TM 5-3610-256-14

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE MANUAL

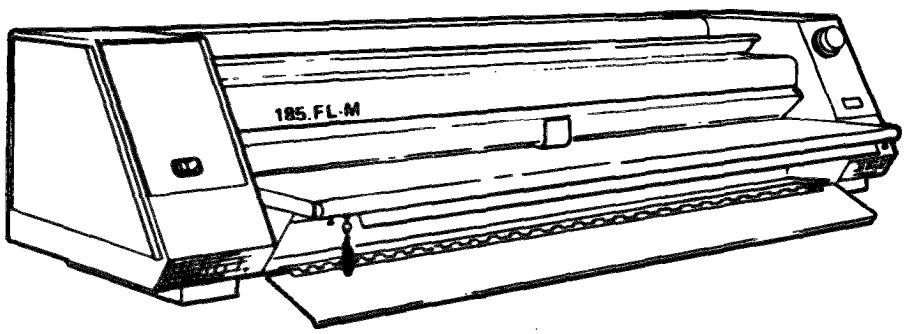


TABLE OF CONTENTS

OPERATING INSTRUCTIONS

ORGANIZATIONAL MAINTENANCE PROCEDURES

DIRECT SUPPORT MAINTENANCE PROCEDURES

GENERAL SUPPORT MAINTENANCE PROCEDURES

REPRODUCTION SET
DIAZO PROCESS 185.FL-M
(361041-123-7782)

HEADQUARTERS, DEPARTMENT OF THE ARMY
29 APRIL 1983

CHANGE

NO. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 28 April 1997

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

REPRODUCTION SET, DIAZO PROCESS 185.FL-M
(3610-01-123-7782)

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited

TM 5-3610-256-14, 29 April 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
i and ii	i and ii
C-3 and C-4	C-3 and C-4

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
03328

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25-E, block no. 1483, requirements for TM 5-3610-256-14.

CHANGE

No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 13 February 1990

Operator's, Organizational, Direct Support and General Support Maintenance Manual

REPRODUCTION SET
DIAZO PROCESS 185.FL-M
(3610-01-123-7782)

Approved for public release. Distribution is unlimited.

TM 5-3610-256-14, 29 April 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
i and ii	i and ii
1-1 through 1-4	1-1 through 1-4
2-9/2-10	2-9/2-10
3-1 and 3-2	3-1 and 3-2
3-7 and 3-8	3-7 and 3-8
3-25 through 3-28	3-25 through 3-28
3-35 through 3-40	3-35 through 3-40
4-3 and 4-4	4-3 and 4-4
4-19 through 4-36	4-19 through 4-36
5-5 through 5-8	5-5 through 5-8
5-11 through 5-14	5-11 through 5-14
5-17 through 5-27/5-28	5-17 through 5-27/5-28
---	FO-3
---	FO-4

2. Retain this sheet in front of manual for reference purpose.

By Order of the Secretary of the Army:

CARL E. VUONO
General United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN, II
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator's, Unit, Direct Support and General Support Maintenance requirements for Reproduction set, Diazo Process, (Model 185 FL-M).

TM 5-3610-256-14
C 3

CHANGE NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *21 March 1988*

Operator's, Organizational, Direct Support and General Support Maintenance Manual

REPRODUCTION SET
DIAZO PROCESS 185.FL-M
(3610-01-123-7782)

TM 5-3610-256-14, 29 April 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
B-5 and B-6	B-5 and B-6

2. Retain this sheet in front of manual for reference purpose.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator's, Unit, Direct Support and General Support Maintenance requirements for Reproduction set, Diazo Process, (Model 185 FL-M).

CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 29 May 1987

Operator's, Organizational, Direct Support and General Support Maintenance Manual

REPRODUCTION SET
DIAZO PROCESS 185.FL-M
(3610-01-123-7782)

TM 5-3610-256-14, 29 April 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
i and ii	i and ii
A-1/A-2	A-1/A-2
C-1 through C-4	C-1 through C-4
D-1/D-2	D-1 and D-2

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator's, Organizational, Direct Support and General Support Maintenance requirements for Reproduction Set, Diazo Process, (Model 185 FL-M).

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 21 October 1983

Operator's Organizational, Direct Support, and General Support Maintenance Manual Reproduction Set Diazo Process 185.FL-M (3610-01-123-7782)

TM 5-3610-256-14, 29 April 1983, is changed as follows:

1. **Remove and insert pages as indicated below:**

	Remove pages	Insert pages
Chapter 1	0-1	0-1
	1-3 thru 1-5/1-6	1-3 thru 1-5/1-6
Chapter 2	2-1 and 2-2	2-1 and 2-2
	2-5 thru 2-9/2-10	2-5 thru 2-9/2-10
Chapter 3	3-1 thru 3-8	3-1 thru 3-8
	3-13 and 3-14	3-13 and 3-14
	3-19 and 3-20	3-19 and 3-20
	3-25 and 3-26	3-25 and 3-26
	3-29 and 3-30	3-29 and 3-30
	3-37 thru 3-40	3-37 thru 3-40
	3-43 and 3-44	3-43 and 3-44
Chapter 4	4-1 thru 4-10	4-1 thru 4-10
	4-15 thru 4-18	4-15 thru 4-18
	4-21 thru 4-28	4-21 thru 4-28
Chapter 5	5-9 thru 5-14	5-9 thru 5-14
	5-17 thru 5-22	5-17 thru 5-22
	5-27/5-28	5-27/5-28
Appendix C	C-1 thru C-4	C-1 thru C-4
	FO-1	FO-1
	FO-2	FO-2

2. **New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.**

3. **Retain this sheet in front of manual for reference purposes.**

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator Maintenance requirements for Printing and Reproduction, Camera, Copying.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating Reproduction Set.

Ammonia may cause eye injury or blindness. Eye protection is mandatory while servicing the ammonia system.

Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes. Anyone overcome by ammonia fumes should be removed to fresh air at once. Refer to FM21-11 and apply artificial respiration. Use oxygen if breathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious.

WARNING

If heavy concentration of ammonia vapor is detected, stop operation of machine and unplug power cord. Do not operate until cause of vapor leak is identified and corrected.

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

WARNING

Do not service or adjust ammonia containers without protective safety goggles. Blindness or injury may result from failure to comply with this warning.

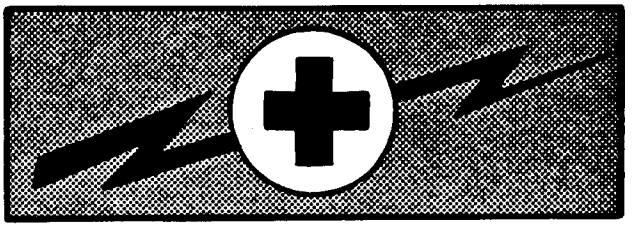
WARNING

High voltage inside cabinet may cause injury or death. Adjustments must be made with insulated tools.

DISPOSAL OF AMMONIA SUPPLY

Field users should contact their local environmental co-ordinator or their industrial hygenist for instructions on the disposal of ammonia supplies. Protective clothing is to be used during disposal.

WARNING



HIGH VOLTAGE

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt ac input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep one hand away from the equipment to reduce the hazard of current flowing through the body.

WARNING: Do not be misled bv the term “low voltage. ” Potentials as low as 50 volts may cause death under adverse conditions.

For Artificial Respiration, refer to FM 21-11.

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 29 April 1983

OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

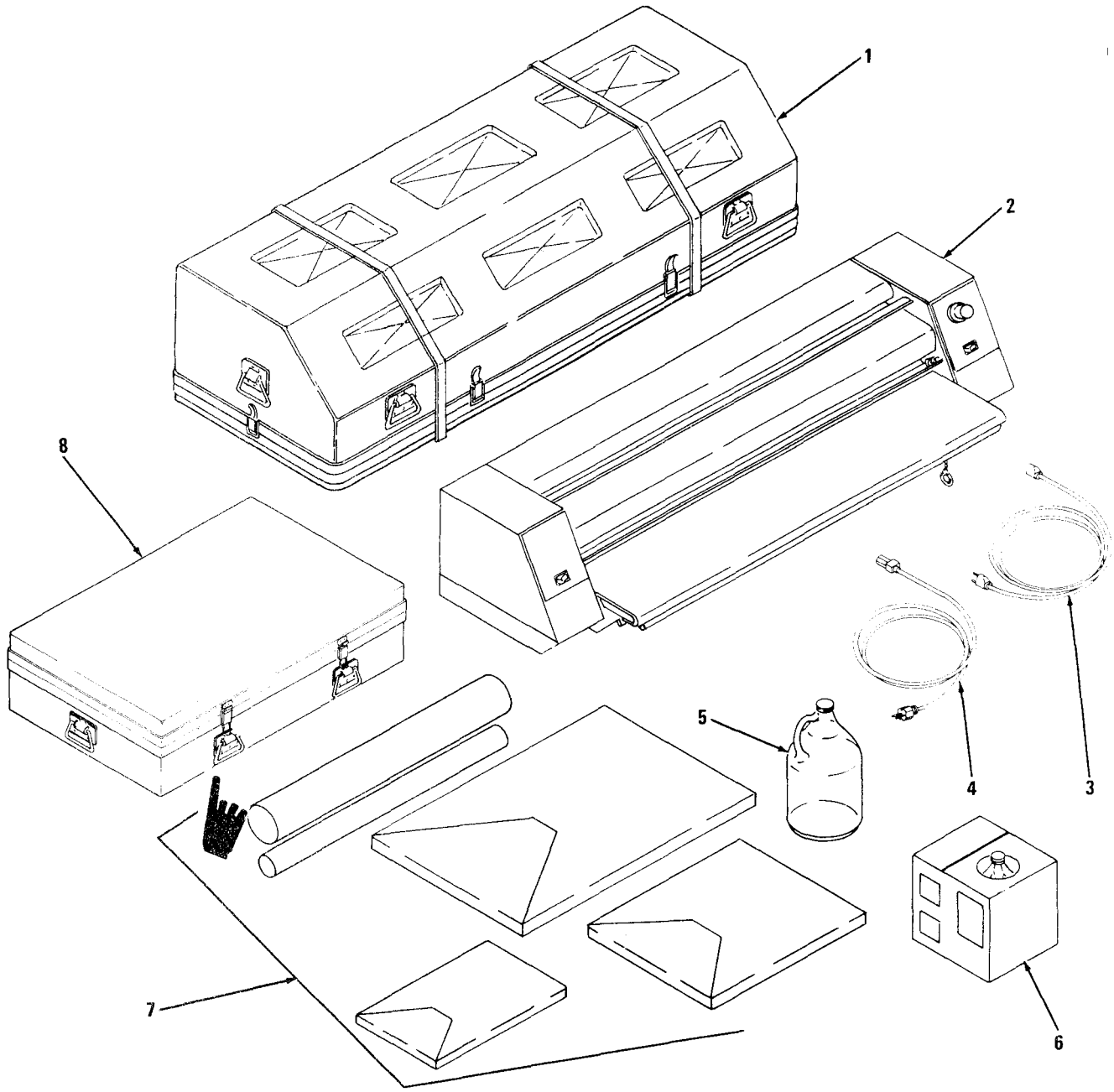
REPRODUCTION SET, DIAZO PROCESS 185.FL-M (3610-01 -123-7782)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St Louis, MO 63120-1798. You may also submit your recommended changes by E-mail directly to <mpmt/%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

TABLE OF CONTENTS

REPRODUCTION SET, 185.FL-M



1. CARRYING CASE
2. MACHINE
3. POWER CORD, 110 V
4. POWER CORD, 220 V
5. AMMONIA BOTTLE
6. ABSORBER
7. PAPER SUPPLIES
8. SUPPLY CARRYING CASE

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

Type of Manual.

Operator's, Organizational, Direct Suppert, and General Support Maintenance Manual.

Model Number and Equipment Name.

185.FL-M Reproduction Set, Diazon Process.

Purpose of Equipment.

Used for reproduction in the field of translucent material such as maps, blueprints, etc.

1-2. MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's). If your Reproduction Set needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, U.S. Army Troop Support Command (AMSTR-QX), 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We will send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-4. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

CHARACTERISTICS

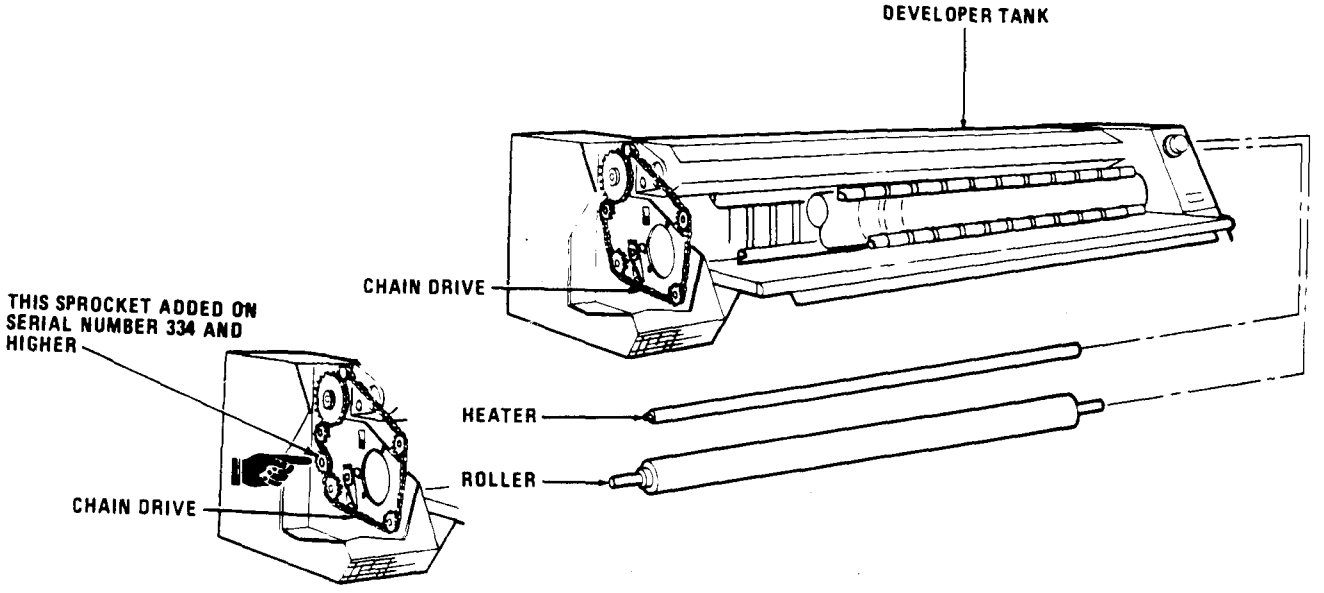
- Produces blue-line, black-line, or film diazo copies of original material.

CAPABILITIES AND FEATURES.

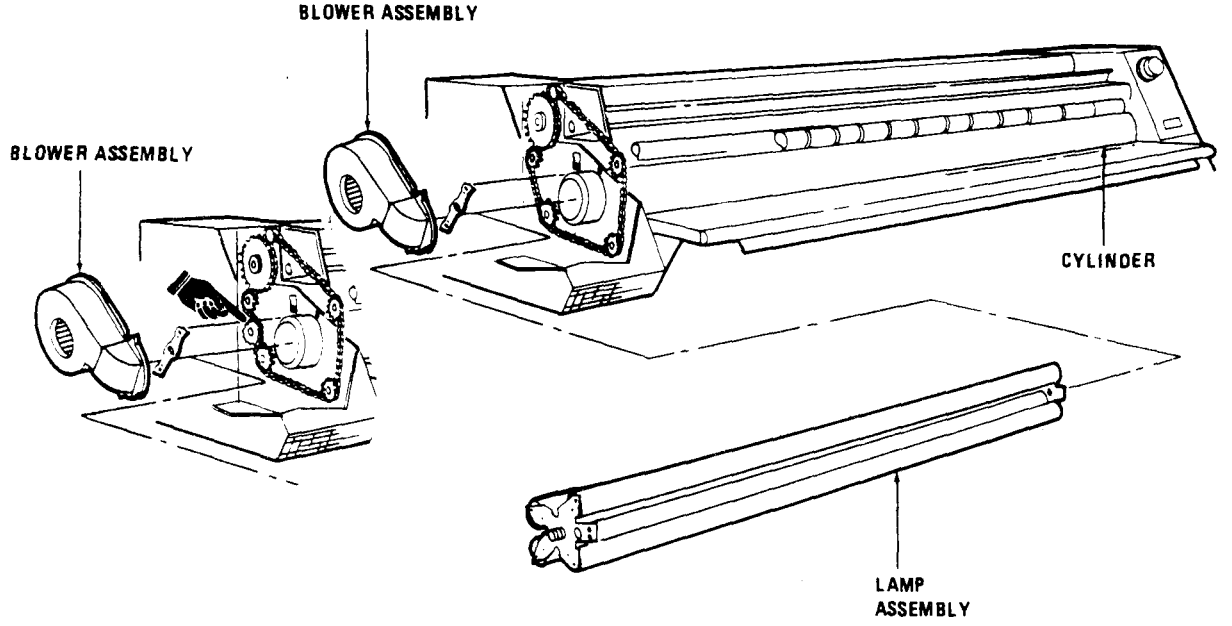
- Uses diazo roll stock or cut sheets.
- Copies on paper, film, or cloth diazo paper.
- Prints blue- or black-line copies.
- Ventless, sealed ammonia circulation system.
- Forward and reverse feed control.
- 50/60 Hz input.
- Hi/Off/Lo Lamp Switch.

14.1 DIFFERENCES BETWEEN MODELS. There is only one model of the Diazo Process Reproduction Set, Model 185.FL-M. However, reproduction sets with serial numbers 334 and higher have minor differences in configuration from those with serial numbers 333 and below. Where models in the two different serial number ranges require different parts, TM 5-3610-256-24P will indicate which part to order by serial number range. Configuration differences between the two serial number ranges are shown in paragraph 1-5.

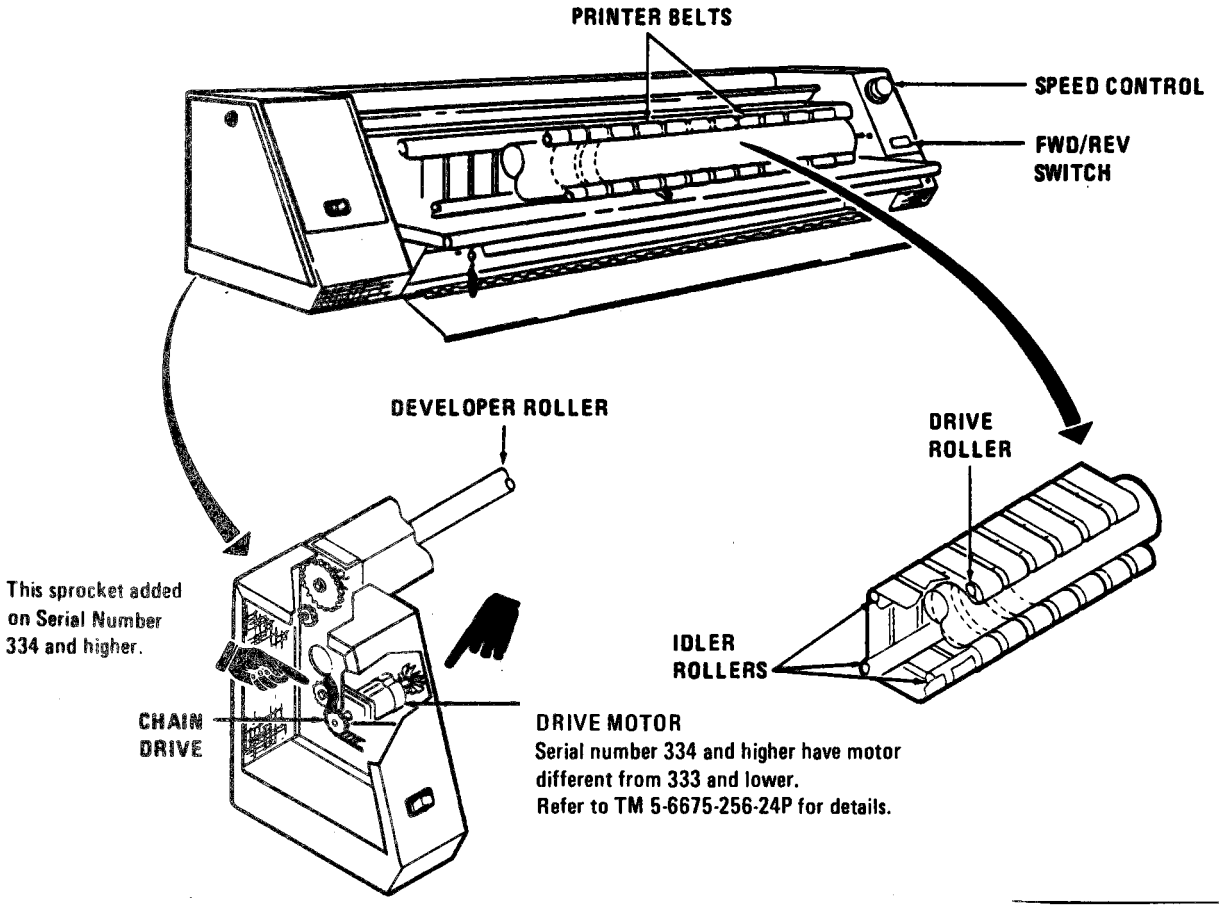
1-5. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



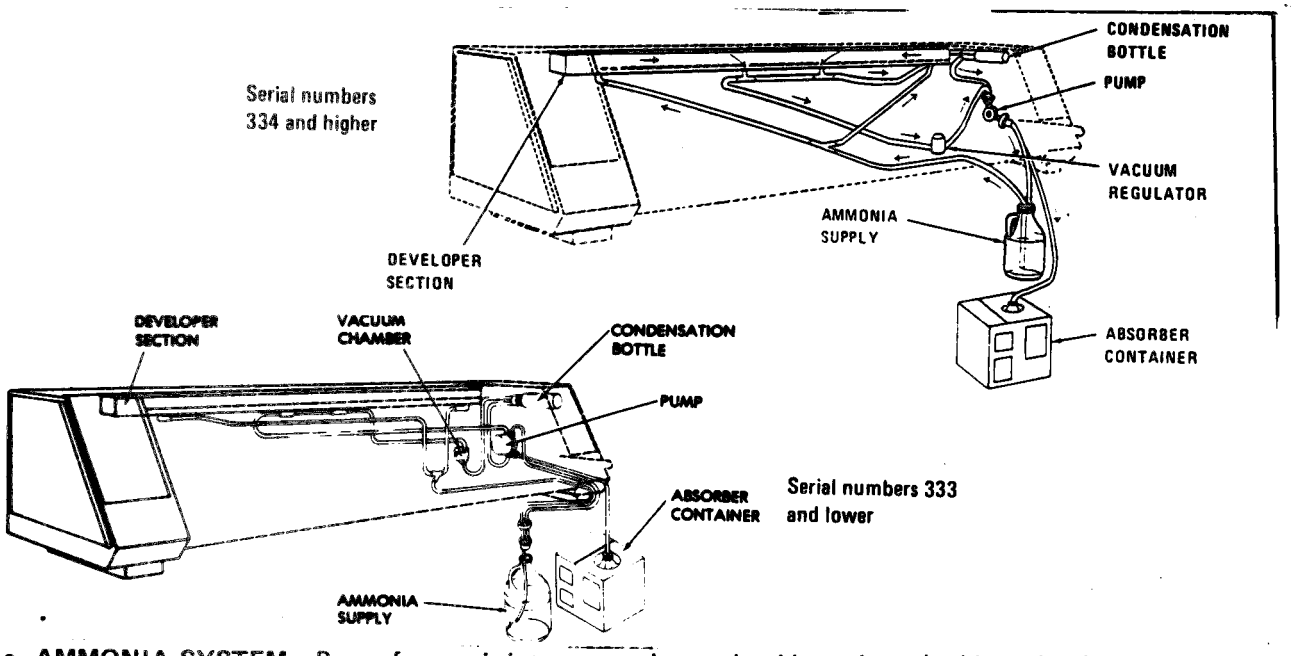
- **DEVELOPER SECTION:** Consists of a closed developer tank containing a chain driven roller and an electric heater. The roller draws exposed diazo paper through section. Heater and ammonia vapor in tank react with exposed diazo paper to form an image of the original copy.



- PRINTER SECTION: Consists of a blower assembly and a belt-driven cylinder rotating around an ultra-violet lamp assembly, Original copy and diazo paper are drawn around cylinder. Ultra-violet light shines through cylinder and original copy to imprint on diazo paper. Blower assembly forces air over the lamps.



- **DRIVE SYSTEM:** The drive motor drives the developer roller and the drive roller, which drives the printer belts and idler rollers. The speed control varies the speed of the motor. Direction of rotation may be changed to retrieve material fed into developer or printer section using the Fwd/Rev switch.

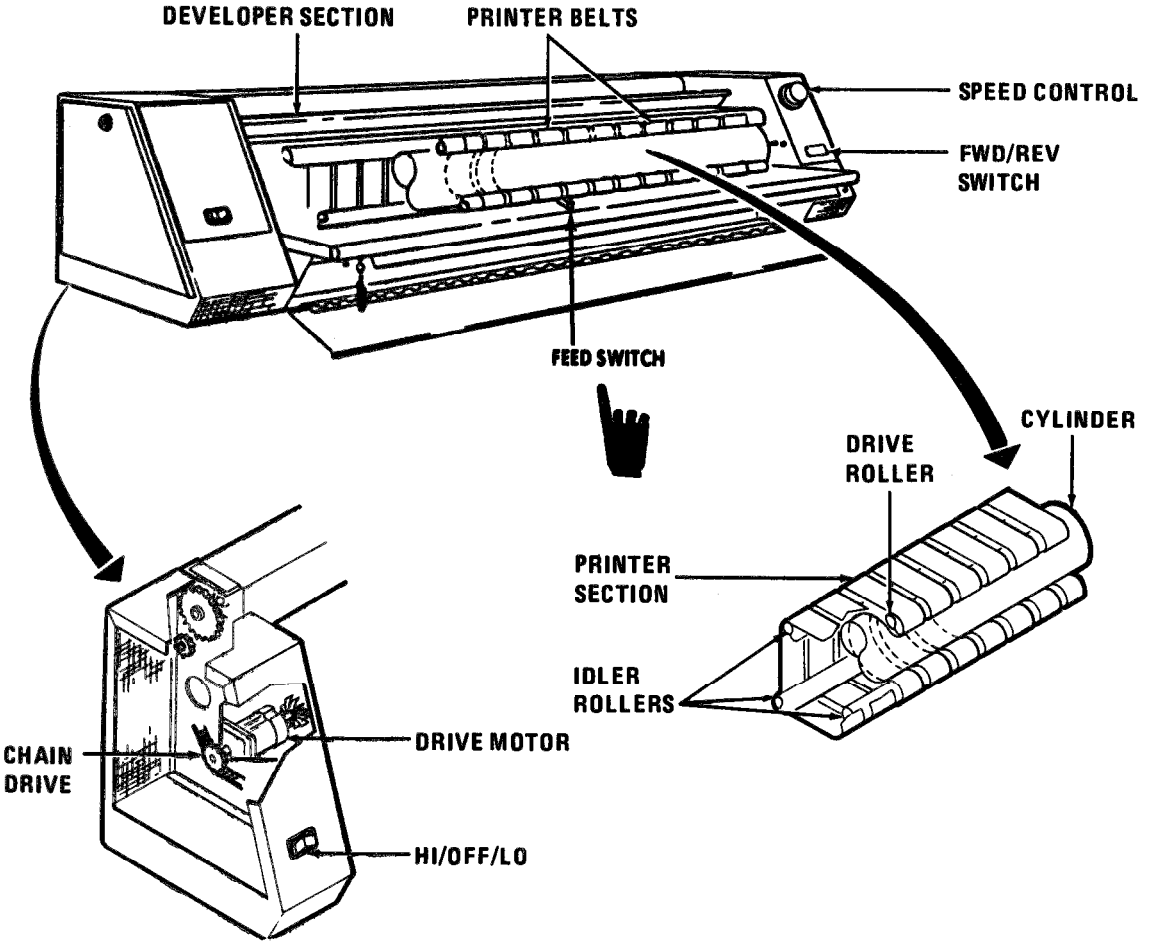


- **AMMONIA SYSTEM:** Pump forces air into ammonia supply. Vapor is pushed into developer section. Vapor is returned to ammonia supply. Vacuum regulator diverts surplus ammonia vapor into absorber container.

1-6. EQUIPMENT DATA.

Original Material Width	Minimum 4 x 6 inches (106.1 x 154.4 mm) and up to 48 inches (1219 mm) wide
Printing Speed	0.6 to 25 ft/min (15 to 635 mm/min)
Light Source	Four Fluorescent Lamps
Power Required	110 to 120 V, 60 Hz, single phase, 10 amps, 220 to 240 V, 50 Hz, single phase, 10 amps. (Factory adjusted to 110)
Width	68 inches (1727 mm)
Height	13-7/8 inches (352 mm)
Depth	23-3/8 inches (594 mm)
Weight	200 pounds (91 kg)
Roll Capacity	50 yards (46 m)
Ammonia	Baumé 21 degrees or better Ozalid Plus No. 2
Absorber	Ozalid Absorber 892-400
Copier-Carrying Case	17 inches high x 70 inches long x 26 inches deep (432x 1778 x 660 mm)

Section III. TECHNICAL PRINCIPLES OF OPERATION



1-7. GENERAL. The original and diazo paper are fed together, original on top, into the printer section. In the printer section, a belt-driven glass cylinder draws the original and diazo material past four fluorescent lamps. Exposure starts the decomposition of the diazo dyes. The rate of paper travel is controlled by the Speed control. The belts are driven by the drive roller, which is in turn chain driven by the drive motor. Printer belts hold the papers flat on the cylinder. The lamps are controlled by the feed switch. An exhaust fan blow air through the printer section for cooling. The exposed diazo paper is fed into the developer section where exposure to ammonia develops the remaining dyes. The closed ammonia system vaporizes the ammonia liquid and pumps it into the developer section. Excess vapor is neutralized in the absorber container.

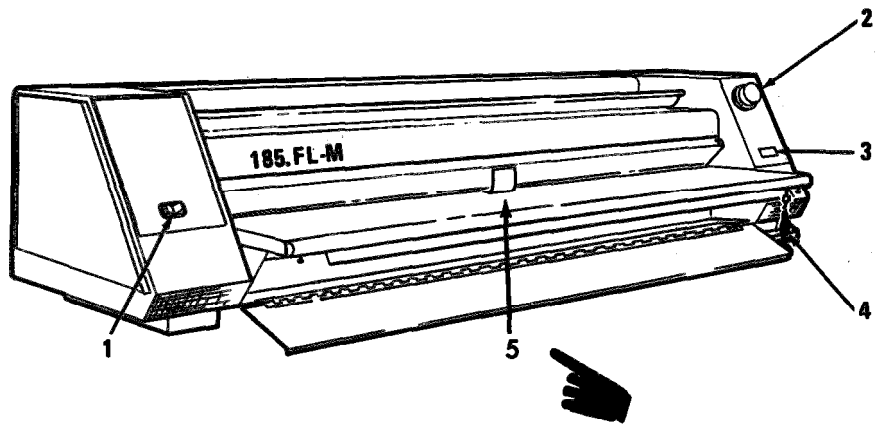
1-8. ELECTRICAL. The heater operates when the equipment is plugged in. The main switch controls power to the pump, blower, drive motor, and fluorescent lamps when the feed switch is depressed. The Speed of the drive motor is controlled by a speed control switch. The motor direction is controlled by the Fwd/Rev switch.

CHAPTER 2

OPERATING INSTRUCTIONS

Page

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS



KEY	CONTROL OR INDICATOR	FUNCTION
1	Hi/Off/Lo Switch	Three-position switch Hi: Used for printing material in medium to fast range (blue-line or black-line paper). Off: Turns off power to lamps, pump, and drive motor. (Does not control heater.) Lo: Used for slow-printing diazo material.
2	Speed Switch	Controls rate material passes past ultra-violet lamps and through ammonia vapor in developer.
3	Fwd/Rw Switch	Controls direction of roller travel. Fwd: Draws material through machine. Rev: Used to clear paper jams.
4	Paper Cutter	Used to cut rolled diazo paper from bulk roll.
5	Feed Switch	When actuated, turns on lamps, pump and drive motor.

Section II. OPERATION UNDER USUAL CONDITIONS

2-1. CHECK AMMONIA SUPPLY.

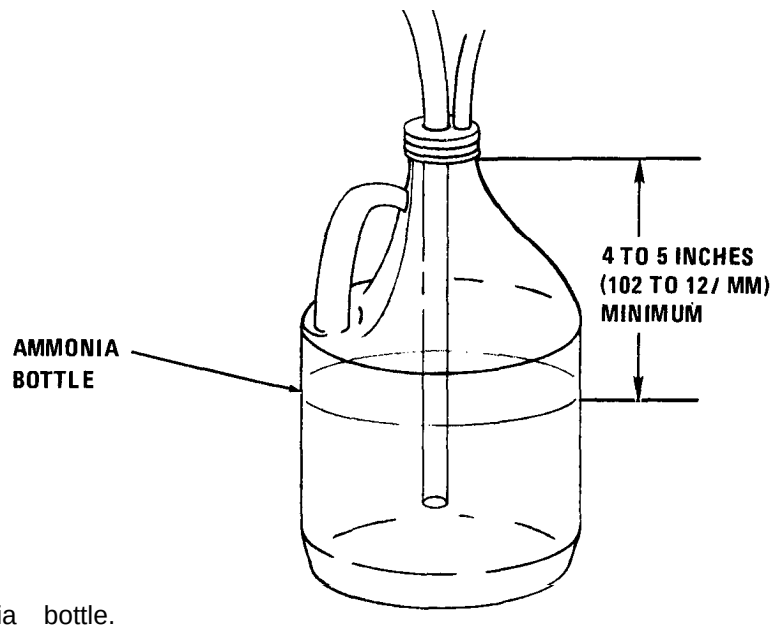
WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating Reproduction Set.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system.

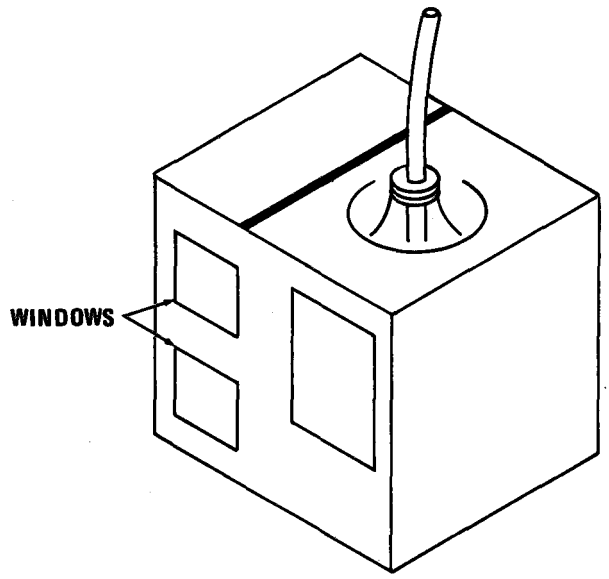
Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes. Anyone overcome by ammonia fumes should be removed to fresh air at once. Refer to FM21-11 and apply artificial respiration. Use oxygen if beathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious,



- Inspect ammonia bottle.
- A minimum of 4 to 5 inches (102 to 127 mm) of air space is required at top of liquid.
- Ammonia in excess of amount specified must be removed and stored for future use. Refer to next higher level of maintenance.

2-2. CHECK ABSORBER SUPPLY.



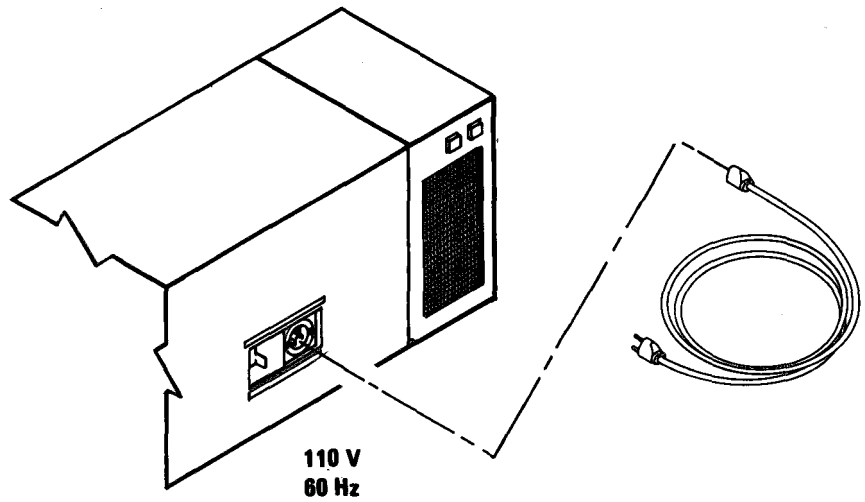
- Determine through windows if color is blue. If color is blue, refer to next higher level of maintenance.

2-3. CONNECT POWER CORD.

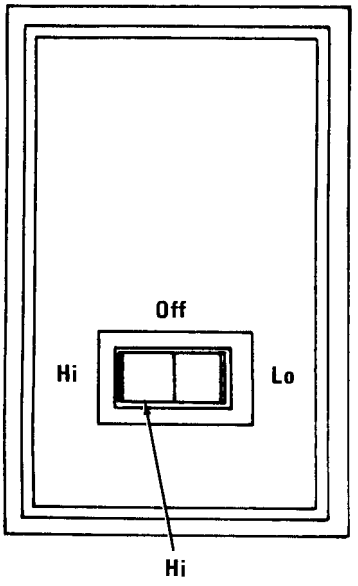
CAUTION

If the machine is to be used with a 220 V line source, internal adjustments must be made by General Support Maintenance.

- Machine is factory adjusted for 110 V ac (60 Hz). Warm up the machine. Wait approximately 15 minutes after plugging in power cord for developer heater to warm up.



2-4. POSITION Hi/OFF/LO SWITCH.

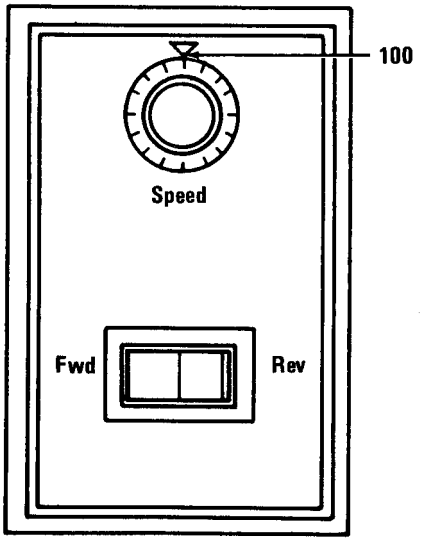


Place Hi/Off/Lo switch to correct position for the paper you are using.

NOTE

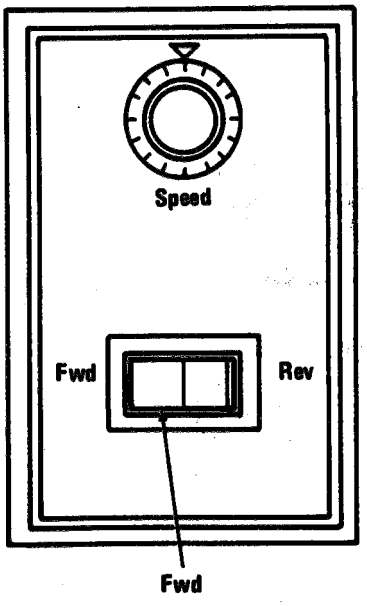
Refer to paragraphs 2-10 and 2-11 for desired setting of Hi/Off/Lo switch.

2-5. SET SPEED CONTROL.



- Set speed control to 100.

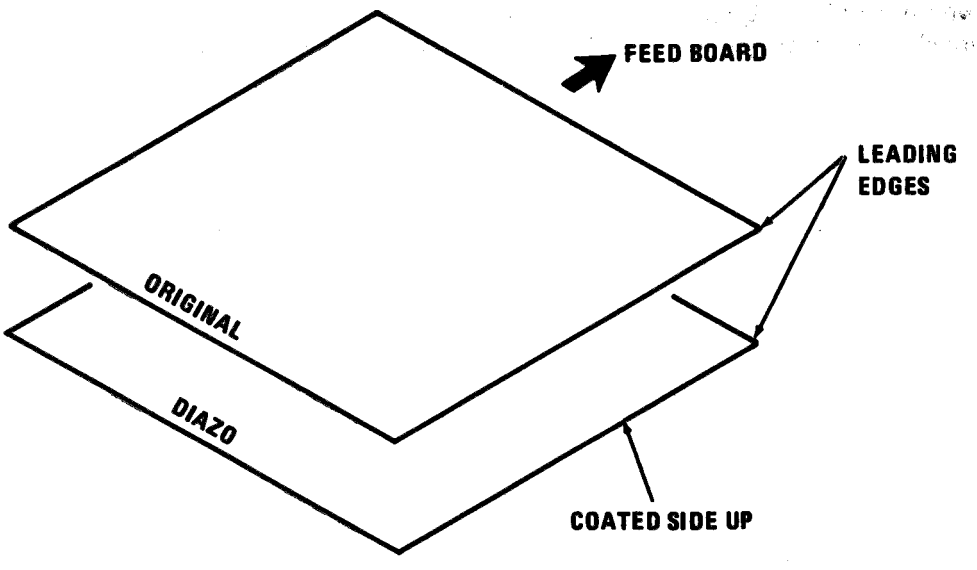
2-6. SET ROLLER DIRECTION.



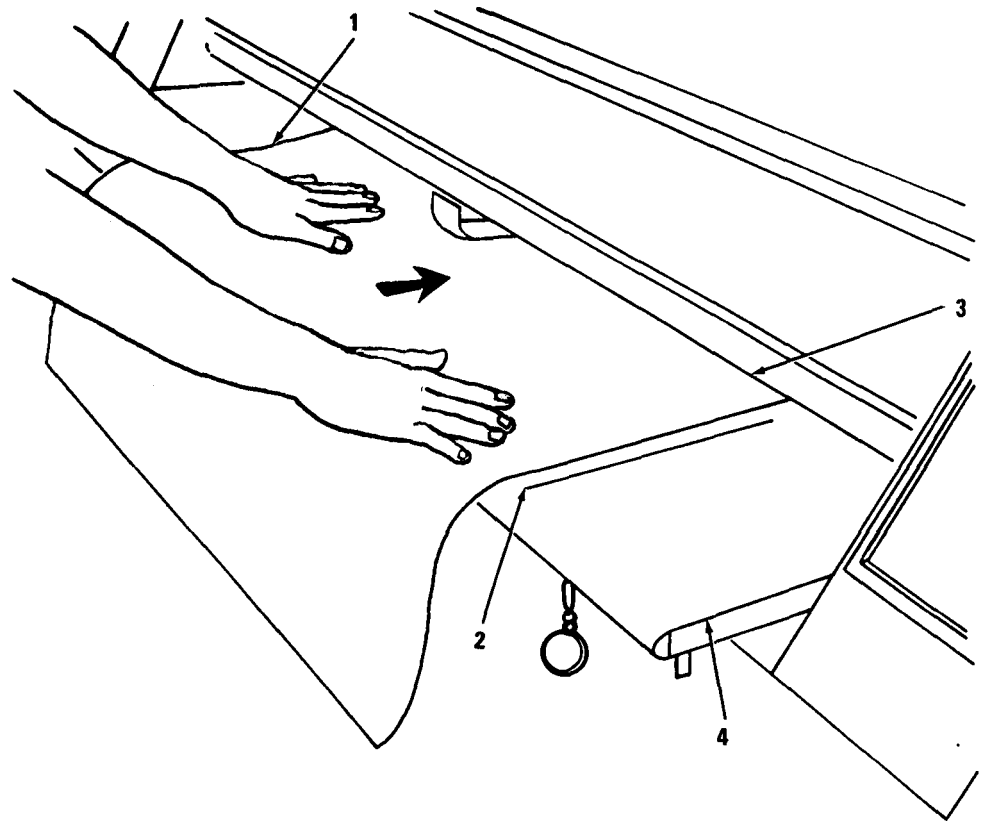
- Set Fwd/Rev switch in Fwd position.

2-7. MAKE TEST RUN.

Place diazo paper (200 SSE blue-line) on feed board (coated side UP).

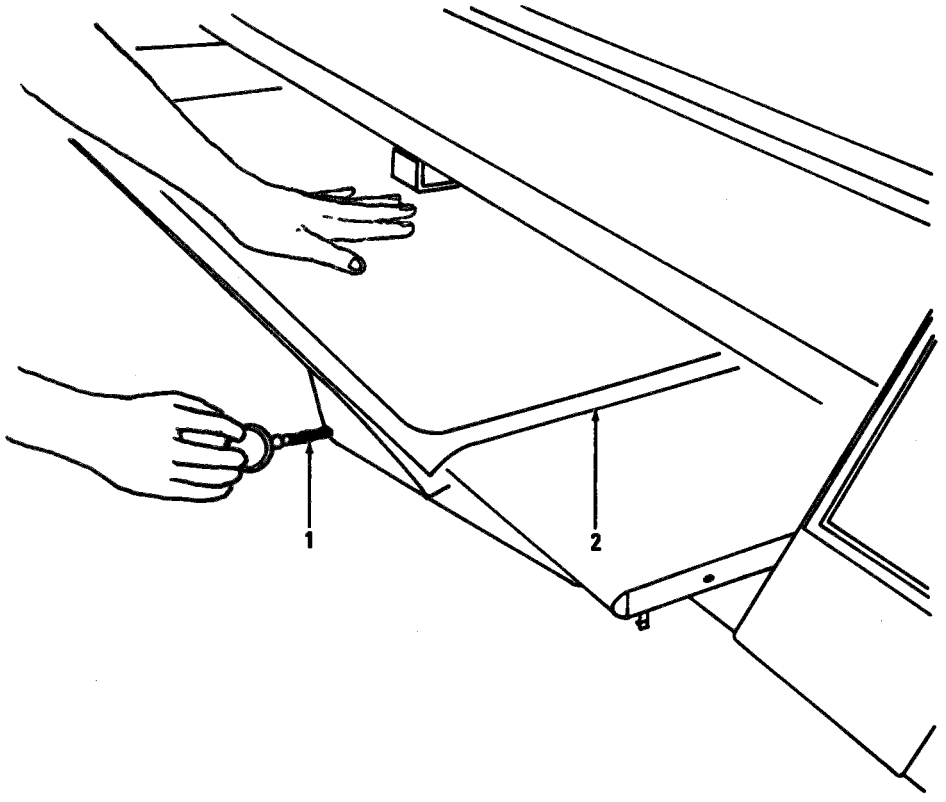


- Positicm original (image sick UP) on top of diazo paper.
- Align leading edges. (Diazo paper width should equal width of original.)



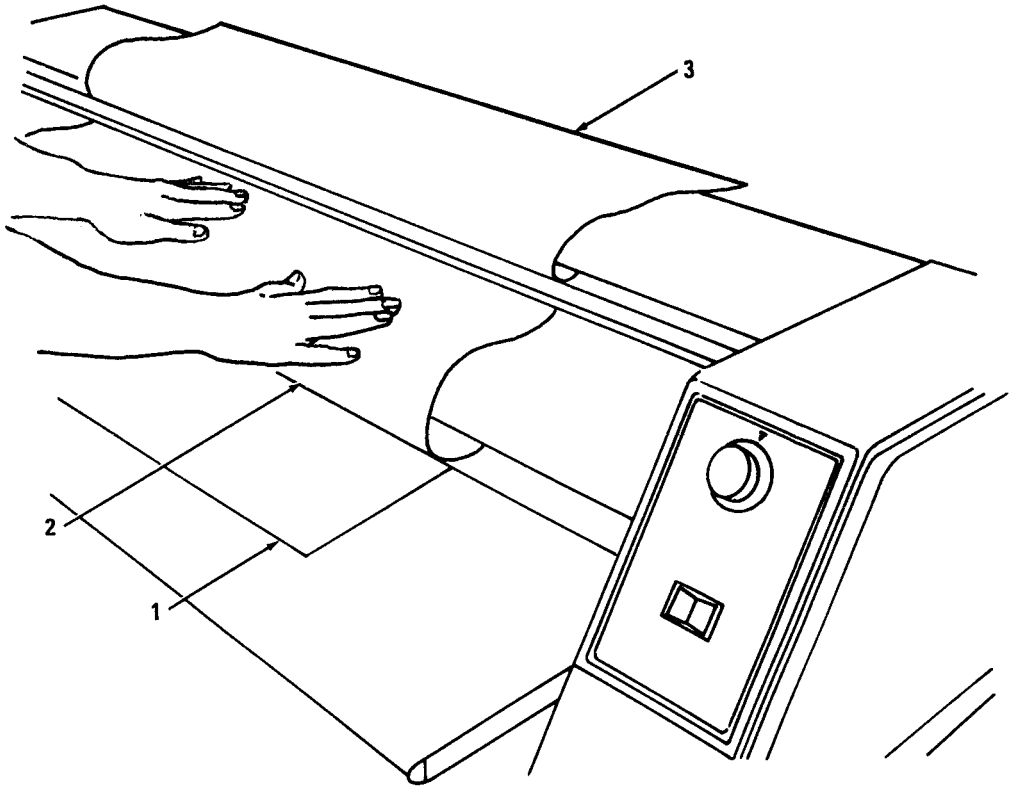
- With two-handed fingertip pressure feed original (1) and diazo sheet (2) evenly into exposure slot (3) of feed board (4). Assure that the feed switch is actuated.

2-8. CUT ROLL DIAZO STOCK.



Pull paper cutter ring (1) up and across paper (2).

2-9. FEED DIAZO PAPER INTO DEVELOPER SECTION.



- Remove original (1).
- Feed diazo material (2) into developer (coated side up).

NOTE

Sepia and polyester diazo papers and films must be fed into developer coated side down.

- Remove completed diazo copy (3).

NOTE

When material is not being processed, machine will turn off after 1 to 2 minutes. Hi/Off/Lo switch must be set to either **Hi or Lo and feed switch must be depressed to continue processing.**

2-10. EXAMINE PROCESSED PRINT.

- Examine diazo product and adjust as follows:

SYSTEM	CAUSE	CORRECTION
Weak lines and no background	Speed too slow	increase speed control or shift to Hi
Dark lines and background	Speed too fast	Decrease speed control or shift to Lo
Strong lines, slight background	Proper adjustment	No change in settings

2-11. PAPER SELECTION GUIDE.

- The following guide may be used to select proper printing diazo paper.

PAPER	Hi/OFF/LO SETTING	SPEED SETTING (FPM)
108 S Black Line	Hi	20
208 S Blue Line	Hi	20
408 ST Intermediate (Sepial)	Hi	20
102 BK View Foil	Lo	18
501 P2 Intensifying Film	Lo	10

NOTE

All slow-printing products, such as polyester films and diazo color films, should be used with a white backing sheet during exposure to ensure even exposure.

Polyester intermediates and diazo color films require slip sheeting over the sensitized side before being fed into the developer tank. Standard weight diazo paper shall be used to prevent scratching polyester intermediates and diazo color film against developer screen.

Sepia and polyester diazo papers and films must be burned over (coated side down) to develop.

2-12. EQUIPMENT FAILURE. If your equipment fails to operate report any deficiencies in accordance with DA PAM 738-750.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. LUBRICATION INSTRUCTIONS. Organizational maintenance lubrication instructions for the machine are found in table 3-1. These instructions are mandatory. They will be performed at the intervals indicated.

3-2 TOOLS AND MATERIALS REQUIRED.

ITEM	QUANTITY
Flat-Tipped Screwdriver	1
Grease	ar

Table 3-1. Organizational Maintenance Lubrication Instructions

ITEM NO	INTERVAL	ITEM TO BE LUBRICATED PROCEDURE
1		DELETED

Table 3-1. Organizational Maintenance Lubrication Instructions (Continued)

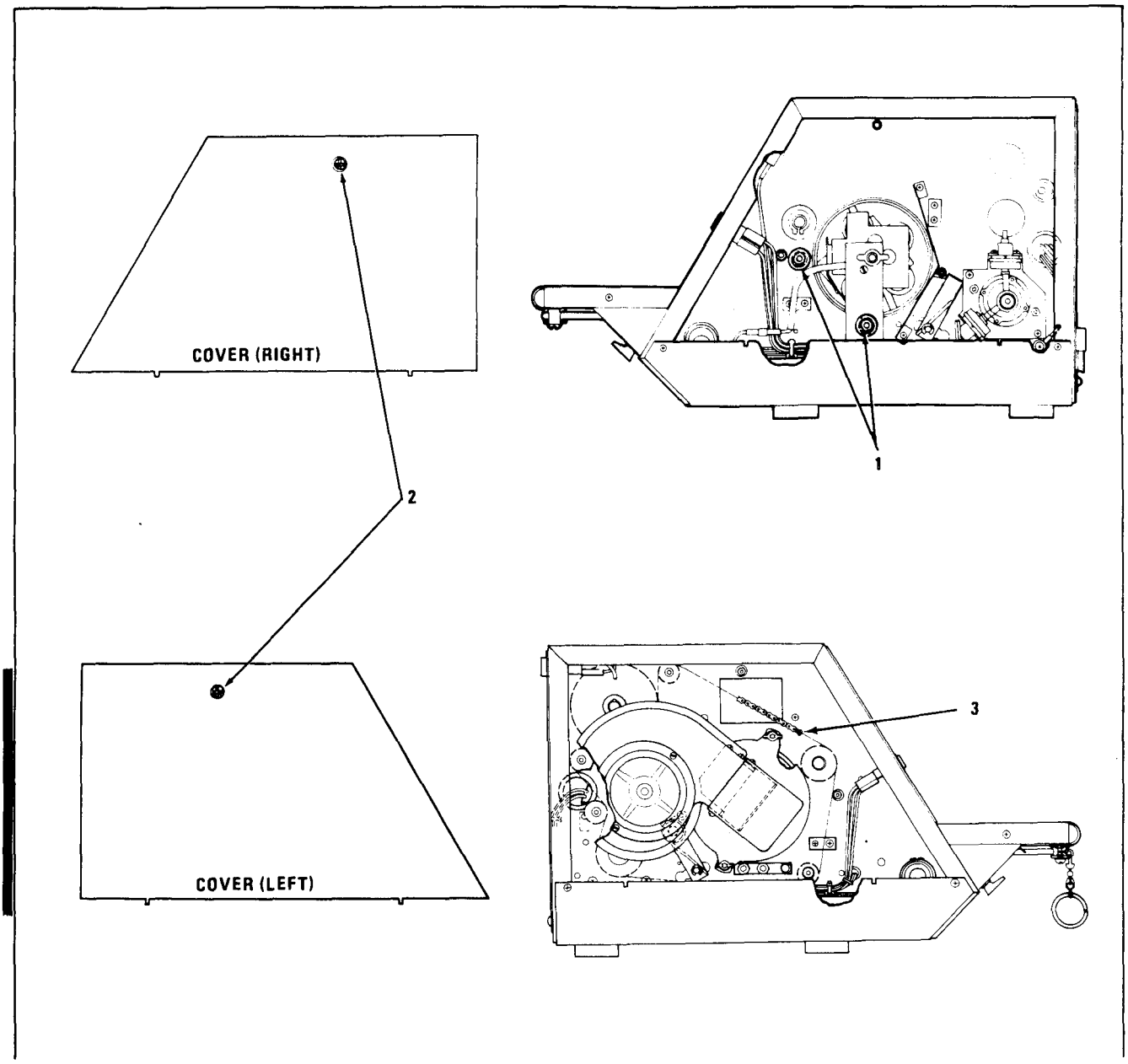


Table 3-1. Organizational Maintenance Lubrication Instructions (Continued)

ITEM NO	INTERVAL	ITEM TO BE LUBRICATED PROCEDURE
2	6 months or 100 hours of operation	**CHAIN** **WARNING** Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning. a. Power OFF. b. Unplug power cord. c. Remove left cover by turning captive screw (2). d. Place the I-Ii/Off/Lo switch in the off position. e. Plug in power cord. Turn power ON. f. Activate feed switch. g. Lubricate chain (3). h. Turn power OF F and unplug power cord. i. Reinstall left cover by turning captive screw. j. Plug in power cord. k. Power ON. l. Perform operational test.

Section II. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT

3-3. COMMON TOOLS AND EQUIPMENT For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

3-4. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT, AND SUPPORT EQUIPMENT. Test, measurement, and diagnotic equipment, and support equipment are not required for the repair of this equipment at the organizational level of maintenance.

3-5. REPAIR PARTS AND SPECIAL TOOLS. Repair parts and special tools for this equipment are listed and illustrate in TM 5-3610-256-24P (to be published).

Section III. SERVICE UPON RECEIPT OF EQUIPMENT

3-6. GENERAL.

a. Inspect the Reproduction Set for damage incurred during shipment. If the equipment has been damaged, report it on DD Form 6, Packaging Improvement Report.

b. Check the equipment against the packing slip to see if the shipment is complete. Report any discrepancies in accordance with the instructions of TM 38-750.

c. Check to see whether the equipment has been modified.

3-7. LOCATION. Careful planning in selecting a location for the Reproduction Set will result in efficient operation.

a. The Reproduction Set shall be placed in a room (minimum size of 120 square feet (1 1 square meters)) with good ventilation,

b. A minimum clearance of 64 inches (1626 mm) on the left side of the machine is necessary to allow lamp assembly removal.

c. Ammonia container and absorber supply must be placed below machine level for proper machine operation.

3-8. POWER SOURCE.

The Reproduction Set shall be located within 6 feet (1.8 m) of power source.

CAUTION

For maxim-mm efficiency, the voltage supplied to the machine should be as close to the prescribed optimum voltage (110 V ac or 220 V dc) as possible. Serious damage to electrical components may result from extreme high or low fluctuations. We a standard, two-conductor, grounded receptacle convenient y close to the rear of the machine.

3-9. MACHINE UNCRATING. The Reproduction Set is shipped bolted to a reusable wooden crate. The machine can be removal from the carton and made ready for installation as follows:

a. Remove top of crate only.

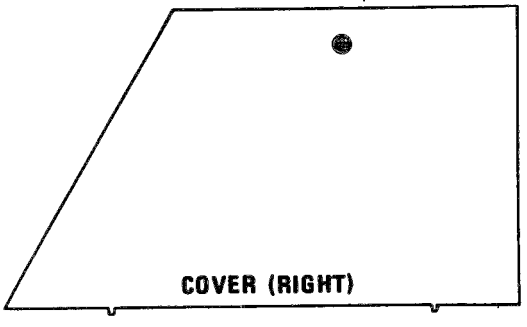
b. Extract contents of top shelf.

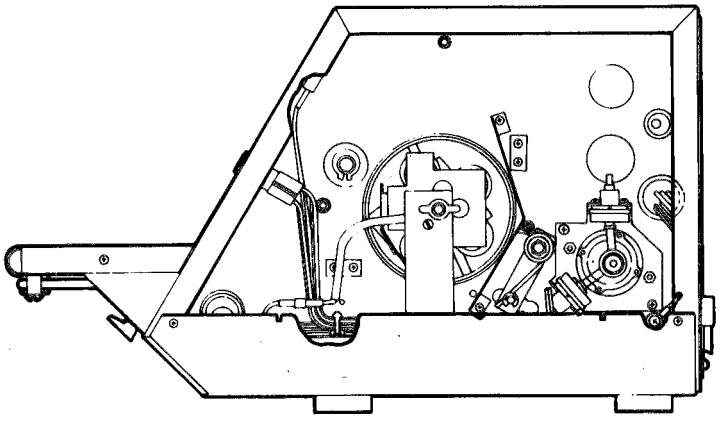
c. Remove top shelf and remaining crate sides.

d. Remove machine.

3-10. MACHINE ASSEMBLY. After removing the shipping container, the following steps must be permed to ensure proper installation.

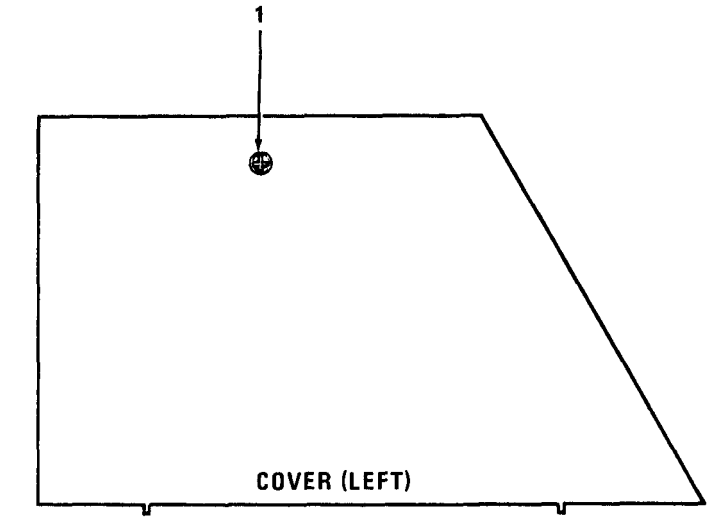
TOOLS: Flat-Tipped Screwdriver

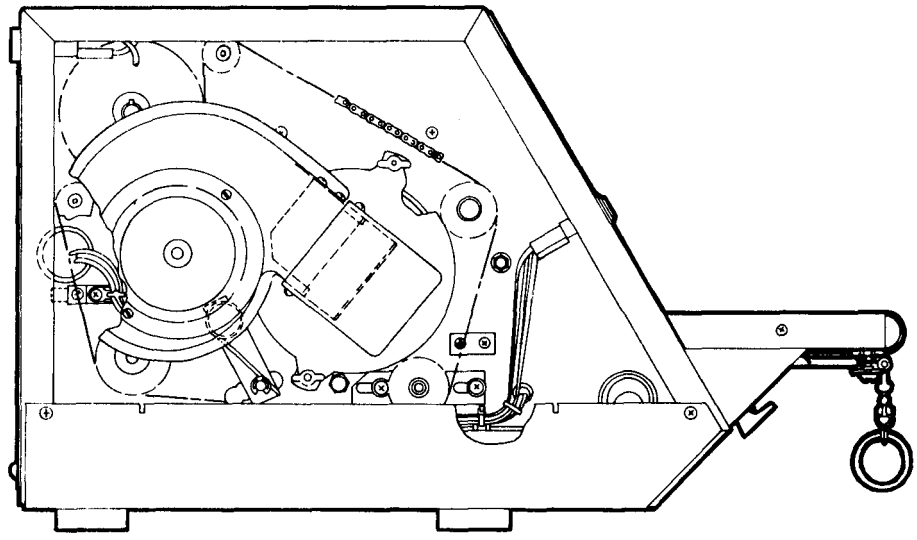




WARNING

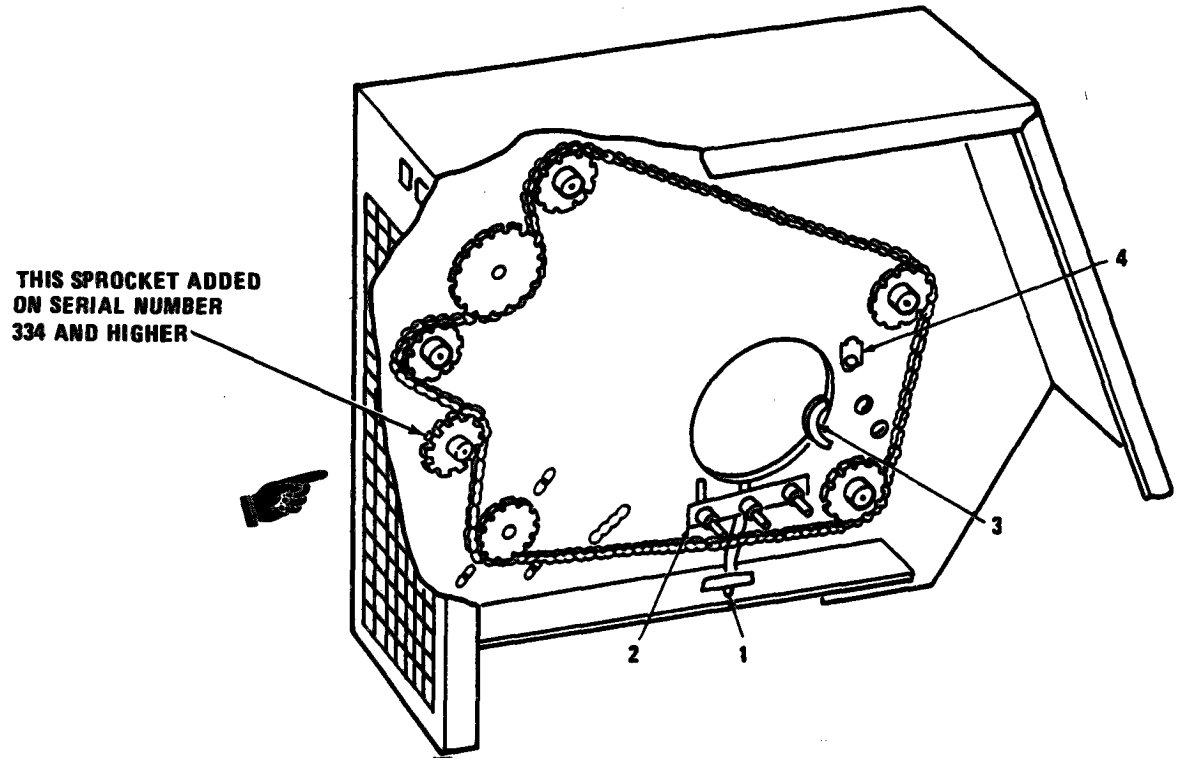
Until instructed to do so, do not plug the machine in. Follow these instructions in the exact order they are presented. Death or injury may result from 'failure to comply with this warning.





a. Remove the left and right covers by turning captive screws (1).

b. After removing covers, find two nylon bearings with hardware in an envelope taped to the left end of the machine. Detach and set aside,



c. In each end housing find a blue tie (1) taped to the base. Remove the tape and pull tie out

d. Lift bearing arm (2) until a click is heard. This raises the lower cylinder bearing. Try to push the arm back down. If it goes down, the pin did not set Repeat this step until the arm locks in place.

e. Remove the cardboard from the right end of the cylinder.

f. Face the front of the machine. Located on each end is a piece of nylon tubing (3). Remove this tubing completely and retain it for future use when packing machine for shipment

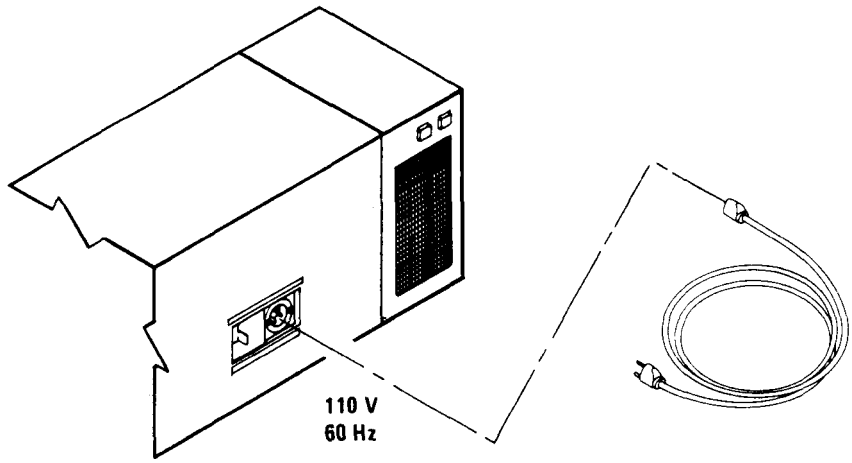
NOTE

Cylinder packaging may obscure this tubing. The tubing is wedged between the endplate and cylinder. The tubing can be seen inside the endhousings but will be removed only from the front of the machine.

g. Place the Hi/Off/Lo switch in the Off position. Set the speed dial to approximately 5. Place the Fwd/Rev switch in the Rev position.

CAUTION

If the machine is to be used with a 220 V line source, internal adjustments must be made by General Support Maintenance.



h. Plug the machine into a 110 V ac, grounded outlet. Turn power ON and dress feed switch. With a slight pulling motion, remove the packing material which is wrapped around the cylinder.

i. After removing all packing material, turn power OFF and unplug power cord.

j. Refer to mounting hole (4) as indicated in illustration on previous page. Install the two bearings as follows:

- Remove the nut from the bearing assembly.
- Screw bearing studs in each endplate mounting hole until tight.
- Tighten nut inside the endhousings fingertight.

3-11. INSTALLATION OF AMMONIA AND ABSORBER SUPPLIES.

WARNING

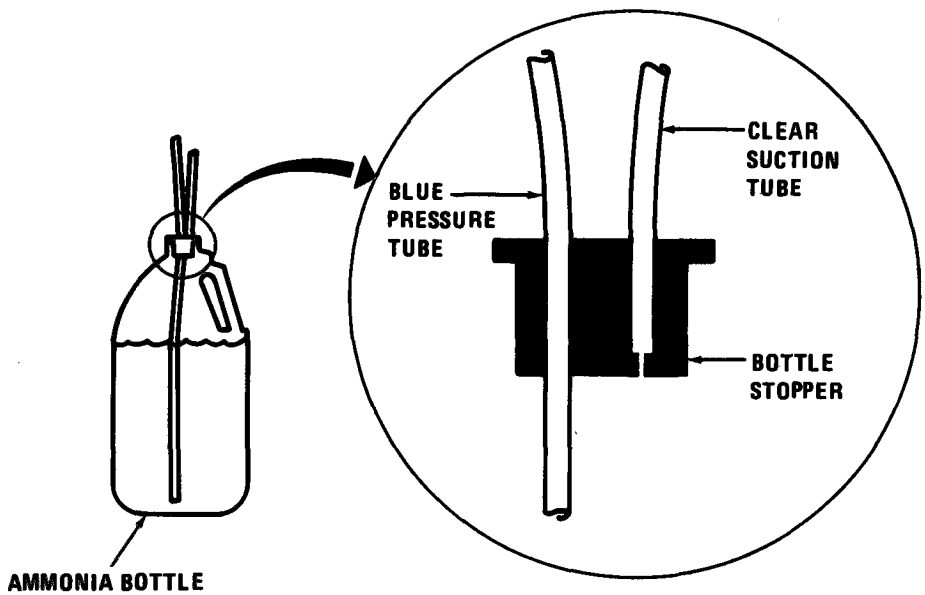
- Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating Reproduction Set.
- Ammonia may cause eye injury or blindness. Eye protection is mandatory while servicing the ammonia system.
- Ammonia may cause skin burns or irritation. Do net let ammonia contact skin or clothing.
- First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes, Anyone overcome by ammonia fumes should be removed to fresh air at once. Refer to FM21-11 and apply artificial respiration. Use oxygen if breathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious.

a. Put on safety glasses.

CAUTION

DO NOT REVERSE the hoses leading from the pump to the ammonia supply bottle. This will cause pumping liquid ammonia or absorber into the system, resulting in instant and total equipment contamination. Should this condition exist, it will be necessary to thoroughly clean the pump, vacuum chamber developer tank, and tubing to render the equipment operable.

The correct position of the tubes in the ammonia supply bottle indicated below are not to be changed. Pushing the suction tube down into the ammonia will cause liquid ammonia to be drawn up into the developer tank. This will result in strong ammonia vapors and possible machine damage.



b. Untape the tubing from the machine and place the two hoses with the attached stopper and cap in the ammonia bottle. To avoid ammonia fumes, ensure that the ammonia cap is on straight and tight.

NOTE

Before attaching the absorber supply, add water to the container as indicated by the instructions on the box. Using your fingers, remove the two perforated square tabs covering the absorber viewing ports.

c. Insert the single hose with the attached disperser into the absorber container.

Section IV. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-12. GENERAL

Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 3-2 lists the PMCS procedures to be performed by organizational maintenance level. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

3-13. ITEM NUMBER COLUMN.

The numbers found in the ITEM NUMBER column shall be used as a source of item numbers for the TM NUMBER column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.

3-14. TOOLS AND MATERIALS REQUIRED.

ITEM	QUANTITY
Ammonia Absorber	1
Ammonia Plus No. 2	1 gallon
Safety Goggles	1
Baumé Hydrometer	1
Bulk Copy Paper	ar
Household Ammonia	ar
Cotton Cloths	3
Flat-Tipped Screwdriver	1
Cylinder Cleaning Swab	1
Glass Cleaner	ar
Cross-Tipped Screwdriver	1

Table 3-2. Organizational Preventive Maintenance Checks and Services

W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
1	•		**MACHINE**

WARNING

Do not operate machine with defective power cord. Death from electrocution may result.

1. **Visually inspect power cord (1) for burns, tears, fraying, or broken plug prongs.**

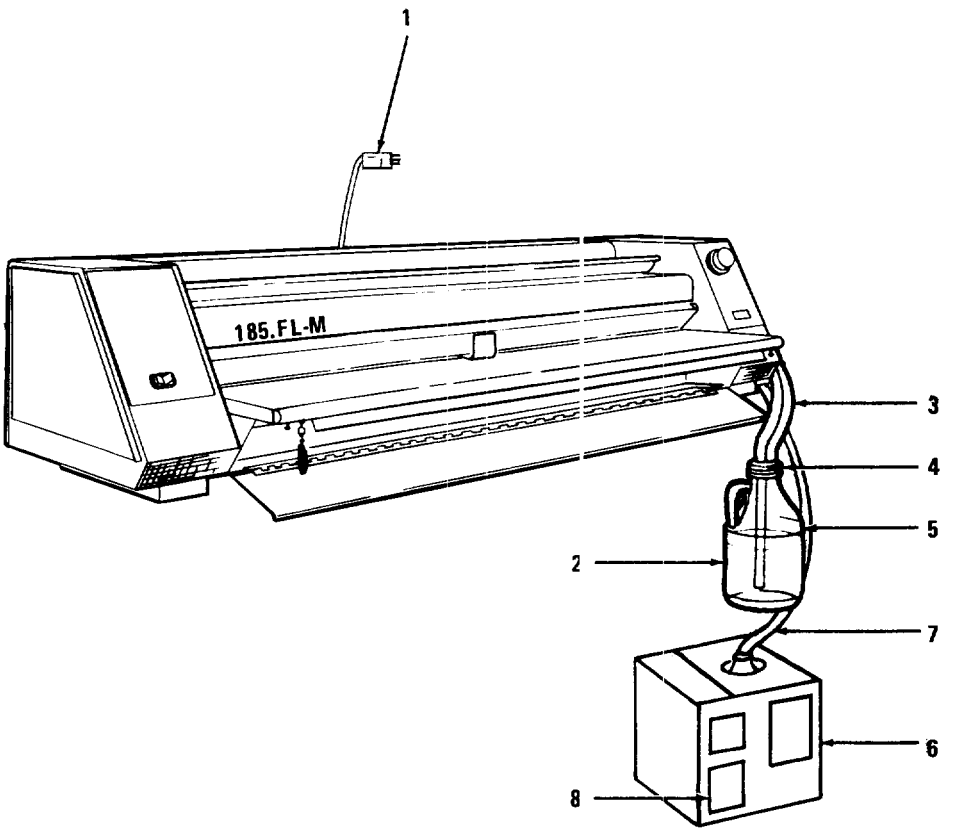


Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W - Weekly **M - Monthly**

Item No.	Interval		Item to be Inspected / Procedure
	W	M	
	•		**MACHINE (CONTINUED)**

WARNING

Do not service or adjust ammonia containers without protective safety goggles. Blindness or injury may result from failure to comply with this warning.

2. Visually inspect ammonia container (2) for secure connection of tubes (3), and ensure that stopper (4) is securely in place.

3. Visually inspect ammonia level (5). Level must be 4 to 5 inches (102 to 127 mm) from top of container. Do not operate equipment if ammonia level is not at 4 to 5 inches (102 to 127 mm) from top of bottle.

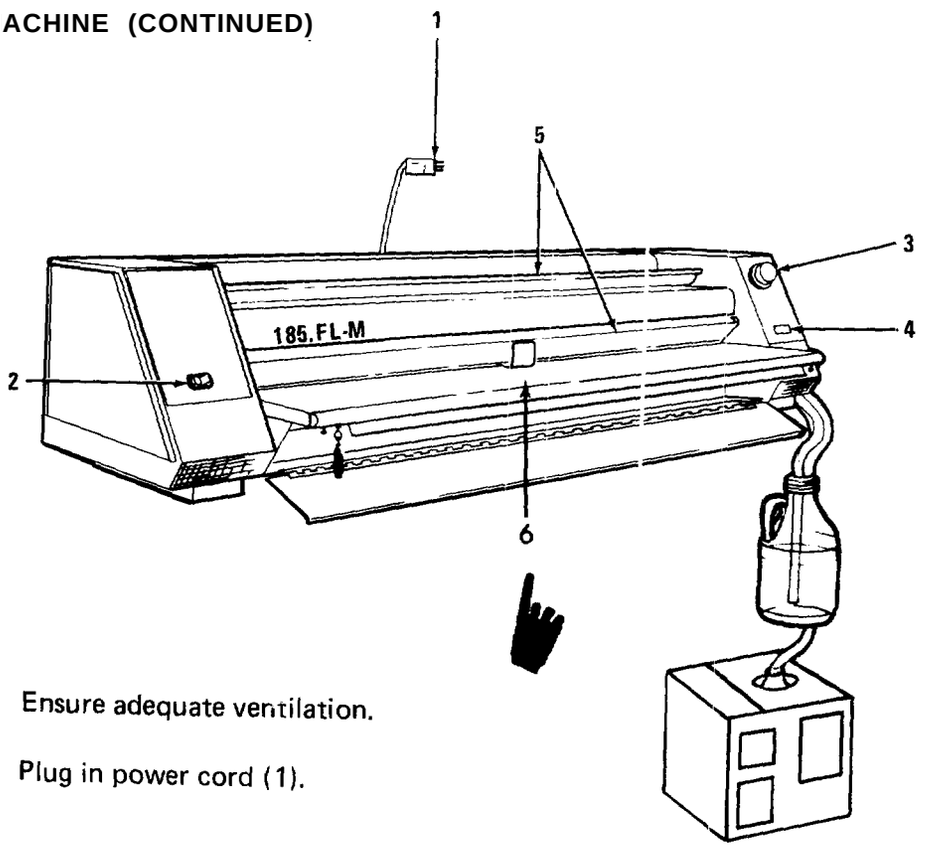
4. Visually inspect absorber container (6). Ensure tubing (7) is connected. Check color of absorber. Do not operate equipment if blue color is observed at window (8).

5. Observe machine for noticeable ammonia vapor fumes.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W - Weekly M - Monthly

Item No	Interval W	Interval M	Item to be Inspected / Procedure
			MACHINE (CONTINUED)



Ensure adequate ventilation.

Plug in power cord (1).

WARNING

If heavy concentration of ammonia vapor is detected, stop operation of machine and unplug power cord. Do not operate until cause of vapor leak is identified and corrected. Ammonia vapor can cause blindness or injury to personnel.

8. **Allow warm-up time of 15 minutes.**

9. **Set Hi/Off/Lo switch (2) to Hi position.**

10. **Set Speed (3) to 100.**

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly **M – Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		**MACHINE (CONTINUED)** 11. Press Fwd/Rev switch (4) to Fwd and depress feed switch (6). Observe machine rollers (5) move in forward direction. 12. Press Hi/Off/Lo switch to OFF. 13. Observe machine stops in 3 to 4 minutes. 14. Unplug power cord.
2	•		CHECK AMMONIA ABSORBER. **WARNING** Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation prior to servicing or operating Reproduction Set. Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause burns or irritation. Do not let ammonia contact skin or clothing.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

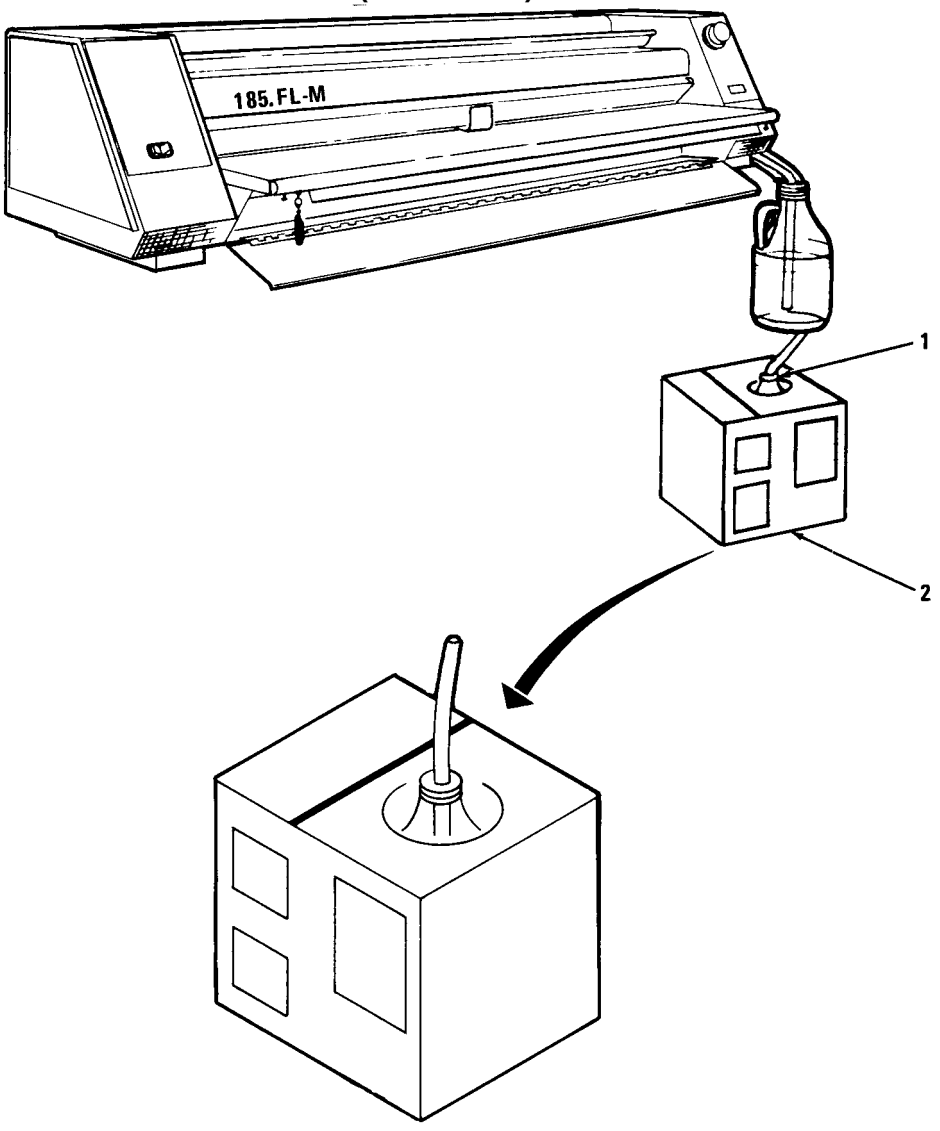
w – weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
			CHECK AMMONIA ABSORBER (CONTINUED)
			WARNING First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes. Anyone overcome by ammonia should be removed to fresh air at once. Refer to FM21-11 and apply artificial respiration. Use oxygen if breathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious.
			NOTE Check the windows of the absorber container for a blue tint. If blue tint is observed, service as follows.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly **M – Monthly**

Item No.	Interval W	Interval M	Item to be Inspected Procedure
	•		**CHECK AMMONIA ABSORBER (CONTINUED)**



1. Put on safety goggles.
2. Remove tube (1) from absorber container (2). Remove container.
3. Add amount of fresh water to new container as specified on label. Amount may vary between authorized containers.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

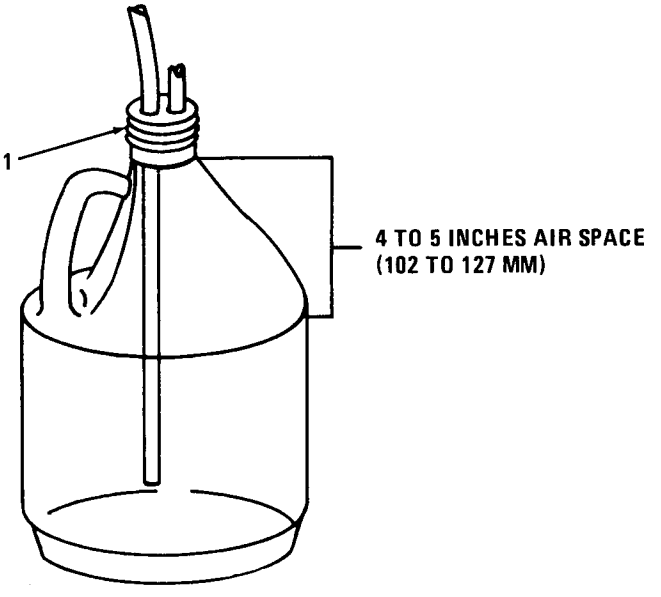
W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		**CHECK AMMONIA ABSORBER (CONTINUED)** 4. Place new absorber container in position and connect tubing. 5. Remove and stow safety goggles. 6. Dispose of old absorber container.
3	•		**TEST AMMONIA SUPPLY.** **WARNING** Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation prior to servicing or operating Reproduction Set. Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected Procedure
			TEST AMMONIA SUPPLY (CONTINUED)

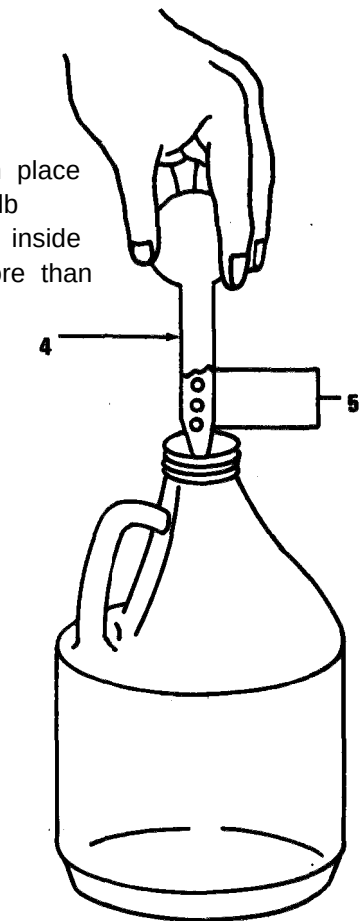


1. Put on safety goggles.
2. Carefully remove bottle stopper (1) from ammonia supply bottle. Do not pull tubing.
3. Place capon bottle and tighten securely.
4. Remove bottle to well ventilated area.
5. Hold bottle at arm's length and remove cap.

Table 3-2. Organizational Preventive Maintenance Checks and Sew ices (Continued)

W - Weakly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		**TEST AMMONIA SUPPLY (CONTINUED)**



6. Gently squeeze hydrometer (4) bulb. Then place hydrometer tip in ammonia and release bulb slowly until ammonia covers colored beads inside hydrometer. Do not draw ammonia up more than 2/3 of the hydrometer's length.

7. Hold hydrometer (4) in vertical position. Reading is accurate only when hydrometer is vertical.

8. Count number of floating beads (5). The more beads floating, the weaker the ammonia solution. If three or more beads are floating, the ammonia must be replaced with a fresh bottle.

No. of Floating Beads	Baumé Reading (degrees)
1	26
2	24
3	21
4	18
5	16

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

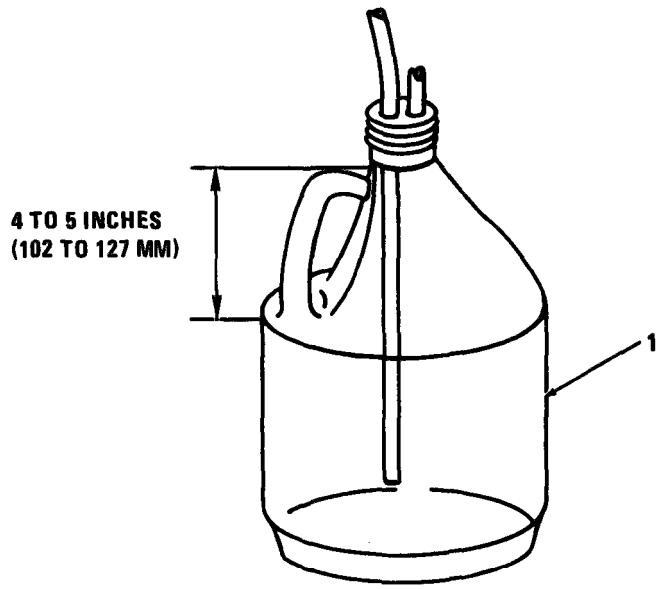
W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		**TEST AMMONIA SUPPLY (CONTINUED)**
			NOTE Machine will not operate satisfactorily if ammonia is 21 degrees or less on the the Baumé scale.
			9. Place new ammonia bottle in proper position. Bottle must be below machine level.
9			10. Remove cap and replace with stopper. Check tubing connection. Clear tube (2) is suction tube and must be firmly set into stopper. Do not place clear tube in liquid. Blue (processor) tube (3) goes through stopper in liquid.
			11. Check stopper cap. It must be tight. If bottle has been replaced, ensure that old ammonia bottle is tightly capped.
			12. Rinse hydrometer in cold water and stow,
			13. Refer to the WARNINGS page and dispose of old ammonia bottle. Stow eye protection.
4	•		**SERVICE AMMONIA CONTAINER.**
			WARNING Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation prior to servicing or operating Reproduction Set. Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

Table 3-2. Organizational Preventive Maintenance Checks and services (Continued)

W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	●		**SERVICE AMMONIA CONTAINER (CONTINUED)** 1. Inspect ammonia container (1). Container must have 4 to 5 inches (102 to 127 mm) of air space between surface of solution and top. Excess solution must be removed. Do not store ammonia in glass containers. Too little requires adding solution. Solution must be tested before adding.



NOTE

Operating machine with excess or incorrect solution will affect material development.

2. Put on safety goggles.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly M – Monthly

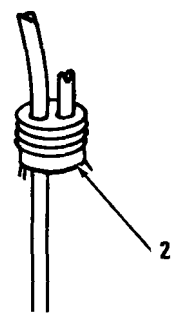
Item No.	Interval W	Interval M	Item to be Inspected Procedure
	•		**SERVICE AMMONIA CONTAINER (CONTINUED)** 3. Carefully remove stopper (2) from ammonia supply bottle. Do not pull tubing.  4. Place capon bottle and tighten securely. 5. Remove bottle to well ventilated area or outdoors. 6. Hold bottle at arm's length and remove cap. 7. Test ammonia supply using test procedure. If ammonia is not at Baumé 21 degrees (three or more beads floating), replace ammonia. Do not service.

Table 3-2. Organizational Preventive Maintenance Checks and Sarvices (Continual)

W - Weakly **M - Monthly**

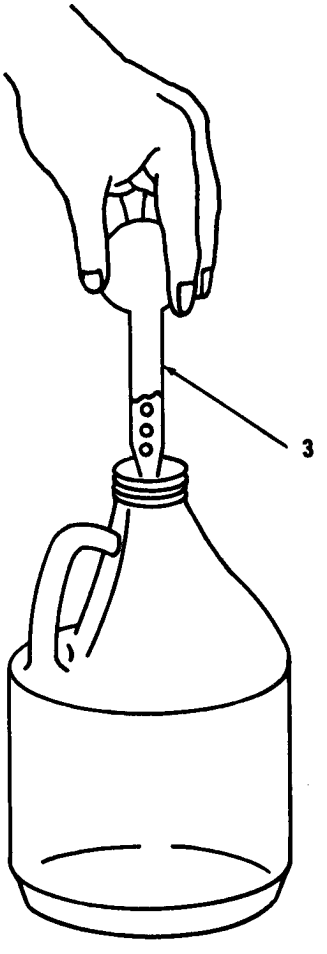
Item No.	Interval		Item to be Inspected / Procedure
	W	M	
	•		**SERVICE AMMONIA CONTAINER (CONTINUED)**
			8. Use hydrometer (3) to remove excess ammonia and place in spare ammonia container. Do not place excess ammonia in glass container. Use hydrometer to transfer ammonia from spare ammonia container to equipment container. Continue transfer until liquid level is 4 to 5 inches (102 to 127 mm) from container top.
			
			9. Tightly cap containers before returning them to machine.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

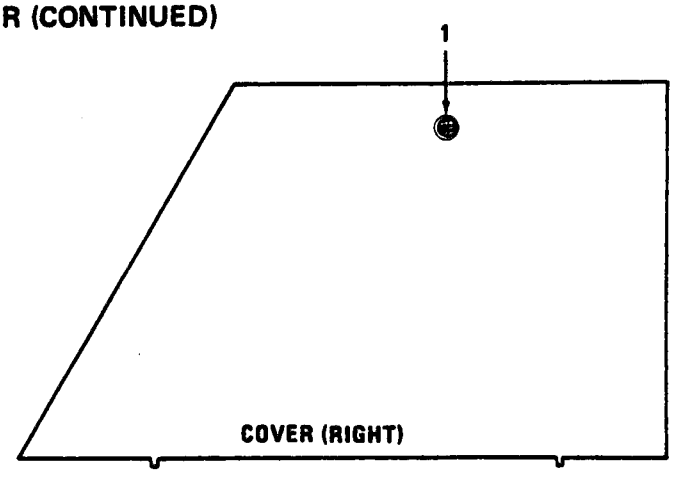
W – Weekly M – Monthly

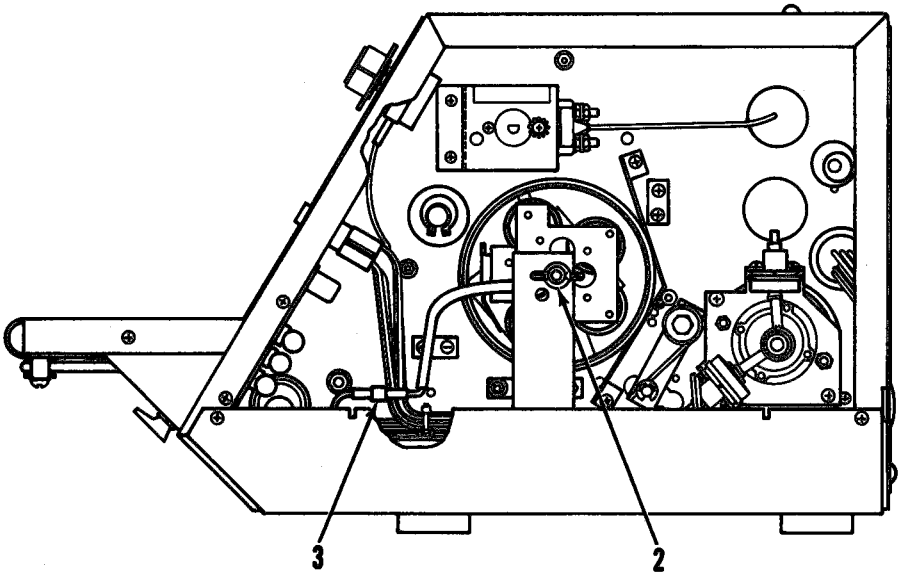
Item No.	Interval W	Interval M	Item to be Inspected Procedure
	•		SERVICE AMMONIA CONTAINER (CONTINUED) 10. Replace container. 11. Remove cap and place stopper in bottle. 12. Check tubing connection. (Clear tube is firmly in cap, not in liquid. Blue tube goes through cap and into liquid.) 13. Rinse hydrometer in cold water. Stow safety glasses and hydrometer.
5		•	CLEAN CYLINDER. **WARNING** Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning. 1. Power OFF. 2. Unplug power cord.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W — Weekly M — Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		CLEAN CYLINDER (CONTINUED)



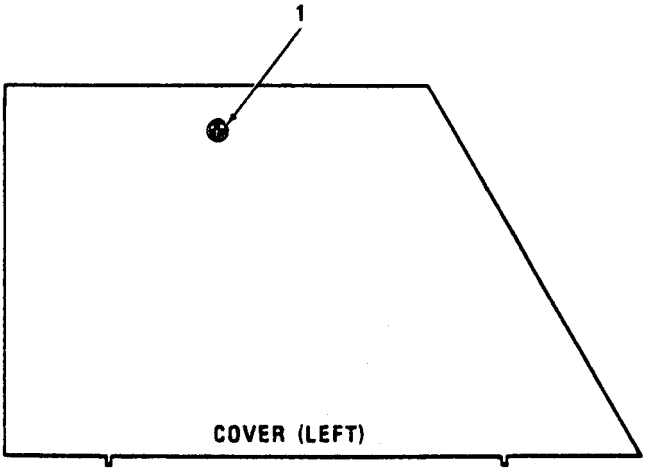


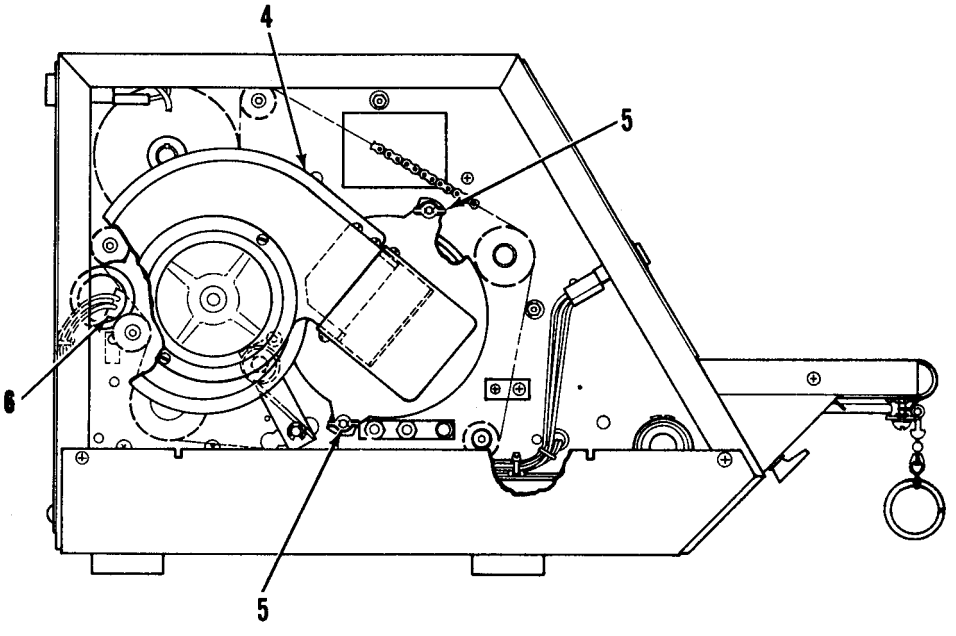
3. Turn captive screws (1) on right and left covers to release.
4. Remove wing nut (2) from right lamp assembly.
5. Disconnect right lamp connector (3).

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly M – Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		CLEAN CYLINDER (CONTINUED)



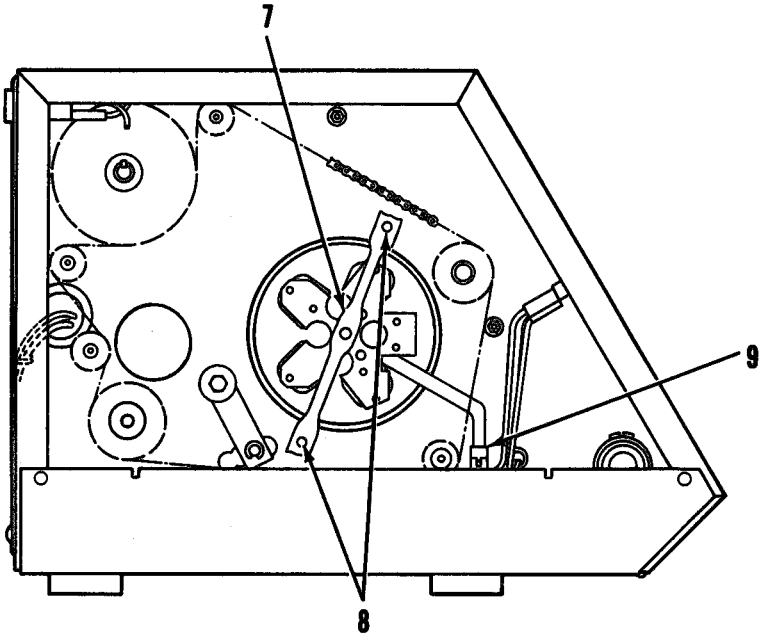


6. Remove cylinder exhaust blower (4) from left end of machine by removing two wing nuts (5) and disconnecting motor connector (6).

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

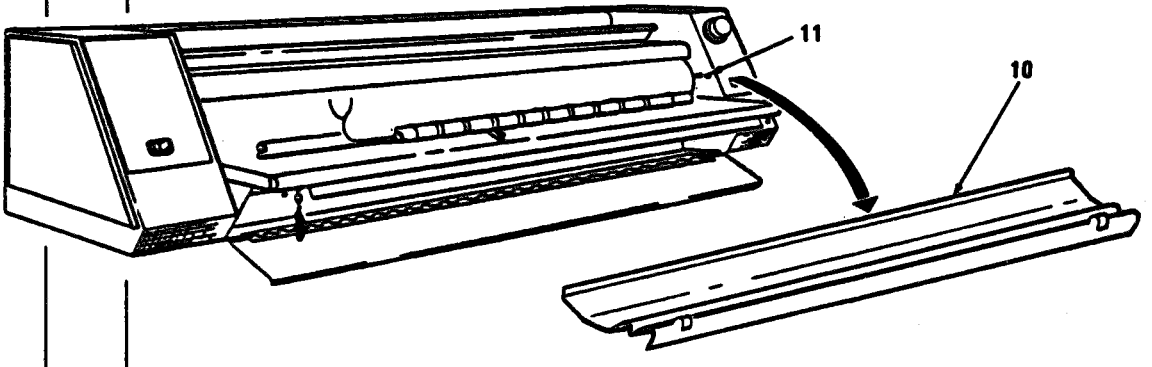
W — Weekly M — Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		CLEAN CYLINDER (CONTINUED)



7. Remove exhaust blower bracket (7) by pulling straight out from studs (8).

8. Disconnect left lamp connector (9).

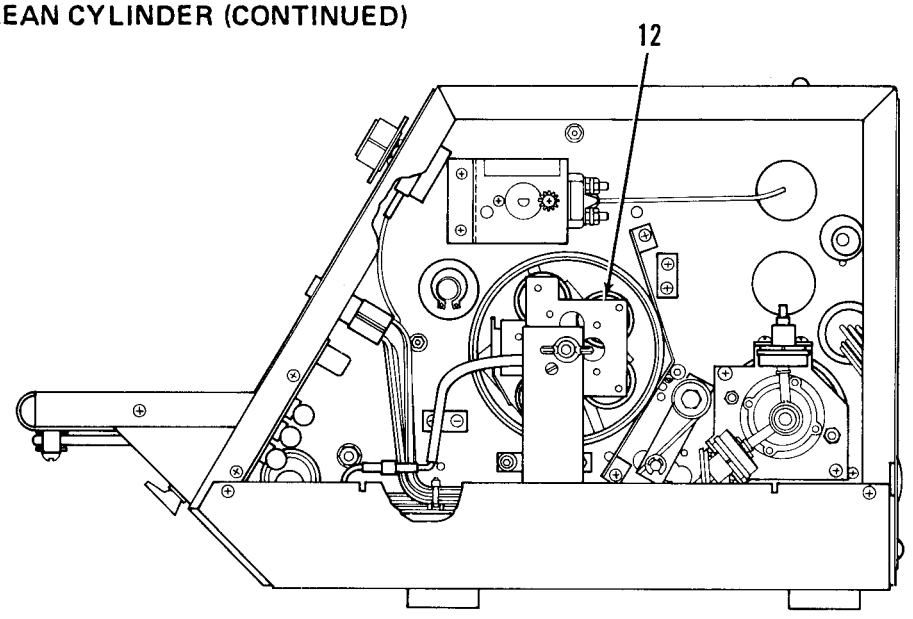


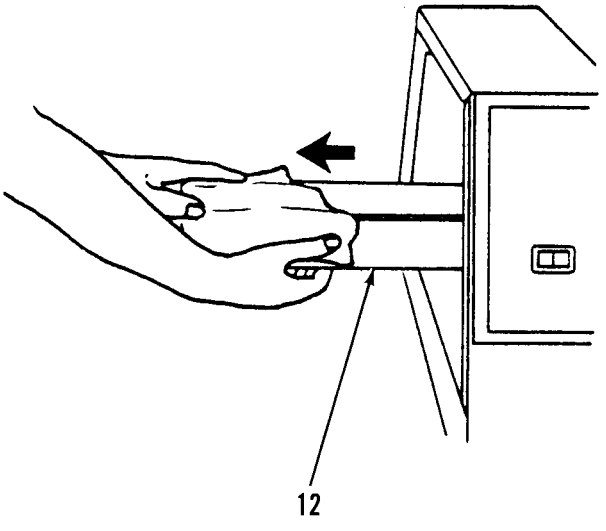
9. Remove cylinder pick-off assembly (10) by lifting free from studs (11).

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly M – Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		CLEAN CYLINDER (CONTINUED)





10. Withdraw lamp assembly about 2 inches (4.5 mm). Wrap cloth around right and left ends of lamp assembly (12) and carefully withdraw lamp assembly by pulling from left end.

11. Lay lamp assembly (12) on working surface and wipe clean.

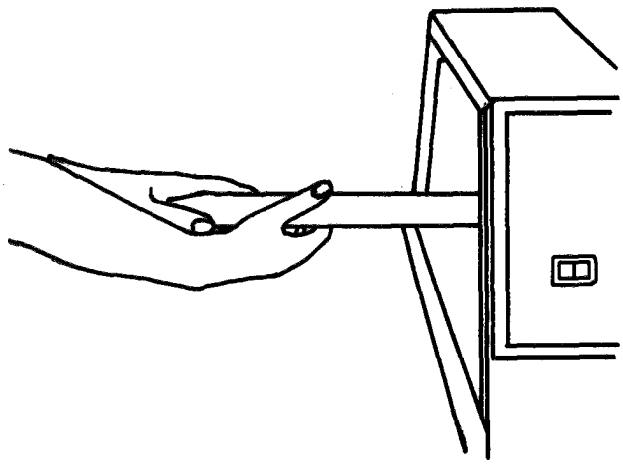
Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly M – Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	•		**CLEAN CYLINDER (CONTINUED)**

NOTE

Cylinder can be cleaned only from left end.



12. Wrap clean cloth around cylinder cleaning swab and move swab back and forth the length of cylinder.
13. Withdraw swab, discard cloth and wrap swab with fresh cloth.
14. Moisten fresh cloth with glass cleaner and swab cylinder.
15. Place cloths around right and left ends of lamp assembly and carefully insert assembly from left end. Remove both cloths.
16. Reconnect left lamp connector.
17. Reinstall exhaust blower bracket on studs.
18. Reinstall cylinder exhaust blower on left end of printing cylinder.
19. Reinstall wing nuts.

Table 3-2. Organizational Preventive Maintenance Checks and Services (Continued)

W – Weekly **M – Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
	●		**CLEAN CYLINDER (CONTINUED)**
			20. Reconnect motor connector.
			21. Reconnect right lamp connector.
			22. Reinstall wing nut on right lamp assembly.
			23. Reinstall right and left covers and turn captive screws.
			24. Depress feed switch and cover with tape.
			25. Set Speed control to lowest number.
			26. Plug in power cord.
			27. Power ON and depress feed switch.
			28. Dampen cloth with glass cleaner.
			WARNING Care must be used when cleaning cylinder as printing belts are moving. Cloth and fingers must be kept clear of belts or injury may result.
			29. Move cloth along rotating cylinder.
			30. Dry rotating cylinder with clean, dry cloth.
			31. Power OFF.
			32. Reinstall cylinder pick-off assembly on studs.
			33. Unplug power cord.

Section V. TROUBLESHOOTING PROCEDURES

3-15. TROUBLESHOOTING TABLE. Proper troubleshooting procedures require that preliminary checks be accomplished, all connections be tight and secure, and safeguards be utilized to prevent excess ammonia vapor from entering the working area.

3-16. SCOPE. This manual cannot list all of the possible malfunctions or every possible test, inspection, or corrective action. If a malfunction is not listed or not corrected by the listed corrective actions, notify your supervisor.

Table 3-3. Organizational Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. MACHINE WILL NOT RUN.
Step 1. Check plug at receptacle.
Reconnect plug.
Step 2. Check main power source.
Restore power.
Step 3. Inspect for defective wiring harness.
Refer to next higher level of maintenance for repair.
Step 4. Inspect for defective receptacle.
Replace receptacle (see paragraph 3-17).
Step 5. Inspect for blown main fuse.
Replace main fuse (see paragraph 3-19).
Step 6. Inspect for defective fuseholder.
Refer to next higher level of maintenance for repair.
2. LAMPS LIGHT. MACHINE WILL NOT RUN.
Inspect drive fuse.
Replace fuse (see paragraph 3-19).

Table 3-3. Organizational Troubleshooting (Continued)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. POOR DEVELOPMENT.

Step 1. Check to see if ammonia supply is low,

Replenish ammonia (see Table 3-2).

Step 2. Test if ammonia is too weak.

Replace as required (see Table 3-2).

Step 3. Inspect ammonia tubing.

Reconnect tubing; no bends or kinks (refer to Chapter 1 for routing of tubing).

Step 4. Inspect pump/motor for sluggish or noisy operation.

Refer to next higher level of maintenance for repair.

4. POOR QUALITY PRINTS OF CLEAR ORIGINAL.

Step 1. Inspect and test for weak or burned out lamps.

Replace lamps (see paragraph 3-18). If lamps burn out frequently, inspect blower assembly. Refer to next higher level of maintenance for repair.

Step 2. Confirm correct diazo material is used.

Use correct papers in correct manner (see paragraphs 2-9 and 2-11).

Step 3. Check shelf life of diazo material.

Replace paper.

Step 4. Inspect for dirty cylinder.

Clean cylinder (see Table 3-2, item 5).

Step 5. Inspect sprockets.

Refer to next higher level of maintenance.

Table 3-3. Organizational Troubleshooting (Continued)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
4. POOR QUALITY PRINTS OF CLEAR ORIGINAL (CONTINUED).
Step 6. Inspect chain. Lubricate as required (see Table 3-1, item 2). Refer to next higher level of maintenance for repair.
Step 7. Inspect thermoswitch. Refer to next higher level of maintenance for repair.
Step 8. Inspect bearings. Lubricate as required (see Table 3-1, item 1).
5. NOTICEABLE AMMONIA FUMES.
Step 1. Inspect absorber solution for blue tint. Replace absorber (see Table 3-2).
Step 2. Inspect for loose ammonia stopper. Secure stopper (see Table 3-2).
Step 3. Inspect condensation bottle. Remove condensed ammonia (see paragraph 3-20).

Table 3-3. Organizational Troubleshooting (Continued)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

6. PRINTS WRINKLE.

Inspect refeed assembly.

Adjust refeed assembly (see paragraph 3-21).

7. PRINTS STALL IN DEVELOPER.

Inspect for dirty print drive roller assembly.

Clean roller.

Refer to next higher level of maintenance for inspection and replacement of developer screen.

8. DRIVE RUNNING AT UNCONTROLLED SPEED.

Inspect potentiometer.

Refer to next higher level of maintenance for repair.

9. PRINTS SMUDGE.

Refer to next higher level of maintenance for repair and adjustment of printer belts.

Section VI. ORGANIZATIONAL MAINTENANCE PROCEDURES

3-17. REPLACE RECEPTACLE.

TOOLS: Flat-Tipped Screwdriver
Cross-lipped Screwdriver

SUPPLIES: Receptacle

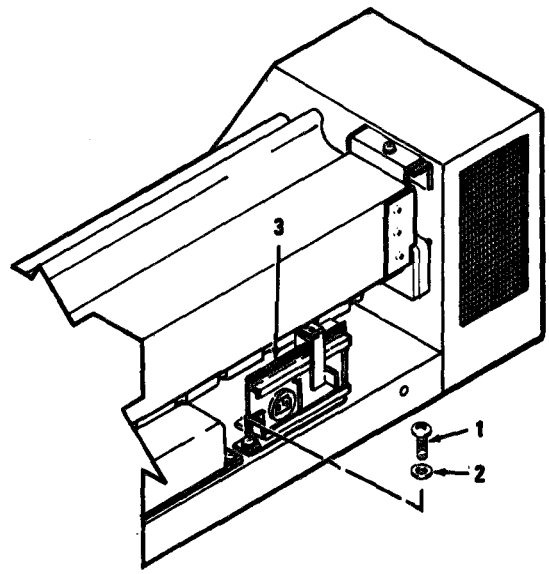
WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove rear cover.



d. Remove screws (1) and lockwashers (2) to remove receptacle (3).

e. Install new receptacle (3) and secure with screws (1) and lockwashers (2).

f. Reinstall rear cover.

g. Plug in power cord.

h. Power ON.

i. Perform operational test.

3-18. REPLACE LAMPS.

TOOLS: Flat-Tipped Screwdriver

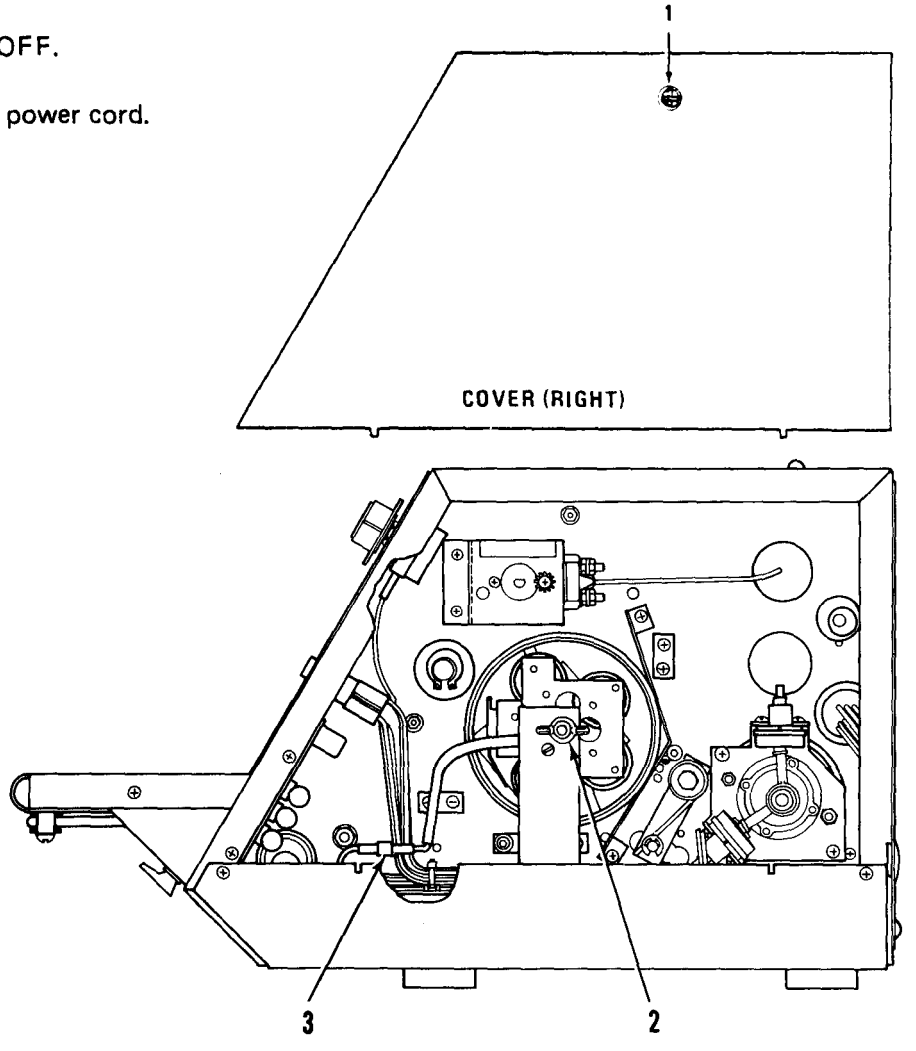
SUPPLIES: Cotton Cloth
Lamp
Fiberglass Tape

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

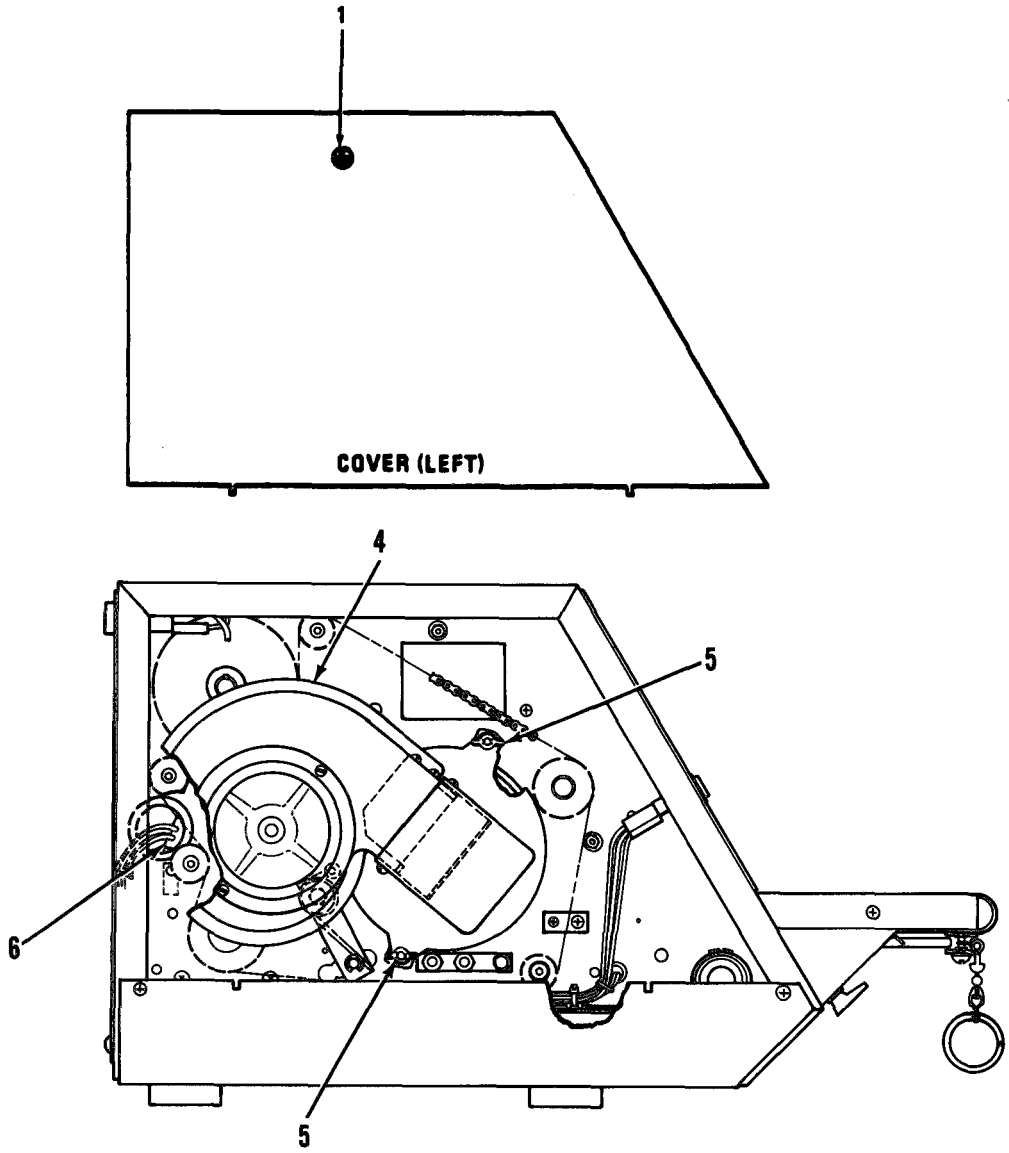
b. Unplug power cord.



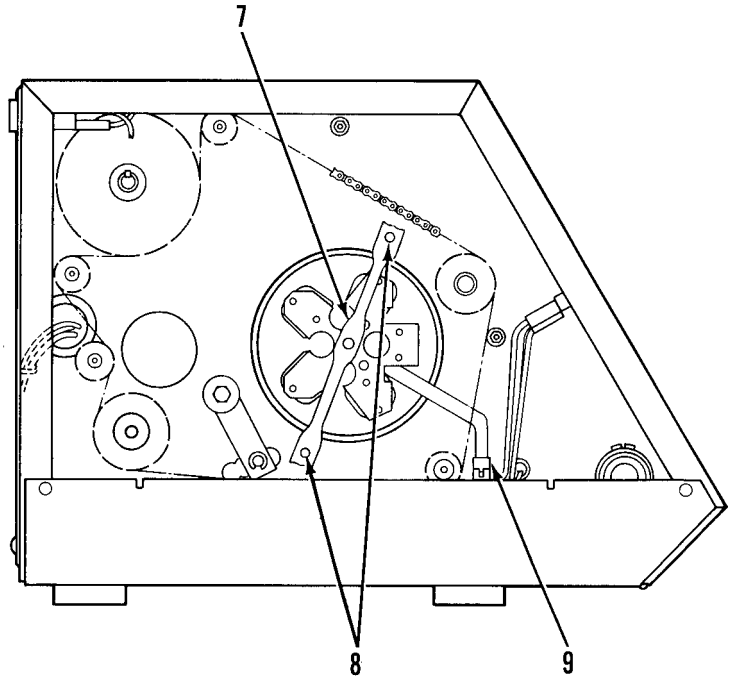
c. Turn captive screw (1) on right and left covers to release covers.

d. Remove wing nut (2) from right lamp assembly.

e. Disconnect right lamp connector (3).

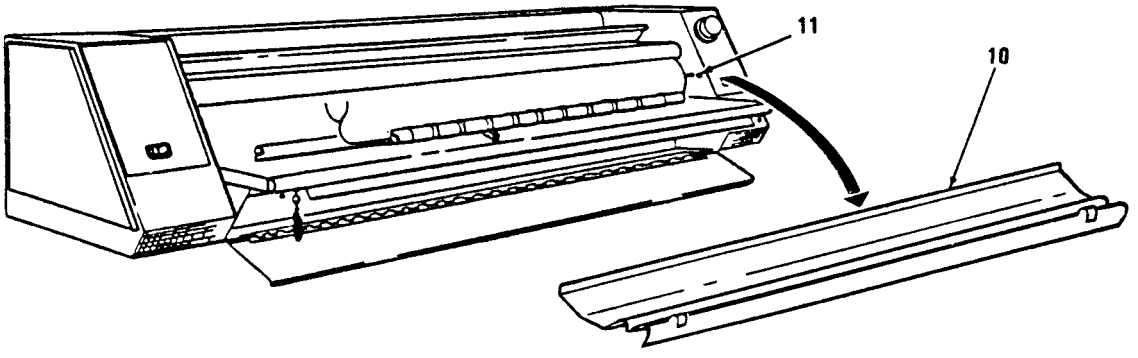


f. Remove cylinder exhaust blower (4) from left end of printing cylinder by removing two wing nuts (5) and disconnecting motor connector (6).

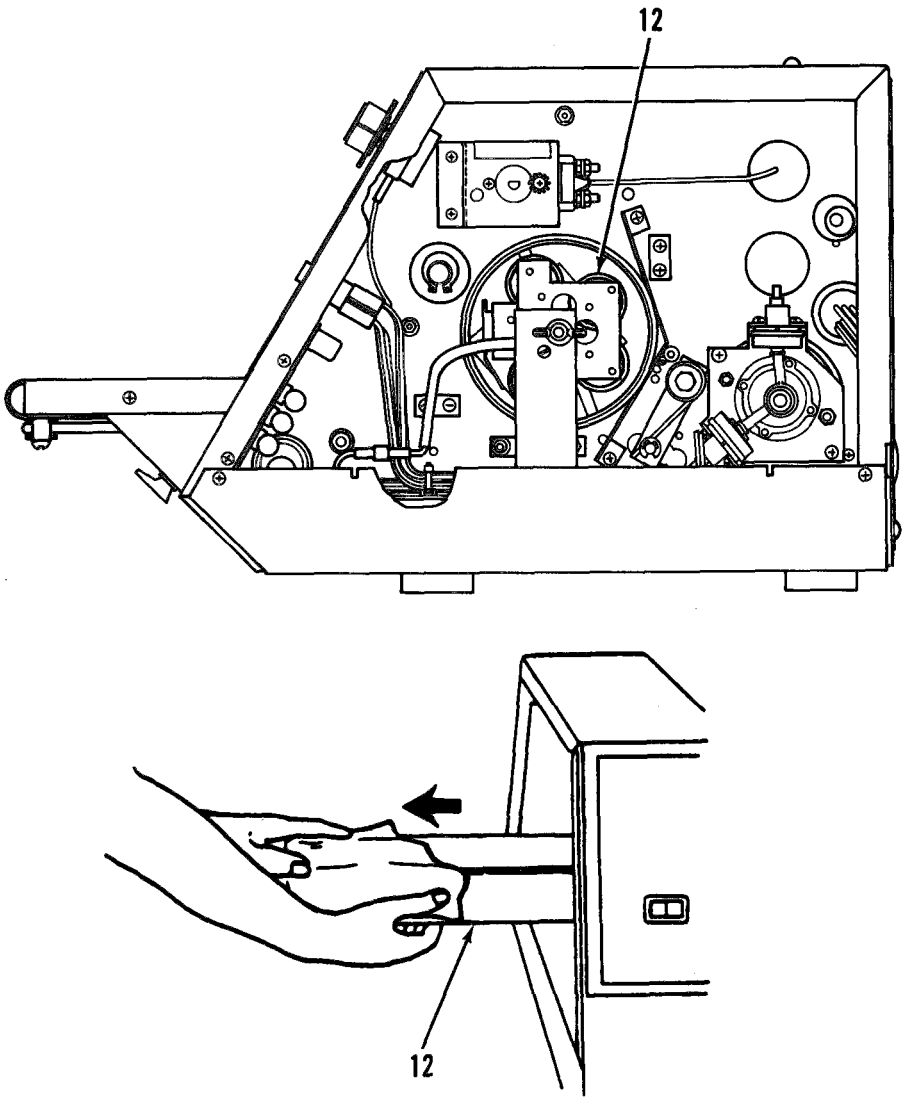


g. Remove exhaust blower bracket (7) by pulling straight out from studs (8).

h. Disconnect left lamp connector (9).



i. Remove cylinder pick-off assembly (10) by lifting free from studs (11).



j. Withdraw lamp assembly about 2 inches (50.8 mm). Wrap cloth around ends of lamp assembly (12) to prevent scratching of the cylinder. Carefully withdraw lamp assembly by pulling from the left end.

k. Lay lamp assembly (12) On working surface and wipe clean with clean cloth.

l. Remove fiberglass tape from ends of lamp assembly.

m. Replace defective lamp(s) and secure with fiberglass tape.

n. With cloths in place, reinstall lamp assembly from left end. Remove both cloths.

o. Reconnect left lamp connector.

p. Reinstall exhaust blower bracket on studs.

r. Reinstall cylinder exhaust blower on left end of machine.

r. Reinstall wing nuts.

s. Reconnect motor connector.

t. Reconnect right lamp connector.

u. Reinstall wing nut on right lamp assembly.

v. Reinstall right and left covers and turn captive screws.

w. Plug in power cord.

x. Power on.

y. Perform operational test.

3-19. REPLACE FUSES.

TOOLS: None

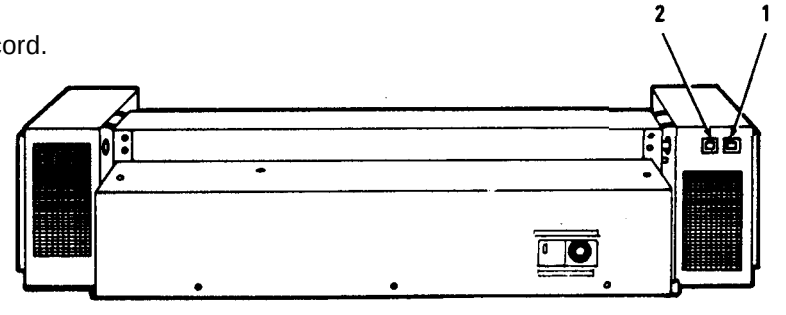
SUPPLIES: 10 amp Main Fuse-
MDL 0.8 Drive Fuse

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.



c. Remove main fuse (1) and drive fuse (2).

d. Replace defective fuse(s).

e. Plug in power cord.

f. Power ON.

g. Perform operational test.

3-20. SERVICE CONDENSATION BOTTLE.

TOOLS: None
SUPPLIES: Safety Goggles

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.
b. Unplug power cord.
c. Turn captive screw and remove right cover.

WARNING

Ammonia may cause injury or death. Do not breathe vapor. Ensure adequate ventilation prior to servicing or operating the machine.

Ammonia may cause eye injury or blindness. Eye protection is mandatory when servicing the ammonia system.

Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

d. Remove the condensation bottle (1) and dispose of ammonia properly. Refer to the WARNINGS page at the f rent of this manual.

e. Reinstall bottle (1).

f. Reinstall right cover and secure with captive screw.

g. Plug in power cord.

h. Power ON.

i. Perform operational test

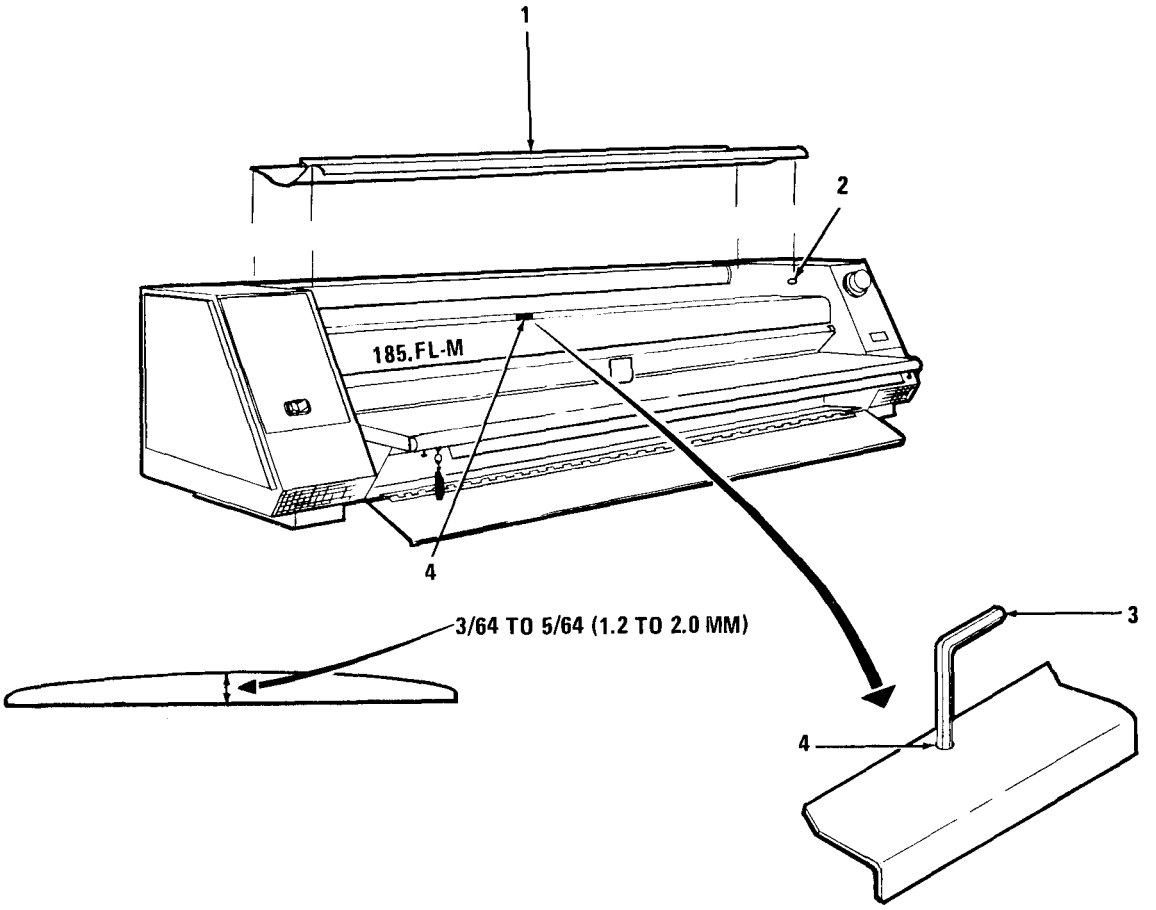
3-21. ADJUST REFEED GUIDE.

TOOLS: Socket Head Wrench Set
SUPPLIES: None

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.



c. Lift pick-off assembly (1) free from studs (2) and place on working surface.

d. Insert socket head wrench (3) in setscrew (4) located under hole in refeed guide.

e. Turn setscrew (4) until center of refeed assembly is 3/64 to 4/64 inch (1.2 to 2.0 mm) above the ends.

NOTE

Crown (center higher than ends) may be approximated by having 10 to 20 thicknesses of bond paper higher at the center than at ends.

f. Replace pick-off assembly on studs.

g. Plug in power cord.

h. Power ON.

i. Perform operational test.

Section VII. PREPARATION FOR STORAGE AND SHIPMENT

3-22. PREPARATION FOR STORAGE.

a. Clean cylinder (see Table 3-2).

b. Turn power OFF and unplug power cord.

c. Allow machine to cool down for at least 30 minutes.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating Reproduction Set.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

d. Wear safety goggles. Remove tubing and stopper from ammonia bottle and secure cap. Rinse tubing and stow with Reproduction Set.

3-23. PREPARATION FOR SHIPMENT.

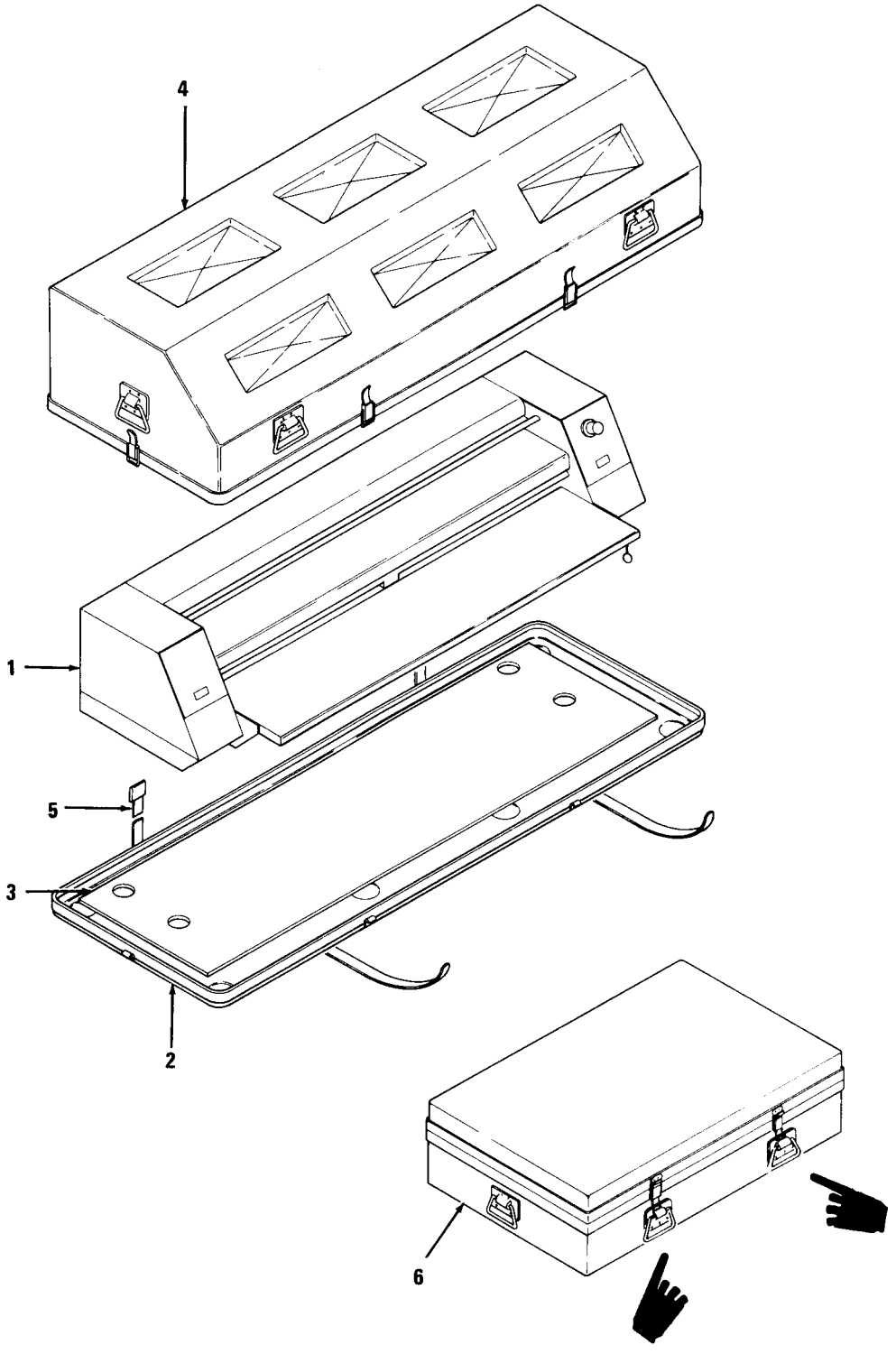
a. Prepare the Reproduction Set for storage in accordance with paragraph 3-22, above.

b. Lower cylinder support bearings.

c. Place the machine (1) in the base (2) of the carrying case. Align the feet of the machine in the support (3).

d. Install the cover (4) and latch. Secure with strap assembly (5).

e. Store all accessories in the supply case (6).


4
1
5
3
2
6

CHAPTER 4

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

LUBRICATION INSTRUCTIONS. Direct support lubrication instructions for the Reproduction are found in Table 4-1. These instructions are mandatory and will be performed at the indicated intervals.

4-2. TOOLS AND MATERIALS REQUIRED.

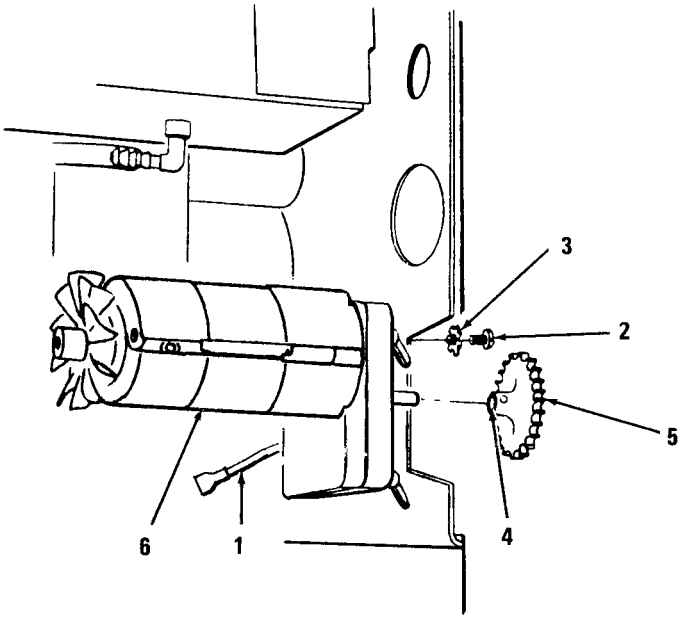
ITEM	QUANTITY
Flat-Tipped Screwdriver	1
Cross-Tipped Screwdriver	1
Sacket Head Wrench Set	1
Grease	ar

Table 4-1. Direct Support Lubrication Instructions

ITEM No.	INTERVAL	ITEM TO BE LUBRICATED PROCEDURE
1	6 months or 100 hours of operation	**DRIVE MOTOR** **WARNING** Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning. a Power OFF. b. Unplug power cord. c. Remove screws from rear cover and remove cover. d. Turn captive screw and remove left cover.

Table 4-1. Direct Support Lubrication Instructions (Continued)

ITEM NO.	INTERVAL	ITEM TO BE LUBRICATED PROCEDURE
1		DRIVE MOTOR (CONTINUED) e. Tag and disconnect leads (1) to motor. f. Remove four screws (2) and washers (3) to relieve chain tension. Loosen socket head setscrews (4) on sprocket (5) to remove gear from motor shaft. g. Carefully withdraw the motor (6) from equipment.



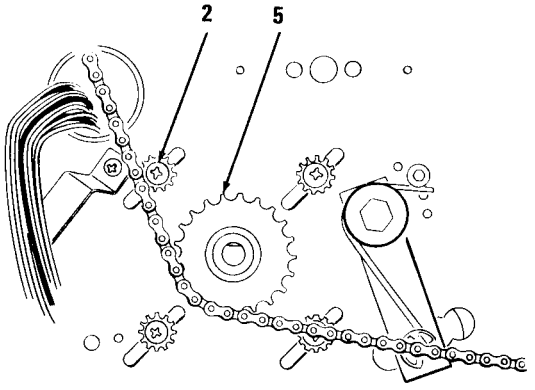
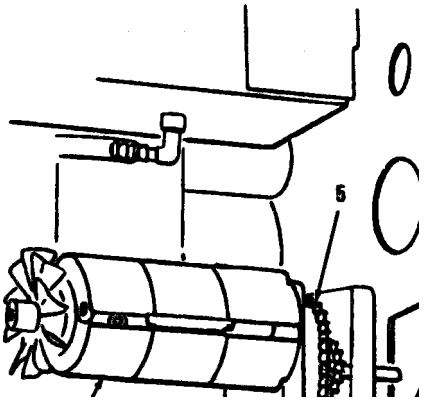


Table 4-1. Direct Support Lubrication Instructions (Continued)

ITEM NO.	INTERVAL	ITEM TO BE LUBRICATED PROCEDURE
1		**DRIVE MOTOR (CONTINUED)** h. Remove four screws (1) and Iockwashers (3) to separate end case (3) from drive motor (4). i. Lubricate drive gears (5). j. Install end case (3) on motor (4) and secure with screws (1) and lockwashers (2). k. Reinstall motor and place sprocket on shaft. Secure the gear by tightening socket head setscrew over the flat portion of the shaft. l. Connect leads to motor, m. Replace four screws and washers. Pull motor downward to restore chain tension. Tighten screws n. Reinstall rear cover and secure with screws. o. Reinstall left cover and turn captive screw. P. Plug in power cord. q. Power ON. r. Perform operational check.



Section II. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT, AND SUPPORT EQUIPMENT

4-3. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-4. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT, AND SUPPORT EQUIPMENT. Test, measurement, and diagnostic equipment and support equipment are not required for the repair of this equipment at the direct support level of maintenance.

4-5. REPAIR PARTS AND SPECIAL TOOLS. Repair parts and special tools for this equipment are listed and illustrated in TM 5-3610-256-24P.

Section III. DIRECT SUPPORT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-6. GENERAL.

- Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 51 lists the the PMCS procedures to be performed by the direct support level maintenance. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.

- Inspection criteria are provided to assure that the maintenance performed will restore the item to an acceptable quality level.

NOTE

If the machine must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

4-7. TOOLS AND MATERIALS REQUIRED.

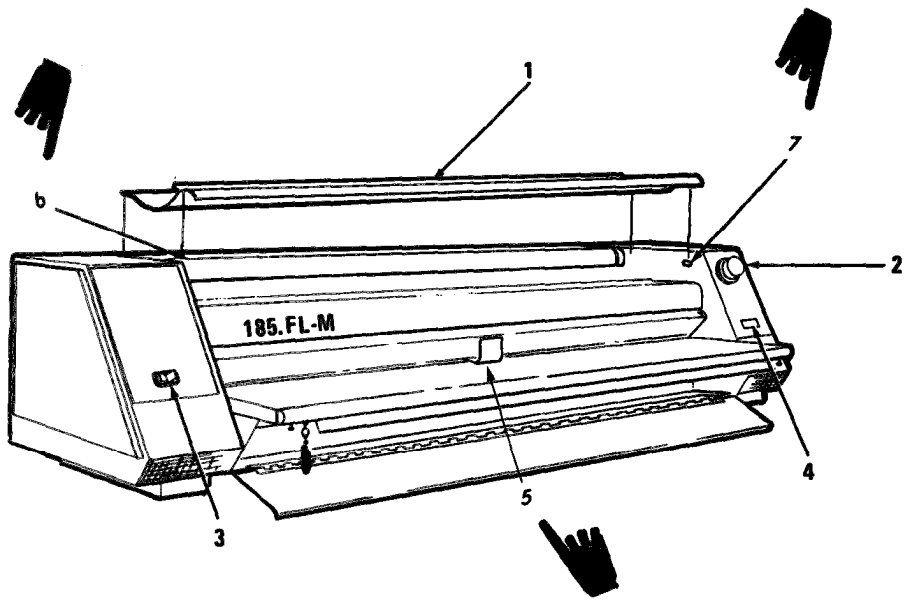
ITEM	QUANTITY
Cloth	1
Household Ammonia	ar

Table 4-2. Direct Support Preventive Maintenance Checks and Services

W – Weekly M – Monthly

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
1	•		CLEAN DEVELOPER ROLLER

1. Plug in power cord to 110 V, 60 Hz grounded outlet. Power ON.



2. Lift developer pick-off assembly (1) free from stud (6).
3. Set Speed control (2) to left (minimum speed).
4. Depress Hi/Off/Lo switch (3) to Lo position.
5. Depress Fwd/Rev switch (4) to Fwd position.
6. Depress feed switch (5).
7. Moisten clean cloth with household ammonia.

WARNING

DO NOT USE DIAZO AMMONIA. Diazo ammonia could cause blindness or skin irritation.

Table 4-2. Direct Support Preventive Maintenance Checks and Services (Continued)

W - Weekly **M - Monthly**

Item No.	Interval W	Interval M	Item to be Inspected / Procedure
			CLEAN DEVELOPER ROLLER (CONTINUED)
			7. Wipe roller (6) with cloth as roller rotates. Continue until roller is clean or machine stops. If roller is not thoroughly clean, depress Fwd switch again and continue wiping until roller is thoroughly clean.
			8. Rinse cloth in fresh clean water.
			9. Replace developer pick-off with front lip resting on studs (7).
			10. Power OFF.
			11. Unplug power cord.
2			**SUPPLY CASE AND CARRYING CASE**
			1. Inspect supply case and carrying case for damage.

Section IV. TROUBLESHOOTING PROCEDURES

4-8. TROUBLESHOOTING TABLE. Proper troubleshooting procedures require that preliminary checks be accomplishd, all connections be tight and secure, and safeguards be utilized to prevent excess ammonia vapor from entering the working area.

4-9. SCOPE. This manual cannot list all the possible malfunctions or every possible test, inspection, or corrective action. If a malfunction is not listed or is not corrected by the listed corrective actions, notify your supervisor.

Table 4-3. Direct Support Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. DRIVE RUNNING AT UNCONTROLLED SPEED.
Rotate potentiometer left and right
Replace potentiometer (see paragraph 4-11).
2. START CIRCUIT NOT ENERGIZED.
Step 1. No voltage on feed switch leads.
(a) Replace printer switch (see paragraph 4-15). (b) Adjust time delay (see paragraph 4-19).
Step 2. No voltage on main switch leads.
Replace main switch leads (see paragraph 4-14).
Step 3. Test wiring harness.
Refer to next higher level of maintenance for repair.
Step 4. Test fuseholder.
Replace defective fuseholder (sea paragraph 4-10).
3. POOR DEVELOPMENT.
Step 1. Observe ammonia bubbles in Supply.
Refer to next higher level of maintenance for pump replacement.
Step 2. Observe plastic lines show condensation.
Remove condensation (see paragraph 4-13).

Table 4-3. Direct Support Troubleshooting (Continued)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
3. POOR DEVELOPMENT (CONTINUED).
Step 3. Test heater rod for continuity.
Replace defective heater rod (see paragraph 4-17).
Step 4. Test time delay.
Adjust or replace time delay (see paragraph 4-19).
Refer to next higher level of maintenance.
4. EXCESSIVE AMMONIA ODOR.
Step 1. Inspect for condensation in pump and lines.
Remove condensation (see paragraph 4-13).
Step 2. Check vacuum chamber for condensation.
Remove condensation (see paragraph 4-13).
Step 3. Inspect developer tank.
Replace defective developer tank (see paragraph 4-20).
5. PRINTS WRINKLED OR SMUDGED.
Step 1. Inspect tension studs and belt setting.
Adjust belt tension (see paragraph 4-18).
Step 2. Test drive motor.
Adjust or repair drive motor as required (see paragraph 4-21).
Step 3. Defective chain.
Replace drive chain as required (see paragraph 4-20).
Step 4. Defective cylinder.
Replace cylinder (see paragraph 4-22).

Section V. DIRECT SUPPORT MAINTENANCE PROCEDURES

4-10. REPLACE FUSEHOLDER.

TOOLS: Flat-Tipped Screwdriver

SUPPLIES: Fuseholders

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord

c. Remove left cover by turning aptive screw.

d. Remove fuse caps (1) and fuses (2).

e. Tag and disconnect terminal connectors (3) on fuseholder (4).

f. Replace fuseholder (4).

g. Reconnect terminal connectors (3).

h. Reinstall fuses (2) and fuse caps (1).

i. Plug in power cord.

j. Power ON.

k. Perform operational check.

4-11. REPLACE POTENTIOMETER.

TOOLS: Flat-Tipped Screwdriver
Socket- Head Wrench Set

SUPPLIES: Potentiometer

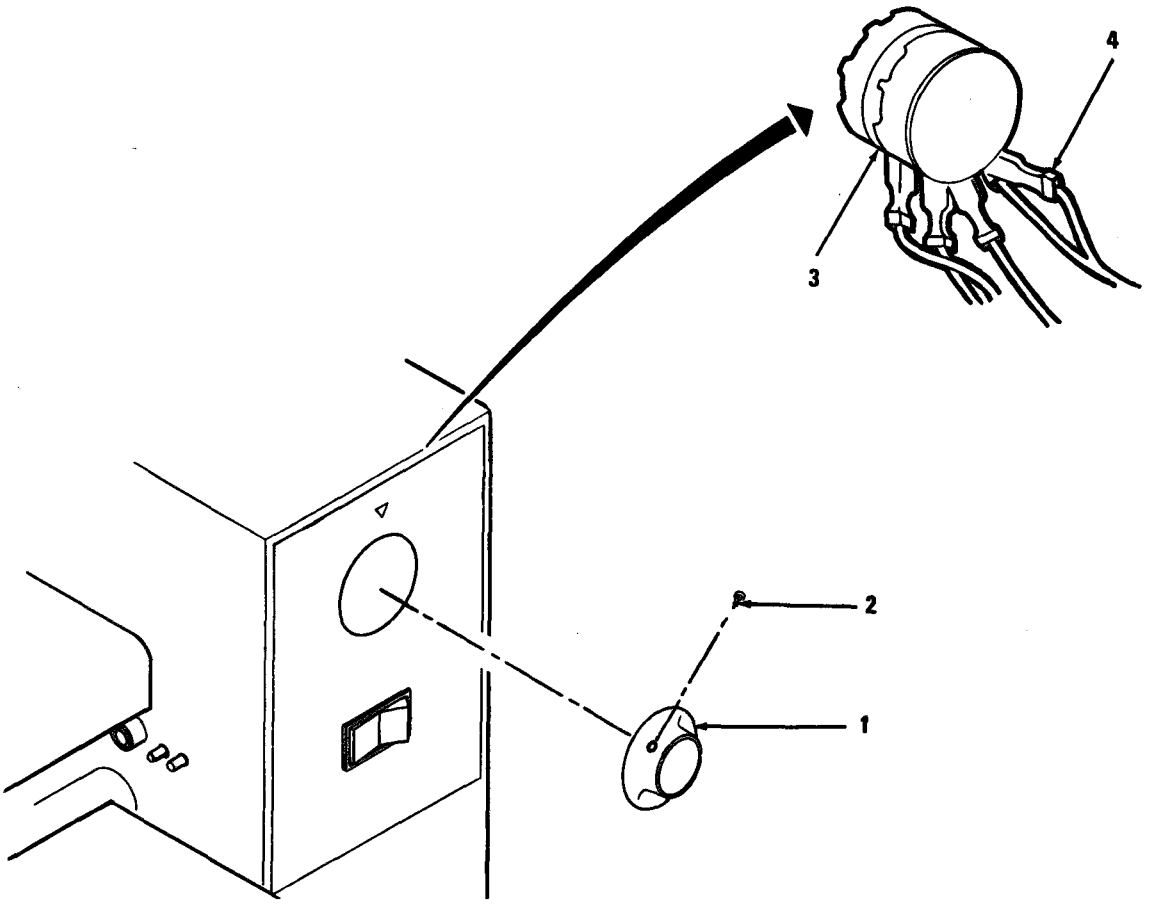
WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove right cover by turning captive screw.



d Remove speed control dial (1) from front of machine by loosening socket head screw (2).

e. Label wires to potentiometer (3).

f. Pull terminal connectors (4) from potentiometer (3).

g. Remove potentiometer (3).

h. Install replacement potentiometer (3).

i. Push terminal connectors (4) on male fittings.

j. Reinstall dial (1) and tighten socket head screw (2).

k. Reinstall right cover and turn captive screw.

l. Plug in power cord.

m. Power ON.

n. Perform operational test.

4-12. REPLACE FWD/REV SWITCH.

TOOLS: Flat-Tipped Screwdriver

SUPPLIES: Fwd/Rev Switch

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

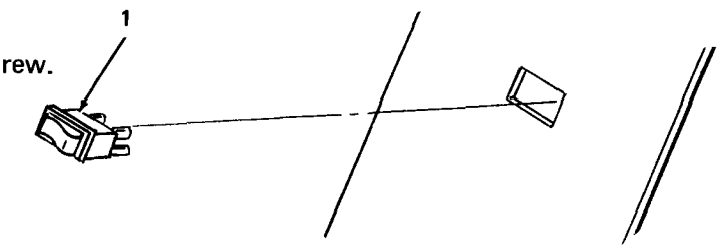
a. Power OFF.

b. Unplug power cord.

c. Remove right cover by turning captive screw.

d. Label wires to switch (1)

e. Pull connectors from switch.



f. Release tabs holding the switch (1) to switch bracket.

g. Replace switch by spreading tabs and pushing switch into opening until it locks.

h. Push connectors on male switch terminals.

i. Reinstall right cover and turn captive screw.

j. Plug in power cord.

k. Power ON.

l. Perform operational check.

4-13. REMOVE CONDENSATION.

TOOLS: Flat-Tipped Screwdriver
Safety Goggles
Vacuum Cleaner

SUPPLIES: None

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Turn captive screw to release right cover. Remove screws and remove rear cover.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating the Reproduction Set.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system.

Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes. Anyone overcome by ammonia should be removed to fresh air at once. Refer to FM21-11 and apply artifical respiration. Use oxygen if breathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious.

d. Put on safety goggles.

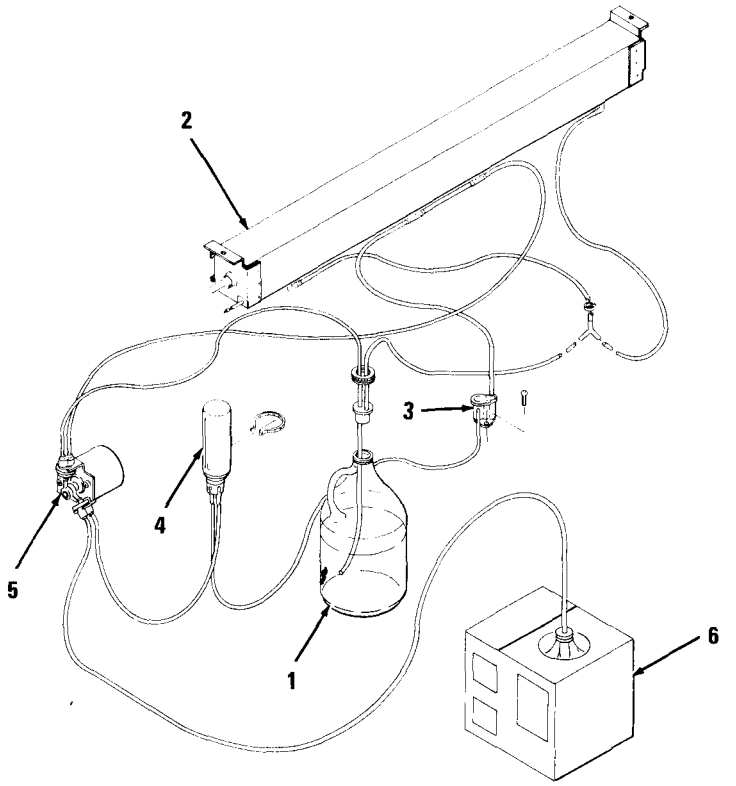
e. Ensure adequate ventilation.

f. Disconnect ammonia bottle (1) from ammonia system. Cap ammonia bottle.

g. Remove each section of tubing, one at a time, and lead one end to a source of fresh, filtered air.

NOTE

Use the illustration below to determine the routing of the tubing.



1. AMMONIA. BOTTLE
2. DEVELOPER TANK
3. VACUUM CHAMBER
4. CONDENSATION BOTTLE
5. PUMP
6. ABSORBER CONTAINER

h. Place tapered nozzle on vacuum cleaner.

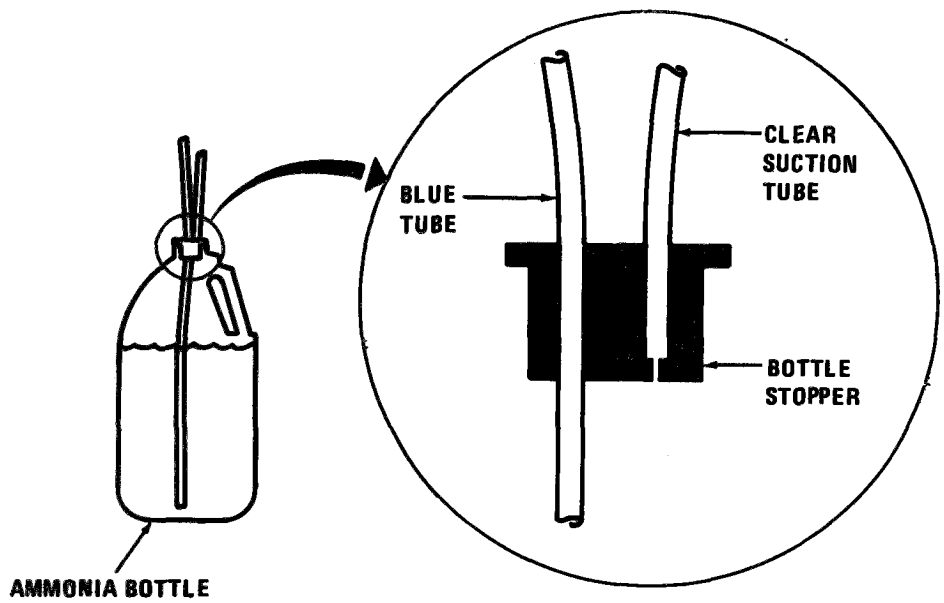
i. Tape nozzle to other end of tubing and turn vacuum on.

j. Visually inspect tubing at 5 minute intervals to detect condensation. Continue running vacuum for 15 minutes after last condensation droplets are observed and then remove vacuum.

k. Install new ammonia bottle.

DO NOT REVERSE the hoses leading from the pump to the ammonia supply bottle. This will cause pumping liquid ammonia or absorber into the system, resulting in instant and total equipment contamination. Should this condition exist, it will be necessary to thoroughly clean the pump, valve assembly, developer tank, and tubing to render the equipment operable.

The correct position of the tubes in the ammonia supply bottle indicated below are not to be changed. Pushing the suction tube down into the ammonia will cause liquid ammonia to be drawn up into the developer tank. This will result in strong ammonia vapors and possible machine damage.



1. Check ammonia absorber (see Table 3-2).

m. Reinstall right and rear covers.

n. Plug in power cord.

o. Power ON.

p. Perform operational test.

4-14. REPLACE MAIN SWITCH.

TOOLS: Flat-Tipped Screwdriver

SUPPLIES: Switch

WARNING

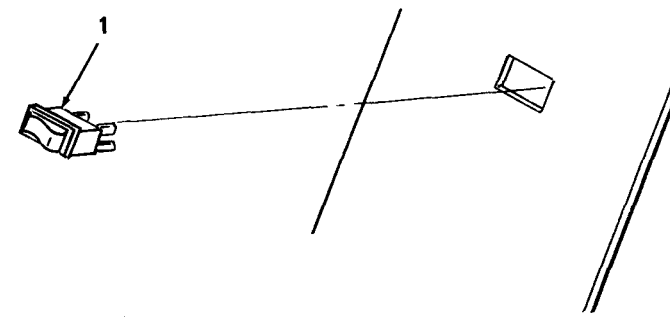
Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Turn captive screw and remove left cover.

d. Label wires to main switch (1).



e. Pull terminal connector from switch.

f. Release tabs holding the switch (1) to switch bracket.

g. Replace switch by spreading tabs and pushing switch into opening until it locks.

h. Push connectors on male switch terminals.

i. Reinstall left cover and turn captive screw.

j. Plug in power cord.

k. Power ON.

l. Perform operational check.

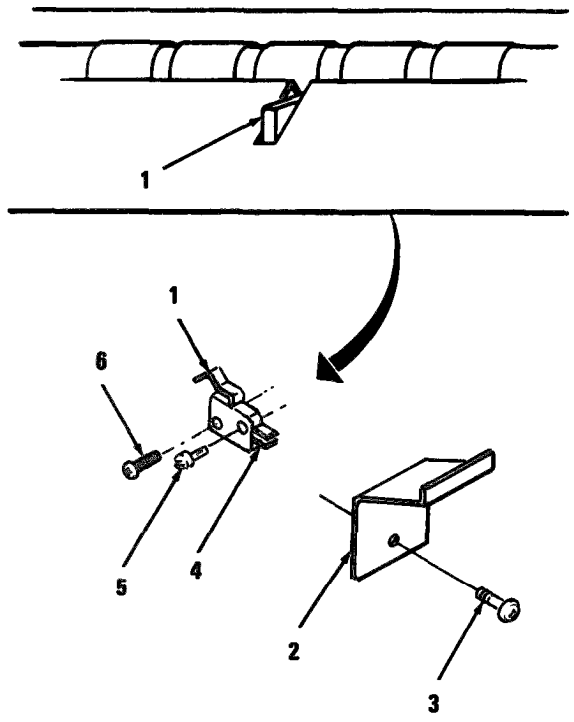
4-15. REPLACE FEED SWITCH.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver

SUPPLIES: Feed Switch

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.



1. FEED SWITCH
2. BRACKET
3. SCREW
4. TERMINAL
5. SCREW
6. SCREW

a. Power OFF.

b. Unplug power cord.

c. Turn two handles and open paper roll compartment.

d. Remove bracket (2) by removing screws (3).

e. Label wires to feed switch (1).

f. Disconnect terminal connectors from switch terminals (4).

g. Remove switch (1) by removing screws (5 and 6).

h. Replace switch and secure with screws (5 and 6).

i. Reconnect terminal connectors to switch terminals (4).

j. Reinstall bracket (2) and secure with screws (3).

k. Close paper roll compartment and turn two handles.

l. Plug in power cord.

m. Power ON.

n. Perform operational check.

4-16. REPAIR OF THE BLOWER ASSEMBLY.

TOOLS: Safety Goggles
Flat-Tipped Screwdriver
Cross-Tipped Screwdriver

SUPPLIES: Cement
Felt Seal

WARNING

Unplug power cord before servicing machine, Death may result from failure to comply with this warning.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation.

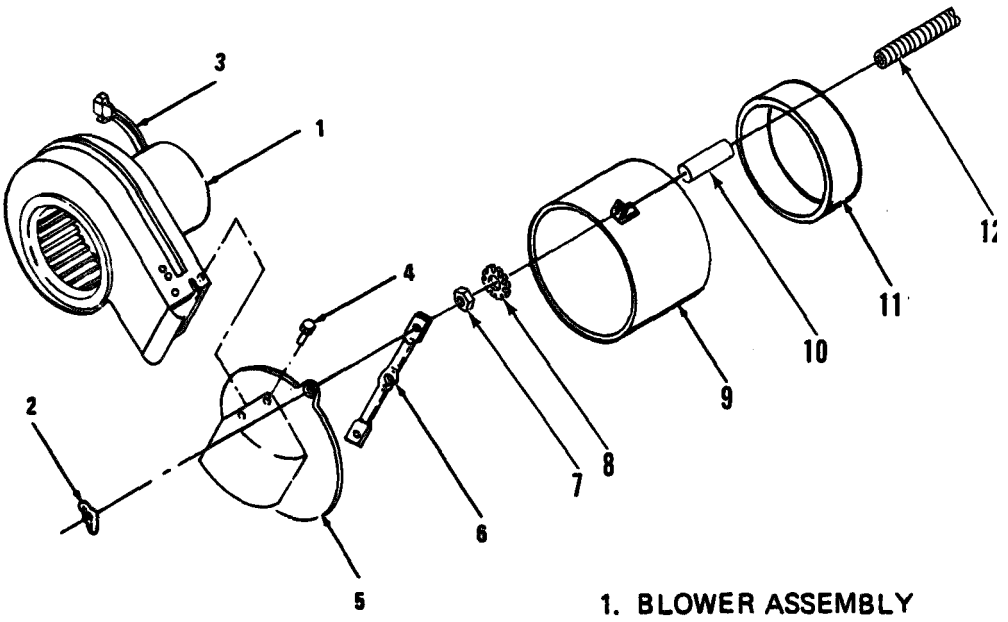
Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system.

Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

a. Power OFF.

b. Unplug power cord.

c. Turn captive screw and remove left cover.



1. **BLOWER ASSEMBLY**
2. **WING NUTS**
3. **ELECTRICAL CONNECTOR**
4. **SCREW**
5. MACHINE MANIFOLD
6. EXHAUST BLOWER BRACKET
7. NUT
8. WASHER
9. AIR DUCT
0. SPACER
1. FELT SEAL
2. THREADED STUD

d. Remove the blower assembly (1) by removing wing nuts (2) from threaded studs (12). Disconnect electrical connector (3).

e. Remove screws (4) to remove machine manifold (5). Inspect for dents which may impair operation. Replace as required.

f. Remove exhaust blower bracket (6), nut (7), washer (8), air duct (9) and spacer (10). Replace felt seal (11) as required. Secure with cement.

g. Reinstall air duct (9), washer (8), nut (7) and exhaust bracket (6).

h. Reinstall machine manifold (5) and secure with screws (4).

i. Reinstall electrical connector (3). Reinstall blower assembly (1) and secure with wing nuts (2).

j. Reinstall left cover and turn captive screw.

k. Plug in power cord.

l. Power ON.

m. Perform operational check.

4-17. REPLACE TANK.

TOOLS: Safety Goggles
Flat-Tipped Screwdriver
Socket Head Wrench Set

SUPPLIES: Ammonia Tank

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating machine.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

a. Power OFF.

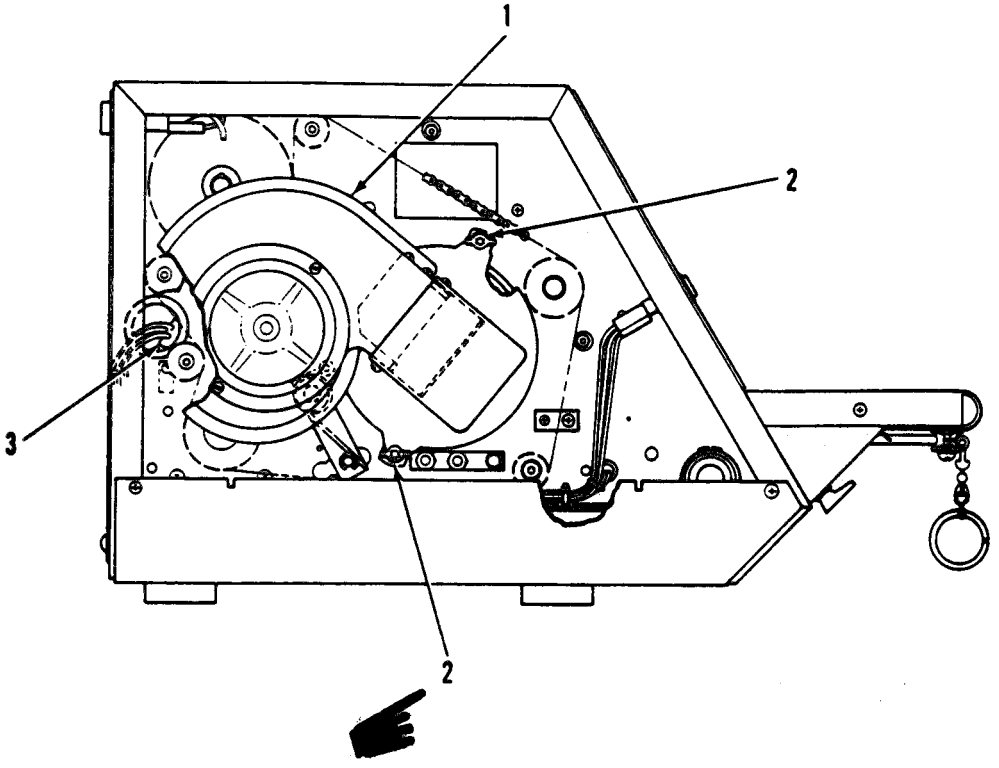
b. Uplug power cord.

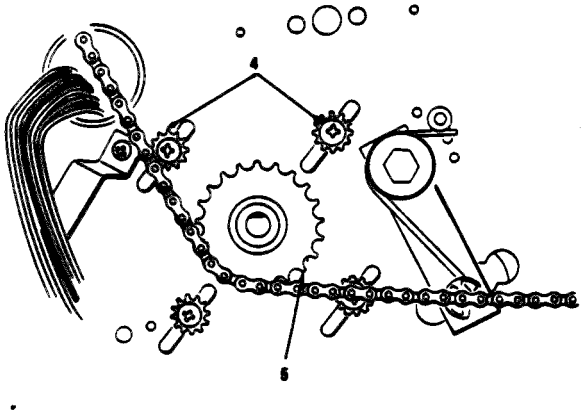
c. Turn captive screws and remove left and right covers.

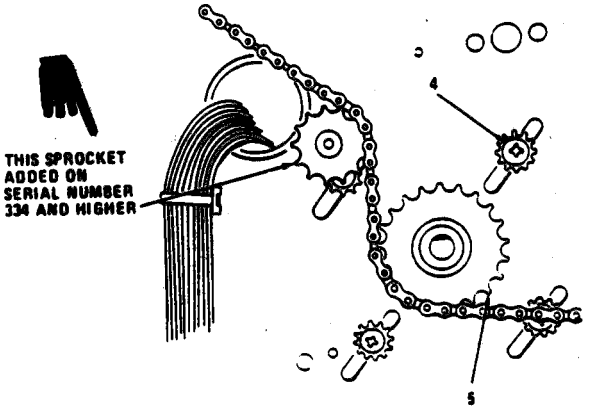
d. Remove exhaust blower (1) from left end of machine by removing two wing nuts (2) and disconnect motor connector (3).

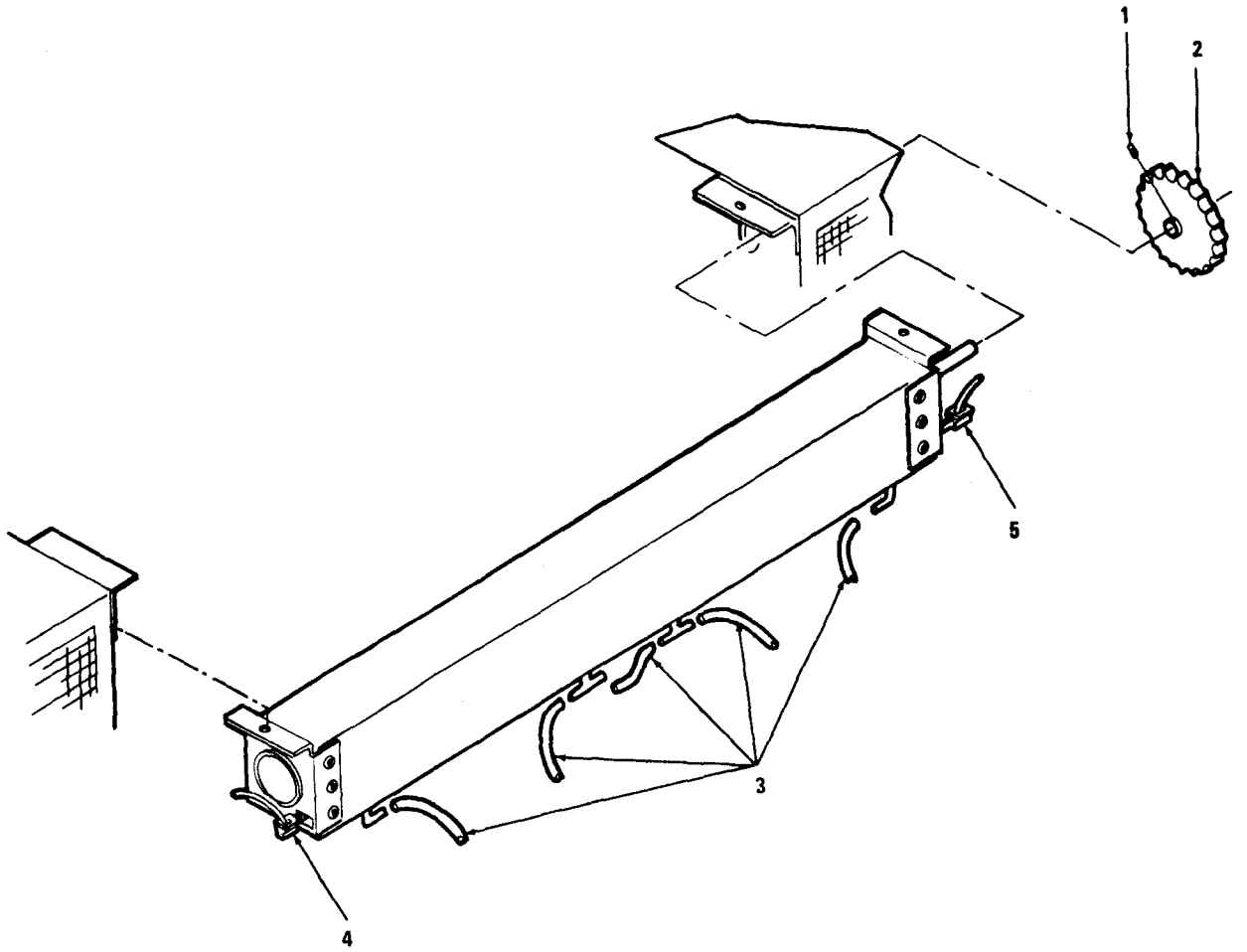
e. Remove exhaust blower bracket.

f. Loosen four screws (4) holding motor to relieve chain tension and push sprocket (5) upward to remove chain.









g. Remove developer roller drive sprocket by loosening socket head setscrew (1) and pulling sprocket (2) from shaft.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating machine.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system. Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing..

h. Disconnect tubing (3) from developer tank. Remove developer tank assembly.

i. Disconnect heater wires (4) from developer tank.

j. Remove heater rod (5).

k. Reinstall heater rod (5).

l. Replace developer tank assembly.

m. Reconnect heater wires (4) to developer tank.

n. Reconnect tubing (3) to developer tank.

o. Reinstall developer roller drive gear on shaft and tighten socket head setscrew.

p. Reinstall drive chain.

q. Adjust chain tension, as required, to restore original tension, by pulling gear downward and tightening screws.

r. Reinstall exhaust blower bracket on studs.

s. Reinstall cylinder exhaust blower and secure with two wing nuts.

u. plug in power cord.

v. Power ON.

v. Perform operational check.

4-18. ADJUST BELT TENSION.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver

SUPPLIES: None

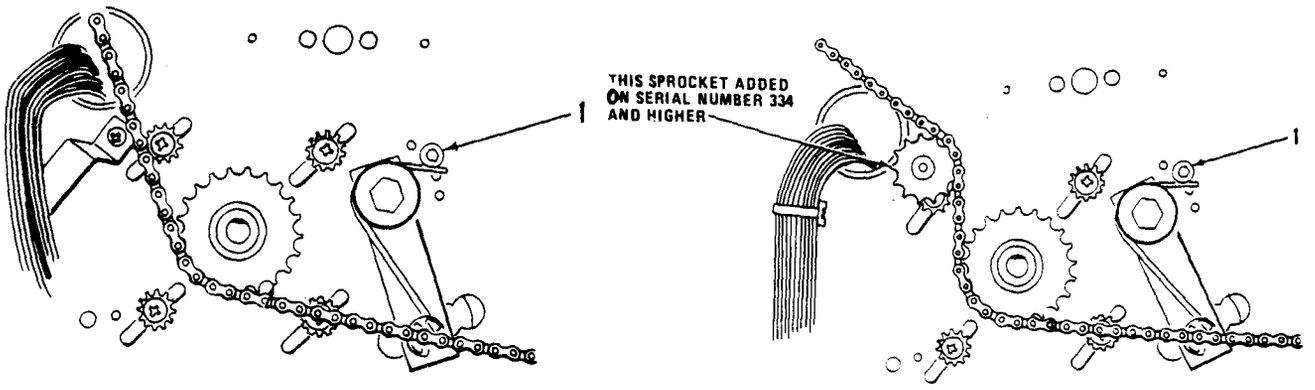
WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Turn captive screws to remove left and right covers.



d. Change belt tension by setting tension studs (1) on each side as follows:

Factory Setting (Minimum)	Upper Position
Increased Tension	Middle Position
Maximum Tension	Lower Position.

e. Reinstall left and right covers.

f. Plug in cord.

g. Power ON.

h. Perform operational check.

4-19. ADJUST TIME DELAY.

TOOLS: Stopwatch
Flat-Tipped Screwdriver

SUPPLIES: None

WARNING

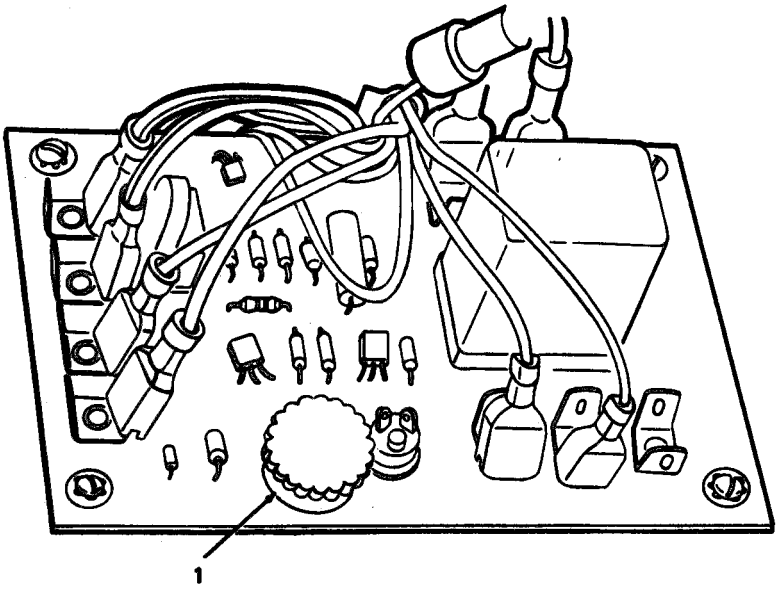
HIGH VOLTAGE IN REPRODUCTION SET CAN KILL YOU. USE EXTREME CAUTION IN ADJUSTMENT OF TIME DELAY.

a. Remove right cover by turning captive screw.

b. Plug in power cord.

c. Power ON.

d. Process one print and determine the amount of time the machine takes to shut off after processing. Factory setting is 2-1/2 minutes.



e. Adjust potentiometer (1) turning knob. Turning to right increases time delay (maximum 5 minutes). Turning to left decreases time delay.

f. Power OFF.

g. Unplug power cord.

h. Reinstall right cover and turn captive screw.

4-20. REPLACE CHAIN

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver

SUPPLIES: Chain

WARNING

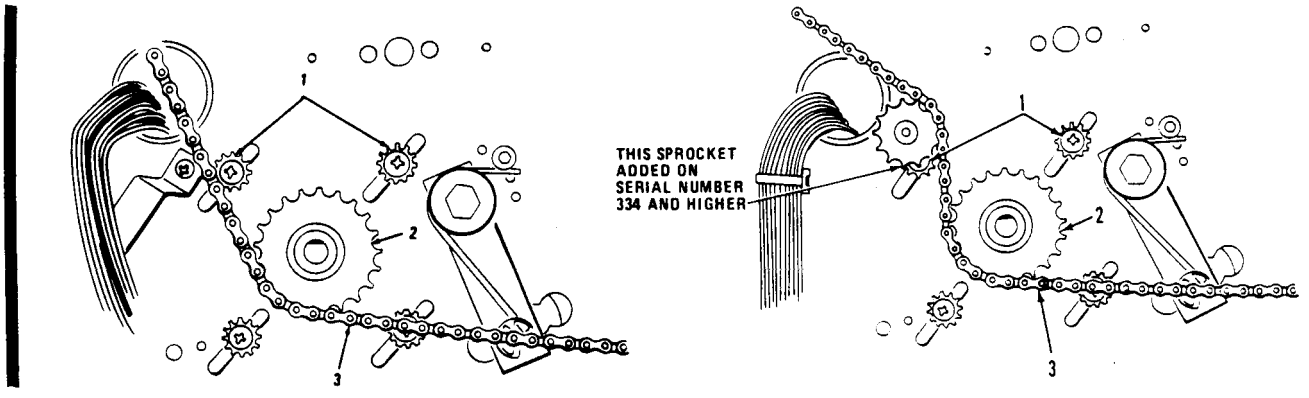
Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Turn captive screw to remove left cover.

d. Loosen screws (1) securing drive motor and slide gear (2) upward to remove chain.



e. Replace chain (3).

f. Slide gear (2) downward to tension chain. Secure with screws (1).

g. Reinstall left cover and turn captive screw.

h. Plug in power cord.

i. Power ON.

j. Perform operational check.

4-21. MAINTENANCE OF DRIVE MOTOR.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver
Socket Head Wrench Set

SUPPLIES: Motor
Brushes

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

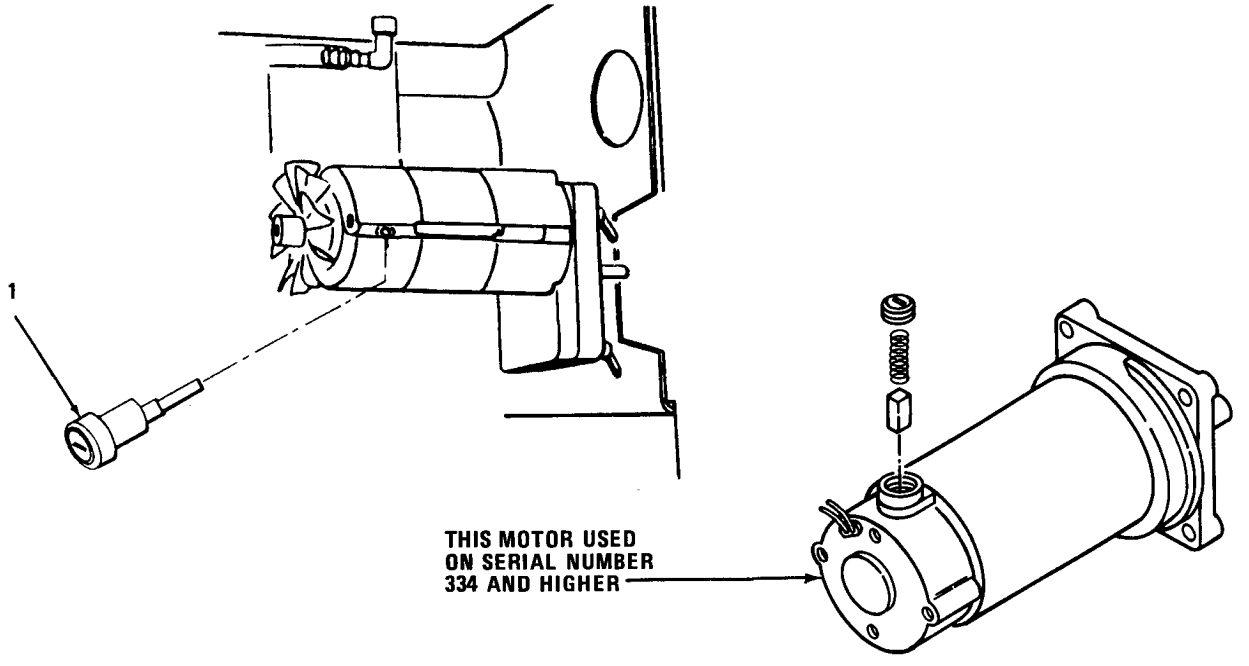
c. Remove screws from rear cover and remove cover.

d. Turn captive screw and remove left cover.

e. Tag and disconnect motor leads (1).

f. Loosen four screws (2) to relieve chain tension. Loosen socket head setscrew (4) on sprocket (5) to remove sprocket from motor shaft.

g. Remove four screws (2) and washers (3) and carefully withdraw the motor (6) from the equipment



h. Loosen brush assembly (1).

i. Remove brush caps and brush and holder assemblies.

j. Examine brush. If brush length is equal to or less than 0.25 inch (6.4 mm), replace the brush and holder assembly.

k. Install brushes and holder assemblies and brush caps (1).

l. Reinstall motor with four screws and lockwashers, and place gear on shaft. Secure the gear by tightening the socket head setscrew over the flat portion of the shaft.

m. Reconnect motor leads.

n. Pull motor downward to restore chain tension. Tighten screws.

o. Reinstall rear cover and secure with screws.

p. Reinstall left cover and secure with captive screw.

q. Plug in power cord.

r. Power ON.

s. Perform operational check.

4-22. REPLACE CYLINDER.

TOOLS: Fiat-Tipped Screwdriver
Socket Head Wrench Set

SUPPLIES: Cotton Cloths
Cylinder

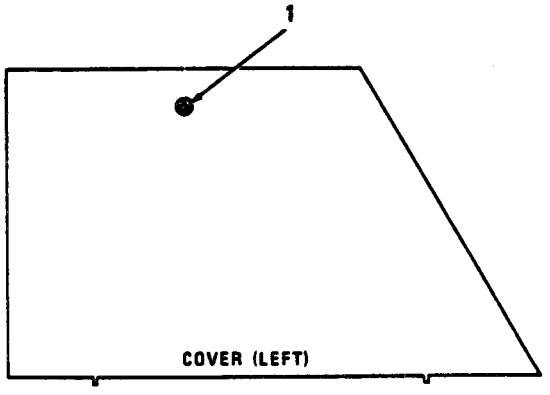
WARNING

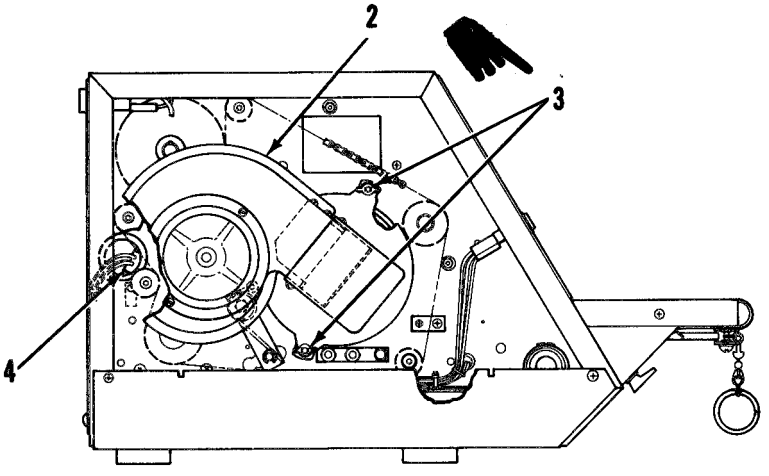
Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

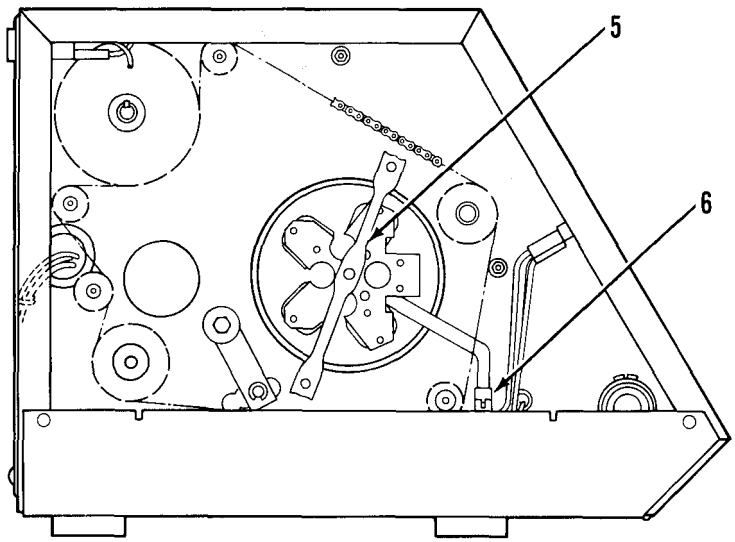
b. Unplug power cord.

c. Turn captive screws (1) on right and left covers to release covers.





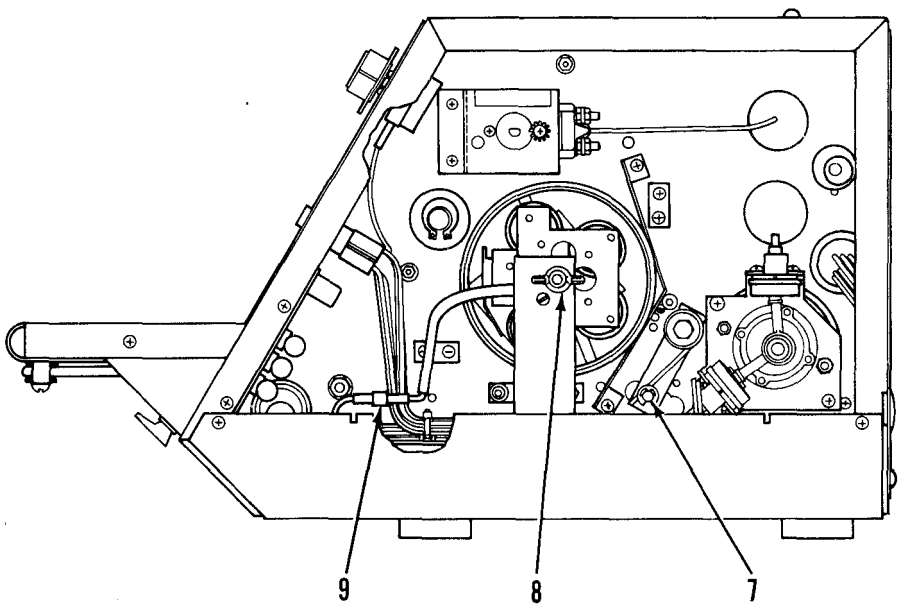
d. Remove exhaust blower (2) from left end of machine by removing two wing nuts (3) and disconnecting motor connector (4).



e. Remove exhaust blower bracket (5) by pulling straight out from studs.

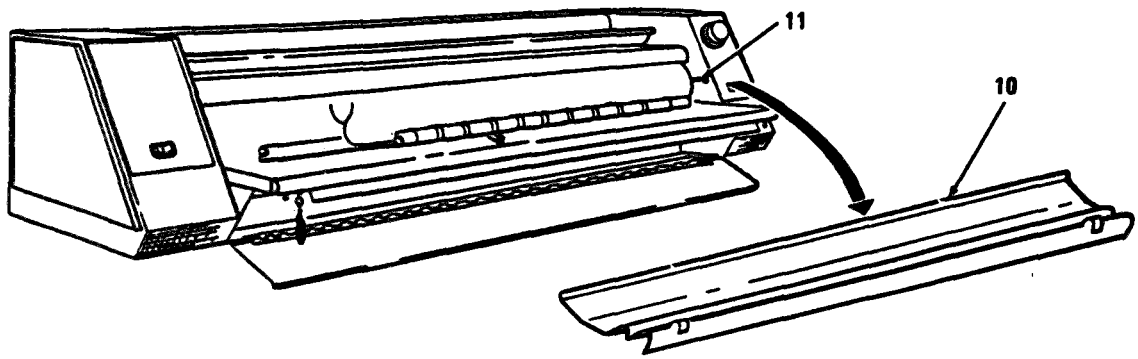
f. Disconnect left lamp connector (6).

g. Relieve belt tension by releasing spring arm from left and right tension studs (7).

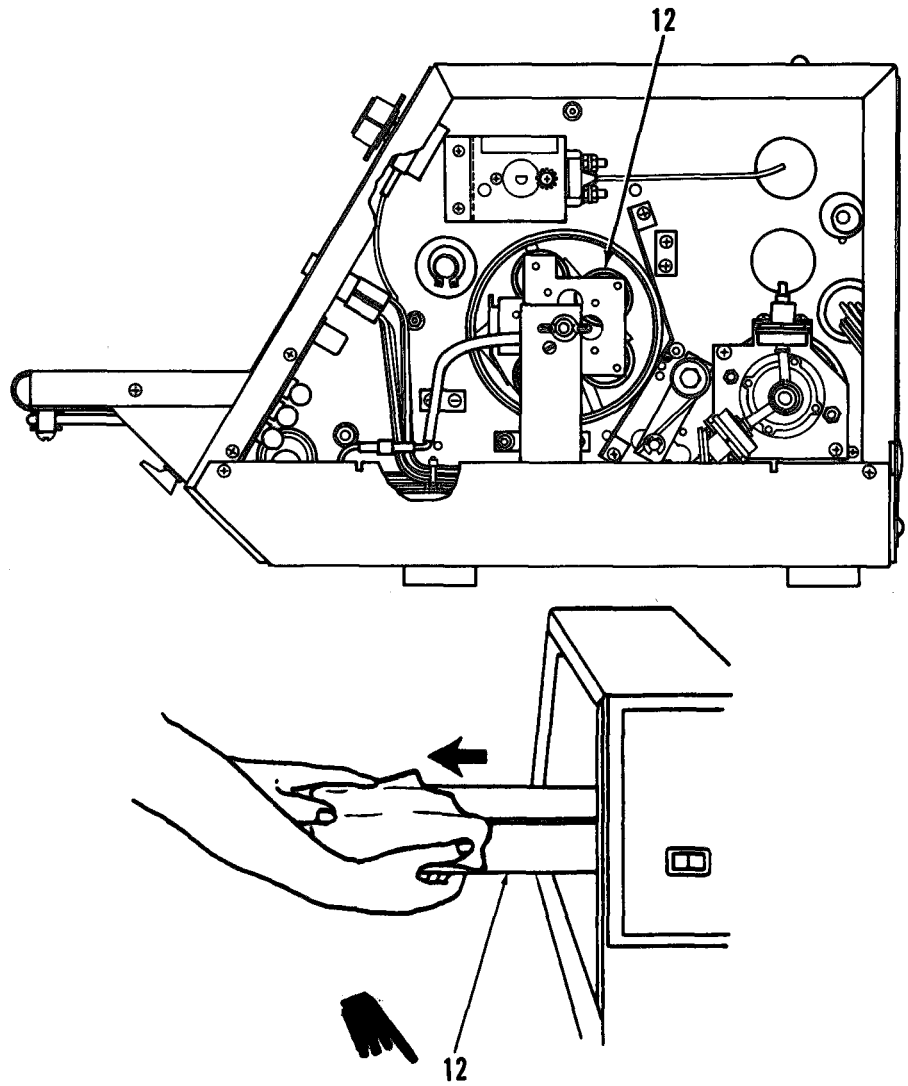


h. Remove wing nut (8).

i. Disconnect right lamp connector (9).

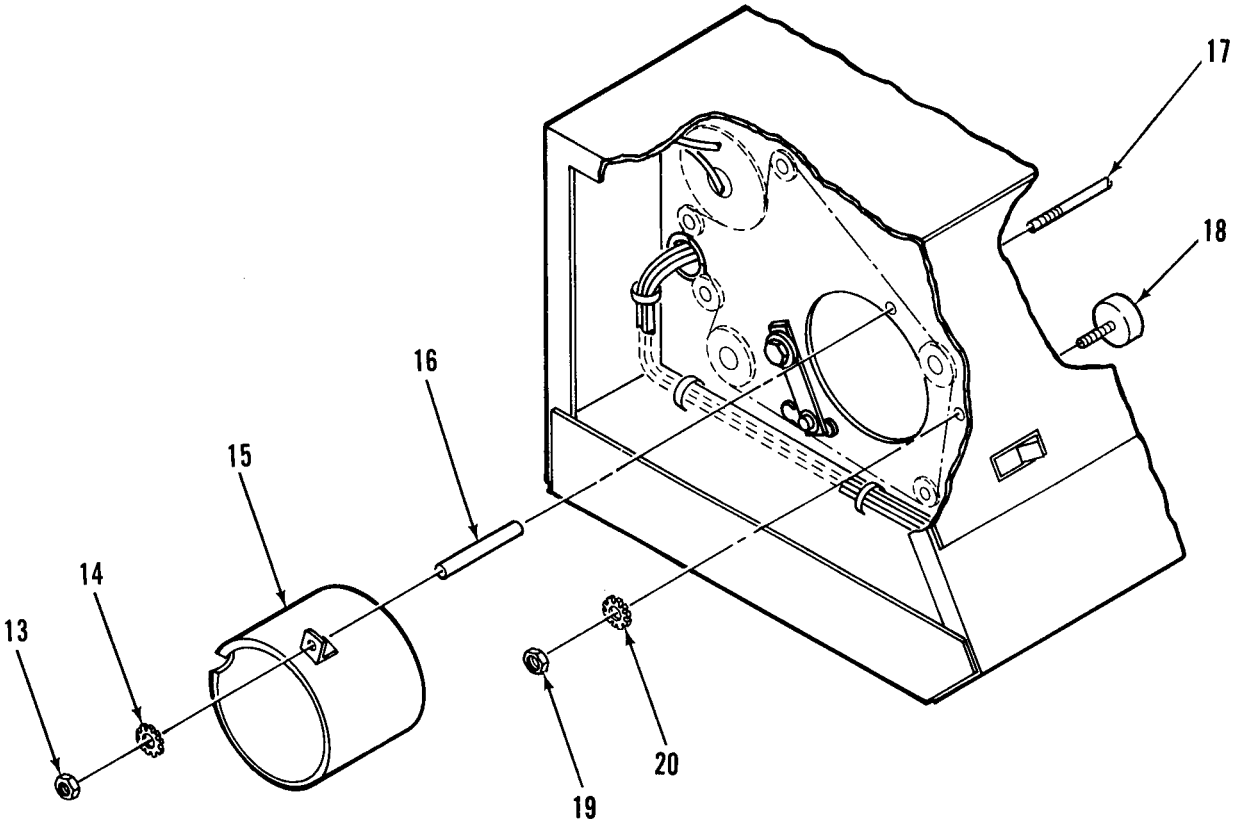


j. Remove cylinder pick-off assembly (10) by lifting free from studs (11).

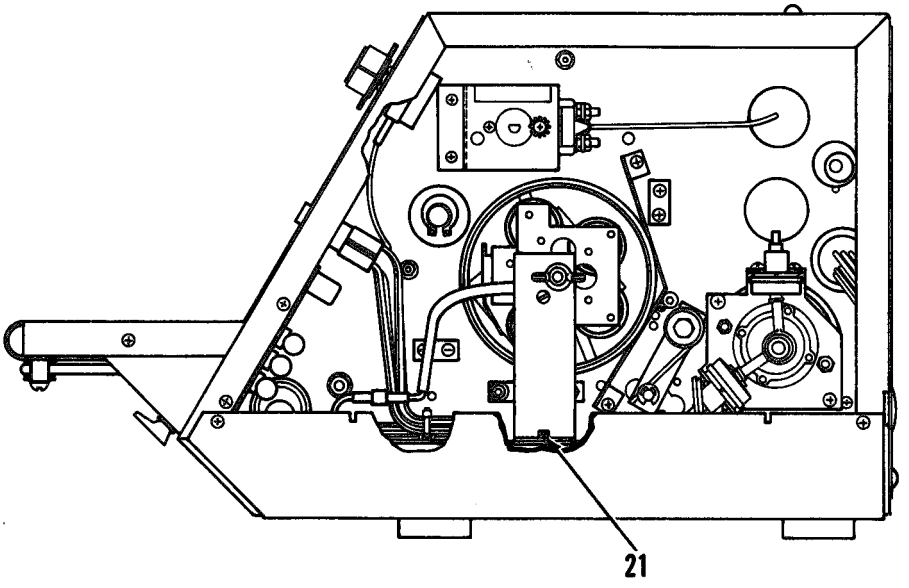


k. Withdraw lamp assembly (12) slightly and wrap cloths around both ends. Carefully withdraw lamp assembly from left end.

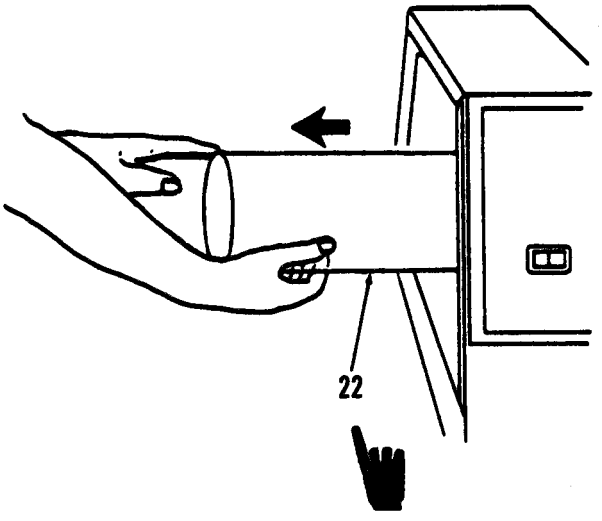
l. Remove two hex nuts (13) and washers (14) retaining the air duct (15). Remove air duct (15) and spacer (16) from threaded stud (17).



m. Remove left and right nylon bearings (18) by removing hex nut (19) and washer (20).



n. On right end, remove head screw (21). Turn center stud counterclockwise until the cylinder support bearing arm drops down.



o. Carefully withdraw glass cylinder (22).

p. Replace cylinder.

q. Lift cylinder support bearing arm on right end and secure with head screw.

r. Reinstall left and right nylon bearings and secure with hex nut and washers.

s. Reinstall spacers and air duct. Secure with hex nuts and washers.

t. Place cloths around right and left ends of lamp assembly and carefully insert assembly from left end, Remove cloths.

u. Secure lamp assembly on right end with wing nut. Reconnect right lamp connector.

v. Tension belts by placing spring arm on left and right tension studs.

w. Reinstall exhaust blower bracket. Reinstall blower assembly and secure with wing nuts. Reconnect blower motor connector.

x. Reinstall left and right covers and turn captive screws.

y. Reinstall cylinder pick-off assembly on studs.

z. Plug in power cord.

aa. Power ON.

ab. Perform operational check.

4-23. REPLACE BALLAST TRANSFORMER.

TOOLS: Flat-Tipped Screwdriver
Multimeter

SUPPLIES: Ballast Transformer

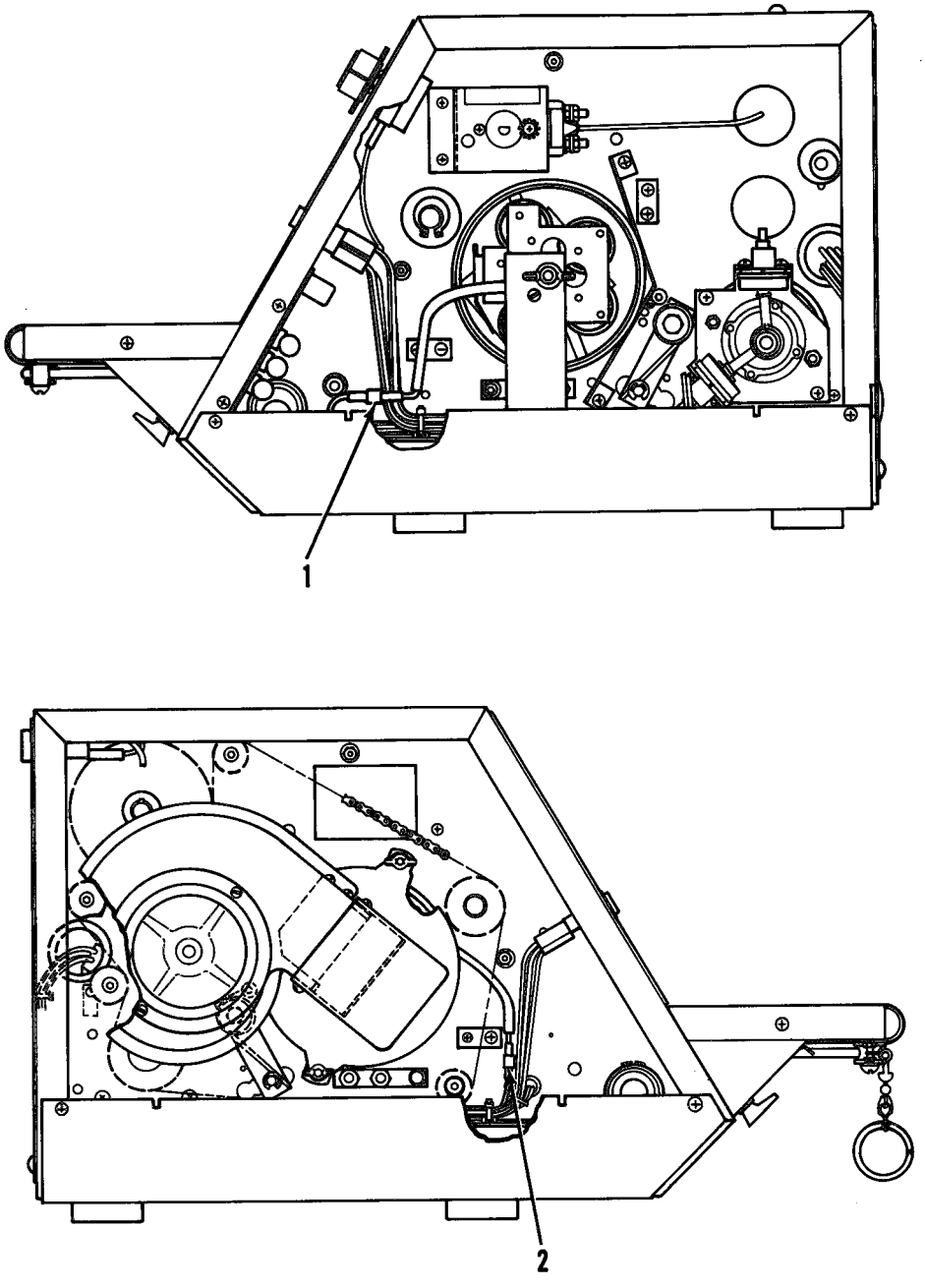
WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove right, left, and rear covers.



d. Disconnect right lamp connector (1).

e. Disconnect left lamp connector (2).

WARNING

HIGH VOLTAGES INSIDE CABINET MAY CAUSE INJURY OR DEATH IF BODY OR PROBES ACCIDENTALLY CONTACT LIVE WIRES.

f. Plug in power cord.

g. Power ON.

h. Turn on printer switch.

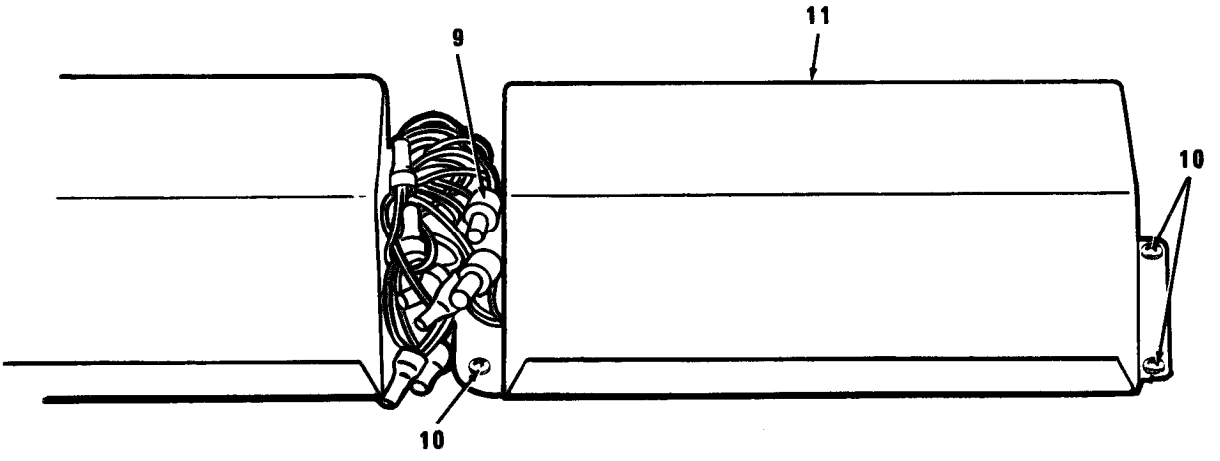
i. Read voltage at ballast transformers with multimeter as follows: white to red and white to yellow. Voltage must be higher than 275 V ac. Voltage lower than 275 V ac indicates defective ballast transformer.

j. Read voltage between the black and white leads at each lamp socket. Voltages must be 2 to 4 V ac. Voltages above or below value indicate defective ballast transformer.

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

k. Unplug power cord.



l. Label wires (9) and disconnect defective ballast transformer (11).

m. Remove four screws (10). Replace ballast transformer (11).

n. Align holes and reinstall four screws.

o. Reconnect ballast transformer wires.

p. Reconnect left and right lamp connectors.

q. Reinstall covers.

r. Plug in power cord.

s. Power ON.

t. Perform operational check.

CHAPTER 5

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT , AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-2. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT, AND SUPPORT EQUIPMENT. Test, measurement, and diagnostic equipment, and support equipment are not required for the repair of this equipment at the general support level of maintenance.

5-3. REPAIR PARTS AND SPECIAL TOOLS. Repair parts and special tools for this equipment are listed and illustrated in TM 5-3610-256-24P (to be published).

Section II. TROUBLESHOOTING PROCEDURES

5-4. TROUBLESHOOTING TABLE. Proper troubleshooting procedures require that preliminary checks be accomplished, al I connections be tight and secure, and safeguards by utilized to prevent excess ammonia vapor from entering the work area.

5-5. SCOPE. This manual cannot list all the possible malfunctions or every possible test, inspection, or corrective action. If a malfunction is not listed or is not corrected by the listed corrective actions, notify your supervisor.

Table 5-1. General Support Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. START CIRCUIT NOT ENERGIZED.
Step 1. Opens or shorts in wiring harness.
Repair wiring harness (see paragraph 5-6).
Step 2. Defective autotransformer.
Replace autotransformer (see paragraph 5-11).
2. EXCESSIVE AMMONIA ODOR.
Step 1. Inspect ammonia pump/motor for leakage.
Repair pump (see paragraph 5-7).
Step 2. Observe ammonia bubbles in supply.
Repair pump (see paragraph 5-7).
3. PRINTS STALL IN DEVELOPER.
Step 1. Inspect screen.
Replace defective screen (see paragraph 5-10).
Step 2. ınspect polyester pick-offs.
Replace defective polyester pick-offs (see paragraph 5-10).

Section III. GENERAL SUPPORT MAINTENANCE PROCEDURES

5-6. REPAIR OF THE WIRING HARNESS

TOOLS: Wire Cutters
Pliers
Multimeter
Soldering Iron
Electronic Tool Kit

SUPPLIES: Resin Flux
Solder
Wire
Shrink Tubing
Terminals
Electrical Connectors

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Locate broken or damaged wires visually, or with a multimeter, and splice as follows:

(1) Install shrink tubing of a diameter and length to cover finished splice, over one end of broken or cut wire. Position shrink down sleeve far enough from break so that it will not interfere with splicing or soldering operations.

(2) Strip end of each wire to be spliced approximately 0.5 inch (13 mm). If a piece of wire is to be spliced into an existing wire, ensure that new wire section is the same AWG size.

(3) Twist all stripped ends tightly together, to form neat joints of uniform size. Use resin flux and solder.

(4) Position shrink sleeve over solder joint, and heat sleeve to 250 degrees F (121 degrees C) so that the sleeve shrinks to form a tight seal around soldered joint.

b. Replace damaged terminals as follows:

(1) Remove damaged terminal by cutting wire as close as possible. If cutting leaves wires too short, splice as in step a, above.

(2) Install shrink down sleeve of a diameter and length to cover the terminal and wire.

(3) Strip 0.15 inch (3.8 mm) of insulation from end of wire. Crimp new terminal in place.

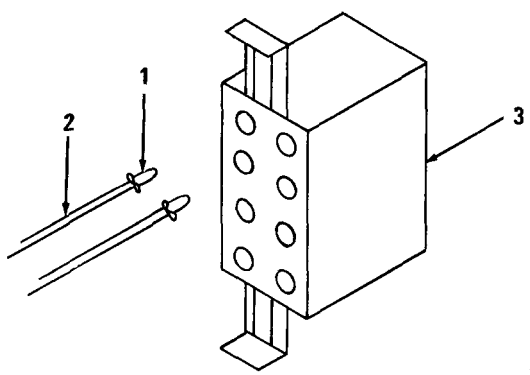
(4) Position shrink tubing over joint, and heat sleeve to 250 degrees F (121 degrees C) so that the tubing shrinks to form a tight seal.

c. Replace damaged electrical connectors as follows:

NOTE

Before removing any damaged connector, prepare a diagram showing the location of each wire in relation to the connector by matching the wire number to the pin letter on the connector.

(1) Remove pins (1) and wires (2) from connector (3), and cut wires as close to pins as possible.



(2) Strip 0.25 inch (6.3 mm) of insulation from the end of each wire.

(3) Crimp pins to wire ends.

(4) Install new pins in proper location in connector and reconnect harness,

5-7. MAINTENANCE OF THE AMMONIA PUMP/MOTOR ASSEMBLY.

TOOLS: Hose Clamp Pliers
Safety Goggles
Flat-Tipped Screwdriver
Socket Head Wrench Set

SUPPLIES: Ammonia Pump and Motor
Diaphragm
Connecting Rod
Body
Lubricant
Hose Clamps

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove right and rear covers.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating machine.

Ammonia may cause eye injury or blindness Wear eye protection before servicing ammonia system.

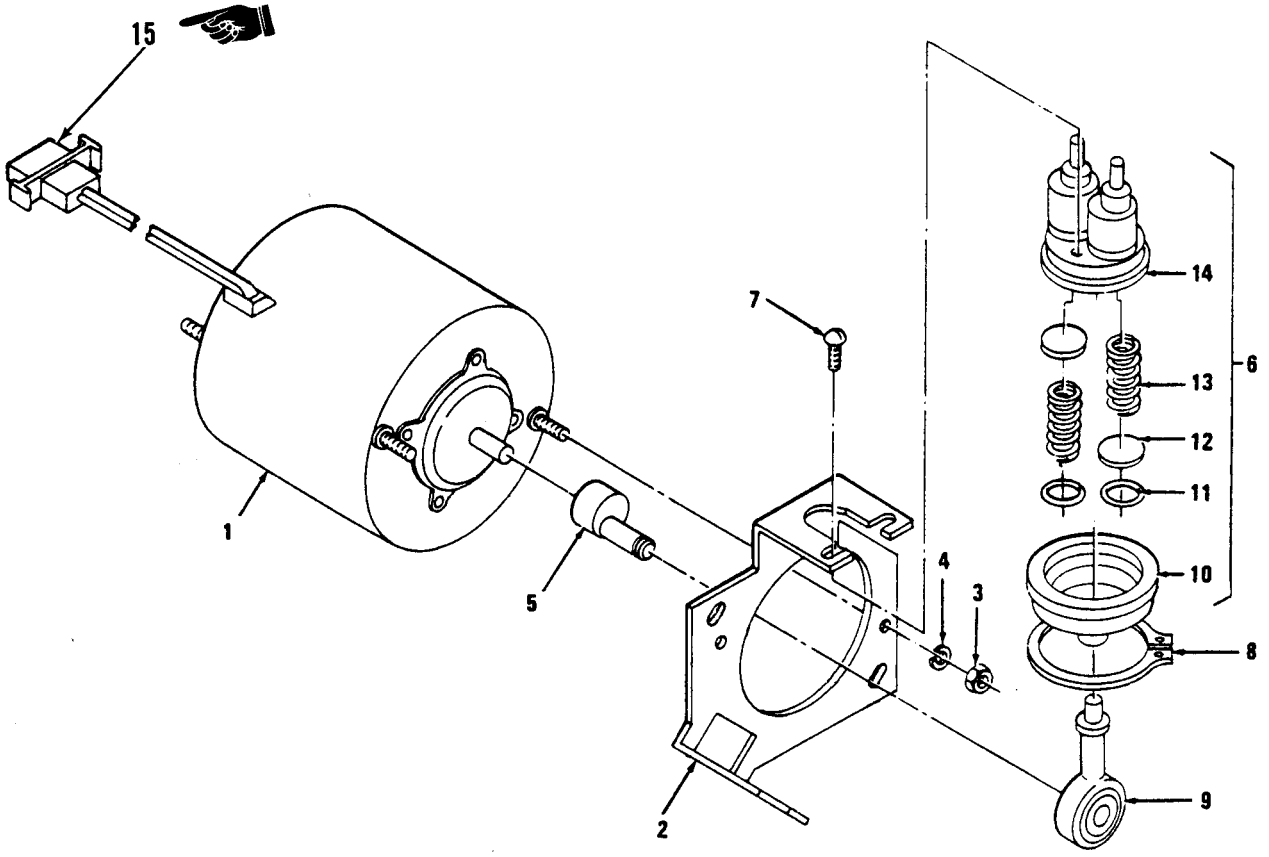
Ammonia may cause skin bums or irritation. Do not let ammonia contact skin or clothing.

First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at Ieast 15 minutes. Anyone overcome by ammonia should be removed to fresh air et once. Refer to FM21-11 and apply artificial respiration. Use oxygen if breathing is labored or has stopped Obtain medical attention at once in cases of aye contact burns to nose or throat, or if parson is unconscious.

d. Unplug connector (1) from pump.

e. Remove hose clamps (2). Tag and disconnect hoses (3).

f. Remove screws (4).



1. MOTOR
2. BRACKET
3. HEX NUT
4. LOCKWASHER
5. ECCENTRIC
6. PUMP BODY ASSEMBLY
7. SCREW
8. SNAP RING
9. CONNECTING ROD
10. DIAPHRAGM
11. PACKING
12. VALVE SEAT
13. SPRING
14. BODY
15. CONNECTOR

g. Remove the pump motor (1) from the pump bracket (2) by removing hex nuts (3) and lockwashers (4). Remove press fit eccentric (5).

h. Remove pump body assembly (6) by removing screws (7).

i. Remove snap ring (8) and separate connecting rod (9) from diaphragm (10).

j. Remove packings (11), valve seats (12), and springs (13) from body (14).

k. inspect the pump components as follows:

(1) Connect the motor and measure the amperage. The proper amperage is 0.70 amps. If excessive vibration or improper amperage is observed, replace the pump motor.

(2) Inspect for pitted or fractured valves or springs.

(3) Inspect for bent or worn connecting rod.

l. Reinstall packings (11), valve seats (12), and springs (13) in body (14).

m. Reinstall diaphragm (10) on connecting rod (9).

n. Reinstall body (14) in diaphragm (10) and secure with snap ring (8).

o. Reinstall pump body assembly (6) and secure with screws (7).

p. Reinstall press fit eccentric (5).

q. Reinstall bracket (2) to motor (1) and secure with hex nuts (3) and washers (4).

r. Install pump/motor assembly and secure with hex heed nuts and washers.

s. Reinstall hoses and secure with hose clamps.

t. Plug connector (15) into pump.

u. Reinstall right and rear covers.

v. Plug in power cord.

w. Power ON.

x. Perform operational check.

5-8. MAINTENANCE OF THERMOSWITCH.

TOOLS: FIat-Tipped Screwdriver
Cross-Tipped Screwdriver
Probe-Type Thermometer

SUPPLIES: Thermoswitch

WARNING

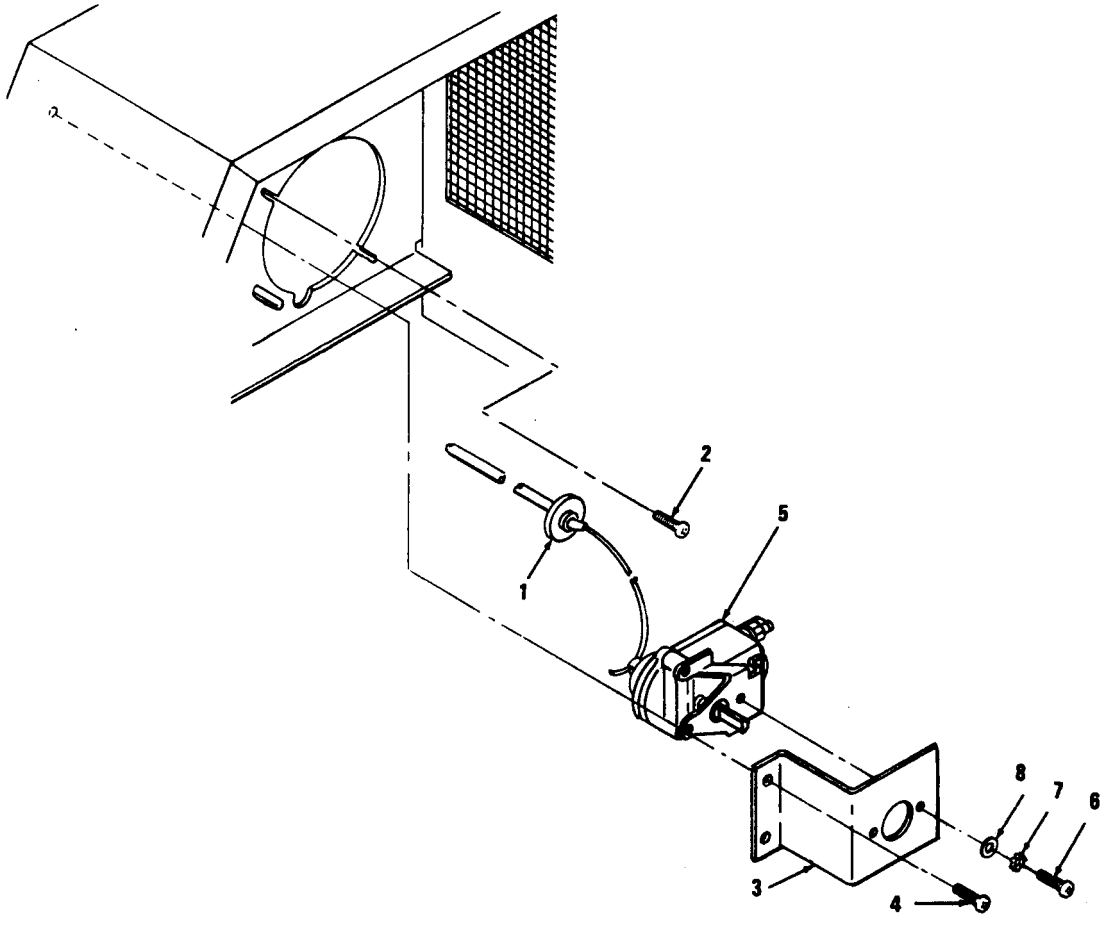
Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove right and rear covers.

d. Label connectors to thermoswitch.



e. Disconnect thermoswitch. Remove the temperature probe (1) by sliding the developer tank back and removing screws (2).

f. Remove bracket (3) by removing screws (4).

g. Remove the thermoswitch (5) by removing screws (6) lockwashers (7), and washers (8).

h. Replace thermomswitch (5) and secure with screws (6), lockwashers (7), and washers (8).

i. Reinstall the temperature probe (1) in the developer tank and secure with screws (2). Reconnect connectors to thermoswitch.

j. Plug in power cord.

k. Power ON. Allow 20 minutes for the machine to warm up.

CAUTION

Use caution when inserting thermometer into developer tank to avoid damaging screen.

l. Remove the upper backside screw securing the developer tank and plate. Remove the end plate.

m. Carefully insert thermometer into developer tank. A reading of 130 degrees F (54 degrees C) at the right end of the developer tank is equivalent to a developer roller temperature of 150 degrees F (66 degrees C).

n. Install the developer tank end plate and secure with screw.

o. Increase the developer tank temperature by turning the control clockwise; temperature may be decreased by turning the control counterclockwise.

p. Power OFF.

q. Unplug power cord.

r. Reinstall right and rear covers.

s. Plug in power cord.

t. Power ON.

u. Perform operational check.

5-9. REPAIR TANK.

TOOLS: Safety Goggles
Flat-Tipped Screwdriver
Cross-Tipped Screwdriver

SUPPLIES: Developer Screen
Polyester Pick-off(s)
End Gaskets
Grommets
Sealant
Double-Sided Tape

WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

WARNING

Ammonia vapor may cause injury or death. Do not breathe vapor. Ensure adequate ventilation before servicing or operating machine.

Ammonia may cause eye injury or blindness. Wear eye protection before servicing ammonia system.

Ammonia may cause skin burns or irritation. Do not let ammonia contact skin or clothing.

First Aid: If ammonia is spilled on skin, promptly wash with plenty of water. Remove clothing if necessary to wash off affected area. If eyes are affected, rinse with fresh water as soon as possible. Continue for at least 15 minutes. Anyone overcome by ammonia should be removed to fresh air at once. Refer to FM21-11 and apply artificial respiration. Use oxygen if breathing is labored or has stopped. Obtain medical attention at once in cases of eye contact, burns to nose or throat, or if person is unconscious.

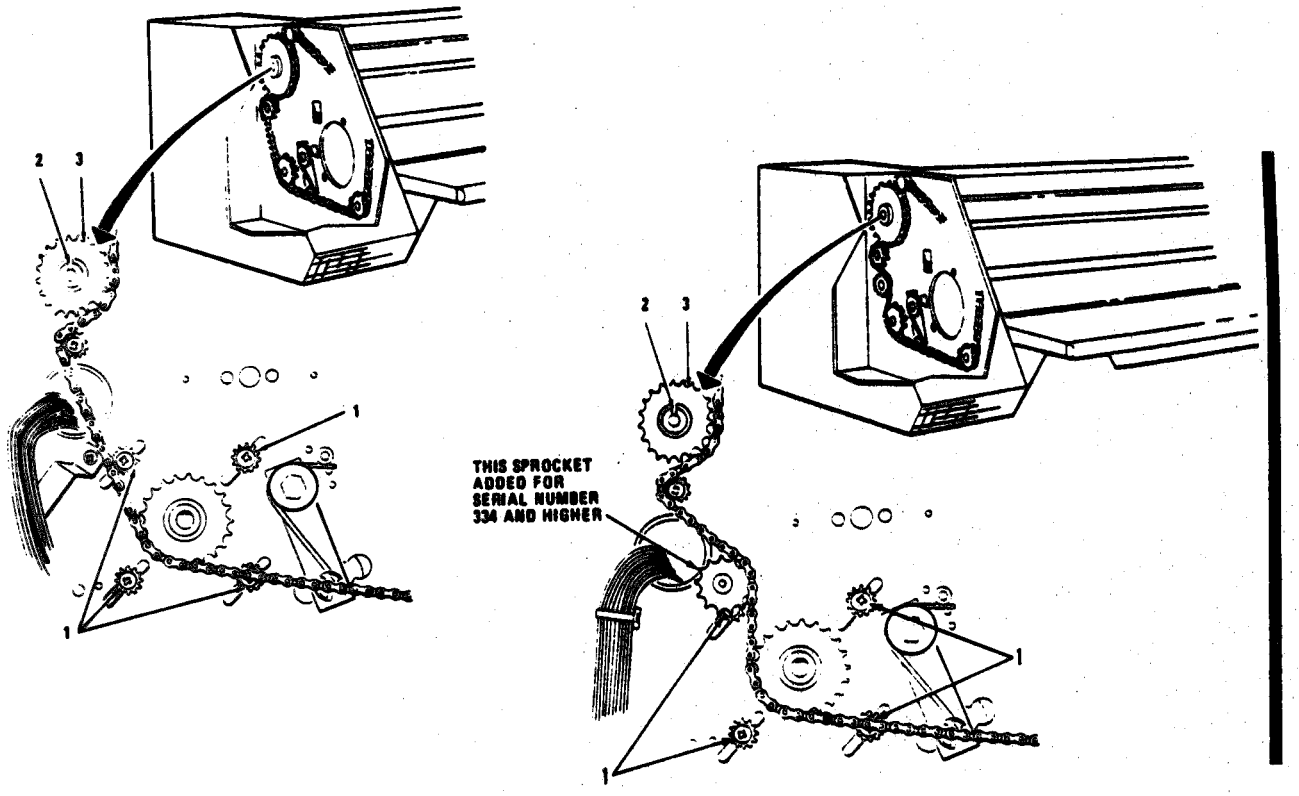
a. Power OFF.

b. Unplug power cord.

c. Remove developer pick-off assembly. Remove rear cover.

d. Remove exhaust blower from left end of machine by removing two wing nuts and disconnecting .notor connectors.

e. Remove exhaust blower bracket by pulling straight out from studs.



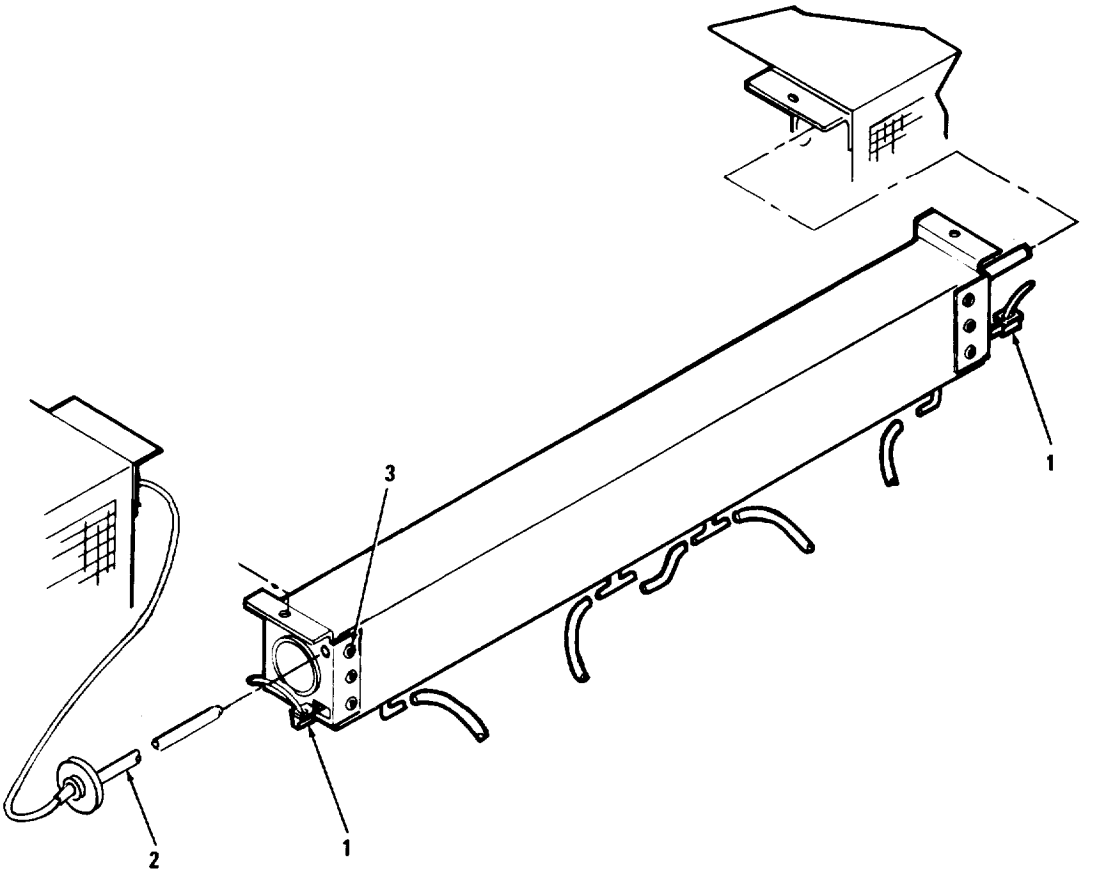
f. Loosen four screws (1) and slide sprocket upward to release chain tension.

g. Remove developer roller drive sprocket by loosening setscrew (2) and pulling sprocket (3) off shaft.

WARNING

Ammonia may cause injury or blindness Wear eye protection before servicing ammonia system.

h. Disconnect tubing from developer tank.



i. Disconnect heater wires (1) from developer tank.

j. Disconnect temperatu re probe (2).

k. Remove six screws (3) securing left and right developer tank end plates. Remove sealant.

l. Note position of developer roller and screen. Then remove developer roller and screen.

m. Remove polyester pick-offs. Scrape gently to remove remaining double sided tape.

n. Install new pick-offs. Secure with double-sided tape.

o. Remove and discard end gaskets and grommets. Remove all traces of sealant from tank and end plates.

p. Replace gaskets and grommets

q. Coat developer tank shell and end plate surfaces where sealant was removed with fresh sealant. Then replace right developer tank end plate and secure with three screws.

r. Place new developer screen in position. Be sure smooth surface of screen will contact roller.

s. Be sure developer screen is aligned.

t. Reinstall developer roller.

u. Reinstall developer tank and plate. Secure with three screws.

v. Reconnact heater wires and temperature probe.

w. Reconnect tubing.

x. Reinstall developer roller drive sprocket. Hold with setscrew.

y. Adjust chain tension by pulling drive sprocket downward until chain tension is the same as n step f, above. Tighten four screws to hold tension.

z. Reinstall exhaust blower bracket.

aa. Reinstall exhaust blower and secure with wing nuts.

ab. Reinstall right end left covers. Secure with captive screws.

ac. Plug in power cord.

ad. Power ON.

ae. Perform operational check.

5-10. MAINTENANCE OF DRIVE CONTROLLER.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver
Stopwatch

SUPPLIES: Drive Controller

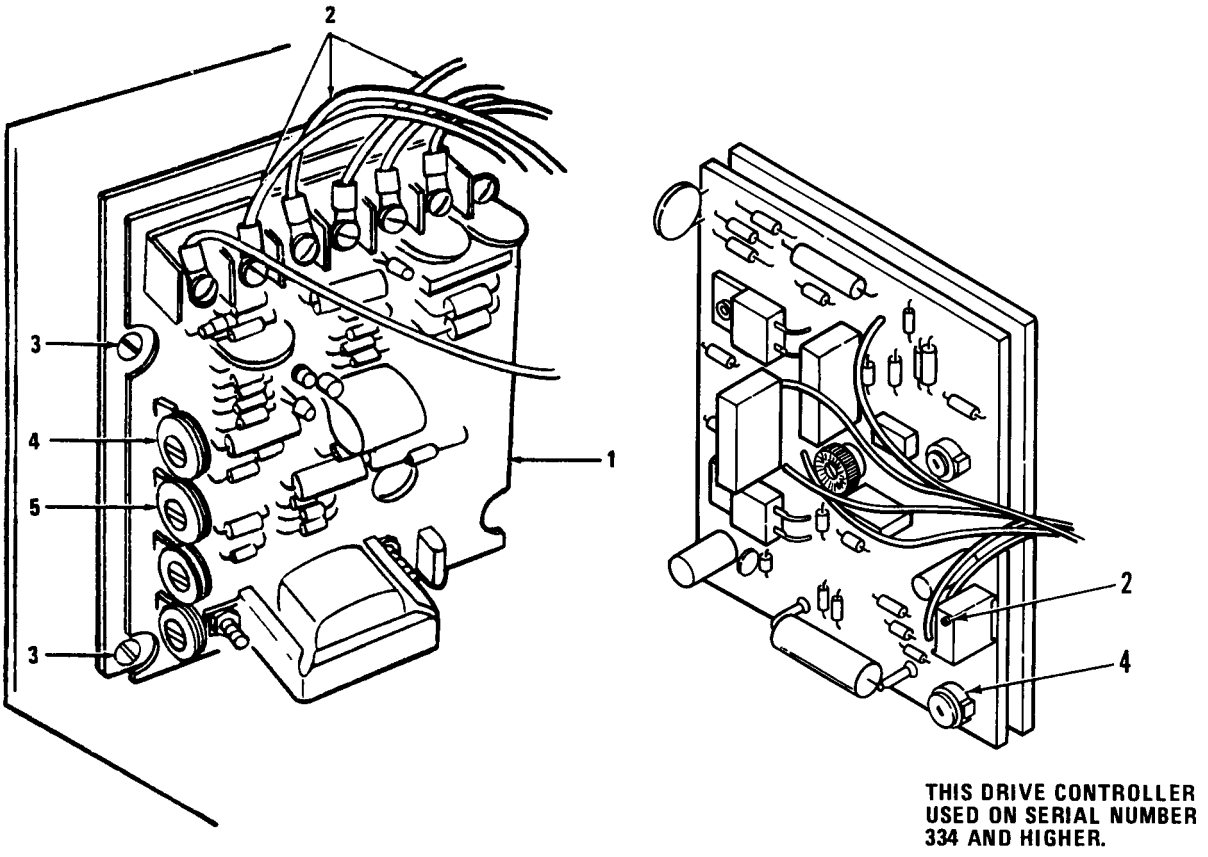
WARNING

Unplug power cord before servicing mechine. Death or injury may result from failure to comply with this warning.

a. Power OFF.

b. Unplug power cord.

c. Remove right cover by turning captive screw.



THIS DRIVE CONTROLLER USED ON SERIAL NUMBER 334 AND HIGHER.

d. Label connectors (2) to drive control (1).

e. Disconnect connectors (2).

f. Remove assembly (1) by removing screws (3).

g. Replace drive control assembly and secure with screws.

h. Reconnect connectors.

WARNING

HIGH VOLTAGE INSIDE CABINET CAN CAUSE INJURY OR DEATH.
ADJUSTMENT MUST BE MADE WITH INSULATED TOOLS.

i. Plug in power cord.

j. Power ON. Warm-up Reproduction Set.

k. Turn speed control to left (minimum speed) and feed used or outdated diazo paper into rollers marked at 9 inches (229 mm) intervals.

l. Turn minimum speed potentiometer (4) adjustment screw (right - faster, left - slower) until speed is no less than 1.5 ft/min (457 mm/min) as observed by rate of paper travel (1 mark in 30 seconds).

m. Turn speed control right to maximum speed.

CAUTION

To avoid damaging the machine, do not exceed 25 ft/min (635 mm/min).

n. Adjust maximum speed potentiometer (5) to speed under 25 ft/min (635 mm/min) by observing rate of paper travel. (Turn right - faster, left - slower.) Maximum speed corresponds to observing 16 marks in 30 seconds.

o. Turn speed control to minimum speed and recheck speed. Adjust if required.

p. Reinstall right cover and turn captive screw.

q. Unplug power cord.

r. Power OFF.

5-11. MAINTENANCE OF AUTOTRANSFORMER.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver
Multimeter

SUPPLIES: Autotransformer

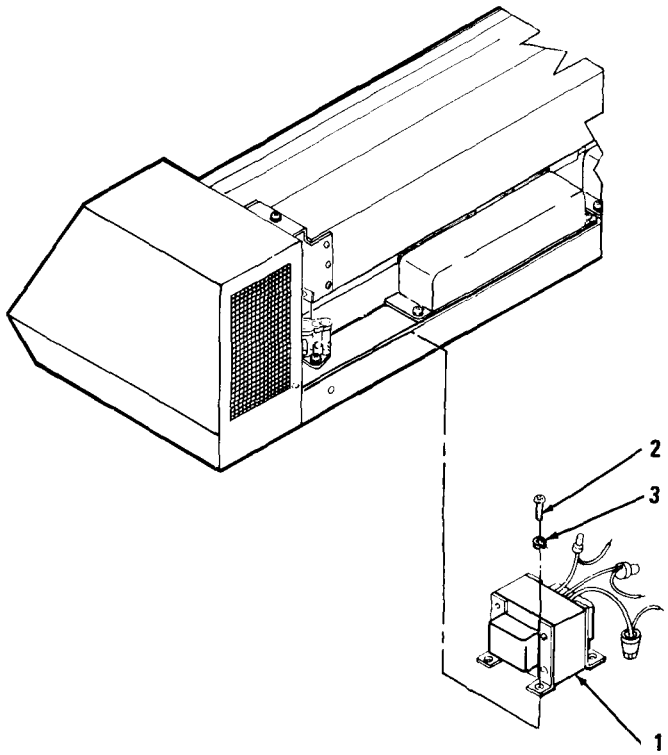
WARNING

HIGH VOLTAGE INSIDE CABINET CAN CAUSE INJURY OR DEATH.
ADJUSTMENT MUST BE MADE WITH INSULATED TOOLS.

a. Power OFF.

b. Unplug power cord.

c. Remove rear cover.



d. Tag and disconnect wires from autotransformer (1).

e. Remove autotransformer by removing screws (2) and lockwashers (3).

f. Refer to FO-1. Connect a 220 V, 50/60 Hz power source to terminals 1 and 5.

NOTE

Perform this test only if the machine is wired for 220 V. This test cannot be performed unless a 220 V power source is available. Refer to FO-1.

If the voltage source is greater than 220 V, connect power source to terminals 1 and 6.

g. Using a multimeter, read voltages between terminals 1 and 2, 1 and 3, 1 and 4, and 1 and 5. Voltage at terminal 2 shall be 110 V, terminal 3 shall be 120 V, terminal 4 shall be 125 V, and terminal 5 shall be 220 V.

h. Remove power source and multimeter. If the autotransformer is defective, it shall be replaced.

i. Install autotransformer and secure with screws and Iockwashers.

j. Reconnect wiring. Refer to the Wiring Schematic, FO-2. Connect wires 29, 30, 33, and 34 to terminal 1.

k. Reinstall rear cover. Secure door of receptacle assembly with screw.

l. Plug in power cord.

m. Power ON.

n. Perform functional test.

5-12. REPLACE IDLER ROLLERS DRIVE ROLLER, AND PRINTER BELTS.

TOOLS: Flat-Tipped Screwdriver
Cross-Tipped Screwdriver
Socket Head Wrench Set

SUPPLIES: Idler Rollers
Drive Roller
Printer Belt Set

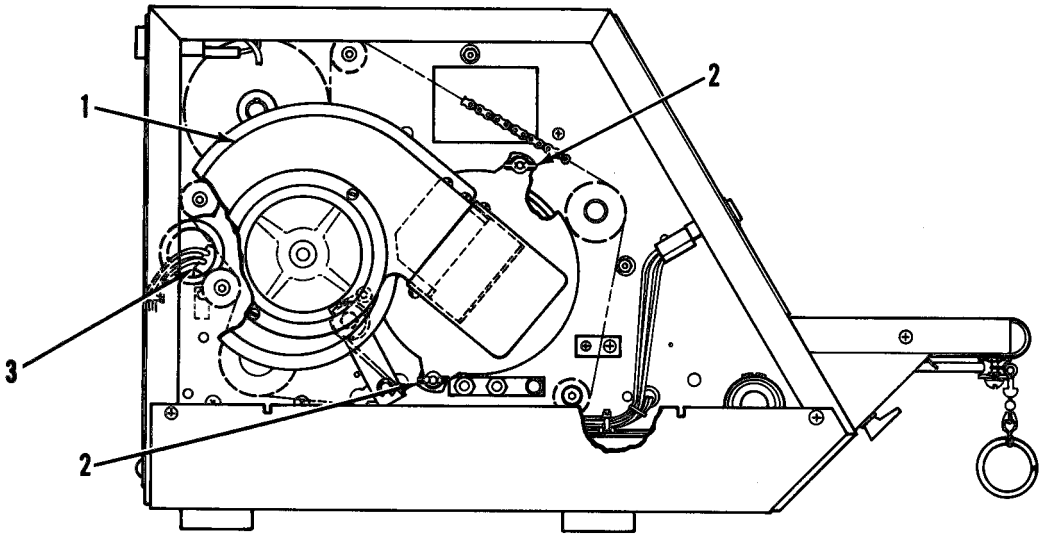
WARNING

Unplug power cord before servicing machine. Death or injury may result from failure to comply with this warning.

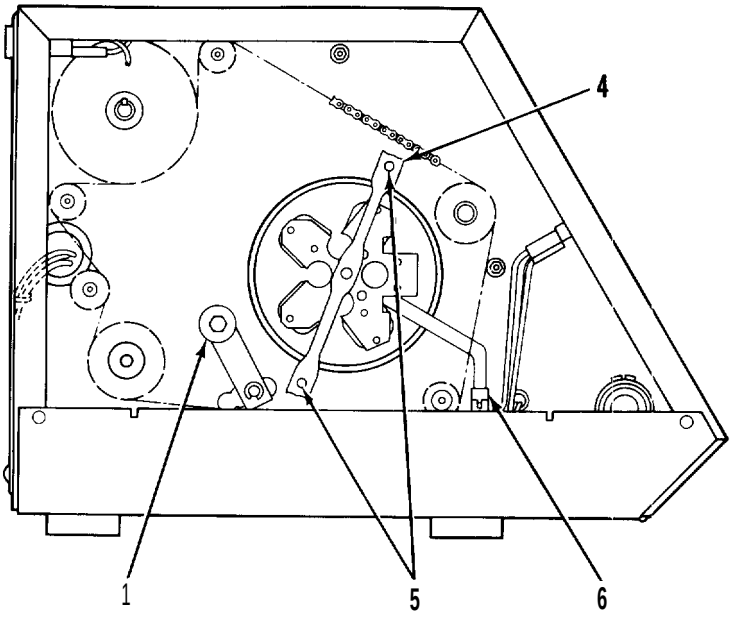
a Power OFF.

b. Unplug power cord.

c. Turn captive screws on right and left covers and remove,



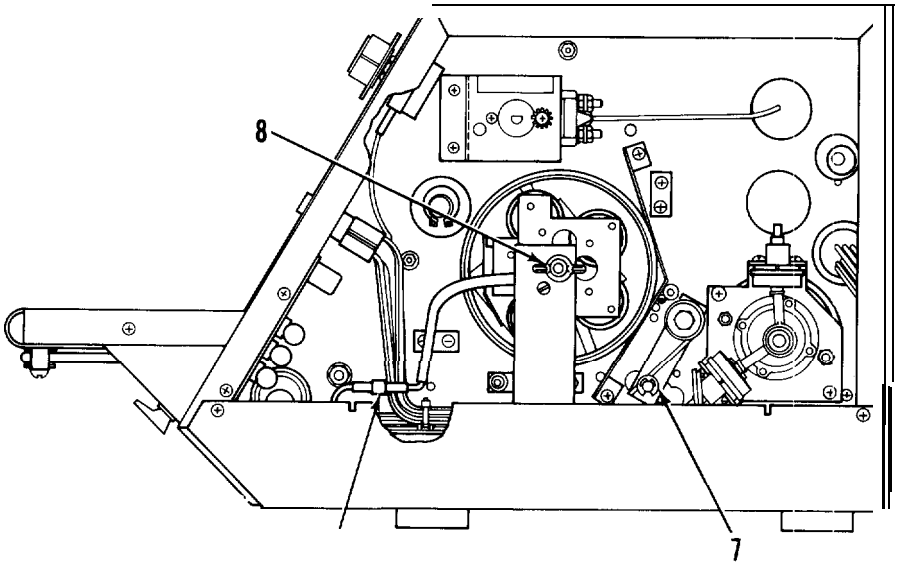
d. Remove exhaust blower (1) from left end of machine by removing two wing nuts (2) and disconnecting motor connector (3).



e. Remove exhaust blower bracket (4) by pulling straight out from studs (5).

f. Disconnect left lamp connector (6).

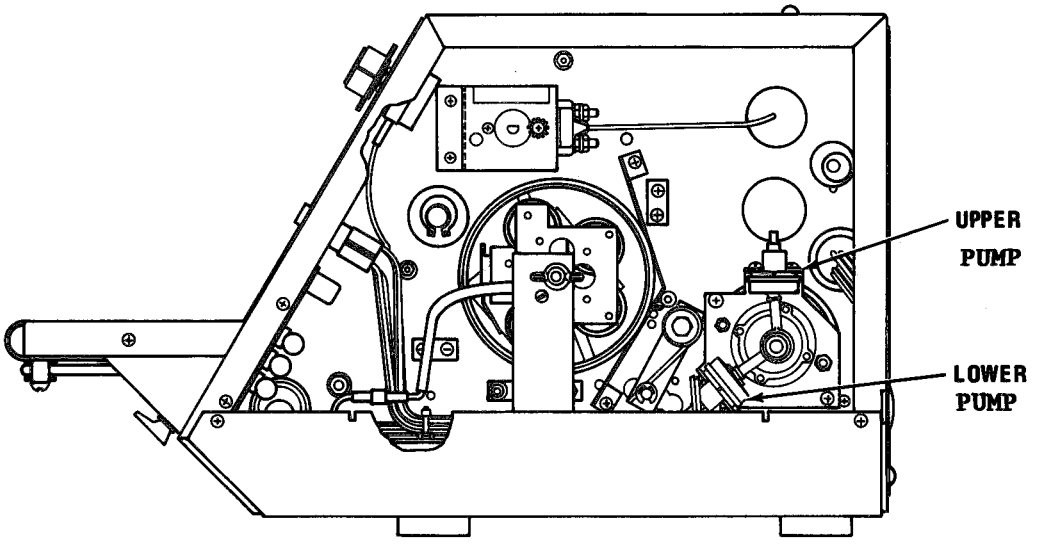
g. Relieve belt tension by releasing spring arm from left and right tension studs (7).

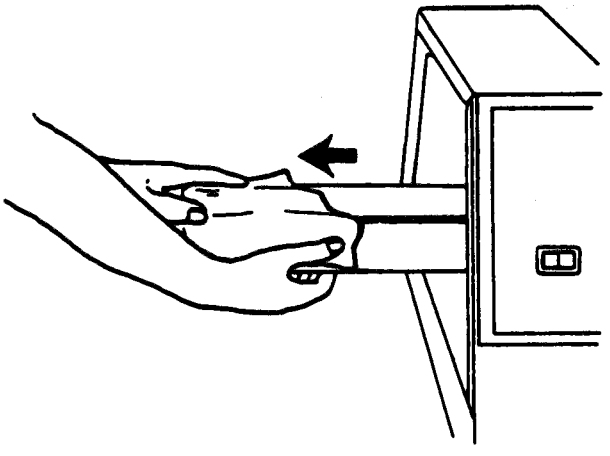


h. Remove wing nut (8).

i. Unplug right lamp connector (9).

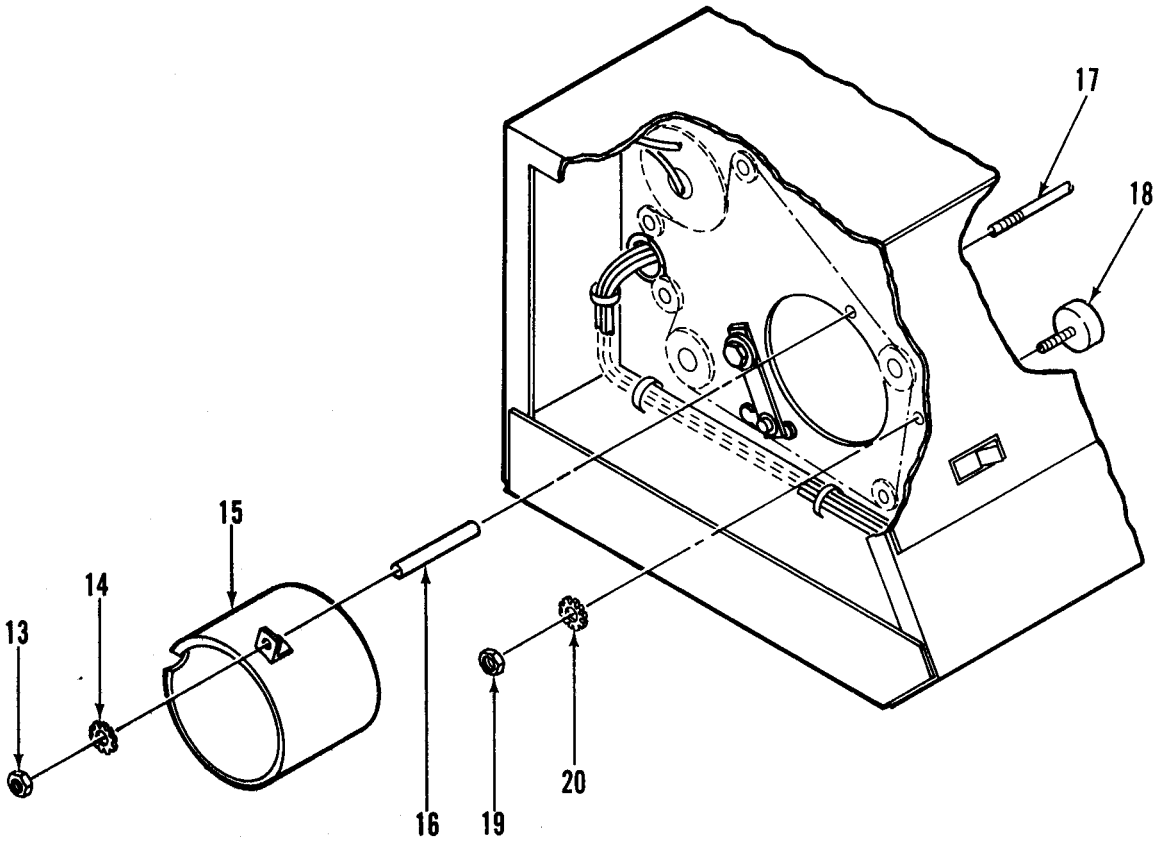
j. Remove cylinder pick-off assembly (10) by lifting free from studs (11).



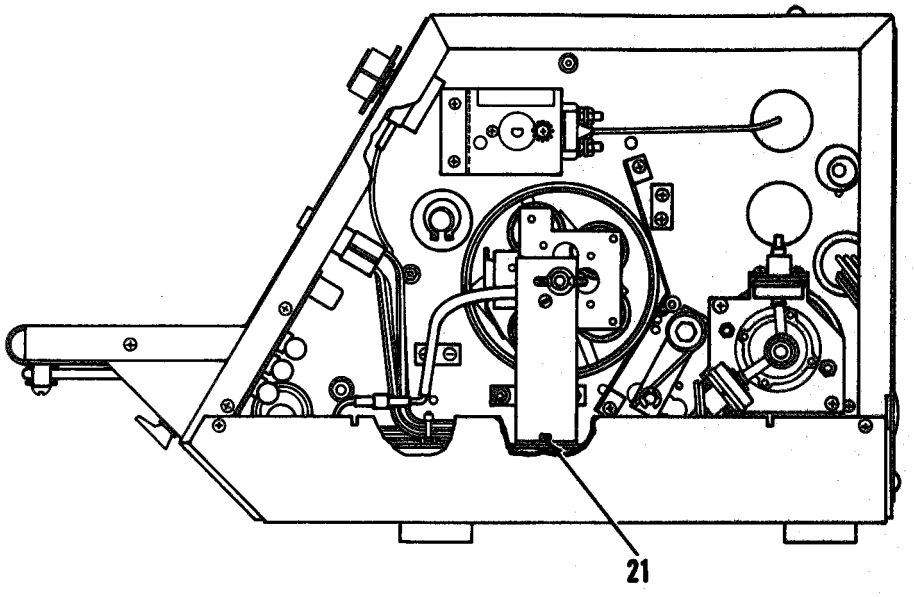


k. Withdraw lamp assembly slightly and wrap cloths around both ends. Carefully withdraw lamp assembly from left end.

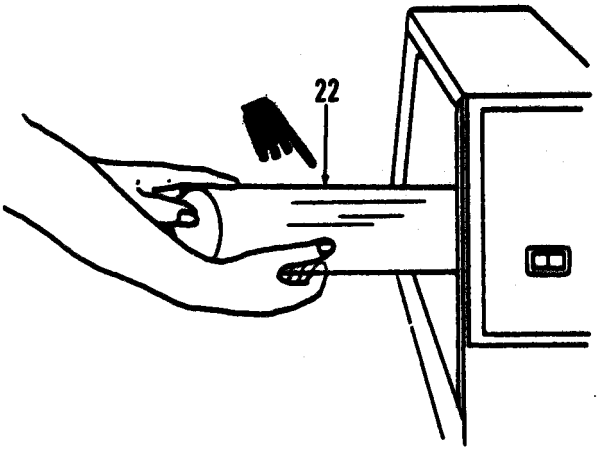
1. Remove two hex nuts (13) and washers (14) retaining air duct (15). Remove air duct (15) and spacer (16) from threaded stud (1 7).



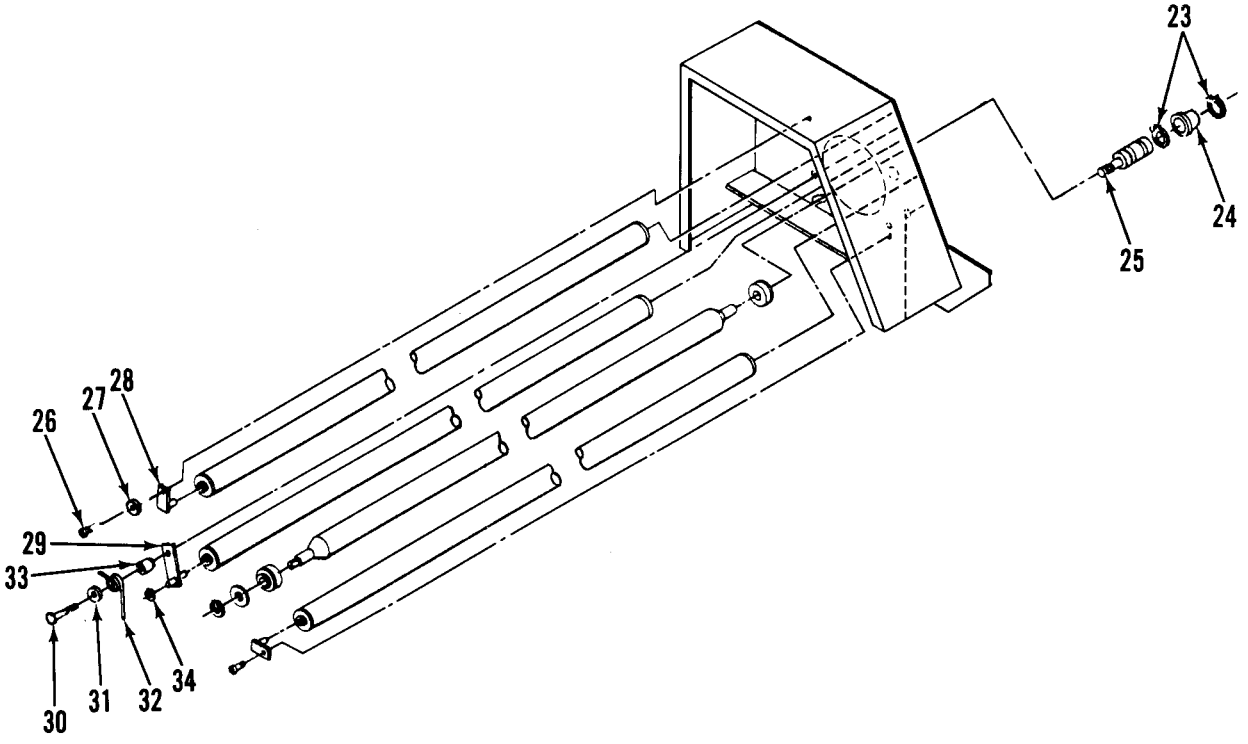
m. Remove left and right nylon bearings (18) by removing hex nut (19) and washer (20).



n. On right end, remove head screw (21). Turn center stud counterclockwise until the cylinder support bearing arm drops down.



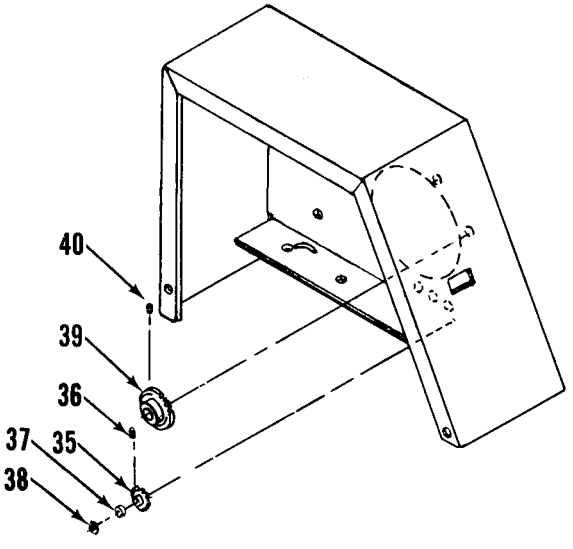
o. Carefully withdraw glass cylinder (22).



p. Remove snap rings (23), spacer (24), and bearing (25) from drive roller at right end.

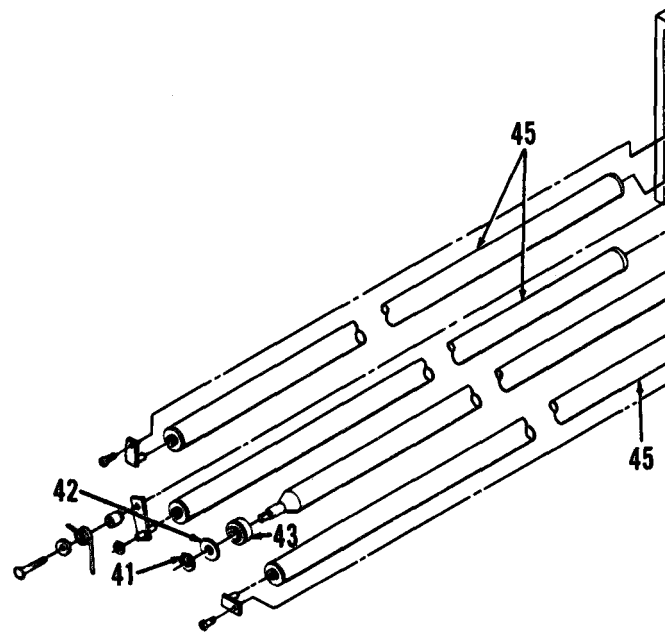
q. Remove screw (26), lockwasher (27), and stud (28) from idler rollers at right and left ends.

r. Remove stud assembly (29) by removing capscrew (30), washer (31), spring (32), spacer (33), and nut (34).



s. Remove idler sprocket (35) by removing socket head capscrew (36), washer (37), and hex nut (38). Remove drive sprocket (39) by loosening socket head capscrew (40).

t. Remove snap rings (41), spacers (42), and bearings (43) from drive roller. Remove drive roller (44) and idler rollers (45).



u. Replace printer belt set.

v. Inspect idler and drive rollers for out-of-round or warping. Replace as required.

During the following procedures, the printer belts must be seated between the spacers or damage to the machine will result.

w. Reinstall bearings, spacers, and snap rings on drive rollers.

x. Reinstall drive sprocket and secure with socket head capscrew. Reinstall idler sprocket and secure with socket head capscrew, washers, and hex nut.

y. Reinstall stud assembly and secure with capscrew, washer, spring, spacer, and nut.

z. Reinstall stud, lockwasher, and screw in idler rollers at right and left ends.

aa. Reinstail bearing, spacer, and snap rings on drive roller at right end.

ab. Replace cylinder.

ac. Lift cylinder support bearing arm on right end and secure with hex nut.

ad. Reinstall left and right nylon bearings and secure with hex nut and washer.

ae. Reinstall spacers and air duct. Secure with hex nuts and washers.

af. Place cloths around right and left ends of lamp assembly and carefully insert assembly from left end. Remove cloths.

ag. Secure lamp assembly on right end with wing nut. Reconnect right lamp connector.

ah. Tension belts by placing spring arm on left and right tension studs.

ai. Reinstall exhaust blower bracket. Reinstall blower assembly and secure with wing nuts. Reconnect motor connector.

aj. Reinstall left and right covers and turn captive screws.

ak. Reinstall cylinder pick-off assembly on studs.

al. Plug in power cord.

am. Power ON.

an. Perform operational check.

5-13. MAINTENANCE OF THE SUPPLY CASE AND CARRYING CASE.

TOOLS: Flat-Tipped Screwdriver
Drill, 5/16-inch Bit
Rivet Gun

SUPPLIES: Strap Assembly
Wire Handle and Plate
Toggle Action Drawbolt
Backup Plates
Rivets
Washers
Support
Base
Cover
Carrying Case
Supply Case

a. If handles are defective, remove handle and backup plate by drilling out rivets with a 5/16-inch drill. Secure new handle and backup plate with rivets.

b. If latches or drawbolts are defective, remove latch and backup plate by drilling out rivets with a 5/16-inch drill. Secure new latch or drawbolt with rivets.

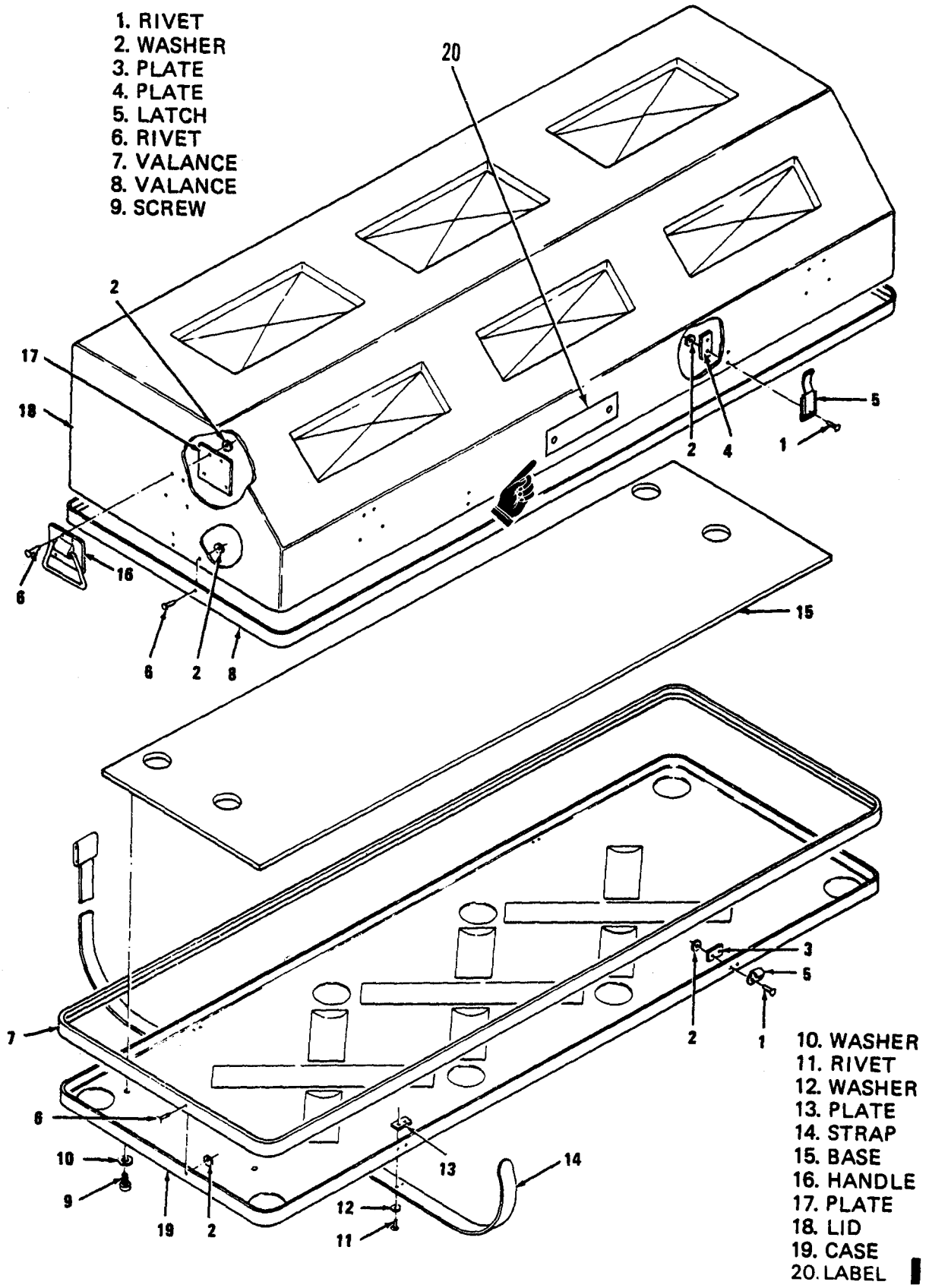
c. Replace defective strap assembly.

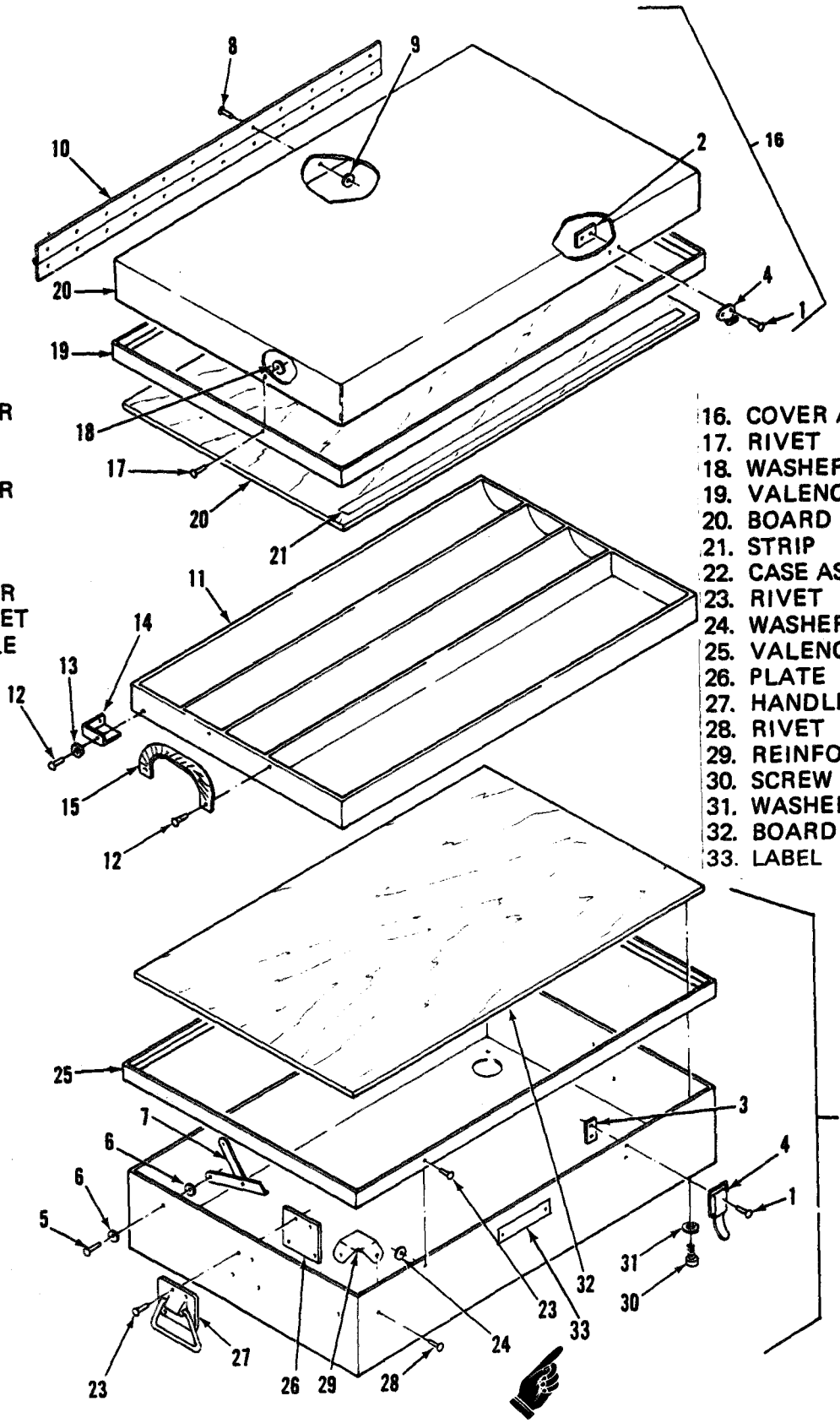
d. Replace defective support.

e. Replace defective base or cover as necessary.

NOTE

The supply case is to be repaired in the same manner as the carrying case.


1. RIVET
2. WASHER
3. PLATE
4. PLATE
5. LATCH
6. RIVET
7. VALANCE
8. VALANCE
9. SCREW
10. WASHER
11. RIVET
12. WASHER
13. PLATE
14. STRAP
15. BASE
16. HANDLE
17. PLATE
18. LID
19. CASE
20. LABEL



U.S. GOVERNMENT PRINTING OFFICE 1990/754-029/20073

APPENDIX A

REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2. FORMS.

Recommended Changes to DA Publications	DA Form 2028-2
Recommend Changes to Publications and Blank Forms	DA Form 2028
Accident Report	DA Form 285
Equipment inspection and Maintenance Worksheet	DA Form 2404
Quality Deficiency Report	SF 368

A-3. FIELD MANUALS.

First Aid for Soldiers	**FM21-11**

A-4. TECHNICAL MANUALS.

The Army Maintenance Management System (TAMMS)	DA Pam 738-750
Destruction of Materiel to Prevent Enemy Use	TM 750-240-3
Administrative Storage of Equipment	TM 740-90-1
Organizational, Direct support, and General Support Maintenance Repair Parts and Special Tools list for Reproduction Set Diazo Process 185.FL-M (3610-01-123-7782)	TM 5-3610-256-24P

A-5. MISCELLANEOUS PUBLICATIONS.

The Army Physical Security Programs	AR 190-13
Accident Reporting and Records	AR 385-40
Packaging of Army Materiel for Shipment and Storage	AR 746-1
Color, Marking, and Preparation of Equipment for Shipment	AR 740-1
Color and Marking of Army Materiel	AR 746-5
Wiring Data and System Schematic Diagrams	MIL-STD-863

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. **Inspect** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. **Service.** Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. **Adjust** To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. **Aline.** To adjust specified variable elements of an item to bring about optimum or desired performance.

f. **Calibrate** To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. **Remove/Install.** To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. **"Replace"** is authorized by the MAC and is shown as the 3rd position code of the SMR code.

i. **Repair.** The application of maintenance services[1], including fault location/troubleshooting[2], removal/installation, and disassembly /assembles procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system

j. **Overhaul.** That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. **Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, Section II.

a. **Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".

b. **Column 2, Component/Assembly.** Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. **Column 3, Maintenance Function.** Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. **Column 4, Maintenance Category.** Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to per-form the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

---

[1] Services. Inspect, test, service, adjust, aline, calibrate, and/or replace.
[2] Fault locate/troubleshoot. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).
[3] Disassemble/assemble. Encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.
[4] Actions. Welding, grinding, riveting, straightening, facing, remachining, and/or resurfacing.

C - Operator or crew
O - Organizational maintenance
F - Direct Support Maintenance
H - General Support Maintenance
L - Specialized Repair Activity (SRA)
D - Depot maintenance

e. **Column 5, Tools and Equipment.** Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. **Column 6, Remarks.** This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. **Column 1, Reference code.** The tools and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. **Column 2, Maintenanca Category.** The lowest category of maintenance authorized to use the tool or test equipment.

c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.

d. **Column 4, National Stock Number.** The National stock number of the tool or test equipment.

e. **Column 5, Tool Number.** The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. **Column 1, Reference Code.** The coda recorded in column 6, Section II.

b. **Column 2, Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

SECTION II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT, ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
00	Reproduction Set, Diazo Process 185. FL-M	Inspect		0.5					
		Test		0.5					
		Service		0.5				1,2,4	
01	Electrical Components								
	Main Wiring Harness	Inspect		0.5					
		Replace			3.0			2,5,7	
		Repair			1.0			2,5,7	
	Hi/Lo Speed Wiring Harness	Inspect		0.5					
		Replace			3.0			2,5,7	
		Repair			1.0			2,5,7	
	Drive Motor	Inspect			3.			2,5	
		Test			0.5			2,4,12	
		Replace			2.0			2,4,12	
		Repair			2.5			2,4,12	
02	Ammonia Supply System								
	Pump/Motor Assembly	Inspect				1.0		1,2	
		Test				2.0		1,2,5, 12	
		Service				2.0		1,2,5, 12	
		Replace				3.0		1,2,5, 12	
		Repair				4.0		1,2,4,5,	
03	Printer Assembly								
	Refeed Assembly	Inspect		0.5				6,8	
		Replace		1.0				6,8	
	Exhaust Blower Assembly	Inspect		0.5				1,2	
		Replace			1.0			1,2,4	

SECTION II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
03	Printer Assembly (continued)								
		Repair		1.0				1,2,4	
	Lamp Assembly	Test		0.5				2	
		Replace		1.5				5	
	Idler Roller, Drive Roller, and Printer Belt Assemblies	Inspect				1.0		2,4,6	
		Replace				1.5			
		Repair				1.5			
04	Developer Assembly								
	Tank Assembly	Inspect			0.5			1,2,3,4, 6,8	
		Replace				1.0			
		Repair				3.0		1,2,3,4, 6,8,9, 13	
05	Machine Cabinet Group								
	Cylinder Pick Off Assembly	Inspect		0.5					
		Replace		1.0					
06	Carrying Case Assembly	Inspect				0.5			
		Replace				0.25		2,14	
		Repair				4.0		2,14	
07	Supply Case Assembly	Inspect				0.5			
		Replace				0.25		2,14	
		Repair				4.0		2,14	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL NATO STOCK NUMBER	TOOL NUMBER
1	O, F, H	GOGGLES, SAFETY		
2	O, F, H	SCREWDRIVER, FLAT-TIPPED		
3	O	HYDROMETER, BAUME		
4	O, F, H	SCREWDRIVER, CROSS-TIPPED		
5	F, H	MULTIMETER		
6	F, H	SOCKET HEAD WRENCH SET		
7	F, H	TOOL KIT, ELECTRONIC		
8	F	CLEANER, VACUUM		
9	H	THERMOMETER, PROBE-TYPE		
10	O	SWAB, CYLINDER CLEANING		
11	F, H	SET, WRENCH, SOCKET		
12	F, H	STOPWATCH		
13	F, H	WRENCH, ADJUSTABLE		
14	H	DRILL, 5/16 INCH		

PIN: 052742-003

SECTION IV. REMARKS

REFERENCE CODE	REMARKS

APPENDIX C

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the (insert short item name) to help you inventory items required for safe and efficient operation.

C-2. GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Hem. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the Reproduction Set in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Reproduction Set during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/ requisition replacement BII, based on TO E/MTOE authorization of the end item.

C-3. EXPLANATION **OF** COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

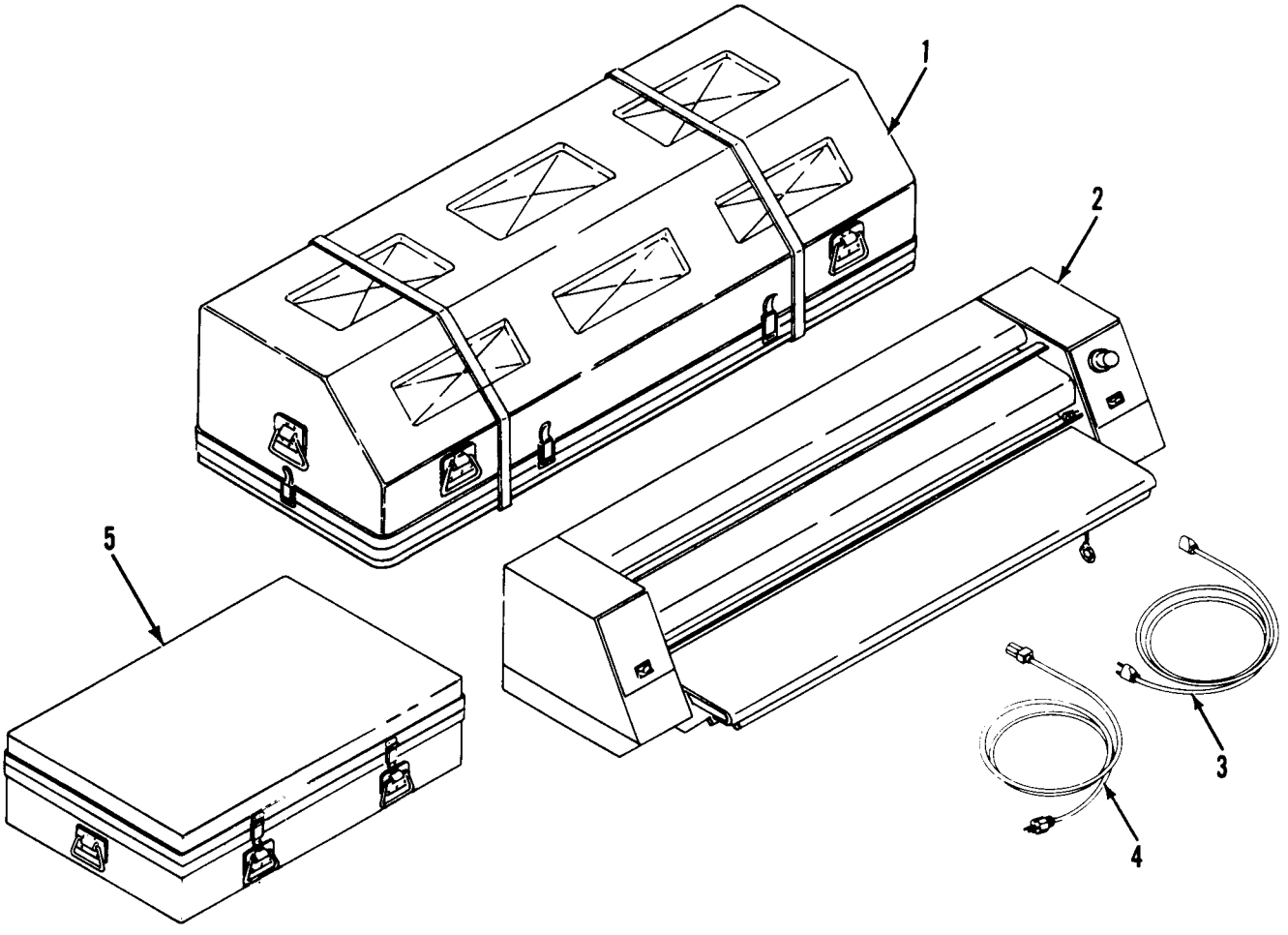


Figure C-1. Components of End Item

SECTION I COMPONENTS OF END ITEM LIST

(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
1	3610-01-174-4065	CASE ASSEMBLY, CARRYING (81337) 5-7-173		EA	1
2	361001-123-7782	REPRODUCTION SET, DIAZO (60887) 33300		EA	1
3	6150-01-150-3097	CORDSET, POWER SUPPLY (60887) 33305		EA	1
4	6150-01-150-3098	CORDSET, POWER SUPPLY, 50 HZ (60887) 33306		EA	1
5	3$10-01-146-4473	CASE ASSEMBLY, SUPPLY (81337) 5-7-181		EA	1

(1) Illus Number	(2) National Stock Number	(3) DESCRIPTION, FSCM and Part Number	Usable On Code	(4) U/I	(5) Qty rqr
		PAPER STOCK			
1	6750-00-137-7976	(60887) 108S		PK	1
	6675-01 -009-7800	(96505) 1 OAC		RL	1
	6750-01-138-3048	(60887) 402ZT		RL	1
	6750-01 -124-3184	(61106) 104A5		PK	1
	6750-01 -006-1842	(61 106) 501 P2		PK	1
2	3610-01 -193-4752	ABSORBER AND AMMONIUM HYDROXIDE SUPPLY KIT (60887) 892185		PK	1

Figure C-2. Basic Issue Items

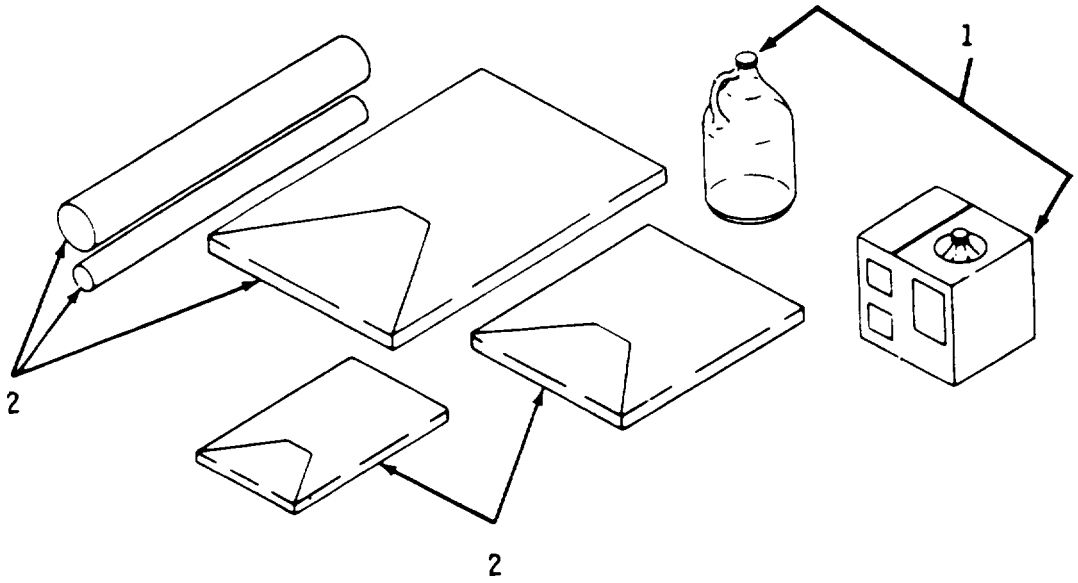


Figure C-2. Basic Issue Items.

*U.S. GOVERNMENT PRINTING OFFICE: 1997-554-024/60148

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Reproduction Set. This listing is for information purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

B-2. EXPLANATION OF COLUMNS.

a. **Column 1-Item Number.** This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning solvent, item 5, Appendix D.")

b. **Column 2-Level.** This column identifies the lowest level of maintenance that requires the listed item.

C-Operator or crew
O-Organizational maintenance
F-Direct support maintenance
H-General support maintenance

c. **Column 3-National Stock Number.** This is the National Stock Number assigned to the item; use it to request or requistion the item.

d. **Column 4-Description.** Indicates the Federal Item Name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturers (FSCM) in parenthesis followed by the part number.

e. **Column 5-Unit of Measure (U/M).** Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-chracter alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

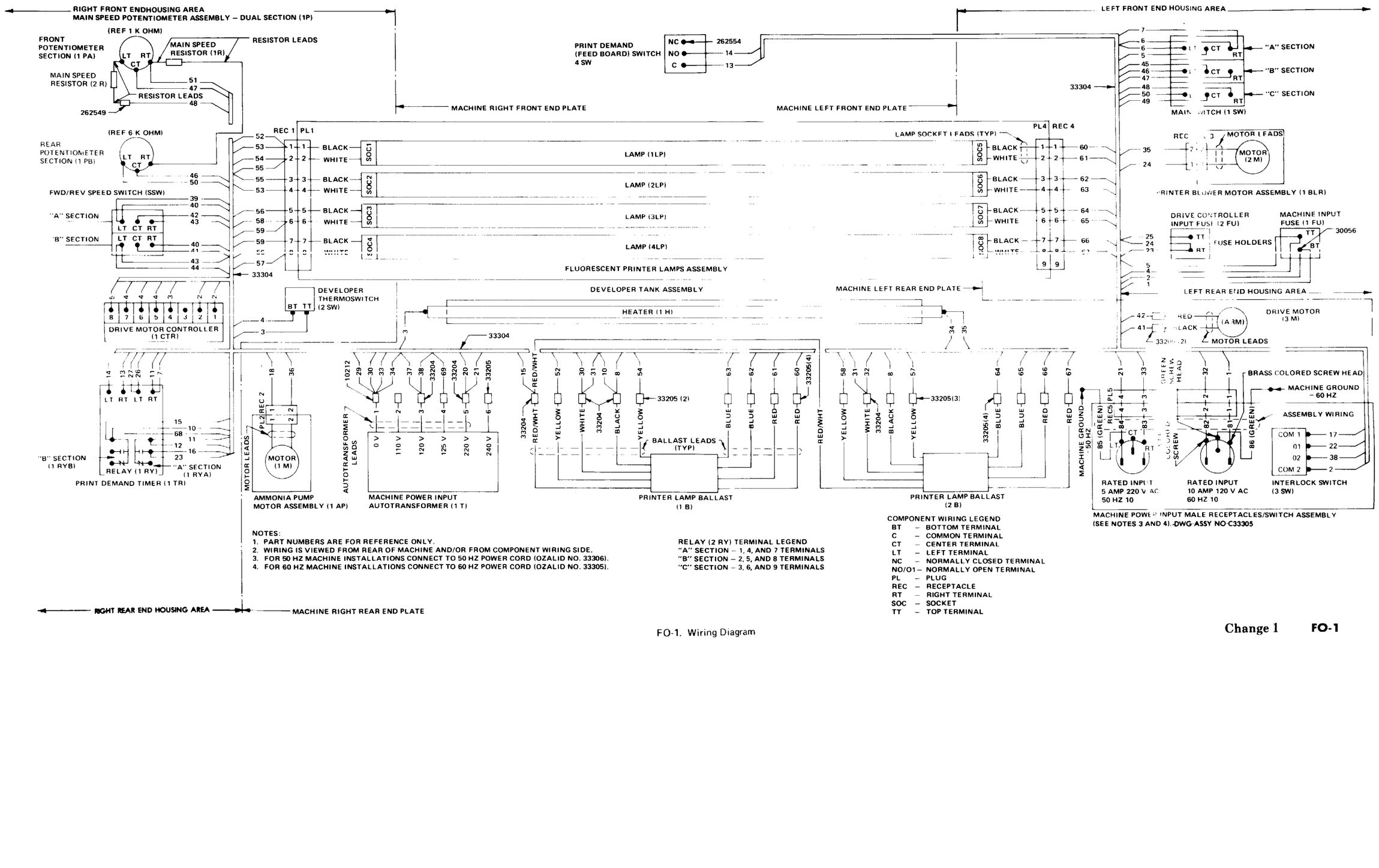
(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	c	6750-01-124-3178	Film, Diazotype (clear base), Standard Speed and Density, ,005 inch thk., Black Image 36" wide x 20 yds. (61106) 012BK	YD
2	c	6750-00-481-9561	Film, Diazotype (overlay sheets) Standard Speed and Density, .005 inch thk., Black Image, 22" x 34" (61106) 102BK	SH
3	c	6750-01-124-3184	Film, Diazotype (overlay sheets), Standard Speed and Density, .005 inch thk., Black Image, 8½ x 11" (61106) 104A5	YD
4	c	6750-01-006-1842	Film, Diazotype, Intermediate, Intensifying Polyester, 22" x 34" x 0.0029" Total thickness, (61106) 501P2	SH
5	c	6750-00-137-7976	Paper, Copying, Diazo Process, Standard Weight (20 lb.), Sensitized one side, Rapid Speed, Blueline, 22" x 34" (61107) 108S	FT
6	c	6750-01-009-7800	Paper, Copying, Diazo Process, Standard Weight (20 lb.), Sensitized one side, Rapid Speed, Blueline, 22" x 34" (250 sheets/pkg) (61106) 208S	SH
7	c	6750-01-138-3048	Paper, Copying, Sepia Image, Trans-parentized, High Strength Paper, Rapid Speed, Process 36" wide x 50 yds (61106) 402ZT	YD
8	c	3610-01-193-4752	Supply Kit, Operating Supplies 25½'' L x 9½'' W x 892185 (60887)	PK

☆ U.S. GOVERNMENT PRINTING OFFICE: 1987—754-030/60355

PIN: 056104-002

INDEX

INDEX (Continued)

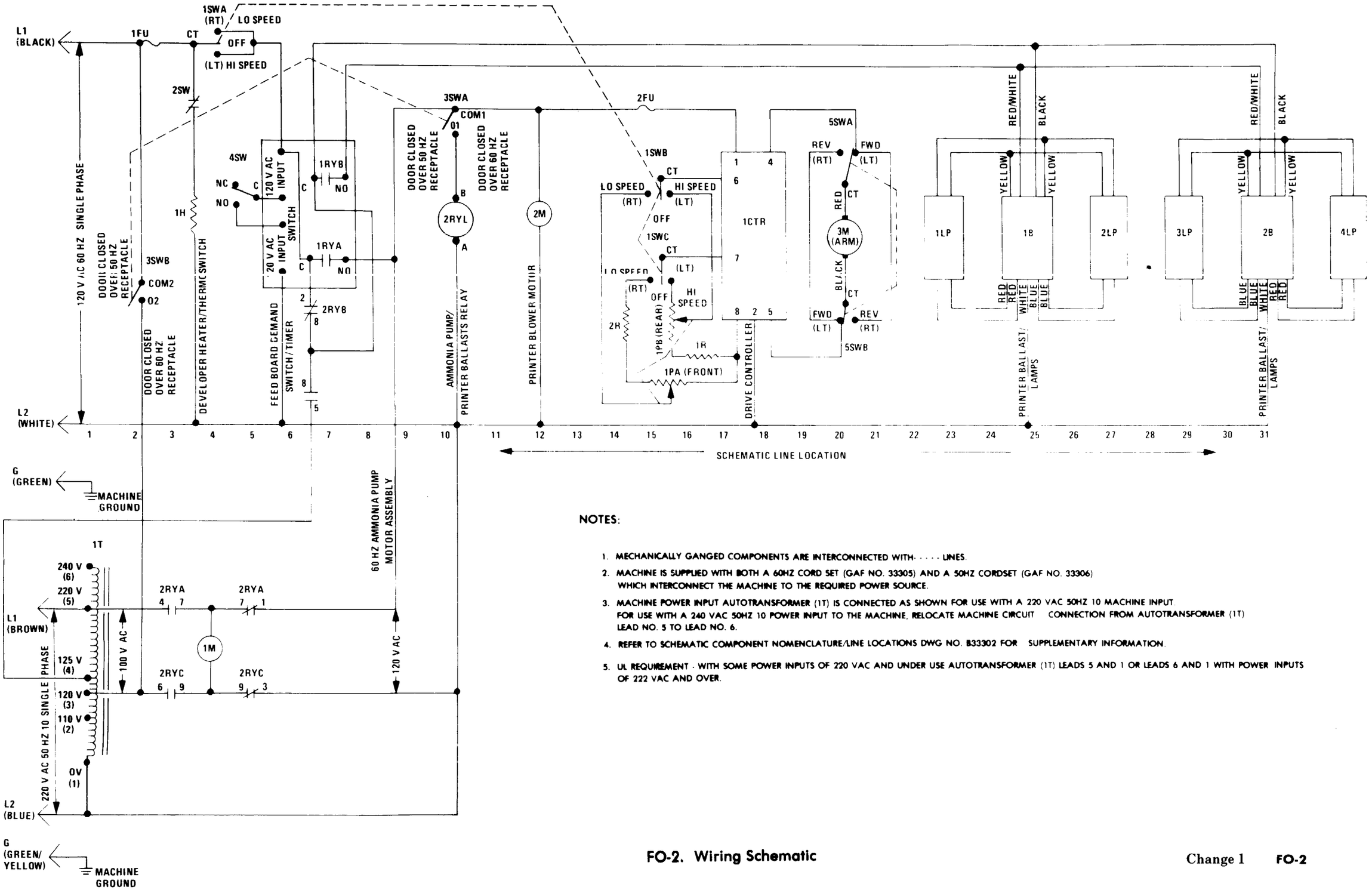


NOTES:
1. PART NUMBERS ARE FOR REFERENCE ONLY.
2. WIRING IS VIEWED FROM REAR OF MACHINE AND/OR FROM COMPONENT WIRING SIDE.
3. FOR 50 HZ MACHINE INSTALLATIONS CONNECT TO 50 HZ POWER CORD (OZALID NO. 33306).
4. FOR 60 HZ MACHINE INSTALLATIONS CONNECT TO 60 HZ POWER CORD (OZALID NO. 33305).

RELAY (2 RY) TERMINAL LEGEND
"A" SECTION – 1, 4, AND 7 TERMINALS
"B" SECTION – 2, 5, AND 8 TERMINALS
"C" SECTION – 3, 6, AND 9 TERMINALS

COMPONENT WIRING LEGEND
BT – BOTTOM TERMINAL
C – COMMON TERMINAL
CT – CENTER TERMINAL
LT – LEFT TERMINAL
NC – NORMALLY CLOSED TERMINAL
NO/O1 – NORMALLY OPEN TERMINAL
PL – PLUG
REC – RECEPTACLE
RT – RIGHT TERMINAL
SOC – SOCKET
TT – TOP TERMINAL

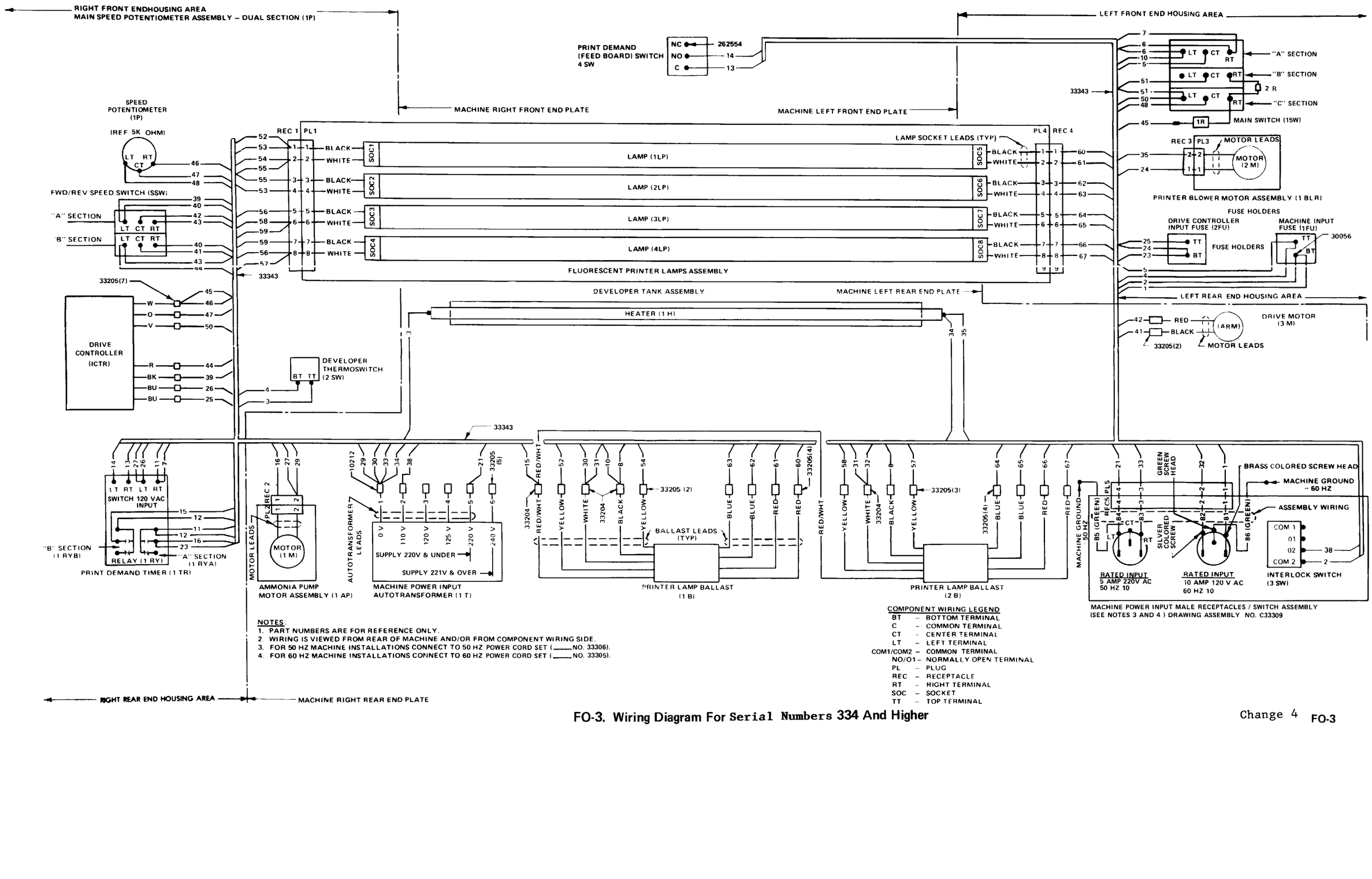
FO-1. Wiring Diagram



NOTES:

1. MECHANICALLY GANGED COMPONENTS ARE INTERCONNECTED WITH- - - - LINES.
2. MACHINE IS SUPPLIED WITH BOTH A 60HZ CORD SET (GAF NO. 33305) AND A 50HZ CORDSET (GAF NO. 33306) WHICH INTERCONNECT THE MACHINE TO THE REQUIRED POWER SOURCE.
3. MACHINE POWER INPUT AUTOTRANSFORMER (1T) IS CONNECTED AS SHOWN FOR USE WITH A 220 VAC 50HZ 10 MACHINE INPUT. FOR USE WITH A 240 VAC 50HZ 10 POWER INPUT TO THE MACHINE, RELOCATE MACHINE CIRCUIT CONNECTION FROM AUTOTRANSFORMER (1T) LEAD NO. 5 TO LEAD NO. 6.
4. REFER TO SCHEMATIC COMPONENT NOMENCLATURE/LINE LOCATIONS DWG NO. B33302 FOR SUPPLEMENTARY INFORMATION.
5. UL REQUIREMENT - WITH SOME POWER INPUTS OF 220 VAC AND UNDER USE AUTOTRANSFORMER (1T) LEADS 5 AND 1 OR LEADS 6 AND 1 WITH POWER INPUTS OF 222 VAC AND OVER.

FO-2. Wiring Schematic

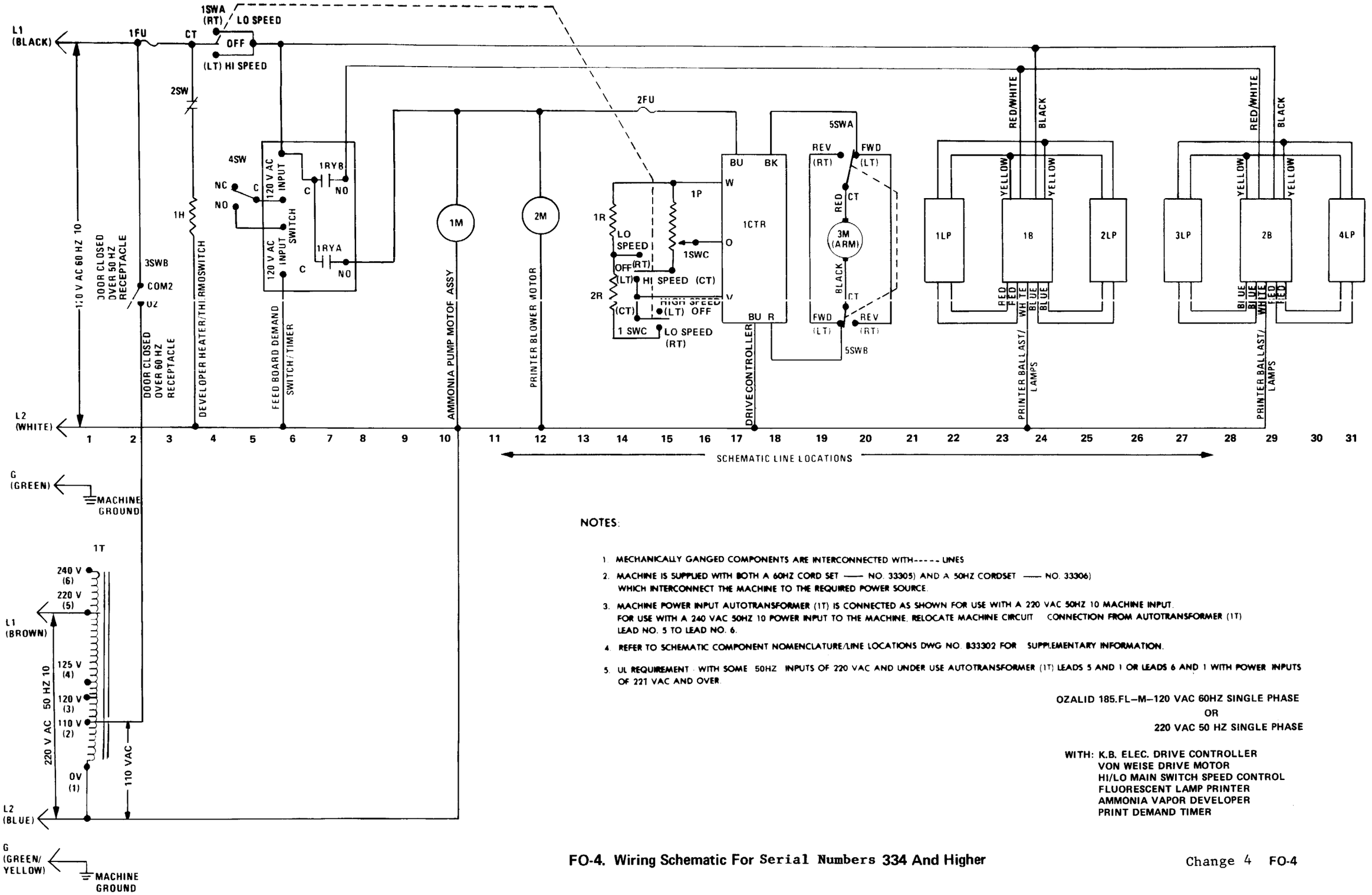


NOTES:
1. PART NUMBERS ARE FOR REFERENCE ONLY.
2. WIRING IS VIEWED FROM REAR OF MACHINE AND/OR FROM COMPONENT WIRING SIDE.
3. FOR 50 HZ MACHINE INSTALLATIONS CONNECT TO 50 HZ POWER CORD SET (____NO. 33306).
4. FOR 60 HZ MACHINE INSTALLATIONS CONNECT TO 60 HZ POWER CORD SET (____NO. 33305).

COMPONENT WIRING LEGEND

BT	– BOTTOM TERMINAL
C	– COMMON TERMINAL
CT	– CENTER TERMINAL
LT	– LEFT TERMINAL
COM1/COM2	– COMMON TERMINAL
NO/O1	– NORMALLY OPEN TERMINAL
PL	– PLUG
REC	– RECEPTACLE
RT	– RIGHT TERMINAL
SOC	– SOCKET
TT	– TOP TERMINAL

FO-3. Wiring Diagram For Serial Numbers 334 And Higher



NOTES:

1. MECHANICALLY GANGED COMPONENTS ARE INTERCONNECTED WITH----- LINES
2. MACHINE IS SUPPLIED WITH BOTH A 60HZ CORD SET —— NO. 33305) AND A 50HZ CORDSET —— NO. 33306) WHICH INTERCONNECT THE MACHINE TO THE REQUIRED POWER SOURCE.
3. MACHINE POWER INPUT AUTOTRANSFORMER (1T) IS CONNECTED AS SHOWN FOR USE WITH A 220 VAC 50HZ 10 MACHINE INPUT. FOR USE WITH A 240 VAC 50HZ 10 POWER INPUT TO THE MACHINE, RELOCATE MACHINE CIRCUIT CONNECTION FROM AUTOTRANSFORMER (1T) LEAD NO. 5 TO LEAD NO. 6.
4. REFER TO SCHEMATIC COMPONENT NOMENCLATURE/LINE LOCATIONS DWG NO. B33302 FOR SUPPLEMENTARY INFORMATION.
5. UL REQUIREMENT - WITH SOME 50HZ INPUTS OF 220 VAC AND UNDER USE AUTOTRANSFORMER (1T) LEADS 5 AND 1 OR LEADS 6 AND 1 WITH POWER INPUTS OF 221 VAC AND OVER.

OZALID 185.FL—M—120 VAC 60HZ SINGLE PHASE
OR
220 VAC 50 HZ SINGLE PHASE

WITH: K.B. ELEC. DRIVE CONTROLLER
VON WEISE DRIVE MOTOR
HI/LO MAIN SWITCH SPEED CONTROL
FLUORESCENT LAMP PRINTER
AMMONIA VAPOR DEVELOPER
PRINT DEMAND TIMER

FO-4. Wiring Schematic For Serial Numbers 334 And Higher

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION :
To be distributed in accordance with DA Form 12-25A, Operator Maintenance requirements for Printing and Reproduction, Camera, Copying.

*U.S. GOVERNMENT PRINTING OFFICCE: 1983-664-028:2031

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEAVENWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5-3610-256-14	29 Apr 83	Reproduction Set, Diazo Process 185 FL-M

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Clenge the manual to show 4 Cylenders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 key NSN 2 910-00-762-3001. I got a gasket bit it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE: John Doe
JOHN DOE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M Overprint 1, 1 Nov 80

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5-3610-256-14	29 Apr 83	Reproduction Set, Diazo Process 185.FL-M

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

TEAR ALONG PERFORATED LINE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M Overprint 2, 1 Nov 80.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 1, 1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

_____

_____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

U.S. MAIL

COMMANDER
U S ARMY SUPPORT AND AVIATION MATERIEL READINESS COMMAND
ATTN: DRSTS-MPSD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.365	metric tons	short tons	1.102
pound-inches	mewton-meters	.11375			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 052742-005