

TM 11-487F

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

Prepared by Capt FC Kerner Sig C

DIRECTORY OF SIGNAL CORPS
EQUIPMENTS

PHOTOGRAPHIC
EQUIPMENT

DEPARTMENT OF THE ARMY • MARCH 1951

DEPARTMENT OF THE ARMY TECHNICAL MANUAL
TM 11-487F

This manual supersedes so much of TM 11-487 as pertains to Photographic Equipment, 2 October 1944

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DEPARTMENT OF THE ARMY

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FOREWORD

This is the sixth of a series of nine manuals, each covering the standard, substitute standard, and limited standard Signal Corps equipment in a particular field. The nine manuals cover, respectively, radio communication equipment, wire communication equipment, ground radar and recognition equipment, radio direction finding equipment, power equipment, meteorological equipment, test equipment, and miscellaneous equipment.

Chapter 1 covers the major items of photographic equipment by nomenclature type numbers in alphabetical and numerical sequence. An illustration and the following applicable information is given for each item of equipment:

Nomenclature	Description and ap-
Status	plication
Signal Corps stock	Technical character-
number	istics
Technical literature	Principal components
	Weight and Volume

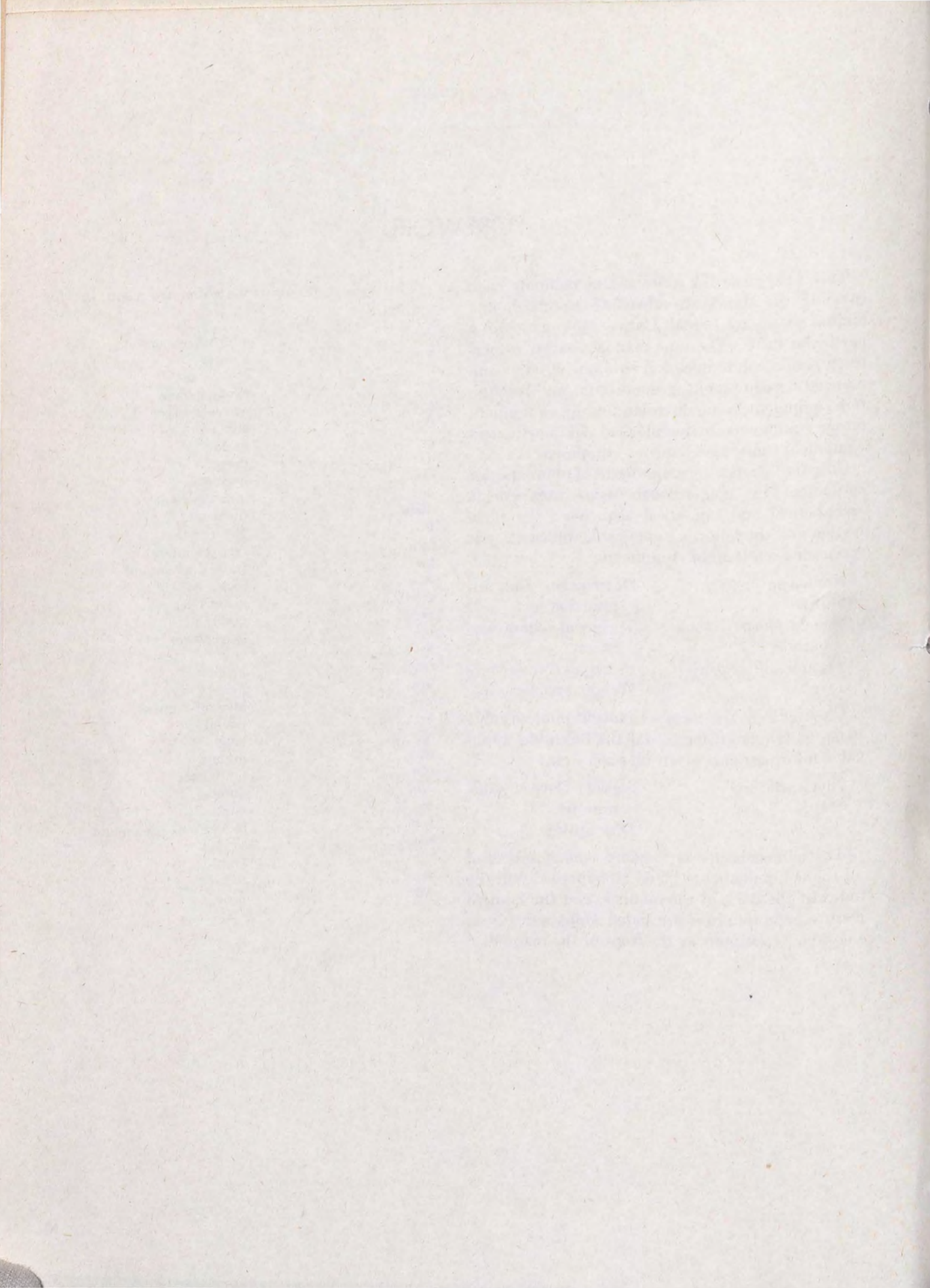
Chapter 2 covers the miscellaneous photographic items in tabulated form, and the following applicable information is given for each item:

Nomenclature	Signal Corps stock
Status	number
	Description

The nomenclature type names and numbers of all the equipments are listed alphabetically in the index at the back of the manual; and the nomenclature type numbers are listed alphabetically in the table of contents at the front of the manual.

The following abbreviations are used in this manual:

ac.....	alternating current
amp.....	ampere
C.....	centigrade
cp.....	candle power
cps.....	cycles per second
cu ft.....	cubic foot
cyc.....	cycle
d.....	deep
db.....	decibel
dc.....	direct current
diam.....	diameter
F.....	Fahrenheit
fpm.....	feet per minute
fps.....	frames per second
ft.....	foot
gpm.....	gallons per minute
gr.....	grain
hp.....	horsepower
hr.....	hour
in.....	inch
inf.....	infinity
kva.....	kilovolt-ampere
lb.....	pound
lg.....	long
min.....	minute
mm.....	millimeter
No.....	number
oz.....	ounce
rpm.....	revolutions per minute
sec.....	second
v.....	volt
w.....	watt
wd.....	wide



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This manual supersedes so much of TM 11-487, 2 October 1944, as pertains to Photographic Equipment

CHAPTER 1

PRINCIPAL ITEMS OF PHOTOGRAPHIC EQUIPMENT



Figure 1. Camera Equipment AN/GFQ-2, component parts.

Status: Standard. Stock No.: 8A413-2. Reference: TM 11-2342.

Camera Equipment AN/GFQ-2 consists of a camera (Leica) and all necessary accessories for making black-and-white negatives or color transparencies of subjects under field conditions that prohibit the use of a heavy still camera. The camera may be operated from cover and provides satisfactory photographs of fast-action and of poorly-lighted subjects. The camera component consists of a built-in coupled coincident image rangefinder, a self-capping focal-plane shutter, built-in film (exposure) counter scale, removable lens assembly in collapsible mount, and body-shutter release.

TECHNICAL CHARACTERISTICS

TYPE: Candid.
 SHUTTER: Focal plane.
 SIZE: 35-mm.
 TYPE OF FILM: Roll.
 LENS: 50-mm, f/2 or f/3.5; 90-mm, f/3.5 or f/4.5; 127- or 135-mm, f/3.5 or f/4.5.
 SHUTTER RANGE: 1 to f/1,000; time; bulb.

DIAPHRAGM STOP: 50-mm, f/2 to f/12.5; 90-mm, f/4 to f/36; 127-mm, f/4.5 to f/45.

FOCAL RANGE: 3½ ft to infinity.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)			
	Length	Height	Width	Depth
Camera (Leica) with 50-mm lens in place	5½	2¾	2¾	-----
Case, carrying	6	3	2¾	-----
Lens, 90-mm	3½	-----	1¾	-----
Lens, 127-mm	5	-----	2¼	-----
Lens hood	2½	1¾	-----	1¾
Filters, red, green, yellow	35-mm (diam)	-----	-----	-----
Viewfinder, Universal	2	1¾	1½	-----
Magazine	2	-----	1	-----
Spool, take-up	1¾	-----	2¾	-----
Exposure Computer PH-504/PF	5	-----	3¼	¾
Case, carrying, gadget-type	12	-----	10	6

WEIGHT AND VOLUME

	Packed
Total weight (lb)	25
Total volume (cu ft)	1

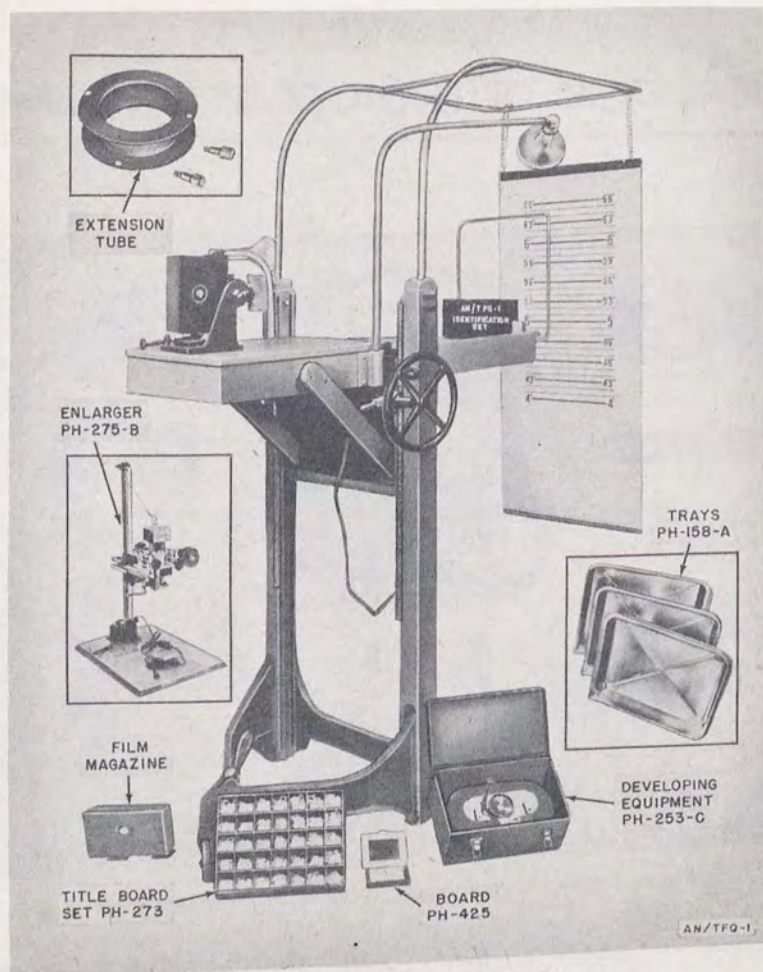


Figure 2. Identification Set AN/TFQ-1.

Status: Standard. Stock No.: 8A1888-1. Reference: TM 11-2340.

Identification Set AN/TFQ-1 consists of a pre-focused 35-mm camera, a stand, and all the equipment necessary to develop and enlarge the pictures. The equipment is used only to take head and shoulder identification photographs. Facilities are available for titling or identifying each individual photograph.

TECHNICAL CHARACTERISTICS
 TYPE: Camera: Prefocused, hand-operated.
 Printer: Projection, condenser design.
 SHUTTER: Heavy duty Betax No. 2.
 SIZE: 35-mm.
 TYPE OF FILM: Magazine.
 LENS: Camera: Prefocused.
 Printer: f/4.5.
 SHUTTER RANGE: 1 to 1/25; time; bulb.
 DIAPHRAGM STOP: F/4.5 to f/22.
 FOCAL RANGE: F/4.5.
 MAGNIFICATION: 1½ x (minimum); 28 x (maximum).

PRINCIPAL COMPONENTS

Name	Dimensions (in.)				Weight (lb)
	Length	Height	Width	Depth	
Camera housing and lens	4.50	5.50	6.50		2.375
Stand	54.0	65.0	30.50		129.0
Focusing panel	5.56	.51	3.09		.25
Magazine	8.0	4.0	5.25		6.5
Camera base	7.50	7.50	5.0		1.65
Lamp support	28.50	12.50	17.50		3.25
Lamp support	17.0	8.50	16.50		2.56

Name	Length	Dimensions (in.)			Weight (lb)
		Height	Width	Depth	
Reflector-flood lamp, 300-watt	5.0			5.0	0.12
Reflector-flood lamp, 150-watt	5.0			5.0	.12
Background curtain	54.0	0.25	24.0		.437
Curtain support	48.0	24.0	36.0		7.50
Tray PH-158-A	10.0		8.0		
Title Board Set PH-273	12.0	6.0	.50		
Power Cord					
Board PH-425	6.25		4.50		
Developing Equipment PH-253-C	10.75	4.0	5.75		
Enlarger PH-275-B	12.75	38.0			
	(head)				
Extension tube for Enlarger PH-275-B					

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)	360	575
Total volume (cu ft)	15	22
Ship tons		0.55



Figure 3. Projector AN/TFQ-4.

Status: Limited/Std. Stock No.: 8A3144-4.
Reference: TM 11-2347.

Projector AN/TFQ-4 is designed to project 16-mm sound or silent motion picture film at speeds between 16 and 24 frames per second. A reversing switch permits the film to run forward and backward without rethreading. The equipment consists of a projector mechanism, carbon arc lamphouse, rectifier, amplifier, four speakers, a telescopic projector stand, and the necessary accessories and carrying cases for amplifier and speakers. Projector AN/TFQ-4 operates on 100- to 120-volts, 50- to 60-cycle ac. The arc lamphouse uses the 28-volt, 30-ampere dc furnished by the rectifier.

TECHNICAL CHARACTERISTICS

TYPE: Sound or silent.
SIZE: 16-mm.
LENS: 3-in. f/2.
RANGE: Auditorium.
CAPACITY: 1,600 ft.
POWER SUPPLY: 100- to 120-v, 50- to 60-cyc.
MOTOR: Universal 100- to 120-v, 50- to 60-cyc ac; or 100- to 120-v dc.
LIGHT SOURCE: Carbon arc.

AMPLIFIER:

Power requirement: 99- to 130-v, 50- to 60-cyc, single-phase ac.
Power consumption: 150-w, output: 55-w 5 percent distortion.
Output impedances: 2, 4, 5.3, 8, 16, and 500 ohms.
Speaker: 25-w, permanent magnet.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)		
	Length	Height	Width
Projector	69.0	48.0	27.50
Rectifier			
Amplifier in case	22.75	8.75	10.25
Speaker	17.0	19.50	12.25
Loudspeaker LS-12-A			
Stand, telescopic projector			
Lens, 3-in. f/2			
Cable, speaker	1,200.0		
Cable, speaker, extension	600.0		
Cord, electrical line	120.0		
Adapter, speaker			
Cable, photocell			
Reel (1,600-ft)			
Chest CH-230-A	41.0	20.12	22.69

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)	276	1,056.5
Total volume (cu ft)		65.5
Ship tons		1.63

Status: Standard. Stock No.: 8A3144-5. Reference: TM 11-2346.

Projector AN/TFQ-5 is a complete, self-contained, 16-mm sound movie projection unit. It includes a projector with a 750-watt projection lamp, an amplifier providing 10-watt sound amplification, a 10-inch speaker, and a continuous reel with a film capacity of 1,600 feet. A dual mirror arrangement projects the image onto a translucent plastic screen in the front of the cabinet or onto the ceiling when the upper cabinet is removed. The projector uses standard 16-mm sound film in black and white or color. Automatic cut-off switches are provided in case of film break, loss of upper loop, or if desired, to stop the projector at any specified point such as the end of a complete show. The unit operates on 110-volt, 60-cycle ac. The cabinet is equipped with four rubber-wheeled casters for ease in moving the projector from one location to another.

TECHNICAL CHARACTERISTICS

TYPE: Sound.
 SIZE: 16-mm.
 LENS: 1-in. f/1.6.
 RANGE: Projector case or ceiling.
 CAPACITY: 1,600 ft.
 POWER SUPPLY: 110-v, 60-cyc.
 MOTOR: 1/25 hp, ac, capacitor-type.
 LAMP RATING: 750-w or 1,000-w, 120-v rating.
 AMPLIFIER:
 Power Source: 115-v, 60-cyc ac.
 Power Output: 10-w.
 Speaker: 10-in., permanent magnet, 8-ohm impedance voice coil.

PRINCIPAL COMPONENTS

Main cabinet assembly	Supply cable
Projector	Adjustable mirror
Projector base assembly	Air filter
Horizontal reel	Upper cabinet assembly
Amplifier	Larger mirror
Speaker	Screen

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	590	590
Total volume (cu ft).....	37.9	40
Ship tons.....	.93	1

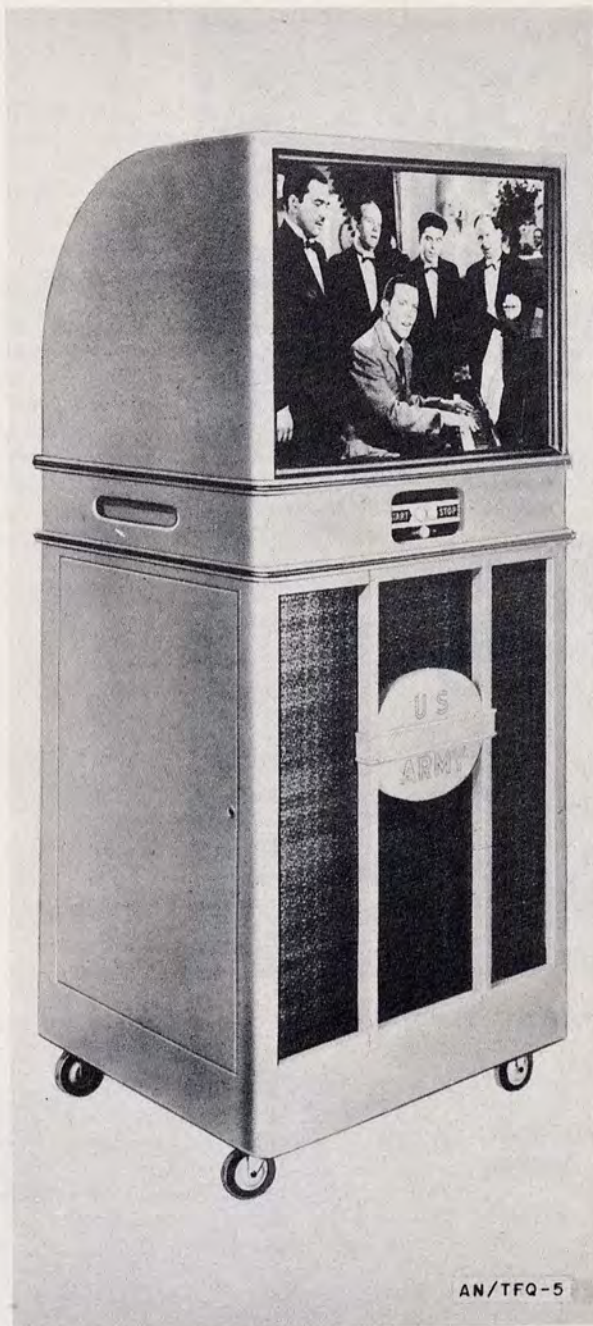


Figure 4. Projector AN/TFQ-5.



Figure 5. Spotting components of Spotting Set AN/TVQ-1.

Status: Standard. Stock No.: 4G3520-1. Reference: TM 11-434.

Spotting Set AN/TVQ-1 is an assembly of equipments which is used in the equiangular method of antiaircraft practice where the guns fire at a point in space instead of directly at the target. The set photographs the target and the shellbursts at the point in space to obtain scoring records which can be compared to analyze the effectiveness of the gunfire. Spotting Set AN/TVQ-1 consists of spotting components, wire and power components, film developing components, and film viewing components. The equipment is portable, and all necessary expendable materials except dry batteries are supplied.

TECHNICAL CHARACTERISTICS

POWER REQUIREMENTS:

Theodolite camera circuit—Battery BB-46.
 Selsyn motor circuit—Flank station—Power Unit PE-75-().
 Battery station—110 v, ac, 60 cps.
 Time interval device—1 Battery BA-26.
 Time interval multiplier—Uses theodolite battery.
 Time interval signal—2 Battery BA-26.
 Line connector unit—Uses theodolite battery.
 Film viewer—Any available 110 v, ac, 60 cps or 110 v, dc.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)				Weight (lb)	Name	Dimensions (in.)				Weight (lb)
	Length	Width	Height	Weight (lb)			Length	Width	Height	Weight (lb)	
4 Theodolite MX-194/TVA-1, in carrying case	36	25	24	265		2 Axle RL-27-()	37 $\frac{1}{4}$	1 $\frac{3}{4}$		9	
4 Junction Box JB-40	4 $\frac{1}{2}$	4 $\frac{1}{2}$	2 $\frac{1}{2}$	7 $\frac{1}{2}$		2 Reel Unit RL-31-()	2 $\frac{5}{8}$	32	30 $\frac{1}{2}$	55 $\frac{1}{2}$	
4 Exposure Meter PH-252-()	2 $\frac{3}{4}$	4 $\frac{3}{4}$	1 $\frac{3}{4}$	$\frac{3}{4}$		24 Reel DR-4 w/1/2 mi of Wire W-110-B	7	22 $\frac{1}{4}$		82	
20 rolls of 35-mm film, 200 ft long	5 $\frac{1}{2}$	5 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{1}{4}$		2 Developing Equipment PH-41	26	26	5	50	
2 Time Interval Device PH-103	27	12	7	23		2 Drying Rack PH-42	50	5	4	12	
2 Time Interval Multiplier PH-264-()	7	6	4	6		2 Bottle PH-22	14	6			
2 Line Connector Unit EE-87	14 $\frac{1}{4}$	11 $\frac{1}{4}$	6 $\frac{3}{8}$	25		6 Bottle PH-136	18	8		7 $\frac{1}{2}$	
4 Time Interval Signal BE-65	10 $\frac{7}{8}$	11 $\frac{1}{2}$	6 $\frac{1}{2}$	18		2 Funnel PH-175	7	4		$\frac{1}{2}$	
Power Unit PE-75-()	36	20	24	319		4 Paddle PH-80	12	2 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{1}{4}$	
2 Hydrometer HY-2	12	2		$\frac{1}{2}$		2 Film Viewer PH-97-()	22	19	24	125	
		(diam)				2 Rewinder PH-92	12	9	8	10	
12 Battery BB-46	21	12	20	122		2 Splicer PH-91-()	8 $\frac{3}{8}$	5 $\frac{1}{2}$	3 $\frac{3}{4}$	8	

PH-6-A



Figure 6. Camera PH-6-A.

Status: Standard. Stock No.: 8A306.

Camera PH-6-A is a fixed-focus still camera used for spotting targets. It has a graphic type back and uses 5- by 7-inch film pack Adapter PH-111. The equipment is equipped with a folding eye-level viewfinder. The shutter is operated by a push button on top of the case.

TECHNICAL CHARACTERISTICS

TYPE: Target spotting.

SHUTTER: Ready set.

SIZE: 6 in. lg, 8 in. wd, 6 in. d over-all.

TYPE OF FILM: Sheet film in film pack Adapter PH-111.

LENS: 4 $\frac{1}{2}$ in. f/1g, f/18, anastigmat.

SHUTTER RANGE: 1/100, 1/50, 1/10, 1/5, 1/2.

DIAPHRAGM STOP: 1 $\frac{1}{2}$ " diam.

FOCAL RANGE: 2 ft to infinity.

PRINCIPAL COMPONENTS

Camera, still, 5 x 7 film.

Film pack Adapter PH-111.

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)	3	8
Total volume (cu ft)	.2	.5



Figure 7. Printer PH-13-B.

Status: Standard. Stock No.: 8A3113A (PH-13-A), 8A3113B (PH-13-B), and 8A3113C (PH-13-C). Reference: TM 11-2391.

Printer PH-13-(*), represents Printers PH-13-A, PH-13-B, and PH-13-C. Printer PH-13-(*), is an 8- by 10-inch table model, manually operated, photographic contact printer which will make prints from negatives of any size up to $7\frac{1}{2}$ by $10\frac{1}{2}$ inches. The printer consists of a printing head mounted on a lamphouse. The printing head consists of the platen and platen arm, the printing surface with four masks, and the masking arm. The lamphouse contains a ground-glass plate, four 115-volt, 40-watt, frosted, incandescent lamps, and one 120-volt, 25-watt, ruby lamp PH-12.

TECHNICAL CHARACTERISTICS

SIZE: 8- by 10-in. table model.

TYPE: Contact.

LENS: None.

SHUTTER: None.

PROJECTION EQUIPMENT: Four 115-v, 40-w, frosted, incandescent lamps. One 120-v, 25-w, ruby lamp.

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	37	58
Total volume (cu ft)-----	3.2	4.8

PH-14-A

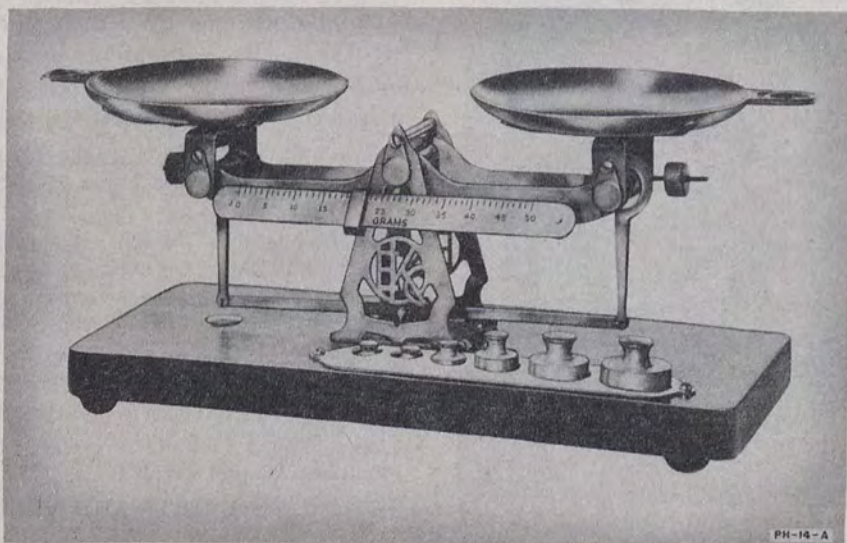


Figure 8. Scale PH-14-A.

Status: Standard. Stock No.: 8A3614.

Scale PH-14-A is a two-pan photographic scale used to measure from 1 grain to 2 ounces (avoirdupois system) and from 1 to 50 decigrams (metric system). The scale has a graduated beam, with a sliding weight, marked for minor weights from 1 to 50 grains. Six extra weights bring the scales capacity up to 2 ounces. The scale weighs 1½ pounds and is part of Photographic Equipment PH-391.

PRINCIPAL COMPONENTS

Pan, scale	Weight, ½ oz
Weight, 50 gr	Weight, 1 oz
Weight, ¼ oz	Weight, 2 oz

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	1.5	2.5
Total volume (cu ft)-----	.8	.2

PH-29



Figure 9. Timer PH-29.

Status: Standard. Stock No.: 8A3829.

Timer PH-29 is a mechanical photographic timer which measures minutes and seconds up to 1 hour. A START and STOP switch is located on the base of the dial. The timer is part of

Photographic Equipment PH-383 and Processing Equipment PH-406.

WEIGHT AND VOLUME

	Packed
Total weight (lb)-----	1.3
Total volume (cu ft)-----	.05



Figure 10. Spotting Set PH-32-B.

Status: Standard. *Stock No.:* 4G3532B. *Reference:* TM 11-434.

Spotting Set PH-32-B is a portable assembly of equipment capable of measuring the vertical and horizontal angles of a point from two positions, and of making motion picture records of that point. The angular measurements and a time identification are included in each picture. The set also

contains equipment for processing the exposed films and for exhibiting the finished films to be viewed for plotting purposes. The spotting set is used in antiaircraft artillery practice to photograph the target and the shellbursts from the gunfire. The purpose is to obtain scoring records which can be compared to analyze the effectiveness of the gunfire.

PRINCIPAL COMPONENTS

Name	Height	Dimensions (in.)		Weight (lb)
		Width	Length	
Theodolite PH-()-33	18 to 21	20 to 24	18 to 21	160 to 230
Junction Box JB-40	2.5	4.5	4.5	7.5
Cord CD-407			84.0	1.5
Exposure Meter PH-252-()	1.75	2.75	4.25	0.75
Time Interval Device PH-103	7.0	12.0	27.0	23.0
Film, 35-mm	1.75	5.5	5.5	1.25
Time Interval Multiplier PH-264-()	4.0	5.75	6.5	6.0
Line Connector Unit EE-87	6.875	11.25	14.25	25.0
Time Interval Signal BE-65	6.5	11.5	10.875	18.0
Developing Equipment PH-41	5.0	26.0	26.0	50.0
Drying Rack PH-42	4.0	5.0	50.0	12.0
Chemical, developer	8.0			6.0
Chemical, acid-fixing powder	6.0			2.5
Bottle PH-22	14.0			4.0
Bottle PH-136	18.0			7.5
Funnel PH-175	7.0			.5
Paddle PH-80		2.5	12.0	.25
Film Viewer PH-97-()	20 to 24	17 to 19	20 to 22	100 to 125
Rewinder PH-92	8.0	9.0	12.0	10.0
Splicer PH-91-()	3.25 to 3.75	5 to 5.5	8.25	6 to 8
Cement, nitrate film splicing	5.0			0.25

WEIGHT AND VOLUME

	Packed
Total weight (lb)	1,237
Total volume (cu ft)	72
Ship tons	1.8

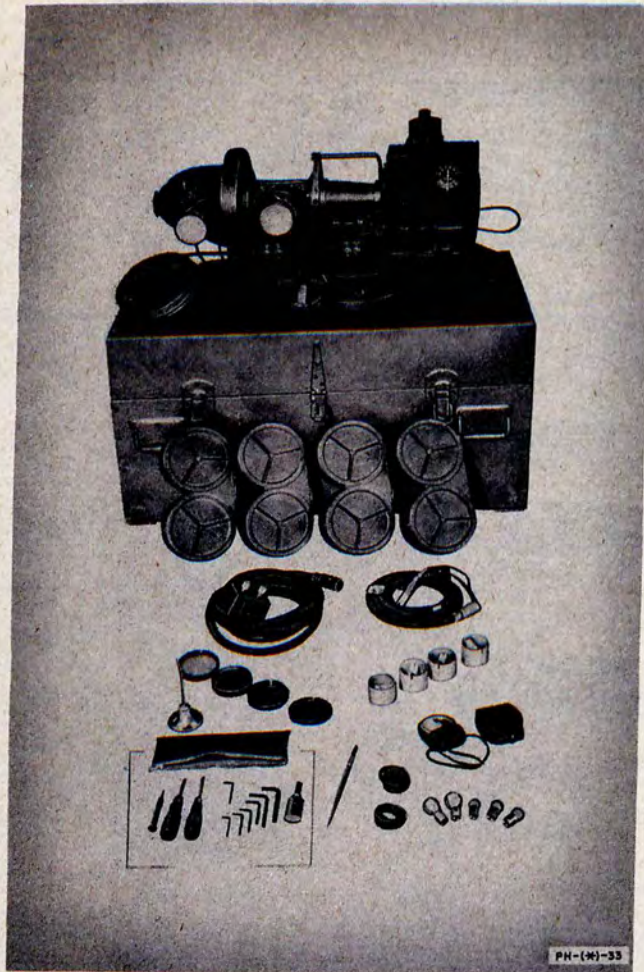


Figure 11. Theodolite PH-BH-33.

Status: Limited/Std. Stock No.: 4G5033. Reference: TM 11-2534.

Theodolite PH-(*)-33 represents PH-BC-33, PH-BD-33, PH-BE-33, PH-BF-33, PH-BG-33, and PH-BH-33. Theodolite PH-(*)-33 is a phototheodolite instrument which measures the horizontal and vertical angles of a point and records a picture of that point and the measurements of its angles on photographic film. The theodolite consists essentially of a frame structure on which a telescope and a camera are mounted. The horizontal and vertical movements of the telescope-camera unit are controlled by manually operated tracking mechanisms built in the frame.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
CAPACITY: 200-foot rolls.

TYPE OF LOADING: Magazine.
LENS: 6-in. or 12-in.
SPEED: Synchronized to speed of theodolite.
SHUTTER SPEED: 10 to 20 fps.
POWER SUPPLY: 12-v, 1/25-hp.

PRINCIPAL COMPONENTS

- | | |
|------------------------|-------------------------|
| Theodolite frame | Base mounting ring |
| Elbow telescope | Film magazines |
| Motion picture camera | Take-up spools |
| Junction Box JB-40 | Photographic filters |
| Cord CD-407 | Lamps |
| Exposure Meter PH-252- | Oil can |
| () | Camel's-hair lens brush |
| Carrying case | |

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	100	434.6
Total volume (cu ft).....		22.4
Ship tons.....		.55



Figure 12. Developing Equipment PH-41, with chemicals and accessory bottles.

Status: Standard. Stock No.: 8A841. Reference: TM 11-434.

Developing Equipment PH-41 is a portable assembly of equipment for processing 35-mm motion picture film. The equipment includes three tanks (for processing solutions) capable of handling 200 feet of film, a developing reel and screen for handling the film, a changing bag for loading film magazines, and a case into which equipment is packed for transportation or storage.

PRINCIPAL COMPONENTS

Case	Developing reel assembly—Con.
Tank	Bracket
Developing reel assembly:	Film roll holder plate
Spiral reel	Screen
Mounting rack	Changing bag

WEIGHT AND VOLUME

Total weight (lb).....	Packed 124.53
Total volume (cu ft).....	4.71



Figure 13. Cameras PH-47-E and PH-47-F.

Status: Standard. Stock No.: 8A374E (PH-47-E), 8A347F (PH-47-F). Reference: TM 11-2352.

Camera PH-47-(*) represents Cameras PH-47-E and PH-47-F. Camera PH-47-(*) is a press-type hand camera which uses 4- by 5-inch film holders and film pack adapters. It has two

shutters: a focal plane shutter with speeds from $\frac{1}{10}$ to $\frac{1}{1,000}$ second, and a between-the-lens shutter with speeds from 1 to $\frac{1}{400}$ second (PH-47-F, 1 to $\frac{1}{200}$ second). Both time and bulb releases are incorporated. The PH-47-E has an anastigmat, 127-mm, f/4.7 Ektar lens mounted in the front shutter. The PH-47-F has a 5½-inch f/4.5, Ilex Paragon, anastigmat lens mounted in an Ilex Acme No. 3 shutter. The shutter assemblies are mounted in a removable lens Board PH-119. The camera has a rangefinder, a ground glass, a focusing back, a wire frame finder with peepsight, a shifting front, an optical finder, a double extension bellows, and a drop bed.

TECHNICAL CHARACTERISTICS

TYPE: Press.

SHUTTER: Focal plane and between-the-lens.

SIZE: 4 x 5 in.

TYPE OF FILM: Film pack or cut film.

LENS: 127-mm, f/4.7 Ektar (PH-47-E); 5½-in. f/4.5 Ilex Paragon (PH-47-F).

SHUTTER RANGE:

$\frac{1}{10}$ to $\frac{1}{1,000}$ (focal plane).

1 to $\frac{1}{400}$ (between-the-lens).

DIAPHRAGM STOP: f/4.5 or f/4.7 to f/32.

FOCAL RANGE: 6 ft. to infinity.

ACCESSORIES: Flash gun and reflector.

PRINCIPAL COMPONENTS

Camera

Lens (Ektar 127-mm f/4.7) (PH-47-E)

Lens (Ilex Paragon 5½-in. f/4.5) (PH-47-F)

Adapter PH-110-A

Filter (Wratten series VI, K2 yellow)

Filter (Wratten series VI, XI green)

Filter (Wratten series VI, G orange)

Filter (Wratten series VI, A red)

Holder PH-81, cut film

Filter mount PH-106-A

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	35	55
Total volume (cu ft)-----		3

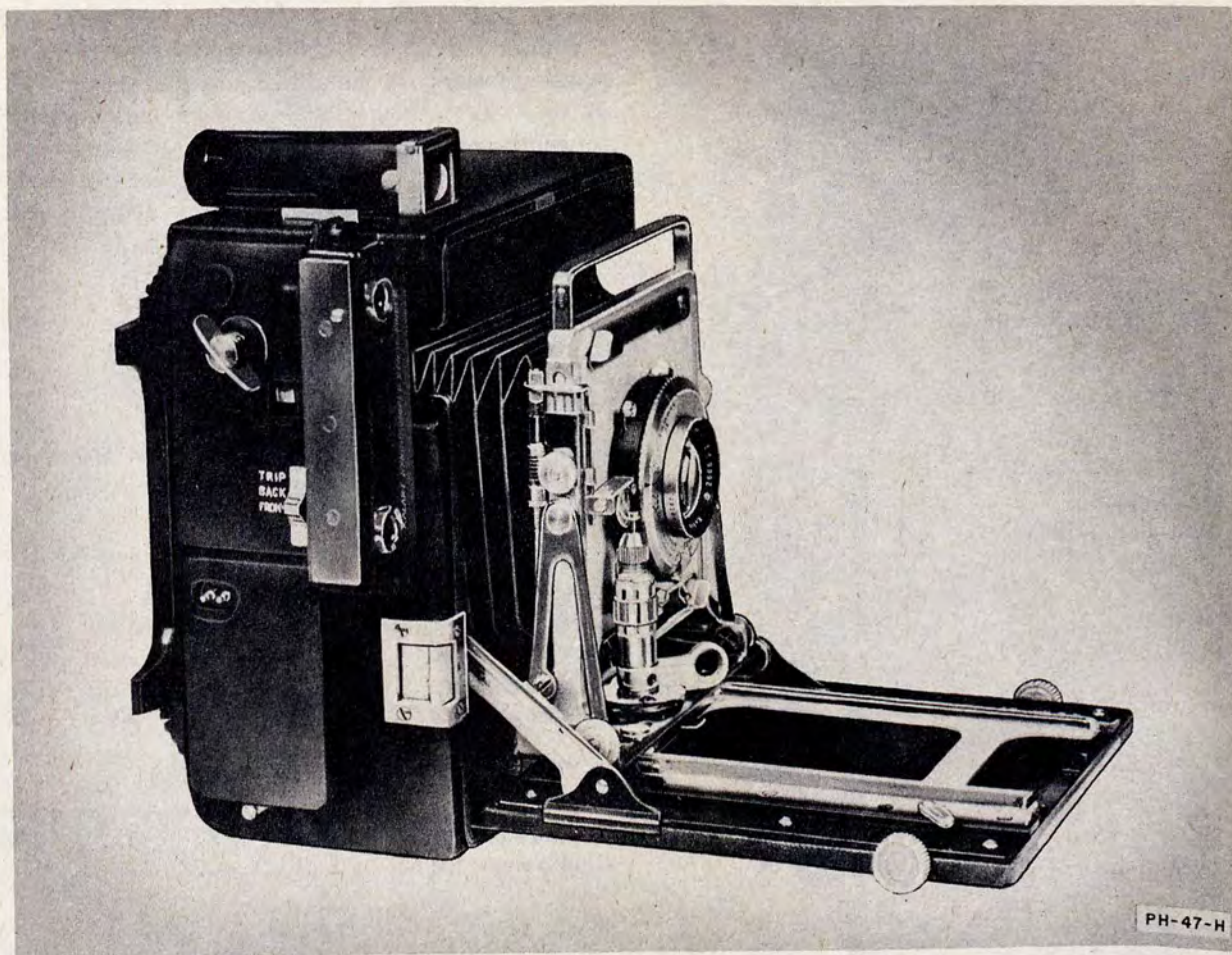


Figure 14. Camera PH-47-H.

Status: Standard. *Stock No.:* 8A374H. *Reference:* TM 11-2352.

Camera PH-47-H is a press-type camera designed primarily for hand-held use. It exposes 4- by 5-inch film for a predetermined interval of time, the time intervals ranging from time and bulb exposures to a minimum of 1/1,000 second. The camera has a focal plane and between-the-lens shutter, a 127-mm, f/4.7 anastigmat coated Ektar lens, and a coupled rangefinder. The shutter contains a blade arrester which opens the shutter blades for focusing, thus eliminating the necessity of resetting from a shutter speed to bulb or time for ground-glass focusing.

TECHNICAL CHARACTERISTICS

TYPE: Press.
 SHUTTER: Focal plane and between-the-lens.
 SIZE: 4 x 5 in.
 TYPE OF FILM: Film pack or cut film.
 LENS: 127-mm, f/4.7 anastigmat Ektar.
 SHUTTER RANGE: 1 to 1/1,000.
 DIAPHRAGM STOP: f/4.7 to f/32.
 FOCAL RANGE: 6 ft to infinity.

PRINCIPAL COMPONENTS

Camera	Filter, light X1, series VI
Lens, objective	Flasher, photoflash lamp
Adapter PH-110-A	Holder PH-81
Filter, light K2, series VI	Filter Mount PH-106-A
Filter, light A, series VI	Lampholder
Filter, light G, series VI	

WEIGHTS AND VOLUMES

Total weight (lb)-----	Unpacked	Packed
	62.1	95
Total volume (cu ft)-----		5

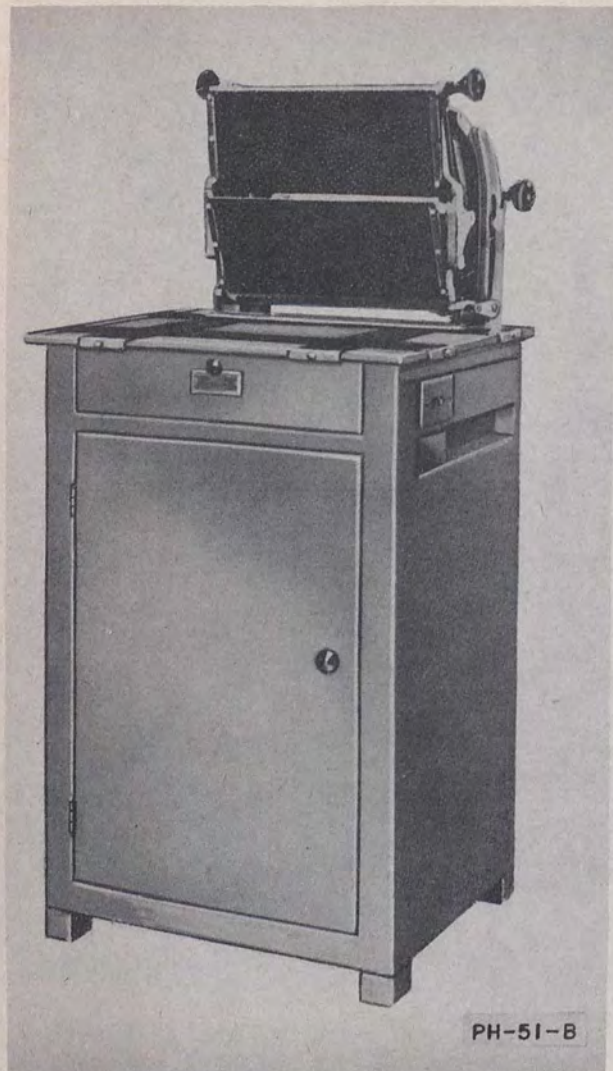


Figure 15. Printer PH-51-B.

Status: Standard. Stock No.: 8A3111B. Reference: TM 11-2371.

Printer PH-51-B is a floor-model-type contact printer, designed to handle film or plate negatives up to 12 by 15 inches. The printer uses a single concentrated light source. Three projection lamps of different light intensities are provided with each equipment. Masks are provided for dodging and vignetting work.

TECHNICAL CHARACTERISTICS

PRINT SIZE: 12 x 15 in. (maximum).
 TYPE: Contact.
 LENS: None.
 SHUTTER: None.
 PROJECTION EQUIPMENT: 25-w, 250-w, 500-w, or 1,000-w lamps.
 POWER SOURCE: 115-v, 60-cyc dc.
 POWER LOAD: 1,040 w.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)			Weight (lb)
	Height	Width	Depth	
Platen assembly-----	23	19	20.5	36
Cabinet assembly-----	34	25	20.5	96

WEIGHTS AND VOLUMES

	Unpacked	Export pack
Total weight (lb)-----	132	266
Total volume (cu ft)-----		21.5

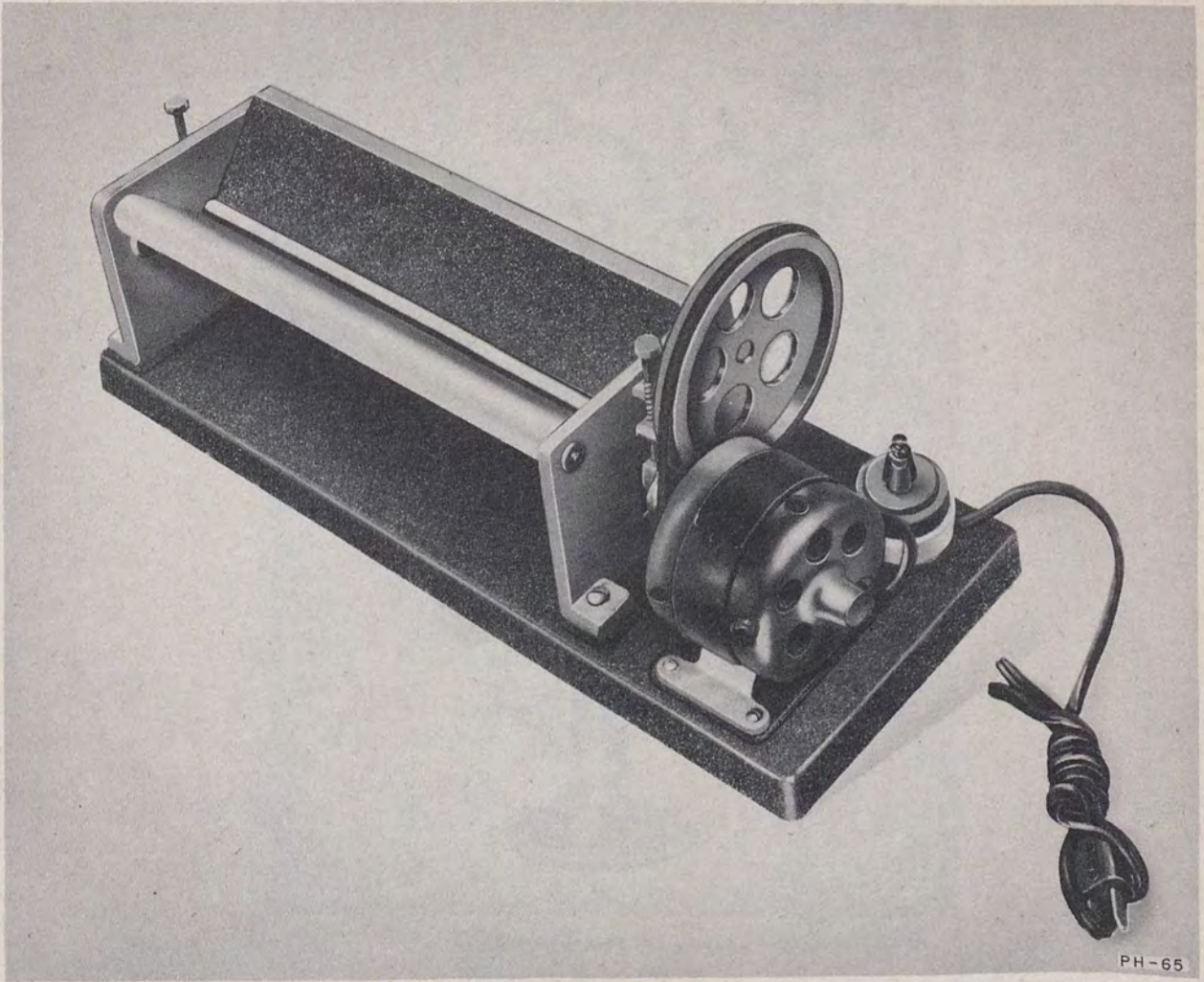


Figure 16. Print Straightener PH-65.

Status: Limited/Std. *Stock No.:* 8A3065.

Print Straightener PH-65 is an electrically-operated straightener for single- or double-weight prints up to 12 inches wide. Print Straightener PH-65 is being replaced by Printer Straightener PH-146.

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)-----	73
Total volume (cu ft)-----	3.67

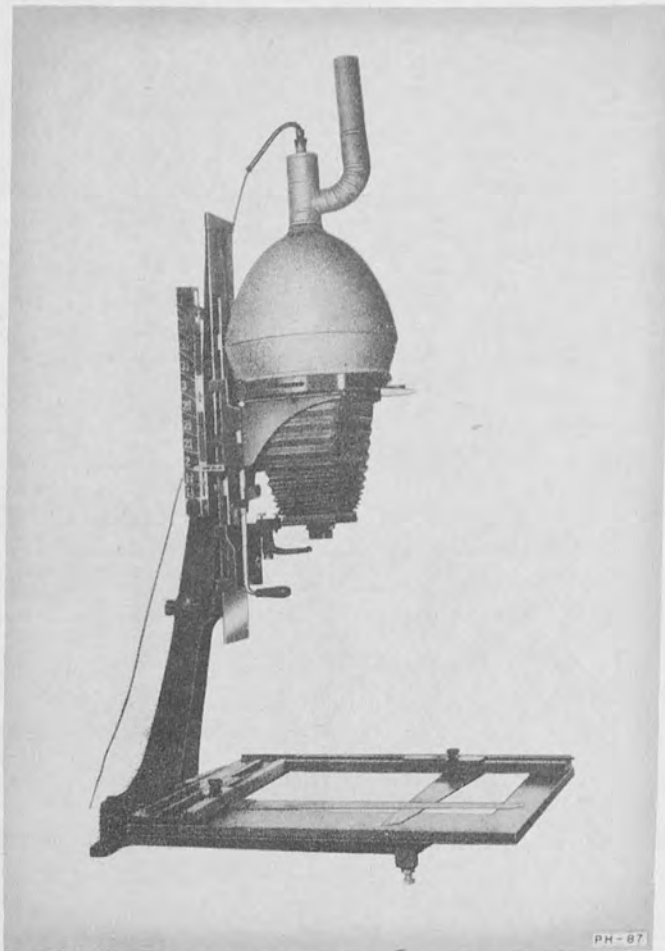


Figure 19. Printer PH-87.

Status: Standard. *Stock No.:* 8A3107.

Printer PH-87 is a photographic enlarger for projection enlargement of negatives up to and including 5 by 7 inches. The printer has an extended height of 6 feet 9 inches, and the base has an over-all area of 29 inches square. An anastigmat f/4.5 7½-inch focal length lens, a foot switch, a diffusion system, and one 500-watt lamp are provided with the printer.

TECHNICAL CHARACTERISTICS

NEGATIVE SIZE: Up to 5 x 7 in.

MAGNIFICATION: 4 diam (maximum).

PROJECTION LAMP: 500-w.

LENS: 187-mm.

POWER SOURCE: 110- to 120-v or 230- to 250-v ac.

PRINCIPAL COMPONENTS

Bare unit	Carrier, enlarger negative
Diffusers	Holder, adjustable
Reflector	Holder, diffuser
Lamp	Lens, projection 187 mm

WEIGHT AND VOLUME

Total weight (lb)-----	<i>Packed</i> 90
Total volume (cu ft)-----	7.1

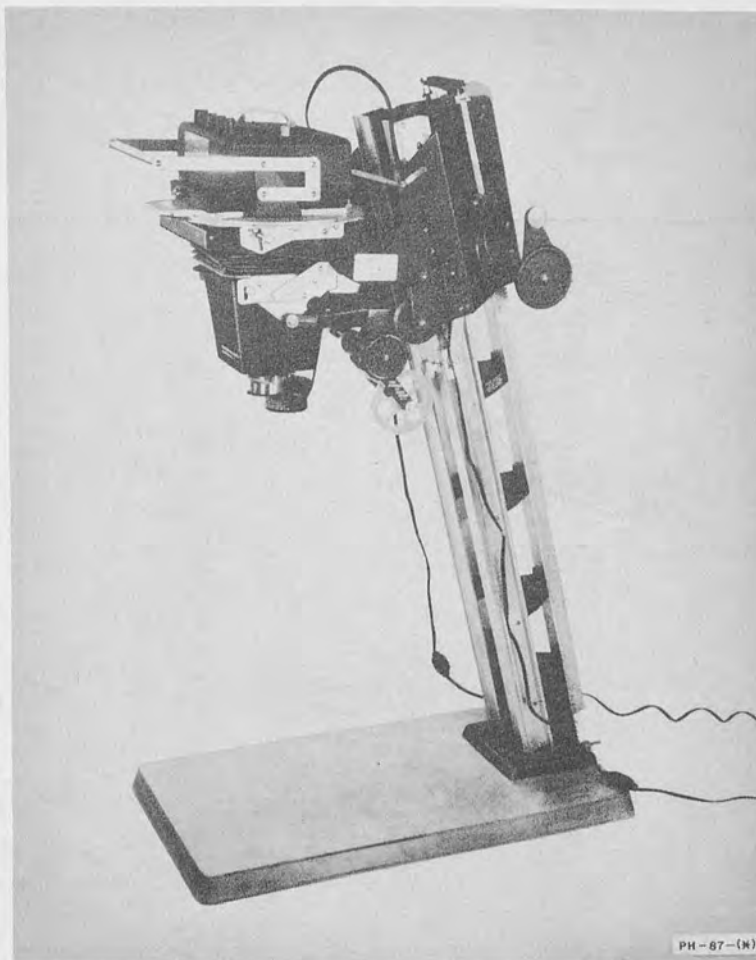


Figure 20. Printer PH-87-B.

Status: Standard. *Stock No.:* 8A3107A (PH-87-A) and 8A3107B (PH-87-B). *Reference:* TM 11-2374 C 1.

Printer PH-87-(*), represents Printers PH-87-A and PH-87-B. Printer PH-87-A is smaller than Printer PH-95-A and can be operated on dc as well as ac. The printers make enlargements to three diameters from negatives of any size up to 5 by 7 inches and use fluorescent lamps for their light source. Printer PH-87-B differs from Printer PH-87-A in that it has an automatic focusing mechanism, a motor-driven shutter, a light dimming switch, automatic lighting, and a filter holder.

TECHNICAL CHARACTERISTICS

SIZE: 5 by 7 in. (maximum).

TYPE: Projection.

LAMP RATING: 8-w (PH-87-A); 6-w (PH-87-B).

LENS: 8¼-in. f/4.5 (PH-87-A); 7½-in. f/4.5 (PH-87-B).

SHUTTER: Magnetic (PH-87-A); motor driven (PH-87-B).

MAGNIFICATION: 3 diam.

PROJECTION EQUIPMENT: Fluorescent lamps.

POWER SOURCE: 110-v.

PRINCIPAL COMPONENTS

Bare unit.

Lamp 8-w (PH-87-A)

Lamp 6-w (PH-87-B)

Carrier, enlarger negative

Timer PH-426 (PH-87-A)

Timer PH-426-A (PH-87-B)

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	90
Total volume (cu ft).....	7.1



Figure 21. Splicer PH-91.

Status: Standard. Stock No.: 8F7875-91. Reference: TM 11-434.

Splicer PH-91 is used for making $\frac{1}{32}$ -inch overlaps on 35-mm positive film.

WEIGHT AND VOLUME

Total weight (lb).....	8.6
Total volume (cu ft).....	0.26

PH-92

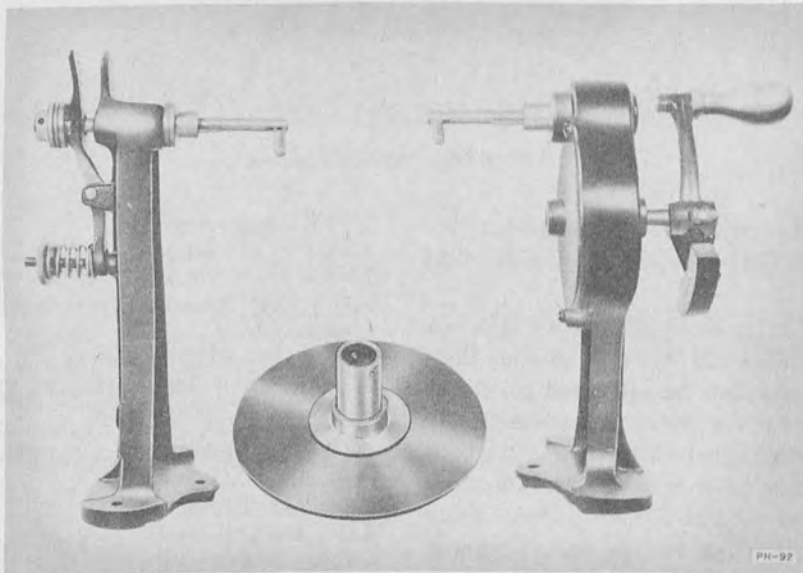


Figure 22. Rewinder PH-92.

Status: Standard. Stock No.: 8A3292.

Rewinder PH-92 is a 35-mm motion picture film rewinder set. It has one geared end fixture with a balanced handle and one dummy end fixture with a tension knob, and can be fastened

to a table top with screws. The rewinder accommodates reels up to 18 inches in diameter

WEIGHTS AND VOLUMES

Total weight (lb).....	10	12
Total volume (cu ft).....	.5	1

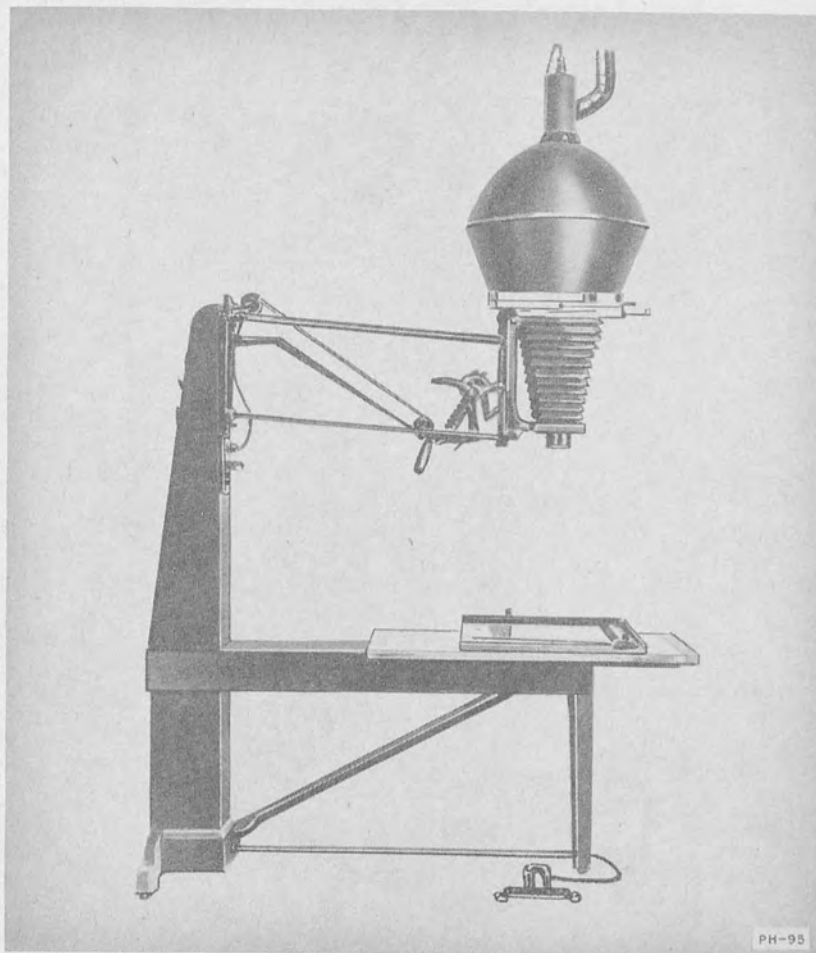


Figure 23. Printer PH-95.

Status: Limited/Std. *Stock No.:* 8A3115.

Printer PH-95 is a photographic enlarger for making projection enlargements from 1 to 5 diameters of 8- by 10-inch negatives or smaller.

TECHNICAL CHARACTERISTICS

NEGATIVE SIZE: 8 x 10 in. (maximum).
MAGNIFICATION: 5 diam.

LENS: $f/4.5$.

PROJECTION EQUIPMENT: 1,000-w lamps.

POWER SOURCE: 100- to 125-v or 210- to 230-v, 60-cyc
ac or dc.

WEIGHT AND VOLUME

Total weight (lb).....	Packed 90
Total volume (cu ft).....	8

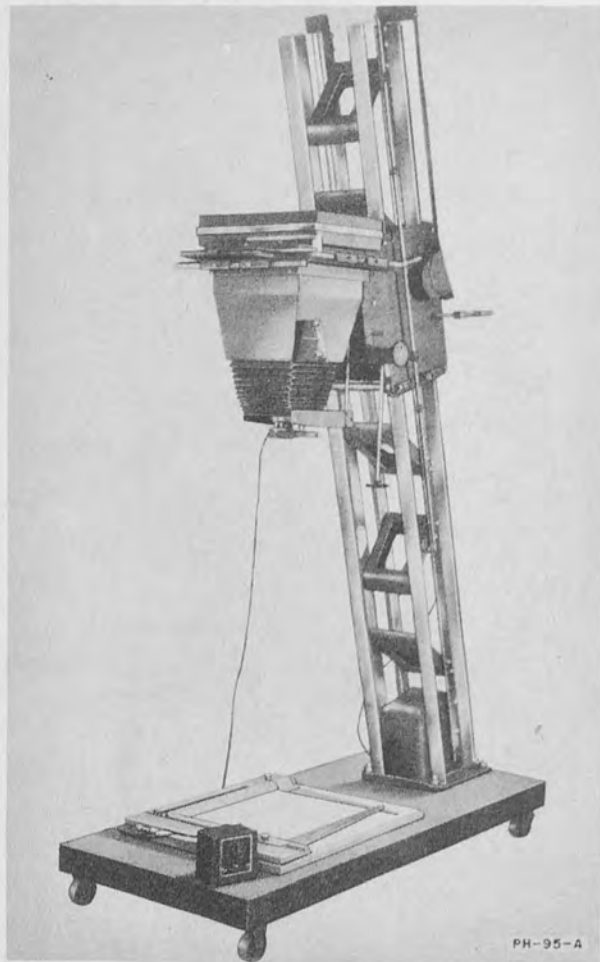


Figure 24. Printer PH-95-A.

Status: Standard. Stock No.: 8A3115A. Reference: TM 11-2374.

Printer PH-95-A is a large, heavy, studio projection printer designed to make enlargements from negatives of any size up to 8 by 10 inches. It will produce enlargements up to 5 diameters, and is equipped with a Timer PH-426 and a magnetic shutter which permit automatic timing of exposures. The equipment also includes a 17- by 20-inch paper holder and a Wollensack 12-inch f/6.3 lens. Fluorescent lamps furnish the light.

TECHNICAL CHARACTERISTICS

SIZE OF NEGATIVE: 8 x 10 in.
 TYPE: Projection.

LENS: Wollensack, 12-in. f/6.3.
 SHUTTER: Magnetic or a red filter may be used.
 MAGNIFICATION: 5 diam.
 PROJECTION EQUIPMENT: Four 14-w, blue, fluorescent lamps.
 POWER SOURCE: 110- to 120-v ac, 50 to 60 cyc.

PRINCIPAL COMPONENTS

Printer	Magnetic shutter
Paper holder	Red filter
Negative holder	Timer PH-426

WEIGHT AND VOLUME

	<i>Domestic pack</i>
Total weight (lb)-----	832
Total volume (cu ft)-----	87.6
Ship tons-----	2.19

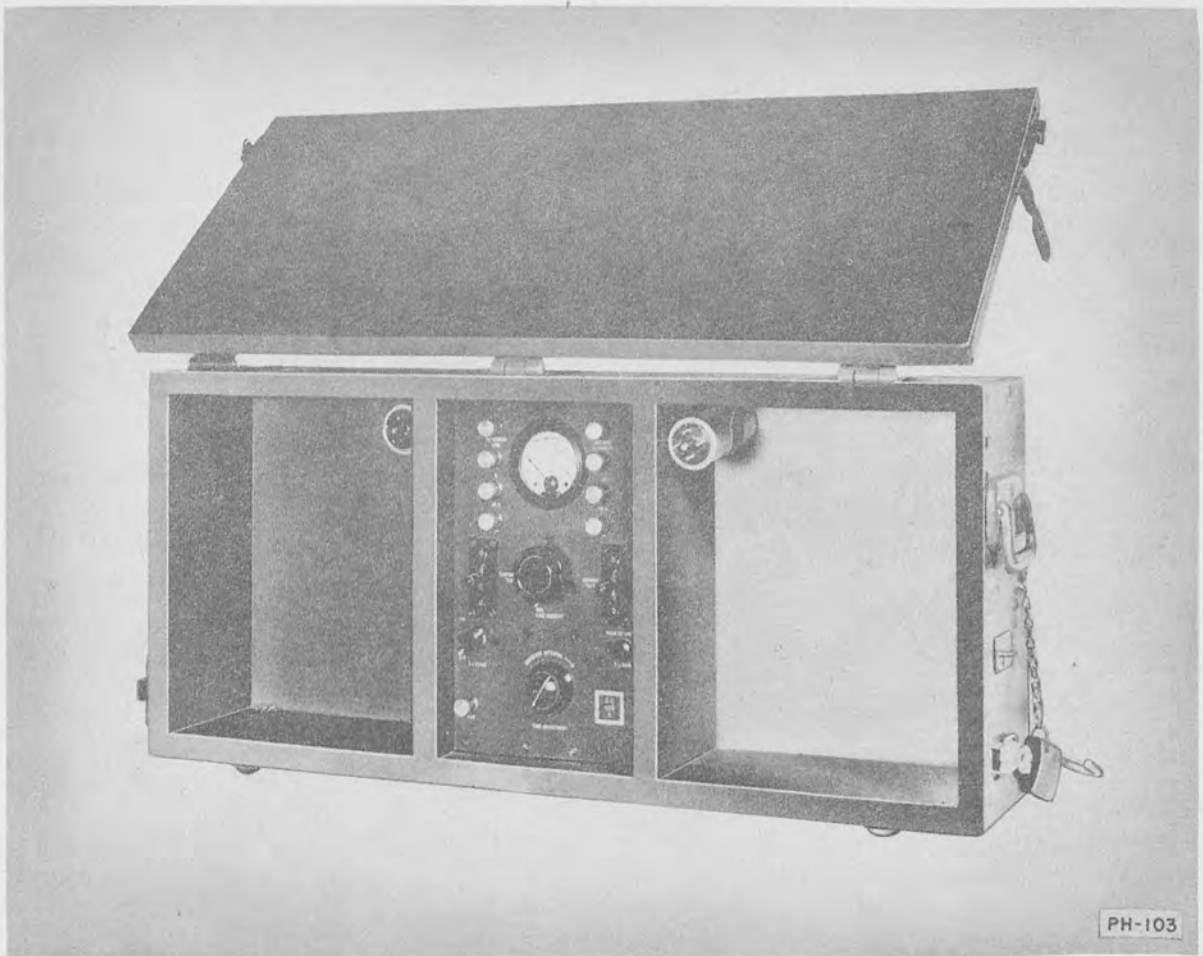


Figure 25. Time Interval Device PH-103.

Status: Standard. *Stock No.:* 8A404. *Reference:* TM 11-2352.

Time Interval Device PH-103 is a portable apparatus designed to provide a 45-volt d-c impulse at 1-second intervals for intermittent operation of other electrical apparatus. Circuits for making continuity and ground tests on associated wire lines are included in the device. The timing and test circuits are assembled on a panel which is mounted in a wooden case that contains space for operating batteries.

TECHNICAL CHARACTERISTICS

PULSING RATE: 1 cps.
POWER SOURCE: Battery BA-26 (two).

PRINCIPAL COMPONENTS

Case
Panel assembly
Can type capacitors

WEIGHT AND VOLUME

Total weight (lb)-----	<i>Packed</i> 8.75
Total volume (cu ft)-----	.404



Figure 26. Camera Equipment PH-104 (with Camera PH-47-E).

Status: Standard. *Stock No.:* 8A404. *Reference:* TM 11-2352.

Camera Equipment PH-104 may be issued with either Camera PH-47-E, PH-47-F, PH-57-G, or PH-47-H, all of which are press-type cameras designed for hand use or for mounting on a tripod. Each camera accepts a film holder and film pack adapter for 4- by 5-inch film, and is equipped with a focal plane shutter, a lens mounted in a between-the-lens shutter on a removable lens board, a rising and shifting front, a drop bed and double-extension bellows, a focusing scale, a ground-glass focusing screen, a wire and tubular viewfinder, and a rangefinder. The equipment also contains a flash synchronizer, a side-lighting unit, reflectors, a connecting cord, an extension cord, a cable release, a lens hood, a lens cover, a filter holder with adapter ring, filters,

film holders, a film pack adapter, a tripod, and a focusing cloth. The equipment is contained in a fiber carrying case.

TECHNICAL CHARACTERISTICS

TYPE: Press.

SHUTTER: No. 2 Supermatic (PH-47-E), No. 3 Acme synchronized (PH-47-F), Graflex (PH-47-G) No. 2 Supermatic (X) (PH-47-H).

SIZE: 4 by 5 in.

TYPE OF FILM: Film pack.

LENS: Elkar or Velostigmat 127-mm f/4.7 anastigmat (PH-47-E); Paragon anastigmat 5½-in. f/4.5 series S (PH-47-F); Elkar, coated, 127-mm f/4.7 anastigmat (PH-47-H).

SHUTTER RANGE: 1 to 1/400 second (PH-47-E, -H); 1 to 1/200 second (PH-47-F). Focal plane shutter 1/30 to 1/1000 second.

DIAPHRAGM STOP: f/4.7 to f/32 (PH-47-E, -H); f/4.5 to f/32 (PH-47-F).

FOCAL RANGE: 6 ft to infinity.

PRINCIPAL COMPONENTS

- Adapter PH-110-A, film pack
- Cable Release PH-308
- Camera
- Case PH-83-D
- Cloth PH-130-A
- Cord connecting
- Filter (Wratten series VI, K2 yellow)
- Filter (Wratten series VI, X1 green)
- Filter (Wratten series VI, G orange)
- Filter (Wratten series VI, A red)

- Cord, extension
- Holder PH-81
- Holder PH-106-A
- Reflector, 5-in.
- Reflector, 7-in.
- Side-lighting unit
- Flash synchronizer
- Tripod PH-121

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	52.5
Total volume (cu ft).....	3.1

PH-109



Figure 27. Timer PH-109.

Status: Standard. Stock No.: 8A3830. Reference: TM 11-2366.

Timer PH-109 is an interval timer with an alarm which may be set to ring at any selected time interval up to 30 minutes. The timer may be set and wound in one operation.

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	1.75
Total volume (cu ft).....	.102

PH-115



Figure 28. Scale PH-115.

Status: Standard. Stock No.: 8A3625.

Scale PH-115 is a photographic scale with a removable scoop. The scale has a balancing bar marked up to 5 pounds in steps of 1 ounce, and three extra disk weights which bring the measuring capacity up to 24 pounds.

PRINCIPAL COMPONENTS

- Scale
- Holder, scale
- Weight, scale (5 and 10 lb)
- Scoop

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Export pack</i>
Total weight (lb).....	15¾	8
Total volume (cu ft).....	-----	.35

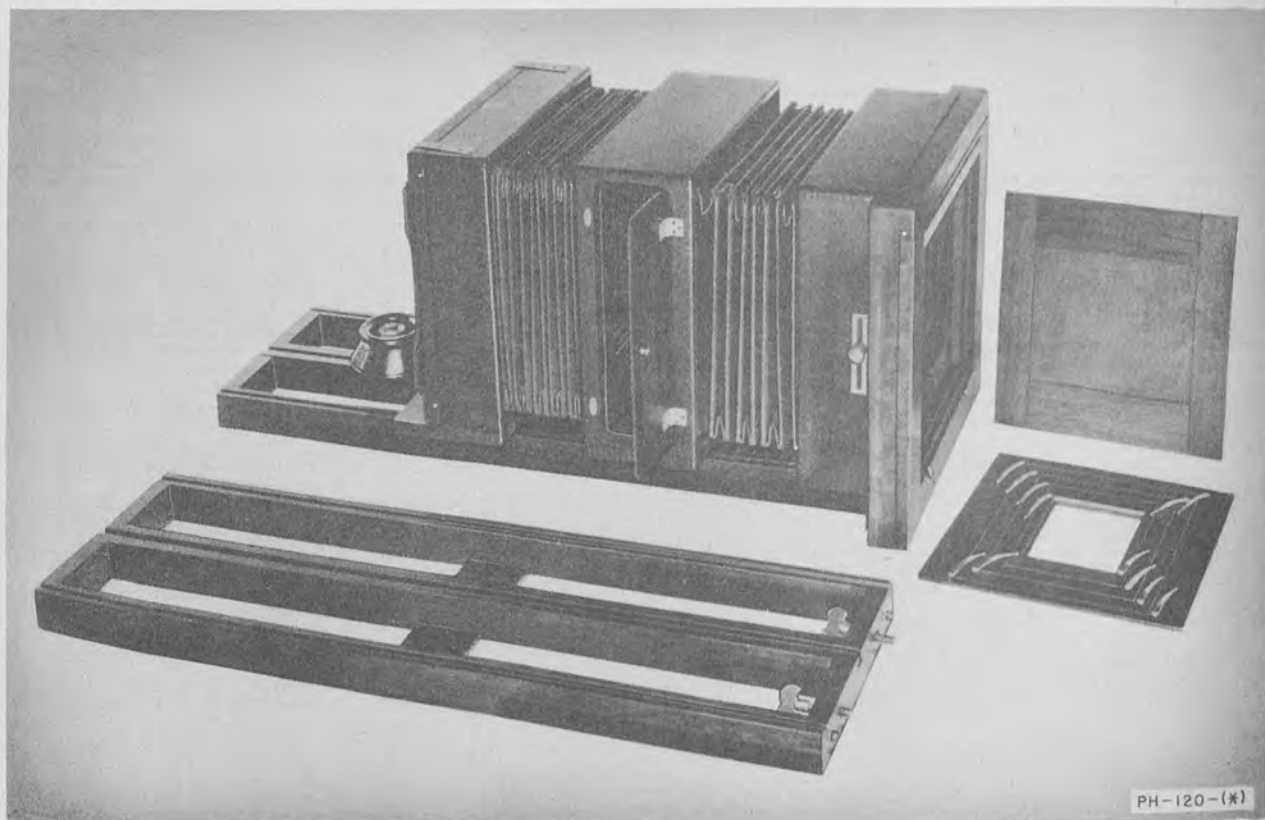


Figure 29. Camera PH-120-B.

Status: Standard. *Stock No.:* 8A320B (PH-120-A) and 8A320B.1 (PH-120-B). *Reference:* TM 11-2348.

Camera PH-120-(*), represents Cameras PH-120-A and -B. PH-120-(*), is an 8- by 10-inch copying camera with a revolving back. The function of the camera is to copy photographs, line drawings, or other flat copy. It may be used for making lantern slides or for photographing small objects. The equipment includes the camera itself, a negative carrier, a nested set of masks for holding the material to be copied, an 11- by 11-inch lens board, and Filters PH-374 through PH-381. Camera PH-120-A includes Holder PH-84, Holder PH-88, and lantern slide Attachment PH-93. Camera PH-120-(*), is used with copying Lens PH-332, Holder PH-215, and Stand PH-196, and is part of Photographic Equipment PH-391. Camera PH-120-B also includes an 11- by 11-inch opal glass.

TECHNICAL CHARACTERISTICS

TYPE: Copying.
SHUTTER: Compound or Belax.
SIZE: 8 by 10 in.
TYPE OF FILM: Sheet film or plates.
LENS: Bausch and Lomb Tessar II B, 12-in. f/6.3.

PRINCIPAL COMPONENTS

Camera	Ground glass
Holder PH-84	Front camera frame
Reversible back	Focusing adjuster
Photographic mask set	Opal glass (PH-120-B only)
Camera bellows rack	

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Export pack</i>
Total weight (lb).....	50	72
Total volume (cu ft).....	4	6

Status: Standard. *Stock No.:* 8A4121. *Reference:* TM 11-2352.

Tripod PH-121 is a lightweight wooden tripod for still cameras. The tripod consists of a top and three demountable legs which fold to 16¼ inches and extend to 50 inches.

PRINCIPAL COMPONENTS

Head Leg assembly

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Packed</i>
Total weight (lb)-----	2.6	3.5
Total volume (cu ft)-----	.15	.2

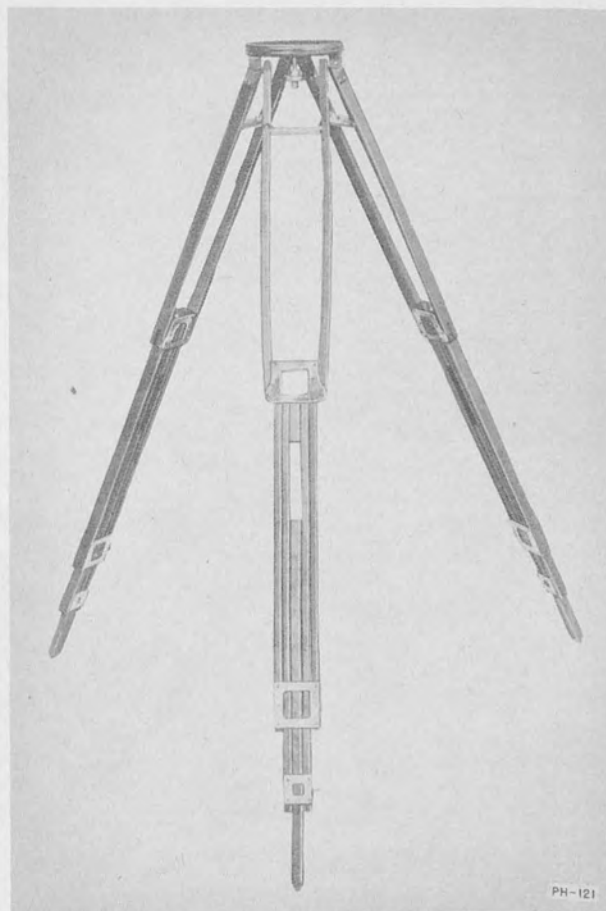


Figure 30. Tripod PH-121.

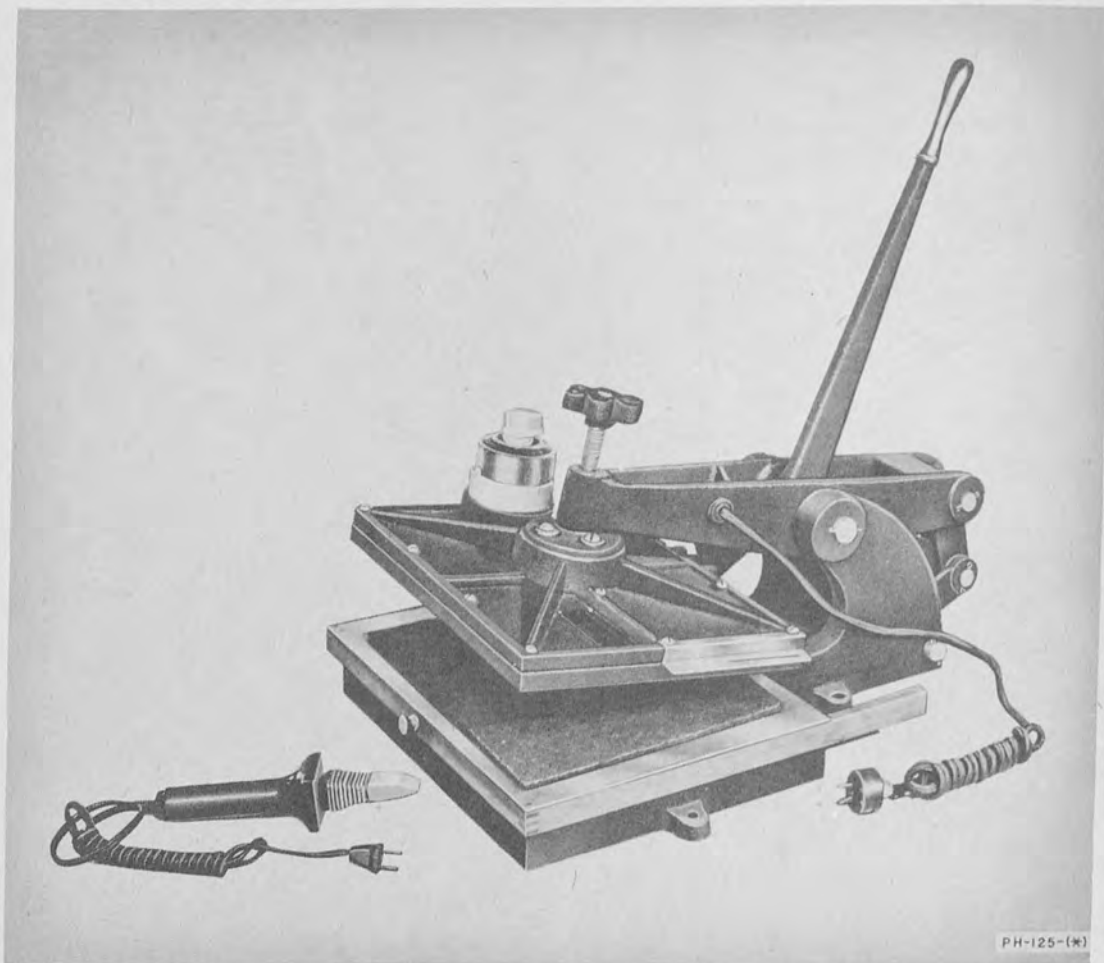


Figure 31. Press PH-125.

Status: Standard. *Stock No.:* 8A3025 (PH-125).

Reference: TM 11-2375.

Press PH-125-(*), represents Presses PH-125 and PH-125-A. Press PH-125-(*), is an 11- by 14-inch, electrically heated, thermostatically controlled, hand-operated, dry-mounting press. The equipment includes an electrically heated tacking iron, a cord, a plug, and a thermometer which registers heat from 150° to 250° F. A switch on the top plate regulates the degrees of heat from LOW to HIGH to OFF. It operates on 110- to 125-volt ac or dc. The press is used to mount photostatic prints or other copy on mounts or back to back.

TECHNICAL CHARACTERISTICS

POWER CONSUMPTION: 1,100 w.
 CURRENT (AC): 10 amp.
 TEMPERATURE (PRESS): 235° F. $\pm 10^\circ$.
 TEMPERATURE (TACKING IRON): 250° F. $\pm 10^\circ$.
 TYPE: Hand-operated.
 CONTROL: Thermostat.
 POWER SOURCE: 110 v, 60 cyc.

PRINCIPAL COMPONENTS

Power cable assembly
 Electric tacking iron
 Press

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	214	257
Total volume (cu ft)-----	8	10

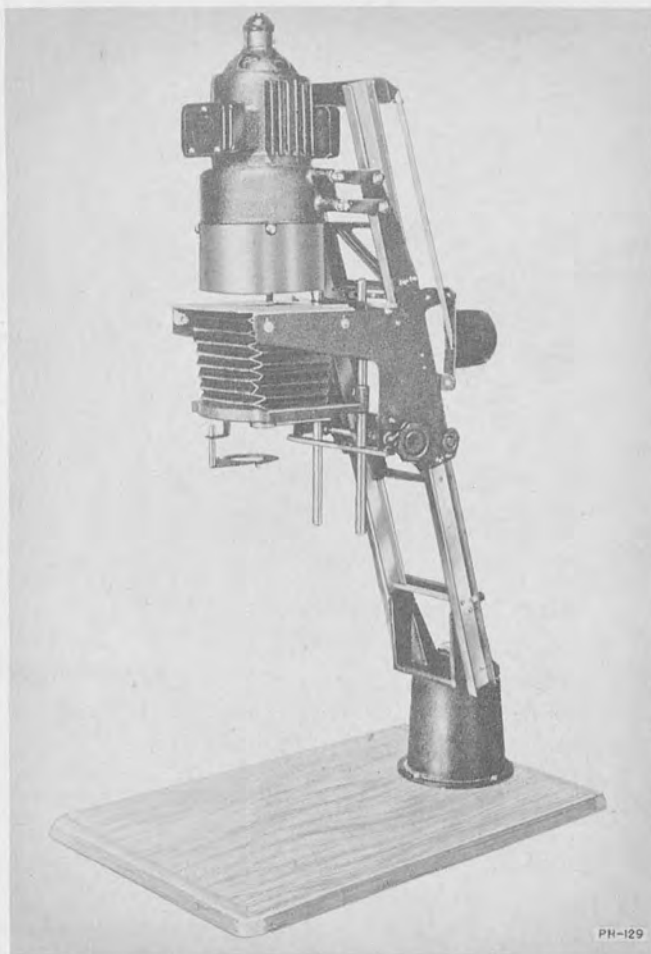


Figure 32. Printer PH-129.

Status: Standard. *Stock No.* 8A3109. *Reference:* TM 11-2339.

Printer PH-129 is an enlarger for 4- by 5-inch to 35-mm negatives. The equipment includes a 3½- and a 6½-inch condenser set, a 6¾-inch f/4.5 Bausch & Lomb Tessar lens, a 2-inch f/4.5 Simmons enlarging anastigmat lens, 2 lens boards, a negative carrier for 4- by 5-inch negatives, a negative carrier for 35-mm negatives, and a paper Holder PH-349. Printer PH-129-A is now known as Printer PH-639/PF.

TECHNICAL CHARACTERISTICS

SIZE OF NEGATIVE: 4 by 5 in. to 35-mm.

TYPE: Projection.

LENS: 2-in. f/4.5; 6¾-in. f/4.5.

SHUTTER: None.

REPRODUCTION RATIO: 1 to 1.

PROJECTION EQUIPMENT: Condensing lens and lamp
75 w, 105 to 120 v.

POWER SOURCE: 110 v, 60 cyc, 6 to 8 v dc.

PRINCIPAL COMPONENTS

Printer	Carrier 4 by 5 in.
Holder	Lens 2 in. focal lg
Carrier 35-mm	Projector lens

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	120	190
Total volume (cu ft).....	9	17



Figure 33. Projector Equipment PH-131-H.

Status: Limited/Std. Stock No.: 8A3121A (PH-131-A), 8A3121B (PH-131-B), 8A3121C (PH-131-C), 8A3121D (PH-131-D), 8A3121E (PH-131-E), 8A3121F (PH-131-F), 8A3121H (PH-131-G, -H), 8A3121J (PH-131-J), and 8A3121K (PH-131-K). References: TM 11-2357 and TM 11-2331 (PH-131-K).

Projector Equipment PH-131-(*) represents Projector Equipments PH-131-A, B, C, D, E, F, G, H, J, and K. PH-131-(*) is a 16-mm, sound or silent (PH-131-K sound only) motion picture projector. The projector can accommodate film reels of 400, 1,200, and 1,600 feet. The equipment includes the projector with a sound head and an amplifier, a loudspeaker, a Screen PH-358 (except PH-131-K), and the necessary carrying cases. A 2-inch f/1.6 lens is also included in the projector equipment.

TECHNICAL CHARACTERISTICS

(for all models except PH-131-K)

- TYPE: Motion picture sound-silent.
- SIZE: 16-mm.
- LENS: 2-in. f/1.6.
- RANGE: Auditorium.
- CAPACITY: 1,600 ft.
- POWER SUPPLY: 110- to 125-v ac, 50 to 60 cyc.
- MOTOR: 960 to 1,410 rpm.
- LAMP RATING: 750 w.
- ACCESSORIES: Amplifier: 12-w output.
- Loudspeaker impedance: Voice coil, 16. Field coil, 700.
- Loudspeaker: Electromagnetic.

TECHNICAL CHARACTERISTICS

(for PH-131-K only)

- TYPE: Sound.
- SIZE: 16-mm.
- FILM SPEED: 24 fps.
- LENS: 2-in. f/1.2.
- RANGE: Theater.
- CAPACITY: 2,000-ft reels.
- POWER SUPPLY: 117-v ac, 50-60 cyc, 500-w.
- MOTOR: Vibrating generator set at 3,400 rpm.
- LAMP RATING: 100 w.
- AMPLIFIER OUTPUT: 12 w.
- POWER CONSUMPTION: 300 w.
- POWER OUTPUT: 12 w less than 2 percent distortion.
- OVER-ALL FREQUENCY: Flat 50 cps to 3,000 cps, -2 db 4,000 cps, -5 db 5,000 cps, -10 db 6,000 cps.
- OVER-ALL SIGNAL TO NOISE RATIO: -56 db at 6 w.
- VOLUME CONTROL: Provides 20 db reserve gain from 12 w at 400 cps.
- TREBLE TONE CONTROL:
 - Accentuation: 6 db at 3,000 cps.
 - Attenuation: 10 db at 5,000 cps.
- BASE TONE CONTROL:
 - Accentuation: 4 db at 150 cps.
 - Attenuation: 12 db at 100 cps.
- LOUDSPEAKER: Permanent magnet type with an impedance of 8 ohms.

PRINCIPAL COMPONENTS

- Speaker Screen PH-358-()
- Projector Cable assemblies

WEIGHTS AND VOLUMES

	Unpacked	Export pack
Total weight (lb).....	108	120
Total volume (cu ft).....	4	109

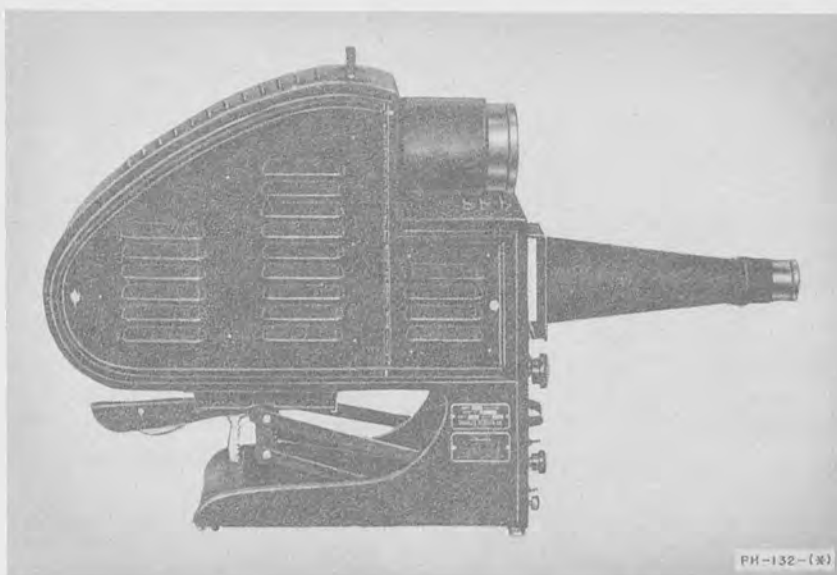


Figure 34. Projector Equipment PH-132.

Status: Standard. *Stock No.:* 8A3122 (PH-132), 8A3122-132A (PH-132-A), 8A3122-132B (PH-132-B), 8A3122-132C (PH-132-C), and 8A3122-132D (PH-132-D). *References:* TM 11-2349 (PH-132) and TM 11-2330 (PH-132-C).

Projector Equipment PH-132-(*) represents Projector Equipments PH-132, PH-132-A, PH-132-B, PH-132-C, and PH-132-D. Projector Equipment PH-132-(*) is designed to project images from 35-mm film strips, standard size slides, and opaque objects. Illumination is provided by a 500-watt, 120-volt lamp. Three mirrors and two reflectors are included in the housing. A motor-driven fan blows the heat from the lamp out through air vents on the roof and sides of the machine. A tilting device for centering the image on the screen is located at the front of the base of the projectors. An 8-foot square screen with a solid semidiffused reflecting surface is provided. The equipment is used as an aid in the training, briefing, and entertaining of troops.

TECHNICAL CHARACTERISTICS

TYPE: Slide.
SIZE: 35-mm or $3\frac{1}{4}$ x $4\frac{1}{4}$ -in. glass slides; 6 x $6\frac{3}{8}$ -in. opaque objects.
LENS: 4-in., 10-in., and 18-in.
RANGE: Average size classroom.
CAPACITY: Unlimited.
POWER SUPPLY: 110- to 120-v a-c or d-c electrical outlet (PH-132, -A, and -B); 115- or 230-v a-c or d-c (PH-132-C and PH-132-D).
MOTOR: Ac-dc; series type; 1/80 hp; 6,000 rpm.
LAMP RATING: 500-w, 115- or 230-v filament bulb.

PRINCIPAL COMPONENTS

Projector unit	Screen PH-69
Film projection attachment	Carrying case
Slide carrier	Lens 10 in. focus

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	69	151
Total volume (cu ft).....	3.5	8.4

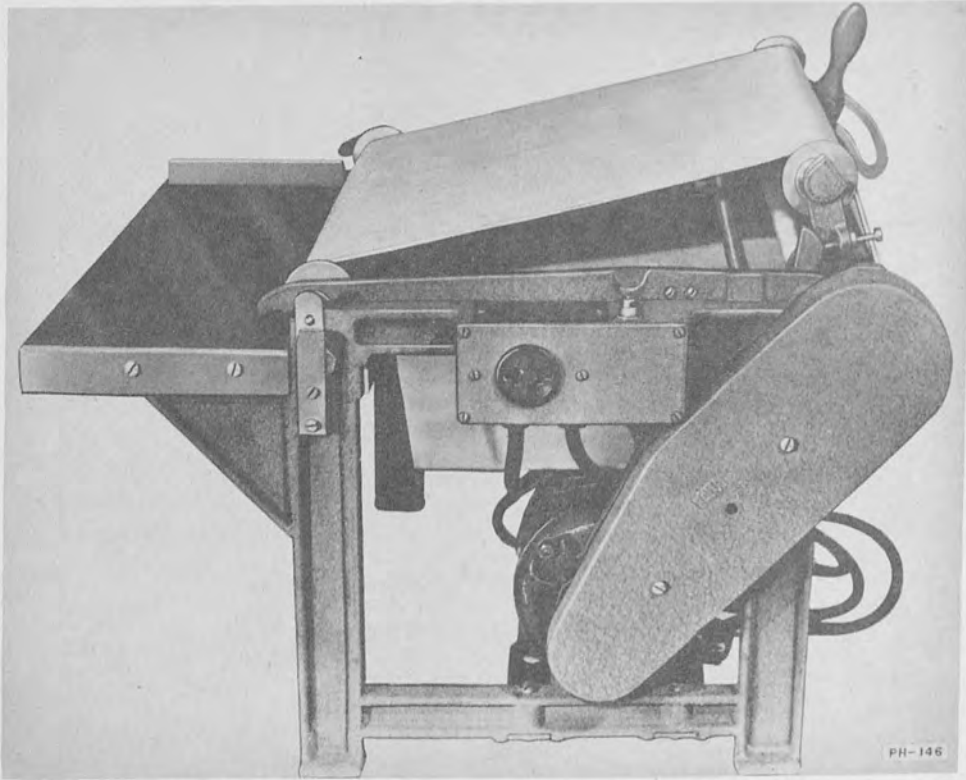


Figure 35. Print Straightener PH-146.

Status: Standard. Stock No.: 8A3066. Reference: TM 11-2382.

Print Straightener PH-146 is an electrically heated straightener used to remove the curl from single or double weight prints up to 14 inches wide. The prints are carried through a water vapor on the apron and rollers. The equipment has a 60-cycle, 110-volt, 1.5 ampere, a-c induction motor and two rubber V-belts. Print Straightener PH-146 replaces Print Straightener PH-65.

TECHNICAL CHARACTERISTICS

TYPE OF PRINT: Single or double weight.
 PRINT SIZE: 14 in. (maximum).
 MOTOR: A-c induction type; 60 cps, 110-v, 1.5 amp.
 POWER SOURCE: 110-v, 60-cyc ac.

PRINCIPAL COMPONENTS

Base	Screen assembly
Belt frame assembly	Motor and wiring assembly
Water pan completer	

WEIGHT AND VOLUME

Total weight (lb).....	Packed 55
Total volume (cu ft).....	4.8

Status: Standard. *Stock No.:* 8A350A. *Reference:* TM 11-2327.

Camera PH-150-A is a studio portrait camera suitable for use in a permanent photographic studio or laboratory. The equipment is fitted with casters that permit it to be moved over a smooth level surface, but it is not considered portable. Camera PH-150-A is used primarily as a portrait camera and has an 8- by 10-inch and a 5- by 7-inch reversible back included. The camera uses Lens PH-350 which is not included in the equipment. A sliding carriage and the adapter backs permit the taking of full-sized negatives or two on negatives (two separate exposures on a single negative) of both sizes. The camera may be used for copying if a sharp focus lens and an improvised easel are used.

TECHNICAL CHARACTERISTICS

HORIZONTAL SWING: 11° (Master), 7½° (4A).

VERTICAL SWING: 7° (Master), 13° forward and 6° backward (4A).

BELLOWS DRAW: 36 in. (Master), 28 in. (4A).

TILT OF CAMERA STAND TOP: 53° forward, 6° backward (Master only).

TILT OF STAND PLATFORM: 16° (4A only).

PRINCIPAL COMPONENTS

Cloth PH-130-A

Camera Master Studio or No. 4A Studio
Stand, studio

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	45
Total volume (cu ft).....	7

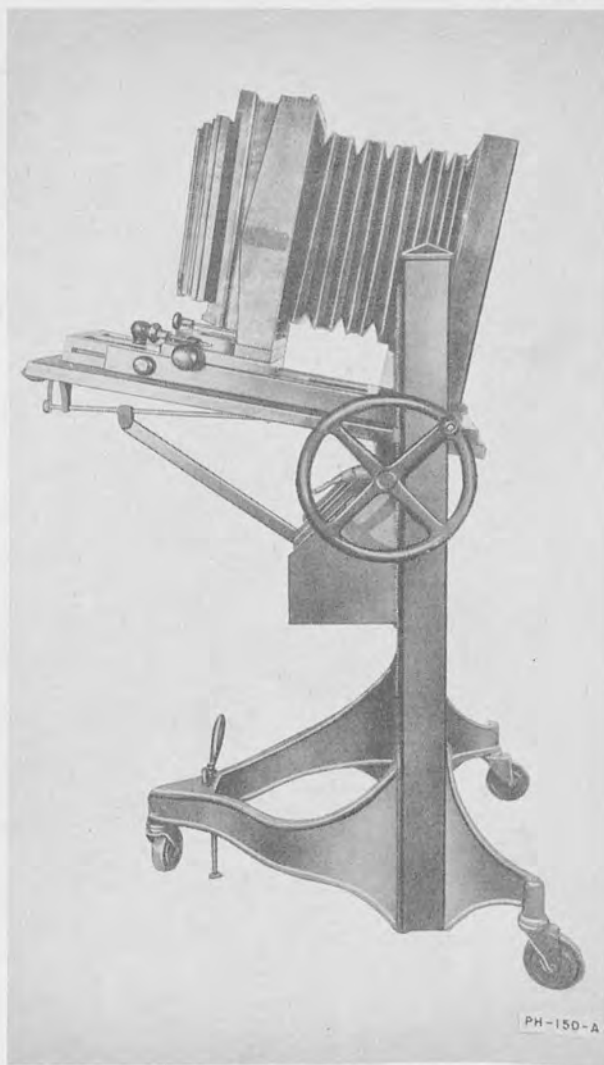


Figure 36. Camera PH-150-A.



Figure 37. Camera Equipment PH-151-A.

Status: Limited/Std. Stock No.: 8A351A. Reference: TM 11-2373.

Camera Equipment PH-151-A is portable equipment designed to produce microphotographic records on 35-mm film and to make enlargements from 35-mm negatives. The equipment includes a complete copying unit Enlarger PH-275 and five metal Tanks PH-186. The copying unit incorporates its own lighting system and may be operated either manually or by an air-compressor foot pedal.

TECHNICAL CHARACTERISTICS

TYPE: Portable.
 SHUTTER: Single action, heavy duty.
 REDUCTION: $\frac{1}{8}$ to $\frac{1}{2}$ actual size.
 SIZE: 35-mm.
 MAGNIFICATION: $2\frac{1}{2}$ to 9 diameters.
 TYPE OF FILM: Magazine.
 LENS: 75-mm f/4.5 anastigmat mounted in a Betax 2.
 SHUTTER RANGE: Time, bulb; $\frac{1}{25}$ to 1 sec.
 DIAPHRAGM STOP: f/4.5 to f/32.
 POWER SOURCE: 115-v ac or dc.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)				Weight (lb)
	Length	Height	Width	Depth	
Carrying case	22.00	6.75	22.5	---	20.5
Column section (3)	20.75	---	---	2.0	1.67
Camera assembly	7.00	5.50	5.0	---	3.69
Lens, 75-mm	---	---	---	---	---
Magazine	8.75	5.50	4.25	---	6.25
Foot pedal	8.75	5.00	4.75	---	3.63
Lamphousing assembly	6.00	6.00	5.00	---	2.7
Power cable	100.00	---	---	1.00	.50
Lamp case	21.00	7.00	6.00	---	4.6
Lamp assembly	---	---	---	---	---
Enlarger PH-275 and case	---	---	---	---	14.75
Paper Board PH-425	7.0	4.0	5.0	---	1.0
Tank PH-186	---	2.125	---	---	1.94

WEIGHT AND VOLUME

	Packed
Total weight (lb)	92
Total volume (cu ft)	5

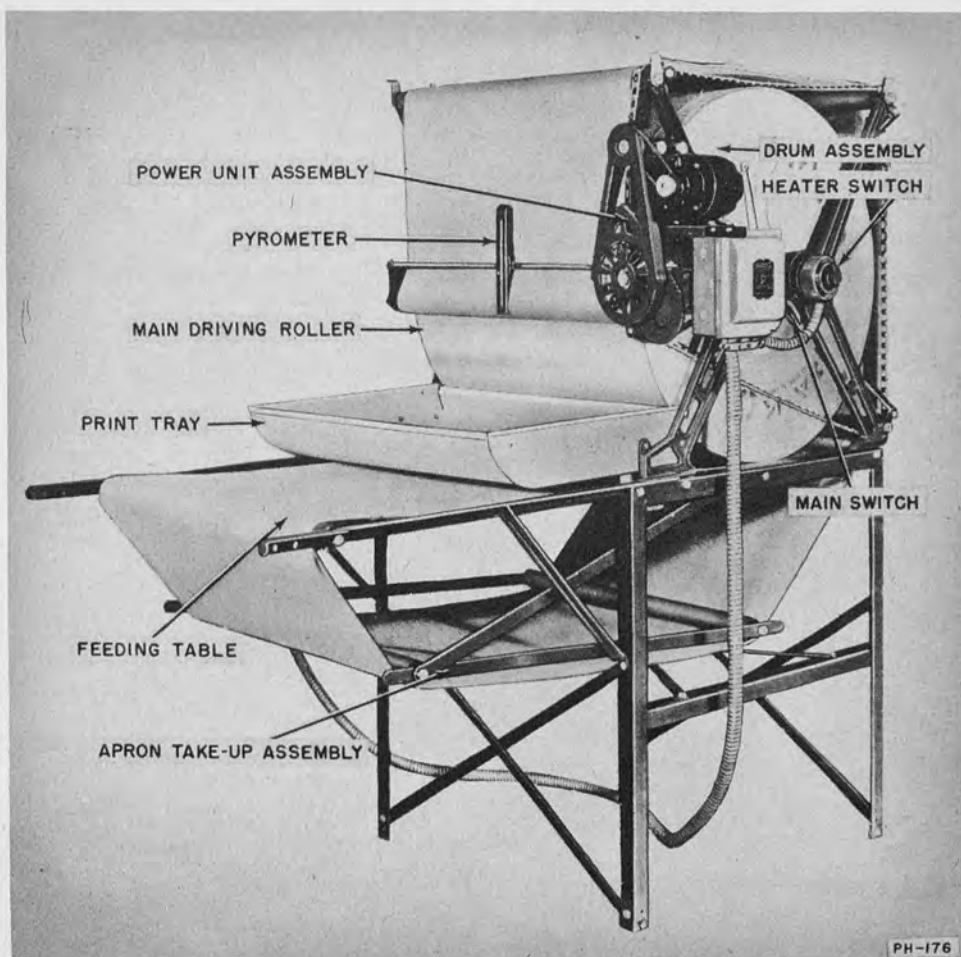


Figure 38. Dryer PH-176.

Status: Standard. *Stock No.:* 8A976. *Reference:* TM 11-2355.

Dryer PH-176-(*) represents Dryers PH-176 and PH-176-A. Dryer PH-176 consists of an apron and a metal-heated drum surface. It is an electrically operated unit for drying quickly and continuously various weights and sizes of matte or semimatte photographs. Dryer PH-176-A differs from Dryer PH-176 in that a control box provides thermostatic control of the drum heating unit and rheostatic control of the drum driving unit.

TECHNICAL CHARACTERISTICS

TYPE: Electrically heated.
PRINT SIZE: 20 x 24 in. (maximum).
CAPACITY: 300 single-weight semimatte prints (8 x 10) per hr.
HEATER: 500-w and 600-w coils.

DRYING CYCLE: 4 to 7 min.

MOTOR: Single-phase; 1,725 rpm; $\frac{1}{20}$ hp; temperature use 40° F.

APRON SPEED: 14 in. per min.

FUSE RATING: 30 amp (heater elements), 4 amp (motor for Dryer PH-176), 1 amp (motor for Dryer PH-176-A).

POWER SOURCE: 110- to 120-v dc or 60-cyc ac.

PRINCIPAL COMPONENTS

Base assembly	Print tray
Two side frames	Power unit assembly
Drum (contains heating unit)	Main switch box (safety)
Apron	Rotary switch
	Roller assemblies

WEIGHT AND VOLUME

Total weight (lb).....	<i>Packed</i> 400
Total volume (cu ft).....	35
Ship tons.....	88

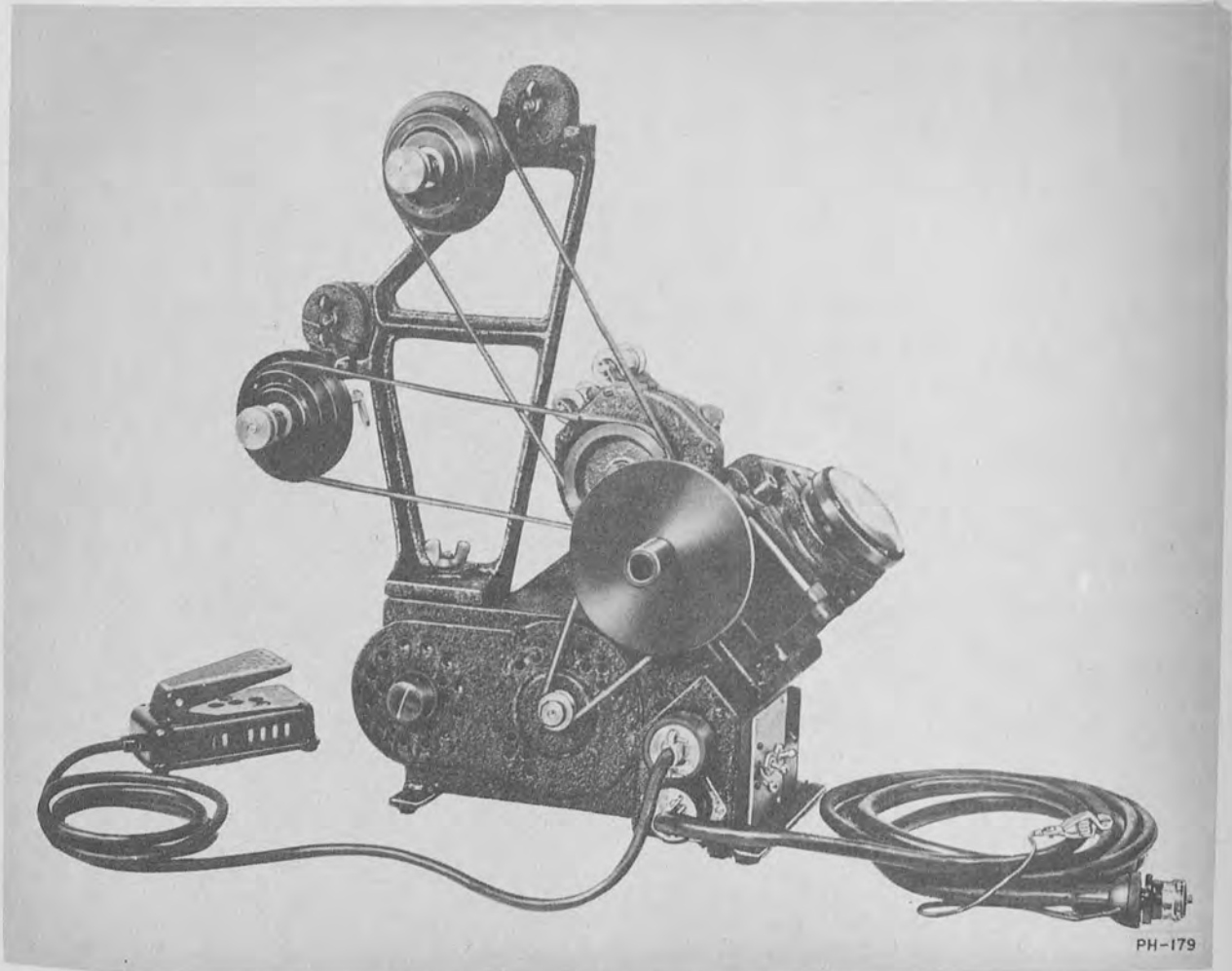


Figure 39. Film Examining Machine PH-179.

Status: Standard. *Stock No.:* 8A1079-179. *Reference:* TM 11-2388.

Film Examining Machine PH-179 is a table-model film-viewing machine designed for use in the inspection and editing of 35-mm positive motion-picture film. The equipment includes take-up reels and a foot switch. Three toggle switches are included in the equipment to start and stop the machine, to set the machine for forward or reverse motion, and to turn the viewing lamp on. A rotary switch adjusts the speed of the machine. The aperture is provided with a viewing lens which may be raised to make the film accessible for marking. Film Examining Machine PH-179 replaces Film Examining Machine PH-279.

TECHNICAL CHARACTERISTICS

FILM SIZE: 35 mm.
 CAPACITY (REEL): 1,000 ft.
 MOTOR: Variable-speed, universal type.
 POWER SOURCE: 115-v ac, 60-cyc or dc.

PRINCIPAL COMPONENTS

Machine base	Belts
Picture head	Power control unit
Reel bracket spindles	Reel PH-235

WEIGHT AND VOLUME

Total weight (lb)	Packed 42
Total volume (cu ft)	2.55

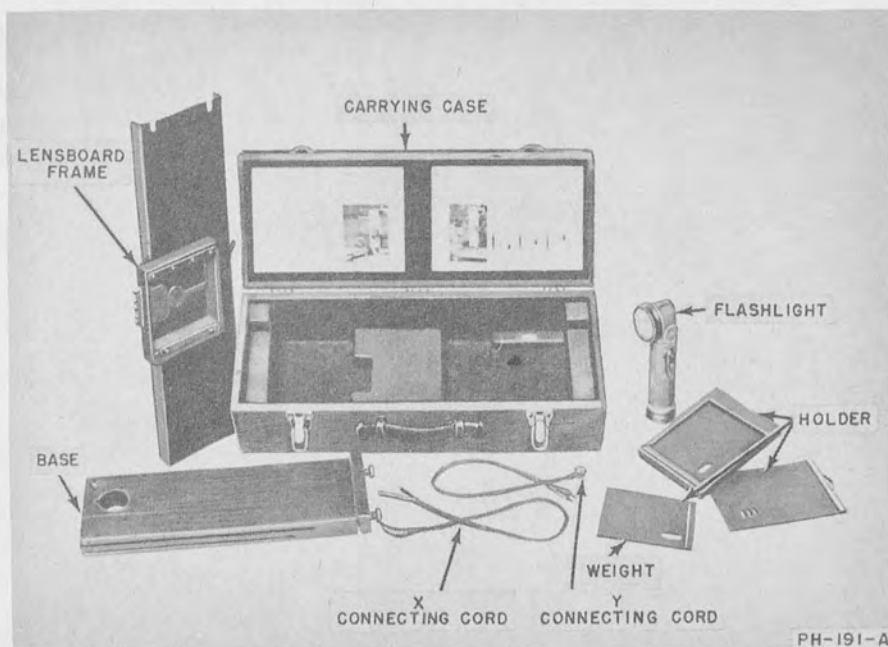


Figure 40. Timer PH-191-A.

Status: Limited/Std. Stock No.: 8A3830-191A.
Reference: TM 11-2378.

The gravity-type synchronizer tester Timer PH-191-A is a portable, self-contained device designed to check the accuracy of the adjustment of electromagnetic photoflash synchronizers. The timer consists of a wooden base, a steel channel which accommodates the connecting cords, and a wooden carrying case.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)			Weight (lb)
	Height	Width	Depth	
Timer.....	18 $\frac{7}{8}$	4 $\frac{3}{4}$	14 $\frac{1}{2}$	2.81
Flashlight TL-122-A.....	-----	-----	7	.81
Connecting cord (X).....	-----	-----	21	-----
Connecting cord (Y).....	-----	-----	17	-----
Holder.....	-----	4 $\frac{3}{4}$	6 $\frac{3}{4}$.75
Carrying case.....	5 $\frac{1}{4}$	7	19 $\frac{3}{4}$	5.88

WEIGHT AND VOLUME

Total weight (lb).....	2
Total volume (cu ft).....	0.1

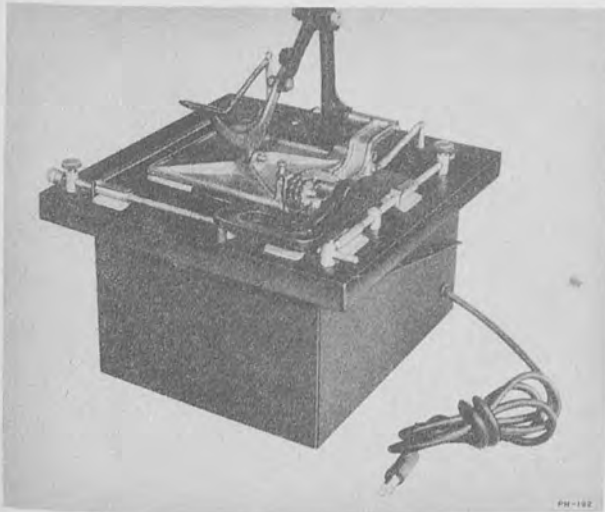


Figure 41. Printer PH-192.

Status: Standard. Stock No.: 8A3119-192.
Reference: TM 11-2385.

Printer PH-192 is a table model, 5- by 7-inch contact printer with masking blades. It is manually operated and consists of a printing head mounted on a lamp box. It will operate from any 110-volt a-c or d-c power source.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm to 5 x 7 in.
TYPE: Contact.
LENS: None.
SHUTTER: None.
PROJECTION EQUIPMENT: Two 75-w bulbs.
POWER SOURCE: 110-v ac or dc.

PRINCIPAL COMPONENTS

Printing head Lamp box

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	33	31
Total volume (cu ft)-----	-----	1.75

Status: Standard. Stock No.: 8A3119-193.
Reference: TM 11-2372.

Printer PH-193 is a hand-operated machine designed to make 24-mm by 36-mm contact prints from 35-mm perforated photographic film.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
TYPE: Contact.
LENS: None.
SHUTTER: None.
PROJECTION EQUIPMENT: 10-w ruby lamp and a 40-w frosted lamp.
POWER SOURCE: 110-v ac.

PRINCIPAL COMPONENTS

Printer unit Glass, clear
Lamp 115-v (40-w and 10-w) Spindle, driving
Bracket, guide Spool, 35-mm
Crank

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	65	85
Total volume (cu ft)-----	5	8



Figure 42. Printer PH-193.

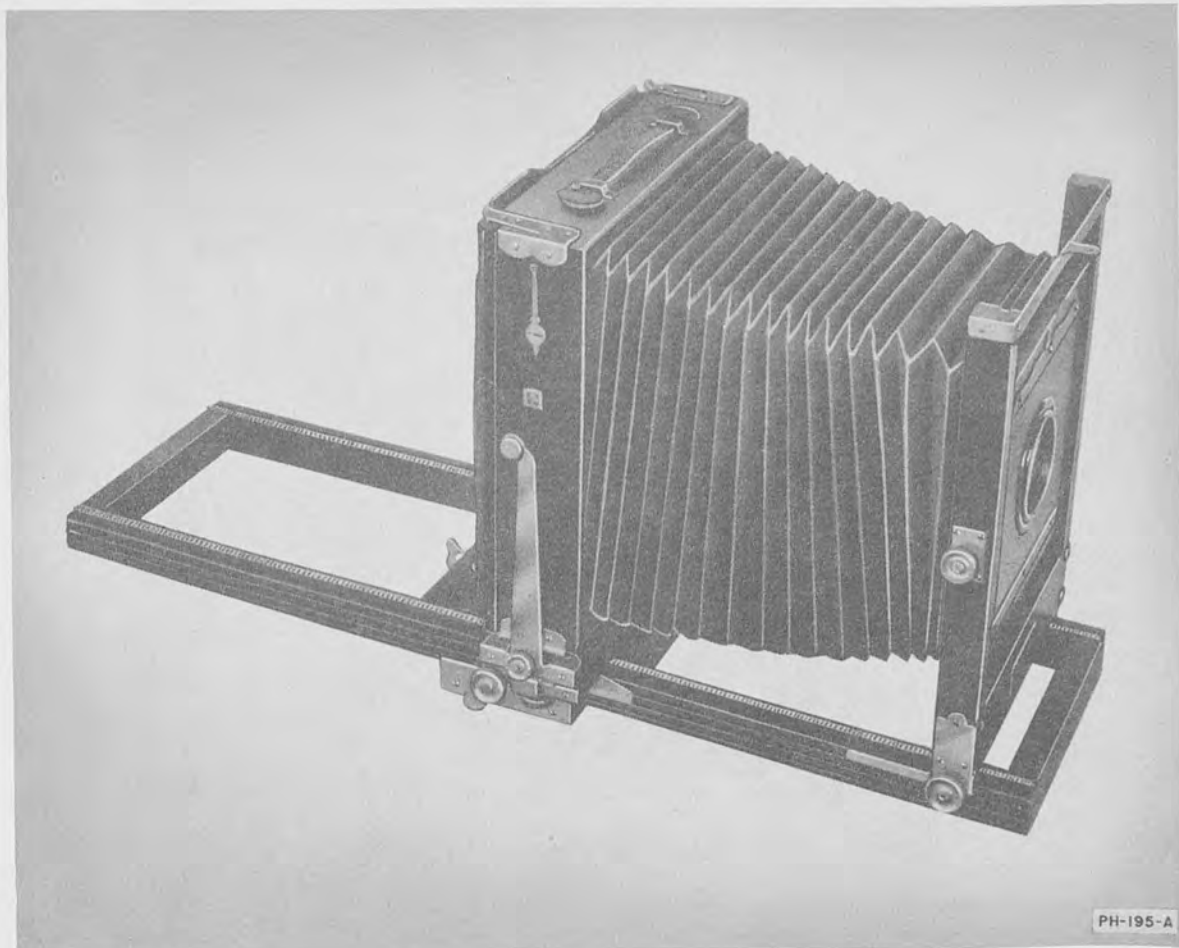


Figure 43. Camera PH-195-A.

Status: Standard. *Stock No.:* 8A395A. *Reference:* TM 11-2365.

Camera PH-195-A is an 8- by 10-inch wooden view camera, finished in flat, dark mahogany with dull metal fittings. The camera contains a swing-back assembly, a carriage assembly, a bellows, a front standard assembly, a bed assembly, a sliding bed block, and a reversible block. A spring arrangement inside the bellows frame prevents sagging. The camera is used to take studio or general view photographs.

TECHNICAL CHARACTERISTICS

TYPE: Studio.

SIZE: 8- x 10-in. or 5- x 7-in. negatives.

TYPE OF FILM: Cut.

LENS: 12-in. f/7.0; 19.7-inch f/12.5; 25-in. f/16; 7½-in. f/16.

SHUTTER RANGE: Time; bulb; 1/50, 1/25, 1/15, 1/8, 1/2.

DIAPHRAGM STOP: f/7 to f/64.

BELLOWS EXTENSION: 29 in.

TILT: 8° forward; 5° backward.

PRINCIPAL COMPONENTS

Camera	Reversible adapter back
Back PH-197	Bellows rack
Board PH-126	Tripod plate

WEIGHT AND VOLUME

Total weight (lb).....	Packed 15.5
Total volume (cu ft).....	1.5

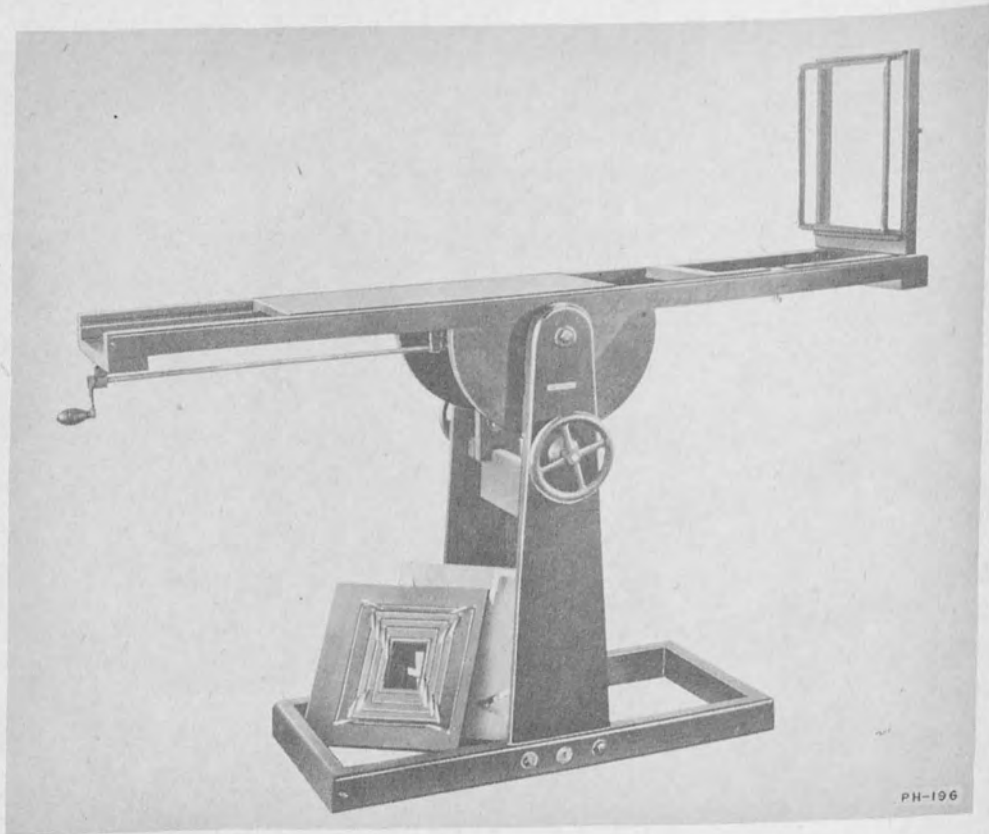


Figure 44. Stand PH-196.

Status: Standard. Stock No.: 8A3696. Reference: TM 11-2348.

Stand PH-196 is a laboratory camera stand used to support an 8- by 10-inch copying camera. It consists of a solid base with a tilting track to support the camera, and a vertical easel with fingers. It is used with, but is not part of, Camera PH-120-B.

PRINCIPAL COMPONENTS

Name	Dimensions (in.)		Depth
	Height	Width	
Basic unit	20 (lg)	13 1/8	1 1/2
Easel base		15	1 1/2
Photographic board		15	1 1/2
Opal glass	1/16	15	1 1/2
Photographic mask set		16	1 1/2
Frame holder			

WEIGHT AND VOLUME

Total weight (lb)	16.5
Total volume (cu ft)	5.9

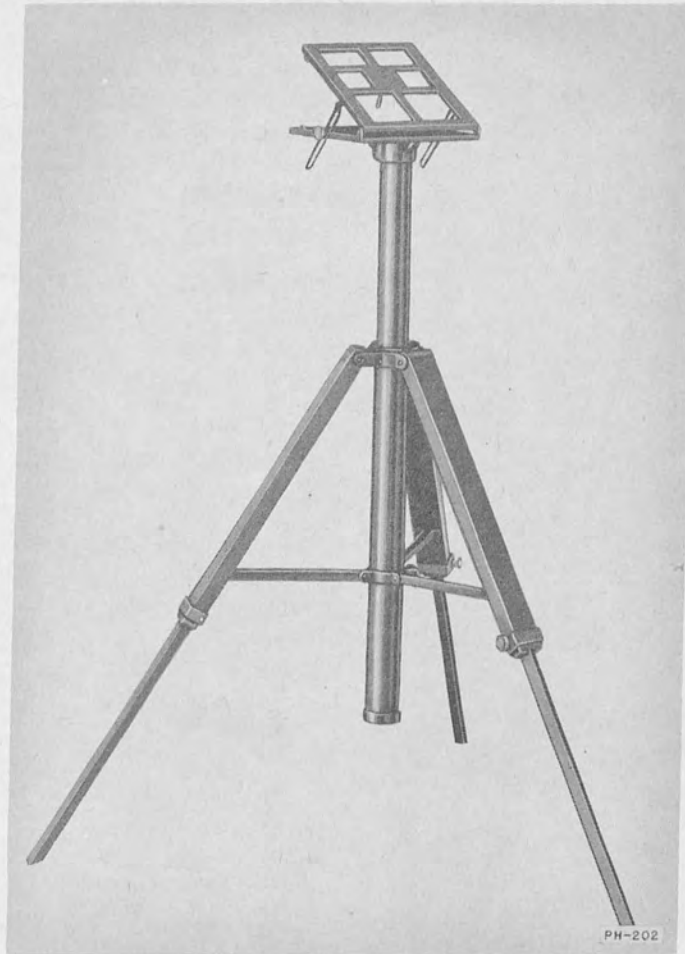


Figure 45. Tripod PH-202, assembled.

Status: Standard. *Stock No.:* 8A4132. *Reference:* TM 11-2365.

Tripod PH-202 is made of aluminum and contains a pneumatic device using a central tube in which a supporting post slides up or down without jar or friction. It has a tilt top covered with felt to protect the camera. The tripod can be raised to a height of 52½ inches, lowered to 24 inches,

and folded to 8 by 13 inches. The tripod is used with Camera PH-195-A.

PRINCIPAL COMPONENTS

Tripod bare unit	Tripod head
------------------	-------------

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	15
Total volume (cu ft).....	1

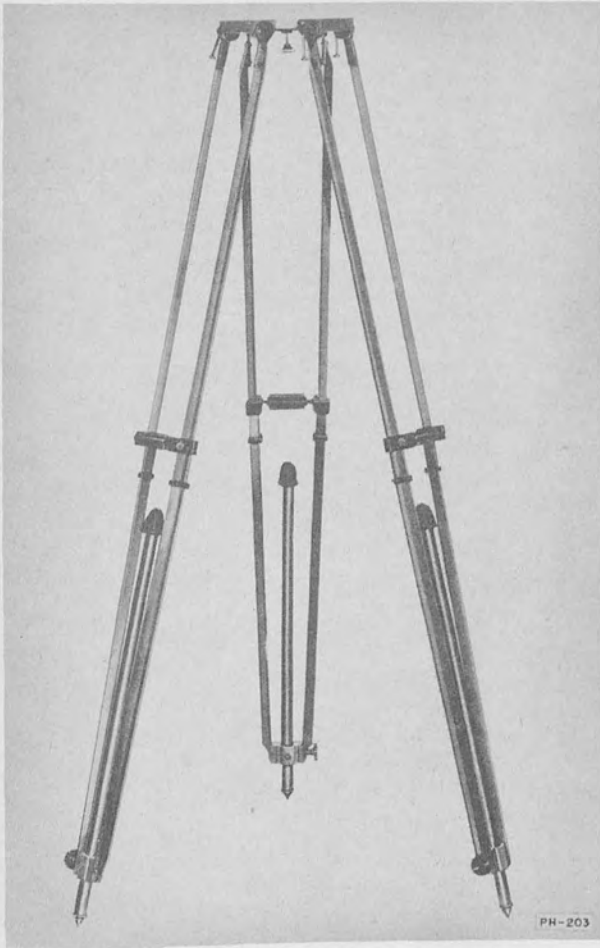


Figure 46. Tripod PH-203, assembled.

Status: Standard. Stock No.: 8A4133. Reference: TM 11-2365.

Tripod PH-203 has an aluminum die-casting to which each leg is firmly bolted and locked with a vice-handle clamp. The height of the tripod can be adjusted from 30 inches to 81 inches. The metal spurs have detachable rubber tips for use on polished floors.

PRINCIPAL COMPONENTS

Bare unit	Leg section
Leg tips	

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)-----	22
Total volume (cu ft)-----	1.8

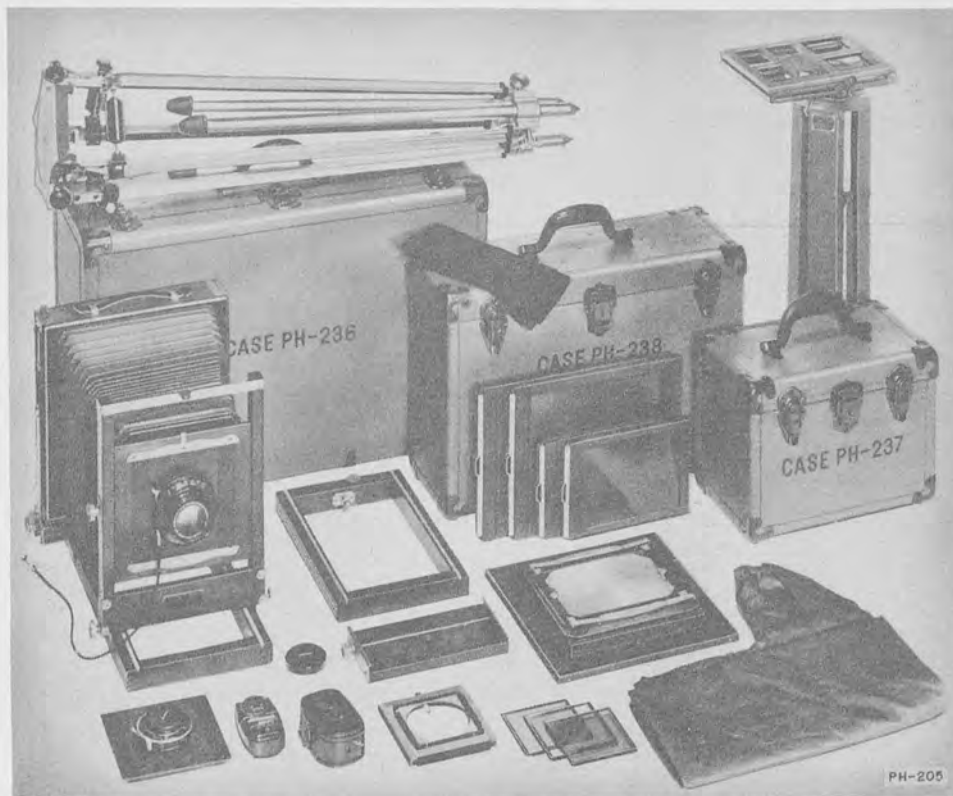


Figure 47. Camera Equipment PH-205.

Status: Standard. *Stock No.:* 8A405. *Reference:* TM 11-2365.

Camera Equipment PH-205 is designed for taking studio and general-view photographs. All equipment necessary, except film, is included. Camera PH-195-A, the major component, can be used to take either 8- by 10- or 5- by 7-inch negatives.

Camera Equipment PH-205 consists of an 8- by 10-inch wooden view camera, Camera PH-195-A (basic component), two lenses and caps, three cable releases, four filters, a filter holder, two tripods, one exposure meter with its case, a

changing bag, a focusing cloth, and three carrying cases.

TECHNICAL CHARACTERISTICS

TYPE: Studio.

SIZE: 8 in. x 10 in. or 5 in. x 7 in.

TYPE OF FILM: Sheet.

LENS: 12-in. f/7.0; 19.7-in. f/12.5; 25-in. f/16; 7¼-in. f/16.

SHUTTER RANGE: Time; bulb; 1/50, 1/25, 1/15, 1/5, 1/2.

DIAPHRAGM STOP: f/7 to f/64.

TRIPOD EXTENSION:

PH-202: 24 to 52½ in.

PH-203: 30 to 81 in.

PRINCIPAL COMPONENTS

Name	Length	Dimensions (in.)			Weight (lb)
		Height	Width	Depth	
Camera PH-195-A		14. 875	13. 0	5. 75	11. 25
Cable Release PH-309	20. 0				
Bag PH-105	32. 0		32. 0		
Tripod PH-202	23. 0 (folded)	24. 0 (lowered) 52. 50 (raised)			8. 0
Tripod PH-203		30. 0 (lowered) 81. 0 (raised)			14. 75
Holder PH-82 (5 in. x 7 in. film holder)	8. 9375		5. 875	. 5625	. 4375
Holder PH-84 (8 in. x 10 in. film holder)	11. 875		9. 3125	. 5625	1. 0

PH-205

Name	Length	Dimensions (in.)			Weight (lb)
		Height	Width	Depth	
Holder PH-184 (filter holder).....	5.375		5.125	.75	.250
Focusing cloth.....	48.0		40.0		.3125
Exposure Meter PH-77-D.....	3.75		2.25	1.25	.5625
Case PH-137 (carrying case for PH-77-D).....	4.25		3.0	1.625	.125
Lens, 7/4-in.....					
Board PH-126 (lens board).....	6.0		6.0		.1875
Back PH-197 (reducing back).....	11.0		11.0	1.75	2.625
Case PH-236 (carrying case).....	27.0		16.75	9.60	11.5625
Case PH-237 (carrying case).....	13.375		8.0	10.0	4.8125
Case PH-238 (carrying case).....	21.0		7.50	13.75	7.1875
Lens, 12-in.....					
Filter PH-374 (Wratten A).....	4.0		4.0		.250
Filter PH-375 (Wratten G).....	4.0		4.0		.250
Filter PH-376.....					
Filter PH-378.....					

WEIGHT AND VOLUME

Total weight (lb).....	40	Packed
Total volume (cu ft).....	3	

PH-206

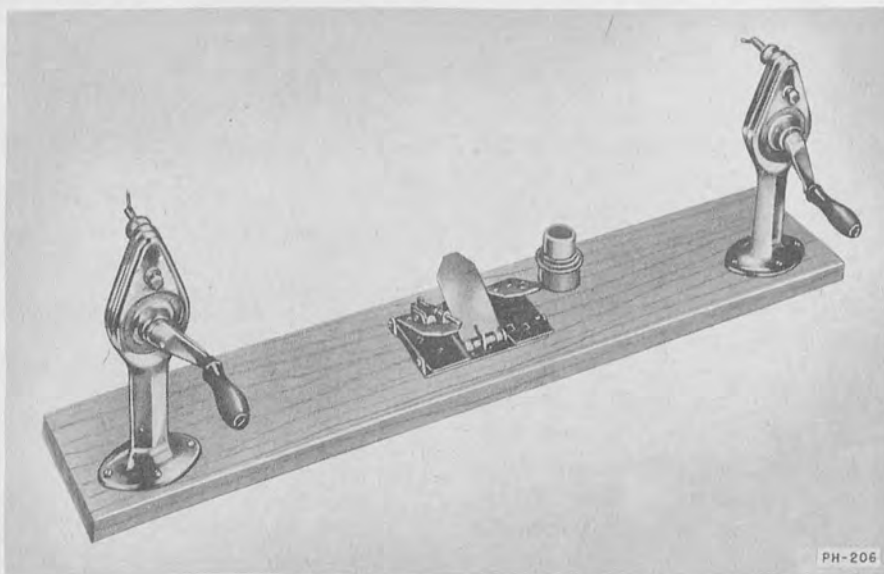


Figure 48. Film Repair Equipment PH-206.

Status: Standard. Stock No.: 8F2325-206.
Reference: TM 11-407.

Film Repair Equipment PH-206 is a rewinder and splicer for 16-mm motion picture film. It has a 1,600-foot capacity, double reel, and dimensions of 40 by 13 by 10 inches.

PRINCIPAL COMPONENTS

- Rewinder, 16-mm
- Splicer, 16-mm
- Reel PH-312

WEIGHT AND VOLUME

Total weight (lb).....	13	Packed
Total volume (cu ft).....	1.5	

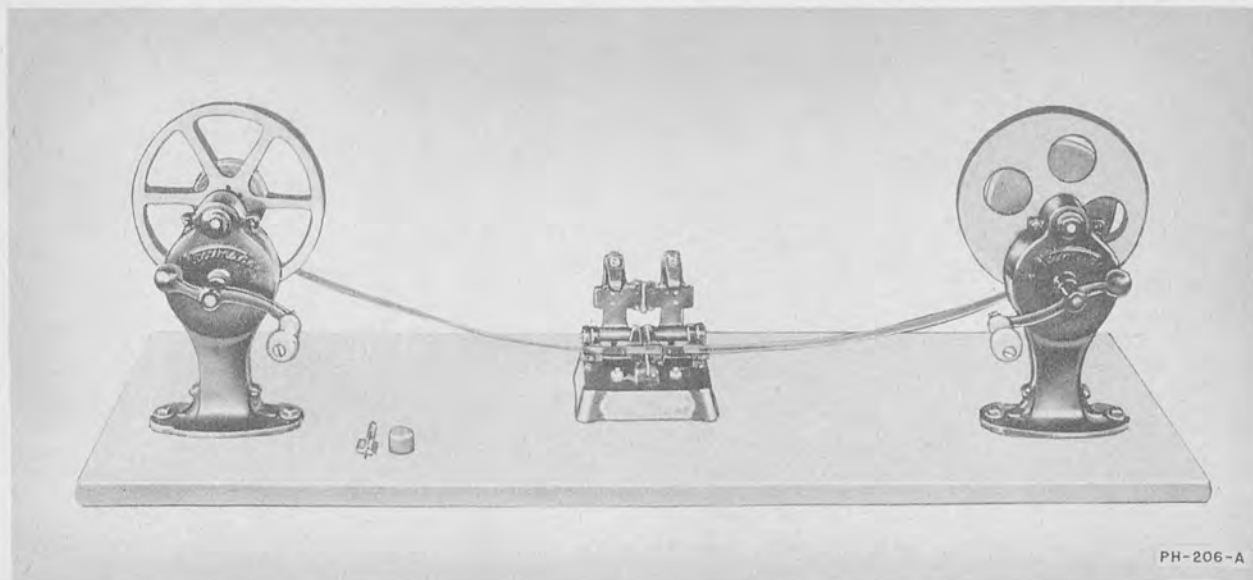


Figure 49. Film Repair Equipment PH-206-A.

Status: Standard. Stock No.: 8F2325-206A.

Film Repair Equipment PH-206-A is a 16-mm rewinder and splicer mounted on a 40- by 13-inch wooden board. The equipment consists of a 34- by 6-inch porcelain panel, two geared-end 2,000-foot rewinders, a Splicer PH-239-A, a scraper, and a moistener pad. The bottom of the board is felt-covered and is equipped with rubber feet to prevent skidding.

PRINCIPAL COMPONENTS

Reel PH-312
 Rewinder PH-416-A
 Splicer PH-239-A

WEIGHT AND VOLUME

Total weight (lb).....	Packed 25
Total volume (cu ft).....	1.7

PH-207

Status: Standard. Stock No.: 8A2107.

Lamp PH-207 is a safelight for use in a photographic darkroom. It is a table-type indirect lamp with three removable 5- by 7-inch safelight filters (OA greenish, No. 2 deep red, and No. 3 green). The lamp is made of steel, has a medium screw base, and is mounted on an adjustable bracket. Safelight PH-364 is used with Lamp PH-207.

PRINCIPAL COMPONENTS

Bare unit	
Lamp, 25-amp, 115-v, 25-w	Safelight PH-365
Safelight PH-364	Safelight PH-366

WEIGHT AND VOLUME

Total weight (lb).....	Packed 4
Total volume (cu ft).....	0.8



Figure 50. Lamp PH-207.



Figure 51. Lamp PH-208.

Status: Standard. Stock No.: 8A2108.

Lamp PH-208 is a focusing-type spotlight with a magnifying lens. The lamphousing is made of aluminum and has vents to dissipate the heat. There is an attached 15-foot cable with a snap switch, an adjustable diaphragm aperture, and a tilting device. The lamp used is a No. 1 photo-flood or 500-watt T-20 bulb. A tripod is included as part of the equipment.

PRINCIPAL COMPONENTS

Bare unit	Tripod
Spotlight attachment	Projection lamp, 500 w

WEIGHT AND VOLUME

Total weight (lb).....	Packed 18.5
Total volume (cu ft).....	2.1

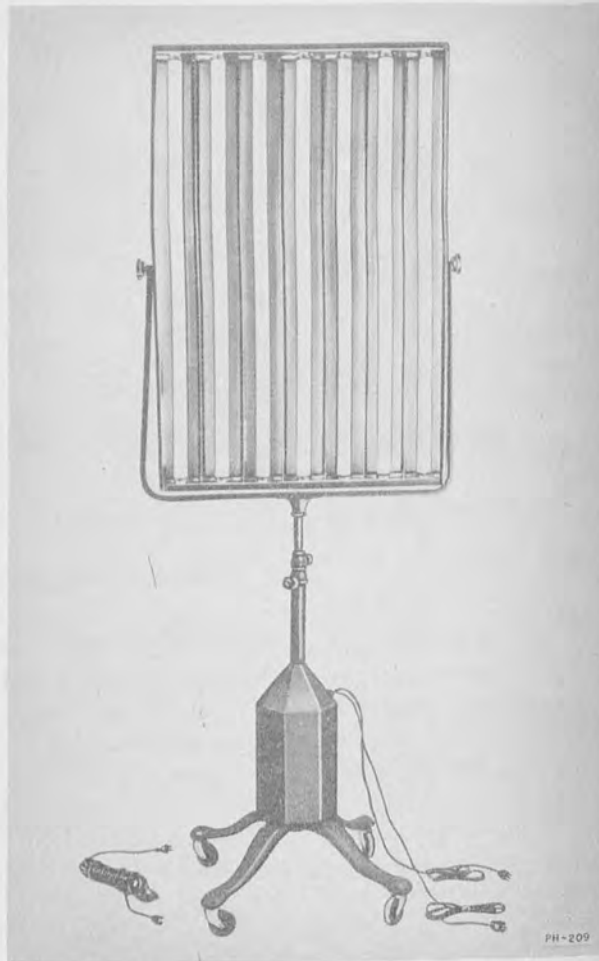


Figure 52. Lamp PH-209.

Status: Standard. Stock No.: 8A2109.

Lamp PH-209 is a fluorescent lamp with a mounting and base, four casters for the base, two brackets, a power pack, a skylight, two lamp starters, a pocket wrench, and seven 40-watt fluorescent lamps.

PRINCIPAL COMPONENTS

Reflector	Stand
Housing assembly (ballast)	Lamp

WEIGHT AND VOLUME

Total weight (lb).....	Packed 100
Total volume (cu ft).....	15

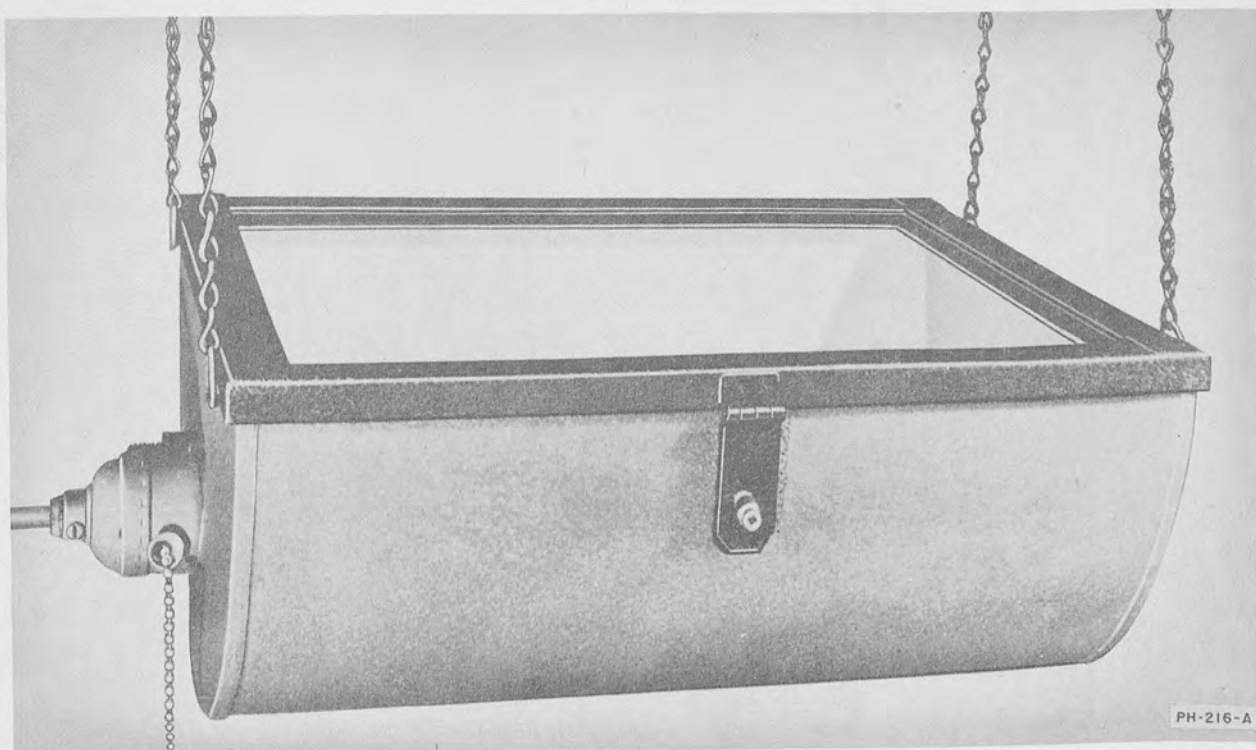


Figure 53. Lamp PH-216-A.

Status: Standard. *Stock No.:* 8A2116A.

Lamp PH-216-A is a 10- by 12-inch utility lamp used in the darkroom. It may be hung from the ceiling or rigidly fastened to a shelf or wall. It uses interchangeable 10- by 12-inch Wratten safelight filters and a bulb. Lamp PH-216-A replaces Lamps PH-216 and PH-211.

PRINCIPAL COMPONENTS

Bare unit	Safelight PH-388
Lamp, 25 amp, 115 v, 25 w	Safelight PH-393
Safelight PH-386	

WEIGHT AND VOLUME

Total weight (lb).....	<i>Packed</i> 13.5
Total volume (cu ft).....	1.0



Figure 54. Lamp Equipment PH-218.

Status: Standard. Stock No.: 8A2188.

Lamp Equipment PH-218 consists of a carrying case containing two lamps with 13- by 6-inch aluminum reflectors, side shields for the reflectors, two tripods, photoflood bulbs, Mogul base sockets complete with cords and male plugs, two double clamp diffusing curtains, and an extension cord. The equipment is part of Photographic Equipment PH-390, Photographic Equipment PH-391, and Photographic Laboratory Set AN/FFQ-1.

PRINCIPAL COMPONENTS

Bare unit	Floodlight
Cord, extension	Tripod
Adapter PH-276	Lamp, photoflood
Case	Screen diffusing assembly

WEIGHT AND VOLUME

Total weight (lb).....	Packed 68
Total volume (cu ft).....	6.5

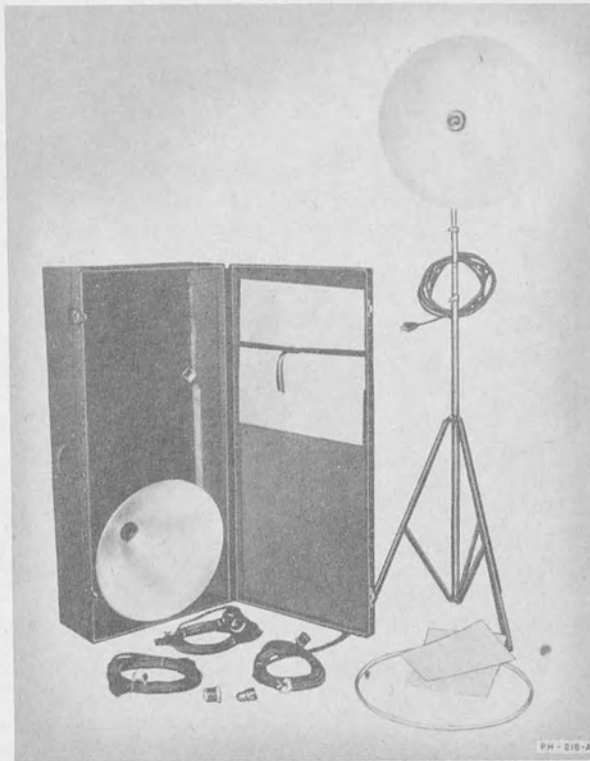


Figure 55. Lamp Equipment PH-218-A.

Status: Standard. *Stock No.:* 8A2188A.

Lamp Equipment PH-218-A is essentially a nonfocusing, open photo type, parabolic reflector made of spun aluminum with a fine frosted finish. The reflector is 18 inches in diameter and 9 inches deep. The tripod stand can be extended to 12½ feet in height.

PRINCIPAL COMPONENTS

Adapter PH-276	Tripod
Extension cord	Reflector
Case	Lamp, photoflood

WEIGHT AND VOLUME

Total weight (lb).....	<i>Packed</i> 68
Total volume (cu ft).....	6.5

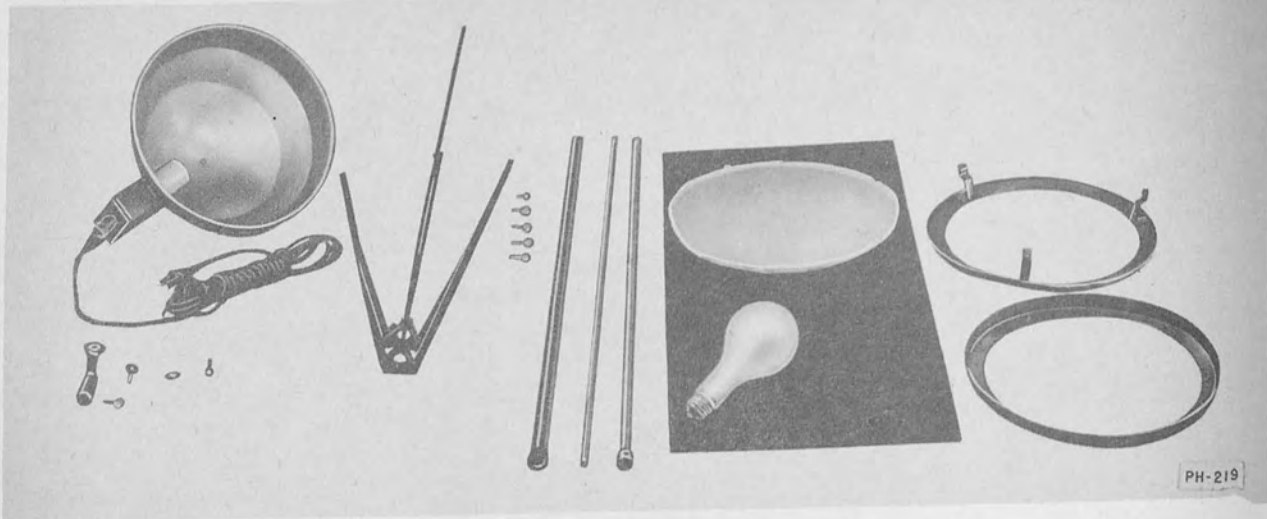


Figure 56. Lamp Equipment PH-219.

Status: Standard. Stock No.: 8A2189.

Lamp Equipment PH-219 is a single parabolic lamp, having an adjustable socket, with screen, tripod, and 15-foot cord. The lamp uses a No. 1 or No. 2 photoflood or 500-watt, T-20 Mazda bulb.

PRINCIPAL COMPONENTS

Floodlight Tripod Lamp, photoflood

WEIGHT AND VOLUME

Total weight (lb)-----	Packed 25
Total volume (cu ft)-----	1.5



Figure 57. Projector PH-222, assembled.

Status: Standard. *Stock No.:* 8A3122-222 (PH-222) and 8A3122-22C (PH-222-C). *References:* TM 11-408 (PH-222) and TM 11-2332 (PH-222-C).

Projector PH-222-(*) represents Projectors PH-122 and PH-222-C. Projector PH-222-(*) is designed to project 2- by 2-inch slides (in fiber, cardboard, or glass mounts) and 35-mm film strips (single or double frame). The equipment consists of a 300-watt projector; a 5- and 7-inch lens; a slide changer; an extra size film magazine with a retaining arm; a 10-foot (15 feet, PH-222-C), No. 18 rubber-covered cord with plug; two Mazda, 300-watt, 115-volt projection lamps with medium prefocus bases; a T-10 projection lamp; and a carrying case.

TECHNICAL CHARACTERISTICS

TYPE: Film strip and slides.
 SIZE: 35-mm and miniature slides.
 LENS: PH-222: 5-in. anastigmat and 7-in. anastigmat;
 PH-222-C: 5-in. anastigmat f/3.5.
 RANGE: Darkened classroom or small assembly hall.
 LAMP RATING: 300 w, T-10 type, 115 v or 230 v with
 prefocused bayonet mount.
 POWER SUPPLY: PH-222: 110- to 120-v, 220- to 230-v,
 ac or dc, 300-w. PH-222-C: 115-v ac or dc.

PRINCIPAL COMPONENTS

Projector	Power cord
Carrying case	Slide carrier

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	13	35
Total volume (cu ft).....	0.8	2

PH-239-A



Figure 58. Splicer PH-239-A.

Status: Standard. Stock No.: 8F7877.
 Splicer PH-239-A is a splicer for 16-mm sound or silent film. It has a $\frac{1}{10}$ -inch overlap for positive film and a $\frac{1}{16}$ -inch overlap for negative film. Splicer PH-239-A replaces Splicer PH-239.

WEIGHT AND VOLUME

Total weight (lb)-----	Packed 3.4
Total volume (cu ft)-----	15

Status: Standard. Stock No.: 8A4510.
 Washer PH-240 is a 36-inch rotary washer used for washing photographic prints.

WEIGHT AND VOLUME

Total weight (lb)-----	Packed 171
Total volume (cu ft)-----	10

PH-240

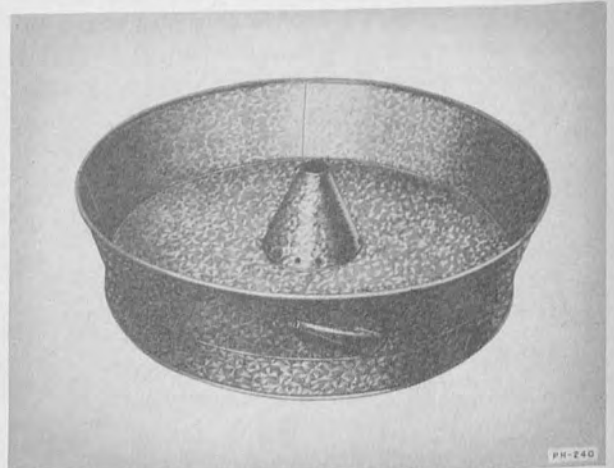


Figure 59. Washer PH-240.

Status: Standard. *Stock No.:* 8A4510A. *Reference:* TM 11-2398.

Washer PH-240-A is a motor-driven print washer with a perforated revolving drum in the tank. The induction-type, $\frac{1}{2}$ -hp motor operates on 115-volt, 60-cycle ac. A continuous flow of water is maintained in the washer while the drum is rotated. Thirty-five to 50 prints, depending on size, can be accommodated at a time.

WEIGHTS AND VOLUMES

	Unpacked	Domestic pack	Export pack
Total weight (lb)-----	131	171	252
Total volume (cu ft)-----	18½	21.2	25.8
Ship tons-----	0.58	-----	0.63

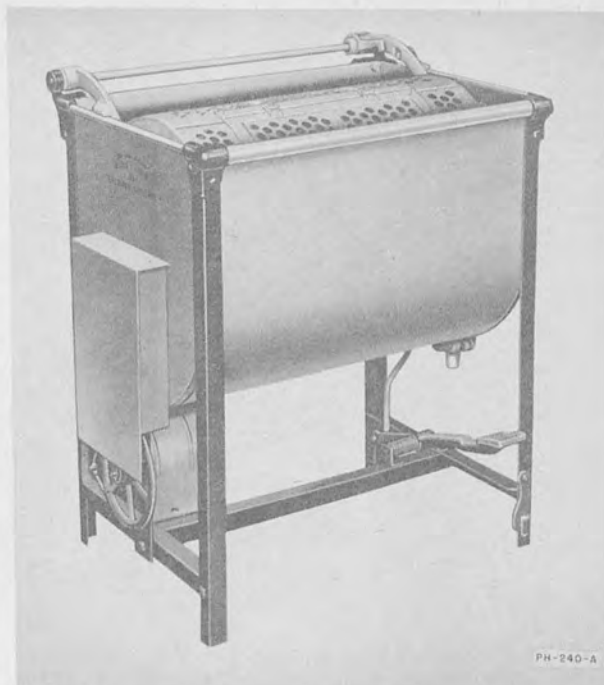


Figure 60. Washer PH-240-A.

PH-242

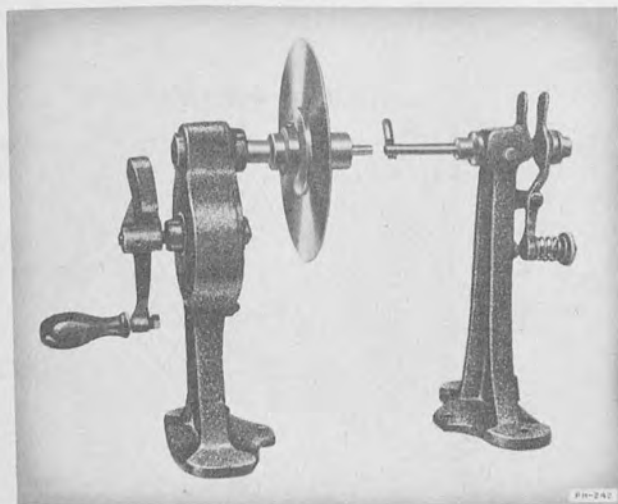


Figure 61. Rewinder Set PH-242.

Status: Standard. *Stock No.:* 8A3292.2.

Rewinder Set PH-242 accommodates 16-mm and 35-mm 2,000-foot film reels. The rewinder consists of two geared ends, both with counter-balanced cranks, one with a brake and the other with a gear ratio of $2\frac{1}{2}$ to 1.

WEIGHT AND VOLUME

Total weight (lb)-----	Packed	25.8
Total volume (cu ft)-----		2.5



Figure 62. Developing Equipment PH-253-C.

Status: Limited/Std. Stock No.: 8A942C. Reference: TM 11-2394.

Developing Equipment PH-253-C is a portable film-developing tank for negative and reversal-to-positive processing of a 100-foot reel of 16-mm or 35-mm film. The hand-operated equipment can be used on a small work table. Developing Equipment PH-253-C replaces Developing Equipments PH-253-A and -B.

TECHNICAL CHARACTERISTICS

FILM CAPACITY: 100 ft.
 FILM SIZE: 16-mm or 35-mm.
 WORKING TEMPERATURE: 70° F. (21.1° C.).

CRANKING SPEED:

2 revolutions per second (100 ft of film).
 1 revolution per second (50 ft of film).

TANK CAPACITY:

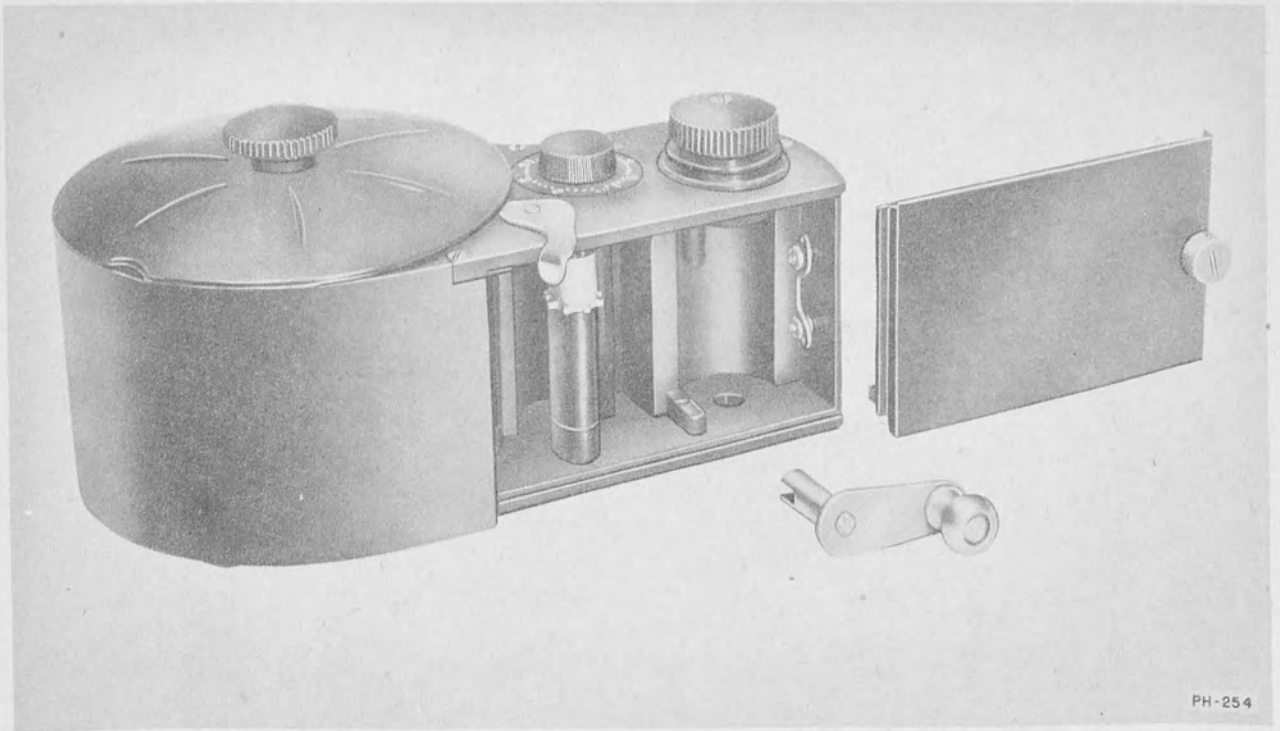
32 oz (1 liter) of solution for 16-mm film.
 48 oz (1.5 liter) of solution for 35-mm film.

PRINCIPAL COMPONENTS

Name	Diameter	Dimensions (in.)		Width
		Length	Height	
Tank		10¾	4	5¾
Reel	5		1½	
Case		13¾	7½	7½

WEIGHT AND VOLUME

Total weight (lb)	200
Total volume (cu ft)	9



PH-254

Figure 63. Film Winder PH-254.

Status: Standard. *Stock No.:* 8A1098.

Film Winder PH-254 is a 100-foot winder for daylight loading of 35-mm still camera cartridges. The equipment includes an integral frame counter.

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	2
Total volume (cu ft).....	0.11



Figure 64. Exposure Meter PH-260.

Status: Standard. *Stock No.:* 8A1056 (PH-260) and 8A1056A (PH-260-A). *Reference:* TM 11-2356.

Exposure Meter PH-260-(*), represents Exposure Meters PH-260 and PH-260-A. Exposure Meter PH-260-(*), consists principally of a photoelectric cell, meter movement assembly, and associated scales, all contained in a bakelite case. The meter indicates light values of reflected light for determining proper exposure data. It provides means of converting light-value information into proper combinations of lens aperture and shutter speed, or in the case of motion picture cameras, into lens aperture for a prescribed number of frames per second. The PH-260 is used primarily for still-type cameras; PH-260-A is calibrated for use with either still- or cine-type camera.

TECHNICAL CHARACTERISTICS

ANGLE OF ACCEPTANCE: 60° vertical; 120° horizontal.
 EMULSION SPEED SCALE: 0.8 to 800.
 (ASA rating)
 SHUTTER SPEED SCALE:
 PH-260: 1/80 to 120 sec.
 PH-260-A: 1/800 to 30 sec.
 LIGHT VALUES: 0 to 1,250 candles per square ft.
 LENS-APERTURE SCALE:
 PH-260: f/1 through f/45.
 PH-260-A: f/1.4 through f/45.
 FRAMES PER SECOND SCALE (PH-260-A only):
 8 through 32.

PRINCIPAL COMPONENTS

Exposure meter
 Carrying case
 Carrying strap

WEIGHT AND VOLUME

Total weight (lb).....	1.268
Total volume (cu ft).....	.042

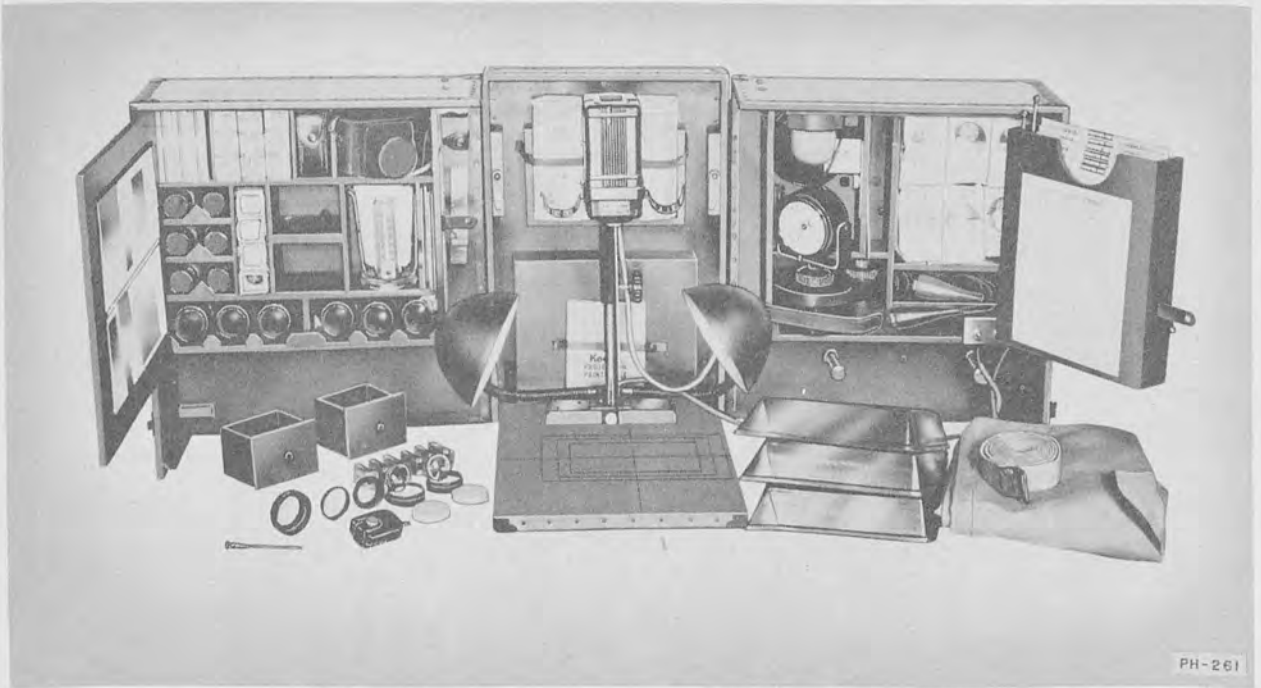


Figure 65. Photographic Set PH-261.

Status: Standard. Stock No.: 8A2861. Reference: TM 11-400.

Photographic Set PH-261 contains material for taking pictures, processing film, and making enlargements. The carrying case is so arranged that all equipment can be packed quickly for moving. With the exception of the copying lights, Photographic Set PH-261 can be operated on

either a 6- to 8- volt or a 100- to 120-volt power supply. The copying lights can be used only on a 100- to 120-volt power supply.

TECHNICAL CHARACTERISTICS

SIZE OF FILM: 35-mm.

MAGNIFICATION: $1\frac{1}{2}$ to 16 times.

POWER SOURCE: 6- to 8-v or 100- to 120-v.

LAMP: 6- to 8-v, 10-w; 110-v, $7\frac{1}{2}$ -w.

PRINCIPAL COMPONENTS

Name	Diameter	Length	Dimensions (in.)		
			Height	Width	Depth
Case PH-318			22.0	14.5	21.0
Enlarger PH-275-A			18.0	4.0	10.0
Lens, projection	2.0	2.0			
Board PH-317			11.0	9.5	1.0
Timer PH-29-B	4.0				3.0
Camera PH-324			3.25	5.25	3.25
Clamp (Kodapod)		3.25	1.5	2.0	
Filter	1.725				.25
Lens hood	2.25				.75
Lens, portra	1.725				.25
Film, M-135 microfile					
Film, Super XX					
Cable Release PH-308		6.75			
Exposure Meter PH-77-D		3.75		2.25	1.25
Developer, DK-20	1.5		2.975		
Developer, universal	.725		4.0		
Hardener and fixer	2.25		4.0		
Graduate PH-11	3.975		6.0		
Rod PH-230	.5	10.0			
Tray PH-158-A		12.5	2.25	10.725	
Thermometer PH-28		4.975		1.250	.475

PRINCIPAL COMPONENTS—Continued

Name	Diameter	Length	Height	Dimensions (in.)		Depth
				Width		
Sponge, viscose.....		5.0		3.0		1.5
Clip PH-165.....		2.25		1.25		.5
Blotters, photographic.....		8.25		10.25		
Tank PH-322.....			4.0	7.5		5.25
Paper, enlarging, grade 2.....		10.0		8.0		
Paper, enlarging, grade 3.....		10.0		9.0		
Paper, lens-cleaning.....		6.0		4.0		

WEIGHT AND VOLUME

Total weight (lb).....	Packed 123
Total volume (cu ft).....	6

PH-270



Figure 66. Camera PH-270, in use with Recorder PH-271.

Status: Standard. Stock No.: 8A370. Reference: TM 11-2353.

Camera PH-270 is a 35-mm, single-system, newsreel, motion picture and sound recording camera. This professional motion picture camera has a minimum of flutter to permit simultaneous recording of sound and picture. The equipment includes a tripod, magazines, carrying cases, a 12-volt, d-c electric motor, and a lens turret which accommodates four lenses.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
 TYPE OF DRIVE: Intermittent.
 CAPACITY: 400 ft.
 TYPE OF LOADING: Magazine.

POWER SUPPLY: 12-v dc.

LENS: 35-mm or 40-mm, 50-mm, 75-mm, 100-mm, and 152-mm.

SPEED: 1,440 frames per minute or 90 fpm.

SHUTTER SPEED: Synchronized to speed of film.

COLD WEATHER OPERATION: 40° F. below zero on 50 w.

PRINCIPAL COMPONENTS

- Camera
- Magazine case with magazines
- Tripod
- Lens (5 supplied)

WEIGHT AND VOLUME

Total weight (lb).....	Packed 347
Total volume (cu ft).....	20
Ship tons.....	0.5



Figure 67. Recorder PH-271.

Status: Standard. *Stock No.:* 8A3219-271.

Reference: TM 11-2353.

Recorder PH-271 is a single-system newsreel sound recorder for 35-mm motion pictures. It consists of a film exposing system, a recording amplifier, a microphone, a lamp, a galvanometer, conductors, a carrying case, and other accessories necessary for the recording of sound on film. There are three interchangeable masks for the sound optical system, one which records a standard sound track, one for a class B track, and one for a class AB track. These are all variable area tracks. Recorder PH-271 is used with Cameras PH-270 and PH-516/GF.

TECHNICAL CHARACTERISTICS

HEADSET: Magnetic; 10-ohm.
 MICROPHONE: Dynamic; 250-ohm output impedance;
 freq response 30-10,000 c+5 db.
 TRIPOD: Folded, 32 in.; extended, 72 in.
 POWER SOURCE: 12- to 24-v dc.

PRINCIPAL COMPONENTS

Amplifier	Tripod
Optical system	Cable bag

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	421
Total volume (cu ft).....	26. 04
Ship tons.....	0. 65



Figure 68. Camera PH-274, set up for normal operation.

Status: Standard. *Stock No.:* 8A374 (PH-274) and 8A374A (PH-274-A). *Reference:* TM 11-2386.

Camera PH-274-(*), represents Cameras PH-274 and PH-274-A. Camera PH-274-(*), is designed for studio and field production work. Camera PH-274-(*), is a 35-mm motion picture camera with a motor, three 1,000-foot magazines, eight lenses (25 to 375 mm), eight viewfinder adapter lenses, a standard and baby tripod, glass filter sets, gelatine filter sets, a changing bag, and general cleaning items. The camera operates from a 12-volt battery. Carrying cases are included. Camera PH-274 has all the accessories necessary for photography of silent pictures as well as for use with a sound recorder. Camera PH-274-A is similar to Camera PH-274 except that the PH-274-A has an eccentric movement instead of an intermittent movement.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
 TYPE OF DRIVE: Intermittent (eccentric PH-274-A).
 CAPACITY: 1,000 ft.
 TYPE OF LOADING: Magazine.
 POWER SUPPLY: 12-v battery.
 LENS: 25-mm, 250-mm, 152-mm, 375-mm, 35-mm, 50-mm, 75-mm, 100-mm.
 TRIPOD HEIGHT: 4½ in. to 6 ft. 4 in.
 SPEED: Any speed up to 24 frames per second.
 SHUTTER SPEED: Synchronized to speed of film.
 SHUTTER: Rotary dissolving type: maximum opening of 170°.

PRINCIPAL COMPONENTS

Camera
 Motor

Tripod equipment

WEIGHT AND VOLUME

Total weight (lb)_____	Packed 75
Total volume (cu ft)_____	2

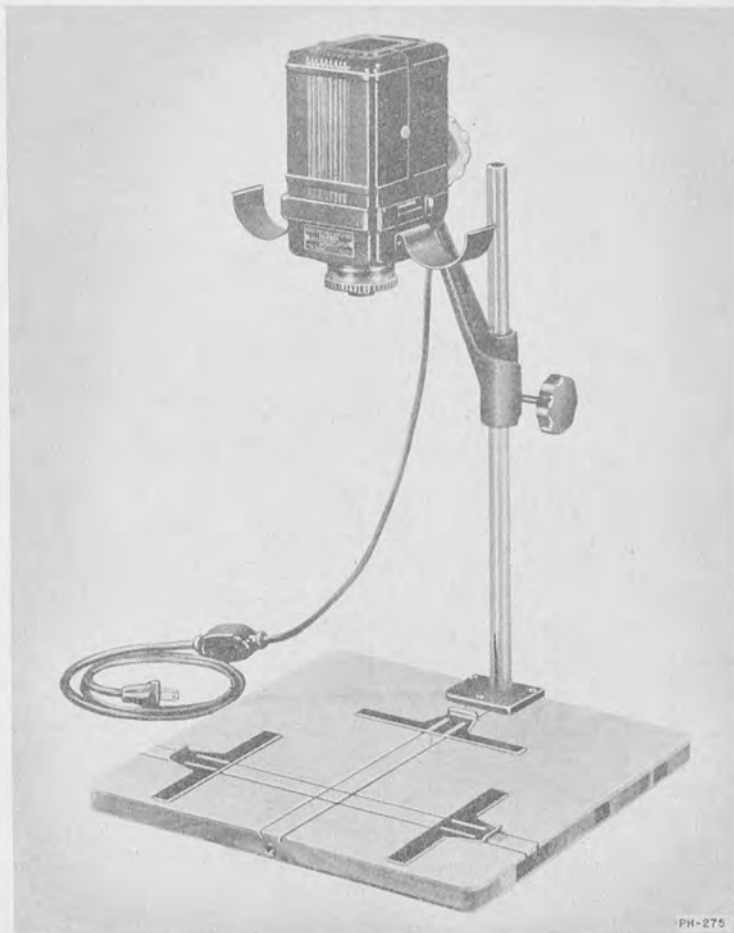


Figure 69. Enlarger PH-275.

Status: Standard. *Stock No.:* 8A1052. *Reference:* TM 11-2368.

Enlarger PH-275 is a portable enlarger for 35-mm negatives only. The enlarger consists of a plastic enlarger head containing the enlarger lamp, condenser lenses, projection lens, heat-absorbing glass, and baffle. It is mounted on an adjustable elevating arm which can be moved up or down an elevating post secured to the paper board. Sliding metal guides on the paper board locate the sensitized paper and maintain it on a horizontal plane. Enlarger PH-275 is known as Enlarger PH-275-A when it is part of Photographic Set PH-261. The differences are: The baseboard of PH-275-A is part of the case of Photographic Set PH-261, PH-275-A utilizes an 8- by 10-inch metal paper Board PH-317 instead of the metal guides, and the ON-OFF switch for PH-275-A is mounted in the electrical control

box of PH-261 and is not part of the lamp cord.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.

TYPE: Projection.

LENS: f/6.3.

SHUTTER: None. A red filter is used.

PROJECTION EQUIPMENT: 50-w, 120-v Mazda lamp; three-element condenser system; and a heat-absorbing glass.

PRINCIPAL COMPONENTS

Projection lens	Case, photo enlarger
Enlarger head	Paper board
Negative holder	Paper clamp
Bracket, enlarger	Board PH-425
Roll film holders	

WEIGHT AND VOLUME

Total weight (lb).....	10
Total volume (cu ft).....	0.8

Unpacked

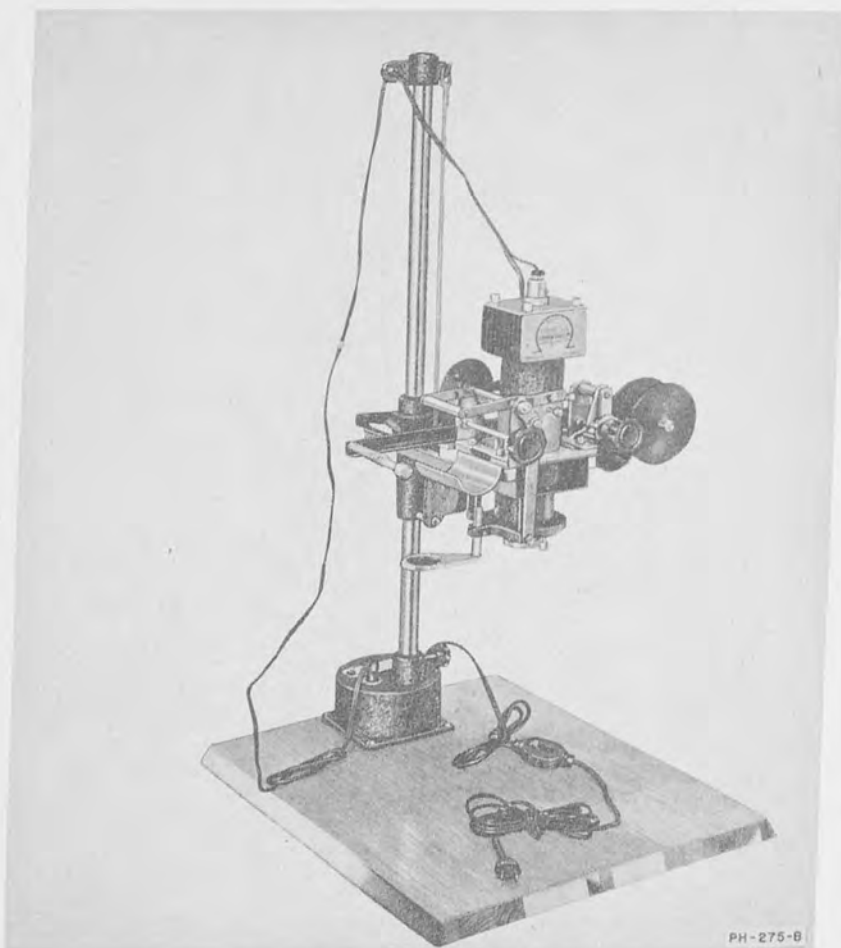


Figure 70. Enlarger PH-275-B.

Status: Standard. Stock No.: 8A1052B. Reference: TM 11-2368B.

Enlarger PH-275-B is a 35-mm enlarger with a microfilm attachment. The equipment includes a reel and film winding device for 100-foot reels, and an Omega, anastigmat, 2-inch, $f/4.5$ lens with click stops to help identify the diaphragm openings. Illumination is provided by a bayonet-type 6- to 8-volt, 32-candlepower opal lamp mounted behind a pair of condenser lenses. Magnifications up to approximately 28 times may be obtained by projection to enlarging paper placed on the floor. Enlarger PH-275-B is similar to PH-642/TFQ-1.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
 MAGNIFICATION: $1\frac{1}{2}$ to 16.
 TYPE: Projection; condenser design.
 LENS: $f/4.5$.
 DIAPHRAGM RANGE: $f/4.5$ to $f/22$.
 SHUTTER: None. A red filter is used.
 CAPACITY: Microfilm 100-ft reel.
 PROJECTION EQUIPMENT: Lamp (32-cp), two condensing lenses, and an enlarging lens.
 POWER SOURCE: 6- to 8-v dc or 110- to 120-v, 60-cyc ac.

PRINCIPAL COMPONENTS

Bare unit	Projection lens
Base and girder support	Microfile attachment
Printer head base	Condenser lens
Optical system	

Status: Standard. Stock No.: 8A2557. Reference: TM 11-2352.

Lens Assembly PH-277 is a telescopic 10-inch f/4.85 lens in a barrel with an iris diaphragm mounted in Board PH-119. There are two infinity stops, finder masks, and protective cases included in the assembly. The assembly is used with, but is not part of, Camera PH-47-E.



Figure 71. Lens Assembly PH-277.



Figure 72. Film Examining Machine PH-279.

Status: Limited/Std. Stock No.: 8A1079-279. Reference: TM 11-2388.

Film Examining Machine PH-279 is a table model viewing machine designed for use in the inspection and editing of 35-mm positive motion picture film. A motor-driven mechanism intermittently moves the film past a lighted aperture. The aperture is provided with a viewing lens which may be raised to make the film accessible for marking. The speed of the film through the machine is controlled by either a hand-operated rheostat knob on the machine or a foot-operated control unit connected to the machine. Film Examining Machine PH-279 is used for viewing relatively short lengths of film which do not need to be handled on reels.

TECHNICAL CHARACTERISTICS

MOTOR: Variable speed, universal type.
 LIGHTING UNIT: 115-v, 25-w lamp.
 CAPACITY: Short lengths (less than 1,000 ft).
 FILM SIZE: 35-mm.
 SHUTTER: None.
 POWER SOURCE: 115-v ac, dc.

PRINCIPAL COMPONENTS

Bare unit	Lamp 115-v, 40 w
Lamp 25-amp, 115-v, 25-w	Lens, magnifying

WEIGHT AND VOLUME

Total weight (lb).....	35
Total volume (cu ft).....	2

Packed

35

2

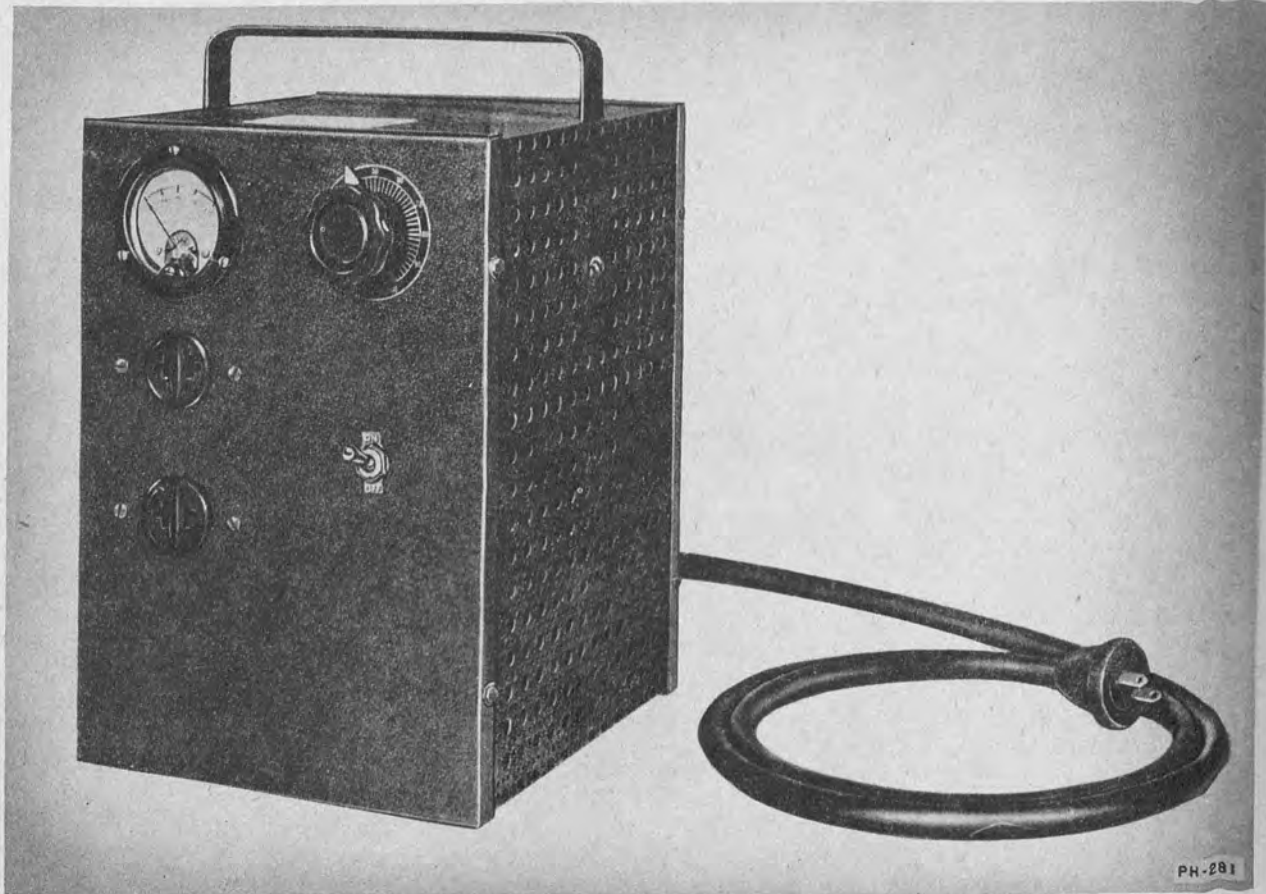


Figure 73. Transformer PH-281.

Status: Standard. *Stock No.:* 8A3881. *Reference:* TM 11-2341.

Transformer PH-281 is a self-contained, portable, single-phase, iron-core autotransformer which steps down a 50- to 60-cycle, 130- to 260-volt input to 115-volt, 2-kva output. The input winding is tapped and connects to a 12-position rotary tap switch. The switch controls the number of turns on the input winding. The output winding is connected to two female connectors and to a 0- to 150-volt a-c voltmeter. One end of a two-

conductor, rubber-covered power cable is connected permanently to the transformer and the other end terminates in a standard male contact connector. Transformer PH-281 is used with 16-mm sound projectors when a 115-volt, a-c source is not available. It can be used with all types of equipment that require a 115-volt source provided that the transformer is not overloaded.

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Packed</i>
Total weight (lb)-----	42	65
Total volume (cu ft)-----	1.5	2.8

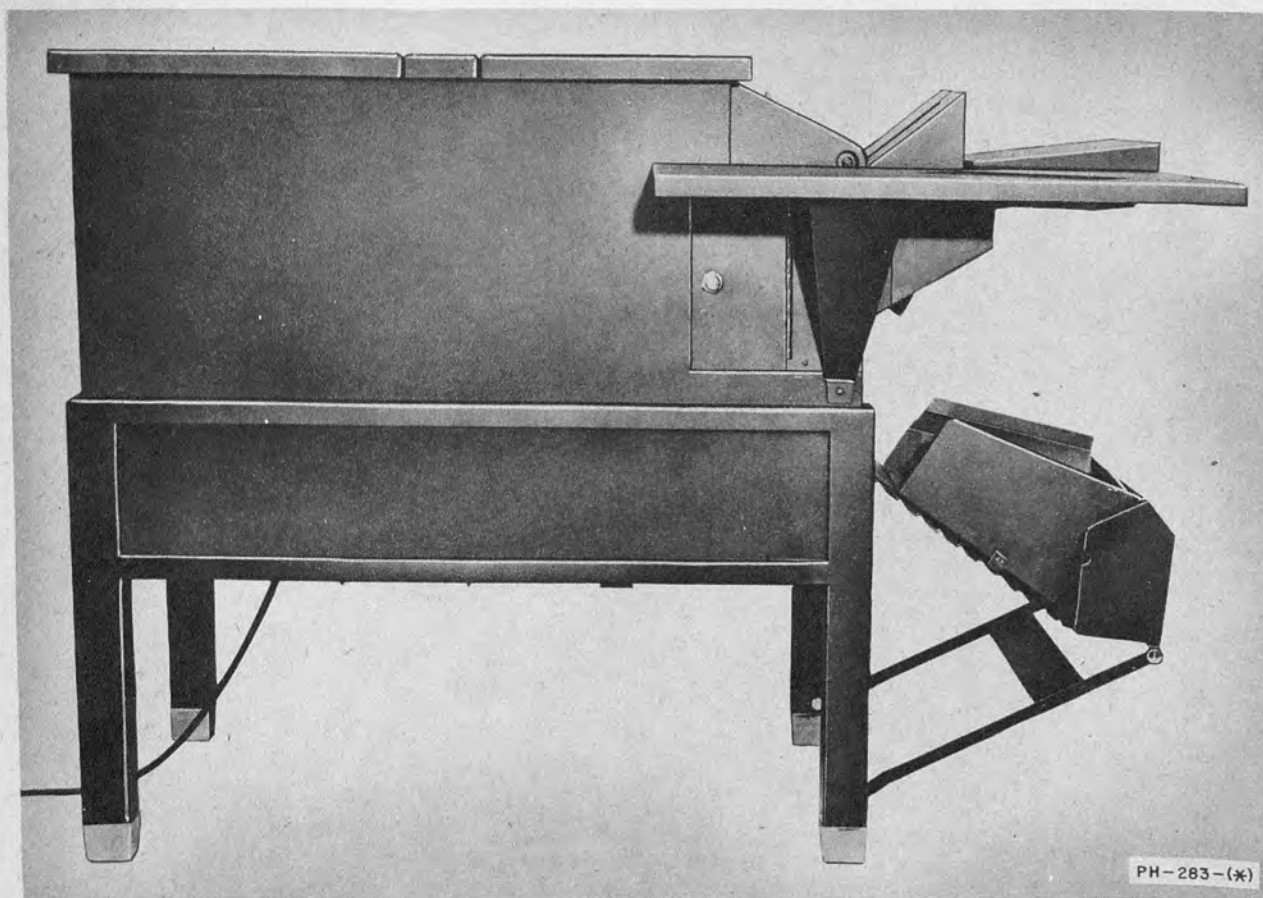


Figure 74. Recorder PH-283.

Status: Standard. *Stock No.:* 8A3213 (PH-283) and 8A3214 (PH-283-Y). *Reference:* TM 11-2310.

Recorder PH-283-(*) represents Recorders PH-283 and PH-283-Y. Recorder PH-283-(*) is a semiautomatic copying machine designed to photograph records, letters, and documents not exceeding 8½ inches in width, on 100-foot spools of 16-mm film. The equipment photographs all copy in motion and accommodates work as rapidly as it can be fed into the machine (approximately 45 documents per minute). Recorder PH-283 operates on 115-volt, 60-cycle ac while Recorder PH-283-Y operates on 115-volt 50-cycle ac.

TECHNICAL CHARACTERISTICS

TYPE: Semiautomatic copying.
 SIZE: Photograph up to 8½.
 FILM SIZE: 35-mm.
 FILM CAPACITY: 100 ft.
 CAPACITY: 45 documents/minute.
 POWER SOURCE:
 PH-283: 115-v, 60-cyc ac.
 PH-283-Y: 115-v, 50-cyc ac.

PRINCIPAL COMPONENTS

Bare unit	Camera
Document-handling mechanism	Drive system
	Lighting system

WEIGHT AND VOLUME

Total weight (lb).....	Packed 390
Total volume (cu ft).....	25.7
Ship tons.....	0.64

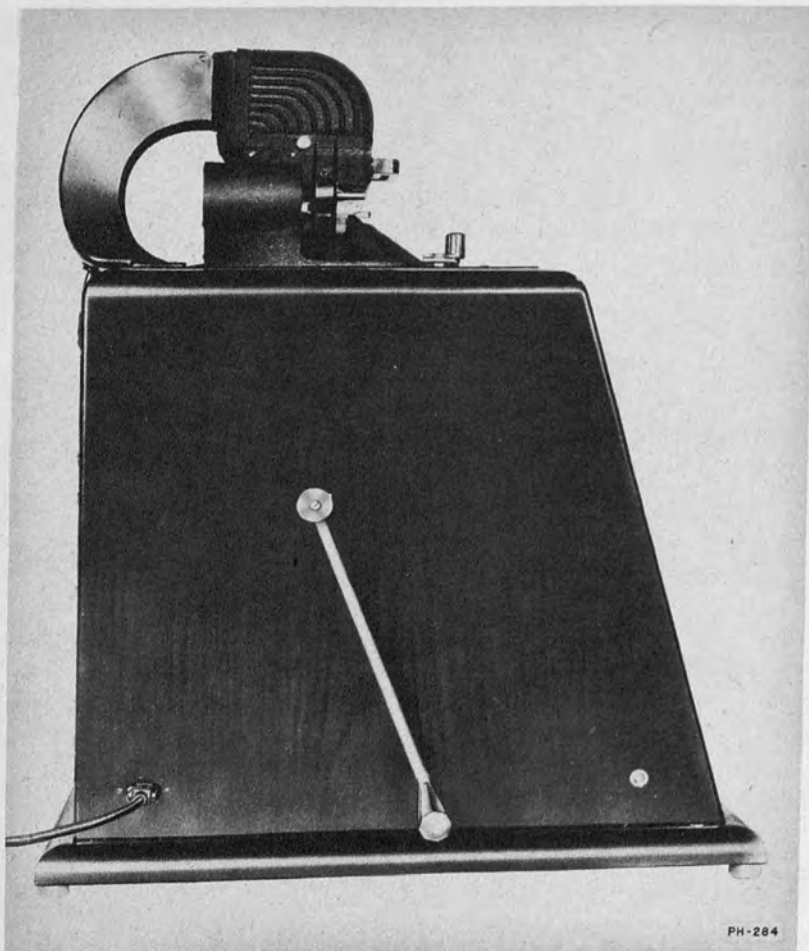


Figure 75. Reader PH-284.

Status: Standard. *Stock No.:* 8A3216-284.

Reference: TM 11-2309.

Reader PH-284 is a dual-purpose machine used either for reading 16-mm film by means of enlarged images projected on a built-in translucent screen, or for making enlarged photographic prints from 16-mm film. A simple conversion process permits its use for either purpose. It operates from 100- to 125-volt ac or dc.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm film.

TYPE OF DRIVE: Hand-wound.

HEAD ROTATION: 360°.

PROJECTION EQUIPMENT: 200-w, 110-v.

MAGNIFICATION OF PRINTS: 18 times maximum.

POWER SOURCE: 115-v ac or dc.

PRINCIPAL COMPONENTS

Reader	Head assembly
Cabinet	Lamphouse
Projection mirror	

WEIGHT AND VOLUME

Total weight (lb).....	300	<i>Packed</i>
Total volume (cu ft).....	25	
Ship tons.....	0.63	

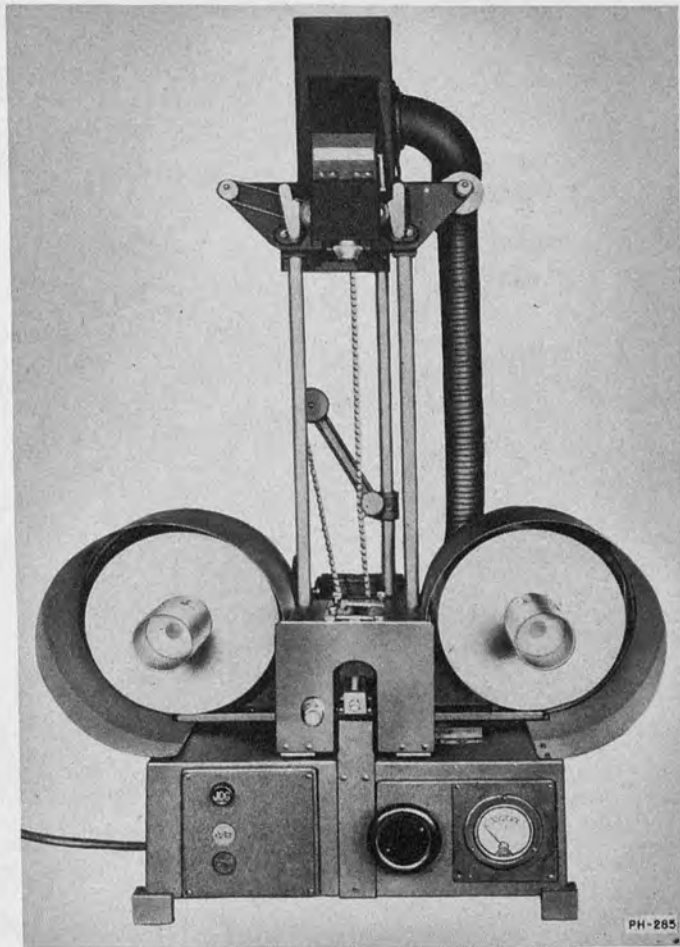


Figure 76. Enlarger PH-285.

Status: Standard. *Stock No.:* 8A1052-285.
Reference: TM 11-2307.

Enlarger PH-285 is designed to enlarge negative images from a continuously moving, 100-foot roll of 16-mm film which is synchronized with and focused on a moving roll of photosensitive paper $4\frac{1}{2}$ inches wide. The enlarging factor is set at 8 diameters so that the machine, which accommodates one roll of paper 825 feet long, can project a 100-foot roll of film on to a single roll of paper in one continuous operation. The equipment operates on 110- to 120-volt, 50- to 60-cycle ac. Enlarger PH-521/GF is similar to Enlarger PH-285 except that the PH-521/GF uses paper 8 inches wide.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
TYPE: Projection.
CAPACITY: 100-ft roll of film.
LENS: 50-mm f/4.5 (fixed focus).
MAGNIFICATION: 8 diameters.
SHUTTER: None.
PROJECTION EQUIPMENT: 115-v, 500-w projection lamp.
POWER SOURCE: 110- to 120-v, 50- to 60-cyc ac.

PRINCIPAL COMPONENTS

Bare unit	Lamphouse and filmhead assembly
Base assembly	Paper and film driving system
Paperhead assembly	
Film reel	

WEIGHT AND VOLUME

Total weight (lb)-----	Packed 445
Total volume (cu ft)-----	26.5
Ship tons-----	1.67

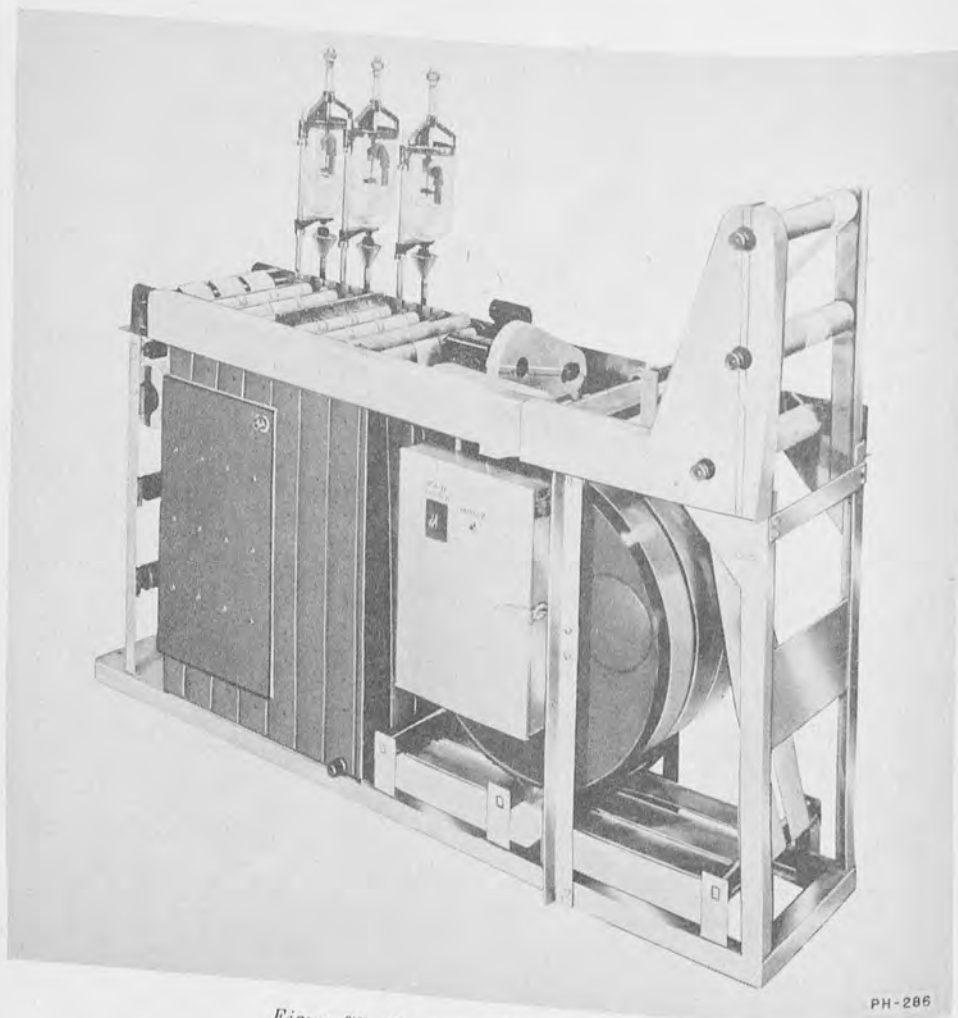


Figure 77. Processing Machine PH-286.

Status: Standard. Stock No.: 8A3150-286.
 Processing Machine PH-286 is designed for permanent installation. In one continuous operation, the machine develops, fixes, washes, and dries rolls of exposed photographic paper of various widths, at a constant speed of 5 fpm. The equipment requires 50 amperes of 115-volt, 50- to 60-cycle ac.

TECHNICAL CHARACTERISTICS

SIZE: Various widths.
 SPEED: 5 fpm.
 POWER SOURCE: 115-v, 50- to 60-cyc, 50-amp ac

WEIGHT AND VOLUME

Total weight (lb).....
 Total volume (cu ft).....
 Ship tons.....



Figure 78. Dryer PH-288.

Status: Standard. Stock No.: 8A979-288 (PH-288) and 8A979-288A (PH-288-A). Reference: TM 11-2381.

Dryer PH-288-(*), represents Dryers PH-288 and PH-288-A. Dryer PH-288-(*), is designed for quick drying of glossy and matte photographic prints by the application of heat to ferrotype plates. The heat is controlled by a thermostat. Plates of any size up to 18 by 24 inches may be used, but none are supplied as part of this equipment. The dryer operates on 110- to 120-volt ac.

TECHNICAL CHARACTERISTICS

THERMOSTAT: 50° to 300° F.; 1,200-w load.
SPEED:

Single-weight print: 4 min.

Double-weight print: 8 min.

POWER SOURCE: 110- to 120-v ac.

PRINCIPAL COMPONENTS

Body	Legs	Aprons
WEIGHT AND VOLUME		
Total weight (lb).....		Packed 25
Total volume (cu ft).....		2.5

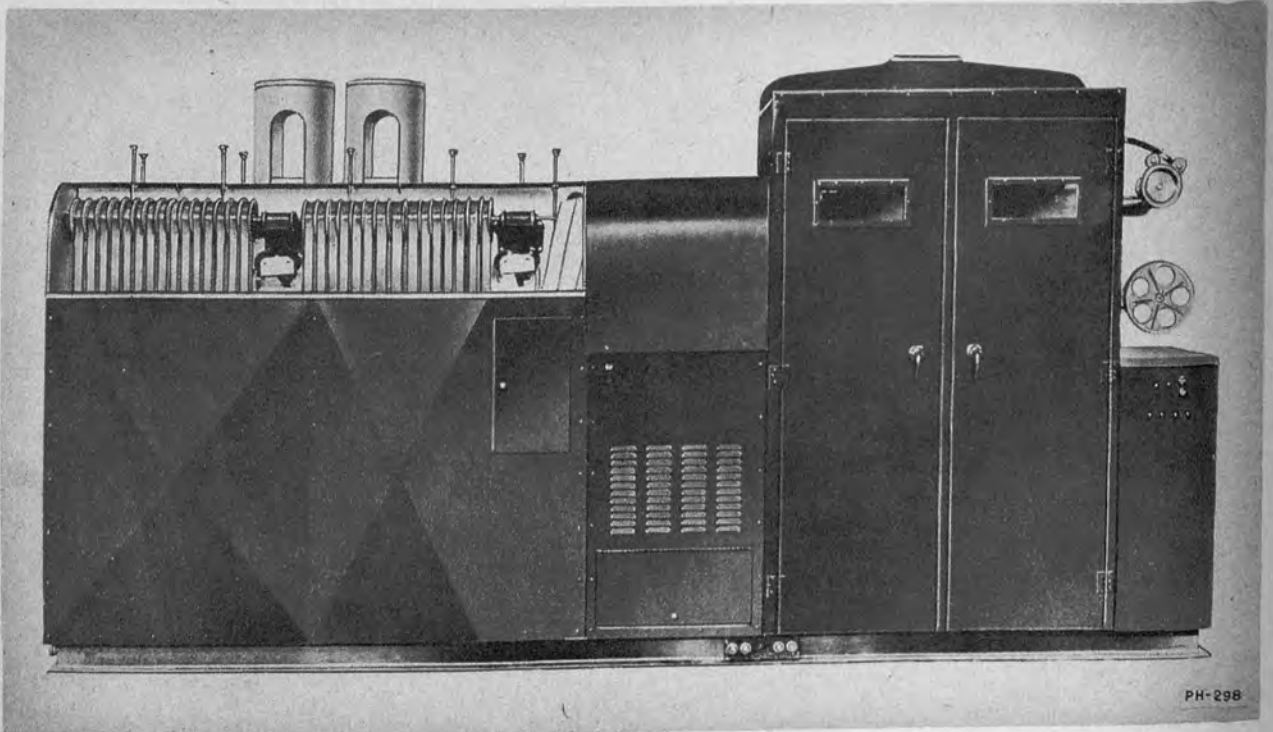


Figure 79. Developing Machine PH-298.

Status: Standard. *Stock No.:* 8A958. *Reference:* TM 11-2376.

Developing Machine PH-298 is a complete mobile equipment for the positive and negative processing of 35-mm motion picture film. It is self-contained and includes every component and accessory needed for film processing. The machine is designed to be operated in a photographic darkroom. Developing Machine PH-298 requires a 220- to 230-volt, 50- to 60-cycle, single-phase, a-c power supply and draws approximately 12 kva. Developing time is controlled by a variable speed transmission system which is set in film speed per minute. The temperature of the developing solutions is maintained within limits by a thermostatically controlled refrigeration unit and heater elements.

TECHNICAL CHARACTERISTICS

FILM SIZE: 35-mm.
 MOTOR: $\frac{1}{4}$ -hp, self-synchronous.
 WATER SUPPLY: 10 gpm.
 THERMOSTAT:
 Cut-off: 68° F.
 Cut-in: 70° F.
 POWER SOURCE: 220- to 230-v, 50- to 60-cyc ac.

PRINCIPAL COMPONENTS

Developing unit Infrared lamp
 Drying unit

WEIGHT AND VOLUME

Total weight (lb).....	500
Total volume (cu ft).....	35
Ship tons.....	0.83

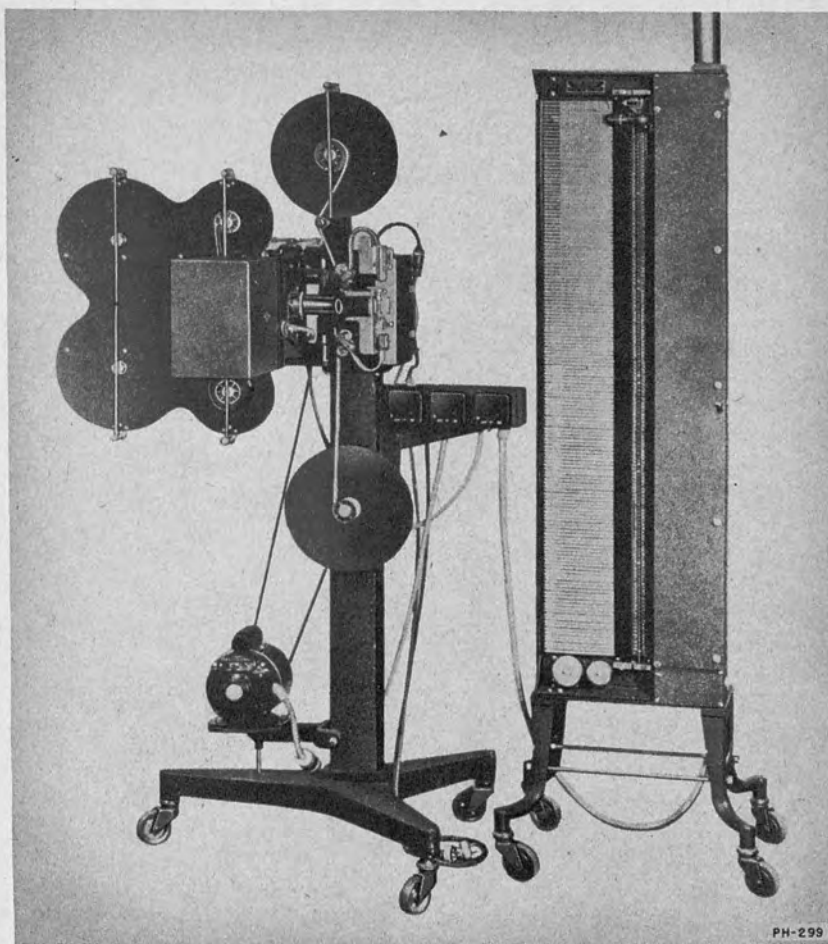


Figure 80. Printer PH-299.

Status: Standard. *Stock No.:* 8A3119-299.

Printer PH-299 makes an optical reduction picture of 35-mm motion picture film to 16-mm motion picture film. The printer has an automatic light control which provides for 22 light changes.

WEIGHT AND VOLUME

Total weight (lb).....	400
Total volume (cu ft).....	30
Ship tons.....	0.75

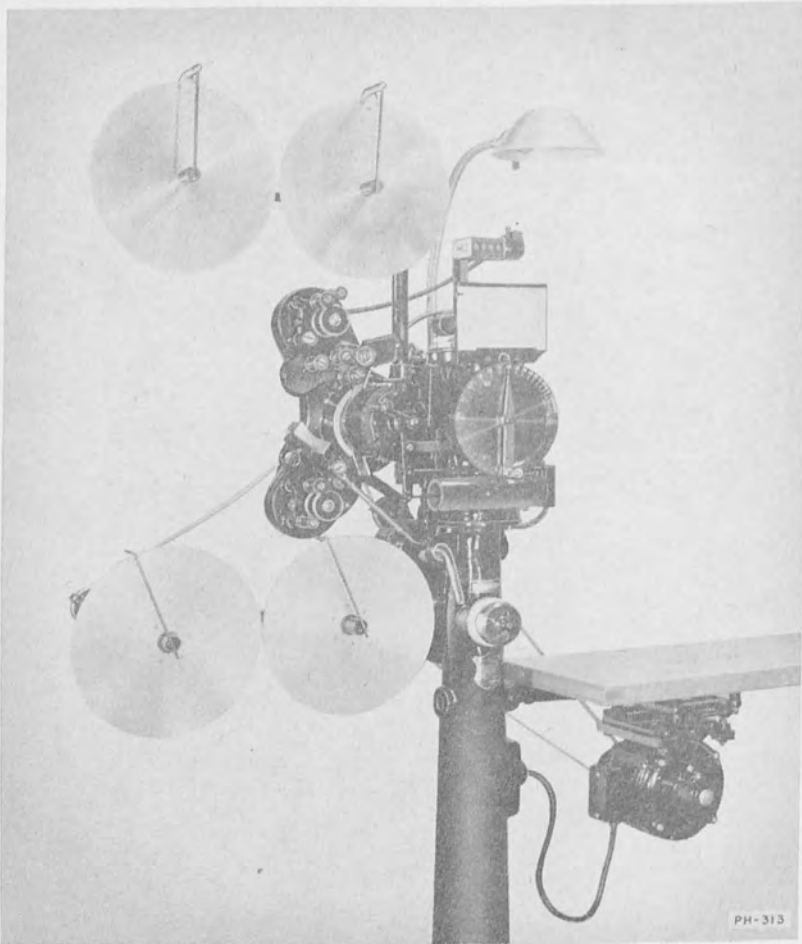


Figure 81. Printer PH-313.

Status: Limited/Std. *Stock No.:* 8A3119-313.

Printer PH-313 is a fully automatic sound and picture production printer for 35-mm motion picture film. It is 5-way, continuous, and automatic. A matte camera used for exposing matte negatives from which the light control mattes are made, and a matte matching attachment for use

with any film splicer are included with the equipment.

WEIGHT AND VOLUME

Total weight (lb).....	550
Total volume (cu ft).....	23
Ship tons.....	0.58

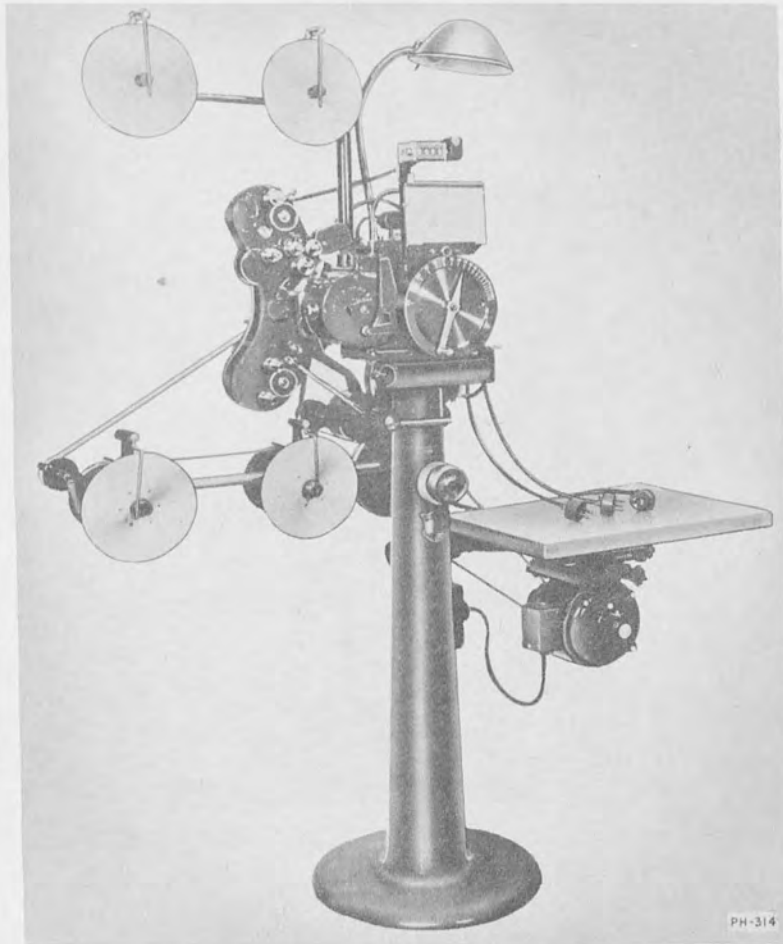


Figure 82. Printer PH-314.

Status: Standard. *Stock No.:* 8A3119-314.

Printer PH-314 consists of a semiautomatic, contact printer and accessories. It is designed for continuous printing of sound or silent 16-mm motion picture film. It is capable of printing the picture area only, the sound area only, or the picture and sound area together.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
 TYPE: Contact.
 LENS: None.

SHUTTER: Curved light.

PROJECTION EQUIPMENT: 150-w, incandescent, double-filament.

PRINCIPAL COMPONENTS

Printer	Lamp 115-v, 150-w, clear
Motor	Lamp 120-v, 25-w, red
Film cores, 16-mm	Film notcher, 16-mm, PH-
Card index	328

WEIGHT AND VOLUME

Total weight (lb)-----	<i>Packed</i> 395
Total volume (cu ft)-----	19

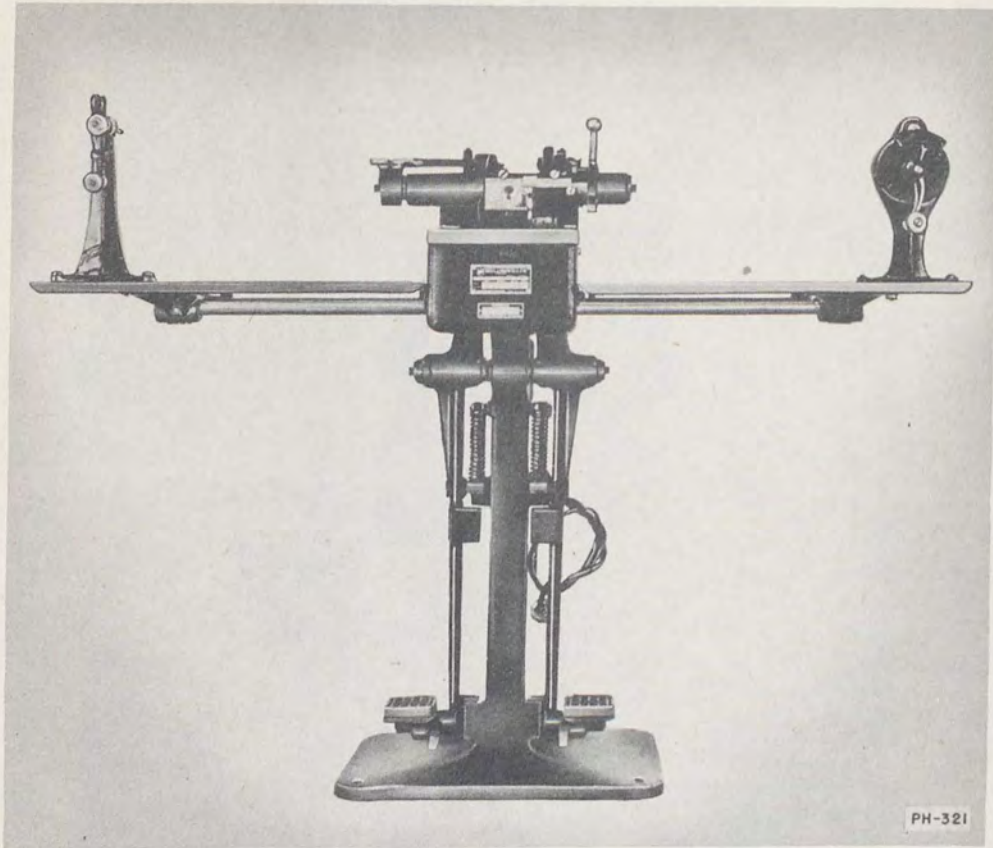


Figure 83. Splicer PH-321.

Status: Standard. Stock No.: 8A329-321.
Reference: TM 11-2392.

Splicer PH-321 is a film-splicing machine consisting of a splicer unit, two service tables, a waste receptacle, a rewinder, and a film holder. The splicer unit has four cutter blades operated by pedals. The equipment is mounted on a pedestal base of sufficient size and weight to prevent tipping or tilting. The splicer is designed to cut and cement together lengths of positive motion picture film to form a continuous film. The splicer

accommodates 35- and 16-mm sound and silent film and 8-mm silent film.

PRINCIPAL COMPONENTS

Bare unit	Service shelves
Scraper block and blade	Rewinder Set PH-355-A
Waste receptacle	

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Packed</i>
Total weight (lb).....	5	7
Total volume (cu ft).....	-----	0.25



Figure 84. Camera PH-324.

Status: Standard. *Stock No.:* 8A424. *Reference:* TM 11-2361.

Camera PH-324 is a portable 35-mm still camera, equipped with an f/4.5 anastigmat lens of 51-mm focal length. The camera has a between-the-lens shutter. It includes carrying Case PH-371 and is part of Photographic Set PH-261. This camera is fitted with click stop adjustments.

TECHNICAL CHARACTERISTICS

TYPE: Candid, hand-held.

SHUTTER: Between-the-lens, Kodak No. 1 Diomatic.

SIZE: 35-mm.

TYPE OF FILM: 35-mm, black-and-white or color, in daylight-loading cassettes.

LENS: 51-mm, f/4.5 Kodak anastigmat lens.

SHUTTER RANGE: 1/25th to 1/150th sec; time; bulb.

DIAPHRAGM STOP: f/4.5, f/5.6, f/8, f/11, and f/16.

FOCAL RANGE: 4, 5, 6, 8, 10, 15, 25, and 50 (ft), and INF.

PRINCIPAL COMPONENTS

Camera

Case PH-371

Carrying strap

WEIGHTS AND VOLUMES

	<i>Unpacked</i>	<i>Packed</i>
Total weight (lb).....	1/4	5.583
Total volume (cu ft).....	0.1	.24

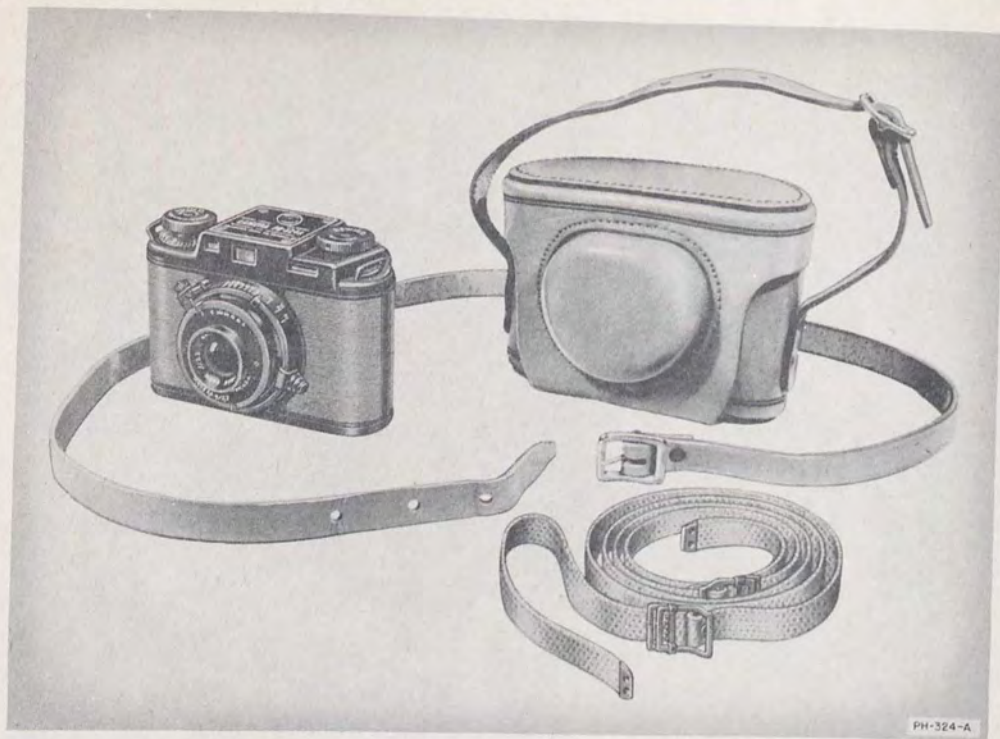


Figure 85. Camera PH-324-A.

Status: Standard.

Camera PH-324-A is a 35-mm still camera that is used for taking black-and-white or color photographs under field conditions which prohibit the use of heavy still cameras. The camera may be operated from cover and provides satisfactory photographs of relatively fast action and of poorly lighted subjects. The camera may be carried in and operated from a leather carrying case. The camera contains a coupled rangefinder, eyelevel viewfinder, between-the-lens shutter, exposure counter, and has a capacity of 36 exposures.

TECHNICAL CHARACTERISTICS

TYPE: Candid.
 SHUTTER: Between-the-lens.
 SIZE: 35-mm.
 TYPE OF FILM: Cartridge.
 LENS: 4-mm.
 SHUTTER RANGE: 1/10, 1/25, 1/50, 1/100, 1/200.
 Bulb, Time.
 DIAPHRAGM STOP: 3.2, 4, 5.6, 8, 11, 16, 22.
 FOCAL RANGE: 2 ft to INF.

PRINCIPAL COMPONENTS

Bare unit
 Case PH-371-A

Strap, neck

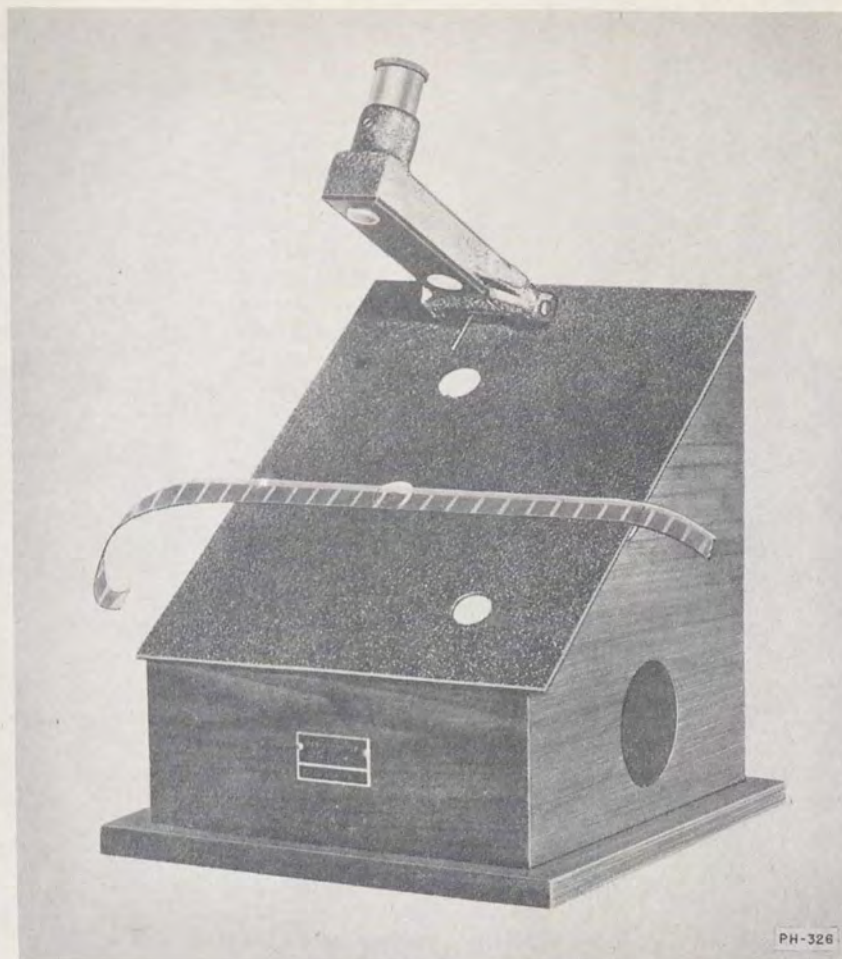


Figure 86. Densitometer PH-326.

Status: Standard. *Stock No.:* 8A890-326. *Reference:* TM 11-2301.

Densitometer PH-326, a comparison type transmission densitometer calibrated for direct reading, is designed to measure the density of a silver deposit in a photographic image. It is a visual type instrument which makes possible a comparison of two photometric fields through the medium of a calibrated photographic wedge. It is used as an aid in the control of negative exposure the control of processing film, and as a check for proper exposure of color-separation negatives.

TECHNICAL CHARACTERISTICS

TYPE: Comparison type, direct reading.

RANGE OF DENSITY: 0 to 3 (100% to .1% light transmission).

DIAMETER OF AREA MEASURED: .5-mm anywhere on films or plates up to 6 in. wide.

POWER SUPPLY: 115-v, 50- to 60-cyc ac only.

LIGHT SOURCE: 6-v, 32-cp lamp.

LENS: Common crown glass; plane convex; $\frac{1}{2}$ " diam x $\frac{3}{32}$ " thk; used in rear eyepiece.

PRINCIPAL COMPONENTS

Cabinet	Lamp, 6-v, 32-cp
Eyepiece assembly	Mirror

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	10 $\frac{1}{4}$	14
Total volume (cu ft)-----	-----	0.4

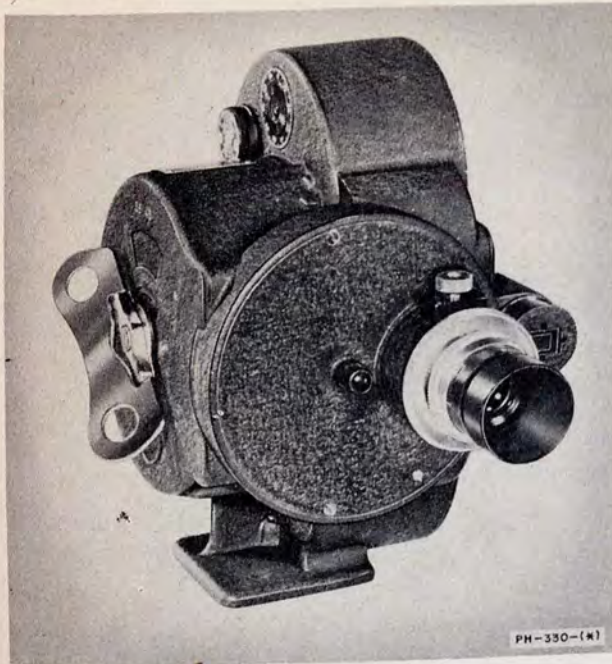


Figure 87. Camera PH-330-A.

Status: Standard. Stock No.: 8A343A (PH-330-A), 8A343B (PH-330-B), 8A343C (PH-330-C), 8A343D (PH-330-D), 8A343E (PH-330-E), 8A343F (PH-330-F), 8A343G (PH-330-G), 8A343H (PH-330-H), and 8A343J (PH-330-J).
References: TM 11-2396 (PH-330-A to -J) and TM 11-2387 (PH-330-K).

Camera PH-330-(*), represents Cameras PH-330-A, -B, -C, -D, -E, -F, -G, -H, and -J. Camera PH-330-(*), is a 35-mm, hand-held, spring and motor driven, motion picture camera with a daylight capacity loading of 100 feet. The cameras are adapted for field and combat photography. The cameras are equipped with viewfinders, governors, footage dials, and various size lenses.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
TYPE OF DRIVE: Spring motor or electric.
CAPACITY: 100 ft daylight, 120 ft darkroom, 200 to 400 ft magazine.
TYPE OF LOADING: Magazine and reel.
POWER SUPPLY: 12-v dc.
LENS: 35-mm, 75-mm, 152-mm, and 254-mm.

SPEED: 8 to 48 fps.
SHUTTER SPEED: f/2.5 to f/32.

PRINCIPAL COMPONENTS

- Camera
- Case, carrying, camera
- Handle and strap, camera holding
- Spool, film 100-ft
- Crank, ratchet winding
- Crank, handle
- Eyepiece, optical, offset
- Eyepiece, optical
- Lens, 35-mm, f/2.3
- Lens, 75-mm, f/2.3
- Lens, 152-mm, f/2.7
- Lens, 254-mm, f/4.5
- Lens, finder, 35-mm
- Lens, finder, 75-mm
- Lens, finder, 152-mm
- Lens, finder, 254-mm
- Tube, viewfinder
- Lens, viewfinder
- Holder, light filter
- Filter, light (35-mm K-2)
- Filter, light (35-mm G)
- Filter, light (35-mm X-1)
- Filter, light (35-mm A)
- Filter, light (35-mm 50% ND)
- Filter, light (35-mm 25% ND)
- Filter, light (75-mm K-2)
- Filter, light (75-mm G)
- Filter, light (75-mm X-1)
- Filter, light (75-mm A)
- Filter, light (75-mm 50% ND)
- Filter, light (75-mm 25% ND)
- Filter, light (254-mm K-2)
- Filter, light (254-mm G)
- Filter, light (254-mm X-1)
- Filter, light (254-mm A)
- Filter, light (254-mm 50% ND)
- Filter, light (254-mm 25% ND)
- Tripod PH-520/U
- Case, carrying, magazine
- Motor, 12-v, dc
- Belt, driving, 400-ft magazine
- Magazine, 35-mm, 400-ft
- Cover, magazine attachment plate
- Cable, assembly, power
- Gage, alinement
- Case PH-403, battery
- Battery BB-53, 12-v
- Cap, lens
- Case, tripod

WEIGHT AND VOLUME

	Packed
Total weight (lb).....	275
Total volume (cu ft).....	17.3

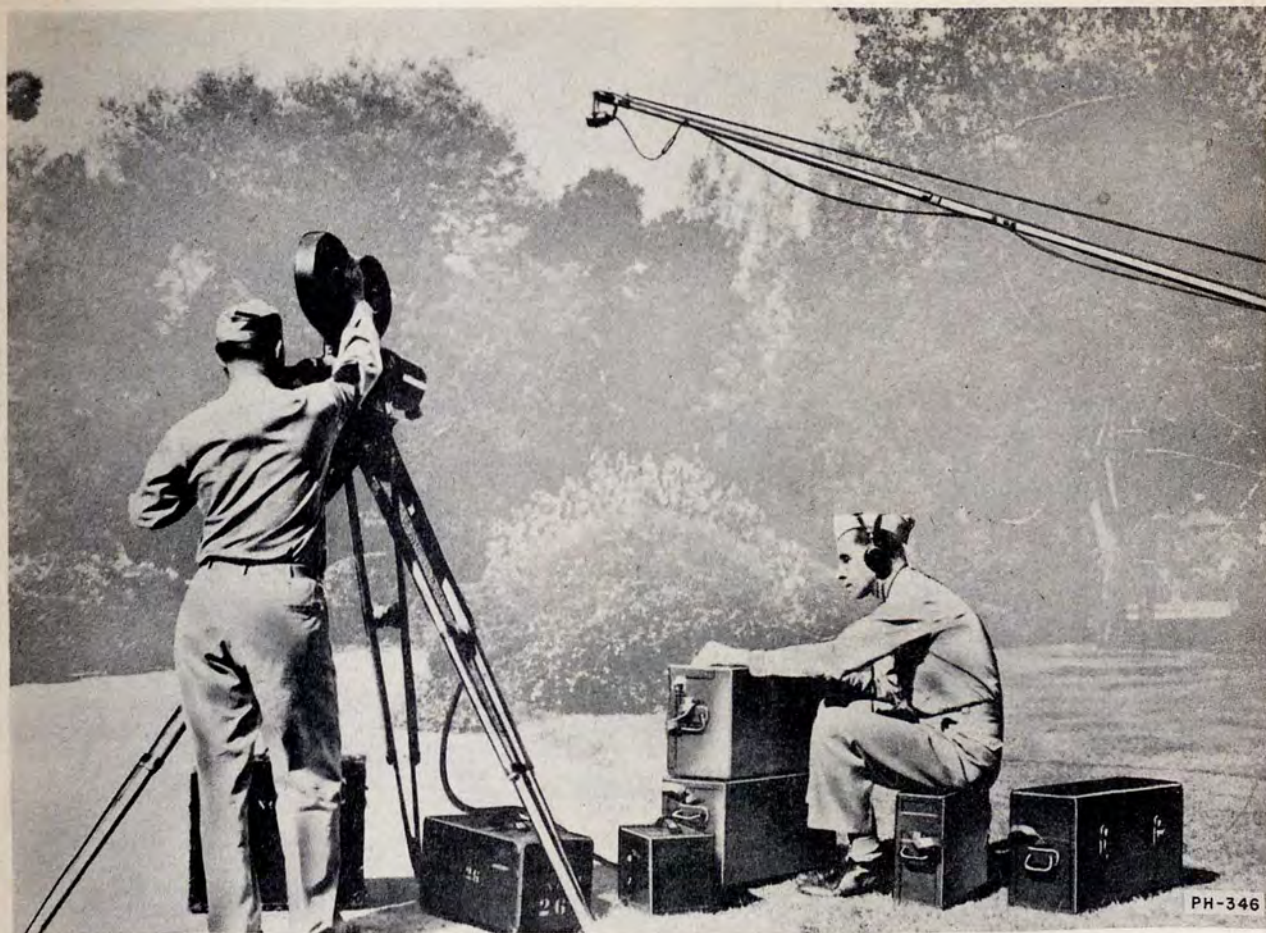


Figure 88. Sound Recording Equipment PH-346-A.

Status: Standard. *Stock No.:* 8A3686-346A.
Reference: TM 11-2350.

Sound Recording Equipment PH-346-A is a lightweight sound-on-film recorder for 35-mm film. It is designed primarily for field use. One operator can handle the entire equipment. The complete sound-recording channel, except for cables, microphones, and batteries, is contained in one portable unit. The equipment can be used as a sound recorder only, or as a sound recorder operating in conjunction with a camera in any of the following ways:

- (1) Monitor channel, check sound picked up by a microphone.
- (2) Complete sound-recording channel without a camera.
- (3) Complete sound-recording channel with a camera.

- (4) Drive means for a camera without use of the sound facilities.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
SPEED: 90 fpm (camera speed 24 fps).
LIGHT MODULATOR RESPONSE: 7,000 cps.
RECORDED WIDTH: 76 mills (maximum).
NOISE REDUCTION: 6 db.
POWER SOURCE: 24 v.

PRINCIPAL COMPONENTS

Recorder unit	Film unit
Accessory unit	Camera motor unit

WEIGHT AND VOLUME

Total weight (lb)-----	150
Total volume (cu ft)-----	9

Packed

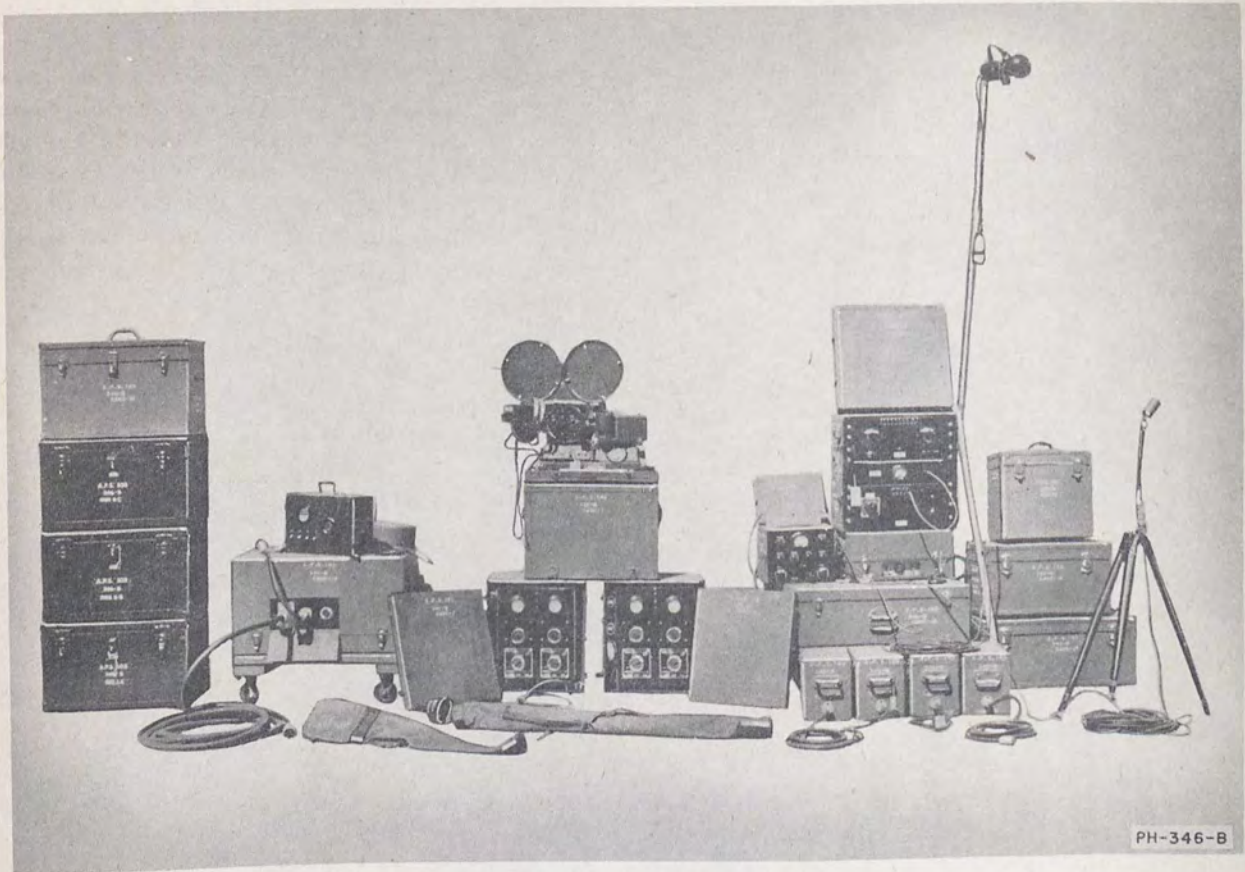


Figure 89. Sound Recording Equipment PH-346-B.

Status: Standard. Stock No.: 8A3686-346B.

Sound Recording Equipment PH-346-B is a complete 35-mm motion-picture film sound-recording unit consisting of an optical system, a film moving mechanism, amplifiers, and a three-phase, 220-volt, 60-cycle, synchronous motor.

PRINCIPAL COMPONENTS

Recorder Drive equipment

WEIGHT AND VOLUME

Total weight (lb)-----	150
Total volume (cu ft)-----	9

Status: Standard. Stock No.: 8A2350. Reference: TM 11-2327.

Lens PH-350 is an 8- by 10-inch portrait camera lens. The lens is an anastigmat, f/6.3 lens mounted on a studio shutter. The lens is mounted on a wooden lens board. The lens assembly consists of the lens barrel, the lens elements, the diaphragm, the diaphragm adjusting ring, and the lens cover. The diaphragm has f/stops of 6.3, 8, 11, 16, 22, 32, and 45. The shutter has speeds of I for instant (approximately 1/15 second) and B for bulb.

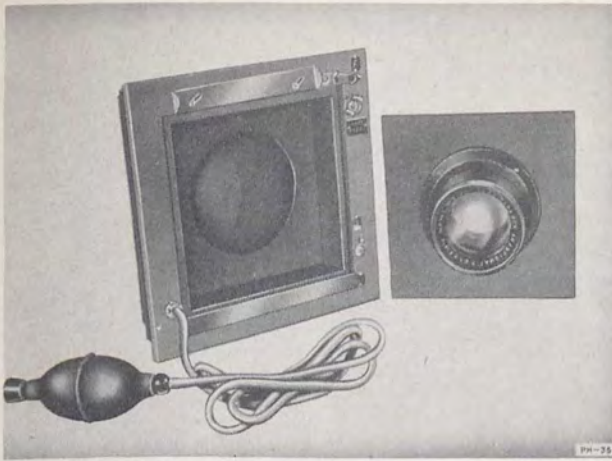


Figure 90. Lens PH-350.

PH-355

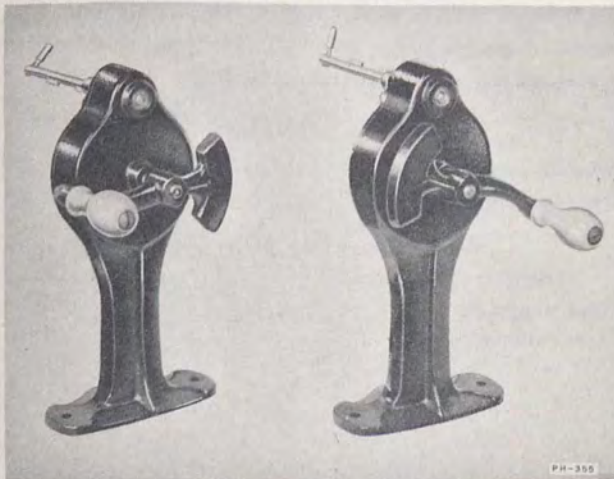


Figure 91. Rewinder Set PH-355.

Status: Limited/Std. Stock No.: 8A3315-355. Reference: TM 11-2392.

Rewinder PH-355 is a 35-mm geared motion picture rewriter of the double reel type. Two rewinders are included in the set. The equipment is equipped with an elongated shaft having two keys to permit the winding of either of the two reels.

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)-----	18
Total volume (cu ft)-----	0.9

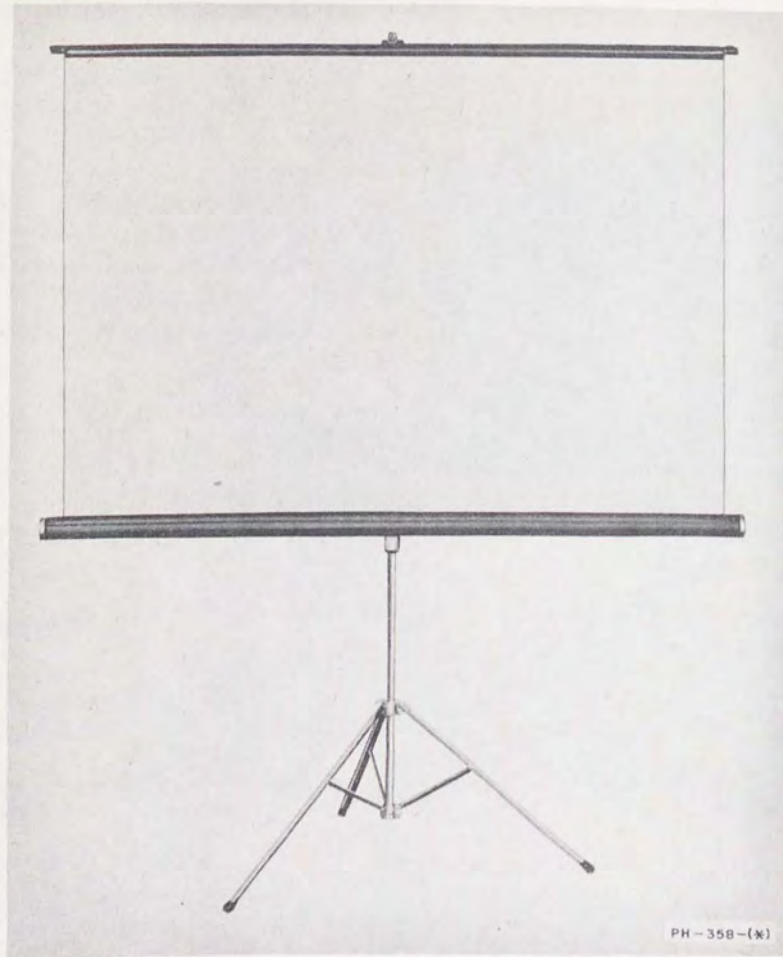


Figure 92. Screen PH-358 with tripod set up, front view.

Status: Standard. Stock No.: 8F7692 (PH-358), 8F7692C (PH-358-C), 8F7692D (PH-358-D), and 8F7692E (PH-358-E). References: TM 11-2384(PH-358) and TM 11-2329 (PH-358-C, -D, and -E).

Screen PH-358-(*) represents Screens PH-358, PH-358-C, PH-358-D, and PH-358-E. Screen PH-358-(*) is a medium sized, portable, roll-type projection screen with a collapsible tripod which may be quickly set up by one man. The screen, especially intended for indoor use, has a viewing area of 50 by 60 inches (50¾ by 69¾ inches Screen PH-358-E) and may be adjusted in height through

a range of approximately 2 feet for Screen PH-358-C, 1½ feet for Screen PH-358-D, or 9½ inches for Screen PH-358-E, within the limits of the screen handle stop screws. The equipment is protected by a canvas carrying bag.

PRINCIPAL COMPONENTS

- Screen assembly
- Carrying bag
- Tripod assembly

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	28	9.5
Total volume (cu ft)-----	1.05	4.48



Figure 93. Photographic Equipment PH-383.

Status: Standard. *Stock No.:* 8A2875. *Reference:* TM 11-2366.

Photographic Equipment PH-383 contains the minimum darkroom equipment necessary to take care of the photographic needs of a regiment. The darkroom equipment is designed to be readily transported and easily set up in any available place that may be converted into a darkroom.

PRINCIPAL COMPONENTS

Apron MC-90	Exposure Meter PH-77-C
Bag PH-105	Funnel PH-175
Box PH-143	Graduate PH-10
Camera Equipment PH-104	Hanger PH-71
Clip PH-23	Holder PH-81
Cord	Lamp PH-207
Cup PH-60 (Replaces Cup PH-61)	Lamps, flash
	Lamp, 10-w, 6-v (clear)

Lamp, 25-w, 6-v
 Lamp, 10-w, 6-v (amber)
 Lamp, 25-w, 110-v
 Lamp, 75-w, 110-v
 Lamp, 10-w, 110-v
 Plate PH-152-A
 Printer PH-192
 Rod PH-230
 Roller PH-204
 Siphon PH-244
 Tank PH-185
 Thermometer PH-28

Timer PH-29
 Timer PH-109
 Tray PH-161
 Tray PH-166-A
 Trimmer PH-8
 Chemical developer
 Chemical, acid-fixing
 Paper, photographic No. 2
 Paper, photographic No. 3
 Paper, photographic No. 4
 Film cut
 Film packs

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)	500
Total volume (cu ft)	30
Ship tons	0.15



Figure 94. Identification Equipment PH-385-(*).

Status: Standard. Stock No.: 8A1885 (PH-385) and 8A1885A (PH-385-A). Reference: TM 11-403.

Identification Equipment PH-385-(*) represents Identification Equipments PH-385 and -A. PH-385-(*) is a field identification equipment consisting of a 35-mm camera with a lens and a shutter, 6- by 12-inch title boards, an adjustable folding camera stand, two lamp sockets with a cord and plug on adjustable arms, two 300-watt lamps, two 150-watt lamps, two 20-foot extension cords, a folding title board holder, a folding background support, a background, a fingerprint outfit, and two fiber-covered plywood carrying cases. Identification Equipment PH-385-A is the same as Identification Equipment PH-385 except for the addition of a 150-watt reflector bulb in a portable stand. The stand has an adjustable head and a 20-foot extension cord.

TECHNICAL CHARACTERISTICS

TYPE: Press.
 SHUTTER: Heavy duty.
 FILM SIZE: 35-mm.
 TYPE OF LOADING: Magazine.
 LENS: Wollensak Optar f/5.
 SHUTTER RANGE: 1/2, 1/5, 1/10, 1/20, 1/50, Time, and Bulb.
 DIAPHRAGM STOP: f/5 to f/32.
 FOCAL RANGE: 5 in.

PRINCIPAL COMPONENTS

Carrying case	Film magazine
Lighting system	Background equipment
Tripod	Title Board Set PH-273
Camera	Fingerprinting equipment

WEIGHT AND VOLUME

Total weight (lb).....	Packed 130
Total volume (cu ft).....	4.5



Figure 95. Darkroom PH-392.

Status: Standard. *Stock No.:* 8A882. *Reference:* TM 11-2363.

Darkroom PH-392 is a portable, heater-ventilated tent designed to provide limited darkroom facilities with a minimum expenditure of time and effort. The unit may be set up in a few minutes. When erected, the tent occupies a ground space of 5 by 7 feet and is approximately 6 feet high. The heater-ventilators operate on either 115-volt ac or 6-volt dc, and have an air-circulating capacity of 125 cfm. The ventilation is provided by a heater with a blower; air leaves the tent through a lightproof vent in the peak. The entire equipment is contained in two steel cases.

TECHNICAL CHARACTERISTICS

TYPE: Portable, heater-ventilated.

AIR CIRCULATING (capacity of heater):
50 cfm (early models).
125 cfm (late models).

BUCKET CAPACITY: 10 qt.

HEATER: Gasoline, combustion type w/electrically operated blower. 5 to 8 hr. continuous operation.

WATER STORAGE CAPACITY: 40 gallon.

POWER CONSUMPTION: 7 w.

POWER SOURCE:

115-v ac (early models).

115-v ac or 6-v dc (late models).

PRINCIPAL COMPONENTS

Steel field cases	Bag
Tent	Collapsible stool
Collapsible canvas bucket	Canvas sink basin frame
Power cable (a-c use)	Heater
Power cable (d-c use)	Telescoping tent supports
Lampholder	Steel stakes
Rubber hose	Ropes
Flexible exhaust pipe	Paper safe
Collapsible tray supports	

WEIGHT AND VOLUME

Total weight (lb).....	164
Total volume (cu ft).....	7

Packed



Figure 96. Processing Equipment PH-395.

Status: Standard. Stock No.: 8A3152. Reference: TM 11-404.

Processing Equipment PH-395 is designed to furnish complete facilities for enlarging, printing, and finishing prints from 35-mm negatives. All components, of which Enlarger PH-275-B is the principal component, are stored and carried in a single fiber carrying case.

TECHNICAL CHARACTERISTICS

- SIZE: 35-mm.
- TYPE: Projection, condenser design.
- PAPER SIZE: 2¼ by 3¼ in.
- LENS: 2-in., f/4.5 anastigmat.
- TIMER EXPOSURE RANGE: 1 to 55 sec.
- SHUTTER: None.
- OPTICAL SYSTEM: 6- to 8-v, 32-cp lamp. Condensing lenses and enlarging lens.
- MICROFILM ATTACHMENT: 100 ft of 35-mm film (capacity).
- POWER SOURCE: 110-v, 60-cyc ac or 6-v dc.

PRINCIPAL COMPONENTS

- Enlarger PH-275-B
- Lamp PH-421 (Rb Lamp PH-566/UF)
- Foot Switch PH-424
- Timer PH-426
- Tray PH-161-A
- Tray PH-164-A
- Board PH-425
- Extension cord
- Power cord with battery clips
- Adapter power cord
- Thermometer PH-28
- Siphon PH-244
- Paddle PH-80
- Carrying Case

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	98	125
Total volume (cu ft).....	4	6.9

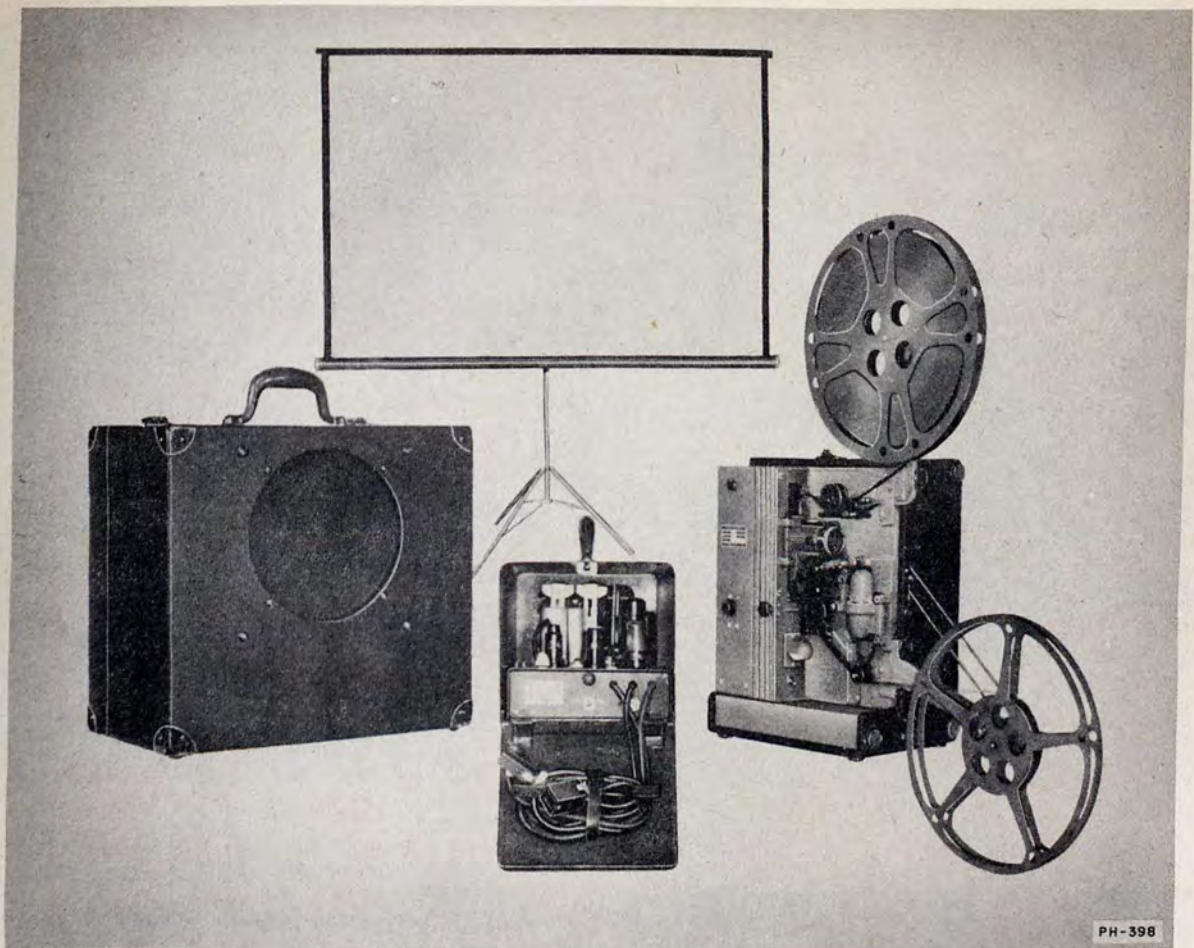


Figure 97. Projector Equipment PH-398.

Status: Substitute/Std. *Stock No.:* 8P398.
Reference: TM 11-406.

Projector Equipment PH-398 is designed for the projection of 16-mm sound motion pictures for educational purposes. It has sufficient illumination and sound volume for any ordinary classroom or for auditoriums of moderate size. The equipment is contained in three portable cases.

TECHNICAL CHARACTERISTICS

TYPE: Sound.
SIZE: 16-mm.
LENS: 2-in., f/1.65.
RANGE: Small auditorium.
CAPACITY: 1,600 ft.
FILM SPEED: 24 fps.
POWER SUPPLY: 105- to 125-v ac, 60-cyc, 900 w.
SOUND TRACK: Variable area.
MOTOR: Speed of 3,520 rpm.
LAMP RATING: 750-w, 115-v or 750-w, 120-v.
ACCESSORIES: Amplifier:
POWER SUPPLY: 105- to 215-v ac, 50- to 60-cyc, 180-w.

POWER OUTPUT: 117-v on 120-v tap 5% maximum.

TUBE COMPLEMENT:

Input—RCA 6J7.
Voltage amplifier—RCA 6J5.
Amplifier-Phase Inverter—RCA 6N7.
Output—2RCA 6L6.
Rectifier—RCA 5U4G.
Field Supply Rectifier—RCA 5U4G.
Oscillator—RCA 6F6.

LOUDSPEAKER:

Electro-dynamic type, 10-in. cone.
Voice coil, 8-ohms.
Field coil, 115 v dc.

PRINCIPAL COMPONENTS

Projector	400-ft reel PH-310
Lubricating oilcan	1,200-ft reel PH-282
Amplifier	1,600-ft reel PH-312
Loudspeaker	Power cable

WEIGHT AND VOLUME

Total weight (lb).....	177
Total volume (cu ft).....	15

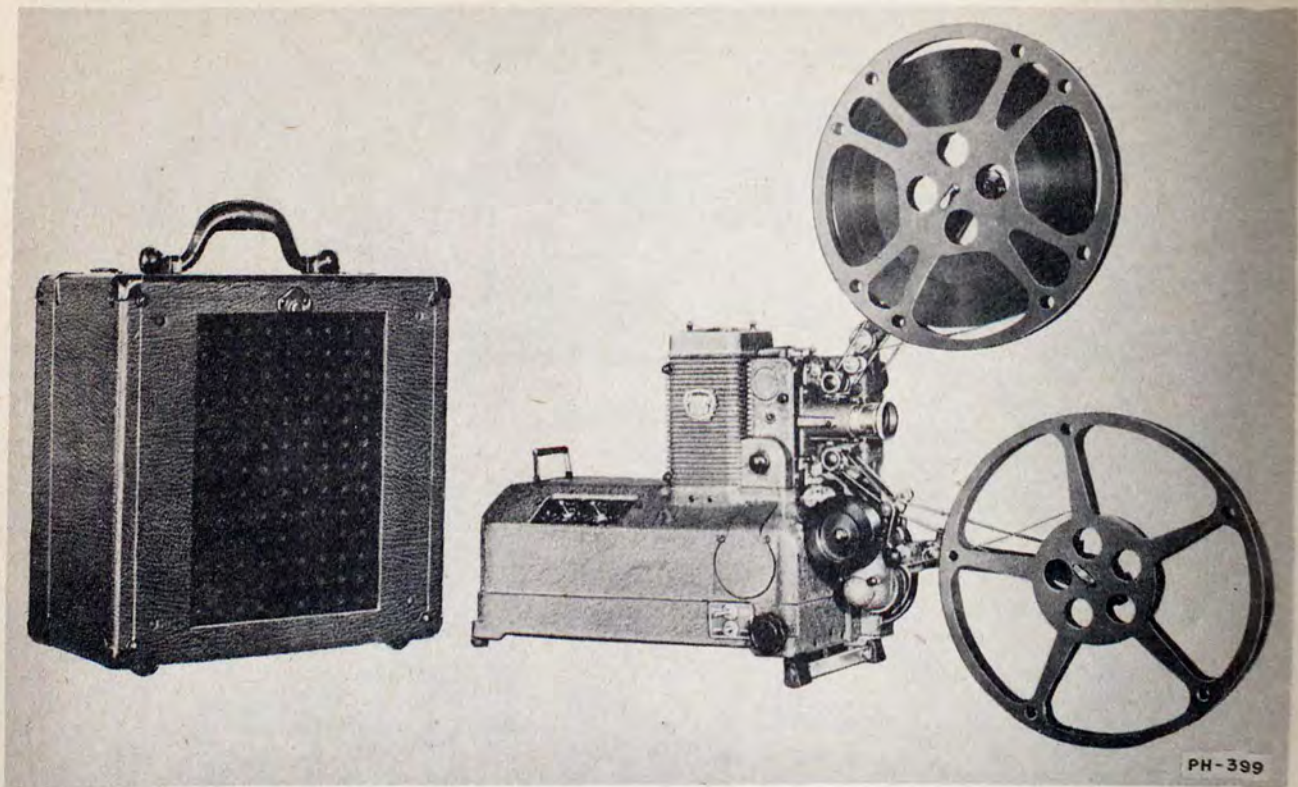


Figure 98. Projector Equipment PH-399.

Status: Standard. *Stock No.:* 8P399. *Reference:* TM 11-407.

Projector Equipment PH-399 is a 16-mm, motion picture sound projector, which accommodates reels up to 1,600 feet. The projector can be used for the projection of 16-mm silent film and single frame pictures as well as sound. The equipment is packed in two cases, one for the speaker and the other for the projector. It operates on a 100- to 120-volt, 60-cycle, a-c source. Projector Equipment PH-399 is part of Projector Equipment PH-408.

TECHNICAL CHARACTERISTICS

TYPE: Sound or silent.
 SIZE: 16-mm.
 LENS: 3½-in., f/2.5.
 RANGE: 150-ft.
 FILM SPEED: 24 fps (sound), 16 fps (silent).
 CAPACITY: 1,000-ft.
 POWER SUPPLY: 100- to 120-v, 50- to 60-cyc.
 POWER LINE FUSE: 15 amp.
 MOTOR: 100- to 120-v, 50- to 60-cyc ac or 100- to 120-v dc.
 PROJECTOR AMPLIFIER FUSE: 1.5 amp.
 LAMP RATING:
 1,000-w, 115-v, 10-hr life.

SPEAKER:

12-in., permanent magnet, 1½-in., 15-ohm voice coil.

Frequency range: 100- to 5,000-cyc per sec.
 Impedances: 2, 4, 5.3, 8, 16, and 500 ohms.

AMPLIFIER:

100- to 130-v, 50- to 60-cyc, single-phase ac.
 Power consumption: 150-w.
 Output: 55-w.

Tubes:

Rectifier 5V4G (2), 5Z3.
 Driver tube 6F6.
 Power amplifier 6L 6G.
 Voltage amplifier 6NJ or 6N7 GT/G.
 Voltage amplifier 6J7 (3).

PRINCIPAL COMPONENTS

Name	Dimensions (in.)			Weight (lb)
	Height	Width	Length	
Projector carrying case	19.75	12.50	23.0	---
Projector	---	---	---	64.0
Speaker in case	18.0	10.75	16.25	29.0
Cable assembly, speaker	---	---	600.0	---
Cord assembly, electrical line	---	---	120.0	---

WEIGHT AND VOLUME

	Packed
Total weight (lb)	175
Total volume (cu ft)	7.6

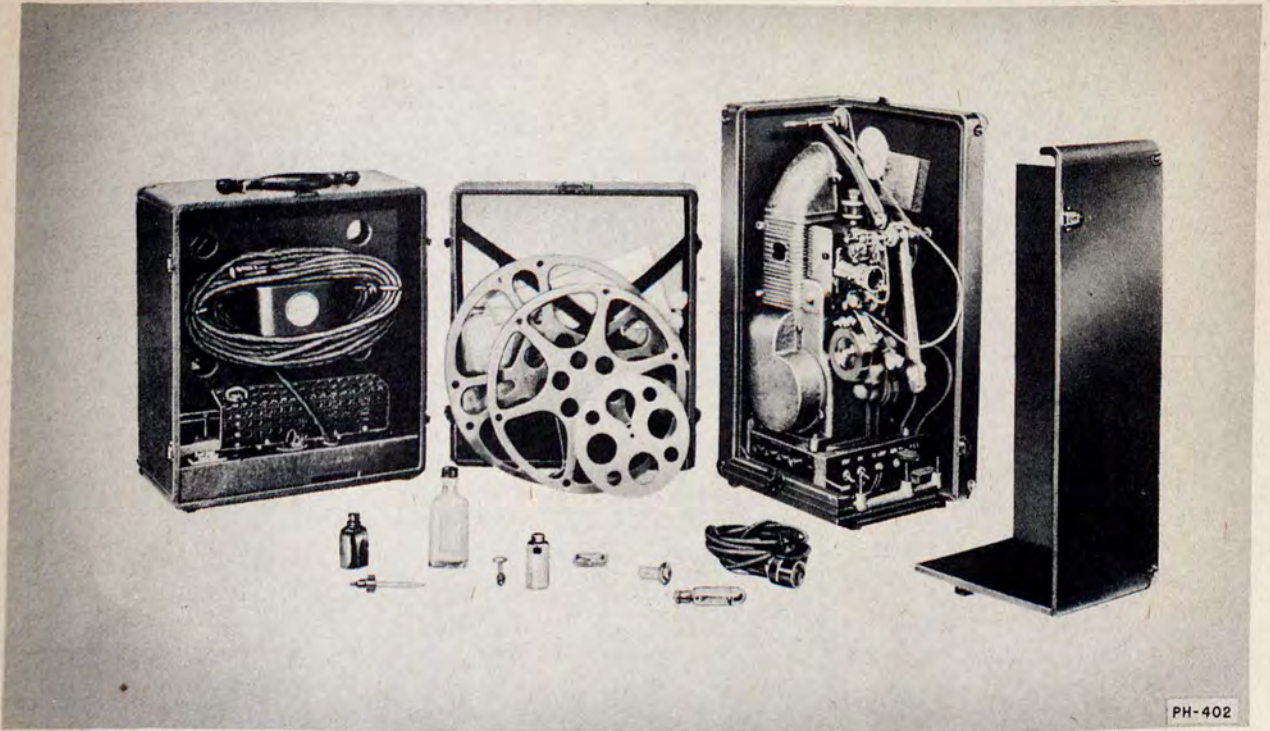


Figure 99. Projector Equipment PH-402.

Status: Limited/Std. Stock No.: 8A3122-402
Reference: TM 11-2384.

Projector Equipment PH-402 is a 16-mm, sound, motion picture projector complete with amplifier and screen. The projector, with the accompanying accessories, is able to project images of sufficient brilliance and sound of sufficient volume for any ordinary classroom or auditorium of moderate size.

TECHNICAL CHARACTERISTICS

TYPE: Sound.
SIZE: 16-mm.
LENS: 2-in., f/1.65; 1½-in., f/1.65.
RANGE: Small auditorium.
CAPACITY: 1,600-ft.
POWER SUPPLY: 100- to 125-v ac, 60-cyc; 1,300 w.

MOTOR: Ac, 3,600 rpm.
LAMP RATING: 750- to 1,500-w; 100- to 125-v.
SPEAKER: 12-in. electro-dynamic, 8-ohm voice coil, 5,400-ohm field, handles 15 w.

PRINCIPAL COMPONENTS

- | | |
|-------------------------|-----------------------|
| Projector | Speaker carrying case |
| Preamplifier | Exciter lamp |
| Amplifier | Fuses (5) 3AG, 5-amp |
| Loudspeaker | Fuses (5) 3AG, 2-amp |
| Speaker cord | Lens 1½ in. |
| Power cord | Projection lamp |
| Screen PH-358 | Belts, motor drive |
| Projector carrying case | Belts, rewind |

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	39	63
Total volume (cu ft)-----	2	3.5



Figure 100. Projector PH-405.

Status: Standard. Stock No.: 8A3126-405. Reference: TM 11-2345.

Projector PH-405 is a 35-mm, semiportable sound projector and sound system, consisting of a projector, amplifier, and loudspeaker. The projector uses a 100-watt Mazda lamp and 2,000-foot reels. A $\frac{1}{8}$ -hp motor which operates on 110-volt, 60-cycle ac, drives the film at a speed of 90 fpm. Projector PH-405 is used principally in the field to present 35-mm training and morale films to troops. Projector PH-405 replaces Projector PH-331.

TECHNICAL CHARACTERISTICS

TYPE: Sound; semiportable.
 FILM SIZE: 35-mm.
 CAPACITY: 2,000-ft reels.
 POWER: 110- to 120-v, 60-cycle ac.
 MOTOR: $\frac{1}{8}$ hp; ac, repulsion; 2.2 amp; 3,450 rpm.
 PROJECTION LAMP: 1,000 w, 115 v.
 FILM SPEED: 24 fps.
 SHUTTER: Disk type, 50 percent open.
 PROJECTION LENS: 4-in. (series I).

PRINCIPAL COMPONENTS

Amplifier Projector
 Case, speaker

WEIGHT AND VOLUME

Total weight (lb).....	Packed 498
Total volume (cu ft).....	16.6



Figure 101. Processing Equipment PH-406.

Status: Standard. *Stock No.:* 8A3153. *Reference:* TM 11-405.

Processing Equipment PH-406 is designed to furnish complete facilities for developing 35-mm roll film (5½-foot lengths), 4- by 5-inch negatives, and for processing projection prints from these negatives.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm or 4- by 5-in film.

PROJECTION LENS: f/4.5, 5½-in. focal length; f/4.5, 6¾-in. focal length.

POWER SOURCE: 105- to 120-v, 60-cyc ac or 6-v dc.

PRINCIPAL COMPONENTS

Printer PH-129-A	Siphon PH-244
Timer PH-426	Power cord, battery
Lamp PH-422	Power cord, adapter
Foot Switch PH-424	Accessories:
Timer PH-29	Tongs PN-373-A
Tray PH-161-A	Squeegee PH-348
Tray PH-164-A	Graduate PH-11
Board PH-317	Thermometer PH-28
Plate PH-152 or PH-152-A	Paddle PH-80
Tank PH-256-A	Rod PH-230
Tank PH-186	Carrying cases

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	225	303
Total volume (cu ft).....	8	12

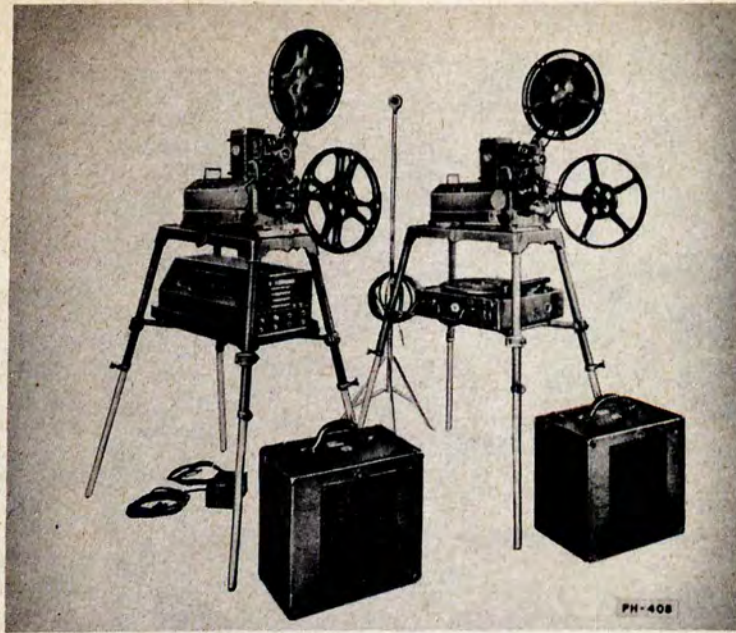


Figure 102. Projector Equipment PH-408.

Status: Standard. Stock No.: 8A3122-408. Reference: TM 11-407.

Projector Equipment PH-408 is an assembly of units designed, primarily, for dual projection of 16-mm sound and silent film. The purpose of dual projection is to permit continuous operation during showings. Included in Projector Equipment PH-408 are two Projector Equipments PH-399, a turntable, a microphone, an automatic change-over box, a projection screen, Film Repair Equipment PH-206 for splicing, cleaning, and rewinding film, and other components necessary for the transportation, installation, operation, and maintenance of the equipment. Power Unit PE-75-(), designed to generate 110- to 120-volt, 50- to 60-cycle ac, is supplied as optional equipment upon request.

TECHNICAL CHARACTERISTICS

- TYPE: Sound or silent.
- SIZE: 16-mm.
- LENS: 3½-in. f/2.5.
- RANGE: 150 ft.
- CAPACITY: 1,000 ft.
- POWER SUPPLY: 110- to 120-v, 50- to 60-cyc.
- MOTOR: 100- to 120-v, 50- to 60-cyc ac or 100- to 120-v dc.
- LAMP RATING: 1,000-w, 115-v, 10 hr life.
- ACCESSORIES:

- Speaker:
 - 12-in., permanent magnet, 1½-in., 15-ohm voice coil.
 - Frequency range: 100 to 5,000 cps.
 - Impedances: 2, 4, 5.3, 8, 16, and 500 ohms.

- Amplifier:
 - 100- to 130-v, 50- to 60-cyc, single-phase ac.
 - Power consumption: 150 w. Output, 55 w.
- Tubes:
 - Rectifier 5V4GN(2), 5Z3.
 - Power amplifier 6L6G.
 - Driver tube 6F6.
 - Voltage amplifier 6NJ or 6N7GT/G.
 - Voltage amplifier 6J7(3).

PRINCIPAL COMPONENTS

Name	Dimensions (in.)		
	Length	Height	Width
Screen carrying case	151.0	6.5	12.5
Screen PH-556/GF	-----	-----	-----
Amplifier	22.75	8.75	10.25
Turntable in case	15.5	3.0	13.5
Change-over box	5.0	3.0	4.0
Microphone stand	-----	-----	-----
Microphone	-----	-----	-----
Projector stand	-----	-----	-----
Projector Equipment PH-399	-----	-----	-----
Film Repair Equipment PH-206	-----	-----	-----
3½-in. f/2.5 lens	-----	-----	-----
Cables	-----	-----	-----
Power Unit PE-75-()	-----	-----	-----

WEIGHT AND VOLUMES

	Unpacked	Packed
Total weight (lb)	-----	500
Total volume (cu ft)	6.55	30
Ship tons	-----	0.75

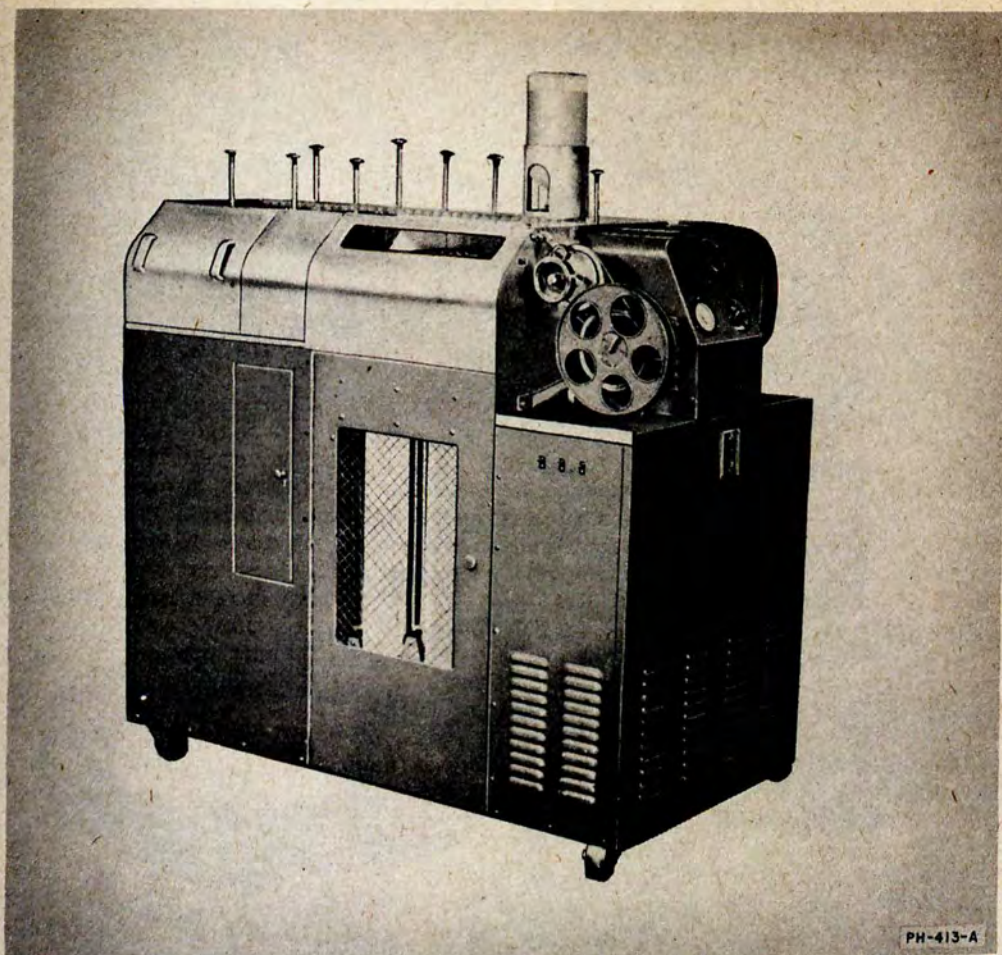


Figure 103. Developing Machine PH-413-A.

Status: Standard. Stock No.: 8A2622
Reference: TM 11-2315.

Developing Machine PH-413-A (V-mail) is a self-contained unit capable of developing, fixing, and drying 16-mm perforated or unperforated film at a rate of 7 to 15 fpm. The machine is continuous in its operation, drawing film from the supply flange in the supply magazine and passing it through the various solutions and washing tanks, on through the drying compartment and rewinding it on a take-up reel at a speed selected by the operator to insure proper development. With the exception of the loading of film on the supply flange, the entire procedure is carried out in a normally lighted room. The unit incorporates automatic temperature control to keep the

temperatures of the solutions between 66° and 70° F. Three pipe connections at the bottom and rear of the machine accommodate water supply, water drainage, and siphon drainage. The machine operates on 115-volt, 50- to 60-cycle ac.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
CAPACITY: 7 to 15 fpm.
TEMPERATURE CONTROL: 60° and 70° F.
POWER SOURCE: 115-v, 50- to 60-cyc ac.

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	370	1,100
Total volume (cu ft).....	62.6	99
Ship tons.....	1.57	2.48



Figure 104. Film Viewer PH-419.

Status: Standard. *Stock No.:* 8F9005.

Film Viewer PH-419 is a 16-mm viewer which is used with but is not part of Splicer PH-239 and Film Repair Equipment PH-206. Rewinders, although not shown in the illustration, are part of the equipment. The equipment is used for viewing, splicing, and rewinding 16-mm motion picture film.

TECHNICAL CHARACTERISTICS

LAMP: 30-w; 100-v. SIZE: 16-mm film.

PRINCIPAL COMPONENTS

Bare unit	Splicer
Lamp	Shield light
Rewinder	Scraper

WEIGHT AND VOLUME

Total weight (lb).....	51
Total volume (cu ft).....	1.5

Packed

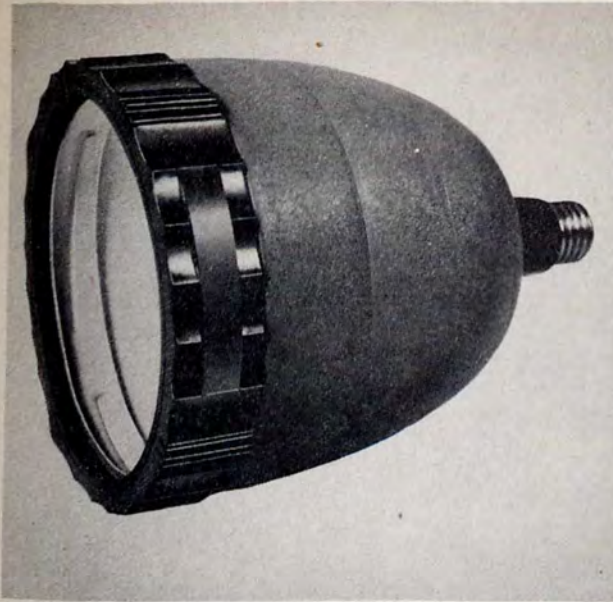


Figure 105. Lamp PH-422.

Status: Limited/Std. Stock No.: 8A2151-422.
Reference: TM 11-405.

Lamp PH-422 is a darkroom lamp that screws directly into a hanging electrical outlet. The lamp uses 5½-inch diameter interchangeable Wratten safelight filters.

PRINCIPAL COMPONENTS

Bare unit	Lamp, photo, 10-w, 6-v
Power cable assembly	Lamp, 10-w, 115-v
Safelights (3 supplied)	

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	1.375	2.75
Total volume (cu ft)-----	.198	.4

PH-426-(*)

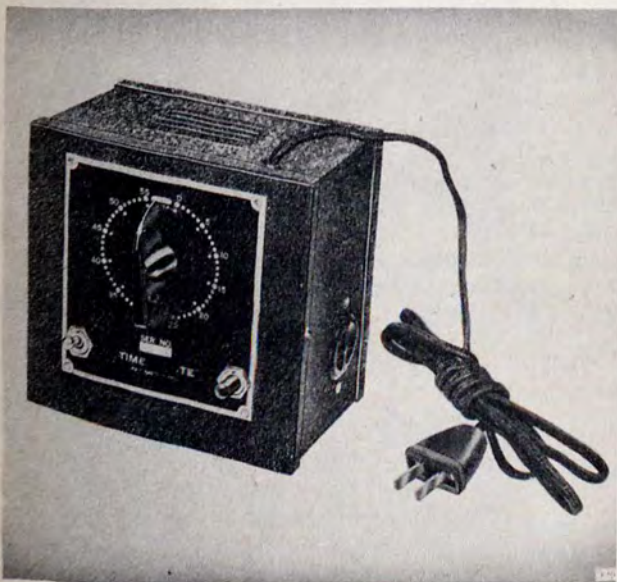


Figure 106. Timer PH-426.

Status: Standard. Stock No.: 8A3830-426.
Reference: TM 11-2374.

Timer PH-426-(*) represents Timers PH-426 and PH-426-A. Timer PH-426-(*) is an automatic interval timer for contact printers or enlargers. It operates on 110-volts, 60-cycle power source. The scale graduations of Timer PH-426 are 0 to 55 seconds while Timer PH-426-A has graduations of 0 to 60 seconds.

WEIGHT AND VOLUME

	Packed
Total weight (lb)-----	10
Total volume (cu ft)-----	0.4

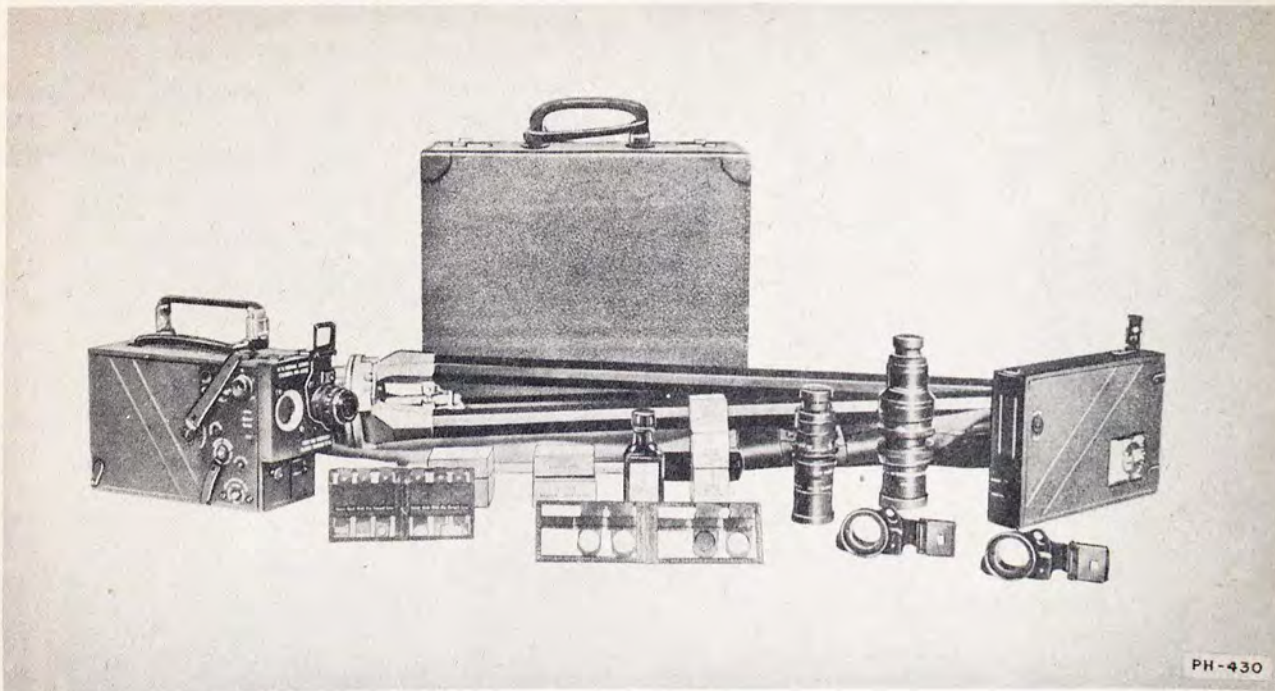


Figure 107. Camera PH-430.

Status: Standard. *Stock No.:* 8A430. *Reference:* TM 11-2380.

Camera PH-430 is a 16-mm, silent, motion picture camera with accessories. The camera is used for general or specialized photography and operates at speeds from 8 to 64 frames per second. Any 16-mm black-and-white or color film may be used with this camera. Camera PH-430 includes several lenses of different focal lengths, an eye-level viewfinder with a mask or window corresponding to each of the lenses supplied, a reflex finder, a dissolving shutter, hand-cranking shafts, a single-frame release, a lens turret, three film meters, a locking starting button, interchangeable film chambers, a universal exposure guide (PH-504/PF), and other items for operation and maintenance.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
 TYPE OF DRIVE: Hand-wound spring-driven motor.
 CAPACITY: 200 ft.
 TYPE OF LOADING: Reel.
 POWER SUPPLY: Hand crank.
 LENS: 25-mm, 63-mm, and 152-mm.

SPEED: 8, 12, 16, 24, 32, 48, and 64 fps.
 SHUTTER SPEED: Closed, $\frac{1}{4}$ open, $\frac{1}{2}$ open, and open 165°.

PRINCIPAL COMPONENTS

Camera with 100-ft film chamber
 Adapter, lens, long focus
 Case, carrying
 Filter, Wratten, A (No. 25)
 Filter, Wratten, G (No. 15)
 Filter, Wratten, K2 (No. 8)
 Filter, Wratten, A, in W mount
 Filter, Wratten, G, in W mount
 Filter, Wratten, K2, in W mount
 Lens, 25-mm (with lens mount)
 Lens, 63-mm
 Lens, 152-mm
 Film chamber, 100 ft extra
 Mask, blind
 Mast set
 Ring, adapter, diam, $1\frac{15}{16}$ in 33-mm
 Ring, adapter, diam, $1\frac{15}{16}$ in 39.5-mm
 Tripod PH-520/U

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	80
Total volume (cu ft).....	4

The wide assortment of lenses, filters, and operating speeds provided permit use of the equipment under all conditions. The camera can also be used in the field stripped to just a lens, the camera, and a 100-foot film reel. The camera is driven by a spring-wound motor.

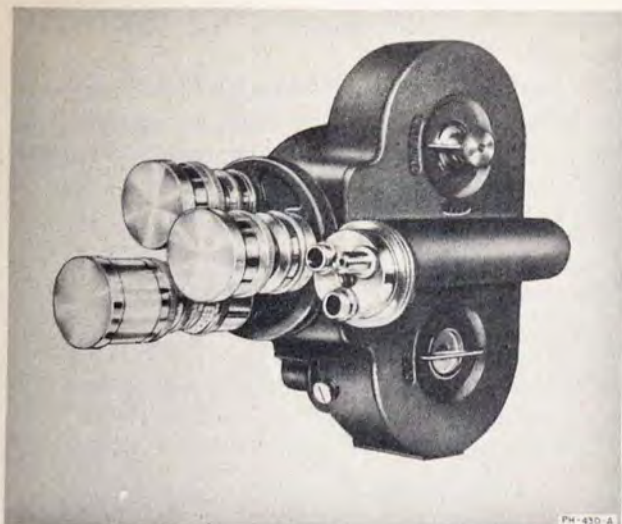


Figure 108. Camera PH-430-A.

Status: Standard. Stock No.: 8A430A. Reference: TM 11-2390.

Camera PH-430-A is a 16-mm motion picture camera used for field or newsreel coverage. The camera can be hand-held or used with a tripod.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
 TYPE OF DRIVE: Spring motor.
 CAPACITY: 100 ft.
 TYPE OF LOADING: Reel.
 POWER SUPPLY: Hand-wound spring.
 LENS: 17-mm, 1-in., 3-in., and 6-in.
 SPEED: 8, 12, 16, 24, 32, 48, and 64 fps.
 SHUTTER SPEED: 1/28 of a sec at 16 fps to 1/112 of a sec at 64 fps.
 ACCESSORIES:
 Filters.
 Tripod assembly.
 Carrying case.
 Maintenance equipment.

PRINCIPAL COMPONENTS

Case, camera carrying
 Camera
 Exposure Computer PH-504/UF

PH-431-(*)

circumstances in which larger and more complex cameras would be impractical. It can be loaded in a few seconds and film magazines can be changed at any time without loss of unused film.



Figure 109. Camera PH-431.

Status: Standard. Stock No.: 8A431 (PH-431) and 8A431A (PH-431-A). Reference: TM 11-2383.

Camera PH-431-(*) represents Cameras PH-431 and PH-431-A. Camera PH-431-(*) (magazine Cine-Kodak, 16-mm) is a small, hand-held, daylight-loading, magazine-type camera, with accessories, designed for taking silent motion pictures on 16-mm reversal film. Its small size and speed of operation adapt it for use under cir-

TECHNICAL CHARACTERISTICS

SIZE: 16-mm.
 TYPE OF DRIVE: Spring-driven motor.
 CAPACITY: 50 ft.
 TYPE OF LOADING: Magazine.
 POWER SUPPLY: Manual.
 LENS: f/1.9 anastigmat.
 SPEED: 24, 32, and 48 fps.
 SHUTTER SPEED: 24 fps.

PRINCIPAL COMPONENTS

Camera with 25-mm lens
 Carrying case
 Lens, 63-mm focal length
 Lens, 102-mm focal length
 Wratten, Aero 2-filter, series VI
 Wratten, Aero 2-filter, series VII
 Wratten, Aero 2-filter, W mount
 Lens adapter for 63-mm lens
 Lens adapter for 102-mm lens
 Adapter ring and insert, series VI
 Adapter ring and insert, series VII

WEIGHT AND VOLUME

	Packed
Total weight (lb).....	20
Total volume (cu ft)	1.5

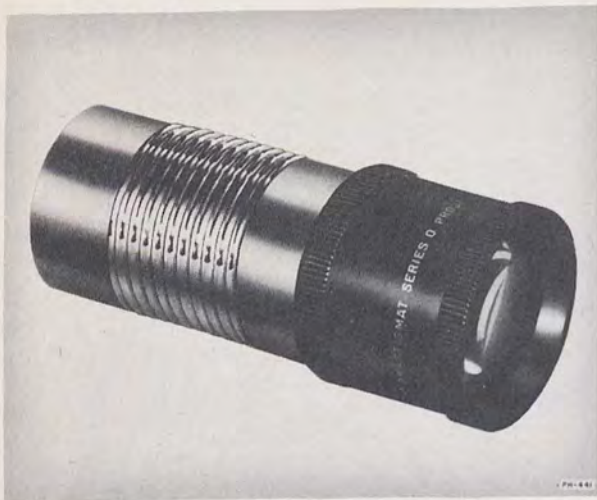


Figure 110. Lens PH-441.

Status: Standard. Stock No.: 8A2308-441.
Reference: TM 11-408.

Projection Lens PH-441 is a Wollinsak series O lens with a 3-inch focal length f/1.8 mounted in a slip spiral mount. It is used with Projector PH-222.

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)-----	1.3
Total volume (cu ft)-----	.13

PH-501/PF

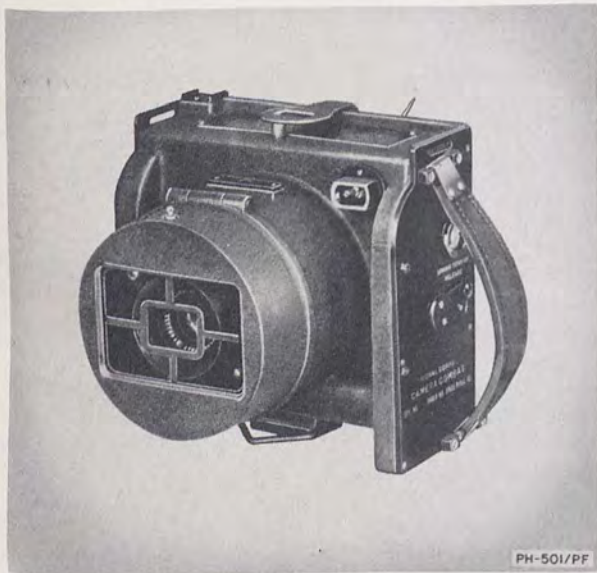


Figure 111. Camera PH-501/PF.

still pictures under combat conditions. The body of the camera is a magnesium casting which houses a vulcanized rubber cloth focal-plane shutter. The 101-mm lens is protected, when the camera is not in use, by a hood which is lifted to form a direct viewfinder.

TECHNICAL CHARACTERISTICS

- TYPE: Still, combat.
- SHUTTER: Focal plane, curtain type.
- FILM SIZE: 2¼ in. x 3¼ in.
- TYPE OF FILM: Pack.
- LENS: 101-mm, f/4.5 anastigmat; and telephoto, 9-in. f/6.3.
- SHUTTER RANGE: 1/25, 1/50, 1/100, 1/200, 1/400, and 1/800 sec.
- DIAPHRAGM STOP: f/4.5 to f/32.
- FOCAL RANGE: 4 in. and 9 in.

PRINCIPAL COMPONENTS

Name	Diameter	Length	Dimensions (in.)			Weight
			Height	Width	Depth	
Camera-----		7	7	6.5		4.75
101-mm lens----	3	2				.50
Telephoto lens--	2.5	5			2.5	.50

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb)-----	18
Total volume (cu ft)-----	0.5

Status: Limited/Std. Stock No.: 8A386. Reference: TM 11-2364.

Camera PH-501/PF is a camera of rugged construction designed for taking 2¼-inch by 3¼-inch

Status: Standard. *Stock No.:* 8A419. *Reference:* TM 11-2370.

Camera PH-502/PF is a still camera which uses 8-exposure No. 828 roll film to make 28- by 40-mm negatives. It is equipped with an f/4.5 anastigmat lens of 47-mm focal length and a between-the-lens shutter. The equipment includes a Porta lens, a $\frac{15}{16}$ -inch adapter ring, a shutter with speeds from 1/25 to 1/200 second, a folding optical eyelevel viewfinder, and a body shutter release. The camera may be focused from infinity to 2½ feet and has an aperture range from f/4.5 to f/16. The camera has a die-cast aluminum body with black grain covering.

TECHNICAL CHARACTERISTICS

TYPE: Bantam.
SHUTTER: Between-the-lens.
TYPE OF FILM: Roll No. 828; 8 exposures.
SIZE: 28- by 40-mm.
LENS: f/4.5 anastigmat special.
SHUTTER RANGE: 1/25 to 1/200.
DIAPHRAGM STOP: f/4.5 to f/16.
FOCAL RANGE: Infinity to 2½ ft.



Figure 112. Camera PH-502/PF.

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb).....	0.78	1.35
Total volume (cu ft).....	.008	.04

PH-503/PF



Figure 113. Camera PH-503/PF.

Status: Standard. *Stock No.:* 8A388. *Reference:* TM 11-2377.

Camera PH-503/PF is a 2½- by 3¼-inch fingerprint camera with an anastigmat, 72-mm, f/6.3 lens, and an automatic shutter. The camera

photographs fingerprints, coins, stamps, portions of printed matter, and other flat objects on a plane surface. The interior of the camera has a self-contained lighting unit which consists of four miniature, incandescent, 3.8-volt outside-frosted, single-contact lamps which operate on two dry cell 6-volt rectangular batteries.

TECHNICAL CHARACTERISTICS

TYPE: Fingerprint.
SHUTTER: Automatic.
SIZE: 2¼ by 3¼ in.
TYPE OF FILM: Cut.
LENS: f/6.3 anastigmat.
SHUTTER RANGE: Fixed.
DIAPHRAGM STOP: Fixed.
FOCAL RANGE: None.

PRINCIPAL COMPONENTS

Camera (complete)	Film holder
Focusing panel	

WEIGHT AND VOLUME

	Packed
Total weight (lb).....	18
Total volume (cu ft).....	1.9



Figure 114. Printer PH-507/PF, with cover and removable panel opened.

Status: Standard. *Stock No.:* 8A3104. *Reference:* TM 11-2362.

Printer PH-507/PF is portable equipment which includes a printer, electrical connecting assemblies, and developer. It is a contact printer designed to make both photographic prints and reproductions and may be used as a light-box for blocking and retouching. The printer can make prints from negatives and X-ray films and can reproduce anything written, printed, typed, traced, drawn, sketched, photographed, or blueprinted up to 11 by 14 inches in size. Images may be reproduced either in white on black (negative) or in black on white (positive). Applicable for either field or office use, the printer operates from a 105- to 120-volt a-c or d-c power source, or from a 12-volt storage battery.

TECHNICAL CHARACTERISTICS

SIZE: 9½ in. x 13 in.
 TYPE: Contact.
 LENS: None.
 SHUTTER: None.
 PROJECTION EQUIPMENT: Six 25-w, 12-v lamps and six 60-w, 115-v lamps.
 POWER SOURCE: 105/120-v ac or 12-v dc.
 PRINT SIZE: 11 x 14 in. (maximum).

PRINCIPAL COMPONENTS

Printer
 Carrying case, wooden
 Cable assembly with battery clips
 Cable assembly with male and female plug
 Developer containers
 Amber light filter
 Lamp, 25-w, 12-v.
 Lamp, 60-w, 115-v.

WEIGHT AND VOLUME

Total weight (lb).....	91
Total volume (cu ft).....	6

Packed



Figure 115. Printer PH-508/PF.

Status: Standard. *Stock No.:* 8A3105. *Reference:* TM 11-2362.

Printer PH-508/PF is portable equipment which includes a printer, electrical connecting assemblies, and developer. It is a contact printer designed to make both photographic prints and reproductions and may be used as a light-box for blocking and retouching. The printer can make prints from negatives and X-ray films and can reproduce anything written, printed, typed, traced, drawn, sketched, photographed, or blue-printed up to 14 by 19 inches in size. Images may be reproduced either in white on black (negative) or in black on white (positive). It is applicable for office use and operates from a 105- to 120-volt a-c or d-c power source. Printer PH-508/PF is the same as Printer PH-507/PF, except for size of print produced.

TECHNICAL CHARACTERISTICS

SIZE: 14 in. x 19 in.
 TYPE: Contact.
 LENS: None.
 SHUTTER: None.
 PROJECTION EQUIPMENT: Six 25-w, 12-v lamps and six 60-w, 110-v lamps.
 POWER SOURCE: 105/120-v ac or dc.

PRINCIPAL COMPONENTS

Printer
 Carrying case, wooden
 Cable assembly with battery clips
 Cable assembly with male and female plug
 Developer containers
 Amber light filter
 Lamp, 25-w, 12-v
 Lamp, 60-w, 115-v

WEIGHT AND VOLUME

Total weight (lb).....	140
Total volume (cu ft).....	12

Packed

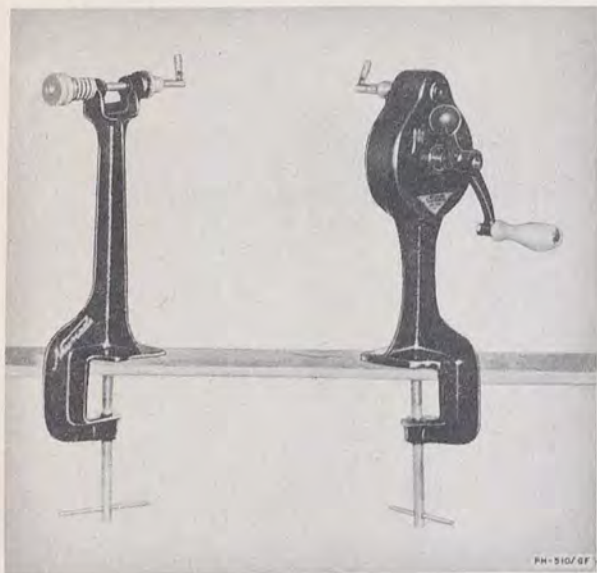


Figure 116. Rewinder PH-510/GF.

Status: Standard. Stock No.: 8A3309.

Rewinder PH-510/GF is a heavy-duty rewriter modified specifically for winding V-mail roll paper, 825 feet long by 4¼ inches wide. The rewriter has a geared mechanism, is operated by a hand-crank, and is provided with a rigid hand-operated clamp. The rewriter is used in sets of two for the inspection of V-mail facsimiles after the roll is processed and before it is separated into individual letters.

PRINCIPAL COMPONENTS

- Rewinder, geared end
- Rewinder, dummy end

WEIGHT AND VOLUME

Total weight (lb).....	Packed
Total volume (cu ft).....	25
	1.75

PH-511/GF

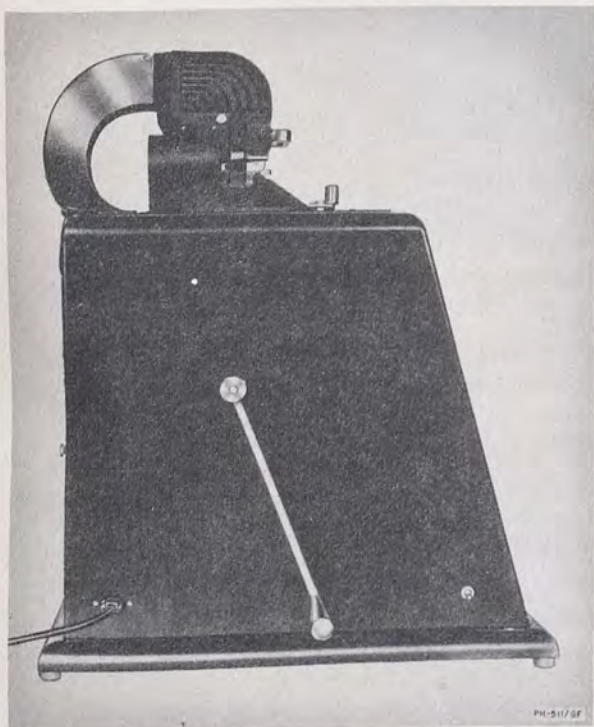


Figure 117. Enlarger PH-511/GF.

accommodates a 100-foot roll of 16-mm film, the images of which are projected one at a time on a roll of photosensitive paper 4½ inches wide and 825 feet long. The 25-mm projection lens is preset to a fixed focus and enlarges the negative images approximately 8 diameters. The enlarger is equipped with a roll paper unit to accommodate the 825-foot roll of paper.

TECHNICAL CHARACTERISTICS

- SIZE: 16-mm.
- TYPE: Projection.
- RATE OF EXPOSURE: 1,500 facsimiles per hr.
- LENS: 25-mm present.
- CAPACITY: 100-ft roll of 16-mm film; 825-ft roll of paper.
- SHUTTER: None.
- MAGNIFICATION: 8 diam.
- PROJECTION EQUIPMENT: 200-w, 110-v, T-8 clear. 200-S, candelabra base lamp.
- POWER SOURCE: 110/120-v, 60-cyc ac.

PRINCIPAL COMPONENTS

- | | |
|------------------------------|------------------------------|
| Cabinet | Roll paper unit |
| Lamphouse with bracket | Paper-advance lever assembly |
| Viewer head assembly | Viewing screen |
| Glass, flat, upper and lower | Paper supply core |
| Projection lamp | Paper chute |
| Reel, 100-ft, 16-mm | |
| Cables | |

WEIGHTS AND VOLUMES

Total weight (lb).....	Unpacked	Packed
Total volume (cu ft).....	225	275
	7.53	9

Status: Standard. Stock No.: 8A1047. Reference: TM 11-2306.

Enlarger PH-511/GF is a manually operated machine, designed specifically to print individual V-mail facsimiles on roll paper. The enlarger

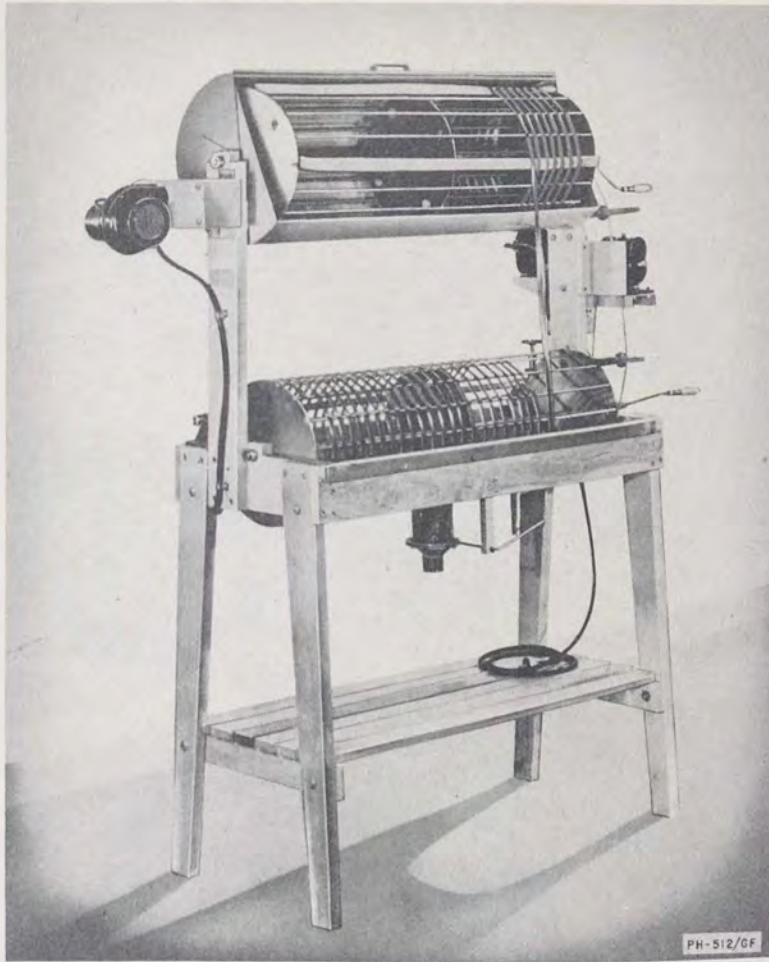


Figure 118. Developing Machine PH-512/GF, front view.

Status: Standard. Stock No.: 8A3241. Reference: TM 11-2305.

Developing Machine PH-512/GF is designed for processing 16-mm film in lengths up to 100 feet. The machine consists primarily of two corrosion-resisting steel reels on which the film is wound. These reels, mounted one above the other on a wooden stand, are motor-driven. The lower, or developing reel, revolves in a metal tank or trough that holds the processing solutions. The upper reel, used for drying, is fitted with a cover or hood, and an electric heater and blower for shortening the drying time. The blower provides uniform drying conditions over all parts of the film on the reel. The machine also processes 35-mm film in lengths up to 50 feet and is adaptable, within limits of its capacity, to all types of photographic installations where motion picture films are processed.

TECHNICAL CHARACTERISTICS

FILM SIZE: 16-mm (or 35-mm).
 FILM CAPACITY: 100 ft.
 HEATER: 300-w, 115-v.
 BLOWER: 115-v motor-driven, 40-w, 3,000 rpm.
 DRIVING MOTOR: 115-v, 50- to 60-cyc ac, 1/10 hp;
 30-1 gear reducer, 1,725 rpm.
 POWER SOURCE: 115-v, 50- to 60-cyc ac.

PRINCIPAL COMPONENTS

Developing machine (bare unit)
 Case, wooden, oversea shipping
 Belts
 Crank handle

WEIGHTS AND VOLUMES

	Unpacked	Packed
Total weight (lb)-----	290	555
Total volume (cu ft)-----	36	40
Ship tons-----	9	1

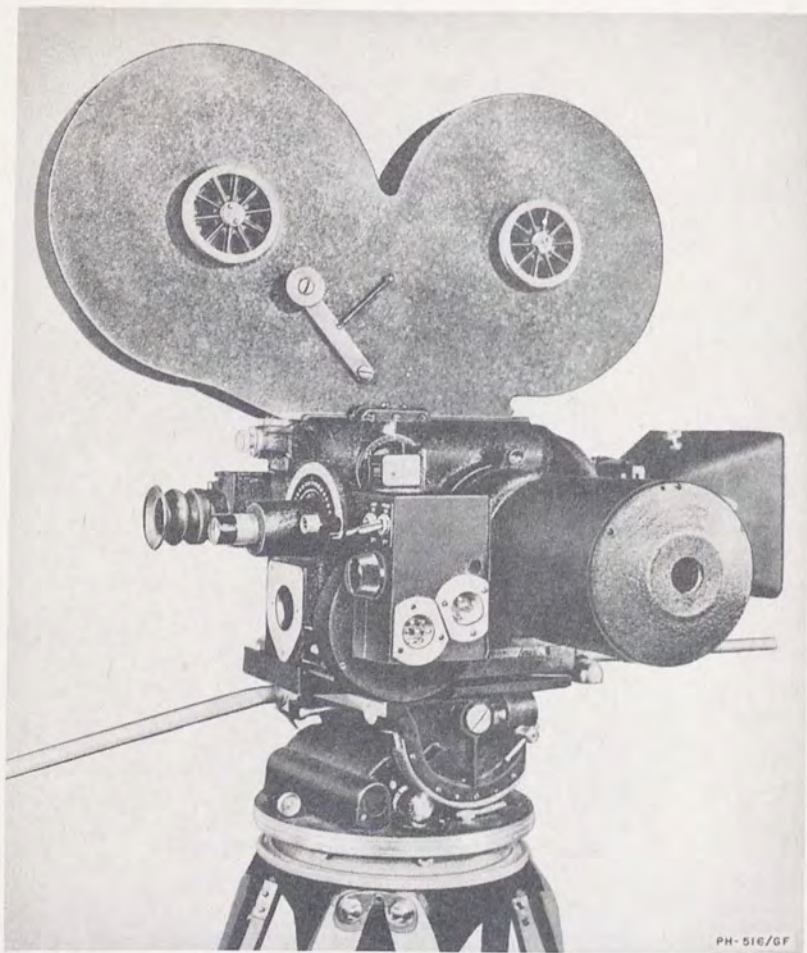


Figure 119. Camera PH-516/GF.

Status: Standard. *Stock No.:* 8A391-516.

Camera PH-516/GF is a 35-mm single-system, motion picture sound camera of the newsreel type. It may be used with a 12-, 24-, or 110-volt motor. The equipment includes a 12-volt d-c motor, a heavy-duty motion picture tripod with pan and tilt head, three 1,000-foot film magazines, an erect image finder with built-in mattes, and three carrying cases. Recorder PH-271 is used with this camera.

TECHNICAL CHARACTERISTICS

TYPE: Newsreel.

SIZE: 35-mm.

TYPE OF FILM: Magazine.

MOTOR: 12-v dc.

POWER SOURCE: 12-, 24-, or 110-v dc.

PRINCIPAL COMPONENTS

Camera equipment
Camera accessory kit
Tripod equipment

WEIGHT AND VOLUME

Total weight (lb)	<i>Packed</i> 281.7
Total volume (cu ft)	16



Figure 120. Tripod PH-520/U.

Status: Standard. *Stock No.:* 8A4160. *Reference:* TM 11-2396.

Tripod PH-520/U has an aluminum head and base and wooden legs. The tripod opens to 84 inches and closes to 33 inches. It can be adjusted for tilting and has fluted knobs between each leg for positive action and locking leg height adjustment.

PRINCIPAL COMPONENTS

Base	Head
Case	Handle

WEIGHT AND VOLUME

Total weight (lb)	<i>Packed</i> 40
Total volume (cu ft)	2.7

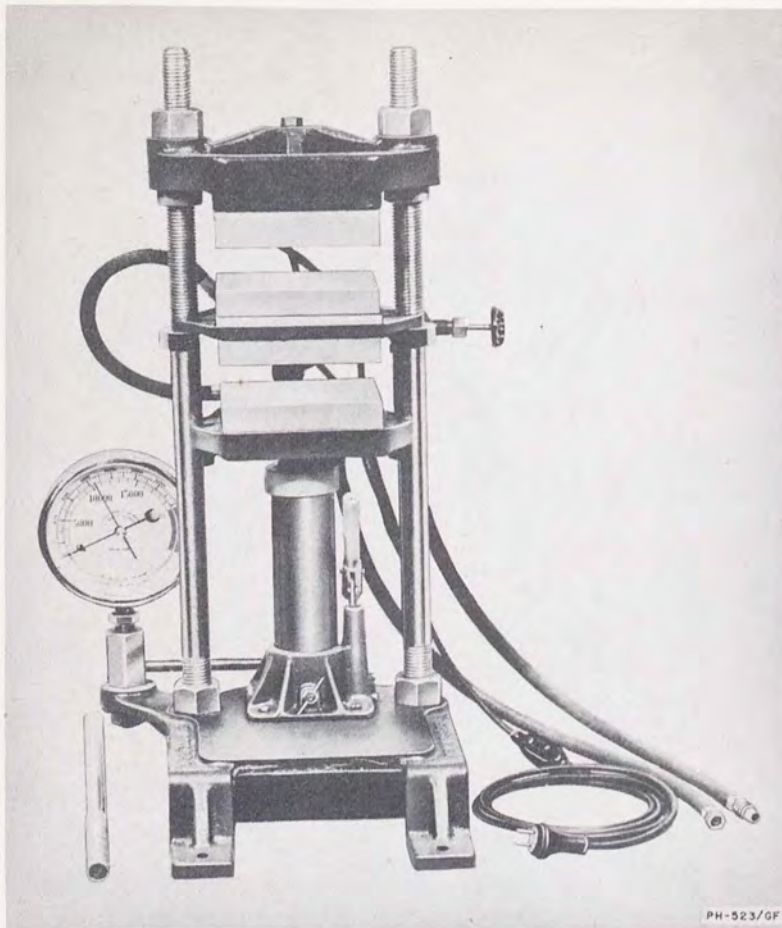


Figure 121. Laminating Equipment PH-523/GF.

Status: Standard. Stock No.: 6Q62573. Reference: TM 11-2369.

Laminating Equipment PH-523/GF is a laminating machine consisting of a hand-operated, thermostatically controlled, electrically heated, portable laminating press with a 7-foot insulated cord. The equipment includes a corner-cutting machine which produces corners of $\frac{1}{4}$ -radius on identification pass cards. The laminating press has been designed to fabricate identification cards between sheets of acetate.

TECHNICAL CHARACTERISTICS

PRESSURE LOAD: 10,000 lb.
 OPERATING TEMPERATURE: 335° to 340° F.
 HEATING UNIT: cartridge type; 285 w, 115 v.
 TEMPERATURE RANGE: 100° to 500° F.
 POWER RATING: 1, 140-w
 POWER SOURCE: 110- or 115-v ac.

PRINCIPAL COMPONENTS

Laminating press, less gage
 Pressure gage
 Corner cutter

WEIGHT AND VOLUME

Total weight (lb).....	Packed 234
Total volume (cu ft).....	6



Figure 122. Tripod PH-524/PF.

Status: Standard. *Stock No.:* 8A4162-524.

Reference: TM 11-2396.

Tripod Cameras PH-330-A, PH-330-G, PH-430, and PH-431. It consists of a Professional Jr. head and of special legs made of three bronze yoke castings and footed with a standard machine gun tripod-type foot. Two of its legs are 12 inches long, and the other leg is 14 inches long. The

tripod may be carried in one hand and used as a unipod.

PRINCIPAL COMPONENTS

Tripod head handle	Tripod base
Tripod head	Thumbnut

WEIGHT AND VOLUME

Total weight (lb)-----	<i>Packed</i> 6.8
Total volume (cu ft)-----	0.35

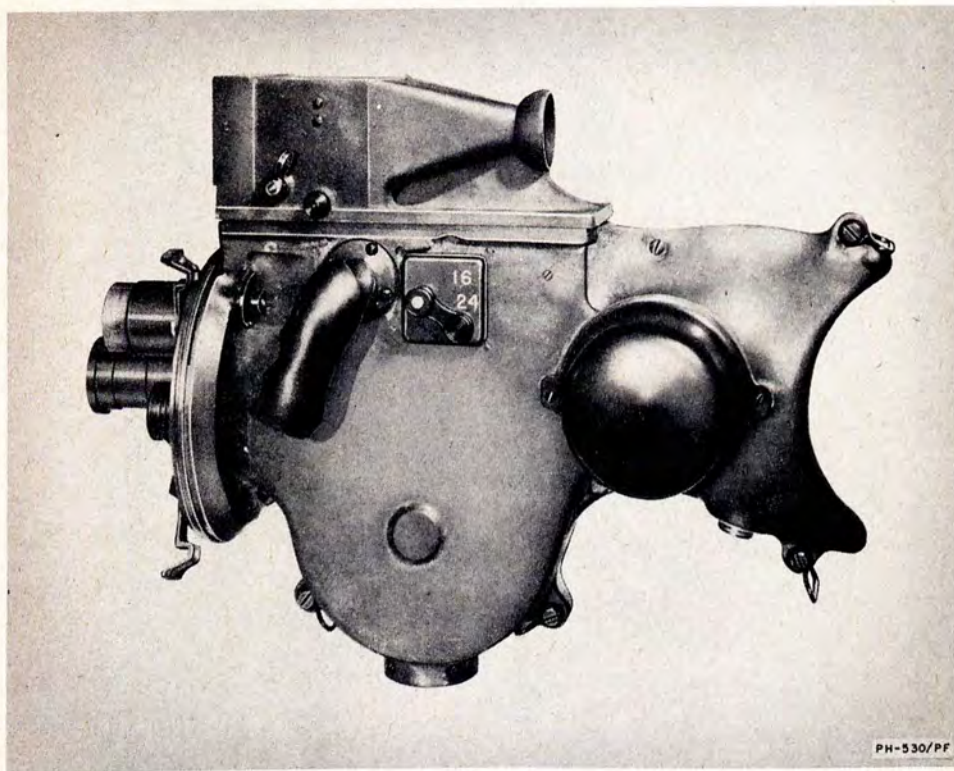


Figure 123. Camera PH-530/PF.

Status: Limited/Std. *Stock No.:* 8A421. *Reference:* TM 11-2389.

Camera PH-530/PF is a self-contained, light-weight, 35-mm motion picture camera designed for hand use in the field. Pistol grip handles and a rifle stock provide firm support and permit the camera to be aimed like a submachine gun. The controls are all visible and may be completely set, without removing gloves or mittens, while the camera is in operation. Most of the controls may be adjusted by the fingers without moving the hands from the handgrips. The film-magazine carries 200 feet of film and can be changed in a few seconds. A revolving lens turret permits lenses to be changed quickly without removing the camera from the shoulder. Focusing is accomplished by moving the film magazine toward or away from the lens. A governor-controlled electric motor drives the camera at one of three speeds, which are selected by means of a switch on the camera body. Batteries, carried on the operator's

belt, supply power for the motor. The camera may be mounted on a tripod.

TECHNICAL CHARACTERISTICS

SIZE: 35 mm.
 TYPE OF DRIVE: Electric motor intermittent.
 CAPACITY: 200 ft.
 TYPE OF LOADING: Magazine.
 POWER SUPPLY: Four 45-v Batteries BA-59.
 LENS: 35-mm, 75-mm, and 6-in.
 SPEED: 16, 24, and 32 fps.
 SHUTTER SPEED: 170°

PRINCIPAL COMPONENTS

Camera with lenses	Prismatic focus adapter assembly
Film magazines	Feed spool
Battery case and cable	Carrying case, empty
Sling strap	
Telephoto lens, 10-in.	

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	1.3
Total volume (cu ft).....	.06

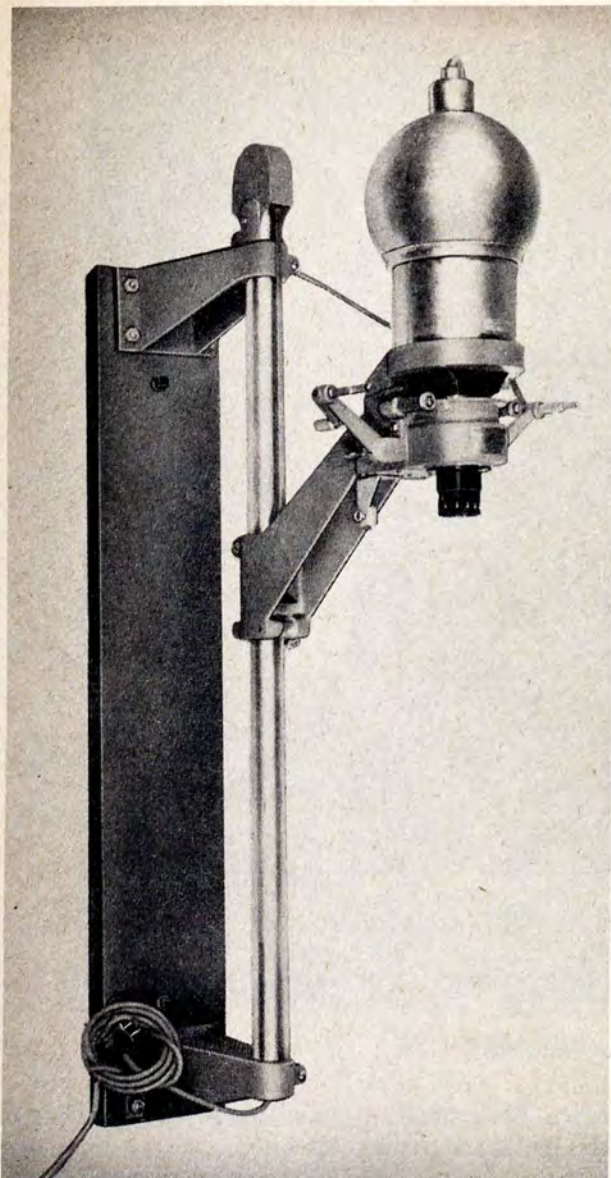


Figure 124. Enlarger PH-542/UF, with film reels removed.

Status: Standard. Stock No.: 8A1052-542 (PH-542/UF) and 8A1052-542A (PH-542A/UF). Reference: TM 11-2300.

Enlarger PH-542(*)/UF represents Enlargers PH-542/UF and PH-542A/UF. Enlarger PH-542(*)/UF (V-mail) is a wall-mounted, precision machine specifically designed to make photographic enlargements from either 16-mm or 35-mm film strips for V-mail or photomail. Since it is designed to handle 100-foot reels of film, spindles with winding cranks have been built into the enlarger so that the film may be rewound easily and rapidly after enlarging. To keep the film in the focal plane, polished glass plates confine the film when it is held in the path of light. To speed up focusing and to assure accuracy, the enlarger is equipped with a flexible steel tape calibrated in diameters of enlargement to correspond with similar markings on the lens. The enlarger when mounted is 46 inches high, 13 inches wide, and extends 25 inches away from the wall. It weighs approximately 30 pounds. Properly installed, it will make enlargements ranging from 8 to 30 diameters. Enlarger PH-542A/UF is used for 35-mm film only.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm or 35-mm.

TYPE: Projection.

LENS: 63.5-mm *f*/6.8, uncoated.

MAGNIFICATION: 8 to 30 diameters.

SHUTTER: None.

PROJECTION EQUIPMENT: 115-w photo-enlarger lamp, two $\frac{4}{16}$ -in. plano convex condenser lens, and 150-w lamp. The lens is a 63.5-mm Kodak Ektar with aperture set *f*/8.

POWER SOURCE: 110 to 120-v ac or dc.

PRINCIPAL COMPONENTS

Enlarger	Filter assembly
Projection lens, microfilm	Lamphousing assembly
Film reel	Lens board

WEIGHTS AND VOLUME

	Unpacked	Packed
Total weight (lb).....	30	82
Total volume (cu ft).....	---	9. 6

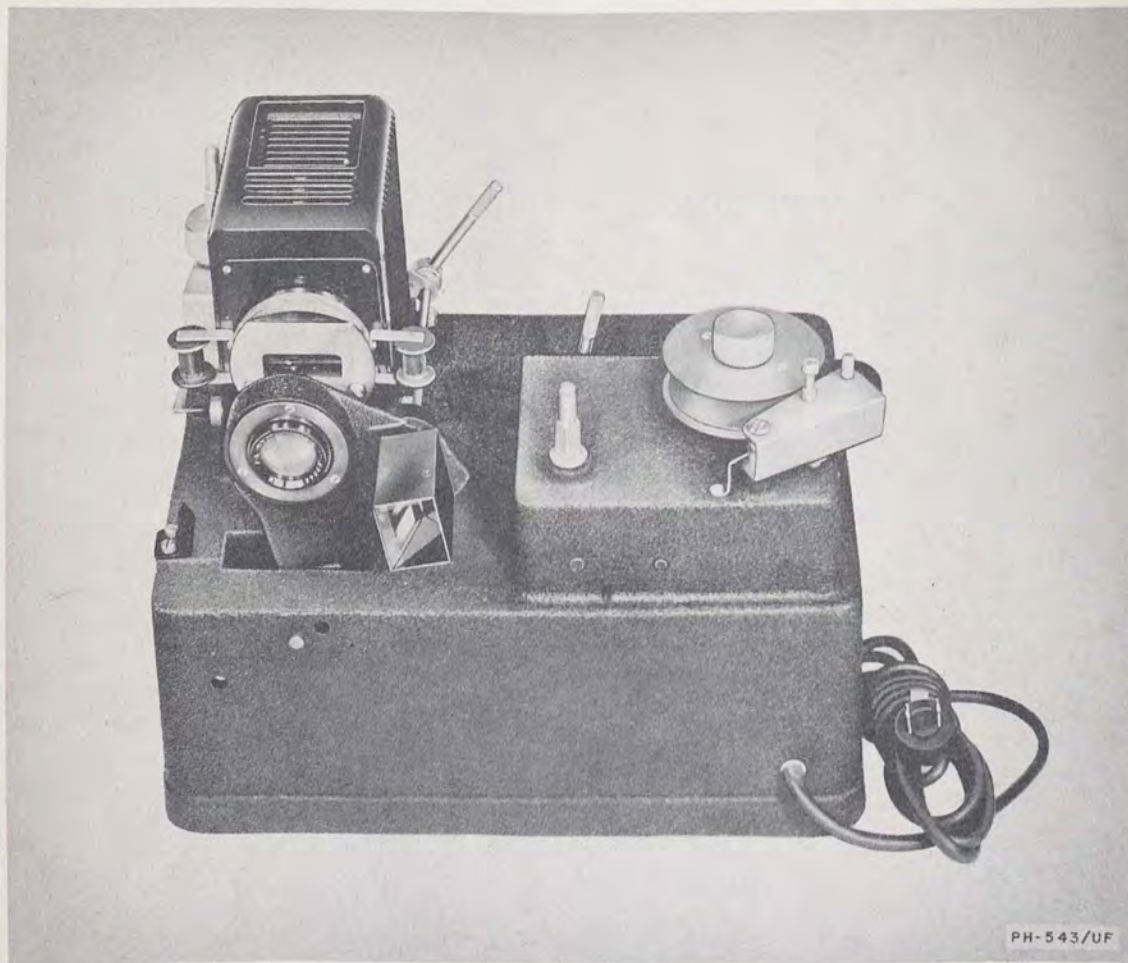


Figure 125. Projector PH-543/UF.

Status: Standard. Stock No.: 8A3134-543.
Reference: TM 11-2304.

Projector PH-543/UF is a portable projector designed for the rapid inspection of perforated or unperforated 16-mm V-mail film. It operates on 100- to 125-volt, 60-cycle ac only. The film strip is drawn continuously across the light path by a small motor. The constantly moving images are projected two images in width through a scanning lens on a white wall or screen, enabling the operator to inspect them for defects. When a doubtful frame comes into view, a manually operated clutch stops the film and a second projection lens, mounted in the lens turret, can be swung into the light path. This lens projects a greatly enlarged image of the frame so that identifying data can be noted by the operator without moving from his operating position. Defective frames can be marked for identification

by a film-punch mechanism without removing the film from the machine.

TECHNICAL CHARACTERISTICS

TYPE: film strip.
SIZE: 16-mm V-mail.
LENS: 45-mm f/2; 25-mm f/1.9.
RANGE: Darkened room 5- by 8-ft.
CAPACITY: 100-ft.
POWER SUPPLY: 100- to 125-v, 60-cyc ac.
MOTOR: 1/50 hp.
LAMP RATING: 150-w, single-contact, bayonet base lamp.
SCREEN AREA: 52 to 72 in.

PRINCIPAL COMPONENTS

Bare unit	Film-punch assembly
Lamphouse assembly	Film-drive assembly
Lens turret assembly	

WEIGHT AND VOLUME

Total weight (lb).....	Packed 22
Total volume (cu ft).....	1. 75

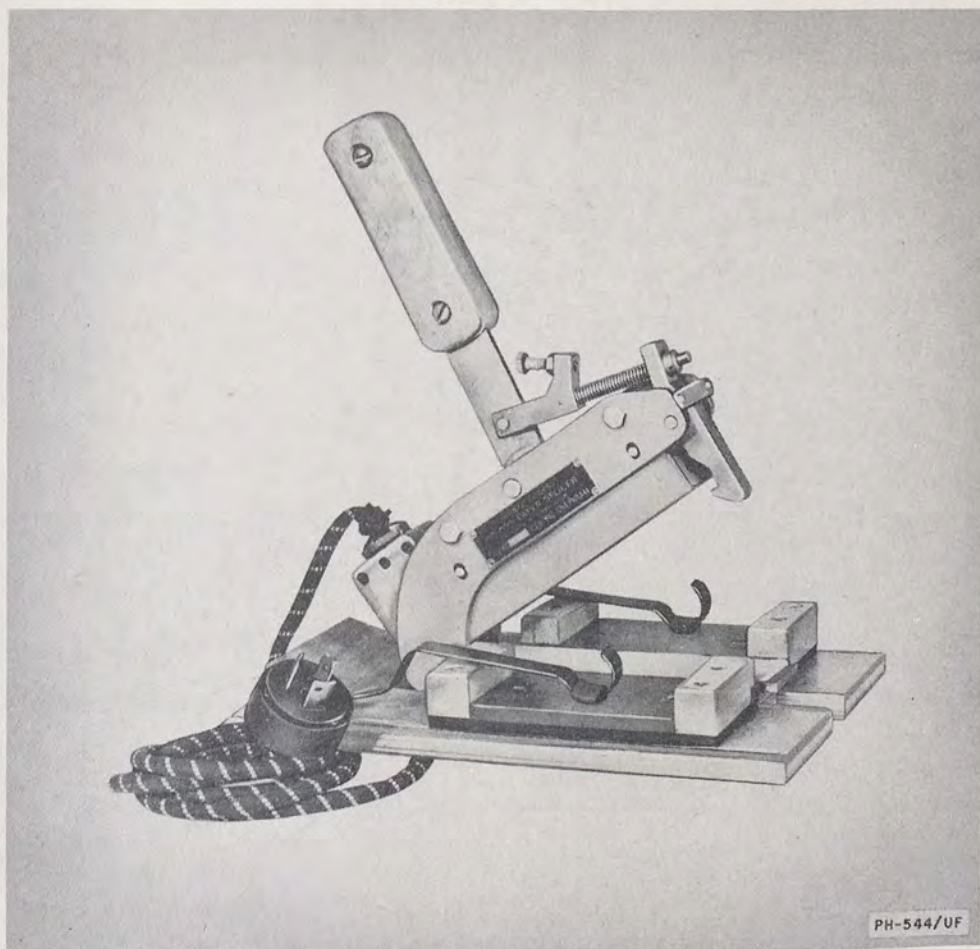


Figure 126. Splicer PH-544/UF.

Status: Limited/Std. *Stock No.:* 8A3664-544.
Reference: TM 11-2303.

Splicer PH-544/UF is used to join rolls of photographic paper in a splice strong enough to withstand the strains incident to continuous development in a paper processing machine. The splicer is designed specifically for use with Processing Machine PH-286. The splicer is 8 inches wide, 12 inches long, and 10 inches high. Mounted on a plywood base, the splicer consists of a hinged heater assembly and a felt-covered metal base plate. To hold the paper ends in place during operation, the plywood base is equipped with two hold-down springs and four wooden cleats which serve as paper guides. The 240-watt cartridge heater is thermostatically controlled to maintain a constant temperature of approxi-

mately 300° F. The splicer will operate only on 115-volt, 50- to 60-cycle ac.

TECHNICAL CHARACTERISTICS

HEATER ELEMENT: 240 w.
TEMPERATURE: 300° F.
CONTROL: Thermostat 400° F., maximum, 50° F. minimum.
SPLICING TIME: 1 min.
PROCESSING RATE: 5 ft per min.
POWER SOURCE: 115-v, 50- to 60-cyc ac.

PRINCIPAL COMPONENTS

Splicer	Heater assembly
Base, plywood	

WEIGHT AND VOLUME

Total weight (lb).....	Packed 22
Total volume (cu ft).....	0.75

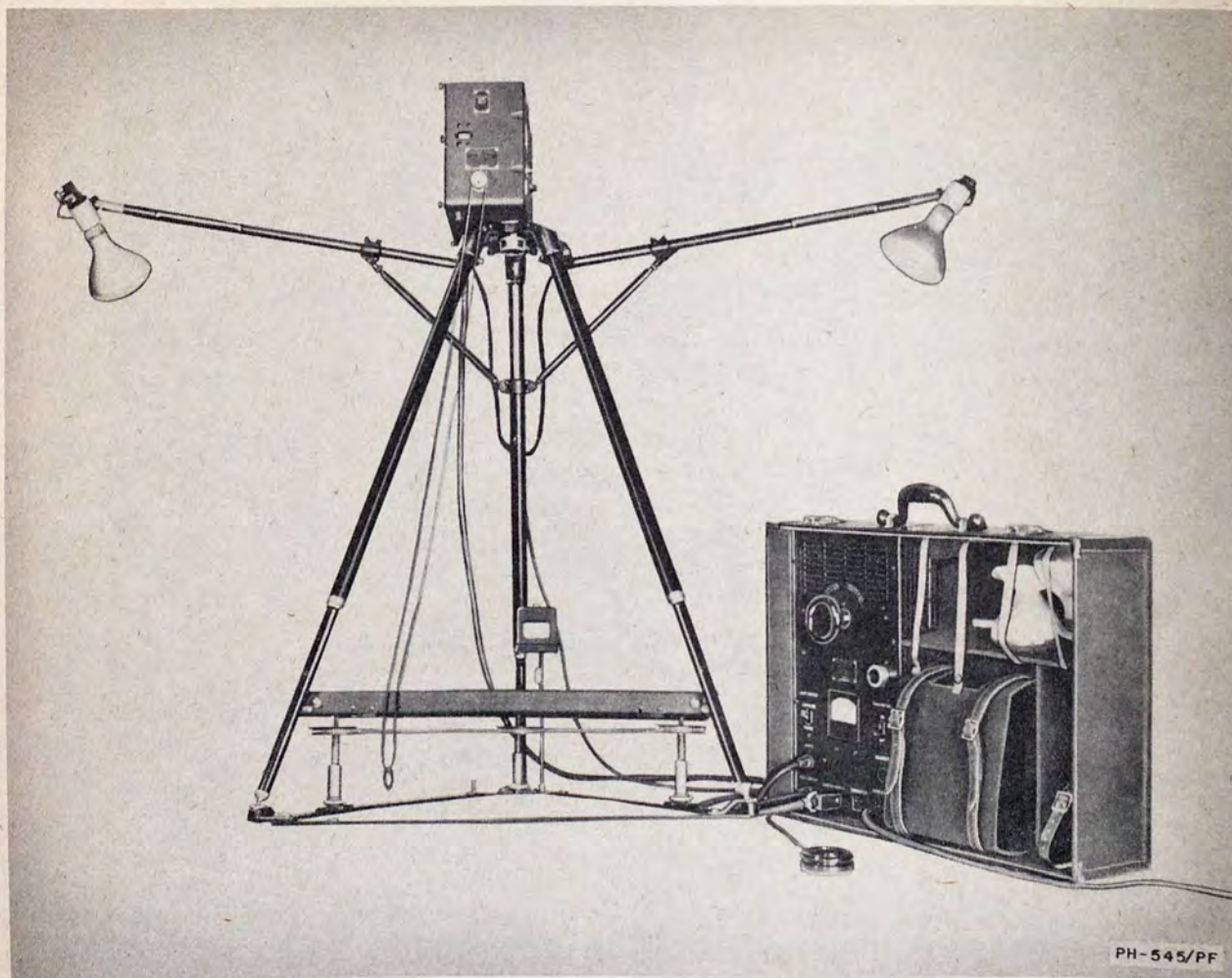


Figure 127. Camera PH-545/PF.

Status: Standard. Stock No.: 8A393-545.
Reference: TM 11-2312.

Camera PH-545/PF (V-mail) is a semiautomatic, portable, document-copying set for recording documents on 35- or 16-mm perforated or unperforated photographic film. The unit operates on 115-volt ac or 115-volt dc when used with a converter. The equipment consists of a camera, a tripod and easel assembly, reflector flood lamps, a light meter, a foot switch, and a power control unit. The automatic camera is electrically operated and photographs small documents placed horizontally on an easel attached to the tripod base, or larger documents mounted vertically on a wall support.

TECHNICAL CHARACTERISTICS

SIZE: 16-mm or 35-mm.
TYPE OF DRIVE: Electrical, motor, built-in.

CAPACITY: 22½- by 33½-in. easel; 35-mm unperforated film for horizontal operation can record up to 37½ by 52½ in.; 16-mm unperforated film for horizontal operation can record up to 17 by 45 in.

TYPE OF LOADING: Daylight.
POWER SUPPLY: 115-v ac or dc.
LENS: None.
SPEED: Fixed, 1/10 sec.

PRINCIPAL COMPONENTS

- | | |
|----------------------------------|-------------------------|
| Camera | Line cord |
| Carrying case, camera | Interconnecting cord |
| Carrying case, tripod | Foot switch and cord |
| Power control unit | Exposure meter assembly |
| Easel | Tripod |
| Reflector flood lamps | Converter |
| Reflector flood lamp feeder cord | |

WEIGHTS AND VOLUME

	Unpacked	Packed
Total weight (lb)-----	93	150
Total volume (cu ft)-----	-----	7.5

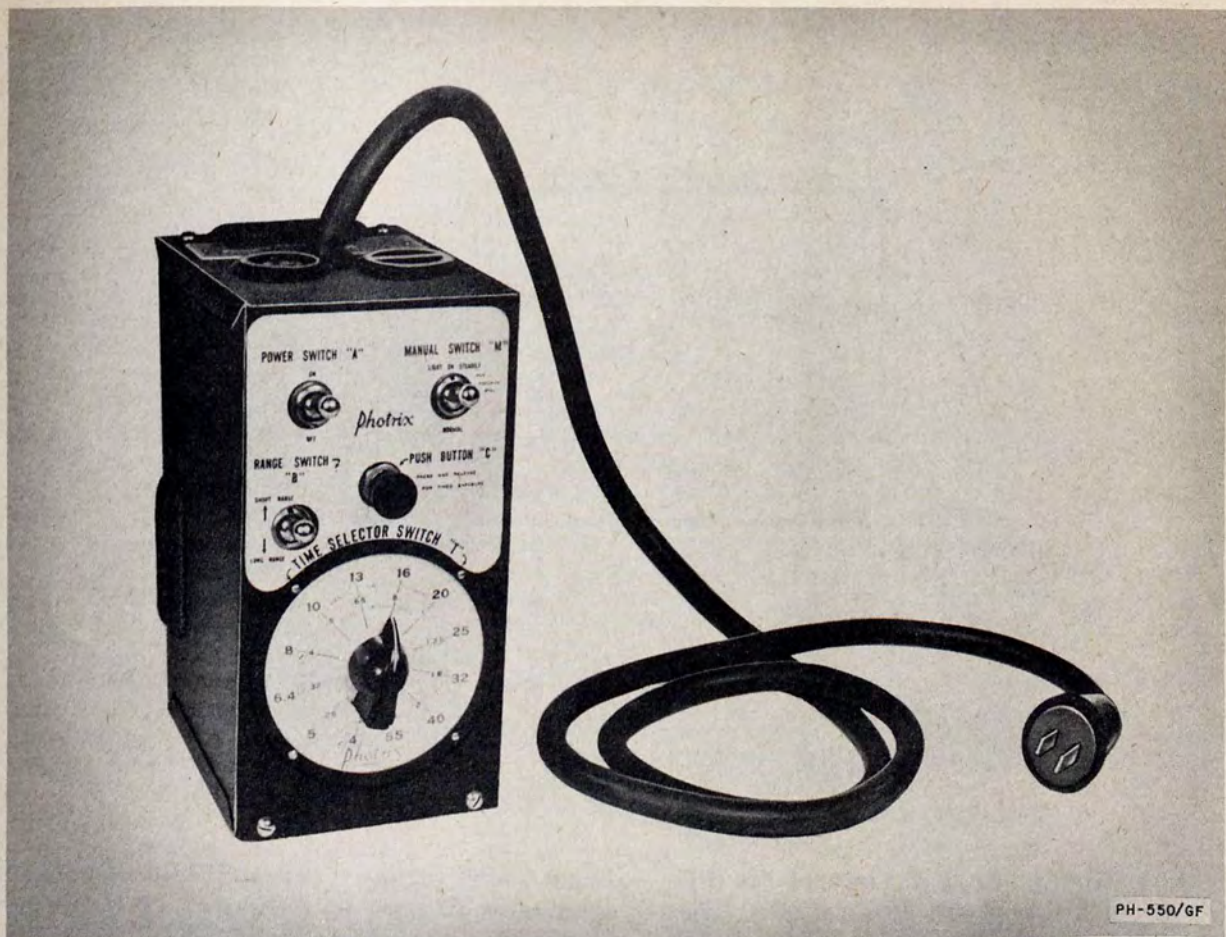


Figure 128. Exposure Timer PH-550/GF.

Status: Standard. *Stock No.:* 8A1055-550. *Reference:* TM 11-2395.

Exposure Timer PH-550/GF is a compact electronic timer designed to control the exposure time of photographic printers, enlargers, or other photographic equipment by regulating the length of time of current flow to the equipment. The equipment operates on a 115-volt, 50- to 60-cycle ac, consumes approximately 30 watts in its func-

tional operation, and will handle loads up to 1,500 watts. A time-selector switch provides 24 time intervals from $\frac{2}{10}$ second to 55 seconds in 2 ranges of 12 steps each.

WEIGHT AND VOLUME

	<i>Unpacked</i>
Total weight (lb).....	3. 25
Total volume (cu ft).....	. 06

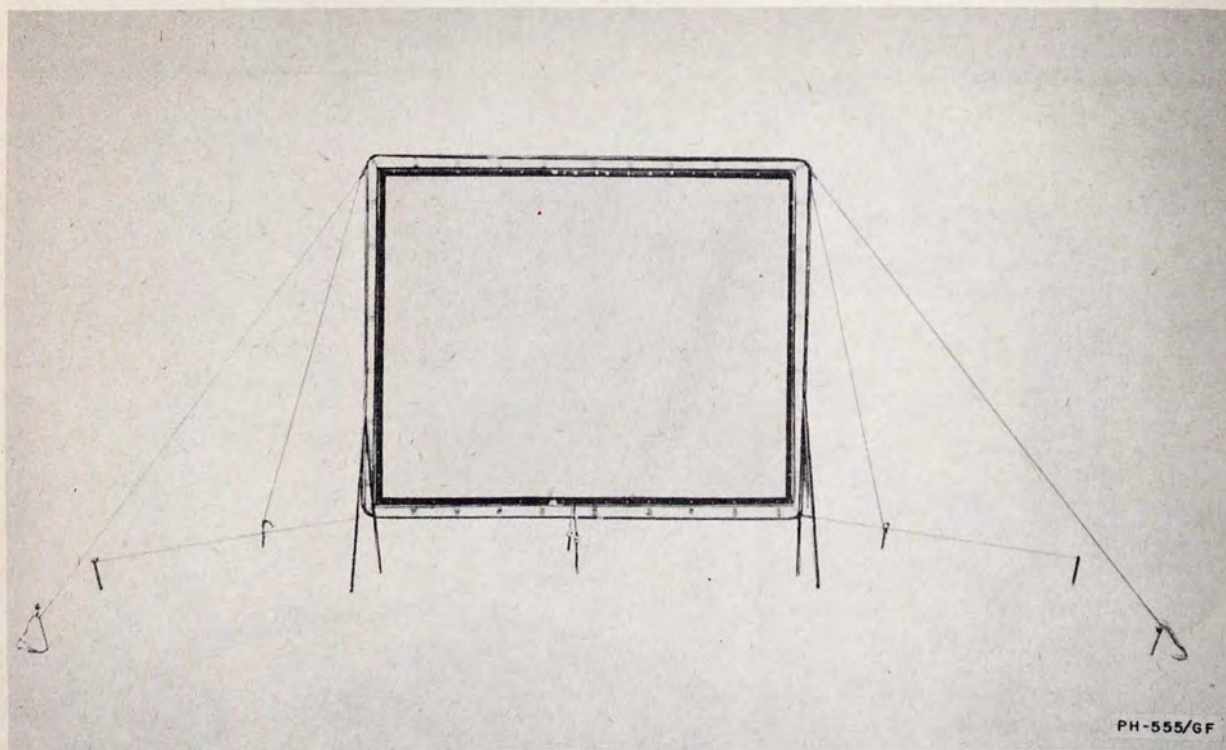


Figure 129. Screen PH-555/GF or PH-556/GF, set up for operation.

Status: Standard. *Stock No.:* 8F7716-555 (PH-555/GF) and 8F7716-556 (PH-556/GF). *Reference:* TM 11-2336.

Screens PH-555/GF and PG-556/GF are large, portable, folding, projection screens designed to accommodate large audiences outdoors and under field conditions. Stakes and guy ropes make these screens usable even under moderately windy conditions. The screens are adjustable in height and may be set up by two operators in 15 minutes or less. A ground area of approximately 18 by 22 feet is required for the placement of stakes and guy ropes. The screens are made of water-repellent cloth and are suspended by coil springs from the sectional tubular metal frames. Screen PH-555/GF has a screen area of 7 feet 6 inches by 9 feet 11 inches and an effective picture area of 7 feet 1 inch by 9 feet 5 inches. The screen has a

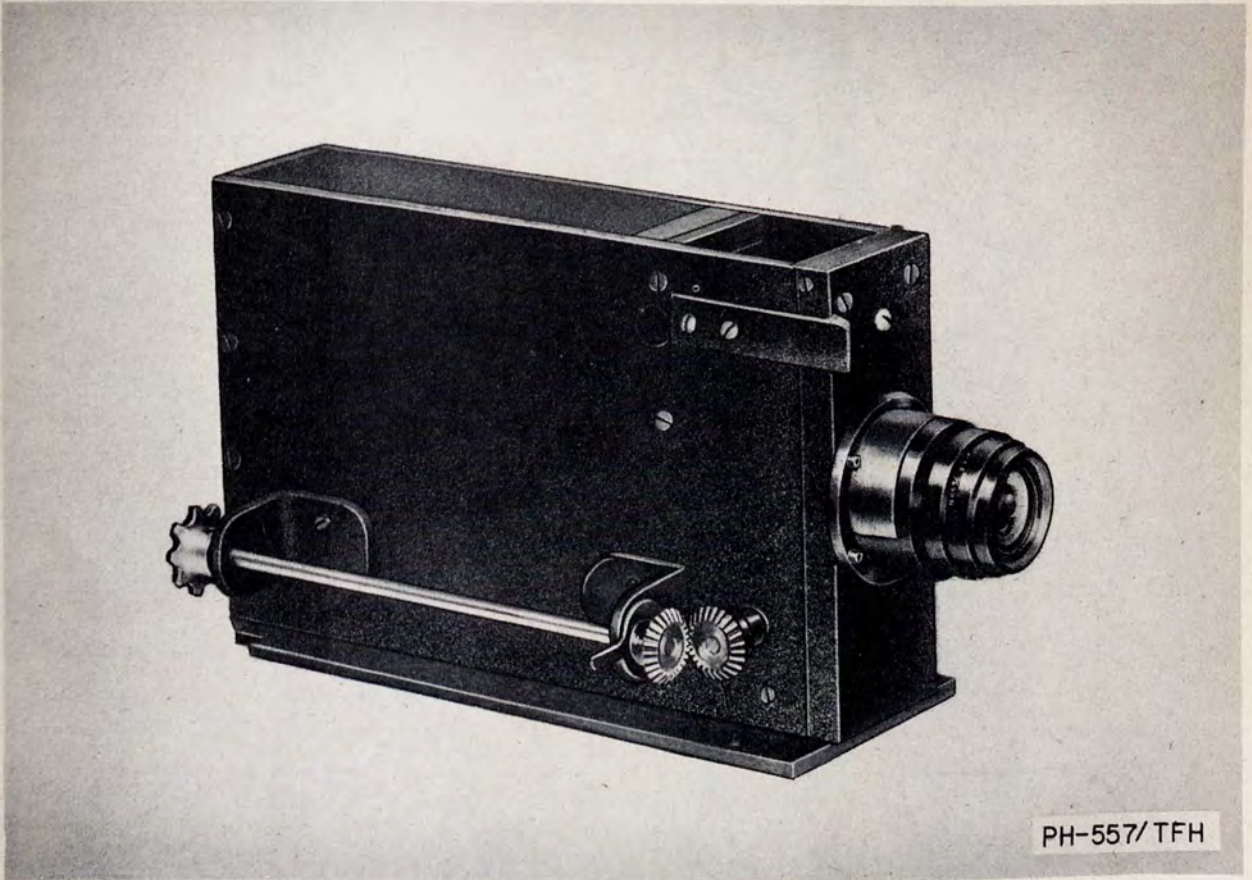
semidiffusing surface. Screen PH-556/GF has a screen area of 10 feet 11 inches by 14 feet 5 inches and an effective picture area of 10 feet 6 inches by 14 feet. The screen has a solid reflecting surface.

PRINCIPAL COMPONENTS

- Projection screen
- Side frame assembly
- Horizontal frame assembly
- Center frame assembly
- Guy rope stake
- Leg extension section
- Telescoping extension leg
- Guy rope with snap hooks
- Guy stake
- Screen case
- Spring hook

WEIGHT AND VOLUME

	<i>Packed</i>
Total weight (lb).....	84
Total volume (cu ft).....	5



PH-557/TFH

Figure 130. Camera PH-557/TFH, housing.

Status: Standard. *Stock No.:* 8A393-577. *Reference:* TM 11-2338.

Camera PH-557/TFH is used in conjunction with Developer PH-559/TFQ and Viewer PH-558/TFP to record and plot traces or patterns occurring on the visible face of a cathode-ray tube, in the same time sequence and continuity as during occurrence. The equipment operates from a 110-volt, single-phase, 60 cycle-circuit.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.
 TYPE OF DRIVE: Chain.
 CAPACITY: 400-ft.

TYPE OF LOADING: Magazine.
 POWER SUPPLY: 110-v, single-phase, 60-cyc.
 LENS: 40-mm f/2.3.
 SPEED: 0- to 10-in. per sec.
 MOTOR: Capacitor start; manual speed control; 3,450 rpm; 2 amp; 115-v, 60-cyc ac.

PRINCIPAL COMPONENTS

Camera housing, with lens	Motor PD-4/TFH
Magazine	Drive chain
Lens cap	

WEIGHT AND VOLUME

Total weight (lb)-----	Packed 90
Total volume (cu ft)-----	1



Figure 131. Viewer PH-558/TFP.

Status: Standard. Stock No: 8A4411-558.

Reference: TM 11-2338.

Viewer PH-558/TFP consists of an operational table equipped with a projector, a viewing screen, and a protractor. It serves to project images from the film, exposed by Camera PH-557/TFH and developed and dried by Developer PH-559/TFQ, onto a screen for the purpose of removing the angular information on the film.

PRINCIPAL COMPONENTS

- | | |
|-------------------------|-----------------------|
| Microprojector assembly | Male cord connector |
| Film scanner | Female cord connector |
| Spare parts for viewer | Toggle switch |
| Viewing screen | Fuses |
| Pressure plate | 50-cp headlight bulbs |
| Aperture plate | |

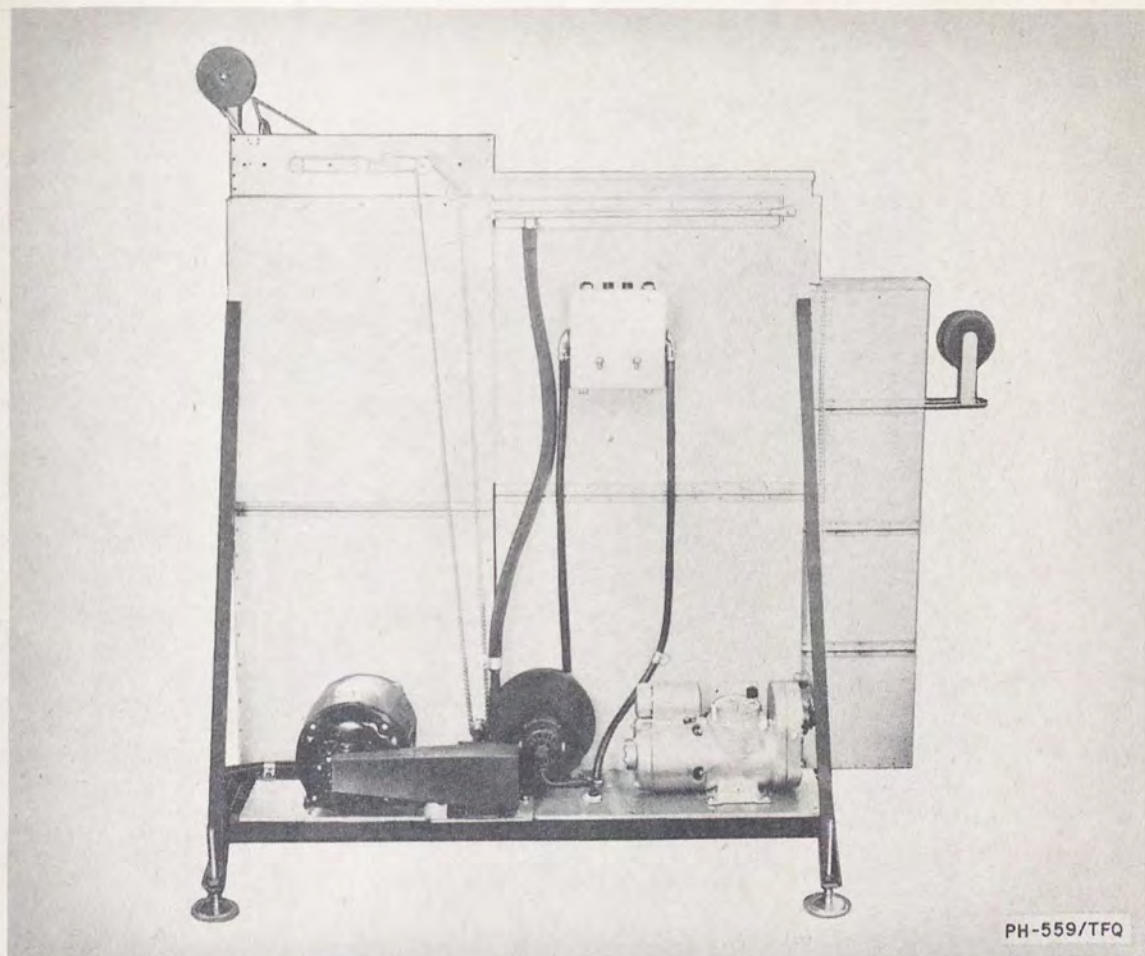


Figure 132. Developer PH-559/TFQ, right side.

Status: Standard. *Stock No.:* 8A959-559. *Reference:* TM 11-2338.

Developer PH-559/TFQ is used in conjunction with Camera PH-557/TFH which is mounted thereon. The developer automatically receives, processes, and dries the exposed film from the camera and makes the film available for projection approximately 7 minutes after exposed. The complete developer consists of two tall thin stainless steel tanks, mounted one in front of the other on a structural iron framework. The front tank, which is the narrower of the two, is the developing section. The smaller stainless steel film reservoir

which mounts the camera is attached to the front tank. The rear tank is thicker to allow for the air drying system. The blower and drive motor for the developer and the drive motor for the camera are mounted on a side shelf at the bottom of the unit.

TECHNICAL CHARACTERISTICS

AIR SYSTEM: 8 cu ft per min.
 HEATER: 125° F.
 MOTOR: ½ hp, 3,450-rpm ac; 100:1 reduction
 POWER SOURCE: 110-v, 60-cyc ac.

PRINCIPAL COMPONENTS

Developing unit Wooden base



Figure 133. Film Examining Machine PH-561/U.

Status: Standard. Stock No.: 8A4412-561.

Reference: TM 11-2379.

Film Examining Machine PH-561/U is designed for inspecting and editing 35-mm positive motion picture film. The machine is equipped with two heads so that two separate films may be run simultaneously: one, a picture and sound (composite) film; the other, a film containing a sound track only. Either a push-pull or standard sound track may be used. The equipment is entirely self-contained. The machine operates on 110- to 120-volt, 60-cycle ac. Operation on 50-cycle current is possible if the pulley of the constant-speed motor is changed for one of a larger diameter to compensate for the reduced speed of the motor when running on 50-cycle current. The equipment can accommodate film on reels up to 2,000 feet. This equipment supersedes Film Examining Machine PH-319.

TECHNICAL CHARACTERISTICS

SIZE: 35-mm.

CAPACITY: 2,000-ft.

MOTOR: 115-v ac or dc, 1.6 amp, 6,000 rpm; $\frac{1}{8}$ hp and 115-v ac, 50- to 60-cyc; $\frac{1}{16}$ hp; 1,425 to 1,725 rpm.

EDITING SPEED: 4 to 24 fps.

LAMP: 6 to 8 v and 115-v, 40-w.

POWER SOURCE: 110- to 120-v, 60-cyc ac.

PRINCIPAL COMPONENTS

Stand	Combination head
Base	Amplifier
Soundhead	

WEIGHT AND VOLUME

Total weight (lb)	285	Packed
Total volume (cu ft)	22	
Ship tons	0.55	



Figure 134. Reader PH-608-A/PFP.

Status: Standard. *Reference:* TM 11-2344 C 2.

Reader PH-608-A/PFP is microfilm equipment designed for quick scanning of 16-mm or 35-mm perforated or unperforated film. The reader can be stopped at any desired image. The equipment is composed of two basic assemblies: a table type metal cabinet and a revolving turret head. The cabinet has a sloping front containing a control panel and projection screen.

TECHNICAL CHARACTERISTICS

FILM SIZE: 16-mm or 35-mm perforated or unperforated.
 SCANNING RATE: 100 ft in 15 sec.
 PROJECTION LAMP: 200-w, 115-v.
 CAPACITY: 100 ft.
 PROJECTION SCREEN: Two-piece, fused opaque glass; antireflection type.
 PROJECTION LENS: f/lg 3.15 in. or 8-mm; f/3.5 lens speed.
 MOTOR: Series type; 40° C temperature rise; 115-v ac, 60-cyc, single-phase; .4 amp.
 POWER SOURCE: 105- to 120-v ac.



Figure 135. Camera Equipment PH-629/UF, without case.

Status: Standard.

Camera Equipment PH-629/UF consists of a compact, portable, 35-mm still picture camera and leather carrying case. The equipment is designed to operate in tropical climates and at temperatures as low as -65° F. The camera is used to take photographs under field conditions that would prohibit the use of heavier equipment.

TECHNICAL CHARACTERISTICS

TYPE: Candid.
 SHUTTER: Self-capping focal plane.
 SIZE: 35-mm.
 TYPE OF FILM: Roll.
 LENS: 47-mm f/2.
 SHUTTER RANGE: 1/20 to 1/1000.
 DIAPHRAGM STOP: f/2 to f/16.
 FOCAL RANGE: $3\frac{1}{2}$ ft to infinity.

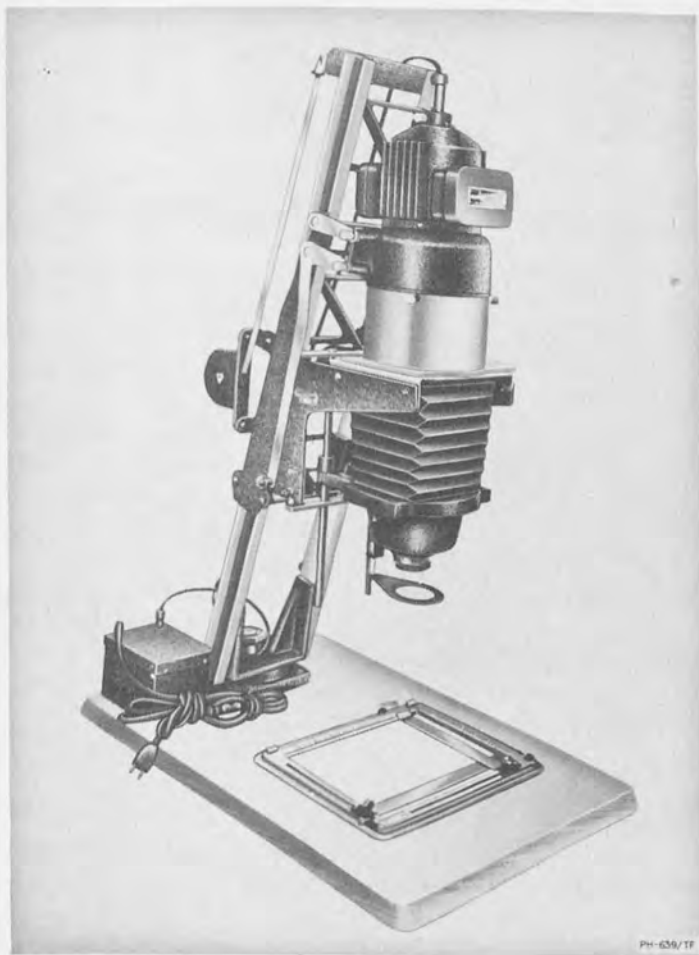


Figure 136. Printer PH-639/TF.

Status: Standard. *Stock No.:* 8A1052-129A.
Reference: TM 11-2339.

Printer PH-639/TF is an enlarger for 4- by 5-inch and 35-mm negatives. The equipment includes a 3½- and a 6½-inch condenser set, a 6⅝-inch f/4.5 Wollensak coated anastigmat lens, a 2-inch f/4.5 Wollensak coated anastigmat lens, 2 lens boards, a negative carrier for 4- by 5-inch negatives, a negative carrier for 35-mm negatives, a paper Holder PH-349-A, and a Color Head Attachment PH-648/U. The printer can be used in the field. Printer PH-639/TF replaces Printer PH-129-A.

TECHNICAL CHARACTERISTICS

SIZE OF NEGATIVE: 4 by 5 in. and 35-mm.
TYPE: Projection.
LENS: 2-in. f/4.5; 6⅝-in. f/4.5.
SHUTTER: None.
REPRODUCTION RATIO: 1 to 1.
PROJECTION EQUIPMENT: Condensing lens, lamp 75 w, 105 to 120 v, and Color Head Attachment PH-648/U.
POWER SOURCE: 110 v, 60 cyc; 6 to 8 v dc.

PRINCIPAL COMPONENTS

Printer
Holder PH-349-A
Carrier, 35-mm.
Carrier, 4 by 5 in.

Lens, 2 in. focal length
Lens, 6⅝ in. focal length
Color Head Attachment
PH-648/U

CHAPTER II

MISCELLANEOUS PHOTOGRAPHIC ITEMS

CS-22. Case CS-22 is a steel storage case for a 1,000-foot reel of 35-mm film.

Sig C Stock No.: 8F695-22.

Status: Standard.

CS-77 (fig. 150). Case CS-77 is a wooden case cover for Film Viewer PH-97.

Sig C stock No.: 8A515.

Status: Standard.

CY-114/PF. Case CY-114/PF is a vulcanized fiber shipping case for one 16-mm, 1,600-foot reel with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F784.

Status: Standard.

CY-115/PF. Case CY-115/PF is a vulcanized fiber shipping case for two 16-mm, 1,600-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F786.

Status: Standard.

CY-116/PF. Case CY-116/PF is a vulcanized fiber shipping case for three 16-mm, 1,600-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F788.

Status: Standard.

CY-118/PF. Case CY-118/PF is a vulcanized fiber shipping case for one 16-mm, 1,200-foot reel with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F776.

Status: Standard.

CY-119/PF. Case CY-119/PF is a vulcanized fiber shipping case for two 16-mm, 1,200-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F778.

Status: Standard.

CY-120/PF. Case CY-120/PF is a vulcanized fiber shipping case for three 16-mm, 1,200-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F780.

Status: Standard.

CY-121/PF (fig. 156). Case CY-121/PF is a vulcanized fiber shipping case for four 16-mm, 1,200-foot reels with film. The telescopic cover is secured with a webbed strap and fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F782.

Status: Standard.

CY-122/PF. Case CY-122/PF is a vulcanized fiber shipping case for one 16-mm, 800-foot reel with film. The telescopic cover is secured with a webbed strap and fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F768.

Status: Standard.

CY-123/PF. Case CY-123/PF is a vulcanized fiber shipping case for two 16-mm, 800-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F770.

Status: Standard.

CY-124/PF. Case CY-124/PF is a vulcanized fiber shipping case for three 16-mm, 800-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive mailing address card.

Sig C stock No.: 8F772.

Status: Standard.

CY-125/PF. Case CY-125/PF is a vulcanized fiber shipping case for one 16-mm, 400-foot reel with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive mailing address card.

Sig C stock No.: 8F756.

Status: Standard.

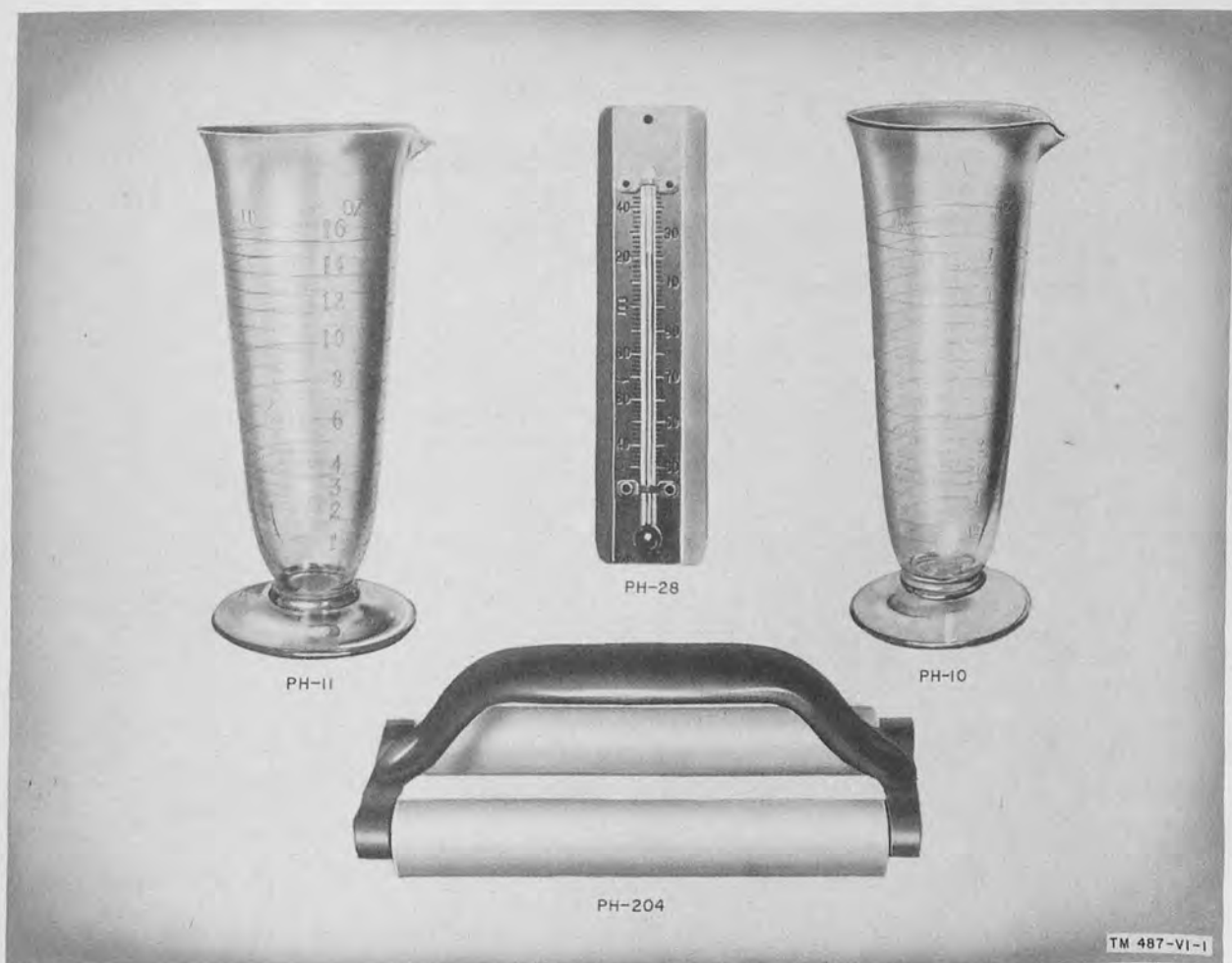


Figure 137. Miscellaneous photographic items.

CY-126/PF. Case CY-126/PF is a vulcanized fiber shipping case for two 16-mm, 400-foot reels with film. The telescopic cover is secured with a webbed strap and a fastening buckle and has a pocket to receive the mailing address card.

Sig C stock No.: 8F758.

Status: Standard.

LM-20-A. Lamp LM-20-A is a 115-volt, 100-watt, clear, T-8½ bulb with a CC-13 filament and a medium screw base.

Sig C stock No.: 8E67.

Status: Standard.

MC-90 (fig. 148). Apron MC-90 is a lightweight rubber photographic apron, 46 inches long.

Sig C stock No.: 8A90.

Status: Standard.

PH-8. Trimmer PH-8 is a 15-inch square trimming board, marked in ½-inch squares for accurate measuring of the item to be cut. It

has a 15-inch ruler on top of the board and a free-motion knife on the right side. The trimmer weighs approximately 20 pounds. Trimmer PH-8 is part of Photographic Equipments PH-383, PH-390, PH-391, and Photographic Laboratory Set AN/FFQ-1.

Sig C stock No.: 8A4008.

Status: Standard.

PH-9. Frame PH-9 is a 5- by 7-inch plate glass held by a 9- by 7- by 1-inch folding board and two steel leaf springs. The frame is used to hold negative and the paper in contact for contact printing.

Sig C stock No.: 8A1109.

Status: Standard.

PH-10 (fig. 137). Graduate PH-10 is a 100-cc, beaker-shaped, glass graduate.

Sig C stock No.: 8A1410.

Status: Standard.

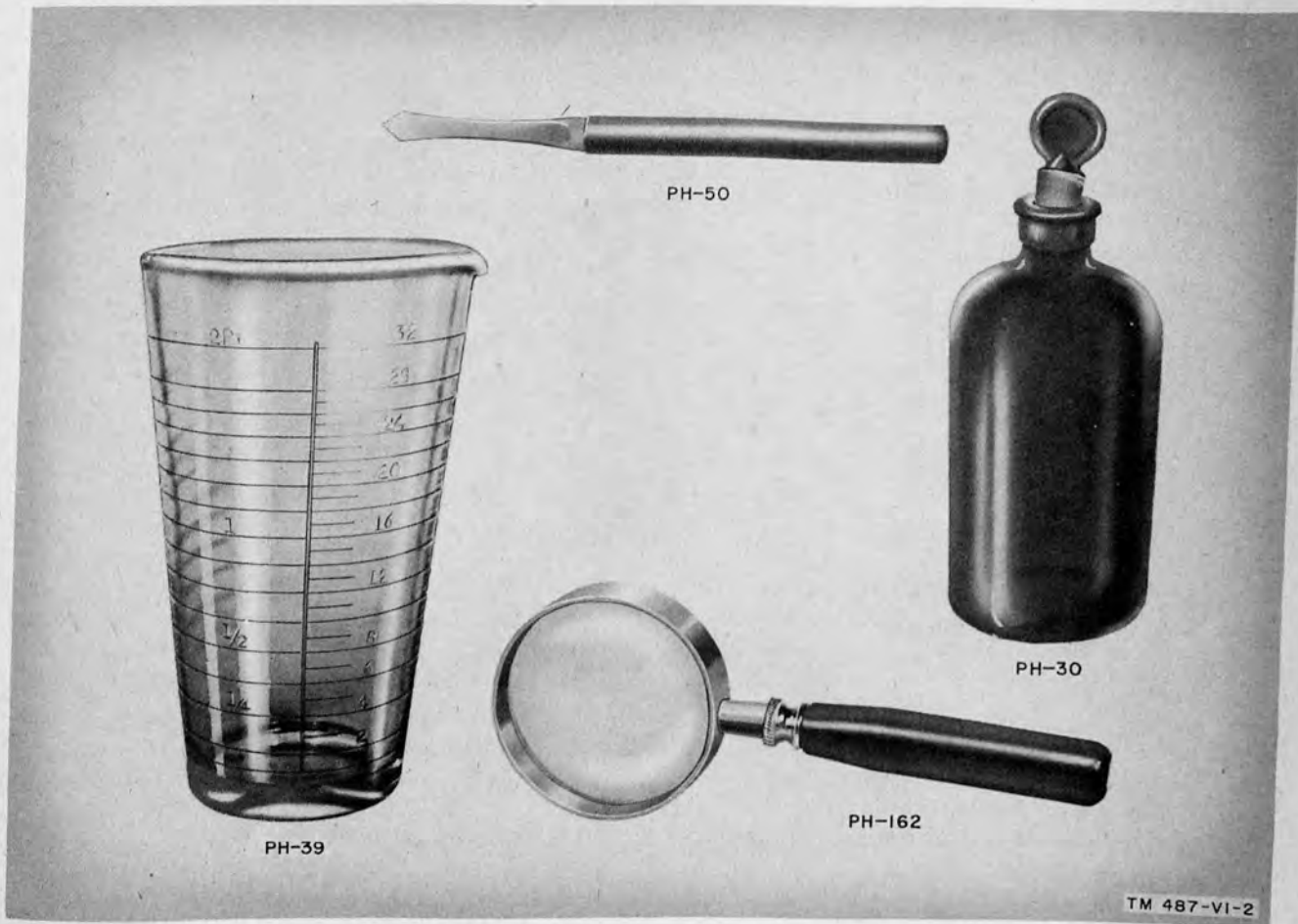


Figure 138. Miscellaneous photographic items—Continued.

PH-11 (fig. 137). Graduate *PH-11* is a 2,000-cc glass graduate.

Sig C stock No.: 8A1411.

Status: Standard.

PH-12. Lamp *PH-12* is a 115-volt, 25-watt, natural dark-ruby lamp. It has a C-9 filament and a medium base screw.

Sig C stock No.: 8E126.

Status: Standard.

PH-16 (fig. 157). Tank *PH-16* is a photographic developing tank for 5- by 7-inch film packs or cut film. The tank consists of a cup containing a segmented rack for film.

Sig C stock No.: 8A3716.

Status: Limited/Std.

PH-22 (fig. 144). Bottle *PH-22* is a 1-gallon dark-glass bottle with a glass stopper. Bottle *PH-22* replaces Jug *PH-297*.

Sig C stock No.: 8A222.

Status: Standard.

PH-23 (fig. 158). Clip *PH-23* is a wooden, 3-inch photographic film clip. The clip holds film or prints for drying and has a wire hook for hanging purposes.

Sig C stock No.: 8A823.

Status: Standard.

PH-28 (fig. 137). Thermometer *PH-28* is a 5-inch indicating thermometer with a scale of 20° to 120° F. It is a mercury-tank-type thermometer with a metal back.

Sig C stock No.: 8A3828.

Status: Standard.

PH-30 (fig. 138). Bottle *PH-30* is a 1-quart, narrow-mouthed, amber-glass bottle with an opaque glass stopper. The bottle is approximately 3½ inches in diameter and 10 inches high.

Sig C stock No.: 8A230.

Status: Standard.

PH-37. Frame *PH-37* is an 8- by 10-inch glass inclosed in a wooden frame. It is used to hold

the negative and the paper in contact for contact printing.

Sig C stock No.: 8A1137.

Status: Standard.

PH-39 (fig. 138). Graduate PH-39 is a 32-ounce glass graduate, graduated in steps of 1 or 2 ounces.

Sig C stock No.: 8A1439.

Status: Standard.

PH-42. Drying Rack PH-42 is a portable assembly of equipment for drying motion picture film. It includes a disassembled rack and case into which the rack is placed for transportation or storage.

Sig C stock No.: 8A982.

Status: Standard.

PH-44. Lamp PH-44 is a photoflash lamp of the Wabash Press No. 2 type. It is 5 inches in length, furnishes 70 to 75M lumens, has a color temperature of 3,800° K, and is usually flashed with two or more dry cells or standard lighting circuits.

Sig C stock No.: 8E10.

Status: Standard.

PH-46 (fig. 146). Gloves PH-46 are light rubber gloves used by photographers to protect their hands from photographic solutions and battery-charging chemicals. The gloves come in sizes 7, 7½, 8, 8½, and 9.

Sig C stock No.: 8A1346.

Status: Standard.

PH-49. Reflector PH-49 consists of two 41- by 35-inch screens mounted on a stand 79 inches high. The screens, black on one side and white on the other, are mounted one on top of the other in an iron frame. The screens can be set at any angle and locked in place.

Sig C stock No.: 8A3249.

Status: Standard.

PH-50 (fig. 138). Knife PH-50 is a 5¼-inch etching knife complete with case.

Sig C stock No.: 8A2000.

Status: Standard.

PH-55 (fig. 159). Perforator PH-55 is a perforator for the lettering of film.

Sig C stock No.: 8A2855.

Status: Standard.

PH-56 (fig. 152). Perforator PH-56 is a 5- by 4½- by 11-inch automatic spacer used to number film.

Sig C stock No.: 8A2856.

Status: Standard.

PH-60 (fig. 139). Cup PH-60 is a 1-quart, white-

enamel cup with a handle. Cup PH-60 replaces Cup PH-61.

Sig C stock No.: 8A860.

Status: Standard.

PH-69. Screen PH-69 is a head and a side diffusing screen.

Sig C stock No.: 8A3669.

Status: Limited/Std.

PH-70-A (fig. 139). Brush PH-70-A is a 2-inch flat, rubber set and bound, camel's-hair brush used as a photographic duster.

Sig C stock No.: 8A270A.

Status: Standard.

PH-71 (fig. 140). Hanger PH-71 is a 4- by 5-inch frame of four perforated channels. The top channel of this film developing hanger is hinged to aid loading of the sheet film or plates.

Sig C stock No.: 8A1601.

Status: Standard.

PH-72 (fig. 140). Hanger PH-72 is a 5- by 7-inch frame of four perforated channels. The top channel of this film developing hanger is hinged to aid loading of the sheet film and plates.

Sig C stock No.: 8A1602.

Status: Standard.

PH-74. Hanger PH-74 is an 8- by 10-inch frame of four perforated channels. The top channel of this film developing hanger is hinged to aid loading of the sheet film or plate.

Sig C stock No.: 8A1604.

Status: Standard.

PH-79. Paper PH-79 is a 250-foot roll of 35-mm photographic recording paper. The paper is packed in individual tins.

Sig. C stock No.: 4G1809.

Status: Limited/Std.

PH-80 (fig. 142). Paddle PH-80 is a 12-inch, hard-rubber, photoprint paddle. The paddle is used to assist in the handling of prints in various developing solutions.

Sig C stock No.: 8A2800.

Status: Standard.

PH-81. Film Holder PH-81 is a holder for cut film. It is constructed of wood, with metal septums and hinged retaining strips to facilitate positioning of the film. The hard-rubber slides are held in place by brass slide hooks. Each slide has a metal handle, one of which is black and the other light in tone. A series of raised points serve to indicate the light side when loading film in the darkroom.

Sig C stock No.: 8A1701.

Status: Standard.

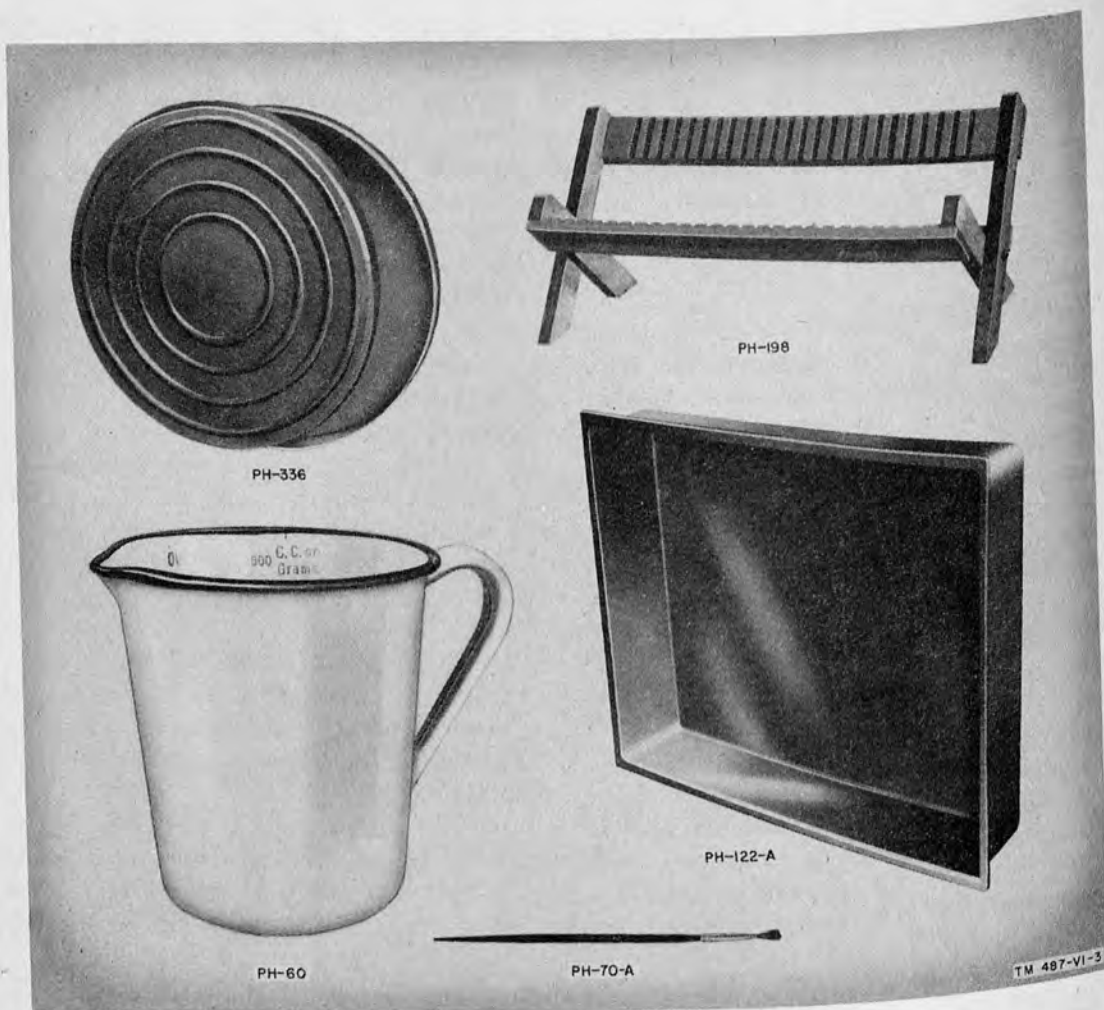


Figure 139. Miscellaneous photographic items—Continued.

PH-82 (fig. 141). Film Holder *PH-82* is a 5- by 7-inch black, hardwood holder. All of the joints are dovetailed, and two aluminum septums are provided. There are two openings on the top edge into which are inserted the film slides after the holder has been loaded or the film exposed. Rotatable metal hooks are provided to prevent the unintentional withdrawal of a slide.

Sig C stock No.: 8A1702.

Status: Standard.

PH-83-D. Case *PH-83-D* is a fiber case used for carrying a 4- by 5-inch Speed Graphic camera and accessories. The dimensions of the case are 19½ by 11¼ by 9¼ inches. The case is modified to provide a better arrangement of compartments and to include an additional compartment to house the side lighting unit.

Sig C stock No.: 8A523D.

Status: Limited/Std.

PH-83-E. Case *PH-83-E* is a fiber case used for carrying a 4- by 5-inch Speed Graphic camera. The dimensions of the case are 19½ by 12 by 9¼ inches. The case has seven compartments in the bottom and one in the top.

Sig C stock No.: 8A523E.

Status: Standard.

PH-84 (fig. 141). Film Holder *PH-84* is an 8- by 10-inch, black, hardwood holder. All of the joints are dovetailed, and two aluminum septums are provided. There are two openings on the top edge into which are inserted the film slides after the holder has been loaded or the film exposed. Rotatable metal hooks are provided to prevent the unintentional withdrawal of a slide.

Sig C stock No.: 8A1704.

Status: Standard.

PH-88 (fig. 141). Holder *PH-88* is a 3¼- by 4-inch plate holder used in making lantern slides.

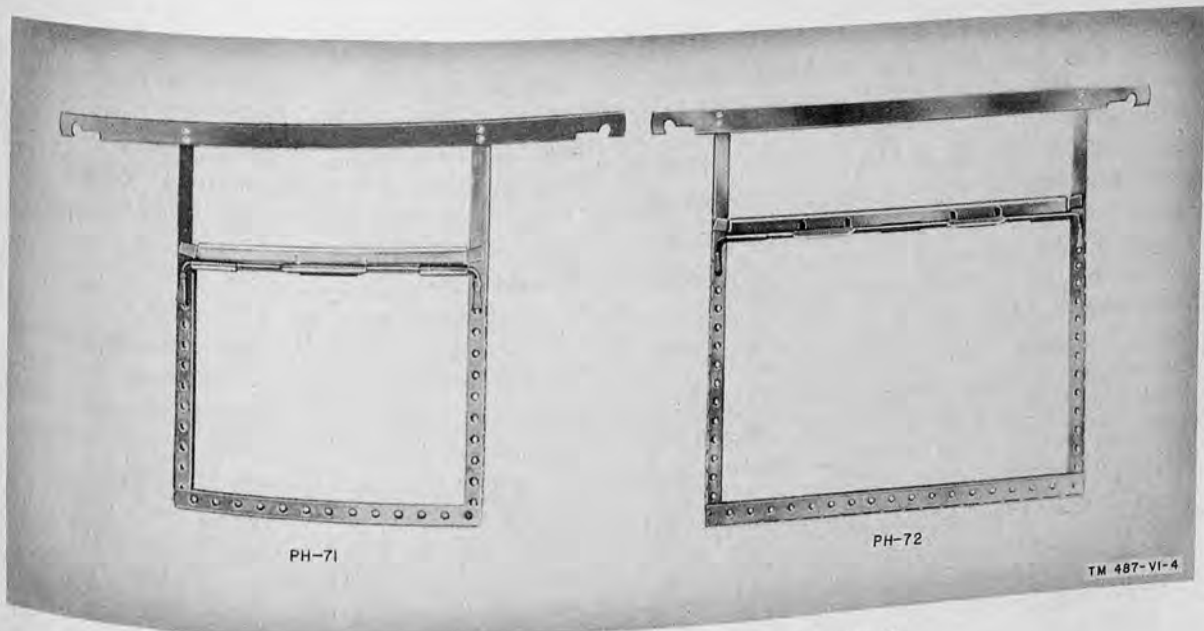


Figure 140. Miscellaneous photographic items—Continued.

Sig C stock No.: 8A1709.
Status: Standard.

PH-89. Filter Selection Chart PH-89 consists of 12 small viewing filters mounted in cardboard for examining photographic subjects to determine the filter to be used.

Sig C stock No.: 8A800.
Status: Standard.

PH-93. Attachment PH-93 is a $12\frac{1}{16}$ - by $12\frac{1}{16}$ -inch attachment used to permit a portrait camera to accept $3\frac{1}{2}$ - by $4\frac{1}{4}$ -inch lantern slides.

Sig C stock No.: 8A93.
Status: Standard.

PH-98. Viewing Attachment PH-98 is a tube containing an objective lens, a reticule, and an eyepiece. It has a fixed over-all magnification of three diameters and a field of view on the film of 33-mm. It is part of Film Viewer PH-97 which is a component of Spotting Set PH-32.

Sig C stock No.: 8A4418.
Status: Limited/Std.

PH-100. Background PH-100 is a 5- by 6-foot portable screen, with a clouded finish, used as a background for photographs. The background is provided with a carrier.

Sig C stock No.: 8A100.
Status: Limited/Std.

PH-101. Background PH-101 is a 5- by 6-foot portable screen with a clear-white finish. The equipment is used as a background for photographs. A carrier is provided.

Sig C stock No.: 8A101.
Status: Limited/Std.

PH-102-(*). Table PH-102-(*), represents Tables PH-102 and PH-102-A. Table PH-102-(*), is a steel film inspection table. Its top is 30 by 60 inches in area, and includes a film rack, rewinder, and splicers.

Sig C stock No.: 8F8010-102 (PH-102) and 8F8010-102A (PH-102-A).
Status: Standard.

PH-105. Bag PH-105 is a zipper-type changing bag for daylight loading and unloading. It is designed to accommodate film holders up to 8 by 10 inches, and motion picture film magazines which hold up to 1,000 feet. The bag is fungiproofed, made of cotton-twill olive-drab cloth on the outside and rubber sheeting on the inside, and has two elastic-cuffed sleeves.

Sig C stock No.: 8A105.
Status: Standard.

PH-106-A (fig. 142). Lens Hood and Filter Holder PH-106-A is a combination lens hood and filter holder which slips on the front cell of the lens. The narrow collar of the adapter ring is slotted so that it may be spread or tightened easily by pushing on the collar sections, thus permitting a proper fit despite slight possible variations in size of either the lens mount or the adapter. Lens Hood and Filter Holder PH-106-A replaces Lens Hood and Filter Holder PH-106.

Sig C stock No.: 8A2576A.
Status: Standard.

PH-110-A. Adapter PH-110-A is 4- by 5-inch all metal film pack used with a Speed Graphic camera. Adapter PH-110-A replaces Adapter PH-110.

Sig C stock No.: 8A10A.

Status: Standard.

PH-111. Adapter PH-111 is used for converting a plate camera into a film camera to utilize 5- by 7-inch film pack.

Sig C stock No.: 8A11.

Status: Standard.

PH-117 (fig. 158). Embosser PH-117 is a tool for producing plate sunk centers on photographs. It consists of a metal rod with a rotating steel ball in the end.

Sig C stock No.: 8A3037-117.

Status: Standard.

PH-119. Lens Board PH-119 is a 4- by 4-inch lens board designed to fit Cameras PH-47-E, -F, and -H.

Sig C stock No.: 8A119.

Status: Standard.

PH-122-A (fig. 139). Tank PH-122-A is a 24- by 30- by 6-inch stainless steel photographic fixing tank.

Sig C stock No.: 8A3727-122A.

Status: Limited/Std.

PH-123. Tank PH-123 is an 11- by 36- by 14-inch vitreous enamel photographic fixing tank.

Sig C stock No.: 8A3727-123.

Status: Limited/Std.

PH-126. Board PH-126 is a 6- by 6-inch lens board used to mount the lens in Cameras PH-195 and PH-195-A.

Sig C stock No.: 8A126.

Status: Standard.

PH-127. Tank PH-127 is a portrait film washing tank used for washing 4- by 5-inch, 5- by 7-inch, or 8- by 10-inch cut film on hangers. The equipment includes six Hangers PH-71 for 4- by 5-inch film, six Hangers PH-72 for 5- by 7-inch film, and six Hangers PH-74 for 8- by 10-inch film. The tank has two hanging racks and a bottom water inlet. It is part of Photographic Equipment PH-391.

Sig C stock No.: 8A3727.

Status: Standard.

PH-130-A (fig. 145). Cloth PH-130-A is a 40- by 48-inch photographic focusing cloth made of silk-finish fabric with bound edges.

Sig C stock No.: 8A830A.

Status: Standard.

PH-135. Bottle PH-135 is a 1-gallon (128-

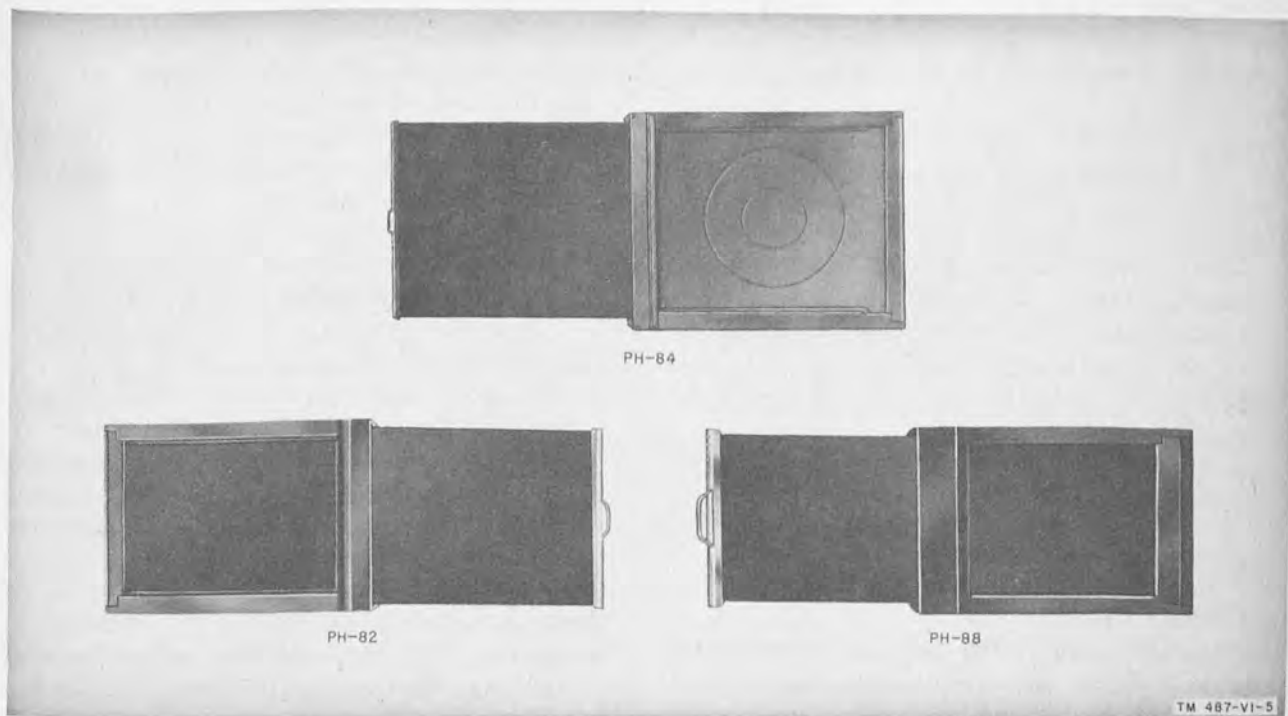


Figure 141. Miscellaneous photographic items—Continued.

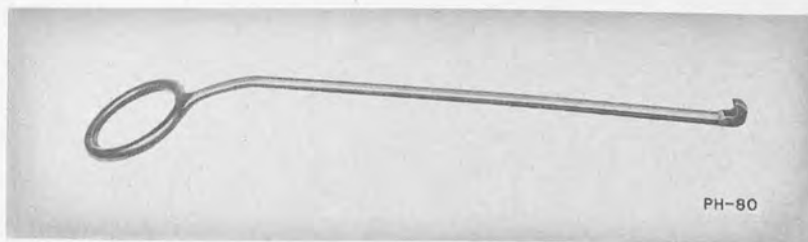


Figure 142. Miscellaneous photographic items—Continued.

ounces), wide-mouthed, clear-glass bottle with a mushroom stopper.

Sig C stock No.: 8A235.

Status: Standard.

PH-136 (fig. 144). Bottle PH-136 is a 2-gallon, wide-mouthed, clear-glass bottle with a mushroom stopper.

Sig C stock No.: 8A236.

Status: Standard.

PH-138. Crock PH-138 is a 5-gallon, stoneware or earthenware crock, with a faucet and a cover, used for photographic solutions.

Sig C stock No.: 6Z3438.

Status: Standard.

PH-139. Crock PH-139 is a 10-gallon, stoneware or earthenware crock, with a faucet and a cover, used for photographic solutions.

Sig C stock No.: 6Z3439.

Status: Standard.

PH-142. Flasher PH-142 is a hand, battery-operated, photoflash lamp with three aluminum reflectors. The hand-operated photoflash lamp is used for large groups and interiors.

Sig C stock No.: 8A1104-142.

Status: Limited/Std.

PH-143 (fig. 154). Box PH-143 is a hard-rubber developing box with a floating lid. The box can hold twenty 5- by 7-inch, twelve 6½- by 8½-inch, or twelve 8- by 10-inch hangers.

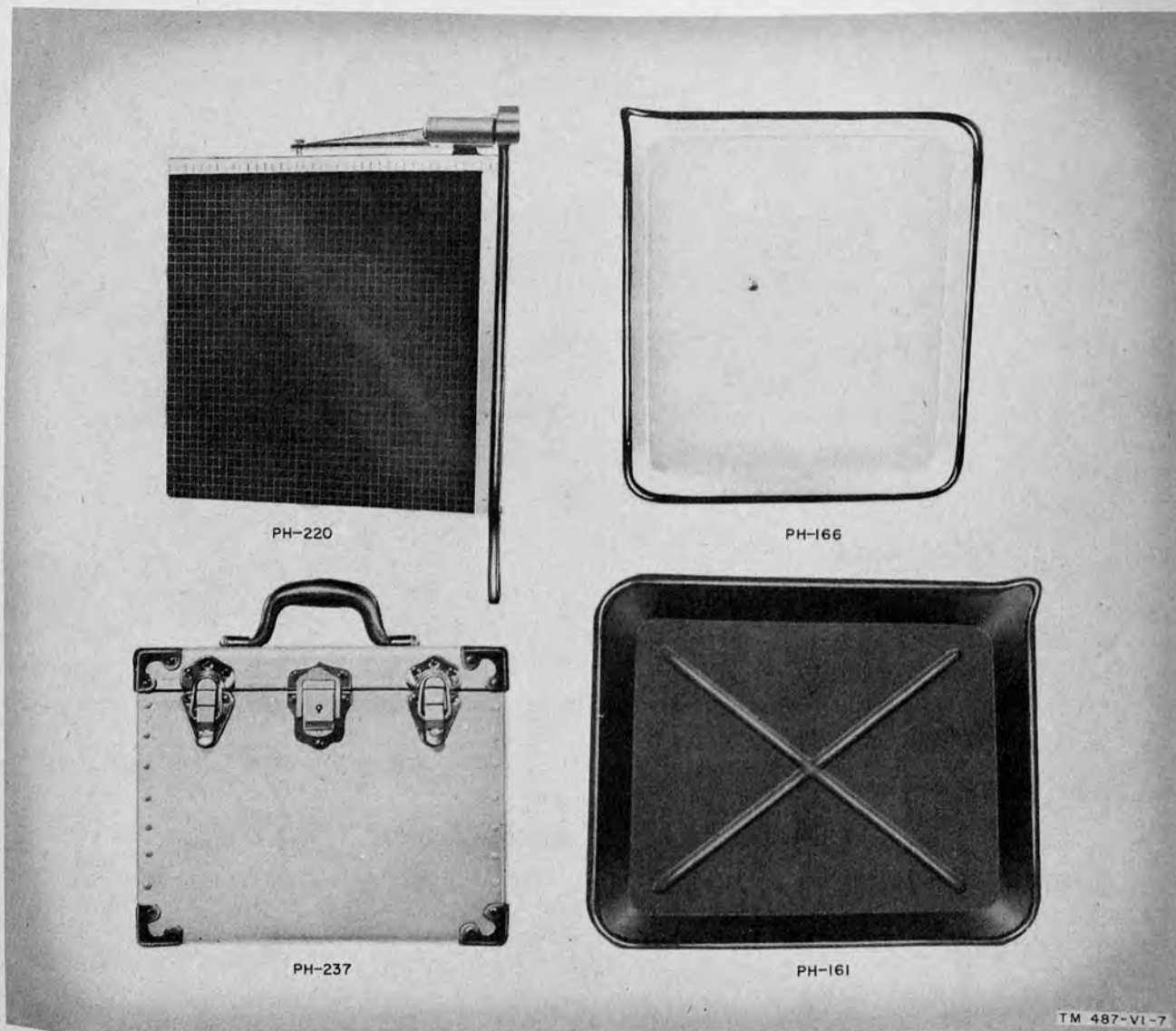


Figure 143. Miscellaneous photographic items—Continued.

Sig C stock No.: 8A243.

Status: Standard.

PH-144 (fig. 145). Preserver PH-144 is a film and plate holder for a 4- by 5-inch negative film or plate.

Sig C stock No.: 8A3004.

Status: Standard.

PH-145 (fig. 147). Preserver PH-145 is a film and plate holder for 5- by 7-inch negative film or plate.

Sig C stock No.: 8A3005.

Status: Standard.

PH-147. Rack PH-147 is a stainless steel hanger rack with a capacity of fourteen 8- by 10-inch, or nineteen 4- by 5-inch, or 5- by 7-inch hangers. It is used with, but is not part of, Hanger PH-71, Hanger PH-72, and Hanger PH-74, and is part

of Tank PH-185, Box PH-143, and Photographic Equipment PH-391.

Sig C stock No.: 8A3167.

Status: Standard.

PH-148 (fig. 146). Preserver PH-148 is a film and plate holder for 8- by 10-inch negative film or plate.

Sig C stock No.: 8A3008.

Status: Standard.

PH-152-().* Plate PH-152-(*), represents Plates PH-152 and PH-152-A. Plate PH-152-(*), is a 14- by 20-inch, heavy copper base, triple chrome-plated, ferrotype plate.

Sig C stock No.: 8A2952-2 (PH-152) 8A2952A.2 (PH-152-A).

Status: Standard.

PH-156. Frame PH-156 is an 11- by 14-inch,

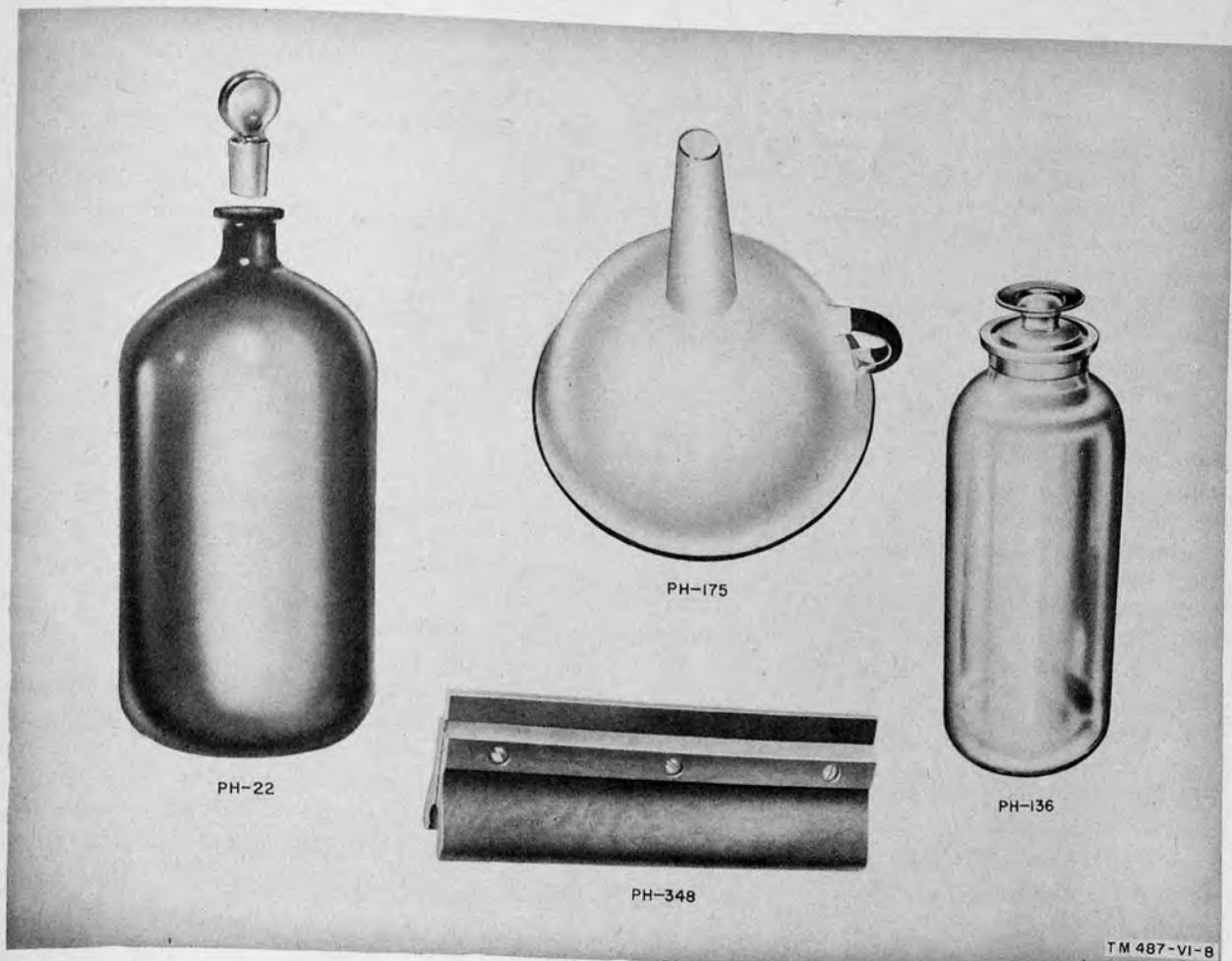


Figure 144. Miscellaneous photographic items—Continued.

heavy-weight, copying or printing frame. The frame requires Glass PH-278.

Sig C stock No.: 8A1156.

Status: Standard.

PH-158-A (fig. 148). Tray PH-158-A is a 12 $\frac{1}{8}$ - by 10 $\frac{1}{8}$ - by 1 $\frac{3}{4}$ -inch over-all, steel, photographic tray which accommodates 8- by 10-inch plates or paper.

Sig C stock No.: 8A3908A.

Status: Standard.

PH-160. Tray PH-160 is a 14 $\frac{5}{8}$ - by 12 $\frac{5}{8}$ - by 1 $\frac{3}{4}$ -inch steel tray used to accommodate 10- by 12-inch plates.

Sig C stock No.: 8A3910.

Status: Standard.

PH-161 (fig. 143). Tray PH-161 is a 17 $\frac{1}{2}$ - by 14 $\frac{1}{2}$ - by 2 $\frac{1}{2}$ -inch over-all steel photographic tray which accommodates 11- by 14-inch plates or paper.

Sig C stock No.: 8A3911.

Status: Standard.

PH-162 (fig. 138). Glass PH-162 consists of a magnifying glass of 2-inch diameter and a handle. Glass PH-162 is used during negative retouching.

Sig C stock No.: 8A1252.

Status: Standard.

PH-164-A. Tray PH-164-A is a 14- by 17-inch stainless steel, photographic tray.

Sig C stock No.: 8A3914A.

Status: Standard.

PH-165 (fig. 156). Clip PH-165 is a heavy, stainless steel, developing film clip designed for use with roll film.

Sig C stock No.: 8A825.

Status: Standard.

PH-166 (fig. 143). Tray PH-166 is a 24- by 20- by 2 $\frac{1}{2}$ -inch over-all, steel, photographic tray which accommodates 16- by 20-inch plates or paper.

Sig C stock No.: 8A3916.

Status: Standard.

PH-167. Hanger PH-167 is a corrosion-resistant metal hanger used for suspending film roll or film pack hangers in deep tanks. The hanger is used for 12-inch tanks.

Sig C stock No.: 8A1607.

Status: Standard.

PH-168. Hanger PH-168 is a corrosion-resistant metal hanger used to accommodate an entire film pack by means of clips. The hanger is used with, but is not part of, Tank Developing Equipment PH-231.

Sig C stock No.: 8A1608.

Status: Standard.

PH-169 (fig. 142). Holder PH-169 is a photographic holder for retouching lens.

Sig C stock No.: 8A1739.

Status: Standard.

PH-171. Reducing Attachment PH-171 is an enlarger attachment used for reducing prints. It is used with Printer PH-87.

Sig C stock No.: 8A3231.

Status: Limited/Std.

PH-172. Reducing Attachment PH-172 is an enlarger attachment for reducing prints. It is used with Printer PH-95.

Sig C stock No.: 8A3232.

Status: Limited/Std.

PH-174. Funnel PH-174 is a 4-inch enamel funnel.

Sig C stock No.: 8A1174.

Status: Substitute/Std.

PH-173. Tray PH-173 is a 31 $\frac{1}{8}$ - by 26 $\frac{5}{16}$ - by 2 $\frac{1}{2}$ -inch steel tray used to accommodate 23- by 28-inch plates or paper.

Sig C stock No.: 8A3923.

Status: Standard.

PH-175 (fig. 144). Funnel PH-175 is a 1-pint enamel funnel.

Sig C stock No.: 8A1175.

Status: Standard.

PH-177. Spotflash Adapter PH-177 consists of one male and one female straight adapters which are used to adapt a single-contact bayonet base photoflash to a medium screw base. The adapter mounts on a photoflash synchronizer. The equipment includes a 7-inch parabolic reflector and a diffusing ring.

Sig C stock No.: 8A3695-177.

Status: Limited/Std.

PH-184. Holder PH-184 is an adjustable filter holder for 4-inch square filters; it can be securely

attached to any lens barrel from 2 $\frac{3}{8}$ to 3 $\frac{3}{8}$ inches in diameter. The holder consists of a square wooden frame, one side of which is fitted with two slide locks and a 2-inch thumbscrew. The other side of the holder contains two steel spring-type septums for accommodating the filter and two steel pins to prevent the filter from sliding past the required position on the holder.

Sig C stock No.: 8A1754.

Status: Standard.

PH-185. Tank PH-185 is a hard-rubber, developing and fixing tank with a lightproof cover. The tank holds twenty 5- by 7-inch or twelve 8- by 10-inch film hangers. Tank PH-185 is part of Photographic Equipments PH-383, PH-390, PH-391, and Photographic Laboratory Set AN/FFQ-1. Tank PH-185 replaces Tank PH-16.

Sig C stock No.: 8A3727-185.

Status: Standard.

PH-186. Tank PH-186 is a stainless steel, 35-mm roll film developing tank with a bakelite lid and a core for one 5 $\frac{1}{2}$ -foot roll of 35-mm film. It is part of Camera Equipment PH-151-A, Photographic Equipment PH-391, Processing Equipment PH-406, Photographic Laboratory Set AN/FFQ-1, and Photographic Identification Set AN/FFQ-2.

Sig C stock No.: 8A3727-186.

Status: Standard.

PH-190. Desk PH-190 is a retouching light box which accommodates 8- by 10-inch negatives. It has an 8- by 10-inch ground glass and mirror. The desk is part of Photographic Equipment PH-391.

Sig C stock No.: 8A900.

Status: Standard.

PH-197. Back PH-197 is a reducing back which permits the use of 5- by 7-inch films in 8- by 10-inch cameras.

Sig C stock No.: 8A97.

Status: Standard.

PH-198 (fig. 139). Rack PH-198 is a lantern slide rack for twenty-four 4- by 5-inch or similar slides.

Sig C stock No.: 8A3178.

Status: Standard.

PH-204 (fig. 137). Roller PH-204 is an 8-inch, nickel-handled, double, photographic print roller.

Sig C stock No.: 8A3458-204.

Status: Standard.



Figure 145. Miscellaneous photographic items—Continued.



Figure 146. Miscellaneous photographic items—Continued.

PH-213. Rack PH-213 is a film storage rack with separators for 16-mm film and holds approximately 200 of 100-foot reels in cans; 100 to 110 of 400-foot reels in cans; and 80 to 90 of 800-, 1,200-, or 16-foot reels in cans. The rack is 4 feet wide, by 6½ feet high, by 16 inches deep.

Sig C stock No.: 8F7242-213.

Status: Standard.

PH-214 (fig. 153). Rack PH-214 is a 6½- by 3½- by 1-foot film storage rack with separators for 35-mm film reels. It has a capacity of 100 to 110 of 1,000-foot reels in cans.

Sig C stock No.: 8F7240-214.

Status: Standard.

PH-215. Holder PH-215 is an 8- by 10-inch cut film holder complete with light tight slides.

Sig C stock No.: 8A1705.

Status: Limited/Std.

PH-220 (fig. 143). Trimmer PH-220 is a 24-square-inch metal trimmer.

Sig C stock No.: 8A4020.

Status: Standard.

PH-224-A. Wringer PH-224-A squeegees photographic prints with double rollers 20 inches long and 2 inches thick. The wringer is hand-operated.

Sig C stock No.: 8A4524A.

Status: Standard.

PH-229 (fig. 156). Frame PH-229 is a 20- by 24-inch wooden printing frame with a hinged back, without glass.

Sig C stock No.: 8A1159.

Status: Standard.

PH-230 (fig. 146). Rod PH-230 is a 10-inch, hard-rubber or plastic, photographic, stirring rod. The rod is acidproof and chemical proof.

Sig C stock No.: 8A3430.

Status: Standard.

PH-231. Tank Developing Equipment PH-231 is a photo-finishing tank outfit consisting of a Water Jacket PH-232, a Cover PH-233, and two Tanks PH-234 (developing and fixing).

Sig C stock No.: 8A3728-231.

Status: Standard.

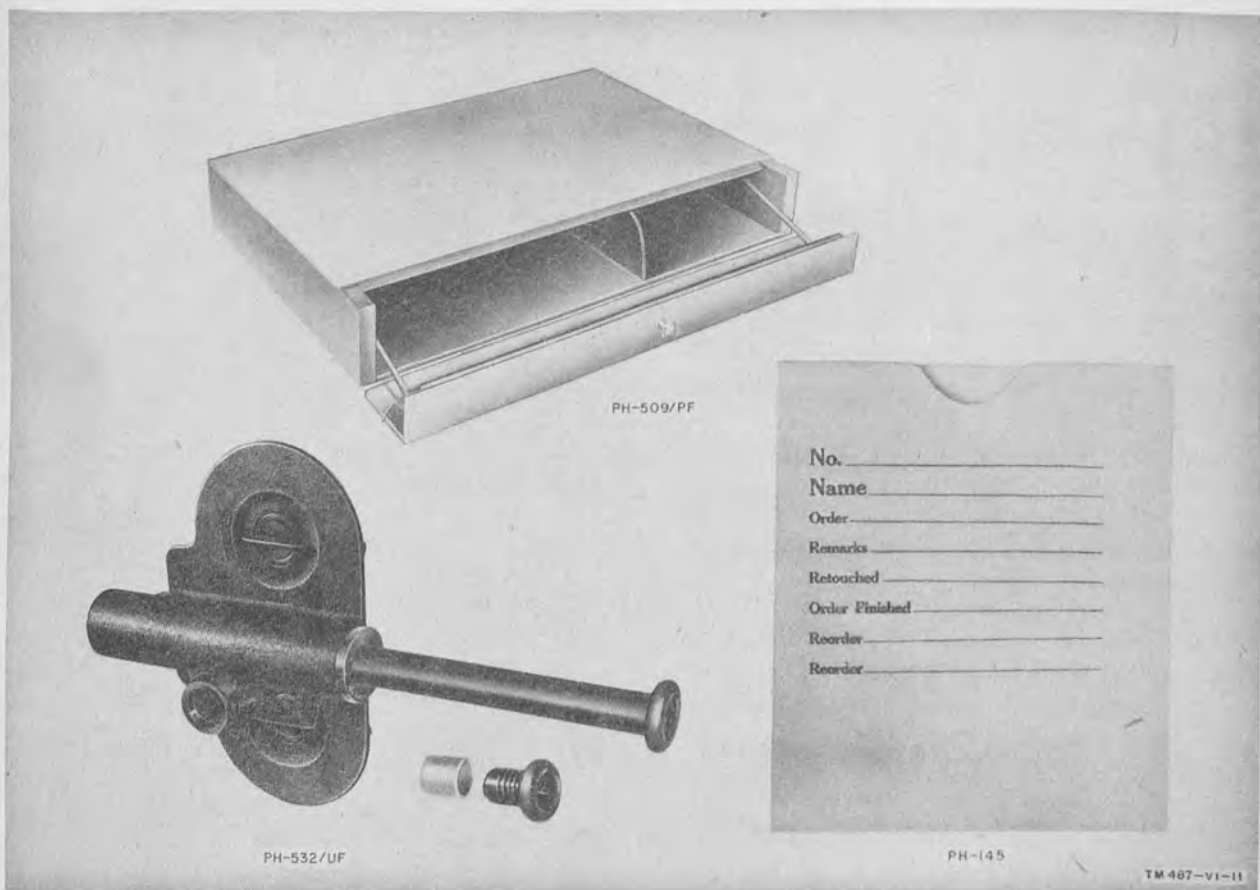


Figure 147. Miscellaneous photographic items—Continued.

PH-232 (fig. 151). Water Jacket *PH-232* is a 19½ by 14½ by 48-inch jacket which is part of Developing Equipment *PH-231*.

Sig C stock No.: 8A4522-232.

Status: Standard.

PH-233. Cover *PH-233* is a cover for Water Jacket *PH-232*.

Sig C stock No.: 8A837.

Status: Standard.

PH-234 (fig. 151). Tank *PH-234* is a 5- by 12- by 47-inch tank which is part of Tank Developing Equipment *PH-231*.

Sig C stock No.: 8A3727-234.

Status: Standard.

PH-235 (fig. 150). Reel *PH-235* is a 35-mm motion picture film reel of 10-inch diameter and 1,000-foot capacity.

Sig C stock No.: 8F7336-235.

Status: Standard.

PH-236. Case *PH-236* is approximately 27 by 16¼ by 9½ inches in size and is divided into three compartments for carrying a camera, ex-

tension beds, lenses, cable release, lens boards, reducing back, focusing cloth, exposure meter, filters, filter holder, and changing bag. The case is of the conventional suitcase type. In addition to two fasteners, the case has an offset surface-lock with a key.

Sig C stock No.: 8A536-236.

Status: Standard.

PH-237 (fig. 143). Case *PH-237* is used for carrying eighteen 5- by 7-inch film holders with slides. The case is approximately 13¾ by 10 inches in size and is made of heavy fiber. All the corners are equipped with riveted metal reinforcements. The hinged lid has a carrying handle, two truck fasteners, and a trunk lock with key.

Sig C stock No.: 8A536-237.

Status: Standard.

PH-238. Case *PH-238* is approximately 21 by 7½ by 13¼ inches over-all. It has two separate compartments each accommodating nine 8- by 10-inch film holders with slides.

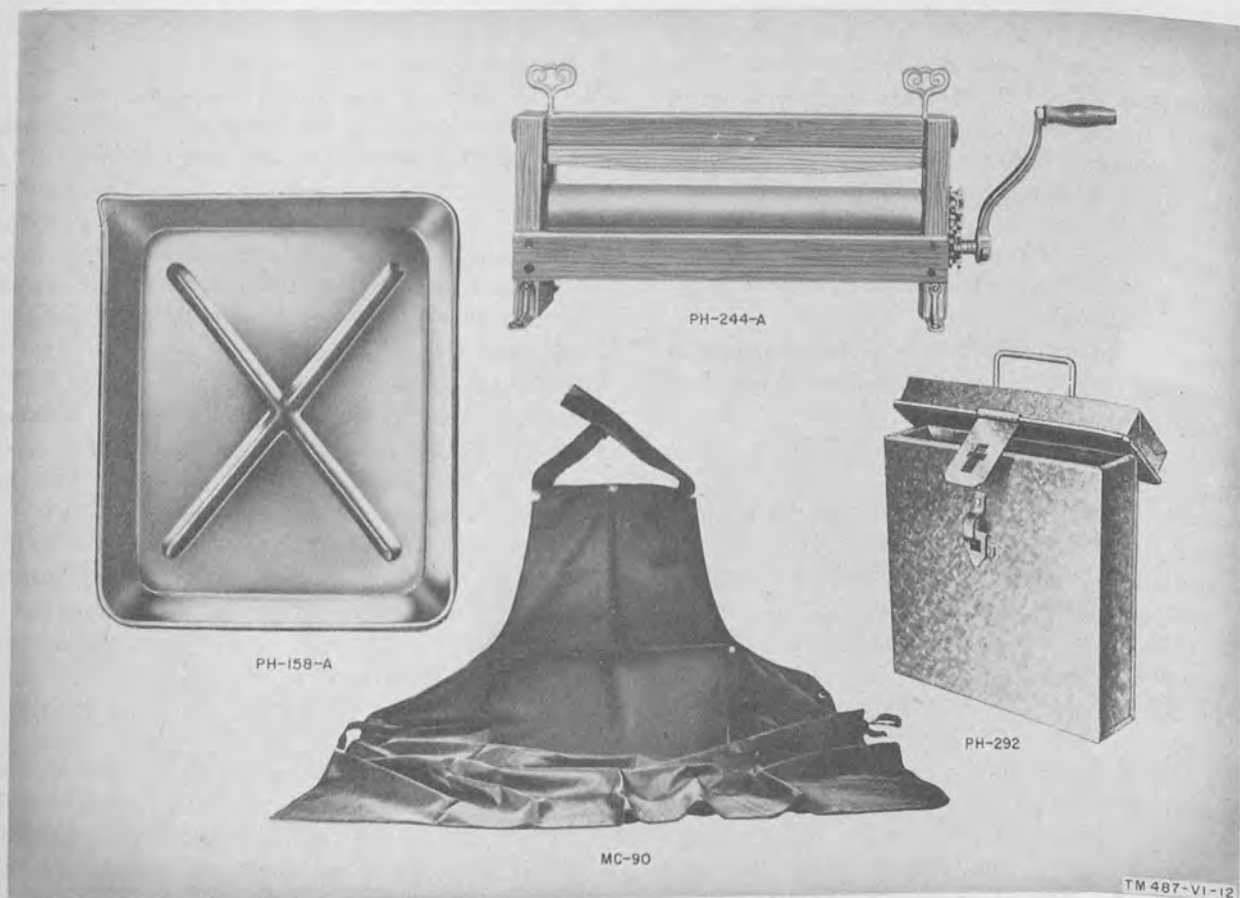


Figure 148. Miscellaneous photographic items—Continued.

Sig C stock No.: 8A536-238.

Status: Standard.

PH-244 (fig. 159). Siphon PH-244 is an automatic tray siphon that washes prints in an ordinary tray. Fresh water flows in at the top of the tray and drains from the bottom of the tray. The siphon attaches to any water tap and is adjustable to any tray.

Sig C stock No.: 8A3688.

Status: Standard.

PH-248 (fig. 149). Band PH-248 is a paper band used to secure film on a 35-mm reel. The following information is printed on one side of the band: "Please return this band around the proper reel—DO NOT REWIND. Property of Signal Corps, U.S. Army Reel Subject."

Sig C stock No.: 8F252-248.

Status: Standard.

PH-256-A. Tank PH-256-A, a metal tank and cover, is a photographic film pack tank, measuring 4 by 5 inches, with a metal case for 12 films. Tank PH-256-A replaces Tank PH-256.

Sig C stock No.: 8A3727-256A.

Status: Standard.

PH-273. Title Board Set PH-273 is constructed of wood, metal, and felt. The front of the board is black felt, countersunk into folds to hold the celluloid letters and numbers which are supplied with the set. The back of the board is a flat piece of wood painted black. The front and the back are held together by means of a black metal frame.

Sig C stock No.: 8A3840-273.

Status: Standard.

PH-276. Adapter PH-276 is a socket reduction adapter to permit use of medium screw base bulb in a large socket (110-12-volt capacity).

Sig C stock No.: 8A76.

Status: Standard.

PH-282. Reel PH-282 is used for 16-mm film and has a 1,200-foot capacity. It is made of steel and has a 5-inch outside diameter and a .319-inch inside diameter hub.

Sig C stock No.: 8F7330-282.

Status: Standard.

PH-287 (fig. 155). Scissors PH-287 are 10 inches long.

Sig C stock No.: 8A3637.

Status: Standard.

PH-289. Flange PH-289 is a flat surface, single, 10-inch, heavy metal flange of the stationary hub type. The flange is part of Table PH-315.

Sig C stock No.: 8A1103.

Status: Standard.

PH-290. Stand PH-290 is a light, collapsible stand with a clamp or socket and cord for use with reflector type bulbs.

Sig C stock No.: 8A3697-290.

Status: Standard.

PH-291 (fig. 146). Case PH-291 is a steel, zinc-plated case, with a semigloss olive drab finish, used to ship reels of film. The case holds one 35-mm, 1,000-foot reel and has interior dimensions of 10 $\frac{1}{8}$ by 2 $\frac{1}{4}$ by 10 $\frac{1}{8}$ inches. The case is lined with fiberboard and has a cover with a metal handle.

Sig C stock No.: 8F800-291.

Status: Standard.

PH-292 (fig. 148). Case PH-292 is a steel, zinc-plated case, with an olive drab finish, used to ship film reels. The case holds two 35-mm, 1,000-foot film reels. The interior dimensions of the case, which do not include the cover, are 10 $\frac{1}{8}$ by 3 $\frac{1}{4}$ by 10 $\frac{1}{8}$ inches. The cover has a metal handle centered on the top. The corners of the bottom are reinforced by metal corners and the bottom is lined with fiberboard.

Sig C stock No.: 8F800-292.

Status: Standard.

PH-293 (fig. 145) Case PH-293 is a steel, zinc-plated case, with a semigloss olive drab finish, used to ship three 35-mm, 1,000-foot reels of film. The interior dimensions are 10 $\frac{1}{8}$ by 5 $\frac{1}{2}$ by 10 $\frac{1}{8}$ inches without the cover. The cover has a metal handle centered on the top. The corners of the bottom are reinforced by metal corners and the case is lined with fiberboard.

Sig C stock No.: 8F800-293.

Status: Standard.

PH-294. Case PH-294 is a steel, zinc-plated case, with a semigloss olive drab finish, used to ship four 35-mm, 1,000-foot reels of film. The interior dimensions of the case, which do not include the interior of the cover, are 10 $\frac{1}{8}$ by 7 $\frac{1}{4}$ by 10 $\frac{1}{8}$ inches. The cover has a metal handle centered on the top. The corners of the bottom are reinforced by metal corners and the case is lined with fiberboard.

Sig C stock No.: 8F800-294.

Status: Standard.

PH-295. Case PH-295 is a steel, zinc-plated case, with a semigloss olive drab finish, used to ship five 35-mm, 1,000-foot reels of film. The interior dimensions of the case, which do not include the interior of the cover, are 10 $\frac{1}{8}$ by 8 $\frac{1}{4}$ by 10 $\frac{1}{8}$ inches. The cover has a metal

handle centered on the top. The corners of the bottom are reinforced by metal corners and the case is lined with fiberboard.

Sig C stock No.: 8F800-295.

Status: Standard.

PH-296 (fig. 149). Case PH-296 is a steel, zinc-plated case, with a semigloss olive drab finish, used to ship six 35-mm, 1,000-foot reels of film. The interior dimensions of the case, which do not include the interior of the cover, are 10½ by 10½ by 10⅝ inches. The cover has a metal handle centered at the top. The corners of the bottom are reinforced by metal corners and the case is lined with fiberboard.

Sig C stock No.: 8F800-296.

Status: Standard.

PH-302. Board PH-302 is an animation drawing board with standard registration pins to match the easel on the animation camera.

Sig C stock No.: 8A135-302.

Status: Standard.

PH-304. Can PH-304 is a welded plate steel, watertight can. The can has a removable self-closing slit cover. Dimensions of the can are 20 inches in diameter and 28 inches in height. The can is finished in bright red baked-on enamel.

Sig C stock No.: 8A480-304.

Status: Standard.

PH-305. Barrel PH-305 is a 12- by 36-inch film cutting barrel. The barrel has a heavy fiber hard glaze finish, a heavy fiber and steel kicking band at the bottom, a smooth steel band around the top, and two cut-in handles.

Sig C stock No.: 8A110-305.

Status: Standard.

PH-306. Barrel PH-306 is an 18- by 28-inch film cutting barrel. The barrel has a heavy fiber hard glaze finish, a heavy fiber and steel kicking band at the bottom, a smooth steel band around the top, and two cut-in handles.

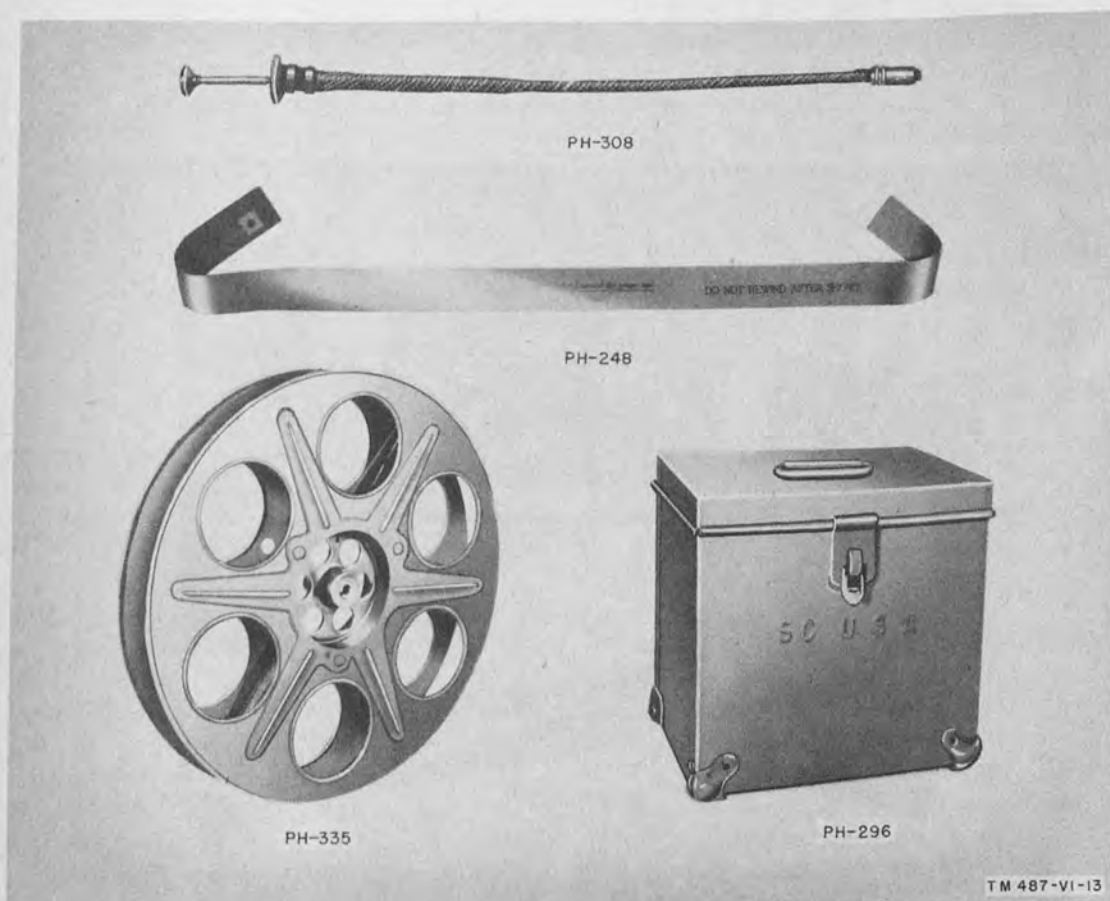


Figure 149. Miscellaneous photographic items—Continued.

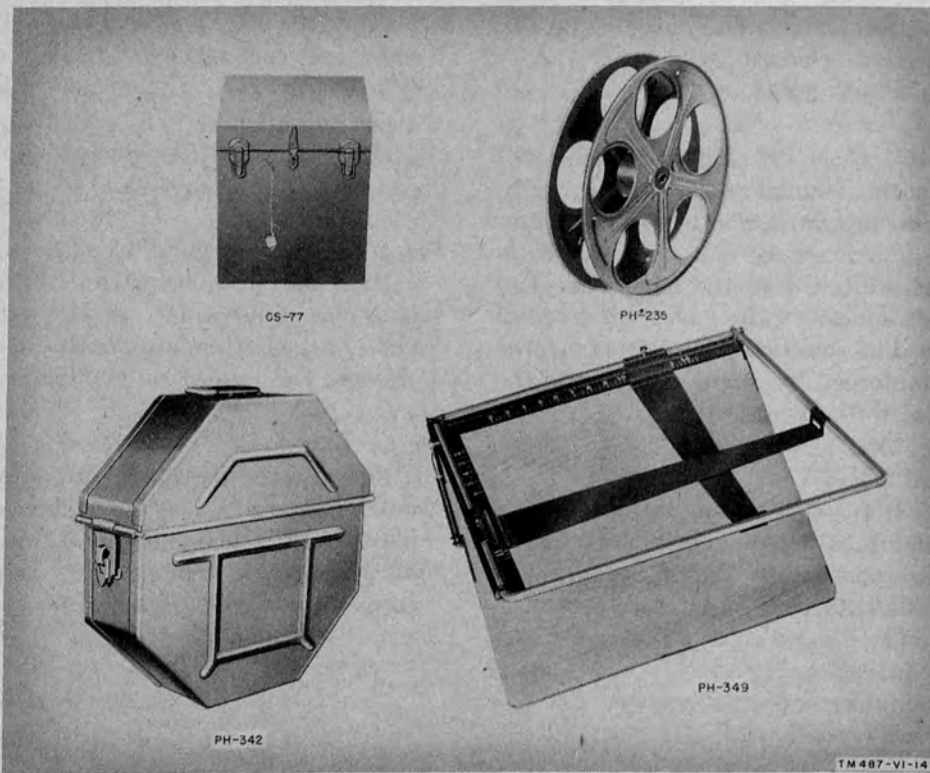


Figure 150. Miscellaneous photographic items—Continued.

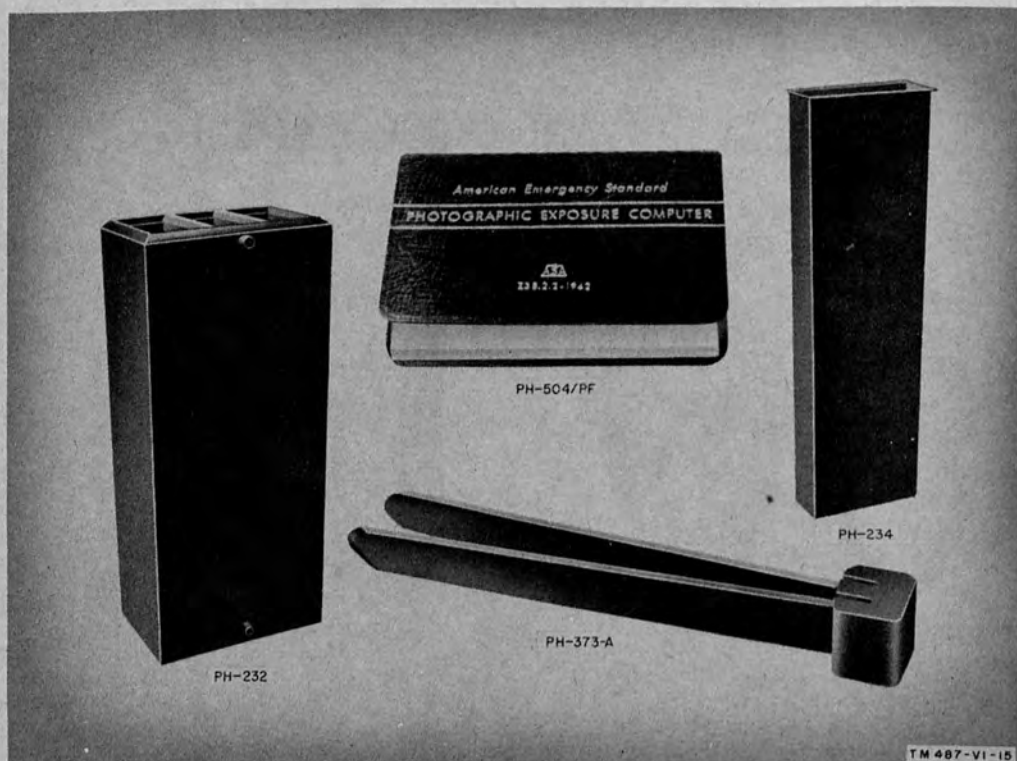


Figure 151. Miscellaneous photographic items—Continued.

- Sig C stock No.:* 8A110-306.
Status: Standard.
PH-307 (fig. 146). Barrel PH-307 is a 20- by 30-inch film cutting barrel. The barrel has a heavy fiber glaze finish, a heavy fiber and steel kicking band at the bottom, a smooth steel band around the top, and two cut-in handles.
- Sig C stock No.:* 8A110-307.
Status: Standard.
PH-308 (fig. 149). Cable Release PH-308 is used to trip the camera shutter or the camera shutter and synchronizer jointly. The cable release is 7½ inches long.
- Sig C stock No.:* 8A3275-308.
Status: Standard.
PH-309 (fig. 152). Cable Release PH-309 is used to trip a Betax shutter. The cable release is 11½ inches long.
- Sig C stock No.:* 8A3275-309.
Status: Standard.
PH-310. Reel PH-310 is a 16-mm film reel of 400-foot capacity. It has a 7-inch outside diameter and a .319-inch diameter hub.
- Sig C stock No.:* 8F7330-310.
Status: Standard.
PH-311 (fig. 150). Reel PH-311 is a 16-mm film reel of 800-foot capacity. It has a 10½-inch inside diameter hub.
- Sig C stock No.:* 8F7330-311.
Status: Standard.
PH-312. Reel PH-312 is a 16-mm film reel of 1,600-foot capacity. It has a 14-inch outside diameter and a .319-inch diameter hub.
- Sig C stock No.:* 8F7330-312.
Status: Standard.
PH-315. Table PH-315 is a timing table used for timing 35-mm film. The equipment includes one timing table and one rewinder.
- Sig C stock No.:* 8A3704.
Status: Standard.
PH-317. Board PH-317 is a metal paper board, of the easel type, used with enlargers. It will accommodate paper up to 8 by 10 inches. The board, which is part of Photographic Set PH-261 and Processing Equipment PH-406, has masking blades and a nonslip base. Locking screws on the side and top lock the masks at the desired size.
- Sig C stock No.:* 8A135-317.
Status: Standard.
PH-318. Case PH-318 is a 15- by 20- by 22-inch wired case designed to contain components of Photographic Set PH-261.
- Sig C stock No.:* 8A781-318.
Status: Standard.
PH-327. Edge Numbering Machine PH-327 is a device for printing footage and identification letters on the edge of 35-mm film.
- Sig C stock No.:* 8A2595-327.
Status: Standard.
PH-328 (fig. 157). Film Notcher PH-328 is a device for notching 35-mm film in order to operate the light change mechanism on Printer PH-304.
- Sig C stock No.:* 8A1088.
Status: Standard.
PH-329. Sensitometer PH-329 is a device for making standard exposures to measure characteristics of the film and the gamma of the development.
- Sig C stock No.:* 8A3679-329.
Status: Standard.
PH-332. Lens PH-332 is a 12-inch f/6.3 lens with a compound shutter or a Wollensak, series VI, Velostigmat lens in a compound or Betax shutter. The lens is mounted in an 11-inch square lens board. The shutter is operated through a cable release.
- Sig C stock No.:* 8A2308.
Status: Standard.
PH-335 (fig. 149). Reel PH-335 is a 35-mm reel of 2,000-foot capacity.
- Sig C stock No.:* 8F336-335.
Status: Standard.
PH-336 (fig. 139). Case PH-336 is a storage case for 16-mm, motion picture film on 400-foot reels.
- Sig C stock No.:* 8F675-336.
Status: Standard.
PH-337. Case PH-337 is a storage case for 16-mm motion picture film on 800-foot reels.
- Sig C stock No.:* 8F675-337.
Status: Standard.
PH-338. Case PH-338 is a storage case for 16-mm motion picture film on 1,200-foot reels.
- Sig C stock No.:* 8F675-338.
Status: Standard.
PH-339. Case PH-339 is a storage case for 16-mm motion picture film on 1,600-foot reels.
- Sig C stock No.:* 8F675-339.
Status: Standard.
PH-341 (fig. 158). Case PH-341 is a shipping case used to ship one 2,000-foot reel of 35-mm motion picture film.
- Sig C stock No.:* 8F822-341.
Status: Standard.
PH-342 (fig. 150). Case PH-342 is a shipping case





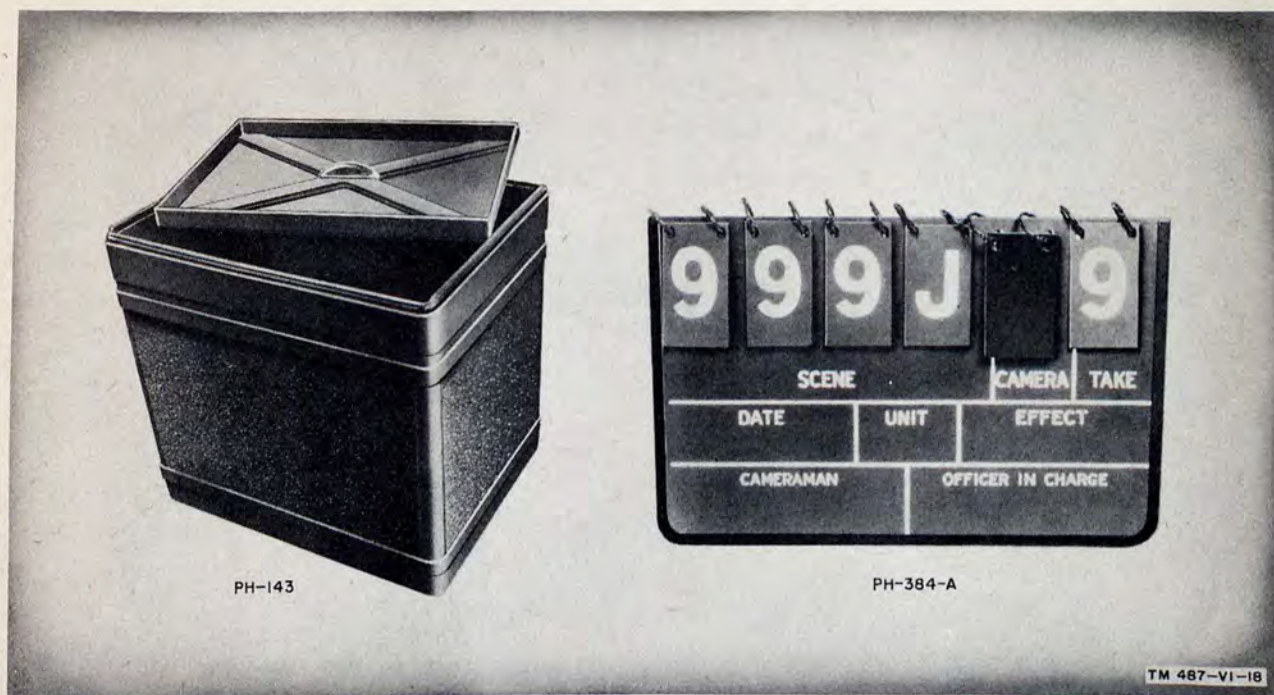


Figure 154. Miscellaneous photographic items—Continued.

is a red filter which can be utilized effectively in photographing distant scenes as it aids in penetrating haze. It makes blue sky appear gray; red and yellow registers almost white and blue, and green appears as black. Filter PH-375 is a deep-yellow filter which improves the texture of outdoor subjects photographed under blue skies. Filter PH-376 is a light-green filter used when white, yellow, red, and green are present in the same picture. Filter PH-377 is a yellow correction filter used for darkening the sky to obtain cloud effects for photographing through haze and in any scene where strong colors predominate. Filter PH-378 is a blue filter; Filter PH-379 is a red filter; Filter PH-380 is a light-yellow filter; and Filter PH-381 is a green filter. The latter filters are used to vary the tonal relationship in the photography of colored subjects.

Sig C stock No.: 8A1100-374 (PH-374), 8A1100-375 (PH-375), 8A1100-376 (PH-376), 8A1100-377 (PH-377), 8A1100-378 (PH-378), 8A1100-379 (PH-379), 8A1100-380 (PH-380), 8A1100-381 (PH-381).

Status: Standard.

PH-384 and PH-384-A. Slate PH-384 is a 9- by 12-inch metal slate used to accommodate lettered and numbered metal inserts. It is

used with motion picture scenes. The identification slate is painted black, and the letters and numbers are painted white. Slate PH-384-A is the same as Slate PH-384 except that it is a 9- by 13½-inch slate.

Sig C stock No.: 8A3700-384 (PH-384), 8A3700-374A (PH-374-A).

Status: Standard.

PH-386. Safelight PH-386 is a green safelight filter for panchromatic films.

Sig C stock No.: 8A3508-386.

Status: Standard.

PH-387. Safelight PH-387 is a 10- by 12-inch clear-yellow safelight filter for use with contact printing papers.

Sig C stock No.: 8A3508-387.

Status: Standard.

PH-388. Safelight PH-388 is a 10- by 12-inch greenish-yellow safelight filter for enlarging contact papers or lantern slides.

Sig C stock No.: 8A3508-388.

Status: Standard.

PH-393. Safelight PH-393 is a 10- by 12-inch deep-red safelight filter for use with orthochromatic film.

Sig C stock No.: 8A3510-2.

Status: Standard.

PH-403 (fig. 156). Case PH-403 is a battery case

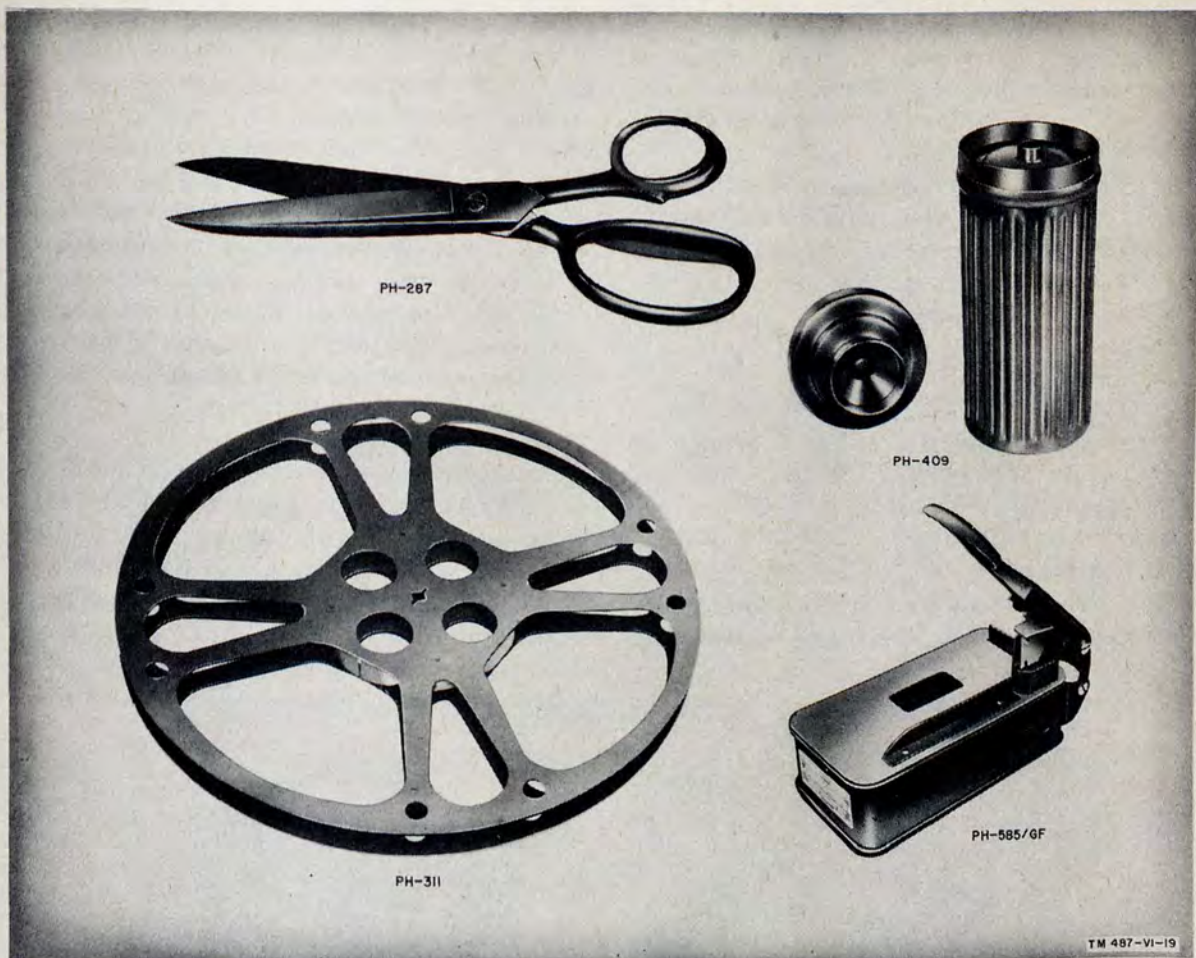


Figure 155. Miscellaneous photographic items—Continued.

with an exterior female receptacle and a snap-fastened carrying strap. The case is $6\frac{1}{2}$ inches high by 13 inches wide by $6\frac{1}{4}$ inches long. It weighs 45 pounds fully loaded.

Sig C stock No.: 8A762-403.

Status: Standard.

PH-409 (fig. 155). Developing Tank PH-409 is a small, cylindrical, developing tank $13\frac{1}{2}$ inches in diameter and 11 inches in length.

Sig C stock No.: 8A3727-409.

Status: Standard.

PH-410. Case PH-410 is a plywood chest used to transport Photographic Equipment PH-411. The case, which has eight compartments, has a handle on each side.

Sig C stock No.: 8A789.

Status: Standard.

PH-414. Synchronizer PH-414 is a 16-mm, dual, double-hub, footage machine for measuring one or two 16-mm motion picture films simultaneously.

Sig C stock No.: 8A3699-414.

Status: Standard.

PH-418 (fig. 152). Heater PH-418 is an immersion, flash type, 1,000-watt heater used to heat photographic solutions.

Sig C stock No.: 8A1618.

Status: Standard.

PH-420 (fig. 153). Daylight Projection Box PH-420 is a daylight screen to provide opportunity for projection when extraneous light interferes with projection on an unshielded screen.

Sig C stock No.: 8A885.

Status: Standard.

PH-424 (fig. 152). Foot Switch PH-424 is a circular treadle-type switch with a grooved bakelite foot plate, metal case, and a 6-foot, rubber-covered cord with a plug. The switch is used in a darkroom and operates on a 10-ampere, 110-volt circuit.

Sig C stock No.: 8A1108-424.

Status: Standard.

PH-425 (fig. 157). Board PH-425 is a 6¼- by 4½- by 3-inch board used during enlarging to accommodate 2¼- by 3¼-inch paper. The board has two paper holding compartments.

Sig C stock No.: 8A135-425.

Status: Standard.

PH-435. Speed Conversion Kit PH-435 maintains the required speed of 24 frames per second for Projector Equipment PH-398 when 50-cycle power supply is used.

Sig C stock No.: 8A3652.

Status: Standard.

PH-437. Speed Conversion Kit PH-437 maintains the required speed of 24 frames per second for Projector Equipment PH-405 when 50-cycle power supply is used.

Sig C stock No.: 8A3653-437.

Status: Standard.

PH-465. Time Interval Device PH-465 provides 1-second time intervals for spotting set recording

theodolites. The device also provides 5- and 10-second time intervals for visual recording section in AA batteries. Time Interval Device PH-465 provides visual indication of position and time sequence.

Sig C stock No.: 8A3838-465.

Status: Standard.

PH-504/PF (fig. 148). Exposure Computer PH-504/PF is a pocket-size, black leatherette booklet with snap fastener, which contains photographic film-exposure data for various light conditions. The exposure computer contains all necessary instructions for its application and use.

Sig C stock No.: 8A1D54.

Status: Limited/Std.

PH-509/PF (fig. 147). Paper Safe PH-509/PF is a 10- by 14-inch, wooden, lightproof safe, for storing light-sensitive photographic paper. The safe is used with Printers PH-507/PF and PH-508/PF and may be used as a base or support for these printers.



Figure 156. Miscellaneous photographic items—Continued.

Sig C stock No.: 8A3499.1.

Status: Standard.

PH-513/GF (fig. 158). Paper Cutter PH-513/GF is a manually operated cutter for separating processed rolls of V-mail messages into individual letters. The unit is operated on a standard table and consists of a conventional paper cutter mounted on a wooden base which is equipped with a supply roll and paper guides.

Sig C stock No.: 8A865.

Status: Standard.

PH-517/TF. Sensitometer PH-517/TF is a portable hand-operated processing control used for making standard step exposures for the purpose of measuring characteristics of film and gamma of development. The sensitometer operates on a 110- to 120-volt a-c power source.

Sig C stock No.: 8A3679-517.

Status: Standard.

PH-529/UF. Badge Press Assembly PH-529/UF is a hand press for use in assembling 1¼-inch identification badges. The assembly includes one maple block, one weighted rawhide mallet,

one cutting die approximately 2½ inches in diameter, and one cutting die of ovulated rectangular shape.

Sig C stock No.: 8A3027-529.

Status: Standard.

PH-532/UF (fig. 147). Viewfinder PH-532/UF is a variable focus viewfinder for use with the sound aperture of Camera PH-330-(*). The finder is used with 25- to 250-mm lenses.

Sig C stock No.: 8A4435-532.

Status: Limited Std.

PH-540/UF. Aperture Cleaner PH-540/UF is used to clean Bell and Howell aperture plates. The cleaner consists of one spring handle, one block, and six sheets of crocus cloth.

Sig C stock No.: 8A817-540.

Status: Standard.

PH-566/UF. Safelight Equipment PH-566/UF is safelight equipment for darkroom use. The safelight is contained in a metal housing with a metal-lock ring for retaining the circular safelight and a molded-black ring for retaining the



Figure 157. Miscellaneous photographic items—Continued.

rectangular safelight. The equipment screws directly into the electrical outlet.

Sig C stock No.: 8A3515-566.

Status: Standard.

PH-568/GF. Background PH-568/GF is a 6- by 8-foot, double-faced, portable, photographic background; one of the faces is clear-white and the other is clouded.

Sig C stock No.: 8A102.

Status: Standard.

PH-579/PF. Slate PH-579/PF is a fiber slate for use in identifying scenes taken with motion picture cameras.

Sig C stock No.: 8A3700-1.

Status: Standard.

PH-585/GF (fig. 156). Cutter PH-585/GF is a machine used to cut $\frac{1}{4}$ -inch radius corners in thermoplastic or similar material up to a thickness of $\frac{1}{2}$ inch. Approximately 12 cards can be cut in one operation. The corner rounder is a self-contained unit of sheet metal and die-cast metal, and is of rugged construction. The corner rounder consists of a field housing. A sliding panel in the rear of the housing provides an outlet for cutting scraps. The field housing incorporates the working table, shearing handle and shearing unit. The shearing unit is designed so that it may be replaced easily if damaged.

Sig C stock No.: 6Q29520/S1.

Status: Standard.

PH-594/PFQ. Tank PH-594/PFQ is a stainless steel developing tank accommodating five 35-mm or two 120-mm film reels. The tank has a light-trapped cover for daylight development and fixation. Five 35-mm and two 120-mm reels are included in the equipment.

Sig C stock No.:

Status: Standard.

PH-623()/UF. Holder PH-623/UF is used to produce 17- by 20-inch prints on photographic paper. The holder accommodates 20 $\frac{1}{2}$ - by 22 $\frac{1}{2}$ -inch paper. The holder is made of wood and metal and has over-all dimensions of 29 $\frac{1}{4}$ by 24 by 2 $\frac{1}{2}$ inches.

Sig C stock No.: 8P15-528.

Status: Standard.

S-48/TFQ-7. Shelter S-48/TFQ-7 is an assembled, rectangular, photo developing shelter with

a parabolic roof. The shelter has over-all dimensions of 74 $\frac{1}{2}$ by 138 by 74 $\frac{1}{2}$ inches. The shelter has a built-in wash system, heating and drying system, storage facilities, 110-volt a-c electrical system, blackout shutters, and provisions for an emergency lighting system to operate from the batteries of a 2 $\frac{1}{2}$ -ton truck.

Sig C stock No.:

Status: Standard.

S-49/G. Shelter S-49/G is a 74 $\frac{1}{2}$ by 138- by 74 $\frac{1}{4}$ -inch transportable shelter designed to house a photographic workroom for printing and processing.

Sig C stock No.:

Status: Standard.

TK-24/GF. Tool Equipment TK-24/GF is tool equipment used for repairing general photographic equipment. It comes in a hard vulcanized fiber case with over-all dimensions of 15 $\frac{3}{4}$ by 9 by 12 $\frac{1}{8}$ inches.

Sig C stock No.: 6R38152-24.

Status: Standard.

TK-25/GF. Tool Equipment TK-25/GF is tool equipment used for repairing 16- and 35-mm motion picture cameras. It comes in a hard vulcanized fiber case with over-all dimensions of 10 $\frac{7}{8}$ by 7 by 9 $\frac{3}{8}$ inches.

Sig C stock No.: 6R38152-25.

Status: Standard.

TK-26/GF. Tool Equipment TK-26/GF is used for repairing still cameras. It comes in a hard vulcanized fiber case with over-all dimensions of 10 $\frac{7}{8}$ by 7 by 7 $\frac{3}{8}$ inches.

Sig C stock No.: 6R38152-26.

Status: Standard.

TK-27/GF. Tool Equipment TK-27/GF is used for repairing 16-mm projectors. It comes in a hard vulcanized fiber case with over-all dimensions of 12 $\frac{7}{8}$ by 9 $\frac{3}{16}$ by 9 $\frac{3}{4}$ inches.

Sig C Stock No.: 6R38152-27.

Status: Standard.

TK-28/GF. Tool Equipment TK-28/GF is a tool set for immediate emergency repair of general photographic equipment in first echelon. The tools are contained in a canvas bag with dimensions of 18 $\frac{1}{2}$ by 11 $\frac{1}{2}$ inches unrolled and 6 $\frac{3}{4}$ by 1 $\frac{3}{4}$ inches rolled.

Sig C stock No.: 6R38152-28.

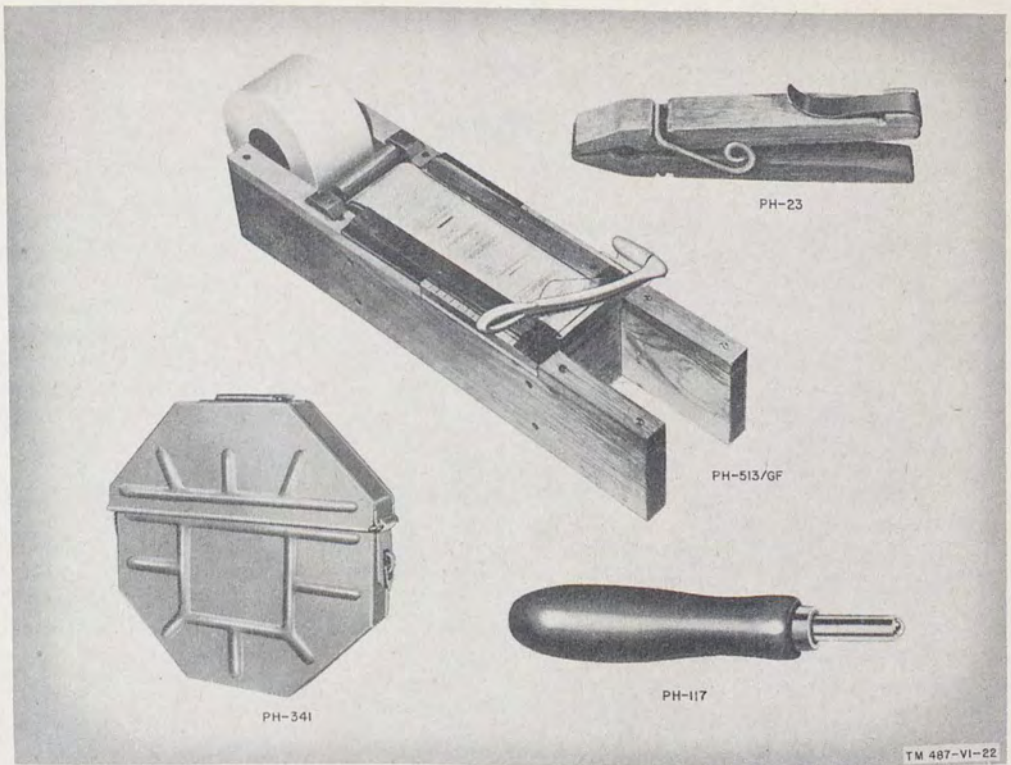


Figure 158. Miscellaneous photographic items—Continued.

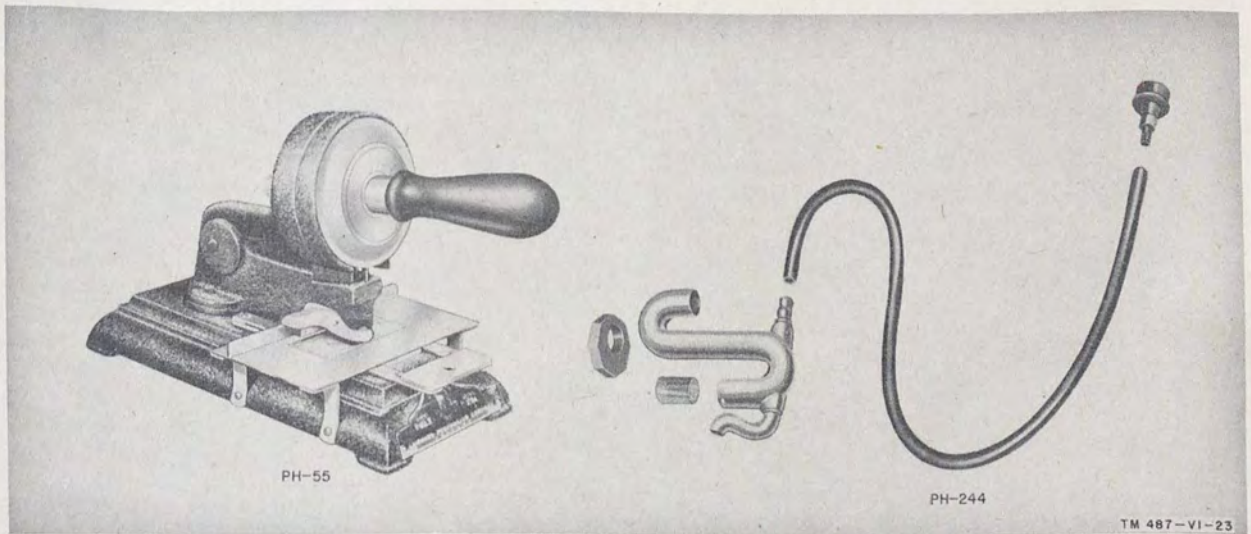


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