

4-Stroke Diesel Engine Cut Sectional Model

User Manual

Educational Model

Intended use

Non-functional cut sectional teaching model of a single-cylinder, water-cooled 4-stroke diesel engine, used to show internal components and explain the diesel cycle.

Intended users

Instructors and students in mechanical, automotive, marine and vocational engineering education, under instructor supervision.

Read this manual completely before first use and keep it with the product. This document provides general operating, care and safety guidance. Where the product is supplied with manufacturer labeling or instructions, those take precedence. For questions, a replacement copy, or a digital copy of this manual, email sales@scimedstore.com.

1. Safety

Safety warnings and cautions

- This is a teaching model only. It is not a working engine and must never be fitted with fuel, oil, water or electrical power.
- Students should use the model under instructor supervision.
- Cut sections may have edges and corners; handle with care and do not run fingers along cut surfaces.
- Keep fingers clear of moving internal parts if the model's mechanism is turned by hand.
- Place the model on a stable, level surface. Lift with both hands from the base; do not lift by the cut components.
- Small parts may detach if handled roughly; keep away from young children.

2. Specifications

Engine type shown	Single-cylinder, 4-stroke, water-cooled diesel
Construction	Metal and plastic
Type	Cut sectional teaching model (non-running)
Components visible	Cylinder and piston, fuel injector, injection pump, hot-coil starting device (glow plug), water cooling jacket, crankshaft and connecting rod, camshaft and valves, combustion chamber
Mounting	Tabletop

3. Unpacking and setup

- 1 Unpack the model carefully and check for any loose or damaged parts.
- 2 Place it on a stable, level table at a height where students can see the cutaway clearly.
- 3 Position the model so the cut section faces the audience and is well lit.

4. Operation

Introducing the components

- 1 Point out the cylinder, piston and the small combustion chamber at top dead center.
- 2 Show the fuel injector at the cylinder head and the injection pump, and explain that they meter and inject fuel.
- 3 Show the hot-coil starting device (glow plug) and explain its use for cold starting.
- 4 Show the water cooling jacket around the cylinder.
- 5 Show the crankshaft, connecting rod, camshaft and valves, and explain how they are linked.

Demonstrating the 4-stroke diesel cycle

- 1 Intake: explain that only air is drawn in through the open intake valve as the piston moves down.
- 2 Compression: explain that both valves close and the piston compresses the air, raising its temperature.
- 3 Power: explain that fuel is injected near top dead center and ignites from the heat of compression, pushing the piston down.
- 4 Exhaust: explain that the exhaust valve opens and the piston pushes the burnt gases out.

- 5 If the model's mechanism can be turned by hand, turn it slowly to show piston and valve movement through each stroke. Do not force it.
- 6 Compare with a petrol (spark-ignition) engine: fuel-air mixture, lower compression and spark plug ignition.

5. Cleaning and disinfection

- Dust with a soft, dry brush or cloth.
- Wipe plastic and painted surfaces with a cloth lightly dampened with mild soapy water; dry immediately.
- Do not use solvents, abrasive cleaners or immerse the model in water.

6. Maintenance and storage

- Store covered in a clean, dry place away from direct sunlight and moisture to prevent fading and corrosion.
- Check periodically for loose parts and labels.
- Do not oil or lubricate the model unless instructed by the supplier.

7. Troubleshooting

Problem	Likely cause	What to do
Mechanism is stiff or will not turn	Dust or a part out of position	Do not force it. Clean gently and check for obstructions; contact the supplier if it remains stiff.
Part has come loose	Rough handling or transport	Stop using that part and contact the supplier for advice.
Labels faded or missing	Wear or sunlight	Store away from sunlight; contact the supplier for replacement labels.

8. Disposal

- Separate metal and plastic parts where possible and recycle according to local regulations.

9. Warranty and support

Products are covered by SciMed's standard warranty (12 months from purchase unless a different period is stated on your invoice). Warranty terms: scimedstore.com/pages/warranty.

Support, spare parts and additional copies of this manual: sales@scimedstore.com. Please include your order number and a photo of the product or issue.

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