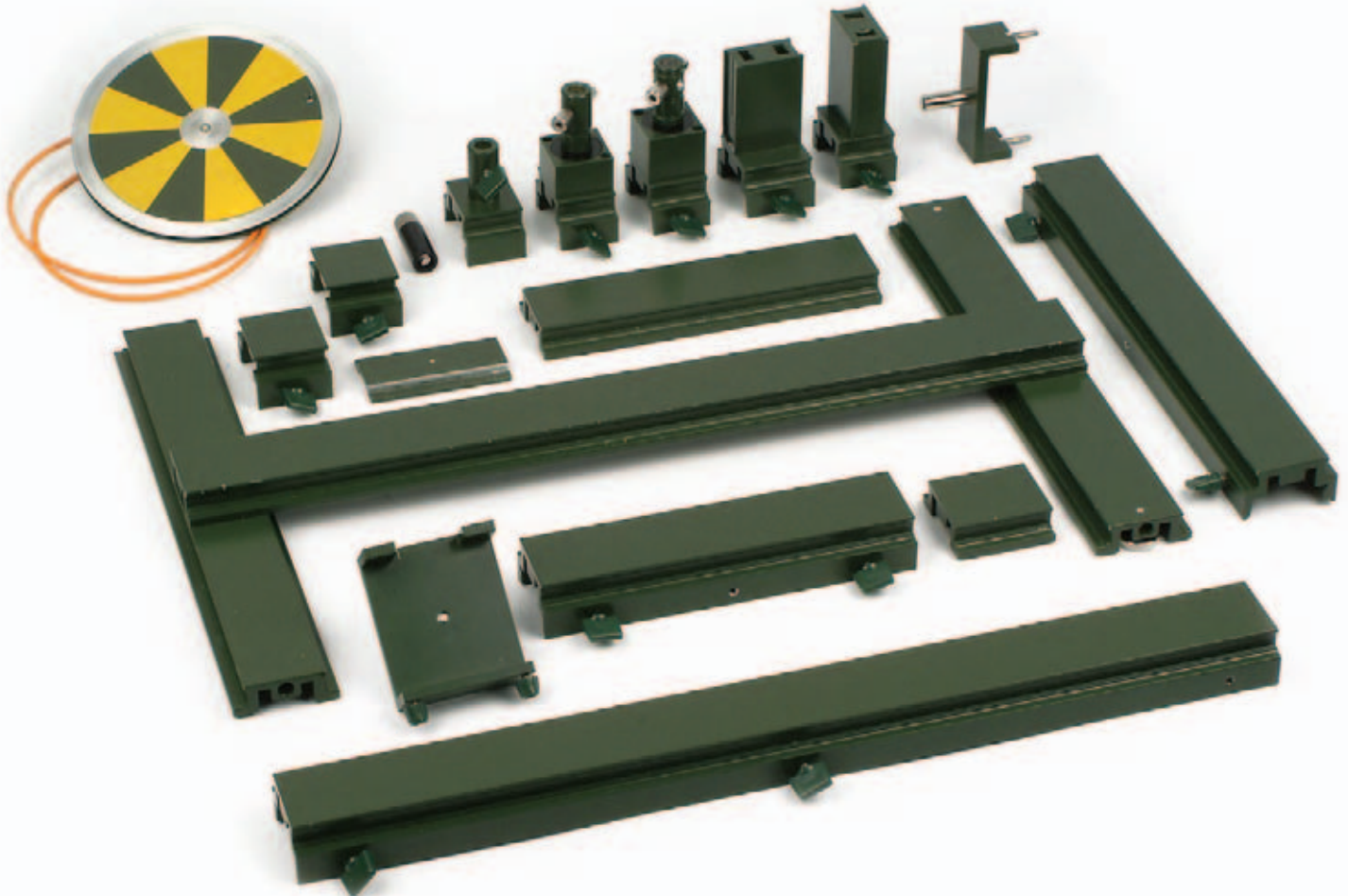


motor - generator basic support material



DS104-1S Motor/Generator – Stand rail - Set

consisting of:

DS101-1G	1x Support base, large
DS104-6G	1x Stand rail, L=200 mm
DS103-3G	1x Stand rail, L=325 mm
DS104-5G	1x Stand rail, L=500 mm
DS101-2G	1x Rail connector
DS407-3G	1x Coil holder with slot
DS102-1G	1x Rail base, L=200 mm, magnetic
DS102-1F	2x Rail base, short, magnetic
DS407-1G	1x Fork with plug
DS103-1W	1x Rail support, horizontal, short
DS103-1S	1x Rail support, vertical, short
DS402-3B	1x Pivot bearing with transverse hole, on saddle
DS402-4B	1x Pivot bearing, short, on saddle
DS103-3G	1x Sliding saddle, H = 34 mm
DS102-2G	2x Clamp saddle
DS402-3D	1x Drive pulley
DS402-2N	1x Crank pin
DS401-1A	1x Drive belts, set of 2

Recommended accessories:

DS103-1T Table on stand, small

For magnetically mounting the 6V/10Ah “inno” battery, the variable “inno” battery or the “inno” AC/DC regulator on a support stand

P3120-5G Assembly platform, large

For magnetically mounting the “inno” universal analogue multimeter on a support stand

Electrical drive options for generators:

DS403-1G Geared motor
DS403-2K Clamp socket adapter
DS403-3F Fixing screw
DS401-1A Drive belts, set of 2

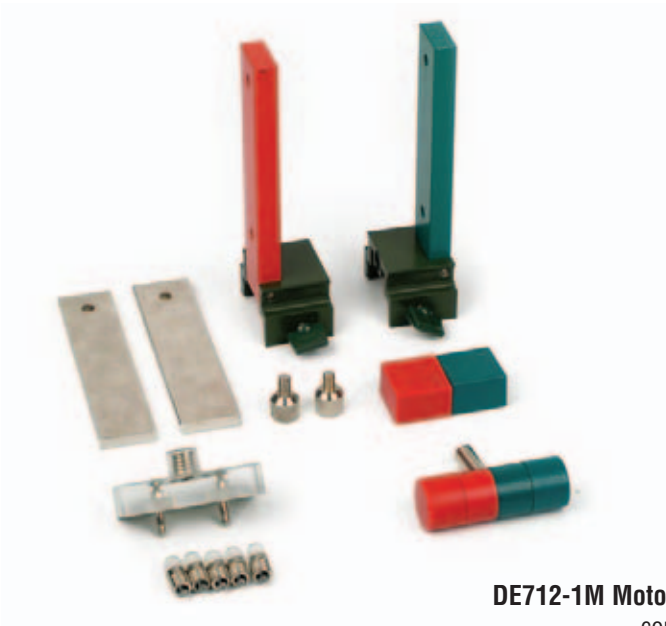
or:

DS403-2S Drive motor, demo

(See page 12 and 13 for technical details)



motor - generator



DE712-1M Motor-generator set, level 1

consisting of:

- DE412-1B 1x Block magnets, pair
- DE456-1R 1x Magnet holders, red-green, pair, on slider
- DP410-2S 1x Cylindrical bar magnet, on support
- DP711-1L 1x Pole plates, plain metal, pair
- DE453-3N 2x Clamping screw, large
- DE453-3A 1x Light bulb socket, E10, on support
- DE309-1S 1x Light bulb, 4 V/40 mA, set of 5
- DE453-1D 1x Coil with 600 turns
- DE452-3B 1x Iron core, laminated, short
- DS407-1T 1x Support with pivot

- DE453-4G 1x Carbon brush holder
- DE453-2P 1x Coil adapter
- DE453-2F 1x Slip-ring adapter
- DE453-2G 1x Commutator adapter

Recommended accessories:

- DE453-1E 1x Coil with 1200 turns

Required apparatus set:

- DS104-1S Motor-generator stand set

See pages 356-357 for a list of possible experiments

ELECTROMOTORS - principle and working



Experiment: Principle of the electromotor



Experiment: How slip rings work



Coil with 600 turns, including coil adapter holding a commutator; for use as a rotor coil (two-pole rotor) with motors and generators

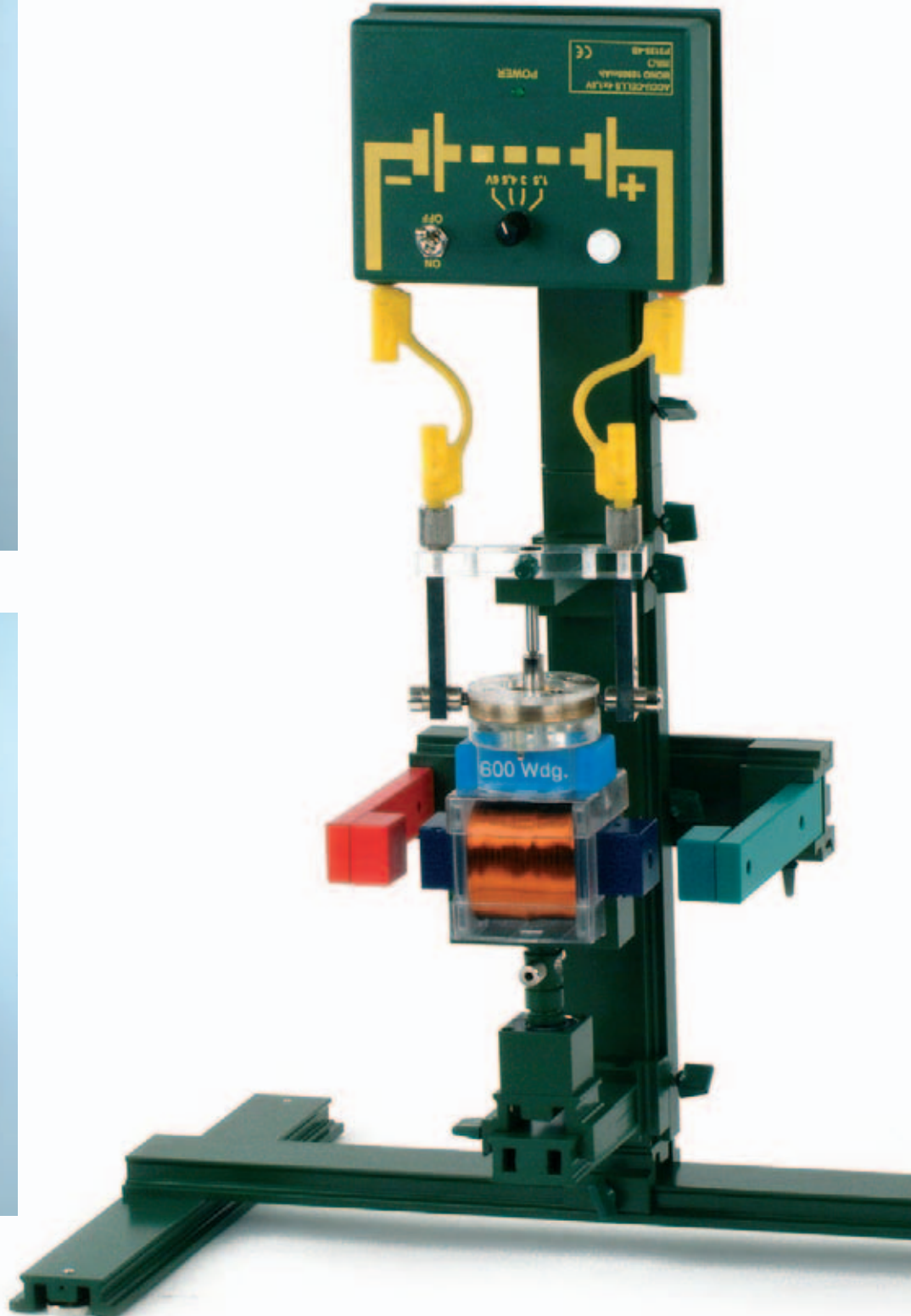
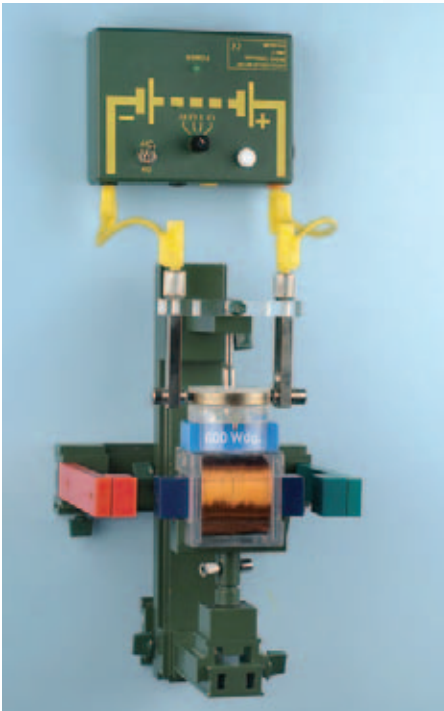


Experiment: How a commutator works

simple electromotor



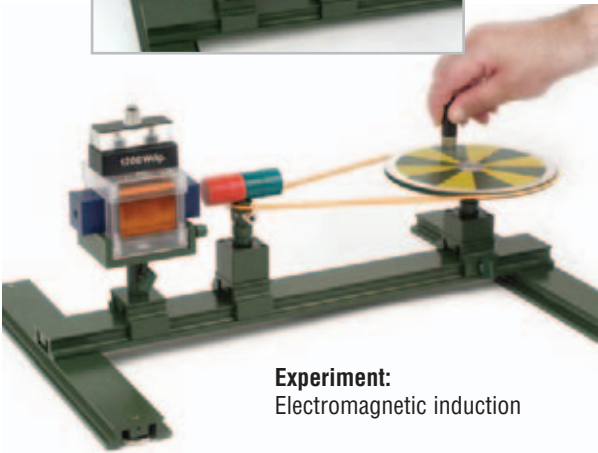
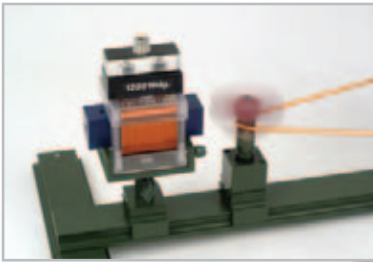
Experiment: Simple electromotor with two-pole rotor - magnetic panel assembly



Experiment: Electromotor with two-pole rotor



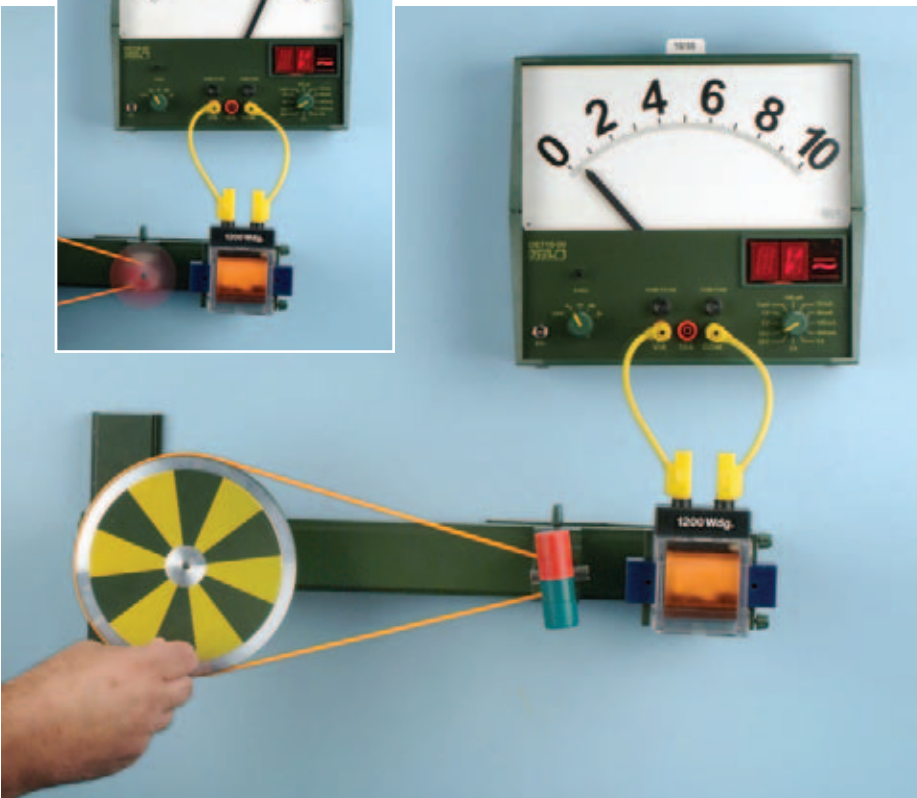
generator experiments



Experiment:
Electromagnetic induction



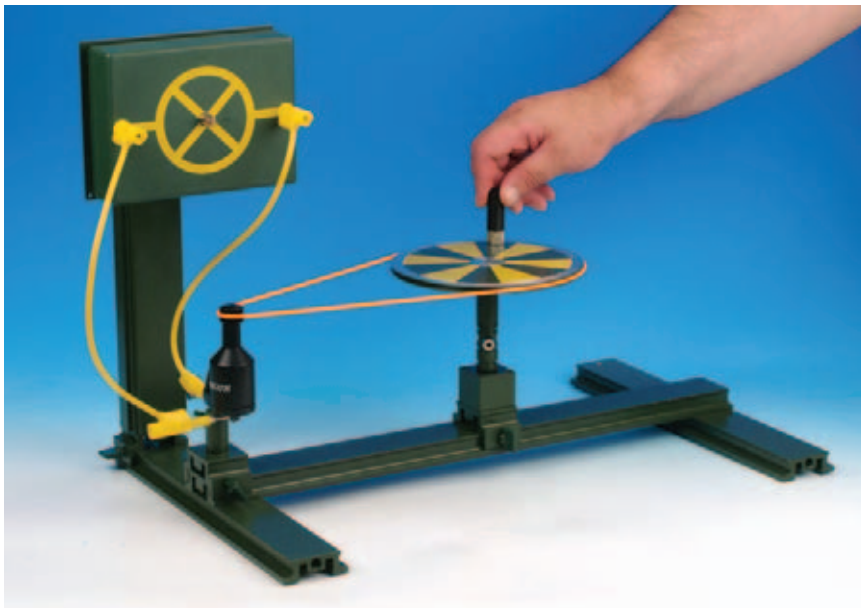
Experiment: Electromagnetic induction -
periodic change in the magnetic field



Experiment: Electromagnetic induction - magnetic panel assembly

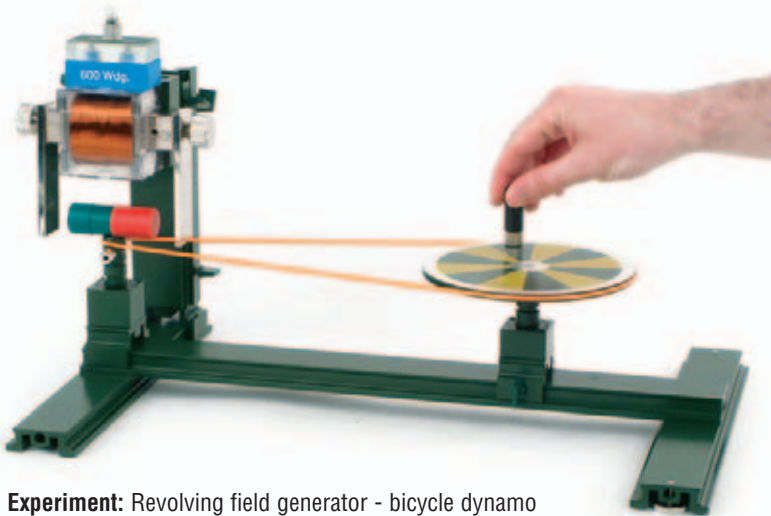


generator experiments

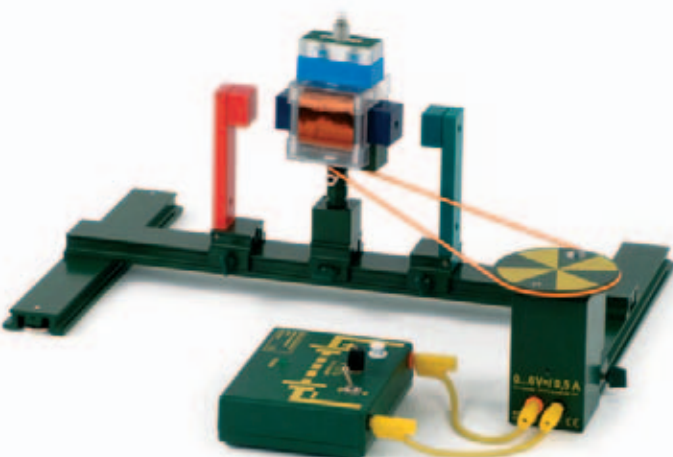


Recommended
accessory:
DE460-1F Bicycle
dynamo

Experiment:
Use of a bicycle
dynamo



Experiment: Revolving field generator - bicycle dynamo



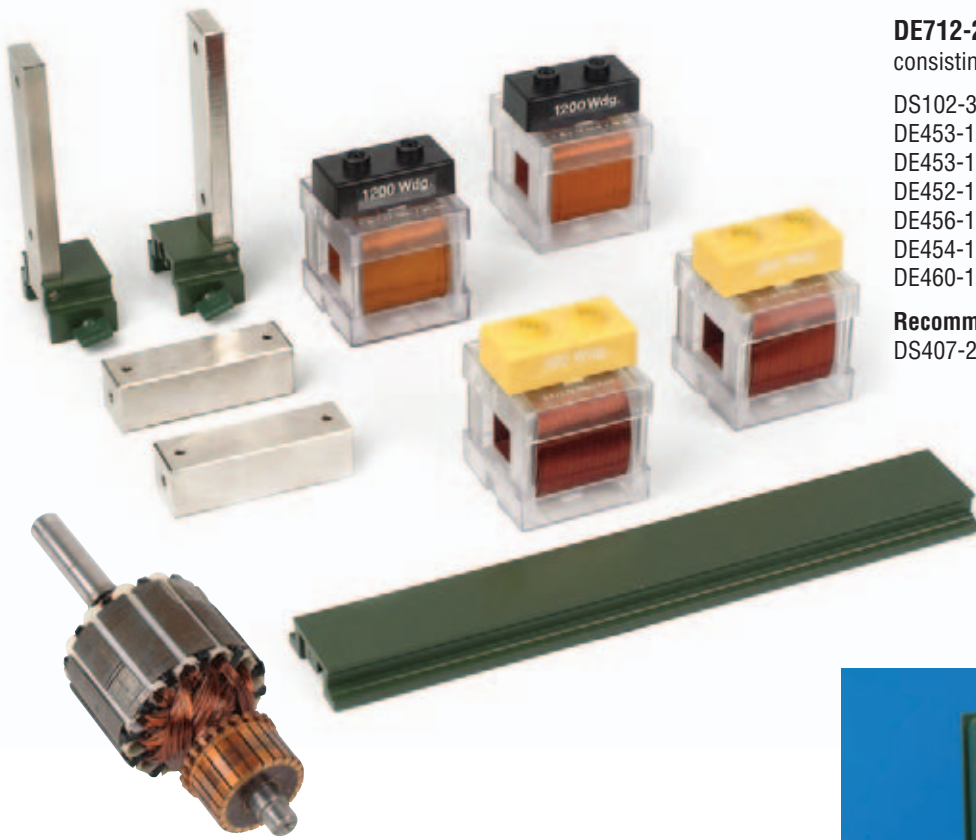
Experiment:
Revolving-armature generator driven by geared motor DS403-1G



Experiment: Revolving-armature generator powered by demo drive motor DS403-2S; voltage generated is measured at the slip rings



motor - generator



DE712-2M Motor-generator set, level 2 consisting of:

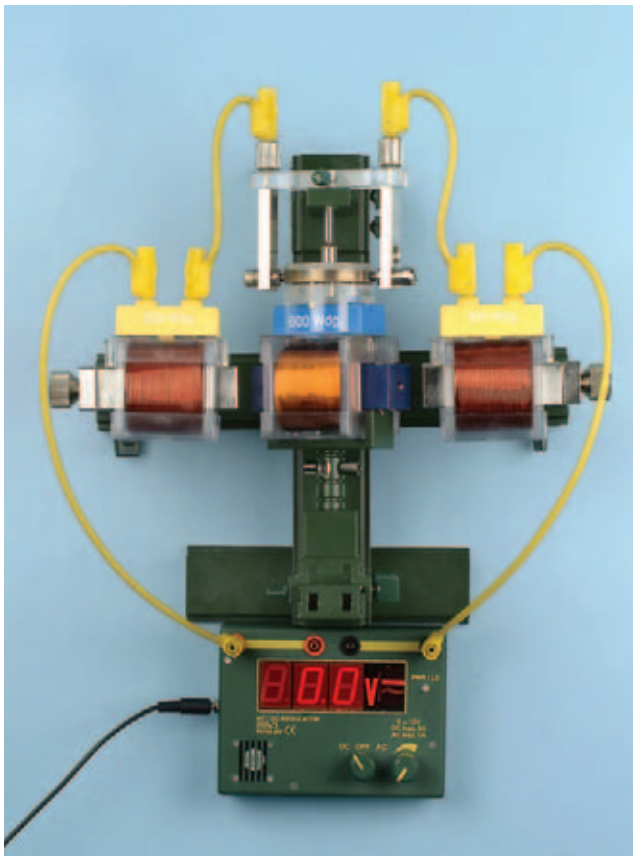
- DS102-3G 1x Rail base, L=325 mm, magnetic
- DE453-1C 2x Coil with 300 turns
- DE453-1E 2x Coil with 1200 turns
- DE452-1N 2x Iron core, solid
- DE456-1N 1x Magnet holders, plain metal, pair
- DE454-1F 4x Flat plug, 4 mm (not shown)
- DE460-1T 1x Drum armature

Recommended accessory:

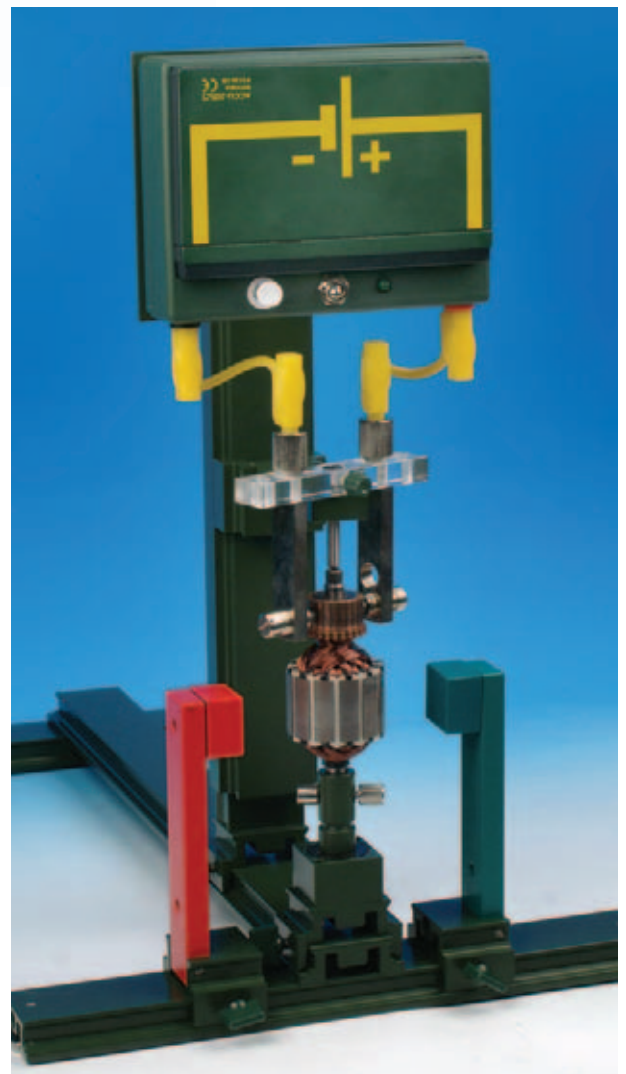
- DS407-2G 1x Coil holder with plug pins

Required apparatus sets:

- DE712-1M Motor-generator set "inno", level 1
- DS104-1S Motor-generator stand set

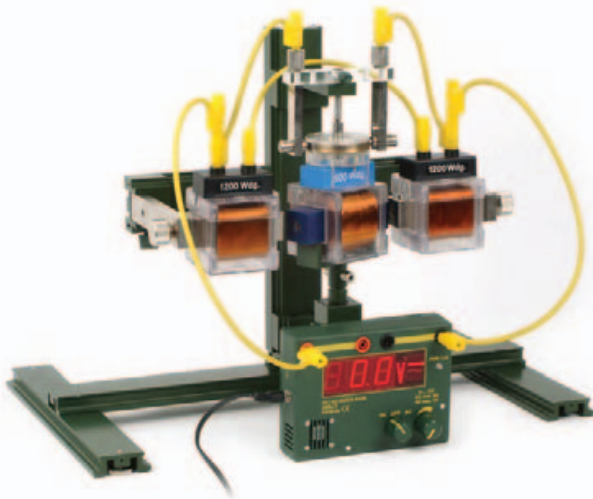


Experiment: Series-wound motor - magnetic panel assembly

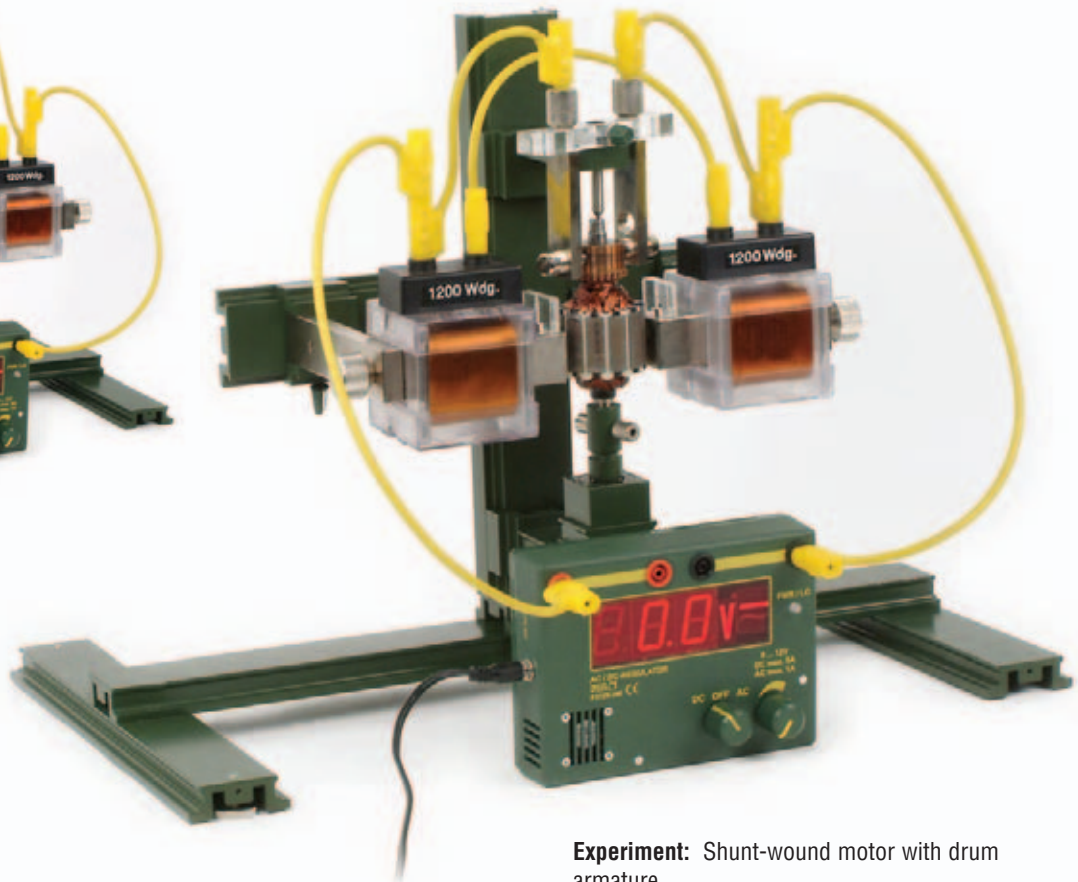


Experiment: Electromotor with drum armature

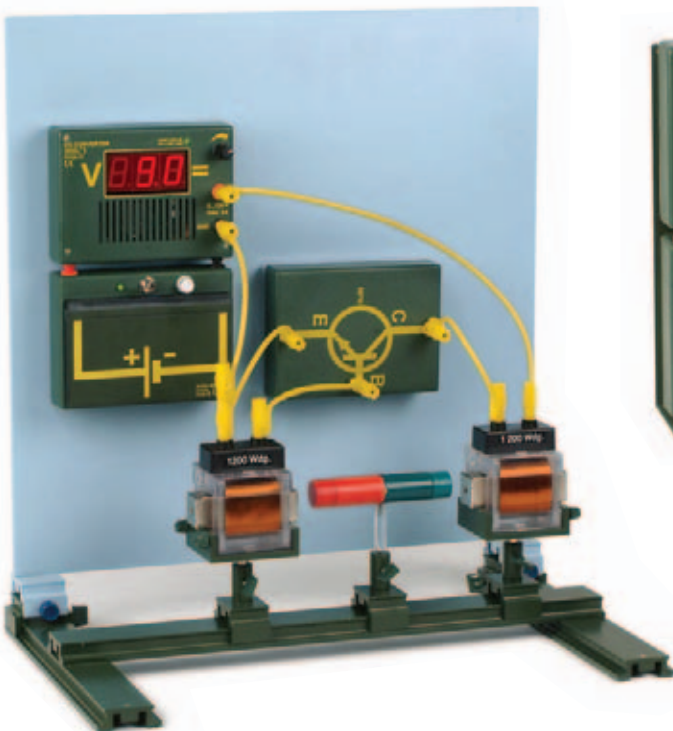
motor experiments



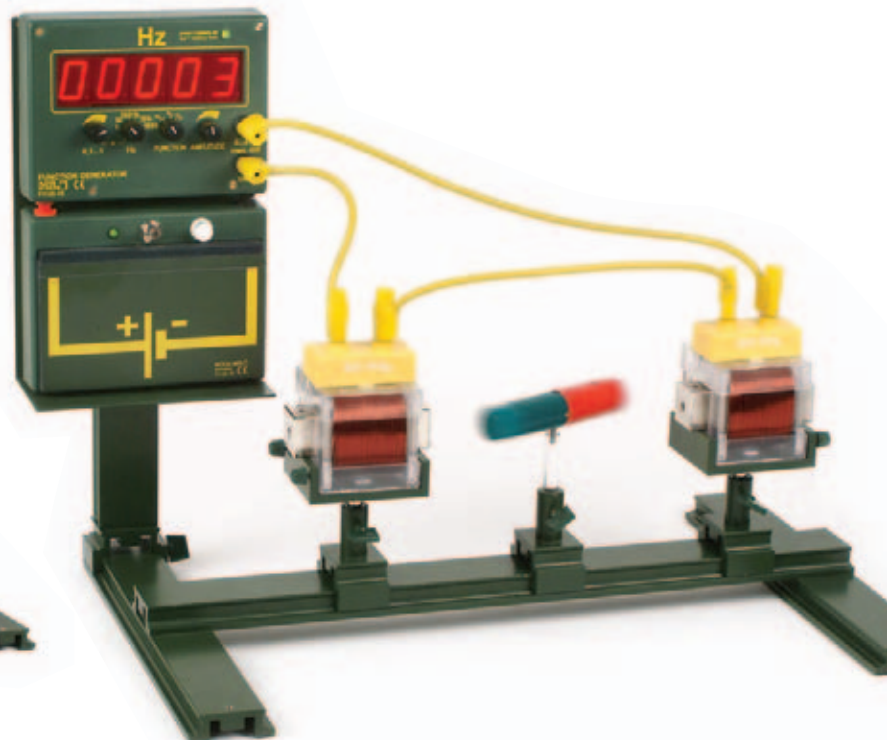
Experiment: Shunt-wound motor with two-pole rotor



Experiment: Shunt-wound motor with drum armature



Experiment: Stepper motor (DC motor without a commutator)



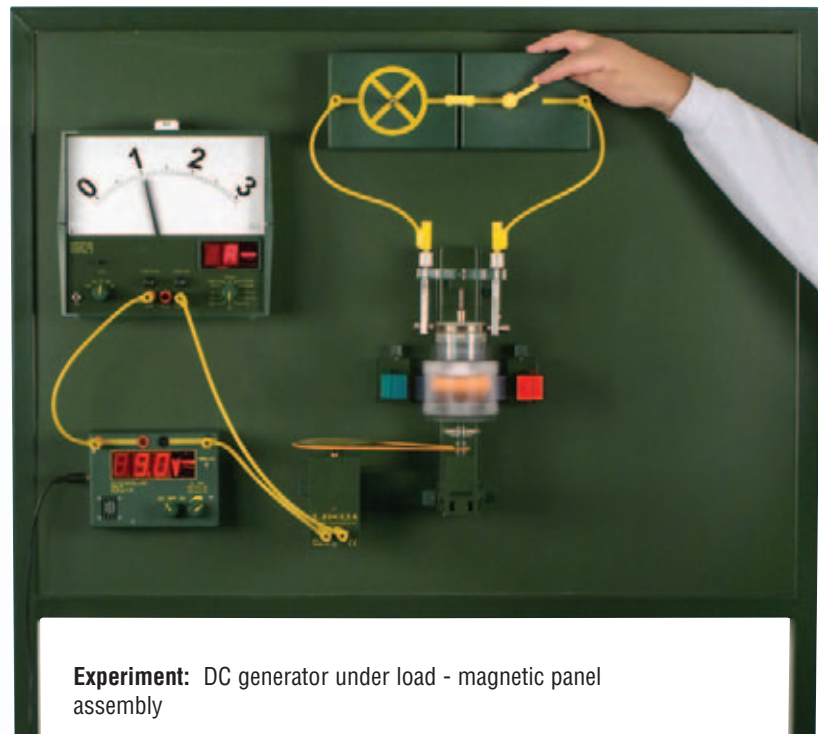
Experiment: Synchronous motor



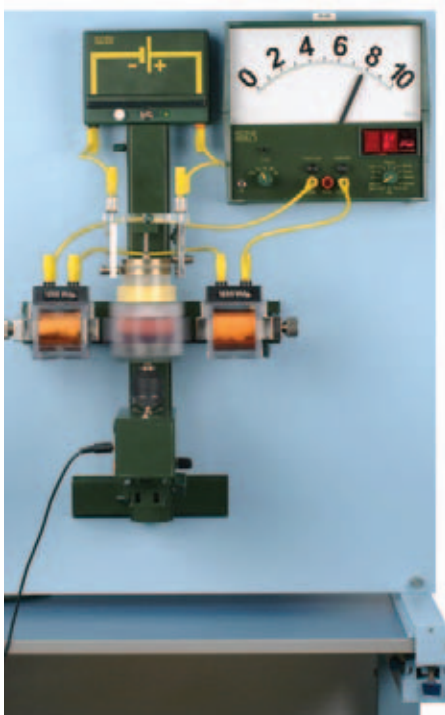
generator experiments



Experiment: Revolving field generator with a permanent magnet rotor



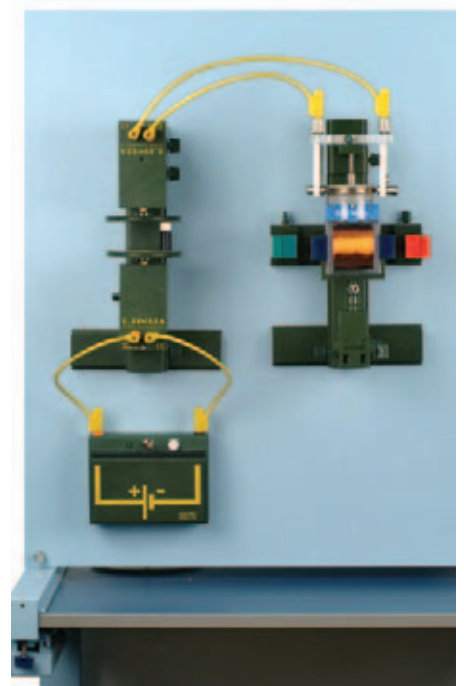
Experiment: DC generator under load - magnetic panel assembly



Experiment: Revolving field generator with electromagnetic rotor - magnetic panel assembly



Experiment: DC generator with drum armature



Experiment: DC motor drives a DC generator - DC generator powers a DC motor - magnetic panel assembly