# HM 161.61
## Vibrating piles

The illustration shows a similar unit

## Description

■ **vibrations of a single pile or of two parallel piles in a flow**

Jetties or drilling platforms usually stand in the water on piles. Flowing water exerts forces on the part of the piles that is located under water, possibly causing vibrations. The vibrations can lead to component failure.

The vibrations are caused by the interaction between the water and the pile. For example, flow around a pile can lead to the formation of a Karman vortex street. The detachment of these vortices causes a change in the flow direction. In the worst case the vortex shedding frequency corresponds to the natural frequency of the pile.

HM 161.61 enables the observation of a single vibrating pile. Furthermore, there are two parallel piles that stand transverse to the direction of flow, and which are made to vibrate by the flow. The distance between the piles can be varied. If the distance is too small, there will be coupled vibrations between the two piles.

## Learning objectives/experiments

- vibration of a single pile
  - observation of a Karman vortex street
  - effect of the rod diameter
  - effect of additional masses
- coupled vibrations between two piles

## Specification

[1] rods as vibrating piles for the experimental flume HM 161
[2] 3 single rods with different diameters
[3] weight holder with weights as additional masses for the single rod to be studied
[4] vibration of 2 parallel piles: 2 identical rods with holding device, distance of rods adjustable
[5] single rod to be studied and holding device for parallel piles fastened on the flume bottom

## Technical data

Single rods: 950mm long, made of PVC
- Ø 12mm
- Ø 20mm
- Ø 15mm

Weights
- 3x 200g
- 1x 60g (holder)

Rods for vibration of 2 parallel piles
- 2x Ø 15mm

LxWxH: 580x100x30mm (parallel piles holding device)
Weight: approx. 12kg

## Scope of delivery

5 rods
1 holder for parallel piles
1 set of weights
1 set of accessories
1 manual

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Required accessories

| | |
|---|---|
| HM 161 | Experimental flume 600x800mm |