o **Print Job Prep**

- Perform Daily User maintenance tasks**, see User Maintenance checklist for weekly, monthly checklist**
  - o Daily/Every Print
    - Laser Window, inspect and clean if needed
      - Laser Window Assembly O-Rings
        - o consumable replace as needed
        - o PM replace (1yr)
    - Black body, inspect and clean if needed
    - Inner Chamber door, clean seal and window
    - Chamber interior including heater trays should be wiped down.

Note: Both inner and outer door must be closed (interlocks made) in order to move the part piston or roller. Opening a door or an interlocked cover such as the overflow cover or blackbody cover will cause the contactor to drop out. If the piston or roller is moving when this happens you will need to re-home each of them.

Note: When ProX 500 is idle, keep inner and outer doors closed, and all interlocked covers on so that the IR core heater remains on and the IR core is at a stable temperature.

o **Build Setup**

Follow normal best practices for part placement and orientation.

Additional Hints:

- Large cross-sections should be placed at higher z-heights to reduce occurrence of post-build curl.
- If cross-section is large (12,500mm2) it should be rotated to enough so that the area being scanned on each layer is reduced. This helps prevent short feeds and reduce layer time.
- Keep scan time per layer as even as possible. If possible keep scan time under 30-35 seconds.
- Use Build Time estimate and Tools/View Layer time to see scan time per layer
- Geometry's that are closed on all sides except one should be built with the open side up if possible to prevent trapped heat, making breakout easier and extending the life of the powder.

New Build Parameters:

- 6 heaters (Q1,Q2,Q3,Q4, Right Inner, Left Inner)
  - One calculated Master Duty Cycle
  - Each of the 6 heaters uses a ratio of the Master Duty Cycle. The default ratio values should give a uniform part cake hardness
    - If part cake at breakout is too soft overall, then increase the part heater setpoints by small increments (0.5 to 1.0 degrees)
    - If part cake at breakout is too hard overall, then decrease the part heater setpoint by small increments (0.5 to 1.0 degrees)
    - *Be aware that changing the ratio for one heater may require changes to the ratios of other heaters in order to maintain the balance of the heaters.*
    - *IF making adjustments make small incremental changes of 1 or 2%. Increasing/decreasing the ratios by larger amounts will require a change in part heater setpoint.*
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- See Release Notes for diagram of new layer time definitions
  - Post-Add Powder delay – default is set to 8 seconds and as you gain experience with the ProX 500, you will be able to determine when this delay is needed. Most likely it will still need at the beginning of the build.
  - Pre-Add Powder delay – default is zero
  - Re-Feed Delay – default is 1 second, as you gain experience you will be able to remove this delay
- Feed Powder amount
  - This value is the rotation of the Feed Roller (located just under the feed hopper)
    - This should be adjusted so that the traverse roller moves enough powder across the part bed to cover all the scanned area and deposit a small amount in the return piston. If scanned area is very similar on each layer, one feed amount for entire build stage will be good. If scanned area varies a lot from layer to layer then use an amount that will work for the layers with the larger area.
    - Note: If ProX 500 is not run for several days, it may take several layers while leveling powder for feed powder to dispense properly.
    - Note2: If Feed Hopper is emptied completely and then re-filled, allow several hours before starting a build so that powder "settles" and feeds correctly.

Before Starting the build:

- Verify Chiller is on (flow 7 lpm) and at proper temp (20C) o Verify laser window N2 flow (5 lpm) (when not purging) o Verify Compressed air on
- Verify MQC in Full Cycle mode
- Verify adequate powder in MQC (in blended bin) or that MQC will be able to blend more if needed..
  - **1kg of powder for every 18-20mm of build height**.
  - Feed Hopper holds approx. 6kg but as a normal practice you should keep hopper full by allowing MQC to send powder to hopper as powder level drops below upper prox.
- **<u>Verify Heater Trays are in correct position</u>**

- **Build Removal**
  - Part Bed Surface should be at or below 85C to open Print Chamber door
  - Then move piston to approx. 20 mm below current location
  - Open doors
  - Raise Heaters
  - Remove Laser window and Replace with red insert
  - Brush loose powder from liner plate onto part bed
  - Pull roller forward and brush powder from roller bar into part bed, return roller to left   position
  - Place extraction cylinder in chamber & close doors
  - Move piston to Start position
  - Open doors and slide extraction tray under extraction cylinder and lock tray into place
  - Use extraction Tray (and cart for heavy builds) to move part cake to MQC
  - Complete cooldown in MQC, using Cooling lid (if desired)
  - Part Breakout
    - Currently the MQC is set for Cooling by temperature (setpoint is 40C)
    - Discard powder next to parts and any hard clumps that do not break apart easily in hand.
  - Material sifting
    - Separate reusable powder to sift and discard remainder