You said: PNEUMATIC SOLENOID VALVE

A **pneumatic solenoid valve** is an electromechanical device used to control the direction, flow, and pressure of compressed air within automated systems. By translating electrical signals into mechanical movement, it acts as the primary interface between electronic controllers (like PLCs) and pneumatic actuators like cylinders. [1, 2, 3, 4, 5]

□ Core Components & Working Principle

The valve consists of two integrated sections that work together to route airflow: [1, 2, 3]

- **Solenoid Coil**: An electrical coil wrapped around a core. When energized, it generates a magnetic field.
- **Plunger / Armature**: A movable iron core drawn upward or forward by the magnetic field.
- **Internal Spool / Poppet**: The mechanical component connected to the plunger that shifts inside the valve body.
- **Valve Body**: The housing containing specific flow paths and openings called ports. [1, 2, 3, 4, 5, 6]

When electrical current passes through the coil, the resulting magnetic force pulls the plunger. This shifts the internal spool to connect or block specific ports, changing the path of the compressed air. When power is removed, a mechanical return spring pushes the spool back to its default sta