

MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE



Maintenance Management Order

SUBJECT: Operational and Preventive Maintenance
Guidelines for Sack Sorting Machine Carousel

DATE: August 1, 2014

NO: MMO-094-14

TO: Manager Maintenance

FILE CODE: Y10

mcol:mm14014ag

This Maintenance Management Order (MMO) **supersedes MMO-134-98, MMO-135-98**, and provides Operational and Preventive Maintenance Guidelines for the Sack Sorting Machine (SSM) Carousel. This MMO affects Acronym SSM, Class Code CA.

The workhours indicated in the workload estimate (Attachment 1) represent the base hours for calculations. Equipment factors such as size and multiple components will increase estimated times required to maintain each system. 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 employees from performing any of this work.

WARNING

Various products requiring Material Safety Data Sheets (MSDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current MSDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current MSDS be requested. Refer to MSDS 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 Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.

Direct any questions or comments concerning this bulletin to the MTSC HelpDesk, online at <http://mtsc.usps.gov/apps/remedyticket/index.cfm> or call (800) 366-4123 or (405) 573-2123.



Manager
Maintenance Technical Support Center
HQ Maintenance Operations

Attachments: 1. Summary Workload Estimate for SSM
2. Master Checklist: 03-SSM-CA-001-M
3. Master Checklist: 09-SSM-CA-001-M

ATTACHMENT 1

SUMMARY

WORKLOAD ESTIMATE

FOR SSM

**SUMMARY
WORKLOAD ESTIMATE
FOR SSM**

NOTE

Since this equipment contains multiple units of unknown quantity, the workload estimate can not be provided in a traditional roll-up table. For this guideline, the annual work hours are derived from local site specific entries made in an electronic Work Hour Estimator Program (eWHEP) worksheet. Multiple units are identified by a "*" next to the number in the "Est. Time Req. (min)" column, the unit is specified in the "Part or Component" column before the ":" of the Maintenance Checklist. Refer to eWHEP for further guidance.

ATTACHMENT 2

SSM MASTER CHECKLIST

03-SSM-CA-001-M

U.S. Postal Service Maintenance Checklist	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE
	0	3	S	S	M					C	A	0	0	1
Equipment Nomenclature Sack Sorting Machine	Equipment Model						Bulletin Filename				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.	<p>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shutdown and lockout this machine. Open equipment and inspect dust conditions. 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.</p> <p>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.</p> <p>WARNING FOR EWP/PPE: Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE and barricade requirements.</p> <p>WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.</p> <p>WARNING: Be cautious when working around or on equipment when power has been applied.</p> <p>NOTE: Predictive maintenance (PdM) techniques are included within this PM guideline. The recommended procedure is to utilize the Ultrasonic Detector to supplement determining the condition of rotating components (i.e. bearings, rollers and shafts and other slow speed rotating equipment) in addition to audible "listen to" and "check for noise" tasks. Refer to manufacturer's users manual and video for Ultrasonic Detector Operational Instructions.</p>	3	All			W

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		<div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Be cautious when working around or on equipment when power has been applied.</p>					
MAIL SEARCH:	2.	CHECK FOR MAIL. Look for loose mail while performing these activities. Return loose mail found while performing this checklist to locally designated locations.	3	07			W
SYSTEM:	3.	START EQUIPMENT. Start equipment and check warning indicators for proper operation.	3	09			W
DRIVE:	4.	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.	6	09			Q
DRIVE: BRAKE	5.	CHECK BRAKE. Check brake as follows: 1. Observe effectiveness of brake. 2. Check braking action on motor. 3. Listen for noisy brake operation.	8	09			Q
DRIVE: COUPLING	6.	CHECK OUTPUT COUPLING. Observe output coupling 1. Look for or any misalignment of shafts. 2. Check for excessive slippage of torque limiting clutch when unit is starting.	3	09			Q
CARRIAGE: CHAIN	7.	CHECK CHAIN / CARRIAGE ASSEMBLY. With the equipment operating, check chain/carriage assembly as follows: 1. Look for proper chain lubrication. 2. Check for cracked trays, missing bumpers, and damaged wheels. 3. Look for mail caught in chain.	0.12*	07			W

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TRAY STRAIGHTENER:	8.	CHECK TRAY STRAIGHTENER. Check tray straightener as follows: 1. Observe carriages at the tray straightener for smooth operation and proper latching. 2. Check that clearance between tray and straightener should be 1/2".	2	09			W
CARRIAGE:	9.	CHECK CARRIAGE ASSEMBLY. Check carriage assembly as follows: 1. Remove latch pins and lower removable track. 2. Check trays for cracks and rough edges. 3. Clean all dirt and build-up from carriage assembly and wheels. 4. Check all wheels and guide rollers and Index plates for wear and damage. 5. Check carriage for cracks and warpage. 6. Check for damaged bumpers.	3*	09			Q
CARRIAGE: CHAIN	10.	CHECK CHAIN. Observe chain (one complete revolution at slow speed) around one sprocket for indications of frozen or worn rollers and missing cotter pins.	0.04*	09			Q
UNICO:	11.	CHECK UNICO DRIVE CABINET. Check cabinet as follows: 1. Clean or replace filter as needed. 2. Review fault history. 3. Review fault mask.	4	09			Q
		<div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Before performing the following tasks, power down and lock out the equipment as prescribed by the local Energy Control Procedures (ECP) developed in accordance with the current ECP Maintenance Management Order (MMO). Failure to comply may result in personal injury or death, and/or damage to equipment.</p>					

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SYSTEM:	12.	POWER DOWN AND LOCK OUT POWER. Power down the machine and lock out its electrical power as prescribed by the current local Energy Control Procedure (ECP) procedures.	3	All			W
OILER:	13.	CHECK OILER OIL LEVEL. Check automatic oiler level. Add oil (OL-3) if required.	5	07			W
WIPER: DRAIN PAN	14.	SERVICE WIPER AND DRIP PAN. Service wiper and drip pan as follows: 1. Check chain oil wipers. 2. Drain and clean oil drip pan.	15	07			M
CHAIN:	15.	CHECK CHAIN TENSION. Check the sorter chain tension using the approved method. Tension chain as necessary.	60	09			Q
DRIVE: REDUCER	16.	CHECK AND CLEAN MOTOR AND REDUCER HOUSINGS. Check that the motor and reducer housings are free from dirt accumulation. Clean if necessary.	30	07			S
DRIVE: REDUCER	17.	LUBRICATE REDUCER. Take oil sample for lab test. If change is indicated, drain and refill reducer to the appropriate level. Use lubricant GL-5-EP.	15	07			A
DRIVE: REDUCER	18.	CHECK AND LUBRICATE INPUT CLUTCH. – If Applicable: Check and lubricate the input clutch as follows: 1. Remove clutch guard. 2. Check clutch spacing. 3. Measure exposed portion of spring. 4. Lubricate clutch with GR-2-EP lubricant. 5. Replace the guard. <div style="display: flex; justify-content: space-around;"> <div> <u>MOTOR</u> 25 HP 30 HP 40 HP </div> <div> <u>SPACING</u> 1.44" 1.38" 1.25" </div> </div>	20*	07			A

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DRIVE: REDUCER	19.	SERVICE V-BELTS. - Service V-belts as follows: 1. Remove guard from V-belt drive. 2. Clean dirt or other foreign material from belts, sheaves, or other power transmission parts. 3. Look for misalignment of sheaves and for excessive wear to V-belts and sheaves. 4. Feel V-belts (or measure sag between sheaves) to determine if tension is properly adjusted.	8	09			A
DRIVE: REDUCER	20.	WRENCH TEST BOLTS. Wrench test mounting bolts on output coupling.	5	07			A
DRIVE: REDUCER	21.	CLEAN AND LUBRICATE DRIVE SHAFT BEARING. Clean and lubricate drive shaft bearing as follows: 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 excess lubricant from bearing.	6	07			A
ENCODER	22.	CHECK ENCODER MODULE. Check encoder module as follows: 1. Remove cover on encoder module. 2. Clean the chain. 3. Look for damage and wear to chain and sprockets. 4. Lube the chain (GL-5) and reinstall the cover. 5. Check motor encoder for secure mounting.	10	09			A
DRIVE: SPROCKET	23.	CHECK AND CLEAN SPROCKET TEETH. Check and clean sprocket teeth as follows: 1. Check sprocket teeth for wear. 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.	30	09			S

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DISCHARGE: TRIPPER ASSEMBLY	24.	CLEAN AND CHECK TRIPPER ASSEMBLY. Clean and check tripper assembly as follows: <ol style="list-style-type: none"> 1. Remove foreign material from tripper assembly, power cables, solenoids, and air hoses. 2. Check 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. Check trippers for proper position. 6. Wrench test all mounting bolts. Check for excess wear. 7. Check bumpers for wear or damage. Rotate tripper roller to check for ease of rotation. 8. Look for damaged or worn linkage. 9. Check pivot points for ease of operation. 	4*	09			Q
STRUCTURE:	25.	CHECK CONDUIT AND WIRING. Check conduit and wiring as follows: <ol style="list-style-type: none"> 1. Check for damage to conduit and wiring between control panel and motor panels, limit switches, photocells, and other control devices associated with this group panel. 2. Look for conduit being used for handhold or steps. 	10	09			S
LIMIT SWITCH:	26.	CLEAN AND CHECK LIMIT SWITCH. Clean and check limit switch as follows: <ol style="list-style-type: none"> 1. Remove dust from housing and tripper arm of removable track switch. 2. Look for damaged or worn linkage. 3. Check pivot points for ease of operation. 4. Wrench test switch mounting bolts for tightness. 5. Look for damage to conduit and wiring. 	3*	09			Q
STATIC DEVICE:	27.	CHECK STATIC DISCHARGE DEVICE. Check condition and contact of static discharge device.	5*	09			Q

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STRUCTURE:	28.	CHECK STRUCTURE. Check structure as follows: <ol style="list-style-type: none"> Look for damage to supporting and structural members of equipment, misalignment at joints between equipment sections, and loose connecting bolts. Look and feel for loose anchor bolts, hanger rods, and tie rods. Look for cracked or broken welds. 	40	07			S
		<div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Before performing the following tasks, remove the lock out device and power up the equipment as prescribed by the local Energy Control Procedures (ECP) developed in accordance with the current ECP Maintenance Management Order (MMO). Failure to comply may result in personal injury or death, and/or damage to equipment.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Be cautious when working around or on equipment when power has been applied.</p>					
SYSTEM:	29.	RESTORE EQUIPMENT TO SERVICE. Restore equipment to service as prescribed by the current local procedure providing Energy Control Procedure (ECP) procedures.	3	All			W
START UP:	30.	START UP. Perform normal start-up procedures as follows: <ol style="list-style-type: none"> Start or preset equipment. Check for proper operation. 	5	All			W
SENSOR: TRACKING (DVS, IVS, LVS)	31.	RUN FMPCS MAINTENANCE SENSOR TESTS. Check tracking sensor alignment, run test for each sorter tracking sensor (observe test results on message log). Verify condition of tray stabilizer and wear strip for tray load sensors.	5*	10			Q

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DISCHARGE:	32.	RUN FMPCS MAINTENANCE DISCHARGE TESTS. Run discharge unit test for each discharge (observe each discharge unit tipping tray).	0.5*	10			Q
DISCHARGE: CHUTE /CONTAINER LOADER	33.	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).	1*	10			Q
CLEAN UP:	34.	CLEAN UP. Ensure all tools, lubricants, rags, etc., are removed from the work area. Report all deficiencies to your supervisor.	3	All			W

* --- the tasks marked with an asterisk are per unit tasks.

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ATTACHMENT 3

SSM MASTER CHECKLIST

09-SSM-CA-001-M

Operational Maintenance

U.S. Postal Service		IDENTIFICATION												
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		0	9	S	S	M				C	A	0	0	1 M
Equipment Nomenclature Sack Sorting Machine		Equipment Model						Bulletin Filename			Occurrence Tourly			

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	<p>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shutdown and lockout this machine. Open equipment and inspect dust conditions. 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.</p> <p>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.</p> <p>WARNING FOR EWP/PPE: Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE and barricade requirements.</p> <p>WARNING: Discard solvent soaked materials according to local procedures to prevent spontaneous combustion.</p> <p>WARNING: Be cautious when working around or on equipment when power has been applied.</p>		All			T
FMPCS REPORTS:	2	<p>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.</p> <ol style="list-style-type: none"> Review volume report. Look for high number occurrences of Induction failure, missent, Induction Unit problem, or Discharge problem or failure. Review condition report. Look for not operational, out of service, failing, or down equipment. Review maintenance report. Look for high 	15	10			T

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		number occurrences of problems or failures. 4. Review current message log.					
SENSOR: TRACKING (DVS, IVS, LVS)	3	RUN FMPCS MAINTENANCE SENSOR TESTS. Run sensor test for each sorter tracking sensor (observe test results on message log). The location of mail on the trays or tray state must be known to determine correct test results.	5*	10			T
DISCHARGE:	4	RUN FMPCS MAINTENANCE DISCHARGE TESTS. Run discharge unit test for any discharge showing a high failure rate in the maintenance report (observe discharge unit tipping tray).	10	10			T
INDUCTION UNIT:	5	CHECK INDUCTION UNIT. Observe condition of the induction unit (belting, controls).	1*	09			T
INDUCTION UNIT:	6	CHECK INDUCTION. Observe induction of sack onto the sorter, ensure sack is hitting the correct tray.	1*	09			T
INDUCTION UNIT: SCANNER	7	CHECK SCANNER. Verify scanners ability to read bar code.	1*	09			T
CHAIN:	8	CHECK CHAIN. Check chain tension by observing chain slack coming off the driving sprocket (bull wheel). Check chain lubrication (if applicable).	1	09			T
DRIVE:	9	CHECK DRIVE. Check reducer, drive gear, and coupling. Look for oil leaks, grease seals. Listen for bearing or gear noise.	1	07			T
CARRIAGE:	10	CHECK CARRIAGES. Observe sorter carriages for broken trays, latching plates, or missing wheels.	10	07			T
TRAY STRAIGHTENER:	11	CHECK TRAY STRAIGHTENERS. Verify tray straighteners are functional and wear strip is in good condition.	2	09			T
TRAY STABILIZER:	12	CHECK TRAY STABILIZERS. Verify tray stabilizers are functional and wear strip is in good condition.	2	09			T
REPORT:	13	REPORT DEFICIENCIES. Report all deficiencies to your supervisor.	3	All			T

* --- the tasks marked with an asterisk are per unit tasks.