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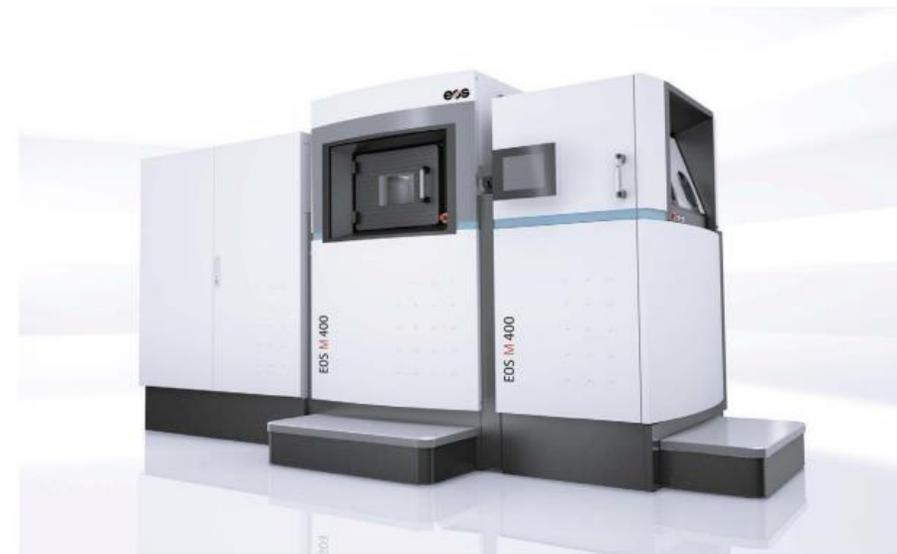
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Gas Inlet Nozzle Exchange

Gas Inlet Nozzle Exchange Overview



Gas flow in the PBF-LB system is critical to a successful metal AM build. It is essential in preventing oxidation of the metal alloys during printing as well as to carry process emissions away from the melt pool to keep the build chamber, walls and optical system clean from accumulated particles and metal condensate.



EOS M400

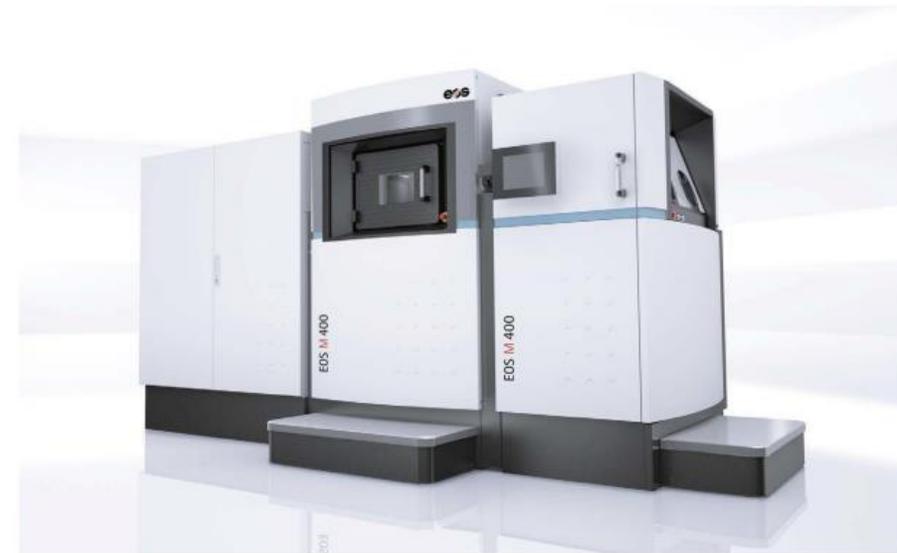
Gas Inlet Nozzle Exchange Overview



Use of differently shaped nozzles, can enhance the gas flow in the chamber improving the build process by reducing turbulence of the gas flow. Therefore, maintaining and changing gas inlet nozzles to ones that can improving the gas flow in the chamber is a key operation in keeping PBF-LB system functioning correctly.

Gas Inlet nozzle exchange scenario to focus on:

- Location of a gas inlet nozzle
- Process of exchanging gas inlet in situ nozzle with aerospike nozzle
- Summary



EOS M400

Gas Inlet Nozzle Exchange

Step 1 – HMI Command

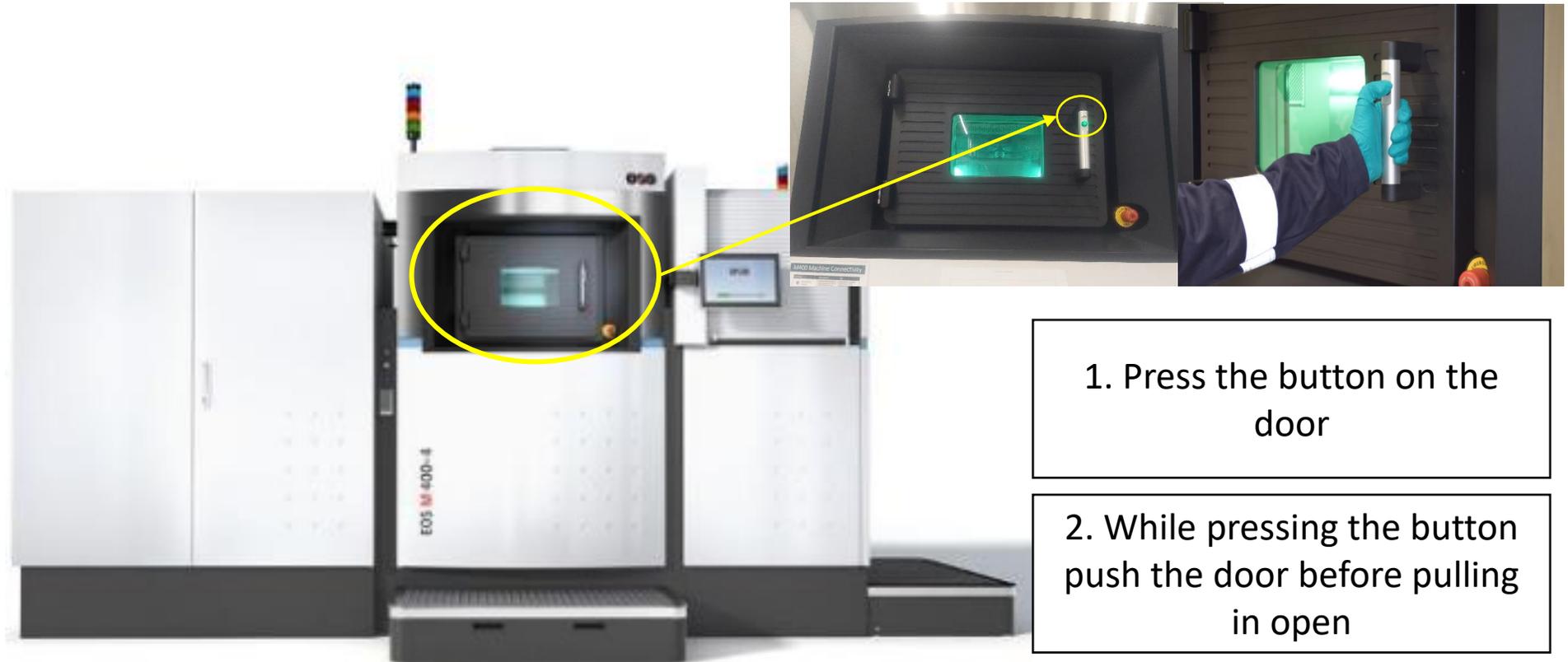


EOS M400-4 - HMI

1. Select “open door”
function on the HMI

Gas Inlet Nozzle Exchange

Step 2 – Build Chamber



1. Press the button on the door

2. While pressing the button push the door before pulling in open

EOS M400-4 Build Chamber

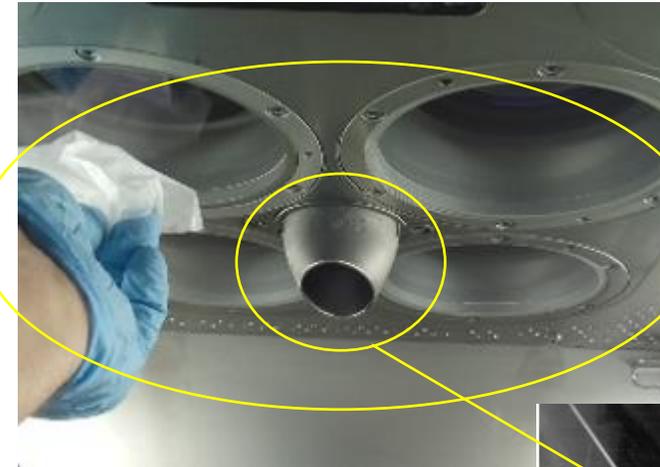
Gas Inlet Nozzle Exchange

Step 3 – Location of the Gas Inlet Nozzle

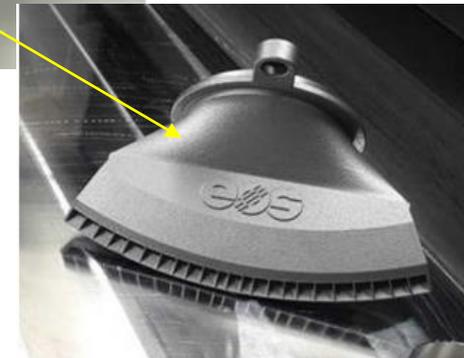
1. Gas inlet nozzle is located at the top of an EOS M400-4 build chamber



EOS M400-4 Build Chamber



Old Nozzle in Situ



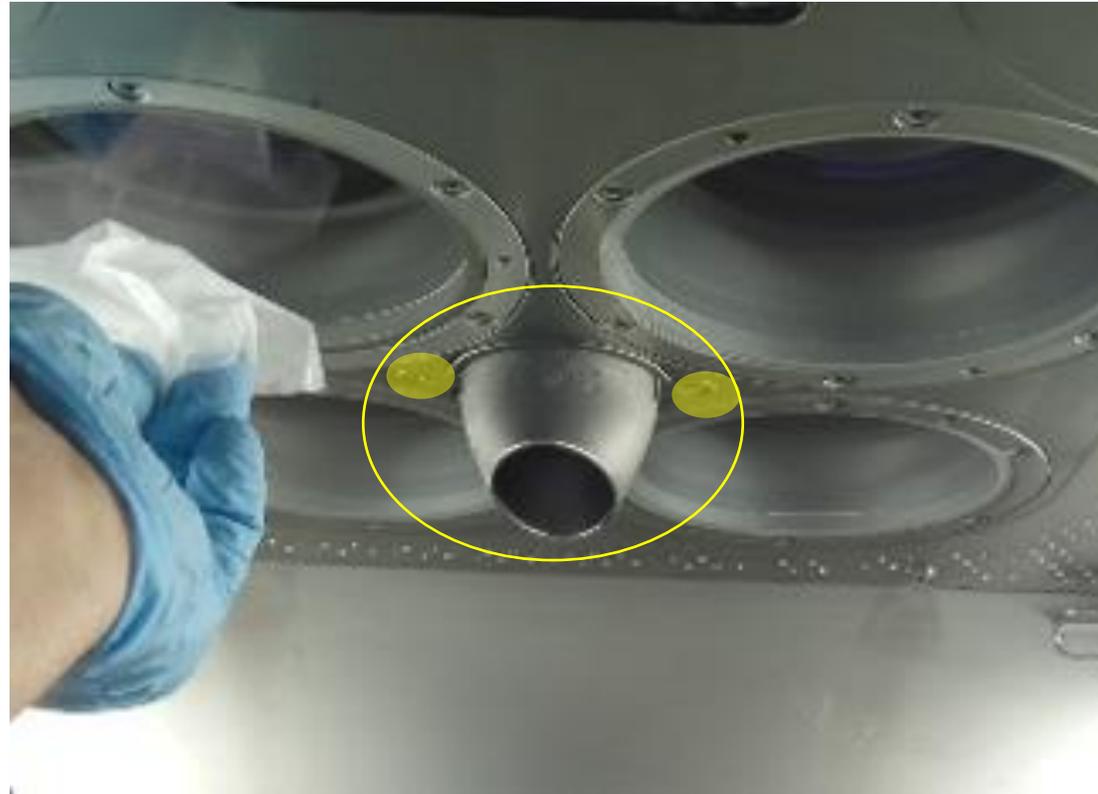
Aerospike nozzle

Gas Inlet Nozzle Exchange

Step 4 – Removing In-situ Nozzle



1. Use an Allen key to remove bolts on each side of a gas inlet nozzle



Take extra care when around the laser windows, not to scratch them etc.!



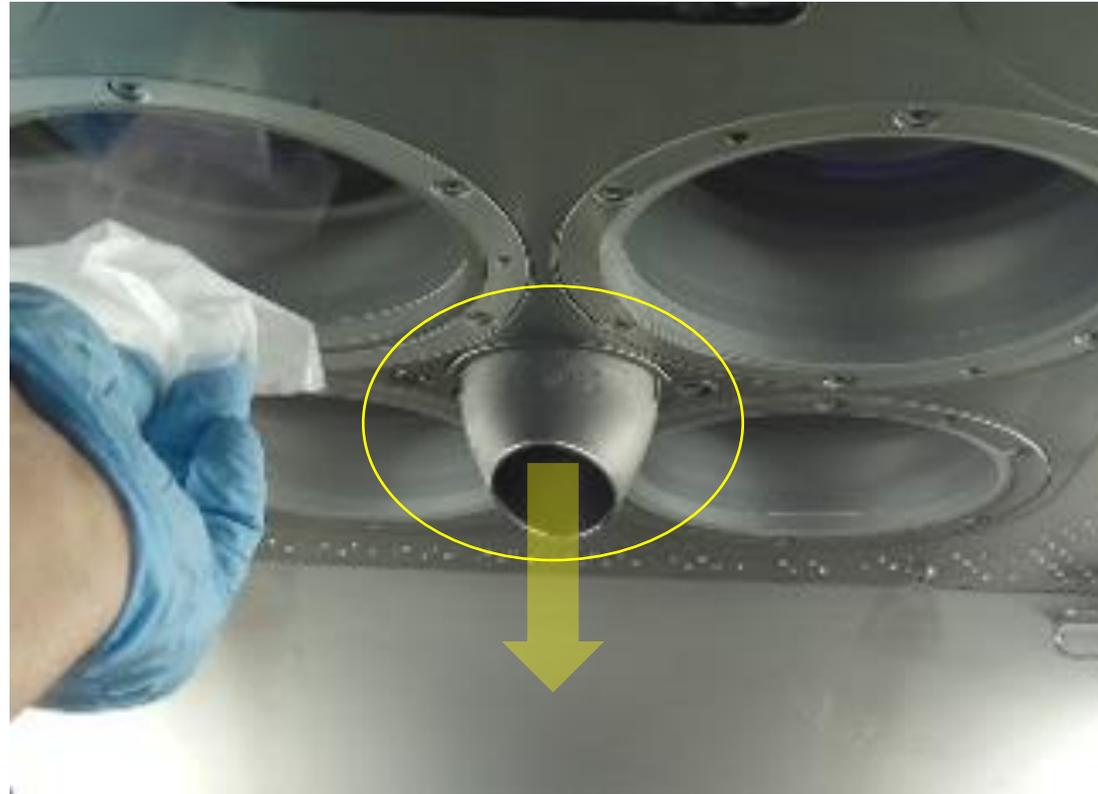
EOS M400-4 Old Nozzle in Situ

Gas Inlet Nozzle Exchange

Step 5 – Pull Out In-situ Gas Inlet Nozzle



1. Pull out gas inlet nozzle,
making sure O-ring is
removed



Take extra care when around
the laser windows, not to
scratch them etc.!



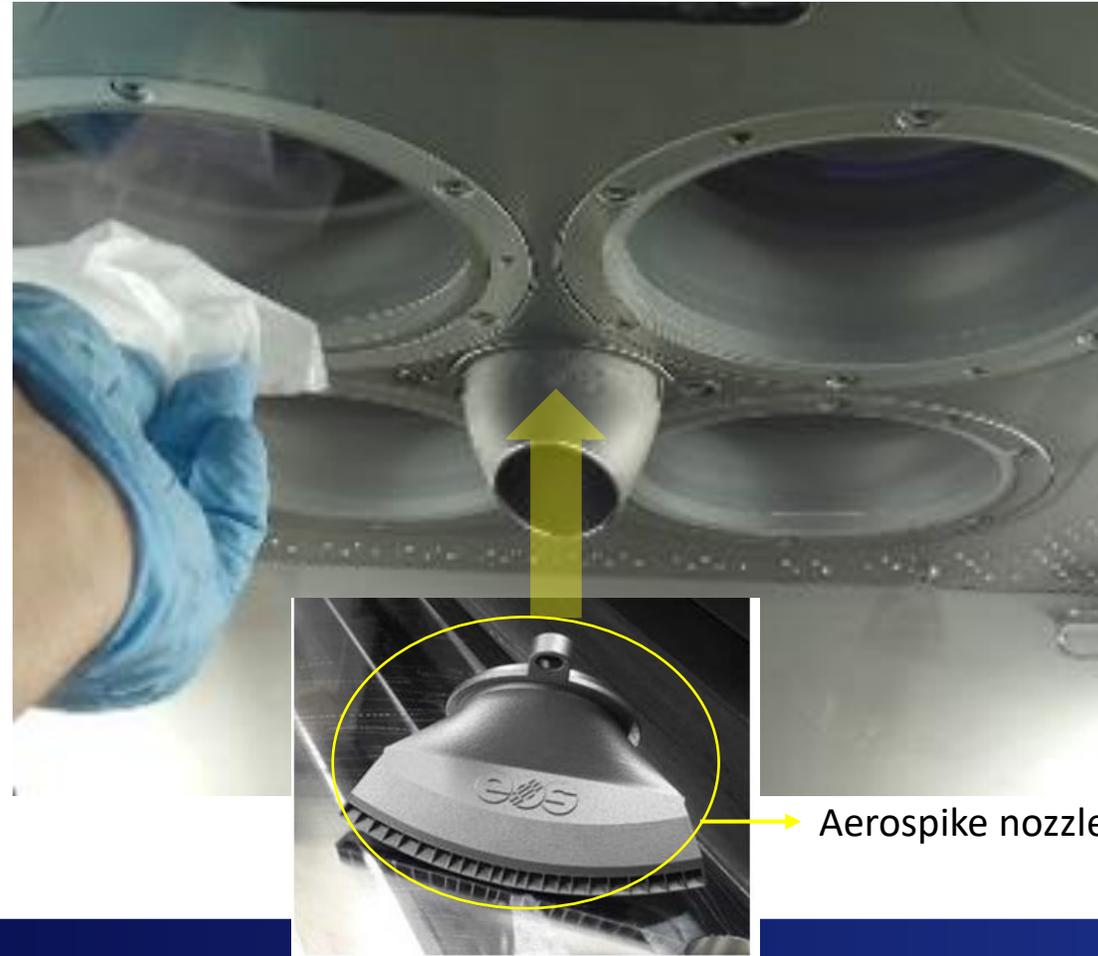
EOS M400-4 Old Nozzle in Situ

Gas Inlet Nozzle Exchange

Step 6 – Fit in Aerospike Gas Inlet Nozzle



1. Fit in aerospike gas inlet nozzle, making sure the O-ring is seated properly when installed



Take extra care when around the laser windows, not to scratch them etc.!



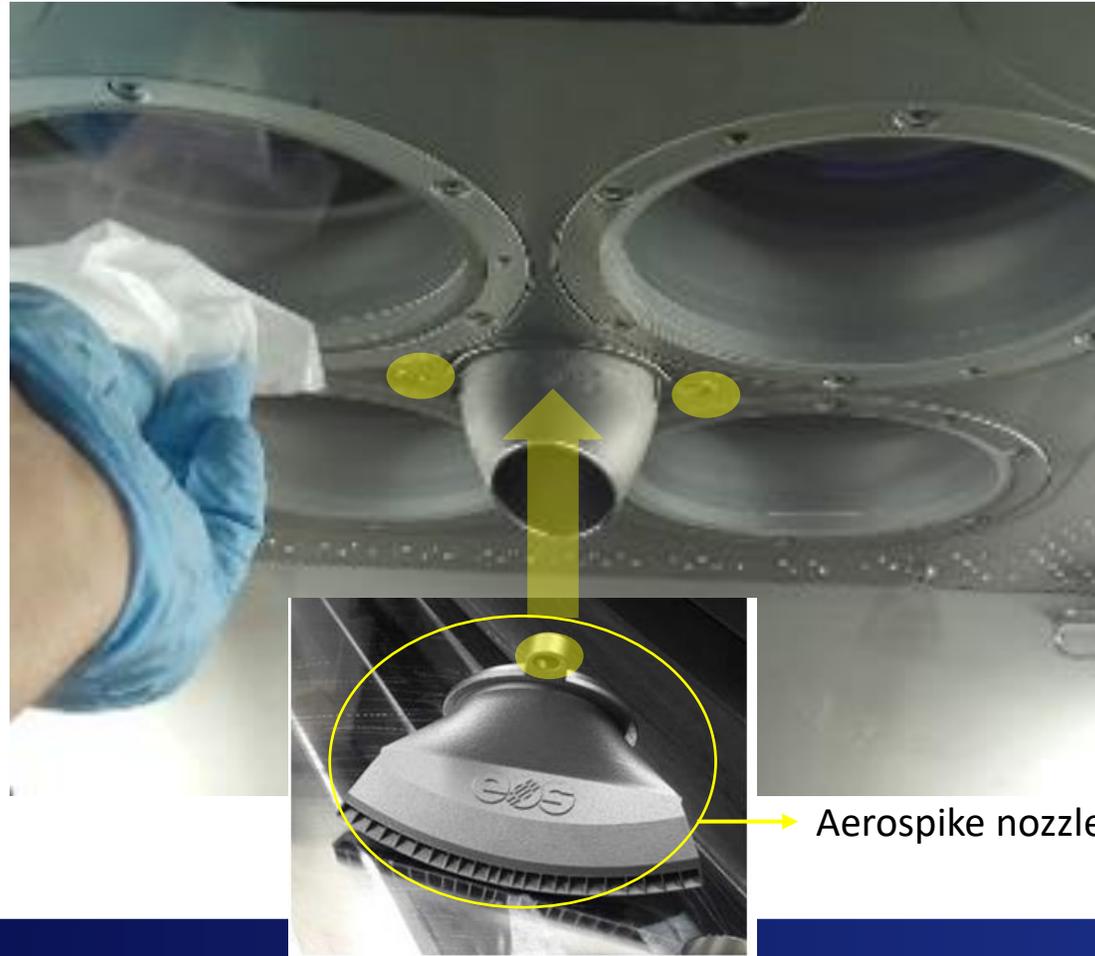
Aerospike nozzle

Gas Inlet Nozzle Exchange

Step 7 – Tighten Bolts on the Aerospace Gas Inlet Nozzle



1. Use Allen key to tighten bolts on each side of an aerospike gas inlet nozzle



Take extra care when around the laser windows, not to scratch them etc.!



Gas Inlet Nozzle Exchange Summary



Even though the practical operation of exchanging an intel gas nozzle in a PBF-LB system, focusing on EOS M400 as an example, is a reasonably simple operation, it may vary slightly depending on the specific PBF-LB system. As such, process steps 4 - 10 may look slightly different for another PBF-LB machine, nonetheless, the general process can still be related to.





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Any questions?

Thank you!

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