A rigid tank with a volume of 18 ft3 contains superheated steam at 580 psia and 1000°F. A valve on the tank is suddenly opened and steam is allowed to escape until the pressure in the tank becomes 150 psia. While the steam is escaping, heat is simultaneously added to the tank in a manner that causes the specific enthalpy inside the tank to remain constant throughout the process. Determine the total heat transfer required.



