

• Affinity Laws

**Affinity Laws for Centrifugal Pump  
SPEED CHANGES**

$$\frac{RPM_1}{RPM_2} = \frac{GPM_1}{GPM_2} = \sqrt[3]{\frac{HEAD_1}{HEAD_2}} = \sqrt[3]{\frac{BHP_1}{BHP_2}}$$

$$\left[ \frac{RPM_1}{RPM_2} \right]^3 = \frac{BHP_1}{BHP_2}$$

$$\left[ \frac{RPM_1}{RPM_2} \right]^2 = \frac{HEAD_1}{HEAD_2}$$

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**Affinity Laws for Centrifugal Pump  
IMPELLER DIAMETER CHANGES**

$$\frac{IMP_1}{IMP_2} = \frac{GPM_1}{GPM_2} = \sqrt[3]{\frac{HEAD_1}{HEAD_2}} = \sqrt[3]{\frac{BHP_1}{BHP_2}}$$

$$\left[ \frac{IMP_1}{IMP_2} \right]^3 = \frac{BHP_1}{BHP_2}$$

$$\left[ \frac{IMP_1}{IMP_2} \right]^2 = \frac{HEAD_1}{HEAD_2}$$

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