

KS-21428 PHONECART

IDENTIFICATION, INSTALLATION, OPERATION TESTS, MAINTENANCE, AND CONNECTIONS

1. GENERAL

1.01 This section provides information on the KS-21428 Phonecart (Fig. 1 and 2) which is a rolling cart for use with a modified 1C- or 1D-type coin telephone set in hospitals and/or nursing homes. The cart is intended to be rolled from one location to another to make available coin telephone service for those patients who do not have a room phone and whose illness prevents them from using public telephones provided outside the hospital room or ward. These carts are also used to provide coin telephone service in penal institutions.



When used in a hospital, the cart may only be used in the general care or public areas. A wall jack must not be located within 30 feet of critical care area.

1.02 This section is reissued to:

- (a) Show KS-6573 battery replaced with KS-8588 battery
- (b) Show 90-volt KS-7890 battery replaced with two 45-volt KS-14196 batteries
- (c) Add KS-21428, List 13 battery harness
- (d) Include 1D1 and 1D2 coin telephone sets
- (e) Change title.

Revision arrows are used to emphasize the more significant changes.

2. IDENTIFICATION

2.01 Overall dimensions of the cart are as follows:

- Height — 57 inches
- Width — 26 inches

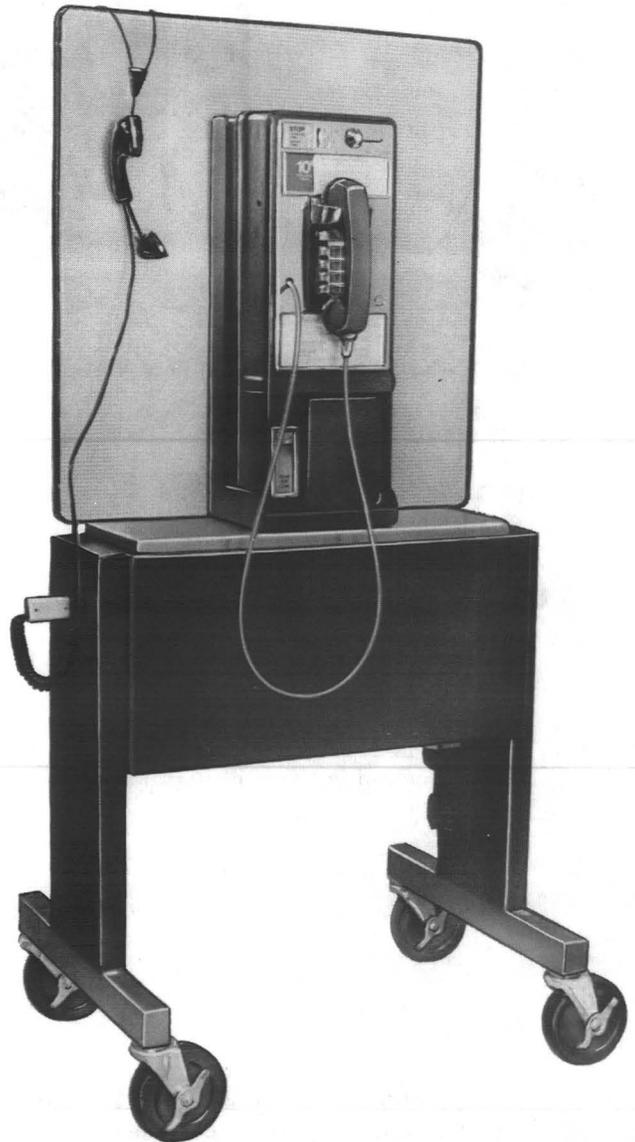


Fig. 1—Typical KS-21428, List 4 Phonecart With Modified 1C-Type Coin Telephone Set

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

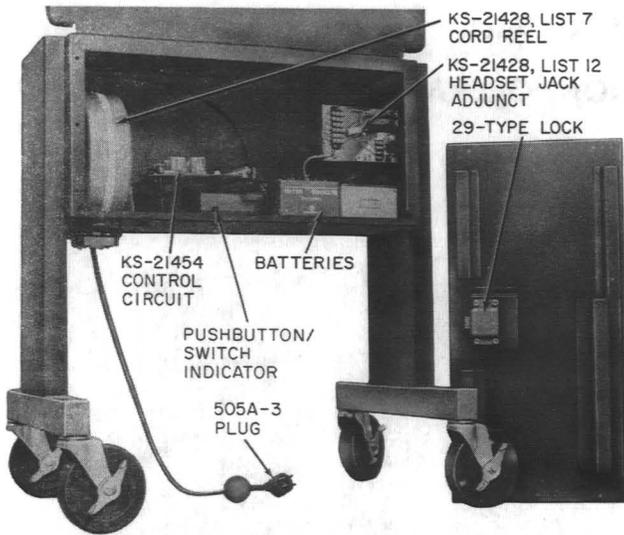


Fig. 2—KS-21428 Phonecart, Rear View

- Depth — 19-1/2 inches
- Shelf Height — 30 inches
- Coin Slot Height — 50-1/2 inches.

2.02 Weight of the cart including the coin telephone set is approximately 190 pounds.

2.03 The cart is constructed of rectangular steel tubing covered with sheet metal and finished in black-textured vinyl paint.

2.04 The legs are equipped with four rubber tired casters, all of which have foot-operated locking devices.

2.05 The top consists of a stainless steel cover which serves as a shelf.

2.06 A backplate, covered with fiberglass acoustic material and a perforated metal exterior, offers some measure of acoustical and visual privacy.

2.07 A KS-21676, List 1 L-shaped backboard (Fig. 3) is bolted to the structural rails under the stainless steel shelf and also to the backplate.

2.08 A storage compartment is located between the two leg assemblies. This compartment houses a KS-21454 control circuit, four dry cell batteries,

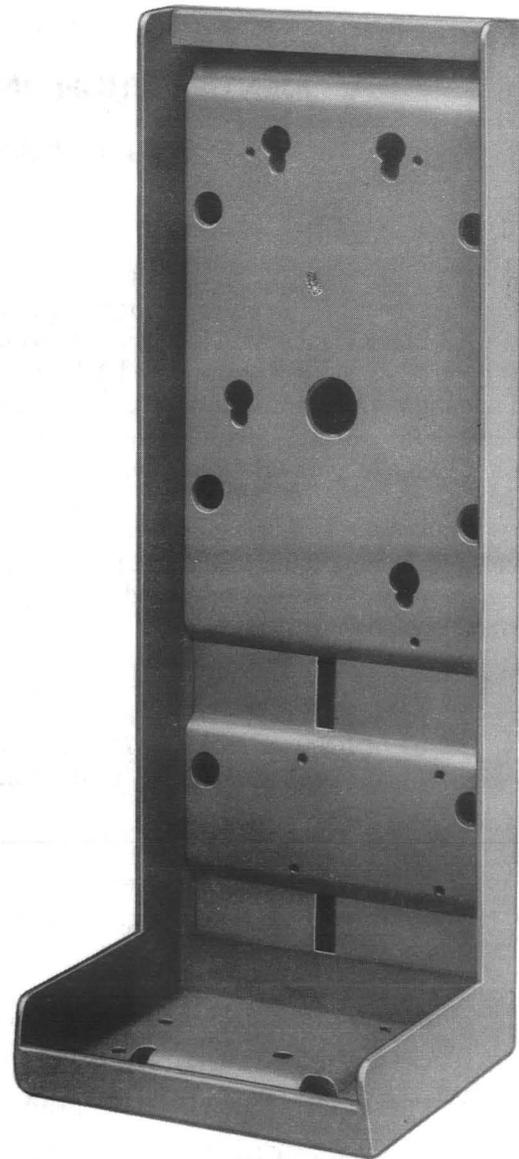


Fig. 3—KS-21676, List 1 Backboard Assembly

a switch indicator, and a 30-foot latching cord reel (Fig. 2). These components are described as follows:

(a) The KS-21454 control circuit is composed of a plug-in printed circuit board. This circuit causes deposited coins to be collected if the cart is rocked, tilted, or unplugged while a call is in process. ♦If coins are deposited while the cart is unplugged, they will be returned.♦

(b) ♦Four♦ dry cell batteries are used with the phonecart as follows.

- (1) A ♦KS-8588♦ 22-1/2 volt battery drives the control circuit.
- (2) A KS-7105 22-1/2 volt battery operates the totalizer.
- (3) ♦Two KS-14196 45-volt batteries operate the coin relay. They are connected in series with a KS-21428, List 13 battery harness (Fig. 4).♦

(c) The pushbutton switch indicator at rear of storage compartment is used to check the KS-8588 battery.

(d) The mounting cord (a component of the cord reel) is approximately 30-feet long and consists of 18-gauge, 4-conductor cord, terminated in a standard 505A-3, 4-prong plug.

2.09 The KS-21428, List 12 headset jack adjunct (Fig. 5) is available for using a headset. When headset is plugged in, the handset ♦must be off-hook and♦ is inoperative.

Note: A modified 53JR headset (Fig. 6) must be furnished locally.

ORDERING GUIDE

2.10 Refer to Table A for available list numbers.

2.11 Orders for this product shall specify quantity, KS number, and list number. The following are examples of typical orders:

- (a) Example 1 — basic cart with batteries, lock, 505A plug, and control circuit will be ordered as one Phonecart, KS-21428, L3.
- (b) Example 2 — one complete facility including headset jack adjunct and a ♦chocolate brown♦ TOUCH-TONE® dialing coin telephone set will be ordered as one Phonecart, KS-21428, L4 equipped with a modified 1C2-104 coin telephone set with G3AH-104 handset (4-1/2 foot cord).

3. INSTALLATION

3.01 The cart, modified 1C- or 1D-type coin telephone set, and KS-21454 control circuit

(with batteries) are assembled at the service center complete with 29A lock and 505A cord reel plug. Installation of a standard coin line, terminated in a 548A or 549A jack, is required for mating with the 505A mounting cord plug.



The provision of a local ground to the 548A or 549A jack using No. 10 AWG wire is required to meet existing National Electric Code (NEC) regulations.

3.02 Connect a No. 10 AWG insulated copper wire to a local power system or telephone system ground that must be made available in the patient area where the phonecart is to be used as specified in NEC regulations. Connect the other end of this wire to the Y terminal of the 548A or 549A jack as shown in Fig. 9. It will be necessary to procure locally a No. 6-32 by 1/2 roundhead machine screw and two No. 6 flat washers. Replace the existing screw in Y jack terminal with the screw and washers before installing the No. 10 ground wire.

3.03 All coin lines associated with a phonecart must have a protector at point of entry to the building (Fig. 9).

3.04 Refer to Fig. 9 for the 548A or 549A jack wiring requirements.

Note 1: Make sure the (BK) strap is added to the 548A or 549A jack and not placed between terminals 8 and 15 on the control circuit. Due to the design of the control circuit, a strap between terminals 8 and 15 is not equivalent to a short on the 548A or 549A jack.

Note 2: Spacing of jacks in a hospital ward must be such that every bed can be reached by 30 feet (or less) of mounting cord. Jacks should be located so that the cord will not have to be placed across frequently used aisles or passage-ways. Jacks should also be provided so the phonecart can be used by hospital personnel and public visitors when not being used by a patient.

3.05 Verify that information plate on front of coin telephone set (dial-tone-first [DTF] or coin-first [CF]) agrees with mode of operation.



Phonecarts can be wired for either CF or DTF mode and should only be plugged into jacks connecting to central office (CO) which provides the same mode of operation.

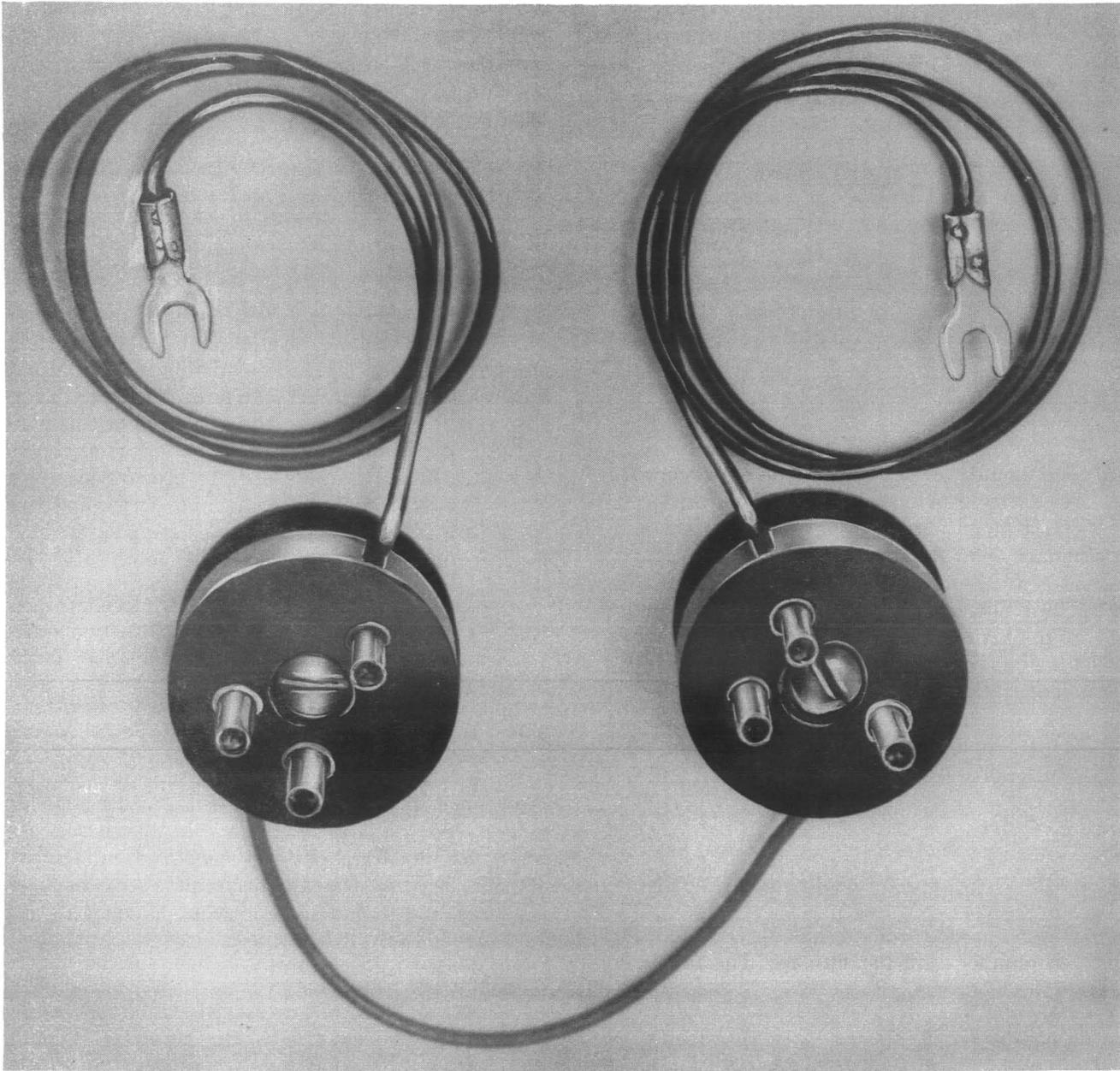


Fig. 4—KS-21428, List 13 Battery Harness

3.06 Verify that a shorting strap has been installed from terminal No. 8 to terminal No. 10 on the printed circuit connector.

3.07 After installation, ensure that the coin telephone is working properly by performing routine tests per local instructions. If set does not work properly, perform tests outlined in Part 4.

4. OPERATION TESTS AND TROUBLE ANALYSIS

4.01 The modified 1C- or 1D-type coin telephone set associated with the phonecart can be tested separately by using the following procedure:

- (1) Ensure that the mounting cord is unplugged from wall jack.

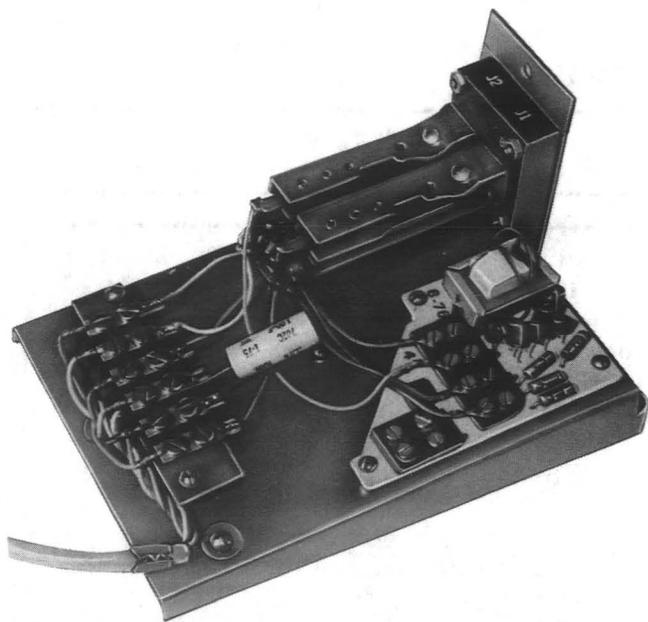


Fig. 5—KS-21428, List 12 Headset Jack Adjunct

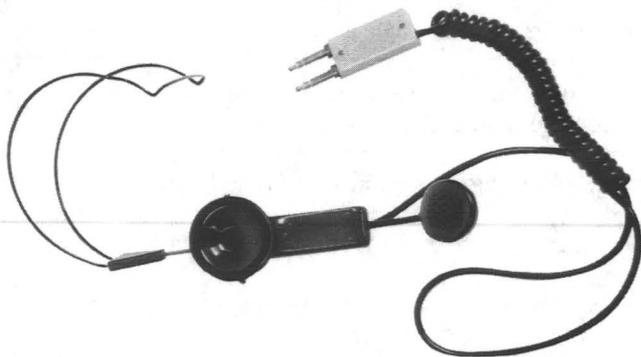


Fig. 6—53JR Headset With Modified 425A-61 Plug

- (2) If applicable, remove headset plug from headset jack adjunct.
- (3) Disconnect the tip, ring, and ground leads from TB1 in the coin telephone set. (These leads are from the control circuit.)
- (4) Install a shorting strap between terminals of the coin relay, where the (G-W) and (W-O) wires are connected (Fig. 10).

- (5) Temporarily extend tip, ring, and ground from the 548A or 549A jack to TB1 in the coin telephone set.
- (6) Perform Operation Tests as directed in Sections 506-410-400 and 506-900-503 or the Public Services Maintenance Check Booklet.

4.02 After tests have been completed on coin set, remove the improvised extension, the strap from coin relay, and reconnect tip, ring, and ground from control circuit to TB1.

4.03 Test and/or troubleshoot the control circuit and headset jack adjunct (if applicable as directed in Table B).

5. MAINTENANCE

5.01 To make components of the phonecart accessible, remove six B-189998-3 security screws from compartment cover using a KS-19192 wrench. Unlock the 29-type lock, slide cover up, and lift off. Install cover using reverse procedure.

5.02 The KS-8588 battery can be checked by operating the pushbutton switch indicator located on the bottom rear of the storage compartment (Fig. 2) as follows:

- (a) If indicator lamp lights, battery is OK.
- (b) If indicator lamp does not light, check wiring and retest.
- (c) If indicator lamp still does not light, replace battery.
- (d) Retest pushbutton switch indicator. If indicator lamp still does not light, replace switch indicator per paragraph 5.04.
- (e) Initiate a call using the coin telephone set and check for proper operation.

COMPONENT REPLACEMENT

A. KS-8588, KS-7105, and KS-14196 Batteries

5.03 Disconnect leads and remove batteries. When installing batteries, refer to Fig. 11 for connections.

TABLE A
BASIC LIST NUMBERS

KS-21428 LIST NO.	FIG.	DESCRIPTION	REMARKS
1	—	Basic phonecart	Includes the dolly, KS-21454, List 1 control circuit, KS-21676, List 1 backboard, and KS-21428, Lists 5, 7, 8, 9, and 10. Does not include coin telephone set.
3	—	Phonecart, batteries, lock, and plug	Includes KS-21428, List 1, KS-8588, KS-7105, two KS-14196 batteries, KS-21428, List 13 battery harness, 29A lock, and 505A plug.
4	—	Phonecart with headset jack adjunct	Includes KS-21428, List 3 plus a KS-21428, List 12.
5	7	Roller guide bracket assembly	For assisting in extending and retracting mounting cord.
6	7	Roller assembly	Component of List 5. Intended as a replacement part.
7	2	Cord reel assembly	Contains retractable mounting cord.
8	—	Printed circuit connector	Plug in connector for KS-21454 control circuit.
9	—	Miniature pushbutton switch	For checking the KS-8588 battery.
10	—	Caster	Includes one caster with a foot brake. Has a 5/8-inch diameter mounting shaft.
12	5	Headset jack adjunct	Jack for plugging in a modified 53JR headset.
13	4	Battery harness	For connecting two KS-14196 batteries in series.
101	8	Caster kit	Includes one caster and associated hardware. Used to replace old gray-colored obsolete casters. Not to be used as a replacement part for List 10. Has a 3/8-inch diameter mounting shaft.

B. Miniature Pushbutton Switch Indicator

5.04 Replace switch indicator as follows:

Note 1: An early version (Tec Inc. No. S-1022-1AA-07-T02) has an orientation dot on the base between terminals 1 and 4. Terminals are numbered in a clockwise direction from the dot.

Note 2: A later version (Grayhill Inc. No. 40-200) has one brass terminal and 3 white

terminals. Terminals are numbered in a clockwise direction, the brass terminal being number 4.

- (1) Remove the two wires from switch indicator terminals 1 and 2.
- (2) Remove knurled nut, lockwasher, and switch indicator.
- (3) Remove the strap wire from the old switch indicator and install it on the new switch indicator terminals 3 and 4.

TABLE B
TROUBLE ANALYSIS — COIN-FIRST OR DIAL-TONE-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
PREPARATION FOR ALL TESTS					
1	Remove coin cover unit from coin telephone set.				
2	Install KS-20950 cover parking tool and hang coin cover unit on tool.				
3	Plug cord reel plug of phonecard into proper wall jack. <i>Note 1:</i> Do not unplug or tilt the phonecard while test is in progress. <i>Note 2:</i> The KS-21250 portable test set cannot be used for these tests.				
4	Remove six security screws from compartment cover of phonecard, unlock 29-type lock, slide cover up, and lift off.				
HEADSET TEST					
5	Remove handset and lay it aside. Plug headset into jack. Deposit initial rate and call operator.	Operator on line, side tone present in headset.	No side tone.	Defective headset.	Replace defective apparatus.
			No transmission.	Defective headset jack adjunct.	
6	Request operator to return coins.	Coins returned.	Coins not returned.	Nonstation trouble.	Repeat request and if failure reoccurs, test with testdesk.

TABLE B (Contd)

TROUBLE ANALYSIS — COIN-FIRST OR DIAL-TONE-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
CONTROL CIRCUIT AND ASSOCIATED APPARATUS					
7	Trip hopper trigger in coin set by hand then remove cord reel plug from wall jack.	Coin relay operates and coin vane moves to collect position.	Coin relay does not operate.	Defective KS-14196 battery.	Replace defective apparatus.
				Defective control circuit.	
		Coin vane operates to refund position.	Defective control circuit.		
8	With cord reel unplugged, deposit a nickel.	Totalizer resets and nickel is returned.	Nickel does not return.	Defective control circuit.	
			Totalizer does not reset.	Defective KS-7105 battery.	
				Defective control circuit.	
9	Restore phonecart for normal operation.				

(4) Install and secure the new switch indicator in the phonecart.

(5) Connect the lead from terminal 11 of the control circuit to terminal 1 and the lead from terminal 9 of the control circuit to terminal 2.

C. KS-21428, List 7 Cord Reel Assembly

5.05 Replace cord reel assembly as follows:

Note: Early model phonecards do not have a roller guide assembly associated with the cord

reel assembly and the mounting hardware is different than current models.

(1) To remove cord reel assembly on early models, disconnect the four leads from printed circuit connector and remove two 3/8-16 by 1/2 round-head machine screws and two 3/8-inch lockwashers. Install using reverse procedure and refer to Fig. 11 for connections to terminal strip.

(2) To remove cord reel assembly on current manufactured models with roller guide bracket assembly, disconnect the four leads from printed circuit connector, remove two 3/8-16 by 3/4 roundhead machine screws, two 3/8-inch

lockwashers, and one No. 10-32 by 1/2 security screw. The roller guide bracket and cord reel assembly are secured with the same hardware. Install using reverse procedure and refer to Fig. 11 for connections to terminal strip.

D. KS-21428, List 5 Roller Guide Bracket Assembly

5.06 Replace roller guide bracket assembly as follows:

Note 1: The rubber ball on retractable cord will not go through the roller guide, consequently the roller guide will have to be removed from the bracket (paragraph 5.07) before the bracket can be removed from the cord. The rubber ball can be forced through opening in the bracket.

Note 2: Early model phonecards do not have a roller guide bracket assembly.

- (1) To remove bracket assembly, remove two 3/8-16 by 3/4 roundhead machine screws, two 3/8-inch lockwashers, and one No. 10-32 by 1/2 security screw. Install using reverse procedure.
- (2) To install a roller guide bracket assembly on an early phonecard which was never equipped with one, perform the following:
 - (a) Separate roller guide from bracket (Fig. 7).
 - (b) Force rubber ball of retractable cord through bracket.
 - (c) Disassemble roller guide (paragraph 5.07).
 - (d) Insert cord through cutout in roller guide.
 - (e) Assemble roller guide and secure it to bracket (Fig. 7).
 - (f) Secure bracket to phonecard using two 3/8-16 by 3/4 roundhead machine screws, two 3/8-inch lockwashers, and one No. 10-32 by 1/2 security screw.

E. KS-21428, List 6 Roller Guide

5.07 Replace roller guide as follows:

Note: The roller guide will have to be partially disassembled to remove or install.

(a) Remove roller guide as follows:

- (1) Remove four No. 10-32 hex nut lockwasher assemblies and four No. 10-32 by 3/4 roundhead machine screws (Fig. 7).
- (2) Remove roller next to the opening in frame by removing the roller pin and lifting roller out.
- (3) Pull roller assembly from mounting cord.

(b) Install using reverse procedure.

F. KS-21454 Control Circuit

5.08 Remove two No. 6-32 by 1/2 roundhead machine screws from the mounting brackets and pull the control circuit out of the connector assembly. Install using reverse procedure. Verify that a shorting strap has been installed from terminal No. 8 to terminal No. 10 on the printed circuit connector.

G. Modified 1C- or 1D-Type Coin Telephone Set

5.09 Remove the coin telephone set per instructions in Section 506-410-400 or Task Oriented Practice (TOP) 506-410-402 with the following exceptions:

- (1) The five inside wires between the control circuit and coin telephone set will have to be disconnected from the coin set, two of which will have to be unsoldered from the coin relay.
- (2) The six inside wires between the headset adjunct, if provided, and coin telephone set will have to be disconnected from the coin telephone set (Fig. 12).



Never replace a modified coin telephone set on the phonecard with a standard set. The set must be modified per Fig. 10 and be equipped with a 4-1/2 foot handset cord.

H. KS-21428, List 12 Headset Jack Adjunct (Fig. 5)

5.10 Replace headset jack adjunct as follows:

- (1) Disconnect leads from TB4 on adjunct.
- (2) Remove screw which secures stayhook.
- (3) Remove three hex nuts which secure adjunct to phonecard housing.

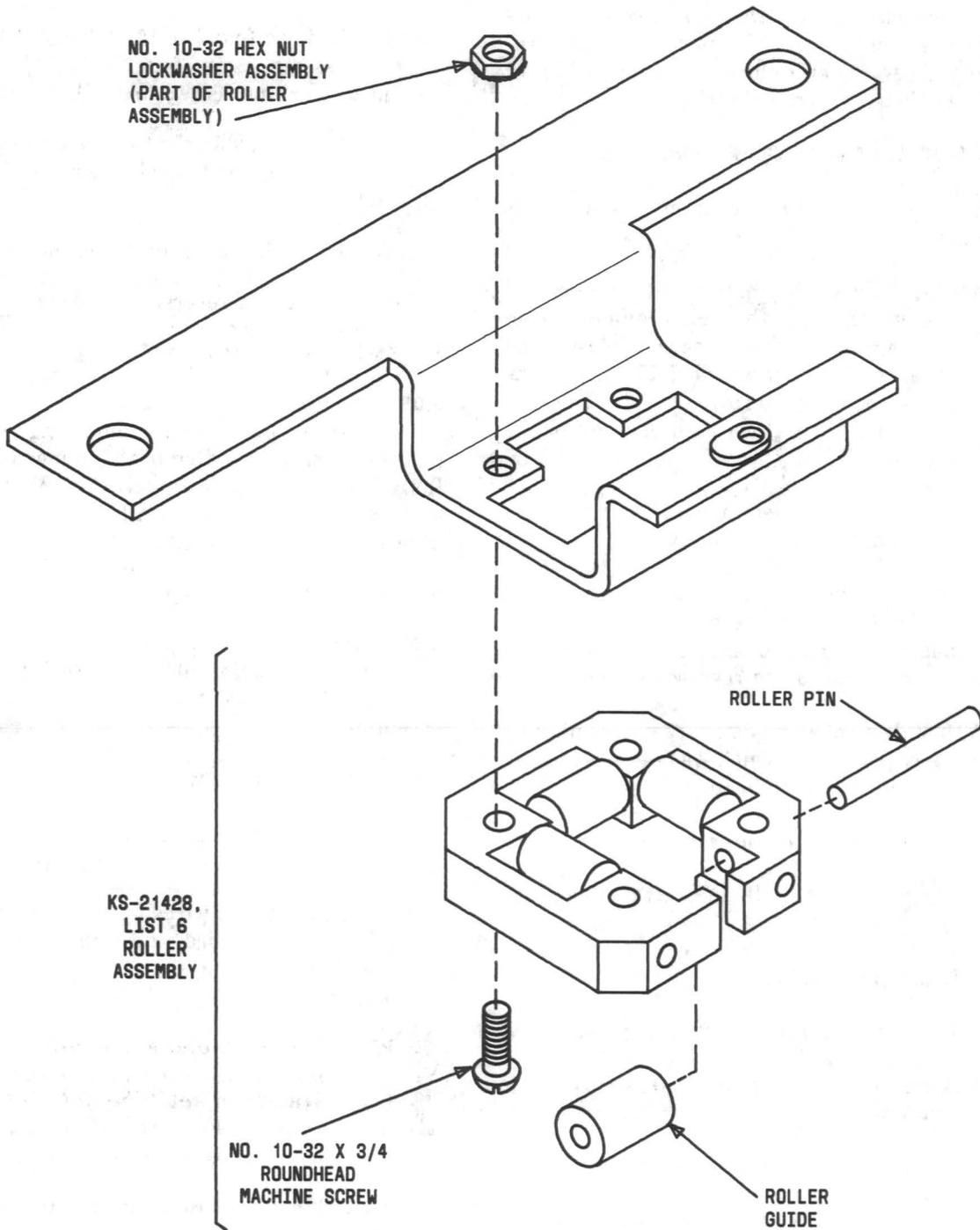


Fig. 7—KS-21428, List 5 Roller Guide Bracket Assembly

- (4) Lift adjunct out of cart.
- (5) To install, use reverse procedure.
- (6) Connect leads to TB4 per Table C and Fig. 12.
- (7) Secure stayhook.
- (8) Ensure that adjunct bracket and phonecart frame are bonded electrically.

I. KS-21428, List 10 Casters

Note: The List 10 casters and List 101 casters are not interchangeable. The mounting shaft on a List 10 is larger.

5.11 Replace a List 10 caster as follows:

- (1) Remove the 5/8-18 hex nut and 5/8-inch lockwasher. Lift caster off.
- (2) To install, use reverse procedure.

J. KS-21428, List 101 Casters

Note: The List 101 caster (Fig. 8) is a replacement for the old gray-colored obsolete caster which is equipped with a 3/8-inch diameter mounting shaft. It should not be used as a replacement for the List 10 caster which has a 5/8-inch diameter mounting shaft.

5.12 Replace a List 101 caster as follows:

- (1) To remove a List 101 caster, or an obsolete gray-colored caster, remove one 3/8-16 hex nut and one 3/8-inch lockwasher.

Note: A wrench (comcode No. 900403379) can be ordered separately for use on the List 101 caster.

- (2) To install, use reverse procedure.

COMPONENT ADDITIONS

- 5.13 To add a List 12 headset jack adjunct to a List 1 or List 3 phonecart, proceed as follows.

TABLE C

HEADSET JACK ADJUNCT AND
MODIFIED COIN TELEPHONE SET CONNECTIONS

HEADSET JACK ADJUNCT TERMINAL	WIRE COLOR (COMPONENT OF ADJUNCT)	CONNECT TO MODIFIED COIN SET TERMINAL			
		1C1 SET	1C2 SET	1D1	1D2
TB4-1	BL	TB2-3	TB2-3	TB2-3	TB2-3
TB4-2	BK	TB2-8	TB2-8	TB2-7	TB2-8
TB4-3	Y	TB2-2	TB2-7	TB2-4	TB2-7
TB4-4	R	Handset R lead*	Handset R lead*	Handset R lead*	Handset R lead*
TB4-5	W	Handset W lead*	Handset W lead*	Handset W lead*	Handset W lead*
TB4-6	G	TB2-6	TB2-5	TB2-6	TB2-6

* The (R) and (W) leads from adjunct to handset are spliced with two 801219320 connector assemblies.

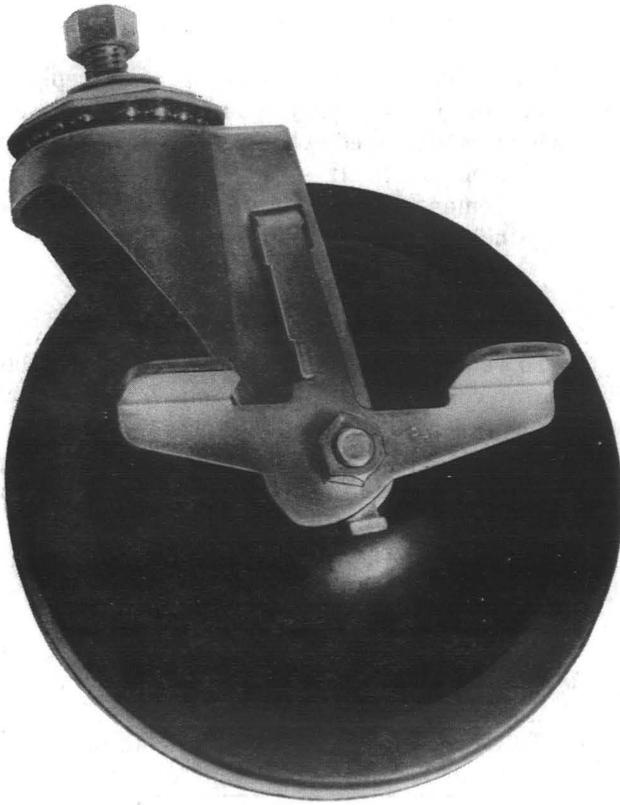


Fig. 8—KS-21428, List 101 Caster Kit

Note: The List 12 headset jack adjunct includes three hex nut lockwasher assemblies and three standard lockwashers for securing adjunct to cart, plus two connectors and insulation sleeves for splicing handset wires. Also included is the cable for interconnecting the adjunct to the coin telephone set and a 425A-61 plug to be used with the 53JR headset (paragraph 5.14).

- (1) Remove knockout from right end of cart, as viewed from rear.
- (2) Install the three lockwashers over studs and mount adjunct to inside of cart utilizing the knockout hole for headset jack and the three mounting studs which are part of the cart. Secure with the three furnished hex nut lockwasher assemblies.

Note: Ensure that the adjunct and cart are bonded electrically. The three lockwashers are installed between the cart and adjunct chassis for that purpose.

- (3) Run the cable up through the cart and into back of coin set following same path as control circuit cable.
- (4) Allow approximately 2 feet of cable from backplate grommet to end of spade terminals.
- (5) Connect the spade terminals to coin telephone set per Table C and Fig. 12. Dress all wires in housing so as not to interfere with moving parts.

5.14 The 53JR headset can be used in conjunction with the List 12 adjunct; however, the 464A-61 headset plug must be replaced with a 425A-61 plug. The 425A-61 plug is furnished with a List 12 adjunct. Modify the 53JR headset as follows:

- (1) Remove three-plug clamp screws and lift shell half off of the 464A-61 plug.
- (2) Disassemble the 425A-61 plug.
- (3) Observe lead colors and connections on the 464A-61 plug and transfer leads to the respective terminals on the 425A-61 plug.
- (4) Install the shell half on the 425A-61 plug.
- (5) Discard the 464A-61 plug in accordance with local instructions.
- (6) Plug the 425A-61 plug into the List 12 adjunct.

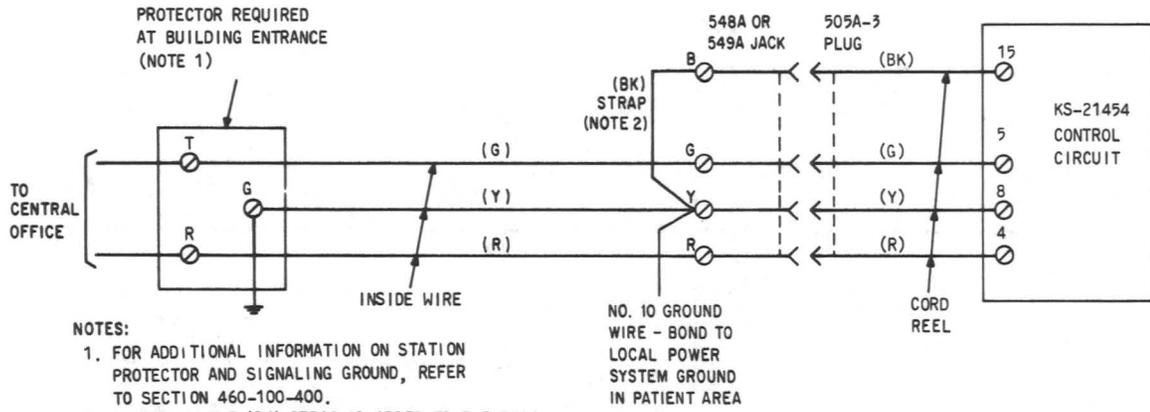
5.15 Refer to Section 508-100-101 for cleaning.

6. CONNECTIONS

6.01 Refer to Fig. 12 for KS-21428, List 12 headset adjunct connections.

6.02 Refer to Fig. 11 for control circuit connections.

6.03 Refer to Section 506-410-400 or TOP 506-410-402 for coin telephone set connections except the coin relay connections shown in this section will be modified per Fig. 10 and 11.



- NOTES:
1. FOR ADDITIONAL INFORMATION ON STATION PROTECTOR AND SIGNALING GROUND, REFER TO SECTION 460-100-400.
 2. MAKE SURE THE (BK) STRAP IS ADDED TO THE 548A OR 549A JACK AND NOT PLACED BETWEEN TERMINALS 8 AND 15 ON THE CONTROL CIRCUIT. DUE TO THE DESIGN OF THE CONTROL CIRCUIT, A STRAP BETWEEN TERMINALS 8 AND 15 IS NOT EQUIVALENT TO A SHORT ON THE 548A OR 549A JACK.

Fig. 9—Plug and Wall Jack Wiring

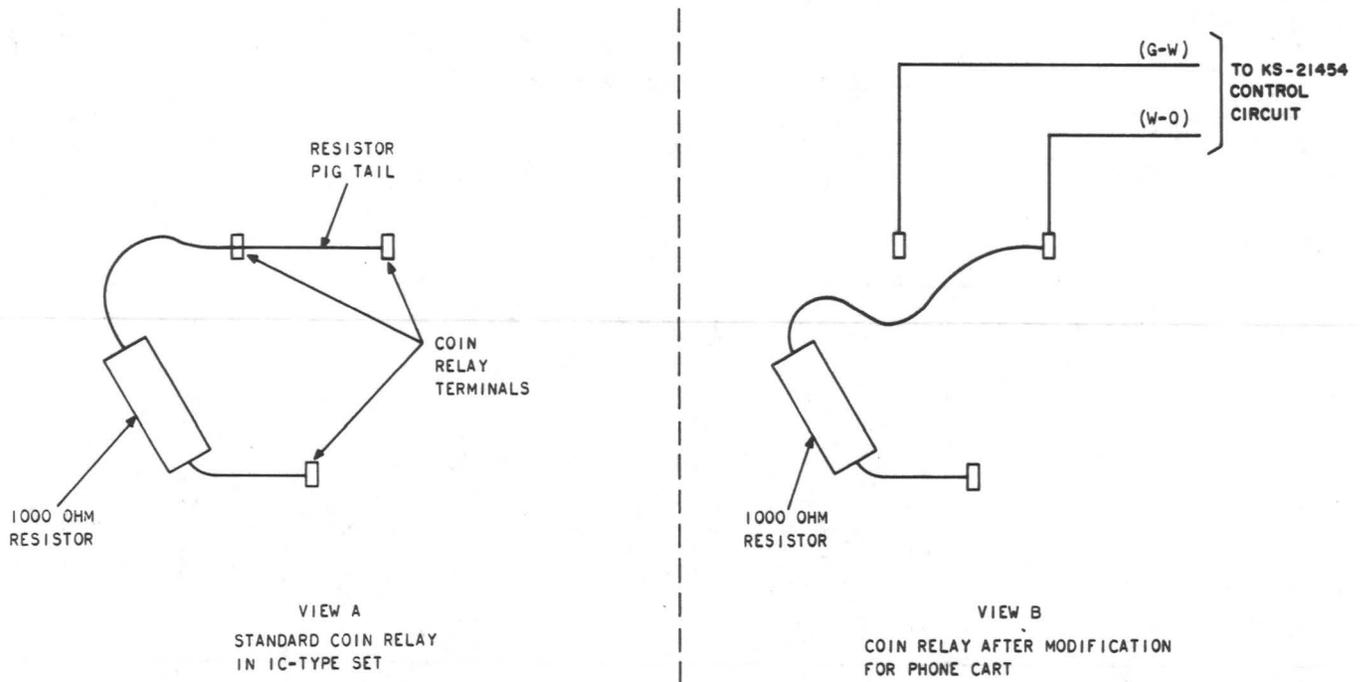


Fig. 10—Coin Relay Modification

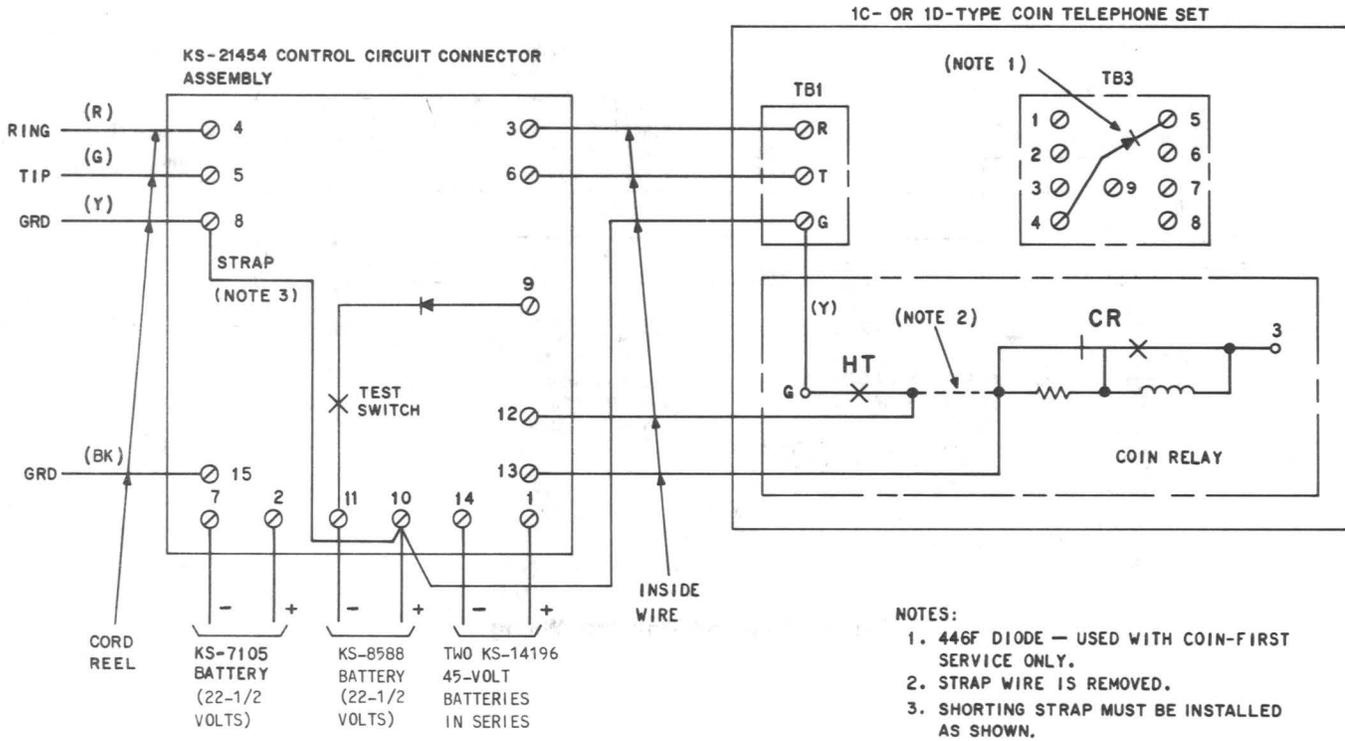


Fig. 11 — Phonecart, Connections

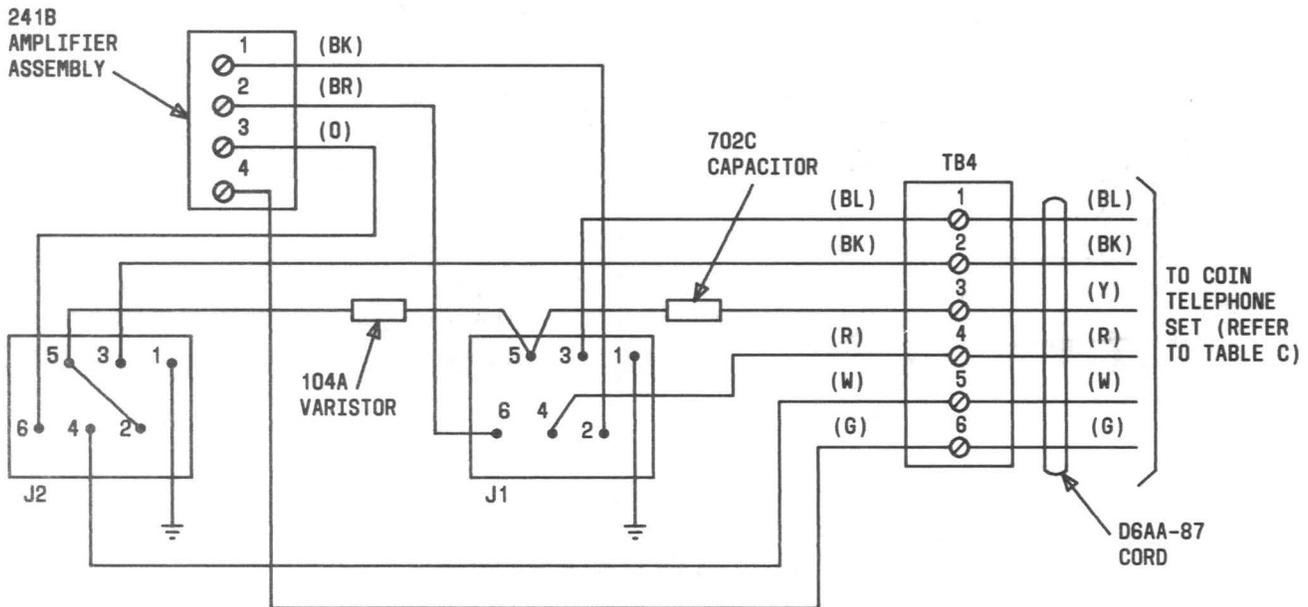


Fig. 12 — KS-21428, List 12 Headset Jack Adjunct, Connections