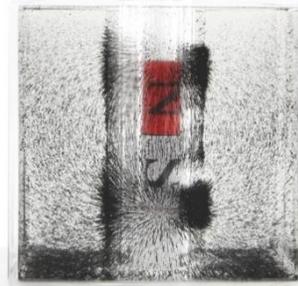


## INSTRUCTIONAL GUIDE

### Contents

- 3" Magnetic Field Observation Box
- Alnico magnet: 5/8" x 1 1/2"



### Background

**Precautions:** Handle the observation box with care. If dropped, it may be damaged and begin to leak. Clean the box with a mild cleanser; do not use paint thinner.

This apparatus enables the 3-dimensional observation of magnetic field lines (magnetic lines of force), which is normally only seen on a 2-dimensional plane. Fine iron powder and silicone oil solution are enclosed in the transparent box. Operation is so easy that anyone can understand what magnetic lines of force are. It can also be used on an overhead projector for 2-dimensional observations.

### Activities

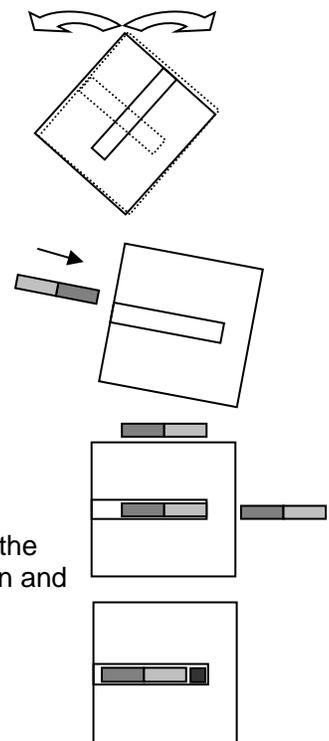
Before the demonstration, scatter the iron powder by rotating the box as shown.

When the iron powder is scattered uniformly, insert the supplied bar magnet slowly. (Inserting it forcefully could damage the box.)

Lay the box down. The iron powder is magnetized and forms magnetic lines of force. When the magnet is removed, the iron powder slowly drops.

Scatter the powder again and insert the magnet. Bring another magnet close to the box (side or end). The iron powder is magnetized in two areas showing attraction and repulsion of magnetic forces. Try placing like poles near each other and placing opposite poles near each other.

Try adding a spacer such as a bit of iron screw, iron nail, wood chip, etc. before inserting the magnet. Different types of magnetic fields can be observed.



## Related Products

**Magnetic Color Chips (P8-1115)** Multi-colored plastic-coated iron chips are not only easy to handle and clean up, but also heaps of fun! This alternative to iron filings puts some color and excitement into the exploration of 3-dimensional magnetic fields.

**Magnetic Field Model (P8-1138)** Visualize magnetic fields in an instant! The magnetic field model is one of the quickest and easiest ways to demonstrate invisible magnetic fields to your students.

**Small Clear Compass 20 pack (P8-1170)** Here's an easy way to demonstrate magnetic fields in class. Simply use these small, clear-cased compasses to map magnetic fields by placing them around different shaped magnets.