

03. Build Preparation

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Part height						
21.54 mm	21.54 mm	Gas OFF	U			
Total of ma Current 04h51m12s	Estimated 04h19m44s	O2 value 21.0 % O2 setpoint 0 ppm Enclosure pressure 0 mbar Enclosure temperature 35.3 °C				
04 Layering 717 00m11s 02h10m54s	Sintering 717 00m04s 02h16m18s	Lens cleaner Turbine Setpoint 0 % Feedback				
Launching Start of cycle End of cycle	 Sintering Layering 	Part Clamping Available powder 198.00 mm Zero sintering 101.40 mm Loaded material	READY			
Layer 0 to 0		Laser/Optic Defocus 0.00 mm Laser power setpoint 0 % 0 W				
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Introduction

This guide will lead you through preparing the ProX 200 to start running a build. You will also need to read the Lens Cleaning Dozuki for in depth cleaning procedures.

Step 1 — Build Plate - Cleaning

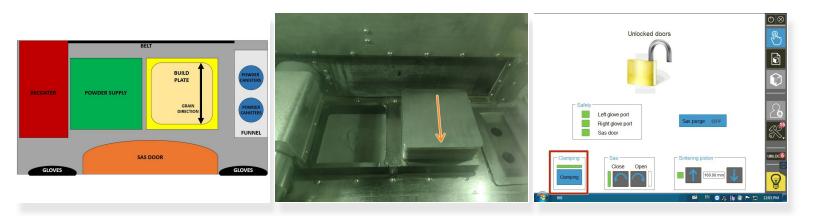


• Attach the build plate to the base plate using (4) 4mm screws

Build plate grain direction must be perpendicular to recoater direction of travel. (Vertical to front of machine)

- Clean build plate and base using IPA
- Place build plate in open SAS

Step 2 — Build Plate - Clamping



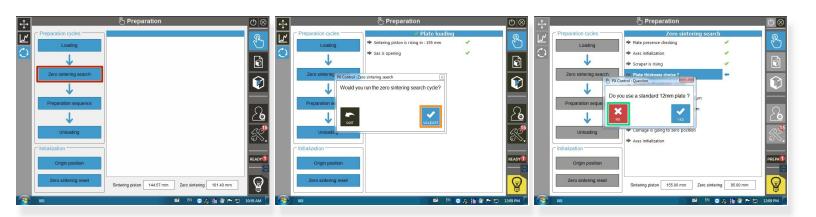
- After opening the SAS to the machine, gently place the build plate and base on the build platform
 - The inscribed **FRONT** should be facing you and the gear teeth should easily slot into place
- Select CLAMPING to activate the suction cup
- The build plate will not sit evenly if there is powder in the gear teeth which will be evident in the preparation layer

Step 3 — Build Plate - Loading

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Preparation cycles Loading ∠ Zero sintering search ↓ Preparation sequence ↓ Unloading			
Initialization Origin position Zero sintering reset	Sintering piston 144.57 mm Zero sintering 101.40 mm	READY	Initialization Origin position Zero sintering reset Sintering piston 160.00 mm Zero sintering 101.40 mm

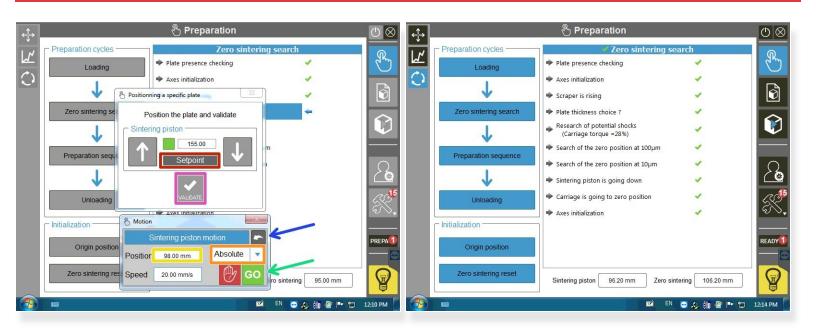
- Navigate to the Preparation Menu and touch Loading to start the process
- We do not currently mark the plate number so just touch Validate

Step 4 — Build Plate - Leveling



- Touch **Zero Sintering Search** to start the leveling process
 - Touch Validate
- Touch **NO** because we do not use a 12mm plate

Step 5 — Build Plate - Leveling



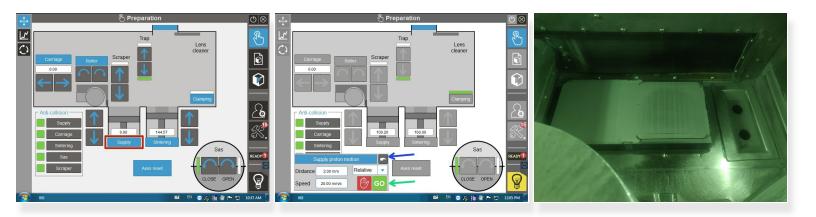
- Touch Setpoint to set the height for the top of the build plate
- Change the drop down menu to Absolute
 - Set the value to 98 mm
 - Touch **GO** to move the sintering piston
 - You have to touch the back arrow to exit this menu
- Touch Validate to initiate the automatic zero sintering process
- The machine will run through the zero sintering procedure to level the build plate for the preparation layer
 - (i) The process takes a few minutes

Step 6 — Build Plate - Preparation Layer

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cleaner line line line line line line line line	\bigcirc		Axes initialization	~			8 Preparation sequence	
koler		¥	Scraper is rising	~	8	¥	ProX200_PowderBed.S	ð
		Zero sintering search	Plate thickness choice ?	~		Zero sintering search	Value Unit	\sim
		1	 Research of potential shocks (Carriage torque =28%) 	*		1	Layer thickness 10 µm	
		Preparation sequence	Search of the zero position at 100µm	~		Preparation sequence	Compacting rate 0 %	
		Proparation sequence	Search of the zero position at 10µm	~	Ω	Proparation Sequence	Compacting Iteration 100	Ω
		↓	Sintering piston is going down	1	<u> </u>	↓ ↓	Powder raising 120 µm	۲
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		Origin position			READY	Origin position		
Axes reset						-		
CLOSE OPEN		Zero sintering reset	Sintering piston 96.20 mm Zero si	ntering 106.20 mm		Zero sintering reset	Sintering piston 96.20 mm Zero sintering 106.20 mm	
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- (i) The powder supply should be at an even height with the build platform
 - If it isn't, raise the piston until it is level
- Touch **Preparation Sequence** to start the powder layering process
- Make sure the Layer Thickness is set to 10 um and then touch Validate

Step 7 — Build Plate - Preparation Layer



You will repeat the preparation layering steps if the first layer of powder is uneven or has weird patterns

(i) You are looking for an evenly distributed thin layer of powder

- Touch SUPPLY and raise the powder supply up 2 mm using Relative motion
 - Touch **GO** to move the piston

(i) Each time you touch GO the powder supply will move an additional distance

- You must select the back arrow to exit the menu
- Go through the **Preparation Sequence** again
- You are finished once the powder layer looks even

Step 8 — Loading Build File

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Loaded file : dog_bone		Available laye	ers : 718	l naded file : dog bon	e		Available layers :	718
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					_smaller_Support - Blade		0.00 mm 9.56 mm	25
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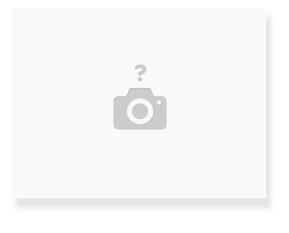
- Find the build file from the build menu and then touch LOAD FILE
- Touch **BUILD LAYERS** after confirming all associated files are present
- (i) Support structures are considered as their own objects

Step 9 — Water Supply Check



- Open up the machine using the square key for the (2) locks
- The water level should be between the marked levels
 - Add DI water if necessary

Step 10 — Lens Cleaning



• View the Lens Cleaning Dozuki

Step 11 — Purging Oxygen

Preparation	€ Preparation 0 ⊗	ې او
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Temperature	Temperature	
OFF Oven 60 Temperature setpoint 0°C 20	OFF Oven	Carrage Sintering
Temperature value	Temperature value 35.2 °C	Scaper Axes reset
External vacuum valves 🔁 📑 Valve status 💿 mber	External vacuum valves 🔁	CLOSE OPEN
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- (i) This will take ~2 hours
- Close all valves by touching EXTERNAL VACUUM VALVES
- Manually lock the arm holes and make sure to turn the Argon on
- Set oxygen to **DIRECT**
- Change the O2 setpoint to **1000 ppm**
- Touch **INERTING CYCLE** and set to **ON**
- Open and close the lens trap when the oxygen value is at 2000 ppm for about 3 seconds
 - This will cause a small spike in oxygen, but will go back down to 1000 ppm

Step 12 — Manual Powder Layering

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Progress Part height 0.00 mm	← INFORMATION →	Progress Part height 0.00 mm / 21.54 mm Atmos		Part height 0.00 mm / 21.54 mm	← INFORMATION →
Total of manufacturing Current Estimated 04h51m12s / 04h19m44s	Gas OFF O2 value 210 % O2 setpoint 1000 ppm Enclosure pressure 0 mbar	Total of manufacturing Current Estimated 04h51m12s / 04h19m44s	Gas 0FF 02 value 210 % 02 setpoint 1000 ppm Enclosure pressure 0 mbar	Total of manufacturing Current Estimated 04h51m12s / 04h19m44s	Gas OFF O2 value 21.0 % O2 setpoint Enclosure pressure O mbar
0% Layering Sintering	Enclosure temperature 35.6 °C	0% Layering Sintering		0% Layering Sintening	Enclosure temperature 35.7 °C
717 717 00m11s 00m04s 02h10m54s 02h16m18s	Turbine Setpoint 0% Feedback 0%	717 717 00m11s 00m04s 02h10m54s 02h16m18s	Turbine Setpoint 0% Feedback 0%	717 717 00m11s 00m04s 02h10m54s 02h16m18s	Turbine
Start of cycle Sintering	Clamping Available powder 58.20 mm Zero sintering 106.20 mm	Launching Start of cycle Sintering	Clamping Available powder 58.20 mm Zero sinteing 106.20 mm	Start of cycle Sintering	Clamping Available powder 58 20 mm Zero sintering 108 20 mm
End of cycle Layering Layer to to	Loaded material READY CLASER/Optic Defocus 0.00 mm	Layer 1 to 1 Layering		End of cycle X Layering Layer 1 to 1 +1	Loaded material RSAUV1
X Aiming	Laser power setpoint 0% 0W		ocus er pover setpoint 0 % 0 W	Aiming	Defocus 0.00 mm Laser power setpoint 0 % 0 W

- The preparation layer is layer 0. Turn off all LAUNCHING commands except Sintering. Then touch PLAY to Sinter 0
- Touch +1 to move to the next layer. Turn on Layering and turn off Sintering
 - Touch PLAY to Layer 1
 - Turn off Layering and turn on Sintering. Now Sinter 1
- Repeat 3-5 times until it looks good

Step 13 — Run the Build

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Progress Part height		← INFORMATION →	_মি
21.54 mm Total of ma Current 04h51m12s	/ 21.54 mm anufacturing Estimated / 04h19m44s	Gas OFF O2 value 21.0 % O2 setpoint 0 ppm Enclosure pressure 0 mbar	
Layering	% Sintering	Enclosure temperature 35.3 °C	(\mathfrak{P})
717 00m11s	717 00m04s	Lens cleaner Turbine Setpoint 0 %	
02h10m54s	02h16m18s	Feedback 0%	2
Launching Start of cycle End of cycle	Sintering Layering	Part Clamping Available powder 198.00 mm Zero sintering 101.40 mm Loaded material	READY
Layer 0 to 0		Laser/Optic Defocus Laser power setpoint 0 %	
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- Select build to end and sinter to end
- All Launching commands should be selected
- Touch **PLAY** to run the build