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## INSTALLATION AND USE OF THE 2189 ADJUSTABLE CLAMP ASSEMBLY

FOR USE WITH THE 2010 GENO/GRINDER®

### 1.0 INSTALLATION

If replacing an original 2194 Standard or 2199 Large Capacity Clamp, remove this from the Geno/Grinder and set aside. This requires removing the three 3/16" bolts that secure the clamp base to the Geno/Grinder shaft.

Place the 2189 Adjustable Clamp base on top of the shaft with the vertical upright at the rear of the Geno/Grinder. Using the lock washers and 3/16" bolts supplied with the clamp, secure the clamp base to the shaft with an Allen wrench. Unlike the Standard Clamp, the Adjustable Clamp is secured using 2 bolts rather than 3.

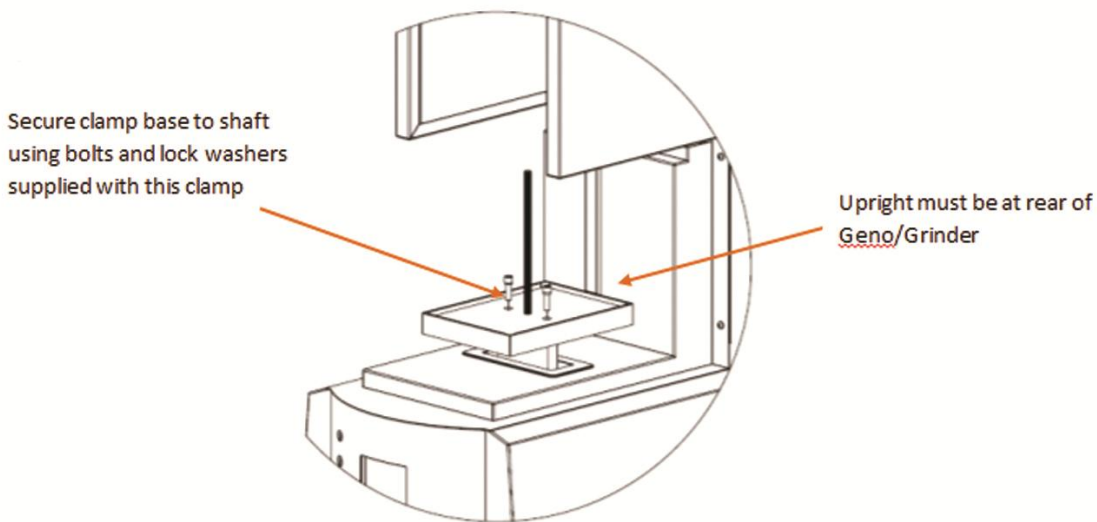


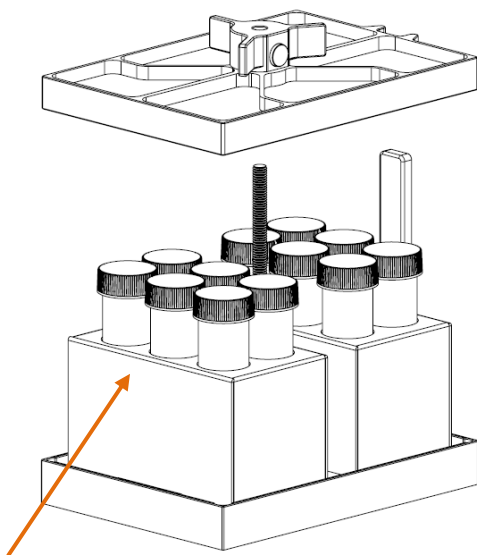
Figure 1 - Installing the Adjustable Clamp

**IMPORTANT: THE BOLTS AND LOCK WASHERS SUPPLIED WITH THIS CLAMP MUST BE USED!! DO NOT USE THE BOLTS SUPPLIED WITH THE STANDARD CLAMP.**

**2.0 LOADING THE CLAMP**

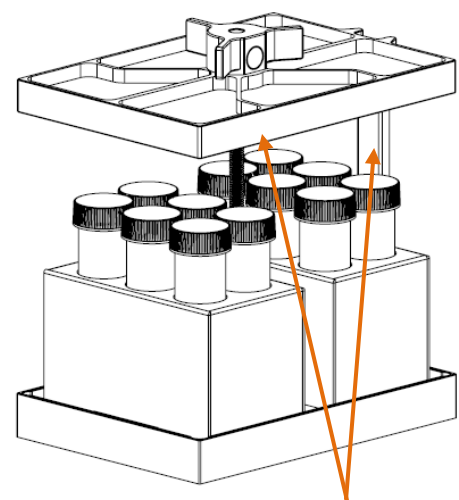
**2.1 Vials in Holders or Cryo-Blocks**

1. Place the sample vials (in the appropriate holder or cryo-block) in the clamp base (Figure 2). The sample load must be evenly distributed at the front and back of the clamp to avoid excess wear to the Geno/Grinder. Also, the clamp lid must have an even surface upon which to rest. If running less than a full holder of vials, be sure to place vials at the 4 corners to support the clamp lid.
2. Press and hold the button on the lid handle and slide the lid onto the vertical screw and the guide onto the upright at the back of the clamp (Figure 3).
3. While holding in the button, slide the clamp lid down to rest on top of the sample vials (Figure 4).
4. Release the button and press down on the lid handle.
5. Turn the handle clockwise until finger tight and ensure that the button has popped out. It is not necessary to over tighten the clamp lid. Check to see whether the vials can be moved from side to side in the clamp. If not, the clamp is tight and samples are secure. If the vials can be moved, tighten the handle gradually until the vials are secure. If the button does not pop out during tightening, loosen the handle one full turn and retighten.
6. Close the Geno/Grinder cover and run the unit.



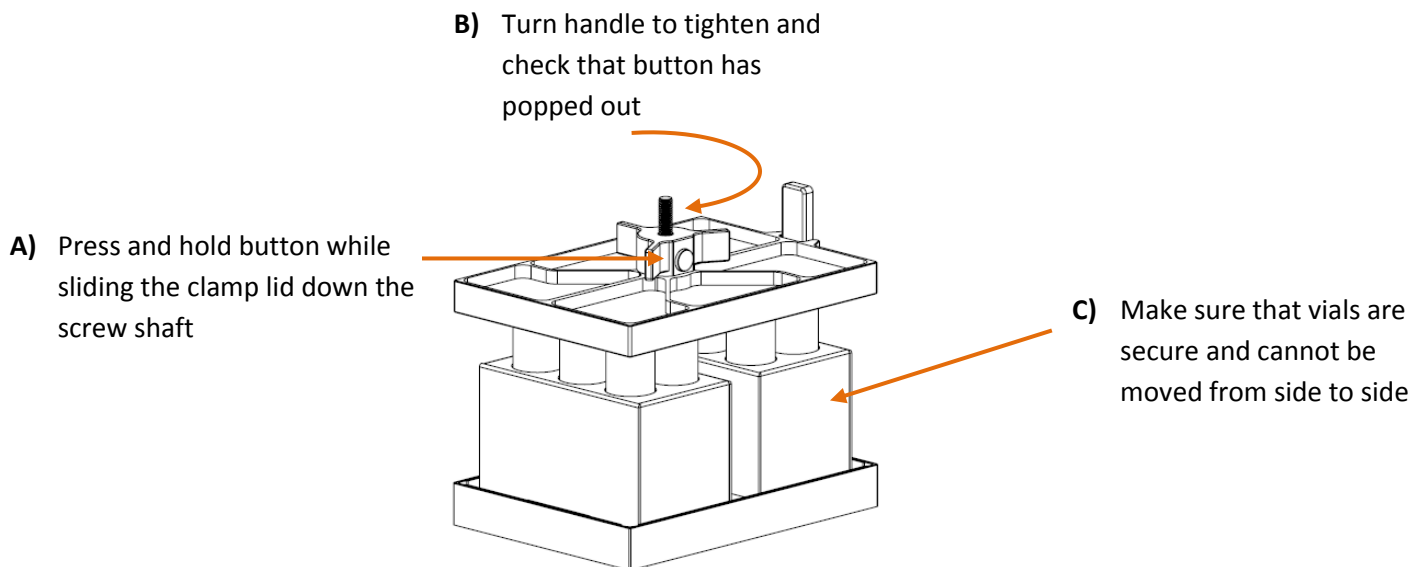
Place vials in holders or cryo-blocks in clamp base

**Figure 2 – Loading the Clamp**



Slide lid onto the screw with guide on upright at rear

**Figure 3 – Attaching the Clamp Lid**

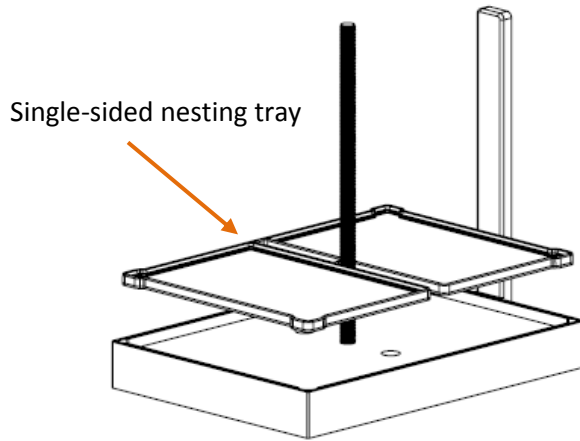


**Figure 4 – Securing the Clamp Lid**

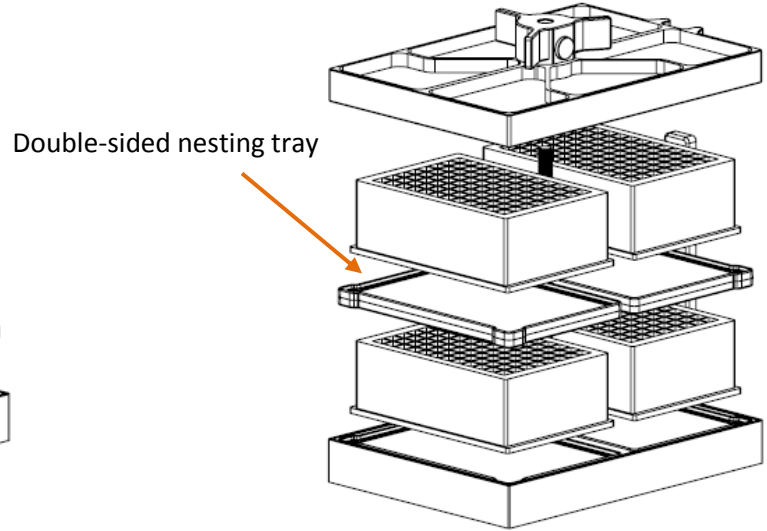
## **2.2 Titer Plates**

1. A minimum of two titer plates must be run as the clamp lid requires a level surface upon which to rest. If running a set of 2 titer plates, simply place 1 plate in the front of the clamp and one in the rear and follow the instructions above for closing the clamp.
2. Titer plates can also be stacked in the clamp to increase throughput. A maximum of 4 deep-well plates can be run in the 2189 clamp, stacked two high in the front and rear of the clamp. Shorter plates can be stacked 3 high for a total of 6 plates.
3. When stacking titer plates, it is necessary to use the 2189T nesting trays. These provide a rigid surface at the top of the plate to prevent the grinding balls from perforating a film used to seal the plate. The nesting trays must also be used if plates are sealed with cap mats as these hold the cap mats securely in place and prevent leakage from the plate wells.
4. The 2189T nesting tray set consists of one tray that has nests on one side only and two trays that are nested on both sides.
5. Place the single-sided nesting tray in the bottom of the clamp base, as shown in Figure 5, with the nests facing up.
6. Place a set of 2 titer plates in the clamp base (front and rear) making sure that the plates are properly seated in the nests (Figure 6).
7. Place a double-sided nesting tray onto the titer plates in the clamp and stack a second row of plates on top, again making sure that the plates are properly seated in the nests (Figure 6). It is not necessary to place a nesting tray on top of the upper row of titer plates.

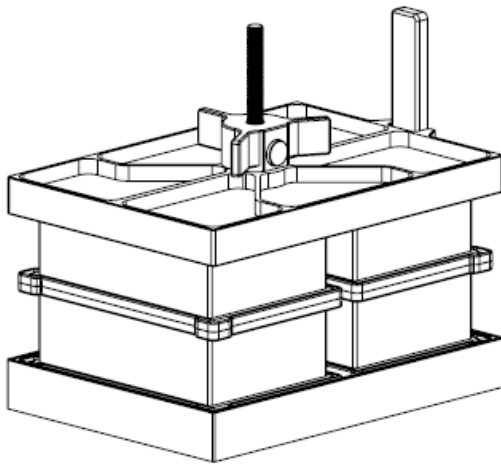
- Secure the clamp lid to the loaded clamp (Figure 7), following Steps 2 – 5 in Section 2.1, and run the Geno/Grinder.



**Figure 5 – Nesting Plate in Clamp Base**



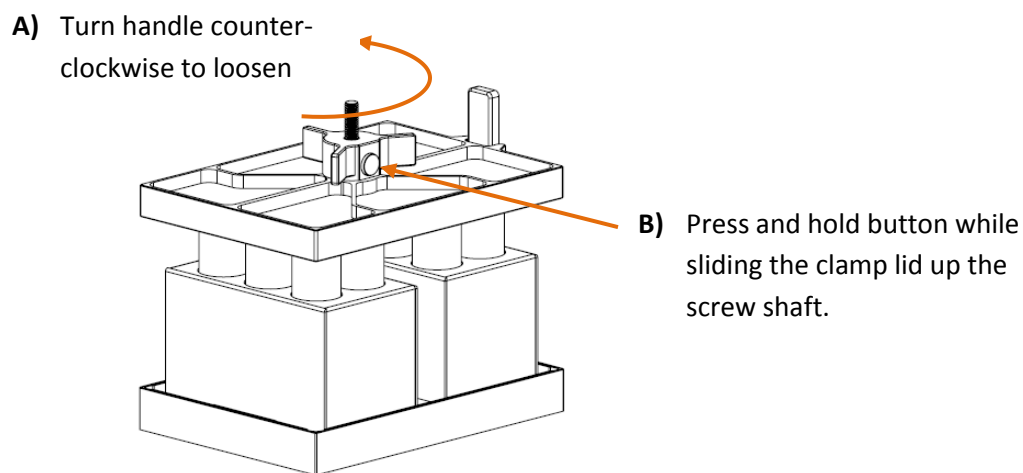
**Figure 6 – Stacking Titer Plates**



**Figure 7 – Closed Clamp with 4 Titer Plates**

**2.0 RELEASING THE CLAMP**

1. When the Geno/Grinder comes to a complete stop, open the cover.
2. Turn the clamp lid handle counter-clockwise until it rotates freely (Figure 8).
3. Press the button and hold while sliding the lid up the screw shaft.
4. It is not necessary to remove the clamp lid entirely. Simply raise the lid until the sample vials or titer plates are easily accessible. Then release the button and the clamp lid will remain at that height. Vials or titer plates can be unloaded and the next set loaded while the lid rests in this position.



**Figure 8 – Releasing the Clamp Lid**



Visit [www.youtube.com/sampleprep](http://www.youtube.com/sampleprep) to see instructions for using the clamp in the 2010 Geno/Grinder®