

$$\text{Desired power} = \text{stock power} \times \text{pressure ratio} \times \text{density ratio} \\ \times \text{volumetric efficiencies ratio} \times \text{drive power efficiency}$$

or

$$\text{Pressure ratio} = \frac{\text{desired power}}{\text{stock power} \times \text{pressure ratio} \times \text{density ratio} \\ \times \text{volumetric efficiencies ratio} \times \text{drive power efficiency}}$$

Then *non-intercooled*:

$$\text{Pressure ratio} = \frac{320 \text{ hp}}{220 \text{ hp} \times 0.83 \times 1.15 \times 0.90} = 1.69$$