Engine Basics
(E) Exhaust camshaft, (I) Intake camshaft, (S) Spark plug, (V) Valves, (P) Piston, (R) Connecting rod, (C) Crankshaft, (W) Water jacket for coolant flow
Four Cycles of an Engine

Intake (suck)
Compression (Squeeze)
Power (Bang)
Exhaust (Blow)
Carburetors

- Faded away from use in 1980s
- Made possible by the Bernoulli Effect.
- Complex
- Hard to fix
- Replaced by fuel injection systems
Bernoulli Effect

- As air moves through smaller orifice:
  - Velocity increases
  - Pressure below decreases

- Fuel is sucked up due to pressure difference
Electronic Fuel Injection Systems

- Used in modern automobiles
- Injectors are turned on and off rapidly
- The air and fuel combine at the last moment
Dynamometer

- Measures the torque, speed, and power of the engine
- Allows placement of loads
- Tested under varying conditions
WinTEC

- Takes data from the engine and displays it for the user
  - RPM
  - Volumetric Efficiency
  - Ignition advance
  - Etc.
- Volumetric efficiency tables are adjusted to reach maximum horsepower
- Changes made to the table are made immediately to the engine
## Volumetric Efficiency Table

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Volumetric Efficiency Table

MAP Value = 59 kPa
Engine Speed Value = 750 RPM

Volumetric Efficiency (% FPW)

Use + or - Keys to Adjust Graph Values. This Graph does not use ONFLY
Acknowledgements

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