33 AND 35 TELETYPEWRITER STATIONS

FOR "DATA-PHONE®" SERVICE

INSTALLATION AND CHECKOUT

CONTENTS PAGE

1. GENERAL

1.01 This section provides instructions for assembling and installing 33 and 35 teletypewriter sets with their applicable data sets for DATA-PHONE service. This section also provides checkout procedures to be followed after the station is installed.

1.02 References to left, right, front, or rear, etc consider the teletypewriter station as viewed by the teletypewriter station operator.

1.03 The following references provide supplemental assembly information for the basic set:

33 sets – Section 574-100-201
35 ASR sets – Section 574-202-200
35 KSR and RO sets – Section 574-201-200

2. ASSEMBLY OF UCC29 CALL CONTROL UNIT

33 TELETYPEWRITER SETS

2.01 Normally the UCC29 call control unit is shipped already assembled in the set. However, in some cases it may be necessary to install the UCC29 call control unit in the set.

2.02 If assembly is required and set cover is in place follow steps 1 thru 9. If set cover is removed follow steps 7 thru 9.

(1) Remove faceplate by pulling outward and down.

(2) Remove four front set cover screws.

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(3) Remove three rear set cover screws.

(4) On ASR sets remove setscrew from left rear cover of the tape reader.

(5) Remove platen knob on friction feed set by pulling knob to the left. For sprocket feed, remove platen knob screw. Remove knob by pulling it to the left.

(6) Carefully lift cover from subbasc.

(7) Mount UCC29 call control unit on right side of subbase with four screws supplied.

(8) Connect copper ground strap from rear post of typing unit casting to rear left screw of UCC29 call control unit base plate.

(9) Mate all set plugs at rear of UCC29 call control unit.

35 TELETYPEWRITER SETS

2.03 To install the UCC29 call control unit into a 35 set, TP336474 modification kit must be used to modify the set. The modification is covered in 2.04 thru 2.19.

2.04 Remove two TP192274 pan head screws which secure the cover latch and replace them with two shorter TP129505 screws (Figure 1).

2.05 Remove and discard the elapsed time indicator and bracket from the UCC29.

2.06 Remove power cord from UCC29 by disconnecting three terminals from the CZ terminal strip (refer to 8162WD):

Black wire – CZ-4
White wire – CZ-2
Green wire – CZ-1 ground screw

Slip TP103092 cord connector on power cord. Reconnect power cord to terminal strip CZ.

2.07 Install the TP185718 diode assembly on the UCC29 in series with the motor control relay (CV) by:

(1) Removing the metal jumper between terminals 5 and 6 on CZ terminal strip.

(2) Move black and slate wires on CZ-6 to CZ-5.

(3) Move black wire on CZ-8 to CZ-6.

(4) Place the TP185718 diode assembly between CZ-6 and CZ-8 with the cathode end on CZ-6.

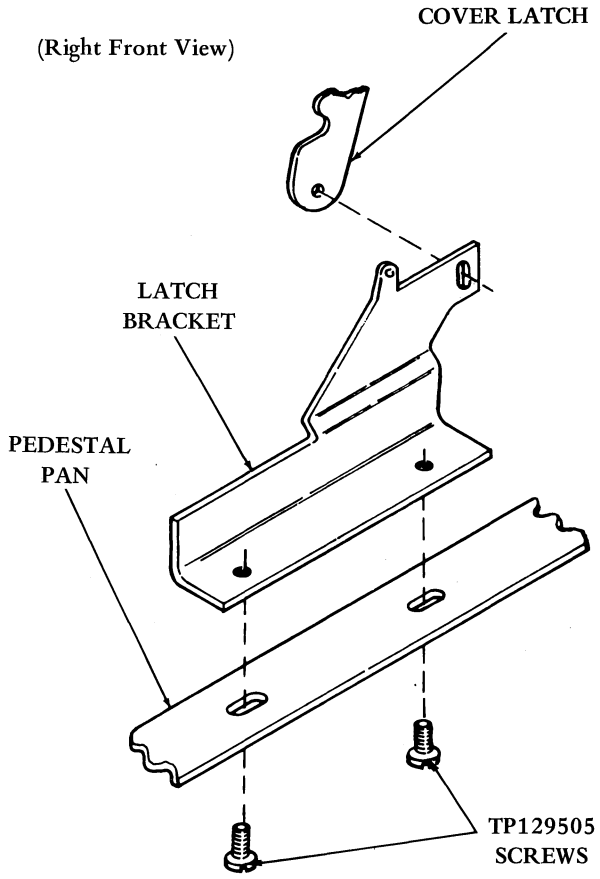

Figure 1 - Cover Latch Assembly

2.08 On ASR sets, solder the slate lead of TP336958 wire assembly to break detector card connector (CN), terminal A, if UCC29 is not already so equipped. Route the slate lead along the left side of the UCC29, to pin CAA7 (connector no. 4). On KSR and RO sets do not solder the slate lead.

2.09 Mount the UCC29 on the right side of the set with five TP181241 screws with lockwashers. Connect the ground lead from the UCC29 to the cabinet.

2.10 Relieve strain on signal line cord coming out of the UCC29 with a TP181241 screw with lockwasher and a TP125015 flat washer securing the TP121245 cable clamp in the tapped hole through the base plate.

2.11 Remove the relay rack from the pedestal to ease assembly of TP336497 cable.

2.12 Interconnect the ESU and the UCC29 call control unit as follows:

(a) Mate connectors 3, 4, 5, 6, 7, and 8 of TP336497 cable with corresponding connectors on UCC29.

(b) Push the Molex connectors of both the 35T ESU cable and the TP336497 cable through the right rear hole of the cabinet into the pedestal.

(c) On ASR sets, mate the connectors of the ESU cable with connector 3, 4, 6, 7, and 8 of cable TP336497.

(d) On KSR and RO sets with 35A ESU, mate plugs 6, 7, and 8 only.

(e) Position cables so that the set cover can be freely closed. Replace relay rack.

2.13 For ASR sets, remove the 3.2 ampere fuse and label on the UCC29 and replace with 6.25 ampere fuse (SL-BL) TP161136 and label TP185686. For KSR and RO sets, remove the 3.2 ampere fuse and label from the UCC29 and replace with 4 ampere SL-BL fuse TP129919 and label TP185684.

2.14 Mount the TP181879 transformer and fuse as follows:

(a) Mount transformer TP181879 loosely to mounting plate TP336495 with four screws with lockwashers TP181241 and four flat washers TP125015.

(b) Insert fuse holder TP182182 in hole on mounting plate. Insert 1/2 ampere SL-BL fuse in fuse holder and affix fuse label TP185679.

(c) Connect transformer cable TP336498 to terminals (Figure 2).

(d) Connect fuse (Figure 3). Use two insulated slip on terminals on transformer cable assembly TP336498 for the fuse.

(e) Place insulator TP336496 under the four mounting plate flat washers and tighten screws.

(f) Mount assembled plate with transformer at center of relay rack with two screws TP165103 and speed nuts TP153017.

(g) Route transformer cable TP336498 through the left rear hole of the ASR cabinet (right rear hole on KSR and RO cabinets) and inside the ESU container. Connect leads to "C" wiring field as follows:

ASR *	KSR	RO
P to 3R	P to 3L	P to 3L
S to 1T	S to 1N	S to 1N
G to 7L	G to 2G	G to 5G
Y to 5E	Y to 4AA	Y to 4AA
O to 6E	O to 5AA	O to 5AA
	R to 2E	R to 2D

*Note: Disconnect, tape, and tie back the green slate lead from E2 on the ASR and connect the red lead to 2E.

(h) On ASR set only, disconnect W-R-S wire from C-7E, reroute wire through cutout on the H thru T terminal board, and connect it to C-3P.

2.15 Modify the 35K (KSR, RO) or the 35L (ASR) typing unit for the reader stop on EOT feature by assembling the following parts:

(a) Install TP192466 EOT function bar, one TP153604 function pawl, one TP4703 spring, one TP157240 spring, and one TP72522 wick in slot number 24 of AVA stunt box.

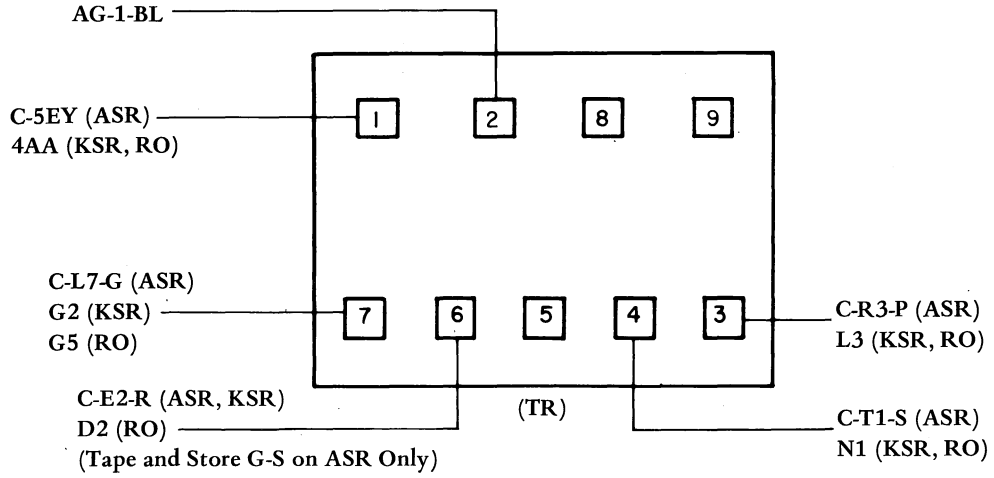

Figure 2 - TP181879 Transformer Connections (10-14-48 V AC)

Note: Install the TP153604 function pawl with the long arm first.

(b) Replace the TP152653 function pawl in slot 25 with the TP153598 function pawl.

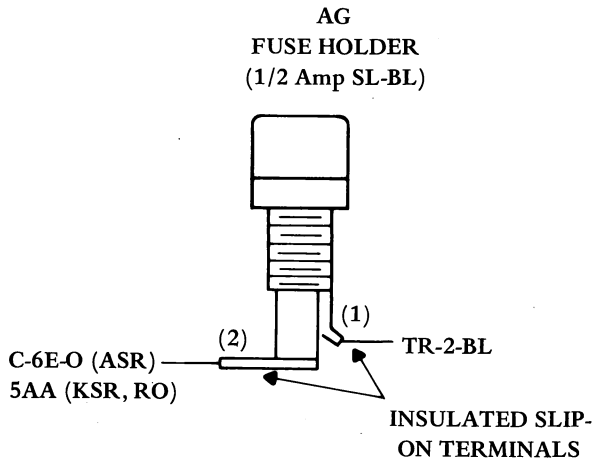

Figure 3 - Fuse Holder (AG)

2.16 Modify the 35 set for new line feature. Modification kit TP336474 includes function bar TP192471, and modification kit TP334884. Modify sprocket feed set with modification kit TP334884; modify friction feed set with modification kit TP334884 except omit function bars in the kit and replace them with function bar TP192471. Modify sprocket feed set as follows:

(a) Remove the stunt box per Section 574-220-702.

(b) Remove CR function bar TP192459 from slot 5 and retain associated parts.

(c) Install CR-FF function bar TP192477 and associated parts in slot 5.

(d) Install LF-VT function bar TP192472 in slot 4.

(e) Install lever TP152298, pawl TP152653, latch TP154613, spring TP157240, spring TP90517, wick TP72522, spring TP4703, and disabling clip TP157274 in slot 4.

(f) Remount stunt box.

Modify friction feed set the same as the sprocket feed set except install LF function bar TP192471 in slot 4. Replace the LINE FEED keytop with the NEW LINE keytop TP185227.

2.17 Secure the lower edge of the faceplate to the cabinet with the following hardware:

TP199309	Stud
TP198654	Locating Bracket
TP194819	Spring Clip
TP7002	Flat Washer
TP119649	Retaining Ring

2.18 Secure the TP301664 plate over the hole in the cabinet reserved for the speaker with two TP194776 screws.

2.19 Remove and discard the TP199353 SPKR-VOL control plate and replace it with the blank TP199359 plate.

3. ASSEMBLY OF TP186627 SET LOGIC ASSEMBLY

33 TELETYPEWRITER SETS

3.01 The TP186627 EIA set logic assembly mounts in front of the UCC29 call control unit and is housed under the set cover.

3.02 The TP186627 assembly mounts on the UCC29 base plate by means of three TP181241 screws with washers, and three TP336493 posts.

3.03 A TP336464 cable interconnects the TP186627 assembly and the UCC29 call control unit. Connectors 1 and 2 of the TP336464 cable mate with connectors 1 and 2 at the rear of the call control unit. The two unmarked connectors mate with two polarized connectors on the TP186637 circuit card.

3.04 Connect the TP311605 connector of the TP336601 cable coming out of the TP186627 to the data set.

35 TELETYPEWRITER SETS

3.05 The TP186627 EIA set logic assembly mounts in front of the UCC29 call control unit.

3.06 It may be necessary to remove the TP303826 circuit card and the smaller piggyback card from the TP186627 assembly to facilitate mounting it in a 35 set. If so, proceed as follows:

(1) Remove the Molex connector from the TP303826 circuit card.

(2) Remove the four mounting screws from the TP303826 card.

(3) Carefully remove the two circuit cards from the mounting bracket.

3.07 Position the TP336459 "T" shaped plate on the base of the 35 set towards the right front end. Mount the TP186627 on top of the TP336459 plate. Insert the TP192271 nut plate between the base of the TP186627 assembly and the TP303826 circuit card. Align the two holes of the nut plate with the two holes of the T-plate and secure with two TP55320 screws.

Note: Remove and discard the TP192270 bracket which is attached to the base of the model 35 set in the front area of the call control unit when installing the TP186627 assembly.

3.08 A TP336464 cable interconnects the TP186627 interface assembly and the UCC29 call control unit. Connectors 1 and 2 of the TP336464 cable mate with connectors 1 and 2 at the rear of the call control unit. The two unmarked connectors mate with two polarized connectors on the TP186637 circuit card.

3.09 Connect the TP311605 connector of the TP336601 cable coming out of the TP186627 interface to the data set.

4. ASSEMBLY OF DATA SETS

33 AND 35 SETS – DATA SET 103G-TYPE

4.01 Data set 103G-type mounts on customer provided facilities near the teletypewriter. The customer must also provide two ac power receptacles: one for the teletypewriter, the other for the data set. The set logic assembly EIA connector joins with the connector at the rear of the data set. Preparation of data set 103G-type for DATA-PHONE service should be performed according to Section 591-026-200, "Data Set 103G-Type, Installation and Connection." Refer to the table in this section for options on the teletypewriter set logic assembly.

33 AND 35 SETS – DATA SET 113A-TYPE

4.02 Data set 113A-type may be mounted either on customer provided facilities near the teletypewriter, or on a TP328937 shelf which attaches to the frame of the 33 or 35 cabinet at the right side. Connect the cable of the set logic assembly to the data set. Connect the data set to the tip and ring of the transmission facility. Connect the teletypewriter power cord to a customer provided ac power outlet. No ac power outlet for the data set is necessary because the data set derives its power from the transmission facility. Preparation of data set 113A-type should be performed according to Section 591-033-200, "Data Set 113A-Type, Installation and Connection." Preparation of the 33 teletypewriter set should be performed according to Section 574-100-201, "33 Teletypewriter Set, Installation." Preparation of the 35 teletypewriter set should be performed according to Sections 574-201-200 (RO and KSR) and 574-202-200 (ASR). Refer to the table in this section for options on the set logic assembly.

33 AND 35 SETS – DATA SET 403E-TYPE

4.03 Data set 403E-type mounts on customer provided facilities near the teletypewriter. The connector of the set logic assembly mates with the interface connector of the data set. Two ac power outlets must be provided: one for the data set and one for the teletypewriter. Data auxiliary set 804G is connected to the transmission facilities. All options and detailed installation procedures for the data set can be found in Section 594-026-200, "Data Set 403E-Type, Installation and Connections." Detailed installation procedures for the 33 teletypewriter set can be found in Section 574-100-201. For the 35 ASR set, refer to Section 574-202-200; for the 35 KSR and RO sets, refer to 574-201-200. For the options available with the TP186627 set logic assembly, refer to the table.

33 AND 35 SETS – DATA SET 103A-TYPE

4.04 Data set 103A-type with its data auxiliary set mounts on customer provided facilities. A 3-wire ac power outlet that is not under the control of a switch must be provided by the customer for the data set. An ac source for teletypewriter power must also be supplied. Connection with the teletypewriter is made through the EIA connector of the set logic assembly which attaches to the rear of the data set. Connection between the data set and the data auxiliary set is made with a cord attached to the data set. For the options available with data set 103A-type, refer to Section 591-014-200, "Data Set 103A-Type Installation and Connections." Refer to Sections 574-100-201 for detailed installation for the 33 set. For the 35 RO and KSR installation information, refer to 574-201-200; for the 35 ASR set, refer to 574-202-200. Refer to the table in this section for options on the TP186627 set logic assembly.

5. STATION OPTIONS

BREAK DETECTOR AND INDICATOR

5.01 Modification kit TP186630 provides the break detection and indication feature for both 33 and 35 stations (8162WD).

5.02 The TP336462 bracket mounts on the UCC29 call control unit base plate (refer to Figure 4). The TP303833 break detector card is part of the TP186630 modification kit but mounts in the card connector (CN on 8162WD) on the UCC29 call control unit.

5.03 Make the following connections:

(a) Remove the yellow strap on CN connector between CN-F and CN-H.

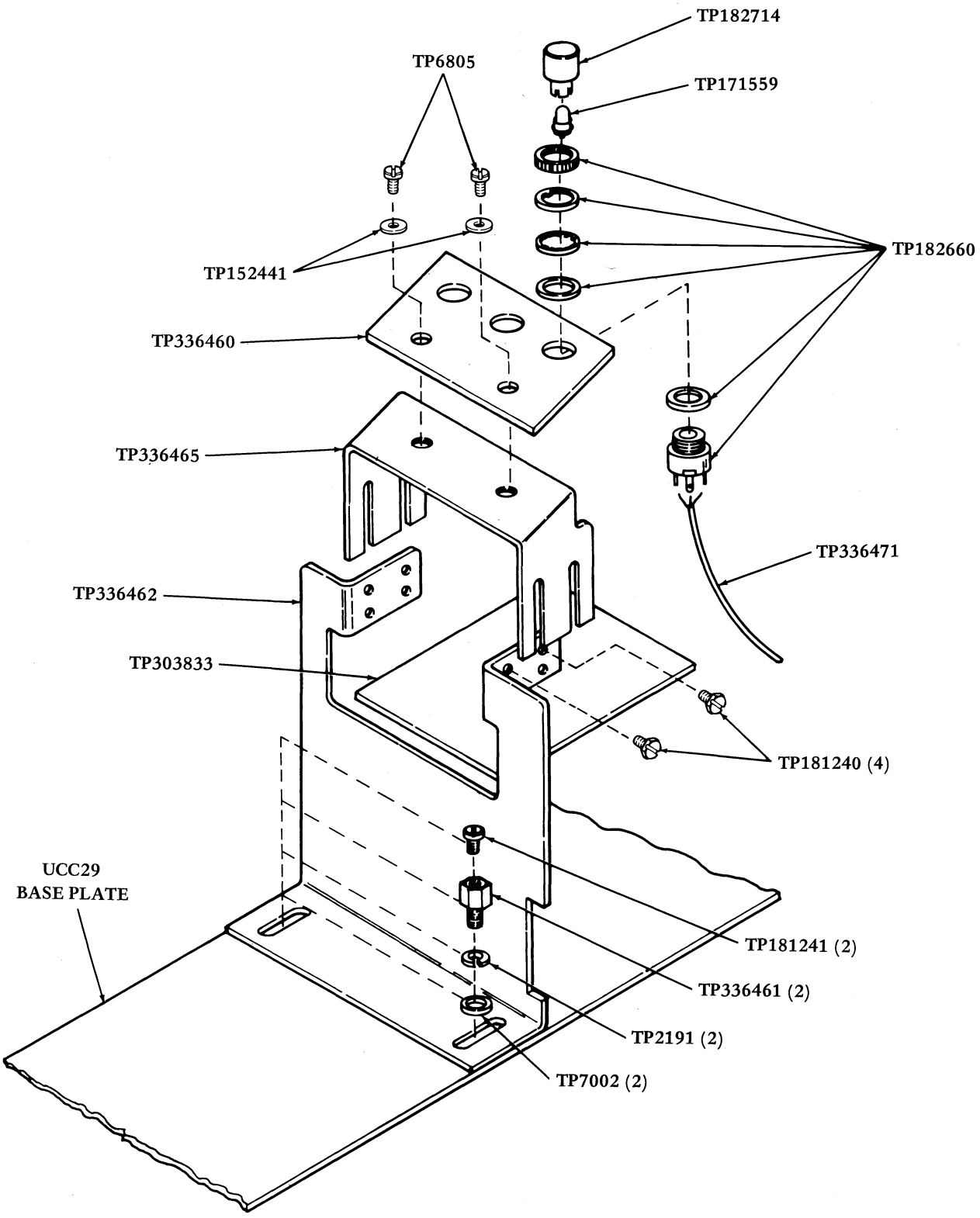

Figure 4 - Break Detector and Indicator

(b) Connect the following leads of the break detector indicator lamp cable TP336471 to the terminal board TB of TP186627 set logic assembly as follows:

R-S to TB 13
R-BR to TB 6
BL to TB 12
O-G to TB 9

TABLE

OPTIONS FOR TELETYPEWRITER
SET LOGIC ASSEMBLY TP186627

OPTION DESIGNATION	OPTION	STRAPPING
A	Half-duplex operation	TB16 to TB17
B*	Full-duplex operation	TB1 to TB16
C*	Permits the operator to originate transmission in a low paper or paper out condition	TB7 to TB18
D	Data terminal ready lead (CD) on when DATA key on data set is depressed	TB14 to TB19
E	Disables the data terminal ready timing circuit	TB15 to TB19
F*	For distributor control	TB5 to TB10

*Factory wired

AUTOMATIC ANSWER-BACK

5.04 Modification kit TP336192 provides automatic answer-back on 33 & 35 DATA-PHONE stations equipped with 103G or similar type answering data sets. The modification kit consists of one TP303834 circuit card, two TP336804 bushings, and two TP125217 screws. A cable on the TP303834 circuit card connects to the set logic assembly. Two terminal screws on the TP303834 circuit card connect with the CB and CE leads from the data set.

5.05 The answer-back circuit card mounts piggyback to the set logic assembly circuit card. Assemble as follows (Figure 5):

(1) Loosen screw and clear the small plate securing the key bracket on the set logic assembly. Loosen TP181241 screws. Lift and remove key bracket.

(2) Remove and discard two screws securing the TP303826 circuit card to the TP186682 mounting bracket.

(3) Mount the TP303834 circuit card to the logic assembly using two TP336804 bushings and two TP125217 screws.

(4) Connect the cable assembly of the TP303834 circuit card to the logic assembly circuit card as follows:

Red wire to terminal 3
Blue wire to terminal 12
Orange wire to terminal 18

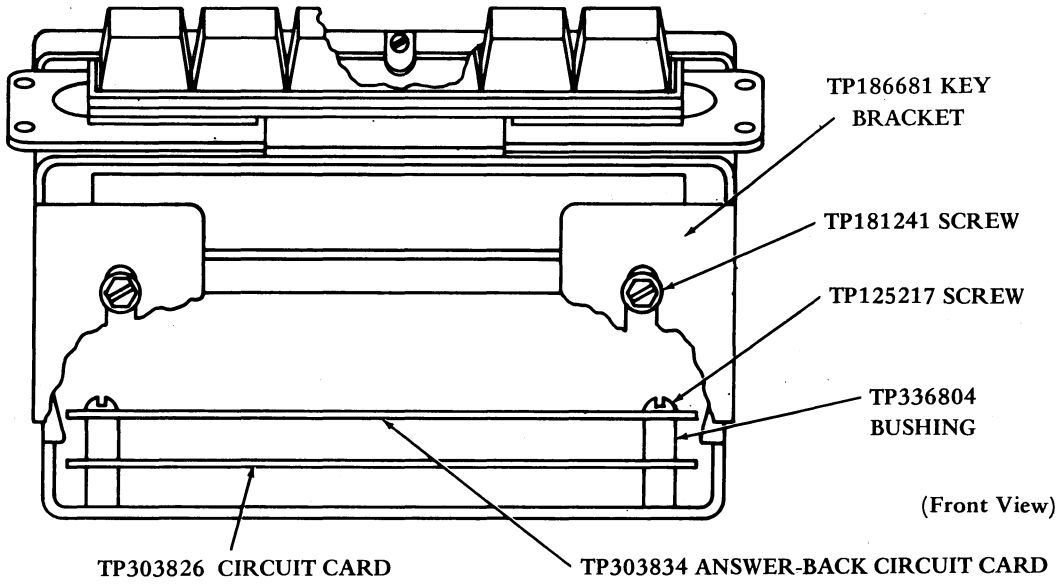

Figure 5 - Mounting of Answer-Back on Set Logic Assembly

(5) The TP186627 set logic assembly has a cable which connects to the data set. Two wires (black-green and black-blue) are taped and tied. Untie these two wires and connect them to the two screw terminals of the TP303834 circuit card. Either wire can connect with either terminal.

(6) Replace the TP186681 key bracket. Tighten the two TP181241 screws. Make certain there is some clearance between the components of the circuit card and the key assembly to avoid shorting.

6. CHECKOUT PROCEDURES

STATIONS WITH DATA SET 103G-TYPE

6.01 For test procedures on data set 103G-type refer to Section 591-026-500, "Data Set 103G-Type, Test Procedures."

A. 33 Stations

6.02 Operate all character and function keys on the keyboard. The typing unit should print the proper characters and perform the proper functions. If the new-line feature is not disabled, the typing unit should line feed (form feed for sprocket feed stations) and carriage return when the NEW LINE key is depressed. On sprocket feed stations, simultaneously depress CTRL and L keys. Typing unit should form feed. Check for proper form feed. Depress RETURN and NEW LINE keys on the keyboard. Depress 1 through 0 keys seven times, then depress keys 1, 2, 3. The number 3 should overprint the 2 indicating that there are 72 characters per line. The bell should ring at about the 60th character.

6.03 On ASR stations, depress the ON button of the tape punch. Depress various characters and function keys on the keyboard. The typing unit should print and the tape punch should punch the appropriate characters (except that the typing unit will not print functions).

6.04 Check punched code combinations in tape to make certain the keyboard is transmitting the parity bits properly. Depress the B. SP. (Backspace) button on the tape punch several times. The tape should backspace each time the button is depressed. Depress DELETE key several times. Depress the REL (Release) button on the tape punch and pull tape forward. Check tape for correct overpunching and make certain the punched holes are not elongated. Depress the OFF button on the tape punch. Remove the tape from the tape punch and place it in the tape reader. Move the control lever on the tape reader to MANUAL START position. The tape reader should operate. Monitor the message being locally transmitted to the typing unit.

6.05 Move the tape reader control lever first to MANUAL START and then to MANUAL STOP. The tape reader should start and stop without transmitting errors. Move the control lever to the MANUAL START position. While the tape reader is operating, open the tape lid. Tape reader should stop. Close the tape lid and again move the control lever to the MANUAL START position. Move the control lever to the FREE position. Tape should move freely when pulled. Move control lever to the MANUAL START position and allow tape to be read. Hold back the end of the tape as it feeds into the tape reader. When the tape becomes taut, the tape reader should stop. Release the tape and allow the tape reader to process the remaining tape. Reader should stop when tape runs out.

6.06 Depress the HERE IS key. The station answer-back mechanism should operate and the answer-back sequence should be printed by the typing unit. Simultaneously depress CTR and ENQ keys. The answer-back mechanism should not operate. Depress the BREAK key. Typing unit should not run.

6.07 On the TP186627 set logic assembly, depress the ON key; then depress the OFF key. The OFF lamp should not light. The LOCAL key should release (if depressed) and its lamp should turn off. The set motor should turn off.

B. 35 Stations

6.08 Depress the LOCAL key on the set logic assembly. The copy lamp should light, the T lamp should light, and the motor should start. Depress the K key. Its lamp should light and the T lamp should extinguish. Operate all characters and functions on the keyboard. The typing unit should print the proper characters and perform the proper functions. Check form out, horizontal tab, and vertical tab on units so equipped.

6.09 Depress RETURN and NEW LINE keys. Depress 1 through 0 keys seven times, then depress keys 1, 2, and 3. The number 3 should overprint 2 indicating there are 72 characters per line.

6.10 Check that the character counter operates properly. The EOL lamp should light about 4 to 7 characters before end-of-line.

6.11 Depress the T key. Its lamp should light, the K lamp should extinguish, operation of keyboard should cause tape to be punched, and typing unit should not print. Depress the KT key. Its lamp should light, and the T lamp should extinguish. Operate all character and function keys; typing unit should print and function, tape should be punched, and EOL lamp should light to indicate that the end of the line is being reached.

6.12 Depress the KT key on the control panel. Depress various characters and function keys. The typing unit should print and the tape punch should punch the

appropriate characters (except that the typing unit will not print functions). Check punched code combinations in tape to make certain keyboard is transmitting the parity bits properly. Depress LOCAL B. SP. key on keyboard several times. Tape should backspace each time key is depressed. Depress RUB OUT key several times. Check tape for correct overpunching and make certain holes are not elongated. Remove tape from tape punch and place in tape reader.

6.13 Depress the TD ON key. Tape reader should operate. Monitor message being locally transmitted to typing unit, and message being punched by the punch. Alternately depress the TD OFF and TD ON keys. The reader should stop and start without transmitting errors. While reader is operating open tape lid. Reader should stop. Close tape lid and operate TD ON key. Operate reader lever to FREE position and pull back tape. Tape should move freely. Release lever from FREE position and hold back tape as it feeds into reader. When tape becomes taut reader should stop. Tape must be held back in such a way as to operate taut tape arm, otherwise feed holes will tear and reader will not stop. Release tape and allow reader to process remaining tape. Reader should stop and TD ON lamp should go out when tape runs out.

6.14 Place keyboard in each of the K, KT, and T modes and depress HERE IS key for each position. The station answer-back mechanism should operate and the answer-back sequence should be printed on the typing unit. In the KT mode, the station answer-back should be punched in tape.

6.15 With the keyboard in each of the K, KT, and T modes, simultaneously depress CTRL and WRU keys. The answer-back should not operate. In the KT and T modes the punch will punch the WRU character in the tape.

6.16 Depress the OFF key on the set logic assembly. The LOCAL key should release and its lamp extinguish. The set motor should turn off.

33 AND 35 STATIONS WITH DATA SET 113A-TYPE

6.17 Refer to Section 591-033-500 for procedures to test the data set with a Data Test Center.

6.18 Perform a few local tests to insure that the teletypewriter is functioning properly, and also that the interfacing between the teletypewriter and the data set is in order.

6.19 Depress the ON key on the set logic assembly. The motor should turn on, but the ON lamp should not light. Allow the set motor to run for approximately two minutes without depressing any of the keys on the set. The motor should automatically turn off.

6.20 Remove the roll of paper from the recess in the cover. The ALARM lamp on the set logic assembly should light indicating an out-of-paper condition.

6.21 Depress the LOCAL key on the set logic assembly. Its lamp should light. Perform local test as covered in 6.02 thru 6.16 to make certain teletypewriter is working properly.

6.22 Depress the OUT-OF-SVC key. Its lamp should light. The station should not be able to answer calls in the data mode. Operators however should be able to establish voice connection in the talk mode.

6.23 Depress the ON or LOCAL key. After the motor has started depress the OFF key. The set motor should turn off.

6.24 If the station is equipped with a break detector and indicator modification kit, request the Data Test Center or another DATA-PHONE station to transmit a BREAK. Observe that the break detector lamp lights when the BREAK is received. A manual reset of the BRK-RLS key is necessary to enable the station to transmit and receive again.

33 AND 35 STATIONS WITH DATA SET 403E-TYPE

6.25 Refer to Section 594-026-500, "Data Set 403E-Type, Single Receiver Station, Test Procedures," to test the data set portion of the station locally and remotely.

6.26 Check the interfacing between the teletypewriter and the data set by operating the various keys on the set logic assembly as described in 6.19 thru 6.23. Refer to 6.02 thru 6.16 to test proper teletypewriter operation in local mode.

33 AND 35 STATIONS WITH DATA SET 103A-TYPE

6.27 Refer to Section 591-014-500, "Data Set 103A-Type, Test Procedures," for tests to be performed on the data set at the time of installation. Refer to 6.19 thru 6.23 for procedures to test for proper interfacing operation between the teletypewriter and the data set. Refer to 6.02 thru 6.16 to test the major components of the teletypewriter.