

PIPE VISCOMETER EXPERIMENT

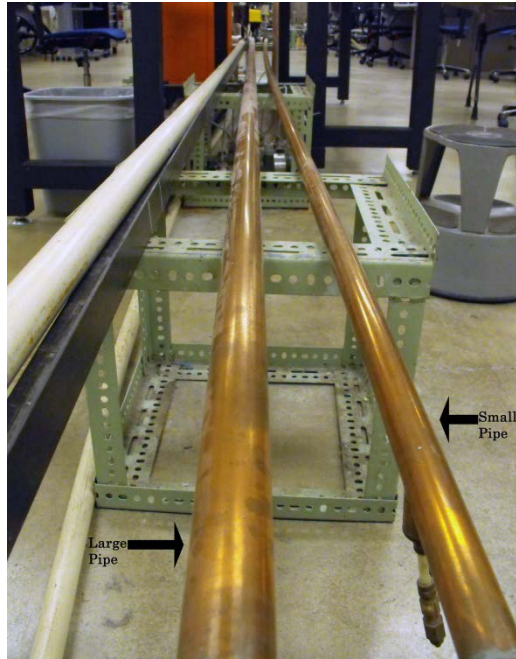
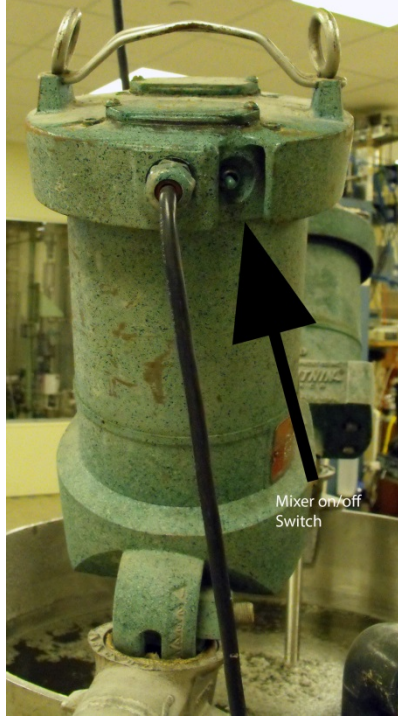
Version 9.2017

Startup (You may want to start this experiment 20 minutes before lab time.):

- Turn the mixers on.
- Go to the Labview Controls ([here](#); use Pale Moon; see screen shot).
- Right click and request control of VI (see screen shot)
- Tunable parameters have a white background (instead of gray)
- Select the large or small pipe. (**NEVER** switch between the pipes while the pump is on.)
- Toggle pump switch on.
- Now you can read your flow rates, pressure drop, and fluid temperature.
- To switch to the other pipe: toggle pump switch off, select pipe size, turn pump on, collect data from the other pipe.
- Once you have values from both pipes, you can select what flow rates you would like to use.
- Then turn your pump off and de-select the window.
- Go to the flow control and select auto-control.
- Now you can use your set point to set target values below your maximum values.
- Then go to pump control, turn it on, and record the important variables.

Shutdown:

- Turn off the pump.
- Turn off the mixers.
- Leave everything plugged in.



The screenshot displays the Labview control interface for a pipe viscometer. It includes several control elements:

- Flowrate Setpoint:** A numeric control set to 4.0 gal/min.
- Liquid Flowrate:** A numeric control set to 0.0 gal/min.
- Manual Control Override:** A radio button set to "Auto".
- Set Manual Valve Position:** A slider control set to 100.
- Control Valve:** A vertical slider control set to 100.
- Pump Switch:** A red indicator light.
- Pipe Selector:** A radio button set to "Large Pipe".
- Fluid Temperature:** A numeric control set to 19.7 C.
- Pressure Drop (large pipe):** A numeric control set to -0.0 "WC.
- Pressure Drop (small pipe):** A numeric control set to 19.5 "WC.
- Control Parameters:**
 - Kc:** A numeric control set to 1.
 - Ti:** A numeric control set to 0.05 (min).
 - Td:** A numeric control set to 0 (min).
- Data Collection Interface:**
 - Specify Time between Data Points (sec):** A numeric control set to 1.
 - Specify number of data points:** A numeric control set to 100.
 - Data Point Count:** A numeric control set to 100.
 - Buttons:** "Push to Record", "Cancel Data Collection", and "Cancel".

A right-click context menu is displayed over the interface. The menu items are:

- Request Control of VI
- Release Control of VI
- Show Last Message
- Show Control Time Remaining
- Close Panel

Figures 1a & b Screen Shot of Labview Controls for Pipe Viscometer; Right click menu