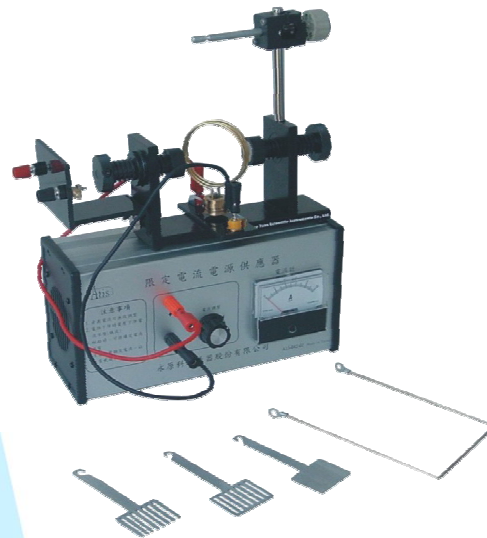
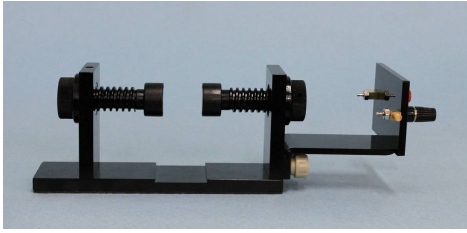
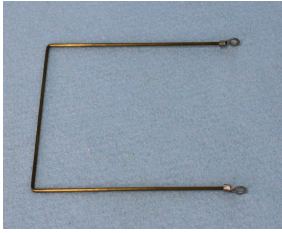
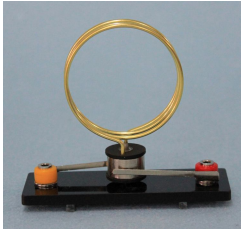
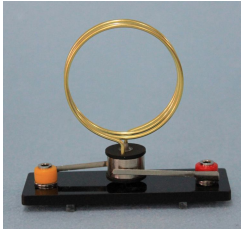

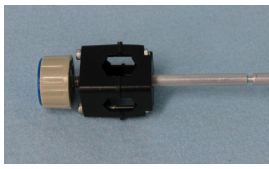
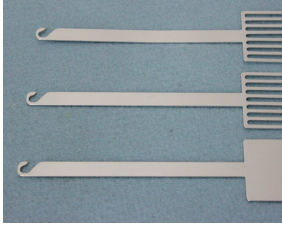



Experiment: Electromagnetic Induction Experiment**Purpose**

1. Generate a current vortex on the conductor using the permanent magnet to stop the swinging conductor.
2. Observe the electromagnetic induction
3. Demonstrate the principle of electric motors

Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Experimental Base	1	2	Metal Strip Hanger	1
3	Metal Strips	1	4	Motor Set	1
5	Iron Rod	1	6	Magnetic Damper Piece Hanger	1
7	Magnetic Damper Piece	3	8	Connecting Wire	2
9	Current Restricted Power Timer	Not included			

Accessories			
			
1	2	3	4
			
5	6	7	8

Procedure

1. Eddy current experiment - damping swing

Eddy currents (also called Foucault currents) are electric currents induced within conductors by a changing magnetic field in the conductor.

When N pole of the magnet close to the conductor, the eddy currents will be generated in a counterclockwise, as shown in Fig 3-1 (a)

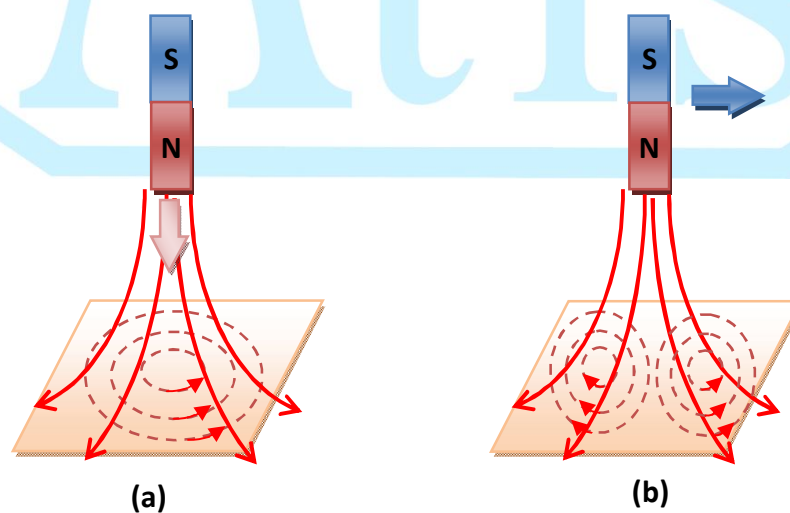
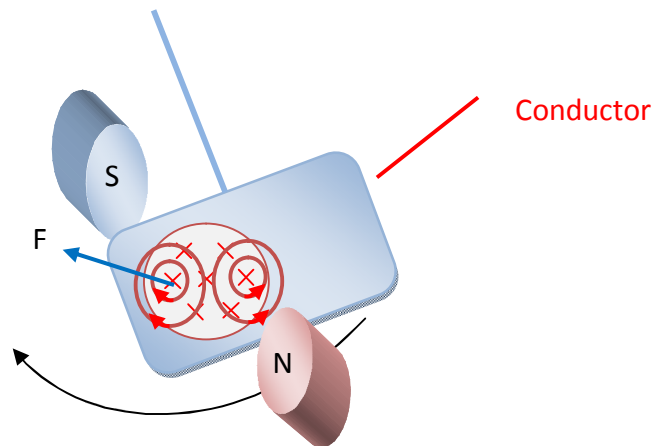


Fig 3-1 (a)

If the magnet bar is parallel to the conductor and move in parallel, the flux of the left and right sides of the bar changes in the contrary, the eddy currents generated in the reverse direction, as shown in 3-1 (b) below.



3-1 (b)

According to Figure 3-3, when the aluminum piece passes through the magnetic field, the eddy current generated by the magnetic effect of the original magnetic field will produce a reverse moment, so that the swing amplitude gets small, until it stops.

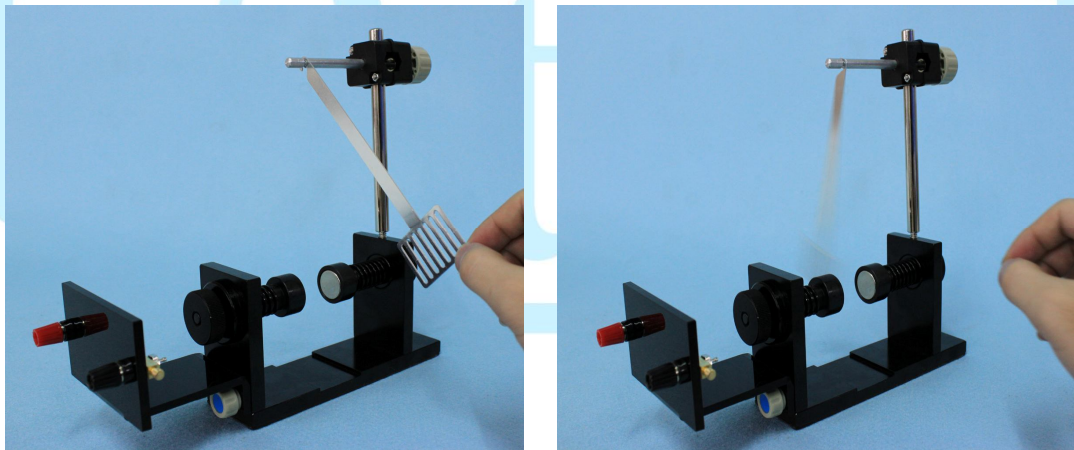


Figure 3-3

Change the aluminum dumper piece to observe and compare the difference.

2. Square current-carrying wire experiment

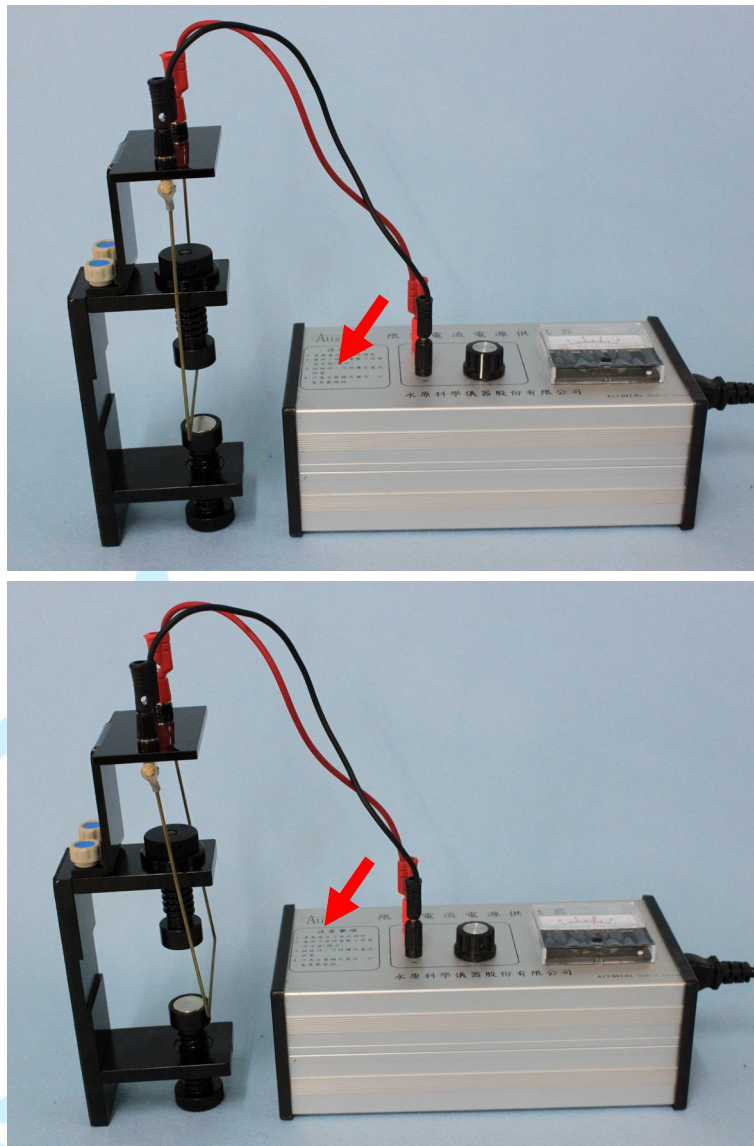


Figure 3-3

Set up the device as shown in Fig. 3-4 to observe if the metal wire deflects.

Change the positive and negative poles and repeat the above steps to observe the metal line.

3. Motor demonstration

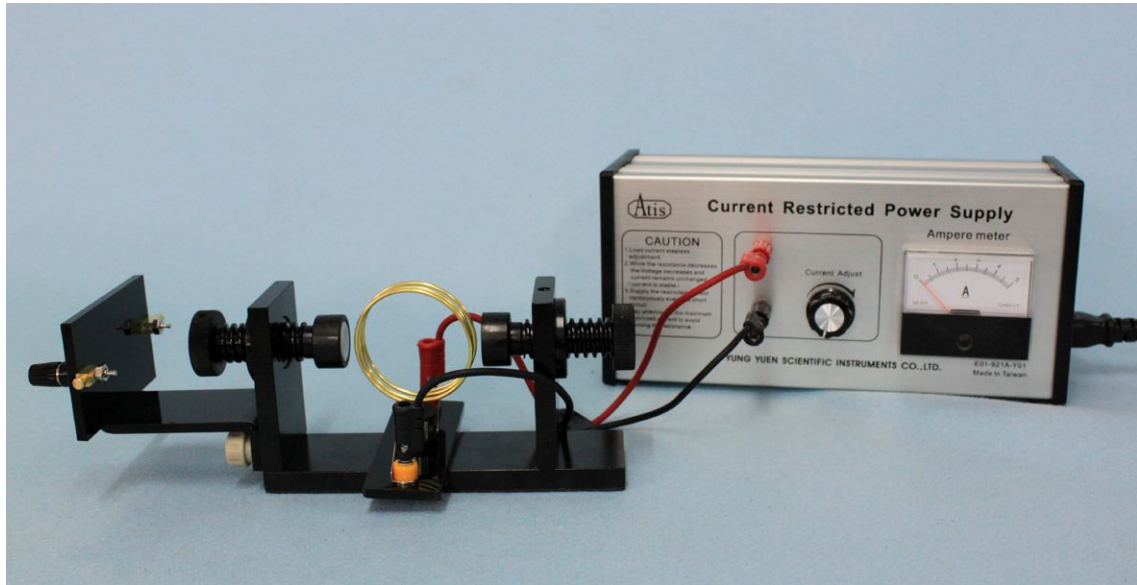


Figure 3-5

Set up the device as shown in Fig. 3-5. Adjust the relative distance of the magnet to observe the relationship between the magnetic field and magnet.

Questions and Discussions

Q1: How to reduce eddy current?

Q2: Explain why the metal wire deflect.

Q3: Describe the principle of operation of the motor.



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