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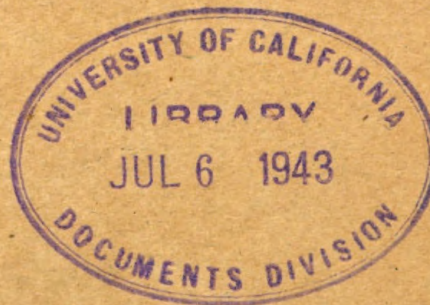
U.S. Dept. of Army

WAR DEPARTMENT

TECHNICAL MANUAL

PHOTOGRAPHIC DARKROOM
EQUIPMENT
(PROCESSING EQUIPMENT PH-395)

May 29, 1943



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TECHNICAL MANUAL }
 No. 11-404

WAR DEPARTMENT,
 WASHINGTON, May 29, 1943.



PHOTOGRAPHIC DARKROOM EQUIPMENT

(PROCESSING EQUIPMENT PH-395)

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SECTION I

DESCRIPTION

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1. Purpose.—Processing Equipment PH-395 is designed to furnish complete facilities for enlarging, printing, and finishing prints from 35-mm negatives.

2. Components.—*a.* The components of Processing Equipment PH-395 are:

- 1 enlarger PH-275-B, for 35-mm film, with 2-inch f/4.5 anastigmat enlarging lens, and microfilm attachment (called a "printer" throughout this manual).
- 1 lamp PH-421, darkroom (commonly known as a safelight).
- 1 foot switch PH-424.
- 1 timer PH-426, automatic, electric.
- 2 trays PH-161-A, 11 by 14 inches.
- 2 trays PH-164-A, 14 by 17 inches.
- 1 board PH-425, paper-holding, 2¼ by 3¼ inches.
- 1 extension cord, 10½ feet.
- 1 power cord, with battery clips.
- 1 adapter power cord, 25 feet.
- 1 thermometer PH-28.
- 1 siphon PH-244.

1 paddle PH-80.

1 carrying case, 35 by 19½ by 11 inches, with smaller case inside.

b. Processing Equipment PH-395, completely cased and ready for transporting is approximately 35 inches long, 19½ inches high, and 11 inches deep, and weighs about 131 pounds.

3. Printer.—This projection printer is used to enlarge prints from 35-mm negatives. It is of standard condenser design, and employs a 2-inch, f/4.5 anastigmat, enlarging lens. (See fig. 3.) The printer is mounted on a laminated baseboard, with a single girder bar sup-

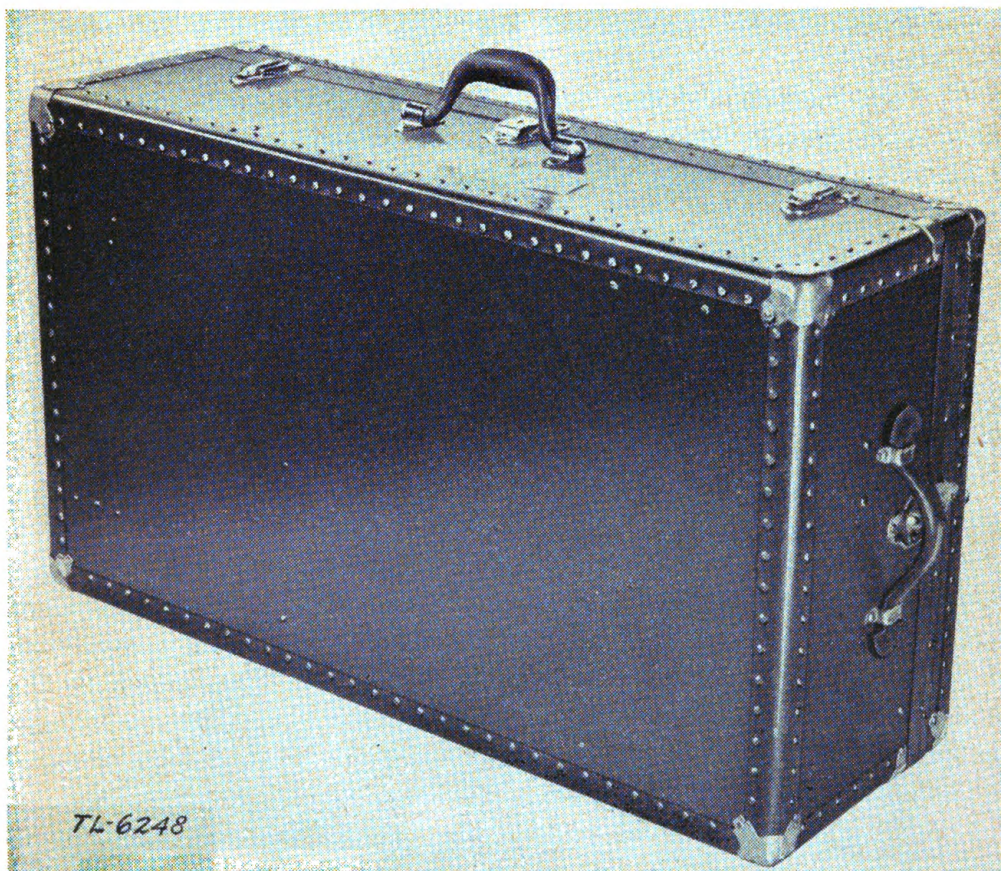


FIGURE 1.—Processing Equipment PH-395 packed ready for transporting.

port for the printer head. Within the base is a step-down transformer (60-cycle, 110-volt-6-volt) which supplies the printer lamp with 6 volts. When the printer is operated from a 6-volt vehicular storage battery, the lamp is connected directly to the battery through the foot switch.

4. Microfilm attachment.—The microfilm attachment is a device for rapidly producing projection prints from 35-mm negatives. It consists of a reel and ratchet arrangement which is easily fastened

to the printer head. A single revolution of the operating knob, which is provided with a ratchet stop, automatically frames the next negative in the film gate for printing.

5. Automatic timer.—This device is an electrically operated timer which governs exposure time on the printer. The exposure time desired, which may be from 1 to 55 seconds, is selected by moving the dial pointer to the proper figure. After this the push-button switch, mounted just below the dial, is operated. The timer operates only from a 110-volt, 60-cycle power source.

6. Safelight.—A standard ruby safelight is provided for dark-room illumination. Lamps are supplied for either 6- or 110-volt operation.

7. Foot switch.—A foot switch is supplied to control the printer lamp when battery power supply is used. Pressure on the switch illuminates the printer lamp which remains lighted until the pressure is released.

8. Trays.—Four stainless steel trays are supplied, two of which are 11 by 14 inches and the other two, 14 by 17 inches. They are used to hold the developing, fixing, and washing solutions.

9. Paper board.—This item is made of molded plastic and has a metal frame to hold paper $2\frac{1}{4}$ by $3\frac{1}{4}$ inches. No provisions are made for handling paper of any other size.

10. Power cords.—Three power cords are furnished for connecting the printer to either a 6- or a 110-volt power source. The 110-volt power cord is a rubber-covered cable $10\frac{1}{2}$ feet long, one end of which is equipped with a three-way receptacle. The other end has a standard power plug for connecting to a power source. The 6-volt power cord is also equipped with a three-way receptacle for connecting to the printer and accessories, and battery clips for connecting to a storage battery. A small adapter cord is provided for connecting the lamp to the power cord receptacle when a battery power source is used.

11. Siphon.—A molded hard rubber automatic tray siphon converts an ordinary tray into an effective print washer. It is supplied with a rubber hose for connecting to a water tap or faucet.

12. Carrying case.—Processing Equipment PH-395 includes a fiber carrying case, designed to hold all the components securely during transportation. A fiber box mounted inside the chest cover holds the microfilm attachment, while brackets are provided for fastening the other items of equipment within the case. (See fig. 2.) Another fiber box carried inside the trays houses the timer, siphon, power cords, foot switch, and safelight. This cover is secured by two fast-action fasteners and a trunk-type lock.

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EMPLOYMENT

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13. Preliminary arrangements.—A lightproof room or tent suitable for use as a darkroom should be prepared before the equipment is unpacked. Lightproofing may be accomplished by means of blankets, tarpaulins, canvas, or other opaque materials. The location selected should have an adequate water supply and power source. Large quantities of clear water are needed for the washing of prints. A



FIGURE 2.—Case open, showing packing arrangement.

110-volt, 60-cycle outlet or a 6-volt vehicular storage battery must be available as a source of power.

14. Unpacking and preparation for use.—Before Processing Equipment PH-395 can be used, it must be carefully unpacked and prepared for use.

a. The unpacking is carried out as follows:

(1) Unlock the two fast-action fasteners and the trunk latch lock and open the case cover. (See fig. 2.)

(2) Loosen the retaining strap and remove the fiber box containing accessories.

(3) Lift out the stainless steel trays.

(4) Remove the printer head and the girder bar assembly.

(5) Lift out the baseboard.

(6) Open the fiber box containing accessories, and remove the safe-light foot switch, timer, siphon, and power cords.

b. To prepare Processing Equipment PH-395 for use, the following procedure and precautions must be observed:

(1) Place the baseboard in the approximate center of the workbench or table. (See fig. 3.)

(2) Insert the girder bar and the printer head assembly in the base socket, and tighten the bakelite knobbed set screw. Care must be exercised in aligning the printer head with the baseboard.

(3) If the microfilm attachment is to be used, loosen the knurled screws just behind the lamp house and slide the attachment frame under the screws. Tighten the screws to hold the attachment in position.

(4) Arrange the trays, timer, foot switch, and paper board (fig. 4) in the most convenient location. It is good practice to place the developer and fixer trays on opposite sides of the printer for easy identification in the dimly lit darkroom.

(5) Connect the siphon to the water source, and place it in position in the wash tray.

15. Electrical connections.—*a.* The procedure below is followed to connect the printer to a 110-volt, 60-cycle power source:

(1) Insert the plug of power extension cord in the power source receptacle.

(2) Plug the safelight and the timer cords into the three-way receptacle on end of the extension cord.

(3) Plug the printer power cord into receptacle on the side of the timer.

(4) Plug the midget connector into the receptacle located on the printer base.

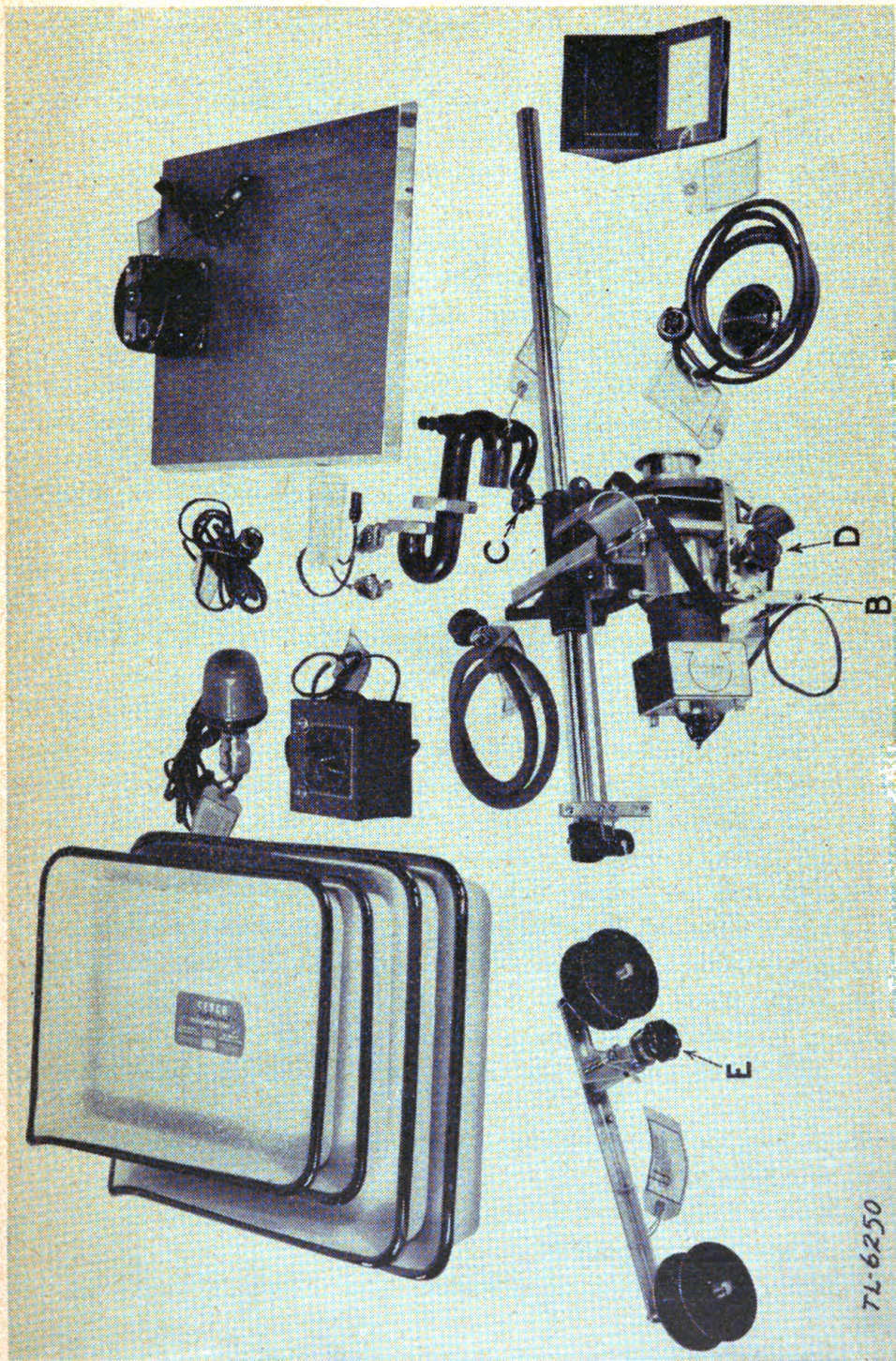


FIGURE 3.—Processing Equipment PH-395 removed from case.

b. The procedure below is followed to connect the printer to a 6-volt vehicular battery:

- (1) Connect the clips on the power cord to the battery terminals.
- (2) Insert the safelight and foot-switch plugs into the receptacles on end of the power cord.
- (3) Plug the power cord from the lamp housing into midget receptacle on the end of the adapter cable.
- (4) Plug the end of the adapter cable into receptacle on the back of the foot-switch plug.

Caution: Check the voltage of safelight lamps and make certain that the correct lamp is provided for the voltage used.

16. Developing and fixing solutions.—*a. Preparation.*—The solutions used in developing and fixing baths are standard solutions made by dissolving prepared powders in water. In the preparation of these solutions, it is essential that mixing instructions on the package be followed exactly. If raw chemicals are used to prepare the solutions, appendix I of TM 1-219 should be consulted for detailed instructions.

b. Employment.—Pour the developer solution into one of the two 11- by 14-inch trays to a depth of about 2 inches. Fill the two 14- by 17-inch trays to a similar depth with the fixer and rinse solutions. The trays should be placed far enough apart so that there will be no danger of splashing one solution into the other. This can be accomplished by placing the developer and fixing solutions on opposite sides of the printer. Such an arrangement also facilitates identification of the solutions in the darkroom. Since it is difficult to keep large prints separated when immersed in a solution, liberal quantities of solution should be placed in the trays.

17. Processing of prints.—*a. General.*—Successful preparation of enlarged prints with Processing Equipment PH-395 depends on careful preparation of the negative, proper projection, and correct developing and fixing technique. Extreme care must be exercised in the handling of prints from the actual exposure to completion of the finished print.

b. Inspection of printer.—Inspection of the printer should include the following steps:

- (1) Checking the lens for cleanliness and determining if the diaphragm is working properly.
- (2) Checking the lights, switches, and movable parts of the printer.
- (3) Testing the evenness of illumination with the negative removed from the carrier.

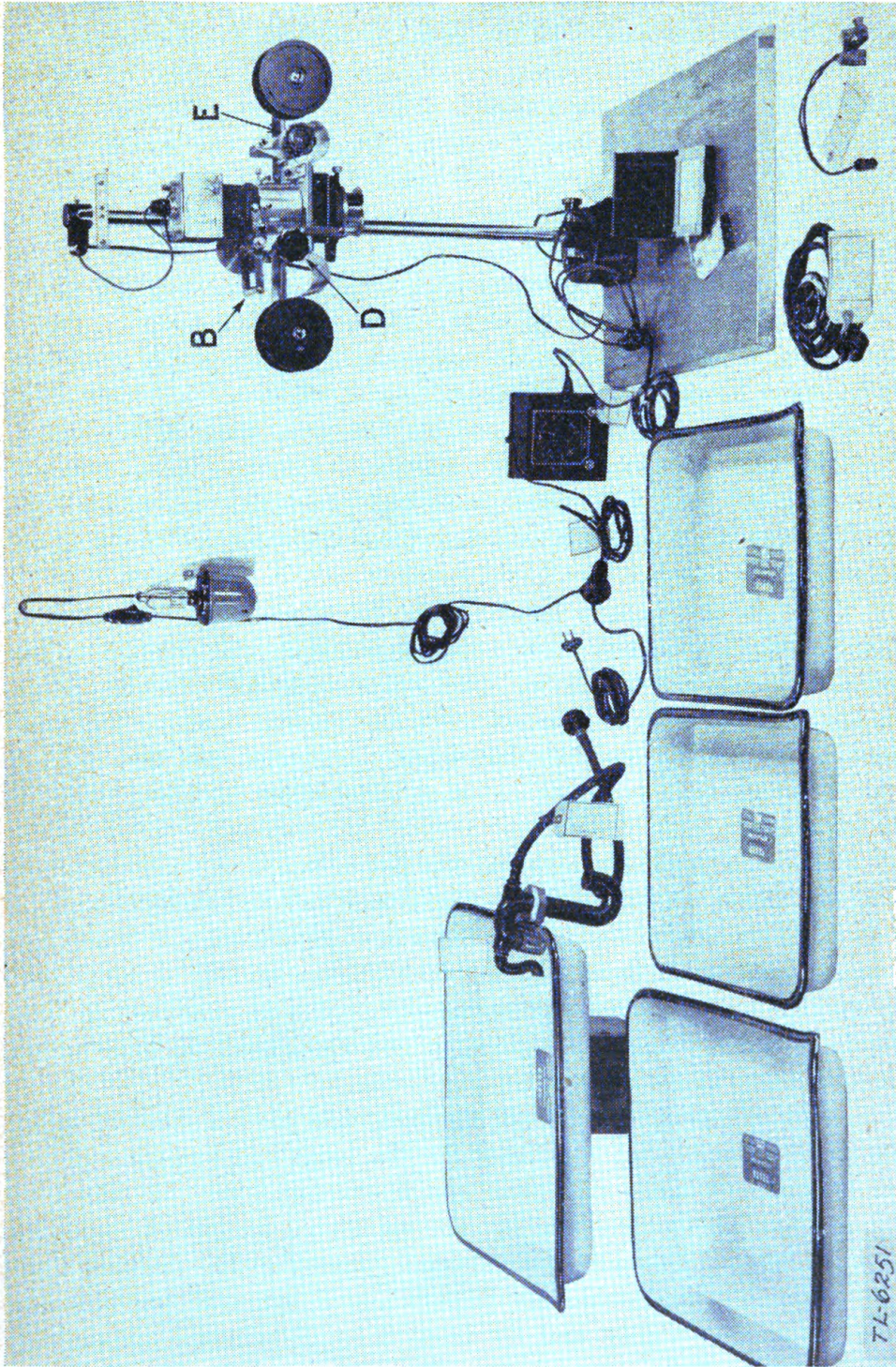


FIGURE 4.—Processing Equipment PH-395 ready for use.

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c. Composing the print.—Insert the negative in the film gate by pressing down the film gate release lever *B* (fig. 4), located just to the left of the lamp house. Turn the emulsion or dull side of the negative toward the lens. If the print is to include the entire area of the negative, the composing of the print is a matter of correct spacing of the image on the paper board. To accomplish this, loosen the bakelite knobbed setscrew *C* (fig. 3), located on the bottom of the printer-head bracket, and slide the entire printer head vertically along the guide bar until the correct image size is obtained. Open the lens wide; focus the lens by rotating the focusing knob *D* (fig. 3), located just to the left of the lamp house. Frequently it is not necessary to include the entire image of the negative in the print. In such instances, it is often possible to improve the composition of the print by local masking of the image.

d. Test exposure.—To insure proper exposure time of the print, it is usually best to perform a test exposure. This is done as follows:

(1) Open the lens wide and study the projected image for contrast. The degree of contrast will determine the contrast of the paper which should be used.

(2) Turn on the printer lamp; close the diaphragm of the lens until the image appears to have a brightness that will require an exposure of at least 10 seconds. The diaphragm has clicking stops which make it easier to determine when the desired opening has been reached. The ability to estimate when an image has the desired degree of brightness requires practice, but is an excellent way to judge exposures.

(3) Place a strip of test paper on the paper board in such a manner that it will cover an area of the negative which is uniform and of average density. Set the timer for exposures of 4, 8, 12, and 16 seconds and expose a strip for each period. If a storage battery is supplying power to the printer, the timer cannot be used and must be replaced by the foot switch. Exposure time, in this case, must be determined by use of a watch or some other timing device.

e. Exposing the print.—Turn off the lamp and place a piece of paper on the paper board. Set the timer for the length of exposure determined by the test strip and push the operating lever. If the foot switch is used, apply pressure for the estimated length of exposure and then release. Develop the exposed paper for the normal time ($1\frac{1}{2}$ minutes for bromochloride papers and 2 minutes for bromide papers), rinse thoroughly and fix from 3 to 10 minutes, depending on the strength of fixing solution. Rinse the print and inspect it under normal light. Dry and trim the print.

18. Use of microfilm attachment.—*a. General.*—If a number of prints of the same size are to be made from a reel of microfilm negatives, the microfilm attachment should be used. (See figs. 3, 4, and 5.) The installation of this attachment is outlined in paragraph 15*b*(4).

b. Procedure.—The procedure below is followed in using the microfilm attachment:

(1) Place the reel containing the negative strip on the shaft just to the right of the lamp house. Tighten the nut that holds the reel on the shaft.

(2) Insert the end of the film over the guide bar with the right hand. Turn knob *E* (fig. 4) clockwise with the left hand, making sure that the sprocket teeth engage the holes in the film. Rotate the knob until the film approaches the film gate.

(3) Press down the gate release lever *B* (fig. 4) when the film reaches the film gate, and lead the negative into the gate. Turn knob *E* until the desired negative is centered in the film gate.

(4) Loosen the small knurled screw on the collar located immediately behind knob *E* and rotate the collar until the ratchet engages. Tighten the knurled screw.

(5) Expose the paper according to instructions in paragraph 17.

(6) To project the next negative, press down on the film gate release lever and rotate knob *E* clockwise until the ratchet stops movement. The next negative will then be automatically centered in the film gate and may be printed.

(7) When the negatives project through the film gate, wind clockwise on the reel just to the left of the lamp house.

19. Dismounting and packing equipment.—After all processing has been completed, the equipment must be thoroughly cleaned and properly packed. The trays must be washed free of any solution and wiped dry. Disconnect the electrical connections and place each item in its traveling position (see fig. 2), making certain that all straps and brackets are tight. Failure to take these precautions will result usually in damage to the equipment during transport.

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FUNCTIONING OF PARTS

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20. Projection printer.—*a. Base and girder bar support.*—The printer is mounted on a 16- by 20-inch laminated baseboard. Also mounted on this baseboard is a base casting containing a step-down transformer (60-cycle, 110-volt-6-volt) which supplies 6 volts to the lamp. A socket for the girder bar support, a screw lock, and a power outlet receptacle for the transformer are located on top of the base casting. The 110-volt power cord of the transformer passes through a hole in the base of the casting. There is a socket, located on top of the base casting, for mounting the girder bar support. A bakelite knobbed setscrew holds the girder bar in position.

b. Printer head base.—The printer head base is a casting designed to slide vertically along the girder bar support. The base provides a lens mount, film gate, and screws for fastening the microfilm attachment. The adjustment knob *D* (fig. 3) moves the lens vertically for focusing. This knob turns a shaft, which in turn operates a lever arrangement through a gear reduction, thus providing a micrometer focusing adjustment for the lens. A positive-lock setscrew for clamping the printer head in any desired position is located near the bottom of the base casting. The film gate is of pressed steel construction, and is equipped with internal springs that automatically open the gate when the release lever is operated. The operation of this lever relieves the gate of the weight of the lamp house and permits easy insertion of the negative. The weight of the printer head is counterbalanced by a spring loaded reel mounted on the printer head base, with the end of the tape fastened to the top of the girder bar. As a result of this arrangement, a minimum effort is required on the part of the operator in moving the printer head for print size selection. A red filter for use with bromide papers is mounted just below the lens on a swivel mount.

c. Optical system.—The optical system consists of a lamp, two condensing lenses, and an enlarging lens. (See fig. 5.)

(1) *Lamp.*—The printer is supplied with a Lamp S-14, which operates on 6 to 8 volts. This 32-candlepower lamp has a double-contact base, and its glass bulb is of the shaded opal type. The lamp housing is of cast construction, with integral cooling fins. The lamp house cover is fastened to the lamp house by means of four knurled thumb-screws. The lamp socket is mounted on the lamp house cover.

(2) *Condensing lenses.*—The two condensing lenses are mounted in a tubular housing just below the lamp house. The housing is held in position by four knurled screws located around the outer edge of the housing. The lenses are mounted with the curved surfaces facing each other, and are separated by a corrugated spacer.

(3) *Enlarging lens.*—The printer is supplied with a 2-inch, $f/4.5$ enlarging anastigmat lens. The lens is mounted on a detachable lens board and is provided with a micrometer adjustment for critical focusing. The diaphragm has clicking stops to make it easier to identify the size of the opening in the darkroom.

(4) *Mechanics of focusing.*—The size of the projected image (fig. 5) depends on the distances between the negative, lens, and paper board, as well as on the focal length of the enlarging lens. Because of the constructional design, and the use of an enlarging lens of one focal length, the only variable factor that materially affects the print size is the distance between the negative and the paper board. The lens adjustment changes the relation between negative and lens very slightly, and is used for focusing purposes. The greater the distance between the printer head and the paper board (fig. 5①) the larger the size of the projected image. Conversely, the shorter the distance between the two elements (fig. 5②) the smaller the image. Whenever adjustments are made for a different print size, the lens must be refocused.

21. Microfilm attachment.—The microfilm attachment consists of a frame, reel, and ratchet assembly that can easily be fastened to the printer for the purpose of rapidly preparing 35-mm negatives for printing. The frame has shafts for two 100-foot reels of 35-mm film. The reel of film to be printed is placed on the feed reel shaft located to the right of the lamp house and is held in place by a spring and thumb nut. A reel to receive the printed negatives is placed on a similar shaft located to the left of the lamp house, and is held in position in an identical manner. Just to the right of the lamp house are the ratchet, feed mechanism, and operating knob. The film from the feed reel is fed between a guide bar and a sprocket into the film gate. The teeth of the sprocket engage the holes in the edges of the film as it passes

through. The sprocket is rotated by the operating knob; by one revolution of the knob, the negative is moved exactly one frame in the film gate. A ratchet stops the sprocket feed at exactly the correct position. The ratchet consists of an adjustable collar, with an indentation cut on its outer edge, and a hinged ratchet lever held against the collar by a spring. The collar is held in position by a knurled thumbscrew. The film is threaded and alined in the film gate, the setscrew loosened, and the collar rotated until the ratchet is engaged. The setscrew is

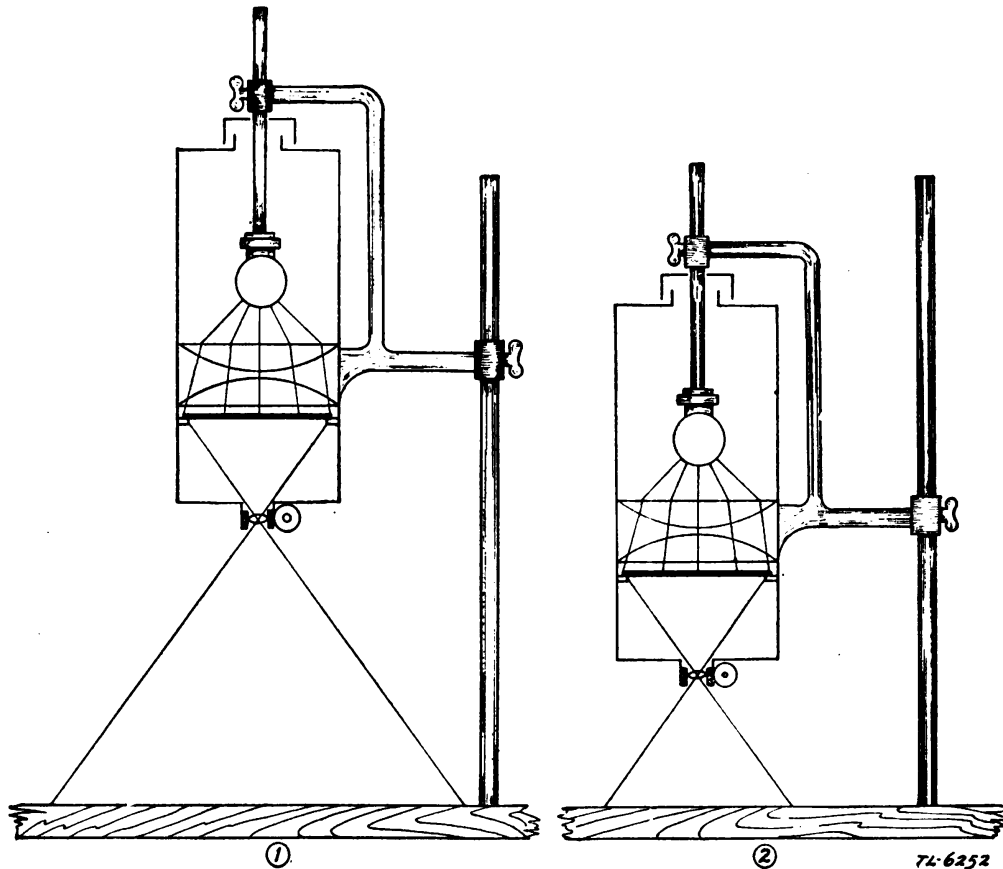


FIGURE 5.—Location of printer head for print size selection.

then tightened, completing the adjustment of the attachment. To advance the film one frame, press down on the film gate release lever *B* (fig. 4) and rotate the operating knob one revolution. Stop when the ratchet engages.

22. Safelight.—The safelight consists of a standard power cord and light socket, a base containing a candelabra-type socket, and a lamp cover. The base, which is of molded plastic, screws into the standard lamp socket and contains within itself a socket for a small lamp. The lamp cover is of red plastic and screws to the base. This red cover emits light which does not affect light-sensitive materials.

Thus the safelight can be used to provide some degree of illumination in the darkroom.

23. Foot switch.—The foot switch closes the circuit between the power source and the printer lamp. Stepping on the treadle operates an internal switch which closes this circuit. Release of pressure on the treadle causes the switch to open the circuit.

24. Automatic timer.—The automatic timer is a self-contained electric timing device with an integral switch for printer control. The timer receives power from any 110-volt, 60-cycle source through its power cord and plug. The printer power cord is connected to the timer by means of a receptacle on the side of the timer. The position of the dial pointer on the timer face governs the time of exposure. The timer is placed in operation by operating the switch on the lower left side of the panel to ON and actuating the push switch on the lower right side of the panel. The printer lamp is then lighted for the time indicated by the pointer; at the end of this time, the lamp is automatically turned off.

25. Trays.—Four stainless steel trays, two 11 by 14 inches, and two 14 by 17 inches, are provided for holding the developing, rinsing, and fixing solutions. The trays are of pressed steel construction and are rust- and corrosion-resistant.

26. Paper board.—The paper board consists of a molded base and a hinged paper frame made of pressed steel. After the projected image has been properly composed and focused on the paper board, the sensitized paper is placed on the board with the metal frame holding it in position. The paper is then exposed, the metal frame lifted out of the way, and the paper developed and fixed in the usual way.

27. Power cords.—Three power cords supply the printer power from either a 110-volt, 60-cycle power source, or a 6-volt vehicular battery. The 110-volt power cord is a rubber-covered cable, 10½ feet long, having one end equipped with a three-way receptacle. All accessories obtain power from this receptacle. The other end of the cable has a plug for connecting to a power source receptacle. The 6-volt power cord is equipped with a three-way receptacle and battery clips for connecting to the battery terminals. The power cord from the lamp house is equipped with a midget plug and will not fit the three-way receptacle. An adapter cord with a receptacle to fit the midget plug is used to connect the lamp to the power cable. The other end of the adapter cable has a plug to fit the three-way receptacle.

28. Siphon.—A molded hard rubber automatic tray siphon converts an ordinary tray into an effective print washer. It puts fresh water in at the top of the tray, keeps prints agitated, and siphons out the

chemically laden water. The force of the stream may be adjusted to keep the prints separated and in motion. The tray siphon can be attached to any water tap and can be adjusted to any tray.

29. Carrying case.—The carrying case has facilities for housing all the component parts of the processing equipment for transporting. Compartments and fiber boxes hold the small units, and the printer and larger items are held in position by straps and brackets. The case is locked by means of two fast-action fasteners and a trunk-type lock. A diagram showing the location of each item of equipment is fastened to the cover.

30. Thermometer.—The developing solution must be maintained at a predetermined temperature if the best results are to be obtained. The thermometer should be used at frequent intervals to check the temperature.

31. Print paddle.—The print paddle is used to assist in the handling of prints in the various solutions.

SECTION IV

MAINTENANCE

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32. Cleaning lenses.—For efficient projection, all lenses contained in the optical system must be kept free of dust and dirt. Use only lens tissue or a soft lintless cloth to remove any foreign matter from the lenses.

a. Enlarging lens.—The enlarging lens can be cleaned without being removed from the lens board or printer.

b. Condensing lenses.—To clean the condensing lenses, remove the four knurled screws holding the condenser housing to the lamp house (fig. 6). Hold the condenser housing with the right hand and press the film gate release lever with the left hand. This frees the condenser housing from the lamp house. Remove the condensing lenses from the housing by pressing carefully on the bottom lens with the thumb, thus forcing out both lenses and spacer. Clean the lenses and replace them in the housing. The curved surfaces of the two lenses should face each other when properly assembled in the housing. Slip the housing in position on the lamp house and replace the four screws.

33. Replacing lamp.—To replace the printer lamp, remove the four knurled screws on top of the lamp house and lift off the cover and socket assembly. (See fig. 6.) Remove the lamp by pressing

down on it and rotating counterclockwise. Insert a new lamp and replace the cover.

34. Lubrication.—To facilitate movement of the printer head on the girder bar, occasionally spread a thin film of vaseline on the bar.

35. Precautions.—*a.* The lenses should never be dropped or allowed to collect moisture. Rough treatment of any of the printer parts will disturb the optical adjustment, resulting in poor prints.

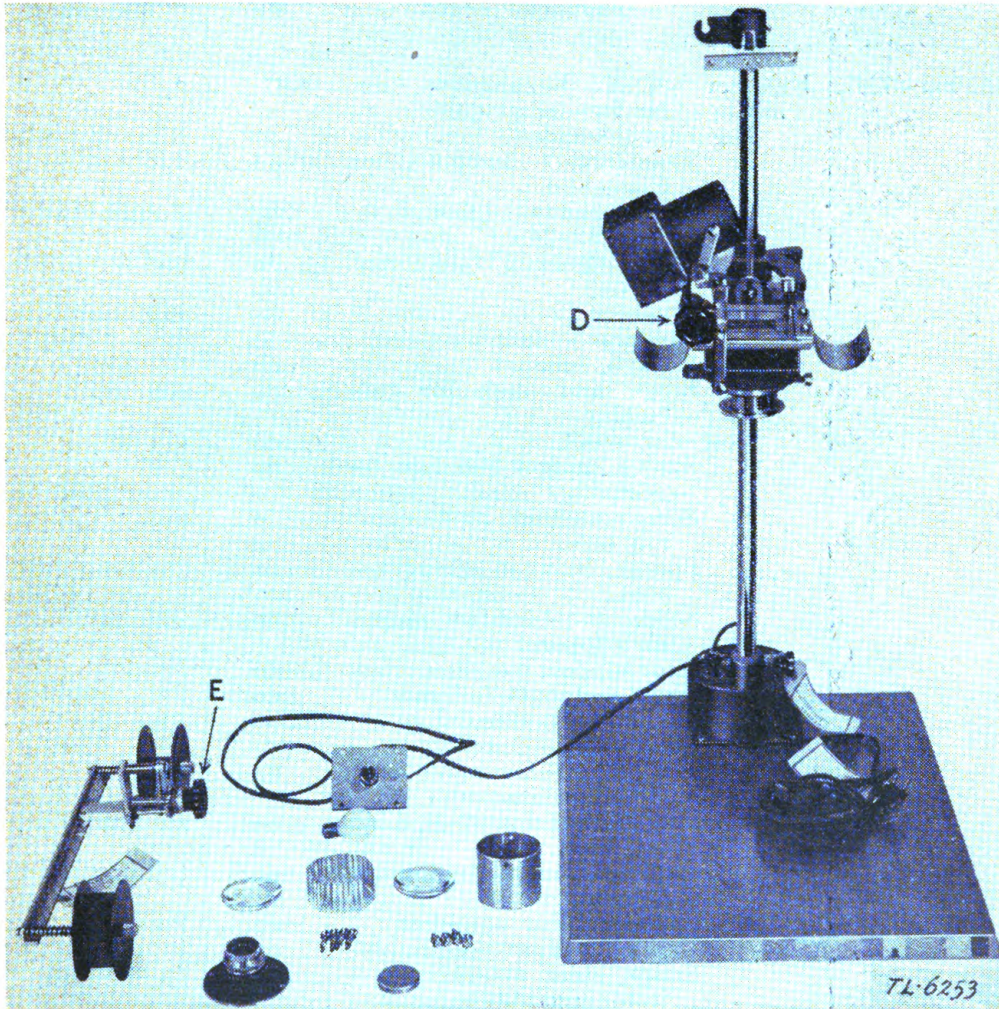


FIGURE 6.—Printer with lens, lamp, and condensers removed.

b. The transformer is not used for battery operation. The power cord to the transformer should be disconnected under these conditions. The transformer will be damaged if connected to the 6-volt battery.

c. Before the safelight lamp is connected, it should be checked to make sure that the lamp is of the correct voltage. Lamps are supplied for both 6- and 110-volt use.

d. The automatic timer cannot be used for battery operation. If it is connected to the battery, it will be damaged.

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SUPPLEMENTARY DATA

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36. List of replaceable parts.

Signal Corps stock No.	Description	Mfr.	Mfr's. No.
8A1052-275B.	Enlarger PH-275-B complete, consisting of the following items:	SBI	
	Baseboard, wooden	do	BBD-395-SC
	Transformer assembly on baseboard.	do	TR-A-1
	Transformer, 110/6-8 v	do	T 3216
	Screws, 12-24 x 1", iron, r. h.	do	Std.
	Nuts, 12-24 x 7/16" hex. iron.	do	Std.
	Washers, 12-24	do	Std.
	Receptacle, double contact	do	4989-7
	Casting, base	do	BC-395
	Screw and knob for base casting.	do	308-58
	Post, c. r. steel	do	GA-395
	Spring, midget Pullman, for post.	do	7-F
	Screw, machine, 12-24 x 1 1/2" r. h. iron.	do	Std.
	Spacer, between spring and post.	do	251-84
	Screw and knob for projector support.	do	308-58
	Projector support complete	do	PS-395
	Knob and shaft, focusing	do	FKS-395
	Collar for knob and shaft	do	FKC-395
	Screws, set, Allen 8-32	do	Std.
	Wrench, Allen setscrew 8-32 (for maintenance).	do	Std.
	Pinion for focusing knob and shaft.	do	PI-395
	Gear, actuated by pinion above.	do	GR-395
	Projector assembly, complete	do	PA-395
	Casting, projector assembly	do	PC-395
	Strips, steel, attaching projector assembly to focusing movement.	do	PC-395-SS
	Lens mounting, complete	do	LB-395
	Lens, 2 Omega, f/4.5	do	L-395-2
	Cap, lens, for 2" lens	do	LC-395-2
	Screw, knurled, for lens	do	251-81
	Film holder, complete	do	FH-395
	Condenser assembly, complete	do	CA-395
	Condensers, glass, 2 3/8" dia. x 3 1/2" focus, plano-convex.	do	GC-395
	Spacer, separating glass condensers.	do	CS-395
	Screws, knurled, for condenser assembly.	do	KS-CA-395

Signal Corps stock No.	Description	Mfr.	Mfr's. No.
	Enlarger PH-275-B complete, consisting of the following items—Con.		
	Microfilm attachment, complete	SBI	M-395-SC
	Shafts for film spools	do	251-89
	Screw knob for film spools	do	251-86
	Film changing mechanism, complete.	do	FCM-MF-395
	Knob, for turning shaft	do	309-4
	Spring, tension, for cam	do	TS-395
	<i>Other components:</i>		
	Connector, electrical, Edison screw male plug at one end, female midget plug on other.	do	PO-4989-8
8A2952A.2	Plates PH-152-A, ferrotype. 14 x 20"		
8A135-425	Board PH-425, metal paper-holding, 2¼ x 3¾"		
8A135-425/1	Case for Processing Equipment PH-395.		
8A135-425/2	Case. (See note.)		
8A828	Connector, battery, heavy duty, 2-cond., 2-ft. long, female plug, 2 battery clips with sleeves.		
8A844	Cord, extension, 10-ft., rubber-covered, 2-cond., with 110v male plug, line switch and socket.		
8A845	Cord, extension, 25-ft., rubber-covered, 2-cond., with 110v male plug and cord cube tap.		
8A1108-424	Foot switch PH-424		
8A2151-421	Lamp PH-421 (darkroom)		
8A2091	Lamp, 7.5-watt, 110-volt, frosted, candelabra base, for lamp PH-421 (darkroom).		
8A2092	Lamp, 7.5-watt, 6-volt, candelabra base, for lamp PH-421 (darkroom).		
8A2800	Paddle PH-80, print, hard rubber, 12"		
8A3688	Siphon PH-244, automatic tray		
8A3828	Thermometer PH-28, tank and tray, 5", 20-120° F.		
8A3830-426	Timer PH-426, automatic, electric		
8A3911A	Tray PH-161-A, 11" x 14", stainless steel.		
8A3914A	Tray PH-164-A, 14" x 17", stainless steel.		

NOTE.—This is a small case fitting inside case 8A135-425/1 and holds the following items: board, extension cords, foot switch, darkroom lamp, siphon, and timer.

37. Manufacturers and their addresses.

Abbreviation	Manufacturer	Address
SBI	Simmon Brothers, Inc.	3706 36th Street, Long Island City, N. Y.

[A. G. 062.11 (4-15-43).]

SIGNAL CORPS

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

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Major General,
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