

Sample Calculations

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derivation of Equations 1, 2, and 3:

general form of single pump characteristic curve:

$$\Delta h = a - bQ^2 \quad \begin{array}{l} \text{a and b obtained from Figure 5:} \\ a = 24.838 \\ b = 0.0869 \end{array}$$

$$\text{Equation 1: } \Delta h = 24.838 - 0.0869Q^2$$

general form of pumps in series characteristic curve:

$$\Delta h = n(a - bQ^2) \quad n = 2 \text{ (number of pumps in series)}$$

$$\text{Equation 2: } \Delta h = 2(24.838 - 0.0869Q^2) = 49.676 - 0.1738Q^2$$

general form of pumps in parallel characteristic curve:

$$\Delta h = a - b\left(\frac{Q}{n}\right)^2 \quad n = 2 \text{ (number of pumps in parallel)}$$

$$\text{Equation 3: } \Delta h = 24.838 - 0.0869\left(\frac{Q}{2}\right)^2 = 24.838 - 0.0217Q^2$$