



## WATER HAMMER



**DL DKL092**

The module is designed to demonstrate and study the phenomenon known as water hammer: this phenomenon occurs when a valve is closed suddenly in a pipeline system causing a pressure surge. The equipment is suitable to provide all the necessary elements to perform several practical experiments in order to grant a complete understanding of the topic.

The system has three tanks placed at different heights:

- one tank is able to provide constant water supply granted by an air pressurized tank; it includes a check valve avoid the return of the water in this tank
- one tank has fixed overflow level
- one tank, the upper one, has adjustable overflow level

The equipment includes a quick lock valve in the pipeline for the flow cut generating the overpressure that leads to the phenomenon of the water hammer. Moreover, the module is supplied with two pipes sections of different lengths (1 mt. and 3 mt. segments) in order to allow the performing of further experiments. The system is supplied with a 500ml volumetric tank to perform suitable measurements for the performance of the experiments.

The module is supplied with a hose granting a possible connection to either the hydraulic bench or the hydraulic group with flow meter included.

### PERFORMABLE EXPERIMENTS

- Demonstration and analysis of the water hammer phenomenon produced by the closing of a valve.
- Operation of the water hammer.
- Operation of the air chamber.
- Theoretical flow relation.
- Volumetric performance.
- Water hammer efficiency.



# FLUID MECHANICS FUNDAMENTALS



- Observation of the phenomenon to the following variables:
  - Supply piping length
  - Air volume in the chamber
  - Flow rate of the water supply

## TECHNICAL DATA

### Tanks:

- Transparent PVC tank with fixed overflow.
- Transparent PVC tank with adjustable overflow.

### Piping:

- 16mm inner  $\varnothing$  piping

### Segments:

- 1 segment: 1 m length
- 1 segment: 3 m length

### Water Hammer:

- Supply flow rate: 240 l/h
- High flow: 40 l/h
- Maximum elevation height: 250mm

### Requirements:

Hydraulic bench DL DKL014, not included in this item.