

Heated Vacuum Chuck Accessory

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Tool Platform

PulseForge 1X00 series

Configuration

EX-1, EX-2 and EX-3

Safety notice:



The PulseForge series of tools involves a number of hazards. Key among them are Blinding Optical Radiation, including Ultraviolet (UV) radiation, as well as electrical hazards. The surface of the heated vacuum chuck is inherently hot. Take caution when handling the samples. Loading and unloading the heated vacuum chuck could create pinch points during operation. Take all appropriate precautions.

1. The heated vacuum chuck accessory comes in many different variations depending on the specific model of your PulseForge tool and desired applications. This short summary provides basic operational details. Contact NovaCentrix customer service if you run into any issues during the installation and operation of this tool.
2. To load the heated vacuum chuck accessory, lower the sample tray in your PulseForge 1X00 series to its lowest setting. Open the Pelican case that is used for storage and carefully raise the chuck and place it on the sample tray.
(Caution: the graphite plate can fall out of its slot and break if not handled carefully)
(Caution: because of its weight, there is a pinch point between the sample tray and the chuck. Use caution when loading and unloading the chuck)
3. Once in place, there are four alignment pins on the bottom of the chuck that have corresponding holes on the sample tray. Once all the pins are aligned, the chuck will move in relation to the moving sample tray. The chuck should be aligned with the sample tray to activate the pins.
4. The electrical, compressed air and inert gas connection of the vacuum chuck are to be connected as presented in the following picture. The flow of inert gas is further controlled through a needle valve.



5. Vacuum is pulled by turning on the small pump in the vacuum chuck housing (small switch marked “VAC PUMP ON/OFF”). The vacuum is pulled through the porous graphite chuck. This enables attachment of the product piece to the graphite plate for improved thermal contact. If desired, the inert gas could be turned on at the same time to provide an inert processing atmosphere. The inert gas enters the chamber through the port 2 hole in the bottom right corner of the graphite plate.



6. The latch for the clamp shell can be used to open and close the processing chamber. Caution should be used when opening the clam shell to prevent bounce back.
7. Both “fixed position” and “once through” operation of the PulseForge is possible when using the heated sample plate. The 100 mm position is marked on the vacuum chuck. For fixed position processing, the sample must fit within the highlighted area. For the once through processing, all the graphite plate is illuminated.
(Caution: during once through processing, all of the vacuum chuck is illuminated with light. The clamp shell latch could get hot to the touch during excessive use. Take precaution)
8. Temperature on the heated vacuum chuck is controlled through the small temperature controller in the right section of the vacuum chuck. Power to the controller is through the power switch on the side. The operating range for the vacuum chuck is between 15 and 300 °C. The digital read out shows the current temperature (in white) and the set point temperature (in green). The set point temperature can be changed using the up and down arrows on the bottom

right corner of the digital readout. The vacuum chuck is equipped with an air cooling unit as well that enables more precise control of the temperature and it also enables achieving temperatures slightly below room temperatures.



9. To provide lower vacuum pressure, your kit might come with an external vacuum pump. The vacuum pump should be connected to the external Swagelok connection on the side of the tool as pictured below.



10. With the external vacuum pump, a more precise vacuum gauge is needed. The following image shows how the vacuum line should be connected to the chuck. The pressure gauge is turned on by pushing and holding the blue button in the center. The pressure read out is in mTorr. The operation of the tool is as previously stated.



11. There is a brass purge valve on the side of the vacuum gauge. This purge valve is used to repressurize the sample chamber. First close the black vacuum valve and then turn the purge knob to repressurize the sample chamber



12. The vacuum chuck should be stored back in the Pelican case.