MESSAGE REGISTER CAMERAS KS-7703 AND KS-8320 REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers KS-7703 and KS-8320 Message Register Cameras.

1.02 This section is reissued to add a requirement and procedure for freedom of movement of film guide rollers and to add a procedure for adjusting the end play of the motor shaft and motor reduction gears. Detailed reasons for reissue will be found at the end of the section.

1.03 Reference shall be made to Section 020-010-711 covering General Requirements and Definitions for additional information necessary for the proper application of the requirements listed herein.

*1.04 Asterisk: Requirements are marked with an asterisk (*) when to check for them would necessitate the dismantling or dismounting of apparatus, or would affect the adjusting involved or other adjustments. No check need be made for these requirements unless the apparatus or part is made accessible for other reasons or its performance indicates that such a check is advisable.

1.05 One dip of oil for the purpose of this section is the amount of oil retained on an R-1575 No. 4 Artist's show card brush after being dipped into the oil to a depth

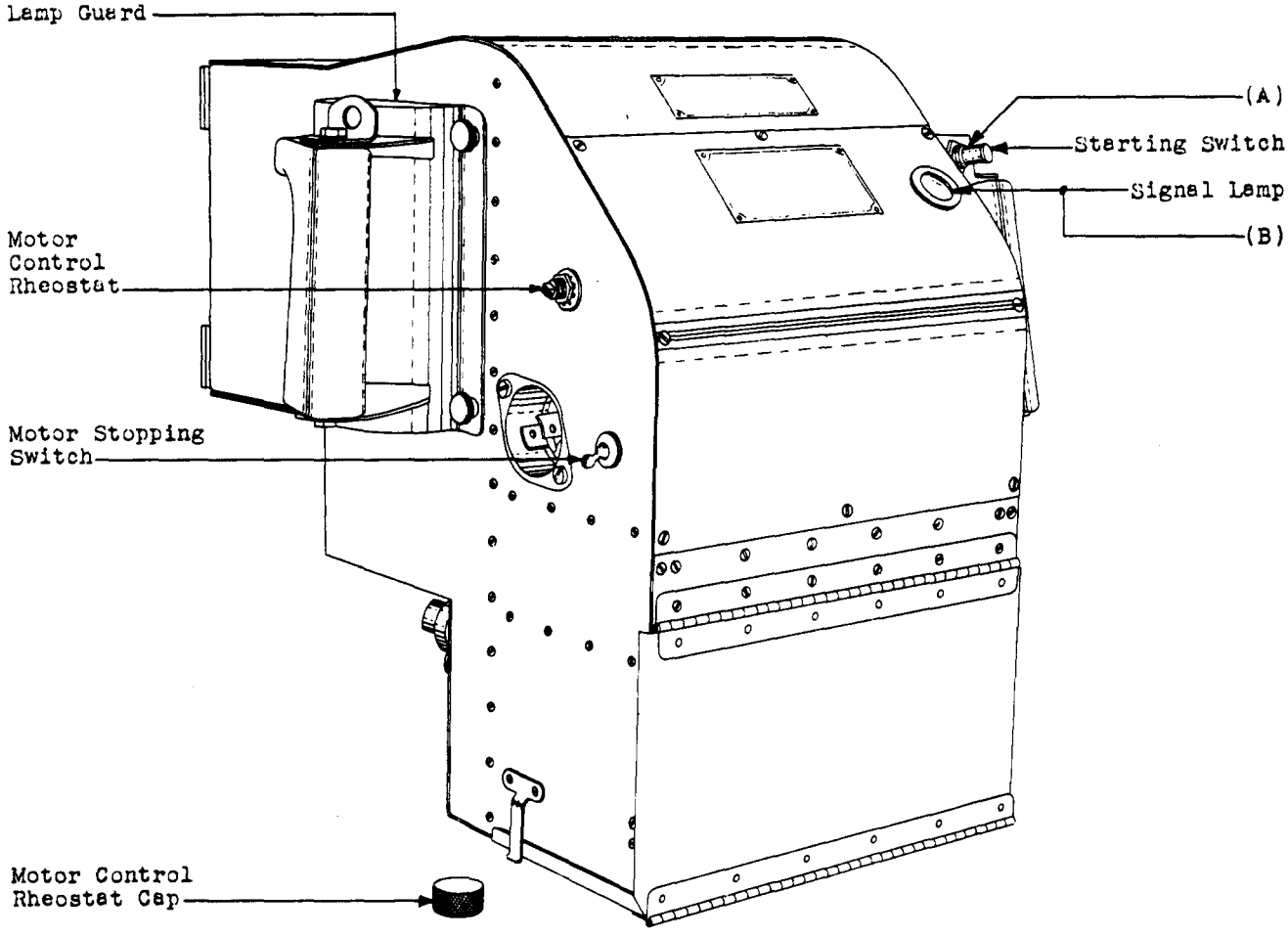

Fig. 1 - KS-8320 Camera

1.05 (Continued)

of 3/8" and then scraped on the edge of the container to remove the surplus oil. There shall not be sufficient oil adhering to the brush to form one drop on the end of the bristles.

1.06 Operating Cycle: With the motor driving the timing gears, an operating cycle may be taken as the time between the lighting and relighting of the photographic lamps.

1.07 Warming Up

(a) KS-7703 Camera: Immediately before testing or readjusting, the camera shall be operated approximately 40 operation cycles with the film chamber empty. See note under part (b).

(b) KS-8320 Camera: Immediately before testing or readjusting, the camera shall be operated through 5 to 10 operation cycles with the film chamber empty.

Note: When the motor is running without a film in the camera, such as during the warming up period, the driving mechanism may "overthrow", that is, the motor operates continuously with the starting switch released. In this case to stop the motor operate the motor stopping switch to its "OFF" position. This should be done only at the end of a cycle of operation, however.

1.08 Where a requirement specifies that the camera be equipped with a film, a new or used roll of sensitized paper may be employed. It is satisfactory to use a film until the paper becomes torn or badly worn.

2. REQUIREMENTS

2.01 Cleaning

(a) KS-7703 Camera: The lamps, diagonal mirror, reflectors, camera lenses, and condensing lenses shall be cleaned, when necessary, in accordance with approved procedures.

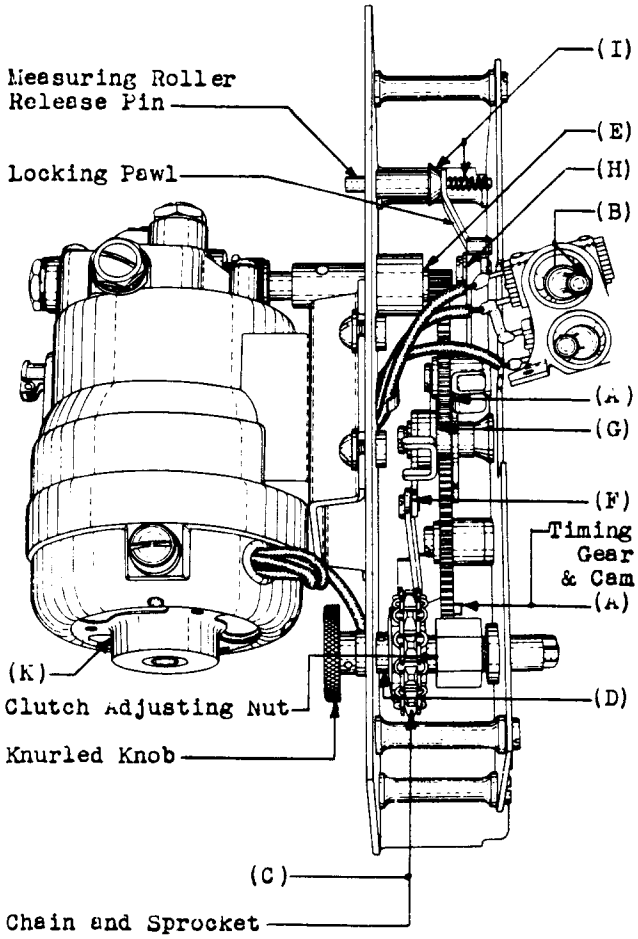

Fig. 2 - KS-8320 Camera - Motor Drive Unit

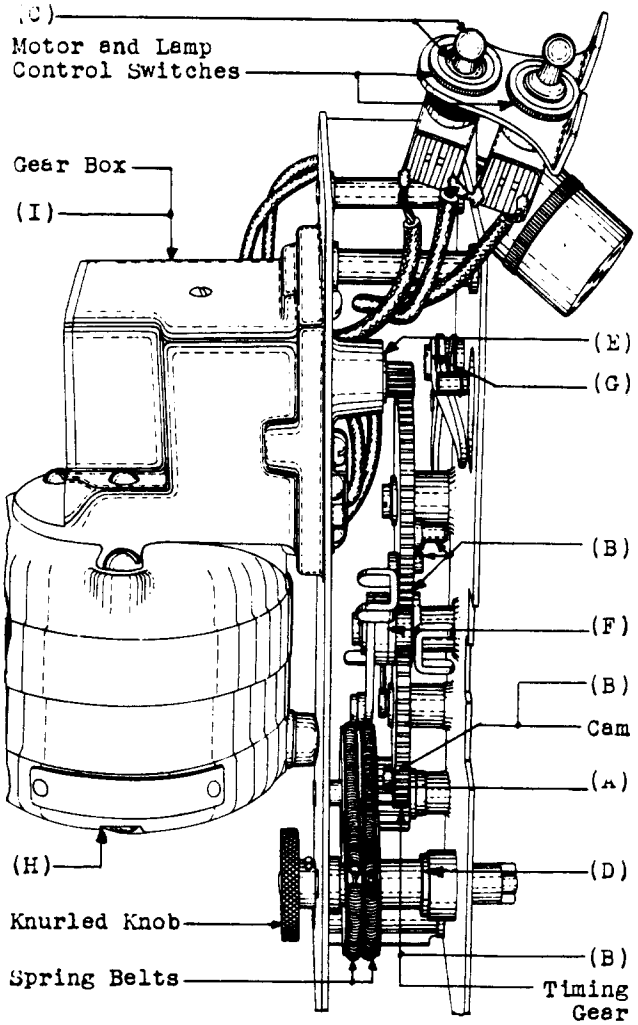

Fig. 3 - KS-7703 Camera - Motor Drive Unit

2.01 (Continued)

(b) KS-8320 Camera: The lamps, diagonal mirror, reflectors and camera lenses shall be cleaned, when necessary, in accordance with approved procedures.

(c) The contacts in the film chamber shall be cleaned, when necessary in accordance with the section of Division A500 covering cleaning procedures for relay contacts.

2.02 Lubrication:

(a) The following parts shall be adequately lubricated with W. E. Co. 57997 petrolatum.

KS-7703 Camera

(1) Spring Drive - Fig. 3 (A)

(2) Timing Gears and Cams - Fig. 3 (B)

(3) Motor and Lamp Control Switch Knobs and Pins - Fig. 3 (C)

(4) Gear Box - Fig. 3 (I)

The spring drive shall be lubricated only when necessary to meet requirement 2.05. Make small applications of the lubricant to the spring belts with a No. 4 Artist's Show Card Brush as required to meet 2.05. When necessary, the parts covered by items (2) and (3) shall be lubricated by coating with a light film of lubricant. Use the No. 4 Artist's Show Card Brush.

When necessary to lubricate the gear box, empty the box and refill with lubricant sufficient to cover the gear wheel. The amount, however, shall not be sufficient to cause the lubricant to run or creep out of the housing.

KS-8320 Camera

(1) Chain and Sprocket - Fig. 2 (C)

(2) Timing Gears and Cam - Fig. 2 (A)

(3) Motor and Lamp Control Switch Knobs and Pins - Fig. 2 (B)

These parts shall be lubricated, when necessary, by coating with a light film of lubricant. Use the No. 4 Artist's Show Card Brush.

(b) The following parts shall be adequately lubricated with KS-6232 oil. When lubrication is necessary one dip shall be sufficient for application to each of the points.

KS-7703 Camera

(1) Take-Up Spindle Bearings - Fig. 3 (D)

(2) Drive Shaft Bearings - Fig. 3 (E)

(3) Motor Switch Lever Bearing - Fig. 3 (F)

(4) Locking Pawl Bearing - Fig. 3 (G)

(5) Starting Switch Plunger - Fig. 1 (A)

(6) Shutter Control Bell Crank - Fig. 5 (A)

KS-8320 Camera

(1) Take-Up Spindle Bearings - Fig. 2 (D)

(2) Drive Shaft Bearings - Fig. 2 (E)

(3) Shutter Rod Bearing - Fig. 2 (F)

(4) Motor Switch Lever Bearing - Fig. 2 (G)

(5) Locking Pawl Bearing - Fig. 2 (H)

(6) Starting Switch Plunger - Fig. 1 (A)

(7) Measuring Roller Release Pin Bearing and Spring - Fig. 2 (I)

(8) Shutter Control Bell Crank - Fig. 5 (A)

(c) The following parts shall be adequately lubricated with 58-65 3210 oil. When lubrication is necessary, apply two drops to each bearing with the No. 1704B Gem Mfg. Co. oiler.

KS-7703 Camera: Rear Motor Bearing - Fig. 3 (H)

KS-8320 Camera: Front and Rear Motor Bearings - Fig. 2 (J) and (K)

(d) The following parts shall be adequately lubricated with powdered graphite. When lubrication is necessary, apply a small quantity from the spout of the container or with the No. 4 Artist's Show Card Brush.

KS-7703 and KS-8320 Cameras

(1) Pressure Plate Springs - Fig. 6 (D)

(2) Film Guide Rollers - Fig. 6 (E)

(e) Recommended Lubrication Intervals:

KS-7703 Camera: The spring drive shall be lubricated when necessary to meet requirement 2.05. The gear box shall be lubricated at intervals of 24 months. All other parts shall be lubricated at intervals of 12 months.

KS-8320 Camera: All parts shall be lubricated at intervals of 12 months.

Under ordinary circumstances these intervals should be satisfactory. There may, however, be local conditions such as high temperatures which will necessitate lubrication at more frequent intervals The intervals covered above may be extended if periodic inspections have indicated that the requirement will be met during the extended interval.

Requirements for Camera

2.03 Light Baffle Position: The position of the light baffles shall be such as to give uniform lighting to the registers. Gauge by eye.

(1) To check that the light baffles are satisfactorily positioned, attach a sheet of bond paper to one side of a plate of 1/8" thick glass cut approximately 7" x 9". With the camera lying hood up, place the glass with the bond paper down inside the hood. The glass should be below and make contact with the flat surface which bears against the faces of the message register covers. If the glass fits snugly it will rest on the reflectors. If necessary, fasten the glass in position with a commercial brand of gummed tape. Operate the starting switch and when the photographic lamps light, stop the motor by operating the motor stopping switch. Check that the illumination is approximately uniform over the surface of the plate (there should be no vertical band near the middle of the plate which is darker or lighter than the rest of the plate). This check must be made when looking at the plate from a position directly above it and not from either side of its center.

2.04 Freedom of Movement of Starting Switch, Measuring Roller Release Pin, Pressure Plate, and Film Guide Roller, Fig. 1(A), 2(I) and 6(D) and (E): The starting switch and measuring roller release pin shall operate and restore freely. The pressure plate shall restore without binding after being depressed. The film guide rollers shall rotate freely. Gauge by eye and feel.

2.05 Torque Requirement: With the motor in operation the driving friction shall be such that with the application of the following restraining force the take-up spool shall not turn.

	Restraining Force Min.	Max.
KS-7703 Camera	1040 inch-grams	1590 inch-grams
KS-8320 Camera	900 inch-grams	1360 inch-grams

Use the No. 79B gauge:

(a) To check the torque requirement first attach a lever arm to an empty film spool. One method is to employ a strip of 1/16" thick brass sheeting, approximately 1/2" wide and 6" long. Drive the strip tightly into the film slot in the spool. Mark a point on the strip 5" from the center of the spool. Mount the spool in the take-up spool mountings with the strip extending out of the film chamber. Divide the minimum and maximum restraining force specified above in inch grams by 5 to obtain the corresponding force in grams to be checked with the No. 79B gauge. Apply the No. 79B gauge to the point marked on the lever arm and start the motor. Read the tension measured on the gauge required to prevent the spool rotating. This value shall fall between the minimum and maximum values determined above.

Example:

Assuming a measured distance of 5" on the lever from the center of the spool, the following represents the limits in grams between which the spool must not rotate. The values specified below are readable on the No. 79B gauge.

KS-7703 Camera	Min. 212.5 grams	Max. 325 grams
KS-8320 Camera	Min. 175 grams	Max. 275 grams

2.06 Pressure Spring Tension (Take-Up Spool) Fig. 6(B): The tension of the pressure spring against a full spool of film shall be

Max. 900 grams

Use the No. 158A gauge and measure the tension when the spring is in the approximate position it would take when resting on a full spool of film.

2.07 Pressure Spring Clearance (Supply Spool) Fig. 6(A): With an empty spool in the spool holder of the supply side of the film chamber, there shall be a clearance between the spool and the pressure spring of approximately 1/8". Gauge by eye.

Fig. 4 - Contact Alignment (Showing Maximum Permissible Misallignment)

2.08 Contact Alignment (Film Chamber Contact) - Fig. 4(A): The point of contact shall fall wholly within the boundary of the opposing contact. Gauge by eye.

2.09 Contact Follow (Film Chamber Contact): With no film in position the contact follow of the signal contact springs shall be

Min. .005"

Gauge by eye.

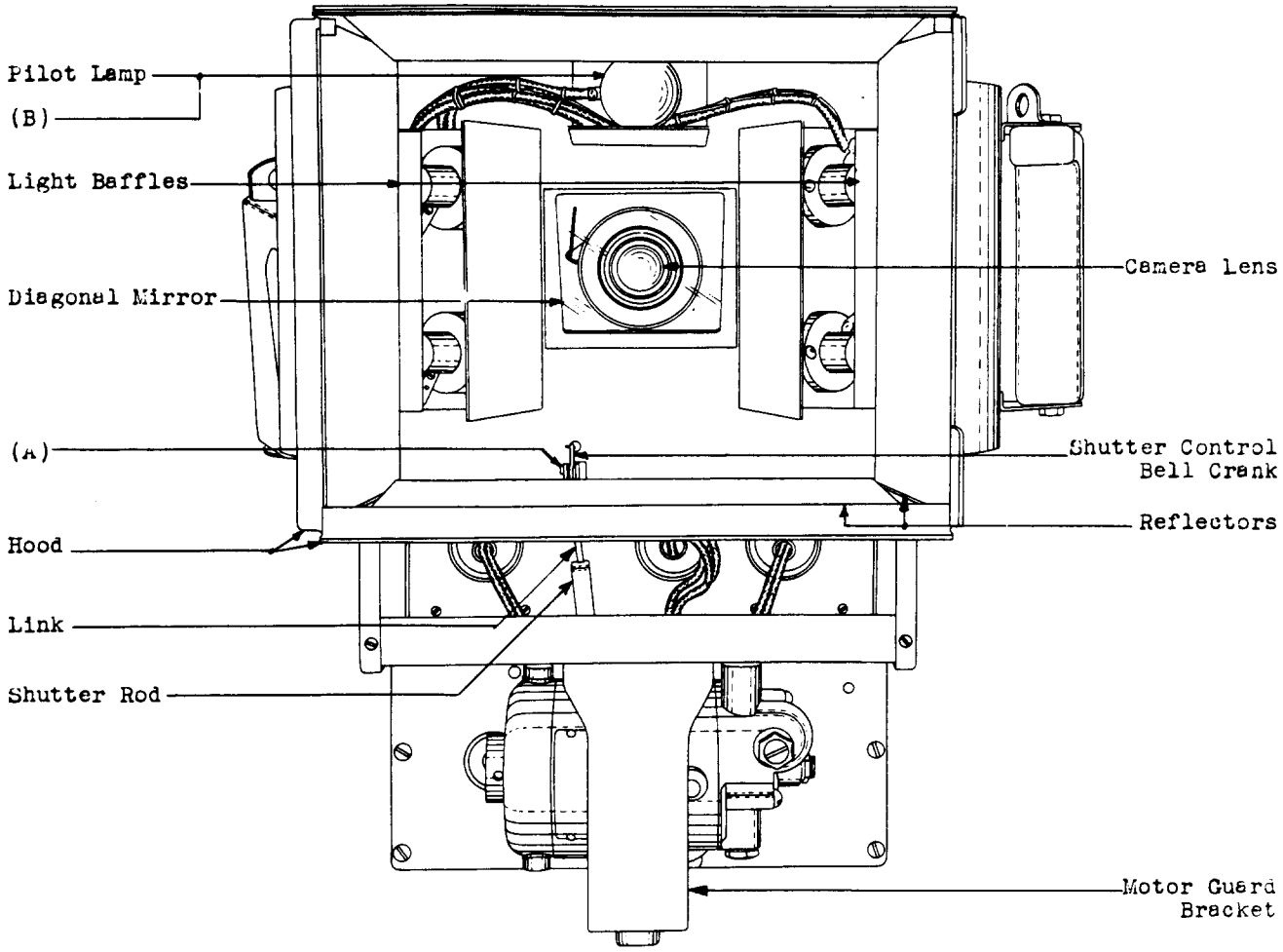

Fig. 5 - KS-8320 Camera - Looking Into Hood

2.10 Contact Separation (Film Chamber Contact): With a film in position to actuate the signal contact spring plunger the contacts shall be open. Gauge by eye. This requirement is met if with voltage on the camera and with the motor stopping switch normal, the red signal lamp does not light. Check that the lamp lights with the film removed.

2.11 Straightness of Springs (Film Chamber Springs): All springs shall be free of sharp bends or kinks due to adjustment. A gradual bow in a spring is permissible. Gauge by eye.

2.12 Separation Between Springs (Film Chamber Springs): There shall be a clearance between springs whether in the operated or unoperated position of:
Min. .008"
Gauge by eye.

2.13 Shutter Operation: When the camera is operated through one operating cycle the shutter shall open and close once. The shutter shall open immediately after the lights go on and shall close just before the lights go off, the time of shutter opening being approximately 80 to 90 per cent of the time that the lamps are lighted. Gauge by eye.

2.14 Operating Cycle Time:

KS-7703 Camera: With the camera loaded with film, the motor shall not stall during an operating cycle of
Min. 4.5 seconds
Use the KS-3008 stop watch.

KS-8320 Camera: With the camera loaded with film, the motor shall not stall during an operating cycle of
Min. 6 seconds
Use the KS-3008 stop watch.

(1) To check hold the starting switch operated and adjust the motor speed to the point where the motor will just operate the camera without stalling. Record the time required for ten operating cycles. The requirement is met if

2.14 (Continued)

the recorded time for the 10 operating cycles is 45 seconds or more for the KS-7703 camera or 60 seconds or more for the KS-8320 camera.

Note: This requirement specifies the maximum time at which the motor must be capable of operating the camera. During service operation the motor speed may be increased as desired to give satisfactory pictures with the recommended development technique.

Requirements for Motor and Gear Reduction Unit

2.15 Smooth and Uniform Operation: The motor and associated gear reduction unit shall operate smoothly and uniformly. Gauge by feel and ear.

2.16 Brush Fit

(a) Brushes shall not bind in their holders, neither shall they be loose enough to cause poor commutation.

(b) Brushes shall be so fitted as to insure successful commutation.

*2.17 Brush Pressure: The brush pressure shall be such that with the brush holder screw cap removed and the brush in its holder and resting against the commutator, the brush spring shall extend outside of its holder

Min. 3/16 inch

Use the R-8550 steel scale.

*2.18 Brush Length: The overall length of the brush up to the spring shall be

Min. 3/8 inch

Use R-8550 steel scale.

2.19 Commutator Surface: The surface of the commutator shall be clean and free from scoring, pitting or other deformation of the surface or structure save that caused by normal wear. Gauge by eye or by feel.

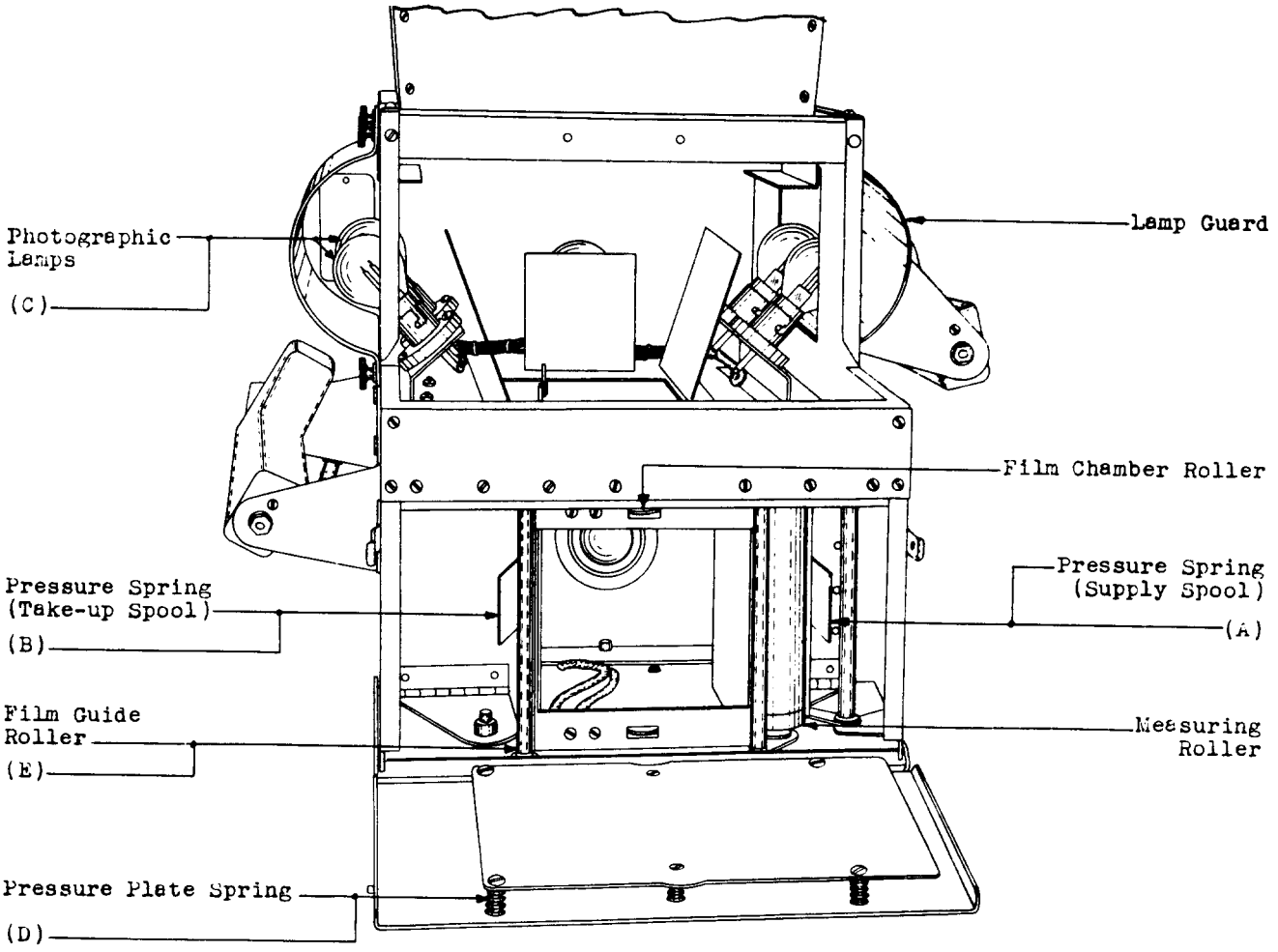

Fig. 6 - KS-8320 Camera - Film Chamber (Motor Drive Removed)

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges and Materials

Code or Spec.No.	Description
Tools	
246	1/2" Hex. Open Single End - Flat Wrench
417A	1/4" and 3/8" Hex. Open Double End Flat Wrench
485A	Smooth Jaw Pliers
506A	.024" Spring Adjuster
KS-6854	3-1/2" Screwdriver
-	4" Regular Screwdriver
KS-6367	Wrench
-	1/2 Pint Oiler, Gem Mfg. Co. No. 1704B
KS-6320	Orange Stick
R-1575	No. 4 Artist's Show Card Brush
-	No. 8 Bristo Set Screw wrench (6 Flutes)
Gauges	
79B	0-1000 Gram Push Pull Tension Gauge
158A	0-1400 Gram Gauge
R-8550	Steel Scale
KS-3008	Stop Watch
Material	
KS-7583	Sensitized Paper (Film, New or Used)
W.E. Co. 57997	Petrolatum (unmedicated White Vaseline may be used)
KS-6232	Oil
-	58-65-S210 Oil (See B.S.P. Section A710.012)
KS-7860	Petroleum Spirits
-	Surgical Cotton
KS-7187	Bell Seal Bond Paper Substance No. 20
-	Lens Paper - As supplied in books from Eimer & Amend, New York Catalog No. 29710 (or equivalent)
KS-2423 or D-98063	Cloth
-	Commercial Powdered Graphite - ← Obtain Locally
-	Sandpaper or Abrasive Cloth, No. 0000
Type S11 (Photographic Lamps - Fig. 6(C))	100 W. - 105-120 V. Mazda Candelabra, Bayonet Base Min. Projection Lamp (For KS-8320 Camera)
Type S11 (Photographic Lamps - Fig. 7(A))	32-32 C.P. - 6-8 V. Bayonet Base Double Contact Auto Lamp (For KS-7703 Camera)
Type S11 (Signal Lamp-Fig. 1(B) & Pilot Lamp - Fig. 5(B))	15 W. - 105-120 V. Candelabra Screw Base Lamps (For KS-7703 and KS-8320 Cameras)

3.002 If the KS-6854 screwdriver does not readily remove the large headed screws for which it is specified use the 4" regular screwdriver. In case the tip of the blade of the 4" regular screwdriver is too thick to engage the slot in the screws select a screwdriver which has a thinner blade or file the blade down slightly to fit the slot in the screw.

3.01 Cleaning (Rq.2.01)

(1) Clean the diagonal mirror by wiping gently with surgical cotton. If the mirror is coated with grease use petroleum spirits on the surgical cotton.

Caution: Care must be used not to scratch the diagonal mirror when cleaning it as it is a first surface mirror, that is, the reflecting surface is not protected by a transparent covering.

(2) Clean the lamps, inside of lamp ← guards, hood and photographic lamp ← reflectors, with a clean dry D-98063 cloth. Clean the outside surfaces of the camera lenses and the condensing lenses (KS-7703 Camera) with lens paper. Obtain access to the film side of the camera lens through the film chamber. Clean the mirror side of the camera lens by reaching in at the hood of the camera. If in doubt whether the mirror side of the lens is clean obtain access to the lens by removing the panel on which the "Western Electric" nameplate is mounted, using the KS-6854 screwdriver to remove the panel mounting screws (See 3.002).

Caution: Care must be used not to bend or misalign the baffles or to scratch the lenses.

(3) Clean the contacts in the film chamber in accordance with the section covering cleaning of relay contacts and parts.

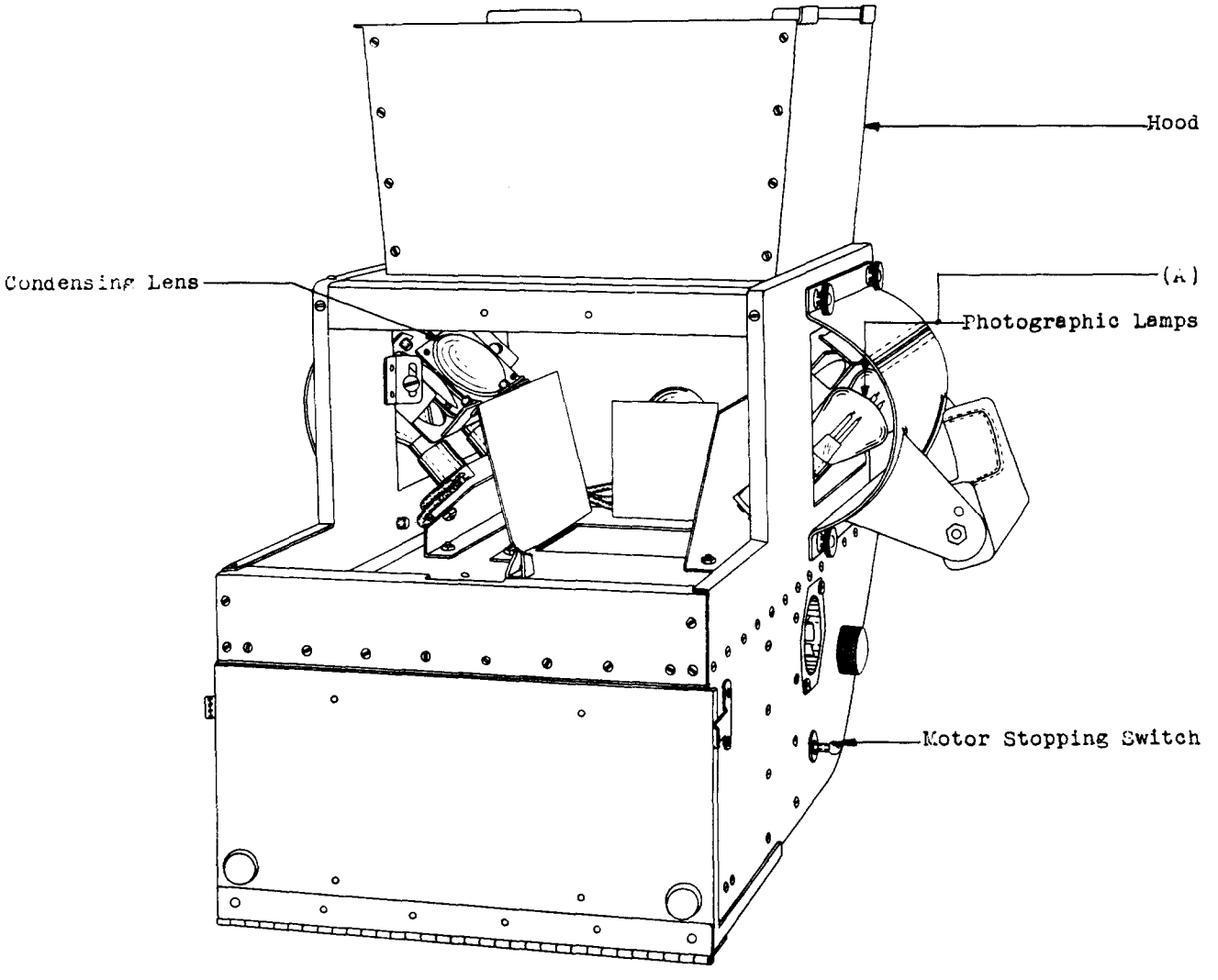

Fig. 7 - KS-7703 Camera (Motor Drive Removed)

3.02 Lubrication

(1) After lubricating any part, wipe off excess lubricant with the D-98063 cloth.

Caution: Be careful to keep lubricant from contacting with any part of the film chamber.

(2) Spring Drive (KS-7703 Camera): If requirement 2.05 is not met it is an indication that the spring drive is not properly lubricated. Remove the motor guard bracket using the KS-6854 screwdriver (See 3.002) to remove the bracket mounting screws and nuts. Be careful not to loose the lock washers associated with the nuts. Disconnect the plugs associated with the leads to the motor drive unit. Disconnect the link between the bell crank and the drive unit. Remove the motor drive unit using the KS-6854 screwdriver to remove the unit mounting screws (See 3.002).

(3) If the torque is below the minimum specified in 2.05, wipe off the pulleys and spring belts with a D-98063 cloth. Connect the two prong motor plug to an extension cord and run the motor approximately 1/2 minute. Recheck the torque requirement and if the requirement is still below the minimum, again wipe the belts and pulleys with the D-98063 cloth. Again run the motor and check the requirement. If after three trials, as here outlined, the torque is below the minimum remove the belts by unhooking the looped ends of the belts and wash them in a bath of petroleum spirits. Wipe the belts with a D-98063 cloth and when the belts have thoroughly dried, replace them. If after washing, the torque exceeds the maximum specified in 2.05 proceed as outlined in (4).

3.02 (Continued)

Note: Experience indicates that maintenance on the spring drive will be reduced if the spring belts are replaced at approximately one year intervals. (Approximately 100 hours of camera operation).

(4) If the torque is above the maximum specified in 2.05 apply a mere trace of lubricant to one or two points on the spring belts with the No. 4 Artist's Show Card Brush. Operate the motor approximately 1/2 minute and check 2.05. If necessary make additional applications of the lubricant. If the torque drops below the minimum specified in 2.05 proceed as outlined in (3) above.

(5) After the torque requirement has been met disconnect the extension cord from the motor plug. Remount the motor drive unit on the camera and replace and tighten the mounting screws securely. Connect the linkage from the motor drive unit to the bell crank. Connect the plugs on the leads from the motor drive unit to the associated receptacles in the camera. Remount the motor guard bracket and tighten the nuts and screws securely.

(6) Parts Located in Motor Drive Unit: For either KS-7703 or KS-8320 camera remove the motor drive unit as outlined in (2) above, in order to obtain access to the parts. After lubrication remount the motor drive unit as outlined in (5) above.

(7) Gear Box (KS-7703 Camera): To lubricate the gear box remove the four gear box cover mounting screws with the KS-6854 screwdriver and remove the cover. Lift out the large gear and shaft assembly, being careful to prevent any grease getting in the shaft bearing. Remove the grease from the gear box. Wipe off the gears with a D-98063 cloth. Use petroleum spirits on the cloth to remove dirt or gummy grease adhering to the gears or shaft. Replace the gear and shaft assembly. Fill the gear box with lubricant to just cover the gear wheel but not sufficient to cover the worm drive. Replace the cover and replace and tighten the four gear box cover mounting screws securely.

3.03 Light Baffle Position (Rq.2.03)

(1) To adjust the position of the light baffles, loosen the light baffle set screws with the KS-6854 screwdriver after first removing the lamp guard to obtain access to the screws. Shift the position of the baffles as required. Tighten the set screws securely. If adjustment of the baffles is insufficient to give uniform illumination of the registers or the KS-7703 camera adjust the position of the condensing lenses. Loosen the set screws for the condensing lens mountings and adjust the position of the condensing lenses, as required. Tighten the set screws securely.

3.04 Freedom of Movement of Starting Switch, Measuring Roller Release Pin, Pressure Plate and Film Guide Rollers (Rq.2.04) ←

(1) If the push button, measuring roller release pin or pressure plate do not operate freely, or the film guide ← rollers do not rotate freely lubricate ← the part, if it has not recently been lubricated. If after lubrication the part still binds, refer the matter to the supervisor.

3.05 Torque Requirement (Rq.2.05)

(1) (KS-7703 Camera): If this requirement is not met, relubricate the spring drive as outlined in 3.02 (1) to (5).

(2) (KS-8320 Camera): Remove the motor drive unit as outlined in 3.02 (2) for the KS-7703 camera. Loosen the clutch adjusting nut set screw with the No. 8 Bristo Set Screw wrench. Adjust to meet requirement 2.05 by turning the clutch adjusting nut with the KS-6367 wrench. Tighten the adjusting nut set screw securely. Connect the two prong motor plug to an extension cord and check requirement 2.05. Made additional adjustments of the adjusting nut, as required, to meet 2.05. After adjustment has been completed replace the motor drive unit in the camera as outlined in 3.02 (5). Replace the motor shield and tighten the shield mounting screws and nuts securely.

3.06 Pressure Spring Tension (Take-Up Spool) (Rq.2.06)
3.07 Pressure Spring Clearance (Supply Spool) (Rq.2.07)

(1) To adjust the pressure spring, remove the film spool, if one is in the camera and adjust the spring with the fingers.

3.08 Contact Alignment (Rq.2.08)
3.09 Contact Follow (Rq.2.09)
3.10 Contact Separation (Rq.2.10)
3.11 Straightness of Springs (Rq.2.11)
3.12 Separation Between Springs (Rq.2.12)

(1) To adjust to meet any of these requirements first remove the contact spring assembly from the film chamber by removing the assembly mounting screws with the KS-6854 screwdriver. Use the No. 506A spring adjuster to adjust the

3.08-3.12 (Continued)

springs for contact follow, contact separation, straightness of springs or separation between springs. If the contact alignment requirement is not met loosen the contact spring mounting screws with the KS-6854 screwdriver and move the springs sufficiently to give satisfactory contact alignment. Tighten the contact spring mounting screws securely. Reposition the spring assembly and replace and tighten the assembly mounting screws securely.

3.13 Shutter Operation (Rq.2.13)

(1) If the shutter does not open or close during the operating cycle it may be due to improper length of the link between the shutter rod of the drive unit and the shutter control bell crank. Adjust the wire link on the KS-7703 camera by removing the link and adjusting the crook at either end with the No. 485A pliers. Adjust the length of the link on the KS-8320 camera by loosening the hex. nut on the link rod with the No. 417A wrench and turning the rod with the finger. After adjusting the rod to give satisfactory shutter operation tighten the nut securely. If after adjusting the link the shutter does not open or close refer the matter to the supervisor.

3.14 Operating Cycle Time (Rq.2.14)

(1) The operating cycle is controlled by the motor speed. To change the motor speed unscrew the rheostat cap on the left side of the camera with the fingers and turn the motor control rheostat with the fingers or the KS-6854 screwdriver.

3.15 Smooth and Uniform Operation (Rq.2.15)

(1) If the motor fails to start or fuses are operated the trouble may be due to power failure, defective wiring, unsatisfactory alignment of the motor and gears in the gear box or binding or broken timing gear assembly.

(2) If the motor of the KS-8320 camera does not run freely, there may be insufficient motor shaft or reduction gear end play. Loosen the shaft and reduction gear positioning screw lock nuts with the No. 246 wrench. Turn the screws in with the 4" regular screwdriver until they strike the end of the shaft or gear and then back them out slightly (approximately 1/8 of a turn). Hold the screws in position and tighten the lock nuts securely.

(3) If there are binding gears or misalignment of parts refer the matter to the supervisor.

3.16 Brush Fit (Rq.2.16)
3.17 Brush Pressure (Rq.2.17)
3.18 Brush Length (Rq.2.18)

(1) Brush Fit: If the brushes bind in the brush holders, remove the brushes from their holders using the KS-6854 screwdriver to remove the brush cap. Mark the position which the brushes take in their holders, and wipe them with a D-98063 cloth moistened with petroleum spirits. To remove the brush next to the motor panel on the KS-7703 camera, first remove the motor end shield mounting screws with the KS-6854 screwdriver (see 3.002) and partially withdraw the end shield from the armature shaft. Rotate the end shield on the shaft until the brush cap is accessible. Remove the brush cap and brush. If there are any rough projections on a brush, the edges of the brush may be smoothed with fine sandpaper or abrasive cloth before wiping.

(2) In replacing the brushes see that they are put back in the same holders and in the same position in which they were originally. Replace brushes which are too loose in their holders.

(3) Brush Pressure: Examine the brush springs and pigtails to see that the pigtails are not twisted. Untwist as required. If the spring does not extend beyond the brush holder at least the minimum amount, replace the brush and spring. A temporary adjustment may be made by stretching the spring, but that should be done only until such time as a new brush and spring can be obtained.

(4) Brush Length: Replace any short brushes.

3.19 Commutator Surface (Rq.2.19)

(1) Remove the motor end shield of the KS-7703 camera as outlined in 3.16 (1), except that the end shield shall be entirely removed from the armature. Remove and clean the brushes of either KS-7703 or KS-8320 camera as outlined in 3.16(1). Wipe the commutator surface with a clean dry D-98063 cloth. Use the cloth wrapped around the KS-6320 orange stick and applied through the openings in the motor end shield to wipe the commutator of the KS-8320 camera. Excessively rough commutator surfaces will necessitate resurfacing. If this condition exists, give consideration to returning the motor to the manufacturer for refinishing.

Note: A bronze colored highly polished commutator is very desirable and it should not be mistaken for a burned commutator. If a commutator presents this condition, is smooth and commutation is satisfactory, leave it alone.

3.19 (Continued)

(2) If the commutator becomes smutted from oil, clean with a D-98063 cloth moistened with petroleum spirits.

(3) Before remounting the end shield on the motor of a KS-7703 camera remove all dirt from the inner surface of the shield with a D-98063 cloth moistened with petroleum spirits. Remount the end shield on the armature shaft. Replace the brushes and brush caps of the KS-7703 or KS-8320 camera making sure the brushes are put back in the same holders and in the same position in which they were originally. Position the end shield of the KS-7703 camera and replace and tighten the end shield mounting screws securely.

REASONS FOR REISSUE

1. To cover lubrication requirements for pressure plate springs and film guide rollers. (2.02) (d)
2. To revise the method for checking the position of the light baffles. (2.03)(1)
3. To add a requirement for freedom of movement of film guide rollers. (2.04)
4. To specify at what part of the operating cycle the shutter shall be open. (2.13)
5. To add a note to specify that the requirement for operating cycle time represents maximum time. (2.14) (1)
6. To add powdered graphite to the list of materials and to bring the list of tools, gauges and materials into standard form. (3.001)
7. To add a procedure for adjusting the end play of the motor shaft and motor reduction gears. (3.15) (2)