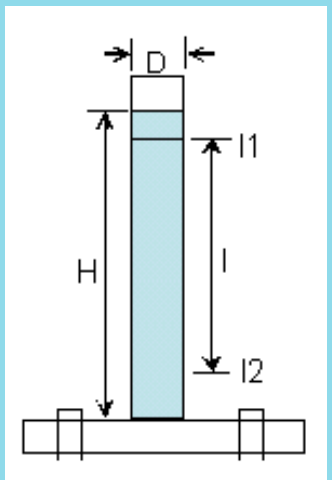
lambda scientific

Construct, Conduct & Comprehend Physics Experiments

LEMI-32 Measuring Liquid Viscosity-Falling Ball Method

- *Photoelectric timing*
- *High accuracy*
- *Stable and reliable*
- *Affordable*



Schematic of experimental method

Viscosity coefficient is one of the important properties of liquid. Measurement of liquid viscosity coefficient using a falling ball can reveal related physical phenomena clearly. Normally, the measurement accuracy of the falling ball method is not high by using a manual stopwatch considering the existing parallax errors of the ball.

This apparatus is designed with the following benefits:

1. Using photoelectric sensor and electronic timer to avoid the parallax and timing errors caused by a stopwatch.
2. Improved mechanical design to ensure precise falling trace of the ball.
3. Using laser ranging to accurately measure both the fall time and fall distance to avoid the parallax error.

Experimental Objectives

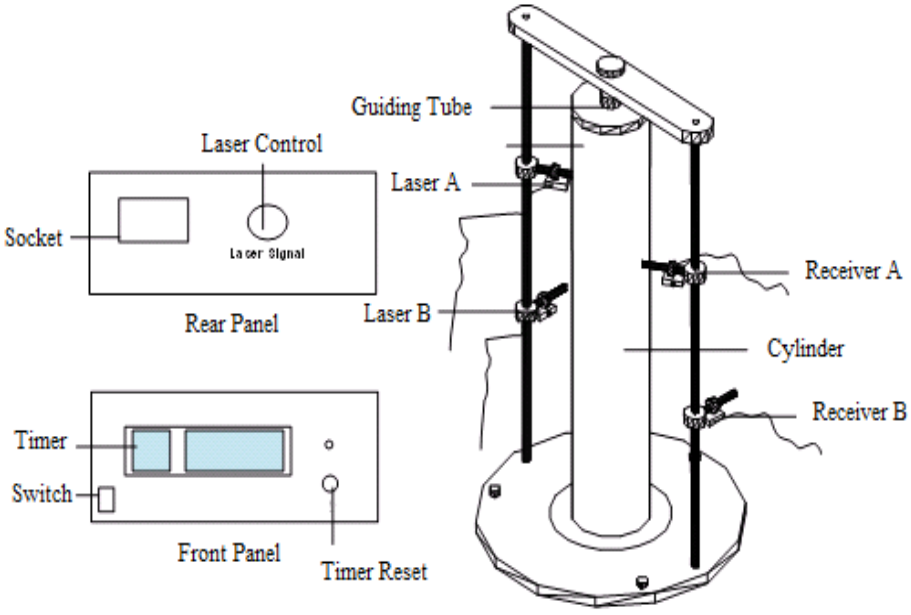
1. Measure time and speed of a moving object using a laser photoelectric sensor
2. Measure oil viscosity using falling ball method and Stokes formula
3. Understand the falling ball method and make proper corrections if necessary

Specifications

Electronic timer	Displacement range: 400 mm; resolution: 1 mm
	Timing range: 250 s; resolution: 0.1 s
Measuring cylinder	Volume: 1000 mL; height: 400 mm
Measurement error	<3%

Parts

Name	Qty	Note
Electronic unit	1	
Stand rack	1	
Laser emitter	2	
Laser receiver	2	
Cable	1	
Cylinder	1	
Small steel ball	1 set	diameter: 1.5, 2.0 & 2.5 mm, one bag each
Magnetic steel	1	
Power cord	1	



Schematic of system

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