

NaRiKa BeeSpi *U*

S77-1321-W0

Measure speed and acceleration in an instant with the BeeSpi *U*. Unlike traditional tape-based velocity measuring experiment that is hard to set up and can be inaccurate, BeeSpi *U* uses advanced light gate technology to measure speed of an object in no time, based on which you can easily calculate acceleration of object by using multiple BeeSpi *U*s. This provides additional class time to analyze the results of the experiment, as well as, helps the students improve their understanding.

Specifications

[Speed] 0 to 999.9cm/s, 0 to 99.9m/s, 0 to 99.99km/h

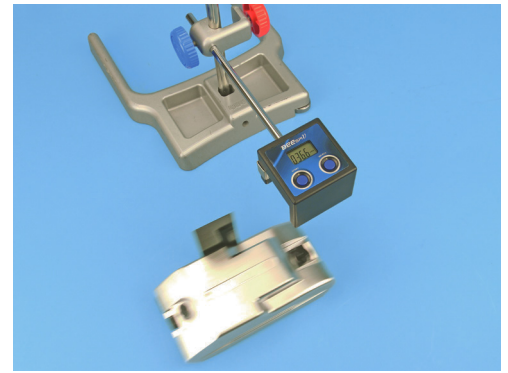
[Accumulated Wrap Time] 0 to 99.99sec

[Power Source] Two size AAA batteries (sold separately)

[Size] 60 x 60 x 50mm

[Weight] 55g (excluding batteries)

[Functions] Clock function, Memory function



NaRiKa Holding Rod for BeeSpi *U*

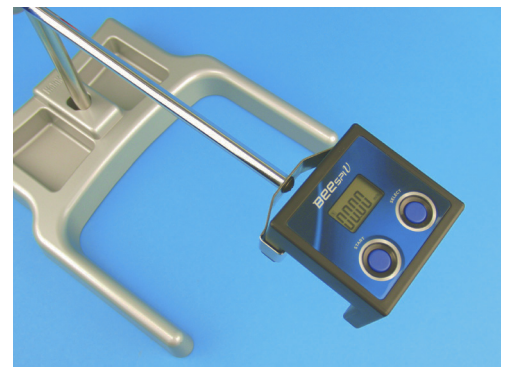
S77-1321-W1

Specially designed adapter (holder) for the NaRiKa BeeSpi *U* to be secured to stand at an arbitrary angle and/or height. By using this, your BeeSpi *U* can be fixed at appropriate angle/direction depending on the experiment you wish to carry out. (Experiments of Slope, Dynamic Cart, and Free-fall motion, etc.)

Specifications

[Size] ca 200mm (whole length)

[Dia of the supporting rod] ϕ 8mm



NaRiKa I-Gauge OS-K (with BeeSpi V)

C15-2456-W1

This equipment is the most suitable for dynamics experiment of sphere (ball) rolling down a track in combination with a BeeSpi V attached as velocity measuring gate for the sphere.

This helps learning;

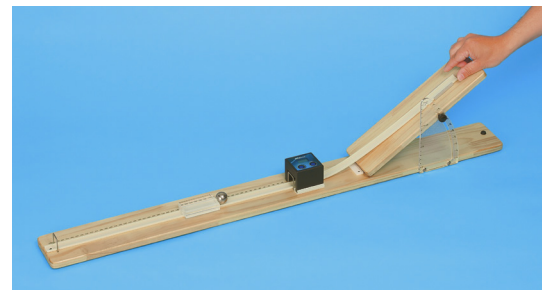
1. Correlation of height and speed.
2. Correlation of impact force to an object and height/speed/weight.
 - (1) The angle of slope is adjustable from 0 to 45 degrees, which is measurable with a protractor on one side of the track.
 - (2) With the scale beside the track, you can measure the distance of objects moved by the impact.
 - (3) If a BeeSpi V is set on the track, you get the velocity of sphere directly.

Contents

- I-Gauge OS-K : x 1
- BeeSpi V x 1
- Balls x 2
- Sliding Weight x 1
- Stopper Gate for Balls x 2

Specifications

- [Balls] Steel Ball x 1, Ceramic Ball x 1 (c.a. $\phi 25\text{mm}$)
 [Equipment's Size] 1050 x 100 x 185mm
 [Track] 1,000mm (scale length 500mm), Angle 0~45 degrees
 [Object block] Acrylic resin, ca 40 x 80 x 14mm



NaRiKa G-Gauge ME-K

C15-2905-W0

This equipment is specially designed for experimentation of velocity and acceleration in free fall motion and others. Experimental condition of object's motion is adjustable to multiple angles not only for free fall but also for motion on the slope. Under the condition of two units of BeeSpi Vs used with this equipment, they provide you with V1 and V2. Thus, you will get the acceleration by using V1 and V2.

Contents

- G-Gauge ME-K : x 1
- BeeSpi V : x 2
- Steel ball ($\phi 25\text{mm}$) : x 1
- Screwdriver : x 1

Specifications

- [Size] ca 1,100 x 100 x 145 mm
 [Scale] 960 mm
 [Angle] 0~90 degrees



NaRiKa Photoelasticity Experiment Set (S Type)

C15-3301-W0

Photoelasticity experimental set enables observing internal stress condition of a transparent object of any shape. This set includes two polarizing plates and photoelastic materials. By checking a topographical map shown as “contour lines”, it is also possible to know a photoelastic-striped pattern as the condition of stress. With a transparent plastic sample placed between two polarizing plates, you can see how the striped pattern changes depending on the intensity of external forces applied to the sample.

Specifications

[Body] Acrylic resin, Size:100 x 85 x 27mm

[Polarization plate] Plastics, Size:100 x 85 x 0.7mm

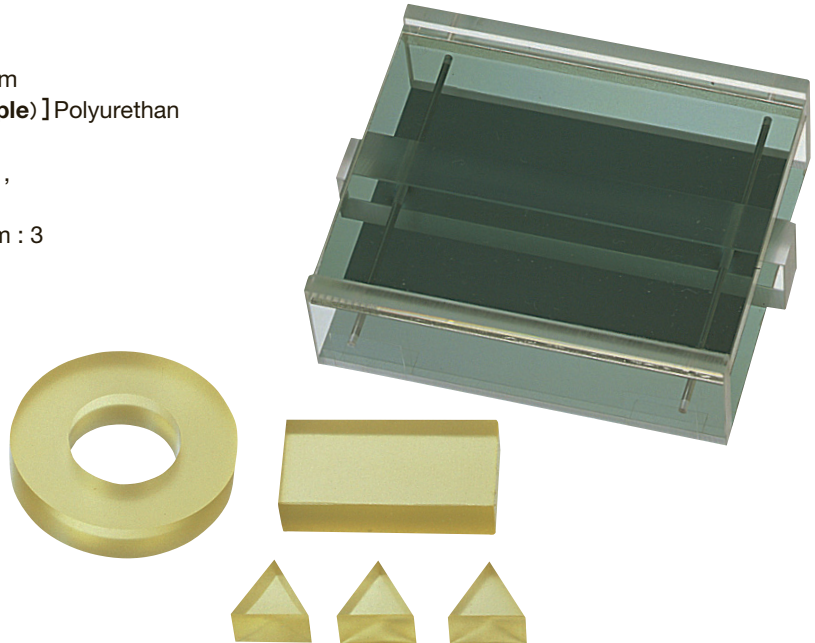
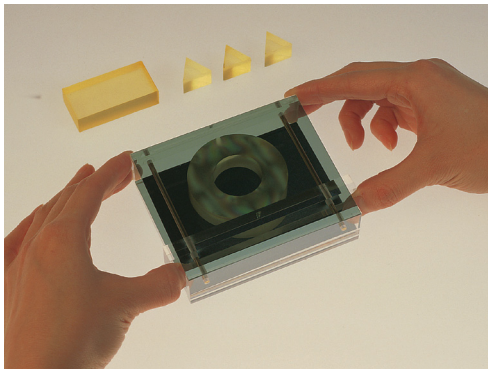
[Photoelastic material (transparent plastic sample)] Polyurethan

[Samples]

Ring type : $\phi 55$ (outside) & $\phi 27$ (inside) x 12mm : 1,

Rectangle type : 50 x 25 x 25 x 12mm : 1,

Equilateral triangle type : 18mm (on a side) x 12mm : 3



NaRiKa Spring Balance SO-5N (5N, Newton Range)

A05-4054-W1

Transparent “Newton Spring Balance” with many features:

- User-friendly index to easy determination of the measurement criterion
- Shaped to prevent rolling over on the table
- Zero point adjustment available with only one hand
- Measurement available either by pressing/pulling the Push-stick

Specifications

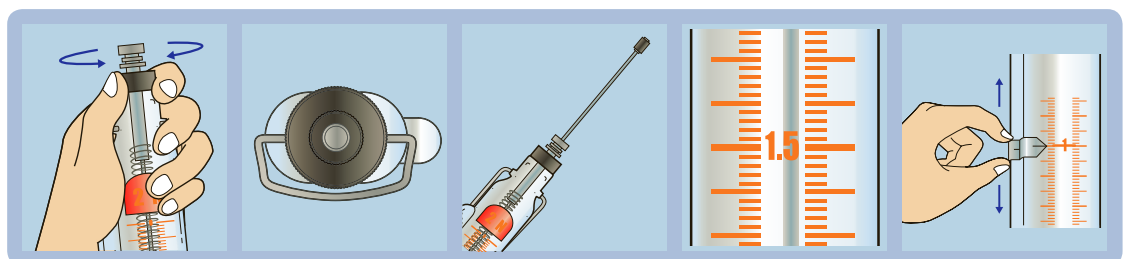
[Material] Polycarbonate

[Size] 35 x 260 x 20mm

[Scale Length] 120mm (Comes with a push-stick)

[Maximum scale value] 5N

[Minimum scale value] 0.05N



NaRiKa Lever & Pendulum Set KGF

C15-1008-W0

This lever & pendulum set is for students' experimentation including a lever unit, a pendulum unit, weights, and a steel stand. For easier experimentation by students, the lever unit has numbered holes on it to hook weights, while the pendulum unit has a semicircular protractor for measuring angle of pendulum, as well as, an adjusting knob to adjust the length of thread. In addition, the lever & pendulum set pays much attention to the storage in schools. Lever unit has a function to be fixed vertically on the steel stand, while pendulum unit has a function to reel a thread of itself, requiring less space for the storage.

With the lever unit, students' group may carry out the experimentation for "Motion of Force" such as the correlation between fulcrum point and point of effort/load). With the pendulum unit, students' group may carry out experimentation for "Pendulum motion" such as correlation between the length of thread with weight and the cycle, as well as, energy conversion of potential/kinetic energy.

Specifications

●Lever unit

[Lever arm] Aluminum, 30 x 400mm, Printed numbers 0-6 (12), Triangle shaped weight holes.

[Lever clamp] Function to fix the arm vertically on steel stand, 55 x 50 x 35mm

●Pendulum unit

[Protractor] $\phi 100$ mm, semicircular, scale marks by 10 degrees (Max 120 degrees).

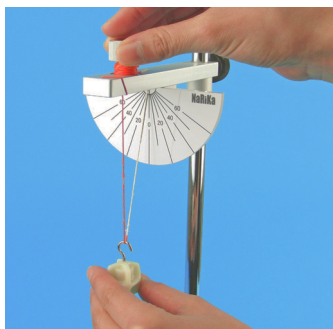
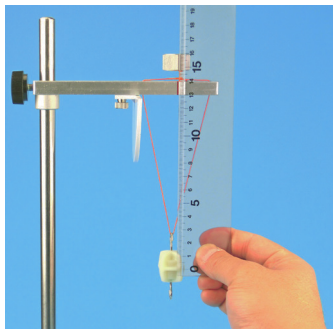
[Thread strage] Reeling a thread around the knob.

[Thread] 1m

●Steel stand

[Support rod] Brass chrome plating, $\phi 12$ x 440mm (effective length)

[Basement] Iron, 180 x 140 x 15mm, ca 475g

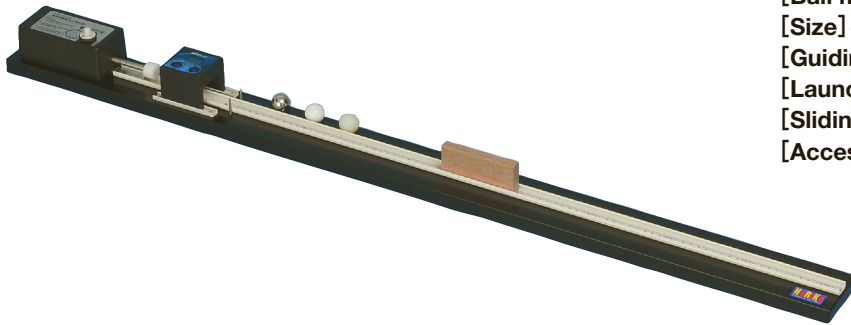




NaRiKa Collision Apparatus for Kinetic Energy (with BeeSpi U)

C15-2455-W1

This apparatus includes a “Horizontal Ball Launcher” and BeeSpi U for measuring velocity of the launched ball. Kinetic energy change depending on the velocity of the ball can be quantitatively obtained by measuring moving distance of sliding wood block when getting collision of horizontal launched ball on the guide rail.



Specifications

[Ball material] Metal, Ceramics, Plastic (ca 25mm)

[Size] ca 1,155 x 80 x 70mm

[Guiding rail] Plastics, length: ca 1,000mm

[Launcher] 3 levels of launch speed

[Sliding block] Wood block ca 15 x 100 x 40mm

[Accessory] BeeSpi U

NaRiKa Magnetic Levitation Track MF-B

C15-1953-W0

New type of Dynamics equipment replacing Air track! This is the world's 1st dynamics track of “Easy & Quiet operation” without electric power. Dynamics experiments are available for;

- Uniform motion of a sliding body
- Verification of Momentum-conservation Law
- Simple harmonic oscillation as “spring pendulum”

Specifications

[Total Length of Sliding Track] 2,000 mm

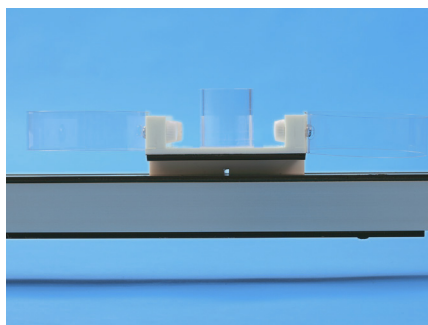
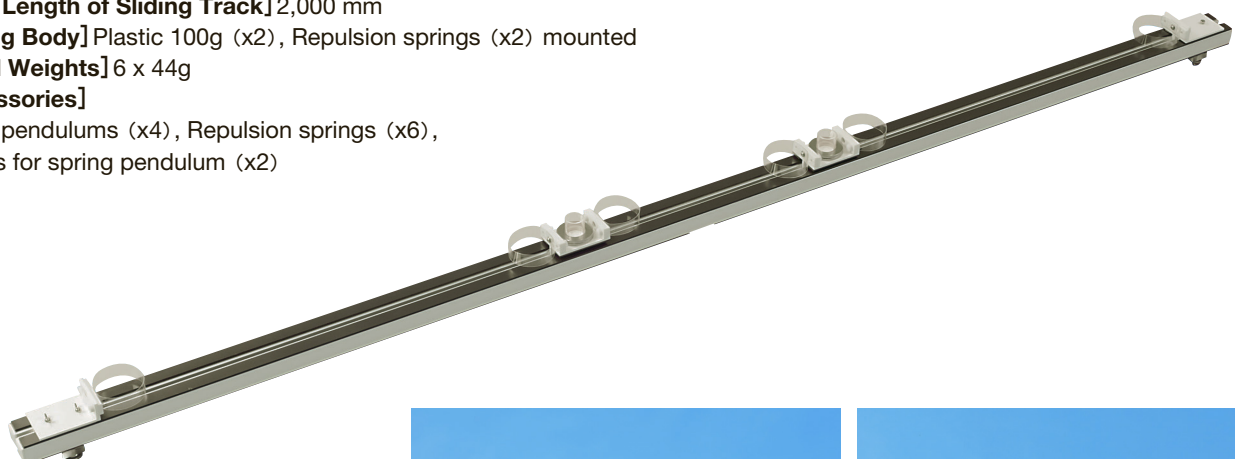
[Sliding Body] Plastic 100g (x2), Repulsion springs (x2) mounted

[Metal Weights] 6 x 44g

[Accessories]

Spring pendulums (x4), Repulsion springs (x6),

Springs for spring pendulum (x2)



NaRiKa Energy Conversion Experimental GENECON Set

B10-2639-S0

This is specially assorted set. As GENECON is established product for teaching general electricity to students, Narika has assorted special set for “experiments with energy conversion” for your convenience. This set comes with carrying pouch, therefore, bringing the set between classes became easier for teachers.

Recommended experiments with the set

1. Comparison of the consumption between parallel and series connection of miniature bulbs
2. Conversion of the potential energy to the electric energy
3. Comparison of the energy conversion efficiency
4. Confirmation of Gravitational potential energy and mass
5. Comparison of the work between lifting and falling weight

And more...

Contents

- Genecon DUE : 1
- Genecon DUE with Pulley : 1
- Genecon Holder ($\phi 8\text{mm}$) : 1
- Series miniature bulb base : 1
- Parallel miniature bulb base : 1
- Miniature bulbs 3.8V 0.3A : 4
- Thread : 2 m
- Carrying pouch : 1

Specifications

[Holder for Genecon x1 unit] Length 270 mm, Bar $\phi 8\text{ mm}$

[Genecon with Pulley x1 unit] 115 x 140 x 43mm, $\phi 50 \times 10\text{mm}$ (Pulley), Generation max. 12V

[Genecon DUE x1 unit] 115 x 140 x 43mm, Generation max. 12V

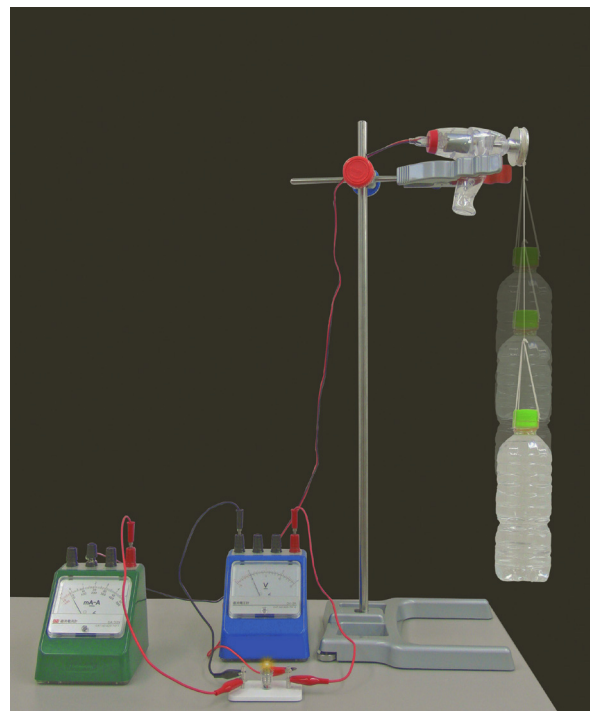
[Series miniature bulb base x1 unit] Bulb holders x 2, 140 x 80mm

[Parallel miniature bulb base x1 unit] Bulb holders x 2, 140 x 80mm

[Miniature bulb] x 4 bulbs 3.8V 0.3A

■ Thread x 1 2m

■ Carrying pouch included



Experiment in progress

NaRiKa Rubber Mat for Air Lifting (*Gompita-kun*)

C15-6655-W0

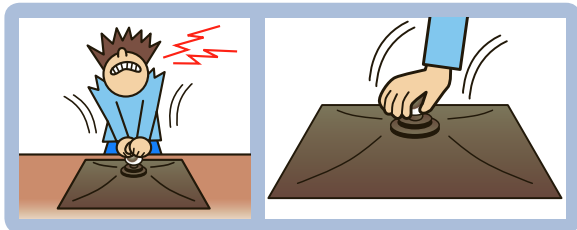
Students can realize how heavy the atmospheric pressure is when they try to pull it up. It is easy to use when you put the rubber mat on smooth surface place (table etc.) and try to pull it up. Size of rubber mat is approx 900 square cm, which means it is pushed by air weighing 900kg.

Specifications

[Rubber size] ca 300 x 300 x 3mm

[Handle] ca $\phi 30$ mm

[Weight] ca 450g



NaRiKa Water Pressure Sensor

C15-5530-W0

L-shaped acrylic tube (rotatable 360 degrees) is attached in the middle of two rubber membranes at the both edges of the acrylate resin cylinder.

The rubber membranes at the both edges will be dented due to the hydraulic pressure when this app is swamped in the tank with holding the L-shaped section.

Meanwhile, when the cylinder is swamped in tank lengthwise, the rubber membrane at the bottom is dented much more than the rubber membrane at the upper portion is.

Thus, this app provides hands-on experience and visual observation of hydraulic pressure.

Specifications

[Main unit] Transparent acrylate resin $\phi 50$ x 70mm

[L-shaped tube] $\phi 5$ x 300mm



NaRiKa Refraction & Reflection of Light Set LB

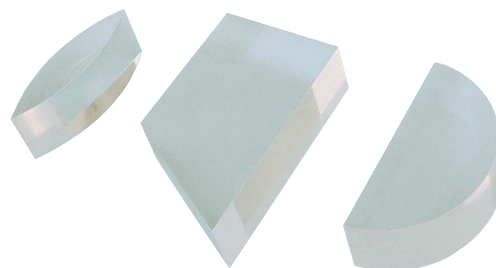
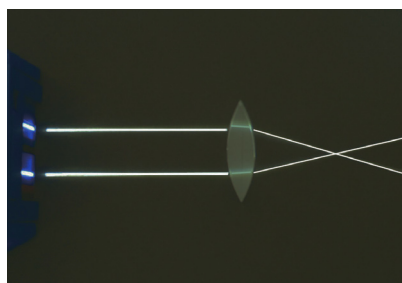
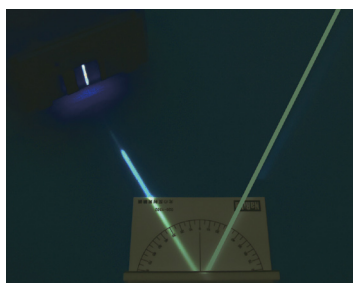
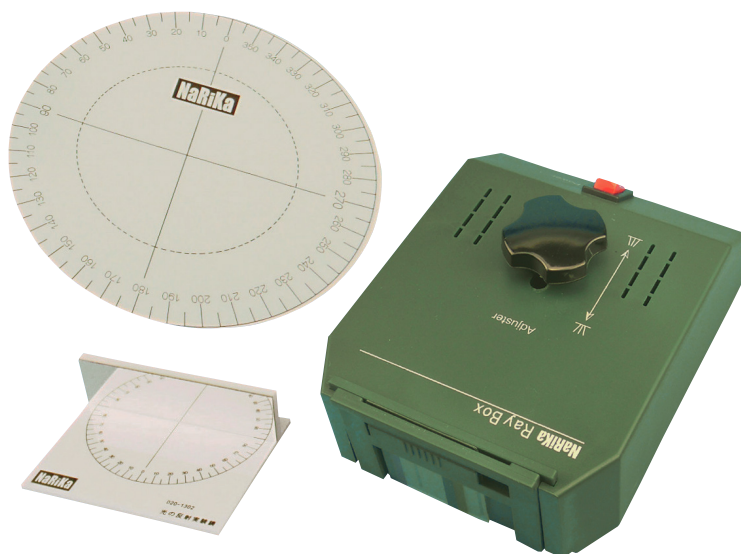
D20-1640-W0

The ray box in this set provides so clear light lines, which are white, red and blue color by the filter, because a super luminosity LED is in the body of the ray box. The ray box and tyndall effect lenses are in one set.

Specifications

[RayBox] L-type

- One Mirror (80 x 65 x 22mm)
- One Semicircle Smoke Lens ($\phi 60 \times 120\text{mm}$)
- One Smoke Convex Lens ($f=50\text{mm}$)
- One Trapezoid Smoke Lens (70 x 40 x t20mm, acute angle 60°)
- One Circular Protractor



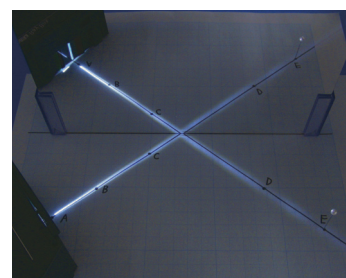
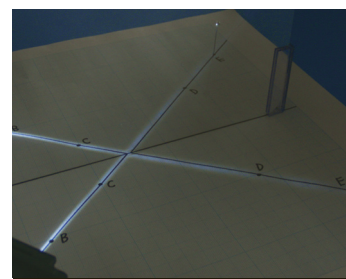
NaRiKa Optical Reflection Mirror L

D20-1312-W1

This is a special mirror with modified surface mirror coating and with the semicircular protractor on it for the study of reflection. Students can observe reflected light ray easily.

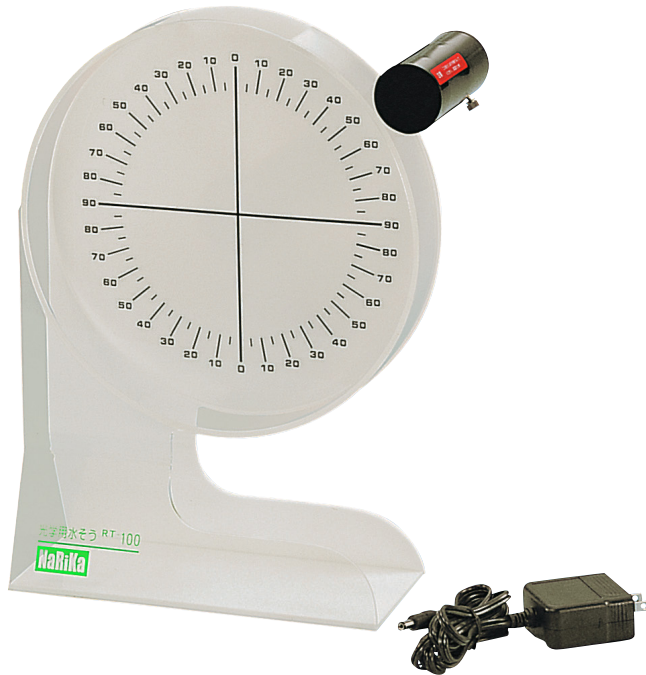
Specifications

[Size] 215 x 145 x 5mm



NaRiKa Refraction Tank RT-100TA

D20-1282-W1



This tank is large enough for teacher's demonstration and student group experimentation. Water tank has a circular form and the light source is able to rotate approx 270 degrees on outer periphery of the tank. Then students confirm the refraction and reflection of light ray emitted from the light source.

Specifications

[Size] 250 x 110 x 350mm

[Material] Plastics

[Scale] 360 degrees

[Light Source] 6V, Line bulb

[Power Supply] AC adapter (not included)

NaRiKa Refraction Tank Mini WR-L

D20-1289-W1

This is a miniature size version for the "Refraction Tank RT-100TA" (D20-1282). Diameter of the water tank is approx 90mm. It is able to be put on a small whiteboard by its magnet on the back side for observation and investigation of the refraction and reflection.

Specifications

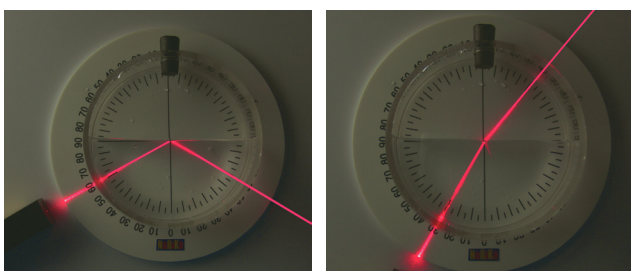
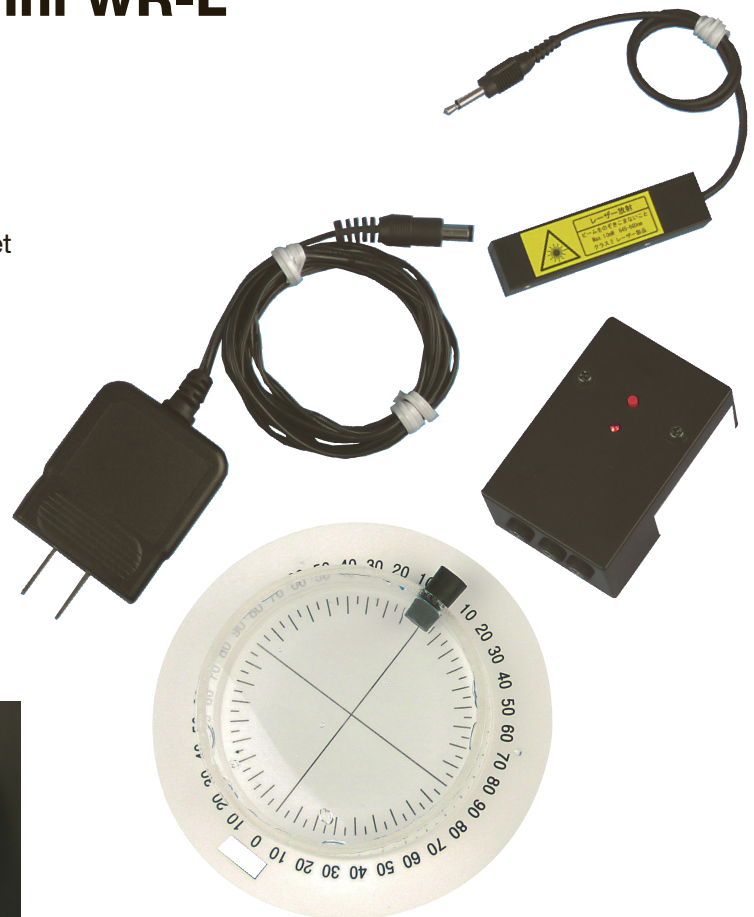
[Size] $\phi 130 \times 28\text{mm}$ (total), $\phi 90 \times 23\text{mm}$ (water tank)

[Material] Plastics

[Scale] 360 degrees

[Laser Light Source] SSL

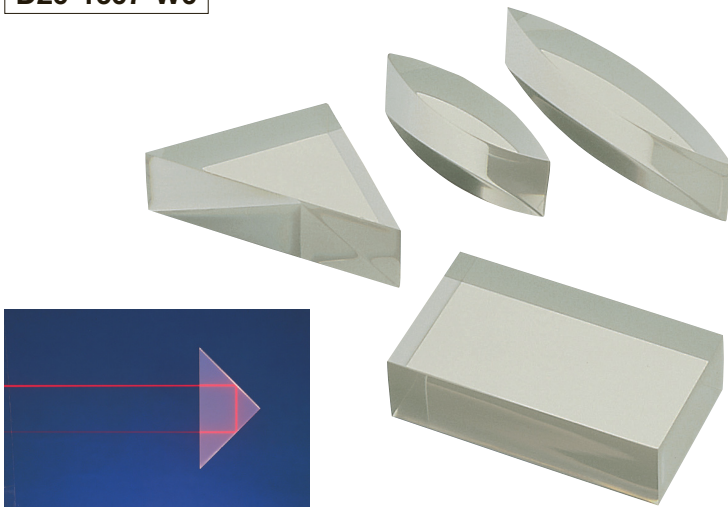
[Power Supply] AC adapter (not included)





NaRiKa Tyndall Effect Lenses

D20-1607-W0



Special plastic lens that enables 3-D observation of ray transmitted through the lens based on Tyndall scattering phenomenon. One set includes totally four lenses : two types of cylindrical lenses, right angle prism, and rectangular parallelepiped. Supplied in a case.

Contents

- Small convex lens (50 x 20mm, $f \approx 50$)
- Large convex lens (76 x 20 mm, $f \approx 50$ mm)
- Right angle prism (hypotenuse 70mm, thickness ≈ 20 mm)
- Rectangular solid (70 x 40 x 20mm)

Specifications

[Material] Plastics

NaRiKa Trapezoid Tyndall Effect Lens

D20-1607-W5

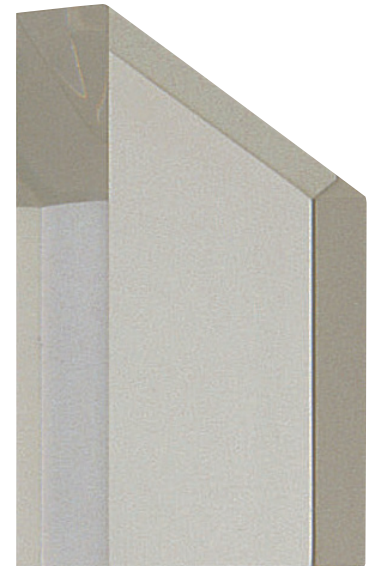
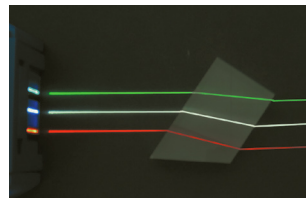
Special plastic lens that enables 3-D observation of ray transmitted through the lens based on Tyndall scattering phenomenon. Since it is trapezoid, it has 3 angles (60 degrees, 90 degrees and 120 degrees).

Contents

- Trapezoid Translucent Lens

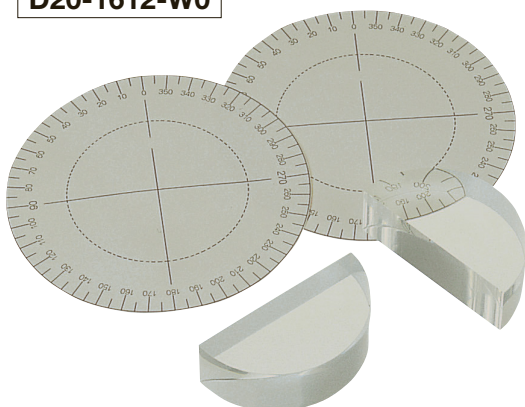
Specifications

[Material] Plastics
 [Acute angle] 60 degrees
 [Size] 70 (base) x 47 (upper) x 40 (height) x 20 (thickness) mm

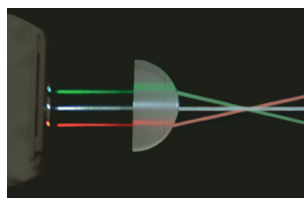


NaRiKa Semicircular Tyndall Effect Lenses

D20-1612-W0



Special plastic lens that enables 3-D observation of ray transmitted through the lens based on Tyndall scattering phenomenon. Since the lens is a semicircular shape comes with a circular protractor plate, it is useful for observation of reflection and refraction of light ray.



Contents

- Semicircular Tyndall Effect Lenses : x 2
- Circular protractor plate : x 2

Specifications

[Size] $\phi 60$ mm semicircular, Thickness : 20mm

NaRiKa Optical Fiber Theory Set

D20-1614-W0

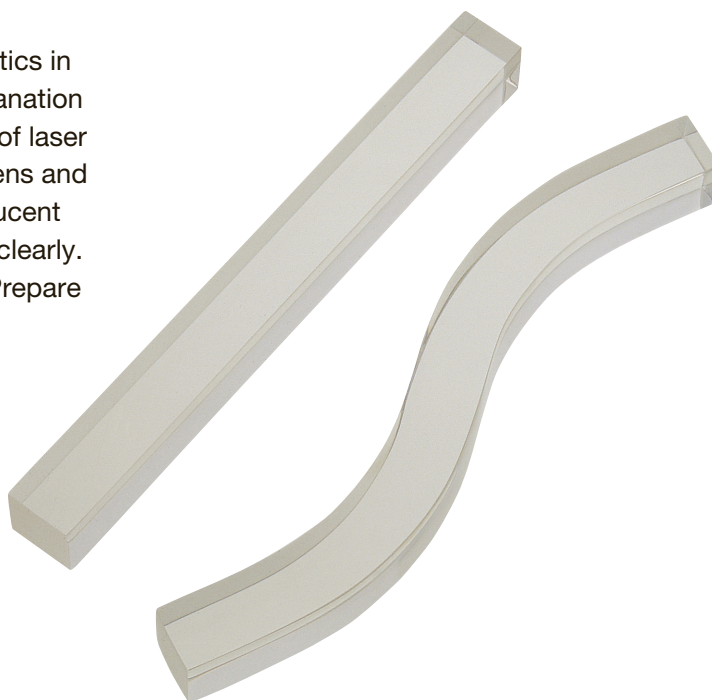
Optical fiber is made from optical silica or plastics in generally. The purpose of this set is the explanation of its theory showing internal reflection of light ray of laser beam transmitted inside the translucent S-shape lens and straight shape lens. Since material of lens is translucent plastic, the laser beam line in the lens is observed clearly. (Notice : Laser pointer is not included in this set. Prepare it separately for this experimentation.)

Contents

- Tyndall Effect S-shaped Lens : 1
- Tyndall Effect straight shaped Lens : 1

Specifications

[Material] Plastics
[Size] ca 20 x 20 x 195mm



NaRiKa Optical Bench OB-C

D20-1254-W0

Suitable for experiment of optics such as measuring focal length of a lens or inverted image.

Specifications

- | | |
|--|--|
| ■ Bench (whole scale length 1m, 1mm scale span) x 1 | ■ Douser x 1 |
| ■ Carrier x 4 | ■ Throttle plate x 1 |
| ■ Light bulb socket (holder) (with switch and cable) x 1 | ■ Cross slit plate x 1 |
| ■ Candleholder x 1 | ■ Scale plate x 1 |
| ■ Convex lens (dia. 45mm·f=ca 140mm) x 1 | ■ Holder (for Cross slit/scale plates) x 2 |
| ■ Convex lens (dia. 35mm·f=ca 100mm) x 1 | ■ Incandescent light bulb (40W) x 1 |
| ■ Lens holder x 1 | |

