MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE

Maintenance Management Order

SUBJECT: Operational and Preventive Maintenance Guidelines for Parcel Sorting Machine (Carousel w/ PDS) Using eCBM

DATE: June 20, 2024

TO: All PSM_CB Sites

PUB NO: MMO-094-22
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This Maintenance Management Order (MMO) **supersedes MMO-021-17 and MMO-081-12** and provides Operational and Preventive Maintenance Guidelines for the Parcel Sorting Machine (PSM) (Carousel with Parcel Detection System (PDS)). This bulletin applies to Acronym PSM, Class Code CB.

The workhours indicated in the workload estimate (Attachment 1) are based on 17-run-hours per day, 52 million mailpieces processed per year, and reflect the maximum annual workhours required to maintain each system. Actual workhour requirements and the frequency of tasks are dependent on run time, pieces processed, and machine configuration. Therefore, PM workhour requirements will vary day-to-day based on site-specific machine utilization and may require more than one employee to complete PM tasks and repairs during the Maintenance Window. Management may modify task frequencies to address local conditions.

The minimum maintenance skill level required to perform each task is included in the Minimum Skill Level column of each checklist. This does not preclude higher level bargaining unit employees from performing any of this work.

Maintenance Managers are to use these preventive maintenance guidelines when preparing the route sheets for local maintenance personnel. It is the responsibility of each Maintenance Manager to ensure all WARNINGS, CAUTIONS, and NOTES are included with each applicable task as part of the preparation of any local route sheets.

PM guidelines provide maintenance employees with the recommended task-based maintenance activities. The electronic Conditioned Based Maintenance (eCBM) is an abbreviated task list that represents a portion of the PM checklist. The complete master PM checklist must be accessible to all maintenance employees when performing PM and eCBM task-based maintenance activities.

WARNING

Various products requiring Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS for appropriate personal protective equipment.

WARNING

The use of compressed or blown air is prohibited. An alternative cleaning method such as a HEPA filtered vacuum cleaner, a damp rag, lint-free cloth, or brush must be used in place of compressed or blown air.

WARNING

Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO for appropriate EWP PPE and barricade requirements.

For questions or comments concerning this bulletin contact the MTSC HelpDesk, either online at **MTSC**>**HELPDESK**>**Create/Update Tickets** or call (800) 366-4123.

Frederick L. Jackson III
Executive Manager
Maintenance Technical Support Center
Asset Maintenance Planning, Performance, and Support

Attachments
1. Summary of Workload Estimate For PSM System
2. PSM_CB Master Checklist 03-PSM-CB-001-M – Preventive Maintenance (PM)
3. PSM_CB Master Checklist 09-PSM-CB-001-M – Operational Maintenance (OM)

ATTACHMENT 1

SUMMARY WORKLOAD ESTIMATE

FOR PSM SYSTEM

Site	PSM #	Routine Servicing per Machine (Hrs/Yr)	Repair Time per Machine (Hrs/yr) *	Routine Servicing + Repair Time (Hrs/Yr)	Non-Productive Time per Machine (Hrs/yr) **	Total Servicing per Machine (Hrs/Yr)	Operational Maintenance + Total Servicing		
							1 Tour Hrs/Yr OpM x 1	2 Tours Hrs/Yr OpM x 2	3 Tours Hrs/Yr OpM x 2.5
Atlanta	3	477.34	143.20	620.54	62.05	682.60	1,621.72	2,560.84	3,030.40
	4	430.60	129.18	559.78	55.98	615.76	1,300.08	1,984.40	2,326.56
Cincinnati	3	555.30	166.59	721.89	72.19	794.08	1,627.64	2,461.20	2,877.98
	4	561.61	168.48	730.09	73.01	803.10	1,658.50	2,513.90	2,941.60
Dallas	1	488.08	146.42	634.50	63.45	697.95	1,757.19	2,816.43	3,346.05
	3	507.34	152.20	659.54	65.95	725.50	1,573.62	2,421.74	2,845.80
	4	507.75	152.33	660.08	66.01	726.08	1,770.76	2,815.44	3,337.78
Denver	3	431.86	129.56	561.42	56.14	617.56	1,305.52	1,993.48	2,337.46
	4	430.18	129.05	559.23	55.92	615.16	1,299.48	1,983.80	2,325.96
Des Moines	1	580.36	174.11	754.47	75.45	829.91	1,583.39	2,336.87	2,713.61
	3	385.02	115.51	500.53	50.05	550.58	1,180.30	1,810.02	2,124.88
	4	385.02	115.51	500.53	50.05	550.58	1,180.30	1,810.02	2,124.88
Detroit	3	423.22	126.97	550.19	55.02	605.20	1,467.88	2,330.56	2,761.90
	4	422.46	126.74	549.20	54.92	604.12	1,466.80	2,329.48	2,760.82
Greensboro	1	543.02	162.91	705.93	70.59	776.52	1,613.72	2,450.92	2,869.52
	2	556.66	167.00	723.66	72.37	796.02	1,636.86	2,477.70	2,898.12
	3	427.42	128.23	555.65	55.56	611.21	1,386.53	2,161.85	2,549.51
	4	427.02	128.11	555.13	55.51	610.64	1,378.68	2,146.72	2,530.74
Jacksonville	3	899.59	269.88	1169.47	116.95	1286.41	2,596.81	3,907.21	4,562.41
	4	915.41	274.62	1190.03	119.00	1309.04	2,615.80	3,922.56	4,575.94
Kansas City	3	337.44	101.23	438.67	43.87	482.54	1,054.02	1,625.50	1,911.24
	4	336.95	101.09	438.04	43.80	481.84	1,056.96	1,632.08	1,919.64
Los Angeles	3	357.31	107.19	464.50	46.45	510.95	1,162.51	1,814.07	2,139.85
	4	359.43	107.83	467.26	46.73	513.98	1,172.82	1,831.66	2,161.08
Memphis	3	513.26	153.98	667.24	66.72	733.96	1,491.08	2,248.20	2,626.76
	4	516.30	154.89	671.19	67.12	738.31	1,506.35	2,274.39	2,658.41
Minn-St Paul	3	427.68	128.30	555.98	55.60	611.58	1,284.98	1,958.38	2,295.08
	4	427.68	128.30	555.98	55.60	611.58	1,284.98	1,958.38	2,295.08
Philadelphia	3	361.13	108.34	469.47	46.95	516.42	1,328.14	2,139.86	2,545.72
	4	380.49	114.15	494.64	49.46	544.10	1,330.34	2,116.58	2,509.70
Pittsburgh	1	490.74	147.22	637.96	63.80	701.76	1,761.00	2,820.24	3,349.86
	2	489.19	146.76	635.95	63.59	699.54	1,758.78	2,818.02	3,347.64
	3	507.86	152.36	660.22	66.02	726.24	1,683.56	2,640.88	3,119.54
	4	509.54	152.86	662.40	66.24	728.64	1,638.64	2,548.64	3,003.64
BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK

Site	PSM #	Routine Servicing per Machine (Hrs/Yr)	Repair Time per Machine (Hrs/yr) *	Routine Servicing + Repair Time (Hrs/Yr)	Non-Productive Time per Machine (Hrs/yr) **	Total Servicing per Machine (Hrs/Yr)	Operational Maintenance + Total Servicing		
							1 Tour Hrs/Yr OpM x 1	2 Tours Hrs/Yr OpM x 2	3 Tours Hrs/Yr OpM x 2.5
St. Louis	3	342.85	102.86	445.71	44.57	490.28	1,079.96	1,669.64	1,964.48
	4	344.96	103.49	448.45	44.84	493.29	1,090.25	1,687.21	1,985.69
San Francisco	3	382.92	114.88	497.80	49.78	547.58	1,170.02	1,792.46	2,103.68
	4	382.92	114.88	497.80	49.78	547.58	1,170.02	1,792.46	2,103.68
Seattle	1	546.52	163.96	710.48	71.05	781.52	1,622.36	2,463.20	2,883.62
	2	562.99	168.90	731.89	73.19	805.08	1,653.20	2,501.32	2,925.38
	3	384.26	115.28	499.54	49.95	549.49	1,179.21	1,808.93	2,123.79
	4	382.99	114.90	497.89	49.79	547.68	1,170.12	1,792.56	2,103.78
Springfield	3	505.56	151.67	657.23	65.72	722.95	1,640.23	2,557.51	3,016.15
	4	504.78	151.43	656.21	65.62	721.84	1,733.76	2,745.68	3,251.64
Washington	3	381.99	114.60	496.59	49.66	546.25	1,671.01	2,795.77	3,358.15
	4	382.33	114.70	497.03	49.70	546.73	1,183.73	1,820.73	2,139.23

*** Repair maintenance estimates based on 30% of preventive maintenance.**

**** Based on 10% of total PM and repair.**

ATTACHMENT 2

PSM_CB MASTER CHECKLIST

03-PSM-CB-001-M

PREVENTIVE MAINTENANCE (PM)

Time Total: (416.92) minutes

U.S. Postal Service Maintenance Checklist	IDENTIFICATION															
	WORK CODE		EQUIPMENT ACRONYM								CLASS CODE		NUMBER			TYPE
	0	3	P	S	M						C	B	0	0	1	M
Equipment Nomenclature Parcel Sorting Machine	Equipment Model										Bulletin Filename mm20106		Occurrence			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
SAFETY STATEMENT	1.	**COMPLY WITH ALL SAFETY PRECAUTIONS.** Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Check for suspicious dust or unusual debris. If any unusual substance is found, notify supervisor prior to proceeding with any further action on the equipment. **THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.** When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods cannot be used. Report safety deficiencies to your supervisor immediately upon detection. **WARNING: Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO or appropriate EWP PPE and barricade requirements.** **WARNING: Various products requiring Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS for appropriate personal protective equipment.**	1	All			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
SYSTEM:	2.	**Power Down and Lock Out Power.** **WARNING: Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO for appropriate EWP PPE and barricade requirements.** Power down the machine and lock out as prescribed by the current local lockout instructions providing lockout/restore procedures. * Multiplied by number of drive units.	3*	07		6500	
MAIL SEARCH	3.	**Check For Mail** **WARNING: Be cautious when working around or on equipment when power has been applied.** 1. Check under and around each induction station for loose mail. 2. Check induction platform for loose mail. Check under induction slide and check surrounding catwalks, screens, and crossovers. 3. Traverse accessible portions of transport checking for loose mail. Check all horizontal surfaces, turns, catwalks, screens, tray tippers, and discharge chutes. Check raceways, conduits, cable/ladder trays, and surrounding structural members. 4. Check turn platform for loose mail. Check around sprockets, tray straighteners, and surrounding catwalks, screens, and crossovers. 5. Check drive platform for loose mail. Check sprocket teeth and surrounding support structure, platform, catwalks, and screens. 6. Walk entire length under transport checking for loose mail. Check all horizontal surfaces, turns, tray tippers, discharge chutes, slides, and catch nets. Check raceways, conduits, cable/ladder trays, piping, and surrounding structural members. 7. Check that all equipment guards are in place. 8. Return all mail found during mail search to the proper mail path. 9. Report all deficiencies to your supervisor including any unusual amounts of loose mail found or any unretrievable mail requiring equipment lockout. * Multiplied by number of trays.	.2*	07		6500	
OILER:	4.	**Check Oiler Oil Level.** Check automatic oiler level. Add if required (OL-3) (if applicable).	5	07	110		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
PDS: SENSOR	5.	**Clean PDS Sensors** Clean PDS system as follows (PDS Manual 8.1.1): 1. Using a clean, soft cloth, clean PDS trigger sensor. **CAUTION: Using anything other than a feather duster or clean, dry, soft, lint-free cloth may result in damage to the PDS SICK Ruler.** 2. Using a clean feather duster or cloth, clean Sick Ruler Camera, and Laser lenses.	5	09	450		
WIPER DRAIN PAN:	6.	**Check Wiper and Drip Pan.** Check chain oil wipers and oil drip pan as follows (if applicable): **WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.** 1. Check chain oil wipers. 2. Drain and clean oil drip pan.	15	07	450		
CARRIAGE: CHAIN	7.	**Check Chain Tension.** Check the sorter chain tension. Tension chain as necessary.	60	09	1350		
DRIVE: REDUCER	8.	**Clean Reducer Oil Strainer.** Disassemble reducer oil strainer, clean, and reassemble. * Multiplied by number of drive units.	15*	09	450		
DRIVE: REDUCER	9.	**Check and Clean Motor and Reducer Housings.** Clean the motor and reducer housings to ensure that they are free from dirt accumulation. * Multiplied by number of drive units.	30*	07	2700		
DRIVE: REDUCER	10.	**Lubricate Reducer.** Check oil level and fill as needed. (Lubricant GL-5-EP.) * Multiplied by number of drive units.	15*	07	5500		
DRIVE: COUPLING	11.	**Lubricate Output Coupling.** Lubricate output coupling with GR-2-EP lubricant. *Multiplied by number of drive units.	5*	07	5500		
DRIVE: COUPLING	12.	**Wrench Test Output Coupling Bolts.** Wrench test mounting bolts on output coupling. * Multiplied by number of drive units.	5*	07	5500		

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
DRIVE: REDUCER	13.	**Clean and Lubricate Drive Shaft Bearing.** Clean and lubricate drive shaft bearing as follows: **WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.** 1. Wipe clean and lubricate the drive shaft bearing with (GR-2-EP) lubricant. 2. Lube until fresh lubricant appears at relief vent. 3. Clean off excess lubricant from bearing. * Multiplied by number of drive units.	6*	07	5500		
DRIVE: SPROCKET	14.	**Check And Clean Sprocket Teeth.** Check and clean sprocket teeth as follows: 1. Check sprocket teeth for damage. 2. Remove build-up of foreign material. 3. Check sprocket teeth mounting bolts. 4. Tighten, if required, SAE-8 bolts and lock nuts to 15 ft/lb. torque. * Multiplied by number of drive units.	30*	07	5500		
ENCODER:	15.	**Check Encoder Module.** Check sorter encoder module as follows: 1. Remove cover on encoder module, check for damage to belt. 2. Check top and bottom covers for damage, scuffs, gouging, strapping, cracking swells, or ply separation. 3. Check for build-up of foreign material on top and bottom belt surfaces. 4. Remove split cover where encoder shaft goes into bullwheel. 5. Verify four 1/4-20" hex-head cap-screw bolts are tightened to 76 in-lbs and securely fasten shaft to bullwheel. 6. Replace split cover and secure bolts to bullwheel. 7. Check motor encoder for damage and is secure to motor**.** 8. Return cover on encoder module. 9. Note any deficiencies, generate a work order, and report them to the supervisor**.**	20	09	5500		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
ENCODER: BEARING	16.	**Clean and Lubricate Bearing.** Clean and lubricate bearing as follows: **WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.** 1. Wipe clean and lubricate bearing on the encoder module drive shaft, located on top of the main drive sprocket. 2. Clean excess lubricant from bearing.	4	07	1350		
DISCHARGE: TRIPPER ASSEMBLY	17.	**Clean and Check Tripper Assembly.** Clean and check tripper assembly as follows: 1. Remove foreign material from tripper assembly, power cables, solenoids, and air hoses. 2. Examine air hose connectors and look for damaged air hoses. 3. Listen for air leaks. 4. Look for damage to electrical cable, solenoid valves, and connector. 5. Examine trippers for proper tipping position. 6. Wrench test all mounting bolts. Check for excess wear. 7. Examine bumpers for wear or damage. Rotate tripper roller for ease of rotation and wear or damage. 8. Look for damaged or worn linkage. 9. Check pivot points for ease of operation and cylinder mounting hardware. 10. Note any deficiencies, generate a work order, and report them to the supervisor. *Multiplied by number of discharge units.	4*	09	1350		
TRACK:	18.	**Check Track Sections.** Check track sections as follows: 1. Look for cracks or damage. 2. Look for missing wear strips (composite sorters only). 3. Look for uneven carriage travel through sections. 4. Inspect expansion joint for damage and uneven travel. 5. Inspect entrance and exit slip joints for damage. 6. Note any deficiencies, generate a work order, and report them to the supervisor.	20	09	1350		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
STRUCTURE:	19.	**Check Conduit and Wiring.** Check conduit and wiring as follows: 1. Check for visual signs of damage to conduit and wiring between control panel and motor panels, limit switches, photocells, and other control devices associated with this group panel. 2. Report deficiencies to your supervisor.	10*	07	2700		
ACCESS DOOR: MAINTENANCE	20.	**Clean and Check Limit Switch.** Clean and check limit switch as follows: 1. Remove dust from housing and tripper arm of maintenance access door track switch. 2. Look for broken, bent, cracked, or misaligned switch or actuator. 3. Check pivot points for ease of operation. 4. Wrench test switch mounting bolts for tightness. 5. Look for visual signs of damage to conduit and wiring. 6. Report deficiencies to your supervisor.	3	07	1350		
STRUCTURE:	21.	**Check Structure.** Check structure as follows: 1. Check for visual signs of damage to supporting and structural members of equipment, misalignment at joints between equipment sections, and loose connecting bolts. 2. Look and feel for loose anchor bolts, hanger rods, and tie rods. 3. Look for cracked or broken welds. 4. If composite track, check for broken or missing wear strip. 5. Report deficiencies to your supervisor.	40	07	2700		
CENTERING DEVICE:	22.	**Centering Device.** Check centering device as follows: 1. Check parcel centering device for mounting and loose hardware. 2. Check arm locations for proper clearance over trays and centering of parcels. 3. Note any deficiencies, generate a work order, and report them to the supervisor.	10	09	1350		
STATIC DEVICE:	23.	**Check Static Discharge Device.** 1. Check condition and contact of static discharge device. 2. Note any deficiencies, generate a work order, and report them to the supervisor.	5	09	1350		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
TRAY STABILIZER:	24.	**Check Tray Stabilizer.** 1. Check tray stabilization bar through induction areas for mounting, damage, and wear strip. - 1/2" clearance. 2. Note any deficiencies, generate a work order, and report them to the supervisor.	15	07	1350		
TRAY STRAIGHTENER:	25.	**Check Tray Straightener.** 1. Check tray straightener bar for mounting, damage, and wear strip - 1/2" clearance. 2. Note any deficiencies, generate a work order, and report them to the supervisor.	15	07	1350		
CLEANUP:	26.	**Clean Up.** Ensure all tools, lubricants, rags, etc., are removed from the work area. Report all deficiencies to your supervisor. **WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.**	3	All	110		
SYSTEM:	27.	**Restore Equipment to Service.** **WARNING: Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO for appropriate EWP PPE and barricade requirements.** **WARNING: Be cautious when working around or on equipment when power has been applied.** Restore equipment to service as prescribed by the current local procedure providing lockout/restore procedures. * Multiplied by number of drive units.	3*	All		6500	
SYSTEM:	28.	**Start Equipment.** **WARNING: Be cautious when working around or on equipment when power has been applied.** Perform normal start-up procedures as follows: 1. Start or preset equipment. 2. Check for proper operation. Start equipment and check warning indicators for properly lit warning lights, bells and / or horns sounding correctly.	3*	07	110		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
DRIVE REDUCER:	29.	**Sorter Reducer Strainer.** Turn sorter reducer strainer handle one full turn in either direction to scrape strainer plates. * Multiplied by number of drive units.	3*	07	110		
DRIVE REDUCER:	30.	**Check Reducer Oil pressure:** Record reducer oil pressure. If below 12 psi, report to supervisor immediately. * Multiplied by number of drive units.	3*	07	110		
DRIVE:	31.	**Check Motor and Gear Housing.** Check motor and gear housing as follows: 1. Use the ultrasonic detector with stethoscope probe to check motor and gear housings to detect for excessive vibration and noise. 2. Use the noncontact infrared thermometer to check for excessive heat on the motor and reducer. *.Multiplied by number of drive units.	6*	09	1350		
DRIVE BRAKE:	32.	**Check Brake:** Check brake as follows: 1. Observe effectiveness of brake. 2. Check braking action on motor. 3. Listen for noisy brake operation. If applicable (pneumatic brake only) 1. Check all airlines and brake parts for leaks. 2. Check for proper pressure (75-95PSIG). * Multiplied by number of drive units.	8*	09	1350		
DRIVE COUPLING:	33.	**Check Output Coupling.** Check output coupling for any misalignment of shafts. * Multiplied by number of drive units.	2*	09	1350		
TRAY STRAIGHTENER:	34.	**Check Tray Straightener.** Check tray straightener as follows: 1. Observe carriages at the tray straightener for smooth operation and proper latching. 2. Check that the clearance between tray and straightener is 1/2". * Multiplied by number of tray straighteners.	4*	09	1350		

Tasks marked with one asterisk after the time required are per unit tasks.
Tasks marked with two asterisks after the item number are critical tasks.

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
CARRIAGE:	35. **	**Check Chain / Carriage / Tray Assemblies.** Check Chain/Carriage/Tray assemblies as follows: 1. Look for proper chain lubrication (if applicable). 2. Cracked trays, missing bumpers, and damaged carriage wheels or centering wheel. 3. Check each tray for labels, stickers, paint, and other debris or markings that will cause interference with the PDS system. 4. Look for mail or debris caught in chain or between carriages. * Multiplied by number of trays.	0.13*	07	110		
PDS SENSOR	36.	**Check PDS System Trigger Photo Eye.** Inspect/check trigger photo eye for correct operation. Ensure that the photo eye changes state properly. 1. On the PDS GUI, click in the box labeled Diagnostic Pane. 2. In the Diagnostic Pane, click on the I/O tab. 3. Block and unblock the Trigger sensor and watch for the box labeled “Trigger” to flash.	5	09	110		
PDS: COMPUTER	37.	**Reboot PDS Computer.** Shut down and then reboot PDS computer (ref PDS Maintenance manual section 3.1.1).	5	10	110		
PDS: SENSOR	38. **	**Perform PDS Sensor Checks and Alignments.** **NOTE:** Sorter must be empty before performing the steps below. 1. Perform “Teach Function”. (ref. PDS O and M manual, section 3.6 Teach Function). 2. Perform the Maintenance test, “Belt Health Test” (ref. PDS O and M manual, section 4.4 Maintenance Tests) * Multiplied by number of trays.	.05*	10	450		
PDS: COMPUTER	39.	**Defragment PDS Sensor Computer.** Run the computer system defragment routine. 1. Using the mouse, click on the start Menu Icon. 2. Click on “All Programs” at the bottom of the menu screen. 3. Click on “Accessories”. 4. Click on “System Tools”. 5. Click on “Disk Defragmenter”. 6. In the Disk Defragmenter Screen, click on “Defragment”.	5	10	450		
PDS: PC CABINET	40.	**Clean Cabinet Filter.** Clean the filters located on the right and left sides of the PDS control cabinet.	4	07	450		

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
CARRIAGE	41.	**Check Carriage Assembly.** Check the condition the carriage assemblies as follows: **CAUTION: Some of the following tasks require that the machine be running. When working around or on equipment when power has been applied take precautions to prevent hair, clothing, tools, and test equipment from being caught in moving parts.** 1. Remove latch pins or hardware and lower removable track (maintenance access panel). 2. Check trays for cracks and rough edges. 3. Clean all dirt and build-up from carriage assembly and wheels. Jog as necessary. 4. Check all carriage wheels and centering wheel for damage such as gouges, cracks, flat spots, or inability to spin. Verify retaining rings are installed and not damaged. **NOTE:** An unloaded tray with a "NEW" Index Plate and Index Pin will have 4° positive angle towards center of tray. 5. With a 20lb weight on edge of tray, report Index Plate or Pin wear allowing a 4° or more deflection from "NEW" in either direction. a. Place 20lb weight at edge of tray. b. Use protractor to measure angle of tray on weighted side. c. Repeat for other side of tray. d. If measured angle is negative (away from center of tray), report as deficiency to supervisor. 6. Check front and rear carriage pins for damage. Damage could appear as slight hourglass shaped pins, wallowed out holes, cracks or splits in the pins. Verify pins are fully engaged. 7. Check carriage for cracks, warping, scarring, gouges, and missing mail catchers. 8. Check for damaged or missing bumpers and verify compression spring is in place. 9. When completed, close the track section and reinstall latch pins. 10. Report all deficiencies to your immediate supervisor. * Multiplied by number of Trays.	8*	07	1350		

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
CARRIAGE: CHAIN	42.	**Check Chain.** Observe chain (one complete revolution at slow speed) around one sprocket for indications of frozen or worn rollers, missing chain fasteners, and cracked or broken links. * Multiplied by number of Trays.	.04*	09	1350		
DRIVE: UNICO	43.	**Check UNICO Drive Cabinet.** **Check cabinet as follows:** 1. Clean or replace filter as needed. 2. Review fault history. 3. Review fault mask. 4. Report all masks to supervisor immediately. * Multiplied by number of drive units.	4*	09	1350		
SYSTEM: ESTOP	44.	**Verify Emergency Stop Timing Relay.** Verify relay set to OFF and timer times out after 3 seconds. * Multiplied by number of drive units.	3*	09	450		
SYSTEM ESTOPS	45. **	**Check Mushroom Head E-Stop on Unico Panel (On primary sorters and secondary sorters with dual drives this step will need to be completed at both Unico Panels).** **WARNING: Be cautious when working around or on equipment when power has been applied. Some of the following tasks require that the machine be running. Take precautions to prevent hair, clothing, tools, and test equipment from being caught in moving parts.** 1. Start sorter. 2. Activate E-Stop Switch. 3. Verify the E-Stop switch latches in the activated position. 4. Verify machine stops. 5. Reset emergency stop switch. 6. Press Preset on Unico Panel. 7. Initiate corrective action for damaged or improperly functioning switch. 8. Generate corrective work order and notify supervisor as necessary. * Multiplied by number of drive units.	3*	09	450		

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
SYSTEM PULL CORDS	46. **	**Check all Pull-Cord Stops. (2 people recommended).** **WARNING: Be cautious when working around or on equipment when power has been applied. Some of the following tasks require the machine be running. Take precautions to prevent hair, clothing, tools, and test equipment from getting caught in moving parts.** 1. Start sorter. 2. Activate a Pull-Cord. 3. Verify the Pull-Cord switch latches in the activated position. **NOTE**: Start with a different Pull-Cord each time this task is issued and performed. 4. Verify machine stops. 5. Verify red lamp on pull cord reset panel illuminates. 6. Verify EPC is identified on MOCS screen. 7. Reset Pull-Cord switch. Verify and adjust cable tension on Pull-Cord as necessary. 8. Without restarting machine, check remaining Pull-Cords by repeating the activate and reset sequence for each Pull-Cord switch. 9. Initiate corrective action for any damaged or improperly functioning switch. 10. Generate corrective work order and notify Supervisor as necessary**.**	40	09	450		
SENSOR TRACKING (DVS, LVS)	47.	**Run FMPCS Maintenance Sensor Tests.** Check tracking sensor alignment, run test for each sorter tracking sensor (observe test results on message log). 1. At the FMPCS Control Station terminal sign on as maint. 2. Place a 4"x 4" test box on the front edge of 1 tray, the middle of a second tray, and the back edge of a third tray. Make note of each tray number used and box position. 3. Start the PSM. 4. At the FMPCS Control Station Main Menu, select Maintenance. 5. Start a sensor test. Use the configuration report to identify the name of each sensor to be tested (for example lvs-1) a. Type in the command test sensor lvs-1 quiet (Use name of each LVS as identified in configuration)	5*	10	1350		

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
		b. Repeat this step for each active LVS sensor on the sorter. This test will only generate logs in FMPCS that each sensor is blocked for more than 1 SEI. 6. Press Escape 2 times; from the FMPCS Control Station terminal Main Sorter Controller Menu: a. Select View Message Log. b. Select Current tour (latest log) c. Verify trays with test box were correctly identified and box position was correctly identified on each tray. 7. Note any trays that falsely report a load on the tray. 8. Remove the test box from the trays. 9. At the FMPCS Control Station Main Menu, select Maintenance. 10. Select start a sensor test. 11. Select an active DVS sensor. Use the configuration report to identify the name of each sensor to be tested (for example dvs-1) a. Number of trays or windows to examine [ ] (Use the number of trays on the sorter as identified in configuration) b. Repeat this step for each active DVS sensor on the sorter. 12. Select a discharge unit in prior to the DVS being tested at the FMPCS terminal. a. From the Maintenance screen select Discharge unit tests b. Select start a discharge unit test. c. Select an in service discharge unit to tip a tray that will be seen by the DVS being tested. d. Number of times to fire DU: [4] e. Tray modulus: [5] 13. Press Escape 2 times; from the FMPCS Control Station terminal Main Sorter Controller Menu: a. Select View Message Log. b. Select specific actions from log. c. Tab down 4 times to select the first action field, enter the number 5 to view any false tips reported by the DVS sensor. 14. Press Escape 2 times; from the FMPCS Control Station terminal Main Sorter Controller Menu: a. Select View Message Log. b. Select Current tour (latest log). c. Verify the trays that were tipped in step 11 discharge test are the same tray reported by each DVS sensor as being tipped. 15. Stop the PSM.					

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
		16. Generate a work order to address any deficiencies. * Multiplied by number of LVS/DVS sensors.					
DISCHARGE	48.	**Run FMPCS Maintenance Discharge Tests.** Perform a Sequential Discharge Unit Test to check the functionality of the tippers. 1. At the FMPCS Control Station terminal sign on as maint. 2. Start the PSM. 3. At the FMPCS Control Station Main Menu, select Maintenance. 4. Select Discharge Unit Tests. 5. Select Start A Sequential Discharge Unit Test. 6. Under Enter Test Options enter the following: a. Sequential Test Side [blank] b. First discharge unit name [CH-001] (Use Configuration report for name of first discharge on PSM) c. Last discharge unit name [CH-200] (Use configuration report for name of last discharge on PSM) d. Number of times to fire each DU [4] e. Tray or window interval [1] f. Tray modulus [blank] g. Number of times to repeat test [1] 7. Start test by pressing Enter. 8. Walk along PSM during test and record any tippers that do not tip trays. 9. Press Escape. 10. At the FMPCS Terminal screen select Cancel a Sequential Discharge Unit Test once the discharge unit test completes. 11. Stop the PSM. 12. Press Escape 2 times; from the FMPCS Control Station terminal Main Sorter Controller Menu: a. Select View Message Log. b. Select specific actions from log. c. Tab down 4 times to select the first action field, enter the number 4 to view Discharge Unit failures. 13. Note which discharge unit reported discharge problem and/or failure. 14. Generate a work order to address any deficiencies. * Multiplied by number of discharge units.	0.5*	10	1350		

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
CHUTE DISCHARGE	49.	**Test Chute Sensors.** Verify operation of chute sensor and reporting circuits: 1. For chutes that only have one sensor (these sensors are located near the top of each chute). a. Block the sensor and check to see if the chute full light illuminates. b. While the sensor is blocked check the FMPCS condition report or message log to see that it indicates the chute is full. c. Check the FMPCS Cimplicity screen to see if blocked sensor is shown on the screen. 2. For chutes that have two sensors (the second sensor is located near the middle of the chute). a. Block the upper sensor and check the FMPCS condition report or message log to see that it indicates the chute is full. b. Check the FMPCS Cimplicity screen to see if blocked sensor is shown on the screen. c. Block lower sensor to see if the chute full light illuminates (if this is a container loader the parcel gate should move). 3. For chutes or container loaders that have a button to inhibit the discharge unit (location varies): a. Press the inhibit button, check to see if the chute full light illuminates and that the FMPCS condition report or message log to see that it indicates the discharge inhibit is active. b. Check the FMPCS Cimplicity screen to see if the correct condition is shown. * Multiplied by number of discharge units.	1*	10	1350		

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ATTACHMENT 3

PSM_CB MASTER CHECKLIST

09-PSM-CB-001-M

OPERATIONAL MAINTENANCE (OM)

Time Total: (67.27) minutes

U.S. Postal Service Maintenance Checklist	IDENTIFICATION															
	WORK CODE		EQUIPMENT ACRONYM								CLASS CODE		NUMBER			TYPE
	0	9	P	S	M						C	B	0	0	1	M
Equipment Nomenclature Parcel Sorting Machine	Equipment Model										Bulletin Filename mm20106		Occurrence Daily			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
SAFETY STATEMENT	1.	**COMPLY WITH ALL SAFETY PRECAUTIONS.** Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Check for suspicious dust or unusual debris. If any unusual substance is found, notify supervisor prior to proceeding with any further action on the equipment. **THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.** When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods cannot be used. Report safety deficiencies to your supervisor immediately upon detection. **WARNING Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO or appropriate EWP PPE and barricade requirements.** **WARNING: Various products requiring Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS for appropriate personal protective equipment.**	1	All			

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					Run Hours	Pieces Fed (000)	Freq.
FMPCS REPORTS	2. **	**Generate And Review Reports.** Analyze data provided on the following reports to determine if any areas of the machine are degrading or need attention. Reports can be selected through the FMPCS menu system or requested at the command line. Reports are to be generated for current tour. 1. Review volume report. Look for high number occurrences of Induction failure, Mis-sent (Induction Unit problem, Multi Load, Discharge problem, or failure). 2. Review condition report. Look for not operational, out of service, failing, or down equipment. 3. Review Tray failures report. Look for Trays with a high number of occurrences of discharge failures. 4. Review current message log.	15	10			T
DISCHARGE	3.	**Run FMPCS Maintenance Discharge Tests.** Run discharge unit test for each discharge noted as problematic from report analysis (observe each discharge unit tipping tray). 1. At the FMPCS Control Station terminal sign on as maint. 2. At the FMPCS Control Station Main Menu, select Maintenance. 3. Select Discharge Unit Tests. 4. Select Start a Discharge Unit Test. 5. Select the discharge unit to be tested. 6. Under Enter Test Options enter the following: a. Number of times to fire the DU [4] b. Tray or window interval: [ ] (Leave Blank) c. Tray Modulus [5] (This will only tip trays ending in 0 or 5) d. The sorter will only attempt to tip trays that are empty and end in a 0 or 5 once started. 7. Start test by pressing Enter. 8. Verify the tipper extends at the beginning of the tray, for the entire duration of the index plate and retracts at the end of the tray. 9. Verify that the tipper is tipping empty trays that only end in 0 or 5. 10. Note which discharge unit are not at the correct SEI location and/or do not have the correct extended duration to properly tip the trays.	10	10			T

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
		11. Generate a work order to address any deficiencies.					
PDS SENSOR	4.	**Observe Sensor.** Look at the PSOC computer monitor and verify that it is: Ready, Connected to FMPCS, and displaying read rate and bar code results.	2	10			T
PSOC	5.	**Observe Camera.** Look at the PSOC computer monitor and verify that it is Ready. Connected to FMPCS and displaying read rate and bar code results.	2	10			T
PSOC	6.	**Check For Mail.** Look for loose mail in proximity of PSOC Camera. Return mail found during mail search to proper mail path. * Multiplied by number of induction zones.	4*	07			T
INDUCTION	7.	**Check Induction Unit.** Observe condition of the induction unit (belting, edge guards, controls, lighting). * Multiplied by number of induction stations.	2*	09			T
INDUCTION SHAKER TABLE	8.	**Check Shaker Table.** Observe shaker table operation (if applicable) (noisy stroke, banging). * Multiplied by number of induction stations.	1*	09			T
INDUCTION	9.	**Check Induction.** Observe induction of mailpiece onto the sorter, ensure mail piece is hitting the correct tray (APLA enabled and working correctly for mailpiece not centered on belt). * Multiplied by number of induction stations.	1*	09			T
INDUCTION	10.	**Check For Mail.** Look for loose mail in proximity to Induction Lane. Return mail found during mail search to proper mail path**.** * Multiplied by number of induction stations.	4*	07			T
DRIVE CHAIN	11.	**Check Chain.** 1. Check chain tension by observing chain slack coming off the driving sprocket (bull wheel). 2. Check chain lubrication (if applicable). * Multiplied by number of drive units.	1*	09			T

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					Run Hours	Pieces Fed (000)	Freq.
DRIVE REDUCER	12.	**Check Drive.** 1. Reducer, drive gear and coupling (look for oil leaks, grease seals, listen for bearing or gear noise). 2. Report deficiencies to supervisor for a corrective work order. * Multiplied by number of induction stations.	1*	07			T
CARRIAGE CHAIN	13.	**Check Carriages.** Observe sorter carriages for broken trays, latching plates, or missing/damaged mail catchers (beaver tails) between carriages or missing wheels.	10	07			T
TRAY STRAIGHTENER	14.	**Check Tray Straighteners.** 1. Verify UHWM (white plastic) on the tray straighteners are smooth and do not have UHWM missing (gaps). 2. Look for missing hardware, gouges, warping, cracks, and splits in the UHWM. 3. Observe trays transition across straightener for one full lap and verify trays stay level when no longer supported by straightener. 4. Report deficiencies to your supervisor. * Multiplied by number of trays.	.02*	07			T
TRAY STRAIGHTENER	15.	**Check For Mail.** Look for loose mail in proximity to Tray Straightener. Return mail found during mail search to proper mail path. * Multiplied by number of tray straighteners.	4*	07			T
TRAY STABILIZER	16.	**Check Tray Stabilizers.** 1. Verify UHWM (white plastic) on the tray stabilizers are smooth and do not have UHWM missing (gaps). 2. Look for missing hardware, gouges, warpage, cracks, and splits in the UHWM. 3. Report deficiencies to your supervisor for a corrective work order.	2	07			T
TRAY STABILIZER	17.	**Check For Mail.** Lock for loose mail in proximity to Tray Stabilizer. Return mail found during mail search to proper mail path. * Multiplied by number of induction zones.	4*	07			T
CHUTE: TRIPPER ASSEMBLY	18.	**Check For Mail.** Look for loose mail in proximity to discharge units, chutes, and container loaders. Return mail found during mail search to proper mail path. * Multiplied by number of discharge unit.	0.25*	07			T

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.
REPORT	19.	**Report Deficiencies.** Report all deficiencies to your supervisor.	3	All			T

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