



maintenance bulletin

SUBJECT: Revised PM Scheduling Procedure for
Facer Cancelers and Edger Feeders

DATE: February 9, 1979

NO.: MMO-15-79

- TO:**
1. Regional General Managers
Maintenance Management Divisions
 2. District Managers
 3. Mark II Edger Feeder Offices

Recent investigation into the scheduling of Preventive Maintenance (PM) for Mark II Facer Cancelers have revealed instances where PM man-hours expended were excessive compared to operating hours for the equipment. A test of scheduling PM based upon actual running time of the machine rather than a fixed frequency was conducted. This test revealed no deterioration of machine performance as a result of the revised scheduling procedure.

This Maintenance Bulletin prescribes, in Attachment 1, a manual PM scheduling procedure for Facer Cancelers and Edger Feeders. PM criteria checklists for Facer Cancelers and Edger Feeders are provided as Attachment 2 and 3, respectively. For Class A maintenance offices this manual scheduling procedure is an interim measure until computer programs can be revised to permit computer scheduling of PM. Class B maintenance offices will utilize the revised scheduling procedure as given.

The scheduling procedure of Attachment 1 will be implemented beginning AP 9, FY79 (May 19, 1979).

This bulletin supersedes and replaces MMO-21-77 (Mark II), MMO-7-76, and MS-58, Appendix C (Model 50 and 500A).

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Attachments

PM SCHEDULING PROCEDURES

I. Class A Maintenance Offices (NMICS)

The manual scheduling procedure described below is an interim measure. When computer programs have been modified to provide automatic schedules, you will be given a description of the procedure and an implementation date.

Although scheduling of PM is manual, the reporting of the manpower can be done on an exception basis. To do this it will be necessary to input the routes into the NMICS computer system.

The route numbers assigned should be the same as the master checklist number. For example, the route number assigned for 3-FC-2M should be 0002. This standard numbering scheme will permit an easier transition to the automated scheduling system without any further input. See Figure 1 for route numbers and estimated times.

The assignment of frequency codes requires a careful evaluation of each machine to minimize reporting problems. An estimated operating schedule for each machine should be obtained from operations (refer to MMO-30-77). This schedule used in conjunction with the actual run-time of each machine during a previous 13 AP period will give an estimated weekly running time. Use this weekly run-time to calculate the number of weeks between each occurrence of the schedule time of each checklist and select the most appropriate frequency code from Appendix VII of MS-63. For example, for a machine scheduled 35 hours per week the 720 to 800 hour route would occur about once every 20 weeks. The most appropriate frequency code is S (Semi-annual).

For frequency codes of C and less frequent it will be necessary to assign an AP per paragraph 825 (p. 4) of MS-63. The AP is to be assigned as the beginning of the appropriate group based upon the first calculated occurrence after AP 07. For the example above, the first AP the 720 to 800 hour route occurs after AP07 is AP12. Therefore the AP assigned should be 06 to permit automatic scheduling in AP 12.

The following frequency codes are recommended for a machine operating 30 to 40 hours per week (1600 to 2100 hours per year):

<u>Scheduled Time</u> <u>For Route</u>	<u>Frequency Code</u>	<u>AP</u>	<u>Remarks</u>
Daily	D,E or F		Depends on whether operations schedules the machine for 7, 6 or 5 days per week.
20 to 30 hours	W (1 time per week)		
120 to 150 hours	M (1 time per AP)		
240 to 300 hours	C (every other AP)	01	
720 to 800 hours	S (2 times each year)	07	

Scheduling of PM is to be accomplished by a combination of the Route Sheet Register, the operations schedule, and a worksheet showing accumulated running time. A typical worksheet to use for accumulating the run-time is shown in Figures 2 and 3.

The Route Sheet Register shows all routes scheduled for the accounting period based upon the frequency codes and AP's assigned. The operations schedule will give a forecast of the number of hours to be run during the week. The worksheet, giving the current run-time for each PM category, and the operations schedule will give a guide for scheduling the PM during the next week.

The worksheets are used as a reference for the current run-time since the last scheduled PM for each machine. The run-time should be recorded at the end of each daily operation. Each PM category should be updated to reflect cumulative run-time. When the run-time for a PM category is within one tour's operation of the scheduled time, the PM route should be scheduled for the next day's maintenance tour. During the maintenance tour that the PM is performed and after the run-time has been updated, the cumulative run-time column for that route and any superseded routes should be set to zero to show completion of the PM and the start of another scheduling sequence.

Some of the checklists are superseded by less frequent checklists. The following is a list of the superseding checklists:

<u>Checklist</u>	<u>Superseded By</u>
2-FC-1M	2-FC-2M
2-FC-2M	2-FC-3M

<u>Checklist</u>	<u>Superseded By</u>
3-FC-1M	3-C-2M
3-FC-3M	3-FC-4M
3-EF-1M	3-EF-2M
4-EF-1M	4-EF-2M

The coding structure discussed above does not allow for automatic superseding. The superseded routes will be scheduled at the same time and must be bypassed. If a superseding route cannot be scheduled (for example 2-FC-2M), the superseded route (2-FC-1M) should be performed. Under no circumstances will both routes be done.

The reporting of exceptions is done in accordance with MS-63, Maintenance Management Class A Offices. However, when the run-time of the machine causes the scheduling of a route more frequent than the schedule input to the computer, two methods can be used to report the additional man-hours.

1. The first method requires the completion of a PS Form 4805 identifying the route and man-hours required to perform the PM and other required data.
2. The second method requires the completion of a PS Form 4802 with MS Code 4. To accumulate the proper man-hours, the time reported on the 4802 must be the sum of the actual time used and the estimated time for the route.

The purpose of scheduling PM by machine run-time is to reduce the amount of maintenance performed. Therefore, the daily PM will not be performed when there is no accumulated run-time since the last performance of daily PM and will be reported as bypassed using MS Code 9.

II. Class B Maintenance Offices (Non-NMICS)

The reporting requirements for Class B offices are determined by the regions. Therefore, only the scheduling procedures will be discussed.

Figure 1 and 2 show a typical worksheet which should be used to assist in scheduling the PM. The worksheets are used as a reference for the current run-time since the last scheduled PM for each machine. The

run-time should be recorded at the end of each daily operation. Each PM category should be updated to reflect the cumulative run-time. When the run-time for a PM category is within one tour's operation of the scheduled time, the PM route should be scheduled for the next day's maintenance tour. During the maintenance tour that the PM is performed and after the run-time has been updated, the cumulative run-time column for that route and any superseded routes should be set to zero to show completion of the PM and the start of another scheduling sequence.

Some of the checklists are superseded by less frequent checklists. The following is a list of the superseding checklists:

<u>Checklist</u>	<u>Superseded By</u>
2-FC-1M	2-FC-2M
2-FC-2M	2-FC-3M
3-FC-1M	3-FC-2M
3-FC-3M	3-FC-4M
3-EF-1M	3-EF-2M
4-EF-1M	4-EF-2M

The superseding structure means that two checklists will be scheduled at the same time. Under no circumstances are both checklists to be performed. If for some reason a superseding checklist cannot be performed (e.g., 2-FC-2M), the superseded checklist (2-FC-1M) should be performed.

The purpose of scheduling PM by machine run-time is to reduce the amount of maintenance performed. Therefore, the daily PM will not be performed when there is no accumulated run-time since the last performance of daily PM.

Checklist	-----Assigned-----		Estimated Time	(Model 3501 Only)
	Work Code	Route Number		Estimated Time
2-FC-1M	02	0001	.5	.3
2-FC-2M	02	0002	.8	.5
2-FC-3M	02	0003	.9	.6
3-FC-1M	03	0001	.8	.5
3-FC-2M	03	0002	2.3	1.2
3-FC-3M	03	0003	2.0	1.1
3-FC-4M	04	0004	9.8	5.6
2-EF-1M	02	0001	1.8	
3-EF-1M	03	0001	.3	
3-EF-2M	03	0002	.8	
4-EF-1M	04	0001	.7	
4-EF-2M	04	0002	1.4	

Figure 1

SCHEDULING WORKSHEET - MARK II FACER CANCELER

Equipment: FC 1 G

		Checklist	3-FC-1M	3-FC-2M	3-FC-3M	3-FC-4M	2-FC-1M	2-FC-2M	2-FC-3M
A?	DAY	RUN-TIME	DAILY	20-30	240-300	720-800	20-30	120-150	240-300
8	1	4.1		4.1	4.1	4.1	4.1	4.1	4.1
	2	6.2		10.3	10.3	10.3	10.3	10.3	10.3
	3	5.8		16.1	16.1	16.1	16.1	16.1	16.1
	4	5.6		0	21.7	21.7	0	21.7	21.7
	9	4.2		16.4	117.8	117.8	16.4	117.8	117.8
	10	4.7		0	122.5	122.5	0	0	122.5
	11	3.8		3.8	126.8	126.3	3.8	3.8	126.3

Figure 2

SCHEDULING WORKSHEET - EDGER FEEDER 500

Equipment: EF 1 A

		Checklist	3-EF-1M	3-EF-2M	2-EF-1M	4-EF-1M	4-EF-2M
A?	DAY	RUN-TIME*	DAILY	20-30	720-800	720-800	1440-1600
8	1	4.1		4.1	4.1	4.1	4.1
	2	6.2		10.3	10.3	10.3	10.3
	3	5.8		16.1	16.1	16.1	16.1
	4	5.6		0	21.7	21.7	21.7
12	9	4.7		16.8	717.2	717.2	717.2
	10	3.8		0	0	0	721.0
	11	5.2		5.2	5.2	5.2	726.2

*Run-time for Edger Feeder is same as Mark II it is interfaced with.

Figure 3

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-1M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 20-30 Operating Hours
General	1	(<u>Safety</u>) Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection.	
Machine A & B	2	(<u>Recognition Test</u>) a. Obtain a test deck consisting of two each of the following: (1) Red Phosphor Go (2) Red Phosphor No-Go (3) Green Phosphor Go (4) Green Phosphor No-Go (5) Fluorescent Go (6) Fluorescent No-Go (7) OEM 31040, Card #8, Sensitivity, High Background b. Disable dies on both machines. Run a blank card to clear logic. c. With MODE switch in STAMP, run RED and GREEN Go and No-Go cards to each of the four stackers. If RED and GREEN Go cards are accepted and No-Go cards are bypassed, no adjustment is required. d. With MODE switch in METERED, run FLUORESCENT Go and No-Go cards to each of the four stackers. If FLUORESCENT Go cards are accepted and No-Go cards are bypassed, no adjustment is required. I. Timing Checks/Adjustments a. <u>General Note:</u> If the lead and trail scan one shot EECO's have been removed by modification, disregard Step b. In Step c, increase the gate timing pulse to 73-77 milliseconds. (1) Disable cancelling dies by placing switch at position 3E on electronics panel to OFF. (2) Place mode switch to STAMP and METERED. (3) Start machine. (4) Set up Tektronix 310A oscilloscope: Vertical Input - AC (use 10X probe) Vertical Volts/Div - 5 Trigger - AC, Internal, Negative Trigger Level - Adjust, Negative Time/Div - 5 milliseconds Ground Connection - to machine ground	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection		2-FC-1M	
System:	Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machine A & B	2 (Cont)	<p>b. <u>Scan Timing</u></p> <p>(1) (Lead) Connect 10X probe tip to 4D, pin 7 and run test cards or live mail. The lead scan pulse width should be 40 milliseconds. Adjust with pot at 5D if necessary.</p> <p>(2) (Trail) Connect 10X probe tip to 4G, pin 7 and run test cards or live mail. The trail scan pulse width should be 25 to 26 milliseconds. Adjust with pot at 5G if necessary.</p> <p>c. <u>Gate Timing</u> - Connect 10X probe tip to 4E, pin 7 and run test cards or live mail. The gate timing pulse should be 33-37 milliseconds. Adjust with pot at 3E if necessary.</p> <p>d. Stop machine and enable cancelling dies with switch at position 3E.</p> <p>II. UV Lamp and Sleeve Check/Adjustment</p> <p>a. <u>Sleeve</u> (see Figure B-4) - Visually check to see that the UV lamp sleeve is positioned so the sensor tube window is just shaded from direct UV light. If adjustment is necessary, loosen set screw (item 6 in Figure B-4) and rotate sleeve (4) to correct position as shown in figure. Tighten set screw.</p> <p>b. Place the probe of the J-239 Blak-Ray Meter in the letter track with the probe window directly in front of the UV lamp. Check that the meter reads 14 or more. If the reading is less than 14, rotate the lamp to obtain a maximum reading. If the maximum reading is less than 14, replace the UV lamp and position new lamp for maximum reading. Be sure the UV lamp is firmly seated in the sleeve when adjustments are complete.</p> <p>III. Sensitivity Adjustments</p> <p>a. <u>General</u></p> <p>(1) If complete adjustments must be made, they must be accomplished in the following order: Trail - Stamp, Metered Lead - Stamp, Metered</p> <p>(2) Sensitivity adjustments must be made for any stacker for which the UV lamp has been replaced or adjusted.</p> <p>(3) Switch power ON switch to OFF, remove appropriate sensor amplifier covers, switch power back on.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-1M
Type of Activity: Inspection			
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machine A & B	2 (Cont)	<p>(4) Allow UV lamps and circuitry to warm up and stabilize before making adjustments; time required is approximately equal to the time power was off up to a maximum warm-up of 20 minutes.</p> <p>(5) Insure that DIE ON/OFF switch located at position 3E on electronics panel is off when running test cards so that cancelling is inhibited.</p> <p>(6) After each time machine is started, run a blank card through machine to clear the logic circuits.</p> <p>b. <u>Stamp Sensitivity Adjustment</u></p> <p>(1) Place MODE switch in STAMP.</p> <p>(2) Run RED and GREEN Go and No-Go cards to appropriate stacker. Turn R44 on corresponding phosphor amplifier clockwise to increase sensitivity or counter-clockwise to decrease sensitivity. Continue adjusting until all Go cards are accepted and all No-Go cards are bypassed.</p> <p>c. <u>Metered Balance and Sensitivity Adjustment</u></p> <p>(1) Set up Tektronix 310A oscilloscope as follows:</p> <p style="padding-left: 40px;">Vertical Input - AC (connect 1X probe)</p> <p style="padding-left: 40px;">Vertical Volts/Div - 0.02</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-1M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machine A & B	B 2 (Cont) 2 (Cont)	<p>Vertical Input - AC (connect 1X probe) Vertical Volts/Div - 0.02 Trigger - AC, Internal, Negative Trigger Level - Adjust, Negative Time/Div - 500 microseconds</p> <p>(2) Stop machine (3) Connect 1X probe tip to trail meter amplifier output, TP-2 (or top of R-19) on meter amplifier card. Note: New version card, OEM 31038A, has test point pins added; older version, OEM 31038, had no test point pins (see Figure B-1). Connect oscilloscope ground to pin E3 or pin E6 on meter amplifier card. (4) Place test card #8 (high background) between transport belts in front of trail sensor window. Close light shield. (5) Adjust oscilloscope triggering for a repetitive AC waveform at 1.76 ms/cycle (see Figure B-2). (6) Adjust trail balance pot (R18) for correct waveform amplitude ratio. (7) Move test card #8 to lead sensor window and move probe tip to TP-1 (top of R5). (8) Adjust lead balance pot (R4) for correct waveform amplitude ratio. (9) Remove test card #8 and disconnect oscilloscope from amplifier card.</p> <p><u>Sensitivity</u></p> <p>(1) Start machine and run blank card to clear logic circuitry. (2) Run FLUORESCENT Go and No-Go cards to appropriate stacker. Turn R21, Lead or R7, Trail clockwise to increase sensitivity or counterclockwise to decrease sensitivity. Continue adjusting until Go cards are accepted and No-Go cards are bypassed.</p>	
Machine A & B	3	(Cancellation Check) Enable dies by placing DIE ON/OFF at position 3E to ON position. Run mail with stamps to all stackers and check for proper operation of dies, gates, and ink pumps. Check mail for good cancellation impressions.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection			2-FC-1M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machine A & B	4	(Clean-up) Be sure all tools and test equipment are removed from work area. Initiate necessary work orders and reports to accomplish scheduled repairs. Report serious deficiencies to maintenance foreman immediately upon detection.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-FC-1M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models (Excluding Model 3501)	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 20-30 Operating Hours
1	Safety		
2	Recognition Checks		
3	Cancellation Check		
4	Clean-up		
		<u>Total Time Required Per Event</u>	
		3 minutes	
		20 minutes	
		4 minutes	
		3 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-FC-1M
Type of Activity: Inspection		System: Mark II Facer-Canceler	Equipment: -----
		Type: Model 3501	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 20-30 Operating Hours
1	Safety	<u>Total Time Required Per Event</u>	
2	Recognition Checks	3 minutes	
3	Cancellation Check	10 minutes	
4	Clean-up	2 minutes	
		3 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection			2-FC-2M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 120-150 Operating Hours
General	1	(Safety) Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection.	
Machine A & B	2	(Shutdown Devices) Manual stop switches: With machine running, manually depress each stop switch (on "A" control panel, on "B" control panel, and Auxiliary Stop switch near bypass stacker) to insure that each switch will stop machine. Automatic Shutdown Devices: a. (Stacker Limit Switches) Manually check proper operation of each stacker limit switch. b. (Gate Jam Detector Switches) Manually check proper operation of each gate jam detector switch. c. (Motor Jam Circuit) Rotate JAM DETECTION SENSITIVITY control fully counterclockwise. Start machine and slowly rotate control clockwise until machine automatically stops. Rotate control about 1/8 turn counterclockwise. Sensitivity may need to be decreased slightly during operation to prevent unnecessary jam shutdowns.	
Machine A & B	3	(Edge Detector Light Source) Using a card or piece of paper, check the edge detector light source beam for convergence to a small spot at the center of the letter track and divergence to a 3/8" diameter spot on the edge detector window. Loosen locknut and adjust barrel assembly to properly focus beam if required. Reinstall light shield covers.	
Machine A & B	4	(Recognition Test) a. Obtain a test deck consisting of two each of the following: (1) Red Phosphor Go (2) Red Phosphor No-Go (3) Green Phosphor Go (4) Green Phosphor No-Go (5) Fluorescent Go (6) Fluorescent No-Go (7) OEM 31040, Card #8, Sensitivity, High Background	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection		2-FC-2M	
System:	Mark II Facer-Canceler	Equipment:	-----
		Type:	3500 Series Models
Component	Item	Instructions	Frequency 120-150 Operating Hours
Machine A & B	4 (Cont)	<p>I. Timing Checks/Adjustments</p> <p><u>Note:</u> If the lead and trail scan one shot EECO's have been removed by modification, disregard Step b. In Step c, increase the gate timing pulse to 73-77 milliseconds.</p> <p>a. <u>General</u></p> <p>(1) Disable cancelling dies by placing switch at position 3E on electronics panel to OFF.</p> <p>(2) Place mode switch to STAMP & METERED.</p> <p>(3) Start machine.</p> <p>(4) Set up Tektronix 310A oscilloscope:</p> <p style="padding-left: 40px;">Vertical Input - AC (use 10X probe) Vertical Volts/Div - 5 Trigger - AC, Internal, Negative Trigger Level - Adjust, Negative Time/Div - 5 milliseconds Ground Connection - to machine ground</p> <p>b. <u>Scan Timing</u></p> <p>(1) (Lead) Connect 10X probe tip to 4D, pin 7 and run test cards or live mail. The lead scan pulse width should be 40 milliseconds. Adjust with pot at 5D if necessary.</p> <p>(2) (Trail) Connect 10X probe tip to 4G, pin 7 and run test cards or live mail. The trail scan pulse width should be 25 to 26 milliseconds. Adjust with pot at 5G if necessary.</p> <p>c. <u>Gate Timing</u> - Connect 10X probe tip to 4E, pin 7 and run test cards or live mail. The gate timing pulse should be 33-37 milliseconds. Adjust with pot at 3E if necessary.</p> <p>d. Stop machine and enable cancelling dies with switch at position 3E.</p> <p>II. UV Lamp and Sleeve Check/Adjustment</p> <p>a. <u>Sleeve</u> (see Figure B-4) - Visually check to see that UV lamp sleeve is positioned so the sensor tube window is just shaded from direct UV light. If adjustment is necessary, loosen set screw (item 6 in Figure B-4) and rotate sleeve (4) to correct position as shown in figure. Tighten set screw.</p> <p>b. Place the probe of the J-239 Blak-Ray Meter in the letter track with the probe window directly in front of the UV lamp. Check that the meter reads 14 or more. If the reading is less than 14, rotate the lamp to obtain a maximum reading.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-2M
Type of Activity: Inspection		System: Mark II Facer-Canceler	Equipment: ----- Type: 3500 Series Models
Component	Item	Instructions	Frequency 120-150 Operating Hours
Machine A & B	4 (Cont)	<p>If the maximum reading is less than 14, replace the UV lamp and position new lamp for maximum reading. Be sure the UV lamp is firmly seated in the sleeve when adjustments are complete.</p> <p>III. Sensitivity Adjustments</p> <p>a. <u>General</u></p> <ol style="list-style-type: none"> (1) If complete adjustments must be made, they must be accomplished in the following order: - Trail - Stamp, Metered Lead - Stamp, Metered (2) Switch power ON switch to OFF, remove sensor amplifier covers, switch power back on. (3) Allow lamps and circuitry to warm up and stabilize before making adjustments; time required is approximately equal to the time power was off up to a maximum required warm-up of 20 minutes. (4) Insure that DIE ON/OFF switch located at position 3E on electronics panel is off when running test cards so that cancelling is inhibited. (5) After each time machine is started, run a blank card through machine to clear the logic circuits. <p>b. <u>Stamp Sensitivity Adjustment</u></p> <ol style="list-style-type: none"> (1) Place MODE switch in STAMP. (2) Run RED and GREEN Go and No-Go cards to all four stackers. If RED and GREEN Go cards are accepted and No-Go cards are bypassed, no adjustments are required. If adjustment is required, turn R44 on appropriate phosphor amplifier clockwise to increase sensitivity or counterclockwise to decrease sensitivity. Continue adjusting until all Go cards are accepted and all No-Go cards are bypassed. <p>c. <u>Metered Balance and Sensitivity Adjustment</u></p> <ol style="list-style-type: none"> (1) Place MODE switch in METERED. 	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-2M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 120-150 Operating Hours
Machine A & B	4 (Cont)	<p><u>Balance</u></p> <ol style="list-style-type: none"> (1) Set up Tektronix 310A Oscilloscope as follows: Vertical Input - AC (connect 1X probe) Vertical Volts/Div - 0.02 Trigger - AC; Internal, Negative Trigger Level - Adjust, Negative Time/Div - 500 microseconds (2) Stop machine (3) Connect 1X probe tip to trail meter amplifier output, TP-2 (or top of R-19) on meter amplifier card. Note: New version card, OEM 31038A, has test point pins added; older version OEM 31038 had no test point pins (see Figure B-1). Connect oscilloscope ground to pin E3 or pin E6 on meter amplifier card. (4) Place test card #8 (high background) between transport belts in front of trail sensor window. Close light shield. (5) Adjust oscilloscope triggering for a repetitive AC waveform at 1.76 ms/cycle (see Figure B-2). (6) Adjust trail balance pot (R18) for correct waveform amplitude ratio. (7) Move test card #8 to lead sensor window and move probe tip to TP-1 (top of R5). (8) Adjust lead balance pot (R4) for correct waveform amplitude ratio. (9) Remove test card #8 and disconnect oscilloscope from amplifier card. <p><u>Sensitivity</u></p> <ol style="list-style-type: none"> (1) Start machine and run blank card to clear logic circuitry. (2) Run FLUORESCENT Go and No-Go cards to all four stackers. If Go cards are accepted and No-Go cards are bypassed, no adjustments are required. If adjustment is required, turn R21, Lead or R7, Trail clockwise to increase sensitivity or counter-clockwise to decrease sensitivity. Continue adjusting until Go cards are accepted and No-Go cards are bypassed. <p>e. Switch power ON switch to OFF, replace sensor amplifier covers, switch power back on.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection			2-FC-2M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 120-150 Operating Hours
Machine A & B	5	(Cancellation Check) Enable dies by placing DIE ON/OFF at position 3E to ON position. Run mail with stamps to all stackers and check for proper operation of dies, gates, and ink pumps. Check mail for good cancellation impressions.	
Machine A & B	6	(Clean-up) Insure that all tools, test equipment, etc., are removed from work area. Initiate necessary work orders and reports to accomplish required major repairs. Report all serious deficiencies to maintenance foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-FC-2M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models (Excluding Model 3501)	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 120-150 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Shutdown Devices		2 minutes
3	Edge Detector Light Source		4 minutes
4	Recognition Test (Adjustments)		30 minutes
5	Cancellation Check		5 minutes
6	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-FC-2M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: Model 3501	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 120-150 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Shutdown Devices		1 minute
3	Edge Detector Light Source		2 minutes
4	Recognition Test (Adjustments)		15 minutes
5	Cancellation Check		3 minutes
6	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection		2-FC-3M	
System:	Mark II Facer-Canceler	Equipment:	-----
		Type:	3500 Series Models
Component	Item	Instructions	Frequency 240-300 Operating Hours
General	1	<u>(Safety)</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection.	
Electronic Cabinet	2	<u>(LID DC Power Supplies)</u> Measure the following DC power supply voltages between the indicated pins of J-3 (or J-4) and ground (pin k of J-3 or J-4) using a Simpson 260 VOM or equivalent. a. +28 VDC at pin e. b. -28 VDC at pin f. c. +12 VDC at pin g. d. -12 VDC at pin h. e. -8 VDC at pin j. Voltages should be <u>± 10%</u> of the indicated values.	
Machine A & B	3	<u>(Filament Supplies)</u> Measure the following AC filament voltages at the indicated points on each electronic panel using a Simpson 260 VOM or equivalent: a. 6.3 VAC between pins 1 and 4 of 1A36TB11. b. 6.3 VAC between pins 6 and 7 of 1A36TB11. Voltages should be <u>±10%</u> of the indicated values.	
Machine A & B	4	<u>(DC Power Supplies)</u> Press START MOTORS switch. Using a Simpson 260 VOM or equivalent, measure the following DC voltages on the electronics panel: a. +250 VDC, pin 8 of 1A36TB11 to machine ground. b. -20 VDC, pin 5 of 1A36TB11 to machine ground. Voltages a and b should be <u>±10%</u> of indicated values. c. +200 VDC, center terminal of switch 1A6S3 located at position 2E to machine ground. Adjust + 200 VOLT ADJUSTMENT potentiometer located at position 5I if necessary.	
Machine A & B	5	<u>(Shutdown Devices)</u> Manual stop switches: With machine running, manually depress each stop switch (on "A" control panel, on "B" control panel, and Auxiliary Stop switch near bypass stacker) to insure that each switch will stop machine.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection		2-FC-3M	
System:	Mark II Facer-Canceler	Equipment:	-----
		Type:	3500 Series Models
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine A & B	5 (Cont)	<p>Automatic Shutdown Devices:</p> <p>a. (Stacker Limit Switches) Manually check proper operation of each stacker limit switch.</p> <p>b. (Gate Jam Detector Switches) Manually check proper operation of each gate jam detector switch.</p> <p>c. (Motor Jam Circuit) Rotate JAM DETECTION SENSITIVITY control fully counterclockwise. Start machine and slowly rotate control clockwise until machine automatically stops. Rotate control about 1/8 turn counterclockwise. Sensitivity may need to be decreased slightly during operation to prevent unnecessary jam shutdowns.</p>	
Machine A & B	6	<p>(Edge Detector Light Source) Using a card or piece of paper, check the edge detector light source beam for convergence to a small spot at the center of the letter yrack and divergence to a 3/8" diameter spot on the edge detector window. Loosen locknut and adjust barrel assembly to properly focus beam if required. Reinstall light shield covers.</p>	
Machine A & B	7	<p>(Recognition Test)</p> <p>a. Obtain a test deck consisting of two each of the following:</p> <ol style="list-style-type: none"> (1) Red Phosphor Go (2) Red Phosphor No-Go (3) Green Phosphor Go (4) Green Phosphor No-Go (5) Fluorescent Go (6) Fluorescent No-Go (7) OEM 31040, Card #8, Sensitivity, High Background <p>I. Timing Checks/Adjustments <u>Note:</u> If the lead and trail scan one shot EECO's have been removed by modification, disregard Step b. In Step c, increase the gate timing pulse to 73-77 milliseconds.</p> <p>a. <u>General</u></p> <ol style="list-style-type: none"> (1) Disable cancelling dies by placing switch at position 3E on electronics panel to OFF. (2) Place mode switch to STAMP & METERED. (3) Start machine. (4) Set up Tektronix 310A oscilloscope: Vertical Input - AC (use 10X probe) Vertical Volts/Div - 5 	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-3M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine A & B	7 (Cont)	<p>Trigger - AC, Internal, Negative Trigger Level - Adjust, Negative Time/Div - 5 milliseconds Ground Connection - to machine ground</p> <p>b. <u>Scan Timing</u></p> <p>(1) (Lead) Connect 10X probe tip to 4D, pin 7 and run test cards or live mail. The lead scan pulse width should be 40 milliseconds. Adjust with pot at 5D if necessary.</p> <p>(2) (Trail) Connect 10X probe tip to 4G, pin 7 and run test cards or live mail. The trail scan pulse width should be 25 to 26 milliseconds. Adjust with pot at 5G if necessary.</p> <p>c. <u>Gate Timing</u> - Connect 10X probe tip to 4E, pin 7 and run test cards or live mail. The gate timing pulse should be 33-37 milliseconds. Adjust with pot at 3E if necessary.</p> <p>d. Stop machine and enable cancelling dies with switch at position 3E.</p> <p>II. UV Lamp and Sleeve Check/Adjustment</p> <p>a. <u>Sleeve</u> (see Figure B-4) - Visually check to see that UV lamp sleeve is positioned so the sensor tube window is just shaded from direct UV light. If adjustment is necessary, loosen set screw (item 6 in Figure B-4) and rotate sleeve (4) to correct position as shown in figure. Tighten set screw.</p> <p>b. Place the probe of the J-239 Blak-Ray Meter in the letter track with the probe window directly in front of the UV lamp. Check that the meter reads 14 or more. If the reading is less than 14, rotate the lamp to obtain a maximum reading. If the maximum reading is less than 14, replace the UV lamp and position new lamp for maximum reading. Be sure the UV lamp is firmly seated in the sleeve when adjustments are complete.</p> <p>III. Sensitivity Adjustments</p> <p>a. General</p> <p>(1) Adjustments must be accomplished in the following order: Trail - Airmail, Regular, Metered Lead - Airmail, Regular, Metered</p> <p>(2) Switch power ON switch to OFF, remove sensor amplifier covers, switch power back on.</p> <p>(3) Allow lamps and circuitry to warm up and stabilize before making adjustments; time required is approximately equal to the time required is</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-FC-3M
Type of Activity: Inspection			
System:	Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine A & B	7	<p>approximately equal to the time power was off up to a maximum required warm-up of 20 minutes.</p> <p>(4) Insure that DIE ON/OFF switch located at position 3E on electronics panel is off when running test cards so that cancelling is inhibited.</p> <p>(5) After each time machine is started, run a blank card through machine to clear the logic circuits.</p> <p>b. <u>Stamp Sensitivity Adjustment</u></p> <p>(1) Place MODE switch in STAMP.</p> <p>(2) Run RED and GREEN Go and No-Go cards to all four stackers. If RED and GREEN Go cards are accepted and No-Go cards are bypassed, no adjustments are required. If adjustment is required, turn R44 on appropriate phosphor amplifier clockwise to increase sensitivity or counterclockwise to decrease sensitivity. Continue adjusting until all Go cards are accepted and all No-Go cards are bypassed.</p> <p>c. <u>Metered Balance and Sensitivity Adjustment</u></p> <p>(1) Place MODE switch in METERED.</p> <p><u>Balance</u></p> <p>(1) Set up Tektronix 310A Oscilloscope as follows:</p> <p>Vertical Input - AC (connect 1X probe) Vertical Volts/Div - 0.02 Trigger - AC, Internal, Negative Trigger Level - Adjust, Negative Time/Div - 500 microseconds</p> <p>(2) Stop machine</p> <p>(3) Connect 1X probe tip to trail meter amplifier output, TP-2 (or top of R-19) on meter amplifier card. Note: New version card, OEM 31038A, has test point pins added; older version OEM 31038 had no test point pins (see Figure B-1). Connect oscilloscope ground to pin E3 or pin E6 on meter amplifier card.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection			2-FC-3M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine A & B	7 (Cont)	<p>(4) Place test card #8 (high background) between transport belts in front of trail sensor window. Close light shield.</p> <p>(5) Adjust oscilloscope triggering for a repetitive AC waveform at 1.76 ms/cycle (see Figure B-2).</p> <p>(6) Adjust trail balance pot (R18) for correct waveform amplitude ratio.</p> <p>(7) Move test card #8 to lead sensor window and move probe tip to TP-1 (top of R5).</p> <p>(8) Adjust lead balance pot (R4) for correct waveform amplitude ratio.</p> <p>(9) Remove test card #8 and disconnect oscilloscope from amplifier card.</p> <p><u>Sensitivity</u></p> <p>(1) Start machine and run blank card to clear logic circuitry.</p> <p>(2) Run FLUORESCENT Go and No-Go cards to all four stackers. If Go cards are accepted and No-Go cards are bypassed, no adjustments are required. If adjustment is required, turn R21, Lead or R7, Trail clockwise to increase sensitivity or counterclockwise to decrease sensitivity. Continue adjusting until Go cards are accepted and No-Go cards are bypassed.</p> <p>e. Switch power ON switch to OFF, replace sensor amplifier covers, switch power back on.</p>	
Machine A & B	8	<u>(Cancellation Check)</u> : Enable dies by placing DIE ON/OFF at position 3E to ON position. Run mail with stamps to all stackers and check for proper operation of dies, gates, and ink pumps. Check mail for good cancellation impressions.	
Machine A & B	9	<u>(Clean-up)</u> Insure that all tools, test equipment, etc., are removed from work area. Initiate necessary work orders and reports to accomplish required major repairs. Report all serious deficiencies to maintenance foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number: 2-FC-3M	
Type of Activity: Inspection			
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models (Excluding Model 3501)
Item	Performance Time Criteria	Notes and Additional Information	Frequency 240-300 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	LID DC Power Supplies		3 minutes
3	Filament Supplies		2 minutes
4	DC Power Supplies		3 minutes
5	Shutdown Devices		2 minutes
6	Edge Detector Light Source		4 minutes
7	Recognition Test (Adjustments)		30 minutes
8	Cancellation Check		5 minutes
9	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-FC-3M
Type of Activity: Inspection			
System: Mark II Facer-Canceler	Equipment: -----	Type: Model 3501	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 240-300 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	LID DC Power Supplies		3 minutes
3	Filament Supplies		1 minute
4	DC Power Supplies		2 minutes
5	Shutdown Devices		1 minute
6	Edge Detector Light Source		2 minutes
7	Recognition Test (Adjustments)		15 minutes
8	Cancellation Check		3 minutes
9	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-1M
System: Letter Mail Preparation		Equipment: Mark II Mark II	Type: 3500 Series Models
Component	Item	Instructions	Frequency Daily
General	1	(Safety) Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Machine A & B	2	(Preparation) Remove associated equipment from work area. Look for and remove all mail in stackers, brush section, and other transport parts. Open front and rear hinged access panels and doors. Remove and set aside the die hubs from both machines.	
Machine A & B	3	(General Cleaning) Remove foreign material from exposed surfaces of machine by blowing, vacuuming and wiping as appropriate.	
Machine A & B	4	(Sensor Mounting Plate) Remove dust on exposed area of sensor plate by blowing with low pressure air stream. Wipe lamp windows and sensor tube windows with "Q" tip immersed in alcohol. (Note: Use extreme care not to damage UV lamps. Do not use any solvents except alcohol on sensor plate.)	
Machine A & B	5	(Lubrication) Apply one drop of light machine oil at following lubrication points. Machine A: a. Impression roller pivots. b. Rocker arm pivots and universals. c. Reverse roller pivots and universals. d. Wear compensator pivot and rod. e. All accessible bearings and bushings. Machine B: a. Impression roller pivots. b. Rocker arm pivots and universals. c. All accessible bearings and bushings.	
Machine A & B	6	(Die Hub Assemblies) Clean lead and trail die hub assemblies. Change type as appropriate. Reinstall die hub assemblies and adjust ink felt rollers.	
Machine A & B	7	(Ink Tanks) Stir ink and fill tanks to a level 1/2" from the top, both machines.	
Electronic Cabinet	8		

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-1M
System: Mark II Facer-Canceler		Equipment: Mark II Facer Canceler	Type: 3500 Series Models
Component	Item	Instructions	Frequency Daily
Electronic Cabinet and Machine A & B	8	(Air Filters (3)) Remove and clean air filter by directing air stream through filter in reverse of normal direction of air flow. Replace air filter.	
Machine A & B	9	(Operating Check) Reinstall light shield covers and metal tray shields. Start machine, see that main feed roller, reverse roller, impression rollers, take-away rollers, starwheels, stacker belts, brushes, inverter belt, main feed belt and vertical feed belt are turning. See that blower motors are operating. Listen for evidence of wear or damage to bearings and gears.	
Machine A & B	10	(Clean-up) Be sure all tools, lubricants, and rags are removed from work area. Initiate necessary work orders and reports to accomplish scheduled repairs. Report serious deficiencies to maintenance foreman immediately upon detection.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number:	
Type of Activity: Routine Preventive Maintenance		3-FC-1M	
System: Letter Mail Preparation	Equipment: Mark II Facer Canceled	Type: 3500 Series Models	
Item	Performance Time Criteria	Notes and Additional Information	Frequency
		<u>TOTAL TIME REQUIRED PER EVENT</u>	
1	Safety	3 minutes	
2	Preparation	2 minutes	
3	General Cleaning	3 minutes	
4	Sensor Mounting Plate	8 minutes	
5	Lubrication	4 minutes	
6	Die Hub Assemblies	5 minutes	
7	Ink Tanks	8 minutes	
8	Air Filters	5 minutes	
9	Operating Check	5 minutes	
10	Clean-up	3 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number: 3-FC-1M	
Type of Activity: Routine Preventive Maintenance			
System: Letter Mail Preparation		Equipment: Mark II Facer Canceler	Type: 3500 Series Models
Item	Performance Time Criteria	Notes and Additional Information	Frequency Daily
		<u>TOTAL TIME REQUIRED PER EVENT</u>	
1	Safety	3 minutes	
2	Preparation	2 minutes	
3	General Cleaning	3 minutes	
4	Sensor Mounting Plate	4 minutes	
5	Lubrication	2 minutes	
6	Die Hub Assemblies	2 minutes	
7	Ink Tanks	4 minutes	
8	Air Filters	3 minutes	
9	Operating Check	2 minutes	
10	Clean-up	3 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-2M	
System: Mark II Facer Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 20-30 Operating Hours
General	1	<u>(Safety)</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Machine A & B	2	<u>(Preparation)</u> Remove associated equipment from work area. Look for and remove all mail in stackers, brush section, and other transport parts. Open front and rear hinged access panels and doors. Remove and set aside the following parts and assemblies from both machines: a. Control panels b. Vertical feed fence c. Take-away covers d. Gate deck assemblies e. Die hubs f. Inker arms g. Spring tension bars h. Transport belts i. Metal tray shelves	
Machine A & B	3	<u>(General Cleaning)</u> Remove foreign material from exposed surfaces of machine by blowing, vacuuming and wiping as appropriate.	
Machine A & B	4	<u>(Sensor Mounting Plate)</u> Remove dust on exposed area of sensor plate by blowing with low pressure air stream. Wipe lamp windows and sensor tube windows with "Q" tip immersed in alcohol. (Note: Use extreme care not to damage UV lamps. Do not use any solvents except alcohol on sensor plate.)	
Machine A & B	5	<u>(Ink Pump Drive Assemblies)</u> Without disassembly, blow and wipe lead and trail ink pump drive assemblies. Look and feel for loose or damaged solenoids, linkages, pins, pin retainers, springs, adjusting screw, locknuts, and wiring. Operate pump actuator arm and check ratchet reverse stop pawl, trip pawl and limit block for wear and for proper adjustment.	
Machine A & B	6	<u>(Lubrication)</u> Apply one drop of light machine oil at following lubrication points. Machine A: a. Impression roller pivots. b. Rocker arm pivots and universals.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-2M	
System: Mark II Facer Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machine A & B (Cont'd)	6 (Cont)	<p>c. Reverse roller pivots and universals. d. Wear compensator pivot and rod. e. All accessible bearings and bushings.</p> <p>Machine B:</p> <p>a. Impression roller pivots. b. Rocker arm pivots and universals. c. All accessible bearings and bushings.</p>	
Machine A & B	7	<u>(Inker Arm Assemblies)</u> Disassemble lead and trail inker arm assemblies. Lift out ink felts but keep with respective arm assemblies. Clean inker arms and covers. Check inker arms, covers and felt rollers for wear or damage. Reassemble lead and trail inker arm assemblies and reinstall. Reinstall anticipator arm assembly and replace retaining clip. Reinstall transport belts and spring tension bars.	
Machine A & B	8	<u>(Gate Assembly)</u> Clean gate assembly, by blowing and wiping with solvent. Look and feel for binding or sticking plungers and for wear or damage to pins, linkage, bushings, bearings, shafts, flags, and springs. Check flag tip clearance (approximately 3/16"). Reinstall gate assembly. Wipe and reinstall take-away covers.	
Machine A & B	9	<u>(Access)</u> Wipe and close front access panels. Unlock and open front cabinet doors. Wipe inside of doors.	
Machine A & B	10	<u>(Die Hub Assemblies)</u> Clean lead and trail die hub assemblies. Change type as appropriate. Reinstall die hub assemblies and adjust ink felt rollers.	
Machine A & B	11	<u>(Control Panels)</u> Clean control panel, machine A & B by blowing and wiping. Look for damage to wiring, switches, and relays. Clean vertical feed fence by wiping. Reinstall vertical feed fence and control panel A. Reinstall control panel B.	
Machine A	12	<u>(Reverse and Feed Rollers)</u> Check rubbers for excessive wear, nicks or gouges. Check compensator roller or build up of foreign material and freedom of rotation. Adjust the separator shield adjusting screw so that 1/64" to 1/32" of the reverse rubber is exposed through the separator shield. Set the gap between the reverse and main feed rubbers to 0.002".	
Machine B	13	<u>(Brush Assembly)</u> Remove string and other foreign material caught or wrapped in brush bristles. Blow or vacuum dust and other foreign material from brushes, guides, and inside of brush cover. Check brushes for looseness on shafts, wear, and debristling.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-2M
System: Mark II Facer Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 20-30 Operating Hours
Machines A & B	14	(Ink Tanks) Stir ink and fill tanks to a level 1/2" from the top, both machines.	
Machines A & B	15	(Access) Wipe and close rear hinged access panels and ink tank dust cover. Unlock and open rear cabinet doors. Clean inside of doors and shelf. Clean interior of cabinet.	
	16	(Exterior Cleaning) Spot-clean exterior panels on both machines by wiping. Use solvent or detergent to remove hardened deposits.	
Electronic Cabinet and Machine A & B	17	(Air Filters (3) Remove and clean air filter by directing air stream through filter in reverse of normal direction of air flow. Replace air filter.	
Machine A & B	18	(Operating Check) Reinstall light shield covers and metal tray shields. Start machine, see that main feed roller, reverse roller, impression rollers, take-away rollers, starwheels, stacker belts, brushes, inverter belt, main feed belt and vertical feed belt are turning. See that blower motors are operating. Listen for evidence of wear or damage to bearings and gears.	
Machine A & B Machine A & B	19	(Clean-up) Be sure all tools, lubricants, and rags are removed from work area. Initiate necessary work orders and reports to accomplish scheduled repairs. Report serious deficiencies to maintenance foreman immediately upon detection.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number:	
Type of Activity: Routine Preventive Maintenance		3-FC-2M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 20-30 Operating Hours
		<u>TOTAL TIME REQUIRED PER EVENT</u>	
1	Safety		3 minutes
2	Preparation		12 minutes
3	General Cleaning		30 minutes
4	Sensor Mounting Plate		8 minutes
5	Ink Pump Drive Assembly		8 minutes
6	Lubrication		4 minutes
7	Inker Arm Assembly		10 minutes
8	Gate Assembly		16 minutes
9	Access		4 minutes
10	Die Hub Assemblies		5 minutes
11	Control Panels		4 minutes
12	Reverse and Feed Rollers		2 minutes
13	Brush Assembly		4 minutes
14	Ink Tanks		8 minutes
15	Access		4 minutes
16	Exterior Cleaning		5 minutes
17	Air Filters		5 minutes
18	Operating Check		5 minutes
19	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number: 3-FC-2M	
Type of Activity: Routine Preventive Maintenance			
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Item	Performance Time Criteria	Notes and Additional Information	Frequency 20-30 Operating Hours
		<u>TOTAL TIME REQUIRED PER EVENT</u>	
1	Safety		3 minutes
2	Preparation		6 minutes
3	General Cleaning		15 minutes
4	Sensor Mounting Plate		4 minutes
5	Ink Pump Drive Assembly		4 minutes
6	Lubrication		2 minutes
7	Inker Arm Assembly		5 minutes
8	Gate Assembly		8 minutes
9	Access		2 minutes
10	Die Hub Assemblies		2 minutes
11	Control Panels		2 minutes
12	Reverse and Feed Rollers		2 minutes
14	Ink Tanks		4 minutes
15	Access		2 minutes
16	Exterior Cleaning		3 minutes
17	Air Filters		3 minutes
18	Operating Check		2 minutes
19	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-3M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 240-300 Operating Hours
General	1	(Safety) Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Machine A & B	2	(Preparation) Remove associated equipment from work area. Look for and remove all mail in stackers, brush section, and other transport parts. Open front and rear hinged access panels and doors. Remove and set aside the following parts and assemblies from both machines. a. Light shield covers b. Metal tray shelves c. Control panels d. Vertical feed fence e. Take-away covers f. Inverter belt guards g. Brush housing cover h. Inverter belt i. Ink pump assemblies j. Gate deck assemblies	
Machine A	3	(Relays 1K1(K3) and 1K2(K4)) Remove covers from relays. Blow foreign material from relay contacts and wiring. Check for pitted contacts and damaged wiring. Repair or replace as necessary. Replace covers.	
Machine B	4	(Brush Assembly) Clean all exposed areas of brush assembly by blowing and wiping. Check castings, gears, brushes, shafts, pulleys, belts, belt take-ups, and bearings for looseness, damage, and wear. Check for proper brush adjustment and correct as necessary. Brush adjustments: a. Right pair - vertical position on shaft is 1-1/2" to 2" from bottom of brush to casting. b. Left pair - vertical position is where bottom of brush just clears letter track. c. Right pair - gap - bristles just touch. d. Left pair - gap - 1/32"-1/16".	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-3M	
System:	Equipment:	Type:	
Mark II Facer-Canceler	-----	3500 Series Models	
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine B	5	<u>(Inverter Section)</u> Check for excessive wear or damage to pulleys, belts, bearings, shafts, and guides. Repair as necessary. Replace inverter belt, brush cover, and inverter belt guards.	
Machine A & B	6	<u>(Sensor Mounting Plate)</u> Install P-101 onto mating connector in sensor mounting plate with two retaining screws. Place sensor plate in position on machine and install the four mounting bolts. Replace ground wire and check for zero resistance between sensor plate and machine frame with a VOM.	
Machine A & B	7	<u>(Spring Tension Adjustments)</u> Check spring tension adjustments given below at transport belt rollers and reverse roller using spring gauge. Adjust if necessary. a. At feed end - 16 pounds b. At gate end - 8 pounds c. At intermediate roller - 5 pounds d. At reverse roller - 3 to 3-1/2 pounds	
Machine A & B	8	<u>(Rocker Arm Stops)</u> Check the following stop adjustments and adjust if necessary. a. Machine A, right front and rear - 1/64" gap between stop screws and stops when transport belts are touching and aligned with pinch point of reverse and feed rubbers. b. Machine B, right front and rear - 1/16" gap between transport belts at rollers when belts are aligned with left front and rear brushes. c. Both machines, left front and rear - Transport belts should barely touch at center line of letter track. d. (Letter guide springs) Gap between springs should be 1/16" with springs aligned with center line of letter track.	
Machine A & B	9	<u>(Ink Pump Assemblies)</u> Clean and oil (10W machine oil) ink pump drive mechanisms. Install ink pump assemblies onto machine and reconnect solenoid wires.	
Machine A & B	10	<u>(Control Panels - Vertical Feed Fence)</u> Install control panel and vertical feed fence on Machine "A". Install control panel on Machine "B". Reconnect power wiring and place main circuit breakers ON. Place power ON-OFF switch in ON position to allow circuitry to warm up for later electronic adjustments.	
Machine A & B	11	<u>(Gate Assemblies)</u> a. Clean entire gate assembly by blowing and wiping.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-3M	
System:	Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 240-300 Operating Hours
Machine A & B	11 (Cont)	<p>(Gate Assemblies) (Cont'd)</p> <p>b. Check operation of flag mechanism for signs of excessive binding or wear in bearings.</p> <p>c. Check gate flag adjustments as indicated and reposition appropriate solenoid as necessary:</p> <p>(1) Reset condition - Reset solenoid plungers should be bottomed when both gate flags are in <u>Reset</u> position (aligned with notches on gate deck).</p> <p>(2) Set condition - Set solenoid plungers should be bottomed when the flag is in <u>Set</u> position (flag tip 3/16" from other flag held in Reset position).</p> <p>d. Connect an ohmmeter to the gate jam switch terminals. Check to see that the switch closes when a pressure of about 1 to 2 pounds is applied downward on either gate flag tip. Adjust if necessary.</p> <p>e. Install the gate deck assemblies into the machine and replace the take-away covers. Reinstall light shield covers.</p>	
Machine A & B	12	(Cancellation Check) Enable dies by placing DIE ON/OFF at position 3E to ON position. Run mail with stamps to all stackers and check for proper operation of dies, gates, and ink pumps. Check mail for good cancellation impressions.	
Machine A & B	13	(Final Close-up) Wipe inside and outside of panels, ink tank covers, and cabinet doors with a rag and solvent to remove dirt, ink, and grease. Close front and rear hinged access panels and ink tank covers. Close and lock front and rear cabinet doors.	
Machine A & B	14	(Tray Shelves) Reinstall metal tray shelves on machine.	
Machine A & B	15	(Clean-up) Insure that all tools, lubricants, rags, test equipment, etc., are removed from work area. Initiate necessary work orders and reports to accomplish required major repairs. Report all serious deficiencies to maintenance foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number:	
Type of Activity: Routine Preventive Maintenance		3-FC-3M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 240-300 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Preparation		10 minutes
3	Relays 1K1(K3) and 1K2(K4)		10 minutes
4	Brush Assembly		8 minutes
5	Inverter Section		5 minutes
6	Sensor Mounting Plates		20 minutes
7	Spring Tension Adjustments		8 minutes
8	Rocker Arm Stops		8 minutes
9	Ink Pump Assemblies		10 minutes
10	Control Panels - Vertical Feed Fence		3 minutes
11	Gate Assemblies		20 minutes
12	Cancellation Check		5 minutes
13	Final Close-up		8 minutes
14	Tray Shelves		2 minutes
15	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number:	
Type of Activity: Routine Preventive Maintenance		3-FC-3M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3501 3500 Sries Models	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 240-300 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Preparation		5 minutes
3	Relays 1K1(K3) and 1K2(K4)		10 minutes
6	Sensor Mounting Plates		10 minutes
7	Spring Tension Adjustments		4 minutes
8	Rocker Arm Stops		4 minutes
9	Ink Pump Assemblies		5 minutes
10	Control Panels - Vertical Feed Fence		2 minutes
11	Gate Assemblies		10 minutes
12	Cancellation Check		3 minutes
13	Final Close-up		4 minutes
14	Tray Shelves		1 minute
15	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-4M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 720-800 Operating Hours
General	1	<u>(Safety)</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Machine A & B	2	<u>(Preparation)</u> Remove associated equipment from work area. Look for and remove all mail in stackers, brush section, and other transport parts. Open front and rear hinged access panels and doors. Remove and set aside the following parts and assemblies from both machines. a. Light shield covers b. Metal tray shelves c. Control panels d. Vertical feed fence e. Take-away covers f. Inverter belt guards g. Brush housing cover h. Inverter belt i. Ink pump assemblies j. Gate deck assemblies k. Inker arms l. Spring tension bars m. Transport belts n. Reverse roller and shield assembly o. "A" control panel left mounting bracket p. Right and left, front and rear, rocker arms q. Stacker skirts and access panels	
Machine A & B	3	<u>(Sensor Mounting Plate) Removal:</u> a. Remove sensor mounting plate mounting bolts. b. Remove screws from plug P101; disconnect plug. c. Disconnect ground wire from plate. d. Remove sensor mounting plate from machine. e. Check shock mounts for damage. Disassembly, checking, cleaning: Note: Use only isopropyl alcohol as cleaning solvent. Other solvents will damage optical windows and UV lamp. a. Blow dirt from top and bottom of sensor plates and wipe clean.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-4M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 720-800 Operating Hours
		<ul style="list-style-type: none"> b. Remove fiberboard cover from trail sensor amplifier connectors. Remove amplifier and solar cell covers. c. Check for loose or damaged parts, evidence of belt rubbing, and frayed or damaged wiring. Repair any defects found. d. Remove sensor amplifier printed circuit cards from sockets; clean and check sockets for damaged connector pins; reinstall cards. e. Remove edge detector assemblies; disassemble and clean. f. Using a "Q"-tip saturated with isopropyl alcohol, clean solar cell filters and windows (inside and outside of windows); clean inside and outside of edge detector windows; clean edge lamp source lenses. Clean UV lamps. g. Reinstall solar cell assemblies, edge detector assemblies, sensor amplifier covers, and trail connector covers. h. Check that locking nuts on edge detector lamps are tight. i. Set sensor plate aside until ready to reinstall. 	
Machine A & B	4	<p><u>(Main Drive and Clutches Assembly)</u></p> <ul style="list-style-type: none"> a. Remove mounting bolts and slip off main drive and timing belts. b. Lift out main drive and clutches assembly, allowing oil to drain into sump. Clean assembly using appropriate degreasing solvent. c. Check clutch assembly for damage and excessive wear. Check adjustable stop cam to insure 1/4" to 3/8" gap between dead stop arm and dead stop cam. Adjust if necessary. d. Adjust solenoids for free plunger travel. Plunger should bottom 3/16" after tripping. e. Check clutch stop actuating arm to insure .005" to .010" gap between actuating arm and stop screw when die is rotated 350° from home position. Adjust if necessary. f. Drain oil from sump and clean sump and surrounding area on machine. Close petcock and refill oil sump with 9 pints of Mobil Velocite #6 or equivalent oil. g. Reinstall main drive and clutches assembly and main drive and timing belts on machine. h. Install inker arms onto assembly and reconnect die solenoid connectors. 	
Machine A	5	<p><u>(Feed Gear Train Assembly)</u></p> <ul style="list-style-type: none"> a. Remove belt guards, cover plate and mounting bolts. Lift assembly and disengage horizontal feed belt and main drive belt. Remove assembly from machine. b. Clean and check for worn or damaged parts. Check bushings and compensator rod for excessive wear and lubricate. Lubricate at grease fitting using ESSO P-290 or equivalent until grease appears at relief hole. 	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-4M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 720-800 Operating Hours
Machine A	6	<p>c. Drain oil from sump; clean sump and surrounding area. Close petcock and refill oil sump with 1 pint, 5 ounces of Mobil Velocite #6 or equivalent.</p> <p>d. Reinstall feed gear train assembly, engaging main drive and horizontal feed belts. Replace cover plate and belt guards.</p> <p>(Relays 1K1(K3) and 1K2(K4)) Remove covers from relays. Blow foreign material from relay contacts and wiring. Check for pitted contacts and damaged wiring. Repair or replace as necessary. Replace covers.</p>	
Machine B	7	<p>(Brush Assembly) Clean all exposed areas of brush assembly by blowing and wiping. Check castings, gears, brushes, shafts, pulleys, belts, belt take-ups, and bearings for looseness, damage, and wear. Check for proper brush adjustment and correct as necessary. Brush adjustments:</p> <p>a. Right pair - vertical position on shaft is 1-1/2" to 2" from bottom of brush to casting.</p> <p>b. Left pair - vertical position is where bottom of brush just clears letter track.</p> <p>c. Right pair - gap - bristles just touch.</p> <p>d. Left pair - gap - 1/32" - 1/16".</p>	
Machine B	8	<p>(Inverter Section) Check for excessive wear or damage to pulleys, belts, bearings, shafts, and guides. Repair as necessary. Replace inverter belt, brush cover, and inverter belt guards.</p>	
Machine A & B	9	<p>(Sensor Mounting Plate) Install P-101 onto mating connector in sensor mounting plate with two retaining screws. Place sensor plate in position on machine and install the four mounting bolts. Replace ground wire and check for zero resistance between sensor plate and machine frame with a VOM.</p>	
Machine A & B	10	<p>(Starwheel Assemblies) Remove covers, clean and check starwheel assemblies for excessive wear and damage. Replace covers.</p>	
Machine A & B	11	<p>(Stacker Take-Away Motors) Remove stacker take-away motor assemblies. Clean stacker take-away motors, sprockets, drive chains, and pulleys. Check parts for excessive wear and damage. Lubricate chain and motor with 10W oil. Reinstall stacker take-away motor assemblies onto machine.</p>	
Machine A & B	12	<p>(Stacker Assemblies) Check stacker drive belts, pulleys, rollers, and shafts for excessive wear and damage. Check stacker drive belts for proper tension. Replace stacker skirts and access panels.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-4M	
System:	Equipment:	Type:	
Mark II Facer-Canceler	-----	3500 Series Models	
Component	Item	Instructions	Frequency 720-800 Operating Hours
Machine A & B	13	<u>(Impression Rollers)</u> Check impression rollers for proper adjustment and adjust if necessary. The clearance between the high point of the die hub and the roller should be 0.006". Using spring gauge, insure that impression roller spring tension is between 19 and 21 pounds measured at the center of the roller.	
Machine A & B	14	<u>(Blower Motors)</u> Remove blower motors from machine. Clean motors and lubricate with 10W oil. Replace motors on machine.	
Machine A & B	15	<u>(Interior Cleaning)</u> Wipe rear cabinet doors and shelf. Spray front and rear panels with solvent and blow dry. Wipe front face of panels with clean rag. Check wiring for damage or deterioration.	
Electronic Cabinet	16	<u>(Electronic Chassis)</u> Remove electronic chassis from cabinet and blow chassis clean. Wipe inside of cabinet. Check screws on terminal board under chassis for tightness.	
Electronic Cabinet	17	<u>(Blower Motor)</u> Remove blower motor from cabinet, clean and lubricate with 10W oil, and reinstall motor.	
Electronic Cabinet	18	<u>(Electronic Chassis)</u> Check printed circuit cards for proper seating in edge connectors. Check chassis wiring for damage. Reinstall chassis in electronic cabinet.	
Electronic Cabinet	19	<u>(Air Filter)</u> Remove air filter from rear of cabinet and replace with new filter.	
Machine A & B	20	<u>(Tension Bars and Rocker Arm Assemblies)</u> Wipe tension bars and rocker arm assemblies clean using a rag and solvent. Check the following for looseness, damage or wear: <ul style="list-style-type: none"> a. Spring guides b. Castings c. Pulleys d. Bearings e. Bushings f. Shafts g. Nylon anticipator blocks Install right front and rear rocker arm assemblies, reverse roller arm and shield assembly, front and rear transport belts, and left front and rear rocker arm assemblies. Install spring tension bar. Install "A" machine control panel left mounting bracket. Adjust the shield so 1/64" to 1/32" of the reverse rubber is exposed through the shield.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-FC-4M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models	
Component	Item	Instructions	Frequency 720-800 Operating Hours
Machine A & B	21	<p><u>(Spring Tension Adjustments)</u> Check spring tension adjustments given below at transport belt rollers and reverse roller using spring gauge. Adjust if necessary.</p> <p>a. At feed end - 16 pounds b. At gate end - 8 pounds c. At intermediate roller - 5 pounds d. At reverse roller - 3 to 3-1/2 pounds</p>	
Machine A & B	22	<p><u>(Rocker Arms Stops)</u> Check the following stop adjustments and adjust if necessary.</p> <p>a. Machine A, right front and rear - 1/64" gap between stop screws and stops when transport belts are touching and aligned with pinch point of reverse and feed rubbers. b. Machine B, right front and rear - 1/16" gap between transport belts at rollers when belts are aligned with left front and rear brushes. c. Both machines, left front and rear - Transport belts should barely touch at center line of letter track. d. (Letter guide springs) Gap between springs should be 1/16" with springs aligned with center line of letter track.</p>	
Machine A & B	23	<p><u>(Ink Pump Assemblies)</u> Clean and oil (10W machine oil) ink pump drive mechanisms. Install ink pump assemblies onto machine and reconnect solenoid wires.</p>	
Machine A & B	24	<p><u>(Control Panels - Vertical Feed Fence)</u> Install control panel and vertical feed fence on Machine "A". Install control panel on Machine "B". Reconnect power wiring and place main circuit breakers ON. Place power ON-OFF switch in ON position to allow circuitry to warm up for later electronic adjustments.</p>	
Machine A & B	25	<p><u>(Stacker Blades)</u> Remove stacker blades from guide rods. Clean blade bearings by picking out compacted dirt and lint and by blowing. Reinstall blades making sure that adjusting screw, spring, and nylon insert are properly assembled. Adjust adjusting screw so there is a slight drag when blades are moved along guide rod.</p>	
Machine A & B	26	<p><u>(Air Filters)</u> Remove air filters from machine and replace with new filters.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-FC-4M
System: Mark II Facer-Canceler		Equipment: -----	Type: 3500 Series Models
Component	Item	Instructions	Frequency 720-800 Operating Hours
Machine A & B	27	<p><u>(Gate Assemblies)</u></p> <p>a. Clean entire gate assembly by blowing and wiping.</p> <p>b. Check operation of flag mechanism for signs of excessive binding or wear in bearings.</p> <p>c. Check gate flag adjustments as indicated and reposition appropriate solenoid as necessary.</p> <p>(1) Reset condition - Reset solenoid plungers should be bottomed when both gate flags are in Reset position (aligned with notches on gate deck).</p> <p>(2) Set condition - Set solenoid plungers should be bottomed when the flag is in Set position (flag tip 3/16" from other flag held in Reset position).</p> <p>d. Connect an ohmmeter to the gate jam switch terminals. Check to see that the switch closes when a pressure of about 1 to 2 pounds is applied downward on either gate flag tip. Adjust if necessary.</p> <p>e. Install the gate deck assemblies into the machine and replace the take-away covers. Reinstall light shield covers.</p>	
Machine A & B	28	<p><u>(Cancellation Check)</u> Enable dies by placing DIE ON/OFF at position 3E to ON position. Run mail with stamps to all stackers and check for proper operation of dies, gates, and ink pumps. Check mail for good cancellation impressions.</p>	
Machine A & B	29	<p><u>(Final Close-up)</u> Wipe inside and outside of panels, ink tank covers, and cabinet doors with a rag and solvent to remove dirt, ink, and grease. Close front and rear hinged access panels and ink tank covers. Close and lock front and rear cabinet doors.</p>	
Machine A & B	30	<p><u>(Tray Shelves)</u> Reinstall metal tray shelves on machine.</p>	
Machine A & B	31	<p><u>(Clean-up)</u> Insure that all tools, lubricants, rags, test equipment, etc., are removed from work area. Initiate necessary work orders and reports to accomplish required major repairs. Report all serious deficiencies to maintenance foreman.</p>	

MASTER PREVENTIVE MAINTENANCE CHECKLIST -- SIDE B		Checklist Number:	
Type of Activity: Routine Preventive Maintenance		3-FC-4M	
System: Mark II Facer-Canceler	Equipment: -----	Type: 3500 Series Models (Excluding Model 3501)	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 720-800 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Preparation		20 minutes
3	Sensor Mounting Plates		60 minutes
4	Main Drive and Clutches Assembly		150 minutes
5	Feed Gear Train Assembly		50 minutes
6	Relays 1K1(K3) and 1K2(K4)		10 minutes
7	Brush Assembly		8 minutes
8	Inverter Section		5 minutes
9	Sensor Mounting Plates		20 minutes
10	Starwheel Assemblies		10 minutes
11	Stacker Take-Away Motors		40 minutes
12	Stacker Assemblies		10 minutes
13	Impression Rollers		12 minutes
14	Blower Motors		20 minutes
15	Interior Cleaning		40 minutes
16	Electronic Chassis		10 minutes
17	Blower Motor		10 minutes
18	Electronic Chassis		8 minutes
19	Air Filter		2 minutes
20	Tension Bars and Rocker Arm Assemblies		20 minutes
21	Spring Tension Adjustments		8 minutes
22	Rocker Arm Stops		8 minutes
23	Ink Pump Assemblies		10 minutes
24	Control Panels - Vertical Feed Fence		3 minutes
25	Stacker Blades		10 minutes
26	Air Filter		2 minutes
27	Gate Assemblies		20 minutes
28	Cancellation Check		5 minutes
29	Final Close-up		8 minutes
30	Tray Shelves		2 minutes
31	Clean-up		3 minutes

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B		Checklist Number: 3-FC-4M	
Type of Activity: Routine Preventive Maintenance			
System: Mark II Facer-Canceler		Equipment: -----	Type: Model 3501
Item	Performance Time Criteria	Notes and Additional Information	Frequency 720-800 Operating Hours
		<u>Total Time Required Per Event</u>	
1	Safety		3 minutes
2	Preparation		10 minutes
3	Sensor Mounting Plates		30 minutes
4	Main Drive and Clutches Assembly		75 minutes
5	Feed Gear Train Assembly		50 minutes
6	Relays 1K1(K3) and 1K2(K4)		10 minutes
9	Sensor Mounting Plates		10 minutes
10	Starwheel Assemblies		5 minutes
11	Stacker Take-Away Motors		20 minutes
12	Stacker Assemblies		5 minutes
13	Impression Rollers		6 minutes
14	Blower Motors		10 minutes
15	Interior Cleaning		20 minutes
16	Electronic Chassis		10 minutes
17	Blower Motor		10 minutes
18	Electronic Chassis		8 minutes
19	Air Filter		2 minutes
20	Tension Bars and Rocker Arm Assemblies		10 minutes
21	Spring Tension Adjustments		4 minutes
22	Rocker Arm Stops		4 minutes
23	Ink Pump Assemblies		5 minutes
24	Control Panels - Vertical Feed Fence		2 minutes
25	Stacker Blades		5 minutes
26	Air Filter		1 minute
27	Gate Assemblies		10 minutes
28	Cancellation Check		3 minutes
29	Final Close-up		4 minutes
30	Tray Shelves		1 minute
31	Clean-up		3 minutes

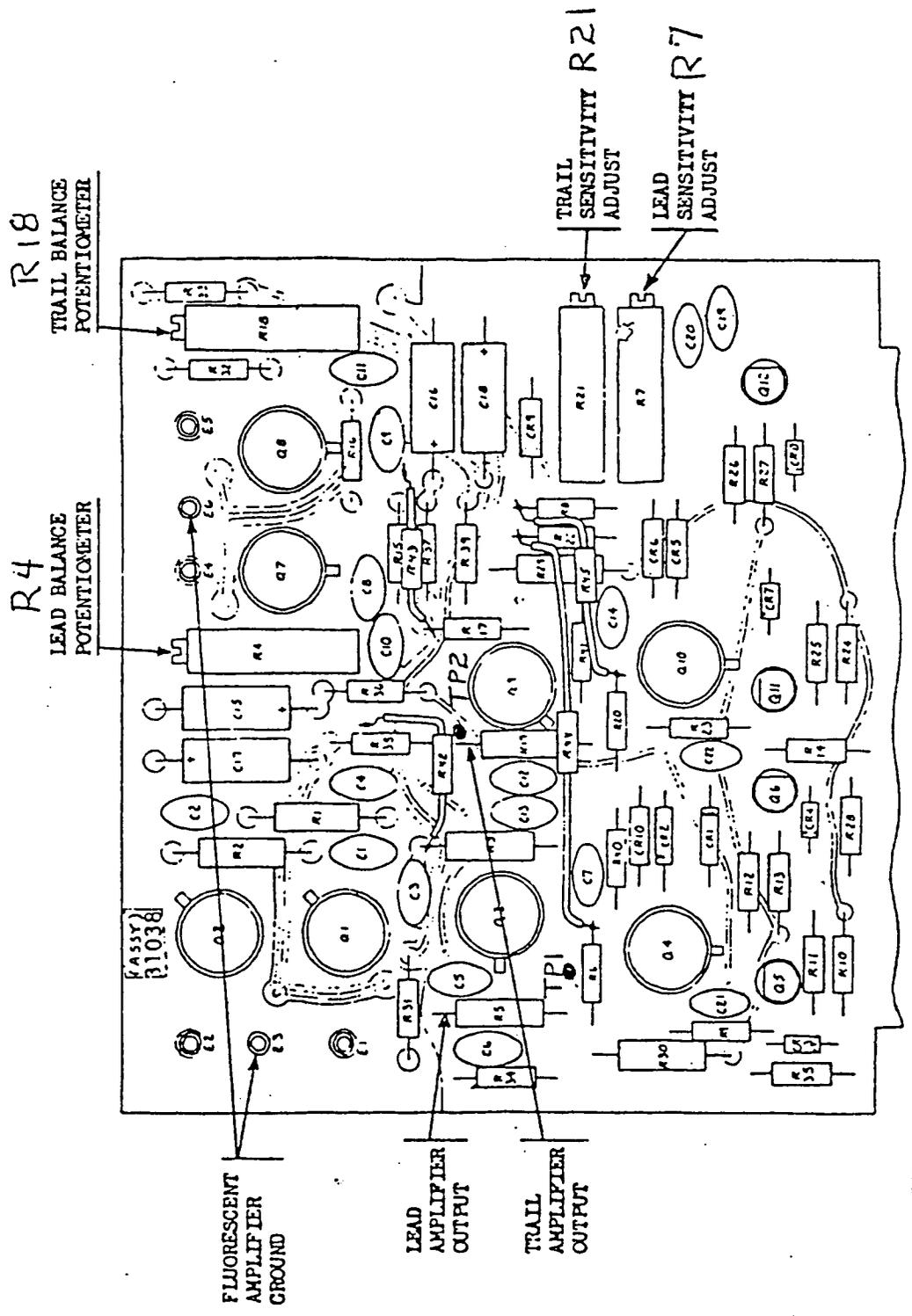


Figure B-1. Oscilloscope Connections
 FLUORESCENT AMPLIFIER OEM 31038 (31038A has Test Points 1 & 2 added)

NOTE: Adjust R18 or R4 on 31038/A so that amplitude "B" is $\frac{1}{2}$ of amplitude "A".

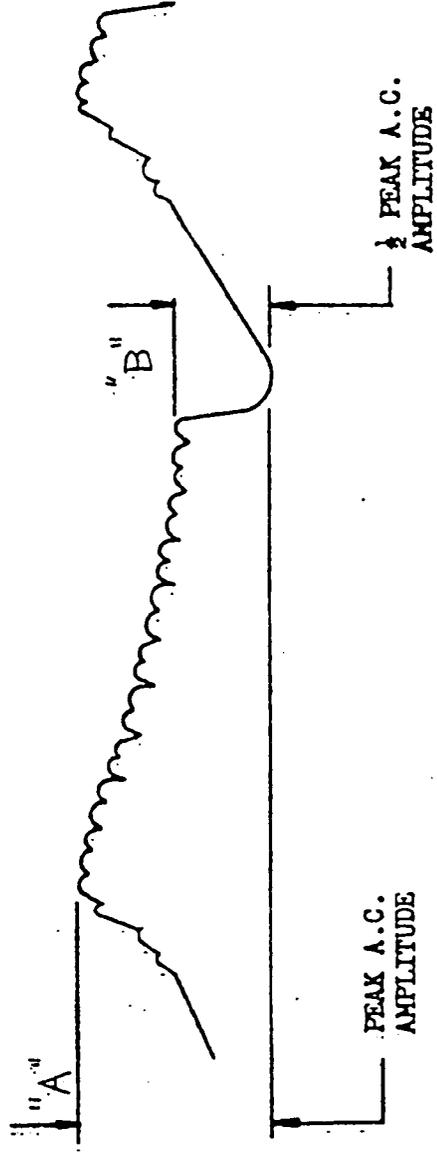
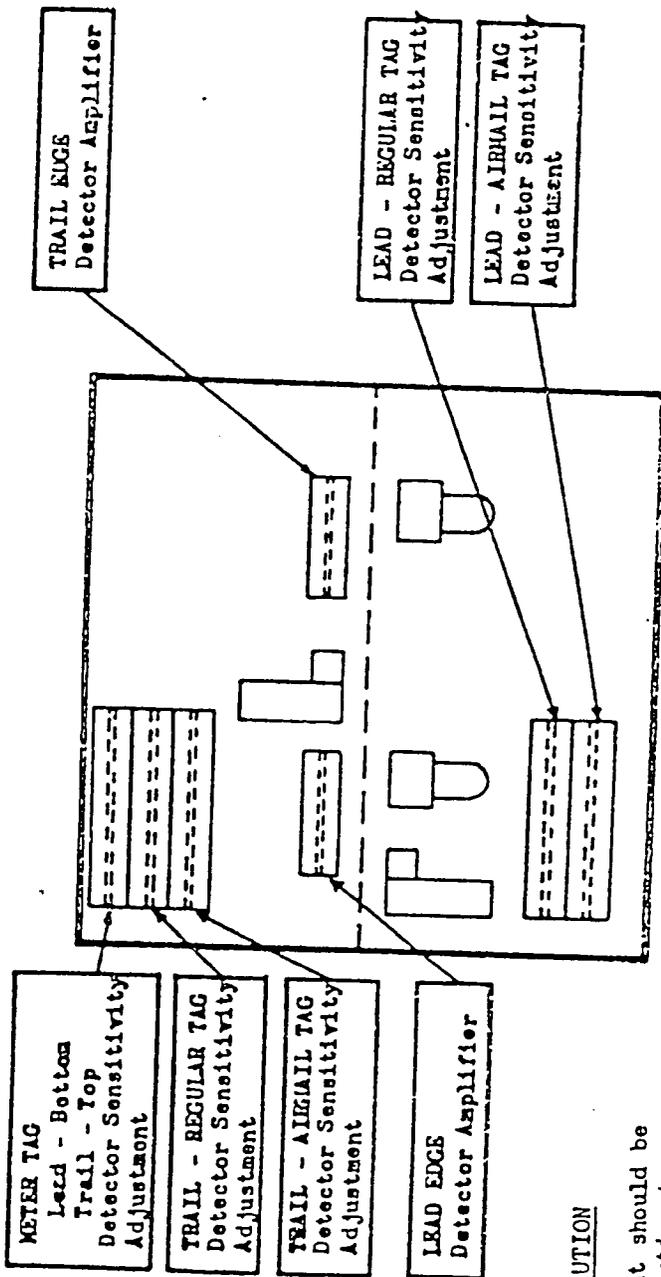


Figure B-2. Proper Balance Waveform

Waveform obtained at TP-1 and TP-2 of Fluorescent Amplifier Card, OEM 31038/A



CAUTION

No adjustment should be made to potentiometers on the METER TAG amplifier that are inaccessible with housing cover in position unless a Balance adjustment is required.

Figure B-3. Sensor Amplifier Locations

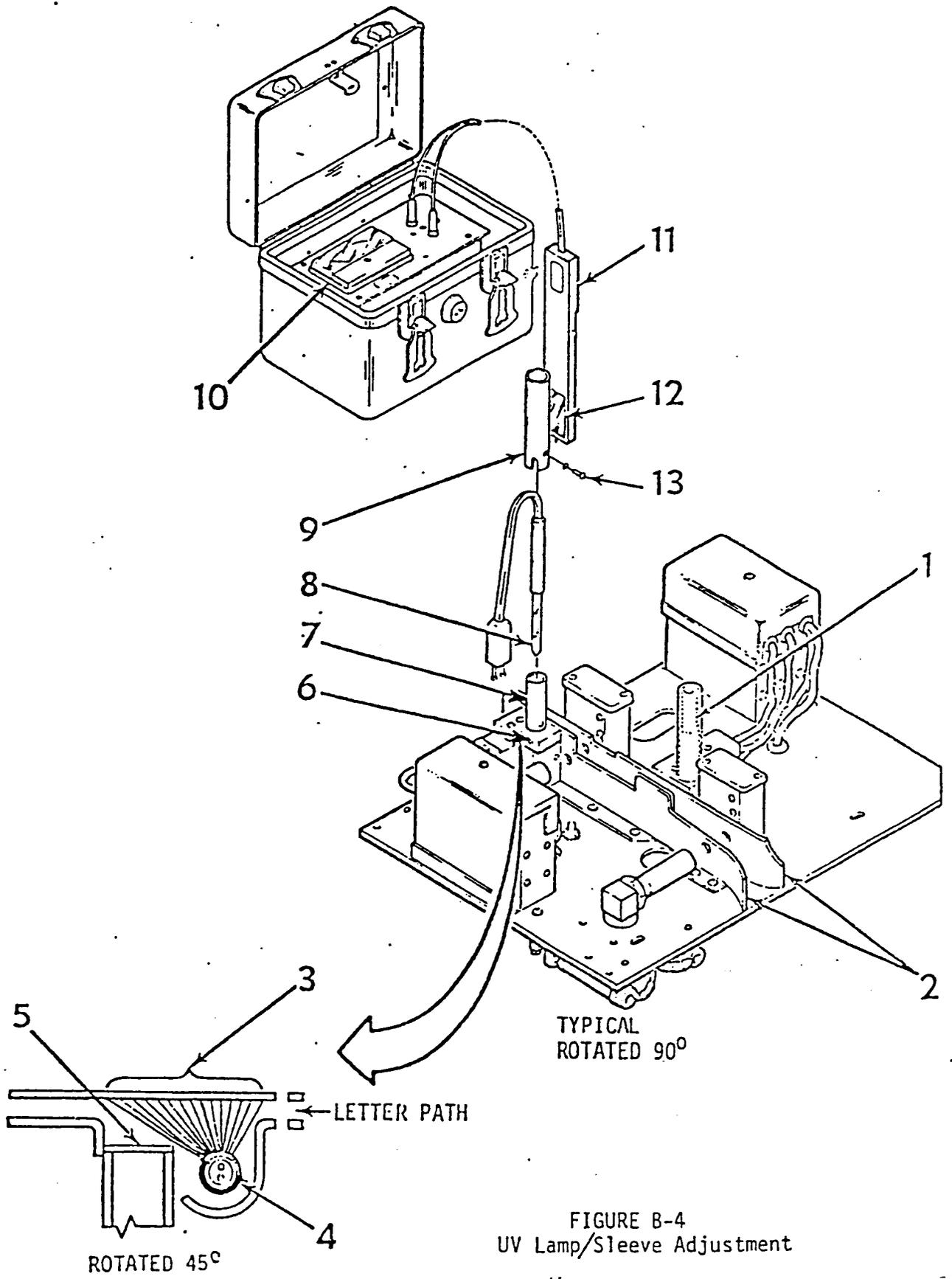


TABLE 2
 MAINTENANCE STAFFING*
 FACER CANCELER MODEL 3501

HOURS OPERATED PER YEAR	PREVENTIVE MAINTENANCE HOURS/YEAR	REPAIR MAINTENANCE HOURS/YEAR	NON-PRODUCTIVE HOURS/YEAR	TOTAL MAINTENANCE HOURS/YEAR	MAINTENANCE PERSONNEL MEN/MACHINE
500	184	92	28	304	.172
600	189	95	28	312	.176
700	194	97	29	320	.181
800	205	103	31	339	.192
900	211	106	32	349	.197
1000	217	109	33	359	.203
1100	222	111	33	366	.207
1200	229	115	34	378	.214
1300	234	117	35	386	.218
1400	239	120	36	395	.223
1500	250	125	38	413	.234
1600	255	128	38	421	.238
1700	261	131	39	431	.244
1800	266	133	40	439	.248
1900	271	136	41	448	.253
2000	278	139	42	458	.259
2100	283	142	42	467	.264
2200	294	147	44	485	.274
2300	299	150	45	494	.279
2400	306	153	46	505	.286
2500	311	156	47	514	.291
2600	316	158	47	521	.295
2700	322	161	48	531	.300
2800	327	164	49	540	.305
2900	338	169	51	558	.316
3000	344	172	52	568	.321

*For the purposes of calculating PM criteria, a six-day operation is assumed for this table. To arrive at a Total Maintenance Hours/Year for a five-day or seven-day operation, subtract 43 hours for a five-day operation or add 43 hours for a seven-day operation.

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number: 2-EF-1M
Type of Activity: Inspection			
System: Letter Mail Preparation	Equipment: Edger Feeder	Type: Model 500 and 500A	
Component	Item	Instructions	Frequency 720-800 Operating Hours
General	1	<u>Safety.</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Shingler Feeder	2	<u>Shingler Feeder</u> a. Open shingler feeder access grills and examine gear belt, V-belts, sheaves, and other drive parts for corrosion, damage, and build-up of dirt or foreign material. Look for misalignments and excessive wear of belts and sheaves. Feel belts or measure sag for correct tension adjustment. Wrench test set screws and feel keys to insure sheaves are tight on shafts. b. Examine pulley and flange bearings. Look for wear, dirt, or fretting corrosion in bearings. Feel pulley shafts for looseness through bearings. Examine bearing stops for correct positioning. c. Examine drive motors for security of mounting. Using both hands, twist both halves of the flexible coupling in opposite directions, feeling for excessive play.	
Edger Conveyor Assembly	3	<u>Edger Conveyor Assembly</u> a. Examine conveyor belt and lacing for damage and wear. Feel for proper belt tension. b. Lift the conveyor belt and spin each return roller to determine freedom of rotation. c. Examine all drive, idler, and take-up pulley bearings. Look for fretting corrosion and other signs of bearing failure. d. Open the pulley guard covering the roller channel assembly pulleys and examine the drive belts and pulleys for wear and damage. Wrench test all pulley set screws. e. Examine all roller channel assembly flanged bearings. Look for wear, dirt, and fretting corrosion in the bearings and feel for binding or looseness through the bearing shafts. f. Examine rubberized surfaces of all knockdown rollers in the roller channel assembly. Look for wear or damage.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:	
Type of Activity: Inspection			2-EF-1M	
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A	
Component	Item	Instructions	Frequency 720-800 Operating Hours	
Edger Convey Assembly (Cont'd)	4	<u>Flats Extractor</u> a. Check for proper adjustment of the flats extractor. Check that the contact or "nipping" point of the flats extractor wheels is set at 5-3/4 inches above the edger conveyor belt surface. b. Loosen and raise belt guard on flats extractor unit and look for wear or damage to the belt and sheaves. Feel for proper belt tension. Examine the nip roller rubber wheels for surface damage and misalignment. c. Examine flats extractor pillow block bearings and shaft assemblies. Look for wear, dirt, and fretting corrosion in bearings. Feel shafts for binding or looseness through bearings. Examine bearing stops/collars for correct positioning. d. Wrench test flats extractor set screws and pillow block cap screws for tightness. Reposition belt guard and tighten retaining fastener.		
	Inclined Conveyor Assembly	5	<u>Inclined Conveyor.</u> Examine conveyor belt drive. Remove the belt guard and examine the pulleys and belt for wear, proper tension, and alignment. Wrench test set screws and feel shaft keys for tightness.	
		6	<u>Metering Wheels.</u> Examine metering wheels assembly for damage and misalignment. Check drive belt for proper tension.	
	Electrical Wiring and Control Panels	7	<u>Wiring and Control Panels</u> a. Examine machine general wiring for chafing of insulation and improper or faulty terminal connections. See that connecting cables are off the floor and clamped to frame. b. Examine electrical control panels. Blow dirt and dust off exterior of panel. Open panel door. Blow dirt and dust from interior of panel. Look for burnt or damaged components, bare or burnt wiring and loose connections. Be sure that plug-in relays are tight in sockets and that fuses are tight in sockets. Close panel.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection			2-EF-1M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 720-800 Operating Hours
Electrical Wiring and Control Panels (Cont'd)		c. Examine and clean ratiotrol motor and control. Blow dirt and dust off exterior of panel. See that toggle switch is OFF and open panel door. Blow dirt and dust from interior of panel and louvers. Look for burnt or damaged components, bare or burnt wiring and loose terminal connections. Feel to see that fuses are tightly clamped in clips. Close panel. Return toggle switch to ON position.	
General	8	Turn Electrical Disconnect switch ON and start Edger Feeder 500. Listen for unusual noises, feel for excessive vibrations and look for slippage of V-belts.	
Edger Conveyor Assembly	9	<u>Edger Conveyor Assembly</u> a. Observe Edger Conveyor Belt for tracking and look for belt damage. Listen for unusual noises. b. Observe running actions of the flats extractor assembly. Look for extractor wheel bounce (indicating out-of-round rubbers) and slippage of V-belt. c. Observe running action of the roller channel assembly. Look for eccentricity or "wobble" of knock-down roller pulleys and shafts and slippage of belts.	
Fine Cull Assembly	10	<u>Fine Cull Assembly</u> a. Listen for unusual noises, feel motors and gear housings for excessive vibration, and look and listen for slippage of belts on pulleys and sheaves. b. Observe the fine cull unit conveyor belt for proper tracking.	
Inclined Conveyor Assembly	11	<u>Inclined Conveyor</u> a. Test the ratiotrol controller. Operate the speed control through the full range of belt speeds. Observe change in belt speed with changes in control settings. b. Examine inclined conveyor belt with unit running. Look for belt damage, excessive wear, proper tracking and evidence of belt slippage.	
Vibrator Hopper	12	<u>Vibrator Hopper</u> . Examine the vibrator hopper photoelectric control system. Inspect for proper alignment of the two photoelectric scanners and reflective discs mounted on the vibrator	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Inspection		2-EF-1M	
System:	Letter Mail Preparation	Equipment:	Edger Feeder
		Type:	Model 500 and 500A
Component	Item	Instructions	Frequency 720-800 Operating Hours
Vibrator Hopper (Cont'd)		frame. Check for proper operation of automatic control circuits. When both light beams are simultaneously interrupted, the equipment feeding the hopper, usually a C89 conveyor, will stop after a preset time interval. When either light beam becomes unblocked, the feeding equipment will restart after a preset time interval, both the ON and OFF mode	
Edger Feeder	13	<u>Edger Feeder</u> a. Shut down the equipment and turn the motor controller/ electrical disconnect switch OFF. b. Stop Inclined Conveyor Belt in a position where lacing can be examined. Examine conveyor belt and lacing for damage and wear. Feel belt for proper tension. c. Close Shingler Feeder Assembly access grilles. d. Reinstall belt guards on Fine Cull Assembly. e. Replace Edger Conveyor and Roller Channel guards and covers. f. Reinstall the Inclined Conveyor Assembly belt guard.	
	14	<u>Clean-Up</u> . Look to be sure all maintenance equipment is removed from work area. Initiate necessary work orders and reports to effect schedules repairs. Report serious discrepancies to Maintenance Foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number: 2-EF-IM
Type of Activity: Inspection			
System:	Letter Mail Preparation	Equipment:	Edger Feeder
		Type:	Model 500 and 500A
Item	Performance Time Criteria	Notes and Additional Information	Frequency 720-800 Operating Hours
1.	Safety	5 minutes	
2.	Shingler Feeder	12 minutes	
3.	Edger Conveyor Assembly	20 minutes	
4.	Flats Extractor	8 minutes	
5.	Inclined Conveyor	5 minutes	
6.	Metering Wheels	1 minute	
7.	Wiring and Control Panels	15 minutes	
8.	General	1 minute	
9.	Edger Conveyor Assembly	10 minutes	
10.	Fine Cull Assembly	3 minutes	
11.	Inclined Conveyor	10 minutes	
12.	Vibrator Hopper	4 minutes	
13.	Edger Feeder	6 minutes	
14.	Clean-Up	5 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance		3-EF-1M	
System: Letter Mail Preparation	Equipment: Edger Feeder	Type: Model 500 and 500A	
Component	Item	Instructions	Frequency Daily
General	1	<u>Safety.</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Edger Conveyor Assembly	2	<u>Edger Conveyor.</u> a. Using compressed air, blow dirt and debris from edger conveyor trough and chute areas. b. Using a clean lint-free cloth or lens tissue, wipe the lens of the roller channel jam detecting photocell and the surface of its reflecting disc. c. Check edger conveyor belt tension. Examine belt and lacing for damage.	
Vibrator Hopper Assembly	3	<u>Vibrator Hopper.</u> a. Check vibrator hopper compressed air system. Look to be sure air pressure is set at 40 psi. Open filter drain cock to drain accumulated moisture, then close it. Look for proper oil level in lubricator. b. Using a clean lint-free cloth or lens tissue, wipe the vibrator hopper mail level photocell lenses and the disc surfaces.	
General System Operation	4	<u>General System Operation.</u> a. Turn motor controller/electrical disconnect switch ON and start equipment. Listen for unusual noises, look and listen for slippage of belts, and look for proper tracking of belt- ing on the edger conveyor, fine cull unit and inclined conveyor, as applicable.	
General	5	Shut down the equipment and turn the motor controller/electrical disconnect switch OFF.	
Clean-Up	6	<u>Clean-Up.</u> Look to be sure all maintenance equipment is removed from work area. Initiate necessary work orders and reports to effect scheduled repairs. Report serious discrepancies to Maintenance Foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-1M
System:		Equipment:	Type:
Letter Mail Preparation		Edger Feeder	Model 500 and 500A
Item	Performance Time Criteria	Notes and Additional Information	Frequency
1	Safety	5 minutes	Daily
2	Edger Conveyor	2 minutes	
3	Vibrator Hopper	3 minutes	
4	General	3 minutes	
5	General	1 minute	
6	Clean-Up	5 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
General	1	<u>Safety.</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Shingler Feeder Assembly	2	<u>Top Deck Assembly.</u> Visually check top deck assembly shingler belts and idler roller rubber for excessive wear and damage.	
	3	<u>No. 2 Arm Assembly.</u> Check and adjust No. 2 Arm Assembly. Check operation and adjustment as follows: <ul style="list-style-type: none"> a. The arm should rotate freely without binding. b. Clearance between the toe of the pivoting shoe and the vertical feed belt surface is 1/16 to 1/8 inch. c. Clearance between the shoe and the vertical feed belt is 1/2 inch, at the pivot point of the shoe. d. The No. 2 arm switch should actuate when the clearance between the shoe and the vertical feed belt is 1-1/4 to 1-1/2 inches, at the pivot point of the shoe. e. Adjust as necessary using the following procedures: <ul style="list-style-type: none"> (1) Free Rotation. Loosen stop nut securing arm cap to pivot shaft until cap spins freely. (2) Shoe Clearance. Loosen lock nut on stop post and adjust limiting screw for 1/2 inch clearance between the pivot point of the shoe and the vertical feed belt surface. Loosen jam nut and adjust for 1/16 to 1/8 inch clearance between toe of shoe and vertical feed belt. Tighten jam nut. (3) Spring Tension. Loosen pivot shaft mounting screw (beneath mounting plate). Turn knurled tension adjustment disc until a four to five-ounce force is required to move the arm. This force value is measured by attaching a pull-type spring gauge to the pivoting shoe limit screw bracket. Loosen screws securing tension spring bracket and adjust until 1-1/2 to 2 ounces of force is required to pivot the shoe. This force value is measured by attaching a pull-type spring gauge at the toe of the shoe. 	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
Shinger Feeder Assembly (Cont'd)	3	No. 2 Arm Assembly (Cont'd) (4) Switch Actuation Adjustment. Loosen screws holding switch channel to switch mounting angle. Slide switch and channel assembly up or down to obtain actuation at required gap of 1-1/4 to 1-1/2 inches. Tighten screws.	
	4	No. 1 Gate Assembly. Check and adjust No. 1 Gate Assembly. Check for 1/4 inch clearance between gate and shingler belts and that switch actuates when gate is 3/8 inch from belts. Check that split-hub clamp on gate spring rod is clamped at center of rod. Adjust as necessary using these procedures: a. Gate Clearance. Loosen jam nut on limit screw post. Adjust limit screw to obtain 1/4 inch clearance between gate and shingler belts. Tighten jam nut. b. Spring Tension Setting. Loosen set screw on split-hub clamp and position to center of rod. Tighten set screw. c. Switch Actuation Adjustment. Loosen jam nut on switch actuating arm. Adjust set screw so that switch actuates when gate is 3/8 inch from shingler belts. Tighten jam nut.	
	5	No. 2 Gate Assembly. Check and adjust No. 2 Gate Assembly. Check that clearance between gate and shingler belts is 1/2 inch. Check that gate has been fixed so it does not move. Adjust as necessary using these procedures. a. Gate Clearance. Loosen jam nut on gate assembly limit screw post and adjust limit screw to obtain 1/2 inch clearance between gate and shingler belts. Tighten jam nut. b. Spring Setting. Loosen set screw in split-hub clamp and position clamp to compress spring completely. Tighten clamp in position.	
	6	No. 3 Gate Assembly. Check that clearance between gate and shingler belts is 1/8 inch and that spring clamp is set to center of spring loading rod. Adjust as necessary using these procedures: a. Gate Clearance. Loosen jam nut on limit screw post and adjust limit screw to obtain 1/8 inch clearance between gate and shingler belts. Tighten jam nut. b. Spring Setting. Loosen set screw in split-hub and position hub to center of spring loading rod. Tighten set screw.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System:	Letter Mail Preparation	Equipment:	Edger Feeder
		Type:	Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
Shingler Feeder Assembly (Cont'd)	7	<u>Shingler Assembly.</u> Open access panels on shingler assembly and using compressed air, blow off all underneath areas, pulleys, motors, bearings, etc. Look for mail, rubber bands and facing slips, and other debris that may have fallen into lower shingler areas. Blow off upper deck areas and close access panels.	
	8	<u>Flats Extractor.</u> Check that the contact or "nipping" point of the flats extractor wheels is set at 5-3/4 inches above the edger conveyor belt surface. Adjust as necessary using these procedures <u>Flats Extractor Height Adjustment.</u> Loosen set screws in driven sheave and four shaft collars on wheel shafts. Adjust shafts up or down to set contact point of flats extractor wheel at 5-3/4 inches above edger conveyor.	
Edger Conveyor Assembly	9	<u>Edger Conveyor.</u> a. Using compressed air, blow dirt and debris from edger conveyor trough and chute areas. b. Using a clean lint-free cloth or lens tissue, wipe the lens of the roller channel jam detecting photocell and the surface of its reflecting disc. c. Check edger conveyor belt tension. Examine belt and lacing for damage.	
Fine Cull Assembly	10	<u>Gauge Drum.</u> a. While rotating gauge drum by hand, check to insure that "GO" gauge (1/4 inch thick) passes between gauge roller and fine cull belt across the full length of the gauge drum. Repeat using "NO-GO" gauge (5/16 inch thick) and insure that "NO-GO" gauge does not pass between gauge roller and belt. b. Gauge Drum Height Adjustment. Loosen bearing mounting bolts and position gauge drum up or down as necessary so that "GO" gauge passes and "NO-GO" gauge is rejected. Tighten bolts. c. Without removing belt guards, feel drive motor V-belts for proper tension. Visually examine V-belts for damage and deterioration. d. Examine fine cull unit belt and lacing for damage. Check for proper belt tension.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
Fine Cull Assembly (Cont'd)	10	<u>Gauge Drum (Cont'd)</u> e. Examine gauge drum belting for damage, deterioration, and security. f. Remove rummage from debris tray under cull chute.	
Inclined Conveyor Assembly	11	<u>Inclined Conveyor.</u> a. Examine inclined conveyor belt and lacing for damage. Check for proper belt tension. b. After mail processing begins, check for excessive mail slippage on inclined belt. If excessive slippage is noted, follow the procedures below: (1) Check for proper clearance between vibrator hopper and inclined conveyor frame. (2) Remove possible glazing from belt surface following standard preventive maintenance cleaning procedures. (3) Reverse or replace conveyor belt if other procedures are unsuccessful.	
	12	<u>Metering Wheels.</u> Examine metering wheels assembly for damage and misalignment. Check drive belt for proper tension.	
Vibrator Hopper Assembly	13	<u>Vibrator Hopper.</u> a. Check vibrator hopper compressed air system. Look to be sure air pressure is set at 40 psi. Open filter drain cock to drain accumulated moisture, then close it. Look for proper oil level in lubricator. b. Using a clean lint-free cloth or lens tissue, wipe the vibrator hopper mail level photocell lenses and the disc surfaces.	
General System Operation	14	<u>General System Operation.</u> a. Turn motor controller/electrical disconnect switch ON and start equipment. Listen for unusual noises, look and listen for slippage of belts, and look for proper tracking of belting on the edger conveyor, fine cull unit and inclined conveyor, as applicable.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
Shingle Feeder Assembly	15	<p><u>Idler Roller Assembly.</u> Check and adjust idler roller assembly. With machine running, visually check for 1/16 inch gap between idler roller and shingler belts. Adjust as necessary using procedure below:</p> <p style="padding-left: 40px;">Loosen adjustment plate screw and adjust plate position to obtain 1/16 inch clearance between roller and shingler belts. Tighten screw.</p>	
Edger Conveyor Assembly	16	<p><u>Edger Conveyor Jam Detector.</u> Check and adjust edger conveyor jam detector with machine running, block jam detector photocell light beam and observe that inclined belt stops two seconds after beam is blocked. Adjust as necessary using the following procedures:</p> <p style="padding-left: 40px;"><u>Jam Detector Time Delay Adjustment.</u> Remove detector photocell unit from mounting bracket and remove lens and cover. Adjust potentiometer in photocell unit to increase or decrease time delay, as appropriate. Re-assemble photocell and reinstall on mounting bracket. Block light beam with machine running and recheck for two-second delay. Repeat as necessary.</p>	
Inclined Conveyor Assembly	17	<p><u>Metering Wheels. Operational Checks.</u> These checks are made with the machine running. Check for binding in metering wheel pivot shaft by raising metering wheels two inches off inclined belt. Check that all metering wheels are positioned close to, but not touching, inclined belt surface. When metering wheels are raised, inclined belt should stop for one second, move approximately one foot, and repeat this inching mode operation until wheels are lowered. Adjust as necessary using the following procedures:</p> <ol style="list-style-type: none"> a. <u>Pivot Shaft Adjustment.</u> Loosen self-locking nuts on rod-end bearings 1/2 turn and align bearing. b. <u>Clearance Adjustment.</u> With machine running, adjust lower limit screws on each side of metering wheel frame to position outside metering wheels as close to belt as possible without touching. c. <u>Inching Mode Switch Adjustment.</u> With machine running, adjust switch actuator screw until inclined belt goes into "inching" mode. Then adjust screw until inclined belt just switches back to "continuous" mode and rotate screw an additional 1/4 turn. d. <u>Time Delay Relay Adjustments.</u> With machine running, raise and block metering wheel frame to place inclined conveyor 	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 20-30 Operating Hours
Inclined Conveyor Assembly (Cont'd)	17	<p><u>Metering Wheels (Cont'd)</u></p> <p>in "inching" mode. While observing action of inclined belt, adjust TDR2 for one second "stop" time of the belt, then adjust TDR3 for approximately one foot of belt movement during "run" time.</p>	
	18	<p><u>Feed Regulator.</u> Check that feed regulator counterweight is at the center of the counter-balance arm. With machine running, check for 1/16 inch clearance between lowest fork element and inclined conveyor belt surface and that switch opens and vibrator stops when feed regulator forks are raised more than 3/16 inch above belt surface. Raise and lower fork assembly several times and check that vibrator starts and stops reliably. Adjust as necessary using procedures below:</p> <p>a. Counterweight Adjustment. Loosen set screw in counterweight, position counterweight to center of balance arm and tighten set screw.</p> <p>b. Fork Clearance Adjustment. Adjust feed regulator fork limit screw for 1/16 inch clearance between lowest fork element and inclined belt surface.</p> <p>c. Feed Regulator Switch Adjustment. Adjust switch actuator screw so that switch actuates when forks are raised 3/16 inch off belt surface.</p>	
General	19	Shut down the equipment and turn the motor controller/electrical disconnect switch OFF.	
Clean-Up	20	<u>Clean-Up.</u> Look to be sure all maintenance equipment is removed from work area. Initiate necessary work orders and reports to effect scheduled repairs. Report serious discrepancies to Maintenance Foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number:
Type of Activity: Routine Preventive Maintenance			3-EF-2M
System:	Equipment:	Type:	
Letter Mail Preparation	Edger Feeder	Model 500 and 500A	
Item	Performance Time Criteria	Notes and Additional Information	Frequency 20-30 Operating Hours
1	Safety	5 minutes	
2	Top Deck Assembly	2 minutes	
3	No. 2 Arm Assembly	2 minutes	
4	No. 1 Gate Assembly	2 minutes	
5	No. 2 Gate Assembly	1 minute	
6	No. 3 Gate Assembly	1 minute	
7	Shingler Assembly	5 minutes	
8	Flats Extractor	1 minute	
9	Edger Conveyor	2 minutes	
10	Gauge Drum	3 minutes	
11	Inclined Conveyor	5 minutes	
12	Metering Wheels	1 minute	
13	Vibrator Hopper	3 minutes	
14	General	3 minutes	
15	Idler Roller Assembly	1 minute	
16	Edger Conveyor Jam Detector	1 minute	
17	Metering Wheels	2 minutes	
18	Feed Regulator	2 minutes	
19	General	1 minute	
20	Clean-Up	5 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-1M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 720-800 Operating Hours
Safety	1	<u>Safety</u> . Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Shingler Feeder	2	<u>Shingler Feeder Assembly</u> . Open access panels on Shingler Assembly and using compressed air blow off all underneath areas, pulleys, motors, bearings, etc. Look for mail, rubber bands, facing slips, and other debris that may have fallen into lower shingler areas. Wipe dirt and foreign material from exterior of bearings and lubricate fittings located under the shingler top deck. Wipe excess lubricant from bearings and fittings. (LUBRICANT: _____) Blow off upper deck areas and close access panels.	
Edger Conveyor Assembly	3	<u>Edger Conveyor Assembly</u> a. Wipe dirt and foreign matter from belt return rollers and take-away pulley frame and bearings. Wipe off grease fittings and lubricate bearings. Wipe away excess lubricant. (LUBRICANT: _____) b. Unfasten and open the belt guard covering the flats extractor drive assembly. Wipe dirt and foreign material from exterior of flats extractor motor, drive pulleys, pillow block areas, and extractor wheels. Close and refasten the belt guard.	
Fine Cull Assembly	4	<u>Fine Cull Assembly</u> . Wipe dirt and foreign matter from exterior surfaces of the gauge drum and conveyor belt drive motor, pulleys, and pillow block bearings. Wipe off grease fittings and lubricate bearings. Wipe away excess lubricant. (LUBRICANT: _____)	
Inclined Conveyor Assembly	5	<u>Inclined Conveyor Assembly</u> a. Remove plug and check oil level in the gear reducer on the inclined conveyor. Remove filler cap and add lubricant as necessary. Replace oil level plug. Clean the air vent in the filler cap and replace. (LUBRICANT: _____) b. Wipe dirt and foreign matter from drive roller, return roller, and take-up pulley bearings. Wipe off grease fittings and lubricate bearings. Wipe away excess lubricant. (LUBRICANT: _____)	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-1M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 720-800 Operating Hours
Inclined Conveyor Assembly (Cont'd)	5	<u>Inclined Conveyor Assembly (Cont'd)</u> c. Using a vacuum cleaner or compressed air hose, clean the gripping surface of the inclined conveyor belt. Spot clean the surface as required using a non-flammable, non-toxic solvent to remove gummy residue and follow by scrubbing with a brush, using a detergent and water solution.	
	6	<u>Metering Wheels.</u> Wipe dirt and foreign matter from exterior surfaces of the metering wheels assembly motor and reducer. Check lubricant level and add lubricant if necessary to reservoir on the reducer motor. (LUBRICANT: _____)	
	Clean-Up	7 <u>Clean-Up.</u> Look to be sure all maintenance equipment is removed from work area. Initiate necessary work orders and reports to effect scheduled repairs. Report serious discrepancies to Maintenance Foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-1M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Item	Performance Time Criteria	Notes and Additional Information	Frequency 720-800 Operating Hours
1	Safety	5 minutes	
2	Shingler Feeder Assembly	10 minutes	
3	Edger Conveyor Assembly	4 minutes	
4	Fine Cull Assembly	3 minutes	
5	Inclined Conveyor Assembly	10 minutes	
6	Metering Wheels	2 minutes	
7	Clean-Up	5 minutes	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 1440-1600 Operating Hours
Safety	1	<u>Safety.</u> Comply with all safety precautions. Keep machine circuit breaker OFF except when operations must be performed with equipment running. Report serious deficiencies to supervisor immediately upon detection. Where air pressure is required for cleaning, use a low pressure (30 psi or less) air source. Eye protection (goggles or face masks) must be used when using compressed air for cleaning.	
Shingler Feeder Assembly	2	<u>Shingler Feeder Assembly.</u> Open access panels on Shingler Assembly and using compressed air blow off all underneath areas, pulleys, motors, bearings, etc. Look for mail, rubber bands, facing slips, and other debris that may have fallen into lower shingler areas. Wipe dirt and foreign material from exterior of bearings and lubricate fittings located under the shingler top deck. Wipe excess lubricant from bearings and fittings. (LUBRICANT: _____) Blow off upper deck areas and close access panels.	
Edger Conveyor Assembly	3	<u>Edger Conveyor Assembly</u> a. Wipe dirt and foreign matter from belt return rollers and take-up pulley frame and bearings. Wipe off grease fittings and lubricate bearings. Wipe away excess lubricant. (LUBRICANT: _____) b. Unfasten and open the belt guard covering the flats extractor drive assembly. Wipe dirt and foreign material from exterior of flats extractor motor, drive pulleys, pillow block areas, and extractor wheels. Close and refasten the belt guard.	
Fine Cull Assembly	4	<u>Fine Cull Assembly.</u> Wipe dirt and foreign matter from exterior surfaces of the gauge drum and conveyor belt drive motors, pulleys, and pillow block bearings. Wipe off grease fittings and lubricate bearings. Wipe away excess lubricant. (LUBRICANT: _____)	
Inclined Conveyor Assembly	5	<u>Inclined Conveyor Assembly</u> a. Remove filler cap from gear reducer and clean air vent using a pipe cleaner or wire. Remove the level and drain plugs and drain old lubricant from gear case. Replace drain plug and add fresh lubricant to reducer until oil flows from the level plug opening. Replace level plug and filler cap and wipe exterior of motor and reducer to remove spillage and accumulated dirt. (LUBRICANT: _____)	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE A			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Component	Item	Instructions	Frequency 1440-1600 Operating Hours
Inclined Conveyor Assembly (Cont'd)	5	<u>Inclined Conveyor Assembly</u> (Cont'd) b. Remove the inclined conveyor belt and stretch it out on a flat surface. Spot clean as required using a non-flammable, non-toxic solvent and brush scrub the entire gripping surface using a detergent and water solution. Examine the drive roller lagging for wear and separation from roller. Wipe dirt and foreign matter from return and take-up rollers, and examine for damage and freedom of rotation. Reinstall belt with its top surface reversed to travel in the opposite direction, i.e., turn belt "end-for-end".	
	6	<u>Metering Wheels</u> . Wipe dirt and foreign matter from exterior surfaces of the metering wheels assembly motor and reducer. Check lubricant level and add lubricant if necessary to reservoir on the reducer motor. (LUBRICANT: _____)	
Air System	7	<u>Air System Components</u> . Wipe exterior surfaces of the air system components. Close the shut-off valve and remove the air filter bowl and lubricator reservoirs. Discard old lubricant. Wipe inside of filter bowl and lubricator reservoirs with a clean, lint-free cloth. Refill reservoir to proper oil level and reinstall on lubricators. Reinstall air filter bowl and open shut-off valve. (LUBRICANT: _____)	
Clean-Up	8	<u>Clean-Up</u> . Look to be sure all maintenance equipment is removed from work area. Initiate necessary work orders and reports to effect scheduled repairs. Report serious discrepancies to Maintenance Foreman.	

MASTER PREVENTIVE MAINTENANCE CHECKLIST — SIDE B			Checklist Number:
Type of Activity: Cleaning and Lubrication			4-EF-2M
System: Letter Mail Preparation		Equipment: Edger Feeder	Type: Model 500 and 500A
Item	Performance Time Criteria	Notes and Additional Information	Frequency 1440-1600 Operating Hours
1	Safety	5 minutes	
2	Shingler Feeder Assembly	10 minutes	
3	Edger Conveyor Assembly	4 minutes	
4	Fine Cull Assembly	3 minutes	
5	Inclined Conveyor Assembly	50 minutes	
6	Metering Wheels	2 minutes	
7	Air System Components	5 minutes	
8	Clean-Up	5 minutes	

TABLE 1
 MAINTENANCE STAFFING *
 EDGER FEEDER MODEL 500

HOURS OPERATED PER YEAR	PREVENTIVE MAINTENANCE HOURS/YEAR	REPAIR MAINTENANCE HOURS/YEAR	NON-PRODUCTIVE HOURS/YEAR	TOTAL MAINTENANCE HOURS/YEAR	MAINTENANCE PERSONNEL MEN/MACHINE
500	106	53	16	175	.099
600	109	54	16	179	.101
700	111	55	17	183	.103
800	116	58	17	191	.108
900	119	59	18	196	.111
1000	121	60	18	199	.113
1100	124	62	19	205	.116
1200	126	63	19	208	.118
1300	129	64	19	212	.120
1400	131	65	20	216	.122
1500	137	68	21	226	.128
1600	139	69	21	229	.130
1700	142	71	21	234	.132
1800	144	72	22	238	.135
1900	147	73	22	242	.137
2000	149	74	22	245	.139
2100	152	76	23	251	.142
2200	157	78	24	259	.146
2300	159	79	24	262	.148
2400	162	81	24	267	.151
2500	164	82	25	272	.154
2600	167	83	25	275	.156
2700	169	84	25	278	.157
2800	172	86	26	284	.161
2900	178	89	27	294	.166
3000	180	90	27	297	.168

*For purpose of calculating PM criteria, a six-day operation is assumed for all machines. To obtain Total Maintenance Hours/Year for machines operating five or seven days per week, subtract 26 hours from the Total Hours/Year for a five-day operation and add 26 hours for a seven-day operation.