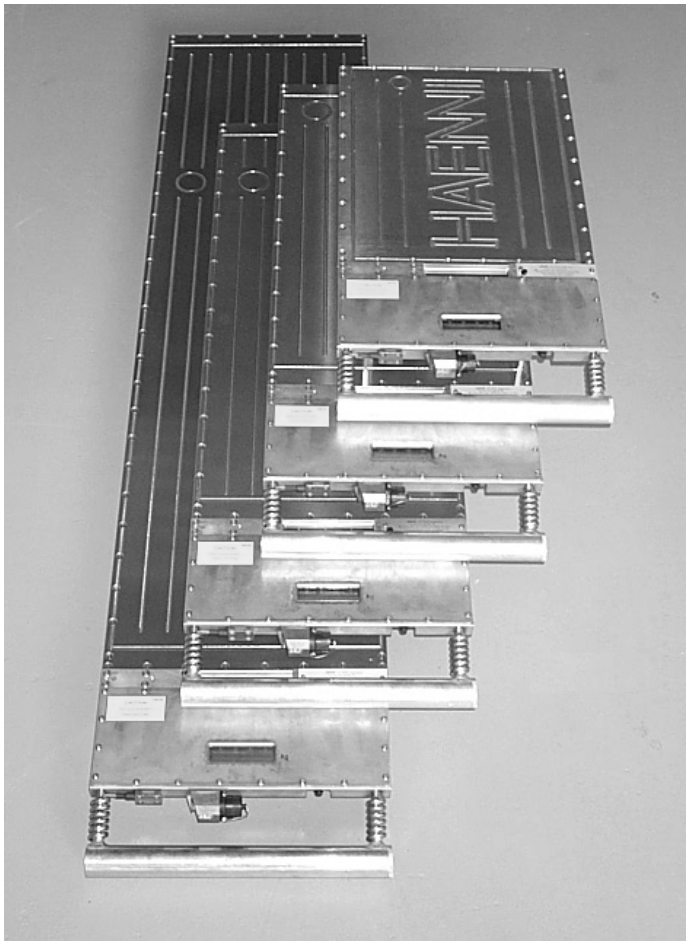
Electronic Wheel Load Scale WL 103

Application	Measurement of wheel and axle loads of vehicles with pneumatic tires.
Platform Size	Standard size for accommodating easily a dual tyre. Medium size for semi fixed installation. XL for weighing heavy haulage vehicles.
Ranges	0...2t 0...10t, 0...15t
Temperature range	-20...+60°C
Accuracy	OIML No. 76 Class 4, optionally with HAENNI works test report or intended for official test.
Execution	Aluminium alloys, water resistant IP 65 (IEC 144).
Supply	Integrated rechargeable power source, for 60h operation. Recharge (and operation) by 12V car battery or AC adapter.
Data in- and output	RS 232 C
Electrical connection	Robust plug, watertight
Weight	14 kg (0...2t) 17 kg (0...10t, 0...15t, standard) 20 kg (0...10t, 0...15t, medium) 29 kg (0...10t, 0...15t, XL)
Platform height	19 mm (0...2t) 17 mm (0...10t, 0...15t)



Selection Chart

Ordering example:	**WL 103 / 4 1 1 . 1 1 1 / 10Y / . . . .**					
Temperature and Standard	- 20 . . . + 60°C **4** OIML No. 76 Cl. 4 **1**					
Division	Standard **1** Smaller [3] **3**					
Platform Size	Standard (small) **1** Medium **4** Extra Long **9**					
Ranges	0 . . . 2t **08Y** 0 . . . 10t **10Y** 0 . . . 15t **20Y**					
Options	Heavy duty ground plate with rubber base **802** For official test. The ordering code is determined after the approval procedure					

Operation

Because of its light weight, the wheel load scale WL 103 is easy to transport and can be used at any time without the need of ramps. For efficient measurements, it is recommended to work with at least two units. Measurements should be made on firm and level ground. The scale is placed close to in front of the wheel to be tested and the vehicle is driven onto the platform.
The wheel load is indicated directly on the digital liquid crystal display. With a connecting cable, two scales can be used as an axle load scale. Up to 12 scales can be connected serially to a separate processing unit or to a personal computer.

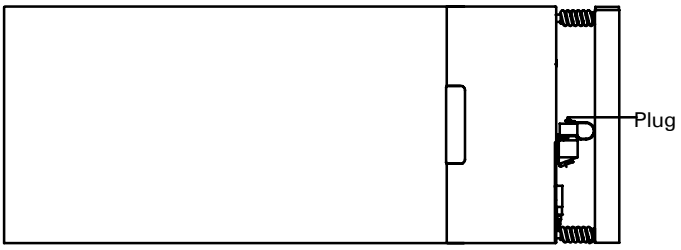
Accessories

For accessories as levelling mats, cables, pads for weighing point loads, carrying cases etc. refer to data sheet W9.100.

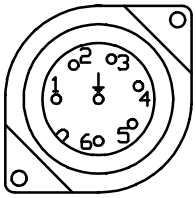
Official Test

In most countries the wheel load scale WL 103 is approved by official test laboratories. The 10 t and the 2 t range are tested and certified by OIML[1].

Electrical connection



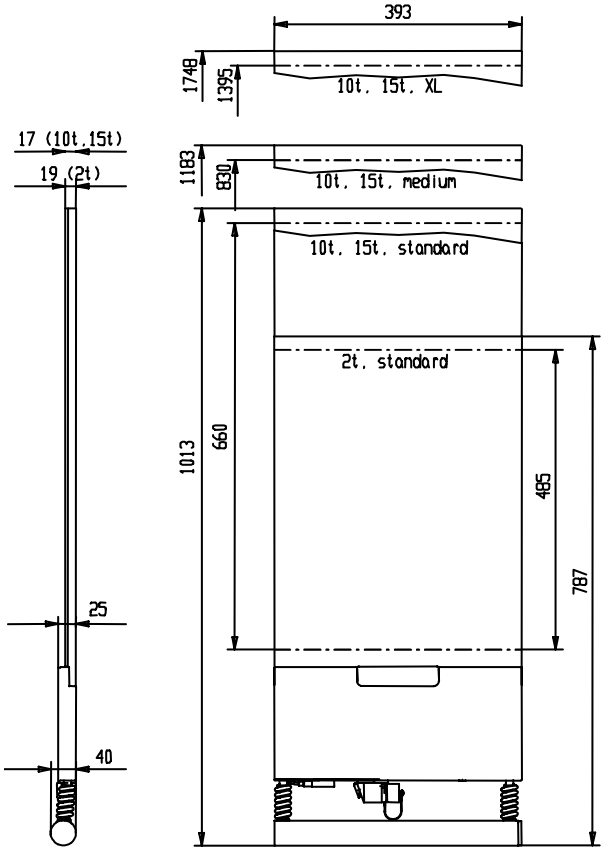
Plug view



1	Code
2	Code
3	Data output
4	V_0
5	V_B 10.8...16V
6	Data input
⊥	Shield

Electronic Wheel Load Scale WL 103

Dimensions



Construction and Function

The wheel load scale comprises of a flat weighing platform with a laterally connected indicating device.

The weighing platform has a measuring element in the form of a grid of flat oval tubes mounted between metal plates. All tubes are connected together and to a sensor located in the indicating device. The whole system is filled with a non freezing liquid and is hermetically sealed. The elastic tubes are pressed between the moving cover plate and the massive ground plate when the platform is loaded.
The liquid expelled is measured by the sensor which produces a electrical signal proportional to the applied load.
For compensation of all kinds of temperature effects the platform is equipped with a temperature sensor in the form of a loop.
The signals of the volume and the temperature sensor are digitised in the electronic circuit and processed by the micro processor to a weight value, which is indicated at the display.

At switch on of the scale a test routine is activated and the indication is set to zero. In service the indication is kept automatically at zero when the platform is unloaded, so there is no need for a zero adjusting screw.

If desired, two scales may be connected together to get an axle load scale. Each scale will indicate the sum of both units. An other possibility is to connect up to 12 scales serially to a processing unit or a personal computer. The signals are compatible to RS 232.
The charging circuit for the built in Ni-Cd accumulators avoids an overcharge. A total discharge is not possible because of the auto shutdown of the scale, when the lower limit of the battery voltage is reached. The result is a long lifetime of the batteries.

The construction of the platform is specially designed for measuring the weight of vehicles with air filled tires. Hard rubber tires and rigid items as containers and so on, are not suitable, because the load will be distributed on a too small surface. In such cases a measurement is possible by using the specially designed HAENNI load distribution pads.

Technical Data

Range		0...2 t		0...10 t		0..15t
Division (standard / smaller[3])		10 kg	5 kg	50 kg	20 kg	50 kg
Accuracy at first calibration	Standard Division	±5 kg (up to 500 kg) ±10 kg (500 kg..2000 kg)		±25 kg (up to 2,5 t) ±50 kg (2,5 t...10 t)		±25 kg (up to 2,5 t) ±50 kg (2,5 t...10 t) ±75 kg (10 t...15 t)
	Smaller Division	±2.5 kg (up to 250 kg ±5 kg (250 kg...1000 kg) ±7.5 kg (1000 kg ...2000 kg)		±10 kg (up to 1 t) ±20 kg (1 t...4 t) ±30 kg (4 t...10 t)		-----
in operation		Twice the tolerance at first calibration				
Loading limit		2,5 t		12,5 t		18 t
Permissible load per area		6 kg/cm^2		12 kg/cm^2		15 kg/cm^2
Loading limit per area		12 kg/cm^2		24 kg/cm^2		30 kg/cm^2
Operating temperature		-20...+60°C	0...+40°C	-20...+60°C		
Storage temperature		-30°C ....+60°C				
Electromagnetic susceptibility		OIML Nr. 76 [1]				
Zero tracking, test etc..		automatic according OIML Nr. 76 [1]				
Type of protection (IEC 144)		IP 65				
Overrunable		completely overrunable incl. cable				
Operating site		Firm and level ground, max. 10 mm bend through, max. 5% slope (≈3°)				
Active surface	in driving direction	345 mm		380 (12 kg/cm^2)[2] 393 (6 kg/cm^2)[2]		380 (15 kg/cm^2)[2] 393 (6 kg/cm^2)[2]
	across to driving dir.	see sketch				
Over all dimensions		see sketch				
Power supply		Integrated accumulators for 60h service Recharge and operation from 12V car battery or AC adapter				

1) OIML is the abbreviation for Organisation Internationale de Métrologie Légale.
2) In practical operation the complete surface may be used, because the ground pressure in the marginal area of the tyre foot print does not exceed 6 kg/cm^2 .
3) The smaller division should be chosen for specific applications only. In most applications the standard division is the better choice. Refer also to paper P 1196