DEPARTMENT OF THE ARMY TECHNICAL MANUAL

WASHER

PH-240-B

This copy is a reprint which includes current pages from Changes 1 through 8

DEPARTMENT OF THE ARMY • *APRIL 1953*

AGO 3385B-Apr

CHANGE
No. 8
HEADQUARTERS

DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *17 September 1973*

WASHER PH-240-B AND PRINT WASHER, PHOTOGRAPHIC

EK-1(1), EK-1(2), EK-1(3), AND EK-1(4)

TM 11-2398A, 16 April 1953, is changed as follows:

Page 1, paragraph 1*b*. Delete the second sentence.

Paragraph 1.1. Delete paragraph 1.1 and substitute:

1.1. Indexes of Publications

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

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

Paragraph 2. Delete and substitute:

2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP Pub 378 (Navy)/AFR 71-4 (Air Force)/and MCO P4030.29 (Marine Corps).

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army)/NAVSUP Pub 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

2.1. Reporting of Equipment Publication Improvements
The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged.

Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-S, Fort Monmouth, NJ 07703.

Page 2. After paragraph 3 add:

3.1. Items Comprising an Operable Equipment

FSN	QTY	Nomenclature, part No., and mfr code	Usable on code
5995-951-3088	1	Cable assembly, power, electrical, 7-19, Dirigo Instrument Corp. (Not installed)	1

Page 44, appendix III. Delete appendix III in its entirety.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official
VERNE L. BOWERS
Major General, United States Army
The Adjutant General

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  32-500

NG: None
USAR: None
For explanation of abbreviations used,-see AR 310-50.

WASHER PH-240 AND PRINT WASHERS, PHOTOGRAPHIC EK-1(1), EK-1(2), EK-1(3) , AND EK-1(4)

CHANGE
No. 7
HEADQUARTERS

DEPARTMENT OF THE ARMY
Washington, D.C., *18 February 1964*

TM 11-2898A, 16 April 1958, is changed as follows:

This manual is changed as indicated so that it also applies to the following equipment:

Nomenclature	*Order No.*
PRINT WASHER, PHOTOGRAPHIC EK-1(4)	AF 33(657)-9284

Change the title of the manual as shown above.

Note. **The parenthetical reference to previous changes (example: page 1 of C 4) Indicates that pertinent material was published In that change.**

Pages 1, chapter 1, note (page 1 of C 4). Delete note 3 aid substitute:

3. Print Washers, Photographic EK-1(8) and EK-1(4) are similar to Washer PH-240-B and Print Washer, Photographic EK-1(2). Information in this manual pertaining to the PH-240-B and EK-1(2) also applies to the EK-1(8) and EK-1(4) unless otherwise specified.

Paragraph a (page 1 of C 1),line 3. Change"(fig. 1 and 1.1)" to: (fig. 1,1.1, 1.2, and 1.3).

Change "(figs. 1, 1.1, and 1.2)" to: (fig. 1, 1.1, 1.2, and 1.3) in the following places:

Page 2, paragraph 5*a* (page 1 of C 4), heading.

Paragraph 5*b* (page 1 of C 4),heading.

Page 4, paragraph 5e (page 1 of C 4), heading.

Paragraph 5*f* (page 1 of C 4), heading.

Page 12, paragraph 17d (page 1 of C 4), line 1.

Page 2, paragraph 3*b* (page 1 of C 1). After the last sentence, add:

The overall dimensions of the unpacked EK-1 (4) are 24 by 36 by 34 inches. The overall dimensions of the EK-1 (4) packed in a braced wooden box are 27 by 391/2 by 361/2 inches.

Paragraph 4 (page 2 of C 4). Add paragraph 4.3 after paragraph 4.2

4.3. Table of Components (EK-1(4))
(fig. 1.3)

AGO 1505B-Feb. 700-484° -64

Quantity	Component	Dimensions (in.)			Weight (lb)
		Height	Width	Length	
1	Frame transmission -	34	24	36	85
1	Cylinder ----------	----------	18 dia	26 ¼	15
1	Tank ----------	20 depth	23	34	25
1	Motor----------	7	6	9	15

Paragraph 5 heading (page 2 of C 1). Change heading to:

Component Parts of Washer PH-240B and Print Washers, Photographic EK-1(1), EK-1(2), EK-1(3), and EK-1(4).

Subparagraph *a* (page 2 of C 1). Change the last sentence to:

The EK-1(1) and EK-1(4) are furnished with an angle iron frame with the legs welded in place.

Page 3 (page 5 of C 4). Add figure 1.3 after figure 1.2.

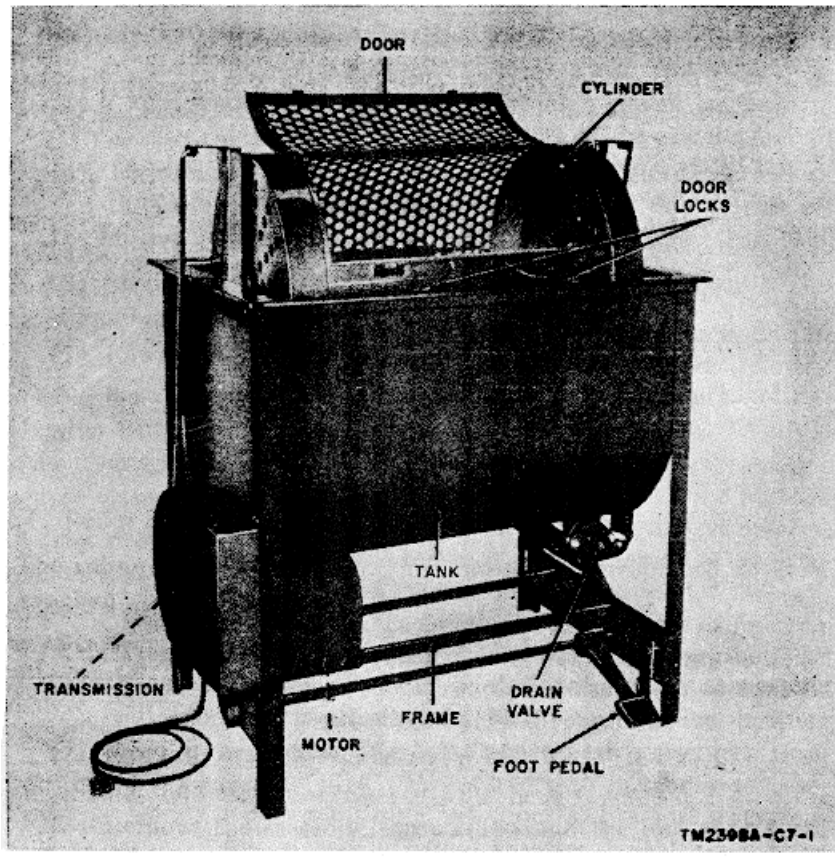


Figure 1.2. Print Washer, Photographic EK-1(4), in position for receiving prints.

Page 4, paragraph 5 (page 3 of C 4). After the first sentence, add:

Subparagraph *c.* On the EK-1 (4), the tank is supported by the welded frame.

Subparagraph d. After the last sentence, add: On the EK-1 (4), the same type of pulley system is used except that the stud on which the reduction pulley revolves is mounted on a bracket welded to the front left leg of the frame.

Subparagraph e, next to the last sentence. Add after "on the EK-1 (3)": and EK-1 (4).

Paragraph 6. "Power requirements." Change "15-v, 60 cpc ac, 125 w (min)" to: 115-v, 60 cps, 125 w (min).

Paragraph 7*a* (page 3 of C 1). Make the following changes: Heading. Change "(PH-240-B only)" to: (PH-240-B and EK-1(4) only).

Subparagraph a(1). After the first sentence, add: The EK-1(4) is packed in a braced wooden box with overall dimensions of 27 by 39 by 36 inches.

Page 6, paragraph 7b (page 4 of C 1). Make the following changes:

Heading. Change "(PH-240-B only)" to: (PH-240-B and EK-1(4)).

Subparagraph (1), first sentence. Change "The washer" to: The PH-240-B.

After the first sentence, add: The EK-1 (4), when boxed, has overall dimensions of 28 by 40 by 37 inches.

Page 7, paragraph 7.1 (page 4 of C 4). Add the following column to the chart:

Print Washer. Photographic EK-1(4)
Weight 85 lb (includes transmission).
Weight 15 lb.
20" high by 23" wide by 34" long; weight 24 lb.
7 3/16" dia by 4 1/4" thick; mounted on frame.
1/4-horsepower.
Right side below tank.

Page 9, paragraph 11. Make the following changes:

Subparagraph a (page 6 of C 1). Delete the note following subparagraph a and substitute the following:

Note. **The EK-1(1) and the EK-1(4) are not equipped with right side panels.**

Subparagraph b (page 5 of C 4). Delete note 2 and substitute:

2. Does not apply to EK-1 (3) or EK-1 (4).

Page 10., figure 3. Add the following note:

NOTE:
THE EK-1(4) OVERFLOW ELBOW IS PART OF THE TANK.

Change the figure caption to: Figure 3. Plumbing diagram, for PH-4-- B and EK-1(4).

Subparagraph 11e (page 5 of C 4). Delete the note after subparagraph a and substitute: Does not apply to EK-1(3) or EK-1(4).

Paragraph 12*a*. After the last sentence add: The EK-1 (4) power cord has a three-prong connector that must be plugged into a ground power outlet. The longer prong is the ground connection on the connector.

Page 11, paragraph 13 (page 5 of C 4) line 4. After "on the EK-1(3)"add: and EK-1(4).

Paragraph 16. After the heading, add: (PH-240B, EK-1 (1), EK-1(2), and EK-1(3) only).

After paragraph 16, add:

16.1 Door Locks (EK-1(4))

The two door locks on the EK-1(4) cylinder (fig. 1.3) consist of pins which are inserted through hinge halves to secure the hinged door. Each pin is secured to the cylinder by a flexible cable. To lock the door, close it so that the halves of both locking hinges match and insert the pins from the side through each locking hinge. To unlock the door, withdraw the pins from each locking hinge.

Page 24, paragraph 41. Subparagraph c (page 8 of C 1). After the third sentence, add:

The EK-1 (4) has no end panels. There is a pulley cover on the left side of the washer. It is not necessary to remove this cover to examine the valve assembly.

Subparagraph d. After subparagraph d, add the following note:

Note **To inspect the pulleys and belts of the EK-1 (4), it is necessary to remove the pulley cover (para 42.1*a*). Replace the cover (para 42.1*b*) after inspection.**

Add paragraph 42.1 after paragraph 42.

42.1. Pulley Cover (EK-1 (4))
(fig. 7.3)

To remove (*a* below) and replace (*b* below)- the pulley cover, proceed as follows:

a. Removal.

(1) Remove the pulley cover screws (7) and the lockwashers (8).

(2) Remove the pulley cover (9) from the washer stand (6).

b. Replacement.

(1) Position the pulley cover (9) on the washer stand (6).

(2) Secure the pulley cover with the screws (7) and the lockwashers (8).

Page 25, paragraph 43b. After the heading, add:

(PH-240B, EK-1 (1), EK-1 (2), and EK-1 (3) only).

After paragraph 43b, add:

c. Drive Belt (EK-1(4)) (fig. 7.3).

(1) Remove the pulley cover (para 42.1*a*).

(2) To adjust the drive belt (11), loosen the hexagonal nut (19) and slide the pulley stud (14) up or down in the adjusting slot.

(3) Tighten the hexagonal nut (19).

(4) Replace the pulley cover (para 42.1*b*).

Page 26, paragraph 44b. After the heading, add:

(PH-240-B, EK-1(1), EK-1 (2), and EK-1(3) only).

After paragraph 44b, add:

c. Drive Belt (EK-1(4)).

(1) Remove the pulley cover (para 42.1*a*).

(2) Loosen the pulley stud (14) to release the reduction pulley (13).

(3) Slip off the old pulley belt (11) and replace it with the new belt.

(4) Adjust the new pulley belt tension (para 43*c*).

(5) Replace the pulley cover (para 42.1*b*).

Note. **If both pulley belts need adjustment or replacement, make the adjustment of the drive belt first.**

Paragraph 47.2 *(page 7 of C 4). Add paragraph 47.3 after paragraph 47.2.*

47.3. Frame Repair (EK-1(4))

(fig. 7.3)

a. General. Repair of the washer stand (6), the pulley cover (9) and the frame unit is restricted to minor straightening and painting. Before straightening, disassemble the unit (*b* below) to prevent damage. After straightening, reassemble the unit (*c* below).

b. Disassembly

(1) Lift the cylinder (1) from the drum slides (3).

(2) Lift the cylinder bearings (2) out of the drum slides (3).

(3) Remove the pulley cover (para 42.1*a*).

(4) Withdraw the lift rods (24) from the drum slides (3) and lift the drum slides from the tank unit.

(5) Remove the pulley belt (5) from the drive pulley on the tank.

(6) Remove the pan head screws (4) that attach the tank to the washer stand (6).

(7) Lift the tank from the stand.

(8) Loosen the pulley stud (14) and remove the pulley belt (11) from the reduction pulley (13).

(9) Remove the fillister head screws (23) and the lockwashers (22) and separate the frame unit from the washer stand (6).

c. Reassembly

(1) Line up the frame unit holes with the holes in the washer stand (6) and replace the fillister head screws (23) and the lockwashers (22). Tighten the screws.

(2) Replace the pulley belt (11) on the motor pulley and on the reduction pulley (13).

(3) Lower the tank in place on the washer stand (6).

(4) Replace and tighten the four pan head screws (4), holding the tank positioned on the stand.

(5) Replace the pulley belt (5) on the reduction pulley (13) and on the tank drive pulley.

(6) Lower the drum slides (3) into place in the tank and reinsert the ends of the lift rods in the drum slides.

(7) Replace the pulley cover (para 28.1*b*).

(8) Lower the cylinder bearings (2) into place in the drum slides (3).

(9) Lower the cylinder (1) into the tank.

Page 28, (page 9 of C 4). Add figure 7.3 after 7.2.

Page 29, paragraph 49 (page 9 of C 4). Change heading to: Stuffing Box Repair (PH-240-B, EK-1(1), EK-1(2), and EK-1(4) only).

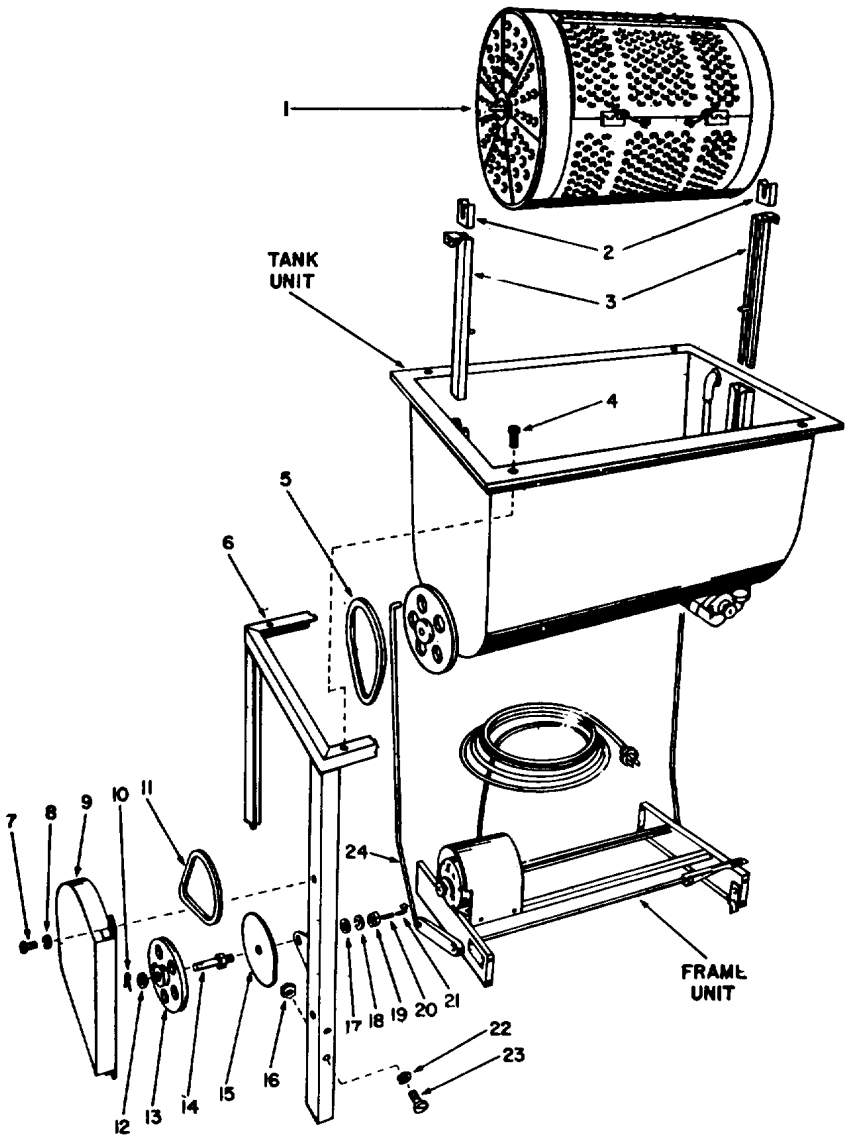
Page 30, paragraph 50*e*. Add the following note after subparagraph *e*.

Note. **Does not apply to the EK-1(4). Replace the pulley cover (para 42.1b).**

Page 33, paragraph 55 (page 11 of C 4). Change heading to: (Inlet Pipe Repair (PH-240B, EK-1(1), EK-1(2), and EK-1(4) only).

Page 36, subparagraph 55*c* (page 15 of. C 1). In note following step 4, after "In the EK-1(1)", add: and the EK-1(4).

Paragraph 56.1 (page 15 of C 4). After paragraph 56.1, add:



TM 2398A-C7-2

1 Cylinder
2 Bearings, cylinder (MP3)
3 Slides, drum
4 Screw, pan head (4)
5 Belt, pulley (MP5)
6 Stand, washer
7 Screw, pulley cover (3)
8 Washer, lock (3)
9 Cover, pulley
10 Pin, cotter
11 Belt, pulley (MP5)
12 Washer, flat
13 Pulley, reduction
14 Stud, pulley
15 Guard, pulley
16 Nut, hex (8)
17 Washer, flat
18 Washer, lock
19 Nut,' hex
20 Pad, lubricating
21 Cup, oil (012)
22 Washer, lock (8)
23 Screw, fillister head (8)
24 Rods, lift (2)

Figure 7.3. Print Washer, Photographic EK-1 (4), exploded view, less plumbing.

56.2 Transmission Repair (EK-1 (4))

The transmission consists of the pulleys and the mounting parts. Replace any parts which are damaged or worn.

a. Disassembly.

(1) Remove the pulley cover (para 28.1*a*).

(2) Remove the pulley belts (para 44).

(3) Remove the drive pulley on the tank by unscrewing the setscrew in the pulley.

(4) Remove the motor cover (1, fig. 10.2) by removing the fillister head screws (3) and lockwashers (2).

(5) Remove the motor pulley (7) by unscrewing tile setscrew (8).

(6) To remove the reduction pulley (13, fig. 7.3), pull out the cotter pin (10) in tile pulley stud (14), and remove the flat washer (12).

(7) Unscrew tile oilcup (21) from the pulley stud (14). Remove the lubricating pad (20) from the oilcup (21). Discard the lubricating pad if it is dirty or defective and substitute a new lubricating pad.

(8) Unscrew the hexagonal nut (19), remove the lockwasher (18), and the flat washer (17). Pull the pulley stud (14) from the bracket and the pulley guard (15).

b. Reassembly

(1) Fasten the pulley stud (14) and the pulley guard (15) to the mounting bracket with the fiat washer (17), the lockwasher (18), and the hexagonal nut. (19).

(2) Place the lubricating pad (20) in the oilcup (21). Screw the oilcup (21) into the end of the pulley stud (14).

(3) Replace the reduction pulley (13) on the pulley stud and secure it with the flat washer (12) and the cotter pin (10).

(4) Fasten the motor pulley (7, fig. 10.2) to the motor shaft with the setscrew (8).

(5) Fasten the drive pulley onto the tank drive shaft by tightening the setscrew.

(6) Replace or reinstall the pulley belts (para 44).

(7) Adjust the tension of both belts (para 43).

(8) Set the motor cover (1, fig. 10.2) in place and secure with the fillister head screws (3) and the lockwashers (2).

(9) Replace the pulley cover (para 42.1*b*).

Page 36 (page 16 of C 4). Add figure 10.2 after figure 10.1.

Page 37, paragraph 57. After heading, add: (PH-240-B, EK-1(1),EK-1(2),and EK-1(3) only).

After paragraph 57, add:

57.1 Motor Replacement (EK-1(4))
(fig. 10.2)

a. Removal.

(1) Remove the fillister head screws (3) and the lockwashers (2).

(2) Remove the motor cover (1).

(3) Remove the hexagonal head screws (5), the flat washers (6), the lockwashers (14), and the hexagonal nuts (13).

(4) Lift the motor (4) from the frame.

b. Power Cord Repair. Replace a defective plug or the power cord (80). Make sure the wires are secure in their proper positions.

c. Reinstallation.

(1) Position the motor (4) on the frame, lining up the mounting holes in the motor base with those on the frame.

(2) Secure the motor with the hexagonal head screws (5), the flat washers (6), the lockwashers (14) and the hexagonal nuts (13).

(3) Replace and adjust the pulley belt (para 43 and 44).

(4) Replace the motor cover (1) and secure it with the fillister screws (8) and the lockwashers (2).

Paragraph 58. After heading, add: (PH-240-B, EK-1(1), EK-1(2), and EK-1(3) only).

After paragraph 58, add:

58.1 Cylinder Lift Repair (EK-1(4))
(fig. 10.2)

a. General. The cylinder lift consists of the foot pedal (16), the pedal shaft (29), the lift levers (26), the lift rods (27), the pedal lock (20), and the attaching parts. To disassemble (*b* below) and reassemble (*c* below) the cylinder lift, proceed as follows:

b. Disassembly

(1) Pull the cotter pin (25) from each lift rod (27) and remove the lift rods from the lift levers (26),

(2) Unfasten the lift levers (26) from each end of the pedal shaft (29) by removing the setscrews (28).

(3) Remove the setscrew (10) which secures the foot pedal (16).

(4) Drive out the woodruff key (15) which holds the foot pedal (16) in place on the pedal shaft (29).

(5) Pull out the pedal shaft (29).

(6) Unscrew the pedal hexagonal head screw (24) and the hexagonal nut (17). Remove the pedal lock (20), the flat washer (18), the lockwasher (19), the pedal lock spacer (21), the lockwasher (22),and the fiat washer (23).

c. Reassembly

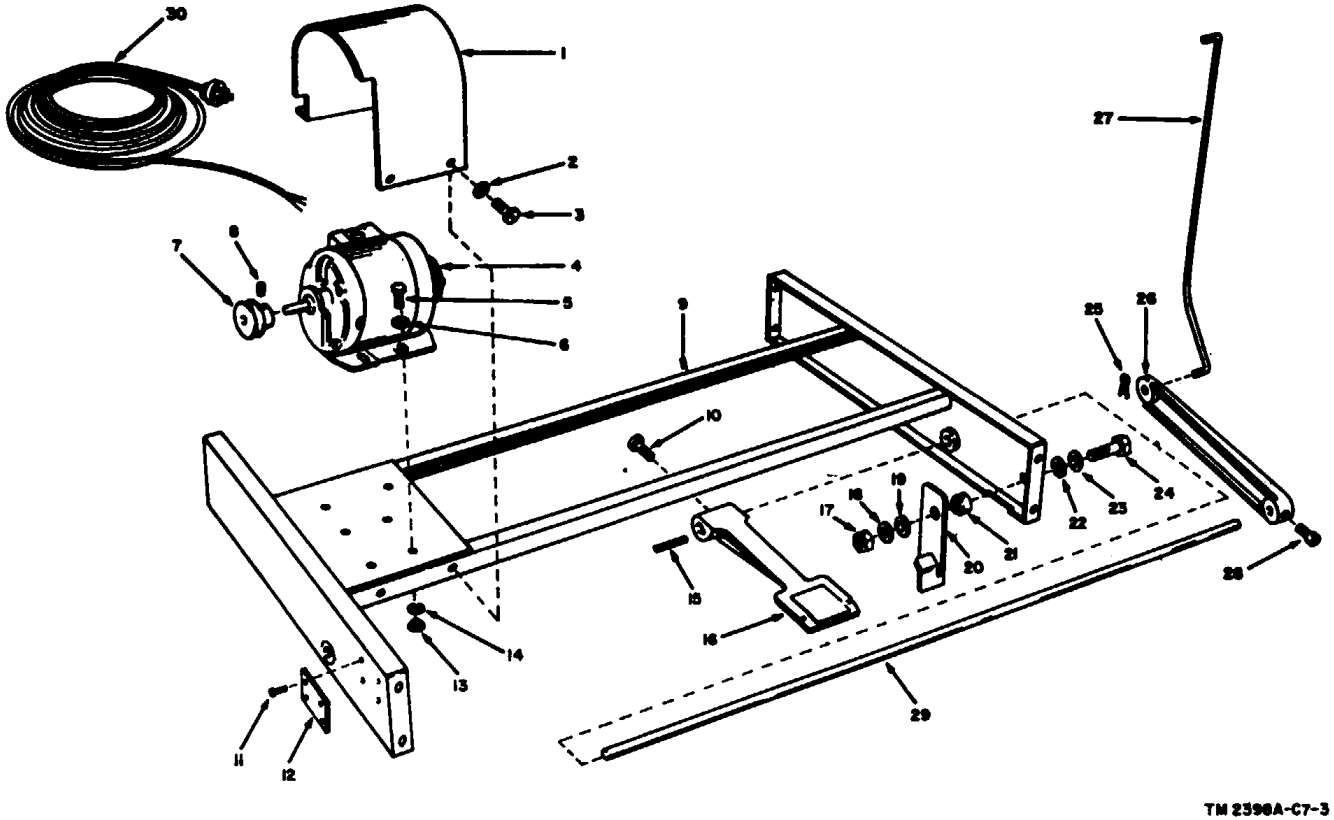


Figure 10.2. Print Washer, Photographic EK-1 (4), exploded view of frame unit.

1 Cover, motor
2 Lockwasher (4)
3 Screw, fillister head (4)
4 Motor (B1)
5 Screw, hex head (4)
6 Washer, fiat (4)
7 Pulley, motor
8 Screw, set (furnished with pulley)
9 Brace, cross
10 Screw, set
11 Screw, pan head (4)
12 Plate, identification
13 Nut, hex (4)
14 Lockwasher (4)
15 Key, woodruff
16 Pedal, foot
17 Nut, hex
18 Washer, flat
19 Lockwasher
20 Lock, pedal
21 Spacer, pedal lock
22 Lockwasher
23 Washer, flat
24 Screw, hex head
25 Pin, cotter (2)
26 Lever, lift (2)
27 Rod, lift (2)
28 Screw, set (2)
29 Shaft, pedal
30 Cord, power (W1)

Figure 10.2. Continued

(1) Replace the flat washer (28) and the lockwasher (22) on the hexagonal head screw (24).

(2) Insert the hexagonal head screw (24) through the hole in the frame and slide the pedal lock spacer (21), the pedal lock (20), the lockwasher (19), and the flat washer (18), onto the screw. Tighten the hexagonal nut (17) to secure the pedal lock in place.

(3) Slide the pedal shaft (29) through the frame and the foot pedal (16).

(4) Fasten a lift lever (26) to each end of the pedal shaft (29) with a setscrew (28).

(5) Secure the lift rods (27) to the lift levers (26) with the cotter pins (25).

(6) Slide the foot pedal (16) into proper position and drive home the woodruff key (15).

(7) Secure the foot pedal (16) on the pedal shaft (29) .with the setscrew (10) after checking that the pedal lock (20) works properly.

Page 39, paragraph 60, chart (page 15 of C 1). Remedy column.

Delete lines 17 and 18 and substitute: Repair power cord (para 57b and 57.1b).

Page 40, paragraph 67 (page 15 of C 1).

Subparagraph a(2). After the first sentence, insert: The braced wooden box for the EK-1(3) has overall dimensions of 27 by 39% by 86% inches.

Subparagraph b. After first sentence insert: The braced wooden box for the EK-1(4) has overall dimensions of 28 by 40 by 87 inches.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

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NG: State AG (3).

USAR: None.

For explanation of abbreviation used, see AS 320-50.

TM 11-2398A
C6

WASHER PH-240-B AND PRINT WASHERS
PHOTOGRAPHIC EK-I(I), EK-1(2), AND EK-1(3)

CHANGE
No. 6
HEADQUARTERS

DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *19 December 1963*

TM 11-2398A, 16 April 1953, is changed as follows:

Note. **The parenthetical reference to previous changes (example: "page 1 of C 1") indicates that pertinent material was published in that change.**

Page 1, paragraph 1. Make the following changes:

Delete subparagraph b and substitute:

b. The maintenance allocation chart is in appendix II. The basic issue items list is in appendix III.

Add paragraph 1.1.

1.1. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. DA Pam 310-4 is an index of current technical manuals, technical bulletins, supply manuals (types 4, 6, 7, 8, and 9) supply bulletins, lubrication orders, and modification work Orders which are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes to and revisions of each equipment publication.

Paragraph 2 (page 1 of C 5). Delete paragraph 2 and substitute:

2. Forms end Records.

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

c. Reporting of Equipment Manual Improvements. The direct reporting by the individual user of errors, omissions, and recom

mendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended changes to DA technical manual parts lists or supply manuals 7, 8, or 9) will be used for reporting these improvement recommendations. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to-Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, N. J. 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor, etc.).

Page 13, paragraph 20 (page 7 of C 1). Add subparagraph e after subparagraph d.

e. Check to see that the interior surfaces are clean (par. 31*b*(1)).

Page 17 (page 7 of C 4).

Section I. OPERATOR'S MAINTENANCE

(Superseded)

26. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the equipment are listed below together with a reference to the paragraphs covering the specific maintenance functions. The duties assigned do not require tools or materials other than those specified in paragraph 27.

a. Weekly preventive maintenance checks and services (par. 30).

b. Cleaning (par. 31).

27. Tools and Materials Required

The following tools and materials are required to perform operator's preventive maintenance.

a. Lint-free cloth (Federal stock No. 8305-170-5062).

b. Camel's-hair brush.

c. Cleaning Compound (Federal stock No. 7930-395-9542).

d. Oxalic acid.

e. Sodium Nitrate.

f. Whiting Compound.

28. Operator's Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 30 and 31 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services chart (par. 30) outlines functions to be performed at weekly intervals. These checks and services are to maintain equipment in a serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining serviceability, the chart indicates what to check, how to check, and the normal conditions. The *References* column lists the location of additional data or procedures. If a defect is noted that cannot be remedied by the operator, higher echelon maintenance is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

29. Operator's Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the equipment are required on a weekly basis while the equipment is in use. A week is defined as approximately 7 calendar days of 8-hour-per day operation. If the equipment is operated more than 8 hours a day, the weekly maintenance interval should be adjusted. Adjustment of the weekly maintenance interval should also be made to compensate for any unusual operating conditions. Equipment maintained in a *standby* condition must have weekly maintenance performed on it. Equipment in limited storage (requires service before operation) does not require weekly maintenance. Paragraph 30 specifies the checks and services that must be accomplished weekly and under the following special conditions:

a. When the equipment is initially placed in service.

b. When the equipment or any of its major components are removed from service for any reason.

30. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness--------	Check to see that equipment is complete (app. III).	
2	Cleanliness ----------	Check to see that equipment is clean.	Par. 31.
3	Operation----------	During operation, be alert for any unusual operating conditions.	Par. 22.

31. Cleaning

a. Exterior. Inspect the exterior surfaces of the equipment. The exposed surfaces should be clean and free of dust, dirt, grease, and fungus.

(1) Remove dust and loose dirt with a clean, soft cloth.

***Warning*: Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. Do not use near a flame.**

***Caution*: Do not allow cleaning compound to come in contact with lubricated surfaces or surfaces that touch the washing liquid. Use cleaning compound sparingly.**

(2) Remove grease, fungus, and ground-in dirt from the exterior; use a cloth dampened with cleaning compound; dry thoroughly.

(3) Remove dust and dirt from the plug with a brush.

b. Interior. Inspect the interior surfaces of the equipment. The exposed surfaces should be clean and free of dust, dirt, grease, and fungus.

(1) Flush the tank and cylinder, and then remove the cylinder from the tank by lifting it straight up. Flush the tank again to remove iron scales and slivers. Check to see that the supply line is free of foreign matter.

(2) Remove chemical deposits from the cylinder and tank; use a cloth saturated with a soap solution. Dry the cleaned items thoroughly.

***Warning:* Oxalic acid is toxic. Check to see that oxalic acid containers are clearly marked. Do not use axalic acid near food or food handling utensils. Flush all acid-contaminated objects thoroughly after using oxalic acid.**

(3) Use a cloth dampened with a 2- to 5-percent solution of oxalic acid to remove stains and corrosion from the cylinder.

(4) Remove heavy deposits of rust and other impurities from the exposed surfaces of the tank. Use a cloth dampened with a 10-percent solution of sodium nitrate and sprinkled with whiting compound.

***Caution:* Do not use a wire brush or steel wool to clean the equipment.**

(5) Replace the cylinder in the tank and flush thoroughly.

Section II. SECOND ECHELON MAINTENANCE

(Superseded)

32. Scope of Second Echelon Maintenance

The maintenance duties assigned to second echelon maintenance personnel of the equipment are listed below together with a reference to the paragraphs covering the specific maintenance functions.

a. Monthly preventive maintenance checks and services (par. 36).

b. Lubrication (par. 37).

c. Touchup painting (par. 38).

33. Tools, Materials, and Test Equipment Required

In addition to the tools and materials listed in paragraph 27, the following items are required:

a. Tool Kit, Photographic Repairman TK-77/GF.

b. Sandpaper (No. 000).

c. Lubricating Oil, Internal Combustion Engine (OE30) (Federal stock No. 9150-265-9433).

d. Multimeter AN/URM-105.

34. Organizational Preventive Maintenance

a. Organizational preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all echelons concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the equipment at the second echelon level are made at monthly intervals at the same time as the weekly preventive maintenance checks and services (par. 30) unless otherwise directed by the commanding officer.

b. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750.

35. Monthly Maintenance

Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (par. 36) once each month. A month is defined as approximately 30 calendar

days of 8-hour-per-day operation. If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a *standby* condition must have monthly preventive maintenance checks and services performed on it. Equipment in *limited storage* does not require monthly preventive maintenance.

36. Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Lubrication ----------	*a.* Lubricate bearings and oilcups.	*a.* Par. 37*a*.
		b. Lubricate stuffing box.	*b.* Par. 37*b*.
2	Pulley belts----------	Check to see that pulley belts (fig. 6) are clean and in apparent good condition.	
3	Leakage ----------	Inspect valves, (fig. 3), hoses, clamps, and stuffing box for leakage.	
4	Preservation ----------	Check all exterior surfaces for evidence of fungus, rust, and corrosion.	Par. 38.
5-Q [a]	Publications----------	Check to see that all publications are complete, serviceable, and current.	DA Pam 310-4.
6-Q [a]	Modifications ---------	Check DA Pam 310-4 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	TM 38-7560 and DA Pam 310-4.

[a] To be performed quarterly, instead of monthly.

37. Lubrication

a. General Lubrication. Lubricate. the following points monthly. Use 2 or 3 drops of oil (OE-30); do not over lubricate. Wipe off excess oil with a clean cloth.

(1) Motor oilcups (fig. 4).

(2) Pulley stud oilcup.

(3) Pulley stud bearing.

(4) Lift lever bearing (fig. 5).

b. Stuffing Box (fig. 5).

Note. **Does not apply to EK-1(3).**

Lubricate the stuffing box quarterly as follows:

(1) Remove the left end panel.

(2) Remove the driven pulley by unscrewing one squarehead setscrew in the pulley.

Caution: **The stuffing box cap has a left-hand thread.**

(3) Remove the stuffing box cap.

(4) Remove the stuffing box gland, and apply several drops of oil (OE-30) to the packing.

(5) Wipe off excess oil.

(6) Replace the stuffing box gland on the shaft and screw the left-hand threaded stuffing box cap into place.

(7) Tighten the cap and then back it off one-half turn on adjustment.

(8) Replace the driven pulley; secure it to the shaft with the squarehead setscrew.

(9) Replace the end panel.

38. Touchup Painting

Remove rust and corrosion from metal surfaces by lightly sanding with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-213.

Page 42, appendix I (page 17 of C 4). Add the following reference:

TM 11-6625-203-12 Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.

Page 44. Delete appendix III (page 7 of C 5) and substitute:

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation. The list includes parts and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

Columns are as follows:

a. Federal stock number. This column lists the 11-digit Federal stock number.

b. Designation by model. The dagger (†) indicates model in which the part is used.

c. Description. Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

d. Unit of issue. The unit of issue is each and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

e. Expendability. Nonexpendable items are indicated by NX. Expendable items are not annotated.

f. Quantity authorized. Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment.

g. Illustration. Not used.

THIS PAGE CURRENTLY NOT AVAILABLE FOR DIGITIZATION
ORIGINAL COPY UNREADABLE

AGO 7213B
PAGE #9

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:
Active Army:
DASA (6)
USASA (2)
CNGB (1)
CSigO (7)
CofT (1)
CofEngrs (1)
OCofSptS (1)
TSG (1)
USACECDA (1)
USACECDA, Monmouth Ofc (1)
USCONARC (5)
USAMC (5)
USASMCOM (1)
USAECOM (7)
USAMICOM (4)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (3)
OS Base Comd (2)
LOGCOMD (2)
MDW (1)
Armies (2)
Corps (2)
Instl (2) except
Ft Monmouth (63),
Ft Gordon (5),
Ft Hancock (4),
Ft Huachuca (10)
USATC AD (2)
USATC Armor (2)
USATC Engr (2)
USATC FA (2)
USATC Inf (2)
USASTC (2)
GENDEP (OS) (2)
Sig Sec, GENDEP (5)
Sig Dep (OS) (12)
Army Dep (2) except
Lexington (12)
Tobyhanna (12)
Sacramento
Ft Worth (8)
Svc Colleges (2)
Br Svc Sch (2)
WRAMC (2)
USAECDA (1)
USACBRCDA (1)
USAMSCDA (1)
USAOCDA (1)
USAQMCDA (1)
USA Tml Comd (1)
Army Tml (1)
USAOSA (1)
POE (1)
AMS (1)
Army Pic Cen (2)
USA Mbl Spt Cen (1)
USA Elct Mat Agcy (12)
Chicago Proc Dist (1)
Sig Fld Maint Shops (3)
USA Elct RD Actv (Ft Huachuca) (2)
USA Elct RD Actv (White Sands) (13)
WSMR (5)
Yuma PG (2)
USA Corps (3)
USASCC (4)
USA Avn & Sur Mat Comd (1)
USATCDA (1)
USAADCDA (1)
USAARMCDA (1)
USAAVNCDA (1)
USAARTYCDA (1)
USASWCDA (1)
USAPA (5)
USAINTC (5)
1st USASA Fld Sta (5)
USA Crim Inves Lab (5)
GENMISH (5)

Units org under fol TOE:11-557 (2)

11-16 (2)
11-57 (2)
11-95 (2)
11-96 (2)
11-117 (2)
11-155 (2)
11-157 (2)
11-500 (AA-AE) (4)
11-592 (2)
11-597 (2)
19-500 (AA-AE) (2)
30-25 (2)
30-26 (2)
30-500 (AA-AE) (2)
32-500 (2)

NG: State AG (3); units-same as Active Army except allowance is one copy to each unit.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

TECHNICAL MANUAL

WASHER PH-240-B AND PRINT WASHERS, PHOTOGRAPHIC

EK-1(1) EK-1(2) AND EK-1(3)

TM 11-2398A

CHANGES No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 7 June 1963

TM 11-2398A, 16 April 1953, is changed as follows:

TM 11-2398A, 16 April 1953, (as changed by C 3, 8 August 1960) is changed as indicated so that the manual also applies to the following equipment:

Nomenclature	*Order No.*
PRINT WASHER, PHOTOGRAPHIC EK-1(2)	AF 33(600)89401
PRINT WASHER, PHOTOGRAPHIC EK-1(3)	AF 33(667)7810

Change the title of the manual (as changed by C 3, 8 August 1960) to WASHER PH-240-B AND PRINT WASHERS, PHOTOGRAPHIC EK-1(1), EK-1(2) and EK-1(3).

Note. **The parenthetical reference to previous changes (example: "page 1 of C 1") indicate that pertinent material was published in that change.**

Page 1, (as changed by C 3, 8 August 1960) chapter 1, note ("page 1 of C 1"). Make the following changes: Change "Note" to Notes.

Designate the existing note "1" and add the following:

2. Print Washer, Photographic EK-1(2) is identical to Washer PH-240-B. All information in the manual pertaining to the PH-240-B also applies to Print Washer, Photographic EK-1 (2).

Page 1, paragraph 2. Add after subparagraph d.

e. *Comments on Manual.* Forward all comments on this publication direct to Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, N. J., DA Form 1598 (Record of Comments on Publication), DA Form 2028 (Recommended Changes to DA Technical Manual Parts List or Supply Manual 7, 8 or 9), DD Form 96 (Disposition Form), or letter may be used.

*These change supercede C 3. 8 August 1960.

Paragraph 2. Add after subparagraph e.

f. Index of Equipment Publications. Refer to DA Pam 810-4 to determine what changes to or revisions of this publication are current.

Page 44 (as changed by C 3, 8 August 1960). Delete appendix II and substitute:

APPENDIX II

MAINTENANCE ALLOCATION CHART
PRINT WASHER. PHOTOGRAPHIC EK-1(1), EK--1(2),
EK-1(3) AND WASHER PH-240-B
(Superseded)

Section I. MAINTENANCE ALLOCATION 1.

1. General

a. This section assigns maintenance functions to be performed on Components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Component.* This column shows only the nomenclature or standard item name. Additional descriptive data is included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation break down (components, assemblies, or subassemblies) are listed in disassembly order or alphabetical order.

(2) *Maintenance* function. This column indicates the various maintenance functions allocated to the echelons.

(a) *Service.* To clean, to preserve, and to replenish lubricants.

(b) *Adjust.* To regulate periodically to prevent malfunction.

(c) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) *Replace*. To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(f) *Repair*. To restore an item to serviceable condition through correction of a specific failure of unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(g) *Align*. To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) *Calibrate*. To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) *Overhaul*. To restore an item to *completely serviceable* condition as prescribed by serviceability standards. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) *Rebuild*. To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/ or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelons.* The symbol X placed in columns 8 through 7 indicate the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tool required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks*. Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools* required for maintenance functions. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

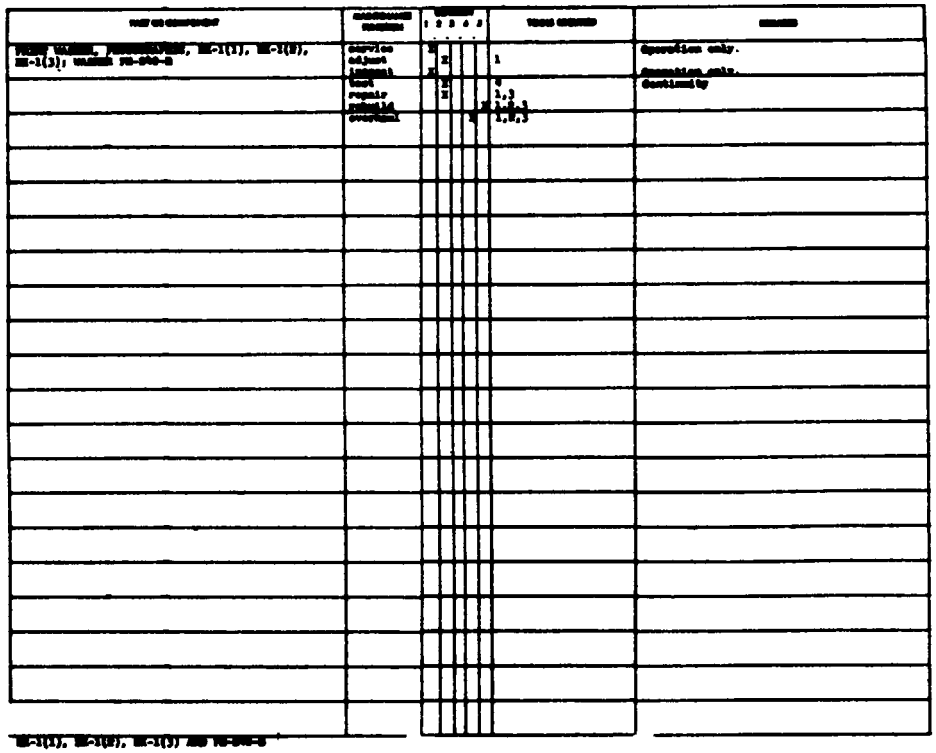
(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (t) symbol in these columns indicates the echelons normally allocated the facility.

(3) *Tool code*. This column lists the tool code assigned.

2. Maintenance by Using Organization

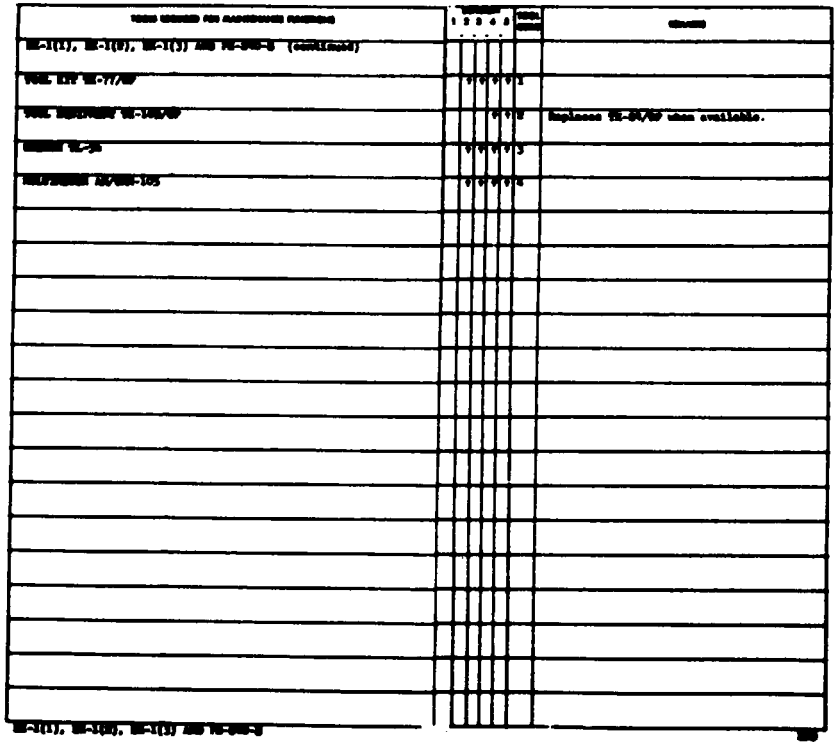
When this equipment is used by signal services organizations organic to theater headquarters or communication zones to pro vide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

Section II. MAINTENANCE CHART



AGO 10102B

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS



APPENDIX III

BASIC ISSUE ITEMS LIST PRINT WASHER, PHOTOGRAPHIC EK-1(1), EK-1(2), EK-1(3) AND WASHER PH-240-B

(Superseded)

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation and for initial spares. The list includes tools, accessories, part, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

2. Columns

a. Source, Maintenance and Recoverability Code. Not Used.

b. Federal Stock Number. This column list the 11-digit Federal stock number.

c. Designation by Model. The dagger (†) indicates model in which the part is used.

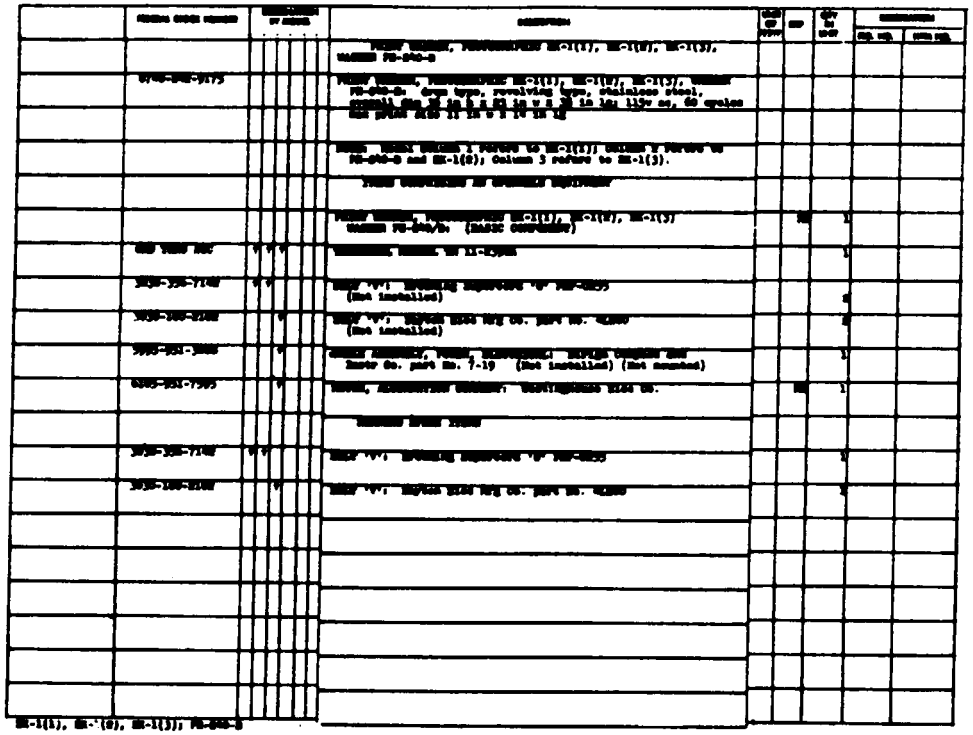
d. Description. Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

e. Unit of Issue. The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowance, and issue purposes.

f. Expendability. Nonexpendable items are indicated by NX. Expendable items are not annotated.

g. Quantity Authorized. Under "Items Comprising an Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spare Items" the quantities listed are those issued initially with the equipment as spare parts The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

h. Illustrations. Not used.



AGO 10102B

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United State, Army
Chief of Staff.

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:
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TSG (1)
CSigO (5)
CofT (1)
USA CD Agcy (1)
USCONARC (5)
USAMC (5)
ARADCOM (2)
ARADCOM Rgn (2)
08 Maj Comd (3)
08 Bas Comd (2)
LOGCOMD (2)
USAECOM (6)
USAMICOM (3)
USASCC (4)
MDW (1)
Armies (2)
Corps (2)
USA Corps (3)
USATC AD (2)
USATC Engr (2)
USATC Inf (2)
USATC Armor (2)
Instls (2) except
Ft Monmouth (63)
Svc College (2)
Br Svc Sch (2)
GENDEP (OS) (2)
Big Dep (OS) (12)
Sig Sec, GENDEP (5)
Army Dep (2) except
Ft Worth (8)
Lexington (12)
Sacramento (28)
Tobyhanna (12)
CofSptS (1)
DCA (1)
USA Elct RD Actv,
White Sands (13)
USAElct Rd Actv, Ft
Huachuca (2)
USA Trans Tml Comd (1)
Army Tml (1)
POE (1)
USAOSA (1)
AMS (1)
WRAMC (1)
AFIP (1)
Army Pie Cen (2)
USA Mbl Spt Cen (1)
USA Elct Mat Agcy (12)
Chicago Proc Dist (1)
USARCARIB Sig Agcy (1)
Sig Fld Maint Shop (3)
USAPA (2)
Units org under fol TOE:
Two copies each UNOINDC:

11-7	11-557
11-16	11-587
11-27	11-592
11-57	11-597
11-95	19-500
11-96	(AA-AE)
11-97	30-15
11-98	30-19
11-117	30-25
11-155	30-26
11-157	30-500
11-500 (AA-AC) (4)	(AA-AE)

NG: State AG (3); units-same as Active Army except allowance is one copy for each unit.
USAR: None
For explanation of abbreviations used, see AR 320-50.

TECHNICAL MANUAL

WASHER PH-240-B AND PRINT WASHERS, PHOTOGRAPHIC EK-1(1), EK-1(2), AND EK-1(3)

TM 11-2898A
CHANGE NO. 4

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *3 December 1962*

HEADQUARTERS ,

TM 11-298A, 16 April 1965, is changed as indicated so that the manual also applies to the following equipment:

Nomenclature	*Order No.*
PRINT WASHER, PHOTOGRAPHIC EK-1(3)	AF 33(657)-7810

The title of the manual is changed as shown above.

Note. **The parenthetical reference to previous changes (example: page 2 of C 1) indicate that pertinent material was published in that change.**

Page 1, chapter 1, note (page 1 of C 5). After note 2, add:

3. Print Washer, Photographic EK-1 (3) is similar to Washer PH-24-B and Print Washer, Photographic EK-1 (2). Information in this manual pertaining to the PH-240-B and EK-1 (2) also applies to the EK-(3) unless otherwise specifed.

Change (figs. 1 and 1.1) to (fig. 1, 1.1, and 1.2) in the following

Page 2, paragraph 5*a* (page 2 of C 1), heading. Paragraph 5*b* (page 2 of C 1), heading.
Page 4, paragraph 5*e* (page 2 of C 1), heading. Paragraph 5*f*, (page 2 of C 1), heading.
Page 12, paragraph 17*d* (page 7 of C 1), line 1.

Change (fig. 3 and 3.1) to (fig. 3, 3.1, and 3.2) in the following places:

Page 9, paragraph 11 (page 6 of C 1), heading.
Page 11, paragraph 17*b* (page 7 of C 1) Paragraph 17*c* (page 7 of C 1), line 1.
Page 13, paragraph 20*b* (page 7 of C 1). Paragraph 20*c* (page 7 of C 1).
Page 1, paragraph 2 (page 1 of C 1) Delete paragraph 2 and substitute:

2. Forms and Records

a. Reports of Unsatisfactory Equipments. Fill out DA Form 2407 (Maintenance Request) in accordance with instructions in TM 38-7560 and forward it to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-PIE, Fort Monmouth, N. J. The form should be filled out and forwarded to report:

(1) Receipt of defective equipment (use DD Form 6 (*b* below) if defect is due to damaged or improper shipment).

(2) Equipment deficiencies (deadlined equipments).

(3) Equipment shortcomings (operable, but less than rated capability of efficiency).

(4) Equipment improvement suggestions and recommendations.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publications 378, and AFR 71-4 (Air Force).

c. Report of Comments on Basic Issue Items List (Appx II) and Maintenance Allocation Chart (Appx III). Fill out and forward DA Form 2028 (Recommended changes to DA technica manuals parts lists or supply manual 7, 8, or 9) direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-ML, Fort Monmouth, N. J.

d. Index to Equipment Publications. Refer to DA Pamphlet 310-4 to determine what Changes to or revisions of this publication are current.

e. Comments on Manual. Forward all other comments on this publication direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MPP-4, Fort Monmouth, N. J., DA Form 1598 (Record of comments on publications), DA Form 2028 (*c* above), DD Form 96 (Disposition Form), or letter may be used.)

Page 2, paragraph 4 (page 2 of C 1). After the heading, add: (PH-240-B and EK-1 (2) Only)

Paragraph 4.1 (page 2 of C 1). Add paragraph 4.2 after paragraph 4.

4.2. Tables of Components (EK-1 (3))
(fig. 1.2)

Quantity	Component	Dimensions (in.)			Weight (lb)
		Height	Width	Length	
1	Frame ----------	35	23	36	32
1	Cylinder --------		18 dia	26	23
1	Tank ----------	20 depth	22	31	36
1	Transmission -		8 dia	5	3
1	Motor ----------	7	6	9	15

Page 2, paragraph 5 (page 2 of C 1), heading. Change the heading to: Component Parts of Washer PH-24-B and Print Washers, Photographic EK-1(1), EK-1(2), and EK-1(3).

Page 3 (Page 3 of C 1). Add figure 1.2 after figure 1.1.

Page 4, paragraph 5 (Page 2 of C 1). Make the following changes: Subparagraph *c.* After the fourth sentence, add: On the EK-1 (3) the water inlet and water outlet (with overflow) are on the back side of the washer. The drain valve is an integral part of the tank.

Subparagraph *e.* After the last sentence, add: The motor on the EK-1(8) is a ¼ -horsepower split-phase type which operates on 115-volt, 60-cycle ac. A 6-foot power cord with a three pronged plug is provided for electrical connection.

Page 7, after paragraph 7. Add:

7.1. Differences in Models

Item	Washer PH-240-B and Print Washer, Photographic EK-1(2)	Print Washer. Photographic EK-1(1)	Print Washer. Photographic EK-1(3)
Frame	Weight 31 ¾ lb	Weight 39 lb	Weight 32 lb
Cylinder	Weight 23 lb	Weight 15 lb	Weight 23 lb
Tank	20" high by 22" wide by 31" long; weight 86 lb.	20" high by 23" wide by 36" long; weight 28 lb.	20" high by 22" wide by 31"' long; weight 86 lb.
Transmission	8" dia by 4 ½" thick	8" dia by 4 ½" thick	8" dia by 5" thick
Motor	1/20-horsepower	1/20-horsepower	¼-horsepower
Drain valve handle (location)	Right side below tank	Right id of frame	Left side of tank

AGO 721

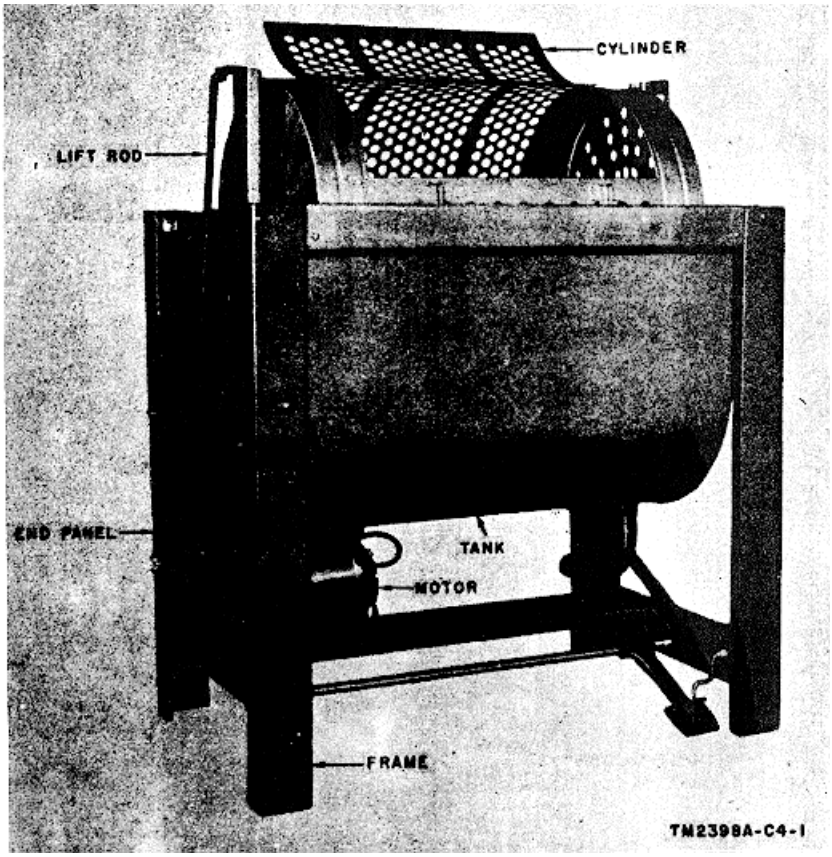

Figure 1.2. Print Washer, Photographic EK-1 (3), in position for receiving prints.

Page 9, paragraph 11 (page 6 of C 1). Change "Note" to: Notes. Designate the existing note "1". Add the following:

2. Does not apply to EK-1(3).

Page 10, paragraph 11*e.* Add the following note after subparagraph *e:*

Note. **Does not apply to EK-1(3).**

*Page 10 (*page 6 of C 1). Add figure 3.2 after figure 3.1.

Page 11, paragraph 13, line 4. Add: All bearings used on the EK-1 (3) are porous impregnated bronze which require no lubrication.

Paragraph 15.1 (page 7 of C 1). Add paragraph 15.2 after paragraph 15.1.

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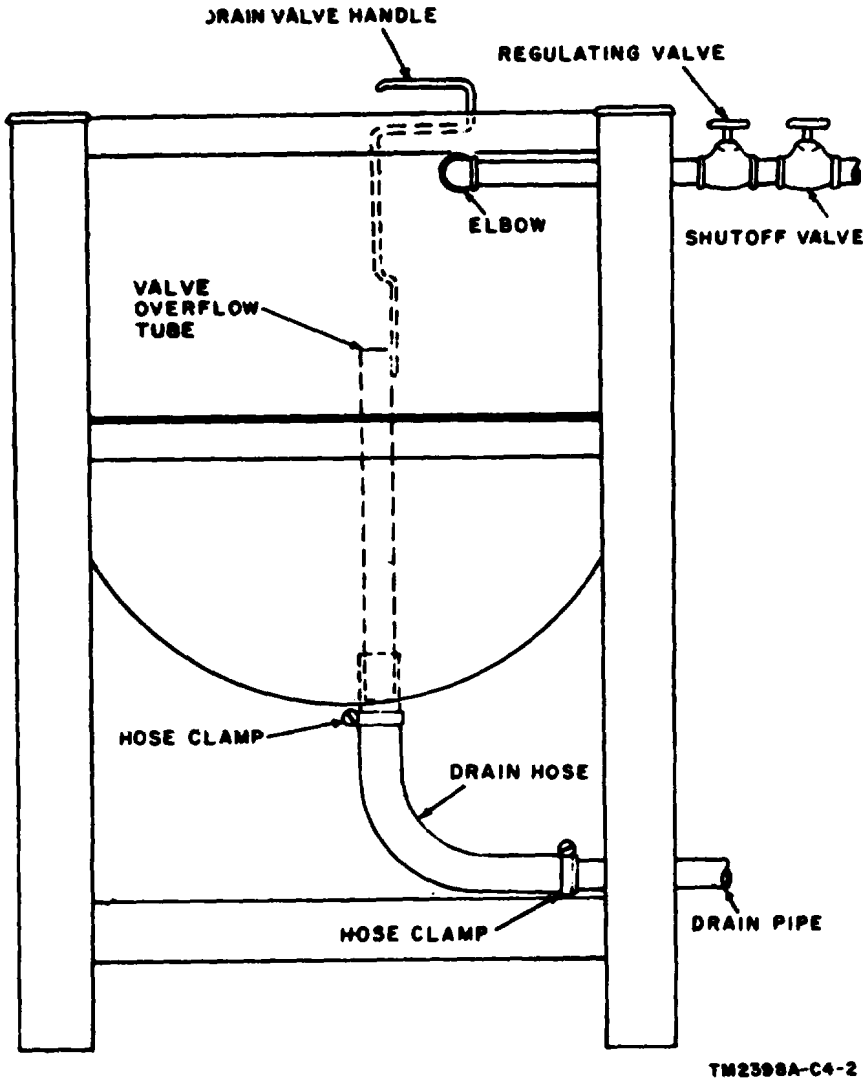

Figure 3.2. Print Washer, Photographic EK-1 (3), plumbing diagram.

15.2. Drain Valve (EK-1(3))
(fig. 8.2)

After the washing operation, use the drain valve of the EK-1 (3) to empty the tank; proceed as follows:

a. Lift the drain valve handle and turn it 90° clockwise to open the valve. Allow the tank to completely drain.

b. Turn the drain valve handle 90° counterclockwise and allow the overflow tube to drop into the O-ring seat to close the valve.

c. Do not force the valve overflow tube down into the O-ring seat.

Page 17, paragraph 28. Add the following note after line 1:
Note. **Does not apply to EK-1(3).**

Page 25, paragraph 43*a* (4),note (page 8 of C 1). Delete the note and substitute:
Note **The EK-1(1) and EK-1(3) motors are not furnished with a cover.**

Page 26, paragraph 44*a*(7) note (page 8 of C 1). Delete the note and substitute:
Note. **The EK-1(1) and EK-1(3) motors are not furnished with a cover.**

Paragraph 47.1 (page 9 of C 1). Add paragraph 47.2 after paragraph 47.1.

47.2. Frame Repair (EK-1(3))

If straightening of the frame is necessary, remove the end panel (fig. 7.2), cylinder, and tank, to prevent damage.

a. Disassembly.

(1) Lift the cylinder (20, fig. 7.8) from the lift channels (3).

(2) Lift the cylinder bearings (4) out of the lift channels (3).

(3) Unscrew the wingnuts (16) and remove the end panel (13).

(4) Remove the cotter pins (11) from the upper end of the lift rods (9 and 10) and remove the lift rods from the holes in the upper end of the lift channels (3).

(5) Withdraw the lift channels (3) from the tank (1).

(6) Remove the V-belt (6) from the drum drive pulley (5).

(7) Remove the machine screws (17) and the nuts (18) that attach the tank crossmembers (2) to the legs (26).

(8) Remove the machine screws (22) and the nuts (23) that attach the tank (1) top flanges to the legs (26).

(9) Lift the tank (1) from the frame (21).

(10) Straighten the frame (21).
Note. **If the legs have to be straightened, remove the leg cap to prevent damage. For example, remove the appropriate leg cap, by first removing the machine screw (24) and the nut (25); then remove the leg cap (14).**

b. Reassembly.

(1) Lower the tank (1) onto the frame (21).
Note. **If the leg cap has been removed, replace the appropriate leg cap. For example, replace the leg cap (14), and then replace the machine screw (24) and the nut (25).**

(2) Insert the machine screws (22) and the nuts (23) that attach the tank (1) top flanges to the legs (26).

(3) Insert the machine screws (17) and nuts (18) that attach the tank crossmembers (2) to the legs (26).

(4) Slip the V-belt (6) on the drum drive pulley (5).

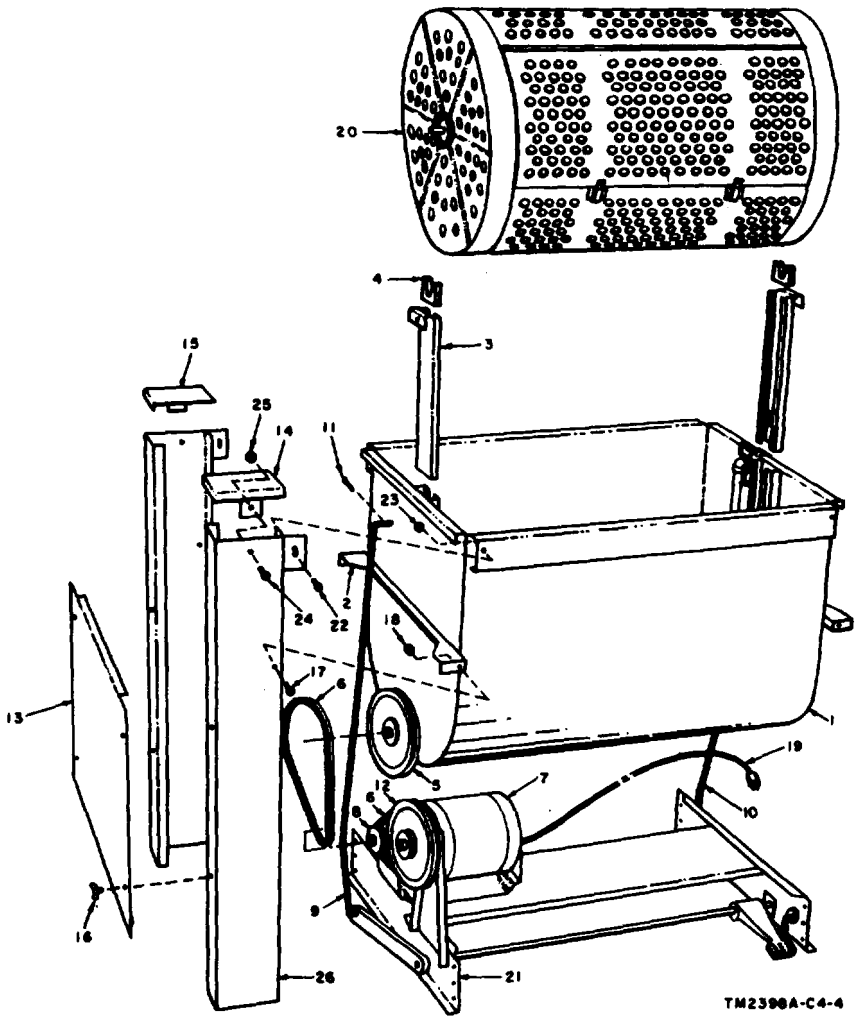

Figure 7.2. Print Washer, Photographic EK-1 (3), exploded view, less plumbing.

1 Tank
2 Tank crossmember
3 Lift channel (H1)
4 Cylinder bearing (rubber) (MP3)
5 Drum drive pulley (021)
6 V-belt (MP5)
7 Motor (B1)
8 Motor pulley (019)
9 Lift rod (left) (022)
10 Lift rod (right) (022)
11 Cotter pin
12 Transmission pulley (020)
13 End panel
14 Leg cap (09)
15 Leg cap (08)
16 Wingnut
17 Machine screw ($\frac{1}{4}$ inch dia.)
18 Nut
19 Power cord assembly (W1)
20 Cylinder
21 Frame
22 Machine screw
23 Nut
24 Machine screw
25 Nut
26 Leg

Figure 7.2.-Continued.

(5) Position the lift channels (3) in the tank (1).

(6) Insert the lift rods (9 and 10) into the holes in the upper end of the lift channels (3), and insert the cotter pins (11) into the holes in the upper end of the lift rods (9 and 10).

(7) Secure the end panel (13) with the wingnuts (16).

(8) Place the cylinder bearings (4) into the lift channels (3).

(9) Lower the cylinder (20) onto the lift channels (3).

Page 28 (page 11 of C 1). Add figure 7.2 after figure 7.1.

Page 29, paragraph 49. Heading. After heading, add: (PH- 240B, EK-1(1), and EK-1(2) Only).

Page 30, after paragraph 49, add:

49.1. Stuffing Box Repair (EK-1(3))

If water leaks through the stuffing seal fitting, the O-ring must be replaced.

a. Disassembly.

(1) Lift the cylinder (20, fig. 7.2) from the lift channels (3).

(2) Unscrew the wingnuts (16) that secure the end panel (13) to the frame (21).

(3) Remove the end panel (13) from the frame (21).

(4) Remove the V-belt (6) from the drive drum pulley (5). Do not remove the drive drum pulley (5) from the roller shaft (15, fig. 8.2).

(5) Loosen the setscrews (14) in both of the drive rollers (13).

(6) Withdraw the roller shaft (15) from the end of the tank (29) by pulling on the drive drum pulley (5, fig. 7.2).

The drive rollers (13, fig. 8.2) and the spacer tube (12) will fall off the roller shaft (15) and remain in the tank (29).

(7) Remove the old O-ring (11) from the inboard end of the stuffing seal fitting (10). It is not necessary to remove the tank (29).

b. Reassembly.

(1) Insert a new O-ring (11) into the stuffing seal fitting (10).

(2) Insert the roller shaft (15) through the stuffing seal fitting (10). Before the shaft is fully in place, slip the spacer tube (12) and the two drive rollers (13) over the roller shaft (15). The hub of the drive rollers face the drum drive pulley (5, fig. 7.2) end of the roller shaft (15, fig. 8.2). Finish inserting the roller shaft (15) until it seats in the shaft bearing (17).

(3) Relocate the drive rollers (13) on the roller shaft (15).
Note. **The drive roller and the spacer tube at the pulley end of the shaft determines the lateral freedom of the roller shaft. Maximum allowable lateral movement is 1A- inch. Minimum lateral movement is .- inch. The drive roller at the drain end of the tank is located so that the edge of the drive roller is approximately 2'2 inches from the end of the tank.**

(4) Tighten the setscrews (14) that secure the drive rollers (13) to the roller shaft (15).

(5) Slip the V-belt (6, fig. 7.2) over the drive drum pulley (5).

(6) Secure the end panel (13) to the frame (21) with the wingnuts (16).

(7) Lower the cylinder (20) onto the lift channels (3).

Page 31, paragraph 52. Make the following changes: Heading. After heading add: (PH-240-B, EK-1(1), and EK-1(2) Only).

After paragraph 52, add:

52.1. Roller Shaft Bearing Replacement (EK-1(3))

The roller shaft bearing is nylon and must be replaced if worn or cracked.

a. Disassembly.

(1) Disassemble the EK-1(3) by following the instructions contained in paragraph 49.1*a* (1) through (5).

(2) Partially withdraw the roller shaft ((15), fig. 8.2) from the tank (29).

(3) Remove the machine screw (16) and the nut (18) from the shaft bearing (17).

b. Reassembly.

(1) Secure the machine screw (16) and the nut (18) to the replacement shaft bearing (17).

(2) To complete the reassembly, follow the instructions contained in paragraph 49.1c (3) through (7).

Paragraph 53 (page 10 of C 1). Make the following changes:
Heading. Change the heading to: Water Hose Replacement (PH-240-B and EK-1 (2) Only).
After paragraph 53.1, add:

53.2. Water Hose Replacement (EK-1(3))
(fig. 8.2)

The water drain hose is secured by two hose clamps. One of the hose clamps secures the hose to the tank fitting and the other to the plumbing drain (not part of the washer).

a. Disassembly.

(1) Loosen the hose clamps (5).

(2) Remove the drain hose (6).

b. Reassembly.

(1) Replace the drain hose (6).

(2) Secure the hose clamps (5).

Paragraph 54 (page 12 of C 1). Heading. Change the heading to: Drain Valve Repair (PH-240-B and EK-1 (2) Only).

Page 33, paragraph 54 (page 12 of C 1). After paragraph 54.1, add:

54.2. Drain Valve Repair (EK-1(3))
(fig. 8.2)

If the drain valve is allowing water to leak out of the tank, the O-ring must be replaced.

a. Disassembly.

(1) Loosen the hose clamps (5).

(2) Remove the drain hose (6).

(3) Use a narrow-bladed knife (or similar tool) to extract the O-ring (4) from the tube in the bottom of the tank (29).

b. Reassembly.

(1) Install the new O-ring (4)

(2) Replace the drain hose (6).

(3) Tighten the hose clamps (5).

Figure 8.1 (page 13 of C 1). Add figure 8.2 after figure 8 and 8.1.

Page 33, paragraph 55 (page 15 of C 1). Heading. After heading, add: (PH-240-B, EK-1 (1), and EK-1(2) Only).

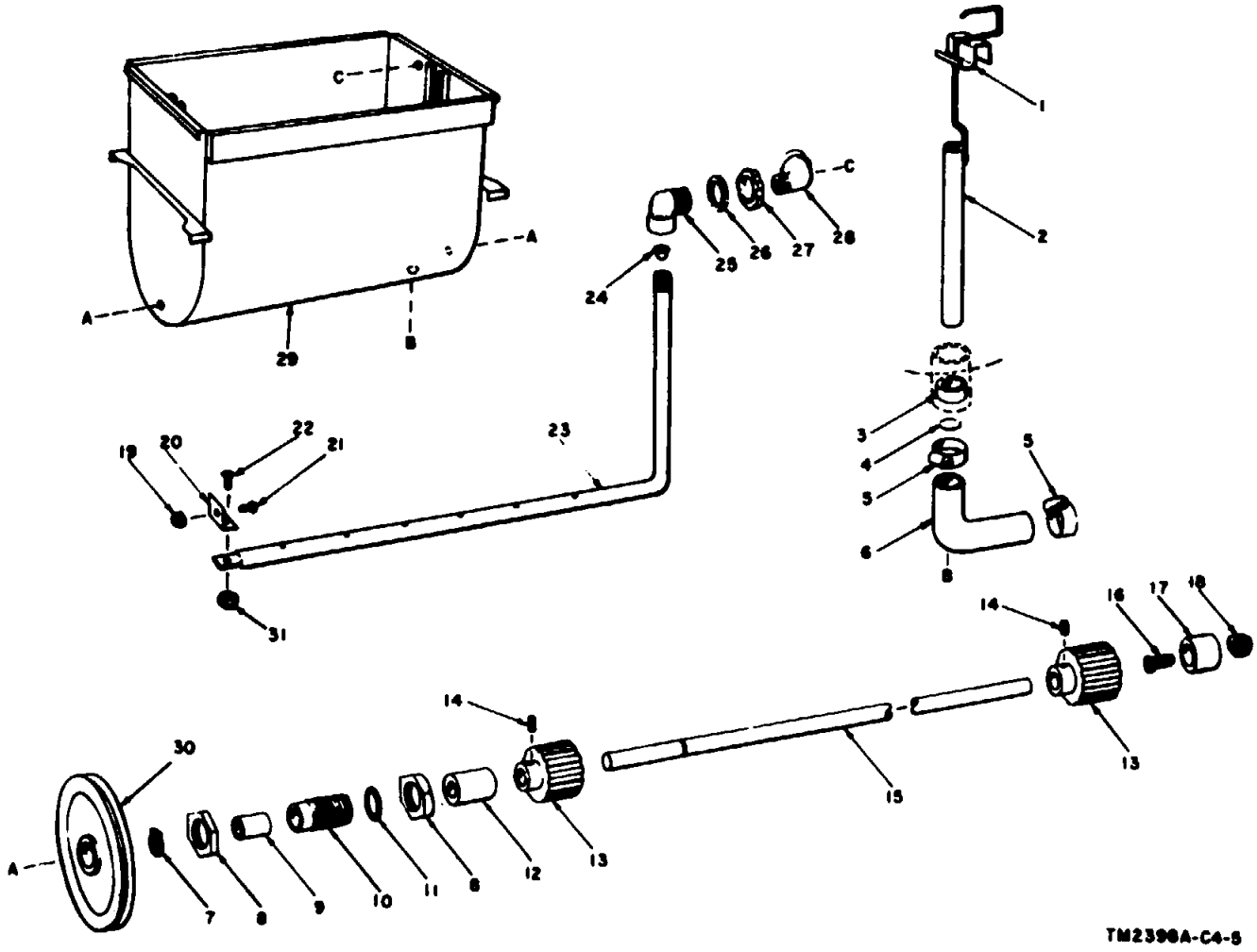

Figure 8.2. Print Washer, Photographic EK-1 (3), exploded view.

1 Valve guide bracket (MP1)
2 Valve overflow tube (H25)
3 Valve seat
4 O-ring (MP4)
5 Hose clamp (H19)
6 Drain hose (MP7)
7 Snap ring (MP8)
8 Nut (H2)
9 Bearing insert (MP9)
10 Stuffing seal fitting (A4)
11 O-ring (MP10)
12 Spacer tube (026)
13 Drive roller (024)
14 Setscrew
15 Roller shaft (028)
16 Machine screw
17 Shaft bearing (05)
18 Nut
19 Nut
20 Bracket
21 Machine screw
22 Machine screw
23 Inlet pipe (plastic) (018)
24 Aspirator fitting (MP2)
25 Elbow (plastic pipe) (MP11)
26 Gasket (MP13)
27 Nut (H3)
28 Street elbow (brass pipe)
29 Tank (inset)
30 Drum drive pulley (021)
31 Nut

Figure 8.2.--Continued.

Page 34, figure 9. After figure caption, add: (PH-240-B *and* EK-1 (2) *Only*).

Page 35, paragraph 55 (page 15.of C 1). After paragraph 55, add:

55.1. Inlet Pipe Repair (EK-1(3))

The inlet pipe is formed from one piece of plastic pipe and is held in place by a machine screw and a nut.

a. Disassembly.

(1) Lift the cylinder (20, fig. 7.2) from the lift channels (3).

(2) Remove the nut (27, fig. 8.2) from the elbow (25).

(3) Slide the gasket (26) off the elbow (25).

(4) Remove the screw (21) and the nut (19).

(6) Lift the inlet pipe (23) from the tank (29).

(6) Make minor repairs to the inlet pipe (23). If it is necessary to replace the inlet pipe, proceed as follows.

(7) Remove the screw (22), the nut (31) and the bracket (20) from the end of the inlet pipe.

(8) Remove the elbow (25) and the aspirator (24) from the inlet pipe (23).

b. Reassembly.

(1) Insert the aspirator (24) into the new inlet pipe (23).

(2) Secure the elbow (25) to the inlet pipe (23). Check to see that the airholes in the inlet pipe (23) close to the elbow (25) are open. (These are the air sources for the aspirator (24).)

(3) Secure the bracket (20) to the inlet pipe (23) with the screw (22) and the nut (31).

(4) Insert the inlet pipe (23) into the tank (29).

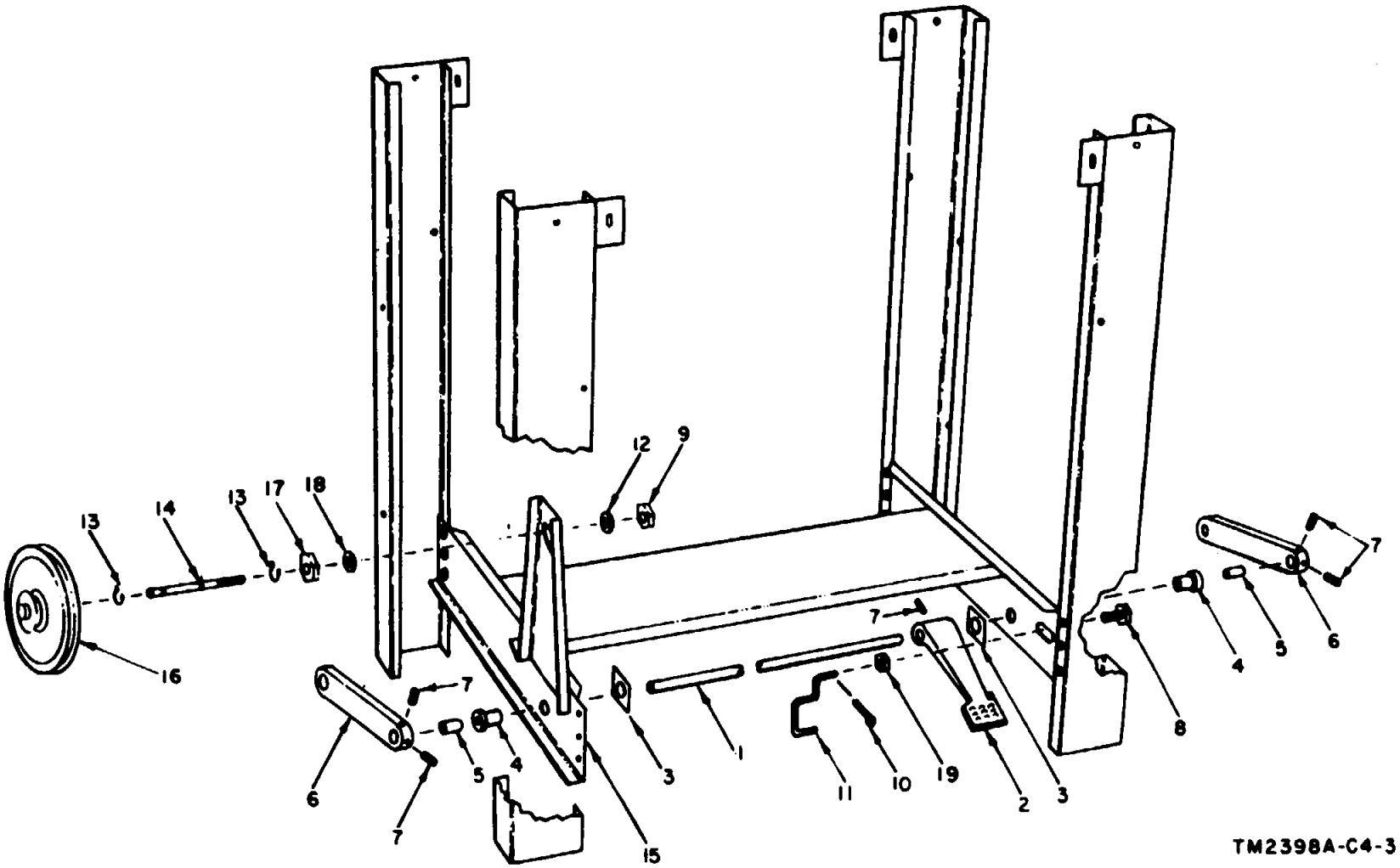

Figure 10.1. Printer Washer, Photographic EK-1 (3), exploded view of frame.

1 Shaft (027)
2 Pedal (016)
3 Retainer (011)
4 Bearing (MP14)
5 Spacer (H4)
6 Lift arm (014)
7 Set screw
8 Latch fitting (MP15)
9 Nut
10 Cotter pin
11 Latch arm (01)
12 Washer
13 Snap ring (H5)
14 Shaft (H82)
15 Frame
16 Transmission pulley
17 Nut
18 Washer
19 Nut

Figure 10.1.-Continued.

(5) Place the gasket (26) on the elbow (25).

(6) Secure the elbow (25) to the street elbow (28) with the nut (27).

(7) Lower the cylinder (20, fig. 7.2) onto the lift channels (3).

Paragraph 56. Make the following changes: Heading. After the heading, add: (PH-240-B, EK-1 (1), and EX-1 (2) Only). After paragraph 56, add:

56.1. Transmission Repair (EK-1(3))

The transmission consists of the pulleys and the mounting parts. Replace any parts which are damaged or worn.

a. Disassembly.

(1) Remove the end panel (13, fig. 7.2).

(2) Remove the V-belts (6).

(3) Remove the snap rings (13, fig. 10.1).

(4) Remove the transmission pulley (16) or (12, fig. 7.2).

(5) Remove the nut (9, fig. 10.1).

(6) Remove the washer (12).

(7) Remove the shaft (14).

(8) Remove the washer (18) and the nut (17) from the shaft (14).

b. Reassembly.

(1) Thread the nut (17) onto the shaft (14).

(2) Place the washer (18) on the shaft (14).

(3) Insert the shaft (14) through hole in lower portion of the left front leg of the frame (15).

(4) Place the washer (12) over the shaft (14).

(5) Secure the shaft (14) to the frame (15) with the nut (9). *Do not* tighten.

(6) Place the transmission pulley (16) or (12, fig. 7.2) on the shaft (14).

(7) Position the transmission pulley (16) on the shaft (14) with the snap rings (13). The snap rings fit into grooves on the shaft (14) on either side of the transmission pulley (16).

(8) Position the transmission pulley (16) in line with the motor pulley (8, fig. 7.2) by adjusting nuts (9 and 17, fig. 10.1).

(9) Slip the V-belts (6) on the pulleys (5, 8, and 12, fig. 7.2).

(10) Replace the end panel (13) and secure with the wingnuts (16).

Page 37. Add figure 10.1 after figure 10.

Paragraph 57*c*(2) note (page 15 of C 1). Delete the note and substitute:

Note. **The EK-1(1) and EK-1(3) are not furnished with motor covers.**

Page 38, paragraph 58*c*(5) note, (page 15 of C 1). Change "EK-1(1) is" to: The EK-1(1) and EK-1(3) are. Change (fig. 7.1) to: (fig. 7.1 and 10.1).

Page 42. Delete appendix I and substitute:

APPENDIX I

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Lubrication Orders, and Modification Work Orders.
TM 9-213	Painting Instructions for Field use.
TM 11-401	Elements of Signal Photography.
TM 38-750	The Army Equipment Record System and Procedures.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United State Army,
Chief of Staff.

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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AFIP (1)
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Army Pictorial Cen (2)
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Yuma Test Station (2)
USA Carib Sig Agey (1)
USA Sig Fld Maint Shops (3)
USA Corps (3)
JBUSMC (2)
USA Elct R&D Activity (13)
USA Strat Comm Comd (4)
USAINTC (5)
USA Crim Inves Lab (5)
USA Asia Minor Sig Agey (5)
USA Photo Agcy (5)
Units org under fol TOE:
(2 each UNOINDC)

11-7	11-567
11-16	11-587
11-57	11-92
11-96	11-597
11-96	19-600 AA-AE
11-97	30-15
11-117	30-19
11-155	30-25
11-157	30-500 AA-AE
11-500 AA-AE (4)	32-500

NG: State AG (3) Units same as Active Army except allowance is one copy to each unit

USAR: None.

For explanation of abbreviations used, see AR 320-60.

TECHNICAL MANUAL
WASHER PH-240-B AND
PHOTOGRAPHIC PRINT WASHER EK-1 (1)

TM 11-2398A
CHANGES NO. 1
DEPARTMENT OF THE ARMY

WASHINGTON 25, D. C., *8 September 1955*

TM 11-2398A, 16 April 1953, is changed as follows:
The title of the manual is changed to read:
WASHER PH-240-B **AND PHOTOGRAPHIC PRINT WASHER EK-1(1)**

CHAPTER 1
INTRODUCTION

***Note*. (Added) Photographic Print Washer EK-I(1), procured on Order No. AF 33 (600)-27682, is similar to Washer PH-240-B covered in the manual. All information in the manual covering the PH-240-B applies equally to the EK-I(1) except as otherwise specified in this change.**

Figures 1, 2, 3, and 7. So much of the captions of figures 1, 2, 3, and 7 as reads: "Washer PH-240-B" is changed read: **Washer PH-240-B only.**

2. Forms and Records
The following forms will be used for reporting unsatisfactory conditions of Army equipment.

3. General

a. Washer PH-240-B is designed to wash photographic prints for the purpose of removing the fixing solution. A constant flow of water aided by a rotating cylinder (figs. **1 and 1.1**) circulates the prints to provide constant agitation. The machine is equipped with manually regulated inlet and outlet valves to adjust the rate of water flow and displacement.

b. The overall dismensions of the unpacked washer are 23 by 36 by 35 inches. The overall dimensions of the washer **(PH-240-B only)** packed in a braced wooden box are 26 by 39½ by 37½ inches. **The overall dismensions of the EK-1(1) packed in a wire-bound box are 24¾ by 39 $\frac{3}{8}$ by 37 $\frac{3}{8}$ inches.** For oversea shipment the dimensions of the boxed washer are 27 by 40 by 38 inches.

4. Table of Components *(PH-240-B Only)*
(fig. 1)

Quantity	Component	Dimensions (in.)			
		Height	Width	Length	Weight (lb)
*	*	*	*	*	*

4.1. Table of Components (EK-1 (1))
(figs. 1.1 and 7.1)
(Added)

Quantity	Component	Dimensions (in.)			
		Height	Width	Length	Weight (lb)
1	Frame	35	36	23	39
1	Cylinder		18 dia	26	15
1	Tank	20	36	23	28
1	Motor	5	4 ½	6 ½	9 ½
1	Cylinder lift, which contains:				
1	foot pedal	1 ¼		9 ½	2
	1 pedal shaft		⅝ dia	31	3
	2 lift rods	1 ½	1 ¼	33	1 (ea)
	2 lift levers	1 ½	⅝	12	2 ¼ (ea)

Note. This list is for general information only. See appropriate supply publications pertaining to requisition of spare parts.

5. Component Parts of Washer PH-240-B and Photographic Print Washer EK-1(1)
Washer PH-240-B consists of the following major components: frame, cylinder (drum), tank, transmission, motor, and cylinder lift.

a. Washer Frame (figs. **1 and 1.1**). The frame, together with the four legs which are bolted to it, provides support for the motor, transmission, cylinder lift units, cylinder, and tank. **The EK-1(1) is furnished with an angle iron frame with the legs welded in place.**

b. Cylinder (figs. **1 and 1.1**). The cylinder is *** tank during operation. **The EK-1 (1) is equipped with wooden block bearings to support the stub shafts of the cylinder.**

c. Tank. The tank is *** the drain outlet. **On the EK-1 (1), the drain valve is located within the valve body (fig. 8.1) connecting the overflow and drain pipes.** The inlet pipe *** ease of maintenance.

* * * * * * *

e. Motor (figs. **1 and 1.1**). The motor is *"* for electrical connection.

f. Cylinder Lift (figs. **1 and 1.1**). The cylinder lift *** in the tank.

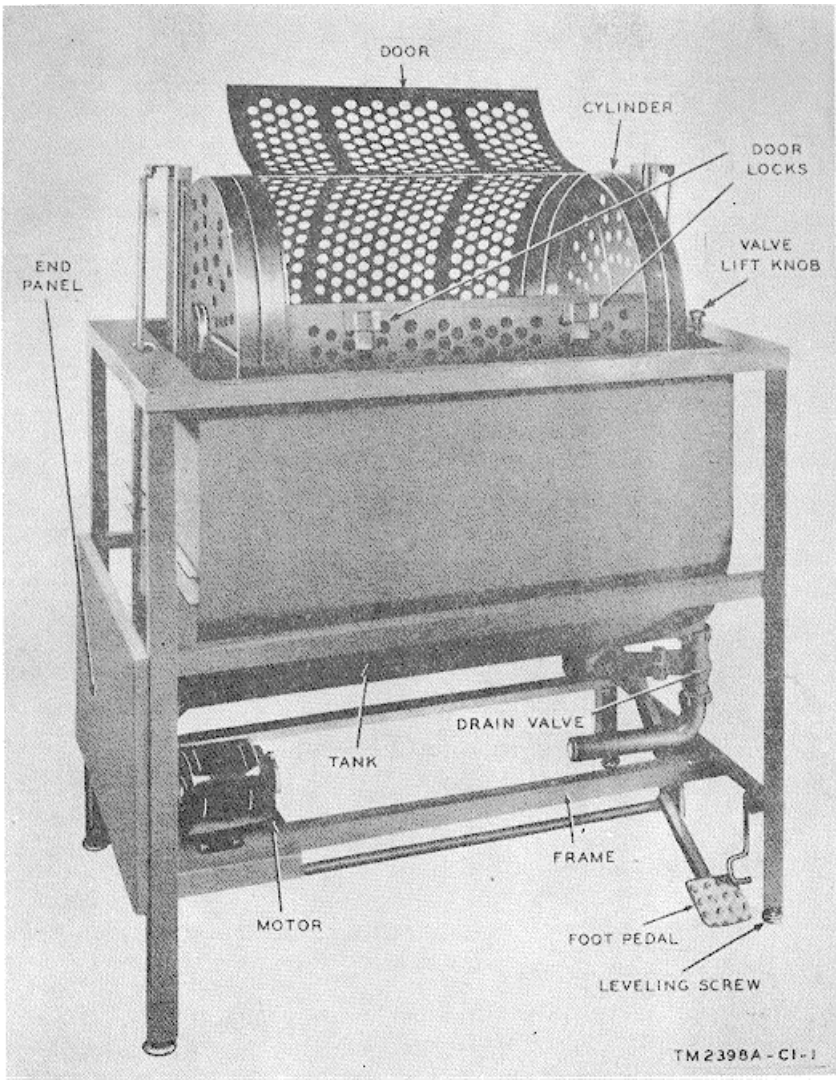

Figure 1.1. (Added) Photographic Print Washer EK-1(1), in position for receiving prints.

7. Packaging and Packing
(figs. 2 **and 2.1**)

a. Domestic Shipment **(PH-240-B Only).**

* * * * * * *

a.1. (Added) *Domestic Shipment (EK-I(I))* (fig. 2.1). The ES-1(1) as packed in a fiberboard carton with overall dimensions of approximately 24 by 37 by 37 inches. The fiberboard carton is wrapped with

a moisture-vaporproof liner and the entire package is inclosed in a wire-bound wooden box with overall dimensions of 24 ¾ by 39 ⅜ by 37 ⅜ inches. Detailed packaging instructions are as follows:

1) A frame made of ¾ by ¾-inch wooden strips is placed so that it will hold the drum down within the complete package, and also provide a bearing surface between the carton and the upper surface of the washer.

(2) The open-ended fiberboard carton is placed over the washer. The washer and carton then are turned over so that the washer rests upside down within the carton.

(3) A frame made of ⅜-inch boards is placed across the legs of the washer. The flaps of the box are folded in and sealed with gummed tape.

(4) The package is wrapped with a moisture-vaporproof liner. The edges of the paper are folded for complete inclosure and sealed with tape.

(5) The wire-bound box is placed over the package, and the box is turned over so that the washer is right side up. The top is fastened securely in place by twisting the binding wires.

b. Oversea Shipment (PH-240-B ONLY).

* * * * * * *

8. Uncrating, Unpacking, and Checking

a. Uncrating and Unpacking Oversea shipment **(PH-240-B Only).**

* * * * * * *

b. Uncrating and Unpacking Domestic Shipment **(PH-240_B Only).**

* * * * * * *

b.1. (Added) *Uncrating and Unpacking Domestic shipment* **(EK-1(1)).**

(1) Untwist the ends of the binding wires and lift the cover.

(2) Fold back the box cover and turn the box cover carefully so that the washer rests upside down. Lift the wire-bound box straight up and off the fiberboard carton.

(3) Cut open the flaps of the fiberboard carton and fold them back.

(4) Turn the carton over carefully so that the washer rests on its feet. Lift the carton straight up and off the washer.

* * * * * * *

d. Motor Installation. The motor is already mounted and adjusted for domestic shipment. For oversea shipment (PH-240-B only) the motor is wrapped in a moisture barrier and secured to the frame

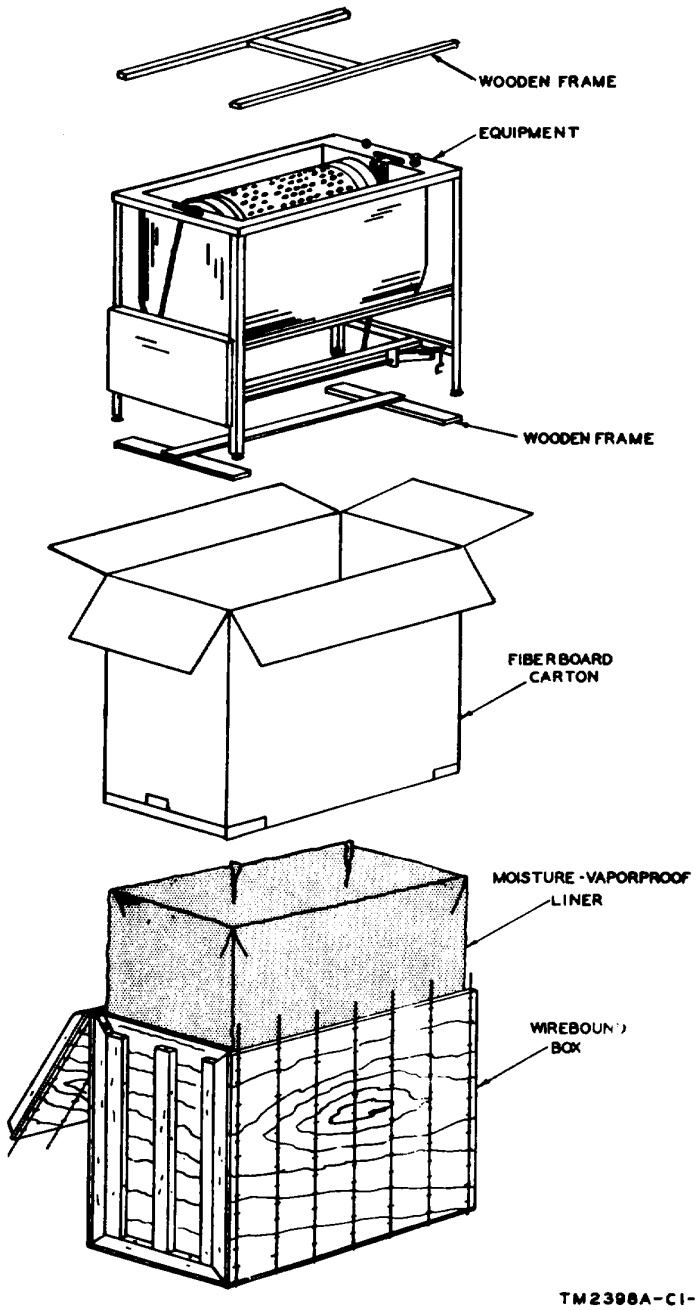

Figure 2.1. (Added) Photographic Print Washer EK-1(1) prepared for domestic shipment, packaging diagram.

with two hexagonal head bolts, internal tooth lockwashers and hexagonal nuts.

* * * * * * *

10. Location

The washer should ******* under the legs.

Note. **(Added) The EK-1(1) is equipped with leveling screws on all four legs.**
To level the EK-1(I), adjust each screw as required.

11. Plumbing Connections
(figs. **3 and 3.1)**

Make all plumbing connections in accordance with the plumbing diagram.

a. Remove the end panel from the right side of the washer by lifting it up and pulling it out.
Note. **(Added) The right side of the EK-1(1) is not equipped with an end panel.**

b. Connect the drain valve to a l14-inch drain pipe with the rubber hose and hose clamps provided.
Note. **(Added) The EK-1(1) is not supplied with hose or clamps. A piece of**

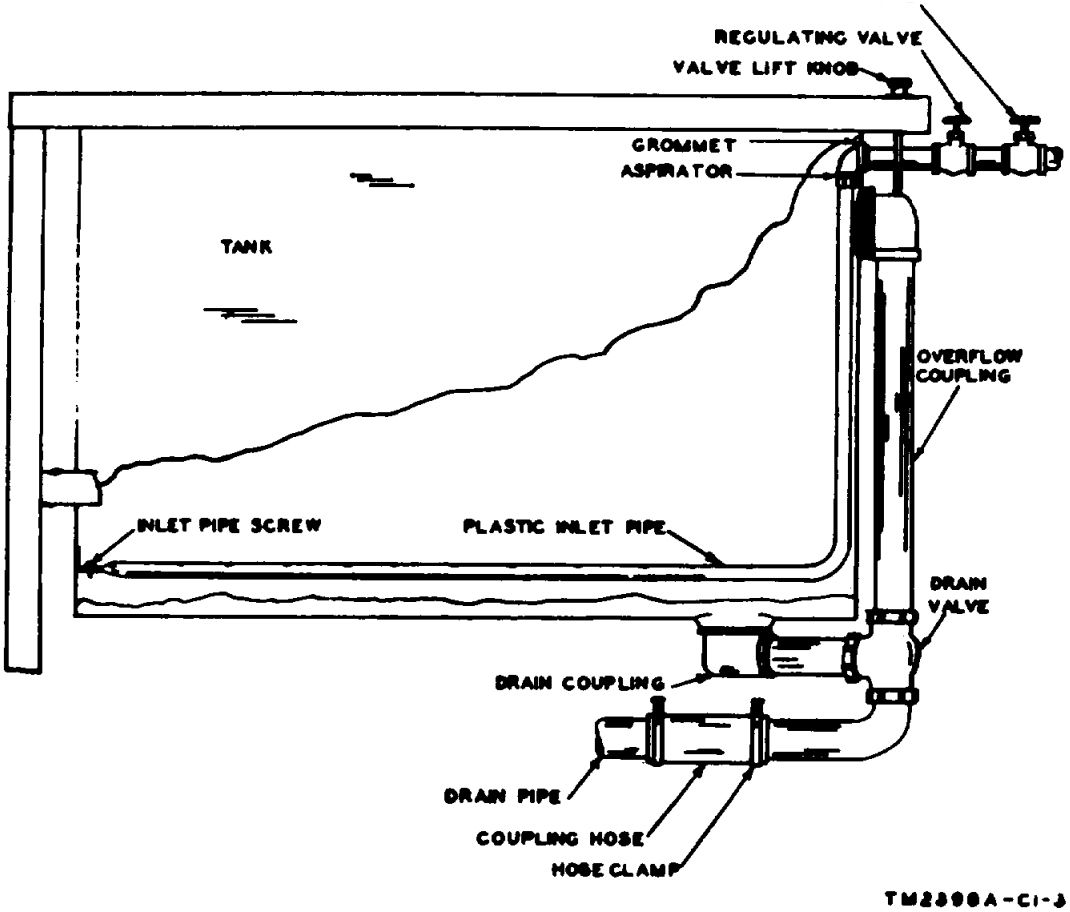

Figure 3.1. (Added) Photographic Print Washer EK-I(1), plumbing diagram.

rubber hose, 112 inches inside diameter, should be cut to sufficient length for this application.

* * * * * * *

15. Drain Valve (PH-240-B Only)

The drain valve *** damage the diaphragm.

15.1. Drain Valve (EK-1 (1))

(fig. 3.1)
(Added)

Photographic Print Washer EK-1(1) is equipped with a lift type valve controlled by a valve lift knob. The lift knob is located on the top right end of the washer and is connected by a brass rod and hook to a drain plug located in the drain valve (fig. 9.1). When the lift knob is raised, the drain plug is lifted by the brass rod and hook, and the valve opens. The knob is pressed down to close the valve.

17. Placing Washer in Operation

*** * * * * * ***

b. Close the drain valve (figs. 3 **and 3.1**).

c. Open the water shutoff valve (figs. 3 **and 3.1**) and allow the tank :o fill to overflow. Leave the valve from one-half to three-quarters open to maintain a continuous flow of fresh water.

d. Raise the cylinder by stepping on the foot pedal (figs. 1 **and 1.1**).
Engage the pedal lock to hold the foot pedal down.

*** * * * * * ***

20. Shutting Down Washer

* * * * * * *

b. Turn off the shutoff-value (figs. 3 and 3.1).

c. Open the drain valve (figs. 3 and 3.1) to drain the tank.

22. Equipment Performance Checklist

	Item No.	Item	Action or condition	Normal indication	Corrective measures
	*	*	*	*	* *
	4	Cylinder-----	Turns freely when raised.	Should *** place.	Check index pin. Check cylinder shafts and bearings.
	*	*	*	*	* *

34. Cleaning

Every 3 days ******* and foreign material. Then lower the cylinde, onto the bearings in the lift channels. Repeat the flushing.

37. Preventive Maintenance Checklist

Item No.	What to check	When to check	What to do
*	* *	* *	* * *
7	Drain valve	Monthly	Examine for leakage (para. 54 **and 54.1).**

41. Inspection

A thorough overall *** specific repair procedures.

* * * * * * *

b. Tank Interior. Lift the cylinder *" wear and breakage. Examine the rollers, roller shaft, roller spacer and bearings for wear and distortion. Examine the inlet *** wear or distortion.

c. Drain Valve, Hoses, and Clamps. Lift up and pull out the end panels free of the washer. The EK-1(1) is equipped with only on en(l panel, located at the left end of the washer. It is not necessary to remove this panel to examine the valve assembly. The drain valve must be disassembled for inspection (pars. 54 and 54.1). Examine the rubber *** clamps work properly.

* * * * * * *

43. Pulley Belt Adjustment

(fig. 4)

a. Motor Belt

* * * * * * *

(4) Secure tile motor cover to the frame with the motor cover screws.

***Note*. (Added) The EK-1(1) motor is not furnished with a cover.**

* * * * * * *

44. Pulley Belt Replacement

(fig. 4)

a. Motor Belt

* * * * * * *

(7) Secure the motor cover to the frame with tie motor cover screws.

***Note*. (Added) The EK-1(1) motor is not finished with a cover.**

* * * * * * *

45. Cylinder Repair

The cylinder is ******* foreign material (par. 59). If the cylinder needs replacement, simply lower the new cylinder into the tank so that the stub shafts rest in the bearings (5, fig. 7).

46. Cylinder Bearing and Lift Channel Replacement (PH-240-B Only)
(fig. 7)

The two cylinder ***°*** or damaged parts.

46.1. Cylinder Bearing and Lift Channel Replacement (EK-1(1) Only)
(fig. 7.1)
(Added)

The two wooden cylinder bearings ride in the lift channels. To disassemble, proceed as follows:

a. Slide the wooden bearing up and out of the lift channels.

b. Slide the lift channels out of the guide channels in the tank.

c. Replace worn or damaged parts.

d. Reassemble the bearings by reversing the procedure in a and b above.

47. Frame and Repair (PH-240-B Only)
(fig. 7)

*** * * * * * ***

47.1. Frame Repair (EK-1(1) Only)
(fig. 7.1)
(Added)

a. General. If straightening of the frame is necessary, remove the left end panel, cylinder, and tank to prevent damage during this operation. To remove these parts, follow the procedure outlined in *b*(1) through (8) below.

b. Disassembly.

(1) Lift the cylinder out of the tank.

(2) Lift the wooden cylinder bearings out of the lift channels:

(3) Lift off the left end panel.

(4) Remove the cotter pins from the upper end of the lift rods, and remove the lift rods from the lift channels.

(5) Raise the lift channels from the tank.

(6) Remove the drive belt from the drive pulley.

(7) Remove the valve assembly (par. 54.1).

(8) Lift the tank from the frame.

c. Reassembly.

(1) Lower the tank onto the frame.

(2) Replace the valve assembly (par. 54.1).

(3) Replace the drive belt.

(4) Slide the lift channels into their proper places.

(5) Replace the upper end of the lift rods in the hole in the upper end of the lift channel.

(6) Replace the cotter pins in the upper end of the lift rods.

(7) Replace the left end panel.

(8) Slide the wood cylinder bearings into the lift channels.

(9) Lower the cylinder into the tank.

48. Tank Repair

Do not remove ******* dismounting the tank.

Note. **(Added) The tank unit of the EK-I(I) lifts from the frame after the attached parts are removed (par. 47.1 and fig. 7.1).**

51. Roller Repair

(fig. 8)

a. Disassembly.

*** * * * * * ***

(3) Slide the roller shaft (22) from the left end of the tank and lift out the two rollers (20).

Note. **(Added) The EK-1(1) is furnished with rubber-covered roller made without hub ends. A setscrew for securing the roller is located in the body of each roller.**

*** * * * * * ***

53. Water Hose Replacement (PH-240-B Only)

(fig. 8)

The two water *** and hose clamps (2).

53.1. Water Hose Replacement (EK-1 (1) Only)

(figs. 3.1 and 8.1)

(Added)

The coupling hose is connected to the drain elbow and drain pipe with two hose clamps. To remove the coupling hose, proceed as follows:

a. Unscrew the thumbscrew on each clamp.

b. Slide the clamps off the hose, and pull off the hose.

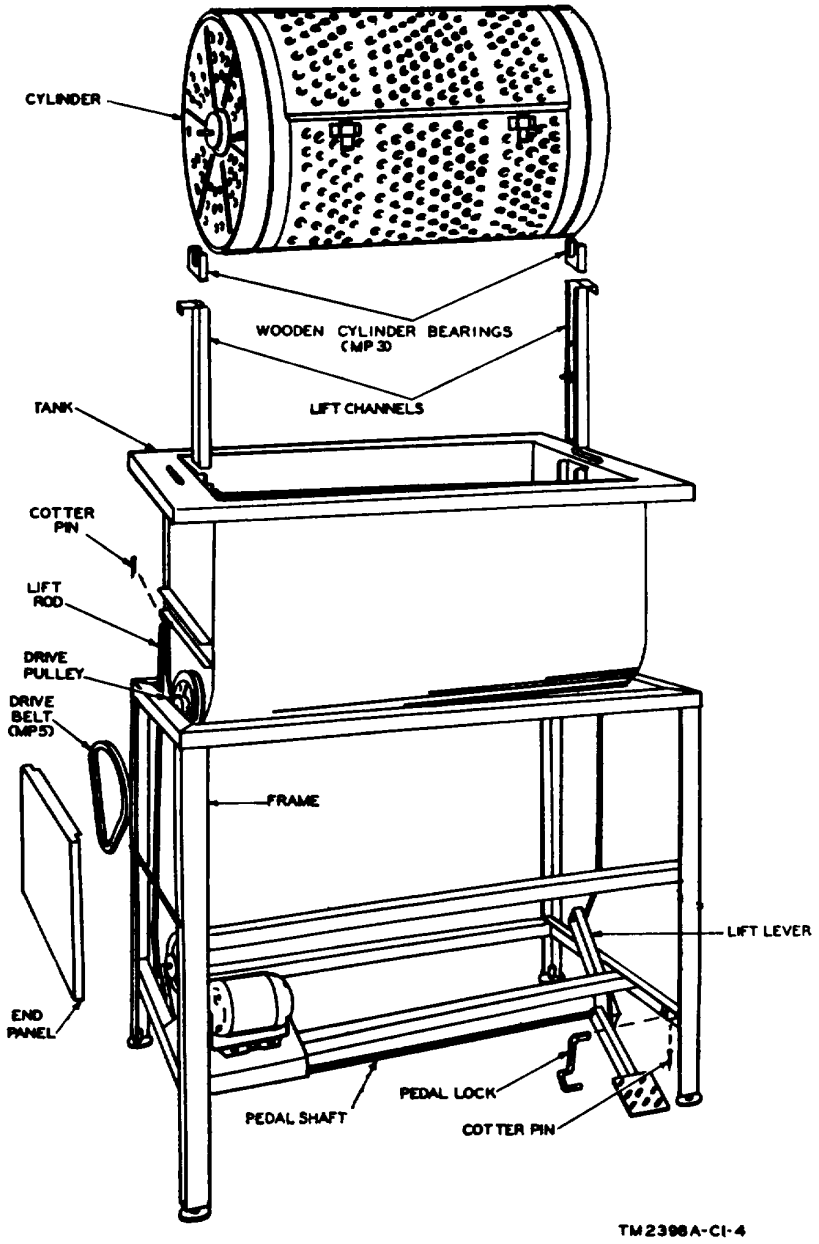

Figure 7.1. (Added) Exploded view, Photographic Print Washer EK-1(1), less plumbing.

c. Place the new hose over the drain elbow and drain the pipe ends in such a manner that the clamps will clamp properly.

d. Slide and secure the clamps in position by tightening the thumbscrew on each clamp.

54. Drain Valve Repair (PH-240-B Only)
(figs. 8 and 9)

*** * * * * * ***

54.1. Drain Valve Repair (EK-1(1) Only)
(figs. 8.1 and 9.1)
(Added)

a. General. If the water does not shut off properly, the drain valve may be out of alinement, or the valve seat or other parts of the assembly may be damaged. Replace the damaged or worn parts after disassembly.

b. Disassembly (fig. 8.1). To disassemble the drain valve, proceed as follows:

(1) Unscrew the valve, and then lift the knob from the lift rod.

(2) Unscrew the drain elbow slip nut, and remove the drain elbow and the elbow washer.

(3) Remove the two guard retaining screws and remove the two guards.

(4) Unscrew the two retaining flanges, remove their inner and outer washers, and remove the drain assemblies from the tank.

(5) Remove the respective slip nuts and lead washers, and slide the overflow coupling and the drain coupling from the valve body.

(6) Slide the lift rod from the overflow coupling, and remove the lift hook and drain plug.

c. Reassembly.

(1) Slide the respective slip nuts and lead washers onto the overflow coupling and the drain coupling.

(2) Connect the drain plug to the lift rod with the lift hook. The plug should hang freely on the hook.

(3) Locate the lift rod within the overflow coupling, and insert the overflow and drain couplings into the valve body. Hand-tighten the respective overflow and drain coupling slip nuts to a loose fit.

Figure 8. Tank unit showing valve assembly (PH-240B only), exploded view.

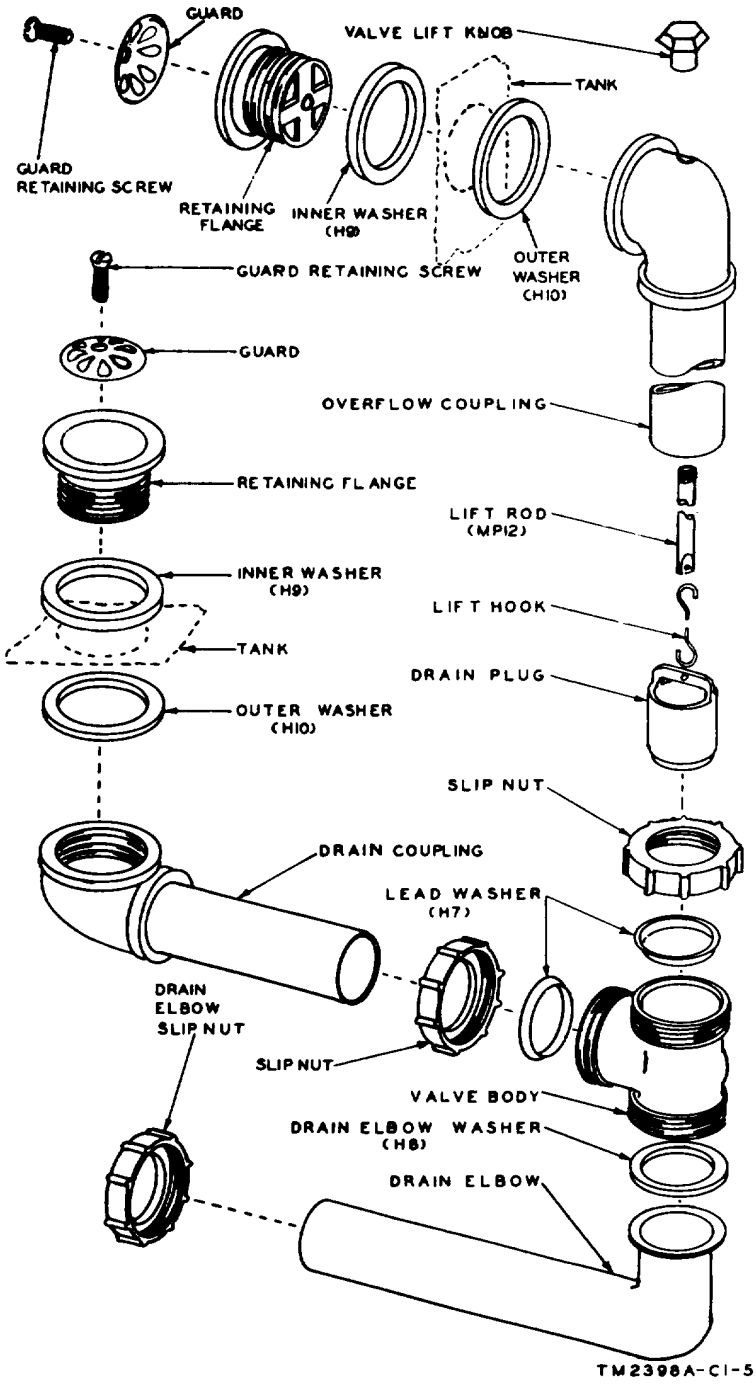

Figure 8.1. (Added) Valve assembly for the EK-1(1), exploded view.

Figure 9. Drain valve (PH-24-B only).

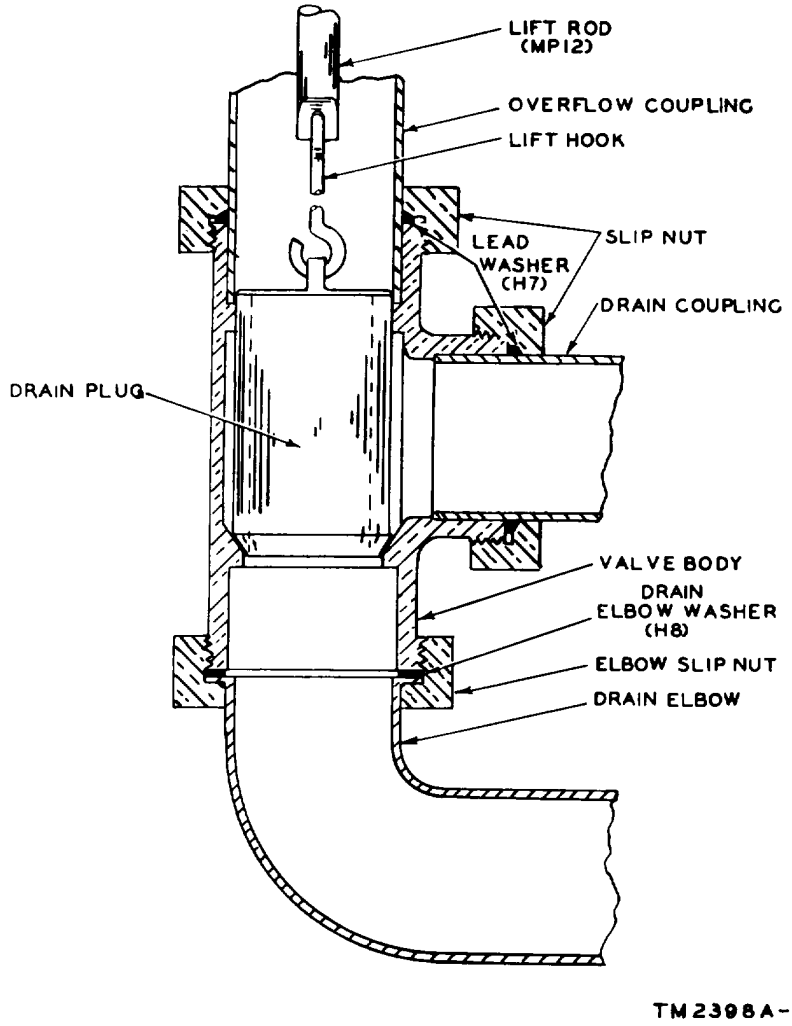

Figure 9.1. (Added) Cross-sectional view of drain valve assembly (EK-1(1)).

(4) Lift the assembly to its position on the tank (fig. 3.1). Attach the inner and outer washers in place, the thinner washers inside the tank, and secure the assembly in position with the respective retaining flanges.

(5) Straighten the overflow and drain couplings so that the lift rod works freely, and clamp the assembly in this position by tightening the respective slip nuts.

(6) Replace the guards, guard retaining screws, and screw on the valve lift knob.

55. Inlet Pipe Repair
(fig. 8)

* * * * * * *

c. Reassemble.

* * * * * * *

(4) Secure the inlet pipe (25) with the inlet pipe screw (24).
Note. **(Added) In the EK-1(1), the inlet pipe is formed from one piece of bent plastic tubing (fig. 3.1). If it in necessary to remove it from the tank, unscrew the inlet pipe screw on the left end and pull the other end from the plumbing at the top of the tank.**

57. Motor Replacement
(fig. 10)

* * * * * * *

c. Reinstallation.

* * * * * * *

(2) Do not fasten the motor cover until after adjustment of the motor pulley is made (par. 43).
Note. **(Added) The EK-1(1) is not furnished with a motor cover.**

58. Cylinder Lift Repair
(fig. 10)

* * * * * * *

c. Reassembly.

* * * * * * *

(5) Slide the foot square head setscrews (24).
Note. **(Added) The EK-1(1) is furnished with a pedal lock formed from a metal rod (fig. 7.1). This lock is retained in position by a cotter pin through a hole in the end of the rod. To remove the lock, withdraw the pin and slide the lock from position.**

60. Troubleshooting Chart

Trouble	Probable cause	Remedy
* * *	* *	*
Excessive water intake required for washing.	Leaking drain valve----------	Repair drain valve (pars. 54 and 54.1).
* * *	* *	*

67. Repacking Washer PH-240-B

a. Domestic Shipment.

* * * * * * *

(2) The original packing *** for the washer.
Note. **(Added) The EK-1(1) is repacked for domestic shipment or storage in accordance with instructions in paragraph 7a.**

[AG 41353 (30 Jun 55)]
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WASHINGTON 25, D. C., *16 April 1953*

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[AG 413.53 (5 Mar 53)]

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AGO 33868

CONTENTS

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual is published for the information and guidance of personnel to whom this equipment is issued. It contains information on the operation and the organizational and field maintenance of the equipment as well as a discussion of the theory of its operation. These instructions apply only to Washer PH-240-B.

b. Appendix I contains a list of current references including supply manuals, technical manuals, and other available publications applicable to the equipment. Appendix II contains an identification table of parts for Washer PH-240-B.

2. Forms and Records

The following forms will be used for reporting unsatisfactory conditions of Army equipment and in performing preventive maintenance:

a. DD Form 6, Report of Damaged or Improper Shipment, will be filled out and forwarded as prescribed in SR 7445-45.

b. DA Form 468, Unsatisfactory Equipment Report, will be filled out and forwarded to the Office of the Chief Signal Officer, as prescribed in SR 700-45-5.

c. AF Form 54, Unsatisfactory Report, will be filled out and forwarded to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio, as prescribed in SR 700-45-5.

d. Use other forms and records as authorized.

Section II. DESCRIPTION AND DATA

3. General

a. Washer PH-240-B is designed to wash photographic prints for the purpose of removing the fixing solution. A constant flow of water, aided by a rotating cylinder (fig. 1), circulates the prints

to provide constant agitation. The machine is equipped with manually regulated inlet and outlet valves to adjust the rate of water flow and displacement.

b. The overall dimensions of the unpacked washer are 23 by 36 by 35 inches. The overall dimensions of the washer packed in a braced wooden box are 26 by 39 ½, by 37 ½ inches. For oversea shipment the dimensions of the boxed washer are 27 by 40 by 38 inches.

4. Table of Components
(fig. 1)

Quantity	Component	Dimensions (in.)			Weight (lb)
		Height	Width	Length	
1	Frame ----------	35	23	36	31 ¾
1	Cylinder ----------	----------	8 dia	26	23
1	Tank ---------- ----------	20 depth	22	31	36
1	Transmission ---------	----------	8 dia	4 ½	3
1	Motor----------	5	4 ½	6 ½	9 ½
1	Cylinder lift, which consists of-				
	1 foot pedal	----------	----------	----------	----------
	1 pedal shaft	----------	----------	----------	----------
	2 lift rods	----------	----------	----------	----------
	2 lift levers	----------	----------	----------	----------

Note. **This list is for general information only. See appropriate publications pertaining to requisition of spare parts.**

5. Component Parts of Washer PH-240-B

Washer PH-240-B consists of the following major components: frame, cylinder (drum), tank, transmission, motor, and cylinder lift.

a. Washer Frame (fig. 1). The frame, together with the four legs which are bolted to it, provides support for the motor, transmission, cylinder lift units, cylinder, and tank.

b. Cylinder (fig. 1). The cylinder is a perforated stainless steel drum which holds the prints during washing. It has a hinged door with door locks for convenient loading and unloading. An index pin located on each lift channel holds the cylinder in position when it is raised and the door turned upward. Attached to each end of the cylinder is a stub shaft that rests in the rubber bearing of the lift channel to support the cylinder. These shafts, resting in the rubber bearings, permit cylinder rotation. Two rollers in

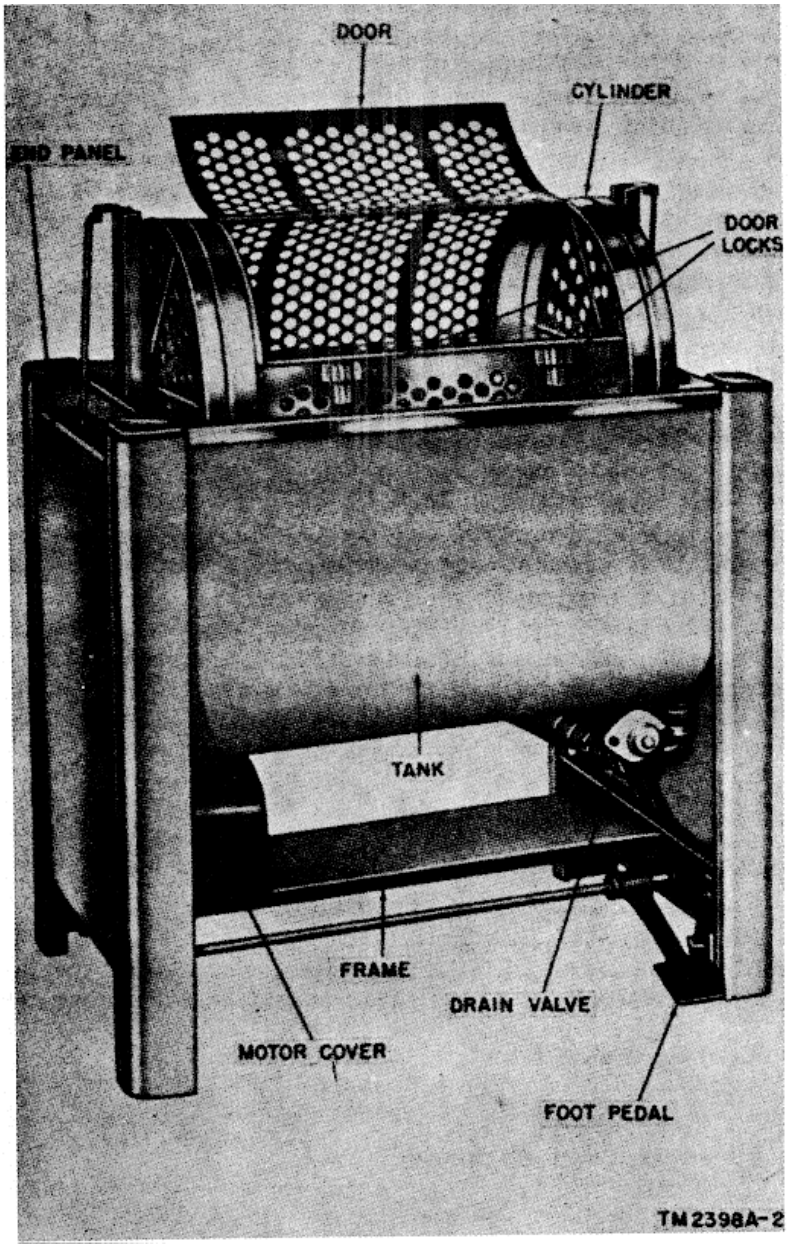

Figure 1. Washer PH-240-B, in position for receiving prints.

the bottom of the tank contact the cylinder surface to drive the cylinder in its lowered position. The cylinder may be raised from the tank during operation.

c. Tank. The tank is supported by the four legs to which the frame is bolted. It has a water inlet and overflow outlet on the right side. The drain valve is bolted to the bottom under the drain outlet. The inlet pipe assembly, cylinder rollers, and roller shaft are located on the inside of the tank. The outside surface is painted for ease of maintenance.

d. Transmission. The transmission consists of a simple reduction pulley system (figs. 4, 5, and 6). The motor pulley is fastened to the motor shaft. The reduction pulley revolves on a pulley stud which is mounted to the upright bracket on the frame. The driven pulley is attached to the left end of the roller shaft where it emerges from the tank. Two belts, the motor belt and the drive belt, transmit the power from the motor to the roller shaft.

e. Motor (fig. 1). The motor is a $\frac{1}{20}$-hp (horsepower) split phase type which operates on 116-volt, 60-cycle ac (alternating current). A 6-foot power cord with two-prong plug is provided for electrical connection.

f. Cylinder Lift (fig. 1). The cylinder lift consists of the foot pedal, pedal shaft, two lift rods, and two lift levers. The foot pedal and lift levers are fastened to the pedal shaft which rotates in the frame. The lift rods are fastened to the lift levers and the lift channels which ride in the guide channels in the tank.

6. Performance Characteristics

The table of installation and performance data follows:

Power requirements	15-v, 60-cyc ac, 125 w (min)
Inlet pipe size	$\frac{1}{2}$ in.
Drain pipe size	1 $\frac{1}{4}$ in.
Washing capacity	150 prints (8- x 10-in. double weight) in 60 min
Recommended water flow	4 to 6 gal per min
Tank capacity	36 gal

7. Packaging and Packing

(fig. 2)

a. Domestic Shipment.

(1) Washer PH-240B is packed in a braced wooden box with overall dimensions of 26 by 39 $\frac{1}{2}$ by 37 $\frac{1}{2}$ inches. The box consists of a base which supports the washer and a shell which completely incloses the washer.

(2) The base consists of 1-inch boards held together by a 1 x 6 cleat at the center and two 1 x 10 cleats located 11/: inches from either end. The cleats are nailed crosswise to the base boards.

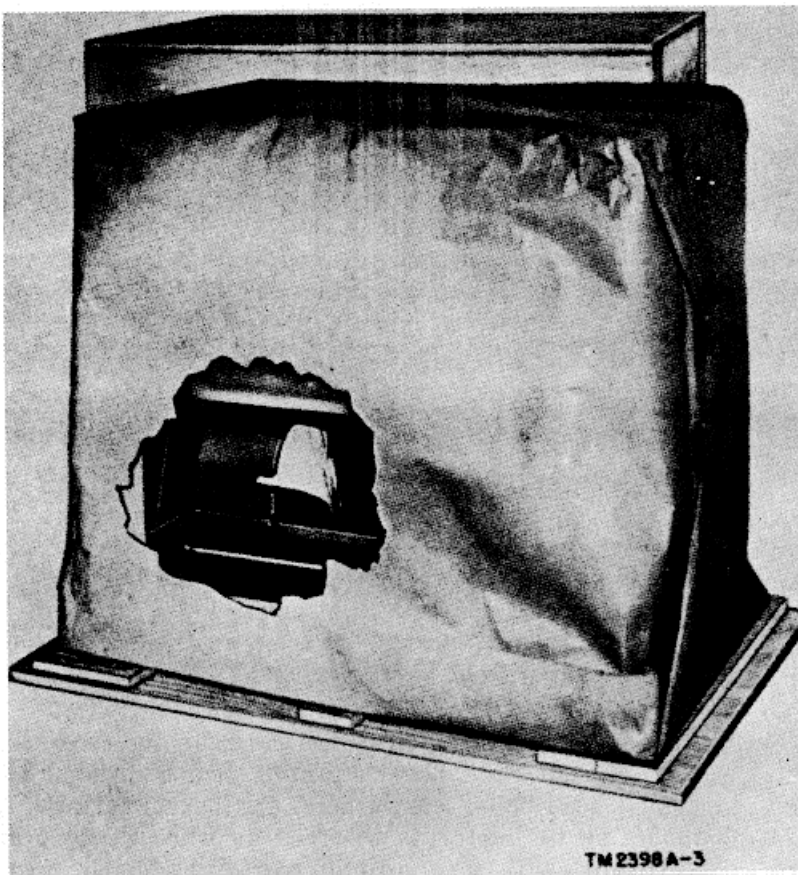

Figure 2. Washer PH-20-B, prepared for oversea shipment.

(3) A 2 x 2 block, 6 inches long, is nailed to the rear edge of each 1 x 10 cleat. The block must be flush with the end of the cleat. Two long 2 x 2 blocks then are nailed the length of the 1 x 10 cleats. These long blocks must be flush with the outer edge of each cleat.

(4) Nail the ends and back boards to the cleats and blocks of the base, and lift the washer onto the base. The motor end of the washer should be to the left, and the rear legs of the washer should butt against the 6-inch blocks at the rear of the base.

(5) Nail a 6-inch, 2 x 2 block to the front end of each 1 x 10 cleat, with the block bearing against the front legs of the washer.

(6) Nail the front boards to the cleats and blocks of the base.

(7) Install two end braces between the front and back boards of the box. The lower edge of each end brace must rest along the top edge of each of the washer end panels. Therefore, it will be necessary to notch each brace so that it will clear the top ends of the legs as well as the top of each lift channel. The right-hand end brace also must be notched out to accommodate the water inlet elbow. Nail a third brace board flat across top of the cylinder to hold it firmly in the lowered position.

(8) Nail the top boards securely to the front, back, and end boards. Then invert the crate carefully and drive nails through the base and into the front, back, and end boards.

b. Oversea Shipment.

(1) The washer is packed for oversea shipment in a braced wooden box with overall dimensions of 27 by 40 by 38 inches. Detailed packaging instructions are as follows: (2) The motor is mounted firmly to the frame with two hexagon head bolts, lockwashers, and hexagonal nuts. Use the two motor mounting holes at the pulley end of the motor and the two right-hand slotted holes in the mounting frame, thus leaving room for the desiccant bag and the vaporproof barrier material between the motor and the left-hand end panel.

(3) The motor, together with desiccant, an indicator card and a small cloth bag containing two additional hexagonal head bolts, lockwashers, and hexagonal nuts for mounting the motor, is wrapped in grade C paper and is covered with a vaporproof barrier material. Fasten the motor cover over the motor with two sheet metal screws.

(4) Prepare the base for shipping box as instructed in *a*(2) above and center a waterproof shroud, approximately 13 feet square, on the base. Center the washer on the shroud and base; remove the washer end panels.

(5) Cut out two 2 x 4's approximately 3 feet long and position them lengthwise on the base so they are straddled by the feet of the washer. In other words, the front edge of the front 2 x 4 must bear against the inside of the front legs, and the rear edge of the rear 2 x 4 must bear against the rear legs. Secure the washer to the base by inserting a

1/4-inch carriage bolt through holes in the brackets on the inside of each washer leg and through the 2 x 4 and base. Reinstall the end panels. Block in place by inserting blocking between the lift rods and tank ends. Secure blocking in place.

(6) The waterproof shroud then is wrapped over the washer and all edges are wrapped and folded for complete inclosure. The edges of the shroud are sealed with a suitable cement.

(7) Nail ends, back, and front of the box to the base. Brace the washer against the top edge with padded blocks. Nail a brace board flat across the top of the shroud in such a position as to hold the cylinder firmly in the lowered position. Nail top boards to the end, back, and front boards.

(8) Bind the box securely with metal strapping. Invert the box carefully and drive nails through the base and into the front, back, and end boards.

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

8. Uncrating, Unpacking, and Checking

a. Uncrating and Unpacking, Oversea Shipment.

(1) Turn the box upside down and remove the metal s
trapping. Remove the nails which fasten the box shell to the base. Use a hammer or bar for this purpose.

(2) Turn the box right side up and lift the box straight up and off the bottom base. This requires two men.
(3) Cut away the waterproof shroud.

(4) Remove the washer from the base by removing the washer end panels. Remove the nuts and bolts which fasten the washer to the base. Lift the washer straight up.

b. Uncrating and Unpacking, Domestic Shipment.

(1) Remove the box from the washer in the same manner as described in a above with the exception of the removal of the metal strapping and waterproof shroud which are not used for domestic shipment.

(2) The motor already is positioned properly when packed for domestic shipment. No belt adjustment is necessary.

c. Checking. When the washer has been unpacked, check the equipment as follows:

(1) See that the washer is complete by checking it against the packing slip.

(2) Carefully inspect all parts for any possible damage that may have occurred during shipment or because of rough handling.

d. Motor Installation. The motor is already mounted and adjusted for domestic shipment. For oversea shipment the motor is wrapped in a moisture proof barrier

(1) Remove the motor cover by unscrewing two motor cover screws from the frame.

(2) Unscrew the two hexagonal nuts under the center panel on the frame.

(3) Lift off the motor and unwrap the moisture proof barrier. Be sure the motor is clean.

(4) Place the motor on the frame so the motor pulley engages the motor belt. Secure the motor with the two hexagonal head bolts, lockwashers and hexagonal nuts used for packing. Two other hexagonal head bolts, lockwashers and hexagonal nuts are provided in a cloth bag packed with the motor.

(5) Adjust the position of the motor for proper belt tension by sliding it along the slots in the frame. Then tighten the hexagonal head bolts and hexagonal nuts.

(6) Fasten the motor cover to the frame with two motor cover screws.

9. Used or Reconditioned Equipment

Follow the instructions given in paragraph 8. Check the used or reconditioned washer to see that it is in the same operating condition as new equipment.

Note. **Instructions and precautions for the operation and maintenance of the used and/or reconditioned washer are the same as those for new equipment.**

10. Location

The washer should be located in the laboratory near fresh water connections. Allow enough space between it and other equipment or walls. The minimum space required is 37 by 24 inches, but allowance must be made for plumbing and electrical connections and for maintenance work. Level the washer, if necessary, by placing wooden or metal shims under the legs.

11. Plumbing Connections
(fig. 3)

Make all plumbing connections in accordance with the plumbing diagram.

a. Remove the end panel from the right side of the washer by lifting it up and pulling it out.

b. Connect the drain valve to a $1\frac{1}{4}$-inch drain pipe with the rubber hose and hose clamps provided.

c. Connect the water inlet fittings to a $\frac{1}{2}$-inch water line with any necessary pipe fittings. Install two $\frac{1}{2}$-inch valves in tandem in the water supply line, one for shut-off and the other for regulating.

Note. The two valves and all pipe fittings installed must be brass or stainless steel to prevent rust and dirt from being carried into the print washer.

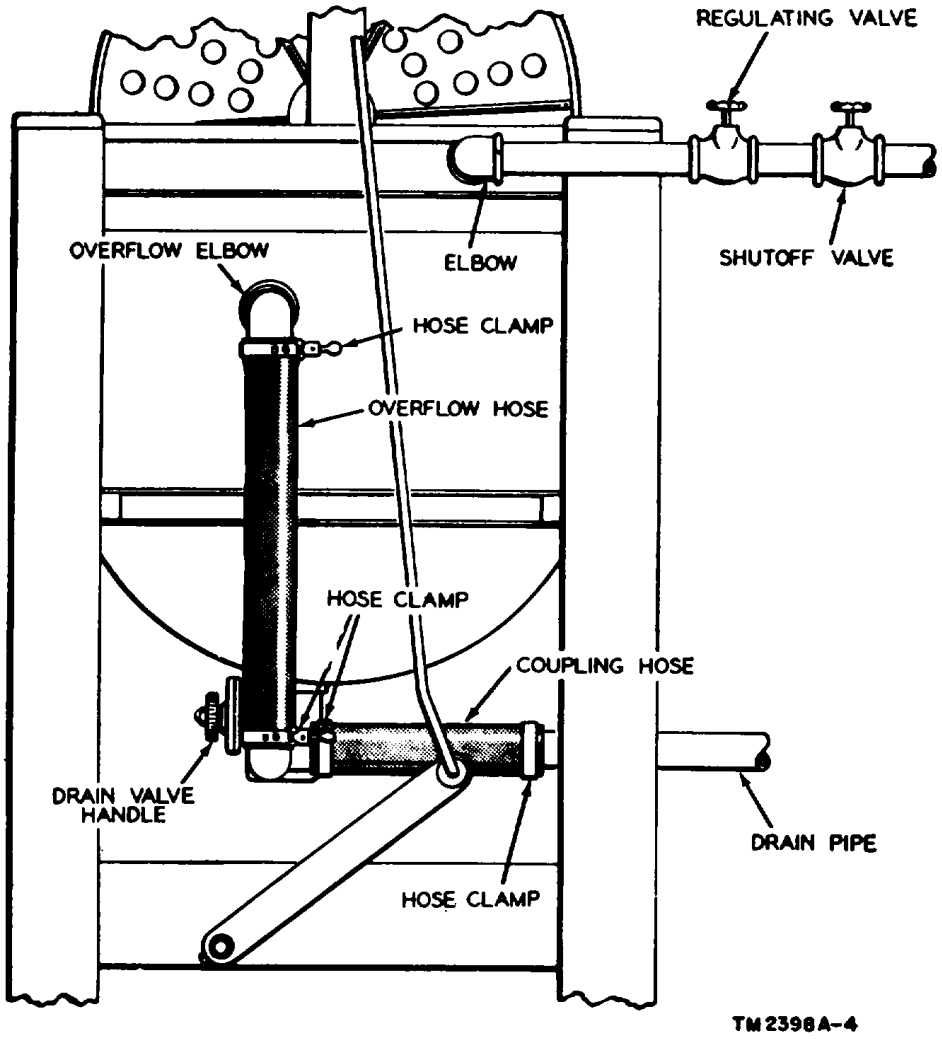

Figure 3. Plumbing diagram, for Washer PH-240-B.

d. Make sure all hose clamps are tightened securely.

e. Hang the end panel in place on the right side of the washer.

12. Electrical Connections

a. This washer is equipped with a power cord which must be plugged into a 115-volt, 60-cycle power outlet and will carry a total of 125 watts. Install a disconnect (power ON-OFF) switch of proper size and electrical rating in the power line at a point where it will be convenient for the operator.

b. The cylinder must revolve toward the operator as he faces the machine (par. 22, item 2).

13. Preliminary Lubrication

Lubricate the print washer as described in paragraph 27. The stuffing box is lubricated with graphite and should not require further lubrication even though the washer has been in storage for some time.

Note. The services prescribed for the installation of used and/or reconditioned equipment are the same as those described in paragraphs 10 through 13.

Section II. CONTROLS

14. Foot Pedal

The foot pedal (fig. 1) is used to raise and lower the cylinder in the tank. To raise the cylinder, push down on the foot pedal far enough to allow the pedal lock to hold the pedal down. To lower the cylinder, push down on the foot pedal to release the pedal lock and allow the pedal to rise slowly.

15. Drain Valve

The drain valve (fig. 3) is used to empty the tank after operation. Turn the valve handle counterclockwise to open the valve and clockwise to close the valve.

Note. **The valve is designed so that only slight pressure on the diaphragm, inside the valve, is necessary to shut off the flow of water. Excessive tightening will damage the diaphragm.**

16. Door Locks

The two door locks (fig. 1) on the cylinder slide over the end of the hinged door. Simply push the door locks up or down to lock or unlock the door.

Section III. OPERATION UNDER USUAL CONDITIONS

17. Placing Washer in Operation

a. Drain hypo from prints before washing them to decrease washing time.

b. Close the drain valve (fig. 3).

c. Open the water shut-off valve (fig. 3) and allow the tank to fill to overflow. Leave the valve from one-half to three-quarters open to maintain a continuous flow of fresh water.

d. Raise the cylinder by stepping on the foot pedal (fig. 1). Engage the pedal lock to hold the foot pedal down.

e. Rotate the cylinder by hand until the door is on top and the index pin on each lift channel engages the cylinder to hold it in place.

f. Release the door locks and open the door.

g. Place the prints in the cylinder, one by one, so that they do not stick together.

h. Close and lock the door.

i. To lower the cylinder in the tank, step on the foot pedal to release the pedal lock, and allow the pedal to rise slowly.

j. Turn on the power switch to start the motor.

Note. No other equipment is used with the washer as part of the washing operation.

18. Washing Time

Variations in chemical characteristics, temperature and rate of flow of wash water, as well as variation in the size and weight of prints, make it impractical to give firm rules for the washing time required. Length of washing time should be determined when the equipment is first placed in operation under a given set of conditions; use the potassium permanganate test for the elimination of hypo. Recheck whenever the washer is used under different conditions. Repeated checking of performance in this manner will allow the operator to determine the time required for complete washing of various quantities, sizes, and weights of prints at a given water temperature and rate of water flow. Refer to paragraph 6.

19. Removing Prints

a. Turn off the power switch to the motor.

b. Raise the cylinder by pressing down on the foot pedal until it is held by the pedal lock.

c. Rotate the cylinder by hand until the index pin locks the cylinder in position.

d. Release the door locks and open the door. Remove the prints and place them on the door to drain.

20. Shutting Down Washer

a. Remove all prints from the washer (par. 19).

b. Turn off the shut-off valve (fig. 3).

c. Open the drain valve (fig. 3) to drain the tank.

d. Wipe the tank and cylinder with a clean dry cloth.

21. Purpose and Use of Equipment Performance Checklist

The equipment performance checklist (par. 22) is used to determine whether Washer PH-240-B is functioning properly. The checklist gives the item to be checked, the action or condition under which the item is to be checked, the normal indication of correct operation, and the corrective measures that the operator can take. Check items 1 through 6 before starting, items 7 and 8 when starting, and items 9, 10, and 11 when stopping.

a. Action or Condition. The information given under the *Action or condition* column represents, in the case of some items, the control settings at which the item is to be checked. In other items the information represents the action that must be taken to check the normal indication given in the column bearing the title *Normal indication*.

b. Normal Indication. The normal indications listed include the visible and audible signs that the operator will perceive when he checks the items. If the indications in the equipment operation are not normal, the operator should apply the recommended corrective measures.

c. Corrective Measures. The corrective measures listed are those that the operator can make without turning the equipment in for repairs. If the equipment will not operate or if the recommended corrective measures do not yield the desired results, turn the equipment in for repair by technical service personnel.

22. Equipment Performance Checklist

Item	No	Item	Action or condition	Normal Indication	Corrective measures
P	1	Power cord ----	Connects washer to an external power source.	Power cord fits securely in source receptacle.	Check power source, power cord, and repair or replace.
R					
E	2	ON-OFF switch	Power is on when switch is on.	Motor should start. Cylinder should revolve toward the operator.	Check wiring and motor. If cylinder revolves backward, reverse its direction by interchanging the leads to the starting winding of the motor.
P					
A	3	Foot pedal -----	Raises and lowers cylinder into the tank.	Cylinder should rise or descend without friction. Pedal lock should hold cylinder in place when raised.	Check foot pedal mechanism. Replace damaged or worn parts.
R					
A	4	Cylinder---------	Turns freely when raised.	Should be turned by hand until doors are on top and the index pin on the cylinder holds the cylinder in place.	Check index pin. Check cylinder shafts and rubber bearings.
T					
O	5	Door locks -----	Releases easily ----------	Should work smoothly so door can be opened or closed.	Check door locks for damage or broken parts.
R	6	Shut-off valve -	Works easily ----------	Should open to permit intake of water. Should close to shut off water supply.	Check valve for damage or broken parts.
Y					

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S T A R T	7	ON-OFF switch	Starts and stops motor when turned ON or OFF.	Motor starts and cylinder turns when switch is turned to ON.	Check wiring and motor.
	8	Cylinder---------	Raises or descends easily when foot pedal is pushed down or released.	Cylinder is lowered into tank when foot pedal is released.	Check foot pedal mechanism for possible damage.
	9	ON-OFF switch	Starts and stops motor when turned ON or OFF.	Motor stops and cylinder stops turning when switch is turned to OFF.	Check wiring or motor. Remove power cord from receptacle.
S T O P	10	Cylinder---------	Rises or descends easily when foot pedal is pushed down or released.	Push down on foot pedal until it locks; cylinder rises. Door is on top. Door unlocks so that prints can be removed.	Check foot pedal mechanism for damage.
	11	Drain valve-----	Opens and closes easily.	Tank empties when valve is open.	Check drain valve for damage. Re place parts.

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Section IV. OPERATION UNDER UNUSUAL

CONDITIONS

23. General

Washer PH-240-B normally is used in a photographic laboratory where extreme cold and heat and other variable conditions do not present problems. In any event, the washer must be housed and protected from adverse weather and climatic conditions.

24. Salt Water Areas

Atmospheric conditions in salt water areas are conducive to corrosion of metals. If the washer is used in such areas, preventive maintenance services and lubrication should be increased in frequency to protect the equipment.

25. Hot Water

Conditions If the source of wash water is such that the wash water temperature is too high, provision must be made to cool the water. Hot water will injure the emulsion on the paper. The wash water temperature should be kept below 750 F.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. ORGANIZATIONAL TOOLS, EQUIPMENT, AND LUBRICANTS

26. Tools and Equipment

No tools or equipment are issued for use with Washer PH-240B; however, the common tools, such as screw drivers and wrenches, which are required for maintenance services are provided in Tool Equipment TK-24/GF. This tool kit contains general tools for repair of photographic equipment.

27. General Lubrication
(fig. 4)

Apply two or three drops of oil, engine (OE 30) to the motor, pulley stud, and lift lever once every month. Apply oil (OE 30) to the bearing surfaces of the pulley stud and lift lever. The motor has two oil cups for application; the pulley stud has a single oil fitting.

28. Stuffing Box Lubrication
(fig. 5)

Every 3 months, lubricate the stuffing box as follows:

a. Lift up and pull out the end panel on the left side of the washer.

b. Remove the drive pulley by unscrewing one squarehead setscrew in the pulley.

c. Unscrew the stuffing box cap clockwise; the cap has left-hand threads.

d. Pull off the stuffing box gland.

e. Apply several drops of oil (OE 30) to the packing.

Note. **Do not over lubricate. Wipe off all excess oil. Never pack the stuffing box with grease.**

f. Place the stuffing box gland on the roller shaft and screw the stuffing box cap into place (left-hand threads). Tighten the cap and then back it off one-half turn on adjustment.

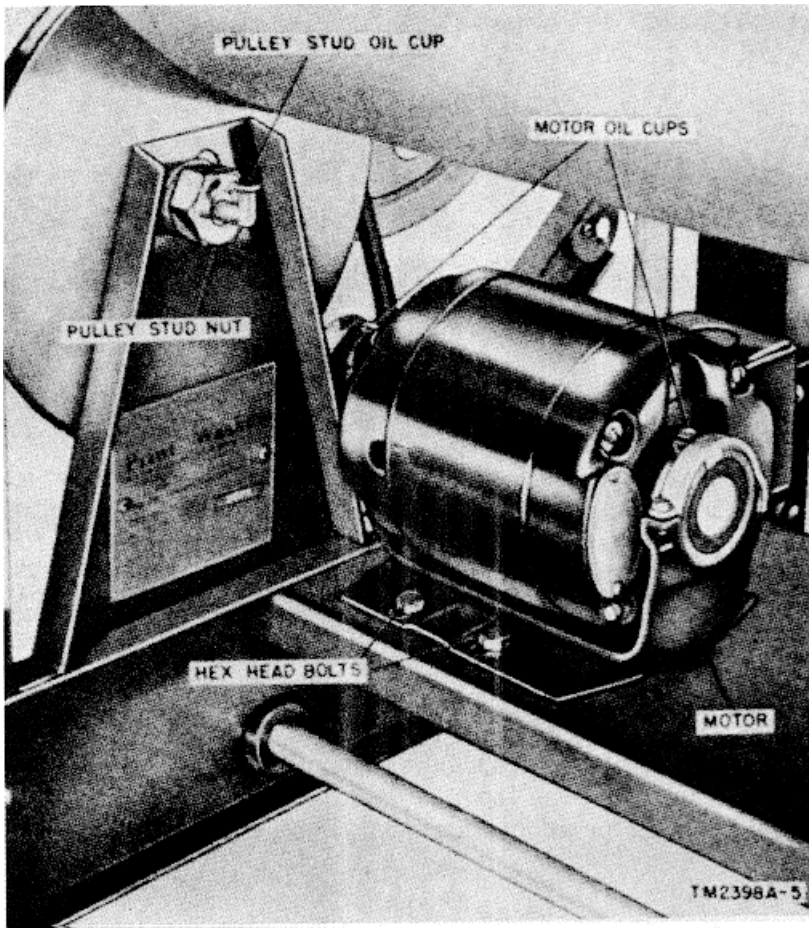

Figure 4. Motor and pulleys (motor cover removed).

g. Fasten the drive pulley to the roller shaft with the squarehead setscrew.

h. Hang the end panel between the legs on the left sidle of the washer.

29. Lubrication Under Unusual Conditions

a. When the equipment is subjected to extremes of heat, cold, dust, storm, and other unfavorable condition., the lubrication intervals must be reduced to the extent necessary to provide adequate lubrication under such conditions. The change in intervals to meet these abnormal conditions is usually one-third to one-half. Experience in the field under unfavorable conditions will give a more accurate check on the change of interval.

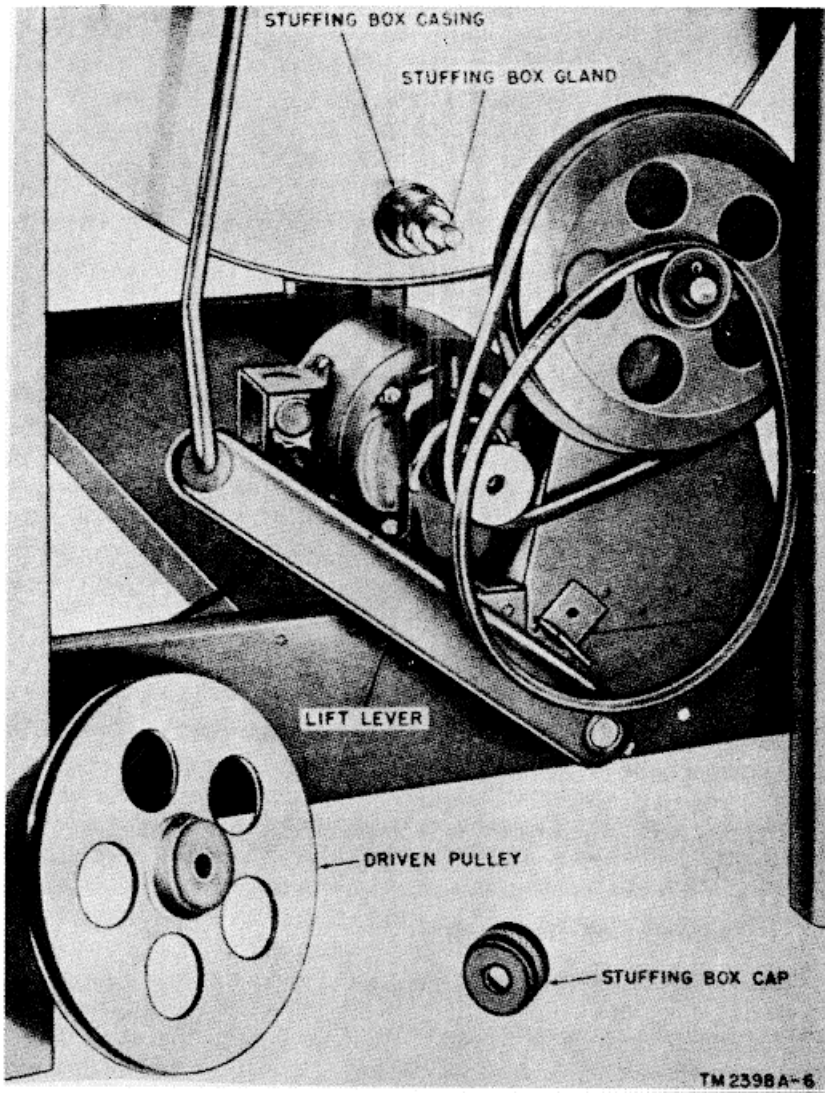

Figure 5. Stuffing box (end panel removed).

b. The effects of extreme cold and heat on materials and lubricants are explained in TB SIG 69. Observe all precautions outlined in TB SIG 69.

Section II. PREVENTIVE MAINTENANCE SERVICES

30. Meaning and Importance

Preventive maintenance means making systematic checks and adjustments at regular intervals to keep equipment operating at

top efficiency. It is not the same as trouble shooting and repair. The purpose of preventive maintenance is to prevent breakdowns and, therefore, the need for repair. The purpose of trouble shooting and repair is to locate and correct existing defects. The importance of preventive maintenance cannot be overemphasized. Failure or inefficient operation of one piece of the equipment may cause the failure of the entire washer operation. It is vitally important, therefore, that operators and repairmen properly maintain their equipment.

Note. **The operations given in this section of the manual are to be performed by organizational personnel.**

31. Preventive Maintenance

Procedures Most of the parts of Washer PH-240-B require routine preventive maintenance. Because maintenance technique cannot be applied indiscriminately, definite and specific instructions are needed. Paragraphs 32 through 38 contain specific instructions for the general maintenance of the equipment and serve as a guide for organizational maintenance personnel. Chapter IV deals with the individual parts requiring maintenance.

32. General Inspection

To insure efficient and trouble-free performance of all operating parts, inspect, lubricate, and check Washer PH-240-B for cleanliness at regular intervals. Avoid the use of unauthorized cleaning substitutes and of improvised implements of inspection and correction.

33. Frequency of Inspection

The preventive maintenance checklist (par. 37) is a summary of the basic maintenance operations that are necessary and the intervals at which they should occur. Routine before-operational and after-operational inspection of Washer PH-240-B should become habitual with the operator. A check of the motor and the cylinder driving mechanism should be made while the washer is in motion. Cleanliness of the washer is essential. Clean the different parts of the washer after it has been unpacked and before it is put in operation.

34. Cleaning

Every 8 days, the cylinder must be lifted from the tank for thorough cleaning. Simply lift the cylinder straight up and out of the tank. Flush out the tank to remove iron scale and slivers. See that the supply line is free of scale and foreign material. Then

lower the cylinder onto the wooden bearings in the lift channels. Repeat the flushing.

35. Chemical Deposits, General

Once a week, wash the cylinder and the inside of the tank with a clean cloth, saturated with soap solution. Swab off any chemical deposits; rub vigorously if necessary. Then flush out the tank and cylinder.

36. Heavy Chemical Deposits

Where deposits of iron, rust, and other impurities have become heavy, special solutions must be used for removal. A 10-percent solution of sodium nitrate sprinkled with whiting compound may be used as a cleaner. On unpainted stainless steel surfaces a 2 to 5-percent solution of oxalic acid should be used. Moisten a clean cloth with solution and rub vigorously over contaminated areas. If necessary, use a fiber brush to scrub the surface. *Never use a wire brush or steel wool to clean the cylinder or tank*. Flush thoroughly after this treatment. The tank and cylinder should be washed with one of these solutions every 3 months as a preventive maintenance service. Never use oxalic acid solution on painted surfaces because it will remove the paint.

37. Preventive Maintenance Checklist

Item No.	What to check	When to check	What to do
1	Cylinder, tank and frame	After operation	Dry with a clean dry cloth.
2	Cylinder and tank	Every 3 days	Clean as directed in paragraph 34.
3	Cylinder and tank	Weekly	Swab off chemical deposits (par. 35).
4	Cylinder and tank	Every 3 months	Wash and scrub (par. 36).
5	Pulley belts	Monthly	Inspect for slipping and proper tension (par. 43). Examine for wear and damage (par. 44).
6	Tank and stuffing box	Monthly	Examine for leakage at the stuffing box (par. 50).
7	Drain valve	Monthly	Examine for leakage (par. 54).

38. General Trouble Shooting

The equipment performance checklist (par. 22) and the preventive maintenance checklist (par. 37) contain the various visual and operational indications of normal performance while Washer PH-240-B is in use. The corrective measures recommended in the equipment performance checklist relate only to minor failures of equipment which can be remedied by a simple adjustment of parts which are otherwise unimpaired. The trouble-shooting chart (par. 60) provides a table of specific equipment defects, probable causes, and recommended remedies.

CHAPTER 4

FIELD MAINTENANCE INSTRUCTIONS

Section I. THEORY

39. General

The repair instructions below are intended for field maintenance and are applicable for all purposes of repair through and including rebuilding. The amount of repair to be performed by any particular unit which has field maintenance responsibility will be limited only by the tools and test equipment available and by the skill of the assigned personnel.

40. Washer

Washer PH-240-B is used to wash photographic prints. Essentially, it consists of a tank in which fresh water circulates and a cylinder which holds the prints and which revolves in the tank.
The tank and cylinder are fabricated from stainless steel to prevent the formation of chemical deposits. The cylinder can be raised from or lowered into the tank by a foot pedal and level arrangement. Power for rotating the drum is supplied by a motor through a system of reduction pulleys. The entire unit is supported by a frame and four legs.

Section II. INSPECTING, STRIPPING, CLEANING, ND LUBRICATING

41. Inspection

A thorough overall inspection should be made to determine the general extent of repair and specific components to be repaired. The inspection procedures which follow require minor disassembly, which is indicated. After the overall inspection, refer to the following paragraphs for specific repair procedures.

a. *Cylinder, Tank, and Frame*. Examine the cylinder and tank for deposits of rust, iron, and other impurities on the surface and in corners. These chemical deposits can be removed without disassembly (par. 59). Inspect the frame, including legs and end panels, for chipped paint and for signs of rust. Examine all parts

for bends, breaks, and cracked surfaces. Severe distortion of these parts will require replacement.

b. Tank Interior. Lift the cylinder straight up and out of the tank to expose parts in the tank. Examine the lift channels for rust spots and chemical deposits. Inspect the rubber bearings for wear and breakage. Examine the rollers, roller shaft, roller spacer and rubber bearings for wear and distortion. Examine the inlet pipe assembly for clogged holes. Check the inlet pipe grommet for deterioration. Replace parts which show excessive wear or distortion.

c. Drain Valve, Hoses, and Clamps. Lift up and pull out the end panels free of the washer. The end panels simply hang in place between the legs on each end of the washer. The drain valve must be disassembled for inspection (par. 54). Examine the rubber hoses for deterioration. See that the hose clamps work properly.

d. Pulley, Belts, and Cylinder Lift. Examine the drive and motor belts for deterioration and wear. See that the pulleys are free of cracks or breaks. Examine the foot pedal, pedal shaft, pedal lock, lift levers, lift rods, pulley stud, and pulley guard for wear and surface cracks or breaks. Replace parts which are deteriorated or distorted to the point where they might cause malfunction of the washer.

e. Stuffing Box. Disassemble the stuffing box for a thorough inspection (par. 49).

f. Motor. To check the motor, connect it to a 115-volt, 60-cycle power source. See that the motor runs free, without excessive noise or overheating. Examine the power cord insulation for cuts, bruises, worn spots, and deterioration. Inspect the power cord plug for bent or worn contacts and prongs.

42. General Repair

After inspection, make a check of the repair procedures for all parts which need repairing to determine just how far the washer must be disassembled. This eliminates the time required to disassemble parts in good working condition. Then reassemble each repaired part as directed. Replace damaged parts which support or attach other components, such as screws, washers, and nuts.

43. Pulley Belt Adjustment
(fig. 4)

a. Motor Belt.

(1) Remove the motor cover by unscrewing the motor cover screws which secure it to the frame.

(2) To tighten the motor belt, loosen the four hexagonal head bolts and slide the motor toward the rear of the machine.

(3) Adjust the motor belt for proper tension and tighten the motor base screws.

(4) Secure the motor cover to the frame with the motor cover screws.

b. Drive Belt.

(1) Lift and pull off the left-hand end panel.

(2) To tighten the drive belt, loosen the pulley stud nut and slide the stud downward in the adjusting slot.

(3) Then tighten the stud nut.

(4) Hang the end panel in place.

44. Pulley Belt Replacement
(fig. 4)

a. Motor Belt.

(1) Remove the motor cover by unscrewing the motor cover screws which secure it to the frame.

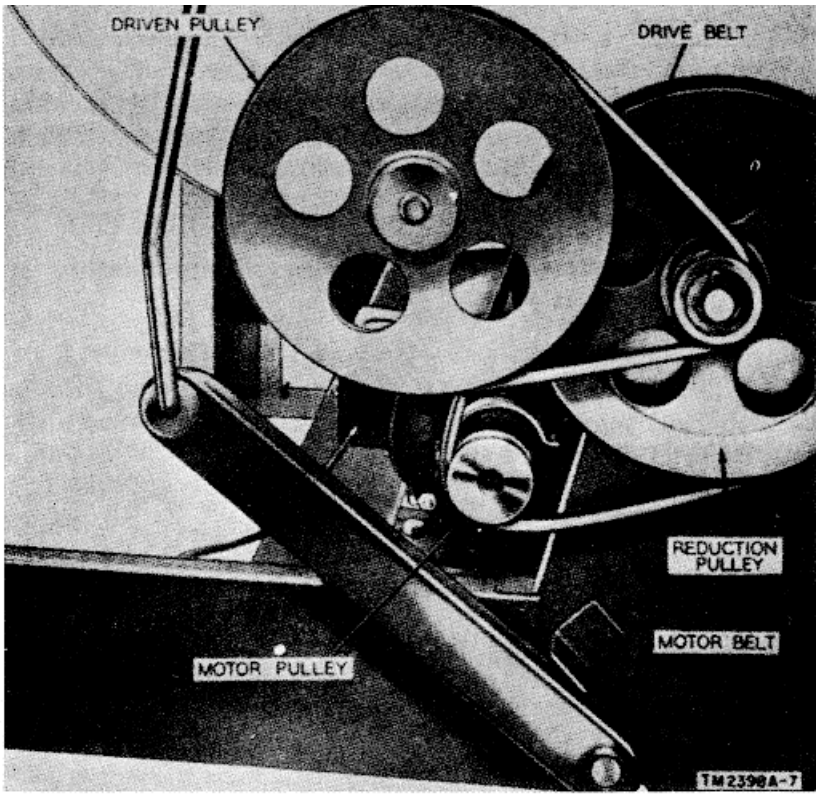

Figure 6. Transmission (end panel removed).

(2) Lift and pull off the left-hand end panel.

(3) Loosen the four hexagonal head bolts (fig. 4) which secure the motor.

(4) Slip off the old belt and replace with the new belt.

(5) Adjust motor belt tension (par. 43a).

(6) Hang the end panel in place.

(7) Secure the motor cover to the frame with the motor cover screws.

b. Drive Belt.

(1) Lift and pull out the left-hand end panel.

(2) Loosen the pulley stud nut to release the reduction pulley.

(3) Slip off the old belt and replace it with the new one.

(4) Adjust the drive belt for tension (par. 43b and fig. 6).

(5) Hang the end panel in position.

Note. **If both pulley belts need adjustment or replacement, make the adjustment and/or replacement of the drive belt first.**

45. Cylinder Repair

The cylinder is a welded unit and cannot be disassembled or repaired beyond the minor straightening of hinges, door locks, or door. It must be cleaned to remove all foreign material (par. 59). If the cylinder needs replacement, simply lower the new cylinder into the tank so that the stub shafts rest in the rubber bearings (5, fig. 7).

46. Cylinder Bearing and Lift Channel Replacement
(fig. 7)

The two cylinder bearings (5) are made of rubber and ride in the lift channels (6). The bearings easily slide from the lift channels, and the lift channels slide out of the guide channels in the tank. Replace worn or damaged parts.

47. Frame Repair
(fig. 7)

a. General. Repair of the legs (11), end panels (14), and frame is restricted to minor straightening and painting. Generally, no disassembly is necessary, but if it is necessary to disassemble these parts, follow the procedure outlined in b(1) through (9) below.

b. Disassembly.

(1) If it already has not been done, remove the cylinder (4) from the tank.

(2) Lift off the two end panels (14) from between the legs (11).

(3) Remove the hexagonal head bolts (1), the internal tooth lockwashers (2), and the hexagonal nuts (3) that secure each leg to the tank.

(4) Remove the pulley belt.

(5) Lift the tank unit from the legs.

(6) Remove two truss headscrews (7) from inside each corner of the frame. This will release the back plate (8) behind the lip on each leg.

(7) Remove the right front leg (11) by unscrewing the panel lockscrew (26, fig. 10) and one hexagonal nut (22, fig.

10) securing the pedal lock (28, fig. 10). Remove the pedal lock (28, fig. 10), lock spacer (29, fig. 10), internal tooth lockwasher (21, fig. 10) and plain washer.

(8) Unfasten the other three legs by removing one truss headscrew, internal tooth lockwasher and hexagonal nut for each leg. These screws fasten the frame to the rectangular bracket on each leg.

(9) If necessary, remove the leg caps (9 and 13) from each leg by unscrewing the leg cap screws (10).

c. Reassemble.

(1) Insert one back plate (8, fig. 7) behind the lip of each leg (11, fig. 7). Aline the mounting holes in the frame corners with the holes in the legs and back plates. Secure each leg with two truss headscrews (7, fig. 7).

(2) Insert the pedal lockscrew (26, fig. 10) through the plain washer (32, fig. 10), pedal lock (28, fig. 10) and lock spacer (29, fig. 10). Fasten these parts to the frame and right front leg with one internal tooth lockwasher (2, fig. 7) and hexagonal nut (3, fig. 7). The lockwasher and hexagonal nut go behind the rectangular bracket on the leg.

(3) Further fasten each of the other legs to the frame with one truss headscrew (7, fig. 7), internal tooth lockwasher (2, fig. 7) and hexagonal nut (3, fig. 7). The screw passes through the frame into the rectangular bracket on each leg.

(4) Lower the tank unit onto the legs.

(5) Place the drive belt over the driven pulley.

(6) Secure each leg to the mounting brackets on the tank with two hexagonal head bolts (1, fig. 7), internal tooth lockwashers (2, fig. 7) and hexagonal nuts (3, fig. 7).

(7) Secure each leg cap (9 and 13, fig. 7) to the top of each leg (11, fig. 7) with two leg cap screws (10, fig. 7).

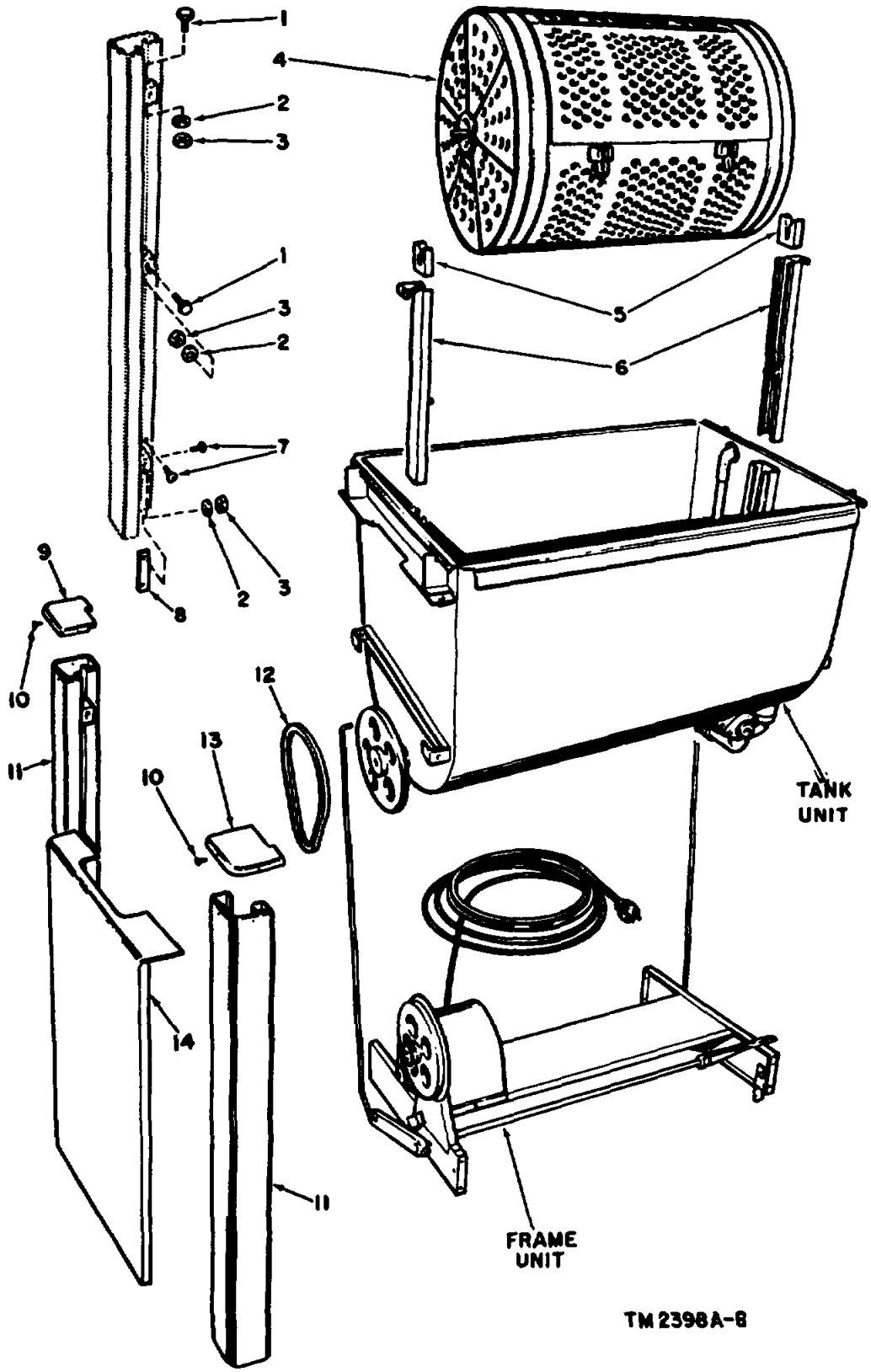

Figure 7. Exploded view of washer PH-240-B.

1. Bolt, hexagonal head
2. Washer, internal tooth
3. Nut, hexagonal
4. Cylinder
5. Bearing, cylinder (O 4)
6. Channel, lift (Hi)
7. Screw, truss head
8. Plate, back (A 11)
9. Cap, rear leg (O 8)
10. Screw, leg cap (H67)
11. Leg (A 5)
12. Belt, pulley
13. Cap, front leg (O 9)
14. Panel, end (A '3)

Figure 7. Continued.

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48. Tank Repair

Do not remove the tank from the legs unless it must be replaced with a new one. Touch up the outside surface with paint where necessary. Clean the inside surface in accordance with the procedure given in paragraph 59. If disassembly is required, follow the procedure given in paragraph 47. Remove all parts which are attached to the tank, such as the drain valve, before actually dismounting the tank.

49. Stuffing Box Repair
(fig. 8)

a. General. If there is water leakage through the stuffing box, it must be disassembled for inspection and/or repair. Disassembly required for lubrication of the stuffing box is discussed in paragraph 28.

b. Disassembly.

(1) Remove the drive pulley (11) from the roller shaft (22) by unscrewing the squarehead setscrew (12) from the pulley.

(2) Unscrew the stuffing box cap (13) (left-hand threads).

(3) Pull off the stuffing box gland (14) and unwind the stuffing box packing (15).

(4) To remove the stuffing box casing (16), unscrew the retaining nut (18) from inside the tank.

(5) Pull out the stuffing box casing (16), the stuffing box gasket (17), and the roller spacer (19).

c. Reassembly.

(1) Slide the roller spacer (19) over the roller shaft (22).

(2) Secure the stuffing box casing (16) and the stuffing box gasket (17) to the tank with the retaining nut (18) inside the tank.

(3) Replace the stuffing box packing (15) around the roller shaft (22). Wind the packing counterclockwise.
(4) Lubricate the packing (par. 28).

(5) Place the stuffing box gland (14) on the shaft (22) and carefully screw on the stuffing box cap (13) (left-hand threads) to tighten the packing. Tighten the cap and then back it off one-half turn for adjustment.

(6) Secure the drive pulley (11) to the roller shaft (22) with the squarehead setscrew (12).

50. Stuffing Box Packing Repair

a. If there is leakage from the tank at the stuffing box, the packing must be tightened or replaced.

b. First lift and pull off the end panel on the left-hand side of the washer.

c. To tighten the stuffing box packing, first remove the drive pulley (11) (par. 28). Tighten the stuffing box cap (13) by turning counterclockwise (left-hand threads) until tight. Then back the cap off one-half turn for adjustment. Reinstall the drive pulley.

d. To replace the packing, disassemble the stuffing box as directed for lubrication (par. 28). Then rewind the packing and replace it. Lubricate the packing and reinstall the stuffing box and drive pulley.

e. Hang the end panel between the legs.

51. Roller Repair (fig. 8)

a. Disassembly.

(1) Remove all stuffing box parts as described in paragraph 49b.

(2) Loosen the setscrew (21) in each roller (20) on the roller shaft (22).

(3) Slide the roller shaft (22) from the left end of the tank and lift out the two rollers (20).

b. Reassembly.

(1) Slide the plain end of the roller shaft (22) through the left end of the tank and through the rollers (20) into the roller shaft bearing (23). The collar on the roller should be on the left.

(2) Tighten the setscrew (21) in each roller (20). The rollers should be placed in such a manner that the bands on the cylinder nearest the door ride on the rollers.

(3) Reassemble the stuffing box parts as directed in paragraph 49c.

52. Roller Shaft Bearing Replacement
(fig. 8)

The roller shaft bearing is wooden and must be replaced if worn or cracked.

a. Disassembly. Remove the rollers and roller shaft (par. 51). Lift the roller shaft bearing (23) from the left-hand guide channel in the tank.

b. Reassembly. Slide the new roller shaft bearing (23) into the left-hand guide channel in the tank. The raised edge of the bearing must face upward next to the tank end. Reinstall the rollers and roller shaft (par. 51).

53. Water Hose Replacement
(fig. 8)

The two water hoses (1 and 6) are secured to the drain valve housing (7) and plumbing with four hose clamps (2). To remove the hoses (1 and 6), unscrew the thumbscrew on each clamp (2), slide the clamps along the pipes, and pull off the hoses. Place the new hoses over the pipes in such a manner that the hose clamps will clamp properly. Then secure the hoses (1 and 6) and hose clamps (2).

54. Drain Valve Repair
(figs. 8 and 9)

a. General. If the drain valve (7, fig. 8) is not operating to shut off the water from the tank, the valve diaphragm (8) needs repair. Other parts, such as the valve crab (4), may require replacement. Replace them after disassembly.

b. Disassembly. To remove the valve cap (9) and diaphragm (8), proceed as follows:

(1) Unscrew the two valve cap screws (10) which secure the valve cap (9) to the valve housing (7).

(2) Carefully pull the valve cap (9) and the valve diaphragm (8) from the valve housing (7).

(3) Slide the valve cap (9) so the valve stem slips to the outer edge of the slot in the diaphragm (8). Then pull the cap

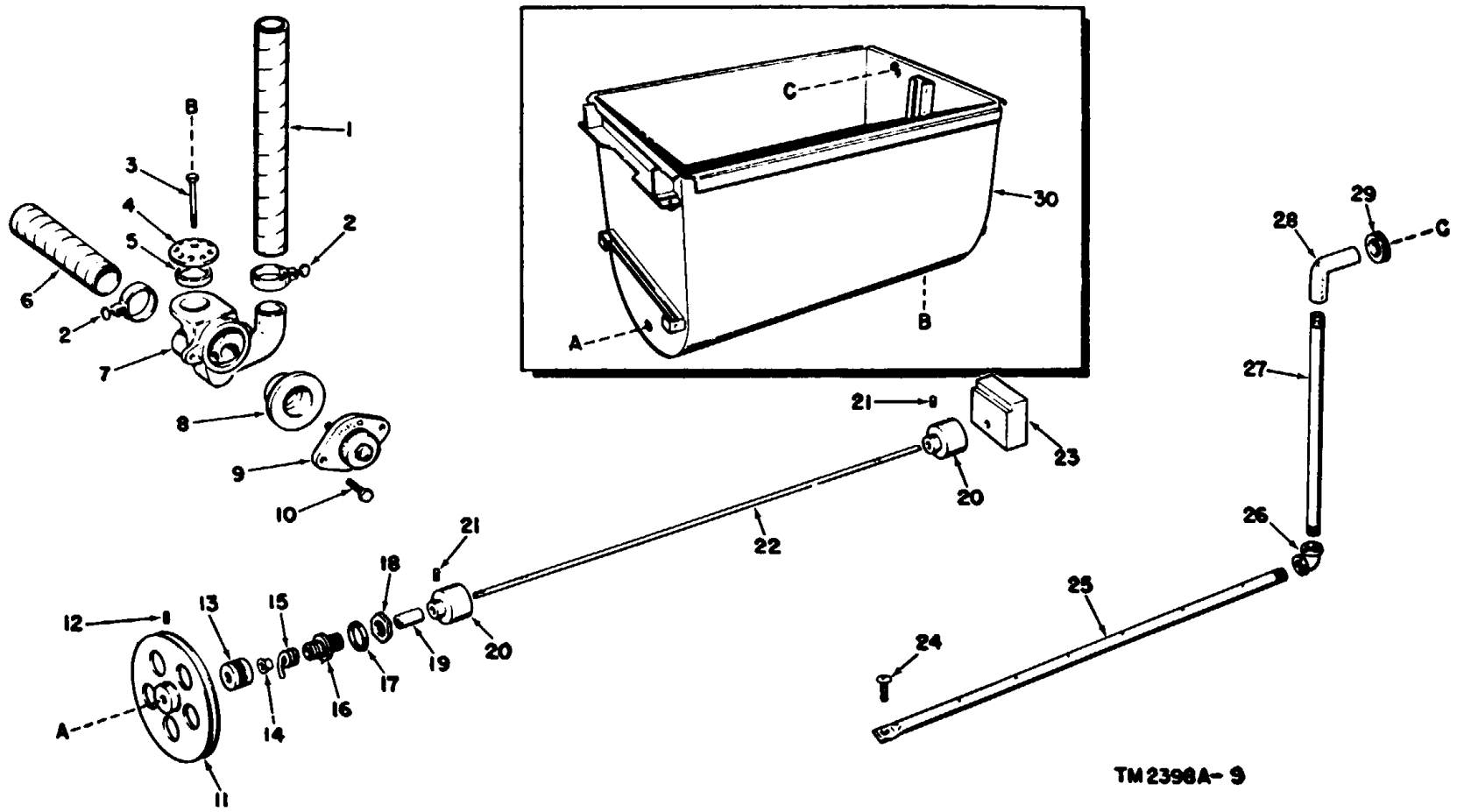

Figure 8. Exploded view of tank unit.

1. Hose, overflow (H25)
2. Clamp, hose (H19)
3. Screw, valve crab
4. Crab, valve (O 13)
5. Gasket, valve
6. Hose, coupling (H25)
7. Housing, drain valve (O 29)
8. Diaphragm, valve (Q1)
9. Cap, valve (A 2)
10. Screw, valve cap
11. Pulley, drive (O 21)
12. Screw, set, squarehead
13. Cap, stuffing box (O 10)
14. Gland, stuffing box (H23)
15. Packing, stuffing box (MS1)
16. Casing, stuffing box (A 4)
17. Gasket, stuffing box
18. Nut, retaining
19. Spacer, roller (O 26)
20. Roller (O 24)
21. Screw, set, roller
22. Shaft, roller (O 28)
23. Bearing, roller shaft (O 5)
24. Screw, inlet pipe
25. Pipe, inlet (O 18)
26. Elbow, inlet pipe (H22)
27. Pipe, connecting (O 17)
28. Aspirator
29. Grommet, inlet pipe
30. Tank

Figure 8.-Continued.

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from the diaphragm. To remove the drain valve housing (7), proceed as follows:

(a) Unscrew the valve crab screw (3) from inside the tank.

(b) Remove the valve crab (4) and valve gasket (5).

c. Reassembly.

(1) Fasten the drain valve housing (7), valve gasket (5), and valve crab (4) to the tank with the valve crab screw (3). Mount the valve crab (4) inside the tank; mount the gasket (5) and housing (7) outside the tank. Be sure to seat the gasket (5) properly.

(2) Place a new diaphragm (8) on the stem of the valve cap (9). Insert the valve cap (9) and diaphragm (8) into the valve housing (7). Secure the valve cap (9) to the housing (7) with the two valve cap screws (10).

55. Inlet Pipe Repair
(fig. 8)

a. General. One end of the inlet pipe assembly is secured to a mounting bracket inside the' tank with one inlet pipe screw (24). The opposite end of the pipe assembly is held in a retaining bracket and the upper end passed through the inlet pipe grommet (29) in the right side of the tank.

b. Disassembly.

(1) Remove the inlet pipe screw (24). Lift up the left end of the inlet pipe assembly and pull it through the inlet pipe grommet (29).

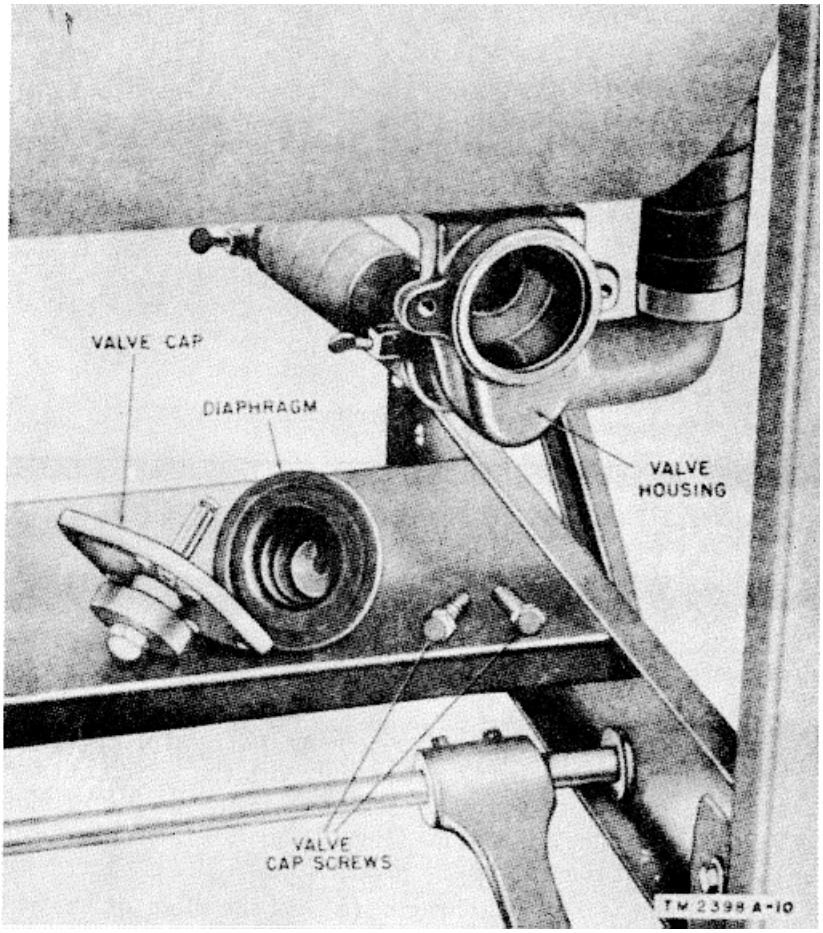

Figure 9. Drain valve.

(2) Remove the inlet pipe (25) and connecting pipe (27) from the aspirator (28) and inlet pipe elbow (26).

(3) Remove the inlet grommet (29) from the tank if replacement is require(l.

(4) Clean the pipes, elbow, and aspirator with a stiff bristle brush.

c. Reassembly.

(1) Place the inlet pipe grommet (29) in the hole in the right side of the tank.

(2) Reassemble the inlet pipe (25), pipe elbow (26), connecting pipe (27), and aspirator (28).

(3) Place this assembly so that the aspirator (28) slides through the inlet pipe grommet (29) and the pipes fit in the retaining and mounting brackets.

(4) Secure the inlet pipe (25) with the inlet pipe screw (24).

56. Transmission Repair
(fig. 10)

a. General. The transmission consists of the pulleys and the mounting parts. Replace any parts which are damaged or worn.

b. Disassembly.

(1) Remove the pulley belts as described in paragraphs 43 and 44.

(2) Remove the drive pulley by unscrewing the squarehead setscrew in the pulley (12, fig. 8).

(3) Remove the motor pulley (5, fig. 10) by unscrewing the setscrew (6) in the pulley.

(4) To remove the reduction pulley (10), pull out the cotter pin (8) in the pulley stud (11), and remove the sprocket washer (9).

(5) Unscrew the oil cup (17) in the pulley stud (11). Remove the oil felt (16) from the oil cup (17) if necessary.

(6) Unscrew the pulley stud nut (15), remove the internal tooth washer (14), and pulley stud washer (13). Pull the pulley stud (11) from the bracket and pulley guard (12).

c. Reassembly.

(1) Fasten the pulley guard (12) and pulley stud (11) to the mounting bracket with an internal tooth washer (14), the pulley stud washer (13), and the pulley stud nut (15).

(2) Place the oil felt (16) in the oil cup (17). Screw the oil cup (17) into the end of the pulley stud (11).

(3) Secure the reduction pulley (10) to the pulley stud (11) with the sprocket washer (9) and cotter pin (8).

(4) Fasten the motor pulley (5) to the motor shaft with the setscrew (6).

(5) Fasten the drive pulley (11, fig. 8) to the roller shaft with the squarehead setscrew (12, fig. 8).

(6) Replace or reinstall the pulley belts (par. 44).

(7) Adjust the belt tension (par. 43).

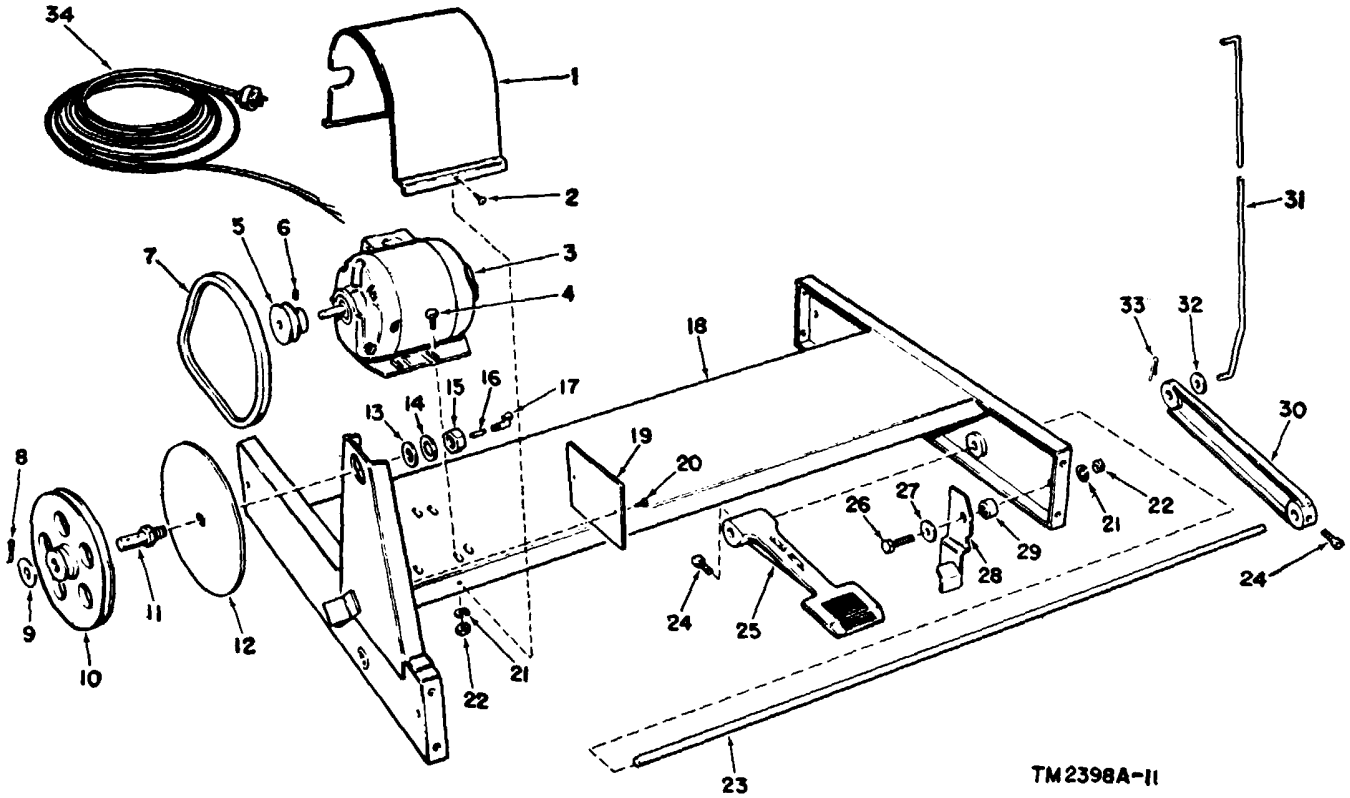

Figure 10. Exploded view of frame unit.

1. Cover, motor (A 1)
2. Screw, motor cover (H66)
3. Motor
4. Bolt, hexagonal head
5. Pulley, motor (O 19)
6. Screw, set (furnished with pulley)
7. Belt, pulley (O 2)
8. Pin, cotter, pulley stud (H50)
9. Washer, sprocket
10. Pulley, reduction (O 20)
11. Stud, pulley (H82)
12. Guard, pulley
13. Washer, pulley stud
14. Washer, internal tooth
15. Nut, pulley stud (H43)
16. Felt, oil
17. Cup, oil (O 12)
18. Frame
19. Plate, name
20. Screw, nameplate (H63)
21. Washer, internal tooth
22. Nut, hexagonal
23. Shaft, pedal (O 27)
24. Screw, set, squarehead
25. Pedal, foot (O 16)
26. Screw, pedal lock
27. Washer, pedal lock
28. Lock, pedal (O 1)
29. Spacer, pedal lock (O 11)-
30. Lever, lift (O 14)
31. Rod, lift (O 22)
32. Washer, plain
33. Pin, cotter, left rod (H46)
34. Cord, power

Figure 10.-Continued.

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57. Motor Replacement
(fig. 10)

a. Removal.

(1) Unscrew the motor cover screws (2) and remove the motor cover (1).

(2) Remove the hexagonal head bolts (4), the internal tooth lockwashers (21) and the hexagonal nuts (22).

(3) Lift the motor from the frame.

b. Power Cord Repair. Replace defective plug and/or cable as necessary. Make sure wires are secure in their proper positions.

c. Reinstallation.

(1) Set the motor over the mounting holes in the frame and secure it with the hexagonal head bolts (4), the internal tooth washer (21), and the hexagonal nuts (22).

(2) Do not fasten the motor cover until after adjustment of the motor pulley is made (par. 43).

58. Cylinder Lift Repair
(fig. 10)

a. General. The cylinder lift consists of the foot pedal (25), pedal shaft (23), lift levers (30), lift rods (31), pedal lock (28), and attaching parts. All defective parts must be replaced.

b. Disassembly.

(1) Remove the lift rods (31) from the lift levers (30) by pulling the cotter pin (33) from each lift rod (31). Remove the two plain washers.

(2) Unfasten the lift levers (30) from each end of the pedal shaft (23) by removing the squarehead setscrews (24).

(3) Remove the squarehead setscrews (24) which secure the foot pedal (25) and pull out the pedal shaft (23).

(4) Unscrew the pedal lockscrew (26) and the hexagonal nut (22); remove the pedal lock (28), pedal lockwasher (27), pedal lock spacer (29), and the internal tooth lockwasher (21).

c. Reassembly.

(1) Fasten the pedal lock spacer (29) and pedal lock (28) to the frame with the pedal lockscrew (26), the hexagonal nut (22), the lockwasher (27), and the internal tooth lockwasher (21).

(2) Slide the pedal shaft (23) through the frame and foot pedal (25).

(3) Fasten a lift lever (30) to each end of the pedal shaft (23) with a squarehead setscrew (24).

(4) Secure the lift rods (31) to the lift levers (30) with the cotter pins (33), and two plain washers (32).

(5) Slide the foot pedal (25) on the pedal shaft (23) until it rests over the pedal lock (28). Operate the foot pedal (25) to see that the pedal lock (28) works properly. Secure the foot pedal (25) with the squarehead setscrews (24).

59. Cleaning

Complete cleaning instructions for the cylinder and tank are described in paragraphs 34 through 36. Clean other parts with a clean dry cloth.

***Note*. After overhaul, lubricate the washer in accordance with the instructions given in paragraphs 27 through 29.**

60. Trouble-shooting Chart

Trouble	Probable cause	Remedy
Cylinder fails to rotate or rotates very slowly.	Drive belt or motor belt pulley is slipping.	Adjust belt tension (par, 43).
Excessive water intake required for washing.	Leaking drain valve----------	Repair drain valve (par. 54).

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Trouble	Probable cause	Remedy
Rapid formation of rust and iron deposits on cylinder and tank.	Improper cleaning	Clean cylinder and tank (par. 36).
	Excessive iron rust in plumbing.	Replace old plumbing with galvanized pipe.
Washer fails to operate	Power failure	Check power source for blown fuse.
	Broken pulley belt	Replace belt (par. 44).
	Cylinder is jammed	Turn off power to motor and remove cause of the jamming.
Water leaks from stuffing box on tank.	Defective packing	Tighten or replace packing as required (par. 50).
Motor fails to run	Power failure	Check for blown fuses.
	Defective motor	Repair or overhaul motor.
	Defective power cord	Repair power cord (par. 57b).
Insufficient water flow and circulation.	Clogged inlet pipe	Remove obstruction or replace pipe.

Section III. FINAL TESTING

61. General

The only test for performance of Washer PH-240-B is a running test. Connect the washer to a power source and fill the tank with fresh water. Check as outlined in the following paragraphs.

62. Cylinder

The cylinder must rotate evenly and freely without jerking. See that the door opens easily and that the locks secure the door during operation.

63. Foot Pedal

Check the operation of the foot pedal and pedal lock. The pedal shaft and lift rods must move freely. The pedal lock should hold the foot pedal securely with the cylinder raised from the tank.

64. Drain Valve

Inspect the drain valve for leakage. Then open the drain valve to drain the tank. See that the water drains properly.

65. Tank

Examine the tank for leakage at the stuffing box. See that the tank is fastened securely to the legs.

66. Motor and Transmission

The motor must operate without excessive noise or overheating. The pulleys and pulley belt should not bind. Check the belts for tension and alineinent.

CHAPTER 5

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

67. Repacking Washer PH-240-B

a. Domestic Shipment.

(1) Washer PH-240-B does not require disassembly for repacking. Pack it as a single unit and in the original packing case if possible.

(2) The original packing case is a braced wooden box which has overall dimensions of 26 by 391/2 by 371/2 inches. This box consists of a base which supports the washer and a shell which completely incloses the sides and top. If the original box is not available, refer to the dimensions in paragraph 7a and construct a box for the washer.

b. Oversea Shipment. The washer is packed for oversea shipment in a braced wooden box with overall dimensions of 27 by 40 by 38 inches. Refer to paragraph 7b for detailed packaging instructions.

68. Methods of Demolition

a. Smash. Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

b. Cut. Use axes, handaxes, machetes.

c. Burn. Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

d. Explode. Use firearms, grenades, TNT.

e. Dispose. Bury in slit trenches, fox holes, other holes. Throw into streams. Scatter.

Note. **Use anything immediately available for destruction of this equipment.**

69. Destruction of Components

When ordered by your commander, destroy all equipment to prevent its being used or salvaged by the enemy.

a. Smash (par. 68*a*) the cylinder, tank, motor, frame, foot pedal, legs, and all plumbing.

b. Cut (par. 68*b*) wiring.
c. Burn (par. 68*c*) motor parts, pieces of wire, and publications.

d. Bury or scatter (par. 68*e*) all remaining parts of the equipment.

e. Destroy everything.

APPENDIX I

REFERENCES

Note. **For availability of items listed, check SR 310-20-3, SR 310-20-4, and SR 310-20-5. Check Department of the Army Supply Manual SIG 1, for Signal Corps Supply Manuals.**

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1. Army Regulations

AR 380-5	Military Security (Safeguarding Military Information).
AR 750-5	Maintenance of Supplies and Equipment (Maintenance Responsibilities and Shop Operation).

2. Supply Bulletins

SB 11-100	Serviceability Standards for Signal Equipment in Hands of Troops.
SB 38-5-3	List of Standard Lubricants, Hydraulic Fluids, Liquid Fuels and Preservative Materials Used by the Department of the Army.

3. Auxiliary Equipment and Test Equipment

TM 11-2324	Fundamentals of Photography.
TM 11-2325	Specialized Photography.

4. Pointing, Preserving, and Lubrication

TB SIG 13	Moistureproofing and Fungiproofing Signal Corps Equipment.
TB SIG 23	Rustproofing of Engines.
TB SIG 66	Winter Maintenance of Signal Equipment.
TB SIG 72	Tropical Maintenance of Ground Signal Equipment.
TB SIG 75	Desert Maintenance of Ground Signal Equipment.
TB SIG 123	Preventive Maintenance Practices for Ground Signal Equipment.
TB SIG 69	Lubrication of Ground Signal Equipment.
TM 9-2851	Painting Instructions for Field Use.

5. Camouflage, Decontamination, and Demolition

FM 5-20	Camouflage, Basic Principles
FM 5-25	Explosives and Demolitions.
TM 3-220	Decontamination.

6. Other Publications

SR 310-20-3	Index of Training Publications.
SR 310-20-4	Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletin. Lubrication Orders, and Modification Work Orders.
SR 310-20-7	Tables of Organization and Equipment, Reduction Tables, Tables of Organization, Tables of Equipment, and Tables of Allowances.
SR 310-20-5	Index of Administrative Publications.
SR 700-45-5	Unsatisfactory Equipment Report (Reports Control Symbol CSGLD-247).
SR 725-405-5	Issues of Supplies and Equipment-Transportation Corps Sources of Supply.
SR 745-45-5	Shipment of Supplies and Equipment. Report of Damaged or Improper Shipment.
TB SIG 25	Preventive Maintenance of Power Cords.
TB SIG 149	Tropicalization of Photographic Equipment.
TB SIG 189	Cold Weather Photography.
TB SIG 211	Still and Motion Picture Data and Formulary.
TB SIG 219	Operation of Signal Equipment at Low Temperatures.

APPENDIX II

IDENTIFICATION TABLE OF PARTS

The following is an identification table of parts for Washer PH-240-B (Sig C stock No. 8A4510A).

Note. The fact that a part is listed in this table is not sufficient basis for requisitioning the item. Requisitions must cite an authorized basis, such as a specific T/O&E, T/A, SIG 7 & 8, SIG 7-8-10, list of allowances of expendable material, or another authorized supply basis. The Department of the Army Supply Manual applicable to the equipment covered in this manual is SIG 7 & 8-PH-240-B. For an index of available supply manuals in the Signal portion of the Department of the Army Supply Manual, see the latest issue of SIG 1.

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
O 2	BELT, "V"	Pulley connecting belt.	8P15-8620
O 4	BLOCK, bearing	Cylinder bearing.	8P16-8625
O 5	BLOCK, bearing	Roller shaft bearing.	8P15-8626
H19	CLAMP	Hose clamp.	8P16-8630
A 2	COVER	Valve cap assembly.	8P165-8637
O 12	CUP, oil	Reduction pulley oil cup.	6Z3460-17
O 1	DIAPHRAGM, valve	Drain valve diaphragm.	8P16-8643
	GASKET	Stuffing box gasket.	8P15-8670
H23	GLAND	Compresses stuffing box packing.	8A4510A/3
H24	GROMMET	Inlet pipe grommet.	8P165-8677
H20	HOSE	Coupling hose.	8P15-8680

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H25 HOSE	Overflow hose. 8P15-8681		
	MOTOR, alternating current----------	Supplies power to turn washer cylinder.	3H3000A05-43
MS-1	PACKING ----------	Water seal for pulley shaft.	8A4510A/9
H45	PAD, lubricating ----------	Felt oiling pad.	8P15--8760
O 10	RETAINER, packing ----------	Covers end of stuffing box.	8P15-8780
O 24	ROLLER, drive.----------	Drives washer cylinder.	8P15--8786
H82	l SHAFT ----------	Pulley stud.	8P15-8794
A 4	STUD ----------	Stuffing box.	8P15-8797
H88	WASHER, flat----------	Spacing washer.	6L51876

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