

SR-30™ Cutaway

Turbojet Engine

A full-scale turbojet engine manufactured to reveal the inner workings and engineering details of a gas turbine power plant.



Product Summary

- Complete SR-30™ Turbojet Engine Cutaway
- Compressor and Turbine Stages Readily Viewable
- Ball Bearing Mounted Rotating Assembly Permitting Full Rotation
- Turbomachinery Components Reveal Actual Blade Geometries
- Reverse Flow Annular Combustor Can Clearly Visible
- Provided with Black Anodized Aluminum Mounting Stand
- Complete with Custom Storage and Transportation Case
- Supplied with a Comprehensive Teaching Narrative
- Designed to Meet ABET Criterion 4 and 6 Objectives
- Industry Leading Warranty with Unsurpassed End-User Support
- Designed and Manufactured in the USA

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Description

The SR-30™ Gas Turbine Engine is designed and manufactured by Turbine Technologies, LTD specifically for the MiniLab™ Gas Turbine Power System. The SR-30™ Cutaway is a full scale example of the actual operating power plant with portions of selected components removed to reveal the inner workings of the engine.

A pure turbojet, the SR-30™ is representative of all straight jet engines in which combustion results in an expanding gas that is sufficiently capable of producing useful work and propulsive thrust. Consisting of a centrifugal compressor, annular combustor and axial flow turbine, the SR-30™ engine is typical of the gas generator core found in turbofan, turboprop and turboshaft gas turbine engines used for aero and marine propulsion and industrial applications.

Flow path analysis is the preferred method to introduce gas turbine operating principles. With the SR-30™ Cutaway, the entire flow process from inlet to exit is traceable, matching the path the actual fluids take through an operating engine. Each major component can be investigated in turn with study given to how the individual parts contribute to the overall function of the engine. Showcasing the complex internal configuration of the basic turbojet, the SR-30™ Cutaway facilitates the qualitative understanding of gas turbine fundamentals and establishes a foundation for more advanced study. The SR-30™ Cutaway completes the MiniLab™ Gas Turbine Power System. It is equally effective as an independent teaching aid and will further the understanding of gas turbine engine operation in any context.

Unlike other cutaways or display models, the SR-30™ Cutaway is meant to be handled and used for demonstration purposes. Hands on manipulation of the rotating assembly and the ability to conduct tactile exploration of the flow path enhance the potential for learning. Supplied with a rugged, road style transportation case, the SR-30™ Cutaway may be safely transported and securely stored. A free, two year warranty is provided on the SR-30™ Cutaway engine.

A comprehensive teaching narrative is provided. It utilizes the SR-30™ Cutaway to illustrate gas turbine concepts and operation. Additional material relating to the manufacturing and assembly process is also included.

Details

Dimensions

SR-30™ Cutaway:	14.5 x 11.0 x 8.0 inches (37 x 28 x 20 cm)
Storage Case:	18.0 x 14.0 x 12.0 inches (46 x 36 x 31 cm)

Weight

SR-30™ Cutaway:	10 lbs (5 kg)
Storage Case:	23 lbs (10 kg)
Combined:	33 lbs (15 kg)

All Actual and Representative Components

- Inlet Bell and Compressor Casing
- Compressor Spinner / 2 Pole Generator for Engine RPM Sensing
- Centrifugal Flow Compressor and Diffuser
- Reverse Flow Annular Combustor with Laser Cut Air Flow Holes
- Outer Combustor Mantle
- Metal Spun Combustor Transition Liner
- Nozzle / Vane Guide Ring
- Bladed Axial Flow Turbine Disk with Main Engine Shaft
- Turbine Containment Ring
- Thrust Cone and Thrust Nozzle
- Fuel Manifold, Fuel Nozzles, Fuel Control Unit and Engine Backplate
- Compressor and Turbine Oil Seals and Main Bearings
- Typical Air, Fuel and Oil Fittings with Internal Engine Fluid Galleyways

Storage Case

Air Transport Association Approved Delicate Equipment Case
Fully Lined and Latchable for Safe, Secure Transportation

Experimental Opportunities

- Gas turbine fundamentals.
- Mechanical operating principles.
- Detailed flow path analysis and visualization.
- Mass and volume flow calculations.
- Construction of blade angle, flow and vector velocity diagrams.
- Examination of typical jet engine manufacturing and construction techniques.

Purchase Specifications

- A complete, full-scale turbojet engine with portions of selected components removed to reveal the inner workings of the engine.
- Engine to utilize a centrifugal flow compressor, reverse annular flow combustor and an axial flow turbine stage.
- Engine to be of current manufacture and consisting of all new components.
- Engine sufficiently open and accessible to trace entire gas flow through all components.
- Rotating assembly capable of full rotation as in operating engine.
- Engine supplied with and displayable on black anodized aluminum mounting stand.
- To be supplied with a latchable aluminum ATA approved travel and storage case.
- Provided with a comprehensive teaching narrative.
- To be covered by a free two year warranty.

