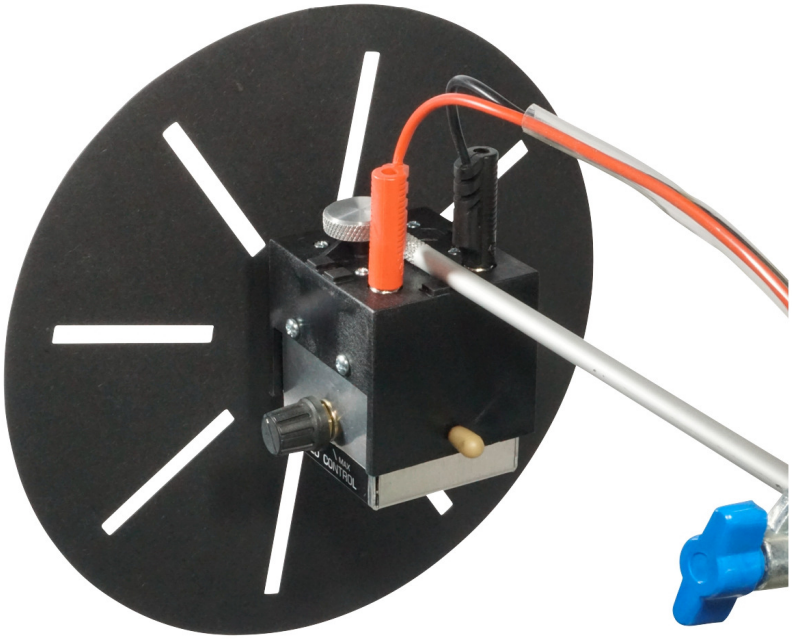
Stroboscope

Motorised, Variable Speed



LB3854-001

Description:

The IEC Motorised Stroboscope is a strongly engineered, gear driven unit with inbuilt speed control. The gear drive ensures that the electric motor rotates fast to provide a predictable and stable output speed with useful torque to turn the slotted disc.

The speed is adjustable by an inbuilt electronic speed controller which ensures that the motor cannot be easily destroyed by over-voltage. It can accept up to 12V.AC or DC so it is perfect for student use and normal classroom power packs.

The strong support stem can be held in a retort stand and the power cable is complete with banana plugs and is protected inside the stem. For versatility, it can be clamped to the body in either of two positions 90^{o} around. The unit is complete with 3 discs with 4, 8, 12 slits in stiff black board and a blank disc is provided for the creation of a disc in the classroom.

Kit Contents:

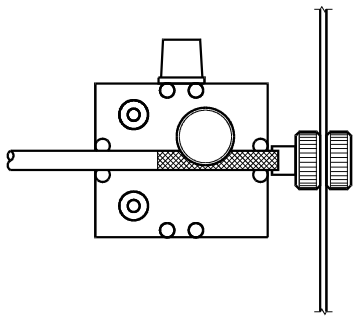
- 1 pce Stroboscope body with motor & electronic speed controller.
- 1 set Stroboscope card discs with 4, 8 & 12 slits.
- 1 pce Stroboscope card disc - blank.
- 1 pce Support stem complete with cable and 4mm banana plugs.

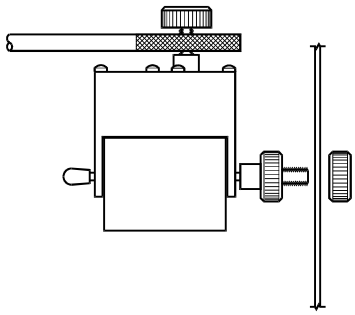
Disc Diameter: 250mm	Rail Length: 300mm	Height: 40mm	Weight: 500g

Fitting of Support Stem:

Engage the support stem in the hole in the plastic body and clamp the stem in place with the knurled knob. Remove the knurled nut from the output shaft, place the strobe disc over the threaded stem and replace the knurled nut. Clamp the strobe disc firmly.

The IEC mechanical rotating disc stroboscope is used in the classroom to teach the principles of stroboscopic observation. Stroboscopic observation means viewing a rapidly moving object and receiving an image as if it were stationary.





Explanation of Operation:

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

If the shutter were slightly altered 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.

Double Speed:

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

Half Speed:

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

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 moving objects from a distance and without the need to touch them. It therefore improves user safety.
- Speed of very low powered objects is not altered because there is no physical contact.
- A stroboscope can measure exact speed of motions that are not necessarily rotational. This is very important in engineering.

IEC manufactures two types of electronic stroboscopes: A high powered mains operated bright Xenon gas Digital Stroboscope (LB3808-001 and LB3809-001) and the unique low cost, low voltage LED Digital Stroboscope (LB3806-001) for student experiments.

Designed and manufactured in Australia