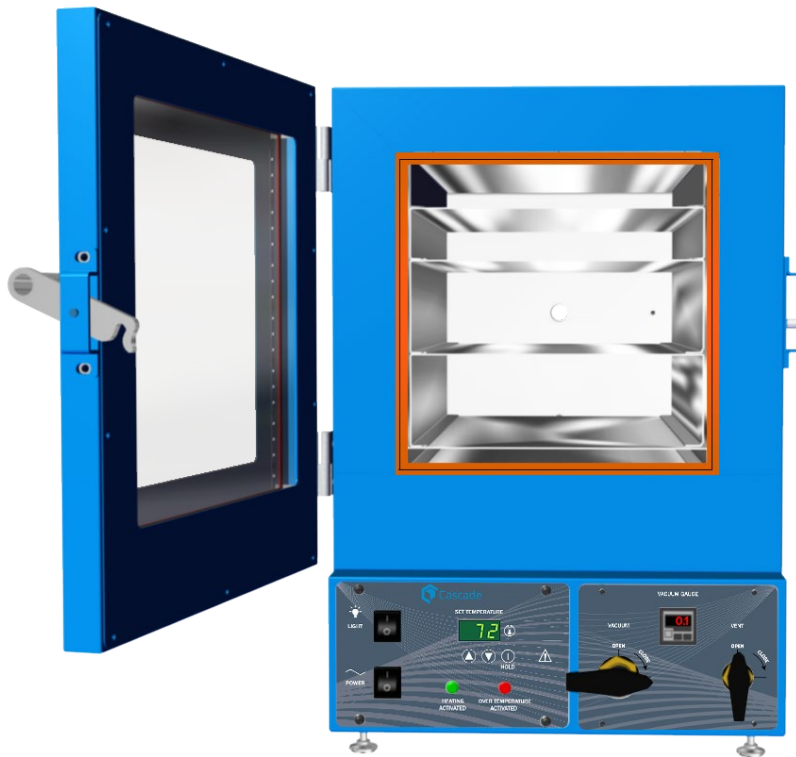


Benchtop Vacuum Ovens



CVO-2 CVO-2-2

Temperature Calibration

TEMPERATURE CALIBRATION

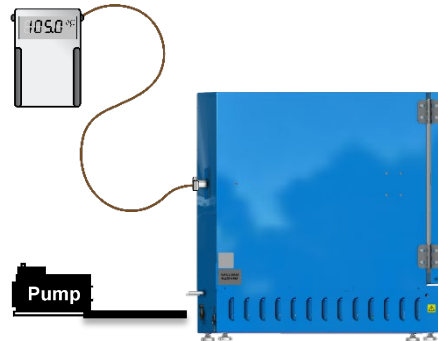
CALIBRATE THE TEMPERATURE DISPLAY



Note: A calibration reference device must be purchased separately. For best results, use a digital device with thermocouple probes. The device must be accurate to at least 0.1°F and should be regularly calibrated by a third party. **Never use alcohol or mercury-based thermometers!**

Cascade Sciences CVO ovens do not normally require calibration. Should your SOP or Quality program require calibrations, follow this guideline.

Temperature calibrations match the temperature display to the actual shelving temperature inside the oven chamber. The actual shelving temperature is supplied by a reference sensor device. Always calibrate to the industry or regulatory standards required for your application.



Suggested Temperature Calibration Set Up

1.



Introduce a thermocouple probe from a reference device into the oven chamber using a feedthrough secured to the KF-25 port on the back of the oven.

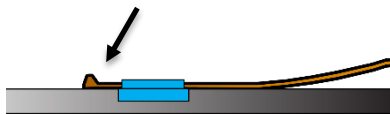
- Place at least 12 inches (305 mm) of thermocouple wire in the chamber to prevent heat sinking outside temperatures.

2.



Use the KF-25 clamp included with the oven to secure the feedthrough and probe, sealing the port.

3.

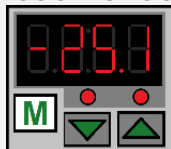


The thermocouple probe ends must be in direct contact with the shelving. Place the probe on the shelving as close as possible to the geometric center of the chamber.

- The probe may be taped to the shelves using heat-resistant non-stick tape. Use the tape to secure any loose wiring.

4.

VACUUM GAUGE



Evacuate the chamber to the vacuum level of your application or baking process.

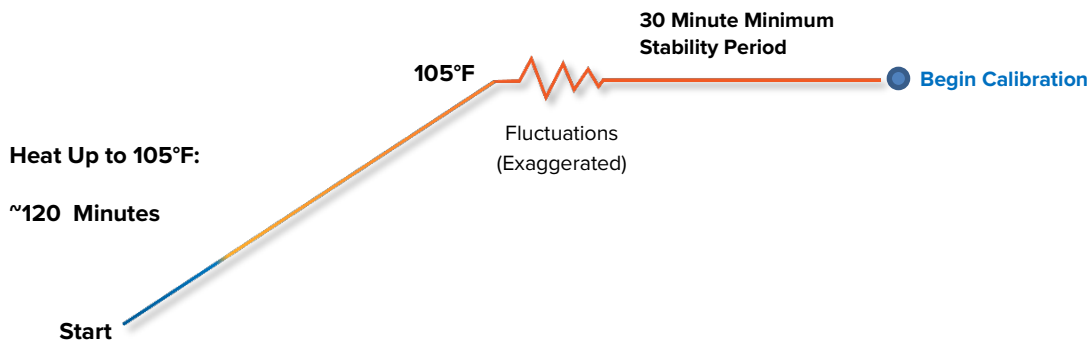
- The chamber must be under vacuum in order to perform an accurate temperature calibration.

Continued on next page

TEMPERATURE CALIBRATION

5. Heat up and stabilization period: The oven temperature must be stable in order to perform an accurate calibration.

- The oven temperature is considered stabilized when the oven chamber has operated at your calibration temperature for at least 30 minutes with no fluctuations of $\pm 1^\circ\text{F}$ or greater.



Suggested Calibration Procedure

1

Once the chamber has stabilized, compare the reference temperature device and chamber temperature display readings.

- If the readings are the same, or the difference between the two falls within the acceptable range of your protocol, the display is accurately showing the chamber temperature. **The Temperature Calibration procedure is now complete.**

-Or-

- See Step 2 if a difference falls outside the acceptable range of your protocol.

Reference Device

105.0 °F

Set Temperature

105 ✓

2

The display requires calibration. Advance to Step 3.

Reference Device

103.8 °F

Set Temperature

105 ✗

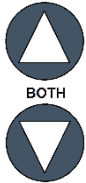
Continued on next page

TEMPERATURE CALIBRATION

Calibration continued

3

Place the oven in temperature calibration mode.

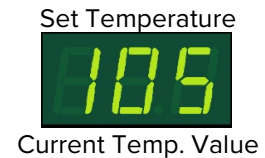


- a. Press and hold **both** the **UP** and **DOWN** arrow buttons simultaneously.

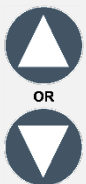
 - The Temperature Display will show the letters “C O”, then begin flashing the **current temperature value**.



Note: If an arrow key is not pressed for five seconds, the Temperature Display will cease flashing, and store the last displayed value as the new current chamber temperature value.



4



Adjust the current temperature value to match the reference device.

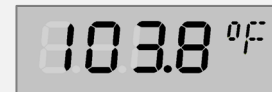
- a. Use the **UP** and **DOWN** arrow buttons.

Set Temperature



Corrected

Reference Device



5

After entering the correction adjustment wait 5 seconds.



Wait 5 Seconds

- The temperature display will cease flashing and store the correction as an offset.
- The oven will now begin heating or allow itself to cool in order to reach your setpoint with the corrected display value.

Set Temperature



Heating with Corrected Value

6



Wait 30 Minutes

Wait for 30 minutes for the oven to stabilize **after the oven has achieved the setpoint** with the corrected display adjustment.

- Failure to wait until the unit is fully stabilized will result in an inaccurate oven display reading.

Set Temperature



Procedure continued on next page

TEMPERATURE CALIBRATION

Calibration continued

7

Allow the oven to stabilize after achieving the temperature setpoint with the corrected display value.

Note: The unit is stabilized when no fluctuations of $\pm 1^{\circ}\text{F}$ or greater have been detected with the reference device for a minimum of 30 minutes.

Reference Device

A digital display showing the temperature 105.0 °F.

8

Once the temperature has stabilized, compare the reference device and the oven display temperature readings.

- If the readings are the same, or the difference between the two falls within the acceptable range of your protocol, **the oven is calibrated for temperature.**

-Or-

- Advance to step 9.

Reference Device

A digital display showing the temperature 104.8 °F.

Set Temperature

A digital display showing the temperature 105 with a blue checkmark to the right.

9

If the two readings still fall outside the acceptable range of your protocol, repeat steps 3 – 8 up to two more times.

- Three calibration attempts may be required to successfully calibrate ovens more than $\pm 3^{\circ}\text{F}$ out of calibration.

Reference Device

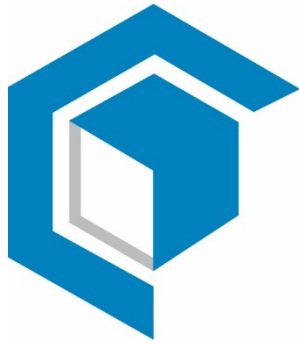
A digital display showing the temperature 104.0 °F.

Set Temperature

A digital display showing the temperature 105 with a red X to the right.

If the temperature readings of the oven and the reference device fall outside your protocol after three calibration attempts, contact [Technical Support](#) or your distributor for assistance.

End of procedure



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