Stroboscope

Hand Whirling

LB3851-001

Description:

The Stroboscope disc is a device that provides a set of slots to pass the observer's eye so as to behave like a shutter, so that a repetitively moving object is viewed with an interrupted view.

If a wheel turns at 20 revs per second and if it is observed through a very fast acting shutter that opens and closes very quickly at 20 times per second, the wheel would be seen by the eye at exactly the same position each time. It would appear to be stationary at that position.

If the shutter were altered slightly in frequency so that it was no longer exactly synchronised with the rotating wheel, the image would appear to be rotating slowly in one direction or the other. This would be a 'slow motion' image.

The slits in the disc behave like a shutter opening and closing very quickly in front of the eye. A stationary image will be seen whilst looking through the slits when the number of slits per second equals the rotation speed of the object per second.

The kit contains a spring blade to attach to a bench with a G-clamp and to freely vibrate at various frequencies.

Double Speed:

If the stroboscope disc speed is doubled, an image will be seen at each half-turn of the wheel. If the wheel being observed has a single mark on the rim, the image will show two marks half way around.

Half Speed:

If the disc speed is halved, the image seen will remain a stationary image but the wheel has rotated two turns between the passing of consecutive slits in the disc.

Disc Diameter: 250mm	Rail Length: 300mm	Height: 40mm	Weight: 500g

Instructions:

The user of the disc stroboscope holds the handle with one hand while the finger of the other hand reaches around to the front of the disc to enter the hole provided so as to spin the disc on its pivot.

While the disc is spinning, either one or two observers look at a moving object through the slits in the rail.

The slits behave as shutters rapidly opening and closing so as to provide the observer with short duration 'snapshots' of the moving object.

The disc stroboscope has two discs that can be adjusted with one another to provide a selection of 1, 2, 3, 4, 6 or 12 slits through which to observe a moving object.

To adjust the slits, use the small humps provided to stress the discs apart about 6mm and note the number markings on the inner disc. As the location peg disengages, shift one disc relative to the other and locate the peg into the hole that provides the number of slits desired.

Uses of a Stroboscope:

If the rotational speed of the disc is known and the number of slits is known, the speed of the moving object can be calculated.

Stationary or very slowly moving images of very rapidly moving machinery can be observed and faults in machine operation can be viewed.

Sometimes, certain faults occur only when machinery operates at high speed. Faults of this type are very difficult to repair without the help of a stroboscope.

A stroboscope can be used to measure the exact speed of hot or cold or dangerous moving objects from a distance and without the need to touch them.

A stroboscope can therefore provide safety in dangerous surroundings. Another great advantage is that, because there is no physical contact, the behaviour and speed of very low powered objects is not altered.

A stroboscope can 'freeze the image' and also measure the exact speed or frequency of motions that might be oscillating or vibrating and are not necessarily rotational. This is very important in engineering.

Other Types of Stroboscope:

The more usual electronic stroboscope has a bright light to flash repetitively on a moving object to provide an image of the object as it passes one point. The flashing frequency is altered until the illuminated image appears to be stationary.

IEC manufactures two types of electronic stroboscopes. A high powered bright Xenon gas Digital Stroboscopes (LB3808-001 and LB3809-001) that operates from mains power and the unique Low Cost LED Digital Stroboscope (LB3806-001) that runs from a 240/12V.AC. mains plugpak or Power Supply for student experiments.

Another style is the mechanical Motorised Stroboscope (LB3854-001) whereby the disc with slits is rotated by a small electric motor with integral speed control rather than rotating the disc by hand.

Designed and manufactured in Australia