Regenerative Rankine cycle

Mass Flow 1 enters a closed feedwater heater as a saturated vapor at a pressure of 600 kPa. It leaves as a saturated liquid. Mass Flow 2 is heated. This stream has a pressure of 5 MPa and enters with an enthalpy of 341 kJ/kg. What are approximately the maximum enthalpy and temperature of the second stream after leaving the closed feedwater heater?

Answer: T = 158.83 °C and h = 670.38 kJ/kg.

Explanation: The maximum temperature to which the steam can be heated is 158.83 °C as this is the temperature of the heating steam.