

MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE



Maintenance Management Order

SUBJECT: Preventive Maintenance Guidelines for
Automated Guided Vehicle (AGV) Eye in the
Sky (EITS)

DATE: October 13, 2023

TO: All AGV Sites with EITS installed

PUB NO: MMO-010-23
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This Maintenance Management Order (MMO) provides Operational and Preventive Maintenance Guidelines for the Automated Guided Vehicle (AGV) Eye in the Sky (EITS) System. This bulletin applies to Acronym EITS, Class Code AA.

The workhours indicated in the workload estimate (Attachment 1) are a calendar-based schedule to reflect the maximum annual workhours 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.

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.

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.



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- Attachments
1. Summary of Workload Estimate For EITS
 2. Master Checklist 03-EITS-AA-001-M – EITS_AA Preventive Maintenance (PM)

ATTACHMENT 1**SUMMARY WORKLOAD ESTIMATE****FOR EITS_AA**

Groups	Routine Servicing (hrs/yr)	Repair* (hrs/yr)	Routine Servicing + Repair Time (hrs/yr)	Non-productive Time** (hrs/yr)	Total Servicing Per Machine (hrs/yr)	Operational Maintenance + Total Servicing		
						1 Tour (hrs/yr)	2 Tours (hrs/yr)	3 Tours (hrs/yr)
2	7.98	2.40	10.38	1.04	11.42	N/A	N/A	N/A
3	9.48	2.85	12.33	1.23	13.56	N/A	N/A	N/A
4	10.98	3.30	14.28	1.43	15.71	N/A	N/A	N/A
5	12.48	3.75	16.23	1.62	17.85	N/A	N/A	N/A
6	13.98	4.20	18.18	1.82	20.00	N/A	N/A	N/A
7	15.48	4.65	20.13	2.01	22.14	N/A	N/A	N/A
8	16.98	5.10	22.08	2.21	24.29	N/A	N/A	N/A
9	18.48	5.55	24.03	2.40	26.43	N/A	N/A	N/A
10	19.98	6.00	25.98	2.60	28.58	N/A	N/A	N/A

NOTES:

*Repair estimates based on 30% of servicing.

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

						Operational Maintenance + Total Servicing		
Operation Days	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)	1 Tour Hrs/Yr OpM x 1	2 Tours Hrs/Yr OpM x 2	3 Tours Hrs/Yr OpM x 3
5 Days	7.57	2.27	9.84	0.98	10.82	10.82	10.82	10.82
6 Days	7.57	2.27	9.84	0.98	10.83	10.83	10.83	10.83
7 Days	7.57	2.27	9.84	0.98	10.83	10.83	10.83	10.83

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

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

THRESHOLDS and PM TIME SUMMARY Hrs PER Year			OPERATIONAL MAINTENANCE		
Daily	351.87		PER DAY PER MACHINE		
Weekly	8.67		One Tour	Two Tours	Three Tours
Monthly	83.00	5 Day	0.00	0.00	0.00
Quarterly	16.67	6 Day	0.00	0.00	0.00
Semi-Annual	15.83	7 Day	0.00	0.00	0.00
Annual	0.00				
Bi-Annual	0.21				

Frequency Codes (1 Accounting Period (AP) = 4 Weeks)					
Code	Frequency	Description	Code	Frequency	Description
A	ANNUAL	Once every 13 APs	B	BI-WEEKLY	Once every half AP
C	BI-MONTHLY	Once every 2 APs	D	DAILY	Once a day; 7 days a week
E	DAILY	Once a day; 6 days a week	F	DAILY	Once a day; 5 days a week
G	DAILY	Once a day; 4 days a week	H	DAILY	Once a day; 3 days a week
J	SEMI-WEEKLY	2 days a week	K	BI-ANNUAL	Once every 26 APs
L	tdl-ANNUAL	Once every 39 APs	M	MONTHLY	Once every AP
N	QUAD-ANNUAL	Once every 52 APs	P	QUINT-ANNUAL	Once every 65 APs
Q	QUARTERLY	4 times every 13 Aps	S	SEMI-ANNUAL	Twice every 13 APs
T	TOURLY	3 times a day; 7 days a week	U	TOURLY	Twice a day; 7 days a week
V	TOURLY	3 times a day; 6 days a week	W	WEEKLY	Once 1/4 AP (a week)
X	TOURLY	Twice a day; 6 days a week	Y	TOURLY	3 times a day; 5 days a week
Z	TOURLY	Twice a day; 5 days a week			
WI(*)	WEEKS INTERVAL	Perform a task once every # weeks e.g., WI(60) = Once every 60 weeks			
		# = number of weeks			

ATTACHMENT 2**EITS MASTER CHECKLIST****03-EITS-AA-001-M****PREVENTIVE MAINTENANCE (PM)**

U.S. Postal Service Maintenance Checklist	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER		TYPE	
	0	3	E	I	T	S				A	A	0	0	1
Equipment Nomenclature AGV Eye in the Sky	Equipment Model EITS						Bulletin Filename mm23010				Occurrence Calendar			

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	10	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.	1	All			
		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 FOR EWP/PPE: 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 FOR SDS: 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.					

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.
EITS SOFTWARE: EITS MAINTENANCE LAPTOPS	20**	Login to EITS Maintenance Laptops. Login to both EITS Maintenance laptops to ensure laptops are connected to the network and each EITS Electronic Technician has a profile created on each laptop. 1. Using the EITS Maintenance laptops, enter ACE ID in the USER ID field. 2. Enter your ACE password . 3. Enter USA for Domain. 4. Press Enter to log in to Maintenance laptop. 5. Log out of Maintenance laptop. *Per EITS Trained Personnel (assume 6 trained personnel per facility for full coverage of system) Reference MMO-004-23, EITS Maintenance Laptop Guidelines.	1*	10			W
APPLIANCE COMPUTER CABINET: FAN FILTER	30	Clean Cabinet Chassis Fan Filter. 1. Open appliance computer cabinet front door. 2. Remove exhaust fan cover to access filter. 3. Remove filter. 4. Vacuum dust from filter. If necessary, replace filter or rinse in warm water. Ensure filter is dry before re-installing it. 5. Install filter. 6. Install fan cover onto chassis. 7. Close appliance computer cabinet front door. *Per EITS appliance computer cabinet	5*	7			S
EITS PICK/DROP LANES: FLOOR MARKINGS	40	Verify lane floor markings are visible, datum mark(s) and lanes are clearly identified. Wheeled Container Pick Lane 1. Locate datum mark for each lane and ensure it is clearly marked and visible. 2. Ensure datum mark is visible, marked in blue as an arrow facing the rear of the lane. 3. Ensure the lane name is clearly identified, marked and visible, drawn below or near the datum mark, the text is legible and at least 3 inches tall.	20*	7			S

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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.
		<ol style="list-style-type: none"> 4. Locate towbar alignment mark and ensure it is visible. This mark is typically a blue round dot adhered to or painted onto the floor at the front of the lane. 5. Ensure the towbar alignment marks and text letters are legible and at least 3 inches tall. 6. Confirm the pick lane boundary is clearly marked and EITS sensors are correctly oriented to containers within pick lane. <p>Pallet Pick Lane</p> <ol style="list-style-type: none"> 1. Locate and ensure the datum mark is clearly identified, marked and visible, and located in the middle of the front edge of the lane's forward boundary. 2. Ensure the datum mark is drawn in blue as an arrow facing the rear of the lane. 3. Ensure the arrow projects at least 3 inches from the dot to ensure good visibility. 4. Ensure the lane name is clearly identified, marked and visible, drawn below or near the datum mark, the text is legible and at least 3 inches tall. 5. Confirm the pick lane boundary is clearly marked and EITS sensors are correctly oriented to containers within pick lane. <p>Drive-Through Style Drop Lane</p> <ol style="list-style-type: none"> 1. Locate and ensure the datum mark is clearly identified, marked, visible, and the datum mark arrow points towards container location. 2. Ensure datum mark is visible, marked in blue as an arrow facing the rear of the lane. 3. Ensure the arrow projects at least 3 inches from the dot to ensure good visibility. 4. Ensure the lane name is clearly identified, marked and visible, drawn below or near the datum mark, the text is legible and at least 3 inches tall. 5. Confirm drop lanes are clearly marked, and EITS sensors are correctly oriented to containers within the drop lane. 					

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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.
		Reverse-In Style Drop Lane 1. Locate and ensure the datum mark is clearly identified, and the datum mark arrow is pointing towards the containers. 2. Ensure datum mark is visible, marked in blue as an arrow facing the rear of the lane. 3. The arrow projects at least 3 inches from the dot to ensure good visibility. 4. Ensure the lane name is clearly identified, marked and visible, drawn below or near the datum mark, the text is legible and at least 3 inches tall. 5. Ensure the front most boundary of the lane (nearest the aisle) and lane boundaries are clearly marked and EITS sensors are correctly oriented to containers within drop lane. Reference EITS Maintenance Guide (KB0020865) Common Issues/Faults - EITS Floor Marking and Layout Procedure (KB0021304). * Generate a work order for any lane that needs to be remarked. *Per group					

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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.
APPLIANCE COMPUTER CABINET: COMPUTER	50	<p>Clean computer, switch, and hub.</p> <ol style="list-style-type: none"> 1. Perform appliance computer shutdown. 2. Disconnect outlet strip from facility outlet. <p>CAUTION</p> <p>Extreme care should be taken that rules regarding electrostatic discharge (ESD) are strictly followed when handling all printed circuit boards, including those in logic racks, system computers, etc. This includes the use of wrist straps and ESD pads.</p> <ol style="list-style-type: none"> 3. Set up ESD Workstation kit in accordance with current ESD MMO. 4. Remove appliance computer cable connections, noting locations of cables. 5. Remove two screws from rear of computer tray. 6. Remove chain from software dongle if attached to chassis. 7. Remove computer from rear of chassis. 8. Pull latch cover to remove cover. 9. Clean dust and debris from inside computer chassis using an approved HEPA filter shop vacuum cleaner. 10. Reinstall cover on computer chassis. 11. Using a static free cloth, wipe dust from monitor, top of hub, switch assemblies and surrounding cables. 12. Reinstall appliance computer cables. 13. Connect outlet strip to facility power. 14. Power on appliance computer. 15. Generate a work order for any issues identified. <p>*Per EITS Appliance Computer Cabinet</p>	20*	10			A

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APPLIANCE COMPUTER CABINET: (UPS)	60	<p>Check Functionality of UPS.</p> <ol style="list-style-type: none"> 1. On the EITS appliance computer, login with MIG account. 2. In the Helper App (yellow icon on taskbar), verify that the UPS is connected (it can take up to 5 minutes for the UPS connection to be established on boot up). 3. Once the UPS connection is established, unplug the UPS from its power receptacle on the column or wall and verify the following: <ol style="list-style-type: none"> a. Within 5 seconds, the UPS Status in the Helper App should report "Online, On Battery". It may also display "InputBad, OutputOffPending". b. Within 1 minute, the EITS appliance computer should commence an automatic shutdown process. c. Within 2 minutes, the UPS itself should shut down and enter a suspended state, at which point all the network devices in the appliance cabinet will power off, but the UPS screen will stay on. <p>NOTE</p> <p>In certain cases, it can take up to 5 minutes for the UPS connection to be established. Reference Section 11.3 UPS Power Loss Test of the latest EITS SMO, located on the MTSC EITS equipment page, for details.</p> <ol style="list-style-type: none"> 4. Plug the UPS back into its power receptacle, ensuring that the plug is connected securely and properly twisted into its locked position. <ol style="list-style-type: none"> a. Within 10 seconds, the UPS should power on. b. Within 1 minute, the EITS appliance computer should begin to boot. c. If the EITS appliance computer does not boot after power is restored, check Appliance Computer BIOS Power Loss Settings and ensure "enable boot" on power is enabled. d. Within 5 minutes, the switches and hubs should be powered on. 5. Log into the appliance computer with a MIG account and verify that the UPS status shown in the Helper App is Online. It may or may not also say, "HighEfficiency". 	20*	10			A
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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.
		6. Generate a work order to address any discrepancies. 7. Generate a work order for any issues identified. *Per EITS Appliance Computer Cabinet					
FINAL-CLEANUP	70	Clean Up. 1. Ensure all tools, lubricants, rags, etc., are removed from the work area. 2. Note any deficiencies and generate a work order/report them to supervisor.	5	ALL			

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