

# 6200 Calorimeter Operation

Parr Instrument Company

# Goal

- Learn how to run a test on a Parr 6200 Calorimeter with a standard 1108 Oxygen Bomb.





## Warning!

- It is important that the Operating Instruction Manual be read and understood (**especially the safety instructions**) before using the calorimeter. Failure to do so could result in catastrophic failure.

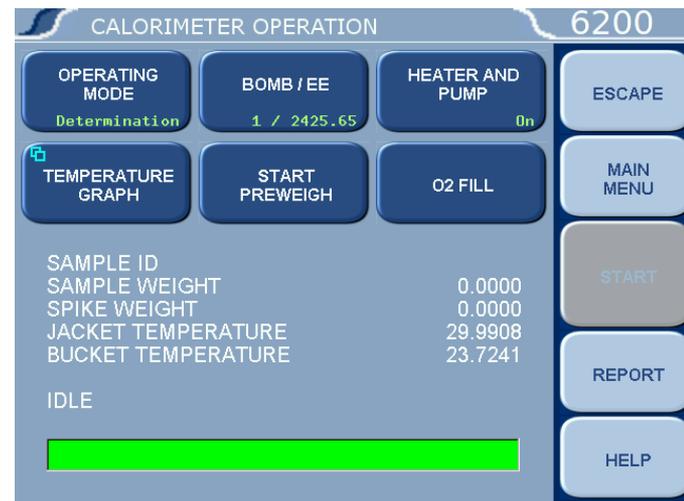
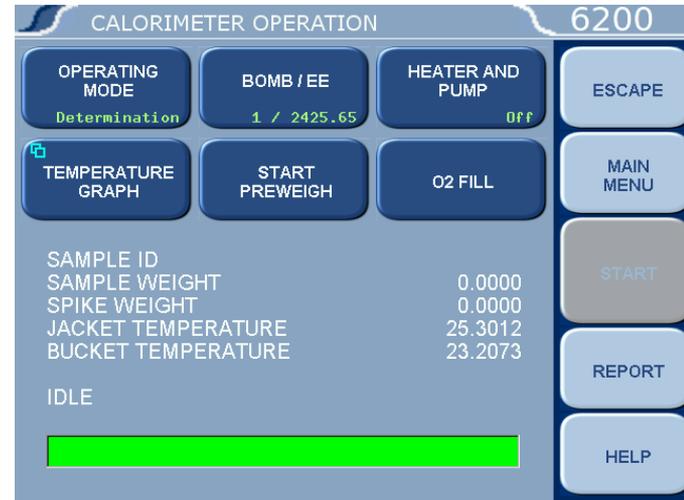
# Step 1

- Turn on the calorimeter
  - The calorimeter will boot up to the main menu.
- Turn on the Oxygen Supply.



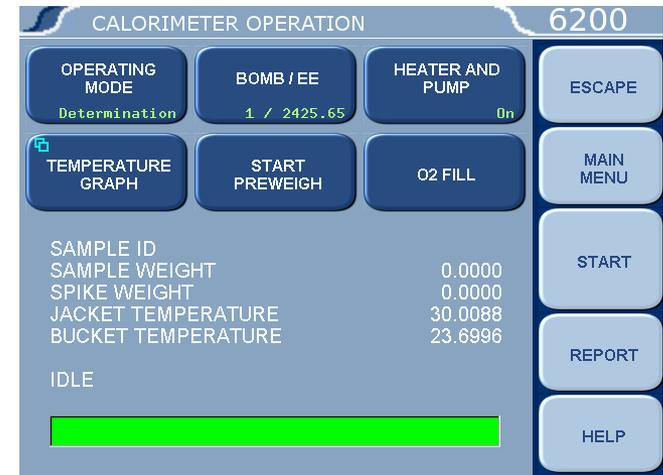
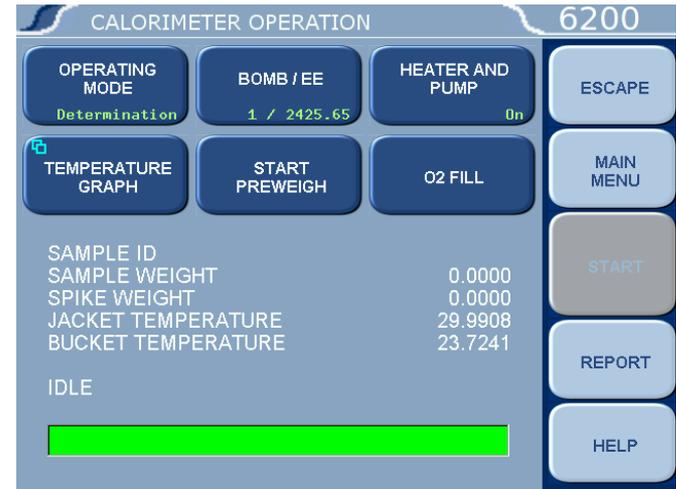
# Step 2

- Go to the Calorimeter Operation menu.
- Turn on the Heater and Pump.



# Note:

- The Start will be grayed out when the calorimeter is not ready to run a test.
  - The jacket temperature must be at 30° C.
  - Once the jacket temperature is at 30° C it will be an additional 10 minutes before the Start function is available. This is true only if the pump and heater have been off for an extended period of time.



# Step 3

## ■ Prepare a Sample

- Tare (zero the weight of) a sample cup.
- Weigh a sample to the nearest .0001 g



# Step 4

- Put the sample on the head
  - Attach a fuse wire.
    - The fuse wire should touch the top of a solid pellet.
    - The fuse wire should not be buried in a powder or granulated sample.
    - The fuse wire can touch a liquid sample or be positioned just above the surface of the sample.



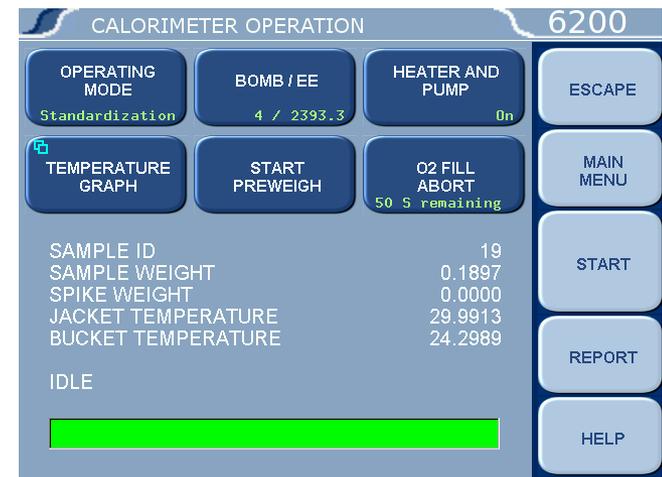
# Step 5

- Load the head into the bomb cylinder
  - Place the head into the cylinder.
  - Screw on the cap as far as it will go. Do not over-tighten.



# Step 6

- Place the Oxygen Fill Connection on to the 1108.
- Press the O2 Fill button on the Calorimeter Operation screen.
  - Oxygen will flow into the 1108.
  - A timer will count down the fill time.
  - Pressing the O2 Fill key while the timer is counting down will abort the fill process.



# Step 7

- Fill the bucket with 2 liters (2000 ± .5 g) of water.
  - Using the same amount of water each time is critical.
- Place the bucket inside the calorimeter.
  - Note: There are three plastic pieces in the bottom of the air can that line up with the depressions in the bottom of the bucket.



# Step 8

- Using the bomb lifter position the bomb part way into the bucket.
- Attach the ignition wires to the terminals on the 1108 bomb head.
  - Try to avoid getting your fingers wet.



# Step 9

- Lower the bomb the rest of the way into the bucket.
  - Note that the bomb will sit on the embossed circle on the bottom of the bucket.
- Observe the bomb to make sure that there are no oxygen leaks.
  - Do **NOT** continue if there are bubbles coming from the bomb!



# Step 10

- Close the lid making sure that neither the stirrer or the bucket thermistor are touching the 1108 bomb or bucket.



# Step 11

- Choose Standardization (calibration) or Determination (unknown samples) for Operating Mode.
- Press Start.
  - Input the Sample ID.
  - Input the Bomb ID.
  - Input the Sample weight.
  - Input the Spike weight (if spiking is turned on).



# Step 12

- The test will automatically proceed through the following steps:
  - Preperiod Cycle
  - Fire the sample
  - Post Period Cycle



# Step 13

- Results

- Once the calorimeter is finished with the post period cycle the results will print out on the printer or display on the touch screen.

- Once the test results have been printed or displayed the calorimeter will be ready for the next test once the next sample is ready.



# Step 14

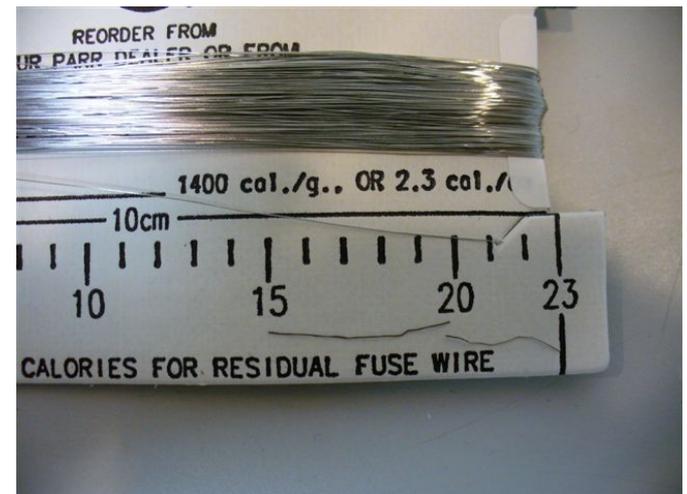
- Open the lid and remove the bucket with the bomb.
  - If another bomb and bucket combination is ready it may be put in at this time and go to step 8.
- Remove the 1108 bomb from the bucket and release the pressure by loosening the valve knob.
  - If you are analyzing the bomb rinse water then release the pressure slowly (over not less than one minute) to avoid entrainment losses.



# Step 15

- Fuse correction determination.\*
  - Remove the unburned remains of the fuse wire.
    - Measure the unburned length and subtract from 10 cm. Multiply this by 2.3 cal/cm to get the result.
    - The 45C10 Fuse Wire card may be used to directly measure how many calories the fuse wire contributed.

\*This step can be skipped if you are using a fixed fuse correction.



# Step 16

- Rinse the bomb head and cylinder.
  - Use distilled water and rinse thoroughly.
  - Save the rinse water for further tests as required.
- Dry the bomb head, cylinder and screw cap.
- The bomb is now ready to prepare for the next test.

