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Operating instructions

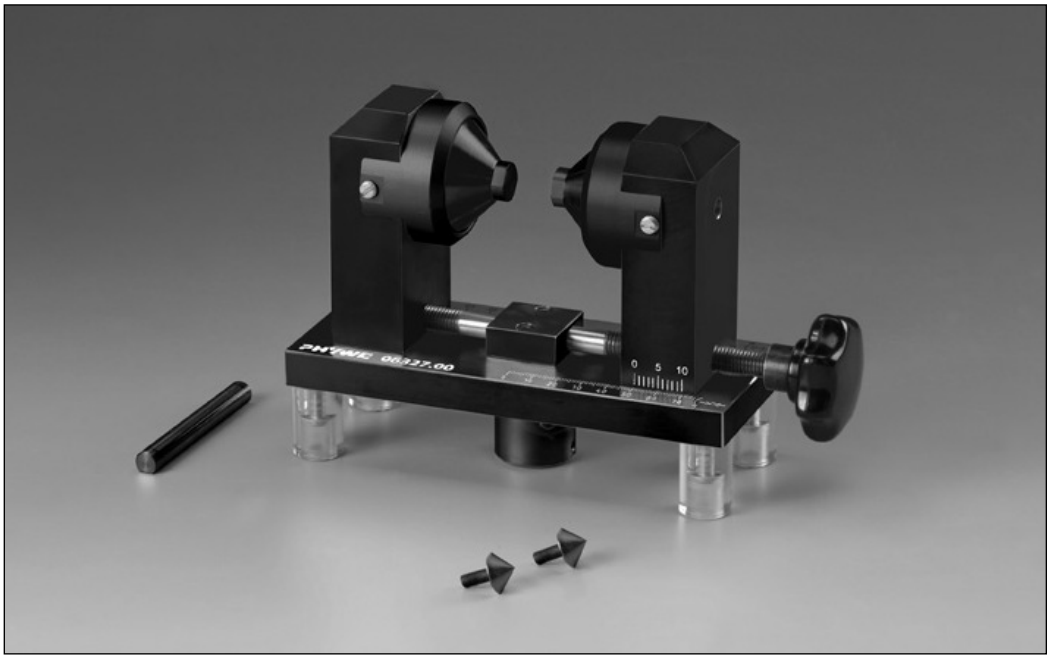


Fig. 1: Magnetic System, variable 06327.00.

1 SAFETY PRECAUTIONS

- Carefully read these operating instructions completly before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Only use the instrument for the purpose for which it was designed.

2 PURPOSE AND DESCRIPTION

The variable magnetic system 06327.00 serves to generate strong magnetic fields. The distance between the pole shoes, and so the field strength in the air gap, can be varied by means of a spindle drive. The change in the distance can be read off from the imprinted vernier scale.
The different pole shoe tips that are supplied allow different types of fields to be obtained: the plane pole tips provide strong homogeneous fields and the conical tips provide very inhomogeneous ones. In addition, when no pole shoe tips are used, observation can be made longitudinally to the magnetic field through the pole shoe drill-hole.
This magnetic system is particularly suitable for the Zeeman effect, for experiments on diamagnetism and paramagnetism, as well as for the Hall effect etc.

3 POSITION OF USE

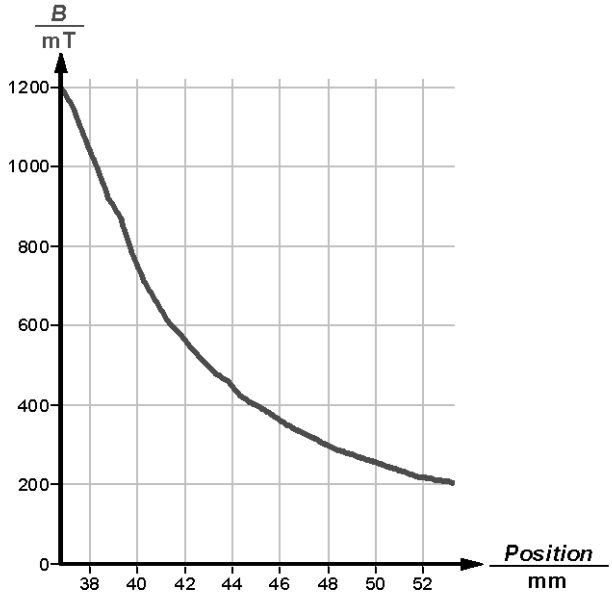
When experiments are to be carried out on a table, the magnetic system can be simply stood on its four feet. It can be alternately mounted on the slide mount of an optical bench or on a stand using the rod that is supplied. This rod is flattened on one side to ensure a defined fitting both in a rider and also to the magnetic system. When the magnetic system is appropriately held it can be turned around the vertical axis whereby it locks in position at each 90° step. This is particularly practical in experiments on the Zeeman effect, when a change is made from transverse observation to longitudinal observation.

4 MOUNTING THE POLE SHOE TIPS

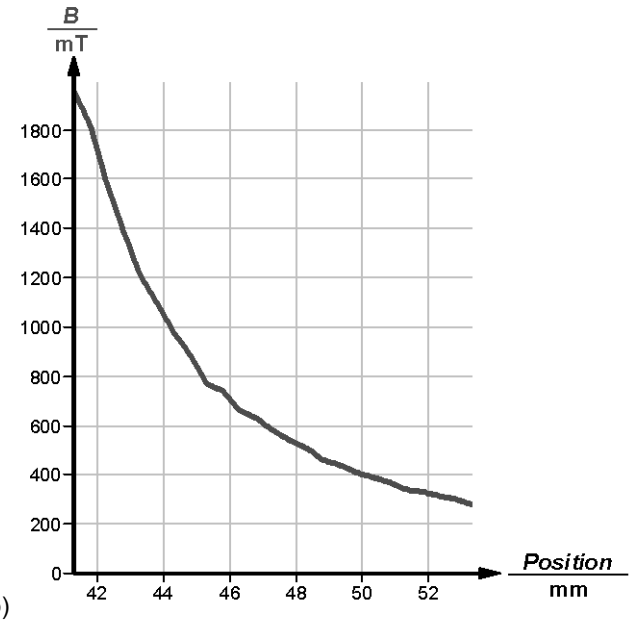
The pole shoe tips are threaded and have a lug for the non-magnetic spanner that is supplied. Before screwing the pole shoe tips on or off, turn the pole shoes as far apart as possible.

5 CALIBRATION

We recommend that, prior to quantitative experiments with the magnetic system, you record a calibration curve that assigns each position of the pole shoes in the system to a magnetic field at the location where observations are to be made. The pole shoe tips that are to be used later in the experiment must be used in this calibration.
Fig. 2 shows two calibration measurements as examples.
The Teslameter, digital 13610.93, together with a Hall probe, tangential 13610.02, can be used for the calibration, for example.
The distance between the pole shoes can be reproducibly set via the spindle drive using the star knob. The position can be precisely read from the imprinted Vernier scale.



a)



b)

Fig. 2: Calibration curves for the magnetic system, (a) without pole shoe tips and (b) with plane pole shoe tips. The magnetic flux density was measured at the middle of the air gap in each case.

6 LIST OF EQUIPMENT

Magnetic system, variable	06327.00

that are standardly supplied:
2 Pole shoe tips, plane
2 Pole shoe tips, conical
1 Open-ended spanner, non-magnetic
1 Rod with flat part
1 Hollow hexagon wrench, L-shaped, for fitting the rod

7 TECHNICAL SPECIFICATIONS

Distance between the pole shoes	2 mm - 20 mm
Magnetic field strength	0.2 T - 2 T
Housing dimensions (mm)	180 x 140 x 75
Weight	4.7 kg

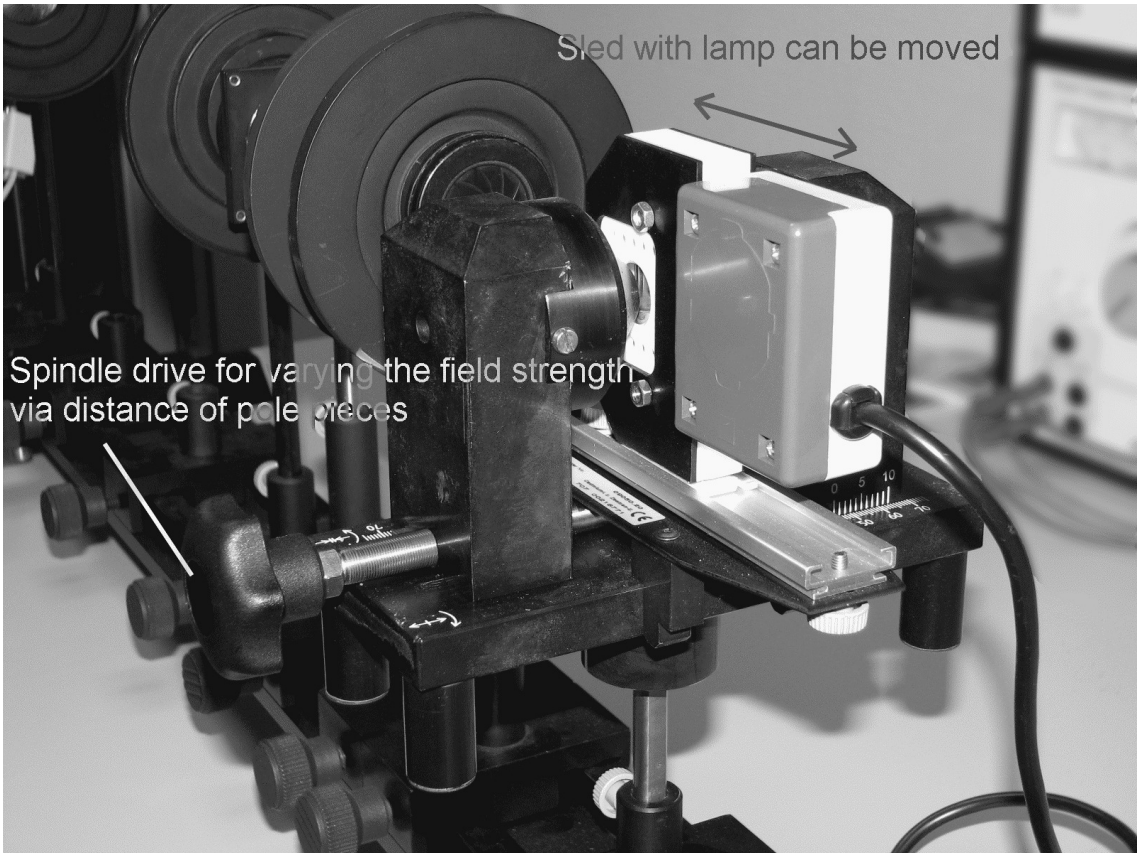
8 NOTES ON THE GUARANTEE

We guarantee the instrument supplied by us for a period of 24 months within the EU, or for 12 months outside of the EU. Excepted from the guarantee are damages that result from disregarding the Operating Instructions, from improper handling of the instrument or from natural wear.
The manufacturer can only be held responsible for the function and technical safety characteristics of the instrument, when maintenance, repairs and alterations to the instrument are only carried out by the manufacturer or by personnel who have been explicitly authorized by him to do so.

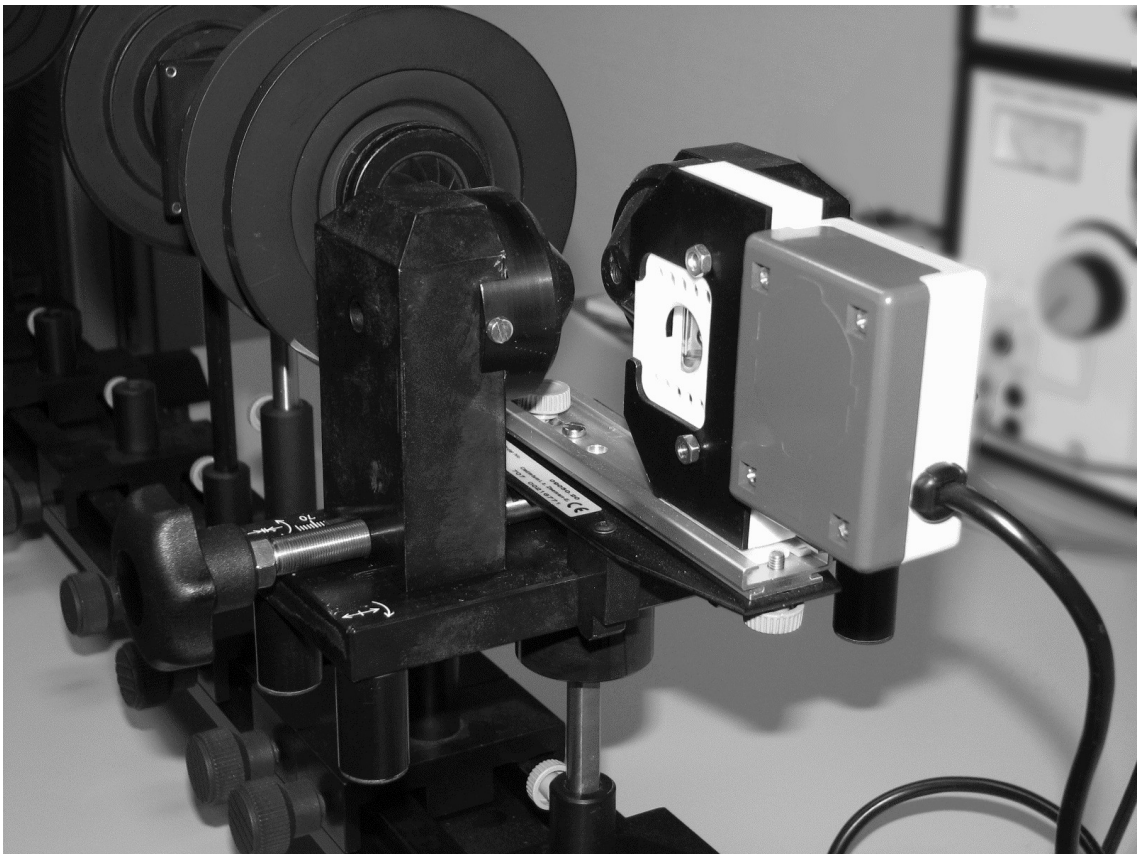
9 WASTE DISPOSAL

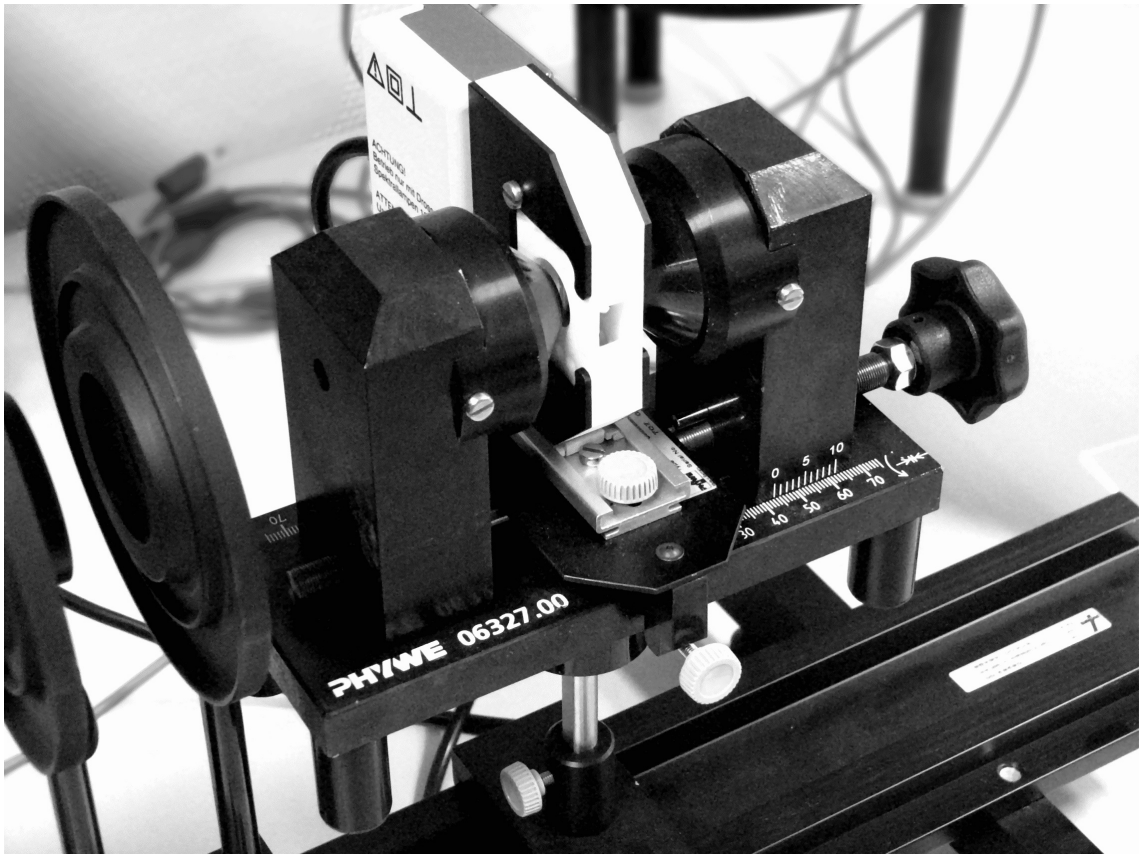
The packaging consists predominately of environmentally compatible materials that can be passed on for disposal by the local recycling service.
Please contact your municipal administration for information on the disposal of instruments.

For the use of the Zeeman effect apparatus with the variable magnetic system, the magnetic system is placed on a slide mount for the optical profile bench. Then the cadmium lamp is mounted on the magnetic system as seen.



In transversal observation of the discharge the magnetic field strength can be varied by either moving the lamp in and out of the field or by varying the spacing between the magnets.





Here the longitudinal observation of the Zeeman effect can be seen.