

HM 290

Base Unit for Turbines



- * **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**

Technical Description

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 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 hose. The flow rate respectively the pressure applied to the turbine is adjusted by pump speed. The height of fall 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 circulating water. Basic pump experiments can be performed using the included throttle valve. 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. All the advantages of software-supported experiments and evaluation are offered by the GUNT software and the microprocessor. The connection to a PC is made by USB.

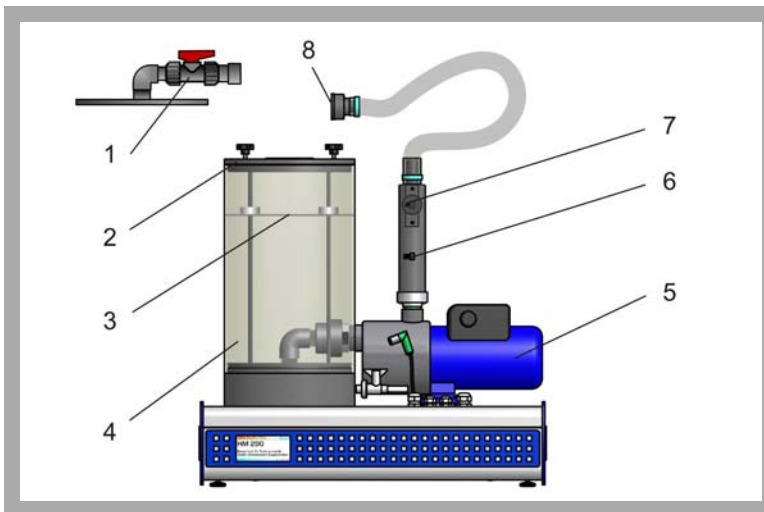
Following turbines are available: a reaction turbine (HM 288), a Pelton turbine (HM 289) and an action turbine (HM 291).

The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

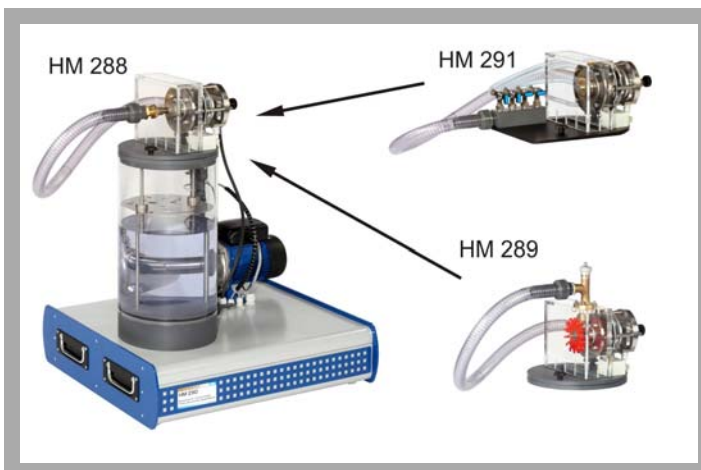
Learning Objectives / Experiments

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

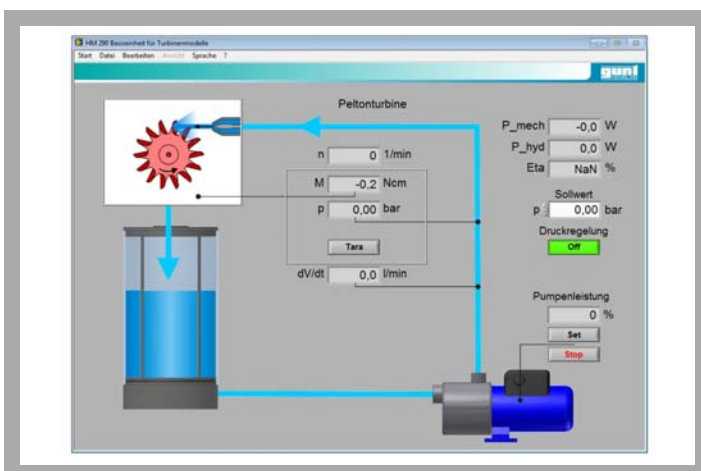
HM 290 *Base Unit for Turbines*



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



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: experiments with the Pelton turbine HM 289

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] microprocessor-based measuring technique
- [9] unit-specific GUNT software for data acquisition and operation via USB under Windows XP, Windows Vista or Windows 7

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

Dimensions and Weight

- LxWxH: 670x600x630mm
Weight: approx. 28kg

Required for Operation

- 230V, 50/60Hz, 1 phase or 120V, 60Hz/CSA, 1 phase

Scope of Delivery

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

Order Details

070.29000 HM 290 Base Unit for Turbines

HM 290

Base Unit for Turbines

Available accessories and options:

Product no. Order text

070.28800 HM 288 Experiments with a Reaction Turbine

070.28800 HM 289 Experiments with a Pelton Turbine

070.28800 HM 291 Experiments with an Action Turbine