TM 11-6720-244-35

TECHNICAL MANUAL

DIRECT SUPPORT, GENERAL SUPPORT, AND
DEPOT MAINTENANCE MANUAL INCLUDING
REPAIR PARTS AND SPECIAL TOOLS LISTS

CAMERA SET, STILL PICTURE KS-15(4)

(FSN 6720-935-7701)

HEADQUARTERS, DEPARTMENT OF THE ARMY
MARCH 1972

WARNING

HIGH VOLTAGE

The following test instruments incorporate circuitry which produce high voltages:

Conductivity Test Instrument _____ **42-531-Z1W13**

Synchronizing Test Instrument _____ **42-253.01-Z1W109**

Electronic Shutter Teat Instrument _____ **42-253.01-Z1W111**

DEATH OR INJURY

***may* result if safety precautions are not observed.**

Do not come in contact with high voltage leads.

Disconnect the instrument when not in use.

Disconnect the power and discharge high voltage capacitors before working inside the instrument.

DON'T TAKE CHANCES!

TECHNICAL MANUAL
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 *March* 1972

Direct Support, General Support, and Depot Maintenance Manual Including Repair Parts and Special Tools lists

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	Paragraph	Page
CHAPTER 1. FUNCTIONING		
Section I. General	1-1, 1-2	1-1
II. Camera body	1-3-1-9	1-1
III. Exposure meter, lenses, and flash unit	1-10-1-15	1-11
CHAPTER 2. TROUBLESHOOTING	2-1-2-4	2-1
CHAPTER 3. DISASSEMBLY		
Section I. Camera body	3-1-3-9	3-1
II. Exposure meter	3-10-3-13	3-22
III. Lenses	3-14-3-26	3-26
IV. Flash unit	3-27-3-31	3-38
CHAPTER 4. REPAIR AND ALIGNMENT		
Section I. Camera body	4-1-4-18	4-1
II. Exposure meter	4-19-4-26	4-21
III. Lenses	4-27-4-38	4-26
IV. Flash unit	4-39-4-43	4-33
CHAPTER 5. REASSEMBLY		
Section I. Camera body	5-1-5-10	5-1
II. Exposure meter	5-11-5-13	5-10
III. Lenses	5-14-5-18	5-14
IV. Flash unit	5-19-5-23	5-17
CHAPTER 6. DEPOT OVERHAUL STANDARDS		
Section I. General	6-1,6-2	6-1
II. Camera body	6-3-6-13	6-1
III. Exposure meter	6-14	6-13
IV. Lenses	6-15,6-16	6-14
V. Flash unit	6-17	6-16
CHAPTER 7. DEMOLITION TO PREVENT ENEMY USE	7-1,7-2	7-1
APPENDIX A. REFERENCES		A-1
B. DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS		B-1
C. TOOL AND TEST EQUIPMENT REQUIREMENTS		C-1
INDEX		I-1

LIST OF ILLUSTRATIONS

Figure No.	*Title*	Page
1-1	Film transport and shutter operation	1-2
1-2	Shutter winding and speed controls in B position, shutter wound	1-3
1-3	Shutter winding and speed controls in l-second position, shutter wound	1-3
1-4	Shutter winding and speed controls in 1/1000-second position, shutter wound	1-3
1-5	Shutter release operation	1-4
1-6	Shutter winding and speed controls in B position, shutter released	1-4
1-7	Second shutter curtain release operation	1-4
1-8	Delayed action release operation	1-5

Figure No.	Title	Page
1-9	Brake action operation	1-6
1-10	Shutter functioning graph	1-7
1-11	Frame counting mechanism	1-7
1-12	Range-viewfinder, mechan cal operation (viewed from front)	1-8
1-13	Range-viewfinder, optical operation (viewed from top rear)	1-8
1-14	Flash bulb circuit, electrical schematic	1-9
1-15	Electronic flash circuit, electrical schematic	1-9
1-16	Flash bulb circuit, mechanical operation (contacts open)	1-10
1-17	Flash bulb circuit mechanical operation (contacts closed)	1-10
1-18	Electronic flash circuit, mechanical operation (contacts open)	1-10
1-19	Electronic flash circuit, mechanical operation (contacts closed)	1-10
1-20	Exposure meter light measuring circuit, schematic	1-11
1-21	Exposure meter battery test circuit, schematic	1-11
1-22	Exposure meter calibration circuit, schematic	1-12
1-23	Flash unit circuit, schematic	1-13
3-1	Baseplate assembly, exploded view	3-3
3-2	Hinged back, exploded view	3-4
3-3	Top cover removed, exploded view	3-5
3-4	Top cover assembly, exploded view	3-6
3-5	Range-viewfinder assembly removed, exploded view	3-7
3-6	Range-viewfinder assembly, exploded view	3-8
3-7	Bright-line frame assembly, exploded view	3-9
3-8	Camera chassis removed from camera housing, partial exploded view	3-9
3-9	Delayed action clockwork, exploded view	3-10
3-10	Synchronizing components, exploded view	3-11
3-11	Bearing plate, drive shaft and rewind assembly, partial exploded view	3-12
3-12	Slow speed escapement, exploded view	3-13
3-13	Bearing plate assembly, exploded view	3-13
3-14	Drive shaft assembly, exploded view	3-14
3-15	Takeup, film transport and release mechanism, partial exploded view	3-15
3-16	Shutter and brake assemblies removed, partial exploded view	3-17
3-17	Brake assembly, exploded view	3-18
3-18	Shutter curtain and main roller assemblies, exploded view	3-19
3-19	Camera housing, exploded view	3-20
3-20	Film magazine, exploded view	3-21
3-21	Exposure meter housing removed from chassis, exploded view	3-22
3-22	Exposure meter chassis, expltided view	3-23
3-23	Exposure meter movement, exploded view	3-25
3-24	Lens hood, exploded view	3-26
3-25	35-mm lens focusing mount, exploded view	3-27
3-26	35-mm lens tube assembly, exploded view	3-28
3-27	50-mm lens head, partial exploded view; and focusing scale, exploded view	3-30
3-28	50-mm lens head forward components, exploded view	3-31
3-29	Rear components of 50-mm lens head (lens tube), exploded view	3-31
3-30	50-mm lens focusing mount, exploded view (with viewing unit)	3-32
3-31	50-mm lens viewing unit, exploded view	3-33
3-32	135-mm lens head, partial exploded view	3-34
3-33	135-mm lens head forward components, exploded view	3-35
3-34	135-mm lens focusing mount, exploded view	3-36
3-35	135mm lens viewing unit, exploded view	3-37
3-36	Flash unit reflector, partial exploded view	3-38
3-37	Flash unit lamp socket and bayonet adapter, exploded view	3-39
3-38	Flash unit battery-capacitor insert, exploded view	3-40
3-39	Flash unit housing, exploded view	3-41
4-1	Film plane measuring points	4-5
4-2	Delayed action lever, tensioned position	4-6
4-3	Delayed action lever, releasing position	4-6
4-4	Positioning second shutter curtain ribbons	4-7
4-5	Position of shutter curtain bar and labyrinth	4-7
4-6	Tensioning shutter curtain springs	4-7
4-7	Fast shutter speed patterns	4-9
4-8	Fast shutter speed adjustment	4-9
4-9	Speed setting cam for l/1000-second adjustment	4-9
4-10	Position of disengaging lever	4-10

Figure No.	Title	Page
4-11	Slow shutter speed adjustments	4-10
4-12	Flash bulb synchronizing tolerance pattern	4-11
4-13	Electronic flash synchronizing tolerance pattern	4-12
4-14	Brake adjusting screw	4-12
4-15	Sprocket wheel gauge in test position	4-13
4-16	Position of stop disc	4-13
4-17	Drives shaft assembly	4-15
4-18	Range-viewfinder calibrating stand	4-16
4-19	Rangefinder image at infinity	4-17
4-20	Range-viewfinder roller arm	4-17
4-21	Rangefinder image at 10 meters	4-17
4-22	Distance setting gauge 10-meter bearing surfaces	4-17
4-23	Range-viewfinder adjusting points	4-18
4-24	Bright-line frame setting gauge	4-19
4-25	Pressure plate removal	4-20
4-26	Exposure meter circuit test points	4-22
5-1	Spring location (spring (2) from fig. 3-16)	5-3
5-2	Spring location (spring (20) from fig. 3-15)	5-4
5-3	Spring 'location (spring (11) from fig. 3-14)	5-4
5-4	Spring location (spring (3) from fig. 3-14)	5-4
5-5	Spring location (spring (36) from fig. 3-11)	5-5
5-6	Spring location (spring (27) from fig. 3-11	5-5
5-7	Spring location (spring (22) from fig. 3-11)	5-5
5-8	Spring location (spring (17) from fig. 3-11)	5-6
5-9	Spring location (spring (30) from fig. 3-11)	5-6
5-10	Spring location (spring (3) from fig. 3-12)	5-6
5-11	Spring location (spring (9) from fig. 3-11)	5-6
5-12	Spring location (spring (28) from fig. 3-10)	5-7
5-13	Spring location (spring (15) from fig. 3-9)	5-7
5-14	Spring location (spring (12) from fig. 3-9)	5-7
5-15	Spring location (spring (22) from fig. 3-9)	5-8
5-16	Spring location (spring (1) from fig. 3-9)	5-8
5-17	Spring location (springs (1) and (3) from fig. 3-7)	5-9
5-18	Spring location (spring (7) from fig. 3-6)	5-9
5-19	Spring location (spring (44) from fig. 3-22)	5-12
5-20	Spring location (spring (40) from fig. 3-22)	5-12
5-21	Exposure meter circuit hoard soldering points	5-12
5-22	Spring location (spring (10) from fig. 3-22)	5-13
6-1	Shutter speed pattern plate, 42-253 01-Z1A95 and shutter speed checking drum, 42-253.01-Z1W100	6-2
6-2	Setup for stroboscopic test of shutter slit gradient, block diagram	6-2
6-3	Hinged hack with mirror, 42-253.01-Z1W41 and electronic shutter tester, 42-253.01-Z1W111	6-3
6-4	Setup for electronic shutter speed test, block diagram	6-3
6-5	Gauge with center shaft, 42-253.01-Z1L74	6-3
6-6	Adjustable weight with center shaft, 42-253.01-Z1A22	6-4
6-7	Synchronizing circuit test instrument, 42-531-Z1W13	6-5
6-8	Equipment for camera synchronizing delay calibration	6-5
6-9	Setup for camera synchronizing delay calibration, block diagram	6-6
6-10	Gauge set, 42-253.01-Z1A76 and auto collimator, 42-582.01-Z1W4-4	6-7
6-11	Setup for measuring camera lens flange to film plane distance	6-7
6-12	Arrangement of equipment for parallelism check	6-8
6-13	Range viewfinder roller arm height gauge check	6-9
6-14	Equipment for rangefinder adjustment check, viewfinder parallax check, and viewfinder bright-line frames positioning check	6-9
6-15	Setup for rangefinder, viewfinder, and bright-line frames checks, block diagram	6-10
6-16	Distance setting calibrating gauge with 90-mm lens, 42-582.01-Z1A10	6-11
6-17	Frame setting gauge, 42-253.01-Z1A107	6-12
6-18	Equipment for camera takeup spool friction measurement	6-12
6-19	Takeup spool friction tolerance indications	6-12
6-20	Equipment for exposure meter check	6-13
6-21	Exposure meter calibration check, equipment setup, block diagram	6-14
6-22	Ground glass housing, 42-630 01-Z1A6NY, and focusing magnifier, 5X, 16,486	6-15
6-23	Ruled target, 42-630.01-Z1A7	6-15

CHAPTER 1

FUNCTIONING

Section I. GENERAL

1-1. Scope

a. This manual covers direct and general support and depot maintenance for Camera Set, Still Picture KS-15(4). It includes instructions for troubleshooting, testing, aligning, repairing the equipment, and replacing maintenance parts. Lists of tools, materials, and test equipment for direct support, general support, and depot maintenance are included. Detailed functions of the equipment and circuit analysis are covered.

b. The complete technical manual for this equipment includes TM 11-6720-244-12.

1-2. Reporting of Equipment Publication Improvements and Indexes of Publications

a 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 Commanding General, US Army Electronics Command, ATTN: AMSEL-MA-SNV Fort Monmouth, NJ 07703.

b. DA Pam 310-4. **Refer to DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.**

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

NOTE

For applicable forms and records, see TM 11-6720-224-12.

Section II. CAMERA BODY

1-3. Introduction

The camera body, lenses, and accessories supplied with the camera set, are designed for general photographic use. It may be employed in the field, studio or laboratory. It uses 35mm perforated film (black and white or color) and mounts interchangeable lenses for wide-angle, normal and telephoto photography. Accessories (contained in Photographic Accessory Kit LE-11A) extend the range of the camera to include closeup and photomacrography. The compensating focalplane shutter is self-capping. It is synchronized for flash bulbs at all speeds (1 second to 1/1000 second) and for electronic flash at shutter speeds up to and including 1/50 second. The winding lever simultaneously tensions the shutter, advances the film, and actuates the frame counter. A built-in rangefinder couples to interchangeable lenses having focal lengths from 21-mm (millimeters) through 135-mm, and may be used either as a coincident or split-image type. Bright-line frames, outlining the field, are positioned in the viewfinder when mounting the 35-mm, 50-mm, 90-mm or 135-mm f/2.8 lens with viewing unit. Parallax is automatically adjusted while focusing. A delayed action release serves as a self-timer, or for shutter-release when using an unsteady support.

1-4. Shutter (figs. 1-1 and 1-2)

The focal plane shutter employs two curtains of rubberized fabric which operate independently of each other. When the shutter is released the first curtain begins its travel across the film aperture and uncovers a portion of the film. At a later interval, depending on the selected shutter speed, the second curtain is released, travels across the aperture, and covers the film. The trailing edge of the first curtain, and the leading edge of the second curtain form a slit. The curtains travel at the same rate for all shutter speeds. Exposure is determined by the delay between release of the

first and second curtains (slit width). The more narrow the slit (shorter interval before release of second curtain) the shorter the exposure; the wider the slit (longer interval between release of first and second curtain) the longer the exposure. Accurate exposure (slit width) is mechanically controlled by cams and levers. At shutter speeds from 1 second to 1/30 second an escapement is engaged and further delays release of the second curtain. At shutter speeds of 1/50 second and slower, the first curtain completely uncovers the film before the second curtain is released.

a. Shutter Winding. The shutter is wound and the film advanced one frame by operating the winding lever through a complete stroke. The shutter may also be wound by completing a stroke cycle with a series of short intermittent strokes of the winding lever.

(1) The drive shaft gear (fig. l-l), rotates counterclockwise as the winding lever is moved through its operating arc. It meshes with intermediate gear A which engages gear C of the sprocket wheel shaft. The drive shaft gear also meshes with gear D and simultaneously rotates the takeup spool.

(2) The lower gear of the winding shaft meshes with two-part intermediate gear B which engages a gear on the main shutter roller shaft. Operation of the winding lever rotates the main shutter roller through the gears. This simultaneously winds the second curtain onto the main roller; and by shutter curtain ribbons, pulls the first shutter curtain across the film aperture and tensions the springs in the spring rollers.

(3) The stop disc and stop arm on top of winding shaft gear C (fig. 1-2), in conjunction with two stop levers, control the stroke of the winding lever, film advance and exact shutter winding.

(4) The locking lever, resting on intermediate gear A prevents reverse rotation of the sprocket wheel if the winding operation should be interrupted.

(5) When the shutter is fully wound, one of the lower ends of the spring-loaded double-stop lever engages a notch on the under side of the drive shaft gear. This prevents the winding mechanism from being overdriven.

b. Shutter Speed Selection (figs. 1-2, 1-3, and 1-4). Shutter speeds are selected by setting the shutter speed dial to the indicated speed. This adjusts the shutter control cams and levers which regulate the release of the second shutter curtain and consequent slit width.

(1) *Shutter* set for B. Figure 1-2 illustrates the position of shutter control cams and levers

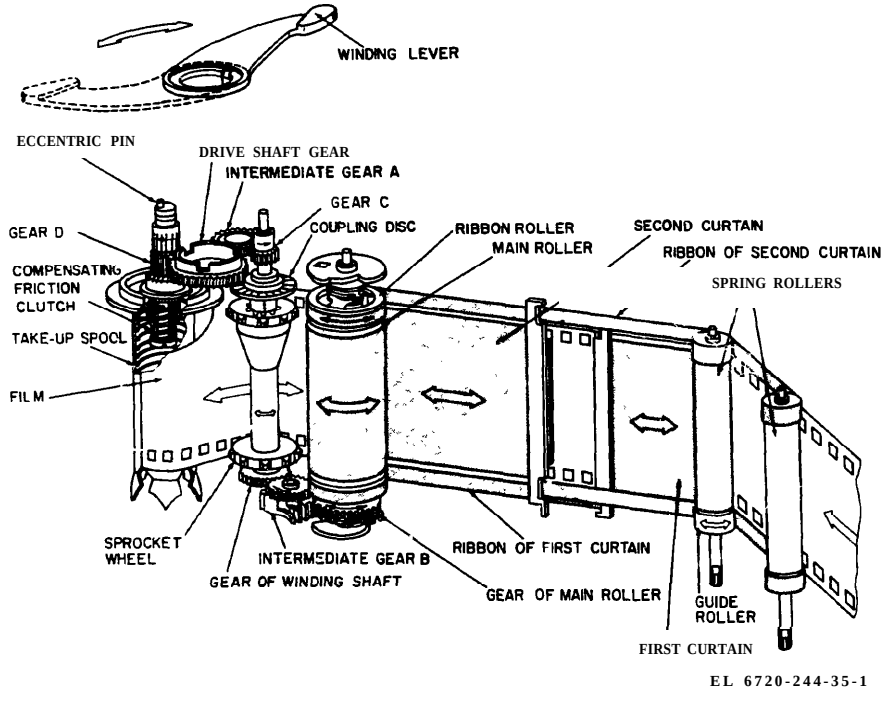


Figure 1-1. Film transport and shutter operation.

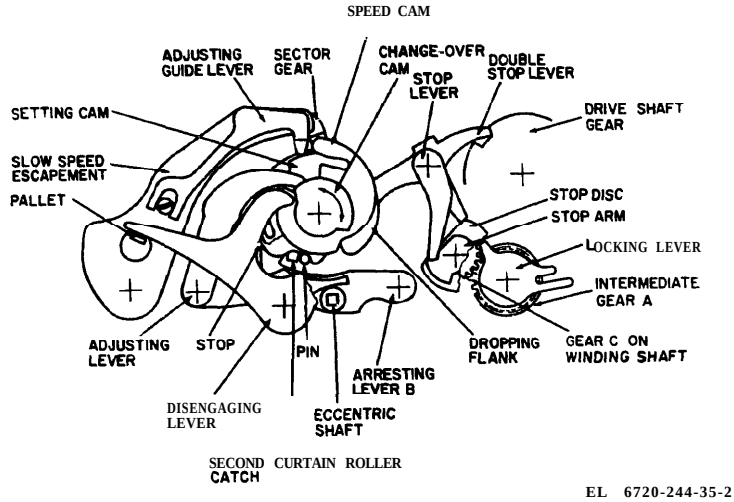


Figure 1-2. Shutter winding and speed controls in B position, shutter wound.

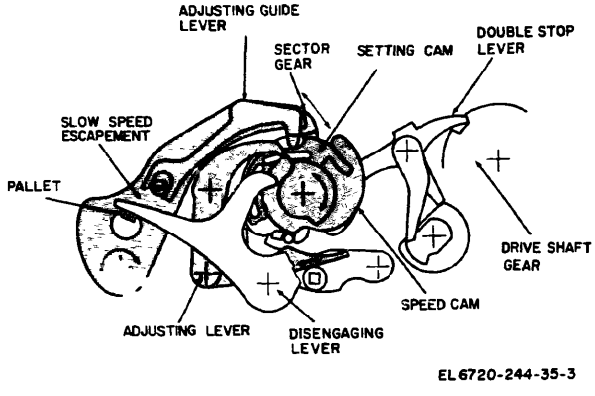


Figure 1-3. Shutter winding and speed controls in 1-second position, shutter wound.

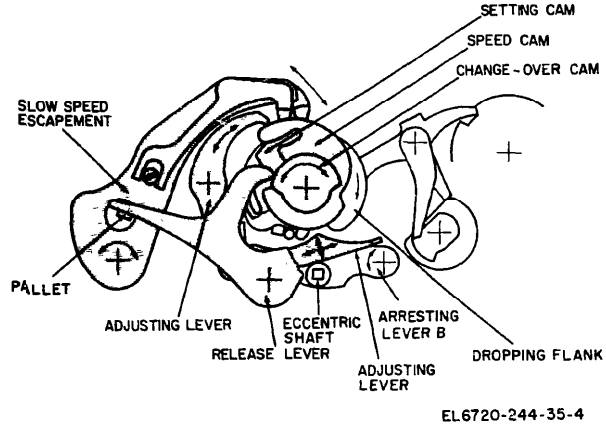


Figure 1-4. Shutter winding and speed controls in 1/1000-second position, shutter wound.

when the shutter is wound. The slow-speed escapement is disengaged. The shutter slit adjusting and arresting levers are positioned to prevent release of the second shutter.

(2) Shutter set for 1 to 1/30 second (fig. 1-3). The speed cam renders the adjusting lever inoperative. The setting cam positions the adjusting guide lever and pivots the slow-speed escapement around its axis. The sector gear is actuated by a catch on the main shutter roller shaft. The slow-speed escapement controls the delay of the second shutter curtain release. The slow-speed escapement pallet is deactivated by the disengaging lever at shutter speeds of 1/15 second and 1/30 second.

(3) Shutter set for 1/50 to 1/1000 second (fig. 1-4). At shutter speeds between 1/50 second (electronic flash symbol) and 1/1000 second the slow-speed escapement is disengaged by the setting cam. The speed cam positions the adjusting lever according to the selected speed, and the highest point on the cam sets the shutter for 1/1000 second. The dropping flank, on the main shutter roller shaft, actuates the adjusting lever which rests against the arresting lever B eccentric shaft.

c. Shutter Release figs. 1-5, 1-6, and 1-7).

(1) *First shutter curtain (fig.* 1-5). The shutter release knob, when depressed, pushes the release rod against the flat spring. A projection on the flat spring rides against the beveled edge of

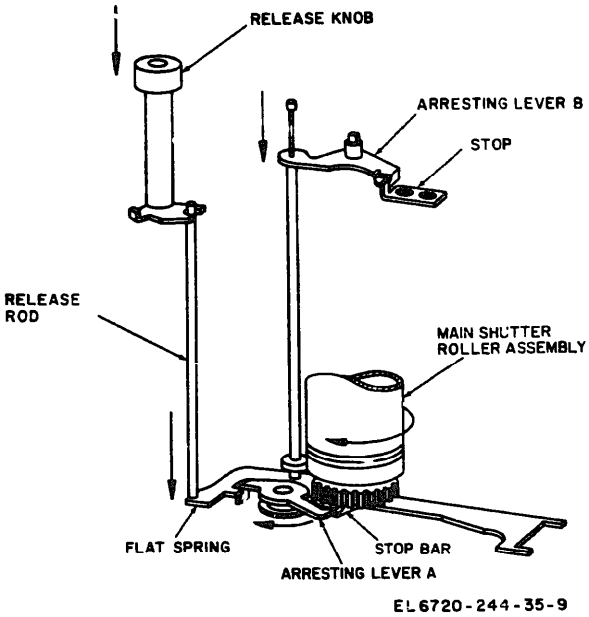


Figure 1-5. Shutter release operation.

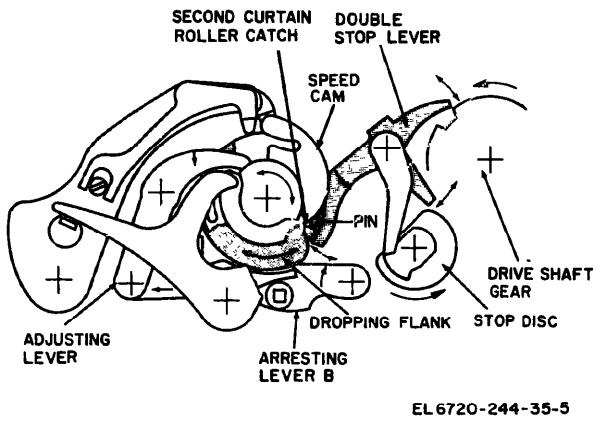


Figure 1-6. Shutter winding and speed controls in B position, shutter released.

arresting lever A, which is spring-loaded, and rotates it slightly. The arresting lever A sear disengages the stop bar on the under side of the main shutter roller assembly The shaft of the main shutter roller assembly rotates, and the first shutter curtain runs off. Simultaneously, the second curtain roller of the main shutter roller assembly rotates through a small arc. It is then arrested by arresting lever B which engages a catch on the second curtain roller.

(2) Second shutter curtain.

(a) B setting (figs. 1-6 and 1-7). When the shutter speed dial is set at B, the speed cam (fig. 1-6) positions the adjusting lever and permits arresting lever B to move forward against a stop (fig. 1-7). Depressing the shutter release knob moves arresting lever B down and it engages

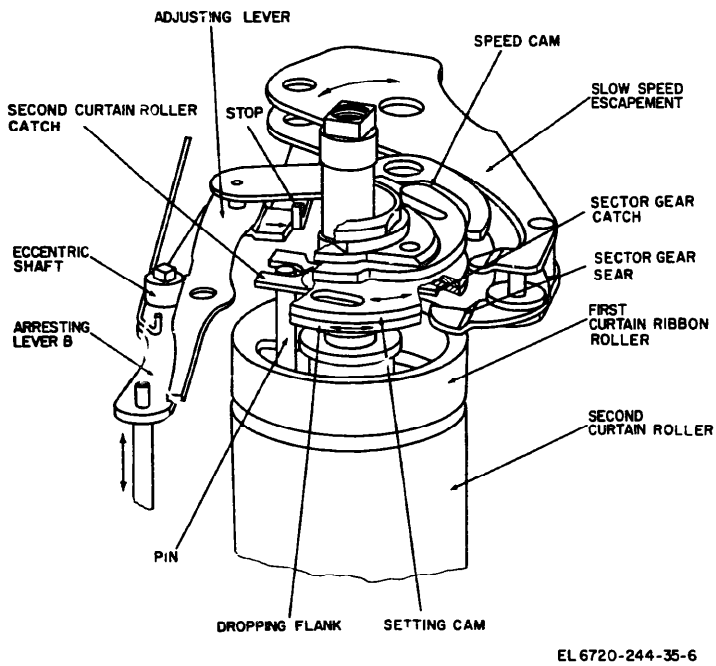


Figure 1-7. Second shutter curtain release operation

the second curtain roller catch. This prevents run-off of the second shutter curtain. Removing pressure from the shutter release knob returns arresting lever B to its upper position, disengaging the catch and permitting rotation of the second curtain roller.

***(b) l-second to 1/30-secoad** setting (fig.* **1-7). Release of the second shutter curtain, at shutter speeds between 1 second and 1/30 second, is governed by the slow-speed escapement. Setting the shutter speed knob rotates the setting cam and pivots the escapement. When set for 1 second, the sear of the sector gear engages the sector gear catch of the second curtain roller to its fullest extent. At faster speeds the escapement is pivoted further from the cam axis. A lesser area of the sear engages the catch and the second curtain is released earlier. Release of the second curtain roller is delayed by the inertia of a gear train and pallet in the slow-speed escapement. With the sear disengaged, the gear train is reset by a hairspring in the escapement.**

(c) 1/50-second to 1/1000-second setting **(fig. 1-7). At shutter speeds of 1/50 second, and faster, the slow-speed escapement is disengaged by the setting cam. When the shutter release knob is depressed, the dropping flank rotates and presses the wedge segment of the adjusting lever against the arresting lever B eccentric. Arresting lever B is pushed back and releases the catch of the second curtain roller.**

(d) Position for ***rewinding (fig.*** **1-6). A pin on top of the second shutter curtain roller rotates when the second curtain is released. Near completion of its run it strikes the opposite end of the lower portion of the double stop lever. This disengages the double stop lever from the notch, on the under side of the drive shaft gear, and the upper portion of the double stop lever releases the stop disc. The shutter can now bo rewound.**

d. **Delayed Action. *Release* (fig. 1-8). Delayed shutter release is accomplished by a clockwise mechanism which is spring driven. The spring is wound by the delayed action lever on the front of the camera, and the release is activated by depressing a release button.**

(1) The wound spring is held under tension by a snap spring. When this is depressed by the release button the spring unwinds, activating a gear train and pallet. The winding gear rotates and a cam, through the rocker arm, moves the release arm. The lower part of the arm depresses the flat spring of the shutter mechanism and releases the shutter.

(2) The extent of the delay is governed by the degree to which the spring is wound.

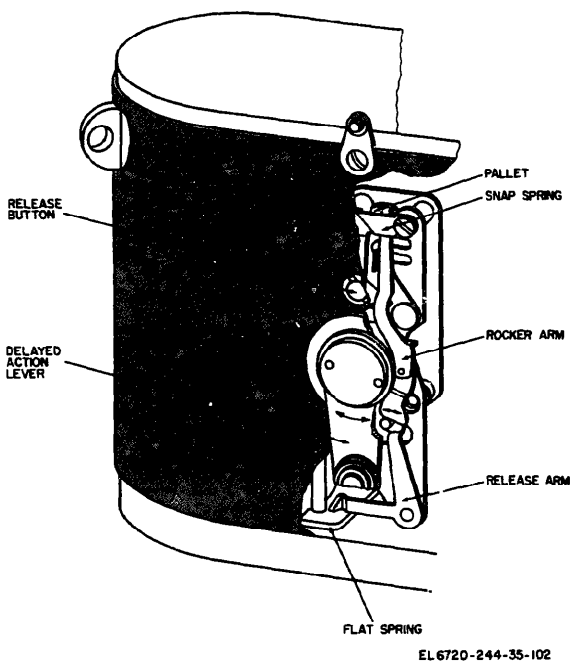


Figure 1-8. Delayed action release operation.

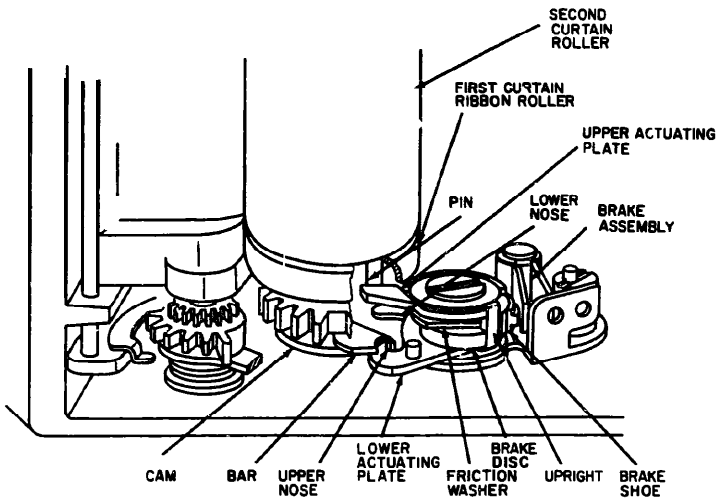


Figure 1-9. Brake action operation.

***e. Brake Assembly (fig.* 1-9). The brake is deactivated when the shutter is wound. When the shutter is released the first curtain traverses the film aperture and, near the end of its run, activates the brake.**

(1) *First curtain braking. The* bar, on the under side of the main shutter roller assembly gear, strikes the upper nose of the lower actuating plate of the brake assembly. This pushes the lower actuating plate forward, rotates the eccentric brake disc through a small arc, and presses it against the spring-loaded brakeshoe. This gradually slows down the curtain and brings it to a stop.

***(2) Second curtain braking.* Near the end of its run, the pin on the under side of the second shutter curtain roller, strikes the upper actuating plate of the brake assembly and pushes it forward. Friction washers apply partial braking at this point. As the curtain continues its travel, the upper actuating plate is pushed further forward. A notch in the plate engages the upright of the lower actuating plate moving it further forward, and applies additional pressure against the brakeshoe.**

***(3) Deactivation of brake.* When the shutter is being wound the cam on the under side of the main shutter roller assembly rotates. The cam rides against the lower nose of the lower actuating plate and pushes it, with engaged parts, back to the deactivated position.**

f. ***Shutter Functioning (fig.* 1-10). When the shutter is wound, both curtains lie approximately 7 millimeters behind the edge of the film aperture. When the shutter is released, the curtains travel together for approximately 4 millimeters, at which point the second shutter curtain is arrested. The trailing edge of the first shutter curtain enters the film aperture approximately 12 milliseconds after release of the shutter. The time required for the curtains to traverse the aperture is approximately 17 milliseconds (1/59 second). The shutter curtains, overcoming inertia during their travel, move faster as they cross the film. To assure even exposure, the slit must widen as the curtains move across the aperture. This is accomplished by increased diameter of the shutter curtain and ribbon rollers as material is wound on them, and by different tensioning of the shutter springs. A brake mechanism applies a gradual braking action to the shutter curtains as they near the end of their run. This prevents an abrupt stop of the curtains and lessens camera vibration.**

1-5. Film Transport

***a.* Film *Advance and Takeup (figs.* 1-1, 1-2).**

(1) The teeth of the sprocket wheel engage the film perforations and, in conjunction with the takeup spool, advances the film one frame (eight perforations) for each complete stroke of the winding lever. The drive shaft gear meshes with gear D of the takeup spool assembly (fig. 1-1). Operating the winding lever rotates the takeup spool assembly counterclockwise and winds the advanced film onto the takeup spool.

(2) The degree of rotation of the takeup

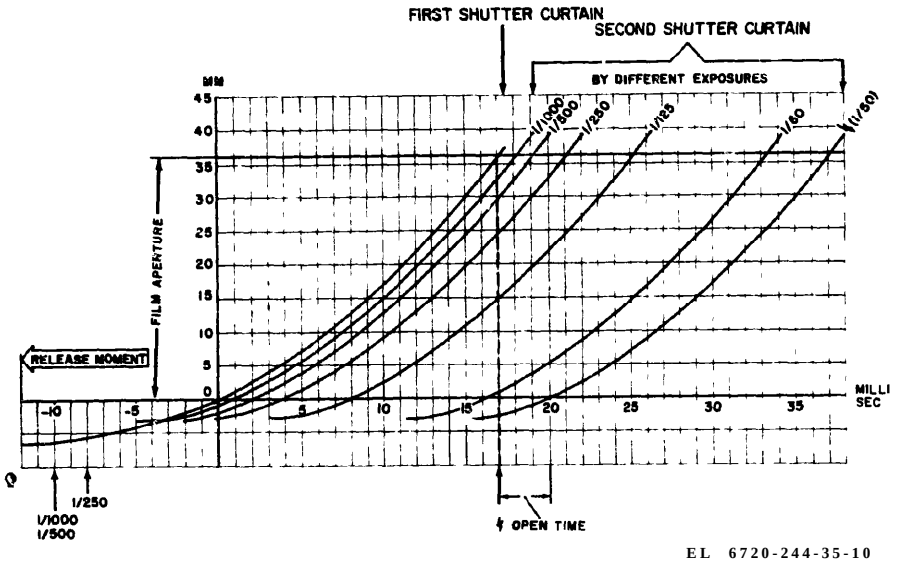


Figure 1-10. Shutter functioning, graph.

spool is dependent on the diameter of the spooled film. As the diameter increases, the takeup spool must rotate to a lesser degree. This is accomplished by the compensating friction clutch.

(3) The lower end of the double stop lever (fig. 1-2), stops the drive shaft gear. The upper end of the double stop lever is resting against the stop disc on top of the sprocket wheel assembly and prevents over-advancement of the film. The spring-loaded stop lever, which is on the same axis as the double stop lever, rests against the stop arm and prevents backlash of the sprocket wheel.

b. Frame Counter (fig. 1-11). A frame counting dial advances one index each time the winding lever completes a stroke. An eccentric pin on top of gear D couples with the counting pawl. A spring-loaded, flatheaded pin on the under side of the pawl rides in an elliptical slot. The pawl engages a tooth of the frame counting ratchet gear as the eccentric pin rotates.

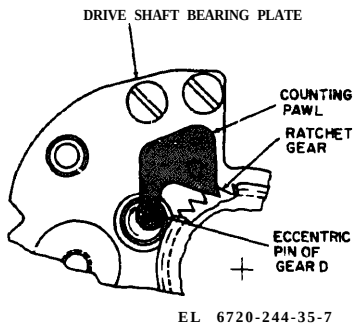


Figure 1-11. Frame counting mechanism.

c. Film Rewind. After the film has been exposed, and is on the takeup spool, it must be rewound into the film magazine for removal. This is accomplished by setting the reverse lever to R, pulling up the rewind knob and turning in the direction of its arrow. Film, while being rewound, is properly tensioned by the takeup spool compensating friction clutch (fig. l-l). The rewind knob is disengaged when it is pushed down. This assures smooth transport of the film while winding the shutter.

(1) *Reverse lever.* To rewind exposed film, the sprocket wheel must be disengaged from the winding mechanism so it will rotate freely. The reverse lever, through a camshaft, when placed in a horizontal position, depresses the coupling disc (fig. l-i) of the sprocket wheel assembly. This disengages the sprocket wheel.

(2) *Rewind knob assembly.* The shaft of the rewind knob assembly has a gear on its lower end. This meshes with an intermediate gear on the bearing plate assembly, which in turn meshes with a gear on the rewind fork. The intermediate gear rotates the fork in the same direction as the rewind knob. The shaft is held in its bearing by a retaining screw. When the rewind knob is pulled up, a key in its shaft engages a forked carrier. A slotted friction sleeve fits over a bearing assembly and a key, inside the rewind knob shaft, engages the slot in the friction sleeve. Fric-

tion of the sleeve prevents counter rotation of the rewind shaft while reminding the film.

1-6. Range-Viewfinder Assembly

The components of the rangefinder and viewfinder are incorporated in one assembly. The magnification factor is 0 7, and the long base-length (68.5 mm) of the rangefinder assures greater accuracy. The rangefinder, through a roller arm, couples to the rangefinder cam of the lens focusing mount. The viewfinder automatically compensates for parallex and indicates the field of view of the 35-mm, 50-mm and 90-mm lenses by bright-line frames. The frames position automatically as the lenses are interchanged.

a. Mechanical Functioning (fig. 1-12).

(1) *Rangefinder.* Basically, the rangefinder is optical triangulization of fixed and movable images of the objects to which distances are being measured. The fixed image is the viewfinder image, and the movable image is controlled by a swinging objective lens. The rangefinder cam on the camera lens, through the rangefinder roller arm, transmits the movements to the rangefinder objective lens. As the lens focusing mount is rotated the rangefinder cam actuates the rangefinder roller arm. A cam on the upper part of the roller arm axle moves the objective lever assembly through an arc. The swing of the objective changes the angle between the images. The objective lever assembly is spring loaded and mounted on ball bearing pivots.

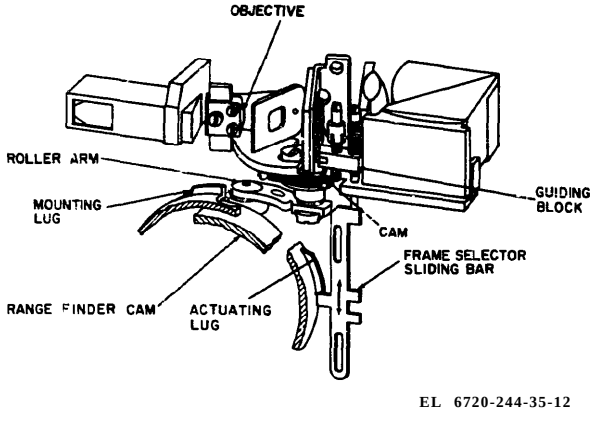


Figure 1-12. Range-viewfinder, mechanical operation (viewed from front).

(2) viewfinder.

(a) Bight-line frame assembly. The bright-line frames are contained between two cemented glass plater. The frame, corresponding to the lens mounted on the camera, is displayed in the viewfinder by a metal mask which slides across the glass plate. The mask is actuated, through a sliding bar, by the actuating lug on the camera lens.

(b) Parallax compensation. Parallax is automatically compensated as the lens is focused. The rangefinder roller arm, when actuated by the rangefinder cam of the lens, moves a wedged guide rivet attached to the roller arm axle. This moves the metal mask and glass plate diagonally across the field.

(c) Frame selector. The frame selector is coupled mechanically to the bright-line frame assembly. Fields covered by the 35mm, 50-mm, and 90-mm lenses (135-mm lens with viewing unit) may be previewed by operating the frame selector lever on the front of the camera. The lever moves a bar which actuates a spring-loaded pin. The pin, through the guide block and a lever arrangement, moves the metal mask across the glass plate. When the frame selector lever is pushed toward the camera lens the 90-mm frame is displayed in the view-finder, and when pushed away from the lens the 35-mm frame is shown. The 50-mm frame is positioned when the lever is in the vertical position.

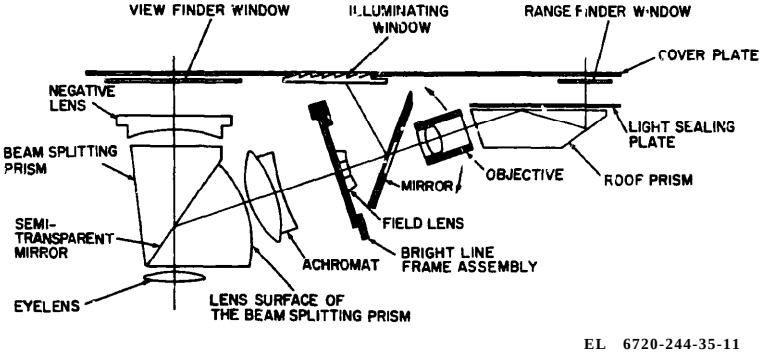


Figure 1-13. Range-viewfinder, optical operation. (viewed from top rear).

b. Optical System (fig. 1-13).

(1) Rangefinder. **Rays from the subject, which form the movable image, enter the fixed roof prism. They pass through the objective lens: the mirror aperture, and an opening in the field lens. The rays are focused in the plane of the bright-line frames. An opening in the center of the metal mask permit formation of an aerial image. The image combines with the viewfinder image in the beam-splitting prism, and is viewed through the eyelens. When the two images** coincide, **the lens is correctly focused.**

(2) ***Viewfinder.***

(a) Subject Viewing, Rays from the subject enter the negative lens, pass through the beam-splitting prism with semitransparent mirror, and are imaged by the positive eyelens.

(b) Bright-line frames. **The bright-line frames are imaged in the viewfinder by an optical system collimated for infinity. The optical components consist of an eyelens, beam-splitting prism-lens combination, an achromatic lens, a glass plate, a field lens, a metal mirror with central aperture, and an Illuminating window.** Light **falling on the illuminating window is directed by its prismatic surface to the mirror which is mounted at an angle. The mirror reflects the light to the bright-line frame assembly. The field lens, cemented on the bright-line frame glass plate, directs light to the smaller (90-mm) bright-line frame. 'The achromatic lens, in combination with the lens surface of the beam-splitting prism, images the bright-line frame and directs it to the semitransparent surface of the beam-splitter. The rays combine with the viewfinder image and are reflected to the eyelens.**

1-7. Synchronization

The camera has two synchronizing circuits; one with adjustable delay for flashbulbs, and one without delay for electronic flash. A precontact switch in each circuit is interconnected with the shutter release. During a portion of the camera winding cycle the synchronizing contacts are closed. The precontact switches are closed only when the shutter is tripped, and premature firing is prevented. The synchronizing circuits, one **side of which is grounded, terminate in synchro-outlet sockets on the rear of the camera top cover. The flashbulb socket** IS **Identified by a bulb symbol, and the electronic flash socket by a lighting stroke symbol.**

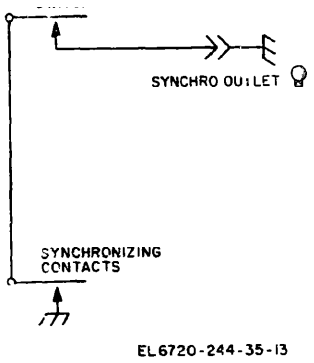


Figure 1-14. Flash bulb circuit, electrical schematic

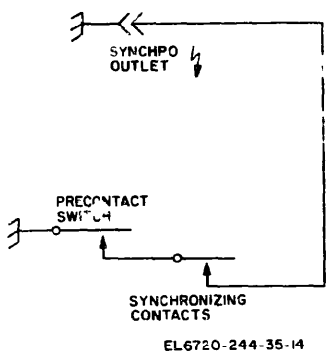


Figure 1-15. Electronic flash circuit, electrical schematic.

a. Electrical Circuits.

(1) ***Flash bulb*** **(fig. 1-14). When the camera shutter release is depressed the precontact switch closes and** the **shutter is released. Runoff of the shutter closes the synchronizing contacts and completes the circuit through the flashbulb synchro-outlet.**

(2) ***Electronic*** **flash (fig. 1-15). When the camera shutter release is depressed the precontact switch closes and the shutter is released. Runoff of the first shutter curtain, in conjunction with the shutter brake, closes the synchronizing contacts and completes the circuit through the electronic flash synchro-outlet.**

b. Mechanical Functioning.

(1) ***Flashbulb.*** **Flashbulbs require a period** of **time** between **lgnition and usable light Output. To provide this delay the synchronizing circuit must be closed before the first shutter curtain has started to uncover the film aperture The delay between closing of the circuit, and entry of** the first **curtain into the film aperture, must**

be varied as shutter speeds are changed. The precontact switch and synchronizing contacts are located on the upper portion of the camera chassis.

(a) Delay mechanism (fig. 1-16). A Synchro cam, on the shaft of the speed cam, positions the synchro adjusting lever. The cam brings the lever closer to, or further from, the contact arm in accordance with the shutter speed selected.

(b) Contact closing (fig. 1-17). The contact arm cam, on the main shutter roller assembly, rotates when the shutter runs off. Rotation of the cam moves the spring loaded contact arm toward the synchro adjusting lever and closes the circuit. When the first shutter curtain has traversed the film aperture, the high point of the contact arm cam (fig. 1-16), moves the contact arm away from the synchro adjusting lever and opens the circuit.

(2) *Electronic flush.* Electronic flash is, in effect open flash. The first shutter curtain must clear the film aperture, and fire the flash, before the second curtain enters the aperture. The highest shutter speed at which the film aperture is completely uncovered is 1/50 second. This setting is indicated by a lightning stroke symbol on the shutter speed dial. The precontact switch and synchronizing contacts are located n the lower portion of the camera chassis.

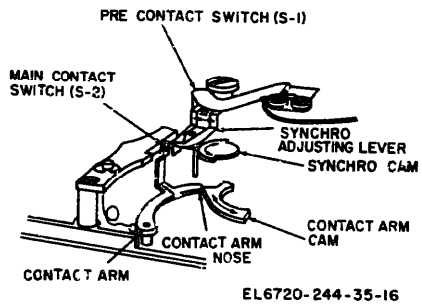


Figure 1-16. Flashbulb circuit, mechanical operation (contacts open).

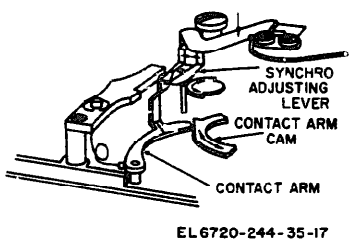


Figure 1-17. Flashbulb circuit, mechanical operation (contacts closed)

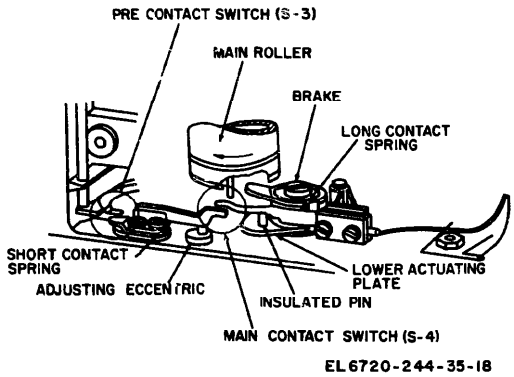


Figure 1-18. Electronic flash circuit, mechanical operation (contacts open).

(a) Contact location (fig. 1-18). The synchronizing contacts, which are operated by the shutter brake, are located near the bottom of the main shutter roller assembly. The contacts are open when the shutter is wound (fig. 1-18), and closed when the shutter is released (fig. 1-19).

(b) Contact operation (fig. 1-19). The first shutter curtain, after clearing the film aperture, operates the shutter brake. An insulated pin on the lower actuating plate of the brake presses against the long contact spring. The long contact spring moves against the short contact spring and closes the circuit. When winding the shutter the brake is released, and the lower actuating plate moves back. This opens the contacts.

1-8. Baseplate

In addition to its obvious function of providing access to the camera interior, the baseplate secures the hinged back in closed position, provides a tripod bushing, guides the takeup spool, aligns the film with the film advancing sprocket wheel and opens the metal film magazine.

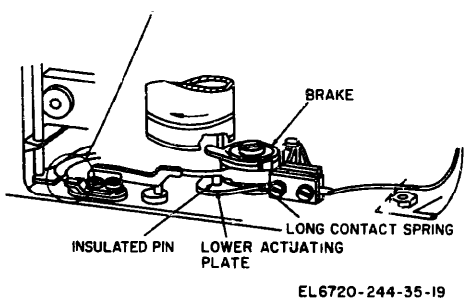


Figure 1-19. Electronic flash circuit, *mechanical operation (contacts closed).*

a. Film Positioning Disc. The film positioning disc has cutout sectors which engage the film loading prongs. The disc serves as a bearing for the prongs and aligns the film with the film transport mechanism.

b. Lock *Assembly.* The baseplate lock assembly secures the baseplate to the camera and opens the metal film magazine.

(1) The locking plate is a slightly wedged shape. When the lock is turned from the open to closed position, the plate engages a locking bar on the camera chassis. The wedge shape of the plate pulls the baseplate tight to the camera housing. Two projections on the locking plate strike the angled stop and prevent rotation of the lock beyond the open or closed position.

(2) When the baseplate is mounted on the camera, the curved edge of the angled stop pushes back the magazine retaining spring and unlocks the magazine. A groove in the locking plate engages the magazine inner shell knob. When the baseplate lock is turned to the closed position, the magazine inner shell is turned to its open position. Turning the lock to its open position closes the magazine. Removing the baseplate reengages the magazine retaining spring, and locks the magazine in the closed position.

1-9. Hinged Back

The hinged back. in addition to opening for camera loading, also carries a pressure plate and studs for positioning the film.

a. *Pressure Plate.* When the hinged back is closed, a spring pushes the pressure plate against two outer film guides on the camera chassis. The film rests between the outer guides and on two inner film tracks in the film plane. This provides accurate positioning of the film and a breathing space for smooth transport.

b. Film Positioning Studs. When the hinged back is closed, the positioning studs rest against the outer edges of the film. This holds the film perforations in engagement with the sprocket wheel teeth.

Section III. EXPOSURE METER, LENSES, AND FLASH UNIT

1-10. General

General functioning of the exposure meter furnished with the camera set is described in paragraph 6-3, TM 11-6720-244-12. Following is supplemental information not contained in TM 11-6720-244-12.

a. Light Measuring Circuit (fig. 1-20). A photo-resistor (CdS cell), battery and ammeter are in series. When the cell is dark it has an infinite resistance and no current flows. The resistance of the cell decreases in proportion to the intensity of the light incident to it. As light intensity increases, current flow increases and is measured by the ammeter.

b. Battery Test Circuit (fig. 1-21). Actuating the battery test switch disconnects the CdS cell and substitutes a 2,200-ohm resistor (R1). A 100-ohm resistor (R2) is placed in series with (R1) and the battery. The ammeter is connected across (R2) and measures the voltage drop.

c. Calibration Circuit (fig. 1-22). The calibration circuit employs two potentiometers; one of 10,000 ohms in series with the battery, ammeter and photo-resistor, and the other of 5,000 ohms

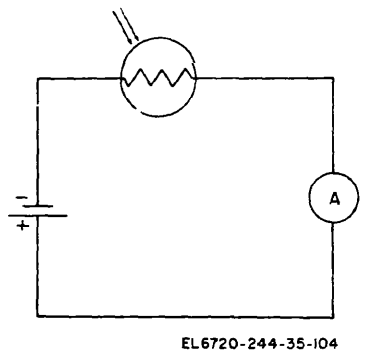


Figure 1-20. Exposure meter light measuring circuit, schematic.

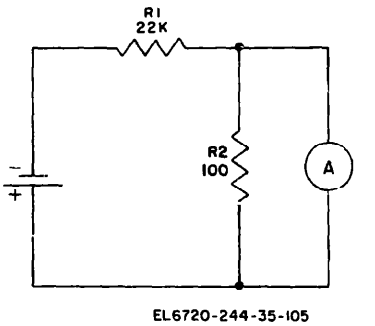


Figure 1-21. Exposure meter battery teat circuit, schematic.

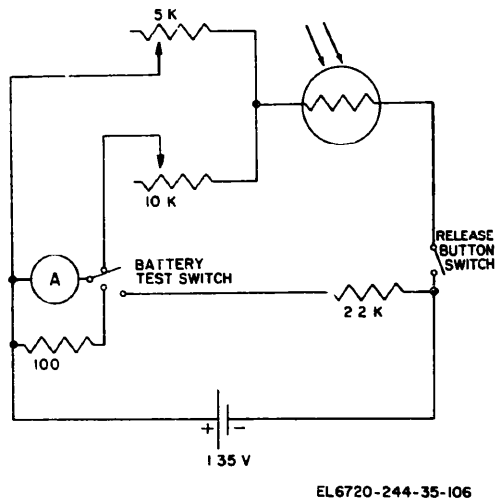


Figure 1-22. Exposure meter calibration circuit, schematic.

which is shunted across the first potentiometer and ammeter. The 5,000-ohm potentiometer basically controls the current from the battery through the photo-resistor, and is used when calibrating the exposure meter for low light levels. The 10,000-ohm potentiometer adjusts the current flow through the ammeter and photo-resistor, and is basically employed when calibrating the exposure meter for high light levels. Final calibration requires balance of the circuit with both potentiometers. The potentiometers are disconnected from the circuit when the battery-test switch is activated.

1-11. Lenses

General functioning of lenses furnished with the camera set is described in paragraph 6-2, TM 11-6720-244-12. All **lenses in the set have parallel focusing mounts and couple with the camera's built-in rangefinder. Following is supplemental information not contained in TM 11-6720-244-12.**

1-12. 35-Mm Lens Focusing Mount and Rangefinder Coupling

a. Parallel *Focusing.* The focusing ring is secured to the outer ring of the forward helix, which is part of the helical focusing assembly, by a retaining rang. The inner portion of the helix has a milled slot which mates with a fixed guide in the differential focusing assembly. Rotation of the focusing ring moves the inner helix longitudinally. The fixed guide prevents it from rotating.

***b. Rangefinder Coupling.* The inner helix of the differential focusing assembly has a milled slot. This mates with a guide secured to the outer ring of the forward helix. Rotation of the focusing ring turns the inner helix, which actuates the camera rangefinder. It has a steeper pitch than the forward helix, and the same longitudinal displacement as a SO-mm lens.**

1-13. 50-Mm lens Focusing Mount and Range finder Coupling

***a. Parallel Focusing.* The retaining ring secures the focusing ring assembly to the outer ring of the forward helix, which is part of the helical focusing assembly. The inner portion of the helix has a milled slot which mates with a fixed guide. Rotation of the focusing ring moves the inner helix longitudinally. The fixed guide prevents it from rotating.**

***b. Rangefinder Coupling.* The 50-mm lens has a two-step rangefinder cam. The lower portion of the cam engages the rangefinder roller arm when focusing at distances between 3 feet 4 inches and infinity. Its longitudinal movement is in direct relation to that of the lens elements. The higher sector of the cam actuates the rangefinder roller arm when focusing at closer distances. The height of the cam compensates for the increased forward movement of the lens in the closeup range. The longitudinal movement of the closeup range cam is not in direct relation to** that **of the lens. The viewing unit, used in the close range, alters the rangefinder optical system.**

1-14. 135-Mm Lens Focusing Mount and Rangefinder Coupling

***a. Parallel Focusing.* The inner helix of the helical focusing assembly has a milled slot which mates with a fixed guide on the differential cam assembly. Rotation of the focusing ring moves the inner helix longitudinally. The fixed guide prevents it from rotating.**

***b. Rangefinder Coupling.* The differential cam has a milled slot. This mates with a stop which is secured to the outer helix of the helical focusing assembly. Rotation of the focusing ring turns the differential cam. The Inclined edge of the differential cam rides, against a spring-loaded arm, which actuates the camera rangefinder. The longitudinal displacement of the rangefinder roller arm differs from that of a 50-mm lens. This is necessitated by the viewing unit which alters the optical system of the rangefinder.**

c. Viewing **Unit. The functioning of the 135-mm lens viewing unit is described in paragraph 6-2d (3) (c), TM 11-6720-244-12.**

1-15. Flash Unit

General functioning of the flash unit furnished with the camera set is described in TM 11-6720-241-12. Following is supplementary information not contained in TM 11-6720-244-12. The flash unit is powered by a battery-capacitor (B-C) insert and is connected to the camera's flashbulb socket by a connecting cord. The flash unit fits into the accessory clip on top of the camera, or may be hand held for off-camera use. A tripod socket in the base of the unit permits tripod mounting. The reflector is removable and may be folded for carrying in the universal case.

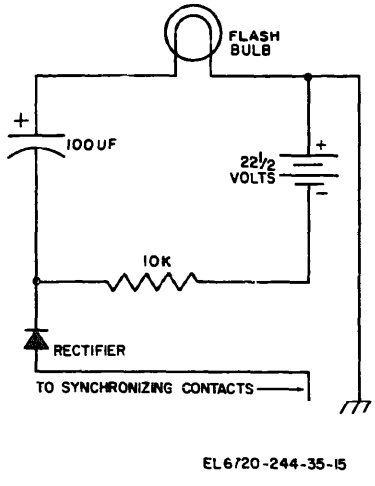


Figure *1-23. Flash unit circuit, schematic.*

a. Mechanical Functioning. **The reflector may be adjusted in height for centering with the flashbulb. Medium screwbase bulbs or, with an adapter, bayonet-base bulbs may be used. The bayonet-base adapter is equipped with a bulb ejector.**

(1) Height adjustment of the reflector is secured by a spring which engages notches in the reflector handle.

(2) Screw-base bulbs are held in the socket by spring clips. The bayonet-base adaptor fits into the medium-base socket in the same manner as a flashbulb. Bulbs are ejected by the adapter's contact pin when the ejector button is depressed.

b. Electrical Functioning. **The B-C insert, with a 22 1/2-volt battery, fits into the flash unit housing. A selenium rectifier, in the base of the housing, prevents reverse current flow when using multiple units in parallel.**

(1) B-C *insert.* The B-C insert contains a 10,000-ohm resistor, 100-microfarad capacitor, and a 22 1/2 volt battery. These are placed in series when a bulb is inserted in the lamp socket.

(2) Flash unit circuit **The capacitor charging circuit is closed by inserting a bulb in the flash unit socket. Current flows from the battery through the bulb filament, the capacitor and resistor. The value of the resistor reduces the current below that necessary to fire the bulb. When the synchronizing contacts of the camera are closed, the capacitor discharges. The flow of current (which bypasses the resistor) is through the filament of the bulb, connecting cord, camera synchronizing contacts, and the rectifier. Ignition of the bulb destroys its filament and opens the circuit.**

CHAPTER 2

TROUBLESHOOTlNG

2-1. camera Body

The photographic effects of equipment malfunctions are detailed in paragraph 4-8, TM 11-6720-244-12. Mechanical and optical malfunctions of the camera body are listed in the following troubleshooting chart :

NOTE

Gauges and test equipment should be used at all times; not only to pinpoint the malfunction, but to make certain the equipment is properly adjusted. The camera body should be completely checked, and all malfunctions located, before repair is started.

a. Most malfunctions will become obvious by a careful examination of the camera. Other malfunctions may require partial disassembly of the equipment.

b. **After the camera has been repaired and adjusted, it should be tested photographically. The final test of any photographic system is its ability to accurately and clearly record information. The processed film should be examined for frame position, evenness of exposure and exposure density, image sharpness, and scratches.**

c. Troubleshooting Chart.

Malfunction	Probable cause	Remedy
Shutter release knob cannot be depressed, or remains depressed.	Release disc loose	Tighten release disc (31, fig. 3-15).
	Release sleeve has shifted	Reposition release sleeve (30, fig. 3-3).
Shutter does not release when release knob is depressed.	Foreign matter in shutter mechanism	Remove foreign matter.
Shutter curtains do not open when release knob is depressed.	Flat spring incorrectly adjusted	Adjust flat spring (5, fig. 3-15).
	Arresting lever B incorrectly adjusted	Adjust arresting lever B (37, fig. 3-11).
	Foreign matter between bottom cover and flat spring,	Remove foreign matter between bottom cover (3, fig. 3-5), and flat spring (5, fig. 3-15).
Winding lever loose	Loose screw ring	Tighten screw ring (3, fig. 3-3).
	Defective saddle spring	Replace saddle spring (4 fig. 3-3).
Winding lever cannot be advanced.	Foreign matter in winding, shutter, or release mechanism.	Remove foreign matter.
	Loose sprocket wheel shaft bearing	Tighten bearing (64, fig. 6-15).
	Intermediate gear B incorrectly positioned.	Realign m&mediate gear B (16 fig. 3-16).
Winding lever will not fully wind shutter.	Defective rachet plate	Replace ratchet plate (7, fig. 3-14).
	Broken or misaligned gear in winding or shutter mechanism.	Replace, or realign gear causing the malfunction.
Frame counter rotates too freely	Defective saddle spring	Replace saddle spring (23 fig. 3-3).
Rewind knob difficult to pull up, or will not stay up.	Defective slotted friction sleeve	Replace slotted friction sleeve (21, fig. 3-3) or clean and lubricate.
Rewind knob difficult to turn	Dry rewind assembly hearings	Clean and relubricate bearings.
Rewind knob will not rotate	Damaged rewind assembly gears	Replace damaged gear (6, fig. 3-11) or rewind shaft 4.
Rewind knob rotates without rewinding film.	Sheared rewind knob shaft key	Replace rewind knob (19, fig. 3-3).
	Defective forked carrier	Replace forked carrier (20, fig. 3-3).
Frame selector will not position bright-line frames.	Defective range-viewfinder mask adjusting mechanism.	Readjust, or replace mechanism (fig. 3-19).

Malfunction	Probable cause	Remedy
	Spring defective, or disconnected from frame selector sliding bars.	Replace, or reconnect spring (33, fig. 3-19).
Reverse lever remains in R position when winding shutter.	Defective coupling disc	Replace coupling disc (47, fig. 3-16).
	Defective camshaft	Replace camshaft (3, fig. 3-16).
Delayed action lever will not fully wind clockwise.	loose retaining screw	Tension clockwise spring and tigthen retaining screw (1, fig. 3-19).
	Broken main spring in clockwork _ _ _ _ _ _	Replace spring (1, fig. 3-9).
Delayed action release button will not activate clockwork.	Foreign matter in clockwise mechanism	Remove foreign matter from clockwork mechanism (14 fig. 3-8), clean and relubricate.
Lens lock release remains depressed.	Foreign matter under retaining ring	Remove foreign matter between bushing (17) and retaining ring (19, fig. 3-19).
Locked lens can be rotated slightly, positioning incorrect bright-line frames	Slot in lens mounting flange worn or damaged.	Replace lens mounting flange (23, fig. 3-19).
Lens seats roughly or loosely in lens mounting flange.	Worn or damaged lens mounting flange	Replace lens mounting flange (23, fig. 3-19).
	Worn or damaged spring ring	Replace spring ring (25, fig. 3-19).
Light leaks on film	Loose or missing neck strap lugs	Replace neck strap lugs (43, fig 3-19).
	Hole in shutter curtains	Replace defective shutter curtain (3 or 4, fig. 3-18).
	Deformed shutter curtains	Replace shutter curtain (3 or 4, fig. 3-18).
	Damaged or missing light shields	Replace sealing cap (6, fig. 3-6), or light shields (16, 17, 18, and 19, fig. 3-5).
	defective or maladjusted shutter brake	Replace or adjust brake assembly (10, fig. 3-16).
	Defective guide spring _ _ _	Replace guide spring (13, fig 3-10).
Shutter does not completely traverse film aperture when release knob is depressed.	Shutter curtain ribbons loose	Reglue shutter curtain ribbons (3 and 4, fig. 3-18).
	Light shield felt strips loose	Reglue felt strips (16, fig. 3-8).
	Loose retaining nut _	Tighten retaining nut (36, fig 3-15).
	Slow speed escapement hangs below 1/50 second.	Clean and adjust slow-speed escapement (10, fig. 3-11)
	Damaged ribbon rollers	Replace main roller assembly (5, fig. 3-18).
Uneven spacing between frames	Loose reta nut	Adjust stop arm (37, fig 3-16) stop disc (38), and tighten retaining nut (36).
	Loose sprocket wheel screw _ _ _ _ _	Tighten screw (42, fig. 3-15).
	Maladjusted compensating friction clutch.	Remove or add washers (28, fig. 3-15).
Baseplate lock has no positive stop.	Locking plate bent	Straighten locking plate (5, fig. 3-1).
	Angled stop bent or broken	Straighten stop or replace baseplate (9, fig. 3-1).
Baseplate lock has insufficient friction	Defective upper or lower washers	Replace spring washer (7, fig. 3-1) or washer 10).
Shutter speeds below 1/50 second too slow.	Foreign matter in slow speed escapement	Remove foreign matter from slow-speed escapement (10, fig 3-11).
	Slow-speed escapement dry	Clean and relubricate slow-speed escapement (10, fig. 3-11).
Shutter speeds below 1/50 second too fast.	Slow-speed escapement pallet does not fully engage.	Readjust pallet assembly (6, fig. 3-12).
	Hairspring defective	Replace slow-speed escapement (10, fig. 3-11).
	Second shutter curtain tension too high	Reduce tension of spring (42, fig 3-18).
Shutter speeds above 1/50 second too slow.	Foreign matter in shutter mechanism	Remove foreign matter from shutter mechanism.
	Dry shutter mecharism bearing _ _ _ _ _	Clean and relubricate bearings.
	First shutter curtain tension too high	Reduce tension of spring (33, fig. 3-18).
	Second shutter curtain tension too low _	Increase tension of spring (42, fig. 3-18).

Malfunction	Probable cause	Remedy
Shutter speeds above 1/50 second too fast.	First shutter curtain tension too low	Increase tension of spring (33, fig. 3-18).
	Second shutter curtain tension too high	Reduce tension of spring (42, fig. 3-18).
Uneven exposures	Foreign matter in shutter mechanism	Remove foreign matter from shutter mechanism.
	Dry shutter mechanism bearings	Clean and relubricate shutter mechanism bearings.
Flashbulb does not fire when shutter release is depressed.	*Note* Shutter must be correctly adjusted before troubleshooting synchronization	
	Damaged terminal	Replace terminal (22, fig. 3-10).
	Loose insulated wire	Resolder insulated wire (19, fig. 3-10).
	Foreign matter between contacts	Remove foreign matter from contact spring (25, fig. 3-10) synchro adjusting lever (29).
	Pitted or burned contacts	Clean or replace contact spring (26, fig. 3-10) or synchro adjusting lever (29), and contact arm (26, fig. 3-11).
Flash unit fires when connecting cord is inserted in flashlamp socket.	Shorted flashlamp socket	Replace terminal (22, fig. 3-10) or insulated wire 19.
	Precontact switch upper spring grounded	Remove ground. Replace insulating plates (24, fig. 3-10) and (26).
	Insulating cap on arresting lever B missing.	Replace insulating cap (38, fig. 3-11).
Flash unit fires erratically	Intermittent open in flashlamp socket	Resolder insulated wire (19, fig. 3-10).
	Intermittent contact of precontact switch	Clean precontact switch (S-1, fig. 1-16).
	Dirty, pitted or burned switch contacts	Clean or replace synchro adjusting lever (29, fig. 3-10), and clean spring contacts.
	Broken or disconnected ground wire	Resolder or replace ground wire (14, fig. 3-11).
Flashbulb fires too early or late	Maladjusted contact arm	Readjust contact arm (26, fig. 3-11).
Electronic flash does not fire when shutter release is depressed.	Damaged terminal	Replace terminal (21, fig. 3-10).
	Foreign matter in precontact switch	Remove foreign matter and clean contacts of precontact switch S-3 (fig. 1-18).
	Pitted or burned contacts of precontact switch.	Replace flat spring (5, fig. 3-16) with riveted contact spring, and short contact spring (9, fig. 3-10).
	Foreign matter in main contact switch	Remove foreign matter and clean main contact switch S-4 (fig. 1-18).
	Pitted or burned contact, of main contact switch.	Replace short contact spring (9, fig. 3-10) and long contact spring 3.
	Electronic flash socket open	Replace, *or* resolder insulated wire (18, fig. 3-10).
Electronic flash fires when connecting cord is inserted in electronic flash socket and shutter is wound or released.	Shorted electronic flash terminal	Repair or replace terminal (21, fig. 3-10).
	Electronic flash socket lead grounded	Replace insulated wire (18, fig. 3-10).
	Grounded long contact spring	Remove ground. Replace insulating plates (2 and 4, fig. 3-10) if required.
Electronic flash fires when connecting cord is inserted in electronic flash socket and shutter is released.	Grounded short contact spring	Remove ground. Replace insulating plates (7 and 10, fig. 3-10) and insulating shield (8) if required.
	Helical spring disengaged and touching short contact spring.	Relocate spring (20, fig. 3-15) against insulating cap (14, fig. 3-16).
	Foreign matter in precontact switch	Remove foreign matter from precontact switch S-3, (fig. 1-18).
Electronic flash fires erratically	Intermittent open in electronic flash socket.	Resolder or replace insulated wire (18, fig. 3-10).
		Replace terminal (21, fig. 3-10).
	Foreign matter in precontact switch	Remove foreign matter and clean precontact switch S-3 (fig. 1-18).
	Broken or disconnected ground wire	Resolder or replace ground wire (17, fig. 3-10).
	Loose guide spring retaining nut	Tighten nut (11, fig. 3-10).

Malfunction	Probable cause	Remedy
	Insufficient tension of long contact spring.	Adjust tension of long contact spring (3, fig. 3-10).
	short contact spring too far from long contact spring.	Reset adjusting eccentric (fig. 1-18).
	Defective brake	Clean, lubricate and readjust, or replace, brake assembly (10, fig. 3-16).
Scratches on emulsion side of film.	Film tracks rough	Hone film tracks.
	Curved bracket plate too high	Readjust or replace curved bracket plate *(46,* fig. 3-15).
	Insufficient tension of compensating friction clutch.	Adjust tension of compensating friction clutch by adding washers (28, fig. 3-15).
Scratches on back of film	Foreign matter on pressure plate	Clean pressure plate (3, fig. 3-2).
	Damaged or scratched pressure plate	Replace pressure plate (3, fig. 3-2).
Image on film unsharp	Rangefinder maladjusted	Readjust rangefinder, paragraph 4-15a.
	Lens flange-to-focal plane distance incorrect.	Adjust lens mounting flange, paragraph *4-4d.*
	Lens flange not parallel with film plane	Adjust lens mounting flange, paragraph *4-4d.*
Rangefinder does not indicate correct distance.	Note Lens mounting flange must be correctly adjusted before troubleshooting rangefinder	
	Roller arm maladjusted	Adjust rangefinder, paragraph 4-15a.
	Roller arm bent	Straighten roller arm, paragraph 4-15e.
Rangefinder roller arm does not follow lens focusing cam.	Objective lever pulling spring disengaged.	Re-engage pulling spring (7, fig. 3-6).
	Objective lever ball screw too tight	Readjust and relubricate ball screw (8, fig. 3-6).
Viewfinder field dark except for rangefinder movable image.	Beam-splitting prism separated	Replace range-viewfinder assembly (16 fig. 3-5) including roller arm (10).
Bright-line frames have hairlines.	Glass plates decemented	Replace bright-line frame assembly (2, *fig. 3-6).*
Bright-line frame does not move, or position correctly, when interchanging lenses, actuating the frame selector or roller arm.	Spring disengaged	Re-engage spring (1 or 3, fig. 3-7).
	Foreign matter between brightline frame carrier and glass plate mount.	Remove foreign matter between mask carrier (8 fig. 3-7) and glass plate mount *4.*
	Foreign matter between metal mask and glass plate.	Remove foreign matter between glass plate (6, fig. 3-7) and metal mask (7).
Film magazine does not open or close in camera.	Defective inner shell knob	Replace inner shell (1, fig. 3-20).
Film does not wind onto magazine film spool.	Defective *film* spool	Replace film spool (2, fig. 3-20).
Film magazine does not lock in closed position.	Defective retaining spring	Replace retaining spring (9, fig. 3-20).

2-2. Exposure Meter

Malfunctioning of a photo-resistor exposure meter may be divided into three categories; mechanical, electrical, or fatigue of the CdS cell.

a. Mechanical malfunctions are generally evident, and a careful examination of the exposure meter will usually reveal the cause.

b. Electrical malfunctions require tracing the circuit with a multimeter, checking resistors, and contacts.

c. The cadmium sulfide photo-resistor (CdS cell) is adversely affected by prolonged exposure to an intense source of light. Its memory may result in incorrect or erratic readings. If the CdS cell is a suspected source of trouble, the exposure meter should be protected from light for a period of 12 hours before checking the circuit electrically.

d. Troubleshooting Chart.

Malfunction	Probable cause	Remedy
Coupling knob will not rotate meter speed dial.	Defective gears	Replace gear (3 fig. 3-22) or sector gear (9)
	Defective nose washer	Replace nose washer (5, fig. 3-22).
	Broken step pin	Replace pin (54, fig. 3-22).

Malfunction	Probable cause	Remedy
Sensitivity switch will not alter sensitivity.	Defective sensitivity switch linkage	Replace sensitivity switch linkage (43, fig. 3-22).
	Defective aperture plate	Replace aperture plate (48, fig. 3-22).
Indicator needle will not reach 0 on light intensity scale.	Damaged adjusting fork	Replace adjusting fork (36, fig. 3-23).
	Hair spring disconnected from adjusting fork.	Secure hair spring (20, fig. 3-23) to adjusting fork (36).
	Defective hair spring	Replace meter movement (58, fig. 3-22).
Indicator needle will not reach battery test index.	Low battery voltage	Replace mercury cell (16, fig. 3-22).
	Battery test index arm shifted	Reposition battery test index arm (9, fig. 3-23).
	Weak meter movement magnet	Replace meter movement (58, fig. 3-22).
Indicator needle goes beyond battery test index.	Battery voltage too high	Replace mercury cell (16, fig. 3-22).
	Defective resistors	Replace resistor (33 or 34, fig. 3-22).
	Battery test index arm shifted	Reposition battery test index arm (9, fig. 3-23).
Indicator needle does not register	Exhausted battery	Replace mercury cell (16, fig. 3-22).
	Defective meter movement coil	Replace meter movement (58, fig. 3-22).
	Defective meter movement bearings	Replace jeweled bearings (10 and 33, fig. 3-23).
	Foreign matter in meter movement	Clean meter movement (58, fig. 3-22).
	Poor battery contact	Clean, or replace, contact springs (52 and 53, fig. 3-22).
	Bad switch contact	Clean and adjust, or replace, contact springs (23 and 27, fig. 3-22).
		Clean contacts of circuit board (35, fig. 3-22).
	Defective circuit board	Replace circuit board (35, fig. 3-22).
Indicator needle sluggish	Defective meter movement bearings	Replace jeweled bearings (10 and 33, fig. 3-23).
	Defective hairspring	Replace meter movement (58, fig. 3-22).
	Foreign matter in meter movement	Clean meter movement (58, fig. 3-22).
Erratic readings	Poor contact of release button switch	Clean and adjust, or replace, contact spring (27 fig. 3-22), clean contacts of circuit board (35).
	Poor contact of battery test switch	Clean and adjust, or replace, contact spring (23 fig. 3-22). Clean contacts of circuit board (35).
	Poor battery contact	Clean, or replace, contact springs (52 and 53, fig. 3-22).
	Defective meter movement	Replace meter movement (58, fig. 3-22).
	Defective CdS cell	Replace photo-resistor (49, fig. 3-22).
Meter reads too high	Incorrect battery (high voltage)	Replace mercury cell (16, fig. 3-22).
	CdS cell characteristics changed	Recalibrate, or replace photo-resistor (49, fig. 3-22).
	Defective circuit board	Replace circuit board (35, fig. 3-22).
Meter reads too low	Weak battery	Replace mercury cell (16, fig. 3-22).
	Potentiometers out of adjustment	Recalibrate meter.
	Weak meter movement magnet	Replace meter movement (58, fig. 3-22).
	Defective CdS cell	Replace photo-resistor (49, fig. 3-22).
	Defective circuit board	Replace circuit board (35, fig. 3-22).

2-3. Lenses

Lens malfunctions can be placed in three categories; mechanical, optical, and optical-mechanical. Lenses, after repair, should be tested photographically.

a. Mechanical. Mechanical components which may require maintenance are the focusing mount, light baffles, rangefinder cam, lens diaphragm, filter mounting threads, and lens hood.

b. Optical. Optical malfunctions are confined to the lens unit (lens head) and take the form of decemented, broken or loose elements, abrased lens surfaces, and incorrect reassembly of components. Included in this category are the viewing units for the 50-mm and 135-mm lenses.

c. Optical-Mechanical. This malfunction exhibits itself photographically, and is caused by cross-threading, or improper seating of the lens unit in its focusing mount. Lens units, having focal length tolerances, are in most instances matched to their focusing mounts. Mismatching will adversely affect the performance of the lens.

d. Troubleshooting Chart (Lens Hood).

Malfunction	Probable cause	Remedy
Fits loosely on lens	**Damaged** spring	Replace spring (4, fig. 3-24).
Fits tightly on lens	Damaged base ring	Replace base ring (3, fig. 3-24).
Flare on film	Reflection from inner surface	Refinish flutted tube (2, fig. 3-24).

e Troubleshooting Chart 35-Mm Lens).

Malfunction	Probable cause	Remedy
Fits loosely in camera	Damaged bayonet mounting lugs	Replace focusing mount
	Damaged locking slot	Replace focusing mount.
Fits tightly in camera	Damaged bayonet mounting lugs	Replace focusing mount.
	Burrs on base of focusing mount or bayonet mounting lugs.	Remove burrs by honing.
Focusing lever inoperative	Damaged lock bar	Replace lock bar (23, fig. 3-26).
	Damaged spring	Replace spring (24).
Focusing mount binds	Foreign matter in focusing helices	Clean focusing helices (28, and 29, fig. 3-25)
	Damaged focusing helices	Replace focusing mount.
Positions other than 35-mm **bright-** line frame.	Bayonet lug engaging frame selector damaged.	Replace focusing mount.
	Locking slot damaged	Replace focusing mount.
Rangefinder image jumps when focusing.	Burrs on rangefinder cam	Remove burrs from rangefinder cam (33, fig. 3-25), by honing.
Rangefinder images do not coincide at infinity	Damaged bayonet mounting lugs	Replace focusing mount.
	Burrs on base of focusing mount	Remove burrs by honing under surface of mounting base (35, fig. 3-25).
Focusing ring can be rotated without focusing lens.	Loose retaining ring	Tighten retaining ring (19, fig. 3-25).
Incorrect f/stop indexing	Loose retaining rings	Tighten retaining **rings** (5, and 10, fig. 3-25).
Diaphragm binds	**Foreign** matter **in** diaphragm	Clean diaphragm.
	Damaged diaphragm blades	Replace diaphragm blades (9, fig. 3-26).
	Damaged guide ring	Replace diaphragm guide ring (8).
	Damaged diaphragm adjusting tube	Replace diaphragm adjusting tube (16, fig. 3-26).
	Bent diaphragm adjusting ring	Replace diaphragm adjusting ring (11).
Flare on film	Reflections	Refinish fluted tube (3, fig. 3-25).
		Refinish lens mount (10, fig. 3-26).
Poor image contrast	Foreign matter on optical components	Clean optical components.
	Abraded optical components	Replace lens head.
	Decemented optical components	Replace lens head.
Unsharp image on film	Loose optical components	Tighten retaining ring (5, fig. 3-25).
		Tighten retaining rings (1, 3, and 14, fig. 3-26).
	Decemented optical components	Replace lens head.
	Damaged rangefinder cam (33. fig. 3-25)	Replace focusing mount.

f. ***Troubleshooting Chart (50-Mm Lens).***

Malfunction	Probable cause	Remedy
Fits loosely in camera	Damaged bayonet mounting lugs	Replace focusing mount.
	Damaged locking slot	Replace focusing mount.

Malfunction	Probable cause	Remedy
Fits tightly in camera	Damaged bayonet mounting lugs	Replace focusing mount.
	Burrs on base of focusing mount or bayonet mounting lugs.	Remove burrs by honing.
Focusing mount binds	Foreign matter in focusing helices	Clean focusing helices (7 and 8, fig. 3-30).
	Damaged focusing helices	Replace focusing mount.
Positions other than SO-mm bright-line frame.	Bayonet lug engaging frame *selector damaged.*	Replace focusing mount.
	Damaged locking slot	Replace focusing mount.
Rangefinder image jumps when focusing.	Burrs on rangefinder cam	Remove burrs from rangefinder cam (11, fig. 3-30) by honing.
Rangefinder images do not *coin-*cide at infinity.	Damaged bayonet mounting lugs	Replace focusing mount.
	Burrs on base of focusing mount	Remove burrs by honing under surface of mounting base (13, fig. 3-30).
Focusing ring can be rotated without focusing lens.	Loose retaining ring	Tighten retaining ring (17, fig. 3-27).
Incorrect f/stop indexing	Loose or missing set screws	Tighten or replace set screws (4 and 6, fig. 3-27).
	Loose or missing dowel screw	Tighten or replace dowel screw (7).
Diaphragm binds	Foreign matter in diaphragm	Clean diaphragm.
	Damaged diaphragm blades	Replace diaphragm blades (13, fig. 3-27).
	Damaged guide ring	Replace diaphragm guide ring (12).
	Damaged adjusting tube	Replace diaphragm adjusting tube (14).
	Bent diaphragm adjusting ring	Replace diaphragm adjusting ring (8).
Flare on film	Reflections	Refinish fluting of rangefinder cam (11, fig. 3-30).
		Refinish fluting of female helix (7).
		Refinish fluting of retaining ring (1, fig. 3-29).
Poor image contrast	Foreign matter on optical components	Clean optical components.
	Abraded optical components	Replace lens head.
	Decemented optical components	Replace lens head.
Unsharp image on film	Loose optical components	Tighten retaining rings (1, 4, and 6, fig. 3-28).
		Tighten retaining ring (1, fig. 3-29).
	Decemented optical components	Replace lens head.
	Damaged rangefinder cam (11, fig. 3-30)	Replace focusing mount.
	Defective viewing unit	Replace or repair viewing unit (1, fig 3-30).

g. Troubleshooting Chart (50-Mm Lens Viewing Unit).

		Remedy
Unsharp viewing image	Decemented optical components	Replace optical component (4 or 11, fig. 3-31).
Rangetinder images do not coin-cide.	Optical components misaligned	Collimate viewing unit, (para 4-35b).
Will not mount on lens	Damaged finger grip	Replace finger grip (13, fig 3-31).
	Misaligned positioning stud	Realign positioning stud (16, fig. 331).

h. Troubleshooting Chart (136-Mm Lens).

Malfunction	Probable cause	Remedy
Fits loosely in camera	Damaged bayonet mounting lugs	Replace mounting ring (3, fig. 3-34).
	Damaged locking slot	Replace mounting ring (3).
Fits tightly in camera	Damaged bayonet mounting lugs	Replace mounting ring (3, fig. 3-34).
	Burrs on mounting lugs or base of mounting ring.	Remove burrs by honing.

Malfunction	Probable cause	Remedy
Focusing mount binds	oreign matter in focusing helices	Clean focusing helices (23, and 24, fig. 3-34).
	Damaged focusing helices	Replace focusing mount.
Positions other than 90-mm bright-line frame.	Bayonet lug engaging frame selector damaged.	Replace mounting ring (3, fig. 3-34).
	Locking slot damaged	Replace mounting ring (3).
Rangefinder images do not coincide at infinity.	Damaged bayonet mounting lugs	Replace mounting ring (3, fig. 3-34).
	Burrs on base of mounting ring	Remove burrs by honing.
	Loose mounting ring	Tighten screws (2).
	Damaged cam arm	Straighten or replace cam arm (13).
	Weak or broken pressure spring	Replace pressure spring (15).
	Viewing unit misaligned	Collimate viewing unit (7), (para 4-38b).
Incorrect f/stop indexing	Loose or missing setscrews	Tighten or replace setscrews (9 and 13, fig. 3-32).
Diaphragm binds	Foreign matter in diaphragm	Clean diaphragm.
	Damaged diaphragm blades	Replace diaphragm blades (20, fig. 3-32).
	Damaged guide ring	Replace diaphragm guide ring (19).
	Damaged adjusting ring	Replace diaphragm adjusting ring (10).
	Damaged adjusting tube	Replace diaphragm adjusting tube (16).
	Damaged retaining ring	Replace retaining ring (18).
Flare on film	Reflections	Refinish fluting of inner lens hood tube (5, fig. 3-32).
		Refinish fluting of outer lens hood tube (8).
		Refinish fluting of lens tube (23).
		Refinish fluting of mounting ring (3, fig. 3-34).
		Refinish fluting of rangefinder cam tube (8).
		Refinish fluting of cam am (13).
		Refinish fluting of fluted tube (30).
Poor image contrast	Foreign matter on optical components	Clean optical components.
	Abraded optical components	Replace lens head.
	Decemented optical components	Replace lens head.
Unsharp image on film	Loose optical components	Tighten retaining ring (21, fig. 3-32).
		Tighten retaining rings (1, 4, and 7, fig. 3-33).
	Decemented optical components	Replace lens head.
	Damaged cam arm	Replace cam arm (13, fig. 3-34).
	Misaligned viewing unit	Collimate viewing unit, (para 4-38b).

2-4 Flash Unit

The photographic effects of flash unit malfunctions are detailed in paragraph 4-8, TM 11-6720-244-12. Mechanical and electrical malfunctions are listed in the following troubleshooting chart.

a. **Mechanical malfunctions will, in most cases, become evident by an examination of the flash unit.**

b. **Electrical malfunctions usually require checking with a multimeter. The procedures are outlined in paragraph 5-3c, TM 11-6720-244-12.**

c. Trouble shooting Chart.

Malfunction	Probable cause	Remedy
Reflector will not open	Defective segment cleat	Replace segment cleat (7, fig. 3-36).
Reflector will not close	Defective reflector segment	Replace reflector segment (5, 6, or 8, fig. 3-36).
	Defective segment cleat	Replace segment cleat (7, fig. 3-36).
Reflector will not lock in open position.	Upper reflector segment defective	Replace upper reflector segment (8, fig. 3-36).
	Lower reflector segment defective	Replace lower reflector segment (5, fig. 8-36).

Malfunction	Probable cause	Remedy
Reflector handle loose or tight in mounting bracket.	Reflector mounting bracket defective	Replace reflector mounting bracket (3, fig. 3-39).
	Pressure spring defective	Replace pressure spring (4, fig. 3-39).
Bayonet-base bulb will not lock in socket.	Release spring defective	Replace release spring (4, fig. 3-37).
Bayonet-base bulb will got eject	Release spring too tight	Adjust release spring (4, fig. 3-37).
	Contact spring defective	Replace spring (12, fig. 3-37).
Mounting foot loose	Loose or missing mounting foot screws	Tighten or replace screws (17, fig. 3-39).
	Base defective	Replace base (19, fig. 3-39).
Flashbulb fires when inserted in socket.	Connecting cord shorted	Replace connecting cord.
	Resistor shorted	Replace resistor (19, fig. 3-38).
Flashbulb will not fire	Battery exhausted	Replace battery.
	Polarity reversed	Reverse battery.
	Connecting cord open	Replace connecting cord.
	Capacitor defective	Replace capacitor (22, fig. 3-38).
	Rectifier defective	Replace rectifier (9, fig. 3-39).
Capacitor will not charge	Battery exhausted	Replace battery.
	Capacitor defective	Replace capacitor (22, fig. 3-38).
	Resistor defective	Replace resistor (19, fig. 3-38).

CHAPTER 3

DISASSEMBLY

NOTE

The following lists the unit number reference designations.

	UNIT
1	Camera body
2	50-mm lens
3	Exposure meter
5	35-mm lens
6	Lens hood
7	135-mm lens
10	Flash unit
20	Film magazine

NOTE

Direct support repairs are limited by spare parts, took, and test equipment available.

NOTE

The following lists the special tool number reference designations.

Tool No.	*E. Leitz number*	Nomenclature
1	42-253.01-36W4	Spanner wrench, collet type
2	42-253.01-494W4	Key, 2.pm
3	42-253.01-498W2	Wrench, collet type
4	42-253.01-486W1	Wrench, collet type
5	42-253.01-483W8	Clamping key. threaded
6	42-582.01-27W1	Wrench, collet type
7	42-253.01-Z1W84	Holding pin, threaded
8	42-253.01-571W1	Pin vise, top adjusted
9	42-253.01-637W5	Key, l-pin, recessed
10	42-253.01-79W4	Key, 2-pin
11	42-253.01-80W8	Retaining tool, slotted, recessed
12	042-782.001ZW2	Spring mounting tool
13	42-782.001-161WNY	Jig
14	42-782.001-162W1	Key, drilled, slotted
15	42-253.01-27W4	Key, l-pin, extended center
16	42-253.01-U257W3	Key, 2-pin, extended, drilled center
17	42-253.01-246NY	Key, 1-pin, drilled center
18	42-253.01-598W2	Key, 2-pin, drilled center
19	42-253.01-597W2	Key, 1-pin, countersunk
20	U42-253.01-596W2	Key, 2-pin, extended center
21	42-253.01-593w2	Jig
22	42-253.01-538W3	Key, 2-blade, drilled center
23	42-253.01-635W2	Key, 2-pin, drilled center
24	42-253.01-460W1NY	Jig
25	42-253.01-460W2NY	Punch
26	42-58201-273W3	Key, 2-pin, offset, drilled center
27	42-582.01-33W3	Key, 2-pin, hollow center, retractable blade
28	42-253.01-74W1NY	Plier, end drilled

Tool No.	E. Leitz number	Nomenclature
29	42-253.01-76W2	Key, 2-blade
30	42-253.01-31w3	Key, 2-pin, drilled center
31	42-253.01-124W2	Key, 2-pin, hollow center, retractable blade
32	42-253.01-320W2	Key, 2-pin
33	42-263.01-338W2	Wrench, open end, flat
34	42-253.01-Z1A92	Tolerance gauge
35	42-253.01-U443W6	Bending tool
36	42-253.01-U443W5	Bending tool
37	42-582.03-62W2	Key, 1-blade, angle cut, recessed
38	Georg Karstens, Stuttgart, Get	Dial gauge, with feeler
39	42-263.01-Z1A89	Gauge, indicating
40	42-216-216-Z1W42	Gauge, spring tension, with screwdriver blade
41	42-253.01-Z1A95	Pattern plate, shutter speed checking
42	42-253.01-Z1W100	Light drum, shutter speed checking
43	42-253.01-U281W3	Wrench, double end, offset
44	42-253.01-Z1W41	Hinged back, with mirror
45	42-253.01-Z1W111	Test set, slow and high speed
46	42-253.01-Z1L74	Gauge, with center shaft
47	42-253.01-Z1A22	Weight, adjustable, with center shaft
48	42-531-Z1W13	Test instrument synchronizing circuit
49	42-531-Z1W13-101	Spark gap
50	42-531-Z1W13-100	Resistor, 0.3-ohm, plug-in
51	103.25.18	Test leads
52	42-253.01-Z1W109	Synchro test unit
53	42-253.04	Connecting cable
54	42-253.01-Z1A96	Pattern plate, tolerance
55	42-253.01-Z1A97	Pattern plate, tolerance
56	42-253.01-Z1A76	Gauge, set
57	42-582.01-Z1W4-4	Auto collimator
58	42-582.01-Z1W4-5	Adapter, auto collimator
59	42-253.01-535W15-6	Adapter, lathe
60	42-253.01-535W15-1/5	Intermediate piece
61	42-253.01-535W15-3	Adapter, flange
62	42-253.01-535W15-2	Pressure piece
63	M10DIN6303	Nut, holding
64	42-253.01-Z1W7	Table stand, with adjustable fixture and ground glass.
65	42-253.01-Z1W9	Telescope focusing
66	42-253.01-Z1W63	Housing, graticule, illuminated
67	42-700.01-Z1W20	Graticule, 1- ar 2-meter
68	42-582.01-Z1W8	Target, 0.7-meter
69	103.25.2	Housing, graticule
70	103.25.16	Graticule, 10-meter and infinity
71	42-582.01-Z1A10	Gauge, calibrating, with 90-mm lens
72	42-253.01-Z1A107	Gauge, frame setting
73	42-253.01-703W2	Screwdriver, double end, offset
74	42-253.01-700W2	Bending tool, with angled pin
75	42-253.01-630W6	Screwdriver, angled blade, twin-diameter shaft
76	42-582.03-Z1W6	Screwdriver, undercut blade
77	42-253.01-Z1A45	Gauge
78	42-253.01-114W1	Screwdriver, long shank
79	42-253.01-804W2	Key, 2-pin, flat
80	42-253.01-115W2	Key, 2-pin, flat
81	42-582.03-Z1W1	Plate, angle, with eyelens
82	42-253.01-Z1A59	Gauge, torsion tolerance
83	042-782.001-001-ZW1	Adapter, gauge, torsion tolerance
84	42-216-U482A1	Gauge, go/no-go
85	42-253.01-Z1137	Gauge
86	3.719.004.01/5W1NY	Key, 2-pin
87	BN1.301.01(3)W2NY	Key, 2-prong, milled
88	8.23.0328.05 MESSW.1/3DMLK3	Jig, multipurpose
89	KH10	Transformer, voltage regulator
90	42-655.01-Z1W7	Instrument, calibration check
91	42-655.01-Z1W22	Instrument, calibration check

Tool No	E Leitz number	Nomenclature
92	42-655.01-625W5NY	Fixture, battery substitute
93	42-471U48W1NY	Push rod, center drilled
94	42-471U39W2NY	Chuck, spring, with plunger
95	42-471-117W3NY	Key, 2-blade
96	42-471-296W4NY	Key, S-pin
97	42-672.01-3-1W1NY	Key, 2-blade
98	42-560.01-105W2NY	Spanner, fixed, 2-pin
99	42-680.01-Z1A6NY	Housing, ground glass
100	16,486	Magnifier, 5x, focusing
101	42-630.01-Z1A7	Target, ruled
102	C42-37.01-U60T1NY	Screws, knurled, 1.4-mm
103	C42-37.01-U60T6	Key, recessed
104	42-37.01-U60W3NY	Spanner, fixed, 2-blade
105	42-624.01-Z1A6	Parallel saddle
106	42-253.01-Z1W4	Key, 2-blade, center pin
107	42253.01-48WNY	Key, 2-blade, center drilled
108	42253-01-52WNY	Key, 2-blade, center pin
109	42-253.01-17W11	Jig, 7-slot, center bored
110	42-253.01-27W4NY	Key, l-pin, center drilled

Section I. CAMERA BODY

3-1. General

So far as possible, the cause of the malfunctions should be identified before disassembling the camera. Seldom must a camera be completely taken apart for repair. Disassembly should not be carried further than is necessary to correct the determined malfunction. To do so will disturb other adjustments. The identity, location, and position of all parts should be noted as they are removed, and replaced in the same position when reassembling. Many parts are not directly interchangeable, but must be fitted individually. All subassemblies can be taken apart, but in many cases it is advisable to replace the entire subassembly rather than to attempt to repair it. An example is the range-viewfinder assembly. This is an intricate mechanism and, if taken apart, would require the use of special collimators for realignment. Components which are riveted, sweated or press fitted, should be replaced *as* assemblies. This is especially true of optical elements which are cemented.

3-2. Baseplate Disassembly

a. Remove baseplate from camera.

b. Remove screw (1) .

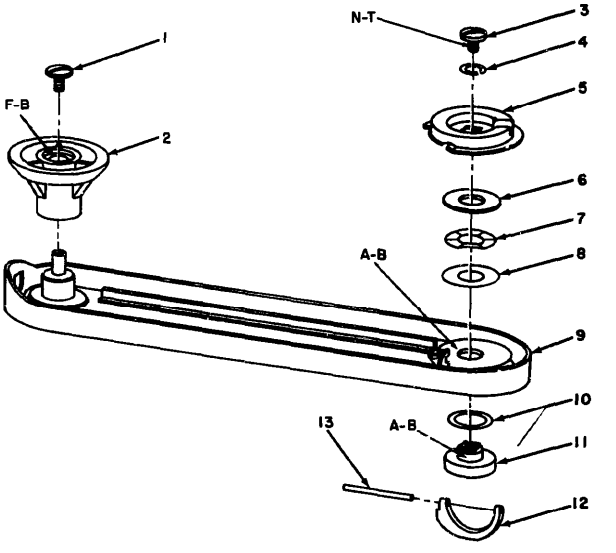
c. Lift off film positioning disc (2).

d. Remove screw (3) and washer (4).

e. Lift off locking plate (5) and washers (6), (7), and (8).

f. Remove lock stud assembly (11, 12 and 13) with washer (10).

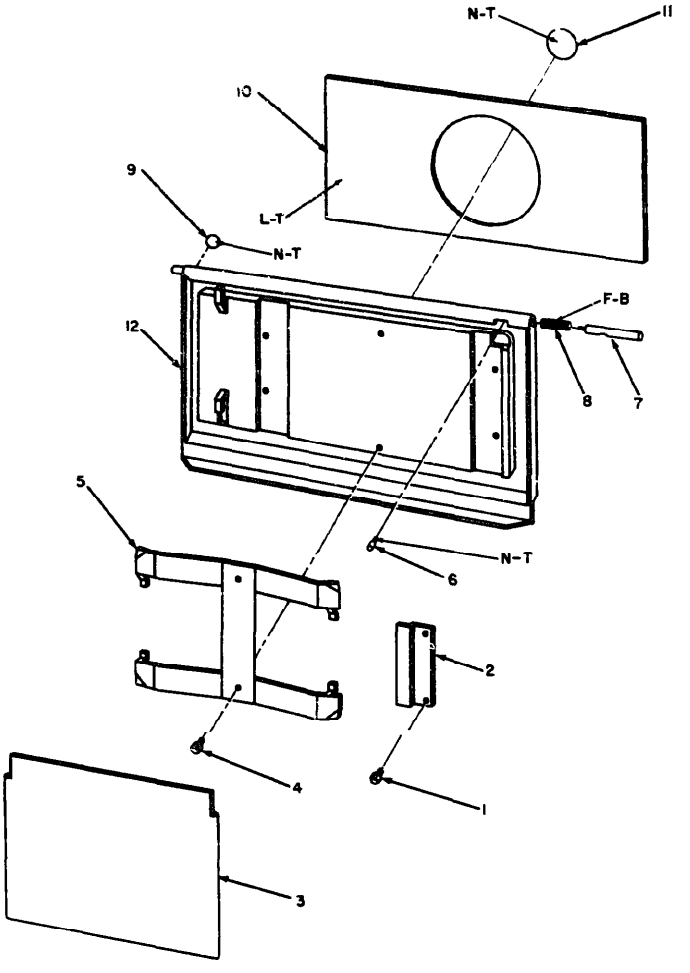
g. Remove pin (13) from lock stud (11) and handle (12).



EL 6720-244-35-22

1 Screw (1A1H1)
2 Film positioning disc (1A1MP1)
3 Screw (1A1H2)
4 Washer (1A1H3)
5 Locking plate (1A1MP2)
6 Washer (1A1H4), (1A1H7)
7 Spring washer (1A1H5)
8 Plastic washer (1A1H6)
9 Baseplate (1A1MP3)
10 Washer (1A1H8)
11 Lock stud (1A1H9)
12 Handle (1A1MP4)
13 Pin (1A1MP5)

Figure S-l. Baseplate assembly, exploded view.



EL 6720-244-35-23

1 Four screws (1A2H1)
2 Two angle plates (1A2MP1)
3 Pressure plate (1A2MP2)
4 Two screws (1A2H2)
5 Leaf spring (1A2MP3)
6 Actuator (1ALA1MP1)
7 Locking pin (1A2A1MP2)
8 Pressure spring (1A2A1MP3)
9 Two plastic cushions (1A2A1MP4)
10 Covering (1A2A1MP5)
11 Film-type indicator (1A2A1MP6)
12 Hinged back (p/o 1A2)

Figure 3-2. Hinged back, exploded view.

3-3. Hinged Back Disassembly
(fig. 3-2)

a. Remove hinged back (12) from camera.

b Remove four screws (1).

c Remove two angle plates (2).

d. **Disengage pressure plate** ***(3)*** **from** ***spring*** **(5).**

e. Remove two screws (4), and leaf spring (5).

f Remove actuator (6) with tool No. 8.

CAUTION

Hold locking pin when removing actuator

g. Remove locking pin (7) with pressure spring (8).

h. **Remove two plastic cushions (9).**

i. Remove covering (10).

j. Remove film-type indicator (11).

3-4 Top Cover Removal and Disassembly
(figs. 3-3 and 3-4)

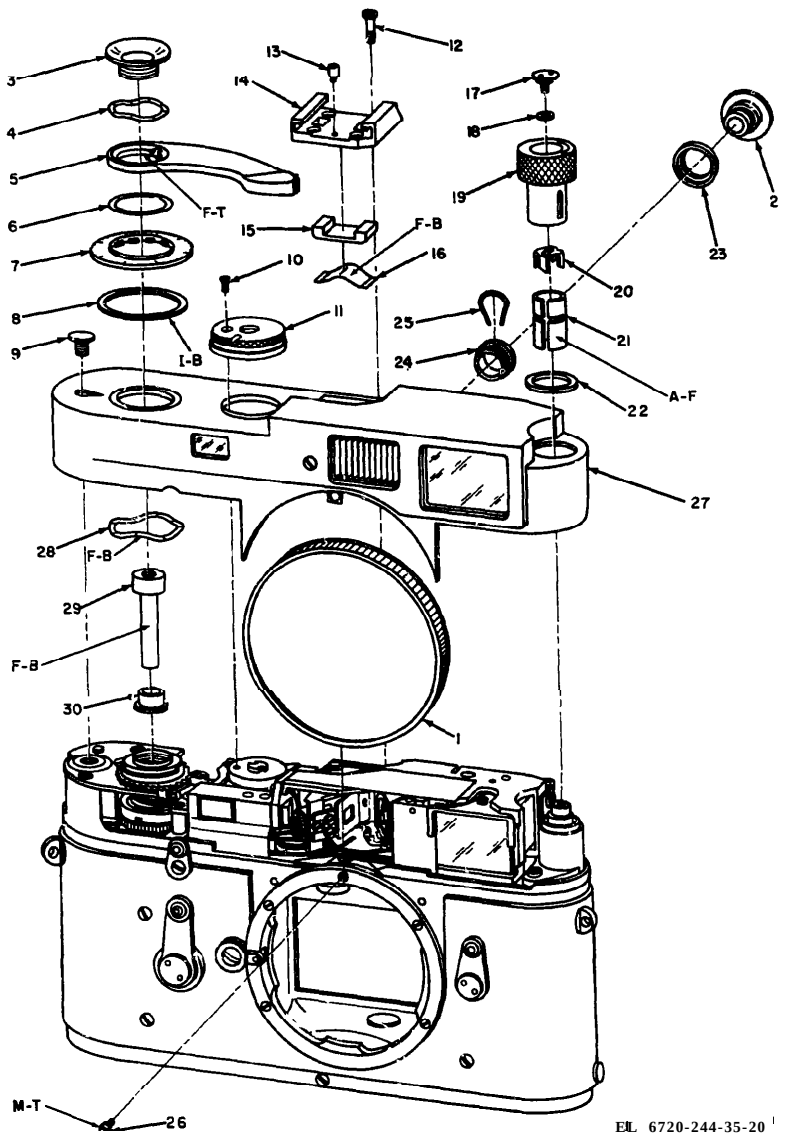
a. Removing Top Cover From Camera Body **(fig. 3-3).**

(1) Remove body cover (1).

(2) Remove two flash socket covers (2).

(3) Remove screw ring (3) with tool No. 1.

(4) Lift off saddle spring (4), winding lever (5), spacer (6), and counting dial (‘7).



1 Body cover (1MP1)
2 Two flash socket *covers* (1MP2)
3 Screw ring (1A3MP1)
4 Saddle spring (1A3MP2)
5 Winding lever (1A3MP3)
6 Spacer (1A3MP4)
7 Counting dial (1A3MP5)
8 Felt ring (1A3A1MP1)
9 Screw (1A3H1)
10 Screw (1A3H2)
11 Speed dial (1A3MP6)
12 Four screws (1A3H3)
13 Stop screw (1A3H4)
14 Accessory clip (1A3MP7)
15 Pressure plate (1A3MP8)
16 Pressure spring (1A3MP9)
17 Screw (1A3H5)
18 Washer (1A3H6)
19 Rewind knob (1A3MP10)
20 Forked carrier (1A8MP2)
21 Slotted friction sleeve (1A8MP1)
22 Retaining ring (1A3H7)
23 Two cover rings (1A3MP11)
24 Two bushings (L43MP12)
25 Two locking springs (1A3MP13)
26 Screw (1H1)
27 Top cover (complete) (1A3A1)
28 Saddle spring (1H2)
29 Release knob (1AMP50)
30 Release sleeve (1AMP51)

Figure 3-3. Top cover removed, exploded view.

NOTE

Spacer (6) IS not on all cameras.

(5) Remove felt ring (8).

NOTE

Felt ring is glued on top cover. Remove only if damaged.

(6) Remove screw (9) with tool No. 6.

(7) Remove screw (10) from speed dial (11).

(8) Lift off speed dial (11).

(9) Remove four screws (12), and stop screw (13) from accessory clip (14).

NOTE

Remove screw (13) only if damaged.

(10) Lift off accessory clip (14), Pressure plate (15), and pressure spring (16).

(11) Remove screw (17) with tools No. 2 and 11.

(12) Lift off washer (18), and rewind knob (19).

(13) Remove forked carrier (20), and slotted friction sleeve (21).

(14) Remove retaining ring (22) with tool No. 3.

(15) Remove two cover rings (23) with tool *No. 4.*

(16) Remove two bushings (24) with tool No. *5.*

(17) Remove two locking springs (25).

NOTE

Remove springs only if damaged.

(18) Remove sealed screw (26).

NOTE

Seal must be removed to provide access to screw.

(19) Remove top cover (27).

(20) Lift off saddle spring (28), release knob and shaft (29), and release sleeve (30).

b. Disassembly of Top Cover (fig. 3-4).

(1) Remove Screw (1).

(2) Remove window (2).

(3) Remove holding bracket (3).

(4) Remove window (4)

(5) Remove illuminating window (5).

(6) Remove eyelens (6) with tool No. 1.

NOTE

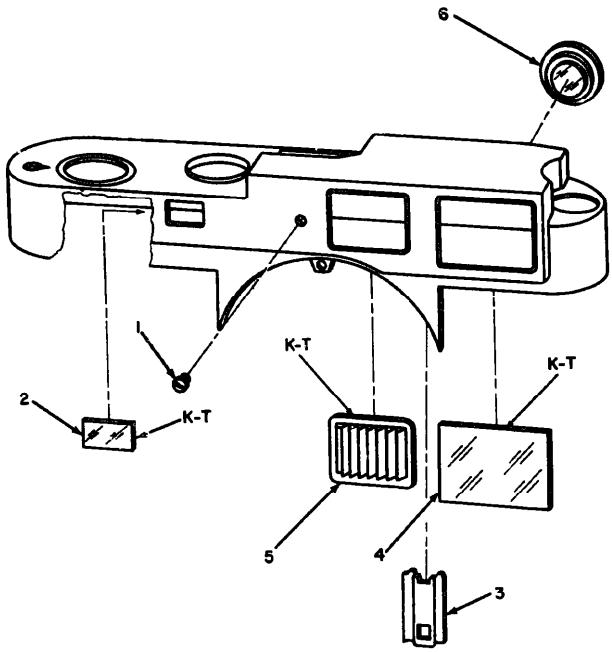
Remove windows and eyelens only if damaged.

3-5. Range-Viewfinder Assembly Removal and Disassembly (figs. 3-5, 3-6, and 3-7)

a. Removing Range- Viewfinder Assembly (fig. 3-5).

(1) Remove two screws (1), screw (2), bottom cover (3), locking bar (4), and spacer (5).

(2) Remove cover plate (6) with tool No. 79.



EL 6720-244-35-24

1 Screw (1A3H8)
2 Window (1A3A1MP2)
3 Holding bracket (1A3A1MP5)
4 Window (1A3A1MP4)
5 Illuminating window (1A3A1MP3)
6 Eyelens (1A3MP14)

Figure 3-4. Top cover **assembly,** *exploded view.*

(3) Remove screw (7) with tool No. 75, and washer (8).

(4) Remove cam (9), roller arm (10), and stop arm (11).

(5) Remove eccentric nut (12) with tool No. 80, and double-end screw (13) with tool No. 78.

(6) Remove two screws (14) and lift off range-viewfinder assembly (15).

(7) Remove light shields (16), (17), (18), and (19).

b. Disassembly of Range-Viewfinder Assembly **(figs. 3-6 and 3-7). It is not recommended that the range-viewfinder be disassembled beyond removing the bright-line frame assembly.**

(1) Remove two screws (1, fig. 3-6), and lift out bright-line frame assembly (2).

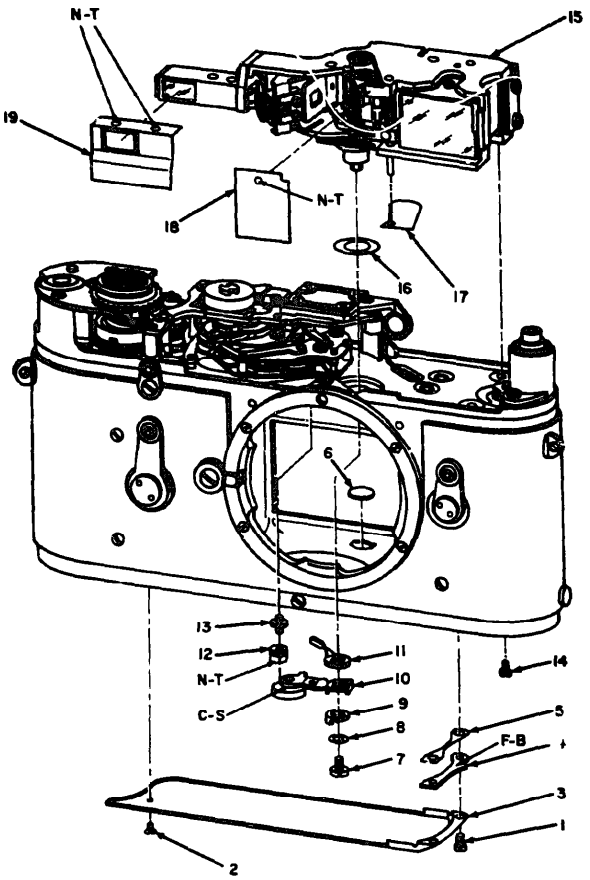
(2) Remove two screws. (3), screw (4), and lift off roof prism seat (5) with prism.

NOTE

Prism is cemented in seat.

(3) Remove sealing cap (6).

(4) Unhook spring (7).



EL 6720-244-35-25

	Two screws (1H4)	13	Double-end screw (1A5A2H1)
2	screw (1H6)	14	Two screws (1H3)
3	Bottom cover (1MP8)	15	Range-viewfinder assembly (1A5)
4	Locking bar (1MP4)	16	Light shield (1AM-P55)
5	Spacer (1MP6)	17	Light shield (1A-MP56)
6	Cover plate (1A4)	18	Light shield (p/o 1A5)
7	Screw (1A5H1)	19	Light shield (p/o 1A5)
8	Washer (1ASH2)		
9	cam (1A6MP1)		
10	Roller arm (1A6A1)		
11	Stop arm (1A6MP2)		
12	Eccentric nut (1A6-A2MP1)		

Figure 3-5. Range-viewfinder assembly removed, *partial* exploded view.

(5) **Remove ball screw** (8).

(6) **Lift out objective lever (9) with attached components.**

(7) **Remove objective mount (10), and objective (11).**

NOTE

Remove the lens only if damaged.

(8) **Remove two** screws **(12), and objective adjusting plate** (13).

(9) Remove objective holder (14).

(10) Remove screw (15), and mirror (16).

(11) Remove threaded de (17), and spring (18).

(12) Lift out guiding block (19) with attached components.

(13) Remove adjusting screw (20) with adjusting nut (21), **and remove nut from screw.**

(14) Remove plastic pin (22).

(15) Remove three acres (23), and bearing (24).

(16) **Lift out roller arm axle assembly (25).**

(17) Remove two screws (26), and angle plate (27).

(18) Remove screw (28), and retaining spring (29)

(19) Remove pressure spring (30), and negative lens (31).

NOTE

Negative lens is held in housing by apoxy.

(20) Remove two adjusting screws (32), and adjusting screw (33).

(21) Remove mask (34).

(22) Remove adjusting screws (35), and (36).

(23) Remove screw (37), and retaining spring (38).

(24) Remove sealing studs (39), and push out beam-splitting prism (40).

NOTE

The prism must be pushed toward the rear of the housing for removal.

(25) **Remove screw (41), and retaining bracket (42).**

(26) Remove two screws (43), and holding spring (44).

(27) Lift out lens mount (45) with achromatic lens (46).

NOTE

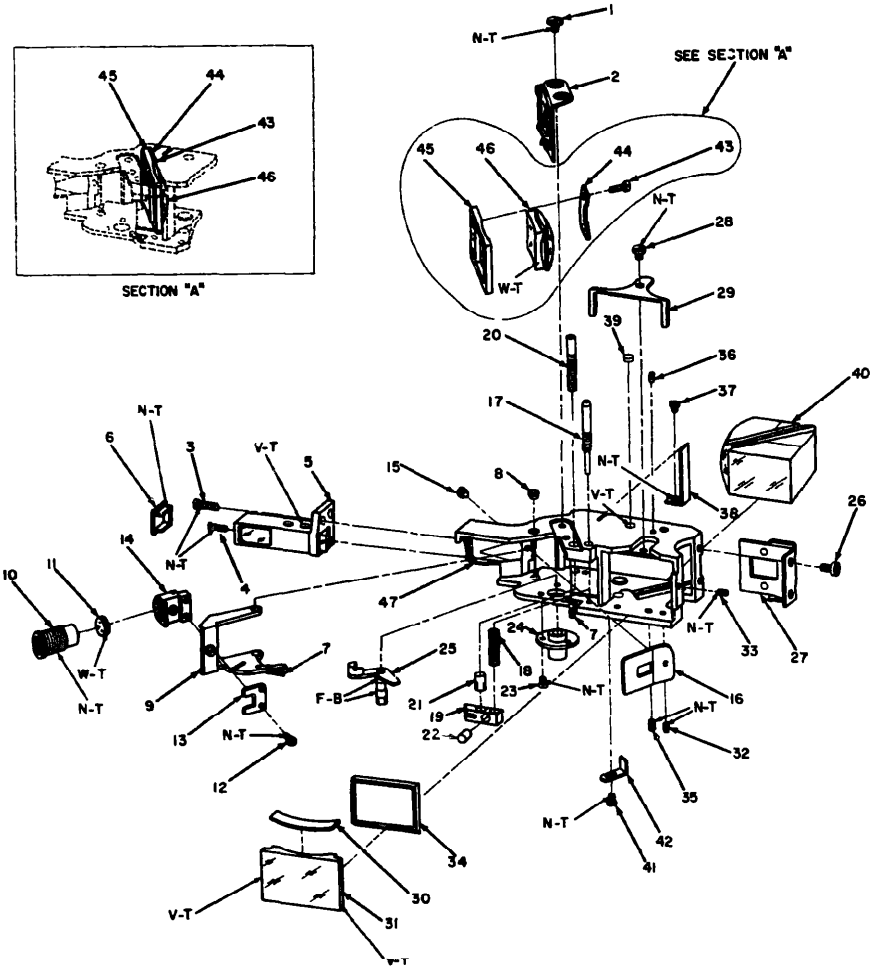
Lens is cemented in mount.

(28) Unhook and remove spring (1, fig. 3-7).

(29) Unhook spring (3), remove screw (2) with spring (3), and remove spring.

(30) Remove glass plate mount (4) with two riveted eccentrics (5), and cemented glass plate (6).

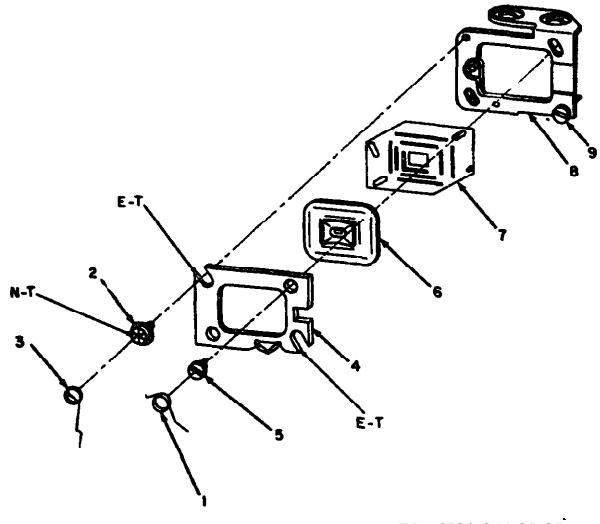
(31) Lift metal mask (7) from mask carrier assembly (8).



EL 6720-244-35-26

1	Two screws (1A5H3)	16	Mirror (1A5MP5)	32	Two adjusting screws (1A5H9)
2	Bright-line frame assembly (1A5A3)	17	Threaded axle (1A5A6MP1)	33	Adjusting screw (1A5H10)
3	Two screws (1A5H4)	18	Pressure spring (1A5A6MP2)	34	Mask (1A5MP12)
4	Screw (1A5H5)	19	Guiding block (1A5A6A1A1)	35	Adjusting screw (1A5H11)
5	Roof prism seat with prism (1A5A4)	20	Adjusting screw (1A5A6A1MP1)	36	Adjusting screw (1A5H9)
6	Sealing cap (1A5A4MP3)	21	Adjusting nut (1A5A6A1MP2)	37	Screw (1A5H12)
7	Pulling spring (1A5A5MP1)	22	Plastic pin (1A5A6A1A1MP1)	38	Retaining spring (1A5MP13)
8	Ball screw (1A5MP4)	23	Three screws (1A5H6)	39	Two sealing studs (1A5MP14)
9	Objective lever (1A5A5MP3)	24	Bearing (1A5MP7)	40	Beam-splitting prism (1A5A7)
10	Objective mount (1A5A5A1)	25	Roller arm axle assembly (1A5MP6)	41	Screw (1A5H13)
11	Objective (1A5A5A1MP2)	26	Two screws (1A5H7)	42	Retaining bracket (1A5MP15)
12	Two screws (1A5A5H1)	27	Angle Plate (1A5MP8)	43	Two screws (1A5H14)
13	Objective adjusting plate (1A5A5-MP2)	28	Screw (1A5H8)	44	Holding spring (1A5MP16)
14	Objective holder (p/o 1A5A5)	29	Retaining spring (1A5MP9)	45	Lens mount (1A5A8MP1)
15	Screw (1A5H6)	30	Pressure spring (1A5MP10)	46	Achromatic lens (1A5A8MP2)
		31	Negative lens (1A5MP11)	47	Housing (1A5MP16)

Figure, 3-6. Range-viewfinder assembly, exploded view.



EL 6720-244-35-27

1 Spring (1A5A3MP1)
2 Screw (1A5A3A1H1)
3 Spring (1A5A3A1MP1)
4 Glass plate mount (1A5A3A2MP1)
5 Two eccentrics (riveted) (1A5A3A-2MP2)
6 Glass plate (cemented) (1A5A3A2-MP3)
7 Metal mask (1A5A3MP2)
8 Mask carrier assembly (1A5A3A3)
9 Eccentric (riveted) (p/o 1A5A3A3)

Figure 3-7. Bright-line frame assembly, exploded view.

3-6. Removing Camera Chassis From Camera Housing
(fig. 3-8)

a. Fully wind delayed action release clockwork by turning delayed action lever (1) counterclockwise.

b. Remove screw (2), and pull off reverse lever (3).

c. Loosen screw (4) with tool No. 9, and push frame selector lever (5) clockwise to uncover *screw.*

d. Remove four screws (6).

e. Remove screw (7), and lift camera chassis (8) out of camera housing (9).

3-7. Disassembly of Camera Chassis

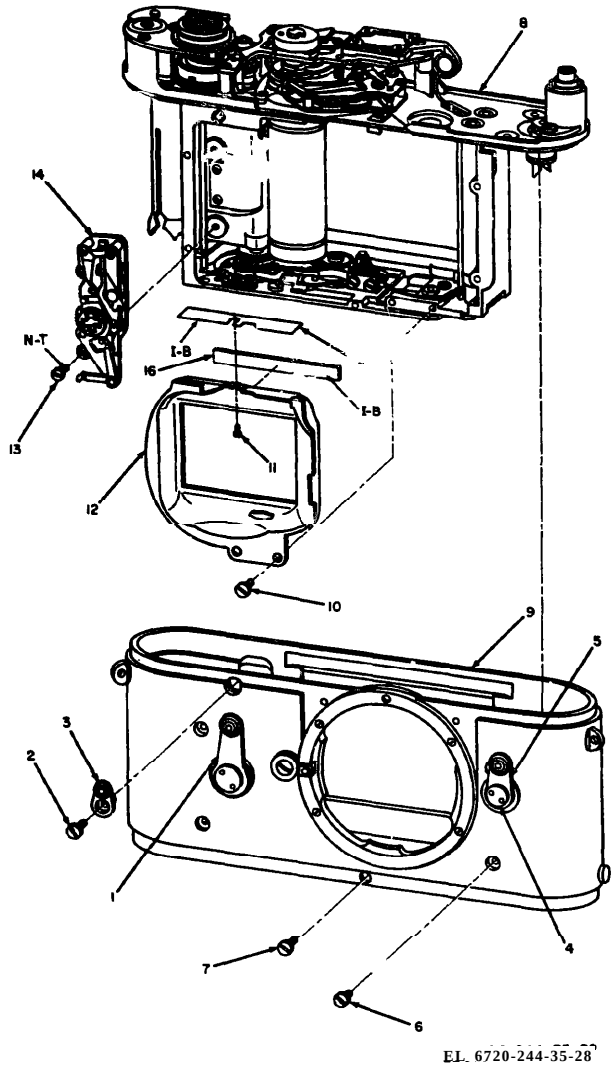
a. Removing Main Light Shield (fig. 3-8).

(1) Remove two screws (10), screw (11), and lift out main light shield (12).

(2) Remove light seal (15), and two felt strips (16).

NOTE

Light seal and felt strips are cemented to the main light shield.



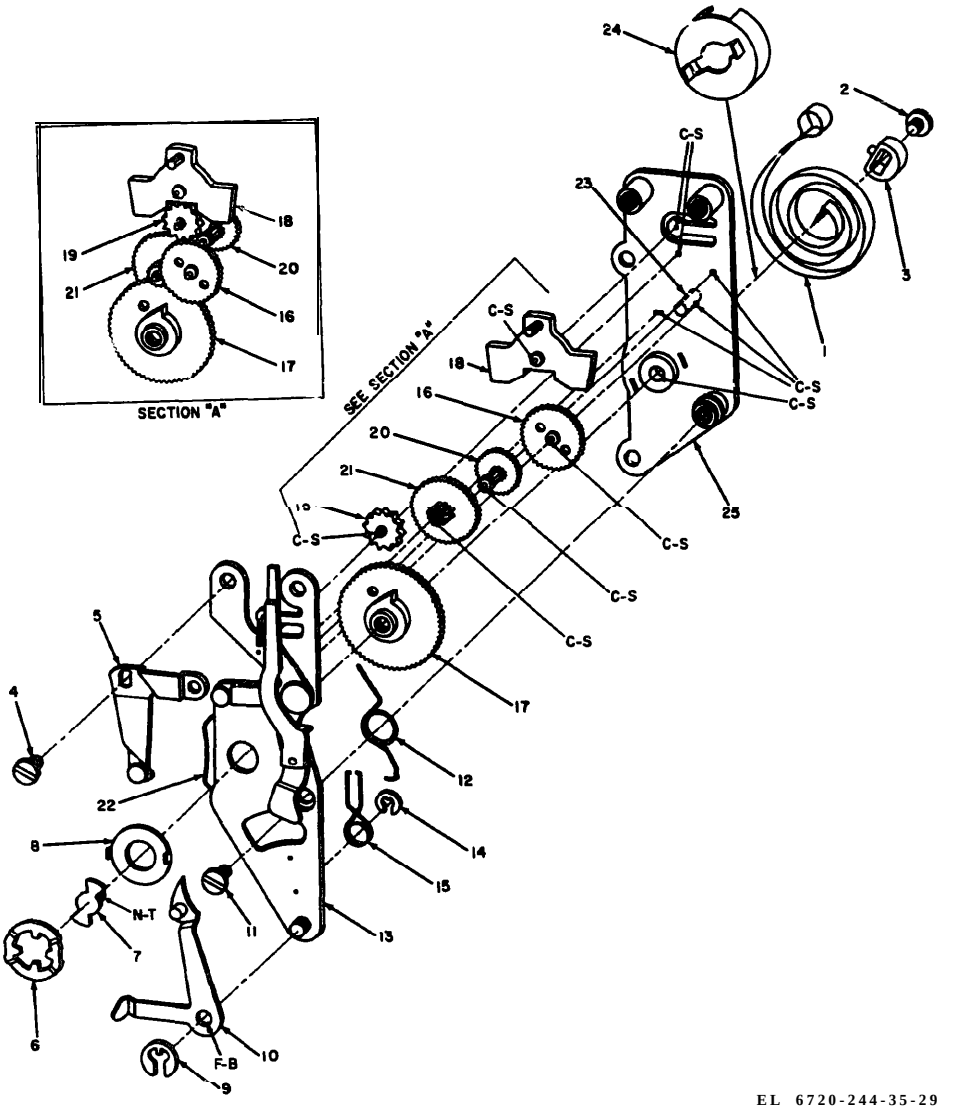
EL 6720-244-35-28

1 Delayed action lever (1A22MP1)
2 Screw (1H6)
3 Reverse lever (1MP6)
4 Retaining screw (1A22H4)
5 Frame selector lever (1A22MP11)
6 Four screws (1H7)
7 Screw (1H8)
8 Camera chassis (p/o 1)
9 Camera housing (1A22)
10 Two screws (1H9)
11 Screw (1H10)
12 Main light shield (1MP7)
13 Two screws (1H19)
14 Clockwork mechanism (1A6)
15 Light seal (p/o 1MP7)
16 Two felt strips (p/o 1MP7)

Figure 3-8. Camera chassis removed from camera housing, partial exploded view.

b. Removal and Disassembly of Delayed Action **Release** ***Clockwork*** **(figs. 3-3 and 3-9).**

(1) Remove two screws (13, fig. 3-8), and clockwork mechanism (14).



EL 6720-244-35-29

1	Spring (1A6MP1)	10	Release arm (1A6MP8)	18	Pallet (1A6MP14)
2	Screw (1A6H1)	11	Screw (1A6H3)	19	Star wheel (1A6MP15)
3	Spring carrier (1A6MP2)	12	Spring (1A6MP9)	20	Shifting gear (1A6MP16)
4	Two screws (1A6H2)	13	Upper bearing plate assembly (1A 6A1)	21	Double gear (1A6MP17)
5	Snap spring (1A6MP3)	14	Retaining ring (1A6MP10)	22	Spring (riveted to upper bearing plate) (p/o 1A6A1)
6	Coupling disc (1A6MP5)	15	Spring (1A6MP11)	23	Stud (riveted) (p/o 1A6MP18)
7	Carrier screw (1A6MP6)	16	Intermediate gear (1A6MP12)	24	Spring housing (p/o 1A6MP18)
8	Coupling disc holder (1A6MP4)	17	Winding gear (1A6MP13)	25	Lower bearing plate (1A6MP18)
9	Retaining ring (1A6MP7)				

Figure 3-9. Delayed action clockwork, exploded view.

(2) Release the clockwork, let spring (1, fig. 3-9) unwind, and remove the spring.

(3) Remove screw (2), and spring carrier (3).

(4) Remove two screws (4), and snap spring (5).

(5) Bend up two lips of coupling disc holder (8), and remove coupling disc (6).

(6) Remove carrier screw (7), and coupling disc holder (8).

NOTE

Carrier screw is left-hand threaded?

(7) Unhook spring (15) and remove retaining ring (9) and release arm (10).

(8) Remove screw (11).

(9) Unhook spring (12), and lift off upper 'bearing plate assembly (13).

(10) Remove retaining ring (14), and spring (15).

(11) Remove intermediate gear (16), and winding gear (17).

(12) Remove pallet (18).

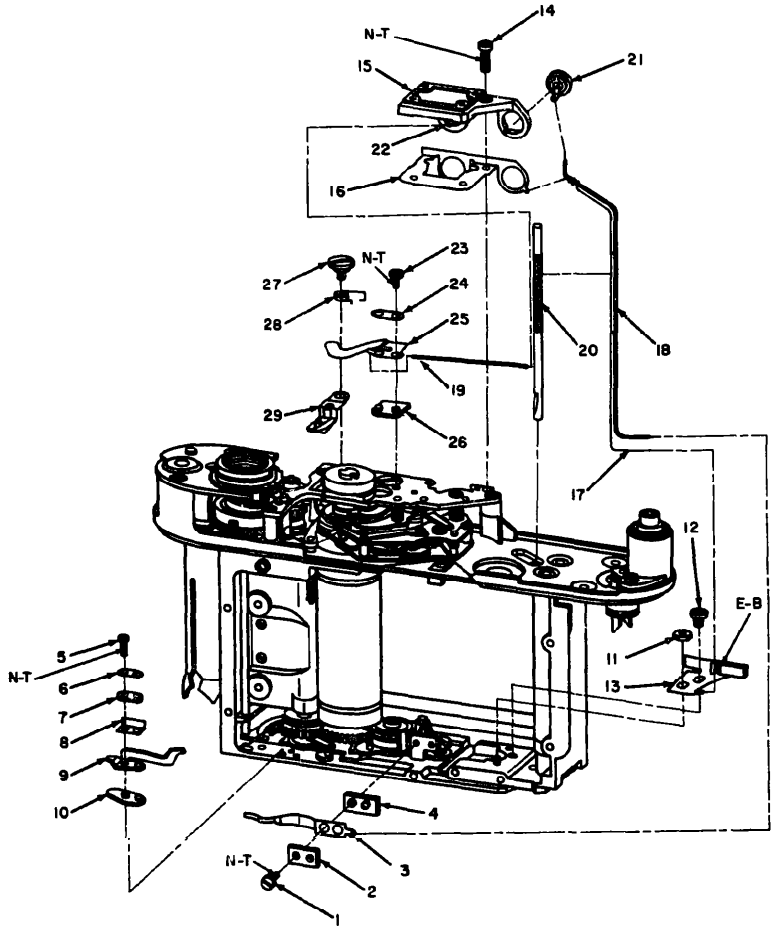
(13) Remove star wheel (19), shifting gear (20), and double gear (21) from lower bearing plate (26).

NOTE

Spring (22) is riveted to upper b -ring plate. Stud (23) is riveted to lower bearing plate.

(14) Remove spring housing (24).

c. Disassembly of Synchronizing circuit components (fig. **3-10).**



EL 6720-244-35-30

1	Two screws (1H11)	11	Nut (1H13)	21	Terminal (electronic flash) (1A25-MP2)
2	Insulating plate (1A7E1)	12	Screw (1H14)	22	Terminal (flash bulb) (1A25MP2)
3	Long contact spring (1A7MP1)	13	Guide spring (1MP10)	23	Two screws (1H16)
4	Insulating plate (1A7E2)	14	Screw (1H15)	24	Insulating plate (1A26MP1)
5	Two screws (1H12)	15	Terminal frame (1A25MP1)	25	Contact spring (1A26MP2)
6	Metal plate (1A24MP1)	16	Grounding plate (1MP14)	26	Insulating plate (1A26MP3)
7	Insulating plate (1A24MP2)	17	Ground wire (1W1)	27	Screw (1H17)
8	Insulating shield (1A24MP3)	18	Insulated wire (1W2)	28	Spring (1MP16)
9	Short contact spring (1A24MP4)	19	Insulated wire (p/o 1A26MP2)	29	Synchro adjusting lever (1MP17)
10	Insulating plate (1A24MP5)	20	Metal tube (1MP11)		

Figure *3-10. Synchronizing components, exploded view.*

(1) Remove two screws (1), insulating plate (2), long contact spring (3), and insulating plate *(4).*

(2) Remove two screws (5), metal plate (6), insulating plate (7), insulating shield (8), short contact spring (9), and insulating plate (10).

(3) Remove nut (11) with tool NO. 33, *screw* (12), and lift off guide spring (13).

(4) Remove screw (14), and lift up terminal frame (15) with grounding plate (16).

(5) Unsolder ground wire (17) from guide spring (13) and grounding plate (16).

(6) Unsolder insulated wire (18) from long contact spring (3) and terminal (21).

(7) Unsolder insulated wire (19) from terminal (22) and contact spring (26).

(8) Slightly raise metal tube (20), containing insulated wires, and remove from camera chassis. Remove wires from tube.

(9) Remove terminals (21), and (22) by pushing to the rear.

(10) Remove two screws (23), insulating plate (24), contact spring (25), and insulating plate (26).

(11) Remove screw (27), unhook and remove spring (28), and synchro adjusting lever (29).

NOTE

Additional components of the synchronizing circuits are inaccessible at this point. The camera chassis must be further disassembled before they can be removed.

d. Removal and Disassembly of *Rewind As*sembly (fig. 3-11).

(1) Remove two screws (1), sleeve (2), and hearing assembly (3) with rewind shaft (4).

(2) Remove rewind shaft (4), and washer (5) from bearing assembly.

(3) Remove gear (6) from rewind fork (7) with tools No. 10 and 11.

e. Removal and Disassembly of Slow-Speed Escapement (figs. 3-11 and 3-12).

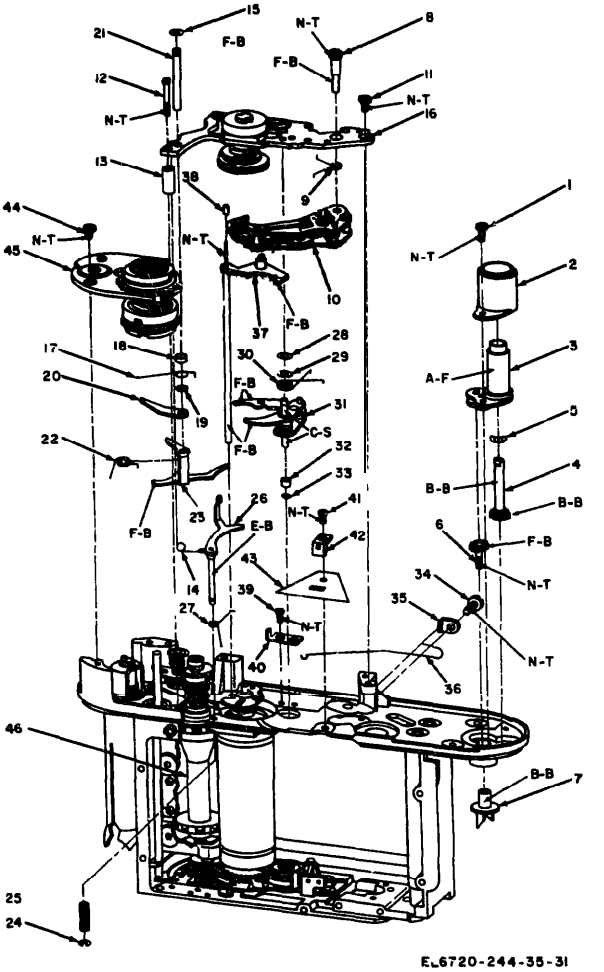
(1) Remove threaded shaft (3, fig. 3-11).

(2) Remove spring (9).

(3) Lift out slow-speed escapement (10).

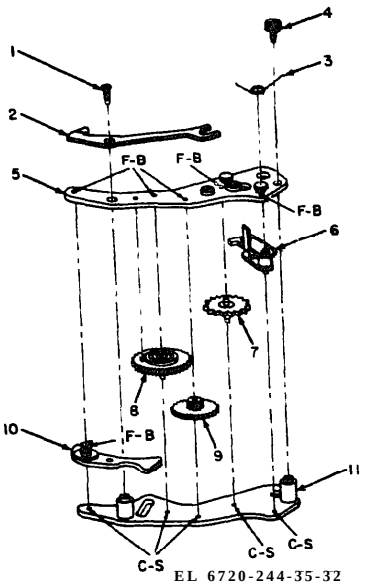
(4) Remove screw (1), and guide lever (2, fig. 3-12).

(5) Remove spring (3), and screw (4).



1	Two screws (1A8H1)	24	Retaining ring (1MP18)
2	Sleeve (1A8MP3)	25	Spring (1MP19)
3	Bearing assembly (1A8MP4)	26	Contact arm (1A10)
4	Rewind shaft (1A8MP6)	27	Spring (1MP20)
5	Washer (1A8MP5)	28	Washer (1A9A4MP2)
6	Gear (1AMP48)	29	Retaining ring (1A9A4MP1)
7	Rewind fork (1AMP49)	30	Spring (1A9A4MP3)
8	Threaded shaft (1A9MP3)	31	Adjusting lever assembly (1A9A4)
9	Spring (1A9MP4)	32	Spacer sleeve (1A9A4MP4)
10	Slow-speed escapement (1A9A2)	33	Washer (1A9A4MP5)
11	Two screws (1A9H2)	34	Screw (1H18)
12	Long screw (1A9H1)	35	Holding plate (1MP21)
13	Sleeve (1A9MP2)	36	Spring (1MP22)
14	Ground wire (p/o 1A10)	37	Arresting lever B (1A11)
15	Retaining ring (1A9MP1)	38	Insulating cap (1A11MP1)
16	Shutter bearing plate assembly (1A9A1)	39	Two screws (1H20)
17	Spring (1A9MP13)	40	Stop plate (1MP25)
18	Spacer ring (1A9MP14)	41	Screw (1H19)
19	Washer (1A9MP15)	42	Angle bracket (1MP23)
20	Stop lever (1A9MP16)	43	Light shield (1MP24)
21	Shaft (1A9MP19)	44	Three screws (1A12H1)
22	Spring (1A9MP18)	45	Driveshaft assembly (1A12)
23	Double stop lever (1A9MP17)	46	Sprocket wheel assembly (1A13)

Figure 3-11. Bearing plate, drive shaft and rewind assembly, partial exploded view.



1 Screw (1A5A2H1)
2 Guide lever (1A9A2MP1)
3 Spring (1A9A2MP2)
4 Screw (1A5A2H2)
5 Upper mounting plate (1A9A2A1)
6 Pallet assembly (1A5A2A2)
7 Star wheel (1A5A2MP3)
8 Gear with spiral spring (1A9A2 M P 4)
9 Double gear (1A9A2MP5)
10 Sector gear assembly (1A9A2A3)
11 Lower mounting plate (1A3A2A4)

Figure 3-12. Slow-speed escapement, exploded view.

(6) Unfasten spiral spring of gear (8) from upper mounting plate (5), and remove mounting plate.

(7) Remove pallet assembly (6), star wheel (7), gear (8) with spiral spring, double gear (9), and sector gear assembly (10) from lower mounting plate (11).

f. ***Removal and Disassembly of Shutter Bearing Plate and Associated Components*** **(figs. 3-11 and 3-13).**

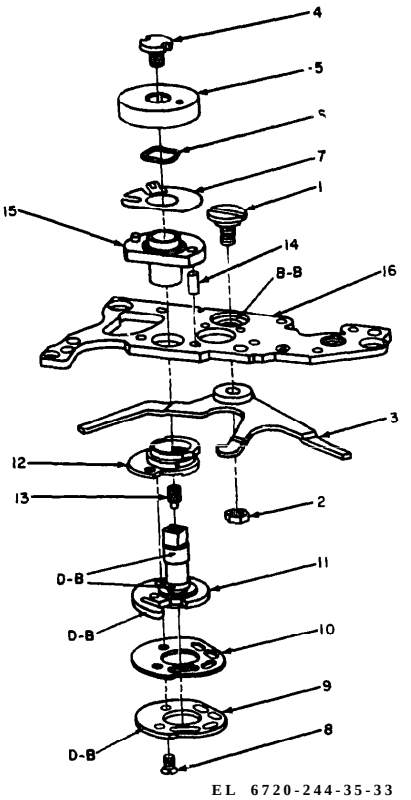
(1) Remove two screws (11, fig. 3-11).

(2) Remove long screw (12), and sleeve (13).

(3) Unsolder ground wire (14) from shutter bearing plate assembly (16), and from contact arm (26).

(4) Unhook spring (27) from contact arm (26), and position contact arm to clear cams of shutter bearing plate assembly (16).

(5) Unhook spring (30) from shutter bearing plate assembly (16).



1 Screw (1A9A1H1)
2 Nut (1A9A1H2)
3 Disengaging lever (1A9A1MP2)
4 Screw (1A9A1H3)
5 Speed dial knob (1A9A1MP3)
6 Spring washer (1A9A1MP4)
7 Arresting spring (1A9A1MP5)
8 Two screws (1A9A1H4)
9 Slow-speed cam (1A9A1MP6)
10 Spacer (1A9A1MP8)
11 High-speed cam (1A9A1MP7)
12 Synchro lever setting cam (1A9A1MP9)
13 Adjusting screw (p/o 1A9A1MP7)
14 Rivet (p/o 1A9A1)
15 High-speed cam bearing (1A9A1A1)
16 Bearing plate (p/o 1A9A1)

Figure 3-13. Bearing plate assembly, exploded view.

(6) Remove retaining ring (15), push shaft (21) down to just clear shutter bearing plate assembly (16), and remove assembly.

NOTE

Hold adjusting lever assembly (31), making certain it is not removed with the shutter bearing plate assembly.

(7) Remove spring (17), spacer ring (18), washer (19), and stop lever (20).

(8) Unhook spring (22), and remove shaft (21) with spring (22).

(9) Remove double stop lever (23).

(10) Remove retaining ring (24), and spring (25).

(11) Remove contact arm (26), and spring (27).

(12) Remove washer (28), retaining ring (29), and spring (30).

(13) Remove adjusting level assembly (31), spacer (32), and washer (33).

(14) Remove screw (34), holding plate (35), and spring (36).

(15) Remove arresting lever B (37), and insulating cap (33).

(16) Remove two screws (39), and stop plate (40).

(17) Remove screw (41), angle bracket (42), and light shield (43).

(18) Remove screw (1, fig. 3-13), nut (2) with tool No. 33, and disengaging lever (3).

(19) Remove screw (4) with tool No. 32, speed dial knob (5), spring washer (6), and arresting spring (7).

NOTE

Lift free side of arresting spring (7), and slide from under-cut rivet on high speed cam bearing (15).

(20) Remove two screws (8), slow-speed cam (9), and spacer (10).

(21) Remove high-speed cam (11) with adjusting screw (13), and synchro lever setting cam (12).

(22) Remove synchro lever setting cam (12), and adjusting screw (13) from high speed cam (11).

(23) Knock out rivet (14), and remove high-speed cam bearing (15) from bearing plate (16).

***g. Removal and Disassembly of Drive Shaft Assembly* (fig. 3-11 and 3-14).**

(1) Remove three screws (44, fig. 3-11), and lift off drive shaft assembly (45).

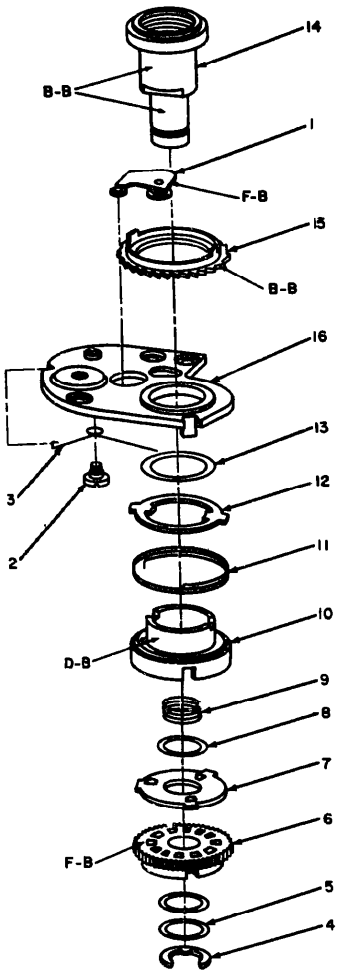
(2) Unhook spring (3, fig. 3-14), and lift out pawl (1).

(3) Remove screw (2), and spring (3).

(4) Remove retaining ring (4), spacer washers (5), drive shaft gear (6), ratchet plate (7), washer (8), and spring (9).

(5) Remove carrier sleeve (10), spring (11), carrier disc (12), and washer (13).

(6) Lift out drive shaft (14), and remove ratchet gear (15) from drive shaft bearing plate (16).



EL 6720-244-35-34

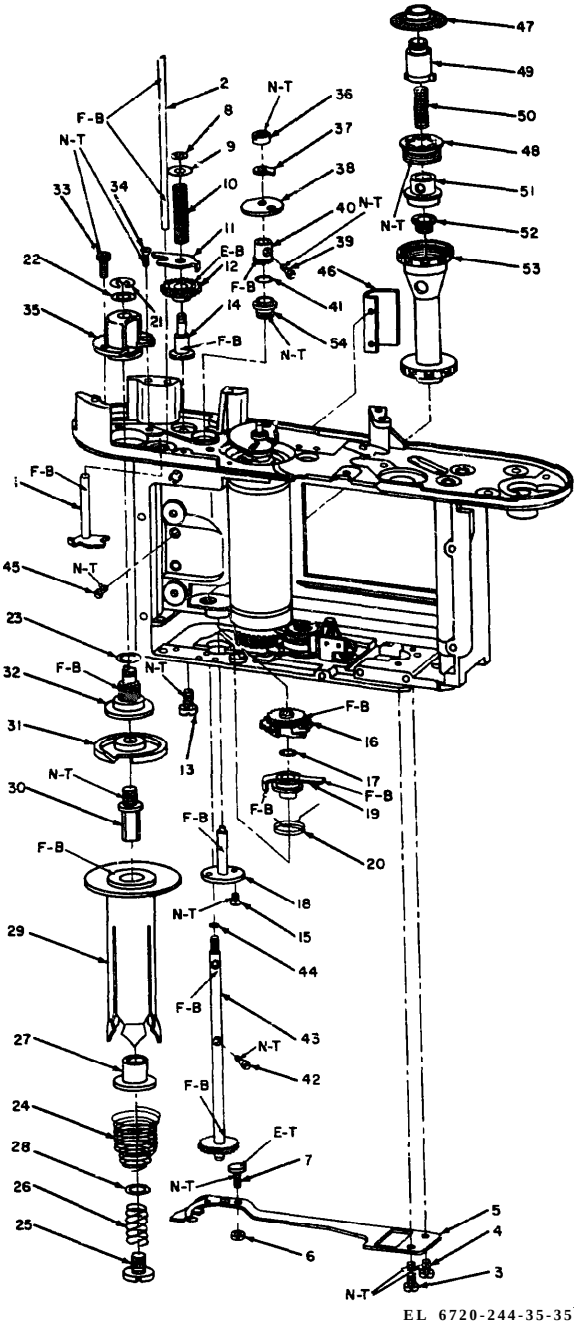
1 Pawl (1A12A1)
2 Screw (1A12H2)
3 Spring (1A12MP3)
4 Retaining ring (1A12MP4)
5 Washer (1A12H3)
6 Drive shaft gear (1A12MP5)
7 Ratchet plate (1A12MP6)
8 Washer (1A12MP7)
9 Spring (1A12MP8)
10 Carrier sleeve (1A12MP9)
11 Spring (1A12MP10)
12 Carrier disc (1A12MP11)
13 Washer (1A12H4)
14 Drive shaft (1A12MP12)
15 Ratchet gear (1A12MP13)
16 Drive shaft bearing plate (1A12A2)

Figure 3-14. Drive shaft assembly, exploded view.

***h. Removal and Disassembly of Shutter Release Components and Intermediate Gear Assemblies (fig.* 3-15).**

(1) Remove release shaft (1), and release rod (2).

(2) Remove long screw (3), short screw (4), and flat spring (5).



1 Release shaft (1A14)
2 Release rod (1MP26)
3 Long screw (1H25)
4 Short screw (1H26)
5 Flat Spring (1A15)
6 Nut (1A15H2)
7 Adjusting screw (1A15H1)
8 Retaining ring (1MP40)
9 Washer (1H30)
10 Spring (1MP41)
11 Locking lever (1MP42)
12 Intermediate gear A (1MP43)
13 Screw (1H31)
14 Shaft (1MP44)
15 Two screws (1H27)
16 Intermediate gear B (1MP37)
17 Washer (1H28)
18 Intermediate gear shaft (1MP36)
19 Arresting lever A (1A16)
20 Spring (1MP38)
21 Retaining ring (1MP27)
22 Washer (1H21)
23 Washer (p/o 1MP28)
24 Spring (1MP29)
25 Screw (1H22)
26 Spring (1MP30)
27 Bushing (1MP31)
28 Washer (1H23)
29 Takeup spool (1MP32)
30 Holding shaft (1MP33)
31 Release disc (1MP34)
32 Gear (1MP28)
33 Two screws (1H24)
34 Screw (1A13H1)
35 Takeup spool assembly bearing (1MP35)
36 Retaining nut (1A13H2)
37 Stop arm (1A13MP1)
38 Stop disc (1A13MP2)
39 Screw (1A13H3)
40 Gear (1A13MP3)
41 Washer (1A13MP5), (1A13H4), (1A13H5)
42 Screw (p/o 1A13MP4)
43 Winding shaft (1A13MP4)
44 Washer (1A13MP5), (1A13H4), (1A13H5)
45 Two screws (1H29)
46 Curved bracket plate (1MP39)
47 Coupling disc (1A17MP1)
48 Retaining nut (p/o 1A13)
49 Coupling shaft (1A17MP2)
50 Spring (1A17MP3)
51 Carrier bushing (p/o 1A13)
52 Bearing (p/o 1A13)
53 Sprocket wheel (p/o 1A13)
54 Bearing (1MP45)

Figure 3-15. Takeup, film transport and release mechanism, partial exptoded view.

(3) Remove nut (6), and adjusting screw (7) with tool No. 31.

(4) Remove retaining ring (3), washer (9), spring (10), locking lever (11), and intermediate gear A (12).

NOTE

Prevent spring (10) from dislodging when removing retaining ring (3).

(5) Remove screw (13), and shaft (14).

(6) Remove two screws (15), and partially pull out intermediate gear shaft (13). Remove intermediate gear B (16), and washer (17).

NOTE

Washer (17) is not present in all cameras.

(7) Remove intermediate gear shaft (18), and arresting lever A (19) with spring (20).

(8) Remove spring (20).

***i. Removal and Disassembly of Takeup spool Assembly (fig.* 3-15).**

(1) Remove retaining ring (21), washer (22), and takeup spool assembly.

(2) Remove washer (23).

(3) Remove spring (24) with tool No. 12.

(4) Remove screw (25), spring (26), bushing (27) with washer (28), and remove washer.

(5) Remove takeup spool (29).

(6) Remove holding shaft (30) with tools No. 13 and 14, and release disc (31) from gear (32).

(7) Remove two screws (33).

(8) Remove screw (34). and takeup spool assembly bearing (35).

***j. Removal and Disassembly of Sprocket Wheel Assembly (fig.* 3-15).**

(1) Remove retaining nut (36) with tool No. 30, stop arm (37), and stop disc (38).

NOTE

Retaining nut (36) is left-hand threaded.

(2) Remove screw (39), gear (40), and washer (41).

(3) Remove screw (42). pull out winding shaft (43), and remove washer (44).

(4) Remove two screws (45), curved bracket plate (46), and sprocket wheel assembly.

(5) Remove coupling disc (47) with tools No. 106 and 109.

(6) Remove retaining nut (48) with tools No. 107 and 109.

NOTE

Nut is left-hand threaded.

(7) Remove coupling shaft (49), spring (50), and carrier bushing (51).

(8) Remove bearing (52) with tools No. 108 and 109 from sprocket wheel (53).

NOTE

Bearing is left-hand threaded.

(9) Remove bearing (54) with tool No. 15.

***k. Removal of Reverse Mechanism (fig.* 3-16).**

(1) Remove screw (1), and spring (2).

(2) Remove camshaft (3), washer (4), and atop screw (6).

(3) Remove nut (6) with tool No. 27, and adjusting screw (7).

***l. Removal and Disassembly of Brake Assembly (figs.* 3-16 and 3-17).**

(1) Remove screws (8, and 9, fig. 3-16), and lift out brake assembly (10).

(2) Remove retaining ring (1, fig. 3-17), lift off spring (2), and brakeshoe (3).

(3) Remove eccentric nut (4) with tool No. 26, and pull out shaft (5) with spring washer (6) and washer (7).

(4) Remove bushing (8) with tool No. 32, and spacer (9).

(5) Remove screw (10) and lift off spring washer (11), upper actuating plate (12), friction washers (13) and (14), brake disc (15), and lower actuating plate (16).

(6) Remove insulating cap (17).

(7) Remove friction washer (18) from bearing plate (19).

***m. Removal of Electronic Flush Synchro Eccentric (fig.* 3-16).**

(1) Remove nut (11) with tool No. 29, and spring washer (12).

(2) Lift out eccentric (13), and remove insulating cap (14).

***n. Removal of Shutter Curtain Assembly (fig.* 3-16).**

(1.) Remove two shutter tension adjusting bearings (15), using tool No. 16.

(2) Lift out ribbon spring roller assembly (16), and curtain spring roller assembly (17).

(3) Lift main roller assembly (18) out of the bearing, and remove shutter curtain assembly (19) from the camera chassis.

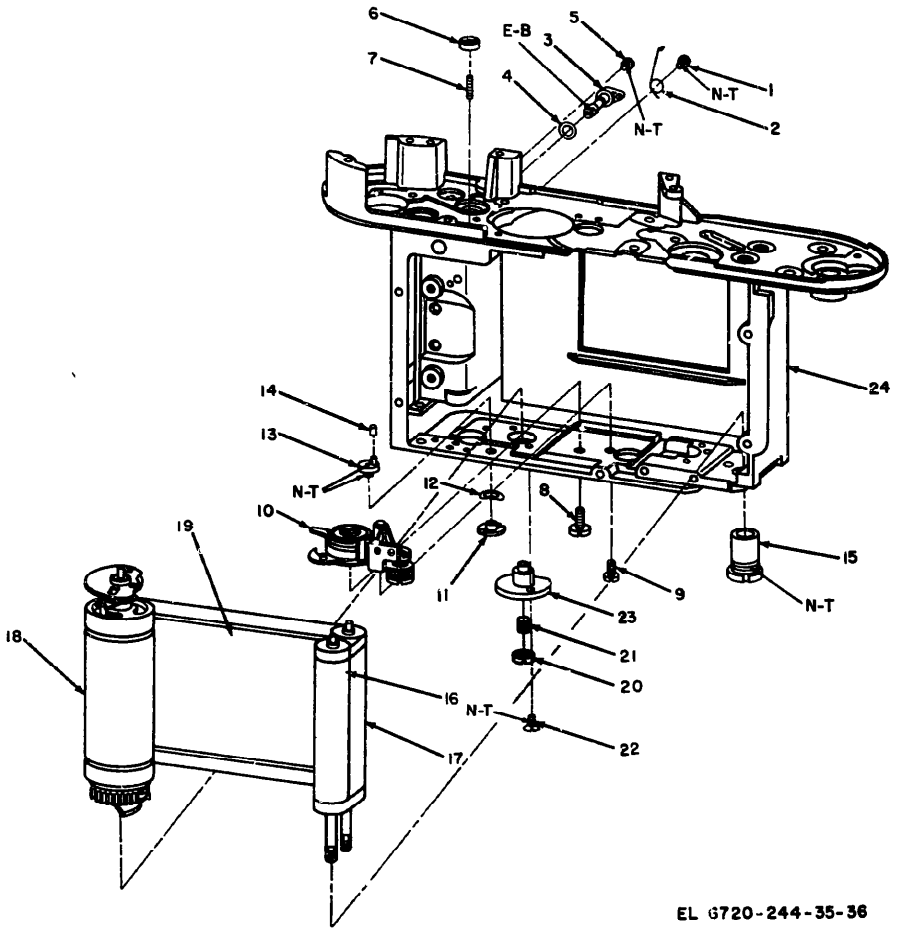
(4) Remove nut (20), and adjusting screw (21) with tool No. 27.

(5) Remove two screws (22), and bearing (23) from camera chassis (24).

***o Disassembly of Shutter Curtain Assembly* (fig. 3-18).**

NOTE

Main roller assembly (5) consists of components (1) and (2), and (6) through (22).



1 Screw (1A21H4)
2 Spring (1A21MP7)
3 Camshaft (1A21MP5)
4 Washer (1A21MP6)
5 Stop screw (1A21H3)
6 Nut (1A21H2)
7 Adjusting screw (1A21MP4)
8 Long screw (1A18H1)
9 Short screw (1A18H2)
10 Brake assembly (1A18)
11 Nut (1A21H1)
12 Spring washer (1A21MP1)
13 Eccentric (1A21MP2)
14 Insulating cap (1A21MP3)
15 Two shutter tension adjusting bearings (1A20)
16 Ribbon spring roller assembly (1A19A2)
17 Curtain spring roller assembly (1A19A1)
18 Main roller assembly (1A19A5)
19 Shutter curtain assembly (1A19)
20 Nut (1H33)
21 Adjusting screw (p/o 1MP46)
22 Two screws (1H32)
23 Bearing (1MP46)
24 Camera chassis (1A21)

Figure 3-16. Shutter and brake assemblies removed, partial exploded view.

(1), Remove two screws (1), and curtain holding bar (2).

(2) Remove second shutter curtain (3) from main roller assembly (5), and ribbons from ribbon roller (40).

(3) Remove first shutter curtain (4) from first curtain roller (30), and first shutter curtain ribbons from main roller assembly (5).

(4) Remove two screws (6), and contact arm cam (7).

(5) Drive out pin (8), and remove dropping flank (9).

(6) Remove second curtain roller catch (10), and washer (11).

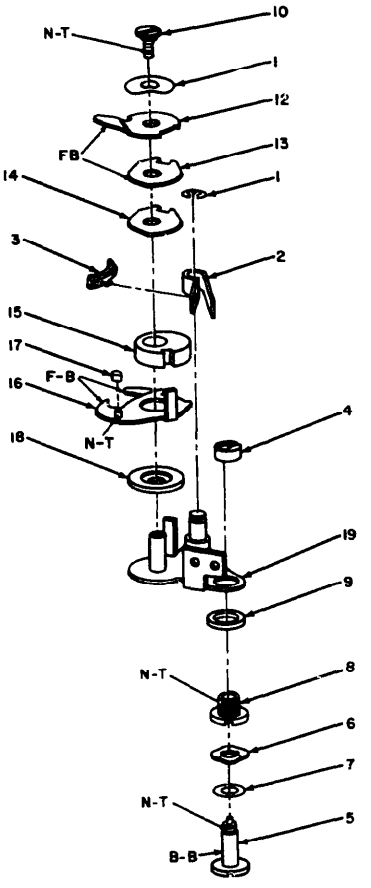
(7) Drive out pin (12), and remove upper ribbon roller (13).

(8) Remove washer (14), second shutter curtain roller (15), and washers (16) and (17).

(9) Remove retaining ring (18), and drive out pin (19).

(10) Drive out main roller assembly shaft (20), and remove main roller gear assembly (21) from lower ribbon roller (22).

(11) Remove retaining ring (23), washer (24), and upper ribbon guide roller (26).



EL 6720-244-35-37

1	Retaining ring (1A18MP1)	12	Upper actuating plate (1A18MP8)
2	Spring (1A18MP2)	13	Friction washer (1A18MP9)
3	Brakeshoe (1A18MP3)	14	Friction washer (1A18MP10)
4	Eccentric nut (1A18MP4)	15	Brake disc (1A18MP11)
5	Shaft (1A18H3)	16	Lower actuating plate (1A18A1)
6	Spring washer (1A18MP5)	17	Insulating cap (1A18A1MP1)
7	Washer (1A18A4)	18	Friction washer (1A18MP12)
8	Bushing (1A18MP6)	19	Bearing plate (1A18A2)
9	Spacer (1A18H5)		
10	Screw (1A18H6)		
11	Spring washer (1A18MP7)		

Figure 8-17. Brake assembly, exploded view.

(12) Remove tensioning stud (26), retaining ring (27), washer (28), and lower ribbon guide roller (29).

NOTE

Tensioning stud (26) is left-hand threaded.

(13) Remove first curtain roller (30) while holding bearing (31) with tool No. 17.

(14) Unhook spring (33) from bearing (31), remove bearing (31), and washer (32).

NOTE

Washer (32) is not in all cameras. Spring (33) cannot be removed from roller shaft (34) without damage.

(15) Remove retaining ring (35).

(16) Remove tensioning stud (36), washer (37), retaining ring (38), and washer (39).

NOTE

Tensioning stud (36) is left-hand threaded.

(17) Remove ribbon roller (40) while holding bearing (41) with tool No. 17.

(18) Unhook spring (42) from bearing (41), and remove bearing (41).

NOTE

Spring (42) cannot be removed from roller shaft (43) without damage.

3-8. Disassembly of Camera Housing Assembly

(fig. 3-19)

a. Removal and Disassembly of Delayed Action Lever and Related Components.

(1) Remove retaining screw (1) with tool No. 19, and delayed action lever (2).

(2) Remove cover plate (3), using tool No. 20.

(3) Remove three screws (4), and bearing (5).

1	Two screws (1A19H1)	15	Second shutter curtain roller (p/o 1A19A5)	28	Washer (p/o 1A19A1)
2	Holding bar (1A19MP1)	16	Washer (p/o 1A19A5)	29	Lower ribbon guide roller (p/o 1A19A1)
3	Second shutter curtain and ribbons (1A19A3)	17	Washer (p/o 1A19A5)	30	First curtain roller (1A19A1MP1)
4	First shutter curtain and ribbons (1A19A4)	18	Retaining ring (p/o 1A19A5)	31	Bearing (p/o 1A19A1)
5	Main roller assembly (1A19A5)	19	Pin (p/o 1A19A5)	32	Washer (not in all cameras) (p/o 1A19A1)
6	Two screws (1A19A5H1)	20	Main roller assembly shaft (p/o 1A19A5)	33	Spring (1A19A1A1)
7	Contact arm cam (1A19A5MP1)	21	Main roller assembly gear (p/o 1A19A5)	34	Roller shaft (p/o 1A19A1)
8	Pin (p/o 1A19A5)	22	Lower ribbon roller (p/o 1A19A5)	35	Retaining ring (1A13A2MP2)
9	Dropping flank (p/o 1A19A5)	23	Retaining ring (1A19A1MP2)	36	Tensioning stud (1A19A2MP4)
10	Second curtain roller catch (p/o 1A19A5)	24	Washer (1A19A1MP3)	37	Washer (p/o 1A19A2)
11	Washer (p/o 1A19A5)	25	Upper ribbon guide roller (1A19A1MP3)	38	Retaining ring (p/o 1A19A2)
12	Pin (p/o 1A19A5)	26	Tensioning stud (1A19A1MP4)	39	Washer (p/o 1A19A2)
13	Upper ribbon roller (p/o 1A19A5)	27	Retaining ring (p/o 1A19A1)	40	Ribbon roller (1A19A2MP1)
14	Washer (p/o 1A19A5)			41	Bearing (p/o 1A19A2)
				42	Spring (1A19A2A1)
				43	Roller shaft (p/o 1A19A2)

Figure 3-18-Continued

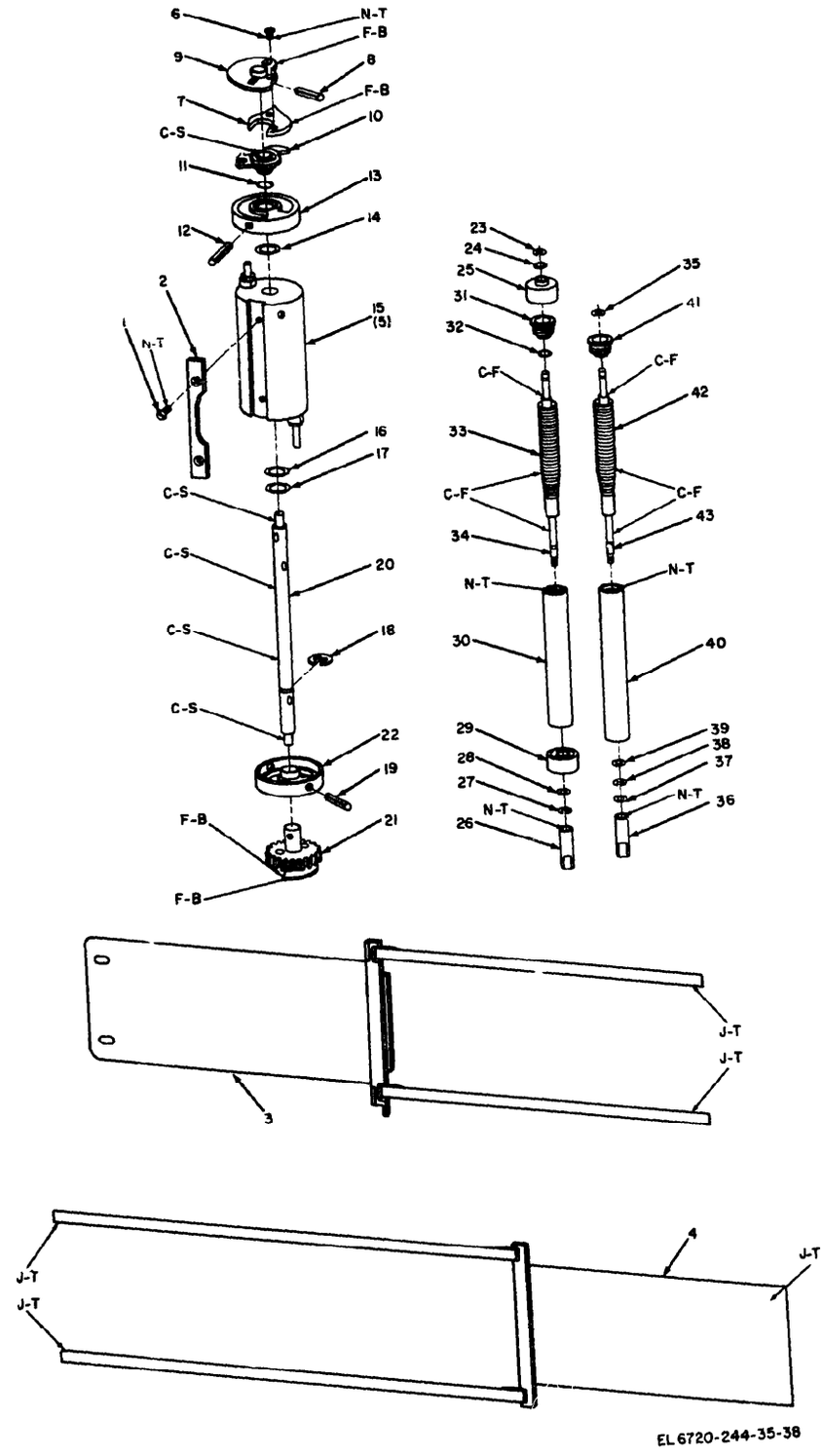
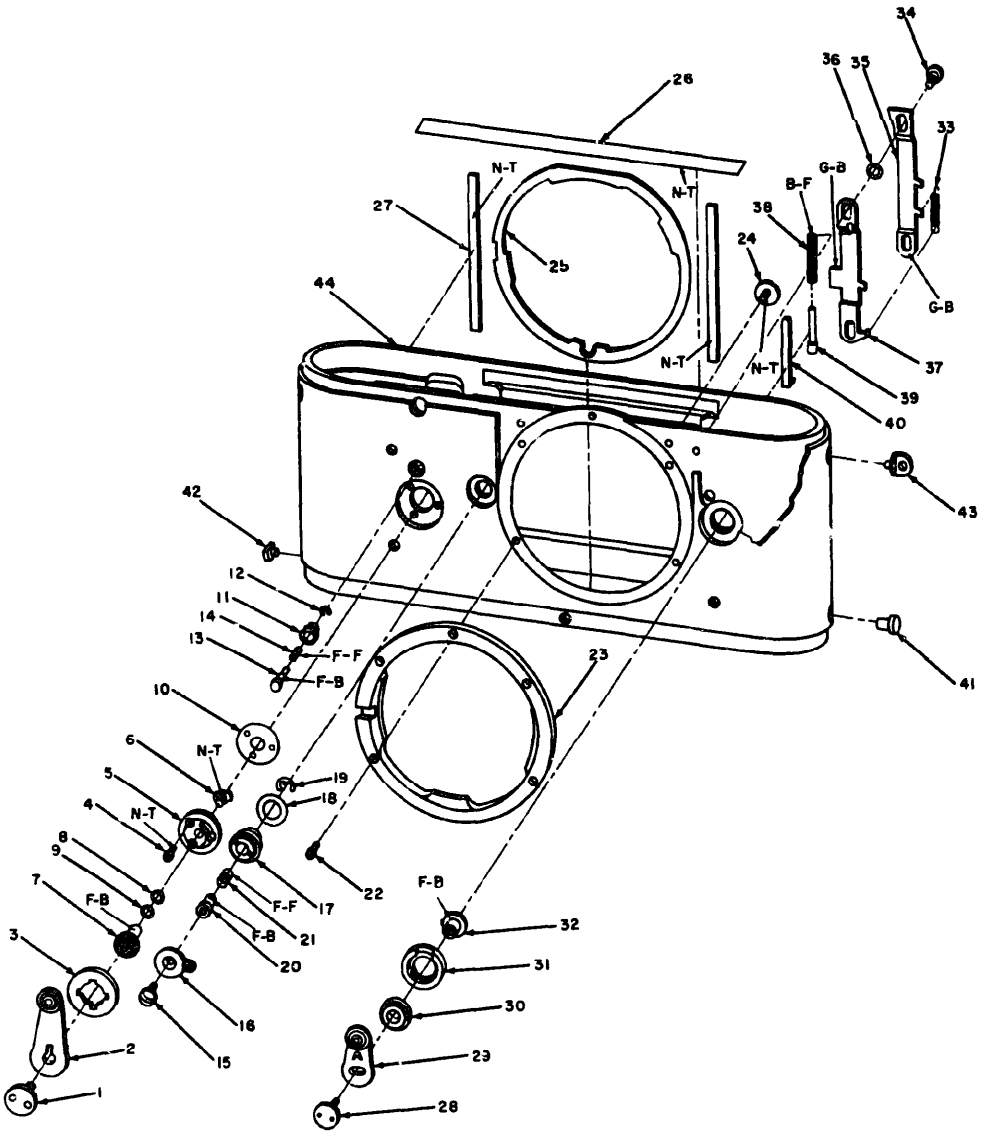


Figure 3-18. ***Shutter curtain and*** *main roller assemblies, exploded view.*



1	Retaining screw (1A22H1)	16	Lens lock (1AMP52)	31	Limiting ring (1A22MP12)
2	Delayed action lever (1A22MP1)	17	Bushing (1A27MP1)	32	Crankshaft (1A22MP14)
3	Cover plate (1A22MP2)	18	Spacer washer (1A27MP3)	33	Spring (1A22MP15)
4	Three screws (1A22H2)	19	Retaining ring (1A27MP2)	34	Two screws (1A22H5)
5	Bearing (1A22MP6)	20	Shaft (1A27MP4)	35	Rear sliding bar (1A22MP16)
6	Carrier screw (1A22MP3)	21	Spring (1A27MP5)	36	Two washers (1A22MP17)
7	Serrated shaft (1A22MP4)	22	Four screws (1AH35)	37	Front sliding bar (1A22MP18)
8	Washer (1A22H3)	23	Lens mounting flange (1AMP53)	38	Spring (1A22MP19)
9	Cup washer (1A22MP5)	24	Four screws (1AH36)	39	Pin (1A22MP20)
10	Spacer (1A22MP7), (1A22MP8)	25	Spring ring (1AMP54)	40	Angle bracket (1A22MP21)
11	Bushing (1A22A1MP1)	26	Light sealing strip (1A22MP9)	41	Positioning stud (1A22MP22)
12	Retaining ring (1A22A1MP2)	27	Two felt strips (1A22MP10)	42	Baseplate stud (1A22MP23)
13	Release button (1A22A1MP3)	28	Screw (1A22H4)	43	Two neck strap lugs (1A22MP24)
14	Spring (1A22A1MP4)	29	Frame selector lever (1A22MP11)	44	Camera housing (1A22MP25)
15	Screw (1AH34)	30	Bushing (1A22MP13)		

Figure 3-19. Camera *housing assembly, exploded view.*

(4) Remove carrier screw (6) with tool NO. 21.

NOTE

Place delayed action lever (2) on serrated shaft (7) and secure with screw (1). Hold carrier (6) with tool *NO.* 21 and turn delayed action lever clockwise.

(5) Remove delayed action lever from serrated shaft (7). Remove serrated shaft (7), washer (8), and cup washer (8).

(6) Remove spacer (10).

NOTE

Spacer (10) is not on all cameras.

(7 j Remove bushing (11), with attached components, using tool No. 18.

(8) Remove retaining ring (12), release button (13), and spring (14).

b. Removal of Lens Lock Release, Lens Mounting Flange, and Light Sealing Strips.

(1) Remove screw (15), and lens lock (16).

(2) Remove bushing (17), with attached components, using tool No. 22.

(3) Remove spacer washer (18).

NOTE

Spacer washer (18) is not on all cameras.

(4) Remove retaining ring (19), shaft (20), and spring (21).

(5) Remove four screws (22), and lift off lens mounting flange (23).

(6) Remove four screws (24), and lift out spring ring (25).

(7) Remove light sealing strip (26), and two felt strips (27).

c. Removal of Frame Selector Mechanism.

(1) Remove screw (28) with tool No. 9, and frame selector lever (29).

(2) Remove bushing (30) with tool No. 23, limiting ring (31), and crankshaft (32).

(3) Remove spring (33).

(4) Remove two screws (34), rear sliding bar (35), two washers (36), front sliding bar (37), spring (38), pin (39), and angle bracket (40).

NOTE

Before removing front sliding bar (37), press spring (38) into slot in housing to avoid dislodging.

d. Removing Riveted Studs and Lugs.

(1) Drill out positioning stud (41), and baseplate stud (42).

(2) Drill out two neck strap lugs (43).

NOTE

When removing rivets, do not increase diameter of countersunk holes in camera housing (44).

3-9. Disassembly of Film Magazine (fig. 3-20)

a. Remove inner shell (1), and film spool (2).

b. Remove felt washer (3) from inner shell (1).

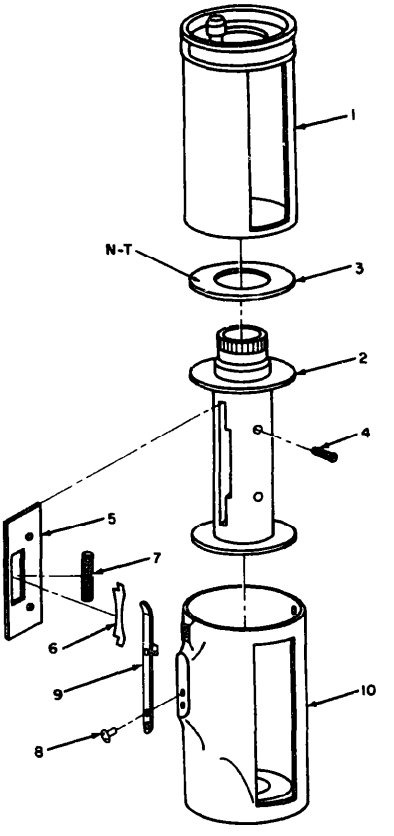
NOTE

Washer is cemented to shell.

c. Remove two screws (4), and lift out plate (5) with spring (6), and roller (7).

d. Grind off, and drive out two rivets (8).

e. Lift up retaining spring (9), and remove from outer shell (10).



1 Inner shell (p/o 20A2)
2 Film spool (p/o 20A3)
3 Felt washer (20A2MP1)
4 Two screws (20A3H1)
5 Plate (20A3MP1)
6 Spring (20A3MP3)
7 Roller (20A3MP2)
8 Two rivets (p/o 20A1)
9 Retaining spring (p/o 20A1)
10 Outer shell (p/o 20A1)

Figure 3-20. Film magazine, exploded view.

Section II. EXPOSURE METER

3-10. General

The exposure meter should not be disassembled beyond that necessary to make the repair. If the printed **circuit assembly, or the meter movement is damaged, it is usually best to replace the assembly rather than repair it.**

3-11. Removal and Disassembly of Meter Housing (fig. 3-21)

a. Removal.

(1) Remove screw (1), aperture dial (2), friction disc (3), washer (4), speed dial (5), and spacer (6).

(2) Remove plastic washer (7).

NOTE

Washer (7) is cemented to housing.

(3) Remove two screws (8) and two screws (9).

(4) Remove meter housing assembly from meter chassis.

NOTE

Push battery test switch in the direction of its arrow and lift housing from chassis.

b. Disassembly.

(1) Remove retaining ring (10), washer (11), and sensitivity switch knob (12).

(2) **Remove bearing (13).**

(3) **Remove screw (14), release lever (15), and release button (16).**

(4) Remove three rivets (17), retaining plate (18), wedged plate (19), window (20), and intensity scale (21) from housing (22).

NOTE

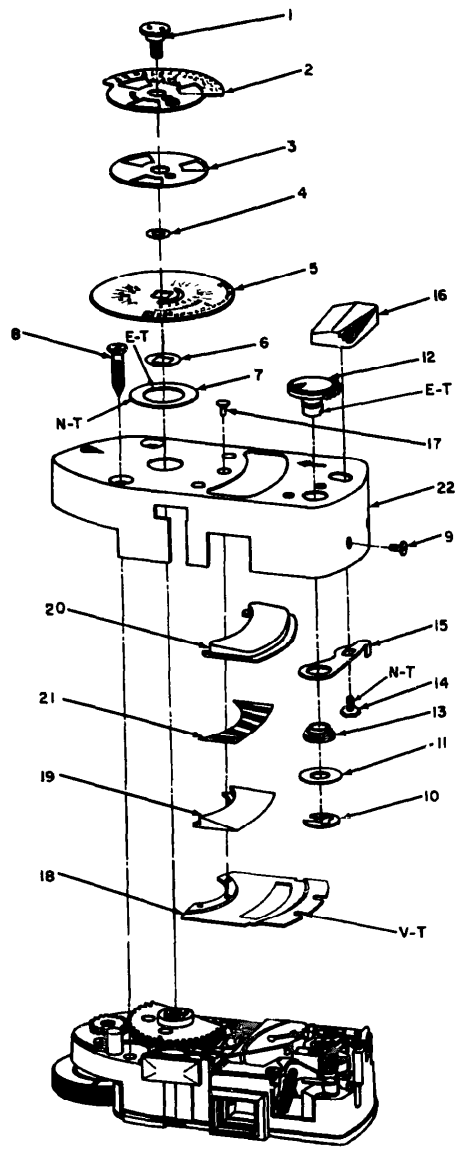
Retaining plate (18) is cemented to housing (22).

3-12. Disassembly of Meter Chassis *(fig. 3-22)*

a. Remove screw (1), washer (2), gear (3), spacer (4), and nose washer (5).

b. Remove two screws (6), and lift off gear plate (11) with attached components.

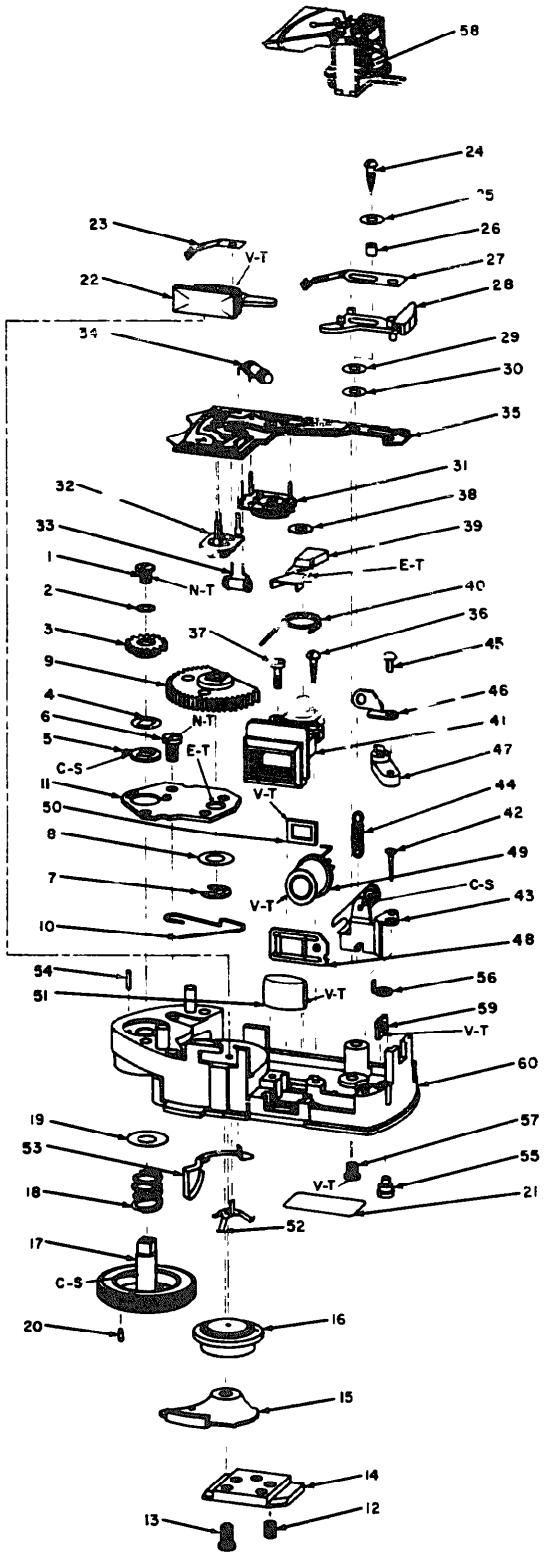
C. Remove retaining ring (7), washer (8), sector gear (9), and spring (10) from gear plate (11).



EL 6720-244-35-67

1	Screw (3H1)	14	Screw (3A2H2)
2	Aperture dial (3A1)	15	Release lever (3A2A1MP3)
3	Friction disc (3A1MP3)	16	Release button (3A2MP3)
4	Washer (3MP1)	17	Three rivets (3A2A1MP4)
5	Speed dial (3MP2)	18	Retaining plate (3A2A1MP5)
6	Spacer (3MP3)	19	Wedged plate (3A2A1MP6)
7	Plastic washer (3E1)	20	Window (3A2A1MP7)
8	Two screws (3H2)	21	Intensity scale (3A2A1MP8)
9	Two screws (3H3)	22	Housing (3A2A1MP1)
10	Retaining ring (3A2MP1)		
11	Washer (3A2H1)		
12	Sensitivity switch knob (3A2MP2)		
13	Bearing (3A2A1MP2)		

Figure 3-21. Exposure meter housing ***removed from*** *ohassis, exploded view.*



1 Screw (3A3H1)
2 Washer (3A3H2)
3 Gear (3A3MP1)
4 Spacer (3MP6)
5 Nose washer (3MP7)
6 Two screws (3A3H3)
7 Retaining ring (3A3A1MP2)
8 Washer (3A3A1MP3)
9 Sector gear (3A3A1MP4)
10 Spring (3A3A1MP1)
11 Gear plate (3A3A1MP5)
12 Two screws (3MP5)
13 Three screws (3H4)
14 Mounting foot (3MP4)
15 Battery cover (3MP8)
16 Mercury cell (3BT1)
17 Coupling knob (3A4MP1)
18 Spring (3MP9)
19 Washer (3MP10)
20 Pin (press fit) (3A4MP2)
21 Instruction plate (3MP11)
22 Switch lever (3A6MP1)
23 Contact spring (3A6MP2)
24 Screw (3H6)
25 Washer (3H7)
26 Sleeve (3MP13)
27 Contact spring (3A7MP1)
28 Contact arm (3A7MP2)
29 Washer (3H8)
30 Insulating washer (3MP12)
31 Potentiometer (5,000 ohms) (3A8R1)
32 Potentiometer (10,000 ohms) (3A8R2)
33 Resistor (100 ohms) (3A8R3)
34 Resistor (2,200 ohms) (3A8R4)
35 Circuit board (3A8)
36 Two screws (3MP9)
37 Screw (3A9H1)
38 Washer (3A9H2)
39 Switch lever (3A9MP1)
40 Spring (3A9MP2)
41 Light baffle (3A9MP3)
42 Screw (3H10)
43 Sensitivity switch linkage (3A12)
44 Spring (3MP14)
45 Pin (3A11MP1)
46 Link (p/o 3A11MP2)
47 Lever (3A11MP2)
48 Aperture plate (3A13)
49 Photo-resistor (3A8V1)
50 Mask (3A14MP1)
51 Lens (3MP15)
52 Contact spring (3A14MP2)
53 Contact spring (3A14MP3)
54 Pin (3A14MP8)
55 Adjusting screw (3A14MP7)
56 Angle plate (3A14MP4)
57 Screw (3H5)
58 Meter movement (3A5)
59 Two nuts (p/o 3A14)
60 Base (3A14)

3-22. Exposure meter chassis, exploded view.

d. Remove two screws (12), three screws **(13), mounting foot (14), battery cover (15), and mercury cell (16).**

e. Remove coupling knob (17), spring (18), and washer (19).

f. Drive out pin (20).

g. Remove instruction plate (21).

h. **Remove switch lever (22) with contact spring (23).**

i. Remove contact spring (23) from switch lever *(22).*

j. Remove screw (24), washer (25), sleeve (26), contact spring (27), contact arm (28), washer (29), and insulating washer (30).

k. Unsolder and remove potentiometers (31) and (32).

l. Unsolder and remove resistors (33), and *(34)*

m. Unsolder wires (1 and 14, fig. 3-23), from circuit board (35, fig. 3-22), and remove circuit board.

n. Remove screws (36) and (37).

o. Remove washer (38), switch lever (39), spring (40), and lift out light baffle (41).

p. **Remove *screw* (42), and sensitivity switch linkage (43).**

q. Remove spring (44).

r. Remove pin (45), link (46), and lever (47).

s. Remove aperture plate (48).

t. Unsolder and remove photo-resistor (49).

u. Remove mask (50), and lens (51).

v. Remove contact springs (52) and (53), and pin (54).

w. Remove adjusting screw (55), angle plate (56), two screws (57), and m&r movement (53).

x. Remove two nuts (59) from base *(60).*

3-13. Disassembly of Meter Movement (fig. 3-23)

a. **Unsolder red insulated wire (1), and hairspring (16) from terminal (4).**

b. Remove screw (2), insulating washer (3), terminal (4), and insulating shoulder washer (5).

c. Remove screw (6), and locking plate (7) with attached components.

d. Remove two indicator needle stops (8), and battery test index arm (9) from locking plate (7).

e. Remove jeweled bearing (10), washer (11), positioning washer (12), and mounting bracket *(13).*

NOTE

Mounting bracket (13) is soldered to mounting plate (37).

f. Unsolder hairspring (20), and blue insulated wire (14) from adjusting fork (36), and remove wire (14).

g. Remove two screws (15), and lift out magnet mount (32) with attached components.

h. **Unsolder hairspring (16), and coil (22) from soldering lug (18).**

i. Remove hairspring (16), insulating washer (17), soldering lug (18), and insulating washer (19).

j. Unsoldering hairspring (20) from soldering lug (24), remove hairspring (20), and insulating washer (21).

k. Unsolder coil (22) from soldering lug (24), and remove coil.

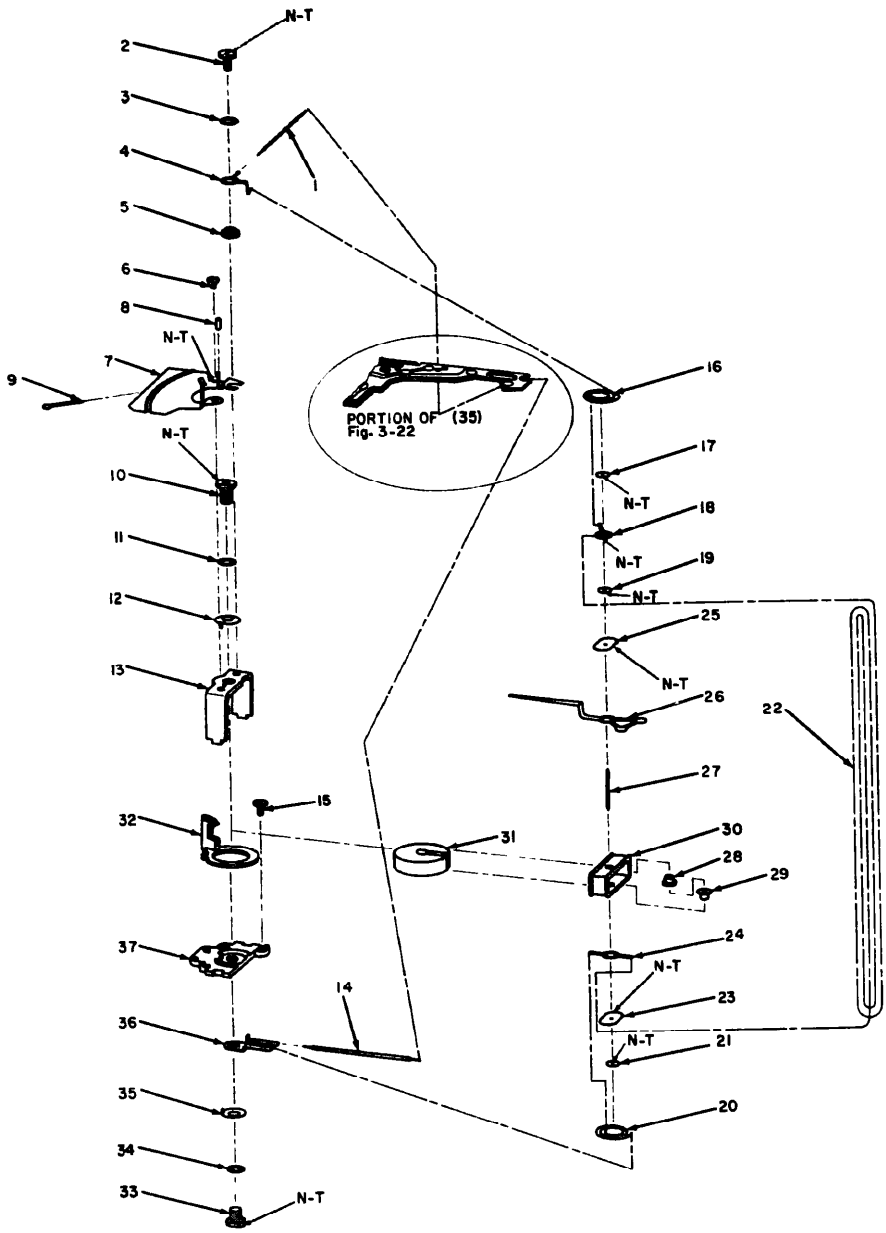
l. Remove plate (23), soldering lug (24), plate (25), and indicator needle (26).

m. **Remove frame (30), with attached components, from magnet assembly.**

n. Remove axle (27), and bushings (28) and (29), from frame (30).

o. Unsolder and remove magnet (31) from magnet mount (32).

p. **Remove jeweled bearing (33), washer (34), positioning washer (35), and adjusting fork (36) from mounting plate (37).**



1	Insulated wire (red) (3W1)	14	Insulated wire (blue) (3W2)	26	Indicator needle (3A5A2MP4)
2	Screw (3A5H1)	15	Two screws (3A5A3H1)	27	Axle (3A5A2MP1)
3	Insulating washer (3A5E1)	16	Hairspring (3A5MP3)	28	Bushing (3A5A2MP3)
4	Terminal (3A5E3)	17	Insulating washer (3A5A2E1)	29	Bushing (3A5A2MP3)
5	Insulating shoulder washer (3A5E2)	18	Soldering lug (3A5A2E2)	30	Frame (3A5A2MP5)
6	Screw (3A5H2)	19	Insulating washer (3A5A2E3)	31	Magnet (3A5A3A1MP1)
7	Locking plate (3A5A1MP3)	20	Hairspring (3A5MP3)	32	Magnet mount (3A5A3A1MP2)
8	Two needle stops (3A5A1MP1)	21	Insulating washer (3A5A2E1)	33	Jeweled bearing (3A5H3)
9	Battery test index arm (3A5A1MP1)	22	Coil (p/o 3A5)	34	Washer (3A5H4)
10	Jeweled bearing (3A5H3)	23	Plate (3A5A2MP2)	35	Positioning washer (3A5MP1)
11	Washer (3A5H4)	24	Soldering lug (3A5A2E2)	36	Adjusting fork (3A5MP2)
12	Positioning washer (3A5MP1)	25	Plate (3A5A2MP2)	37	Mounting plate (3A5A3A2MP2)
13	Mounting bracket (3A5A3A2MP1)				

Figure 3-23. Exposure meter movement, exploded view.

Section III. LENSES

3-14. General

Do not disassemble a lens beyond the point necessary to make the repair. Scribe mating parts, except optical components, to assure proper positioning when reassembling. Do not intermix components of different lenses. Mechanical parts are generally custom lapped, and optical assemblies are matched to their focusing mounts. Optical components (elements), which comprise a lens assembly, are individually mated and are not interchangeable. Glass-to-air surfaces are antireflection coated. Inner surfaces are generally soft-coated, and are easily damaged.

3-15. Disassembly of Lens Hood *(fig. 3-24)*

a. Remove lens cap (1).

b. Remove fluted tube (2).

c. Depress two release grip (5) to their full extent. Turn base ring (3) clockwise until pro jections of springs (4) are disengaged from slots in base ring (3).

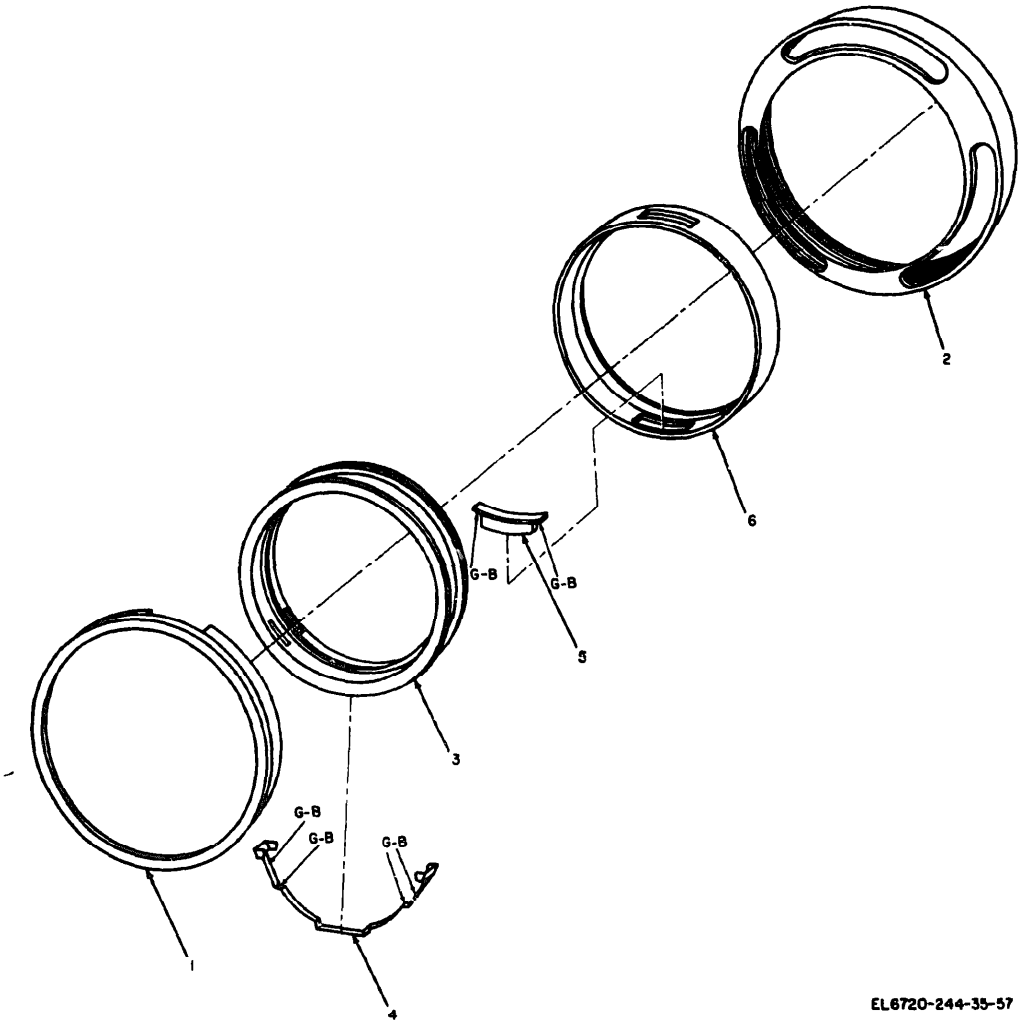
d. Pull base ring (3), with two springs (4) and two release grips (5), from cover ring (6).

3-16. Removal of 35-Mm Lens Tube Assembly and Disassembly of Focusing Mount *(fig. 3-25)*

a. Removal of Lens Tube Assembly.

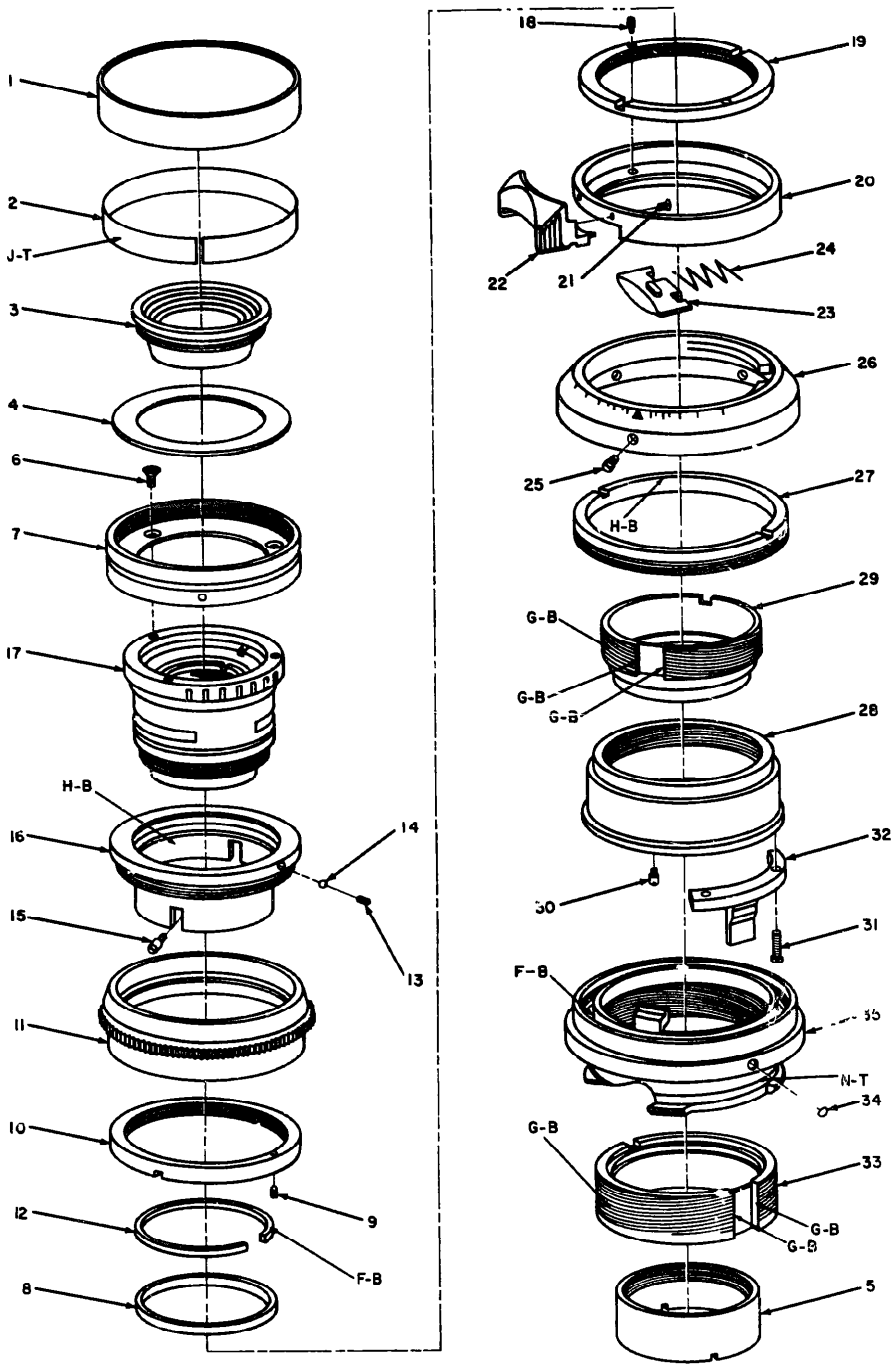
(1) Remove lens cap (1).

(2) Remove lens cap liner (2).



1 Lens cap (6MP1)
2 Fluted tube (6MP2)
3 Base ring (p/o 6)
4 Two springs (p/o 6)
5 Two release grips (p/o 6)
6 Cover ring (p/o 6)

Figure 3-24. Lens hood, exploded view.



1	Lens cap (p/o 5MP1)	13	Spring (p/o 5)	25	Three screws (5H2)
2	Lens cap liner (p/o 5MP1)	14	Ball (p/o 5)	26	Depth-of-field ring (p/o 5)
3	Fluted tube (5MP2)	15	Two guide screws (p/o 5)	27	Retaining ring (p/o 5)
4	Serial number ring (5MP3)	16	Diaphragm adjusting tube (p/o 5)	28	Female helix (p/o 5)
5	Retaining ring (p/o 5)	17	Lens tube assembly (p/o 5)	29	Male helix (p/o 5)
6	Three screws (5H1)	18	Dowel screw (p/o 5)	30	Stop screw (p/o 5)
7	Front ring (5MP4)	19	Retaining ring (p/o 5)	31	Two screws (p/o 5)
8	Spacer ring (p/o 5)	20	Focusing ring (p/o 5)	32	Guide (p/o 5)
9	Set screw (p/o 5)	21	Two screws (p/o 5)	33	Rangefinder cam (p/o 5)
10	Retaining ring (p/o 5)	22	Focusing lever (p/o 5)	34	Mounting indicator (5MP5)
11	Diaphragm adjusting ring (p/o 5)	23	Lock bar (p/o 5)	35	Mounting base (p/o 5)
12	Retaining ring (p/o 5)	24	Spring (p/o 5)		

Figure 3-25, 35-mm lens focusing mount, exploding view.

NOTE

Liner is cemented to lens cap.

(3) Remove fluted tube (3), and serial number ring (4).

(4) Remove retaining ring (5).

(5) Remove three screws (6), front ring (7), and spacer ring (8).

(6) Remove setscrew (9), retaining ring (10), and diaphragm adjusting ring (11).

(7) Remove retaining ring (12) spring (13), and ball (14).

(8) Remove two guide screws (15), and slide diaphragm adjusting tubs (16) from lens tube assembly (17).

b. Disassembly of Focusing Mount.

(1) Remove dowel screw (18), retaining ring (19), and focusing ring (20).

(2) Remove two screws (21), and focusing lever (22).

(3) Remove lock bar (23), and spring (24).

(4) Remove three screws (25), and depth-of-field ring (26).

(5) Remove retaining ring (27), and female helix (28) with attached components.

(6) Remove male helix (29), stop screw (30), two screws (31), and guide (32).

(7) Remove rangefinder cam (33).

(8) Remove mounting indicator (34) from mounting base (35).

NOTE

Mounting indicator is cemented in mounting base.

3-17. Disassembly of 35-Mm Lens Tube Assembly (fig. 3-26)

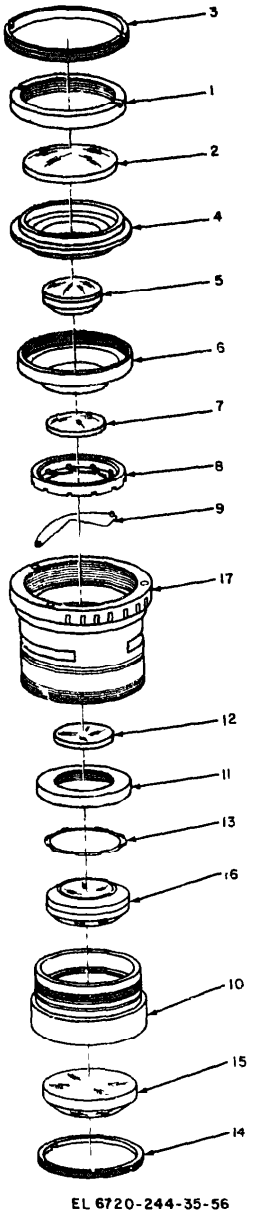
a Remove retaining ring (1), and lift out optical component (2).

b Remove retaining ring (3), from lens tube (17), with tool No. 97. Lift out lens mount (4) with optical component (5).

c Remove optical component (5) from lens mount (4)

NOTE

Optical component is spun in lens mount. Removal may result in damage.



EL 6720-244-35-56

1 Retaining ring (p/o 5)
2 Optical component (p/o 5)
3 Retaining ring (p/o 5)
4 Lens mount (p/o 5)
5 Optical component (cemented) (p/o 5)
6 Lens mount (p/o 5)
7 Optical component (p/o 5)
8 Diaphragh guide ring (p/o 5)
9 10 diaphragm blades (p/o 5)
10 Lens mount (p/o 5)
11 Lens mount (p/o 5)
12 Optical component (p/o 5)
13 Pressure washer (p/o 5)
14 Retaining ring (p/o 5)
15 Optical component (p/o 5)
16 Optical component (cemented) (p/o 5)
17 Lens tube (p/o 5)

Figure 3-26. 35-mm lens tube assembly, exploded view.

d. Slide out lens mount (6) with optical component (7).

e. Remove optical component from lens mount (6).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

f. Remove diaphragm guide ring (8), and 10 diaphragm blades (9).

g. Remove lens mount (10) with attached components.

h. Lift out lens mount (11) with optical component (12).

i. Remove optical component (12) from lens mount (11).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

j. Remove pressure washer (13).

k. Remove retaining ring (14), and optical component (15).

l. Remove optical component (16) from lens mount (10).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

3-18. Partial Disassembly of 50-Mm lens Head and Disassembly of Focusing Scale
(fig. 3-27)

a. Remove lens cap (1), and lens cap liner (2).

NOTE

Lens cap liner is cemented to lens cap.

b. **Remove lens mount assembly (3).**

c. Remove setscrew (4), and index ring (5).

d. **Remove two setscrews (6), dowel screw (7), and slide off diaphragm adjusting ring (8).**

CAUTION

Take care that flat ring (9), and ball (10) do not dislodge when removing diaphragm adjusting ring.

e. Remove flat spring (9), and ball (10).

f. Remove two guide screws (11), diaphragm guide ring (12), and 10 diaphragm blades (13).

g. Remove diaphragm adjusting tube (14) from lens tube assembly (15).

h. Lift out cover ring (16), and remove retaining ring (17).

i. Remove sleeve (18), spring ring (19), and focusing ring (20) with attached components.

j. Remove screw (21), and stop (22).

k. **Remove three screws (23), bearing segment (24), and setscrew (25) from stop ring (26).**

3-19. Disassembly of 50-Mm lens Head Forward Components
(fig. 3-28)

a. Remove retaining ring (1), pressure washer (2), and optical component (3).

b. **Remove retaining ring (4), and optical component (5).**

c. Remove retaining ring (6), pressure washers (7), (8), and (9), and optical components (10) and (11) from lens mount (12).

3-20. Disassembly of 50-Mm lens Head (lens Tube) Rear Components
(fig. 3-29)

a. Remove retaining ring (1) from lens tube (7), pressure washer (2), and lens mount (3) with optical component (4).

b. **Remove optical component (4) from lens mount (3).**

NOTE

Optical component is spun in lens mount. Removal may result in damage.

c. Slide out lens mount (5) with optical component (6).

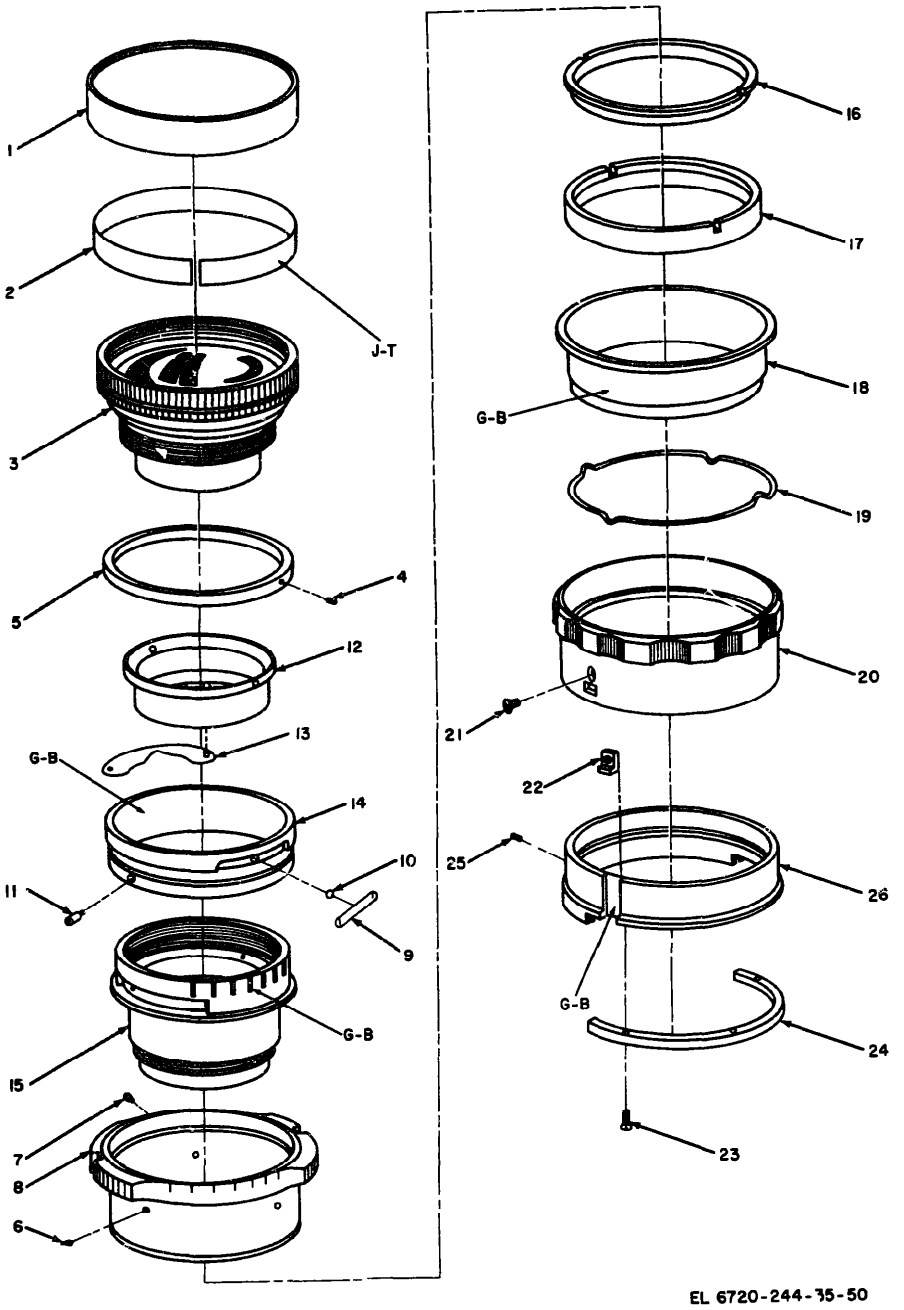
d. Removal optical component (6) from lens mount (5).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

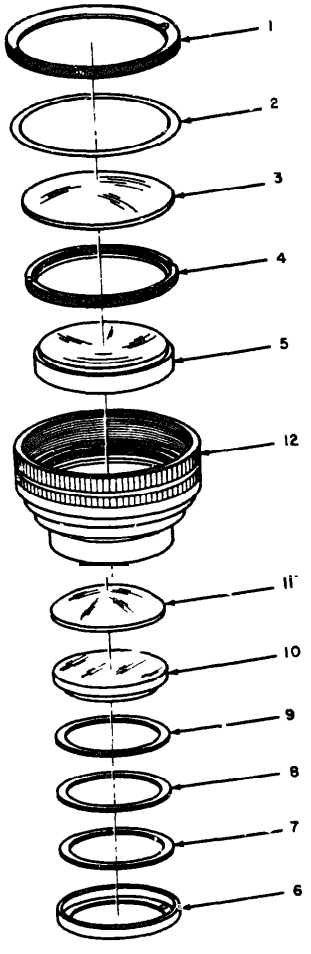
3-21. Disassembly of 50-Mm lens Focusing Mount
(fig. 3-30)

a. Remove viewing unit (1), if attached.



1 Lens cap (p/o 2MP1)
2 Lens cap liner (p/o 2MP1)
3 Lens mount assembly (p/o 2)
4 Setscrew (p/o 2)
5 Index ring (p/o 2)
6 Two setscrews (2MP2)
7 Dowel screw (2MP3)
8 Diaphragm adjusting ring (p/o 2)
9 Flat spring (p/o 2)
10 Ball (p/o 2)
11 Two guide screws (p/o 2)
12 Diaphragm guide ring (p/o 2)
13 10 diaphragm blades (p/o 2)
14 Diaphragm adjusting tube (p/o 2)
15 Lens tube assembly (p/o 2)
16 Cover ring (p/o 2)
17 Retaining ring (p/o 2)
18 Sleeve (p/o 2)
19 Spring ring (p/o 2)
20 Focusing ring (p/o 2)
21 Screw (2H1)
22 Stop (p/o 2)
23 Three screws (p/o 2)
24 Bearing segment (p/o 2
25 Setscrew (p/o 2)
26 Stop ring (p/o 2)

Figure 3-27. 50-mm lens head, partial exploded view; and focusing scale, exploded view.



1 Retaining ring (p/o 2)
2 Pressure washer (p/o 2)
3 Optical component (p/o 2)
4 Retaining ring (p/o 2)
5 Optical component (p/o 2)
6 Retaining ring (p/o 2)
7 Pressure washer (p/o 2)
8 Pressure washer (p/o 2)
9 Pressure washer (p/o 2)
10 Optical component (p/o 2)
11 Optical component (p/o 2)
12 Lens mount (p/o 2)

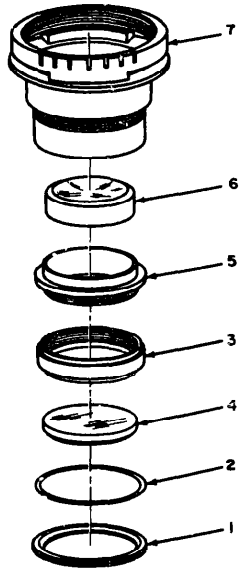
Figure 3-28. 50-mm lens head forward components, exploded view.

b. **Remove two screws (2), holding bar (3), pressure spring (4), and locking pin (5).**

c. Remove retaining ring (6), using tool No. 98.

d. Lift out female helix (7) with attached components.

e. Remove male helix (8), two screws (9), and guide (10).



1 Retaining ring (p/o 2)
2 Pressure washer (p/o 2)
3 Lens mount (p/o 2)
4 Optical component (p/o 2)
5 Lens mount (p/o 2)
6 Optical component (cemented) (p/o 2)
7 Lens tube (p/o 2)

Figure 3-29. Rear components o 50-mm lens head (lens tube), exploded view.

f. Remove rangefinder cam (11).

g. Remove mounting indicator (12) from mounting base (13).

NOTE

Mounting indicator is cemented in mounting base.

3-22. Disassembly of 50-Mm lens Viewing Unit

(fig. 3-31)

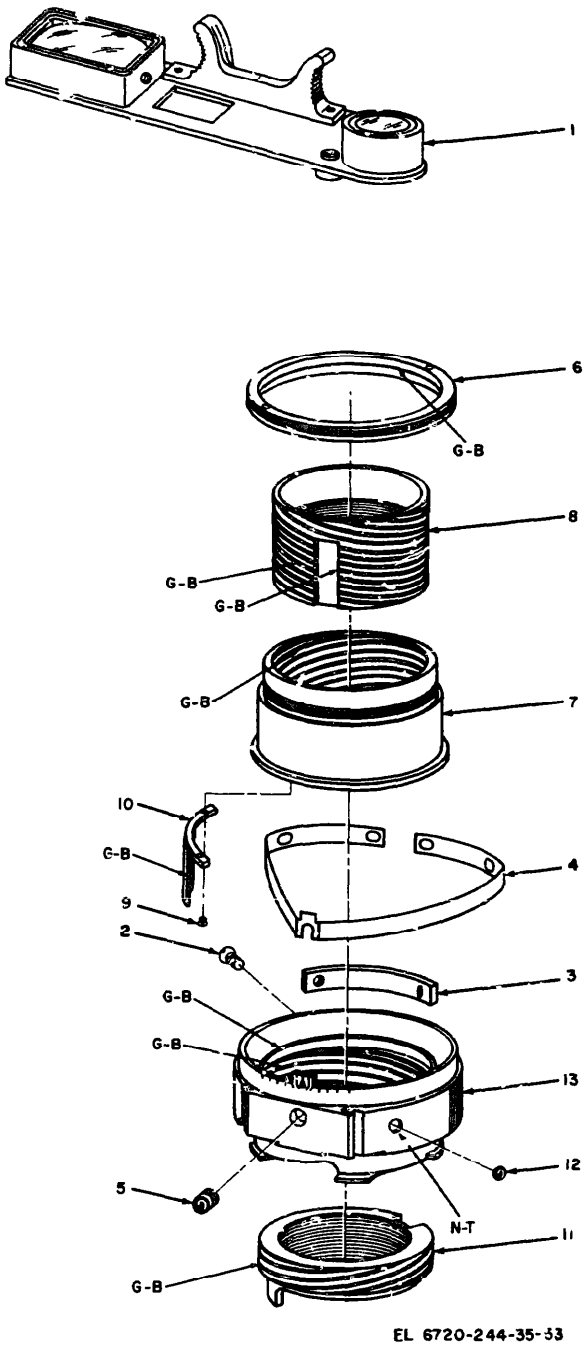
CAUTION

Optical components of the viewing unit, and their mounts, are cemented. Exercise care when disassembling the unit to avoid damage.

a. **Remove two screws (1), lens housing cover (2), and spacer (3).**

b. **Remove optical component (4), and lens mount (5).**

c. Remove lens housing (6).



1 Viewing unit (2A1)
2 Two screws (2H2)
3 Holding bar (p/o 2)
4 Pressure spring (p/o 2)
5 Locking pin (p/o 2)
6 Retaining ring (p/o 2)
7 Female helix (p/o 2)
8 Male helix (p/o 2)
9 Two screws (p/o 2)
10 Guide (p/o 2)
11 Rangefinder cam (p/o 2)
12 Mounting indicator (2MP4)
13 Mounting base (p/o 2)

Figure 3-30. 50-mm lens focusing mount, exploded view (with viewing unit).

d. Remove lens mount (7) with optical component (8).

e. Remove optical component (8) from lens mount (7).

f. Remove retaining ring (9), and lens mount (10) with optical component (11).

g. Remove optical component (11) from lens mount (10).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

h. Remove two screws (l2), and finger grip (13).

i. Pull out two stop pins (14).

j. Remove screw (15), and positioning stud (16) from mounting plate (17).

3-23. Partial Disassembly of 135-Mm Lens Head
(fig. 3-32)

a. Remove lens cap (1), and filter retaining ring (2).

b. **Remove retaining ring (3), and slide off lens hood assembly (4, 5, 6, 7, and 8).**

C. Remove stop ring (4), and inner lens hood tube (5) with lens hood liner (6).

d. Remove lens had liner (6).

NOTE

Liner is cemented to lens hood tube.

e. Remove lens hood liner (7) from outer lens hood tube (8).

NOTE

Liner is cemented to lens hood tube.

f. Remove three set screws (9), diaphragm adjusting ring (10), flat spring (11), and ball (12).

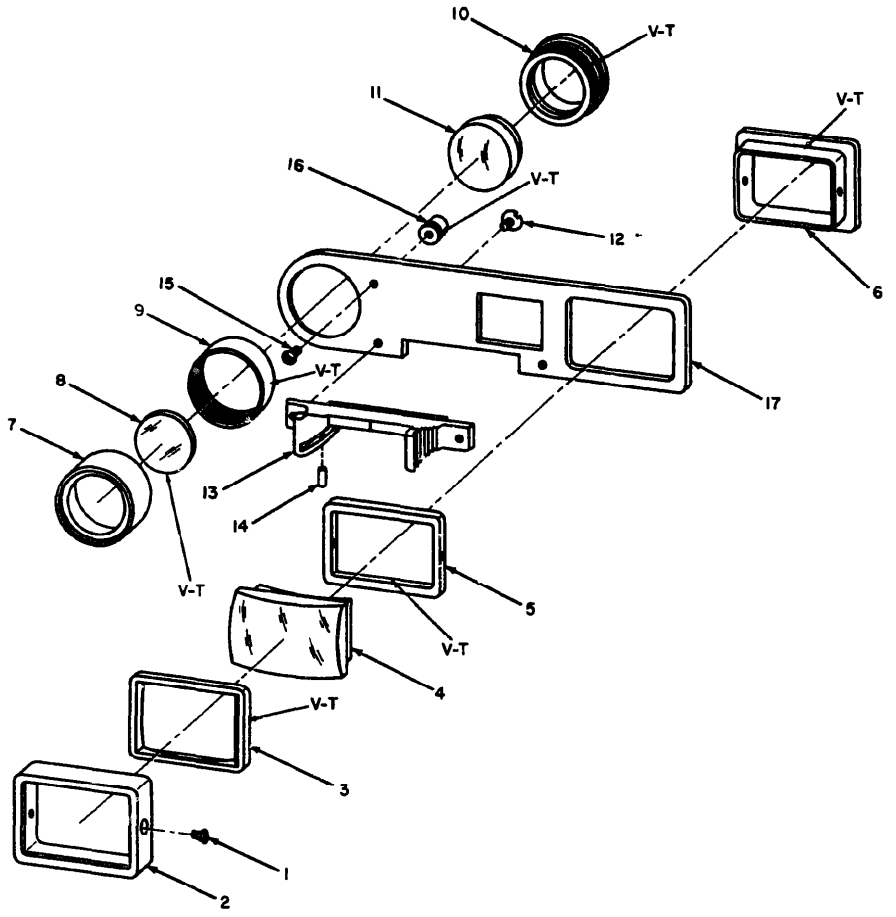
CAUTION

Take care that flat spring and bail do not dislodge when, removing diaphragm adjusting ring.

g. Remove setscrew (13), and lens mount (54) with attached components.

h. Remove retaining ring (15), diaphragm adjusting tube (16), and guide *screw (17).*

i. Remove retaining ring (18), diaphragm guide ring (19), and 12 diaphragm blades (20).



1 Two screws (2A1H2)
2 Lens housing cover (p/o 2A1)
3 Spacer (p/o 2A1)
4 Optical component (cemented) (p/o 2A1)
5 Lens mount (p/o 2A1)
6 Lens housing (p/o 2A1)
7 Lens mount (p/o 2A1)
8 Optical component (p/o 2A1)
9 Retaining ring (p/o 2A1)
10 Lens mount (p/o 2A1)
11 Optical component (cemented) (p/o 2A1)
12 Two screws (2A1H3)
13 Finger grip (p/o 2A1)
14 Two stop pins (p/o 2A1)
15 Screw (2A1H1)
16 Positioning stud (2A1MP1)
17 Mounting plate (p/o 2A1)

Figure 3-31. **50-mm lens, viewing** *unit; exploded view.*

j. Remove retaining ring (21), and rear optical component (22) from lens tube (23).

3-24. Disassembly of 135-Mm Lens Head Forward Components (fig. 3-33)

a. Remove retaining ring (1), pressure washer (2), and optical component (3).

b. Remove retaining ring (4), and lens mount (5) with optical component (6).

c. Remove optical component (6) from lens mount (5).

NOTE

Optical component is spun in lens mount. Removal may result in damage.

d. Remove retaining ring (7), pressure washer (8), and optical component (9) from lens mount (10).

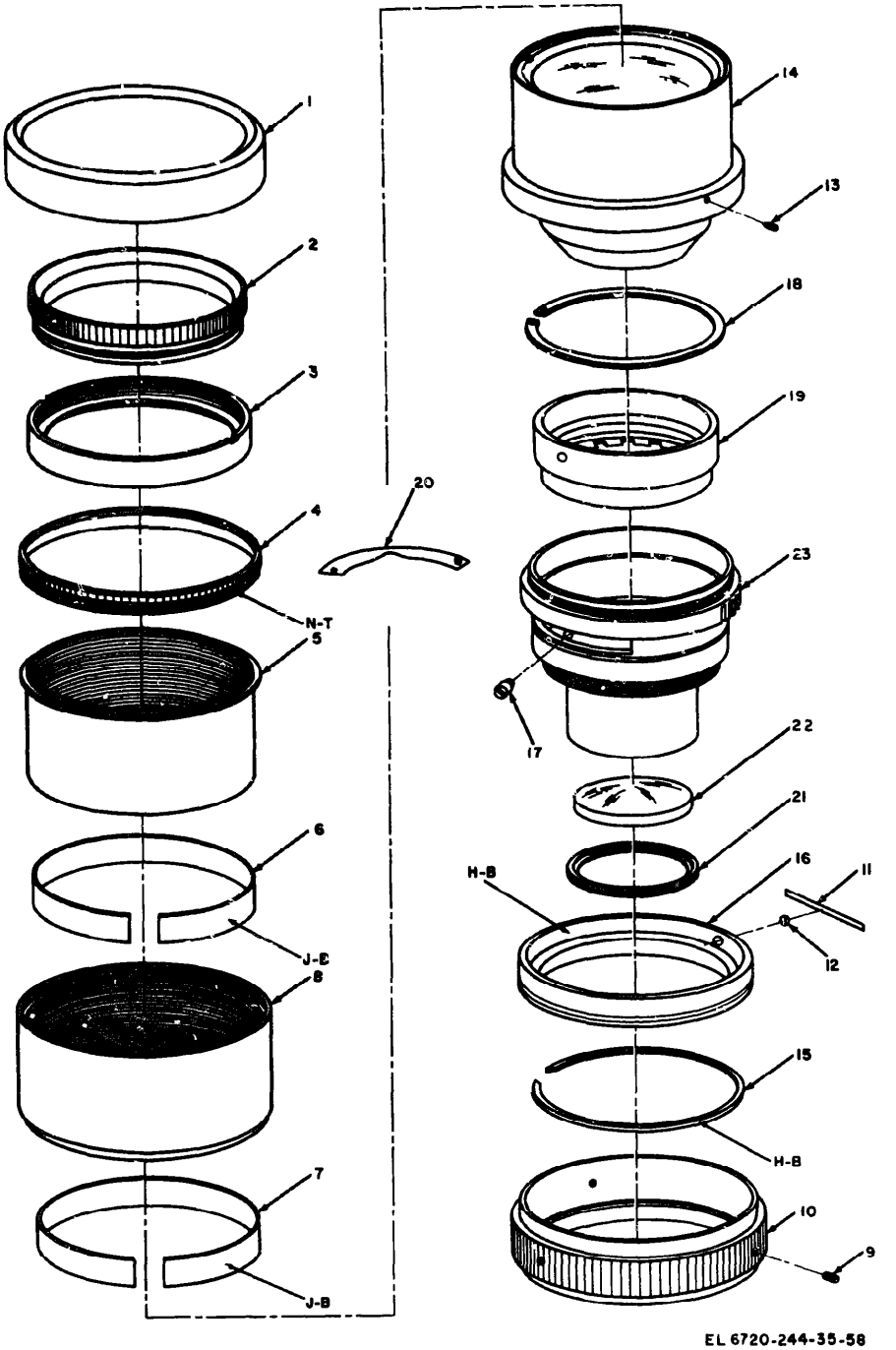
3-25. Disassembly of 135-Mm lens Focusing Mount **(fig. 334)**

a. Remove lens cap (1).

b. **Remove six screws (2), and mounting ring (3).**

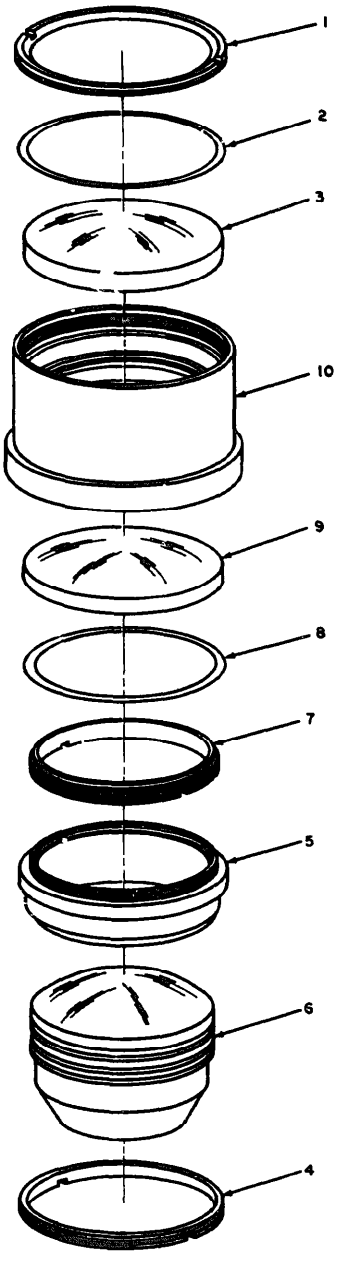
c. **Remove two screws (4), and tripod bushing (5).**

d. Remove screw (6), viewing unit (7), using tool No. **103, and lift out rangefinder cam tube (8) with attached components.**



1 Lens cap (7MP1)
2 Filter retaining ring (7MP2)
3 Retaining ring (7MP4)
4 Stop ring (7A1MP1)
5 Inner lens hood tube (7A1MP3)
6 Lens hood liner (p/o 7A1MP3)
7 Lens hood liner (p/o 7A1MP2)
8 Outer lens hood tube (7A1MP2)
9 Three set screws (7MP7)
10 Diaphragm adjusting ring (p/o 7)
11 Flat spring (p/o 7)
12 Ball (p/o 7)
13 Setscrew (7MP8)
14 Lens mount (p/o 7)
15 Retaining ring (p/o 7)
16 Diaphragm adjusting tube (p/o 7)
17 Guide screw (p/o 7)
18 Retaining ring (p/o 7)
19 Diaphragm guide ring (p/o 7)
20 12 diaphragm blades (p/o 7)
21 Retaining ring (p/o 7)
22 Optical component (p/o 7)
23 Lens tube (p/o 7)

Figure 3-32. 135-mm lens head, partial exploded view.



1 Retaining ring (p/o 7)
2 Pressure washer (p/o 7)
3 Optical component (p/o 7)
4 Retaining ring (p/o 7)
5 Lens mount (p/o 7)
6 Optical component (cemented) (p/o 7)
7 Retaining ring (p/o 7)
8 Pressure washer (p/o 7)
9 Optical component (p/o 7)
10 Lens mount (p/o 7)

Figure 3-33. 135-mm lens head forward components, exploded view.

e. Remove retaining ring (9), and rangefinder cam (10).

f. Remove screw (11), cam roller (12), and cam arm (13) with attached glide plate (14).

g. Remove glide plate (14).

NOTE

Glide plate is cemented to cam arm (18).

h. **Remove pressure spring (15), and stop screw (16).**

i. Remove screw (17), nut (18), and positioning bar (19).

j. Remove retaining ring (20), using tool NO. 104, and slide off depth-of-field tube (21).

k. **Remove distance scale ring (22).**

NOTE

Distance scale ring is cemented to female helix (23).

l. Remove female helix (23) from male helix (24).

m. **Remove dowel screw (25), cover tube (26), and positioning ring (27).**

n. Remove four screws (28), two guide bars (29), and fluted tube (30).

3-26. Disassembly of 135-Mm Lens Viewing Unit
(fig. 3-35).

CAUTION

Optical components of the viewing unit, and their mounts, are generally cemented. Exercise care when disassembling to avoid damage.

a. Remove two cover screws (1).

b. Remove four screws (2), three screws (3), and cover plate (4) with mask (5).

c. Remove mask (5).

NOTE

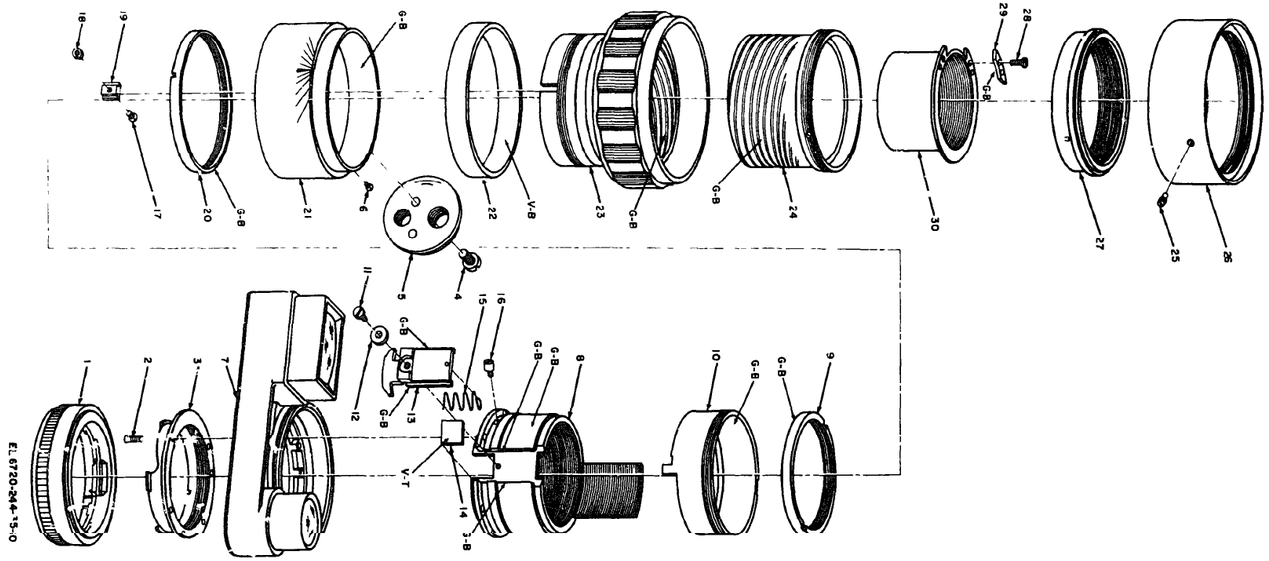
Mask is cemented to cover plate.

d. Remove two screws (6), washer ('I), retaining plate (8), and pressure spring (9).

e. Remove lens housing (10), optical component (11), lens mount (12), and spacer (13).

f. Remove lens mount (14) with optical component (15).

g. Remove optical component (15).



1 Rear lens cap (7MP13)
2 Six screws (7H5)
3 Mounting ring (7MP11)
4 Two screws (7H1)
5 Tripod bushing (7MP9)
6 Screw (p/o 7)
7 Viewing unit (p/o 7)
8 Rangefinder cam tube (p/o 7)
9 Retaining ring (p/o 7)
10 Rangefinder cam (p/o 7)
11 Screw (p/o 7)
12 Cam roller (p/o 7)
13 Cam arm (p/o 7)
14 Glide plate (p/o 7)
15 Pressure spring (p/o 7)
16 Stop screw (p/o 7)
17 Screw (p/o 7)
18 Nut (p/o 7)
19 Positioning bar (p/o 7)
20 Retaining ring (p/o 7)
21 Depth-of-field tube (p/o 7)
22 Distance scale ring (p/o 7)
23 Female helix (p/o 7)
24 Male helix (p/o 7)
25 Dowel screw (p/o 7)
26 Cover tube (p/o 7)
27 Positioning ring (p/o 7)
28 Four screws (p/o 7)
29 Two guide bars (p/o 7)
30 Fluted tube (p/o 7)

Figure 3-34 13-mm lens focusing mount, exploded view.

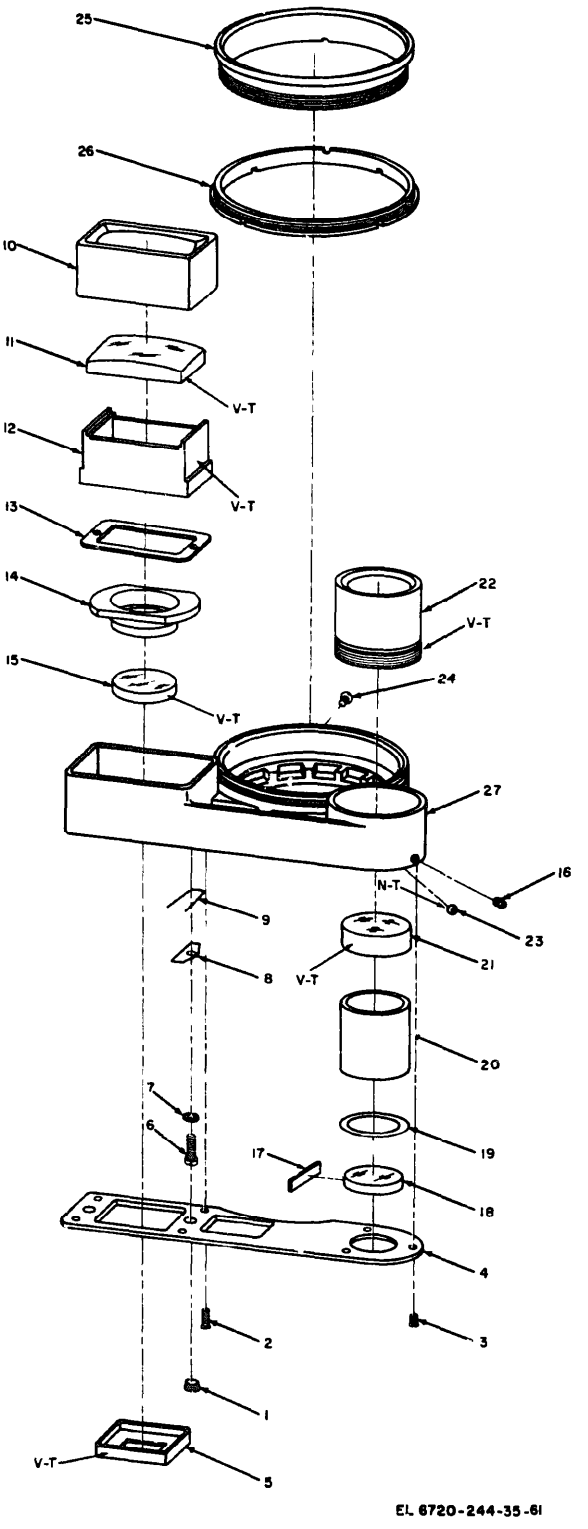


Figure3-35. 135-mm lens viewing **unit,** *exploded view.*

1 Two cover screws (p/o 7)
2 Four screws (7H3)
3 Three screws (7H2)
4 Cover plate (p/o 7)
5 Mask (p/o 7)
6 Two screws (p/o 7)
7 Washer (p/o 7)
8 Retaining plate (p/o 7)
9 Pressure spring (p/o 7)
10 Lens housing (p/o 7)
11 Optical component (p/o 7)
12 Lens mount (p/o 7)
13 Spacer (p/o 7)
14 Lens mount (p/o 7)
15 Optical component (p/o 7)
16 Two adjusting screws (p/o 7)
17 Flat spring (p/o 7)
18 Optical component (p/o 7)
19 Shim (p/o 7)
20 Spacer tube (p/o 7)
21 Optical component (p/o 7)
22 Lens mount (p/o 7)
23 Mounting indicator (5MP5)
24 Screw (p/o 7)
25 Retaining ring (p/o 7)
26 Retaining ring (p/o 7)
27 Base (p/o 7)

Figure 3-35-Continued.

h. **Remove two adjusting screws (16), flat spring (17), optical component (18), shim (19), spacer tube (20), and optical component (21).**

i. Remove lens mount (22).

j. Remove mounting indicator (23).

NOTE

Mounting indicator is cemented in base (27).

k. **Remove screw (24), and retaining rings (25) and (26), from base (27).**

Section IV. FLASH UNIT

3-27. Disassembly of Reflector (fig. 3-36)

a. Remove screw (1).

b. Remove ring nut (2), using tool No. 95.

c. Remove reflector handle (3).

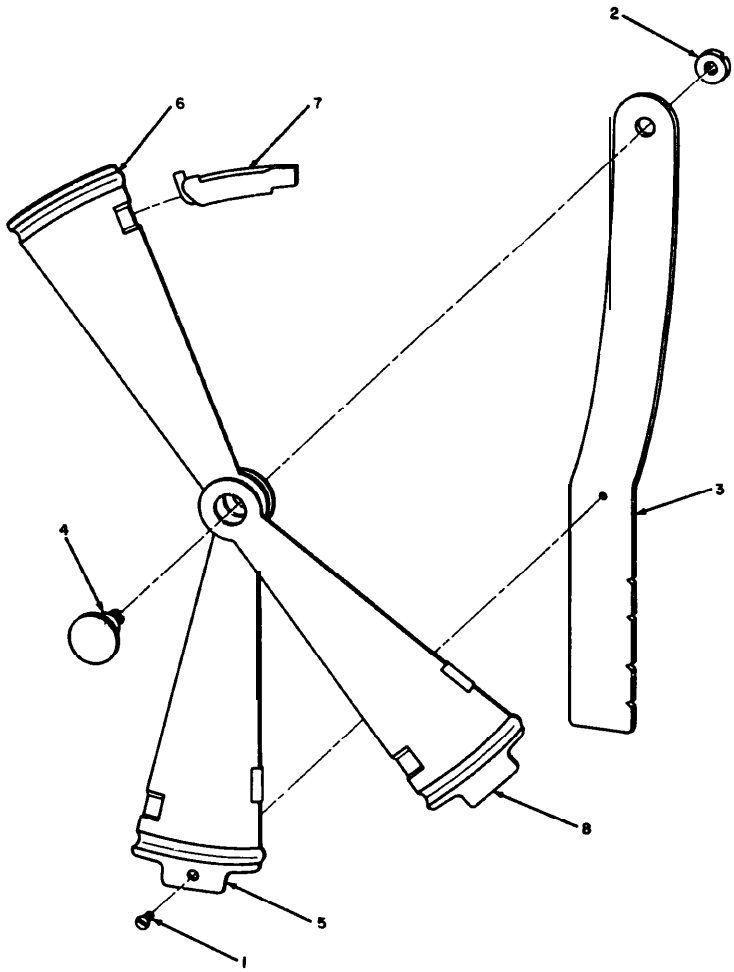
d. Remove shoulder screw (4).

e. Turn reflector segment assembly over, placing lower reflector segment (5) uppermost. Slide lower reflector segment against the nose of segment cleat (7), tilt the segment, and remove it from the cleat.

f. Slide the next reflector segment (6) against the nose of the following segment cleat, tilt the segment, and remove it with attached cleat.

g. Remove segment cleat (7) from the reflector segment.

***h.* Repeat the operations in *f* and g above for each reflector segment, and segment cleat, until the last cleat is removed from upper reflector segment (8).**



1 Screw
2 Ring nut
3 Reflector handle
4 Shoulder screw
5 Lower reflector segment (10A1MP6)
6 19 reflector segments (10A1MP5)
7 20 segment cleats (
8 Upper reflector seg (10A1MP4)

Figure *3-36. Flash unit reflector, partial exploded* view.

3-28. Disassembly of Bayonet-Base Lamp Adapter (fig. 3-37)

a. Remove three screws (1), lift off bayonet socket shell (2) with ejector button (3), and remove ejector button.

b. Remove release spring (4), and lift off intermediate sleeve (5).

C. Remove screw (6), and contact pin (7).

NOTE

An insulating insert, in bayonet socket inner sleeve (8), is spun in. Removal may result in damage.

3-29. Disassembly of Medium-Base Lamp Socket (fig. 3-37)

a. Press insulating insert (9), with attached components, from medium-base lamp socket (IQ), and remove retaining spring (11).

b. Push spring (12) from slots in sleeve (13), and remove spring and sleeve.

c. Remove cap (14) from spring (12)

3-30. Disassembly of battery-Capacitor Insert (fig. 3-38)

a. Remove four screws (1).

b. Lift up insulating plate assembly (plates 6 and 10 with attached components), remove screw (2), and round nut (3).

NOTE

Hold round nut with tool No. 96 while removing screw.

c. Remove upper plate assembly.

***d.* Drill out rivet (4), remove contact clip (5), insulating plate (6), spring (7), and cap (8).**

e. Push sleeve (9) from insulating plate (10).

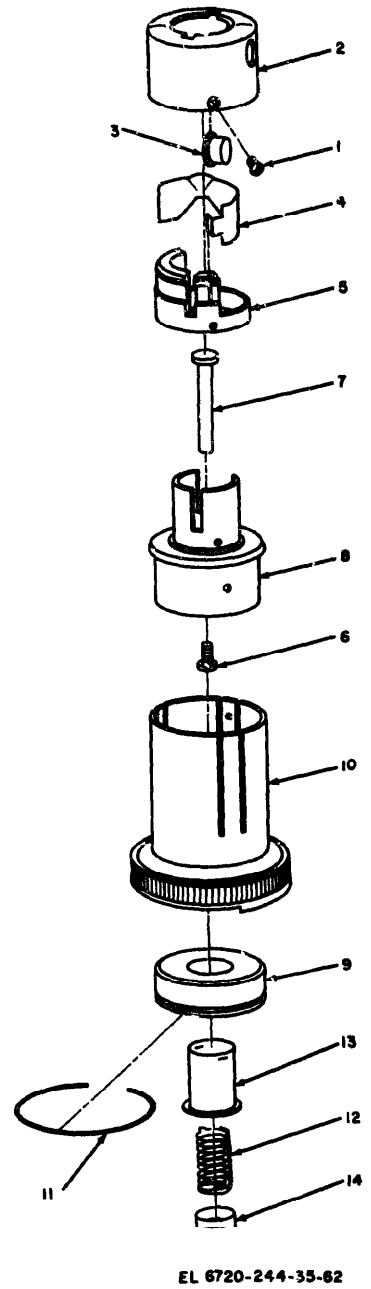
f. Slide off housing (11).

g. Remove four screws (12), four assembly rods (13), and insulating plate (14).

h. Remove screw (15), and round nut (16).

NOTE

Hold round nut with tool No. 96 while removing screw.



EL 6720-244-35-62

Three screws
Bayonet socket shell (10A2MP1)
Ejector button (10A2MP2)
Release spring (10A2MP3)
Intermediate sleeve
Screw
Contact pin
Bayonet socket inner sleeve (10A2A1)
Insulating insert (10A3E1)
Medium screw-base lamp socket (10A3MP1)
Retaining spring (10A3MP2)
Spring (p/o 10A3A1)
Sleeve (p/o 10A3A1)
Cap (p/o 10A3A1)

Figure 3-37. Flash unit lamp socket and bayonet adapter, exploded view.

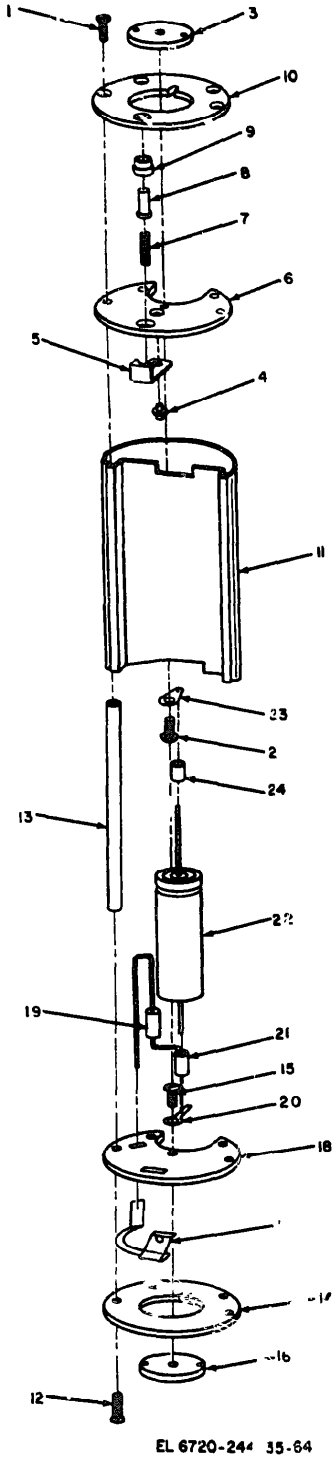


Figure 3-38. *Flash unit battery capacitor insert, exploded view*

1 Screw
2 Screw
3 Rount nut
4 Rivet
5 Contact clip
6 Insulating plate
7 Spring
8 Cap
9 Sleeve
10 Insulating plate
11 Housing (10A4MP3)
12 Four screws
13 Four assembly rods
14 Insulating plate
15 Screw
16 Round nut
17 Contact spring (10A4MP8)
18 Insulating plate
19 Resistor (10A4R1)
20 Lug
21 Insulator
22 Capacitor (10A4C1)
23 Lug
24 Insulator

Figure 3-38-Continued.

i. Unsolder lead of resistor (19) from contact spring (17), and separate contact spring and insulating plate (18).

j. Unsolder leads of resistor (19) and capacitor (22) from lug (20), and remove insulator (21).

***k.* Unsolder lead of capacitor (22) from lug (23), and remove insulator (24).**

3-31. Disassembly of Flash Unit Housing (fig. 3-39)

a. Remove two screws (1), retaining plate (2), reflector mounting bracket (3), and pressure spring (4).

b. Remove three screws (5), and battery housing (6).

c. Remove screw (7), contact plate (8), and rectifier (9).

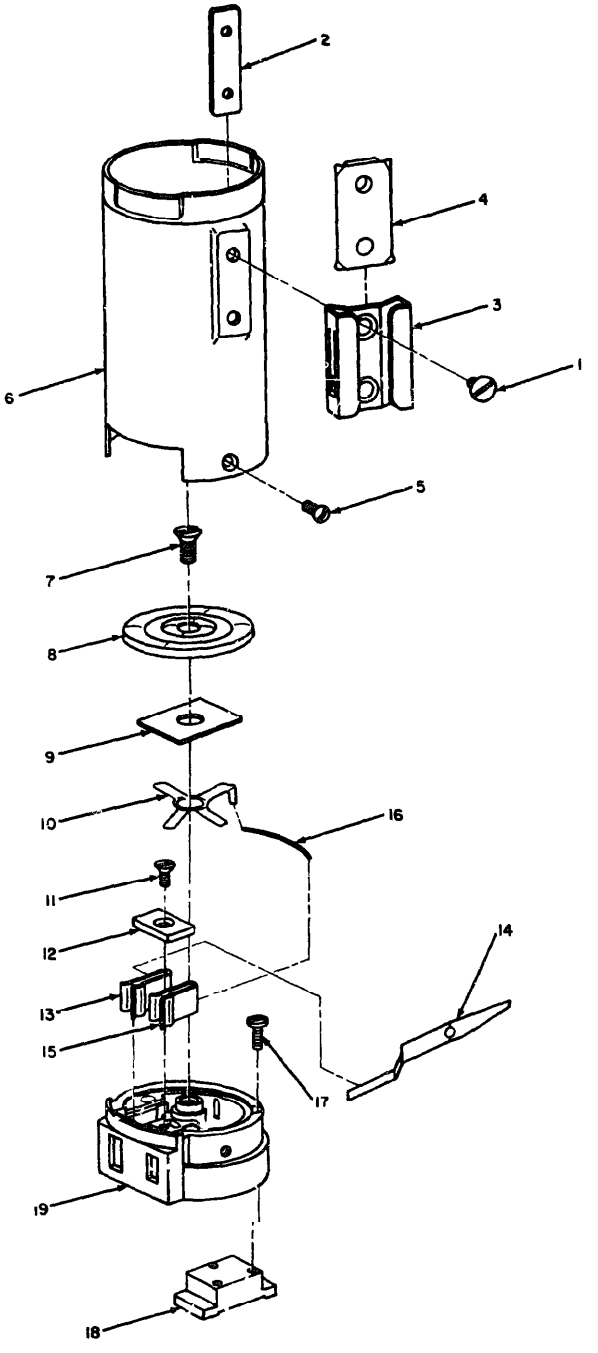
d. Unsolder contact spring (10), and remove.

e. Remove screw (11), and insulating plate (12).

f. Remove wide contact clip (13) with contact strip (14), and unsolder contact strip.

g. Remove narrow contact clip (15), and unsolder wire (16).

***h.* Remove three screws (17), and mounting foot (18) from base (19).**



1	Two screws	11	Screw
2	Retaining plate	12	Insulating plate
3	Reflector mounting bracket	13	Wide contact clip
4	Pressure spring (10A5MP3)	14	Contact strip
5	Three screws	15	Narrow contact clip
6	Battery housing (10A5MP10)	16	Wire
7	Screw	17	Three screws
8	Contact plate	18	Mounting foot
9	Rectifier	19	Base
10	Contact spring		

Figure 3-39. *Flash unit housing, exploded view.*

CHAPTER 4

REPAIR AND ALIGNMENT

Section I. CAMERA BODY

A-1. General

So far as possible, determine the repairs to be made before disassembling the camera Reference to chapter 2 will assist in isolating the component requiring repair or adjustment. Disassembly be yond that necessary should be avoided. In most instances, subassemblies become accessible by re moving the top cover, range-viewfinder assembly, and taking the camera chassis out of the camera housing.

4-2. Cleaning

WARNING

Most cleaning compounds are flammable and toxic. Do not use *near* an open flame. Provide adequate ventilation.

CAUTION

Components should be removed before cleaning. Cleaning without removal may damage other components. Some subassemblies, after removal, may be cleaned without disassembly. All lubricants and adhesives must be removed from components before relubricating or recementing. After cleaning thoroughly dry the part by wiping, or with compressed air.

The required cleaning materials are those listed in TM 11-6720-244-12 (para 5-2b), plus the following:

MATERIAL	TYPE	USE	SYMBOL
Thinner	Terokal D	Thin Tereson glue and cleaning	O
Thinner	MB	Thin adhesive 880 and cleaning	P
Thinner	859–FV	Thin adhesive 859–F and cleaning	Q
Thinner	Atlas 500	Thin adhesive 500 and cleaning	R
Benzine	Liquid	Clean metal parts	S
Detergent	Soap-free powder dissolved in water	Clean top cover windows	T
Lens cleaner	Kodak	Clean optical parts	U

4-3. Lubrication and Gluing

a. *Lubricants and Adhesives.* The lubricants and adhesives used for repair of the camera set are, in most cases, special compounds, and substitutes should not be employed. The materials, and their symbols, are listed in the following table.

Lubricants and Adhesives

Material	Leitz Number	Type	Symbol
Heavy grease	300	Losimol Magunna type 1150–A	A
Medium grease	460	Kluber type VP–2	B
Ball bearing oil	601	Bendix Navigation and Control 10–PD14926–52	C
Light grease	602	Kluber PDP–38 (95%) plus Alugel (5%)	D
Light grease	618	Ernest Leitz, GmbH	E
Medium grease	704	Shell #7 (95%) plus MoS2 microfine (5%)	F
Medium grease	340	Losimol Magunna type BO–4/4	G
Medium grease	428	Kluber type LDS–18 heavy	H
Adhesive	880		I
Glue		Tereson	J
Adhesive	859		K
Adhesive	500	Atlas plastic adhesive	L

Material	Leitz Number	Type	Symbol
Wax	637		M
Cement		Duco	N
Epoxy			V
Cement		Canada balsam	W

b. Methods of Application. Methods of applying lubricants and adhesives, and their identifying symbols, are listed in the following table:

Method	Symbol
Brush	B
Finger	F
Syringe	S
Toothpick	T

c. Lubrication and Gluing Points. Points at which lubricants or adhesives are to be applied are indicated by arrows on the figures. Further information, including materials and methods of application, are contained in the following table:

NOTE

The first letter in the SYMBOL column identifies the material to be used (a above). The second letter indicates the method of application *(b* above).

Figure No	Part	Remarks	Symbol
3-1	2	Place on inside bearing surface	F-B
	3	Place small amount on threads	N-T
	9	Place small amount on upper side	A-B
	11	Apply small amount on shaft	A-B
3-2	6	Place small amount on threads	N-T
	8	Apply lightly all over	F-B
	9	Apply small amount to under side	N-T
	10	Place on entire under side	L-T
	11	Place on entire under side	N-T
3-3	5	Wipe on inside bearing surface	F-T
	8	Place on under side	I-B
	16	Apply lightly all over	F-B
	21	Apply lightly on outside	A-F
	26	Place on top of screw	M-T
	28	Apply lightly all over	F-B
	29	Apply lightly on outside of shaft	F-B
3-4	2	Place around window after seating	K-T
	4	Place around window after seating	K-T
	5	Place around window after seating	K-T
3-5	4	Apply small amount to top	F-B
	10	Place small amount on bearing	c-s
	12	Place small amount on threads	N-T
	18	Place small drop in hole	N-T
	19	Place small drop in each hole	N--T
3-6	1	Place small amount on threads	N-T
	3	Place small amount on threads	N-T
	4	Place small amount on threads	N-T
	5	Place small amount in hole	V-T
	6	Place small amount on flange	N-T
	10	Place small amount on threads	N-T
	11	Place small amount on edge of lens	W-T
	12	Place small amount on threads	N-T
	23	Place small amount on threads	N-T
	25	Apply small amount on axel bearings	F-B
	28	Place small amount on top	N-T
	31	Place small amount on edge of lens	V-T
	32	Place small amount on threads	N-T
	33	Place small amount on threads	N-T
	35	Place small amount on threads	N-T
	38	Place small amount in mounting hole	N-T
	39	Place amall amount in hole for studs	V-T
	41	Place small amount on threads	N-T
	46	Place small amount on edge of lens	W-T

Figure No	Part	Remarks	Symbol
3-7	2	Place small amount on top	N-T
	4	Place small amount on guide slots	E-T
3-8	13	Place small amount on threads	N-T
	15	Place small amount on under side	I-B
	16	Place small amount on under side	I-B
3-9	7	Place small amount on threads	N-T
	10	Place small amount in bearing	F-B
	16	Place small amount on upper shaft	C-S
	18	Place small amount on upper shaft	C-S
	19	Place small amount on upper shaft	C-S
	20	Place small amount on upper shaft	C-S
	21	Place small amount on upper shaft	C-S
	25	Place small amount on bearing surfaces	C-S
3-10	1	Place small amount on threads	N-T
	5	Place small amount on threads	N-T
	13	Apply lightly inside spring clip	E-B
	14	Place small amount on threads	N-T
	2[illegible]	Place small amount on threads	N-T
3-11	1	Place small amount on threads	N T
	3	Apply lightly on outside of shaft	A-F
	4	Apply lightly on shaft and teeth	B-B
	6	Apply lightly on teeth	F-B
		Place small amount on threads	N-T
	7	Place small amount on shaft	B-B
	8	Apply lightly on shaft	F-B
		Place small amount on threads	N-T
	11	Place small amount on threads	N-T
	12	Place small amount on threads	N-T
	21	Apply lightly all over	F-B
	23	Apply lightly on all noses	F-B
	26	Apply lightly on shaft	E-B
	31	Apply lightly on upper and lower shaft and noses of levers	F-B
		Apply lightly on lever bearing	C-S
	34	Place small amount on threads	N-T
	37	Apply lightly on shaft and nose of lever	F-B
		Place small amount on upper end of shaft	N-T
	39	Place small amount on threads	N-T
	41	Place small amount on threads	N-T
	43	Self-adhesive.	
	44	Place small amount on threads	N-T
3-12	5	Place small amount on spring holding pin	F-B
		Apply small amount to all bearings	C-S
	10	Place small amount on sear	F-B
	11	Apply small amount to all bearings	C-S
3-13	9	Apply small amount to bearing surface	D-B
	11	Apply small amount to bearing surfaces	D-B
	16	Place small amount in bearing	B-B
3-14	1	Apply lightly on under side	F-B
	6	Apply lightly all over	F-B
	10	Apply lightly on upper sleeve	D-B
	14	Apply lightly to outside of shaft	B-B
	15	Apply lightly all over	B-B
3-15	1	Apply lightly on shaft	F-B
	2	Apply lightly on upper and lower ends	F-B
	3	Place small amount on threads	N-T
	4	Place small amount on threads	N-T
	7	Place small amount on top	E-T
		Place small amount on threads	N-T
	12	Place small amount on top	E-B
	13	Place small amount on threads	N-T
	14	Apply lightly to lower part of shaft	F-B
	15	Place small amount on threads	N-T
	16	Apply lightly on teeth	F-B
	18	Apply lightly on shaft	F-B

Figure No.	Part	Remarks	Symbol
	19	Apply lightly on both noses	F–B
	29	Apply lightly on top of flange	F–B
	30	Place small amount on threads	N–T
	32	Apply lightly on upper shaft, eccentric, and gear teeth	F–B
	33	Place small amount on threads	N–T
	34	Place small amount on threads	N–T
	36	Place small amount inside threads	N–T
	39	Place small amount on threads	N–T
	40	Place small amount on gear teeth	F–B
	42	Place small amount on threads	N–T
	43	Apply small amount to upper and lower ends of shaft	F–B
	45	Place small amount on threads	N–T
	48	Place small amount on threads	N–T
	54	Place small amount on threads	N–T
3–16	1	Place small amount on threads	N–T
	3	Apply small amount to shaft bearing surface	E–B
	5	Place small amount on threads	N–T
	13	Place small amount on threads and pin	N–T
	15	Place small amount on threads	N–T
	22	Place small amount on threads	N–T
3–17	5	Place small amount on threads	N–T
		Place small amount on shaft	B–B
	8	Place small amount on threads	N–T
	10	Place small amount on threads	N–T
	12	Place small amount on nose contacting surface	F–B
	13	Apply small amount to top	F–B
	15	Apply small amount to inside of noses	F–B
		Place small amount on pin	N–T
3–18	1	Place small amount on threads	N–T
	3	Apply to inner surface of free ends of ribbons for approximately ¾ inch	J–T
	4	Apply to fabric surface of free end of curtain for approximately ¾ inch	J–T
		Apply to inner surface of free ends of ribbons for approximately 1 inch	J–T
	6	Place small amount on threads	N–T
	7	Place small amount on bearing surface	F–B
	9	Place small amount on outer bearing surface	F–B
	10	Place small amount inside bearing	C–S
	20	Place small amount on shaft bearing surfaces	C–S
	21	Place small amount on cam bearing surfaces	F–B
	26	Place small amount on inside threads	N–T
	30	Place small amount on inside threads	N–T
	33	Place small amount on entire surface	C–F
	34	Place small amount on entire surface	C–F
	36	Place small amount on inside threads	N–T
	40	Place small amount on inside threads	N–T
	42	Place small amount on entire surface	C–F
	43	Place small amount on entire surface	C–F
3–19	4	Place small amount on threads	N–T
	6	Place small amount on threads	N–T
	7	Place small amount on shaft	F–B
	13	Apply small amount to shaft	F–B
	14	Apply small amount all over	F–F
	20	Place small amount on bearing surface	F–B
	21	Apply small amount all over	F–F
	24	Place small amount on threads	N–T
	26	Place small amount on under side	N–T
	27	Place small amount on under side	N–T
	32	Place small amount on shaft	F–B
	35	Place small amount on bearing surfaces	G–B
	37	Place small amount on bearing surfaces	G–B
	38	Apply small amount all over	B–F
3–20	3	Place on entire top surface	N–T

4-4. Film Magazine (fig. 3-20)

a. Outer Shell. Replace damaged retaining spring (9).

b. *Inner Shell.* Replace damaged felt washer (3).

c. Film Spool. Replace damaged plate (5), spring (6), and roller (7).

4-5. Camera Housing Assembly

a. Camera Housing (fig. 3-19). If camera housing covering is damaged, replace camera housing (44).

***b. Riveted Studs and Lugs.* Replace damaged positioning stud (41), baseplate stud (42), and neck strap Lugs (43).**

***c. Frame Selector Mechanism.* Replace damaged frame selector lever (29), spring (33), and front sliding bar (37).**

d. Lens Lock Release, Lens Mounting Flange, and Light Sealing Strips.

(1) *Light sealing strips* Replace damaged light sealing strip (26), and felt strips (27).

***(2) Lens mounting flange.* Replace damaged lens mounting flange (23), spring (253, and adjust as follows:**

(a) Install the camera chassis in the camera housing, wind the shutter, and set the shutter speed dial to B. Lock the shutter in the open position with tool No. 7.

***(b)* Place the camera on the gauge block with mirror surface (part of gauge set No. 56), and position the outer film guides on the mirror surface (fig. 4-1).**

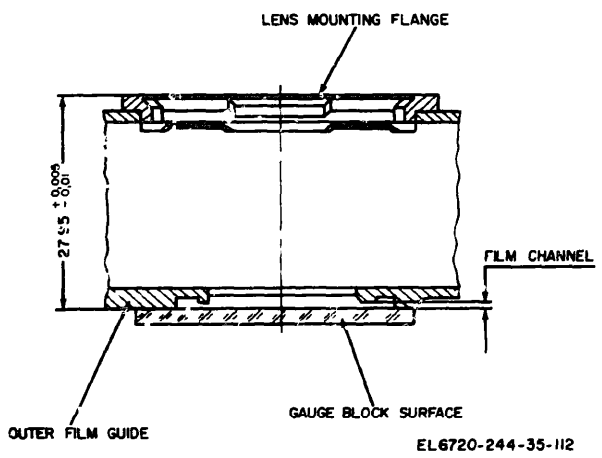


Figure 4-1. Film plane measuring points.

(c) Position dial gauge, with feeler tip (part of gauge set No. 56) on surface of lens mounting flange, and measure the distance to the mirror surface of the gauge block. The dial gauge should indicate zero. A tolerance of +0.005 mm, or *-0.01* mm is permissable.

NOTE

When the dial gauge is calibrated, a reading of zero is equivalent to 27.95 mm.

(d) If the lens mounting flange-to-film plane distance is more than 27.955 mm, when the lens mounting flange is secured to the camera housing, remove the lens mounting flange and turn down its rear surface to the required thickness. Use jig assembly consisting of tools No. 59, 60, 61, 62 and 63.

(e) Place auto collimator, consisting of tools No. 57 and 58, on the lens mounting flange and check for parallelism. The reticle reflection should coincide with the collimator reticle. A deviation of one-half line thickness is permissable.

(f) If the camera housing, or camera chassis, is bent, replace the damaged component.

(3) *Lens lock release.* Replace damaged lens lock (16, fig. 3-19).

e. Delayed Action Release Mechanism.

(1) *Delayed action clockwork.* Most malfunctions are caused by improper lubrication or foreign material within the clockwork.

***(a)* Cleaning *and* lubricating. Completely submerge the clockwork mechanism (14, fig. 3-8), in benzine and move it rapidly back and forth. Remove the clockwork from the bath and dry it with compressed air. Place a small amount of oil *on* all bearings, and again submerge the mechanism in benzine for a brief period. Remove the clockwork from the benzine, and lightly blow out the benzine, leaving a thin film of oil on the bearings.**

***(b) Replacement* of parts (fig. 3-9).**

1. Replace damaged spring (1). Insert the spring in spring housing (24), place the looped end of the spring over stud (23), and hook the inner end of the spring on the nose of spring carrier (3).

2. Relocate springs (12), (15), and (22) as shown in spring location drawings, figures 5-14, 5-13, and 5-15.

3. Replace damaged coupling disc holder (8).

(2) *Delayed action* lever (fig. 3-8). Replace damaged delayed action lever (1).

***(3) Adjusting delayed action release mechanism.* The delayed action clockwork should be in-**

4-4. Film Magazine (fig. 3-20)

a. Outer Shell. Replace damaged retaining spring (9).

b. *Inner Shell.* Replace damaged felt washer (3).

c. Film Spool. Replace damaged plate (5), spring (6), and roller (7).

4-5. Camera Housing Assembly

a. Camera Housing (fig. 3-19). If camera housing covering is damaged, replace camera housing (44).

***b. Riveted Studs and Lugs.* Replace damaged positioning stud (41), baseplate stud (42), and neck strap lugs (43).**

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(1) *Light sealing strips* Replace damaged light sealing strip (26), and felt strips (27).

***(2) Lens mounting* flange. Replace damaged lens mounting flange (23), spring (253, and adjust as follows:**

(a) Install the camera chassis in the camera housing, wind the shutter, and set the shutter speed dial to B. Lock the shutter in the open position with tool No. 7.

***(b)* Place the camera on the gauge block with mirror surface (part of gauge set No. 56), and position the outer film guides on the mirror surface (fig. 4-1).**

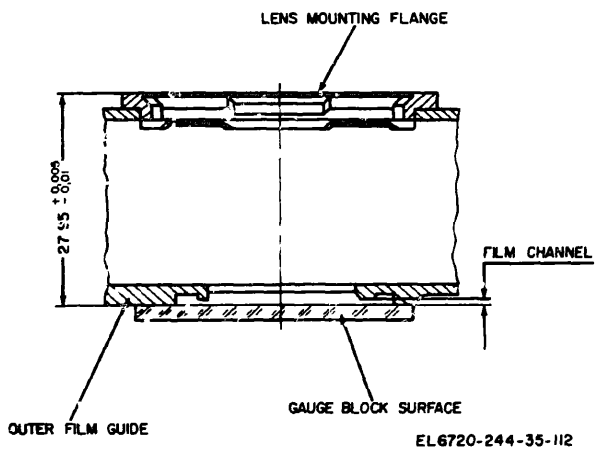

Figure 4-1. Film plane measuring points.

(c) Position dial gauge, with feeler tip (part of gauge set No. 56) on surface of lens mounting flange, and measure the distance to the mirror surface of the gauge block The dial, gauge should indicate zero. A tolerance of +0.005 mm, or *-0.01* mm is permissable.

NOTE

When the dial gauge is calibrated, a reading of zero is equivalent to 27.95 mm.

(d) If the lens mounting flange-to-film plane distance is more than 27.955 mm, when the lens mounting flange is secured to the camera housing, remove the lens mounting flange and turn down its rear surface to the required thickness. Use jig assembly consisting of tools No. 59, 60, 61, 62 and 63.

(e) Place auto collimator, consisting of tools No. 57 and 58, on the lens mounting flange and check for parallelism. The reticle reflection should coincide with the collimator reticle. A deviation of one-half line thickness is permissable.

(f) If the camera housing, or camera chassis, is bent, replace the damaged component.

(3) *Lens lock* release. Replace damaged lens lock (16, fig. 3-19).

e. Delayed Action Release Mechanism.

(1) *Delayed action clockwork.* Most malfunctions are caused by improper lubrication or foreign material within the clockwork.

***(a)* Cleaning *and* lubricating. Completely submerge the clockwork mechanism (14, fig. 3-8), in benzine and move it rapidly back and forth. Remove the clockwork from the bath and dry it with compressed air. Place a small amount of oil *on* all bearings, and again submerge the mechanism in benzine for a brief period. Remove the clockwork from the benzine, and lightly blow out the benzine, leaving a thin film of oil on the bearings.**

***(b) Replacement* of parts (fig. 3-9).**

1. Replace damaged spring (1). Insert the spring in spring housing (24), place the looped end of the spring over stud (23), and hook the inner end of the spring on the nose of spring carrier (3).

2. Relocate springs (12), (15), and (22) as shown in spring location drawings, figures 5-14, 5-13, and 5-15.

3. Replace damaged coupling disc holder (8).

(2) *Delayed action* lever (fig. 3-8). Replace damaged delayed action lever (1).

***(3) Adjusting delayed action release mechanism.* The delayed action clockwork should be in-**

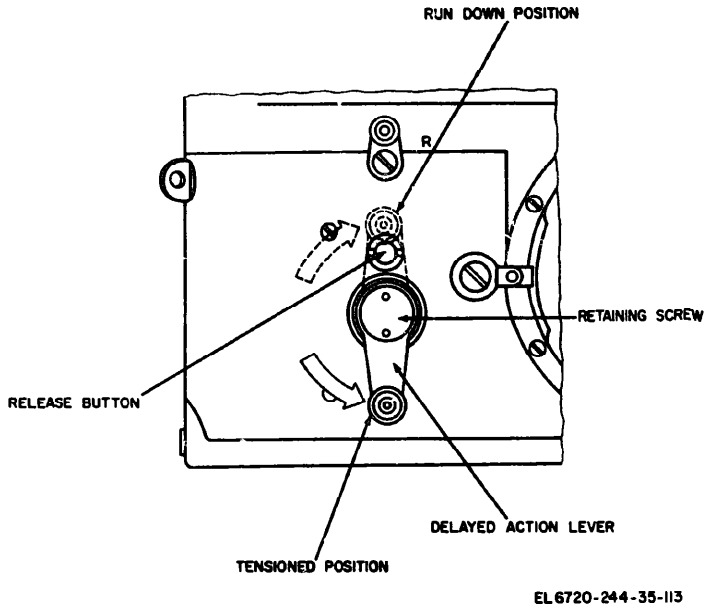

Figure 4-2. Delayed action lever, tensioned position.

stalled on the camera chassis, and the chassis installed in the camera housing, before adjusting.

(a) Tension the clockwork spring by turning the delayed action lever counterclockwise as far as it will go (fig. 4-2).

***(b)* Loosen the left-hand threaded retaining screw with tool No. 19. Lift the lever, rotate it clockwise to the vertical position, and immediately tighten the retaining screw.**

(c) Fully tension the clockwork spring by repeating the procedures in (a) and *(b) above* two or more times.

***(d)* Set the camera shutter speed dial to B, wind the shutter, and depress the delayed action release button. When the clockwork runs off, the shutter should not release. If the clockwork trips the shutter, increase tension of the clockwork spring as in (a), *(b)*, and (c) above.**

(e) Hold the delayed action lever in its vertical (runoff) position, loosen the retaining screw, and permit the clockwork to operate. Tighten the retaining screw immediately after the second shutter curtain has been released.

(f) Check operation of the delayed action mechanism as follows: Set the shutter speed dial to B, wind the shutter, and depress the delayed action release button (fig. 4-2). The first shutter curtain should release when the delayed action lever is approximately 30° from its vertical position (fig. 4-3). The second curtain should release when the lever is approximately 5° from the vertical.

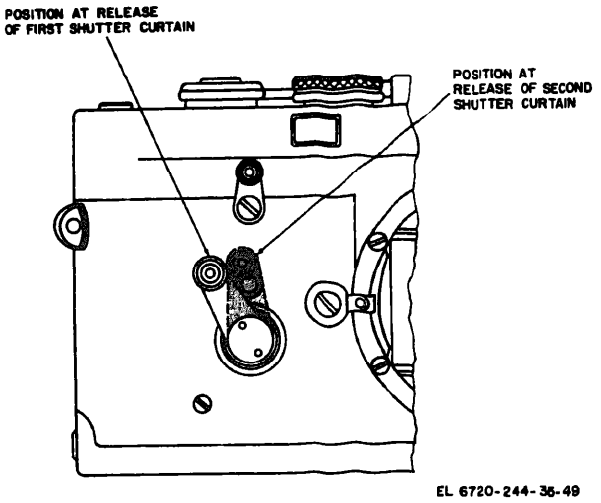

Figure 4-3. *Delayed action lever, releasing position.*

4-6. Shutter Curtain Assembly

If both shutter curtains are to be replaced, the second shutter curtain should be installed first. It is not necessary to remove the complete shutter curtain assembly from the camera chassis when replacing curtains with ribbons.

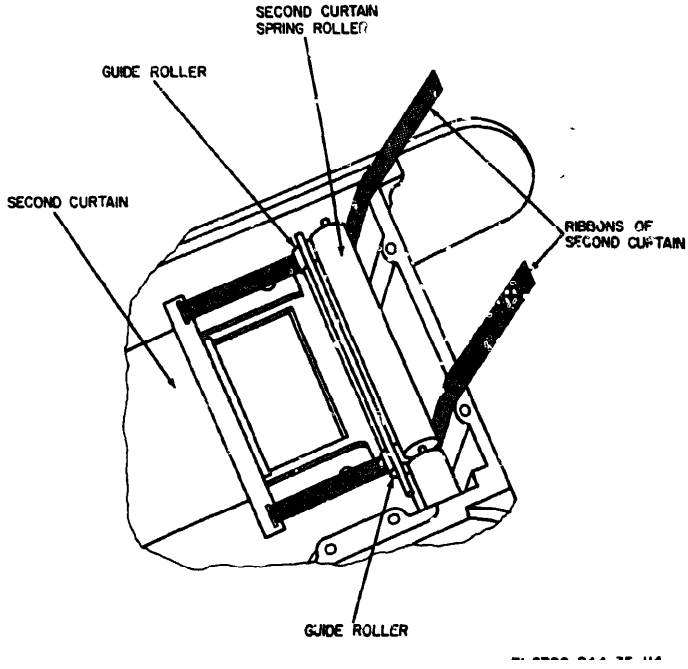

Figure 4-4. Positioning second shutter curtain ribbons.

a. Replacing Second Shutter Curtain With Ribbons. **The ribbons of the second shutter curtain replacement should be cut to the same length as the removed curtain ribbons.**

(1) Thread the ribbons under the guide rollers, and under (behind) the second curtain spring roller (fig. 4-4).

(2) Glue the ends of the ribbons on the second curtain spring roller.

(3) Tension the second curtain spring roller until the metal bar of the first curtain engages the labyrinth of the second curtain (fig. 4-5).

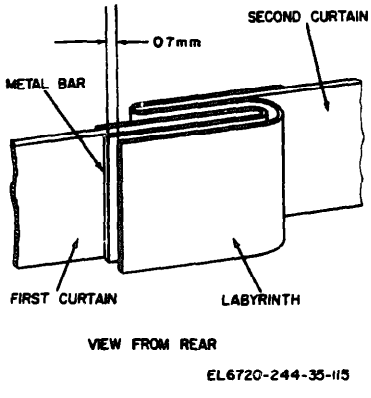

Figure 4-5. Position of shutter curtain bar and labyrinth.

NOTE

To adjust spring tension, insert a screwdriver in the tensioning stud slot, (fig. 4-6), and push down on the setting ring. Turning the stud counterclockwise increases tension. Turning the stud clockwise decreases tension. Removing the screwdriver re-engages the setting ring.

(4) Thread the second shutter curtain under the main roller assembly (5, fig. 3-18). Rotate main roller (15) to its released position to place the holding bar slot uppermost.

(5) Align the slots in the shutter curtain

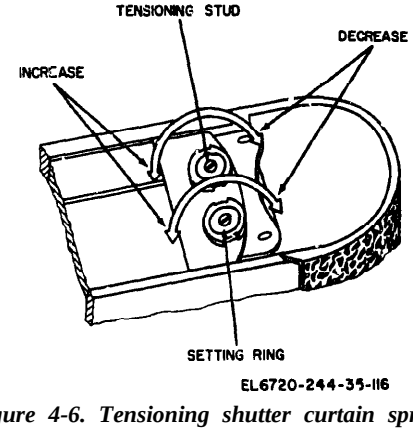

Figure 4-6. Tensioning shutter curtain springs.

with the holding bar mounting holes. Secure the curtain to the main roller by mounting holding bar (2).

(6) Wind the shutter about half way. The crimped edge of the first curtain bar should extend for approximately 0.7 mm outside the second curtain labyrinth, when viewed from the rear (fig. 4-5).

(7) Rotate the second curtain roller, with the thumb, until a narrow slit is visible between the first and second curtains. The edges of the curtains must be parallel to each other.

(8) If the edge of the second curtain is not parallel with the edge of the first curtain, or with the end of the film aperture, reglue one of the curtain ribbons. Keep the 0.7 mm dimension as in (6) above.

NOTE

Borings (in the upper part of the camera chassis) through which the roller shafts pass, have eccentric bushings. These bushings may be rotated to assist in adjusting curtain edges for parallelism.

(9) Wind the shutter, set the shutter speed dial to B, and release the first curtain. Hold the shutter release button in the depressed position.

(10) Check the position of the second shutter curtain with tool No. 34. The edge of the curtain should be between 3.05 mm and 3.55 mm from the edge of the film aperture.

NOTE

Place the slot of the gauge against the end of the film aperture, with engraving 3.55 uppermost. The edge of the curtain must touch the gauge. Reverse the gauge placing 3.05 uppermost. The edge of the curtain must clear, or just touch the end of the gauge.

(11) If the edge of the second curtain is not within tolerance, reposition the curtain. Loosen two screws (1, fig. 3-18), move the curtain. and retighten the screws.

(12) Release the tension of the second curtain spring until the ribbons are slack. Allow 12 hours for the adhesive to dry before retensioning the spring.

(13) Retension the second shutter curtain spring, and adjust the shutter speeds as described in *c* below.

b. Replacing First Shutter Curtain With Ribbons.

(1) Unsolder insulated wire (18, fig. 3-10), from long contact spring (3), ground wire (17) from guide spring (13), and lift metal tube (20) to the side.

(2) Remove shutter tension adjusting bearing (15, fig. 3-16), of the first curtain spring roller assembly, using tool No. 16.

(3) Take the curtain spring roller assembly (17, fig. 3-16) out of the camera chassis, and remove shutter curtain (4, fig. 3-18), from first curtain roller (30).

(4) Remove the first shutter curtain ribbons from ribbon rollers (13) and (22).

(5) Glue the replacement curtain on first curtain roller (30), of the spring roller assembly.

(6) Place the curtain spring roller assembly, with curtain, in the camera chassis lower boring and position the spring roller assembly shaft in the upper boring. Install shutter tension adjusting bearing (15, fig. 3-16), using tool No. 16.

(‘7) Turn tensioning stud (26, fig. 3-18), counterclockwise and slightly tension the first curtain spring. (See note *a(* 3) above). Thread the curtain ribbons under ribbon rollers (13) and (22), bringing them around the ribbon rollers. (The ribbons pass underneath the second shutter curtain labyrinth).

(8) Glue the ribbons to ribbon rollers (13) and (22), and follow the procedure in *a(6)* and (7) above.

(9) If the edge of the first curtain is not parallel with the edge of the second curtain, or with the end of the film aperture, reglue one of the first curtain ribbons. Keep the 0.7 mm dimension as in a(6) above.

NOTE

See note, a(8) above.

(10) Release the tension of the first curtain spring until the ribbons are stack. Allow 12 hours for the adhesive to dry before retensioning the spring.

(11) Retension the first shutter curtain spring, and adjust the shutter speeds as described in c below.

c. Adjusting Shutter Speeds. Install the camera chassis in the camera housing. Wind the camera shutter and tension the shutter curtain springs as described in the note under *a(3)* above. The first curtain spring tension should read between 17 and 18 on the spring tension gauge No. 40. The second curtain spring tension should read between 17 and 21 on the gauge.

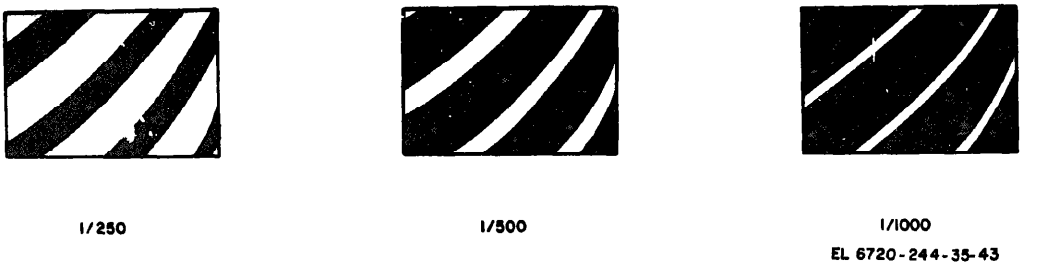

Figure 4-7. Fast shutter speed patterns.

NOTE

To measure spring tension, place the blade of gauge No. 40 in the slot of the tensioning stud. Turn the gauge knob counterclockwise until the tensioning stud moves. Readings are indicated on the scale opposite the index.

(1) Fast *shutter speeds.*

(a) **Set the shutter speed dial to 1/500 second, and position the speed pattern checking plate No. 41 in the film aperture. Place the camera body to position its lens mounting flange against the window of shutter speed checking drum No. 42.**

(b) Release the shutter, and cheek the curved pattern of the second shutter curtain against the pattern plate. If the gradient of the curtain curve does not match the pattern on the plate, proceed as follows:

1. Curtain curve steeper than pattern. **Increase the tension of the second curtain spring.**

2. Curtain curve flatter than pattern. **Decrease the tension of the second curtain spring.**

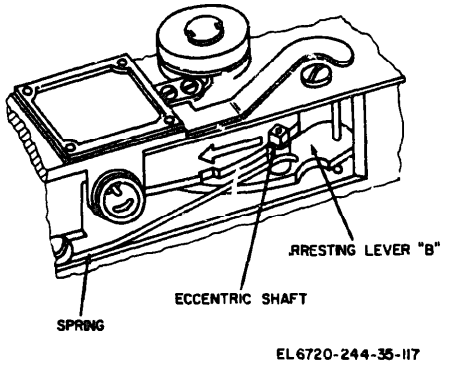

figure 4-8. Fast shutter speed adjustment.

(c) Remove the pattern checking plate from the camera. Wind and release the shutter (still set for 1/500 second) several times. Compare the shutter slit width with the 1/500-second pattern in figure 4-7. The lower part of the slit should be wider than its top. If the slit width does not match the pattern proceed as follows:

1. Lower part of ***slit*** too narrow. **Increase the tension of the first curtain spring.**

2. Lower part of **slit too wide. Decrease the tension of the first curtain spring.**

3. Entire slit too wide or too narrow. **Repeatedly compare the slit width at 1/500 second, and at 1/250 second and 1/1000 second, with the shutter speed patterns (fig. 4-7). If the slit width is too wide, turn the eccentric shaft of arresting lever B (fig. 4-8), to the left using tool No. 43. If the slit width is too narrow, turn the shaft to the right.**

NOTE

Measure lateral pressure of the spring with gauge No. 38. Wind the shutter, place the gauge feeler behind and near the end of the spring, and push back. The gauge should indicate 110 grams. A tolerance of +20 grams is permissible. To measure downward pressure, place the gauge feeler under and near the end of the spring, and lift the spring up. The gauge should indicate 130 grams. A tolerance of plus or minus 10 grams is permissible. If the spring pressure is not within tolerance, bend it accordingly.

4. ***Addtional adjustments for 1/1000***

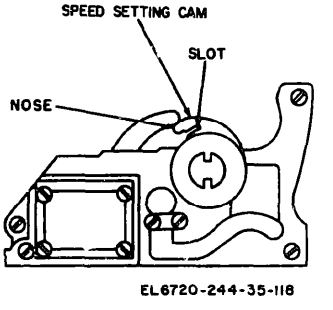

*Figure 4-9. Speed setting cam **for** 1/100-second*

second. **If the 1/1000-second shutter speed slit is too wide, bend the nose of the speed setting cam (fig. 4-9), to widen the cam slot. If the shutter slit is too narrow, bend the nose of the speed setting cam to reduce the width of the cam slot. (This adjustment is seldom required).**

***(2) Slow shutter* speeds. Fast shutter speeds must be currectly set before adjusting the slow *speeds*.**

(a) *Cleaning.* Dry bearings, or foreign matter in the slow-speed escapement, will adversely affect the slow shutter speeds. Completely submerge the slow-speed escapement in benzine and move it rapidly back and forth. Remove the assembly from the bath and dry it with compressed air. Lightly oil the bearings, and again place it in benzine for a brief period. Remove the escapement and lightly blow out the benzine, leaving a thin film of oil on the bearings.

NOTE

If any components of the escapement are damaged, replace the entire assembly.

(a) *Installing.* Install the slow-speed escapement on the camera chassis. The disengaging lever (fig. 4-10), must be positioned in front of the pallet control lever. The disengaging lever must deactivate the pallet at the 1/15-second setting.

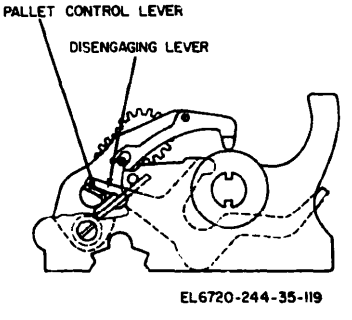

Figure 4-10. Position of disengaging lever.

(c) Adjusting. The basic adjustment for the slow-speed escapement is 1/8 second. This speed must be set well within tolerance.

***1. Adjusting 1/8 second.* Turn the eccentric setting screw (fig. 4-11), with a screwdriver until the 1/8-second speed is correct. (See (8) below for checking shutter speeds electronically).**

***2. Adjusting 1 second to 1/30 second.* Shutter speeds from 1 second through 1/30 second (except 1/8 second) are adjusted by changing the width of the corresponding slot in the slow-speed setting cam. Widening the slot decreases the run-off time of the escapement (shortens the exposure), and narrowing the slot increases the exposure time. Check the shutter speed with the electronic shutter tester, as in (8) below, after each adjustment.**

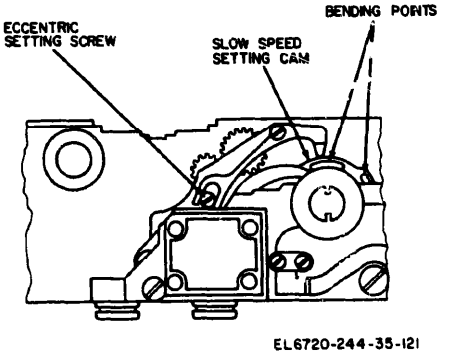

*Figure 4-11. Slow shutter speed **adjustments.***

(3) checking all shutter speeds electronically.* Check all shutter speeds with electronic shutter tester No. 45 and hinged back with mirror No. *44.

(a) Install hinged back with mirror (No. 44) on camera housing, and position the camera housing on test instrument No. 45, fitting the lens mounting flange over the opening. Secure the camera to the instrument with the holding plate.

(b) Wind the camera shutter, set the camera shutter speed dial to 1 second, depress the 1 second button on the test instrument, and release the shutter. The test instrument meter must register within the l-second tolerance.

(c) Repeat the operation, as in (b) above, for each of the shutter speeds. The test instrument button, corresponding to the shutter speed being checked, must be depressed. The meter must register within the tolerance for that speed.

4-7. Synchronizing Circuits

Shutter speeds must be accurately set before checking or adjusting synchronization.

a. *Checking* and Adjusting *Flashbulb Circuit.* Set the voltage selector switch of test instrument No. 48 to 500 volts. Connect the camera flashlamp socket to the test instrument with connecting cord No. *53.*

(1) *Checking insulation.* Set the selector switch to I. Hold the camera shutter release in the depressed position and turn the shutter speed dial through its range from 1/1000 second to B. The meter should not register, and the indicator lamp should not light. If a current leakage is indicated,

trace the circuit with test leads No. 51 and correct the fault.

NOTE

The camera shutter should be unwound before connecting to the test instrument.

(2) *Checking conductivity.* Set the selector switch to D, wind the camera shutter, and set the shutter speed dial to B. Hold the first shutter curtain, depress the shutter release, and allow the curtain to move slowly across the film aperture. After approximately 5 millimeters of travel, the test instrument meter should indicate between 50 and 70. If it does not, check the circuit for poor connections, dirty contact points, or a defective flashlamp socket. Correct the fault.

(3) Checking contact closing. Set the selector switch to L, wind the camera shutter, and set the shutter speed dial to B. Depress the shutter release. The indicator lamp must light. Repeat the operation for each of the shutter speeds, noting that the lamp lights each time the shutter is released. If it does not, check the contact points of switches (S-1 and S-2, fig. 1-16), and correct the fault.

b. Adjusting Flashbulb Synchronization. Connect the camera flashlamp socket to test instrument No. 52 with connecting cord No. 53. Remove the camera hinged back, and insert tolerance pattern No. 54 in the film aperture. Position the camera lens mounting flange over the test instrument opening.

(1) Depress button 4 on the test instrument, wind the shutter, and set the shutter speed dial to 1/1000 second

(2) Release the shutter, and observe the position of the shutter slit on the pattern plate (fig. 4-12). The shutter slit should appear within the tolerance marks on the pattern plate. If it does not, proceed as follows:

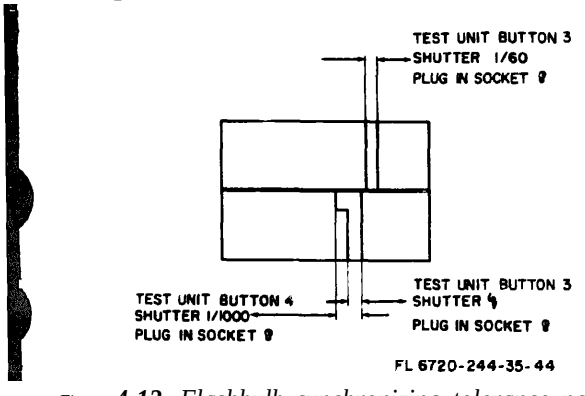

Figure *4-12. Flashbulb synchronizing tolerance pattern.*

(a) Slit on left side of tolerance marks. Bend main contact switch (5-2, upper part of contact arm, fig. 1-16), using tool No. 36, toward the synchro adjusting lever.

(b) Slit on right side of tolerance marks. Bend main contact switch (S-2) away from the synchro adjusting lever.

NOTE

Clearance between the contacts of main contact switch (S-2) should be approximately 0.25 mm.

(3) Depress button 3 on the test instrument, wind the shutter, and set the shutter speed dial to 1/60 second.

(4) Release the shutter, and observe the position of the first shutter curtain on the pattern plate (fig. 4-12). The edge of the first shutter curtain should fall within the narrow pattern on the upper part of the plate. If it does not, proceed as follows :

(a) Contacts close *too* early. Bend the contact arm nose (fig. 1-16), using tool No. 35, toward the contact arm cam.

(b) Contacts close *too late.* Bend the contact nose away from the contact arm cam.

(5) After making a synchronizing adjustment, recheck and adjust alternately between 1/1000 second and 1/60 second until both settings are correct.

c. Checking and Adjusting Electronic Flush Circuit. Set the voltage selector switch of test instrument No. 48 to 1,000 volts. Connect the camera electronic flash socket to the test instrument with connecting cord No. 53.

(1) Checking insulation.

(a) Set the test instrument selector switch to I, wind the camera shutter, and set the shutter speed dial to B.

(b) Hold the first shutter curtain, preventing it from running off, and depress the shutter release. The meter should not register, and the indicator lamp should not light. Release the first curtain and let it run off.

(c) Wind the camera shutter half way, and depress the shutter release. The meter should not register, and the indicator lamp should not light.

(d) If current leakage is indicated by tests ((b) and (c) above), trace the circuit with test leads No. 51, Check for a short in precontact switch (S-3, fig. 1-18), or a short in main contact switch (S-4). Check for faulty insulation.

(2) Checking conductivity.

(a) Set the test instrument selector switch to D, wind the camera shutter, and set the shutter speed dial to B.

(b) Depress the shutter release. The test instrument meter should indicate between 95 and 100. If it does not, check the circuit for poor connections, dirty contact points, or a defective electronic flash socket. Correct the fault.

d. Adjusting Electronic Flash Synchronization. **Connect the camera electronic flash socket to test instrument No. 52 with connecting cord No. 53. Insert tolerance pattern plate No. 55 in the camera film aperture. Position the camera lens mounting flange over the test instrument opening.**

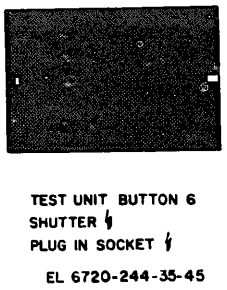

Figure 4-13. Electronic Flash synchronizing tolerance pattern.

(1) Depress button 6 on the test instrument, wind the shutter, and set the shutter speed dial to the electronic flash symbol (1/50 second).

(2) Release the shutter while observing the pattern plate (fig. 4-13). The two rectangles (one on each end of the plate) must be illuminated. One-half millimeter of the outer edge of the left rectangle must be obscured by the first shutter curtain. The rectangle on the right end of the pattern plate must not be obscured in any degree by the second shutter curtain. If these conditions are not met, proceed as follows:

(a) Left pattern tolerance incorrect. **Position the adjusting eccentric (fig. 1-18), with tool No. 29 until 0.5 mm of the first curtain shows in the left rectangle of the pattern plate (fig. 4-13).**

NOTE

The adjusting eccentric slot is located on the underside of the camera chassis.

(b) Right pattern tolerance incorrect. **Reposition the second shutter curtain, and readjust the shutter speeds (para 4-6).**

4-8 Brake Assembly

a. Checking.

(1) Remove baseplate and hinged back from the camera, wind the shutter, set the shutter speed dial to B, and release the shutter.

(2) Grasp the second shutter curtain between the thumb and forefinger, and pull it in the direction of its travel. The curtain should move an additional 0.5 mm.

(3) Wind the shutter, set the shutter speed dial to B, and release the first curtain. Hold the shutter release in the depressed position. The edge of the first shutter curtain should be between 1.5 mm and 2.5 mm beyond the edge of the film aperture.

b. Adjusting. **If the conditions in a above are not met, proceed as follows:**

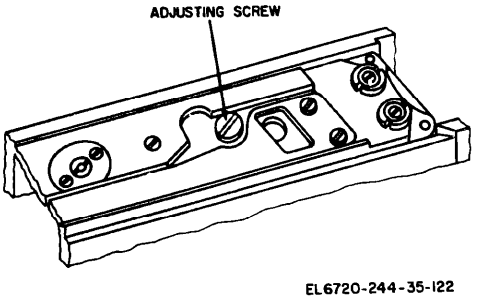

Figure 4-14. Brake adjusting screw.

(1) Turn the adjusting screw (fig. 4-14), to the right or left as required.

(2) If the brake cannot be adjusted by turning the adjusting screw ((1) above), replace spring (2, fig. 3-17).

NOTE

The camera chassis must be removed from the camera housing to replace the spring, or brake assembly.

(3) If the brake cannot be adjusted by following the procedures in (1) and (2) above, replace the brake assembly.

NOTE

The camera shutter must be wound before replacing the brake assembly.

4-9. Reverse Mechanism

Place the reverse lever in its R (rewind) position, and wind the camera shutter. The reverse lever should return to its upright position at the

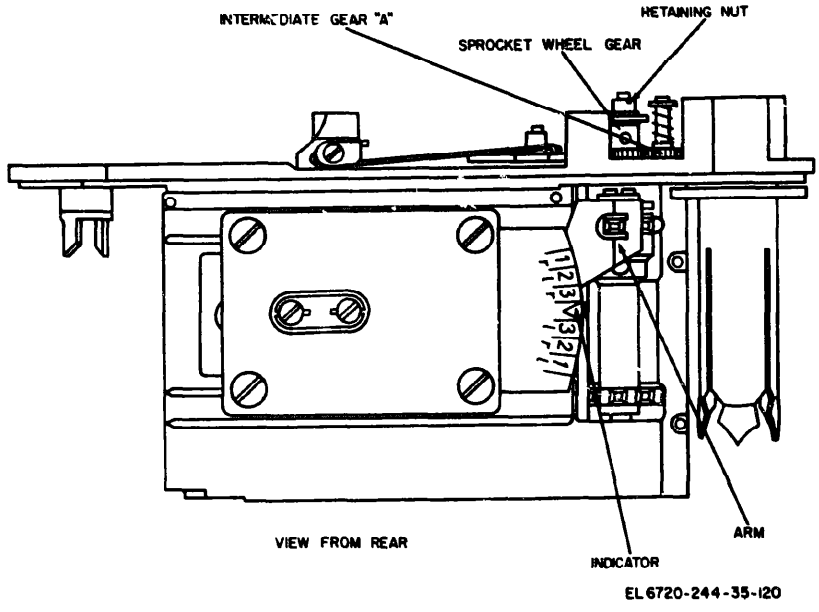

Figure *4-15. Sprocket wheel gauge in* test *position*

start of the winding stroke. If it does not, proceed as follows:

a. Disassemble the camera chassis to the point for removal of the sprocket wheel assembly. Inspect camshaft (3, fig. 3-16), for damage. Replace if necessary.

b. Inspect coupling disc (47, fig. 3-15), for damage. Replace if necessary.

NOTE

While removing coupling disc (para 3-7j (5)), do not disengage it from retaining nut (48).

4-10. Sprocket Wheel Assembly

A maladjusted, or defective sprocket wheel assembly can result in overlapping or uneven spacing between frames, or positioning of frame lines other than between perforations.

a. Remove the top cover and camera chassis from the camera housing. Check screws (39 and 42, fig. 3-15), and tighten if loose.

b. Wind the shutter and position gauge No. 39 in the camera film aperture (fig. 4-15). A tooth of the sprocket wheel must appear through the opening in the gauge **arm.**

c. Move the winding lever to the right as far as it will go, and hold it against its stop. The indicator gauge should rest at midscale. If the indicator is offcenter, proceed as follows (d through *h* below).

***d.* Remove intermediate gear B (16, fig. 3-15), loosen retaining nut (36), and disengage intermediate gear A (12).**

e. Turn the sprocket wheel one or more teeth, as indicated by the gauge.

NOTE

If the gauge indicator rests at three, two, or one L, move the sprocket wheel that many teeth to the left. If the indicator rests in the R sector, move the sprocket wheel the indicated number of teeth to the right.

f. **Re-engage intermediate gear A (12, fig. 3-15), and using the gauge, check for centering of the indicator. If the indicator is not centered, repeat the procedure in *d* above until the gauge indicates correct positioning of the sprocket wheel.**

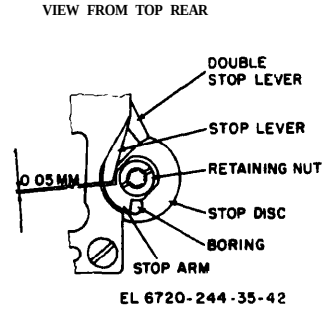

Figure 4-16. Position of stop disc.

g. Wind the shutter with the sprocket wheel, and push the winding lever against its stop. Place a screwdriver in the stop disc boring, and position the stop disc to rest against the upper portion of the double stop lever (fig. 4-16). Hold the sprocket wheel and make certain it does not rotate while making this adjustment. Simultaneously push the stop arm toward the stop lever, leaving a clearance of approximately 0.05 mm. Tighten the retaining nut, An axial play of the sprocket wheel of 0.1 mm to 0.2 mm is permissible.

h. **Reinstall intermediate gear B (16, fig. 3-15).**

NOTE

The full tooth, on the lower portion of intermediate gear B, should be aligned with the center of the nose of arresting lever A (19).

(1) With the shutter wound, push intermediate gear B to the right as far as it will go, and depress the shutter release button. The shutter should operate freely.

(2) Wind the shutter, push intermediate gear B to the left as far as it will go, and depress the shutter release button. The shutter should operate freely.

(3) Recheck position of the sprocket wheel with gauge No. 39. The indicator should rest at the center of the gauge.

4-11. Takeup Spool Assembly

The camera need not be disassembled to adjust the takeup spool compensating friction clutch. It is necessary to remove the top cover if gear (32, fig. 3-15), requires replacement.

a. Checking Compensating Clutch Friction. **Place adapter No. 83 on torsion gauge No. 82, and insert it in the takeup spool. Rest the camera housing against the gauge bottom plate. Turn the gauge handle and rotate the takeup spool The gauge index must position between the tolerance indicators. If it does not, adjust the compensating clutch friction as follows:**

NOTE

Torque required to overcome friction of the clutch should be between 230 grams and 270 grams.

(1) ***Reducing friction.*** **Remove spring (26, fig. 3-15), and decrease its pressure. Replace the spring and check friction with the torsion gauge.**

(2) ***Increasing friction.*** **Place additional washers (28, fig. 3-15) on holding shaft (30). Reassemble the compensating friction clutch and check its friction with the torsion gauge.**

b. Takeup Spool Does Not Rotate When Winding Camera. **Replace gear (32, fig. 3-15).**

c. ***Excessive Axial Play.*** **If takeup spool axial play exceeds 0.15 mm, place additional washers (22, fig. 3-15) under retaining ring (21).**

4-12. Shutter Release Mechanism

a. Shutter Release Travel.

(1) Wind the camera shutter and depress the shutter release knob. The shutter should release. If it does not, check for, and remove foreign matter between flat spring (5, fig. 3-15), and bottom cover (3, fig. 3-5).

(2) Wind the camera shutter and rest gauge No. 46 on the shutter release screw ring. The shutter should not release. If it does, loosen screw (4, fig. 3-15), and shift the free end of flat spring (5) toward front of camera until it does release. Tighten screw (4).

(3) Wind the camera shutter and rest gauge No. 46 on the shutter release screw ring. Depress the gauge center shaft. The shutter should release. If it does not, loosen screw (4), and shift the free end of flat spring (5) toward the rear of the camera until it does release. Tighten screw (4).

(4) Remove gauge No. 46, wind the camera shutter, and set the shutter speed dial to B. Depress the shutter release knob approximately 1.5 mm. The first shutter curtain should release. The shutter release knob should travel approximately 0.25 mm further after release of the first shutter curtain. Slowly reduce pressure on the shutter release knob. The second shutter curtain should release when the release knob is approximately 0.25 mm from its uppermost position. If these conditions are not met, loosen nut (6, fig. 3-15), using tool No. 31, and reposition screw (7).

b. Shutter Release Pressure. **Check spring pressure with gauge No. 47. Check the shutter release mechanism for smooth operation.**

(1) Wind the camera shutter and center the shaft of gauge No. 47 in the shutter release knob. Hold the movable weight against its upper stop while positioning the gauge. The shutter should not release.

(2) Lower the movable weight and rest it on the lower portion of the gauge. The shutter should release.

(3) If conditions in (1) and (2) above are

not met, remove flat spring (5, fig. US), and bend it to increase or decrease pressure.

(4) If the shutter release mechanism does not operate smoothly, check the following parts for defects. Replace if necessary.

(a) Shaft of release knob (29, fig. 3-3), and position of release sleeve (30).

NOTE

Engage release sleeve slot with pin in driveshaft assembly.

(b) Arresting lever B (37, fig. 3-11), and stop plate (40).

(c) Nose of flat spring (5, fig. 3-15), and arresting lever A.

4-13. Drive Shaft Mechanism

Adjustment of the drive shaft mechanism does not necessitate removal of the camera chassis from the camera housing, unless intermediate gear B (16, fig 3-15), is to be aligned or replaced.

a. *Winding Lever Loose.* Tighten screw ring (3, fig. 3-3), using tool No. 1, *or* replace saddle spring (4).

b. Frame Counter Does Not Function Properly. The frame counter should move to its next higher division during the final quarter stroke of the winding lever If it does not, remove the top cover and check the position of pawl (1, fig. 3-14), and spring (3). Check ratchet gear (15) for damage. Adjustment and alignment is described in d below.

c. Winding Lever Cannot be Fully Advanced. Remove the top cover and drive shaft assembly.

(1) Check drive shaft gear (6, fig. 3-14), and ratchet plate (7) for damage.

(2) Check intermediate gear A (12, fig. 3-1.5), gear (32), and gear (40) for damage or foreign matter. Clean or replace as required.

(3) Check bearing (54) for looseness, wear, or lack of lubrication. Tighten, replace bearing using tool No 110, or lubricate as required,

NOTE

Parts (36 through 41, fig. 3-15), must be removed in order to tighten or replace bearing (54).

*d. Installing and Adjusting Drive Shaft Mech*anism. The sprocket wheel assembly (para 4-10g and h), must be correctly adjusted before installing and adjusting the driveshaft mechanism

(1) Wind the camera shutter by rotating the sprocket wheel.

(2) Observe position of the eccentric pin on top of gear (32, fig. 3-15). The pin should rest at approximately 1:00 o'clock when viewed from the front of the camera. When correctly positioned, the pin will fall on a line between the right rear, and left front mounting holes for the driveshaft bearing plate. If it does not, proceed as follows;

(a) Remove camera chassis from camera housing.

(b) Remove intermediate gear B (16).

(c) Lift up intermediate gear A (12), and reposition gear (32).

(d) Re-engage intermediate gear A, and reinstall intermediate gear B.

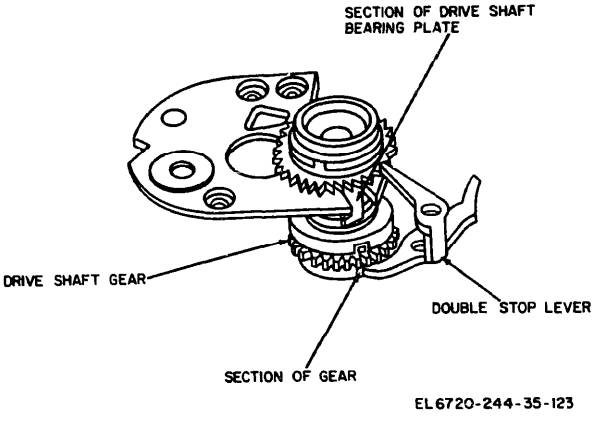

Figure 4-17. Drive shaft assembly.

(3) Position the driveshaft gear (fig. 4-17), to align one of its cutout sections with the cutout in the drives shaft bearing plate.

(4) Push back slightly on the upper end of the double stop lever, and position the drive shaft assembly over its mounting holes. Fasten the drive shaft assembly to the camera chassis.

(5) Install the camera chassis in the camera housing.

(6) Remove takeup spool (29, fig. 3-15), and align release disc (31)

(a) Wind the shutter, and loosen holding shaft (30), using tool No. 14.

(3) Insert tool No. 13, and align the release disc slot (31) with the tool. Tighten the holding shaft.

(c) Reinstall takeup spool (29).

(7) Release the shutter. Observe that the lower portion of the double stop lever (fig. 4-17), engages the drive shaft gear, and that the upper

portion rests against the stop disc (fig. **4-16). Reinstall the top cover.**

4-14. Rewind Assembly

Load the camera and check the rewind assembly by rewinding film.

a. Rewind ***Knob Will Rotate, But Film Will Not Rewind.***

(1) Remove rewind knob (19, fig. 3-3), and check its shaft for damaged key. Replace the rewind knob if damaged.

(2) Check forked carrier (20), and slotted friction sleeve (21) for damage. Replace it required.

b. Rewind Knob Will Not Remain in Up Position. **Spread the upper portion of slotted friction sleeve (21) to increase its friction.**

c. Rewind Knob Will Not Rotate.

(1) Remove top cover and check the gear of bearing assembly (3, fig. 3-11) , gear of rewind shaft (4), and gear (6). Replace if required.

(2) Check rewind fork (7) for damage. Replace if required.

(3) Replace top cover.

4-15. Range-Viewfinder Assembly

a. General. **The lens mounting flange (para 4-5 (2)), and the range-viewfinder roller arm, (b below), must be correctly adjusted before checking or adjusting the range-viewfinder assembly.**

NOTE

If components of the range-viewfinder assembly (with the exception of the bright-line frame assembly) are damaged, the entire range-viewfinder assembly should be replaced.

b. Checking Height **of** ***Range-Viewfinder Roller*** **Arm. Place gauge No. 77 in the lens mounting flange with its measuring surface under the range-viewfinder roller arm. Depress the gauge indicator until the measuring surface touches the range-viewfinder roller arm roller. The indicator index should align with the top edge of the gauge handle. If it does not, proceed as in c below.**

NOTE

A tolerance of one-half the thickness of the gauge index line is permissible.

c. Adjusting Height of Range-Viewfinder Roller Arm. **Bend the range-viewfinder roller arm, up or down, until it is within tolerance** ***(b*** **above).**

d. Rangefinder.

(1) ***Lateral alignment.***

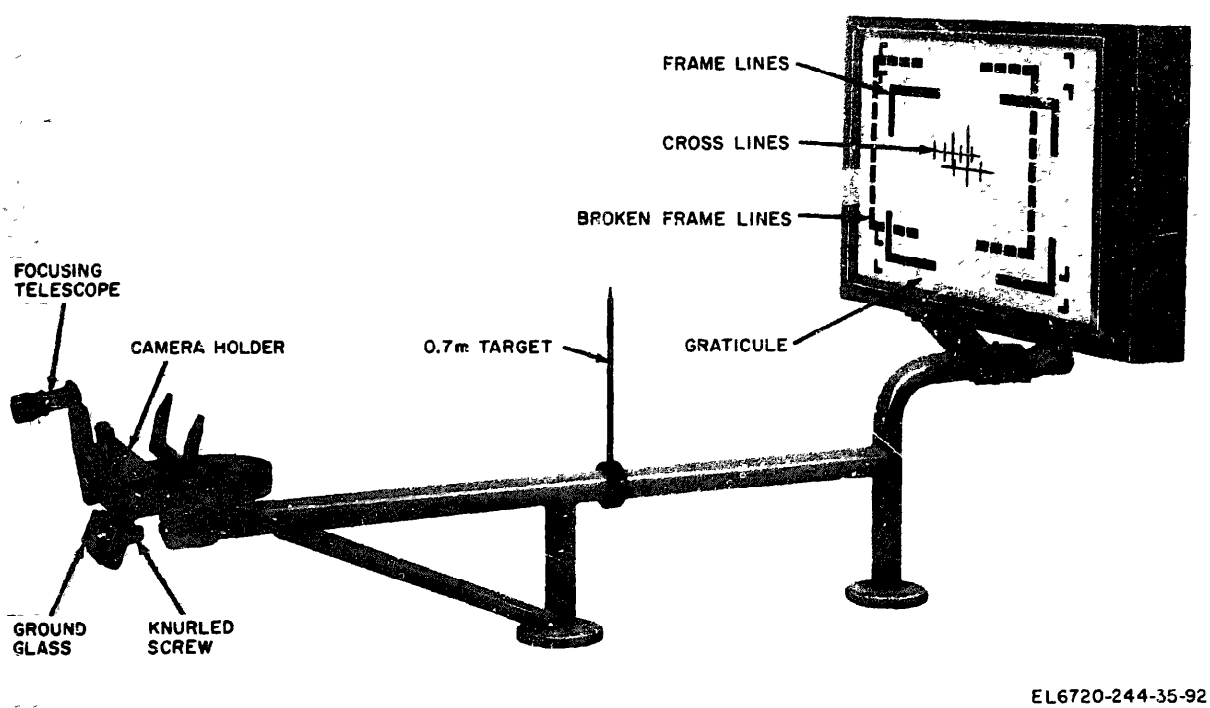

Figure 4-18. Range-viewfinder calibrating stand.

(a) Mount distance setting gauge No. 71 in the lens mounting flange.

(b) **Remove the baseplate and hinged back. Place the camera on the camera holder of calibrating stand No. 64 (fig. 4-18). Position the focusing telescope behind the eyelens, and focus the telescope to view graticule No. 70 at 10 meters.**

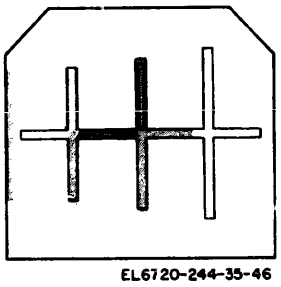

Figure 4-19. Rangefinder image at infinity.

(c) Set the distance setting gauge to infinity, and view the graticule. The rangefinder image should agree with figure 4-19. If it does not, proceed as in ***(d)*** **below.**

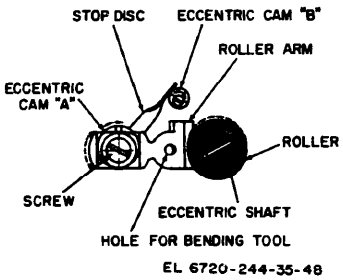

Figure 4-20. Range-viewfinder roller arm.

(d) Turn the eccentric shaft (fig. 4-20), using tool No. 73, until the rangefinder image coincides laterally with the graticule.

NOTE

A tolerance of one-half the thickness of a graticule line is permissible.

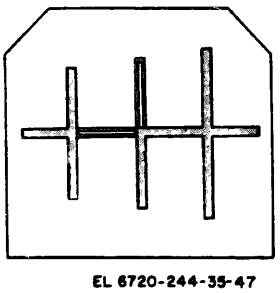

Figure 4-21. Rangefinder image at 10 meters.

(e) Set the distance setting gauge to infinity, and then turn it to the 10-meter setting. From this position rotate the gauge back and forth several times between the click stops which define the lo-meter range. Set the distance gauge to 1 meter, turn it to 10 meters, and again rotate the gauge back and forth within the 10-meter range. While rotating the gauge, within the IO-**meter range, the rangefinder image should remain stationary and agree laterally with figure 4-21. If it does not, insert tool No. 74 in the bending tool hole (fig. 4-20), and align the roller arm. Recheck, and readjust, until the requirements are met.**

NOTE

The distance setting gauge, at its 10-meter range, has an upper and lower bearing surface defined by click stops. This permits checking perpendicular alignment of the roller arm.

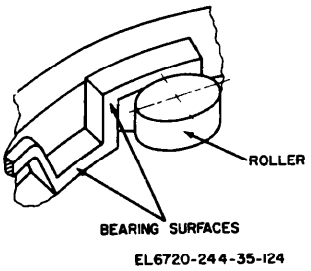

Figure 4-22. Distance setting gauge ***10-meter*** *bearing* surfaces.

(f) **Set the distance setting gauge to 1 meter. Swing the viewing telescope down and, through the range-viewfinder eyelens, view the crosslines on graticule No. 67 (fig. 4-18). The rangefinder image should coincide laterally with the crosslines. If it does not, proceed as follows:**

NOTE

A tolerance of one-half the thickness of a crossline is permissable.

1. Loosen the screw holding eccentric cam A (fig. 4-20), using tool No. 75. Turn the cam until the lateral image coincides with the crosslines. Tighten the screw.

2. Alternately check, and adjust, between 10 meters and 1 meter until the rangefinder image coincides laterally with the graticules at both distances.

3. Set the distance setting gauge to 0.7 meters, and check lateral coincidence against the 0.7 meter target No. 68. If the rangefinder image

does not coincide, alternately check, and adjust, at all distances as described above.

NOTE

A tolerance of one-half thickness of the target needle is permissable. (Seldom is a 0.7-meter adjustment required).

(g) Remove the distance setting gauge from the camera. Push the roller arm to the rear and adjust eccentric cam B, using tool No. 80, to stop the roller arm after a slight override of the infinity setting.

(h) Bend the stop arm to stop the forward movement of the roller arm after a slight override of the 0.7-meter setting

(2) Vertical alignment. Remove screw (1, fig 3-4), from the top cover, and mount distance setting gauge No. 71 in the lens mounting flange Place the camera on the camera holder of the calibrating stand, and alternately view the lo-meter graticule, and l-meter crosslines. The rangefinder image should align vertically with the graticule. If it does not, insert tool No. 76 through the opening of screw (1), and turn the eccentric screw until the image is aligned vertically After adjusting, recheck lateral alignment.

NOTE

A tolerance of one-half graticule line thickness at 10 meters, and one-half the thickness of a crossline at 1 meter is permissable.

e Viewfinder (Bright-Line Frame Assembly). Remove the baseplate, hinged back, and top cover Prom the car.-era when adjusting the bright-line frames If optical components of the bright-line frame assembly are damaged, replace the entire assembly.

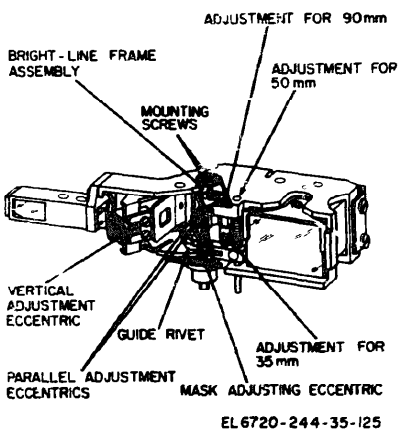

Figure 4-23. Range-viewfinder adjusting points.

(1) Cleaning. Remove the two mounting screws (fig. 4-23), and slide out the bright-line frame assembly.

(a) Disassemble the bright-line frame assembly to the point where the rear of the glass plate is accessible.

(b) Moisten a Q-tip with lens cleaner and carefully wipe exposed surfaces on both sides of the glass plate. Remove the lens cleaner with a dry Q-tip, and reinstall the bright-line frame assembly.

NOTE

Lens cleaner should be removed before it drys. If it is not, dust particles will remain and be magnified in the viewfinder.

(2) Adjusting.

(a) Mount distance setting gauge No. 71 in the lens mounting flange, and place the camera in the holder of the calibrating stand (fig. 4-18). Wind the shutter, set the shutter speed dial to B, and lock the shutter in the open position with tool *No. 7.*

(b) Position the calibrating stand ground glass screen behind the camera film aperture, and set the distance setting gauge to 1 meter. Adjust the camera holder to align the edges of the film aperture with the solid frame lines of graticule *No. 67.*

(c) Mount the angle plate with eyelens (tool No. 81) on the rangefinder. View the graticule through the viewfinder and 90-mm bright line frame, which has been positioned by the distance setting gauge. The bright-line frame must coincide with the solid frame line of the graticule. If it does not, proceed as follows:

1. Turn the parallel adjustment eccentrics (fig. 4-23), until the bright-line frame is parallel with the graticule solid frame line.

2. If the bright-line frame is not visible in its entirety, turn the mask adjusting eccentric until it is.

3. Turn the guide rivet, using tool No. 37, until the bright-line frame coincides with the graticule solid frame line. If turning the guide rivet does not result in coincidence, loosen the mounting screws and shift the bright-line frame assembly. Readjust the guide rivet.

4. Set the distance setting gauge to 0.7 meters and observe the graticule. The bright-line frame should be below the solid graticule lines. Reset the distance gauge to infinity. The bright-line frame should coincide with the graticule broken frame line. Rotate the distance setting

gauge alternately between 0.7 meters and infinity. The diagonal movement of the bright-line frame should be smooth and positive.

NOTE

A slight deviation from coincidence is permissable at the infinity setting.

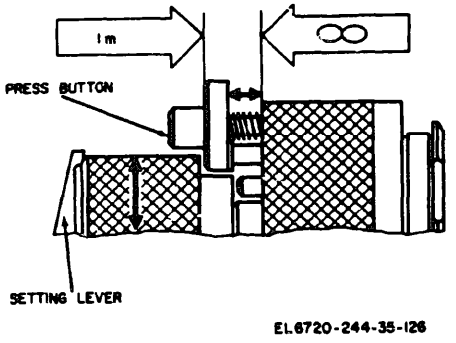

Figure 4-24. Bright-line frame setting gauge.

(d) Mount frame setting gauge *No.* 72 (fig. 4-24), in the lens mounting flange, and place the setting lever of the gauge at midpoint to position the 50-mm bright-line frame. Observe the 50-mm bright-line frame and rotate the large knurled portion of the frame setting gauge back and forth within its limits. Alternately depress and release the press button while rotating the gauge. The 50-mm bright-line frame should remain fully visible, and the 90-mm or 35-mm bright-line frames should not appear in the field. If this condition is not met, proceed as follows:

NOTE

Depressing the press button positions the bright-line frame for infinity. Releasing the button simulates the frame position at a distance of 1 meter.

1. Turn the 50-mm adjusting shaft (fig. 4-23), until only the 50-mm bright-line frame is seen in its entirety.

2. Repeat the checking procedures in (c) 4 above.

(e) Release the setting lever (fig. 4-24), and rotate the front portion of the frame setting gauge to the 90-mm position. Observe the 90-mm bright-line frame, and follow the same procedures as described for the 50-mm bright-line frame in (c)4 above. The SO-mm bright-line frame should remain fully visible, and the 35-mm or 50-mm bright-line frames should not appear in the field. If this condition is not met, proceed as follows:

1. Turn the 90-mm adjusting shaft (fig. 4-23), until only the 90-mm bright-line frame is seen in its entirety.

2. Repeat the checking procedures as described in (c)4 above, but for the 90-mm bright line frame.

(f) Rotate the front portion of the frame setting gauge (fig. 4-24), to the 35-mm position. Observe the 35-mm bright-line frame, and follow the same procedures as described for the 50-mm bright-line frame in (c)4 above. The 35mm bright-line frame should remain fully visible, and the 50-mm or 90-mm bright-line frames should not appear in the field. If this condition is not met, proceed as follows:

1. Turn the 35-mm multislotted adjusting nut (fig. 4-23), until only the 35-mm bright-line frame is seen in its entirety.

2. Repeat the checking procedures as described in (c)4 above, but for the 35-mm bright-line frame.

f. Final Range-Viewfinder Check. The angle plate, No. 81, must be removed from the range-finder before installing the top cover. After installing the top cover, recheck, and if necessary adjust, the range-viewfinder system.

4-16. Top Cover Assembly

If the top cover is badly dented, *or* otherwise damaged, it should be replaced.

NOTE

To remove viewfinder and illuminating windows, first remove holding bracket (3, fig. 3-4). Open the metal clips which secure the holding bracket. Lift the holding bracket, slide down and out.

a. Replace illuminating window if damaged. The prismatic surface of the window must face outward, with the prism hypotenuse facing the viewfinder window (fig. 3-4).

b. Replace range-viewfinder windows if damaged.

c. Replace eyelens if damaged.

4-17. hinged Back Assembly

Replace the entire assembly if the hinged back is bent or dented, or if the film positioning studs are damaged.

a. Pressure Plate *Assembly* (fig. 4-25). Replace the pressure plate if it is scratched, pitted, or otherwise damaged.

(1) *Removing pressure plate.*

(a) Remove the two angle plates.

Section II. EXPOSURE METER

4-19 General

So far as possible, determine the repairs or adjustments to be made before disassembling the exposure meter, Reference to chapter 2 will assist in isolating the trouble. Disassembly beyond that required to make the repair should be avoided. After reassembly, and before testing, the indicator needle should be set to zero as described in TM 11-6720-244-12, paragraph 4-5c (5).

4-20. Cleaning

WARNING

Most cleaning compounds are flammable and toxic. Do not use near an open flame. Provide adequate ventilation.

CAUTION

Components should be removed before cleaning. Do not permit benzine, or carbon tetrachloride, to contact plastic parts. All lubricants and adhesives must be removed from components before relubricating or recementing. After cleaning, thoroughly dry the part with compressed air, or by wiping.

Required cleaning materials are-
Soft lint free cloth
Q-tips
Alcohol (180 proof)
Ammonia (28% solution)
Benzine
Carbon tetrachloride
Antistatic solution (Statnut, Weston Instruments, Inc.)
Lens cleaner (Eastman Kodak)

4-21. Lubrication and Gluing

a. Lubricants and Adhesives. Lubricants and adhesives used in repairing the exposure meter are, in most cases, special compounds, and substitutes should not be employed. The material, and their symbols, are listed in the following table :

Lubricants and Adhesives

Material	Leitz Number	Type	Symbol
Light grease	618	Ernest Leitz, GmbH	E
Ball bearing oil	601	Bendix Navigation and Control 10–PD14926–52	C
Contac lubricant		Cramolin, Craig Laboratories	X
Cement		Duco	N
Epoxy			V

b. Methods of Application. Methods of applying lubricants and adhesives, and their identifying symbols, are-

Method	Symbol
Syringe	S
Toothpick	T

c. Lubricating and Gluing Points. Points at which lubricants or adhesives are to be applied, are indicated by arrows on the figures in chapter 3. Further information is contained in the following table:

NOTE

The first letter in the symbol column identifies the material (a above). The second letter indicates the method of application *(b* above).

Figure No.	Part	Remarks	Symbol
3–21	7	Place small amount on under surface	N–T
		Place small amount on under surface	E–T
	12	Place small amount on shaft	E–T
	14	Place small amount on threads	N–T
	18	Place small amount on upper notched end	V–T
3–22	1	Place small amount on top	N–T
	5	Place small amount on nose	C–S
	6	Place small amount on top	N–T
	11	Place small amount on bearing surface	E–T
	17	Place small amount on shaft	C–S
	22	Place small amount on rivet	V–T
	39	Place small amount on bearing surface	E–T
	43	Place small amount on bearing	C–S
	49	Place small amount on pin	V–T

Figure No.	Part	Remarks	Symbol
	50	Place small amount on each end and bottom	V-T
	51	Place small amount on each end and bottom	V-T
	57	Place small amount on head	V-T
	59	Place small amount on bottom	V-T
3-23	2	Place small amount on top	N-T
	7	Place small amount on slot	N-T
	10	Place small amount on head	N-T
	17	Place small amount on under surface	N-T
	18	Place small amount on under surface	N-T
	19	Place small amount on under surface	N-T
	21	Place small amount on upper surface	N-T
	23	Place small amount on upper surface	N-T
	25	Place small amount on under surface	N-T
	33	Place small amount on head	N-T

4-22. Locating Electrical Malfunctions (fig. 4-26)

Defective electrical components can be isolated with the aid of a multimeter. Test points shown on figure 4-26 correspond to circuit board soldering points in figure 5-21.

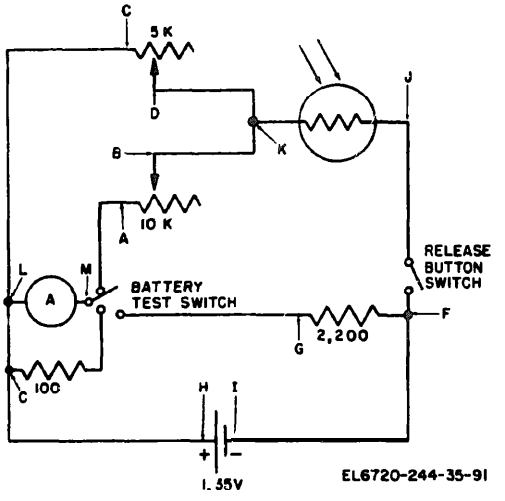

Figure 4-26. Exposure meter circuit test points.

a. No Reading.

(1) Check photo-resistor across points J and K. Some resistance should be indicated when light is directed on the cell.

(2) Place battery test switch in test position. Check 5,000-ohm potentrometer, for open circuit, across points C and D.

(3) Place battery test switch in test position. Check 10,000-ohm potentiometer, for open circuit, across points A and B.

(4) Check meter movement coil for open circuit, or short, across points L and M.

NOTE

Red wire must be unsoldered.

(5) Place release buttom switch in activated position. Check battery circuit across points J and L. If a voltage reading is not obtained, check progressively across points J and C, and J and H. If no reading is obtained check progressively across points H and F, and H and I.

NOTE

Install a mercury cell known to be good.

(6) Place release buttom switch in activated position. Test across points F and J. The multimeter should indicate zero resistance.

(4) Check battery test switch, for open contacts, across points A and M.

b. High Reading.

(1) Place battery test switch in test position. Check 5,000-ohm potentiometer, for open circuit, across points C and D.

(2) Check photo-resistor as follows :

(a) Install a mercury cell known to he good, and cover the photo-resistor with opaque material.

***(b)* Activate release buttom switch. The exposure meter indicater needle should rest between zero and the, first" sector of the light-intensity scale.**

c. Low Reading.

(1) Place battery test switch in test position. Check 10,000-ohm potentiometer across points A and B. Multimeter should indicate 10,000-ohms.

(2) Check meter movement magnet as follows :

(a) Install a mercury cell which measures 1.35 volt.

***(b)* Unsolder red wire from point M.**

(c) Connect a 15,000-ohm resistor between red wire and point I. The exposure meter indicator needle should deflect full scale.

(3) If the potentiometer and meter movement, (1) and (2) above, check satisfactorily, a defective photo-resistor is indicated.

d. Erratic Readings.

(1) Check release buttom and battery test switches as in a(6) and (7) above. Check for foreign matter between switch contacts.

(2) Check battery circuit as in a(6) above. Check for foreign matter on mercury cell contact springs.

(3) Visually check circuit board for poor connections.

e. *Battery Test Circuit.* The meter movement should be checked for proper performance before checking battery test circuit.

(1) *Low reading.*

(a) Install a mercury cell which measures 1.35 volt.

(b) Check 2,200-ohm resistor across points G and F.

(c) Check for foreign matter on mercury cell contact springs.

(d) Check for foreign matter between contacts of battery test switch.

(2) *High reading.* Check 100-ohm resistor across points C and E.

(3) *No reading.*

(a) Remove mercury cell from exposure meter, and place battery test switch in test position.

(b) Check battery test switch across points M and E, M and G, and E and G. The multimeter should indicate zero resistance.

(c) Install a mercury cell. Check battery circuit across points C and I.

(d) Check for foreign matter on mercury cell contact springs.

(4) *Erratic readings.*

(a) Check for foreign matter between contacts of battery test switch.

(b) Check for foreign matter on mercury cell contact springs.

(c) Visually check circuit board for poor connections.

4-23. Meter Housing (fig. 3-21)

a. Replace damaged screw (1), aperture dial (2), and friction disc (3).

NOTE

Washer (4) is used to adjust friction of aperture dial (2). Remove or add one or more washers until aperture dial is quite tight, but can still be turned with thumbnail.

b. Replace damaged speed dial (5).

NOTE

Spacer (6) is used to adjust friction of speed dial (6). Remove or add one or more spacers until exposure meter shutter speed and aperture knob (coupling knob) can be rotated with slight resistance.

c. Replace damaged plastic washer (7).

d. Replace damaged or missing screws (8) and (9).

e. Replace damaged sensitivity switch knob (12) and washer (11).

NOTE

Friction of sensitivity switch knob (12) is controlled by washer (11). Cup, or flatten, washer until switch knob can be turned with slight resistance.

f. Replace damaged release lever (15), and release button (16).

g. Replace damaged window (20), intensity scale (21), and wedged plate (19).

h. Replace damaged retaining plate (18).

i. Replace damaged housing (22).

4-24. Meter Chassis (fig. 3-22)

a. Replace damaged gear (3), and nose washer (5).

NOTE

If replacement gear (3) is higher than sector gear (9), remove spacer (4).

b. Replace damaged sector gear (9).

NOTE

Gear (9) should have a slight amount of play. If not, remove washer (8).

c. Replace damaged spring (10).

d. Replace damaged mounting foot (14), and battery cover (15).

e. Replace damaged coupling knob (17), spring (18), and pin (20).

NOTE

If mounting hole for pin (20) is enlarged, replace coupling knob (17).

f. Replace damaged instruction plate (21).

g. Replace damaged switch lever (22) and contact spring (23) as an assembly.

NOTE

Tension spring (28) to contact circuit board with moderate pressure.

h. Replace damaged contact spring (27) and Contact arm (28) as an assembly.

NOTE

Tension spring (27) to contact circuit board with moderate pressure.

i. Replace damaged potentiometers (31) and (32).

NOTE

If potentiometers are defective, it is best to exchange entire circuit board assembly.

f. Replace defective resistors (33) and (34).

k. Replace damaged circuit board (36) as an assembly, (parts 31, 32, and 35).

l. Replace damaged switch lever (39), spring (40), and light baffle (41) as *an* assembly.

NOTE

If only light baffle (41) is damaged, lever (39) and spring (40) may be installed on replacement baffle.

m. Replace damaged sensitivity switch linkage (43), spring (44), link (46), and lever (47).

n. Replace damaged aperture plate (43).

o. Replace defective photo-resistor (49).

p. Replace damaged lens (51).

q. Replace contact springs (52) and (53) as an assembly.

NOTE

Contact springs are heat riveted to base (60). Entire base assembly, with contact springs, must be replaced.

r. Replace damaged pin (54).

NOTE

Pin is press fitted in base (60). If mounting hole for pin is enlarged, replace entire base assembly.

s. Replace damaged adjusting screw (55), and angle plate (56).

t. Replace meter movement (58) as an assembly.

u. Replace damaged nuts (59).

v. Replace damaged base (60).

NOTE

If base is damaged, it is best to replace it as an assembly.

4-25. Meter Movement (fig. 3-23)

If coil or magnet assemblies are damaged, it is best to *replace* the entire meter movement. The following parts may be replaced:

a. Replace damaged insulated red wire (1), and insulated blue wire (14).

b. Replace terminal (4) and insulating shoulder washer (5).

NOTE

Position terminal (4) by aligning in notched lever of jig No. 88.

c. Replace damaged locking plate (7), with needle stops (8).

NOTE

Adjust locking plate to lock indicator needle, using jig No. 88.

d. Replace damaged battery test index arm (9).

NOTE

See paragraph *4-26b(3)* (c) for calibration and positioning of arm.

e. Replace damaged jeweled bearings (10) and (33).

NOTE

Adjust bearings, with aid of jig No. 88, to center magnet in coil. Coil axel should be without play, but with freedom of rotation. It may be necessary to remove either or both washers (11) and (34).

f. Replace damaged adjusting fork (36).

g. Replace damaged hairsprings (16) and (20).

4-26. Calibrating Exposure Meter

Three calibrations are required; adjusting response to dim light, adjusting response to bright light, and positioning battery test index arm. Light intensity calibrations are made with the meter set to an exposure index of ASA 25. The

indicator needle should be adjusted for mechanical zero before calibrating.

a. Calibration Instruments. The instruments should be turned on, and 20 minutes allowed for stabilization, before calibrating the exposure meter. Instruments used for calibration are-

(1) Voltage regulator No. 89. Used to supply a constant voltage to test instrument No. 90.

(2) Test instrument No. 90. Used to calibrate meter response to bright and dim light.

(3) Calibration instrument No. 91. Used to calibrate test instrument No. 90, and to supply 1.33 volts dc to battery substitute No. 92.

(4) Battery substitute No. 92. Replaces mercury cell in exposure meter to provide a standard calibration voltage.

b. Calibration Procedures. Replace mercury cell with battery substitute No. 92. Place exposure meter lens (cell window) against illuminating window of test instrument No. 90.

NOTE

Exclude extraneous light from meter and test instrument windows.

Test instrument and exposure meter settings, for bright and dim light levels, are listed in the following chart. A tolerance of 1/2 f/stop is permissible.

Test instrument		Exposure meter	
Light level	Test buttom	Shutter speed	Sensitivity index
Bright	15	1/1,000	Black
	14	1/500	
	13	1/250	
	12	1/125	
	11	1/60	
	10	1/30	
	9	1/15	
	8	1/8	
Dim	7	1/4	Red
	6	1/2	
	5	1-sec.	
	4	2-sec.	
	3	4-sec.	
	2	8-sec.	

The meter housing is removed from the chassis to make adjustments, and replaced for readings. Install and secure the housing after calibrations have been completed.

(1) Dim *light level.*

(a) Set selector switch of test instrument No. 90 to dim light position. Set exposure meter sensitivity switch to red index, and activate needle release button.

(b) Set shutter speed scale to 8 seconds, and depress test instrument button 2. The meter indicator needle should position at f/5.6 in the red sector If it does not, proceed as follows:

1. Remove meter housing and adjust 5,000-ohm potentiometer. Replace housing.

2. Repeat procedures in 1 above until the indicator needle aligns with f/5.6.

(c) Set shutter speed scale to 1/8 second, and depress test instrument button 8. The meter indicator needle should position at f/5.6 in the red sector. If it does not, proceed as follows:

1. Remove meter housing and adjust 10,000-ohm potentiometer. Replace housing.

2. Repeat procedures in 1 above until the indicator needle aligns with f/56.

(d) Repeat procedures in (a), *(b),* and (c) above, and adjust both potentiometers until correct readings are obtained.

NOTE

Changing the adjustment of one potentiometer alters adjustment of the other.

(e) Depress test instrument buttons 3 through 7, setting the shutter speed scale as indicated in the chart *(b* above). The indicator needle should position at f/5.6 in the red sector for each setting. If it does not, select a different exposure meter light intensity scale, and exchange it.

NOTE

Photo-resistors have different characteristics. Three light intensity scales, which

differ in their sector angles, are available to match Individual photo-resistors. When correct readings are obtained by depressing test Instrument buttons 2 and 8, but not when depressing buttons 3 through 7, select a light intensity scale that results in a correct reading at each test position.

(2) Bright tight level.

(a) Set selector switch of test instrument No. 90 to bright light position. Set exposure meter sensitivity switch to black index, and activate needle release button.

(b) Depress test instrument buttons 8 through 15, setting the shutter speed scale as indicated in the chart (b above). The indicator needle should position at f/5.6 in the black sector for each setting If it does not, proceed as follows :

1. When indicator needle deflects higher than f/5.6, reduce size of opening in aperture plate (48, fig. 3-22), until correct readings are obtained.

2. If indicator needle deflects lower than f/5.6, increase size of the opening in aperture plate (48) until correct readings are obtained.

(3) Battery test index. Teat instrument No. 90 is not used for this calibration, but battery substitute No. 92 is employed.

(a) Remove meter housing from chassis, and activate battery test switch.

(b) Position battery test index arm to place index midway between lower and upper edges of window. Center index under indicator needle. Cement arm in position.

(c) Install and secure housing.

Section III. LENSES

4-27. General

Individual elements, and mounts, within an optical unit are mated, and are not interchangeable. If an element IS damaged the entire optical assembly should be replaced. Most lenses will vary slightly from their nominal focal length, and therefore have focal length tolerances. The objectives in the camera set have their lens units and focusing mounts matched for maximum performance. The male and female helices of individual focusing mounts are matched and custom lapped. If a helix is damaged the entire focusing mount should be replaced If the focusing mount exhibits slight binding, the helices and guides may be lapped with instrument grade compound.

CAUTION

Excessive lapping will affect the focusing accuracy.

II. *Visual Checks.* After a lens has been repaired, it should be checked visually for incorrectly assembled optical elements, and mismatching of lens heads and focusing mounts.

(1) *Ground glass checking* Mount the lens under test on ground glass housing No. 99 and fit focusing magnifier No 100 to the housing. Place the combination on a sturdy support.

(a) Focus the lens on an object at an intermediate and known distance The focusing scale should agree with the subject distance.

NOTE

Subject distance is measured from the camera film plane (ground surface of viewing screen) to the object.

(b) Focus the lens on an object at infinity. The focusing scale should agree with its infinity symbol.

NOTE

Infinity is defined as a distance equal to, or greater than, 1,000 times the square of the lens focal length.

(c) Check image definition on the ground glass screen at close and medium distances, and at infinity.

(2) Rangefinder checking. Mount the lens under test on a camera body known to have a correctly adjusted rangefinder. Place the camera on a sturdy support.

(a) Focus the rangefinder on an object at an intermediate and known distance. The lens focusing scale should agree with the subjects distance.

(b) Set the lens focusing mount to infinity, and view an ob ject at infinity. Both the vertical and horizontal hingefinder images should coincide.

b. Photographic Check. After a lens has been repaired, it should be tested photographically. Mount the camera on a sturdy support, and focus by rangefinder. Use a thin-emulsion, fine-grain, high-resolution film for making the tests. Make several exposures at different distances, ranging from the closest focusing distance to Infinity.

c. 35-Mm *Lens.* Focusing mounts for the 35-mm lens are standard and may be interchanged. The optical unit has a focal length tolerance and is matched to the focusing mount by a spacer ring. The thickness of the spacer ring depends upon the exact focal length. Lens units may be interchanged between focusing mounts if the proper spacer ring is used.

d. 50-Mm *Lens.* The focusing mount of the 50-mm lens is standard, and the optical unit (lens head) is selected for a focal length of 51.9 millimeters. Focusing mounts and lens heads are interchangeable.

e. 135-Mm *Lens.* Focusing mounts and optical units of the 135-mm lenses are matched within focal length groups Focusing mounts and lens heads, within the same focal length group, may be interchanged Focusing mounts and lens heads are not interchangeable if they are not in the same focal length group.

(1) *Identifying focusing mount group.* Focal length group is indicated by a two-digit number engraved on the distance scale ring. The identifying number is to the right (infinity end) of the scale, and perpendicular to it. The first digit indicates the last whole number of the focal length in millimeters, and the second digit the closest tenth of a millimeter.

Examples:

Engraved number	*Focal length group*
50	135 mm
47	134.7 mm
55	135.5 mm

***(2) Identifying lens unit* group. If the original focusing mount is available, the focal length group may be established as in (1) above. If the focusing mount is not available, focal length may be measured with a collimator. If this is not practical, the focal length may be obtained from the manufacturer by reference to the lens serial number.**

4-28. Cleaning

***a. Optical Surfaces* Procedures for cleaning optical components are listed in TM 11-6720-244-12, paragraph 4-6b. Detergents and lens cleaners are listed in paragraph 4-2 of this manual. Fungus, which attacks some optical glasses in tropical environments, may be removed as follows :**

(1) Materials.

Hydrogen-peroxide, 3% solution.
Ammonia, 28% solution.
Alcohol, 180 proof.
Distilled water.

(2) Removing fungus.

(n) Just prior to use, mix 10 parts hydrogen-peroxide with three parts ammonia solution.

(b) Moisten the lens surface with the solution and allow it to stand for several minutes.

(c) Wipe the lens surface with a clean piece of lens tissue.

***(d)* Thoroughly clean the lens surface with distilled water, and dry.**

(e) If additional cleaning is required, wipe the surface with alcohol and dry with clean lens tissue.

NOTE

Fungus which has remained on an optical surface for a prolonged period etches the glass. In this instance the entire op tical unit should be replaced

***b. Metal Surfaces.* Clean exterior surfaces with a soft bristle brush and clean, lint free cloth. Remove lubricants from interior surfaces (after disassembly) with a bristle brush and benzine. Dry thoroughly with compressed air.**

4-29. lubrication and Gluing

a. Materials and Application. **Lubricants and adhesives, and their methods of application, are slated in paragraph 4-3a and b.**

***b. Lubrication and Gluing Points.* Points at which lubricants or adhesives are to be applied are indicated by arrows on the figures. Further information, including materials and methods of application, are contained in the following table:**

NOTE

See note under paragraph 4-3c.

Figure	Part	Remarks	Symbol
3–24	4	Apply small amount on underside near ends	G–B
	5	Apply small amount on shoulders	G–B
3–25	2	Place small amount on entire outer surface	J–T
	12	Place small amount on upper surface	F–B
	16	Apply small amount on entire inner bearing surface	H–B
	27	Apply small amount on entire inner surface	H–B
	29	Apply small amount to helical threads and slotted bearing surfaces	G–B
	33	Apply small amount to helical threads and slotted bearing surfaces	G–B
	35	Place small amount in mounting indicator boring	N–T
		Place small amount on entire bearing surface	F–B
3–27	2	Place small amount on entire outer surface	J–T
	14	Place small amount on inner bearing surface	G–B
	15	Place small amount on upper bearing surface	G–B
	18	Place small amount on outside bearing surface	G–B
	26	Place small amount in slotted bearing surface	G–B
3–30	6	Place small amount on inner surface	G–B
	7	Apply small amount to helical threads	G–B
	8	Apply small amount to helical threads and slotted bearing surfaces	G–B
	10	Place small amount on bearing surface	G–B
	11	Apply small amount to helical threads	G–B
	13	Place small amount in mounting indicator boring	N–T
		Apply small amount on bearing surface and helical threads	G–B
3–31	3	Place small amount on outer edges	V–T
	5	Place small amount on inner edges	V–T
	6	Apply small amount to flanged surfaces	V–T
	8	Apply small amount to entire edge	V–T
	9	Place small amount on outer surface	V–T
	10	Place small amount on outer threads	V–T
	16	Place small amount in boring	V–T
3–32	4	Place small amount on threads	N–T
	6	Place small amount on entire outer surface	J–B
	7	Place small amount on entire outer surface	J–B
	15	Place small amount on entire retaining ring	H–B
	16	Place small amount on entire inner bearing surface	H–B
3–34	8	Place small amount on entire outer bearing surfaces	G–B
	9	Place small amount on entire under surface	G–B
	10	Place small amount on entire inner bearing surface	G–B
	13	Place small amount on bearing edges	G–B
	14	Apply small amount to mounting surface	V–T
	20	Place small amount on entire upper surface	G–B
	21	Place small amount on entire inner bearing surface	G–B
	22	Apply small amount to entire inner surface	V–B
	23	Apply small amount to helical threads	G–B
	24	Apply small amount to helical threads	G–B
	29	Apply small amount to bearing surfaces	G–B
3–35	5	Apply small amount to outer edges	V–T
	11	Apply small amount to entire outer edge	V–T
	12	Apply small amount to entire outer edge	V–T
	15	Apply small amount to outer edge	V–T
	21	Apply small amount to outer edge	V–T
	22	Place small amount on threads	V–T
	23	Place small amount on flat surface	N–T

4-30. Lens Hood (fig. 3-24)

a. Replace damaged fluted tube (2).

b. Replace damaged base ring (3).

c. Replace damaged springs (4).

d. Replace damaged release grips (5).

e. Replace damaged cover ring (6).

4-31. 35-Mm Lens Tube Assembly **(figs. 3-25 and 3-26)**

a. Replace damaged retaining rings (1, 3, and 14, fig. 3-26).

b. Replace damaged diaphragm blades (9).

NOTE

Position the replacement blade so its profile coincides with the blade being replaced.

c. Replace damaged diaphragm guide ring (8).

NOTE

Set the diaphragm blades to their full opening. Position the guide ring to place its guide screw holes at the right edge of the diaphragm guide slots in lens tube (17).

d. Replace damaged pressure washer (13).

e. Replace damaged fluted tube (3) and serial number ring (4, fig. 3-25).

NOTE

Engrave lens serial number on replacement serial number ring. Destroy the original ring.

f. Replace damaged front ring (7).

NOTE

Open diaphragm to its fullest and position front ring index to coincide with f/2.

g. Replace damaged retaining ring (10).

NOTE

Tighten ring and spot for setscrew (9).

***h.* Replace diaphragm adjusting ring (11).**

NOTE

Position diaphragm adjusting ring to align f/Z with the index of front ring (7). The diaphragm must be fully opened when making this adjustment.

i. Replace damaged retaining ring (12).

j. Replace damaged spring (13) and ball (14).

k. Replace damaged guide screws (15) and diaphragm adjusting tube (16).

NOTE

Position the diaphragm adjusting tube to place installed bail (14) in the sector of lens tube assembly (17) which has click-stop millings.

4-32. 35-MM Focusing Mount (fig. 3-25)

a. Replace damaged retaining rings (5), (19), and (27).

NOTE

Before tightening retaining ring (5), position assembled lens tube (17) to align index on front ring (7) with index on depth-of-field ring (26).

b. Replace damaged focusing ring (20).

NOTE

Turn the focusing helices to infinity (shortest extension). Position the focusing ring to align its infinity symbol with the index on depth-of-field ring (26). Secure with retaining ring (19). Drill body hole for small diameter of dowel screw (18) through focusing ring (20), and **counterbore top of female helix (28).**

c. Replace damaged focusing lever (22), lock bar (23), and spring (24),

d. Replace damaged depth-of-field ring (26).

NOTE

Position ring to place index uppr- **most when lens is mounted on camera.**

e. Replace damaged guide (32).

4-33. 50-Mm Lens Head (fig. 3-27, 3-28, and 3-29)

a. Replace damaged retaining ring (1), and pressure washer (2, fig. 3-29).

b. Replace damaged retaining rings (1, 4, and 6, fig. 3-28).

NOTE

Engrave lens serial number on replace ment retaining ring (1). Destroy the original ring.

c. Replace damaged pressure washers (2, 7, 8, and 9).

d. Replace damaged index ring (5, fig. 3-27).

NOTE

Open diaphragm to its fullest, and position index ring to align its index (tapped hole) with f/2 on diaphragm adjusting ring (8). Secure with setscrew (4), and cover screwhead with wax.

e. Replace damaged diaphragm adjusting ring (8).

NOTE

Open diaphragm to its fullest, and position adjusting ring to align f/2 with the index on index ring (5). Secure with two

setscrews (6) **and dowel screw (7). Make** certain **screws align with spots and counter boring.**

f. Replace damaged diaphragm adjusting tube (14), ball (10), and flat spring (9).

NOTE

Position the diaphragm adjusting tube to place installed ball (10) in the sector of lens tube assembly (15) which has click-stop millings. Align diaphragm adjusting ring (8), (e above), and spot for setscrews (6), and counterbore for dowel screw (7).

g. Replace damaged diaphragm blades (13).

NOTE

Position the replacement blade so its profile coincides with the blade being replaced.

h. **Replace damaged diaphram guide ring (12).**

NOTE

Set **the diaphragm blades to their full opening. Position the guide ring to place its guide screw holes at the right edge of the diaphragm guide slots in lens tube assembly (15).**

4-34. 50-Mm lens Focusing Mount
(figs. 3-27 and 3-30)

a. Replace damaged locking pin (5), pressure spring (4), and holding bar (3, fig. 3-30).

N O T E

Adjust tension of pressure spring (4) by loosening holding bar (3) and shifting the spring. Retighten holding bar.

b. Replace damaged guide (IO).

c. Replace damaged retaining ring (6).

d. Replace damaged cover ring (16, fig. 3-27).

NOTE

Engrave lens serial number on replacement cover ring (16). Destroy the original ring.

e. Replace damaged retaining ring (17), sleeve (18), and spring ring (19).

f. Replace damaged focusing ring (20), stop (22), bearing segment (24), and stop ring (26).

NOTE

Turn the focusing helices (fig. 3-30), to infinity (shortest extension). Place stop ring (26, fig. 3-27), over assembled helices and position stop ring to align setscrew hole with setscrew spotting. Secure with retaining ring (17) and setscrew (25).

4-35. 50-Mm Lens Viewing Unit
(fig. 3-31)

Optical components of the viewing unit, unlike those of photographic objectives, are not individually mated. Single elements, or cemented doublets, **may be interchanged or replaced.**

a. Replacing Components. **Replace damaged optical and mechanical components as required.**

NOTE

Position optical component (4) with its concave surface to the rear of lens housing (6), and with its ground and lacquered corner in the lower right sector.

b. *Collimation.* If one or more of the components, (7) through (11), is out of adjustment, or has been replaced, collimate the viewing unit as follows :

(1) Mount the 50-mm lens on a camera body having a rangefinder known to be correctly adjusted, and mount the camera on a sturdy support. Place a target with vertical and horizontal crosslines 24 inches from the camera film plane. Center the target perpendicular to the 50-mm lens axis.

(2) Mount the viewing unit on the 50-mm lens, set the focusing scale to 24 inches, and view the target through the camera viewfinder. The crosslines must coincide both vertically and horizontally. If they do not, proceed as follows:

(cc) Loosen lens mount (7) and rotate it, with optical component (8), until both vertical and horizontal images coincide. If coincidence cannot be achieved, proceed as in (b) below.

(b) Remove assembly (7 and 8), and slightly loosen retaining ring (9). Rotate lens mount (10), with optical component (11), through a small arc, and retighten the retaining ring. Remount assembly (7 and 8), and readjust as in (a) above. If the images cannot be brought into coincidence, repeat the procedure.

NOTE

When the images coincide, mark the position of lens mount (7) and optical component (8) with a wax pencil. Remove the assembly, apply apoxy, and remount in the same position as marked.

4-36. 4-36-Mm Lens Head
(figs. 3-32 and 3-33)

a. Replace damaged pressure washers (2 and *8,* fig. *3-33).*

***b.* Replace damaged retaining rings (7), (4), and (1).**

NOTE

Engrave lens serial number on replacement retaining ring (1). Destroy the original ring.

c. Replace damaged retaining ring (3), (fig. 3-32), stop ring (4), inner lens hood tube (5), outer lens hood tube (8), and lens hood liners (6) and (7).

NOTE

If friction of lens hood tubes is excessive, smooth nap of lens hood liners with a warm iron.

***d.* Replace damaged retaining rings (15), (18), and (21).**

e. Replace damaged diaphragm blades (20).

NOTE

Position the replacement blade so its profile coincides with the blade being *re*placed.

f. Replace damaged diaphragm guide ring (19).

(1) Set diaphragm blades to their full opening. Position the guide ring to place its guide screw hole at the right edge of the diaphragm guide slot in lens tube (23).

(2) Screw lens mount (14) on lens tube (23). Tighten lens mount to align setscrew hole with spotting on lens tube (23).

g. Replace damaged diaphragm adjusting tube (16), ball (12), and flat spring (11).

***h.* Replace damaged diaphragm adjusting ring (10).**

NOTE

Open diaphragm to its fullest, and position adjusting ring to align f/2.8 with the index on lens mount (14). If diaphragm adjusting tube (16) has been replaced, spot for three setscrews (9).

4-37. 135-Mm Focusing Mount
(figs. 3-34 and 3-35)

a. Replace damaged mounting ring (3, fig. 3-34).

b. Replace damaged viewing unit (7).

NOTE

With focusing scale set to infinity, distance from underside of mounting ring (3) to upperside of positioning ring (27) should be 60.2 mm + or - 0.005 mm. Distance from underside of mounting ring to bearing surface of cam arm (13) should be 6.5 mm + or - 0.005 mm. Measurements should be made with the aid of parallel saddle No. 105. If dimensions are not within tolerance, adjust as in (1) and (2) below.

(1) *Mounting ring to positioning ring.* If distance is greater than tolerance, machine under surface of shoulder of positioning ring (27). If distance is less than tolerance, install a new positioning ring *(h* below), and machine to tolerance.

***(2) Mounting ring to* cam arm. If distance is greater than tolerance, machine bearing surface of cam arm (13). If distance is less than tolerance, install a new cam arm (c below), and machine to tolerance.**

c. Replace damaged cam roller (12), cam arm (13), guide plate (14), and pressure spring (15).

NOTE

With focusing scale set to infinity, distance from underside of mounting ring (3) to bearing surface of cam arm (13) should be 6.5 mm + or - 0.005 mm. Machine bearing surface of cam arm to bring within tolerance.

***d.* Replace damaged retaining rings (9) and** (20).

e. Replace damaged positioning bar (19), guide bars (29), and fluted tube (30).

f. Replace damaged depth-of-field tube (21).

NOTE

With focusing scale set to infinity, distance from underside of mounting ring (3) to upperside of positioning ring (27) should be 60.2 mm + or - 0.005 mm. If distance is not within tolerance, adjust as, in (1) and (2) below.

***(* 1) *Distance greater than tolerance.* Machine under surface of shoulder of positioning ring (27) to bring within tolerance.**

***(2) Distance* less *than tolerance.* Install a new positioning ring (27) (h below), and machine to tolerance.**

g. Replace damaged distance scale ring (22).

NOTE

Turn the focusing helices to infinity (shortest extension). Apply apoxy to distance scale ring and position it to align the infinity symbol with index on depth-of-field tube (21).

h. Replace damaged positioning ring (27).

NOTE

With focusing scale set to infinity, distance from underside of mounting ring (3) to upperside of positioning ring (27) should be 60.2 mm + or - 0.005 mm.

(1) Machine under surface of positioning ring shoulder to bring within tolerance.

(2) Temporarily secure positioning ring (27) by tightening cover tube (26), and mount assembled lens head in positioning ring. Slightly loosen cover tube (26), and rotate lens head with positioning ring to align f/stop index with depth-of-field tube index. Tighten cover tube (26) to secure positioning ring, and remove lens head.

(3) Drill body hole for small diameter of dowel screw (25) through male helix (24), and counter bore positioning ring (27).

i. Replace damaged cover tube (26).

NOTE

Tighten cover tube. If tapped dowel screw hole does not align with dowel screw body hole in male helix (24), drill another body hole through the, male helix, and counterbore positioning ring (27).

j. Replace damaged tripod bushing (5).

k. Replace damaged retaining rings (25 and 26, fig. 3-35).

(1) Tighten retaining ring (25). Drill and tap to accept 1.7 mm screw (24).

(2) Install upper portion of focusing mount on viewing unit (7, fig. 3-34). Align depth-of-field tube index with distance scale infinity symbol. Counterbore and tap retaining rings to accept 1.7 mm screw (6).

NOTE

With focusing scale set to infinity, distance from underside of mounting ring (3) to upperside of positioning ring (27) should be 60.2 mm + or - 0.005 mm. If distance is not within tolerance, adjust as *(a)* and *(b)* below.

(a) *Distance greater than tolerance.* Machine under surface of shoulder of positioning ring (27) to bring within tolerance.

(b) Distance less than tolerance. Install a new positioning ring (27) *(h* above), and machine to tolerance.

4-38. 135-Mm Lens Viewing Unit (fig. 3-35)

Optical components of the viewing unit, unlike those of photographic objectives, are not individually mated. They may be interchanged or replaced.

a. *Replacing Components.* Replace damaged optical and mechanical components as required. Special precautions should be taken when replacing the following :

(1) Lens mount (14). When replacing lens mount (14), with optical component (15), place its spring positioning slot so as to lock pressure spring (9).

(2) Base (27). When replacing base (27), adhere to the tolerances and methods of adjustment given in paragraph *4-37b.*

b. Collimation. If one of the components, other than (1) through (5) or (23) through (26), is out of adjustment, or has been replaced, collimate the viewing unit as follows:

(1) Mount the 135-mm lens on an adjustable support, and attach ground glass housing No. 99 with focusing magnifier No. 100.

(2) Mount ruled target No. 101 on the lens axis at a distance of approximately 7 feet, and approximately perpendicular to the axis. Focus the lens on the target.

(3) Adjust the support, with lens, until the lines on the target are parallel with the mask of ground glass housing No. 99.

(4) Remove the ground glass housing, with magnifier, and mount a camera body on the 135-mm lens.

NOTE

Use a camera body having a range viewfinder known to be correctly adjusted.

(5) View target No. 101 through the camera viewfinder. The lines on the target should be parallel with the viewfinder bright-line frame. If they are not, proceed as follows:

(a) Snug 1.4-mm knurled screws No. 102 into base (27). Place one each in top, end, and bottom of left side of base.

(b) Remove two cover screws (1), and loosen two screws (6).

(c) Turn three screws No. 102, alternately until the viewfinder bright-line frame is parallel with the lines on the target.

(d) Tighten two screws (6), replace two cover screws (1), and remove the 1.1-mm knurled screws No. 102.

(6) Mount the camera with 135-mm lens on a sturdy support, set the lens distance scale to infinity, and view an object at infinity. Both vertical and horizontal rangefinder images should coincide. If they do *not,* proceed as follows :

(a) **Loosen four screws (2), and three screws (3).**

(b) **Turn two adjusting screws (16) alternately until the rangefinder images coincide both vertically and horizontally.**

(c) Tighten four screws (2), and three screws (3).

(7) Fill adjusting holes with wax.

Section IV. FLASH UNIT

4-39. General

NOTE

The flash unit described in this manual differs (principally in base and connecting cord) from the flash unit described in TM 11-6720-244-12. The earlier flash units will be phased out as they become unserviceable; but, where possible, repair parts should be obtained by cannibalizing.

Repair of the flash unit, in most cases, is confined to replacing defective components. If a damaged component can be repaired without affecting its operation, it need not be replaced. Defective electrical components (rectifier, resistor, or capacitor) should be replaced. Methods of checking electrical components of the flash unit B-C insert are outlined in paragraph 5-3c, TM 11-6720-244-12.

4-40. Reflector

(fig. 3-36)

a. Replace damaged or missing screw (1), ring nut (2), and shoulder screw (4).

b. **Replace damaged reflector handle (3).**

c. Replace damaged lower and upper reflector segments (5) and (8).

d. **Replace damaged reflector segments (6), and segment cleats (7).**

4-41. lamp Socket and Bayonet Adapter

(fig. 3-37)

a. Lamp Socket.

(1) Replace damaged medium screw-base lamp socket (10).

(2) Replace damaged retaining spring (11).

(3) Replace weak or damaged spring (12), sleeve (13), and cap (14).

(4) Replace damaged insulating insert (9).

b. Bayonet Adapter.

(1) Replace damaged or missing screws (1) and (6).

(2) Replace damaged bayonet socket shell (2).

(3) Replace weak or broken release spring (4).

(4) Replace damaged contact pin (7).

(5) Replace damaged bayonet socket inner sleeve (8).

4-42. Battery-Capacitor Insert

(fig. 3-38)

a. **Replace damaged or missing screws (1) and** (12).

b. **Replace damaged or missing round nuts (3) and (16).**

c. Replace damaged insulating plates (6), (10), (14), and (18).

d. Replace damaged contact clip (5), spring (7), cap (8), and sleeve (9).

e. Replace damaged contact spring (17).

f. Replace damaged housing (11).

g. Replace defective resistor (19), and capacitor (22).

NOTE

Observe polarity. Connect negative lead of capacitor to resistor.

4-43. Flash Unit Housing (fig. 3-39)

a. **Replace damaged or missing screws (1), (5), and (7).**

b. Replace damaged reflector mounting bracket (3), and pressure spring (4).

c. Replace damaged battery housing (6).

d. **Replace damaged base (19), and mounting foot (18).**

e. Replace damaged wide and narrow contact clips (13), and (15).

f. Replace damaged contact strip (14).

g. Replace defective rectifier (9).

NOTE

Observe polarity. The smooth surface of the rectifier is placed against contact spring (10), with its rough surface uppermost.

CHAPTER 5

REASSEMBLY

Section I. CAMERA BODY

5-1. General

Before reassembling, all components should be inspected for damage or excessive wear. Parts should be cleaned and lubricated where required. Parts should not be forced, and optical surfaces should not be touched with the fingers. Adjustments and alignments should be concurrent with assembly.

5-2. Camera Housing (fig. 3-19)

a. Studs and Lugs.

(1) Install and rivet positioning stud (41) and baseplate stud (42).

(2) Install and rivet two neck strap lugs (43).

b. Frame Selector Mechanism.

(1) Install angle bracket (40), pin (39) and spring (38), front sliding bar (37), two washers (36), rear sliding bar (35), and two screws (34).

NOTE

Front and rear sliding bars should slide freely before installing spring (33).

(2) Install spring (33).

(3) Place limiting ring (31) in camera housing with cutout uppermost, and install crankshaft (32), and bushing (30). Secure bushing with tool No. 23.

NOTE

Position crankshaft between projections of front and rear sliding bars (37) and (35).

(4) Install frame selector lever (29), and secure with screw (28), using tool No. 9.

NOTE

Check position of limiting ring (31) to assure full movement of front and rear sliding bars (37) and (35).

c. Lena Lock Release, Lens Mounting Flange, and Light Sealing strips.

(1) Install light sealing strip (26), and two felt strips (27).

(2) Install spring ring (25). Secure with four screws (24).

(3) install lens mounting flange (23). Secure with four screws (22).

(4) Install spring (21), and shaft (20) in bushing (17). Secure with retaining ring (19).

(5) Place spacer washer (18) on bushing (17), and secure bushing, with assembled parts, to camera housing, using tool No. 22.

NOTE

Spacer washer is required only when necessary to raise lens lock (16) to fully engage lens locking slot of lens when locked in lens mounting flange.

(6) Install lens lock (16), and secure with screw (15).

d. Delayed Action Lever and Related Components.

(1) Place spring (14), and release button (13) in bushing (11). Attach retaining ring (12).

(2) Install bushing (11), with attached components, in camera housing, using tool No. 18.

(3) Insert carrier screw (6) in bearing (5).

(4) Place washers (8) and (9) on serrated shaft (7). Secure to carrier screw (6), using tool No. 21.

(5) Place spacer (10) in camera housing, and install bearing, with assembled components. Secure with three screws (4).

NOTE

Spacer (10) is required only when necessary to raise delayed action lever (2) sufficient to clear release button (13).

(6) Install cover plate (3), using tool No. 20.

(7) Install delayed action lever (2). Secure with retaining screw (I), using tool No. 19.

5-3. Camera Chassis

***a Assembling Shutter Curtain Assembly (fig.* 3-18).**

(I) Place bearing (41) on roller shaft (43), and hook spring (42) in bearing.

***(2)* Screw ribbon roller (40) into bearing (41), using tool No. 17 to hold bearing.**

(3) Install washer (39), retaining ring (38), washer (37), and tensioning stud (36).

NOTE

Tensioning stud is left-hand threaded.

(4) Install retaining ring (35).

(5) Place washer (32), and bearing (31) on roller shaft (34). Hook spring (33) in bearing.

NOTE

Washer (32) is required only when necessary to raise upper ribbon guide roller (25) to center upper ribbon of second shutter curtain.

(6) Screw first curtain roller (30) into bearing (31), using tool No. 17 to hold bearing.

(7) Install upper ribbon guide roller (25), washer (24), and retaining ring (23).

(8) Install lower ribbon guide roller (29), washer (28), retaining ring (27), and tensioning stud (26).

NOTE

Tensioning stud is left-hand threaded.

(9) Place lower ribbon roller *(22)* on shaft of main roller gear assembly (21), and place assembled components on main roller shaft (20). Secure with pin (19).

(10) Install retaining ring (18), washers (17) and (16), on main roller shaft (20).

(11) Place main roller (15), and washer (14) on main roller shaft (20).

(12) Install upper ribbon roller (13) on main roller shaft (20). Secure with pin (12).

(13) Place washer (11), and second curtain roller catch (10) on main roller shaft (20).

NOTE

Engage slot of second curtain roller catch in pin on top of main roller (15).

(14) Mount contact arm cam (7) on dropping flank (9) with two screws (6). Place assembled components on main roller shaft (20), and secure with pin (8).

(15) Glue first shutter curtain ribbons (4) on upper and lower ribbon rollers (13) and (22) of main roller assembly (5). See paragraph 4-6.

(16) Glue first shutter curtain (4) on first curtain roller (30).

(17) Glue second shutter curtain ribbons (3) on ribbon roller (40).

(18) Install second shutter curtain (3) on main roller assembly (5). Secure with holding bar (2), and two screws (1).

***b. Installing Shutter Curtain Assembly (fig.* 3-16).**

(1) Install bearing (23) and secure with two screws (22).

(2) Install adjusting screw (21), and nut (20) in bearing (23), using tool No. 27.

(3) Install shutter curtain assembly (19) in camera chassis (24).

NOTE

Lower shaft of main roller assembly (18) fits into bearing (23). Ribbon spring roller assembly (16), and curtain spring roller assembly (17) shafts are placed in borings for shutter tension adjusting bearings (15), and moved up into upper bearings.

(4) Install two shutter tension adjusting bearings (15), using tool No. 16.

***c. Installing Electronic Flush Synchro Eccentric (fig.* 3-16).**

(1) Install insulating cap (14) on eccentric (13). Place assembled components in camera chassis (24).

(2) Place spring washer (12) on nut (11). Secure nut to eccentric (13), using tool No. 29.

***d. Assembling Brake Assembly (fig.* 3-17).**

(1) Install the following on bearing plate (19) : Friction washer (18), lower actuating plate (16), brake disc (15), friction washers (14) and (13), upper actuating plate (12), and spring washer (11). Secure with screw (10).

NOTE

Cutout of brake disc mates upright of lower actuating plate. Cutout of friction washers (14) and (13), and upper actuating plate mate upright of bearing plate.

(2) Install insulating cap (17) on lower actuating plate (16).

(3) **Place spacer (9) on bushing (8), and secure to bearing plate (19), using tool No. 32.**

(4) Insert projection of brakeshoe (3) into slot of spring (2), and place assembly on shaft of bearing plate (19). Secure with retaining ring (1).

NOTE

Short portion of brakeshoe, measured from projection, faces open end of spring.

(5) Place washer (7), and spring washer (6) on shaft (5). Insert assembly in bushing (8), and secure by screwing shaft into eccentric nut (4), using tool No. 26.

NOTE

Lower portion of eccentric faces spring (2). Shaft (5), when turned, should exhibit considerable friction. If too loose, face off shoulder of shaft. If too tight, face off shoulder of bushing (8).

***e. Installing Brake Assembly (fig.* 3-16). Position brake assembly (IO) in camera chassis (24). Secure with long screw (8), and short screw (9).**

***f. Installing Rever. Mechanism (fig.* 3-16).**

(1) Place spring (2) on screw (1), and secure to camera chassis (24).

(2) Place washer (4) on cam shaft (3) and insert in camera chassis (24). Connect spring (2).

NOTE

See figure 5-1 for spring location.

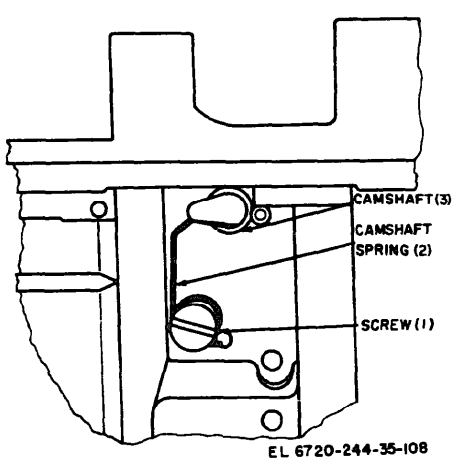

Figure 5-1. Spring location (spring (8) from fig. 3-16).

(3) **Insert stop screw (5) in camera chassis** (24).

(4) Insert adjusting screw (7) in camera chassis (24) and install nut (6), using tool No. 27.

***g. Assembling Sprocket Wheel Assembly (fig.* 3-15).**

(1) Install bearing (54), using tool No. 15.

(2) Install bearing (52) in sprocket wheel (53), using tools No. 108 and 109.

(3) Place carrier bushing (51) in sprocket wheel (53), insert spring (50) in carrier bushing, and place coupling shaft (49) over spring. Install retaining nut (48), using tools No. 107 and 109.

NOTE

Retaining nut is left-hand threaded.

(4) Install coupling disc (47) on coupling shaft (49), using tools No. 106 and 109.

(5) Install curved bracket plate (46). Secure with two screws (45).

***h. Installing Sprocket Wheel Assembly (fig.* 3-15).**

NOTE

Sprocket wheel assembly consists of components (47) through (53).

(1) Position sprocket wheel assembly in camera chassis, place washer (44) on winding shaft (43), and insert winding shaft.

(2) Install screw (42) in winding shaft (43).

NOTE

To install screw, align holes of winding shaft, sprocket wheel (53) and carrier bushing (51).

(3) Place washer (41), and gear (40) on winding shaft (43). Secure with screw (39).

(4) Place stop disc (38), and stop arm (37) on winding shaft (43). Place retaining nut (36) on winding shaft, using tool No. 30. Do not tighten until aligned.

NOTE

Retaining nut is left-hand threaded. See paragraph 4-10 for alignment.

i. Installing Takeup Spool Assembly (fig. 3-15).

(1) Mount takeup spool assembly bearing (35) on camera chassis. Secure with two screws (33), and screw (34).

(2) Place washer (23) on gear (32), and insert in takeup spool assembly bearing (35). Place

washer (22) **on gear, and secure with retaining ring (21).**

(3) Mount release disc (31) on gear (32), and secure with holding shaft (30), using tools No. 13 and 14.

(4) Place takeup spool (29), bushing (27), washer (28), and spring (26) on holding shaft (30). Secure with screw (25).

(5) Insert spring (24) in takeup spool (29), using tool No. 12.

j. Installing Shutter Release Components and Intermediate Gear Assembly (fig. 3-15).

(1) Install adjusting screw (7), and nut (6) on flat spring (5), using tool No. 31.

(2) Install flat spring (5) on camera chassis. Secure with long screw (3), and short screw (4).

(3) Insert release rod (2), and release shaft (1) in camera chassis.

NOTE

Insert release shaft from top of camera chassis, by tilting to clear boring. Engage cutout of release shaft with shoulder of release rod.

(4) Install shaft (14), and secure with screw (13).

(5) Place intermediate gear A (12), locking lever (11), spring (10), and washer (9) on shaft (14). Secure with retaining ring (8).

(6) Place spring (20) on arresting lever A (19), and position in camera chassis.

NOTE

See figure 5-2 for spring location.

(7) Insert intermediate gear shaft (18) in arresting lever A (19), install washer (17), and intermediate gear B (16). Secure intermediate gear shaft with two ***screws (15).***

k. Assembling and Installing Drive Shaft As-***sembly*** **(figs. 3-11 and 3-14).**

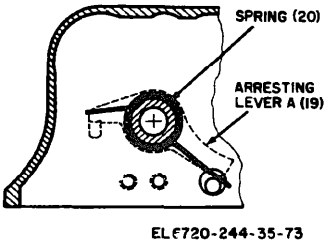

Figure 5-2. Spring location (spring (20) from fig. 3-15).

(1) Position ratchet gear (15) on drive shaft bearing plate (16), and insert drive shaft (14, fig. 3-14).

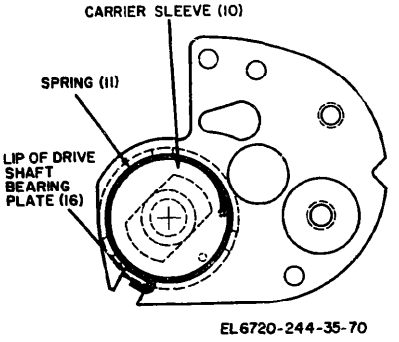

Figure *5-3. Spring location (spring (11)* ***from fig.*** *3-14).*

(2) Place the following on lower portion of driveshaft (14), and position as shown in figure 3-14 : Washer (13), carrier disc (12), spring (11), carrier sleeve (10), spring (9), washer (8), ratchet plate (7), drive shaft gear (5), and washers (5). Secure with retaining ring (4).

NOTE

Add sufficient washers (5) to avoid excessive play.

NOTE

See figure 5-3 for spring location.

(3) Place spring (3) on shoulder of screw (2), and secure assembly to drive shaft bearing plate (16).

(4) Install pawl (1), and connect spring (3).

NOTE

See figure 5-4 for spring location.

(5) Position drive shaft assembly (45, fig.

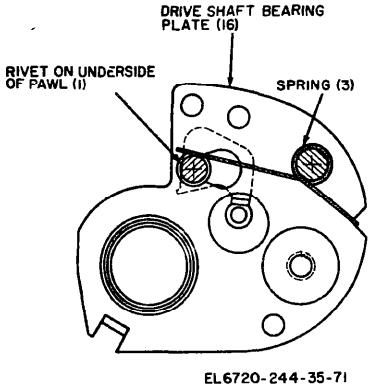

Figure 5-4. Spring location (spring (3) from fig. 3-14)

3-11) on camera chassis, and secure with three screws (44).

NOTE

Refer to paragraph *4-13d* for alignment of drive shaft assembly.

l. Assembling Shutter Bearing Plate Assembly (fig. 3-13).

(1) Place high-speed cam bearing (15) in bearing plate (16). Secure with rivet (14).

(2) Install adjusting screw (13) in shaft of high-speed cam (11), and place synchro lever setting cam (12) over shaft of high-speed cam.

(3) Position spacer (16), and slow-speed cam (9) on under side of high-speed cam (11). Secure with two screws (8).

(4) Position arresting spring (7) on high-speed cam bearing (15), and insert components assembled in (3) above.

(5) Place spring washer (5) on top of arresting spring (7), and speed dial knob (5) on shaft high-speed cam (11). Secure with screw *(4),* using tool No. 32.

NOTE

With the high point of highspeed cam (11) positioned at 5.00 o'clock, the speed dial knob threaded hole should rest at approximately 1.00 o'clock.

(6) Mount disengaging lever (3) on bearing plate (16) with screw (1). Secure with nut (2), using tool No. 33.

m. Installing Shutter Bearing Plate and Associated Components (fig. 3-11).

(1) Install light shield (43), and angle bracket *(42).* Secure with screw (41).

(2) Install stop plate (40). Secure with two screws (39).

(3) Position insulating cap (38) on arresting lever B (37). Place arresting lever B in camera chassis.

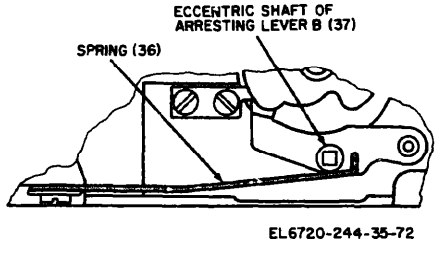

Figure 5-5. Spring location (spring (36) from fig. 3-11).

(4) Install spring (36), and holding plate (35). Secure with screw (34).

NOTE

See figure 5-5 for spring location.

(5) Place washer (33), and spacer sleeve (32) in boring of camera chassis. Insert shaft of adjusting lever assembly (31) into camera chassis, and through washer and spacer.

(6) Position spring (30) on adjusting lever assembly (31), and secure with retaining ring (29). Place washer (28) on top of retaining ring.

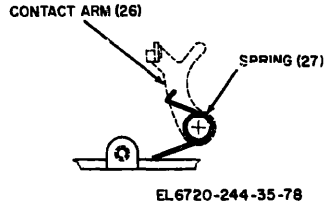

Figure *5-6. Spring location (spring (27) from fig. 3-11).*

(7) Place spring (27) on shaft of contact arm (26), and insert contact arm into camera chassis. Place spring (25) on shaft of contact arm, and secure with retaining ring (24).

NOTE

See figure 5-6 for location of spring (27).

(8) Position spring (22) on lower portion of double stop lever (23), and insert shaft (21). Place assembly on camera chassis.

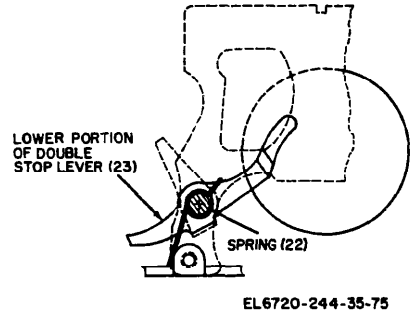

Figure 5-7. Spring location (spring (22) from fig. 3-11).

(9) Connect spring (22).

NOTE

See figure 5-7 for spring location.

(10) Place stop lever (20), washer (19), spacer ring (18), and spring (17) on shaft (21).

(11) Align borings of shutter bearing plate

assembly (16) with components previously placed in camera chassis, and mount in position. Secure with two screws (11).

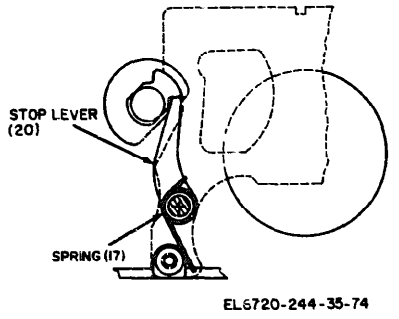

Figure 5-8. Spring location (spring (17) from fig. 3-11).

(12) Insert sleeve (13), and position spring (17). Secure with long screw (12).

NOTE

See figure 5-8 for spring location.

(13) Lift up shaft (21), and install retaining ring (15).

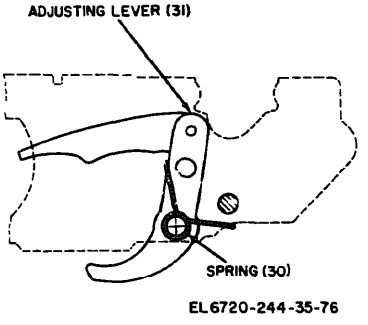

Figure 5-9. Spring location (spring (SO) from fig. 3-11).

(14) Connect spring (30) to shutter bearing plate assembly (16) and adjusting lever assembly (31).

NOTE

See figure 5-9 for spring location.

(15) Resolder ground wire (14) to shutter bearing plate assembly (15) and contact arm (26).

***n. Assembling and Installing Slow-speed Escapement* (figs. 3-12 and 3-11).**

(1) Position double gear (9, fig. 3-12), sector gear assembly (10), gear (8) with spiral spring, star wheel (7), and pallet assembly (6) on lower mounting plate (11).

(2) Install upper mounting plate (5). Secure with screw (4).

(3) Mount guide lever (2), and install screw (1).

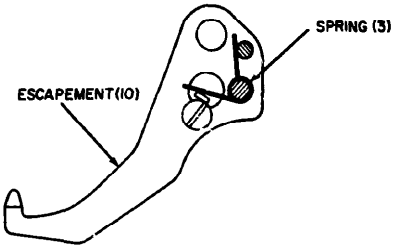

Figure 5-10. Spring *location (spring (3) from fig. 3-12).*

(4) Position and connect spring (3).

NOTE

See figure 5-10 for spring location.

(5) Connect spiral spring of gear (8) to rivet on upper mounting plate (5).

(6) Position slow-speed escapement (10, fig. 3-11) spring (9), and insert threaded shaft (8).

NOTE

Tighten threaded shaft enough to eliminate upward play, but still allowing free movement of slow-speed escapement. Also see paragraph 4-6c (2) *(b).*

(7) Connect spring (9).

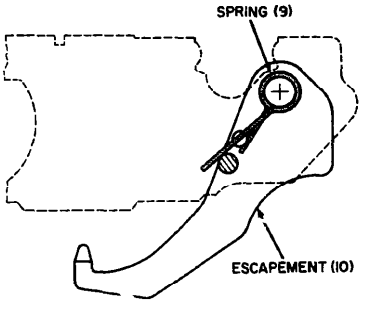

Figure 5-11. Spring location (spring (9) from fig. 3-11).

NOTE

See figure 5-11 for spring location.

***o. Assembling and Installing Rewind Assembly* (fig. 3-11).**

(1) Place rewind fork (7) in camera chassis, and secure with gear (6), using tools No. 10 and 11.

(2) Place washer (5) on rewind shaft (4), and insert in bearing assembly (3).

(3) Place sleeve (2) over bearing assembly (3), and secure to camera chassis with two screws (1).

p. Installing Synchronizing Circuit Components (fig. 3-10).

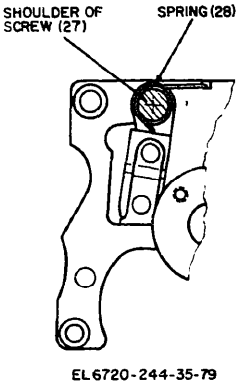

Figure 5-12. Spring location (spring (28) *from fig. 3-10).*

(1) Install synchro adjusting lever (29), and spring (28). Secure with screw (27).

NOTE

See figure 5-12 for spring location.

(2) Install insulating plate (26), contact spring (25), and insulating plate (24). Secure with two screws (23).

(3) Install terminal (21), and (22) in terminal frame (15).

(4) Insert ground wire (17), and insulated wire (18) in metal tube (20).

NOTE

Insert wires through side opening on lower portion of metal tube.

(5) Install metal tube (20), with inserted wires, in camera chassis.

(6) Place grounding plate (16) on terminal frame (15). Solder insulated wire (18) to terminal (21), and ground wire (17) to grounding plate (16).

(7) Solder insulated wire (19) to, contact spring (25) and terminal (22).

(8) Install terminal frame (15), with attached components, and secure with screw (14).

(9) Install guide spring (13), screw (12), and nut (11). Use tool No. 33 to install nut.

(10) Install insulating plate (10), short contact spring (9), insulating shield (8), insulating plate (7), and metal plate (6). Secure with two screws (5).

(11) Install insulating plate (4), long contact spring (3), and insulating plate (2). Secure with two *screws* (1).

(12) Solder insulated wire (18) to long contact spring (3), and ground wire (17) to guide spring (13).

q. Assembling and Installing Delayed Action Release Clockwork (figs. 3-8 and 3-9).

(1) Install spring housing (24) on rear of lower bearing plate (25). Secure by bending lips against lower bearing plate (fig. 3-9).

(2) Position double gear (21), shifting gear (20), star wheel (19), pallet (18), winding gear (17), and intermediate gear (16) on lower bearing plate (25).

(3) Install spring (15), and secure with retaining ring (14).

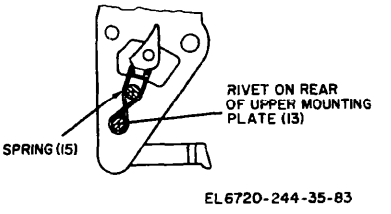

Figure *5-13 Spring location* (spring *(15) from fig. 8-9).*

(4) Mount release arm (10) on upper bearing plate assembly (13), and secure with retaining ring (9). Connect spring (15) to release arm.

NOTE

See figure 5-13 for spring location.

(5) Position spring (12) on lower bearing plate (25), and mount upper bearing plate assem-

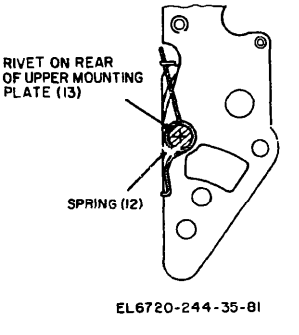

Figure 5-14. Spring location (sprang (12) from fig. 3-9).

bly (13), with attached components, on lower bearing plate. Secure with screw (11). Connect spring (12).

NOTE

See figure 5-14 for spring location.

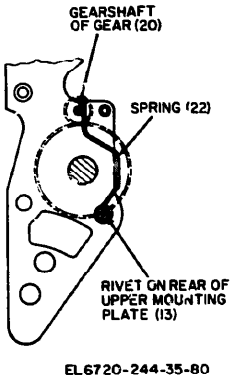

Figure 5-15. Spring location (spring (22, from fig. 3-9).

(6) Position spring (22).

NOTE

See figure 5-15 for spring location.

(7) Place snap spring (5) on upper bearing plate assembly (13), and secure with two screws (4).

(8) Position coupling disc holder (8) on upper bearing plate assembly (13), and install carrier screw (7).

NOTE

Carrier screw is left-hand threaded.

(9) Place coupling disc (6) on coupling disc holder (8). Secure by bending lips of coupling disc holder.

(10) Install spring (I), and spring carrier (3). Secure with screw (2). Connect spring to stud (23).

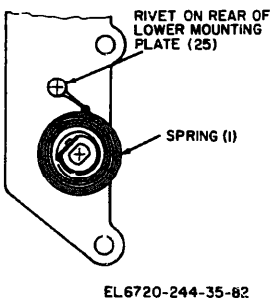

Figure 5-16. Spring location (spring (1) from fig. 3-9).

NOTE

See figure 5-16 for spring location. Refer to paragraph 4-5e (1) (b) for installation.

(11) Install clockwork mechanism (14, fig. 3-8), and secure with two screws (13).

r. Installing Main Light Shield (fig. 3-8).

(1) Cement two felt strips (16), and light shield (15), on main light shield (12).

(2) Install main light shield (12) in camera chassis (8). Secure with screw (1 I), and two screws (10).

5-4. Installing Camera Chassis in Camera Housing
fig. 3-8)

a. Insert camera chassis (8), with assembled components, into camera housing (9).

NOTE

Turn delayed action lever (1) to clear coupling disc of clockwork mechanism (14).

b. Install screw (7), and four screws (6).

NOTE

Loosen retaining screw (4), using tool No. 9, and push frame selector lever (5) clockwise to clear mounting hole.

c. Reposition frame selector lever (5), and tighten retaining screw (4).

d. Install reverse lever (3), and secure with screw (2).

5-5. Assembling Range-Viewfinder Assembly

a. Bright-Line Frame Assembly (fig. 3-7).

(1) Position metal mask (7), and glass plate mount (4), with eccentrics (5) and glass plate (6), on mask carrier assembly (8). Secure with screw (2).

NOTE

Cutout in lower right of glass plate mount engages eccentric (9).

(2) Install spring (1) and spring (3).

NOTE

See figure 5-17 for spring location.

b. Assembling Range-Viewfinder (fig. 3-6).

(1) Install lens mount (45), with achromatic lens (46), in housing (47). Secure with holding spring (44), and two screws (43).

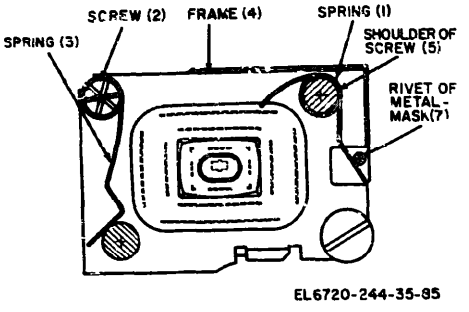

Figure 5-17. Spring location (springs (1) and (3) from fig. 3-7).

(2) Install retaining bracket (42), and secure with screw (41).

(3) Position beam-splitting prism (40) in housing (47), insert two sealing studs (39), and secure with apoxy.

(4) Install retaining spring (38), and secure with screw (37).

(5) Install adjusting screws (35), and (36).

(6) Install mask (34), adjusting screw (33), two adjusting screws (32), negative lens (31), pressure spring (30), and retaining spring (29). Secure with screw (28).

(7) Position angle plate (27), and secure with two screws (26).

(8) Mount bearing (24) with three screws (23), and install roller arm axle assembly (25).

(9) Insert plastic pin (22) in guiding block (19). Insert adjusting screw (20) in housing (47), and install adjusting nut (21) on adjusting screw. Position guiding block (19) in housing, and retain with adjusting screw (20).

(10) Place threaded axle (17) through housing to allow installation of pressure spring (18), and secure to guiding block (19).

(11) Position mirror (16) in housing (47), and secure with screw (15).

(12) Mount objective holder (14), and objective adjusting plate (13), on objective lever (9) with two screws (12).

(13) Install objective mount (10), with objective (11), in objective holder (14).

(14) Install objective lever (9), with attached components, and retain with ball screw (8).

NOTE

Adjust ball screw to permit free movement of objective lever without play.

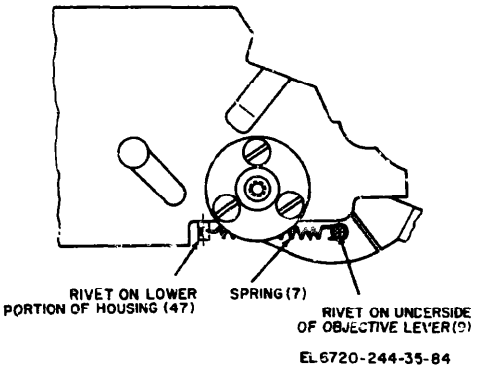

Figure 5-18. Spring location (spring (7) **from fig. 3-6).**

(15) Install and connect pulling spring (7).

NOTE

See *figure* 5-18 for spring location.

(16) Install sealing cap (6) on roof prism seat (5), and mount prism seat, with prism, on housing (47). Secure with two screws (3), and screw (4).

(17) Install bright-line frame assembly (2). Secure with two screws (1).

5-6. Installing Range-Viewfinder Assembly (fig. 3-5)

a. Install light shields (19), (18), (17), and (16) on range-viewfinder assembly (15).

b. Install range-viewfinder assembly (15). Secure with two screws (14), and double-end screw (13), using tool No. 78.

c. Install eccentric nut (12), using tool No. 80.

d. **Install stop arm (11), roller arm (10), cam (9), and washer (8). Secure with screw (7), using tool No. 75.**

e. Install cover plate (6).

f. Install spacer (5), locking bar (4), and botton cover (3). Secure with two screws (1), and screw (2).

5-7. Assembling and Installing Top Cover **(figs. 3-4 and 3-3)**

a. Assembling Top Cover (fig. 3-4).

(1) Install eyelens (6), using tool No. 1.

(2) Install illuminating window (5), window (4), and holding bracket (3).

NOTE

Secure holding bracket by bending clips inside top cover.

(3) Install window (2), and screw (1).

b. Installing Top Cover (fig. 3-3).

(1) Place release sleeve (30) on shaft of release knob (29), and install in drive shaft assembly.

NOTE

Engage release sleeve slot with pin in drive shaft assembly

(2) Place saddle spring (28) on drive shaft assembly, and install top cover (27). Secure with screw (26).

(3) Place one locking spring (25) on each of two bushings (24). Install bushings, using tool No. 5.

(4) Install two cover rings (23), using tool No. 4.

(5) Install retaining ring (22), using tool No. 3.

(6) Install slotted friction sleeve (21), forked carrier (20), rewind knob (19), and washer (18). Secure with screw (17), using tools No. 2 and 11.

(7) Install stop screw (13) in accessory clip (14).

NOTE

Secure screw by peening.

(8) Install pressure spring (16), pressure plate (15), and accessory clip (14). Secure with four screws (12).

(9) Install speed dial (11), and secure with screw (10).

(10) Install screw (9), using tool No. 6.

(11) Cement felt ring (8) to top cover (27).

(12) Install counting dial (7), spacer (6), winding lever (5), and saddle spring (4). Secure with screw ring (3), using tool No. 1.

(13) **Install two flash socket covers (2).**

(14) Place body cover (1) in lens mounting flange.

5-8. Assembling Hinged Back

(fig. 3-2)

a. Cement film-type indicator (11), covering (10), and two plastic cushions (9) to hinged back (12).

b. Install pressure spring (8), and locking pin (7). Secure with actuator (6), using tool No. 8.

c. Install leaf spring (5), and secure with two screws (4).

d. **Install pressure plate (3).**

NOTE

See paragraph 4-17a(3) for installation.

e. Install two angle plates (2), and secure with four screws (1).

f. Mount assembled hinged back on camera body.

5-9. Assembling Baseplate

(fig. 3-1)

a. Place handle (12) on lock stud (11), and secure with pin (13).

b. Install assembled lock stud (11), washer (10), plastic washer (8), spring washer (7), washer (6), locking plate (5), and washer (4) on baseplate (9). Secure with screw (3).

c. Install film positioning disc (2), and secure with screw (1).

5-10. Assembling Film Magazine

(fig. 3-20)

a. Install retaining spring (9) on outer shell (10). Secure with two rivets (8).

b. **Position roller (7), and spring (6) in film spool (2). Mount plate (5), and secure with two screws (4).**

c. Cement felt washer (3) to inner shell (1).

d. Place film spool (2) in inner shell (1), and insert in outer shell (10).

Section II. EXPOSURE METER

5-11. Reassembly of Meter Movement

(fig. 3-23)

a. Solder mounting plate (37) to mounting bracket (13).

b. **Solder magnet (31) to magnet mount (32).**

NOTE

Center magnet over magnet mount and position its slot at approximately right

angles to mounting bracket (13). Place the south pole of the magnet on the same side as terminal (4).

c. Mount magnet assembly (31 and 32) in mounting bracket assembly (13 and 37) with two screws (15).

d. Install soldering lug (24), and bushing (29) in frame (30).

NOTE

Bushing (29) is a rivet which must be drilled.

e. Install indicator needle (26) and bushing (28).

NOTE

Bushing (28) is a rivet which must be drilled.

f. Install plates (23) and (25).

g. Drill centered holes through bushings (28) and (29). Press in axle (27).

h. Wind coil (22) on previously assembled frame (30).

NOTE

Varnish and bake coil after winding.

i. Slide insulating washers (19) and (21) over axle (27), and cement to coil (22).

j. Slide soldering lug (18) and insulating washer (17) over axle (27), and cement to insulating washer (19).

***k.* Solder leads of coil (22) to soldering lugs (18) and (24).**

l. Solder inner end of hairspring (16) to soldering lug (18), and inner end of hairspring (20) **to soldering lug (24).**

m. Insert coil assembly (16 through 30) into magnet assembly (13, 15, 31, 32, and 37).

n. Place adjusting fork (36), positioning washer (35), and washer (34) on mounting plate (37). Secure with jeweled bearing (33) using tool No. 87.

o. Place positioning washer (12), and washer (11) on mounting bracket (13). Secure with jeweled bearing (10) using tool No. 87.

p. Install two needle stops (8) on locking plate (7), and mount locking plate on bracket (13) with screw (6).

***q.* Place insulated shoulder washer (5), terminal (4), and insulated washer (3) on slotted bracket of locking plate (7). Secure to mounting bracket (13) with screw (2).**

NOTE

Use jig No. 88 to position terminal (4).

r. Solder outer end of hairspring (20) to adjusting fork (36).

NOTE

Before soldering, position adjusting fork (36) at right angles to mounting plate (37). Align indicator needle (26) with zero on jig No. 88.

s. Solder hair spring (16) to terminal (4).

NOTE

Make certain indicator needle (26) does not move from previously set zero position.

t. Solder red insulated wire (1) to terminal (4), and blue insulated wire (14) to adjusting fork (36).

u. Position battery test index arm (9) in mounting slot of locking plate (7).

NOTE

Do not cement index arm until meter is calibrated (para 4-26b (3)).

5-12. Reassembly of Meter Chassis (fig. 3-22)

a. Base Subassembly.

(1) Install adjusting screw (55), and angle plate (56). Secure by riveting adjusting screw.

(2) Install contact springs (53) and (52). Secure to base (60) by heating plastic pins.

(3) Press pm (54) into base (60).

(4) Cement lens (51), mask (50), and photoresistor (49) in base (60).

(5) Install aperture plate (48) in base (60).

(6) Cement two nuts (59) in base (60).

b. Sensitivity Switch Linkage Subassembly.

(1) Place link (46) on sensitivity switch linkage (43). Secure with spring (44).

NOTE

See figure 5-19 for spring location.

(2) Place lever (47) on link (46). Secure with pin (45).

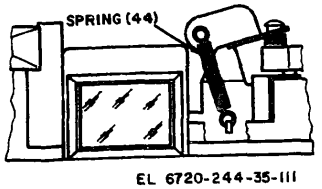

Figure 5-19. Spring location (spring (44) from fig. 3-22).

(3) Mount sensitivity switch linkage subassembly in base (60). Secure with screw (42).

NOTE

Engage slot of sensitivity switch linkage (43) with pin of aperture plate (48).

c. Not used.

d. Light Baffle Subassembly.

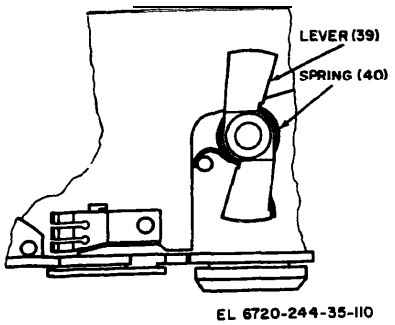

Figure 5-20. Spring location (spring (40) from fig. 3-22)

(1) Install spring (40) on light baffle (41).

NOTE

See figure 5-20 for spring location.

(2) Install switch lever (39), and washer (33) on light baffle (41). Secure by heating plastic pin.

(3) Install screw (37) in light baffle (41).

(4) Mount light baffle subassembly in base (60). Secure with two screws (36).

e. Circuit Board Subassembly.

NOTE

See figure 5-21 for circuit board soldering points.

(1) Mount 10,000-ohm potentiometer (32) on underside of circuit board (35). Solder terminals to points A and B.

(2) Mount 5,000-ohm potentiometer (31) on underside of circuit board (35). Solder terminals to points C and D.

(3) Mount 100-ohm resistor (33) on underside of circuit board (35). Solder terminals to points C and E.

(4) Mount 2,200-ohm resistor (34) on upperside of circuit board (35). Solder terminals to points F and G.

(5) Install circuit board subassembly in base (60).

(a) **Solder terminal of contact spring (52) to point I.**

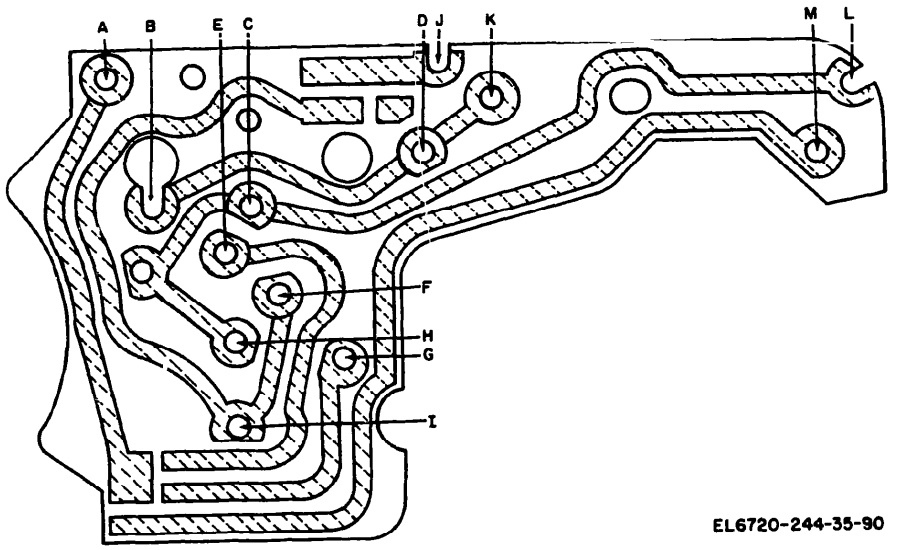

Figure 5-21. Exposure meter *circuit board soldering points.*

(b) Solder terminal of contact spring (53) to point H.

(c) Solder two wires of photo-resistor (19) to points J and K.

f. Contact Arm Subassembly.

(1) Mount contact spring (27) on contact arm (28 j. Secure by heating three plastic pins.

(2) Place insulating washer (30), and washer (29) on circuit board (35).

(3) Place assembled components (1) above, sleeve (26), and washer (25) on circuit board (35). Secure with screw (24).

g. Switch Lever Subassembly.

(1) Mount contact spring (23) on switch lever (22). Secure by heating plastic pin.

(2) Ins? all assembly (1) above, in base (60).

h. Gear Plate Subassembly.

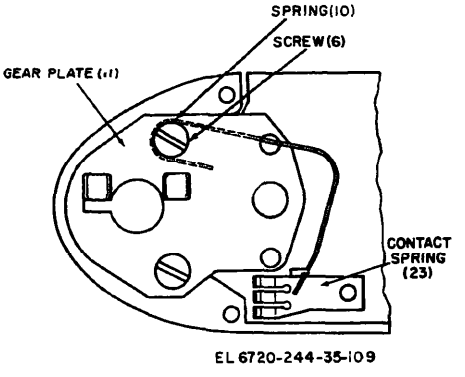

Figure 5-22. Spring location (spring (10) from *fig. 3-22).*

(1) Install spring (10) in gear plate (11).

NOTE

See figure 5-22 for spring location.

(2) Place sector gear (9) on gear plate (11). Install washer (8), and secure with retaining ring (7).

(3) Install subassembly on base (60) with two screws (6).

2. Coupling Knob Subassembly.

(1) Press pin (20) into coupling knob (17).

(2) Place spring (18), and washer (19) on shaft of coupling knob (17).

(3) Place assembled components (17 through 20) in base (60).

(4) Place nose washer (5) on shaft of coupling knob (17).

NOTE

Position nose washer to align with knurled knob index.

(5) Install spacer (4), gear (3), and washer (2) on shaft of coupling knob (17). Secure with screw (1).

NOTE

When installing gear (3), align its reference point with the reference point on sector gear (9).

j. Installing Meter Movement.

(1) Position meter movement (58) in base (60), and secure with screw (57).

NOTE

Fit angle plate (56) into slot of meter movement adjusting fork.

(2) Solder blue insulated wire to circuit board point L. Solder red insulated wire to circuit board point M.

NOTE

See figure 5-21 for circuit board soldering points.

k. Installing Remaining Components.

(1) Cement instruction plate (21) on base (60).

NOTE

Instruction plate is self-adhesive.

(2) Place, mercury cell (16) in base (60).

(3) Install battery cover (15), mounting foot (14), and two screws (12). Secure with three screws (13).

5-13. Reassembly of Meter Housing (figs. 3-21 and 3-22)

a. Mount window (20, fig. 3-21) intensity scale (21), wedged plate (19), and retaining plate (18) in housing (22). Secure with three rivets (17).

b. Install release lever (15) in housing (22). Secure with bearing (13).

NOTE

Bearing (13) is secured by peening.

c. Secure release button (16) to release lever (15) with screw (14).

d. Insert sensitivity switch knob (12) in bearing (13). Install washer (11), and secure with retaining ring (10).

e. Install assembled housing on assembled meter chassis as follows:

(1) Place shaft of lever (47, fig. 3-22), in bearing of sensitivity switch linkage (43).

(2) Position release lever (15, fig. 3-21), to engage contact arm (28, fig. 3-22).

(3) Position sensitivity switch knob (12, fig. 3-21), to engage lever (47, fig. 3-22).

(4) Position switch lever (22, fig. 3-22), to slide in slot of housing (22, fig. 3-21).

(5) Seat housing firmly on meter chassis.

f. **Mount exposure meter on a camera body and couple to the shutter speed control. Set the shutter speed control to B.**

g. Install speed dial (5), and position it to align B with the shutter speed index.

h. Rotate the exposure meter shutter speed and aperture knob (coupling knob) to place the camera shutter speed control at 1/50 second (electronic flash symbol). The red dot on speed dial (5) should align with the shutter speed index. If **it does not, proceed as follows:**

(1) Remove housing (22, fig. 3-21), and reposition gear (3, fig. 3-22), until correct alignment is attained.

(2) Reinstall housing (22, fig. 3-21).

i. Remove speed dial (5). Secure housing (22) with two screws (8) and two *screws (9)*.

j. Install plastic washer (7), and spacer (6).

NOTE

Friction of speed dial (5) is adjusted by spacer (6). In some meters the spacer may not be used, or more than one may be required.

k. Install speed dial (5), and washer (4).

NOTE

Friction of aperture dial (2) is adjusted by washer (4). In some meters the washer may not be used, or more than one may be required.

l. Install friction disc (3), and aperture dial (2). Secure with screw (1) using tool No. 86.

Section III. LENSES

5-14. General

Before reassembly, all components should be cleaned, inspected for damage, and lubricated where required. Scribed parts should be mated and optical surfaces should not be touched with the fingers. Do not use force in assembling corn-ponents.

5-15. Reassembly of Lens Hood (fig. 3-24)

a. Position two springs (4) in base ring (3).

b. Insert two release grips (5) in cover ring (6), align release grips over center of springs and slide cover ring over base ring (3).

c. Secure fluted tube (2) to base ring (3), and replace lens cap (1).

5-16. Reassembly of 35-MM Lens (figs. 3-25 and 3-26)

a. Lens Tube Assembly.

(1) Remount optical component (16, fig. 3-26) in lens mount (10).

(2) Replace optical component (15) in lens mount (10) and secure with retaining ring (14).

(3) Place pressure washer (13) in lens mount (10). Mount optical component (12) in lens mount (11) and place in lens mount (10). Screw lens mount (10), with components, into lens tube (17).

(4) Install 10 diaphragm blades (9) and diaphragm guide ring (8) in lens tube (17).

(5) Remount optical component (7) in lens mount (6), and place in lens mount (17).

(6) Remount optical component (5) in lens mount (4), replace optical component (2) in lens mount (4), and secure with retaining ring (1).

(7) Place lens mount (4), with components, into lens tube (17), and secure with retaining ring (3), using tool No. 97.

(3) Place diaphragm adjusting tube (16, fig. 3-25) on lens tubs assembly (17), and secure with two guide screws (15).

(9) Place ball (14) and spring (13) in diaphragm adjusting tube (16), and slide diaphragm adjusting ring (11) onto diaphragm adjusting tube. Secure with retaining ring (10) and setscrew (9).

(10) Place retaining ring (12) in groove of lens tube assembly (17).

(11) Place front ring (7) on lens tube assembly (17), and secure with three screws (6).

(12) **Place serial number ring (4) in front ring (7), and secure with fluted tube (3).**

(13) Place spacer ring (8) on lens tube assembly (17).

(14) Replace lens cap liner (2) in lens cap (1).

b. Focusing Mount (fig. 3-25).

(1) Thread rangefinder cam (33) into mounting base (35).

(2) Thread male helix (29) into female helix (28), and install stop screw (30).

(3) Install guide (32) and secure with two screws (31).

(4) Slide female helix (28), with components, into mounting base (35). Secure with retaining ring (27).

(5) Install depth-of-field ring (26) on mounting base (35), and secure with three screws (25).

(6) Insert spring (24) into lock bar (23), and slide assembly into focusing lever (22).

(7) Secure focusing lever (22), with components, to focusing ring (20) with two screws (21).

(8) Place focusing ring (20), with components, on female helix (28), and secure with retaining ring (19) and dowel screw (18).

(9) Replace mounting indicator (34) on mounting base (35).

(10) Place assembled lens unit (lens head) in assembled focusing mount, and secure with retaining ring (5).

5-17. Reassembly of 50-Mm lens

***a. Lens Head (figs.* 3-27, 3-28, and 3-29).**

(1) Place optical components (11, fig. 3-28) and (10), and pressure washers (9), (8) and (7) in lens mount (12). Secure with retaining ring (6).

(2) Place optical component (5) in lens mount (12), and secure with retaining ring (4).

(3) Place optical component (3) and pressure washer (2) in lens mount (12). Secure with retaining ring (1).

(4) Remount optical component (6, fig. 3-29) in lens mount (5), and place in lens tube (7).

(5) Remount optical component (4) in lens mount (3), and place in lens tube (7).

(6) Place pressure washer (2) in lens tube (7) and secure with retaining ring (1).

(7) Install 10 diaphragm blades (13, fig. 3-27) and diaphragm guide ring (12) in lens tube assembly (15).

(8) Place diaphragm adjusting tube (14) on lens tube assembly (15), and secure with two guide screws (11).

(9) Place ball (10) and flat spring (9) in diaphragm adjusting tube (14), and slide diaphragm adjusting ring (8) onto diaphragm adjusting tube (14). Secure with dowel screw (7) and two setscrews (6).

(10) Place index ring (5) on lens mount assembly (3), and secure with setscrew (4).

(11) Screw lens mount assembly (3) into lens tube assembly (15).

(12) Replace lens cap liner (2) in lens cap (1).

***b. Focusing Mount* (fig. 3-27, and 3-30).**

(1) Thread rangefinder cam (11, fig. 3-30) into mounting base (13).

(2) Insert locking pin (5) in mounting base (13), and insert pressure spring (4) in mounting base (13). Secure with holding bar (3) and two screws (2).

NOTE

When inserting pressure spring, mate notch with groove of locking pin.

(3) Thread male helix (8) into female helix (7).

(4) Mount guide (10) on female helix (7), and secure with two screws (9).

(5) Place assembled male and female helices in mounting base (13), and secure with retaining ring (6), using tool No. 98.

(6) Replace mounting indicator (12) on mounting base (13).

(7) Mount bearing segment (24, fig. 3-27) on stop ring (26), and secure with three *screws (23).*

(8) Place stop ring (26), with components, in that portion of focusing mount previously assembled. Secure with retaining ring (17), and setscrew (25).

(9) Mount stop (22) inside focusing ring (20), and secure with screw (21 j.

(10) Place focusing ring (20), with components, on stop ring (26). Insert spring ring (19) and secure with sleeve (18).

(11) Replace cover ring (16).

(12) Mount lens head in focusing mount.

c. **50-Mm *Lens Viewing Unit (fig. 3-31).***

(1) Mount positioning stud (16) on mounting plate **(17), and secure with screw (15)**

(2) Press two stop pins (14) in finger grip (13), and secure finger grip to mounting plate (17) **with two screws (12).**

(3) Mount optical component (4) in lens mount (5).

(4) Mount **spacer (3) in lens housing cover (2).**

(5) Mount lens housing (6) in mounting plate (17), and insert **assembled components (4) and (5) in lens housing (6).**

(6) Place **assembled components (2) and (3)** over lens housing (6), **and secure with two screws (1).**

(7) Remount optical component (11) in lens mount (10), and secure assembly to mounting plate (17) with retaining ring (9).

(8) Mount **optical component (8) in lens** mount (7), and mount **assembly on retaining ring (9).**

5-18. Reassembly of 135-Mm lens

a. ***Lens Head*** **(figs. 3-32 and 3-33).**

(1) Place **optical component (9, fig. 3-33)** and **pressure washer (8) in lens mount (10). Secure with retaining ring (7).**

(2) Remount **optical component (6) in lens** mount (5), and place **assembly in lens mount** (10). Secure with **retaining ring (4).**

(3) Place optical component (3) and pressure washer (2) in **lens mount (10). Secure with retaining ring (1).**

(4) Place optical component (22) in lens tube (23), and secure with retaining ring (21, fig. 3-32).

(5) Mount **12 diaphragm blades (20) in lens tube (23), and install diaphragm guide ring (19)** in lens tube. **Secure with retaining ring (18).**

(6) Install guide screw (17) in diaphragm guide ring **(19).**

17) Place diaphragm adjusting tube (16) on lens tube (23), and secure with retaining ring (15).

(8) Screw assembled lens mount (14) onto lens tube (23), and secure with setscrew (13).

(9) Place ball **(12) and flat spring (11) on diaphragm adjusting tube (16), and slide diaphragm adjusting ring (10) over diaphragm adjusting tube. Secure with three screws (9).**

(10) Replace lens hood liner (7) in outer lens hood tube (8), and replace lens hood liner (6) in inner lens hood tube (5).

(11) Place assembled inner lens hood tube (5) in outer lens hood tube (8), and secure with stop ring (4).

(12) Slide assembled lens hood over lens mount (14), and secure with retaining ring (3).

(13) Install filter retaining ring (2), and lens cap (1).

b. Reassembling Viewing Unit Portion *of* ***Focusing Mount, (fig. 3-35).***

(1) Place retaining ring (26) **on base (27), and secure with retaining ring (25), and screw (24).**

(2) Screw lens mount (22) into base (27).

(3) Place optical component (21), spacer tube (20), shim (19), optical component (18), and flat spring (17) into base-lens mount assembly. Secure with two adjusting screws (16).

(4) Mount optical component (15) in lens mount (14).

(5) Mount optical component (11) in lens mount (12), and secure lens housing (10) to assembly **(11) and (12).**

(6) Place assembled lens mount (14), spacer (13), and assembled *lens* **mount (12) in base (27). Secure with one screw (6).**

(7) Place pressure spring (9), retaining plate (8), **and washer (7) in base (27). Secure with one** *screw (6).*

(8) Secure mask (5) in cover plate (4).

(9) Place cover plate (4) on base (27), and secure with three screws (3), and four screws (2).

(10) Install 2 cover screws (1).

(11) Install mounting indicator (23) on base (27).

c. Reassembly *of* ***Focusing Mount (fig. 3-34).***

(1) Place fluted tube (30) into male helix (24). Mount two guide bars (29), and secure with four screws (28).

(2) Place positioning ring (27) in male helix (24), and secure with cover tube (26) and dowel screw (25).

(3) Thread assembled male helix (24) into female helix (23).

(4) Secure distance scale ring (22) on female helix (23).

(5) Mount depth-of-field tube (21) on female helix (23), and secure with retaining ring (20), using tool No. 104.

(6) Slide positioning bar (19) into slot of female helix (23), and secure with screw (17), and nut (18).

(7) Secure guide plate (14) to cam arm (13).

(8) Mount cam roller (12) on cam arm (13), and secure with screw (11).

(9) Attach pressure spring (15) to cam arm (13) and slide cam arm into slot of rangefinder cam tube (8).

(10) Slide rangefinder cam (10) over assembled rangefinder cam tube (8), and secure with retaining ring (9). Install stop screw (16) in rangefinder cam tube.

(11) Place viewing unit (7), and mounting ring (3), on assembled rangefinder cam tube (8), and secure with six screws (2).

(12) Attach viewing unit (7), with rangefinder cam tube (8) and assembled parts, to previously assembled female helix (23), using tool No. 103. Secure with screw (6).

(13) Mount tripod bushing (5) on depth-of-field tube (21), and secure with two screws (4).

Section IV. FLASH UNIT

5-19. Reassembly of Reflector (fig. 3-36)

a. Insert segment cleat (7) into slot of lower reflector segment (5), and into slot of adjacent reflector segment (6). Continue in this manner until all segments, except (8), have been connected to each other.

b. Place upper reflector segment (8) on top of previously connected segments, and insert the free end of the last segment cleat.

c. Mount the assembled reflector segments on shoulder screw (4), and secure to reflector handle (3) with ring nut (2), using tool No. 95.

d. Secure lower reflector segment (5) to reflector handle (3) with screw (1).

5-20. Reassembly of Bayonet-Base lamp Adapter (fig. 3-37)

a. Position intermediate sleeve (5) on bayonet socket inner sleeve (8), and align the slots.

b. Install release spring (4) on intermediate sleeve (5), and slide bayonet socket shell (2) on assembly just enough to hold the release spring in position.

c. Install ejector button (3) in bayonet socket shell (2), and push the shell against shoulder of bayonet socket inner sleeve (8).

d. Align mounting holes, and secure with three screws (1).

e. Install contact pin (7), and screw (6), in bayonet socket inner sleeve (8).

5-21. Reassembly of of Medium-Base Lamp (fig. 3-37)

a. Install cap (14) on spring (12), and insert spring through hole in insulating insert (9).

***b.* Install sleeve (13) on spring (12), using tool No. 93.**

c. Press assembly *(b* above), and retaining spring (11), into medium screw-base lamp socket (10), using tool No. 94.

5-22. Reassembly of Battery-Capacitor Insert (fig. 3-38)

a Install contact spring (17) on insulating plate (18).

***b.* Install lug (20) on insulating plate (18). Secure with screw (15), and round nut (16), using tool No. 96.**

c. Assemble insulating plates (18), with attached components, and (14), with four assembly rods (13), and screws (12).

***d.* Install insulator (21). Solder one lead of resistor (19) to lug (20), and the other lead to contact spring (17).**

e. Solder negative lead of capacitor (22) to lug (20).

NOTE

Observe polarity when installing capacitor.

f. Slide assembled components (a through e above) into housing (11).

g. Place insulator (24) on positive lead of capacitor (22), and solder lead to lug (23).

h. **Press sleeve (9) into insulating plate (10), and place cap (8) in sleeve.**

i. Place insulating plate (10) on insulating plate (6), and press lower part of sleeve (9) into insulating plate (6). Insert spring (7) in sleeve (9).

j. Mount contact clip (5) on insulating plate (6) with rivet (4).

k. **Secure lug (23) to insulating plate (6) with screw (2), and round nut (3), using tool No. 96.**

l. Install assembled insulating plates (6) and (10), with attached components, on housing (11) with four screws (1).

5-23. reassembly of Flash Unit Housing (fig. 3-39)

a. Secure mounting foot (18) to base (19) with three screws (17).

b. **Solder narrow contact clip (15) to wire (16), and install in base (19).**

c. Solder contact strip (14) to wide contact clip (13), and install in base (19).

d. **Position insulating plate (12) over contact clips (13) and (15), and secure with screw (11).**

e. Solder free end of wire (16) to contact spring (10), and position contact spring over mounting hole in base (19).

f. Install rectifier (9), and contact plate (8). Secure with screw (7).

NOTE

Observe polarity. The smooth surface of rectifier (9) is placed against contact spring (10). Rough surfaces of the rectifier faces uppermost.

9. Install assembled base (19) in battery housing (6), and secure with three screws (5).

h. **Insert two screws (1) in holes of reflector mounting bracket (3), and slide pressure spring (4), clip end uppermost, into mounting bracket. Position clip of pressure spring over threads of upper screw.**

i. Position retaining plate (2) inside battery housing (6). Secure reflector mounting bracket (3), pressure spring (4), and retaining plate (2) to battery housing with two screws (1).

CHAPTER 6

DEPOT OVERHAUL STANDARDS

Section I. GENERAL

6-1. Scope

a. This chapter contains instructions for the performance of depot overhaul standards tests. The tests are to be performed on components of the camera set which have been repaired or overhauled to insure that they meet the original performance specifications established by the Government prior to restocking or reissuing the equipment to the field.

b. **The tests described in this chapter check the following components of the camera set.**

(1) Camera shutter (paras 6-3, 6-4, 6-5 and 66).

(2) Camera synchronizing circuits (paras 6-7 and 6-8).

(3) Camera film plane (paras 6-9 and 6-10).

(4) Camera rangefinder and viewfinder (paras 6-11).

(5) Camera takeup spool friction (para 6-12)

(6) Accessory clip checks (para 6-13).

(7) Camera exposure meter (para 6-14).

(8) Lens focusing checks (para 6-15).

(9) Viewing units of 50-mm and 135-mm lenses (para 6-16).

(10) Flash unit (para 6-17).

6-2. Test Facilities

The test facilities required for all of the depot overhaul standards tests must include a clean, flat, vibration-free surface. A 115-volts 60-Hz source for several of the tests is required. The cleanliness of the surroundings is extremely important. Dust or dirt inside the camera may scratch film.

Section II. CAMERA BODY

6-3. Stroboscopic Test of Shutter Slit Gradient

a. ***Purpose.*** **This check determines if the curtain travel and exposure is correct at high shutter speeds.**

b. Test Equipment. **The test equipment required is listed below.**

(1) Shutter speed pattern plate 42-253.01-Z1A95 (fig. 6-1).

(2) Shutter speed checking drum 42-253.01-Z1W100 (fig. 6-1).

c. Procedure.

(1) Set up the shutter speed checking drum, the camera, and the shutter speed pattern plate as shown (fig. 6-2). The shutter speed pattern plate is placed in the camera film aperture.

(2) Set the shutter speed dial to 1/500 second. Make sure the camera body is positioned so that the lens mounting flange is placed against the window of the shutter speed checking drum.

(3) Wind and release the shutter. Check that the gradient is matched with the fixed pattern of the shutter speed pattern plate.

(4) Remove the shutter speed pattern plate from the camera.

(5) Wind and release the shutter several times, at shutter speeds of 1/250 second, 1/500 second, and 1/1000 second. Compare the shutter slit width with the shutter speed patterns shown in figure 4-7.

6-4. Shutter Speed Check

a. Purpose. **The shutter speed check is performed to assure that the camera shutter speeds are within tolerance.**

b. Test Equipment. **The check requires the use of the following test equipment:**

(1) Hinged back with mirror 42-253.01-Z1W41 (fig. 6-3).

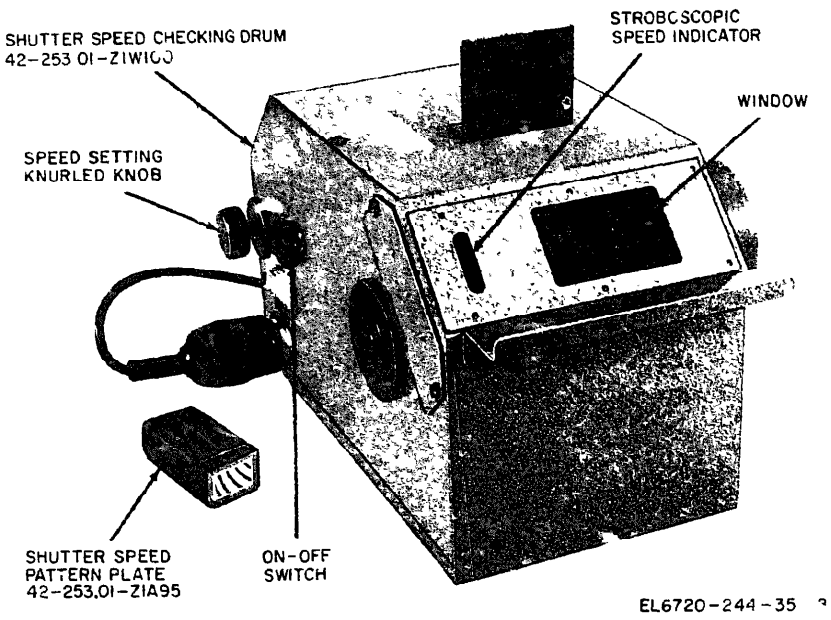

Figure 6-1 Shutter speed pattern plate 42-253.01-Z1A95 and shutter speed checking drum 62-253.01-Z1W100.

(2) Electronic shutter tester 42-253.01-Z1W111 (fig 6-3)

c Procedure

(1) Replace the camera hinged back with the hinged back and mirror, and position the camera housing on the resting plate of the elecronic shutter tester as shown in figure 6-4. Fit the lens mounting flange over the opening in the electronic shutter tester.

(2) Secure the camera to the electronic shutter rester with the holding plate.

(3) Set the electronic shutter tester to 1 second Wind the camera, set the shutter speed dial to 1 second, and release the shutter. The test instrument meter must register within the 1 second tolerance.

(4) Repeat the operation, as in (2) and (3) above, for each of the camera shutter speeds through 1/1000 second The test instrument button, corresponding to the shutter speed being checked, must be depressed for each test. The test instrument meter must register within tolerance for each shutter speed

NOTE

Permissible shutter speed tolerances:
1/1000 through 1/250 second + or − 20%
1/125 second + or − 10%
1/60 second + 25% − 10%
1/30 second + 20% − 10%
1/15 through 1 second + or − 10%

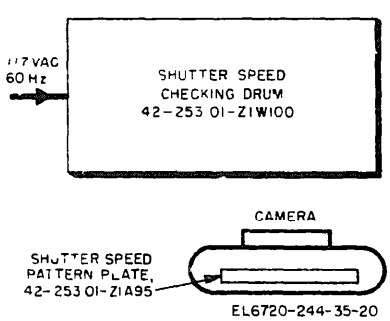

Figure 6-2 Setup for stroboscopic test of shutter slit gradient, block diagram

6-5. Shutter Release Check

a. Purpose. This check verifies correct shutter release and release shaft travel

b. Test Equipment (fig 6-5). This check requires the use of gauge with center shaft 42-253 01-Z1L74.

c Procedure

(1) Position the gauge on top of the shutter release screw ring

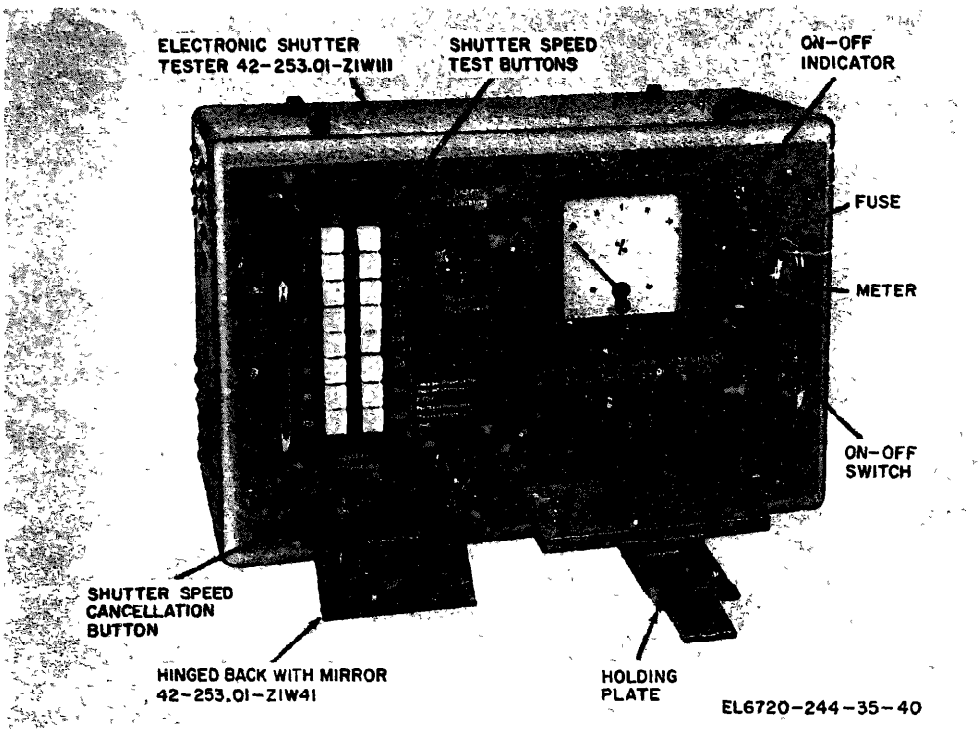

Figure 6-3. Hinged back with mirror 42-253.01-Z1W41 and electronic shutter tester 42-253.01-Z1W111.

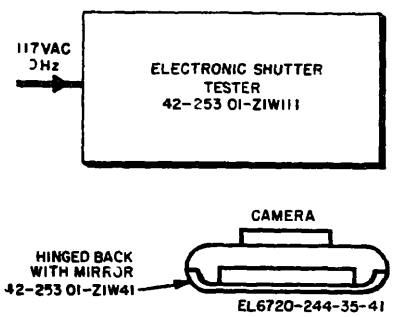

Figure 6-4. Setup for electronic shutter speed test, block diagram.

(2) Wind the camera shutter and depress the gauge center shaft. A tolerance (play) not to exceed 0.1 mm should exist before the shutter is released.

6-6. Shutter Release Spring Check

a. *Purpose.* This check verifies that the shutter release spring will not trip until the correct pressure (weight) is applied.

***b. Test Equipment* (fig. 6-6). This check requires the use of the adjustable weight with center shaft, 42-253.01-Z1A22.**

c. Procedure.

(1) Wind the camera shutter and center the shaft of the adjustable weight in the shutter release knob. Hold the movable weight against its upper stop while positioning the gauge. The shutter should not release.

(2) Lower the movable weight and rest it on

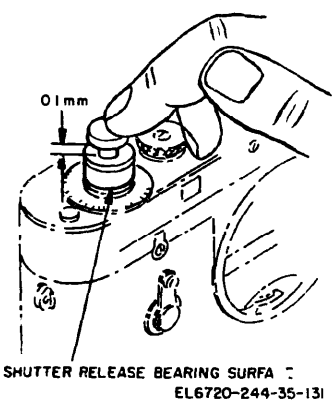

Figure 6-5. Gauge with center shaft 42-253.01-Z1L74.

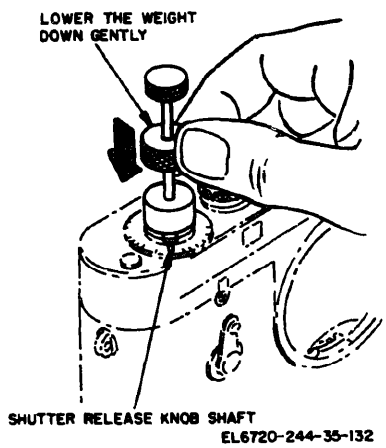

Figure *6-6. Adjustable weight with center* shaft *42-253.01-Z1A22.*

the lower portion of the shaft. The shutter should release.

6-7. Camera Synchronizing Circuits leakage and Conductivity Checks

a. Purpose. **These checks determine if the resistance of the flashbulb and electronic flash circuits is correct with the respective contacts closed (conductivity) and open (leakage).**

b. Test Equipment. **The checks require the use of the following equipment:**

(1) Synchronizing circuit test instrument 42-531-Z1W13 (fig. 6-7).

(2) Connecting cable 42-253.04.

c. Procedure.

(1) ***Insulation check, camera flashbulb circuit.***

(a) **Release the** camera **shutter. Do not wind it unless directed to do so.**

(b) Set the voltage selector switch of the synchronizing circuit test instrument to 500 volts and connect the camera flashlamp socket to the test instrument with the connecting cable.

(c) Set the test elector switch on the test instrument to I.

(d) Hold the camera shutter release in the depressed position and rotate the shutter speed dial from 1/1000 second to B. Check that the meter registers between 0 and 5 and that the test instrument lamp does not light.

(2) Conductivity check, **camera** ***flashbulb*** **circuit.**

(a) Set the selector switch on the test instrument to D.

(b) Wind the camera shutter and set the shutter speed dial to B.

(c) Hold the first shutter curtain; depress the shutter release, and allow the curtain to move slowly across the film aperture.

(d) **After about 5 mm of travel, the test instrument should indicate between 50 and 70.**

(3) Contact closure check, flashbulb circuit.

(a) **Set the test instrument selector switch to L.**

(b) Set **the camera shutter speed dial to B and wind the camera shutter.**

(c) Depress the shutter release and check that the indicator lamp lights.

(d) **Repeat steps (a),** ***(b),*** **and (c) above for each of the shutter speeds, noting that the lamp lights each time the shutter is released.**

(4) ***Insulation check, electronic flash circuit.***

(a) **Set the voltage selector switch of the test instrument to 1,000 volts.**

(b) Connect the camera electronic flash socket to the test instrument with the connecting cable.

(c) Set the test instrument selector switch to I, wind the camera shutter and set the shutter speed dial to B.

(d) **Hold the first shutter curtain, preventing it from running off, and depress the shutter release. The meter should not register and the indicator lamp should not light. Release the curtain and let the shutter run off.**

(e) Wind the camera shutter half-way, and depress the shutter release. Check that the meter registers between 0 and 5 and that the test instrument lamp does not light.

(5) Conductivity check, electronic flash circuit.

(a) Set the test instrument selector switch to D, wind the camera shutter, and set the shutter speed dial to B.

(b) **Depress the shutter release. The test instrument should register between 95 and 100.**

6-8. Calibration of Camera Synchronizing Delay for Flashbulb and Electronic Flash Circuits

a. ***Purpose.*** **This check verifies that the synchronizing delay for both the flashbulb circuit and electronic flash circuit is correct.**

b. Test Equipment (fig. 6-8). **The check requires the use of the following test equipment:**

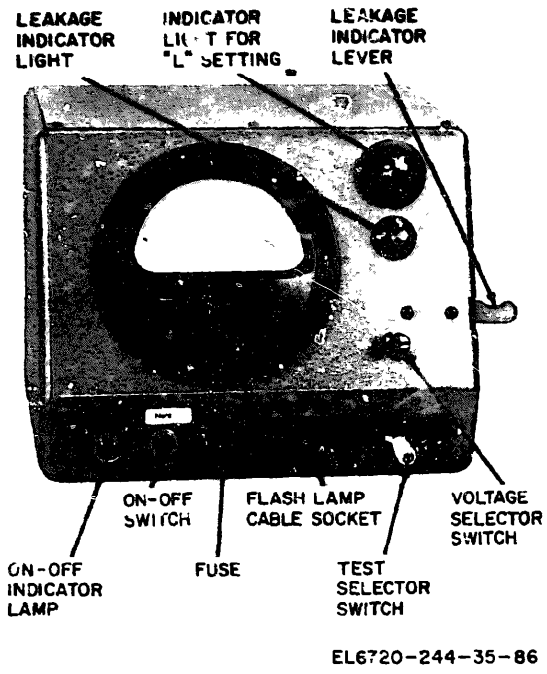

Figure 6-7. Synchronizing circuit test instrument 42-531-21Z1W13.

(1) Synchronizing time delay test instrument 42-253.01-Z1W109.

(2) Connecting cable 42-253.04.

(3) Tolerance pattern plate 42-253.01-Z1A96.

(4) Tolerance pattern plate 42-253.01-Z1A97.

c. Procedure.

(1) ***Flash bulb synchronization delay check.***

(a) Connect the camera flashlamp socket to the synchronizing time-delay **test instrument** with the connecting cable.

(b) Remove the camera hinged back **and** insert tolerance pattern plate **42-253.01-Z1A96.** The equipment setup is shown in **A, figure 6-9.** Position the camera lens mounting flange over the test instrument opening.

(c) Depress button 4 on the synchronizing time delay test instrument, wind the shutter, **and** set the shutter speed dial to 1/1000 **second.**

(d) Release the shutter **and observe the** position of the shutter slit **on the pattern plate** (fig. 4-12) The shutter slit should appear within the tolerance marks on the pattern **plate.**

(e) Depress button **3 on the synchronizing** time delay test instrument, wind **the shutter, and** set the shutter speed dial to 1/60 second.

(f) Release the shutter and **observe the** positron of the first shutter curtain on the pattern plate (fig. 4-12). Check that the edge of the first shutter curtain falls within the narrow pattern on the upper part of the plate.

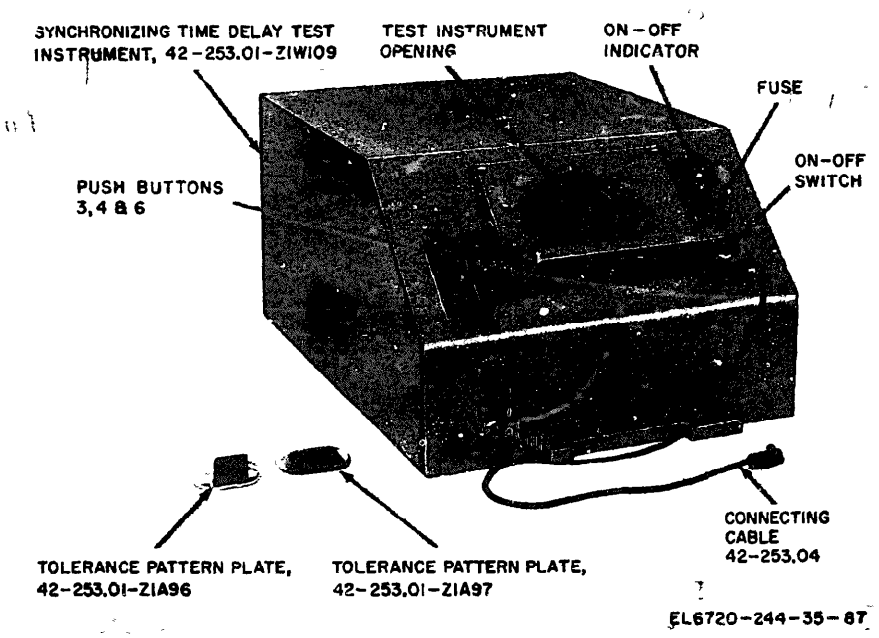

Figure 6-8. Equipment for camera sychronizing delay calibration.

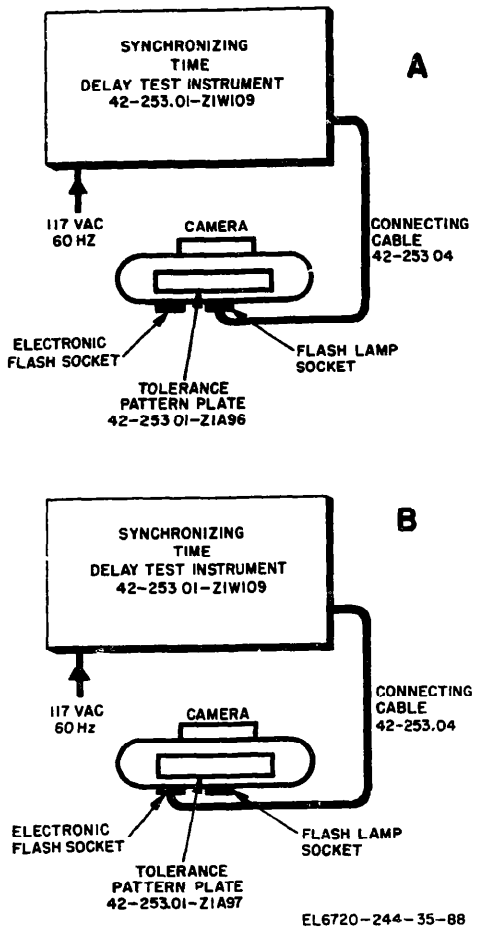

Figure 6-9. *Setup for camera synchronizing delay calibration, block diagram.*

(2) Electronic flash synchronization delay check.

(a) Replace tolerance **pattern plate 42-**253.01-Z1A96 with tolerance **pattern plate *42-***253.01-Z1A97 in the **camera (B, fig. 6-9).**

(b) Connect the **camera electronic flash** socket to the synchronizing **time-delay instru-**ment with the connecting **cable.**

(c) Depress button 6 **on** the **synchronizing** time-delay test instrument, **wind the shutter, and** set the shutter **speed** dial **to the electronic flash symbol (1/50** second)

(d) Release the shutter **while observing the pattern** plate (fig. 4-13). The two **rectangles (one** on each end of the plate) must be illuminated. One-half millimeter of the outer edge of the left rectangle must be obscured **by the** first **shutter** curtain The rectangle on the right en:! of the **pattern** plate must **not be obscured in any degree by** the second shutter curtain.

6-9. Camera lens Flange to Film Plane Distance Measurement

a. Purpose. **This measurement is intended to verify that the distance from the camera lens flange to the camera film plane is correct.**

b. Test Equipment (fig. **6-10). The measure-**ment **requires the use of the following test equip-ment :**

(1) Holding pin, threaded 42-253.01-Z1W84 (fig. 6-11).

(2) Gauge set **42-253.01-Z1A76, consisting o f -**

(u) Dial gauge.

(b) Feeler tip.

(c) Positioning flange.

(d) **Gauge** block with **mirror surface 42-253.01-Z1A70.**

(e) Calibrating tube.

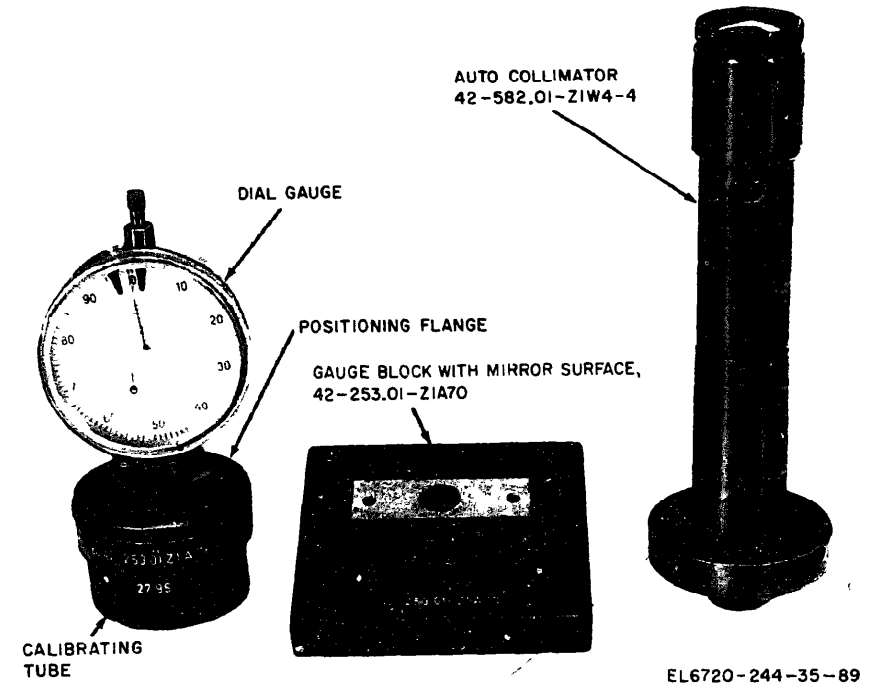

Figure 6-10. Gauge set 42-258.01-21A76 and auto collimator 42-582.01-21W4-4.

(f) Calibrating surface plate.

c. Procedure.

(1) Remove the hinged back from the camera.

(2) Set the shutter speed dial to B. Lock the shutter in the open position with the threaded holding pin.

(3) Place the camera on the gauge block with the mirror surface, and position the outer film guides on the mirror surface (fig. 6-11).

(4) Position the dial gage, with feeler tip, on the surface of the lens mounting flange (fig. 6-12) and measure the distance to the mirror surface of the gauge block. The dial gauge should indicate 0.000, + 0.005, - 0.010 mm. (When the dial gauge is calibrated, a reading of zero is equivalent to 27.95 mm).

6-10. Check of Parallelism of Lens Mounting Flange and Film Plane

a. ***Purpose.*** This check is to insure that the lens mounting flange is parallel with respect to the film plane.

b. Test Equipment. This check requires the following test equipment :

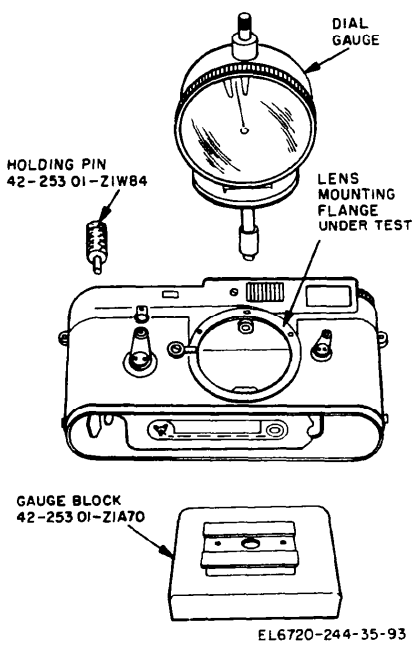

Figure 6-11 Setup for measuring camera lens flange to film plane distance.

(1) Auto collimator 42-582.01-Z1W4-4 (fig. 6-10).

(2) Auto collimator adapter 42-582.01-Z1W4-5 (fig. **6-13).**

(3) Gauge block with mirror surface 42-253.01-Z1A70 (fig. 6-10).

c. Procedure.

(1) Remove the hinged back from the camera

(2) Set the shutter speed dial to B. Lock the shutter in the open position with the threaded holding pin.

(3) Place the camera on the gauge block with mirror surface, and position the outer film guides on the mirror surface (fig. 6-13).

(4) Place the auto collimator with adapter on the lens mounting flange (fig. 6-13).

(5) Check for parallelism. The reticle reflection should coincide with the collimator reticle. A deviation of one-half line thickness is the permissible tolerance.

6-11. Rangefinder Adjustment Check, Rangefinder Roller Arm Alignment Check, Viewfinder Parallax Cheek, and Viewfinder Bright-Line Frames Positioning Check

a. Purpose. **This series of related checks establish the following:**

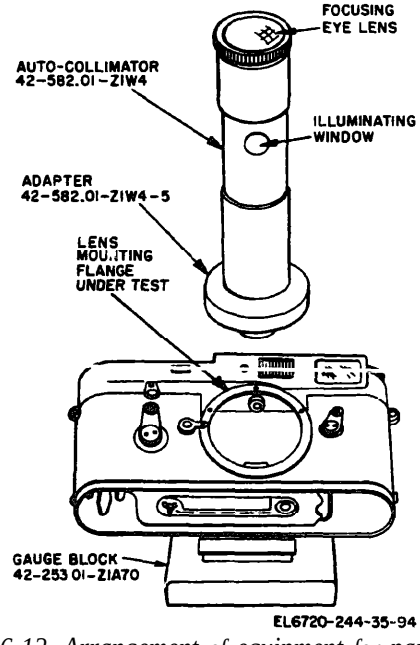

Figure 6-12. Arrangement of equipment for parallelism check.

(1) To check that the rangefinder is correctly adjusted.

(2) To check that the rangefinder roller arm is aligned.

(3) To check for correct parallax of the viewfinder.

(4) To verify correct positioning of the viewfinder bright-line frames.

***b. Test Equipment* (fig. 6-14). The following test equipment is required to perform the checks:**

(1) Table stand with adjustable fixture and ground glass 42-253.01-Z1W7.

(2) Focusing telescope 42-253.01-Z1W9.

(3) Graticule housing with two lamp sockets for one and two meter graticule 42-253.01-Z1W63.

(4) Graticule for one and two meter adjustments 42-700.01-Z1W20.

(5) Target for 0.7-meter adjustments 42-582.01-Z1W8.

(6) Graticule housing for lo-meter and infinity graticule 103.25.2.

(7) Graticule for lo-meter and infinity adjustments 103.25.16.

(8) Distance setting calibrating gauge with 90-mm lens 42-582.01-Z1A10 (fig. 6-16).

(9) Frame setting gauge 42-253.01-Z1A107 (fig. 6-17).

(10) Gauge 42-253.01-Z1A45 (fig. 6-13).

(11) Holding pin, threaded 42-253.01-Z1W84 (fig. 611).

c. Procedure.

(1) Range-viewfinder roller arm height check.

***(a)* Place gauge 42-253.01-Z1845 in the lens mounting flange with its measuring surface under the range-viewfinder roller arm (fig. 6-13).**

***(b)* Depress the gauge indicator until the measuring surface touches the range-viewfinder roller arm roller. The indicator index should align with the top edge of the gauge handle within a tolerance of one-half thickness of the gauge index line.**

(2) Rangefinder alignment check.

***(a)* Set up the calibrating stand with adjustable fixture and ground glass, the focusing telescope, the graticule holder and graticules, and the remaining equipment shown in figure 6-15. Arrange the equipment as shown in figure 6-16.**

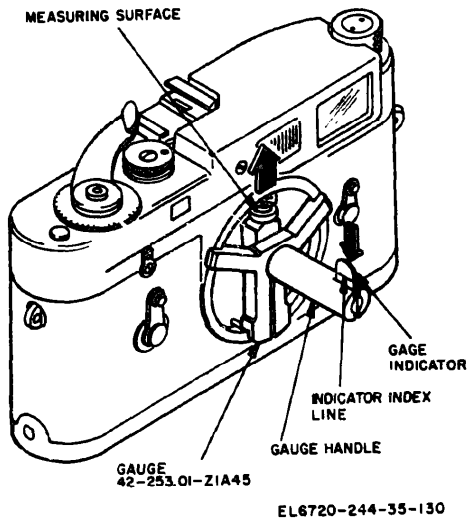

Figure 6-13. Range-viewfinder roller arm height gauge check.

(b) Remove the baseplate and hinged back of the camera; place the camera with mounted distance setting gauge, on the camera holder of the calibrating stand (fig. 6-15).

(c) Position the focusing telescope behind the eyelens, and focus the telescope to view the lo-meter and infinity graticule (A, fig. 6-15).

(d) Set the distance setting calibrating gauge to infinity and view the graticule. The rangefinder image should agree with figure 4-19, within a tolerance of one-half the thickness of a graticule line.

(e) Set the distance setting calibrating gauge to infinity and then turn it to the 19-meter setting. From this position, rotate the gauge back and forth several times between the click stops which define the lo-meter range.

(f) Set the distance setting calibrating gauge to 1 meter, turn it to 10 meters, and again rotate the gauge back and forth within the 10-meter range.

(g) While rotating the gauge within the lo-meter range, the rangefinder image should remain stationary and agree within one-half thick-

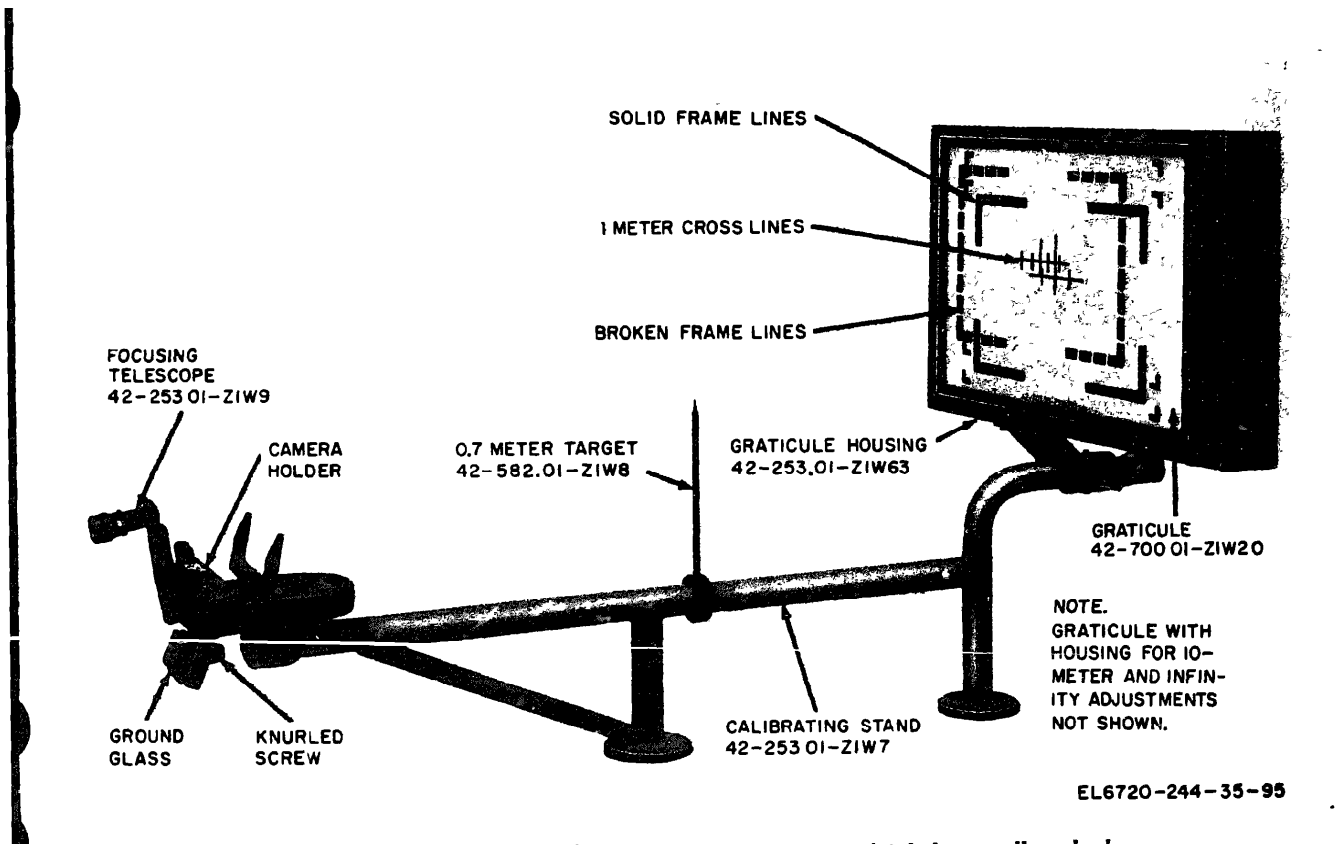

Figure 6-14. Equipment for rangefinder adjustment check, viewfinder parallax check, and viewfinder bright-tine frames positioning check.

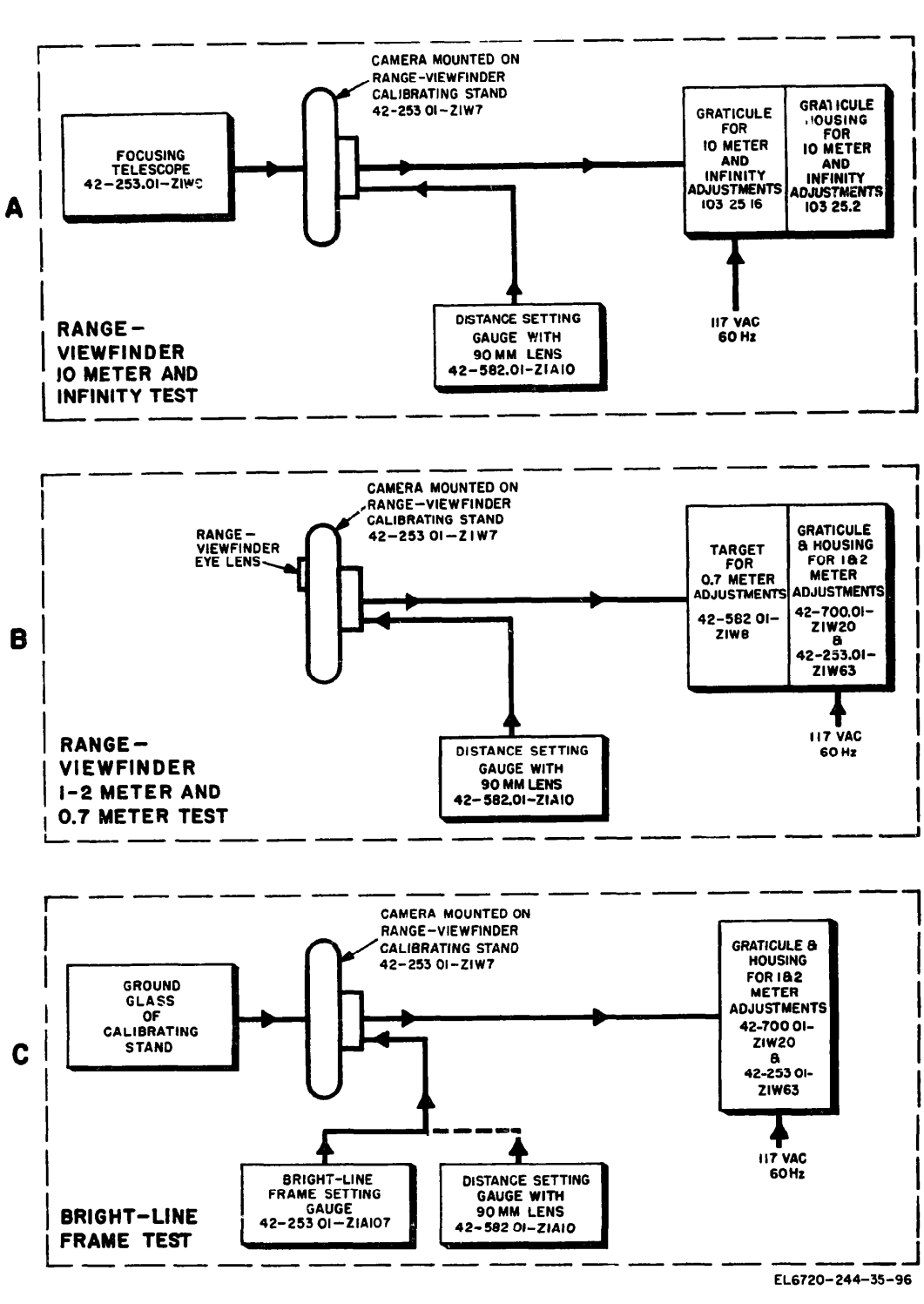

Figure 6-15. Setup for rangefinder, viewfinder, and bright-lane frames checks, block diagram.

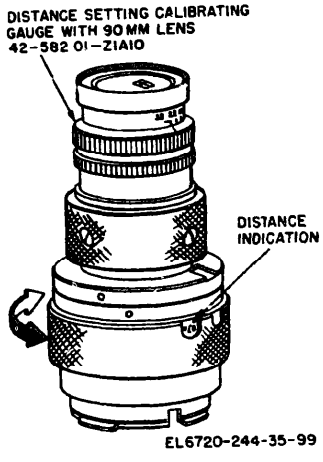

Figure 6-16. Distance setting calibrating gauge with 90-mm lens 42-582.01-Z1A10.

ness of a graticule line with the rangefinder image at 10 meters (fig. 4-21).

NOTE

The distance setting calibrating gauge, at its 10-meter range, has an upper and lower bearing surface defined by click stops (fig. 4-22). This permits checking the perpendicular alignment of the roller arm.

(h) Set the distance setting calibrating gauge to 1 meter. Swing the viewing telescope down and view the crosslines on the l-meter graticule (B, fig. 6-15) through the range-viewfinder eyelens.

(i) Check that the rangefinder image coincides within one-half the thickness of a crossline, with the graticule image.

(j) Set the distance calibrating gauge to 0.7 meters and check coincidence against the 0.7-meter target. A tolerance of one-half thickness of the target needle IS permissible (B, fig. 6-15). Remove the distance setting calibrating gauge.

(3) Bright-line frames positioning checks.

(a) Mount the distance setting calibrating gauge in the lens mounting flange and place the camera in the camera holder of the calibrating stand (fig. 6-14 and C, fig. 6-15).

(b) Wind the shutter, set the shutter speed dial to B, and lock the shutter in the open position with the holding pin.

(c) Position the ground glass screen behind the camera film aperture, and set the distance gauge to 1 meter.

(d) Adjust the camera holder to align the edges of the film aperture with the solid frame lines of the graticule.

(e) View the graticule through the viewfinder eyelens and 90-mm bright-line frame, which has been positioned by the distance setting gauge. Check that the bright-line frame coincides with the solid frame line of the graticule.

(f) Set the distance setting gauge to 0.7 meters and observe the graticule. Check that the brightline frame is below the solid graticule line.

(g) Reset the distance setting gauge to infinity. The bright-line frame should coincide with the graticule broken frame line. A slight deviation from coincidence is permitted at the infinity setting.

***(h)* Rotate the distance setting gauge alternately between 0.7 meters and infinity. The diagonal movement of the bright-line frame should be smooth and positive.**

(i) Mount the frame setting gauge (fig. 6-17) in the lens mounting flange, and place the setting lever of the gauge at midpoint to position the 50-mm bright-line frame.

(j) Observe the 50-mm bright-line frame and rotate the large knurled portion of the frame setting gauge back and forth within its limits.

***(k)* Alternately depress and release the press button while rotating the gauge. Check that the 50-mm bright-line frame remains fully visible and that neither the 90-mm nor the 35-mm bright-line frame appear in the field.**

NOTE

Depressing the press button, positions the bright-line frame for infinity. Releasing the button simulates the frame position at a distance of 1 meter.

(l) Release the setting lever (fig. 6-17) and rotate the front portion of the frame setting gauge to the SO-mm position.

(m) Observe the 90-mm bright-line frame while repeating steps (j) and *(k)* above. Check that the 90-mm bright-line frame remains fully visible, and neither the 35-mm nor the 50-mm bright-line frame appears in the field.

(n) Release the setting lever (fig. 6-17) and rotate the front portion of the frame setting gauge to the 35-mm position.

(o) Observe the 35-mm bright-line frame while repeating steps (j) and *(k)* above. Check that the 35-mm bright-line frame remains fully visible, and neither the 50-mm nor 90-mm bright-line frame appears in the field.

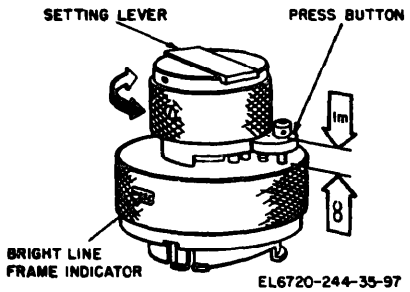

Figure 6-17. Frame setting gauge 42-253.01-Z1A107.

6-12. Camera Takeup Spool Friction Measurement

a Purpose. This measurement checks for the correct friction of the camera takeup spool.

***b. Test Equipment (fig.* 6-18).**

(1) Torsion tolerance gauge 42-253.01-Z1A59.

(2) Adapter for torsion tolerance gauge 042-782.001-001-ZW1,

c. Procedure.

(1) Attach the adapter to the gauge and insert the assembly into the camera takeup spool.

***(2)* Rest the camera housing against the gauge bottom plate.**

(3) Turn the gauge handle and rotate the takeup spool. Check that the torque required to overcome the takeup friction is not more than ± one index line width on the torsion tolerance gauge (fig. 6-19).

NOTE

Torque required to overcome friction is *250* grams + or - 20 grams.

6-13. Camera Accessory Clip Dimension Check

a. *Purpose.* This check ascertains whether the interior dimensions of the camera accessory clip are within tolerances.

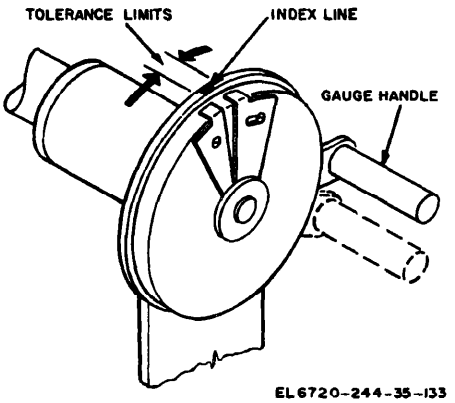

Figure 6-19. Takeup spool friction tolerance indications.

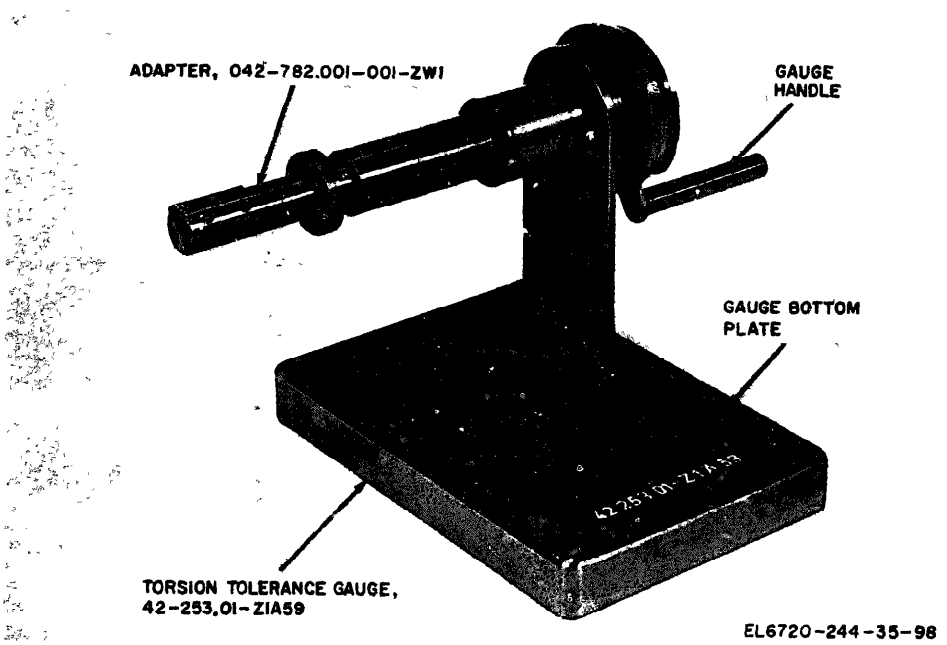

Figure 6-18. Equipment for camera takeup spool friction measurement.

b. Test *Equipment.* This check requires the use of go/no-go gauge 42-216-U482A1.

c. Procedure.

(1) Insert the go gauge into the camera accessory clip.

(2) To be within tolerance, an accessory clip should only accept the go gauge.

NOTE

Inside dimensions of a ssory clip should agree with the gauge within - 0, + 0.1 mm.

Section III. EXPOSURE METER

6-16. Exposure Meter Check

***a. Purpose.* This check determines if the exposure meter is calibrated correctly.**

***b. Test Equipment (fig. 6-20).* The test equip ment required is listed below.**

(I) Voltage regulator and transformer KH10.

(2) Test instrument 42-655.01-Z1W7.

(3) Calibration test instrument 42-655.01-Z1W22.

(4) Fixture with connecting cable 42-655.01-625W5NY.

***c. Procedure.* The calibration of the exposure meter is checked for dim and bright light levels. Proceed as follows:**

(1) Connect test instrument 42-655.01-Z1W7 to the 117-volt, 60-Hz supply; connect voltage regulator and transformer KH10, and calibration test instrument 42-655.01-Z1W22 as indicated in figure 6-21.

(2) Set the exposure meter to an exposure index of ASA 25. The meter indicator needle should be adjusted for mechanical zero before performing the-exposure meter check.

(3) Open the battery holder cover, remake the mercury cell and insert the fixture with connecting cable 42-655.01-625W5NY.

(4) Initially, adjust the voltage output of the calibration test instrument to zero.

(5) Energize the equipment and allow a 20-minute warmup.

(6) Place the lens of the exposure meter (cell window) against the illuminating window of the test instrument.

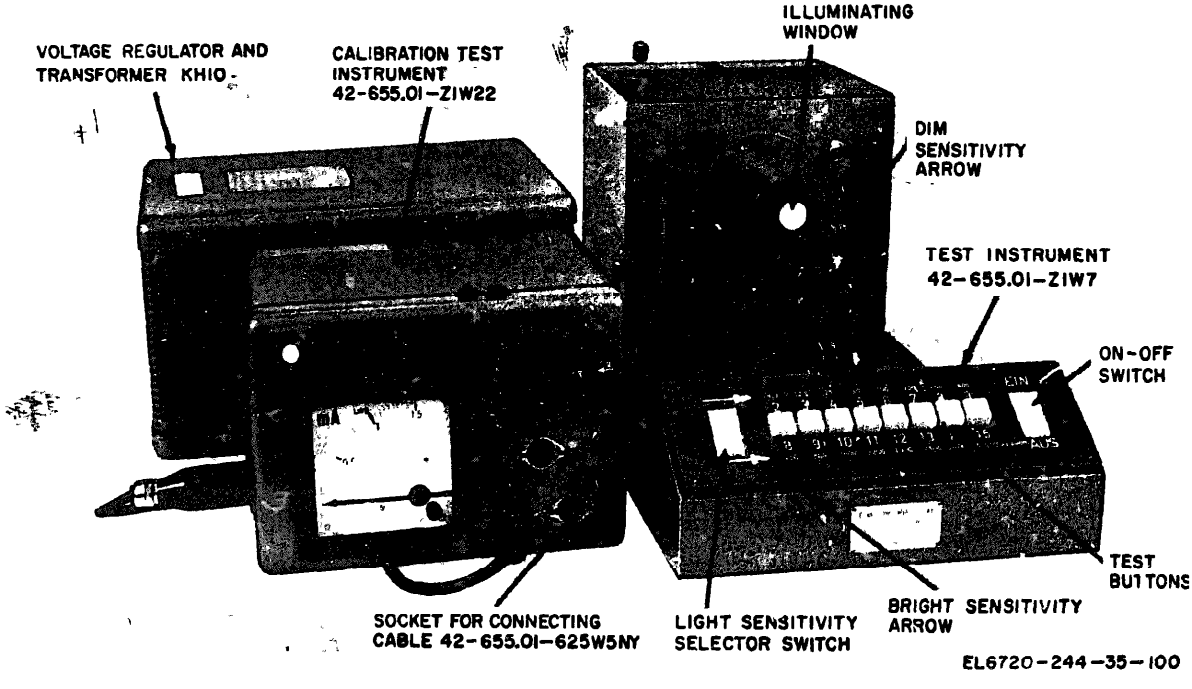

Figure 6-20. *Equipment* ***for*** exposure ***meter*** *check.*

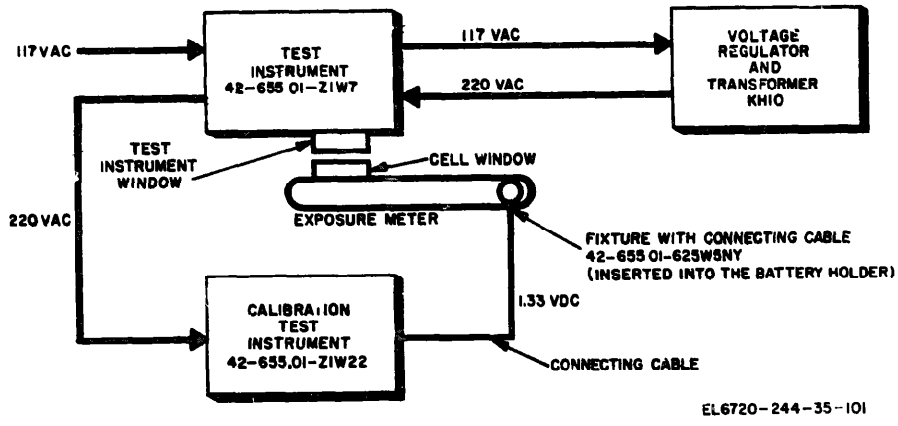

Figure 6-21. Exposure meter calibration check, equipment setup, block diagram.

NOTE

Do not allow extraneous light to enter either the exposure meter or the test instrument windows.

(7) Set the selector switch of the test instrument to the dim light position. Set the exposure meter sensitivity switch to the red index. Set the shutter speed scale on the exposure meter to 8 seconds and depress test instrument button 2.

(8) Activate the exposure meter needle release button. The meter indicator needle should position at f/5.6 in the red sector.

(9) Repeat steps (7) and (8) above for each of the test button positions and corresponding shutter speeds listed in the following table. Check that the meter indicator needle indicates f/5.6 in the red sector at each position.

Light level	*Test button*	*Shutter speed*	*Sensitivity index and f-stop*
Dim	2	8 seconds	Red-f/5.6
	3	4 seconds	Red-f/5.6
	4	2 seconds	Red-f/5.6
	5	1 second	Red-f/5.6
	6	1/2 second	Red-f/5.6
	7	1/4 second	Red-f/5.6
	8	1/8 second	Red-f/5.6

NOTE

A tolerance of 1/2-f/stop is permissible.

(10) Set the selector switch of the test instrument to the brigh-light position. **Set** exposure **meter sensitivity switch to the black index. Set the shutter speed scale on the exposure meter to 1/15 second and depress test instrument button 9.**

(11) Activate the needle release button. The meter indicator needle should position at f/5.6 in the black sector.

(12) Repeat steps (10) and (11) above for each of the test button positions and corresponding shutter speeds listed in the following table. Check that the meter indicator needle indicates f/5.6 in the black sector at each position.

Light level	*Test button*	*Shutter speed*	*Sensitivity index and f-stop*
Bright	9	1/15 second	Black-f/5.6
	10	1/30 second	Black-f/5.6
	11	1/60 second	Black-f/5.6
	12	1/125 second	Black-f/5.6
	13	1/250 second	Black-f/5.6
	14	1/500 second	Black-f/5.6
	15	1/1000 second	Black-f/5.6

NOTE

A tolerance of 1/2-f/stop is permissible.

(13) Remove the exposure meter from the test instrument.

(14) Check that when the battery-test switch is pressed, the indicator needle is centered over the battery-test index on the scale of the exposure meter.

(15) Deenergize and disconnect all test equipment.

Section IV. LENSES

6-15. Verify Calibration of Lens Focusing Scale With Reference to Camera Film Plane

a. Purpose. The checks verify that the 35-mm, 50-mm, and 135mm lens focusing scales agree with the camera film plane.

b. Test Equipment (fig. 6-22). The **checks require the use of the following test equipment:**

(1) Ground glass housing 42-630.01-Z1A6NY.

(2) Focusing magnifier 5X, 16,486.

c. Procedure.

(1) Mount the lens under test on ground glass housing 42-630.01-Z1A6NY, and fit the 5X focusing magnifier 16,486 to the housing. Place the combination on a sturdy support.

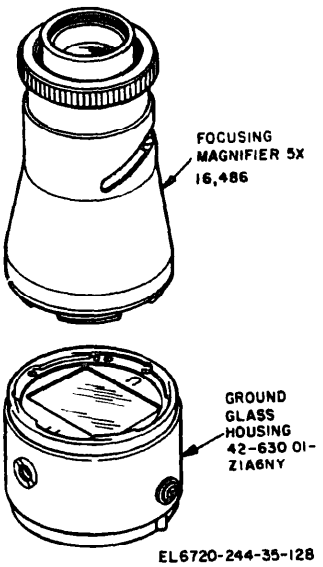

Figure 6-22. Ground glass housing 48-630.01-Z1A6NY, and focusing magnifier 5X, 16,486.

(2) **View the ground glass through the magnifier, and focus the lens on an object at an intermediate and known distance. Check that the focusing scale agrees with the subject distance within + or - 25% of the depth-of-field at full aperture.**

NOTE

Subject distance is measured from the camera film plane (ground surface of viewing screen).

(3) Focus the lens on an object at infinity. The focusing scale should agree with its infinity symbol.

NOTE

Infinity is defined as a distance equal to, or greater than, 1,000 times the square of the lens focal length.

(4) Focus the lens at infinity, medium and close distances, and check image definition on the ground glass *screen.*

(5) Remove the lens under test from the ground glass housing, and mount it on a camera body known to have a correctly adjusted range finder. Place the camera on a sturdy support.

(6) Focus the rangefinder on an object at an intermediate and known distance. The lens focusing scale should agree with the subject distance.

(7) Set the lens focusing mount to infinity and view an object at infinity. Check that the rangefinder images coincide with the object.

6-16. Check Collimation of 50-Mm and 135-Mm Lens Viewing Units

a. Purpose. **These checks verify correct collimation of the SO-mm and 135-mm lens viewing units.**

b. Test Equipment. **The checks require the use of the following test equipment:**

(1) Ground glass housing 42-630.01-Z1A6NY (fig. 6-22).

(2) Focusing magnifier, 5X, 16,486 (fig. 6-22).

(3) Ruled target 42-630.01-Z1A7 (fig. 6-23).

c. Procedures.

(1) *50-mm* lens *viewing unit.*

(a) Mount the SO-mm lens on a camera body having a range-viewfinder known to be correctly adjusted.

(b) Place a target with vertical and horizontal crosslines 24 inches from the camera film plane. Center the target perpendicular to the SO-mm lens axis.

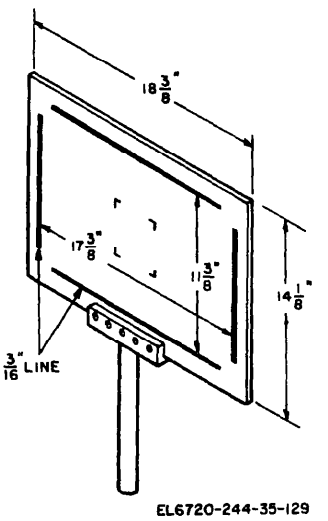

Figure 6-23. Ruled target 42-630.01-Z1A7.

(c) Mount the viewing unit on the SO-mm lens, set the lens focusing scale to 24 inches, and view the target through the camera viewfinder. Check that the rangefinder images coincide with the target.

(2) 135-mm lens viewing unit.

***(a)* Mount the 135-mm lens on an adjustable support, and attach the ground glass housing with the 5X magnifier.**

(b) Mount ruled target 42-630.01-Z1A7 on the 135-mm lens axis at a distance of approximately 7 feet, and perpendicular to the axis. View the ground glass through the magnifier, and focus the lens on the target.

(c) Adjust the support, with the lens, until the lines on the target are parallel with the mask of the ground glass housing.

***(d)* Replace the ground glass housing and magnifies with a camera body having a range-viewfinder known to be correctly adjusted.**

(e) View the target through the camera viewfinder. Check that the lines on the target are parallel with the viewfinder bright-line frame.

(f) Remove the target. Set the lens distance scale to infinity, and view an object at infinity. Check that the rangefinder images coincide with the object.

Section V. FLASH UNIT

6-17. Flash Unit Check

a. *Purpose.* This check verifies that the circuitry of the flash unit and each connecting and extension cord is correct.

***b. Test Equipment.* This check does not require the use of special test equipment, but a known serviceable battery and test lamp should be used to perform the test.**

c. Procedure.

CAUTION

Do not leave the test lamp in the flash unit for a prolonged period of time. It will drain the battery and severely shorten its life.

(1) Insert a known serviceable battery into the flash unit.

(2) Insert the connecting cord in the connecting cord socket on the housing. Pull the plug pan way out of the socket (1/4 inch or less) and expose the metal prongs of the plug.

(3) Insert the test lamp in the bayonet-base lamp socket and allow approximately 5 seconds for the capacitor to charge. The test lamp should not glow.

(4) Short the prongs of the plug by placing a metal object (knife blade, coin, etc.) across them. The test lamp should glow momentarily. Remove the test lamp and shorting object.

(5) Rewind and remove the film if the camera is loaded. Mount the flash unit on the camera and insert the connecting cord in the flashlamp socket of the camera. Push the connecting cord fully into the connecting cord socket on the flash unit housing.

(6) Wind the shutter and set the shutter speed dial to any speed. Insert the test lamp in the flash unit and wait approximately 5 seconds for the capacitor to charge. Trip the shutter. The test lamp should glow momentarily.

(7) Repeat the checks described in steps (5) and (6) above using the extension cord.

CHAPTER 7

DEMOLITION TO PREVENT ENEMY USE

7-1. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. Use the destruction procedures outlined in 7-2 to prevent further use of the equipment.

7-2. Methods of Destruction

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

(1) Camera body

(2) Lens optical components.

(3) Exposure meter.

(4) Flash unit.

(5) Carrying cases.

(6) Spare parts.

b. **Use any of the following methods:**

(1) *Smash.* Smash the controls, optics, lens mounting flange, and back of the camera. Smash the optics and focusing mounts of all lenses. Smash the scales and dials of the exposure meter. Smash the B-C insert, reflector, housing, and test lamp of the flash unit)

(2) **Cut. Cut the cable release and flash connection and extension cords. Cut the leather carrying cases.**

W A R N I N G

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

(3) Burn. **Burn the flash cords and carrying cases. Burn the technical manuals.**

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

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

APPENDIX A

REFERENCES

The following publications contain information applicable to the maintenance and operation of Camera Set, Still Picture KS-15(4).

DA Pam 310-4	**Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.**
SB 38-100	**Preservation, Packaging and Packing Materials, Supplies, and Equipment Used by the Army.**
TM 11-401	**Elements of Signal Photography.**
TM 11-6625-203-12	**Operator and Organizational Maintenance : Multimeter AN/UBM-105, Including Multimeter ME-77/U.**
TM 11-6720-244-12	**Operator and Organizational Maintenance Manual: Camera Set, Still Picture KS-15(4).**
TM 38-755	**The Army Maintenance Management System (TAMMS).**

APPENDIX B

DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS

Section I. INTRODUCTION

B-1. Scope

This appendix lists repair parts required for the performance of direct support, general support, and depot maintenance of the KS-15(4).

B-2. General

This repair parts lists is divided into the following sections :

a. Repair Parts for Direct Support, General Support, and Depot Maintenance-Section II. **A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot level.**

b. Index-Federal Stock Number Cross-Reference to Figure and Item Number or Reference Designation-Section III. **A list of Federal stock numbers in ascending numerical sequence, cross-referenced to the figure number and reference designation.**

c. Index-Reference Number Cross-Reference to Figure and Reference Designation or Item 'Number-Section IV. **A list of reference numbers appearing in ascending alphanumerical sequence, cross-referenced to figure number and reference designation.**

d. Index-Reference Designation Cross-Reference to Page Number-Section V. **A list of reference designations cross-referenced to page num*bers.***

B-3. Explanation of Columns

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

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

(1) Source codes indicate 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 at 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.
Xl	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 canibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.

Code	Explanation
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies as DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance codes indicate the lowest category of maintenance authorized to install the listed item. The maintenance level codes are-

Code	*Explanation*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

(3) Recoverability codes indicate 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 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. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. *Description.* Indicates the Federal item name and any additional description of the item required. The index number has been included as part of the description to aid in the location of "same as" items. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of *Measure (U/M).* A two-character alphabetical 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. Indicates the quantity of the item used in the KS-15(4). Subsequent appearances of the same item in the same assembly are indicated by the letters "REF."

f. *30-Day DS/GS Maintenance Allowances.*

NOTE

Allowances in GS Column are for GS maintenance only.

(1) The allowance columns are divided into three 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 applicable 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 DS/GS levels of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

(3) Determination of the total quantity of parts required for maintenance of more than 100 of these equipments can be accomplished 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.

g. One-Year Allowances per 100 Equipments/ Contingency Planning Purposes. Indicates opposite the first appearance of each item the total quantity required for distribution and contingency planning purposes. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for 1 year.

h. Depot Maintenance Allowance per 100 Equipments. Indicates opposite the first appearance of each item the total quantity authorized for depot maintenance of 100 equipments. Subsequent appearances of the same item will have the letters "REF" in the allowance column. Items authorized for use as required, but not for initial stockage, are identified with an asterisk in the allowance column.

i. Illustrations.

(1) *Figure number.* Indicates the figure number in which the item is shown.

(2) Item number or reference designation. **Indicates the reference designation used to identify the item in the illustration.**

B-4 Special Information

a. Repair parts mortality is computed from failure rates derived from experience factor-s 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, plus 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.

b. **Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization in accordance with SB 11-6.**

B-5. location of Repair Parts

a. **This appendix contains three cross-reference indexes (secs. III, IV, and V) 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 numerical or alphanumerical sequence in ascending order. Where a Federal stock number is listed, refer to section III. Where a Federal stock number is not listed, refer to section IV.**

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

(1) Refer to section III (index of Federal stock numbers) or section IV (index of reference numbers) and note the applicable figure and reference designation.

(2) When the reference designation is determined, refer to the reference designation index (sec. V). The reference designations are listed in alpha-numerical ascending order and are cross-referenced to the page number on which they appear in the repair parts list (sec. II). Refer to the page number noted in the index and locate the reference designation in the repair parts list (col. 10b), ***Support, General Support and Depot Maintenance.*** **If the description column indicates that it is a "SAME AS" item, locate the first appearance of the item by the index number referenced.**

c. When the reference designation is known, follow the procedures given in ***b (2)*** **above.**

d. **When neither the FSN, reference number, nor reference designation is known, identify the part in the illustration and follow directions given in c above, or scrutinize column 3 of the repair parts list (sec. II).**

B-6. Federal Supply Code for Manufacturers

Code	*Manufacturer's name*
35643	Leitz, E., Inc.
90303	Mallory Battery Co.

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51 100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
	6720-935-7701	A CAMERA SET, STILL PICTURE KS-15(4): (THIS ITEM IS NONEXPENDABLE):													
P2-F-S	6720-456-5992	A1 CAMERA, STILL PICTURE: 42-582/1.3 (35643)		EA	1	*	*	*	*	*	*	5	2	3-1	1
P-U	6720-018-4006	A2 BASE PLATE COMPLETE: 42-782.005-001 (35643)		EA	1	*	2	2	*	2	2	14	8	3-1	1A1
[illegible]		A3 SCREW, INSTRUMENT: M2X4DIN621-(35643)		EA	1									3-1	1A1H1
X1-F		A4 ROLLER, BASE PLATE: 42-782.005-005 (35643)		EA	1									3-1	1A1MP1
X2-F	5305-109-7020	A5 SCREW, INSTRUMENT: 15-10.232-5 (35643)		EA	1									3-1	1A1H2
X1-F		A6 WASHER, FLAT: 6.5DIN125 (35643)		EA	1									3-1	1A1H3
X1-F		A7 PLATE, LOCKING: 42-253.001-757 (35643)		EA	1									3-1	1A1MP2
X1-F		A8 WASHER, FLAT: 15-12.06-14/5 (35643)		EA	1									3-1	1A1H4
X1-F		A9 WASHER, SPRING TENSION: 15-12.06-37/1 (35643)		EA	1									3-1	1A1H5
X1-F		A10 SHIM: 15-12.06-14/6 (35643)		EA	1									3-1	1A1H6
X1-F		A11 SHIM: 15-12.06-14/11 (35643)		EA	1									3-1	1A1H7

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE		(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTG CY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-F		A12 BASE PLATE, RIVETED: 42-782.005-018 (35643)		EA	1									3-1	1A1MP3
X1-F		A13 SHIM: 15-12.06-1671 (35643)		EA	1									3-1	1A1H8
X1-F		A14 NUT, LOCKING: 42-253.001-752 (35643)		EA	1									3-1	1A1H9
X1-F		A15 HANDLE, BOW: 42-253.001-753 (35643)		EA	1									3-1	1A1MP4
X1-F		A16 PIN, STRAIGHT, HEADLESS: 42-253.001-754 (35643)		EA	1									3-1	1A1MP5
P-O	6720-018-3999	A17 REAR CAMERA DOOR 42-253.01-646 (35643)		EA	1	*	*	2	*	*	2	8	4	3-2	1A2
X1-F		A18 SCREW, INSTRUMENT: 1.4X2LM120.21 (35643)		EA	4									3-2	1A2H1
X1-F		A19 PLATE, HOLDING: 42-253.01-650 (35643)		EA	2									3-2	1A2MP1
X1-F		A20 PLATE, PRESSURE: 42-253.01-648 (35643)		EA	1									3-2	1A2MP2
X1-F		A21 SPRING, PRESSURE PLATE: 42-253.01-649 (35643)		EA	1									3-2	1A2MP3
X1-F		A22 SCREW, INSTRUMENT: M1.4X2LM12021 (35643)		EA	2									3-2	1A2H2
X1-F		A23 REAR PLATE COMPLETE, RIVETED: 42-253.01-664 (35643)		EA	1									3-2	1A2A1
X1-F		A24 PIN, THREADED, HEADED: 42-253.01-571 (35643)		EA	1									3-2	1A2A1MP1

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SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE		(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1 20	(b) 21-50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-F		A25 SHAFT, HINGE: 42-253.01-570 (35643)		EA	1									3-2	1A2A1MP2
X1-F		A26 SPRING, HELICAL, COMPRESSION: 42-253.01-569 (35643)		EA	1									3-2	1A2A1MP3
X1-F		A27 NIPPLE: 42-253.01-656 (35643)		EA	2									3-2	1A2A1MP4
X1-F		A28 LEATHERETTE COVERING: 42-253.01-652 (35643)		EA	1									3-2	1A2A1MP5
X1-F		A29 PLATE, DESIGNATION: 42-253.01-582 (35643)		EA	1									3-2	1A2A1MP6
P-O	6760-018-3476	A30 LENS, CAP: 14056 (35643)		EA	1	*	2	2	*	2	2	18	9	3-3	1MP1
P-O	6720-018-4003	A31 SYNCHRO-OUTLET COVER: 14054 (35643)		EA	2	*	*	2	*	2	2	12	5	3-3	1MP2
P-H	6720-456-1875	A32 COVER PLATE ASSEMBLY: KS15NY1 (35643)		EA	1				*	*	2	6	3	3-3	1A3
X1-H		A32A COVER, PLATE: 42-582.01-390 (35643)		EA	1									3-3	1A3A1
X1-H		A32B FELT DISC: 15-12.18-5/1 (35643)		EA	1									3-3	1A3A1MP1
X2-H	6620-106-4557	A32C WINDOW, RIGHT: 42-582.01-393 (35643)		EA	1									3-4	1A3A1MP2
X1-H		A32E ILLUMINATING WINDOW: 42-582.01-392 (35643)		EA	1									3-4	1A3A1MP3

AMSEL-M KS-15(4) ESC FM 453448

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X2-H	6720-106-4758	A32F WINDOW, LEFT: 42-582.01-391 (35643)		EA	1									3-4	1A3A1MP4
X1-H		A32G STOP BRACKET: 42-582.01-394 (35643)		EA	1									3-4	1A3A1MP5
X1-H		A33 RING, SCREW: 42-253.01-36 (35643)		EA	1									3-3	1A3MP1
X2-H	6720-106-4754	A34 WASHER, SPRING TENSION: 15-12.11-6/1 (35643)		EA	1									3-3	1A3MP2
X2-H	6720-106-4755	A35 LEVER, MANUAL CONTROL: 42-253.01-371 (35643)		EA	1									3-3	1A3MP3
X2-H	5310-109-7015	A36 WASHER, CLINCH RING: 42-582.01-42 (35643)		EA	1									3-3	1A3MP4
X1-H		A37 PLATE, DESIGNATION: 42-582.01-25 (35643)		EA	1									3-3	1A3MP5
X1-H		A39 SCREW, INSTRUMENT: 42-582.01-27 (35643)		EA	1									3-3	1A3H1
X1-H		A40 SCREW, INSTRUMENT: M1.4X4-DIN63 (35643)		EA	1									3-3	1A3H2
X2-H	6760-111-0693	A41 DIAL, SPEED: 42-253.01-301 (35643)		EA	1									3-3	1A3MP6
X2-H	5305-109-7016	A42 SCREW, INSTRUMENT: 15-10.24-5 (35643)		EA	4									3-3	1A3H3
X1-H		A43 SCREW, INSTRUMENT: 15-10.189-7 (35643)		EA	1									3-3	1A3H4
X1-H		A44 MOUNT, ACCESSORY SHOE: 42-253.01-777 (35643)		EA	1									3-3	1A3MP7

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-D		A45 PLATE, PRESSURE: 42-253,01-780 (35643)		EA	1									3-3	1A3MP8
X1-D		A46 SPRING, FLAT, PRESSURE: 42-253,01-781 (35643)		EA	1									3-3	1A3MP9
X2-H	5305-109-7017	A47 SCREW, INSTRUMENT: 15-10,21-11 (35643)		EA	1									3-3	1A3H5
X2-H	5310-109-7019	A48 SHIM: 15-12,03-17/1 (35643)		EA	1									3-3	1A3H6
X1-H		A49 KNOB, REWIND: 42-253,01-499 (35643)		EA	1									3-3	1A3MP10
X2-H	6720-106-4756	A52 NUT, RETAINING. 42-253,01-498 (35643)		EA	1									3-3	1A3H7
X1-H		A53 SYNCHRO-OUTLET COVER RING: 42-253,01-486 (35643)		EA	2									3-3	1A3MP11
X1-H		A54 BUSHING, SYNCHRO: 42-253,01-483 (35643)		EA	2									3-3	1A3MP12
X1-H		A55 LOCKING SPRING: 42-253,01-[illegible] (35643)		EA	2									3-3	1A3MP13
X1-H		A60 COVER SCREW: 42-253,01-731 (35643)		EA	1									3-4	1A3H8
X1-H		A65 LENS, EYE, SPUN IN: 42-582,01-384 (35643)		EA	1									3-4	1A3MP14
X1-H		A65A SCREW, INSTRUMENT: 15-10,170-10 (35643)		EA	1									3-3	1H1

AMSEL-MEF

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(3) DESCRIPTION	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRAT (a) FIG NO	ITEM REFE DESIG
X1-H			A65B WASHER, SPRING TENSION: 15-12.15-7/1 (35643)	EA	1									3-3	1H2
X1-H			A65C RELEASE KNOB: 42-582.01-28 (35643)	EA	1									3-3	1MP50
X1-H			A65E SLEEVE: 42-582.01-39 (35643)	EA	1									3-3	1MP51
X1-D			A65F INSULATOR, WASHER: 15-12.05-32/1 (35643)	EA	1									3-5	1MP55
X1-D			A65G PLATE, LIGHT SEALING: 42-253.0 -107 (35643)	EA	1									3-5	1MP56
P-H	6720-438-1878		A66 RANGE-VIEWFINDER ASSEMBLY: 42-582.03-1 (35643)	EA	1				*	*	2	6	4	3-5	1A5
X1-H			A67 SCREW, INSTRUMENT: AM2X2.8-DIN84 (35643)	EA	2									3-5	1H3
X1-H			A68 SCREW, INSTRUMENT: M1.7X3.5LN-12025 (35643)	EA	2									3-5	1H4
X1-H			A69 SCREW, INSTRUMENT: 15-10.174-7 (35643)	EA	1									3-5	1H5
X1-H			A70 COVER PLATE: 42-782.001-154 (35643)	EA	1									3-5	1MP3
X1-H			A71 PLATE, LOCKING: 42-253.01-78 (35643)	EA	1									3-5	1MP4
X1-H			A72 SPACER: 42-253.01-814 (35643)	EA	1									3-5	1MP5

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-30	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A73 COVER PLATE, COMPLETE: 42-253.01-804 (35643)		EA	1									3-5	1A4
X1-H		A74 SCREW, INSTRUMENT: M2X4LN12021 (35643)		EA	1									3-5	1A5H1
X1-H		A75 WASHER, FLAT: 15-72.02-17/2 (35643)		EA	1									3-5	1A5H2
X1-H		A76 ROLLER ARM, RIVETED, COMPLETE: 42-153.17-128 (35643)		EA	1									3-5	1A5A3
X1-H		A77 CAM, RANGE-VIEWFINDER: 42-253.17-26 (35643)		EA	1									3-5	1A5MP1
X2-H	6720-106-4761	A78 STOP DISC: 42-253.17-25 (35643)		EA	1									3-5	1A5MP2
X1-H		A78A ECCENTRIC CAM ASSEMBLY: KS15NY2 (35643)		EA	1										1A5A2
X1-H		A79 SCREW, INSTRUMENT: 15-10.29-13 (35643)		EA	1									3-5	1A5A2H1
X1-H		A80 ECCENTRIC CAM: 42-253.01-115 (35643)		EA	1									3-5	1A5A2MP1
P-H	6720-181-1022	A80A KIT, RANGE FINDER CAM: KS15NY3 (35643)		EA	1				*	*	2	6	4		1A5A2MP2
P-H		A83 MASK-ADJUSTING DEVICE ASSEMBLY: 42-582.04-28 (35643)		EA	1				*	*	2	6	3	3-6	1A5A3
X1-H		A84 SCREW, INSTRUMENT: 15-10.170-5 (35643)		EA	2									3-6	1A5H3

AMSEL-ME — ESC-FM 4534-68

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER SOUP CRITICY	(9) DEPOT MAINT ALW PER 100 SOUP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A85 SPRING, HELICAL, TORSION: 42-582.03-35		EA	1									3-7	1A5A3MP1
X1-H		A85A MUTISLOTED SCREW & SPRING ASSY: KS15NY4 (35643)		EA	1										1A5A3A1
X1-H		A86 MILTISLOTED SCREW: 42-582.03-2 (35643)		EA	1									3-7	1A5A3A1MI
X1-H		A87 SPRING: 42-582.03-3 (35643)		EA	1									3-7	1A5A3A1MP1
X1-H		A88 MASK-FRAME PLATE: 42-582.03-4 (35643)		EA	1										1A5A3A2
X1-H		A89 FRAME: 42-582.03-4A (35643)		EA	1									3-7	1A5A3A2MP1
X1-H		A90 RIVET SCREWS: 42-582.03-4B (35643)		EA	2									3-7	1A5A3A2MP2
X1-H		A91 LAMINATED PHOTO ENGRAVED PLATE: 42-582.03-4C		EA	1									3-7	1A5A3A2MP3
X1-H		A92 MATAL MASK, RIVETED: 42-582.03-4D (35643)		EA	1									3-7	1A5A3MP2
X1-H		A93 MAIN FRAME WITH GUIDING ARM: 42-582.03-4E (35643)		EA	1									3-7	1A5A3A3
X1-H		A94 PRISM ASSEMBLY SEAT, COMPLETE: 42-582.03-5 (35643)		EA	1									3-6	1A5A4

AMSEL-ME Form 1 Nov 68 6048 I

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A95 SCREW, INSTRUMENT: N1.7X5DIN84-5A (35643)	EA	2									3-6	1A5H4
X1-H		A96 SCREW, INSTRUMENT: HI.7X5DIN85-58 (35643)	EA	1									3-6	1A5H5
X1-H		A97 OPTICAL PRISM: 42-582.03-5C (35643)	EA	1										1A5A4MP1
X1-H		A98 PENTAPRISM: 42-582.03-5D (35643)	EA	1										1A5A4MP2
X1-H		A99 CAP, SEALING, PRISM: 42-582.03-5E (35643)	EA	1									3-6	1A5A4MP3
X1-H		A100 OBJECTIVE LEVER ASSEMBLY: 42-582.03-6 (35643)	EA	1									3-6	1A5A5
X1-H		4101 SPRING, HELICAL, EXTENSION: 42-582.03-6A (35643(	EA	1									3-6	1A5A5MP1
X1-H		A102 BALL-SCREW, CEMENTED: 42-582.03-6B (35643)	EA	1									3-6	1A5MP4
X1-H		A103 OCULAR BARREL: 42-582.03-6C (35643)	EA	1									3-6	1A5A5A1
X1-H		A103A BARREL: KS15NY5 (35643)	EA	1										1A5A5A1MP1
X1-H		A104 LENS-GROUP, 2 CEMENTED ELEMENTS: 42-582.03-6D (35643)	EA	1									3-6	1A5A5A1MP2
X1-H		A105 SCREW, INSTRUMENT: N1.4X2.2DIN84-6E (35643)	EA	2									3-6	1A5A5H1

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CRITICY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A106 ECCENTER PLATE: 42-582.03-6F (35643)		EA	1									3-6	1A5A5MP2
X1-H		A107 BARREL ADJUSTMENT LINGAGE: 42-582.03-6G (35643)		EA	1									3-6	1A5A5MP3
X1-H		A108 SCREW, INSTRUMENT: N1.4X2DIN84-7 (35643)		EA	1									3-6	1A5H6
X1-H		A109 MIRROR: 42-582.03-8 *(35643)*		EA	1									3-6	1A5MP5
X1-H		A109A ADJUSTING DEVICE ASSEMBLY: K515NY6 *(35643)*		EA	1										1A5A6
X1-H		A110 FRAMES ADJUSTING DEVICE A55Y: 42.582.03-9 (35643)		EA	1										1A5A6A1
X1-H		A111 AXLE, THREADED: 42.582.03-9A (35643)		EA	1									3-6	1A5A6MP1
X1-H		A112 SPRING, HELICAL, COMPRESSION: 42-582.034-9B (35643)		EA	1									3-6	1A5A6MP2
X1-H		A113 SETSCREW: 42-582.03-9C (35643)		EA	1									3-6	1A5A6A1MP1
X1-H		A114 NUT, ADJUSTING: 42-582.03-9D (35643)		EA	1									3-6	1A5A6A1MP2
X1-H		A115 BLOCK, GUIDING: 42-582.03-9E (35643)		EA	1									3-6	1A5A6A1A1
X1-H		A116 PLASTIC PIN: 42-582.03-9F (35643)		EA	1									3-6	1A5A6A1A1MP1

AMSEL-MS Form 1 Nov 68 6048 Pre ESC FM 45346-68

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION — REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
XI-H		A117 ADJUSTING AXLE, RIVETED: 42-582.03-10 (35643)		EA	1									3-6	1A5MP6
XI-H		A118 SCREW, INSTRUMENT: N1.4X1.5D1N63-11 *(35643)*		EA	3									3-6	1A5H6
XI-H		A119 LEARING, AXLE: 42-582.03.12 (35643)		EA	1									3-6	1A5MP7
XI-H		A120 SCREW, INSTRUMENT: *M1.7X2.3DIN84-13 (35643)*		EA	2									3-6	1A5H7
XI-H		A121 FRAME MASK: *42-582.03-14 (35643)*		EA	1									3-6	1A5MP8
XI-H		A122 SCREW, INSTRUMENT: M1.7X2DIN84-15 (35643)		EA	1									3-6	1A5H8
XI-H		A123 BRACKET, ANGLE, SPRING: 42-582.03-16 (35643)		EA	1									3-6	1A5MP9
XI-H		A124 SPRING, LEAF, PRESSURE: 42-582.03-17 (35643)		EA	1									3-6	1A5MP10
XI-H		A125 LENS, VIEW FINDER, PHOTOGRAPHIC: *42-582.03-18 (35643)*		EA	1									3-6	1A5MP11
XI-H		A126 SETSCREW: M1,7X2DIN551-19 (35643)		EA	3									3-6	1A5H9
XI-H		*A121* MASK: 42-582.03-20 (35643)		EA	1									3-6	1A5MP12

AMSEL-ME Form 1 Nov 68 6048 il

DIRECT SUPPORT, GENERAL SUPPORT, [illegible]

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A128 SETSCREW: M1,7X2,8DIN551-2 (35643)		EA	1									3-6	1A5H10
X1-H		A129 SETSCREW: M1,7X1,7DIN551-2 *(35643)*		EA	1									3-6	1A5H11
X1-H		4130 SCREW, INSTRUMENT: M1,7X2,3D1N84-23 (35643)		EA	1									3-6	1A5H12
X1-H		A131 RACKET, ANGLE: 42-582,03-24 (35643)		EA	1									3-6	1A5MP13
X1-H		A132 MAIN PRISM-2 ELEMENTS: CEMENTED 42-582.03-25 (35643)		EA	1									3-6	1A5A7
X1-H		A133 ALUMINUM STUD: 42-582.03-26 (35643)		EA	2									3-6	1A5MP14
X1-H		A134 SCREW, INSTRUMENT: M1,4X2,3DIN84-27 (35643)		EA	1									3-6	1A5H13
X1-H		A135 BRACKET, ANGLE: 42-582.03-28 (35643)		EA	1									3-6	1A5MP15
X1-H		A136 SCREW, INSTRUMENT: M1,7X4DIN84-29 (35643)		EA	2									3-6	1A5H14
X1-H		A137 PLATE, PRESSURE: 42-582.03-30 (35643)		EA	1									3-6	1A5MP16
X1-H		A137A ACROMAT-SEAT ASSEMBLY: K515NY7 *(35643)*		EA	1										1A5A8
X1-H		A138 SEAT: 42-582.03-31 (35643)		EA	1									3-6	1A5A8MP1

AMSEL ME Form 1 Nov 68 **6048**

FSC FM 4530-68

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY. INC. IN UNIT	(6) 20 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) RQ. ALW PER GROUP CAPACITY	(9) DEPOT MAINT NO GROUP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO. OR REFERENCE DESIGNATION
X1-H		A139 ACHROMAT-2 CEMENTED ELEMENTS: 42-582.03-32 (35643)		EA	1									3-6	1A5MP2
X1-H		A140 HOUSING WITH CEMENTED BALL: 42-582.03-33 (35643)		EA	1									3-6	1A5MP16
X1-H		A142 SCREW, INSTRUMENT: 15-10.172-6 (35643)		EA	1									3-8	1H6
P-H	6720-436-5985	A143 LEVER, REVERSE: 42-253.01-116 (35643)		EA	1				*	*	*	5	2	3-8	1MP6
X1-H		A145 SCREW, INSTRUMENT: 15-10.22-6 (35643)		EA	4									3-8	1H7
X1-H		A146 SCREW, INSTRUMENT: SAME AS A74		EA	1									3-8	1H8
X1-H		A147 SCREW, INSTRUMENT: 15-10.20-8 (35643)		EA	2									3-8	1H9
X1-H		A148 SCREW, INSTRUMENT: M1.7X2.5LN12021 (35643)		EA	1									3-8	1H10
X1-H		A149 LIGHT SHIELD: 42-253.01-83 (35643)		EA	1									3-8	1MP7
P-H	6720-106-4765	A151 SELFTIMER ASSEMBLY, COMPLETE: 42-253.16-1 (35643)		EA	1				*	*	*	5	2	3-8	1A6
X1-H		A152 SPRING, SPIRAL, TORSION: 42-253.16-39/1 (35643)		EA	1									3-9	1A6MP1
X1-H		A153 SCREW, INSTRUMENT: 42-253.16-39/2 (35643)		EA	1									3-9	1A6H1

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQU CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A154 CARRIER, SLIP UN: *42-253,16-39/3 (35643)*		EA	1									3-9	1A6MP2
X1-H		A155 SCREW INSTRUMENT: *42-253.16-39/4 (35643)*		EA	2									3-9	1A6H2
X1-H		*A156* SPRING SNAP, RIVETED: *42-253.16-39/5 (35643)*		EA	1									3-9	1A6MP3
X1-H		*A157* HOLDER, CARRIER, WINDING: **42-253.16-39/6** *(35643)*		EA	1									3-9	1A6MP4
X1-H		A158 CARRIER, WINDING: **42-253.16-39/7 (35643)**		EA	1									3-9	1A6MP5
X1-H		*A159* SCREW CARRIER: **42-253.16-39/8** *(35643)*		EA	1									3-9	1A6MP6
X1-H		*A160* RING, RETAINING: *42-253.16-39/9 (35643)*		EA	1									3-9	1A6MP7
X1-H		*A161* ARM, RELEASE RIVETED: **42-253.16-39/10** *(35643)*		EA	1									3-9	1A6MP8
X1-H		A162 SCREW, INSTRUMENT: **42-253.16.39/11** *(35643)*		EA	1									3-9	1A6H2
X1-H		A163 SPRING, LEVER GROUP: **42-253,16-39/12** *(35643)*		EA	1									3-9	1A6MP9
X1-H		*A164* LEVER GROUP ASSEMBLY RIVETED: *42-253,16-39/13 (35643)*		EA	1									3-9	1A6A1

AMSR-MF Form 1 Nov 68 6048 Prev

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL MAINTENANCE, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A165 RING, RETAINING: 42-253.16-39/14 (35643)	EA	1									3-9	1A6MP10
X1-H		A166 SPRING, HELICAL, TORSION: 42-253.16.39/15 (35643)	EA	1									3-9	1A6MP11
X1-H		A167 GEAR CLUSTER, SPUR: 42-253.16-39/16 (35643)	EA	1									3-9	1A6MP12
X1-H		A168 GEAR, SPUR, WINDING: 42-253.16-39/17 (35643)	EA	1									3-9	1A6MP13
X1-H		A169 ANCHOR, RIVETED: 42-253.16-39/18 (35643)	EA	1									3-9	1A6MP14
X1-H		A170 GEAR CLUSTER, SPUR, SELFTIMER: 42-253.16-39/19 (35643)	EA	1									3-9	1A6MP15
X1-H		A171 GEAR CLUSTER. SPUR, SELFTIMER: 42-253.16-39/20 (35643)	EA	1									3-9	1A6MP16
X1-H		A172 GEAR CLUSTER, SPUR, SELFTIMER: 42-253.16-39/21 (35643)	EA	1									3-9	1A6MP17
X1-H		A173 PLATE BOTTOM: 42-253.16-39/22 (35643)	EA	1									3-9	1A6MP18
X1-H		A174 SCREW, INSTRUMENT: 15-10.140-8 (35643)	EA	2									3-10	1H11
1-H		A174A SPRING CONTACT & INSUL PLTE ASY; KS15NY8 (35643)	EA	1										1A7
X1-H		A175 INSULATION PLATE: 42-253.01-467 (35643)	EA	1									3-10	1A7E1

AMSEL-ME Form 1 Nov 68 6048 P

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTRCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
XA1-H		A176 CONTACT SPRING: 42-582.01-311 (35643)	EA	1									3-10	1A7MP1
XA1-H		A177 INSULATION PLATE: 42-253.01-465 (35643)	EA	1									3-10	1A7E2
XA1-H		A178 SCREW, INSTRUMENT: 15-10.140-10 (35643)	EA	2									3-10	1H12
XA1-H		A178A CONTACT SPRING ASSEMBLY: KS15NY9 (35643)	EA	1										1A24
XA1-H		A179 PLATE: 42-253.01-463 (35643)	EA	1									3-10	1A24MP1
XA1-H		A180 PLATE, INSULATION: 42-253.01-462 (35643)	EA	1									3-10	1A24MP2
XA1-H		A181 PLATE, L-SHAPED, INSULATION: 42-253.01-474 (35643)	EA	1									3-10	1A24MP3
XA1-H		A182 SPRING, CONTACT: 42-253.01-461 (35643)	EA	1									3-10	1A24MP4
XA1-H		A183 PLATE, INSULATION: 42-253.01-460 (35643)	EA	1									3-10	1A24MP5
XA1-H		A184 WIRE, COPPER: 42-253.01-471 (35643)	EA	1									3-10	1W1
XA1-H		A185 NUT, PLAIN, HEXAGON: N2X1.6-DIN934 (35643)	EA	1									3-10	1H13

AMSEL-ME Form 1 Nov 68 6048 (Pre FSC FM 4530-68

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A186 SCREW, INSTRUMENT: M2X2.5DIN84 (35643)		EA	1									3-10	1H14
X1-H		A187 SPRING, GUIDE: 42-582.01-31 (35643)		EA	1									3-10	1MP10
X1-H		A188 TUBE: 42-253.01-468 (35643)		EA	1									3-10	1MP11
X1-H		A189 WIRE, ELECTRICAL: 42-253.01-470 (35643)		EA	1									3-10	1W2
X1-H		A190 SCREW, INSTRUMENT: M2X6LN-12021 (35643)		EA	1									3-10	1H15
X1-H		A190A FRAME & CONTACTS: KS15NY10 (35643)		EA	1										1A25
X1-H		A191 FRAME, CONTACT; 42-253.01-478 (35643)		EA	1									3-10	1A25MP1
X1-H		A191A TERMINAL, FEED THRU: 42-253.01-719 (35643)		EA	1									3-10	1A23MP2
X1-H		A194 SCREW, INSTRUMENT: 15-10.140-7 (35643)		EA	2									3-10	1H16
X1-H		A192A SPRING CONTACT: KS15NY11 (35643)		EA	1										1A26
X1-H		A193 PLATE, INSULATION: 42-253.01-427 (35643)		EA	1									3-10	1A26MP1
X1-H		A194 SPRING, CONTACT: 42-253.01-426 (35643)		EA	1									3-10	1A26MP2

AMSEL-ME Form 1 Nov 68 6048 (Previ

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION — REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INCL. IN UNIT	(6) 30 DAY DS MAINT. ALLOWANCE (a) 1-20	(b) 21-30	(c) 31-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-30	(c) 31-100	(8) 1 YR. ALW PER SOMP CAPACITY	(9) DEPOT REPAIR ALW PER SOMP	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
X1-H		A195 PLATE, INSULATION: 42-253.01-425 (35643)		EA	1									3-10	1A26MP3
X1-H		A196 PLATE, CONTACT: 42-253.01-484 (35643)		EA	1									3-10	1MP14
X1-H		A198 SCREW, INSTRUMENT: 19-10.173-5 (35643)		EA	1									3-10	1H17
X1-H		A199 SPRING, HELICAL, TORSION: 42-253.01-439 (35643)		EA	1									3-10	1MP16
X1-H		A200 LEVER, FLASH ADJ, RIVETED: 42-253.01-615 (35643)		EA	1									3-10	1MP17
P-H	6720-106-4763	A201 REWIND ASSEMBLY, COMPLETE: 42-253.01-489 (35643)		EA	1				4	2	2	8	5		1A8
X1-H		A201A SPRING, TUBE: 42-253.01-496 (35643)		EA	1										1A8MP1
X1-H		A201B CARRIER: 42-253.01-495 (35643)		EA	1										1A8MP2
X1-H		A202 SCREW, INSTRUMENT: SAME AS A74		EA	2									3-11	1A8H1
X1-H		A203 SLEEVE: 42-253.01-497 (35643)		EA	1									3-11	1A8MP3
X1-H		A204 BEARING, RIVETED: 42-253.01-488 (35643)		EA	1									3-11	1A8MP4
X1-H		A205 SHIM: 19-12.03-15/1 (35643)		EA	1									3-11	1A8MP5

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USEABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A206 GEARSHAFT, SPUR, REWIND: 42-253.01-491 (35643)		EA	1									3-11	1A8MP6
X1-H		A207 GEAR W/THREADED SHAFT: 42-253.01-501 (35643)		EA	1									3-11	1MP48
X1-H		A208 CARRIER: 42-253.01-502 (35643)		EA	1									3-11	1MP49
P-H	6720-457-9632	A208A BEARING PLATE, ASSEMBLY: KS15NY12 (35643)		EA	1				*	2	2	8	5		1A9
X1-H		A211 RING, RETAINING: 1.5DIN6799 (35643)		EA	1									3-11	1A9MP1
X1-H		A212 SCREW, INSTRUMENT: 15-10.170-6 (35643)		EA	1									3-11	1A9H1
X1-H		A213 SPACER, SLEEVE: 42-253.01-50 (35643)		EA	1									3-11	1A9MP2
X1-H		A214 SCREW, INSTRUMENT: M2X3LN12021 (35643)		EA	2									3-11	1A9H2
X1-H		A215 SHAFT, THREADED: 42-253.01-54 (35643)		EA	1									3-11	1A9MP3
X1-H		A216 SPRING, HELICAL, TORSION: 42-253.01-55 (35643)		EA	1									3-11	1A9MP4
X1-H		A217 SLOW SPEED ASSEMBLY, COMPLETE: 42-253.15-1 (35643)		EA	1									3-11	1A9A2
X1-H		A218 SCREW, INSTRUMENT: M1.4X2.3DIN63 (35643)		EA	1									3-12	1A9A2H1

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A219 GUIDE LEVER: 42-253.15-NY1 (35643)	EA	1									3-12	1A9A2MP1
X1-H		A220 SPRING, HELICAL, TORSION: 42-253.15-NY2 (35643)	EA	1									3-12	1A9A2MP2
X1-H		A221 SCREW, INSTRUMENT: 42-253.15-NY3 (35643)	EA	1									3-12	1A9A2H2
X1-H		A222 PLATE, UPPER, RIVETED: 42-253.15-NY4 (35643)	EA	1									3-12	1A9A2A1
X1-H		A223 ANCHOR ASSEMBLY, RIVETED: 42-253.15-NY5 (35643)	EA	1									3-12	1A9A2A2
X1-H		A224 GEAR CLUSTER, SPUR, DOG: 42-253.15-NY6 (35643)	EA	1									3-12	1A9A2MP3
X1-H		A225 GEAR CLUSTER, SPUR, LARGE: 42-1253.15-NY7 (35643)	EA	1									3-12	1A9A2MP4
X1-H		A226 GEAR CLUSTER, SPUR, WALL: 42-253,15-NY8 (35643)	EA	1									3-12	1A9A2MP5
X1-H		A227 GEAR, SECTOR RIVETED: 42-253.15-NY9 (35643)	EA	1									3-12	1A9A2A3
X1-H		A228 PLATE, LOWER RIVETED: 42-253.15-NY10 (35643)	EA	1									3-12	1A9A2A4
X1-H		A228A BEARING PLATE SUBASSEMBLY: KS15NY13 (35643)	EA	1									3-13	1A9A1
X1-H		A229 SCREw, INSTRUMENT: 15-10.21-9 (35643)	EA	1									3-13	1A9A1H1

ESC FM 4534-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION: REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 20 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A229A BEARING PLATE: *42-253.01-302 (35643)*		EA	1										1A9A1MP1
X1-H		*4230* LEVER, RELEASE: *42-253.01-328 (35643)*		EA	1									3-13	1A9A1MP2
X1-H		A231 NUT, PLAIN, HEXAGON: M2DIN934 *(35643)*		EA	1									3-13	1A9A1H2
X1-H		A232 SCREW INSTRUMENT: 15-10.230-6 (35643)		EA	1									3-13	1A9A1H3
X1-H		A233 DISC, SPEED DIAL SETTING: 42-253-15BST317 (35643)		EA	1									3-13	1A9A1MP3
X1-H		*A234* WASHER, SPRING TENSION: *42-253.15BST319 (35643)*		EA	1									3-13	1A9A1MP4
X1-H		*A235* SPRING, FLAT, REST: *42-253.15NY11* (35643)		EA	1									3-13	1A9A1MP5
X1-H		*A236* SCREW INSTRUMENT: *15-10.144-7 (35643)*		EA	2									3-13	1A9A1H4
X1-H		*A237* CAM, SETTING: *42-253.01-305 (35643)*		EA	1									3-13	1A9A1MP6
X1-H		*A238* CAM, SPEED: *42-253.01BST312 (35643)*		EA	1									3-13	1A9A1MP7
X1-H		*A239* SPACER: 42-253.01-314 *(35643)*		EA	1									3-13	1A9A1MP8
X1-H		*A240* CAM, SYNCHRO: 42-253.01BST326 (35643)		EA	1									3-13	1A9A1MP9

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE / USABLE ON CODE		(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ACTY PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A241	BEARING AND RIVET ASSEMBLY: 42-253.01BST311 (35643)	EA	1									3-13	1A9A1A1
X1-H		A242	ADJUSTING LEVER ASSEMBLY: 42-253.01-287 (35643)	EA	1									3-11	1A9A4
X1-H		A243	SHIM: 15-12.07-13/1 (35643)	EA	1									3-11	1A9A4MP1
X1-H		A244	RING, RETAINING: SAME AS A211	EA	1									3-11	1A9A4MP2
X1-H		A245	SPRING, HELICAL, TORSION: 42-253.01-297 (35643)	EA	1									3-11	1A9A4MP3
X1-H		A246	SPACER. SLEEVE: 42-253.01-44 (35643)	EA	1									3-11	1A9A4MP4
X1-H		A247	SHIM: 42-253.01-NY12 (35643)	EA	1									3-11	1A9A4MP5
X1-H		A248	ADJUSTING LEVER ASSY, RIVETED: 42-253.01-NY13 (35643)	EA	1										1A9A4A1
X1-H		A249	SHAFT: 42-253.01BST288 (35643)	EA	1										1A9A4A1MP1
X1-H		A250	INTERMEDIATE SHAFT, RIVETED: 42-253.01BST291 (35643)	EA	1										1A9A4A1MP2
X1-H		A251	SHAFT: 42-253.01BST293 (35643)	EA	1										1A9A4A1MP3
X1-H		A252	SPRING: 42-253.01BST294 (35643)	EA	1										1A9A4A1MP4

AMSEL-MS Form 1 Nov 65 6048

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1 20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CHNGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A253 LEVER: 42-253.01BST295 (35643)	EA	1										1A9A4A1MP5
X1-H		A254 SPRING, HELICAL, TORSION: 42-253.01-826 (35643)	EA	1									3-11	1A9MP13
X1-H		A255 SPACER, SLEEVE: 42-253.01-60 (35643)	EA	1									3-11	1A9MP14
X1-H		A256 SHIM: 42-253.01NY14 (35643)	EA	1									3-11	1A9MP15
X1-H		A257 LEVER: 42-253.01-825 (35643)	EA	1									3-11	1A9MP16
X2-H	6720	A258 RING, RETAINING: 1.2DIN6799 (35643)	EA	1									3-11	1MP18
P-H	6720	A259 SPRING, HELICAL, COMPRESSION: 42-253.01-424 (35643)	EA	1				*	*	2	6	3	3-11	1MP19
X2-H	6720	A260 SHAFT, FLASH LIGHT, RIVETED: 42-253.01-703 (35643)	EA	1									3-11	1A10
P-H	6720	A261 SPRING, HELICAL, TORSION: 42-253.01-437 (35643)	EA	1				*	*	*	5	2	3-11	1MP20
X2-H	6720	A262 SCREW, INSTRUMENT: SAME AS A74	EA	1									3-11	1H18
X2-H	6720	A263 PLATE, TENSION: 42-253.01-416 (35643)	EA	1									3-11	1MP21

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER / MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	1 YR ALW PER EQUIP CHOCK	DEPOT MAINT ALW PER 100 EQUIP	(a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
P=H	6720	A266 SPRING: 42-[illegible]417 (35643)	EA	1			*	5	2	3-11	1MP22
X2=H	6720	A265 ARRES[illegible] LEVER ASSEMBLY: 42-253.[illegible]61 (35643)	EA	1						3-11	1A11
X1=H		A266 CAP, INSU[illegible]TION: 42-253.01-[illegible]29 (35643)	EA	1						3-11	1A11MP1
X2=H	6720	A267 SCREW, INSTRUMENT: 15-10.20-11 (35643)	EA	1						3-11	1H19
X2=H	6720	A268 BRACKET, ANGLE: 42-253.01-411 (35643)	EA	1						3-11	1MP23
X2=H	6720	A269 SEAL, PREGLUED: 42-253.01-413 (35643)	EA	1						3-11	1MP24
X2=H	6720	A270 SCREW, INSTRUMENT: M1.4X3DIN83 (35643)	EA	2						3-11	1H20
X2=H	6720	A271 PLATE, STOP: 42-253.01-43 (35643)	EA	1						3-11	1MP25
P=H	6720-456-1872	A272 DRIVE SHAFT ASSEMBLY, COMPLETE: 42-582.01-138 (35643)	EA	1			*	6	4	3-11	1A12
X1=H		A273 SCREW, INSTRUMENT: SAME AS A214	EA	3						3-11	1A12H1
X1=H		A274 SPRING, HELICAL, TORSION: 42-582.01-154 (35643)	EA	1						3-14	1A12MP2
X1=H		A275 LEVER, COUNTING, RIVETED: 42-582.01-120 (35643)	EA	1						3-14	1A12A1

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A276 SCREW, INSTRUMENT: 15-10.31-9 (35643)		EA	1									3-14	1A12H2
X1-H		A277 RING, RETAINING: 42-582.01-150 (35643)		EA	1									3-14	1A12MP4
X1-H		A278 WASHER, FLAT: 15-12.06-18/5 (35643)		EA	1									3-14	1A12H3
X1-H		A279 GEAR, SPUR, DRIVE SHAFT: 42-582.01-143 (35643)		EA	1									3-14	1A12MP5
X1-H		A280 COUPLING, DISC: 42-582.01-144 (35643)		EA	1									3-14	1A12MP6
X1-H		A2B1 SHIM: 15-12.06-18/6 (35643)		EA	1									3-14	1A12MP7
X1-H		A282 SPRING, HELICAL: 42-582.01-145 (35643)		EA	1									3-14	1A12MP8
X1-H		A283 CARRIER, 42-582.01-NY15 (35643)		EA	1									3-14	1A12MP9
X1-H		A284 SPRING, HELICAL, TORSION: 42-582.01-NY16 (35643)		EA	1									3-14	1A12MP10
X1-H		A285 WASHER, CARRIER: 42-582.01-NY17 (35643)		EA	1									3-14	1A12MP11
X1-H		A286 WASHER, FLAT: 42.582.01-NY18 (35643)		EA	1									3-14	1A12H4
X1-H		A287 SHAFT, DRIVE: 42-582.01-NY19 (35643)		EA	1									3-14	1A12MP12

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A287A GEAR, SPUR, DRIVE SHAFT: 42-582.01-138A (35643)	EA	1									3-14	1A12MP13
X1-H		A288 BEARING PLATE ASSEMBLY: 42-582.01-NY20 (35643)	EA	1									3-14	1A12A2
X1-H		A289 SCREW RING: 42-582.01-NY21 (35643)	EA	1										1A12A2H1
X1-H		A290 BEARING PLATE: 42-582.01-NY22 (35643)	EA	1										1A12A2MP1
P-H-R	6720	A291 WINDING SHAFT ASSEMBLY: 42-782.001-1655 (35643)	EA	1				4	2	2	8	6	3-11	1A13
P-H	6720	A292 LEVER, STOP: 42-253.01-129 (35643)	EA	1				4	4	4	5	2	3-11	1A9MP17
P-H	5630-491-1580	A293 SPRING, HELICAL, TORSION: 42-253.01-58 (35643)	EA	1				4	4	2	6	4	3-11	1A9MP18
P-H	6720	A294 PIN, GROOVED, HEADLESS: 42-253.01-57 (35643)	EA	1				4	4	4	5	2	3-11	1A9MP19
P-H	6720	A295 SHAFT, RELEASE, RIVETED: 42-253.01-406 (35643)	EA	1				4	4	2	6	3	3-15	1A14
P-H	6720	A296 PIN, SHOULDER, HEADLESS: 42-253.01-40 (35643)	EA	1				4	4	4	5	2	3-15	1MP26
P-H	6720	A297 RING, RETAINING: 42-582.01-181 (35643)	EA	1				4	4	2	6	3	3-15	1MP27
P-H	5365-182-9658	A298 WASHER, FLAT: 15-12.03-26/1 (35643)	EA	1				4	4	2	6	4	3-15	1H21

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) REFERENCE NUMBER & MFR CODE	(3) DESCRIPTION	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CENTAGE	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
P-H	6720	A299	GEAR, SPUR, PINION: 42-782.001-1605 (35643)		EA	1				*	*	*	5	2	3-15	1MP28
X1-F		A300	SCREW, INSTRUMENT: SAME AS A3		FA	1									3-15	1H22
X1-H		A301	WASHER, FLAT: 15-12.04-1476 (35643)		EA	1									3-15	1H23
P-H	5360-491-1581	A302	SPRING, HELICAL, COMPRESSION: 42-782.001-171 (35643)		EA	1				*	*	2	6	4	3-15	1MP29
P-H	6720	A303	SPRING, HELICAL, COMPRESSION: 42-782.001-169 (35643)		EA	1				*	*	2	6	4	3-15	1MP30
X1-H	6720	A304	BUSHING, SHOULDER: 42-782.001-163 (35643)		EA	1									3-15	1MP31
P-H	6720	A305	SPOOL, TAKE-UP 42-782.001-173 (35643)		EA	1				*	*	2	6	4	3-15	1MP32
X1-H		A306	AXIS 42-782.001-162 (35643)		EA	1									3-15	1MP33
P-H	6720	A307	DISC, LOCKING. 42-782.001-161 (35643)		EA	1				*	*	*	5	2	3-15	1MP34
X1-H		A308	SCREW, INSTRUMENT: M1.7X4PH84 (35643)		EA	2									3-15	1H24
X1-H		A309	SCREW, INSTRUMENT. 15-10.174-5 (35643)		EA	1									3-15	1A13H1
X1-H		A310	BUSHING, BEARING. 42-582.01-21 (35643)		EA	1									3-15	1MP35

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SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER 100 EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A311 SCREW, INSTRUMENT: M2X6.3LN12021 (35643)		EA	1									3-15	1H25
X1-H		A312 SCREW, INSTRUMENT: SAME AS A214		EA	1									3-15	1H26
P-H	6720	A313 SPRING, FLAT, RIVETED: 42-253.01-121 (35643)		EA	1				*	*	2	6	4	3-15	1A15
X1-H		A314 ADJUSTING SCREW: 15-10.29-14 (35643)		EA	1									3-15	1A15H1
X1-H		A315 NUT: 15-11.25-5 (35643)		EA	1									3-15	1A15H2
X1-H		A316 SCREW, INSTRUMENT: M1.4X2.2DIN63 (35643)		EA	2									3-15	1H27
X1-H		A317 SHAFT, GEAR, INTERMEDIATE: 42-253.01-368 (35643)		EA	1									3-15	1MP36
X1-H		A318 GEAR CLUSTER, SPUR: 42-253.01-355 (35643)		EA	1									3-15	1MP37
X1-H		A319 WASHER, FLAT: 15-12.03-16/1 (35643)		EA	1									3-15	1H28
X1-H		A320 LEVER, ARRESTING: 42-253.01-361 (35643)		EA	1									3-15	1A16
P-H	6720	A321 SPRING, HELICAL, TORSION: 42-253.01-364 (35643)		EA	1				*	*	2	6	4	3-15	1MP38
X1-H		A322 NUT, ROUND, LOCKING: 42-253.01-31 (35643)		EA	1									3-15	1A13H2

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG. NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A323 STOP DISC: 42-253.01-824 (35643)		EA	1									3-15	1A13MP1
X1-H		A324 STOP DISC: 42-253.01-30 (35643)		EA	1									3-15	1A13MP2
X1-H		A325 SCREW, INSTRUMENT: 15-10.175.7 (35643)		EA	1									3-15	1A13H3
X1-H		A326 GEAR, SPUR, INTERMEDIATE: 42-253.01-28 (35643)		EA	1									3-15	1A13MP3
X1-H		A327 GEAR SHAFT, SPUR, WINDING: 42-253.01-130 (35643)		EA	1									3-15	1A13MP4
X1-H		A328 SHIM: 15-12.03-21/1 (35643)		EA	1									3-15	1A13MP5
X1-H		A329 WASHER, FLAT: 15-12.03-21/2 (35643)		EA	1									3-15	1A13H4
X1-H		A330 WASHER, FLAT: 15-12.03-21/3 (35643)		EA	1									3-15	1A13H5
X1-H		A331 SCREW, INSTRUMENT: 15-10.144-8 (35643)		EA	2									3-15	1H29
X1-H		A332 BRACKET, ANGLE: 42-253.01-821 (35643)		EA	1									3-15	1MP39
P-H 6720		A333 SPROCKET WHEEL ASSEMBLY: 42-253.01-16 (35643)		EA	1				*	*	*	5	2		1A17
X1-H		A334 RATCHET PLATE: 42-253.01-NY23 (35643)		EA	1									3-15	1A17MP1

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A335 CARRIER SHAFT: 42-253.01-NYZ (35643)		EA	1									3-15	1A17MP2
X1-H	6720	A336 SPRING: 42-253.01-NYZ5 (35643)		EA	1									3-15	1A17MP3
X1-H		A337 RING, RETAINING: SAME AS A211		EA	1									3-15	1MP40
X1-H		A338 WASHER, FLAT: 15-12.02-28/1 (35643)		EA	1									3-15	1H30
P-H	5360-182-9601	A339 SPRING, HELICAL, COMPRESSION: 42-582.01-24 (35643)		EA	1				4	2	2	8	5	3-15	1MP41
X1-H		A340 LEVER, LOCK: 42-253.01-684 (35643)		EA	1									3-15	1MP42
X1-H		A341 GEAR, SPUR, INTERMEDIATE: 42-253.01-33 (35643)		EA	1									3-15	1MP43
X1-H		A342 SCREW, INSTRUMENT: AM2X3.5DIN84 (35643)		EA	4									3-15	1H31
X1-H		A343 SHAFT: 42-582.01-22 (35643)		EA	1									3-15	1MP44
X1-H		A34. BUSHING, MACHINE THREAD: 42-253.01-27 (35643)		EA	1									3-45	1MP45
X1-H		A345 BRAKE ASSEMBLY: 42-582.01-449 (35643)		EA	1									3-16	1A18
X1-H		A346 SCREW, INSTRUMENT: M2X5DIN84 (35643)		EA	1									3-16	1A18H1

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51-100	(8) 1 YR ALW PER 100 EQUIP ENTITCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A347 SCREW, INSTRUMENT: M1.7X3DIN84 (35643)		EA	1									3-16	1A18H2
X1-H		A348 RING, RETAINING: SAME AS A211		EA	1									3-17	1A18MP1
X1-H		A349 SPRING, FLAT, BRAKE: 42-562.01-274 (35643)		EA	1									3-17	1A18MP2
X1-H		A350 BRAKE SHOE, EXTRNLY ACTUATED: 42-583.01-275 (35043)		EA	1									3-17	1A18MP3
X1-H		A351 NUT, ECCENTRIC: 42-512.01-273 (35643)		EA	1									3-17	1A18MP4
X1-H		A352 SCREW, INSTRUMENT: 15-10.21-12 (35643)		EA	1									3-17	1A18H3
X1-H		A353 WASHER, SPRING TENSION: 15-12.02-10/1 (35643)		EA	1									3-17	1A18MP5
X1-H		A354 WASHER, FLAT: 15-12.03-32/3 (35643)		EA	1									3-17	1A18H4
X1-H		A355 BUSHING, MACHINE THREAD: 42-582.01-271 (35643)		EA	1									3-17	1A18MP6
X1-H		A356 WASHER, FLAT: 15-12.04-14/8 (35643)		EA	1									3-17	1A18H5
X1-H		A357 SCREW, INSTRUMENT: 15-10.21-13 (35643)		EA	1									3-17	1A18H6

AMSEL-ME Form 1 Nov 68 6048 (Prev

SECTION II REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTCCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A358 WASHER, SPRING TENSION: 15-12.03-25/1 (35643)		EA	1									3-17	1A18MP7
X1-H		A359 PLATE, BRAKE: 42-582.01-261 (35643)		EA	1									3-17	1A18MP8
X1-H		A360 PLATE, FRICTION BRAKE: 42-582.01-260 (35643)		EA	1									3-17	1A18MP9
X1-H		A361 PLATE, INTERMEDIATE, BRAKE: 42-582.01-259 (35643)		EA	1									3-17	1A18MP10
X1-H		A362 DISC, BRAKE: 42-582.01-258 (35643)		EA	1									3-17	1A18MP11
X1-H		A363 PLATE, BRAKE, RIVETED: 42-582.01-277 (35643)		EA	1									3-17	1A18A1
X1-H		A364 WASHER, RECESSED: 42-582.01-256 (35643)		EA	1									3-17	1A18MP12
X1-H		A365 CAP, INSULATION: SAME AS A266		EA	1									3-17	1A18A1MP1
P-H	6720-181-1028	A365A PLATE ASSEMBLY, BEARING: K515NY14 (35643)		EA	1				*	2	2	8	5	3-17	1A18A2
P-H	6720	A366 SHUTTER ASSEMBLY: 42-582 01-188 (35643)		EA	1				*	*	*	5	2	3-16	1A19
X1-H		A367 BEARING BUSHING ASSY, RIVETED: 42-253.01-257 (35643)		EA	2									3-16	1A20
X1-H		A368 SCREW, INSTRUMENT: SAME AS A270		EA	2									3-18	1A19H1

AMSEL-ME

SECTION II REPAIR PART LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION / REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	TYPE MAINT CODE: 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	YR ALOC PER EQUIP CNTGCY	DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A369 PLATE, SHUTTER 42-253.01-918 (35643)		EA	1									3-18	1A19MP1
X1-H		A370 SHUTTER ROLLER ASSEMBLY: 42-253.01-232 (35643)		EA	1									3-16	1A19A1
X1-H		A371 ROLLER, SHUTTER: 42-253.01-232A (35643)		EA	1									3-18	1A19A1MP1
X1-H		A372 RING, RETAINING: 42-253.01-NY26 (35643)		EA	2									3-18	1A19A1MP2
X1-H		A373 SHIM: 42-253.01-NY27 (35643)		EA	2									3-18	1A19A1MP3
X1-H		A374 ROLLER: 42-253.01-NY28 (35643)		EA	2									3-18	1A19A1MP3
X1-H		A375 SHAFT AND SPRING ASSEMBLY: 42-253.01-NY29 (35643)		EA	2									3-18	1A19A1A1
X1-H		A376 PIN, SLOTTED: 42-253.01-NY30 (35643)		EA	1									3-18	1A19A1MP4
X1-H		A376A SHUTTER ROLLER ASSEMBLY: 42-253.01-246 (35643)		EA	1									3-18	1A19A2
X1-H		A376B ROLLER, SHUTTER: 42-253.01-246A (35643)		EA	2									3-18	1A19A2MP2
X1-H		A376C RING, RETAINING: SAME AS A372		EA	2									3-18	1A19A2MP2
X1-H		A376E SHIM: SAME AS A373		EA	2									3-18	1A19A2MP3

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION / REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP ENTOCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A376F SHAFT AND SPRING ASSEMBLY: 42-253.01-NY29A (35643)	EA	1									3-18	1A19A2A1
X1-H		A376G PIN, SLOTTED: SAME AS A376	EA	1									3-18	1A19A2MP4
P-H		A377 SHUTTER CURTAIN ASSY, LONG: 42-253.01-923 (35643)	EA	1				*	2	2	8	5	3-18	1A19A3
X1-H		A378 LABYRINTH: 42-253.01-NY31 (35643)	EA	1										1A19A3MP1
X1-H		A379 RIBBON: 42-253.01-NY32 (35643)	EA	2										1A19A3MP2
X1-H		A380 PIN: 42-253.01-NY33 (35643)	EA	1										1A19A3MP3
X1-H		A381 CURTAIN: 42-253.01-NY34 (35643)	EA	1										1A19A3MP4
P-H	6720-617-8731	A382 SHUTTER CURTAIN ASSEMBLY, SHORT: 42-253.01-273 (35643)	EA	1				*	2	2	8	6	3-18	1A19A4
X1-H		A383 BAR: 42-253.01-NY35 (35643)	EA	1										1A19A4MP1
X1-H		A384 PIN: 42-253.01-NY36 (35643)	EA	1										1A19A4MP2
X1-H		A385 RIBBON: 42-253.01-NY37 (35643)	EA	2										1A19A4MP3

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ESC Form 453-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	REFERENCE NUMBER & MFR CODE	(3) DESCRIPTION	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTG-CY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A386	**CURTAIN:** 42-253.01-NY38 (35643)		EA	1										1A19A4MP4
X1-H		A387	MAIN **ROLLER, COMPLETE:** 42-582.01-199 (35643)		EA	1									3-18	1A19A5
X1-H		A388	SCREW, INSTRUMENT: M1.4X1.5DIN63 (35643)		EA	2									3-18	1A19A5H1
X1-H		A389	**CAM, MAIN ROLLER, SHUTTER:** 42-582.01-NY39 (35643)		EA	1									3-18	1A19A5MP1
X1-H		A390	SCREW, INSTRUMENT: 15-10.174-6 (35643)		EA	2									3-16	1H32
X1-H		A391	**BUSHING, MACHINE THREAD:** 42-582.01-33 (35643)		EA	1									3-16	1MP46
X1-H		A392	SET SCREW: M2.3X2.5DIN551 (35643)		EA	1										1MP47
X1-H		A393	NUT, ROUND, LOCKING. **15-11.232-5 (35643)**		EA	1									3-16	1H33
X1-H		A3934	**MAIN BODY CASTING:** **42-582.01-5 (35643)**		EA	1									3-16	1A21
X1-H		**A394**	**NUT, ROUND, LOCKING:** 15-11.175-5 (35643)		EA	1									3-16	1A21H1
X1-H		A395	**SHIM:** **15-12.02-14/1 (35643)**		EA	1									3-16	1A21MP1
X1-H		*P396*	*SCREW,* **ECCENTRIC:** 42-253.01-74 (35643)		EA	1									3-16	1A21MP2

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A397 CAP, INSULATION: SAME AS A266		EA	1									3-16	1A21MP3
X2-H	6720-100-4767	A398 NUT, ROUND, LOCKING: 15-11.172-5 (35643)		EA	1									3-16	1A21H2
X2-H	5305-109-7025	A399 SCREW, SET: 15-10.176-5 (35643)		EA	1									3-16	1A21MP4
X1-H		A400 SCREW, INSTRUMENT: 42-253.01-110 (35643)		EA	1									3-16	1A21H3
X2-H	6720-106-4752	A401 SHAFT: 42-253.01-25 (35643)		EA	1									3-16	1A21MP5
X1-H		A402 SHIM: 15-12.02-15/1 (35643)		EA	1									3-16	1A21MP6
X1-H		A403 SCREW, INSTRUMENT: 15-10.143-5 (35643)		EA	1									3-16	1A21H4
P-H	6720-106-4766	A404 SPRING, HELICAL, TORSION: 42-253.01-87 (35643)		EA	1				*	*	*	2	6 3	3-16	1A21MP7
P-H	6720	A406 HOUSING ASSEMBLY: 42-582.01-440 (35643)		EA	1				*	*	*	5	2		1A22
X1-H		A407 SCREW, INSTRUMENT: 42-253.01-597 (35643)		EA	1									3-19	1A22H1
X1-H		A408 LEVER: 42-253.01-605 (35643)		EA	1									3-19	1A22MP1
X1-H		A409 NUT, COVER PLATE: 42-253.01-596 (35643)		EA	1									3-19	1A22MP2

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SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

SECTION II REPAIR PARTS FOR DIRECT

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A410 SCREW, INSTRUMENT: M1, 7X3LN12019 *(35643)*	EA	3									3-19	1A22H2
X1-H		A411 SCREW, COUPLING: 42-253.01-593 (35643)	EA	1									3-19	1A22MP3
X1-H		A412 BUSHING: 42-253.01-595 (35643)	EA	1									3-19	1A22MP4
X1-H		A413 SHIM: 15-12.03-13/1 (35643)	EA	1									3-19	1A22MP5
X1-H		4414 WASHER, FLAT: 15-12.03-14/1 (35643)	EA	1									3-19	1A22H3
X1-H		A415 FLANGE, HOUSING, THREADED: 42-253.01-594 (35643)	EA	1									3-19	1A22MP6
X1-H		A416 SPACER, RING: 42-253.01-554 (35643)	EA	1									3-19	1A22MP7
X1-H		A417 SPACER RING: 42-253.01-566 (35643)	EA	1									3-19	1A22MP8
X1-H		A418 SELFTIMER RELEASE ASSEMBLY: 42-253.01-948 *(35643)*	EA	1										1A22A1
X1-H		A419 BUSHING, MACHINE THREAD: 42-253.01-598 *(35643)*	EA	1									3-19	1A22A1MP1
X1-H		A420 RING, RETAINING: SAME AS A211	EA	1									3-19	1A22A1MP2
X1-H		A421 PLUNGER, DETENT: 42-253.01-600 (35643)	EA	1									3-19	1A22A1MP3

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X2-H	6720-106-4759	A422 SPRING, HELICAL, COMPRESSION: 42-253.01-599 (35643)	EA	1									3-19	1A22A1MP4
P-H	6720	A423 LOCKING DEVICE ASSEMBLY: 42-253.01-941 (35643)	EA	1				*	*	2	6	4		1A27
X2-H	5305-109-7021	A424 SCREW, INSTRUMENT: 15-10.25-7 (35643)	EA	1									3-19	1H34
X1-H		A425 LEVER, STOP: 42-253.01-541 (35643)	EA	1									3-19	1MP52
X1-H		A426 BUSHING, MACHINE THREAD: 42-253.01-538 (35643)	EA	1									3-19	1A27MP1
X1-H		A427 RING, RETAINING: SAME AS A211	EA	1									3-19	1A27MP2
X1-H		A428 SHIM: 15-12.06-17/1 (35643)	EA	1									3-19	1A27MP3
X1-H		A429 PLUNGER, DETENT: 42-253.01-540 (35643)	EA	1									3-19	1A27MP4
P-H	6720-106-4760	A430 SPRING, HELICAL, COMPRESSION: 42-253.01-539 (35643)	EA	1				*	2	2	8	5	3-19	1A27MP5
X1-H		A431 SCREW, INSTRUMENT: 15-10.170-9 (35643)	EA	4									3-19	1H35
X1-H		A432 RING, FLANGE: 42-253.01-938 (35643)	EA	1									3-19	1MP53
X1-H		A433 SCREW, INSTRUMENT: 42-253.01-940 (35643)	EA	4									3-19	1H36

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
P-H	6720	A434 SPRING: 42-253.01-939 (35643)		EA	1				*	*	*	5	2	3-19	1MP54
X1-H		A435 SEALING STRIP: 42-253.01-565 (35643)		EA	1									3-19	1A22MP9
X1-H		A436 STRIP, FLLT: 42-253.01-904 (35643)		EA	2									3-19	1A22MP10
X1-H		A437 SCREW, INSTRUMENT: 15-10.170-12 (35643)		EA	1									3-19	1A22H4
X1-H		A438 LEVER: 42-253.01-641 (35643)		EA	1									3-19	1A22MP11
X1-H		A439 BUSHING, GUIDE: 42-253.01-635 (35643)		EA	1									3-19	1A22MP12
X1-H		A440 BUSHING, GUIDE: 42-253.01-634 (35643)		EA	1									3-19	1A22MP13
X1-H		A441 CRANKSHAFT: 42-253.01-636 (35643)		EA	1									3-19	1A22MP14
X1-H		A442 SPRING, HELICAL, EXTENSION: 42-253.01-630 (35643)		EA	1									3-19	1A22MP15
X1-H		A443 SCREW, INSTRUMENT: 15-10.171-6 (35643)		EA	2									3-19	1A22H5
X1-H		A444 BAR, UPPER SLIDING: 42-253.01-627 (35643)		EA	1									3-19	1A22MP16
X1-H		A445 SHIM. 15-12.02-11/3 (35643)		EA	2									3-19	1A22MP17

AMSEL-ME F

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION — REFERENCE NUMBER & MFR. CODE — USEABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY OS MAINT. ALLOWANCE (a) 1-30	(b) 31-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-30	(b) 31-50	(c) 51-100	(8) 1 YR. AUTH FOR DEPOT DIRECT	(9) DEPOT REQMTS ALLOW FOR 100 DEPOT	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
X1-H		A446 BAR, LOWER SLIDING: 42-253.01-626 (35643)	EA	1									3-19	1A22MP18
P-H	6720	A447 SPRING, HELICAL, COMPRESSION: 42-253.01-546 (35643)	EA	1				4	2	2	8	5	3-19	1A22MP19
X1-H		A448 PIN, STRAIGHT, HEADED: 42-253.01-545 (35643)	EA	1									3-19	1A22MP20
X1-H		A449 BRACKET, ANGLE: 42-253.01-632 (35643)	EA	1									3-19	1A22MP21
X1-H		A450 CONTACT RIVET: 42-253.01-562 (35643)	EA	1									3-19	1A22MP22
X1-H		A451 BASE PLATE GUIDE, RIVETED: 42-253.01-560 (35643)	EA	1									3-19	1A22MP23
X1-H		A452 EYELET, RIVETED: 42-216-460 (35643)	EA	2									3-19	1A22MP24
X1-H		A453 HOUSING, RIVETED: 42-582.01-441 (35643)	EA	1									3-19	1A22MP25
P-O	6760-018-3667	A454 LENS, CAMERA, GENERAL, PHOTOGRAPH: 11318 (35643)	EA	1	4	4	4	4	4	4	5	2		2
P-O	6760-018-3590	A455 CAP, LENS: 14031 (35643)	EA	1	4	2	2	2	4	2	33	20	3-27	2MP1
X1-H		A456 SETSCREW: M1.2X1.5DIN553 (35643)	EA	2									3-27	2MP2

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-30	(c) 31-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-30	(c) 31-100	(8) 1 YR. ALW PER EQUIP CNTG CY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A457 SFTSCREW: M1.2X1.250.6DI.926 (35643)	EA	1									3-27	2MP3
X1-H		A458 SCREW, INSTRUMENT: 15-10.144-19 (35643)	EA	1									3-27	2H1
X1-H		A459 SCREW, INSTRUMENT: 15-10.25-6 (35643)	EA	2									3-30	2H2
X1-H		A460 ORIENTATION KNOB: 42-548.01-50 (35643)	EA	1									3-30	2MP4
P-O	6720-018-4004	A461 VIEWING UNIT, 50 MM LENS: 14002 (35643)	EA	1	*	*	*	*	*	*	5	2	3-30	2A1
X1-H		A462 STOP, SPACER: 42-550.04-10 (35643)	EA	1									3-31	2A1MP1
X1-H		A463 SCREW, INSTRUMENT: 15-10.177-10 (35643)	EA	1										2A1H1
X1-H		A464 SCREW, INSTRUMENT: 42-550.04-NY40 (35643)	EA	2									3-31	2A1H2
X1-H		A465 SCREW, INSTRUMENT: 42-550.04-NY41 (35643)	EA	2									3-31	2A1H3
P-O	6760-018-3479	A466 CAP, LENS: 14051 (35643)	EA	1	*	2	2	*	2	2	19	10		2MP5
P-O	6760-018-3724	A467 METER, PHOTOGRAPHIC EXPOSURE: 14210 (35643)	EA	1	*	*	2	*	2	2	12	5		3
P-O	6135-299-6818	A468 BATTERY, DRY: PX-625 (90303)	EA	1	2	3	6	2	2	2	72	50	3-22	3BT1

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FED STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAYS GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A469 SCREW, INSTRUMENT: 3.719.004.01/5 (35643)	EA	1									3-21	3H1
X1-H		A470 SCALE, RIVETED: 2.371.002.01/3 (35643)	EA	1									3-21	3A1
X1-H		A471 SETTING RIVET: 3.359.001.01/5 (35643)	EA	1										3A1MP1
X1-H		A472 RIVET: 3.416.011.01/5 (35643)	EA	1										3A1MP2
X1-H		A473 DISC: 3.414.006.01/5 (35643)	EA	1										3A1MP3
X1-H		A474 SHIM: 3.740.528.01/5 (35643)	EA	1									3-21	3MP1
X1-H		A475 PLATE, DESIGNATION: 3.371.004.01/3 (35643)	EA	1									3-21	3MP2
X1-H		A476 SHIM: 3.740.605.01/5 (35643)	EA	1									3-21	3MP3
X1-H		A477 INSULATOR, WASHER: 3.742.573.01/5 (35643)	EA	1									3-21	3E1
X1-H		A478 SCREW, WOOD: 2X10DIN97MS63 (35643)	EA	2									3-21	3H2
X1-H		A479 SCREW, INSTRUMENT: 3.712.520.02/5 (35643)	EA	2									3-21	3H3
X1-H		A480 HOUSING, INDICATOR: 2.121.002.01C/2 (35643)	EA	1										3A2

ANSEL ME Form 1 Nov 68 6048 Prev

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A480A HOUSING SUBASSEMBLY, EXP METER: RS15N815 (35643)		EA	1										3A2A1
X1-H		A481 HOUSING: 3.121.002.01E/2 (35643)		EA	1									3-21	3A2A1MP1
X1-H		A482 RING, RETAINING: 3.743.004.55 (35643)		EA	1									3-21	3A2MP1
X1-H		A483 KNOB, KNURLED: 3.535.006.01/3 (35643)		EA	1									3-21	3A2MP2
X1-H		A484 WASHER, FLAT: 3.744.515.01/5 (35643)		EA	1									3-21	3A2H1
X1-H		A485 BEARING BUSHING RIVETED: 3.318.146.01/5 (35643)		EA	1									3-21	3A2A1MP2
X1-H		A486 SCREW, INSTRUMENT: 3.710.501.01/5 (35643)		EA	1									3-21	3A2H2
X1-H		A487 STEERING LEVER: 3.414.077.01/4 (35643)		EA	1									3-21	3A2A1MP3
X1-H		A488 PUSHBUTTON: 3.535.052.01/3 (35643)		EA	1									3-21	3A2MP3
X1-H		A489 RIVET: 3.758.001.01/5 (35643)		EA	1									3-21	3A2A1MP4
X1-H		A490 PLATE: 3.168.004.01/3 (35643)		EA	1									3-21	3A2A1MP5
X1-H		A491 WINDOW, METER: 3.162.016.01/5 (35643)		EA	1									3-21	3A2A1MP6

AMSEL-ME Form 1 Nov 68 6048 (P)

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP ENTITY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG. NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A492 WINDOW, METER: 3.162.017.01/4 (35643)		EA	1									3-21	3A2A1MP7
X1-H		A493 SCALEPLATE, EXPOSURE METER: 3.371.008.01/4 (35643)		EA	1									3-21	3A2A1MP8
X1-H		A494 INSERT ASSEMBLY: 3.414.007.01F (35643)		EA	1										3A3
X1-H		A495 SCREW INSTRUMENT: 3.712.525.01/5 (35643)		EA	1									3-22	3A3H1
X1-H		A496 GEAR, SPUR: 3.415.002.01/5 (35643)		EA	1									3-22	3A3MP1
X1-H		A496A WASHER, FLAT: K515NY16 (35643)		EA	1									3-22	3A3H2
X1-H		A497 SCREW, INSTRUMENT: 3.711.047.32 (35643)		EA	2									3-22	3A3H3
X1-H		A498 GEAR ASSEMBLY: 2.415.001.01/4 (35643)		EA	1										3A3A1
X1-H		A499 SPRING, PRESSURE: 3.352.023.01/4 (35643)		EA	1									3-22	3A3A1MP1
X1-H		4500 RING, RETAINING: 3.743.005.55 (35643)		EA	1									3-22	3A3A1MP2
X1-H		A501 SHIM: 3.740.593.01/5 (35643)		EA	1									3-22	3A3A1MP3
X1-H		A502 GEAR SECTOR, SPUR: 3.415.001.01/3 (35643)		EA	1									3-22	3A3A1MP4

AMSEL-MS Form 1 Nov 68 6048 Pre ESC-FM 4534-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51-100	(8) 1 YR ALW PER EQUIP CMDTY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		*A502A* WASHER, FLAT: KS15NY17 (35643)		EA	1										3A3A1H1
X1-H		A503 PLATE, GEAR: 3.323.016.01/4 (35643)		EA	1									3-22	3A3A1MP5
X1-H		A504 SCREW INSTRUMENT. 3.711.541.02/5 (35643)		EA	3										3H4
X1-H		A505 MOUNTING FOOT: 3.326.013.01/4 (35643)		EA	1									3-22	3MP4
X1-H		*A5O6* 5FT SCREW: 3.715.509.01/5 (35643)		EA	2									3-22	3MP5
X1-H		A507 SHIM: 3.740.558.01/5 (35643)		EA	1									3-22	3MP6
X1-H		A508 WASHER, NOSE: 3.413.002.01/5 (35643)		EA	1									3-22	3MP7
X1-H		A509 KNURLED WHEEL ASSEMBLY: 2.535.002.01/4 (35643)		EA	1										3A4
X1-H		A510 KNURLED WHEEL: 3.535.004.01/3 (35643)		EA	1									3-22	3A4MP1
X1-H		A511 COUPLING, PIN RIVETED: 3.413.001.01/5 (35643)		EA	1									3-22	3A4MP2
X1-H		A512 COVER, BATTERY BOX: 3.326.012.01/3 (35643)		EA	1									3-22	3MP8
X1-H		A513 SPRING, FLAT: 3.352.014.01/4 (35643)		EA	1									3-22	3MP9

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A514 SHIM: 3.740.016.01/5 (35643)		EA	1									3-22	3MP10
X1-H		A515 PLATE, IDENTIFICATION: 3.376.049.01/4 (35643)		EA	1									3-22	3MP11
X1-H		A516 SCREW, INSTRUMENT: 3.712.524.01/5 (35643)		EA	1									3-22	3H5
X1-H		A517 WIRE, ELECTRICAL: 1/3DM-LK3NYRW (35643)		EA	1									3-23	3W1
X1-H		A518 WIRE, ELECTRICAL: 1/3DM-LK3NYBW (35643)		EA	1									3-23	3W2
X1-H		A519 COIL ASSEMBLY: 1/3DH-LK3 (35643)		EA	1									3-22	3A5
X1-H		A520 SCREW, INSTRUMENT: 3.711.512.01/5 (35643)		EA	1									3-23	3A5H1
X1-H		A521 SCREW, INSTRUMENT: 3.711.508.01/5 (35643)		EA	1									3-23	3A5H2
X1-H		A522 INSULATOR, WASHER: 3.742.514.01 (35643)		EA	1									3-23	3A5E1
X1-H		A523 INSULATOR DISC: 3.631.016.01/5 (35643)		EA	1									3-23	3A5E2
X1-H		A524 SOLDERING TERMINAL: 3.215.027.01/5 (35643)		EA	1									3-23	3A5E3
X1-H		A525 LOCKING PLATE ASSEMBLY: 2.413.001.01/4 (35643)		EA	1										3A5A1

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION — REFERENCE NUMBER & MFR CODE — USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY OS MAINT ALLOWANCE (a) 1-20	(b) 21 50	(c) 51 100	(7) 30 DAY OS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A526 BATTERY TEST INDICATOR: 3.378.001.01/5 (35643)	EA	1									3-23	3A5A1MP1
X1-H		A527 CERAMIC STOPPER: 3.214.007.01/4 (35643)	EA	2										3A5A1MP1A
X1-H		A528 CLAMPING STRIP, SPOT WELDED: 3.413.005.01/4 (35643)	EA	2										3A5A1MP2
X1-H		A529 LOCKING PLATE: 3.413.004.01/4 (35643)	EA	1									3-23	3A5A1MP3
X1-H		A530 SCREw, INSTRUMENT: BN1.301.01/3 (35643)	EA	2									3-23	3A5H3
X1-H		A531 WASHER, KEY: 3.744.502.01/5 (35643)	EA	2									3-23	3A5MP1
X1-H		A532 FORK: 1152 (35643)	EA	1									3-23	3A5MP2
X1-H		A533 WASHER, FLAT: 3.740.525.01 (35643)	EA	1									3-23	3A5H4
X1-H		A534 COIL ASSEMBLY: M11.7-116 (35643)	EA	1										3A5A2
X1-H		A535 HAIR SPRING: M11.7-116NYHS (35643)	EA	2									3-23	3A5MP3
X1-H		A536 INSULATION WASHER: 3.742.502.01 (35643)	EA	3									3-23	3A5A2E1
X1-H		A537 SOLDERING LUG: 3.623.525.01/5 (35643)	EA	1									3-23	3A5A2E2

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2)a FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CHNGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A A538 SOLDERING TERMINAL: 3.623.581.01/5 (35643)		EA	1									3-23	3A5A2E3
X1-H		A A539 AXLE: 3.261.008.01/4 (35643)		EA	1									3-23	3A5A2MP1
X1-H		A A540 PLATE: 3.632.039.01/5 (35643)		EA	2									3-23	3A5A2MP2
X1-H		L541 DISTANCE WASHER: 3.264.001.01/5 (35643)		EA	2									3-23	3A5A2MP3
X1-H		A542 INDICATOR: 1081 (35643)		EA	1									3-23	3A5A2MP4
X1-H		A543 FRAME: 1/3-25 (35643)		EA	1									3-23	3A5A2MP5
X1-H		A544 MAGNET ASSEMBLY: M11.7-117 (35643)		EA	1										3A5A3
X1-H		A545 SCREW, INSTRUMENT: 3.712.505.01/5 (35643)		EA	2										3A5A3H1
X1-H		A546 MAGNET DISC ASSEMBLY: 1/3G1 (35643)		EA	1										3A5A3A1
X1-H		A547 MAGNET: MAG-1/3 (35643)		EA	1									3-23	3A5A3A1MP1
X1-H		A548 SEGMENT: 3537 (35643)		EA	1									3-27	3A5A3A1MP2
X1-H		A549 BASE PLATE ASSEMBLY, SOLDERED: 3555-G1 (35643)		EA	1										3A5A3A2

AMSEL-ME Form 1 Nov 68 6048 (Pre

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP ENTOCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A550 UPPER PLATE: 3556 (35643)		EA	1									3-23	3A5A3A2MP1
X1-H		A551 LOWER PLATE: 355581 (35643)		EA	1									3-23	3A5A3A2MP2
X1-H		A552 BATTERY TEST SWITCH ASSEMBLY: 2.530.002.01/4 (35643)		EA	1										3A6
X1-H		A553 BATTERY TESTING BUTTON: 3.535.005.01/3 (35643)		EA	1									3-22	3A6MP1
X1-H		A554 COMPACT SPRING: 3.533.003.01/4 (35643)		EA	1									3-22	3A6MP2
X1-H		A555 SCREW, WOOD: 1.7A7D1N96MS (35643)		EA	1									3-22	3H6
X1-H		A556 WASHER, FLAT: 3.740.520.01 (35643)		EA	1									3-22	3H7
X1-H		A557 WASHER, FLAT: 3.740.521.01/5 (35643)		EA	1									3-22	3H8
X1-H		A558 WASHER. NONMETALLIC: 3.742.513.01/5 (35643)		EA	1									3-22	3MP12
X1-H		A559 SPACER, SLEEVE: 3.313.027.01/4 (35643)		EA	1									3-22	3MP13
X1-H		A560 SLIDING SWITCH ASSEMBLY: 2.530.001.O1E/4 (35643)		EA	1										3A7
X1-H		A561 SWITCH FORK: 3.533.002.01 /6 (35643)		EA	1									3-22	3A7MP1

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21-50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A562 SWITCH LEVER: 3.531.001.01G/3 (35643)		EA	1									3-22	3A7MP2
X1-H		**A563 PRINTED CIRCUIT SWITCH** ASSEMBLY. 2.571.019.01C/2 **(35643)**		EA	1									3-22	3A8
X1-H		A564 VARIABLE RESISTOR: 3.569.004.01/4 (35643)		EA	1									3-22	3A8R1
X1-H		A565 VARIABLE RESISTOR: **3.569.005.01** (35643)		EA	1									3-22	3A8R2
X1-H		**A566 RESISTOR: 3.561.497.01 (35643)**		EA	1									3-22	3A8R3
X1-H		**A567** RESISTOR: **3.561.499.01 (35643)**		EA	1									3-22	3A8R4
X1-H		*A568* CIRCUIT PLATE **3.572.078.01C/2 (35643)**		EA	1										3A8MP1
X1-H		A569 SCREW, **WOOD** 1.4X7DIN96MS (35643)		EA	2									3-22	3MP9
X1-H		A570 **LIGHT SHAFT MASK ASSEMBLY 2.127.001.01/3 (35643)**		EA	1										3A9
X1-H		A571 SCREW, INSTRUMENT 3.711.523.01/5 (35643)		EA	1									3-22	3A9H1
X1-H		A572 WASHER, FLAT. 3.740.539.01 (35643)		FA	1									3-22	3A9H2
X1-H		A573 **SWITCH PLATE** 3.414.043.O1/5 (35643)		EA	1									3-22	3A9MP1

AMSEL-LE Form 1 Nov 68 **6048** (F

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP ENTITY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A574 SPRING: 3.352.012.01/4 (35643)		EA	1									3-22	3A9MP2
X1-H		A575 LIGHT SHAFT MASK: 3.127.007.01/2 (35643)		EA	1									3-22	3A9MP3
X1-H		A576 SCREW, WOOD: 1.4X7DIN97MS63 (35643)		EA	1									3-22	3H10
X1-H		P577 SELECTOR LEVER ASSEMBLY: 2.414.001.01/4 (35643)		EA	1										3A10
X1-H		R578 SPRING HELICAL, EXTENSION: 3.352.011.01/4 (35643)		EA	1									3-22	3MP14
X1-H		A579 LEVER ASSEMBLY: 3.414.003.01/4 (35643)		EA	1										3A11
X1-H		A580 SLOTTED PIN: 3.768.001.15 (35643)		EA	1									3-22	3A11MP1
X1-H		A581 LEVER: 3.414.007.01P/4 (35643)		EA	1									3-22	3A11MP2
X1-H		A582 BEARING PLATE ASSY: 3.321.002.01/4 (35643)		EA	1									3-22	3A12
X1-H		A582A BEARING PLATE: K515NY18 (35643)		EA	1										3A12MP1
X1-H		A583 BEARING PIN: 3.318.002.01/5 (35643)		EA	1										3A12MP2
X1-H		A584 SPRING SUSPENSION PIN: 3.318.001.01/5 (35643)		EA	1										3A12MP3

AMSEL-ASE Form 1 Nov 68 6048 F

ESC-FM 45344-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTG/CY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A585 LEVER: 3.414.004.01/4 (35643)	EA	1										3A12MP4
X1-H		A586 APERTURE PLATE ASSEMBLY: 2.515.003.01/4 (35643)	EA	1										3A13
X1-H		A587 PIN, RIVETED: 3.416.001.01/5 (35643)	EA	1										3A13MP1
X1-H		A588 APERTURE PLATE: 3.515.005.01/4 (35643)	EA	1										3A13MP2
X1-H		A589 PHOTO RESISTOR: 3.511.001.01/4 (35643)	EA	1									3-22	3A8V1
X1-H		A589A BASE PLATE ASSEMBLY: 2.117.007.01/2 (35643)	EA	1									3-22	3A14
X1-H		A590 APERTURE PLATE: 3.515.003.01/4 (35643)	EA	1									3-22	3A14MP1
X1-H		A593 CONTACT SPRING: 3.623.522.01/4 (35643)	EA	1									3-22	3A14MP2
X1-H		A594 CONTACT SPRING: 3.623.528.01/4 (35643)	EA	1									3-22	3A14MP3
X1-H		A595 BRACKET, ANGLE: 3.414.042.01/5 (35643)	EA	1									3-22	3A14MP4
X1-H		A596 SHIM: SAME AS A474	EA	1										3A14MP5
X1-H		A597 SHIM: 3.740.531.01/5 (35643)	EA	1										3A14MP6

AMSEL-ME Form 1 Nov 68 6048 Prev

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21 50	(c) 51 100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1=H		A598 WASHER, FLAT: 3.740.532.01/5 (35643)		EA	1										3A14H1
X1=H		A599 ZERO SETTING SCREW: 3.219.020.01/5 (35643)		EA	1									3-22	3A14MP7
X1=H		A599A LENS, EXPOSURE METER: 3.517.001.01/4 (35643)		EA	1									3-22	3MP15
X1=H		A600 PIN, RIVETED: 3.751.526.01/5 (35643)		EA	1									3-22	3A14MP8
P=0	6760-018-3721	A601 CASE, PHOTOGRAPHIC EQUIPMENT: 18526 (35643)		EA	1	*	*	*	*	*	*	5	2		4
P=0	6760-462-3063	A602 GRIP, SHOULDER: 14094 (35643)		EA	1	*	*	2	*	2	2	12	5		4MP1
P=0	6760-018-3647	A603 LENS, CAMERA, GENERAL, PHOTOGRPHC: 11308 (35643)		EA	1	*	*	*	*	*	*	5	2		5
P=0	6760-018-3590	A604 CAP, LENS: SAME AS A455		EA	1	REF	REF	REF	REF	REF	REF	REF	REF	3-25	5MP1
X1=H		A605 FLUTE TUBE: 42-672.01-56 (35643)		EA	1									3-25	5MP2
X1=H		A606 PLATE, IDENTIFICATION: 42-672.01-55 (35643)		EA	1									3-25	5MP3
X1=H		A607 SCREW, INSTRUMENT: 15-10.144-18 (35643)		EA	3									3-25	5H1
P=H	6760-484-3741	A608 HOLDER, FILTER, PHOTOGRAPHIC: 42-672.01-51 (35643)		EA	1				*	*	*	5	2	3-25	5MP4

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

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X1=H		A609	SCREW, MACHINE: M1.4X2DIN920 (35643)		EA	3									3=25	5H2
X1=H		A610	ORIENTATION KNOB: 42-670.01-106 (35643)		EA	1									3=25	5MP5
P=O	6760-018-3479	A611	CAP, LENS: SAME AS A466		EA	1	REF	REF	REF	REF	REF	REF	REF	REF	1=1	5MP6
P=O	6760-018-3875	A612	SHADE, PHOTOGRAPHIC LENS: 12585 (35643)		EA	1	4	2	2	4	2	2	10	10	1=1	6
P=O	6760-018-3582	A613	CAP, LENS: 14033 (35643)		EA	1	4	2	2	4	2	2	10	10	1=1	6MP1
X1=H		A614	THREADED TUBE: 12585-1 (35643)		EA	1										6MP2
X1=H		A615	CLAMPING RING: 12585-2 (35643)		EA	1										6MP3
P=O	6760-018-3606	A616	LENS, CAMERA, GENERAL, PHOTOGRAPHIC: 11829 (35643)		EA	1	4	4	4	4	4	4	5	2	1=1	7
P=O	67600-462-3056	A617	CAP, LENS: 14124 (35643)		EA	1	4	2	2	4	2	2	10	10	1=1	7MP1
P=H	6760-462-3057	A618	HOLDER, FILTER, PHOTOGRAPHIC: 14161 (35643)		EA	1				4	2	2	10	8	3=32	7MP2
P=H	6720-181-1037	A618A	RING, RETAINER, OPTICAL ELEMENT: C42-37.01-57 (35643)		EA	1				4	4	4	5	2	3=32	7MP4

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION — REFERENCE NUMBER & MFR. CODE — USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-30	(c) 31-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1 20	(b) 21-30	(c) 31 100	(8) 1 YR ALW PER SQUIP (DIRECT)	(9) DEPOT MAINT ALW PER SQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
P-H	6720-161-1025	A616B SUNSHADE ASSEMBLY, 135MM LENS: C42-37.01-1169U1 (35643)	EA	1				4	8	2		4		7A1
X1-H		A619 [illegible] OPTICAL ELEMENT: C42-37.01-1169U1 (35643)	EA	1									3-32	7A1MP1
X1-H		A621 TUBE, EXTERNAL, LENS HOOD: C42-37.01-1153 (35643)	EA	1									3-32	7A1MP2
X1-H		A622 TUBE, INTERNAL LENS HOOD: C42-37.01-1149 (35643)	EA	1									3-32	7A1MP3
X1-H		A624 SETSCREW: HI.7X3.5DIN553 (35643)	EA	4									3-32	7MP7
X1-H		A625 SETSCREW: SAME AS A624	EA	DEP									3-32	7MP8
X1-H		A626 LENS HEAD ASSEMBLY, COMPLETE: 11828 (35643)	EA	1										7A2
X1-H		A627 SOCKET, TRIPOD: C42-36.01-123 (35643)	EA	1									3-34	7MP9
X1-H		A628 SCREW, INSTRUMENT: M3X8DIN84 (35643)	EA	2									3-34	7M1
X1-H		A629 SCREW, INSTRUMENT: 15-10.144-12 (35643)	EA	3									3-35	7M2
X1-H		A630 SCREW, INSTRUMENT: 15-10.144-11 (35643)	EA	4									3-35	7M3
X1-H		A631 COVER SCREW: SAME AS A60	EA	2										7MP10

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	REFERENCE NUMBER & MFR. CODE	(3) DESCRIPTION	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51 100	(8) 1 YR. ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A632	SCREW, INSTRUMENT: SAME AS A390		EA	1										7H4
X1-H		A633	RING, BAYONET OPTICAL ELEMENT: C42-36.01-67 (35643)		EA	1									3-34	7MP11
X1-H		A634	SCREW, INSTRUMENT: C42-37.01-63 (35643)		EA	6									3-34	7H5
X1-H		A635	ORIENTATION KNOB: SAME AS A610		EA	1										7MP12
P-O	6760-018-3479	A636	CAP, LENS: SAME AS A466		EA	1	REF	REF	REF	REF	REF	REF	REF	REF	1-1	7MP13
P-O	6760-018-3767	A637	CABLE RELEASE, PHOTOGRPHC SHUTT: 14067 (35643)		EA	1	*	*	*	*	*	*	5	2		8
X1-H		A638	STUD, LOCKING: 14067-1 (35643)		EA	1										8MP1
P-O	7720-018-4419	A639	NECK STRAP, COMPLETE: 14092 (35643)		EA	1	*	*	2	*	*	2	10	4	1-1	9
X1-F		A640	KEY RING: 14092-1 (35643)		EA	2										9MP1
P-O	6760-018-3584	A641A	FLASH GUN, PHOTOGRAPHIC: 15501NY (35643)		EA	1	*	*	2	*	*	2	10	4	3-8	10
P-O	6230-018-3589	A642	REFLECTOR, LIGHT: 15532 (35643)		EA	1	*	*	2	*	*	2	8	3	3-36	10A1
X1-H		A643	NUT, PLAIN, ROUND: 42-471-117 (35643)		EA	1									3-36	10A1MP1

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

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X1-H		A644 BOLT, SHOULDER: 42-471-116 (35643)	EA	1									3-36	10A1MP2
X1-H		A645 BRACKET, REFLECTOR: 42-471-115 (35643)	EA	1									3-36	10A1MP3
X1-H		A646 SCREW, INSTRUMENT: 42-471-118 (35643)	EA	1									3-36	10A1H1
X1-H		A647 LEAF SEGMENT, REFLECTOR: 42-471-112 (35643)	EA	1									3-36	10A1MP4
X1-H		A648 LEAF SEGMENT, REFLECTOR: 42-471-111 (35643)	EA	18									3-36	10A1MP5
X1-H		A649 LEAF SEGMENT, REFLECTOR: 42-471-113 (35643)	EA	1									3-36	10A1MP6
X1-H		A650 SPRING: 42-471-114 (35643)	EA	19									3-36	10A1MP7
P-D	6760-018-3498	A651 ADAPTER, PHOTOELSH LAMPHOLDER: 15533 (35643)	EA	1	*	*	2	*	*	2	8	3	3-8	10A2
X1-H		A652 SCREW, INSTRUMENT: M1.4X3.5DIN91 (35643)	EA	3										10A2H1
X1-H		A653 HOUSING: 42-471-129 (35643)	EA	1									3-8	10A2MP1
X1-H		A654 EJECTOR BUTTON: 42-471-132 (35643)	EA	1									3-37	10A2MP2
X1-H		A655 SPRING: 42-471-131 (35643)	EA	1									3-37	10A2MP3

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ESC-FM 4534-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

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X1-H		A656 HOLDER, ELECTRIC LIGHT/LAMP: 42-471-130 (35643)		EA	1										10A2MP4
X1-H		A657 SCREW, INSTRUMENT: M2X3DIN84 (35643)		EA	1										10A2H2
X1-H		A658 NUT, SLEEVE: 42-471-128 (35643)		EA	1										10A2MP5
H		A659 HOUSING WITH INSULATION DISC: 42-471-126/127 (35643)		EA	1										10A2A1
X1-H		A660 HOLDER, LAMPHOLDER: 42-471-U39 (35643)		EA	1										10A3
X1-H		A661 LAMPHOLDER: 42-471-41 (35643)		EA	1									3-3	10A3MP1
X1-H		A662 INSULATOR, DISC: 42-471-43 (35643)		EA	1										10A3E1
X1-H		A663 RING, RETAINING: 42-471-44 (35643)		EA	1									3-3	10A3MP2
X1-H		A664 SPIRAL SPPING ASSEMBLY: 42-471-U4R (35643)		EA	1									3-3	10A3A1
P-O	5910-789-6816	A665 RETAINER, BATTERY: 15536 (35643)		EA	1	4	4	2	4	4	2	8	3		10A4
X1-H		A666 NUT, KNURLED: 42-471-296A (35643)		EA	1										10A4MP1
X1-H		A667 NUT, KNURLED: 42-471-296 (35643)		EA	1										10A4MP2

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X1-H		*A668* SCREW, INSTRUMENT: M1.7X4 DIN63 (35643)		EA	8										10A4H1
X1-H		A669 HOUSING, SPOTI WELDED: 42-471-U281 (35643)		EA	1									3-8	10A4MP3
X1-H		A670 NUT, SLEEVE: 42-471-291 (35643)		EA	4										10A4MP4
X1-H		A671 TOP PLATE: 42-471.U300 (35643)		EA	1										10A4MP5
X1-H		*A672* SCREW, INSTRUMENT: M2531 (35643)		EA	2										10A4H2
X1-H		A673 LOWER PLATE: 42-471-289 (35643)		EA	1										10A4MP6
X1-H		A674 LOWER PLATE: 42.471.285 (35643)		EA	1										10A4MP7
X1-H		A675 SPRING, CONTACT: 42-471-290 (35643)		EA	1									3-38	10A4MP8
X1-H		A676 SOLDERING LUG: 42-471-293 (35643)		EA	1										10A4E1
X1-H		A677 RESISTOR, FIXED, WIREWOUND: 42-471-294 (35643)		EA	1									3-36	10A4R1
X1-H		*A678* CAPACITOR, FIXED, ELECTROLYTIC: 42-603.01-114 (35643)		EA	1									3-36	10A4C1

ESC FM 4534-68

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

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X1-H		A679 BATTERY HOUSING ASSEMBLY: 42-471-U141 (35643)	EA	1										10A5
	6135-160-7159	A679A BATTERY, DRY BA-261/U	EA	1										10BT1
X1-H		A680 SCREW, INSTRUMENT: M2.3X3.5DIN87 (35643)	EA	2										10A5H1
X1-H		A681 PLATE, HOUSING: 42-471-18 (35643)	EA	1										10A5MP1
X1-H		A682 REFLECTOR SHOE: 42-471-17 (35643)	EA	1										10A5MP2
X1-H		A683 SPRING: 42-471-20 (35643)	EA	1									3-39	10A5MP3
X1-H		A684 SCREW, INSTRUMENT: 15-10.245-7 (35643)	EA	3										10A5H2
X1-H		A685 PUSH-IN RECEPTACLE: 42-471-11 (35643)	EA	1										10A5J1
X1-H		A686 CONTACT, ELECTRICAL: 42-471-10 (35643)	EA	1										10A5E1
X1-H		A687 INSULATION, DISC: 42-471-14 (35643)	EA	1										10A5E2
X1-H		A688 PUSH-IN RECEPTACLE: 42-471-12 (35643)	EA	1										10A5J2
X1-H		A688A BASE LID: 42-471-143 (35643)	EA	1										10A5MP4
X1-H		A689 CONTACT, PLATE: 42-471-9 (35643)	EA	1										10A5MP5

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X1-H		A689A CONTACT PLATE: 15-12,05-5 (35643)		EA	1										10A5MP6
X1-H		A690 CONTACT SPRING: 42-471-13 (35643)		EA	1										10A5MP7
X1-H		A691 NUT, SLEEVE: 42-471-19 (35643)		EA	1										10A5MP8
X1-H		A692 SCREW, INSTRUMENT: M1,7X6DIN84 (35643)		EA	3										10A5H3
X1-H		A693 MOUNTING FOOT: 42-471-155 (35643)		EA	1										10A5MP9
X1-H		A694 HOUSING: 42-471-150 (35643)		EA	1									3-39	10A5MP10
P-O	6760-462-3065	A695 CABLE ASSEMBLY, SPECIAL PURPOSE ELEC: 15528 (35643)		EA	1	*	*	2	*	2	2	12	5	1-1	11
P-O	6760-181-1146	A695A CABLE ASSEMBLY, SPECIAL PURPOSE ELEC. 98344 (35643)		EA	1	*	*	2	*	*	2	8	3		11A1
X1-H		A696 CABLE WITH PLUG MOLDED: 42,531-460/528 (35643)		EA	1									1-1	11W1
X1-H		A697 INNER SLEEVE: 42,531-598 (35643)		EA	1										11MP1
X1-H		A698 CLAMP: 42,531-606 (35643)		EA	1										11MP2

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SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A699 ALPHA-PLUG 3AMP: 42.531-564 (35643)		EA	1										11P1
X1-H		A700 ALPHA-PLUG 2.7 AMP: 42.531-565 (35643)		EA	1										11P2
X1-H		A701 OUTER SLEEVE: 42.531-597 (35643)		EA	1										11MP3
P-O	6760-018-3473	A702 CONNECTING CORD, FLASH GUN: 15521 (35643)		EA	1	*	*	2	*	2	2	12	5	1-1	12
P-O	6760-181-1030	A702A CONNECTING CORD: 98343 (35643)		EA	1	*	*	2	*	*	2	8	3		12A1
X1-H		A703 CABLE WITH PLUG MOLDED: 42.531-560/521 (35643)		EA	1									1-1	12W1
X1-H		A704 INNER SLEEVE: SAME AS A697		EA	1										12MP1
X1-H		A705 CLAMP: SAME AS A698		EA	1										12MP2
X1-H		A706 ALPHA-PLUG 3AMP: SAME AS A699		EA	1										12P1
X1-H		A707 ALPHA-PLUG 2.7 AMP: SAME AS A700		EA	1										12P2
X1-H		A708 OUTER SLEEVE: SAME AS A701		EA	1										12MP3
P-O		A709 LAMP, INCANDESCENT: 15534 (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	13

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP CNTG-CY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
P-O	6760-018-3637	A710 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13096 (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	14
X1-H		A711 HOLDER, FILTER, PHOTOGRAPHIC: 13096R (35643)		EA	1									1-1	14MP1
P-O		A712 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13096G (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	14MP2
X1-H		A713 RING, SCREW-IN, FILTER: 13096S (35643)		EA	1									1-1	14MP3
X1-H		A714 BOX, FILTER, HINGED: 14612 (35643)		EA	1									1-1	14MP4
P-O	6760-814-2876	A715 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13101 (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	15
X1-H		A716 HOLDER, FILTER, PHOTOGRAPHIC: SAME AS A711		EA	1									1-1	15MP1
P-O		A717 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13101G (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	15MP2
X1-H		A718 RING, SCREW-IN, FILTER: SAME AS A713		EA	1									1-1	15MP3
X1-H		A719 BOX, FILTER, HINGED: SAME AS A714		EA	1									1-1	15MP4
P-O	6760-018-3643	A720 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13131 (35643)		EA	1	*	*	*	*	*	*	5	2	1-1	16

AS-15(4)

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY. INC. IN UNIT	(6) 30 DAY OS MAINT. ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 70 DAY OS MAINT. ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALLOW PER GROUP	(9) DEPOT MAINT ALLOW PER 100 GROUP	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
X1-H		A721 HOLDER, FILTER, PHOTOGRAPHIC: SAME AS A711	EA	1									1-1	16MP1
P-O		A722 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13131G (35643)	EA	1	*	*	*	*	*	*	5	2	1-1	16MP2
X1-H		A723 RING, SCREW-IN, FILTER: SAME AS A713	EA	1									1-1	16MP3
X1-H		A724 BOX, FILTER, HINGED: SAME AS A714	EA	1									1-1	16MP4
P-O	6760-018-3612	A725 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13007 (35643)	EA	1	*	*	*	*	*	*	5	2	1-1	17
X1-H		A726 BOX, FILTER: 14614 (35643)	EA	1									1-1	17A1
X1-H		A727 BOX, FILTER, TOP: 14614A (35643)	EA	1									1-1	17A1MP1
X1-H		A728 BOX, FILTER, BOTTOM: 14614B (35643)	EA	1									1-1	17A1MP2
P-O	6760-018-3626	A729 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13008 (35643)	EA	1	*	*	*	*	*	*	5	2	1-1	18
X1-H		A730 BOX, FILTER: SAME AS A726	EA	1									1-1	18A1
X1-H		A731 BOX, FILTER, TOP: SAME AS A727	EA	1									1-1	18A1MP1

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SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR. CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR. ALW PER EQUIP ENTITY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A732 BOX, FILTER, BOTTOM: SAME AS A728	EA	1									1-1	18A1MP2
P-O	6760-018-3627	A733 FILTER, LIGHT, PHOTOGRAPHIC LENS: 13009 (35643)	EA	1	*	*	*	*	*	*	5	2	1-1	19
X1-H		A734 BOX, FILTER: SAME AS A726	EA	1									1-1	19A1
X1-H		A735 BOX, FILTER, TOP: SAME AS A727	EA	1									1-1	19A1MP1
X1-H		A736 BOX, FILTER, BOTTOM: SAME AS A728	EA	1									1-1	19A1MP2
P-O	6760-018-3809	A737 MAGAZINE, FILM: 14006 (35643)	EA	2	*	*	*	*	*	*	5	2	1-1	20
X1-H		A738 OUTER SHELL, RIVETED: 42-253.02-5 (35643)	EA	1										20A1
X1-H		A739 INNER SHELL, RIVETED: 42-253.02-18 (35643)	EA	1										20A2
X1-H		A740 SEALING RING: 15-12.13-5/1 (35643)	EA	1										20A2MP1
X1-H		A741 SPOOL, PHOTOGRAPHIC FILM: 14015A (35643)	EA	1										20A3
X1-H		A742 SCREW, INSTRUMENT: SAME AS A629	EA	2										20A3HI
X1-H		A743 PLATE, SPRING: 42-253.02-31 (35643)	EA	1										20A3MP1

SECTION II REPAIR PARTS LIST FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30 DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30 DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG NO	(b) ITEM NO OR REFERENCE DESIGNATION
X1-H		A744 STUD, CONTINUOUS THREAD: 42-253.02-26 (35643)		EA	1										20A3MP2
X1-H		A745 INLAY: 42-253.02-27 (35643)		EA	1										20A3MP3
P-O	6760-823-9699	A746 CASE, PHOTOGRAPHIC EQUIPMENT: 14803 (35643)		EA	1	*	*	4	*	*	*	5	2	1-1	21
X1-H		A747 KEY, LOCK, CARRYING CASE: 14803K (35643)		EA	1										21MP1
P-O	6760-462-3067	A748 LENS COUPLER: 98205 (35643)		EA	1	*	2	2	*	2	2	19	10	1-1	21MP2
A-H		A749 STRAP, LEATHER: 14803S (35643)		EA	1										21MP3
M-H		A750 GRIP, SHOULDER: 98094 (35643)		EA	1										21MP4

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SECTION III INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO FIGURE AND ITEM NUMBER OR REFERENCE DESIGNATION

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF. DESIGNATION
5305-109-7016	3-3	1A3H3
5305-109-7017	3-3	1A3H5
5305-109-7020	3-1	1A1H2
5305-109-7021	3-19	1H34
5305-109-7025	3-16	1A21MP4
5310-109-7015	3-3	1A3MP4
5310-109-7019	3-3	1A3H6
5360-182-9601	3-15	1MP41
5360-491-1581	3-15	1MP29
5365-182-9658	3-15	1H21
5630-491-1580	3-11	1A9MP18
5910-789-6816		10A4
6135-160-7159		10BT1
6135-299-6918	3-22	3BT1
6230-018-3589	3-36	10A1
6620-106-4557	3-4	1A3A1MP2
6720-018-3999	3-2	1A2
6720-018-4003	3-3	1MP2
6720-018-4004	3-30	2A1
6720-018-4006	3-1	1A1
6720-106-4752	3-16	1A21MP5
6720-106-4754	3-3	1A3MP2
6720-106-4755	3-3	1A3MP3
6720-106-4756	3-3	1A3H7
6720-106-4758	3-4	1A3A1MP4
6720-106-4759	3-19	1A22A1MP4
6720-106-4760	3-19	1A27MP5
6720-106-4761	3-5	1A5MP2
6720-106-4765		1A8
6720-106-4765	3-8	1A6
6720-106-4766	3-16	1A21MP7
6720-106-4767	3-16	1A21H2
6720-181-1022		1A5A2MP2
6720-181-1025		7A1
6720-181-1028	3-17	1A18A2
6720-181-1032	3-32	7MP4
6720-436-5985	3-8	1MP6
6720-456-1872	3-11	1A12
6720-456-1875	3-3	1A3
6720-456-1876	3-5	1A5
6720-457-9636		1A9
6720-617-8731	3-18	1A19A4
6760-018-3382	1-1	6MP1
6760-018-3473	1-1	12
6760-018-3476	3-3	1MP1
6760-018-3479	1-1	5MP6
6760-018-3479	1-1	7MP13
6760-018-3498	3-8	10A2
6760-018-3584	3-8	10
6760-018-3590	3-27	2MP1
6760-018-3590	3-25	5MP1
6760-018-3606	1-1	7
6760-018-3612	1-1	17
6760-018-3626	1-1	18
6760-018-3627	1-1	19
6760-018-3637	1-1	14
6760-018-3643	1-1	16
6760-018-3647		5
6760-018-3667		2
6760-018-3675	1-1	6
6760-018-3721		4
6760-018-3724		3
6760-018-3767		8
6760-018-3809	1-1	20
6760-111-0693	3-3	1A3MP6
6760-181-1030		12A1
6760-181-1146		11A1
6760-462-3056	1-1	7MP1
6760-462-3057	3-32	7MP2

SECTION II INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE
TO FIGURE AND ITEM NUMBER OR REFERENCE DESIGNATION

FEDERAL STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER OR REF DESIGNATION
6760-462-3063		4MP1
6760-462-3065	1-1	11
6760-462-3067	1-1	21MP2
6760-484-3741	3-25	5MP4
6760-814-2876	1-1	15
6760-823-9699	1-1	21
7720-018-7719	1-1	9

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE

TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO.	MFGRS. CODE	FIG. NO.	REF DESIGNATION OR ITEM NO.
AM2X2.8-D1N34	35643	3-5	1H3
AM2X3.5D1M8	35643	3-15	1H31
BN1.301.01/3	35643	3-23	3A5H3
C42-36.01-123	35643	3-34	7MP9
C42-36.01.67	35643	3-34	7MP11
C42-37.01-1149	35643	3-32	7A1MP3
C42-37.01-1153	35643	3-32	7A1MP2
C42-37.01-58	35643	3-32	7A1MP1
C42-37.01-63	35643	3-34	7H5
KS15NY10	35643		1A25
KS15NY11	35643		1A25
KS15NY13	35643	3-13	1A9A1
KS15NY15	35643		3A2A1
KS15NY16	35643	3-22	3A3H2
KS15NY17	35643		3A3A1H1
KS15NY18	35643		3A12MP1
KS15NY2	35643		1A5A2
KS15NY4	35643		1A5A3A1
KS15NY5	35643		1A5A5A1MP1
KS15NY6	35643		1A5A6
KS15NY7	35643		1A5A8
KS15NY8	35643		1A7
KS15NY9	35643		1A24
MAG-1/3	35643	3-23	3A5A3A1MP1
M1.2X1.5D1N553	35643	3-27	2MP2
N1.2X1.8S0.6D1N926	35643	3-27	2MP3
N1.4X1.5D1N63-11	35643	3-6	1A5H6
N1.4X2D1N920	35643	3-25	5H2
N1.4X2LN12021	35643	3-2	1A2H2
N1.4X2.2D1N63	35643	3-15	1H27
N1.4X2.2D1N84-6E	35643	3-6	1A5A5H1
N1.4X2.3DIN63	35643	3-12	1A9A2H1
N1.4X2.3D1N84-27	35643	3-6	1A5H13
N1.4X3.5D1N91	35643		10A2H1
N1.4X3D1N63	35643	3-11	1H20
N1.4X4-D1E63	35643	3-3	1A3H2
N1.4X3D1N63	35643	3-18	1A19H1
N1.7D1N551-2	35643	3-6	1A5H11
N1.7X2D1N551-19	35643	3-6	1A5H9
N1.7X2D1N84-15	35643	3-6	1A5H8
N1.7X2.6D1N84-13	35643	3-6	1A5H7
N1.7X2.3D1N34-23	35643	3-6	1A5H12
N1.7X2.5LN12021	35643	3-8	1H10
N1.7X2.8D1N551-2	35643	3-6	1A5H10
N1.7X3D1N84	35643	3-16	1A18H2
N1.7X3LN12019	35643	3-19	1A22H2
N1.7X3.3D1N553	35643	3-32	7MP7
N1.7X3.5D1N553	35643	3-32	7MP8
N17X3.5LM-12025	35643	3-5	1H4
N1.7X3D1N63	35643		10A4H1
N1.7X4D1N84	35643	3-15	1H24
1N.7XD1N84-29	35643	3-6	1A5H14
N1.7X5D1N84-5A	35643	3-6	1A5H4
N1.7X5D1N85-5B	35643	3-6	1A5H5
N1.7X6D1N84	35643		10A5H3
N11.7-116	35643		2A5A2
N11.7-116NYHS	35643	3-23	3A5MP3
N11.7-117	35643		3A5A3
M2.3X2.5D1N551	35643		12MP7
M2.3X3.5D1N87	35643		10A5H1
M2D1N934	35643	3-13	1A9A1H2
M2S31	35643		10AAH2
M2X1.6-D1N934	35643	3-10	1H13
M2X2.5D1N84	35643	3-10	1H14
M2X3D1N84	35643		10A2H2
M2X3LN12021	35643	3-15	1H26
M2X3LN12021	35643	3-11	1A9MP9
M2X3LN12021	35643	3-11	1A12H1
M2X4D1N921	35643	3-15	1H22
M2X4D1N921	35643	3-1	1A1H1
M2X4LN12021	35643	3-8	1H8
M2X4LN12021	35643	3-5	1H18
M2X4LN12021	35643	3-5	1A5H1
M2X4LN12021	35643	3-11	1A8H1
M2X5D1N84	35643	3-16	1A18H1
M2X6LN-12021	35643	3-10	1H15
M2X6.31N12021	35643	3-15	1H25
M3X8D1N84	35643	3-34	7H1
1081	35643	3-23	3A5A2MP4
1152	35643	3-23	3A5MP2
11828	35643		7A2
12585-1	35643		6MP2
12585-2	35643		6MP3
13096G	35643	1-1	14MP2
13096R	35643	1-1	14MP1
13096R	35643		15MP1
13096R	35643	1-1	16MP1
13096S	35643	1-1	14MP3
13096S	35643		15MP3
13096S	35643	1-1	16MP3
13101G	35643	1-1	15MP2
13131G	35643	1-1	16MP2
1.2D1N6799	35643	3-11	1MP18
1/3-25	35643	3-23	3A5A2MP5
1/3DM-LK3	35643	3-22	3A5
1/3DM-LK3NYBW	35643	3-23	3M2
1/3DM-LK3NYRW	35643	3-23	3M1
1/3G1	35643		3A5A3A1
14015A	35643		20A3
14067-1	35643		8MP1
14092-1	35643		9MP1
14612	35643	1-1	14MP4
14612	35643		15MP4
14612	35643	1-1	13MP4
14614	35643	1-1	17A1
14614	35643	1-1	18A1

ESC-15(A)

ESC FM 4535 60

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE

TO FIGURE AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO	MFGRS CODE	FIG NO	REF DESIGNATION OR ITEM NO
14614	35643	1-1	19A1
14614A	35643	1-1	17A1MP1
14614A	35643	1-1	18A1MP1
14614A	35643		19A1MP1
14614B	35643	1-1	17A1MP2
14614B	35643	1-1	18A1MP2
14614B	35643	1-1	19A1MP2
14803K	35643		21MP1
14803S	35643		21MP3
1.4X2LN120.211	35643	3-2	LA2H1
1.4X7D1N96MS	35643	3-22	3MP9
1.4X7D1N97MS3	35643	3-22	3H10
15-10.140-10	35643	3-10	1H12
15-10.140-7	35643	3-10	1H16
15-10.140-8	35643	3-10	1H11
15-10.143-5	35643	3-16	LA21H4
15-10.144-11	35643	3-35	7H3
15-10.144-12	35643	3-35	7H2
15-10.144-12	35643		20A3H1
15-10.144-18	35643	3-25	5H1
15-10.144-19	35643	3-27	2H1
15-10.144-7	35643	3-13	LA9A1H4
15-10.144-8	35643	3-15	1H20
15-10.149-7	35643	3-3	LA3H4
15-10.170-10	35643	3-3	1H1
15-10.170-12	35643	3-19	LA22H4
15-10.170-5	35643	3-6	LA5H3
15-10.170-6	35643	3-11	LA9H1
15-10.170-9	35643	3-19	1H35
15-10.171-6	35643	3-19	LA22H5
15-10.172-10	35643		2A1H1
15-10.172-6	35643	3-8	1H6
15-10.173-5	35643	3-10	1H17
15-10.174-5	35643	3-15	LA13H1
15-10.174-6	35643	3-16	1H32
15-10.174-6	35643		7H4
15-10.174-7	35643	3-5	1H5
15-10.175.7	35643	3-15	LA13H3
15-10.20-8	35643	3-8	1H9
15-10.20-11	35643	3-11	1H19
15-10.21-12	35643	3-17	LA18H3
15-10.21-13	35643	3-27	LA18H6
15-10.21-9	35643	3-13	LA9A1H1
15-10.22-6	35643	3-8	1H7
15-10.230-6	35643	3-13	LA9A1H3
15-10.25-6	35643	3-30	2H2
15-10.265-7	35643		10A5H2
15-10.29-13	35643	3-5	LA5A2H1
15-10.29-14	35643	3-15	LA15H1
15-11.175-5	35643	3-16	LA21H1
15-11.232.5	35643	3-16	1H33
15-11.25-5	35643	3-15	LA15H7
15-12.02-10/1	35643	3-17	LA18MP5
15-12.02-11/3	35643	3-19	LA22MP17
15-12.02-13/1	35643	3-11	LA9AAMP1
15-12.02-14/1	35643	3-16	LA21MP1
15-12.02-15/1	35643	3-16	LA21MP6
15-12.02-17/2	35643	3-5	LA5H2
15-12.02-28/1	35643	3-15	1H30
15-12.03-13/1	35643	3-19	LA22MP5
15-12.03-14/1	35643	3-19	LA22H3
15-12.03-15/1	35643	3-11	LA8MP5
15-12.03-16/1	35643	3-15	1P28
15-12.03-21/1	35643	3-15	LA13MP5
15-12.03-21/2	35643	3-15	LA13H6
15-12.03-12/3	35643	3-15	LA13H5
15-12.03-25/1	35643	3-17	LA18MP7
15-12.03-32/3	35643	3-17	LA18H4
15-12.84-14/6	35643	3-15	1H23
15-12.04-14/8	35643	3-17	LA18H5
15-12.05-32/1	35643	3-5	1MP55
15-12.05-5	35643		10A5MP6
15-12.06-14/11	35643	3-1	LA1H7
15-12.06-14/5	35643	3-1	LA1H4
15-12.06-14/6	35643	3-1	LA1H6
15-12.06-16/1	35643	3-1	LA1H8
15-12.06-17/1	35643	3-19	LA27MP3
15-12.06-18/5	35643	3-16	LA12H3
15-12.06-18/6	35643	3-16	LA12MP7
15-12.06-37/1	35643	3-1	LA1H5
15-12.13-5/1	35643		20A2MP1
15-12.15-7/1	35643	3-3	1H2
15-12.18-5/1	35643	3-3	LA3A1MP1
15534	35643	1-1	13
1.5D1N6799	35643	3-15	1MP40
1.5D1N6799	35643	3-11	LA9MP1
1.5D1N6799	35643	3-11	LA9AAMP2
1.5D1N6799	35643	3-17	LA18MP1
1.5D1N6799	35643	3-19	LA22A1MP2
1.5D1N6799	35643	3-19	LA27MP2
2.117.007.01/2	35643	3-22	3A14
2.121.002.01C/2	35643		3A2
2.127.001.01/3	35643		3A9
2.371.002.01/3	35643	3-21	3A1
2.413.001.01/4	35643		3A5A1
2.414.001.01/4	35643		3A10
2.414.001.01/4	35643		3A3A1
2.515.003.01/4	35643		3A13
2.530.001.01E/4	35643		3A7
2.530.002.01/4	35643		3A6
2.535.002.01/4	35643		3A4
2.571.019.01C/2	35643	3-22	3A8
2.5D1N125	35643	3-1	LA1H3
2X10D1N97MS63	35643	3-22	3H2
3.121.002.01E/2	35643	3-21	3A2A1MP1

ESCAN 4535-40

SECTION IV INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO FIGURE REFERENCE NUMBER AND MANUFACTURERS CODE

REFERENCE NO.	MFGRS. CODE	FIG NO	REF DESIGNATION OR ITEM NO
3.127.007.01/2	35643	3-22	3A9MP3
3.162.016.01/5	35643	3-21	3A2A1MP6
3.168.004.01/3	35643	3-21	3A2A1MP5
3.214.007.01/4	35643		3A5A1MP1A
3.215.027.01/5	35643	3-23	3A5R3
3.219.020.01/5	35643	3-22	3A14MP7
3.261.006.01/4	35643	3-23	3A5A2MP1
3.264.001.01/5	35643	3-23	3A5A2MP3
3.131.027.01/4	35643	3-22	3MP13
3.318.001.01/5	35643		3A12MP3
3.318.002.01/5	35643		3A12MP2
3.318.146.01/5	35643	3-21	3A2A1MP2
3.312.002.01/4	35643	3-22	3A12
3.323.016.01/4	35643	3-22	3A3A1MP3
3.326.012.01/3	35643	3-22	3MP8
3.316.013.01/4	35643	3-22	3MP4
3.352.011.01/4	35643	3-22	3MP14
3.352.012.01/4	35643	3-22	3A9MP2
3.352.014.01/4	35643	3-22	3MP9
3.352.023.01/4	35643	3-22	3A3A1MP1
3.359.001.01/5	35643		3A1MP1
3.371.004.01/5	35643	3-21	3MP2
3.371.008.01/4	35643	3-21	3A2A1MP6
3.376.049.01/4	35643	3-22	3MP11
3.378.001.01/5	35643	3-23	3A5A1MP1
3.413.001.01/5	35643	3-22	3A4MP2
3.413.002.01/5	35643	3-22	3MP7
3.413.004.01/4	35643	3-23	3A5A1MP3
3.413.005.01/4	35643		3A5A1MP2
3.414.003.01/4	35643		3A11
3.414.004.01/4	35643		3A12MP4
3.414.006.01/5	35643		3A1MP3
3.414.007.0/P	35643		3A3
3.414.007.81P/4	35643	3-22	3A11MP2
3.414.042.01/5	35643	3-22	3A14MP4
3.414.043.01/5	35643	3-22	3A9MP1
3.414.077.01/4	35643	3-21	3A3A1MP3
3.415.001.01/3	35643	3-22	3A3A1MP4
3.415.002.01/5	35643	3-22	3A3MP1
3.416.001.01/5	35643		3A13MP1
3.416.011.01/5	35643		3A1MP2
3.511.001.01/4	35643	3-22	3A8V1
3.515.003.01/4	35643	3-22	3A14MP1
3.515.005.01/4	35643		3A13MP2
3.517.001.01/4	35643	3-22	3MP15
3.531.001.01G/3	35643	3-22	3A7MP2
3.533.002.01/4	35643	3-22	3A7MP1
3.5003.01/4	35643	3-22	3A6MP2
3.535.004.01/3	35643	3-22	3A6MP1
3.535.005.01/3	35643	3-22	3A6MP1
3.535.006.01/3	35643	3-21	3A2MP2
3.535.052.01/3	35643	3-21	3A2MP3
3537	35643	3-23	3A5A3A1MP2
3555-C1	35643		3A5A3A2
3555B1	35643	3-23	3A5A3A2MP2
3556	35643	3-23	3A5A3A2MP1
3.561.497.01	35643	3-22	3A8R3
3.561.499.01	35643	3-22	3A8R4
3.569.005.01	35643	3-22	3A8R2
3.572.026.01C/2	35643		3A8MP1
3.623.522.01/4	35643	3-22	3A14MP2
3.623.525.01/5	35643	3-23	3A5A2R2
3.623.528.01/4	35643	3-22	3A14MP3
3.623.581.01/5	35643	3-23	3A5A2R3
3.631.016.01/5	35643	3-23	3A5R2
3.632.039.01/5	35643	3-23	3A5A2MP2
3.710.501.01/5	35643	3-21	3A2R2
3.711.047.32	35643	3-22	3A9R3
3.711.508.01/5	35643	3-23	3A5R2
3.711.512.01/5	35643	3-23	3A5R1
3.711.523.01/5	35643	3-22	3A9R1
3.711.541.02/5	35643		3R4
3.712.505.01/5	35643		3A5A2R1
3.712.520.02/5	35643	3-21	3R3
3.712.524.01/5	35643	3-22	3R5
3.712.525.01/5	35643	3-22	3A3R1
3.715.509.01/5	35643	3-22	3MP5
3.719.004.01/5	35643	3-21	3R1
3.740.016.01/5	35643	3-22	3MP10
3.740.520.01	35643	3-22	3R7
3.740.521.01/5	35643	3-22	3R8
3.740.525.01	35643	3-23	3A5R4
3.740.520.01/5	35643	3-21	3MP1
3.740.528.01/5	35643		3A14MP15
3.740.531.01/5	35643		3A14MP6
3740.532.01/5	35643		3A14R1
3.740.539.01	35643	3-22	3A8R2
3.740.558.01/5	35643	3-22	3MP6
3.740.595.01/5	35643	3-22	3A3A1MP3
3.740.605.01/5	35643	3-21	3MP3
3.742.502.01	35643	3-23	3A5A2R1
3.742.514.01/5	35643	3-22	3MP12
3.742.514.01	35643	3-23	3A5R1
3.742.573.01/5	35643	3-21	3R1
3.743.004.55	35643	3-21	3A2MP1
3.743.005.55	35643	3-22	3A3A1MP2
3.744.502.01/5	35643	3-23	3A5MP1
3.744.515.01/5	35643	3-21	3A2R1
3.751.526.01/5	35643	3-22	3A14MP8
3.758.001.01/5	35643	3-21	3A2A1MP4
3.768.001.15	35643	3-22	3A11MP1
42-153.17-128	35643	3-5	1A5A1
42-216-460	35643	3-19	1A22MP24
42-253-15BST317	35643	3-13	1A9A1MP3
42-253.001-752	35643	3-1	1A1R9

ESC-Fm 4535-60

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE
TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO.	MFGRS. CODE	FIG NO	REF DESIGNATION OR ITEM NO
42-253.001-753	35643	3-1	1A1MP4
42-253.001-754	35643	3-1	1A1MP5
42-253.001-757	35643	3-1	1A1MP2
42-253.01-107	35643	3-5	1MP56
42-253.01-110	35643	3-16	1A21H3
42-253.01-115	35643	3-5	1A5A2MP1
42-253.01-121	35643	3-15	1A15
42-253.01-129	35643	3-11	1A9MP17
42-253.01-130	35643	3-15	1A13MP4
42-253.01-16	35643		1A17
42-253.01-232	35643	3-16	1A19A1
42-253.01-232A	35643	3-18	1A19A1MP1
42-253.01-246	35643	3-18	1A19A2
42-253.01-246A	35643	3-18	1A19A2MP2
42-253.01-257	35643	3-16	1A20
42-253.01-27	35643	3-45	1MP45
42-253.01-28	35643	3-15	1A13MP3
42-253.01-281	35643	3-11	1A11
42-253.01-287	35643	3-11	1A9A4
42-253.01-297	35643	3-11	1A9A4MP3
42-253.01-30	35643	3-15	1A13MP2
42-253.01-302	25643		1A9A1MP1
42-253.01-305	35643	3-13	1A9A1MP6
42-253.01-31	35643	3-15	1A13H2
42-253.01-314	35643	3-13	1A9A1MP8
42-253.01-328	35643	3-13	1A9A1MP2
42-253.01-33	35643	3-15	1MP43
42-253.01-355	35643	3-15	1MP37
42-253.01-36	35643	3-3	1A3MP1
42-253.01-361	35643	3-15	1A16
42-253.01-364	35643	3-15	1MP38
42-253.01-368	35643	3-15	1MP36
42-253.01-40	35643	3-15	1MP26
42-253.01-406	35643	3-.5	1A14
42-253.01-411	35643	3-11	1MP23
42-253.01-413	35643	3-11	1MP24
42-253.01-416	35643	3-11	1MP21
42-253.01-417	35643	3-11	1MP22
42-253.01-424	35643	3-11	1MP19
42-253.01-425	35643	3-10	1A26MP3
42-253.01-426	35643	3-10	1A26MP2
42-253.01-427	35643	3-10	1A26MP1
42-253.01-429	35643	3-11	1A11MP1
42-253.01-429	35643	3-17	1A18A1MP1
42-253.01-429	35643	3-16	1A21MP3
42-253.01-43	35643	3-11	1MP25
42-253.01-437	35643	3-11	1MP20
42-253.01-439	35643	3-10	1MP16
42-253.01-44	35643	3-11	1A9A4MP4
42-253.01-460	35643	3-10	1A24MP5
42-253.01-461	35643	3-10	1A24MP4
42-253.01-462	35643	3-10	1A24MP2
42-253.01-463	35643	3-10	1A24MP1
42-253.01-465	35643	3-10	1A7E2
42-233.01-468	35643	3-10	1MP11
42-253.01-470	35643	3-10	1H2
42-253.01-471	35643	3-10	1W1
42-253.01-474	35643	3-10	1A24MP3
42-253.01-478	35643	3-10	1A25MP1
42-253.01-453	35643	3-3	1A3MP12
42-253.01-484	35643	3-10	1M716
42-253.01-485	35643	3-3	1A3MP13
42-253.01-486	35643	3-3	1A3MP11
42-253.01-488	35643	3-11	1A8MP4
42-253.01-491	35643	3-11	1A8MP6
42-253.01-495	35643		1A8MP2
42-253.01-496	35643		1A8MP1
42-253.01-497	35643	3-11	1A8MP3
42-253.01-499	35643	3-3	1A3MP10
42-253.01-50	35643	3-11	1A9MP2
42-253.O1-501	35643	3-11	1MP48
42-253.01-502	35643	3-11	1MP49
42-253.01-538	35643	3-19	1A27MP1
42-253.01-54	35643	3-11	1A9M3
42-253.01-540	35643	3-19	1A27MP4
42-253.01-541	35643	3-19	1MP52
42-253.01-545	35643	3-19	1A22MP20
42-253.01-546	35643	3-19	1A22MP19
42-253.01-55	35643	3-11	1A9MP4
42-253.01-554	35643	3-19	1A22MP7
42-253.01-560	35643	3-19	1A22MP23
42-253.01-562	35643	3-19	1A22MP22
42-253.01-565	35643	3-19	1A22MP9
42-253.01-566	35643	3-19	1A22MP8
42-253.01-569	35643	3-2	1A2A1MP3
42-253.01-57	35643	3-11	1A9MP19
42-253.01-570	35643	3-2	1A2A1MP2
42-253.01-571	35643	3-2	1A2A1MP1
42-253.01-582	35643	3-2	1A2A1MP6
42-253.01-593	35643	3-19	1A22MP3
42-253.01-594	35643	3-19	1A22MP6
42-253.01-595	35643	3-19	1A22MP4
42-253.01-596	35643	3-19	1A22MP2
42-253.01-597	35643	3-19	1A22H1
42-253.01-598	35643	3-19	1A22A1MP1
42-253.01-60	35643	3-11	1A9MP14
42-253.01-600	35643	3-19	1A22A1MP3
42-253.01-605	35643	3-19	1A22MP1
42-253.01-615	35643	3-10	1MP17
42-253.01-626	35643	3-19	1A22MP18
42-253.01-627	35643	3-19	1A22MP16
42-253.01-630	35643	3-19	1A22MP15
42-253.01-632	35643	3-19	1A22MP21
42-253.01-634	35643	3-19	1A22MP13
42-253.01-635	35643	3-19	1A22MP12

KS-15(4)

ESC FM 4535-68

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE

TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO.	MFGRS. CODE	FIG NO	REF DESIGNATION OR ITEM NO
42-253.01-636	35643	3-19	1A22MP14
42-253.01-641	35643	3-19	1A22MP11
42-253.01-648	35643	3-2	1A2MP2
42-253.01-650	35643	3-2	1A2MP1
42-253.01-652	35643	3-2	1A2A1MP5
42-253.01-656	35643	3-2	1A2A1MP4
42-253.01-664	35643	3-2	1A2A1
42-253.01-684	35643	3-15	1MP42
42-253.01-703	35643	3-11	1A10
42-253.01-719	35642	3-10	1A25MP2
42-253.01-731	35643	3-4	1A3H8
42-253.01-731	35643		7MP10
42-253.01-74	35643	3-16	1A21MP2
42-253.01-777	35643	3-3	1A3MP7
42-253.01-78	35643	3-5	1MP4
42-253.01-780	35643	3-3	1A3MP8
42-253.01-781	35643	3-3	1A3MP9
42-253.01-804	35643	3-5	1A6
42-253.01-814	35643	3-5	1MP5
42-253.01-321	35643	3-15	1MP39
42-253.01-824	35643	3-15	1A13MP1
42-253.01-825	35643	3-11	1A9MP16
42-253.01-826	35643	3-11	1A9MP13
42-253.01-83	35643	3-8	1MP7
42-253.01-904	35643	3-19	1A22MP10
42-253.01-918	35643	3-18	1A19MP1
42-253.01-923	35643	3-18	1A19A3
42-253.01-938	35643	3-19	1MP53
42-253.01-939	35643	3-10	1MP54
42-253.01-949	35643	3-19	1H36
42-253.01-941	35643		1A27
42-253.01-948	35643		1A22A1
42-253.01BST288	35643		1A9A6A1MP1
42-253.01BST291	35643		1A9A6A1MP2
42-253.01BST293	35643		1A9A6A1MP3
42-253.01BST294	35643		1A9A6A1MP4
42-253.01BST295	35643		1A9A6A1MP5
42-253.01BST311	35643	3-13	1A9A1A1
42.253.01BST312	35643	3-13	1A9A1MP7
42-253.01BST326	35643	3-13	1A9A1MP9
42-253.01-NY13	35643		1A9A6A1
42-253.01NY14	35643	3-11	1A9MP15
42-253.01-NY23	35643	3-15	1A17MP1
42-253.01-NY24	35643	3-15	1A17MP2
42-253.01-NY25	35643	3-15	1A17MP3
42-253.01NY26	35643	3-18	1A19A1MP2
42-253.01-NY26	35643	3-18	1A19A2MP2
42-253.01-NY27	35643	3-18	1A19A1MP3
42-253.01-NY27	35643	3-18	1A19A2MP3
42-253.01-NY28	35643	3-18	1A19A1MP3
42-253.01NY29	35643	3-18	1A19A1A1
42-253.01-NY29A	35643	3-18	1A19A2A1
42-253.01NY30	35643	3-18	1A19A1MP4
42-253.01-NY30	35643	3-18	1A19A2MP4
42-253.01-NY31	35643		1A19A3MP1
42-253.01-NY32	35643		1A19A3MP2
42-253.01-NY33	35643		1A19A3MP3
42-253.01-NY34	35643		1A19A3MP4
42-253.01-NY35	35643		1A19AAMP1
42-253.01-NY36	35643		1A19AAMP2
42-253.01-NY37	35643		1A19AAMP3
42-253.01-NY38	35643		1A19AAMP4
42-253.02-18	35643		20A2
42-253.02-26	35643		20A3MP2
42-253.02-27	35643		20A3MP3
42-253.02-31	35643		20A3MP1
42-253.02-5	35643		20A1
42-253.15BST319	35643	3-13	1A9A1MP4
42-253.15-1	35643	3-11	1A9A2
42-253.15-NY1	35643	3-12	1A9A2MP1
42-253.15-NY10	35643	3-12	1A9A2A4
42-253.15NY11	35643	3-13	1A9A1MP5
42-253.15-NY2	35643	3-12	1A9A2MP2
42-253.15-NY3	35643	3-12	1A9A2H2
42-253.15-NY4	35643	3-12	1A9A2A1
42-253.15-NY5	35643	3-12	1A9A2A2
42-253.15-NY6	35643	3-12	1A9A2MP3
42-253.15-NY7	35643	3-12	1A9A2MP4
42-253.15-NY8	35643	3-12	1A9A2MP5
42-253.15-NY9	35643	3-12	1A9A2A3
42-253.16-39/1	35643	3-9	1A6MP1
42-253.16-39/11	35643	3-9	1A6H3
42-253.16-39/12	25643	3-9	1A6MP9
42-253.16-39/13	35643	3-9	1A6A1
42-253.16-39/14	35643	3-9	1A6MP10
42-253.16-39/15	35643	3-9	1A6MP11
42-253.16-39/16	35643	3-9	1A6MP12
42-253.16-39/17	35643	3-9	1A5MP13
42-253.16-39/18	35643	3-9	1A6MP14
42-253.16-39/19	35643	3-9	1A6MP15
42-253.16-39/2	35643	3-9	1A6H1
42-256.16-39/20	35643	3-9	1A6MP16
42-253.16-39/21	35643	3-9	1A6MP17
42-253.16-39/22	35643	3-9	1A6MP18
42-253.16-39/3	35643	3-9	1A6MP2
42-253.16-39/4	35643	3-9	1A6H2
42-253.16-39/5	35643	3-9	1A6MP3
42-253.16-39/6	35643	3-9	1A6MP4
42-253.16-39/7	35643	3-9	1A6MP5
42-253.16-39/8	35643	3-9	1A6MP6
42-253.16-39/9	35643	3-9	1A6MP7
42-253.17-26	35643	3-5	1A5MP1

ESC FM 4535-68

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE

TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO	MFGRS CODE	FIG NO	REF DESIGNATION OR ITEM NO
42-471-10	35643		10A5E1
42-471-11	35643		10A5J1
42-471-111	35643	3-36	10A1MP5
42-471-112	35643	3-36	10A1MP4
42-471-113	35643	3-36	10A1MP6
42-471-114	35643	3-36	10A1MP7
42-471-115	35643	3-36	10A1MP3
42-471-116	35643	3-36	10A1MP2
42-471-117	35643	3-36	10A1MP1
42-471-118	35643	3-36	10A1H1
42-471-12	35643		10A5J2
42-471-126/127	35643		10A2A1
42-471-128	35643		10A2MP5
42-471-129	35643	3-8	10A2MP1
42-471-13	35643		10A5MP7
42-471-130	35643		10A2MP4
42-471-131	35643	3-37	10A2MP3
42-471-132	35643	3-37	10A2MP2
42-471-14	35643		10A5E2
42-471-143	35643		10A5MP4
42-471-150	35643	3-39	10A5MP10
42-471-155	35643		10A5MP9
42-471-17	35643		10A5MP2
42-471-18	35643		10A5MP1
42-471-19	35643		10A5MP8
42-471-20	35643	3-39	10A5MP3
42-471-289	35643		10A4MP6
42-471-290	35643	3-38	10A4MP8
42-471-291	35643		10A4MP4
42-471-290	35643		10A4E1
42-471-294	35643	3-38	10AAR1
42-471-295	35643		10A4MP2
42-471-296A	35643		10A4MP1
42-471-41	35643	3-37	10A3MP1
42-471-43	35643		10A3E1
42-471-44	35643	3-37	10A3MP2
42-471-9	35643		10A5MP5
42-471-U141	35643		10A5
42-471-U281	35643	3-8	10A4MP3
42-471-U300	35643		10A4MP5
42-471-U39	35643		10A3
42-471-U48	35643	3-37	10A3A1
42.531-560/521	35643	1-1	12W1
42.531-560/521	35643	1-1	11W1
42.531-564	35643		11P1
42.531-564	35643		12P1
42.531-565	35643		11P2
42.531-565	35643		12P2
42.531-597	35643		11MP3
42.531-597	35643		12MP3
42.531-598	35643		11MP1
42.531-598	35643		12MP1
42.531-606	35643		11MP2
42.531-606	35643		12MP2
42-548.01-50	35643	3-30	2MP4
42-550.04-10	35643	3-31	2A1MP1
42-550.04-NY40	35643	3-31	2A1H2
42-550.04-NY41	35643	3-31	2A1H3
42-582.01-120	35643	3-14	1A12A1
42-582.01-138A	35643	3-14	1A12MP13
42-582.01-143	35643	3-14	1A12MP5
42-582.01-144	35643	3-14	1A12MP6
42-582.01-145	35643	3-14	1A12MP8
42-582.01-150	35643	3-14	1A12MP4
42-582.01-154	35643	3-14	1A12MP3
42-582.01-181	35643	3-15	1MP27
42-582.01-188	35643	3-16	1A19
42-582.01-199	35643	3-18	1A19A5
42-582.01-21	35643	3-15	1MP35
42-582.01-22	35643	3-15	1MP44
42-582.01-25	35643	3-3	1A3MP5
42-582.01-256	35643	3-17	1A18MP12
42-582.01-258	35643	3-17	1A18MP11
42-582.01-259	35643	3-17	1A18MP10
42-582.01-260	35643	3-17	1A18MP9
42-582.01-261	35643	3-17	1A18MP8
42-582.01-27	35643	3-3	1A3H1
42-582.01-271	35643	3-17	1A18MP6
42-582.01-273	35643	3-17	1A18MP4
42-582.01-274	35643	3-17	1A18MP2
42-582.01-275	35643	3-17	1A18MP3
42-582.01-277	35643	3-17	1A18A1
42-582.01-28	35643	3-3	1MP50
42-582.01-31	35643	3-10	1MP10
42-582.01-311	35643	3-10	1A7MP1
42-582.01-33	35643	3-16	1MP46
42-582.01-384	35643	3-4	1A3HP14
42-582.01-39	35643	3-3	1MP51
42-582.01-392	35643	3-4	1A3A1MP3
42-582.01-394	35643	3-4	1A3A1MP5
42-582.01-440	35643		1A22
42-582.01-441	35643	3-19	1A22MP25
42-582.01-449	35643	3-16	1A18
42-582.01-5	35643	3-16	1A21
42-582.01-NY15	35643	3-14	1A12MP9
42-582.01-NY16	35643	3-14	1A12MP10
42-582.01-NY17	35643	3-14	1A12MP11
42-582.01-NY18	35643	3-14	1A12H4
42-582.01-NY19	35643	3-14	1A12MP12
42-582.01-NY20	35643	3-14	1A12A2
42-582.01-NY21	35643		1A12A2H1
42-582.01-NY22	35643		1A12A2MP1
42-582.01-NY39	35643	3-18	1A19A5MP1

5069 KS-15(4)

ESC FM 4335-68

SECTION IV INDEX-REFERENCE NUMBER CROSS REFERENCE

TO FIGURE NUMBER AND REFERENCE DESIGNATION OR ITEM NUMBER

REFERENCE NO	MFGRS CODE	FIG NO	REF DESIGNATION OR ITEM NO
42-582.03-10	35643	3-6	1A5MP6
42-582.03-12	35643	3-6	1A5MP7
42-582.03-14	35643	3-6	1A5MP8
42-582.03-16	35643	3-6	1A5MP9
42-582.03-17	35643	3-6	1A5MP10
42-582.03-18	35643	3-6	1A5MP11
42-582.03-2	35643	3-7	1A5A3A1H1
42-582.03-20	35643	3-6	1A5MP12
42-582.03-24	35643	3-6	1A5MP13
42-582.03-25	35643	3-6	1A5A7
42-582.03-26	35643	3-6	1A5MP14
42-582.03-28	35643	3-6	1A5MP15
42-582.03-3	35643	3-7	1A5A3A1MP1
42-582.03-30	35643	3-6	1A5MP16
42-582.03-31	35643	3-6	1A5A8MP1
42-582.03-32	35643	3-6	1A5A8MP2
42-582.03-33	35643	3-6	1A5MP16
42-582.03-35	35643	3-7	1A5A3MP1
42-582.03-4	35643		1A5A3A2
42-582.03-4A	35643	3-7	1A5A3A2MP1
42-582.03-4B	35643	3-7	1A5A3A2MP2
42-582.03-4C	35643	3-7	1A5A3A2MP3
42-582.03-4D	35643	3-7	1A5A3MP2
42-582.03-4E	35643	3-7	1A5A3A3
42-582.03-5	35643	3-6	1A5A4
42-582.03-5C	35643		1A5A4MP1
42-582.03-5D	35643		1A5A4MP2
42-582.03-5E	35643	3-6	1A5A4MP3
42-582.03-6	35643	3-6	1A5A5
42-582.03-6A	35643	3-6	1A5A5MP1
42-582.03-6B	35643	3-6	1A5MP4
42-582.03-6C	35643	3-6	1A5A5A1
42-582.03-6D	35643	3-6	1A5A5A1MP2
42-582.03-6F	35643	3-6	1A5A5MP2
42-582.03-6G	35643	3-6	1A5A5MP3
42-582.03-8	35643	3-6	1A5MP5
42-582.03-9	35643		1A5A6A1
42-582.03-9A	35643	3-6	1A5A6MP1
42-582.03-9B	35643	3-6	1A5A6MP2
42-582.03-9C	35643	3-6	1A5A6A1MP1
42-582.03-9D	35643	3-6	1A5A6A1MP2
42-582.03-9E	35643	3-6	1A5A6A1A1
42-582.03-9F	35643	3-6	1A5A6A1A1MP1
42-582.04-28	35643	3-6	1A5A3
42-603.01-114	35643	3-38	1OA6C1
42-670.01-106	35643	3-25	5MP5
42-670.01-106	35643		7MP12
42-672.01-55	35643	3-25	5MP3
42-782.001-154	35643	3-5	1MP3
42-782.001-160S	35643	3-15	1MP28
42-782.001-161	35643	3-15	1MP34
42-782.001-162	35643	3-15	1MP33
42.782.001-163	35643	3-15	1MP31
42.782.001-164	35643	3-15	1MP30
42-782.001-165s	35643	3-11	1A13
42-782.001-173	35643	3-15	1MP32
42-782.005-005	35643	3-1	1A1MP1
42-782.005-018	35643	3-1	1A1MP3
T1.4X2D1N84-7	35643	3-6	1A5H6
91094	35643		21MP4

SECTION v INDEX-REFERENCE DESIGNATION

CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER
1H1	B-8	1H27	B-31	1HP22	B-27
1H2	B-9	1H28	B-31	1HP23	B-27
1H3	B-9	1H29	B-32	1HP24	B-27
1H4	B-9	1H30	B-33	1HP25	B-27
1H5	B-9	1H31	B-33	1HP26	B-29
1H6	B-16	1H32	B-38	1HP27	B-29
1H7	B-16	1H33	B-38	1HP28	B-30
1H8	B-16	1H34	B-41	1HP29	B-30
1H9	B-16	1H35	B-41	1HP30	B-30
1H10	B-16	1H36	B-41	1HP31	B-30
1H11	B-18	1HP1	B-6	1HP32	B-30
1H12	B-19	1HP2	B-6	1HP33	B-30
1H13	B-19	1HP3	B-9	1HP34	B-30
1H14	B-20	1HP4	B-9	1HP35	B-30
1H15	B-20	1HP5	B-9	1HP36	B-31
1H16	B-20	1HP6	B-16	1HP37	B-31
1H17	B-21	1HP7	B-16	1HP38	B-31
1H18	B-26	1HP10	B-20	1HP39	B-32
1H19	B-27	1HP11	B-20	1HP40	B-33
1H20	B-27	1HP14	B-21	1HP41	B-33
1H21	B-29	1HP16	B-21	1HP42	B-33
1H22	B-30	1HP17	B-21	1HP43	B-33
1H23	B-30	1HP18	B-26	1HP44	B-33
1H24	B-30	1HP19	B-26	1HP45	B-33
1H25	B-31	1HP20	B-26	1HP46	B-38
1H26	B-31	1HP21	B-26	1HP47	B-38

[Form 1 Nov 68 6114 KS-15(4)

ESC FM 4536-68

SECTION v INDEX-REFERENCE DESIGNATION
CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
1MP48	B-22
1MP49	B-22
1MP50	B-9
1MP51	B-9
1MP52	B-41
1MP53	B-41
1MP54	B-42
1MP55	B-9
1MP56	B-9
1W1	B-19
1W2	B-20
1A1	B-4
1A1H1	B-4
1A1H2	B-4
1A1H3	B-4
1A1H4	B-4
1A1H5	B-4
1A1H6	B-4
1A1H7	B-4
1A1H8	B-5
1A1H9	B-5
1A1MP1	B-4
1A1MP2	B-4
1A1MP3	B-5
1A1MP4	B-5
1A1MP5	B-5
1A2	B-5
1A2H1	B-5
1A2H2	B-5
1A2MP1	B-5
1A2MP2	B-5
1A2MP3	B-5
1A2A1	B-5
1A2A1MP1	B-5
1A2A1MP2	B-6
1A2A1MP3	B-6
1A2A1MP4	B-6
1A2A1MP5	B-6
1A2A1MP6	B-6
1A3	B-6
1A3H1	B-7
1A3H2	B-7
1A3H3	B-7
1A3H4	B-7
1A3H5	B-8
1A3H6	B-8
1A3H7	B-8
1A3H8	B-8
1A3MP1	B-7
1A3MP2	B-7
1A3MP3	B-7
1A3MP4	B-7
1A3MP5	B-7
1A3MP6	B-7
1A3MP7	B-7
1A3MP8	B-8
1A3MP9	B-8
1A3MP10	B-8
1A3MP11	B-8
1A3MP12	B-8
1A3MP13	B-8
1A3MP14	B-8
1A3A1	B-6
1A3A1MP1	B-6
1A3A1MP2	B-6
1A3A1MP3	B-6
1A3A1MP4	B-7
1A3A1MP5	B-7
1A4	B-10
1A5	B-9
1A5H1	B-10
1A5H2	B-10
1A5H3	B-10
1A5H4	B-12
1A5H5	B-12
1A5H6	B-13
1A5H7	B-14
1A5H8	B-14
1A5H9	B-14

SECTION v INDEX-REFERENCE DESIGNATION

CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER
1A5H10	B-15	1A5A3	B-10	1A5A6A1	B-13
1A5H11	B-15	1A5A3MP1	B-11	1A5A6A1MP1	B-13
1A5H12	B-15	1A5A3MP2	B-11	1A5A6A1MP2	B-13
1A5H13	B-15	1A5A3A1	B-11	1A5A6A1A1	B-13
1A5H14	B-15	1A5A3A1H1	B-11	1A5A6A1A1MP1	B-13
1A5MP1	B-10	1A5A3A1MP1	B-11	1A5A7	B-15
1A5MP2	B-10	1A5A3A2	B-11	1A5A8	B-15
1A5MP4	B-12	1A5A3A2MP1	B-11	1A5A8MP1	B-15
1A5MP5	B-13	1A5A3A2MP2	B-11	1A5A8MP2	B-16
1A5MP6	B-14	1A5A3A2MP3	B-11	1A6	B-16
1A5MP7	B-14	1A5A3A3	B-11	1A6H1	B-16
1A5MP8	B-14	1A5A4	B-11	1A6H2	B-17
1A5MP9	B-14	1A5A4MP1	B-12	1A6H3	B-17
1A5MP10	B-14	1A5A4MP2	B-12	1A6MP1	B-16
1A5MP11	B-14	1A5A4MP3	B-12	1A6MP2	B-17
1A5MP12	B-14	1A5A5	B-12	1A6MP3	B-17
1A5MP13	B-15	1A5A5H1	B-12	1A6MP4	B-17
1A5MP14	B-15	1A5A5MP1	B-12	1A6MP5	B-17
1A5MP15	B-15	1A5A5MP2	B-13	1A6MP6	B-17
1A5MP16	B-15	1A5A5MP3	B-13	1A6MP7	B-17
		1A5A5A1	B-12	1A6MP8	B-17
1A5A1	B-10	1A5A5A1MP1	B-12	1A6MP9	B-17
1A5A2	B-10	1A5A5A1MP2	B-12	1A6MP10	B-18
1A5A2H1	B-10	1A5A6	B-13	1A6MP11	B-18
1A5A2MP1	B-10	1A5A6MP1	B-13	1A6MP12	B-18
1A5A2MP2	B-10	1A5A6MP2	B-13	1A6MP13	B-18

Mar 68 6114 K5-15(4)

ESIC FM 45536-68

SECTION V INDEX-REFERENCE DESIGNATION
CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER	REFERENCE DESIGNATION	PAGE NUMBER
1A6MP14	B-18	1A9MP14	B-26	1A9A2MP3	B-23
1A6MP15	B-18	1A9MP15	B-26	1A9A2MP4	B-23
1A6MP16	B-18	1A9MP16	B-26	1A9A2MP5	B-23
1A6MP17	B-18	1A9MP17	B-29	1A9A2A1	B-23
1A6MP18	B-18	1A9MP18	B-29	1A9A2A2	B-23
1A6A1	B-17	1A9MP19	B-29	1A9A2A3	B-23
1A7	B-18	1A9A1	B-23	1A9A2A4	B-23
1A7E1	B-18	1A9A1H1	B-23	1A9A4	B-25
1A7E2	B-19	1A9A1H2	B-24	1A9A4MP1	B-25
1A7MP1	B-19	1A9A1H3	B-24	1A9A4MP2	B-25
1A8	B-21	1A9A1H4	B-24	1A9A4MP3	B-25
1A8H1	B-21	1A9A1MP1	B-24	1A9A4MP4	B-25
1A8MP1	B-21	1A9A1MP2	B-24	1A9A4MP5	B-25
1A8MP2	B-21	1A9A1MP3	B-24	1A9A4A1	B-25
1A8MP3	B-21	1A9A1MP4	B-24	1A9A4A1MP1	B-25
1A8MP4	B-21	1A9A1MP5	B-24	1A9A4A1MP2	B-25
1A8MP5	B-21	1A9A1MP6	B-24	1A9A4A1MP3	B-25
1A8MP6	B-22	1A9A1MP7	B-24	1A9A4A1MP4	B-25
1A9	B-22	1A9A1MP8	B-24	1A9A4A1MP5	B-26
1A9H1	B-22	1A9A1MP9	B-24	1A10	B-26
1A9MP1	B-22	1A9A1A1	B-25	1A11	B-27
1A9MP2	B-22	1A9A2	B-22	A111MP1	B-27
1A9MP3	B-22	1A9A2H1	B-22	1A12	B-27
1A9MP4	B-22	1A9A2H2	B-23	1A12H	B-27
1A9MP9	B-22	1A9A2MP1	B-23	1A12H2	B-28
1A9MP13	B-26	1A9A2MP2	B-23	1A12H3	B-28

SECTION v INDEX-REFERENCE DESIGNATION

CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
1A12H4	
1A12MP3	
1A12MP4	
1A12MP5	
1A12MP6	
1A12MP7	
1A12HP8	
1A12MP9	
1A12HP10	
1A12MP11	
1A12MP12	
1A12HP13	
lA12A1	
lA12A2	
lA12A2H1	
1A12A1MP1	
1A13	
lA13H1	
lA13H2	
lA13H3	
lA13H4	
1A13H5	
1A13MP1	
1A13MP5	
1A13MP3	
1A13MP4	
1A13MP5	B-32
1A14	B-29
lA15	B-31
lA15H1	B-31
1A15H2	B-31
1A16	B-31
1A17	B-32
lA17MP1	B-32
1A17MP2	B-33
lA17MP3	B-33
lA18	B-33
lA18H1	B-33
lA18H2	B-34
lA18H3	B-34
1A18H4	B-34
lA18H5	B-34
lA18H6	B-34
1A18MP1	B-34
lA18MP2	B-34
1A18MP3	B-34
lA18MP4	B-34
1A18MP5	B-34
1A18MP6	B-34
1A18MP7	B-35
lA18MP8	B-35
1A18MP9	
lA18MP10	B-35
lA18MP11	B-35
lA18HP12	B-35
lA18A1	B-35
lA18A1MP1	B-35
lA18A2	B-35
lA19	B-35
lA19H1	B-35
lA19MP1	B-36
lA19A1	B-36
lA19A1MP1	B-36
lA19A1MP2	B-36
1A19A1MP3	B-36
lA19A1MP4	B-36
lA19A1A1	B-36
lA19A2	B-36
lA19A2HP2	B-36
1A19A2MP3	B-36
lA19A2MP4	B-37
lA19A2A1	B-37
lA19A3	B-37
lA19A3MP1	B-37
1A19A3MP2	B-37
lA19A3MP3	B-37
lA19A3MP4	B-37
lA19A4	B-37

C.F.M 4536-88

SECTION v INDEX-REFERENCE DESIGNATION
CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
lA19A4MPl	B-37
1Al9A4MP2	B-37
lA19A4MP3	B-37
lA19A4MP4	B-38
lAl9A5	B-38
lA19A5Hl	B-38
lAl9A5MPl	B-38
lA20	B-35
1A21	B-38
1A21H1	B-38
1A2lH2	B-39
lA21H3	B-39
lA21H4	B-39
1A21MP1	B-38
1A21MP2	B-38
1A21MP3	B-39
1A21MP4	B-39
1A21MP5	B-39
1A21MP6	B-39
1A21MP7	B-39
1A22	B-39
1A22H1	B-39
lA22H2	B-40
1A22H3	B-40
1A22H4	B-42
1A22H5	B-42
1A22MP1	B-39
1A22MP2	B-39
1A22MP3	B-40
1A22MP4	B-40
1A22MP5	B-40
1A22MP6	B-40
1A22MP7	B-40
1A22MP8	B-40
1A22MP9	B-42
1A22MP10	B-42
1A22MP11	B-42
1A22MP12	B-42
1A22MP13	B-42
1A22HP14	B-42
lA22MPl5	B-42
lA22MPl6	B-42
lA22MP17	B-42
lA22MP18	B-43
1A22MP19	B-43
lA22MP20	B-43
lA22MP21	B-43
1A22MP22	B-43
1A22MP23	B-43
1A22MP24	B-43
1A22MP25	B-43
lA22Al	B-40
lA22AlHPl	B-40
lA22A1HP2	B-40
lA22AlMP3	B-40
lA22A1HP4	B-41
1A24	B-19
lA24MP1	B-19
1A24MP2	B-19
lA24MP3	B-19
lA24MP4	B-19
1A24MP5	B-19
1A25	B-20
1A25MPl	B-20
lA25MP2	B-20
1A26	B-20
lA26MPl	B-20
1A26MP2	B-20
1A26MP3	B-21
1A27	B-41
lA27MPl	B-41
lA27MP2	B-41
lA27MP3	B-41
1A27MP4	B-41
1A27MP5	B-41
2	B-43
2H1	B-44
2H2	B-44

ESC-FM 4536-68

SECTION v INDEX-REFERENCE DESIGNATION CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
2MP1	B-43
2MP2	B-43
2MP3	B-44
2MP4	B-44
2MP5	B-44
2A1	B-44
2A1H1	B-44
7A1H2	B-44
2A1H3	B-44
2A1MP1	B-44
3	B-44
3BT1	B-44
3E1	B-45
3H1	B-45
3H2	B-45
3H3	B-45
3H4	B-48
3H5	B-49
3H6	B-52
3H7	B-52
3H8	B-52
3H10	B-54
3MP1	B-45
3MP2	B-45
3MP3	B-45
3MP4	B-48
3MP5	B-48
3MP6	B-48
3MP7	B-48
3MP8	B-48
3MP9	B-48
3MP10	B-49
3MP11	B-49
3MP12	B-52
3MP13	B-52
3HP14	B-54
3HP15	B-56
3W1	B-49
3W2	B-49
3A1	B-45
3A1MP1	B-45
3A1MP2	B-45
3A1MP3	B-45
3A2	B-45
3A2H1	B-46
3A2H2	B-46
3A2MP1	B-46
3A2MP2	B-46
3A2MP3	B-46
3A2A1	B-46
3A2A1MP1	B-46
3A2A1MP2	B-46
3A2A1MP3	B-46
3A2A1MP4	B-46
3A2A1MP5	B-46
3AZA1MP6	B-46
3A2A1MP7	B-47
3A2A1MP8	B-47
3A3	B-47
3A3H1	B-47
3A3H2	B-47
3A3H3	B-47
3A3MP1	B-47
3A3A1	B-47
3A3A1H1	B-48
3A3A1MP1	B-47
3A3A1MP2	B-47
3A3A1MP3	B-47
3A3A1MP4	B-47
3A3A1MP5	B-48
3A4	B-48
3A4MP1	B-48
3A4MP2	B-48
3A5	B-49
3A5E1	B-49
3A5E2	B-49
3A5E3	B-49

SECTION v INDEX-REFERENCE DESIGNATION
CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
3A5H1	B-49
3A5H2	B-49
3A5H3	B-50
3A5H4	B-50
3A5HP1	B-50
3A5MP2	B-50
3A5MP3	B-50
3A5A1	B-49
3A5A1MP1	B-50
3A5A1MP1A	B-50
3A5A1MP2	B-50
385A1MP3	B-50
3A5A2	B-50
3A5A2E1	B-50
3A5A2E2	B-50
3A5A2E3	B-51
3A5A2NP1	B-51
3A5A2MP2	B-51
3A5A2MP3	B-51
3A5A2MP4	B-51
3A5A2MP5	B-51
3A5A3	B-51
3A5A3H1	B-51
3A5A3A1	B-51
3A5A3A1MP1	B-51
3A5A3A1MP2	B-51
3A5A3A2	B-51
3A5A3A2MP1	B-52
3A5A3A2MP2	B-52
3A6	B-52
3A6MP1	B-52
3A6MP2	B-52
3A7	B-52
3A7MP1	B-52
3A7MP2	B-53
3A8	B-53
3A8MP1	B-53
3A8R1	B-53
3A8R2	B-53
3A8R3	B-53
3A8R4	B-53
3A8V1	B-55
3A9	B-53
3A9H1	B-53
3A9H2	B-53
3A9MP1	B-53
3A9MP2	B-54
3A9MP3	B-54
3A10	B-54
3A11	B-54
3A11MP1	B-54
3A11MP2	B-54
3A12	B-54
3A12MP1	B-54
3A12MP2	B-54
3A12MP3	B-54
3A12MP4	B-55
3A13	B-55
3413MP1	B-55
3A13MP2	B-55
3A14	B-55
3A14H1	B-56
3A14MP1	B-55
3A14MP2	B-55
3A14MP3	B-55
3A14MP4	B-55
3A14MP5	B-55
3A14MP6	B-55
3A14MP7	B-56
3A14MP8	B-56
4	B-56
4MP1	B-56
5	B-56
5H1	B-56
5H2	B-57
5HP1	B-56
5MP2	B-56
5MP3	B-56

SECTION V INDEX-REFERENCE DESIGNATION

CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
5MP4	B-56
5MP5	B-57
5MP6	B-57
6	B-57
6MP1	B-57
6MP2	B-57
6MP3	B-57
7	B-57
7H1	B-58
7H2	B-58
7H3	B-58
7H4	B-59
7H5	B-59
7MP1	B-57
7MP2	B-57
7MP4	B-57
7MP7	B-58
7MP8	B-58
7MP9	B-58
7MP10	B-58
7MP11	B-59
7MP12	B-59
7MP13	B-59
7A1	B-58
7A1MP1	B-58
7A1MP2	B-58
7A1MP3	B-58
7A2	B-58
8	B-59
8MP1	B-59
9	B-59
9MP1	B-59
10	B-59
10BT1	B-63
10A1	B-59
10A1H1	B-60
10A1MP1	B-59
10A1MP2	B-60
10A1MP3	B-60
10A1MP4	B-60
10A1MP5	B-60
10A1MP6	B-60
10A1MP7	B-60
10A2	B-60
10A12H1	B-60
10A12H2	B-61
10A2MP1	B-60
10A2MP2	B-60
10A2MP3	B-60
10A2MP4	B-61
10A2MP5	B-61
10A2A1	B-61
10A3	B-61
10A3E1	B-61
10A3MP1	B-61
10A3MP2	B-61
10A3A1	B-61
10A4	B-61
10A4C1	B-32
10A4E1	B-62
10A4H1	B-62
10A4H2	B-62
10A4MP1	B-61
10A4MP2	B-61
10A4MP3	B-62
10A4MP4	B-62
10A4MP5	B-62
10A4MP6	B-62
10A4MP7	B-62
10A4MP8	B-62
10A4R1	B-62
10A5	B-63
10A5E1	B-63
10A5E2	B-63
10A5H1	B-63
10A5H2	B-63
10A5H3	B-64
10A5J1	B-63

ESC-FN 45336-68

SECTION V INDEX-REFERENCE DESIGNATION

CROSS REFERENCE TO PAGE NUMBER

REFERENCE DESIGNATION	PAGE NUMBER
10AJ2	B-63
10A5MP1	B-63
10A5MP2	B-63
10A5MP3	B-63
10A5MP4	B-63
10A5MP5	B-63
10A5MP6	B-64
10A5MP7	B-64
10A5MP8	B-64
10A5MP9	B-64
10A5MP10	B-64
11	B-64
11MP1	B-64
11MP2	B-64
11MP3	B-65
11P1	B-65
11P2	B-65
11W1	B-64
11A1	B-64
12	B-65
12MP1	B-65
12MP2	B-65
12MP3	B-65
12P1	B-65
12P2	B-65
12W1	B-65
12A1	B-65
13	B-65
14	B-66
14MP1	B-66
14MP2	B-66
14MP3	B-66
14MP4	B-66
15	B-66
15MP1	B-66
15MP2	B-66
15MP3	B-66
15MP4	B-66
16	B-66
16MP1	B-67
16MP2	B-67
16MP3	B-67
16MP4	B-67
17	B-67
17A1	B-67
17A1MP1	B-67
17A1MP2	B-67
18	B-67
18A1	B-67
18A1MP1	B-67
18A1MP2	B-68
19	B-68
19A1	B-68
19A1MP1	B-68
19A1MP2	B-68
20	B-68
20A1	B-68
20A2	B-68
20A2MP1	B-68
20A3	B-68
20A3H1	B-68
20A3MP1	B-68
20A3MP2	B-69
20A3MP3	B-69
21	B-69
21MP1	B-69
21MP2	B-69
21MP3	B-69
21MP4	B-69

6114 K5-15(4)

ESC-FM 45326-68

APPENDIX C

TOOL AND TEST EQUIPMENT REQUIREMENTS

Tool No.	E. Leits number	Nomenclature
1	42–253.01–36W4	Spanner wrench, collet type
2	42–253.01–494W4	Key, 2 pin
3	42–253.01–498W2	Wrench, collet type
4	42–253.01–486W1	Wrench, collet type
5	42–253.01–483W8	Clamping key, threaded
6	42–582.01–27W1	Wrench, collet type
7	42–253.01–Z1W84	Holding pin, threaded
8	42–253.01–571W1	Pin vise, top adjusted
9	42–253.01–637W5	Key, 1 pin, recessed
10	42–253.01–79W4	Key, 2 pin
11	42–253.01–80W8	Retaining tool, slotted, recessed
12	042–782.001–001ZW2	Spring mounting tool
13	42–782.001–161WNY	Jig
14	42–782.001–162W1	Key, drilled, slotted
15	42–253.01–27W4	Key, 1 pin, extended center
16	42–253.01–U257W3	Key, 2 pin, extended, driller center
17	42–253.01–246NY	Key, 1 pin, drilled center
18	42–253.01–598W2	Key, 2 pin, drilled center
19	42–253.01–597W2	Key, 1 pin, countersunk
20	U42–253.01–596W2	Key, 2 pin, extended center
21	42–253.01–593W2	Jig
22	42–253.01–538W3	Key, 2 blade, drilled center
23	42–253.01–635W2	Key, 2 pin, drilled center
24	42–253.01–460W1NY	Jig
25	42–253.01–460W2NY	Punch
26	42–582.01–273W3	Key, 2 pin, offset, drilled center
27	42–582.01–33W3	Key, 2 pin, hollow center, retractable blade
28	42–253.01–74W1NY	Plier, end drilled
29	42–253.01–76W2	Key, 2 blade
30	42–253.01–31W3	Key, 2 pin, drilled center
31	42–253.01–124W2	Key, 2 pin, hollow center, retractable blade
32	42–253.01–320W2	*Key,* 2 pin
33	42–253.01–338W2	Wrench, open end, fiat
34	42–253.01–Z1A92	Tolerance gauge
35	42–253.01–U443W6	Bending tool
36	42–253.01–U443W5	Bending tool
37	42–582.03–62W2	Key, 1 blade, Angle ·cessed
38	George Karstens, Stuttgart, Ger.	Dial gauge, with f
39	42–253.01–Z1A89	Gauge, indicating
40	42–216–Z1W42	Gauge. spring tension, with screwdriver blade
41	42–253.01–Z1A95	Pattern plate, shutter speed checking
42	42–253.01–Z1W100	Light drum, shutter speed checking
43	42–253.01–U281W3	Wrench, double end, offset
44	42–253.01–Z1W41	Hinged back, with mirror
45	42–253.01–Z1W111	Test set, slow and high speed
46	42–253.01–Z1L74	Gauge, with center shaft
47	42–253 01–Z1A22	Weight, adjustable, with center shaft
48	42–531–Z1W13	Test instrument, synchronizing circuit
49	42–531–Z1W13–101	Spark gap
50	42–531–Z1W13–100	Resistor, 0.3 ohm, plug-in
51	103.25.18	Teat leads

Tool No	E. Leitz number	Nomenclature
52	42-253.01-Z1W109	Synchro test unit
53	42-253.04	Connecting cable
54	42-253.01-Z1A96	Pattern plate, tolerance
55	42-253.01-Z1A97	Pattern plate, tolerance
56	42-253.01-Z1A76	Gauge, 8et
57	42-582.01-Z1W4-4	Auto collimator
58	42-582.01-Z1W4-5	Adapter, auto collimator
59	42-253.01-535W15-6	Adapter, lathe
60	42-253.01-535W15-1/5	Intermediate piece
61	42-253.01-535W15-3	AAdapter, flange
62	42-253.01-535W15-2	Iressure piece
63	M10DIN6303	Nut, holding
64	42-253.01-Z1W7	Table stand, with adjustable fixture and ground gla
65	42-253.01-Z1W9	TTelescope, focusing
66	42-253.01-Z1W63	IHousing, graticule, illuminated
67	42-700.01-Z1W20	CGraticule, 1 and 2 meter
68	42-582.01-Z1W8	TTarget, 0.7 meter
69	103.25.2	IHousing, graticule
70	103.25.16	CGraticule, 10 meter and infinity
71	42-582.01-Z1A10	CGauge, calibrating- with 90-mm lens
72	42-253.01-Z1A107	CGauge, frame setting
73	42-253.01-703W2	SScrewdriver, double end, offset
74	42-253.01-700W2	IBending tool, with angled pin
75	42-253.01-630W6	SScrewdriver, angled blade, twin-diameter shaft
76	42-582.03-Z1W6	SScrewdriver, undercut blade
77	42-253.01-Z1A45	CGauge
78	42-253.01-114W1	SScrewdriver, long shank
79	42-253.01-804W2	IKey, 2 pin, flat
80	42-253.01-115W2	IKey, 2 pin, flat
81	42-582.03-Z1W1	IPlate, angle, with eyelens
82	42-253.01-Z1A59	CGauge, torsion tolerance
83	042-782.001-001-ZW1	AAdapter, gauge, torsion tolerance
84	42-216-U482A1	CGauge, go/no-go
85	42-253.01-Z1L37	CG a u g e
86	3.719.004.01/5W1NY	IKey, 2 pin
87	BN1.301.01(3)W2NY	IKey, 2 prong, mille
88	8.23.0328.05 MESSW.1/3DMLK3	JJig, multipurpose
89	KH10	TTransformer, voltage regulator
90	42-655.01-Z1W7	IInstrument, calibration check
91	42-655.01-Z1W?2	IInstrument, calibration check
92	42-655.01-625W5NY	FFixture, battery substitute
93	42-471U48W1NY	PPush rod, center driBed
94	42-471U39W2NY	CChuck, spring, with plunger
95	42-471-117W3NY	KKey, 2 blade
96	42-471-296W4NY	KKey, 2 pin
97	42-672.01-3-1W1NY	KKey, 2 blade
98	42-550.01-105W2NY	SSpanner, fixed, 2 pin
99	42-630.01-Z1A6NY	HHousing, ground glass
100	16,486	MMagnifier, 5x, focusing
101	42-630.01-Z1A7	TTarget, ruled
102	C42-37.01-U60T1NY	SScrews, knurled, 1.4 mm
103	C42-37.01-U60T6	KKey, recessed
104	42-37.01-U60W3NY	SSpanner, Axed, 2 blade
105	42-624.01-Z1A6	PParallel saddle
106	42-253.01-21W4	KKey, 2 blade, center pin
107	42-253.01-48WNY	KKey, 2 blade, center drilled
108	42-253.01-52WNY	KKey, 2 blade, center pin
109	42-253.01-17W11	JJig, 7 slot, center bored
110	42-253.01-27W4NY	KKey, 1 pin, center drilled

INDEX

	Paragraph	Page
Adjustable weight with center shaft 42-253.01-Z1A22, fig. 6-6	6-6c	6 - 3
Adjusting:		
Brake assembly	***4-8b***	4-12
Drive shaft mechanism	4-13d	4-15
Electronic flash circuit	4-7a	4-11
Electronic flash synchronization	4-7d	4-12
Fast **shutter speeds**	4-6c(1)	4-9
Flashbulb **circuit**	4-7a	4-10
Flashbulb synchronization	***4-7b***	4-11
Rangefinder	4-l5d	4-16
Rangefinder lateral alignment	4-15d (1)	4-16
Rangefinder vertical alignment	4-15d (2)	4-18
Range-viewfinder assembly	4-15	4-16
Range-viewfinder roller arm	4-15a	4-16
Shutter release mechanism	4-12	4-14
Shutter speeds	4-6c	4-8
Slow shutter speeds	4-6c (2)	4-10
Sprocket wheel assembly	**4-10**	4-13
Sychronization, **electronic flash**	***4-7d***	4-12
Synchronization, flash bulb	***4-7b***	4-11
Takeup spool assembly	4-11	4-14
Viewfinder	4-15e (2)	4-18
Arrangement of equipment parallelism check, fig. 6-12	**6-10c**	6-7
Assembling:		
Baseplate	**5-9**	5-10
Battery-capacitor insert	**5-22**	5-17
Bayonet-base lamp adapter	5-20	5-17
Brake assembly	***5-3d***	5 - 2
Bright-line frame assembly	***5-5a***	5 - 8
Camera body, general	**5-1**	5-1
Camera chassis	5-3	5-2
Circuit board subassembly-	**5-12e**	5-12
Contact arm subassembly, exposure meter	**5-12f**	5-12
Coupling knob subassembly, exposure meter	**5-12i**	5-13
Delayed action release clockwork	**5-3q**	5-7
Drive shaft assembly -	**5-3k**	5-4
Film magazine	**5-10**	**5-10**
Rash unit housing	**5-23**	**5-18**
Flash **unit reflector**	**5-19**	**5-17**
Hinged back	5 - 8	**5-10**
Lens hood	**5-15**	**5-14**
Lenses, general	**5-14**	**5-14**
Medium-base lamp socket	**5-21**	**5-17**
Meter chassis	**5-12**	**5-11**
Meter housing	**5-13**	**5-13**
Meter movement	**5-11**	**5-10**
Range-viewfinder	**5-5b**	**5-8**
Range-viewfinder assembly	5-5	**5-5**
Rewind assembly	5 - 3 0	**6-6**
Shutter bearing plate assembly	5-3l	5-5
Shutter curtain assembly	5-3a	5-2
Slow speed escapement	5-3n	5-6
Sprocket **wheel** assembly	5-3g	5-3
Switch lever **subassembly, exposure meter**	**5-12g**	5-12

	Paragraph	Page
Top cover	5-7a	5-9
35-mm lens focusing mount	5-16b	5-14
35-mm lens, general	5-16	5-14
35-mm lens tube assembly	5-16a	5-14
50-mm lens focusing mount	5-17b	5-16
50-mm lens, general	5-17	5-15
50-mm lens head	5-17a	5-15
50-mm lens viewing unit	5-17c	5-15
135-mm lens focusing mount	5-18c	5-16
135-mm lens, general	5-18	5-16
135-mm lens head	5-18a	5-16
1335-mm lens viewing unit	5-18b	5-16
Authority for demolition	7-1	7-1
Baseplate :		
Assembling	5-9	5-10
Disassembling	3-2	3-3
General functioning	1-8	1-10
Repair	4-18	4-20
Baseplate assembly, exploded view, fig. 3-1	3-2	3-3
Battery-capacitor insert :		
Assembling	5-22	5-17
Disassembling	3-30	3-39
Repair	4-42	4-33
Bayonet-base lamp adapter:		
Assembling	5-20	5-17
Disassembling	3-28	3-39
Repair	4-41j	4-33
Bearing plate assembly, exploded view, fig. 3-13	*3-7f*	3-13
Bearing plate, drive shaft and rewind assembly, partial exploded view, fig. 3-11	*3-7d*	3-12
Brake action, schematic, fig. 1-9	1-4e	1-6
Brake adjusting screw, fig. 4-14	*4-8b*	4-12
Brake assembly :		
Adjusting	*4-8b*	4-12
Assembling	*S-3d*	5-2
Checking	*4-8a*	4-12
Disassembling	3-7l	3-16
General functioning	1-4e	1-6
Installing	5-3e	5-3
Removing	3-71	3-16
Brake assembly, exploded view, fig. 3-17	3-71	3-16
Bright-line frame assembly. assembling	5-5a	5-8
Bright-line frame assembly, exploded view, fig. 3-7	*3-Sb*	3-6
Bright-line frame setting gauge, fig. 4-24	4-15e (2)	4-18
Calibrating exposure meter	4-26	4-24
Calibration instruments, exposure meter	4-26a	4-25
Calibration procedures, exposure meter	*4-263*	4-26
Camera body:		
Assembling, general	S-l	5-1
Cleaning	4-2	4-1
Delayed action release mechanism, repair	4-5e	4-5
Disassembling, general	3-1	3-3
First shutter curtain, replacing	*4-6b*	4-8
Frame selector mechanism, repair .	4-5c	4-5
General functioning	1-3	1-1
Lens lock release, repair	*4-5d*	4-5
Lens mounting flange, repair	*4-5d*	4-5
Light sealing strips, epair	*4-Sd*	4-5
Lubricants and adhesives	*4-3a*	4-1
Lubricants and adhesives, methods of application	*4-3b*	4-2
Lubrication and gluing, general	4-3	4-1
Lubrication and gluing points	4-3c	4-2
Repair and aligning, general	4-1	4-1

	Paragraph	Page
Second shutter curtain, replacing	4-6a	4-7
Shutter curtain assembly, repair	4-6	4-6
Shutter speeds, adjusting	4-6c	4-8
Troubleshooting	2-1	2-1
Camera chassis :		
Assembling	5-3	5-2
Disassembling	3-7	3-9
Installing	5-4	5-8
Removing from housing	3-6	3-9
Camera chassis removed from camera housing, partial exploded view, fig. 3-8	3-6	3-9
Camera housing.		
Disassembling	3-8	3-18
Repair	4-5a	4-5
Studs and lugs, installing	5-2a	5-1
Studs and lugs, repair	4-5b	4-5
Camera housing assembly, exploded view, fig. 3-19	3-8	3-18
Chart :		
Troubleshooting, camera body	2-1c	2-1
Troubleshooting, exposure meter	2-2d	2-4
Troubleshooting, flash unit	2-4c	2-8
Troubleshooting, lenses	2-3d	2-6
Checking:		
Brake assembly	4-8a	4-12
Electronic flash circuit	4-7c	4-11
Flashbulb circuit	4-7a	4-10
Frame counter	4-13b	4-15
Lens mounting flange	4-5d(2)	4-5
Lenses photographically	4-27b	4-26
Lenses visually	4-27a	4-26
Range flnder	4-15d	4-16
Range-viewfinder assembly	4-15	4-16
Range-viewfinder, Anal check	4-15f	4-19
Range-viewfinder roller arm	4-15b	4-16
Rewind assembly	4-14	4-16
Shutter speeds, electronically	4-6c(3)	4-10
Winding lever	4-13c	4-15
Cleaning:		
Camera body	4-2	4-1
Delayed action clockwork	4-5e	4-5
Exposure meter	4-20	4-21
Lenses	4-28	4-27
Slow-speedescapement	4-6c(2)	4-10
Viewfinder	4-15e(1)	4-18
Collimation :		
SO-mm lens viewing unit	4-35b	4-30
135-mm lens viewing unit	4-38b	4-32
Definition of infinity	4-27a(1)(b)	4-26
Delayed action clockwork, exploded view, fig. 3-9	3-7b	3-9
Delayed action lever :		
Disassembling	3-8a	3-18
Instailing	5-2d	5-1
Removing	3-8a	3-18
Delayed action lever, releasing position, fig. 4-3	4-5e	4-5
Delayed action lever, tensioned position, fig, 4-2	4-5e	4-5
Delayed action release clockwork :		
Assembling	5-3q	5-7
Disassembling	3-7b	3-9
Installing	5-3q	5-7
Removing	3-7b	3-9
Repair	4-5e	4-5
Delayed action release general functioning	1-4d	1-5
Delayed action release, schematic, fig. 1-8	1-4d	1-5

	Paragraph	Page
Demolition :		
Authority	7-1	7-1
Methods of destruction	7-2	7-1
Depot overhaul standards:		
Accessory clip dimension	6-13	6-12
Bright-line frames positioning	6-1c(3)	6-11
Electronic flash circuit conductivity	6-7c(5)	6-4
Electronic flash circuit insulation	6-7c(4)	6-4
Electronic flash **synchronization delay**	6-8c(2)	6-6
Exposure meter calibration	6-14	6-13
Exposure meter tolerance	6-14c	6-13
Flash circuit conductivity	6-7c(2)	6-4
Flashbulb circuit contact closure	6-7c(3)	6-4
Flashbulb circuit insulation	6-7c(1)	6-4
Flashbulb synchronization delay	6-8c(1)	6-5
Flash unit	6-17	6-16
Lens flange distance	6-9	6-6
Lens flange parallelism	6-10	6-7
Lens focusing scales	6-15	6-14
Rangefinder alignment	6-11c(2)	6-8
Range-viewfinder roller arm	6-11c(1)	6-8
Scope	6-1	6-1
Shutter release	6-5	6-2
Shutter release spring	6-6	6-3
Shutter alit gradient	6-3	6-1
Shutter speed check	6-4	6-1
Shutter speed tolerance	6-4c(4)	6-2
Takeup spool friction	6-12	6-12
Test facilities	6-2	6-1
50-mm lensviewing unit	6-16c(1)	6-15
135-mm lens viewing unit	6-16c(2)	6-15
Difference in flash unit models	4-39	4-33
Disassembling:		
Baseplate	3-2	3-3
Battery-capacitor inse t	3-30	3-39
Bayonet-base lamp adapter	3-28	3-39
Brake assembly	3-71	3-16
Camera **body, general**	3-1	3-3
Camera chassis	3-7	3-9
Camera housing	3-8	3-18
Delayed action lever	3-8a	3-18
Delayed action release clockwork -	3-7b	3-9
Drive shaft assembly	3-7g	3-14
Exposure meter, general	3-10	3-22
Film magazine	3-9	3-21
Flash unit housing	3-31	3-40
Flash unit reflector	3-27	3-38
Hinged back	3-3	3-4
Lens hood	3-15	3-26
Lenses, **general**	3-14	3-26
Medium-base lamp socket	3-29	3-39
Meter chassis	3-12	3-22
Meter housing	3-11b	3-22
Meter movement	3-13	Text
Range-viewfinder	*3-5b*	Text
Rewind assembly	*3-7d*	Text
Shutter bearing plate	*3-7f*	Text
Shutter curtain **assembly**	3-70	Text
Shutter release components and intermediate gear assemblies	*3-7h*	Text
Slow speed escapement	3-7e	Text
Sprocket wheel assembly	3-7j	Text
Synchronizing circuit components	3-7c	Text
Takeup spool assembly	3-7i	Text
Top cover	3-4b	Text

	Paragraph	Page
35-mm lens focusing mount	3-16b	3-28
35-mm lens tube assembly	3-17	3-28
56-mm lens focusing mount	3-21	3-29
50-mm lens head and focusing scale, partial disassembly	8-18	3-29
50-mm lens head forward components	3-19	3-29
50-mm lens head rear components	3-20	3-29
50-mm lens viewing unit	3-22	3-31
135-mm lens focusing mount	3-25	3-33
135-mm lens head forward components	3-24	3-33
135-mm lens head, partial disassembly	3-23	3-32
135-mm lens viewing unit	3-26	3-35
Distance setting calibrating gauge with 90-mm lens 42-582.01-Z1A10, fig. 6-16	6-11c(2)	6-8
Distance setting gauge IO-meter bearing surfaces, fig. 4-22	4-15d	4-16
Distance setting gauge 10-meter bearing surfaces, fig. 6-16	6-11c(2)	6-8
Drive shaft assembly :		
Assembling	5-3k	Text
Disassembling	3-7g	Text
Installing	*5-3k*	Text
Removing	3-7g	Text
Drive shaft assembly, fig. 4-17	4-13d	Text
Drive shaft assembly, exploded view, fig. 3-14	3-7g	Text
Drive shaft mechanism :		
Adjusting	*4-13d*	4-16
Repair	4-13d	4-15
Electrical malfunctions, exposure meter	4-22	4-22
Electronic flash :		
Circuit conductivity, checking	4-7c(2)	4-12
Circuit insulation, checking	4-7e(1)	4-11
Depot overhaul standards	Text	Text
Synchro eccentric, installing	5-3c	5-2
Synchro eccentric, removing	3-7m	3-16
Synchronization, adjusting	*4-7d*	4-12
Electronic flash circuit, electrical schematic, fig. 1-15	1-7a	1-9
Electronic flash circuit, mechanical schematic (contacts closed), fig. 1-19	1-7b	1-9
Electronic flash circuit, mechanical schematic (contacts open), fig. 1-18	1-7b	1-9
Electronic flash synchronizing tolerance pattern, fig. 4-13	4-7d	4-12
Electronic flash synchronizing tolerance pattern	6-8c(2)	6-6
Equipment for camera sychronizing delay calibration, fig. 6-9	6-8c(1)	6-5
Equipment for camera takeup spool friction measurement, fig. 6-19	6-12c	6-12
Equipment for exposure meter check, fig. 6-20	6-14b	6-13
Equipment for rangefinder adjustment check, viewfinder parallax check, and viewfinder bright-line frames positioning check, fig. 6-14	6-11c(2)	6-8
Exposure meter :		
Base subassembly, installing	5-12a	5-11
Battery test circuit, general functioning	1-10b	1-11
Calibrating	4-26	4-24
Calibration circuit, general functioning	1-10c	1-11
Calibration instruments	4-26a	4-25
Calibration procedures	*4-26b*	4-26
Chassis, assembling	5-12	5-1
Chassis, disassembling	3-12	3 - 2
Chassis, repair	4-24	4-23
Circuit board subassembly, assembling	5-12e	5-12
Circuit board subassembly, installing	5-12e	5-12
Cleaning	4-20	4-21
Contact arm subassembly, assembling	5-12f	5-12
Contact arm subassembly, installing	5-12f	5-12
Coupling knob subassembly, assembling	5-12i	5-13
Coupling knob subassembly, installing	5 - 1 2 i	5-13
Depot overhaul standards	6-14	6-13
Disassembling, general	3-10	3-22
Electrical malfunctions	4-22	4-22
Gear plate subassembly, installing	5-12h	5-12

	Paragraph	Page
General functioning	1-10	1-11
Housing, assembling	5-13	5-13
Housing, disassembling	3-11b	3-22
Housing, installing	5-13	5-13
Housing, removing	3-11a	3-22
Housing, repair	4-23	4-23
Light baffle subassembly, Installing	5-12d	5-12
Light measuring circuit, general functioning	1-10a	1-11
Lubricants and adhesives	4-21a	4-21
Lubrication and gluing	4-21	4-21
Lubrication and gluing points	4-21c	4-21
Movement, assembling	5-11	5-10
Movement, disassembling	3-13	3-24
Movement, installing	5-12j	5-13
Movement, repair	4-25	4-24
Repair, general	4-19	4-21
Sensitivity switch linkage, installing	5-12b	5-11
Switch lever subassembly, assembling	Text	5-12
Switch lever subassembly, installing	Text	5-12
Tolerances	Text	6-13
Troubleshooting	Text	2-4
Exposure meter battery test circuit. schematic, fig 1-21	Text	1-11
Exposure meter calibration check, equipment setup, block diagram	Text	6-13
Exposure meter calibration circuit, schematic, fig. 1-22	1-10c	1-11
Exposure mete: chassis, exploded view, fig 3-22	3-12	3-22
Exposure meter circuit board soldering points, fig 5-21	5-12e	5-12
Exposure meter circuit test points, fig. 4-26	4-22	4-22
Exposure meter housing removed from chassis, exploded view, fig. 3-21	3-11	3-22
Exposure meter light measuring circuit, schematic, fig. 1-20	l-10a	1-11
Exposure meter movement, exploded view, fig 3-23	3-13	3-24
Fast shutter speed adjustment, fig 4-8	4-6c(1)	4-9
Fast shutter speed patterns, fig. 4-7	4-6c(1), 6-3c	4-9, 6-1
Film advance and takeup, general functioning	**1-5a**	1-6
Film magazine		
Assembling	5-10	5-10
Disassembling	3-9	3-21
Repair	4-4	4-5
Film magazine, exploded view, fig. 3-20	3-9	3-21
Film plane measuring points, fig 4-1	***4-5d***	4-5
Film plane measuring points	***6-9c***	6-7
Film rewind, general functioning	1-5c	1-7
Film transport and shutter operation, schematic, fig l-l	1-4a	1-2
Film-type indicator, repair	4-17c	4-20
Flashbulb circuit:		
Conductivity, checking	4-7a(2)	4-11
Contact closing, checking	4-7a(3)	4-11
Depot overhaul standards	6-8	6-4
Insulation, checking	4-7a(1)	4-10
Flashbulb circuit, electrical schematic, fig. 1-11	1-7a	1-9
Flashbulb it, chanical schematic (contacts closed), fig. l-17	1-7b	1-9
Flashbulb it, mechanical schematic (contacts open), fig 1-16	1-7b	1-9
Flashbulb synchronization, adjusting	***4-7b***	4-11
Flashbulb synchronizing tolerance pattern, fig. 4-12	***4-7b***	4-11
Flashbulb synchronizing tolerance pattern	***6-8c(1)***	6-5
Flash unit		
Battery-capacitor insert., assembling	5-22	5-17
Battery-capacitor insert, disassembling	3-30	3-39
Battery-capacitor insert, repair	4-42	4-33
Bayonet-base lamp adapter, assembling	5-20	5-17
Bayonet-base lamp adapter, disassembling	3-28	3-39
Bayonet-base lamp adapter, repair	4-41b	4-33
Depot overhaul standards	6-17	6-16
Difference in models _	4-39	4-33

	Paragraph	Page
Electrical, general functioning	1-15b	1-13
General functioning	1-16	1-13
Housing, assembling	5-23	5-18
Housing, disassembling	3-31	3-40
Housing, repair	4-43	4-34
Lamp socket, repair	4-41a	4-33
Mechanical functioning	1-15a	1-13
Medium-base lamp socket, assembling	5-21	5-17
Medium-base lamp socket, disassembling	3-29	3-39
Reflector, assembling	5-19	5-17
Reflector, disassembling	3-27	3-38
Reflector, repair	4-40	4-33
Repair, general	4-39	4-33
Troubleshooting	2-4	2-8
Flash unit battery-capacitor insert, exploded view, fig. 3-38	3-30	3-39
Flash unit circuit, schematic, fig. 1-23	1-15b	1-13
Flash unit housing, exploded view, fig. 3-39	3-31	3-40
Flash unit lamp socket and bayonet adapter, exploded view, fig. 3-37	3-28	3-39
Flash unit reflector, partial exploded view, fig. 3-36	3-27	3-38
Frame counter :		
Checking	4-13b	4-15
General functioning	***1-5b***	1-7
Frame counting mechnism, fig. 1-11	***1-5b***	1-7
Frame selector mechanism :		
Installing	***5-2b***	5-1
Repair	**3-8c**	3-21
	4-5c	4-5
Frame setting gauge 42-253.01-Z1A107	6-11c(3)	6-11
Gauge set, 42-253.01-Z1A76 and auto collimator 42-582.01-Z1W4-4, fig. 6-10	6-9c	6-7
Gauge with center shaft, 42-253.01-Z1L74, fig. 6-5	6-5c	6-2
General functioning*		
Baseplate	1-8	1-10
Battery test circuit, exposure meter	1-10b	1-11
Brake assembly	1-4e	1-6
Calibration circuit, exposure meter	1-10c	1-11
Camera body	1-3	1-1
Delayed action release	1-4d	1-5
Exposure meter	1-10	1-11
Film advance and takeup	1-5a	1-6
Film rewind	1-5c	1-7
Flash unit	1-15	1-13
Frame counter	1-5b	1-7
Hinged back	1-9	1-11
Lenses	1-11	1-12
Light measuring circuit, exposure meter	1-10a	1-11
Range-viewfinder, mechanical	1-6a	1-8
Range-viewfinder, optical	1-6b	1-9
Shutter	1-4	1-1
Shutter release	1-4C	1-3
Shutter speed selection	1-4b	1-2
Shutter winding	1-4a	1-2
Synchronization	1-7	1-9
35-mm lens	1-12	1-12
50-mm lens	1-13	1-12
135-mm lens	1-14	1-12
Ground glass housing 42-630 01-Z1 A6NY, and focusing magnifier 5X, 16,486	6-15c	6-15
Hinged back		
Assembling	5-8	5-10
Disassembling	3-3	3-4
General functioning	1-9	1-11
Repair	4-17	4-19
Hinged back, exploded view, fig. 3-2	3-3	3-4

	Paragraph	Page
Hinged back with mirror 42-253 01-Z1W41 and electronic shutter tester 42-253.01-Z1W111, fig. 6-3	6-4c	*6-2*
Identifying:		
Lens focusing mount group	4-27e(1)	*4-27*
Lens unit group	4-27e(2)	*4-27*
Infinity, definition	4-27a(1)(b)	*4-26*
Installing		
Bare subassembly, exposure meter	5-12a	5-11
Brakeassembly	5-3e	5-3
Camera chassis	5-4	5-8
Circuit board subassembly	5-12e	5-12
Contact arm subassembly, exposure meter	5-12f	5-12
Coupling knob subassembly, exposure meter	5-12i	5-13
Delayed action lever	5-2d	5-1
Delayed action release clockwork	5-3q	*5-7*
Driveshaft assembly	*5-3k*	5-4
Electronic flash synchro eccentric	5-3c	5-2
Frame selector mechanism	5-2b	5-1
Gear plate subassembly, exposure meter	5-12h	5-12
Lens **lock** release	5-2c	5-1
Lens mounting flange	5-2c	5-1
Light baffle subassembly, exposure mete-	5-12d	5-12
Light sealing strips	5-2c	5-1
Main light shield	5-3r	5-8
Meter housing	5-13	*5-13*
Meter movement	5-12j	5-13
Range-viewfinder assembly	5-6	5-9
Reverse mechanism	*5-3f*	5-3
Rewind assembly	5-3o	*5-6*
Sensitivity switch linkage subassembly, exposure meter	5-12b	5-11
Shutter bearing plate	5-3m	*5-5*
Shutter curtain assembly	5-3b	*5-2*
Shutter release components and intermediate gear assemblies	5-3j	5-4
Slow-speed escapement	5-3n	5-6
Sprocket wheel assembly	*5-3h*	5-3
Studs and lugs	*5-2a*	5-1
Switch lever subassembly, exposure meter	5-12g	5-12
Sychronizing circuit components	*5-3p*	5-7
Takeup spool assembly	*5-3i*	5-3
Top cover	*5-7b*	5-10
Lamp socket, repair	4-41a	4-33
Lens hood		
Assembling	5-15	5-14
Disassembling	3-15	*3-26*
Repair	*4-30*	*4-28*
Lens hood, exploded view, fig. 3-24	3-15	*3-26*
Lens lock release		
Installing	*5-2c*	5-1
Removing	*3-8b*	3-21
Repair	*4-5d*	*4-5*
Lens mounting flange.		
Checking	*4-5d(2)*	4-5
Depot overhaul standards	6-9	6-6
Installing	*5-2c*	5-1
Removing	*3-8b*	3-21
Repair	*4-5d*	*4-5*
Lenses		
Assembling, general	**5-14**	5-14
Cleaning	*4-28*	*4-27*
Depot overhaul standards	6-15	6-14
Disassembling, general	3-14	*3-26*
General functioning	1-11	1-12
Identifying focusing mount group	4-27e(1)	*4-27*

	Paragraph	Page
Identifying lens unit group	4-27e(2)	4-27
Lens hood, assembling	5-15	5-14
Lubricants and adhesives	4-29a	4-27
Lubrication and gluing	4-29	4-27
Lubrication and gluing points	*4-29b*	4-27
Photographic check	4-27b	4-26
Repair, general	4-27	4-26
Troubleshooting	2-3	2-5
Visual check	4-27a	4-26
35-mm, general functioning	1-12	1-12
50-mm, general functioning	1-13	1-12
135-mm, general functioning	1-14	1-12
Light sealing strips :		
Installing	5-2c	5-1
Removing	3-8b	3-21
Repair	*4-5d*	4-5
Lubricants and adhesives:		
Camera body	4-3a	4-1
Exposure meter	4-21a	4-21
Lenses	4-29a	4-27
Lubrication and gluing:		
Camera body	4-3	4-1
Exposure meter	4-21	4-21
Lenses	4-29	4-27
Lubrication and gluing points		
Camera body	4-3c	4-2
Exposure meter	4-21c	4-21
Lenses	*4-29b*	4-27
Main light shield :		
Installing	5-3r	5-8
Removing	3-7a	*3-9*
Meter chassis:		
Assembling	5-12	5-11
Disassembling	3-12	3-22
Repair	4-25	4-24
Meter housing.		
Assembling	5-13	5-13
Disassembling	3-11b	3-22
Installing	5-13e	5-13
Removing	3-11a	3-22
Repair	4-23	4-23
Meter movement :		
Assembling	5-11	5-10
Disassembling	3-13	3-24
Repair	4-25	4-24
Methods of destruction	7-2	7-1
Position of shutter curtain bar and labyrinth, fig. 4-5	4-6a	4-7
Position of stop disc, fig. 4-16	4-10f	4-13
Positioning of disengaging lever, fig. 4-10	4-6c(2)	4-10
Positioning second shutter curtain ribbons, fig. 4-4	4-6a	4-7
Pressure plate removal, fig. 4-25	4-17	4-19
Rangefinder		
Adjusting	4-15d	4-16
Checking	4-15d	4-16
Depot overhaul standards	6-11	6-8
Lateral alignment, adjusting	4-15d(1)	4-16
Vertical alignment, adjusting	4-15d(2)	4-18
Rangefinder image at infinity, fig, 4-19	4-15d	4--16
Rangefinder image at infinity	6-11c(2)	6-8
Rangefinder image at 10 meters, fig. 4-21	4-15d	4-16
Rangefinder image at 10 meters	6-11c(2)	6-8

	Paragraph	Page
Range-viewfinder:		
Assembling	5-5b	5-8
Checking, final	4-15f	4-19
Disassembling	***3-5b***	3-6
Removing	***3-5a***	3-6
Range-viewfinder adjusting points, fig 4-23	4-15e	4-18
Range-viewfinder assembly.		
Adjusting	4-16	4-16
Adjusting height of roller arm	4-15c	4-16
Assembling	5-5	5-5
Checking	4-15	4-16
Checking height of roller arm	4-15b	4-16
Disassembling	***3-5b***	3-6
General functioning	1-6	1-8
Installing	5-6	5-9
Mechanical functioning	1-6a	1-8
Optical functioning	1-6b	1-9
Range-viewfinder assembly, exploded view, fig 3-6	***3-5b***	3-6
Range-viewfinder assembly removed, partial exploded view, fig. 3-5	3-5a	3-6
Range-viewfinder calibrating stand, fig. 4-18	***4-15d***	4-16
Range-viewfinder, mechanical schematic (viewed from front), fig. 1-12	1-6a	1-8
Range-vietinder, optical schematic (viewed from top rear), fig. 1-13	1-6b	1-9
Range-viewfinder roller arm, fig. 4-20	4-15d	4-16
Range-viewfinder roller arm height gauge check, fig. 6-13	6-11c(1)	6-8
Rear components of 50-mm lens head (lens tube), exploded view, fig. 3-29	3-20	3-29
Reflector:	APP. A	A-1
Assembling	5-19	5-17
Disassembling	3-27	3-38
Repair	4-40	4-33
Removing :		
Brake assembly	3-71	3-16
Camera chassis from housing	3-6	3-9
Delayed action lever	3-8a	3-18
Delayed action release clockwork	***3-7b***	3-9
Drive shaft assembly	3-7g	3-14
Electronic flash synchro eccentric	3-7m	3-16
Frame selector mechanism	3-8c	3-21
Lens lock release	***3-8b***	3-21
Lens mounting flange	***3-8b***	3-21
Light sealing strips	***3-8b***	3-21
Main light shield	3-7a	3-9
Meterhousing	3-11a	3-22
Range-viewfinder	3-5a	3-6
Reverse mechanism	***3-7k***	3-16
Rewind assembly	***3-7d***	3-12
Shutter bearing plate and components	***3-7f***	3-13
Shutter curtain assembly	3-7n	3-16
Shutter release components and intermediate gear assemblies	***3-7h***	3-14
Slow speed escapement	3-7e	3-12
Sprocket wheel assembly	3-7j	3-16
Studs and lugs	***3-8d***	3-21
Takeup spool assembly	3-7i	3-16
Top cover	3-4a	3-4
35-mm lens tube assembly	3-16a	3-26
Repair :		
Baseplate assembly	4-18	4-20
Battery-capacitor insert	4-42	4-33
Bayonet-base lamp adapter	***4-41b***	4-33
Camera body, general	4-1	4-1
Camera housing	4-5a	4-5
Delayed action release mechanism	4-5e	4-5
Drive shaft mechanism	***4-13d***	4-15
Exposure meter, general	4-19	4-21

	Paragraph	Page
Film magazine	4-4	4-5
Film-type indicator	4-17c	4-20
First shutter curtain	4-6b	4-8
Flash unit, general	4-39	4-33
Flash unit housing	4-43	4-34
Flash unit lamp socket	4-41a	4-33
Flash unit reflector	4-40	4-33
Frame selector mechanism	4-5c	4-5
Hinged back assembly	4-17	4-19
Lens hood	4-30	4-28
Lens lock release	*4-5d*	4-5
Lens mounting flange	*4-5d*	4-5
Lenses, general	4-27	4-26
Light sealing strips	*4-5d*	4-5
Lock assembly, hinged back	4-17b	4-20
Meter chassis	4-24	4-23
Meter housing	4-23	4-23
Meter movement	4-25	4-24
Reverse mechanism	4-9	4-12
Rewind assembly	4-14	4-16
Second shutter curtain	4-6a	4-7
Shutter curtain assembly	4-6	4-6
Shutter release mechanism	4-12	4-14
Sprocket wheel assembly	4-10	4-13
Studs and lugs, camera housing	*4-5b*	4-5
Synchronizing circuits	4-7	4-10
Takeup spool assembly	4-11	4-14
Top cover assembly	4-16	4-19
Winding lever	4-13c	4-15
35-mm lens focusing mount	4-32	4-29
35-mm lens, general	4-27c	4-27
35-mm lens tube assembly	4-31	4-28
50-mm lens focusing mount	4-34	4-30
50-mm lens, general	*4-27d*	4-27
50-mm lens head	4-33	4-29
50-mm lens viewing unit	4-35	4-30
135-mm lens focusing mount	4-37	4-31
135-mm lens, general	4-27e	4-27
135-mm lens head	4-36	4-31
135-mm lens viewing unit	4-38	4-32
Repair and aligning camera body, general	4-1	4-1
Reverse mechanism :		
Installing	*5-3f*	5-3
Removing	*3-7k*	3-16
Repair	*4-9*	4-12
Rewind assembly		
Assembling	5-3o	5-6
Checking	4-14	4-16
Disassembling	3-7d	3-12
Installing	5-3o	5-6
Removing	3-d	3-12
Repair	4-14	4-16
Ruled target 42-630.01-Z1A7, fig. 6-23	6-16c(2)	6-16
Second shutter curtain release, schematic, fig. 1-7	1-4c	1-3
Setup for camera synchronizing delay calibration, block diagram, fig 6-9	6-8c(1)	6-5
Setup for electronic shutter speed test, block diagram, fig 6-4	6-4c	6-2
Setup for measuring camera lens flange to film plane distance, fig 6-11	6-9c	6-7
Setup for rangefinder, viewfinder, and bright-line frames checks, block diagram, fig. 6-15	6-11c(2)	6-8
Setup for stroboscopic test of shutter slit gradient, block diagram, fig. 6-2	6-3c	6-1
Shutter.		
Bearing plate, assembling	5-31	5-5
Bearing plate, disassembling	*3-7f*	3-13

	Paragraph	Page
Bearing plate, installing	5-3m	5-5
Bearing plate, removing	3-7f	3-13
Brake assembly, general functioning	1-4e	1-6
Curtain assembly, assembling	5-3a	5-2
Curtain assembly, disassembling	3-7o	3-16
Curtain assembly, installing	*5-3b*	5-2
Curtain assembly, removing	3-7n	3-16
Curtain assembly, repair	4-6	4-6
Delayed action release, general functioning	1-4d	1-5
First curtain, repair	*4-6b*	4-8
General functioning	1-4	1-1
Release components and intermediate gear assemblies, disassembling	*3-7h*	3-14
Release components and intermediate gear assemblies, installing	5-3j	5-4
Release components and intermediate gear assemblies, removing	*3-7h*	3-14
Release, general functioning	1-4c	1-3
Release mechanism, **adjusting**	4-12	4-14
Release mechanism, repair	4-12	4-14
Second curtain, repair	4-6a	4-7
Speed, adjusting	4-6c	4-8
Speed, checking electronically	4-6c(3)	4-10
Speed selection, general functioning	1-4b	1-2
Speed tolerances	6-4c(4)	6-2
Winding, general functioning	1-4a	1-2
Shutter and brake assemblies removed, partial exploded view, fig. 3-16	*3-7k*	3-16
Shutter curtain and main roller assemblies, exploded view, fig. 3-18	3-70	3-16
Shutter functioning, graph, fig. 1-10	*1-4f*	1-6
Shutter release, schematic, fig. 1-5	1-4C	1-3
Shutter speed pattern plate 42-253.01-Z1A95 and shutter speed checking drum 42-253.01-Z1W100, fig. 6-1	6-3c	6-1
Shutter winding and speed controls in B position, shutter released, fig. 1-6	1-4c	1-3
Shutter winding and speed controls in B position, shutter wound, fig. 1-2 1-4a	1-4a	1-2
Shutter winding and speed controls in l-second position, shutter wound, fig. 1-3	1-4b	1-2
Shutter winding and speed controls in 1/1000-second position, shutter wound, fig. 1-4	1-4b	1-2
Slow shutter speed adjustments, fig. 4-11	4-6c(2)	4-10
Slow-speed escapement :		
Adjusting	4-6c(2)	4-10
Assembling	*5-3n*	5-6
Cleaning	4-6c(2)	4-10
Disassembling	3-7e	3-12
Installing	*5-3n*	5-6
Removing	3-7e	3-12
Slow speed escapement, exploded view, fig. 3-12	3-7e	3-12
Speed setting cam for 1/1000-second adjustment, fig. 4-9	4-6c(1)	4-9
Spring location (spring (1) from fig. 3-9) fig. 5-16	*5-3q*	5-7
Spring location (springs (1) and (3) from fig. 3-7), fig. 5-17	5-5a	5-8
Spring location (spring (2) from fig. 3-16), fig. 5-1	*5-3f*	5-3
Spring location (spring (3) from fig. 3-12), fig. 5-10	*5-3n*	5-6
Springlocation (spring (3) from fig. 3-14), fig. 5-4	*5-3k*	5-4
Spring location (spring (7) from fig. 3-6), fig. 5-18	*5-5b*	5-8
Spring location (spring (9) from fig. 3-11), fig. 5-11	5-3n	5-6
Spring location (spring (10) from fig. 3-22), fig. 5-22	5-12h	5-12
Spring location (spring (11) from fig. 3-14) fig. 5-3	*5-3k*	5-4
Spring location (spring (12) from fig. 3-9), fig. 5-14	5-3q	5-7
Spring location (spring (15) from fig. 3-9), fig. 5-13	*5-3q*	5-7
Spring location (spring (17) from fig. 3-11), fig. 5-8	*5-3m*	5-5
Spring location (spring (20) from fig. 3-15), fig. 5-2	5-3j	6-4
Spring location (spring (22) from fig. 3-9). fig. 5-15	*5-3q*	6-7
Spring location (spring (22) *from fig.* **3-11), fig. 5-7**	5-3m	5-5
Spring location (spring (27) from fig. 3-11). fig. 5-6	5-3m	5-6
Spring location (spring (28) from fig. 3-10), fig. 5-12	*5-3p*	5-7
Spring location (spring (30) from fig. 3-11), fig. 5-9	*5-3m*	6-6
Spring location (spring (36) from fig 3-11), fig. 5-5	*5-3m*	5-5
Spring location (spri g (40) from fig. 3-22), fig. 5-20	5-12d	5-12
Spring location (spring (44) from fig. 3-22), fig. 5-19	*5-12b*	6-11

	Paragraph	Page
Sprocket wheel assembly :		
Adjusting	**4-10**	Text
Assembling	**5-3g**	Text
Disassembling	**3-7j**	**3-16**
Installing	**5-3h**	**5-3**
Removing	**3-7j**	**3-16**
Repair	**4-10**	**4-13**
Sprocket wheel gauge **in test position,** fig. **4-15**	**4-10a**	**4-13**
Studs and lugs		
Installing	**5-2a**	**5-1**
Removing	**3-8d**	**3-21**
Repair	*4-5b*	**4-5**
Synchronization :		
Depot overhaul standards	**6-8**	**6-4**
Electrical circuits, general functioning	**1-7a**	**1-9**
Electronic flash, adjusting	*4-7d*	**4-12**
Flashbulb, adjusting	*4-76*	**4-11**
General functioning	**1-7**	**1-9**
Mechanical, general functioning	**1-7b**	**1-9**
Synchronizing:		
Circuit components, disassembling	**3-7c**	Text
Circuit components, installing	*5-3p*	Text
Circuits, repair	**4-7**	Text
Synchronizing circuit test instrument, 42-531-Z1W13, fig. 6-7	**6-7c(5)**	Text
Synchronizing components, exploded view, fig. 3-10	**3-7c**	Text
Table :		
Exposure meter calibration	*4-26b*	**4-25**
Cleaning materials, camera body	**4-2**	**4-1**
Lubricants and adhesives, camera body	**4-3a**	**4-1**
Lubricants and adhesives, exposure meter	**4-21a**	**4-21**
Lubrication and gluing points, camera body	**4-3c**	**4-2**
Lubrication and gluing points, exposure meter	**4-21c**	**4-21**
Lubrication and gluing points, lenses	*4-29b*	**4-27**
Takeup, film transport and release mechanism, partial exploded view, fig. 3-15	*3-7h*	**3-14**
Takeup spool assembly		
Adjusting	**4-11**	**4-14**
Depot overhaul standards	**6-12**	**6-12**
Disassemblimg	**3-7i**	**3-16**
Installing	**5-3i**	**5-3**
Removing	**3-7i**	**3-16**
Repair	**4-11**	**4-14**
Takeup spool friction tolerance IT indications, fig. 6-19	**6-12c**	**6-12**
Tensioning shutter curtain springs, fig 4-6	**4-6a**	**4-7**
Tool and test equipment requirements	**APP. C**	**c-l**
Top cover:		
Assembling	*5-7a*	**5-9**
Disassembling	*3-4b*	Text
Installing	*5-7b*	**5-10**
Removing	*3-4a*	**3-4**
Repair	**4-16**	**4-19**
Top cover assembly, exploded view, fig. 3-4	*3-4b*	**3-6**
Top cover removed, exploded view, fig. 3-3	**3-4**	**3-4**
Troubleshooting		
Camera body	**2-1**	**2-1**
Exposure meter	**2-2**	**2-4**
Flash unit	**2-4**	**2-8**
Lenses	**2-3**	**2-6**
Viewfinder		
Adjusting	**4-15e(2)**	**4-18**
Cleaning	**415e(1)**	**4-18**
Depot overhaul standards	**6-11**	**6-8**

	Paragraph	Page
Winding lever :		
Checking	**4-13c**	4-15
Repair	**4-13c**	4-15
35-mm lens:		
Assembling, general	**5-16**	**5-14**
Focusing mount, assembling	**5-16b**	**5-14**
Focusing mount, disassembling	***3-16b***	**3-28**
Focusing mount, repair	**4-32**	**4-29**
General functioning	**1-12**	**1-12**
Lens tube assembly, assembling	**5-16a**	**5-14**
Lens tube assembly, disassembling	**3-17**	**3-28**
Lens tube assembly, removing	**3-16a**	**3-26**
Lens tube assembly, repair	**4-31**	**4-28**
Repair, general	**4-27c**	**4-27**
35-mm lens focusing mount, exploded view, fig. 3-25	**3-16**	**3-26**
35-mm lens tube assembly, exploded view, fig. 3-26	**3-17**	**3-28**
SO-mm lens:		
Assembling, general	**5-17**	**5-15**
Focusing mount, assembling	***5-17b***	**5-15**
Focusing mount, disassembling	**3-21**	**3-29**
Focusing mount, repair	**4-34**	**4-30**
General functioning	**1-13**	**1-12**
Lens head and focusing scale, partial disassembling	**3-18**	**3-29**
Lens head, assembling	**5-17a**	**5-15**
Lens head forward components, disassembling	**3-19**	**3-29**
Lens head rear components, disassembling	**3-20**	**3-29**
Lens head, repair	**4-33**	**4-29**
Repair, general	***4-27d***	**4-27**
Viewing unit, assembling	**5-17c**	**5-15**
Viewing unit, collimation	***4-35b***	**4-30**
Viewing unit, disassembling	**3-22**	**3-31**
Viewing unit, repair	**4-35**	**4-30**
50-mm lens focusing mount, exploded view (with viewing unit), fig. 3-30	**3-21**	**3-29**
***50-mm* lens *forward* components, exploded view, fig. 3-28**	**3-19**	**3-29**
50-mm lens head, partial exploded view; and focusing scale, exploded view, fig. 3-27	**3-18**	**3-29**
50-mm lens viewing unit, exploded view, fig. 3-31	**3-22**	**3-31**
135-mm lens:		
Assembling, general	**5-18**	**5-16**
Focusing mount, assembling	**5-18c**	**5-16**
Focusing mount, disassembling	**3-25**	**3-33**
Focusing mount, repair	**4-37**	**4-31**
General functioning	**1-14**	**1-12**
Lens head, assembling	**5-18a**	**5-16**
Lens head forward components, disassembling	**3-24**	**3-33**
Lens head, partial disassembling	**3-23**	**3-32**
Lens head, repair	**4-36**	**4-31**
Repair, general	**4-27e**	**4-27**
Viewing unit, assembling	**5-18b**	**5-16**
Viewing unit, collimation	***4-38b***	**4-32**
Viewing unit, disassembling	***3-26***	**3-35**
Viewing unit, repair	**4-38**	**4-32**
135-mm lens focusing mount, exploded view, fig 3-34	**3-25**	**3-33**
135-mm lens head forward components, exploded view, fig. 3-33	**3-24**	**3-33**
135-mm lens head, partial exploded view, fig. 3-32	**3-23**	**3-32**
135-mm **lens viewing unit, exploded view, fig. 3-35**	**3-26**	**3-35**

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Units org under fol TOE :-2 ea.
11-15
11-16
11-36
11-38
11-39
11-96
11-96
11-158
11-215
11-216
11-226
11-226
11-237
11-500(AA-AC, FA, FE)
29-1
29-2
29-11
29-16
29-21
29-26
29-36
29-41
29-61
29-134
29-136
29-206

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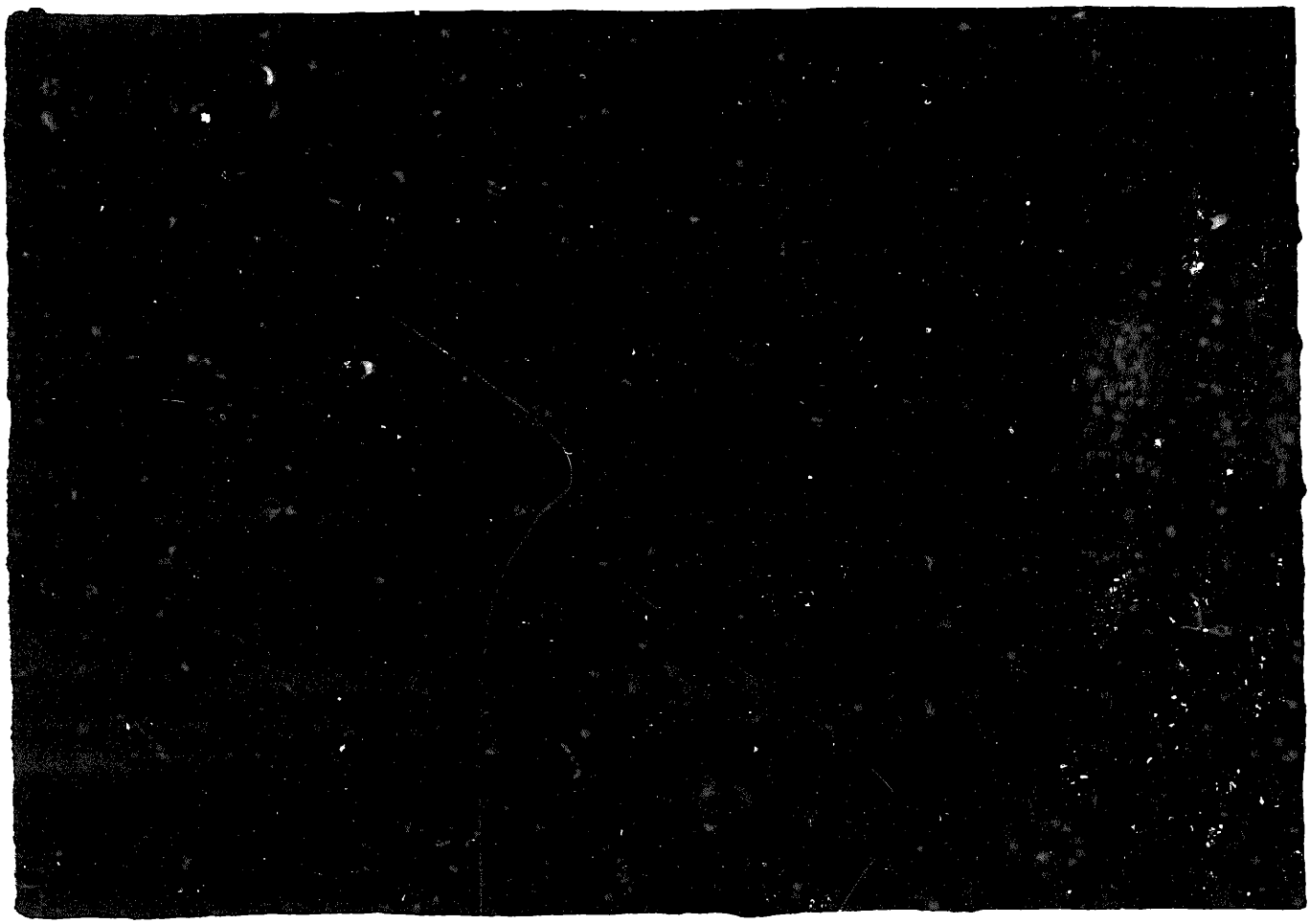

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