



TEMPERATURE RISE

Inherent in the 3296 design is that heat is added to the pumped liquid as it passes through the pump liquid end and recirculation circuit. The heat addition can raise the liquid temperature as much as 20°F (11°C) under normal operating conditions. Given below are the formulas to calculate temperature rise through the pump liquid end and recirculation circuit. Refer to the Application Guidelines on pages 725.9A800 to determine when these calculations are necessary.

FORMULA USED IN CALCULATING TEMPERATURE RISE THROUGH THE PUMP

$$\Delta^{\circ}\text{F} = \frac{5.09 \times (\text{S.O. HP})}{\text{GPM} \times \text{Sp.Gr.} \times \text{Sp.Ht.}}$$

$$\Delta^{\circ}\text{C} = \frac{0.86 \times (\text{S.O. kW})}{\text{m}^3/\text{hr} \times \text{Sp.Gr.} \times \text{Sp.Ht.}}$$

S.O. HP/kW — Shut Off HP or kW estimated from CDS curves related to maximum HP or kW for each Drive Assembly

Δ°F or °C — Temperature rise for pumped liquid

Sp.Gr. — Specific Gravity of pumped liquid

Sp.Ht. — Specific Heat of pumped liquid

GPM or m³/hr — Rated minimum flow through the pump. (See customer data sheet and CDS curve for value. Use whichever value is greater.)

FORMULA USED IN CALCULATING TEMPERATURE RISE THROUGH THE RECIRCULATION CIRCUIT

$$\Delta^{\circ}\text{F} = \frac{5.09 \times \text{Drive Loss(HP)}}{\text{GPM} \times \text{Sp.Gr.} \times \text{Sp.Ht.}}$$

$$\Delta^{\circ}\text{C} = \frac{0.86 \times \text{Drive Losses(kW)}}{\text{m}^3/\text{hr} \times \text{Sp.Gr.} \times \text{Sp.Ht.}}$$

Drive Losses — Based on Chart Page 725.9A106

Δ°F or °C — Temperature rise for liquid in the recirculation circuit

Sp.Gr. — Specific Gravity of pumped liquid

Sp.Ht. — Specific Heat of pumped liquid

GPM or m³/hr — Flow through recirculation circuit (See CDS curve for value)

