Heat rejected by the engine must be transported to the radiator for cooling.

The rate of heat transport is

Q = m*Cp*dT

Where:
m = the mass flow rate in #/min
Cp = the heat capacity in Btu/#/deg_F
dT = the temperature rise of the fluid between the inlet to the block and the exit of the block

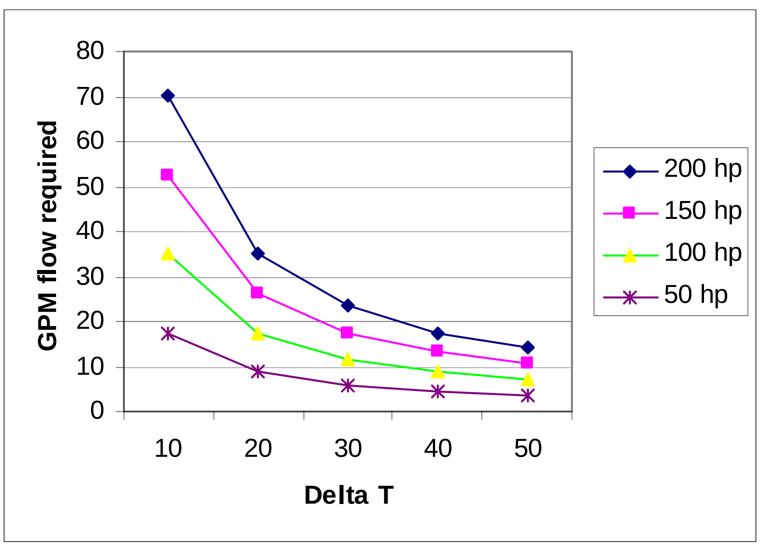
For an engine generating 100 horsepower,

Q = 100_hp*(42.44498 Btu/min/hp)*(.17/.28) = 2577 Btu/min

So, for Glycol coolant with Cp of 0.87, density of 8.47 #/gallon,

Flow (gpm)*dT(deg_F) = (2577 Btu/min)/(0.87 Btu/#/deg_F)/ (8.47#/gal) = 349.7 gal/min

So, for dT = 10 deg_f, you need 349/10 = 35 gal/min flow rate. (for 100 hp engine power)



For the air side,

From the preceding page,

Q = 2577 Btu/min
Cpair = 0.24 Btu/#/deg_F
Density of air = 0.07 #/ft^3

Flow (ft3)*dT(deg_F) = (2577 Btu/min)/(0..24 Btu/#/deg_F)/ (0.07#/ft3) = 153392 ft3/min, so

For 10deg rise in air temperature, flow = 15,392 ft3/min