

Outline of Procedures

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1. POWERING ON

1.1. Turn the machine on

- 1.1.1. Using the main power switch located on the right-hand side of the electrical enclosure, turn the machine power on

1.2. Home the drive

- 1.2.1. Once the machine has booted up, press the “HOME DRIVE” button on the touch screen
 - 1.2.1.1. *The Drive is home when the “GO” button appears on the screen*
 - 1.2.1.2. *The drive must be homed again if the “STOP” button is pressed*

1.3. Turn heater on

- 1.3.1. The material feed cartridge retainer is equipped with a wrap-heater. This heater defaults to “OFF” upon powering up the machine
- 1.3.2. To turn the heater ON, select “AUTO” from the drop-down menu near the top right of the touch screen labeled HEAT MODE

It is a best practice to set this heater to 40C for most materials

2. LOADING MATERIAL INTO TUBE

2.1. Place plug in tube

- 2.1.1. Place a ¼” NPT plug into the threaded portion of the tube

Do not use Teflon tape on the plug. Hand tighten only

2.2. Homogenize the material

- 2.2.1. Before material is added to the tube, mix the material up to homogenize the batch as much as possible. This will also help slightly warm the material up from the friction which will help it flow in the system

2.3. Load material into the tube

2.3.1. Method 1

- 2.3.1.1. *Add material to the tube and remove air bubbles*
- 2.3.1.2. *Add material into the tube until it is about 3” full*

Adding too much material at a time will make it difficult to remove air pockets
- 2.3.1.3. *Remove air pockets*

Air pockets must be removed from the material feed tube. Failure to remove air pockets will cause inconsistencies in shot size while dispensing
- 2.3.1.4. *Using either a benchtop or the ground, hit the tube against the ¼” plug to force the material towards the bottom of the tube. Once air pockets are gone, repeat steps 4.3.1.2-4.3.1.4*

2.3.2. Method 2

- 2.3.2.1. *Add material to tube leaving a minimum of 2” of empty tube at the top*
- 2.3.2.2. *Cover the top of the tube using a cap*
- 2.3.2.3. *Leave tube upright at room temperature until the air pockets rise to the top*

2.4. Insert plunger into tube

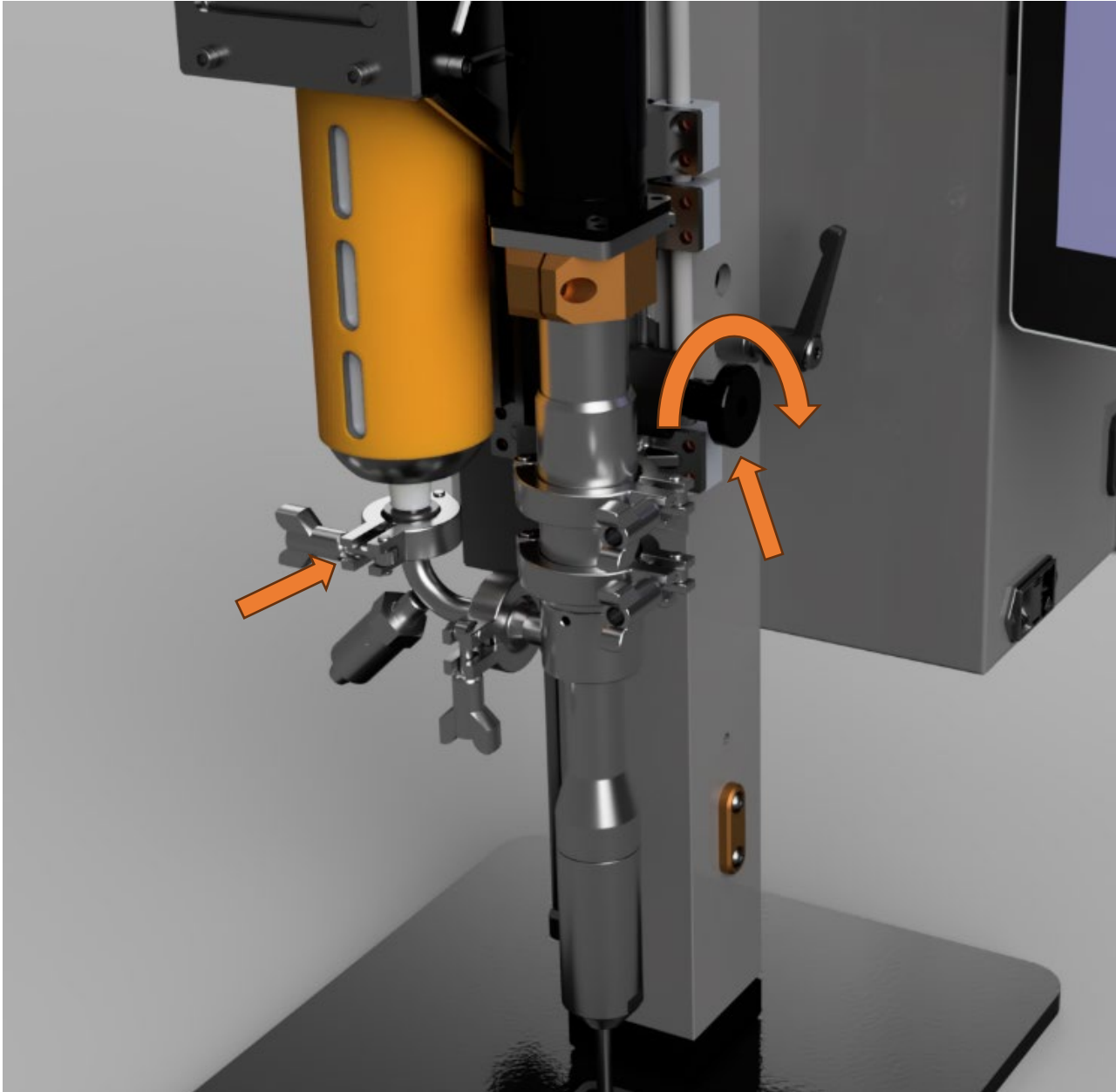
3. LOADING TUBE INTO MACHINE

3.1. Lift the tube retainer

In order to load a tube into the machine, the tube retainer must first be lifted away from the pump assembly

3.1.1. Remove the clamp connecting the tube to the elbow (#1 in FIG. 1)

3.1.2. Rotate the knob clock-wise to lift the tube assembly away from the pump (#2 in FIG. 1)



3.2. Position the tube assembly

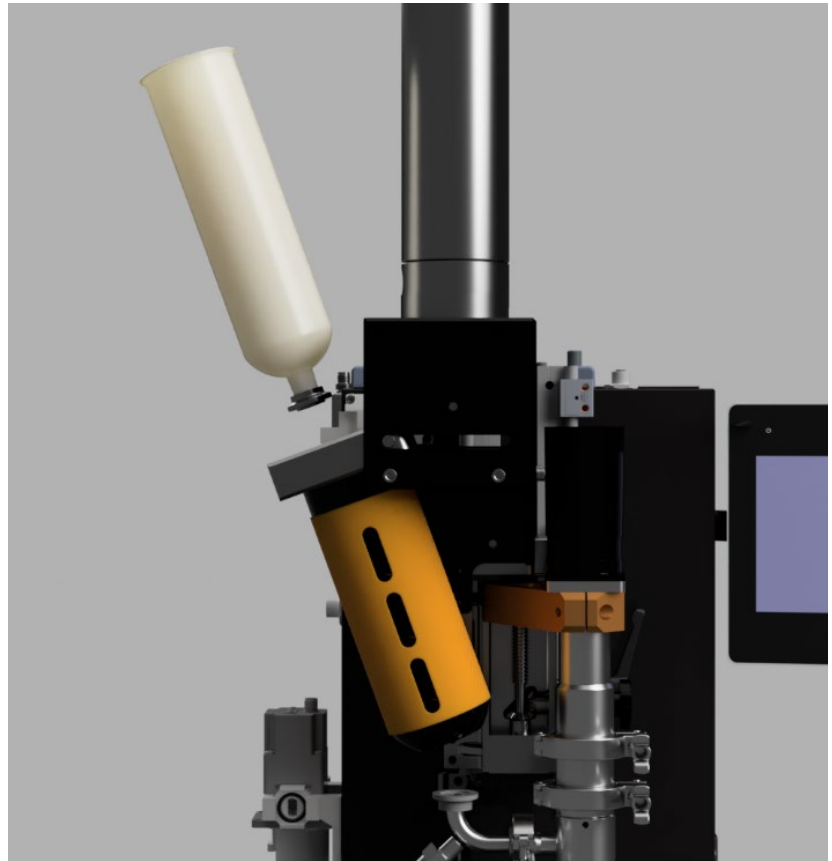
- 3.2.1. The tube assembly can now be slid to the side
- 3.2.2. Once the assembly has been moved to the left, the tube retainer can be tipped. This allows a tube to be inserted/removed.

3.3. Prep the tube

- 3.3.1. Using a tube that has been loaded with material and the plunger inserted, remove the 1/4" threaded plug
- 3.3.2. Insert the 1/4" to flange adapter into the tube and tightened by hand

3.4. Insert tube

- 3.4.1. Insert the tube into the retainer
- 3.4.2. Slide the retainer assembly back into position
- 3.4.3. Lower the assembly into position by turning the knob on the right-hand side of the machine counter-clockwise
- 3.4.4. Using the clamp, attach the tube to the elbow and tighten by hand



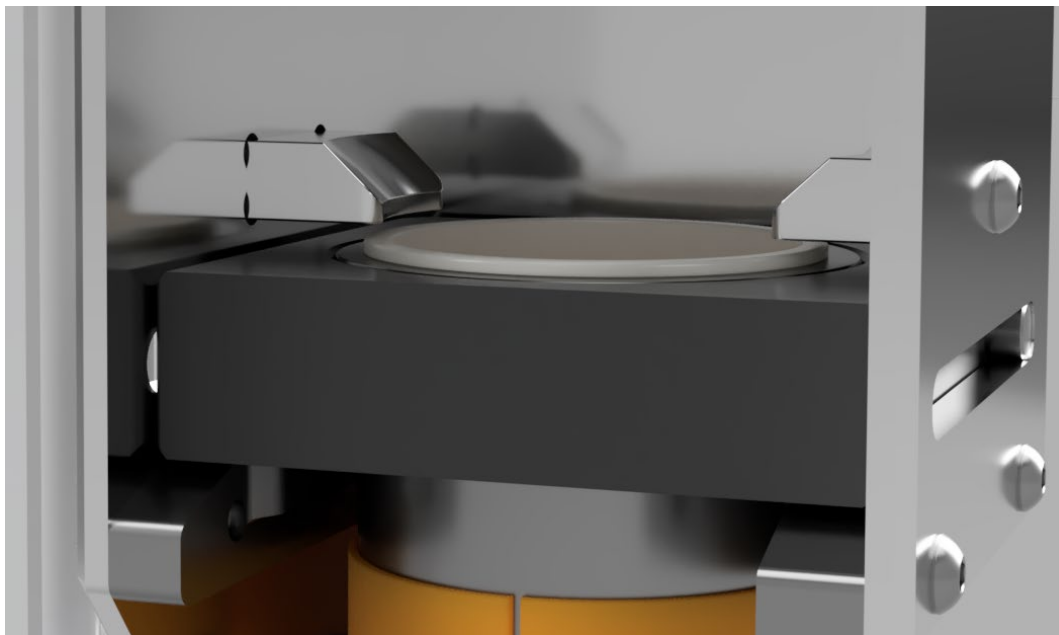
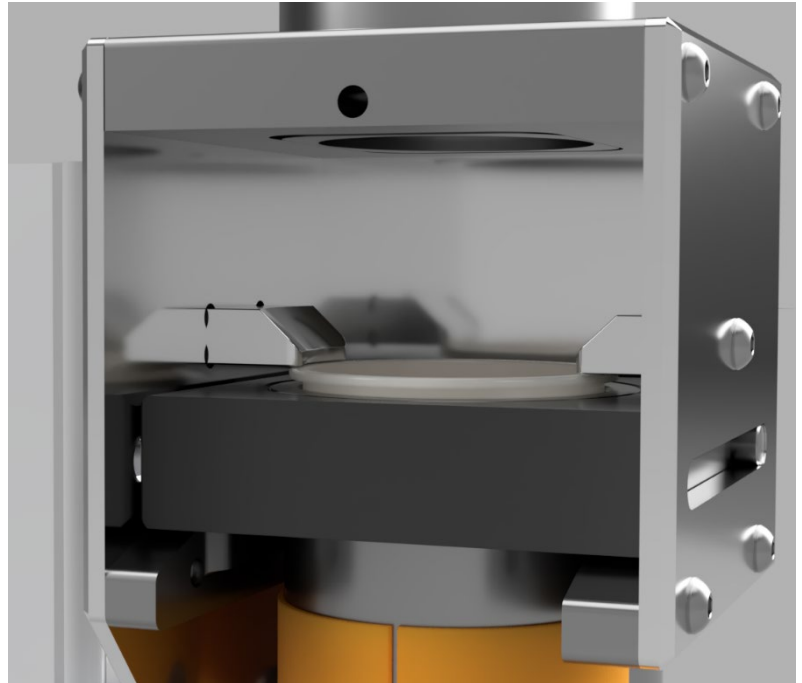
3.5. Ensure tube is resting on retainer block

When lowering the tube retainer assembly down to connect the tube to the elbow, it is likely the assembly was lowered too much. The tube will be floating above the retainer instead of resting on it

3.5.1. Looking from the left side of the machine, check to see if the tube is floating above the retainer

3.5.2. If the tube is floating above the retainer, use the knob on the right hand side of the machine to lift the assembly by turning it clockwise, until the tube is resting on the retainer

3.5.2.1. *You can see this by looking at the tube from the left side of the machine, and you will also feel it when the knob is slightly harder to turn*



4. BATCH CALIBRATION

A batch calibration is necessary when a new tube of material is loaded into the machine. In order to dispense material by weight, we must dispense a known volume (1ml) of material and enter the weight of the material into the machine.

4.1. Preload pressure

4.1.1. Press the “Preload Pressure” button located on the bottom left of the touchscreen

4.1.1.1. This will pressurize the material feed tube and push material into the pump housing

4.2. Purge material through the pump

4.2.1. Place a container under the pump nozzle

The material that is dispensed during this process is good material, but will not be used for the actual calibration of the batch.

4.2.2. Set the “desired volume” on the touch screen to desired shot size

4.2.3. Press “GO” on the touch screen, or by pressing the foot switch. This step may need to be repeated multiple times

Repeat this step until material is flowing out of the nozzle with NO air pockets, or voids in the dispensed materials. Once material is free from air pockets, press the STOP button located on the bottom right of the touch screen. “HOME DRIVE” must be pressed after using the STOP button

4.3. Weight check

4.3.1. Zero out a small jar on a scale

4.3.2. Press “batch calibration” located on the lefthand side of the touchscreen

4.3.3. Place the jar under the nozzle and press “1 ml go” on the touchscreen or press the foot pedal

4.3.3.1. Once shot is completed, weigh the jar and note the weight

4.3.4. Zero out the jar again and repeat this process 2 more times

If the weight of shot is less than .85 grams, reduce motor speed and restart the process. If the weight of the shot is more than 1.2 grams, increase the motor speed and restart the process

4.3.5. Using the average of the 3 weights, enter the weight into the “ACTUAL WEIGHT” and press “REGISTER CAL FACTOR”

5. REMOVING THE PUMP

5.1. Remove Elbow/Sensor assembly

- 5.1.1. Remove the 2 small clamps attaching the elbow to the pump and the feed tube
- 5.1.2. Remove electrical connector attached to the pressure sensor

5.2. Remove pump from gear box

- 5.2.1. Remove the top clamp holding the pump to the gear box/ motor
- 5.2.2. Lightly pull down on the pump while wiggling to remove from gearbox

Green gear coupling may stay on pump side or stay on gear box side. It does not make a difference which side the green gear coupling stays on



6. PUMP DISASSEMBLY

The following steps should only be performed when the pump is off the machine

6.1. Remove nozzle

6.1.1. While holding the pump, rotate the nozzle cover until fully unthreaded



6.2. Remove stator

Nozzle cover must be removed prior to removing stator

6.2.1. Place “Assembly aid” onto the top of the pump assembly by aligning the assembly aid cutout to the gear coupling

The green gear coupling can either be on or off the pump for this step, it does not make a difference

6.2.2. While holding the pump housing, rotate the assembly aid until the “key” on the stator is no longer engaged

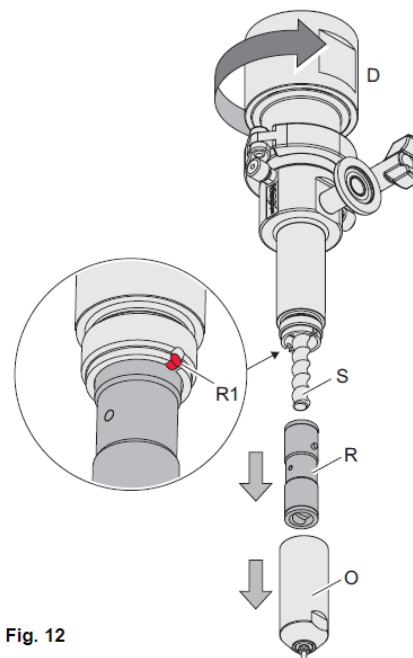


Fig. 12

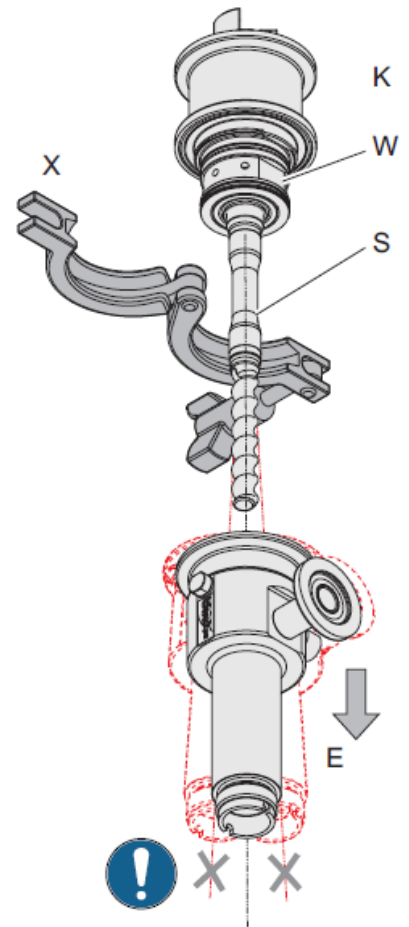
6.2.3. With the stator key disengaged, you can now hold the assembly aid and rotate the stator off the rotar completely

6.3. Remove rotor

6.3.1. Remove the final clamp holding the rotor assembly to the pump housing

6.3.2. While holding the pump housing, pull up on the rotor assembly while wiggling to completely remove the rotor

If the complete rotor assembly does not come out, place the rotor assembly back into the pump housing, rotate the rotor assembly 90 degrees, and then remove the assembly



7. PUMP CLEANING

Use only DDS provided cleaning tools

7.1. Stator

- 7.1.1. Set stator in ethanol or isopropyl alcohol and scrub internals using the white foam brushed provided with machine

DO NOT use and metal or hard tools on internal of stator

7.2. Pump housing

- 7.2.1. Using the provided tools, reclaim all material from internal of pump housing

This material is all good, clean, material and can be hand-jarred or added back into the bulk container if it is the same batch

7.3. Rotor

- 7.3.1. Using the provided tools, scrape all material from the rotor. DO NOT use metal to scrape rotor

This material is all good, clean, material and can be hand-jarred or added back into the bulk container if it is the same batch

- 7.3.2. Use a piece of paper towel or cloth soaked in either isopropyl alcohol or ethanol to wipe down rotor

7.4. Elbow

- 7.4.1. Using a dab tool, remove all material from inside of the elbow

8. PUMP ASSEMBLY

This procedure will be the exact opposite of the pump disassembly

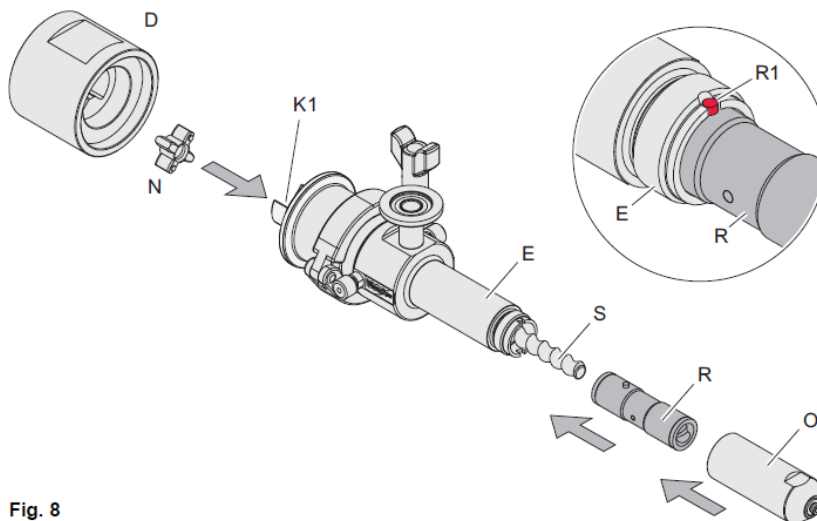


Fig. 8

8.1. Lubricate the rotor

*The rotor assembly **MUST** be lubricated prior to installation. Failure to do so will result in premature stator failure*

8.1.1. Using an appropriate lubricant, cover the rotor

Appropriate lubricants include using the next batch of material to cover the rotor. You can also use terpene sauce or head fractions as a lubricant

8.2. Insert rotor into pump housing

8.2.1. After the rotor has been lubricated, insert the rotor into the pump housing by lightly pushing the rotor while wiggling

8.2.2. Put the clamp on to hold the rotor into the pump housing

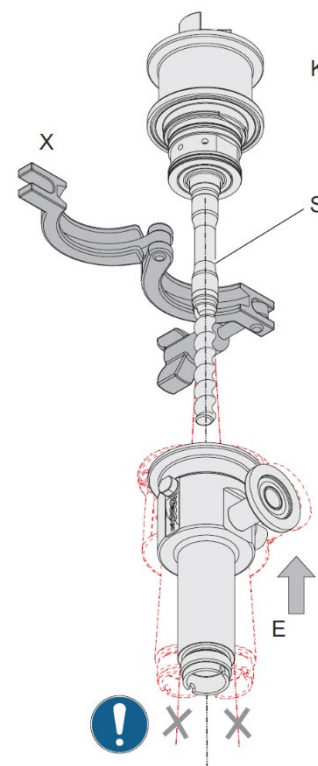


Fig. 41

8.3. Insert Stator

8.3.1. Using the assembly aid, hold the rotor assembly to prevent it from rotating

8.3.2. Insert stator onto the rotor shaft and rotate the stator until the key has reached the pump housing

The “key” on the stator should be facing the rotor. The “key” is not centered on the stator

8.3.3. Manually rotate the stator until the key lines up with the key hole

8.3.4. While holding the stator and the pump housing together with the key and key hole aligned, rotate the assembly aid until the key has seated into the key hole

8.4. Assembly nozzle

8.4.1. Using the nozzle of your choice, insert the nozzle into the nozzle cover

8.4.2. Thread nozzle cover onto pump housing until fully threaded

