DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL,

CAMERA SET, STILL PICTURE KS-19A3

Headquarters, Department of the Army, Washington 25, D.C.
10 September 1964

WARNING

HIGH VOLTAGE

is present in this equipment

Do not connect the power input cable to a power source until all other electrical connections are complete and checked, the flash tubes are inserted into the lamp sockets in the speedlight assemblies, and the POWER switch on the power supply flash control panel is operated to the OFF position.

Do not disconnect electrical connections from the power supply before the POWER switch is operated to the OFF position, the power input cable is disconnected from the outside power source, and the electrolytic capacitors in the power supply are discharged by actuating the shutter.

DON'T TAKE CHANCES!

CHAPTER 1

PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

Section I. PREVENTIVE MAINTENANCE

1-1. Scope

a. This manual contains instructions covering organizational maintenance of Camera Set, Still Picture KS-19A3. It includes instructions for performing preventive and periodic maintenance services and repair functions to be accomplished by the organizational repairman. Operating instructions are in TM 11-6720-216-10.

b. Organizational maintenance of Camera, Still Picture-KS-19A3 includes:

(1) Preventive maintenance (para 1-4, 1-5, and 1-6).
(2) Lubrication (para 1-7).
(3) Troubleshooting (para 1-8 and 1-9).
(4) Checking flash tube circuits (para 1-10).
(5) Repair procedures (para 2-1 through 2-8).

c. The direct reporting, by the individual user, of errors, omissions, and recommendations for improving this equipment manual is authorized and encouraged. DA Form 2028 will be used for reporting these improvement recommendations. This form may be completed using pencil, pen, or typewriter. DA Form 2028 will be completed in triplicate and forwarded by the individual using the manual. The original and one copy will be forwarded direct to: Commanding General, U.S. Army Electronics Command, ATTN: AMSELMR-MP-P, Fort Monmouth, New Jersey 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor etc).

Note: **For applicable forms and records, see paragraph 3, TM 11-6720-216-10.**

1-2. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to this equipment. Department of the Army Pamphlet No. 310-4 is an index of current technical manuals, technical bulletins, supply manuals (types 4, 6, 7, 8, and 9), supply bulletins, lubrication orders, and modification work orders that are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc) and the latest changes to and revisions of each equipment publication.

1-3. Tool, Materials, and Test Equipment Required

A list of parts authorized for organizational maintenance will appear in TM 116720-216-20P. The tool, materials, and test equipment required for organizational maintenance are listed below.

a. Tools. All tools required are contained in Tool Kit, Photographic Repairman TK-77/GF.

b. Materials.

(1) Cleaning Compound (FSN 7930-395-9542).
(2) Grease, Aircraft and Instrument (GL) (FSN 9150-576-4262).
(3) Lubricating Oil, General Purpose (LO) (FSN 9150-252-6173).
(4) Lubricating Oil, General Purpose, Preservative (PL-SPECIAL) (FSN 9150-273-2389).

c. Test Equipment. The only test equipment required is Multimeter AN/URM105.

1-4. 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 personnel

concerned with the equipment. It includes inspections and tests and repair or replacement of parts, subassemblies, or units that these inspections and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the equipment at the organizational level are made at the same time that the daily (TM 11-6720-216-10) checks and services are made, unless otherwise directed by the commanding officer.

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

1-5. Quarterly Maintenance

Quarterly preventive maintenance checks and services on the equipment are required. All deficiencies or shortcomings will be recorded in accordance with the requirements of TM 38-750. Perform all the checks and services listed in the quarterly preventive maintenance checks and services chart (para 1-6) in the sequence listed. Equipment maintained in a standby (ready for immediate operation) condition must have quarterly preventive maintenance checks and services performed on it. Equipment in limited storage (requires service before operation) does not require quarterly preventive maintenance.

1-6. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness	See that the equipment is complete	TM 11-6720-216-10.
2	Spare parts	Check general condition and method of storage of all spare parts. There should be no overstockage, and all shortages must be on valid requisitions.	TM 11-6720-216-10, TM 11-6720-216-20P
3	Publications	See that all applicable publications are complete, serviceable, and current.	DA Pam 310-4.
4	Modifications	Check DA Pam 310-4 to determine whether applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	
5	Preservation	*a.* inspect all painted surfaces for bare spots, rust, and corrosion. *b.* Remove rust and corrosion by lightly sanding with fine sandpaper. Brush two thin coats of paint on bare metal to protect it from further corrosion.	*a.* None. *b.* TM 9-213.
6	Diaphragm	Open and close diaphragm by means of iris diaphragm control lever, and check diaphragm for binding and sticking.	TM 11-6720-216-10.
7	Cable release	Remove cable release from lens and shutter assembly. Press cable release, and check for binding and sticking. Lubricate or replace defective cable release.	Fig. 1-1.
8	Back door assembly	*a.* Check back door assembly for tight closure. *b.* Open back door assembly, and check it for binding and sticking.	*a.* Para 1-9. *b.* Para 1-9.
9	Back cover assembly	Open back cover assembly, and check it for binding, sticking, and damage.	Para 1-9.

Sequence No.	Item	Procedure	References
10	Bridge and pressure plate assembly.	Open bridge and pressure plate assembly, and check it for binding, sticking, and damage.	Para 1-9.
11	Spreader roller----------	Rotate spreader roller, and check it for binding and sticking.	Para 1-9.
12	Film guide roller ----------	Rotate film guide roller, and check it for binding and sticking.	Para 1-9.
13	Bridge roller----------	Rotate bridge roller, and check it for binding and sticking.	Para 1-9.
14	Power cables and switches--	Assemble and connect camera set (TM 11-6720-216-10) Operate power switch to ON. INDICATOR lamp should blink within 10 seconds after power is applied to camera set.	Para 1-9.
15	Flash tube circuits----------	Press cable release; both flash tubes should flash.	Para 1-9.
16	Lubrication and, print quality--	*a.* Load camera with film, and expose a full frame. *b.* During operation, check for noises that indicate lack of lubrication. *c.* Process print, and check quality of print.	*a.* TM 11-6720-216-10. *b.* Para 1-7. *c.* TM 11-6720-216-10 and fig. 1-9.

1-7. Lubrication

CAUTION

When lubricating the camera set, apply lubricants sparingly. Remove excessive lubricant immediately. Do not allow lubricant to contact the lens elements, any camera' surfaces that contact the film, or the rubber feet on the tripod.

a. Lubrication Intervals. The symbol 2M (fig. 1-1) means bimonthly (every 2 months), the symbol S means semiannually (every 6 months), and the symbol A (fig. 1-2) means annually (every 12 months). For lubrication purposes, a month consists of 30 days of 8-hour-per-day operation. If the equipment is operated more than 8 hours per day, the lubrication intervals must be adjusted accordingly, For example, if the equipment is operated 16 hours a day instead of 8, the cable release must be lubricated every month instead of every 2 months.

b. Lubrication Procedure. Before lubricating, remove dirt and old lubricant from the parts with a brush or clean cloth.

(1) Every 2 months lubricate the cable release (fig. 1-1), the paper cutoff bar pivots, the camera back hinges, the back door assembly hinge, and the retaining shaft with lubricating oil (LO). To gain access to the retaining shaft, open the back cover assembly (2, fig. 2-1) and the bridge and pressure plate assembly (3).

(2) Every 6 months lubricate the button of the positioning bar (fig. 1-2), the tripod (except the inner tube), the double exposure latch (fig. 1-1), the bridge roller, film guide roller, spreader roller bearing ends, and the ball plunger top.

(3) Every year lubricate the inner tube (fig. 1-2) of the tripod.

c. Lubrication During Unusual Conditions.

(1) In tropical, maritime, and rainy regions, lubricate the camera set more frequently to maintain a protective film of lubricant on bearing and sliding surfaces and to seal out moisture.

(2) Before lubricating in desert regions, clean the lubricating points to remove sand and dirt and prevent scoring and rapid wear of bearing and sliding surfaces.

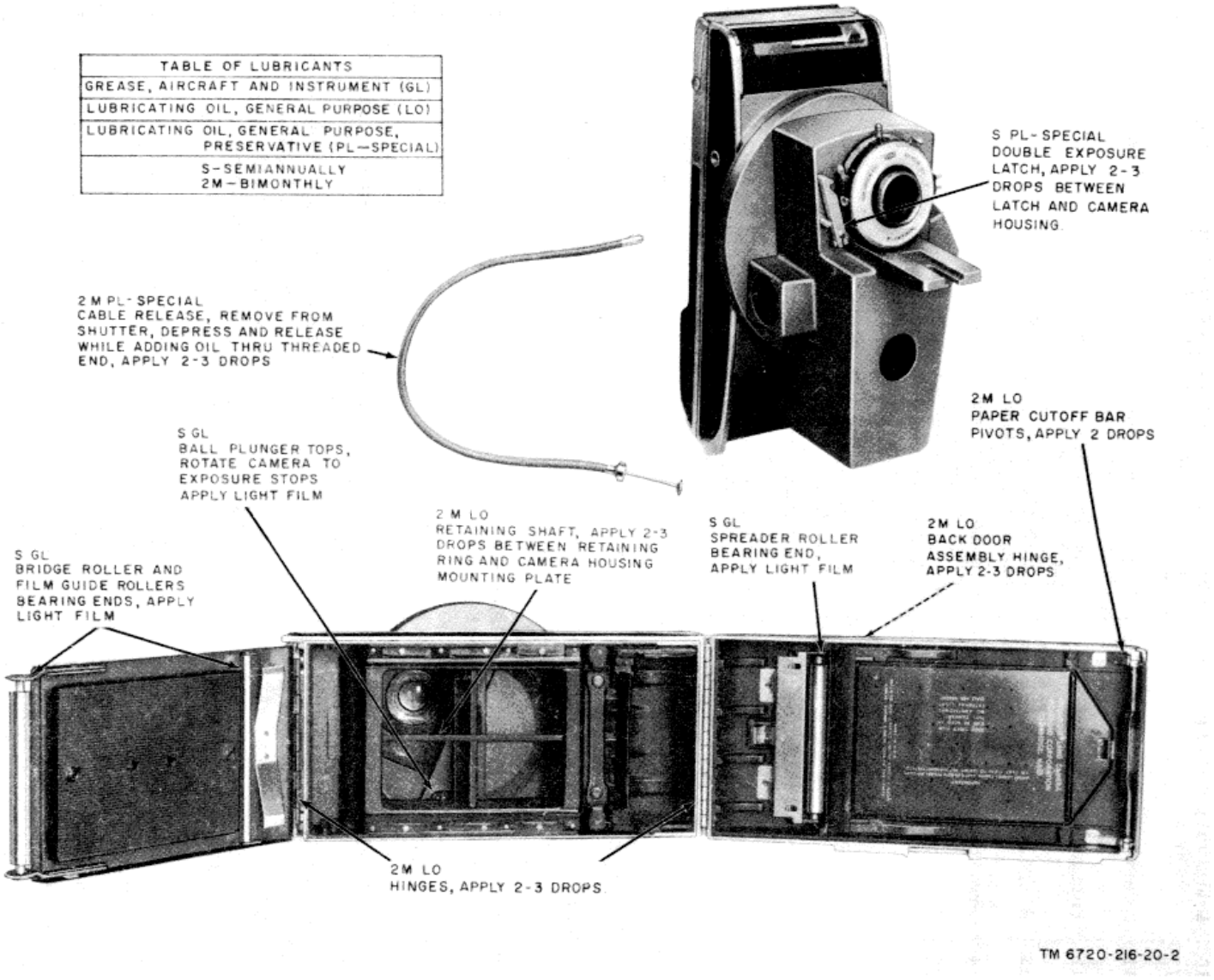


Figure 1-1. Camera assembly, lubrication diagram.

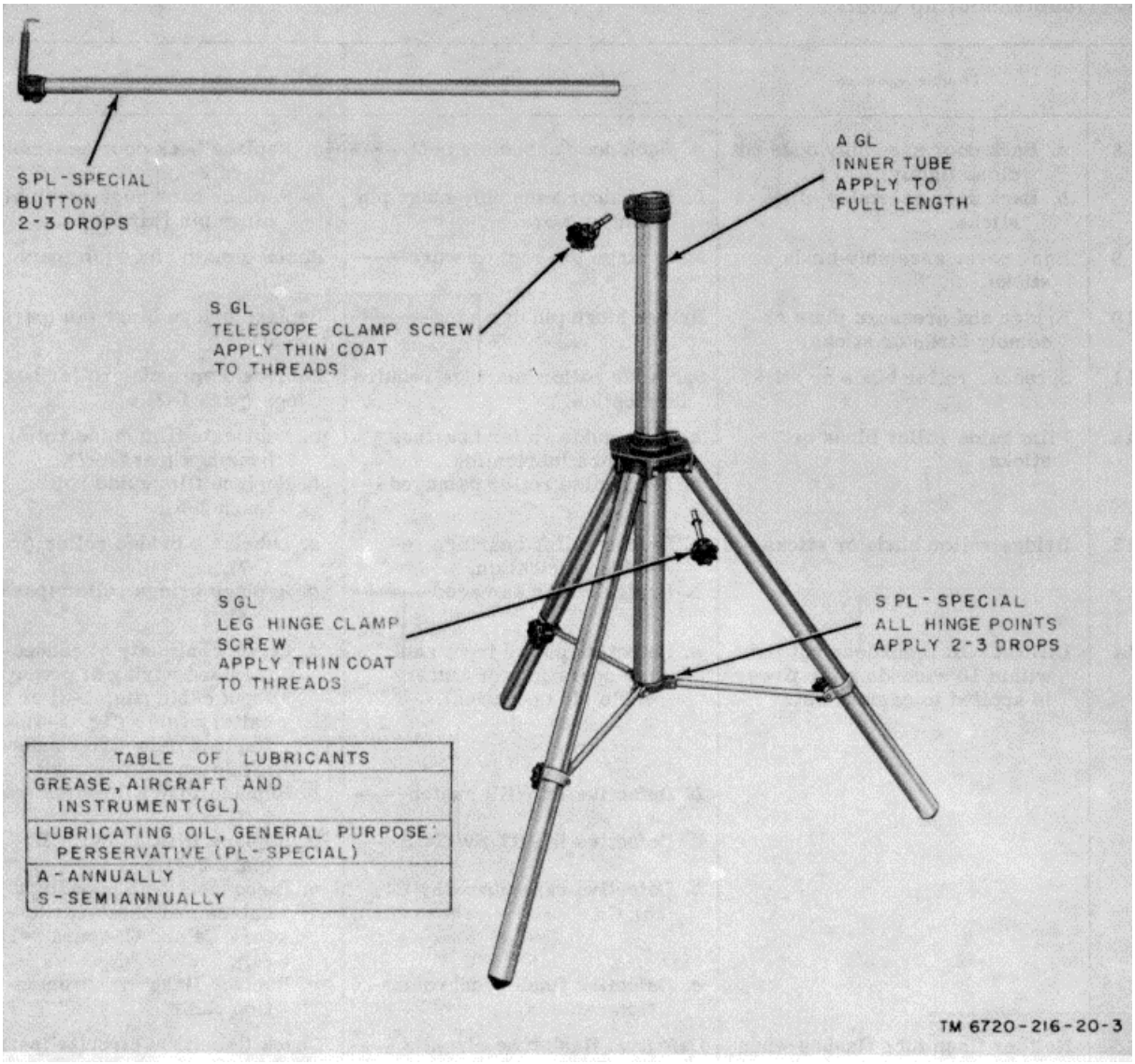


Figure 1-2. Tripod and positioning bar, lubrication diagram.

Section II. TROUBLESHOOTING

1-8. Troubleshooting Procedure

Troubleshooting of this equipment-at the organizational level is based upon the quarterly preventive maintenance checks and services chart (para 1-6). To troubleshoot the equipment, perform all functions starting with item number 8 in the quarterly preventive maintenance checks and services chart, and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the item number, and turn to the corresponding item number in the troubleshooting chart (para 1-9). Perform the checks and corrective measures indicated in the troubleshooting chart. If performance of the corrective measures does not result in correction of the trouble, a higher level of maintenance is required. Paragraph 1-10 contains instructions for checking the flash tube circuits.

1-9. Troubleshooting Chart

Item No.	Trouble symptom	Probable trouble	Checks and Corrective measure
8	*a.* Back door assembly does not close tightly.	*a.* Back door assembly bent ----	*a.* Replace back door assembly (para 2-1).
	b. Back door assembly binds or sticks.	*b.* Back door assembly hinge pin bent or worn	*b.* Replace back door assembly hinge pin (para 2-1).
9	Back cover assembly binds or sticks.	Main hinge pin bent or worn -----	Replace main hinge pin (para 2-2).
10	Bridge and pressure plate assembly binds or sticks.	Bridge hinge pin damaged -------	Replace bridge hinge pin (para 2-5).
11	Spreader roller binds or sticks	Spreader roller bearings require lubrication.	Lubricate spreader roller bearings (para 1-7).
12	Film guide roller binds or sticks.	*a.* Film guide roller bearings require lubrication.	*a.* Lubricate film guide roller bearings (para 1-7).
		b. Film guide roller damaged ---	b. Replace film guide roller (para 2-3).
13	Bridge roller binds or sticks---------	*a.* Bridge roller bearings require lubrication.	*a.* Lubricate bridge roller (para 1-7).
		b. Bridge roller damaged---------	b. Replace bridge roller (Para 2-4).
14	INDICATOR lamp does not light within 10 seconds after power is applied to camera set.	*a.* Defective power input cable (ac operation) or battery Cable (dc operation).	*a.* Check continuity of connectors and wiring of power input cable (fig. 1-3) or battery cable (fig. 1-4). Replace defective connector (para 2-6) or cable.
		b. Defective POWER switch ----	*b.* Replace POWER switch (para 2-7).
		c. Defective INPUT SWITCH --	c. Replace INPUT SWITCH (para 2-7).
		d. Defective capacitor C3, C4, or C5.	*d.* Disconnect both speedlight cables and check capacitors C4 and C5 (para 1-10*b* (6)).
		e. Defective flash synchronization cable.	*e.* Replace flash synchronization cable.
15	Neither flash tube flashes when cable release is pressed.	Defective flash tube circuits------	Check flash tube circuits (para 1-10*a*).
16	*a.* One side of subject's face too dark on print.	*a.* One flash tube not flashing --	*a.* Check flash tube circuits dark on (para 1-10*b*).
	b. Print is completely white and blank or shows fogged patches.	*b.* Back door assembly bent or warped and does not close tightly.	*b.* Replace back door assembly (para 2-1).

1-10. Checking Flash Tube Circuits

If neither flash tube flashes when the cable release is pressed, perform the procedure described in a below. If one flash tube flashes when the cable release is pressed, perform the procedure described in b below.

a. Neither Flash Tube Flashes.

(1) Disconnect the flash synchronization cable from the two pin connectors (TM 11-6720-216-10) of the lens and shutter assembly.

(2) After the INDICATOR lamp of the power supply begins to blink, short circuit the two pins in the open end of the flash synchronization cable. If both flash tubes flash, the trouble is in the lens and shutter assembly, and higher level maintenance is required. If neither flash tube flashes, check

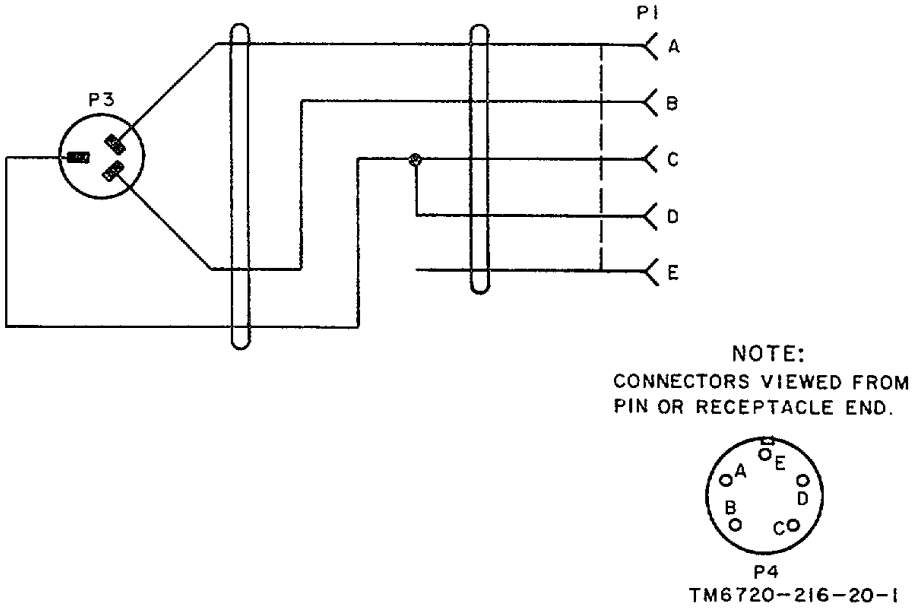


Figure 1-3. Power input cable, schematic diagram.

the continuity of the connectors and wiring of the flash synchronization cable. Replace a defective flash synchronization cable or connector P10 (para 2-6). If the flash tubes still do not flash, a higher level of maintenance is required.

b. One Flash Tube Does Not Flash.

WARNING: **Before disconnecting a speedlight cable, operate the POWER switch to the OFF position, disconnect the power input cable from the outside power source (or disconnect the battery cable from the POWER CABLE jack) and trip the shutter. Be careful when handling a speedlight assembly; if their discharge circuit is faulty, capacitors C4 and C5 can remain charged after the shutter has been tripped.**

(1) Disconnect the speedlight cable of the speedlight assembly that does not flash, and remove the flash tube (1, fig. 2-3) from the lamp socket (13).

CAUTION: **Be careful when testing a speedlight assembly; if their discharge circuit is faulty, capacitors C4 and C5 can remain charged after the shutter has been tripped, and a meter can be damaged.**

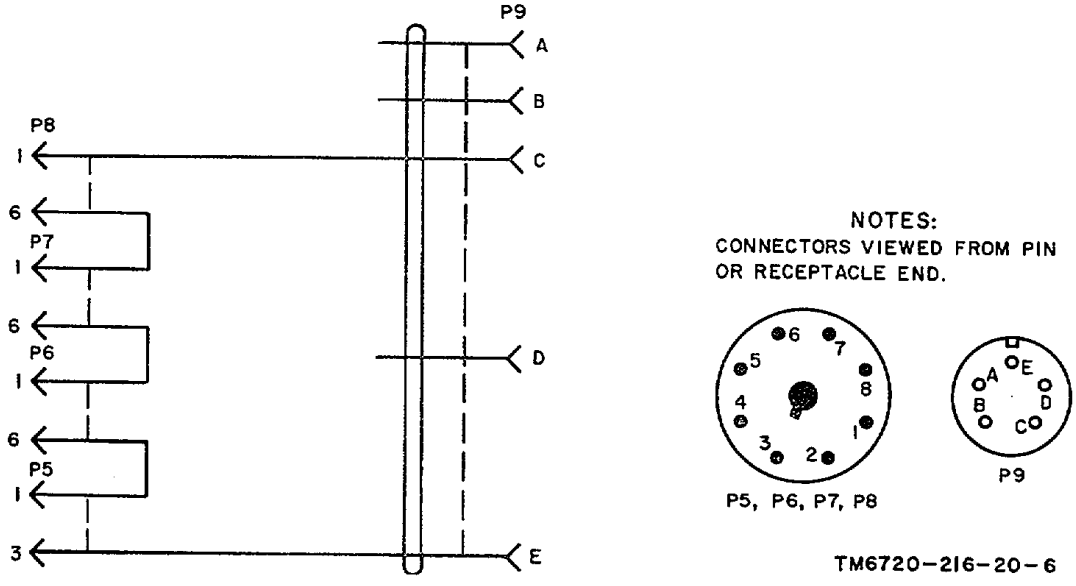


Figure 1-4. Battery cable, schematic diagram.

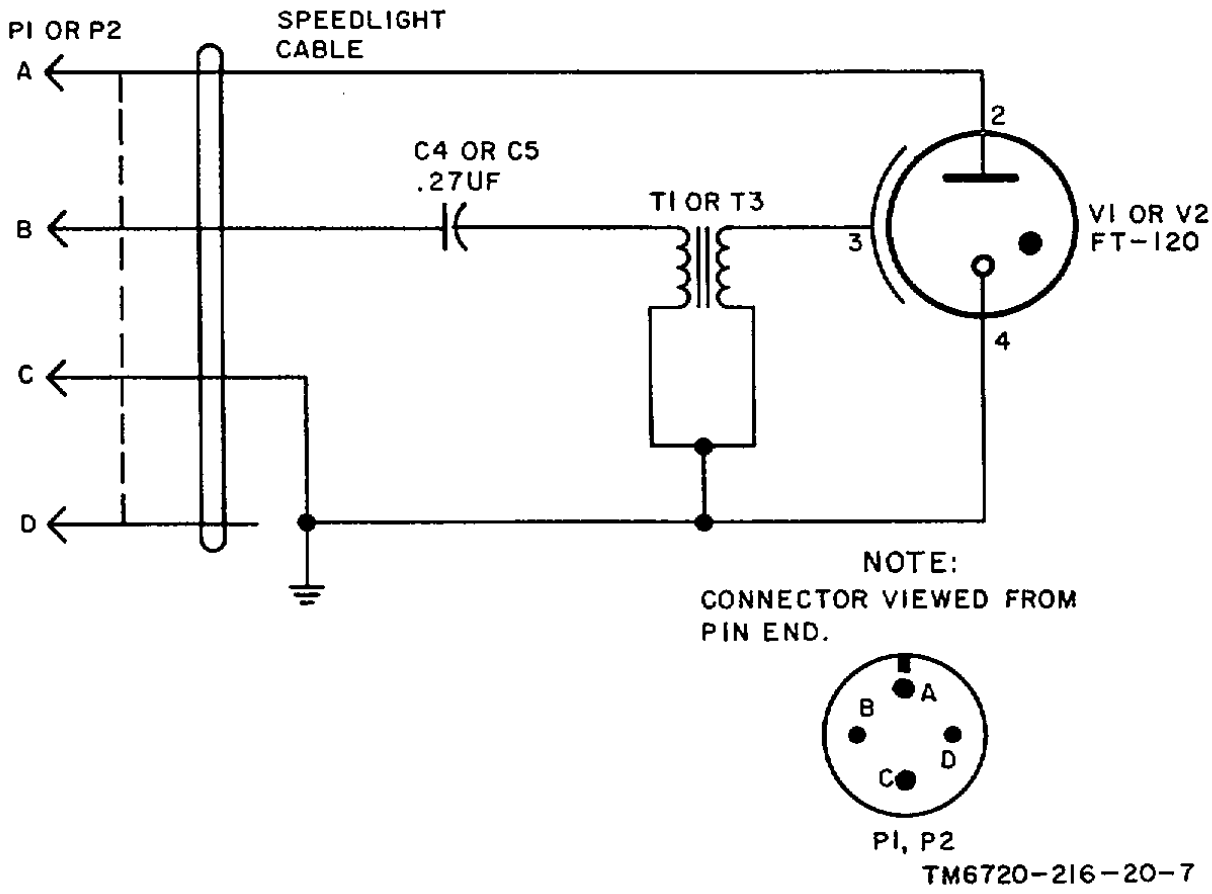


Figure 1-5. Speedlight assembly. schematic diagram.

(2) Check for continuity between pin A of P1 or P2 (fig. 1-5) and pin 2 of lamp socket XV1 or XV2 (13), and between pin C of P1 or P2 and pin 4 of lamp socket XV1 or XV2 (13).

(3) Measure the resistance (540 ohms) between pin C of P1 or P2 and pin 3 of lamp socket XVI or XV2 (13). Replace a defective transformer T2 or T3 (para 2-8) or connector P1 or P2 (para 2-6).

(4) Expose the leads of transformer T2 or T3 and capacitor C4 or C5 (para 2-8a(2), (3), and (4)).

(5) Check for continuity between pin B or connector P1 or P2 and the side of capacitor C4 or C5 that is connected to pin B. Replace a defective connector P1 or P2.

(6) Measure the resistance (0.35 ohm) between pin C of P1 or P2 and the junction between capacitor C4 and transformer T2 (or between capacitor C5 and transformer T3). Replace a defective transformer T2 or T3 (para 2-8).

(7) Measure the resistance (infinite) between pins B and C of P1 or P2. Replace a defective capacitor C4 or C5 (para 2-8).

(8) If the measurements made in (2), (3), (5), and (6) above are correct, a higher level of maintenance is required.

2-1. Removal and Replacement of Back Door Assembly Hinge Pin and Back Door Assembly

(fig. 2-1)

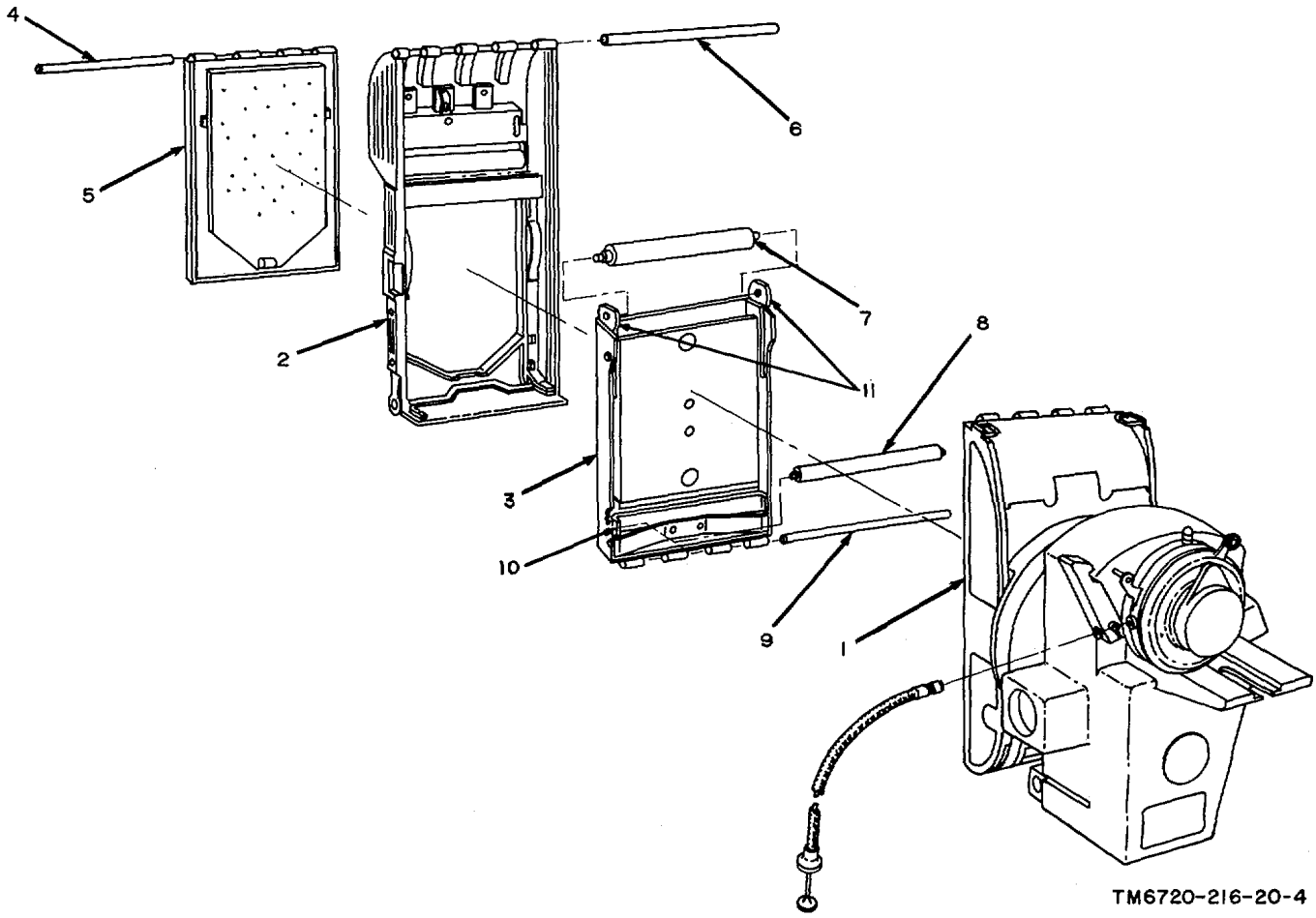
a. Removal.

(1) Remove the back door assembly hinge pin (4) from the back door assembly (5).

(2) Open the back door assembly (5), and remove it from the backcover assembly (2).

b. Replacement.

(1) Place the replacement back door assembly (5) on the back cover assembly (2) so that the holes in the hinge are aligned.



1–Camera body
2–Back cover assembly
3–Bridge and pressure plate assembly (A17)
4–Back door assembly hinge pin
5–Back door assembly (A18)
6–Main hinge pin
7–Bridge roller (MP130)
8–Film guide roller (MP129)
9–Bridge hinge pin
10–Film guide roller retainer
11–Bridge roller support arms

Figure 2-1. Camera assembly, partial exploded view.

(2) Wipe the replacement back door assembly hinge pin (4) with a cloth moistened with lubricating oil (LO).
(3) Carefully secure the backdoor assembly (5) to the back cover assembly (2) with the replacement back door assembly hinge pin (4).
(4) Close and lock the back door assembly (5).

2-2. Removal and Replacement of Main Hinge Pin
(fig. 2-1)

a. Remove the main hinge pin (6) from the back cover assembly (2).
b. Open the back cover assembly (2), and remove it from the camera body (1).
c. Wipe the new main hinge pin (6) with a cloth moistened with lubricating oil (LO).
d. Align the holes in the hinge, and push the new main hinge pin (6) through the holes to secure the back cover assembly (2) to the camera body (1).
e. Close and lock the back cover assembly (2).

2-3. Removal and Replacement of Film Guide Roller
(fig. 2-1)

a. Removal.
(1) Open the back cover assembly (2) and the bridge and pressure plate assembly (3).
(2) Bend one end of the film guide roller retainer (10), and remove the film guide roller (8) from the holes in the ends of the film guide roller retainer (10).
b. Replacement.
(1) Insert the new film guide roller (8) into the holes in the ends of the film guide roller retainer (10); bend the end of the film guide roller retainer (10) until the new film guide roller (8) is securely positioned but rotates without binding or sticking.
(2) Close the bridge and pressure plate assembly (3); close and lock the back cover assembly (2).

2-4. Removal and Replacement of Bridge Roller

a Removal.
(1) Open the back cover assembly (2, fig. 2-1) and the bridge and pressure plate assembly (3).
(2) Spread the bridge roller support arms (11), and remove the bridge roller (7) from them.
b. Replacement.
(1) Spread the bridge roller support arms (11), and insert the pins of the new bridge roller (7) into the holes in the bridge roller support arms

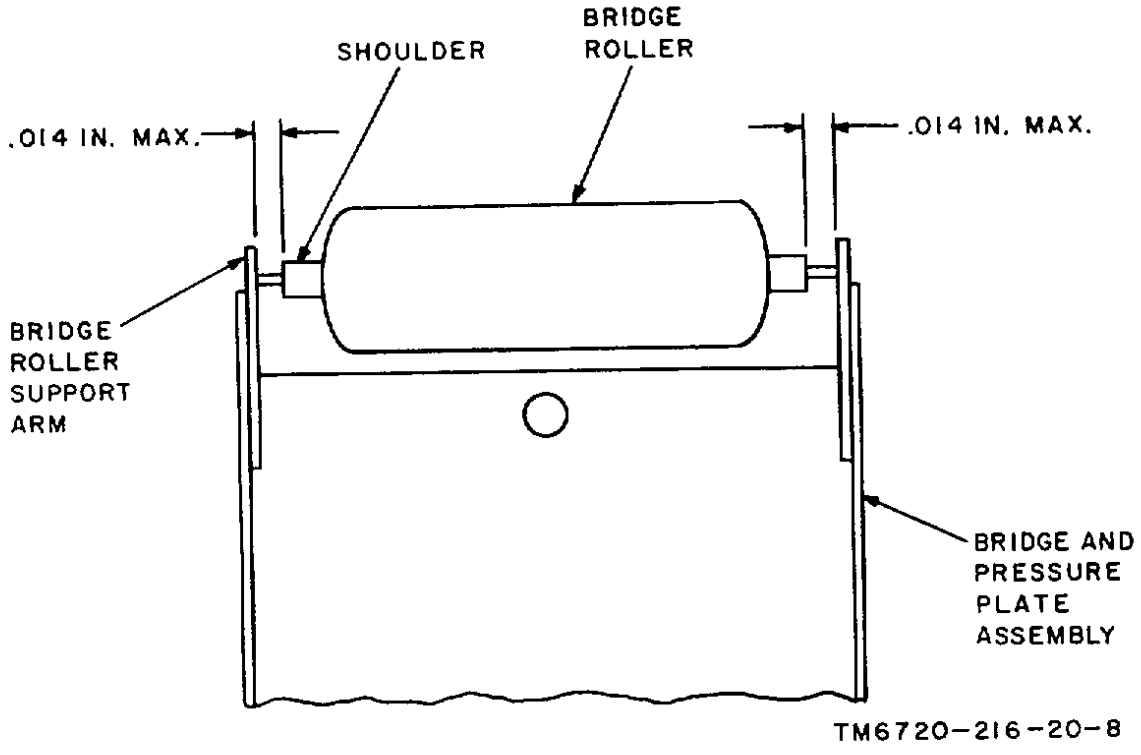


Figure 2-2. Gap between bridge roller and bridge roller support arm.

(2) Press the bridge roller support arms (11) against the new bridge roller (7) until the gap (fig. 2-2) between each bridge roller support arm (11, fig. 2-1) and the adjacent shoulder on the new bridge roller (7) does not exceed 0.014 inch.

(3) Close the bridge and pressure plate assembly (3); close and lock the back cover assembly (2).

2-5. Removal and Replacement of Bridge Hinge Pin

a. Open the back cover assembly (2, fig. 2-1).

b. Remove the bridge hinge pin (9) from the bridge and pressure plate assembly (3).

c. Wipe the new bridge hinge pin (9) with a cloth moistened with lubricating oil (LO).

d. Align the holes in the hinge, and push the new bridge hinge pin (9) through the holes to secure the bridge and pressure plate assembly (3) to the camera body (1).

2-6. Repair of Connectors P1, P2, P4, P9, and P10

(fig. 2-3)

NOTE: **The construction of connectors P1 (31), P2, P4, P9, and P10 is the same; therefore, the following procedure is applicable to any one of these connectors.**

a. Disassembly.

(1) Remove the two screws (22), two lockwashers (24), and the cable clamp cap (23) from the cable clamp (26).

(2) Hold the back shell (25), and unscrew the cable clamp (26) from it.

(3) Hold the plug body (27), and unscrew the back shell (25) from it.

(4) Slide the back shell (25) and coupling ring (28) back from the plug body (27); mark the wiring and unsolder it from the terminals of the plug body (27).

(5) Remove the coupling ring (28), the back shell (25), the plastic washer (29), the rubber washer (30), and the cable clamp (26) from the speedlight cable (9).

b. Assembly.

(1) Slide the cable clamp (26), rubber washer (30), plastic washer (29), back shell (25), and coupling ring (28) over the end of the speedlight cable (9).

(2) the wiring (removed in a(4) above) to the terminals of the plug body (27).

(3) Hold the plug body (27), and screw the back shell (25) to it.

(4) Hold the back shell (25), and screw the cable clamp (26) to it.

(5) Secure the cable clamp cap (23) to the cable clamp (26) with the two screws (22) and lockwashers (24).

2-7. Replacement of POWER Switch and INPUT SWITCH

WARNING: **Before removing the power supply cover, disconnect the power supply input cable, and trip the shutter to discharge the electrolytic capacitors in the power supply.**

a. Remove the eight screws that secure the power supply cover to the power supply case, and remove the power supply cover.

b. Tag and unsolder the wiring from the defective switch (POWER switch or INPUT SWITCH).

c. Remove the nut that holds the switch to the power supply case, and remove the switch.

d. Insert the new switch into the hole in the power supply case, and secure the switch with the nut.

e. Solder the wiring (removed in b above) to the switch.

f. Secure the cover to the power supply case with the eight screws.

2-8. Repair of Lightarm Assemblies

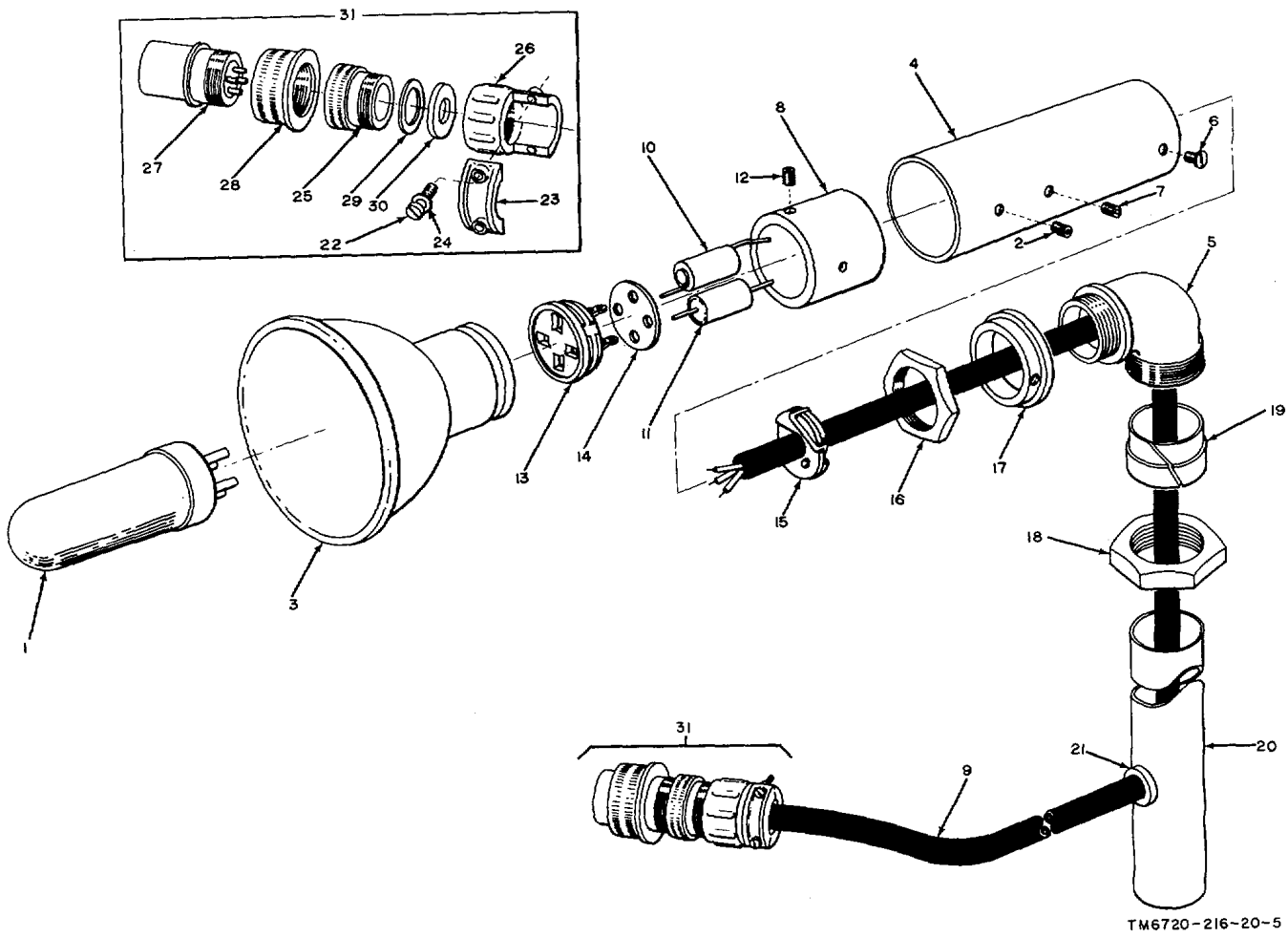
(fig. 2-3)

WARNING: **Trip the shutter to discharge the capacitors in the lightarm assemblies before disconnecting the flash synchronization and speedlight cables.**

Disassembly and assembly procedures for the left and right lightarm assemblies are identical. Disassemble only as far as necessary to replace the faulty components.

a. Disassembly.

(1) Pull flash tube V1 or V2 (1) straight out from



1–Flash tube V1 or V2
2–Setscrew (2)
3–Flash tube reflector
4–Lamp housing
5–Lightarm elbow
6–Screw (2)
7–Setscrew (2)
8–Insulating sleeve
9–Speedlight cable
10–Transformer T2 or T3
11–Capacitor C4 or C5
12–Setscrew
13–Lamp socket XV1 or XV2
14–Insulating disk
15–Strain relief bushing
16–Nut
17–Lamp housing cap
18–Nut
19–Tube locking sleeve
20–Lightarm tube
21–Cable grommet
22–Screw (2)
23–Cable clamp cap
24–Lockwasher
25–Back shell
26–Cable clamp
27–Plug body
28–Coupling ring
29–Plastic washer
30–Rubber washer
31–Connector P1 or P2

Figure 2-3. Lightarm assembly, exploded view.

lamp socket XV1 or XV2 (13).

(2) Loosen the two setscrews (2), and remove the flash tube reflector (3) from the lamp housing (4).

(3) Remove the two screws (6), and separate the lamp housing (4) from the lightarm elbow (5).

(4) Remove the two setscrews (7), and slide the insulating sleeve (8) out of the lamp housing (4) to expose transformer T2 or T3 (10) and capacitor C4 or C5 (11).

(5) Tag and unsolder the white speedlight cable (9) lead from capacitor C4 or C5 (11) and the capacitor C4

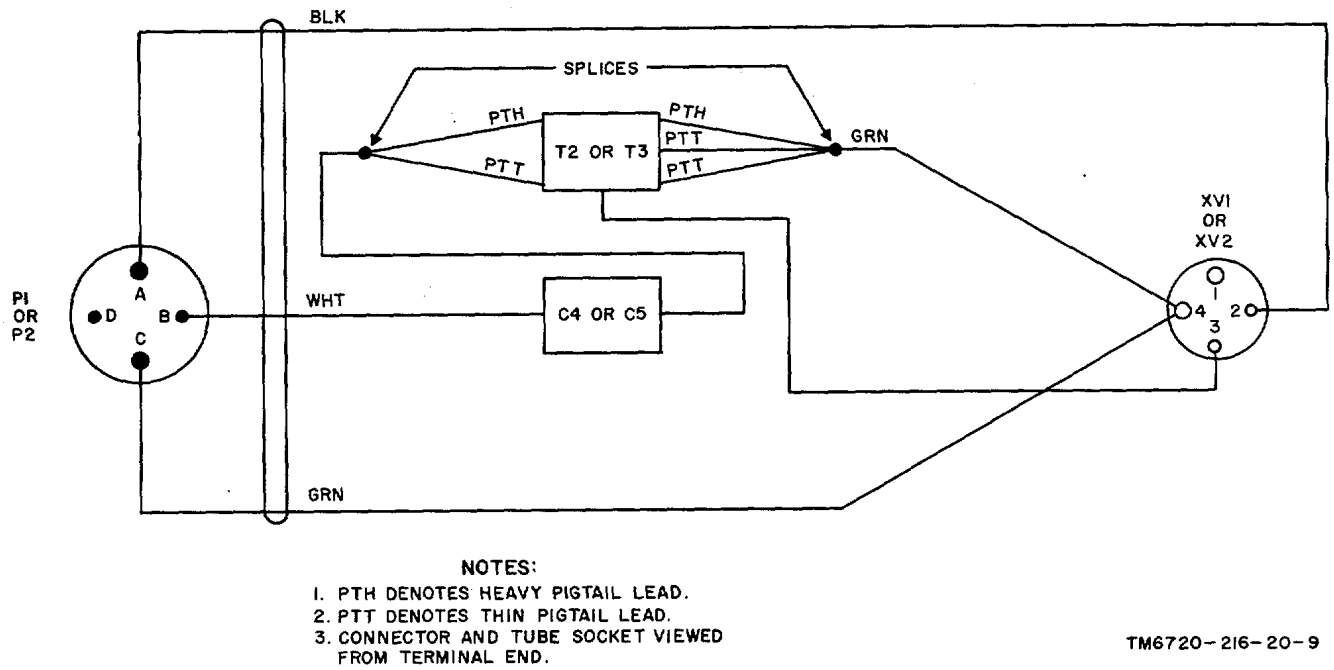


Figure 2-4. Lightarm assembly, wiring diagram.

or C5 (11) lead from transformer T2 or T3 (10).

(6) Remove the setscrew (12), the lamp socket (13), the insulating disk (14), transformer T2 or T3 (10), and capacitor C4 or C5 (11) from the insulating sleeve (8).

(7) Mark and unsolder transformer T2 or T3 (10), the black, and the green speedlight cable (9) leads from lamp socket XV1 or XV2 (13).

(8) Rotate the strain relief bushing (15) one-quarter turn, separate its two parts, and remove it from the speedlight cable (9).

(9) Remove the nut (16) and the lamp housing cap (17) from the lightarm elbow (5).

10) Remove the nut (18) and the tube locking sleeve (19) from the lightarm tube (20).

(11) Remove the speedlight cable (9) and the cable grommet (21) from the lightarm tube (20).

b. Assembly.

(1) Insert the cable grommet (21) into its hole in the lightarm tube (20); push the unattached end of the speedlight cable (9) through the cable grommet (21) until the speedlight cable (9) appears from the threaded end of the lightarm tube (20).

(2) Slide the lightarm elbow (5) with the tube locking sleeve (19) and nut (18) over the speedlight cable (9), and attach the lightarm elbow (5) to the lightarm tube (20) with the nut (18).

(3) Attach the lamp housing cap (17) to the lightarm elbow (5) with the nut (16).

(4) Replace the two parts of the strain relief bushing (15) on the speedlight cable (9), approximately 3 inches from the end of the cable insulation, and join them.

(5) Slide the insulating disk (14) over the terminals of the lamp socket (13), and solder the black and the green speedlight cable (9) leads and transformer T2 or T3 (10) (removed in a(7) above) to lamp socket XV1 or XV2 (13) terminals (fig.

(6) Slide the insulating sleeve (8) over transformer T2 or T3 (10) and capacitor C4 or C5 (11) and against lamp socket XV1 or XV2 (13); secure

the insulating sleeve (8) to lamp socket XV1 or XV2 (13) with the setscrew (12).

(7) Solder capacitor C4 or C5 (11) leads (removed in *a*(5) above) to the lead of T2 or T3 (10) and the white speedlight cable (9) lead.

(8) Slide the lamp housing (4) over the lamp socket (13) and the insulating sleeve (8) and against the lamp housing cap (17) so that the screwholes in the lamp housing (4) and the lamp housing cap (17) are aligned; secure the lamp housing (4) to the lamp housing cap (17) with the two screws (6).

(9) Position the lamp socket (13) and insulating sleeve (8) so that their screwholes are aligned with the screwholes in the lamp housing (4); secure the insulating sleeve (8) to the lamp housing (4) with the two setscrews (7).

(10) Insert the flash tube reflector (3) into the lamp housing (4) so that the screwholes in the flash tube reflector (3) and the lamp housing (4) are aligned; secure the flash tube reflector (3) to the lamp housing (4) with the two setscrews (2).

(11) Insert flash tube V1 or V2 (1) into lamp socket XV1 or XV2 (13).

APPENDIX I

REFERENCES

Following is a list of applicable references available to organizational maintenance personnel of Camera Set, Still Picture KS-19A3:

DA Pamphlet 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 4, 6, 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-203-12	Operator and Organizational Maintenance, Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6720-216-10	Operator's Manual, Camera Set, Still Picture KS-19A3.
TM 38-750	Army Equipment Record Procedures.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A2-1. General

a This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance category.

b Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the categories.

(a) Service. To clean, to preserve, and to replenish lubricants.

(b) Adjust. To regulate periodically to prevent malfunction.

(c) Inspect. To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) Test. To verify serviceability and to detect probable electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(*e) Repair.* To restore an item to serviceable condition by correcting 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.

(f) Overhaul. To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(3) *Operator, organization, direct and general support, and depot.* The symbol X indicates the level responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Maintenance levels higher than the level marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be used to clarify the data in the preceding column.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools and test equipment required to perform the maintenance functions.

2) *Operator, organization, direct and general support, and depot.* The dagger (t) indicates the level to which the tools and test equipment are normally allocated.

(3) *Tool code.* This column lists the code assigned to the tools and test equipment.

A2-2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including general support are authorized to the organization operating this equipment.

SECTION II. MAINTENANCE ALLOCATION CHART

PART OR COMPONENT	MAINTENANCE FUNCTION	ECHELON 1	2	3	4	5	TOOL CODE	REMARKS
CAMERA SET, STILL PICTURE KS-19A3	service	X						Clean, hand tighten
			X				1	Lubricate Shutter
	adjust				X		1,3	
	inspect	X						Visual
			X				1	Mechanical, optical, electrical
	test				X		5	Lens seating,
			X				2	Continuity of wired circuits
	repair		X				1	Running spares & easily replaced parts
					X		1,3	
	overhaul					X	1,3, 5	

SECTION III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

PART OR COMPONENT	ECHELON 1	2	3	4	5	TOOL CODE	REMARKS
	•	•	•	•			
KS-19A3 (continued)							
TOOL KIT, PHOTOGRAPHIC REPAIRMAN TK-77/GF		†	†	†	†	1	
MULTIMETER AN/URM-105		†	†			2	
TOOL KIT PHOTOGRAPHIC REPAIR TK-109/GF				†	†	3	
MULTIMETER TS-352/U				†	†	5	

By Order of Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (2)
CNGB (1)
CC-E (7)
CofT (1)
CofEngrs (1)
TSG (1)
CofSptS (1)
USAARMBD (2)
USAARTYBD (2)
USCONARC (5)
USAMC (5)
USAECOM (7)
USAMICOM (4)
USASMCOM (2)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (3)
LOGCOMD (2)
MDW (1)
Armies (2)
Corps (2)
USA Corps (3)
11th Air Assault Div (3)
Instl (2) except Ft Gordon (5)
Ft Hancock (4), Ft Huachuca (10)
Ft Monmouth (63)
Svc Colleges (2)
Br Svc Sch (2) except
USA PM Sch (10)
GENDEP (OS) (2)
Sig Sec, GENDEP (OS) (5)
Sig Dep (OS) (12)
Army Dep (2) except Sharpe (3)
Lexington, Tobyhanna (12)
Sacramento (28), Ft Worth (8)
Letterkenny, Navajo (5)
Savanna (5), Charleston (3)
USASCC (4)
USAECDA (1)
USACBRCDA (1)
USACECDA (1)
USACECDA (Monmouth Ofc) (1)
USAMSCDA (1)
USAOCDA (2)
USAQMCDA (1)
USATCDA (1)
USAADCDA (1)
USAARMCDA (1)
USAAVNCDA (1)
USAARTYCDA (1)
USASWCDA (1)
USA Elct Mat Agcy (9)
USASA 1st Fld Sta (5)
USAPA (3)
USARSOUTHCOM Sig Agcy (1)
USATC AD (2)
USATC Armor (2)
USATC Engr (2)
USATC Inf (2)
USASTC (3)
WRAMC (1)
Army Pic Cen (2)
Chicago Proc Dist (1)
AMS (1)
GENMISH (5)
USAELRDA (White Sands) (13)
WSMR (5)
Units org under fol TOE: (2 copies each except as indicated)

	9-47 11-587
11-16	11-592
11-57	11-597
11-95	30-17
11-96	80-18
11-97	30-25
11-98	30-28
11-117	30-500 (AA-EE)
11-155	
11-157	
11-337	
11-500 (AA-AE) (4)	
11-557	

NG: None.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

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: 019596-000