

Automatic Pneumatic Grinding Machine

<https://www.youtube.com/watch?v=EPkLqVQx5EY>

The Automatic Pneumatic Grinding Machine Using Two Switches is designed to automate the grinding operation with minimum human effort. The system uses an air compressor, pneumatic cylinder, solenoid valve, grinding motor, and two control switches. The first switch is used to start the grinding operation, while the second switch controls the return or stop operation of the pneumatic cylinder. When the start switch is activated, the solenoid valve supplies compressed air to the pneumatic cylinder, moving the grinding mechanism towards the workpiece. The grinding motor performs the grinding operation, and the second switch is used to bring the mechanism back to its initial position. The system provides simple, reliable, and repeatable grinding operation while reducing manual effort and improving operator safety.

Objectives:

- To develop an automatic pneumatic grinding machine using two switches.
- To eliminate the need for complex sensors.
- To control the pneumatic cylinder using a solenoid valve.
- To use the first switch for starting the grinding operation.
- To use the second switch for returning or stopping the pneumatic cylinder.
- To reduce manual effort and grinding time.
- To achieve uniform and repeatable grinding.
- To improve operator safety and machine reliability.

Components:

1. **Air Compressor** – Supplies compressed air.
2. **Pneumatic Cylinder** – Moves the grinding mechanism.
3. **Solenoid Valve** – Controls airflow to the cylinder.
4. **Grinding Motor** – Rotates the grinding wheel.
5. **Grinding Wheel** – Performs the grinding operation.
6. **Two Push Buttons/Switches** – Used to control forward and return operations.
7. **Relay Module** – Controls the motor and solenoid valve.
8. **Power Supply** – Provides electrical power to the control circuit.
9. **Pneumatic Pipes** – Carry compressed air.
10. **ON/OFF Switch** – Provides main power control.
11. **Workpiece Holder** – Holds the workpiece during grinding.
12. **PIC Microcontroller.**

Block diagram of the project

