DATA SET 401J-TYPE

RECEIVER

DESCRIPTION AND OPERATION

CONTENTS PAGE

LIST OF FIGURES

1. GENERAL

1.01 Data Set 401J-type (Fig. 1 and 2) is an integrated data set designed for use in DATA-PHONE® service. It can be connected directly to the central office or PBX lines or into 1A1 and 1A2 Key Telephone Systems.

1.02 This section is reissued for the following reasons:

- To show that Data Sets 401J6, 401J7, 401J8, and 401J9 are the current standard production models
- To show Data Sets 401J2, 401J3, 401J4, and 401J5 rated manufacture discontinued (MD).

Since this reissue constitutes a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 This section does not include information concerning the business machine used with the data set.

1.04 Data Set 401J-type receives data in the form of either 2-out-of-10 or 3-out-of-14 multifrequency tones from certain Data Set 401-type transmitters, and 2-out-of-7 from TOUCH-TONE® telephone sets.

1.05 Received data is translated from multifrequency tones into contact closures for delivery to various classes of business machines. The rated speed is up to 20 characters per second.

1.06 Provisions are included in Data Set 401J-type for use with automatic calling data units.

1.07 The customer must furnish a 3-wire ac outlet (to accept a plug with two parallel blades and a U-shaped grounding pin). This outlet must not be under control of a switch. The data set power supply is a ferroresonant type and requires no internal fuses in the data set.

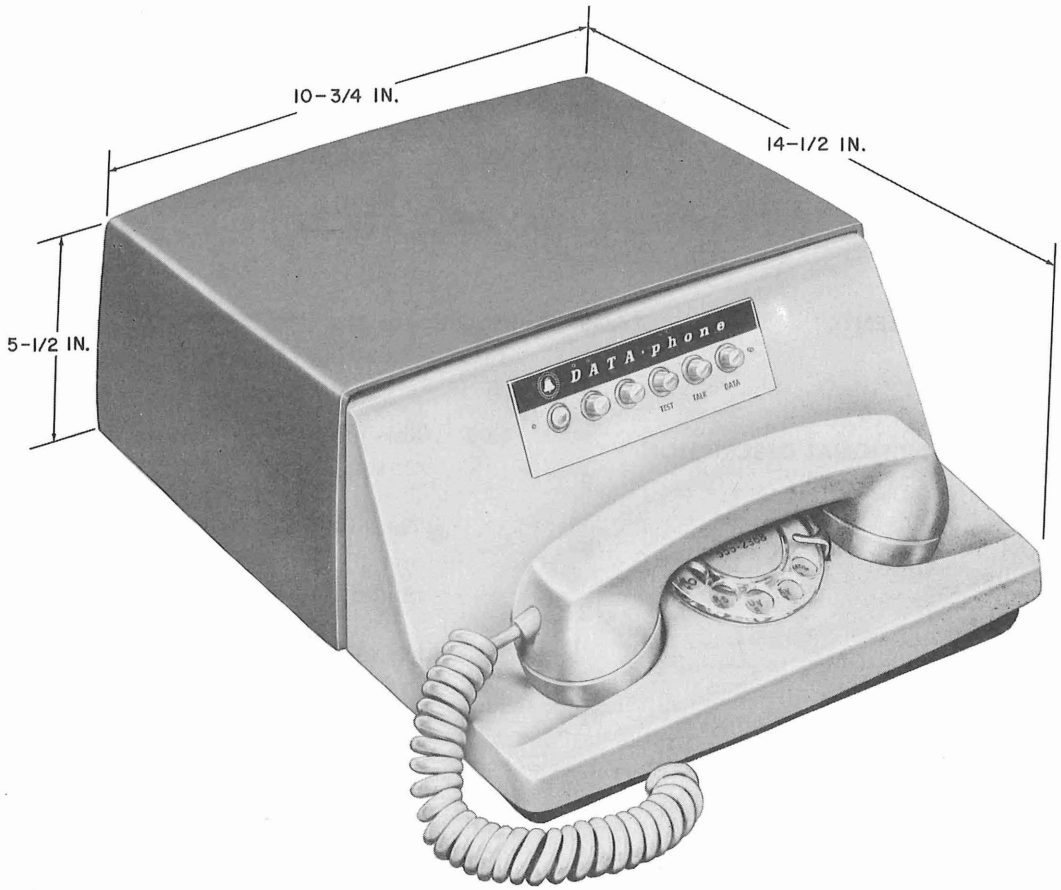

Fig. 1—Data Set J1D401J, 401J1, 401J2, 401J3, 401J6, or 401J7—Front View

1.08 The data set is designed to operate within an ambient temperature range of 40 to 120°F with a relative humidity of 20 to 95 percent.

1.09 When test or demonstration calls are made, refer to the section entitled Crediting Charges on Test Calls (010-250-001) for proper procedure for crediting charges.

2. PHYSICAL AND FUNCTIONAL DESCRIPTION

2.01 Data Sets 401J-type are designed to permit the following:

- Attended operation (optional)
- Unattended operation
- Answer-back signals to transmitting data set
- Regular telephone service on spare buttons (optional use as signal buttons)
- A lead control on spare buttons and data line
- Receiving data from 401-type data transmitters and signals generated by TOUCH-TONE telephone sets
- Loop-back testing
- Out-of-service control by customer (optional for answer-only lines)

2.02 In addition, Data Sets 401J3, 401J5, 401J7, and 401J9 are capable of transmitting voice answer-back while the data set is in the data mode.

Note 1: Data Sets J1D401J, 401J1, 401J2, 401J3, 401J4, and 401J5 are now rated MD, but information on these sets will be retained for those units already in the field.

Note 2: Data Sets 401J6, 401J7, 401J8, and 401J9 come factory equipped with the 3A3 data unit instead of the 58A control unit found in older models.

Fig. 2—Data Set 401J4, 401J5, 401J8, or 401J9—Front View

2.03 Data Set 401J-type is available in 2-tone gray only.

2.04 Data Set 401J-type is available in both the rotary dial and the TOUCH-TONE dial versions. Data Sets J1D401J, 401J1, 401J2, 401J3, 401J6, and 401J7 are provided with the rotary dial. Data Sets 401J4, 401J5, 401J8, and 401J9 are provided with the TOUCH-TONE dial.

2.05 The business machine connection cord and plug must be supplied by the customer. The business machine connection is made at the data set interface connector (Fig. 3).

2.06 All Data Sets 401J-type are factory equipped with two cords—a KS-14532-L16 (10-foot) power cord, and a D6AA-61 (5-1/2 foot) mounting cord or a D10P-61 (5-1/2 foot) mounting cord. When it is necessary to use more conductors than can be accommodated by the D6AA-61 mounting cord in Data Set J1D401J and 401J1, a D30B-61 (5-1/2 foot) mounting cord can be substituted. The D10P-61 (5-1/2 foot) cord is intended to provide all connections for Data Sets 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, and 401J9, except those for spare lines. The D24D-61 (5-1/2 foot) cord is required only if the spare lines are used. Earlier models of the 401J2, 401J3, 401J4, and 401J5 were equipped with the D6AA-61 (5-1/2 foot) cord.

2.07 A G1B ringer provides an audible ringing signal on the data line for Data Set J1D401J and 401J1. Other Data Sets 401J-type use an M1A

ringer to provide an audible ringing signal on the data line. The ringer volume control lever is located at the lower left front corner of the data set (Fig. 4).

2.08 A 6-button 589AA key controls all TALK, DATA, TEST, and spare button functions. Figure 5 shows lamp and key assignments and functions.

2.09 The leads present at the interface connector are numbered and designated as shown in Table A.

Note: The 58A control unit found in the older model of the 401J-type is now rated additions and maintenance (A&M) only but will be covered in this section to provide information for units in the field.

2.10 The 58A control unit and 3A3 data unit designs permit the following:

- Complete unit replacement for repair
- Matching data set impedance to 600- or 900-ohm data line

TABLE A
INTERFACE LEAD DESIGNATIONS

PIN NO.	LEAD DESIGNATION
1	Chassis ground
2	A0
3	A1
4	A2
5	A3
6	A4
7	A Common
8	B0
9	B1
10	B2
11	B3
12	B4
13	B Common
14	C1
15	C2
16	C3
17	C0
18	C Common
19	Electrical answer-back (1017 Hz)
20	Electrical answer-back (1785 Hz)
21	Data receive (squelch)
22	Data terminal ready (line control)
23	Data set ready (line status)
24	Signal ground
25	Ringing indication (W option) or out of service (X option)

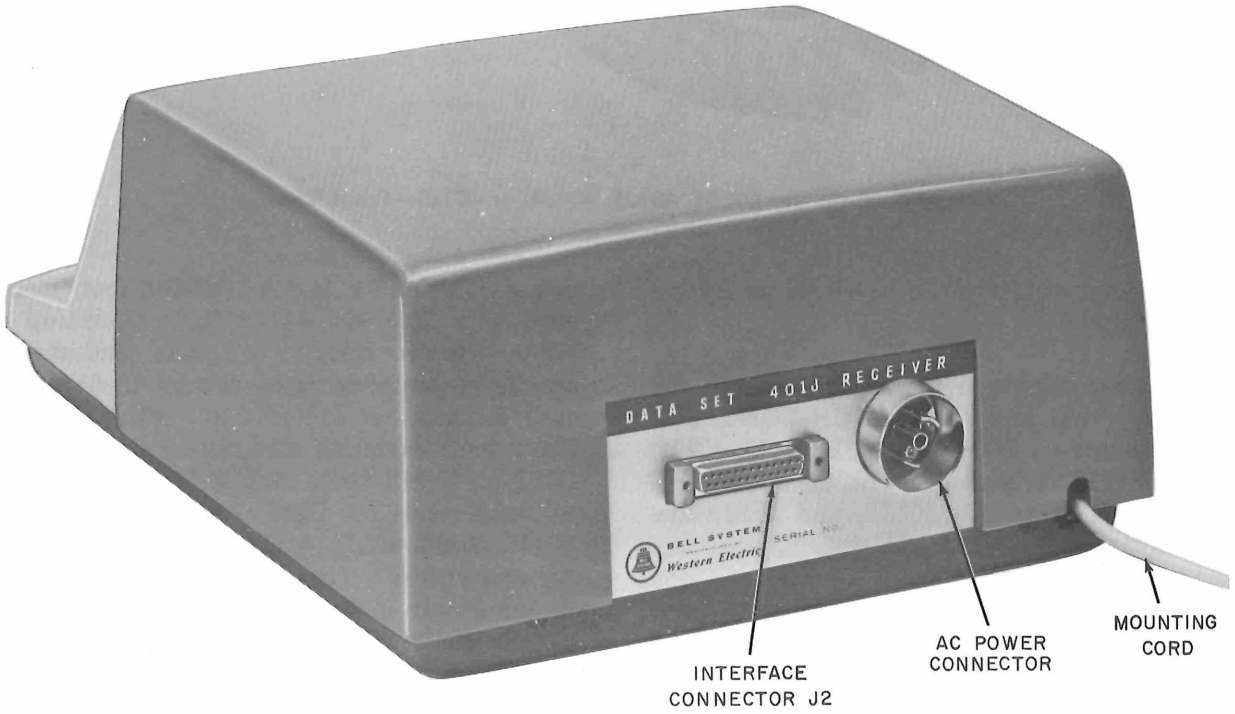

Fig. 3—Data Set 401J-Type—Rear View

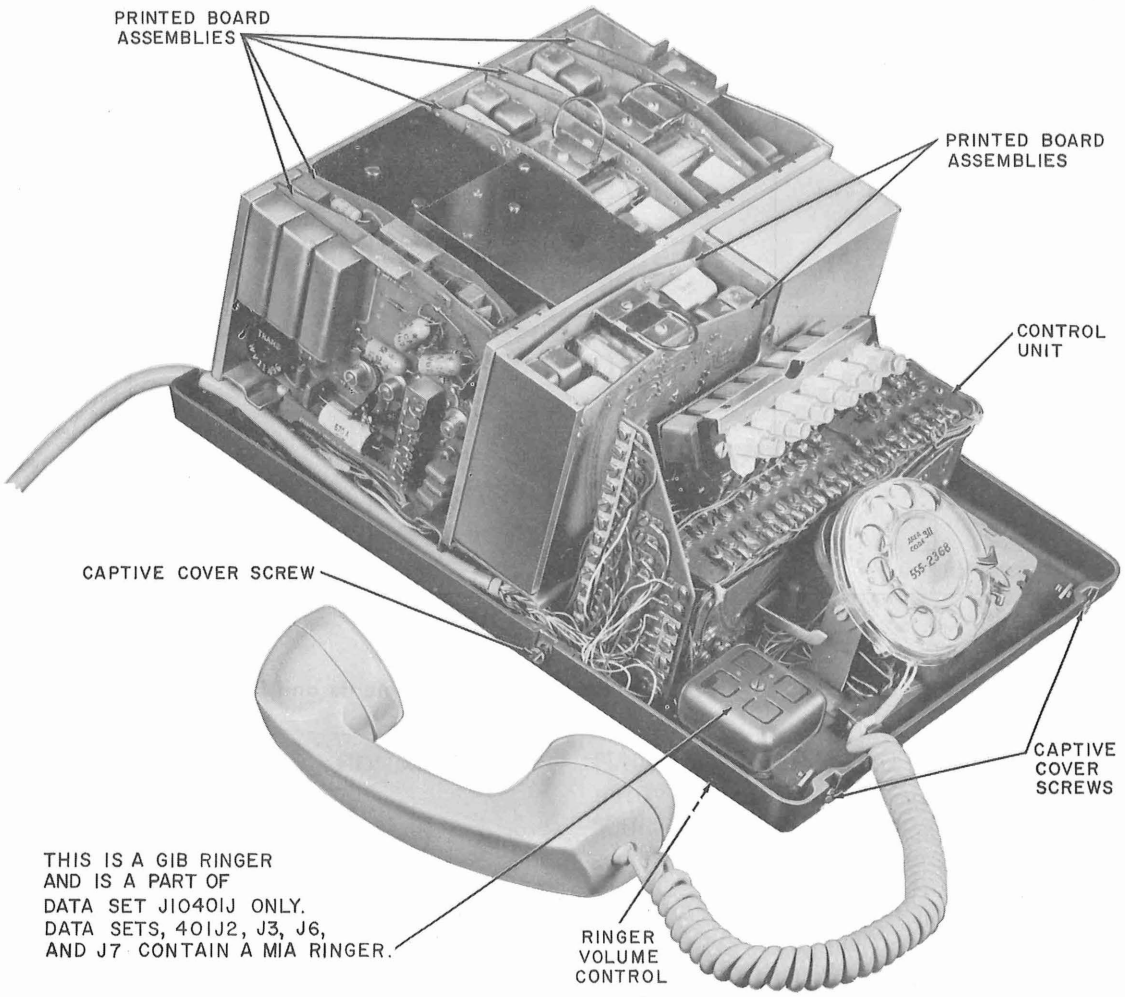

Fig. 4—Data Set J1D401J, 401J2, or 401J6—Inside View

- Protection of data set from electrical disturbances on data line

- Automatic answer of data line (optional)

Note: Provides answer-back tone to transmitting data set.

- Transfer of data set to talk and test modes under direction of 589AA key buttons.

2.11 In addition, the 3A3 data unit makes the data set compatible with No. 1 Electronic Switching System (ESS) central offices and with long Unigauge lines.

Note: The 3A3 data unit will not directly replace the 58A control unit due to wiring incompatibility.

(Spare No. 1)	(Spare No. 2)	(Spare No. 3)	TEST	TALK	DATA
(DATA MODE) In case of power failure, this key is used to supply momentary ground start to the data line when data set is connected to Data Auxiliary Set 801A and if the data set is equipped with F option. Switchhook and TALK key must be operated to make this key functional	(DATA MODE) Not used	(DATA MODE) Not used	(DATA MODE) Used to place data set in test mode. Illuminated when in use. Switchhook and TALK key must be operated to make this key functional.	(DATA MODE) Used to place data set in talk mode. Not illuminated when in use. Transfers data line to telephone network for voice communication.	(DATA MODE) Used to place data set in data mode. Illuminated in this mode. Can be used to release test connection.
(TALK MODE) Used to pick up additional telephone line with or without 1A1 Key Telephone System when data set is arranged. Illuminated when used with 1A1 Key System. Use of these buttons does not restrict simultaneous data reception. Can be converted to signal key.	(TALK MODE) Same as Spare No. 1	(TALK MODE) Same as Spare No. 1	(TALK MODE) Not used	(TALK MODE) Can be used to answer regular calls on data line. (Assumes customer's only line is data line.)	(TALK MODE) Used as a HOLD key for key-equipped lines connected to spare buttons 1, 2, or 3. Not illuminated in this mode. Can be used during data transmission provided data set is not in TEST mode.

Fig. 5—Data Set 401J-Type, Pushbutton Assignments and Functions

2.12 An inside view of Data Set 401J3 or 401J7 is shown in Fig. 6. When the voice answer-back amplifier is removed, Data Set 401J3 becomes Data Set 401J2 and Data Set 401J7 becomes Data Set 401J6.

2.13 An inside view of Data Set 401J5 or 401J9 is shown in Fig. 7. When the voice answer-back amplifier is removed, Data Set 401J5 becomes Data Set 401J4 and Data Set 401J9 becomes Data Set 401J8.

2.14 A block diagram of Data Set 401J-type operating arrangement is shown in Fig. 8.

2.15 The MA-type miniature relays are used in Data Set 401J-type. Adjustment or repair of these miniature relays is not recommended.

3. OPERATION

3.01 The operation of Data Set 401J-type is controlled by the pushbutton key switches on the front of the data set (see Fig. 1 and 2).

3.02 When the spare pushbutton key positions on the front of the data set (see Fig. 1 pickup, telephone (not data) calls can be originated and received in the usual manner on spare lines.

and 2) are connected for spare telephone line

Note 1: Audible ring indication must be provided for the spare lines.

Note 2: Data calls may be received during spare line use if the unattended option is used.

3.03 The operation of the data set is divided into two categories, unattended and attended. The typical arrangement of the data set for use in either category of operation is shown in Fig. 9.

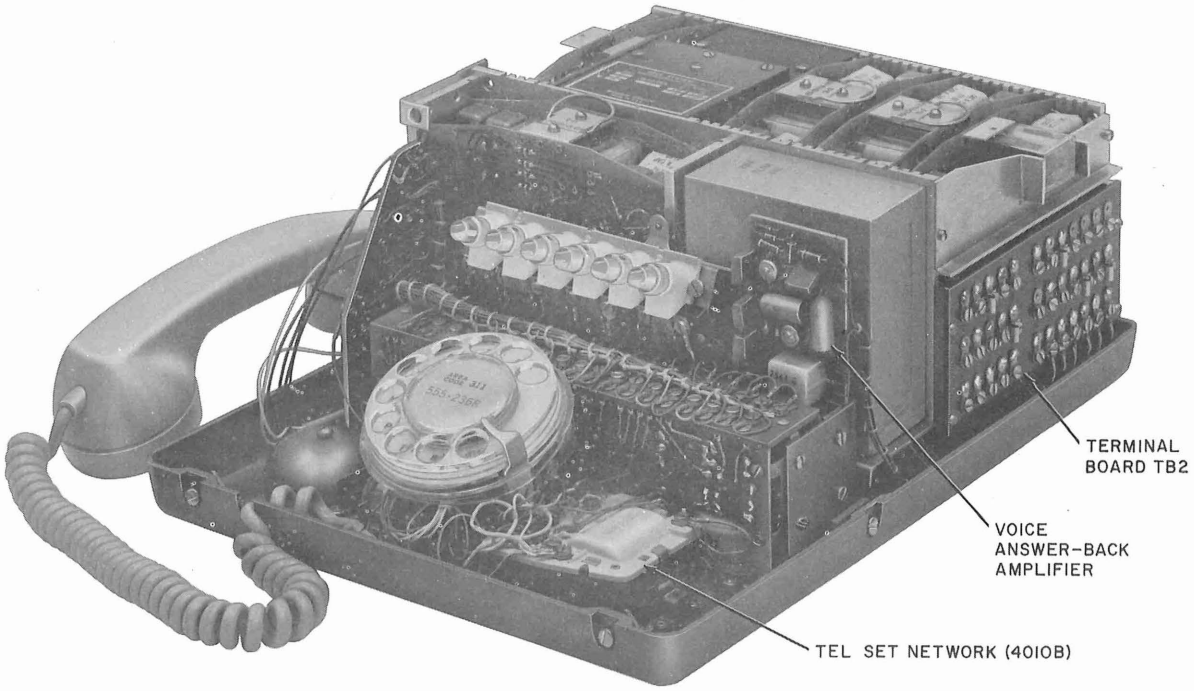

Fig. 6—Data Set 401J3 or 401J7—Inside View

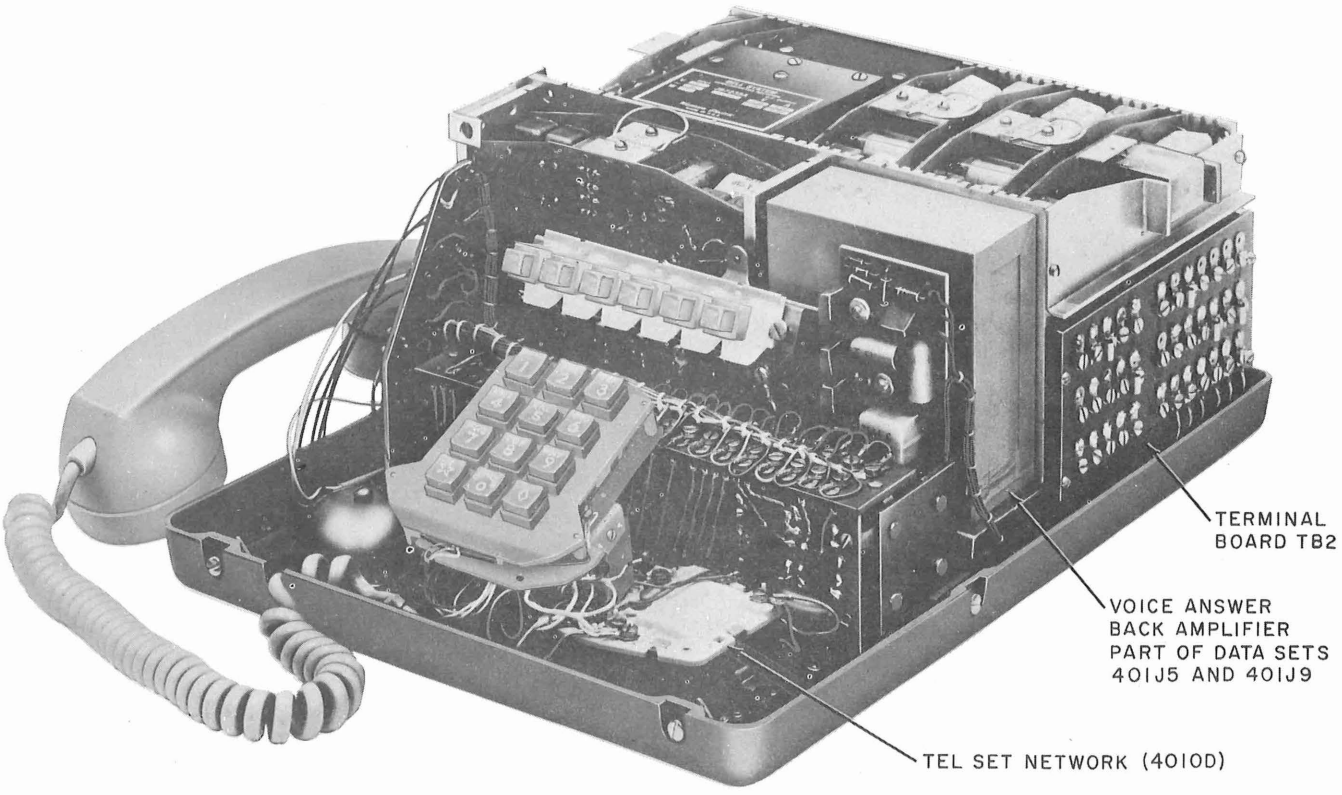

Fig. 7—Data Set 401J5 or 401J9—Inside View

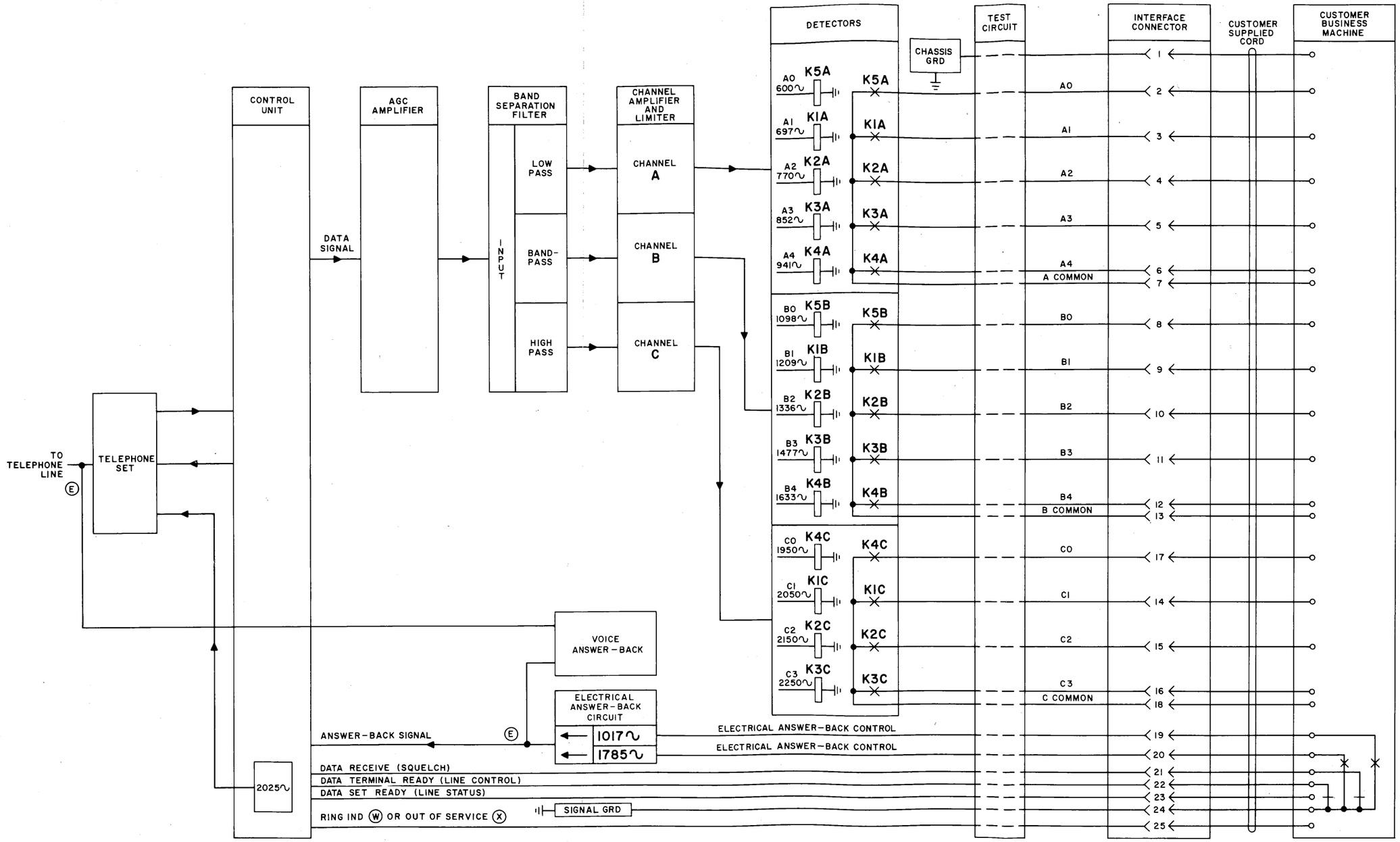

Fig. 8—Data Set 401J-Type, Block Diagram

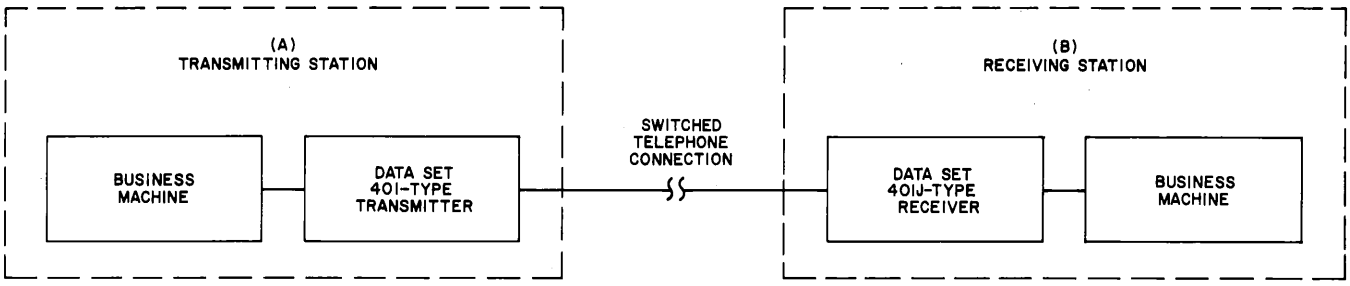

Fig. 9—Data Set 401J-Type Operation Arrangement (Block Diagram)

3.04 ***Unattended Operation Procedure:***

Initially, the customer at the receiving station must prepare the business machine for unattended operation. This includes grounding the data terminal ready (line control) interface lead of Data Set 401J-type.

Note: The data receive (squelch) interface lead of Data Set 401J-type is grounded by the business machine at the receiving station after a call is answered, unless it was previously grounded.

STEP	PROCEDURE
1	Connection is established between the transmitting station and the receiving station (Fig. 9).
2	A ringing signal appears on the line at the receiving station.
3	A short audible ringing is heard, ringing is automatically tripped, and a holding bridge is connected across the data line at the receiver.
4	DATA lamp lights on the receiver.
5	After 1.1 seconds, a 2025-Hz tone is transmitted for about 3 seconds from the receiver to the transmitter.
6	The business machine at the receiving station is signaled by the receiver that the receiver is ready to receive data.
7	Data is transmitted from the transmitting station to the receiving station at the end of the 2025-Hz tone. ***Note:*** If the customer at the receiving station wishes to talk with the transmitting station after data reception, proceed to Step 4 of the attended operation procedure. After completion of attended operation procedure Step 4, the customer can proceed to Steps 5, 6, and 7 of the attended operation procedure, if desired.
8	The customer at the receiving station must release the connection with the transmitting station by opening the data terminal ready (line control) interface lead to the receiver.

3.05 ***Attended Operation Procedure:***

STEP	PROCEDURE
1	Connection is established between the transmitting station and the receiving station (Fig. 9).
2	A ringing signal appears on the line to the receiving station.
3	Audible ringing is heard at the receiver.
4	The customer at the receiving station depresses the TALK key on the receiver, lifts the receiver handset, and talks with the customer at the transmitting station. ***Note:*** Steps 1 through 4 occur when the customer at the transmitting station calls the customer at the receiving station. The customer at the receiving station can also establish the connection (Step 1) by calling the customer at the transmitting station, but the actions of Steps 2 through 4 will take place at the transmitter.
5	After both customers have agreed to go to the data mode, the customer at the transmitting station depresses the DATA key on the transmitter and counts slowly to five before sending data. Upon hearing the tones, the customer at the receiving station depresses the DATA key on the receiver, which releases the TALK key on the receiver.
6	The DATA lamp on the receiver lights.
7	Data is transmitted from the transmitting station to the receiving station. ***Note:*** If desired, both customers can return to Step 4, but this must be done simultaneously. After both customers simultaneously return to Step 4, Steps 5 through 7 can be repeated.
8	The customer at the receiving station can release the line to the receiver by opening the data terminal ready (line control) interface lead. ***Note:*** When the customer at the transmitting station hangs up the transmitter handset, the line to the transmitter is released.

3.06 The operation of the TEST key on Data Set 401J-type is covered in the section entitled Data Set 401J-Type—Test Procedures (594-018-500).

4. REFERENCES

4.01 For more detailed information about Data Set J1D401J and 401J1-types, refer to CD- and SD-1-D022-01; for types 401J2, 401J3, 401J4, 401J5, 401J6, 401J7, 401J8, and 401J9, refer to CD- and SD-1D064-01.