TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS UST

CAMERA SET,

STILL PICTURE

KS-19A4 AND KS-19B

This copy is a reprint which includes current pages from Changes 1 and 2. The title was changed by C 1 to read as shown above.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JANUARY 1970

TECHNICAL MANUAL
NO. 11-6720-248-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *22 January 1970*

Operator's and Organizational Maintenance Manual
Including
Repair Parts and Special Tools Lists

CAMERA SET, STILL PICTURE KS-19A4 AND KS-19B

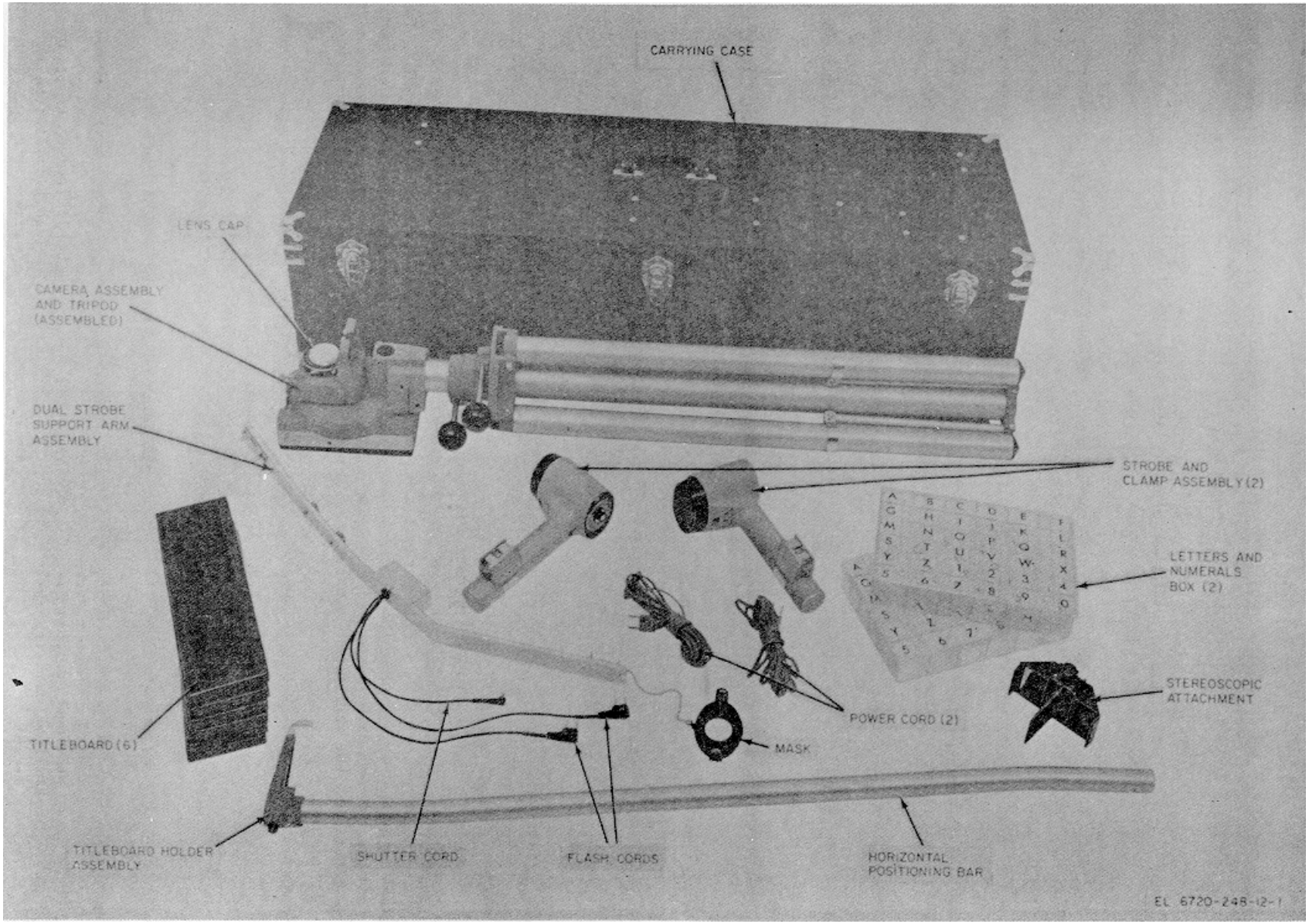


Figure 1-1. Camera Set, Still Picture KS-19Aa4.

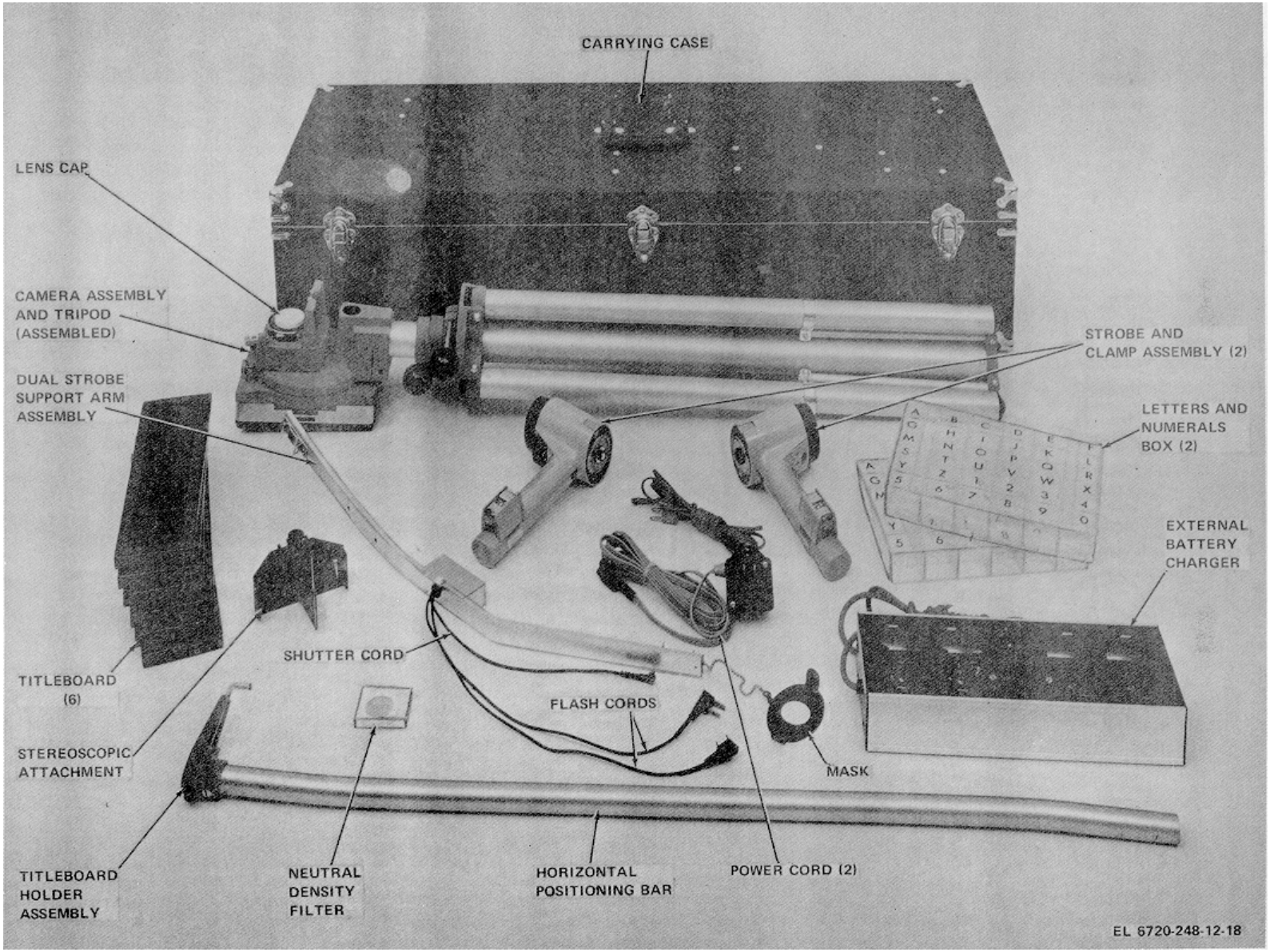


Figure 1-1.1. Camera Set, Still Picture KS-19B.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Camera Sets, Still Picture KS19A4 and KS19B (camera set) (fig. 1-1 and 1-1.1) and covers their installation, operation, and operator and organizational maintenance. It includes information on operation under usual and unusual conditions, cleaning and inspection of the equipment, minor adjustments, and replacement of parts available to operator and organizational categories of maintenance.

b. The maintenance allocation chart (MAC) appears in appendix C and organizational repair parts appears in appendix D.

NOTE

Appendixes C and D are current as of 8 September 1969.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 3104 to determine whether there are nets editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 3107 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. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38750.

b. Report oft Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 70058 (Army)/NAVSUP PUB 378 (Navy)/AFR 714 (Air Force)/and MCO P4030.29 (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 5538 (Army)/NAVSUP PUB 459 (Navy)/AFM 7534 (Air Force)/and MCO P4610.19 (Marine Corps).

1-3.1. Reporting of Equipment Publication Improvements

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

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Purpose. The camera set is a self-contained, tripod-mounted camera set. The camera set is used to make permanent identification photographs.

b. Use. The camera set is used indoors or under sheltered field conditions to make and process, on the spot, black-and-white or color photographs. The camera can be used under extreme lighting conditions.

1-5. Technical Characteristics

Camera	Still picture, identification with stereoscopic attachment, Polaroid photo-processing; tripod-mounted.
Shutter:	
Type	Between-the-lens, self-setting, 6 blades.
Speeds (in seconds)	1/30, 1/60, 1/125, bulb, time (indicated as 30, 60, 125, B, T).
Synchronization	Zero delay for electronic flash illumination.
Iris diaphragm apertures	f/4.5, 5.6, 8, 11, 16, and 22
Lens:	
Type	Wide angle, fixed focus, f4.5, 90 millimeter (3-1/2 inch) triplet (three element), color-corrected; all lens elements have antireflection coatings.
Angular fields of view	Horizontal: 49.5° Vertical: 61.9° Diagonal: 74.2°
Density filter:	
Type	Lens, 1.67 density. 46.77 opacity equivalent to 5.25 f stops of light reduction.
Film:	
Type	Polaroid Film Pack type 107 or 108.

Emulsion speed	Type 107 (black-and-white): ASA 3000 daylight. ASA 2300 tungsten	Light output	190 lumen-seconds per square foot (95 for each lamp)
	Type 108 (color): ASA 75 daylight. ASA 40 tungsten.	Filter	Density (0.92), opacity (8.32) equivalent to 3 f stops of light reduction.
Flash illumination:		Power source	Ac operation: 105 to 129 vac, 50 to 60 Hz, single phase, grounded.
Type	Electronic, repeating		
Flash duration	1/1,000 of a second		Battery operation: Four sub-C size nickel cadmium rechargeable cells.
Recharge time	15 seconds maximum for full charge.		
Power output	100 watt-seconds (50 for each lamp).		

1-6. Components and Dimensions

a. Components. The components of the camera set are listed below and in paragraph 16.1.

b. Dimensions Major Components,.

	Dimensions (in.)			
Item	*Height*	*Width*	*Depth*	*Weight*
Camera assembly and tripod	8	8	42	17.5 lb
Lens cap		1 5/8	1/4	0.25 oz
Stereoscopic attachment	4	3	4 1/2	4 oz
Strobe and clamp assembly	4	4 1/2	9 1/2	1.75 lb
Strobe and clamp assembly (Model 700)	3 3/4	4 1/2	9 1/2	1.6 lbs.
Battery charger	3 1/8	4 5/8	13	3 3 lbs.
Spare battery trays (4)	21/8	39/16	17/8	9 oz.
Dual strobe support arm assembly	5	4 1/2	25	1 lb
Power cord				3oz
Titleboard	31/2	12	5/8	6 oz
Horizontal positioning bar	5 1/2	1 1/2	39 1/2	14 oz
Letters and numerals box containing:	1 3/4	10	71/4	1.5 lb
10 each of letter E and L				
9 each of letter T				
6 each of letters A, C, D, F, G, I. M, N, O, R, and S.				
5 each of letters H, J, and P				
5 each of numeral				
4 each of letters B, K, and W				
3 each of letters Q, U, V, and Y				
2 each of letters X and Z				
Carrying case	10 7/8	13 7/8	42 7/8	25 lb

1-6.1. Items Comprising an Operable Equipment

FSN	Qty	Nomenclature, part No. and mfr code	Usable on code	Fig No.
		NOTE		
		The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency; etc.		
		NOTE		
		Number 1 in the usable on code column refers to items comprising an operable Camera Set Still Picture KS-19A4 Number 2 in the usable-on code column refers to items comprising an operable Camera Set Still Picture KS-19B.		
6720-144-6812		Camera Set, Still Picture KS-19A4;	1-1	
6720-192-9569		Camera Set, Still Picture KS-19B;	1-1	
		consisting of:		
	1	Arm Assembly Support: 588-218; 99176	1,2	1-1
6760-983-3978	1	Bar Assembly Horizontal: 588-004; 99176	1,2	1-1
6760-983-3980	6	Board Title: 588-144, 99176	1,2	1-1
6760-887-8615	2	Cable Assembly Power Electrical: 588-177; 17479	1,2	1-1

FSN	Qty	Nomenclature, part No. and mfr code	Usable on code	Fig No.
		Cable Assembly Power Electrical: 588-191; 27321	1	1-1.1
	1	Camera Still Picture: 588-291-1, 99176	1,2	1-1
	2	Electronic Flash: 588-198; 99176	1,2	1-1
	2	Electronic Flash: 588-036	1	1-1.1
6720-981-8690	1	Stereoscope Dual Image: 001-095; 99176	1,2	1-1
6760-981-8692	2	Title Board Set: 001-141; 99176	1,2	1-1
	1	Tripod: 588-115; 99176	1,2	1-1
		Charger Assembly, Battery, External: 588-034; 99176	1	

1-7. Description of Camera Set

(Fig. 1-1 and 1-1.1.)

a. Overall Description. The camera set consists of a camera assembly and tripod, a stereoscopic attachment, a dual strobe support arm assembly, two strobe and clamp assemblies, two power cords, a horizontal positioning bar, six titleboards, two boxes containing letters and numerals, and a carrying case. A lens cap and a neutral density filter are included with the camera assembly. An external battery charger and four spare battery trays are provided with those camera sets that include Model 700 strobe units. The battery charger may also be used with Model 600 strobe units. All components are packed in the carrying case.

b. Camera Assembly (fig. 1-2). The camera assembly consists of a Polaroid camera back and a camera housing which is attached to the tripod and supports the optical components. The camera assembly is equipped with a stereoscopic attachment that produces a pair of identical pictures on one-half of the film frame each time the film is exposed. The Polaroid camera back can be rotated 1800 with respect to the camera body to allow two pair of pictures per full frame of film.

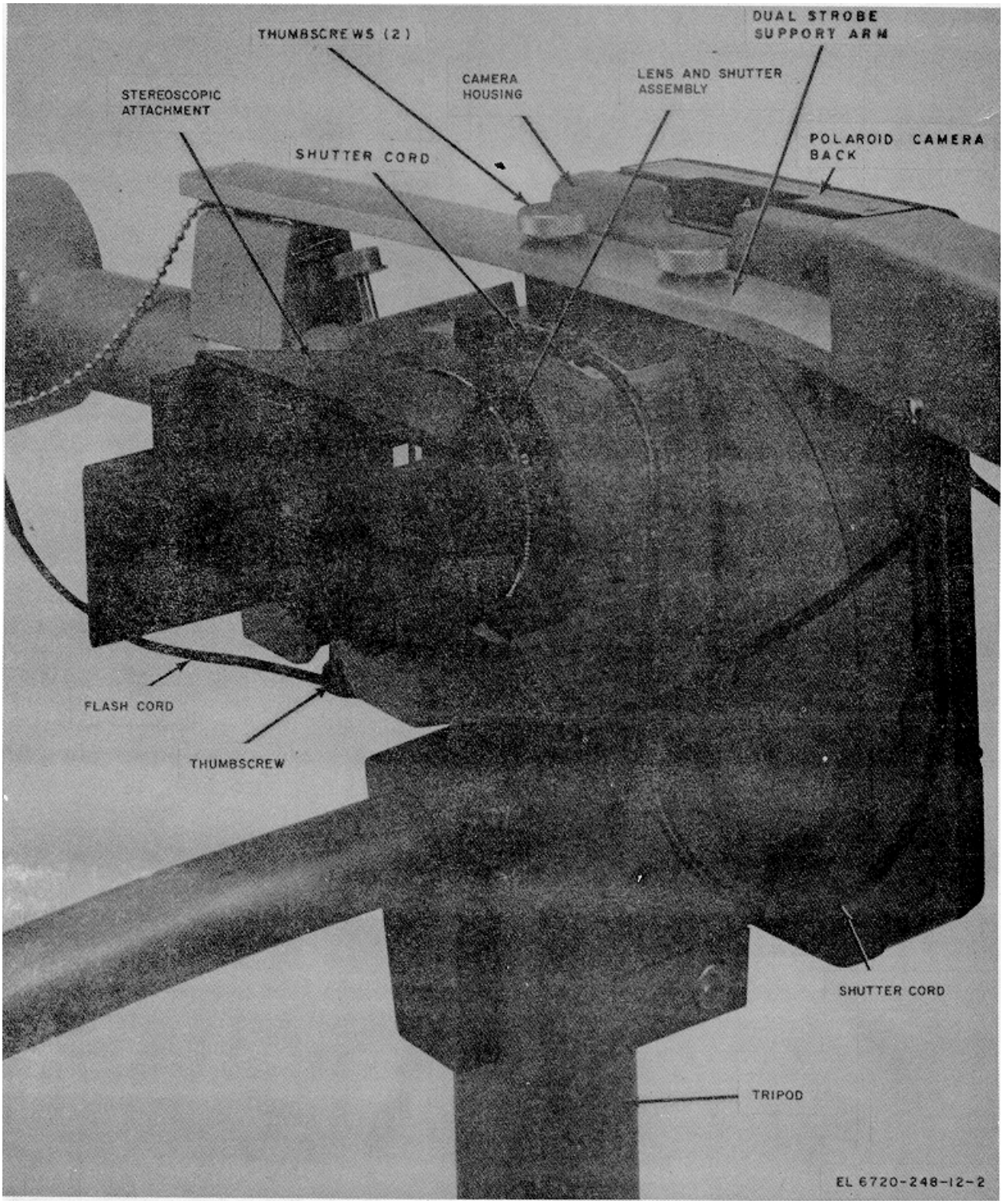


Figure 1-2. Camera assembly, front view.

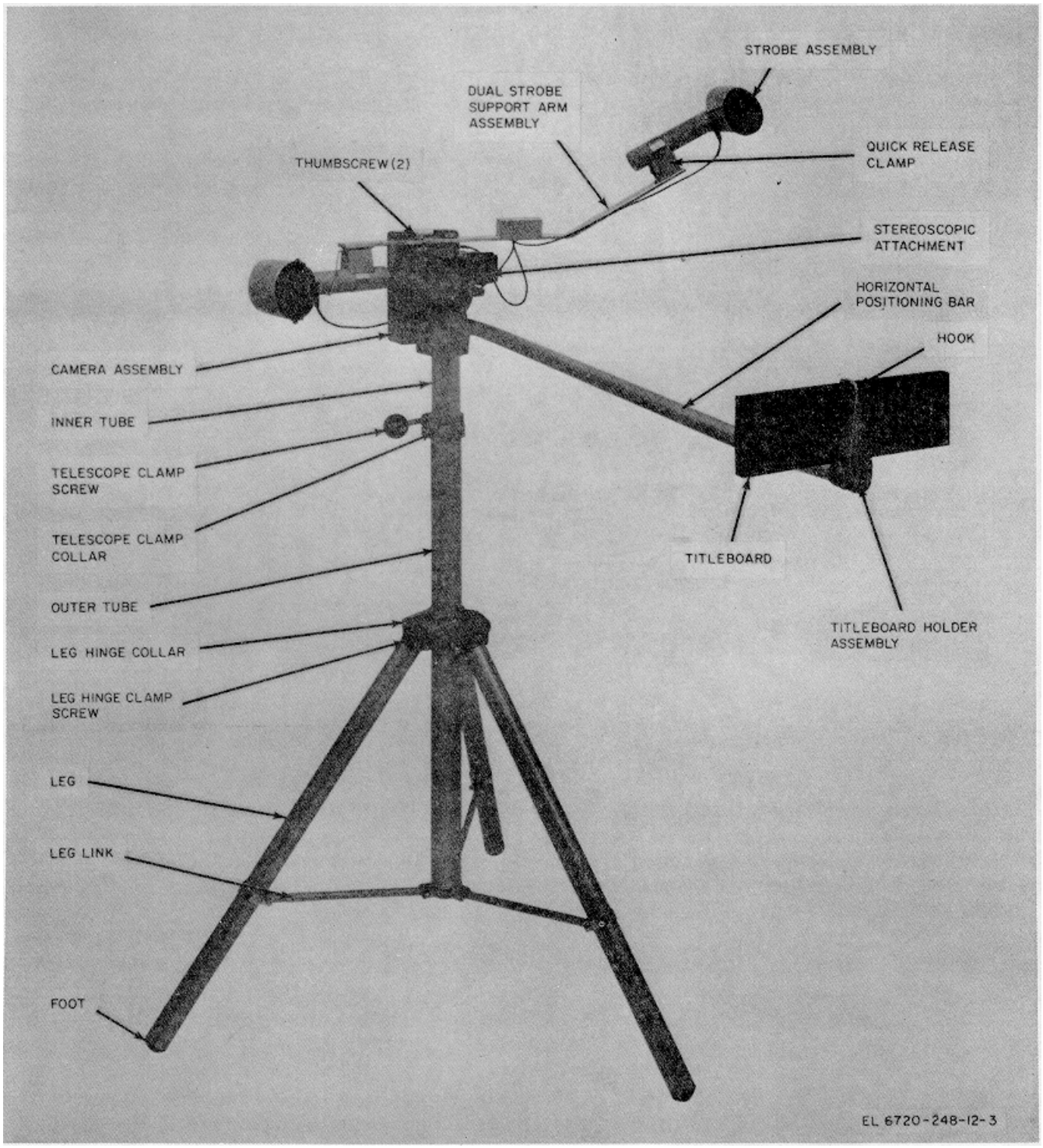


Figure 1-3. Camera set, assembled for use.

c. Tripod (fig. 1-3). The tripod assembly consists of three legs, an outer tube, an inner tube, a counterbalance assembly, and associated hardware. The three legs are connected to the lower end of the outer tube by three leg links, and to a selected position on the outer tube by the leg hinge collar and the leg hinge clamp screw. The three leg links hold the legs equidistant from the outer tube as the leg hinge collar is positioned on the outer tube. The inner tube fits inside the outer tube and is spring-loaded by the counterbalance assembly. The spring pressure of the counterbalance assembly compensates for the weight of the camera assembly, the horizontal positioning bar, the dual strobe support arm assembly, and the strobe and clamp assemblies. The inner tube is held at a selected height in the outer tube by the telescope clamp collar and the telescope clamp screw.

d. Dual Strobe Support Arm Assembly. The dual strobe support arm assembly consists of a support arm, two quick-release clips, a junction box, and two captive thumbscrews. The two captive thumbscrews are used to attach the support arm to the camera assembly. The quick-release clips are provided for attaching the strobe and clamp assemblies to the support arm. The junction box contains a battery and triggering circuit which is used to isolate the strobe assemblies and reduce current through the shutter switch during operation of the strobe assemblies. A shutter cord and two flash cords are used to connect the lens and shutter assembly to the strobe assemblies.

e. Strobe and Clamp Assembly. Each strobe and clamp assembly consists of a quick-release clamp, for attaching the strobe assembly to the dual strobe support arm assembly, and a strobe assembly. The strobe assembly is an electronic flash unit which consists of a power supply, a light source, four sub-C Ni-Cad batteries, and a battery-charging circuit contained in a single housing. Portable power is supplied by the four removable sub-C Ni-Cad rechargeable batteries mounted in a battery tray which is held in the housing by two plastic clips. A power cord is furnished for alternating current (ac) operation and recharging the batteries.

f. Horizontal Positioning Bar and Titleboards. The horizontal positioning bar consists of the titleboard tube and the titleboard holder assembly. The titleboard holder assembly is fastened to one end of the titleboard tube and holds a titleboard. The opposite end of the titleboard tube contains a contractor assembly which joins to a mating connector in the camera housing and secures the horizontal positioning bar to the camera assembly. The front of each titleboard is grooved, and the tabs on the letters and numerals are inserted into these grooves to supply information to be photographed with the subject.

g. External Battery Charger. The external battery charger provided with camera sets that include Model 700 strobe units. consists of a chassis, and associated circuitry for recharging battery ray assembles. Battery charger operates independently from the camera set, therefor as many as Sour spare battery tray assemblies may be charged simultaneously while the camera set is in operation. Battery trays are inserted and the self contained timer controls the ac OOFF function for up to 16 hours.

CHAPTER 2
INSTALLATION

2-1. Unpacking

a. Packaging and Packing Data. The components of the camera set are packaged in the carrying case. The carrying case is then cushioned at the corners, latches, and handle with polyurethane foam material and sealed in a moisture-barrier bag before it is placed in a corrugated carton. The carton is sealed with paper tape and packed in a plywood container. The packed camera set weighs approximately 70 pounds and occupies 6.0 cubic feet. The dimensions of the plywood container are 47 inches by 17 inches by 13 inches.

b. Unpacking Camera Set.

NOTE

Save all packing materials for use during repacking (para 6-1).

(1) Cut and fold back the metal straps that bind the plywood container.

(2) Remove the nails that secure the plywood container lid and remove the lid.

(3) Cut the paper tape and remove the carrying case from the corrugated carton and the moisture-barrier bag.

(4) Unlatch the six latches of the carrying case (fig. 2-2) and remove the cover of the carrying case.

(5) Remove the camera set components from the carrying case.

(6) Check the unpacked equipment (para 2-2).

2-2. 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 (para 1-3).

b. Check the equipment with the list of items on the packing slip. If a packing slip is not available, check the equipment with paragraph 1-6.1. Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, check to see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear on the camera housing near the nomenclature plate.

d. Rotate the camera back clockwise, as viewed from the film side of the camera, and check for positive detents without binding.

e. Remove the lens cap and check the lens and shutter assembly for damage or looseness in the shutter. Check the operation of the shutter and diaphragm at all shutter speeds and diaphragm settings.

f. Examine the stereoscopic attachment for fractures in the plastic and loose or broken mirrors.

g. Check the dual strobe support arm assembly for damage to the junction box, cables, and connectors.

h. Inspect the tripod (fig. 1-3) for bends and dents. Loosen the leg hinge clamp screw, pull the legs away from the outer tube, and check for binding.

i. Inspect the strobe assemblies for damage to the housing or filter.

j. Check the horizontal positioning bar for bends and the six titleboards for damage. Also check for damaged or missing letters or numerals.

k. Check the interior and exterior of the carrying case for damage.

l. Check the technical manual for missing pages.

m. Check the external battery charger for damaged or missing parts.

2-3. Siting and Shelter Requirements

a. Siting Requirements.

(1) The site must be on level ground and away from heavy traffic.

(2) If available, the site should be located near a source of 115 volts ac.

b. Shelter Requirements.

(1) An enclosed area at least 8 feet wide by 8 feet high by 8 feet long is required to photo-

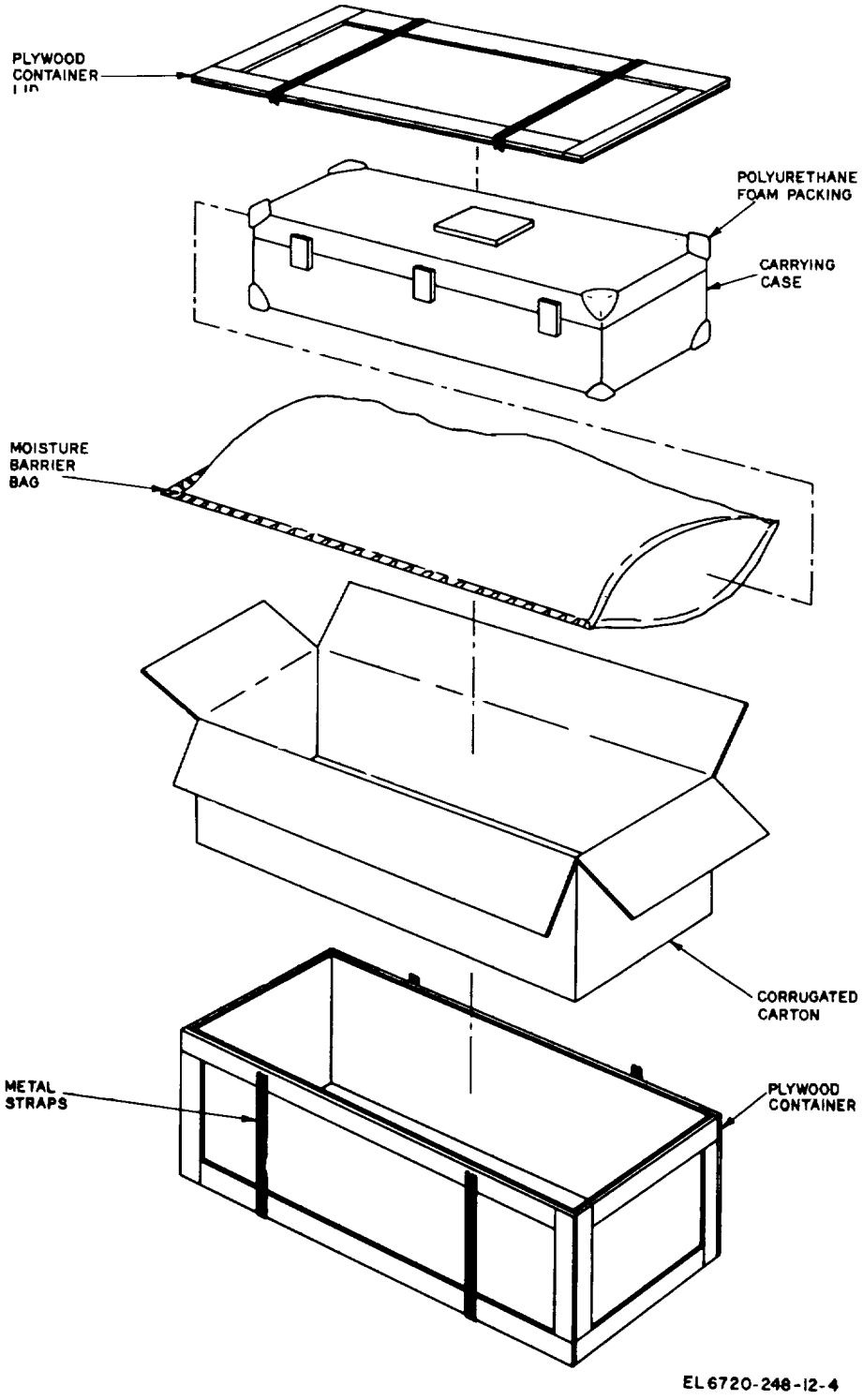


Figure 2-1. Camera set, packaging diagram.

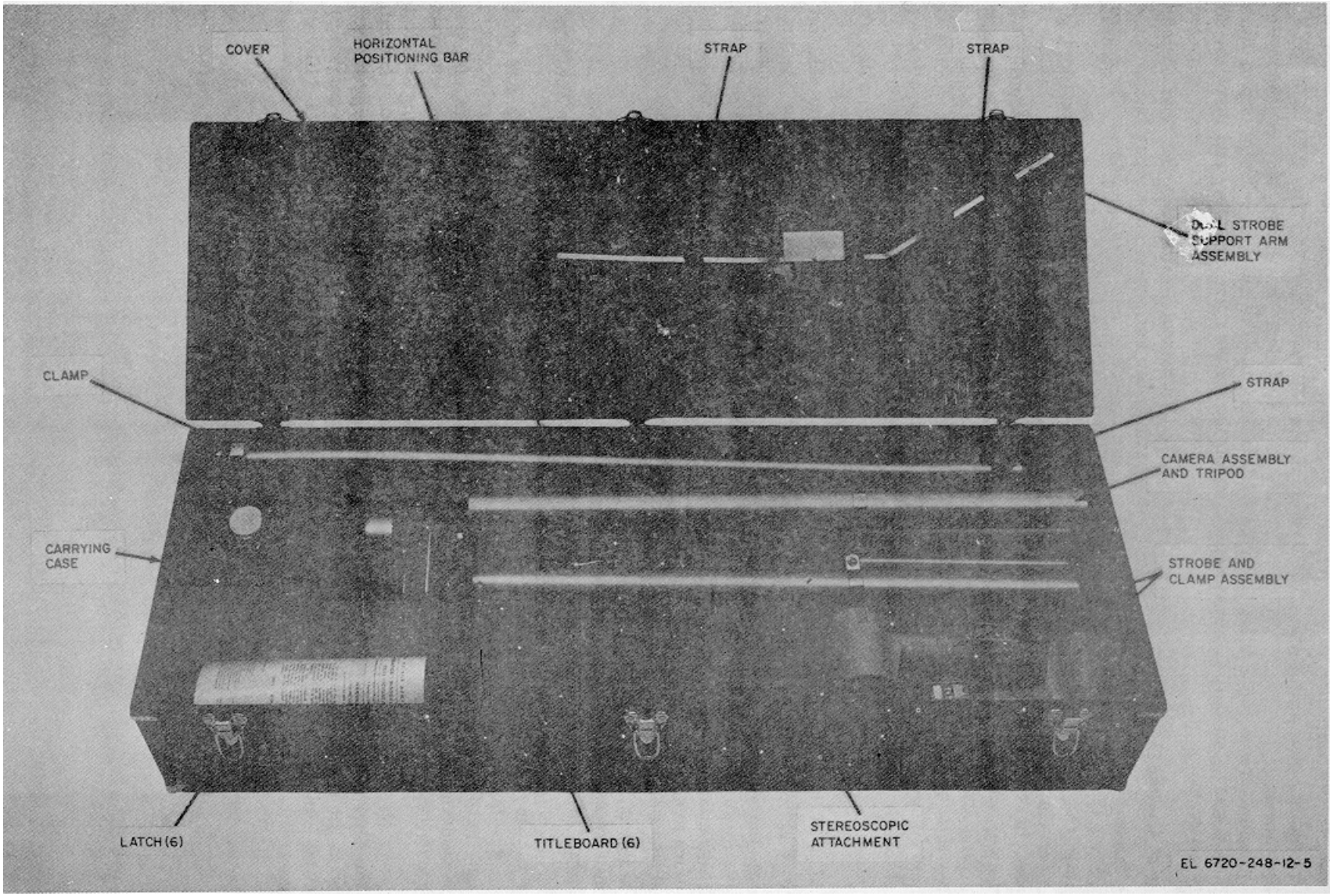


Figure 2-2. Component of camera set KS-19A4, packed in carrying case

graph the subjects. An entrance and exit that permits rapid handling of a continuous stream of subjects is also required.

(2) The temperature of the shelter must be 65° F (180 C), or above, to permit personnel to remove heavy outer clothing.

2-4. Assembly of Camera Set

a. Camera Assembly and Tripod. Set up the camera assembly and tripod as follows:

(1) Remove the camera assembly and tripod from the carrying case (fig. 2-2).

(2) Loosen the leg hinge clamp screw and pull each leg away from the outer tube until the leg links are fully extended. (The legs are held against the outer tube by a snap-detent action; pull the legs hard enough to overcome the detenting action.) Tighten the leg hinge clamp screw (fig. 1-3).

CAUTION

The inner tube is spring-loaded; loosen the telescope clamp screw slowly.

(3) Loosen the telescope clamp screw (fig. 2-2), and allow the camera to rise to a height that will allow easy attachment of the strobe and clamp assemblies and horizontal positioning bar. Tighten the telescope clamp screw.

b. Electronic Flash Assembly. Attach the dual strobe support arm assembly and the strobe and lamp assemblies to the camera housing as follows:

(1) Remove the dual strobe support arm assembly from the carrying case cover.

(2) Attach the dual strobe support arm assembly to the camera housing with the two captive thumbscrews (fig. 1-2).

NOTE

Attach the dual strobe support arm assembly with the short section to the left side (viewed from the front) of the camera housing.

(3) Remove the strobe and clamp assemblies from the carrying case (fig. 2-2).

(4) Insert the clamp fingers (opposite red button) into the quick-disconnect clip of the dual strobe support arm assembly and pivot the strobe assembly until the locking device is engaged.

c. Horizontal Positioning Bar and Titleboard. Attach the horizontal positioning bar to the camera assembly and a titleboard to the horizontal positioning bar as follows:

(1) Remove the horizontal positioning bar from the carrying case.

(2) Insert the end of the horizontal positioning bar into the socket on the camera assembly so that the bayonet connector in the camera assembly engages the slots in the horizontal positioning bar; rotate the horizontal positioning bar clockwise to lock it in place.

(3) Remove the titleboards from the carrying case.

(4) Insert a titleboard into the seat on the titleboard holder (fig. 1-3) so that the grooved side of the titleboard faces the camera assembly; push the button to raise the hook until the top of the titleboard fits under the hook, center the titleboard on the titleboard holder, and release the button.

2-5. Connections

a. Shutter Cord. Connect the free end of the shutter cord to the receptacle on the lens and shutter assembly (fig. 1-2).

b. Flash Cord. Connect the free end of flash cords to the receptacle in each strobe assembly.

c. Power Cord. The power cords are used to connect the strobe assemblies to the power source during ac operation, or during the period required to recharge the batteries of the strobe assemblies. One end of the power cord is plugged into the receptacle provided in each strobe assembly, and the opposite end is plugged into a 115-volt 60- Hertz (Hz) power source.

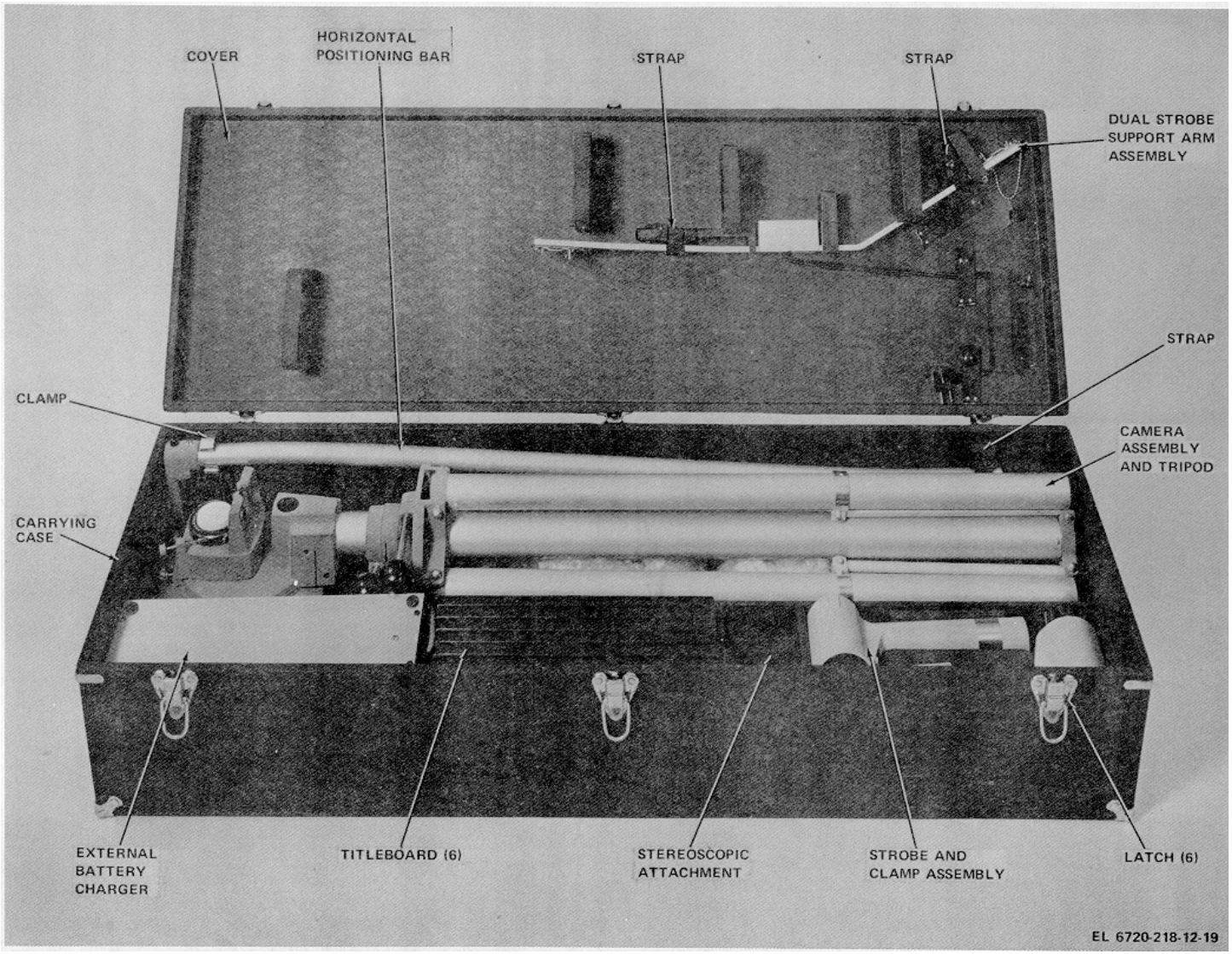


Figure 2-2.1. Components of Camera Set KS-19B, packed in carrying case.

CHAPTER 3
OPERATING INSTRUCTIONS

Section I. OPERATION UNDER USUAL CONDITIONS

3-1. General

The number of subjects to be photographed in a certain length of time and the type of film (color or black-and-white) to be used are the main determining factors in selecting the proper mode of operation.

a. Use of black-and-white film (type 107) requires the use of the neutral density filter over the front lens of the lens and shutter assembly, and the mask over the strobe assembly. Develop ment time of the film is affected by temperature; the chart below gives approximate development times at different temperatures.

Temperature (°)		
Fahrenheit	*Centigrade*	*Time (seconds)*
75	24	10
70	21	15
65	18	20
60	16	25
50	10	30 to 40
40	5	45 to 55
35	1.5	55 to 70

b. Use of color film (type 108) requires a longer interval between exposures to allow time for the color film to be developed. Development time is affected by temperature; the chart below gives approximate development times at different temperatures.

Temperature (°)		
Fahrenheit	*Centigrade*	*Time (seconds)*
75	24	60
70	21	70
65	18	90

c. The proper mode of operation of the strobe assemblies can be determined by considering the following:

(1) During battery operation, the strobe assembly may be flashed approximately 80 times before it is necessary to recharge the batteries; the minimum time interval between flashes is 8 to 15 seconds.

(2) During ac operation, the minimum time interval between flashes is 25 seconds.

(3) During ac operation, the strobe assembly can be flashed as many times as (2) above will allow.

3-2. Controls and Indicators

a. Lens and Shutter Assembly and Camera Controls.

Controls	*Function*
Release button (fig. 3-1)	Actuates shutter release lever.
Diaphragm control lever	Sets size of diaphragm opening.
Shutter release lever	Opens and closes shutter.
Shutter speed control ring	Sets shutter speed.
Back cover latch fig. 3-2)	Secures back cover assembly to camera back assembly.

b. Strobe Control and Indicator (fig. 3-4).

Control or indicator	*Pos*	*Function Action*
Power Switch	B	Battery operation.
	A	Ac operation.
	C	Battery charge.
Neon indicator		Signifies readiness of strobe.

c. Model 700 Strobe Control and Indicator (Fig. 3-4.1)

Control or indicator	Pos	Function
Power Switch	On	Battery operation
		Battery/ac operation
	Off	Ac oper. during stor.
		Charge in-unit batt.
Neon indicator		Strobe readiness
Open flash switch		Flashes strobe

3-3. Preliminary Procedures

a. Assemble and interconnect-camera set (para 2-4 and 2-5).

b. Loosen the telescope clamp screw on the tripod (fig. 1-3). Rotate the inner tube so that the horizontal positioning bar is directly over the tripod leg that is nearest the leg hinge clamp screw. Tighten the telescope clamp screw.

c. Remove the lens cap from the lens and shutter assembly. Remove dust from the front lens assembly with a hand blower, and gently wipe the front lens element with a clean lens tissue moistened with lens cleaner.

d. Operate the back cover latch toward the camera assembly pivot point and open the back cover assembly (fig. 3-3). If an empty film pack remains in the camera, remove and discard it.

e. Remove dust from the rear lens element and interior of the camera with a hand blower. Clean the rollers with a cloth moistened with water.

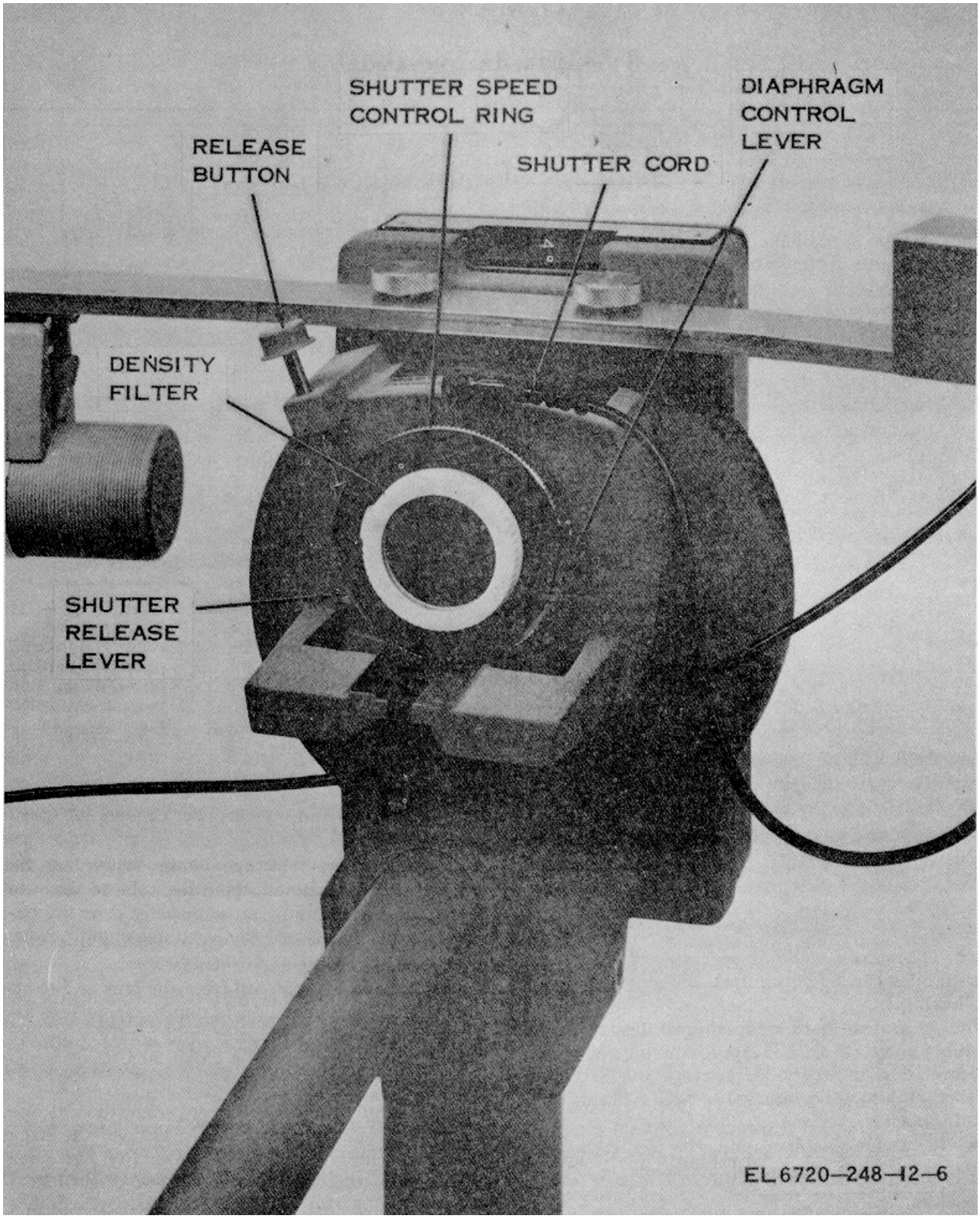


Figure 3-1. Lens and shutter assembly, controls and connectors.

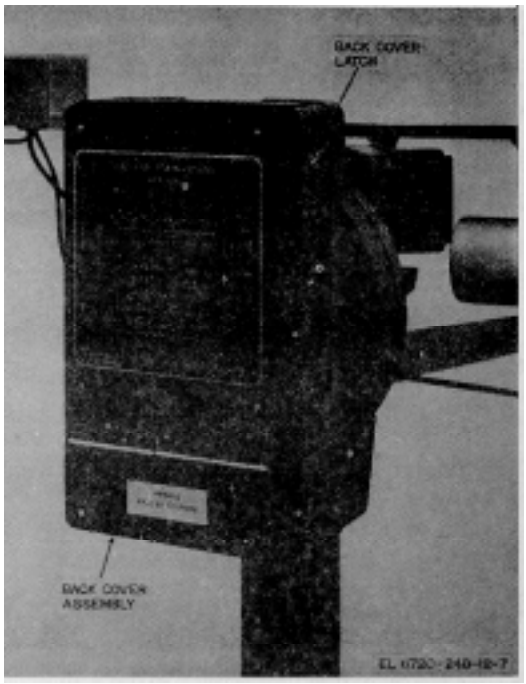


Figure 3-2. Camera assembly, rear view

f. Attach the dual strobe support arm and strobe and clamp assemblies (para 2-4b).

g. Connect the shutter and flash cords (para 2-5a and b).

3-4. Ac Operation

The strobe assembly is used in the ac operation mode when a, large number of subjects are to be photographed in a relatively short period of time.

a. Insert one end of each power cord into the receptacle provided in each strobe assembly.

b. Plug the opposite end of each power cord into a power outlet source of 115 volts ac, 50 to 60 Hz.

c. Place the power switch to A (Model 600, fig.3-4) or ON (Model 700, fig.3-4.l).

d. The neon indicators may not light during ac operation; full output of the strobe assembly will be realized if 25 seconds is allowed from the time the power switch is positioned to A or ON until the strobe assembly is operated.

3-5. Battery Operation

The strobe assembly is used in the battery operation mode when a small number of subjects are to

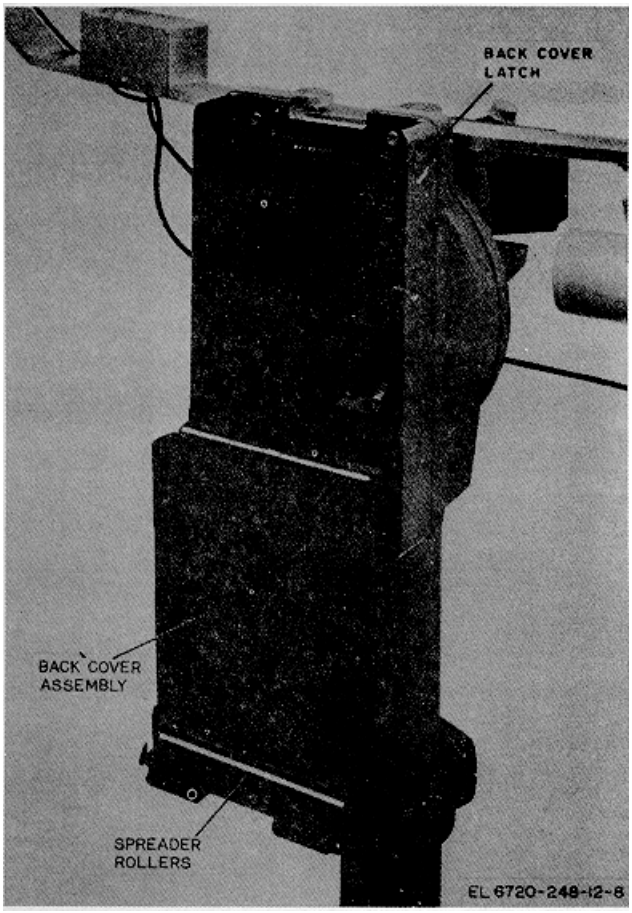


Figure 3-3. Camera opened.

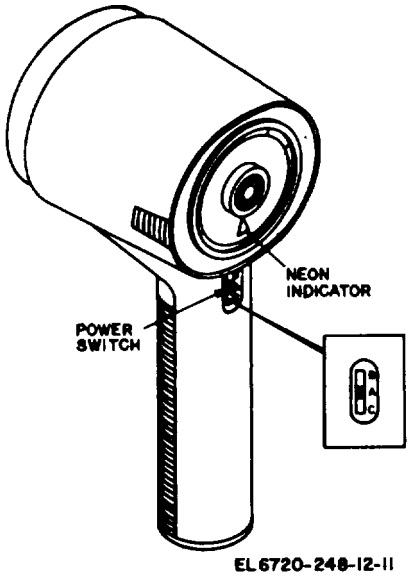


Figure 3-4. Strobe assembly rear view, model 600.

be photographed in a relatively long time period. The strobe assembly is capable of approximately 80 flashes before it is necessary to recharge the batteries.

a. Place the power switch to B (Model 600) or to ON (Model 700).

b. The neon indicators will light when the strobe assemblies are ready to be fired.

3-5.1. External Battery Charger

When battery operation is required in locations with ac power unavailable at the photo site, the external battery charger is used to provide four additional, fully charged battery trays. If the condition is anticipated, the spare battery trays are charged overnight in the external charger and usually will provide 8 hours of heavy operation.

a. Insert battery trays into charger until they latch in place.

b. Connect charger power cord to 115 volts ac, 50 to 60 Hz source.

c. If batteries are quite low, rotate timer knob to maximum time, otherwise set timer to charge time required to bring batteries up to full charge.

d. Red lamp glows until time has elapsed, the time automatically turns off when time has elapsed.

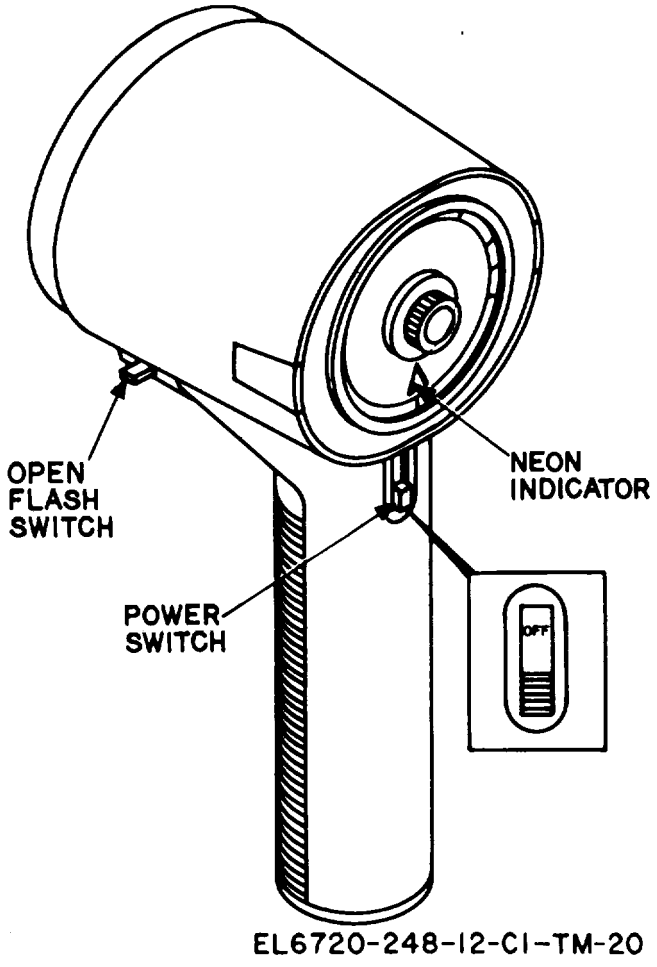


Figure 3-4.1. Strobe assembly, rear view, model 700.

3-6. Operation Using Black-and-White Film

a. Remove the neutral density filter from the compartment in the camera back assembly and attach it firmly to the front lens assembly.

b. Slide the thumbscrew (fig. 1-2) into the slot in the camera housing; push the stereoscopic attachment as far as possible into the slot and tighten the thumbscrew.

c. Cover the right-hand strobe assembly lens with the mask provided. Install the twist-lock filters on each Model 700 strobe assembly.

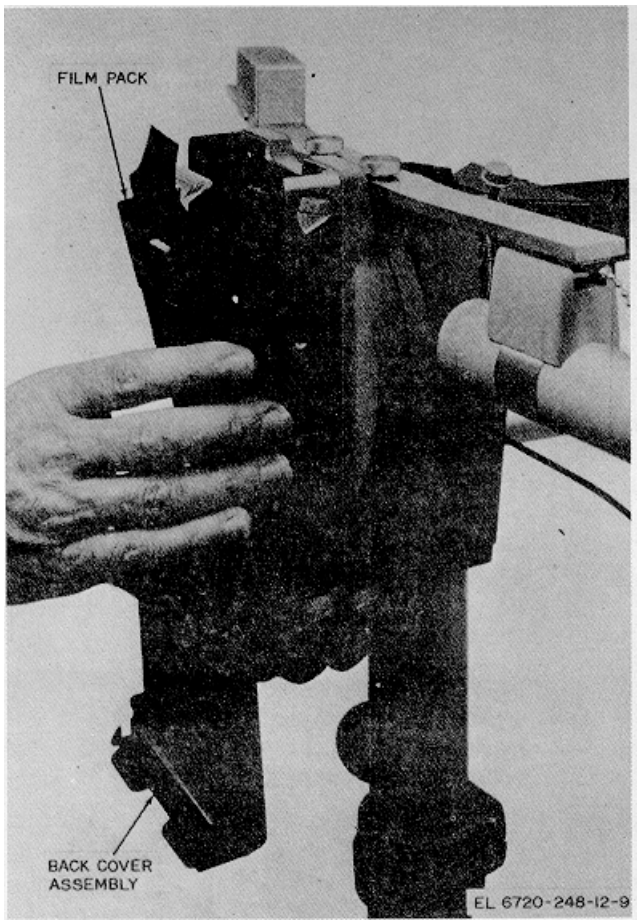


Figure 3-5. Inserting film pack in camera.

CAUTION

Do not load the camera in a brightly lighted area and do not apply pressure to the open side of the film pack.

d. Remove the film pack from its box, and remove the sealed foil wrapper.

e. Carefully place the film pack in the film chamber (fig. 3-5) of the camera. Press the film pack against the spring and into the opening of the camera back; close the back cover assembly.

f. Grasp the protruding black tab (fig. 3-6) and pull it out of the camera. The camera is now ready for use.

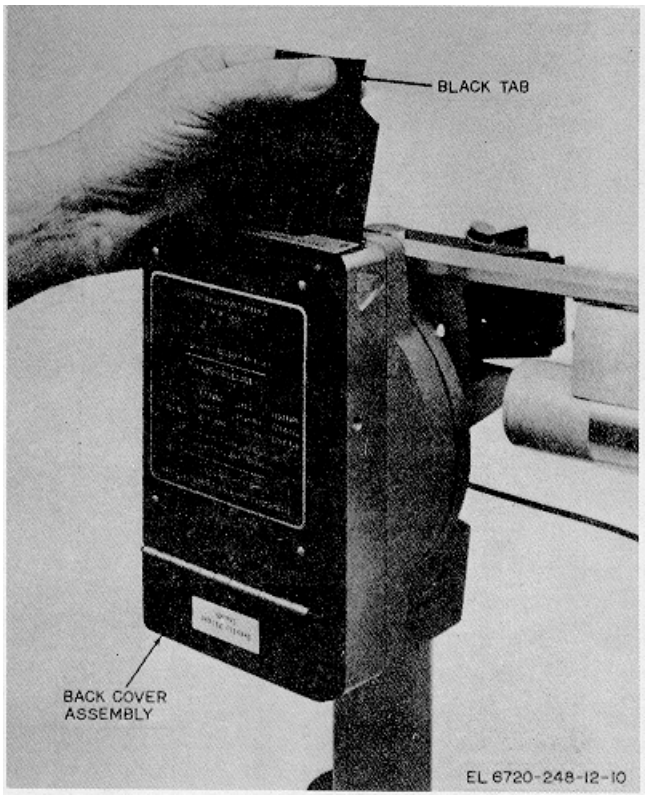


Figure 3-6. Removing film pack leader.

g. Adjust the shutter and diaphragm as follows:

Note: Variations may occur due to color of clothing, background color, and room lighting. Adjustments may have to be made to compensate for these conditions.

(1) Set the shutter speed control ring (fig. 3-1) to 125.

(2) Set the diaphragm control lever to f/5.6

for a subject with dark complexion, and to f/8 for a subject with light complexion.

h. Photograph a subject as follows:

(1) Rotate the camera housing through an arc of 180° clockwise. This rotation positions the film so that one-half of the frame of film will be exposed and releases the double exposure prevention mechanism so that the shutter will operate.

(2) Insert the appropriate letters and numerals into the grooves of a titleboard and secure the titleboard holder assembly (fig. 1-3 and para 2-4c).

(3) Position the subject. Adjust the camera set height as follows:

(*a*) Loosen the telescope clamp screw on the tripod.

(*b*) Adjust the inner tube so that the end of the titleboard holder assembly is against the subject's chest and the top of the titleboard is approximately 4 inches below the subject's chin.

(*c*) Tighten the telescope clamp screw.

(4) Have the subject look at the stereoscopic attachment; press the release button.

(5) If another pair of photographs of the same subject is required, repeat the procedures outlined in (1) and (4) above after the neon indicator of the strobe assemblies lights. If a pair of photographs of another subject is required, repeat the procedures outlined in (1) through (4) above with the new subject.

i. After two pairs of photographs have been made on the same frame of film, process the print as follows:

(1) Grasp the protruding white film tab (fig. 3-7) and pull the strip, with a smooth, continuous motion, out of the camera to expose the yellow tab.

(2) Grasp the protruding yellow tab (fig. 3-8) and pull the film, with a straight, continuous motion, out of the camera.

(3) After a period of 10 seconds, grasp the corner of the print and carefully remove the print from the film (fig. 3-9). Handle the print only by its edges.

NOTE

Do not allow the print-coating applicator to pick up dust in the area; the printcoating will transfer dust to the finished print.

(4) Remove the print-coating applicator from its container.

(5) Hold the print by its edge and coat the

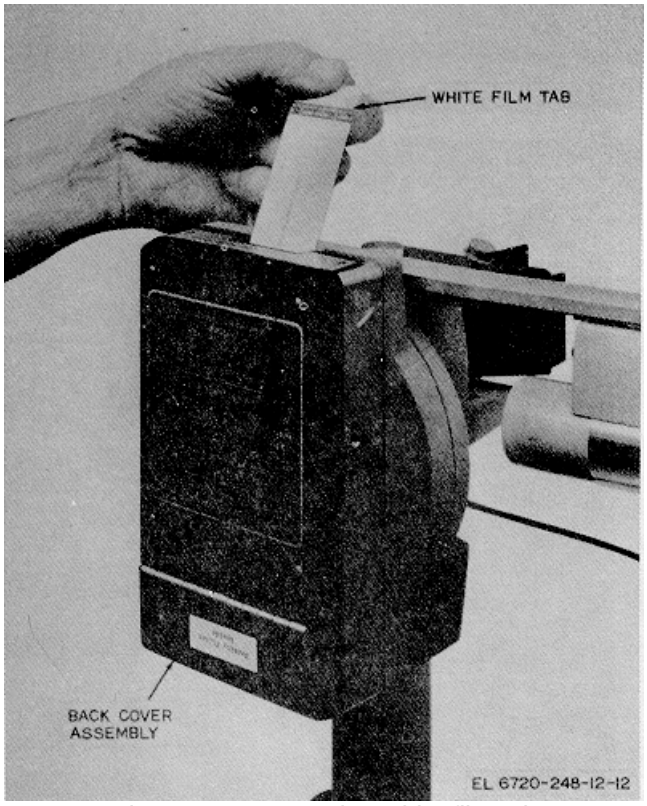


Figure 3-7. Removing white film tab.

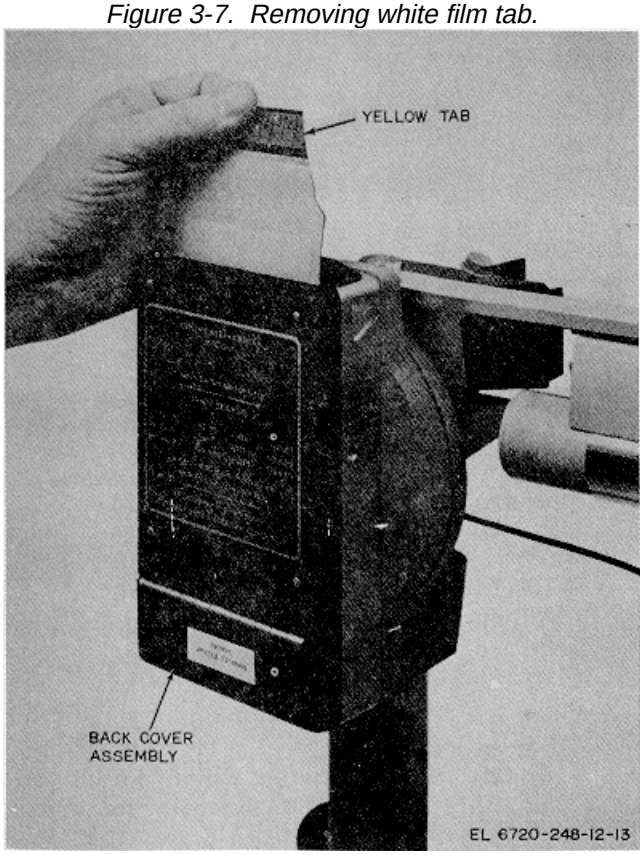


Figure 3-8. Removing film to stars print processing.

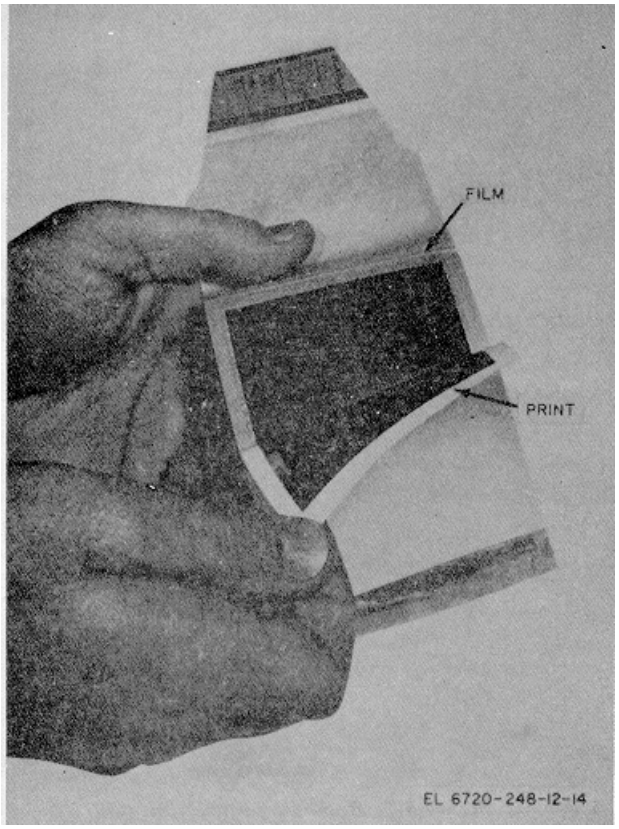


Figure 3-9. Removing print.

entire print surface with firm, overlapping strokes.

(6) Allow the print coating to dry.

(7) Trim the four pictures to the required size.

3-7. Operation Using Color Film

NOTE

Do not attach the neutral density filter on the camera lens assembly and do not cover the strobe assembly lens with the mask. The twist lock filters must remain on both strobe assemblies.

a. Attach the stereoscopic attachment (para 3-6b).

b. Load the camera (para 3-6d, e, and f).

c. Adjust the shutter and diaphragm and photograph the subject (para 3-6g and h).

d. After two pairs of photographs have been made on the same frame of film, process the print as follows:

(1) Grasp the protruding white film tab (fig. 3-7) and pull the strip, with a smooth, continuous motion, out of the camera to expose the yellow tab.

(2) Grasp the protruding yellow tab (fig. 3-8) and pull the film, with a straight, continuous motion, out of the camera.

(3) After a period of 60 seconds, grasp the corner of the print and carefully remove the print from the film (fig. 3-9). Handle the print only by its edges.

(4) Allow the print coating to dry.

(5) Trim the pictures to the required size.

3-8. Stopping Procedure

a. Temporary Shutdown. If the camera set was connected for ac operation (para 3-4), place the power switch (fig. 3-4) of each strobe assembly, to C (Model 600) or OFF(Model 700). If the camera set was connected for battery operation (para 3-5, , proceed as follows:

(1) Connect a power cord to each of the strobe assemblies and to the 115-volt ac, 50to 60-Hz power source.

(2) Place the power switch of each strobe assembly at C (Model 600) or OFF(Model 700)

(3) With the strobe assemblies connected to the ac power source and the power switches in the C position (Model 600) or OFF(Model 700) ac power will be supplied to the battery-charging circuit of each strobe assembly. Under normal conditions, the battery-charging circuit will recharge the batteries during a 16hour period.

b. Sixteen-Hour or Longer Shutdown. If the camera set will not be used again the following day, or later, perform the procedure in a above; then, proceed as follows:

(1) Disconnect the power cord from the strobe assemblies and the 115-volt ac, 50to 60Hz power source.

(2) Remove the titleboard (fig. 1-3) from the titleboard holder assembly by pushing the button on the titleboard holder.

(3) Rotate the horizontal positioning bar counterclockwise and withdraw it from the front socket of the camera housing.

(4) Loosen the thumbscrew and remove the stereoscopic attachment from the camera housing.

(5) Disconnect the shutter cord (fig. 1-2) from the lens and shutter assembly.

(6) Disconnect the flash cords from the strobe assemblies.

(7) Remove the strobe and clamp assemblies (fig. 1-3) from the dual strobe support arm assembly.

(8) Loosen the thumbscrews and remove the dual strobe support arm assembly.

(9) Loosen the telescope clamp screw and push the camera housing down against the telescope clamp collar; rotate the inner tube so that the front socket is directly' over the tripod leg nearest the leg hinge clamp screw; tighten the telescope clamp screw.

(10) Loosen the leg hinge clamp screw. Push the tripod legs in toward the outer tube until each leg is held against the outer tube by the snap-action detent. Tighten the leg hinge clamp screw.

(11) Sort and place the letters and numerals boxes in the bottom of the carrying case; place the titleboards in their compartment in the tray of the carrying case.

(12) Insert the stereoscopic attachment in the plastic bag and place it in its compartment in the tray of the carrying case.

(13) Place the strobe and clamp assemblies in their compartment in the tray of the carrying case.

(14) Clamp the dual strobe support arm assembly in the cover of the carrying case with the straps provided.

(15) Place the horizontal positioning bar in the clamp provided so that the titleboard holder faces downward at the left-hand end of the carrying case; snap the strap around the opposite end of the horizontal positioning bar.

(16) Place the camera assembly and tripod at the rear of the carrying case so that the lens and shutter assembly faces upward at the left-hand end of the carrying case.

(17) If the external battery charger is not to be used, place it and the spare battery trays in the space provided in the carrying case.

(18) Close and latch the cover of the carrying case.

Section II. OPERATION UNDER UNUSUAL CONDITIONS

3-9. Operation in Arctic Regions

CAUTION

Do not warm either the film or the printcoating applicator near a hot object (heater, stove, or hotwater pipe).

a. Warming Film. If the film has been stored at low temperatures, warm it to room temperature for a minimum of 2 hours before unsealing the package. To shorten the warming time, remove the sealed film and the print-coating applicator from the film carton and place them close to the body.

b. Warming Camera Set. If the camera set has not been unpacked, but -has been stored at a low temperature, transfer it to a heated area and allow it to remain there for a minimum of 6 hours before unpacking it. If the camera set has been unpacked and stored at a low temperature, wrap it with water-repellent material, transfer it to a heated area, and allow it to remain covered for a minimum of 6 hours before checking (c below) and assembling it for operation.

c. Checking Equipment Before Use.

CAUTION

Do not operate the camera set until all moisture has been removed from it.

(1) Remove moisture from the exterior surfaces of the camera set, except the lens and the stereoscopic attachment mirrors, with a clean cloth.

(2) Remove moisture from the interior surfaces of the back cover assembly, the camera body, and the bridge and pressure plate assembly with a clean cloth.

(3) Clean the accessible surfaces of the front and rear lens elements and the mirrors of the stereoscopic attachment with lens tissue.

3-10. Operation in Desert and Tropical Regions

In high temperature regions, carry only the quantity of film required for immediate use. If possible, store the remainder of the film at a temperature of 40° F (4° C) and warm the film to room temperature (para 3-9 a) before using.

a. Desert Regions. Before operating the camera set, remove dust and sand from the exterior surfaces of the camera set components and the interior surfaces of the camera body with a soft-bristled brush. Remove dust and sand from the front and rear lens elements and the accessible surfaces of the stereoscopic attachment mirrors with a hand blower; then, wipe them with lens tissue moistened with lens cleaner. Cover the camera set while it is not in use.

b. Tropical Regions.

CAUTION

Keep oil off lenses, mirrors and electrical contacts.

Check the camera set daily; remove corrosion, fungus, mites, and mold. Wipe all exposed metal parts, except the camera, with a cloth moistened with Lubricating Oil, General Purpose (FED VVL-800) (FSN 9150-273-2389). Store the camera set in a well ventilated area and air the carrying case daily. Do not leave film in the camera overnight.

3-11. Operation in Maritime, High Altitude, Low Temperature, or Rainy Regions

To prevent corrosion from salt-laden air or saltwater spray and rusting from moisture when the camera set is stored, wipe all exposed metal parts, except the camera, with a cloth moistened with oil (FED VV-L-800). To remove condensation, allow the equipment to warm to room temperature (para 3-9b) and then wipe with a clean, dry cloth before using it. After the camera set has been used in rainy, dusty, or dirty regions, it may need lubrication. If lubrication is necessary, turn in the camera set for repair. Check the condition of the camera set after each assignment; clean all parts as soon as possible. When storing the equipment, cover with water-repellent material and add desiccant, if available, to absorb moisture.

CHAPTER 4

OPERATOR MAINTENANCE

4-1. Scope of Operator Maintenance

The maintenance duties assigned to the operator of the camera set are listed below together with reference to paragraphs covering the specific maintenance instructions. The materials required for operator maintenance are listed in paragraph 4-2.

a. Daily preventive maintenance checks and services (para 4-5).

b. Cleaning (para 4-6).

c. Troubleshooting (para 4-7).

4-2. Materials Required

a. Trichloroethane.

b. Lens cleaner.

c. Lens tissue.

d. Textile cloth.

4-3. Operator 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 4-5 and 4-6 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services chart (para 4-5) outlines functions to be performed at a specific interval. These checks and services are to maintain equipment in a serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operator in maintaining serviceability, the chart indicates what to check, how to check, and the normal conditions. The References column either lists the paragraphs that contain detailed repair procedures or references the troubleshooting chart (para 4-7). If the defect cannot be corrected by the operator, higher category maintenance is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

4-4. Operator Preventive Maintenance Checks and Services Periods

a. Preventive maintenance checks and services of the camera set are required daily (para 4-5). Perform the checks described in sequence No. 1 through 5 once each week if the equipment is maintained in standby (ready for immediate operation) condition.

b. If the camera set is placed in storage for an extended period, perform the following steps every 30 days:

(1) Remove the strobe and clamp assemblies and power cords.

(2) Place the power switch (fig. 3-4) of each strobe assembly at C.(Mod 600) or OFF(Mod 700).

(3) Connect the power cords between each strobe assembly and a power source of 115 volts ac, 50 to 60 Hz.

(4) After a period of 16 hours, disconnect the power cords and check the operation of the strobe and clamp assembly.

(5) Return the strobe and clamp assemblies and power cords to storage if the operation is satisfactory. If operation is not satisfactory, higher category repair is required.

NOTE

The operator may use the external battery charger for battery charging (para 3-5.1) in lieu of strobe charging procedure.

4-5. Operator Daily Preventive Maintenance Checks and Services Chart

Interval and sequence No.					
Before operation	*During operation*	*After operation*	*Item to be inspected*	*Procedure*	*References*
1			Exterior surfaces.	Inspect exterior surfaces of camera set (fig. 1-3) for dirt, dust, grease, and corrosion.	Para 4-6a and b.
2			Lenses and mirrors	a. Inspect mirrors of stereoscopic attachment (fig. 1-2) for dust, fingerprints, and cracks.	a. Para 4-6c
				b. Open back cover assembly (para 3-3d) and inspect front and rear lens elements for dust, fingerprints, and cracks.	b. Para 4-6c
3			Camera	Inspect interior surfaces of camera for dirt, film chips, emulsion, and dried developer.	Para 4-6a, b, and d.
4			Back cover assembly.	Inspect interior surfaces of back cover assembly and spreader rollers for dirt, film chips, and emulsion.	Para 4-6a, b, and d.
5			Covers	Close back cover assembly (fig. 3-3) and check for tight closure.	
6			Neon indicator.	Check for glow of neon indicator (fig. 3-4) within 15 seconds after strobe assemblies are flashed.	Para 4-7, item 1.
7			Strobe assemblies.	Check for flashing of both strobe assemblies.	Para 4-7, item 2.
8			Print	Check quality of processed print.	Para 4-7, items 3 through 14.

4-6. Cleaning

a. Remove dust, loose dirt, and film chips with a brush and 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 to an open flame converts the fumes to highly toxic, dangerous gases.

b. Remove grease, fungus, ground-in dirt, and corrosion with a cloth dampened (not wet) with trichloroethane.

c. Remove dust from the front and rear lens elements and the mirrors of the stereoscopic attachment with a brush and a hand blower. Remove fingerprints with a lens tissue moistened with lens cleaner.

d. Remove emulsion from the interior surfaces of the camera body, the back cover assembly, and the spreader roller with a brush. Remove dried developer from the spreader rollers with a clean cloth moistened with water.

4-7. Operator Troubleshooting Chart

The chart below is supplied as an aid to the operator for locating trouble in the camera set. The chart lists the symptoms, probable causes, and corrections.

Item No.	*Trouble symptom*	*Probable trouble*	*Checks and corrective measures*
1	Neon indicator (fig. 3-4) fails to glow within 15 seconds after strobe assemblies are flashed.	*a.* Battery voltage is too low to trigger strobe assemblies (battery operation).	*a.* Recharge batteries (para 3-8a).
		b. Power cord connector loose (ac operation).	*b.* Push power cord connectors fully into receptacles.
2	One or both strobe assemblies do not flash when shutter is tripped.	*a.* Power switch is set to wrong position.	*a.* Set power switch to A (Model 600) or OFF (Model 700) for ac operation. For battery operation, set power switch to B (Model 600) or ON (Model 700).

Item No.	*Trouble symptom*	*Probable trouble*	*Checks and corrective measures*
		b. Flash cord connector loose.	b. Push flash cord receptacle into strobe assembly.
		c. Shutter cord connector loose.	c. Push shutter cord connector into lens and shutter assembly receptacle.
3	Print too light	Film overexposed.	Set diaphragm control lever (fig. 3-1) one f-stop closer to f/22, and photograph subject again.
4	Print white	a. Film outdated.	a Check expiration date cn film box; if expiration date has passed, replace film.
		b. Back cover assembly (fig. 3-3) not closed.	b. Close and latch back cover assembly.
		c. Film extremely overexposed.	c. Set diaphragm control lever two f-stops closer to f/22, and photograph subject again.
5	Print too dark	Film underexposed.	Set diaphragm control lever one f-stop closer to f/(4.5, and photograph subject again.
6	Print black	Shutter not reset	Rotate camera through arc of 180° and photograph subject again.
7	Print has poor contrast	Processing time too short.	Consult developing chart for temperature differences (para 3-1).
8	Sections of print are blurred.	Dirty lens elements or dirty mirrors in stereoscopic attachment (fig. 1-2).	Clean front and rear lens elements and mirrors in stereoscopic attachment (para 4-6c).
9	White spots appear across each print.	*a*. Spreader rollers (fig. 3-3) dirty.	*a*. Clean spreader rollers (para 4-6*a* and *d*).
		b. Defective film.	*b*. Replace film pack.
10	Print partially developed.	Film outdated.	Check expiration date on film box; if expiration date has passed, replace film.
11	Subject image on print is blurred.	Subject standing too far from titleboard.	Instruct subject to stand with chest against titleboard holder assembly.
12	Print streaked across narrow dimension.	Film not pulled smoothly.	Pull film in continuous motion without stopping.
13	Developer smeared on one end of print	*a*. Film not pulled smoothly.	*a*. Pull film in continuous motion without stopping.
		b. Print was allowed to flop back and to contact developer-covered negative.	*b*. When removing print, do not allow it to flop back on negative.
14	Bubbles on surface of print.	Print-coating applicator moved too rapidly across print, pressed too hard during coating procedure, or moisture in print-coating applicator.	Coat prints with slow, firm stroke without pressing print-coating applicator. If quality of processed print is still poor, higher category

CHAPTER 5

ORGANIZATIONAL MAINTENANCE

5-1. Scope of Organizational Maintenance

The duties assigned to organizational maintenance personnel for maintaining the camera set are listed below together with references to the paragraphs covering specific maintenance functions.

a. Lubrication (para 5-3).

b. Organizational preventive maintenance checks and services chart (para 5-5).

c. Visual inspection (para 5-6).

d. Organizational troubleshooting (para 5-7).

e. Organizational repair and replacement of parts (para 5-8, 5-9, and 5-10).

5-2. Tools, Test Equipment, and Materials Required

The parts replaced at organizational maintenance are listed in appendix D. The tools, test equipment, and materials required for organizational maintenance are as follows:

a. Tools and Test Equipment.

(1) Tool Kit, Photographic Repairman TK77-GF.

(2) Multimeter AN URM-105.

b. Materials.

(1) Trichloroethane.

(2) Grease, Aircraft and Instrument (GIA (9150-985-7243)).

(3) Lubricating Oil, General Purpose (FED (VV-L-800)).

5-3. Lubrication

CAUTION

When lubricating the camera set, apply lubricants sparingly. Excessive lubrication can cause damage to the camera set and sensitize material. Remove all excess lubricant immediately. Do not allow lubricants to contact the lens elements or the roller surfaces.

WARNING

The fumes of trichoroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of fumes to an open flame converts them to highly toxic, dangerous gases.

a. Preparation. Before lubricating, clean the parts with a soft, clean brush or a cloth slightly dampened with trichloroethane. Thoroughly dry all parts. Do not allow the trichloroethane to get on the lenses or on any rubber surfaces. Check the action of the camera set periodically. Stiff or noisy operation indicates that the old lubricants should be removed, the parts cleaned, and new lubricants applied.

b. Lubrication Under Usual Conditions. The parts listed below have been lubricated during assembly by the manufacturer. They must be relubricated semiannually as indicated below with the specified lubricants.

(1) Apply a very thin coating of grease (GIA) to the threaded portions of the leg hinge clamp screw and the telescope clamp screw.

(2) Lubricate each hinge point of the tripod legs with 2 to 3 drops of oil (FED VV-L-800).

c. Lubrication Under Unusual Conditions.

(1) In tropical, seacoast, and rainy areas, lubricate the camera set at more frequent intervals. This will maintain a protective film of lubricant on bearing and sliding surfaces and seal out damaging moisture.

(2) In desert, sandy, or extremely dusty areas, carefully clean the lubrication points to remove all sand and gritty particles before lubricating. This will prevent scoring and rapid wear of bearing and sliding surfaces.

5-4. Organizational 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. Inspection. The procedures given in paragraph 5-6 cover routine inspection essential in maintaining serviceable equipment.

b. Preventive Maintenance Checks and Services Chart. The preventive maintenance checks and services chart (para 5-5) outlines the functions to be performed at a specific interval. These checks and services are to maintain the camera set in a serviceable condition; that is, in good general (physical) condition. To assist in maintaining serviceability, the chart indicates the item to be inspected, the procedure to follow, and para graph reference.

Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

c. Preventive Maintenance Checks and Services Periods. Preventive maintenance checks and services of the camera set are required monthly. Paragraph 5-5 specifies the items to be checked monthly.

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

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Button release and shutter release lever.	Rotate camera through a 180' arc. Check to see that button release moves outward as shutter release lever moves.	Fig. 3-1 and para 3-6h.
2	Shutter speed control ring.	Rotate shutter speed control ring through its range of speed stops. Check to see that shutter speed control ring rotates easily and comes to definite stop in each detent position.	
3	Diaphragm control lever.	With shutter speed control ring in T position and diaphragm control lever in 22 position, operate button release. Check to see that aperture opening is centered in lens,-and becomes larger as diaphragm control lever is moved toward 4.5 position.	
4	Back cover latch.	Move back cover latch in direction of tripod. Check to see that back cover latch operates smoothly and back cover opens.	Fig. 3-2 and para 3-3d.
5	Back cover hinge	Open back cover fully. Check to see that back cover hinge does not bind and is firmly attached to end of back cover.	Para 3-3d.
6	Spreader rollers.	Gently lift up on roller assembly release latch until roller assembly is released. Check to see that roller assembly swings out and spreader rollers are clean, move without binding, and are free of damage and foreign matter.	Fig. 5-3.
7	Roller assembly release latch.	Move roller assembly into back cover and operating position. Check to see that roller assembly is held securely by roller assembly release latch.	
8	Back cover.	Close back cover. Check to see that back cover closes easily and both sides latch securely.	Fig. 3-2 and para 3-6.
9	Dual strobe support arm assembly.	Check condition of flash and shutter cords for frayed insulation and damaged connectors.	Fig. 1-2 and para 3-3.
10	Strobe and clamp assemblies.	Install strobe and clamp assemblies on dual strobe support arm assembly and connect flash cords. Check to see that quick-release clamp engages easily with quick-release clip on dual strobe support arm assembly, and flash cord connector fits firmly in strobe assembly receptacle.	Fig. 1-3.
11	Telescope clamp screw.	Slowly release telescope clamp screw. Check to see that camera assembly can be placed at any desired position.	
12	Leg hinge clamp screw.	Release leg hinge clamp screw. Check to see that tripod legs and leg links can be placed at any desired position.	

5-6. Visual Inspection

a. Carefully examine the components of the camera set before attempting to operate the equipment. This preliminary inspection may save repair time and may prevent damage to the equipment. Inspect the equipment for the following:

(1) Missing or broken parts.

(2) Loose or missing screws.

(3) Electrical cables that are frayed, cracked, or cut.

(4) Scored or excessively worn bearing and sliding surfaces.

(5) Broken or distorted tubing, flash reflectors, and control levers.

(6) Broken or cross-threaded thumbscrews, locking knobs, and threaded inserts.

(7) Cracked, chipped, or broken castings on tripod and camera assemblies.

b. Operate the equipment and observe the action. Refer to the operator troubleshooting chart

(para 4-7) and the organizational troubleshooting chart (para 5-7).

5-7. Organizational Troubleshooting

The troubleshooting chart (b below) is provided as an aid in localizing trouble in the camera set. It supplements the operator troubleshooting chart (para 4-7). Only those corrective measures which the organizational maintenance personnel can apply are given. If the suggested measure does not restore normal equipment performance, troubleshooting is required by higher category maintenance personnel. Note on the repair tag the corrective measures taken.

a. General. Before using the troubleshooting chart, examine the repair tag to see whether the trouble has been sectionalized. If there has been no sectionalization, perform the procedures outlined in the operator troubleshooting chart (para 4-7).

b. Organizational Troubleshooting Chart.

Item No.	*Trouble symptom*	*Probable trouble*	*Checks and corrective measures*
1	Neon indicator (fig. 3-4) fails to glow within 15 seconds after strobe assemblies are flashed (battery operation).	*a.* Defective batteries.	*a.* Replace strobe assembly batteries (para 5-9).
		b. Defective neon indicator.	*b.* Refer equipment to higher category of maintenance for repair.
2	One or both strobe assemblies do not flash when shutter is tripped.	*a.* Broken or loose wiring in flash or shutter cord.	*a.* Remove junction box cover and check continuity of electrical circuits. Use low ohms scale of Multimeter AN/URM-105, and repair break in circuit.
		b. Defective flash synchronization switch in lens and shutter assembly.	*b.* Disconnect shutter cord from lens and shutter assembly. Short center conductor to outer shield of shutter cord. If strobe assemblies flash, shutter synchronization switch is defective; refer equipment to higher category maintenance for repair.
		c. Defective strobe assembly.	*c.* Refer equipment to higher category maintenance for repair.
		d. Defective battery in triggering circuit.	*d.* Replace battery in triggering circuit (para 5-8).

5-8. Replacement of Triggering Circuit Battery

(fig. 5-1)

Replace the triggering circuit battery as follows:

a. Loosen the two screws that secure the junction box cover.

b. Remove the junction box cover.

c. Note the polarity position of the battery and remove the battery from the clips.

d. Install the replacement battery in the position noted in *c* above.

e. Install the junction box cover and secure it by tightening the screws loosened in a above.

5-9. Replacement of Battery Tray

(fig. 5-2)

Install a new battery tray in the strobe assembly (when required) as follows:

a. Compress the two battery compartment clips and withdraw the old battery tray.

b. Install a new battery tray and press in until the plastic clips engage with the strobe assembly housing.

5-10. Replacement of Spreader Rollers and Bushings

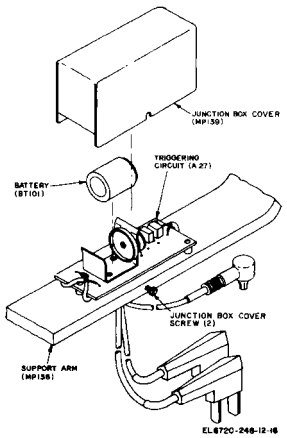
(fig. 5-3)

Replace the spreader rollers and bushings in the camera back cover assembly (when required) as follows:

a. Open the back cover assembly (para 3-3*d*).

b. Gently spring the roller assembly release latch outward until the roller assembly is released.

c. Swing the roller assembly away from the back cover assembly.



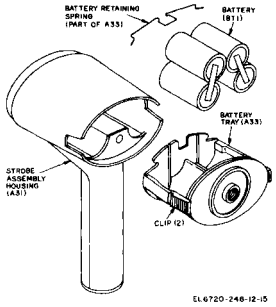
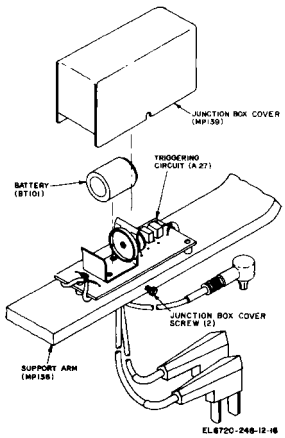


Figure 5-2. Strobe assembly with battery tray removed.

Figure 5-1. Triggering circuit, exploded view.



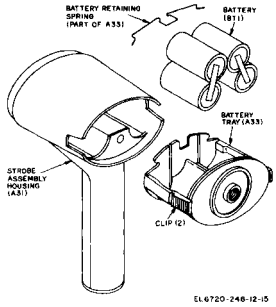


Figure 5-2. Strobe assembly with battery tray removed.

Figure 5-2. Strobe assembly with battery tray removed.

d. Carefully spread the front roller tabs to allow clearance for removing the front roller and bushings.

e. Remove the front roller and bushings.

f. Remove the rear roller and bushings from the notches in the roller assembly.

g. Install replacement rear roller and bushings in the notches of the roller assembly.

h. Insert one end of the replacement front roller, with bushing, into a front roller tab of the roller assembly.

i. Position the other end of the replacement front roller, with bushing, against the other front roller tab of the roller assembly.

j. While maintaining the front and rear rollers in a parallel position, lift the front roller into position to allow the front roller bushing to snap into place.

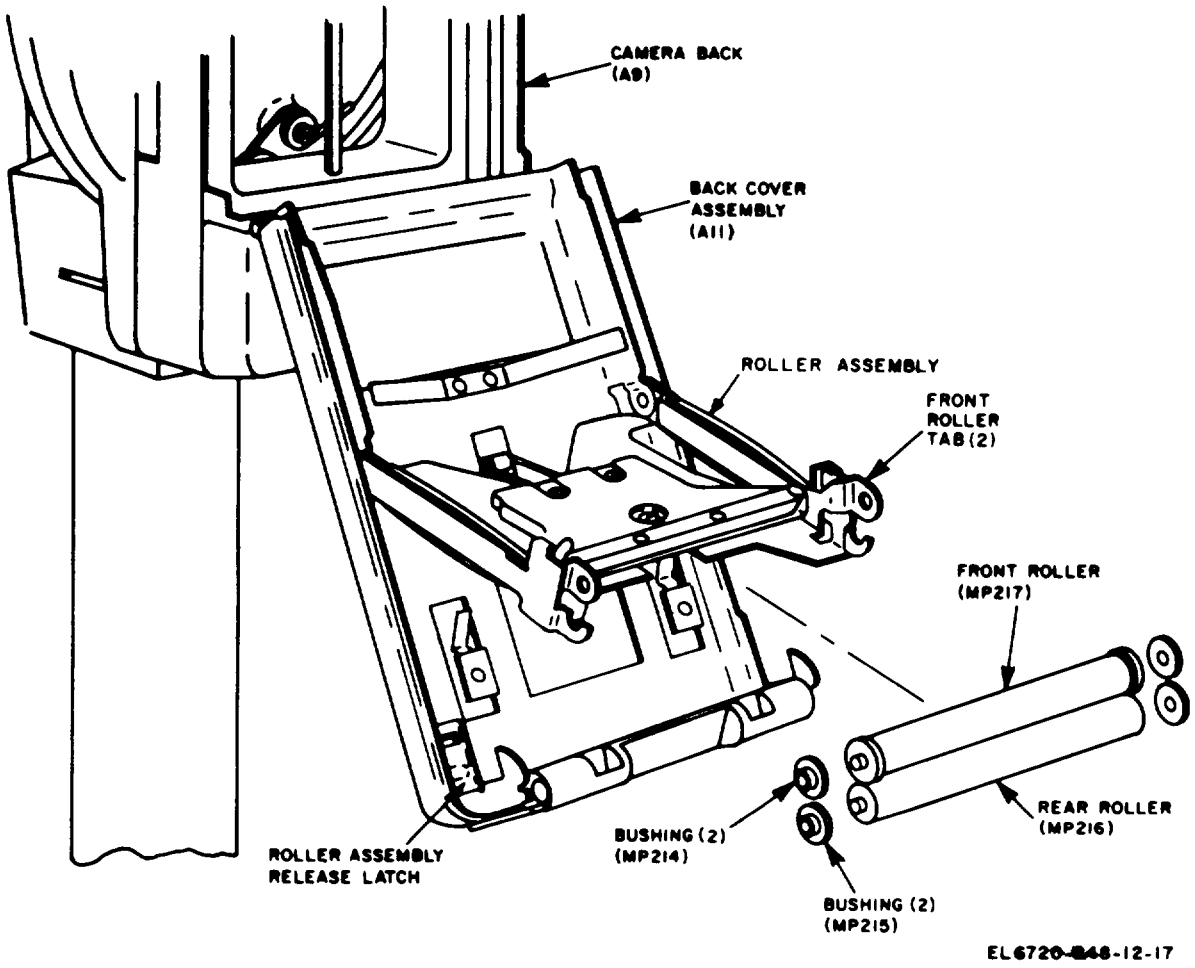


Figure 5-3. Camera back cover assembly with rollers removed.

CHAPTER 6

SHIPMENT AND ADMINISTRATIVE STORAGE AND DEMOLITION TO PREVENT ENEMY USE

6-1. Repackaging Camera Set for Shipment or Administrative Storage

NOTE

Refer to SB 38-100 for descriptions and Federal stock numbers of packaging and packing materials.

a. Disassemble the camera set (para 3-8b), and pack the components in the carrying case.

b. Attach polyurethane foam padding on the latches, corners, and handle of the carrying case.

c. Place the carrying case inside a moisture proof barrier bag.

d. Squeeze out the air trapped inside the barrier bag and seal the open end with waterproof tape.

e. Place the carrying case inside a corrugated carton and seal the top of the carton with waterproof tape.

f. Place the corrugated carton in a plywood container and attach the lid with nails.

g. With steel strapping, band the shipping container.

6-2. Administrative Storage

Administrative storage of the equipment will be accomplished as outlined in TM 740-90-1.

6-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon order of the commander. Use the destruction procedures outlined in paragraph 6-5 to prevent further use of the equipment.

6-4. Degree of Damage

Destruction must achieve such damage to equipment and essential spare parts that it will not be possible to restore the equipment to a usable condition in the combat zone either by repair or cannibalization. Whenever possible, equipment should be destroyed to the extent required to prevent its eventual repair and use by the enemy.

6-5. Methods of Destruction

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

(1) Camera assembly.
(2) Electronic flash assembly.
(3) Tripod.
(4) Titleboard tube and titleboards.

b. Use any of the following methods:

(1) *Smash*. Smash lenses, mirrors, flash tubes, and internal parts; use sledges, axes, hand-axes, pickaxes, hammers, or crowbars.

(2) *Cut*. Cut all cords, cables, and wiring; use axes, handaxes, or machetes.

WARNING

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

(3) *Burn*. Burn cords, cables, and technical manuals; use gasoline, kerosene, or flamethrowers.

(4) *Explode*. If explosives are necessary, use firearms, grenades, or TNT.

(5) *Dispose*. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

APPENDIX A

REFERENCES

The following publications contain information applicable to the operation and maintenance of the camera set::

DA Pam 310-4	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 ,f Modification Work Orders.
SB 38-100	Preservation, Packaging, Packing, and Marking Materials, Supplies, and Equipment Used by the Army.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11-401-1	Army Pictorial Techniques, Equipments, and Systems: Pictorial Fundamentals.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 38-750	Army Equipment Record Procedures.
TM 740-90-1	Administrative Storage of Equipment.

APPENDIX B
BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

Section I. INTRODUCTION

B-1. Scope

This appendix lists only basic issue items required by the crew/operator for installation, operation, and maintenance of Camera Set, Still Picture KS-19A4 and KS-19B.

B-2. General

This basic issue items and items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List-Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

b. Items Troop Installed or Authorized List-Section III. Not applicable.

B-3. Explanation of Columns

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

a. Illustration. This column is divided as follows:

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

(2) *Item Number*. Not applicable.

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

c. Part Number. This column 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.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency; etc., and is identified in SB 70842.

e. Description. This column indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). This column indicates the standard or 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 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.

g. Quantity Furnished with Equipment. This column indicates the quantity of the basic issue item furnished with the equipment.

Section II. BASIC ISSUE ITEMS LIST

(1) ILLUSTRATION		(2)	(3)	(4)	(5)		(6)	(7)
(A) FIG. NO.	(B) ITEM NO.	FEDERAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION	USUABLE ON CODE	UNIT OF MEAS	QTY FURN WITH EQUIP
1-1			588-207	99176	CASE, PHOTOGRAPHIC EQUIPMENT	1.2	EA	1

THIS PAGE MISSING FROM ORIGINAL DOCUMENT

PAGE B-2

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for the KS-19A4 and KS-19B. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

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

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

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

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

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

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

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

C-3. Explanation of Format

a. Column 1, group number. 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.

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
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Column 4, tools and test equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table 1.

e. Column 5, Remarks. Self-explanatory.

C-4. Explanation of Format of Table 1, Tool and Test Equipment Requirements

The column in Table 1, Tool and Test Equipment Requirements are as follows:

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

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

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

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

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS c										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
a	b												d	e
1A	Camera Set, Still Picture KS-19A4 & KS-19B	C	O H	C	H					O H	D		1,2 1,3,4 1,3,4,5,6,7	Visual check, clean , hand tighten
1A1	Camera Back, Polaroid	O		H					O	H			1 3	
1A1a	Spreader Rollers	O		O					O				1	
1Ab	Bushings	O		O					O				1	
1A2	Lens & Shutter Assy	C	O H		H				O	H			1 1,3,4	Visual check
1A3	Strobe Assy	C	O H						O	H			1 1,3,4	Visual check
1A3a	Cables, Connecting, Sync	C	O						O				1,2	
1A3b	Tray, Battery	O	O						O				2	
1A3c	Triggering Circuit Assy	O	F						O	F			1 1,3,4	Visual check
1A3c1	Battery	O							O				1	
1A4	Title Board	C		C					C					
1A5	Tripod	C		C					C					
1A6	Stereoscopic Attachment	C		C					C					
1A7	Battery Charger, External	C		C					C	F			1,3,4	B Model Only

TABLE 1. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**FSN**	**TOOL NUMBER**
1	O,F,H,D	Tool Kit, Photographic Repairman TK-77/GF	5180-752-9068	
2	O	Multimeter AN/RM-105	6625-581-2036	
3	F,H,D	Tool Kit, Photographic Repair TK-109/GF	5180-856-9653	
4	F,H,D	Multimeter TS-352B/U	6625-242-5023	
5	D	Oscilloscope AN/USM-281	6625-228-2201	
6	D	Analyzer, Motion, National Camera LS-76	6760-062-4542	
7	D	Light Meter, General Radio 1501A (or equiv)		

APPENDIX D
ORGANIZATIONAL MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

D-1. Scope

This appendix lists repair parts and special tools required for the performance of organizational maintenance of KS-19A4 and KS-19B.

D-2. General

This Repair Parts and Special Tools List is divided into the following sections:

a. Prescribed Load Allowance (PLA)-Section II. A composite listing of the repair parts, special tools, test and support equipment having quantitative allowances for initial stockage at the organizational level.

b. Repair Parts--Section III. A list of repair parts authorized for the performance of maintenance at the organizational level.

c. Special Tools, Test and Support Equipment - Section IV. Not applicable.

d. Federal Stock Number and Reference Number Index-Section V. A list of Federal stock numbers in ascending numerical sequence followed by a list of reference numbers in ascending alphanumeric sequence, cross-referenced to the illustration figure number and item number.

e. Reference Designation Cross-Reference to Page Number-Section VI. A list of reference designations cross-referenced to page number.

D-3. Explanation of Columns

The following provides an explanation of columns in the tabular lists:

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1:

(1) Source code indicates the selection status and source for the listed item. Source codes are:

Code	*Explanation*
P	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.
P10	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.
M	Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels.
A	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.
X2	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU levels. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes are:

Code	*Explanation*
C	Operator/Crew
O	Organizational Maintenance

(3) Recoverability code indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are:

Code *Explanation*

R-Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

S-Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.

T-High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.

U-Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings or castings.

b. Federal Stock Number. Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description. Column 3. This column indicates the Federal item name and any additional description of the item required. A part number of other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure, Column 4. A two character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit. Column 5. This column indicates the quantity of the item used in the KS-19A4 and KS-19B. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims. spacers, etc).

f. 15-Day Organizational Maintenance Allowances, Column 3 of Section II and Column 6 of Section III and IV.

(1) The allowance columns are divided into four subcolumns. Indicated in each subcolumn opposite the first appearance of each item is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have the letters "REF" in the allowance columns. Items authorized for use as required but not for initial stockage are identified with an asterisk in the allowance column.

(2) The quantitative allowances for organizational level of maintenance represents one initial prescribed load for a 15-day period for the number of equipments supported. Units and organizations authorized additional prescribed loads will multiply the number of prescribed loads authorized by the quantity of repair parts reflected in the density column applicable to the number of items supported to obtain the total quantity of repair parts authorized.

(3) Organizational units providing maintenance for more than 100 of these equipments shall determine the total quantity of parts required by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying the decimal factor by the parts quantity authorized in the 51-100 allowance column. Example, authorized allowance for 51-100 equipments is 40; for 150 equipments multiply 40 by 1.50 or 60 parts required.

(4) Subsequent changes to allowances will be limited as follows No change in the range of items is authorized. If additional items are considered necessary, recommendation should be forwarded to Commanding General, U. S. Army Electronics Command, ATTN: A M S E L M E NMP-R, Fort Monmouth, N. J. 07703 for exception or revision to the allowance list. Revisions to the range of items authorized will be made by the USA ECOM National Maintenance Point based upon engineering experience, demand data, or TAERS information.

g. Illustration, Column 7. This column is divided as follows:

(1) *Figure number, column 7a.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item number, column 7b.* Indicates the callout number used to reference the item in the illustration.

D-4. Special Information

Repair parts mortality is computed from failure rates derived from experience factors with the individual parts in a variety of equipments. Variations in the specific application and periods of use of electronics equipment, the fragility of electronic piece parts, plug intangible material and quality factors intrinsic to the manufacture of electronic parts, do not permit mortality to be

based on hours of end item use. However, long periods of continuous use under adverse conditions are likely to increase repair parts mortality.

D-5. Location of Repair Parts

a. This appendix contains two cross reference indexes (sect. V and VI) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), or reference designation is known. The first column in each index is prepared in alphanumerical sequence. The reference numbers (manufacturer's part numbers) are listed immediately following the last listed Federal stock number in the index of Federal stock numbers.

b. When the Federal stock number is known, follow the procedures given in (1), (2). and (3) below.

(1) Refer to the index of Federal stock numbers (sect. V) and locate the Federal stock number. The FSN is cross-referenced to the applicable figure and item or reference designation.

(2) Refer to the RPSTL (sec III) and locate the figure number (col 7a) and item or reference number (col. 7b) as noted in the FSN index.

(3) If the FSN or manufacturer's part number is not listed in the index, refer to columns 2 and 3 of the RPSTL (sect. III) and locate the Fed eral stock number or part number by scrutiny of the numbers listed in columns 2 and 3.

c. When the reference designation is determined, refer to the reference designation index (sec VI). The reference designations are listed in alphanumerical order and are cross referenced to the page number on which they appear in the repair parts list (sec III). Refer to the page number noted in the index and locate the reference designation (col 7b). If the word "REF" appears in the allowance column for the repair part, note the Federal stock number (col 2) or manufacturer's part number (col 3). Refer to the FSN index and note the reference designation for that FSN or part number. Refer to the reference designation index' and note the page number given for the reference designation. Refer to the page noted in the RPSTL (sec III) and locate the reference designation in column 7b of the repair parts list.

D-6. Federal Supply Codes for Manufacturers

Code	*Manufacture's Name*
17479	Honeywell Inc., Building Controls and Components Group, Commercial Controls Division
47904	Polaroid Corp.
75543	Lavelle Rubber Co.
80813	Dimco Gray Co.
90201	Mallory Capacitor Co.
99176	Mast Development Co.

SECTION II PRESCRIBED LOAD ALLOWANCE

(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION USEABLE ON CODE	(3) 15-DAY ORG MAINT. ALLOW. (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100
5305-953-2324	THUMBSCREW: 001-128; (80813)	*	*	*	2
5340-329-1464	BUMPER RUBBER: 5-34PB; (755143)	*	*	*	2
6135-269-5843	BATTERY: RMIR; (90201)	*	*	*	2
6720-911-3581	ROLLE: 149613; (47904)	*	*	*	2
6720-911-3821	ROLLER: 149612; (47904)	*	*	*	2
6720-933-2520	BUSHING: 149517; (47904)	*	*	*	4
	BATTERY: 16760259-001; (17479)	*	*	*	4
	CORD SHUTTER: 588-219; (99176)	*	*	*	2
	ELECTRONIC FLASH REPEATING: 599-198; (99176)	*	*	*	2
	ELECTRONIC FLASHREPEATING: 588-036; (99176)	*	*	*	2
	FLASH CORD ASSEMBLY:588-22C; (99176)	*	*	*	2
	FILTER PHOTOGRAPHIC LENS: 588-005; (99176)	*	*	*	2
	KNOB: 588-192; (99176)	*	*	*	2
	KNOB: 588-193; (99176)	*	*	*	2
	MASK: 588-348; (99176)	*	*	*	2

SECTION III REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number and Mfr Code / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) (a) 1-5	(6) (b) 6-20	(6) (c) 21-50	(6) (d) 51-100	(7) (a) FIG NO.	(7) (b) ITEM NO OR REFERENCE DESIGNATION
	6720-144-6812	CAMERA SET, STILL PICTURE KS-19A4: andKS-19B (This item is nonexpendable)							1-1	
P-O--	6135-269-5843	BATTERY: RMIR;(90201) (SYNCHRONIZATION)	ea	1	*	*	*	2	5-1	BT 101
P-O--		BATTERY: 16760259-001; (17479) (ILLUMINATION)	ea	8	*	*	*	4	5-2	BT1
P-O--	5340-329-1464	BUMPER RUBBER: 5-34PB; (75543)	ea	2	*	*	*	2	1-1	MP152
P-O--	6720-933-2520	BUSHING: 149517; (47904)	ea	4	*	*	*	4	5-3	MP214
P-O--		CAP LENS: 588-222; (99176)	ea	1	*	*	*	*	1-1	MP21
P-O--		CORD SHUTTER: 588-219; (99176)	ea	1	*	*	*	2	1-1	W103
P-O--		ELECTRONIC FLASH REPEATING: 599-198; (91176)	ea	2	*	*	*	2	1-1	MP159
P-O--		ELECTRONIC FLASH REP:588-036 (99176)	ea	2	*	*	*	*	1-1.1	
P-O-- W102		FLASH CORD ASSEMBLY: 588-220	ea	2	*	*	*	2	1-1	W101,
P-O--		FILTER PHOTOGRAPHIC LENS: 588-005; (99176)	ea	1	*	*	*	2	3-1	MP203
P-O--		KNOB: 588-192; (99176)	ea	1	*	*	*	2	1-3	MP129
P-O--		KNOB: 588-193; (99176)	ea	1	*	*	*	2	1-3	MP132
P-O--		MASK: 588-348; (99176)	ea	1	*	*	*	2	1-1	MP151
P-O-R	6720-908-9080	REAR DOOR ASSEMBLY: 146860; (47904)	ea	1	*	*	*	*	5-3	All
P-O--	6720-911-3821	ROLLER: 149612, (47904)	ea	1	*	*	*	2	5-3	MP216
P-O--	6720-911-3581	ROLLER: 149613; (47904)	ea	1	*	*	*	2	5-3	MP217
P-O--	5 5-953-2324	THUMBSCREW: 001-128; (80813)	ea	1	*	*	*	2	1-2	M7-1

SECTION V. INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE

TO FIGURE AND ITEM NUMBER OR REFERENCE DESIGNATION

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION	FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION
5305-953-2324	1-2	M7-1			
5340-329-1464	1-1	MP152			
6135-269-5843	5-1	3TlO1			
6720-908-9080	5-3	All			
6720-911-3581	5-3	MP217			
6720-911-3821	5-3	Mp216			
6720-933-2520	5-3	MP214			

REF No.	Mfg Code	Figure Number	Item No.
16760259-001	17479	5-2	BT1
588-005	99176	3-1	MP203
588-192	99176	1-3	MP129
588-193	99176	1-3	MP132
588-219	99176	1-1	W103
588-220	99176	1-1	W101, W102
588-222	99176	1-1	MP21
588-348	99176	1-1	MP151
599-198	99176	1-1	MP159

SECTION VI INDEX-REFERENCE DESIGNATION CROSS REFERENCE TO PAGE NUMBER

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:
- CNGB (1)
- Dir of Trans (1)
- CofEngrs (1)
- TSG (1)
- CofSpts (1)
- ACSC-E (2)
- USAMB (10)
- USAARENBD (2)
- USCONARC (2)
- USAMC (1)
- USAMICOM (2)
- USAECOM (2)
- ARADCOM (2)
- ARADCOM Rgn (1)
- OS Maj Comd (2)
- USACDCEC (10)
- USASTRATCOM (2)
- USAESC (70)
- USATECOM (2)
- USARYIS (5)
- Armies (1)
- Sig FLDMS (1)
- 52nd USASA SP OP Comd (5)
- USASESS (10)
- USMA (5)
- USAINTS (10)
- USASA (2)
- USACDCCEA (1)
- USACDCCEA
  - Ft Huachuca (1)
- USAPA (]O)
- Army Depots (1) except
  - LBAD
  - SAAD
  - TOAD (14)
  - LEAD (7)
  - NAAD (3)
  - SVAD (3)
  - ATAD (10)
- Svc Colleges (1)
- 1st Cav Div (2)
- Gen Deps (1)
- Sig Sec Gen Deps (4)
- Sig Dep (6)
- USACRRIL (2)
- USA Crun Inves Lab (5)
- Fort Huachuca (5)
- Fort Carson (7)
- Fort Campbell (10)
- Fort Bragg (10)
- WSMR (2)
- USAERDAA (2)
- USAERDAW (2)
- AV Comm Cen (2)
- Army Pie Cen (10)
- Units org under fol TOE:
  (2 copies each unit)
  - 1-101
  - 5-101
  - 5-111
  - 9-47
  - 9-87
  - 11-95
  - 11-96
  - 11-158
  - 11-500(AA-AC) (FD-FE)
  - 17-95
  - 17-98
  - 19-97
  - 19-237
  - 19-256
  - 19-500(AA-AC) (GD)
  - 29-134
  - (14) 30-17
  - (30) 30-18
  - 30-25
  - 30-28
  - 30-500
  - 54-12
  - 54-22
  - 67

NG: None.
USAR: None.
For explanation of abbreviations used, see AR 310-50.

***U.S. GOVERNMENT PRINTING OFFICE: 1995 -388-421/01352**

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ▸ ARE OBSOLETE.

P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 016209-000