

Hw 3.4

quarta-feira, 4 de dezembro de 2024 15:50

Homework made by julia ♡
with the moral support of
BRYNN JEWELL ♡



13.17

if the speed is cut in half
whats the head capability change?

$$\frac{Q_1}{Q_2} = \left(\frac{N_1}{N_2} \right)^2$$

so

$$\frac{Q_1}{Q_2} = \left(\frac{1}{2} \cdot \frac{N_1}{N_2} \right)^2 = \left(\frac{N_1}{2N_2} \right)^2 = \frac{1}{4} \frac{N_1}{N_2}$$

in this case the rotation speed will be
reduced by 25%.

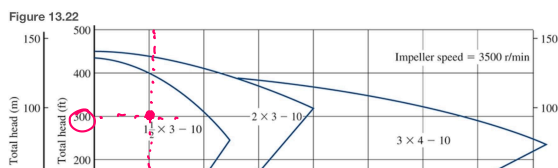
19 if d is reduced by 25% ($\frac{3d}{4}$)

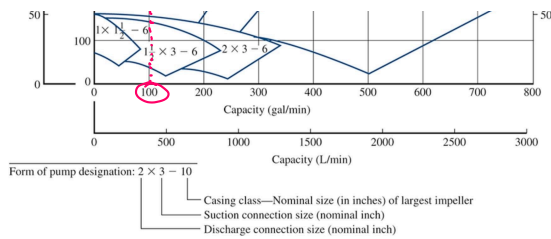
$$\frac{Q_1}{Q_2} = \frac{D_1}{D_2} \rightarrow \text{direct proportional}$$

so the capacity also increase by 25%.

22 a $1\frac{1}{2} \times 3 - 6$ pump means it has a
 $1\frac{1}{2}$ inch discharge connection
3 inch suction connection
6 inch max size of impeller

23

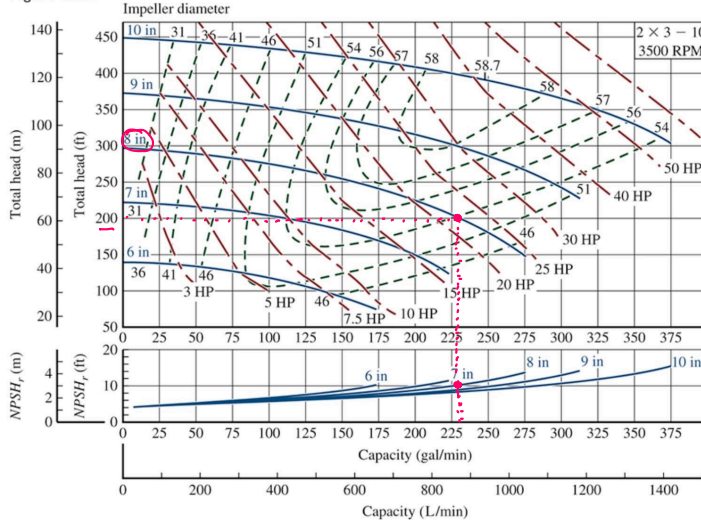




with capacity of 100 gal/min and 300 ft head
the best option pump is a $1\frac{1}{2} \times 3 - 10$ pump

25

Figure 13.28

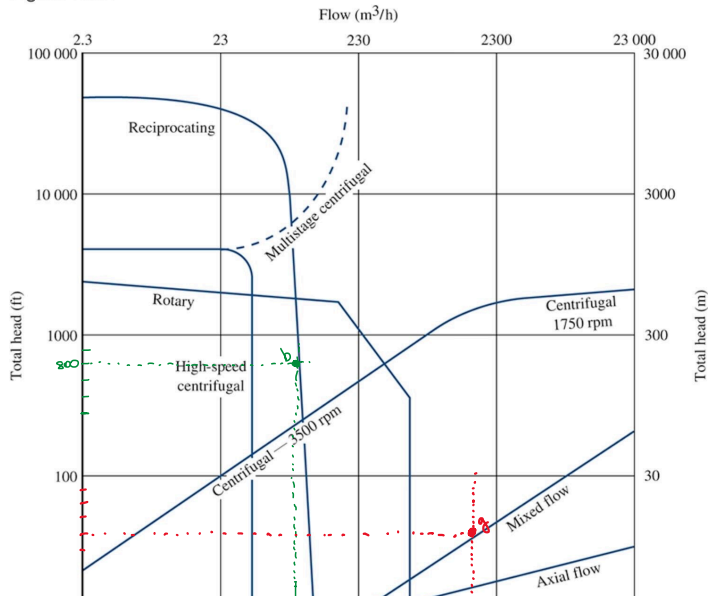


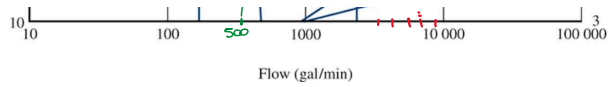
for $2 \times 3 - 10$ pump, if diameter of impeller = 8 in and
system head of 200 ft; give :

capacity $\rightarrow 230$ gal/min
power required $\rightarrow 22.5$ HP
efficiency $\rightarrow 54$
NPSH $\rightarrow 10$ ft

34

Figure 13.52





b) 500 gal/min at 800 ft head

can use rotary or reciprocating pump

a) 8000 gal/min at 60 ft head

can use centrifugal 1750 RPM pump