TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL

PROJECTOR, STILL PICTURE

AP-42A

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

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1970

WARNING

Be careful when working on the 115-volt ac line connections. Serious INJURY or DEATH may result from contact with these terminals. Remove power when making any inspections inside the equipment.

DON'T TAKE CHANCES!

CAUTION

Handle projection lamps with care. Oils from skin on glass surface of lamp may cause glass to blister and cause damage to projector optics.

HEADQUARTERS DEPARTMENT OF THE ARMY WASHINGTON, D.C., 6 August 1973

Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists PROJECTOR, STILL PICTURE, AP-42A

TM 11-6730-236-12, 17 August 1970, is changed as follows:

1. Title is changed as shown above.

2. Remove and insert pages as indicated in the page list below.

Remove None None C-1 through C-

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

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS General United States Army Official: Chief of Staff

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CHANGE

No. 1

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Active Army		
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MICOM (2)	Fort Huachuca (5)	11-500 (AA-AC, FJ,
ARADCOM (2)	WSMR (1)	FK, FL, RK);
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Svc Colleges (1)	8-650;	57;
USASESS (5)	9-227;	11-226.
USAINTS (3)	9-377;	
USNG: None		
USAR: None		
For explanation of abbreviations used, se	e AR 310-50.	

TECHNICAL MANUAL

NO. 11-6730-236-12

HEADQUARTERS DEPARTMENT OF THE ARMY WASHINGTON, D.C., *17 August 1970*

Operator and Organizational Maintenance Manual Projector, Still Picture AP-42A

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INTRODUCTION

Section I. GENERAL

1-1. Scope

a. General. This manual describes Projector, Still Picture AP-42A (projector set) (fig. 1-1) and covers its installation, operation, and operator's and organizational maintenance. It includes operation under usual and unusual conditions, cleaning and inspection of the equipment, and replacement of parts available to organizational maintenance personnel.

b. Maintenance Allocation Chart. The maintenance allocation chart (MAC) appears in appendix B.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new additions, changes, or additional publications pertaining to the equipment.

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

1-3. Forms and Records

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

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army), NAVSUP Publications 378 (Navy), AFR 71-4 (Air Force), and MCO P4610-5 (Marine Corps).

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 (Army), NAVSUP Pub 459 (Navy), AFM 75-34 (Air Force), and MCO P461019 (Marine Corps).

d. Reporting of Equipment Manual Improvements. Reporting of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-EM, Ft. Monmouth, N.J., 07703.

Section II. DESCRIPTION AND DATA

1-4 Purpose and Use

a. *Purpose*. Projector, Still Picture AP42A is a portable, manually operated photographic device that projects 35-millimeter (mm) single or double frame filmstrips, or 2-by-2 slides.

1-5. Technical Characteristics

Туре
Slides accommodated
Filmstrips accommodated
Illumination

b Use The AP-42A can be used in theaters or any fixed or mobile site. It includes all of the accessories required for operation.

Manual, portable.

2-by-2 inch.

35-millimeter single or double frame.

Special 200-watt, 24-volt, 25-hour combined lamp and reflector assembly provides an equivalent of 1,000 watts (650 lumens light output).

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Figure 1-1. Projector. Still Picture AP-42A.

Focal length of lens	
Filmstrip transport:	
Туре	
Capacity	
Projector housing temperature rise	
Filmstrip temperature rise	
Tilt	

Power supply.....

Power requirements

Items Comprising Projector, Still Picture AP-1-6. 42A.

(fig. 1-1)

The items in the chart below make up an operable Projector, Still Picture AP-42A FSN 6730-450-6742, One copy of TM 11-6730-236-12 is packed with each AP-42A.

	Quant	ity	Weight (in.)	Depth (in.)	Width (in.)	Weight (lb.)
67-450-6742	Projector					
	AP-42A	1	10 5/8	8 1/2	15 7/8	30
6760-494-6678	Case	1	12 1/16	18 3/8	18 1/8	8 1/2

1-7. **Common Names**

The common name assigned to Projector, Still Picture AP-42A is projector set. The main component of the projector set is referred to throughout this manual as projector.

1-8. **Description of Equipment.**

a. Overall Description (fig. 1-1). The projector set includes the projector, its case, the slide carrier, and the filmstrip mechanism. When not in use, the slide carrier is stored within the case, as are the lens tissue, two film cans, a lamp assembly, and three fuses.

b. Projector (fig. 1-2). The components of the projector are mounted on a base which supports the housing and the turret. The housing is readily removed by withdrawing its two housing release screws, providing access to the lamp assembly (fig. 3-1), fan motor, transformer, and electrical wiring. The turret, which can be rotated from its full vertical to a fully horizontal position, accommodates the slide carrier or the filmstrip mechanism.

5 inch.

Roll, manually advanced. 100-foot rolls. 65° F (18° C) 140°F (60° C). Adjustable up to 8° from horizontal. Stepdown autotransformer provides 24 volts for projection lamp.

115 volts, single phase, 60 Hz, 200 watts.

The height of the front of the unit can be adjusted up to 8° above horizontal and secured in the desired position by a tilt locking knob. The front of the turret contains the projection lens which can be adjusted by rotating in or out to obtain proper focusing. A magnifying optical 2-3) at the rear of the turret enables pointer (fig. designating enlarged points of interest on the projected image.

c. Filmstrip Mechanism. Filmstrips are wound on a film spool on top of the filmstrip mechanism. The film is passed through aperture plates and wound on a film takeup spool (fig. 24) underneath the turret. A film advance knob moves the film through the aperture plates by means of sprockets.

A LAMP switch and a FAN switch d. Switches. are located at the rear of the unit (fig. 2-3). The projector lamp operates only when the FAN switch is ON. The fan can operate independently of the lamp. This enables cooling the unit and prevents lamp operation without cooling.

e. Accessories. The spare fuses, spare lamp assembly, slide carrier, two film cans, and a package of lens tissue are stored inside the case.

Additional Equipment Required 1-9.

The following additional equipment is required for proper operation of the projector.

a. Screen. In theaters, use of a permanently installed screen is desirable. For large classrooms, a 6foot ceiling-mounted screen is recommended. For small audiences, use a portable 5- by 5-foot screen. А smooth white surface, such as a wall or sheet, may be used under emergency conditions.

b. Table. A sturdy table approximately 3 feet high is required to support the projector. The dimensions of the tabletop should be at least 1 by 2 feet.



Figure 1-2. Projector.

CHAPTER 2

INSTALLATION AND OPERATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Unpacking

(fig. 2-1)

a. Packaging Data. The projector set is shipped within the case, which is packed in an inner carton, within a protective barrier bag, which in turn is packed in an outer carton. Each carton is sealed with pressuresensitive tape. The size, weight, and volume of the packaged and unpackaged equipment are given below.

	Overall	Dimension	าร (in.)	Volume	Weight
Equipment					
	Height	Depth	Width	(cu ft)	(lb)
Unpackaged	. 12 1/6	18 1/8	9 3/8	1 3/16	38 1/2
Packaged	. 15 1/4	22 1/4	13	2 9/16	41 1/2

b. Unpacking and Checking.

(1) Open the outer corrugated carton.

(2) Open the barrier bag and remove the four upper corner spacers.

(3) Lift out the inner corrugated carton.

(4) Open the inner corrugated carton and remove the case.

(5) Unlatch the top section of the case and remove the projector.

(6) Check within the case top (fig. 2-2) for the two film cans, the lens tissue, the three fuses, and the spare lamp assembly. Check the bottom of the case for the slide carrier. To remove the lamp assembly, withdraw the two screws holding the cushion in place.

(7) Inspect the equipment for damage that may have been incurred during shipment. Report damage in accordance with instructions (para 1-3).

(8) Check to be sure that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against paragraphs 1-6 and 1-8e and figure 1-1.

(9) If the equipment has been used or reconditioned, see whether it has been modified in accordance with current modification work orders (MWO's). Current MWO's applicable to the projector are listed in DA Pam 310-7. If the projector has been modified, the MWO number will appear on or near the nomenclature plate.

2-2. Siting

The projector should be positioned on a level, firm base approximately 36 inches from the floor. To facilitate air circulation, the equipment should be located no less than 6 inches from a wall. Standard projection room conditions should be provided, if possible, to obtain optimum results.

2-3. Installation

The projector may be used as part of a fixed or mobile installation. There are no provisions for permanent mounting.

a. Erect a suitable screen where it can be seen by the entire audience.

b. Place the screen perpendicular to the floor and positioned so that the projector lens can be pointed at the center of the screen.

c. When a matte or beaded screen is used, place the screen so that no person sits closer to it than two and one-half screen widths, nor farther than six screen widths.

d. Arrange the seating facilities in the room so that no person sits outside an angle of 30° from the centerline of the projection.

e. Check the image size and set the projector at the distance from the screen shown in the image chart. The approximate height of the picture is 0.75 x width.

Distance from	Width of picture		
projection lens	Filmetrin	Qlida	
to screen	Filmstrip	Silde	
(1)			
5		10 in.	
6	17in	12in.	
8	25 in	16 in.	
10	29 in	21 in.	
15	43 in	32 in.	
20	57 in	43 in.	
30	86 in	58 in.	
40	9 ft, 7 in	86 in.	
50	12 ft	9 ft	
75	18 ft	13 ft, 6	
		in.	
100	24 ft, 2 in	18 ft, 1	
		in.	
150	35 ft, 10 in.		



Figure 2-1. Packing diagram.

f. The, projector base rests on four rubber bumpers. The unit should be placed on a firm level surface which is high enough so that the light beam will not be blocked by the heads of the audience. Place the projector so that the lens is pointed at the center of the screen. This will prevent distortion of the image. Be sure that the projector is in line with the center of the screen.

g. Determine the voltage and type of electric current available before connecting the projector to the power source. The projector operates on 115volt, 60Hz, single-phase power.



Figure 2-2. Location of components within case.

FAN switch (fig. 2-3) LAMP switch
Film advance knob
Projection lens (fig 2-3) Magnifying optical pointer
Tilt locking knob (fig 1-2)
Slide carrier and filmstrip mechanism locking
screw
screw

2-5. Preliminary Procedures

a. Projector. When in use, clean the projector daily before it is operated.

(1) Dust the outer surface of the projection lens assembly with a camel's-hair brush.

(2) Dampen a lens tissue with liquid lens cleaner and wipe off any dust that cannot be removed with the camel's-hair brush. Use a circular motion to wipe the lens. (3) Dry the lens with a clean, dry lens tissue.

CAUTION

Do not use any cleaning fluid that has not been approved for use on lens. Do not touch the lens with the fingers.

b. Filmstrip Mechanism.

mechanism as follows:

(1) Remove dust from the filmstrip mechanism with a soft camel's-hair brush. Avoid scratching the glass pressure plates.

WARNING

Provide adequate ventilation when using cleaning compound. Prolonged breathing of the fumes is dangerous. Cleaning compound is inflammable; never use it near a flame.

Function

In ON position, energizes fan.

- In ON position, energizes lamp when FAN switch is in ON position.
- Advances film through aperture and onto takeup spool Focuses projected image (rotate lens).
- Enables designating points of interest on projected image.
- Secures front of projector in desired angle of tilt up o 8 from horizontal.
- When loosened, enables removal of slide carrier or filmstrip mechanism. Tightening secures slide carrier or filmstrip mechanism in place.
- When loosened, enables rotating turret 90° to accommodate film on slide format. Tightening secures turret in position.

Frames filmstrip image on screen.

Moves slides into projection position.

When pushed up, allows ejection of last slide in series.

(2) Remove all emulsion or dirt from the filmstrip mechanism with an orange stick or toothpick dipped in cleaning compound.

(3) Remove dirt, dust, or lint from the edge of the aperture opening.

c. Slide Carrier. Remove dust or dirt from the slide carrier in the same manner as described in b above.

2-6. Operation Under Usual Conditions

a. Filmstrip Loading (fig. 2-4). For single frame projection, insert filmstrip mechanism into turret and lock with slide carrier and filmstrip mechanism locking screw (fig. 1-2). Thread filmstrip between aperture plates. Push filmstrip down, maintaining slight pressure downward, and turn film advance knob counterclockwise (toward rear of projector) until film is engaged by sprockets. Continue to turn knob to allow enough film leader to reach film takeup spool. Slip film leader into any one of slots, and film will take up automatically as it is advanced. Place balance of film on spool. Continue to turn knob until image appears on screen. Frame image on screen by moving framing lever up or down. A front and rear aperture plate are furnished. They are inserted with the glass plates facing each other, and the aperture plate with the larger lip at the rear (nearest the projector body) and the aperture plate with the smaller lip at the front (nearest the projection lens) for single frame filmstrip. When projecting double frame strips, lift out both aperture plates from the



Figure 2-3. Controls



Figure 2-4. Filmstrip mechanism

forward channel of the filmstrip mechanism assembly, turn 180°, and reinsert into the rear channel. The large lip should be at the front, the smaller lip at the rear.

b. Slide Loading (fig. 2-5).

(1) Insert slide carrier in turret and tighten slide carrier and filmstrip mechanism locking screw.

(2) Push slide knob to left to move slide into projection position. Slide carrier feeds slides from right to left.

(3) Pull slide knob to right; slide remains in projection position and another slide can be inserted.

(4) As second slide is moved into projection position, previous slide is ejected to left.

(5) To eject last slide, push slide ejector stud in center of carrier to top position, push slide knob to left, and pull slide knob back to right.

(6) Return slide ejector stud to original position.

c. Projector Operation (fig. 2-3).

(1) Set FAN and LAMP switches to ON.2-6 Figure 2-5. Slide carrier.



Figure 2-5. Slide carrier

(2) Focus image by rotating projection lens in or out.

(3) Projector can be tilted by releasing tilt locking knob (fig. 1-2). Adjust front of projector to height desired and tighten tilt locking knob.

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NOTE

Perform following two procedures on filmstrip projector.

(4) Frame (filmstrip) image on screen by moving framing lever up and down (fig. 2-4).

(5) Use magnifying optical pointer on any portion of the film by pushing pointer in any direction (up, down, or sideways).

2-7. Operation Under Unusual Conditions

a. Arctic Areas. Operate in accordance with instructions in paragraph 2-6, taking the following additional precautions:

(1) Use a lint free cloth to remove any water condensation from the projector.

(2) Keep filmstrips and slides from being needlessly exposed to freezing temperatures to prevent crystallization.

b. Tropical and Desert Areas. When the projector is to be used under conditions of extreme heat and humidity, such as desert and tropical regions, operate in accordance with instructions in paragraph 2-6, and observe the following precautions:

(1) Before using the projector in desert regions, use a soft-bristled brush to remove sand or other foreign matter from all surfaces. Dust the equipment carefully before loading filmstrip or slides.

(2) In climates of high humidity, such as the tropics, inspect the projector daily for traces of fungus, mold, mites, and metallic corrosion. Remove all fouling immediately.

CHAPTER 3

OPERATOR MAINTENANCE

3-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the projector are listed below together with a reference to the paragraphs covering the specific maintenance function. The duties assigned do not require any special tools or test equipment.

a. Daily preventive maintenance checks and services (para 3-5).

b. Weekly preventive maintenance checks and services (para 3-6).

- c. Cleaning (para 3-7).
- d. Troubleshooting (para 3-8).
- e. Repairs (para 3-9).

3-2. Materials Required for Operator's Maintenance

a. The maintenance allocation chart (MAC) (app B) lists the maintenance functions authorized for operator's maintenance.

b. The following materials are required for operator's maintenance: (1) Cleaning compound.

WARNING

Prolonged breathing of cleaning compound is dangerous. Make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands.

- (3) Hand blower (air syringe).
- (4) Lens tissue.
- (5) Lens cleaner.

3-3. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 3-5 through 3-9 cover routine systematic care and cleaning essential to proper upkeep and operation of the projector.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (paras 3-5 and 3-6) outline functions to be performed at specific intervals. These checks and services are to maintain the equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the chart indicates what to check, how to check, and what the normal The References column lists the conditions are. paragraphs that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, the equipment should be referred to the appropriate maintenance facility. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

3-4. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the projector are required on a daily and weekly basis.

a. Paragraph 3-5 specifies checks and services that must be accomplished daily and under special conditions listed below:

(1) When the projector is initially set up for operation.

(2) At least once each week if the projector is maintained in standby (ready for immediate use) condition.

b. Paragraph 3-6 specifies checks and services that must be performed weekly. If the equipment is being maintained in a standby condition, the daily and weekly procedures should be accomplished at the same time.

3-5. Operator Daily Preventive Maintenance Checks and Services Chart

Sequence No.	ltem	Procedure	Reference
1	Exterior surfaces	Remove dust and dirt from all exterior surfaces of	Para 3-7.
		Projector.	
2	Controls	a. Check FAN and LAMP switches for positive action.	Para 2-6.

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Sequence No.	ltem	Procedure	Reference
		 b. Loosen turret locking screw (fig. 1-2) and rota turret to be sure of ease of movement. c. Loosen tilt locking knob (fig. 1-2) and lift front projector to be sure that tilting device operations smoothly. 	of es
3	Projection lamp	Inspect projection lamp. If filament is broken, or lam is blackened, replace lamp.	o Para 3-9 <i>a</i> .
4	Operation	Operate projector to be sure all operations are as designed, without fault.	Paras 2-6.

3-6. Operators Weekly Preventive Maintenance Checks and Services Chart.

Seque No.	ence Item		Proced	Procedure						
1 2	Lens Filmstrip mechanism	LensClean lens Filmstrip mechanismCheck filn actior diffici			ns. Imstrip mechanism (fig. 2-4) for positive on. If it is bent or broken, or if operation is cult, refer to higher category of maintenance for air					
3	Slide carrier		Check slide carrier (fig. 2- bent or broken, or if to higher category o	slide carrier (fig. 2-5) for positive action. If it is Para 2-7 <i>k</i> nt or broken, or if operation is difficult, refer higher category of maintenance for repair.						
3-7.	Cleaning WARNING Prolonged breathing of c compound is dangerous. certain that adequate ventil provided. Cleaning compo flammable; do not use near Avoid contact with the skin; v any that spills on your hands.	leaning Make ation is ound is a flame. vash off	cleaning com useful in forcir b. and lens tissue c. with a lint free d. switches and dust and dirt f all lint is remo	pound. A ng dust out o <i>Lens.</i> Clea e. <i>Heat Filter.</i> cloth. <i>Switches a</i> controls with from expose ved.	hand blower (air f tight crevices. an the lens with lo Clean heat filter and Controls. a lint free cloth. d operating parts.	syringe) is ens cleaner in housing Clean the Remove all Insure that				
3-8. (Operator Troubleshooting Chart									
ltem No.	Trouble symptom	Pro	obable trouble		Check and corr measures	ective				
1	Fan inoperative with FAN	a. Projecto swit repl	or not connected to tch set to ON. ace defective fuse.	a.	Connect projector to source of power	power; ; blown fuse.				
		D. Delectiv	E FAIN SWITCH OF 1811.	D.	of maintenance.	er category				
2	Lamp inoperative with FAN and LAMP switches set to ON.	a. Defectiv blov	e lamp assembly; wn fuse.	a.	Replace lamp assen place defective	nbly; re- fuse.				

b. Refer trouble to higher category of maintenance.

b. Defective LAMP switch or

transformer.

3-9. Repairs

Operator repair of malfunction is limited to replacement of easily accessible parts.

a. Lamp Assembly. The lamp assembly is prefocused and does not require any adjustment after replacement. The lamp assembly consists of a lamp and a reflector which form an integral unit.

Replace the lamp assembly as follows:

(1) Remove two housing release screws and remove housing (fig. 1-2).

(2) Disconnect plug from lamp assembly (fig. 3-1).

(3) Loosen spring clips and remove lamp assembly.

(4) Insert new lamp assembly in position and secure with spring clips.

(5) Attach plug.

(6) Replace housing and secure with two housing release screws.

b. Projection Lens. The projection lens (fig. 1-2) is removed by unscrewing it from front of turret (approx 3 1/2 inches). The new projection lens is inserted by screwing it into front of turret.



Figure 3-1. Lamp assembly installation.

ORGANIZATIONAL MAINTENANCE

4-1. Scope

Section I. GENERAL

a. This chapter contains instructions covering organizational maintenance of Projector, Still Picture AP-42A. It includes instructions for performing preventive and periodic maintenance services, general functioning, and repair procedures to be accomplished by the organizational repairman. The maintenance allocation chart (MAC) is provided in appendix B.

b. Organizational maintenance of the projector includes

(1) Preventive maintenance (para 4-3).

(2) Troubleshooting (paras 4-8 and 4-9).

(3) Repairs, adjustments, and replacement of parts (paras 4-10 and 4-11).

4-2. Tools and Materials Required for Organizational Maintenance

The tools and materials required for organizational maintenance are listed below.

a. Tools. All the tools required for maintenance are contained in Toolkit, Photographic Repairman TK-77/GF.

b. Materials.

(1) Cleaning compound.

(2) Lint free cloth.

(3) Camel's-hair brush.

4-3. Organizational Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive

maintenance is the responsibility of all categories of maintenance concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and test indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services on the projector performed at the organizational level are made at monthly and quarterly intervals, unless otherwise directed by the commanding officer.

b. The maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750.

4-4. Organizational Monthly Maintenance

Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (para 4-5) 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 must have monthly preventive maintenance. Equipment in limited storage (required service before operation) does not require monthly maintenance.

4-5. Organizational Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	ltem	Procedure	Reference
1	Knobs, dials and switches	While making operating checks, observe that mechanical cal action of each control and switch is smooth and free of external and internal binding.	Para 2-6.
2	Projector lens	Check for scratches.	Para 3-7.

4-6. Organizational Quarterly Maintenance

Quarterly preventive maintenance checks and services on the projector are required every 3 months. All deficiencies or shortcomings will be recorded in accordance with the requirements of TM 38750. Perform all the checks and services listed in the quarterly preventive maintenance checks and services chart (para 4-7) in the sequence listed.

chart. If the corrective measures indicated do not result in correction of the trouble, refer the equipment to a

higher category of maintenance.

4-7. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Sequence			
No.	Item	Procedure	Reference
1	Installation	Check to see that projector is properly located and positioned.	Para 2-3.
2	Mountings	Check for missing bumpers on bottom of unit.	Para 4-11.
3	Connections	Check to be sure that- a. Electrical plug is clean, intact, and not loose fitting. b. Power cable is properly mounted and protected.	Para 3-7.
4	Spare parts	Check to see that all spare parts are in good condition and properly stored. There should be no evidence of overstock, and all shortages must be on valid requisitions.	Fig. 2-2.
5	Projection function a	 a. Load a filmstrip or slide and project image. b. Projected image should be a good facsimile with no blurs or distortions (consistent with quality of film or slide) and fan motor should operate. 	Para 2-6.
6.	Publicationsa	 Check to see that all publications are complete, serviceable, and current. 	DA Pam 310-4
	t	 Check DA Pam 310-7 to determine if new applicable have been published. All URGENT MWOs and TM 38-750. must be applied immediately. All NORMAL MWOs must be scheduled. 	DA Pam 310-7

Section II. TROUBLESHOOTING

4-8. General Troubleshooting Information

The paragraph references in the troubleshooting chart include procedures too lengthy to be included in the

4-9. Troubleshooting Chart

ltem No.	Trouble symptom		Probable trouble		Check and corrective measures
1	Fan inoperative	a.	Blown fuse.	a.	Replace fuse.
		b.	Defective FAN switch or fan motor.	b.	Refer trouble to higher category of maintenance.
2	Lamp inoperative	а.	Blown fuse.	а.	Replace fuse.
		b.	Defective lamp assembly	b.	Replace lamp assembly (para 3-9 <i>a</i>).
		С.	Defective LAMP switch or transformer.	С.	Refer trouble to higher category of maintenance.
3	Projected image is not a good facsimile of film or slide.	а.	Damaged projector lens	a.	Replace projector lens (para 3-9 <i>b</i>).
		b.	Defective lamp assembly	b.	Replace lamp assembly (para 3-9 <i>a</i>).

4-10. Repairs and Adjustments

If repairs or adjustments are indicated for any of the movable, electrical, or optical parts, reference should be made to a higher maintenance category.

4-11. Replacement of Parts

Replacement of parts by the using organization is limited to the lamp assembly (para 3-9a); the projection lens (para 3-9b); the two fuses (fig. 2-3); and the rubber

bumpers, removable simply by turning the projector on its side and withdrawing the screw from the center of each bumper.

4-12. Repainting and Refinishing Instructions

If inspection of the projector indicates that a painted surface is chipped, cracked or peeling, repaint or refinish in accordance with the instructions in TB 746-10. Use paints or finished listed in SB 11-573.

CHAPTER 5

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

5-1. Preliminary Procedures

- a. Shutting Down Electrical Power.
 - (1) Set both switches to the OFF position.

(2) Disconnect the projector power cable from the source of power.

b. Securing Equipment. Secure the equipment as follows:

(1) Store the power cable.

(2) Screw the projector lens all the way into the turret.

(3) Secure projector in carrying case.

5-2. Shipment

The projector may be shipped in the wooden carrying case. Additional protective packing, such as a corrugated box, may be employed to prevent damaging the unit during shipment.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

5-3. Authority for Demolition

Demolition of the projector will be accomplished only upon the order of the commander. Use the destruction procedures outlined in paragraph 5-4 to prevent further use of the equipment.

5-4. Methods of Destruction

a. General. If complete destruction of the projector cannot be accomplished in the time available, destroy the following components in the order given:

- (1) Projector lens.
- (2) Lamp assembly.
- b. Methods. Use any of the following methods: .

(1) Smash. Smash the optical parts, switches and electrical connectors; use sledges, axes, handaxes, packaxes, hammers, or crowbars.

- (2) Cut. Cut cords, cables, and wiring; use axes, handaxes, or machetes.
- (3) *Bend.* Bend the chassis.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

(4) *Burn.* Burn cords, cables, technical manuals, and films; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

- (5) Explode. If explosives are necessary, use firearms, grenades, or TNT.
- (6) *Dispose*. Burn or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

APPENDIX A

REFERENCES

DA Pam 310-4 I	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 11-401	Elements of Signal Photography.
SB 11-573	Painting and Preservation Supplies Available for Field Use of Electronics Command Equipment.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 740-90-1	Administrative Storage of Equipment.

A-1

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Projector, Still Picture AP-42A. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

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

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

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

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

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

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

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

B-3. Explanation of Format

a. 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, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies, and modules on which maintenance is authorized.

B-1

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

Code	Maintenance category
C	Operator/crew
0	Organizational maintenance
F	Direct support maintenance
Н	General support maintenance
D	Depot maintenance

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

e. Column 5, Remarks. Self-explanatory.

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

The columns in table I are as follows:

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

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

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

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

e. Tool Number. Not used.

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	0	MULTIMETER, AN/URM-105	6625-581-2036	
2	0	TOOL KIT, PHOTOGRAPHIC REPAIRMAN TK-77/GF	5180-752-9068	
3	F, H, D	MULTIMETER, TS-352/B	6625-242-5023	
4	F, H, D	TOOL KIT, PHOTOGRAPHIC REPAIR TK-109/F	5180-856-9653	

TABLE I. TOOLS AND TEST EQUIPMENT REQUIREMENTS

MAINTENANCE ALLOCATION CHART														
group Number	COMPONENT ASSEMBLY	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	TOOLS AND EQUIPMENT	REMARKS
1	PROJECTOR, STILL PICTURE AP-42A	0	0 F	0						F H	D	D	1, 2 3, 4 3, 4 3, 4 3, 4	
1A1	TURRET ASSEMBLY	0			F				F	0 F H D			2 4 4 4	Replacement of Projection Lens.
1A1A1	PROJECTION LENS	0							0				2	
A2	FILM STRIP MECHANISM ASSEMBLY	0	0						F	н	D		2 4 4	4
1A3	LAMP ASSEMBLY	0	0 F						C 0	F H D	D		1, 2 3, 4 3, 4 3, 4 3, 4	Replace lamp, fuses, etc. Replace line cord, etc.
1A3A1	FAN MOTOR		F							F			3, 4	
1A4	BASE	0							н	D	D		2 4 4	
1A4A1	RUBBER BUMPERS	0							0				2	

ТΜ

APPENDIX C ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

Code

C-1. Scope

This appendix lists repair parts required for the performance of organizational maintenance of the AP42A. This appendix is current as of 5 March 1973.

C-2. General

This repair parts list is divided into the following sections:

a. Repair Parts List-Section II. A list of repair parts authorized at the organizational level for the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts.

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

c. Federal Stock Number and Reference Number Index-Section IV. Not applicable.

C-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

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

(1) Source code. This code indicates the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are: *Code* Explanation

PA Item procured and stocked for anticipated or known usage.

- PB Item procured and stocked for insurance purposes because essentiality dictates that a minimum quantity be available in the supply systems.
- PC Item procured and stocked and which otherwise would be coded PA, except that it is deteriorative in nature.
- PD Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replenishment.
- PE Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
- PF Support equipment which will not be stocked but which will be centrally procured on demand.
- PG Items procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which because of probable discontinuance or shutdown of production facilities would prove uneconomical to reproduce at a later time.
- KD Item of a depot overhaul/repair kit and not purchased' separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
- KF An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that

Explanation

- provides an item that can be replaced at organizational, direct support, or Code Explanation general support levels of maintenance.
- KB Item included in both a depot overhaul/repair kit and a maintenance kit.
- MO Item to be manufactured or fabricated at the organizational level.
- MF Item to be manufactured or fabricated at the direct support maintenance level.
- MH Item to be manufactured or fabricated at the general support maintenance level.
- MD Item to be manufactured or fabricated at the depot maintenance level.
- AO Item to be assembled at the organizational level.
- AF Item to be assembled at the direct support maintenance level.
- AH Item to be assembled at the general support maintenance level.
- AD Item to be assembled at the depot maintenance level.
- 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 it is not available through salvage requisition it.
- XC Installation drawing, diagram instruction sheet, or field service drawing that is identified by a manufacturers' part number.
- XD Support items listed in this RPSTL-TM assigned maintenance and recoverability codes and no source codes can be requisitioned with justification.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded XB and aircraft support items as restricted by AR 70042.

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

Code Application/Explanation O Support item is removed, replaced, used at the organizational level of maintenance.

TM 11-6730-236-12

NOTE

A code "C" may be used in this position to denote crew or operator maintenance performed within organizational maintenance.

Code Application/Explanation

- F Support item is removed, replaced, and used at the direct support maintenance level.
- H Support item is removed, replaced, and used at the general support maintenance.
- D Support items that are removed, replaced, and used at depot level only.

(b) Repair (fourth position). 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). When a maintenance code is not used, a dash (-) sign is entered. For multi-service equipment/systems, or when a code is entered, this position will contain one of the following maintenance codes as assigned by the service(s) that require the code:

Code Application/Explanation

- O The lowest maintenance level capable of complete repair of the support item is the organizational level.
- F The lowest maintenance level capable of complete repair of the support item is the direct support level.
- H The lowest maintenance level capable of complete repair of the support item is the general support level.
- D The lowest maintenance level capable of complete repair of the support item is the depot level.
- L Repair restricted to a designated specialized repair activity.
- Z Nonrepairable; no repair is authorized.
- B No repair is authorized. The item may be reconditioned by adjusting, lubricating; etc., at the user level. No parts or special tools are procured by the maintenance of this item.

(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:

Code

Explanation

- Z Nonrepairable item. When unserviceable, condemn it and dispose of it at the level indicated in the first digit of the maintenance code.
- O Repairable item. When uneconomically repairable, condemn it and dispose of it at organizational level.
- F Repairable item. When uneconomically repairable, condemn it and dispose of it at the direct support level.
- H Repairable item. When uneconomically repairable, condemn it and dispose of it at the general support level.
- D Repairable item. When beyond lower level repair capability, return it to depot. Condemnation and disposal are not authorized below depot level.

- L Repairable item. Repair, condemnation, and disposal are not authorized below depot/specialized repair activity level.
- A Item requires special handling or condemnation procedures because of specific reason(i.e., precious metal content, high dollar value, critical material or hazardous material).

b. Federal Stock Number. This column indicates the Federal stock number assigned to the item which will be used for requisitioning purposes.

c. Description. This column indicates the Federal item name and a minimum description required to identify the item. The last line indicates the reference number followed by the applicable Federal supply code for manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designate the manufacturer, distributor, or government agency, etc., and is identified in SB 708-42.

*d Unit of Measure (U/M)*This column indicates the standard or basic quantity by which the listed item is 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 unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

e. Quantity Incorporated in Unit. This column indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for an assembly.

f. 15-Day Organizational Maintenance Allowances.

(1) The repair parts indicated by an asterisk in the allowance columns represent those authorized for use at the organizational category and will be requisitioned on an as-required basis until stockage is based on demand in accordance with AR 710.2

(2) Major Army commanders are authorized to approve reduction in range of support items authorized for use in units within their commands. Recommendation for increase in range of items authorized for use will be forwarded to: Commander, US Army Electronics Command, ATTN: AMSEL-MA-S, Fort Monmouth, NJ 07703. Any changes approved will be reflected in a revision to the RPSTL.

g. Illustration. This column is divided as follows:

(1) Figure number. This column indicates the figure number of the illustration on which the item is shown.

(2) Item number. Not applicable.

C-4. Special Information Not applicable.

C-5. Location of Repair Parts

This appendix does not contain any cross-reference indexes. To locate a repair part, scrutinize column 3 of the repair parts list (sect. II).

C-6. Abbreviations

Not applicable.

Change 1 C-2

0				
Section II.	<u>. REPAIR PARTS</u>	<u>S FOR ORGAN</u>	<u>NIZATION MAIN</u>	<u>II ENANCE</u>

(1)	(2)			(4)	(5)	15-DA	(6) 15-DAY ORGANIZATIONAL			(7) ILLUS-	
SMR CODE	FEDERAL STOCK NUMBER	DESCRIPTION	аF	UNIT OF MEAS	QTY INC	M/ (A)			ALW (D)		ATION (B)
		REF NUMBER & MFR CODE COL	I DE		UNIT	1-5	6-20	21-50	51-100	FIG. NO.	ITEM NO.
	6730-450-6742	PROJECTOR, STILL PICTURE AP-42A (THIS ITEM IS NONEXPENDABLE)								1-1	
XA0FD		PROJECTOR ASSEMBLY G3130-01 (82394)		EA	1					1-2	
PA0ZZ	6730-167-1133	LENS PROJECTION 30-0002-05 (82394)		EA	1	*	*	*	*	1-2	
PA0ZZ	6240-194-4825	LAMP, INCANDESCENT, PROJECTION 31-1012-00 (82394)'		EA	1	*	*	*	*	3-1	
PA0ZZ	5305-054-6654	SCREW, MACHINE MS51957-30 (96906)		EA	2	*	*	*	*	1-2	
PA0ZZ	5310-209-1366	WASHER, LOCK MS35335-58 (96906)		EA	2	*	*	*	*	1-2	
XD0ZZ		BUMPER, ELEVATION, LEG 67-3402-00 (82394)		EA	2					1-2	
PA0ZZ	5305-054-6659	SCREW, MACHINE MS51957-35 (96906)		EA	2	*	*	*	*	2-3	
XD0ZZ		BUMPER, REAR 67-3420-00 (82394)		EA	2					2-3	
PA0ZZ	5920-284-6787	FUSE, 5 AMP, SPARE 312005 (75915)		EA	2	*	*	*	*	2-3	
PA0FF	6730-402-2229	FILM STRIP MECHANISM ASSEMBLY A555 (82394)		EA	1	*	*	*	*	2-4	
PA0ZZ	6730-100-4283	HOLDER APERTURE PLATE ASSEMBLY 90-0326 (82394)		EA	1	*	*	*	*	2-4	
PA0ZZ	6730-117-0803	HOLDER APERTURE PLATE ASSEMBLY 90-0325 (82394)		EA	1	*	*	*	*	2-4	
PA0ZZ	6730-177-0795	MASK, SINGLE FRAME 20-0529-02		EA	1	*	*	*	*		
XDOFF		CASE, PHOTOGRAPHIC EQUIPMENT 90-0881-00 (82394)		EA	1					1-1	
PA0ZZ	6760-494-6679	CAN, PHOTOGRAPHIC STORAGE 67-5109-00 (82394)		EA	2	*	*	*	*	1-1	
PA0ZZ	5920-284-6787	FUSE, 5 AMP, SPARE 312005 (75915)		EA	3	*	*	*	*	1-1	
PA0ZZ	6640-393-2090	TISSUE, LENS SM339107 (80063)		EA	1	*	*	*	*	1-1	
PA0ZZ	6240-194-4825	LAMP, INCANDESCENT, PROJECTION 31-1012-00 (82394)		EA	1	*	*	*	*	2-2	
PA0ZZ	6730-402-2230	SLIDE, CARRIER ASSEMBLY A550 (82394)		EA	1	*	*	*	*	2-5	
XD0FF		CASE ASSEMBLY 90-0881-01 (82394)		EA	1					2-2	

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

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