



Software Version 2.0

L60 Maintenance Guide

Version: December 2022

Preface

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Acknowledgements

The DOSIS operating system is designed by Manchac Technologies, LLC. The DOSIS L60 cabinet is 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 anytime without notice.

Patent

Patent Pending

Customer Service

Customer Service office hours are Monday through Friday from 8:00AM to 7:00PM CST.

During office hours, dial 1-877-626-2422 (877-MANCHAC)

After Hours: Leave a message, and someone will return your call. Voicemails are automatically dispatched via email to the support staff that is on call, and that person will return your call. Please leave a phone number that you can be contacted at.

Service Preventative Maintenance

Manchac's L60 DOSIS machines 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 following service intervals and/or cleanings 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 not changed to every six months.

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Recommended Intervals (minimum)

Close the Packaging Unit Door.

Canisters – As required/Per Trouble Drug List recommendations

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

Stray Pills/Other Debris

- 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
- Internal Printer - Every Second to Third Label Roll Replacement
- Bypass Printer - Every Second to Third Label Roll Replacement

Printers

- Internal Printer - Every Second to Third Roller Cleaning or As Required
- Bypass Printer - Every Second to Third Roller Cleaning or As Required

Cabinet

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

Recommended Cleaning Supplies/Materials

1. Isopropyl Alcohol or Wipes
2. Cotton Balls, Swabs, or Lint free cloths
3. Canned Air/Compressed Air or Data Vacuum (Metro DataVac or equivalent)

Fielded “Spare” DOSIS components

(for quick restoration of robot operation)

1. Suction Cups – DOSIS was fielded with a second set of cups. We will replace, when they are damaged.
2. Pill Hoop – A second hoop was fielded with your DOSIS. We will replace, if the first hoop breaks.
3. Fuses – 3 1.25 Amp fuses

Recommended Service and Cleaning

1. “Difficult” Drugs

See the user guide for the list of Manchac determined “difficult” drugs. These drugs/NDCs have been found, through trial and error, to have difficulties being counted or processed or cannot be processed by the DOSIS. For the “Countable 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.

2. Maintaining Canisters

Except for the canisters with difficult 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 L60 User Guide for additional information on your canisters.

3. Suction Cups

As part of the initial installation, each L60 was fielded with an extra set of suction cups. The “spares” are needed to quickly restore operations in case of suction cup failures because the suction cups are an essential part of the blister card filling process of your DOSIS. The suction cups are warranted and will be replaced by Manchac Technologies 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 pick up 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. Your DOSIS was designed so that the suction cups do not touch anything during rest. If you find suction cup deformities, contact Manchac Customer Service for assistance.

Monthly: Remove the suction cups from your DOSIS. Visually check the suction cups for cuts, tears, dirt, and, or deformity. If none are found, use isopropyl alcohol (wipe or swab) to clean each of the cups. Re-apply the alcohol if excessive dirt is found. Re-install the cups. Note – All of the alcohol has to have evaporated from the cups before re-installing them.

4. Stray Pills/Other Debris

Your DOSIS L60 should not have “stray” pills or debris in or around the operating parts of your robot. At times, stray pills (jumpers, broken pills, etc.), container desiccants, and other debris can and will disrupt your robot’s operation. Normally, if your DOSIS is not operating correctly contact Manchac Customer Service. They may ask you to check for and remove any stray pills and other debris from the affected module/sub-assembly. Stray pills, if found, shall be processed in accordance with your pharmacy’s policies.

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 L60 hasn’t been opened within three months. See page 55 (currently) in the L60 User Guide for the areas to check on the EOAT.

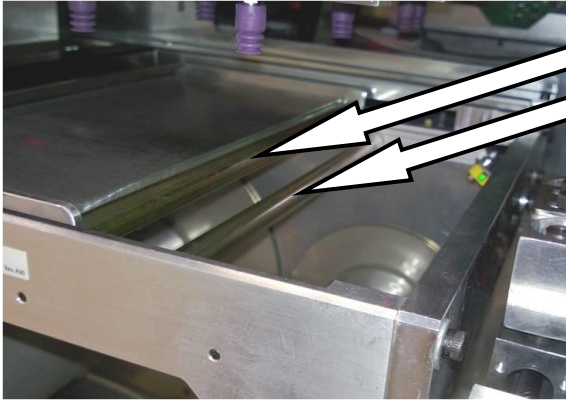
Flipper Assembly: Whenever you have your DOSIS L60 open, it is recommended that for any reason, you should check for stray pills and debris in and around the flipper and all of its moving parts. A quarterly check is recommended if your DOSIS L60 hasn’t been opened within three months. See page 55 (currently) in the L60 User Guide for the areas to check on the Flipper Assembly.

Cabinet Bottom (Internal): Stray pills and other debris can also fall to the bottom of your DOSIS L60. It is recommended that you check and clean the cabinet bottom every six months. See paragraph 7 in this guide or page 55 (currently) in the L60 User Guide for guidance on opening and cleaning the bottom of the cabinet.

5. Rollers

CAUTION: Never use harsh chemicals such as WD-40 or Goo-Gone to clean parts of the tower. Cleaners such as Uni-Solve should not be used. They have additives that can cause damage to components. Only clean with 70% Isopropyl Alcohol with no other additives, always allow the alcohol to completely dry off before returning the machine to service. When in doubt, contact Manchac Customer Service (support@manchac.com or 887-626-2422) for additional guidance before proceeding with cleaning.

Lid Slider: It is recommended that the lid slider rollers be cleaned during each lid roll replacement using isopropyl alcohol. 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.



Clean these Lid Slider Rollers.

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

Internal Printer: The internal 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 internal printer roller should be cleaned every second to third label roll replacement. See page 14 (currently) in the L60 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.

6. Printers

At the present, the internal and bypass printers supporting your DOSIS L60 are either Cognitive or Zebra brand direct thermal printers. 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 in conjunction with every second to third roller cleaning (see paragraph 5 above). Manchac Customer Service may also request that you perform a cleaning in the process of troubleshooting a maintenance issue.

Bypass Printer: The print head should be cleaned with isopropyl alcohol in conjunction with every second or third roller cleaning (see paragraph 5 above). 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 L60 User Guide for additional guidance.

7. Cabinet

Your DOSIS L60 was installed to your specifications in your pharmacy. It has been leveled and anchored to the wall or floor for security. The below recommended actions should be performed, as recommended, or at an accelerated schedule, depending upon your pharmacy requirements.

External: Depending on the floor covering, the area inside and around the cabinet should be swept or vacuumed every month. Attention should be focused on the vent areas in 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 L60 machine.

Internal: Every six months, the cabinet doors should be opened and the bottom of the cabinet 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.

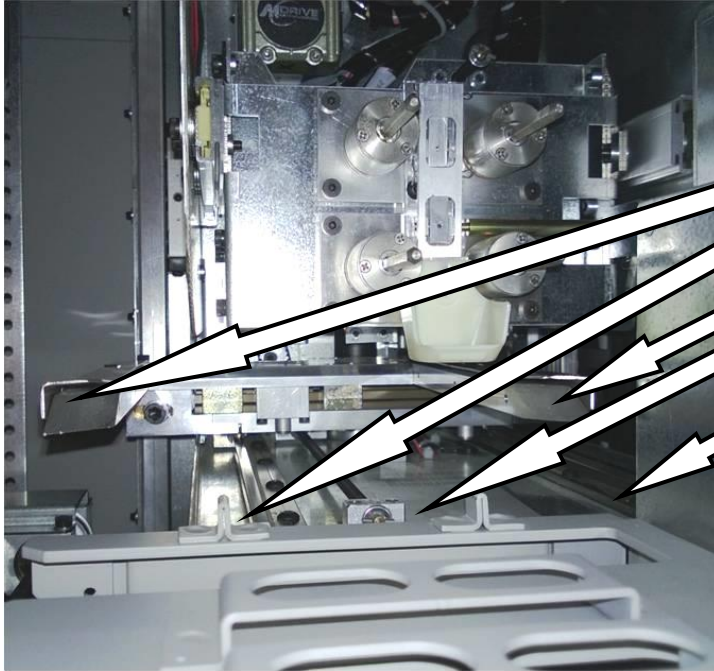
8. Site Server

May only apply to pharmacies with more than one L60 installed.

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

Checking the End-of-Arm Tooling

The end-of-arm tooling has several areas to check when looking for obstructions. The blister card forks move in and out and side to side. The following photo depicts some of the common areas to look for obstructions.

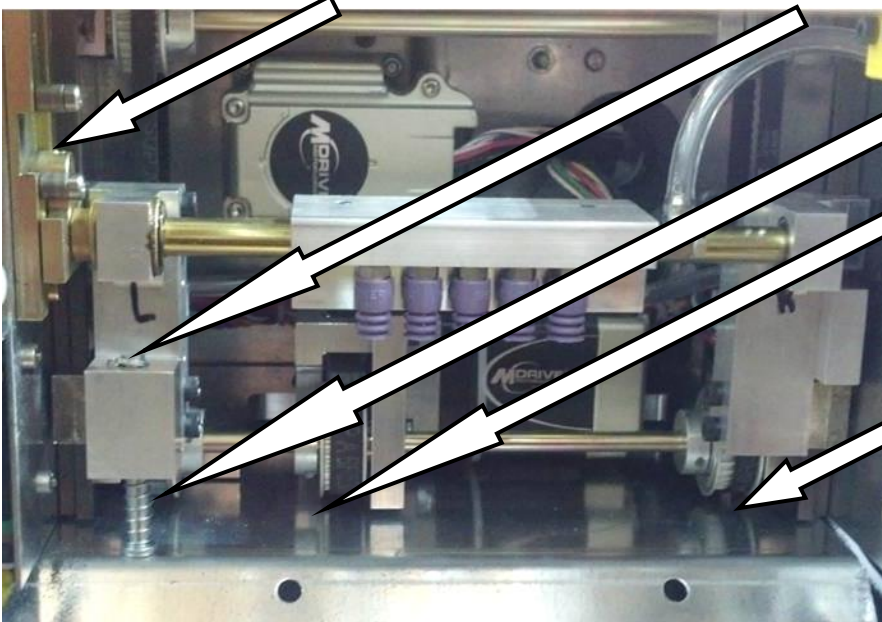


Check the following areas for obstructions.

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

Checking the Flipper Assembly Area

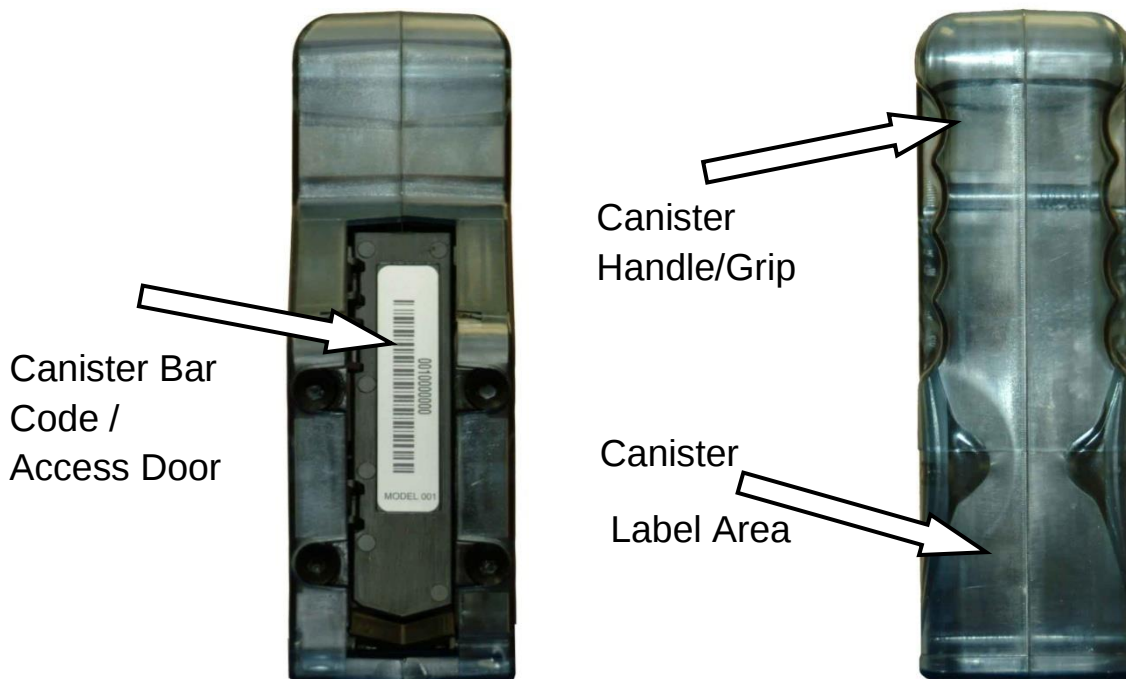
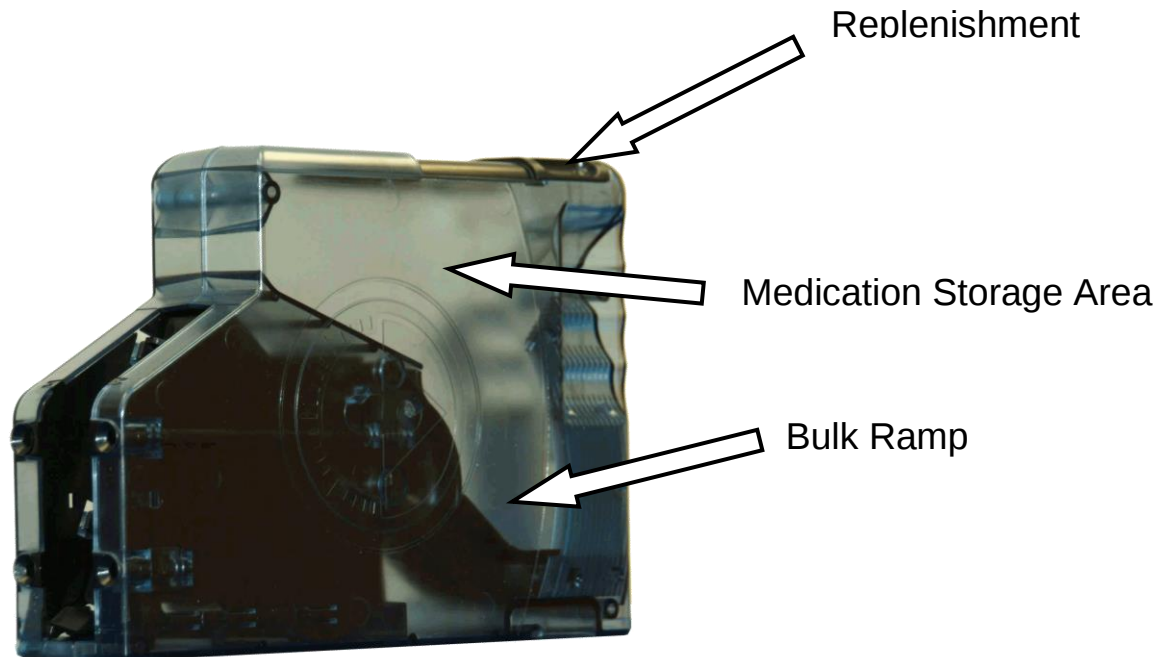
You will need to pull out the internal printer to access the flipper assembly area. See page 57 (currently) in the L60 User Guide for instructions on accessing the printer and flipper assembly. The following photo depicts some of the common areas to look for obstructions.



Check the following areas for obstructions.

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

The Canister



Canister Information and Check Procedures

Information

Manchac engineers designed, tested, and contracted for the manufacture of the canisters for the L60. These canisters have an approximate mean time between failure (MTBF) of 20,000 cycles and an expected lifecycle of five years or more. The canisters are not considered consumables but are considered warranted items of the DOSIS L60. Considerable cost, in time, effort, and expense, is expended in replacing defective canisters and we request that you, as the user, help us to 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 L60 ships with an initial inventory of 72 canisters, 60 for the machine and 12 extra canisters for additional drugs or swap outs. Customers can also purchase additional canisters to meet their pharmacy’s requirements. All canisters including: additional purchase at install, or additional purchase, are considered warranted items and will be replaced, if considered defective by Manchac Technologies.

Canister Types

For this guide, there are two types of canisters.

1. Additional or spare canisters.

Additional or spare canisters are canisters that are added to the original number or present number of canisters retained by a customer. Due to a change in formulary, additional workload, or other issues, a pharmacy may decide they need to have more canisters on hand than they presently possess. These canisters are additional and must be purchased from Manchac Technologies. Please contact us for the current price and be sure to identify that you need additional canisters.

2. Replacement canisters.

Replacement canisters are canisters sent to a customer to replace ones that have been confirmed defective by Manchac Customer Service. There are no costs for the replacements and the canisters will be replaced one for one. The defective canisters will be decommissioned by Manchac Customer Service and will no longer function in the L60. If we determine that the defective canisters require additional analysis to check for form, fit, or function failures, then we will let you know and will fund the costs for the return of these canisters. If a return is not needed, then the defective canisters can be disposed of following your pharmacy’s normal procedures.

Canister Checks

Using the canister adjustment tool included in your kit

Access Door Control

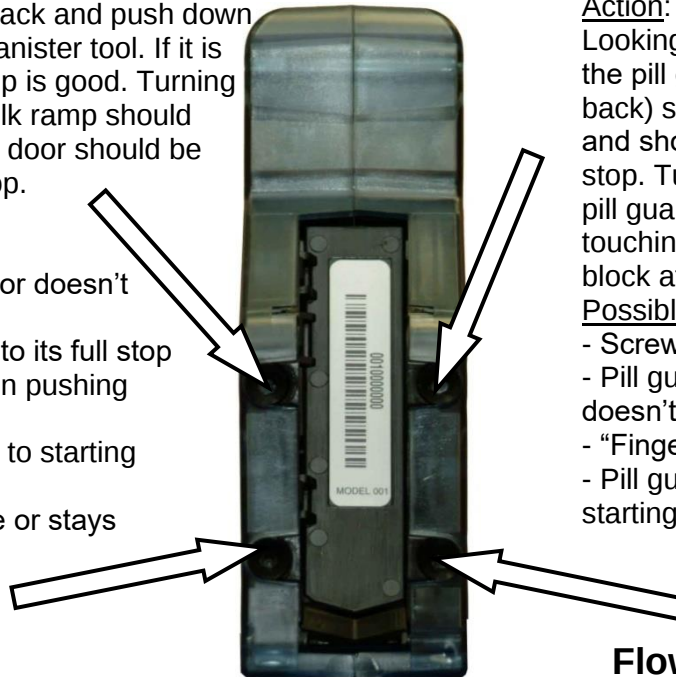
Turn the screw counter-clockwise until it stops.

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 doesn'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



Pill Guard Release

With the Access Door Open (see Access Door Control left), turn the screw counter-clockwise 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

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 bottom at screw stop

Flow Ramp Vibration

With the access door open (see Access Door Control above), 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

DOSIS Maintenance Schedule

			Month:												Machine #:																		
Procedure		Suggested Frequency																															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Visually Check Suction Cups	Weekly																															
2	Remove/Clean Suction Cups	Monthly																															
3	Remove Stray Pills (End of Arm Tooling and Flipper Assembly areas	Monthly																															
4	Clean Lid Slider Roller	Monthly																															
5	Clean Internal Printer Roller	Monthly																															
6	Clean Internal Printer Print Head	Monthly																															
7	Clean Bypass Printer Roller	Monthly																															
8	Clean Bypass Printer Print Head	Monthly																															
9	Vacuum External Cabinet Vents	Monthly																															
10	Dust Top and sides of Cabinet	Monthly																															
11	Remove Stray Pills at Cabinet Bottom	q 6 Months																															
12	Server fan blown out with compressed air	q 6 Months																															

