SCIENTICO INDIA
Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Boyle's Law Apparatus | ThermoFlux – 7023

Category: Thermodynamics Lab Equipment · **Country of Origin:** India

Product Overview

The Boyle's Law Apparatus – 7023 is a dedicated laboratory unit enabling students to study and experimentally verify the isothermic change of state of gases, also known as the Boyle-Mariotte Law. Made by Scientico India, ISO 9001:2015 certified, and supplied with a calibration certificate and operation manual.

View this product online: https://scienticoindia.com/product/boyles-law-apparatus-thermoflux-7023/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Boyle's Law Apparatus, Technical Specifications

Parameter	Detail
Model	ThermoFlux – 7023
Test Gas	Air
Vessel Type	Transparent measuring vessel
Volume Change Method	Built-in pump with hydraulic oil
Valve	3/2-way valve (compression / expansion switching)
Pump Function	Compression and vacuum
Temperature Measurement	Electronic sensors
Pressure Measurement	Pressure gauge + sensors

Technical Data

Pump

Parameter	Value
Power Output	60 W
Delivery Side	2 bar
Intake Side	213 mbar

Temperature Measuring Range

Parameter	Value
Vessel	-100 ~ 400 °C

Pressure Measuring Range

Parameter	Value
Vessel	0 ~ 4 bar

Volume Measuring Range

Parameter	Value
Vessel	0 ~ 1.5 L (approx.)

Key Features

Key Features

- **Dedicated Boyle's Law Apparatus:** Single transparent vessel for focused experimental verification of the Boyle-Mariotte isothermic gas law
- **Hydraulic oil displacement system:** Built-in 60 W pump varies enclosed air volume (0 to approx. 1.5 L) to produce controlled isothermic compression and expansion
- **Pump dual function:** Operates as both a compressor (2 bar delivery) and a vacuum pump (213 mbar intake) within the same Boyle's Law Apparatus
- **3/2-way valve:** Enables direct switching between compression and expansion modes without reconfiguration
- **Pressure measurement:** 0 to 4 bar gauge range via integrated pressure gauge
- **Electronic temperature measurement:** –100°C to 400°C range via integrated sensor for continuous monitoring during isothermic experiments
- **Transparent vessel:** Allows direct visual observation of volume change and state change throughout each experiment
- **Test gas:** Air, no specialist gas supply required
- **Optional DAQ software:** ThermoFlux – 7023 LabVIEW-based software for automated measurement and result calculation; Windows compatible

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Experiments

- Demonstrating the laws of state changes in gases experimentally
- Isothermic change of state, Boyle-Mariotte Law

Construction and Design

The Boyle's Law Apparatus ThermoFlux – 7023 is constructed as a self-contained experimental unit centred on a single transparent measuring vessel that allows direct observation of the enclosed air volume during isothermic Boyle's Law Apparatus experiments. The vessel is connected to a built-in 60 W pump that displaces hydraulic oil to vary the enclosed air volume between 0 and approximately 1.5 L. A 3/2-way valve controls switching between compression and expansion modes; the compressor is also operable as a vacuum pump, with an intake side rating of 213 mbar and a delivery side rating of 2 bar. Pressure within the vessel is monitored via an integrated gauge over a 0–4 bar range. Temperature is measured electronically via an integrated sensor covering –100°C to 400°C, enabling verification that the change of state occurs under near-constant temperature conditions when volume changes are applied slowly. The optional LabVIEW-based DAQ software integrates with an electronic sensor set for computerised data acquisition and result calculation under Windows environments.

Software

ThermoFlux – 7023 DAQ Software (Optional)

- Developed in National Instruments™ LabVIEW™ environment
- Measures and calculates experimental results from the apparatus
- Compatible with all Windows™ operating systems
- When the software option is selected, a set of electronic sensors is included

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Scope of Delivery

- 1 × Experiment unit
- 1 × Instruction manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1. Which gas law does the ThermoFlux – 7023 demonstrate?
The apparatus demonstrates the isothermic change of state, also known as the Boyle-Mariotte Law, which describes the inverse relationship between the pressure and volume of a gas maintained at constant temperature.

Q2. What test gas is used in the Boyle's Law Apparatus?
Air is used as the test gas. No specialist gas supply or gas cylinder is required.

Q3. How is the volume of the enclosed gas varied during experiments?
The built-in 60 W pump displaces hydraulic oil into or out of the transparent vessel to reduce or increase the enclosed air volume. A 3/2-way valve switches between compression and expansion modes.

Q4. Can the pump be used to create a vacuum?
Yes. The built-in compressor is also operable as a vacuum pump, with an intake side pressure of 213 mbar, enabling sub-atmospheric pressure conditions within the vessel.

Q5. Can the ThermoFlux – 7023 be used without the optional DAQ software?
Yes. Both experiments can be conducted manually using the integrated pressure gauge and electronic temperature sensor. The ThermoFlux – 7023 DAQ software is an optional add-on for automated data acquisition under Windows environments.

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