



ABOUT US

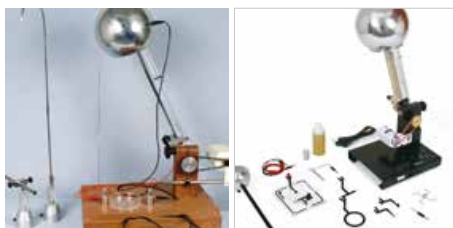
The company was born in 1990, at the hands of a physics professor, with the mission of developing innovative products that would contribute to the improvement of scientific education.

From here to there, there were years of investments improving the product line and thousands of customers served throughout Brazil and abroad.

Throughout this journey, we were motivated by the same goal and inspired by the dedication of teachers to science education.

Today we have an extensive line of equipment for scientific education, especially for experimental physics.

There are many reasons why customers choose us, but the main one is our commitment to their satisfaction. Therefore, we want to invite you to know our company and product line, and we hope to have the opportunity to prove our commitment.



5 YEARS WARRANTY PERIOD

AZEHEB brand equipment have 5 year warranty against manufacturing defects. *

STORAGE UNIT

Several equipment in our line has its own storage unit. It was specially developed to facilitate the organization, transportation and storage of the pieces that make up several of our products. The system is composed externally of a thick kraft paper box and a high-strength plastic cradle with the cavities in the format of the pieces for perfect fit and storage.



TECHNICAL ASSISTANCE AND PERMANENT TECHNICAL SUPPORT



We provide permanent technical assistance for AZEHEB brand products, directly in our factory. We are always available to our customers in case of technical problems or questions regarding our equipment.



ASSEMBLY AND EXPERIMENT MANUALS

The manuals were prepared by experienced physics teachers and aims to fully explore the use of equipment and accompanying accessories. They are divided into the student's manual and the teacher's manual, with the answers.

FORCE PANEL

COD 62001096

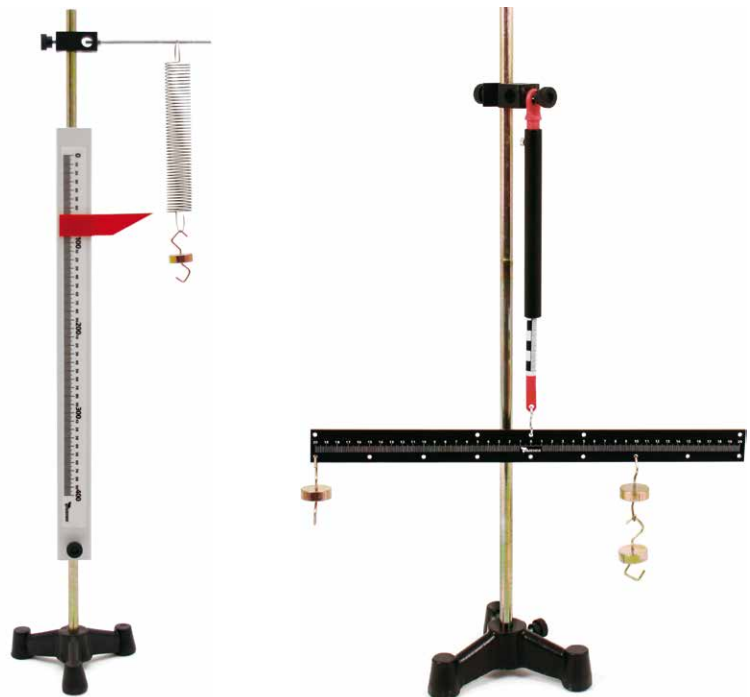
STUDIES

- Instrument for measuring force.
- Strength.
- Hooke's Law.
- Restorative force.
- Elasticity limit.
- Balance of an object suspended by a spring.
- Spring constant.
- Composition and decomposition of competing, collinear and orthogonal forces.
- Balance of a point.
- Conditions for one-point equilibrium.
- Balance of a rigid body and conditions for the equilibrium.
- The resulting moment.
- Theorem of Varignon.
- Find the weight of an object by applying the equilibrium conditions.
- Inter-fixed, inter-powerful and inter-resistant levers,
- Traction in cables.
- Association of pulleys.
- Period, frequency and amplitude.
- Relationship between the period of oscillation of a pendulum and the amplitude;
- Relationship between the period of oscillation of a pendulum and the pendulum mass.
- Relation between the period of oscillation and the length of the pendulum.
- Acceleration of gravity.
- Massive spring oscillator
- Simple harmonic motion MHS;
- Determination of period and oscillation of a spring mass oscillator.
- Ratio between oscillation period of a pendulum and the pendulum mass;
- Ratio between the period of oscillation and the pendulum's length;
- Gravitational acceleration.
- Oscillator mass-spring
- Simple harmonic motion MHS;
- Determination of the period and oscillation of a mass spring oscillator.



STORAGE UNIT

Specially developed for the storage of parts that make up the product. With its reduced size (LxW) 50x40cm can be easily stored in lockers. It has a transparent lid which allows easy viewing and still provides protection for parts.



INCLINED PLANE

COD 62001101

STUDIES

- Static friction force
- Kinetic friction force
- Coefficient of static friction
- Coefficient of kinetic friction
- Coefficient of friction / area of contact.
- Coefficient of friction / Surface materials.
- Coefficient of friction / Normal force.
- Resolution of forces on an inclined plane
- Uniformly accelerated motion
- Uniform linear motion
- Initial position
- Final position
- Critical angle
- Average speed.
- Average acceleration

STORAGE UNIT



FORCE TABLE

COD 62001087

STUDIES

- Vector Addition
- Resultant Force.
- Equilibrant Force
- Addition of Forces.
- Resolution of Forces.
- Static Equilibrium for a Point.



STORAGE UNIT



FREE FALL

COD 62001214 (02 sensors)
62001139 (05 sensors)



STUDIES

- Free Fall
- The acceleration due to gravity
- Energy conservation during free-fall.



FREE FALL ACCESSORIES

COD 62001209

Set recommended for customers who already own the Air Track.





AIR TRACK 1,2m

COD 62001202 (110V)

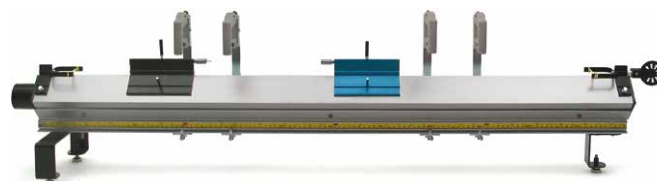
62001203 (220V)

STUDIES

- Initial Position, Final position.
- Uniformly accelerated motion.
- Uniform linear motion.
- Force versus Acceleration.
- Mass versus acceleration.
- Work versus kinetic energy.
- Conservation of mechanical energy.
- Impulse versus quantity of motion.
- Conservation of quantity of motion.
- Elastic and Inelastic Collisions.



STORAGE UNIT



DIGITAL TIMER AZB-30 USB

COD 62001226 (no sensor)

62001228 (02 sensors included)

62001227 (05 sensors included)

Digital timer for measuring time intervals using photoelectric sensors. It allows the use of up to 5 sensors. It also has control to a coil, precision 1 μ s and **software for data acquisition**.

- Free Fall
- Air Track
- Centripetal Force
- Projectile Launcher and Ballistic Pendulum



PROJECTILE LAUNCHER

COD 62001027

Equipment for the study of launching (horizontal and oblique). The cannon has 3 spring compression stages allowing launching up to 5m away with great precision with angle adjustment up to 90°. The assembly further includes a fitting for holding the collision experiments.

STUDIES

- Projectile launch
- Collision



BALLISTIC PENDULUM

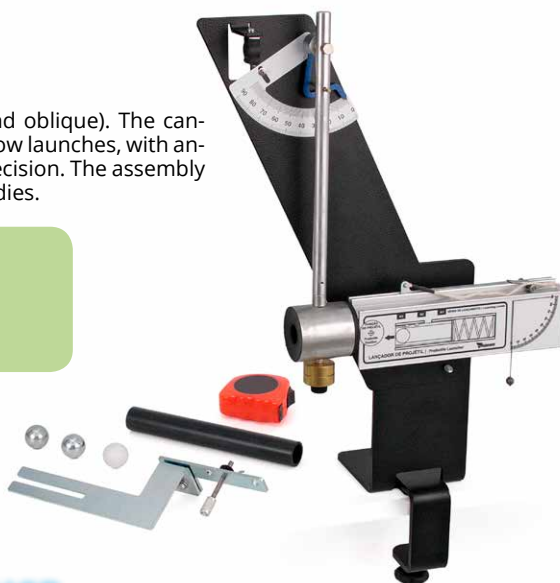
COD 62001231

Projectile launcher with ballistic pendulum.

Equipment to study launches (horizontal and oblique). The cannon has 3 spring compression stages that allow launches, with angle adjustment, up to 5m away with great precision. The assembly further includes a accessory for collision studies.

STUDIES

- Projectile launch
- Collision
- Energy conservation



TIME OF FLIGHT SENSOR TFS-D10

COD 04002036

Electronic sensor for performing horizontal launch and free fall experiments to measure the flight time of a sphere. Compatible with the digital timer AZB-30 USB.



DIGITAL TIMER AZB-30 USB

COD 62001226 (no sensor)



BALLISTIC PENDULUM ACCESSORY SET

COD 62001231

Set of accessories for ballistic pendulum for use with the projectile launcher.



PHOTOELECTRIC SENSOR PGS-D10

COD 04002037

Photoelectric sensor for digital timer AZB-30 USB utilization.



ROTATIONAL MOVEMENTS

COD 62001230

STUDIES

- Uniform Circular Motion.
- Centripetal Force \times radius.
- Centripetal force \times mass.
- Centripetal force \times period.
- Circular movement uniformly varied
- Moment of inertia of solid bodies
- Conservation of angular momentum - Angular velocity
- Angular Acceleration
- Energy conservation.



HYDROSTATIC

COD 62001035

STUDIES

- Specific gravity
- Specific gravity of aluminum, copper, water and alcohol.
- Density and density meter.
- Atmospheric Pressure and Magdeburg hemispheres.
- Communicating vessels.
- Depth and Pressure.
- U-Tube experiment.
- Stevin's principle.
- Pascal law.
- Buoyancy.
- Buoyancy and apparent weight.
- Specific gravity of a liquid and Buoyancy.
- Archimedes' principle.



ADVANCED Electricity Set

COD: 66001055



What are the advantages of this new set?

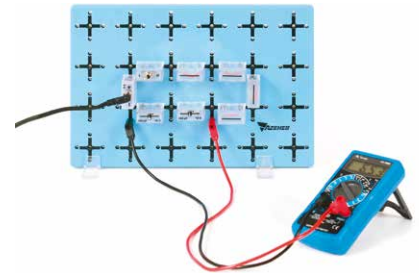
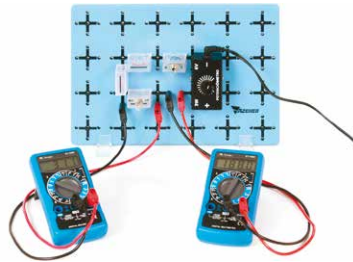
This set has a contact panel which is formed by 24 independent islands with 5 contacts each island. The circuits are connected using the component modules with banana pins.

The main advantage of this new set is the view of the circuit and easy assembly. Most electricity sets are assembled on protoboard. This type of installation requires a prior knowledge of electrical circuits which hinders student learning. Besides all advantages still have security because the connections are not exposed.

- Identification of a color-coded resistor.
- Measurement of current intensity with the multimeter.
- Measurement of voltage with the multimeter.
- Measurement of electrical resistance with the multimeter.
- Resistor ohmic and non-ohmic.
- Ohm's Law.
- Kirchhoff's junction rule
- Kirchhoff's loop (or mesh) rule.
- Series and parallel lamps association.
- Series and parallel resistors association.
- Charge and discharge of capacitors.
- Measurement of the electrical resistance of the voltmeter.
- Series and parallel capacitors association.
- RL, RC and RLC circuits.
- Ratio of transformation in detachable transformer;
- Study of diodes and rectifier bridges;
- AC conversion into direct current;



STORAGE UNIT



RECOMMENDATIONS



FUNCTION GENERATOR 25KHZ

COD: 08003007



DIGITAL MULTIMETER MINIPA ET-2082E

COD: 08004023



DIGITAL OSCILLOSCOPE MINIPA MVB-DSO 50MHZ

COD: 08011004

VAN DE GRAAFF GENERATOR

COD: 66001034 (110V)

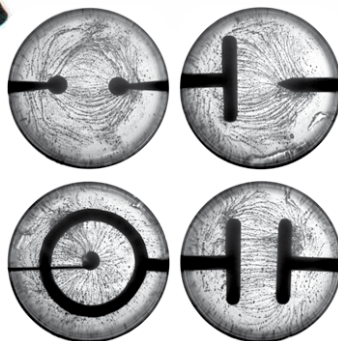
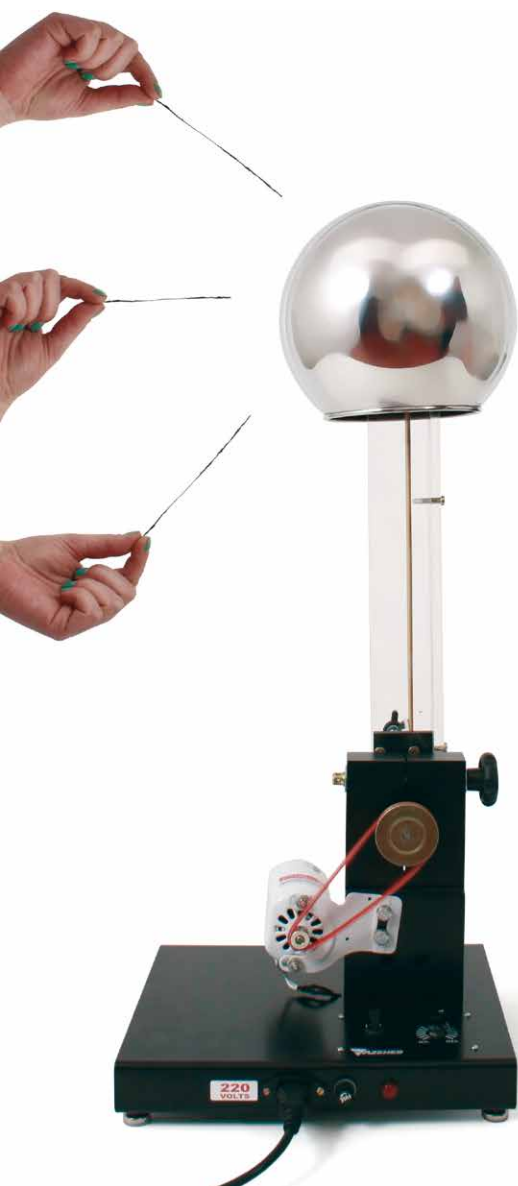
COD: 66001035 (220V)

STUDIES

- Charging by Friction, Induction, Conduction.
- Lightning rod.
- Electric field spectrum
- Electroscope
- Attraction and Repulsion of Electric Charges.

DESCRIPTION

- Seamless sphere.
- Seamless rubber belt.
- A selection of quality accessories enhance instruction.



RECOMMENDATIONS

INSULATION WOOD PLATFORM

COD: 66001001



ELECTROSTATIC SET R12

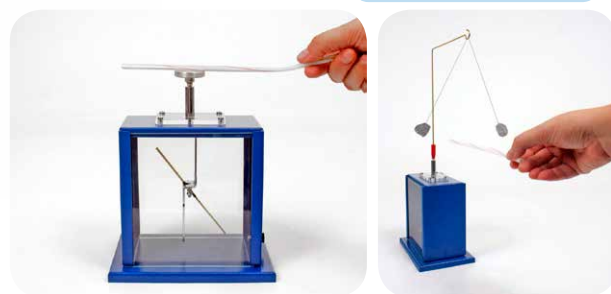
COD: 66001064

STUDIES

- Charging by Friction.
- Charging by Induction.
- Charging by Conduction



STORAGE UNIT



PHOTOELECTRIC EFFECT

COD: 68001002

STUDIES

- Photoelectric effect
- Charging by friction, contact and induction
- Determination of the spectral lines of mercury



LINEAR THERMAL EXPANSION

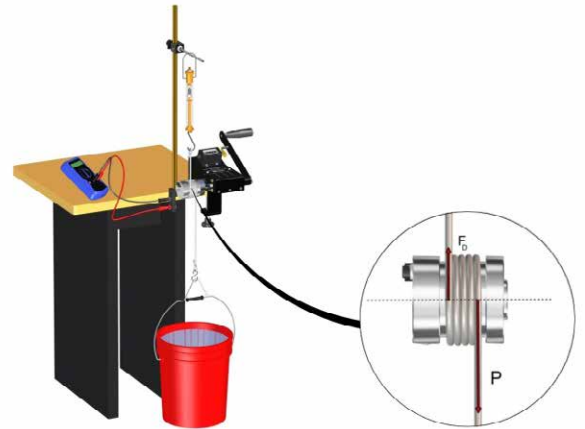
COD: 65001075 (with multimeter)
65001072 (without multimeter)



Equipment for determination of the mechanical equivalent of heat. Equipped with a crank system with shaft and double bearing, revolution counter for measuring the number of revolutions and system of fixing the test cylinder through handles.

The heating of the test cylinder occurs through friction or electric energy through an integrated system to the cylinder.

The cylinder temperature measurement is performed by a temperature sensor (NTC) attached to an aluminum probe that is inserted into the test cylinder. The temperature measurement is done with a digital multimeter to determine the resistance of the NTC and later conversion in a table that accompanies the equipment.

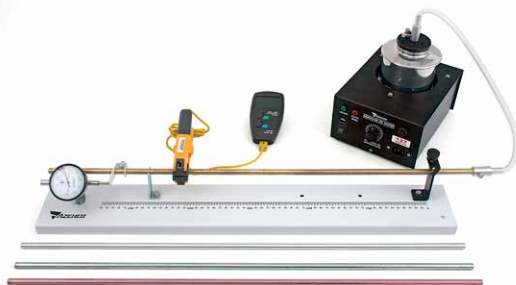


LINEAR THERMAL EXPANSION

COD: 65001013 (glass thermometer)
65001078 (digital thermometer)
07006003 (digital thermometer and steam generator)

STUDIES

- Accurately Determine the Coefficient of Linear Expansion (brass, aluminum and steel.)



CALORIMETRY AND THERMOMETRY

COD: 65001008

STUDIES

- Thermometric liquids.
- Thermometric Scales.
- Ice-point and Steam-point.
- The water equivalent.
- Heat capacity.
- Specific Heat Capacity of a Liquid
- Specific Heat Capacity of Aluminium.
- Specific Heat Capacity of Steel.



HEAT TRANSFER

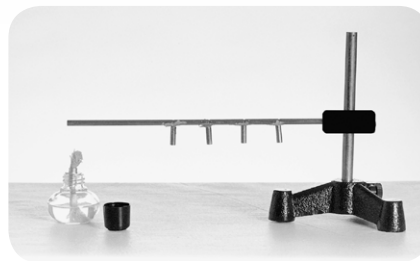
COD: 65001025

STUDIES

- Thermal convection.
- Thermal radiation.
- Thermal conduction.
- Black body.
- Surface effects.

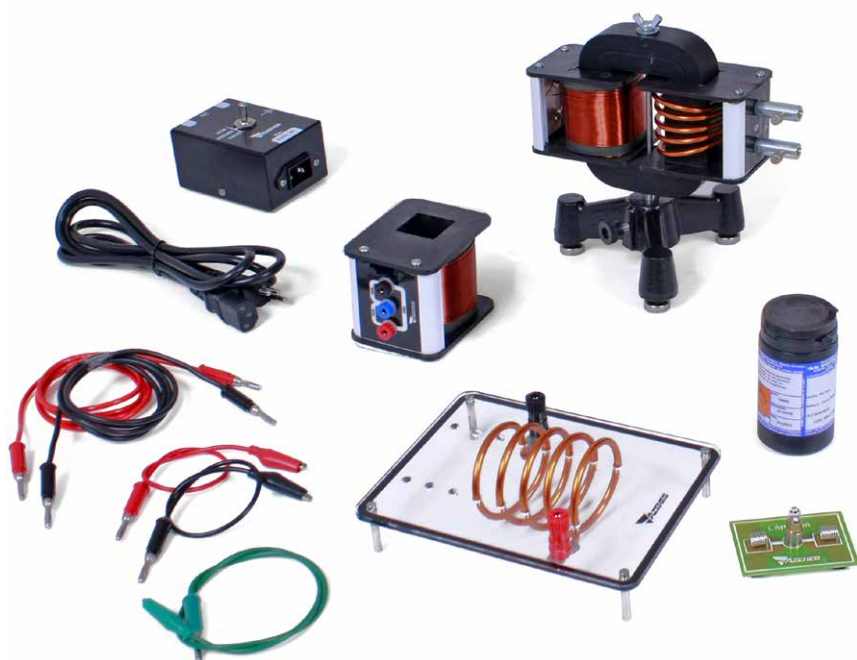


STORAGE UNIT



DIDACTIC TRANSFORMER DEMOUNTABLE

COD: 67001029



STUDIES

- Magnetic field generated by electric current in 1 or 2 straight conductors.
- Magnetic field generated by electric current in a solenoid.
- High Tension Transformers, Low Tension Transformers.
- Electromagnetic induction heating.
- Lenz's law.



STORAGE UNIT



MAGNETISM AND ELECTROMAGNETISM

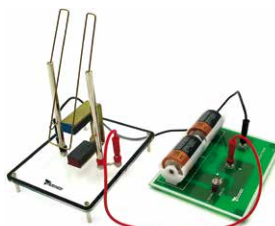
COD: 67001014

STUDIES

- Magnetization by friction, contact and induction.
- Permanent and temporary magnets.
- Ferromagnetic substances.
- Earth's magnetic field.
- Compass.
- Polarity of Magnets.
- Magnetic field from a bar magnet.
- Magnetic field between like and unlike poles. - Magnetic field inside a coil and a solenoid.
- Electric Current and a compass.
- Lenz's law.
- Oersted's experiment.
- Magnetic force.
- Right hand rule.
- DC electric motor.



STORAGE UNIT





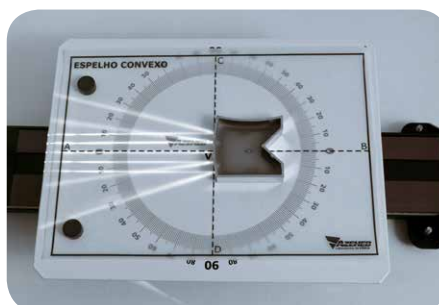
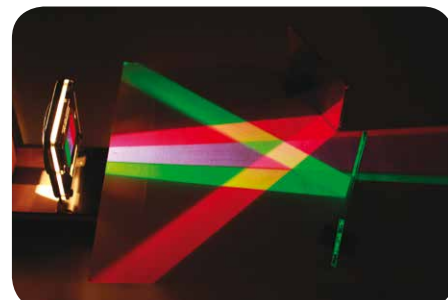
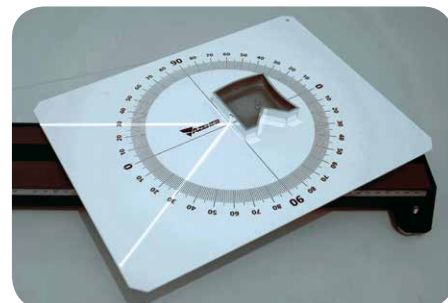
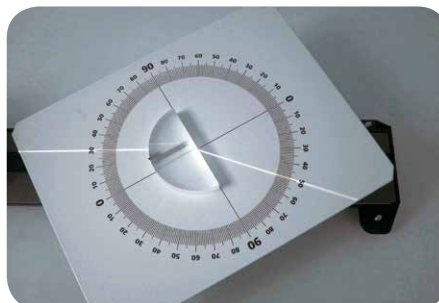
ALPHA OPTICS SYSTEM

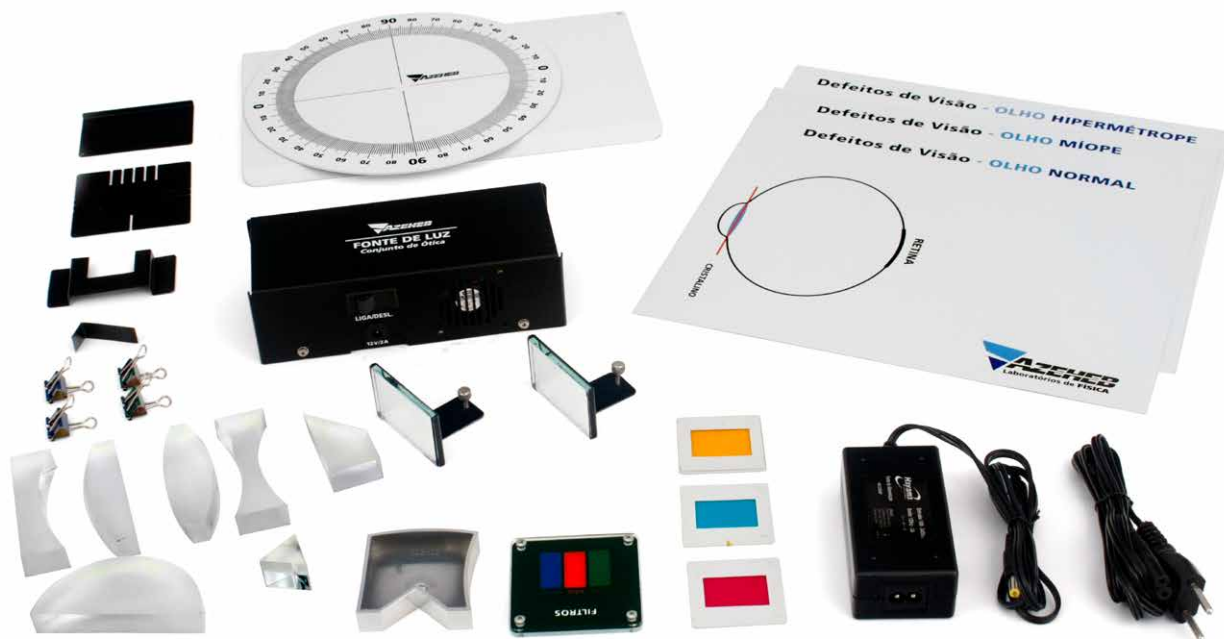
COD 64001003

STORAGE UNIT

STUDIES

- Reflection from a Plane Mirror
- Multiple Reflection from two plane mirrors.
- Concave mirrors.
- Convex mirrors.
- Concave mirror and its focal length.
- Refractive index of acrylic glass to air and air to acrylic glass.
- Converging Lens.
- Diverging Lens.
- Converging Lens and its focal length.
- Optical instruments: the astronomical telescope.
- Optical instruments: magnifying lens.
- Optical instruments: terrestrial telescope.
- Decomposition of white light using a prism.
- Wavelength of Light.
- Light and Polarization.
- Polarization by Reflection.
- Faraday Rotation.
- Vision defects.





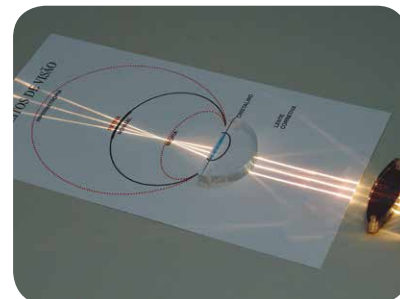
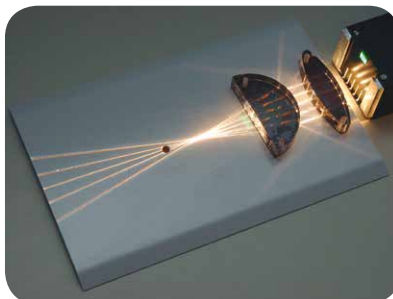
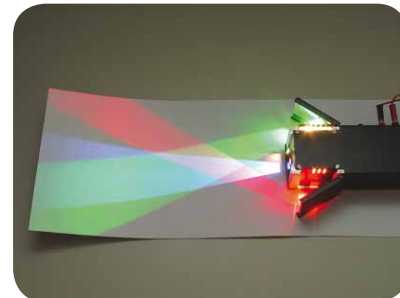
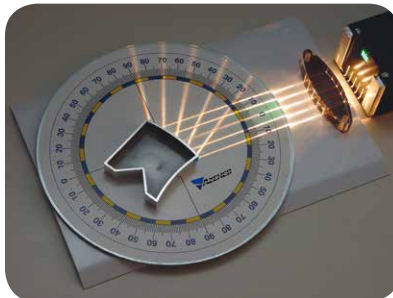
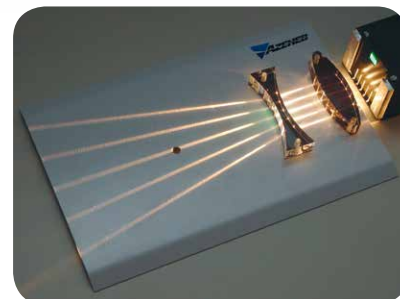
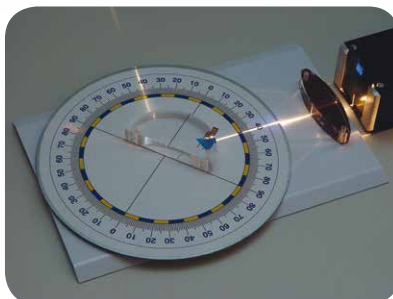
COMPACT OPTICS SYSTEM

COD 64001074

STORAGE UNIT

STUDIES

- Reflection from a Plane Mirror.
- Ray of light and light beam.
- The incident ray.
- Angle of incidence.
- Angle of reflection.
- Image point and object point.
- Virtual image and a real image.
- Concave mirrors.
- Convex mirrors.
- Concave mirror and its focal length.
- Refractive index of acrylic glass to air and air to acrylic glass.
- The angle of refraction.
- Converging Lens.
- Diverging Lens.
- Converging Lens and its focal length.
- Decomposition of white light using a prism.
- Wavelength of Light.
- Color Addition.
- Vision defects.



ACOUSTICS AND WAVES SET

COD 63001003

STORAGE UNIT

STUDIES

- Nodes and anti-nodes
- Wavelength.
- Frequency and Period in oscillation of a spring.
- Amplitude.
- Reflection of Spring Waves.
- The inversion of the reflected pulse.
- Longitudinal and Transverse Waves.
- Standing Waves
- Constructive interference and destructive interference.
- Mass on Spring Resonance
- Timbre, Pitch and Loudness.
- Tuning Forks Resonance
- Beats with tuning forks.
- Resonances of closed-end air columns.
- Standing waves of closed-end air columns.
- Wavelength of closed-end air columns.
- Sound-propagation velocity in air.



STANDING WAVE GENERATOR

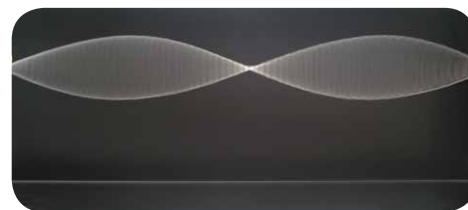
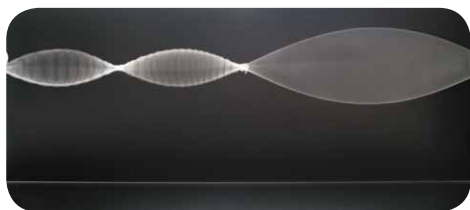
COD 63001008

STUDIES

- Equipment for the study of Standing Waves on Strings with frequency measurement system that consists on a photoelectric sensor and display of three digits precision (0.1 Hz).

STUDIES

- Standing Waves
- Nodes and anti-nodes
- Constructive interference and destructive interference.
- Wavelength.
- Tension in the string X linear density.
- Tension in the string X wavelength
- Mechanical wave refraction on a string.



RIPPLE TANK SYSTEM

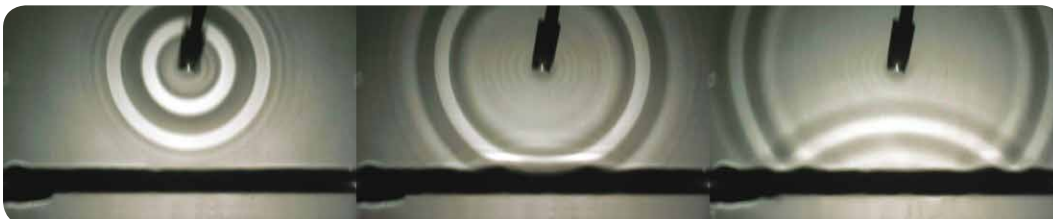
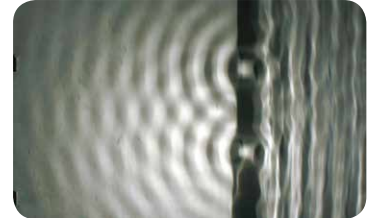
COD 63001005



STORAGE UNIT

STUDIES

- Demonstrating wave properties.
- Circular waves.
- Plane waves.
- Reflection
- Refraction
- Diffraction
- Interference.





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