

CT 159

Modular test stand for single-cylinder engines, 3kW



Learning objectives/experiments

- in conjunction with the HM 365 load unit and one of the engines (CT 150 – CT 153)
 - ▶ plotting of torque and power curves
 - ▶ determination of specific fuel consumption
 - ▶ determination of volumetric efficiency and lambda (fuel-air ratio)
 - ▶ determination of the frictional power of the engine (in passive mode)

Description

- **setup of a complete test stand in conjunction with the universal drive and brake unit HM 365 and an engine**
- **test stand for single-cylinder internal combustion engines up to 3kW**
- **HM 365 drive and brake unit used as belt-driven starter-generator**
- **part of the GUNT-FEMLine**

This test stand measures the power output of internal combustion engines delivering up to 3kW. The complete test stand consists of three main elements: The CT 159 for mounting of the engine and as a control unit, the universal drive and brake unit HM 365 as a load unit and a choice of engine: four-stroke diesel engine (CT 151), two-stroke petrol engine (CT 153) or four-stroke petrol engine (CT 150).

The main function of CT 159 is to mount the engine, supply it with fuel and air and record and display relevant measurement data. The engine is mounted on a vibration-insulated base plate and connected by way of a belt drive to HM 365.

HM 365 is initially used to start the engine. As soon as the engine is running, HM 365 acts as a brake for applying a load to the engine.

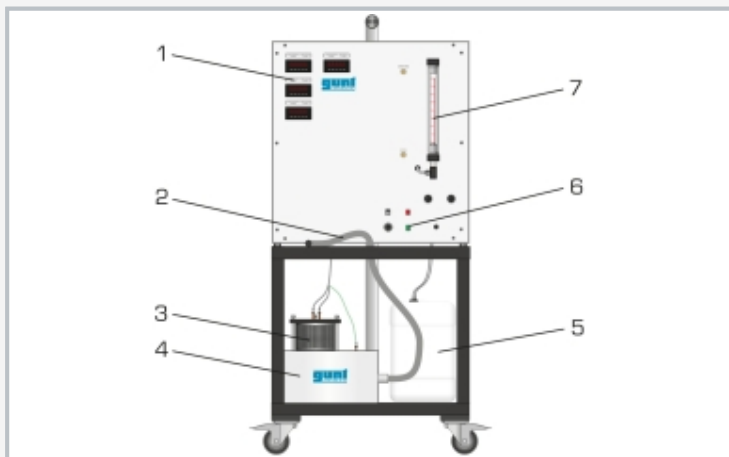
The lower section of the mobile frame contains fuel tanks and a stabilisation tank for the intake air.

The vibration-dampened switch cabinet contains digital displays for temperatures (one display each for exhaust gas, fuel and intake air) and air consumption. The speed and torque are adjusted and displayed on the HM 365.

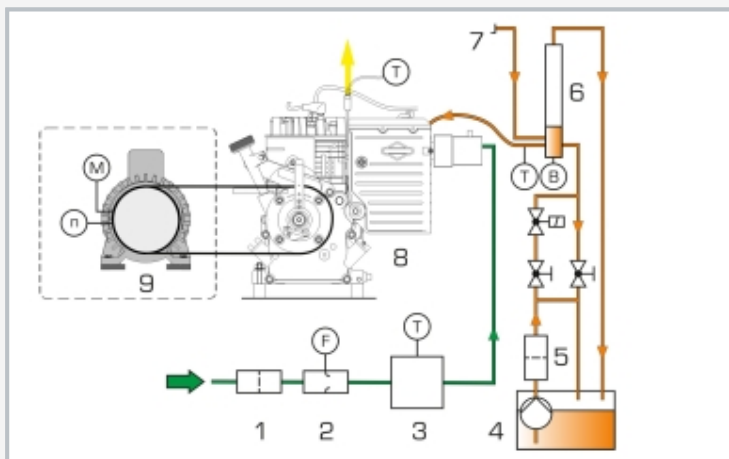
The measured values are transmitted directly to a PC via USB. The data acquisition software is included.

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1 displays, 2 air hose, 3 air filter, 4 stabilisation tank, 5 fuel tank with pump, 6 connections and controls, 7 measuring tube for fuel consumption



1 air filter, 2 orifice plate, 3 stabilisation tank, 4 fuel tank with pump, 5 fuel filter, 6 measuring tube for fuel consumption, 7 diesel return, 8 motor (CT 150-CT 153), 9 HM 365; B fuel consumption, T temperature, F volumetric flow rate, n speed, M torque, orange: fuel, green: intake air, yellow: exhaust gas



Complete experimental setup with HM 365, CT 159 and CT 151

Specification

- [1] test stand for mounting of prepared single-cylinder engines (two-stroke and four-stroke) with a maximum power output of 3kW
- [2] engine started by HM 365
- [3] HM 365 acting as a brake generates the engine load
- [4] force transmission from engine to load unit via V-belt drive
- [5] continuous adjustment of speed and torque using HM 365
- [6] vibration-dampened switch cabinet for display and control
- [7] measuring tube with scale and pressure sensor for manual and electronic fuel consumption measurement
- [8] measurement and display of air consumption, ambient temperature and fuel temperature
- [9] measured value displays for engine exhaust gas temperature
- [10] stabilisation tank for intake air
- [11] 3 supply tanks for different fuels
- [12] GUNT software for data acquisition via USB under Windows 8.1, 10

Technical data

3 fuel tanks: 5L each

Measuring ranges

- temperature:
 - ▶ 0...100°C (ambient)
 - ▶ 0...100°C (fuel)
 - ▶ 0...1000°C (exhaust gas)
- air consumption: 30...333L/min
- fuel consumption: 0...50cm³/min

230V, 50Hz, 1 phase
 230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase
 UL/CSA optional
 LxWxH: 900x900x1900mm
 Weight: approx. 135kg

Required for operation

exhaust gas routing, ventilation
 PC with Windows recommended

Scope of delivery

- 1 test stand (devoid of engine and load unit)
- 1 set of tools
- 1 set of accessories
- 1 GUNT software + USB cable
- 1 set of instructional material

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Required accessories

Load unit		
070.36500	HM 365	Universal drive and brake unit
Engines		
063.15000	CT 150	Four-stroke petrol engine for CT 159
or		
063.15100	CT 151	Four-stroke diesel engine for CT 159
or		
063.15300	CT 153	Two-stroke petrol engine for CT 159

Optional accessories

for Remote Learning		
010.10000	GU 100	Web Access Box
with		
063.15900W	CT 159W	Web Access Software
Indication system		
063.15901	CT 159.01	Electronic engine indicating system for CT 159
with		
063.15903	CT 159.03	Pressure transducer and TDC sensor for CT 150
or		
063.15904	CT 159.04	Pressure transducer and TDC sensor for CT 151
or		
063.15905	CT 159.05	Pressure transducer and TDC sensor for CT 153
Exhaust gas analysis		
063.15902	CT 159.02	Exhaust gas analysing unit