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BACTROX, BACTROX-2

Long-Term Preventative Maintenance Schedule [DRAFT]

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- **SUBJECT**

Long-Term PM schedule for Bactrox Hypoxia Chamber

- **SUMMARY**

This Document outlines the Preventative Maintenance checks that should be performed on the Bactrox (-2) Hypoxia Chamber every 6 months. These maintenance checks may also be performed on an as-needed basis throughout the year; however, this PM check-set should be performed on a 6 month basis regardless of any daily or spontaneous maintenance actions.

- **LONG-TERM PM SCHEDULE AS FOLLOWS:**

Carry out the following inspection steps every six (6) months:

1. Verify that the unit is not missing panels or parts.
2. Inspect the exterior surfaces for obvious signs of damage.
 - a. Minor nicks and scratches on the acrylic glass surfaces of the front flange and top flange can be fixed by cleaning and then applying Novus brand Acrylic Glass Scratch Remove (PN 1060504).
 - b. Cracks that penetrate the acrylic flange, often visually presented as "spider-webbing," will require replacement of the flange.
3. Inspect power-management systems.

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- a. Inspect the power cord and confirm that it is properly connected to both the all source and the BACTROX inlet, and is free from damage or fatigue.
 - b. Using a volt meter, verify if the power source meets the requirements listed in the BACTROX user manual.
 - c. Verify that the green control panel displays illuminate when BACTROX is turned on, and all control panel displays properly illuminate.
4. Inspect the following operational components:
 - a. Ensure condensate-controller fan and chamber circulation fan are both operating
 - b. Verify all LEDs on the lightbar are functional.
 - c. Inspect the air intake pump for proper activation when the O2 setpoint is increased.
5. Inspect the gas lines from the gas cylinders or gas sources. Look for kinks, bends, or other signs of obstruction. Gases should be supplied to the BACTROX at 15 to 20 PSI.
 - a. Replace the in-line HEPA filters (PN 2800525) every 6-12 months
6. Check the pass box gaskets for signs of wear (PN 3450506):
 - a. Replace if there are cracks, brittleness, loss of elasticity, or other signs of wear. Replace if excessive stretching prevents the gasket from adhering when the door is opened or closed.
 - b. Gaskets are expected to last anywhere from 3 months to 12 months before replacement is needed.
7. Check the sleeve assemblies for cracks, brittleness, or signs of wear. Verify that all parts are present, including self-grip fastening straps. Replace if necessary. Make sure to inspect:
 - a. The cuff rings for cracks or protruding pieces of plastic that could cause damage to the sleeves, cuffs, or user.
 - b. The cuff O-rings for cracking, brittleness, or loss of elasticity.
 - c. The sleeves for holes, cuts, abrasions, or cracks.
 - d. The sleeve cuffs for tears, loss of elasticity, or fraying.
 - e. Sleeve assemblies are expected to last from 3 to 12 months between replacements.
8. Discard and replace the Anatox activated charcoal scrubber (PN 1060500) currently in use every six months.

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9. Inspect the Armpport door O-rings (6000509) for signs of wear or cracking. These O-rings should last for 12 to 48 months.
10. Perform Oxygen and CO2 calibrations every 12 months
11. Review the quality control or maintenance log records of the BACTROX going back to the previous inspection.
 - a. Look for unusual variations in the recorded incubator temperature.
 - b. Look at the recorded daily gas cylinder(s) pressure readings. Check for unusual intervals of gas consumption.
 - c. Check calibration records against current calibration values; look for high or increasing disparities between the instrument's values and the reference meters' values. High disparities or unstable calibration symptoms may be indicative of sensor failure.
12. Inspect the ambient conditions where the Bactrox unit is operating, the installation parameters, and interrogate the users' operating principles.
 - a. Check that the ambient temperature of the room is between 59°F - 86°F (15°C - 30°C), at no greater than 80% Relative Humidity. Conditions outside of this range will adversely impact the incubator performance and create condensation in the workspace chamber.
 - b. Verify the workstation is not exposed to direct sunlight, radiant heat sources, air conditioning vents or other fast moving air currents. All of these may adversely impact temperature uniformity, stability, and the effective operating range of the incubator.
 - c. Check that the workstation has at least 4 inches (10cm) open on all side to allow for adequate air flow, as well as 2 inches (5cm) above the top of the unit.
 - d. Verify that users are NOT using Ultra-Violet sterilizers inside or in the vicinity of this equipment, as this will degrade the acrylic flange and contribute to premature material-failure.
 - e. Ensure that users are not using harsh chemical cleaners that may damage plastic materials to clean the acrylic flange. These chemicals include, but are not limited to, hexanes, ketones, mineral spirits, strong acids or bases, halogenated solvents, and toluene/aromatic solvents.