

109433 Motor Accessory Set

NFU 453



The Motor Accessory Set is designed to work with the Philip Harris Dissectible Transformer, and comprises a solid eddy plate, slotted eddy plate, aluminium disc, two pole pieces, a vertical support rod, suspension poles, and a bars.

Background

Lenz's Law states that an electric current induced by a magnetic field will flow in the direction opposing the field that created it. For example, when a magnet is dropped through a copper pipe, the falling magnet induces an electrical current in the pipe. This current creates a magnetic field that opposes the changing field of the falling magnet. This results in a resistive force that makes the magnet fall more slowly than a non-magnetic object dropped through the same pipe (see Eddy Current Kit B8F64953).

In the case of the Motor Accessory Set, Lenz's Law applies to the swing of the eddy plates or the direction of rotation in the aluminium disc.

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Demonstration of Eddy Current Damping

1. Eddy plates

Set the 100 turn and 50 turn coils on the U-core connected in parallel to a 12V D.C. power supply. Attach the pole pieces by clamping on top of the two vertical arms without the cross piece. Mount the solid eddy plate (as below), and check that it swings freely between the pole pieces. Switch on the power supply and attempt to swing the eddy plate again, it should exhibit a damped motion and come to rest quickly.

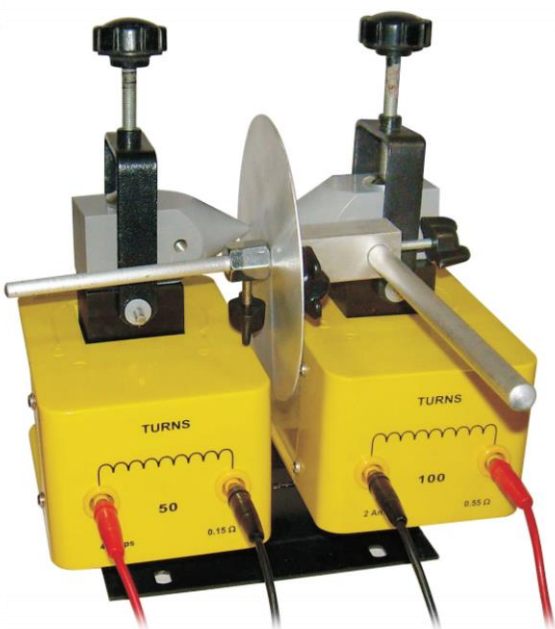
When the solid eddy plate is replaced by the slotted eddy plate, damping no longer (or just barely) occurs. This is because eddy currents induced in the plate are broken up by the slots, so produce little or no force that opposes the plate's motion.



2. Aluminium disc

Turn off the power supply and replace the the eddy current plate with the aluminium motor disc. Adjust the height of the support rod so that the aluminium disc passes between the pole pieces. Ensure it can spin freely between the pole pieces, and observe how long it takes to stop spinning when no current is applied.

Now switch on the power supply and spin the disc again, the eddy currents should induce a damping effect and the disc will stop spinning much quicker.



Safety advice

This advice is not a replacement for a formal risk assessment, which should be carried out according to your school or LEA policy.

Warranty, repairs and spare parts

The Motor Accessory Set is guaranteed for a period of one year from the date of delivery to the customer. This warranty does not apply to defects resulting from the action of a user such as misuse, improper wiring, any operations outside of its specification, improper maintenance or repair, or unauthorized modification.

Our liability is limited to repair or replacement of the product. Any failure during the warranty period should be referred to Customer Services.

Please contact Customer Services or techsupport@philipharris.co.uk for advice

Supplier details

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