# Fundamental principles

Der skal være 4 spørgsmål i hver gruppe

## Pascals law

* W
* **G**
* **G**
* **G**

## Pressure, area and force from a cylinder

* W
* **G**
* **G**
* **G**

## Flowrate, moving cylinder

* W
* **G**
* **G**
* **G**

## Volumetric efficiency

* W
* **G**
* **G**
* **G**

# Hydraulic system components

## Flow control

Which configuration would be most appropriate if you want to control piston speed in the plus direction?

4 billeder med muligheder!!

## Counterbalance valve

****

**Husk nyt billede!!!**

Which pressure does the pressure gauge in point C measure?

* **P = 200 bar**
* **P = 250 bar**
* **P = 300 bar**
* **P = 350 bar**

## Counter balance valve

The valves opening pressure should be adjusted to a higher value than the pressure from the load. How much higher should the opening pressure be adjusted to?

* **1,10 x P**
* **1,20 x P**
* **1,25 x P**
* **1,30 x P**

## Counterbalance valve

The pilot operated valve is a “10:1” valve. Which pressure on the pilot line will open the valve?

Måske en anden opgave her i stedet?? 3-vejs tryk kompenseret mængderegulering?

* **3 bar**
* **9 bar**
* **90 bar**
* **300 bar**

# Pumps and associated control systems

Vane pump picture?

## Automatic pressure and flow compensating pumps

The 4 drawings show different pump compensating systems. Write the frame number next to the correct reference in the table below.

3 x Billeder!! 9.5 + 9.6 + 9.7

|  |  |
| --- | --- |
| Pump no. | The correct term for compensation |
|  | Pressure compensation |
|  | Flow compensation |
|  | Load sensing |

## Pump characteristic - Volumetric efficiency



Lave n ny karateristik

What is the pumps volumetric efficiency at XX bar?

* **0,7?**
* **0,7?**
* **0,7?**
* **0,7?**

## Pump Characteristic – Total efficiency.

The pumps mechanical efficiency is 0,7? What is the pumps total efficiency?

* **0,7?**
* **0,7?**
* **0,7?**
* **0,7?**

Fixed pump with relief valve

# Hydraulic actuators

Cylinder

## The mussel diagram

Indsæt muslingediagram 10.3.

The mussel diagram abowe shows a performance of a Danfoss ORBIT motor. The motor shall deliver a torque of 16 daNm. The oil flow is 40 L/mi. How fast will the motor turn?

* **144 rpm**
* **175 rpm**
* **200 rpm**
* **210 rpm**

## The mussel diagram

Use same mussel diagram as in previous question.  
If the oil flow is reduced to 30 L/min and the system pressure is 80 bar, how much power will the motor then deliver?

* **2 kW**
* **3 kW**
* **4 kW**
* **5,1 kW**

Serie – parallel

???

# Circuitry and control features

Counterbalance er taget I opgave6+7

HI-LOW pump

Elektro

Elektro

# Hydraulic fluids

Carrier of contaminants

Viskositet

Oxidation

Emulsion

# Reservoirs and auxiliary equipment

Returnline arrangements

Reservoir size

Accumulator type

Precharge accumulator

# Contamination control

Cleanliness target

Sampling and measurement

Filter performance

ISO code

# Maintenance monitoring and faultfinding