TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

NAVIGATIONAL SET, TACAN

AN/ARN-103(V)

This copy is a reprint which includes current pages from Changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY
OCTOBER 1973

WARNING

DEATH OR SERIOUS INJURY may result from electrical hazards unless proper safety measures are observed when operating and maintaining this equipment. Up to 4.0 kw rf and 2000 vdc are present when the equipment is energized.

CHANGE NO. 2

C2
HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *13 January* 1983

Organizational Maintenance Manual
NAVIGATIONAL SET, TACAN ANIARC-103 (V)
(NSN 5826-00-168-9420)

TM 11-5826-243-20, 30 October 1973, is changed as follows:

1. Title of the manual is changed as shown above.
2. New or revised material is indicated by a vertical bar in the margin. Where an entire chapter, section, or illustration is added or revised, the vertical bar is placed opposite the identification number and title.
3. Remove old pages and insert new pages as follows:

Remove pages	*Insert pages*
i	i and ii
1-3 and 1-4	1-3 and 1-4
2-1 and 2-2	2-1 and 2-2
3-3	3-3/(3-4 blank)
4-3 and 4-4	4-3 and 4-4
A-1	A-1/(a-2 blank)

4. File this change sheet in front of the publication.

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TECHNICAL MANUAL
No. 11-5826-243-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *30 October 1973*

Organizational Maintenance Manual
NAVIGATIONAL SET, TACAN ANIARN-103(V)
(NSN 5826-00-168-9420)

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 or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, NJ 07703.
In either case, a reply will be furnished direct to you.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Navigational Set, TACAN AN / ARN-103(V) (fig. 1-1) and includes installation, operating instructions, and organizational maintenance. The organizational maintenance instructions consist of cleaning, inspecting, testing, troubleshooting, and replacement of parts authorized for organizational maintenance.

b. Refer to TM *11-5826-243-24P for repair* parts and special tools list.

c. The (V) denotes that the equipment is used in various configurations. Refer to paragraph 1-12 for a description of the configuration differences.

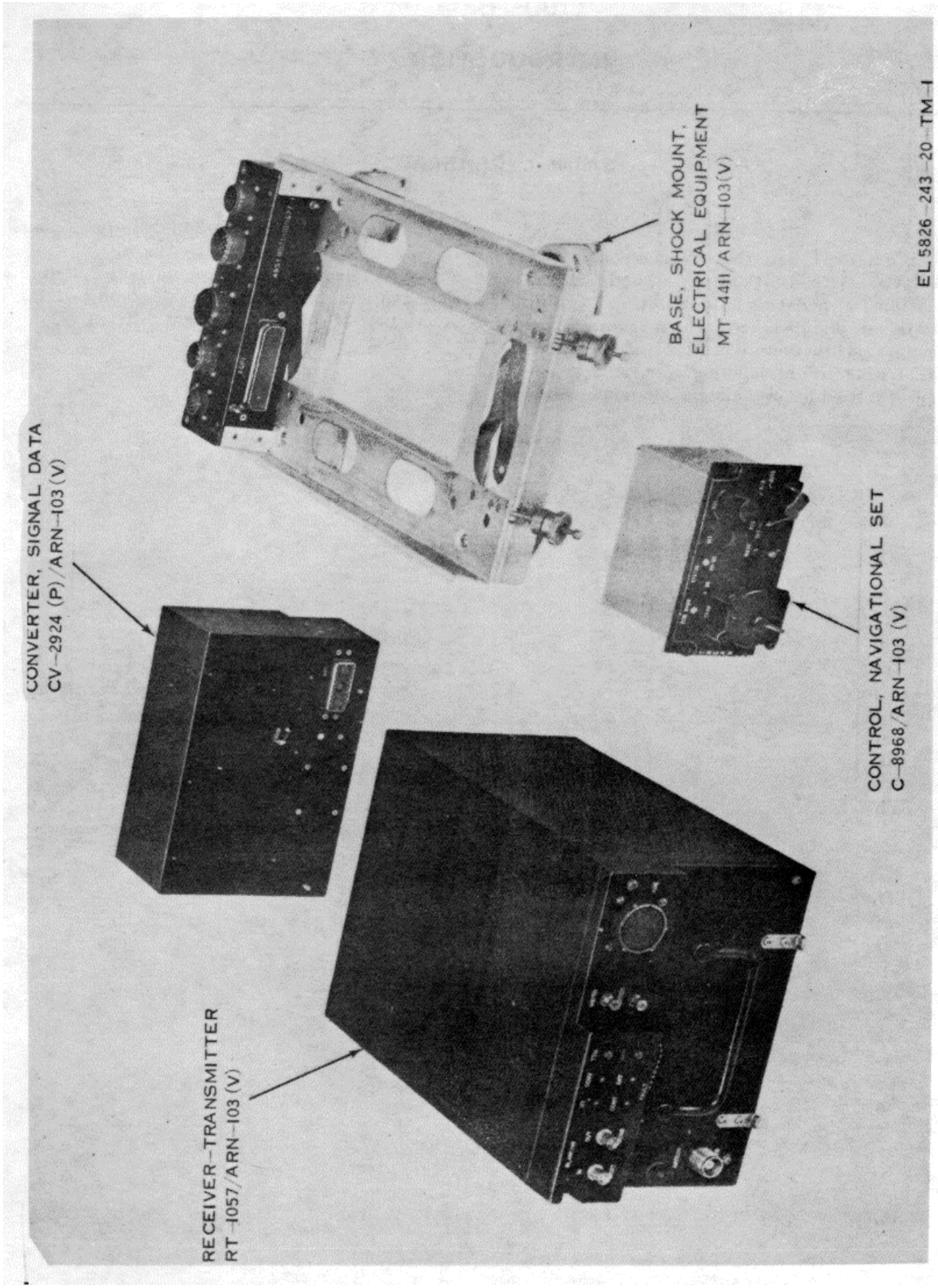

Figure 1-1. Navigational Set. TACAN AN / ARN-103(V).

1-2. 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 TM 38-750, The Army Maintenance Management System.

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) (SF361). 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. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-4. Administrative Storage

Refer to TM 740-90-1 for procedures, forms, records, and inspections required during administrative storage of this equipment.

1-5. Reporting Equipment Improvement Recommendations (EIR)

If your Navigational Set, TACAN, AN/ARN-103(V) 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: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-6. Purpose and Use

a. Purpose. Navigational Set, TACAN AN/ARN-103 (V) is a 126 -channel airborne UHF receiver-transmitter with decoding and data computation capabilities. During tactical deployment, the navigational set may operate with other items of airborne and surface electronic equipment including a TACAN ground or airborne beacon transponder, a horizontal situation indicator, a bearing distance-heading indicator, and a computer.

b. Use. Navigational Set, TACAN AN/ARN-103(V) is used to:

(1) Determine the bearing (in degrees) of an aircraft with respect to a surface beacon transponder, and provide appropriate analog output signals to indicate bearing, course deviation, and to from indications on the bearing-distance-heading and horizontal situation indicators in the aircraft.

(2) Determine the slant range from an aircraft to a surface beacon transponder, and provide appropriate analog output signals to cause the distance in nautical miles to be displayed on the bearing-distance-heading and horizontal situation indicators.

(3) Receive and detect coded identification signals from the surface beacon transponder, and decode and covert these signals into an audio Morse code signal for use by the pilot in determining beacon identity.

(4) Determine and display slant range to one aircraft and transpond to as many as five aircraft. In this case, each aircraft must be equipped with a TACAN navigational set, and must be operating in the air-to-air mode. When performing this function, the navigational set does not provide bearing or beacon identity information concerning the transponding beacon.

(5) Interface with an external digital computer which can automatically control TACAN channel and mode of operation, and request and receive TACAN digital range, bearing, and channel/mode data.

1-7. Description

The components of Navigational Set, TACAN AN/ARN-103(V) are described in paragraphs 1-8 through 1-11. Differences in models are described in paragraph 1-12.

1-8. Receiver-Transmitter RT -1057/ARN-103(V) Receiver-Transmitter RT-1057/ARN-103(V) (fig. 1-2) consists of eleven removable modules inclosed within the chassis assembly. The chassis assembly is provided with a removable cover to gain access to the modules. The chassis also contains a plug-in blower assembly to provide cooling air to the modules. The front panel of the receiver-transmitter contains a TTM (total time meter), four FAULT status indicators, an ANTENNA connector, two BLANKING (IN and OUT) connectors, and a FUSE. The course adjustments (WIDTH and CENTER) controls, AGE connector, and a spare fuse are contained behind a removable cover plate. The rear of the chassis contains an electrical connector for mating with Converter, Signal Data CV-2924(P)/ARN-103(V). The receiver-transmitter and converter are mounted on Base, Shock Mount, Electrical Equipment MT-4411/ARN-103(V) (fig. 1-4).

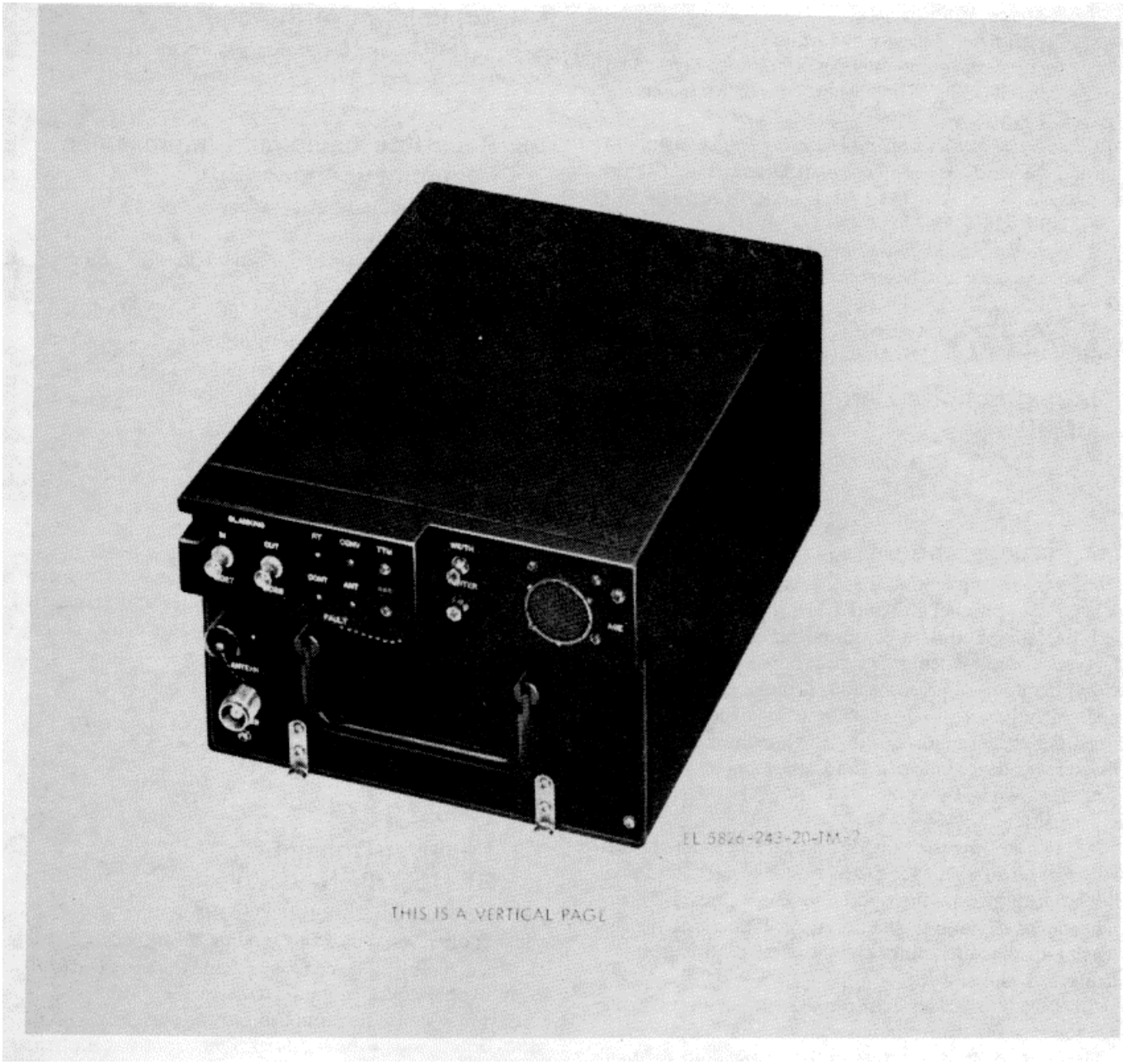

Figure 1-2. Receiver-Transmitter RT-1057/ARN-103(V).

1-9. Converter, Signal Data CV-2924(P) ARN-103(V)

Converter, Signal Data CV-2924(P)/ARN-103(V) (fig. 1-3) houses the bearing and range couplers, digital interface module and buffer module. The converter provides electrical interface between Receiver-Transmitter RT-1057/ARN-103(V) and the adapter connector mounted on Base, Shock Mount, Electrical Equipment MT-4411/ARN-103(V). The converter mates with both the receiver-transmitter and the adapter connector. The converter is secured to the receiver-transmitter with two captive screws located in the rear of the converter.

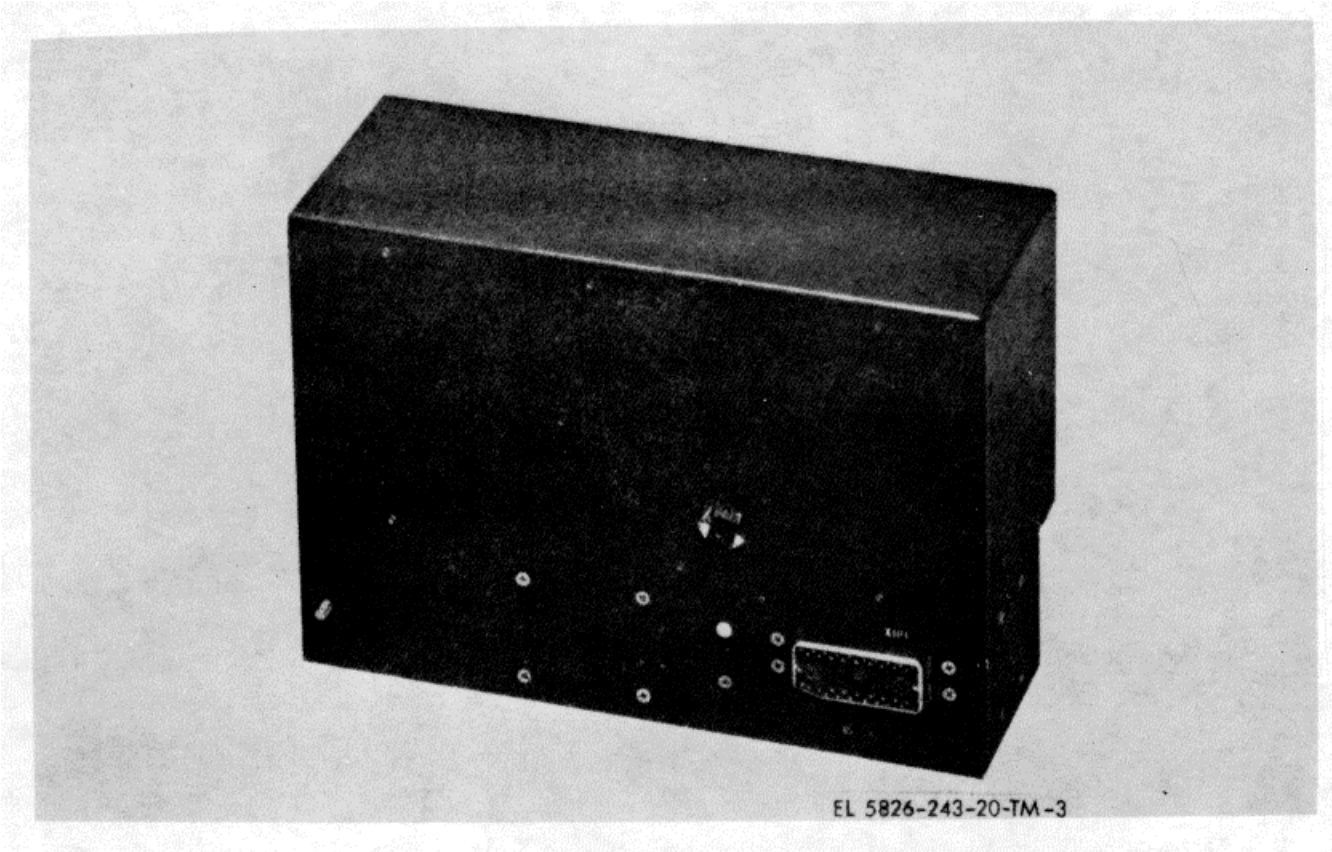

Figure 1-3. Converter, Signal CV-2921(P) / ARN-103(V).

1-10. Base, Shock Mount, Electrical Equipment MT-4411 / ARN-1031V)

Base, Shock Mount, Electrical Equipment MTI'4411/ ARN-103(VI (fig. 1-4) is an aluminum Barry shock mount that provides a firm shock resistant mounting installation for the receiver transmitter and the converter. Two self-locking fasteners secure the receiver-transmitter and converter to the mount. Four vibration isolators dampen air(craft Vibrations. An adapter connector is mounted to the shock mount and provides the electrical interconnections between the converter and the aircraft wiring.

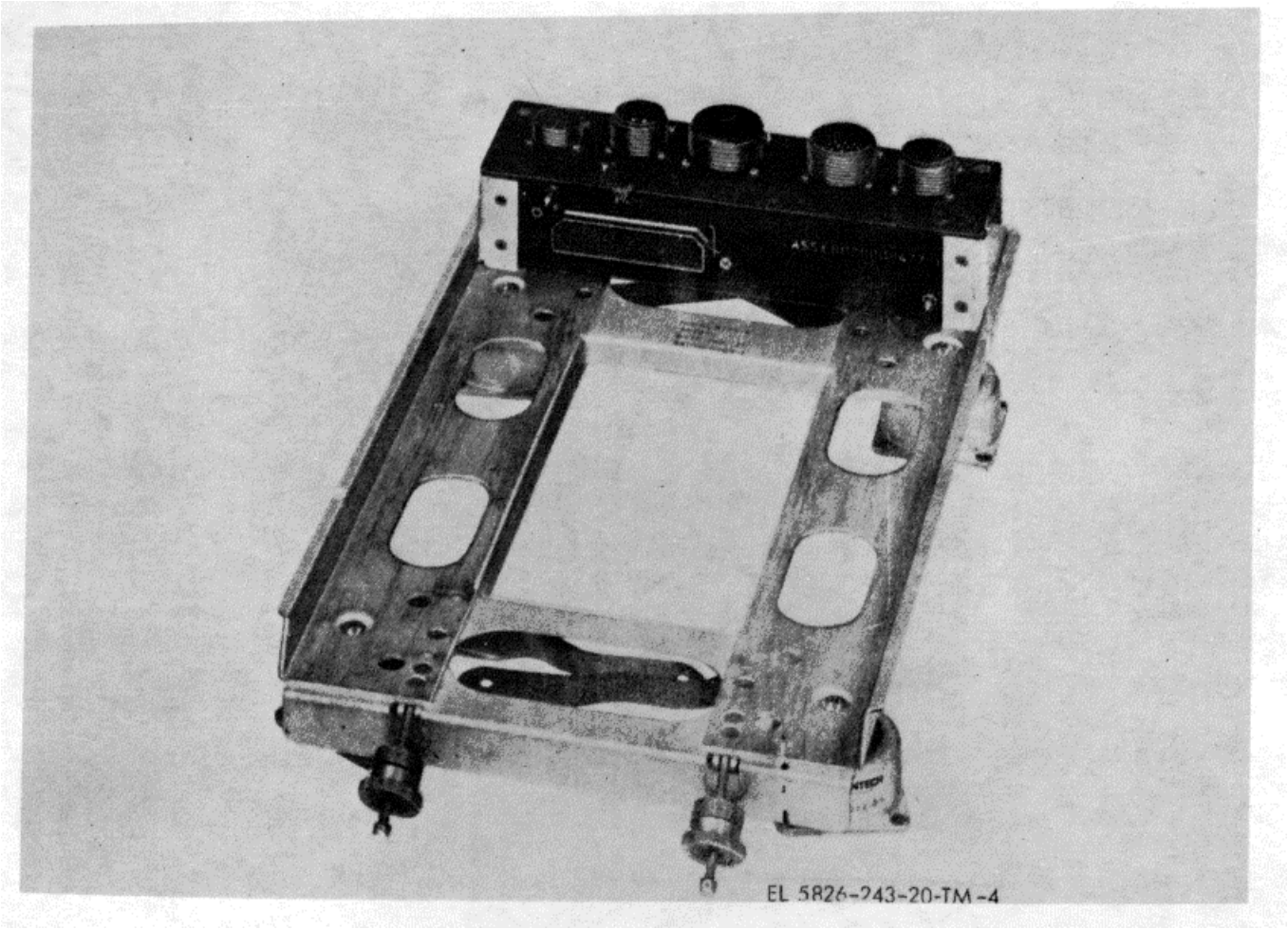

Figure 1-4. Base. Shock Mount. Electrical Equipment MT-4411/ARN-103(V).

1-11. **Control, Navigational Set C-8968 / ARN103(V)** Control, Navigational Set C-8968 / ARN-103(V) (fig. 1-5) is console-mounted in the aircraft to provide remote control of the receiver-transmitter. All controls are located on the front panel. A connector at the rear of the control unit provides electrical interconnections between the aircraft wiring and navigational set.

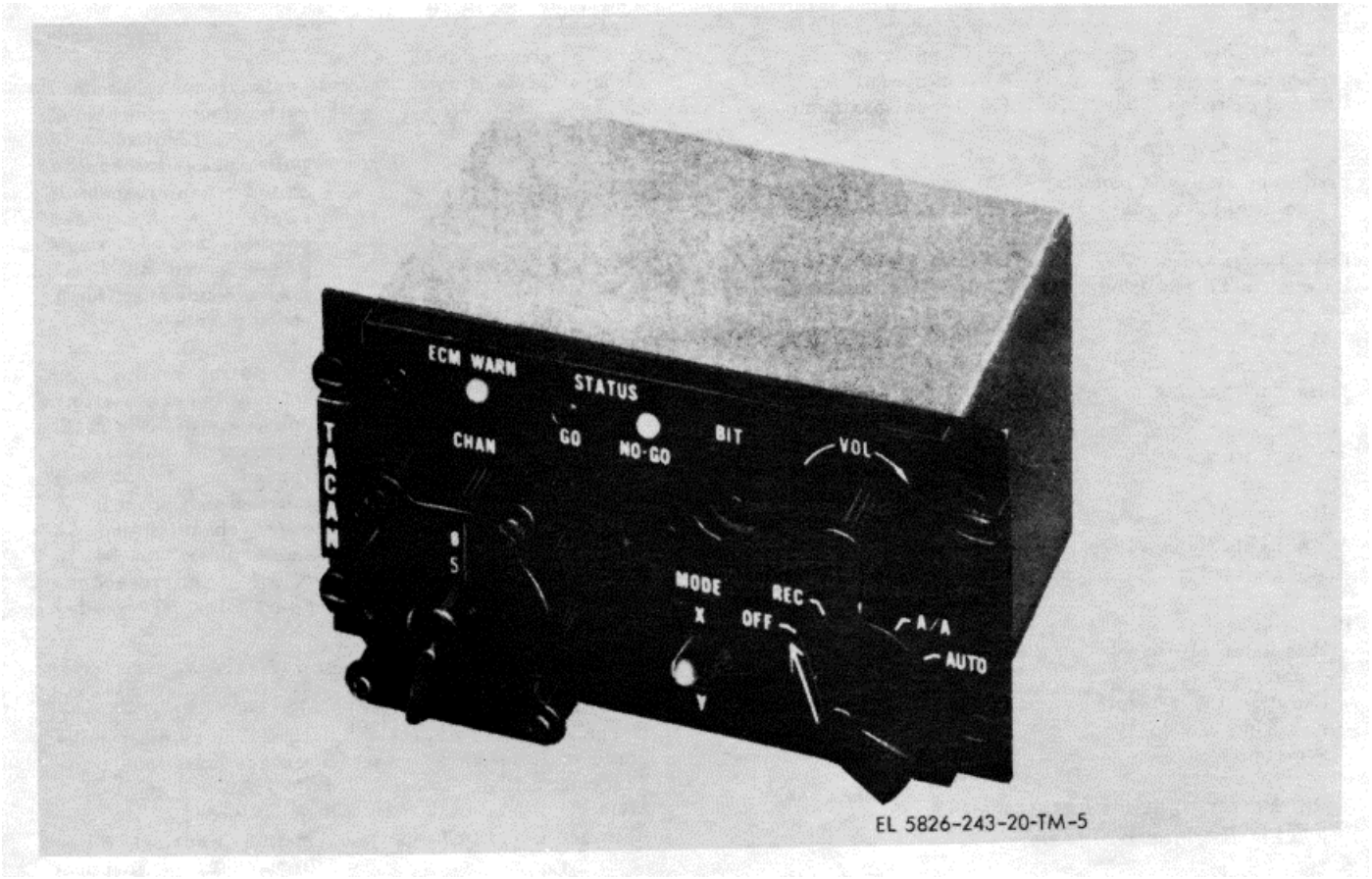

Figure 1-5. Control, Navigational Set C-8968 / ARN-103(V).

1-12. Differences in Models

Navigational Set, TACAN AN / ARN-103(VI consists of two configurations. The suffixes (VI1 and IV)2 are assigned to denote the variations in the functions of Converter CV-2924(P) / ARN103(V). One function provides the capability of interface with an external computer. The other function does not provide the computer interface. A reversible nameplate is installed on Converter CV2924(1P/ARN-103(VI that informs the user whether or not the converter is compatible with the AN / ASN-86 computer.

NOTE

No damage would occur to the navigational set or to the AN / ASN-86f computer if a noncompatible converter is used.

a. Navigational Set. TAC(AN AN/ARN103(V) I (PI/N 8000000070-1). In this configuration, Converter CV-2924tP1 / ARN-103(VI contains a digital interface module and a buffer module in addition to the range and bearing couplers. The nameplate displays the statement, "COMPATIBLE WITH AN / ASN-86 INS."

b.Navigational Set, TACAN AN/ARN103(V)2 (P/N 8000000070-2). In this configuration, Converter CV-2924(P)/ARN-103(V) contains, in addition to the range and bearing couplers, a signal distributor adapter which is installed in place of the digital interface and buffer modules. The nameplate displays the statement, **"NOT COMPATIBLE WITH AN / ASN-86 INS."**

1-13. Tabulated Data

a. *Technical Characteristics.*

(1) Receiver.

Input Frequency, REC or T R Mode:

Channels 1X to 63X	*962 to 1024 MHz (in 1-MHz increments)*
Channels 64X to 126X	*1151 to 1213 Mhz (in 1-MHz increments)*
Channels 1Y to 63Y	*1088 to 1150 MHz in 1-MHz increments)*
Channels 64Y to 126Y	*1025 to 1087 MHz (in 1-MHz increments)*

Input Frequency, A A Mode (X or Y Coding)

Channels 1 to 63 ....1088 to 1159 MHz (in 1-MHz increments)

Channels 64 to 126 .....1025 to 1087 MHz (in 1-MHz increments)

First IF Frequency .....63 MHz

Second IF Frequency..... .....11.5 MHz + 325 KHz

Image Rejection ....60 db minimum

Sensitivity ..... -90 db minimum threshold
Adjacent Channel Rejection ..... 60 db minimum
Co-Channel Rejection ..... 8 db minimum
Channel Selection Time ..... 1.0 second maximum

(2) *Transmitter.*

Frequency Range (Channels 1-126) ..... 1025 to 1150 MHz ± 100 KHz
Pulse Power Output ..... 1.5 to 4 kw
Pulse Pair Transmission Rate 22 to 30 pulse pairs per second (track) or 138 to 150 pulse pairs per second (search)
Pulse pair Spacing 12 ± 0.5 microseconds (X coded channels); 32 ± 0.5 microseconds (Y coded channels); 24 ±0.5 microseconds (Y coded A/A channel)
A/A Reply Pulse ..... Single pulse
Reply Delayed 62 microseconds (X mode); 74 microseconds (Y mode)
Pulse Shape:
Rise Time (10 to 90 percent) ..... 2.5 ± 0.25 microseconds
Duration (50 percent) ..... 3.5 ± 0.5 microseconds
Fall Time (90 to 10 percent) ..... 2.5 ± 0.5 microseconds

b. Performance Characteristics.

(1) *Received Signals.*

Pulse Modulation ..... Audio modulation at 15 and 135 Hz; depth of modulation is 15 to 55 percent.
Beacon Identity Signal ..... Morse coded audio tone at 1350 hz
Pulse Coding ..... Pulses are coded in pairs spaced 12 + 0.1 microseconds apart (x coded channels); 30 + 0.1 microseconds (Y coded channels); and 24 ± 0.5 microseconds (Y coded A/A channels)
Pulse Shape:
Rise Time (10 to 90 percent) 2.0 + 0.25 microseconds
Duration (50 percent) ..... 3.5 + 0.5 microseconds
Fall Time (90 to 10 percent) 2.5 + 0.5 microseconds
Coarse Reference pulse Groups (main Burst) ..... 15 pulse groups per second; each group consists of twelve 12-microsecond pulse pairs spaced 30 + 0.1 microseconds apart for X coded channels and 13 single pulses spaced 30 + 0.1 microseconds apart for Y coded channels.
Fine Reference Pulse Groups (Auxilliary Burst) ..... 120 pulse groups per second; each group consists of six 12-microsecond pulse pairs spaced 24 + 0.1 microseconds apart for X coded channels and 13 single pulses spaced 15 + 0.1 microseconds apart for Y coded channels.

(2) *Digital Distance and Bearing.*

Distance:
Range ..... 0 to 297.6 nautical miles
Speed of Response ..... 3 seconds maximum
Tracking 4500 knots
Memory 8 to 12 seconds
Accuracy (-90 to 0 dbm) ..... + 0.05 nautical miles from 0 to 50 nautical miles; + 0.1 nautical miles from 50 to 300 nautical miles (an additional + 0.05 nautical miles range error is allowed for analog range coupler)
Bearing (15 and 135 Hz modulation present):
Speed of Response ..... 3 seconds maximum
Tracking Rate ..... 20 degrees per second
Memory 3 to 8 seconds
Accuracy:
(-82 to 0dbm) ..... + 0.5 degree
(-90 to 82 dbm) ..... +1.0 degree
(loss signal to -90 dbm) ..... + 2.0 degree (an additional + 0.5 degree bearing error is allowed for analog bearing coupler)

(3) *Electronic Countermeasure (ECM) Response.* TACAN type signal within 6 db of desired signal.

c. Power Requirements.

Volts	*Frequency*	*Phase*	*Current*	*Power*
AC 115	400 Hz	Single	3.2 amps	375 watts max
AC 26	400 Hz	Single	0.77 amps	20 watts
DC 28			2.2 amps[1]	62 watts

[1] Includes 2 amps maximum to operate coaxial switch located external to navigational set.

1-14. Components Comprising Navigational Set, TACAN AN / ARN-103(V)

The following is a list of the components comprising Navigational Set, TACAN AN/ ARN103(V). Also listed is the quantity, dimensions, weight, and figure reference.

Qty	*Item*	*Height (in.)*	*Depth (in.)*	*Width (in.)*	*Weight (lb.)*	*Fig. No.*
1	Receiver-Transmitter RT-1057/ARN-103(V).	7.00	13.50	10.125	29.00	1-1
1	Converter, Signal Data CV-2924(P)/ARN-103(V)	7.00	3.75	10.125	9.00	1-3
1	Base, Shock Mount, Electrical Equipment MT-4411/ARN-103(V)	4.75	19.75	11.15	5.00	1-4
1	Control, Navigational Set C-8968/ARN-103(V)	3.00	5.56	5.75	2.00	1-5

1-15. Common Names

The following is a list of the components and associated common names for the units that make up Navigational Set, TACAN AN / ARN-103(V).

Nomenclature	*Common name*
Navigational Set, TACAN AN / ARN-103V)	Navigational Set
Receiver-Transmitter RT-1057 / ARN-1031V)	Receiver-Transmitter
Converter, Signal Data CV-2924(P)/ARN-103(V)	Converter
Base, Shock Mount, Electrical Equipment MT-4411/ ARN-103(V)	Mounting Adapter
Control, Navigational Set C-8968 / ARN-103(VI)	Control Unit

CHAPTER 2
SERVICE UPON RECEIPT AND INSTALLATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Unpacking

The method of unpacking the navigational set is shown in figure 2-1. No special instructions are required for unpacking except care should be taken not to damage the equipment. Reinsert the packing materials in the board box for possible reuse.

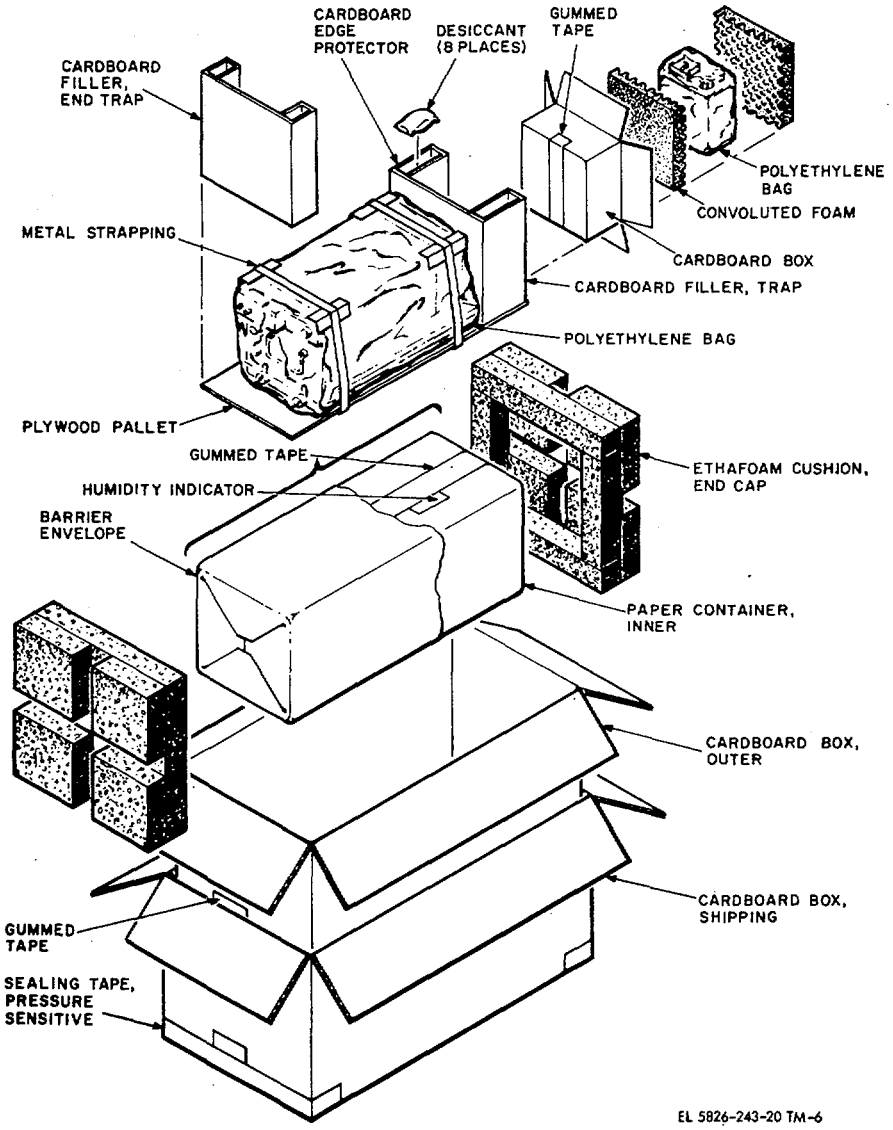

Figure 2-1. Packing of Navigational Set. TACAN AN/ARN-103(V).

2-2. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364.

b. Check the equipment against the component listing in paragraph 1-14 and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions in 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. (Equipment which has been modified will have the Modification Work Order (MWO) number on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWO's have been applied (Current MWO's applicable to the equipment are listed in DA Pam 310-1).

Section II. INSTALLATION INISTRUCTIONS

2-3. Assembly and Installation Instructions

The following procedures provide the instructions for installing the navigational set into the aircraft. Figure FO-1 shows the installation dimensions and approximate centers of gravity of the components to be installed.

a. Mounting Adapter. The instructions for installing the mounting adapter are contained in the manual for the aircraft.

b. Receiver-Transmitter and Converter. The receiver transmitter with converter attached is installed as follows:

(1) Slide the units onto the mounting adapter and mate the converter electrical connector to the connector on the adapter connector.

(2) Secure the receiver-transmitter and converter with the two knurled nuts located on the front of the mounting adapter, taking care not to damage connectors.

(3) Hand tighten the two self-locking (knurled nuts) fasteners that secure the receiver-transmitter and converter to the base.

(4) To ensure the receiver-transmitter is firmly seated into the connectors located on the base, raise the handle located on the front of the receiver-transmitter and push firmly. The unit should move approximately 1/16 of an inch. If so, tighten self-locking fasteners firmly again. Repeat (3) above as required.

(5) Connect the antenna cable and the suppression pulse cables to the connectors on the front panel of the receiver-transmitter.

c. Control Unit. Install the control unit into the console and secure with the four captive screws.

2-4. Interconnections

An interconnection (cabling) diagram that shows all external cables and equipment that must be connected to the navigational set when it is installed in an aircraft is shown in figure FO-2.

CHAPTER 3
OPERATING INSTRUCTIONS

Section I. OPERATING UNDER USUAL CONDITIONS

3-1. Operator/Crew Controls and Indicators

a. Receiver-Transmitter. The receiver-transmitter controls and indicators are listed in table 3-1 and shown in figure 3-1.

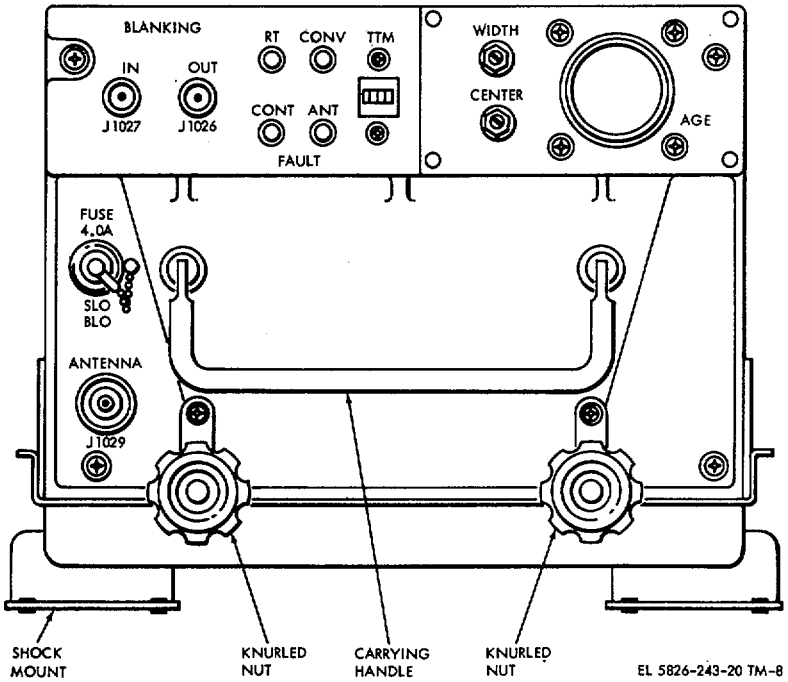

Figure 3-1. Receiver-transmitter controls and indicators.

b. Control Unit Controls and Indicators. The control unit controls and indicators are listed in table 3-2 and shown in figure 3-2.

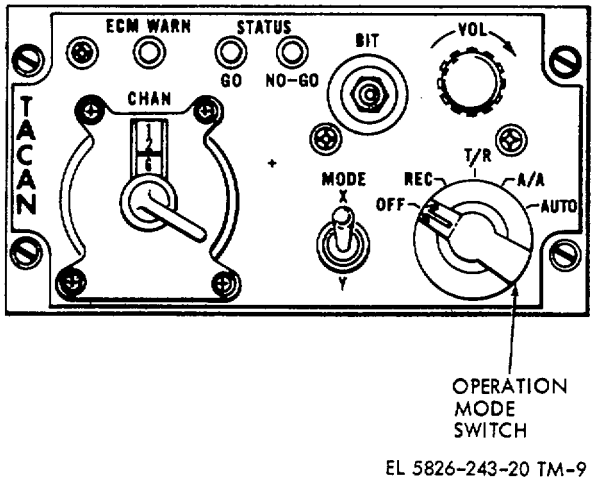

Figure 3-2. Control unit controls and indicators

Table 3-1. Receiver-Transmitter Controls and Indicators (fig. 3-1)

Control or indicator	*Function*
TTM meter (DS5)	Indicates the number of hours that 115 vac, 400 Hz power is applied to the receiver-transmitter.
RT magnetic latching fault indicator (DS4)	Indicates if there is fault in the receiver-transmitter. Black indicates GO: white indicates NO-GO
CONT magnetic latching fault indicator (DS3)	Indicates if there is a fault in the control unit. Black indicates GO: white indicates NO-GO.
ANT magnetic latching fault indicator (DS2)	Indicates if there is a fault in the antenna system. Black indicates GO: white indicates NO-GO.
CONV magnetic latching fault indicator (DS1)	Indicates is there is a fault in the converter. Black indicates GO: White indicates NO-GO.
Course WIDTH control (R2)	Used to adjust width of course deviation indication on external horizontal situation indicator.
Course CENTER control (R1)	Used to adjust centering of course deviation indication on external horizontal situation indicator.

Table 3-2. Control Unit Controls and Indicators (fig. 3-2)

ECM WARN lamp (DSI)	Indicates when enemy countermeasure signal is trying to jam the system.
STATUS GO and NO-GO indicators (DS2 and DS3)	Indicates a system GO or NO-GO (fault) during self-test.
BIT pushbutton switch (S3)	Initiates a self-test sequence in the system and result is displayed by the STATUS indicators. It also illuminates the ECM WARN and STATUS indicators as long as the switch is pressed to provide a lamp test.
VOL control (R1)	Adjusts volume of beacon identity tone.
Operation mode switch (S1)	Selects operating mode of system OFF-no power to system REC-receive beacon identity tone and bearing T/R-transmit- receive between beacon and aircraft (range, bearing, and identity tone). A/A-transmit-receive between aircraft (range only) AUTO-external computer takes control of system
MODE switch (S4)	Selects X or Y beacon controls.
CHAN select control (S2A and S2B)	Selects any one of the 126 TACAN channels; outer wheel selects ten and hundreds, and inner wheel selects units.

3-2. Preliminary Starting Procedure

Set control unit operation mode switch to OFF. Set VOL control to full counterclockwise position.

3-3. Operating Procedure

a. Set control unit operation mode switch to REC.

NOTE

Insure local beacon is transmitting and navigational set is on beacon channel before performing step *b.* Otherwise, skip step b.

b. Turn VOL control counterclockwise until identity tone is heard on pilot's intercom.

c. Set CHAN control off channel and then press and release BIT switch. If GO light illuminates return CHAN control to operating frequency. If NO-GO lamp goes on, or any one or more of magnetic latch FAULT indicators are white, troubleshoot the equipment according to instructions in chapter 4.

NOTE

If aircraft should taxi within close proximity of a TACAN station it could possibly override the receiver causing the GO/NO/GO light to illuminate. If this happens, refer to c above.

Section II. PREPARATION FOR MOVEMENT

3-4. Disassembly for Travel

The following procedures describe the disassembly of the navigational set for travel.

NOTE

If the mounting adapter is to remain in the aircraft, omit steps c through f.

a. Loosen knurled nuts that secure the receiver transmitter and converter to the adapter connector.

b. Remove receiver-transmitter and converter from mounting adapter.

c. Disconnect electrical connections to adapter connector.

d. Remove the 16 screws that secure the shock mount to the aircraft.

e. Remove mounting adapter from aircraft.

f. Reinstall receiver-transmitter and converter onto mounting adapter and secure them in place.

3-5. Repacking

Repacking of the 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 materials from those listed in SB 38-100. Package the equipment in accordance with the original packaging, so far as possible, with the available materials.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-1. Tools, Test Equipment, and Materials Required

The tools, test equipment, and materials required for organizational maintenance are listed below. Repair parts, special tools, special test equipment, and accessories issued with or prescribed for use with Navigational Set, TACAN AN / ARN103(V) at the organizational maintenance level are listed in TM 11-5826-243-24P.

a. Tools. Tool kit, electronic TK-101/ G.

b. Test Equipment. None.

c. Materials.

(1) Lint-free cloth (cloth, textile, lintless, FSN 8305-170-5062).

(2) Sandpaper No. 000.

(3) Paint, black, lusterless, color no. 37038 per FED STD 595.

(4) Small paint brush.

(5) Trichloroethane.

(6) Detergent.

4-2. Painting and Refinishing Instructions

Refer to the applicable cleaning and refinishing practices specified in TB 746-10. Remove rust or corrosion from metal surfaces by lightly sanding them with No. 000 sandpaper. Brush two thin coats of paint, black, lusterless, color no. 37038, on exposed metal areas to prevent further corrosion. Apply paint to only those areas which have been previously painted. Refer to SB 11-573 and AR 746-1.

4-3. Preventive Maintenance

To insure that Navigational Set, TACAN AN / ARN-103(V) is always ready for operation, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are listed and described in tables 4-1 and 4-2. The item numbers indicate the sequence of and minimum inspection required. Defects discovered during operation of the equipment will be noted for future correction to be made as soon as the operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment. Record all deficiencies together with the corrective action taken on the applicable forms. Instructions for performing the required checks are identified as periodic checks in the direct and general support manual.

4-4. Instructions for Performance of Preventive Maintenance Checks and Services

The items listed in the tables should be checked on a monthly, or quarterly, basis during periods of use and nonuse. The table indicates when to inspect, what to inspect, and how to inspect. The Reference column lists the paragraphs or publications that contain additional information. If the defect cannot be remedied at the organizational maintenance level, higher level maintenance category of repair is required.

Table 1-1. Monthly Preventive Maintenance Checks and Services

Sequence number	*Item to be inspected*	*Procedure*	*Reference*
	Navigational Set	*a.* Inspect for cleanliness	Para 4-5*a*.
		b. Perform operational procedures and observe Following: (1) Magnetic latch FAULT indicators on receiver-transmitter are not white. (2) The NO-GO STATUS and ECM WARN indicators on control unit are not illuminated. GO STATUS is illuminated for 10 seconds.	Para 3-3.
		c. Press BIT pushbutton switch and see that GO indicator and ECM WARN and STATUS indicator lamps illuminate.	Table 3-2
2	Receiver-Transmitter	*a.* Inspect for cleanliness	Para 4-5*a.*
		b. Inspect all connectors for bent pins and cleanliness	Para 4-5*c*.
		c. Inspect for scratches, chipped paint, or corrosion.	Para 4-2.
3	Converter	*a.* Inspect for cleanliness.	Para 4-5*a.*
		b. Inspect connector for bent pins and cleanliness.	Para 4-.*c.*
		c. Inspect for scratches, chipped paint, or corrosion.	Para 4-2.
4	Mounting Adapter	*a.* Inspect for cleanliness	Para 4-5*a*.
		b. Inspect for broken wiring.	Send faulty mounting adapter to general support maintenance.
5	.Adapter Connector	*a.* Inspect for cleanliness.	Para 4-5*a.*
		b. Inspect connectors for bent pins and cleanliness.	Para 4-5*c.*
6	Control Unit	*a.* Inspect for cleanliness.	Para 4-5*a*.
		b. Inspect connector for bent pins and cleanliness.	Para 4-5*c*.
		c. Inspect for scratches, chipped paint, or corrosion.	Para 4-2.
		d. Inspect for loose or broken control knobs.	
		e. Inspect front panel switches. indicators, and controls	Send faulty control unit to general support maintenance.

Table 1-2. Quarterly Preventive Maintenance Checks and Services

Sequence number	*Item to be inspected*	*Procedure*	*Reference*
I	Completeness	Check that equipment is complete.	Para 1-14.
2	Installation	Check that equipment is properly installed and connected.	Para 2-3.
3	Cleanliness	Check that equipment is clean.	Para 4-5.
4	Preservation	Check all, surfaces for evidence of fungus. Remove Remove rust and corrosion, and spot-paint bare spots	Para 4-2.
5	Publications	Check that all publications are complete, serviceable, and current.	DA Pam 310-4.
6	Spare parts	Check all spare parts for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.	TM 11-5826-243-P
7	Equipment Modification	Check DA Pam 310-7 to determine if new applicable MWO's (Modification Work Order) have been Published. All URGENT MWO's must be incorporated immediately. Schedule incorporation of NORMAL MWO's for next maintenance service.	DA Pam 310-7 and TM 38-750.

4-5. Cleaning

Inspect each component of the navigational set for cleanliness. The equipment shall be free of dust, dirt, grease, and fungus. Clean the components as follows:

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 TRICHLOROTRIFLUORO ETHANE 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.

a. Remove dust and dirt from external surfaces with a clean lint-free cloth, dampen with water if necessary.

b. Remove grease, fungus, and ground-in dirt by using a cloth dampened (not wet) with trichlorotrifluoroethane.

c. Use a small brush to clean connectors.

Section II. TROUBLESHOOTING

4-6. Troubleshooting

Chart Troubleshooting of the navigational set at the organizational maintenance level is based on the results observed in paragraphs 3-3 and 4-4. Table 4-3 provides a list of the most frequent malfunctions and the corrective actions to be taken. The only corrective maintenance procedures, aside from control knob replacement, authorized at organizational level, are removal of line replaceable units and substitution with maintenance float units. Malfunctioning units will be referred to general support maintenance for repair.

Table 4-3. Troubleshooting

Malfunction	*Probable cause*	*Corrective action*
NO-GO STATUS indicator on control unit illuminated.	Faulty unit in navigational set.	Check magnetic latching FAULT indicators on front panel of receiver-transmitter.
One or more magnetic latching FAULT indicators on receiver-transmitter are white.	*a.* Faulty receiver-transmitter.	*a.* Remove and replace receiver-transmitter. Send faulty receiver-transmitter to general support maintenance
	b. Faulty converter	*b.* Remove and replace converter. Send faulty converter to general support maintenance.
	c. Faulty control unit.	*c.* Remove and replace control unit. Send faulty control unit to general support maintenance.
	d. Faulty antenna system.	*d. Remove and replace receiver-transmitter. Rerun BIT check. If trouble persists, refer to aircraft manual to troubleshoot antenna system. If no malfunction is present, send faulty receiver-transmitter to general support maintenance.*
Controls or switches on control unit do not have positive detent or smooth operation	a. Loose or broken knobs. b. Faulty control or switch.	a. Replace or tighten knob. b. Send control unit to general support maintenance.

4-7. Removal Procedures

a. Receiver-Transmitter.

(1) Remove receiver-transmitter with converter attached as described in paragraph 3-4 a and *b.*

(2) Remove two captive screws located at rear of converter.

(3) Carefully pull receiver-transmitter away from converter taking care not to damage mating connector.

b. Converter. Perform removal steps as described in a above.

c. Mounting Adapter. Perform removal procedures described in paragraph 3-4 *c* and c

d. Adapter Connector.

(1) Perform step c above.

(2) Remove six screws securing adapter connector to mounting adapter.

(3) Lift adapter connector up and away from mounting adapter.

e. Control Unit.

(1) Loosen four captive screws securing control unit to console.

(2) Remove control unit from console.

f. Control Unit Knobs.

(1) Loosen setscrew securing knob to control shaft.

(2) Remove knob from shaft.

4-8. Replacement Procedures

a. Receiver-Transmitter.

(1) Carefully connect receiver-transmitter to converter taking care not to damage connectors.

(2) Secure two units with two captive screws located at rear of converter.

(3) Slide the units onto the mounting adapter and mate the converter electrical connector to the connector on the adapter connector, taking care not to damage the connectors.

(4) Tighten two self-locking (knurled nuts) fasteners that secure the receiver-transmitter and converter to Base, Shock Mount, Electrical MT-4411/ARN-103(V).

(5) To ensure the receiver-transmitter is firmly into the connectors on the base, raise the handle located on the front of the receiver-transmitter and push firmly. The unit should move approximately 1/16 of an inch. If so, tighten self-locking fasteners firmly again. Repeat (3) above as required.

(6) Perform procedures described in paragraph 2-3b to install receiver-transmitter in aircraft.

(3) Perform procedures described in paragraph 2-3b to install receiver-transmitter in aircraft.

b. Converter. Perform steps listed in *a* above.

c. Adapter connector. Install adapter connector in position on mounting adapter and secure with two screws.

d. Mounting Adapter. Install mounting adapter in aircraft as described in aircraft manual.

e. Control Unit. Insert control unit into console and secure with four captive screws.

f. Control Unit Knobs.

(1) Rotate control shaft fully counterclockwise.

(2) Place new knob in position on shaft with marker or pointer lined up with front control position.

(3) Secure knob to shaft by tightening setscrew.

APPENDIX A
REFERENCES

Following is a list of references available to the organization maintenance manual of the navigational set.

AR-746-1	Packaging of Army Material for Shipment and Storage.
DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
SB 11-573	Painting and Preservation of Supplies Available for Field Use for Electronics Command Equipment.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TM 11-5826-243-20P	Organizational Maintenance Repair Parts and Special Tools List for Navigational Sets, TACAN AN/ARN-103(V)1 (NSN 5826-00-167-1027) and AN/ARN-103(V)2 (NSN 5826-00-167-1026).
TM 11-5826-243-34	Direct and General Support Maintenance Manual, Navigational Set, TACAN AN/ARN-103(V) (NSN 5826-00-167-1027) (V)1, and (5826-00-167-1026) (V)2.
TM 11-5826-243-34P	Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Navigational Sets, TACAN AN/ARN-103(V)l (NSN 5826-00-167-1027) and (V)2 (5826-00-167-1026).
TM 38-750	The Army Maintenance Management System (TAMMS).

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature. 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.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and / or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure of measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean, preserve, drain, paint, or to replenish fuel / lubricants / hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used to precision 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.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, module (component or assembly) in a manner to allow the proper functioning of an equipment/ system.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, rematching, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module / component / assembly, end item or system.

j. Overhaul. That maintenance effort (service/ action) necessary to restore an item to a completely serviceable / operational condition as prescribed by maintenance standards (e.g., DMWR in pertinent technical manuals. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services / actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment / components.

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

B-3. Explanation of Format

a. Group Number. Column 1 lists group numbers, the purpose of which is to match components, assemblies, subassemblies and modules with the next higher assembly.

b. Functional Group. Column 2 lists the next higher assembly group and the item names of components, assemblies, subassemblies and modules within the group for which maintenance is authorized.

c. Maintenance Functions. Column 3 lists the twelve maintenance functions defined in paragraph B-2 above. Each maintenance function required for an item is specified by the symbol among those

listed in *d* below which indicates the level responsible for the required maintenance. Under this symbol is listed an appropriate work measurement time value determined as indicated in *, below.

d. Use of Symbols. The following symbols are used to prescribe work function responsibility:

C-Operator / Crew
O-Organization
F-Direct Support
H-General Support
D-Depot

e. Work Measurement Time. The active repair time required to perform the maintenance function is included directly below the symbol identifying the category of maintenance. The skill levels used to obtain the measurement times approximate those found in typical TOE units. Active repair time is the average aggregate time required to restore an item (subassembly, assembly, component, module end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, fault isolation/ diagnostic time, and QA / QC time in addition to the time required to perform specific maintenance functions identified for the tasks authorized in the maintenance allocation chart. This time is expressed in man-hours and carried to one decimal place (tenths of hours).

f. Tools and Test Equipment. This column is used to specify, by code, those tools and test equipment required to perform the designated function.

g. *Remarks.* Self-explanatory.

B-4. Explanation of Format of Table I (Tool and Test Equipment Requirements)

The columns in table I 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

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/ARN-103(V)1&2 NAVIGATIONAL SET, TACAN	0	0.1 0 0.1		0	0.1								Knobs, fuces, con-nector$ Press BIT button and check STATUS indicator
								0 0.1	0 0.1				1	RT vith CV
			H 0.1										2,3,4	C-8968/ARN-103(V) and Cv-2924(P)/ARN-103 (V) with RT-1057/ARN-103CV)
						H 0.1							2,3,21	Course WIDTH and CENTER controls (R1 & R2)
1	RT-1057/ARN-103(V) RECEIVER-TRANSMITTER, TACAN A002 (P/N 8010000231-1)	0 0.1	0 0.1											Connector, Fuse Press BIT button on C-8968/AiR-103(V) and check fault Indicators on RT-1057/ARN-103 (V)
								0 0.1	0 0.1				1	RT-1057/AR1-103 (V) with CV-2924XP)/ArN-103(V:
			H 0.1										2,3,4	Requires a CV-2924(P)/ ARN-103(V)
					H 0.1								2,3	
										H 0.2			2,3,4	By replacing modules
1A1	POWER AMPLIFIER/MODULAT-OR ASSY A003 (P/N 8020000809-								H 0.1				2	Every 600 hours
			D 0.4		D 0.1					D 2.0			2,5,6,11,12,16 thru 19,28,38,40,42,45,46 47,48,52,53,54,55,56	
1A2	FREQUENCY SYNTHESIZER ASSY A894 (P/N 8020000487-1)								H 0.1				2	Module
			D 0.4		D 0.1					D 2.2			2,5,6,8,10,14,15,20,31,39, 51,57,58,59,60,61,62	
1A3	MODULE ADDSEMLY, DECODER B152 (P/N 8020000315-4)								H 0.1				2	Module
			D 0.4		D 0.1					D 2.0			2,6,7,14,5,29,36,44,51	

SECTION II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
IA4	MODULE ASSMLY, INTEM-AL CONTROL 3810 (P/H 8020000316-5)								H 0.1				2	Module
			D 0.4							D 2.0			2,6,30,37,43,51	
1A5	MODULE ASSEMBLY, BEARING COMPUTER C260 (P/N 8020000317-5)								H 0.1				2	Module
			D 0.4		D 0.1					D 1.8			2,5,6,14,23,28,37,51	Module
1A6	MODULE ASSEMBLY RANGE COMPUTER C908 (P/N 8020000318-5)								H 0.1				2	Module
			D 0.4		D 0.1					D 2.0			2,6,14,25,37,43,51	
1A7	MODULE ASSEMBLY, SELF TEST D589 (P/N 8020000488-1)								H 0.2				2	Module
			D 0.4							D 2.5			2,5,6,14,20,35,39,51	
1A8	CHASSIS ASSEMBLY E482 (P/NN 8020000 496-1)								H 0.2				2	
			H 0.4							H 0.5			2,5	Replace fault indicators, and elapsed time indicators
										D 3.0			2,5	By replacing potentiometers (WIDTH & CENTER controls) SPO, SPI connector
1A9	BLOWER ASSEMBLY R611 (P/N 8020000 502-1		H 0.1						H 0.1				2	Replace connector & clamp
									D 0.4				2	Replace bearing
1RE1	RECEIVER ASSEMBLY P165 (P/N 8020000 312-4								H 0.1				2	Module
			D 0.4		D 0.1					D 2.2			2,5,6,8,9,13,14,15,18,20,32 37,39,40	
1PS1	POWER SUPPLY E698 (P/N 8020000314-7)								H 0.1				2	Module
			D 0.3							D 2.5			2,5,6,20,26,36,37,49	

SECTION II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
1FL1	COUPLE, DUAL-LOW PASS FILTER E694 (P/N 8822400001-1)								H 0.1				2	Failure determined at H
1HY1	CIRCULATOR, FOUR PORT, COAXIAL E692 (P/N 881730000-1)								H 0.1				2	Failure determined at H
1W1 THRU 1W9	CABLE ASSEMBLIES (P/N 8190000607-1 THRU -9)		H 0.2						H 0.1				5	
										D 0.3			5	
2	MT-4411/ARN-103(V)	0 0.1						0 0.1	0 0.1				1	
	BASE, SHOCKMOUNT, ELECTRIAL EQUIPMENT F474 (P/N 8010000223-1)		H 0.3										2,5	Continuity
										H 0.5			2,5	ISOLATORS & ADAPTER
2A1	ADAPTER ASSY P/O MT 4411/ARN-103(V) F475 (P/NM 8020000477-1_		H 0.2						H 0.1				2,5	
										D 0.5			2,5	
3	C-8968/ARN-103(V) CONTROL, NAVIGATIONAL SET F601 (P/N 8010000222-1)	0 0.1						0 0.1	0 0.1				1	Switches, lights, knobs
			0											In aircraft, press BIT and check fault indicator or RT-1057/ARN-103(V)
			H 0.2										2,3	
										D 2.2			2,5,6,27	
3A1	SERIAL DATA GENERATOR F602 (P/N 80300001392-1)		D 0.4						D 0.3	D 2.0			2,5,6,27	As part of Control Nav Set
3A2	5 VDC DRIVER ELECTRONIC COMPONENT ASSEMBLY F719 (P/N 803 0001391-1)		D 0.5							D 1.0			2,5,6,27	As part of Control Nav Set
3A4	FILTER (804-1138) F778 (P/N 8040001188-1)		D 0.4						D 0.4				2,5	
3S1 thru3S3	SWITCHES		D 0.3						D 0.4				2,5	

SECTION II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) FUNCTIONAL GROUP COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
4	CV-2924(P)/ARN-103(V) CONVERTER, SIGNAL DATA F880 (P/N 8010000232-1)	0 0.1	0 0.1											Press BIT button on C-8968/Arn-103(V) and check fault indicator on RT-1057/ARN-103(V)
4A1	BUFFER MODULE ASSEMBLY HO43 (P/N 8020000398-2)		D 0.4						H 0.1	D 1.5			2 2,5,6,34	
4A2	CHASSIS ASSEMBLY, CON-VERTER F881 (P/N 8020000498-1)		H 0.2						H 0.1	H 0.6 D 3.0			5 2 2,5	Relay antenna driver Circuit Card, Filter transformer T1
4A3	INTERFACE ASSEMBLY, MODULE H157 (P/N 8020000433-1)		D 0.3						H 0.1	D 2.0			2 2,5,6,33,51	
4DC1	BEARING COUPLER G523 (P/N 8020000307-7)		D 0.5		D 0.4				H 0.1	D 3.0			2 2,5,6,22,63	
4DC2	RANGE COUPLER ASSEMBLY MODULE G114 (P/N 8020000306-8)		D 0.5		D 0.5				H 0.1	D 3.0			2 2,5,6,24,36,41,50,63	
4TB1	TERMINAL BOARDS								H 0.2				2	
4A3	SIGNAL ADAPTER U/W CV-2924 H693A (P/N 8020000486-1)		H 0.1						H 0.1	H 0.1			2,5	

TABLE I.

TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY		NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
I	0		TK-101/G Tool Kit, Electronic Equipment	5180-064-5178	
2	H	D	7K-100/G Tool Kit, Electronic Equipment	5180-064-5178	
3	H	D	TS-3134/ARN-103 Test Set, Navigational Set	6625-476-5551	
4	H	D	AN/ARM-156 Test Set, Radio	6625-086-6304	
5	H	D	Ml-26D/U Multimeter	6625-913-9781	
6	H	D	H-104/G Headset	5965-296-9910	
7	H	D	AN/USM-281A Oscilloscope	6625-228-2201	
8	H	D	ID-387/ARN Course Indicator	5826-00-505-2947	
9		D	AN/USN-44A Generator, Signal	6625-649-5262	
10		D	Generator, Signal SG-104( )/G	6625-880-1906	
11		D	SG-97/PRC Generator, Signal	6625-351-5958	
12		D	SG-321/U Generator, Signal	6625-674-7097	
13		D	Generator, Sweep HP-8690A		
14		D	RP Unit, Plug In HP-8691A		
15		D	SG-69B/PPM-1 Generator, Pulse	6625-545-7953	
16		D	AN/USH-207 Counter, Electronic, Digital Readout	6625-911-6368	
17		D	CM-77/USM Comparator, Frequency	6625-788-3780	
18		D	Probe, 100X, Tek P-6009		
19		D	Microwave Amplifier HP-489A		
20		D	CU-1517/G Coupler, Dual, Directional		
21		D	Detector, RF HP-420A		
22		D	Probe, Waveguide MX-2144/U	6625-886-1955	

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUPMENT	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
23	D	TZ 1481 Bearing Coupler Test Station		
24	D	TE 1482 Bearing Computer Teat Station		
25	D	TE 1483 Range Coupler Test Station		
26	D	TE 1484 Range Computer Test Station		
27	D	TS 1486 Power Supply Test Station		
28	D	TE 1487 Control Unit Test Station		
29	D	TE 1488 PA/Modulator Test Station		
30	D	TS 1490 Decoder Test Station		
31	D	TE 1491 Internal Control Test Station		
32	D	TE 1492 Frequency Synthesizer Test Station		
33	D	TZ 1494 Receiver Test Station		
34	D	TE 1585 Computer Interface Test Station		
35	D	TS 1588 Self Test Station		
36	D	TE 1587 Buffer Test Station		
37	D	Resistance Decade Box GR-1432K/P		
38	D	Digital Voltmeter, HP-344UA/3444A		
39	D	Peak Power Meter, HLI-116A		
40	D	Power Meter, HP-431C		
41	D	Thermocouple Current Meter Sensitive Research Polyranger Mod A		
42	D	Power Supply, 0-45 VDC, Harrison 6200B		
43	D	Resistance, Decade Box, Heathkit, RD-1		

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TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUPMENT	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
44	D	Delay Pulse Generator, Data Pulse ll0B		
45	D	Double Pul.e Generator, Beckman/Berkeley Mod 4904		
46	D	Fixed Attenuator, Microlab AD-20N		
47	D	Fixed Attenuator, tMcrolab AD-30N		
48	D	Isolator, HEC 8050002043		
49	D	Circulator, HEC 8050001733		
50	D	Air Blower, Dayton Electric 1C180		
51	D	Ratiometer, Digital, Elctro Inst, DXC-OO		
52	D	Tool, Installation, Circuit Card Assy HEC 8040000909-1 thru 13		
53	D	Directional Coupler, HP-786D		
54	D	Yig Filter, HEC 8050001738		
55	D	Power Meter HP-340B		
56	D	Bolometer Mount HP-476A		
57	D	Attenuator, Fixed AD-6N		
58	D	Coaxial Crystal Detector HP-423A		
59	D	Filter Bandpass HEC 8020000370-1		
60	D	Frequency Meter, HP-536A		
61	D	Resistance Substitute Box Th-1492 At		
62	D	Attenuators, Fixed Microlab FXR 80-10N FXR 80-20N FPXR 80-30N		
AMSEL-MA Form 1 Jan 72 6013 (Replaces AMSEL-MR 6013)				HISA-FM 436-72

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUPMENT	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FEDERAL STOCK NUMBER**	**TOOL NUMBER**
63	D	Microvolt Ammeter Kay Lab 203		
64	D	Bristol - Wrenches Size - 080 and 256		

AMSEL-MA Form
1 Jan 72 6013 (Replaces AMSEL-MR 6013)

HISA-FM 436-72

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:
VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-31, organizational maintenance requirements for OV-1A, B, C, OV-1D, and U-21 Aircrafts.

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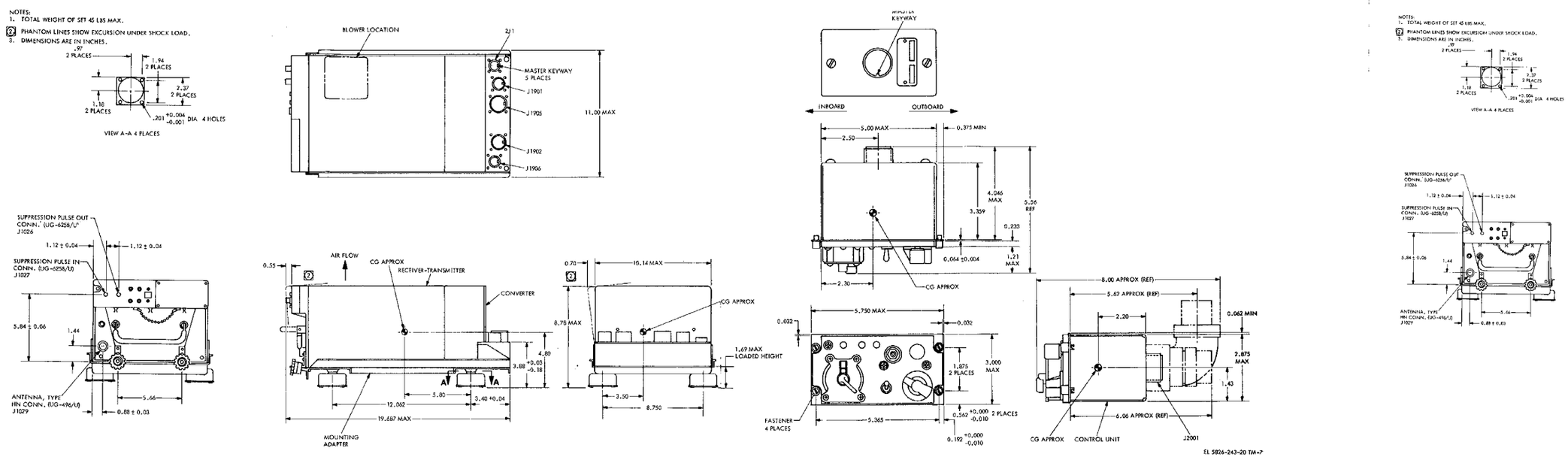

Figure FO-1. Navigational Set. TACAN AN / ARN-103(V), installation drawing.

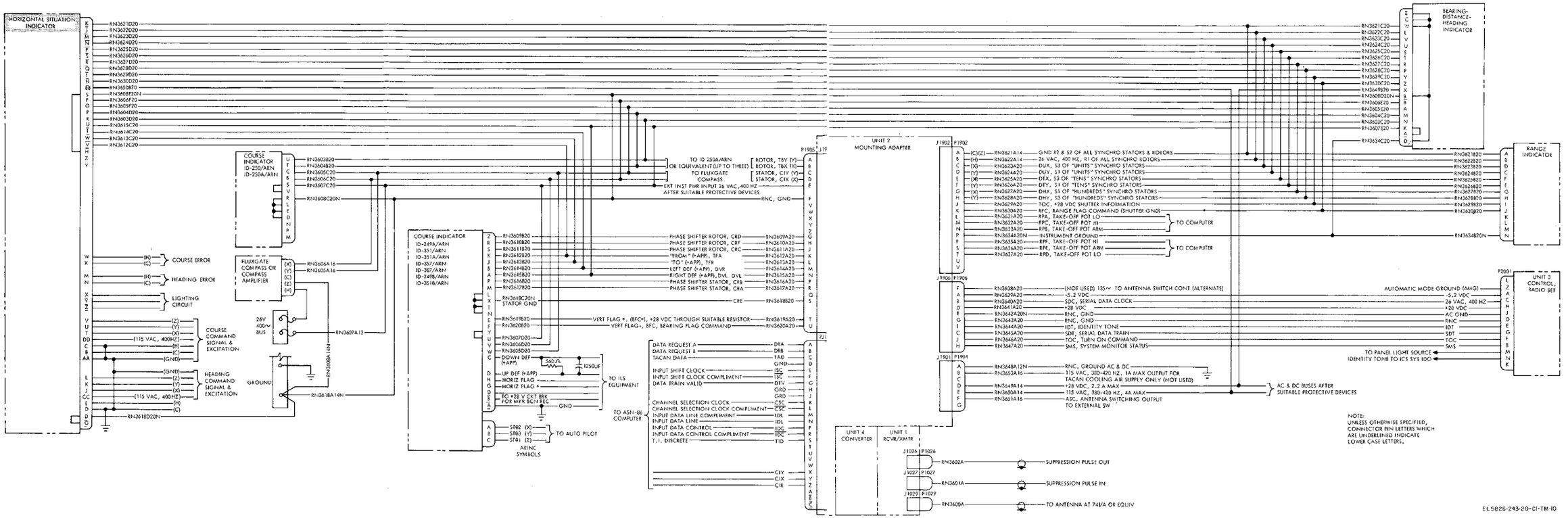

Figure FO-2. Navigational Set, TACAN AN/ARN-103(V), interconnection diagram.

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