DATA SET 403E-TYPE
INSTALLATION AND CONNECTIONS

CONTENTS PAGE

1. GENERAL

1.01 This section provides information on the installation of options, and installation and connections for data set 403E-type and associated data auxiliary sets.

1.02 This section is reissued for the following reasons:

- To add footnote reference to options F and G, to delete checks for option Q in "Factory-Furnished Options" column and add checks for option R, to show answer-back in terms of level rather than attenuation, and to include answer-back levels for data sets rated manufacture discontinued (MD). These changes apply to Table C.
- To add "J3" to power connector on 8A-type data unit in Fig. 6.
- To show BK lead as supplying OOS feature on cord 1 and in ***Note 1*** in Fig. 7.

Because many data sets 403E2, 3, and 4 (MD) are still used in the field, information on these units is retained. The AR250 circuit pack has been rated additions and maintenance (A&M) only.

1.03 Data set 403E-type consists of a data set 403D-type and an 8A-type data unit enclosed in a KS-20018-L1 cabinet. The various combinations of data sets 403E-type are shown in Table A. The data set may be installed on a desk, table, shelf, or any horizontal surface that is convenient for customer use and within reach of the customer-provided interface cord. The circuit pack (CP) complement of the basic receiver of data sets 403E-type is given in Table B. The current standard data sets (shown in Table B) provide for operation with ESS and on Unigauge loops, and meet the signal level constraints of FCC Tariff No. 263. An attendant alert feature (except on data set 403E7) and third-wire out-of-service option for single set use are provided on the current standard data sets.

1.04 Data set 403E-type requires approximately 12 watts of customer-supplied 117-Vac 60-Hz power for operation.

1.05 A data auxiliary set (DAS) 804G-type must be supplied to provide data, talk, and test mode controls, and to supply conventional telephone service for the data station. Data auxiliary set 801-type automatic calling unit (ACU) may also be used to provide automatic calling features on an optional basis. There are two cords provided for interconnecting the components (Fig. 1). An M50H cord (3 feet long) must be ordered for interconnecting the data set 403D-type and the 8A-type data unit when an ACU is used in conjunction with the data set.

1.06 All components of the data station should be installed in conformance with existing practices covering installation of station sets as specified in the section entitled Data Sets—General Installation and Connection Information (590-010-200).

1.07 Test or demonstration calls should be made in accordance with the section entitled Crediting Charges on Test Calls (010-250-001).

1.08 Assure that the data loop has been tested and meets requirements outlined in the section entitled Data System—DATA PHONE® Service on Direct Distance Dialing Network—Test

TABLE A

DATA SETS 403D-TYPE BASIC RECEIVER AND INTERFACE UNITS
USED WITH DATA SETS 403E-TYPE
SINGLE RECEIVER STATION

SINGLE RECEIVER STATION CODE AND DATA UNIT		USES DATA SET AND INTERFACE COUPLER (DU)		TYPE OF INTERFACE PROVIDED
DATA SET	DATA UNIT	DATA SET	DATA UNIT	
403E2* 403E5	8A3*, 8A4* 8A5	403D4* 403D10	15A1 15A1	2-out-of-8 Contact
403E3* 403E6	8A3*, 8A4* 8A5	403D6* 403D12	15A2 15A2	4-Level Binary Coded Matrix (EIA Voltage)
403E4* 403E7	8A3*, 8A4* 8A5	403D8* 403D14	15A3 15A3	Serial ASCII (EIA Voltage)

* Rated MD

TABLE B

CIRCUIT PACK COMPLEMENT OF DATA SET 403D-TYPE BASIC RECEIVERS
USED WITH DATA SET 403E-TYPE SINGLE RECEIVER STATION

DATA SET 403E-TYPE	DATA SET 403D-TYPE	CIRCUIT PACK USED							
		CONT UNIT	LINE CONT	OPTION BOARD	AGC	FLT'R	GROUP LIMITERS	CHANNEL DET'R	TIMERS, DET'R
CURRENT STANDARD									
403E5 403E6 403E7	403D10 403D12 403D14	AR429	AR422	AR461	AR249	755A	AR248	AR246 & AR247	AR245
RATED MD									
403E2 403E3 403E4	403D4 403D6 403D8	AR253[1]	AR251[1]	AR250[2]					

Note 1: Rated MD

Note 2: Rated A&M

Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines (314-205-501).

2. SPECIAL TOOLS

2.01 In addition to the standard installation tools, the following special tools will be helpful in making the installation:

- Screw Starter—Kedman Co. No. 1736, or equivalent
- 748A Extracting Tool (WECO).

3. OPTION CONNECTIONS

3.01 All data installer options should be specified on the service order. Gain access to the CPs by removing data set panels as described in 4.03. Remove the CP retaining bar on the front of data set 403D-type, then remove AR250 CP (A&M) or AR461 CP using the 748A extracting tool if available; or remove by pulling gently on

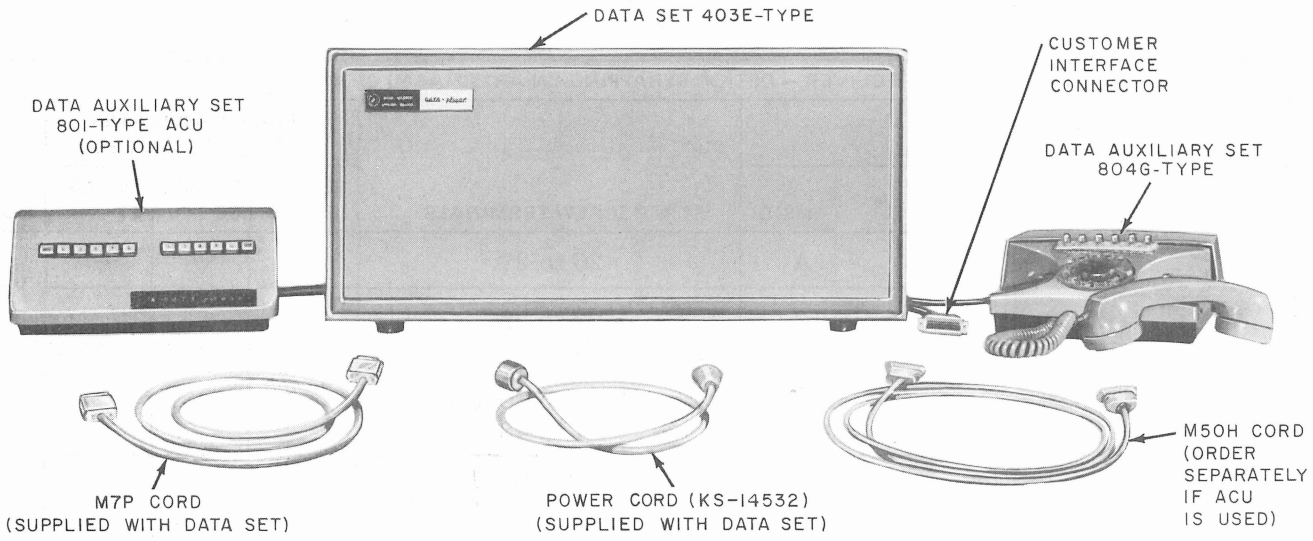


Fig. 1—Data Set 403E-Type With Associated Components

the faceplate. Install specified options in accordance with Table C and Fig. 2. For a detailed description of each option, refer to the section entitled Data Set 403E-Type—Description (594-026-100).

Note: Data sets 403E4 (MD) and 403E7, which use a 15A3 data unit [American National Standard Code for Information Interchange (ASCII) interface], contain additional options on two CPs which require special consideration when installing, as explained in 3.02.

3.02 Install specified options for data set 403E4 (MD) or 403E7, as follows:

(1) Remove AR287 and AR288 CPs from the data set. Install options on AR288 CP in accordance with Table C and Fig. 2, then replace the CP in data set.

(2) Select the three ASCII characters specified on the service order and install options on AR287 CP in accordance with Table D and Fig. 3.

(3) In each of the three rows, the strap from the center terminal to the top terminal provides a "1" bit; the strap from the center terminal to the bottom terminal provides a "0" bit, as the CP is oriented in Fig. 3.

Note: Bits 1 through 6 and 8 may be either a "0" or a "1"; however, bit 7 is always a "0", and there is no provision for strapping.

(4) Position the straps in each row to correspond to the "1" or "0" for each bit, as determined from Table D.

(5) After option strapping, replace AR287 CP in the 15A3 data unit.

Note: Options may be installed in accordance with the service order and the preceding instructions at any convenient telephone company location, such as a shop or garage, prior to visiting the customer location for installing the data set.

4. INSTALLATION

4.01 Locate the data set 403E-type on a desk, table, or shelf within reach of the customer-provided interface cord from the business machine. The maximum length of the cord should not exceed 50 feet.

4.02 The customer must furnish a 3-wire 117-Vac 60-Hz power outlet (two parallel blades and a U-shaped grounding pin). The outlet should not be under the control of a switch.

◗TABLE C◖

OPTIONS FOR DATA SET 403E-TYPE

BASIC RECEIVER – OPTION STRAPPING ON AR250 (A&M) OR AR461							
OPTION				CHECK (√) INDICATES FACTORY FURNISHED			
FEATURE	DESCRIPTION	DESIG	STRAP SCREW TERMINALS	E2 (MD) E5	E3 (MD) E6	E4 (MD) E7	USED
Answer-Back	Internal	A	26 to 27	√	√	√	One Per DS
	External	F[1]	27 to 28				
Out of Service	Tip-to-Ring Short — Control Circuit ON	G[2]	2 to 3 8 to 9 13 to 14 17 to 18 29 to 30 38 to 39 47 to 48	√	√		One Per DS
	Tip-to-Ring Short — Control Circuit OFF	H	3 to 4 8 to 9 13 to 14 16 to 17 29 to 30 38 to 39 47 to 51				
	Third-Wire Control — Control Circuit ON	J[2]	2 to 3 9 to 10 12 to 13 15 to 16 29 to 30 38 to 39 47 to 48				
	Third-Wire Control — Control Circuit OFF	K[3]	3 to 4 10 to 11 12 to 13 15 to 16 29 to 30 38 to 39 47 to 51				
	OOS Feature Disabled	ZC	1 to 2 8 to 9 12 to 13 15 to 16 29 to 30 38 to 39 47 to 48			√	
Answer-Tone Duration	1.25 sec	M	35 to 36				One Per DS
	0.57 sec	N	36 to 37	√	√	√	
6-dB Input Pad	OUT	Q	32 to 33 45 to 46				
	IN	R	33 to 34 44 to 45	√	√	√	
Answer-Back Level	STD / MD[4]	S	24 to 25 42 to 43				One Per DS
	−12 dBm / −9 dBm						
	−7 dBm / −6 dBm	T	23 to 24 42 to 50	√	√	√	
	−3 dBm / −3 dBm	V	22 to 23 41 to 42				
Termination	900 Ω	W	5 to 6	√	√	√	One Per DS
	600 Ω	X	6 to 7				
Answering	Unattended	Y	20 to 21	√	√	√	One Per DS
	Attended	Z	19 to 20				

◗TABLE C (Cont)◖

OPTIONS FOR DATA SET 403E-TYPE

BASIC RECEIVER – OPTION STRAPPING ON AR250 (A&M) OR AR461							
OPTION				CHECK (√) INDICATES FACTORY FURNISHED			
FEATURE	DESCRIPTION	DESIG	STRAP SCREW TERMINALS	E2 (MD) E5	E3 (MD) E6	E4 (MD) E7	USED
Private Line Service Without Ringing	Without Talk Battery	ZA	1 to 2 8 to 9 12 to 13 15 to 16 30 to 31 40 to 49 47 to 48				
	With Talk Battery	ZB	1 to 2 8 to 9 12 to 13 15 to 16 29 to 30 39 to 40 47 to 48				
15A3 DATA UNIT – OPTION STRAPPING ON AR288 [5]							
Initial ## Insertion	Enabled	XA	1 to 2	—	—	√	One Per DU
	Disabled	XB	2 to 3	—	—		
Interdigit Timeout	45 sec	XC	4 to 5	—	—		One Per DU
	15 sec	XD	5 to 7	—	—	√	
	Disabled	XE	5 to 6	—	—		
* Answer-Back	Enabled	XF	10 to 13	—	—	√	One Per DU
	Disabled	XG	13 to 16	—	—		
# Answer-Back	Enabled	XH	9 to 12	—	—	√	One Per DU
	Disabled	XJ	12 to 15	—	—		
## Answer-Back & Hang Up	Enabled	XK	8 to 11	—	—	√	One Per DU
	Disabled	XL	11 to 14	—	—		

Note 1: Applies to DS 403E2, 3, 5, and 6 only.
Note 2: Applies to DS 403E5 and 6 only.
Note 3: Applies to DS 403E5, 6, and 7 only.
Note 4: External padding may be required on short loops to meet the requirement of —12 dBm at the central office.
Note 5: Applies to DS 403E4 and 7 only.

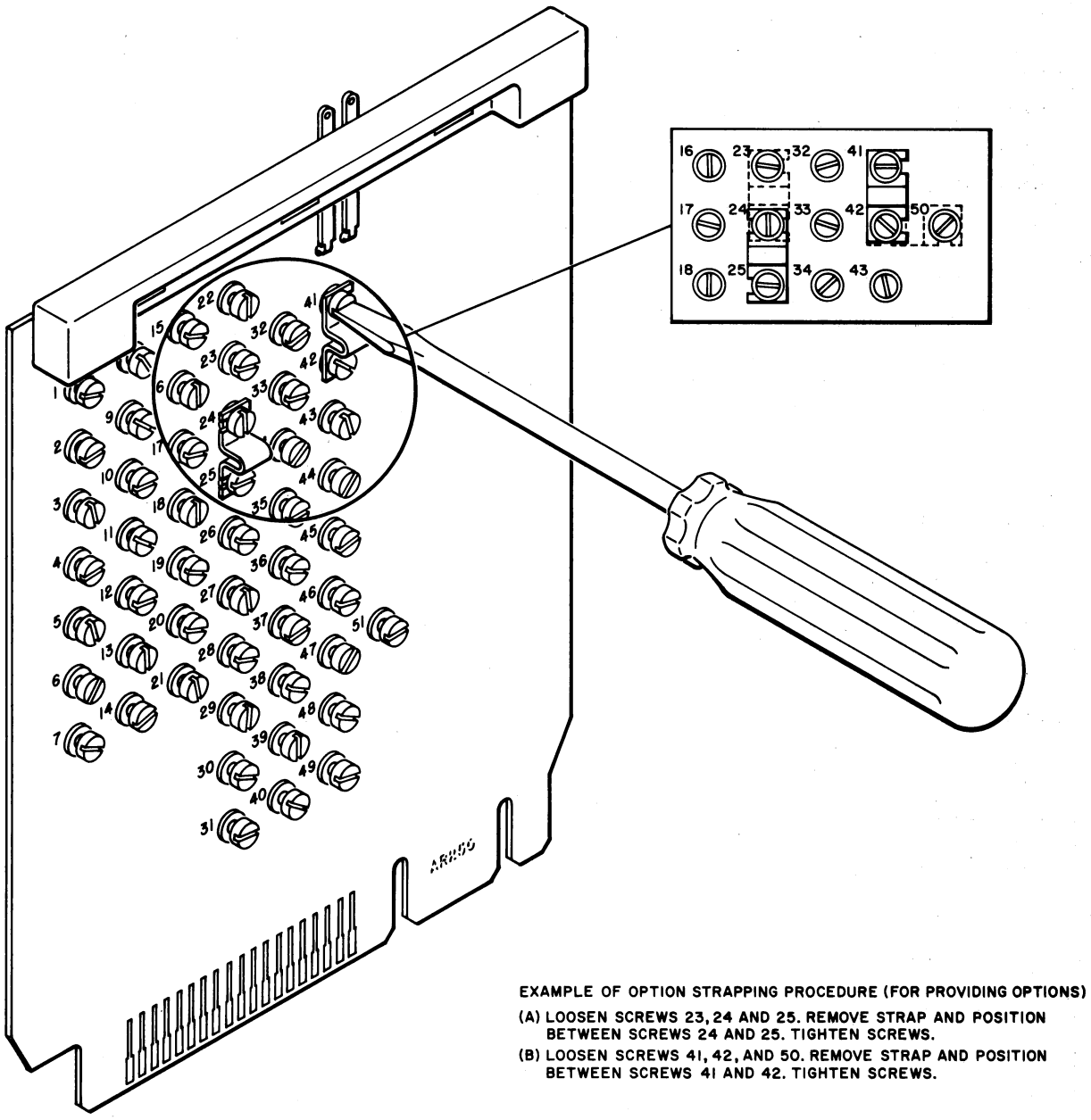


Fig. 2—Typical Option Installation Procedure

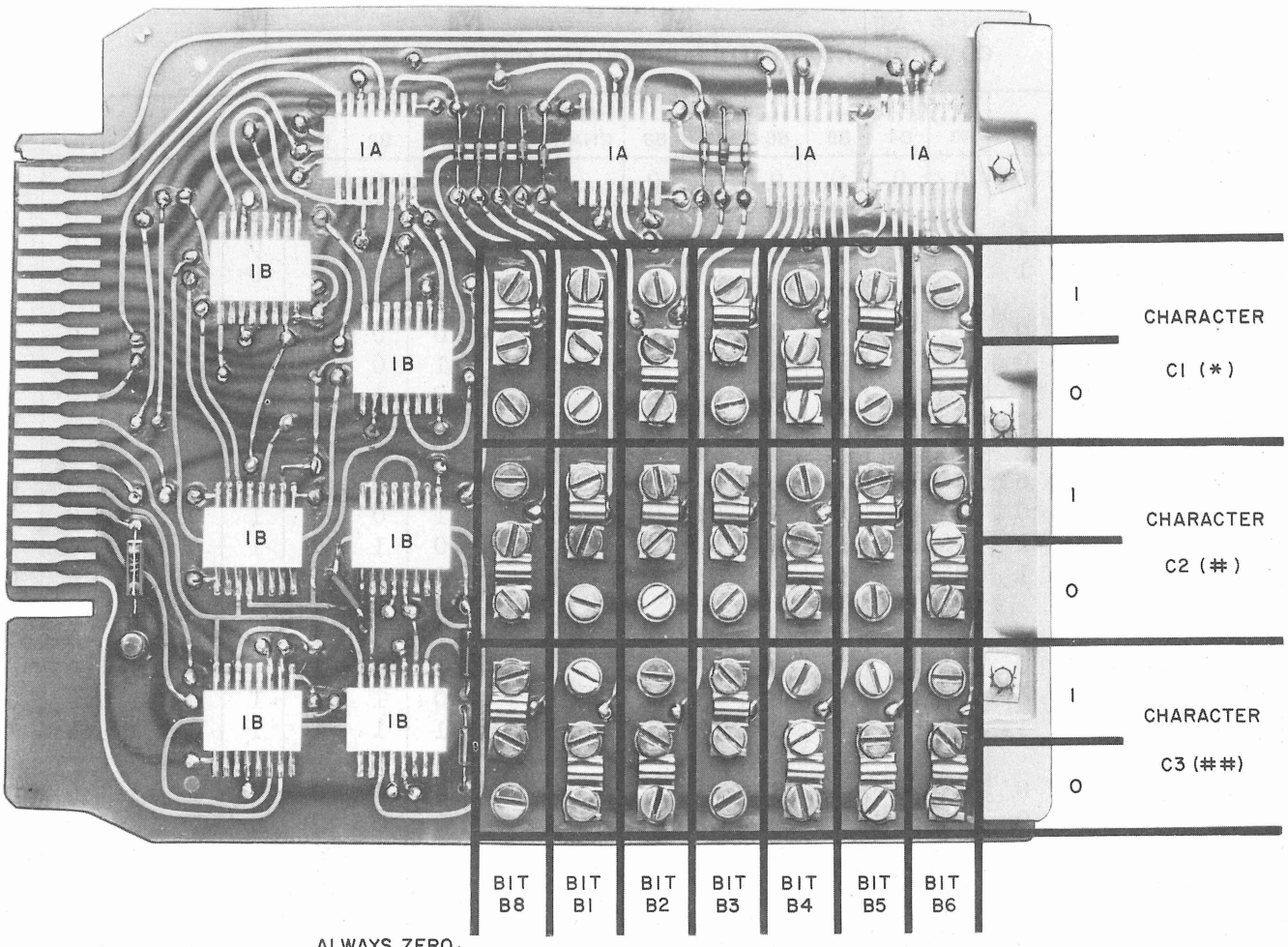
4.03 Remove the panels of data set 403E-type for access to interconnecting plugs, jacks, and terminal strips (Fig. 4). The front and rear panels are removed by pressing down upon the panel from the top and pulling forward to disengage the cover latch.

4.04 Jacks, plugs, and terminal boards used to interconnect components of the data station are shown in Fig. 5.

5. CONNECTIONS

To eliminate possible damage to electronic components in the data set, do not make power connection until all other connections have been completed.

5.01 Connect the data set and DASs in accordance with Fig. 6 and 7 or 8 as applicable.



CHAR	B1	B2	B3	B4	B5	B6	B7	B8	FUNCTION
C1 (*)	1	0	1	0	1	0	0	1	NAK
C2 (#)	1	1	1	0	1	0	0	0	ETB
C3 (##)	0	0	1	0	0	0	0	1	EOT

NOTE:
FOR EXAMPLE SHOWN AT LEFT, WITH STRAPS POSITIONED AS ILLUSTRATED, THE THREE FUNCTIONS SHOWN WILL RESULT FROM THE STAR (*), NUMBER SIGN (#), AND DOUBLE NUMBER SIGN (##) AS INPUTS.

Fig. 3—Typical Option Installation on AR287 Circuit Pack

5.02 An external answer-back generator, such as data set 202D or 402C, may be used in single set application to provide high-speed data answer-back. The calling station must be equipped to receive such high-speed answer-back signals. If an external answer-back generator is used, make connections in accordance with Fig. 7. The answer-back generator must have a 600-ohm output with a transmit level no higher than −3 dBm, and must be band-limited to voice frequencies.

TABLE D

CONTROL AND PRINTING CHARACTER OPTIONS AND CODES

CONTROL CHARACTER	B1	B2	B3	B4	B5	B6	B7	B8	PRINTING CHARACTER	B1	B2	B3	B4	B5	B6	B7	B8
NUL	0	0	0	0	0	0	0	0	SP	0	0	0	0	0	1	0	1
SOH	1	0	0	0	0	0	0	1	!	1	0	0	0	0	1	0	0
STX	0	1	0	0	0	0	0	1	"	0	1	0	0	0	1	0	0
ETX	1	1	0	0	0	0	0	0	#	1	1	0	0	0	1	0	1
EOT	0	0	1	0	0	0	0	1	$	0	0	1	0	0	1	0	0
ENQ	1	0	1	0	0	0	0	0	%	1	0	1	0	0	1	0	1
ACK	0	1	1	0	0	0	0	0	&	0	1	1	0	0	1	0	1
BEL	1	1	1	0	0	0	0	1	'	1	1	1	0	0	1	0	0
BS	0	0	0	1	0	0	0	1	(	0	0	0	1	0	1	0	0
HT	1	0	0	1	0	0	0	0	)	1	0	0	1	0	1	0	1
LF	0	1	0	1	0	0	0	0	*	0	1	0	1	0	1	0	1
VT	1	1	0	1	0	0	0	1	+	1	1	0	1	0	1	0	0
FF	0	0	1	1	0	0	0	0	,	0	0	1	1	0	1	0	1
CR	1	0	1	1	0	0	0	1	—	1	0	1	1	0	1	0	0
SO	0	1	1	1	0	0	0	1	.	0	1	1	1	0	1	0	0
SI	1	1	1	1	0	0	0	0	/	1	1	1	1	0	1	0	1
DLE	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0
DC1	1	0	0	0	1	0	0	0	1	1	0	0	0	1	1	0	1
DC2	0	1	0	0	1	0	0	0	2	0	1	0	0	1	1	0	1
DC3	1	1	0	0	1	0	0	1	3	1	1	0	0	1	1	0	0
DC4	0	0	1	0	1	0	0	0	4	0	0	1	0	1	1	0	1
NAK	1	0	1	0	1	0	0	1	5	1	0	1	0	1	1	0	0
SYN	0	1	1	0	1	0	0	1	6	0	1	1	0	1	1	0	0
ETB	1	1	1	0	1	0	0	0	7	1	1	1	0	1	1	0	1
CAN	0	0	0	1	1	0	0	0	8	0	0	0	1	1	1	0	1
EM	1	0	0	1	1	0	0	1	9	1	0	0	1	1	1	0	0
SUB	0	1	0	1	1	0	0	1	:	0	1	0	1	1	1	0	0
ESC	1	1	0	1	1	0	0	0	;	1	1	0	1	1	1	0	1
FS	0	0	1	1	1	0	0	1	<	0	0	1	1	1	1	0	0
GS	1	0	1	1	1	0	0	0	=	1	0	1	1	1	1	0	1
RS	0	1	1	1	1	0	0	0	>	0	1	1	1	1	1	0	1
US	1	1	1	1	1	0	0	1	?	1	1	1	1	1	1	0	0

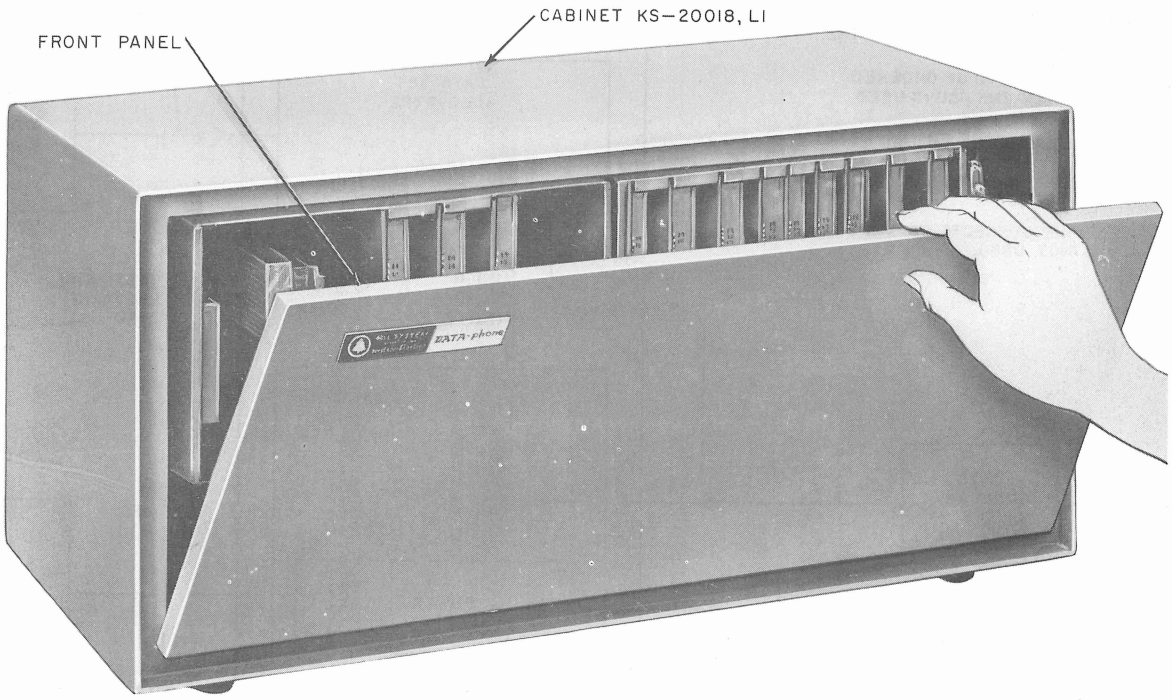


Fig. 4—Removing Front Panel of Data Set 403E-Type

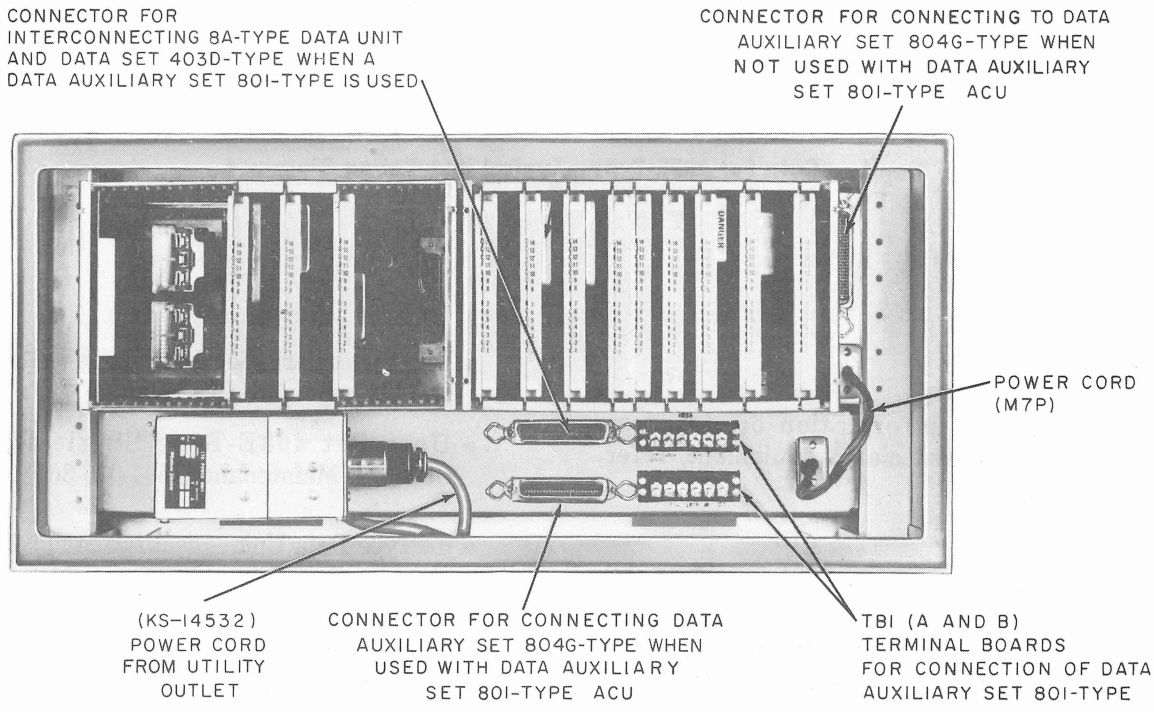


Fig. 5—Data Set 403E-Type Connector Identification

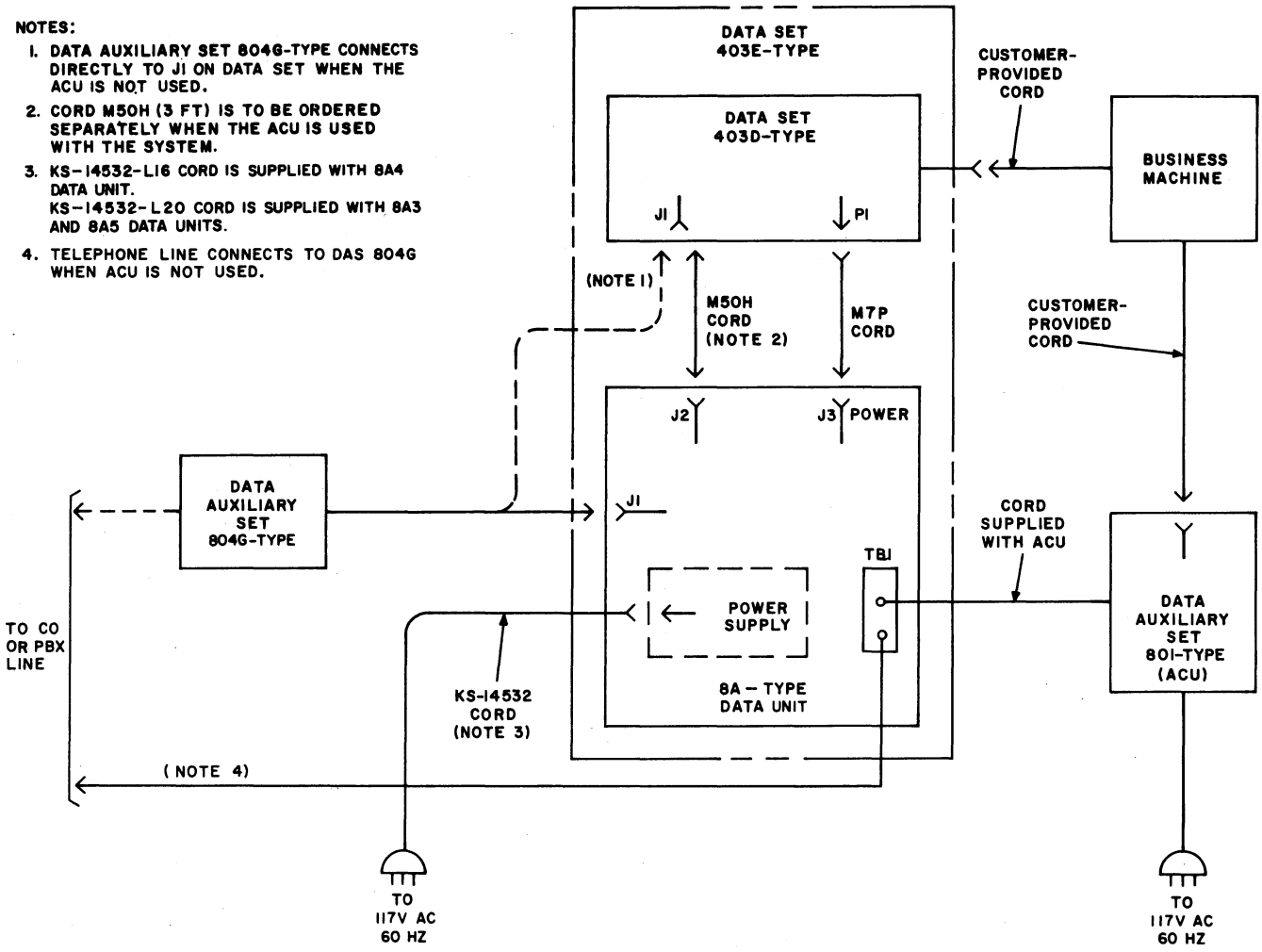
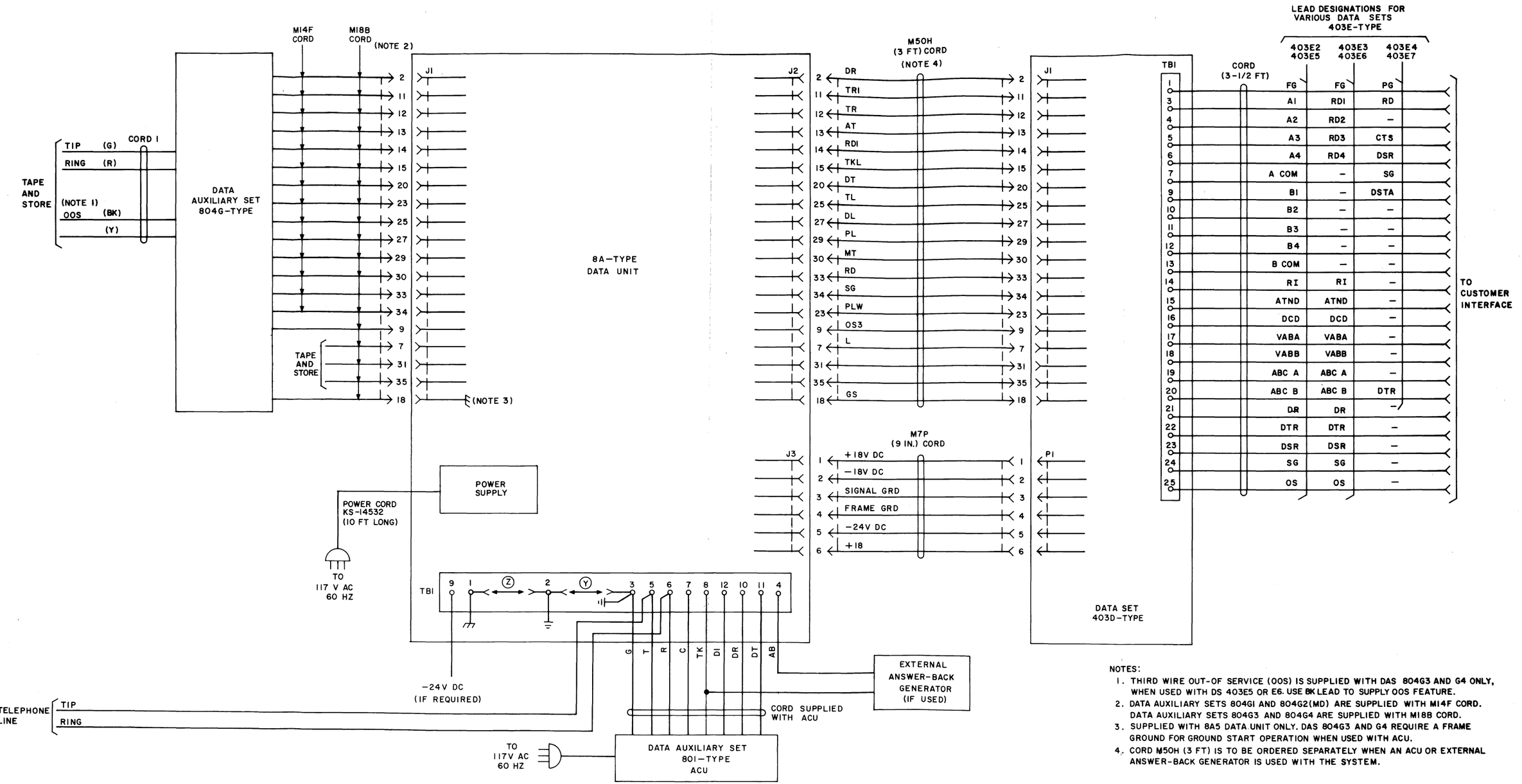


Fig. 6—Data Set 403E-Type—Typical Installation Diagram

6. REFERENCES

6.01 For additional information on data set 403E-type and associated equipment, refer to the following:

- Data Set 403D-Type—Description (594-025-100)
- Data Set 403E-Type Single Receiver Station—Description and Operation (594-026-100)
- Data Set 403E-Type Single Receiver Station—Test Procedures (594-026-500)
- Data Auxiliary Set 804G-Type—Description and Operation (598-048-100)
- Data Set 403E-Type Single Receiver Station—Maintenance (594-026-300)
- 8A-Type Data Unit—Identification (590-100-110)
- Data Systems Station—Data Set 403E-Type (CD- and SD-1D093-01)
- Data Sets 403A-, D-, and E-Types—Reference Guide (590-004-106).



NOTES:

1. THIRD WIRE OUT-OF SERVICE (OOS) IS SUPPLIED WITH DAS 804G3 AND G4 ONLY, WHEN USED WITH DS 403E5 OR E6. USE BK LEAD TO SUPPLY OOS FEATURE.
2. DATA AUXILIARY SETS 804GI AND 804G2(MD) ARE SUPPLIED WITH MI4F CORD. DATA AUXILIARY SETS 804G3 AND 804G4 ARE SUPPLIED WITH MI8B CORD.
3. SUPPLIED WITH 8A5 DATA UNIT ONLY. DAS 804G3 AND G4 REQUIRE A FRAME GROUND FOR GROUND START OPERATION WHEN USED WITH ACU.
4. CORD M50H (3 FT) IS TO BE ORDERED SEPARATELY WHEN AN ACU OR EXTERNAL ANSWER-BACK GENERATOR IS USED WITH THE SYSTEM.

Fig. 7—Data Set 403E-Type—Single Data Set Station Connections With ACU for DDD Network Use

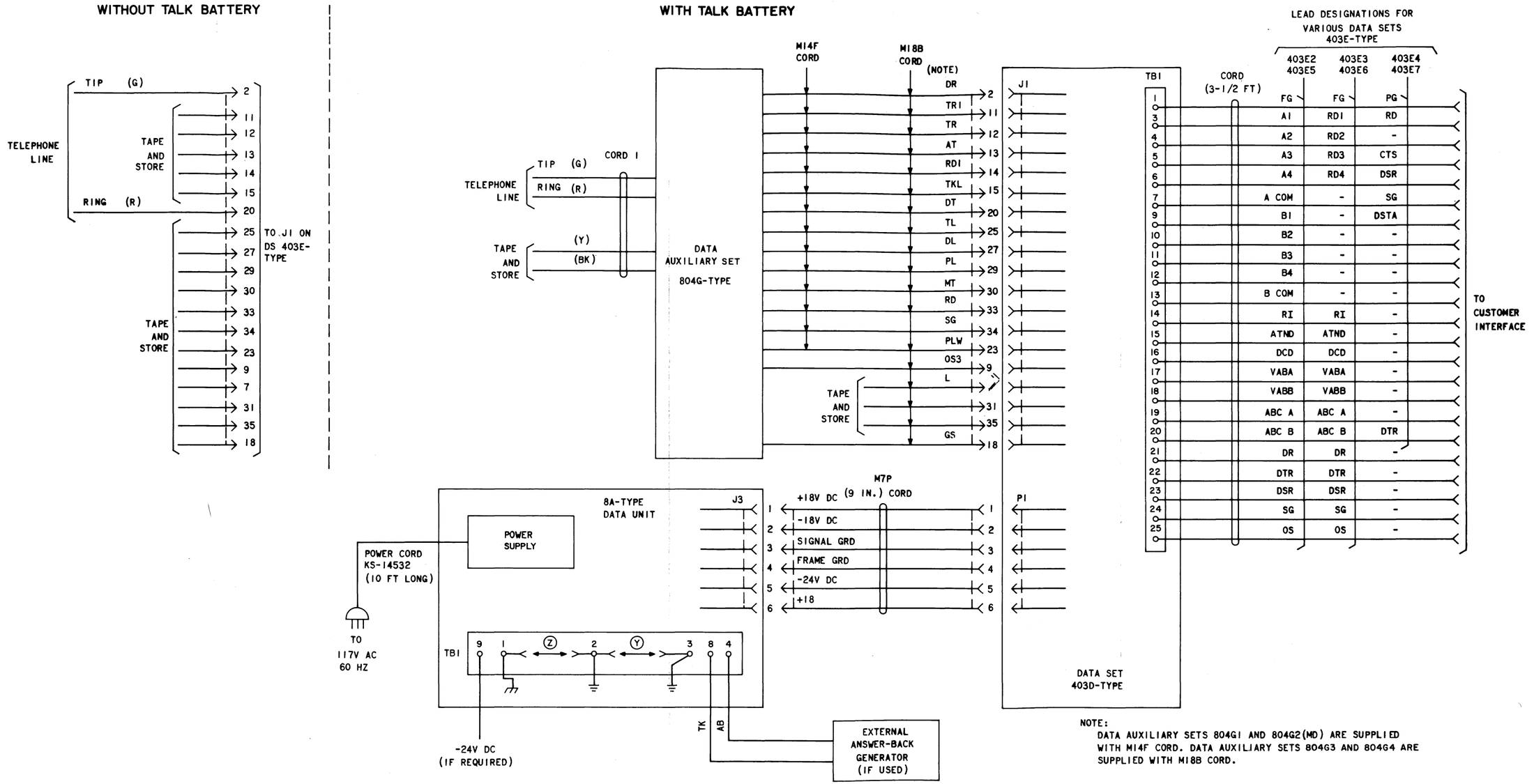


Fig. 8—Data Set 403E-Type—Single Data Set Station Connections for Private Line Use