

# powertek™

## Single Cylinder Dynamometer

GDJ LabTrainers™ and Classroom Instruction Modules directly integrate factual learning with industry-standard methodologies of data gathering and problem solving. GDJ replaces dry, rote memorization, with the means to visualize the relationship between formulas and real-world results.

Designed to teach students not only how the engine operates but why it works. Lesson Plans teach the transformation of chemical to mechanical energy.

- Hardware is used as a means to create problems, which are then solved through the correct application of the relevant formulas.
- Experiments are designed to illustrate strong cause and effect relationships.
- Combustion Pressure for P/V diagrams and calculate indicated horsepower. Combustion pressure allows students to see a direct link to the pressure

### Ordering Specification

- A air cooled one cylinder internal combustion engine, complete with all services and instrumentation to allow the engine to be evaluated in a laboratory environment.
- The unit includes a variable load dynamometer, which directly measures the power and torque produced by the engine.
- Combustion pressure indicator to provide calculated indicated



- or force that acts on the piston.
- Optional computer control allows the engine to be operated from a remote location.

horsepower and also allow P/V diagrams

- The engine, dynamometer, fuel tank(s), battery etc. are all mounted on a self-contained steel frame of painted and welded construction. The frame is designed to be easily moved.
- The basic engine runs on gasoline. As an optional accessory kit, the same engine can also be run on natural gas

(NG) or liquid petroleum gas (LPG).

- The LabVIEW™ software supplied includes extensive data logging, analysis and graph plotting facilities, plus full instructions on operating the equipment and performing the investigations.

Designed for  
Educational Investigations  
into Engineering,  
Thermodynamic &  
Environmental Principles

### Features

- GDJ offers gasoline fuel as standard with a options available for alternative fuels of natural gas and liquid petroleum gas
- LabVIEW™ software for data capture and analysis
- Combustion Pressure for P/V diagrams and calculate indicated horsepower
- Air cooled single cylinder engine
- Variable load dynamometer
- Comprehensive instrumentation
- Easy to install, portable units
- Optional computer control of engine allows students to operate the engine and retrieve data from remote location!

### Educational Capabilities

- Single Cylinder Engine Training System, generating characteristic torque, power and fuel consumption curves under different conditions
- Thermodynamic investigations of internal combustion engines, with ability to measure real time cylinder pressures and temperatures
- Environmental investigations of different fuels

**GDJ INC.**

## Other Classroom Aids from GDJ, Inc.

### Physics Coaster

A new, innovative teaching tool that will capture your student's imagination and make learning physics, engineering, and mathematics concepts both fun and challenging.

### Flotek Wind Tunnel

Research Grade Wind Tunnels let your students move beyond demonstration, to true application. Three different sizes and many options.

### Crash Tester

Allows students to conduct the same impulse momentum experiments that highway safety experts and automotive design engineers do.

### Engine Dynamometers

Available in Gasoline, Alternative Fuels, Diesel Internal Combustion Engines or Gas Turbine Engine. **Also available in single cylinder internal combustion engine.**

For full details on this and other GDJ Products see us at [www.gdjinc.com](http://www.gdjinc.com)

## Engine Performance Specification

### – Gasoline

No of Cylinders.....	1
Bore x Stroke.....	2.83 in (72 mm) x 2.05 in (52 mm)
Displacement.....	13 cu. in.
Gross Power (nominal) .....	5.6 kW (7.5 hp)
Gross Torque (nominal).....	13.4 Nm (9.9 ftlbs)
Electric Starter .....	12V
Engine Design .....	Overhead Valve
Fuel Tank .....	5 gallons

**Note:** Fuel tank is separate from engine for safety.

### Other Features

#### Stand

- Eddy current dynamometer
- Torque reading direct to calibrated load cell
- Fuel flow meter
- Engine combustion pressure measured DURING engine operation
- Heavy duty, welded steel box frame

#### Curriculum

- Lesson plans based on transformation of energy.
- Students work step by step through the transformation of chemical energy to mechanical energy
- Laboratory grade equipment assures accurate, repeatable data

### Data Retrieved

- Engine torque
- Engine horsepower
- PV diagrams
- Fuel flow
- Engine RPM
- Air flow CFM
- Cylinder head temperature
- Exhaust gas temperature

## Installation Requirements

- The equipment should be installed in a well ventilated area.
- The engine exhaust may be connected to a duct pipe and vented external to the building.
- For exhaust ducts of greater than 20 feet (6m), a fan assisted duct is recommended.

### The following services are required:

- Model PT-100 thru 130 – 110V, 50/60Hz, single phase electricity supply
- Model PT-120 – Natural gas supply, between 150mm and 350mm water gauge

### Essential Additional Equipment

- The user must have access to a PC running Windows™ 98/XP.
- It is recommended that the user has access to a barometer for measuring air pressure.

### Shipping Specification

Gross Weight. 600 lbs (272 kg)

Volume: 70 cubic feet  
(2.0 cubic meter)

### Overall Dimensions

Height	60 inches
Width	55 inches
Depth	32 inches

Optional L/P or natural gas fuels



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