

A02-100S-Y01

junior high



• Purpose

1. Expansion of liquids-thermometer production
2. Expansion of gases
3. Saturated steam experiment
4. Expansion of metal ball
5. Linear expansion of metals
6. Heat transfer of solid bodies
7. Thermal equilibrium
8. Convection of liquid
9. Convection of air
10. Absorption of thermal radiation
11. Specific heat of solid

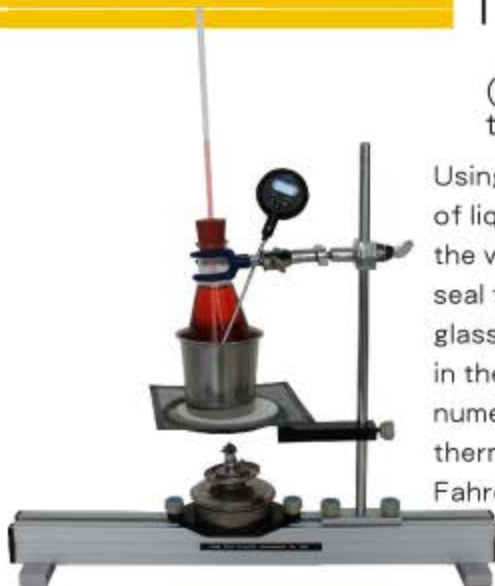
Including an aluminum case with manual and a set of accessories.

• Expansion of gases



(Liquid volume expansion experiment)

Fill the conical flask with water and then use the beaker to double-boiling the conical flask. Observe and record the relationship between the volume of water and temperature using the U-shaped manometer and thermometer.



(Expansion of liquids-
thermometer production)

Using the known characteristic of volume of liquid thermal expansion after staining the water placed in the conical flask, and seal the flask with rubber stopper and glass tube, and then heat the water up in the conical flask. Compare the numerical scale on the glass tube and thermometer, thus learning the Celsius, Fahrenheit, and Kjeldahl temperature scale and the temperature scale production theory.

• Saturated steam experiment



To understand that when the liquid evaporates in a sealed container, it changes to gas, which gives pressure on the liquid, called vapor pressure. In addition, when the evaporation and condensation speed of the liquid are the same, called the saturated vapor pressure. We use saturated steam pipe and the temperature of human palm to observe the change of the vapor pressure of the liquid container.



(Gas volume expansion experiment)

Put a dry conical flask into the beaker for water-boiling, and use the U-shaped manometer and the thermometer to observe the expansion of the gas volume while heated. In addition to understand the expansion of the gas volume, the gas thermometer can also be produced, and compare the differences with the liquid thermometer.



(Heat transfer of solid bodies)

Fix and heat up one end of three different metal rods (copper, iron, aluminum) using the alcohol lamp and use the electronic thermometer at the other end to observe the speed of heat conduction in three different metal objects.

• Solid expansion experiment



(Metal ball expansion experiment)

Use the alcohol lamp to heat up the metal ball and metal ring and observe that if the metal ball fits through a hole in a ring before and after heating.

(Coefficient of expansion of different metals)

Use three different metal rods (copper, iron, aluminum) and heat them up. Then use the linear expansion scales to record the expansion situation of those three kinds of metal rods, in order to understand the objects of different materials for the subject The situation changes in the thermal volume expansion.



• Thermal convection experiment



(Thermal conduction balance experiment)

Put the thermometer in two beakers of water with different temperature, and then place an aluminum piece in to observe the changes in the two beakers, so we know that how the water transfer the heat energy to make it in thermal equilibrium.

(Air heat convection experiment)

Use a closed air convection box, light a candle in the box at one end, and then place the aluminum tubes in two holes of the top, in order to observe the flow of incense smoke in the box to study the thermal convection when air molecules are heated.

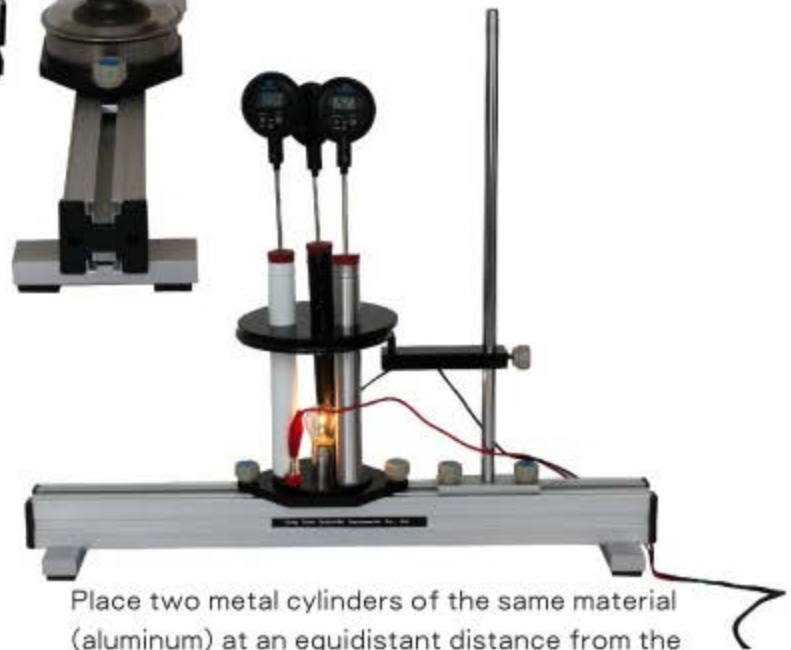


(Liquid heat convection experiment)

Fill the glass tube with water, and trickle a few drops of dye in it. Then heat one end of the glass tube to observe the thermal convection; and understand the process of heat transfer through liquid.

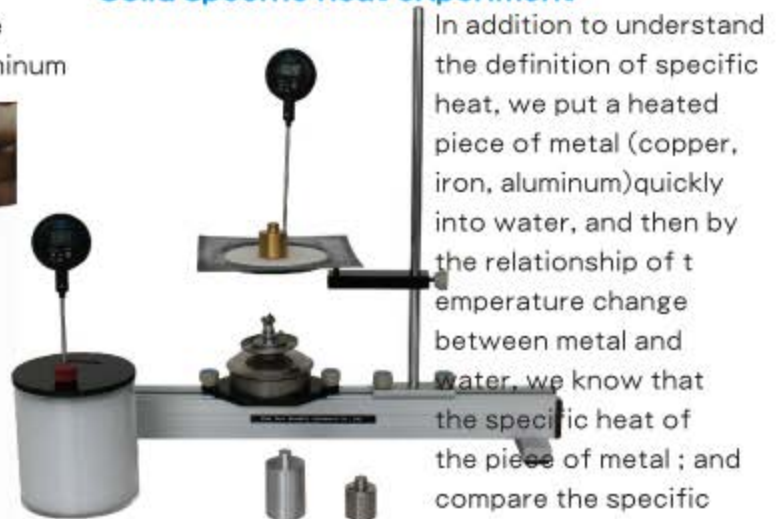


• Heat radiation experiment



Place two metal cylinders of the same material (aluminum) at an equidistant distance from the heat source to observe the changes in temperature of different cylinders. So, we can understand the heat conduction, and compare thermal radiation with thermal convection and heat conduction.

• Solid specific heat experiment



In addition to understand the definition of specific heat, we put a heated piece of metal (copper, iron, aluminum) quickly into water, and then by the relationship of temperature change between metal and water, we know that the specific heat of the piece of metal; and compare the specific heat among the three equal quality piece of metal.



Including an aluminum case with manual and a set of accessories.



• Specification

Accessory	Qty	Accessory	Qty	Accessory	Qty	Accessory	Qty
1 Aluminum Base	1	12 Linear Expansion Experimental Stick aluminum stick	1	23 Solid Thermal Conduction Device	1	34 Three-Prong Clamp	1
2 Alcohol Burner	1	13 Linear Expansion Scale	1	24 Ball Expansion Experimental Ball	1	35 Solid Specific Heat Metal Piece(copper piece \ iron piece aluminum piece)	1
3 Alcohol Burner Holder	1	14 Removable Stand	1	25 Ball Expansion Experimental Ring	1		
4 Water Convection Glass Tube	1	15 Removable Pedestal	1	26 Incense	1	37 Acrylic Tube	1
5 Flask	1	16 Iron Bar	1	27 Electronic Thermometer	3	38 ropper	1
6 Thermal Radiation Aluminum Tube Holder	1	17 Thermal Radiation Aluminum Tubes	1	28 Calorimeter (including a steel cup)	2	39 Bulb Holder	1
7 U-shaped manometer	1	18 black bottle	1	29 Air Convection Box	1	40 Bulb	1
8 Ring-Shaped Heated Seat	1	19 rubber plug	1	30 Saturated Steam Experimental Device	1	41 DC Power Supply (12V)	1
9 Ceramic Fiber Net	1	20 white bottle	1	31 Hose (50cm)	1		
10 Linear Expansion Experimental Stick iron stick	1	21 original aluminum bottle	1	32 Air Convection Metal Bar	1		
11 Linear Expansion Experimental Stick copper stick	1	22 Thermal Conductivity Aluminum Piece	1	33 Forceps	1		