

Contact

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**Preventive Maintenance Checklist
Microlab STARline**

PM 1 (6-months PM)

PM 2 (12-months PM)

Verification

Other version of PM: _____

PM Date: _____ System S/N: _____

Customer: _____

Contact person: _____

Phone: _____

E-mail address: _____

Address: _____

Postal Code and Address: _____

Country: _____

STARlet

STAR

STARplus

Chemagic

EasyBlood

EasyPunch

NGS STAR

MagNA STARlet

Dual-arm system

Venus Version: _____

Customer owned computer

Maintenance Performed by: _____

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16440 Kista

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Sign: _____



**Preventive Maintenance Checklist
Microlab STARline**

Decontaminate and clean using Disinfectant, Isopropanol or ethanol before you start working with the system, use gloves during the PM process.

Create a folder with the date and PM-type in the naming and put it in the Info folder under the Service folder.

Make a copy of the Instrument Configuration and Instrument data.

Check the firmware versions with the compatibility list.

PM 1 and PM 2

Take away all labware from the deck, clean away dust, particles and disinfect the deck surface, carrier stops, waste block, probe head housings and inner plexiglas covers.

Clean all surfaces on the X- and Y-arm (s).

N/A

1 ml pipetting heads and Channels

Remove the stopdiscs, O-rings and washers from the pipetting heads, use service software for the steps below and follow the guidelines in the service manual.

Clean, oil and lubricate the (silicon oil (511119) and grease (173310))
squeezer- and dispensing spindle.

Clean and slightly lubricate (Topas AK50, 173310) Y- and Z-rail on channels.

Lubricate the Y-spindle with silicon oil (511119).

Clean the contact surface of the squeezer sleeves (199312).

Check / Replace if needed the Tip ejection tubes.

Check / Replace the tension spring on channels, camera and grippers.

Replace stopdiscs, O-rings and washers, use Ergo 4003 (511114)

Run all PM macros according to the service manual.

N/A

5 ml pipetting heads and channels

Remove the stopdiscs, O-rings and washers from the pipetting heads, use service software for the steps below and follow the guidelines in the service manual.

Check stopdiscs (184123) and O-rings (254260) for scratches and none normal use, replace if they doesn't look or work OK.

Check tip ejection tube for free movement.

Clean and slightly lubricate (Topas AK50, 173310) the dosing spindle.

Clean and slightly lubricate (Silicon oil, 511119) the Y-spindle.

Clean and slightly lubricate (Topas AK50, 173310) Y- and Z-rail on channels.

Clean dust from dosing belts and pulleys.

Run all PM macros according to the service manual.

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N/A

iSwap

Use service software for the steps below and follow the guidelines in the service manual.

Clean and slightly lubricate (Silicon oil, 511119) the Y-spindle.
Clean and slightly lubricate (Silicon oil, 511119) on Robotic hand spindle.
Clean and slightly grease (Topas, 173310) Y- and Z-rail on the iSwap.
Use the service software to check all movements and run the PM macro according to the service manual if necessary.

N/A

CoRe 96-Head (ver I, ver II and TADM)

Use service software for the steps below and follow the guidelines in the service manual.

Check stopdiscs, washers and O-rings, replace if necessary (replace all every second year during PM2).
Clean and if necessary slightly lubricate (Silicon oil, 511119) the Y-spindle.
Clean and slightly grease (Topas AK50, 173310) the Z- and Dosing spindle.
Use the service software to check all movements and run the PM macros according to the service manual.

N/A

Co-Re 384-Head (1000µl and STP)

Use service software for the steps below and follow the guidelines in the service manual.

Check stopdiscs, and O-rings, replace if necessary.
Clean and if necessary slightly lubricate (Silicon oil, 511119) the Y-spindle.
Clean and slightly grease (Topas AK50, 173310) the Z- and Dosing spindle.
Use the service software to check all movements and run the PM macros according to the service manual.

N/A

Image System (EasyBlood, EasyPick)

Use service software and Venus Run Control for the steps below and follow the guidelines in the service manual.

Clean the camera lens.
Check the USB cable and connectors for damage, replace if necessary.
Clean and slightly grease (Topas AK50, 173310) the Z- and Y- rail.

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N/A

CoRe 96-, DC 96/384-, DC- Wash Stations

Use service software for the steps below and follow the guidelines in the service manual.

- Check tightness of all tubing and bulkhead fittings, tighten or replace.
- Check bottles against leakage and damage.
- Check all switches and sensors.

N/A

Autoload

Use service software for the steps below and follow the guidelines in the service manual.

- Check insertion guides against contamination and damage.
- Check loading trays against defective or broken slide blocks.
- Check that the loading trays are in level.
- Check for lifted (not completely attached) insertion guides.
- Check against defective or broken stop hooks (173293).
- Check for signs of liquid spillage underneath.
- Clean and decontaminate surfaces under the Autoload ribbon, flatband cable and ensure that there is a collision free movement of the flatband cable.
- Check all belts and drives for any damage, or loose screws.
- Check the cable connections.
- Oil (Silicon oil, 511119) the cogwheel bearings, check the Z-guide shaft and and if necessary clean and slightly lubricate with silicon oil.
- Check the X-linear guide and if necessary, slightly lubricate with grease (173310).

N/A

Needle Wash Station

Use service software for the steps below and follow the guidelines in the service manual.

- Decontaminate and clean spillage trays.
- Check tightness of all tubing and bulkhead fittings, tighten or replace.
- Check bottles against leakage and damage.
- Check the needles for contamination, damage and clean the needles in ethanol. Check all seals, springs, wires, containers (tightness), container- valves and balances. Clean all wash slots with a cotton swab.
- Lubricate the slide bearing (Microgliss, 511057).
- Clean all bottles and fluid system with Wash Station Cleaner (281238).
- Check open and closing of wash lids, magnetic valves.

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N/A

CR Wash Station

Use service software for the steps below and follow the guidelines in the service manual.

- Decontaminate and clean spillage trays.
- Check tightness of all tubing and bulkhead fittings, tighten or replace.
- Check bottles against leakage and damage.
- Check the needles for contamination, damage and clean the needles in ethanol.
- Check the spring of the lever arm (Wash module).
- Lubricate the guide bar of the wash module (Microgliss, 511057).
- Clean all bottles and fluid system with Wash Station Cleaner (281238).
- Check all sensors and switches (service software).

N/A

TCC(s)

- Decontaminate and clean spillage trays.
- Check tightness of all tubing and bulkhead fittings, tighten or replace.
- Check the liquid path (no sharp bending's).
- Check the glycol/water level in the cryostat reservoir, fill up if necessary.
- Hamilton recommend a replacement of the heat exchange solution every second year.*

N/A

MultiFlex Heating/Cooling Modules

- Remove the side cover plates and clean. Blow/
Clean away dust from the fan area.

N/A

BVS/CVS

- Decontaminate and clean spillage trays.
- Check tightness of all tubing and bulkhead fittings, tighten or replace.
- Check the sealing performance of the manifold gasket top. If not satisfactory, exchange the gasket top (186298).
- Check the O-ring under the manifold, if cracks are visible on the O-ring, exchange the O-ring (254208)

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N/A

Hepa Hood

Once a year, replace the small filter (p/n: 51015-01, dim: 14 x 18 x 1).
Every second year, replace the large filter (p/n: 51011-01, dim: 18 x 24 x 3).

N/A

Card Puncher and Card/Plate Handler

Remove and clean the Glass Plate. Visually inspect the Glass Plate for scratches and damage (do not use Solarsept). "Resoap" the glass surface and wipe away all needless soap.

Empty the vacuum system dust collector.
Check the Gripper Jaws (rubber coating). Change as needed.
Check the Vacuum Particle Filter (P/N 803687). Clean as needed. Replace every 2 years.
Check the Ionizer Filter. Change if necessary, at least every 2 years. (Set of 5 ER-QFX5(391227)).
Remove the Eccentric Cover. Inspect and clean as needed.
Clean the Slider of the MTP Plate Support.
Remove Punch Cover and clean the Punch Drive Mechanism.
Perform Position and Camera Macros.
Perform the easyPunch Verification (use Consumable Kit 8 (199411)).

N/A

Chemagic

The Service interval for the Extraction Unit is 6 months. During a maintenance service the Extraction Unit has to be checked for any damages, it has to be cleaned and disinfected and all moving parts have to be lubricated where applicable.

Extraction Unit Disinfection and Cleaning
Clean the Chemagic Rod Heads (70% Ethanol, use a lint free cloth in jog mode).
Remove the Drop cover and clean.
Lubricate the linear guide rails and linear slides of the axes to prevent corrosion and maintain optimal gliding (use Hiwin G02/G03/G05 greases or Dynalub 520).
X-axis lubrication
Z-axis lubrication
Lubricate the drop cover unit linear guide rail

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PM 2

All the items on page 3 - 6 plus the mentioned below.

Remove the deck panels on an annual basis, or when signs of spillage are observed.

Check against defective or broken slide blocks.

Take away the plastic cover underneath the deck and check electronics and mechanics. Clean the plastic cover with isopropanol.

Clean flatband cables channel and ensure collision free movement of the cables.

Check the steel band and ribbon cables for damage, cracks or breaking, replace as needed.

All belts, drives and cables for damage – or loose screws.

Check the distance of the X-Magnetic reader on the X-arm(s) to the magnetic tape.

Clean all surface on the X-arm (s).

Clean and slightly lubricate with silicon oil (511119) the front X-guide shaft, wipe away all remaining oil.

Clean and slightly grease (Topas, 173310) the X-rail, take away all remaining grease.

Run verification for X-, Y- and Z positioning, Barcode, Volume and Heater shakers.

Remarks: _____

PM 1 and PM 2

Reassemble

The autoloader ribbon.

The deck panels and reconnect the carrier stops.

All multiprobe heads.

Loading trays.

All deck components and labware.

All side-, back and front covers.

Check

That the instrument stickers are OK and that the PM label are replaced and/or correct filled.

That all instrument cables are OK (i.e., power- and communication cables).

Teaching needles for signs of damage, decontaminate and clean them, damaged teaching needles should be replaced (inform customer).

Check carriers for signs of damage and spillage, decontaminate and clean dirty carriers, ensure smooth gliding on deck panel and loading trays, damaged carriers should be replaced (inform customer).

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After PM

Make a copy of the Instrument Configuration and Instrument data and save them in the Info folder under the Service Map.

Create the Service report

Print out the verification reports (Only on PM 2 or when verifications has been performed) and sign them.

Send (or handover) the service report, this PM checklist, copy of your used instruments calibration certificate and the signed verification report (PM 2) to the customer.