

217#845B
PHOTOGRAPHING MESSAGE REGISTERS

**USING KS-14593 L1 MESSAGE REGISTER CAMERA
AND KS-14778 PHOTO PROCESSOR**

1. GENERAL

1.01 This section covers the method of photographing message registers using the KS-14593 L1 message register camera and the method of processing the paper on which the photographs were made using the KS-14778 photo processor.

1.02 This section is reissued to add information covering the use of the KS-16964 L1 loaded cassette and the re-use of empty KS-16148 cassettes for receiving exposed paper. Detailed reasons for reissue will be found at the end of the section.

1.03 The KS-14593 L1 message register camera consists of the KS-14593 L2 message register camera described in 1.04 through 1.08, and the KS-14594 power unit described in 1.09 through 1.11. Both the list 2 camera and the power unit are provided with carrying cases. The camera in its carrying case is shown in Fig. 1. The KS-14778 photo processor is described in 1.12 through 1.15.

KS-14593 L2 Message Register Camera

1.04 The KS-14593 L2 message register camera, shown in Fig. 2, has outside dimensions approximately 13 by 16 by 17 inches and weighs about 18 pounds. This specially designed camera is used for photographing 2000 central office message registers, in blocks of 25, on a roll of sensitized paper approximately 3-5/8 inches wide. The roll of paper is developed and stabilized in the telephone office, using the KS-14778 photo processor, and provides direct readings of the message registers photographed. The camera hood, containing the flash lamps for illuminating the message registers, is placed over the block of 25 registers being photographed. An exposure counter on the outside of the camera shows the number of exposures made on the paper in the camera. Normally, 80 exposures are

made on a roll of paper, photographing 2000 registers. However, the length of paper in the roll permits a maximum of five additional exposures. Rolls of unexposed paper are supplied in cassettes described in 1.16 through 1.19.

1.05 The camera mechanism operates electrically from the KS-14594 power unit which is connected to a 115-volt ac source of power. When the mechanism is actuated by pulling the camera trigger, it operates the flash lamps in the hood and simultaneously opens the shutter. Following the exposure, the mechanism operates a motor which, through a spring belt drive, advances the paper for the next exposure.

1.06 Provision is made in the camera hood for mounting a designation strip which is photographed with the message registers. This designation strip is intended to show pertinent information such as the central office name and the date of the exposures.

1.07 An optical filter is provided with the camera for mounting over the lens. Recommendations on its use are covered in 5.01. With new cameras, the filter and its adapter (which mounts over the camera lens) are shipped in separate boxes. The filter and adapter are assembled by unscrewing the retaining ring from the body of the adapter, placing the filter in the body of the adapter with the wide side of the filter rim outward, and screwing on the retaining ring of the adapter fingertight. When not in use, the assembled filter may be placed in the box in which the adapter was furnished and kept in the plastic pocket in the cable compartment of the camera case.

1.08 The aperture setting of the camera lens is fixed during manufacture of the camera. No attempt should be made to change the setting.

KS-14594 Power Unit

1.09 The KS-14594 power unit shown in Fig. 3 is provided to supply a momentary high dc voltage (approximately 450 volts) to operate the flash lamps in the camera hood. In order to insure reliable electrical connections, the camera cable (approximately 30 feet long) is connected to the power unit by a locking-type connector.

1.10 The momentary dc voltage for operating the flash lamps is obtained by charging two capacitors from a rectifier connected to the secondary of a transformer. When the camera mechanism closes the circuit through the cable to these capacitors, the capacitors discharge and flash the lamps. The camera motor circuit is connected across the primary of the transformer.

1.11 In order to regulate the flash lamp voltage, a variable autotransformer is provided in the power unit. The voltage setting is checked by means of a voltmeter mounted in the top of the unit. The range in which the voltage should be set when taking photographs is indicated in green on the meter scale, and the range of voltage settings which might endanger circuit components is indicated in red. A pilot lamp adjacent to the voltmeter indicates when the power unit is in operation.

KS-14778 Photo Processor

1.12 The KS-14778 photo processor is a portable device which automatically develops, stabilizes, and dries rolls of sensitized paper on which message registers have been photographed. The processor, which is arranged for daylight loading and operation, completely processes a roll of paper in approximately 6 minutes.

1.13 The photo processor, shown in Fig. 11 and 12, has outside dimensions of approximately 8-1/2 by 18-1/2 by 20-1/2 inches and weighs about 70 pounds when empty. It consists of a covered tank holding two cans, one for the developing and the other for the stabilizing solutions. Rollers on each can and on extensions from the underside of the tank cover guide the paper through the developing and stabilizing solutions. Water placed in the

tank is maintained between 104 F and 108 F by a thermostat to insure proper temperature of the solutions in the cans. The tank heater will heat the water and the solutions to the required temperature from an initial temperature of 75 F in approximately 35 minutes.

1.14 The paper is drawn from the cassette into which it was wound in the camera, through the solutions, over the drying drum and onto the motor-driven winding drum. The roll of paper is then readily removed from the winding drum. The drying drum is maintained thermostatically at the proper temperature.

1.15 A panel below the drying and winding drums mounts switches for the motor and the tank and drum heaters. Associated with the switches are lamps which indicate when the tank and drum are at the proper temperatures and other lamps which indicate when a fuse in the processor circuit has blown.

↑ Cassettes Loaded With Unexposed Paper

1.16 Initially, rolls of unexposed sensitized paper were furnished in KS-16148 loaded cassettes. These cassettes were made of molded plastic and, when empty, were returnable for credit and reloading. Subsequently, the KS-16964 L1 loaded cassette, which is made of wood and cardboard and is discarded when empty, was introduced.

1.17 The KS-16148 loaded cassette is wrapped with a spacer over each end of the cassette core to prevent impacts on the core during handling which might result in binding of the paper as it is drawn from the cassette. Five loaded cassettes are furnished in the shipping tube shown in the cover of the camera carrying case in Fig. 1. A label on the outside of the tube shows the expiration date and emulsion number of the paper in the tube.

1.18 The KS-16964 L1 loaded cassette, which supersedes the KS-16148 loaded cassette, is shown in Fig. 6. Each cassette is individually wrapped and five cassettes are furnished in a disposable carton. A label on the outside of the carton shows the expiration date and emulsion number of the paper in the cassettes in the carton.

1.19 In order to use the KS-16964 L1 loaded cassette, it is necessary that the camera be equipped with an adapter which is mounted on the fixed pin at the trigger side of the camera as shown in Fig. 7. A locating pin on this adapter enters a corresponding hole in the end of the cassette to hold the cassette in the proper position during withdrawal of the paper. Procedures for mounting the adapter are covered in Section 030-301-801. KS-16148 loaded cassettes may also be used in a camera equipped with the adapter.

Cassettes for Receiving Exposed Paper

1.20 An empty KS-16148 cassette (ordered as the 34387-G1 empty cassette) is used for receiving the paper after exposure in the camera regardless of whether the unexposed paper was withdrawn from a KS-16148 or a KS-16964 L1 loaded cassette. If a KS-16964 L1 loaded cassette is used, the KS-16148 cassette into which the exposed paper was wound should be retained for future use after the paper has been removed during processing. Before re-using this cassette, however, the check covered in 3.05 should be made to make sure that the light seals of the cassette are not damaged.

2. APPARATUS, TOOLS, AND MATERIALS

2.01 KS-6320 orange stick.

2.02 KS-14593 L1 message register camera including:

KS-14593 L2 message register camera

KS-14594 power unit

34387-G1 empty cassette (Graflex, Inc)

34394-G1 magnetic insert (Graflex, Inc)

34437-P13 filter adapter (Graflex, Inc)

34437-P14 filter (Graflex, Inc)

W6161 lens cap (Graflex, Inc)

2.03 34387-G1 empty cassettes (Graflex, Inc), as required (empty KS-16148 cassettes).

2.04 KS-14666 cloth, as required.

2.05 KS-14778 photo processor.

2.06 KS-16964 L1 loaded cassettes, as required (or replaced KS-16148 loaded cassettes).

2.07 KS-16160 chemical kits, as required.

2.08 5-inch E screwdriver (or the replaced 5-inch regular screwdriver).

2.09 M. L. Snyder Special 2072-D plastic apron (or equivalent), as required.

2.10 Plax Corp. S-8105 1-gallon wide-mouth plastic jar (or equivalent), as required.

2.11 16-inch lengths of 1/4-inch wooden dowel, as required.

2.12 Crocus cloth, as required.

2.13 Steel wool, as required.

2.14 Cotton work gloves, as required.

3. STORING, HANDLING, AND USE OF CASSETTES

Cassettes Loaded With Unexposed Paper

3.01 Since the sensitized paper is affected by heat and dampness, store loaded cassettes in cool and dry areas.

3.02 Before using cassettes, verify the freshness of the paper which they contain by reference to the expiration date indicated on the shipping tube or carton. Do not use cassettes after the expiration date of the paper they contain.

3.03 Unwrap a loaded cassette just prior to using it in the camera. Retain the wrapping for use on the cassette containing the paper on which the photographs have been made. After taking the photographs, remove the cassette into which the paper has been wound and, after removing the magnetic insert, immediately wrap the cassette. Subsequently, unwrap the cassette just prior to placing it in the photo processor.

3.04 While handling unwrapped cassettes containing either unused or exposed paper, avoid placing the cassette in a strong light such as close to a window on a bright day.

Cassettes for Receiving Exposed Paper

3.05 Where unexposed sensitized paper is supplied in a KS-16964 L1 loaded cassette and an empty KS-16148 cassette (34387-G1 cassette) is used for receiving the paper after exposure in the camera, the empty KS-16148 cassette should be checked for light leaks before each use. Carefully examine the cassette for evidence of wear or damage at the light seals at the paper opening and at the ends of the cassette where the cassette core enters the cassette. If there is any evidence of damage at the light seals or of damage to the cassette which might result in light leaks, do not use the cassette. Also reject cassettes which, due to wear, have slits or notches at the ends of the paper opening which might cause binding or tearing of the sensitized paper.

3.06 Where unexposed sensitized paper is supplied in KS-16148 loaded cassettes and the empty KS-16148 cassettes are returned for credit and reloading, the empty cassettes should be returned promptly to Graflex, Inc, Rochester 8, New York, in accordance with local instructions. The cassettes should be returned in shipping tubes in which loaded cassettes were received.

4. PREPARATION OF CAMERA

General

4.01 Remove the camera from the carrying case as follows. Unlatch and swing back the cover of the carrying case. Loosen the front wing nuts on the two braces which hold the camera in the case, as shown in Fig. 1. Swing the braces away from the camera. Lift the camera from the case, taking care that the flash indicating windows on the camera hood do not strike the wing nut or bolt on the adjacent vertical portion of the brace in the case. Place the camera on the floor or on a suitable support convenient to the location where it is to be used.

4.02 Remove the power unit from its carrying case and place it near the camera and accessible to a power receptacle. Take care that the power unit and its leads are placed so that personnel are not likely to trip over them.

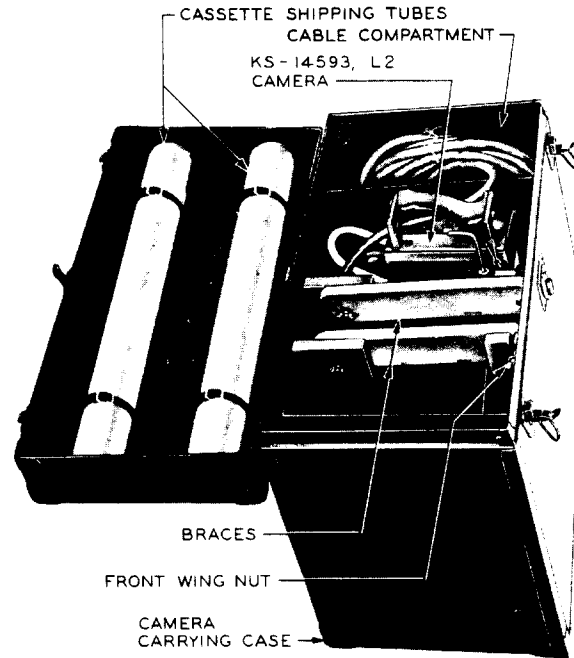


Fig. 1 – Camera in Carrying Case

4.03 Prepare a designation strip bearing pertinent information including central office name and date of exposure. The designation strip should be 4 inches long and 1/4 inch wide and should preferably be of a light brown color with the characters applied in India or printer's ink. The characters should be at least 3/16 inch high and the 3/8-inch portion at each end of the strip should be left blank since the designation strip holder lugs cover these portions. Slip the designation strip in position in the holder at the lower edge of the camera hood shown in Fig. 2. The lettering on the strip should face the camera lens, and the bottom edge of the strip should be toward the bottom of the hood.

4.04 Camera and Power Unit Connections: Referring to Fig. 3, make sure that the switch on the power unit is in the OFF position and that the voltage regulating knob is set to ZERO. Insert the plug on the camera cable into the jack on the power unit and manually tighten the plug locking ring. Insert the plug on the power unit cord into the proper 115-volt ac receptacle. After making these connections, turn the power unit switch to its ON position and check that the pilot lamp on the power unit lights. Set the volt-

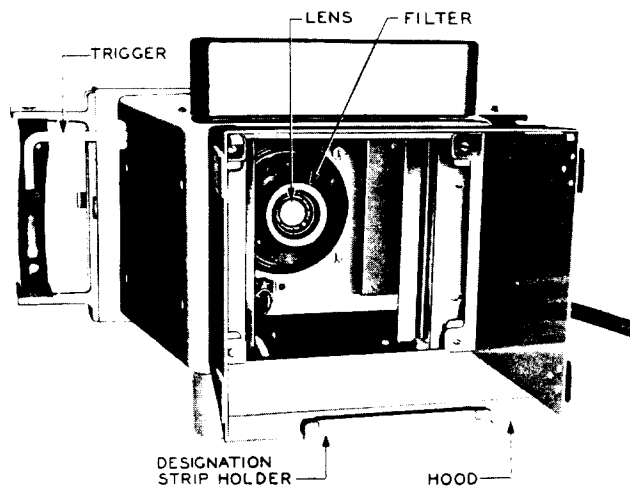


Fig. 2 - Camera Showing Hood and Designation Strip Holder (filter mounted over lens)

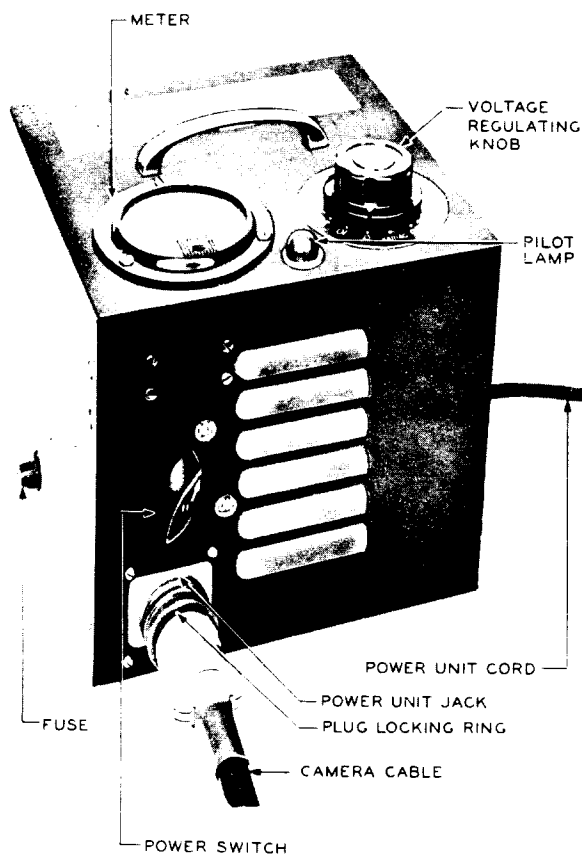


Fig. 3 - Power Unit

age regulating knob on the power unit so that the indicator of the associated meter is within the green range on the meter scale. Check that the pilot lamp on the camera lights (Fig. 4).

Loading the Camera

4.05 Make sure that the switch on the power unit is in the OFF position and the voltage regulating knob is set to ZERO. This is advisable for safety reasons and to avoid the possibility of line voltage changes subjecting circuit components to excessive voltage when the switch is again turned on. Place the camera with the hood down so that the locating lugs on the edges of the hood rest on the floor, as shown in Fig. 4. Release the camera cover latches and remove the cover from the camera. Remove the empty cassette from the trigger side of the camera (Fig. 5) and put it aside for use as covered in 4.09. To do this, push the cassette against the retractable pin adjacent to the trigger, tilt the cassette slightly, and lift

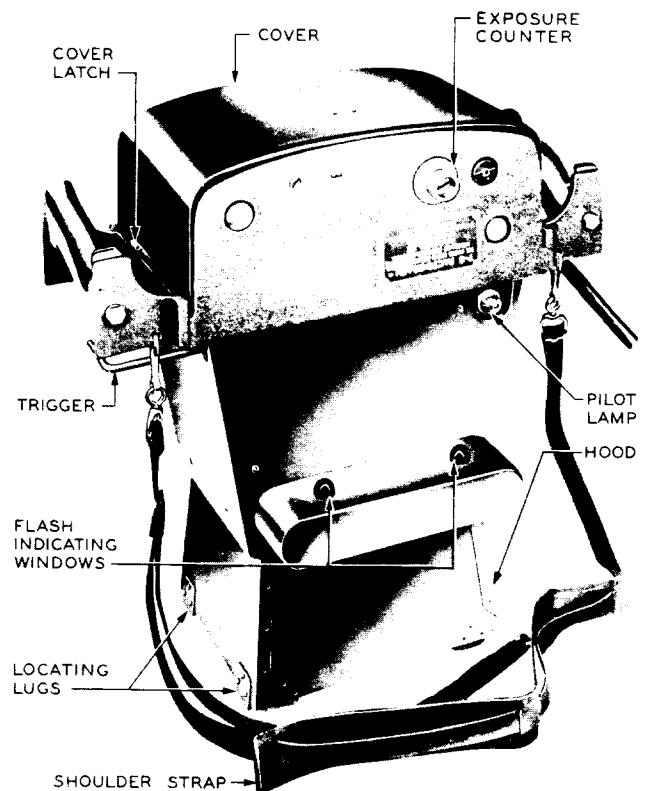


Fig. 4 - Camera With Cover and Shoulder Strap in Place

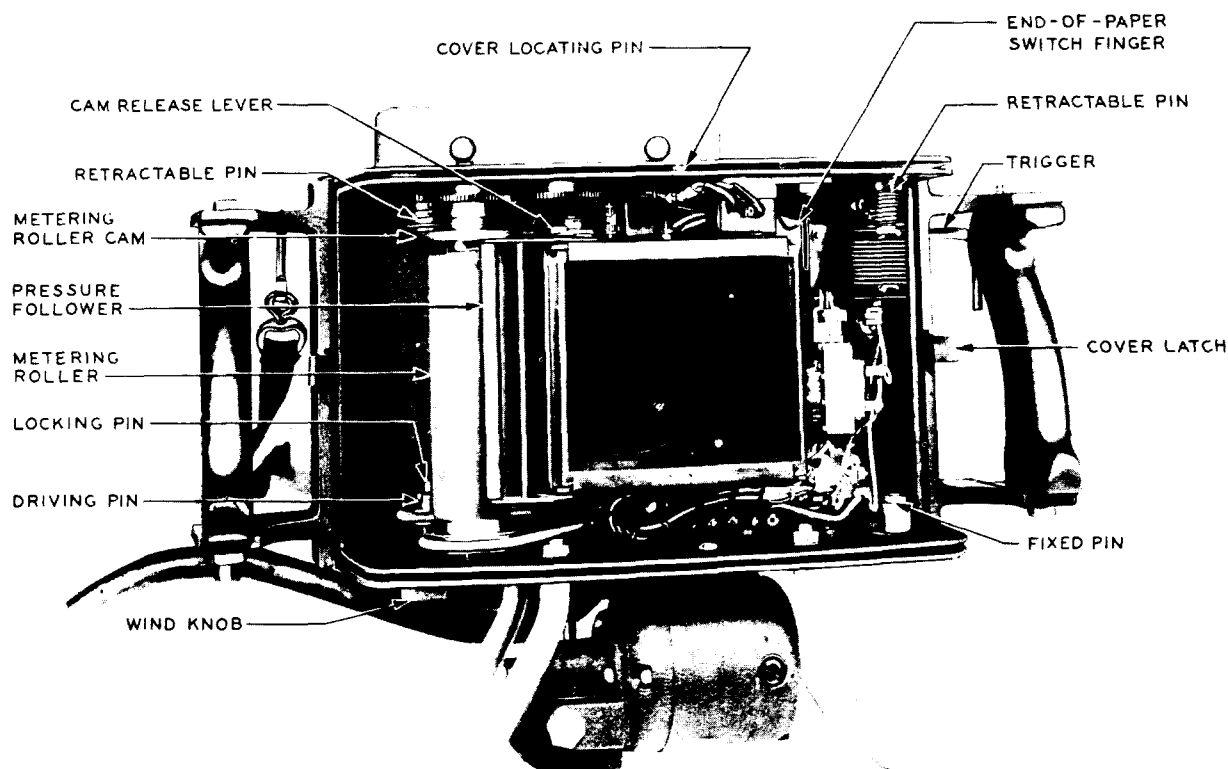


Fig. 5 – Camera With Cover Removed

it from the camera. Swing the pressure follower to its raised position away from the metering roller.

4.06 Unwrap a loaded cassette. Save the wrapping for wrapping the cassette containing exposed paper after taking the photographs. In the case of the KS-16148 loaded cassette, it is unnecessary to retain the spacers which were over the ends of the cassette core. Exercise care in handling unwrapped KS-16148 loaded cassettes to avoid jarring or striking the cassette core.

4.07 Insert the loaded cassette in the trigger side of the camera as follows.

(a) **KS-16148 Loaded Cassette:** Hold the cassette with the side marked UP uppermost. Place the slotted end of the core of the cassette on the retractable pin adjacent to the trigger. Push the cassette against this pin and position

the other end of the cassette so that the fixed pin enters the core.

(b) **KS-16964 L1 Loaded Cassette:** Hold the cassette with the side marked UP uppermost. Position the cassette so that the retract-



Fig. 6 – KS-16964 L1 Loaded Cassette Partially Unwrapped

able pin adjacent to the trigger enters the hole in the end of the cassette having the large recess for the retaining ring on the pin. Push the cassette against the retractable pin and position the other end of the cassette so that the fixed pin enters the center hole and the locating pin on the adapter enters the locating hole in this end of the cassette.

4.08 Draw paper from the loaded cassette over the end-of-paper switch finger and under the guide plate, as shown in Fig. 7. Then, in order to break the internal seal provided in the KS-16964 L1 cassette and to facilitate threading the paper into the take-up cassette, firmly draw the end of the paper about 10 inches beyond the metering roller, taking care not to tear the paper. Lower the pressure follower to its position holding the paper against the metering roller.

Note: In loading the camera it will be noted that the emulsion side of the paper is away from the lens. This arrangement is provided in order to obtain direct reading photographs by making the exposure through the paper.

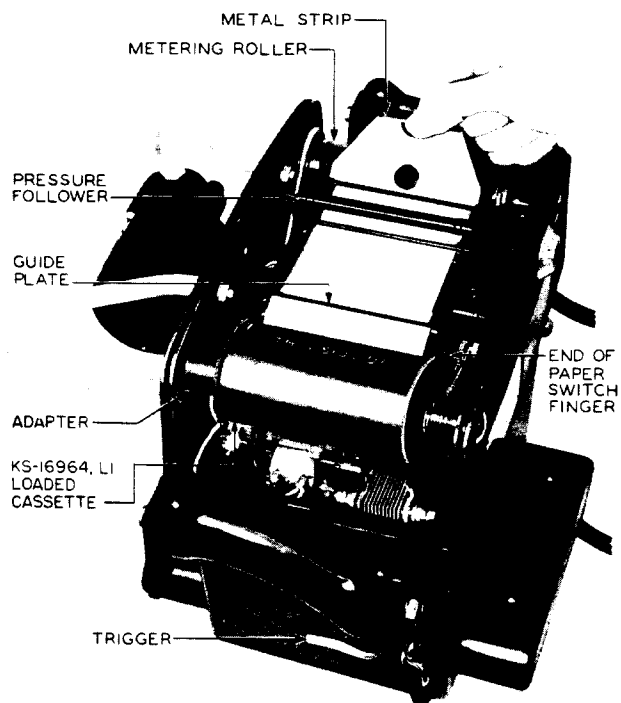


Fig. 7 – Loading Camera

4.09 Make sure that there is a magnetic insert in the hollow core of the empty cassette which was removed from the camera as covered in 4.05. The magnetic insert should have been inserted in this cassette as covered in 5.09 upon completion of previous use of the camera. The magnetic insert is provided to pull the metal strip on the leading edge of the paper against the core when the paper is inserted into the cassette. This facilitates engagement of the hole in the paper adjacent to the metal strip with a lug projecting from the core which is necessary for winding the paper on the core. Fig. 8 shows a cassette with the magnetic insert part way in the core. This figure also shows the cassette locking slot and driving slots referred to in 4.11.

4.10 Hold the empty cassette with the side marked UP uppermost and the opening in the cassette toward the end of the paper in the camera. Insert the end of the paper into the cassette far enough so that the tapered portion is entirely in the cassette as shown in Fig. 9. Turn the slotted end of the core of the cassette with the fingers in a counterclockwise direction to wind the paper over the core. Continue to turn the core until most of the slack paper is wound into the cassette. When starting and winding the paper into the cassette, take care that the paper enters the cassette squarely and does not tend to curl or bind at either end of the cassette opening.

4.11 Place the cassette into which the paper has been started on the pins adjacent to the metering roller, as follows. Facing the metering roller, hold the cassette so that the paper opening is at the top. Tilt the cassette sufficiently to position the left end of the core on

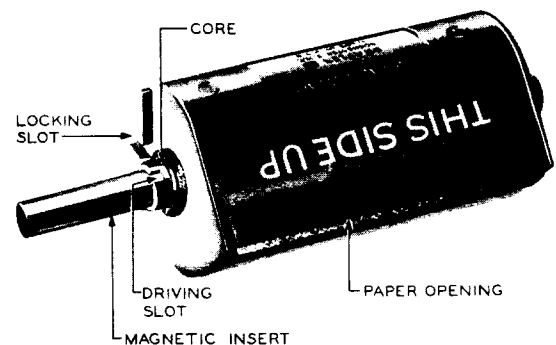


Fig. 8 – Empty KS-16148 Cassette (34394-G1 cassette) With Magnetic Insert Part Way in Core

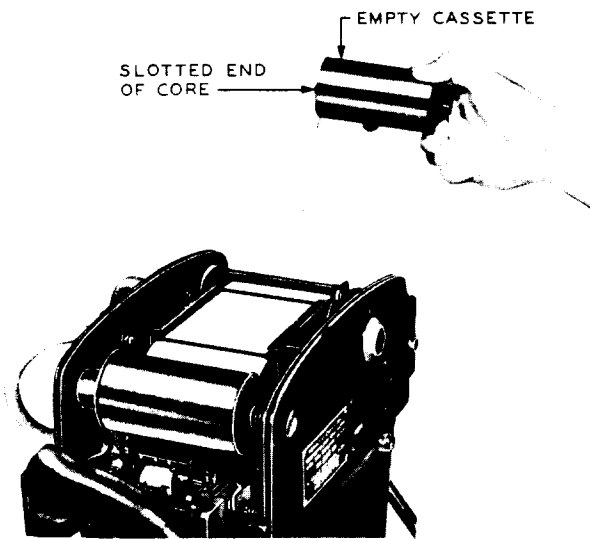


Fig. 9 – Paper Inserted in Empty Cassette

the retractable pin shown in Fig. 5. Rotate the cassette to move the paper opening away from the roller sufficiently to clear the metering roller cam, and push the cassette against the retractable pin. Then position the cassette so that the locking slot shown in Fig. 8 engages the locking pin in the bottom of the camera (Fig. 5) and the core is against the end of the driving pin. Turn the wind knob on the camera until the driving pin lugs engage the driving slots in the core of the cassette. Check that the cassette is locked in position by the locking pin. Then turn the wind knob counterclockwise to take up any remaining slack in the paper.

4.12 Turn the switch on the power unit to its ON position. Turn the voltage regulating knob until the indicator of the associated meter is approximately centered in the green range on the meter scale. As stated in 5.01(g), special conditions may indicate the desirability of deviating from this setting. In such cases, adjust the voltage toward the minimum or maximum of the range, as required.

4.13 Move the cam release lever (Fig. 5) toward the metering roller until the lever releases the cam and the motor starts. Release the lever and note that the paper is drawn from the loaded cassette, under the guide plate, over

the metering roller, and into the second cassette without binding. Mount the cover on the camera, taking care that the slot in the cover engages the cover locating pin shown in Fig. 5. Make sure that the hole in each cover latch engages the associated pin on the cover.

4.14 Operate the camera three times to bring unexposed paper into position for taking the first photograph. In operating the camera, pull and release the trigger and wait until the motor stops before starting the next operation. Note that both flash indicating windows (Fig. 4) are momentarily illuminated by the flash lamps each time the camera operates. Depress the screw in the center of the exposure counter to disengage the counter gearing and turn the counter, as necessary, to set it to 80. Release the screw and check that the counter gearing is engaged.

5. PHOTOGRAPHING MESSAGE REGISTERS

General

5.01 In order to obtain satisfactory photographs, the following general procedures should be observed in photographing message registers with the KS-14593 camera.

- (a) Make sure that the caps are fully seated on all registers.
- (b) Indistinct markings on the register caps and broken or cracked register windows will reduce the legibility of the photographs. If the markings are in red, it may be desirable to restencil them in white.
- (c) Portions of register numerals may be obscured due to the following conditions which would result in the complete numeral not being photographed.
 - (1) Masks on 5-type registers may cover portions of numerals on any of the wheels of the register. In such cases, the holes in the masks may be enlarged or the masks removed.
 - (2) The edges of the window in cover caps of the earlier design used on 14-type registers may obscure portions of the nu-

merals at either side. In such cases, replace the caps.

(d) If, in taking photographs, there are any indications of improper handling or functioning of the camera, doubtful exposures should be repeated after the condition has been corrected.

(e) Care should be taken not to skip any blocks of registers in taking the series of photographs.

(f) In general, the best photographs will be obtained under the following conditions.

(1) Median voltage adjustment on the power unit, as covered in 4.12.

(2) Filter mounted on lens of camera when photographing blocks of 14-type registers or of 5-type registers having covers equipped with plastic windows.

(3) Filter removed from lens of camera when photographing blocks containing any 5-type registers equipped with glass windows.

(g) If lighter or darker photographs than those obtained under the conditions described in (f) are desired, they may be obtained as follows.

(1) Lighter photographs may be obtained by adjusting the voltage at the power unit toward the minimum of the range specified, while darker photographs may be obtained by adjusting the voltage toward the maximum of the range.

(2) In any case, the use of the filter will result in lighter photographs than those obtained without it.

(h) If the camera does not function properly, refer the matter to the supervisor. Apparatus requirements and adjusting procedures for the camera are covered in Section 030-301-701.

Taking the Photographs

5.02 Place the camera strap over the shoulders to avoid dropping the camera and to facilitate its handling. While using the camera, periodically check the position of the indicator on the meter of the power unit as covered in 4.12.

5.03 Bring the camera into position for an exposure by inserting the locating lugs on the hood into the spaces bounding the block of registers to be photographed, as shown in Fig. 10. Hold the camera firmly and squarely against the registers and pull the trigger. Note that both flash lamps flash.



Fig. 10 – Photographing Block of 25 Message Registers

5.04 Move the camera to the position for the next exposure and observe that the pilot lamp on the camera lights before pulling the trigger.

Note: The camera may be moved from one position to the next as soon as the flash lamps have flashed.

5.05 Continue to photograph blocks of registers as covered in 5.03 and 5.04. The normal number of exposures to be made on a roll of paper is 80 as indicated by the exposure counter. However, a maximum of five additional exposures may be made if needed.

5.06 After the last photograph has been taken as covered in 5.05, operate the camera four times. This advances the paper sufficiently to prevent the last photograph being light struck when the cover is removed from the camera. Remove the camera strap from the shoulders and place the camera, hood down, on the floor or a suitable support.

5.07 Release the cover latches and remove the cover from the camera. Move the cam release lever (Fig. 5) toward the metering roller and hold it in this position until the motor stops. The motor is stopped by the end-of-paper switch when the switch finger is released by the cutout near the end of the paper. Turn the switch on the power unit to its OFF position and set the voltage regulating knob to ZERO.

5.08 Remove the empty cassette from the trigger side of the camera. If a KS-16964 L1 loaded cassette was used and the exposed paper cannot be readily detached from the cassette core, tear the paper straight across using the adjacent edge of the guide plate as a straight edge against which to tear the paper. Remove the cassette into which the paper has been wound. To do this, push the cassette toward the retractable pin, thus disengaging it from the driving pin. Then tilt the cassette, as required, and remove it from the camera. Remove the magnetic insert from the core of the cassette by pushing it out with the KS-6320 orange stick. Carefully wrap the cassette using the wrapping referred to in 4.06.

5.09 Check an empty KS-16148 cassette (34387-G1 cassette) for light leaks as covered in 3.05. Place the magnetic insert in the core of

this cassette by pushing the insert into the slotted end of the core until it is entirely within the core. Then, using the KS-6320 orange stick, position the insert so that it is just clear of the driving slots. If more photographs are to be taken immediately, do not place the cassette in the camera, but proceed to reload the camera, as covered in 4.06 through 4.14.

5.10 If additional photographs are not to be taken, mount the empty cassette in the trigger side of the camera to insure that a cassette with a magnetic insert will be available when the camera is next used. Mount the cover on the camera. Remove power from the power unit. Unscrew the camera cable plug locking ring and remove the plug from the jack on the power unit. Place the camera and power unit in their carrying cases. When placing the camera in its case, take care to position it so that the brace farther from the cable compartment engages both portions of the hood of the camera (Fig. 1). This position of the camera will prevent distortion of the hood by the brace. Also, make sure that the camera pilot lamp cap clears the vertical portion of the adjacent brace in carrying cases in which the brace is not notched at this point.

6. PREPARATION OF PHOTO PROCESSOR

6.01 General: The following general procedures apply to the use of the KS-14778 photo processor.

(a) The KS-14778 photo processor should be set up for use outside the switchroom in a ventilated location specified locally for this purpose, preferably near a water supply. An electric fan should be placed to direct a current of air over the drying drum of the processor in order to dissipate vapors resulting from drying the paper.

(b) If more than five cassettes of paper are to be processed within a period of several days, it may be advantageous to mix developing and stabilizing solutions in greater quantities than required for a single filling of the processor cans. If this is done, the solutions should be kept in tightly capped bottles to prevent oxidation and contamination.

6.02 Processing Solutions: The chemicals required for the preparation of the developing and stabilizing solutions used in the photo processor are furnished in the KS-16160 chemical kit. This kit contains material for the preparation of 1/2 gallon of developing solution and 1 gallon of stabilizing solution. This constitutes one loading of the processor which is good for the processing of the paper from a maximum of five cassettes.

Caution: Provide fresh solution after processing the paper from five cassettes.

6.03 The solutions should be prepared in accordance with the instructions furnished with the kit. In preparing the solutions, precautions should be taken to avoid spilling the solutions on clothing or parts of the body. Also, it is important to avoid contaminating the developing solution with the stabilizing solution. Recommendations for doing this work are covered in 6.04.

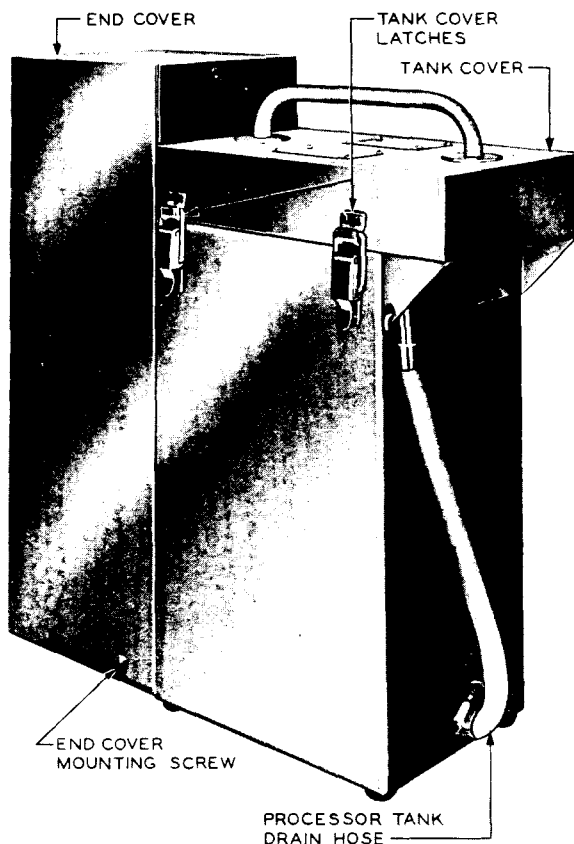


Fig. 11 – Photo Processor With End and Tank Covers in Place

6.04 It is recommended that the person preparing the solutions wear a protective apron such as the Snyder Special 2072-D plastic apron. Mixing and handling the solutions will be facilitated by using nonmetallic containers such as the Plax Corp. S-8105 1-gallon wide-mouth plastic jar. Separate containers should be used to mix the two solutions. If containers of the same size are used for both solutions, the container for each should be identified by suitable marking. Sixteen-inch lengths of 1/4-inch wooden dowels are suitable for use as stirring rods. The same rod should not be used for stirring both solutions.

6.05 Referring to Fig. 11, disengage the tank cover latches on the photo processor. Using the 5-inch E screwdriver, loosen the end cover mounting screws and lift this cover from the processor. Insert the plug of the power lead into the proper receptacle. Remove the tank cover and stand it in an upright position on the rollers. Lift the developer and stabilizer cans from the processor tank. These parts are shown in Fig. 12.

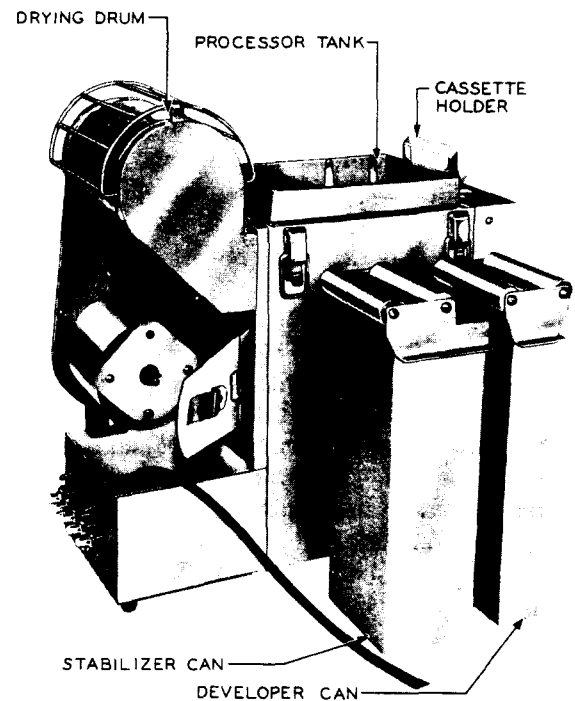


Fig. 12 – Photo Processor With Covers and Cans Removed

6.06 Pour lukewarm water, not to exceed 100 F, into the processor tank until the water level reaches the embossing on the inside of the tank. Avoidance of initial excessive temperature of the processing solutions is necessary to prevent dark photographs.

6.07 Place the stabilizer (larger) can in the end of the processor tank adjacent to the drying drum with the roller which overhangs the edge of the can toward the drum. Place the developer can in the processor tank with the roller having the greater overhang beyond the can toward the cassette holder. The two cans will not settle to their normal positions in the tank until they have been filled with the solutions as covered in 6.08.

6.08 Pour 1/2 gallon of developing solution into the developer (smaller) can and 1 gallon of stabilizing solution into the stabilizer can. Embossings are provided on the inside of these cans to indicate the normal level of the solution. Latch the cover on the processor tank.

6.09 Move the main switch to its ON (upper) position and check that the ON lamp lights (Fig. 13). Move the tank switch to its ON (upper) position. If the tank indicator lamp lights at this time, the temperature of the water used to fill the tank, as covered in 6.06, was probably excessive. In this case, refill the tank with cooler water and observe that the lamp does not light upon operation of the switch. When, after an interval following operation of the switch, the tank indicator lamp lights, proceed with the processing of the paper, as covered in Part 7.

Note: The two lamps directly below the main switch and the single lamp directly below the motor switch are fuse indicator lamps. If one of these lamps lights when the main and the motor switches are in the ON position, the fuse associated with the lighted lamp has blown, indicating a trouble condition. Refer the matter to the supervisor.

7. PROCESSING CASSETTES OF EXPOSED SENSITIZED PAPER

7.01 After the photo processor has been prepared as covered in Part 6, and the processor tank is ready for use as indicated by light-

ing of the tank indicator lamp, unlatch and remove the tank cover. In removing the cover, lift it over the side rather than either end of the processor to avoid contaminating the solutions. Place the cover upright with the rollers resting on a pad of at least four thicknesses of KS-14666 cloth. Because of the corrosive effect of the processing solutions, make sure that the table or other support on which the cover is placed is protected by an adequate thickness of cloth.

Caution: While removing and mounting the cover, exercise care that the solution in the developer can is not contaminated by solution from the stabilizer can dripping from parts of the cover which have been immersed in the stabilizer solution.

7.02 Move the drum switch to its ON (upper) position. Usually the drum will be heated to a satisfactory temperature while the cassette and paper are being positioned in the processor, and it will not be necessary to wait for lighting of the drum indicator lamp. An excessive drum temperature may be obtained if the drum heater is left on for an extended period with the drum

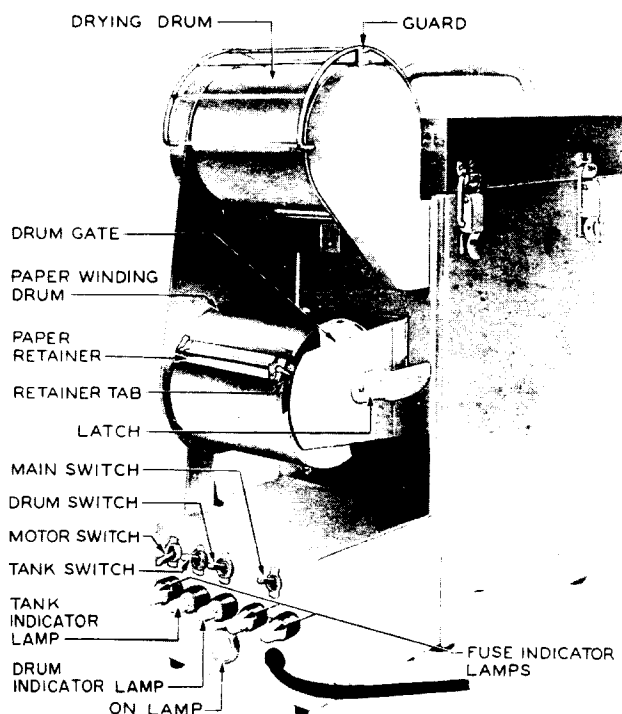


Fig. 13 - Photo Processor - End View

at rest, resulting in scorching of the paper when it is first placed over the drum.

7.03 Make sure that the paper retainer on the winding drum is in an accessible position as shown in Fig. 13. If necessary, run the motor by operating the motor switch to bring the drum to the required position. Swing the drum gate latch upward and swing the gate away from the end of the drum. Place a finger behind the paper retainer tab and remove the retainer from the drum. Swing the guard away from the drying drum.

7.04 Remove the wrapping and spacers from the cassette containing exposed paper to be processed. Hold the cassette containing the paper to be processed with the side marked UP uppermost. Pass the paper from the cassette through the opening in the cassette holder and position the cassette in the holder as shown in Fig. 14. Make sure that the cassette is held securely in the holder by the retaining clip and that the opening in the cassette is approximately at the center of the opening in the holder.

7.05 Draw the paper from the cassette over the drying drum, as shown in Fig. 14, and down against the winding drum. Exercise care not to touch the hot drying drum. Mount the

paper retainer over the paper, as shown in Fig. 15. Position the paper roll expander so that it is approximately perpendicular to the paper retainer. Close and latch the drum gate.

7.06 Move the motor switch to its ON position.

Allow the motor to run until the paper winding drum has revolved through approximately 360 degrees and then stop the motor. Hold the tank cover with the external roller toward the drying drum and the other rollers above the spaces between the rollers on the stabilizer and developer cans as shown in Fig. 16. Carefully lower the cover so that the rollers push the paper down into the processing solutions. The paper will be drawn out of the cassette during this operation. When the cover is seated on the processor tank, fasten the cover latches and swing the guard over the drying drum. Move the motor switch to its ON position.

7.07 If, as the paper passes over the drying drum, the photographs appear to be extremely light or dark, it is possible that the setting of the tank thermostat may require adjustment. Too high temperature of the processing solutions may result in dark photographs and too low temperature in light photographs. In

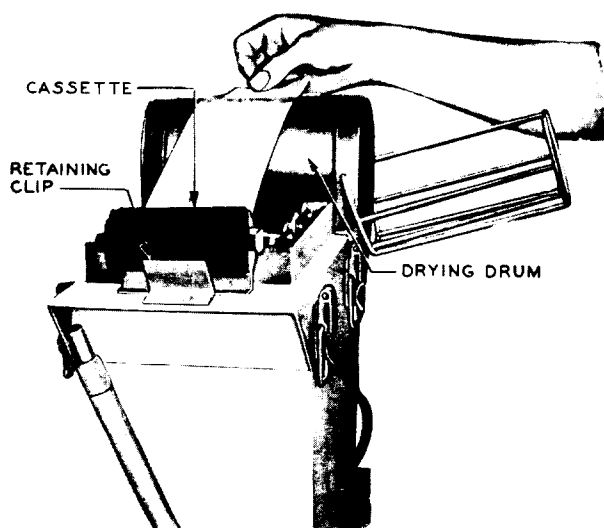


Fig. 14 – Drawing Paper Over Drying Drum of Photo Processor

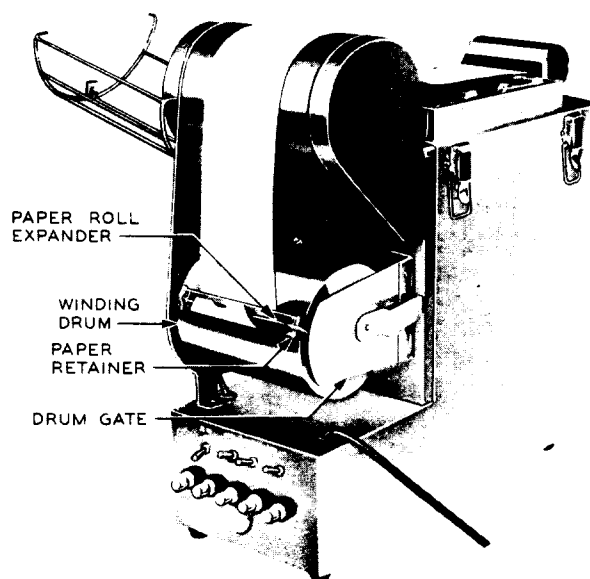


Fig. 15 – Photo Processor With Paper Secured to Winding Drum

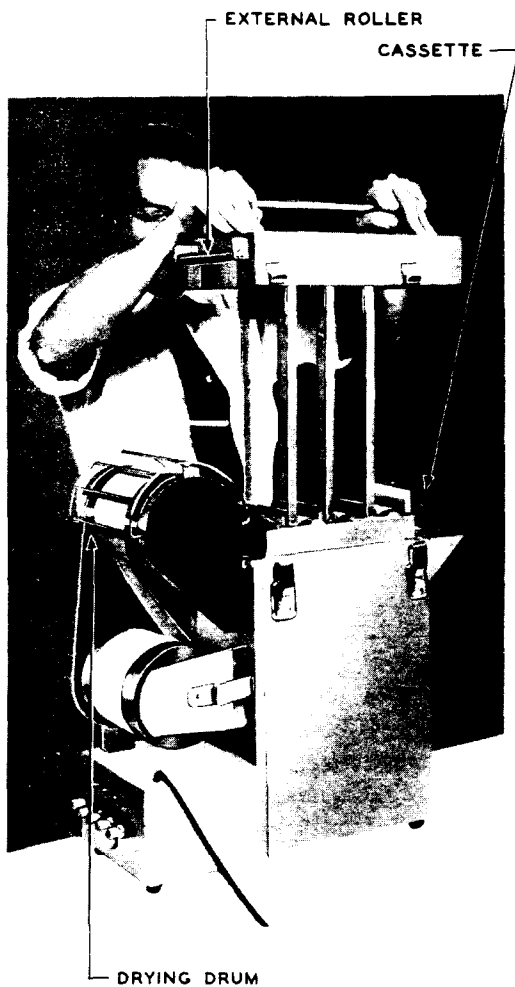


Fig. 16 – Positioning Tank Cover on Loaded Photo Processor

such cases, refer to the requirement covering heating of processing solutions in Section 030-320-701.

7.08 When all the paper has been drawn through the processor and wound on the winding drum, stop the motor. Unlatch the paper winding drum gate and swing the gate away from the drum. Remove the drum from the processor. Turn the paper roll expander handle clockwise and remove the paper retainer from the drum. Press the paper which was over the paper roll expander against the drum to loosen the roll from the drum. Remove the roll of paper from the drum.

7.09 Mount the paper winding drum on the processor. Move the drum switch to its OFF position. If more paper is to be processed immediately, do not mount the paper retainer on the drum. If more paper is not to be processed, mount the paper retainer on the drum, and close and latch the drum gate. In this case, move all switches to their OFF positions.

7.10 Unlatch and remove the tank cover from the processor. Place the cover upright with the rollers resting on a pad of at least four thicknesses of KS-14666 cloth. Remove the empty cassette from the processor.

7.11 Check the roll of paper which has just been removed from the processor (7.08) to determine whether there is a metal strip on the trailing edge. If this strip is missing, examine all metal rollers and also the squeegee blade which is inside the cover adjacent to the external roller. Remove the metal strip if it is adhering to one of the rollers or to the squeegee blade.

7.12 If the paper from less than five cassettes has been processed by the solutions in the processor and more paper is to be processed immediately, continue using the processor, as covered in 7.01 through 7.11.

7.13 After processing the paper from five cassettes, move the tank switch to its OFF position. Remove the cans from the processor tank and empty them. Take care not to spill the solutions on clothing or parts of the body. Empty the cans into the drain of the water supply with fresh water running down the drain. Rinse the cans with water.

7.14 If more paper is to be processed, place the stabilizer (larger) can in the end of the processor tank adjacent to the drying drum with the roller which overhangs the edge of the can toward the drum. Place the developer can in the processor tank, with the roller having the greater overhang beyond the can toward the cassette holder. Pour 1/2 gallon of developing solution into the developer (smaller) can and 1 gallon of stabilizing solution into the stabilizer can. Latch the cover on the tank.

7.15 Clean the drying drum, as covered in 7.19.

7.16 Move the tank switch to its ON position.

The tank indicator lamp should light after an interval indicating that the processor is ready for use. Immediate lighting of the lamp when the switch is moved to its ON position should be disregarded because, although the temperature of the water in the tank may be high enough to cause the lamp to light, appreciable time is required to heat the processing solutions to the proper temperature. In this case, wait for the lamp to extinguish and then re-light before using the processor.

7.17 If the processing operations have been completed for the day, remove the cans from the processor and rinse them, as covered in 7.13. Empty and clean the processor tank, as covered in 7.18. Clean all rollers, as covered in 7.20, and clean the dryer drum, as covered in 7.19.

Note: Cleaning the processor, as covered above, is necessary to prevent formation of chemical deposits on parts of the processor which, if not removed promptly, would cause discoloration of photographs.

7.18 To empty the processor tank, unhook the drain hose nozzle from the processor (Fig. 11) and drain the water from the tank into a suitable container. Remove any metal strips which may have been torn off the paper during processing. Clean the tank with a damp KS-14666 cloth, and rinse the tank with water.

7.19 Clean the dryer drum with a wet KS-14666 cloth, as follows. Saturate the cloth with cold water and lightly wring it. Fold the cloth in quarters and wipe the drum with the cloth. If the drum is hot, use two KS-14666 cloths folded together in quarters to give eight thicknesses of cloth. When cleaning a hot drum, wear cotton work gloves to prevent burning the hands.

Caution: In cleaning a hot drum, take care to avoid touching the drum with the hands. Use two cloths and cotton work gloves, as covered above, in order to protect the hands.

7.20 Clean all rollers with a damp KS-14666 cloth. If there are chemical deposits at the ends of the rollers which cannot be removed with the cloth, hold the roller under running warm water while turning the roller on its shaft. If there is an insoluble black deposit on a roller, this may be removed by rubbing the roller with crocus cloth and then wiping with a damp cloth. If this does not remove the deposit, rub the roller lightly with steel wool, exercising care not to scratch the roller unduly, and then wipe with a damp cloth.

REASONS FOR REISSUE

1. To revise the description of cassettes to cover the KS-16964 L1 loaded cassette and the re-use of empty KS-16148 cassettes for receiving exposed paper (1.16 through 1.20).
2. To add KS-16964 L1 loaded cassettes and additional 34387-G1 empty cassettes, as required, to the list of materials (2.03 and 2.06).
3. To revise the information on storing, handling, and use of cassettes to cover the KS-16964 L1 loaded cassette and the re-use of empty KS-16148 cassettes for receiving exposed paper (3.02, 3.03, 3.05, and 3.06).
4. To revise the information on loading the camera to cover the KS-16964 L1 loaded cassette (4.06 and 4.07).
5. To revise illustrations to show KS-16964 L1 loaded cassette (Fig. 6 and 7).
6. To revise the information on taking the photographs to cover checking empty KS-16148 cassettes for light leaks (5.09).