85A1 DATA SELECTIVE CALLING SERVICE STATIONS 100-WORD PER MINUTE HALF-DUPLEX OPERATION MAINTENANCE

CONTENTS PAGE

1. GENERAL

A. Scope

1.01 This section contains information on the maintenance requirements and procedures for the 85A1 data selective calling service (DSCS) stations 100-word per minute half-duplex operation, hereafter referred to in this BSP as the station.

1.02 This section is reissued to include information on the data auxiliary set (DAS) 820J (controller) used in RO and ROTR service. Since this reissue constitutes a general revision and changes have been made throughout the section, change arrows ordinarily used to denote changes have been omitted.

1.03 This section should be used as a guideline in conjunction with the description, installation, and test practices, 581-131-100, 581-131-200, 666-702-500, 581-131-500, respectively, and to locate troubles at the station.

B. Maintenance Policy

1.04 No routine maintenance is required for the data sets 108- and 109-type, DASs 820G1, 820G-L1/4, 820G-L1/5, 820J-L1/2, 804N-type, nor 804R7. Routine station maintenance is limited to

the periodic maintenance required for the 33 or 35 teletypewriter (TTY).

Note: Data sets 108E and 109E are the current models being produced for use in DSCS. New installations will be equipped with these sets; however, older models (data sets 108A and 109A) currently in the field need not be replaced unless they are inoperative. In order to avoid confusion, the data sets in this BSP will be referred to as data sets 108- and 109-type unless a specific model is being discussed.

1.05 Routine maintenance of the 33 and 35 TTYs should be performed in accordance with the procedures contained in the 579-series Field Maintenance Practices (FMPs) which cover information on the type of TTY being used at the station.

1.06 Stations suspected of being in trouble should be tested in accordance with the test procedures outlined in the section entitled 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Test Procedures (581-131-500).

1.07 The 85A1 DSCS station or components of the station (circuit packs, DASs, etc) not meeting the test requirements should be replaced to restore customer service as quickly as possible.

1.08 The defective unit should be sent to the nearest distribution house for repair. Maintenance on the circuit packs (CPs) other than at the service center should ***not*** be attempted. This does not include operations such as cleaning the contacts of the circuit board or making prescribed adjustments.

1.09 Verify that proper options have been installed on the replacing CPs before placing them into their positions.

When DAS 820G-type is to be replaced or the AR188 CP that contains the shift register is to be changed, the AR188 CP must be encoded as described in Part 3 of this section. When the DAS 820J-type controller is replaced or AR686 CP is to be changed, switches SA, SB, and SC on AR686 must be set to encode the SCC and SIC for the station. Information on encoding the AR686 CP is provided in Part 4 of this section.

1.10 The wire required for encoding the shift register on AR188 CP (for DAS 820G-type only) can be obtained from the Western Electric Company by ordering ***one*** of the following:

- Piece Part No. 840555726 polyurethane-coated 36-gauge wire with approximately 6 feet of wire in an envelope
- RM 638-230 polyurethane-coated 36-gauge wire with approximately 5 pounds of wire on a spool.

1.11 Information on obtaining access to the data set and DASs used as part of this section is contained in Part 2 of this section.

Caution: To prevent damage to this equipment, disconnect the power cord plug from the customer power receptacle before connecting or disconnecting CPs, making connections of installation options, etc. After completing the required work on the station, return the station to service by reconnecting the cord to the power receptacle. If the customer power receptacle is not readily accessible, the power cord and the M connector must be disconnected at the controller.

1.12 If the trouble cannot be isolated to a particular CP within the 85A1 DSCS station, replace all CPs as follows:

(1) Replace CPs one at a time, until the trouble is corrected.

(2) Reinstall all original CPs, one at a time, to determine which CP is causing the trouble condition.

(3) If after replacing an original CP the 85A1 DSCS station does function properly, that circuit pack is probably defective and should be returned to the distribution house for repair.

(4) Circuit packs taken from the distribution house to the station for replacement purposes are assumed to be in good working order.

1.13 Exercise care in handling and transporting the data set, DASs, and CPs. Whenever possible, these units should be stored, transported, or shipped in original-type cartons to protect them from damage.

2. OBTAINING ACCESS TO DATA AUXILIARY SETS AND DATA SET

33 TTY

2.01 Access to DAS 820G-type, DAS 820J-type, and data set 108- or 109-type is obtained by removing the rear panel of the TTY stand. To facilitate ease of maintenance, the DAS can be tilted outward into a maintenance position (Fig. 1). This is accomplished as follows:

(1) Rotate the latch in a counterclockwise direction. This allows the DAS to pivot on the 91A bracket.

(2) Using both hands, gently tilt the DAS toward the rear of the station as shown in Fig. 1.

35 TTY

2.02 To obtain access to DAS 820G-type, 820J-type, and data set 108- or 109-type, the lower compartment front panel is removed. There is no maintenance position provided for the equipment mounted in a 35 TTY. Maintenance of these units is performed in the normal position as shown in Fig. 2.

35 ROTR TTY

2.03 The DAS 820G-type, 820J-type, and data set 108- or 109-type cannot be mounted in the 35 ROTR due to a space limitation when the 35 ROTR is used as a primary station. A KS-20018-type cabinet is required to house the DAS 820G- or 820J-type, and data set 108- or 109-type. The DAS 804R7 is the attendant set used with the 35 ROTR station and is mounted in the door of the 35 ROTR stand. Access to the DAS 820G- or 820J-type is obtained by removing the front panel of the KS-20018 cabinet as follows:

(1) Apply outward pressure at the top of the KS-20018-type cabinet panel until the catches disengage.

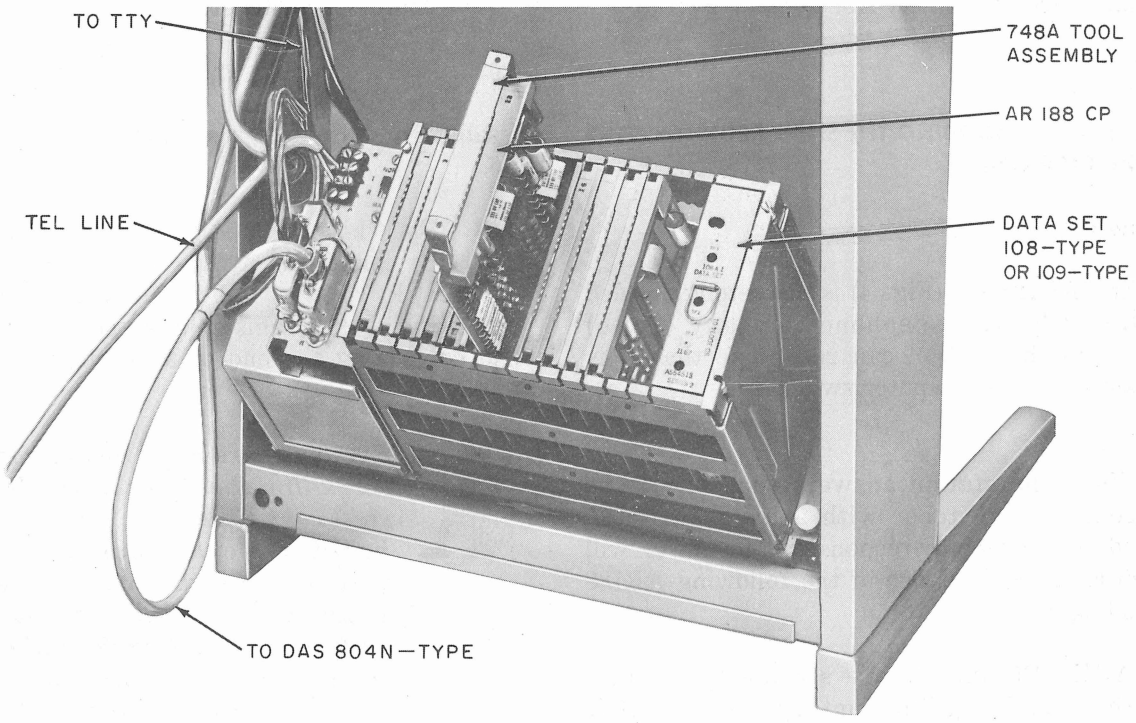


Fig. 1—Model 33 ASR TTY—Rear View With DAS 820G1 in the Maintenance Position

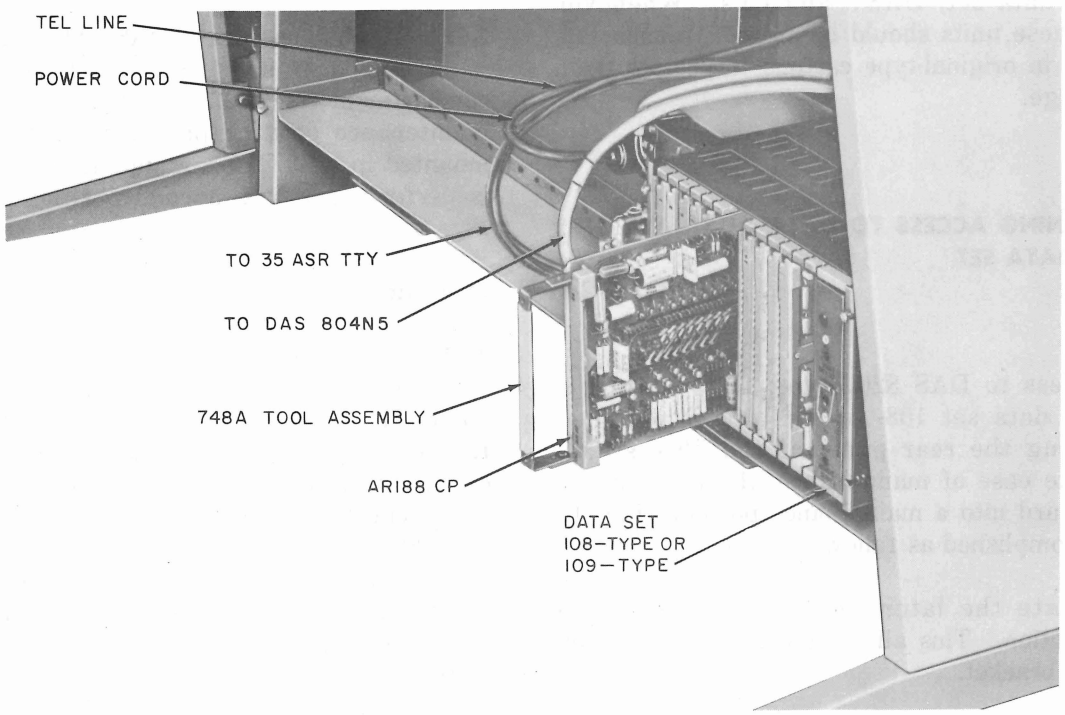


Fig. 2—Model 35 ASR TTY—Location of DAS 820G1—AR188 CP Extended

(2) Lift the panel up to remove it from the frame of the cabinet (see Fig. 3), thereby providing access to the DAS.

3. AR188 CP—ENCODING THE SHIFT REGISTER (DAS 820G-TYPE ONLY)

A. General

3.01 The AR188 CP (Fig. 4) is discretely encoded (SCC) by the telephone company (Telco) employee so the station can recognize that it is being polled by the computer switcher.

3.02 When the station answers the poll of the computer switcher with a have-traffic-to-send and receiver-ready-response, the answer will be given as a result of one of the following AR188 CP encodings:

- ACK—E5 and E6 are strapped together, thus enabling the factory built-in ACK encoded shift register.
- SIC—Encoded by the Telco employee to give a discrete identity in its answer to the computer switcher.

3.03 When the SIC encoding is performed, the factory built-in ACK encoding must be disabled by cutting the strapping between E5 and E6.

3.04 The shift register on AR188 CP is encoded by connecting a wire to a specified terminal on the CP, routing the wires through the eight tubes of the shift register in a specified ***direction,*** and connecting the end to a specified terminal on the CP.

Extreme care must be exercised when threading the wires through the eight shift register tubes. The wires should be relatively taut, but not to the point that sharp bends occur. Any excessive strain on the wires may damage the shift register. After threading, protect those loops of wire that may be brought across the top of the register during the threading procedure by

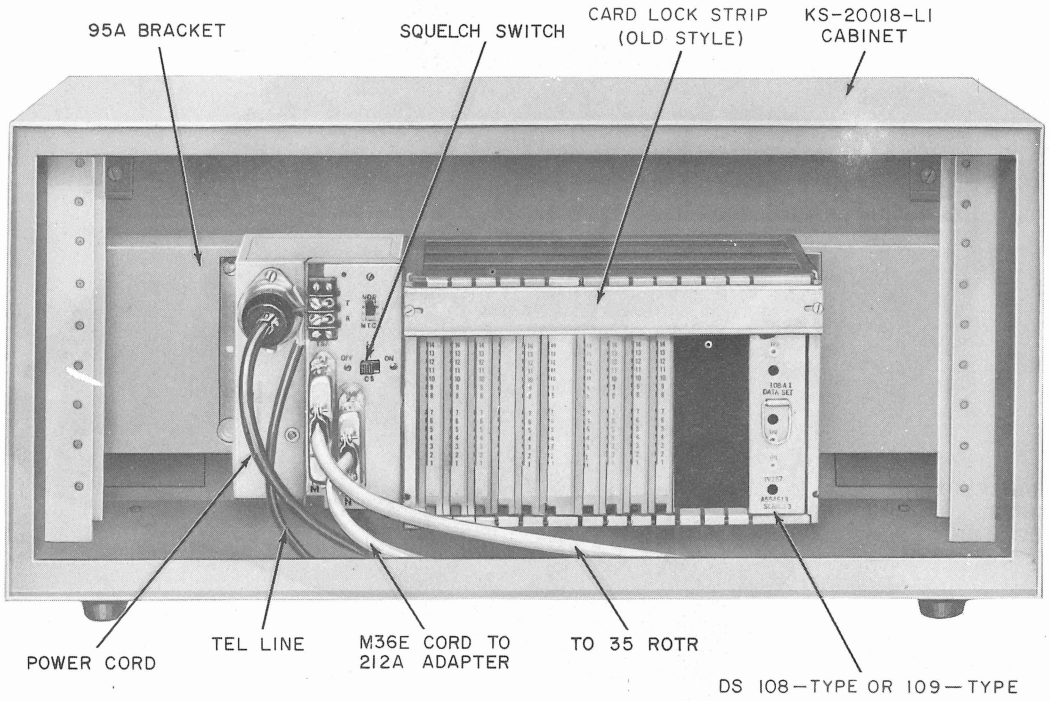


Fig. 3—DAS 820G-L1/5 Mounted in a KS-20018 Cabinet With Front Panel Removed

applying an insulating tape (vinyl or equivalent) along the top of the register to prevent interference with adjacent CPs.

B. Preparation for Encoding (AR188 CP)

3.05 Position the AR188 CP as shown in Fig. 5. The faceplate is on the left, the connector end is on the right, and the component side is facing up. With AR188 CP positioned as mentioned above, a wire threaded ***up*** through the tube of the shift register (from the bottom to the top) will result in a space being encoded. A wire threaded ***down*** through the tube of the shift register (from the top to the bottom) will result in a mark being encoded (Fig. 6).

3.06 The following procedure is recommended for encoding the shift register:

(1) Obtain the characters to be encoded from the faceplate of the CP being replaced or, in the case of a new installation, from the service order and/or circuit layout record card.

(2) Select the proper mark and space combination for each code character by using Fig. 7.

(3) Cut a piece of 36-gauge wire (see 1.10 for type of wire) two feet long for each character to be encoded (SCC and, if required, SIC).

Note: When it is necessary to recode a shift register that has been previously encoded (SCC and/or SIC), the old code must be removed before attempting to encode the new code. To avoid damaging the shift register, use extreme care when removing the old encoding wire from the eight bit tubes.

The following operations require the use of a KS-16346-L1 or -L2 soldering iron (or an equivalent low voltage rated iron). Extreme care must be exercised when soldering the wires to the specified terminals.

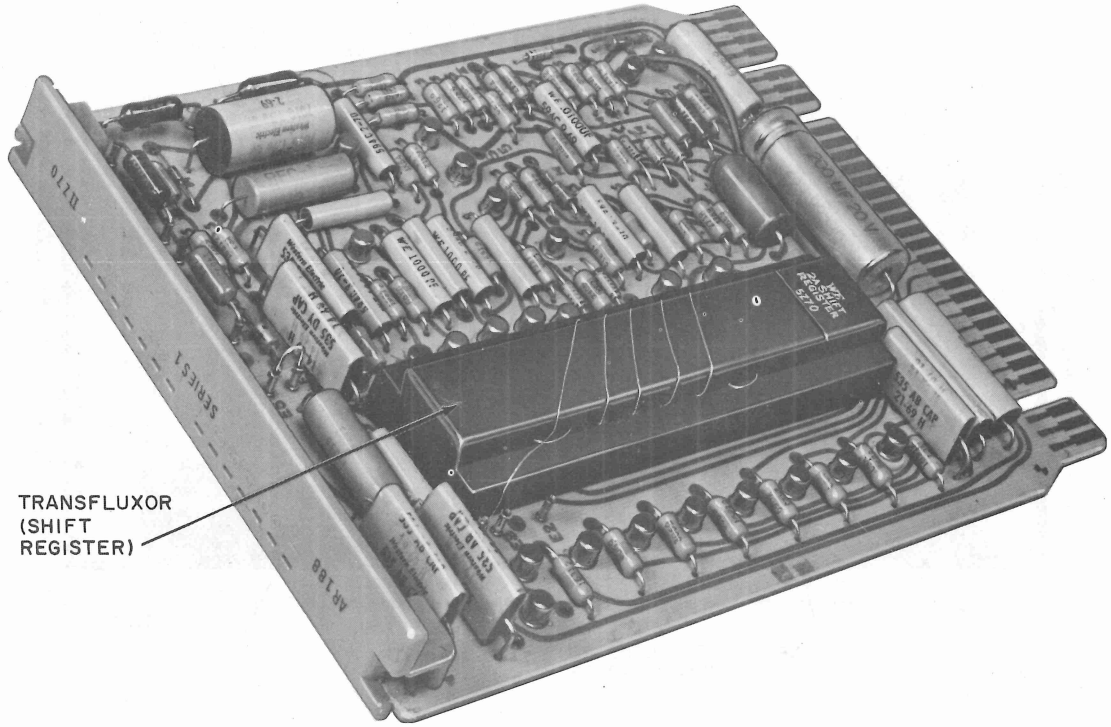


Fig. 4—AR188 CP Showing an Encoded Transfluxor Shift Register Before Insulating Tape Has Been Added to Top of Shift Register

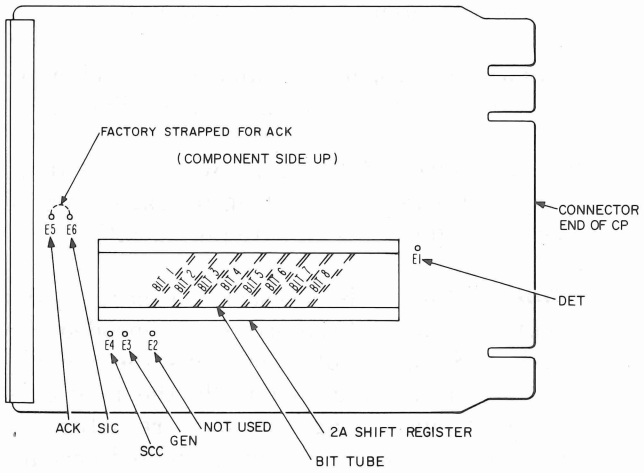


Fig. 5—Orientation of AR188 CP for Encoding of the Shift Register

C. Station Code Character (SCC) Encoding (AR188 CP)

3.07 In order to encode the SCC, proceed as follows:

(1) Solder one end of a 2-foot wire [3.06(3)] to the SCC terminal E4. Refer to Fig. 5 for the location of terminal E4.

(2) Refer to Fig. 7 to determine the mark-space pattern for the SCC code required for this station. Note that the bit numbers in the code chart are read from right to left.

(3) Thread the wire connected to terminal E4 through the BIT 1 tube (Fig. 5 and 6) in the ***direction*** required to produce the desired mark or space signal (see Fig. 6 and 3.05). Continue threading the wire through the other bit tubes in the ***direction*** required to produce the mark-space pattern obtained from Fig. 7.

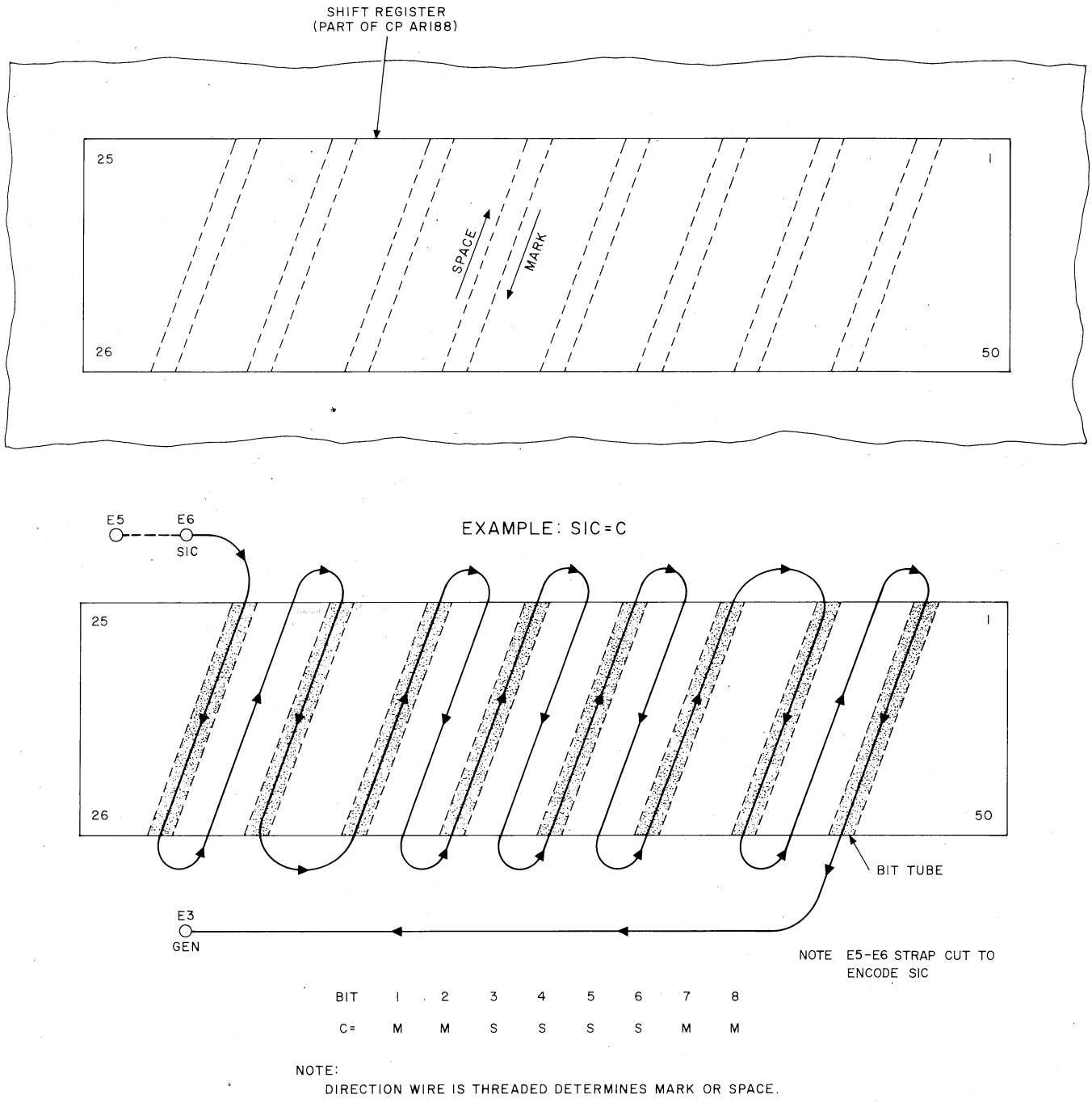


Fig. 6—Mark-Space Encoding of Transfluxor Shift Register—Direction of Wiring

Note that the bit numbers on the shift register are counted from left to right.

(4) After threading all the bit tubes, remove any excess wire that is not required to

BITS B_4	B_3	B_2	B_1	ROW \ COLUMN	0 (000)	1 (001)	2 (010)	3 (011)	4 (100)	5 (101)	6 (110)	7 (111)
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	¦
1	1	0	1	13	CR	GS	—	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	—	o	DEL

DENOTES A 1 IN THE EIGHTH BIT (PARITY BIT)

1 = MARK
0 = SPACE

Fig. 7—American National Standard Code for Information Interchange (ASCII)

reach terminal E1 (Fig. 5). Solder the wire end to terminal E1 on AR188 CP.

D. Acknowledge (ACK) Code (AR188 CP)

3.08 The encoding for the ACK character is internally encoded (threaded) in the shift register at the factory and cannot be changed. The AR188 CP is delivered from the factory with a jumper wire installed between terminals E5 and E6, thus enabling the internally encoded ACK. Removing the jumper from between terminals E5 and E6 disables the internally encoded ACK (ACK coding must be disabled when the shift register is encoded for SIC).

E. Station Identity Code (SIC) Encoding (AR188 CP)

3.09 In order to encode SIC, proceed as follows:

(1) Cut the strap between terminals E5 and E6 (Fig. 5).

(2) Solder one end of a 2-foot wire [3.06(3)] to terminal E6 on AR188 CP.

(3) Refer to Fig. 7 to determine the mark-space pattern for the SIC code required for this station. Note that the bit numbers in the code chart are read from right to left.

(4) Thread the wire connected to terminal E6 through the BIT 1 tube (Fig. 5 and 6) in the ***direction*** required to produce the desired mark or space signal (See Fig. 6 and 3.05). Continue threading the wire through the other bit tubes in the ***direction*** required to produce the mark-space pattern obtained from Fig. 7. Note that the bit numbers on the shift register are counted from left to right.

(5) After threading all the bit tubes, remove any excess wire that is not required to reach terminal E3 on AR188 CP (Fig. 5). Solder the wire end to terminal E3 on AR188 CP.

4. AR686 CP ENCODING FOR SCC AND ACK OR SIC

A. General

4.01 The AR686 CP (Fig. 8) is discretely encoded with a SCC so the station can recognize that it is being polled by the computer switcher.

4.02 The station can be arranged to answer the computer switcher poll with a SIC or ACK to indicate a receiver-ready condition. When station identification is not required, the ACK character is used. Encoding of the ACK mark-space sequence or SIC character is covered in 4.05.

4.03 The AR686 CP is encoded for SCC by setting the SA and SB switches on the circuit pack. The SIC or ACK is encoded by setting the SC switch contacts to give the required mark-space sequence.

B. Station Code Character (SCC) Encoding (AR686 CP)

4.04 Encode the SCC character as follows:

(1) Obtain the mark-space sequence for the character to be encoded (Fig. 7).

(2) Refer to Fig. 8 for the location of the SA and SB switches. The contact designations and switch setting required to obtain a mark or space are also shown by Fig. 8.

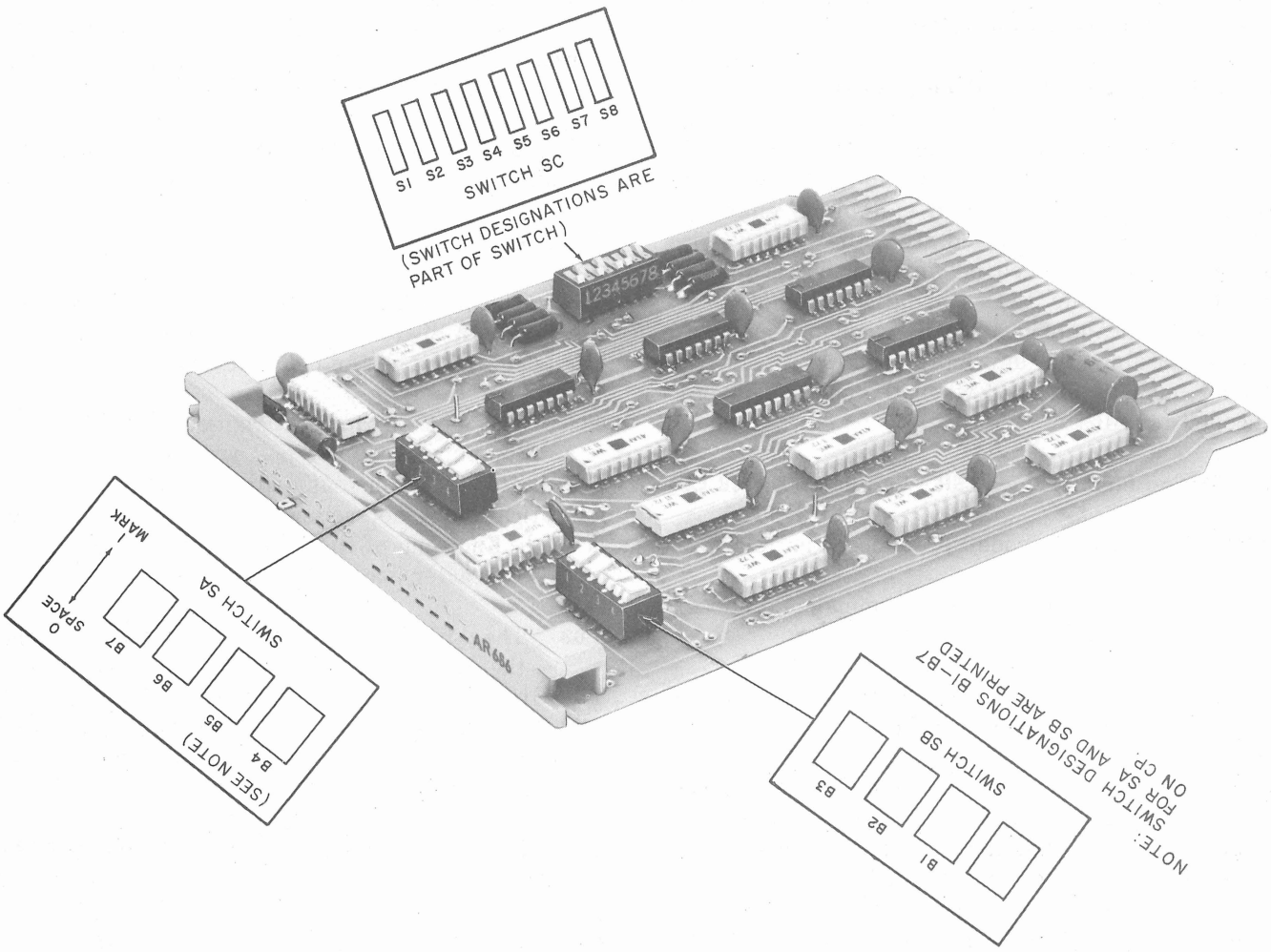


Fig. 8—AR 686 CP Switch Location and Designation

Note: Switch SA and SB are eight contact rocker arm-type switches. On both switches the rocker arms are ganged to operate two contacts as follows:

Switch SA

Contacts 1,2 — B7 (bit 7)
Contacts 3,4 — B6 (bit 6)
Contacts 5,6 — B5 (bit 5)
Contacts 7,8 — B4 (bit 4)

Switch SB

Contacts 1,2 — B3 (bit 3)
Contacts 3,4 — B2 (bit 2)
Contacts 5,6 — B1 (bit 1)
Contacts 7,8 — not used

(3) Encode bit 1 by depressing the side of the B1 rocker to give the required mark or space (Fig. 8).

(4) Encode the remaining bits (2 through 7) by setting the switch of the corresponding number to the required mark or space position. Encoding of the eighth bit is not required because the controller circuits will check for even parity.

C. Station Identity Code (SIC) Encoding (AR686 CP)

4.05 The SIC or ACK is encoded using the SC switch on AR686 CP as follows:

(1) Obtain the mark-space sequence for the SIC character (or ACK character sequence) from Fig. 7.

(2) Refer to Fig. 8 for the location of the SC switch and the contact designations.

Note: The SC switch is an eight contact rocker arm-type switch. Depressing the side of the rocker arm towards the number (or dot) closes the switch contact resulting in a mark being encoded. To obtain a space, the rocker arm side without the number (or dot) is depressed. Contacts SC1 through SC7 correspond to bits 1 through 7, respectively. Contact SC8 is used for the even mark parity bit of the ASCII code.

(3) Encode the mark-space pattern obtained from Fig. 7 by depressing the rocker arms as required to give the selected mark-space sequence.

5. MAINTENANCE PHILOSOPHY AND TROUBLE CLEARING PROCEDURE

5.01 Maintenance of the 85A1 DSCS station should be performed in accordance with the flowchart shown in Fig. 9. This chart is provided as a guide for an organized trouble locating procedure with a minimum amount of time spent to locate a reported trouble condition.

5.02 The station can be maintained by either replacement of major assemblies or by locating the circuit or circuit pack causing trouble and repairing or replacing ***only*** the defective circuit or circuit pack.

5.03 When a trouble condition occurs, the condition will be reported to or referred to the STC. The first action to be taken is an analysis of the trouble to determine, if possible, the probable cause of the trouble.

5.04 In some cases, it will be obvious from the analysis of the trouble report that the TTY is causing the trouble condition (noisy operation, overheating, etc). When this is the case, a Telco employee will have to be dispatched to clear the trouble and make any required adjustments. Trouble clearing and maintenance of the TTY should be performed in accordance with the applicable parts of the FMP covering the type of TTY used at the station. The applicable FMPs are:

- Model 33 Teletyperwriter—Field Maintenance Practice (579-200-350)
- Model 35 Teletypewriter—Field Maintenance Practice (579-210-350).

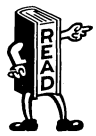
5.05 After the trouble report has been received and analyzed, the STC should perform an unattended test to verify the trouble and locate it, if possible. The unattended loop-back test should narrow the trouble analysis to either the data set (interface to line), AR-series CPs (control logic), or the TTY and its controls.

Caution: A remote loop-back test may be performed only on those stations that are equipped with a data set 108A-type (series 4 or later), 108E, or 109E. Stations equipped with a data set 109A-type are not designed to provide loop-back capabilities.

5.06 If the results of the tests indicate TTY trouble, refer to the appropriate FMP for clearance procedures. If the results of the tests indicate controller or attendant set trouble, dispatch a Telco employee to the station to assist the STC in performing the attended test.

5.07 Should the attended test indicate that the 85A1 DSCS station is operating properly, inform the customer of the test results and request him to check his equipment operation and format. If the trouble is resolved, return the circuit to normal operation and close the trouble report.

5.08 If the attended test indicates that the 85A1 DSCS station is not operating properly, take the steps described in the section entitled 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Test Procedures (581-131-500) to determine if a CP is faulty and locate any other cause of trouble. When found, the fault should be corrected and the remote loop-back test repeated.



IF AR188 CP or AR686 CP is found to be the faulty CP, its replacement CP will have to be encoded for the station to operate properly. The encoding procedure is described in Part 3 of this section for AR188. Refer to Part 4 for information on encoding AR686.

5.09 If all of the tests do not isolate the trouble to a specific component, it is recommended that additional help be requested through proper

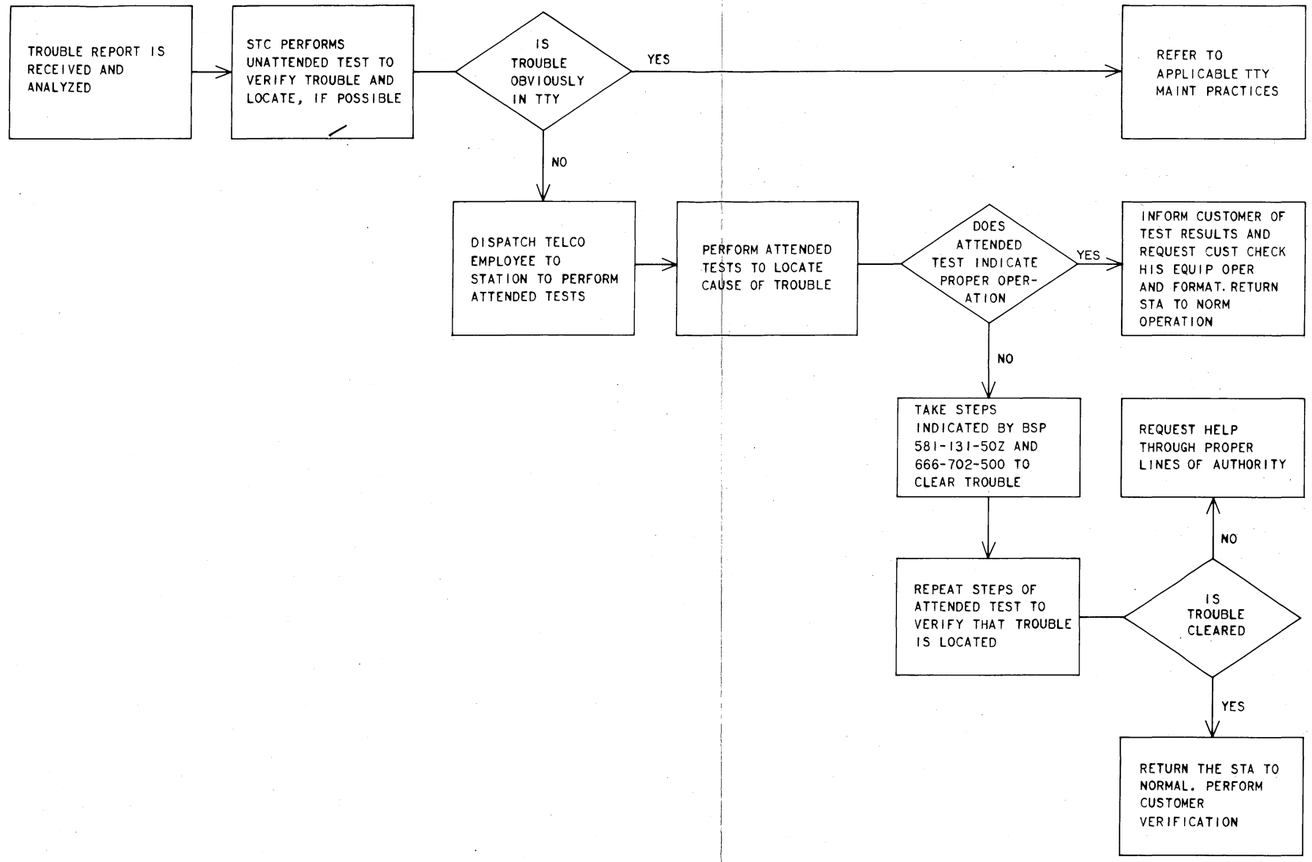


Fig. 9—Flowchart—Maintenance Philosophy and Troubleshooting Procedure

lines of organization in order to restore service to the customer.

5.10 After the trouble is cleared, return the circuit to normal service, perform the customer verification, and close the trouble report.

6. DATA AUXILIARY SET 820G- OR 820-J-TYPE MAINTENANCE

6.01 Maintenance of DAS 820G- or 820J-type controller is limited to the replacement of defective CPs.

6.02 Table A lists the CPs used in the DAS 820G- on 820J-type. When it is ncessary to replace a CP, proceed as follows:

(1) Gain access to the DAS 820G- or 820J-type as indicated in Part 2 of this BSP.

(2) Disconnect power from the station.

(3) Remove the card lock strip.

(4) Use the 748A tool or new style card lock strip to extract the CP from the DAS.

Note: When reinstalling a CP, make sure to place the CP in the correct slot and seat firmly in the connector of the DAS. After seating the CP, reverse the preceding procedure [6.02(1) through (3)] to complete the replacement procedure.

7. DATA AUXILIARY SET 804N-TYPE MAINTENANCE

7.01 Maintenance of DAS 804N-type is limited to the replacement of lamps, keys, cord, and/or loudspeaker.

7.02 Table B summarizes the codes for the replacement parts.

Lamps

7.03 To replace lamps:

Note: Before changing lamps, unplug the N connector from the DAS 820G or 820J-type controller.

(1) Remove the faceplate from the cover by removing the two mounting screws.

(2) Remove key cap (by applying longitudinal force to key cap).

(3) Using a 553A tool (lamp extractor), remove lamp.

(4) Replace lamp. Make sure the lamp is properly seated to avoid shorts that might damage the controller interface CP.

(5) Replace key cap.

(6) Replace faceplate.

(7) Reconnect the N connector.

33 TTY

7.04 Replacement of keys, cord, and/or loudspeaker will require the removal of the TTY cover.

7.05 To remove the cover.

(1) Remove the faceplate from the cover by removing the two mounting screws.

(2) Remove nameplate by pulling it down and out. This will expose four cover mounting screws in front.

(3) Remove these four screws and the three cover mounting screws located at the rear of the cover.

Note: On 33 ASR TTYs, also remove the screw from the left rear corner of the tape reader cover.

(4) Remove platen knob.

(5) Gently lift the cover from the subbase.

35 ASR or RO TTY

7.06 Replacement of keys, cord, and/or loudspeaker will require opening TTY housing cover.

7.07 To open the TTY housing cover:

(1) Open the upper cover to its partially open latched position.

(2) Remove the faceplate from the cover by removing the two mounting screws.

TABLE A

CIRCUIT PACK DESIGNATIONS

SLOT NUMBER	CONTROLLER			
	820G1	820G-L1/4	820G-L1/5	820J-L1/2
1	AR364	AR487	AR487	D/S (Note 1)
3	AR194	AR273	AR268	—
5	AR189	AR498	AR498	—
6	—	—	—	AR682
7	(Note 2)	AR530	AR530	—
9	AR192	AR542	AR542	—
11	AR188	AR188	AR188	—
12	—	—	—	AR683
14	AR363	AR486	AR486	AR684
16	AR362	AR485	AR485	AR685
18	AR193	AR193	AR193	—
20	AR190	AR190	AR190	—
21	—	—	—	AR686
28	D/S (Note 1)	D/S (Note 1)	D/S (Note 1)	—

Note 1: Data set 108E and 109E are the current models being produced for use in data selective calling service. New installations will be equipped with these sets; however, older models (data sets 108A- and 109A-type) currently in the field need not be replaced unless they are inoperative.

Note 2: Data auxiliary set 820G1 uses the AR191 or AR530 circuit pack in position 7.

TABLE B

SUMMARY OF REPLACEMENT PART CODES

TTY MODEL		MODEL	KEY	ATTENDANT LAMP	UNIT CORD	LOUDSPEAKER
33	RO	804N3	635K2	53A	M24K	KS-16908-L1
	ASR	804N5	635L2 635M2	53A	M36D	KS-16908-L1
35	RO	804N3	635K2	53A	M24K	KS-16908-L1
	ASR	804N5	635L2 635M2	53A	M36D	KS-16908-L1
	ROTR	804R7	635F2	53A	M24K	KS-16107-L2

(3) Open the latch on the right-hand side of the TTY.

(4) Grasp the hand grips located in the front of the TTY housing and raise the cover.

(5) Verify that the left rear stop arm is latched when cover is opened fully.

804N5 Keys

7.08 After opening or removing the cover, key replacement is as follows:

(1) Loosen the key locking bar retaining screw (Fig. 10) on DAS 804N5.

(2) Lift the 635L2 key sufficiently to clear the bracket.

(3) Release spring-retaining clips which hold the plug to the key and remove plug.

(4) Rotate the front key locking bar to clear the 634M2 key.

(5) Lift the 635M2 key sufficiently to clear the bracket.

(6) Release spring-retaining clips which hold the plug to the key and remove plug.

(7) Connect plugs to 635L2 key and 635M2 key to be installed.

(8) Lower keys into bracket. Seat the 635M2 key in the keying pins and rotate the front key locking bar to retain the key.

(9) Seat the 635L2 key in the keying pins and replace the key locking bar retaining screw.

804N3 Keys

7.09 After opening or removing the cover, key replacement is as follows:

(1) Loosen the key locking bar retaining screw (Fig. 11) on DAS 804N3.

(2) Lift the 635K2 key sufficiently to clear the bracket.

(3) Release spring-retaining clips which hold the plug to the key and remove plug.

(4) Connect plugs to the 635K2 key to be installed and lower the key into the bracket.

(5) Seat the 635K2 key in the keying pins and replace the key locking bar retaining screw.

7.10 To replace the M36D cord on DAS 804N5:

(1) Perform (1) through (5) of 7.08.

(2) Remove cord-retaining screw and nut.

(3) Disconnect the cord plug from the DAS (controller).

(4) Using a screwdriver, loosen the two screws on terminal strip (TS B) which connect the cord to the loudspeaker terminal strip. Remove the spade tips from TS B.

(5) Remove cord.

(6) Reverse the above procedure for installing the cord.

7.11 To replace the M24K cord on the DAS 804N3:

(1) Perform (1) through (3) of 7.09.

(2) Remove cord-retaining screw and nut.

(3) Disconnect the cord plug from the DAS (controller).

(4) Perform (4) through (6) of 7.10.

Loudspeaker

7.12 To replace the loudspeaker:

33 TTY

(1) Remove the DAS 804N-type by removing the four screws on the mounting plate.

(2) Loosen, but do not remove, the five bracket assembly mounting screws.

(3) Lift bracket assembly sufficiently to clear mounting screws.

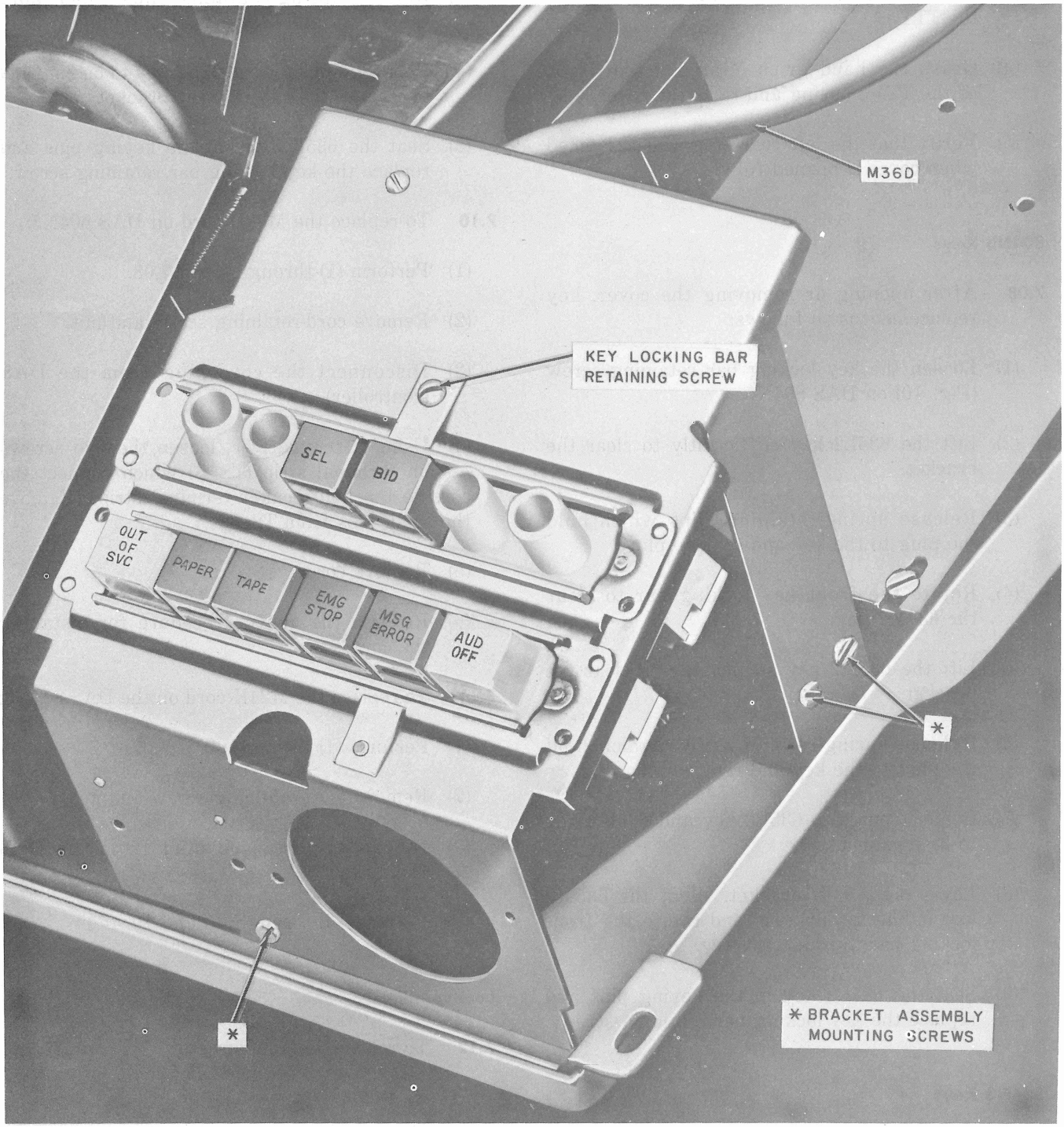


Fig. 10—DAS 804N5 Mounted in a 35 ASR TTY Showing Mounting Screws and Key Retaining Screws

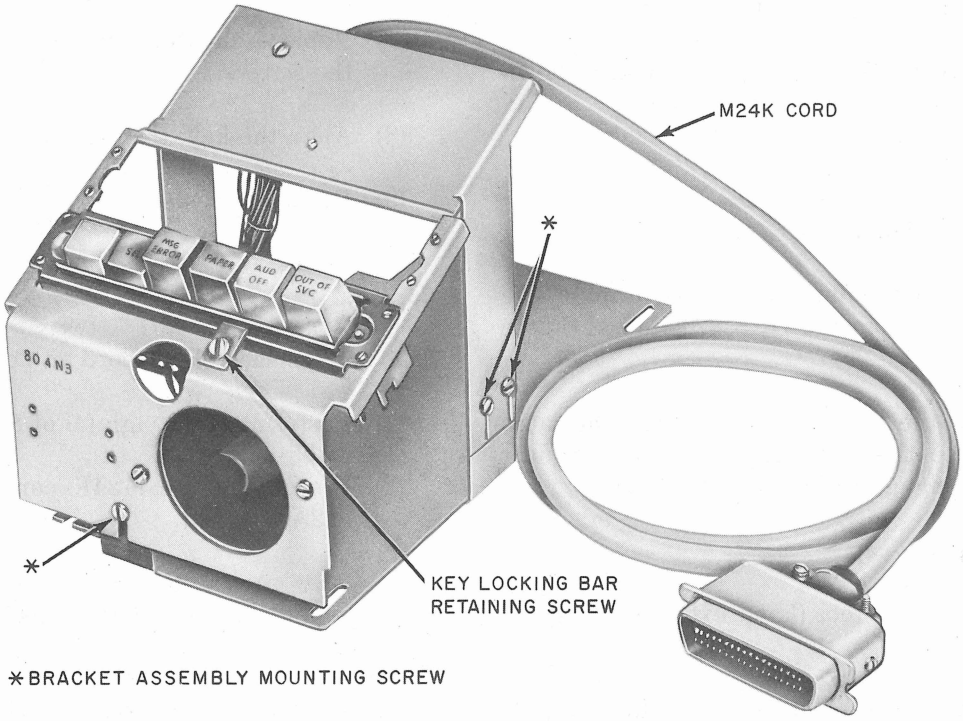


Fig. 11—DAS 804N3 Showing the Mounting Screws and Key Retaining Screw

(4) Turn DAS 804N-type over to expose TS B.

(5) Loosen the two bottom screws which connect the loudspeaker leads to TS B.

(6) Remove the two screws which hold the loudspeaker to the bracket assembly.

(7) Remove loudspeaker.

(8) Reverse the procedure for the loudspeaker to be installed.

35 ASR or RO TTY

(1) Remove DAS 804N-type by removing the two screws (with an Allen wrench) from the TTY pan on the bottom right-hand side.

(2) Loosen, but do not remove, the five bracket assembly mounting screws (Fig. 11).

(3) Lift bracket assembly sufficiently to gain access to TS B.

The loudspeaker is not mounted on the bracket assembly. Exercise care when lifting the bracket assembly to prevent damaging wires to the loudspeaker.

(4) Loosen the two bottom screws which connect the loudspeaker leads to TS B.

(5) Remove the four loudspeaker mounting screws (by using an Allen wrench) located at the right-front bottom of the TTY pan.

(6) Remove loudspeaker.

(7) Reverse the procedure for the loudspeaker to be installed.

8. DATA AUXILIARY SET 804R7

8.01 Maintenance of DAS 804R7 is limited to the replacement of lamps, keys, cord, and/or loudspeaker. The DAS 804R7 is mounted in the door of the ROTR stand (Fig. 12).

Note: DAS 804R7 is provided when a 35 ROTR is used as a primary receiver.

8.02 The DAS 804R7 replacement parts are shown in Table B.

Lamps

8.03 To replace lamps:

Note: Before changing lamps, unplug the N connector from the DAS 820G or 820J-type controller.

(1) Remove the faceplate by moving the latch spring to the left. Lift faceplate by left side and disengage right side of faceplate.

(2) Remove key cap.

(3) Using a 553A tool (lamp extractor), remove lamp.

(4) Replace lamp. Make sure the lamp is properly seated to avoid shorts that might damage the controller interface circuit pack.

(5) Replace key cap.

(6) Replace faceplate.

(7) Reconnect the N connector.

Keys

8.04 To replace keys:

(1) Remove the faceplate by moving the latch spring to the left. Lift faceplate by left side and disengage right side of faceplate.

(2) Using a KS-6854 screwdriver, or equivalent, remove the four screws which hold the key to the bracket.

(3) Lift key (to be replaced) sufficiently to clear the bracket.

(4) Release spring-retaining clips which hold the plug to the key and remove plug.

(5) Connect plug to the key to be installed.

(6) Lower key into bracket.

(7) Replace the four screws. Do not tighten the screws.

(8) Align the key, then tighten the screws.

(9) Replace faceplate.

Cord

8.05 To replace M24K cord on DAS 804R7:

(1) Perform (1) through (4) of 8.04.

(2) Disconnect the M24K cord plug from the 212A adapter.

Note: Access to the 212A adapter will require opening the door of the ROTR stand (see Fig. 13).

(3) Loosen the two screws which connect the cord to the loudspeaker. Remove spade tips from the loudspeaker.

(4) Remove cord-retaining screw and nut.

(5) Remove cord.

(6) Reverse the above procedure for the cord to be installed.

Loudspeaker

8.06 To replace loudspeaker:

(1) Open the door of the ROTR stand.

(2) Loosen the two screws on the loudspeaker which connect the cord conductors to the loudspeaker and remove these spade lugs from the loudspeaker.

(3) Remove the two mounting nuts which hold DAS 804R7 to the door.

(4) Remove the four screws which hold the loudspeaker to the mounting plate assembly.

(5) Remove loudspeaker.

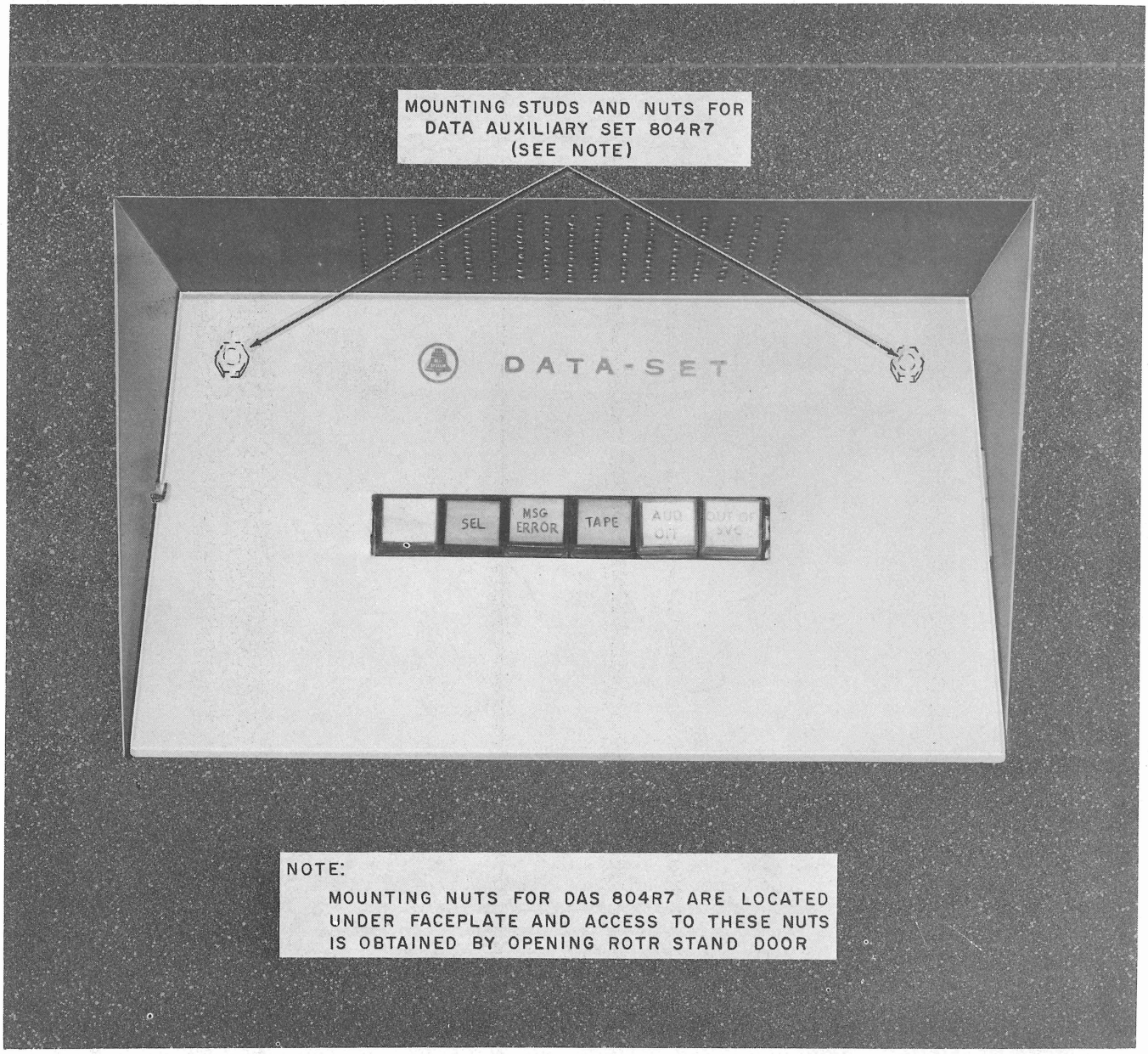


Fig. 12—DAS 804R7 Mounted in the Door of the Primary 35 ROTR TTY

(6) Reverse the procedure for the loudspeaker to be installed.

9. DATA SET 108 AND 109-TYPE REPLACEMENT

Note: Data sets 108E and 109E are the current models being produced for use in DSCS. New installations will be equipped with these sets; however, older models (data sets 108A and 109A) currently in the field need not be replaced unless they are inoperative.

9.01 The data sets used as part of the station require no maintenance and are replaced when they malfunction or cause trouble. To replace a data set 108- or 109-type, proceed as follows:

(1) Obtain access to DAS 820G- or 820J-type as indicated in Part 2 of this BSP.

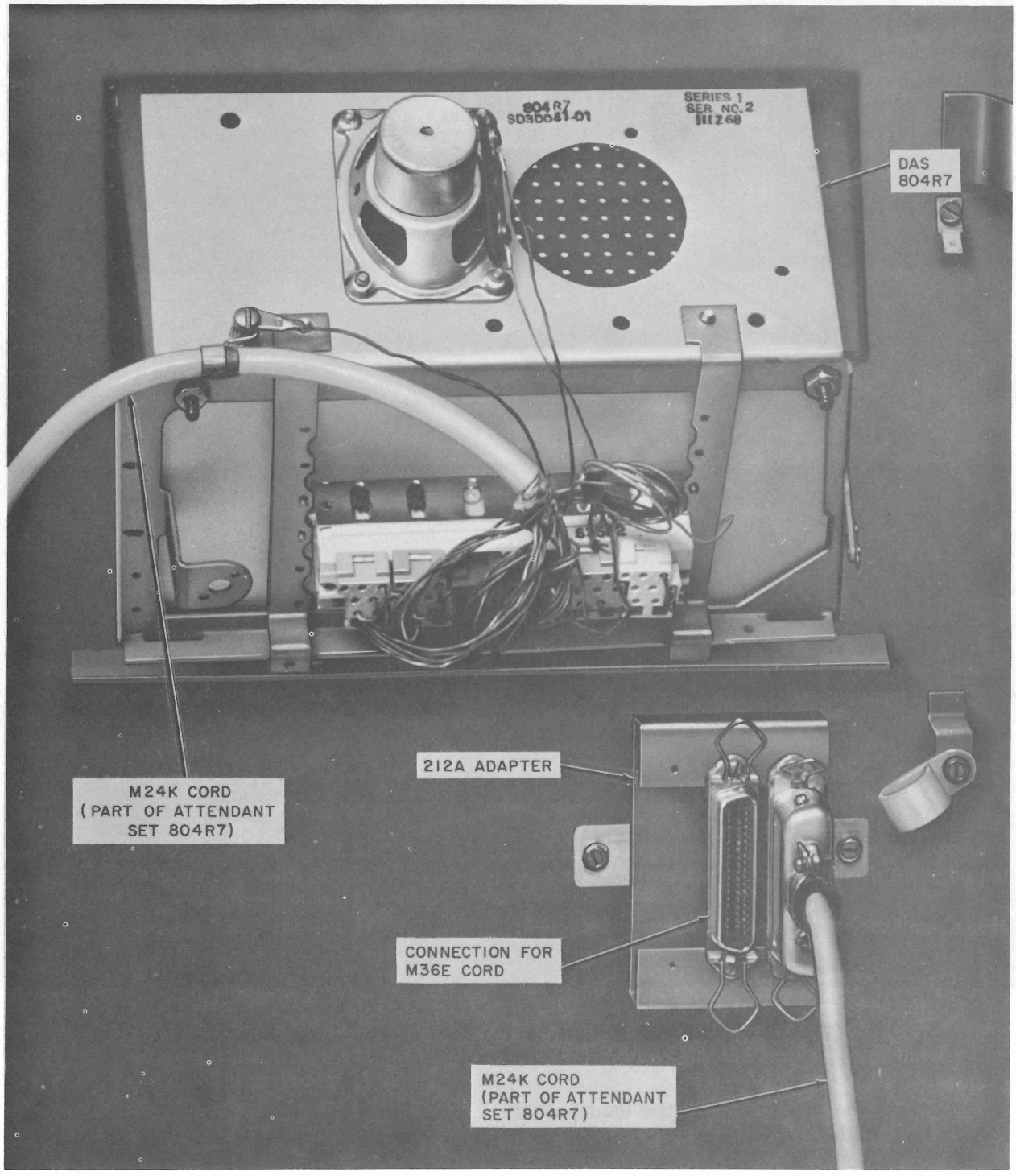


Fig. 13—DAS 804R7 and the 212A Adapter—Rear View

(2) Remove lock strip (card-retaining bar) by loosening the two screws which hold it to the apparatus mounting. Slide lock strip from beneath screws to remove.

(3) Grasp handle on data set 108- or 109-type and pull straight out.

Note: The replacing data set must be equipped with the same options as the data set being removed before it is installed in the DAS.

(4) Replace data set in accordance with the installation instructions contained in the section entitled 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Installation (581-131-200).

10. REPLACEMENT OF DATA AUXILIARY SETS

DAS 820G- or 820J-Type

10.01 Replacement of the DAS 820G- or 820J-type is accomplished by obtaining access to the unit as indicated in Part 2 of this BSP, disconnecting the cords and connectors, and removing the DAS from the mounting bracket. The installation of the replacing DAS should be performed in accordance with the instructions contained in the section entitled 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Installation (581-131-200).

DAS 804N-Type or DAS 804R7

10.02 Replacement of the DASs used as attendant units is accomplished by obtaining access to these units (as described in Parts 7 and 8 of this BSP), removing the connecting cords from their respective connectors, and removing the mounting screws. The replacing unit can now be installed by reversing the procedure. When replacing or reinstalling an attendant unit, the bezel or cover may have to be adjusted to prevent it from binding on the keys of the attendant unit.