Airflow Notes
Auto 64HP, Dave Capitolo

- Our *Superflow*™ flow bench uses a sharp-edge orifice technology to measure airflow
- Airflow is measured in cubic feet per minute (CFM)
- Velocity is measured in feet per second (FPS), by a Pitot tube
    - This Pitot tube compares static and dynamic pressures to calculate velocity
- Tumble is a vertical mixture motion created by multiple intake valves
- Swirl is a horizontal mixture motion created by a single intake valve
- Mixture motion is created at the expense of airflow, and ultimately VE
- Flow testing is done at a steady-state of airflow, compared to a pulsed airflow in a running engine
- The more valve openings that are tested, the more accurate the results are. Valves are opened with an opening fixture that also measures how far the valve is open
- Modeling clay is added at the entrance of an intake port to help direct the air into the port. An exhaust pipe adapter is installed on the head when testing an exhaust port
- 28" H2O is the standard test pressure in the industry, but lower test pressures can be converted to 28" H2O accurately
- 65% - 75% exhaust-to-intake flow is desired for 2-valve heads, and 75% - 85% exhaust-to-intake flow is desired for 4-valve heads
- Some surface roughness in an intake port can improve airflow by delaying flow separation. This separation becomes turbulent. Airflow that has not separated is said to be laminar
- Flow testing should be done on an adapter that is the same diameter as the engine being built, with a spark plug installed, and using low pressure springs (valve area x pressure differential)
- If test pressure bounces more that .5" H2O, the port is turbulent
- Engine airflow requirements for carburetor sizing: (CID ÷ 2) x (RPM ÷ 1728) x VE