

# Pneumatic Air Cylinders and Valves

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Pneumatics & Air Tools



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Pneumatic cylinders convert compressed air into linear motion - single-acting with a spring return, or double-acting with ports at both ends - while directional valves control their extension and retraction. They form the muscle of automation projects.

## Key Features

- Bore sizes 10-40 mm common
- Stroke lengths 25-300 mm
- Single and double acting types
- 5/2 and 3/2 solenoid valve patterns
- Cushioning and sensors available

## Typical Uses in the Workshop

- Push, lift and clamp parts automatically
- Build pneumatic pick-and-place stations
- Teach automation and actuation
- Drive sorting and counting machines

## Safe Operation

1. Supply clean filtered air at the rated pressure
2. Connect the ports to the valve
3. Mount the cylinder and align the load
4. Use flow controls to set speed
5. Test the full cycle by hand first

## SAFETY NOTES

- Air cylinders can pinch - guard the moving parts
- Do not exceed the rated pressure
- Drain water from the air supply
- Keep hands and loose items clear
- Depressurise before servicing

#### Maintenance & Consumables

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- Lubricate via the FRL unit
- Check seals and rod for leaks
- Tighten mounting brackets
- Drain condensate from the air line
- Replace worn cylinders

#### Specification & Buying Notes

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A starter kit of double-acting cylinders, 5/2 valves, tubing and fittings covers school automation. Match bore and stroke to the task. Quality valves switch crisply; cheap ones leak.