

CHOKED FLOW EXPERIMENT

ver 5.07

Startup:



- Turn the up stream pressure regulator all the way counter-clockwise.
- Open the down-stream needle valve all the way counter-clockwise.
- Turn on the main power and you should see a number show up on the mass flow meter. (Allow 10 minutes of warm-up before starting.)



- Now we are ready to select an upstream pressure for the first run. We will start with 30 psig.
- The air will start flowing. We have a maximum flow rate at this setting.
- The mass flow, upstream and downstream pressure and temperature are all recorded on a bailey screen. (Click [here](#) to learn how to run the Bailey Controls)
- Go to group displays and select the choked flow. There is nothing to control but you can read all the variables and record them to the data acquisition.
- After 10 minutes of warm-up time, you can now adjust your downstream pressure.
- You will probably want to start a data acquisition to collect data so that you don't have to keep going back to the bailey. This will be recorded to a disk that you can import to excel and analyze later.
- Now you can turn your needle valve in, which increases the downstream pressure. The more you turn the valve, the more you increase your pressure. You can also reduce your downstream pressure which affects the downstream flow. Leave the valve open long enough to get a steady reading.
- Now select a higher upstream pressure. Go ahead and do the same thing that was done with the downstream pressure. You can collect data going back down as well. By collecting data as you increase and decrease the pressure you reduce any miscalculations.



Shutdown:

- Turn the down-stream needle valve all the way counter-clockwise.
- Turn the pressure regulator to 0 by turning it all the way counter-clockwise. Don't leave it closed all the way or it might jam.
- Turn off the power so that the mass flow meter doesn't remain on.