

### Rotary Resonance Pendulum

Your students can study resonance with this well made oscillatory system designed to give you a particularly sharp resonance peak. The amplitude of oscillations can be easily read with the degree scale marked on the ring outside the wheel. The scale features cutout degree markings, so you can use a point light source to easily project the readings in a darkened room.

Using the rotary pendulum you can do experiments such as the determination of the natural frequency of a damped, free oscillation. More sophisticated experiments can also be done, such as a detailed study of the characteristics of forced oscillation. Experiments like these are very visual since students can see the phase shift between the exciter and resonator of the rotary pendulum system.

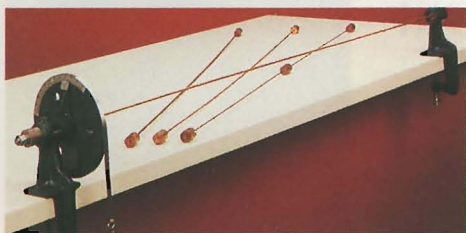
A copper wheel with a ball-bearing mounting makes up the oscillating system. A built-in motor and a spiral spring excite the wheel. It oscillates with a natural frequency in the region of 0.5 Hz. You can vary the frequency of the motor continuously from a standstill up to approximately 3 Hz. An electromagnet, also built right into the system, lets you damp the oscillations electro-dynamically over a large range.

All you need to add are two power supplies. One power supply is for the motor, which requires at least 20 VDC and 2A. We recommend our Lab Regulated DC Power Supply (32074C). The other power supply is for damping, which requires about 12 V. For this purpose we recommend the Low Voltage Power Supply (31383C).

**34600T \$2,380.00**

#### You Need to Supply:

<b>32074T</b>	Lab Regulated DC Power Supply	<b>\$215.00</b>
<b>31383T</b>	Low Voltage Power Supply	<b>\$295.00</b>



74050

### Torsion Apparatus

You can measure the modulus of rigidity with our Torsion Apparatus. Its quality rod design offers you dependability and reproducibility.

We attach a high-quality ball-bearing hub with a 15cm-diameter wheel to a table

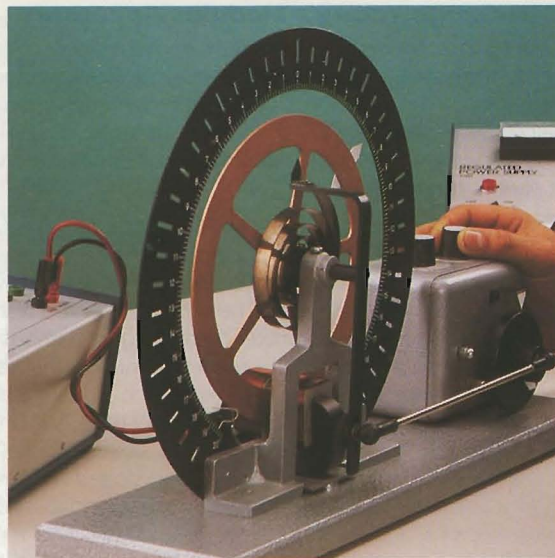
clamp. This clamp and another, also included, hold one of our four metal rods. Hang a mass hanger from the special steel ribbon that's wrapped around the wheel, and you're ready to work. The twist that the mass will apply to the rod can be measured up to 100° of rotation on the degree scale set along one section of the wheel. An attached vernier arm, movable about the wheel axis, lets you read precisely down to 0.1° of rotation.

With the Torsion Apparatus, we include a 3.96mm-diameter brass rod, as well as three steel rods, precision-milled to diameters of 2.02mm, 2.76mm and 3.96mm. Each rod is 1m long between bushings. The smallest of the steel rods also has a bushing near the middle that you clamp on the table socket, giving you an effective length of 50cm for your measurements. We also supply you with a mass holder and the two clamps, each of which has a socket with a single T-head set screw that holds the rod in rigid security. With your slotted masses, you will be able to do an experiment that will give certain proof of the effects of stress.

**74050T \$460.00**

#### You Need to Supply:

<b>09604-1T</b>	100g Slotted Mass	<b>\$6.40</b>
<b>09604-2T</b>	200g Slotted Mass	<b>\$8.50</b>
<b>09655-01T</b>	0.5kg Slotted Mass	<b>\$13.85</b>
<b>09655-02T</b>	1 kg Slotted Mass	<b>\$18.50</b>
<b>09655-03T</b>	2kg Slotted Mass	<b>\$28.35</b>



34600

### Torsion Pendulum

Use our multi-functional Torsion Pendulum for more than just torsional vibration studies. You can use it to find the rotational inertia of various objects and the coefficients of rigidity of steel and brass. The periods of the rods are on the order of several seconds, making them easy to measure.

Supplied with this high quality apparatus is a stable wall bracket made of cast iron with a socket to clamp in one of our four torsion rods. Three of the included rods are made of steel with diameters of 2, 3, and 4mm. The fourth rod is made of brass and has a diameter of 4mm. For additional studies we made an extra bushing in the center of the 2mm steel rod so you can clamp it at 500mm.

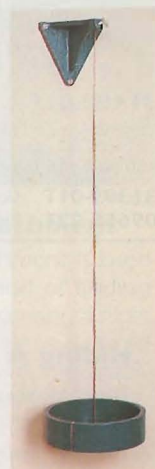
A disk is included to place at the bottom of the rod that lets you suspend the included ring. We also sell a Cylindrical Inertia Mass Set (75265C) separately to suspend with the disk. Both the ring and the disk are 13mm thick, about 25cm in diameter, and have the same weight (about 4.7kg).

**75260T \$340.00**

#### Replacement torsion rods:

<b>00674-09T</b>	Brass Rod, 4mm diameter	<b>\$36.00</b>
<b>00674-1T</b>	Steel Rod, 2mm diameter w/ bushing	<b>\$33.00</b>
<b>00674-11T</b>	Steel Rod, 3mm diameter	<b>\$36.00</b>
<b>00674-12T</b>	Steel Rod, 4mm diameter	<b>\$42.00</b>

<b>75269T</b>	Ring	<b>\$88.00</b>
<b>75267T</b>	Disk	<b>\$99.95</b>
<b>75265T</b>	Cylindrical Inertia Mass Set, a pair of accurately turned steel masses for oscillation studies.	<b>\$99.95</b>



75260