

**Module 7 - Pneumatic System Design**  
**Week 12 Work Sheet**

Textbook Reading

Chapter 14 – All

What are 4 considerations when designing a pneumatic system?

- 1.
- 2.
- 3.
- 4.

Design Case Studies: see following pages(s)

What are vacuum systems used for?

Describe the Venturi Principle and how this is used in industrial vacuum systems.

What must be considered when selecting a vacuum cup?

How is force of a vacuum system calculated?

How heavy an object can be lifted with a suction cup having a 6-in lip outside diameter and a 5-in lip inside diameter with a - 10 psig suction pressure?

### Case Study Air Pilot Control of Double-Acting Cylinder

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

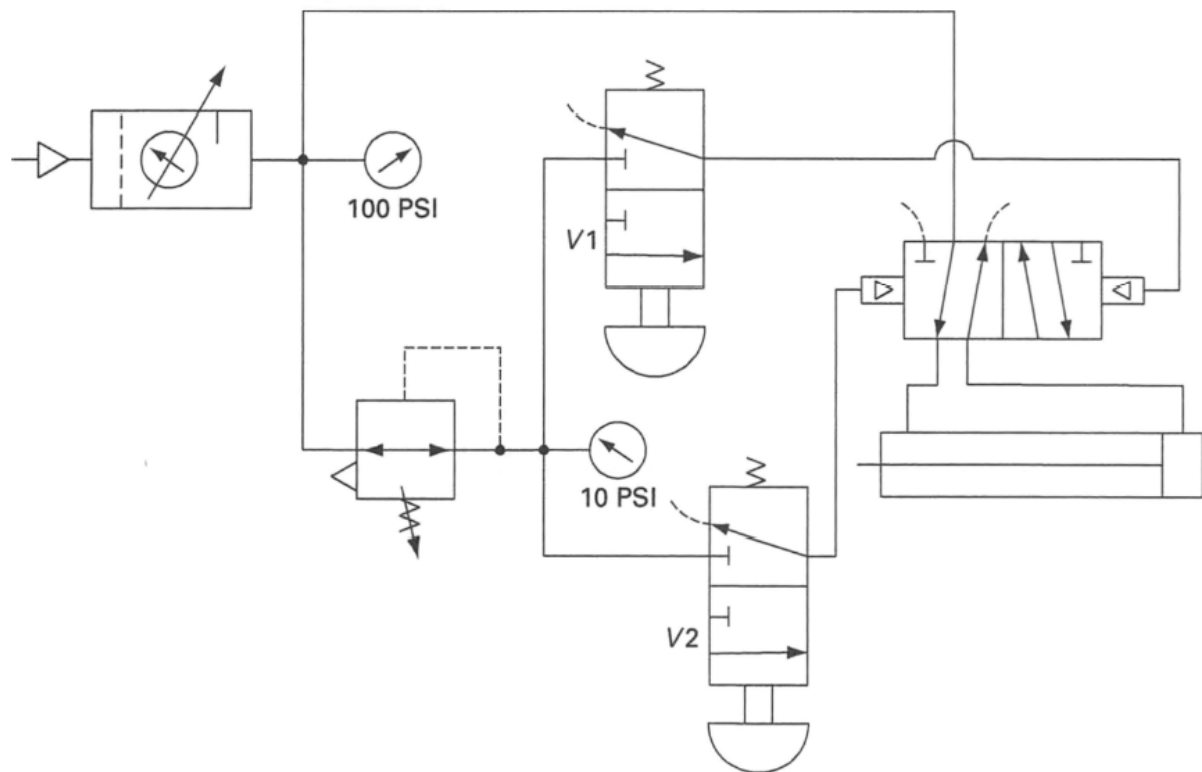
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency



### Case Study Cylinder Cycle Timing System

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

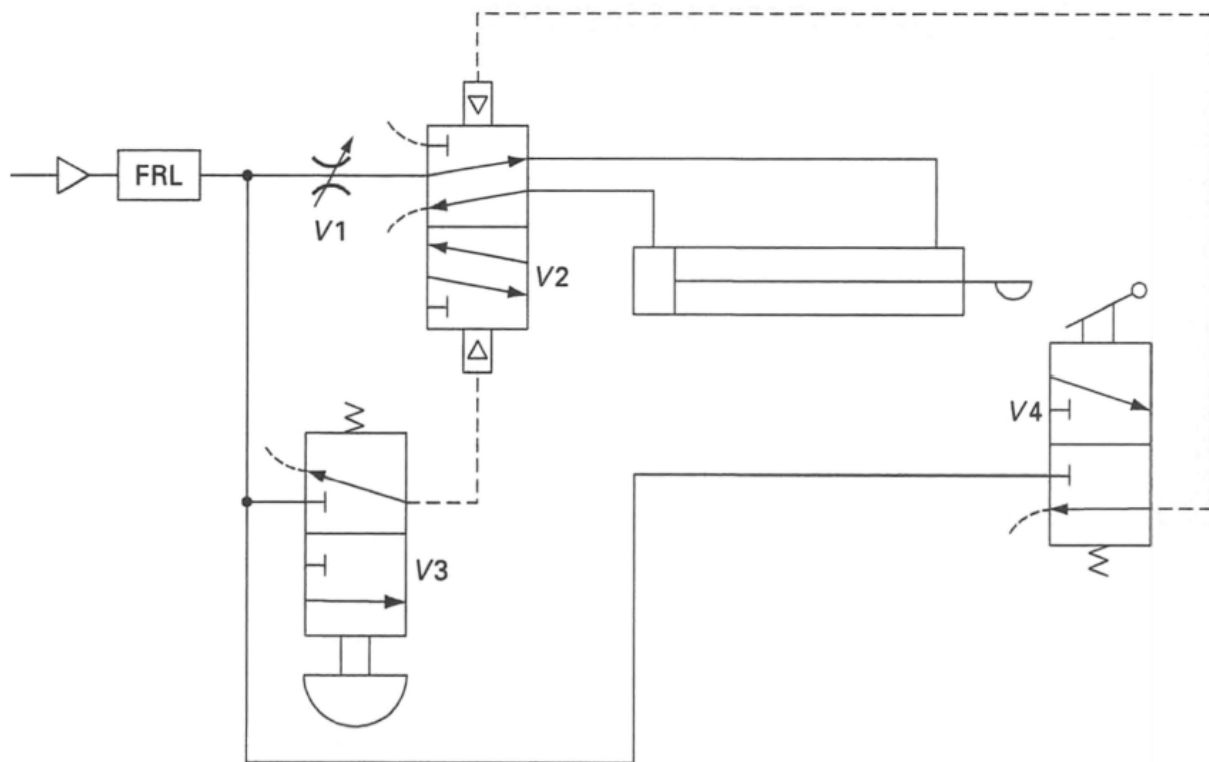
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency





## Case Study Two-Handed Safety Control

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

### Performance:

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

### Safety:

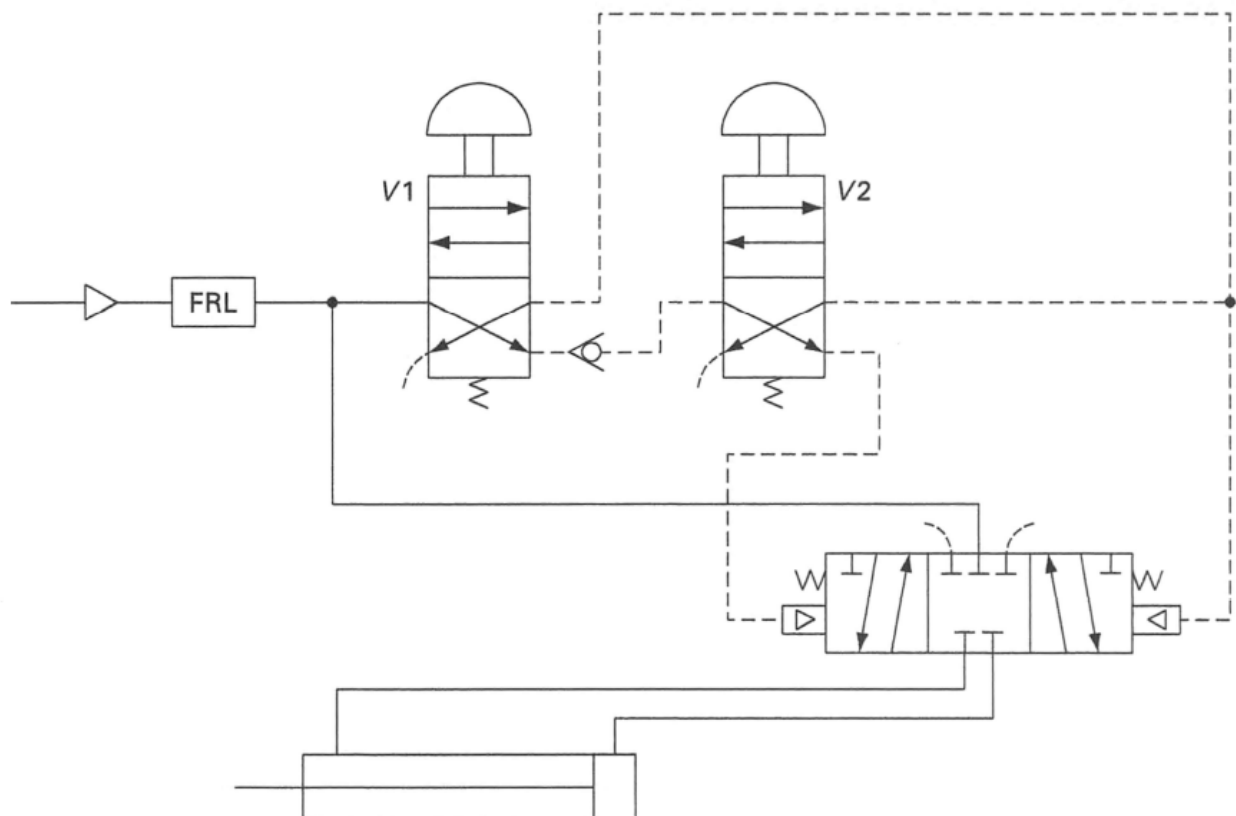
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

### Efficiency:

- how you could make the circuit better, e.g. reduce components, different components

### Costs and Losses

- how you reduce operating costs and monitor efficiency



### Case Study Control of Air Motor

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

#### Performance:

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

#### Safety:

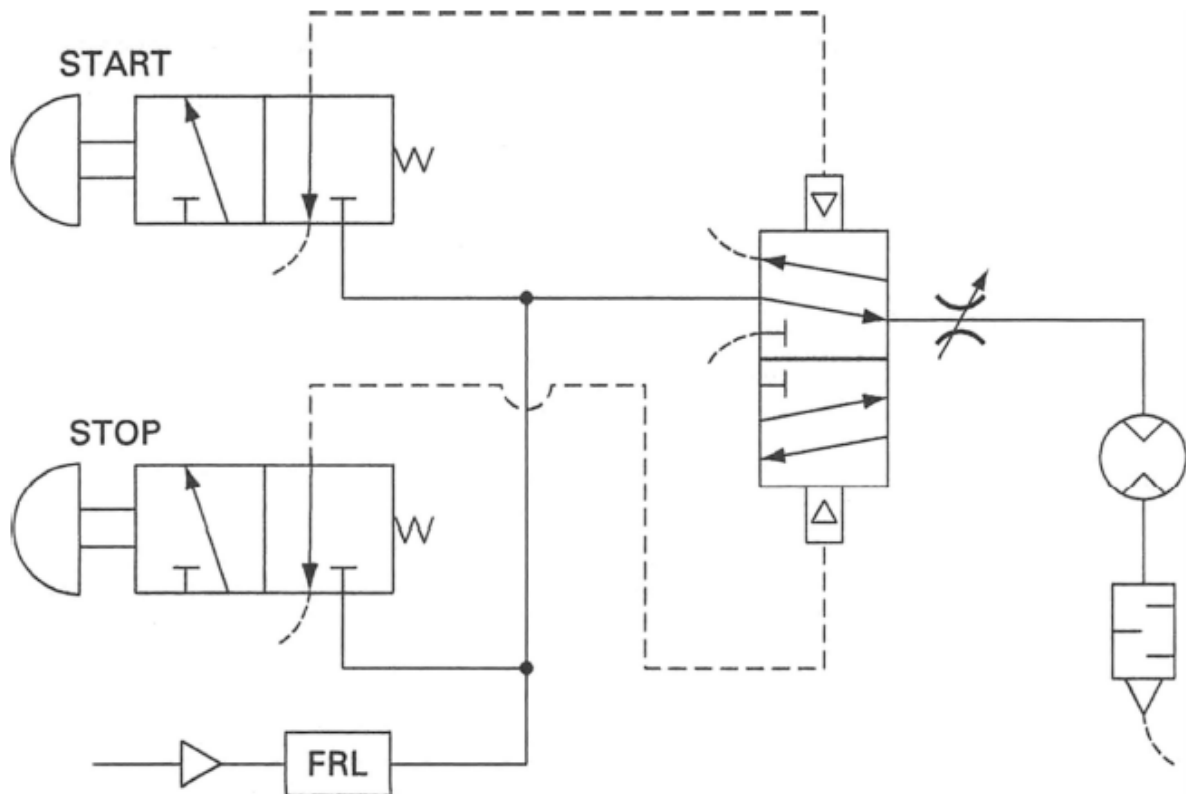
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

#### Efficiency:

- how you could make the circuit better, e.g. reduce components, different components

#### Costs and Losses

- how you reduce operating costs and monitor efficiency



## Case Study Deceleration Air Cushion of Cylinder

For your case study design, prepare a short (5-10 min) ‘verbal’ presentation on this circuit to include:

### Performance:

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

### Safety:

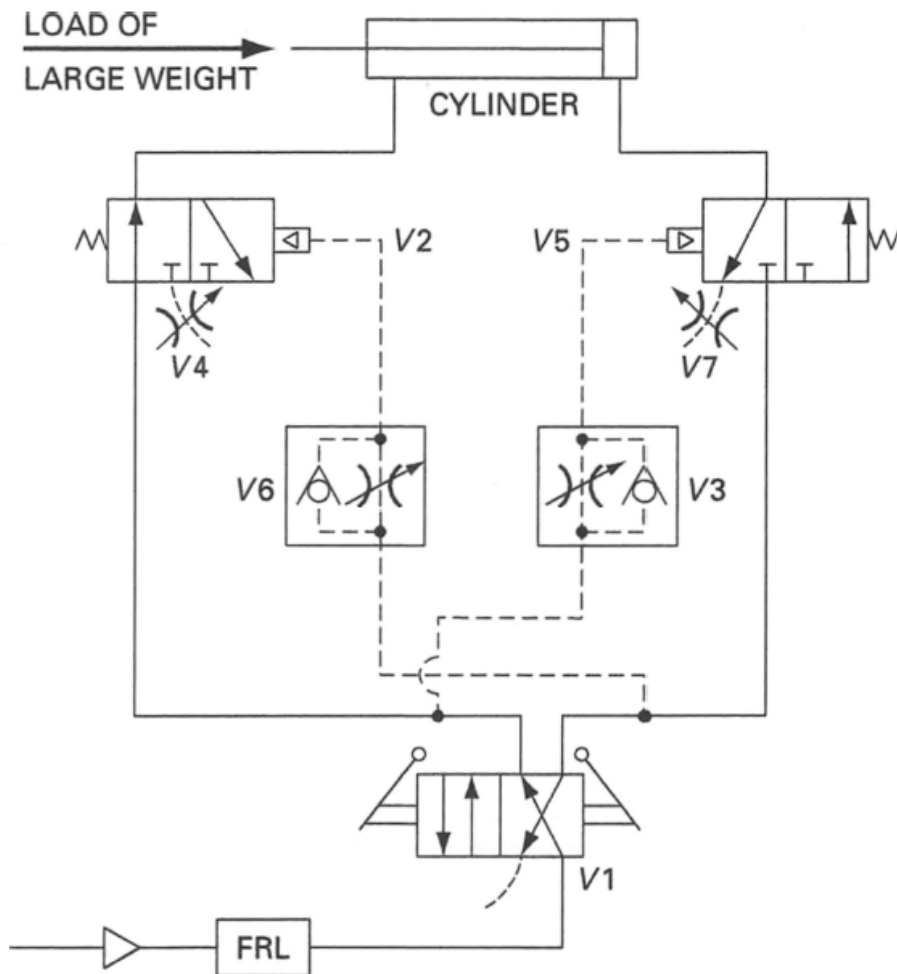
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

## Costs and Losses

- how you reduce operating costs and monitor efficiency



### Case Study Cylinder extends and retracts continuously

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

#### Performance:

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

#### Safety:

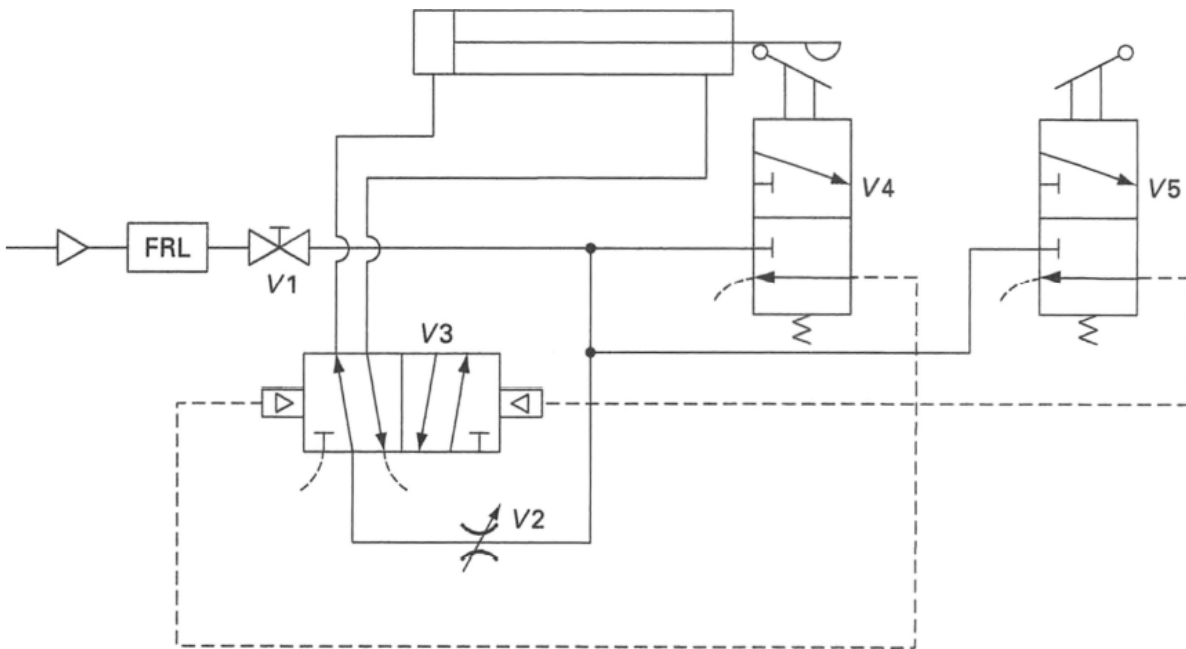
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

#### Efficiency:

- how you could make the circuit better, e.g. reduce components, different components

#### Costs and Losses

- how you reduce operating costs and monitor efficiency





### Case Study Controlled cylinder extension and retraction

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

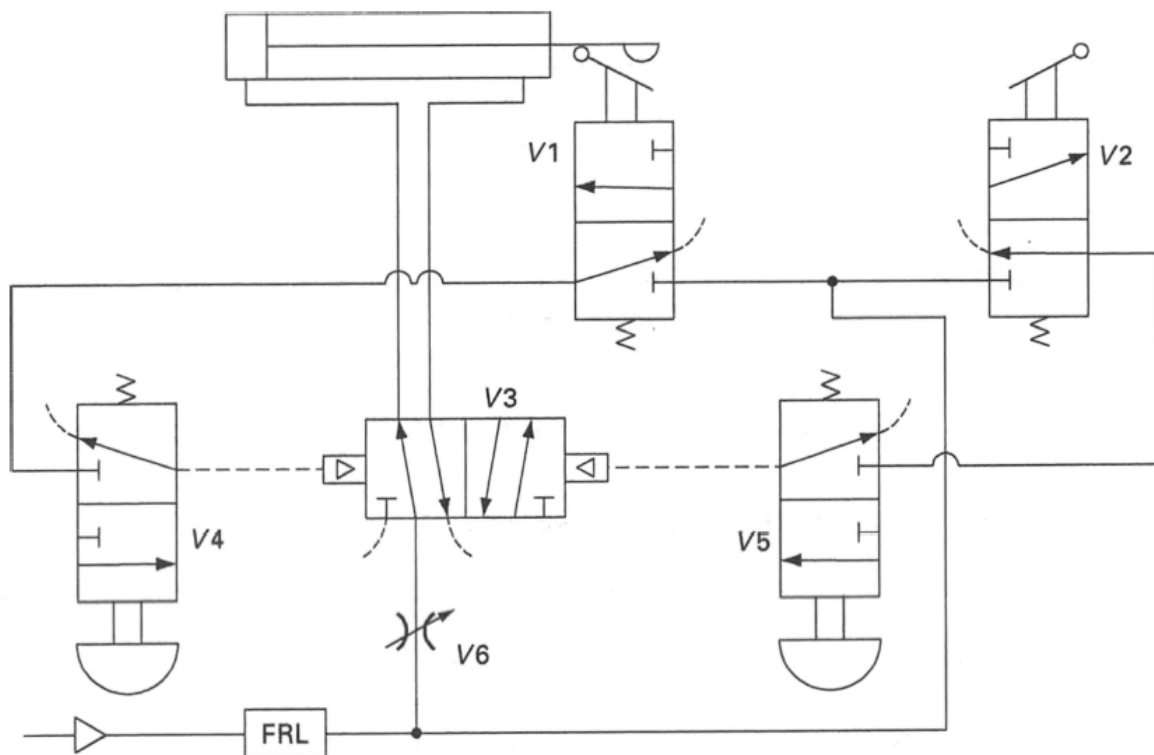
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency



### Case Study Cylinder Sequencing

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

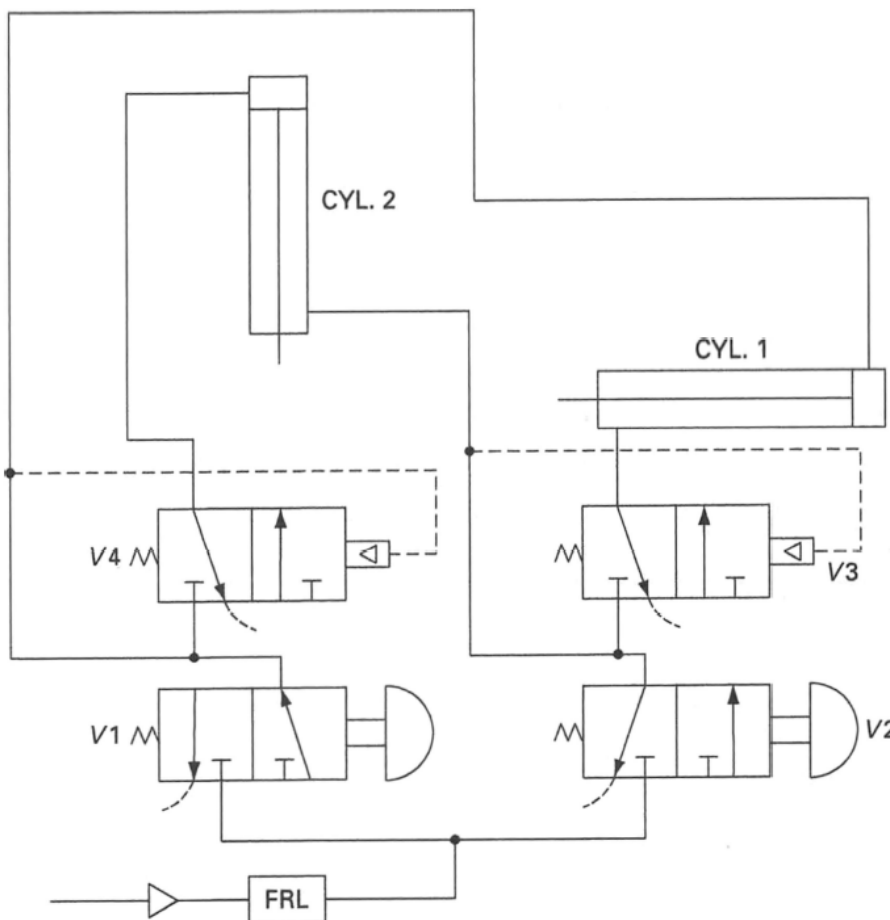
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency



### Case Study Double Rod Cylinder (1)

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

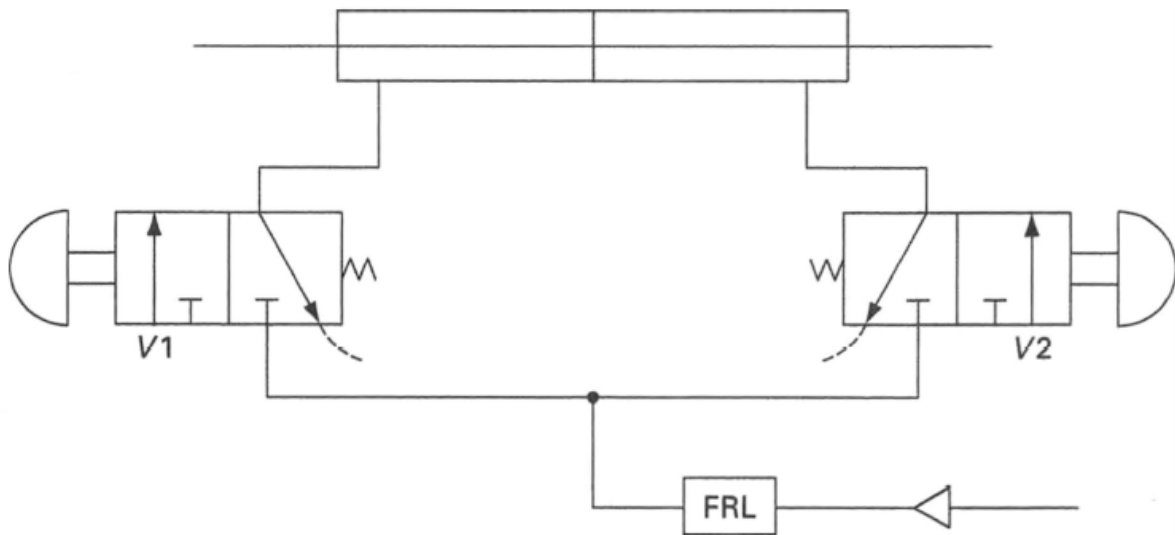
- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency



### Case Study Double Rod Cylinder (2)

For your case study design, prepare a short (5-10 min) 'verbal' presentation on this circuit to include:

**Performance:**

- how the circuit operates (if you get stuck, refer to the class lesson slides)
- an example of an industrial application for your circuit

**Safety:**

- how the system incorporates safety, or what you would add to improve safety (for your chosen industrial application)

**Efficiency:**

- how you could make the circuit better, e.g. reduce components, different components

**Costs and Losses**

- how you reduce operating costs and monitor efficiency

