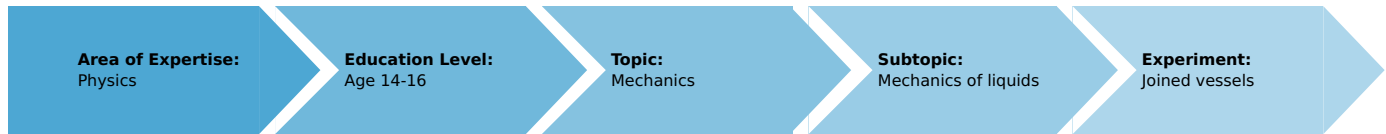


Joined vessels (Item No.: P1001700)

Curricular Relevance



Difficulty



Intermediate

Preparation Time



10 Minutes

Execution Time



10 Minutes

Recommended Group Size



2 Students

Additional Requirements:

- Glycerol, 250 ml 30084-25

Experiment Variations:

Keywords:

Task and equipment

Information for teachers

Additional Information

Using a flexible U-tube consisting of two glass bells and a piece of tubing, the students should investigate how the water level in the two sides of the U-tube behave when the relative positions of the two tubes are changed.

Remark on experiment 1

The water level in both sides of the tube is equally high.

Remark on experiment 2

With the glass tube the same phenomena occur: the height of the water on both sides is always equal; the water surface is always horizontal and does not tip with the tipping movements of the tube.

Joined vessels (Item No.: P1001700)

Task and equipment

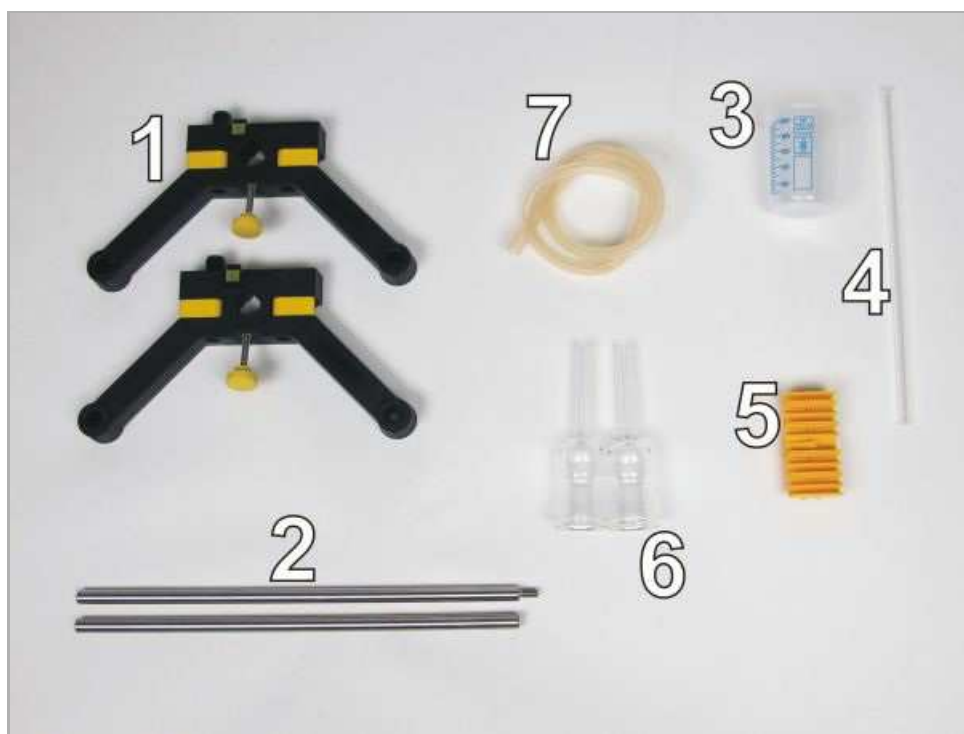
Task

How does water behave in a U-tube?

Fill a U-shaped tube with water and observe the water level in the two sides when you move them with respect to each other.



Equipment



Position No.	Material	Order No.	Quantity
1	Support base, variable	02001-00	1
2	Support rod, l = 600 mm, d = 10 mm, split in 2 rods with	02035-00	1
3	Beaker, low form, plastic, 100 ml	36011-01	1
4	Glass tubes, l.250 mm, pkg.of 10	36701-68	(1)
5	Glass tube holder with tape measure clamp	05961-00	1
6	Glass bell with tube	03917-00	2
7	PVC tubing, i.d. 7mm	03985-00	1
Additional Material:			
8	Glycerol, 250 ml	30084-25	1

Set-up and procedure

Set-up

Set up a stand with the support base (Fig. 1) and the 600 mm support rod (Fig. 2-3).

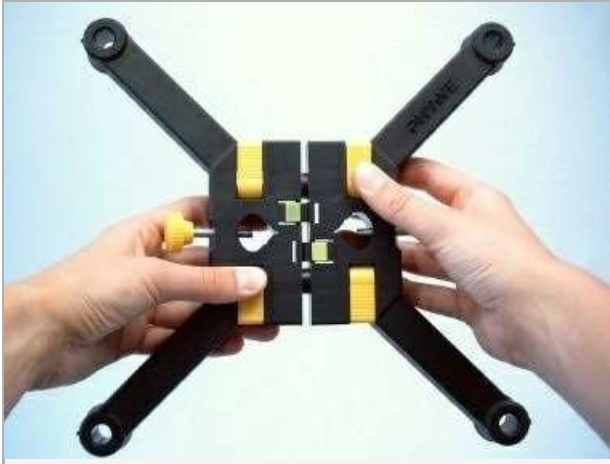


Fig. 1



Fig. 2



Fig. 3

Fix the glass tube holder to the support rod (Fig. 4). Clamp the two glass bells with tube to the glass tube holder. Connect them with a piece of tubing (50 cm long) (Fig. 5) and fill both of them half-full with water (Fig. 6).



Fig. 4



Fig. 5



Fig. 6

Procedure

Observe the water level of the two glass bells; sketch your observations in Fig. 16 in the report.

Now take the right glass bell out of the holder and hold it as shown in Figs. 8, 9, 10. In each case record the water levels in Fig. 16.



Replace the right glass bell with the glass tube (Fig. 11) and repeat the experiment (Figs. 12, 13, 14). Observe the water levels and sketch them in Fig. 17 in the report.



Fig. 11



Fig. 12



Fig. 13



Fig. 14

In order to disassemble the support base, press the yellow buttons (Fig. 15).

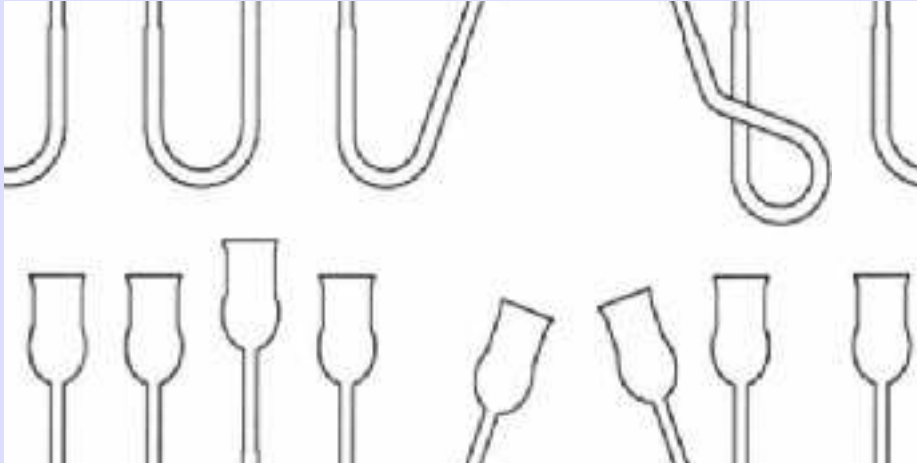


Fig. 15

Report: Joined vessels

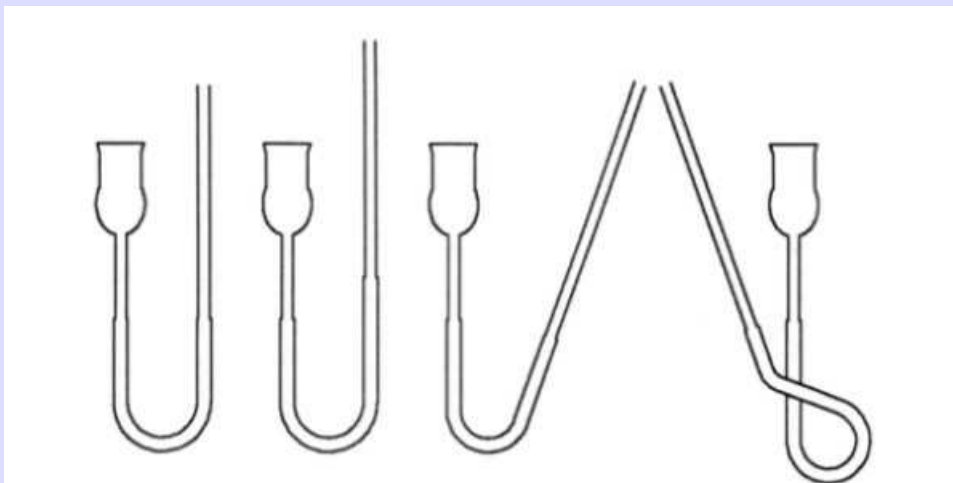
Result - Observations 1

Draw the water levels in the two glass bells in Fig. 16 below:



Result - Observations 2

Draw the water levels in the glass bell and the glass tube in Fig. 17 below:



Evaluation - Question 1

How do the water levels in the two glass bells correlate?

Evaluation - Question 2

What happens when you raise or lower one of the two glass bells?

Evaluation - Question 3

Does the water surface slope when you tip one of the glass bells?

Evaluation - Question 4

What can you conclude from this?

Evaluation - Question 5

Can you think of a useful application for this observation?

Evaluation - Question 6

How does the result change when you replace the glass bell with a glass tube?
