Email : sales@scilabexport.com
Phone: +91-7082934803

**Product Name :**

Water Hammer Apparatus

**Product Code :**

SLE/EFM/18



Science Lab
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Phone: +91-7082934803

# Description :

**Water Hammer Apparatus** (Product Code: SLE/EFM/18) lets students create and measure the pressure surge that travels along a pipe when flowing water is stopped suddenly. At its heart is a 60 m long coil of copper pipe with a solenoid valve at the discharge end; when the valve shuts,an electronic pressure transducer next to it captures the resulting pressure fluctuations. The apparatus serves mechanical and civil engineering courses on unsteady pipe flow, and it is made by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, Ambala, among its engineering educational equipment for Indian and overseas institutions.

## Specifications

| Parameter | Detail |
|---|---|
| Test pipe | Coil of copper pipe, 60 m long |
| Water inlet | Connects to your water supply |
| Fast-closing valve | Solenoid valve at the discharge end of the pipe |
| Flow control | Second adjustable valve at the discharge, downstream of the solenoid valve |
| Bypass valve | At the inlet end, discharging to waste; regulates the mean pipe pressure before the solenoid valve shuts and allows calibration of the pressure transducer |
| Transientmeasurement | Electronic pressure transducer near the solenoid valve |
| System pressure | Bourdon pressure gauge between the solenoid valve and the downstream control valve |

## Typical Use

Students first set a steady flow through the coil with the downstream control valve and adjust the bypass valve to fix the mean pressure, reading it on the Bourdon gauge. Closing the solenoid valve then stops the water almost instantly, and the transducer records a sharp pressure rise followed by a decaying series of oscillations as the wave reflects back and forth along the pipe. From the period of these oscillations and the known pipe length they estimate the pressure-wave speed and compare the peak surge with the value predicted by Joukowsky's equation.

The long coiled pipe stretches the wave's travel time so it can be resolved clearly on a recording instrument. Before each session, use the bypass valve and Bourdon gauge to check the transducer calibration, and bleed trapped air from the pipe, as air pockets soften the surge. The rig is a practical choice among engineering educational equipment in India for showing why pipelines need surge protection.

## Manufacturer

**Jain Scientific Equipments Private Limited** builds this apparatus under its **ScienceLab** label at Ambala in Haryana, where it develops pipe-flow and pressure teaching rigs for colleges and polyte

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