

HM 290

Base unit for turbines



Description

- closed water circuit for supplying turbines
- GUNT software for data acquisition, visualisation and operation
- basic experiments on centrifugal pumps
- part of the GUNT Labline fluid energy machines

The base unit HM 290 is required to supply different turbines. Additionally, the base unit enables basic experiments on a centrifugal pump.

The closed water circuit of HM 290 features a water tank and a centrifugal pump with variable speed via a frequency converter. The turbine to be investigated (HM 288, HM 289, HM 291) is placed on the tank cover and is connected to the base unit via a hose. The flow rate hence the pressure applied to the turbine is adjusted by pump speed. The head and the pressure upstream of the turbine can be kept constant by a pressure control. A damping plate inside the tank ensures a low air entry into the circulating water. Basic pump experiments can be performed using the throttle valve included. The throttle valve is placed upon the tank cover instead of the turbine.

The base unit is fitted with sensors for pressure and flow rate. The microprocessor-based measuring technique is well protected in the housing. The measured values are transmitted directly to a PC via USB where they can be analysed using the software included.

All the advantages of software-supported experiments with operation and evaluation are offered by the GUNT software and the microprocessor.

Following turbines are available: a reaction turbine (HM 288), a Pelton turbine (HM 289) and an action turbine (HM 291).

Learning objectives/experiments

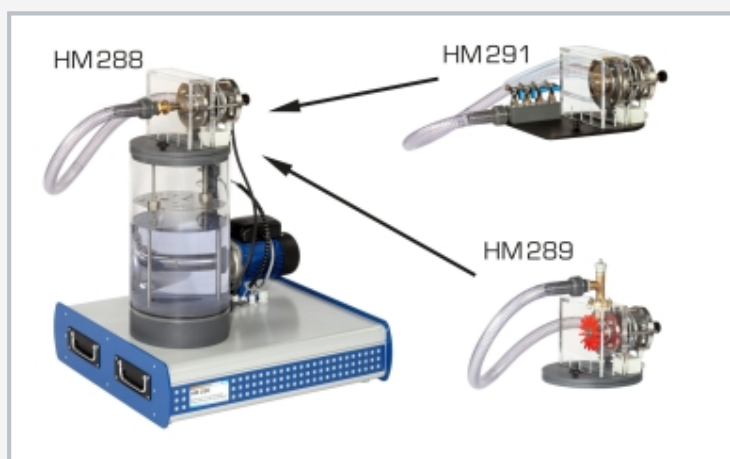
- basic experiments on a centrifugal pump
- together with the turbines HM 288, HM 289 or HM 291
 - ▶ determination of typical turbine curves
 - ▶ performance curves at varying turbine speeds
 - ▶ determination of efficiencies

HM 290

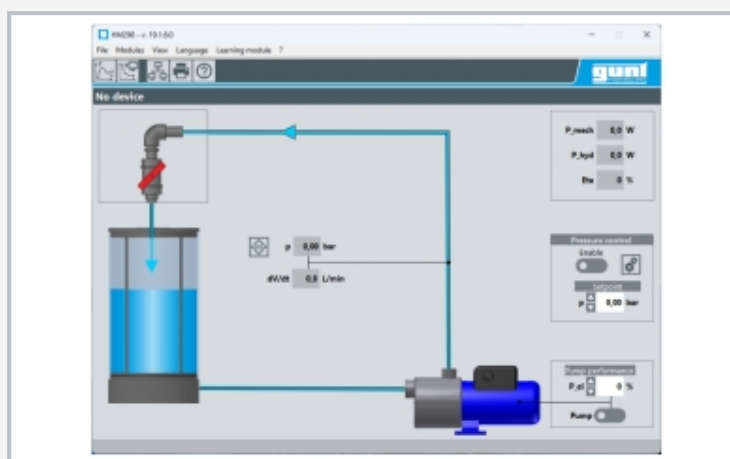
Base unit for turbines



1 water connection, 2 throttle valve for pump experiments, 3 tank cover, 4 damping plate, 5 water tank, 6 pump with motor, 7 pressure sensor, 8 flow meter



The illustration shows the base unit HM 290 together with the reaction turbine HM 288. The turbines HM 289 or HM 291 can be investigated after easily interchanging them.



Operating interface of the powerful software: experiment with the pump

Specification

- [1] supplying the turbines HM 288, HM 289 or HM 291 with water under pressure
- [2] basic experiments on centrifugal pumps
- [3] together with the turbines: investigation of operating behaviour and recording of turbine characteristics
- [4] includes pump and transparent water tank
- [5] low air entry into circulating water ensured by damping plate inside the tank
- [6] variable pump speed via frequency converter
- [7] sensors for flow rate and pressure
- [8] due to integrated microprocessor-based instrumentation no additional devices with error-prone wiring are required
- [9] display and evaluation of the measured values as well as operation of the unit via software
- [10] GUNT software with control functions and data acquisition via USB under Windows 10

Technical data

Pump

- power consumption: 670W
- max. flow rate: 70L/min
- max. head: 35,4m

Water tank: approx. 15L

Measuring ranges

- flow rate: 3,9...50L/min
- pressure: -1...5bar

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 670x600x840mm

Weight: approx. 47kg

Required for operation

PC with Windows

Scope of delivery

- 1 experimental unit
- 1 GUNT software + USB cable
- 1 set of instructional material

HM 290

Base unit for turbines

Optional accessories

WP 300.09	Laboratory trolley
HM 288	Experiments with a reaction turbine
HM 289	Experiments with a Pelton turbine
HM 291	Experiments with an action turbine