310M.16 Vacuum Technology

Course Objectives

- **Understand vacuum system operation.**
- **Understand basic vacuum components and their functions.**
- **Select and size components for typical applications.**
- **Carry out systematic troubleshooting of vacuum control systems.**

Course Outline

- **Introduction**
- **Systems of Pressure**
- **Nature of Pneumatic Pressure**
  - Evangelista Torricelli
  - Absolute and Vacuum Gauge Pressure
  - Pascal's Law
  - Boyle's Law
- **Units of Measure**
  - Scientific Notation
  - Exercise on Scientific Notation
  - Conversion Charts
- **Exercise 1 - Conversions**
- **Vacuum Generation**
  - Low Range Pumps
  - High Range Pumps
  - Vacuum Generators and Ejectors
- **Vacuum Systems**
  - Low Vacuum Systems
  - High and Ultra High Vacuum Systems

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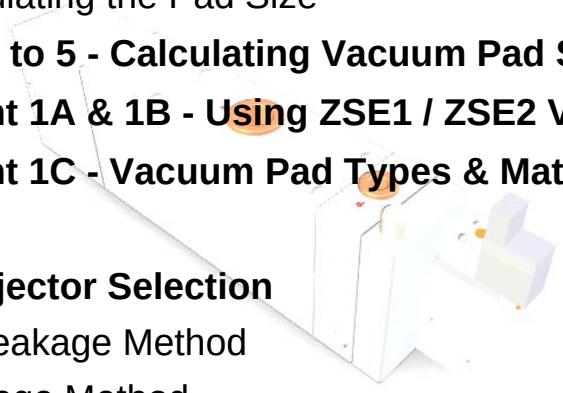
- **Glossary of Low Vacuum Terms**
- **Glossary of High Vacuum Terms**
- **Vacuum Pad Selection**
  - o First and Second Step
  - o Calculating the Pad Size
- **Exercise 2 to 5 - Calculating Vacuum Pad Size**
- **Experiment 1A & 1B - Using ZSE1 / ZSE2 Vacuum Switch**
- **Experiment 1C - Vacuum Pad Types & Materials Exercise**



- **Vacuum Ejector Selection**
  - o No Leakage Method
  - o Leakage Method
- **Exercise 6 to 9 - Leak and non Leakage Method Calculations**
- **Experiment 2 to 6 - Using the ZSE3 / ZSE30 / ZSE40 Vacuum Switches**
- **Vacuum Pump Systems**
- **Peripheral Vacuum Components**
  - o Calculating Tubing Flow Capacity
- **Exercise 10 - Using All Equations to Size a Complete System**
- **Experiment 7 – Evacuation Time Comparisons, - Using Various Ejectors & Components**