

Operations of Mach 2.5 Tunnel

Here are some guidelines in running the Supersonic Tunnel. The TA or Professor will be with everyone at the beginning to show you.

1. Make sure that valve to the supersonic jet tunnel is closed. Open the valve to the 2.5 Mach tunnel. Open the valve near the regulator that supplies air to both tunnels.
2. As of Feb. 2012, the exit-line valve (the big 12-inch vacuum valve) is now locked open, since the 12-inch Ludwig tube has been removed. There is nothing to adjust here, now.
3. Turn on power to the electronic pressure regulator. Set control to local. Turn the potentiometer to set the pressure, read the volts on the scale. With the regulator installed in 2011, 80 psia is now 10V.
4. Make sure that the model is secured in the tunnel.
5. If venting to atmosphere make sure the passive exhaust valve (outside 12-inch flapper valve) is propped open.
6. Turn the quick release valve to start flow in tunnel. Watch your air supply, make sure your supply is at least 110 psig. Be conservative while running the tunnel, the longer you run the longer it takes for the air reserve to build up. Run for 30 seconds at most, but should need much less than this, at least usually.

Pressure Measurements

1. When you change models be sure you watch the pressure in the outside exhaust system. If there is a lot of pressure above room ambient in the outside tank when you take out the model, it could blow the model out. So just be careful.
2. The data from the digital scope should be saved as in the earlier labs.

Vacuum Pump

1. Professor Schneider and the TA will be responsible for turning the vacuum pump on and off.
2. There are two valves to the vacuum pump. One goes to a small tank which will be your reference tank for the pressure measurements. The other valve blanks off the pump. When your experiment calls for a vacuum downstream open the main valve and it will start pumping vacuum. Make sure to close this valve before you run the tunnel.

3. If vacuum still exists in the exhaust system, the models will become stuck due to the vacuum. Be careful and aware. Relieve the vacuum, then change the model.

Schlieren set up

1. The Schlieren is set up by the TA and Prof. Schneider. When not taking Schlieren pictures we ask that you keep the covers on the mirrors. Please do not touch these mirrors and be careful with them, they are expensive.
2. Bring a USB memory device to download the data from the Canon camera.