

### Hydraulic & Pneumatic Circuits



Faculty of Engineering Mechanical power

**Engineering Dept.** 

Lecture (5)

#### on

# Components of Hydraulic Action and Control

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#### **Direct-Operated Pressure Control Valves**



**Relief Valve** 







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### **Uses of a Normally Closed Pressure Valve**







### **Uses of a Normally Closed Pressure Valve**







### **Uses of a Normally Closed Pressure Valve**









### **Normally Open Pressure Valve**



Normally Open Pressure Control Valve Symbol











### **Normally Open Pressure Valve in a Circuit**







#### **Pressure Reducing Valve Droop**







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### **Hi-Lo System**







#### **Remotely Operated Counterbalance Valve**









#### **Directly Operated Counterbalance Valve in a Motor Circuit**







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#### **Reverse Flow**



Sequence valve

Counterbalance valve

Counterbalance Valve With Reverse Check

Platen



Pressure reducing valve





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### **Pressure Control Valve Symbols**







**Relief Valve** 

Unloading Valve

Sequence Valve







Pressure Reducing Valve



Counterbalance Valve

**Brake Valve** 



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### **Pilot Operated Pressure Control Valves**





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#### **Override Characteristic of Pressure Control Valves**



Direct operated valves

Pilot operated valves





### What a Pilot Operated Relief Valve Consists of







### **How a Pilot Operated Relief Valve Works**



Pilot dart unseated



Valve relieving

