ENGINE TEST BED (braking dynamometer) HVU 10/1 with MP Computer

This engine test bed is intended for testing high speed combustion engines.

In the following the basic design is described. A wide variety of standard functions is additionally available.

In basic design the engine test bed is not supposed to be run unattended, if internal faults of the test bed or external faults may lead to dangerous situations.

Loading system:	low-inertia hydrostatic braking unit	
sense of rotation:	seen from the engine to the braking unit: to be specified	
Max. speed (continuously permissible):	12.000	rpm
Min. sensed speed:	500	rpm
Min. permissible speed at max. torque:	600	rpm
Max. power at 6.000 rpm	10	kW
Load-carrying capacity depending on the speed	see table 10.792/3	
Max. torque up to 6.000 rpm	15,9	Nm
Max. torque above 6.000 rpm	see table 10.792/3	

The engine test bed consists of the braking and measuring unit, the oil cooler, and the control unit (evaluation, display and control unit with MP computer). The braking and measuring unit is connected by flexible tubes to the oil cooler and by cables and plugs to the control unit.

The braking and measuring unit is suitable for testing high speed engines with vibration insulation and horizontal axis of rotation. The engines to be tested including their vibration insulation are to be fixed on module plates. These module plates are adjusted on the table of the braking and measuring unit by a prismatic guide and then fixed by clamping sets.

The braking and measuring unit is fixed on a mobile support. This mobile support is also bearing the oil tank positioned above the braking and measuring unit.

A foundation or fixation to the floor are not required.

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Weight:	Braking and measuring unit including oil in the tank	approx.	kg
	Oil cooler including oil	approx.	kg
	Control unit	approx.	26 kg
Space required:	Braking and measuring unit	approx.	
	Oil cooler	approx.	
	Control unit	approx.	0,7 m x 0,8 m
Distances between the single units, length of cables and hoses:	depending on the desired positioning of the single units		
Electric supply:	220 V, 50/60 Hz with protection earth via 1,5 m cable with connector rated current ... A, max. fuse rating 16 A Other supply voltages are possible.		
Exhaust evacuation:	required, available on request		

Control and measurement

The control unit in the 19" desktop case contains:
- the MP computer,
- the control circuits for the hydrostatic braking unit,
- display and control circuits for the temperature of the oil cooler with a control of the ventilator at the oil cooler, and
- the required power supplies.

Protection class of the control unit: IP 20

Rotational speed n, torque M, power P, work (energy) W

Loading of the engine by the braking unit is controlled by limiting the brake speed. This is achieved by manually entering the desired speed value (analog input) at a manually operated input potentiometer. This potentiometer controls the braking unit via analogous control circuit.

The input potentiometer is installed in a separate hand-control housing and connected to the control unit via a spiral cable in such a way, that it can be operated from any point near the engine, if the control unit is positioned in an appropriate location.

A speed-stabilizing function of the MP computer with numerical input of the desired value can be optionally superimposed to the manual speed adjustment and allows fast and precise adjustment of the speed.

Speed measurement: digital incremental pick-up non-sensitive for sense of rotation

Torque measurement: analog measurement of the reactive torque at the braking unit by strain gage load cell

The MP computer displays the following measured and calculated values simultaneously via LED's 20 mm high:

Speed	display range		9999	rpm x 10
	display resolution		1	rpm x 10
Torque	display range	min.	16	Nm
	display resolution		0,01	Nm
	calibration value		10	Nm
Power	display range		99,99	kW
	display resolution		0,01	kW
Work (energy)	display range (automatic change-over)		9,999	kWh
		or	99,99	kWh
		or	999,9	kWh
		or	9999	kWh
	corresponding display resolution		0,001	kWh
		or	0,01	kWh
		or	0,1	kWh
		or	1	kWh

The work counter (kWh) can be set On/Off or reset.

Setting On/Off of the work counter controls at the same time the

determination of the specific fuel consumption (additional equipment)

Subject to change !

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