

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL,
DIRECT SUPPORT, AND
GENERAL SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS LIST)

RECORDER-REPRODUCER SET, SOUND

AN/UNH-17A

NSN 5835-01-023-4332

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HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1976

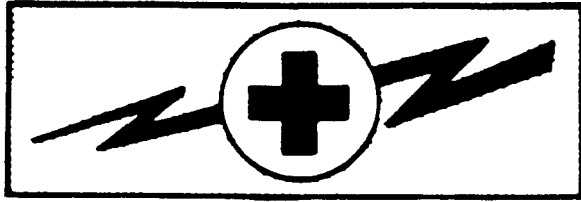
Change 2 18 DECEMBER 1987 ■



5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

- 1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL**
- 2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER**
- 3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL**
- 4 SEND FOR HELP AS SOON AS POSSIBLE**
- 5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION**

WARNING



WARNING

HIGH VOLTAGE

IS USED IN THE OPERATING OF THIS EQUIPMENT

DEATH ON CONTACT

MAY RESULT IF PERSONNEL FAIL TO OBSERVE SAFETY PRECAUTIONS

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off always ground every part before touching it.

Be careful not to contact high-voltage connections of 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING: Do not be misled by the term "low voltage". Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM21-11.

WARNING

SHOCK HAZARD

This equipment contains dangerous voltages which can cause injury or death by severe electrical shock. Be extremely careful when making voltage measurements or other checks with the equipment connected to the power source during troubleshooting. Always disconnect the power source before making any continuity tests.

NOTICE

As contained in this publication, the words he, his and him are intended to include both the masculine and the feminine genders. Any exceptions to this are so noted.

Change
No. 2

Headquarters
Department of the Army
Washington, D. C., 18 December 1987

Operator, Organizational, Direct Support, and General Support
Maintenance Manual
(Including Repair Parts List)

RECORDER-REPRODUCER SET, SOUND

AN/UNH-17A

(NSN 5835-01-023-4332)

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1. The portion of text affected by the changes is indicated by a vertical line in the outer margins of the page. New illustrations are indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by a miniature pointing hand. Changes to schematics are indicated by shaded areas.
2. Remove old pages and insert new pages as follows:

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Cover	Cover
Title and A	a and b
B/(C blank)	Title and A
i and ii	B/(C blank)
iii and iv	i and ii
1-0	iii and iv
1-1 thru 1-6	1-0
2-1 and 2-2	1-1 thru 1-6
4-1 and 4-2	2-1 and 2-2
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6-1 and 6-2	5-1 and 5-2
6-5 and 6-6	6-1 and 6-2
7-1 thru 7-4	6-5 and 6-6
7-11/(7-12 blank)	7-1 thru 7-4
8-1 and 8-2	7-11/(7-12 blank)
8-15/(8-16 blank)	8-1 and 8-2
8-23 thru 8-26	8-15/(8-16 blank)
8-29/(8-30 blank)	8-23 thru 8-26
A-1/(A-2 blank)	8-29/(8-30 blank)
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	B-3 thru B-6

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C-37 and C-38
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CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R.L. DILWORTH
Brigadier General, United States Army
The Adjutant General

CHANGE }
No. 1 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 20 September 1979

**Operator's, Organizational, Direct Support, and General Support Maintenance Manual
(Including Repair Parts List)**

**RECORDER-REPRODUCER SET, SOUND
AN/UNH-17A
(NSN 5835-01-023-4332)**

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By Order of the Secretary of the Army:

Official:

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*Major General, United States Army
The Adjutant General*

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WARNING

SHOCK HAZARD

This equipment contains dangerous voltages which can cause injury or death by severe electrical shock. Be extremely careful when making voltage measurements or other checks with the equipment connected to the power source during troubleshooting. Always disconnect the power source before making any continuity tests.

RECORD OF CHANGES

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TECHNICAL MANUAL

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WASHINGTON, DC, 20 December 1976

**OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT
AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS LIST)**

**SOUND RECORDER-REPRODUCER SET AN/UNH-17A
NSN 5835-01-023-4332**

REPORTING OF ERRORS

You can improve this manual by recommending improvements using DA Form 2028 (Recommended Changes to Publications and Blank Forms) or D4 Form 2028-2 located in the back of this manual and mail the form direct to Commander, US Army Electronics Materiel Readiness Activity, ATTN: SELEM-MR-E-P, Vint Hill Farms Station, Warrenton, VA 22186-5141. A reply will be furnished direct to you.

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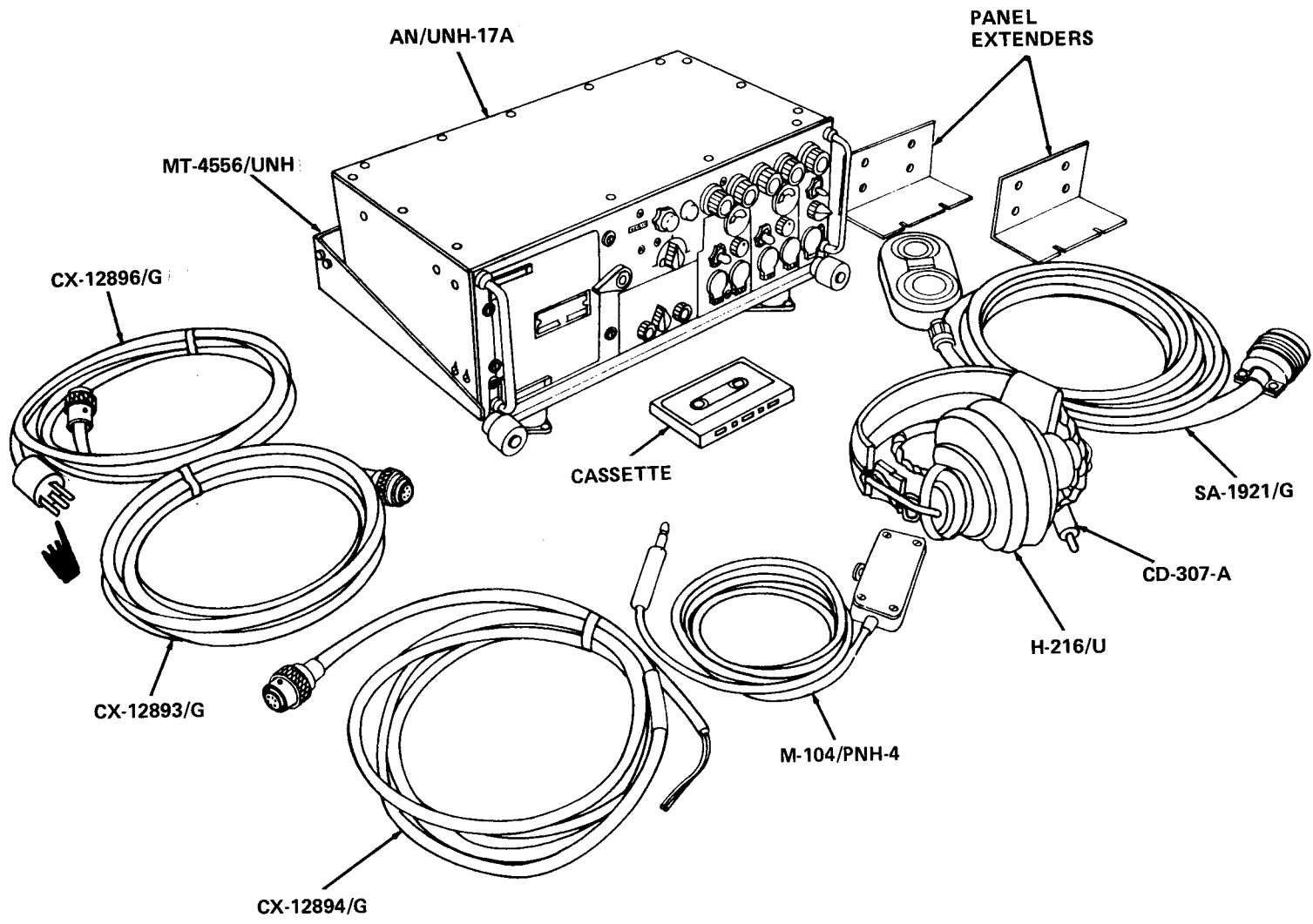


Figure 1-1. Sound Recorder-Reproducer Set AN/UNH-17A

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual provides operational, organizational, direct support and general support maintenance information and procedures for Recorder/Reproducer Set, Sound AN/UNH-17A.

- a. Appendix A. Contains reference publications.
- b. Appendix B. Contains the maintenance allocation and repair operations to be performed at the appropriate maintenance categories.
- c. Appendix C. Contains a Basic Issue Item List, Repair Parts and Special Tools List.

1-2. Maintenance, Forms and Records.

- a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions given in DA PAM 738-750.
- 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.

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.

1-3. Destruction of Army Material to Prevent Enemy Use.

Refer to TM 750-244-2 for destruction of Army Material to prevent enemy use.

1-4. Reporting of Errors.

Deleted.

1-5. Administrative Storage.

Deleted.

Section II. DESCRIPTION AND DATA

1-6. Purpose and Use.

a. Purpose. Recorder/Reproducer Set, Sound AN/UNH-17A is a magnetic tape recorder/reproducer (See Fig. 1-1.) designed to record and play back audio frequencies from 200 Hz to 4 KHz at 15/16 IPS and 200 Hz to 8 KHz at 1-7/8 IPS. Signal data source may be operator cements from a microphone or signals from a radio receiver. The signal may be monitored on headphones or external equipment.

b. Intended Use. The equipment is intended for two general types of installation. First, the equipment may be secured to a vehicle or aircraft by means of a mounting base and powered by the vehicle/aircraft battery (22-30 VDC.) Second, the equipment may be operated in any suitable shelter (rack panel extenders are provided) and powered by a 115/230 VAC, 50 to 400 Hz power source. The recorder has two 600 ohm input jacks for radio receiver signals, two 250 ohm input jacks for microphone signals, and one 600 ohm output jack for signal monitoring.

1-7. Description.

a. System Components. The AN/UNH-17A includes the items shown in Figure 1-1. and listed in Table 1-1. The basic recorder/reproducer consists of the transport, self contained electronics and power supply, with a common case.

b. Installation Configuration. The AN/UNH-17A is intended for two general types of installation.

(1) Secured to a vehicle or aircraft by means of a MT-4556/UNH mounting base (Figure 1-1.) and powered by the vehicle/aircraft battery.

(2) Secured to a standard 19" equipment rack (panel extenders are provided) (Figure 1-2.) and powered by the self contained power supply.

c. Description of Tape Transport. The tape transport is a two channel, four-track unit which operates at speeds of 15/16 and 1-7/8 IPS to record/reproduce a signal bandwidth of 200 Hz to 4 KHz and 200 Hz to 8 KHz respectively. The unit is cartridge loaded, utilizing 300 feet of 0.150 inch wide magnetic tape for recording a signal input through a microphone, or through a radio receiver interconnect, and reproducing this signal for monitoring purposes. The unit records on one-half of the tape width for a complete passage of tape at which time the cartridge is turned over and the process repeated for a total recording time in excess of two hours at 15/16 IPS. The transport operates from the following power sources - 115/230 VAC $\pm 5\%$, 50 to 400 Hz $\pm 10\%$ or 22 to 30 VDC battery power. Four jacks (two per channel) on the control panel provide input connections for recording signals from a receiver and/or microphone. One jack (for both channels) permits connecting headphones for monitoring the input radio signals or the channel outputs when recorded data is played back. A connector on the rear of the unit permits remote operation or foot-switch playback-neutral fast reverse-neutral modes of operation. An audio connector on the rear of the unit provides input/output signal connectors duplicating those on the front panel.

1-8. Tabulated Data.

a. Performance Data. Refer to Table 1-2. for the technical performance characteristics.

b. Items Comprising an Operable Equipment. Refer to Table 1-1. for listing of ancillary items.

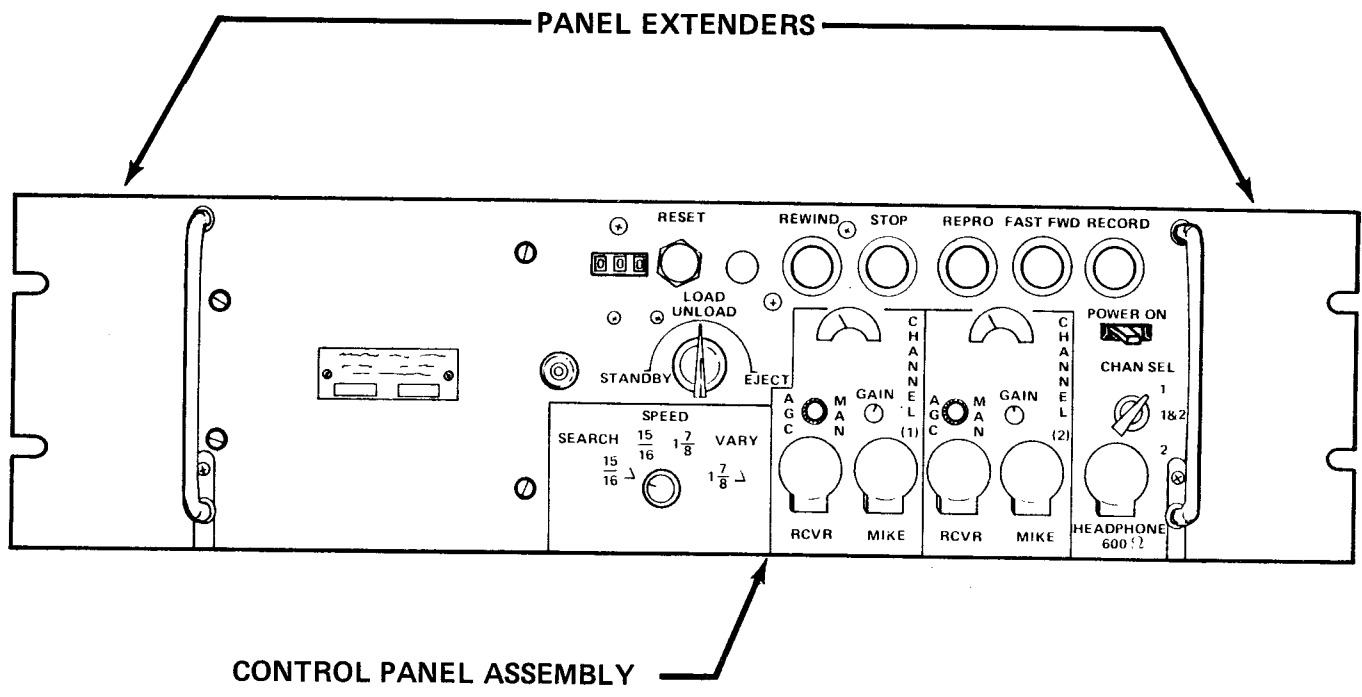


FIGURE 1-2
(CONTROL PANEL WITH EXTENDERS)

TABLE 1-1. ITEMS COMPRISING AN OPERABLE EQUIPMENT.

TM32-5835-005-14&P

FSN	ITEM	PART NUMBER	QTY	MILITARY TYPE DESIGNATIONS	HGT. (IN.)	DP. (IN.)	WD. (IN.)	WT. (LB.)
5835-01-023-4332	RECORDER/REPRODUCER SET, SOUND	0421-1-4207	1	AN/UNH-17A	5	10-5/16	14-1/4	16.5
5965-00-892-3353	HEADSET		1	H-216/U				
	MOUNTING BASE, ELECTRICAL EQUIPMENT	0421-1-4225	1	MT-4556/UNH	3-3/4	11-1/4	15-5/8	5.5
5995-00-251-9593	POWER INPUT CABLE 115 VAC	0149-1-2090	1	CX-12896/G				
5995-00-097-8488	POWER INPUT CABLE 230 VAC	0149-1-2092	1	CX-12893/G				
5995-00-097-8489	POWER INPUT CABLE 22 - 30 VDC	0149-1-2093	1	CX-12894/G				
	PANEL, EXTENDERS W/MOUNTING HARDWARE	0421-1-3218	2		5	2-3/8	2-3/8	0.5
5835-00-163-1118	FOOTSWITCH ASSEMBLY	0421-1-4010	1	SA-1921/G				
5835-01-147-5062	TAPE CARTRIDGE	AUX-60	1					
5965-00-560-1760	MICROPHONE			M-104/PNH-4				
5995-00-636-5898	CORD ASSEMBLY			CD-307-A				

Table 1-2. Performance Data

SPECIFICATIONS		REQUIREMENTS
Input Power		115/230 VAC $\pm 5\%$, 50-400 HZ $\pm 10\%$ or 22 to 30 VDC from nominal 24 VDC vehicular or 28 VDC aircraft sources.
Connectors		Reference No.
Power	J8	MS3112E10-6P
Receiver	J3 & J5	M641-6-1
Microphone	J2 & J4	M641-5-1
Head Phone	J1	M641-6-1
Audio	J7	M81511
FootSwitch	J6	67-02E22-67S
Tape Speed		15/16 IPS and 1-7/8 IPS $\pm 2\%$ (with provision for adjusting $\pm 30\%$ from the basic speeds).
Speed Drift		$\pm 0.5\%$
Recording Time		1hr. (One direction) at 15/16 IPS, 1/2 hr. (one direction) at 1-7/8 IPS.
Wow and Flutter		1.5% rms. max. (0.1 to 250 Hz bandwidth).
Tape		TDK SA-60 or equivalent.
Controls		All operating controls and indicators are panel mounted.
Record Bias Frequency		50 KHz (Approx.)

Table 1-2. Performance Data - Continued

SPECIFICATIONS	REQUIREMENTS
Record Input Impedance RCVR Jack MI KE Jack	600 ohms 250 ohms
Signal Input Level	1.0 to 40 milliwatts, adjustable for normal record level.
Magnetic Heads	2-Channel, 4 track Record/Reproduce two-track erase.
Normal Record Level	3% third harmonic distortion of reproduced signal
Reproduce Output Impedance	Designed to drive a 600-ohm headphone.
Reproduce Output Level (At normal record level)	20 milliwatts minimum (into standard 600-ohm headphone).
Record/Reproduce Frequency Response	200 Hz to 8 KHz ± 3 dB at 1-7/8 IPS 200 Hz to 4 KHz ± 3 dB at 15/16 IPS.
Signal to Noise Ratio Peak Signal + Peak Noise to Peak Noise	35 dB at 400 Hz with distortion not to exceed 10%
Crosstalk	Minus 40 dB between tracks at any frequency 200 Hz to 8 KHz.

CHAPTER 2

SERVICE UPON RECEIPT AND INSTALLATION

Section I. SYSTEMS PLANNING

2-1. Application.

The application of Recorder/Reproducer Set. Sound AN/UNH-17A is not within complex equipment systems or equipment within system.

2-2. Procedures.

Procedures are limited and can be carried out by operator/crew. Refer to Section IV Installation Instructions.

Section II. SITE AND SHELTER REQUIREMENTS

2-3. Siting.

The AN/UNH-17A is designed for use with an external power source of 115 or 230 VAC or 22 to 30 VDC. The recorder may be used at any site to which it can be transported. However, its use for recording data from a radio receiver is limited by the normal restrictions for the receiver.

2-4. Shelter Requirements.

The AN/UNH-17A is designed for use in two distinct applications.

a. Vehicular/Aircraft. Refer to para. 1. 6b.

b. Sheltered. The equipment can be housed in a permanent or semi permanent shelter during use. Panel extenders are provided for rack mounting.

Section III. SERVICE UPON RECEIPT OF MATERIAL

2-5. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6, refer to paragraph 1-2b.

b. Discrepancies. Check the equipment against the component listing and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with instructions given in paragraph 1-2c. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Modification. Check to see whether the equipment has been modified. (Equipment which has been modified will have the MWO number on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWOs have been applied. (Current MWO applicable to the equipment are listed in DA PAM 1750-10.)

Section IV. INSTALLATION INSTRUCTIONS

2-6. Configuration.

As noted in the siting instructions, paragraph 2-3, the recorder may be used in either of two modes. Except for the difference in use of a shock mount or rack panel extenders, the operating procedure is the same in any case. Using applicable portions of the installation instructions, prepare the recorder for either vehicle/aircraft or rack mounted operation. Connect the proper input signal source, the headphone, and the microphone.

2-7. Installation Instructions.

a. Vehicle/Aircraft Mounting. To permit operation of the unit in a vehicle or aircraft, a mounting base is provided to support the recorder. Install the recorder as follows:

(1) Slide unit into shock mount (refer to Figure 2-1,) and position so that the two (2) pins on rear of the shock mount fit into the two (2) matching holes on the rear of the unit.

NOTE

Prior to fastening unit to mount, be certain that connector cap chains on the rear of the unit are clear of mount.

(2) Engage lower flange of the recorder front panel with mount clamp and secure with knurled clamp fasteners.

NOTE

Installation of the vibration isolator (vehicular/aircraft mount) is beyond the scope of this manual. Refer to figure 2-2 for configuration and mounting dimensions.

b. Rack Mounted Operating Configuration. For ac or dc operation the recorder may be rack mounted (using panel extenders/hardware provided) and connected either to a 115 or 230 VAC or 22-30 VDC power source using power cable. Refer to figure 2-2 for configuration and mounting dimensions.

c. Signal Connections. Five jacks are provided (see Figure 3-1. on the front of the recorder.) To connect headphones, microphones and radio receiver cables, lift jack cover and insert applicable plug into proper jack by pushing straight in until firmly seated. The AUDIO and FOOTSWITCH connectors on the rear of the unit may also be used. Refer to Figure 3-2.

2-8. External Connections.

Power Input Connections. Connectors on all three power cables are polarized so that power supply ends of cables will mate with power input connector A4J1 in only one position. The connector for the power source end of the 230 VAC and 28 VDC is selected (and installed) by the user to mate with the applicable power source. Connect cables to the unit as follows:

a. Select the proper power cables to use with the available power.

b. Connect the appropriate power cable to POWER input connector A4J1 by rotating cable connector until it partially seats inside the power input connector. Turn the knurled ring on cable connector until connectors are drawn together and seat securely.

c. Connect opposite end of applicable power cable to appropriate power source.

Section V. PRELIMINARY ADJUSTMENT OF EQUIPMENT

2-9. Pre-Operational Checks.

Preliminary Checks. Make the following preliminary checks of the recorder before operating.

a. Check power and signal cable connections to make sure they are correct and secure.

b. Check that power is available to drive the recorder by throwing POWER toggle switch to the ON position. The power LAMP will glow indicating presence of power.

2-10. Operational Checks.

Perform operational testing in accordance with Chapter 3 Operating Instructions, paragraphs 3-3 through 3-9.

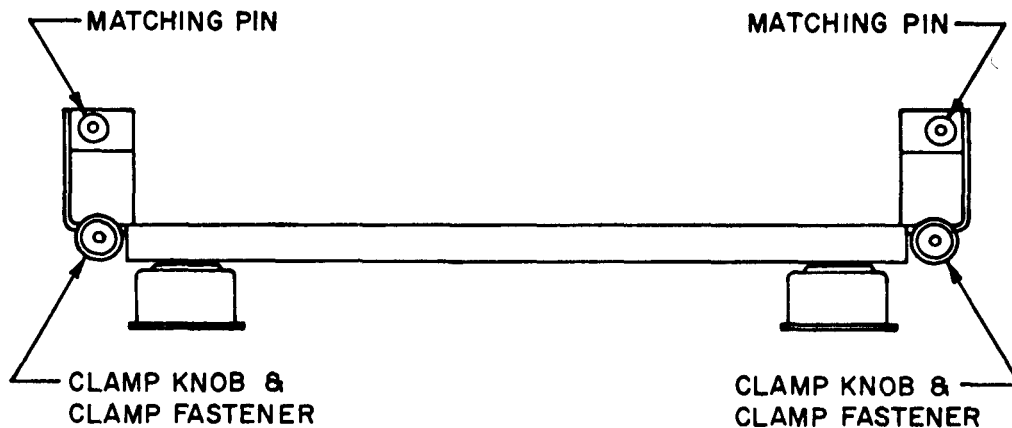


FIGURE 2-1
UNIT MOUNTING

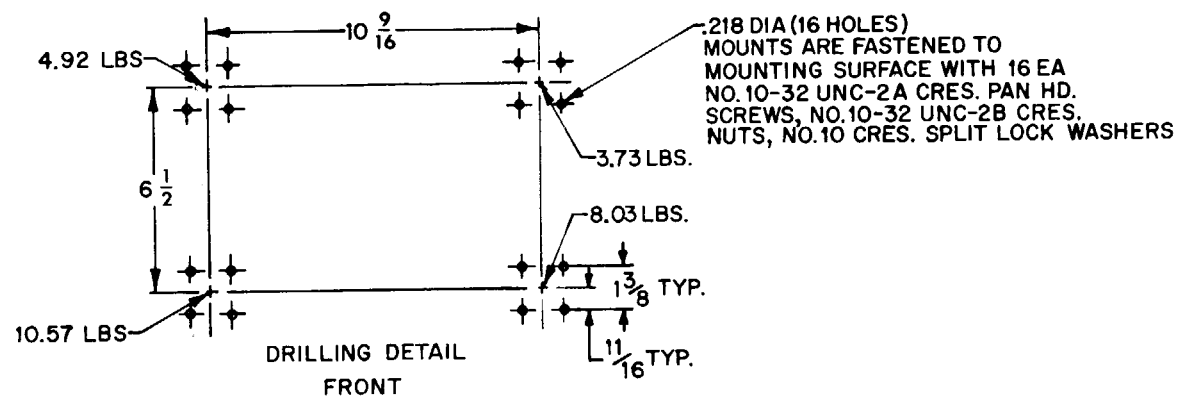
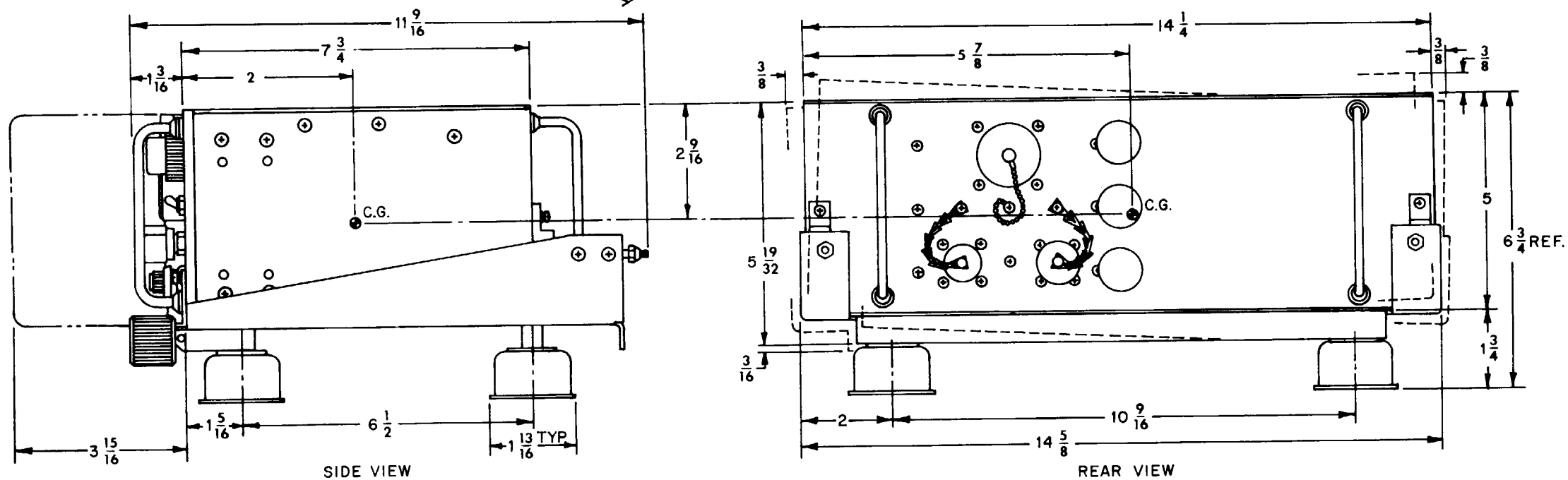
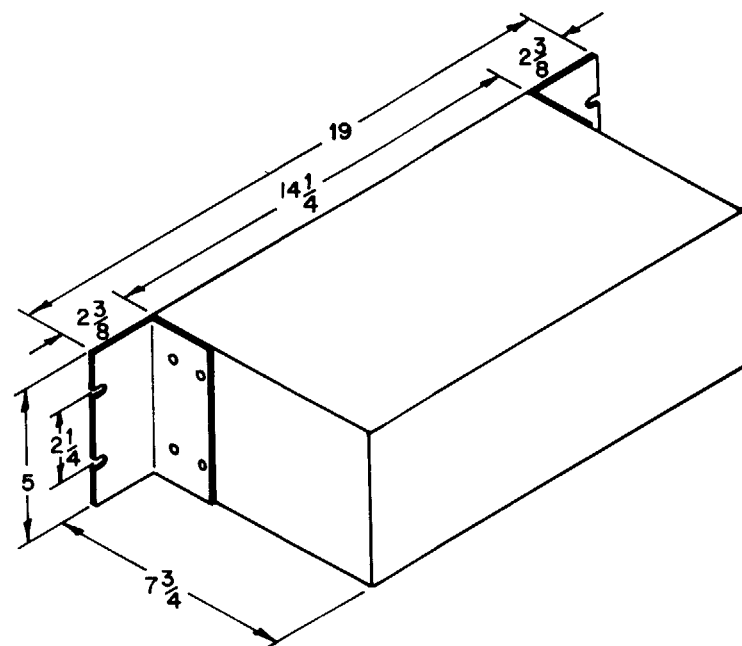


FIGURE 2-2
(INSTALLATION CONFIGURATION)

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATORS CONTROL AND INSTRUMENTS

3-1. Damage From Improper Settings.

a. POWER toggle switch must be in the off position (down) when unit is not in operation, and before making power connections.

b. SEARCH knob is used only in FAST FWD and REWIND modes of operation. For normal FAST FWD and REWIND operation, the SEARCH knob should be fully clockwise. (refer to Figure 3-1.)

c. Be sure cassette door is open before ejecting tape.

3-2. Operator/crew controls.

Operating controls, connectors and indicators are listed in Table 3-1., and illustrated in Figure 3-1.

Section II. OPERATION UNDER USUAL CONDITIONS

3-3. Operating Procedure Mobile/Fixed.

The following section provides a detailed step-by-step procedure for operating the AN/UNH-17A. Refer to Figures 3-1. and 3-2. for location of referenced controls. Instructions apply to either mobile or fixed operation.

(4) Insert new cassette rear first and full reel down. Unit will not operate without a cassette. Operating without a cassette in the Record or Reproduce mode will result in unit stopping. Do not use prerecorded test tapes except as specified for maintenance testing.

3-4. Preliminary Starting Procedure.

Perform the following preliminary starting procedures prior to operating the equipment.

(1) Turn latch on cassette door and open.

(2) If a cassette is in the magazine, turn function switch to EJECT and release switch.

(3) If no cassette is in the magazine, turn function switch directly to LOAD/UNLOAD.

(5) Close cassette door and secure latch.

(6) Turn function switch to STANDBY.

(7) Check that receiver and microphone connection are correct.

(8) Set tape counter to 000 by pressing RESET.

(9) Flip POWER ON switch up.

Table 3-1. Controls, Connectors and Indicators

Note: This table covers only items used by the operator; items used by higher level maintenance personnel are covered in instructions for the appropriate maintenance level.

CONTROL, INDICATOR OR CONNECTOR FIGURES 3-1, 3-2	FUNCTION
COUNTER	A 3-digit (999) counter is belt driven from the take-up reel drive. Counter permits the operator to index a specific point on the tape, record some data, rewind tape to the index point, and reproduce the data.
EJECT	A mechanical device which disengages the tape cartridge from the transport drive for easy removal. CASSETTE DOOR must be open.
RESET	Push button control which resets tape index counter to 000 when pressed.
SPEED VARY	Permits speed adjustment up to $\pm 30\%$ of base speeds.
REWIND	To select the fast reverse (rewind) mode, depress the REWIND push button.
STOP	To stop tape motion, depress the STOP button.
REPRO	To reproduce recorded signals, depress the REPRO push button. SPEED CONTROL must be at either 15/16 or 1-7/8 position corresponding to the speed at which the signals were originally recorded. AGC MANUAL (either channel 1 or 2) switch in MANUAL position, adjust GAIN (either channel 1 or 2) to desired listening level.
FAST FWD	To activate the fast forward mode of operation, press FAST FWD (fast forward wind) push button. The tape will move in forward direction, the speed of which can be controlled by rotating SEARCH knob i.e. increasing in clockwise direction and decreasing in counter-clockwise direction.

Table 3-1. Controls, Connectors and Indicators (Cont)

CONTROL, INDICATOR OR CONNECTOR FIGURES 3-1, 3-2	FUNCTION
RECORD	To select the Record mode, Press the (RECORD) push button. Select the proper speed of 15/16 or 1-7/8 for recording. Check VU meter. The VU meter should deflect to the center of the red area, with AGC/MAN (either channel 1 or 2) toggle switch in AGC position. If meter does not deflect to the center of the red area, flip toggle switch to MAN (either channel 1 or 2) position and adjust GAIN (either channel 1 or 2) control potentiometer until VU meter deflects to the center of the red area.
POWER LAMP	Indicates presence of power (ac or dc). The lamp will glow when power toggle switch is in POWER ON position.
POWER ON	To switch on ac or dc power to the unit, flip toggle switch to POWER ON position.
CHAN SEL.	A three position rotary switch for monitoring (with headphones) of desired Channels during record or reproduce mode.
CHANNEL 1 VU METER	Color coded meter provided to check data signal level, red scale indicates proper record signal level.
CHANNEL 2 VU METER	Color coded meter provided to check data signal level, red scale indicates proper record signal level.
AGC/MAN CONTROL CHAN 1 AND CHAN 2	Toggle switches which permit selection of automatic control of the record/reproduce amplifiers gain (AGC) to provide a constant output with a varying input, or manual (MAN) control of the signal level by use of GAIN potentiometers which permit adjusting the record/reproduce amplifier output signal levels when AGC/MAN switches are in a MAN (manual) position.

Table 3-1. Controls, Connectors and Indicators

CONTROL, INDICATOR OR CONNECTOR FIGURES 3-1, 3-2	FUNCTION
GAIN CONTROLS CHAN 1 AND CHAN 2	Potentiometers which permit adjusting the record/reproduce amplifier output signal levels when AGC/MAN switches are in MAN position.
INPUT CONNECTORS, RCVR CHAN 1 AND CHAN 2	Input connector on front panel for inter-connecting radio receiver signal cable
INPUT CONNECTORS, MIKE CHAN 1 AND CHAN 2	Input connector on front panel for inter-connecting microphone signal cable.
HEAD PHONE	Output connector for monitor headphone permits monitoring signals during recording or reproduction. During recording, the data signals from receiver are audible in the headphone; during reproduction only previously recorded receiver and microphone (voice) signals are audible in the headphone.
SPEED CONTROL	To select proper tape-speed for recording and reproduction, rotate SPEED CONTROL KNOB to either 15/16 or 1-7/8 position. In these positions, the speed is constant within a ±2% variation. If the SPEED CONTROL KNOB is placed in the variable 15/16 or 1-7/8 it permits speed adjustment up to ±30% of the base speeds by rotating SPEED VARY knob in clockwise or counter-clockwise direction. The speed vary control is inoperative in record mode.
SEARCH	Permits controlling tape speed during FAST FWD (Fast Forward Wind) or REWIND (Rewind) modes of operation. Tape speed can be increased by rotating SEARCH knob in clockwise direction.

Table 3-1. Controls, Connectors and Indicators

CONTROL, INDICATOR OR CONNECTOR FIGURES 3-1, 3-2	FUNCTION
CASSETTE-MODE KNOB	Facility for loading, unloading or ejecting a cassette in the magazine. To unload a cassette from the magazine, first turn latch on cassette door and open. Turn cassette mode knob to EJECT position and eject cartridge. Insert new cassette, close the cassette door and secure the latch. Rotate the cassette mode knob to STANDBY position. The unit is ready for recording/reproducing.
LATCH	Latches/Unlatches the cassette door.
CASSETTE DOOR	Loading/Unloading door.
POWER (rear of unit)	Power/Input connector.
AUDIO (rear of unit)	Input/Output signal connector on rear of unit.
FOOTSWITCH (rear of unit)	Provision for connection of a footswitch (supplied) to provide remote modes playback-neutral or connection of a remote control box (not supplied) permitting remote activation of all function controls.
CIRCUIT BREAKERS	Circuit protection 115 VAC, 230 VAC and 28 VDC.

3-5. Record Mode of Operation.

- a. Record a signal from the receiver (or other signal source) by pressing the RECORD pushbutton - holding in the depressed position and then pressing the REPRO push button.
- b. The CHAN SEL switch must be rotated to the 1 or 2 position corresponding to the channel to which the receiver signal is connected. This switch is for monitoring only.
- c. Throw either AGC - MAN 1 or 2 switch to AGC position depending upon channel in use. Operation in the MAN position with GAIN turned up will cause distortion.
- d. For recording, select a tape speed of either 15/16 or 1-7/8 IPS by rotating SPEED CONTROL to appropriate position.
- e. Check VU METER 1 or 2 (depending upon channel in use) deflection should be in the red portion of the scale.
- f. If VU METER does not deflect to the Red portion of the scale (insufficient signal) throw either AGC - MAN 1 or 2 to MAN position depending upon channel in use.
- g. Adjust either GAIN 1 or 2 (depending upon channel in use) until VU METER deflects to the Red portion of the scale.
- h. If the receiver(s) and/or other signal sources are connected to both channels it is possible to record signals simultaneously.
- i. CHAN SEL switch must be placed in 1 and 2 position. To monitor both signals being recorded.
- j. Monitor both VU meters when establishing proper record level.
- k. Check for receiver signals in the headphones.

1. Activate microphone (either channel 1 or 2) and record voice over receiver signals.

- m. Press STOP pushbutton to stop recording.

3-6. Rewind Mode of Operation.

- a. To move tape rapidly in a reverse direction, press REWIND pushbutton. Be sure SEARCH knob is fully clockwise.
- b. The rewind speed can be varied (decreased) by rotating SEARCH knob in a counterclockwise or increased in a clockwise direction which permits rapid location of signals present on tape.
- c. To stop tape motion when desired portion of tape has been reached, press the STOP pushbutton.

3-7. Reproduce Mode of Operation.

- a. Select speed (15/16 or 1-7/8 IPS) at which the signals were recorded by rotating SPEED CONTROL to appropriate position.
- b. Headphone selector in Channel 1 and 2.
- c. Press REPRO pushbutton.
- d. Place AGC-MAN 1 or 2 switch to MAN position depending upon channel in use.
- e. Adjust GAIN 1 or 2 (depending upon channel in use) to a satisfactory listening level.
- f. If two (2) signals were recorded simultaneously (receiver and microphone) both signals will be audible in the headphones.

NOTE

During reproduction only, the base speeds can be varied $\pm 30\%$ of either $15/16$ or $1-7/8$ IPS by placing the SPEED CONTROL knob **in $\Delta 15/16$ or $\Delta 1-7/8$** and rotating SPEED VARY knob counter-clockwise for reduced speed, or clockwise for increased speed. During record or stop data signals from receiver will be audible in the headphones; during reproduction both receiver and microphone signals will not be in the headphones.

3-8. Fast Forward Mode of Operation.

a. To move tape rapidly in a fast forward direction, press FAST FWD pushbutton.

b. The fast forward speed can be varied (increased or decreased) by rotating SEARCH knob in either a clockwise (increase) direction, or counter-clockwise (decrease) direction, which permits rapid location of signals present on tape.

c. To stop tape motion when desired portion of tape has been reached, press the STOP pushbutton.

3-9. Remote Mode of Operation.

a. FootSwitch. The AN/UNH-17 can be remote operated by a footswitch (supplied) or a pushbutton control (not supplied) box. A cable with foot switch connected to the REMOTE connector on the rear of the unit permits three (3) remote (Repro-Neutral, Fast Reverse-Neutral) modes of operation.

b. Control Box. Provision has been made (refer to figure 3-2) for connection of a remote (not supplied) control box. Connection of a remote control box would permit remote activation of all function controls.

3-10. End of Tape Sensor

a. End of Tape Sensor. At the end of the tape, the end of tape sensor will cause the unit to automatically go to stop.

b. Unit will not operate without a cassette. Operating without a cassette in the Record or Reproduce mode will result in unit stopping.

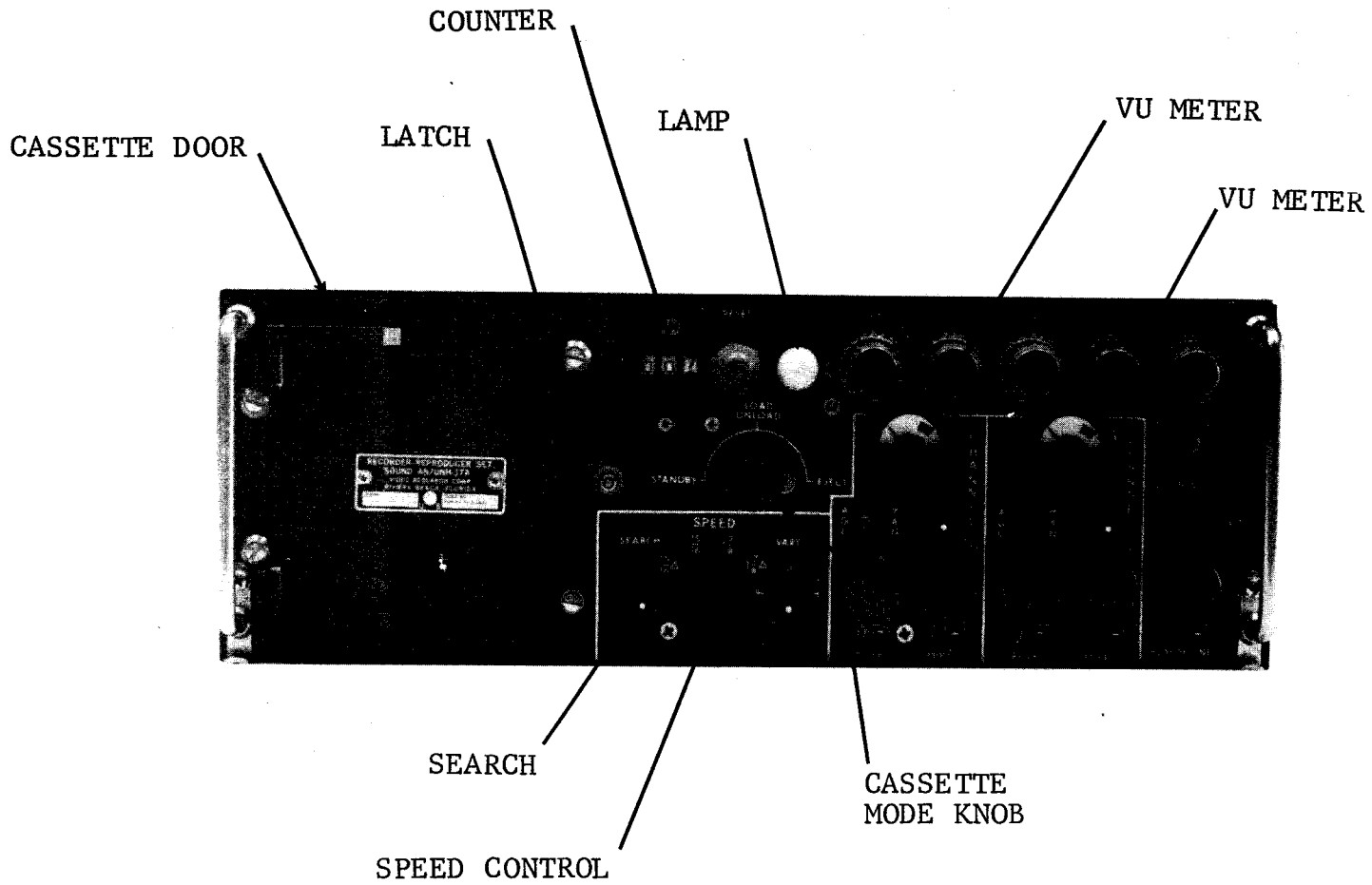
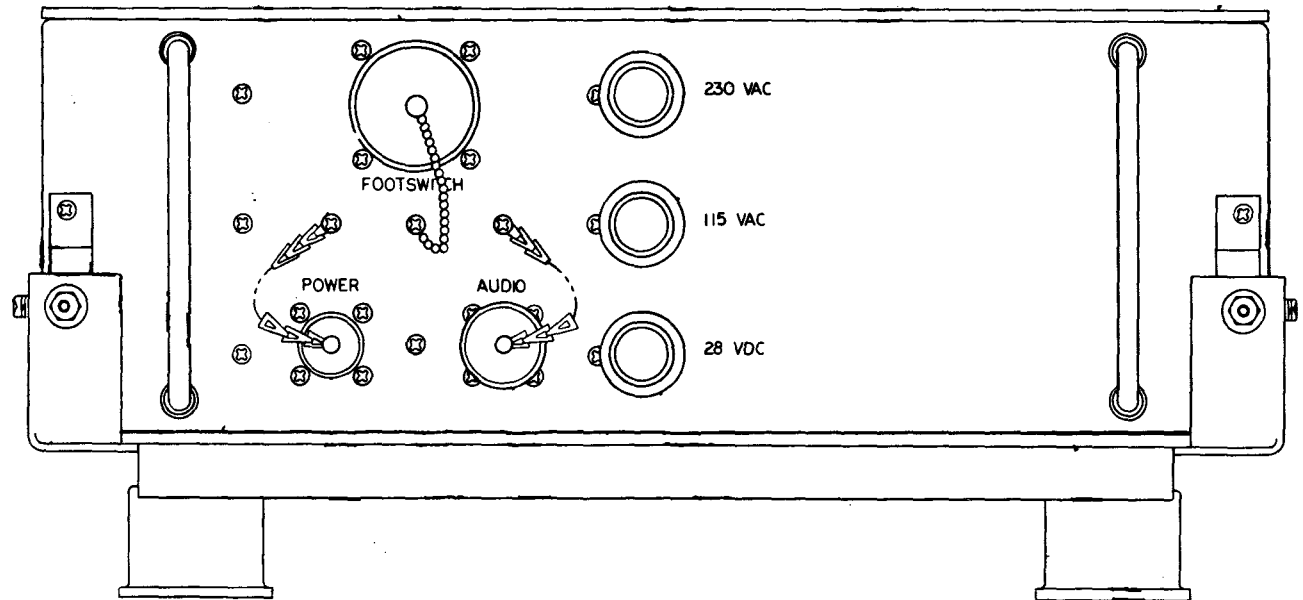


FIGURE 3-1
CONTROLS, CONNECTORS AND INDICATORS



**FIGURE 3-2
CONNECTORS - REAR VIEW**

CHAPTER 4

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

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

(a) Cleaning compound (National stock No. 7930-00-395-9542).

Repair parts, tools, test equipment, and accessories issued with or authorized for use by the operator for the Recorder/Reproducer Set, Sound AN/UNH-17A are listed in the Maintenance Allocation Chart, appendix B of this manual. Materials required for maintenance are listed below.

(b) Cloth, textile, cheesecloth (National stock No. 8305-00-267-3015).

(c) Xylene (Federal Specification-TT-X-916B).

Section II. LUBRICATION INSTRUCTIONS

4-2. Lubrication.

No lubrication is required, all rotating parts use sealed bearings.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-3. General.

(1) Daily preventive maintenance checks and services. Table 4-1.

To insure that the Recorder/Reproducer, Set Sound AN/UNH-17A, 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.

(2) Weekly preventive maintenance checks and services. Table 4-2.

(3) Cleaning. Paragraph 4-6.

(4) Troubleshooting. Paragraph 4-7.

4-4. Scope of Operator's Maintenance.

The maintenance duties assigned to the operator of the AN/UNH-17A are listed below together with a reference to the paragraphs covering the specific maintenance functions. These duties assigned do not require special tools or test equipment.

4-5. Operator's Preventive Maintenance.

Operator's preventive maintenance is the systematic care, servicing, and inspection of the AN/UNH-17A to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in Tables 4-1. and 4-2. cover routine systematic care and cleaning essential to proper upkeep of the recorder/reproducer.

b. Preventive Maintenance - Checks and Services. The checks and services Tables 4-1. and 4-2. outline functions to be performed daily and weekly. These checks and services are necessary to maintain the AN/UNH-17A in a serviceable condition; that is, in good general (physical) condition and in good operating condition. The chart indicates what to check, how to check, and the normal conditions. The Reference column lists the illustrations, paragraphs, or manuals that contain detailed maintenance procedures. If the defect cannot be remedied by the operator, higher category of maintenance is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in DA PAM 738-750. If the equipment is in a standby status, the preventive maintenance checks and services listed in Table 4-1. must be performed weekly.

4-6. Cleaning.

Exterior Surfaces. Inspect the exterior surfaces of the recorder. The surface should be free of dust, dirt, grease and fungus.

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

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT USE NEAR AN OPEN FLAME. Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas.

b. Remove grease, fungus, and ground in dirt from the outer case; use a cloth dampened (not wet) with cleaning compound.

c. Remove dust or dirt from connector sockets with a brush.

CAUTION

Do not press on meter or counter faces when cleaning. The faces are easily damaged.

d. Clean the front panel, meter and counter faces and control knobs, using a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water. Mild soap may be used for more effective cleaning.

e. Clean the magnetic head using a lint free cotton swab moistened (not saturated) with Xylene (FED-SPEC TT-X-916B). Clean the face of magnetic heads by wiping in the horizontal direction along the head gap. At the time the heads are cleaned, it is recommended that capstan shafts and tape guiding elements also be inspected and cleaned as necessary, using the same method.

Table 4-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NUMBER	INTERVAL						B-BEFORE OPERATION D-DURING OPERATION M-MONTHLY	A-AFTER OPERATION W-WEEKLY Q-QUARTERLY	ITEM TO BE INSPECTED	PROCEDURE	REF.
	OPERATOR			ORG.							
	DAILY			W	M	Q					
	B	D	A								
1.	X.							External connectors	Check for dust and corrosion. Check for tightness.		
2.	X.							Outer case and front panel.	Wipe clean with soft, dry cloth. Visually inspect case and front panel (including attached connectors and controls) for evidence of moisture, dust, sand and corrosion.	Para. 4-6. a-d	
3.	X.							Magnetic Heads.	Clean.	Para. 4-6. e	
4.	X.								Demagnetize	Para. 5-11.	

Table 4-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NUMBER	INTERVAL						B-BEFORE OPERATION D-DURING OPERATION M-MONTHLY	A-AFTER OPERATION W-WEEKLY Q-QUARTERLY	REF.
	OPERATOR			ORG.			ITEM TO BE INSPECTED	PROCEDURE	
	DAILY			W	M	Q			
	B	D	A						
1.				X.			Mounting (if vehicle/ aircraft mounted).	Tighten loose bolts, screws, or nuts on recorder and vehicular/ aircraft mount.	Figure 2-1.
2.				X.			Recorder operation.	Check recorder for proper operation.	Chapter 3 Section 11
3.				X.			Microphone, headphones and cables.	Clean microphone headphone with soft brush. Wipe cables. Inspect for dirt in connectors.	
4.				X.			Cables.	Inspect for loose connections or damaged cable. Repair or replace as required.	

Section IV. TROUBLESHOOTING

4-7. General Troubleshooting Information.

Troubleshooting this equipment is based upon the operation checks contained in the daily preventive maintenance checks and services chart (paragraph 4-5.). Proceed through each item until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the trouble and turn to the corresponding trouble in Table 4-3. troubleshooting chart. If the corrective measures indicated do not result in correction of the trouble, or if the corresponding number does not appear in the troubleshooting chart, higher category of maintenance is required.

4-8. Authorized Operator/Crew Maintenance.

Repair and replacement at the operator level of maintenance is limited to preventive maintenance, paragraph 4-5. Any trouble that is beyond the scope of the operator/crew will be referred to organizational maintenance.

Table 4-3. TROUBLESHOOTING CHART

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
1. Low output.	Dirty heads.	Clean - Para. 4-6. e
2. No power.	Circuit Breaker.	Reset by pressing.
3. Voice signal muffled.	Warped/Damaged Cassette	Replace.
4. Indicator does not light.	Defective bulb.	Replace.
5. Recorder does not function properly	Beyond scope of operator.	Request organizational maintenance.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

5-1. General.

Appendix C contains a list of Repair Parts and Special Tools for the equipment. Appendix B contains the maintenance allocation and repair operations to be performed at the appropriate maintenance categories.

The maintenance duties assigned to the organizational repairman are listed below together with a reference to the paragraphs covering the specific maintenance functions. These procedures do not require special tools or test equipment and can be performed with the equipment in place. This may include isolation of malfunctions to assembly or sub-assembly level and replacement of pluck-out items.

- a. Retouching painted surfaces. (para. 5-3.)
- b. Monthly and quarterly preventive maintenance checks and services. (para. 5-5.)
- c. Organizational troubleshooting. (para. 5-8.)
- d. Maintenance of magnetic heads. (para. 5-9.)
- e. Drive belt cleaning. (para. 5-12.)
- f. Maintenance of circuit board edge connectors. (paras. 5-16 through 5-18.)

5-2. Maintenance Task Definitions.

Refer to Appendix B Maintenance Allocation Chart for both maintenance task definitions and assignment of maintenance performance levels.

Section II. REPAINTING AND REFINISHING INSTRUCTIONS

5-3. Touchup Painting Instructions.

CAUTION

The use of steel wool, although permitting rapid removal of rust, is not recommended. Minute particles of steel wool frequently enter the case and cause harmful internal electrical shorting or grounding of circuits.

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats semi-gloss (olive drab) No. 24087 per Fed-Std-595 of paint on the bare metal to protect it from further corrosion. Refer to applicable cleaning and refinishing practices specified in TM 746-10.

Section III. LUBRICATION INSTRUCTIONS

5-4. Lubrication.

No lubrication is required, all rotating parts use sealed bearings.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

5-5. General.

To insure that the Recorder/Reproducer Set, Sound AN/UNH-17A 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 5-1. and 5-2. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit will be noted for future correction to be made as soon as 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 as directed by DA PAM 738-750.

5-6. Perform the maintenance functions indicated in the preventive maintenance checks and services chart (Table 5-1.) once each month. A month is defined as approximately 30 calendar days of 8-hour-per day operation.

If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition requires monthly preventive maintenance checks and services. Equipment in limited storage (requires service before operation) does not require monthly preventive maintenance.

5-7. Quarterly Maintenance.

Perform all the checks and services listed in the quarterly preventive maintenance checks and services chart (Table 5-2) in sequence listed. Periodic weekly and monthly services constitute a part of the quarterly preventive maintenance checks and services and must be performed concurrently. All deficiencies or shortcomings will be recorded in accordance with the requirements of the using organization.

Section V. TROUBLESHOOTING

5-8. Organizational Maintenance Troubleshooting Chart.

a. General. The organizational maintenance troubleshooting chart, Table 5-3, is based on the operational checks listed in the monthly and quarterly preventive maintenance checks and services (para. 5-6. and 5-7.).

To troubleshoot the equipment, proceed until an abnormal condition or result is observed, perform the indicated checks and corrective measures. If the indicated corrective measures do not correct the trouble, higher category of maintenance is required.

b. Authorized Repair. Authorized repair and replacement at the organizational level of maintenance is limited to corrective measures indicated in paragraph 5-1. and Table 5-3.

TABLE 5-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NUMBER	INTERVAL						B-BEFORE OPERATION D-DURING OPERATION M-MONTHLY	A-AFTER OPERATION W-WEEKLY Q-QUARTERLY	ITEM TO BE INSPECTED	PROCEDURE	REF.
	OPERATOR			ORG.							
	DAILY			W	M	Q					
	B	D	A								
1.					X.			Circuit Breakers	See that circuit breakers are in good condition.		
2.					X.			Connectors	Check power cable connectors to be sure that they are undamaged and intact. Be sure that attached wires within cable connector are not broken, frayed or under undue strain. Repair or replace as required.		
3.				X.					Inspect and clean mylar belt and counter belt.	Para. 5-13.	
4.					X.				Inspect and clean circuit boards and connectors.		
5.					X.			Knobs and Switches	While making the operating checks (item 5) make sure that mechanical action of each knob and switch is smooth and does not bind internally or externally. Make sure knobs are tight on shafts.		

TABLE 5-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont.)

ITEM NUMBER	INTERVAL						B-BEFORE OPERATION D-DURING OPERATION M-MONTHLY	A-AFTER OPERATION W-WEEKLY Q-QUARTERLY	ITEM TO BE INSPECTED	PROCEDURE	REF.
	OPERATOR			ORG.							
	DAILY			W	M	Q					
	B	D	A								
6.					X.			Recorder/Reproducer	Check recorder for proper operation.	Para. 3-3.	
7.					X.				General inspection and cleaning.	Para. 5-10.	

TABLE 5-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

ITEM NUMBER	INTERVAL						B-BEFORE OPERATION D-DURING OPERATION M-MONTHLY	A-AFTER OPERATION W-WEEKLY Q-QUARTERLY	ITEM TO BE INSPECTED	PROCEDURE	REF.
	OPERATOR			ORG.							
	DAILY			W	M	Q					
	B	D	A								
1.						X.		Completeness	Check completeness of equipment.	Para. 1-6.	
2.						X.		Installation	See that recorder/reproducer is properly installed	Para. 2-7.	
3.						X.		Cleanliness	See that equipment is clean.	Para. 5-10.	
4.						X.		Connections	See that power cables and connectors are clean and intact.		
5.						X.		Operation	Check recorder/reproducer for proper operation.	Para. 3-3.	

Table 5-3. ORGANIZATIONAL TROUBLESHOOTING CHART

TROUBLE SYMPTOM	PROBABLE CAUSE	CHECKS AND CORRECTIVE MEASURES
1. Controls do not function as specified in table 3-1.	Faulty pushbutton.	Request higher level of maintenance.
2. Tape speed unstable.	a. Faulty capstan. b. Faulty servo circuit. c. Faulty capstan motor. d. Faulty drive belts. e. Dirty capstan drive belt or pinch rollers. f. Defective servo rotor control board.	Request higher level of maintenance. Request higher level of maintenance. Request higher level of maintenance. Request higher level of maintenance. Clean (para. 5-15.) Request higher level of maintenance.
3. Normal record level is not obtained in AGC mode.	AGC potentiometer out of adjustment.	Request higher level of maintenance.
4. Normal record level is not obtained in MAN or AGC mode.	a. Faulty meter. b. Faulty record/reproduce circuit board. Fig. 6-9, 7-1. c. Lack of power to record/reproduce circuit board.	Request higher level of maintenance. Request higher level of maintenance. Request higher level of maintenance.
5. Poor high frequency response (voice signal muffled).	a. Warped or otherwise damaged cassette. b. Dirty heads.	Replace tape cassette. Clean (para. 4-6).
6. Reproduce signal distorted with low output.	Defective record/reproduce amplifier.	Request higher level of maintenance.

TROUBLE SYMPTOM	PROBABLE CAUSE	CHECKS AND CORRECTIVE MEASURES
7. Distortion when reproducing signals immediately after recording on same unit.	Head magnetized.	Use a suitable head degausser to demagnetize head assembly. Para. 5-11.
8. Garbled reproduce signal when recording is made on previously used tape.	Failure to erase previously recorded signal.	Request higher level of maintenance.
9. Record level excessively high when recording with AGC accompanied by severe distortion.	AGC circuit out of adjustment.	Request higher level of maintenance.
10. Counter does not count.	a. Broken belt.	Install new belt.
	b. Faulty Counter.	Request higher level of maintenance.
11. Recorder does not operate in selected mode.		Request higher level of maintenance.

Section VI. ORGANIZATIONAL MAINTENANCE OF MAGNETIC HEADS

5-9. General.

It is normal for dust, dirt, and lint from the environment and dust oxide from the tape to gradually accumulate on the face of the record/reproduce and erase heads. This results in poor erasure, poor high frequency response, loss of volume, distortion, and intermittent or poor sound. As a precautionary measure, never subject the head to any strong magnetic field. If the head has been near a strong permanent magnet or electromagnetic field, it will have to be demagnetized.

5-10. Cleaning.

Refer to operator maintenance instructions para. 4-6e.

5-11. Demagnetization.

a. General. Occasionally the heads may become permanently magnetized through improper use of the equipment or by contact with magnetized objects. Magnetized heads may cause an increase in distortion and can impair good recordings by partially erasing high frequencies.

b. Procedure. The procedure for head demagnetization is as follows:

(1) Open cassette loading door, and rotate function switch to EJECT.

(2) Rotate function switch to STANDBY.

(3) Plug the demagnetizer (not supplied) into a 115-volt a-c source.

NOTE

If the tips of the demagnetizer are uncoated (plastic) place one layer of electrical friction tape on the demagnetizer tips. Scratching the heads will then be prevented.

(4) Bring the tips of the demagnetizer to within approximately 1/8 inch (if the demagnetizer tips are taped or covered, contact with the heads can be made) of the record head, straddle the head gap and draw the demagnetizer tips up and down the length of the record head three or four times.

(5) Remove the demagnetizer slowly from the record head to a distance of 3 or 4 feet, thus allowing its a-c field to diminish gradually. This slow removal is extremely important.

CAUTION

Do not unplug the demagnetizer while it is near the heads; the collapse of its magnetic field may re-magnetize the head.

(6) Repeat steps (4) and (5) at the erase head.

(7) If necessary, repeat the process till complete demagnetization is effected in each case.

NOTE

The erase head under certain conditions is susceptible to magnetization by spurious sources and can require demagnetization.

(8) If the capstan, tape guides, or other metal parts become magnetized, a few passes of the demagnetizer along their lengths and the slow withdrawing technique should be adequate.

Section VII. ORGANIZATIONAL MAINTENANCE OF THE CAPSTAN DRIVE BELT

5-12. General.

It is normal for dust, dirt, and lint from the environment to gradually accumulate on drive belt surfaces.

5-13. Cleaning.

After each forty (40) hours of operation, clean the mylar drive belt.

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT USE NEAR AN OPEN FLAME. Trichloroethane is not flammable, but exposure of the fumes to an open flame or hot metal forms highly toxic phosgene gas.

5-14. Disassembly Procedure.

a. Remove. Remove all attached cables and microphone from unit.

b. Demount. If vehicle mounted, loosen knurled screw clamps and remove recorder/reproducer.

c. Loosen fourteen (14) captive screws on the top cover with a #2 Phillips screwdriver and remove.

WARNING

The 230 and 115 volt Circuit Breakers on the inside rear of the recorder have a potential of 230 volts at all times that the unit is connected to one of these voltages. This is true even if the recorder is turned off. Avoid contact with hands or uninsulated tools.

5-15. Cleaning Procedure.

Insert a blank tape cartridge and place the recorder in the reproduce mode. Touch the capstan drive belt on both faces with a cotton swab dampened (not saturated) with Trichloroethane while the belt is in motion. Refer to Fig. 5-1.

Section VIII. ORGANIZATIONAL MAINTENANCE OF CIRCUIT BOARD EDGE CONNECTORS

5-16. General.

It is normal for dust, dirt and corrosive materials to gradually accumulate on edge connector surfaces.

5-17. Disassembly Procedure.
(Para. 5-14.)

5-18. Cleaning Procedure.

a. Remove boards one at a time by lifting straight up.

b. Use a cheesecloth dampened in Xylene and clean each side of edge connector on each board.

c. Replace each board in its socket. Boards are keyed to prevent insertion in wrong socket.

d. Assembly is the reverse of disassembly.

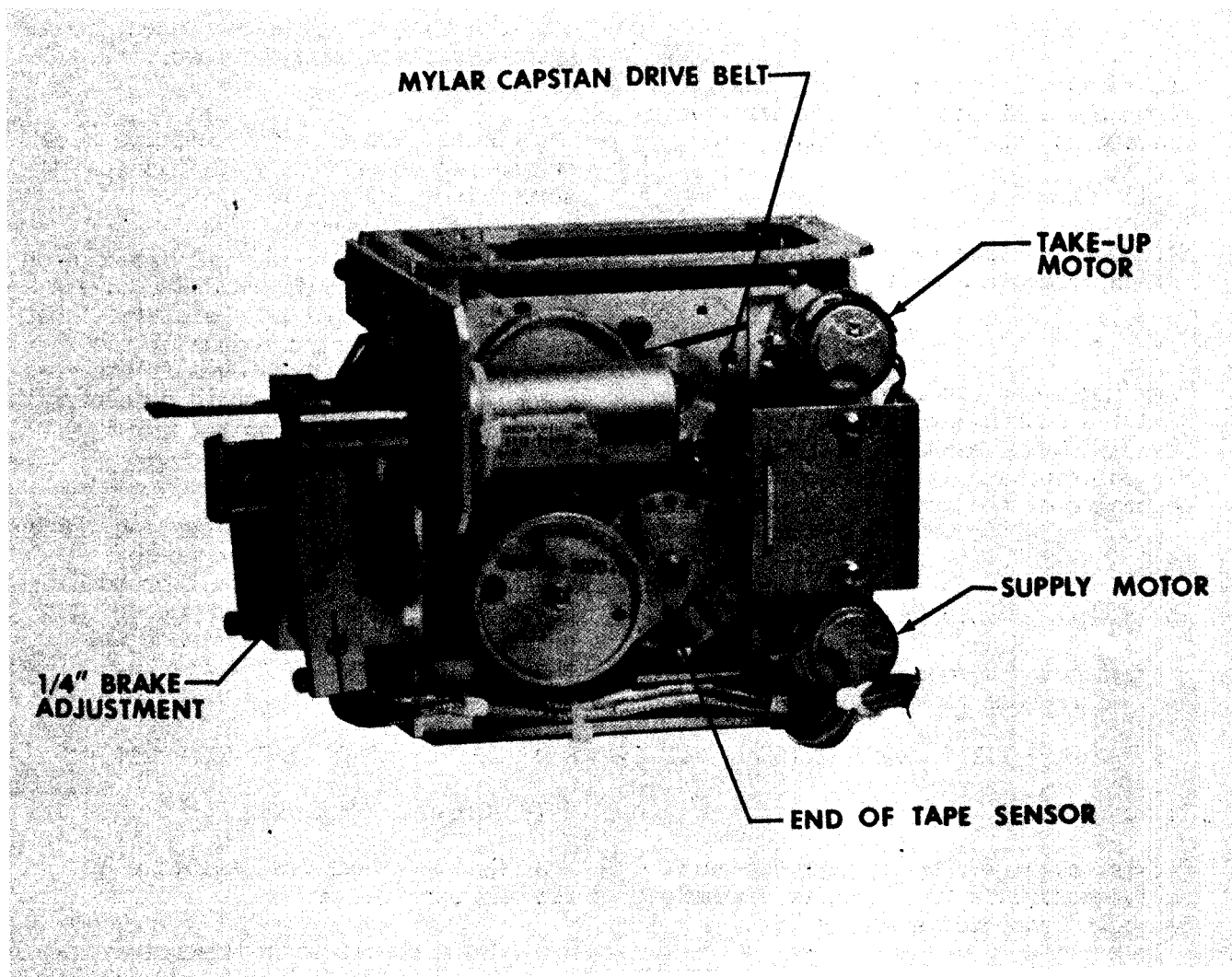


FIGURE 5-1
(TRANSPORT ASSEMBLY)

CHAPTER 6

FUNCTIONING OF EQUIPMENT

Section I. INTRODUCTION

6-1. Scope of Section.

This section provides a theory of operation for use by maintenance personnel at the direct support, general support and depot levels in understanding the functions of the AN/UNH-17A, Recorder/

Reproducer Set. Information provided in this section should be used as an aid in performing the procedures detailed in other sections pertaining to isolation and repair of malfunctions in the equipment.

Section II. GENERAL

6-2. Recorder/Reproducer (Transport).

a. Recording Technique. (See Figure 6-1). Standard direct recording techniques are used in which a record amplifier and magnetic head transfer the time relationship of an input signal directly to a magnetic tape. The signal amplifier conditions and amplifies the input signal and provides a current source for the record head proportional to the applied input signal. This creates magnetic flux changes in the magnetic oxide coating of the tape which correspond in intensity and timing to the input signals. Since the flux density in a magnetic medium does not vary linearly with the magnetizing force, the data signal is superimposed on a high frequency (50 KHz) bias signal to overcome the hysteresis nonlinearity of the magnetic tape. A symmetrical low distortion bias signal is adjusted to optimize system parameters such as frequency response, signal-to-noise ratio and distortion. The data signal is adjusted for recording at normal record level (3% third harmonic distortion upon reproduction of a 400 Hz signal at input record level of 0.77 VRMS.) The bias and data signal record levels are both a function of the characteristics of the record head and magnetic tape used and must be adjusted accordingly.

b. Equalization Technique. Figure 6-2., a and b indicate typical response curves for cassette recorders operating at 15/16 IPS and 1-7/8 IPS respectively.

The head response curves show in each case that overall response varies from low frequencies to a mid-band peak by 6 dB/octave. As this curve was made under constant current recording conditions, it is clear that this rise in response occurs during playback. To equalize this curve, the playback amplifier must provide a gain response complementing the head response. From mid-band to high frequencies, a great degradation of head response is noted. This is due primarily to tape and head losses which occur during the recording process. The playback amplifier is provided with adjustable equalizers to introduce playback loss. In this way, frequency response with maximum overall flatness is obtained.

c. Transport Functional Sections. The Recorder/Reproducer is functionally divided into the electro-mechanical tape drive system, the control logic electronics, the data signal electronics and the power supply. The transport is a casting that supports the mechanical subassemblies, and has no electronic circuitry mounted on it. The data signal amplifiers, logic control gating, servo mechanism amplifiers and bias oscillator are plug-in circuit boards. Total access is obtained by removing the top and bottom covers. The front panel as well as the covers are provided with a rubber gasket that is both a moisture and RFI seal. All operator controls and the tape cassette are front panel accessible.

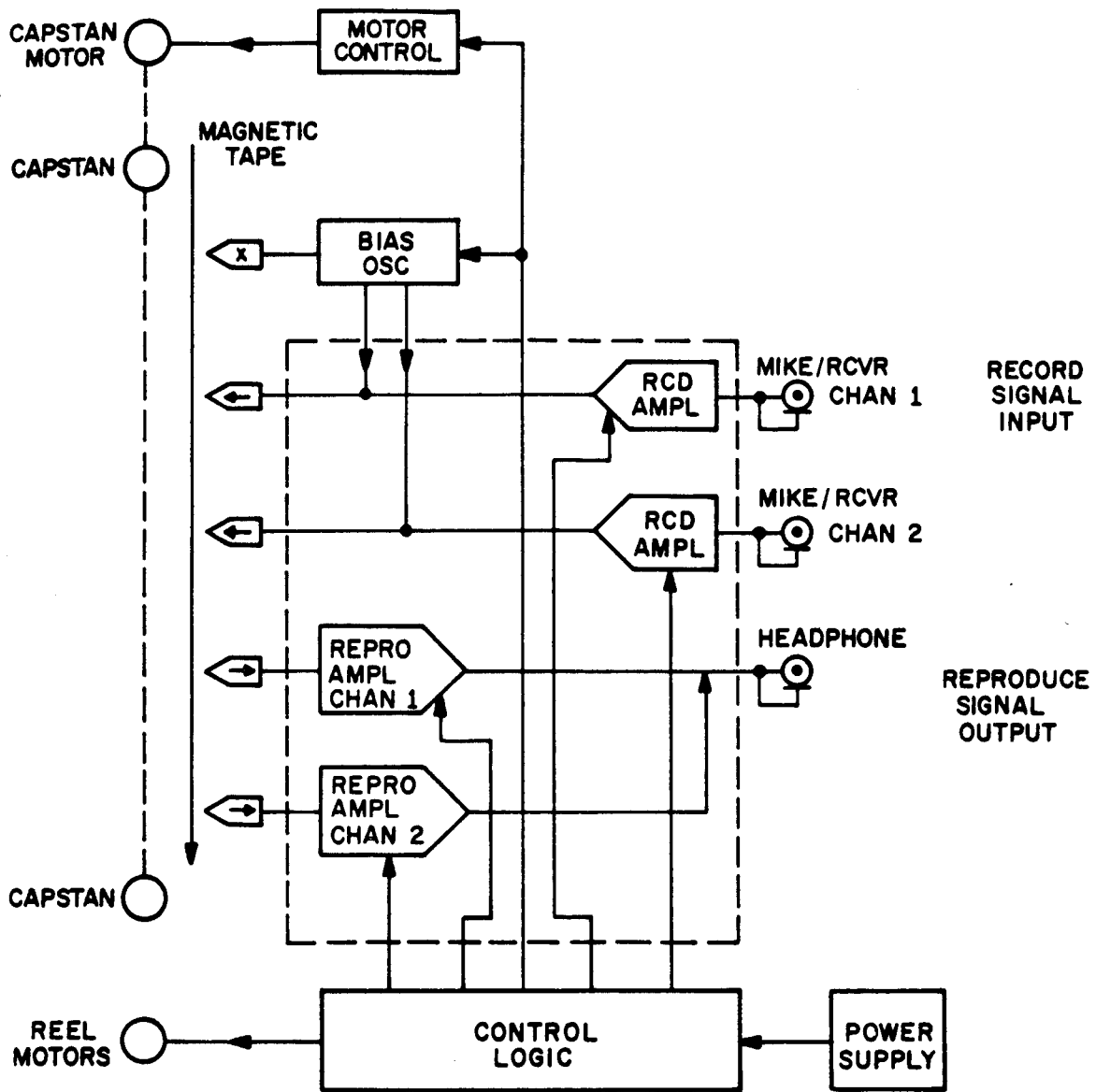


FIGURE 6-1
SIMPLIFIED BLOCK DIAGRAM

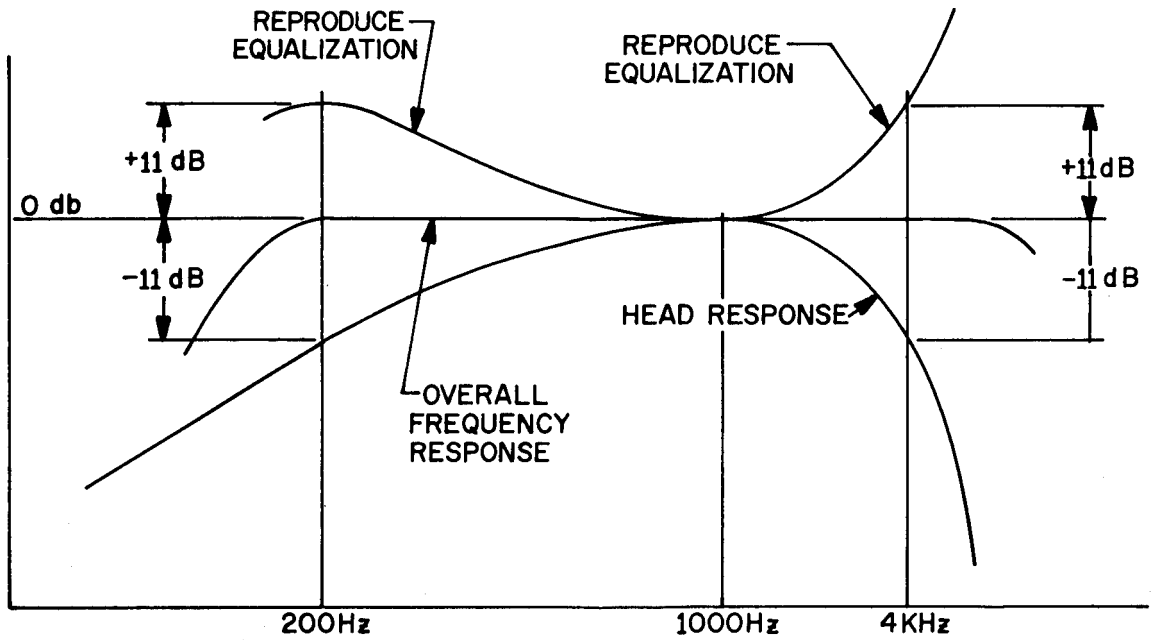


FIGURE 6-2a
EQUALIZATION CURVE AT 15/16 IPS

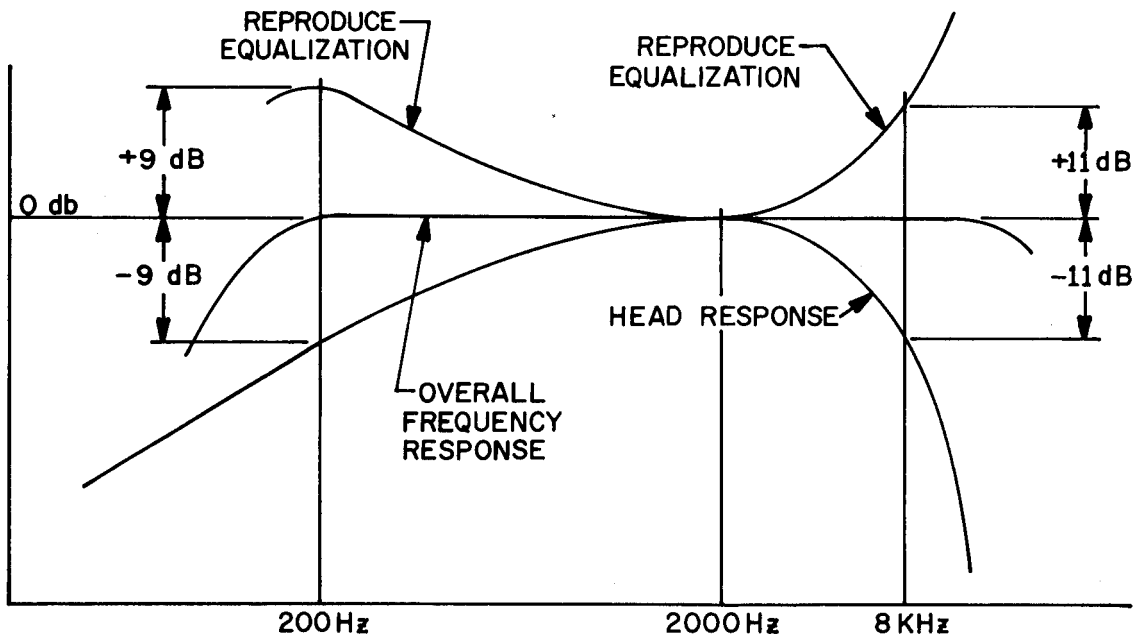


FIGURE 6-2b
EQUALIZATION CURVE AT 1 7/8 IPS

d. Tape Drive System. The purpose of a recorder is to make a record on tape of signal data which may be recovered in its original form at a later date. This is accomplished by moving a magnetic tape past a record head. The input data signal changes the magnetic field generated by the head, which in turn changes the magnetic flux of the iron oxide particles on the tape in accordance with the applied signal. Data is then reproduced by moving the magnetized tape past a reproduce head to induce a voltage in head windings equivalent to changes in flux. Since, in analog recording, the data signal is a function of the time and amplitude of the magnetic field, it is essential that the tape be moved past the reproduce head at the same rate it was moved past the record head originally. Therefore, the primary function of the tape drive system is to move the magnetic tape in a smooth and uniform manner past the record and reproduce heads to preserve the fidelity of the data signals with regard to time. This is accomplished by a dual capstan drive system when the unit is operated in the record or reproduce mode. In the fast modes (F/F and F/R) the tape is moved by the reel drive system only and speed may be varied.

e. Head Contact. The relative position of tape to head contact, illustrated in Figure 6-3. (a) occurs when the CASSETTE MODE KNOB is in the UNLOAD-LOAD position. Rotating the CASSETTE MODE KNOB to the STANDBY position results in the following:

(1) The head is brought into slight contact with the tape, but the pinch rollers are not engaged as illustrated in Figure 6-3. (b). This position is maintained during fast forward and fast rewind modes of operation, permitting rapid signal location, or in the STOP mode, awaiting fictional commands.

(2) If either the RECORD and/or REPRODUCE pushbuttons are pressed, both the brake-solenoid (A2L2) and the latch solenoid (A2L1) are activated, releasing the brakes, bringing the tape into firm contact with the head. (See Figure 6-3. (c)). The pinch rollers are engaged, initiating controlled tape motion.

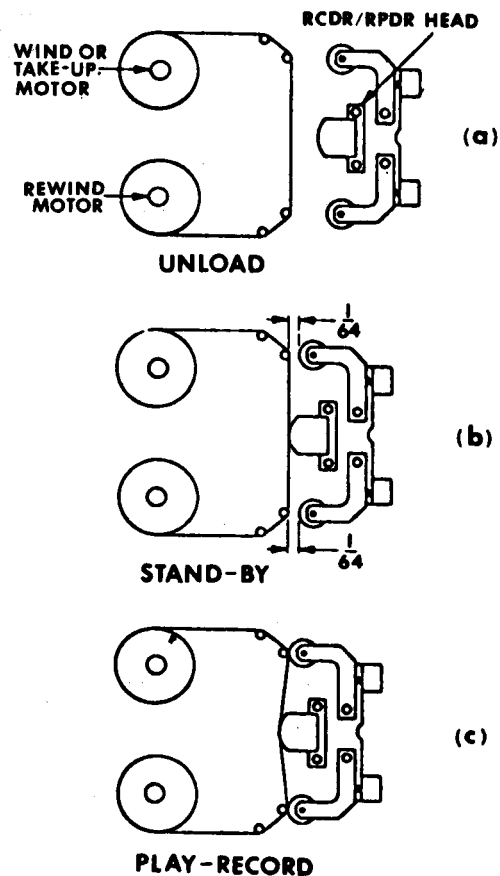


FIGURE 6-3
(HEAD CONTACT)

f. Capstan Drive System. The Recorder/Reproducer uses a dual capstan drive to provide positive control of tape motion during adverse environmental conditions. In recording and reproducing, the tape leaves the supply reel (in CASSETTE), is fed over a tape guide, between the input capstan and pinch roller, and past a tape guide to the take-up reel (in CASSETTE). The stability of the linear speed of the surfaces of the capstans determines the precision with which the tape is moved in the RECORD and REPRODUCE modes. For this reason, a servo control circuit is used to minimize speed changes of the capstan drive motor due to variations in torque loading and supply voltage. The capstans are belt driven by the servo controlled drive motor and the pinch rollers clamp the tape to the capstans in the RECORD and REPRODUCE modes. Since the capstan drive pulleys have slightly different diameters, the capstans operate at slightly different speeds with the exit capstan rotating slightly faster than the input capstan. This differential speed produces a controlled tension in the head area which greatly reduces the possibility of tape-to-head separation during vibration, shock, or acceleration. The motor control board (reference designation A1A5) is connected to the SPEED CONTROL on the front panel and permits selection of either 15/16 or 1-7/8 IPS nominal tape speeds. The combined actions of the SPEED VARY and SPEED CONTROL when set at Δ 15/16 or Δ 1-7/8 IPS permit a +30% speed variation from the nominal fixed speeds of the unit.

g. Capstan Motor Servo Circuit. (See Figure 6-4.) Capstan servo control is provided by a closed loop, DC referenced servo system. Shaft speed information is provided by an optical tachometer. The servo loop consists of the motor A1A1M3, tachometer, A1A1VI, and the servo control board, A1A5. Voltage for the tachometer photo-transistor is supplied by the servo plug-in card. A nearly sinusoidal wave is applied to a

high gain amplifier U1. The resultant square wave is then applied to a four input nor gate, U2, where it is transformed into a series of pulses. The resultant pulse train has a constant pulse width of 25 μ s and will vary in frequency (i.e., the number of "ON" pulses) in direct proportion to the tach input frequencies. The series of pulses (representing the capstan speed), are applied to the differential amplifier, U3, where they are compared to a reference level determined by the speed select. By comparing the capstan speed (voltage level) with a predetermined reference level, an error level is produced which in turn compensates the speed of the capstan by either increasing or decreasing it. By setting the speed select at either of the variable speed positions, Δ 1-7/8 IPS or Δ 15/16 IPS, the comparator reference level becomes adjustable and variable capstan speed of $\pm 30\%$ is achieved.

h. Reel Drive System, Search Mode and Take-up Functions. The reel drive system consists of two motors; the take-up motor (A1A1M1) which drives the upper cassette spool and the supply motor (A1A1M2) which drives the lower cassette spool. The supply motor is energized by the logic card (A1A6) when the REWIND button is pressed. This results in the lower spool rotating clockwise. The take-up motor, also energized by the logic card, rotates the upper spool counter-clockwise when the FAST FWD button is pressed. The heart of the logic card is the integrated circuit U2 (See Figure 6-5.). This device called a Quad Latch has four set-reset flip-flops in a package. It stores the four control commands FAST-FWD, REWIND, REPRO and RECORD. The STOP mode simply resets any or all of these four functions and enables brakes. The FAST FWD switch places a logic high on the SC input of U2, and causes a logic high to appear at QC, the output of U2. QC then enables the FAST-FWD lamp indicator and take-up motor; it disables

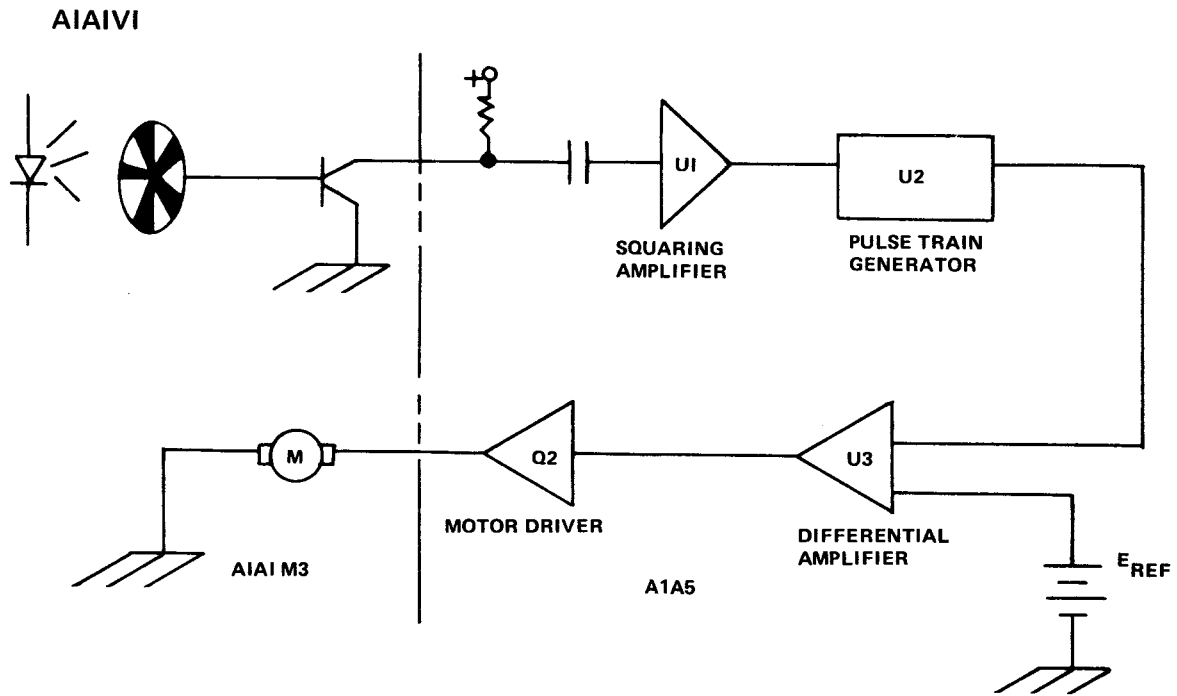


FIGURE 6-4
(CAPSTAN MOTOR SERVO CIRCUIT)

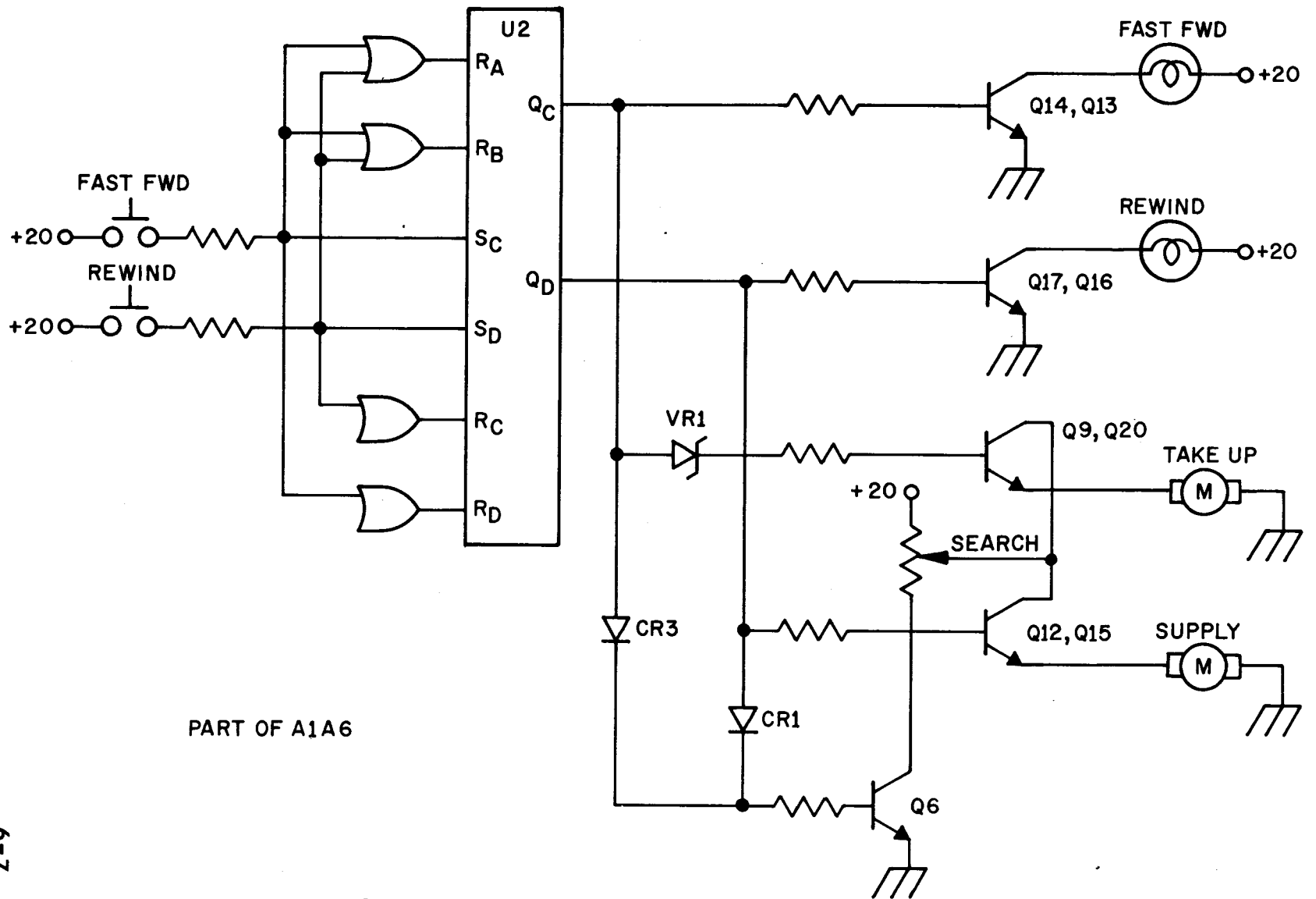


FIGURE 6-5
(LOGIC CONTROL CIRCUITRY-PARTIAL SCHEMATIC)

the STOP lamp indicator and brakes. Thus, U2 provides a memory for the operator commands. Q6 enables the search potentiometer A1A2R4 in FAST FWD and REWIND. In all other modes, the search potentiometer does not affect the reel driver transistors. In RECORD and PLAY the take-up reel motor is partially energized due to the Zener action of VR1. In FAST-FWD, the take-up reel motor is fully energized; REWIND is the only mode that energizes the supply reel motor.

j. Record/Reproduce Control Logic. Pressing the REPRO switch places a logic high on SA of U2 and resets all other functions (See Figure 6-6.) Latch output QA of U2 goes high which enables the REPRO Light Indicator, Reproduce Enable, Carriage Solenoid, Capstan Enable and Take-Up motor. (The take-up motor drive receives partial activation due to the Zener action of VR-1). The spool brakes are disabled by the high output of QA. The carriage assembly and capstan pinch rollers are slower to engage than the take-up spool motor action, and tape would slip by the head without some hold back tension. C3 and C4 provide a wide pulse of energy to the supply spool

motor for this hold-back tension. Pressing the RECORD switch places a logic high on SB of U2 (See Figure 6-7). The RECORD switch contacts receive their source voltage from the PLAY switch via CR14 and CR13. Therefore, RECORD cannot be activated until PLAY is activated. The action, however, of PLAY and RECORD is to reset one another. To prevent this, C10 is provided on the RECORD switch input and receives a charge when PLAY and RECORD are pressed simultaneously. Because the S inputs over-ride the R inputs for as long as they are both high, the signaling appears at the output of U2 on both QA and QB. QB output at once returns the RECORD lamp indicator to ground, thereby lighting the lamp and disabling the PLAY switch line. C10 is still charged and is the last logic level U2 sees on its input lines. RECORD then being the last command, resets play, latches out the PLAY mode, inhibits REPRO and enables the Record Enable Line. All the functions for RECORD are the same as PLAY (except for Reproduce Enable) and are enabled by the QB output of U2. CR14 prevents voltage at the RECORD switch from appearing at SA input. CR8 prevents voltage from the base of Q1 reaching the RECORD switch and causing the accidental enabling of RECORD. CR2 prevents any positive base voltage on Q1.

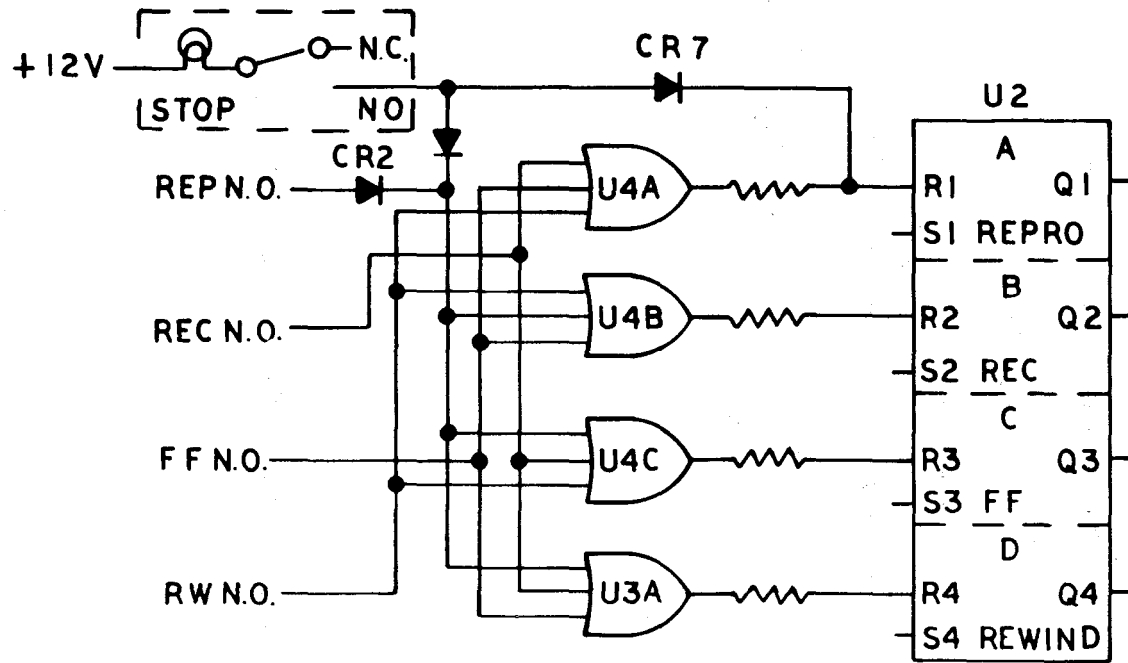


FIG 6-6
 (LOGIC CONTROL CIRCUITRY RESET LOGIC)

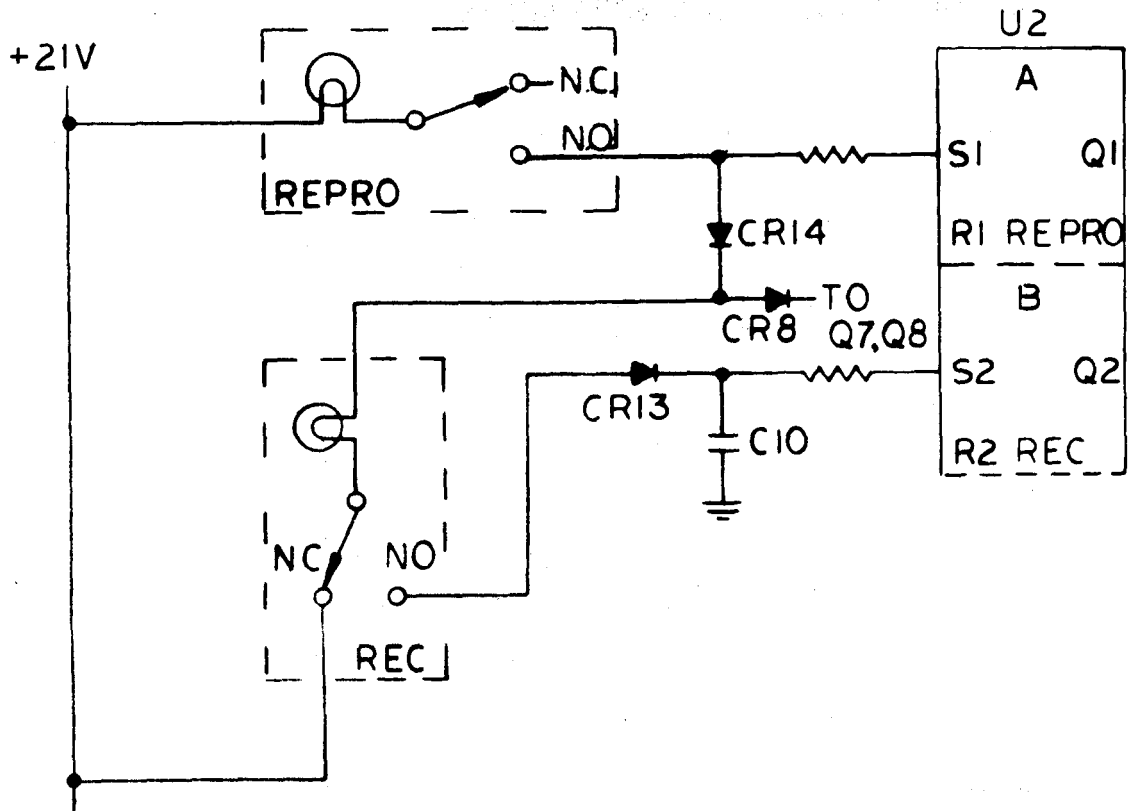


FIG 6-7

(CHANGE IN SET LOGIC FOR INTERLOCK OPERATION)

6-3. Record/Reproduce Electronics.

a. Signal Amplifiers. The AN/UNH-17A Recorder/Reproducer utilizes different amplifiers for recording and reproduction (See Figure 6-8.) For signal-to-noise ratio considerations, the playback pre-amplifier, which handles low level signals from the playback heads, is located near the tape transport mechanism on a small plug-in module A1A8. This amplifier boosts the playback signal to a high level for the main data signal amplifier A1A3, which is common to record and reproduce processes. In the RECORD mode, signals from the MIKE jacks A1J2 and A1J4 and the RCVR jacks A1J3 and A1J5 are resistively mixed and connected to the input of the amplifier through relays K1 and K2 on A1A3. The amplifier outputs are connected to summing points on the bias oscillator board A1A4 for addition to the bias signal. (See Figure 6-9.) The bias oscillator is turned on during the RECORD mode to provide high frequency bias required for low distortion recording and the combined data signals and bias signals are applied directly to the record head. The HEADPHONE jack A1J1 is connected to the bias oscillator board and can be energized by either a record or reproduce signal. The headphones monitor the data signal electronics during RECORD/REPRODUCE and STOP. In RECORD, the pre-emphasis necessary does not affect headphone response as the pre-equalization occurs after the headphone jack. The channel selector permits headphone monitoring of channel 1 and/or channel 2. Switching for equalizers is achieved with solid state analog switches. Switching for channel selection and record/repro functions is achieved with miniature relays. During RECORD, high level, high frequency signals to the record heads would exceed the breakdown voltage rating of analog switch devices. The relays handle high peak-to-peak currents and also improve crosstalk in playback mode. Following are the nominal input/

output characteristics of the signal electronics: receiver input 0.5 to 5 VRMS, microphone input 0.1 to 1.0 MVRMS and headphone output 0.0 to 20 milliwatts.

b. Record Amplifier. (See Figure 6-8.) This discussion will be confined to channel 1. The RECORD mode is selected by simultaneously pressing REPRO and RECORD switches (A1A2S1 and A1A2S3) on the front panel. Microphone and receiver signals are mixed in the resistive network R43, R44, R45. The combined signal is applied to K1 and then to the non-inverting input of amplifier U1A. This amplifier in turn provides an amplified signal to U2A and then to drivers Q1 and Q2. The frequency response of this circuit card is 200 Hz to 8 KHz. No high frequency boost occurs here; headphone monitoring is undistorted by pre-emphasis. The amplifier U1A is followed by the gain control circuit, manual or automatic. Both manual and automatic gain control is accomplished by resistive shunting of the output of amplifier U1A, which is provided by A1A2R2 (front panel) in manual mode and by field effect transistor Q3 in AGC mode. A portion of the output of amplifier U2A is converted to DC by a voltage doubling rectifier circuit; the error (feedback) signal thus developed across C17 is applied to the gate of field effect transistor Q3. The magnitude of resistance presented by Q3 is controlled by the voltage on its gate and the position of AGC potentiometer R16. Resistive shunting in the AGC feedback loop varies in direct proportion to changes in the output signal level. This arrangement permits the output level to remain constant within 3dB with changes in input level as great as 15dB. The amplifier output from Q1 and Q2 is applied to the bias oscillator board A1A4 through K3. (See Figure 6-9.) At TP3 a 50 KHz sine wave is added to the amplified data signal. Q3 is connected in a Hartley oscillator configuration. The combined audio and bias signals are supplied to the record head via relay K1 on the pre-amplifier

board A1A8. This relay is energized during RECORD. The bias oscillator output is also connected to the erase head during RECORD to effect erasure of previous recorded material.

c. Reproduce Amplifier. The following discussion will be confined to channel 1 at 1-7/8 IPS. Tape signals, from the reproduce head, are switched through relay K1 to the non-inverting input of U1A. (See Figure 6-8.) This pre-amplifier is uniform in gain from 200 Hz to 8 KHz. Signal-to-noise ratio improved, the amplified reproduce signal is connected to the input of U1A on circuit board A1A3 via relay K1 now energized. During REPRODUCE, equalizers are analog switched by a reproduce enable signal from the logic board A1A6. A lesser type equalizer, located on the record/reproduce board A1A3, shunts all gain control circuitry and the amount of loss is set by R15. Frequency shaped and amplified, the reproduce signal is further amplified by U2A and output stages Q1 and Q2. This signal is connected to the bias oscillator board A1A4. (Figure 6-9.) where it is switched to a headphone monitor jack A1A2J1.

d. Meter Drive Circuits. Rectified audio from the full wave AGC rectifiers on the record/reproduce card A1A3 is connected to the bias oscillator card A1A4. In turn emitter follower Q1 drives a filter capacitor and resistive divider network. (See Figure 6-9.) Diode CR1 protects front panel meter A1A2M2 from burnout.

NOTE

The operation of channel 2 is identical to that of channel 1. For 15/16 IPS operation, the record/reproduce amplifier is rolled off sooner than for 1-7/8 IPS.

6-4. Logic Circuit, FootSwitch.

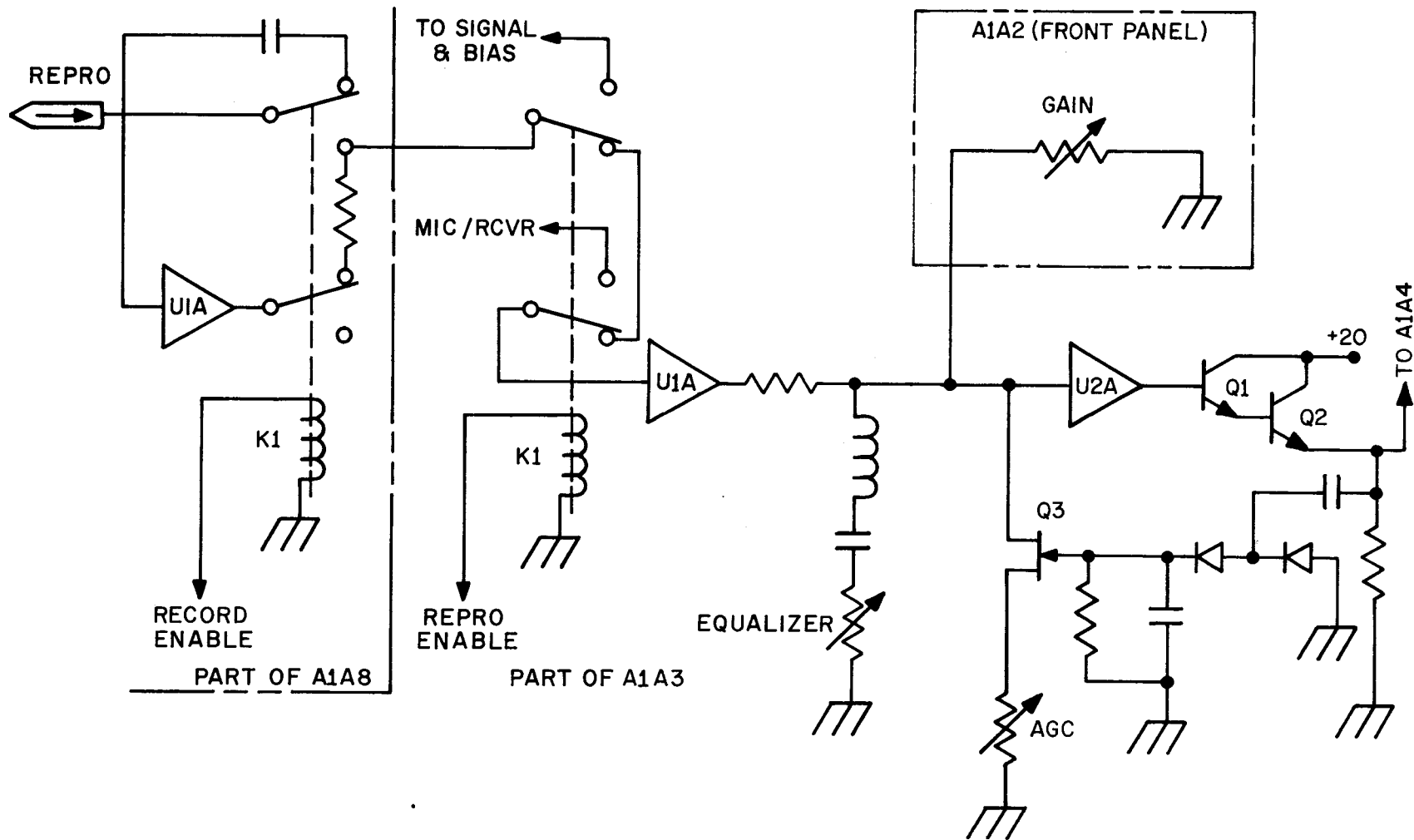
a. Remote Control Logic. If a remote control panel (not supplied) is connected to the unit, the push buttons are connected in parallel with the push buttons on the front panel and permit unit activation and mode functioning from a remote location. (See Figure 6-10.)

b. FootSwitch. If a footswitch is connected (supplied with the unit), the rocker switches are connected in parallel with the push buttons on the front panel and permit REPRODUCE, STOP and REWIND modes only. (See Figure 6-11.)

6-5. Tape Motion Sensor Circuits.

a. The End of Tape Sensor Circuit. (See Figure 6-12.) This circuit consists of an optical motion sensor on the transport module A1A1 and an amplifier rectifier on the servo capstan circuit board A1A5. When the disc on the tape supply spool interrupts a light beam, the phototransistor sends a pulse train to rectifier CR1 and Q1 and establishes a DC level across C5. This turns Q3 on, pulling its collector to ground. If the disc stops turning, no DC is produced across C5 and Q3 is released from conduction. This produces a +15 volt pulse across CR4 and actuates the STOP mode logic on board A1A6.

b. Brake Solenoid. Referring again to Figure 6-12., note that once in the STOP mode, Q3 receives no base current drive and, therefore, is nonconducting. If a tape cassette jam occurred or other malfunction that prevents the supply reel from turning, no information would ever reach the STOP mode logic. Therefore, each time transport brake release is energized a negative going pulse turns Q1 on and, therefore, Q3's collector will go to ground. If disc rotation is achieved, the action described previously will hold Q3 in conduction. However, if the supply



6-13

FIGURE 6-8
(SIGNAL AMPLIFIERS - PARTIAL SCHEMATIC)

6-14 Change 1

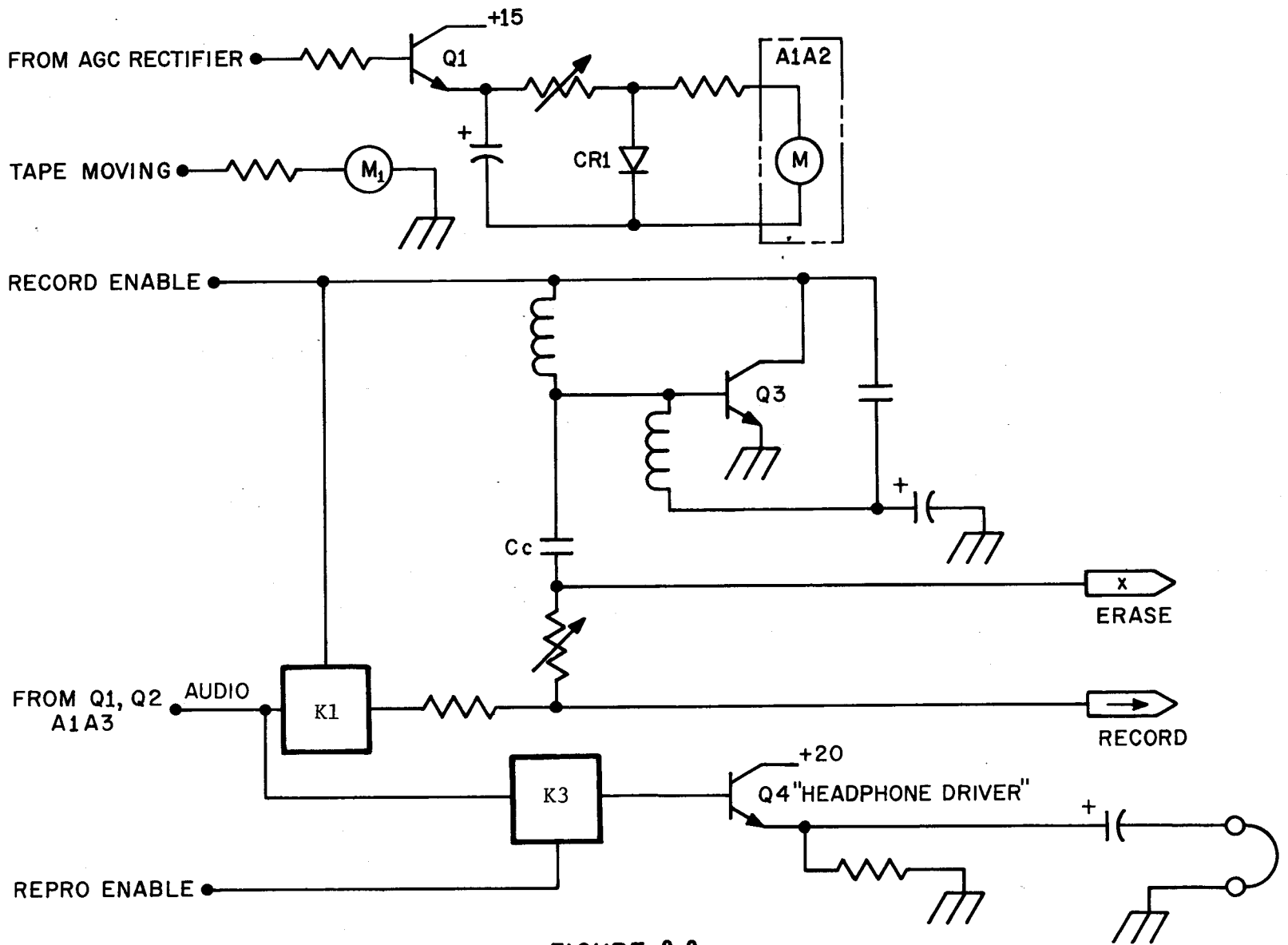
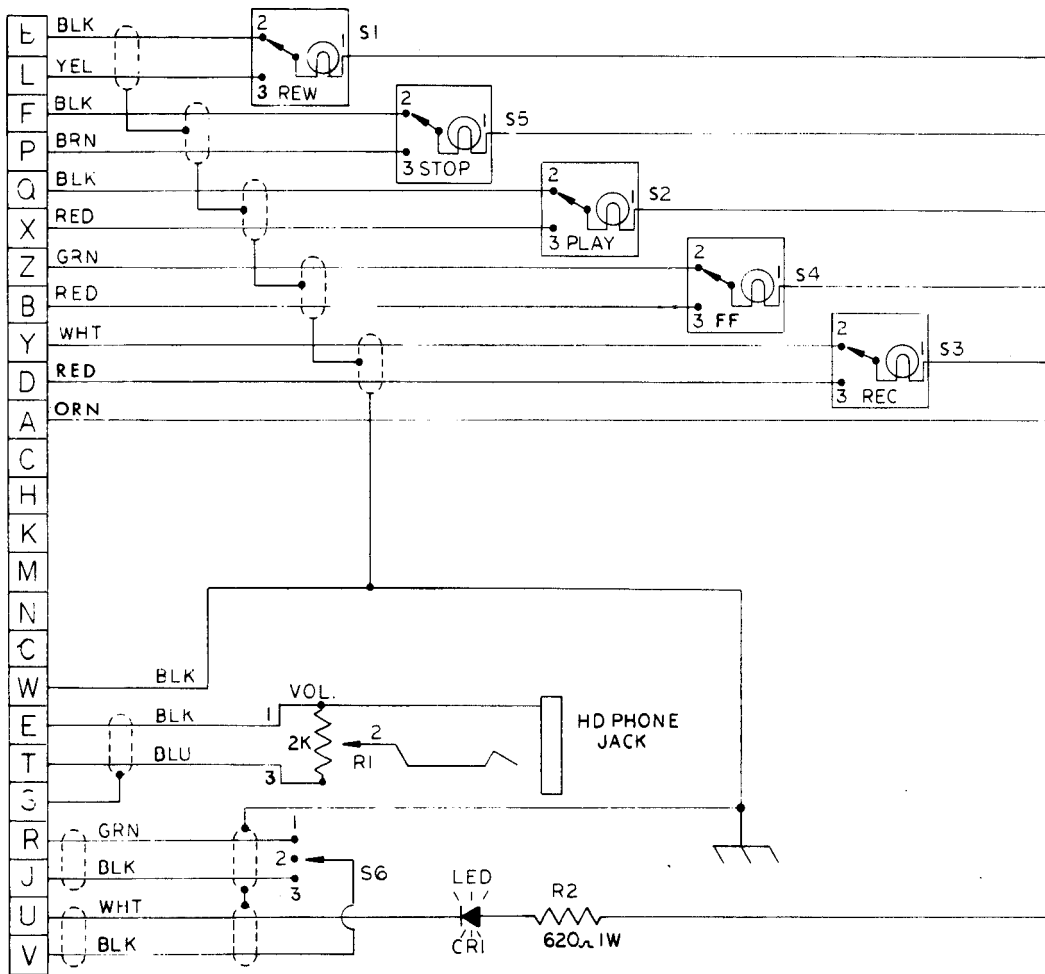


FIGURE 6-9
BIAS OSCILLATOR BOARD
PART OF A1A4

P6



NOTE
SHLD FLOATING ON CONN. END

FIGURE 6-10
REMOTE CONTROL WIRING DIAGRAM

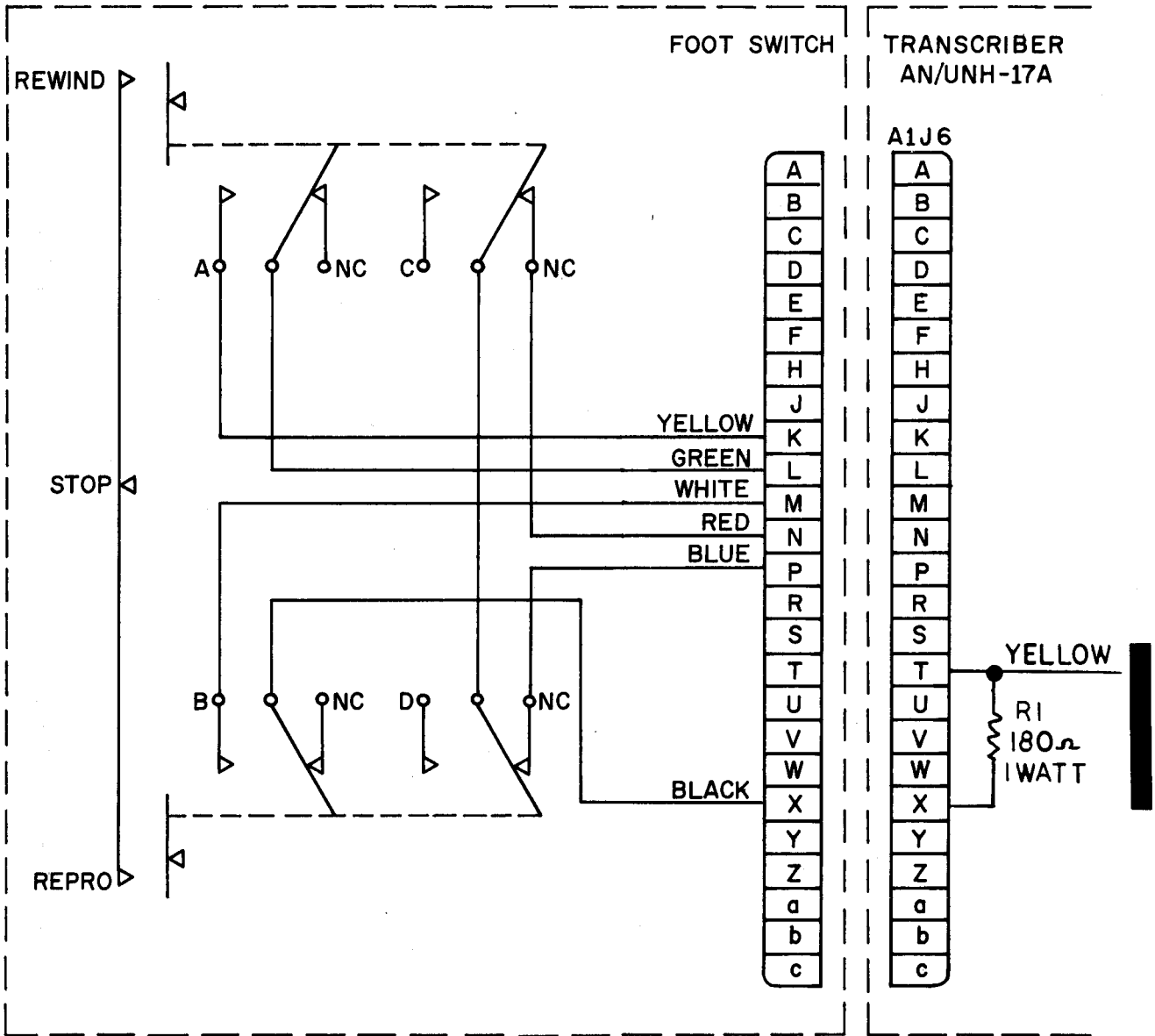


FIGURE 6-11
FOOT SWITCH WIRING DIAGRAM

reel fails to turn, the negative pulse energizing the base of Q1 will soon decay and turn off Q1 and Q3. This will provide a positive pulse to activate STOP logic and prevent system damage.

6-6. Tone Generator.

Deleted.

6-7. Elapsed Time Indicator.

Refer to bias oscillator board (See Figure 6-9.) M1 is a capillary tube filled with mercury separated by a gap of electrolyte. When a current passes through the indicator, mercury particles are deposited on the anode terminal. As mercury deposition continues, the electrolytic gap appears to travel from anode to cathode at a rate proportional to the current flow. Current is supplied to M1 by the tape moving signal from logic board, A1A6. This signal is generated whenever spool brakes are released; FAST FWD, REWIND, PLAY and RECORD.

6-8. Power Supply.

As shown in Figure 6-14., the power supply A1A7 provides regulated +15 VDC and a Zener referenced +21 VDC. The supply receives its AC input voltage from the power transformer A1A12T1 (115 or 230 VAC) or +22 to +40 VDC battery voltage applied through CR6. The +15 regulation is achieved with U1 which is internally programmed to supply +15 volts. The Zener referenced supply of +21 volts is effected through VR1 and Q1 on the supply board and transistor A1A12Q1 which is chassis mounted. The available current range of voltage regulation available from VR1 is multiplied by A1A7Q1 and A1A12Q1. As they are close in value, this configuration is often referred to as a voltage regulator. Selection of input voltages is achieved on the rear panel connector A1J8. (See Figure 6-15.)

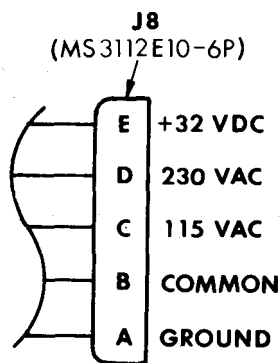


FIGURE 6-15

Figure 6-13 is deleted.

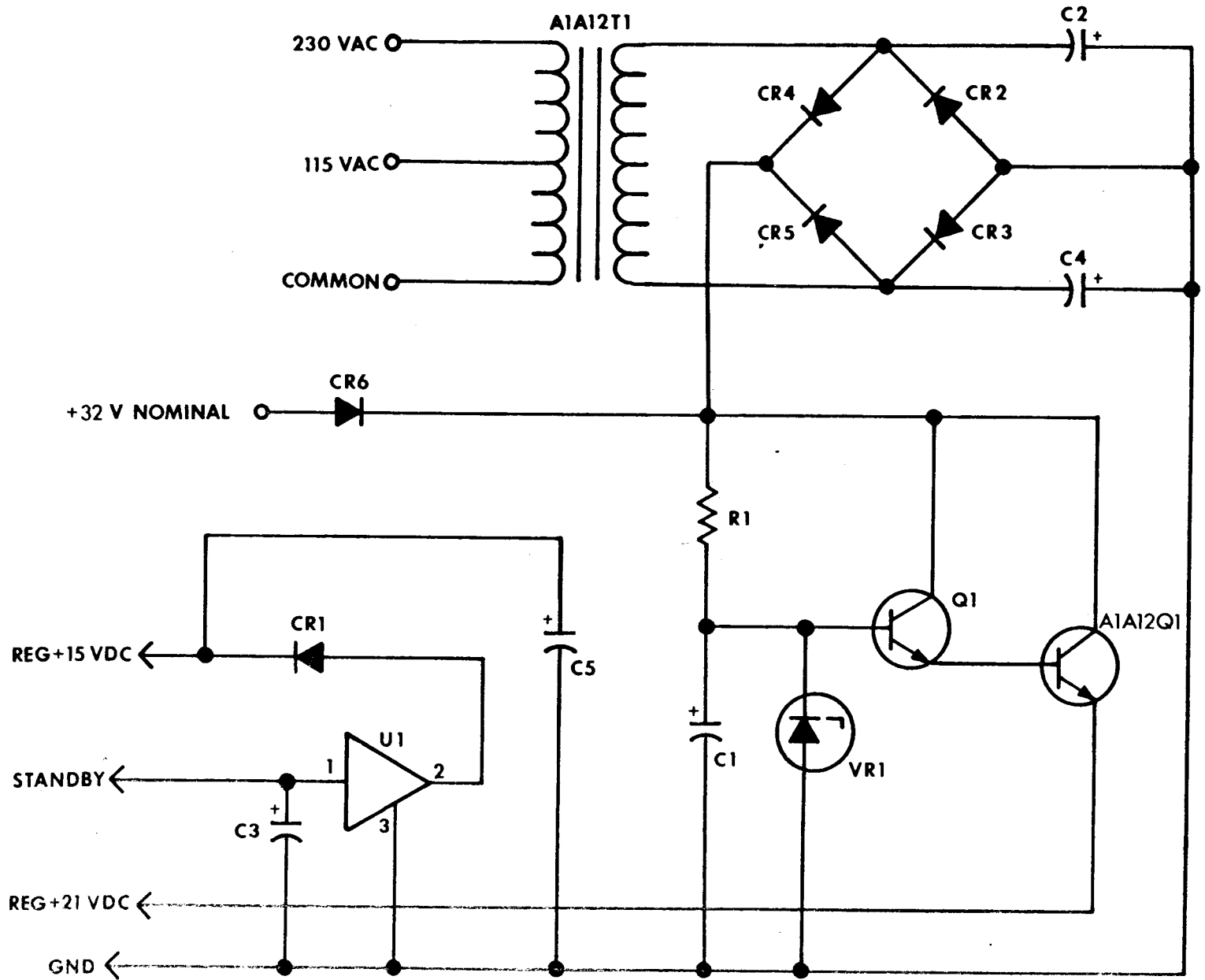


FIGURE 6-14
(POWER SUPPLY PARTIAL SCHEMATIC)

CHAPTER 7

DIRECT SUPPORT MAINTENANCE INSTRUCTION

Section I. GENERAL

7-1. Voltage and Resistance Measurements.

This equipment is transistorized. When measuring voltages, use tape or sleeving (spaghetti) to insulate the entire test prod, except for the extreme tip. A momentary short can ruin a transistor. Make voltage and resistance measurements as directed on the voltage and resistance diagram using the same or equivalent multimeter specified.

b. Before using any ohmmeters to test transistors, check the open-circuit voltage across the ohmmeter test leads. Do not use the ohmmeter if open-circuit voltage exceeds 1.5 volts, since transistors may be damaged.

c. Since the RXI range normally connects an ohmmeter internal battery directly across the test leads, the comparatively high current (50 ma, or more) may damage a transistor under test. Normally the RXI range should not be used to test low power transistors.

d. Use a coupling capacitor to connect test equipment (other than multimeter or VTVM) to transistorized circuits to prevent damage to transistors.

e. Make certain POWER switch is in OFF position, before connecting power. Surge voltage may damage transistor circuits.

f. Voltage measurements at the direct support maintenance level are limited to those measurements indicated in Sections IV through XV. Measurements beyond those indicated shall not be performed at the direct support maintenance level.

7-2. Scope of Direct Support Maintenance.

The direct support maintenance procedures are not complete in themselves but supplement the procedures performed at the organizational category and include any additional techniques required to perform maintenance on the AN/UNH-17A.

7-3. Bench Testing.

Bench testing at the direct support maintenance level of the AN/UNH-17A shall be limited to the following:

a. Testing power supply voltages.

b. Direct replacement of the record/reproduce amplifier (A1A3), motor control servo board (A1A5), preamp board (A1A8), bias oscillator and meter drive board (A1A4), power supply board (A1A7) and control logic board (A1A6). See Figure 7-1. for component location.

Section II. TOOLS AND EQUIPMENT

7-4. General.

Refer to Appendix C Repair Parts and Special Tools List and Appendix B Maintenance Allocation Chart as they pertain to Direct Support Maintenance.

7-5. Tools/Material/Test Equipment.

Direct support maintenance of the AN/UNH-17A requires the use of the tools, materials and test equipment listed in Table 7-1.

Section III. DIRECT SUPPORT TROUBLESHOOTING

7-6. General Instructions.

a. Direct support testing procedures used by direct support maintenance personnel are designed to provide test indications that constitute a direct basis for acceptance or rejection of the AN/UNH-17A on a go-no-go basis.

b. Authorized direct support testing troubleshooting procedures are indicated in Sections IV to X of this chapter. Testing beyond that described in Section VIII to X will not be performed at the direct support level.

Table 7-1. Direct Support Tools/Material/Test Equipment.

<u>Item</u>	<u>Purpose</u>	<u>Applicable Publication</u>
Screw Driver, Phillips #1	Maintenance	
Multimeter AN/USM-223	Maintenance	
Audio Generator AN/URM-127	Testing	
VTVM (RMS) ME-318/U	Testing	
Oscilloscope AN/USM-211	Testing	
Telephone Plug	Testing	
Pre-recorded Cassette Tape 1 7/8 IPS at 3 KHZ ±.5%	Testing	
Digital Electronic Counter AN/USM 207-A	Testing	

Section IV. DIRECT SUPPORT MAINTENANCE OF THE POWER SUPPLY

7-7. General.

Before troubleshooting to correct an observed fault, the performance of the unit power supply must be verified. Proceed as follows:

7-8. Disassembly Procedure.

- a. Remove. Remove all power cables from the unit.
- b. Loosen. Remove unit top cover by loosening captive screws.

7-9. Power Supply Testing Procedure.

- a. Connect power cable to the unit and activate the POWER ON switch to ON.
- b. Connect negative lead of multimeter to the reference ground terminal TP2 on logic board A1A6. (See Figure 7-1.)
- c. With the positive lead of the multimeter, test voltage at TP2 on power supply card A1A7. Indication should be +23 to +25 VDC.

d. Test voltage at TP3 on A1A7. Indication should be +15 VDC \pm 1 VDC.

e. Test voltage at TP1 on A1A7. Indication should be \pm 1 volt of input line voltage.

f. Should any tests made in steps b. through e. indicate voltages out of range, replace board A1A7.

g. Repeat measurements b. through e. after replacement of A1A7. Should any tests now indicate voltages out of range, refer to higher level of maintenance.

7-10. Repair.

Repair of the power supply at the Direct Support Level is not authorized. Request higher level of maintenance.

Section V. DIRECT SUPPORT MAINTENANCE OF THE LOGIC CONTROL BOARD (A1A6)

7-11. General.

Should any of the following symptoms/malfunctions evidence themselves during unit operation, probable cause is a defective LOGIC CONTROL board (A1A6.)

- a. Capstan motor fails to operate in RECORD/REPRODUCE modes of operation.
- b. Capstan motor operates but there is no tape motion.

c. Faulty take-up action.

d. Improper foot switch operation.

e. Unit will not go into RECORD/REPRODUCE, FAST FWD, or REWIND modes of operation.

f. Unit reproduces but does not record, or records but does not reproduce.

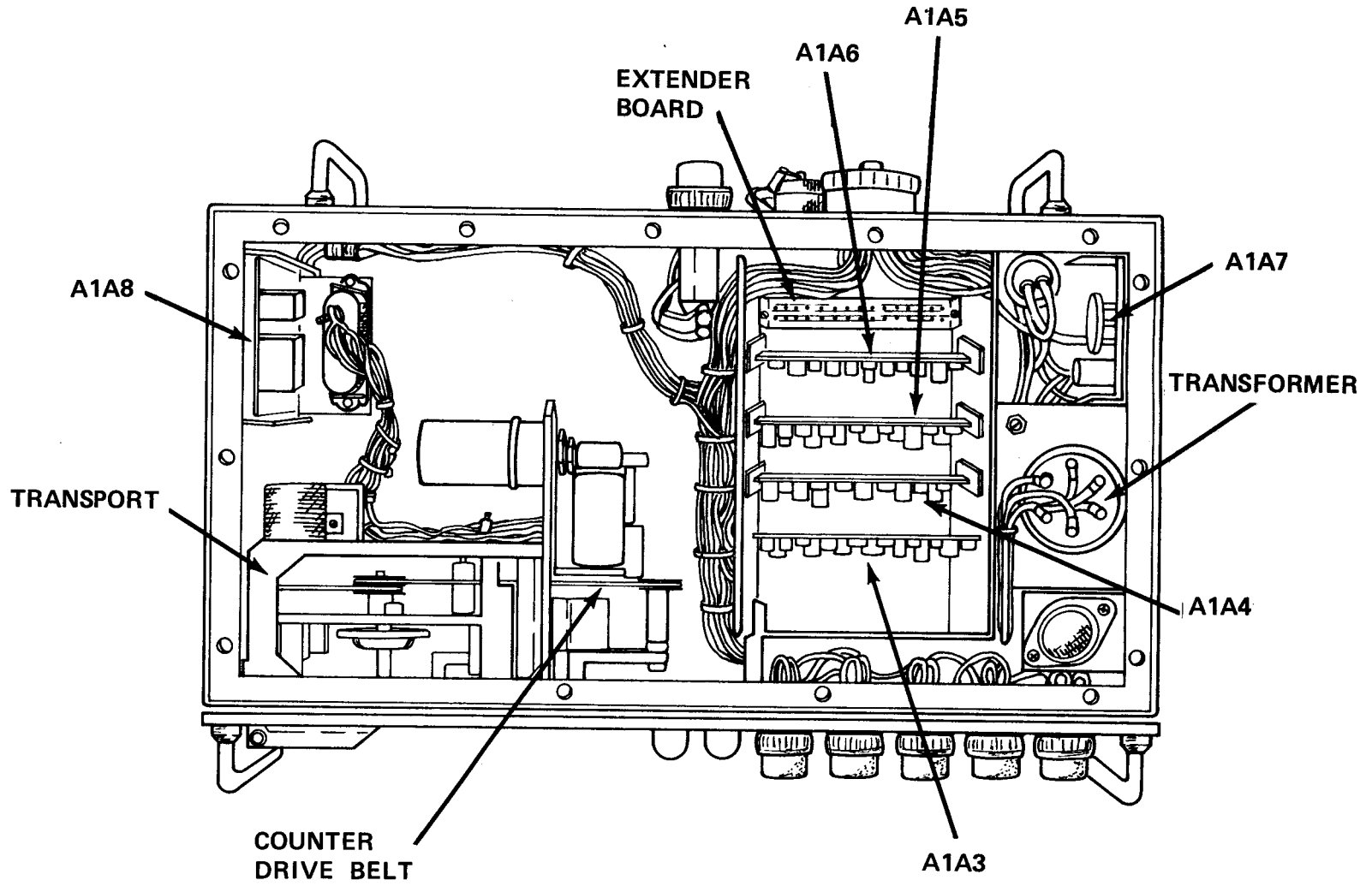


FIGURE 7-1
AN/UNH-17A - TOP VIEW

7-12. Disassembly Procedure.

See Paragraph 7-8.

7-13. Replacement of Logic Control Board A1A6.

Power unit down and unplug defective board; install replacement.

7-14. Testing after Repair.

a. If malfunction in para. 7-11. a. through e. has been corrected, replace covers.

b. If malfunctions a. through e. persist, refer to higher level of maintenance.

c. If malfunction f. persists, but the indicator lights indicate proper function, to to Section VI. Otherwise request higher level of maintenance.

7-15. Repair.

Repair of the Logic Control Board at the Direct Support Level is not authorized. Request higher level of maintenance.

Section VI. DIRECT SUPPORT MAINTENANCE RECORD/REPRODUCE AMPLIFIER AND BIAS BOARD.

(A1A3, A1A8, A1A4)

7-16. General.

Should unit not record and/or playback, there are three board possibilities in addition to a faulty Logic Control Board: the pre-amplifier board (A1A8), the record/reproduce board (A1A3), or the bias oscillator board (A1A4). Replacement of one of these boards may correct the malfunction. Refer to figure 7-2.

7-17. Disassembly Procedure.

See Paragraph 7-8.

7-18. Testing Procedure.

Refer to testing chart Figure 7-2.

7-19. Repair.

Repair of the pre-amplifier board (A1A8), the record/reproduce board (A1A3) and the bias oscillator board (A1A4) at the Direct Support Level is not authorized. Request higher level of maintenance.

7-20. Testing after Repairs.

Operate unit in RECORD/REPRODUCE modes and ensure that malfunction has been corrected by the replacement. If operation is still faulty (except for AGC equalization and bias, refer to higher level of maintenance.

7-21. Alignment.

If malfunctions have been corrected, proceed with electrical testing procedure Section VIII and/or Section IX.

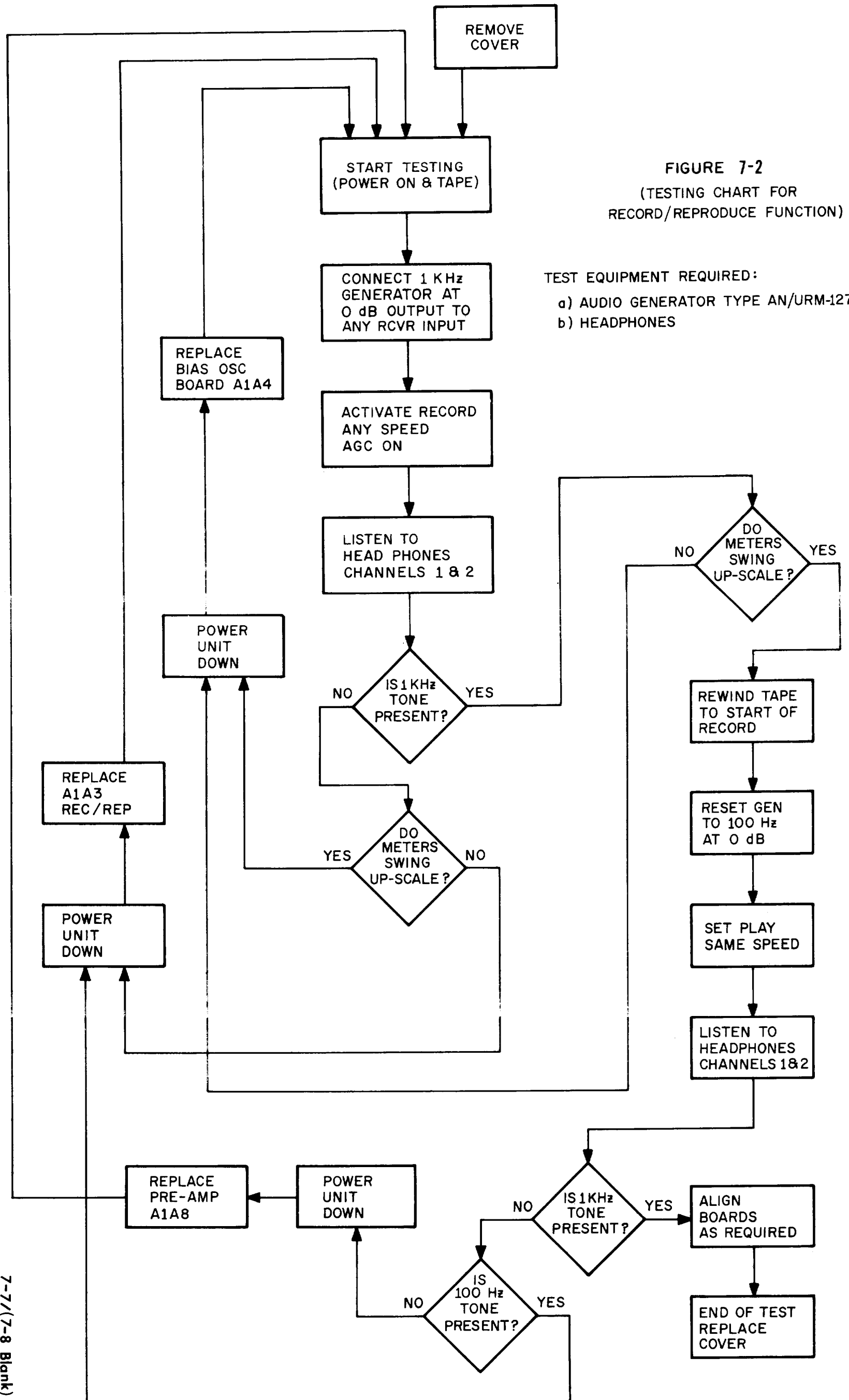


FIGURE 7-2
(TESTING CHART FOR
RECORD/REPRODUCE FUNCTION)

TEST EQUIPMENT REQUIRED:
a) AUDIO GENERATOR TYPE AN/URM-127
b) HEADPHONES

7-7/(7-8 Blank)

Section VII. DIRECT SUPPORT MAINTENANCE SERVO CAPSTAN CONTROL BOARD
(A1A5)

7-22. General.

Should any of the following symptoms or malfunctions become evident during unit operation, probable cause is a defective motor control-oscillator board, (A1A5).

- a. Capstan motor does not run.
- b. Capstan motor is running at an obviously higher or lower speed than selected.
- c. Variable 15/16 IPS and variable 1-7/8 IPS does not work.
- d. Tape motion sense fails.
- e. Deleted.

7-23. Disassembly Procedure.

See paragraph 7-8.

7-24. Replacement of motor control board (A1A5).

Power unit down and unplug defective board; install replacement.

7-25. Testing after Repair.

- a. If malfunction has been corrected, see alignment Section X.
- b. If malfunction persists, refer to higher level of maintenance.

Section VIII. TESTING AFTER REPLACEMENT OF BIAS OSCILLATOR BOARD
(A1A4)

7-26. Test Equipment Required.

- a. Audio Generator Type AN/URM-127.
- b. VTVM Type ME318/U.

7-27. Testing Procedure.

- a. Connect audio generator to RCVR1 input and adjust to 1 KHz at 0dB output. (0.77 VRMS).
- b. Place channels in the AGC mode and activate RECORD.
- c. Adjust R2 so that channel 1 meter indicates center of red zone.

d. Reconnect generator to RCVR channel 2 and adjust R4 so that channel 2 meter indicates center of red zone.

e. Disconnect audio generator and connect VTVM to TP-3. Extender card is necessary for TP-3.

f. Adjust R-17 for 4.0 VRMS.

g. Connect VTVM to TP-4 and adjust R-16 for 4.0 VRMS.

h. Disconnect VTVM, alignment of A1A4 is complete.

Section IX. TESTING AFTER REPLACEMENT OF REC/REP BOARD

(A1A3)

7-28. Test Equipment Required.

- a. Audio Generator AN/URM-127.
- b. VTVM Type ME318/U.

7-29. Testing Procedure for Audio Levels.

a. Connect audio generator to RCVR 1 input and adjust to 1 KHz at 0dB output (0.77 VRMS).

b. Place both channels in AGC mode and activate RECORD.

c. Connect VTVM to TP-1 and adjust R-16 for 1.74 VRMS (+7dB).

d. Reconnect generator to RCVR-2.

Reconnect VTVM to TP-2 and adjust R-35 for 1.74 VRMS (+7dB).

f. Both channel meters should have indicated center of red zone. If not, align bias oscillator board (A1A4) as per Section VIII.

g. Disconnect VTVM.

7-30. Testing Procedure for Equalization.

NOTE

Bias board adjustments must be correct before equalization adjustments are made. Due to slight variations in the characteristics of the record/playback head and other components, on rare occasion, it may be necessary to adjust R16 and R17 on the bias board (refer to paragraph 7-27) a few tenths of a volt to obtain proper equalization.

a. Connect audio generator output to RCVR 1 input. Connect headphone output jack with 600 ohm load to audio generator input and oscilloscope. Load

cassette with blank tape into unit.

b. Set audio generator switch to oscillator output and the 0dB range. Adjust oscillator output to 0dB.

c. Set channel selector switch to channel 1, AGC/MAN switch to MAN. Speed selector switch to 15/16 IPS.

d. Set audio generator switch to voltmeter and the +10dB range. Adjust channel 1 gain control to +7dB.

e. Set audio generator switch to oscillator output and the 0dB range. Decrease audio generator oscillator to -10dB.

f. Reset unit counter to 0; place unit into the RECORD mode.

Record:

- 10 counts 1000Hz
- 10 counts 4000Hz
- 10 counts 200Hz
- 10 counts 400Hz
- 10 counts 2000Hz

g. Rewind unit to 0 on counter. Set audio generator switch to voltmeter and the 0dB range.

h. Place unit into the REPRODUCE mode.

i. Adjust channel 1 gain control to 0dB at 1000Hz; at 4000Hz adjust R14 on record/reproduce board (A1A3) to 0dB.

j. Note and record readings for 200Hz, 400Hz and 2000Hz. All readings should be ± 3 dB with reference to 1000Hz at 0dB.

k. Connect audio generator output to RCVR 2 input.

l. Repeat steps a. through h. Insure channel selector switch is in channel 2 position.

m. Adjust channel 2 gain control for 0dB. At 1000Hz, adjust R34 on record/reproduce board (A1A3) for 0dB at 4000Hz.

n. Note and record readings for 200Hz, 400Hz and 2000Hz. All readings should be ± 3 dB with reference to 1000Hz at 0dB.

o. Connect audio generator to RCVR 1 input. Connect headphone jack with 600 ohm load to audio generator input and oscilloscope. Load cassette with blank tape into unit.

p. Set audio generator switch to oscillator output and the 0dB range. Adjust oscillator output to 0dB.

q. Set channel selector switch to channel 1. AGC/MAN switch to MAN. Speed selector switch to 1-7/8 IPS.

r. Set audio generator switch to voltmeter and the +10dB range. Adjust channel 1 gain control to +7dB.

s. Set audio generator switch to oscillator output and the 0dB range. Decrease audio generator oscillator to 10dB.

t. Reset unit counter to 0; place unit into the RECORD mode. Record:
 10 counts 1000HZ 10 counts 400HZ
 10 counts 8000HZ 10 counts 2000HZ
 10 counts 200HZ 10 counts 4000HZ

u. Rewind unit to 0 on counter. Set audio generator to voltmeter and the 0dB range.

v. Place unit into the REPRODUCE mode.

w. Adjust channel 1 gain control for 0dB. At 1000Hz, at 8000Hz adjust R15 on record/reproduce board (A1A3) for 0dB.

x. Note and record readings for 200Hz, 400Hz, 2000Hz and 4000Hz. All readings should be ± 3 dB with reference to 1000Hz 0dB.

y. Connect audio generator output to RCVR 2 input.

z. Repeat steps o. through v. Insure channel selector switch is in channel 2 position.

aa. Adjust channel 2 gain control for 0dB. At 1000Hz, at 8000Hz adjust R33 on record/reproduce board (A1A3) for 0dB.

bb. Note and record readings for 200Hz, 400Hz, 2000Hz, and 4000Hz. All readings should be ± 3 dB with reference to 1000Hz 0dB.

Section X. TESTING AFTER REPLACEMENT OF SERVO CAPSTAN CONTROL (A1A5)

7-31 Test equipment required.

a. Pre-recorded tape cassette 3KHz \pm .5% at 1 7/8 IPS.

b. Counter, Electronic Digital Read-out, AN/USM-207A.

c. VTVM Type ME318/U.

7-32. Testing Procedure.

a. Connect frequency counter to headphone jack and select channels 1 and 2.

b. Place 1 7/8 IPS tape in unit and activate PLAY.

c. Place speed selector in 1-7/8 IPS position.

d. Switch to AGC position.

e. Obtain a 3KHz count by adjusting R-14.

f. To adjust 15/16 IPS speed, use the 1 7/8 IPS tape with speed selector set to 15/16 IPS and adjust R13 for 1.5KHZ, $\pm 2\%$.

g. Place unit in STOP and remove electronic counter.

CHAPTER 8

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

8-1. Scope of General Support Maintenance.

Complete rebuild of the AN/UNH-17A and/or its individual components may be accomplished by general support maintenance facilities when authorized. Rebuild procedures of the AN/UNH-17A will include all repairs, rebuild replacement and testing operations necessary to make the equipment suitable for return to supply systems stocks for reissue to using organizations as equipment equivalent to new material. Detailed procedures for accomplishing the repair and rebuild operations as necessary, will be established by the maintenance facility performing the work.

8-2. Voltage and Resistance Measurements

NOTE

This equipment is transistorized. Observe all precautions given to prevent transistor damage. Make voltage measurements in this equipment only as specified. When measuring voltage, use tape or sleeving to insulate the entire test prod except the extreme tip. A momentary short circuit can damage a transistor. Use the schematic diagram to find normal voltage indications and compare them with test conditions.

NOTE

Before using the multimeter for resistance checks of transistor circuits, check the open circuit voltage across the multimeter test leads. Do not use the multimeter if the open circuit voltage exceeds 1.5 volts. Also, since the RXI range normally connects the multimeter integral battery directly across the test leads, the comparatively high current (50 ma or more) may damage the transistor circuits under test. As a general rule, it is not recommended that the RXI range of any multimeter be used when testing low power transistor circuits. Never connect test equipment (other than multimeters and VTVMs) outputs directly to a transistor circuit, use a coupling capacitor.

8-3. Waveforms.

When making waveform observations for direct comparison with illustrations contained within this manual, observe the conditions under which the waveforms were obtained.

Section II. TOOLS AND EQUIPMENT

8-4. Test Equipment.

The following test equipment is required for general support troubleshooting of the AN/UNH-17A.

Table 8-1. General Support Test Equipment

Nomenclature	Type Number
Frequency Counter	AN/USM-207 or equivalent
Oscilloscope	AN/USM-211 or equivalent
Flutter Meter	Mincom 8300A-W or equivalent
Multimeter	AN/USM-223 or equivalent
VTVM	ME-318/U or equivalent
Audio Generator	AN/URM-127 or equivalent
Variable, Band-Pass Filter	Krohn-Hite 310-AB or equivalent
Distortion Analyzer	Barker-Williamson 400 or equivalent

8-5. Special Tools and Materials.

The following special tools and materials are required for general support troubleshooting of the AN/UNH-17A.

Table 8-2. General Support Special Tools/Materials

Nomenclature	Type Number
Tape, Cassette	Prerecorded 3KHz \pm . 5% at 1 7/8 IPS
Spring Scale	Chatillon LP-36
Snap Ring Tool	Waldes S1520

Section III. TROUBLESHOOTING

8-6. Apparent Malfunctions.

If an apparent malfunction is observed, identify the trouble symptom (see Table 8-3) and using the information supplied, further localize the malfunction. If the trouble symptom is not readily identifiable, proceed with sequential troubleshooting procedure paragraph 8-7.

8-7. Sequential Troubleshooting Procedures.

a. If a malfunction is encountered which cannot be identified or remedied, proceed with the sequential troubleshooting procedure below. Sequence of performance shall be in the sequence given.

Table 8-3. General Support Troubleshooting

Item No.	Trouble Symptom	Meter Reading	Probable Trouble	Check Corrective Measures
1.	Capstan Motor not turning.	A1A5 pin "S" reads 13.0 VDC.	Open motor.	Replace.
2.	Capstan motor running at highest speed.	A1A5 pin "s" reads 13.0 VDC.	Defective photo-transistor capstan tachometer.	Replace.
3.	Capstan motor not turning.	A1A5 pin "S" reads less than 2.0 VDC.	Shorted motor/wiring.	Replace/ check wiring. Check A1A5 for damage.
4.	Noisy amplifier output, no signal.		Open heads/cable or plug.	Replace/check wiring.
5.	Playback signal is distorted.		Low bias level.	Test.
6.	No playback signals in SEARCH.		Carriage alignment wrong.	Adjust.
7.	Drops out of REPRODUCE.		Carriage solenoid not pulling in due to obstruction.	Clear obstruction.
8.	Drops out of REPRODUCE, FAST FWD, and REWIND.		Defective photo-transistor tape motion sense.	Replace.
9.	Reels cannot turn in any mode.		Defective brake solenoid/mal-adjustment.	Replace/ Adjust.

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Item No.	Trouble Symptom	Meter Reading	Probable Trouble	Check Corrective Measures
10.	No control of FAST FWD or REWIND.		Open search potentiometer.	Replace.
11.	No erase.		Defective bias oscillator A1A4/Logic control A1A6. Open erase head.	Test.
12.	No headphone output.		Defective bias oscillator A1A4/Logic control A1A6.	Test.
13.	Microphone receiver audible during playback.		Defective K1 on record/reproduce A1A3.	Replace.
14.	Rattling sounds when tape in motion.		Reel assembly worn/damaged.	Replace.
15.	Flutter.		Defective capstan motor. Defective capstan pulley bearings. Defective strobe disc.	Replace.
16.	High frequency response poor.		Heads defective. Azimuth adjustment incorrect.	Replace Alignment.

Section III. TROUBLESHOOTING - Continued

b. To troubleshoot without tape, hold mode command button in 10 seconds.

d. If push buttons do not light, check switch and lamp.

8-8. Power Supply System.

a. Connect unit to 115VAC source.

e. Press REPRO push button, the take-up motor should run.

b. Place CASSETTE MODE KNOB in STANDBY position.

8-10. End-Of-Tape Sensor/Tone.
Deleted.

c. Throw POWER toggle switch to ON position.

d. Measure voltages at TP-1, TP-2 and TP-3 on power supply card A1A7.

e. The power on lamp should light and 24VDC should appear at its socket.

f. If voltages are not correct or present, troubleshoot the line cord, circuit breaker, power switch, transformer bridge rectifier and the 24VDC regulators.

Note: A1Q1, next to the power transformer is part of the 24VDC line.

8-9. Control Logic System.

a. Replace control logic board A1A6. There are no adjustments on this board.

b. Activate push buttons as follows:

- (1) REPRODUCE - STOP.
- (2) FAST FWD - STOP.
- (3) REWIND - STOP.
- (4) RECORD/REPRODUCE - STOP.

c. Indicating lamps should illuminate when push buttons are pressed and remain illuminated until STOP is pressed. The indicator lamps will only light if the CASSETTE MODE switch is in STANDBY.

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8-11. Capstan Motor.

a. Place unit in REPRO at 15/16 IPS; capstan motor should run and have 4.2VDC across its terminals.

b. Place unit in REPRO at 1-7/8 IPS; capstan motor should run and have 7.7VDC across its terminals.

c. Any fault here should be corrected by replacement of motor control board A1A5. Replacement of A1A5 entails re-adjustment for proper motor speeds and monotone volume.

d. If board replacement does not correct fault, replace A1V1 capstan tach photo transistor.

e. Replacement of motor is advised if both c and d fail to correct problem. Refer to para. 8-25.

f. Do not overlook mechanical faults in the transport such as stuck or jammed bearings, oil film on drive belt and loose shafts.

8-12. Bias Oscillator.

a. Place unit in RECORD either speed.

b. Check signal on bias oscillator board A1A4 at TP-3 and TP-4. A signal of approximately 50 KHz and 4.0VRMS is nominal at these points.

c. If these readings are not obtained, defects are in the heads or the bias oscillator. Check for open coils L1 and L2. A short in the cabling will also load down the oscillator.

d. Replacement at the record\reproduce head requires resetting the bias oscillator to 4.0 VRMS at TP-3 and TP-4 on A1A4.

8-13. Tape Motion.

a. Load cassette into unit and place unit into a reproduce mode.

b. Observe the tape motion between erase head and capstan and also record play head and capstan. Tape should ride smoothly without skewing.

c. If skewing is observed, replace rubber rollers.

d. Other possible causes are: loose head, loose tape guide, cassette holder is not properly secured, defective cassette or cassette not properly seated.

e. Place unit into FAST FWD and then REWIND. Both tape reels should turn. Failure of this test will result in damaged tape. Probable defects are jammed reel bearings, loose drive belts, broken cassette spindle collars or bad motor.

f. Any rattling or howling when in REWIND or FAST FWD, would indicate bearing problems. Replacement is indicated.

8-14. Reproduce Amplifiers.

a. Board substitution should solve most defects. In the event this does not correct faults, test head continuity.

b. If RCVR input will not effect a proper record, check microphone jack or cabling for a short.

c. If noise but no signal is present on board, probable defects are: Head defective, no continuity from head to input of amplifier, relay K1 on A1A8 defective and relay K1 on A1A3 defective.

d. To check AGC feed, a 1 KHz tone at 0dB into RCVR of a channel and determine that +7dB (1.74VRMS across 600 OHMS) is present at the HEADPHONE jack when AGC is switched in.

e. Increase the input by 15dB and determine that the output increase by no more than 3.0 dB.

f. If desired readings are not obtained, probable defects are: board A1A3 defective or AGC - MAN switch defective.

g. If one or both amplifier channels oscillate, probable cause is due to use of extender card for Record/Reproduce board A1A3. This is expected due to the increase in lead length and the unshielded nature of the extender. Oscillation should stop when extender is removed, a faulty capacitor control board (A1A5), or faulty relays on the preamplifier (A1A8) can also cause this oscillation.

h. If meters fail to indicate, yet unit operation is normal, then meter may be open or movement stuck. Check also for open wires to the meter.

8-15. Performance Standards.

Upon completion of troubleshooting and necessary repair actions, unit shall be tested in accordance with operational test procedures (para. 8-34.) which will provide a direct go-no-go basis for rejecting or passing the repaired equipment.

Section IV. MAINTENANCE OF TRANSPORT MECHANISM AND ELECTRONICS

8-16. Scope of Repair.

Repair procedures at the general support level consist of disassembly of the unit as far as required to replace a faulty subassembly, located by troubleshooting, removal and replacement of the subassembly and reassembly of unit. Some repair at the subassembly level may be accomplished by direct support maintenance personnel. (See para. 7-3).

8-17. Disassembly Procedures.

To disassemble the AN/UNH-17A Recorder/Reproducer Set, proceed as follows:

- (a) Remove all attached cables and microphone from unit.
- (b) If vehicle mounted, loosen knurled screws and remove recorder/reproducer from mounting base.
- (c) The Recorder/Reproducer is now disassembled and repairable. Remove top and bottom covers to gain access to transport and chassis. Use Phillips #2 screwdriver.

NOTE

Disassemble only as required to replace a faulty component. For an exploded view of parts, see Fig. C-3.

- (d) Before any disassembly of the transport is attempted, the operational tests, paragraph 8-34, and the troubleshooting procedures, table 8-3 and paragraph 8-7, should have been accomplished to determine that a malfunction exists.

8-18. Mylar Belt Replacement.

- (a) Remove top cover by loosening the fourteen (14) captive screws with a #2 Phillips screwdriver.
- (b) Place cassette mode switch in LOAD/UNLOAD.
- (c) Remove tape counter belt from counter pulley.
- (d) Loosen four (4) captive front panel screws with a ¼" blade screwdriver.
- (e) Disconnect transport plug A1P1.
- (f) Remove transport from chassis panel assembly.
- (g) Place transport on its side such that supply motor is up and drive pulleys are facing the operator. (Do not place transport cassette side down as this will damage flat spring guides).
- (h) Remove the two (2) screws holding the capstan speed sensor cover plate with a #1 Phillips screwdriver.
- (i) Remove cover plate of capstan speed sensor.
- (j) Pull belt off pulleys with fingers and carefully slide belt over optical disc. Do not touch disc with fingers and avoid scratching. (Do not clean disc with solvents).
- (k) Carefully encircle optical disc with replacement belt.
- (l) Encircle lower pulley with belt using index finger to guide it.
- (m) While holding belt on lower pulley, guide remainder of loop over upper pulley with fingers of other hand. A slight rotation of the pulleys will pull belt into place.

(n) To check belt tension, either pulley maybe used. A small right angle bend in the scale's rod will make the following test simpler.

(o) Set pulley such that ¼" holes on outer edge are parallel with work area and hook scale in one hole of upper pulley.

(p) While holding lower pulley fixed, pull slowly on scale straight up and note dial reading as pulley just starts to turn. The scale should read about 7 ozs.

(q) If belt tension needs adjustment, loosen capstan and reel motor mount screws with a #1 Phillips screwdriver and secure proper belt tension.

(r) Replace optical disc cover with two (2) screws, lockwashers and flat-washers. Use a #1 Phillips and ensure that optical disc spins freely in photo-transistor gap.

(s) Replace transport being certain cassette mode switch is in LOAD/UNLOAD position. Guide flat spring guides over front panel lip.

(t) Engage four front panel slotted screws.

(u) Place cassette mode switch in STANDBY.

(v) Tighten four (4) front panel screws down such that rubber pinch rollers clear capstans by 1/64". This assures adequate operation of the STANDBY control.

(w) Test all functions.

(x) Replace top cover.

8-19. Reel Drive Belt Replacement.

(a) Repeat paragraph 8-18, steps a through f.

(b) Place transport on its side with take-up reel rotor (See Fig. 5-1.) up and head assembly to the right and facing operator.

(c) Working from the top opening with tweezers, remove old belt from motor and take-up pulleys.

(d) Replace new belt carefully to prevent nicking the soft rubber. The take-up pulley is positioned closest to deck. The upper pulley is used for the counter drive belt.

(e) Reposition transport such that supply reel motor (See Fig. 5-1.) is up and drive pulleys are facing operator.

(f) With the point of the tweezers, rotate the End-Of-Tape sense disc (See Fig. 5-1.) until the large slot is positioned to 11 o'clock.

(g) Reach past disc with tweezers and pull rubber belt through the large slot. This will force the belt to be captured on edge of slot.

(h) Rotate disc clockwise once around using point of tweezers. The belt will follow the slot around and unwind from pulley.

(i) Remove belt through top opening from the motor pulley.

(j) Reinstall new belt by looping around motor pulley and the stop nut on the disc. Use care not to nick the new belt.

(k) Rotate disc such that slot is at 11 o'clock and push belt through slot with tweezers.

(l) Rotate disc clockwise one turn and rubber belt will thread itself on pulley under disc.

(m) Ensure that belt passes over motor pulley and is seated properly around supply reel pulley.

(n) Return to paragraph 8-18 and complete steps s through x.

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8-20. Control Panel Removal.

(a) Remove tape transport assembly (refer to para. 8-18).

(b) Remove four 9/64" Allen head handle screws on the inside of the chassis. Note: Difficulty may be experienced in removing allen screws from handles. Use standard allen wrenches on all but the screw nearest the RECORD button. This screw maybe loosened by turning handle counter-clockwise.

(c) Remove 2 screws from tape counter. Use caution in removing counter so as not to lose spacer located inside the plastic reset button.

(d) Unscrew plastic boot over REWIND control.

(e) Remove 6 panel screws and carefully separate control panel from chassis frame.

8-21. Head Replacement.

To replace a faulty record/reproduce head, (See Figure 8-1) disconnect leads; remove two (2) screws (.050" Allen wrench) and carefully remove head assembly. Replacement is the reverse of disassembly. Do not disturb the azimuth adjustment or head platform adjustment. Use a medium grade of thread sealer on reassembly. To replace the erase head, the cassette tray and slide assembly must be removed. See para. 8-22 for exact procedure. Having removed the slide assembly, the erase head assembly is held by 1 guide pin and a screw (Phillips #0 screwdriver). Next remove the erase head mounting foot beneath the head held with 2 screws (Phillips #0 screwdriver). Use a medium grade thread sealer on reassembly.

8-22. Slide Plate Replacement. (See Figure 8-1.)

Slide plate assembly must be removed for replacement of erase head, rubber

pinch rollers and take-up supply reels.

(a) Repeat paragraph 8-18, steps a through f.

(b) Remove cassette tray with 3/32" Allen wrench on rear screws and a #1 Phillips screwdriver on the front screws.

(c) Remove helical spring.

(d) Remove "E" retainer clip, sleeve and bushing.

(e) Remove head cable clamp with a #1 Phillips screwdriver.

(f) Remove four (4) hex head screws holding slide assembly down using 5/64" Allen wrench.

(g) Remove slide assembly. Notice the shoulder washers for the slide are round on the record/reproduce head side and hexagonal on the erase head side.

(h) Reassembly is the reverse of disassembly. No adjustments should be disturbed doing this procedure.

(i) Return to paragraph 8-18, steps s through x.

8-23. Reel Drive Assembly Replacement.

(a) Repeat paragraph 8-22, steps a through g.

(b) Place transport on either side and grasp a reel by its rubber rim.

(c) With a 1/4" nut driver, unscrew the stop nut holding that reel.

(d) Remove pulley or disc and pulley (depending on reel being repaired) and carefully remove lock pin from shaft.

(e) Pull reel up from deck.

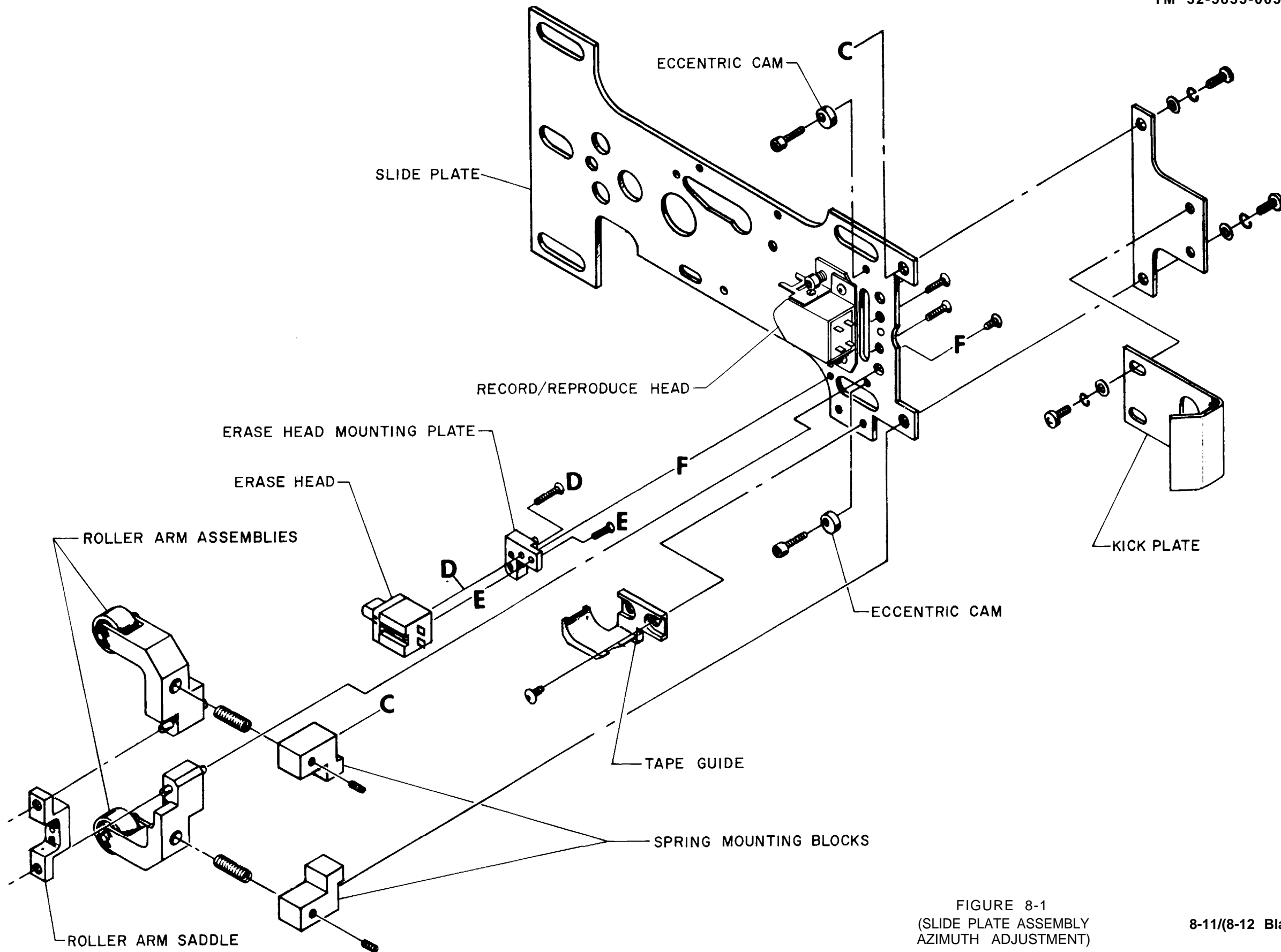


FIGURE 8-1
(SLIDE PLATE ASSEMBLY
AZIMUTH ADJUSTMENT)

(f) Bearings may be removed easily with needle nose pliers.

(g) Reassembly is the reverse of disassembly.

(h) It will be necessary to set up the brake adjustment. (See paragraph 8-30).

8-24. Capstan Replacement.

(a) Repeat paragraph 8-18, steps a through g.

(b) Capstan shafts are the same diameter, the pulleys are not.

(1) The capstan pulley on the supply reel side is part no. 0149-1-3070-2.

(2) The capstan pulley on the take-up reel side is part no. 0149-1-3070-1.

(c) Remove Mylar belt.

(d) Holding a pulley with fingers, unscrew hex head screw with .050" Allen wrench. Remove pulley.

(e) With special tool, Waldes part no. S1520, remove two (2) grip clips from shaft.

(f) Remove shaft and locating pin. Note that capstan associated with the take-up reel requires that the solenoid be removed. Unscrew solenoid, do not disturb linkage or its adjustments.

(g) Bearings may be knocked out using a 1/16" Allen screwdriver. DO NOT USE THE CAPSTAN SHAFTS TO KNOCK OUT BEARINGS.

(h) Replace bearings and/or shaft whichever was indicated. Reinsert locating pin.

(i) Replace pulley with hex head screw, lock washer and washer.

(j) Replace clips with special tool, Waldes S1520. Allow enough clearance for pulley and shaft to turn without undue end shake of capstan shaft.

(k) Replace Mylar belt, using procedure of paragraph 8-18, steps 1 through x.

8-25. Capstan Motor and Reel Drive Motor Removal.

(a) Repeat paragraph 8-18, steps a through j.

(b) Remove strobe disc, using .050" Allen wrench.

(c) Remove rubber reel belts, using procedure of paragraph 8-19, steps b through i.

(d) Remove four (4) screws, using #1 Phillips screwdriver.

(e) Pull the three (3) motor assembly free of transport, using service loop provided. Snip any plastic cable ties that interfere with procedure.

(f) Remove defective motor by unscrewing three (3) screws with #0 Phillips screwdriver.

(g) Replace defective motor(s).

(h) Replace three (3) motor assembly screws and replace any damaged plastic cable ties.

(i) Replace strobe disc.

(j) Refer to paragraph 8-18, steps k through r for replacement of Mylar belt.

(k) Refer to paragraph 8-19, steps j through n for replacement of rubber reel drive belt.

8-26. Repair of Control Panel Assembly.

Repair of control panel assembly consists of replacement of malfunctioning parts. Repair as follows:

(a) Replacement of most parts is obvious and no specific instructions are provided, (See Figure 8-2.) for wiring information.

(b) If counter window requires replacement, coat edges with Type II adhesive per ME-A-8623 prior to installing.

8-27. Counter Reset Adjustment.

If reset push rod is binding loosen counter mounting screws with a #1 Phillips screwdriver and reposition counter as required to obtain proper operation.

8-28. Repair of Motor Speed Tachometer assembly.

Repair of the motor tachometer consists of replacement of A1V1 phototransistor assembly or optical disc as required.

8-29. Repair of End-Of-Tape Sensor Assembly.

Repair of End-Of-Tape sensor consists of replacement A1V2 phototransistor assembly.

8-30. Reel Brake Adjustment.

If braking action is inadequate, adjust brakes as follows: Note: This procedure does not require the transport to be removed from the chassis/panel assembly.

(a) To set reel brakes, tighten stop nuts (See Fig. 5-1.) beneath reels with $\frac{1}{4}$ " nut driver until friction clutch just turns brake rim. (Slowly turn three (3) cornered reel collet with fingers).

(b) Back off a quarter turn with nut driver until brake holds.

8-31. Replacement of Reel Drive Collets.

It is not necessary to remove transport from chassis/panel assembly.

(a) To replace plastic collets, use a $\frac{3}{16}$ " blade screwdriver to unscrew cap screws.

(b) Replace damaged collets.

(c) Replace screws, using a medium grade thread locking compound.

8-31. Removal of Rubber Pinch Rollers.

(a) Repeat paragraph 8-22, steps a through g.

(b) Remove pin support brackets' two (2) screws, using a #0 Phillips screwdriver. (See Figure 8-1.).

(c) Remove Allen adjustment screws and springs, using a .050" Allen wrench.

(d) Remove roller arm assemblies.

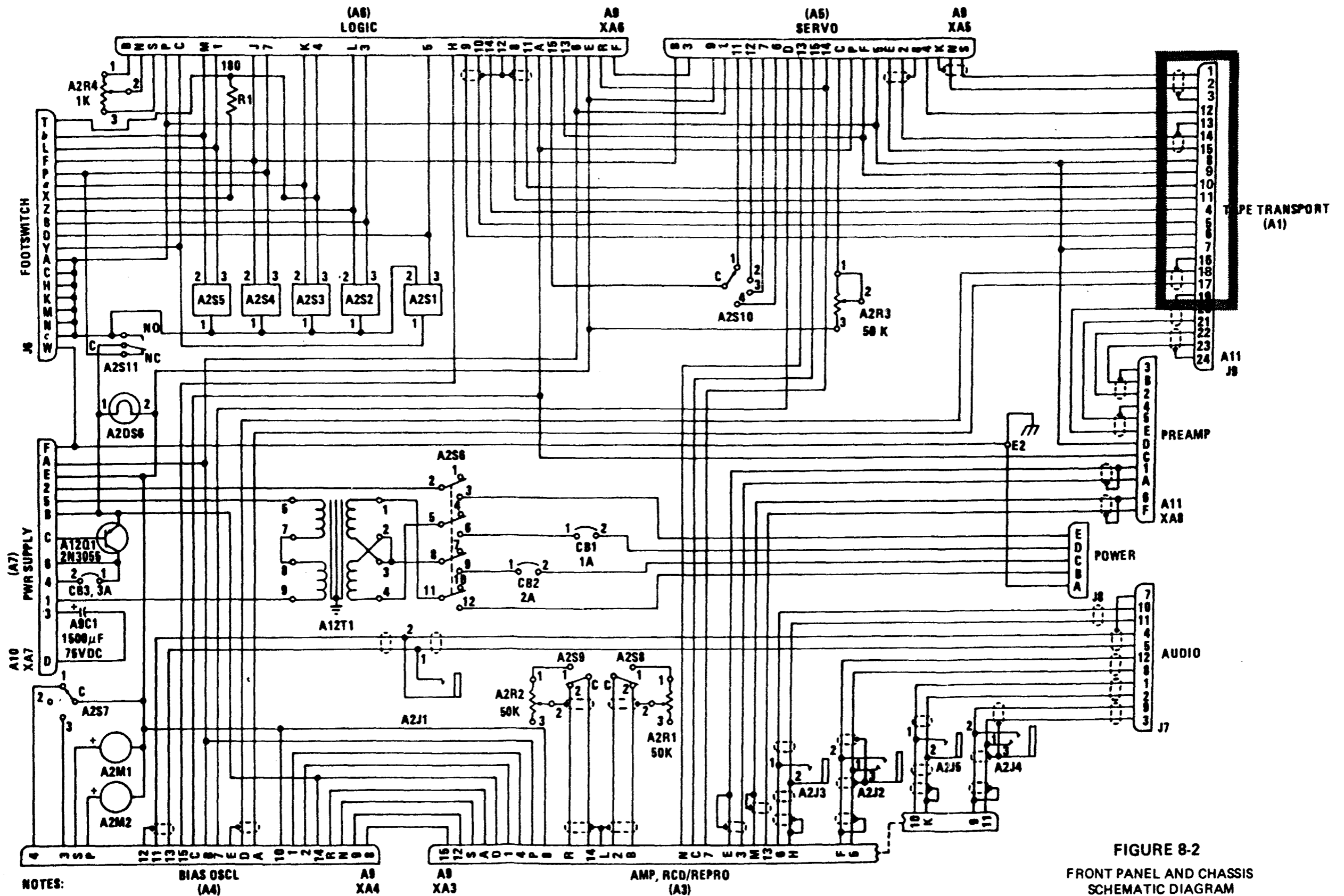
(e) Replace new roller arm assemblies, pins and bracket.

(f) Replace slide assembly and all screws.

(g) Adjustment will be required, See paragraph 8-32.

8-32. Adjustment of Pinch Rollers.

(a) To adjust pinch rollers, transport must be removed from chassis/panel assembly. (See paragraph 8-18, steps a through f. Ignore these steps if transport is already removed.



NOTES:

UNLESS OTHERWISE SPECIFIED:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1 FOR COMPLETE DESIGNATION.
2. ALL COMPONENTS PREFIXED

3. RESISTANCE VALUES IN OHMS.

FIGURE 8-2
FRONT PANEL AND CHASSIS
SCHEMATIC DIAGRAM

Section V. GENERAL SUPPORT TESTING PROCEDURES

8-34. Operational Test Procedure.

a. Scope of Tests. To determine that the Recorder/Reproducer is functioning properly after troubleshooting or repair actions, a series of operational tests is performed on a routine basis. If recorder fails to meet the requirements of any test, refer to troubleshooting Table 8-3. and sequential troubleshooting procedure paragraph 8-7.

b. The following tests shall be performed in the order listed.

- (1) Power Supply
- (2) Speed Accuracy
- (3) Variable Speed
- (4) Wow/Flutter
- (5) Frequency Response
- (6) Reproduce Amplifier Output
- (7) Input Level and Automatic Gain Control
- (8) Signal to Noise Ratio
- (9) Erase Efficiency
- (10) Crosstalk measurement

NOTE

During operational testing procedure, the following conditions/control settings are to be maintained unless otherwise indicated.

CASSETTE LOADED IN UNTIT.
 15/16 IPS TAPE SPEED.
 AGC-MAN CONTROLS IN MAN POSITION.
 CHANNEL SELECTOR SWITCH TO CHANNEL BEING OBSERVED.
 LOAD/UNLOAD LEVER TO STANDBY.
 600 LOAD ON HEADPHONE OUTPUT JACK.
 ALL AUDIO OUTPUT MEASUREMENTS MADE AT HEADPHONE JACK.
 AUDIO GENERATOR CONNECTED TO RCVR JACK OF BOTH CHANNELS; MAINTAIN 0dB OUTPUT UNLESS OTHERWISE DIRECTED.

Refer to Figure 7-1 for location of circuits referenced in the following test.

8-35. Power Supply Test

a. Connect a 230 VAC single phase source to power input of the unit through appropriate cable. Line frequency may be anywhere from 50 to 400Hz.

b. Vary line voltage between 218 and 241 VAC, observe that voltages listed below remain within limits given.

Power Supply Board (A1A7):

TP1= ± 1 volt of input line voltage.

TP2= +21 VDC ± 2 VDC

TP3= +15 VDC ± 1.5 VDC

c. Connect a 115 VAC source to power input of the unit through appropriate cable. Repeat Step b, varying line voltage from 109 to 121 VAC.

d. Connect a 28V DC source to power input of the unit through appropriate cable. Repeat step b, varying DC voltage from 22 to 30 VDC.

8-36. Record/Reproduce Speed Accuracy.

The measurement procedure described below must be made at 25° C ambient temperature, 115 VAC source 60 Hz.

a. Connect counter and oscilloscope to HEADPHONE jack. Insert into the unit a cassette test tape prerecorded with a 3kHz $\pm 5\%$ signal at 1-7/8 IPS.

b. Set AGC-MAN switch to MAN position. Adjust GAIN control 1 to maximum. Set SPEED CONTROL to 15/16 IPS. Set CHANNEL SELECTOR switch to position 1.

c. Place unit into FAST FWD mode of operation by pressing Fast Forward push-button. Wind tape to approximately the middle of the tape.

d. Stop unit by pressing STOP push-button.

e. Place unit into Reproduce mode of operation by pressing the REPRODUCE pushbutton. Observe and note the percentage of deviation from the basic frequency of tape.

This speed is the nominal speed of the tape transport. Note and record read readings. Speed should not be off more than $\pm 5\%$ around the indicated speed.

- f. Repeat steps a. through e. at 1-7/8 IPS. Set SPEED SELECTOR to 1-7/8 IPS. Nominal frequency of tape at this speed will be 3KHz $\pm .5\%$.

NOTE

The measured nominal speeds of the tape transport will serve as the reference speeds with respect to all speed measurements made during the operational testing procedures.

8-37. Variable Speed.

- a. Adjust GAIN control 1 to maximum and set SPEED SELECTOR to $\Delta 15/16$ IPS position.
- b. Connect counter and oscilloscope to HEADPHONE jack. Insert into the unit a cassette test tape prerecord with a $3 \pm .5\%$ of signal at 1 7/8 IPS."
- c. Place unit into REPRODUCE mode of operation.
- d. Turn VARY speed control to the extreme counterclockwise position. Note and record percentage of deviation from basic frequency of tape. Speed variation should be at least $\pm 30\%$.
- e. Repeat step d. with the VARY speed control set to the extreme clockwise position.
- f. Adjust GAIN control 2 to maximum. Set SPEED SELECTOR to $\Delta 1-7/8$ IPS position.
- g. Repeat steps b. through e.
Note: At 1-7/8 IPS, nominal frequency of tape is 3KHz.
- h. Deleted.

8-38. Wow and Flutter.

- a. Connect Wow and Flutter Meter to output of HEADPHONE jack.

- b. Insert into the unit a cassette test tape prerecorded with a 3KHz $\pm .5\%$ signal at 1-7/8 IPS. Turn GAIN CONTROL 1 fully clockwise. Set CHANNEL SELECTOR switch to position 1.

- c. Place unit into REPRODUCE mode of operation, adjust GAIN of recorder to obtain sufficient calibration voltage for the Flutter Meter.

- d. Calibrate Flutter Meter and take 10 readings across the length of the tape.

- e. Average readings of Meter. Note and record readings. Readings should not exceed 1.5% RMS.

- f. Set AGC-MAN switch to MAN position. Adjust GAIN control 1 to maximum. Set SPEED control to 1-7/8 IPS. Set CHANNEL SELECTOR switch to position 1. Repeat steps a. through e.

8-39. Frequency Response

- a. Set speed at 15/16 IPS.
- b. Set oscillator to 1KHz, 0dB output. Put unit in RECORD mode.
- c. Set gain of each channel for an output of +7dBm.
- d. Reduce oscillator level to -10dB. Reset counter to 000.
- e. Record 5 to 10 counts at each of these frequencies: 1KHz, 200Hz, 400Hz, 2KHz, 4KHz. (When testing 1-7/8, also 8KHz).
- f. Rewind to 000 on counter. Put unit in REPRO.
- g. Set output of each channel to 0dB during 1KHz playback, using MAN GAIN CONTROL. This becomes the relative zero dB point.

8-33. Items to be Inspected.

Unit shall be inspected as per Table 8-4.

Table 8-4. Inspection Procedures

STEP NO.	CONTROL SETTINGS		TEST PROCEDURE	PERFORMANCE STANDARDS
	TEST EQUIPMENT	EQUIPMENT UNDER TEST		
1.	N/A	Controls may be in any position.	Inspect wires, leads, connections, insulation and protective coating.	<p>a. No breaks, burns, corrosion, loosened connections or damage.</p> <p>b. No cracked or inadequate protective coating on circuit boards.</p>
2.			Inspect printed circuits.	No breaks, burnouts, corrosion, loosened eyelets and feed-through terminals or lack of protective coating.
3.			Inspect mounting screws.	Mounting screws must not be longer than specified as improper length may damage adjacent component or cause shorts.
4.			Inspect general assembly.	No conductive particles, jumper clippings or solder drops.
5.			Inspect resistors, and capacitors.	No burnouts, bubbles, or lack of protective coatings.
6.			Inspect solder joints.	No cold solder joints, broken joints, excessive solder.
7.			Inspect connectors and receptacles.	No insecure mountings, bent or missing pins, damaged shells.

Table 8-4. Inspection Procedures (Cont)

STEP NO.	CONTROL	SETTINGS	TEST PROCEDURE	PERFORMANCE STANDARDS
	TEST EQUIPMENT	EQUIPMENT UNDER TEST		
8.			Inspect cables.	Damaged insulation, improper routing, kinking or twisting, loose or damaged cable clamps.
9.			Inspect terminal boards.	No breaks, cracks, or loose terminals insecure mounting.
10.			Inspect panels, covers and chassis.	No loose or missing attached hardware, physical damage, illegible markings on name or instruction plates.
11.			Inspect transformers and chokes.	No leaking potting compounds, oil or other signs of overheating, damaged or broken connections, insecure mounting.
12.			Inspect drive belts.	No dirty or worn belts.
13.			Inspect relays.	No loose or broken connections, insecure mountings.
14.			Inspect heads.	No dust, oxide, foreign material or excessive wear.
15.			Inspect bearings.	No rough rotation, sticking or binding.
16.			Inspect mechanical parts.	No broken or misaligned parts, excessive wear. (Excessive wear is defined as any wear which may interfere with the proper function of the equipment).

(b) Using a 5/64" Allen wrench, set eccentric cams such that Record/Reproduce head is flush with the roller face line (See Figure 8-3. a and b) and template.

(c) Use care in setting cams as improper adjustment will jam the slide assembly.

(d) Using opposite side of template, set kick plate to record head distance. Use a #1 Phillips screwdriver. (See Figure 8-4.)

(e) Set slide plate solenoid linkage for about 1/64" over travel of slide past roller contact with capstan. Solenoid may be electrically activated or held in with finger pressure.

(f) Holding slide plate solenoid in, set spring pressure such that 1¼ lbs. just lifts roller from capstan. Use a .050" Allen wrench. (See Figure 8-5.)

(g) Repeat paragraph 8-18., steps x through x.

8-33. Items to be Inspected.

Unit shall be inspected as per Table 8-4, on page 8-17.

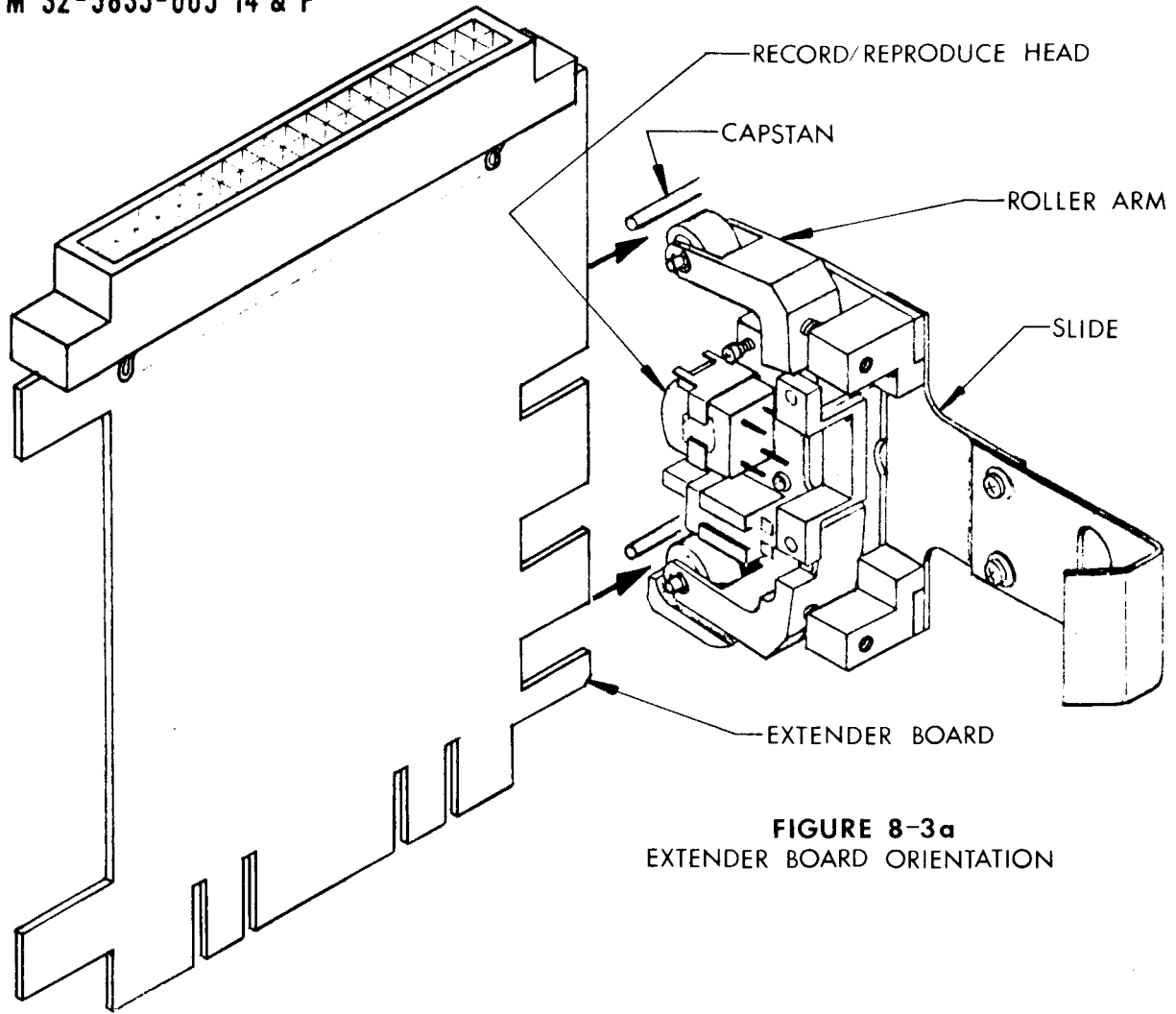


FIGURE 8-3a
EXTENDER BOARD ORIENTATION

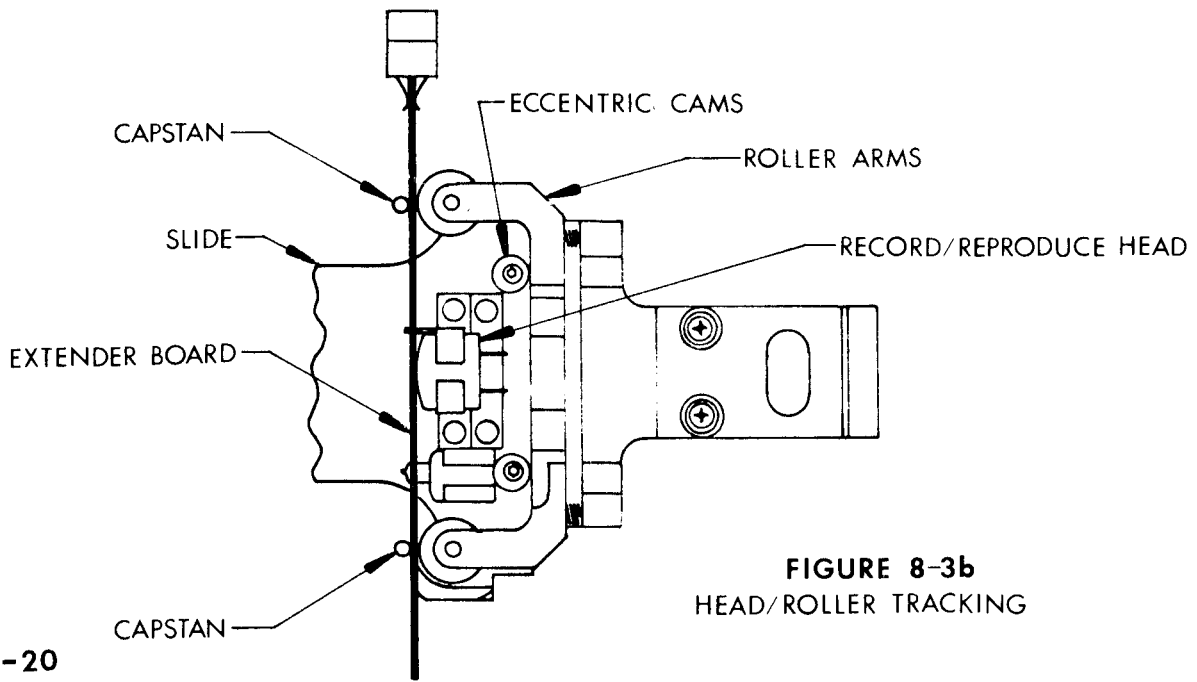


FIGURE 8-3b
HEAD/ROLLER TRACKING

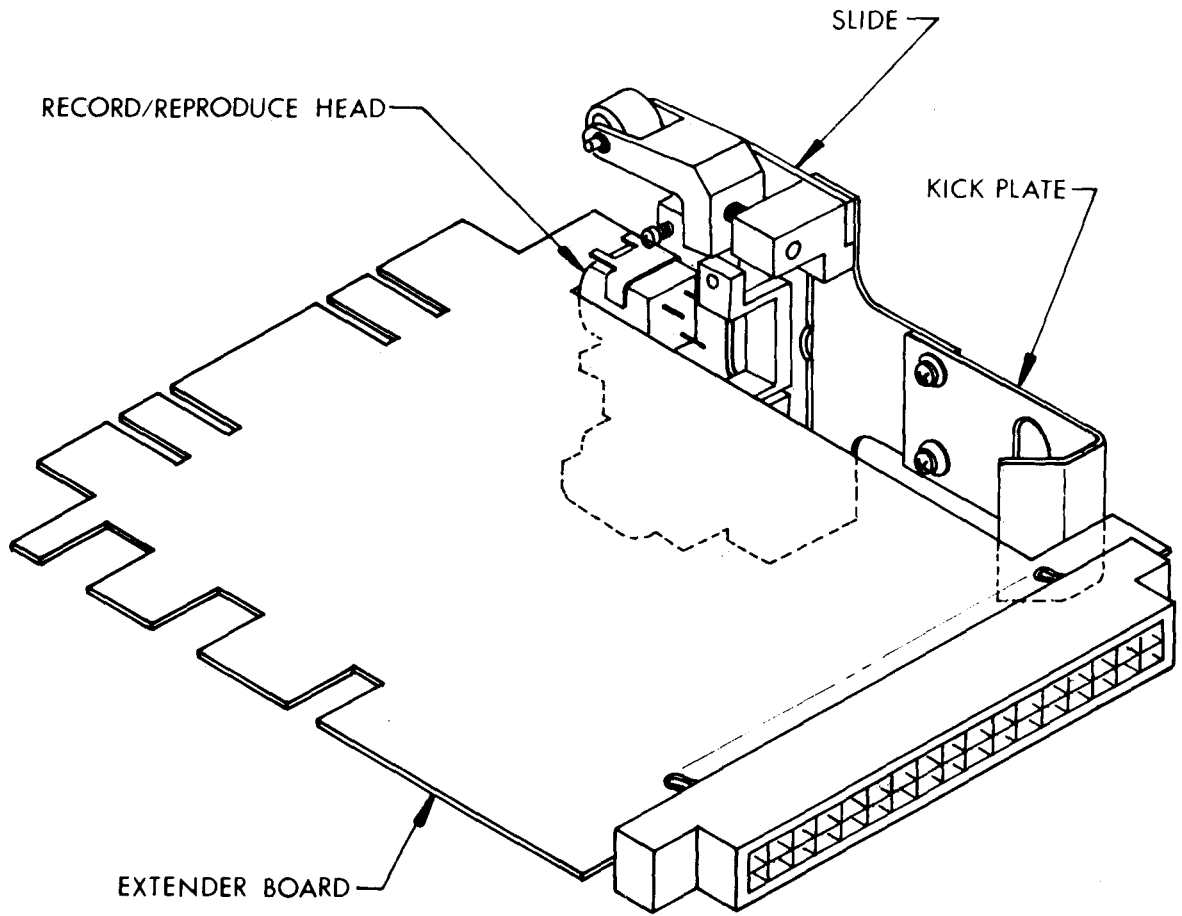


FIGURE 8-4
HEAD/KICK PLATE SETTING

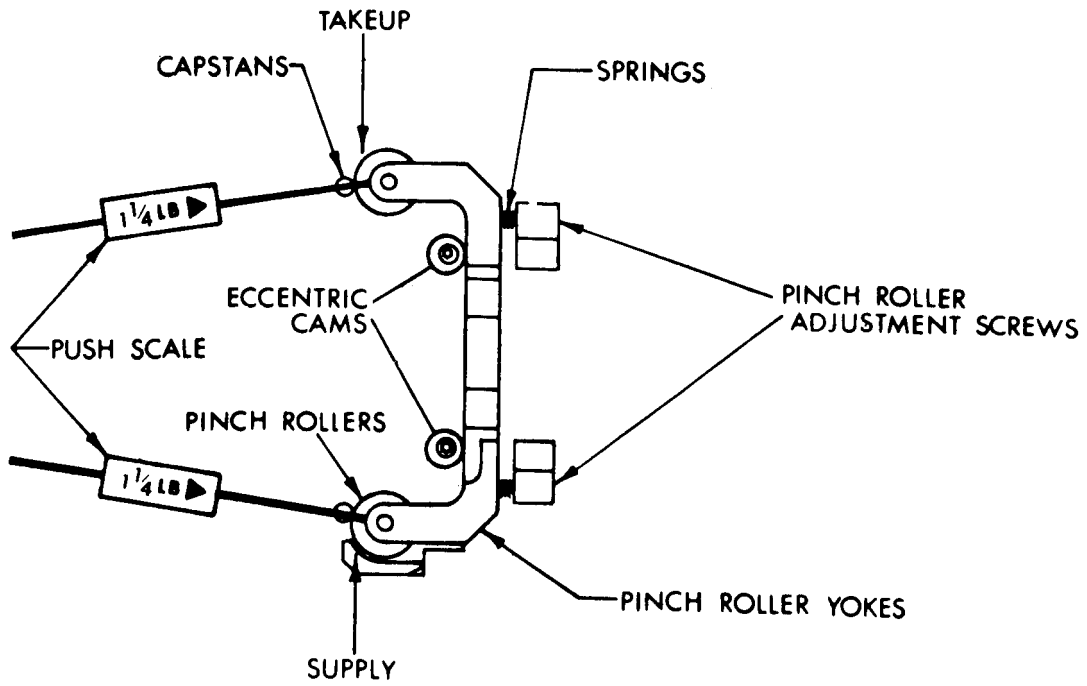


FIGURE 8-5
ADJUSTMENT PINCH ROLLER PITCH/PRESSURE

Section V. GENERAL SUPPORT TESTING PROCEDURES

8-34. Operational Test Procedure.

a. Scope of Tests. To determine that the Recorder/Reproducer is functioning properly after troubleshooting or repair actions, a series of operational tests is performed on a routine basis. If recorder fails to meet the requirements of any test, refer to troubleshooting Table 8-3. and sequential troubleshooting procedure paragraph 8-7.

b. The following tests shall be performed in the order listed.

- (1) Power Supply
- (2) Speed Accuracy
- (3) Variable Speed
- (4) Wow/Flutter
- (5) Frequency Response
- (6) Reproduce Amplifier Output
- (7) Input Level and Automatic Gain Control
- (8) Signal to Noise Ratio
- (9) Erase Efficiency
- (10) Crosstalk measurement

NOTE

During operational testing procedure, the following conditions/control settings are to be maintained unless otherwise indicated.

CASSETTE LOADED IN UNIT.
 15/16 IPS TAPE SPEED.
 AGC-MAN CONTROLS IN MAN POSITION.
 CHANNEL SELECTOR SWITCH TO CHANNEL BEING OBSERVED.
 LOAD/UNLOAD LEVER TO STANDBY.
 600 LOAD ON HEADPHONE OUTPUT JACK.
 ALL AUDIO OUTPUT MEASUREMENTS MADE AT HEADPHONE JACK.
 AUDIO GENERATOR CONNECTED TO RCVR JACK OF BOTH CHANNELS; MAINTAIN OdB OUTPUT UNLESS OTHERWISE DIRECTED.

Refer to Figure 7-1 for location of circuits referenced in the following test.

8-35. Power Supply Test

a. Connect a 230 VAC single phase source to power input of the unit through appropriate cable. Line frequency may be anywhere from 50 to 400Hz.

b. Vary line voltage between 218 and 241 VAC, observe that voltages listed below remain within limits given.

Power Supply Board (A1A7):

- TP1= greater than +22 VDC, less than +40 VDC
- TP2= +21 VDC \pm 2 VDC
- TP3= +15 VDC \pm 1.5 VDC

c. Connect a 115 VAC source to power input of the unit through appropriate cable. Repeat step b, varying line voltage from 109 to 121 VAC.

d. Connect a 28V DC source to power input of the unit through appropriate cable. Repeat step b, varying DC voltage from 22 to 30 VDC.

8-36. Record/Reproduce Speed Accuracy.

The measurement procedure described below must be made at 25° C ambient temperature, 115 VAC source 60 Hz.

a. Connect counter and oscilloscope to HEADPHONE jack. Insert into the unit a cassette test tape prerecorded with a 3kHz \pm .5% signal at 15/16 IPS."

b. Set AGC - MAN 1 switch to MAN position. Adjust GAIN control 1 to maximum. Set SPEED CONTROL to 15/16 IPS. Set CHANNEL SELECTOR switch to position 1.

c. Place unit into FAST FWD mode of operation by pressing Fast Forward push-button. Wind tape to approximately the middle of the tape.

d. Stop unit by pressing STOP push-button.

e. Place unit into Reproduce mode of operation by pressing the REPRODUCE pushbutton. Observe and note the percentage of deviation from the basic frequency of tape.

This speed is the nominal speed of the tape transport. Note and record read readings. Speed should not be off more than $\pm 5\%$ around the indicated speed.

f. Repeat steps a. through e. at 1-7/8 IPS. Set SPEED SELECTOR to 1-7/8 IPS. Nominal frequency of tape at this speed will be 6KHz $\pm .5\%$

NOTE

The measured nominal speeds of the tape transport will serve as the reference speeds with respect to all speed measurements made during the operational testing procedures.

8-37. Variable Speed.

- a. Adjust GAIN control 1 to maximum and set SPEED SELECTOR to 15/16 IPS position.
- b. Connect counter and oscilloscope to HEADPHONE jack. Insert into the unit a cassette test tape prerecorded with a 3KHz $\pm .5\%$ signal at 15/16 IPS."
- c. Place unit into REPRODUCE mode of operation.
- d. Turn VARY speed control to the extreme counterclockwise position. Note and record percentage of deviation from basic frequency of tape. Speed variation should be at least $\pm 30\%$.
- e. Repeat step d. with the VARY speed control set to the extreme clockwise position.
- f. Adjust GAIN control 2 to maximum. Set SPEED SELECTOR to 1-7/8 IPS position.
- g. Repeat steps b. through e.
Note: At 1-7/8 IPS, nominal frequency of tape is 6KHz.

8-38. Wow and Flutter.

- a. Connect Wow and Flutter Meter to output of HEADPHONE jack.

- b. Insert into the unit a cassette test tape prerecorded with a 3KHz $\pm .5\%$ signal at 15/16 IPS. Turn GAIN CONTROL 1 fully clockwise. Set CHANNEL SELECTOR switch to position 1.

- c. Place unit into REPRODUCE mode of operation, adjust GAIN of recorder to obtain sufficient calibration voltage for the Flutter Meter.

- d. Calibrate Flutter Meter and take 10 readings across the length of the tape.

- e. Average readings of Meter. Note and record readings. Readings should not exceed 6.3% peak-to-peak.

- f. Repeat steps a. through e. at 1-7/8 IPS using a 3KHz $\pm .5\%$ signal at 15/16 IPS cassette in unit.

8-39. Frequency Response

- a. Set speed at 15/16 IPS.
- b. Set oscillator to 1KHz, 0dB output. Put unit in RECORD mode.
- c. Set gain of each channel so that Vu Meter is in middle of red scale. (This sets record gain).
- d. Reduce oscillator level to -10dB. Reset counter to 000.
- e. Record 5 to 10 counts at each of these frequencies: 1KHz, 200Hz, 400Hz, 2KHz, 4KHz. (When testing 1-7/8, also 8KHz).
- f. Rewind to 000 on counter. Put unit in REPRO.
- g. Set output of each channel to -10dB during 1KHz playback, using MAN GAIN CONTROL. This becomes the relative zero dB point.

h. Read output of each channel during each frequency recorded. Observe reading at each frequency is within $\pm 3\text{dB}$ of 1 KHz level.

i. Repeat procedure with speed at $1 \frac{7}{8}$.

8-40. Output of Reproduce Amplifiers and Distortion Test.

a. Set speed 15/16.

b. Set oscillator to 1KHz at 0dB.

c. Put unit in RECORD, set gain each channel for an output of +7dBm. Reset counter to 000.

d. Record 10 to 20 counts.

e. Rewind to 000.

f. Put unit in REPRO. Set gain pots full CW. Observe each channel output greater than +13dBm on VTVM.

g. Reduce gain controls for an output on each channel of +13dBm.

h. Measure distortion on each channel.

i. Distortion reading should not exceed 3%.

j. Repeat procedure at $1 \frac{7}{8}$ ips.

8-41. Input Level and AGC Test.

a. Set speed 15/16, both AGC/MAN switches to AGC.

b. Set oscillator to 400 Hz, at 0dB.

c. Put unit in RECORD, reset counter to 000.

d. Record 5 to 10 counts.

e. Increase oscillator drive to +16dBm.

f. Record 5 to 10 counts.

g. REWIND to 000 on counter.

h. Set both AGC/MAN switches to MAN.

i. Put unit in REPRO.

j. Set output of each channel to 0dB with MAN GAIN control.

k. Deleted.

l. When section recorded in step f is passing the head (observe counter reading), observe that the output is within $\pm 3\text{dB}$ of 0dB on each channel.

m. Deleted.

8-42. Signal to Noise Ratio.

a. Set Speed 15/16.

b. Set oscillator to 0dB at 400 Hz.

c. Put unit in RECORD. Set MAN GAIN pots each channel for an output of +7dBm.

d. Increase oscillator to +10dB. Reset counter to 0.

e. Record 5 to 10 counts.

f. Disconnect oscillator, but continue recording 5 to 10 more counts.

g. Rewind to 000. Put machine into REPRO.

h. Set gain each channel to +10dB.

i. When section recorded in step f is reached, subtract this VTVM reading from level step h. This difference should be at least 35dB. Do this for each channel.

j. Repeat procedure at $1 \frac{7}{8}$ ips.

8-43. Erase Efficiency.

a. Set speed 15/16.

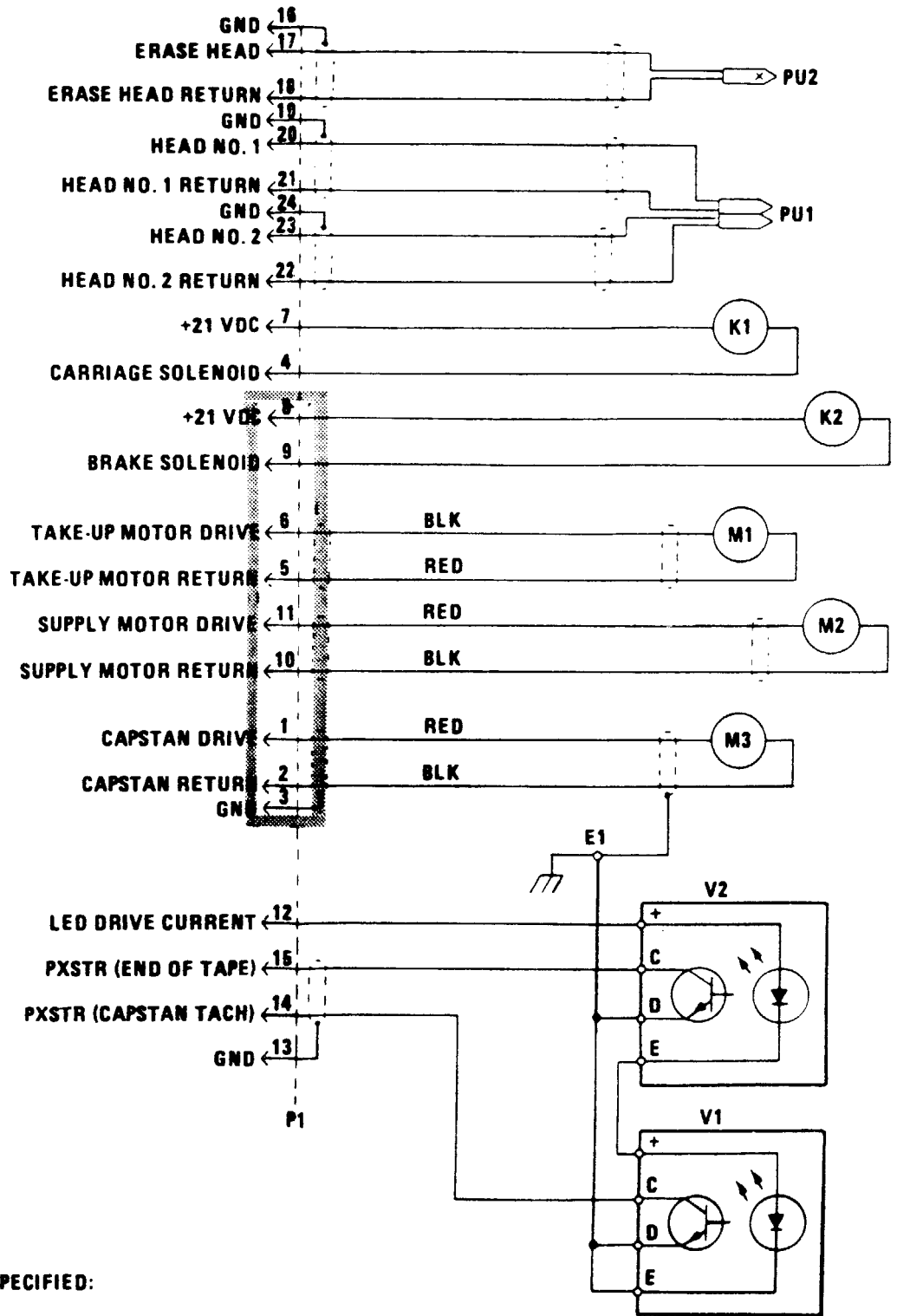
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- b. Set oscillator to 1KHz at 0dB.
- c. Put unit in RECORD.
- d. Set both MAN GAIN pots each channel for an output of +7dBm.
- e. Increase oscillator to +10dB; reset counter to 000.
- f. Record 20 counts.
- g. REWIND tape to 010 on counter.
- h. Disconnect oscillator from both inputs. Turn MAN GAIN pots to the extreme counter clockwise position.
- i. Put unit in RECORD. Record 10 counts.
- j. Rewind to 000 on counter.
- k. Connect filter to headphone jack. Set filter cutoffs to 500 Hz (low) and 2 KHz (high).
- l. Connect VTVM to output of filter.
- m. Put unit in REPRO.
- n. Set MAN GAIN of each channel to +10dB reading on VTVM.
- o. After counter passes 010, observe output of each channel.
- p. The difference between step n and step o, should exceed 40dB for each channel.
- f. Record 10 counts.
- g. Disconnect oscillator from channel 1 only.
- h. Continue recording 10 more counts.
- i. Reconnect oscillator to channel 1, and disconnect oscillator from channel 2 only.
- j. Continue recording 10 more counts.
- k. Rewind to Zero.
- l. Connect filter to headphone jack, set filter cutoffs to 200Hz (low) and 800Hz (high).
- m. Connect VTVM to output of filter.
- n. Put unit in REPRO.
- o. Set MAN GAIN of each channel for 0dB reading on VTVM.
- p. When the recording made in step h passes heads, note output of channel 1 as seen on VTVM.
- q. When the recording made in step j passes heads, note output of channel 2 as seen on VTVM.
- r. Readings p and q should be at least 40dB below reading of step o.

8-44. Crosstalk Measurement.

- a. Set speed 15/16.
- b. Set oscillator to 400Hz at 0dB.
- c. Put unit in RECORD.
- d. Set MAN GAIN of each channel for an output of +7dBm.
- e. Reset counter to 000.

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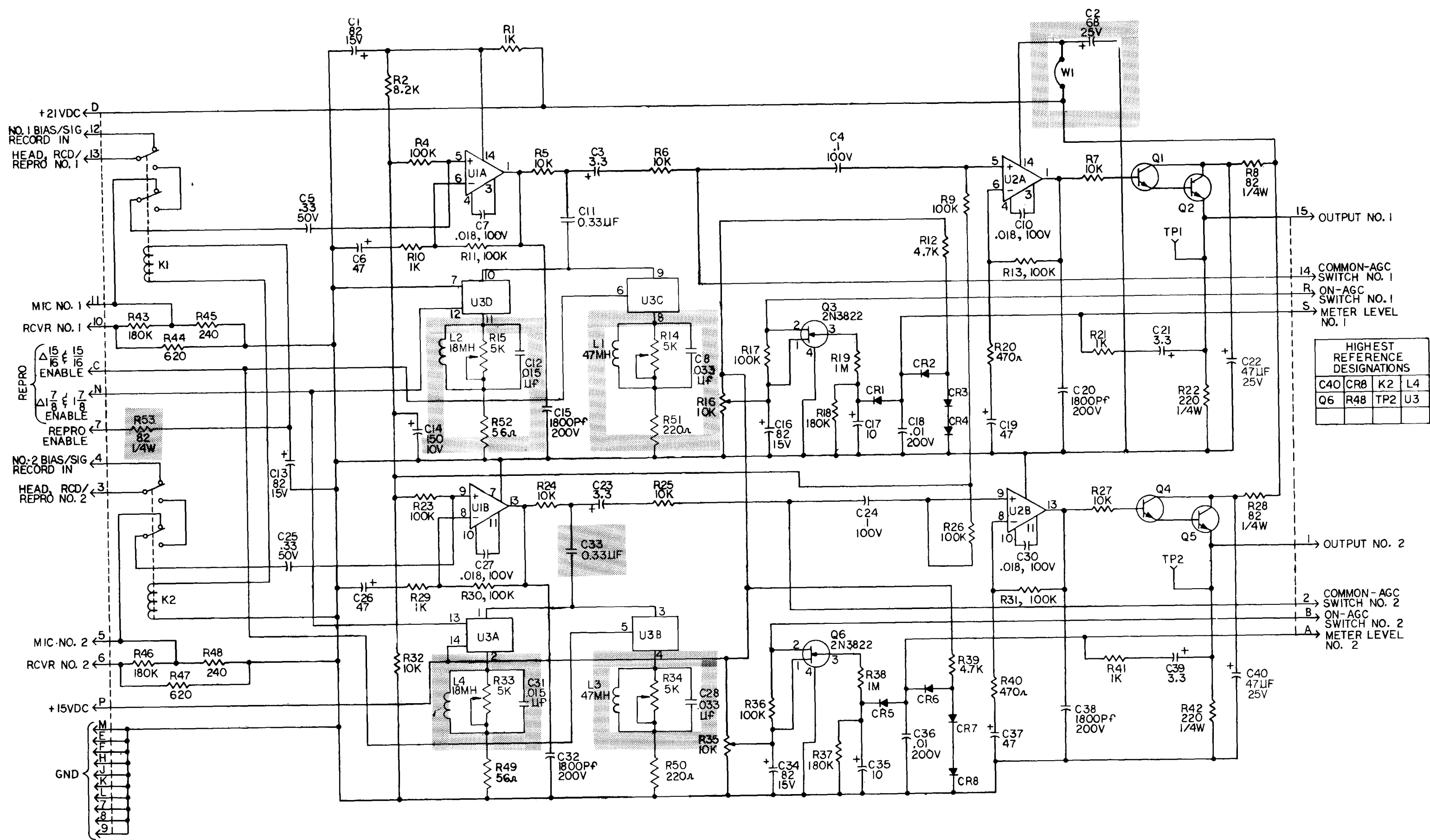


NOTES:

UNLESS OTHERWISE SPECIFIED:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A1 FOR COMPLETE DESIGNATION.
2. V1 AND V2 ARE PART NO. H13A1.

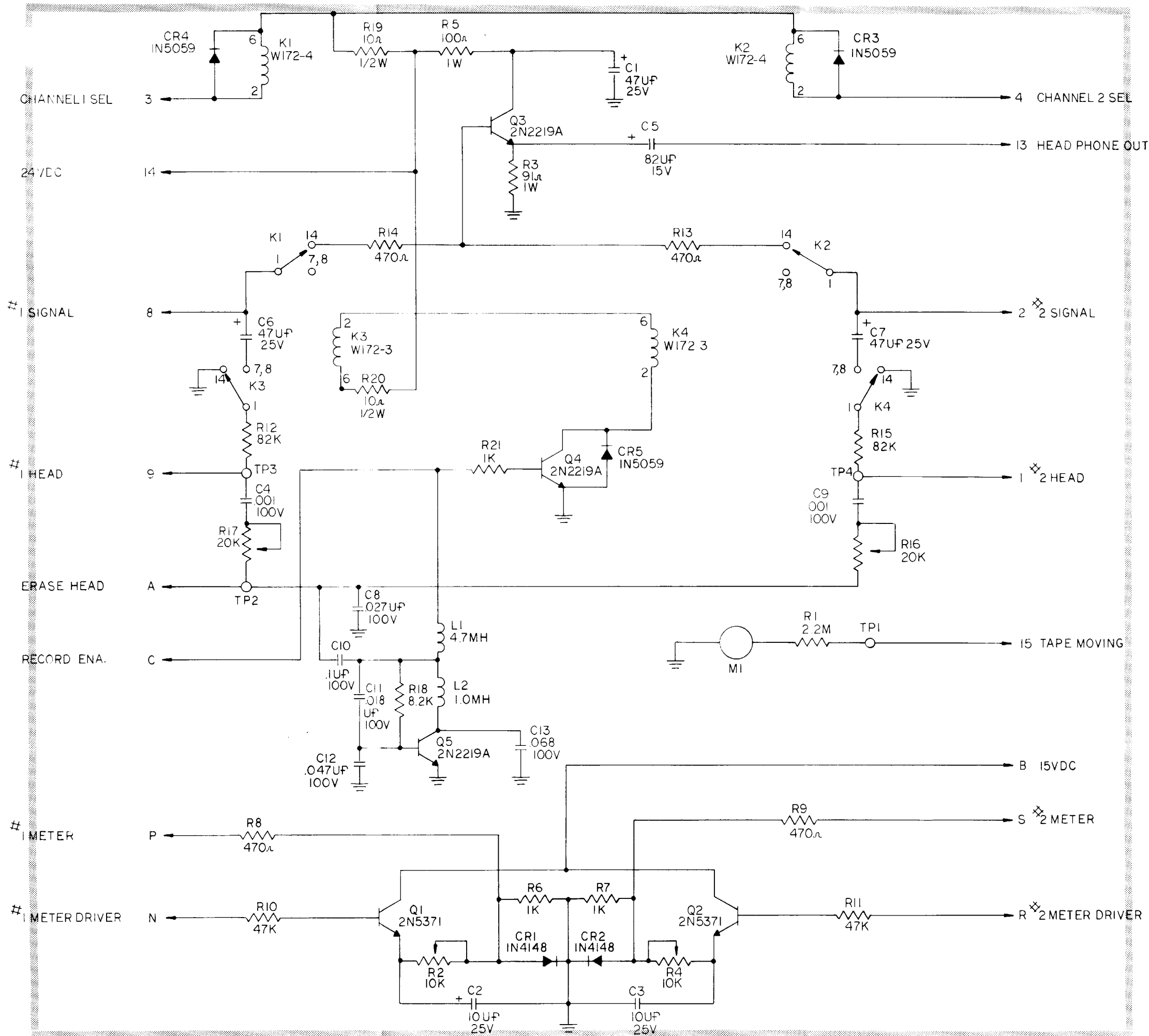
FIGURE 8-6
MAGNETIC TAPE TRANSPORT
SCHEMATIC DIAGRAM



- NOTES:
- UNLESS OTHERWISE SPECIFIED:
1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A3 FOR COMPLETE DESIGNATION.
 2. RESISTANCE VALUES ARE IN OHMS, $\pm 5\%$, 1/8 WATT. CAPACITANCE VALUES ARE IN MICROFARADS, $\pm 10\%$, 25V. INDUCTANCE VALUES ARE IN MILLIHENRIES, $\pm 10\%$.
 3. ALL DIODES ARE 1N4148.
 4. ALL TRANSISTORS ARE 2N5731.
 5. U1 & U2 ARE PART NO. MC1303L. U3 IS PART NO. CD4066AE.

HIGHEST REFERENCE DESIGNATIONS			
C40	CR8	K2	L4
Q6	R48	TP2	U3

FIGURE 8-7
SCHEMATIC DIAGRAM
RECORD/REPRODUCE AMPLIFIER



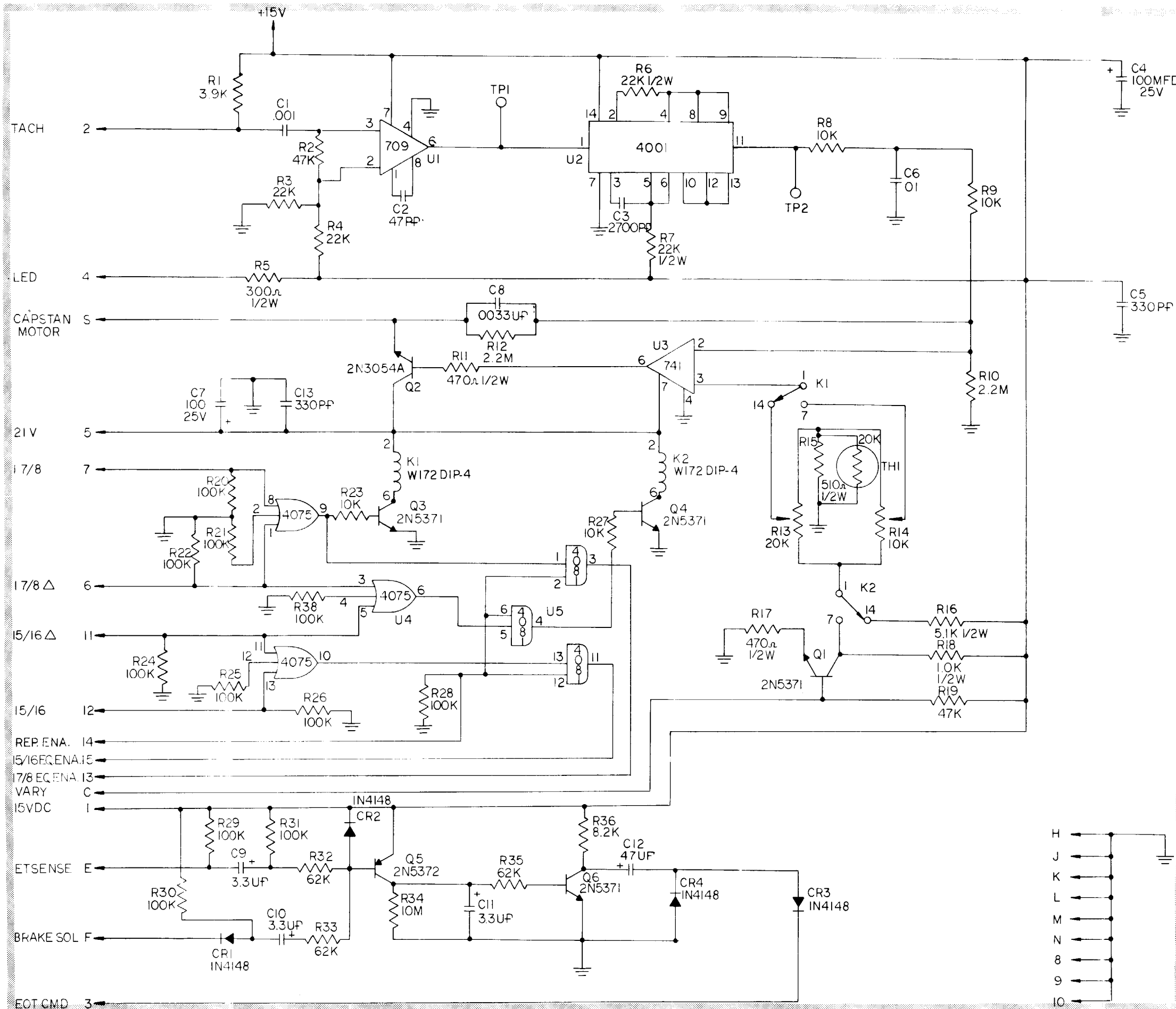
NOTES:

UNLESS OTHERWISE SPECIFIED:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A4 FOR COMPLETE DESIGNATION.
2. RESISTANCE VALUES ARE IN OHMS, +5%, 1/8 WATT. CAPACITANCE VALUES ARE IN MICROFARADS, +10%, 25V.
3. RELAYS SHOWN DE-ENERGIZED.

Change 1 8-33 / (8 34 Blank)

FIGURE 8-8
SCHEMATIC DIAGRAM
BIAS OSCILLATOR AND METER DRIVERS



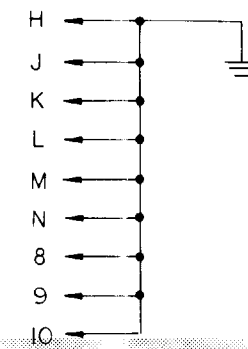
NOTES:

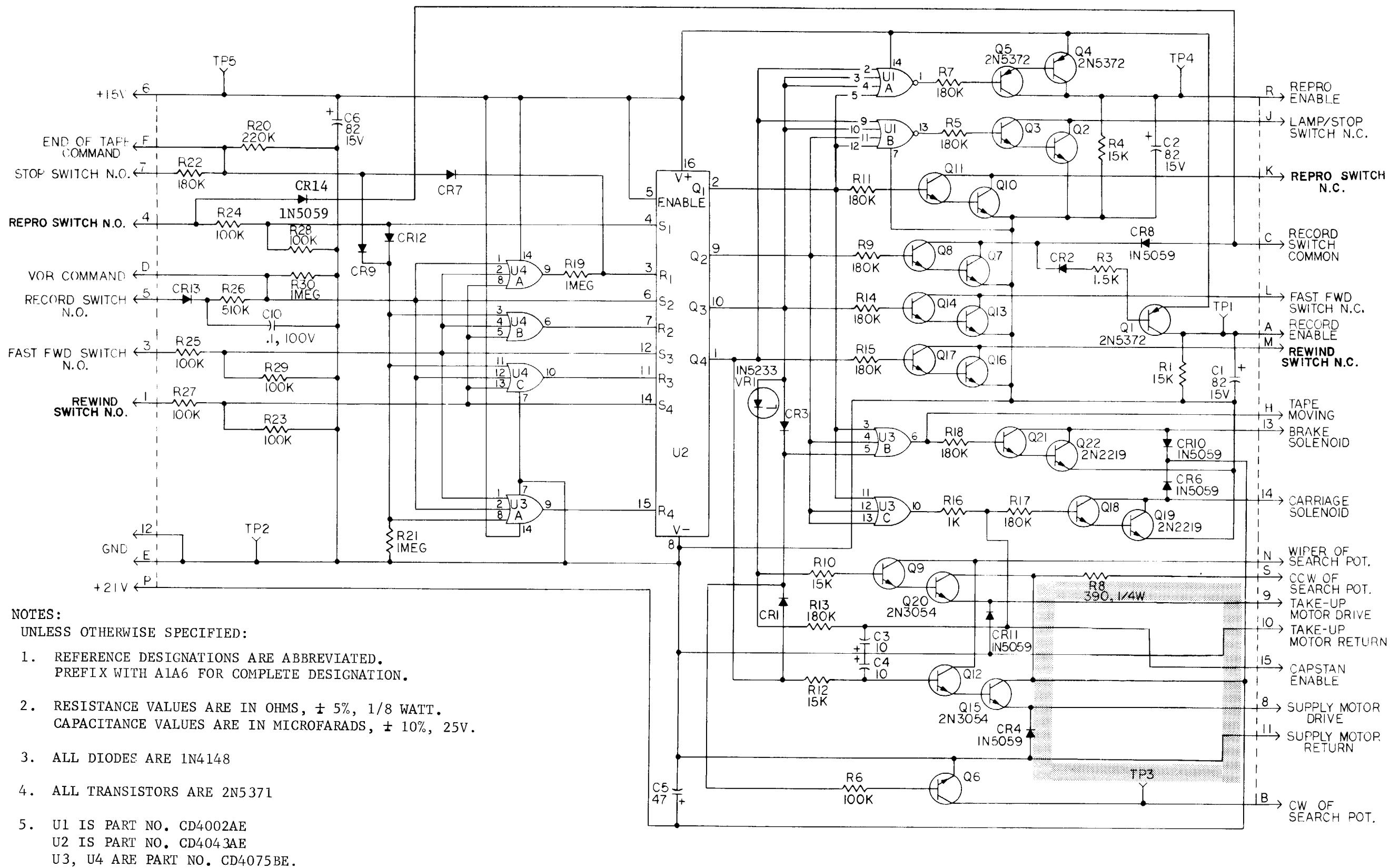
UNLESS OTHERWISE SPECIFIED:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A5 FOR COMPLETE DESIGNATION.
2. RESISTANCE VALUES ARE IN OHMS, +5%, 1/8 WATT. CAPACITANCE VALUES ARE IN MICROFARADS, +10%, 25V. INDUCTANCE VALUES ARE IN MICROHENRIES, +10%.
3. ALL DIODES ARE 1N4148.
4. K1, K2, RELAYS SHOWN DE-ENERGIZED.
5. CONNECT PIN 7 OF U1-U4 TO GND. CONNECT PIN 14 OF U1-U4 TO +15VDC.

FIGURE 8-9

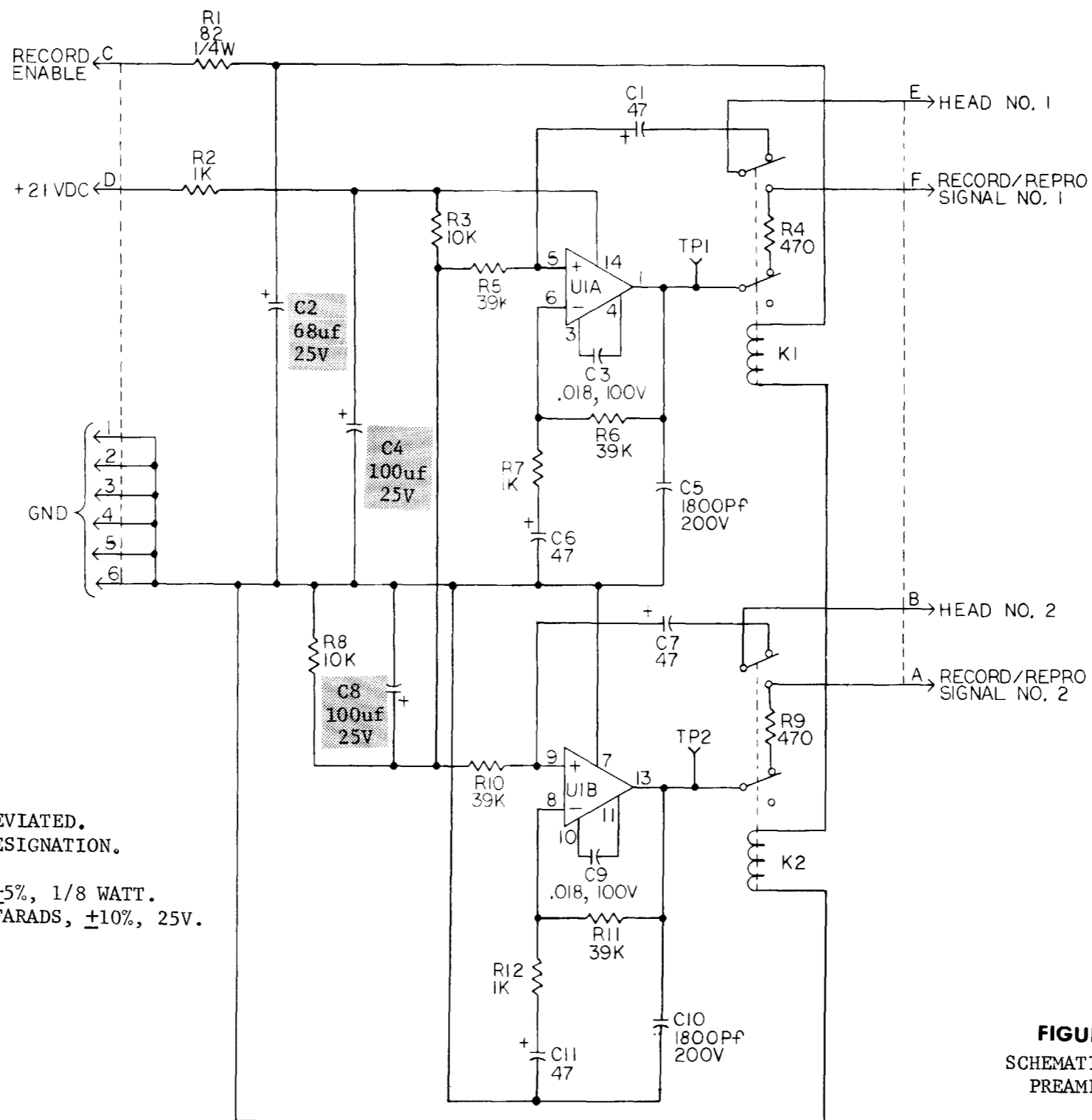
SCHEMATIC DIAGRAM
SERVO CAPSTAN CONTROL





- NOTES:**
 UNLESS OTHERWISE SPECIFIED:
1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A6 FOR COMPLETE DESIGNATION.
 2. RESISTANCE VALUES ARE IN OHMS, $\pm 5\%$, 1/8 WATT. CAPACITANCE VALUES ARE IN MICROFARADS, $\pm 10\%$, 25V.
 3. ALL DIODES ARE 1N4148
 4. ALL TRANSISTORS ARE 2N5371
 5. U1 IS PART NO. CD4002AE
 U2 IS PART NO. CD4043AE
 U3, U4 ARE PART NO. CD4075BE.

FIGURE 8-10
 SCHEMATIC DIAGRAM
 LOGIC CONTROL ASSEMBLY



NOTES:

UNLESS OTHERWISE SPECIFIED:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX WITH A1A8 FOR COMPLETE DESIGNATION.
2. RESISTANCE VALUES ARE IN OHMS, $\pm 5\%$, 1/8 WATT. CAPACITANCE VALUES ARE IN MICROFARADS, $\pm 10\%$, 25V.
3. U1 IS PART NO. MC1303L.

FIGURE 8-12
SCHEMATIC DIAGRAM
PREAMPLIFIER

APPENDIX A**REFERENCES**

TM 38-230-1, -2	Preservation, Packaging, and Packing of Military Supplies and Equipment	
DA Pam 738-750	The Army Equipment Management System (TAMMS)	■
TM 43-0139	Painting Instructions for Field Use	
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters	
DA Pam 25-30	Consolidated Index of Technical Publications	■
DA Pam 750-10	US Army Equipment Index of Modification Work Orders	■
NASA 5038	Recording Techniques and Theory	
FED STD 595	Colors	
AR 700-58	Packaging Improvement Report	

APPENDIX B

MAINTENANCE ALLOCATION CHART

SECTION 1. INTRODUCTION

B-1. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS

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 detect incipient failure by 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 (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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

e. Align. To adjust specified variable elements of an item to bring 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 in precision measurement. Consists of comparisons 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 replacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (services/actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. 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 equipments/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

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

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para. B-2.)

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a "work time" figure in the appropriate sub-column(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of manhours specified by

the "work time" figure represents the average time required to restore an item assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C Operator or crew.
- O Organization maintenance.
- F Direct support maintenance.
- H General support maintenance.
- D Depot maintenance.

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS. SECTION II.

a. Column 1, Reference Code. The tool and TMDE reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

c. Column 4, National Stock Number. The national stock number of the tool or TMDE.

d. Column 5, Tool Part Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS SECTION IV.

a. Reference Code. The code recorded in column 6, section II.

b. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

TM 32-5835-005-14 & P

(1) Group Number	(2) Component/Assembly	(3) Maintenance function	(4) Maintenance level					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
01	Recorder AN/UNH-17A A1	Inspect Test Test		.2 .2		2.0		1, 2, 4, 6, 7, 9, 10	
		Service Install Replace Repair Overhaul Rebuild		.2 1.0 1.0		2.0	8.0 12.0	12	
0101	Tape Transport A1A1	Inspect Test		.3		2.0		12	
		Service Adjust Replace Repair Repair		.3 .4		.2 .2 2.0		12 12 12 12 12, 13, 16	
0102	Panel Assy Front A1A2	Inspect Test		.1		2.0		12	
		Service Adjust Replace Repair Repair		.3 .4		.2 .2 2.0		12 12 12 12 12, 13, 16	
0103	Rcd Rep Amp A1A3	Inspect Test		.2		.5		2, 4, 5, 6, 10 12	
		Service Align Replace Repair		.2	.4 .2	.2		12	
0104	Bias Oscillator A1A4	Inspect Test		.2		.3		2, 4, 5, 12 12	
		Service Align Replace Repair		.2	.4 .2	.2		4, 5, 12 12	
0105	Servo Capstan A1A5	Inspect Test		.2		.5		1, 5, 12 12	
		Service Adjust Align Replace Repair		.2	.4	.2 .2		1, 5, 10, 12 12	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	H	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207A	6625-00-044-3228	
2	F	OSCILLOSCOPE, AN/USM-281C	6625-00-106-9622	
3	F,H	MULTIMETER, AN/USM-223	6625-00-999-7465	
4	F,H	GENERATOR, FUNCTION, SG-747/U	6625-00-118-6736	
5	F	VOLTMETER, ELECTRONIC, ME-303/U	6625-00-727-4706	
6	H	ANALYZER, SPECTRUM, AN/URM-180	6625-00-089-4227	
7	H	FILTER, VARIABLE, KROHN-HITE 3103-4	5915-00-138-0878	
8	H	POWER SUPPLY, D.C., PP-3940A/G	6130-00-460-2148	
9	H	FLUTTERMETER, ME-254A/U	6625-00-987-8527	
10	F,H	TAPE, CASSETTE, PRERECORDED, 1-7/8 IPS AT 3KHZ +.5%, (PN LCT-301-D)	5835-01-053-1236	
12	O,F,H	TOOL KIT, TK-105/G	5180-00-610-8177	
13	H	SPRING SCALE, CHATILLION		L-P-36
14	O	DEMAGNETIZER		
15	H	TELEPHONE PLUG TESTING		
16	H	PLIERS, SNAP RING, WALDS		S1520
17	H	EXTENDER CARD (LOCATED IN EQUIPMENT)		

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS
(3)

(1) REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	H	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207A	6625-00-044-3228	
2	F	OSCILLOSCOPE, AN/USM-281C	6625-00-106-9622	
3	F,H	MULTIMETER, AN/USM-223	6625-00-999-7465	
4	F,H	GENERATOR, FUNCTION, SG-747/U	6625-00-118-6736	
5	F	VOLTMETER, ELECTRONIC, ME-303/U	6625-00-727-4706	
6	H	ANALYZER, SPECTRUM, AN/URM-180	6625-00-089-4227	
7	H	FILTER, VARIABLE, KROHN-HITE 3103-4	5915-00-138-0878	
8	H	POWER SUPPLY, D.C., PP-3940A/G	6130-00-460-2148	
9	H	FLUTTERMETER, ME-254A/U	6625-00-987-8527	
10	F,H	TAPE, CASSETTE, PRERECORDED, 1-7/8 IPS AT 3KHZ +.5%, (PN LCT-301-D)	5835-01-053-1236	
12	O,F,H	TOOL KIT, TK-105/G	5180-00-610-8177	
13	H	SPRING SCALE, CHATILLION		L-P-36
14	O	DEMAGNETIZER		
15	H	TELEPHONE PLUG TESTING		
16	H	PLIERS, SNAP RING, WALDS		S1520
17	H	EXTENDER CARD (LOCATED IN EQUIPMENT)		

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1 SCOPE. This appendix lists spares and repair parts; special tools; special Test, Measurement, and Diagnostic Equipment (TMDE), and other special support equipment required for performance of organizational, direct support, and general support maintenance of the Sound Recorder-Reproducer Set AN/UNH-17A. It authorizes the requisitioning and issue of spare and repair parts as indicated by the source and maintenance codes.

C-2 GENERAL. This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in numeric sequence, with the parts in each group listed in figure and item number sequence.

b. Section III. Special Tools List. Not applicable.

c. Section IV. National Stock Number and Part Number Index. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbers (NSN) appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3 EXPLANATION OF COLUMNS.

a. Illustration This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item Number.* The number used to identify item called out in the illustration.

b. Source, Maintenance, and Recoverability (SMR) Codes.

(1) *Source Code.* Source codes indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the uniform SMR code format as follows:

<u>Code</u>	<u>Definition</u>
PA	- Item procured and stocked for anticipated or known usage.
XA	- Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	- Item is not procured or stocked. If not available through salvage, requisition.

NOTE: Cannibalization or salvage may be used as a source of supply for any items coded above except those coded XA and aircraft support items as restricted by AR 700-42.

(2) *Maintenance Code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the uniform SMR code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
F	- Support item is removed, replaced, used at the direct support level.
	(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair; i.e., all authorized maintenance functions. This position will contain one of the following maintenance codes:
	<u>Code</u> <u>Application/Explanation</u>
F	- The lowest maintenance level capable of complete repair of the support item is the direct support level.
D	- The lowest maintenance level capable of complete repair of the support item is the depot level.

Code Application/Explanation

Z - Nonreparable. No repair is authorized.

(3) *Recoverability Code.* Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the uniform SMR code format as follows:

<u>Recoverability Code</u>	<u>Definition</u>
Z	- Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
F	- Repairable item. When uneconomically repairable, condemn and dispose at the direct support level.
D	- Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.

c. National Stock Number (NSN). Indicates the NSN assigned to the item and which will be used for requisitioning.

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE: When a stock numbered item is requisitioned, the item received may have a different part number than the part being replaced.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr, etc.). When the U/M differs from the unit of issue, the lowest unit of issue that will satisfy the required U/M will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

C-4 SPECIAL INFORMATION. Action change codes indicated in the left-hand margin of the listing page denote the following:

N - Indicates an added item.

C - Indicates a change in data.

R - Indicates a change in NSN only.

C-5 HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is unknown:

(1) *First.* Using the table of contents, determine the fictional group or subgroup within which the item belongs. This is necessary since illustrations are prepared for fictional groups or subgroups, and listings are divided into the same groups.

(2) *Second.* Find the illustration covering the functional group or subgroup to which the item belongs.

(3) *Third.* Identify the item on the illustration and note the illustration figure and item number of the item.

(4) *Fourth.* Using the Repair Parts Listing, find the figure and item number notes on the illustration.

b. When National Stock Number or Part Number is known:

(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent NSN or part number. This index is in NIIN sequence, followed by a list of part numbers in alphanumeric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

C-6 ABBREVIATIONS. Not applicable.

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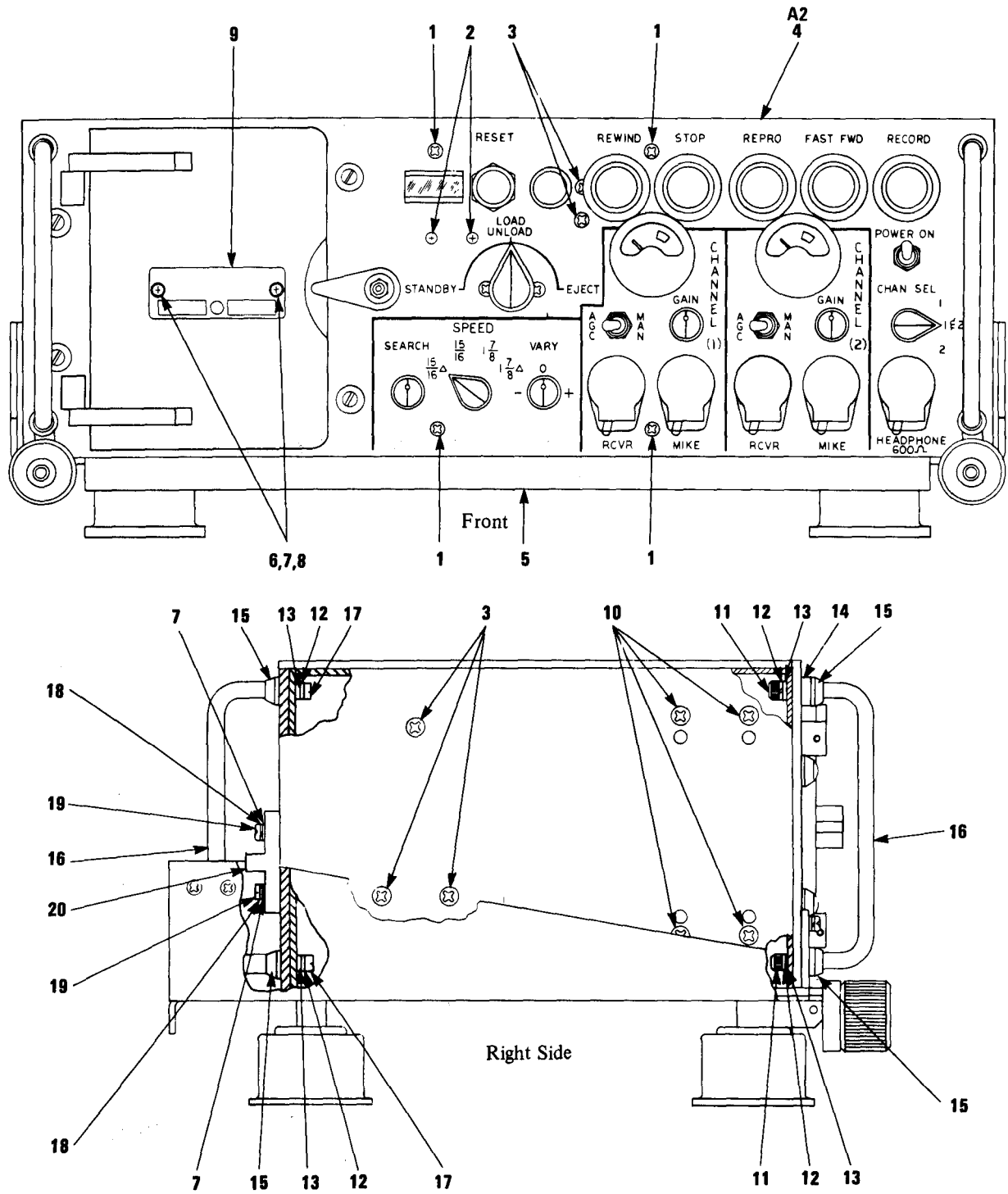


Figure C-1. Sound Recorder/Reproducer Set AN/UNH-17A (Sheet 1 of 3)

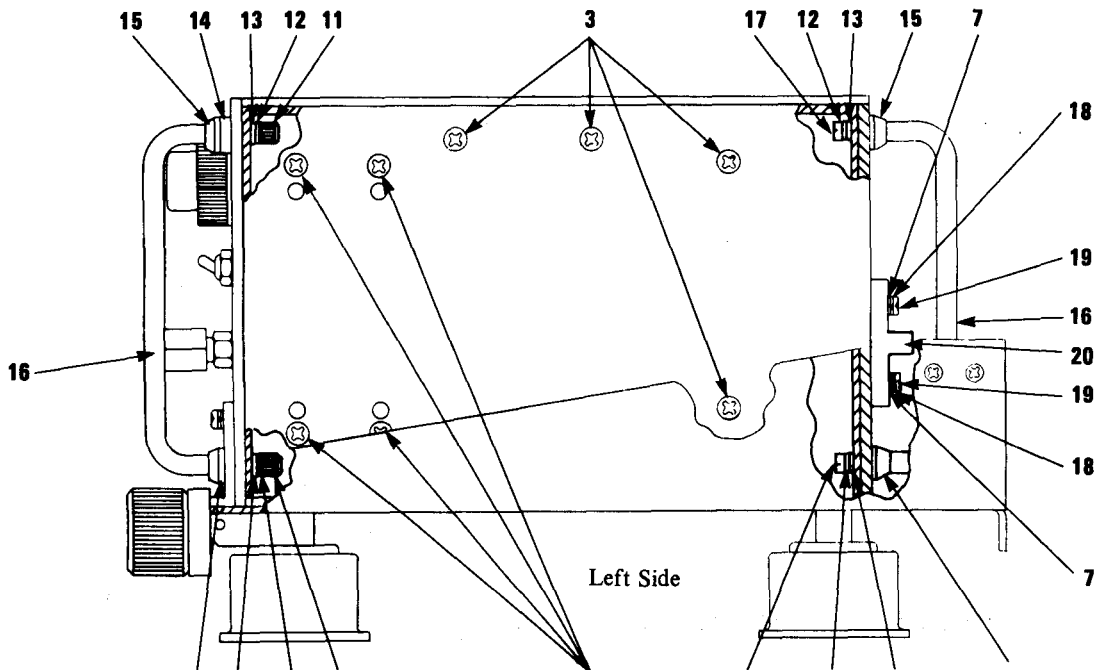
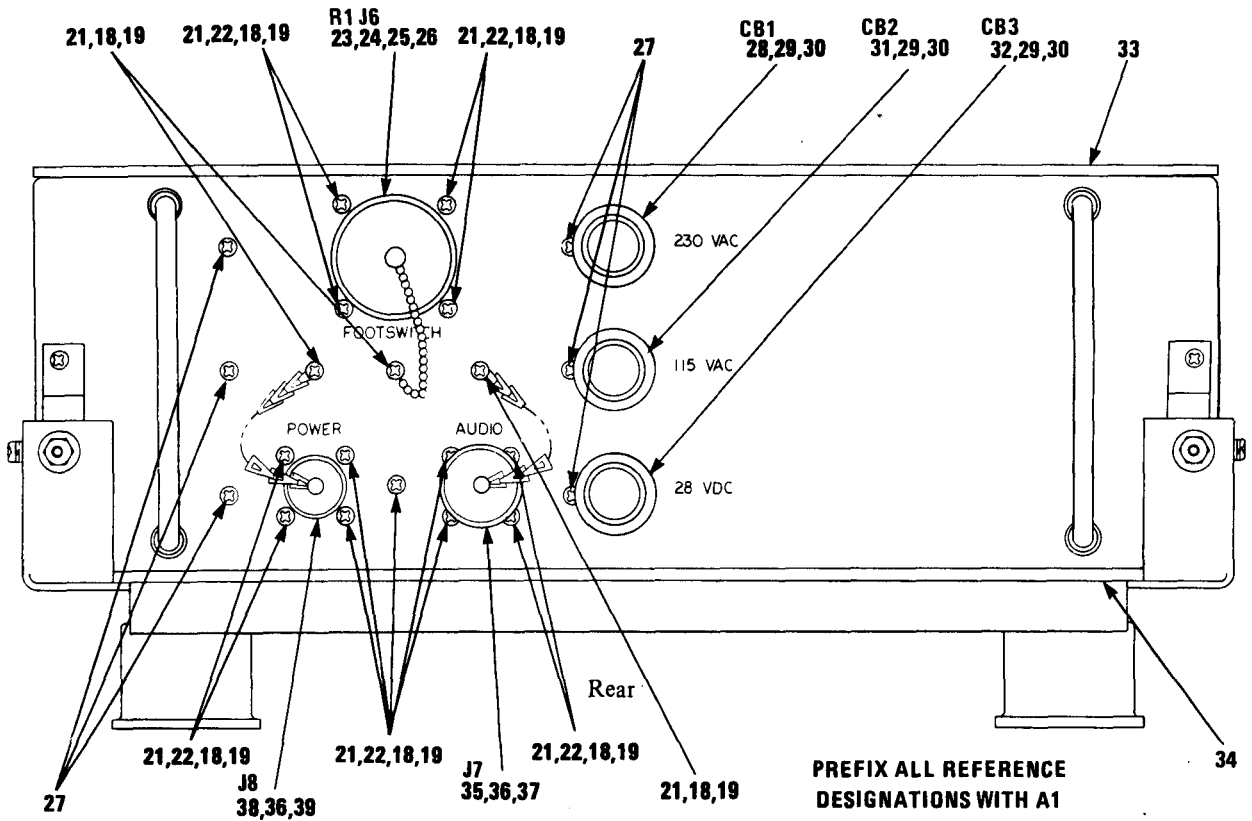


Figure C-1. Sound Recorder/Reproducer Set AN/UNH-17A (Sheet 2 of 3)

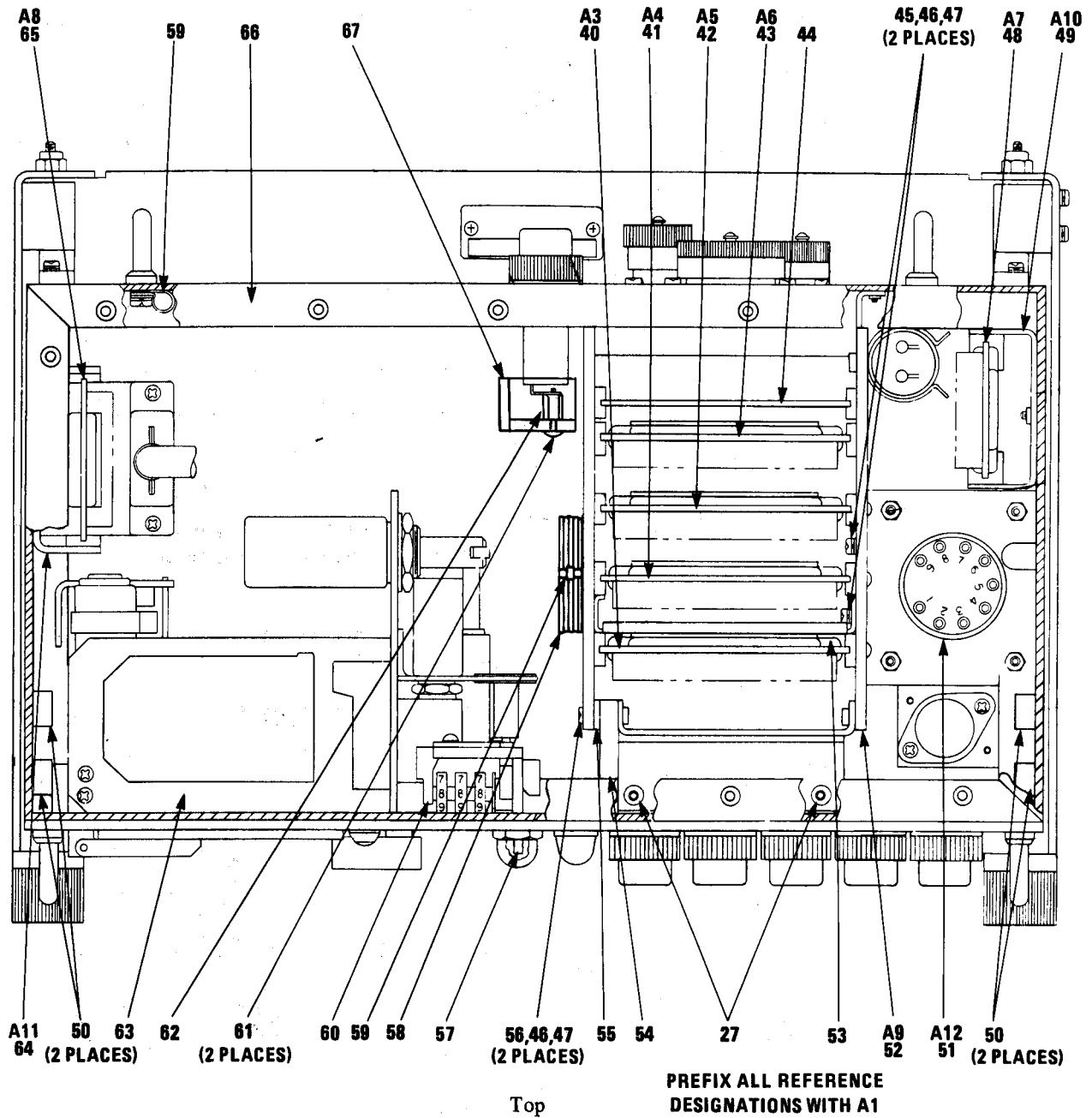


Figure C-1. Sound Recorder/Reproducer Set AN/UNH-17A (Sheet 3 of 3)

SECTION II. REPAIR PARTS LIST

(1) ILLUSTRATION	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
						GROUP: 01 SOUND RECORDER- REPRODUCER SET A1 AN/UNH-17A (15942)		
C-1	1	PAFZZ	5305-00-958-2918	MS24693C26	96906	SCREW,MACHINE	EA	4
C-1	2	PAFZZ	5305-00-056-9961	MS24693C4	96906	SCREW,MACHINE	EA	2
C-1	3	PAFZZ	5305-00-969-6495	MS24693C25	96906	SCREW,MACHINE	EA	9
C	C-1	XBFFF		0421-1-4204	15942	PANEL ASSEMBLY, FRONT, A2	EA	1
C	C-1	XBFFF		0421-1-4225	15942	MOUNTING BASE	EA	1
C-1	6	PAFZZ	5305-00-054-5636	MS51957-2	96906	SCREW,MACHINE	EA	2
C-1	7	PAFZZ	5310-00-595-6761	MS15795-802	96906	WASHER,FLAT	EA	5
C-1	8	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER,LOCK	EA	2
C	C-1	XBFZZ		0421-1-3219	15942	PLATE, IDENTIFICATION	EA	1
C-1	10	PAFZZ	5305-00-902-2136	MS24693C46	96906	SCREW,MACHINE	EA	8
C-1	11	PAFZZ	5305-00-992-5907	MS16995-28	96906	SCREW, SOCKET HEAD	EA	4
R	C-1	PAFZZ	5310-00-933-8119	MS35338-137	96906	WASHER,LOCK,	EA	8
C-1	13	PAFZZ	5310-00-880-5978	MS15795-807	96906	WASHER,FLAT	EA	8
C	C-1	XBFZZ		0421-1-2242	15942	WASHER,FLAT	EA	2
C-1	15	XBFZZ		16020-SS	06540	FERRULE	EA	8
C-1	16	XBFZZ		10209-SS-0832-7	06540	HANDLE	EA	4
C-1	17	PAFZZ	5305-00-054-6670	MS51957-45	96906	SCREW,MACHINE	EA	4
C-1	18	PAFZZ	5310-00-933-8118	MS35338-135	96906	WASHER,LOCK	EA	20
C-1	19	PAFZZ	5305-00-054-5649	MS51957-15	96906	SCREW,MACHINE	EA	20
C	C-1	XBFZZ		0421-1-2203	15942	BLOCK, VEHICULAR MOUNT	EA	2
C	C-1	PAFZZ	5310-00-595-6211	MS15795-803	96906	WASHER,FLAT	EA	16
C-1	22	PAFZZ	5310-00-934-9748	MS35649-244	96906	NUT, PLAIN, HEX	EA	13
N	C-1	PAFZZ	5905-00-141-0726	RCR32G181JS	81349	RESISTOR, FIXED, COMPOSITION, R1	EA	1
C-1	24	PAFZZ	5935-00-577-8583	67-02E22-67S	02660	CONNECTOR, J6	EA	1
C-1	25	PAFZZ	5330-00-815-6552	10-101949-22	77820	GASKET, CONNECTOR	EA	1

CHANGE 2

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C-1	26	PAFZZ	5935-00-898-9069	67-1462	02660	COVER AND CHAIN	EA	1
C-1	27	PAFZZ	5305-00-993-9189	MS24693C2	96906	SCREW,MACHINE	EA	8
C-1	28	PAFZZ	5925-01-041-4745	431-201-101	79405	CIRCUIT BREAKER,CB1	EA	1
C-1	29	PAFZZ	6625-00-137-6808	7	97539	NUT,ADAPTER	EA	3
C-1	30	PAFZZ	1265-00-201-8826		97539	SHIELD,INDICATOR LIGHT	EA	3
C-1	31	PAFZZ	5925-01-042-7584	431-202-101	79405	CIRCUIT BREAKER,CB2	EA	1
C-1	32	PAFZZ	5925-01-041-4746	431-203-101	79405	CIRCUIT BREAKER,CB3	EA	1
C-1	33	XBFFF		0421-1-4201	15942	COVER ASSEMBLY, TOP	EA	1
C-1	34	XBFFF		0421-1-4227	15942	COVER ASSEMBLY, BOTTOM	EA	1
C-1	35	PAFZZ	5935-00-150-0646	M81511/01EB0 1S1	81349	CONNECTOR,J7	EA	1
C-1	36	PAFZZ	5935-00-717-3750	10-101949-10	77820	GASKET,CONNECTOR	EA	2
C-1	37	PAFZZ	5935-00-359-4607	GC860DK10R	02660	COVER AND CHAIN	EA	1
C-1	38	PAFZZ	5935-00-901-5782	MS3112E10-6P	96906	CONNECTOR,J8	EA	1
C-1	39	PAFZZ	5935-00-959-2610	MS3181-10C	96906	COVER AND CHAIN	EA	1
C	C-1	PAFHD		0421-1-4215	15942	AMPLIFIER, RECORD-REPRODUCE ASSEMBLY A3	EA	1
C	C-1	PAFHD		0421-1-4218	15942	BIAS OSCILLATOR AND METER DRIVERS ASSEMBLY A4	EA	1
C	C-1	PAFHD		0421-1-4213	15942	SERVO CAPSTAN CONTROL ASSEMBLY A5	EA	1
C	C-1	PAFHD	5835-01-110-0761	0421-1-4211	15942	LOGIC CONTROL ASSEMBLY A6	EA	1
C	C-1	PAFHD		0421-1-4221	15942	EXTENDER BOARD ASSEMBLY	EA	1
C-1	45	PAFZZ	5305-00-054-6651	MS51957-27	96906	SCREW,MACHINE	EA	4
C-1	46	PAFZZ	5310-00-929-6395	MS35338-136	96906	WASHER, LOCK	EA	6
C-1	47	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER, FLAT	EA	6
C	C-1	PAFHD		0421-1-4209	15942	POWER SUPPLY ASSEMBLY, A7	EA	1
C-1	49	XBFFF		0421-1-3227	15942	BRACKET ASSEMBLY, A10	EA	1
C-1	50	XBFFZ		0421-1-2319	15942	NUTPLATE	EA	8

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C-1	51	XBFFF		0421-1-4222	15942	TRANSFORMER/TRANSISTOR ASSEMBLY, A12	EA	1
C-1	52	XBFFF		0421-1-4223	15942	HOUSING ASSEMBLY, A9	EA	1
C-1	53	XBFZZ		0421-1-3228	15942	SHIELD	EA	1
C-1	54	XBFZZ		0421-1-2354	15942	BLOCK, SUPPORT	EA	1
C-1	55	XBFZZ		0421-1-2334	15942	SPACER	EA	1
C-1	56	PAFZZ	5305-00-054-6655	MS51957-31	96906	SCREW, MACHINE	EA	2
C-1	57	XBFZZ		0421-1-2329	15942	PLUNGER	EA	1
C-1	58	XBFFF		0421-1-4229	15942	HARNESS ASSEMBLY	EA	1
C-1	59	PAFZZ	5340-00-057-9979	NAS1397R4B- 5/16-A	80205	CLAMP, CABLE	EA	6
C-1	60	XBFFF		0421-1-3229	15942	COUNTER ASSEMBLY	EA	1
C-1	61	PAFZZ	5305-00-239-7858	MS18212-26	96906	SCREW, NYLON, ROUND-HEAD	EA	2
C-1	62	XBFZZ		0421-1-2362	15942	SPACER	EA	2
C	C-1	PAHHD	5835-01-042-0958	0421-1-4206	15942	TRANSPORT ASSEMBLY	EA	1
	C-1	XBFZZ		0421-1-3223	15942	BRACKET, CONNECTOR MOUNTING, A11	EA	1
C	C-1	PAFHD		0421-1-4226	15942	PREAMPLIFIER ASSEMBLY, A8	EA	1
	C-1	XBFZZ		0421-1-4228	15942	CHASSIS	EA	1
	C-1	XBFZZ		0421-1-3236	15942	COVER, PROTECTIVE	EA	1

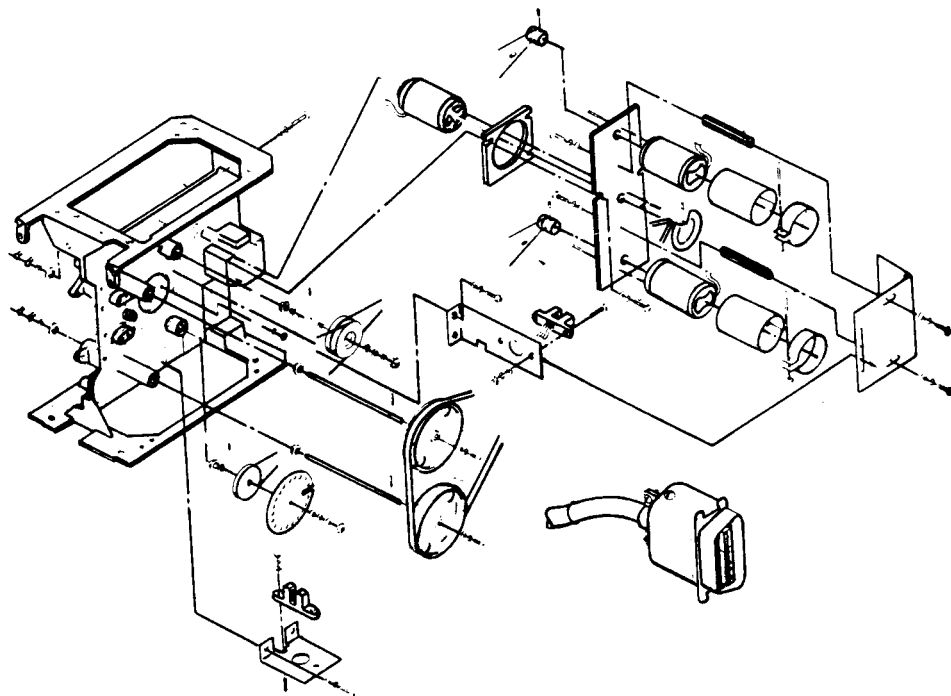
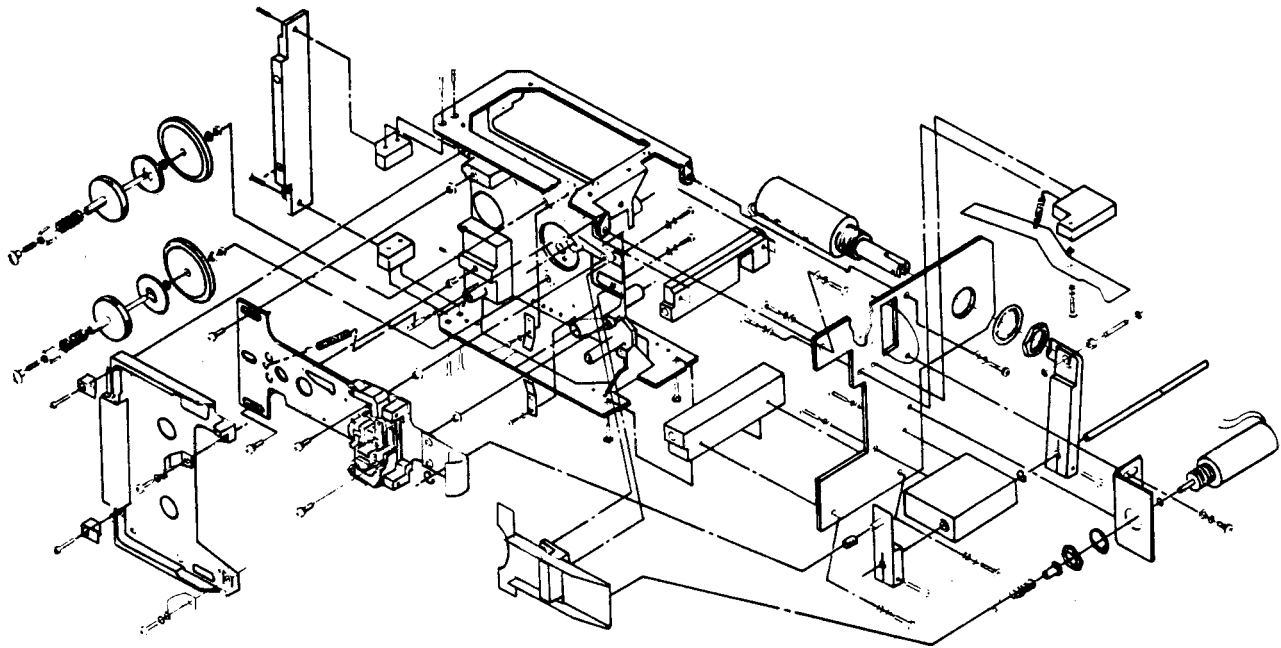


Figure C-2. Magnetic Tape Transport (Sheet 1 of 5)

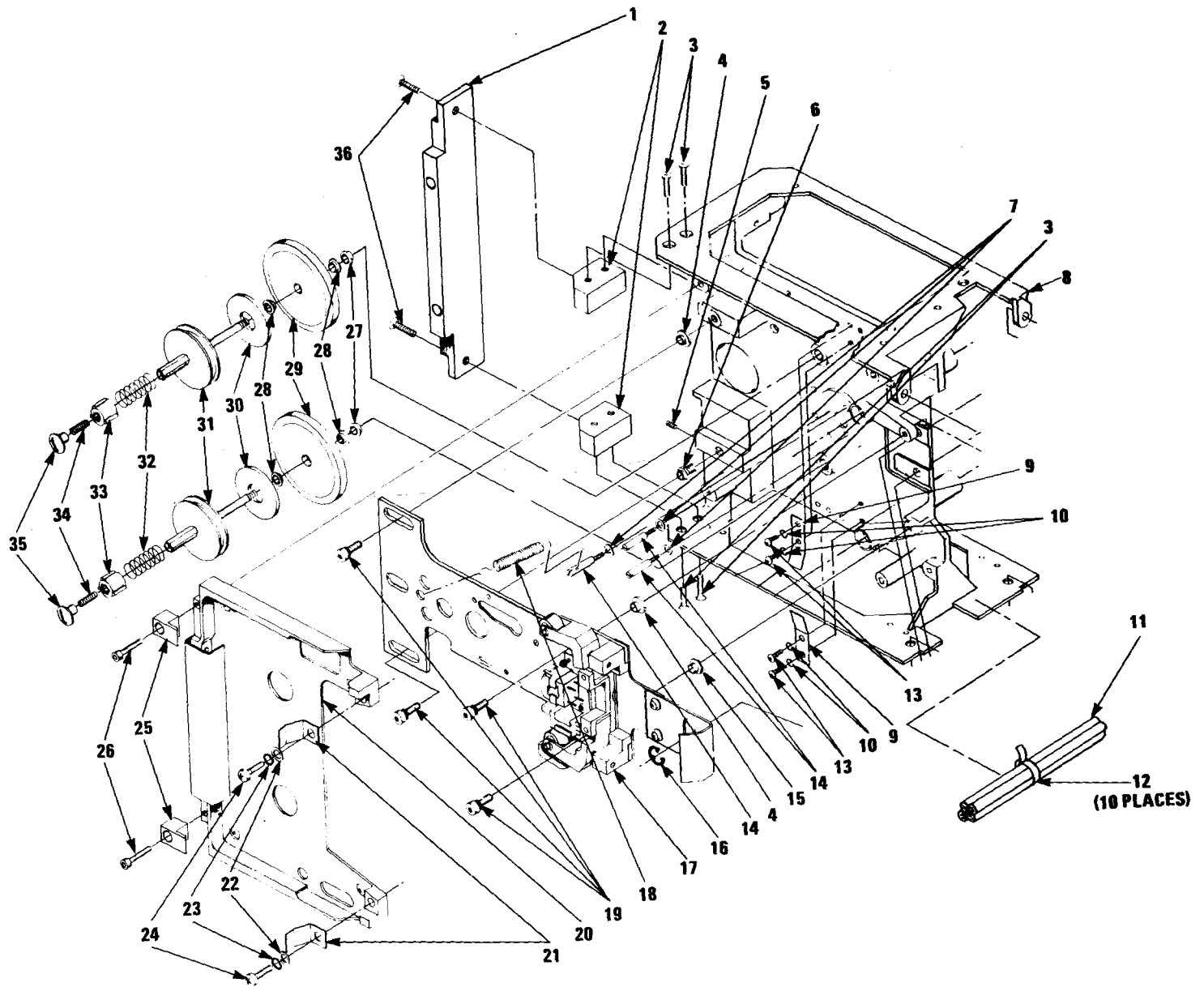


Figure C-2. Magnetic Tape Transport (Sheet 2 of 5)

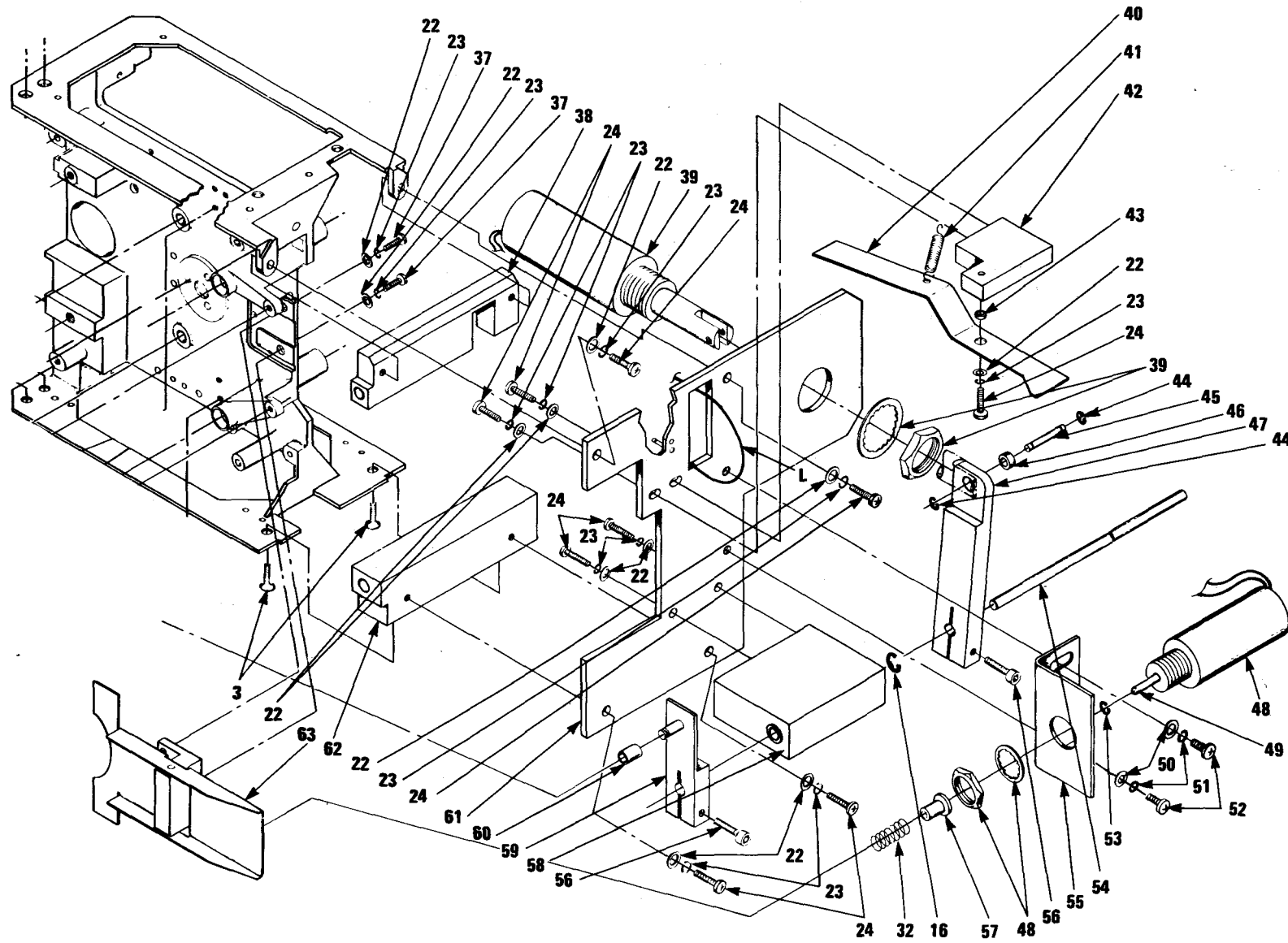


Figure C-2. Magnetic Tape Transport (Sheet 3 of 5)

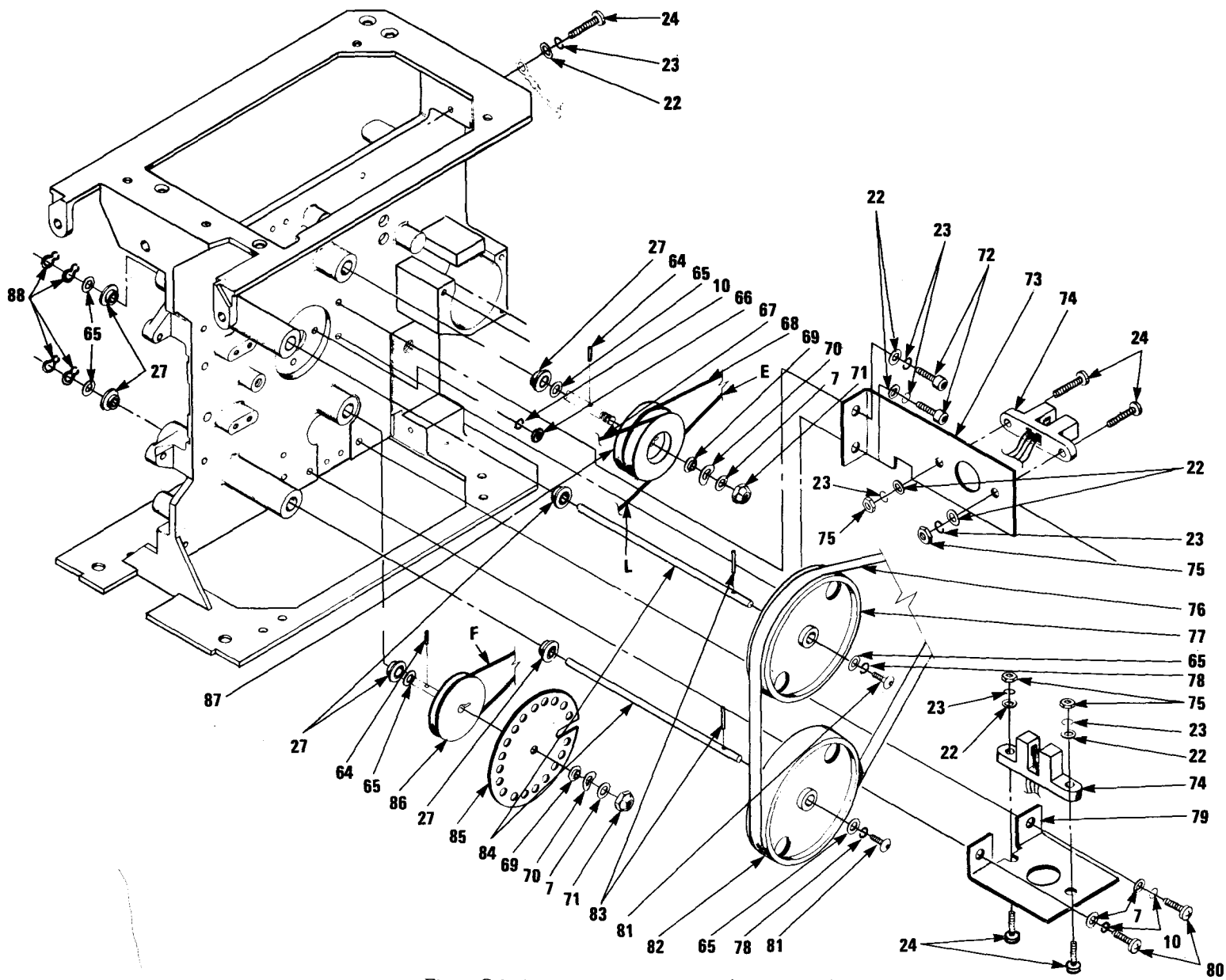


Figure C-2. Magnetic Tape Transport (Sheet 4 of 5)

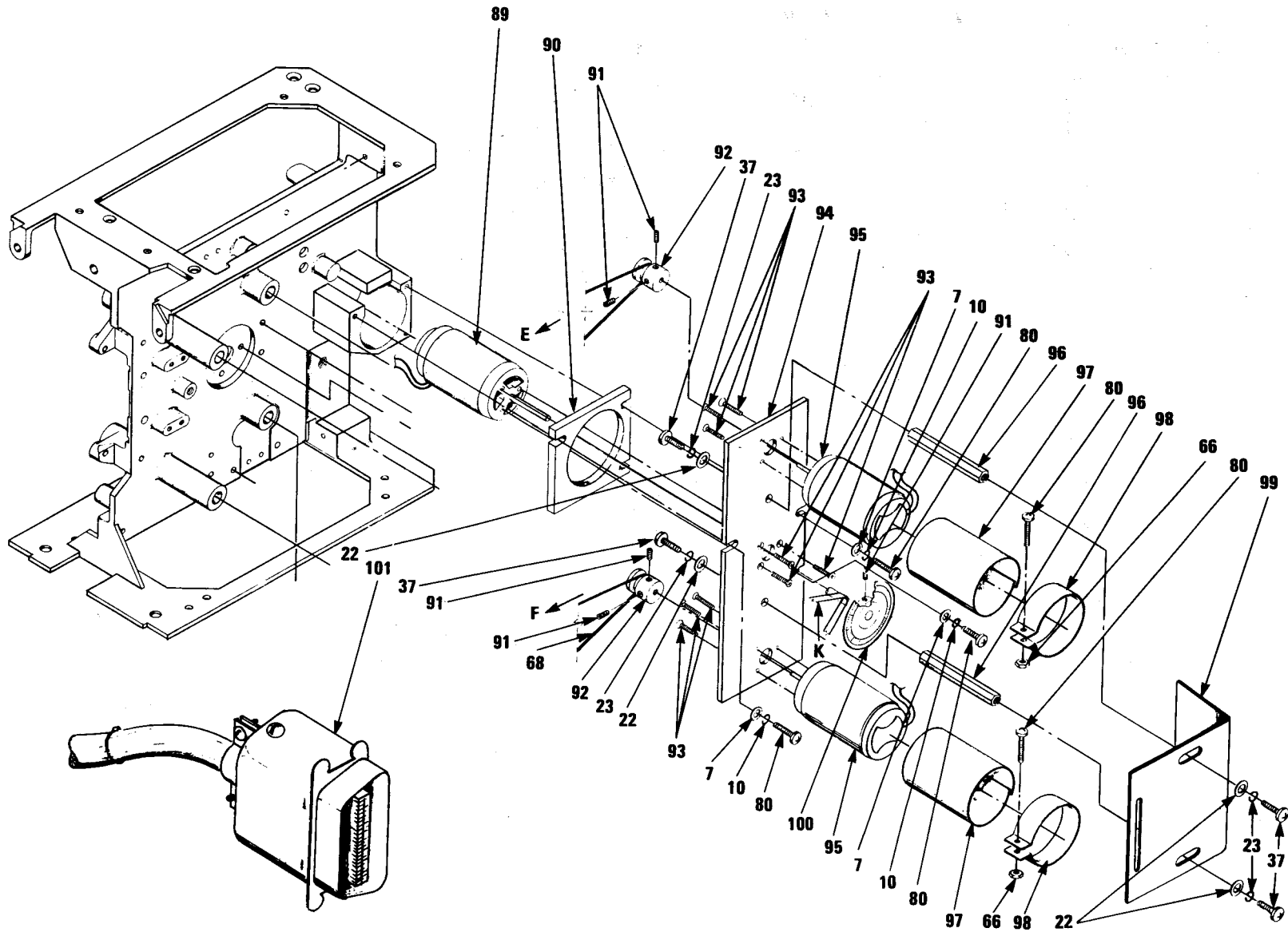


Figure C-2. Magnetic Tape Transport (Sheet 5 of 5)

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
						USABLE ON CODE			
						GROUP: 0101 MAGNETIC TAPE TRANSPORT (15942)			
C	C-2	1	XBFZZ	0421-1-2310	15942	BAR, MOUNTING	EA	1	
C	C-2	2	XBFZZ	0421-1-2309	15942	BLOCK, SUPPORT	EA	2	
C	C-2	3	PAFZZ	5305-00-993-9189	MS24693C2	96906	SCREW, MACHINE	EA	6
C	C-2	4	PAFZZ	3120-01-041-4627	0123-1-3006-2	15942	BUSHING, SLEEVE	EA	2
C	C-2	5	PAFZZ	5305-00-717-6948	MS51963-11	96906	SETSCREW	EA	1
C	C-2	6	XBFZZ	0149-1-2292	15942	BUSHING, MACHINE THREAD	EA	1	
C	C-2	7	PAFZZ	5310-00-595-6761	MS15795-802	96906	WASHER, FLAT	EA	10
C	C-2	8	XBFZZ	0421-1-4219	15942	CHASSIS	EA	1	
C	C-2	9	PAFZZ	5360-00-342-9589	0149-1-2106	15942	SPRING, BRAKE	EA	2
C	C-2	10	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER, LOCK	EA	10
N	C-2	11	PAFFF	5995-01-046-4300	0421-1-4230	15942	WIRING HARNESS	EA	1
N	C-2	12	PAFZZ	5340-00-057-9979	NAS139R4B- 5/16-A	80205	CLAMP, CABLE	EA	10
C	C-2	13	PAFZZ	2-56X3/ 16CRES	70318	SCREW, BUTTON HEAD	EA	4	
C	C-2	14	XBFZZ	0421-1-2348	15942	POST	EA	3	
C	C-2	15	PAFZZ	3120-01-041-4626	0123-1-3006-1	15942	BUSHING, SLEEVE	EA	1
C	C-2	16	PAFZZ	5365-00-725-0969	MS16633-4018	96906	RING, RETAINING	EA	2
C	C-2	17	XBFFF	0421-1-4205	15942	PLATE SUBASSEMBLY, SLIDE	EA	1	
C	C-2	18	PAFZZ	5360-01-042-2659	LE-014A-3-SS	84830	SPRING, EXTENSION	EA	1
C	C-2	19	PAFZZ	5305-01-041-3847	0149-1-2027	15942	SCREW, SHOULDER, SOCKET HEAD	EA	4
C	C-2	20	XBFFF	0149-1-4180	15942	PLATE, MOUNTING, CARTRIDGE	EA	1	
C	C-2	21	XBFZZ	0421-1-2204	15942	DEFLECTOR, CASSETTE	EA	2	
C	C-2	22	PAFZZ	5310-00-595-6211	MS15795-803	96906	WASHER, FLAT	EA	22
C	C-2	23	PAFZZ	5310-00-933-8118	MS35338-135	96906	WASHER, LOCK	EA	24
C	C-2	24	PAFZZ	5305-00-054-5649	MS51957-15	96906	SCREW, MACHINE	EA	16
C	C-2	25	XBFZZ	0149-1-3109	15942	STOP, CASSETTE	EA	2	

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C	C-2	26	PAFZZ	5305-00-068-5414	MS16995-11	96906	SCREW, SOCKET HEAD	EA 2
C	C-2	27	PAFZZ		SFR1335PPEEK 24	83086	BEARING, BALL, ANNULAR	EA 8
C	C-2	28	PAFZZ		SFR1335DK24	83086	BEARING, BALL, ANNULAR	EA 4
C	C-2	29	PAFZZ	5835-00-345-9516	0149-1-4044	15942	WHEEL, DRIVE UNIT	EA 2
C	C-2	30	XBFZZ		0149-1-2030	15942	WASHER, NONMETALLIC	EA 2
C	C-2	31	XBFZZ		0149-1-3023-2	15942	DISK, REEL ASSEMBLY	EA 2
C	C-2	32	PAFZZ	5360-00-342-9588	0123-1-2095	15942	SPRING, COMPRESSION	EA 3
C	C-2	33	PAFZZ	5835-00-333-6621	4822-528-20131	89781	GUIDE, COMPRESSION SPRING	EA 2
C	C-2	34	PAFZZ	5305-00-817-1310	AN565AC2H5	81350	SETSCREW	EA 2
C	C-4	35	PAFZZ	5310-00-499-4575	0149-1-3041	15942	CAP, DRIVE NUT	EA 2
C	C-2	36	PAFZZ	5305-00-066-7326	MS24693C24	96906	SCREW, MACHINE	EA 2
C	C-2	37	PAFZZ	5305-00-054-5647	MS51957-13	96906	SCREW, MACHINE	EA 6
C	C-2	38	XBFZZ		0421-1-2315	15942	BAR, SUPPORT, UPPER RIGHT	EA 1
C	C-2	39	PAFZZ	5945-01-042-5259	T-8X16-C- 24VDC	73949	SOLENOID, ELECTRICAL (THREE PARTS)	EA 1
C	C-2	40	XBFZZ		0421-1-2326	15942	LEVER, EJECTOR	EA 1
C	C-2	41	PAFZZ	5360-01-042-5745	LE-014A-1-SS	84830	SPRING, EXTENSION	EA 1
C	C-2	42	XBFZZ		0421-1-2317	15942	BLOCK, PIVOT	EA 1
C	C-2	43	XBFZZ		0421-1-2333	15942	BUSHING, SLEEVE	EA 1
C	C-2	44	PAFZZ	5365-00-598-1138	MS16633-4012	96906	RING, RETAINING	EA 2
C	C-2	45	XBFZZ		0421-1-2120-3	15942	PIN, GROOVED, HEADLESS	EA 1
C	C-2	46	XBFZZ		0421-1-2331	15942	BUSHING, LEVER, SOLENOID	EA 1
C	C-2	47	XBFZZ		0421-1-3205	15942	LEVER, SOLENOID	EA 1
C	C-2	48	PAFZZ	5945-01-042-5260	TP-6X12-C- 24VDC	73949	SOLENOID, ELECTRICAL (THREE PARTS)	EA 1
C	C-2	49	XBFZZ		0421-1-2340	15942	PLUNGER, SOLENOID	EA 1
C	C-2	50	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER, FLAT	EA 2
C	C-2	51	PAFZZ	5310-00-929-6395	MS35338-136	96906	WASHER, LOCK	EA 2

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
							USABLE ON CODE	
C	C-2	52	PAFZZ 5305-00-054-6651	MS51957-27	96906	SCREW, MACHINE	EA	2
C	C-2	53	PAFZZ 5385-00-543-3981	MS16633-4009	96906	RING, RETAINING	EA	1
C	C-2	54	XBFZZ	0421-1-2316	15942	SHAFT, STRAIGHT	EA	1
C	C-2	55	XBFZZ	0421-1-2312	15942	BRACKET, SOLENOID	EA	1
C	C-2	56	PAFZZ 5305-00-959-1082	MS16995-18	96906	SCREW, SOCKET HEAD	EA	2
C	C-2	57	PAFZZ 5835-01-040-7189	0421-1-2350	15942	GUIDE, SPRING	EA	1
C	C-2	58	XBFFF	0421-1-2353	15942	BEARING BLOCK ASSEMBLY	EA	1
C	C-2	59	XBFFF	0421-1-3215	15942	LEVER ASSEMBLY, SLIDE	EA	1
C	C-2	60	PAFZZ 3120-01-041-1577	0421-1-2123	15942	BEARING, SLEEVE	EA	1
C	C-2	61	XBFFF	0421-1-4198	15942	PLATE, MOUNTING	EA	1
C	C-2	62	XBFZZ	0421-1-2314	15942	BAR, SUPPORT, LOWER RIGHT	EA	1
C	C-2	63	XBFFF	0421-1-3222	15942	BRAKE ASSEMBLY	EA	1
C	C-2	64	PAFZZ 5315-00-376-0340	0149-1-2035	15942	PIN, STRAIGHT, HEADLESS	EA	2
C	C-2	65	PAFZZ 5310-00-805-3214	B6-22	00141	SHIM	EA	6
C	C-2	66	PAFZZ 5310-00-938-2013	MS35649-224	00141	NUT, PLAIN, HEX	EA	3
C	C-2	67	PAFZZ 5330-00-944-2482	MS9068-043	96906	BELT, ROUND	EA	1
C	C-2	68	PAFZZ 5330-00-884-0943	MS9068-027	96906	BELT, ROUND	EA	1
C	C-2	69	XBFZZ	0149-1-2033	15942	GUIDE, MOTOR, CONTROLLER	EA	2
C	C-2	70	PAFZZ 5310-00-401-0857	U125-0060	70472	WASHER, SPRING TENSION	EA	2
C	C-2	71	PAFZZ 5310-00-815-0653	79NM-26	72962	NUT, SELF-LOCKING	EA	2
C	C-2	72	PAFZZ 5305-00-052-9571	NAS1351C04-4	80205	SCREW, SOCKET HEAD	EA	2
C	C-2	73	PAFZZ	0421-1-3211	15942	BRACKET, INTERRUPTER MODULE	EA	1
C	C-2	74	PAFZZ 5961-01-042-2132	H13A1	03508	INTERRUPTER MODULE	EA	2
C	C-2	75	PAFZZ 5310-00-934-9748	MS35649-244	96906	NUT, PLAIN, HEX	EA	4
C	C-2	76	PAFZZ 3030-00-427-1730	0149-1-2014	15942	BELT, POWER TRANSMISSION, FLAT	EA	1
C	C-2	77	PAFZZ 5835-00-434-9068	0149-1-3070-1	15942	PULLEY, TAKE-UP SIDE	EA	1
C	C-2	78	XBFZZ	NO.1	70318	WASHER, SPRING, LOCK	EA	2

CHANGE 2

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C-2	79	XBFZZ		0421-1-3213	15942	BRACKET, INTERRUPTER MODULE	EA	1
C-2	80	PAFZZ	5305-00-054-5638	MS51957-5	96906	SCREW, MACHINE	EA	7
C-2	81	PAFZZ		1-72X5/32LG	70318	SCREW, BUTTON HEAD	EA	2
C-2	82	XBFZZ		0149-1-3070-2	15942	PULLEY, SUPPLY SIDE	EA	1
C-2	83	PAFZZ	5315-00-394-4897	0149-1-2072	15942	PIN, STRAIGHT, HEADLESS	EA	2
C-2	84	PAFZZ	5835-00-357-6759	0149-1-2029	15942	SHAFT, STRAIGHT	EA	2
C-2	85	XBFZZ		0421-1-3212	15942	CONTROLLER, MOTOR	EA	1
C-2	86	XBFZZ		0421-1-2336	15942	PULLEY, DRIVE	EA	1
C-2	87	XBFZZ		0421-1-3204	15942	PULLEY, DRIVE, COUNTER	EA	1
C-2	88	PAFZZ	5365-00-341-6848	G5555-9H	79136	RING, RETAINING	EA	4
C	C-2	PAHZZ		0421-1-3233	15942	DRIVE MOTOR ASSEMBLY	EA	1
C-2	90	XBFZZ		0421-1-3214	15942	SPACER, MOTOR BRACKET	EA	1
C-2	91	PAFZZ	5305-00-717-6955	MS51963-1	96906	SETSCREW	EA	5
C-2	92	XBFZZ		0421-1-2328	15942	PULLEY, MOTOR	EA	2
C-2	93	PAFZZ		M2X5	70318	SCREW, FLATHEAD	EA	9
C-2	94	XBFZZ		0421-1-3231	15942	BRACKET, MOTOR	EA	1
C	C-2	PAHZZ	6105-01-042-4790	0149-1-3234	15942	MOTOR, DC, WITH THREADS	EA	2
C-2	96	XBFZZ		0421-1-2335	15942	STANDOFF	EA	2
C-2	97	PAFZZ	5835-00-334-6556	0123-1-2052	15942	SHIELD, ELECTROSTATIC	EA	2
C-2	98	XBFZZ		0123-1-2053	15942	CLAMP	EA	2
C-2	99	XBFZZ		0421-1-3217	15942	SHEILD, OPTICAL DISK	EA	1
C-2	100	PAFZZ	5935-01-040-7190	0421-1-3224	15942	OPTICAL DISK	EA	1
C-2	101	PAFZZ	5935-00-818-6559	57-30240	02660	CONNECTOR, HARNESS	EA	1

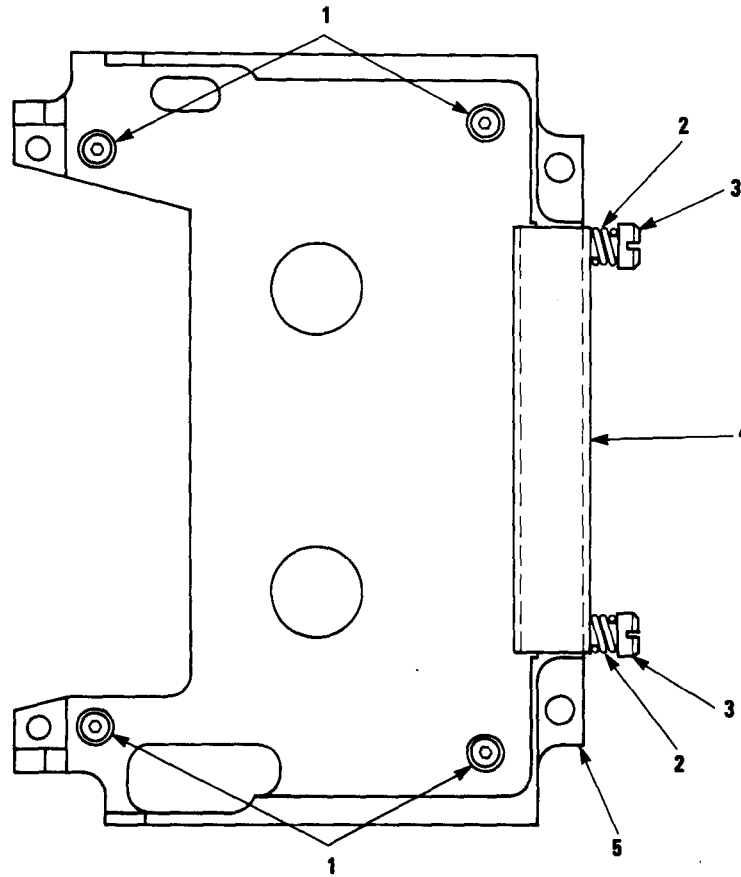


Figure C-3. Cartridge Mounting Plate

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						<i>Usable On Code</i>		
C	C-3	1	XBFZZ	2-56X3/16	70318	GROUP: 010101 CARTRIDGE MOUNTING PLATE (15942) SCREW, CAP, BUTTON HEAD, HEX SOCKET	EA	4
C	C-3	2	PAFZZ 6710-00-063-0509	LC-016B-1	84830	SPRING, HELICAL, COMPRESSION	EA	2
C	C-3	3	PAFZZ 5305-00-841-2682	4311	00141	SCREW, SHOULDER	EA	2
C	C-3	4	XBFZZ	0149-1-3027	15942	BRACKET, DOUBLE ANGLE	EA	1
C	C-3	5	XBFZZ	0149-1-4173	15942	PLATE, MOUNTING	EA	1

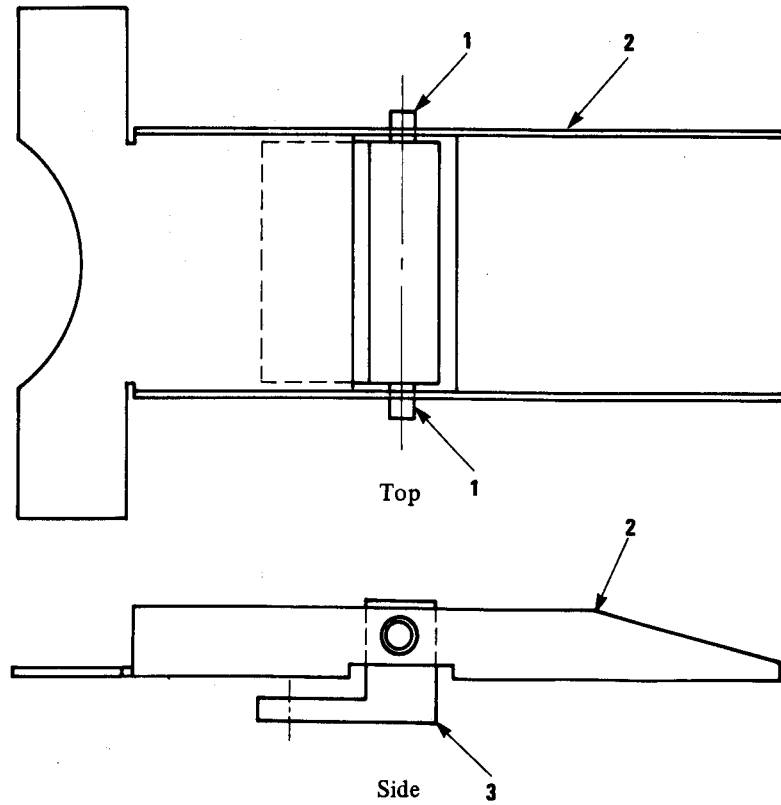


Figure C-4. Brake Subassembly

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
						<i>Usable On Code</i>		
C	C-4	1	PAFZZ 5315-00-840-0966	MS16562-210	96906	GROUP: 010102 BRAKE SUB- ASSEMBLY (15942) PIN, SPRING, TUBULAR	E A	2
C	c-4	2	XBFZZ	0421-1-3206	15942	BRAKE, LEVER ARM	E A	1
C	C-4	3	XBFZZ	0421-1-3207	15942	BLOCK, PIVOT	E A	1

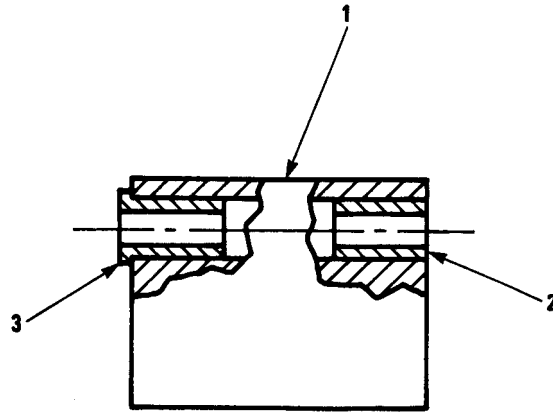


Figure C-5. Bearing Assembly

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION <i>Usable On Code</i>	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
c	C-5	1				GROUP: 010103 BEARING ASSEMBLY (1)		
				0421-1-2313	15942	BLOCK, BEARING	EA	1
c	C-5	2	3120-00-540-8556	B	00141	BEARING, PLAIN	EA	1
c	C-5	3	3120-00-853-5886	B11-7	00141	BEARING, FLANGED	EA	1

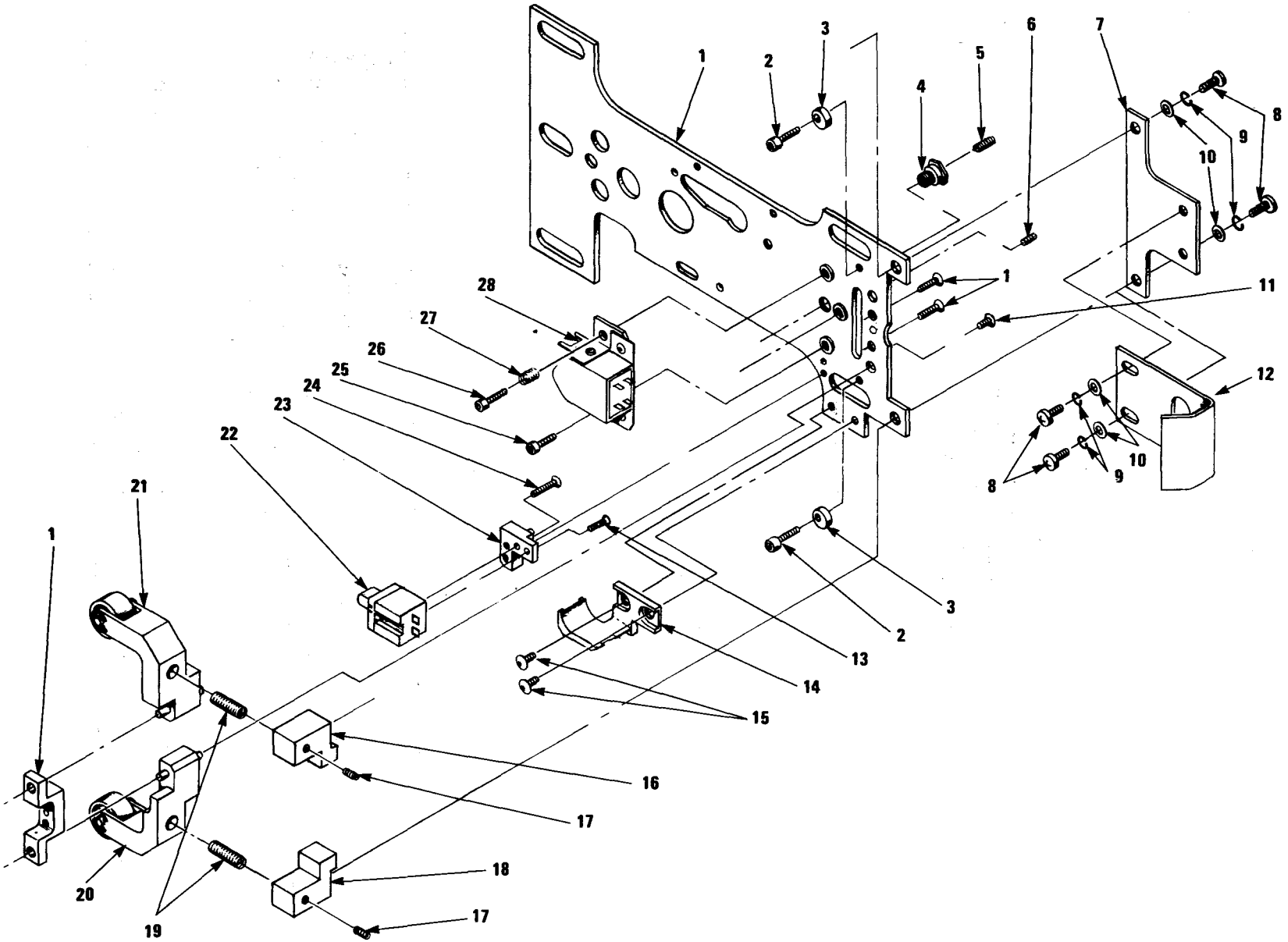


Figure C-6. Slide Plate Subassembly

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
						USABLE ON CODE			
						GROUP: 010104 SLIDE PLATE SUBASSEMBLY (15942)			
C	C-6	1	XBFFF	0149-1-4155	15942	PLATE SUBASSEMBLY (FOUR PARTS)	EA	1	
C	C-6	2	XBFZZ	0123-1-2039	15942	SCREW, SOCKET HEAD	EA	2	
C	C-6	3	PAFZZ	5835-00-504-9794	0149-1-2049	15942	STOP, ADJUSTABLE	EA	2
C	C-6	4	XBFZZ	0123-1-2041	15942	GUIDE, SLIDE PLATE	EA	1	
C	C-6	5	XBFZZ	2-56X3/16	70318	SETSCREW	EA	1	
C	C-6	6	XBFZZ	2-56X1/8	70318	SETSCREW	EA	1	
C	C-6	7	XBFZZ	0421-1-2116	15942	ADAPTER, SLIDE PLATE	EA	1	
C	C-6	8	PAFZZ	5305-00-054-5638	MS51957-4	96906	SCREW, MACHINE	EA	4
C	C-6	9	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER, LOCK	EA	4
C	C-6	10	PAFZZ	5310-00-595-6761	MS15795-802	96906	WASHER, FLAT	EA	4
C	C-6	11	XBFZZ	1-72X1/8	70318	SCREW, FLATHEAD	EA	1	
C	C-6	12	XBFZZ	0149-1-2324	15942	PLATE, SLIDE ADJUSTING	EA	1	
C	C-6	13	XBFZZ	0-80X1/8	70318	SCREW, FLATHEAD	EA	1	
C	C-6	14	PAFZZ	5835-00-466-8544	0149-1-3093	15942	GUIDE, TAPE	EA	1
C	C-6	15	XBFZZ	2-56X1/8	70318	SCREW, BUTTONHEAD	EA	2	
C	C-6	16	PAFZZ	5811-01-004-4300	0149-1-3048-2	15942	BRACKET, SPRING STOP	EA	1
C	C-6	17	PAFZZ	5305-00-655-9246	MS51021-10	96906	SETSCREW	EA	2
C	C-6	18	XBFZZ	0421-1-3048-1	15942	BRACKET, SPRING STOP	EA	1	
C	C-6	19	PAFZZ	5360-01-040-3755	0123-1-2059	15942	SPRING, COMPRESSION	EA	2
C	C-6	20	PAFFF	5835-00-364-0811	0149-1-3060-1	15942	ROLLER, SOUND RECORDER	EA	1
C	C-6	21	PAFFF	5835-00-364-0810	0149-1-3060-2	15942	ROLLER, SOUND RECORDER	EA	1
C	C-6	22	PAFZZ	5835-01-042-9943	0149-1-3202	15942	ERASE HEAD, MAGNETIC	EA	1
C	C-6	23	XBFFF	0149-1-2262	15942	BLOCK, ERASE HEAD MOUNTING	EA	1	
C	C-6	24	XBFZZ	0-80X3/16	70318	SCREW, FLATHEAD	EA	1	
C	C-6	25	PAFZZ	5305-01-042-1410	0149-1-2286	15942	SCREW, SOCKET HEAD	EA	1

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT	
C	C-6	26	PAFZZ	5305-00-068-5411	MS16995-3	96906	SCREW, SOCKET HEAD	EA	1
C	C-6	27	PAFZZ	5360-00-423-6399	0123-1-2104	15942	SPRING, COMPRESSION	EA	1
C	C-6	28	XBFFF		0149-1-3181	15942	HEAD MOUNTING ASSEMBLY	EA	1

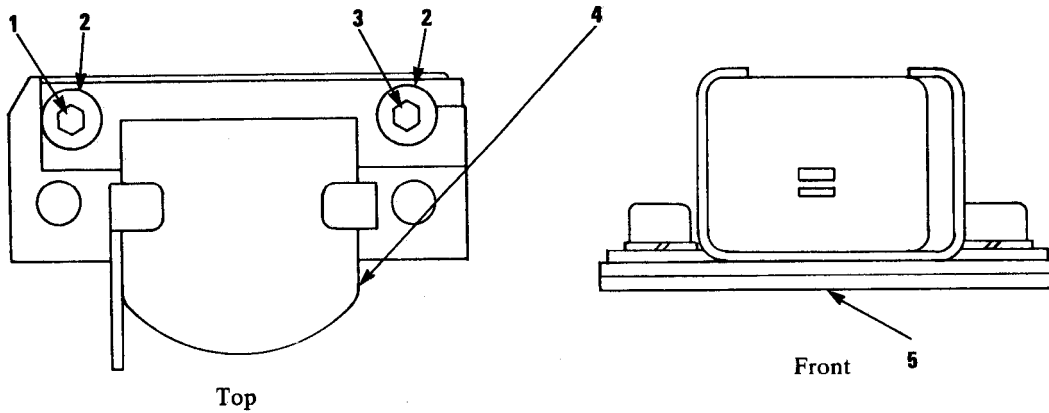


Figure C-7. Head Mounting Assembly

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT	
	C-7	1	XBFZZ		2-56X1/8	70318	GROUP: 01010401 HEADMOUNTING ASSEMBLY (15942) SCREW, CAP, BUTTONHEAD, HEX, SOCKET	EA	1
	C-7	2	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER, LOCK	EA	2
	C-7	3	PAFZZ	5305-01-042-1410	0149-1-2286	15942	SCREW, SOCKET HEAD	EA	1
C	C-7	4	PAHZZ	5835-01-078-4915	0149-1-2361	15942	HEAD, SOUND RECORDER/ REPRODUCER	EA	1
	C-7	5	XBFZZ		0123-1-3036	15942	PLATE, HEAD MOUNTING	EA	1

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LEGEND

REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.	REF DES	ITEM NO.
DS1	1	DS6	1	J5	2	R3	5	S4	10	S9	14	XDS3	17
DS2	1	J1	2	M1	4	R4	6	S5	11	S10	13	XDS4	17
DS3	1	J2	3	M2	4	S1	7	S6	12	S11	16	XDS5	17
DS4	1	J3	2	R1	5	S2	8	S7	13	XDS1	17	XDS6	17
DS5	1	J4	3	R2	5	S3	9	S8	14	XDS2	17		

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A2

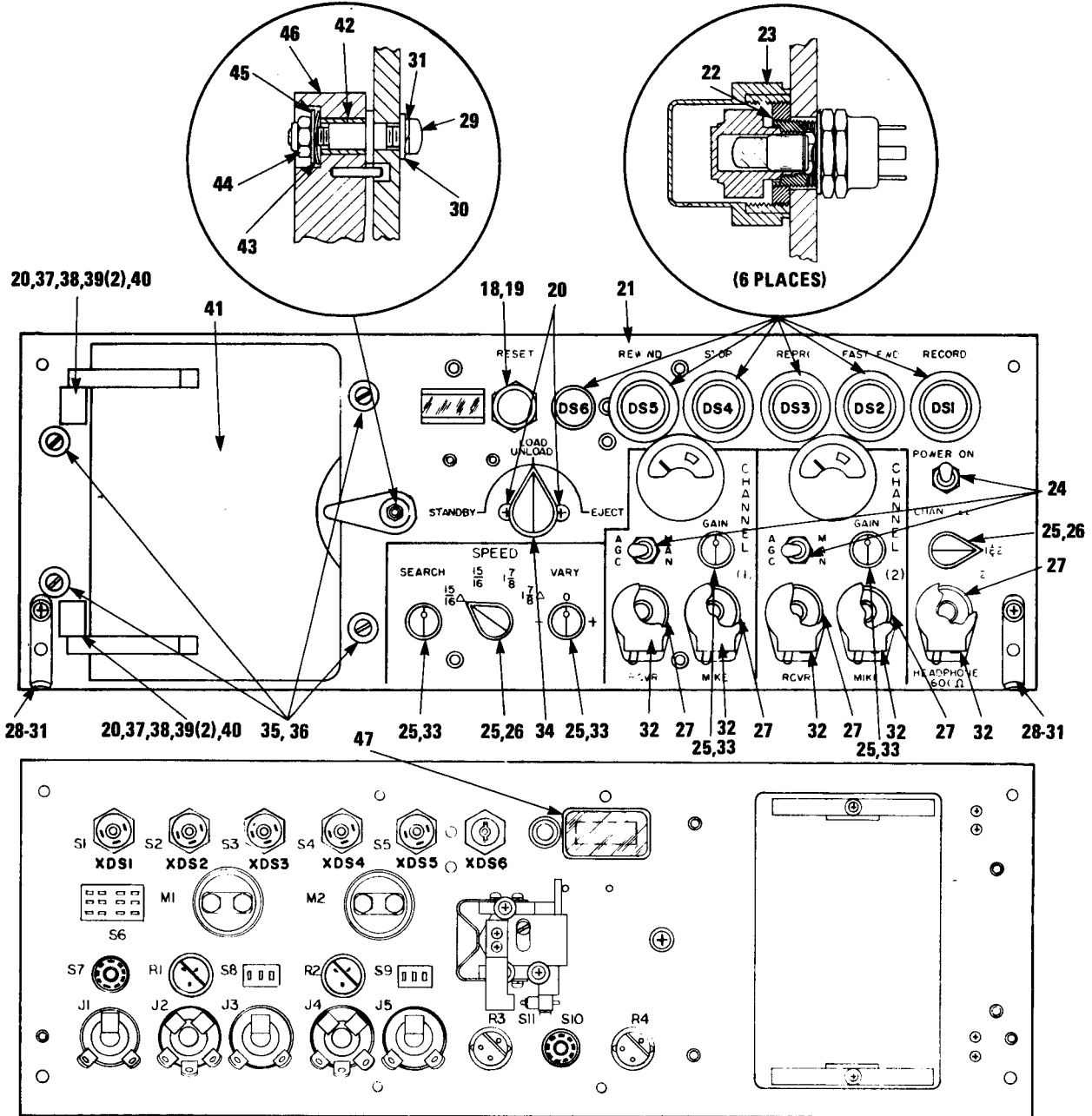


Figure C-8. Front Panel Assembly

CHANGE 2

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M QTY INC IN UNIT	
						USABLE ON CODE		
						GROUP: 0102 FRONT PANEL ASSEMBLY ALA2 (15942)		
C-8	1	PAFZZ	6240-00-155-7836	MS25237-327	96906	LAMP, INCANDESCENT, DS1-DS6	EA 6	
C-8	2	PAFZZ	5935-00-683-2746	M641-6-1	81349	JACK, TELEPHONE, J1, J3, J5	EA 3	
C-8	3	PAFZZ	5935-00-192-4729	M641-5-1	81349	JACK, TELEPHONE, J2, J4	EA 2	
C-8	4	PAFZZ	6625-00-501-7348	0421-1-3175	15942	METER, AUDIO, M1, M2	EA 2	
C-8	5	PAFZZ	5905-00-497-0868	RVC6NYD- 503B	81349	RESISTOR, VARIABLE, R1-R3	EA 3	
C-8	6	PAFZZ	5905-01-025-9029	RVC6NYD- 102B	81349	RESISTOR, VARIABLE, R4	EA 1	
C-8	7	PAFZZ	6210-00-519-0448	MS25041-6	96906	SWITCH, INDICATOR, S1	EA 1	
C-8	8	PAFZZ	6210-00-553-1076	MS25041-7	96906	SWITCH, INDICATOR, S2	EA 1	
C-8	9	PAFZZ	6210-00-635-4700	MS25041-8	96906	SWITCH, INDICATOR, S3	EA 1	
C-8	10	PAFZZ	6210-00-583-9349	MS25041-5	96906	SWITCH, INDICATOR, S4	EA 1	
C-8	11	PAFZZ	6210-00-819-3930	MS25041-11	96906	SWITCH, INDICATOR, S5	EA 1	
C	C-8	12	PAFZZ	5930-00-419-9843	MTA-406N	95146	SWITCH, TOGGLE, S6	EA 1
C	C-8	13	PAFZZ	5930-01-016-5162	M3786/20-316	81349	SWITCH, ROTARY, S7, S10	EA 1
C	C-8	14	PAFZZ	5930-00-147-0707	MTA-106D	95146	SWITCH, TOGGLE, S8, S9	EA 2
C	C-8	15						
C-8	16	XBFFF		0421-1-4203	15942	FUNCTION SWITCH ASSEMBLY, S11	EA 1	
C-8	17	PAFZZ	6210-00-067-6044	177-8430-0976- 50	72619	LIGHT INDICATOR, XDS1 - XDS6	EA 6	
C-8	18	PAFZZ	5930-00-800-5770	M5423/07-01	81349	SHIELD, SWITCH	EA 1	
C-8	19	XBFZZ		0421-1-2322	15942	ADAPTER, SEAL	EA 1	
C-8	20	PAFZZ	5305-00-969-6495	MS24693-C25	96906	SCREW, MACHINE	EA 4	
C-8	21	XBFZZ		0421-1-4196	15942	PANEL, FRONT	EA 1	
C-8	22	PAFZZ	6625-00-137-6808	7	97539	NUT, ADAPTER	EA 6	
C-8	23	PAFZZ	1265-00-201-8826	4082	97539	SHIELD, INDICATOR LIGHT	EA 6	
C-8	24	PAFZZ	5930-00-892-9362	M5423/05-01	81349	SEAL, TOGGLE	EA 3	

CHANGE 2

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C-8	25	PAFZZ	5930-00-892-9026	M5423/09-03	81349	NUT, SEALING	EA	6
C-8	26	PAFZZ	5355-00-990-3175	MS91528-0P1B	96906	KNOB	EA	2
C-8	27	PAFZZ	5330-00-846-0503	MS9241-113	96906	PACKING, PREFORMED	EA	5
C-8	28	PAFZZ	6605-00-972-1348	43-0913-00-901	81860	KEEPER	EA	2
C-8	29	PAFZZ	5305-00-054-6651	MS51957-27	96906	SCREW, MACHINE	EA	3
C-8	30	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER, FLAT	EA	3
C-8	31	PAFZZ	5310-00-929-6395	MS35338-136	96906	WASHER, LOCK	EA	3
C-8	32	PAFZZ	5935-00-333-9112	510	82389	COVER JACK	EA	5
C-8	33	PAFZZ	5355-00-762-1489	MS91528-0E1B	96906	KNOB	EA	4
C-8	34	PAFZZ	5355-01-042-8653	0149-1-2245	15942	KNOB	EA	1
C-8	35	PAFZZ	5355-01-043-1340	6220-SS-0632-7	06540	SCREW, CAPTIVE	EA	4
C-8	36	PAFZZ	5310-01-043-4323	6701-SS-0632-7	06540	WASHER, PANEL	EA	4
C-8	37	XBFZZ		0421-1-2339	15942	BLOCK, HINGE MOUNTING	EA	2
C-8	38	XBFZZ		0421-1-2337	15942	PIN	EA	2
C-8	36	PAFZZ	5305-00-764-2964	MS51959-4	96906	SCREW, MACHINE	EA	4
C-8	40	PAFZZ	5305-00-576-7266	MS51021-22	96906	SETSCREW	EA	2
C-8	41	XBFZZ		0421-1-4112	15942	DOOR, ACCESS	EA	1
C-8	42	XBFZZ		0421-1-2338	15942	POST, LATCH	EA	1
C-8	43	XBFZZ		U190-0090	70472	WASHER, SPRING	EA	1
C-8	44	PAFZZ	5310-00-982-4999	MS21044-C04	96906	NUT, HEX, SELF-LOCKING	EA	1
C-8	45	PAFZZ	5310-00-619-1148	MS15795-808	96906	WASHER, FLAT	EA	1
C-8	46	XBFZZ		0149-1-3169	15942	LATCH ASSEMBLY	EA	6
C-8	47	XBFZZ		0421-1-2246	15942	WINDOW, COUNTER	EA	1

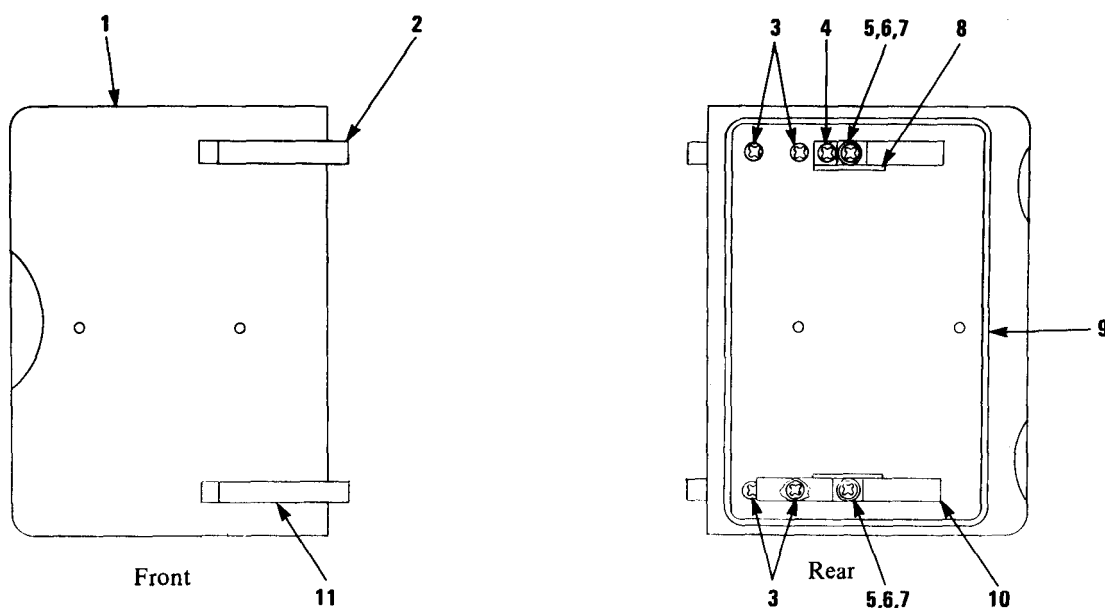


Figure C-9. Transcriber Access Door

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT	
C	C-9	1	XBFZZ		0421-1-3167	15942	GROUP: 010201 TRANSCRIBER ACCESS DOOR (15942)	EA	1
C	C-9	2	XBFZZ		0421-1-2233-1	15942	COVER, CASSETTE	EA	1
C	C-9	3	PAFZZ	305-00-727-8833	MS51959-3	96906	PLATE, HINGE	EA	4
C	C-9	4	PAFZZ	305-00-814-1707	NAS662C2R4	80295	SCREW, FLATHEAD	EA	1
C	C-9	5	PAFZZ	305-00-054-5636	MS51957-2	96906	SCREW, FLATHEAD	EA	2
C	C-9	6	PAFZZ	310-00-595-6761	MS15795-802	96906	SCREW, MACHINE	EA	2
C	C-9	7	PAFZZ	310-00-928-2690	MS35338-134	96906	WASHER, FLAT	EA	2
C	C-9	8	XBFZZ		0421-1-2234	15942	WASHER, LOCK	EA	1
C	C-9	9	XBFZZ		10-05-1362-1250	18565	BLOCK, MOUNTING, CARTRIDGE	EA	1
C	C-9	10	PAFZZ	835-00-483-6173	0421-1-2235	15942	GASKET, SHEILDING, ELECTRONIC	EA	1
C	C-9	11	XBFZZ		0421-1-2233-2	15942	RETAINER, CARTRIDGE	EA	1
							PLATE, HINGE	EA	1

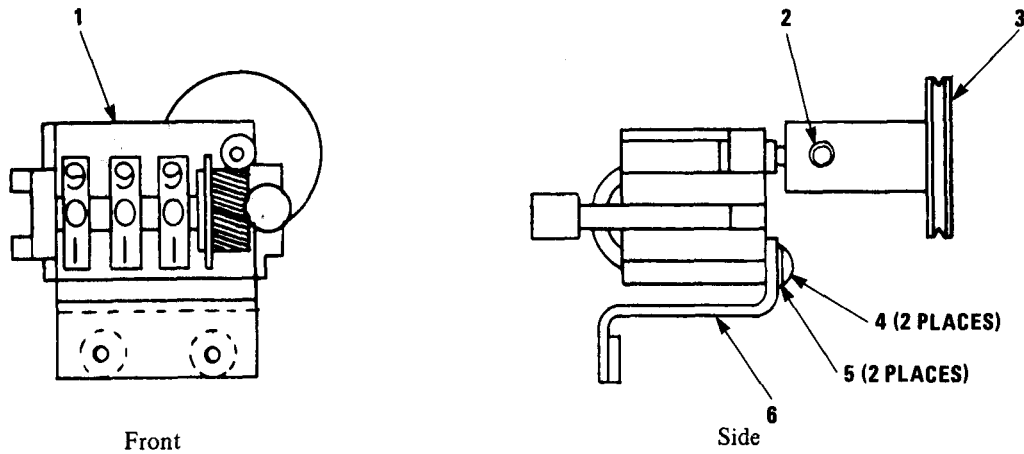


Figure C-10. Counter Assembly

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						<i>Usable On Code</i>		
C	C-10	1	PAFZZ 6680-01-045-7810	M33Z22	33203	GROUP: 010202 COUNTER ASSEMBLY (15942) COUNTER	EA	1
C	C-10	2	PAFZZ 5305-00-543-5832	MS51021-11	96906	SETSCREW	EA	1
C	C-10	3	XBFZZ	0421-1-3203	15942	PULLEY	EA	1
C	C-10	4	PAFZZ 5305-00-058-2099	AN530C4R4	88044	SCREW, THREAD FORMING	EA	2
C	C-10	5	PAFZZ 5310-00-595-6211	MS15795-803	96906	WASHER, FLAT	EA	2
C	C-10	6	XBFZZ	0421-1-2308	15942	BRACKET	EA	1

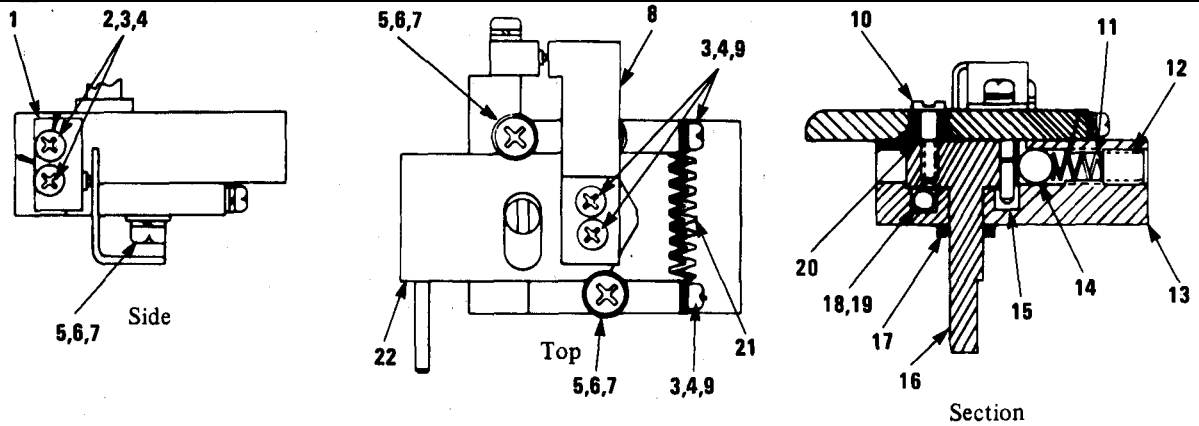


Figure C-11. Function Switch Assembly

		CHANGE 1					TM32-5835-005-14&P		
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
ILLUSTRATION			NATIONAL	PART		DESCRIPTION	U/M	QTY	
(A)	(B)	SMR	STOCK	NUMBER	FSCM			INC	
FIG	ITEM	CODE	NUMBER					IN	
NO.	NO.						USABLE ON CODE	UNIT	
						GROUP: 010203 FUNCTION SWITCH			
						ASSEMBLY (15942)			
C	C-11	1	PAFZZ	5930-00-803-4570	MS24547-1	96906	SWITCH, ELECTRICAL	EA 1	
C	C-11	2	PAFZZ	5305-00-054-5639	MS51957-5	96906	SCREW, MACHINE	EA 2	
C	C-11	3	PAFZZ	5310-00-043-4708	NAS620-C2	80205	WASHER, FLAT	EA 6	
C	C-11	4	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER, LOCK	EA 6	
C	C-11	5	PAFZZ	5305-00-054-5647	MS51957-13	96906	SCREW, MACHINE	EA 3	
C	C-11	6	PAFZZ	5310-00-782-1349	MS15795-804	96906	WASHER, FLAT	EA 3	
C	C-11	7	PAFZZ	5310-00-933-8118	MS35338-135	96906	WASHER, LOCK	EA 3	
C	C-11	8	XBFZZ		0421-1-2327	15942	ACTUATOR ARM	EA 1	
C	C-11	9	PAFZZ	5305-00-054-5636	MS51957-2	96906	SCREW, MACHINE	EA 4	
C	C-11	10	XBFZZ		0421-1-2320	15942	SCREW, SHOULDER	EA 1	
C	C-11	11	PAFZZ	5360-01-040-3753	0421-1-2360	15942	SPRING	EA 1	
C	C-11	12	PAFZZ	5305-00-272-3533	MS51023-49	96906	SETSCREW	EA 1	
C	C-11	13	XBFZZ		0421-1-4200	15942	BLOCK, CAM	EA 1	
C	C-11	14	PAFZZ	3110-00-188-2760	MS19063-5	96906	BEARING, BALL	EA 1	
C	C-11	15	PAFZZ	5315-01-032-3725	MS9390-080	96906	PIN, STRAIGHT, HEADLESS	EA 1	
C	C-11	16	XBFZZ		0421-1-3209	15942	CAM	EA 1	
C	C-11	17	XBFZZ		0421-1-2352	15942	WASHER, NONMETALLIC	EA 1	
N	C-11	18	XBFZZ		0421-1-2370	15942	STOP, NEOPRENE	EA 1	
N	C-11	19	PAFZZ	3110-00-183-9175	MS134352	96906	BEARING, BALL	EA 1	
C	C-11	20	PAFZZ	3120-01-046-4926	0421-1-2321	15942	BUSHING, SLEEVE	EA 1	
N	C-11	21	PAFZZ	5360-00-864-3028	LE022B00	84830	SPRING	EA 1	
C	C-11	22	XBFFF		0421-1-3210	15942	SLIDE	EA 1	

LEGEND

REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO
C1	1	C16	1	C31	9	CR6	14	R1	20	R16	27	R31	22	R46	28
C2	2	C17	12	C32	11	CR7	14	R2	21	R17	22	R32	23	R47	32
C3	3	C18	13	C33	5	CR8	14	R3	N/U	R18	28	R33	26	R48	33
C4	4	C19	6	C34	1	K1	15	R4	22	R19	29	R34	26	R49	34
C5	5	C20	11	C35	12	K2	15	R5	23	R20	30	R35	27	R50	35
C6	6	C21	3	C36	13	L1	16	R6	23	R21	20	R36	22	R51	35
C7	7	C22	6	C37	6	L2	17	R7	23	R22	31	R37	28	R52	34
C8	8	C23	3	C38	11	L3	16	R8	24	R23	22	R38	29	R53	24
C9	N/U	C24	4	C39	3	L4	17	R9	22	R24	23	R39	25	TP1	36
C10	7	C25	5	C40	6	Q1	18	R10	20	R25	23	R40	30	TP2	36
C11	5	C26	6	CR1	14	Q2	18	R11	22	R26	22	R41	20	U1	37
C12	9	C27	7	CR2	14	Q3	19	R12	25	R27	23	R42	31	U2	37
C13	1	C28	8	CR3	14	Q4	18	R13	22	R28	24	R43	28	U3	38
C14	10	C29	N/U	CR4	14	Q5	18	R14	26	R29	20	R44	32		
C15	11	C30	7	CR5	14	Q6	19	R15	26	R30	22	R45	33		

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A3

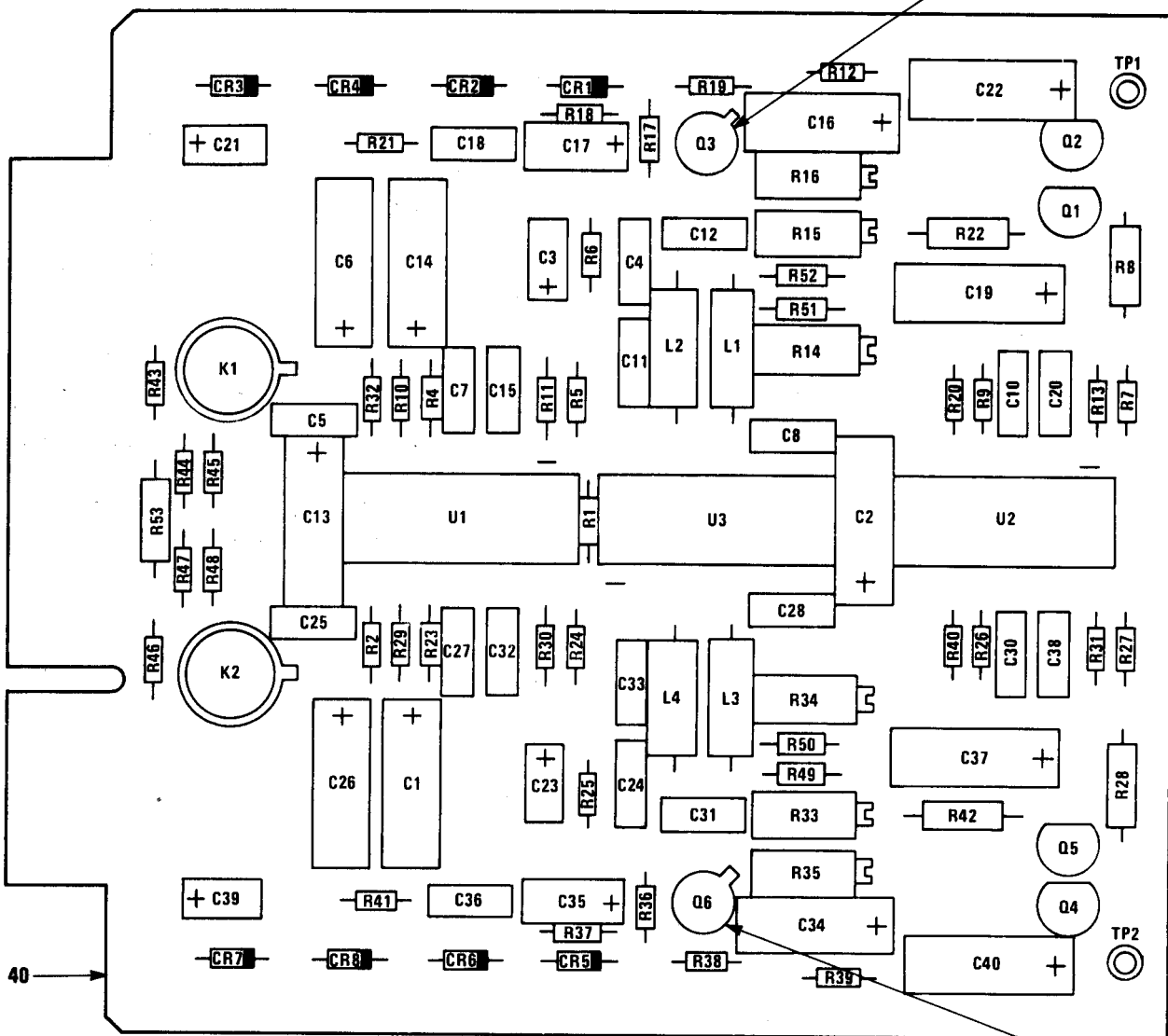


Figure C-12. Record/Reproduce Amplifier Assembly

39

CHANGE 1									
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)		(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	USABLE ON CODE		U/M QTY INC IN UNIT
						TM32-5835-005-14&P GROUP: 0103 RECORD/REPRO- DUCE AMPLIFIER ASSEMBLY A1A3 (15942)			
R	C-12	1	PAFZZ	5910-00-769-5325	PNS826Z015KI	81349	CAPACITOR, FIXED, ELECTRO- LYTIC, C1, C13, C16, C34		EA 4
N	C-12	2	PAFZZ		PNS686Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C2		EA 1
R	C-12	3	PAFZZ	5910-01-057-0375	PNS335X025KI	26769	CAPACITOR, FIXED, ELECTROO LYTIC, C3, C21, C23, C39		EA 4
	C-12	4	PAFZZ	5910-00-113-5499	CK06BX104K	81349	CAPACITOR, FIXED, CERAMIC, C4, C24		EA 2
	C-12	5	PAFZZ	5910-00-113-5284	CK06BX334K	81349	CAPACITOR, FIXED, CERAMIC, C5, C11, C25, C33		EA 4
R	C-12	6	PAFZZ	5910-00-999-2839	PNS476Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C6, C19, C22, C26, C37, C40		EA 6
	C-12	7	PAFZZ	5910-00-114-0803	CK06BX183K	81349	CAPACITOR, FIXED, CERAMIC C7, C10, C27, C30		EA 4
N	C-12	8	PAFZZ	5910-00-115-8405	CK06BX333K	81349	CAPACITOR, FIXED, CERAMIC, C8, C28		EA 2
	C-12	9	PAFZZ	5910-00-113-5494	CK06BX153K	81349	CAPACITOR, FIXED, CERAMIC C12, C31		EA 2
R	C-12	10	PAFZZ	5910-00-928-1128	PNS157Z010KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C14		EA 1
R	C-12	11	PAFZZ	5910-00-113-9446	CK06BX182K	81349	CAPACITOR, FIXED, CERAMIC C15, C20, C32, C38		EA 4
R	C-12	12	PAFZZ	5910-00-911-5906	PNS106Y025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C17, C35		EA 2
R	C-12	13	PAFZZ	5910-00-847-7288	CK06BX103K	81349	CAPACITOR, FIXED, CERAMIC C18, C36		EA 2
C	C-12	14	PAFZZ	5961-00-938-1135	JAN1N4148	81349	DIODE, CR1-CR8		EA 8
R	C-12	15	PAFZZ	5945-01-027-9982	M39016-9-002L	81349	RELAY, K1, K2		EA 2
C	C-12	16	PAFZZ	5950-00-114-5631	MS75089-43	96906	COIL, RF, L1, L3		EA 2
C	C-12	17	PAFZZ	5950-01-012-8038	MS75089-38	96906	COIL, RF, L2, L4		EA 2
R	C-12	18	PAFZZ	5961-01-041-7288	2N5371	03508	TRANSISTOR, Q1, Q2, Q4, Q5		EA 4
C	C-12	19	PAFZZ	5961-00-520-5617	JAN2N3822	81349	TRANSISTOR, Q3, Q6		EA 2

CHANGE 1

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM32-5835-005-14&P (6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
C	C-12	20	PAFZZ	5905-00-458-9500	RCR05G102JS	81349	RESISTOR, FIXED, COMPOSITION, R1, R10, R21, R29, R41	EA 5
	C-12	21	PAFZZ	5905-00-466-1218	RCR05G822JS	81349	RESISTOR, FIXED, COMPOSITION, R2	EA 1
	C-12	22	PAFZZ	5905-00-458-9346	RCR05G104JS	81349	RESISTOR, FIXED, COMPOSITION R4, R9, R11, R13, R17, R23, R26 R30, R31, R36	EA 10
R	C-12	23	PAFZZ	5905-01-035-5065	RCR05G103JS	81349	RESISTOR, FIXED, COMPOSITION, R5-R7, R24, R25, R27, R32	EA 7
	C-12	24	PAFZZ	5905-00-104-8363	RCR07G820JS	81348	RESISTOR, FIXED, COMPOSITION, R8, R28, R53	EA 3
	C-12	25	PAFZZ	5905-00-617-5091	RCR05G472JS	81349	RESISTOR, FIXED, COMPOSITION, R12, R39	EA 2
C	C-12	26	PAFZZ	5905-00-479-8098	RJ24CX502	81349	RESISTOR, VARIABLE, R14, R15, R33, R34	EA 4
C	C-12	27	PAFZZ	5905-00-979-8097	RJ24CX103	81349	RESISTOR, VARIABLE, R16, R35	EA 2
	C-12	28	PAFZZ	5905-00-480-6885	RCR05G184JS	81349	RESISTOR, FIXED, COMPOSITION, R18, R37, R43, R46	EA 4
	C-12	29	PAFZZ	5905-00-195-4074	RCR05G105JS	81349	RESISTOR, FIXED, COMPOSITION, R19, R38	EA 2
C	C-12	30	PAFZZ	5905-00-761-5758	RCR05G471JS	81349	RESISTOR, FIXED, COMPOSITION, R20, R40	EA 2
R	C-12	31	PAFZZ	5905-00-135-3973	RCR07G221JS	81349	RESISTOR, FIXED, COMPOSITION, R22, R42	EA 2
R	C-12	32	PAFZZ	5905-00-422-3798	RCR05G621JS	81349	RESISTOR, FIXED, COMPOSITION, R44, R47	EA 2
R	C-12	33	PAFZZ	5905-00-480-0013	RCR05G241JS	81349	RESISTOR, FIXED, COMPOSITION, R45, R48	EA 2
N	C-12	34	PAFZZ	5905-00-255-3701	RCR05G560JS	81349	RESISTOR, FIXED, COMPOSITION, R49, R52	EA 2
R	C-12	35	PAFZZ	5905-00-177-7486	RCR05G221JS	81349	RESISTOR, FIXED, COMPOSITION, R50, R51	EA 2
R	C-12	36	PAFZZ	5940-00-082-5002	2010B-1	88245	TEST POINT, TP1, TP2	EA 2
	C-12	37	PAFZZ	5962-00-467-1590	MC1303L	04713	INTEGRATED CIRCUIT, U1, U2	EA 2
R	C-12	38	PAFZZ	5962-01-050-7830	CD4066AE	02735	INTEGRATED CIRCUIT, U3	EA 1

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M QTY INC IN UNIT	
R	C-12	39	PAFZZ	5999-01-041-3187	104-060	92219	MOUNTING PAD, TRANSISTOR	EA 2
C	C-12	40	XAFDD		0421-1-4216	15942	PRINTED CIRCUIT BOARD	EA 1

USABLE ON CODE

LEGEND

REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO
C1	1	C8	5	CR2	10	K4	13	Q4	18	R6	23	R13	24	R20	29
C2	2	C9	3	CR3	11	L1	14	Q5	18	R7	23	R14	24	R21	23
C3	2	C10	6	CR4	11	L2	15	R1	19	R8	24	R15	26	TP1	30
C4	3	C11	7	CR5	11	M1	16	R2	20	R9	24	R16	27	TP2	30
C5	4	C12	8	K1	12	Q1	17	R3	21	R10	25	R17	27	TP3	30
C6	1	C13	9	K2	12	Q2	17	R4	20	R11	25	R18	28	TP4	30
C7	1	CR1	10	K3	13	Q3	18	R5	22	R12	26	R19	29		

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A4

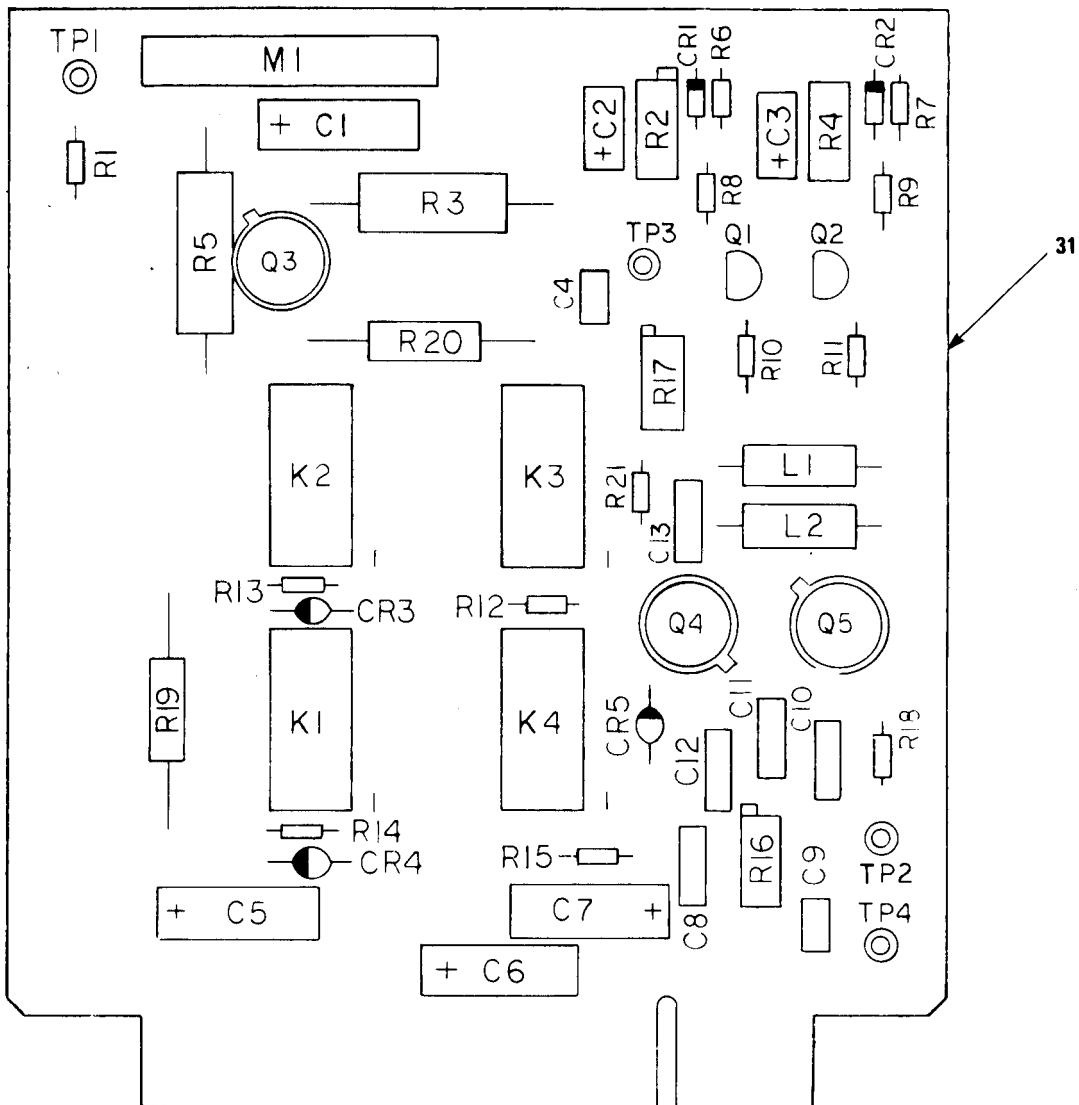


Figure C-13. Bias Oscillator and Meter Drivers Assembly

CHANGE 2

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M QTY INC IN UNIT
						USABLE ON CODE	
						GROUP: 0104 BIAS OSCILLATOR AND METER DRIVERS ASSEMBLY A1A4 (15942)	
C-13	1	PAFZZ		PNS476Z025AS	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C1, C6, C7	EA 3
C-13	2	PAFZZ	5910-00-911-5906	T330C106K025 AS	05397	CAPACITOR, FIXED, ELECTRO- LYTIC, C2, C3	EA 2
C-13	3	PAFZZ	5910-00-010-8666	CK05BX102K	81349	CAPACITOR, FIXED, CERAMIC C4, C9	EA 2
C-13	4	PAFZZ		PNS826Z015AS	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C5	EA 1
C-13	5	PAFZZ	5910-00-450-3041	CK06BX273K	81349	CAPACITOR, FIXED, CERAMIC, C8	EA 1
C-13	6	PAFZZ	5910-00-113-5499	CK06BX104K	81349	CAPACITOR, FIXED, CERAMIC, C10	EA 1
C-13	7	PAFZZ	5910-00-131-1318	CK06BX183K	81349	CAPACITOR, FIXED, CERAMIC, C11	EA 1
C-13	8	PAFZZ	5910-00-113-9817	CK06BX473K	81349	CAPACITOR, FIXED, CERAMIC, C12	EA 1
C-13	9	PAFZZ	5910-00-113-9449	CK06BX683K	81349	CAPACITOR, FIXED, CERAMIC, C13	EA 1
C-13	10	PAFZZ	5961-00-938-1135	JAN1N4148	81349	DIODE, CR1, CR2	EA 2
C-13	11	PAFZZ	5961-00-088-8792	1N5059	80131	DIODE, CR3-CR5	EA 3
R C-13	12	PAFZZ	5945-01-085-3276	W172-4	94696	RELAY, K1, K2	EA 2
C-13	13	PAFZZ		W172-3	94696	RELAY, K3, K4	EA 2
C-13	14	PAFZZ	5950-00-959-2667	MS90537-57	96906	COIL, RF, L1	EA 1
C-13	15	PAFZZ	5950-00-921-3420	MS90537-49	96906	COIL, RF, L2	EA 1
C-13	16	PAFZZ	6645-00-078-0501	120-PC75-30	1853	INDICATOR, ELAPSED TIME, M1	EA 1
C-13	17	PAFZZ	5961-01-041-7288	2N5371	03508	TRANSISTOR, Q1, Q2	EA 2
C-13	18	PAFZZ	5961-00-949-1432	2N2219A	81349	TRANSISTOR, Q3-Q5	EA 3
C-13	19	PAFZZ	5905-00-232-3110	RCR05G225JS	81349	RESISTOR, FIXED, COMPOSITION, R1	EA 1
C-13	20	PAFZZ	5905-00-432-0078	RT24C2X103	81349	RESISTOR, VARIABLE, R2, R4	EA 2

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
							USABLE ON CODE	
C	C-13	21	PAFZZ	5905-00-532-0595	RCR32G910JS	81349	RESISTOR, FIXED, COMPOSITION, R3	EA 1
C	C-13	22	PAFZZ	5905-00-104-8347	RCR32G101JS	81349	RESISTOR, FIXED, COMPOSITION, R5	EA 1
C	C-13	23	PAFZZ	5905-00-458-9500	RCR05G102JS	81349	RESISTOR, FIXED, COMPOSITION, R6, R7, R21	EA 3
C	C-13	24	PAFZZ	5905-00-761-5758	RCR05G471JS	81349	RESISTOR, FIXED, COMPOSITION, R8, R9, R13, R14	EA 4
C	C-13	25	PAFZZ	5905-00-617-5093	RCR05G473JS	81349	RESISTOR, FIXED, COMPOSITION, R10, R11	EA 2
N	C-13	26	PAFZZ	5905-00-466-1219	RCR05G823JS	81349	RESISTOR, FIXED, COMPOSITION, R12, R15	EA 2
	C-13	27	PAFZZ		RT24C2X203	81349	RESISTOR, VARIABLE, R16, R17	EA 2
C	C-13	28	PAFZZ	5905-00-466-1218	RCR05G822JS	81349	RESISTOR, FIXED, COMPOSITION, R18	EA 1
N	C-13	29	PAFZZ	5905-00-104-5775	RCR20G100JS	81349	RESISTOR, FIXED, COMPOSITION, R19, R20	EA 2
C	C-13	30	PAFZZ	5940-00-082-5002	2010B-1	88245	TEST POINT, TP1-TP4	EA 4
C	C-13	31	XAFDD		0421-1-4217	15942	PRINTED CIRCUIT BOARD	EA 1

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LEGEND

REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO
C1	1	C9	8	CR4	10	Q6	12	R8	20	R16	26	R24	28	R32	29	TP1	33
C2	2	C10	8	K1	11	R1	15	R9	20	R17	22	R25	28	R33	29	TP2	33
C3	3	C11	8	K2	11	R2	16	R10	21	R18	27	R26	28	R34	30	U1	34
C4	4	C12	9	Q1	12	R3	17	R11	22	R19	16	R27	20	R35	29	U2	35
C5	5	C13	5	Q2	13	R4	17	R12	21	R20	28	R28	28	R36	31	U3	36
C6	6	CR1	10	Q3	12	R5	18	R13	23	R21	28	R29	28	R37	N/U	U4	37
C7	4	CR2	10	Q4	12	R6	19	R14	24	R22	28	R30	28	R38	28	U5	38
C8	7	CR3	10	Q5	14	R7	19	R15	25	R23	20	R31	28	TH1	32		

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A5

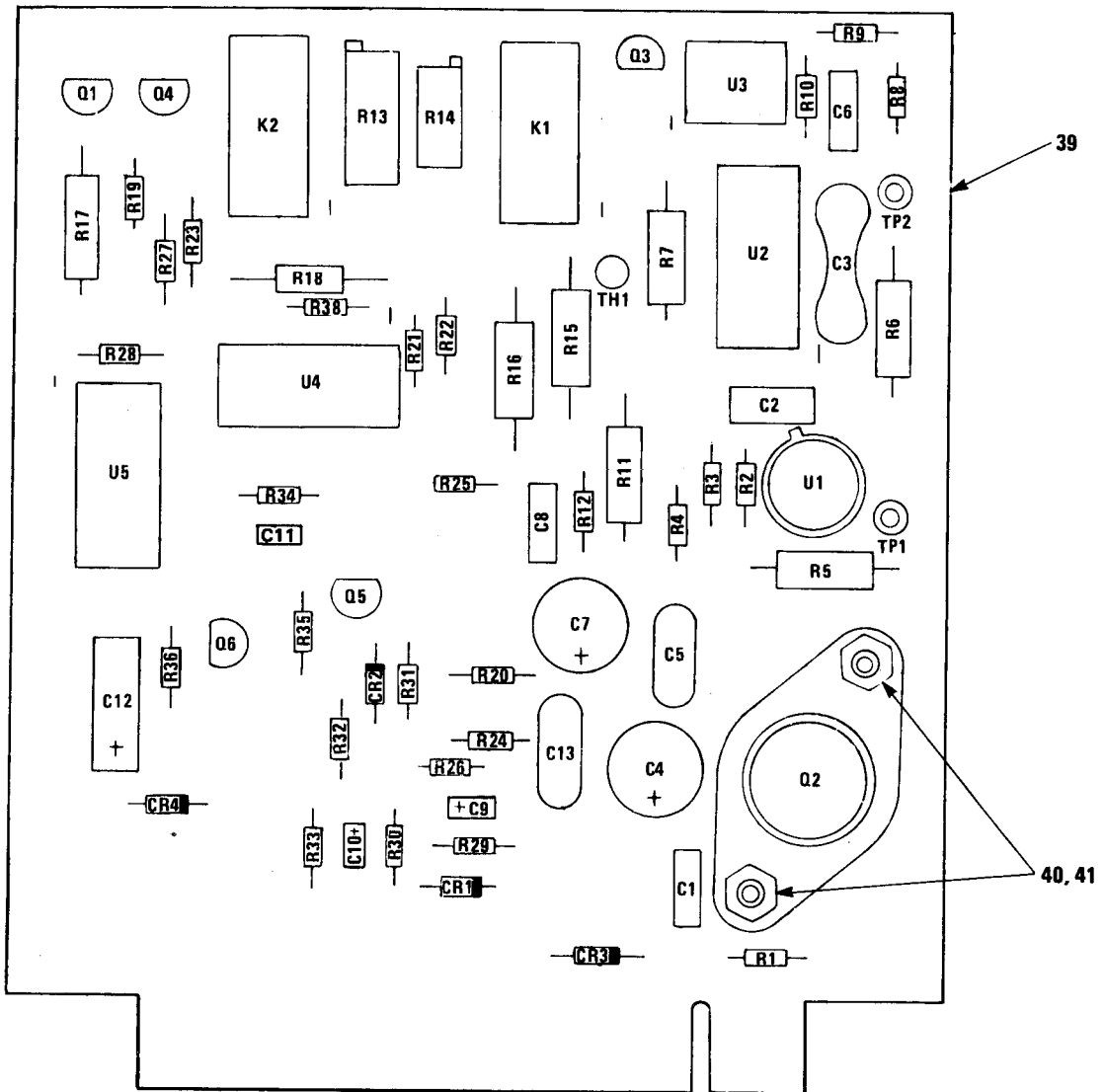


Figure C-14. Servo Capstan Control Assembly

CHANGE 1									
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)		(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	USABLE ON CODE		U/M QTY INC IN UNIT
						TM32-5835-005-14&P			
						GROUP: 0105 SERVO CAPSTAN CONTROL ASSEMBLY ALIAS (15942)			
N	C-14	1	PAFZZ	5910-00-010-8666	CK05BX102K	81349	CAPACITOR, FIXED, CERAMIC C1		EA 1
N	C-14	2	PAFZZ	5910-00-490-0397	CM05ED470 J03	81349	CAPACITOR, FIXED, MICA, C2		EA 1
N	C-14	3	PAFZZ	5910-00-456-9511	CM06FD272 J03	81349	CAPACITOR, FIXED, MICA, C3		EA 1
N	C-14	4	PAFZZ		PC20110/ 10025	26769	CAPACITOR, FIXED, ELETRO- LYTIC, C4, C7		EA 2
N	C-14	5	PAFZZ	5910-00-088-1146	CM05FD331 J03	81349	CAPACITOR, FIXED, MICA, C5. C13		EA 2
N	C-14	6	PAFZZ	5910-00-847-7288	CK06BX103K	81349	CAPACITOR, FIXED, CERAMIC, C6		EA 1
N	C-14	7	PAFZZ	5910-00-435-6556	CK06BX332K	81349	CAPACITOR, FIXED, CERAMIC, C8		EA 1
C	C-14	8	PAFZZ	5910-01-057-0375	PNS335X025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C9-C11		EA 3
	C-14	9	PAFZZ		PNS476Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C12		EA 1
C	C-14	10	PAFZZ	5961-00-938-1135	JAN1N4148	81349	DIODE, CR1-CR4		EA 4
N	C-14	11	PAFZZ		W172-4	94696	RELAY, K1, K2		EA 2
C	C-14	12	PAFZZ	5961-01-041-7288	2N5371	03508	TRANSISTOR, Q1, Q3, Q4, Q6		EA 4
C	C-14	13	PAFZZ	5961-00-361-8753	2N3054A	04713	TRANSISTOR, Q2		EA 1
C	C-14	14	PAFZZ	5961-01-020-6731	2N5372	03508	TRANSISTOR, Q5		EA 1
N	C-14	15	PAFZZ	5905-00-433-6483	RCR05G392JS	81349	RESISTOR, FIXED, COMPOSITION, R1		EA 1
N	C-14	16	PAFZZ	5905-00-617-5093	RCR05G473JS	81349	RESISTOR, FIXED, COMPOSITION, R2, R19		EA 2
N	C-14	17	PAFZZ	5905-00-403-8837	RCR05G223JS	81349	RESISTOR, FIXED, COMPOSITION, R3, R4		EA 2
C	C-14	18	PAFZZ	5905-00-935-8541	RLR20S301JS	81349	RESISTOR, FIXED, COMPOSITION, R5		EA 1

					TM32-5835-005-14&P				
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
							USABLE ON CODE		
C-14	19	PAFZZ	5905-00-482-7991	RLR20S223JS	81349	RESISTOR, FIXED, COMPOSITION, R6, R7	EA	2	
C-14	20	PAFZZ	5905-01-035-5065	RCR05G103JS	81349	RESISTOR, FIXED, COMPOSITION, R8, R9, R23, R27	EA	4	
C-14	21	PAFZZ	5905-00-232-3110	RCR05G225JS	81349	RESISTOR, FIXED, COMPOSITION, R10, R12	EA	2	
C-14	22	PAFZZ	5905-00-148-3149	RLR20S471JS	81349	RESISTOR, FIXED, COMPOSITION, R11, R17	EA	2	
C-14	23	PAFZZ		RT24C2X203	81349	RESISTORF, VARIABLE, R13	EA	1	
C-14	24	PAFZZ	5905-00-432-0078	RT24C2X103	81349	RESISTOR, VARIABLE, R14	EA	1	
C-14	25	PAFZZ	5905-00-256-9991	RLR20S511JS	81349	RESISTOR, FIXED, COMPOSTION, R15	EA	1	
C-14	26	PAFZZ	5905-00-471-2094	RLR20S512JS	81349	RESISTOR, FIXED, COMPOSITION, R16	EA	1	
C-14	27	PAFZZ	5905-00-458-9500	RLR20S102JS	81349	RESISTOR, FIXED, COMPOSITION, R18	EA	1	
C-14	28	PAFZZ	5905-00-458-9346	RCR05G104JS	81349	RESISTOR, FIXED, COMPOSITION, R20, R21, R22, R24-R26, R28-R31, R38	EA	11	
C-14	29	PAFZZ	5905-00-468-2938	RCR05G623JS	81349	RESISTOR, FIXED, COMPOSITION, R32, R33, R35	EA	3	
C-14	30	PAFZZ	5905-00-483-0407	RCR05G106JS	81349	RESISTOR, FIXED, COMPOSITION, R34	EA	1	
C-14	31	PAFZZ	5905-00-466-1218	RCR05G822JS	81349	RESISTOR, FIXED, COMPOSITION, R36	EA	1	
C-14	32	PAFZZ	5905-00-917-5598	42TD2	90634	THERMISTOR, TH1	EA	1	
C-14	33	PAFZZ	5940-00-082-5002	2010B-1	88245	TEST POINT, TP1, TP2	EA	2	
C-14	34	PAFZZ	5962-00-194-6750	MC709CP	04713	AMPLIFIER, U1	EA	1	
C	C-14	35	PAFZZ	5962-00-523-9672	MC14001CL	04713	INTEGRATED CIRCUIT (QUAD NOR GATE), U2	EA	1
C-14	36	PAFZZ		MC741C	04713	AMPLIFIER, U3	EA	1	
C-14	37	PAFZZ	5962-01-044-5800	CD4075BE	02735	INTEGRATED CIRCUIT (OR GATES), U4	EA	1	
C-14	38	PAFZZ	5962-01-049-4680	CD4081BE	02735	INTEGRATED CIRCUIT (AND GATES), U5	EA	1	

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
C	C-14	39	XAFDD	0421-1-4214	15942	PRINTED CIRCUIT BOARD	EA	1	
C	C-14	403	PAFZZ	5305-00-054-5649	MS51957-15	96906	SCREW, MACHINE	EA	2
C	C-14	41	PAFZZ	5310-00-982-4999	MS21044C04	96906	NUT, SELF-LOCKING	EA	2

USABLE ON CODE

LEGEND

REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO	REF DES	ITEM NO
C1	1	CR2	5	CR13	5	Q10	8	Q21	8	R10	11	R21	17	TP2	20
C2	1	CR3	5	CR14	6	Q11	8	Q22	10	R11	13	R22	13	TP3	20
C3	2	CR4	6	Q1	7	Q12	8	R1	11	R12	11	R23	14	TP4	20
C4	2	CR5	N/U	Q2	8	Q13	8	R2	N/U	R13	13	R24	14	TP5	20
C5	3	CR6	6	Q3	8	Q14	8	R3	12	R14	13	R25	14	U1	21
C6	1	CR7	5	Q4	7	Q15	9	R4	11	R15	13	R26	19	U2	22
C7	N/U	CR8	6	Q5	7	Q16	8	R5	13	R16	16	R27	14	U3	23
C8	N/U	CR9	5	Q6	8	Q17	8	R6	14	R17	13	R28	14	U4	23
C9	N/U	CR10	6	Q7	8	Q18	8	R7	13	R18	13	R29	14	VR1	24
C10	4	CR11	6	Q8	8	Q19	10	R8	15	R19	17	R30	17		
CR1	5	CR12	5	Q9	8	Q20	9	R9	13	R20	18	TP1	20		

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A6

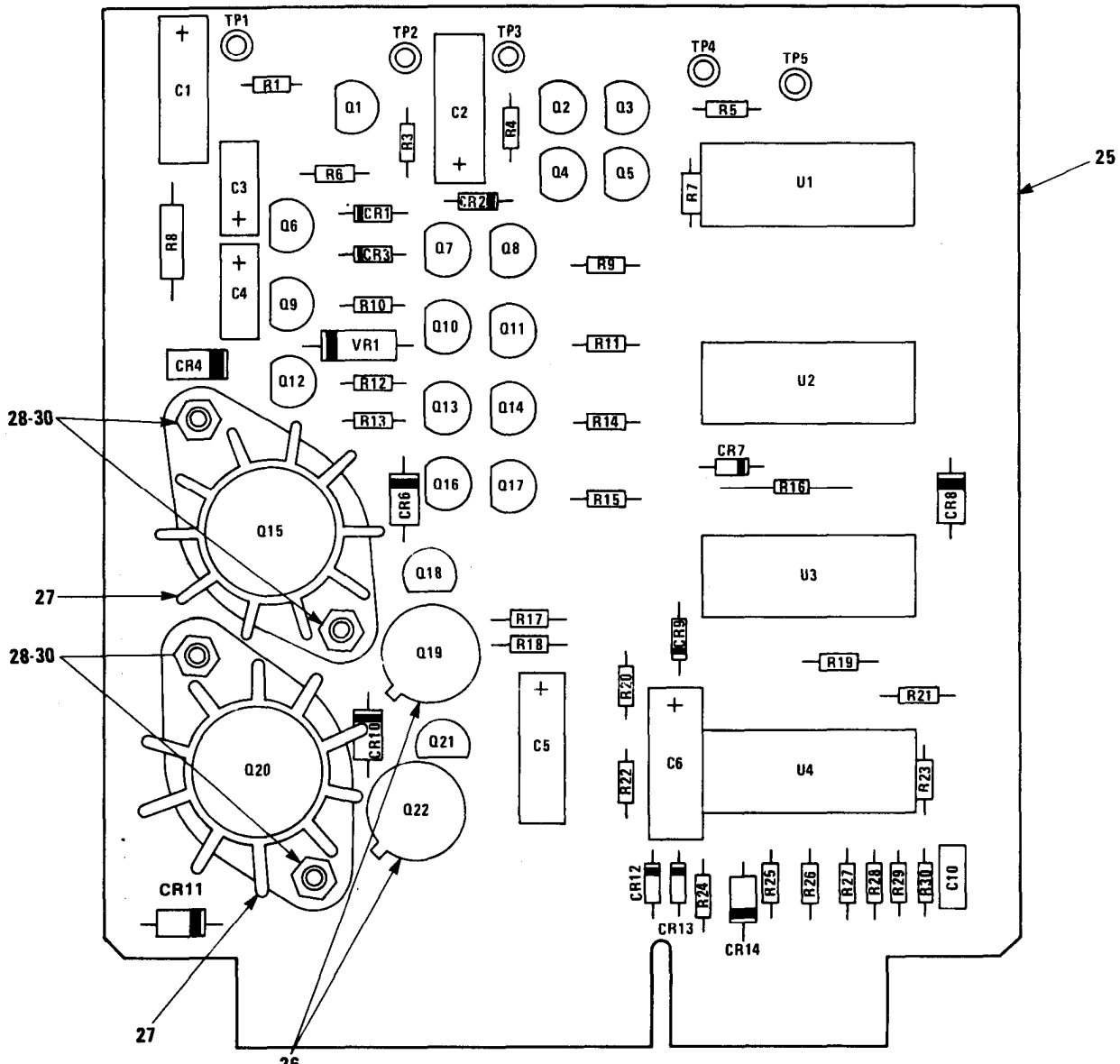


Figure C-15. Logic Control Assembly

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM32-5835-005-14&P (6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
						GROUP:0106 LOGIC CONTROL ASSEMBLY A1A6(15942)		
N	C-15	2	PAFZZ	5910-00-769-5325	PNS826Z015KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C1, C2, C6	EA 3
C	C-15	2	PAFZZ	5910-00-911-5906	PNS106Y025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C3, C4	EA 2
C	C-15	3	PAFZZ	5910-00-999-2839	PNS476Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C5	EA 1
	C-15	4	PAFZZ	5910-00-113-5499	CK06BX104K	81349	CAPACITOR, FIXED, CERAMIC, C10	EA 1
C	C-15	5	PAFZZ	5961-00-938-1135	1N4148	81349	DIODE, CR1-CR3,CR7,CR9,CR12 CR13	EA 7
C	C-15	6	PAFZZ	5961-00-088-8792	1N5059	80131	DIODE,CR4,CR6,CR8,CR10, CR11,CR14	EA 5
C	C-15	7	PAFZZ	5961-01-020-6731	2N5372	03508	TRANSISTOR,Q1,Q4,Q5	EA 3
R	C-15	8	PAFZZ	5961-01-041-7288	2N5371	03508	TRANSISTOR,Q2,Q3,Q6-Q14 Q16-Q18,Q21	EA 15
R	C-15	9	PAFZZ	5961-01-761-9379	2N3054	04713	TRANSISTOR,Q15,Q20	EA 2
C	C-15	10	PAFZZ	5961-01-949-1432	2N2219	81349	TRANSISTOR,Q19,Q22	EA 2
	C-15	11	PAFZZ	5905-00-617-5089	RCR05G153JS	81349	RESISTOR, FIXED, COMPOSITION, R1,R4,R10,R12	EA 4
	C-15	12	PAFZZ	5905-00-180-8303	RCR05G152JS	813490	RESISTOR, FIXED, COMPOSITION, R3	EA 1
	C-15	13	PAFZZ	5905-00-480-6885	RCR05G184JS	81349	RESISTOR, FIXED, COMPOSITION, R5,R7,R9,R11,R13-R15,R17, R18,R22	EA 10
	C-15	14	PAFZZ	5905-00-458-9346	RCR05G104JS	81349	RESISTOR, FIXED, COMPOSITION, R6,R23-R25,R27-R29	EA 7
	C-15	15	PAFZZ	5905-00-121-9932	RCR07G391JS	81349	RESISTOR, FIXED, COMPOSITION, R8	EA 1
	C-15	16	PAFZZ	5905-00-458-9500	RCR05G102JS	81349	RESISTOR, FIXED, COMPOSITION, R16	EA 1
	C-15	17	PAFZZ	5905-00-195-4074	RCR05G105JS	81349	RESISTOR, FIXED, COMPOSITION R19,R21,R30	EA 3
	C-15	18	PAFZZ	5905-00-412-4044	RCR05G224JS	81349	RESISTOR, FIXED, COMPOSITION, R20	EA 1

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
							USABLE ON CODE		
C-15	19	PAFZZ	5905-00-412-0759	RCR05G514JS	81349	RESISTOR, FIXED, COMPOSITION R26	EA	1	
R	C-15	20	PAFZZ	5940-00-082-5002	2010B-1	88245	TEST POINT, TP1-TP5	EA	5
C	C-15	21	PAFZZ	5962-00-169-4731	CD4002AE	02735	INTEGRATED CIRCUIT (NOR GATES), U1	EA	1
C	C-15	22	PAFZZ	5962-01-009-1121	CD4043AE	49671	INTEGRATED CIRCUIT (R/S LATCHES), U2	EA	1
C	C-15	23	PAFZZ	5962-01-044-5800	CD4075BE	02735	INTEGRATED CIRCUIT (OR GATES), U3, U4	EA	2
R	C-15	24	PAFZZ	5961-00-444-6607	1N5233	04713	DIODE, VR1	EA	1
C	C-15	25	XAFDD		0421-1-4212	15942	PRINTED CIRCUIT BOARD	EA	1
R	C-15	26	PAFZZ	5999-01-041-3188	504-038	92219	MOUNTING PAD, TRANSISTOR	EA	2
N	C-15	27	PAFZZ	5999-00-132-0310	211CB	05820	DISSIPATOR	EA	2
	C-15	28	XBFZZ		179A7314P1	03508	WASHER, NYLON	EA	4
	C-15	29	PAFZZ	5305-00-054-5649	MS51957-15	96906	SCREW, MACHINE	EA	4
C	C-15	30	PAFZZ	5310-00-982-4999	MS21044C04	96906	NUT, SELF-LOCKING	EA	4

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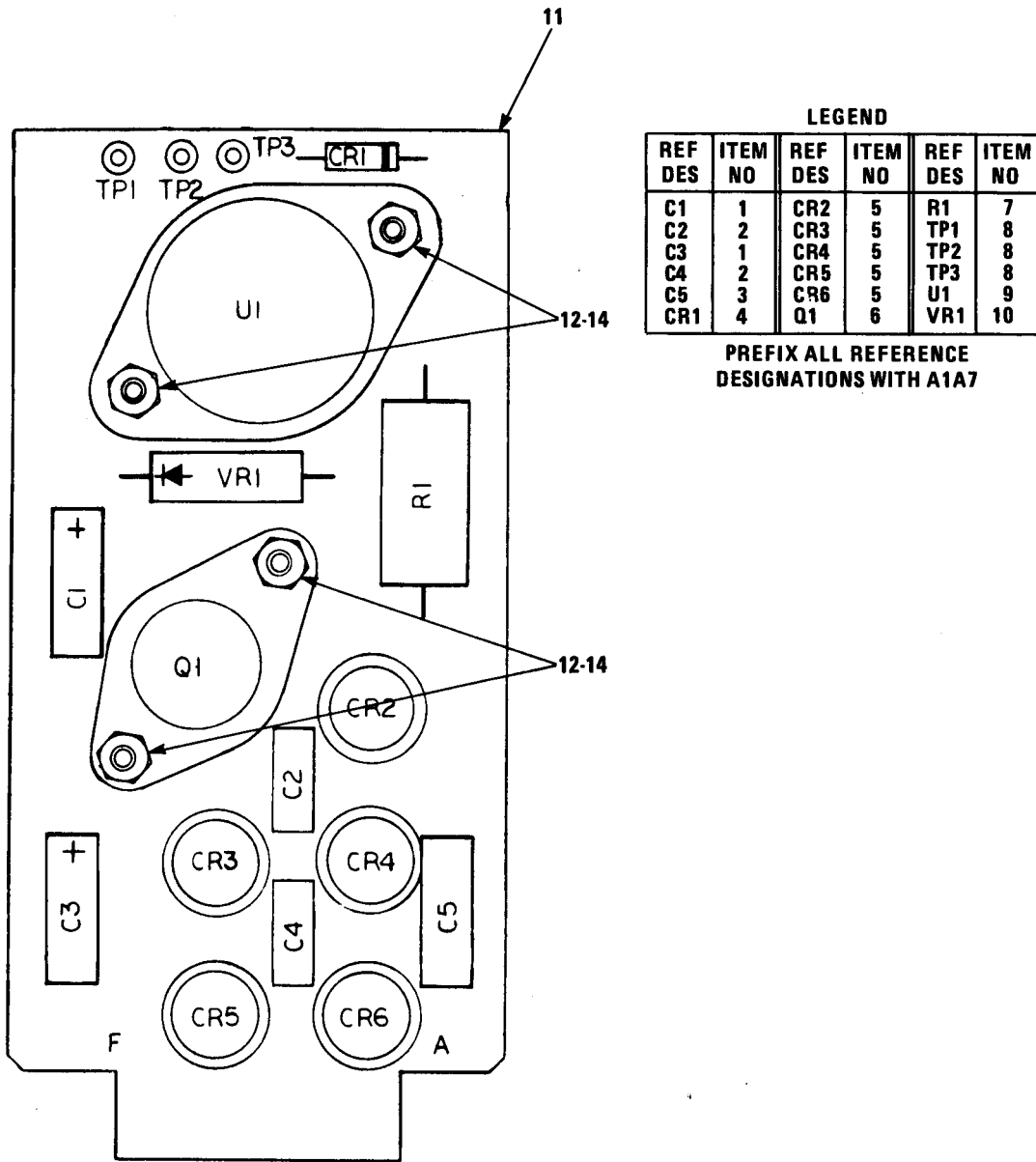
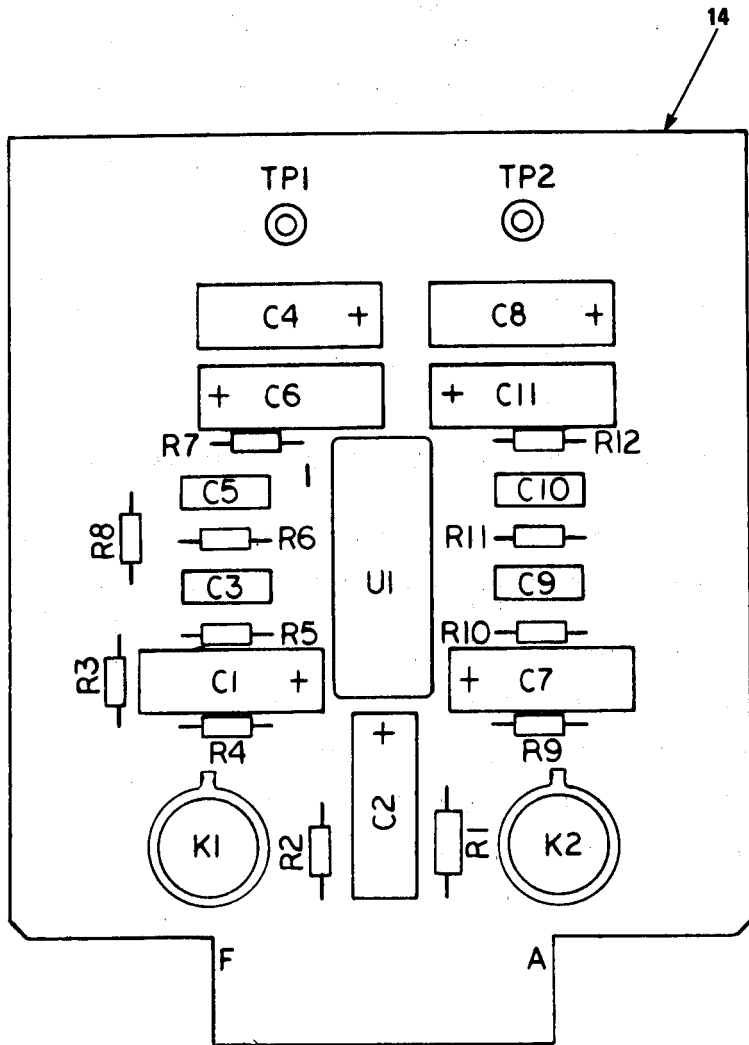


Figure C-16. Power Supply Assembly

CHANGE 1									
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) TM32-585-005-14&P DESCRIPTION	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM		U/M	QTY INC IN UNIT	USABLE ON CODE
						GROUP:0107 POWER SUPPLY ASSEMBLY A1A7 (15942)			
C	C-16	1	PAFZZ	5910-00-999-2839	PNS476Z025KI	26769		EA	2
	C-16	2	PAFZZ	5910-00-010-8718	CK06BX103K	81349		EA	2
C	C-16	3	PAFZZ		PNS686Z020KI	26769		EA	1
	C-16	4	PAFZZ	5961-00-088-8792	1N5059	03508		EA	1
	C-16	5	PAFZZ	5961-00-904-7496	1N4998	04713		EA	5
	C-16	6	PAFZZ	5961-00-761-9379	2N3054	04713		EA	1
N	C-16	7	PAFZZ	5905-00-150-0748	RCR42G122JS	81349		EA	1
R	C-16	8	PAFZZ	5940-00-082-5002	2010B-1	88245		EA	3
	C-16	9	PAFZZ	5962-00-579-7738	UA7815KC	34148		EA	1
N	C-16	10	PAFZZ	5961-00-938-5254	1N4749A	80131		EA	1
C	C-16	11	XAFDD		0421-1-4210	15942		EA	1
	C-16	12	PAFZZ	5305-00-054-5649	MS51957-15	96906		EA	4
C	C-16	13	PAFZZ	5310-00-982-4999	MS21044C04	96906		EA	4
	C-16	14	XBFZZ		179A7314P1	03508		EA	4



LEGEND

REF DES	ITEM NO	REF DES	ITEM NO
C1	1	R2	8
C2	2	R3	9
C3	3	R4	10
C4	4	R5	11
C5	5	R6	11
C6	1	R7	8
C7	1	R8	9
C8	4	R9	10
C9	3	R10	11
C10	5	R11	11
C11	1	R12	8
K1	6	TP1	12
K2	6	TP2	12
R1	7	U1	13

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A8

Figure C-17. Preamplifier Assembly

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
						GROUP:0108 PREAMPLIFIER ASSEMBLY A1A8(15942)		
C	C-17	1	PAFZZ 5910-00-999-2839	PNS476Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C1, C6, C7, C11	EA	4
N	C-17	2	PAFZZ	PNS686D020KI	26769	CAPACITOR, FIXED, CERAMIC, C2	EA	1
	C-17	3	PAFZZ 5910-00-114-0803	CK06BX183K	81349	CAPACITOR, FIXED, CERAMIC, C3, C9	EA	2
N	C-17	4	PAFZZ	PNS107Z025KI	26769	CAPACITOR, FIXED, ELECTRO- LYTIC, C4, C8	EA	2
R	C-17	5	PAFZZ 5910-00-113-9446	CK06BX182K	81349	CAPACITOR, FIXED, CERAMIC, C5, C10	EA	2
R	C-17	6	PAFZZ 5945-01-027-9982	M39016-9-002L	81349	RELAY, K1, K2	EA	2
	C-17	7	PAFZZ 5905-00-104-8363	RCR07G820JS	81349	RESISTOR, FIXED, COMPOSITION, R1	EA	1
	C-17	8	PAFZZ 5905-00-458-9500	RCR05G102JS	81349	RESISTOR, FIXED, COMPOSITION, R2, R7, R12	EA	3
R	C-17	9	PAFZZ 5905-01-035-5065	RCR05G103JS	81349	RESISTOR, FIXED, COMPOSITION, R3, R8	EA	2
R	C-17	10	PAFZZ 5905-00-761-5758	RCR05G471JS	81349	RESISTOR, FIXED, COMPOSITION, R4, R9	EA	2
	C-17	11	PAFZZ 5905-00-407-0086	RCR05G393JS	81349	RESISTOR, FIXED, COMPOSITION, R5, R6, R10, R11	EA	4
R	C-17	12	PAFZZ 5940-00-082-5002	2010B-1	88245	TEST POINT, TP1, TP2	EA	2
	C-17	13	PAFZZ 5962-00-467-1590	MC1303L	04713	INTEGRATED CIRCUIT, STEREO PREAMPLIFIER, U1	EA	1
C	C-17	14	XAFDD	0421-1-4224	15942	PRINTED CIRCUIT BOARD	EA	1

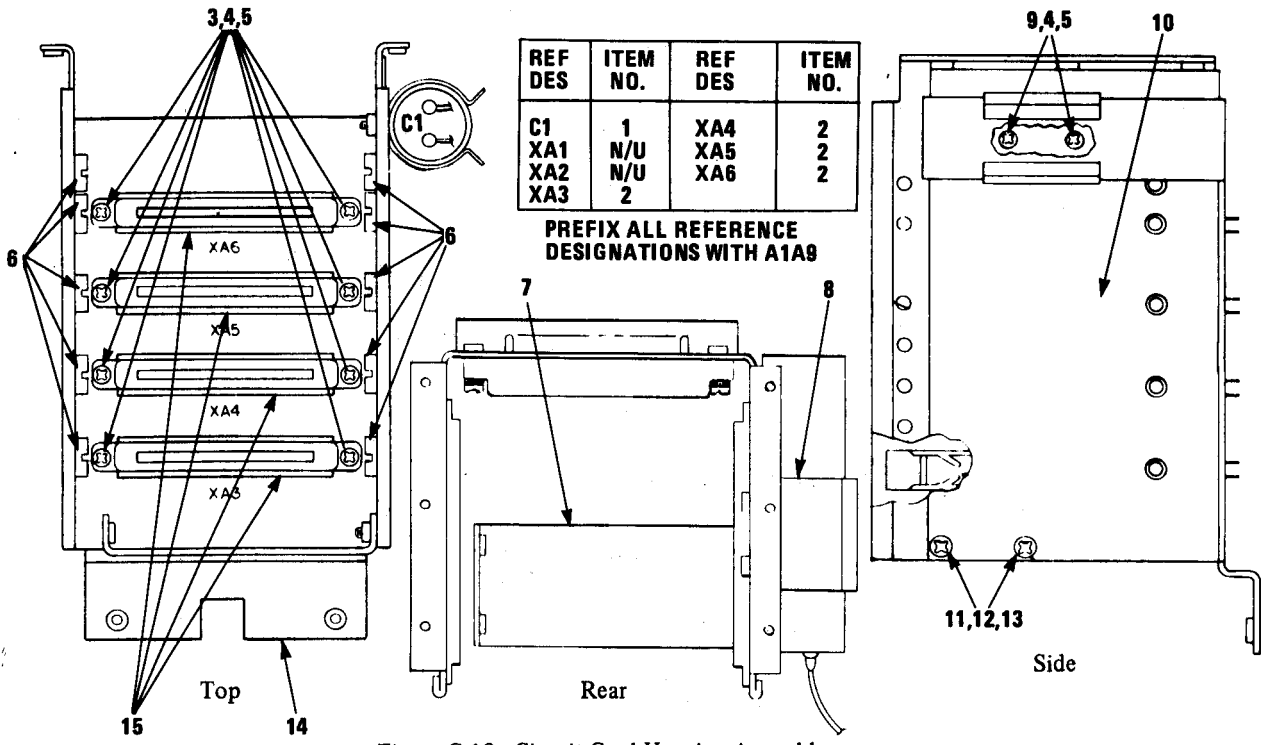


Figure C-18. Circuit Card Housing Assembly

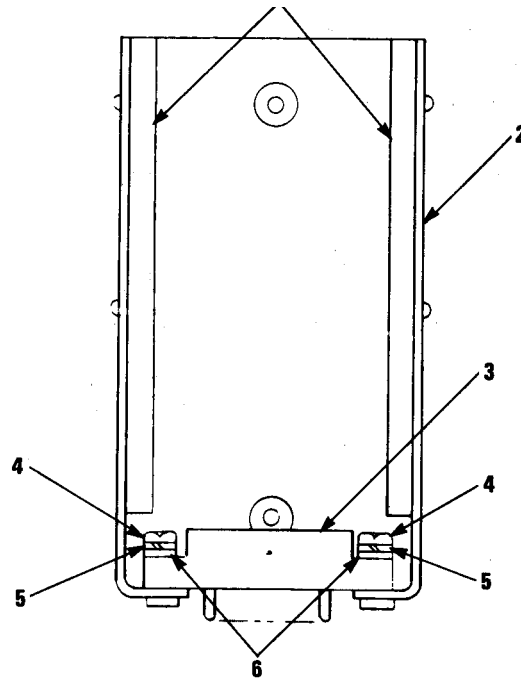


Figure C-19. Card Guide Bracket Assembly

CHANGE 1									
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM32-5835-005-14&P (6)		(7)	(8)
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP:0109 CIRCUIT CARD HOUSING ASSEMBLY A1A9(15942)			
R	C-18	1	PAFZZ 5910-01-042-0091	TVA-1319.8	56289	CAPACITOR,C1		EA	1
	C-18	2	PAFZZ 5935-00-044-5869	M21097/1-097	81349	CONNECTOR,XA3-XA6		EA	4
	C-18	3	PAFZZ 5305-00-054-5651	MS51957-17	96906	SCREW,MACHINE		EA	8
	C-18	4	PAFZZ 5310-00-595-6211	MS15795-803	96906	WASHER,FLAT		EA	10
	C-18	5	PAFZZ 5310-00-933-8118	MS35338-135	96906	WASHER,LOCK		EA	10
	C-18	6	XBFZZ	E-350	92219	CARD GUIDE		EA	10
C	C-18	7	XBFZZ	0421-1-2311	15942	SPACER		EA	1
	C-18	8	PAFZZ 5340-00-884-0152	6020-9A	91506	CLIP,SPRING		EA	1
	C-18	9	PAFZZ 5305-00-054-5647	MS51957-13	96906	SCREW,MACHINE		EA	2
C	C-18	10	XBFZZ	0421-1-3225	15942	SHIELD		EA	1
C	C-18	11	PAFZZ 5305-00-054-6651	MS51957-27	96906	SCREW,MACHINE		EA	2
	C-18	12	PAFZZ 5310-00-722-5998	MS15795-805	96906	WASHER,FLAT		EA	2
	C-18	13	PAFZZ 5310-00-929-6395	MS35338-136	96906	WASHER,LOCK		EA	2
C	C-18	14	XBFZZ	0421-1-4197	15942	SUPPORT		EA	1
R	C-18	15	PAFZZ 5935-00-998-9281	456-07-35-003	71785	KEY,POLARIZING		EA	4
						GROUP:0110 CARD GUIDE BRACKET ASSEMBLY A1A10 (15942)			
C	C-19	1	XBFZZ	E-350	92219	CARD GUIDE		EA	2
C	C-19	2	XBFZZ	0421-1-3221	15942	BRACKET		EA	1
	C-19	3	PAFZZ 5935-00-520-5615	M21097/1-025	81349	CONNECTOR		EA	1
	C-19	4	PAFZZ 5305-00-054-5651	MS51957-17	96906	SCREW,MACHINE		EA	2
	C-19	5	PAFZZ 5310-00-933-8118	MS35338-135	96906	WASHER,LOCK		EA	2
	C-19	6	PAFZZ 5310-00-595-6211	MS15795-803	96906	WASHER,FLAT		EA	2

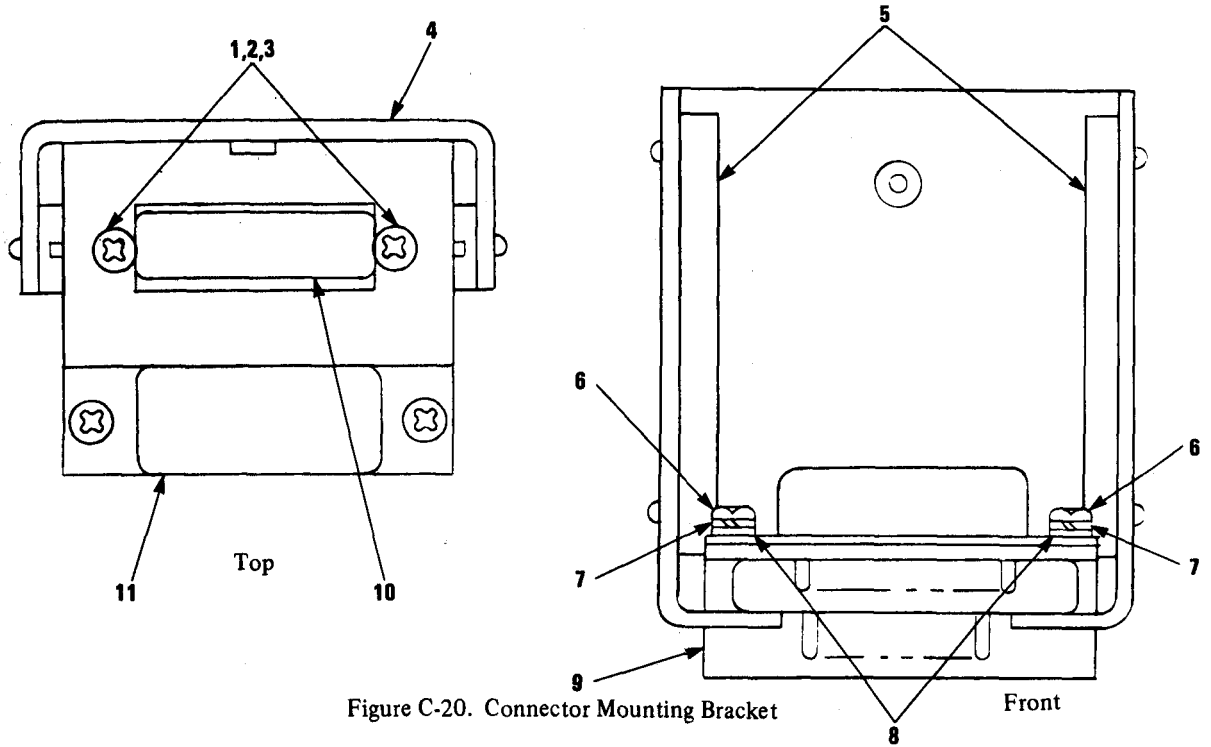
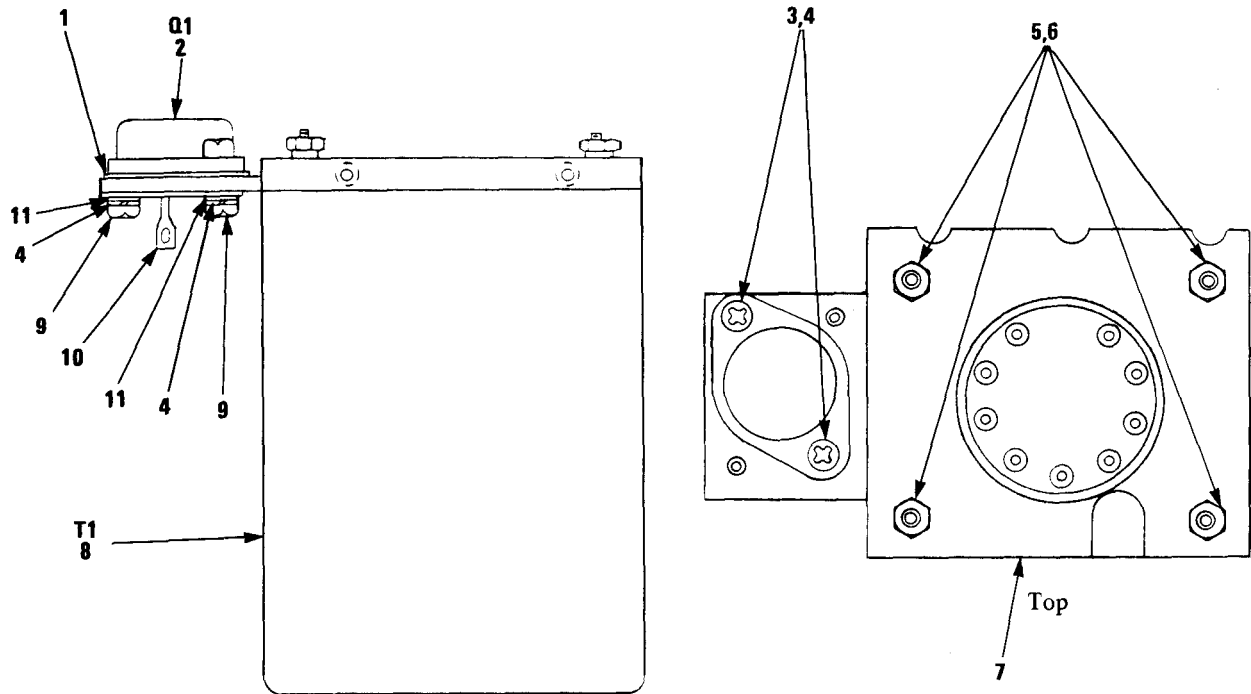


Figure C-20. Connector Mounting Bracket

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT
						GROUP: 0111 CONNECTOR MOUNTING BRACKET A1A11 (15942)		
C-20	1	PAFZZ	5305-00-054-5652	MS51957-18	96906	SCREW, MACHINE	EA	2
C-20	2	PAFZZ	5310-00-595-6211	MS15795-803	96906	WASHER, FLAT	EA	2
C-20	3	PAFZZ	5310-00-933-8118	MS35338-135	96906	WASHER, LOCK	EA	2
C-20	4	XBFZZ		0421-1-3230	15942	BRACKET	EA	1
C-20	5	XBFZZ		E-250	92219	CARD GUIDE	EA	2
C-20	6	PAFZZ	5305-00-054-5640	MS51957-6	96906	SCREW, MACHINE	EA	2
C-20	7	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER, LOCK	EA	2
C-20	8	PAFZZ	5310-00-595-6761	MS15795-802	96906	WASHER, FLAT	EA	2
C-20	9	XBFZZ		0421-1-3216	15942	BRACKET	EA	1
C-20	10	PAFZZ	5935-00-520-5615	M21097/1-025	81349	CONNECTOR	EA	1
C-20	11	PAFZZ	5935-00-826-0458	57-40240	02660	CONNECTOR	EA	1



Side Figure C-21. Transformer/Transistor Assembly

PREFIX ALL REFERENCE DESIGNATIONS WITH A1A12

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION <i>Usable On Code</i>	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
						GROUP: 0112 TRANSFORMER/ TRANSISTOR ASSEMBLY A1A12 (15942)		
C	C-21	1	PAFZZ 5970-01-043-1376	7416	06540	WASHER, MICA	EA	2
C	C-21	2	PAFZZ 5961-00-199-6008	JAN2N3055	81349	TRANSISTER, Q1	EA	1
N	C-21	3	PAFZZ 5305-00-054-6653	MS51957-29	96906	SCREW, MACHINE	EA	2
C	C-21	4	PAFZZ 5310-00-933-8118	MS35338-135	96906	WASHER, LOCK	EA	4
C	C-21	5	PAFZZ 5310-00-934-9761	MS35649-264	96906	NUT, PLAIN, HEX	EA	4
C	C-21	6	PAFZZ 5310-00-043-4708	NAS620C6L	80205	WASHER, FLAT	EA	4
C	C-21	7	XBFZZ	0421-1-3208	15942	SUPPORT	EA	1
C	C-21	8	PAFZZ 5950-00-934-2681	HSM240	26667	TRANSFORMER, T1	EA	1
C	C-21	9	PAFZZ 5305-00-054-5647	MS51957-13	96906	SCREW, MACHINE	EA	2
C	C-21	10	PAFZZ 5935-01-042-2390	7402	06540	SOCKET, TRANSFORMER	EA	1
C	C-21	11	PAFZZ 5310-00-595-6211	MS15795-803	96906	WASHER, FLAT	EA	2

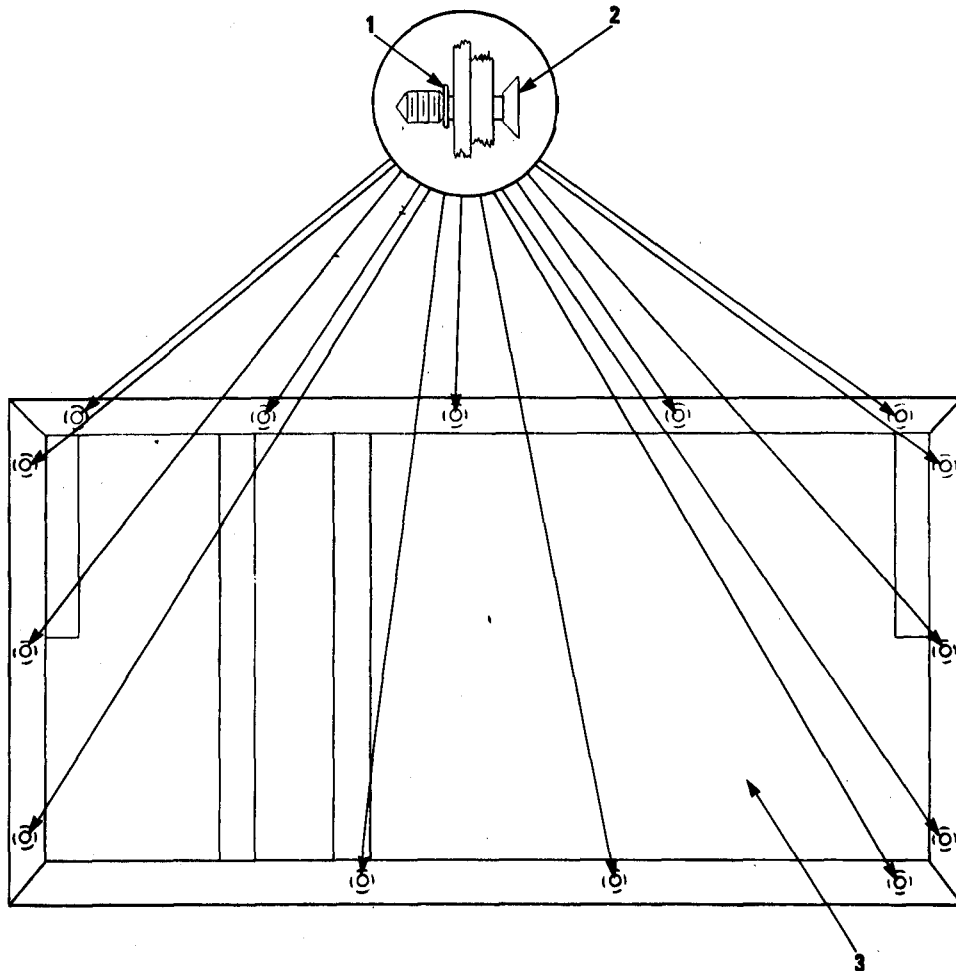


Figure C-22. Top Cover

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT	
						<i>Usable On Code</i>			
C	C-22	1	PAFZZ	5365-01-004-9771	4382-2-SS7	06540	RETAINER	EA	14
R	C-22	2	PAFZZ	5305-01-040-7172	0149-1-2318	15942	SCREW, CAPTIVE	EA	14
C	C-22	3	XBFZZ		0421-1-4201-1	15942	COVER	EA	1
						GROUP: 0113 TOP COVER A13 (15942)			

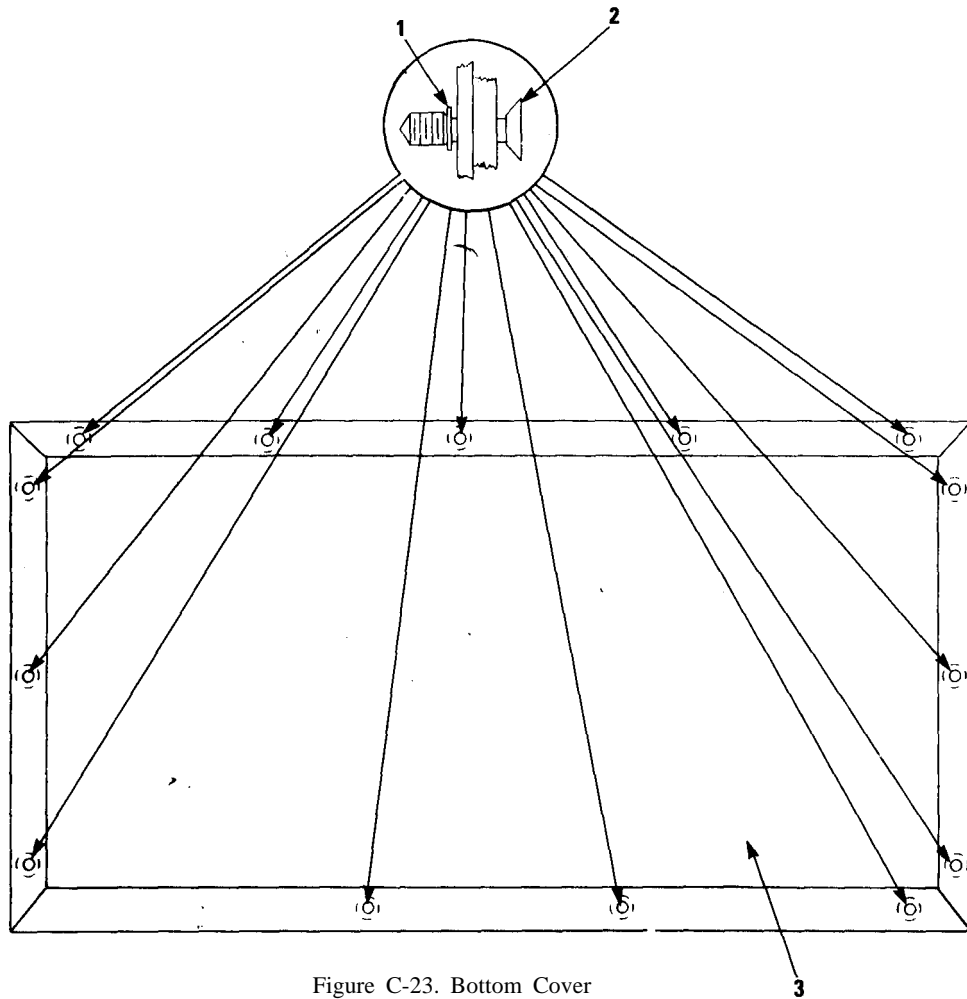


Figure C-23. Bottom Cover

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT
C	C-23	1	PAFZZ	5365-01-004-9771	4382-2-SS7	06540	RETAINER	EA 14
R	C-23	2	PAFZZ	5305-01-040-7172	0149-1-2318	15942	SCREW, CAPTIVE	EA 14
C	C-23	3	XBFZZ		0421-1-4227-1	15942	COVER	EA 1

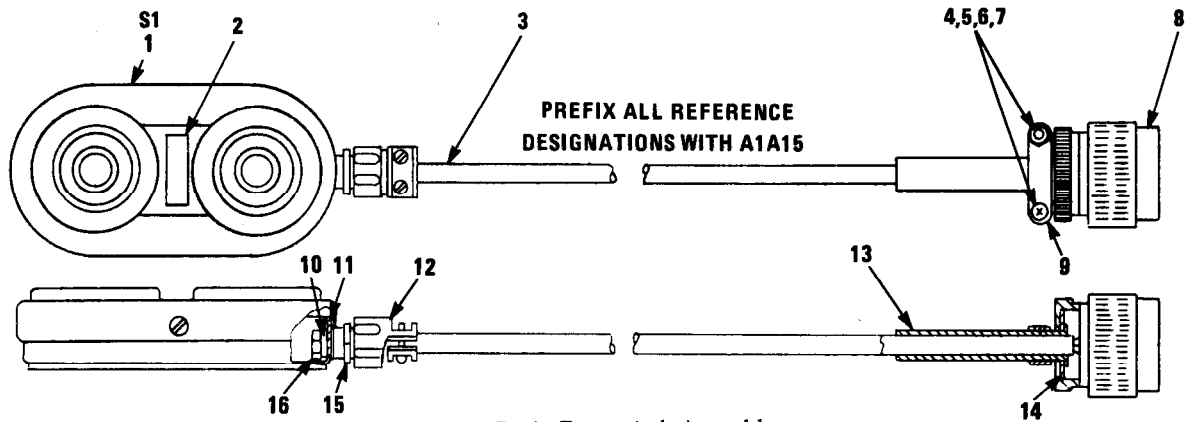


Figure C-24. Footswitch Assembly

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION <i>Usable On Code</i>	(7) U/M	(8) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.							
						GROUP: 0115 FOOTSWITCH A15 (15942)		
C-24	1	PAFZZ	5930-00-678-5964	L-4-S	97918	FOOTSWITCH, S1	EA	1
C-24	2	XBFZZ		0421-1-3235	15942	DECAL, FOOTSWITCH	EA	1
C-24	3	XBFZZ		1717-6C#20-26-34PE	92194	CABLE, ELECTRICAL	FT	AR
C-24	4	PAFZZ	5310-00-934-9748	MS35649-244	96906	NUT, PLAIN, HEX	EA	2
C-24	5	PAFZZ	5310-00-933-8118	MS35338-135	96906	WASHER, LOCK	EA	2
C-24	6	PAFZZ	5310-00-595-6211	MS15795-803	96906	WASHER, FLAT	EA	2
C-24	7	PAFZZ	5305-00-054-5651	MS51957-17	96906	SCREW, MACHINE	EA	2
C-24	8	PAFZZ	5935-00-577-8604	67-06C22-67P	02660	CONNECTOR, RECEPTACLE, ELECTRICAL	EA	1
C-24	9	XBFZZ		0421-1-2248	15942	RETAINER, CONNECTOR	EA	1
C-24	10	PAFZZ	5310-00-209-0790	MS35335-63	96906	WASHER, LOCK	EA	1
C-24	11	PAFZZ	5310-00-838-7285	MS9549-12	96906	WASHER, FLAT	EA	1
C-24	12	PAFZZ	5935-00-240-0173	AN3057-4	88044	CLAMP, CABLE	EA	1
C-24	13	PAFZZ	5365-00-820-4535	AN3420-6	88044	BUSHING	EA	1
C-24	14	XBFZZ		0421-1-2200	15942	WASHER, FLAT	EA	1
C-24	15	XBFZZ		0421-1-2209	15942	BUSHING, STRAIN RELIEF	EA	1
C-24	16	XBFZZ	5310-00-515-8716	AN316C6R	88044	NUT, JAM, HEX	EA	1

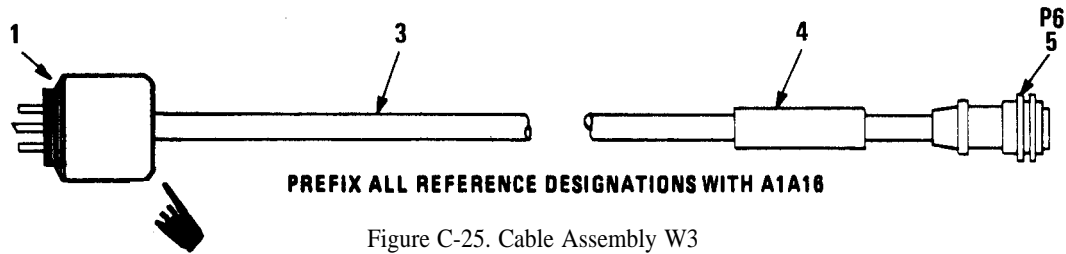


Figure C-25. Cable Assembly W3

	(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION <i>Usable On Code</i>	(7) U/M	(8) QTY INC IN UNIT
	(a) FIG NO.	(b) ITEM NO.							
■ C	C-25	1	PAFZZ	5935-01-005-3579	W-C-596 / 13-1	81348	GROUP: 0116 CABLE ASSEMBLY W3 A1A16 (15942) CONNECTOR, ELECTRICAL	EA	1
■ C	C-25	2							
	C-25	3	PAFZZ	6145-00-635-9836	MIL-C-3432D	81348	CABLE, ELECTRICAL	FT	AR
	C-25	4	XBFZZ		0149 -1-3193-1	15942	BAND, MARKER, CABLE	EA	1
	C-25	5	PAFZZ	5935-00-807-5359	PT06W-10-6S	77820	CONNECTOR, ELECTRICAL, P6	EA	1

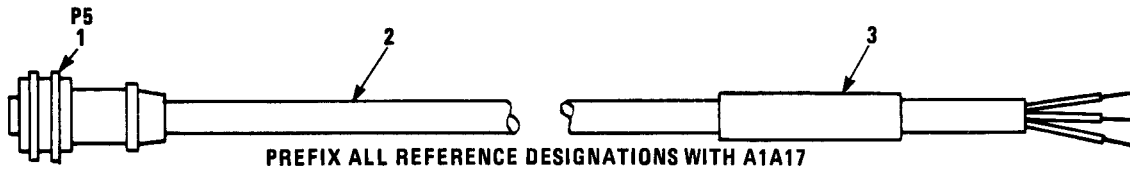
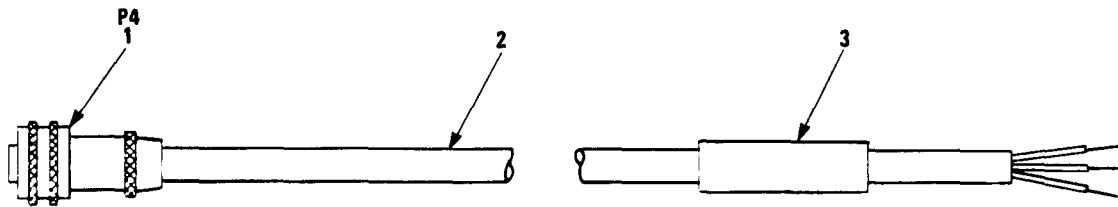


Figure C-26. Cable Assembly W2

	(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION <i>Usable On Code</i>	(7) U/M	(8) QTY INC IN UNIT
	(a) FIG NO.	(b) ITEM NO.							
	C-26	1	PAFZZ	5935-00-807-5359	PT06W-10-6S	77820	GROUP: 0117 CABLE ASSEMBLY W2 A1A17 (15942) CONNECTOR, ELECTRICAL, P5	EA	1
C	C-26	2	PAFZZ	6145-00-635-9836	MIL-C-3432D	81349	CABLE, ELECTRICAL	FT	AR
	C-26	3	XBFZZ		0149 -1-3193-2	15942	BAND, MARKER, CABLE	EA	1



PREFIX ALL REFERENCE DESIGNATIONS WITH A1A18

Figure C-27. Cable Assembly W1

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION <i>Usable On Code</i>	U/M	QTY INC IN UNIT
						GROUP: 0118 CABLE ASSEMBLY W1 A1A18 (15942)		
C-27	1	PAFZZ	5935-00-807-5359	PT06W-10-6S	77820	CONNECTOR, ELECTRICAL, P4	EA	1
C-27	2	PAFZZ	5145-00-635-9836	MIL-C-3432D	81349	CABLE, ELECTRICAL	FT	AR
C-27	3	XBFZZ		0149-1-3193-3	15942	BAND, MARKER, CABLE	EA	1

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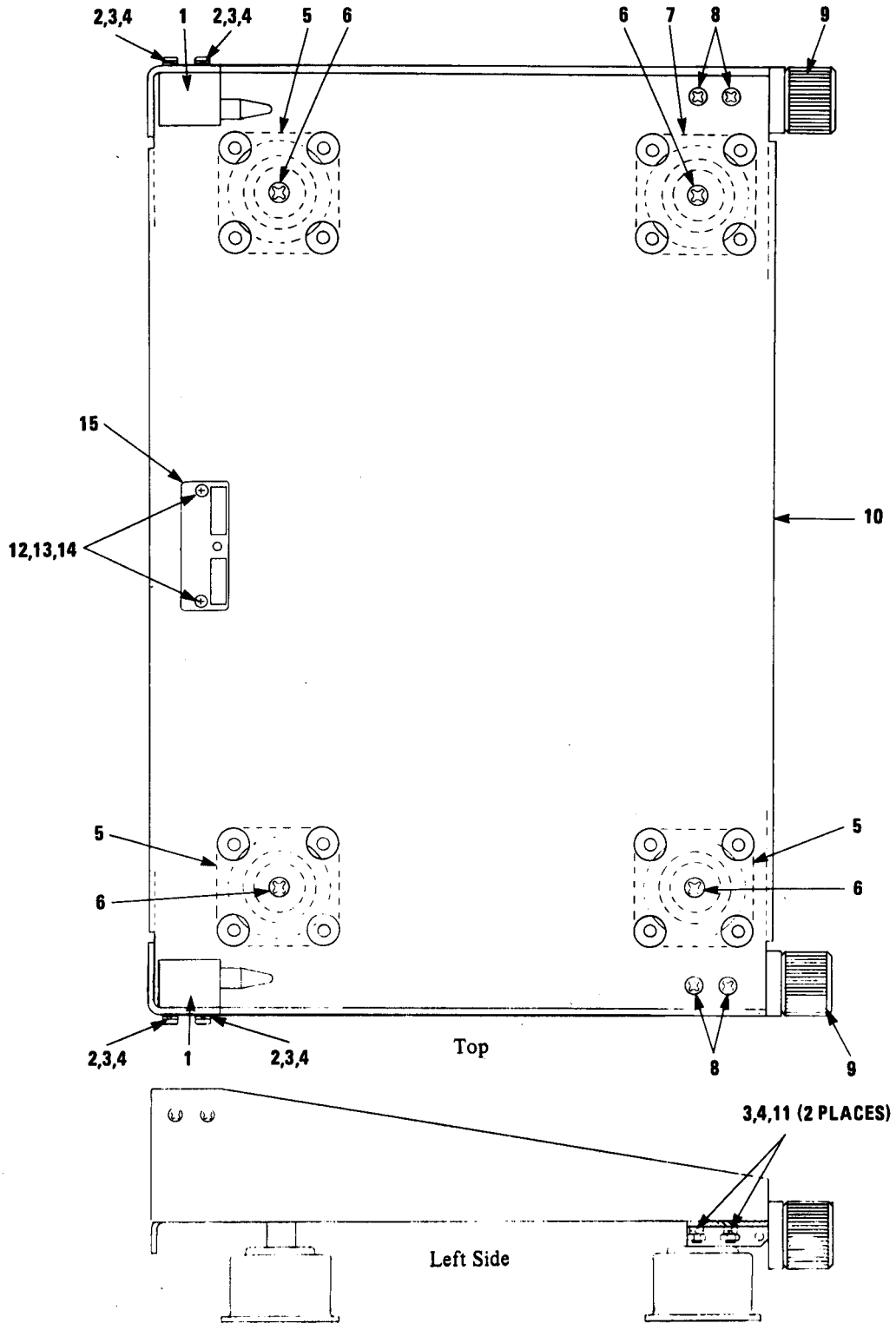


Figure C-28. Shock Mount

CHANGE 1									
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT	
						GROUP:0119 SHOCK MOUNT A1A19 (15942)			
C	C-28	1	XBFZZ	0421-1-2355	15942	GUIDE ASSEMBLY	EA	2	
C	C-28	2	PAFZZ	5305-00-054-6651	MS51957-27	96906	SCREW,MACHINE	EA	4
C	C-28	3	PAFZZ	5310-00-929-6395	MS35338-136	96906	WASHER,LOCK	EA	8
C	C-28	4	PAFZZ	5310-00-722-5998	MS15795-805	96906	WASHER,FLAT	EA	8
C	C-28	5	PAFFF	5340-00-725-2372	L44-BA-5	81860	MOUNT,RESILIENT	EA	3
C	C-28	6	PAFZZ	5305-00-056-9962	MS24693-C47	96906	SCREW,MACHINE	EA	4
C	C-28	7	PAFFF	5340-00-795-1853	L44-BA-10	81860	MOUNT,RESILIENT	EA	1
C	C-28	8	PAFZZ	5305-00-958-2918	MS24693-C26	96906	SCREW,MACHINE	EA	4
C	C-28	9	XBFFF	0421-1-3220	15942	RETAINER ASSEMBLY	EA	2	
C	C-28	10	XBFZZ	0421-1-4122	15942	BASE	EA	1	
C	C-28	11	PAFZZ	5310-00-934-9761	MS35649-264	96906	NUT,PLAIN,HEX	EA	4
C	C-28	12	PAFZZ	5305-00-054-5636	MS51957-2	96906	SCREW,MACHINE	EA	2
C	C-28	13	PAFZZ	5310-00-595-6761	MS15795-802	96906	WASHER,FLAT	EA	2
C	C-28	14	PAFZZ	5310-00-928-2690	MS35338-134	96906	WASHER,LOCK	EA	2
C	C-28	15	XBFZZ	0421-1-2347	15942	PLATE,IDENTIFICATION	EA	1	

CHANGE 1

TM32-5835-005-14&P
(6)

(1) ILLUSTRATION	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(A) FIG NO.	(B) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	U/M	QTY INC IN UNIT
						USABLE ON CODE		
1	PAFDD	6625-00-044-3228	AN/USM-207A	80058	COUNTER, ELECTRONIC, DIGITAL	EA	1	
2	PAFDD	6625-00-106-9622	AN/USM281C	80058	OSCILLOSCOPE	EA	1	
3	PAFDD	6625-00-999-7465	AN/USM-223	80058	MULTIMETER	EA	1	
4	PAFDD	6625-00-118-6736	SG-747/U	80058	GENERATOR, SIGNAL	EA	1	
5	PAFDD	6625-00-727-4706	AN/USM-224	80058	VOLTMETER, ELECTRONIC	EA	1	
6	PAFDD	6625-00-089-4227	ME-367/U	80058	INDICATOR	EA	1	
7	PAFDD	5915-00-138-0878	3103-4	88865	FILTER, VARIABLE	EA	1	
8	PAFZZ	6130-0-460-2148	QRC40-4A	49956	POWER SUPPLY, PP-3940A/G	EA	1	
9	PAFDD	6625-00-987-8527	ME-254/U	80058	TEST SET, SOUND	EA	1	
10	PAFZZ				TAPE, CASSETTE, PRERECORDED	EA	1	
11	PAFZZ				TAPE, CASSETTE, PRERECORDED	EA	1	
12	PADZZ	5180-00-610-8177	TK-105/G	80058	TOOL KIT, ELECTRONICS	EA	1	
13	PAFZZ	6635-00-918-5033	LP-36	11710	SCALE, SPRING	EA	1	
14	PADZZ	5120-01-026-1476	TD-6	55719	DEMAGNETIZER	EA	1	
15	PAFZZ				TELEPHONE PLUG, TESTING	EA	1	
16	PAFZZ		S1520	79136	PLIERS, SNAP RING	EA	1	

SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

NATIONAL STOCK NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS -

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
1265-00-201-8826	C-1	30	5305-00-056-9961	C-1	2
1265-00-201-8826	C-8	23	5305-00-058-9962	C-28	6
3030-00-427-1730	C-2	76	5305-00-054-2099	C-10	4
3110-00-183-9175	C-11	19	5305-00-066-7326	C-2	36
3110-00-188-2769	C-11	14	5305-00-068-5411	C-6	26
3120-00-540-8556	C-5	2	5305-00-068-5414	C-2	26
3120-00-853-5886	C-5	3	5305-00-239-7858	C-1	61
3120-01-041-1577	C-2	60	5305-00-272-3533	C-11	12
3120-01-041-4626	C-2	15	5305-00-543-5832	C-10	2
3120-01-041-4627	C-2	4	5305-00-576-7266	C-8	40
3120-01-046-4926	C-11	20	5305-00-655-9246	C-6	17
5305-00-052-9571	C-2	72	5305-00-717-6948	C-2	5
5305-00-054-5636	C-1	6	5305-00-717-6955	C-2	91
5305-00-054-5636	C-9	5	5305-00-727-8833	C-9	3
5305-00-054-5636	C-11	9	5305-00-764-2964	C-8	39
5305-00-054-5636	C-28	12	5305-00-814-1707	C-9	4
5305-00-054-5638	C-2	80	5305-00-817-1310	C-2	34
5305-00-054-5638	C-6	8	5305-00-841-2682	C-3	3
5305-00-054-5639	C-11	2	5305-00-902-2136	C-1	10
5305-00-054-5640	C-20	6	5305-00-958-2918	C-1	1
5305-00-054-5647	C-2	37	5305-00-958-2918	C-28	8
5305-00-054-5647	C-11	5	5305-00-959-1082	C-2	56
5305-00-054-5647	C-18	9	5305-00-969-6495	C-1	3
5305-00-054-5647	C-21	9	5305-00-969-6495	C-8	20
5305-00-054-5649	C-1	19	5305-00-992-5907	C-1	11
5305-00-054-5649	C-2	24	5305-00-993-9189	C-1	27
5305-00-054-5649	C-14	40	5305-00-993-9189	C-2	3
5305-00-054-5649	C-15	29	5305-01-040-7172	C-22	2
5305-00-054-5649	C-16	12	5305-01-040-7172	C-23	2
5305-00-054-5651	C-18	3	5305-01-041-3847	C-2	19
5305-00-054-5651	C-19	4	5305-01-042-1410	C-6	25
5305-00-054-5651	C-24	7	5305-01-042-1410	C-7	3
5305-00-054-5652	C-20	1	5310-00-043-4708	C-11	3
5305-00-054-6651	C-1	45	5310-00-043-4708	C-21	6
5305-00-054-6651	C-2	52	5310-00-209-0790	C-24	10
5305-00-054-6651	C-8	29	5310-00-401-0857	C-2	70
5305-00-054-6651	C-18	11	5310-00-499-4575	C-2	35
5305-00-054-6651	C-28	2	5310-00-515-8716	C-24	16
5305-00-054-6653	C-21	3	5310-00-595-6211	C-1	21
5305-00-054-6655	C-1	56	5310-00-595-6211	C-2	22
5305-00-056-6670	C-1	17	5310-00-595-6211	C-10	5

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5310-00-595-6211	C-18	4	5310-00-933-8118	C-21	4
5310-00-595-6211	C-19	6	5310-00-933-8118	C-24	5
5310-00-595-6211	C-20	2	5310-00-933-8119	C-1	12
5310-00-595-6211	C-21	11	5310-00-934-9748	C-1	22
5310-00-595-6211	C-24	6	5310-00-934-9748	C-2	75
5310-00-595-6761	C-1	7	5310-00-934-9748	C-24	4
5310-00-595-6761	C-2	7	5310-00-934-9761	C-21	5
5310-00-595-6761	C-6	10	5310-00-934-9761	C-28	11
5310-00-595-6761	C-9	6	5310-00-938-2013	C-2	66
5310-00-595-6761	C-20	8	5310-00-982-4999	C-8	44
5310-00-595-6761	C-28	13	5310-00-982-4999	C-14	41
5310-00-619-1148	C-8	45	5310-00-982-4999	C-15	30
5310-00-722-5998	C-1	47	5310-00-982-4999	C-16	13
5310-00-722-5998	C-2	50	5310-01-043-4323	C-8	36
5310-00-722-5998	C-8	30	5315-00-376-0340	C-2	64
5310-00-722-5998	C-18	12	5315-00-394-4897	C-2	83
5310-00-722-5998	C-28	4	5315-00-840-0966	C-4	1
5310-00-782-1349	C-11	6	5315-00-032-3725	C-11	15
5310-00-805-3214	C-2	65	5330-00-815-6552	C-1	25
5310-00-815-0653	C-2	71	5330-00-846-0503	C-8	27
5310-00-838-7285	C-24	11	5330-00-884-0943	C-2	68
5310-00-880-5978	C-1	13	5330-00-944-2482	C-2	67
5310-00-928-2690	C-1	8	5340-00-057-9979	C-1	59
5310-00-928-2690	C-2	10	5340-00-057-9979	C-2	12
5310-00-928-2690	C-6	9	5340-00-725-2372	C-28	5
5310-00-928-2690	C-7	2	5340-00-795-1853	C-28	7
5310-00-928-2690	C-9	7	5340-00-884-0152	C-18	8
5310-00-928-2690	C-11	4	5340-00-762-1489	C-8	33
5310-00-928-2690	C-20	7	5355-00-990-3175	C-8	26
5310-00-928-2690	C-28	14	5355-01-042-8653	C-8	34
5310-00-929-6395	C-1	46	5355-01-043-1340	C-8	35
5310-00-929-6395	C-2	51	5360-00-342-9588	C-2	32
5310-00-929-6395	C-8	31	5360-00-342-9589	C-2	9
5310-00-929-6395	C-18	13	5360-00-423-6399	C-6	27
5310-00-929-6395	C-28	3	5360-00-864-3028	C-11	21
5310-00-933-8118	C-1	18	5360-01-040-3753	C-11	11
5310-00-933-8118	C-2	23	5360-01-042-3755	C-6	19
5310-00-933-8118	C-11	7	5360-01-042-2679	C-2	18
5310-00-933-8118	C-18	5	5360-01-042-5745	C-2	41
5310-00-933-8118	C-19	5	5365-00-341-6848	C-2	88
5310-00-933-8118	C-20	3	5365-00-598-1138	C-2	44

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5365-00-725-0969	C-2	16	5905-00-422-3798	C-12	32
5365-00-820-4535	C-24	13	5905-00-432-0078	C-13	20
5365-01-001-9771	C-23	1	5905-00-432-0078	C-14	24
5365-01-004-9771	C-22	1	5905-00-433-6483	C-14	15
5385-00-543-3981	C-2	53	5905-00-458-9346	C-12	22
5811-01-004-4300	C-6	16	5905-00-458-9346	C-14	28
5835-00-333-6621	C-2	33	5905-00-458-9346	C-15	14
5835-00-334-6556	C-2	97	5905-00-458-9500	C-12	20
5835-00-345-9516	C-2	29	5905-00-458-9500	C-13	23
5835-00-357-6759	C-2	84	5905-00-458-9500	C-14	27
5835-00-364-0810	C-6	21	5905-00-458-9500	C-15	16
5835-00-364-0811	C-6	20	5905-00-458-9500	C-17	8
5835-00-434-9068	C-2	77	5905-00-466-1218	C-12	21
5835-00-466-8544	C-6	14	5905-00-466-1218	C-13	28
5835-00-483-6173	C-9	10	5905-00-466-1218	C-14	31
5835-00-504-9794	C-6	3	5905-00-466-1219	C-13	26
5835-01-040-7189	C-2	57	5905-00-468-2938	C-14	29
5835-01-042-0958	C-1	62	5905-00-471-2094	C-14	26
5835-01-042-9943	C-6	22	5905-00-479-8098	C-12	26
5835-01-110-0761	C-1	43	5905-00-480-0013	C-12	33
5835-01-078-4915	C7	4	5905-00-480-6885	C-12	28
5905-00-104-5775	C-13	29	5905-00-480-6885	C-15	13
5905-00-104-8347	C-13	22	5905-00-482-7991	C-14	19
5905-00-104-8363	C-12	24	5905-00-483-0407	C-14	30
5905-00-104-8363	C-17	7	5905-00-497-0868	C-8	5
5905-00-121-9932	C-15	15	5905-00-532-0595	C-13	21
5905-00-135-3973	C-12	31	5905-00-617-5089	C-15	11
5905-00-141-0726	C-1	23	5905-00-617-5091	C-12	25
5950-00-148-3149	C-14	22	5905-00-617-5093	C-13	25
5905-00-150-0748	C-16	7	5905-00-617-5093	C-14	16
5905-00-177-7486	C-12	35	5905-00-761-5758	C-12	30
5905-00-180-8303	C-15	12	5905-00-761-5758	C-13	24
5905-00-195-4074	C-12	29	5905-00-761-5758	C-17	10
5905-00-195-4074	C-15	17	5905-00-917-5598	C-14	32
5905-00-232-3110	C-13	19	5905-00-935-8541	C-14	18
5905-00-232-3110	C-14	21	5905-00-979-8097	C-12	27
5905-00-255-3701	C-12	34	5905-01-025-9029	C-8	6
5905-00-256-9991	C-14	25	5905-01-035-5065	C-12	23
5905-00-403-8837	C-14	17	5905-01-035-5065	C-14	20
5905-00-407-0086	C-17	11	5905-01-035-5065	C-17	9
5905-00-412-0759	C-15	19	5910-00-010-8666	C-13	3
5905-00-412-4044	C-15	18	5910-00-010-8666	C-14	1

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5910-00-010-8718	C-16	2	5930-00-892-9026	C-8	25
5910-00-088-1146	C-14	5	5930-00-892-9362	C-8	24
5910-00-113-5284	C-12	5	5930-01-042-1915	C-8	13
5910-00-113-5494	C-12	9	5935-00-044-5869	C-18	2
5910-00-113-5499	C-12	4	5935-00-150-0646	C-1	35
5910-00-113-5499	C-13	6	5935-00-192-4729	C-8	3
5910-00-113-5499	C-15	4	5935-00-240-0173	C-24	12
5910-00-113-9446	C-12	11	5935-00-333-9112	C-8	32
5910-00-113-9446	C-17	5	5935-00-359-4607	C-1	37
5910-00-113-9449	C-13	9	5935-00-520-5615	C-19	3
5910-00-113-9817	C-13	8	5935-00-520-5615	C-20	10
5910-00-114-0803	C-12	7	5935-00-577-8583	C-1	24
5910-00-114-0803	C-17	3	5935-00-577-8604	C-24	8
5910-00-115-8405	C-12	8	5935-00-683-2746	C-8	2
5910-00-131-1318	C-13	7	5935-00-717-3750	C-1	36
5910-00-435-6556	C-14	7	5935-00-807-5359	C-25	5
5910-00-450-3041	C-13	5	5935-00-807-5359	C-26	1
5910-00-456-9511	C-14	3	5935-00-807-5359	C-27	1
5910-00-490-0397	C-14	2	5935-00-818-6559	C-2	101
5910-00-769-5325	C-12	1	5935-00-843-7362	C-25	1
5910-00-769-5325	C-15	1	5935-00-898-9069	C-1	26
5910-00-847-7288	C-12	13	5935-00-901-5782	C-1	38
5910-00-847-7288	C-14	6	5935-00-959-2610	C-1	39
5910-00-911-5906	C-12	12	5935-00-998-9281	C-18	15
5910-00-911-5906	C-13	2	5935-01-005-3579	C-25	1
5910-00-911-5906	C-15	2	5935-01-040-7190	C-2	100
5910-00-928-1128	C-12	10	5935-01-042-2390	C-21	10
5910-00-999-2839	C-12	6	5940-00-082-5002	C-12	36
5910-00-999-2839	C-15	3	5940-00-082-5002	C-13	30
5910-00-999-2839	C-16	1	5940-00-082-5002	C-14	33
5910-00-999-2839	C-17	1	5940-00-082-5002	C-15	20
5930-01-016-5162	C-8	13	5940-00-082-5002	C-16	8
5910-01-042-0091	C-18	1	5940-00-082-5002	C-17	12
5910-01-057-0375	C-12	3	5945-01-027-9982	C-12	15
5910-01-057-0375	C-14	8	5945-01-027-9982	C-17	6
5925-01-041-4745	C-1	28	5945-01-042-5259	C-2	39
5925-01-041-4746	C-1	32	5945-01-042-5260	C-2	48
5925-01-042-7584	C-1	31	5945-01-085-3276	C-13	12
5930-00-147-0707	C-8	14	5950-00-114-5631	C-12	16
5930-00-419-9843	C-8	12	5950-00-921-3420	C-13	15
5930-00-678-5964	C-24	1	5950-00-934-2681	C-21	8
5930-00-800-5770	C-8	18	5950-00-959-2667	C-13	14
5930-00-803-4570	C-11	1			

NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER	NATIONAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
5950-01-012-8038	C-12	17	5962-00-579-7738	C-16	9
5961-00-088-8792	C-13	11	5962-01-009-1121	C-15	22
5961-00-088-8792	C-15	6	5962-01-044-5800	C-14	37
5961-00-088-8792	C-16	4	5962-01-044-5800	C-15	23
5961-00-199-6008	C-21	2	5962-01-049-4680	C-14	38
5961-00-361-8753	C-14	13	5962-01-050-7830	C-12	38
5961-00-444-6607	C-15	24	5970-01-043-1376	C-21	1
5961-00-520-5617	C-12	19	5995-01-046-4300	C-2	11
5961-00-761-9379	C-16	6	5999-00-132-0310	C-15	27
5961-00-904-7496	C-16	5	5999-01-041-3187	C-12	39
5961-00-938-1135	C-12	14	5999-01-041-3188	C-15	26
5961-00-938-1135	C-13	10	6105-01-042-4790	C-2	95
5961-00-938-1135	C-14	10	6145-00-635-9836	C-25	3
5961-00-938-1135	C-15	5	6145-00-635-9836	C-26	2
5961-00-938-5254	C-16	10	6145-00-635-9836	C-27	2
5961-00-949-1432	C-13	18	6210-00-067-6044	C-8	17
5961-01-020-6731	C-14	14	6210-00-519-0448	C-8	7
5961-01-020-6731	C-15	7	6210-00-553-1076	C-8	8
5961-01-041-7288	C-12	18	6210-00-583-9349	C-8	10
5961-01-041-7288	C-13	17	6210-00-635-4700	C-8	9
5961-01-041-7288	C-15	8	6210-00-819-3930	C-8	11
5961-01-042-2132	C-2	74	6210-00-155-7836	C-8	1
5961-01-761-9379	C-15	9	6605-00-972-1348	C-8	28
5961-01-949-1432	C-15	10	6625-00-137-6808	C-1	29
5962-00-169-4731	C-15	21	6625-00-137-6808	C-8	22
5962-00-194-6750	C-14	34	6625-00-501-7348	C-8	4
5962-00-467-1590	C-12	37	6645-00-078-0501	C-13	16
5962-00-467-1590	C-17	13	6680-01-045-7810	C-10	1
5962-00-523-9672	C-14	35	6710-00-063-0509	C-3	2

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
AN3057-4	88044	C-24	12	HSM240	26667	C-21	8
AN316C6R	88044	C-24	16	H13A1	03508	C-2	74
AN3420-6	88044	C-24	13	JAN1N4148	81349	C-12	14
AN530C4R4	88044	C-10	4	JAN1N4148	81349	C-13	10
AN565AC2H5	81350	C-2	34	JAN1N4148	81349	C-14	10
B10-7	00141	C-5	2	JAN2N3055	81349	C-21	2
B11-7	00141	C-5	3	JAN2N3822	81349	C-12	19
B6-22	00141	C-2	65	L-4-S	97918	C-24	1
CD4002AE	02735	C-15	21	LC-016B-1	84830	C-3	2
CD4043AE	49671	C-15	22	LE-014A-1-SS	84830	C-2	41
CD4066AE	02735	C-12	38	LE-014A-3-SS	84830	C-2	18
CD4075BE	02735	C-14	37	LE022B00	84830	C-11	21
CD4075BE	02735	C-15	23	L44-BA-10	81860	C-28	7
CD4081BE	02735	C-14	38	L44BA-5	81860	C-28	5
CK05BX102K	81349	C-13	3	MC1303L	04713	C-12	37
CK05BX102K	81349	C-14	1	MC1303L	04713	C-17	13
CK06BX103K	81349	C-12	13	MC14001CL	04713	C-14	35
CK06BX103K	81349	C-14	6	MC709CP	04713	C-14	34
CK06BX103K	81349	C-16	2	MC741C	04713	C-14	36
CK06BX104K	81349	C-12	4	MIL-C-3432D	81349	C-25	3
CK06BX104K	81349	C-13	6	MIL-C-3432D	81349	C-26	2
CK06BX104K	81349	C-15	4	MIL-C-3432D	81349	C-27	2
CK06BX153K	81349	C-12	9	MS134352	96906	C-11	19
CK06BX182K	81349	C-12	11	MS15795-802	96906	C-1	7
CK06BX183K	81349	C-12	7	MS15795-802	96906	C-2	7
CK06BX183K	81349	C-13	7	MS15795-802	96906	C-6	10
CK06BX183K	81349	C-17	3	MS15795-802	96906	C-9	6
CK06BX183K	81349	C-17	5	MS15795-802	96906	C-20	8
CK06BX273K	81349	C-13	5	MS15795-802	96906	C-28	13
CK06BX332K	81349	C-14	7	MS15795-803	96906	C-1	21
CK06BX333K	81349	C-12	8	MS15795-803	96906	C-2	22
CK06BX334K	81349	C-12	5	MS15795-803	96906	C-10	5
CK06BX473K	81349	C-13	8	MS15795-803	96906	C-18	4
CK06BX683K	81349	C-13	9	MS15795-803	96906	C-19	6
CM05ED470J03	81349	C-14	2	MS15795-803	96906	C-20	2
CM05FD331J03	81349	C-14	5	MS15795-803	96906	C-21	11
CM06FD272J03	81349	C-14	3	MS15795-803	96906	C-24	6
E-250	92219	C-20	5	MS15795-804	96906	C-11	6
E-350	92219	C-18	6	MS15795-805	96906	C-1	47
E-350	92219	C-19	1	MS15795-805	96906	C-2	50
GC860DK10R	02660	C-1	37	MS15795-805	96906	C-8	30
G5555-9H	79136	C-2	88				

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
MS15795-805	96906	C-18	12	MS35338-134	96906	C-9	7
MS15795-805	96906	C-28	4	MS35338-134	96906	C-11	4
MS15795-807	96906	C-1	13	MS35338-134	96906	C-20	7
MS15795-808	96906	C-8	45	MS35338-134	96906	C-28	14
MS16562-210	96906	C-4	1	MS35338-135	96906	C-1	18
MS1663-4009	96906	C-2	53	MS35338-135	96906	C-2	23
MS16633-4012	96906	C-2	44	MS35338-135	96906	C-11	7
MS16633-4018	96906	C-2	16	MS35338-135	96906	C-18	5
MS16995-11	96906	C-2	26	MS35338-135	96906	C-19	5
MS16995-18	96906	C-2	56	MS35338-135	96906	C-20	3
MS16995-28	96906	C-1	11	MS35338-135	96906	C-21	4
MS16995-3	96906	C-6	26	MS35338-135	96906	C-24	5
MS18212-26	96906	C-1	61	MS35338-136	96906	C-1	46
MS19063-5	96906	C-11	14	MS35338-136	96906	C-2	51
MS21044-C04	96906	C-8	44	MS35338-136	96906	C-8	31
MS21044C04	96906	C-14	41	MS35338-136	96906	C-18	13
MS21044C04	96906	C-15	30	MS35338-136	96906	C-28	3
MS21044C04	96906	C-16	13	MS35338-137	96906	C-1	12
MS24547-1	96906	C-11	1	MS35649-224	00141	C-2	66
MS24693-C25	96906	C-8	20	MS35649-244	96906	C-1	22
MS24693-C26	96906	C-28	8	MS35649-244	96906	C-2	75
MS24693-C47	96906	C-28	6	MS35649-244	96906	C-24	4
MS24693C2	96906	C-1	27	MS35649-264	96906	C-21	5
MS24693C2	96906	C-2	3	MS35649-264	96906	C-28	11
MS24693C24	96906	C-2	36	MS51021-10	96906	C-6	17
MS24693C25	96906	C-1	3	MS51021-11	96906	C-10	2
MS24693C26	96906	C-1	1	MS51021-22	96906	C-8	40
MS24693C4	96906	C-1	2	MS61023-49	96906	C-11	12
MS24693C46	96906	C-1	10	MS51957-13	96906	C-2	37
MS25041-11	96906	C-8	11	MS51957-13	96906	C-11	5
MS25041-5	96906	C-8	10	MS51957-13	96906	C-18	9
MS25041-6	96906	C-8	7	MS51957-13	96906	C-21	9
MS25041-7	96906	C-8	8	MS51957-15	96906	C-1	19
MS25041-8	96906	C-8	9	MS51957-15	96906	C-2	24
MS25237-327	96906	C-8	1	MS51957-15	96906	C-14	40
MS3112E10-6P	96906	C-1	38	MS51957-15	96906	C-15	29
MS3181-10C	96906	C-1	39	MS51957-15	96906	C-16	12
MS35335-63	96906	C-24	10	MS51957-17	96906	C-18	3
MS35338-134	96906	C-1	8	MS51957-17	96906	C-19	4
MS35338-134	96906	C-2	10	MS51957-17	96906	C-24	7
MS35338-134	96906	C-6	9	MS51957-18	96906	C-20	1
MS35338-134	96906	C-7	2	MS51957-2	96906	C-1	6

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
MS51957-2	96906	C-9	5	M641-6-1	81349	C-8	2
MS51957-2	96906	C-11	9	M81511/01EB01S1	81349	C-1	35
MS51957-2	96906	C-28	12	NAS1351C04-4	80205	C-2	72
MS51957-27	96906	C-1	45	NAS139R4B-5/16-A	80205	C-2	12
MS51957-27	96906	C-2	52	NAS139R4B-5/16-A	80205	C-1	59
MS51957-27	96906	C-8	29	NAS620-C2	80205	C-11	3
MS51957-27	96906	C-18	11	NAS620C6L	80205	C-21	6
MS51957-27	96906	C-28	2	NAS662C2R4	80295	C-9	4
MS51957-29	96906	C-21	3	NO. 1	70318	C-2	78
MS51957-31	96906	C-1	56	PC20110/10025	26769	C-14	4
MS51957-4	96906	C-6	8	PNS106Y025KI	26769	C-12	12
MS51957-45	96906	C-1	17	PNS106Y025KI	26769	C-15	2
MS51957-5	96906	C-2	80	PNS107Z025KI	26769	C-17	4
MS51957-5	96906	C-11	2	PNS157Z010KI	26769	C-12	10
MS51957-6	96906	C-20	6	PNS335X025KI	26769	C-12	3
MS51959-3	96906	C-9	3	PNS335X025KI	26769	C-14	8
MS51959-4	96906	C-8	39	PNS476Z025AS	26769	C-13	1
MS51963-1	96906	C-2	91	PNS476Z025KI	26769	C-12	6
MS51963-11	96906	C-2	5	PNS476Z025KI	26769	C-14	9
MS75089-38	96906	C-12	17	PNS476Z025KI	26769	C-15	3
MS75089-43	96906	C-12	16	PNS476Z025KI	26769	C-16	1
MS90537-49	96060	C-13	15	PNS476Z025KI	26769	C-17	1
MS90537-57	96906	C-13	14	PNS686D020KI	26769	C-17	2
MS9068-027	96906	C-2	68	PNS686Z025KI	26769	C-12	2
MS9068-043	96906	C-2	67	PNS686Z020KI	26769	C-16	3
MS91528-0E1B	96906	C-8	33	PNS826Z015AS	26769	C-13	4
MS91528-0P1B	96906	C-8	26	PNS826Z015KI	26769	C-15	1
MS9241-113	96906	C-8	27	PNS826Z015KI	81349	C-12	1
MS9390-080	96906	C-11	15	PT06W-10-6S	77820	C-25	5
MS9549-12	96906	C-24	11	PT06W-10-6S	77820	C-26	1
MTA-106D	95146	C-8	14	PT06W-10-6S	77820	C-27	1
MTA-406N	95146	C-8	1	RCR05G102JS	81349	C-12	20
M2X5	70318	C-2	93	RCR05G102JS	81349	C-13	23
M21097/1-025	81349	C-19	9	RCR05G102JS	81349	C-15	16
M21097/1-025	81349	C-20	10	RCR05G102JS	81349	C-17	8
M21097/1-097	81349	C-18	2	RCR05G103JS	81349	C-12	23
M33Z22	33203	C-10	1	RCR05G103JS	81349	C-14	20
M3786/20-316	81349	C-8	13	RCR05G103JS	81349	C-17	9
M39016-9-002L	81349	C-12	15	RCR05G103JS	81349	C-17	9
M39016-9-002L	81349	C-17	6	RCR05G104JS	81349	C-12	22
M5423/05-01	81349	C-8	24	RCR05G104JS	81349	C-14	28
M5423/07-01	81349	C-8	18				
M5423/09-03	81349	C-8	25				
M641-5-1	81349	C-8	3				

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS--CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
RCR05G105JS	81349	C-12	29	RLR20S471JS	81349	C-14	22
RCR05G105JS	81349	C-15	17	RLR20S511JS	81349	C-14	25
RCR05G106JS	81349	C-14	30	RLR20S512JS	81349	C-14	26
RCR05G152JS	81349	C-15	12	RT24C2X103	81349	C-13	20
RCR05G153JS	81349	C-15	11	RT24C2X103	81349	C-14	24
RCR05G184JS	81349	C-12	28	RT24C2X203	81349	C-13	27
RCR05G184JS	81349	C-15	13	RT24C2X203	81349	C-14	23
RCR05G221JS	81349	C-12	35	RVC6NYD-102B	81349	C-8	6
RCR05G223JS	81349	C-14	17	RVC6NYD-503B	81349	C-8	5
RCR05G224JS	81349	C-15	18	SFR1335DK24	83086	C-2	28
RCR05G225JS	81349	C-13	19	SFR1335PPEEK24	83086	C-2	27
RCR05G225JS	81349	C-14	21	T-8X16-C-24VDC	73949	C-2	39
RCR05G241JS	81349	C-12	33	TP-6X12	73949	C-2	48
RCR05G392JS	81349	C-14	15	TVA-1319.8	56289	C-18	1
RCR05G393JS	81349	C-17	11	T330C106K025AS	05397	C-13	2
RCR05G471JS	81349	C-12	30	UA7815KC	34148	C-16	9
RCR05G471JS	81349	C-13	24	U125-0060	70472	C-2	70
RCR05G471JS	81349	C-17	10	U190-0090	70472	C-8	43
RCR05G472JS	81349	C-12	25	W172-3	94696	C-13	13
RCR05G473JS	81349	C-13	25	W172-4	94696	C-13	12
RCR05G473JS	81349	C-14	16	W172-4	94696	C-14	11
RCR05G514JS	81349	C-15	19	W-C-596/13-3	81348	C-25	1
RCR05G560JS	81349	C-12	34	0-80X1/8	70318	C-6	13
RCR05G621JS	81349	C-12	32	0-80X3/16	70318	C-6	24
RCR05G623JS	81349	C-14	29	0123-1-2039	15942	C-6	2
RCR05G822JS	81349	C-12	21	0123-1-2041	15942	C-6	4
RCR05G822JS	81349	C-13	28	0123-1-2052	15942	C-2	97
RCR05G822JS	81349	C-14	31	0123-1-2053	15942	C-2	98
RCR05G823JS	81349	C-13	26	0123-1-2059	15942	C-6	19
RCR07G221JS	81349	C-12	31	0123-1-2095	15942	C-2	32
RCR07G391JS	81349	C-15	15	0123-1-2104	15942	C-6	27
RCR07G820JS	81349	C-12	24	0123-1-3006-1	15942	C-2	15
RCR07G820JS	81349	C-17	7	0123-1-3006-2	15942	C-2	4
RCR20G100JS	81349	C-13	29	0123-1-3036	15942	C-7	5
RCR32G101JS	81349	C-13	22	0149-1-2014	15942	C-2	76
RCR32G181JS	81349	C-1	23	0149-1-2027	15942	C-2	19
RCR32G910JS	81349	C-13	21	0149-1-2029	15942	C-2	84
RCR42G122JS	81349	C-16	7	0149-1-2030	15942	C-2	30
RJ24CX103	81349	C-12	27	0149-1-2033	15942	C-2	69
RJ24CX502	81349	C-12	26	0149-1-2035	15942	C-2	64
RLR20S102JS	81349	C-14	27	0149-1-2049	15942	C-6	3
RLR20S223JS	81349	C-14	19	0149-1-2072	15942	C-2	83
RLR20S301JS	81349	C-14	18	0149-1-2106	15942	C-2	9

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
0149-1-2245	15942	C-8	34	0421-1-2246	15942	C-8	47
0149-1-2262	15942	C-6	23	0421-1-2248	15942	C-24	9
0149-1-2286	15942	C-6	25	0421-1-2308	15942	C-10	6
0149-1-2286	15942	C-7	3	0421-1-2309	15942	C-2	2
0149-1-2292	15942	C-2	6	0421-1-2310	15942	C-2	1
0149-1-2318	15942	C-22	2	0421-1-2311	14942	C-18	7
0149-1-2318	15942	C-23	2	0421-1-2312	15942	C-2	55
0149-1-2324	15942	C-6	12	0421-1-2313	15942	C-5	1
0149-1-2361	15942	C-7	4	0421-1-2314	15942	C-2	62
0149-1-3023-2	15942	C-2	31	0421-1-2315	15942	C-2	38
0149-1-3027	15942	C-3	4	0421-1-2316	15942	C-2	54
0149-1-3041	15942	C-2	35	0421-1-2317	15942	C-2	42
0149-1-3048-2	15942	C-6	16	0421-1-2319	15942	C-1	50
0149-1-3060-1	15942	C-6	20	0421-1-2320	15942	C-11	10
0149-1-3060-2	15942	C-6	21	0421-1-2321	15942	C-11	20
0149-1-3070-1	15942	C-2	77	0421-1-2322	15942	C-8	19
0149-1-3070-2	15942	C-2	82	0421-1-2326	15942	C-2	40
0149-1-3093	15942	C-6	14	0421-1-2327	15942	C-11	8
0149-1-3109	15942	C-2	25	0421-1-2328	15942	C-2	92
0149-1-3169	15942	C-8	46	0421-1-2329	15942	C-1	57
0149-1-3181	15942	C-6	28	0421-1-2331	15942	C-2	46
0149-1-3193-1	15942	C-25	4	0421-1-2333	15942	C-2	43
0149-1-3193-2	15942	C-26	3	0421-1-2334	15942	C-1	55
0149-1-3193-3	15942	C-27	3	0421-1-2335	15942	C-2	96
0149-1-3202	15942	C-6	22	0421-1-2336	15942	C-2	86
0149-1-3234	15942	C-2	95	0421-1-2337	15942	C-8	38
0149-1-4044	15942	C-2	29	0421-1-2338	15942	C-8	42
0149-1-4155	15942	C-6	1	0421-1-2339	15942	C-8	37
0149-1-4173	15942	C-3	5	0421-1-2340	15942	C-2	49
0149-1-4180	15942	C-2	20	0421-1-2347	15942	C-28	15
0421-1-2116	15942	C-6	7	0421-1-2348	15942	C-2	14
0421-1-2120-3	15942	C-2	45	0421-1-2350	15942	C-2	57
0421-1-2123	15942	C-2	60	0421-1-2352	15942	C-11	17
0421-1-2200	15942	C-24	14	0421-1-2353	15942	C-2	58
0421-1-2203	15942	C-1	20	0421-1-2354	15942	C-1	54
0421-1-2204	15942	C-2	21	0421-1-2355	15942	C-28	1
0421-1-2209	15942	C-24	15	0421-1-2360	15942	C-11	11
0421-1-2233-1	15942	C-9	2	0421-1-2362	15942	C-1	62
0421-1-2233-2	15942	C-9	11	0421-1-2370	15942	C-11	18
0421-1-2234	15942	C-9	8	0421-1-3048-1	15942	C-6	18
0421-1-2235	15942	C-9	10	0421-1-3167	15942	C-9	1
0421-1-2242	15942	C-1	14	0421-1-3175	15942	C-8	4

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
RCR05G105JS	81349	C-12	29	RLR20S471JS	81349	C-14	22
RCR05G105JS	81349	C-15	17	RLR20S511JS	81349	C-14	25
RCR05G106JS	81349	C-14	30	RLR20S512JS	81349	C-14	26
RCR05G152JS	81349	C-15	12	RT24C2X103	81349	C-13	20
RCR05G153JS	81349	C-15	11	RT24C2X103	81349	C-14	24
RCR05G184JS	81349	C-12	28	RT24C2X203	81349	C-13	27
RCR05G184JS	81349	C-15	13	RT24C2X203	81349	C-14	23
RCR05G221JS	81349	C-12	35	RVC6NYD-102B	81349	C-8	6
RCR05G223JS	81349	C-14	17	RVC6NYD-503B	81349	C-8	5
RCR05G224JS	81349	C-15	18	SFR1335DK24	83086	C-2	28
RCR05G225JS	81349	C-13	19	SFR1335PPEEK24	83086	C-2	27
RCR05G225JS	81349	C-14	21	T-8X16-C-24VDC	73949	C-2	39
RCR05G241JS	81349	C-12	33	TP-6X12	73949	C-2	48
RCR05G392JS	81349	C-14	15	TVA-1319.8	56289	C-18	1
RCR05G393JS	81349	C-17	11	T330C106K025AS	05397	C-13	2
RCR05G471JS	81349	C-12	30	UA7815KC	34148	C-16	9
RCR05G471JS	81349	C-13	24	UP131M-NUP121M	97539	C-25	1
RCR05G471JS	81349	C-17	10	U125-0060	70472	C-2	70
RCR05G472JS	81349	C-12	25	U190-0090	70472	C-8	43
RCR05G473JS	81349	C-13	25	W172-3	94696	C-13	13
RCR05G473JS	81349	C-14	16	W172-4	94696	C-13	12
RCR05G514JS	81349	C-15	19	W172-4	94696	C-14	11
RCR05G560JS	81349	C-12	34	0-80X1/8	70318	C-6	13
RCR05G621JS	81349	C-12	32	0-80X3/16	70318	C-6	24
RCR05G623JS	81349	C-14	29	0123-1-2039	15942	C-6	2
RCR05G822JS	81349	C-12	21	0123-1-2041	15942	C-6	4
RCR05G822JS	81349	C-13	28	0123-1-2052	15942	C-2	97
RCR05G822JS	81349	C-14	31	0123-1-2053	15942	C-2	98
RCR05G823JS	81349	C-13	26	0123-1-2059	15942	C-6	19
RCR07G221JS	81349	C-12	31	0123-1-2095	15942	C-2	32
RCR07G391JS	81349	C-15	15	0123-1-2104	15942	C-6	27
RCR07G820JS	81349	C-12	24	0123-1-3006-1	15942	C-2	15
RCR07G820JS	81349	C-17	7	0123-1-3006-2	15942	C-2	4
RCR20G100JS	81349	C-13	29	0123-1-3036	15942	C-7	5
RCR32G101JS	81349	C-13	22	0149-1-2014	15942	C-2	76
RCR32G181JS	81349	C-1	23	0149-1-2027	15942	C-2	19
RCR32G910JS	81349	C-13	21	0149-1-2029	15942	C-2	84
RCR42G122JS	81349	C-16	7	0149-1-2030	15942	C-2	30
RJ24CX103	81349	C-12	27	0149-1-2033	15942	C-2	69
RJ24CX502	81349	C-12	26	0149-1-2035	15942	C-2	64
RLR20S102JS	81349	C-14	27	0149-1-2049	15942	C-6	3
RLR20S223JS	81349	C-14	19	0149-1-2072	15942	C-2	83
RLR20S301JS	81349	C-14	18	0149-1-2106	15942	C-2	9

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
0149-1-2245	15942	C-8	34	0421-1-2246	15942	C-8	47
0149-1-2262	15942	C-6	23	0421-1-2248	15942	C-24	9
0149-1-2286	15942	C-6	25	0421-1-2308	15942	C-10	6
0149-1-2286	15942	C-7	3	0421-1-2309	15942	C-2	2
0149-1-2292	15942	C-2	6	0421-1-2310	15942	C-2	1
0149-1-2318	15942	C-22	2	0421-1-2311	14942	C-18	7
0149-1-2318	15942	C-23	2	0421-1-2312	15942	C-2	55
0149-1-2324	15942	C-6	12	0421-1-2313	15942	C-5	1
0149-1-2361	15942	C-7	4	0421-1-2314	15942	C-2	62
0149-1-3023-2	15942	C-2	31	0421-1-2315	15942	C-2	38
0149-1-3027	15942	C-3	4	0421-1-2316	15942	C-2	54
0149-1-3041	15942	C-2	35	0421-1-2317	15942	C-2	42
0149-1-3048-2	15942	C-6	16	0421-1-2319	15942	C-1	50
0149-1-3060-1	15942	C-6	20	0421-1-2320	15942	C-11	10
0149-1-3060-2	15942	C-6	21	0421-1-2321	15942	C-11	20
0149-1-3070-1	15942	C-2	77	0421-1-2322	15942	C-8	19
0149-1-3070-2	15942	C-2	82	0421-1-2326	15942	C-2	40
0149-1-3093	15942	C-6	14	0421-1-2327	15942	C-11	8
0149-1-3109	15942	C-2	25	0421-1-2328	15942	C-2	92
0149-1-3169	15942	C-8	46	0421-1-2329	15942	C-1	57
0149-1-3181	15942	C-6	28	0421-1-2331	15942	C-2	46
0149-1-3193-1	15942	C-25	4	0421-1-2333	15942	C-2	43
0149-1-3193-2	15942	C-26	3	0421-1-2334	15942	C-1	55
0149-1-3193-3	15942	C-27	3	0421-1-2335	15942	C-2	96
0149-1-3202	15942	C-6	22	0421-1-2336	15942	C-2	86
0149-1-3234	15942	C-2	95	0421-1-2337	15942	C-8	38
0149-1-4044	15942	C-2	29	0421-1-2338	15942	C-8	42
0149-1-4155	15942	C-6	1	0421-1-2339	15942	C-8	37
0149-1-4173	15942	C-3	5	0421-1-2340	15942	C-2	49
0149-1-4180	15942	C-2	20	0421-1-2347	15942	C-28	15
0421-1-2116	15942	C-6	7	0421-1-2348	15942	C-2	14
0421-1-2120-3	15942	C-2	45	0421-1-2350	15942	C-2	57
0421-1-2123	15942	C-2	60	0421-1-2352	15942	C-11	17
0421-1-2200	15942	C-24	14	0421-1-2353	15942	C-2	58
0421-1-2203	15942	C-1	20	0421-1-2354	15942	C-1	54
0421-1-2204	15942	C-2	21	0421-1-2355	15942	C-28	1
0421-1-2209	15942	C-24	15	0421-1-2360	15942	C-11	11
0421-1-2233-1	15942	C-9	2	0421-1-2362	15942	C-1	62
0421-1-2233-2	15942	C-9	11	0421-1-2370	15942	C-11	18
0421-1-2234	15942	C-9	8	0421-1-3048-1	15942	C-6	18
0421-1-2235	15942	C-9	10	0421-1-3167	15942	C-9	1
0421-1-2242	15942	C-1	14	0421-1-3175	15942	C-8	4

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
0421-1-3203	15942	C-10	3	0421-1-4206	15942	C-1	63
0421-1-3204	15942	C-2	87	0421-1-4209	15942	C-1	48
0421-1-3205	15942	C-2	47	0421-1-4210	15942	C-16	11
0421-1-3206	15942	C-4	2	0421-1-4211	15942	C-1	43
0421-1-3207	15942	C-4	3	0421-1-4212	15942	C-15	25
0421-1-3208	15942	C-21	7	0421-1-4213	15942	C-1	42
0421-1-3209	15942	C-11	16	0421-1-4214	15942	C-14	39
0421-1-3210	15942	C-11	22	0421-1-4215	15942	C-1	40
0421-1-3211	15942	C-2	73	0421-1-4216	15942	C-12	40
0421-1-3212	15942	C-2	85	0421-1-4217	15942	C-13	31
0421-1-3213	15942	C-2	79	0421-1-4218	15942	C-1	41
0421-1-3214	15942	C-2	90	0421-1-4219	15942	C-2	8
0421-1-3215	15942	C-2	59	0421-1-4221	15942	C-1	44
0421-1-3216	16942	C-20	9	0421-1-4222	15942	C-1	51
0421-1-3217	15942	C-2	99	0421-1-4223	15942	C-1	52
0421-1-3219	15942	C-1	9	0421-1-4224	15942	C-17	14
0421-1-3220	15942	C-28	9	0421-1-4225	15942	C-1	5
0421-1-3221	15942	C-19	2	0421-1-4226	15942	C-1	65
0421-1-3222	15942	C-2	63	0421-1-4227	15942	C-1	34
0421-1-3223	15942	C-1	64	0421-1-4227-1	15942	C-23	3
0421-1-3224	15942	C-2	100	0421-1-4228	15942	C-1	66
0421-1-3225	15942	C-18	10	0421-1-4229	15942	C-1	58
0421-1-3227	15942	C-1	49	0421-1-4230	15942	C-2	11
0421-1-3228	15942	C-1	53	1-72X1/8	70318	C-6	11
0421-1-3229	15942	C-1	60	1-72X5/32	70318	C-2	81
0421-1-3230	15942	C-20	4	1N4148	81349	C-15	5
0421-1-3231	15942	C-2	94	1N4749A	80131	C-16	10
0421-1-3233	15942	C-2	89	1N4998	04713	C-16	5
0421-1-3235	15942	C-24	2	1N5059	03508	C-16	4
0421-1-3236	15942	C-1	67	1N5059	80131	C-13	11
0421-1-4112	15942	C-8	41	1N5059	80131	C-15	6
0421-1-4122	15942	C-28	10	1N5233	04713	C-15	24
0421-1-4196	15942	C-8	21	10-05-1362-1250	18565	C-9	9
0421-1-4197	15942	C-18	14	10-101949-10	77820	C-1	36
0421-1-4198	15942	C-2	61	10-101949-22	77820	C-1	25
0421-1-4200	15942	C-11	13	10209-SS-0832-7	06540	C-1	16
0421-1-4201	15942	C-1	33	104-060	92219	C-12	39
0421-1-4201-1	15942	C-22	3	120-PC75-30	18583	C-13	16
0421-1-4203	15942	C-8	16	16020-SS	06540	C-1	15
0421-1-4204	15942	C-1	4	1717-6C#20-26-34PE	92194	C-24	3
0421-1-4205	15942	C-2	17	177-8430-0976-50	72619	C-8	17

PART NUMBERS CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG. NO.	ITEM NO.	PART NUMBER	FSCM	FIG. NO.	ITEM NO.
179A7314P1	03508	C-15	28	4082	97539	C-1	30
179A7314P1	03508	C-15	28	4082	97539	C-1	30
179A7314P1	03508	C-16	14	4082	97539	C-8	23
2-56X1/8	70318	C-6	6	42TD2	90634	C-14	32
2-56X1/8	70318	C-6	15	43-0913-00-901	81860	C-8	28
2-56X1/8	70318	C-7	1	431-201-101	79405	C-1	28
2-56X3/16	70318	C-3	1	431-202-101	79405	C-1	31
2-56X3/16	70318	C-6	5	431-203-101	79405	C-1	32
2-56X3/16CRES	70318	C-2	13	4311	00141	C-22	1
2N2219	81349	C-15	10	4382-2-SS7	06540	C-22	1
2N2219A	81349	C-13	18	4382-2-SS7	06540	C-23	1
2N3054	04713	C-15	9	456-07-35-003	71785	C-18	15
2N3054	04713	C-16	6	4822-528-20131	89781	C-2	33
2N3054A	04713	C-14	13	504-038	92219	C-15	26
2N5371	03508	C-12	18	510	82389	C-8	32
2N5371	03508	C-13	17	57-30240	02660	C-2	101
2N5371	03508	C-15	8	57-40240	02660	C-20	11
2N5372	03508	C-14	14	6020-9A	91506	C-18	8
2N5372	03508	C-15	7	6220-SS-0632-7	06540	C-8	35
2010B-1	88245	C-12	36	67-02E22-67S	02660	C-1	24
2010B-1	88245	C-13	30	67-06C22-67P	02660	C-24	8
2010B-1	88245	C-14	33	67-1462	02660	C-1	26
2010B-1	88245	C-15	20	6701-SS-0632-7	06540	C-8	36
2010B-1	88245	C-16	8	7	97539	C-1	29
2010B-1	88245	C-17	12	7	97539	C-8	22
211CB	05820	C-15	27	7402	06540	C-21	10
31-100	76854	C-8	14	7416	06540	C-21	1
31-400	76854	C-8	12	79NM-26	72962	C-2	71

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

(Not Applicable)

APPENDIX E
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

E-1 SCOPE. This appendix lists integral components of and Basic Issue Items (BII) for the Sound Recorder-Reproducer Set AN/UNH-17A to help you inventory items required for safe and efficient operation.

E-2 GENERAL. This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the AN/UNH-17A and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items (BII). These are the minimum essential items required to place the AN/UNH-17A in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the AN/UNH-17A during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

E-3 EXPLANATION OF COLUMNS.

a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item Number.* Not applicable.

b. National Stock Number. Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are: None.

g. Quantity Required (Qty Req'd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

SECTION II. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8) QUANTITY			
(a) FIGURE No.	(b) ITEM No.	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION	LOCATION	USABLE ON CODE	QTY REQU	RCV'D	DATE	DATE	DATE
1-1		5835-01-023-4332	0421-1-4207	SOUND RECORDER- REPRODUCER AN/UNH-17A (15942)							

SECTION III. BASIC ISSUE ITEMS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)				
ILLUSTRATION							QUANTITY				
(A)	(B)	NATIONAL	PART NO.	DESCRIPTION	LOCATION	USABLE	QTY				
FIGURE	ITEM	STOCK				ON	REQD				
NO.	NO.	NUMBER				CODE		RCV'D	DATE	DATE	DATE
1-1			0421-1-3218	PANEL EXTENDERS (15942) WITH 8 EA: SCREW,MACHINE, MS24693-C49 (96906), NSN 5305-00-068-5287			2				
1-1		5835-00-163-1118	0421-1-4010	FOOTSWITCH ASSEMBLY SA-1921/G (15942)			1				
1-1		5995-00-636-5898	CD-307A	CORD ASSEMBLY CD-307A -80063			1				
1-1		5965-00-892-3353	266C100	HEADSET ASSEMBLY H-216/U -78711			1				
1-1		5965-00-560-1760	0N009594	MICROPHONE ASSEMBLY PNH-4 (98230)			1				
1-1		5835-00-147-5062	AUX60	"CARTRIDGE, TAPE C-60" 94961			1				
1-1		5995-00-009-8742	0149-1-2092	POWER INPUT CABLE CX-12894/G (15942)			1				
1-1		5995-00-097-8488	0149-1-2093	POWER INPUT CABLE CX-12893/G (15942)			1				
1-1		5995-00-009-8744	0149-1-2090	POWER INPUT CABLE CX-12896/G (15942)			1				
1-1			0421-1-4225	MOUNTING BASE MT45561 UNH (15942)			1				

APPENDIX F

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1 SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the Sound Recorder-Reproducer Set AN/UNH-17A. These items are authorized to you by CTA 50.970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

F-2 EXPLANATION OF COLUMNS.

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., “Use cleaning compound, item 5, App. F”).

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C Operator/Crew
 O Organizational maintenance

F Direct support maintenance
 D Depot maintenance

c. Column 3, National Stock Number (NSN). This is the NSN assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the Federal Item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the U/M differs from the unit of issue, requisition the lowest unit that will satisfy your requirements.

SECTION II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1)	(2)	(3)	(4)	(5)
Item Number	Level	National Stock Number	Description	U/M
1	F		ADHESIVE,A-40 (98911)	AR
2	F		ADHESIVE, GE2562-010P (72685)	AR
3	C	8020-00-260-1306	BRUSH,H-B-695, CLASS1, GRADEB, CLASS1 (81348)	EA
4	C	8305-00-267-3015	CLOTH, LINT-FREE, CCCC440 (81348)	EA
5	C	6850-00-597-9765	COMPOUND, CLEANING, BRULINSOLVENT DEGREASER(94058)	AR
6	F		COMPOUND,SEALING,MIL-R-46082RC75 (81349)	AR
7	F	8030-00-823-7917	COMPOUND, SEALING, MIL-S-22473, GRADE (81349)	AR
8	F		COMPOUND,SEALING AND RETAINING, NO.84 GRADE C (05972)	AR
9	O	9150-00-663-1770	GREASE, LUBRICATING, 630AA(73219)	AR
10	D	5970-00-181-0190	INSULATING COMPOUND,ELECTRICAL, MIL-I-46058, TYPE PUR (81349)	AR
11	F	3439-00-955-1823	SOLDER,SNWRAP3 0.015 1LB(81349)	AR
12	F		TAPE,VINYL FOAM 1/2 IN. WIDE,4516, .06 THK (26066)	AR
13	F		TAPE,VINYL FOAM, 5/8 IN. WIDE,4516, .06 THK(26066)	AR
14	O	6850-00-281-2025	TRICHLOROETHANE (S0175)	AR
15	O		XYLENE,TT-X-916B (81348)	AR

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

PAUL T. SMITH

Major General, United States Army
The Adjutant General



SOMETHING WRONG WITH THIS MANUAL?

THEN... JOT DOWN THE DOPE ABOUT IT ON THIS FORM, TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

FROM: (YOUR UNIT'S COMPLETE ADDRESS)

OPERATIONS SECTION
375th ASA Co.
FORT HOOD, TX 76544

DATE

PUBLICATION NUMBER

TM 32-5895-215-ESC

DATE

OCT 71

TITLE

AN/MLQ-24

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
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6

2H

6

2I

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

THE RATING FOR THIS STEP DOES NOT ACCOUNT FOR THE OPERATIONAL CONDITION OF THE COUNTER ON THE IP-BIA.

RECOMMEND THIS STEP RATE THE SYSTEM RED WHEN THE COUNTER IS INOPERATIVE SINCE THE EQUIPMENT CANNOT ACCOMPLISH ITS PRIMARY MISSION.

CHANGE INSTRUCTIONS TO READ "REPEAT STEP H FOR REMAINING TUNERS OF SYSTEM".

SAMPLE

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

BILL N. ERNEST SP/4

SIGN HERE:

Bill N. Ernest

DA FORM 2028-2
1 AUG 74

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR MANUAL "FIND" MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

TEAR ALONG DOTTED LINE

FILL IN YOUR
UNIT'S ADDRESS

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

FOLD BACK

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314



Commander
US Army Electronics Materiel
Readiness Activity
ATTN: SELEM-ME-E
Vint Hill Farms Station
Warrenton, VA 22186

CUT ALONG DOTTED LINE

FOLD BACK

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



PIN: 017922-002