

$$\left(\frac{W_{new}}{W_{old}}\right) = \left(\frac{D_{new}}{D_{old}}\right)^{-4} \left(\frac{Q_{new}}{Q_{old}}\right)^3$$

$$\left(\frac{477 \text{ watts}}{809.8 \text{ watts}}\right) = \left(\frac{D_{new}}{24 \text{ inches}}\right)^{-4} \left(\frac{4816 \text{ cfm}}{5064.9 \text{ cfm}}\right)^3$$

$$.59 = \left(\frac{D_{new}}{24 \text{ inches}}\right)^{-4} (.95)^3$$

$$\left(\frac{D_{new}}{24 \text{ inches}}\right)^4 = \frac{.86}{.59}$$

$$\sqrt[4]{\left(\frac{D_{new}}{24 \text{ inches}}\right)^4} = \sqrt[4]{1.46}$$

$$\frac{D_{new}}{24 \text{ inches}} = 1.10$$

$$D_{new} = 1.10 \times 24 \text{ inches}$$

$$D_{new} = 26.40 \text{ inches}$$