

TECHNICAL MANUAL

ORGANIZATIONAL, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE MANUAL

**CONTROL INDICATOR C-8157/ARC
AND MOUNTING MT-3802/ARC**

This copy is a reprint which includes current
pages from Change 1.

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 11 September 1985

ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL
CONTROL INDICATOR C-8157/ARC AND
MOUNTING MT-3802/ARC
(NSN 5820-00-167-8002)

TM 11-5895-555-24, 9 December 1971, is changed as follows:

1. The title of the manual is changed as shown above.
2. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

Remove pages

Insert pages

i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
4-1 through 4-4	4-1 through 4-4
A-1	A-1/(A-2 blank)

3. File this change sheet in the front of the publication for reference purposes.

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 WASHINGTON, D. C., 9 December 1971

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CONTROL INDICATOR C-8157/ARC AND
 MOUNTING MT-3802/ARC
 (NSN 5820-00-167-8002)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. In either case, a reply will be furnished direct to you.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual describes Control Indicator C-8157/ARC (fig. 1-1, 1-2) and Mounting MT-3802/ARC (fig. 1-3). The manual provides instructions for operation, organisational, direct support, and general support maintenance, and functioning of the equipment.

1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

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 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3.1. Reporting Equipment Improvement Recommendation (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

1-3.2. Administrative Storage

a. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Removal and repacking equipment for shipment or limited storage is covered in chapter 2 and SB 38-100.

b. COMSEC. equipment must be removed before storage, and turned in to the COMSEC account custodian.

1-3.3. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2. COMSEC equipment and keying information have first priority.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Control Indicator C-8157/ARC (fig. 1-1, 1-2) is used as auxiliary equipment to provide control of the TSEC/KY-28 Cipher voice security equipment (CX mode) operation.

b. Control Indicator C-8157/ARC is used by the pilot and co-pilot of an aircraft to control TSEC/KY-28 and Radio Set AN/ARC-54 (or equivalent for operation in either the plain or the ciphony made). In addition retransmission facilities are available through the C-8157/ARC.

NOTE

MWO 11-5821-244-30/2, 12 September 1966 must be applied to Radio Set AN/ARC-54 for operation with Control Indicator C-8157/ARC and TSEC/KY-28 in the (X) Mode.

c. Mounting MT-3802/ARC (fig. 1-3) provides a secure mount for the TSEC/KY-28 Cipher equipment within an aircraft or radio console.

1-5. C-8157/ARC Technical Characteristics

Modes of operation: PLAIN, CIPHER and Re-transmission (RE-X).

Power Requirements: +28 volts dc at 0.5 amps.

Dimensions:

Height---2 7/16 inches.

Width---5 inches.

Depth---2 7/8 inches.

1-6. Description of Control Indicator

C-8157/ARC

(fig. 1-1 and 1-2)

The Control indicator is a separately housed unit containing one (1) circuit breaker and three (3) switches, three (3) indicator lamps and two (2) panel lamps. All four (4) switches and all of the lamps are wired to receptacle J1 on the rear of the control indicator which provides for plain, or cipher transmission and a remote cipher lamp. The two (2) panel lights are used to illuminate the front panel. The control indicator is flush mounted by means of Dzus fasteners located on the side of the panel mounting plate. The unit is capable of operating from a power source of 27.5 ± 0.5 volts dc which is normally obtained from the main power source of the aircraft.

NOTE

Control Indicator C-8157/ARC is used with, but not part of Radio Set AN/ARC-54.

1-7. Description of Mounting MT-3802/ARC

The MT-3802/ARC (mounting) consists of an upper and lower plate separated by four isolator mounts. The two (2) plates are electrically connected through grounding straps. The TSEC/KY-28 Cipher equipment is secured to the upper plate of the mount by the rear retainer assembly and the front retainer assembly. Drilled holes in the lower plate allow the mount to be secured in an aircraft or radio console.

1-8. Description of Additional Equipment Required

a. Interconnecting Cabling. A ten-wire electrical harness and cabling terminated at one end by an MS-3126F-12-10S connector is needed for interconnection of the control indicator with the TSEC/KY-28 Cipher equipment and the aircraft power and ground bus.

b. Remote Cipher Light. This light can be installed in the rear seat of the aircraft to be used by an observer or radio operator, and is optional.

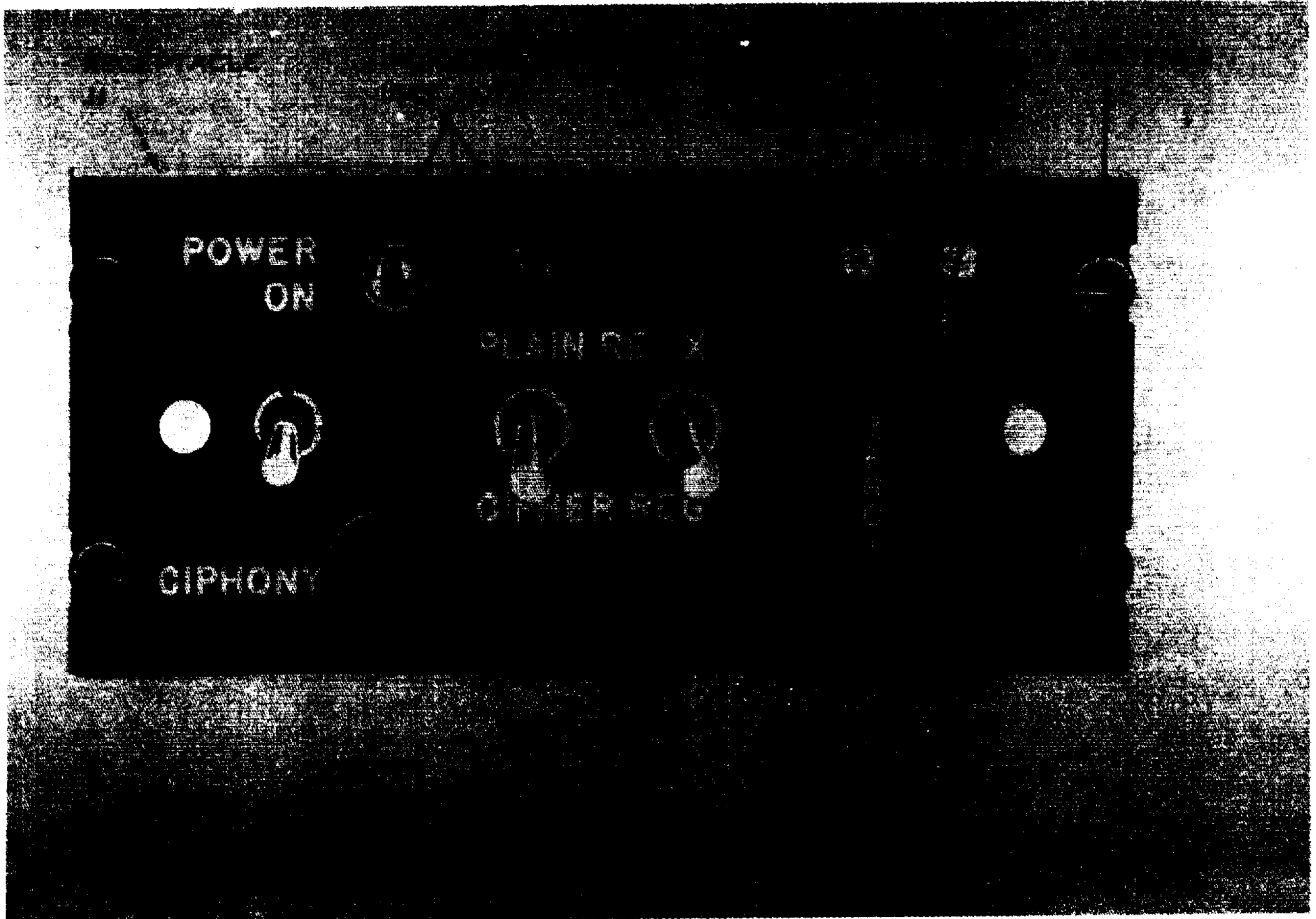


Figure 1-1. Control Indicator.

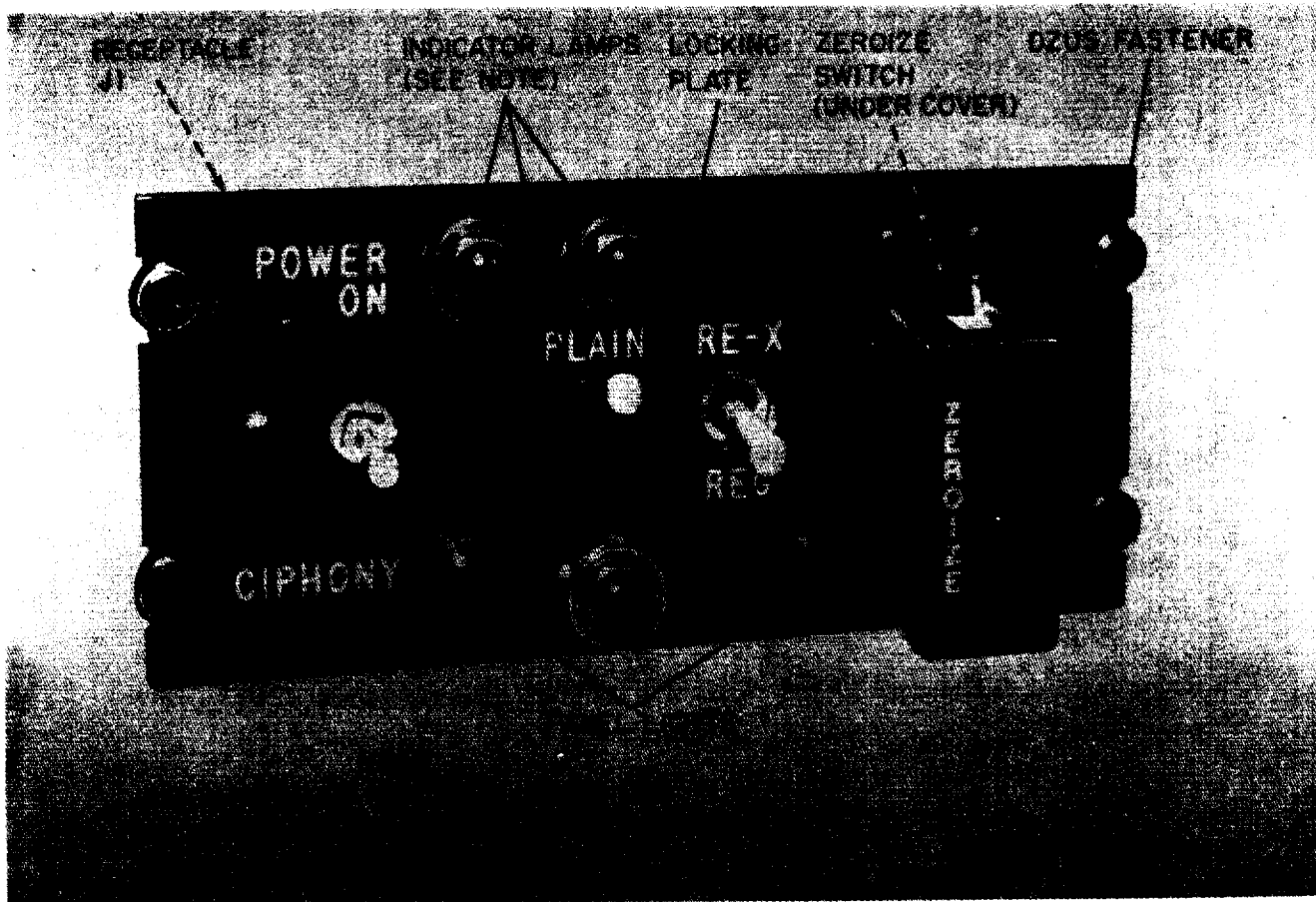
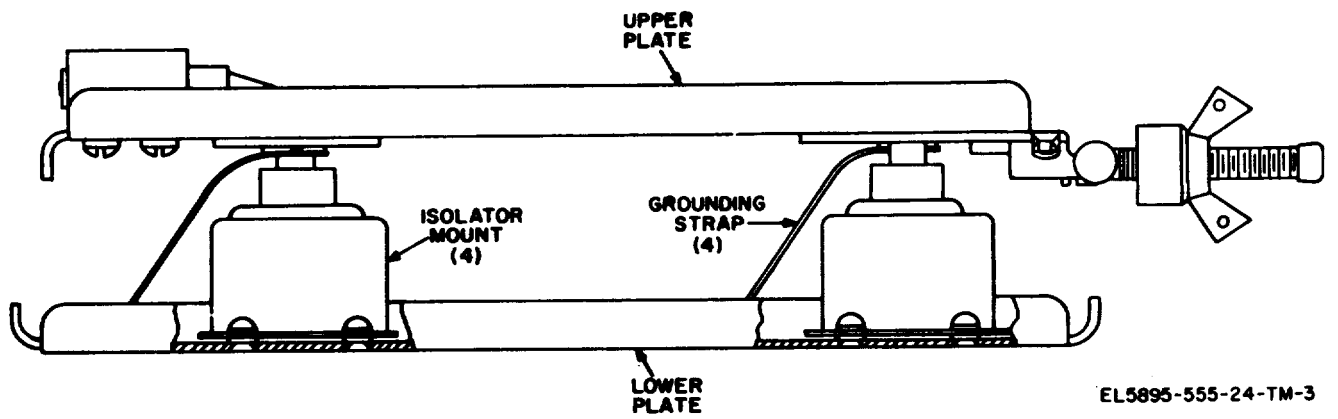
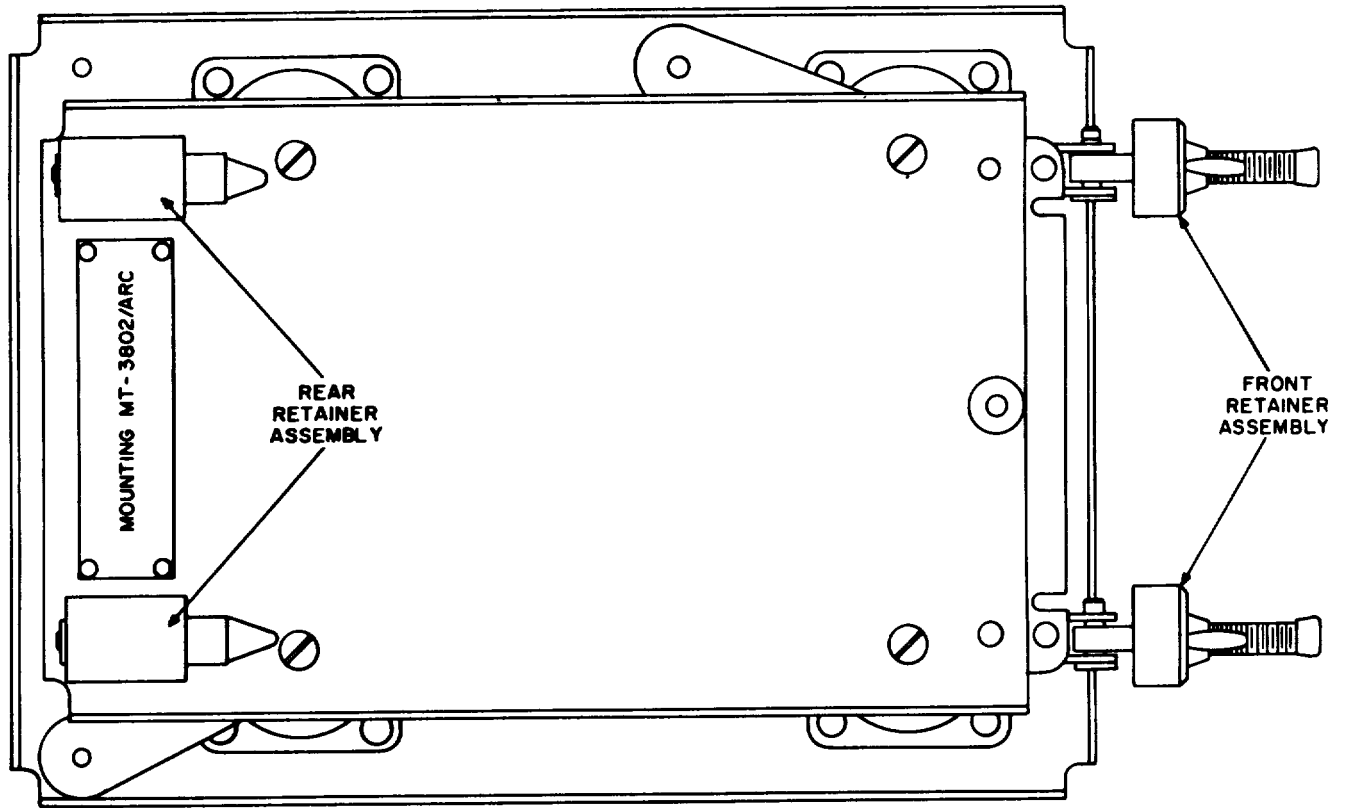


Figure 1-2. Control Indicator with locking plate.



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Figure 1-3. Mounting

CHAPTER 2

INSTALLATION AND REMOVAL

2-1. Installation of Control Indicator

To install the control indicator in an aircraft or radio console, proceed as follows:

- a. Assure the main power switch of the aircraft is in the OFF position.
- b. Connect the end of the electrical harness (paragraph 1-7a) to connector J1 located on the rear of the control indicator.
- c. Slide the control indicator into the opening provided in the aircraft or radio console. Secure the control indicator to the frame by twisting the four Dzus fasteners in the clockwise direction until tight.

NOTE

The location of the control indicator within an aircraft or radio console will be dependent on the configuration of that equipment. Refer to the appropriate configuration manual for necessary location information.

2-2. Installation of Mounting

NOTE

Location of the mounting within an air-

craft or radio console will be dependent on the configuration of that equipment. Refer to the appropriate configuration manual for location information.

The mounting is installed in the aircraft or radio console by securing the lower frame with screws or bolts through the holes provided.

2-3. Removal of Control indicator C-8157/ARC

(fig. 1-1, 1-2)

- a. Unscrew the four Dzus fasteners that mount the control indicator.
- b. Withdraw the control indicator far enough to reach the power and control cable to the rear of the control indicator.
- c. Disconnect the cable and remove the C-8157/ARC.

2-4. Removal of Mounting

(fig. 1-3)

Remove the mounting by removing the screws from the lower frame.

CHAPTER 3

OPERATION

3-1. C-8157/ARC Controls and Indicators

(fig. 1-1 and 1-2)

Control, Indicator or connector	<i>Function</i>
POWER ON switch CB-1 (two-position circuit breaker).	In up (on) position, connects power to control indicator and associated TSEC/KY-28 Cipher equipment. In down (off) position, disconnects power from control indicator and associated TSEC/KY-28 Cipher equipment
POWER ON (amber) indicator L1 (with dimmer switch).	Lights when POWER ON switch CB-1 is set to up (on position).
PLAIN-CIPHER switch SW-1.	In PLAIN position, permits normal (enciphered) communications through associated Radio Set AN/ARC-54 (or equivalent). In CIPHER position, permits Ciphersed communications through associated Radio Set AN/ARC-54 (or equivalent).
PLAIN (red) indicator L2 (with dimmer switch).	Lights when PLAIN-CIPHER switch SW-1 is set to the PLAIN (Up) position.
CIPHER (green) indicator L3 (with dimmer switch).	Lights when PLAIN-CIPHER switch SW-1 is set to the CIPHER (down) position.
RE-X/REG switch SW-2	In RE-X (up) position, permits retransmission of Ciphersed communications through associated retransmission unit. In REG (down) position, permits normal (unciphersed) or ciphersed communications.
ZEROIZE switch SW-3 (under cover)	<i>CAUTION.</i> Do not place ZEROIZE switch SW-3 in the top (on) position unless a crash or capture is imminent. Normally in down (off) position. Placed in up (on) position during emergency situations to neutralize and make inoperative associated TSEC/KY-28 Cipher equipment.
Panel lights L4 and L5. Connector J1.	Provide illumination for <i>front</i> panel of control indicator. Provides interconnection between control indicator, associated TSEC/KY-28 Cipher equipment and power source.
Locking Plate.	Locks PLAIN-CIPHER switch in either plain or cipher mode.

3-2. Operation

When the Control Indicator and associated TSEC/KY-28 Cipher equipments are installed in the aircraft or radio console, two methods of radio communication are provided; PLAIN (unciphersed) and CIPHER. Procedures for operating the equipment in the various modes are provided as follows:

(1) Preliminary operating procedures (*a* below)

(2) Plain (enciphered) mode operation (*b* below)

(3) Cipher mode operation (*c* below)
a. Preliminary Operating Procedure.

(1) Apply power to AN/ARC-54 (or equivalent).

(2) Set the Control Indicator C-8157/ARC POWER ON switch (CB-1) to the up (ON) position (fig. 1-1, 1-2).

(3) Assure POWER ON indicator lamp L1 (amber is illuminated).

(4) Set the intercom system of the aircraft or radio console to accept. AN/ARC-54 (fm radio) communications. Refer to appropriate equipment or aircraft configuration manual for details. Caution: The POWER ON switch must be in the ON position, regardless of the mode of operation, whenever the C-8157/ARC is installed in the aircraft.

(5) Insure that Cipher/Plain locking plate is in the desired position.

b. Plain Mode Operation.

(1) Set the PLAIN-CIPHER switch SW-1 to the PLAIN up position (fig. 1-1, 1-2). This may be secured in the Plain position by installation of the locking plate to prevent accidental depression to the CIPHER position by the operator. PLAIN indicator lamp L2 (red) should illuminate.

(2) Set RE-X/REG switch SW-2 to the REG (down) position.

(3) Press the appropriate press-to-talk switch located in the aircraft or radio console.

(4) Speak into the microphone to transmit. Release the press-to-talk switch to receive.

NOTE

If during reception a short beep is heard in the headset, it is an indication that a Ciphred message is being received. When such a tone is heard, the control indicator and the TSEC/KY-28 Cipher equipment must be adjusted for receipt of a Ciphred message. (Cipher operation may also be secured in the like manner as PLAIN by positioning the locking plate against accidental depression into the PLAIN mode of operation).

c. Cipher Mode Operation.

NOTE

If the control indicator is utilized for Ciphred communications, refer only to steps (1) through (7) below. If retransmission facilities are required, refer to steps (1) through (8) below.

(1) Set PLAIN-CIPHER switch SW-1 to the CIPHER (down) position. CIPHER indicator lamp L3 (green) should illuminate.

(2) Set RE-X/REG switch SW-2 to the REG (down) position.

(3) A constant tone of 1,200 CPS should be heard in the headset. This tone should be heard for approximately 2 seconds. At the end of that interval, the tone should commence to be interrupted at a rate of 2.3 CPS.

(4) Press the appropriate push-to-talk switch on the aircraft or radio console and then immediately release. The tone in the headset should disappear. The Cipher equipment is now in the standby condition.

NOTE

If the tone does not disappear from the headset, a malfunction of the appropriate Cipher equipment is indicated. Higher level maintenance is required.

(5) To transmit, press the press-to-talk switch. *DO NOT TALK!* In approximately 1/2 second, a beep will be heard. This indicates the receiving station is now capable of receiving your message. Transmission can commence.

NOTE

Only one TSEC/KY-28 can transmit at a given time on a given frequency. Simultaneous transmission by two (or more) TSEC/KY-28 equipments on the same frequency will result in the garbling of messages and possible loss of synchronization in the receivers. Always listen before attempting to transmit to assure another transmitter is not on.

(6) When transmission is complete, release the press-to-talk switch. The Cipher equipment is now returned to the standby condition.

(7) To receive, it is necessary for another station to send a signal first. Upon receipt of the signal, the Cipher equipment will be switched automatically to the receive condition. At the same time a short "beep" will be heard in the headset. Reception will then be possible. Upon loss of the signal, the Cipher equipment will be automatically returned to the standby condition.

(8) If retransmission facilities are required, set RE-X/REG switch SW-2 to the RE-X (up) position.

3-3. Stopping Procedures

a. Normal.

(1) Set POWER ON switch CB-1 (fig. 1-1, 1-2) to the off (down) position.

(2) Perform the stopping procedure for Radio Set AN/ARC-54 (or equivalent) in accordance with the appropriate equipment and Aircraft Configuration manual.

b. Emergency. During emergency conditions when a crash-landing or capture is imminent perform the following stopping procedures:

(1) Lift the cover of the ZEROIZE switch SW-3 (fig. 1-1, 1-2). Set ZEROIZE switch SW-3 to the up (on) position.

CAUTION

Any other operation of the ZEROIZE switch must be regulated by local security procedures.

(2) Set POWER ON switch CB-1 to the off (down) position.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. MAINTENANCE

4-1. Scope of Maintenance

Organizational maintenance duties assigned are listed below with a reference to the paragraphs covering the specific maintenance function.

- a. Preventive maintenance checks and services (para 4-5 and 4-6).
- b. Cleaning (para 4-7).
- c. Touch up painting.
- d. Replacement of indicator lamps (para 4-8).
- e. Troubleshooting (para 4-12).

4-2. Tools, Materials and Test Equipment Required*a. Tools and Test Equipment*

- (1) Tool Kit TK-101/G
- (2) Multimeter AN/URM-105

b. Materials

- (1) Trichlorotrifluoroethane
- (2) Cleaning Cloth.
- (3) Sandpaper, Fine No. 000

4-3. (Deleted)**4-4. (Deleted)**

4-5. (Deleted)

4-6. (Deleted)

4-7. Cleaning

Inspect the exteriors of the C-8157/ARC and the MT-3802/ARC. The exterior surfaces should be free of dust, dirt, grease, and fungus.

a. Remove dust and loose dirt with a soft, clean cloth.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, and ground-in dirt from the eases; use a cloth dampened (not wet) with trichlorotrifluoroethane.

c. Clean the panels and switches of the C-8157/ARC; use a soft, clean cloth. If dirt is difficult to remove, dampen the cloth with water. Use a mild soap if necessary.

4-8. Replacement of Indicator Lamps, C-8157/ARC

a. Turn the indicator lamps and jewel assembly counterclockwise and remove them.

b. *Pull* the defective indicator lamp from the jewel assembly.

c. Insert a new lamp into the socket and turn it clockwise.

d. To replace the jewel assembly, turn it clockwise. Do not overtighten it, but be sure that its seal is amply compressed.

4-9. Repainting and Refinishing Instructions

When the finish on any metal parts of the equipment has been badly scarred, damaged, or corroded sand it lightly with fine sandpaper. Use #000 sandpaper and trichlorotrifluoroethane to clean the surface down to bare metal. Refer to applicable cleaning and refinishing practices specified in TB 43-0118.

WARNING

Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. To be usable for cleaning, the compressed air source must limit the nozzle pressure to no more than 29 pounds per square inch gage (PSIG). Goggles must be worn at all times while cleaning with compressed air. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

Section II PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-10. Preventive Maintenance

Periodic preventive maintenance checks and services on the C-8157/ARC and MT-3802/ARC are required. Periodic preventive maintenance checks and services must be performed after 100 hours of flying time. All deficiencies or shortcomings will be recorded in accordance with the requirements of DA Pam 738-750. Perform all the

checks and services listed in the periodic preventive maintenance checks and services chart (para 4-11) in the sequence listed.

4-11. Preventive Maintenance Checks and Services Chart

NOTE

The checks in the "Interval" column are to be performed in the order listed.

B—Before operation

Item No.	Interval	Item to be inspected Procedure	Equipment is not ready/available if:
1	*	Control Indicator Performance check. Perform operational checks as described in Chapter 3.	Equipment fails to support assigned mission.
2	*	Mounting. Check and ensure that the TSEC/KY-28 Cipher equipment is mounted securely.	Damage to the mounting or equipment.

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The check does not need to be done again until redeployment.

Section III. TROUBLESHOOTING

4-12. General

a. Control Indicator C-8157/ARC must be removed from the aircraft if it fails in any of its operations during organizational maintenance, or at anytime it proves to be faulty.

b. If the corrective measures indicated do not result in correction of the trouble, higher level maintenance is required.

4-13. Troubleshooting Chart

Malfunction	Probable Cause	Corrective Action
POWER ON indicator lamp does not light when POWER ON switch CB-1 is set to ON (up) position.	a. Defective POWER ON indicator lamp. b. POWER ON switch CB-1 has tripped to overload.	a. Replace lamp (para 4-8). b. Press POWER ON switch CB-1 to the ON (up) position and release. If CB-1 continues to trip, higher level repair is required.

Malfunction	Probable Cause	Corrective Action
<p>PLAIN indicator lamp does not light when PLAINCIPHER switch SW-1 is set to PLAIN. CIPHER indicator lamp does not light when PLAINCIPHER switch SW-1 is set to CIPHER.</p>	<p><i>c.</i> Defective input power cable.</p> <p><i>a.</i> Defective PLAIN lamp. <i>b.</i> Defective PLAIN mode circuits.</p> <p><i>a.</i> Defective CIPHER lamp. <i>b.</i> Defective CIPHER mode circuits.</p>	<p><i>c.</i> Check continuity of cable. If defective, it must be replaced by higher level repair. <i>a.</i> Replace lamp (para 4-8). <i>b.</i> Higher level repair required.</p> <p><i>a.</i> Replace lamp (para 4-8). <i>b.</i> Higher level repair required.</p>

CHAPTER 5

FUNCTIONING OF CONTROL INDICATOR C-8157/ARC

5-1. Scope

This chapter contains a detailed description of circuits that comprise Control Indicator C-8157/ARC.

a. The control indicator will be installed in aircraft whenever TSEC/KY-28 is installed, and is used to control the output of Radio Set AN/ARC-54 (or equivalent) as to the mode of operation.

b. The installation of Control Indicator C-8157/ARC controls the output of the radio set in either plain or cipher mode of operation.

NOTE

MWO 11-5821-244-30/2, 1.2 September 1966, must be applied to Radio Set AN/ARC-54 when used with the TSEC/KY-28 Cipher equipment and C-8157/ARC for (X) mode operation.

5-2. Power Control CB-1

The power control (CB-1) is a circuit breaker which doubles as a POWER ON switch. Circuit breaker CB-1 applies +28 volts dc to the control indicator. The +28 volts is supplied from the aircraft +28 -volt dc bus through the aircraft harness, connector P1, and pin A of J1. The +28 volts dc through CB-1 is applied to pin 2 of PLAIN-CIPHER switch SW-3, and pin B of J1. Pins E and F of J1 connect from the ground bus of the aircraft and are tied to ground return to the TSEC/KY-28 Cipher equipment. Pin D of J1 connects from system ground to ground, REG/RE-X switch SW-2, and pin 2 of PLAIN-CIPHER switch SW-1.

NOTES

1. Circuit breaker CB-1 must be in the ON position to have any output from associated radio equipment.
2. External wiring is not part of Control Indicator C-8157/ARC (fig. 8-1).

5-3. ZEROIZE Switch SW-3

The Zeroize Switch (SW-3) is a two-position locking toggle, is located under a spring-loaded cover and is normally in the OFF (down) position. Switch SW-3 will be placed in the ON (up) position only *during emergency situations*. When SW-3 is placed in the ON position, +28 volts dc is applied to the TSEC/KY-28 Cipher equipment through pin C of J1 and P1 and the aircraft wiring harness.

5-4. PLAIN-CIPHER Switch SW-1
(fig. 8-1)

Switch SW-1 is used to supply either plain or cipher mode of communications. It is a single-throw, double-pole switch.

a. Plain Mode. With switch SW-1 in the PLAIN position, pins 1 and 2 of SW-1 make contact, causing the red lamp (L2) to light and applies +28 volts dc potential to the receive plain-cipher control of the TSEC/KY-28 cipher equipment through pin J of J1 and P1.

b. Cipher Mode. With switch SW-1 in the CIPHER position, pins 2 and 3 of SW-1 make contact, causing the green lamp (L3) and the reroute lamp (if used) to light through pin G of J1 and P1. Ground potential is also applied through contacts 3 and 1 of SW-1 to the receiver plain-cipher control of the TSEC/KY-28 cipher equipment along with the high side of indicator lamp L2, to pin J of J1 and P1.

5-5. REG-RE-X Switch SW-2
(fig. 8-1)

Switch SW-2 is a two position locking toggle switch and is used whenever retransmission is necessary. Switch SW-2 is normally in the REG position, which allows either plain or cipher communications.

a. RE-X Position. When switch SW-2 is in the RE-X (closed) position, a ground potential is applied to the TSEC/KY-28 cipher equipment

for extended range, through pin K of J1, P1 and the aircraft's interconnecting harness.

b. REG Position. When switch SW-2 is in the REG (open) position, the ground potential supplied to the TSEC/KY-28 is removed.

5-6. Panel Lights

(fig. 8-1)

The two panel lamps, L4 and L5, are used to edgelight the front control panel and receive their power from the aircraft through pin H of J1 and P1. Panel lamps are normally controlled along with the aircraft panel lamps.

CHAPTER 6

DIRECT SUPPORT MAINTENANCE

6-1. Scope of Direct Support Maintenance

a. This chapter contains instructions covering direct support maintenance for Control Indicator C-8157/ARC and the MT-3802/ARC. The Control Indicator must be removed from the aircraft if it fails during organizational maintenance, or at anytime it proves to be faulty.

b. When the control indicator has been removed for bench testing, and the exact functional failure is known (as indicated prior to removal), use a multimeter, the schematic diagram (fig. 8-1) and the troubleshooting chart (pars 6-4) to isolate the fault. Refer to figure 6-1 for parts identification.

c. With an ohmmeter perform procedures in paragraph 6-2.

6-2. Troubleshooting Chart

The following chart lists the control indicator troubles by symptoms, suggest probable causes of each trouble, and suggests a logical procedure for isolating each trouble. The trouble symptoms are grouped into distinct classes of troubles such as retransmission, CIPHER, and ZEROIZE.

6-3. Tools and Test Equipment Required

a. Tools. Tool Kit TK-105/G.

b. Test Equipment.

- (1) Multimeter Electronic ME-26/U
- (2) Multimeter TS-352/U

NOTE

All continuity checks are made with POWER ON switch CB-1 in the ON (up) position and power disconnected.

6-4. Troubleshooting Chart, Direct Support Maintenance

Item	Malfunction	Probable Cause	Corrective Action
1	RE-X line open	REG-RE-X Position Switch SW-2, or wiring from switch to pin D of J1, or poor GRD position.	Check for continuity between D and K of connector J1, and GND and K of J1.
2	REG line shorted	Switch SW-2	Check for continuity between D and K of connector J1. Reading should be infinite with switch open.
3	PLAIN line open	PLAIN-CIPHER Position Switch SW-1 wiring from SW-1 to pin J of connector J1, or wiring from switch CB-1 to pin 2 of SW-1.	Check for continuity between pin 1 and pin 2 of SW-1, between pin 1 and pin J of J1, and between pin 2 of SW-2 and pin A of J1.
4	CIPHER line open	Switch SW-1, wiring from pin 3 of SW-1 to pin G of connector J1, wiring from pin 2 of SW-1 to CB-1, and pin 1 of SW-1 to pin J of J1.	Check for continuity between pins 2 and 3 of SW-1 and pin G of J1, between pin 2 of SW-1 and pin A of J1, and pin 1 of SW-1 and pin J of J1.
5	ZEROIZE line open	ZEROIZE Position Switch SW-3, wiring from SW-3 to CB-1, wiring from SW-3 to pin C of J1.	Check for continuity across SW-3, between SW-3 and pin A of J1, between SW-3 and pin C of J1.

Item	Malfunction	Probable Cause	Corrective Action
6	NO power input	<i>POWER CIRCUITS</i> Switch CB-1 or wiring to pin A of connector J1.	Check for continuity across CB-1, between CB-1 and pin A of J1. Check continuity
7	NO power to TSEC/KY-28 cipher equipment.	Wiring from CB-1 to pin B of connector J 1.	
8	Panel lamps do not light	<i>LAMPS and INDICATORS</i> Lamps L4 and L5 or wiring between L4 and L5 and pin H of J1.	Check resistance across L4 and L5 (should normally be approximately 3 ohms), check continuity between L4 and L5 and pin H of J1, Check resistance across L2 (approximately 3 ohms), check continuity between pin 1 of SW-1 and L2. Check resistance across L3 (approximately 3 ohms), check continuity between pin 3 of SW-1 and L3. Check resistance across L1 (approximately 3 ohms), check continuity between pin 2 of SW-1 and L1.
9	Indicator lamp L2 (red) does not light.	Lamp L2 or wiring from pin 1 of SW-1 to L2.	
10	Indicator lamp L3 (green) does not light.	Lamp L3, wiring between pin 3 of SW-1 and L3.	
11	Indicator lamp L1 (amber) does not light.	Lamp L1, wiring between pin 2 of SW-1 and L1.	

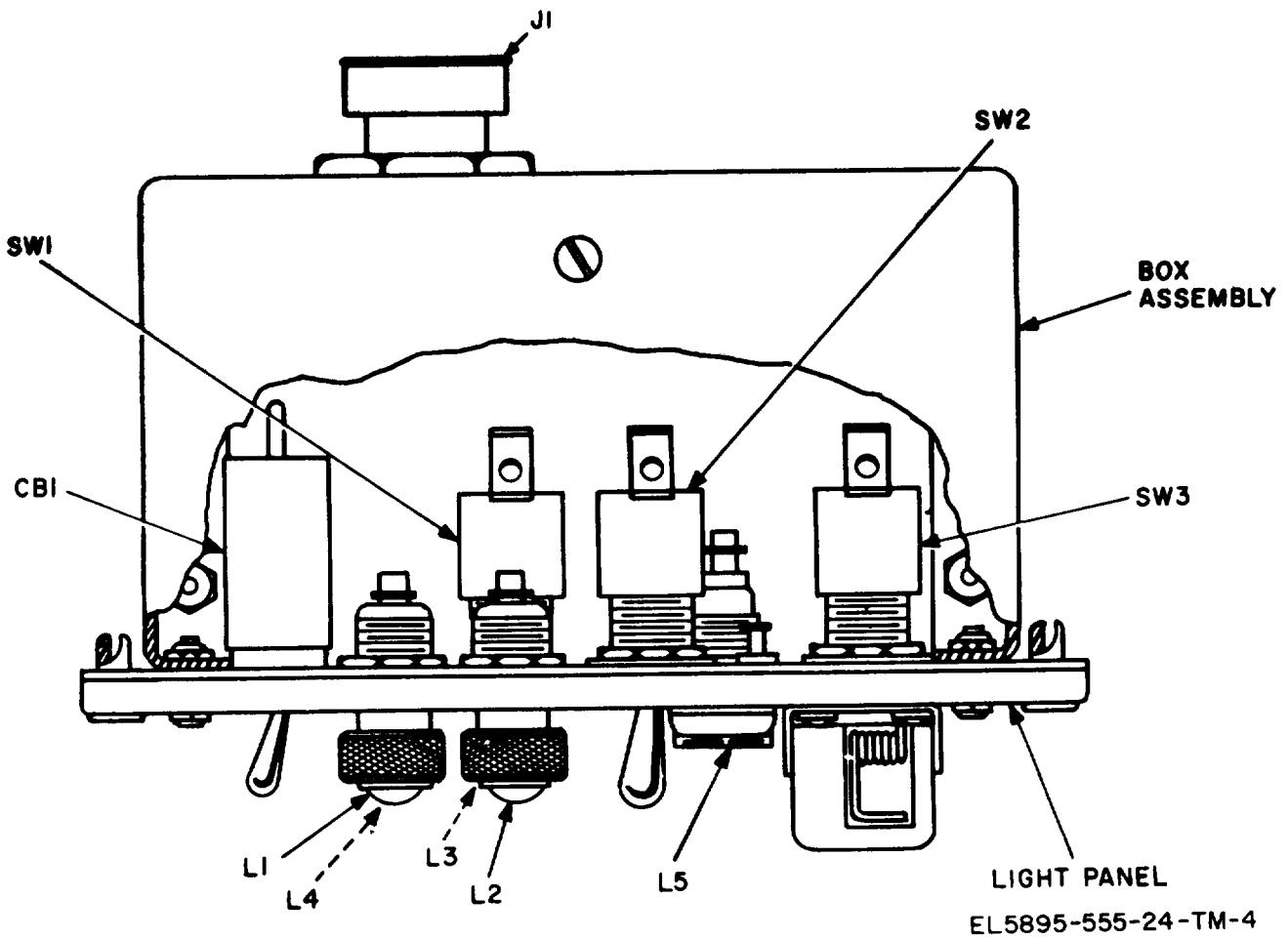


Figure 6-1. Control indicator parts location diagram.

CHAPTER 7
GENERAL SUPPORT MAINTENANCE

7-1. Scope of General Support Maintenance

General Support maintenance shall be performed in the same manner of Direct Support maintenance. Refer to Chapter 6 for procedures to be used.

CHAPTER 8

DEPOT OVERHAUL STANDARDS

8-1. Applicability of Depot Overhaul Standards

The tests outlined in this chapter are designed to measure the performance capability of a repaired control indicator. A control indicator that is to be returned to stock should meet the standards given in these tests.

8-2. Test Equipment Required

<i>Equipment</i>	<i>Quantity</i>	<i>Applicable Literature</i>
Multimeter ME-26B/U	1	TM 11-6625-200-15
Power Supply PP-1104B/U	1	TM 11-5126

8-3. Procedures

Adjust the output of the PP-1104B/G to +27.5 volts dc output and using schematic diagram (fig. 8-1), apply the positive lead to pin A of J1 and ground to pin E of J1.

a. Position the following switches as indicated:

<i>Switch</i>	<i>Position</i>
PLAIN-CIPHER (SW-1)	PLAIN
POWER-ON (CB-1)	ON
REG-RE-X (SW-2)	RE-X
ZEROIZE (SW-8)	On

(1) POWER ON lamp L1 (amber) should light and +27 volts dc should appear at pin J of J1.

(2) PLAIN lamp L2 (red) should light.

b. Position the following switches as indicated:

<i>Switch</i>	<i>Position</i>
PLAIN-CIPHER (SW-1)	CIPHER
POWER-ON (CB-1)	ON
REG-RE-X (SW-2)	REG
ZEROIZE (SW-3)	On

(1) POWER ON lamp L1 (amber) should light and +27 volts dc should appear at pin G of J1.

(2) CIPHER lamp L3 (green) should light.

(3) When the covers of the indicator lamps are rotated clockwise the brightness shall decrease.

c. Apply +27.5 volts dc to pin H of J1. Panel lights L4 and L5 should light.

d. Apply an overload voltage to pin A of J1. POWER-ON switch (CB-1) should trip to the off position.

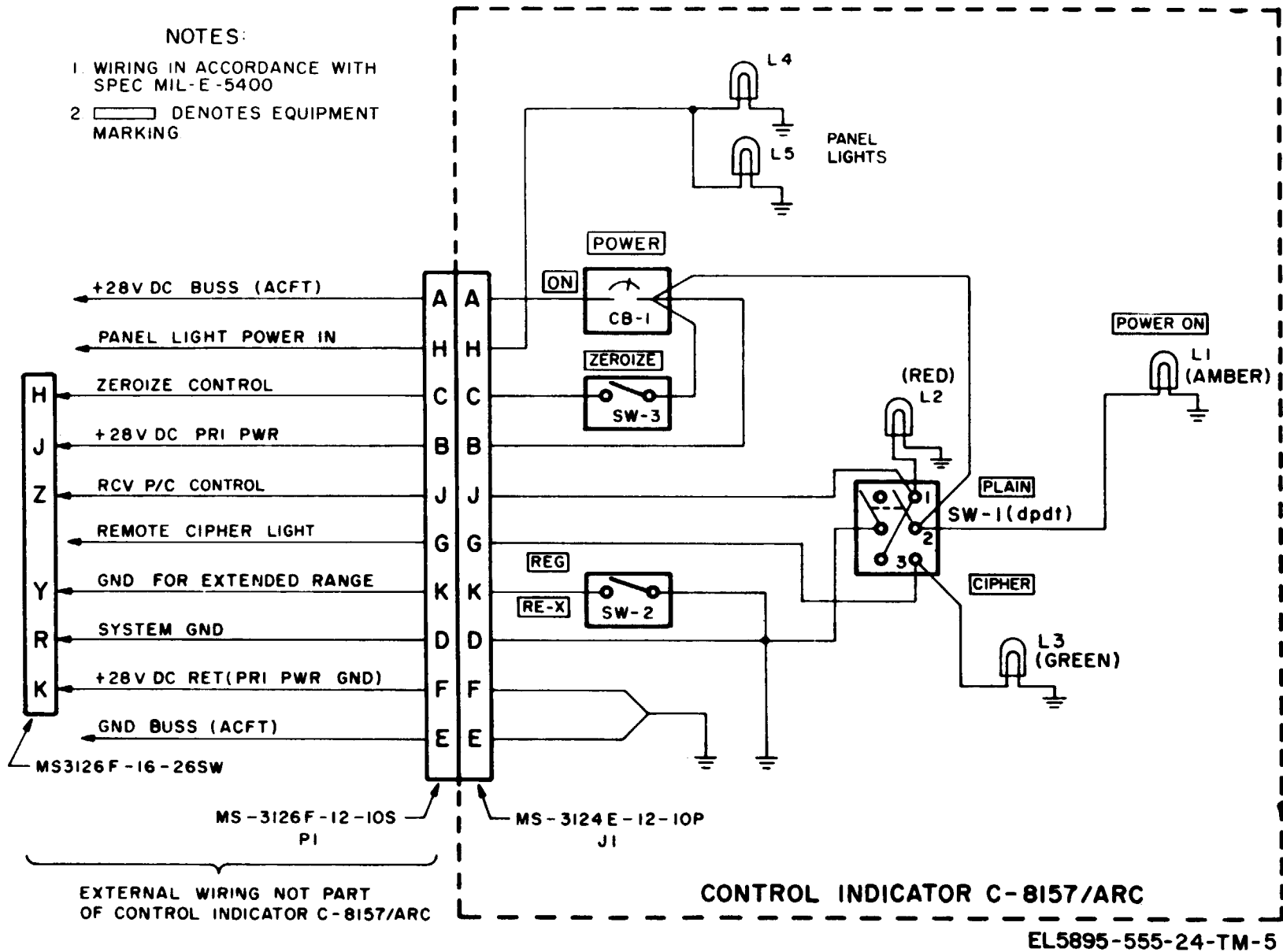


Figure 8-1. Control indicator schematic diagram.

APPENDIX A

REFERENCES

The following publications contain information applicable to the maintenance of the Control Indicator C-8157/ARC and Mounting MT-3802/ARC.

AR 380-40	Policy for Safeguarding and Controlling COMSEC Information. (U)
AR 735-11-2	Reporting of Transportation Discrepancies in Shipment.
DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 11-5821-244-12	Organizational Maintenance Manual, Radio Set AN/ARC-54 (NSN 5821430-082-3598).
TM 11-5821-244-35	Direct and General Support and Depot Maintenance Manual, Radio Set AN/ARC-54 (NSN 5821410-082-3598).
TM 11-6625-203-12	Operator's and Organizational Maintenance Manual: Multimeter AN/URM-105 and AN/URM-105C (Including Multimeters ME-77/U and ME-77C/U).
	Apply to the applicable equipment manual for information concerning the Cipher equipment.

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Control Indicator C-8157/ARC and Mounting MT-3802/ARC. It authorises 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.

B-2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Not used.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorised.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function at higher categories. The codes used represent the various maintenance categories as follows:

<i>Code</i>	<i>Maintenance Category</i>
C-----	Operator/Crew
O-----	Organizational Maintenance
F-----	Direct Support Maintenance
H-----	General Support Maintenance
D-----	Depot Maintenance

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in Section III.

e. Remarks. Self-Explanatory

B-3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and equipment requirements chart 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 MAC. The numbers indicate the applicable tool for the maintenance function.

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

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

d. Federal Stock Number. The numbers in this column are numbers assigned to the various tools and equipment.

e. Tool Number. Not used.

Section II. MAINTENANCE ALLOCATION CHART

MAINTENANCE ALLOCATION CHART															
Group Number	Component Assembly Nomenclature	MAINTENANCE FUNCTIONS											Tools and Equipment	Remarks	
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild			
	CONTROL INDICATOR C-8157/ARC	0	0	0					0					1,3	
	MOUNTING MT-3802/ARC	0								F H O	H F	D		2,4,5 2,4,5 1	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS CHART

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tools and Equipment	Maintenance Category	Nomenclature	Federal Stock Number	Tool Number
1	O	TOOL KIT TK-101	5180-064-5174	
2	F,H,D	TOOL KIT TK-105	5180-610-8177	
3	O	MULTIMETER AN/URM-105	6625-581-2036	
4	F,H,D	MULTIMETER, ELECTRONIC ME-26/U	6625-646-9409	
5	F,H,D	MULTIMETER TS-352/U	6625-242-5023	
6	F,H,D	POWER SUPPLY PP-1104A/G	6130-542-6385	

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