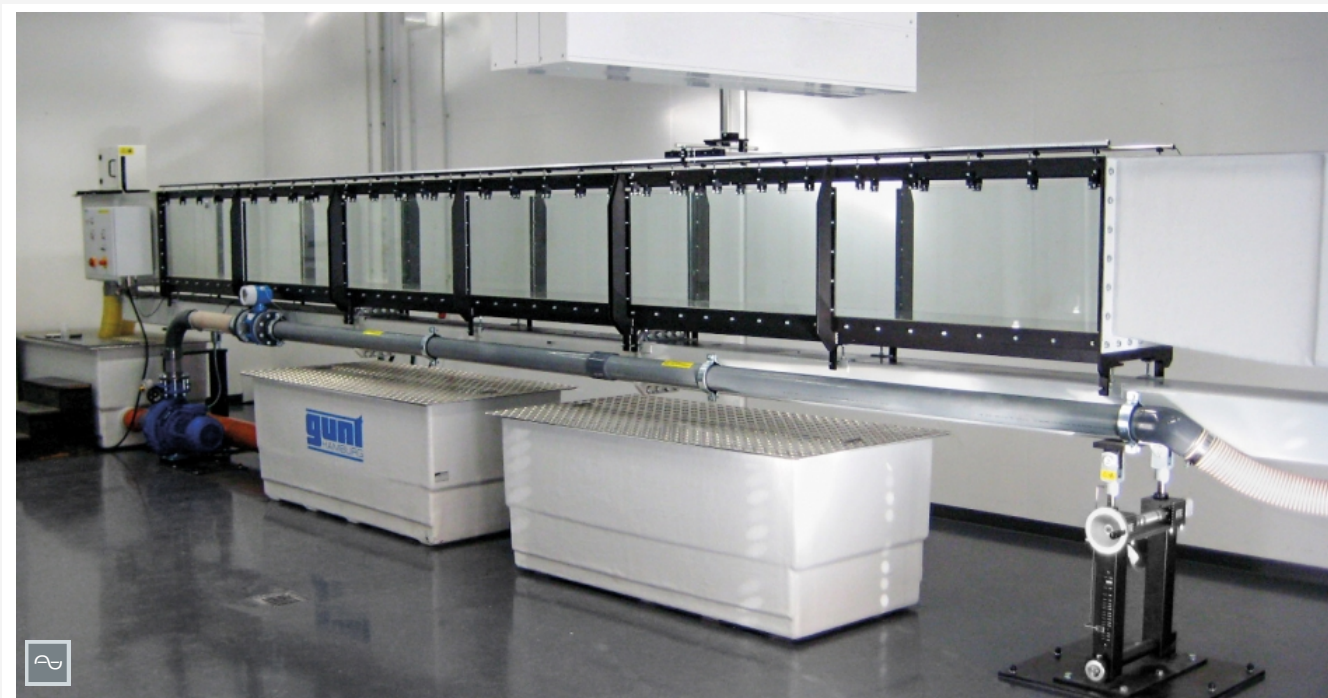


HM 162

Experimental flume 309x450mm



The illustration shows HM 162 (7,5m experimental section) with the wave generator HM 162.41 and the level gauge HM 162.52.

Description

- experiments ranging from fundamental principles to research projects
- experimental section with transparent side walls, lengths between 5m and 12,5m available
- homogeneous flow through carefully designed inlet element
- models from all fields of hydraulic engineering available as accessories

Hydraulic engineering is a crucial part of engineering. How do we achieve the necessary river depth for ships? How does open-channel flow change during flooding? How far upstream do measures such as control structures have an effect? How can the discharge at barrages be calculated? By using experimental flumes in laboratories it is possible to teach the basic knowledge required to understand the answers to these questions and to develop possible solutions.

The experimental flume HM 162 with a closed water circuit has a cross-section of 309x450mm. The length of the experimental section is between 5m and – with further extension elements HM 162.10 – a maximum of 12,5m.

The side walls of the experimental section are made of tempered glass, which allows excellent observation of the experiments. All components that come into contact with water are made of corrosion-resistant materials (stainless steel, glass reinforced plastic). The inlet element is designed so that the flow enters the experimental section with very little turbulence.

The inclination of the experimental flume can be finely adjusted to allow simulation of slope and to create a uniform flow at a constant discharge depth.

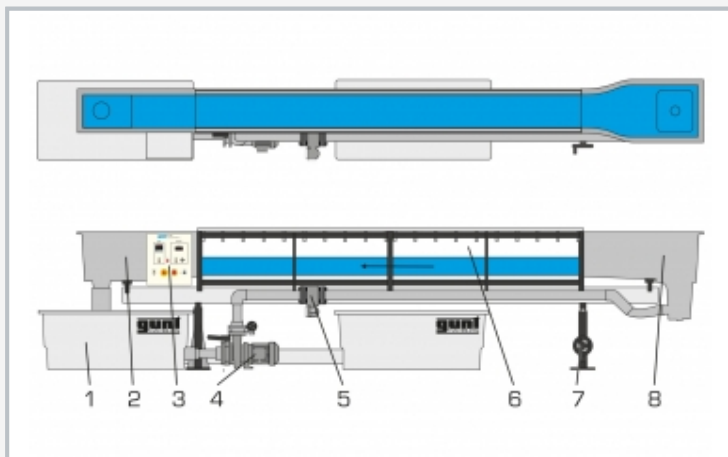
A wide selection of models, such as weirs, piers, flow-measuring flumes or a wave generator are available as accessories and ensure a comprehensive programme of experiments. Most models are quickly and safely bolted to the bottom of the experimental section.

Learning objectives/experiments

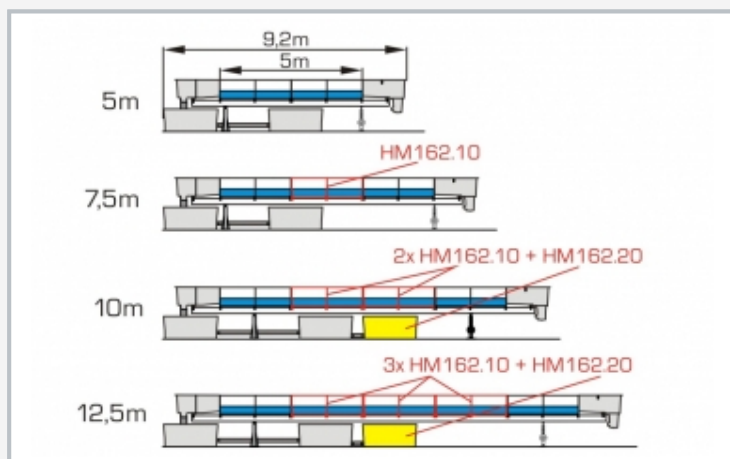
- together with optionally available models
 - ▶ uniform and non-uniform discharge
 - ▶ flow formulae
 - ▶ flow transition (hydraulic jump)
 - ▶ energy dissipation (hydraulic jump, stilling basin)
 - ▶ flow over control structures: weirs (sharp-crested, broad-crested, ogee-crested)
 - ▶ flow over control structures: discharge under gates
 - ▶ flow-measuring flumes
 - ▶ local losses due to obstacles
 - ▶ transient flow: waves
 - ▶ vibrating piles
 - ▶ sediment transport

HM 162

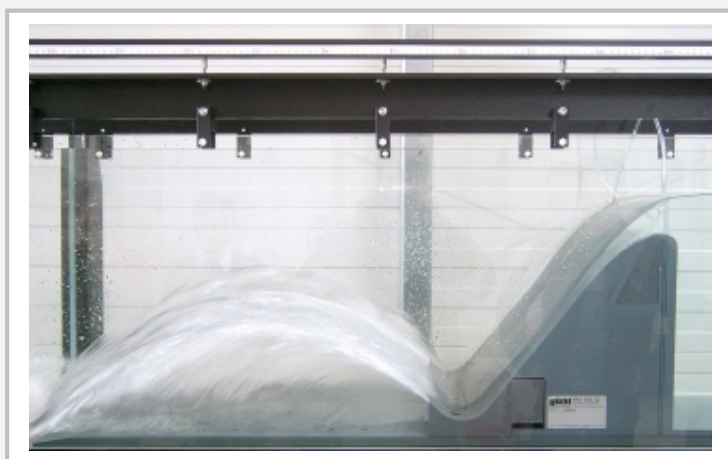
Experimental flume 309x450mm



1 water tank, 2 outlet element, 3 switch box, 4 pump, 5 flow rate sensor, 6 experimental section, 7 inclination adjustment, 8 inlet element



HM 162 with experimental sections of different lengths (5...12,5m). Depending on the desired length, additional extension elements HM 162.10 and water tanks HM 162.20 are required.



Overfall at ogee-crested weir with ski jump spillway HM 162.32.

Specification

- [1] basic principles of open-channel flow
- [2] experimental flume with experimental section, inlet and outlet element and closed water circuit
- [3] length of the experimental section 5m, up to 12,5m possible with additional extension elements HM 162.10
- [4] smoothly adjustable inclination of the experimental section
- [5] experimental section with 20 evenly spaced threaded holes on the bottom for installing models or for water level measurement using pressure
- [6] side walls of the experimental section are made of tempered glass for excellent observation of the experiments
- [7] experimental section with guide rails for the optionally available instrument carrier HM 162.59
- [8] all surfaces in contact with water are made of corrosion-resistant materials
- [9] flow-optimised inlet element for low-turbulence entry into the experimental section
- [10] closed water circuit with 2 water tanks, pump, electromagnetic flow sensor and flow control
- [11] models from all fields of hydraulic engineering available as accessories

Technical data

Experimental section

- possible lengths: 5m-7,5m-10m-12,5m
- flow cross-section WxH: 309x450mm
- inclination adjustment: -0,5...+2,5%

2 tanks

- made of GRP
- 1100L each

Pump

- power consumption: 4kW
- max. flow rate: 132m³/h
- max. head: 16,1m
- speed: 1450min⁻¹

Measuring ranges

- flow rate: 5,4...130m³/h

400V, 50Hz, 3 phases

400V, 60Hz, 3 phases

230V, 60Hz, 3 phases

UL/CSA optional

LxWxH: 9170x1000x2100mm (experimental section 5m)

Empty weight: approx. 1500kg

Scope of delivery

- 1 experimental flume
- 1 set of tools
- 1 set of instructional material

HM 162

Experimental flume 309x450mm

Optional accessories

Control structures

070.16229	HM 162.29	Sluice gate
070.16240	HM 162.40	Radial gate
070.16230	HM 162.30	Set of plate weirs, four types
070.16231	HM 162.31	Broad-crested weir
070.16233	HM 162.33	Crump weir
070.16236	HM 162.36	Siphon weir
070.16238	HM 162.38	Rake
070.16234	HM 162.34	Ogee-crested weir with pressure measurement
070.16232	HM 162.32	Ogee-crested weir with two weir outlets
070.16235	HM 162.35	Elements for energy dissipation

Change in cross-section

070.16244	HM 162.44	Sill
070.16245	HM 162.45	Culvert
070.16246	HM 162.46	Set of piers, seven profiles
070.16277	HM 162.77	Flume bottom with pebble stones

Flow-measuring flumes

070.16251	HM 162.51	Venturi flume
070.16255	HM 162.55	Parshall flume
070.16263	HM 162.63	Trapezoidal flume

Other experiments

070.16241	HM 162.41	Wave generator
070.16280	HM 162.80	Set of beaches
070.16261	HM 162.61	Vibrating piles
070.16271	HM 162.71	Closed sediment circuit
070.16272	HM 162.72	Sediment trap
070.16273	HM 162.73	Sediment feeder

Measuring instruments

070.16252	HM 162.52	Level gauge
070.16291	HM 162.91	Digital level gauge
070.16264	HM 162.64	Velocity meter
070.16250	HM 162.50	Pitotstatic tube
070.16253	HM 162.53	Ten tube manometers
070.16213	HM 162.13	Electronic pressure measurement, 10x 0...50mbar
070.16259	HM 162.59	Instrument carrier

Other accessories

070.16257	HM 162.57	Electrical inclination adjustment
070.16212	HM 162.12	System for data acquisition and automation
070.16210	HM 162.10	Extension element of the experimental flume
070.16220	HM 162.20	Water tank