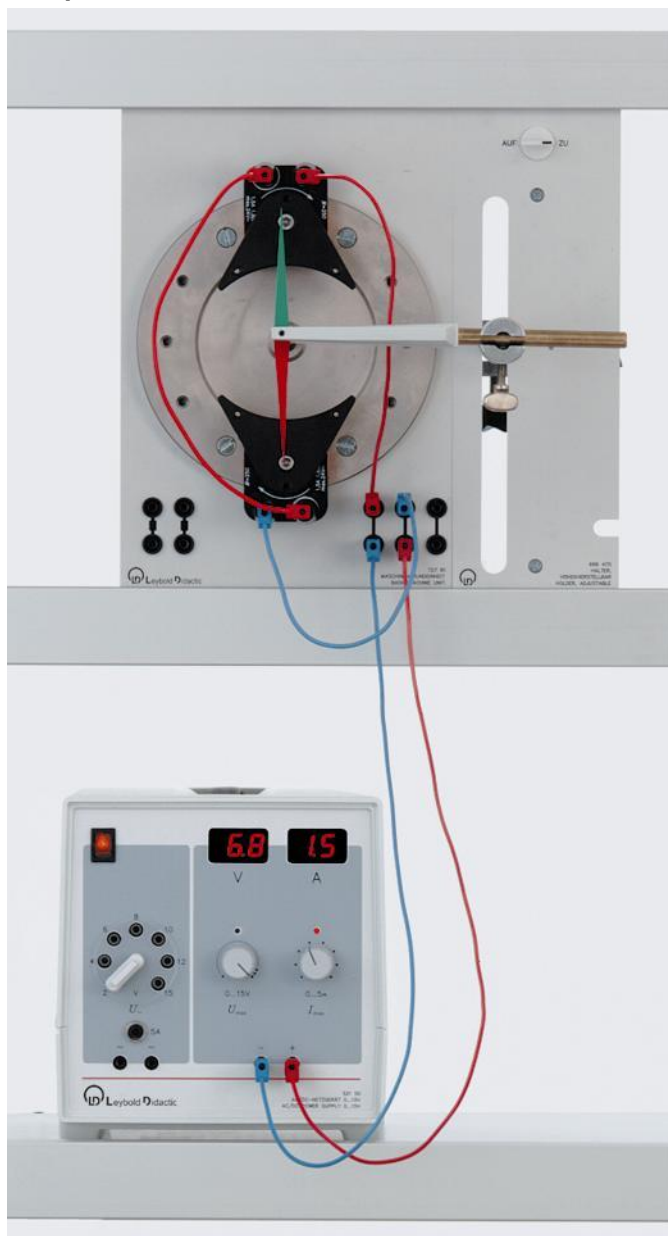


Motors and generators
Stators and rotorsMagnetic field of an electro-magnetic stator
Demonstration with a magnetic field indicator needle**Object of the experiment**

1. Investigate the magnetic field of an electromagnetic stator

Setup**Apparatus**

1 Basic machine unit.....	727 81
2 ELM wide pole pieces for coils.....	563 101
2 ELM coils, 250 turns	563 11
1 Allen key	563 16
1 Magnetic field indicator	514 011
1 AC/DC power supply, 0...15 V/0...5 A.....	521 50
1 Pair of connecting leads, 19 A, 50 cm, red/blue	501 45
1 Connecting lead, 19 A, 25 cm, red.....	500 411
1 Pair of connecting leads, 19 A, 25 cm, red/blue	501 44
1 Holder with clamp, height-adjustable, CPS	666 470
1 Universal bosshead	666 615
1 Stand rod, 25 cm, 12 mm diam.	300 41
1 Demonstration panel frame.....	301 300
1 Profile rail.....	301 311
1 Equipment shelf	301 310
2 Bench clamps with pin	301 05

Procedure

- Attach the indicator needle above the middle of the stator as close to it as possible.
- Use the power supply as a constant current source. To do this, turn the voltage limiting knob to its maximum.
- Connect the ends of the stator coils to the DC output of the power supply.
- Set the current I via the adjustment knob to a value of about 1.5 A and observe the indicator needle.
- Reverse the polarity of the current by swapping the connecting leads at the power supply and observe the direction of the indicator needle again.

Observation

After a DC voltage has been applied, the indicator needle aligns itself parallel to the magnetic field of the stator.

If the direction of the current in the stator coils is reversed, the indicator needle points in the opposite direction.

Evaluation

If a direct current flows through the coils of an electromagnetic stator, a magnetic field develops between the coils.

The direction of the magnetic field depends on the direction of the current flow in the stator coils.