



DOSIS Maintenance Guide

Software Version 2.x

Revision Record

[illegible]

Preface

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Acknowledgements

The DOSIS operating system is designed by Manchac Technologies, LLC. All DOSIS towers are designed and manufactured by Manchac Technologies, LLC.

Disclaimer

The information contained herein is considered accurate at the time of publication. Manchac Technologies, LLC reserves the right to make changes to the equipment or manual at any time without notice.



Customer Care and Product Support

1-877-626-2422 (877-MANCHAC)

www.manchac.com

support@manchac.com

Our standard help desk hours are Monday through Friday from 7:00 AM to 7:00 PM central and Saturday 8:00 AM to 5:00 PM central.

Requests for support after hours and on major holidays are screened for severity and escalated appropriately to on-call technicians for assistance.

Table of Contents

Service Preventative Maintenance.....	2
Overview.....	2
Service Information	3
Recommended Intervals (minimum).....	3
Recommended Cleaning Supplies/Materials	3
Fielded “Spare” DOSIS components.....	4
DOSIS Maintenance Schedule	4
Recommended Service and Cleaning	4
“Challenge” Drugs	4
Maintaining Canisters.....	4
Suction Cups	4
Stray Pills/Other Debris	5
● Sealer Plate/Label Wiper	5
● EOAT (End of Arm Tooling):	5
● Flipper Assembly:.....	6
● Cabinet Bottom (Internal):.....	6
Rollers.....	6
Printers	7
Cabinet	8
Site Server.....	8
Canister Information	8
Specifics	8
Initial Issue.....	8
The Canister.....	9
Canister Check Procedures.....	10
Using the canister adjustment tool	10
Managing System Maintenance and Logs.....	11
Accessing the Maintenance Tasks	11
Maintenance Logs	12

Service Preventative Maintenance

Overview

DOSIS Systems by Manchac is an autonomous workflow solution for blister card pharmacies which improves your efficiency, your productivity, and your bottom line. Realizing the optimum benefits of DOSIS involves a partnership between your pharmacy and our DOSIS team. Our most successful pharmacies adhere to best practices in their interactions with the DOSIS System and are in regular communication with us. Please alert our product support team promptly if anything out of the ordinary occurs.

Manchac's L60 & U60 DOSIS towers have been designed and engineered so that they do not require scheduled calibrations, regular service technician visits, or annual or scheduled preventative maintenance (PM) for wear items. However, the service intervals and/or cleanings addressed in this guide are recommended to help ensure optimal performance of your robot. To reduce problems and system downtime, we request that, if changes to the support frequency are needed, the provided service intervals only be shortened but never lengthened. For example, an action recommended every three months can be changed to be performed every month but should not be changed to every six months.

Service Information

Recommended Intervals (minimum)

Canisters – As required/Per Challenge Drug List recommendations

Suction Cups – As Required/Each shift or Daily/Monthly

Stray Pills/Other Debris

- Sealer Plate/Label Wiper – Monthly/As Needed
- EOAT - Whenever DOSIS is open: Every Three Months
- Flipper - Whenever DOSIS is open: Every Three Months
- Bottom of Cabinet – Every Six Months

Rollers

- Lid Slider – Every Lid Roll Replacement
- Sealer – Monthly/As Needed
- Internal Printer - Every Second to Third Label Roll Replacement
- Bypass Printer - Every Second to Third Label Roll Replacement

Printers

- Internal Printer - Every Roll Change or As Needed
- Bypass Printer - Every Roll Change or As Needed

Also see notes on
maintenance interval chart

Cabinet

- External – Monthly/As Needed
- Internal – Every Six Months or As Needed

Recommended Cleaning Supplies/Materials

- 70%-91% Isopropyl Alcohol or Wipes
- Uni-Solve wipes or Goo Gone Citrus Adhesive Remover: Can be used when applied to a clean lint free cloth to remove adhesive build-up that has proven difficult to remove with alcohol. Do not spray the cleaner directly on any DOSIS components. **WARNING:** If Uni-Solve or Goo Gone is used to remove adhesive, you MUST follow up by cleaning all the surfaces with Isopropyl Alcohol to remove the residue left behind by these cleaners. Failure to remove this residue from these cleaners WILL cause damage to the machine. Always follow the safety precautions on the product's label.
- Swabs or Lint free cloths
- Canned Air/Compressed Air or Data Vacuum (Metro DataVac or equivalent)
- **WARNING:** Do Not use spray cleaners anywhere inside the tower. Overspray on nearby components can cause damage to the tower.

Fielded “Spare” DOSIS components

Each DOSIS tower is fielded with a DLC0399 Spares and Cleaning Materials kit. The kit contains items needed for the initial startup of the tower but also includes a starter supply of cleaning materials and “spare” wear items needed for the quick restoration of your tower’s operation.

- Suction Cups – A second set of cups is provided. Manchac replaces them when they get damaged or lose effectiveness.
- Pill Hoop – A second hoop is delivered with your DOSIS. Manchac replaces if a hoop breaks.
- Fuses – (3) 1.25 Amp fuses. Manchac replaces if a fuse is needed. Do not swap fuses unless instructed by Manchac Product Support staff.
- Lid and label take up spools. Required for the initial installation. Manchac does not replace.
- Cleaning materials. Starter supplies are provided but are not replenished by Manchac. The pharmacy is responsible for any additional cleaning supplies, as needed, to maintain their system.

DOSIS Maintenance Schedule

The last pages of this manual provide information on completing the scheduled maintenance tasks for the DOSIS system. In addition to pharmacy use, the maintenance logs can be provided to a board of pharmacy audit or inspection as proof of continual maintenance on the DOSIS system.

Recommended Service and Cleaning

“Challenge” Drugs

See the user guide for information on the list of Manchac determined “challenge” drugs. These drugs/NDCs have been found, through trial and error, to have difficulties being dispensed or cannot be processed by the DOSIS. For the “Dispensable Depending” list, follow the cleaning or prep instructions provided for each drug. This list is current per the present formulary available to all users; however, it will be updated as new/changed drugs become available that present challenges for the DOSIS.

Maintaining Canisters

Except for the canisters with chalky, difficult to dispense drugs, most canisters do not need cleaning between replenishments. However, users should check for excessive pill dust and/or physical damage between replenishments. Manchac Support may request a canister be cleaned for poor performance during problem drug troubleshooting. The canister does not have a “Fill to Here” line. When adding drugs to a canister, be sure to leave some space at the top of the Medication Storage Area to allow the Bulk Ramp to move up and down. The movement of the Bulk Ramp helps move the pills to the Flow Ramp. See page 9 (currently) in the DOSIS Systems User Guide for additional information on your canisters.

Suction Cups

As part of the initial installation, each DOSIS tower was fielded with an extra set of suction cups. The “spares” are needed to quickly restore operations in case of suction cup failures because they are an essential part of the blister card filling process. The suction cups will be replaced by Manchac whenever they are determined to be non-effective. The following user service actions are recommended for the suction cups. With care, they should provide years of satisfactory service.

- **As required:** If you are experiencing card pickup errors, contact Manchac Customer Service for assistance. They may ask you to clean or replace your suction cups at any time.
- **Start of each shift/cycle:** Visually check the suction cups for cuts, tears, dirt, and, or deformity. If problems are found, clean or replace the suspected cups. If they need to be replaced due to physical damage, contact Manchac Customer Service so additional cups can be sent. Note - If a suction cup was resting on something in the cabinet, the cup itself may look deformed, which could cause card pick up failures. The cup will reform itself within 15 minutes or less once it is removed from the touch area. If you find suction cup deformities, contact Manchac Customer Service for assistance.
- **Monthly:** Remove the suction cups. Visually check for cuts, tears, dirt, and/or deformity. If none found, use Isopropyl Alcohol (wipe or swab) to clean each one. Re-install the cups. Note - The alcohol must evaporate completely from the cups before re-installing them.

Stray Pills/Other Debris

Your DOSIS tower(s) should not have “stray” pills or debris in or around the operating parts of your robot. At times, pills (jumpers, broken pills, etc.), desiccants, and other debris (card, lid, or label pieces) can and will disrupt your tower’s operation. If your DOSIS is not operating correctly contact Manchac Customer Service. They may ask you to check for and remove any pills or other debris from the affected module/subassembly. Any found pills shall be processed in accordance with your pharmacy’s policies.

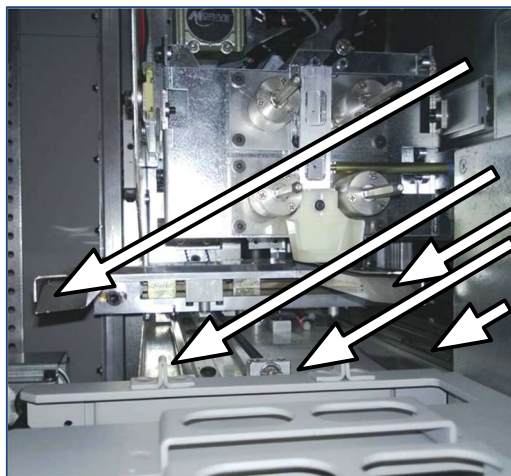
- **Sealer Plate/Label Wiper**

It is recommended that once a month you should check and clean the sealer plate and label wiper. Check for and remove any pill dust, label or lid materials, or adhesive from either.

- **EOAT (End of Arm Tooling):**

It is recommended that whenever you have your DOSIS open, for any reason, that you check for stray pills and debris in and around the EOAT and all of its moving parts, especially under and around the forks. A quarterly check is recommended if your DOSIS tower hasn’t been opened within three months. See page 55 (currently) in the DOSIS Systems User Guide for additional information on the EOAT.

- **Checking the EOAT:** The EOAT has several areas to check for obstructions. The blister card forks move in and out and side to side and this photo depicts some of the common areas to check.



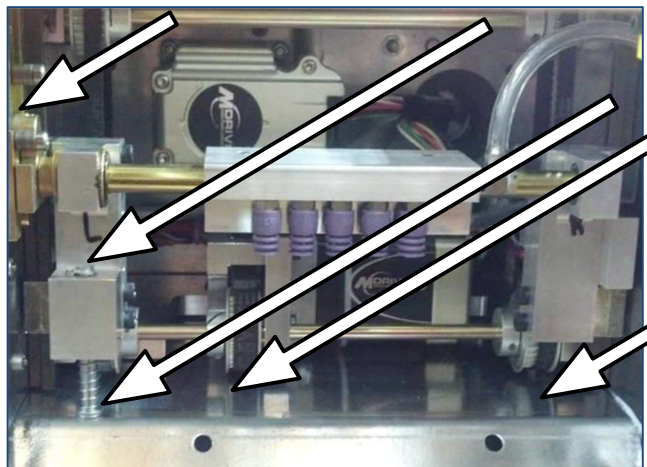
The arrows identify areas to check for possible obstructions.

(Obstructions can be anything, a pill that bounced, a desiccant, or other trash that has gotten into the machine.)

- **Flipper Assembly:**

Regardless of the reason, whenever you open your DOSIS tower, we recommend you check for stray pills and debris in and around the flipper and its moving parts. A quarterly check is recommended if your DOSIS tower hasn't been opened within three months. See page 55 (currently) in the DOSIS Systems User Guide for additional information on the Flipper Assembly.

- **Checking the Flipper Assembly Area:** You will need to pull out the internal printer to access the flipper assembly area. See page 57 (currently) in the DOSIS Systems User Guide for instructions on accessing the printer and flipper assembly. The following photo depicts some of the common areas to look for obstructions.



The arrows identify areas to check for possible obstructions.

(Obstructions can be anything, a pill that bounced, a desiccant, or other trash that has gotten into the machine.)

- **Cabinet Bottom (Internal):**

Stray pills and other debris can also fall to the bottom of your DOSIS tower. It is recommended that you check and clean the cabinet bottom every six months. See page 9 in this guide or page 55 (currently) in the DOSIS Systems User Guide for guidance on opening and cleaning the bottom of the cabinet.

Rollers

DO NOT use WD-40 or other similar oil-based products on any components that may be rubber or silicone-based. These products will “dry” out the material making it brittle and subject to flaking, cracking, or splitting. If in doubt, contact Manchac Customer Service (support@manchac.com or 877-626-2422) for additional guidance before proceeding with the cleaning.

- **Lid Slider:** It is recommended that the lid slider rollers be cleaned during each lid roll replacement using Isopropyl Alcohol, “Uni-Solve”, or “Goo Gone Citrus Adhesive Remover”. If you find that you are experiencing minimal to no adhesive problems occurring, then the lid slider rollers may be cleaned at every second lid roll replacement. However, whenever adhesive residue is suspected as the cause for faults, the rollers should be cleaned. Contact Manchac Customer Service if you continue to experience lid roller errors after the cleaning. **WARNING:** If Uni-Solve or Goo Gone is used to remove adhesive, you MUST follow up by cleaning all the surfaces with Isopropyl Alcohol to remove the residue left behind by these cleaners. Failure to remove residue from these cleaners WILL cause damage to the machine. Always follow the safety precautions on the product’s label. NOTE – Wait until alcohol evaporates to load lids.



Clean these Lid Slider Rollers identified by the arrows.

Note: In normal operation, the other rollers in the assembly should not contact the adhesive and should not need to be cleaned. However, if you find residue on them then they should also be cleaned.

- **Sealer Roller:** The sealer plate roller should be wiped down and cleaned with Isopropyl Alcohol at least monthly or as needed.
- **Internal Printer:** The internal printer roller should be cleaned with Isopropyl Alcohol every time the label roll is replaced or whenever adhesive residue or label dust is suspected as the cause for label faults not related to alignment errors. Note – Wait until the alcohol fully evaporates before loading labels. See page 14 (currently) in the DOSIS Systems User Guide for information on changing out the rolls.
- **Bypass Printer:** The bypass printer roller should be cleaned with Isopropyl Alcohol whenever adhesive residue or label dust is suspected as the cause for label faults not related to alignment errors. If there are minimal to no faults occurring, the bypass printer roller should be cleaned every second to third label roll replacement.

Printers

At present, the internal printers are either made by Cognitive or Microcom. Cognitive printers have black plastic enclosures where the Microcom printers are all metal. For more detailed information on the Microcom label printer, see the “Microcom Internal Label Printer – Troubleshoot, Clean and Load”. The bypass printer(s) supporting your DOSIS system are either Cognitive or Zebra direct thermal printers. These printers will have the name of the manufacturer on them. Label misalignments, label adjustments, print quality, etc. are not normally a user correctible action and requests for these types of support should be sent to Manchac Customer Service via our ticketing system. User specific service actions are addressed below.

- **Internal Printer:** The print head should be cleaned with Isopropyl Alcohol every time the label roll is replaced. Manchac Customer Service may also request that you perform a cleaning in the process of troubleshooting a maintenance issue. NOTE – Wait until the alcohol evaporates to load labels.
- **Bypass Printer:** The print head should be cleaned with Isopropyl Alcohol in conjunction with every second or third roller cleaning. Manchac Customer Service may also request that you perform a cleaning in the process of troubleshooting a maintenance issue.
- **Label Jams:** Label jams should be cleared when they occur. After clearing the jam, the printer should be checked for any obvious defects, torn pieces of labels, or cleaning that may be required. See page 57 (currently) in the DOSIS Systems User Guide for additional guidance.

Cabinet

Your DOSIS tower was installed to your specifications in your pharmacy. It has been leveled and anchored to the wall or floor for security. The recommended actions below should be performed, as recommended, or at an accelerated schedule, depending upon your pharmacy's requirements.

- **External:** Depending on the floor covering, the area outside and around the cabinet should be swept or vacuumed every month. Attention should be focused on the vent areas at the bottom of the cabinet. Additionally, the top and sides of the cabinet should be dusted to prevent the accumulation of dirt and dust that could possibly enter your DOSIS and cause problems. If the cabinet looks dirty, the exterior can be wiped down with a damp cloth and rinsed and dried with a clean cloth or paper towel. Do not get water near or inside your DOSIS tower.
- **Internal:** Every six months, the cabinet doors should be opened, and the bottom should be vacuumed and cleaned to remove any stray pills and other debris that may have fallen to the bottom. The computer fan(s) should also be blown out with compressed air to keep the computer from overheating. Any other debris or other incidental issues observed in the cabinet should be corrected at this time. Contact Manchac Customer Service if you have any questions.

Site Server

The site server may be located on the top of a tower or may be installed in your server room. The site server is a physical PC but will not normally be connected to a monitor or keyboard. Your pharmacy may also be using a "virtual" server for your site server instead of a physical component. Your pharmacy's IT staff will support and maintain a virtual site server.

At a minimum, the site server should have its fan(s) blown out with compressed air every six months to keep it from overheating. The biggest threat to computers and servers is the accumulation of dust inside the cabinet. Depending on where the server is installed, additional cleaning, sweeping, or vacuuming around the server will be at the discretion of the customer. As such, keeping the areas around the server dust free helps keep system downtime to a minimum.

Canister Information

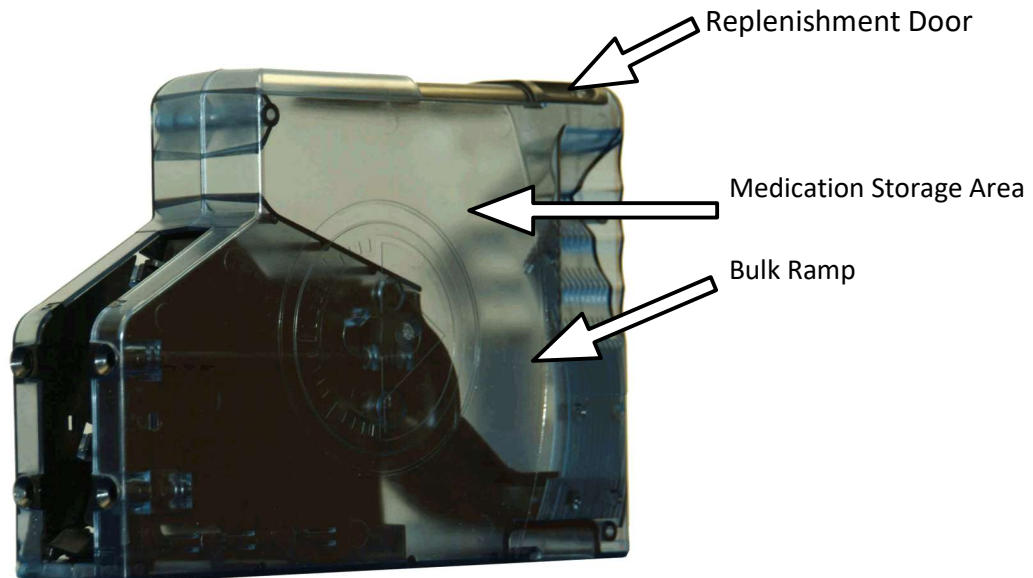
Specifics

The DOSIS universal canister was designed and tested by Manchac engineers. They continually monitor their operation and introduce design and/or material improvements, when warranted. These canisters have an approximate meantime between failure (MTBF) of 20,000 cycles. The canisters are not considered consumables but are warranted items of the DOSIS system. Considerable cost, in time and effort, is expended in repairing defective canisters and we request that you, as the user, help us confirm the condition of your "suspect" canister(s). This guide was created to identify what information and checks our technicians need you to perform before a canister can be confirmed defective.

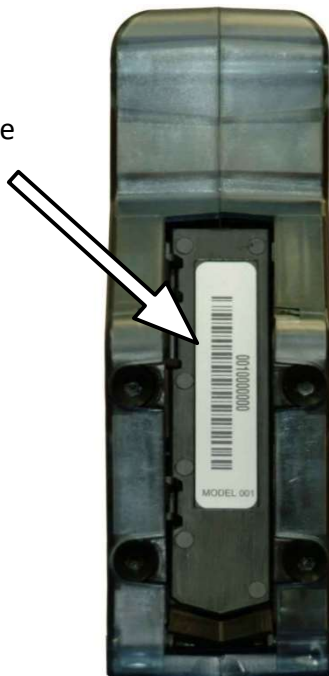
Initial Issue

Every tower ships with an initial inventory of 72 canisters, 60 for the machine and 12 extra canisters for spares or additional drugs. Customers can also purchase additional canisters to meet their pharmacy's requirements. All canisters, including initial issue, additional purchased at install, or additional purchased separately, are considered warranted items and will be repaired by Manchac Technologies.

The Canister

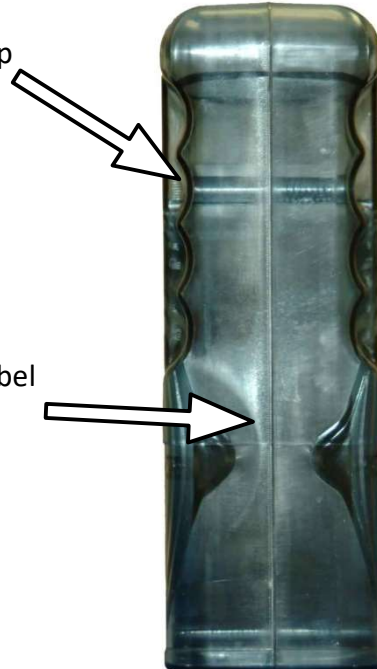


Canister Bar Code
/ Access Door



Canister
Handle/Grip

Canister Label
Area



Canister Check Procedures

Using the canister adjustment tool

A canister adjustment tool (3/16" hex ball-end driver) is included with each tower(s) installation. Whenever a canister goes into attention, we recommend that the following checks be performed to assess the physical condition of the canister. Contact Manchac Customer Service to start the repair process if a canister fails any of the below checks.

Access Door Control

Turn the screw counterclockwise until it stops.

Action: The access door should open smoothly. Once the door is fully open, the bulk ramp should rise up smoothly inside the canister and will be fully up at the screw stop. At this point, open the replenishment door in the back and push down on the bulk ramp with the canister tool. If it is hard to push down, the ramp is good. Turning the screw clockwise, the bulk ramp should move down and the access door should be fully closed at the screw stop.

Possible Defects:

- Screw doesn't spin easily
- Door has trouble opening or won't open fully
- Bulk ramp doesn't rise up to its full stop
- Little to no resistance when pushing down on the bulk ramp
- Bulk ramp does not return to starting position (fully down)
- Access door doesn't move or stays partially open

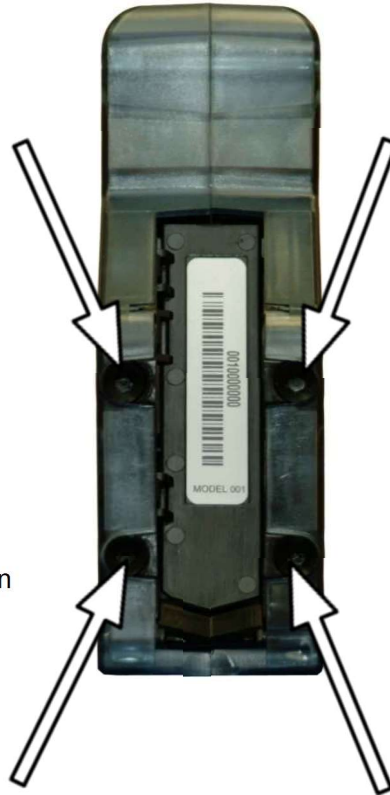
Flow Ramp Control

With the access door open (see Access Door Control above), turn the screw counter-clockwise until it stops.

Action: Looking in the canister, the back of the flow ramp should move up smoothly until the screw stops and the ramp is about 1/4" from the pill guard. Turn the screw clockwise and the back of the ramp should move back down to the canister bottom at the screw stop.

Possible Defects:

- Screw doesn't spin easily
- Flow ramp doesn't move, binds, is hard to move, or doesn't move smoothly
- Flow ramp doesn't rise up to its full stop
- Flow ramp doesn't return to the canister



Pill Guard Release Control

With the Access Door Open (see Access Door Control left), turn the screw counterclockwise until it stops.

Action: Looking in the canister, the bottom of the pill guard (plastic "fingers" at the back) should pull forward smoothly and should be about 1" out at screw stop. Turn the screw clockwise and the pill guard should return with the guard touching the back of the flow ramp block at screw stop.

Possible Defects:

- Screw doesn't spin easily
- Pill guard has trouble opening or doesn't open fully
- "Finger(s)" are broken on the guard
- Pill guard does not return to the starting position at screw stop

Flow Ramp Vibration Control

With the access door open (see Access Door Control above left), turn the screw clockwise and counter-clockwise. There are no screw stops for this adjustment.

Action: Looking in the canister, the flow ramp should move forward and backwards about 1/8" when turning the screw in either direction. Move the back of the ramp up and then check that the flow ramp still moves forward and backwards.

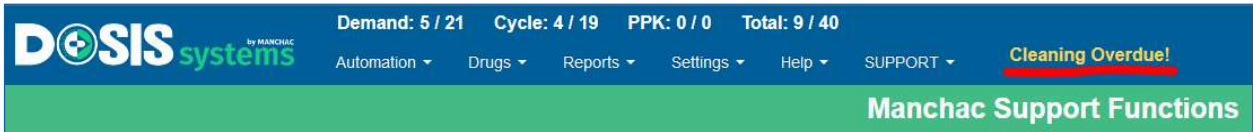
Possible Defects:

- Screw doesn't spin easily
- Flow ramp doesn't move, binds, is hard to move, or doesn't move smoothly

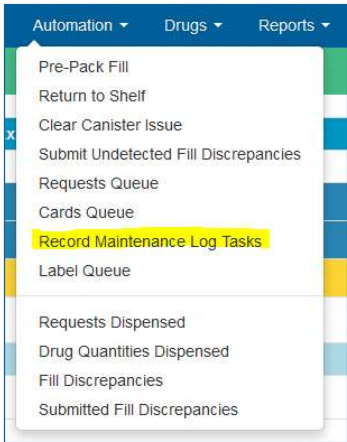
Managing System Maintenance and Logs

Accessing the Maintenance Tasks

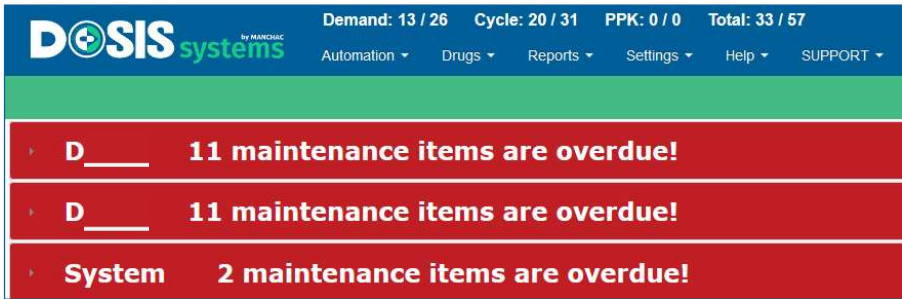
Look for the flashing “Cleaning Overdue” icon at the top of your DOSIS Dashboard. **CLICK on the icon.**



You can also access the maintenance tasks by selecting “Record Maintenance Log Tasks” from the automation drop down tab.



Either link brings you to the following screen:



Choose the item receiving maintenance by clicking on the device’s name. All towers in your system will be listed and the ones with overdue maintenance will be identified in red. Once clicked, a list of the maintenance tasks for that device will open. The left half of this screen is shown below.

System 2 maintenance items are overdue!				
Maintenance				
Task	Frequency	Last Completed Date	Last Completed By	Next Due
Clean Bypass Printer(s) Roller(s)	Monthly	Oct. 17, 2023, 10:20 a.m.	MC	11/17/2023 (24 days Overdue)
Clean Bypass Printer(s) Printhead(s)	Monthly	Oct. 17, 2023, 10:20 a.m.	MC	11/17/2023 (24 days Overdue)
Server Fan Blown Out with Compressed Air	Every 6 Months	Oct. 17, 2023, 10:20 a.m.	MC	04/17/2024 (127 days)

The right half of the screen is shown below. Complete the prescribed task, record any notes in the appropriate area, then **CLICK “Mark Done”**. This step should change the task’s color to white and update the date and initials in the Last Completed Date and By fields.

Note: Entering a note is not required to complete a task. However, it may be helpful, for some tasks, to add specific information. An example would be to identify that baby powder was added to a roller or certain cleaning materials were used. The notes from the last maintenance will populate in the Previous Notes column as shown below.

Tasks		
Previous Notes	Notes	
		Mark Done
		Mark Done

Maintenance Logs

Every maintenance task performed and recorded on the DOSIS system is stored in the Maintenance Log. The log is a tool to be used for board of pharmacy audits or inspections and can be a metric of staff performance. Go to the Reports dropdown on the DOSIS Dashboard and click on the Maintenance Log link.

Cleaning Overdue!		
Reports ▾	Settings ▾	Help ▾
System	Canister	Statistics
System Dashboard	On Shelf With Work Pending	Canister Dispense Statistics
Alert History	Current Lots in Canister	Card Discrepancies
Tower Access Log	Demand Details	Card Quantities
PMIS Requests	Discrepancies	Performance Summary
Requests Pending User Review	Overview	Performance by Subgroup
Cards Dispensed	Current Inventory	Drug Throughput
Pre-Pack Log	Needing Replenishment	Drug Throughput by Subgroup
Maintenance Log	Replenishment History	Tower Fill Summary
Request Priority Change Log	Inventory Adjustment Log	Printer Summary
Print Cancel Log	Drug Association Log	Drug Inventory Utilization
Return to Shelf Log	Reset Ran Empty Log	

A new screen will open with the log, as shown below. This report can be filtered by Tower, Maintenance Task, User, and/or Date Range and can be exported as a CSV spreadsheet or PDF file.

Maintenance Log			
Tower	Date ▲	Task Performed	User
D764	Nov 13, 2023, 1:38 p.m.	Clean Internal Printer Printhead	JS
D764	Nov 13, 2023, 1:38 p.m.	Clean Internal Printer Roller	JS
D764	Nov 13, 2023, 1:38 p.m.	Clean Lid Slider Roller	JS
D764	Nov 13, 2023, 1:38 p.m.	Visually Inspect Label Flipper Suction Cups	JS
D764	Nov 13, 2023, 1:38 p.m.	Visually Inspect Packaging Trolley Suction Cups	JS
D743	Nov 13, 2023, 1:38 p.m.	Clean Internal Printer Printhead	JS
D743	Nov 13, 2023, 1:38 p.m.	Clean Internal Printer Roller	JS
D743	Nov 13, 2023, 1:38 p.m.	Clean Lid Slider Roller	JS
D743	Nov 13, 2023, 1:38 p.m.	Visually Inspect Label Flipper Suction Cups	JS
D743	Nov 13, 2023, 1:38 p.m.	Visually Inspect Packaging Trolley Suction Cups	JS