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updated w concentrate bin maintenance

RECOMMENDED MAINTENANCE FOR FLOW SORT X-RAY DIAMOND RECOVERY MACHINES

Please Note: Throughout this document “FLOW” shall mean Flow Electronics (Pty) Ltd and its subsidiary company Flow Sort (Pty) Ltd

1. GENERAL

- a. When servicing and or maintaining FLOW SORT X-RAY DIAMOND RECOVERY MACHINES it is of utmost importance to take into account that these machines use X-Ray radiation as well as very high voltage potentials.
- b. Only personnel adequately trained and qualified to service FLOW SORT X-RAY DIAMOND RECOVERY MACHINES may conduct any service tasks on these machines.
- c. **FLOW SORT X-RAY DIAMOND RECOVERY MACHINES being serviced by untrained personnel and / or using not approved parts and components in the repair or service of FLOW SORT X-RAY DIAMOND RECOVERY MACHINES, may not only lead to equipment malfunction but also to damage of the machines and even to injury or even death of personnel.**
- d. FLOW conducts regular service personnel training courses. FLOW Candidates who have attended such training course receive a certificate from FLOW stating which level of training they have passed and therefore what type of work they are authorized to. (Operating, Maintenance, Repair).
- e. Only use parts and components for any service and / or repair work on FLOW SORT X-RAY DIAMOND RECOVERY MACHINES
- f. Allowing untrained, not-certified persons to conduct any service or maintenance work or using non-approved parts on FLOW SORT X-RAY DIAMOND RECOVERY MACHINES is in contravention with the prevailing laws governing the usage of radiation emitting devices. This can lead to revoking a customer’s user license as well as possible legal action.

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2. SAFETY AND SECURITY

- a. Above all issues relating to the performance and efficiency of a FLOW SORT X-RAY DIAMOND RECOVERY MACHINES is their SAFETY
 - i. Rule No.1 Never ever work on a FLOW SORT X-RAY DIANOND RECOVERY MACHINE without making 100% sure that there is NO ELECTRIC POWER connected. ISOLATE THE SORTERS CONTROL PANEL FROM THE MAINS SUPPLY and insure that unauthorized or unintentional re-connection of the sorter during service (maintenance) is not possible.
 - ii. Rule No.2 NEVER USE A SAFETY INTERLOCK OF THE FLOW SORT X-RAY DIAMOND RECOVERY MACHINE AS AN “ON / OFF” SWITCH.
 - iii. Rule No 3. Never ask anyone to check if THE POWER TO THE SORTER IS SWITCHED OFF, always check for yourself!

3. REFERENCE BASE FOR SERVICE WORK ON A FLOW SORT MACHINE

- a. When a FLOW SORT X-RAY DIAMOND RECOVER MACHINE is commissioned by a qualified FLOW technician a complete “SET-UP RECORD” is recorded. **ATTACHED REFER TO**
- b. This SET-UP record is to be adhered to at all times unless it is altered and properly recorded by a fully qualified and certified technician.
 - i. A sorters set-up record contains information, for each of the three pre-select positions, about:
 1. the X-ray current
 2. the X-ray voltage
 3. the channel sensitivity dial reading for the left channel
 4. the channel sensitivity dial reading for the right channel
 5. the feeder dial reading
 6. the left P.M. tube current (μA) reading
 7. the right P.M. tube current (μA) reading
 8. the feeder control gate opening in “mm”
 9. the material size
 10. the “inlet” water pressure
 11. the “feed” water pressure
 12. the X-ray “cooling” water pressure
 13. K45 filter installed or not
 14. K42 filter installed or not
 15. percentage of FLOW SORT TRACER recovery at a specific channel sensitivity setting and μA reading

4. DAILY CHECKS AND SERVICE

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- a. COMPARE the actual sorter settings against the SET-UP RECORDS as listed in 3.b.i.1.to 3.b.i.12
 - b. RECORD the all (actual) sorter settings in the sorters LOG BOOK. **ATTACHED**
 - c. DO NOT MAKE ANY ADJUSTMENTS (CORRECTIONS) to any of the sorter settings without fully understanding why such adjustment has to be made. If in the slightest doubt consult with a FLOW machine expert.
 - d. RECORD any changes made with a clear reference to ‘why’, ‘when’ and by ‘who’s recommendation and / or instructions.
 - e. Check for any physical wear, damage, blockage, leaks etc. of the sorter itself; i.e. lamps, LED’s, printer-paper, printer ribbon meters, etc. as well as any connected components such as chutes, pipes, filters cables etc.
 - f. Back-wash water filters and clean / replace filter elements when necessary.
 - g. **KEEP SORTER CLEAN AT ALL TIMES**
 - h. **CONDUCT A TRACER TEST** compare results with 3.b.i.14 and record results

124 **5. WEEKLY CHECKS AND SERVICE**

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- a. Check WINDOW FRAMES for wear and replace when necessary
 - b. Check EJECTOR GATES for wear and replace if necessary
 - c. Check EJECTOR BRAKES for proper friction setting
 - d. Check FEED CONTROL GATES for wear
 - e. Check/Clean OVER-FEED PROTECTION components
 - f. Check transfer chute liners in (TSXR machines only)
 - g. **Conduct a TRACER TEST** compare results with 3.b.i.14 and record results

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- a. Check FEED SLIDES for wear and replace if necessary
 - b. Check EJECTOR SHAFTS and BUSHES for wear and replace if necessary
 - c. Check WATER DEFLECTOR(S)

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7. EVERY TIME A CONCENTRATE BIN IS REMOVED

- a. Clean the concentrate bin guide rails (bin support ball plungers)
- b. Check plungers and replace faulty ones
- c. Lubricate the clean rails with a water repellent lubricant spray such as Q20
- d. Clean concentrate bin lid after every bin opening
- e. Clean concentrate bin after every emptying

8. EVERY TIME AN EJECTOR IS REMOVED

- a. Clean Ejector slides and gaskets
- b. Check Ejector gates for tightness
- c. Check Ejector gates for wear
- d. Check Ejector liners and frame for wear
- e. Check on models XR 35W and 50W the Ejector centre bush assembly for damage and wear. Replace if necessary.

9. EVERY TIME A WINDOW FRAME IS REPLACED

- a. Clean window frame seat in feed slide
- b. Check Optic Box front gasket and replace if necessary
- c. Check Optic Box window film and replace if necessary
- d. Check micro-switch membrane for fatigue and damage
- e. Insure proper optic box insertion into feed slide
- f. Conduct a TRACER TEST compare results with 3.b.i.14 and record results.

10. EVERY TIME A FEED SLIDE IS REPLACED

- a. Check all feed stabilizing curtains for wear and replace if necessary
- b. Ensure that there are no water leaks after replacing a feed slide
- c. Conduct a TRACER TEST compare results with 3.b.i.14 and record results.

200 **11.EVERY TIME THE PRINTER PAPER ROLL IS REPLACED**

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- 202 a. Check status of the printer ribbon
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- 204 b. Check the inside of the control panel for cleanliness
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- 206 c. Check for any loose plug-in PC boards
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209 **12.DO NOT SERVICE ANY COMPONENTS LOCATED UNDER**

210 **THE X-RAY COVER**

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- 212 a. If a problem is encountered with any of the components inside the x-ray
- 213 compartment CALL AN OFFICIAL FLOW SERVICE AGENT for assistance.
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216 **13.DO NOT SERVICE ANY COMPONENTS LOCATED UNDER**

217 **THE X-RAY GENERATOR COVER**

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- 219 a. If a problem is encountered with the high voltage x-ray generator located under
- 220 the x-ray generator cover, CALL AN OFFICIAL FLOW SERVICE AGENT for
- 221 assistance.
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224 **14.DO NOT SERVICE ANY PARTS INSIDE THE OPTIC BOX**

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- 226 a. If a problem is encountered (suspected) with any of the components inside the
- 227 optic box, CALL AN OFFICIAL FLOW SERVICE AGENT for assistance.
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230 **15.DO NOT SERVICE ANY PARTS WITHIN THE SORTERS**

231 **CONTROL PANEL WITH THE EXCEPTION OF CHANGING,**

232 **PRINTER PAPER, PRINTER RIBBONS AND FUSES.**

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- 234 a. If a blown fuse is replaced and it blows again DO NOT KEEP ON REPLACING
- 235 IT BUT CALL AN OFFICIAL FLOW SERVICE AGENT.
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