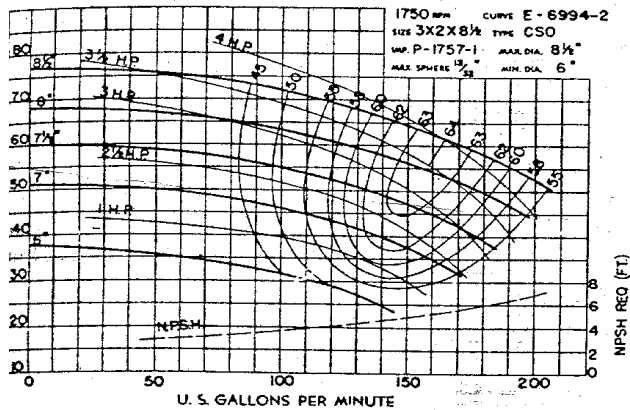


Process Design Project 1

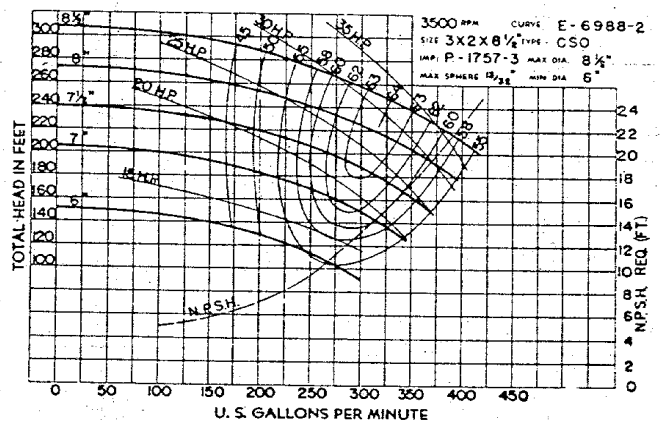
Piping design, pump selection and control valve sizing

Water at 15°C is pumped from a large reservoir to an overhead tank at a normal flow rate of 200 gallon/min (≈ 760 liter/min). Both the reservoir and overhead tank are open to the atmosphere, and the difference in vertical elevation between the water surface of the reservoir and the discharge point to the overhead tank is 100 ft(30 m). The total length of the pipeline is 1,000 ft (300m). One gate valve, one control valve, and three standard 90° elbows are included in the system.

1. Select an appropriate standard size of the pipe.
2. Size the control valve. The equal percentage type is assumed.
3. Select a pump using the attached pump performance charts.
4. Draw vp vs. $flow$ rate.



(a)



(b)

