 3: On 4-wire applications and when switched network feature is used, data set will be required to operate on a half-duplex basis.

(1) The calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and signals called station by momentarily depressing the RING key (RING lamp does not come on). Audible and visual signals at called station are provided by one of the following optional methods.

Note: On 4-wire applications with selective signaling systems, the calling customer can signal the called customer by dialing the code number of the called station.

(a) Bell and RING lamp operate at interrupted rate until call is answered.

(b) Bell and RING lamp operate steadily until call is answered.

(2) Attendant at called station depresses TALK key and takes handset off hook (TALK lamp comes on, ringing trips, and RING lamp goes out).

(3) Calling and called attendants reach voice agreement as to nature of data call.

(4) Both attendants agree to go to data mode by one of the following methods.

Note: If called data station is arranged for automatic answer, called station performs answer and data mode functions automatically. Calling attendant performs the data mode functions manually.

(a) If the called station is a data set 202A, 202B, or 3A both stations may go into data mode simultaneously by operating and releasing DATA keys (DATA lamps come on) and hanging up.

(b) If the called station is a data set 202C or 202D, the called station must operate and release DATA key first (DATA lamp comes on and TALK lamp remains on) and hang up. At this time, the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key (DATA lamp comes on, TALK lamp remains off) and hangs up.

Note: If it becomes necessary to return to talk mode and then again return to data mode, both stations should take handsets off hook, depress TALK keys, and proceed as previously described in Steps 3 and 4.

Originating and Answering a Data Call on Switched Network Line

Note: Any two stations using the switched network line will appear idle on the private line to any other station.

Alternate switched network feature can be used to communicate with any data set 202-type in switched network service.

Note: The transmit or receive condition of the data set is controlled by the business machine.

(1) When desired, the customer can establish data call by using alternate switched network line.

(2) Calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and momentarily depresses key of switched network line (line lamp comes on).

Note: Switched network line will be designated by telephone number. (See Section 592-016-200.)

(3) The calling customer waits for dial tone and then proceeds to establish connection to the called station's switched network line number in the normal telephone manner.

(4) Audible and visual signals at called station will be provided as follows:

(a) Bell and line lamp will operate until call is answered (rate of interruption is subject to ringing cycle interruption rate).

(5) Attendant at called station answers by one of the following methods:

(a) If called station is a data set 202A, 202B, 202C, or 3A, attendant at called station depresses TALK key and takes handset off hook (ringing trips).

(b) If called station is a data set 202D, attendant at called station depresses TALK key, takes handset off hook (TALK lamp comes on), and momentarily depresses line key. (Ringing trips and line lamp changes to steady rate.)

(6) Calling and called attendants reach voice agreement as to nature of data call (which station will transmit, which

station will receive, etc). Both attendants agree to go to data mode by one of the following methods:

Note: If called data station and associated key telephone circuitry is arranged for automatic answer, called station performs answer and data mode functions automatically. Calling attendant performs data mode functions manually.

(a) If the called station is a data set 202A, 202B, or 3A, both stations may go into data mode simultaneously by operating and releasing DATA keys (DATA lamps come on) and hanging up.

(b) If the called station is a data set 202C or 202D, the called station must operate and release DATA key first (DATA lamp comes on and TALK lamp remains on) and hang up. At this time, the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key (DATA lamp comes on, TALK lamp remains off) and hangs up.

Note: If it becomes necessary to return to talk mode and then again return to data mode, both stations should take handsets off hook, depress TALK keys, and proceed as previously described in Step 6.

Test Operation

Note: It is assumed that arrangements have been made to provide access to the data test center for private line testing.

(1) The data test center calls the customer and instructs him to depress data auxiliary set TEST key (TEST lamp comes on) and hang up.

Note: If at any other time the TEST key is accidentally operated while handset is off hook and TALK key is operated,the data set will lock in test mode. Release by restoring handset to on hook and reoperating TEST key.

(2) Test center drops line (data set remains in test mode) and again initiates call to data set. (In test mode data set will answer automatically.)

Note: Customer should disregard momentary ring when test center calls data set.

(3) Test center performs required test.

(4) Test center drops data set out of test mode and releases line.

5.08 Four-Wire Private Line with Data Auxiliary Set 804A2 with Two Alternate Switched Network Lines

Originating and Answering a Data Call on Private Line

Note: Any two stations using the private line will appear idle on the switched network lines to any other station.

(1) The calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and signals called station by one of the following optional methods:

(a) Dials digit 1.

(b) Dials code number (selective signal system) of called station.

(2) Audible and visual signals at called station are provided by one of the following optional methods:

(a) Bell and RING lamp operate at interrupted rate until call is answered.

(b) Bell and RING lamp operate steadily until call is answered.

(3) Attendant at called station depresses TALK key and takes handset off hook (TALK lamp comes on, ringing trips, and RING lamp goes out).

(4) Calling and called attendants reach voice agreement as to nature of data call.

(5) Both attendants agree to go to data mode by one of the following methods:

Note: If called data station is arranged for automatic answer, called station performs answer and data mode functions automatically. Calling attendant performs data mode functions manually.

(a) If the called station is a data set 202A, 202B, or 3A, both stations may go into data mode simultaneously by operating and releasing DATA keys (DATA lamps come on) and hanging up.

(b) If the called station is a data set 202C or 202D, the called station must operate and release DATA key first (DATA lamp comes on and TALK lamp remains on) and hang up. At this time, the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key (DATA lamp comes on, TALK lamp remains off) and hangs up.

Note: If it becomes necessary to return to talk mode and then again return to data mode, both stations should take handsets off hook, depress TALK keys, and proceed as previously described in Steps 4 and 5.

Originating and Answering a Data Call on Alternate Switched Network Lines

Note 1: Any two stations using the switched network lines will appear idle on the private line to any other station.

Note 2: The transmit or receive condition of the data set is controlled by the business machine.

(1) When desired, the customer can establish data call by using the switched network lines.

(2) Calling customer depresses TALK key, takes handset off hook (TALK lamp does not come on), and momentarily depresses key of first (1) line (first line lamp comes on).

Note: Switched network lines will be designated (1) and (2), followed by telephone numbers. (See Section 592-016-200.)

(3) The calling customer waits for dial tone and then proceeds to establish connection to the called station's second (2) switched network line number in the normal telephone manner.

(4) Audible and visual signals at the called station will be provided as follows:

(a) Bell and (2) lamp will operate until call is answered. (Rate of interruption is subject to ringing cycle interruption rate.)

(5) Attendant at called station depresses TALK key, takes handset off hook (TALK lamp comes on), and momentarily depresses (2) key. Ringing trips and (2) lamp changes to steady rate.

(6) Calling and called attendants reach voice agreement on establishing next phase of call.

Note: Calling and called attendants should not restore handsets to on hook until entire procedure is completed.

(7) Called attendant momentarily depresses HOLD key [HOLD lamp does not come on, (2) lamp remains on at steady rate].

(8) Calling attendant momentarily depresses HOLD key [HOLD lamp does not come on, (1) lamp remains on at steady rate].

(9) Calling attendant momentarily depresses (2) key, waits for dial tone, and proceeds to establish connection to the called station's first (1) line number in the normal telephone manner.

(10) Audible and visual signals at called station will be provided as follows:

(a) Bell and (1) lamp will operate until call is answered. (Rate of interruption is subject to ringing cycle interruption rate.)

(11) Attendant at called station momentarily depresses (1) key, ringing trips, and (1) lamp changes to steady rate.

(12) Both attendants agree to go to data mode by the following method:

(a) The called station must operate and release DATA key first [DATA lamp comes on and TALK, (1) and (2) lamps remain on] and hang up. At this time the calling station will hear 2025-cps tone for about 2 to 3 seconds. When tone ceases or changes pitch, calling attendant operates and releases DATA key [DATA lamp comes on, TALK lamp remains off and (1) and (2) lamps remain on] and hangs up.

Note: If it becomes necessary to return to talk mode and then again return to data mode, both stations should take handsets off hook, depress TALK keys, and proceed as previously described in this step.

Test Operation

Note: It is assumed that arrangements have been made to provide access to the data test center for private line testing.

(1) The data test center calls the customer and instructs him to depress data auxiliary set TEST key (TEST lamp comes on) and hang up.

Note: If at any other time the TEST key is accidentally operated while handset is off hook and TALK key is operated,the data set will lock in test mode. Release by restoring handset to on hook and reoperating TEST key.

(2) Test center drops line (data set remains in test mode) and again initiates call to data set (in test mode data set will answer automatically).

Note: Customer should disregard momentary ring when test center calls data set.

(3) Test center performs required test.

(4) Test center drops data set out of test mode and releases line.