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OPERATOR'S ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS TEST SET, TELEPHONE AN GCM-4

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DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE

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THE NAVY, AND THE AIR FORCE

WASHINGTON, D.C., *30 July 1970*

Operator's Organizational, DS, GS, and Depot Maintenance Manual
Including Repair Parts and Special Tools Lists
TEST SET, TELEPHONE AN/GCM-4

LIST OF ILLUSTRATIONS

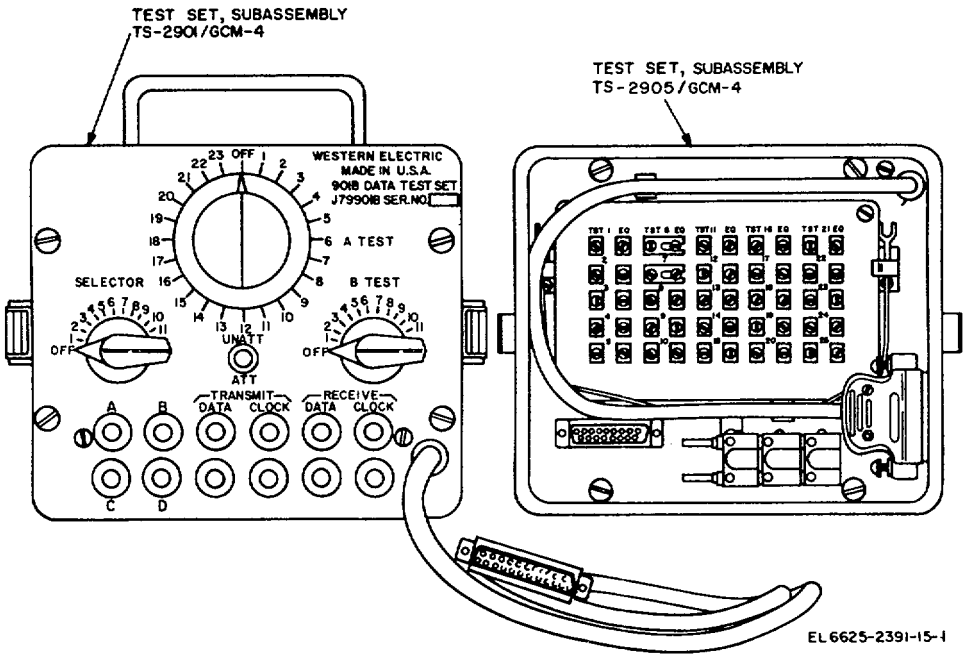

Figure 1-1. Test Set, Telephone AN/GCM-4.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Test Set, Telephone AN/GCM-4, referred to in this manual as "test set" (fig. 1-1), and includes instructions for installing, operating, and maintaining the test set.

b. Appendices A, and C are current as of May 1970.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 (Army), T.O. 0-1-31 (Air Force), or NAVSUP Pub 2002 (Navy) to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions given in TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 378/AFR 71-4/MCO P4030.29, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33/AFM 75-18/MCO P4610.19A, and DSAR 4500.15.

1-3.1. Reporting of Errors

The reporting of errors, omissions and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-C, Fort Monmouth, NJ 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. The test set is a testing unit used for installation and repair of various telephone modems.

b. The test set is used primarily to determine whether or not a telephone modem is operating properly. The test set can also be used to isolate a trouble condition in a telephone modem. The test set is connected to the interface of a telephone modem. Operation of the test set switches simulates various actions to the telephone modem. Responses of the telephone modem to the various actions are monitored on terminals of the test set with a volt-ohm-milliammeter or with an installer handset.

1-5. Technical Characteristics

The test set is a device for switching interconnections between particular telephone modem interfaces and standard test equipment and, as such, no technical characteristics are applicable.

1-6. Items Comprising an Operable Equipment

FSN	QTY	Nomenclature, part No., and mfr code	Fig. No.
		NOTE The part number is followed by the applicable 5 digit Federal supply code for manufacturers (FSCM) identified in SB 708 42 and used to identify manufacturer, distributer, or Government agency, etc.	
6625-411-4032	1	Test set, Telephone AN/ GCM	1-1
		Which includes:	
5995-	1	Cord Assembly, Electrical : W25ACD1FTS1nNCG: 64959	1-1
5995-	1	Cord Assembly, Electrical: W25ACD3FTCG: 64959	1-1
59	1	Dummy Plug, Telephone: MDPR 200 Ohms: 05276	1-1

1-7. Description

a. The test set (fig. 1-1) is housed in an aluminum box approximately 7 by 9 by 7 inches. The cover, Test Set, Subassembly TS-2905/GCM-4 which i 2/4 inches deep, and held in place by two catches attached to the side of the test set. Some early model telephone modems have connectors different from later models. In some test applications it may be necessary to use an adapter cord in order to test an early model telephone modem. Adapter cords are approximately 6 inches long and may be stored in the cover of the test set. Test set, Subassembly TS-2905/GCM-4 contains fastening devices for a maximum of three adapter cords.

b. Located on the front panel of the Test Set Subassembly TS-2901/GCM-4 are a 3-foot-long test cord equipped with a 25-pin male connector, 3 rotary switches, a toggle switch, and 12 test jacks.

c. Connection is made between the test set and the telephone modem by either the test adapter connector cord or test set connection cord (W25A).

d. Four output terminals are provided as convenient tie points for monitoring telephone modem outputs. The A, B, C, and D terminals are used for meter measurements and audible signals. All voltage measurements on output terminals are derived directly from the telephone modem under test.

e. An interface test adapter used to examine signals between the associated equipment and the telephone modem is housed within the cover of the test set. The cover contains the following test adapter equipment

(1) Cord assembly W25A, 1 foot 8 inches in length to connect to a data set.

(2) Connector KS-19087, L2 to receive either the associated equipment interface connector or the connector from the test set.

(3) A panel with 25 pairs of screw terminals with a shorting clip for each pair.

(4) Four, Leads, Electrical CX-12104/GCM-4 used for terminal interconnections in testing.

1-8. Additional Equipment Required

A multimeter is required for monitoring responses of the telephone modem on terminals of the test set.

CHAPTER 2

INSTALLATION INSTRUCTIONS

2-1. Unpacking

The test set is packed in two cartons. Unpack the equipment as follows:

a. Cut and remove the metal straps on the larger of the two cartons.

b. Open the carton.

c. Open the waterproof paper liner which covers the inner carton.

d. Remove the inner carton.

e. Open the inner carton.

f. Open the moistureproof and vaporproof barrier.

g. Remove the test set.

h. Remove the contents from the filler carton.

2-2. Checking Unpacked Equipment

a. Inspect the equipment for damage that may have occurred during shipment. If the equipment has been damaged, fill out and forward appropriate forms as listed in paragraph 1-3.

b. Check to see that the equipment is complete as listed on the packing slip. Report all discrepancies in accordance with TM 38-750. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. If the equipment -has been modified, the MWO number will appear on the front panel, near the nomenclature plate. Check also to see whether all MWO's current at the time the equipment is placed in use have been applied.

NOTE

Current MWO's applicable to the equip ment are listed in DA PAM 310-4.

d. Check the latest issue of DA PAM 310-4 (never more than one year old) wnd its latest changes (never more than six months old) to see whether you have the latest editions of all applicable maintenance literature. (Equipment issued by depots may have been in stock for some time and may contain superseded manuals).

2-3. Installation

The test set is portable and installation is not required.

CHAPTER 3

OPERATION

3-1. Operator Controls, Indicators, and Jacks (fig. 3-1)

a. Test Set, Subassembly TS-2901/GCM-4.

Control, indicator, or jack	*Function*
SELECTOR (12-position rotary switch).	Prepares test set for specific telephone modem to be tested.
A TEST (24-position rotary switch).	Connects telephone modem interface leads to appropriate terminals on test set; connects certain interface leads internally as required.
B TEST (12-position rotary switch).	Supplements functions of A TEST switch.
UNATT/ATT (2-position toggle switch).	Simulates unattended or attended operation of telephone modems.
A, B, C, D (4 terminal posts).	Provide connections to handset, multimeter, or similar test equipment.
TRANSMIT (4 terminal posts):	
DATA (2 terminal posts)	Provide connections to WECO type 903 test set.
CLOCK (2 terminal posts)	Provide connections to WECO type 903 test set.
RECEIVE (4 terminal posts):	
DATA (2 terminal posts)	Provide connections to WECO 902 test set.
CLOCK (2 terminal posts)	Provide connections to WECO 902 test set.

b. Test Set Subassembly TS-2905/GCM-4.

Control, indicator, or jack	*Function*
TST (25 terminals).	Connect to 25-pin connector on adapter cord.
EQ (25 terminals).	Connect through adapter cord to pins of plug.
Adapter cord	Provides access to all telephone modem interface pins.

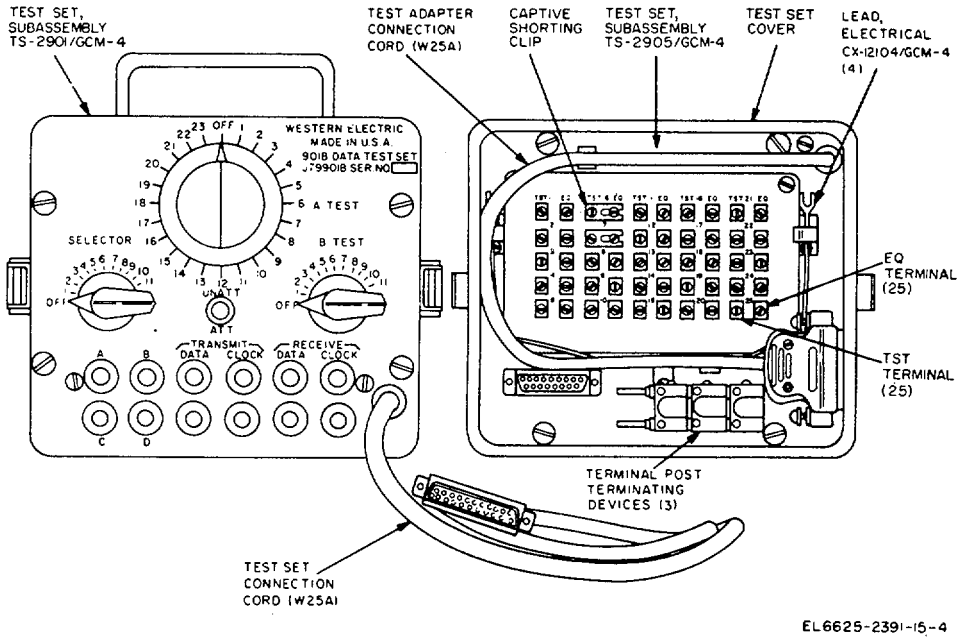

Figure 3-1. Operator's controls, indicators, and jacks, AN/GCM-4.

c. Accessories.

Control, indicator, or jack	*Function*
Terminal post terminating devices (3).	Provide 200-ohm short for certain tests.
Captive shorting clips (25).	Permit isolating or bridging interface leads.
Electrical leads (4).	Cross connect interface leads.

3-2. Operating Procedure

Standard installation and test practices for each telephone modem will specify switch settings, connections, operating instructions, and the types of associated test sets required. A typical test setup is shown in figure 3-2.

NOTE

Recheck installation and test instructions for proper terminal post before making test connection.

3-3. Operation Under Unusual Conditions

Although the test set is designed to operate over a wide temperature and humidity range, operation may be difficult in extreme cold, heat, humidity, moisture, and similar conditions. Observe the

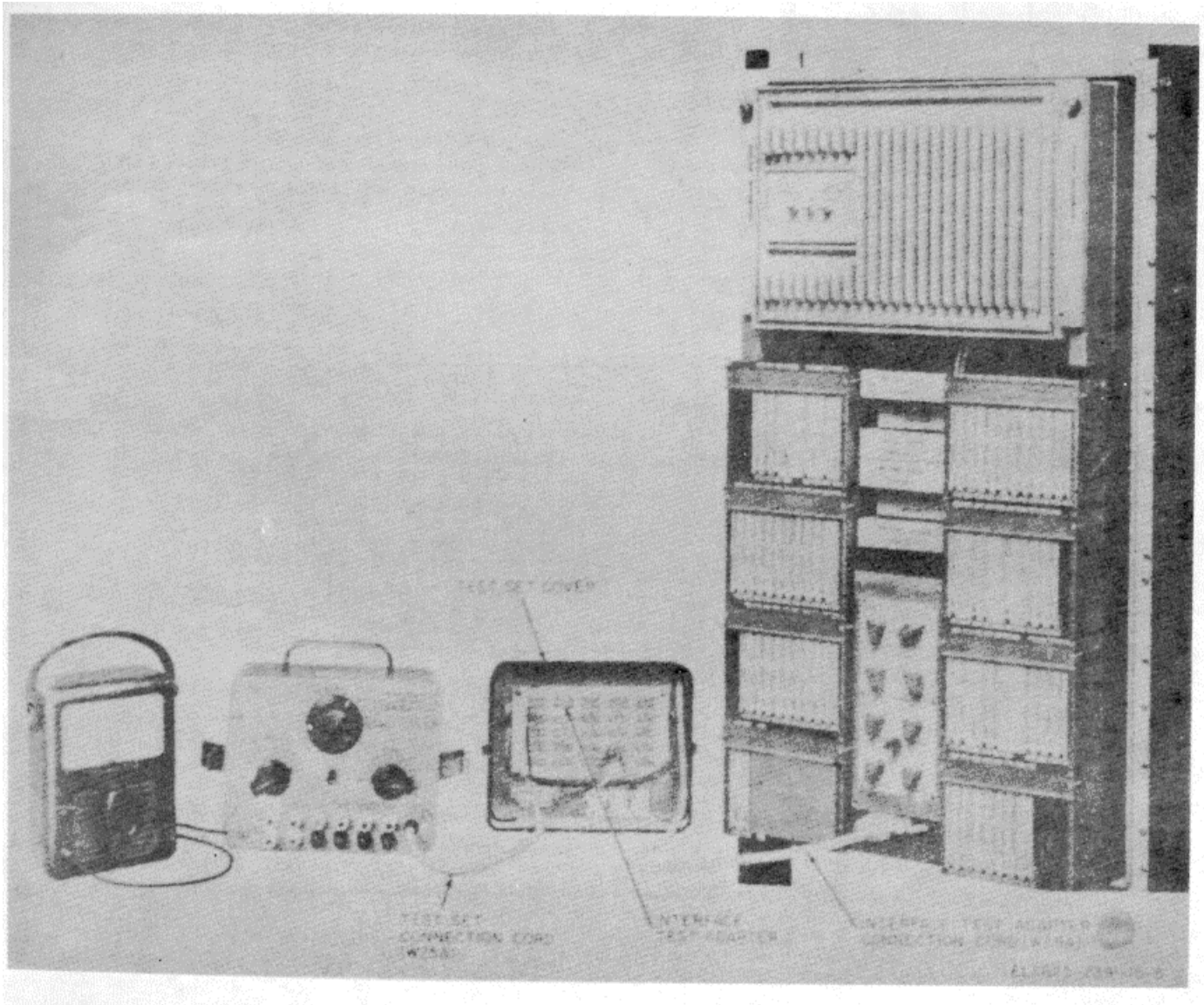

Figure 3-2. Typical test arrangement of AN/GCM-4 with telephone modem not in-service, block diagram.

following procedures when operating the test set under these conditions.

a. Cold Climates. Subzero temperatures and climatic conditions associated with cold weather affect the operation of the equipment. Keep the equipment as warm and dry as possible. If the equipment has been exposed to the cold and then ought into a warm room, moisture will gather on the equipment. When the equipment reaches room temperature, dry it thoroughly.

b. Hot Climates. When equipment is installed in tents, huts, or underground dugouts, provide the best possible ventilation. When the surrounding temperature drops, moisture will form on the equipment. Always dry the equipment thoroughly before operating it.

c. Dry Climates. Keep the equipment as free from dust as possible. When operating the equipment in extreme heat, pull the equipment slightly out of its case to allow air circulation. Do not operate the equipment on or near other equipment that generates excessive heat.

CHAPTER 4

FUNCTIONING

4-1. General

a. The circuitry of the test set basically consists of a set of switches wired so as to produce desired test sequences for a number of different telephone modems. One switch, SELECTOR, modifies the test circuitry for each position of the switch. A single telephone modem or group of telephone modems is selected in each position and a different sequence of tests is performed for each setting. Another, the A TEST switch, when rotated one step at a time, produces the selected test by making a desired sequence of interface pin connections. Each such set of interface pin connections produces a unique condition at other interface points. These are delivered, in turn, to output terminals on the test set where .hey may be interpreted with the aid of external testing equipment.

b. A third switch, B TEST, is operated in conjunction with the SELECTOR and A TEST switches, to produce additional test sequences.

4-2. Explanation of Functions

(figs. 6-1, 6-2, and 6-3)

For descriptive purposes the test set circuit is divided into eight major parts.

a. Connectors and Cords. The test set gains access to the interface of each telephone modem when its mating 25-pin connector and adapter cord are connected to the standard connector used with the telephone modems. Four adapter cords and connectors are provided in the test set to make connection to telephone modems with nonstandard connectors. These adapters are not interchangeable.

b. SELECTOR Switch S2. The SELECTOR is a 26-pole, 12-position switch. The commons of poles 1 through 25 are connected to the interface connector, pins 1 through 25, respectively. These .interface points then fan out to the remaining circuitry, depending on the selected position of the switch. Choice of a particular telephone modem test sequence is made by setting the SELECTOR switch to one of the twelve positions indicated on the front panel of the test set. The most counterclockwise setting is an OFF position; clockwise rotation sets positions 1 through 11.

c. UNATT/ATT Switch (S4). The UNATT/ATT (unattended/attended) switch is a 3-pole, 2-position toggle switch used to control automatic answering circuits of telephone modems equipped for unattended operation. When set in the ATT position, the switch disables the unattended circuit of a telephone modem allowing the associated telephone to ring when ringing voltage appears on the line. When in the UNATT position the unattended answering circuit is enabled and picks up the line on application of ringing voltage. After a call has been answered, with the switch in the unattended mode, returning the switch to the attended position disables the unattended circuit and drops the line.

d. The A TEST Switch (S1).

(1) The A TEST switch is a 7-hole, 24-position rotary switch. Of the 24-positions one is designated OFF. No stop is provided after the last position, allowing continuous rotation in either direction. Additional spare poles are incorporated to provide further test features when new telephone modems are added to those now tested by the test set.

(2) The A TEST switch serves two functions. One is to connect appropriate test terminals to those interface leads to be monitored.

(3) The second is to make interface interconnections required to produce the desired condition to be measured. When the A TEST switch is rotated one step at a time it connects interface terminals in a unique sequence for each telephone modem selected.

e. The B TEST Switch. (S3).

(1) The B TEST switch is a 4-pole, 12-position rotary switch. The first of the 12 positions is designated OFF. The B TEST switch is used

for extended testing of certain telephone modems. Positions 1 through 11 of the B TEST switch, operated in conjunction with the A TEST switch, establish additional sets of interface interconnections and provide a more complete overall test sequence. This added B TEST feature aids in isolating troubles.

(2) Additional spare poles are included for extended testing of telegraph modems if such testing should become necessary.

f. Audio Amplifier. The audio amplifier is used for data phone applications.

g. Circuit for Sensing Relay Contact Closures.

(1) In some telephone modems, output indications take the form of relay contact closures ranging in duration from a few milliseconds to continuous. The resistor-capacitor circuit of CPS1, composed of resistors R6, R7, and RS, and capacitor C3, serves to stretch any closures in the few millisecond region so as to make them observable on an ohmmeter. When an ohmmeter is connected across terminals B[J3] and C[J2] and set to the X10,000 scale, the series resistance of R7 and R8, 0.3 megohm, is read. Two-thirds of the ohmmeter battery voltage appears across resistor R7 and charges capacitor C3. Relay contac closures applied across resistor R7 short R7 and discharge capacitor C3 with the R6C3 time constant, approximately 1 msec. A short duration contact closure, one that would not allow sufficient time for the ohmmeter to register the resistance o R8, is observed on the ohmmeter as capacitor C3 is charged from the ohmmeter battery through the long (R6+R8) C3 time constant.

(2) Where it is necessary to distinguish between two or three different contact closures of long duration, either resistor R8, or resistor R7, or both are shorted giving reductions in resistance readings from 0.3 megohm to 0.2 megohm, 0.3 megohm to 0.1 megohm, or 0.3 megohm to 0, respectively.

h. Output Terminals. Output terminals J1 through J12 provide convenient tie points for monitoring all telephone modem outputs. All voltages measured at these output terminals are derived directly from the telephone modem under test.

CHAPTER 5

MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE

5-1. Operator's Preventive Maintenance

Operator's preventive maintenance is limited to systematic care and inspection of the test set.

a. Systematic Care. Follow the procedures established in paragraph 5-2 for routine systematic care and cleaning essential to proper upkeep of his equipment.

b. Inspection. Follow the procedures established in paragraph 5-2 for routine inspection of knobs, jacks, switches, and other items on the front panel.

5-2. Scope of Organizational Maintenance

Organizational maintenance consists of daily, weekly, monthly, and quarterly checks of serviceability of the equipment. If the equipment is maintained in standby condition the daily checks may be combined with the weekly checks. Perform maintenance in accordance with the following charts.

a. Daily maintenance.

Item to be inspected	*Procedures*	*References*
Completeness	See that the equipment is complete.	Appendix B.
Exterior surfaces	Clean exterior surfaces including panel. Check for damage to case, panel, or cover.	None.
Connectors, terminals, and shorting clips	Check that connectors are undamaged. Check that terminals and shorting clips are undamaged.	None.
Controls	Operate all controls and observe that the mechanical action of each knob, switch, and terminal is free of internal or external binding, and that there is no excessive looseness.	None.

b. Weekly maintenance.

Item to be inspected	*Procedures*	*References*
Cables	Inspect cables for chafed, cracked, or frayed insulation. Replace connectors that are broken or worn excessively	None
Handle	Inspect handle for looseness. Replace or tighten as necessary.	None
Metal surfaces	Inspect metal surfaces for rust and corrosion. Touch up paint as required	Paragraph 5-3

c. Monthly maintenance.

Item to be inspected	*Procedures*	*References*
Jacks	Inspect jacks for snug fit and good contact.	None
Resistors capacitors, and diodes	Inspect resistors, capacitors, and diodes for cracks, blistering, or other detrimental defects	None

d. Quarterly maintenance.

Item to be inspected	*Procedures*	*References*
Publications	See that all publications are complete, serviceable, and current.	DA Pam 310-4.
Modifications	Check DA Pam 310-4 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled	TM 38-750 and DA Pam 310-4.
Spare parts	Check all spare parts (operator and organizational) for general condition and method of storage. No overstock should be evident and all shortage must be on valid requisitions	Appendix B

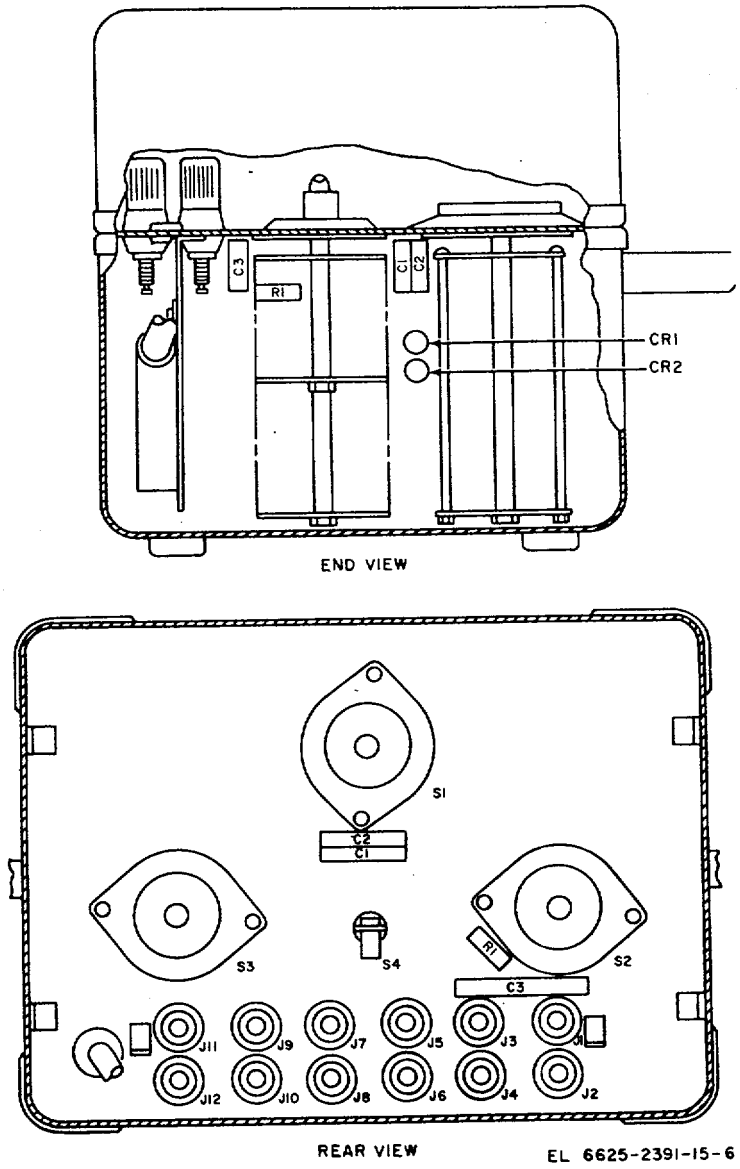

Figure 5-1. Test Set, Telephone AN/GCM-4, component location diagram.

Section II. CORRECTIVE MAINTENANCE

5-3. Sectionalization and Repair

Organizational repair consists of touchup painting of metal surfaces of the test set. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-213 and TB SIG 746-10.

5-4. Replacement Procedures

(fig. 5-1)

Follow standard repair procedures (TB SIG 222) after a trouble has been isolated. Use the normal care accorded electrical and electronic equipment when replacing components.

5-5. Functional Checkout

Functional checkout after repair consists of ohm meter continuity checks.

Refer to the wiring and schematic diagrams in chapter 6 when performing checkout.

CAUTION
Use the Rx100 range when making resistance check in circuits containing semiconductor devices.

Section III. TROUBLESHOOTING AND ADJUSTMENT

5-6. General Instructions

a. Troubleshooting at the direct and general support categories of maintenance includes the techniques outlined for organizational maintenance and any special or additional techniques required to isolate a defective part and return the unit to full operational status. The systematic troubleshooting procedure, which begins with the operational and sectionalization checks performed at the organizational category, must be completed by further localizing and isolating techniques. The tools and test equipment required are indicated in section III of the maintenance allocation chart (appx C).

b. The first step in servicing a defective equipment is to sectionalize the fault. Sectionalization means tracing the fault to a major assembly. For this equipment, the fault will be either in the test set proper or in the cover. Sectionalization is obvious since the assemblies are used independently.

c. The second step is to localize the fault. Localization means tracing the fault to the defective circuit. For this equipment, a fault in the test set assembly must be localized to one of the following circuits.

(1) Cable and connector circuits.
(2) Selector and test switch circuits.
(3) Output terminal circuits.

NOTE
To localize troubles in the cover, use simple inspection and continuity tests.

d. The third step, isolation, means tracing the fault to the defective part. Some parts, such as burned-out resistors, can often be isolated by sight or smell. The majority of faults, however, must be isolated by checking resistances.

CAUTION
Use the Rx100 resistance range when making resistance measurements in circuits containing semiconductor devices.

5-7. Localization Procedures

a. Test Equipment Required. The following chart lists the test equipment and associated technical manual required for troubleshooting the test set.

Test equipment	*Technical manual*
Multimeter TS-352B/U	TM 11-5527
Electronic Equipment Tool Kit, TK100/G	

b. Localization. The first steps in localization procedures are usually obvious. If the test set has no effect on the equipment under test examine the test set cables. If only certain combinations of SELECTOR, A TEST, and B TEST switches have no effect, refer to the schematic and wiring diagrams and perform visual and continuity checks. Typical troubles and corrective measures are indicated in the chart below.

c. Troubleshooting Chart.

Trouble symptoms	*Checks and corrective measures*	*References*
SELECTOR switch has no effect on equipment under test.	Perform continuity checks. Replace switch if defective.	None.
SELECTOR switch binds or does not lock positively.	Check mounting. Replace switch if defective.	None.
A TEST switch has no effect on equipment under test.	Perform continuity checks. Replace switch if defective.	None.
A TEST switch binds or does not lock positively.	Check mounting. Replace switch if defective.	None.
B TEST switch has no effect on equipment under test.	Perform continuity checks. Replace switch if defective	None.
B TEST switch binds or does not lock positively.	Check mounting. Replace switch if defective.	None.

Trouble symptoms	*Checks and corrective measures*	*References*
UNATT ATT switch has no effect on equipment under test.	Perform continuity checks. Replace switch if defective.	None.
UNATT/ATT switch binds or does not lock positively.	Check mounting. Replace switch if defective.	None.
None of the switches has an effect on the equipment under test.	Defective cables, shorting clips or connectors. Perform continuity check. Repair or replace defective component.	None.

5-8. Isolation Procedures

a. After a trouble has been traced to a circuit during the localization procedures, isolate the trouble to component level by point-to-point continuity checks of the circuit in question.

b. Use the schematic and wiring diagrams in chapter 6 and trace the circuit step-by-step to isolate the faulty component.

c. When circuit tracing, do not overlook the possibility of intermittent trouble. A trouble of this type may be made to reappear by tapping or jarring the equipment. Check the internal wiring and connections for looseness. Check the connector pins for a tight fit.

Section IV. FINAL TESTING

5-9. Types of Tests

Final testing consists of two types of tests. Functional checkouts quickly verifies the integrity of repairs that have been made and confirms suitability of the test set for service. Detailed tests verify overall integrity of the test set and confirm all capabilities of the test set.

5-10. Functional Checkout

Functional checkout consists of checking, by ohmmeter, that repairs performed on the test set have removed the trouble from the circuit to which the trouble was isolated. To perform these checkouts, So refer to the schematic and wiring diagrams and to the localization procedures, and check that the circuits operate properly.

5-11. Detailed Tests

The detailed tests check each capability of the test set. To perform these tests, refer to the schematic and wiring diagrams, follow the isolation procedures and check continuity and switching at the test set connectors. Check captive shorting clips for both shorting and open capabilities on the test set cover at its input and output connectors.

CHAPTER 6

SHIPMENT AND LIMITED STORAGE AND DEMOLITION

Section I. SHIPMENT AND LIMITED STORAGE

6-1. Disassembly of Equipment

a. Disconnect the test set from the equipment to which it is connected.

b. Secure the electrical leads, terminal post terminating devices, and adapter cord to the test set cover.

6-2. Repacking for Shipment or Limited Storage

Repackaging of equipment for shipment or limited storage normally will be performed at a packaging facility or by a repackaging team. Should emergency packaging be required, select the materials from those listed in SB 38-100, Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army. Package the equipment in accordance with the original packaging, in so far as possible, with the available materials.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

6-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 6-4 will be used to prevent further use of the equipment.

6-4. Methods of Destruction

Use any of the following methods to destroy the equipment.

a. Smash. Smash the controls, transistors, switches, resistors, and capacitors.

b. Cut. Cut the electrical leads, cut the cables, and slash the connecting wiring to the front panel.

c. Burn. Burn cables and technical manuals.

d. Bend. Bend panel, chassis, and cabinet.

e. Explode. Only if necessary.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or fox-holes, or throw into streams.

6-5. Reporting

Destruction of the equipment will be reported through command channels.

Figure 6-1. Typical test arrangement of AN/GCM-4 with telephone modem not in-service, block diagram.
(Located in back of manual.)

Figure 6-2(1). Test Set, Telephone AN/GCM-4. Section I through 4 of switches S1 and S2, schematic diagram (part 1 of 3 parts).
(Located in back of manual.)

Figure 6-2(2). Test Set, Telephone AN/GCM-4. Section 5 through 9 of switches S1 and and S2, schematic diagram (part 2 of 3 parts).
(Located in back of manual.)

Figure 6-2(3). Test Set, Telephone AN/GCM-4. Sections 1 through 3 of switch S3, Sections 10 through 13 of switch S2, and Audio Amplifier, schematic diagram (part 3 of 3 parts).
(Located in back of manual.)

Figure 6-3(1). Test Set, Telephone AN/GCM-4. Switch S1, decks 1 through 13, wiring diagram. (Sheet 1 of 3).
(Located in back of manual.)
Figure 6-3(2). Test Set, Telephone, AN/GCM-4. Switches S2, decks 1 through 7 S3 decks 1 through 4, and switch S4, wiring diagram. (Sheet 2 of 3).
(Located in back of manual.)
Figure 6-3(3). Test Set, Telephone AN/GCM-4. Switch S2, decks 8 through 13, and printed wiring board assembly, wiring diagram. (Sheet 3 of 3).
(Located in back of manual.)
Figure 6-4. Test Set Subassembly, TS-2905/GCM-4, wiring diagram.
(Located in back of manual.)

APPENDIX A

REFERENCES

The following publications contain information applicable to the operation and maintenance of Test Set, Telephone AN/GCM-4.

AR 55-38	Report of Transportation Discrepancies in Shipment.
AR 700-58	Report of Packaging and Handling Deficiencies
AFM 75-34	Report of Transportation Discrepancies in Shipment
AFR 71-4	Report of Packaging and Handling Deficiencies
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders
DA Pam 310-7	Military Publications, United States Army Equipment Index of Modification Work Orders
MCO P4030.29	Report of Packaging and Handling Deficiencies
MCO P4610.19	Report of Transportation Discrepancies in Shipment
NAVSUP Publication 459	Report of Transportation Discrepancies in Shipment
NAVSUP Publication 378	Report of Packaging and Handling Deficiencies
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army
TB SIG-222	Solder and Soldering
TB SIG-746-10	Field Instructions for Painting and Preserving Electronics Command Equipment
TM 9-213	Painting Instructions for Field Use
TM 11-5527	Multimeters TS-352/U, TS-352A/U, and TS-352B/U
TM 11-5805-555-15	Operator, Organizational, DS, GS and Depot Maintenance Manual Including Repair Parts and Special Tools Lists Modem, Telephone MD-773/GCC, MD-774/GCC, and MD-775/GCC
TM 38-750	The Army Maintenance Management System (TAMMS)

APPENDIX C

MAINTENANCE ALLOCATIONS

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for AN/GCM-4. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. INSPECT. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. TEST. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. SERVICE. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. ADJUST. To rectify to the extent necessary to bring into proper operating range.

e. ALIGN. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. CALIBRATE. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. INSTALL. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. REPLACE. To replace unserviceable items with serviceable like items.

i. REPAIR. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. OVERHAUL. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. REBUILD. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. SYMBOLS. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

C-3. Explanation of Format

a. Column 1, group number. Not applicable.

b. Column 2, functional group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3, maintenance functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	*Maintenance Category*
C	Operator/Crew
0	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Column 4, tools and test equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory.

C-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The columns in Table I, Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the Maintenance Allocation Chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART

GROUP NUMBER	FUNCTIONAL GROUP COMPONENT ASSEMBLY	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
a.	b.												d.	e.
	Test Set, Telephone, A/OCM-4	C												External.
		F											2	Internal.
			F										1, 2	Continuity.
			F										1, 2	All tests on site.
			F										1, 2	All functional tests.
				O										Clean.
									F				1, 2	Worn or damaged components.
										F			1, 2	On-site.
											F		1, 2	Restore to serviceable condition.

TABLE I. TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUIPMENT	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
1	0, P	Multimeter, TS-352/U	6625-553-0142	
2	0, P	Electronic Equipment Tool Kit, TK-100/GT	5180-605-0079	

APPENDIX D

DS, GS, AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

D-1. Scope

This manual contains a list of repair parts required for the performance of direct support, general support, and depot maintenance for TEST SET, TELEPHONE AN/GCM-4.

D-2. General

This repair parts and special tools list is divided into two principal parts:

a. Repair Parts List-Section II. A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot categories.

b. Federal Stock Number Index--Section III. An in index of Federal stock numbers to illustrations by figure and Index number.

D-3. Explanation of Columns

An explanation of the columns in section II is given below.

a. Source, Maintenance, and Recoverability Codes, Col. 1, Section II.

(1) Source code, column 1. The selection status and source for the listed item is noted here. Source codes and their explanations are as follows:

Code	*Explanation*
P--	Applies to repair parts that are stocked in or supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.
M--	Applies to repair parts that are not procured or stocked but are to be manufactured at indicated maintenance categories.
A--	Applies to assemblies that are not procured or stocked as such but are made up of two or more units, each of which carry individual stock numbers and descriptions and are procured and stocked and can be assembled by units at indicated maintenance categories.
X1--	Applies to repair parts which are not procured or flocked, the requirement for which will be supplied by use of next higher assembly or component.
X2--	Applies to repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain through cannibalization; if not obtainable through cannibalization, such repair parts will be requisitioned with supporting justification through normal supply channels.
G--	Applies to major assemblies that are procured with PEMA funds for initial issue only to be used as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DSU and GSU level or returned to depot supply level.

(2) *Maintenance code, column 1.* The lowest category of maintenance authorized to install the listed item is noted here.

Code	*Explanation*
F	Direct Support Maintenance
H	General Support Maintenance

(3) Recoverability code, column 1. The information in this column indicates whether unserviceable items should be returned for recovery or salvage. Recoverability codes and their explanations are as follows:

NOTE

When no code is indicated in the recoverability column, the part will be considered expendable.

Code	*Explanation*
R--	Applies to repair parts and assemblies which are economically repairable at DSU and GSU activities and normally are furnished by supply on an exchange basis.

b. Federal Stock Number, Section, I, Column 2. The Federal stock number for the item is indicated in this column.

c. Description, Column 3, Section II. Federal item name, a five-digit manufacturer's code, and a part number are included in this column. For subsequent appearances of the same item, the

manufacturer's code and part number are omitted. The worlds "same as" followed by the sequence number assigned to the item when it first appeared in the list w ill follow the item name, e.g. "RESISTOR, FIXED, COMPOSITION; SAME AS A298". An asterisk (':) indicates attaching hardware.

d. Unit of Measure Column 4, Section II. The unit used as a basis of issue (e.g., EA, PR, FT, YD, etc.) is noted in this column.

e. Quantity Incorporated in Unit, Column 5, Section II. The quantity of repair parts in an assembly is given in this column. Subsequent appearance of the same item in the same assembly are indicated by the letters "REF".

f. Maintenance Allowance, Columns 6 and 7, Section II.

(1) The allowance columns are divided into subcolumns. Indicated in each subcolumn opposite the first appearance of each item is the total quantity of items authorized for the number of equipment supported. Subsequent appearance of the same item will have no entry in the allowance columns but will have a reference in the description column to the first appearance of the item. Items authorized for use as required but not for initial stockage are identified with an asterisk (*) in the allowance column.

(2) The quantitative allowances for DS/GS levels of maintenance will represent initial stockage for a 30-day period for the number of equipment supported.

g. One-Year Allowances Per 100 Equipment/ Contingency Planning Purposes, Column 8, Section II. Opposite the first appearance of each item, the total quantity required for distribution and contingency planning purposes is indicated. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for one year.

h. Depot Maintenance Allowance for 100 Equipments, Column 9, Section II. This column indicates the total quantity of each item authorized depot maintenance for 100 equipments. Subsequent appearance of the same item will have no entry in this column, but will have a reference in the description column to the first appearance of the item.

i. Illustration, Column 10, Section II.

(1) Figure number, column 10a. This number is used to locate the illustration in the Operator's Manual (TM 11-5805-555-15) in which the D-2 item is used. Refer only to those illustrations, contained in the narrative and parts list sections on the same item of equipment as covered by this manual; that is manuals with the same serial ant FSC number.

(2) Item or Reference Designation number, column 10b. The callout number used to reference the item in the illustration appears in this column.

D-4. Special Information

The following publications pertain to TEST SET, TELEPHONE-AN/GCM-4 and its components:

TM 11-5805-555-15

D-5. Location of Repair Parts

a. When the Federal stock number is unknown, follow the procedures given in (1) through (4) below.

(1) Use the table of contents to determine the functional group or subgroup i.e., receiver, transmitter, electronic module, or assembly within which the repair part belongs.

(2) In the pertinent publication, find the repair parts illustration covering the functional group or subgroup to which the repair part belongs.

(3) Locate the applicable illustration an, note the figure number and item number.

(4) Use the repair parts listing to find the functional group or subgroup of the repair part and the figure number and item number as noted on the illustration.

b. When the Federal stock number is known, follow the procedures given in (1) and (2) below.

(1) Use the Index of Federal stock numbers to Index numbers and locate the Federal stock number. The Federal stock numbers are listed in numerical sequence and are cross referenced to the Index and number.

(2) Use the repair part listing to find the functional group or subgroup of the repair part and the figure and item number as noted in the Index of Federal Stock numbers.

D-6. Federal Supply Codes

This paragraph lists the Federal supply code with the associated manufacturer's name

Code	*Manufacturer*
05F276	Pomona Electronics Co. Inc.
07707	United Shoe Machinery Corp. Fastener Div.
14793	Zero Mfg Co. Inc.
19864	Continental Rubber Works

Code	*Manufacturer*	*Code*	*Manufacturer*
49956	Raytheon Co.	78553	Tinnerman Prod Inc.
61007	Tubular Rivet and Stud Co.	82389	Switchcraft Inc.
64959	Western Electric Co.	95987	Weckesser Co. Inc.
71279	Cambridge Thermionic Corp.	98003	Nielsen Hardware Corp.
75915	Littelfuse Inc.		

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENENCE

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30-DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
GHR	6625	TEST SET, TELEPHONE-AN/GCM-4;	EA	1									1-1	
A001		PART NUMBER J79901BPL2; CODE 64959												
MH	5340	BRACKET, ANGLE;	EA	2										MP1
A002		PART NUMBER P37C917; CODE 64959												
X2H	5305	*SCREW, MACHINE;	EA	6										H2
A003		PART NUMBER P181311; CODE 64959												
MH	5340	BRACKET, ANGLE;	EA	2										MP1MP1
A004		PART NUMBER P37C917-1; CODE 64959												
X2H	5310	NUT, PLAIN, CLINCH;	EA	2										MP1H2
A005		PART NUMBER P10C744; CODE 64959												
MH	5340	BRACKET, ANGLE;	EA	4										MP2
A006		PART NUMBER P41W059; CODE 64959												
X2H	5305	*SCREW, MACHINE;		4										H4
A007		SAME AS A003												
PH	5910	CAPACITOR, FIXED, FILM;	EA	1				2	2	2		5	5-1	C2
A008		PART NUMBER 535AB; CODE 64959												
PH	5910	CAPACITOR, FIXED, FILM;	EA	1				2	2	2		5	5-1	C1
A009		PART NUMBER 535AP; CODE 64959												
PH	5910-880-7670	CAPACITOR, FIXED, FILM;	EA	1				2	2	2		5	5-1	C3
A010		PART NUMBER 542D; CODE 64959												
X1	6625	CASE SUBASSEMBLY;	EA	1										MP3
A011		PART NUMBER P41R959; CODE 64959												
PH	5340	BUMPER, RUBBER;	EA	4				2	2	3		20	1-1	MP3MP1
A012		PART NUMBER P11E213; CODE 64959												
X2H	5310-965-508I	*NUT, PLAIN, ROUND;	EA	4										MP3H4
A013		PART NUMBER P11E212; CODE 64959												
X2H	5305	*SCREW, MACHINE;	EA	4										MP3H4
A014		PART NUMBER P181457; CODE 64959												
X2H	5310-685-7378	*WASHER, FLAT;	EA	4										MP3H4
A015		PART NUMBER P284190; CODE 64959												
X1	6625	CASE, BOTTOM HALF;	EA	1										MP3MP2
A016		PART NUMBER P412017; CODE 64959												

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENENCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
PH	5340	CATCH, FLUSH;	EA	2				*	2	2		12	1-1	MP3MP3
A017		PART NUMBER SCB83314-2SS; CODE 98003												
X2H	5320	*RIVET, TUBULAR;	EA	4										MP3H2
A018		PART NUMBER 30584; CODE 61007												
X2H	5340-766-0314	HANDLE, BOW;	EA	1										MP3MP4
A019		PART NUMBER 2111A; CODE 71279												
X2H	5305	*SCREW, MACHINE;	EA	2										MP3H2
A020		PART NUMBER P182000; CODE 64959												
X2H	5310	*WASHER, LOCK;	EA	2										MP3H2
A021		PART NUMBER 249681; CODE 64959												
AHR	6625	ELECTRONICS COMPONENTS ASSEMBLY;	EA	1										
A022		PART NUMBER ED73005-31G1; CODE 64959												
X2H	5310-639-6553	*NUT, PLAIN, HEXAGON;	EA	6										H6
A023		PART NUMBER P210828; CODE 64959												
X2H	5305-582-5922	*SCREW, MACHINE;	EA	1										H1
A024		PART NUMBER P210810; CODE 64959												
X2H	5305-667-2588	*SCREW, MACHINE; EA 5 N5												
A025		PART NUMBER P283344; CODE 64959												
X2H	5310-688-0247	*WASHER, FLAT;	EA	1										H5
A026		PART NUMBER P284139; CODE 64959												
PH	5910	CAPACITOR, FIXED, ELECTROLYTIC;	EA	1				2	2	2		5		C1
A027		PART NUMBER KS14338; CODE 64959												
PH	5910	CAPACITOR, FIXED, MICA;	EA	1				2	2	2		5		C4
A028		PART NUMBER KS16742L1-1690PF; CODE 64959												
PH	5910-843-4130	CAPACITOR, FIXED, PLASTIC DIELECTRIC;	EA.	1				2	2	2		5		C3
A029		PART NUMBER 542G; CODE 64959												
PH	5910	CAPACITOR, FIXED, ELECTROLYTIC;	EA	1				2	2	2		5		C2
A030		PART NUMBER 602A; CODE 64959												
X1	6625	PRINTED WIRING BOARD;	EA	1										MP4
A031		PART NUMBER P41W802; CODE 649,9												
PH	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R6
A032		PART NUMBER KS13490LI-270 OHMS; CODE 64959												

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENENCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
PH	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R4
A033		PART NUMBER KS13490L1-510 OHMS; CODE 64959												
PE	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R5
A034		PART KS13490Ll-1200 OHMS; CODE 64959												
PE	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R2
A035		PART NUMBER KS13490Ll-16000 OHMS; CODE 64959												
PH	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R3
A036		PART NUMBER KS13490L1-4300 OHMS; CODE 64959												
PH	5905	RESISTOR, FIXED, COMPOSITION:	EA	1				2	2	2		5		R8
A037		PART NUMBER KS13490L1-OR1 MEGOHM; CODE 64959												
PH	5905	RESISTOR, FIXED, COMPOSITION;	EA	1				2	2	2		5		R7
A038		PART NUMBER KS13490L1-OR2 MEGOHM; CODE 64959												
PH 5961		TRANSISTOR;	EA	1				2	2	2		5		Q1
A039		PART NUMBER 17A; CODE 64959												
X2H	5340	CLAMP, LOOP;	EA	1										MP5
A040		PART NUMBER 1-8-4-140CA; CODE 95987												
X2H	5305	*SCREW, TAPPING THREAD FORMING;	EA	5										H1
A041		PART NUMBER P42E428; CODE 64959												
X2H	5340-835-6611	CLAMP, LOOP;	EA	2										MP6
A042		PART NUMBER C3049A5-108; CODE 78553												
X2H	5310-685-7273	*NUT, PLAIN, HEXAGON;	EA	1										H1
A043		PART NUMBER P125952; CODE 64959												
X2H	5305	*SCREW, MACHINE	EA	1										H1
A044		PART NUMBER P124482; CODE 64959												
X2H	5310-559-9302	*WASHER, LOCK;	EA	1										H1
A045		PART NUMBER P283716; CODE 64959												
X2H	5340	CLIP, SPRING, TENSION;	EA	2										MP7
A046		PART NUMBER E1; CODE 95987												
A047		*SCREW, TAPPING, THREAD FORMING;	EA	4										H4
		SAME AS A041												
PH	5935	CONNECTOR, RECEPTACLE, ELECTRICAL;	EA	1				2	2	2		5	1-1	J2
A048		PART NUMBER KS19087L2; CODE 64959												

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
X2E A049	5305-660-2529	*SCREW, MACHINE; PART NUMBER P180923; CODE 64959	EA	2										H2
X2H A050	5310-576-7022	*WASHER, LOCK; PART NUMBER P387666; CODE 64959	EA	2										H2
PH A051	5995	CORD ASSEMBLY, ELECTRICAL; PART NUMBER W25ACD1FT8INLG; CODE 64959	EA	1				2	2	2		5	1-1	W1
X1 A052	5935	CONNECTOR, PLUG, ELECTRICAL; PART NUMBER KS19088L2; CODE 64959	EA	2									1-1	W1P1
PH A053	5995	CORD ASSEMBLY, ELECTRICAL; PART NUMBER W25ACD3FTLG; CODE 649=9	EA	1				2	2	2		5	1-1	W2
A054		CONNECTOR, PLUG, ELECTRICAL; SAME AS A052		1									1-1	W2P1
XL A055	6625	COVER, TEST SET; PART NUMBER P48G785; CODE 64959	EA	1									1-1	MP8
MH A056	6625	BRACKET, ANGLE; PART NUMBER P48G782; CODE 64959	EA	1										MP8MP1
X2R A057	5320	*RIVET, TUBULAR; PART NUMBER 40367; CODE 61007	EA	6										MP8H3
ME A058	6625	BRACKET, ANGLE; PART NUMBER P48G781; CODE 64959	EA	1										MP8MP2
A059		*RIVET, TUBULAR; SAME AS A057		3										MP8H3
X1 A060	6625	COVER, TOP HALF; PART NUMBER 112-144; CODE 14793	EA	1 J									1-1	MP8MP3
PH A061	5340	STRIKE, CATCH; PART NUMBER SCB83314SS; CODE 98003	EA	2				2	2	2		10	1-1	MP8MP4
A062		*RIVET, TUBULAR; SAME AS A018		4										MP8H4
PH A063	5355-656-1230	DIAL, CONTROL; PART NUMBER 175-3-2G; CODE 49956	EA	1				2	2	2		5	1-1	MP9
PH A064	5355-985-6888	DIAL, CONTROL; PART NUMBER 90-8WL2C; CODE 49956	EA	2				2	2	2		5	1-1	MP10
PH A065	5935	DUMMY PLUG, TELEPHONE; PART NUMBER MDPR200 OHMS; CODE 05276	EA	3				2	2	2		15	1-1	R9

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE / INDEX NO.	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATION (a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
A066		DUMMY PLUG, TELEPHONE; SAME AS A065		REF									1-1	R10
A067		D PLUG, TELEPHONE; SAME AS Ao65		REF									1-1	R11
PH A068	5325	GROMMET, RUBBER; PART NUMBER 7414; CODE 19864	EA	2				2	2	2		10	1-1	MP11
MH A069	5995	LEAD, ELECTRICAL; PART NUMBER H328-565G1; CODE 64959	EA	1									1-1	W3
X2H A070	5940-769-5481	TERMINAL, LUG; PART NUMBER 144; CODE 64959	EA	2									1-1	W3E2
MH A071	5995	LEAD, ELECTRICAL; PART NUMBER H328-565G2; CODE 64959	EA	1									1-1	W4
A072		TERMINAL, LUG; SAME AS A070		2									1-1	W4E2
MH A073	5995	LEAD, ELECTRICAL; PART NUMBER H328-565G3; CODE 64959	EA	1									1-1	W5
A074		TERMINAL, LUG: SAME AS A070		2									1-1	W5E2
MH A075	5995	LEAD, ELECTRICAL; PART NUM3ER H328-565G4; CODE 64959	EA	1									1-1	W6
A076		TERMINAL, LUG; SAME AS A070		2									1-1	W6E2
X1 A077	6625	PANEL, DESIGNATION; PART NUMBER P41V062; CODE 64959	EA	1										MP12
X2H A078	5305	*SCREW, MACHINE; PART NUMBER RM608827; CODE 64959	EA	4										H4
X1 A079	6625	PANEL, TEST SET; PART NUMBER P48G777; CODE 64959	EA	1									1-1	MP13
X2H A080	5305	*SCREW, MACHINE; PART NUMBER P181997; CODE 64959	EA	4										H4
X2H A081	5940-279-7999	CLIP, SPRING TENSION; PART NUMBER 104002; CODE 75915	EA	2									1-1	MP13MP1

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1) SMR CODE / INDEX NO.	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATION (a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
X2H A082	532-850-3273	*RIVET, SOLID; PART NUMBER AD52BS; CODE 07707	EA	2										MP13H2
MH A083	6625	PANEL, BLANK; PARTNER P48G776; CODE 64959	EA	1										MP13MP2
X2H A084	5315	PIN, STRAIGHT HEADED; PART NUMBER 274P; CODE 64959	EA	2										MP14
MH A085	6625	PLATE, IDENTIFICATION; PART NUMBER P48M208; CODE 64959	EA	1										M15
X2H A086	5305	*SCREW, TAPPING, THREAD FORMING; PART NUMBER P387724; CODE 64959	EA	4										H2
MH A087	6625	PLATE, IDENTIFICATION; PART NUMBER P48M249; CODE 64959	EA	1										MP6
A088		*SCREW, TAPPING, THREAD FORMING; SAME AS A086		2										H2
PH A089	5940	POST, BINDING; PART NUMBER P41R553; CODE 64959	EA	4				2	2	2		15	1-1	J6
A090		POST, BINDING; SAME AS A089		REF									1-1	J8
A091		POST, BINDING; SAME AS A0B9		REF									1-1	J10
A092		POST, BINDING; SAME AS A089		REF									1-1	J12
PH A093	5940	POST, BINDING; PART NUMBER P41R554; CODE 64959	EA	8				2	2	3		20	1-1	J1
A094		POST, BINDING; SAME AS A093		REF									1-1	J2
A095		POST, BINDING; SAME AS A093		REF									1-1	J3
A096		POST, BINDING; SAME AS A093		REF									1-1	J4
A097		POST, BINDING SAME AS A093		REF									1-1	J5
A098		POST, BINDING; SAME AS A093		REF									1-1	J7

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
A099		POST, BINDING; SAME AS A093		REF									1-1	J9
A100		POST, BINDING; SAME AS A093		REF									1-1	J11
PH A101	5905	RESISTOR, FIXED, WIRE WOUND; PART NUMBER KS16266L3A1000 OHMS; CODE 64959	EA	1				2	2	2		5	5-1	R1
PH A102	5961-509-3048	SEMICONDUCTOR DEVICE, DIODE; PART NUMBER KS15724L1; CODE 64959	EA	2				2	2	2		10	5-1	CR1
A103		SEMICONDUCTOR DEVICE, DIODE; SAME AS A102		REF									5-1	CR2
MH A104	5340	SPACER, PLATE; PART NUMBER P43P364; CODE 64959	EA	2										MP17
PR A105	5930	SWITCH, ROTARY; PART NUMBER KS13779L96; CODE 64959	EA	1				2	2	2		5	1-1	S1
PH A106	5930	SWITCH, ROTARY; ' PART NUMBER KS13779L97; CODE 64959	EA	1				2	2	2		5	1-1	S2
PH A107	5930	SWITCH, ROTARY; PART NUMBER KS13779L98; CODE 64959	EA	1				2	2	2		5	1-1	S3
PR A108	5930-808-3759	SWITCH, TOGGLE; PART NUMBER 3009L; CODE 82389	EA	1				2	2	2		5	1-1	S4
X2 A109	5940	TERMINAL BOARD; PART NUMBER P48G788; CODE 64959	EA	1										
X2H A110	5305	*SCREW, TAPPING, THREAD. FORMING; PART NUMBER P49C306; CODE 64959	EA	4										H4
PH A111	5940-497-9843	LINK, TERMINAL CONNECTING; PART NUMB P48G783; CODE 64959	EA	25				2	3	6		50	1-1	TST1EQ
A112		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST2EQ
A113		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST3EQ
A114		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST4EQ
A115		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST5EQ

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
A116		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST6EQ
A117		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST7EQ
A118		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST8EQ
A119		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST9EQ
A120		LINK, TERMINAL CONNECTING: SAME AS A111		REF									1-1	TST10EQ
A121		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST11EQ
A122		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST12EQ
A123		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST13EQ
A124		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST14EQ
A125		LINK, TERMINAL CONNECTING; SAME ASA111		REF									1-1	TST15EQ
A126		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST16EQ
A127		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST17EQ
A128		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST18EQ
A129		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST19EQ
A130		LINK, TERMINAL CONNECTING; SAME AS A111		REF									1-1	TST20EQ

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AID DEPOT MAINTENANCE (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6) 30 DAY DS MAINT ALLOWANCE			(7) 30DAY GS MAINT ALLOWANCE			(8)	(9)	(10) ILLUSTRATION	
SMR CODE INDEX NO.	FEDERAL STOCK NUMBER	DESCRIPTION REFERENCE NUMBER & MFR. CODE USABLE ON CODE	UNIT OF MEAS	QTY INC IN UNIT	(a) 1-20	(b) 21-50	(c) 51-100	(a) 1-20	(b) 21-50	(c) 51-100	1-YR ALW PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	(a) FIGURE NO.	(b) ITEM NO OR REFERENCE DESIGNATION
A132		LINK, TERMINAL CONNECTING; SAME AS A111			REF								1-1	TST22EQ
A133		LINK, TERMINAL CONNECTING; SAME AS A111			REF								1-1	TB23EQ
A134		LINK, TERMINAL CONNECTING; SAME AS A111			REF								1-1	TB24EQ
A135		LINK, TERMINAL CONNECTING; SAME AS A111			REF								1-1	TB25EQ
X2E A136	5305	*SCREW, TAPPING, THREAD FORMING; PART NUMBER P181052; CODE 64959	EA	50										R50
X2H A137	5940	TERMINAL BOARD; PART NUMBER P48G780; CODE 64959	EA	1										MP18
X2H A138	5940	TERMINAL, LUG; PART NUMBER P43A963; CODE 64959	EA	50										
ME A139	6625	WIRING HARNESS; PART NUMBER LCJ79901B2A; CODE 64959	EA	1										W7

SECTION III. INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO INDEX-NUMBER

FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.
5305	A003	5340	A017	5940	A089
5305	A007	5340	A040	5940	A093
5305	A014	5340	A046	5940	A109
5305	A020	5340	A061	5940	A137
5305	A041	5340	A104	5940	A138
5305	A044	5340-766-0314	A019	5940-279-7999	A081
5305	A078	5340-835-6611	A042	5940-769-5481	A070
5305	A080	5355-656-1230	A063	5961	A039
5305	A086	5355-985-6888	A064	5961-509-3048	A102
5305	A110	5905	A032	5995	A051
5305	A136	5905	A033	5995	A053
5305-582-5922	A024	5905	A034	5995	A069
5305-660-2529	A049	5905	A035	5995	A071
5305-687-2588	A025	5905	A036	5995	A073
5310	A005	5905	A037	5995	A075
5310	A021	5905	A038	6625	A001
5310-559-9302	A045	5905	A101	6625	A011
5310-576-7022	A050	5910	A008	6625	Ao16
5310-639-6553	A023	5910	A009	6625	A022
5310-685-7273	A043	5910	A027	6625	A031
5310-685-7378	A015	5910	A028	6625	A055
5310-688-0247	A026	5910	A030	6625	A056
5310-965-5081	A013	5910-843-4130	A029	6625	A058
5315	A084	5910-880-7670	A010	6625	A060
5320	A018	5930	A105	6625	A077
5320	A057	5930	A106	6625	A079
5320-850-3273	A082	5930	A101	6625	A083
5325	A068	5930-803-3759	A108	6625	A085
5340	A002	5935	A048	6625	A087
5340	A004	5935	A052	6625	A111
5340	A006	5935	A065	6625	A139
5340	A012				

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ARNG: None.

USAR: None.

For explanation of abbreviations used, see AR 310-50.

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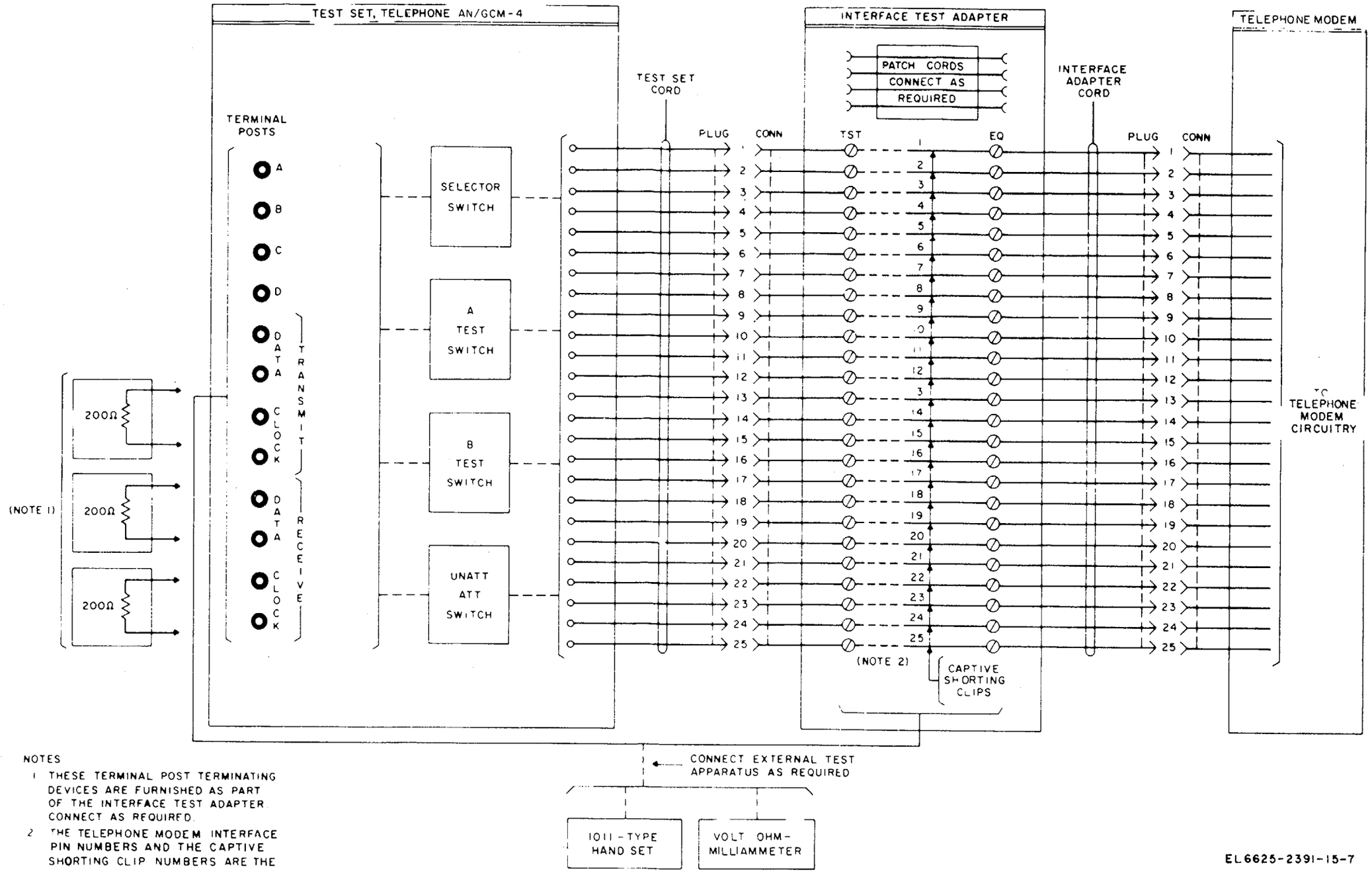

Figure 6-1. Typical test arrangement of AN GCM-4 with telephone modem not in -service, block diagram.

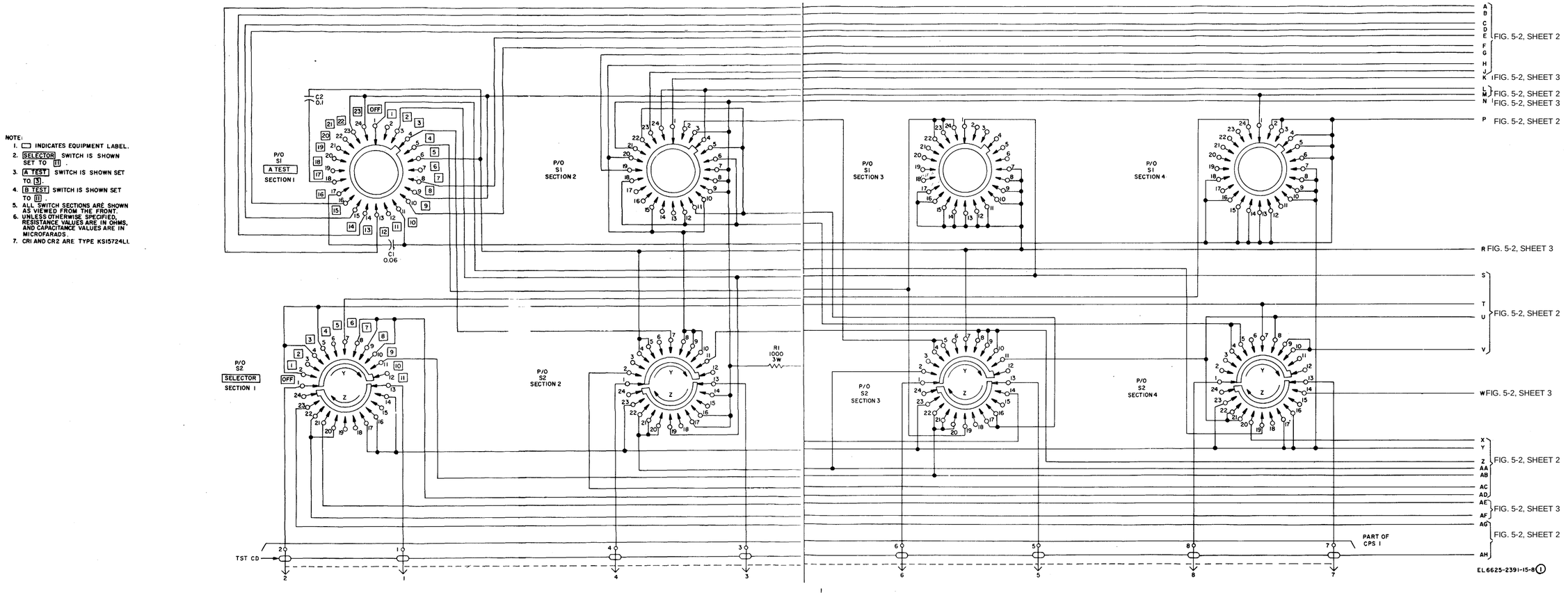

Figure 6-2(1). Test Set, Telephone AN/GCM-4. Section 1 through 4 of switches S1 and S2, schematic diagram (part 1 of 3 parts).,

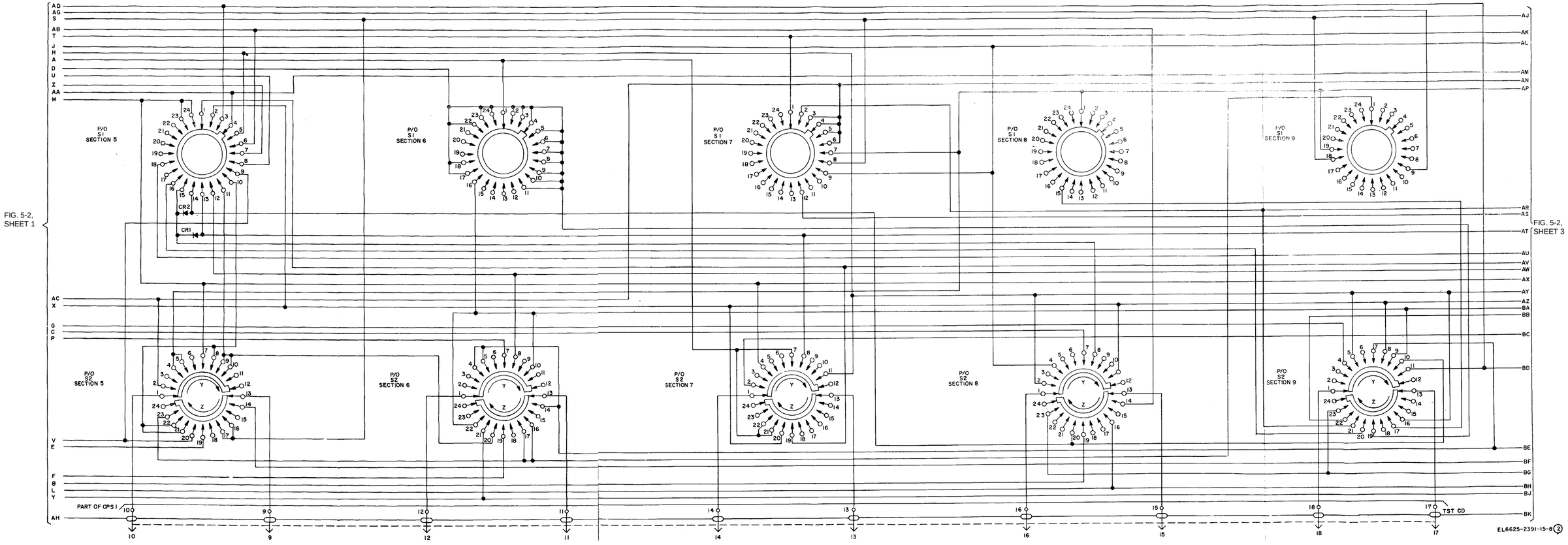

Figure 6-2(2). Test Set, Telephone AN/GCM-4. Section 5 through 9 of switches S1 and S2, schematic diagram (part 2 of 3 parts).

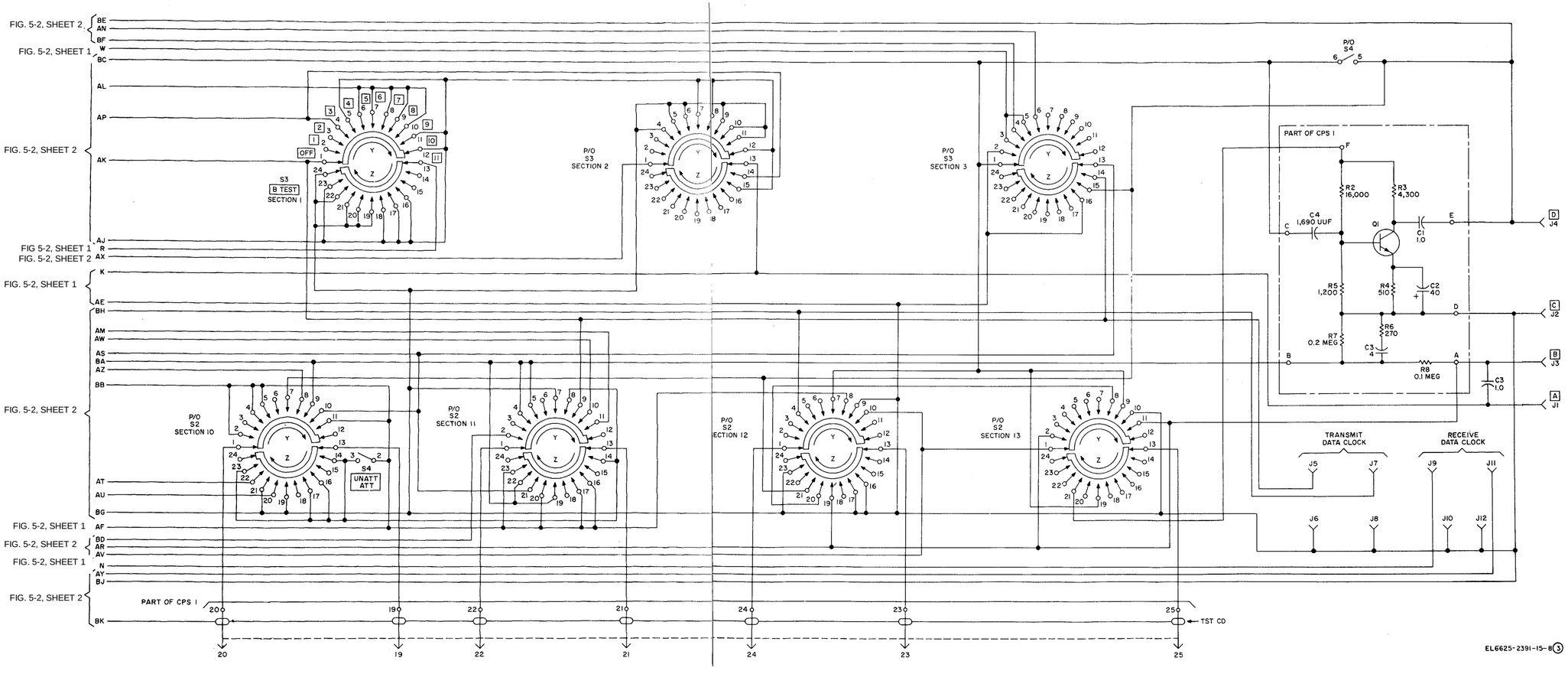

Figure 6-2(3). Test Set, Telephone AN/GCM-4. Section 1 through 3 of switches S3, Sections 10 through 13 of switch S2, and Audio Amplifier , schematic diagram (part 3 of 3 parts).

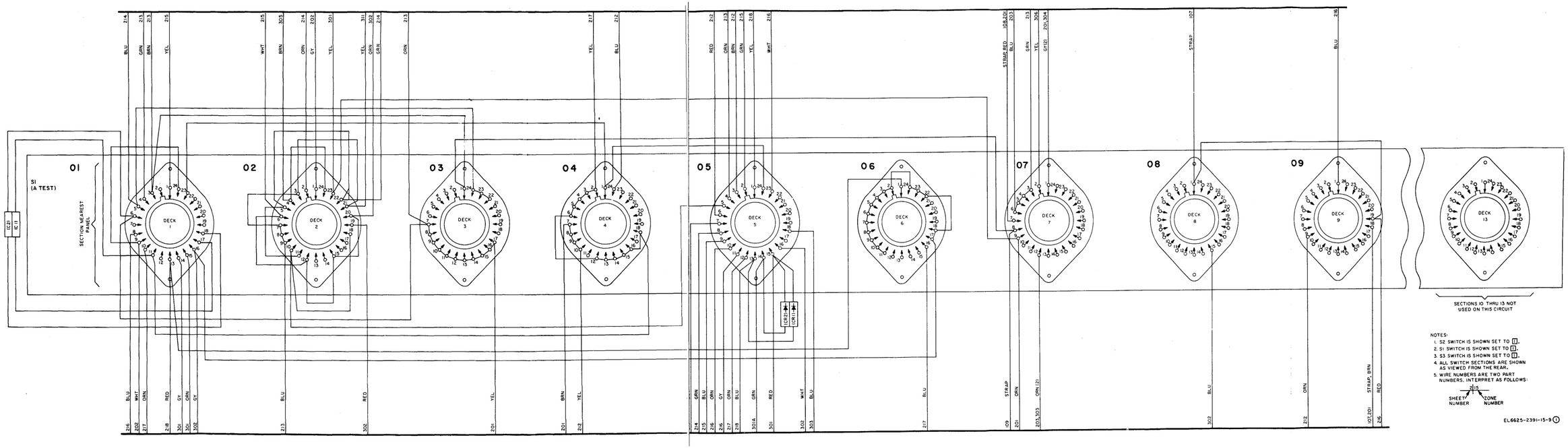

Figure 6-3(1). Test Set, Telephone AN/GCM-4. Switch S1, decks 1 through 13, wiring diagram (part 1 of 3 parts).

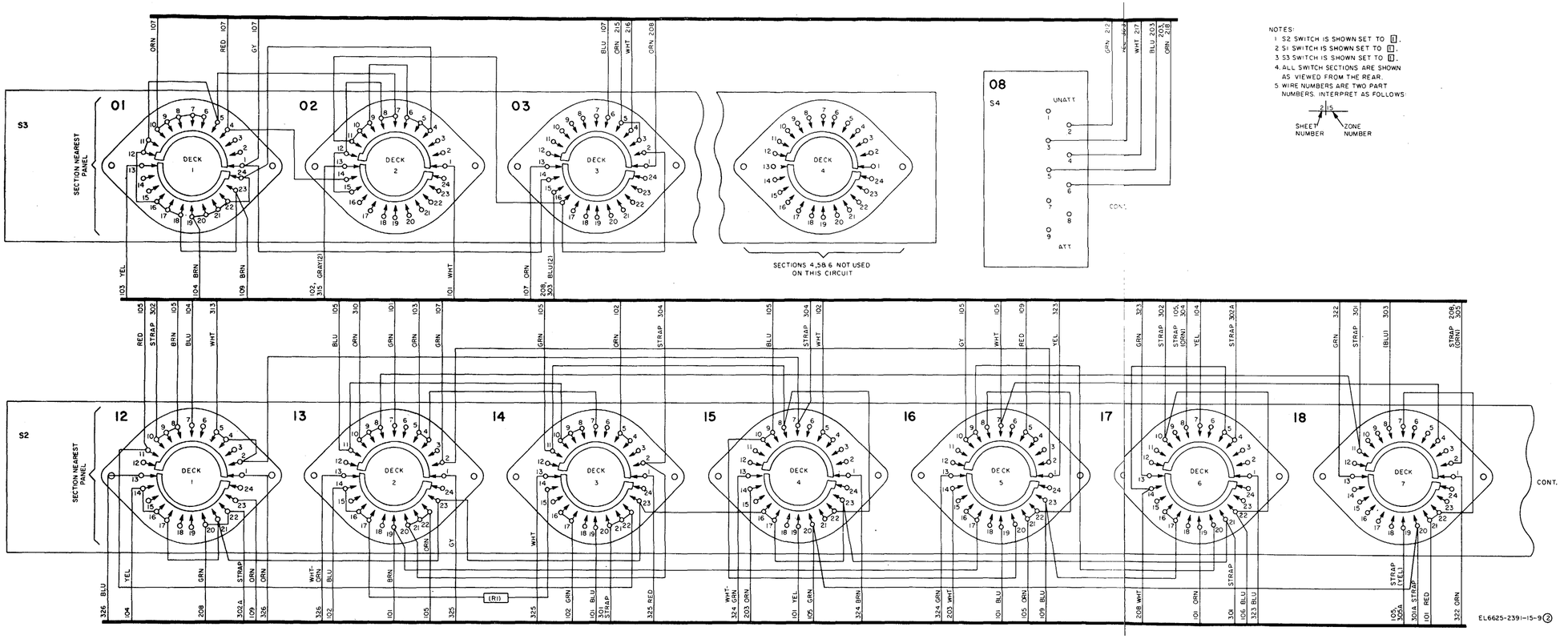

Figure 6-3(2). Test Set, Telephone AN/GCM-4. Switches S2, decks 1 through 7, S3 decks 1 through 4, wiring diagram (part 2 of 3 parts).

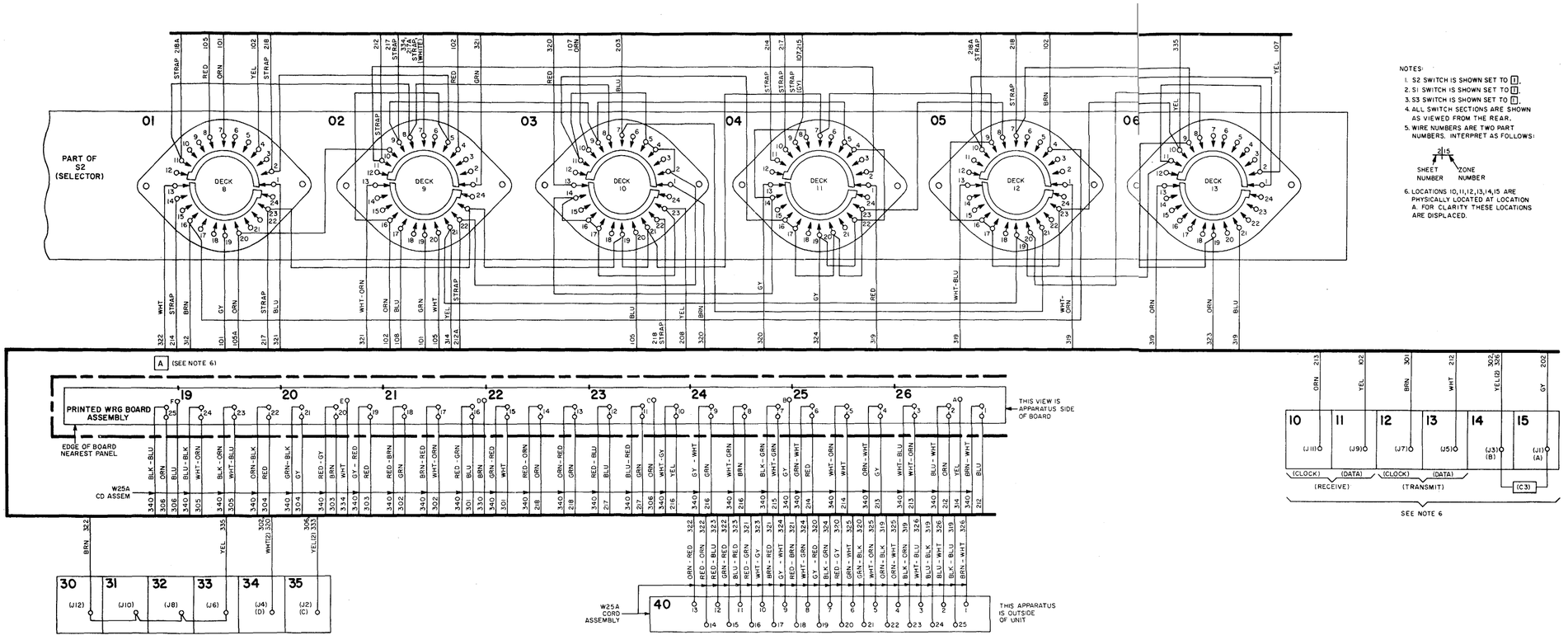

Figure 6-3(3). Test Set, Telephone AN/GCM-4. Switch S2, decks 8 through 13, wiring diagram (part 3 of 3 parts).

EL 6625-2391-15-9 (3)

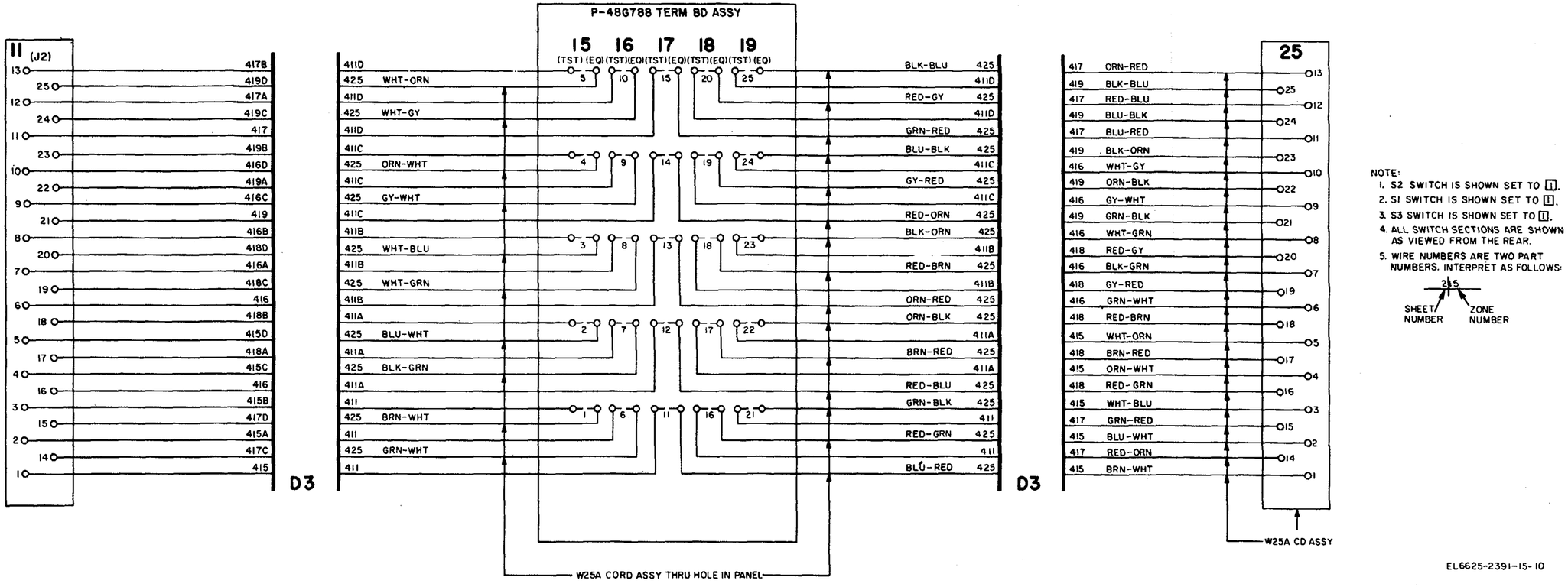

Figure 6-4. Test Set, Subassembly TS-2905/GCM-4, wiring diagram.

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