

## LEMI-17 Apparatus of Shear Modulus and Rotational Moment of Inertia



- *Hall sensor and electronic timer*
- *Specially designed metal claw to replace traditional metal disk*
- *High measurement accuracy*
- *Affordable*

This apparatus of shear modulus and rotational moment of inertia (i.e. torsional pendulum) is developed with a specially designed hanging claw to replace the traditional disk plate. A rigid ring can be mounted onto the claw and rotates around the same axis horizontally or vertically, while other shapes of rigid objects (such as rigid bars) can also be mounted onto the claw. The torsional swing is smooth and reliable. A Hall switch with magnet and digital timing device is used to measure the torsional swing period, check each half period, and determine the optimal number of cycles for achieving accurate measurement results.

Various parameters such as period, moment of inertia, and diameter/length of a sample under test, can be accurately measured and calculated, yielding high measurement accuracy for the shear modulus of the material. This apparatus can measure rotational moment of inertia of any rigid objects such as rings, columns and bars around different axes verify the perpendicular and parallel axis theorems.

## Experimental Contents

1. Learn how to measure length and time
2. Learn how to measure shear modulus using torsional pendulum
3. Learn how to measure rotational moment of inertia of various objects
4. Verify perpendicular/parallel-axis theorems

## Specifications

Item	Specifications
Digital counter/timer	max counts: 80; timing range: 0~255.99 s; resolution: 0.01 s
Hanging claw	length:110 mm; width:16 mm
Hall switch sensor	operating at 5 VDC
Support	with tripod base, and clamp on the support post
Rigid ring	inner diameter: 80 mm; outer diameter: 110 mm
Rigid square bar	height: 120 mm; mass: ~ 312 g
Rigid round bar	height: 120 mm; mass: ~ 187 g
Wire under test	steel wire and copper wire, diameter: ~ 0.4 mm

## Part List

Support post and base	1	
Digital counter/timer	1	
Hall switch sensor	1	including connection wire
Claw	1	
Rigid ring	1	
Rigid square bar	1	
Rigid round bar	1	
Small steel ball	2	
Small magnet	1	
Steel and copper wires	10	5 each

**Note: above product information is subject to change without notice.**