

MET230 Hydraulics and Dynamics

Unit 1 Study Guide 2

Question 1

Which of the following statements is true about positive displacement pumps?

- a. Gear and vane pumps are the only two categories of positive displacement pumps
- b. A positive displacement pump cannot be used with a pressure relief valve
- c. The motion of a positive displacement pump cannot be reciprocating
- d. The output flow rate varies with the system pressure
- e. None of the above

Answer: e. "None of the above"

Question 2

Which of the following statements is true about dynamic pumps?

- a. Dynamic pumps are self-priming
- b. Centrifugal and axial pumps are not classified as dynamic pumps
- c. Dynamic pumps are used for low-volume, high pressure applications
- d. The flow rate output of dynamic pumps decreases as the circuit resistance increases
- e. None of the above

Answer: d. "The flow rate output of dynamic pumps decreases as the circuit resistance increases"

Problem 1

What is the theoretical flow rate from a fixed displacement axial piston pump with a twelve-bore cylinder operating at 750 rpm? Each bore has a 1-in diameter and the stroke of 0.5 in.

Solution

Known data

Number of cylinder $Y = 12$

Rotational speed $N = 750$ rpm

Bore diameter $D = 1$ in

Stroke $S = 0.5$ in

Using Trigonometry:

Unknown[s]

Theoretical flow rate Q_T ?

Needed

Piston/bore area A ?

Displacement volume V_D ?

Hydraulic Test Study Guide

Clemens Wendtner

A red circular graphic with a gradient, appearing as a stylized arrow or a partial circle, located to the right of the author's name.

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