

CL 170

Brake Tester (Decelerometer) CL 170

Purpose

Decelerometer CL 170 is a portable device for testing brakes by measurement of braking deceleration of brake system in road vehicles, as such as cars, trucks and motor-cycles (for testing motor-cycles is necessary a special clamp adapter, which is a standard equipment of CL 170 set). The measurements are taken in technical inspection stations.

The device CL170 measures the real acceleration in two orthogonal axis, which are situated in the plane of vehicle longitudinal symmetry. A special algorithm calculating measurement results makes possible eliminating of influence concerning angle variation from the level in vehicle by using brakes for the measurement results. The device measures also the load force on brake pedal by use of a precise strain gage force sensor.

The measurement results from braking deceleration and load force on brake pedal are stored during braking and after processing are stored in the EE-PROM memory. The decelerometer CL170 analyses additionally the measurement results as satisfactory or not. The results are shown on the display and can be transmitted by RS 232 to the PC for visualization, printout and data acquisition. The device can be equipped with a thermal printer, what makes a direct printout of measurements possible.





Specifications:

Acceleration range measurement	(+/-) 15 m/s ²
Resolution of acceleration measurement	0,1 m/s ²
Acceleration measurement error	< (+/-) 0,1 m/s ²
Maximal allowable overload capacity for acceleration sensors	100 m/s ² by maximum 0,5 ms
Force measurement range on brake pedal	-10 up to +120 daN
Resolution of force measurement	1 daN
Force measurement error	< (+/-) 1 daN
Maximal allowable overload capacity for force sensors	150 daN
Memory for measurements	up to 16
Maximal single measurement time	10 s
Measurement velocity	100 measurements / sec.
Data transmission	in series RS232
Transmission parameters	9600 bps, 8 info bits, 2 stop bits, without parity controll
Electrical safety class - device - power pack	III class II class
Safety degree - device - force sensor	IP51 IP66
Operating temperature	0 - 70°C
Storing temperature	-10 ÷ 70°C





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Barometric pressure	80 - 106 kPa
Power input	<80 mA without illuminating LCD <140 mA with illuminating LCD
Operating time	10 h without illumination LCD ca 6 h with illumination LCD
Power supply	Internal akupack 4,8 V or from vehicle instalation (11,4-14,0 V)
Type of akupack	4 cells NiCd (4 x 1,2 V) R6, 1100 mAh
Battery charging	Feeder 12 V/250 mA
Signalling of battery discharging	Sound signal every second
Battery charging time	14-16 h
Overal dimensions	220 mm x 115 mm x 98 mm
Weight of device	620 g
Weight of force sensor	350 g
Weight of external switch	125 g

CL 170 Set Standard equipment

1. Decelerometer CL170

1 pcs.



CL 170 Set with force sensor on brake pedal



Gauge CL 170

CL 170



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CL 170

- Touch-switch keyboard with 21key buttons
- Connection RS 232 to printer / PC
- RCT with battery maintenance
- Internal accupack
- Input for external switch START

Detailed informations:

The gauge interface has a LCD display (4 type lines 20 alphanumeric characters each) and a touch-switch keyboard with 21 key buttons.
The LCD display shows measurement results and commands to transmit measurements to printer or PC.
Key buttons on the keyboard mean:
ZAŁ - ON,
WYŁ - OFF,
1, 2, 3, 4, 5, 6, 7, 8, 9, 0 – to select options In program and to inscribe vehicle's data and test details,
ARROWS – to select input (registration number, vehicle and brakes type),
AKC – acceptance for input,
REZ – give up the function,
LCD - ON/OFF for display illumination,
START – acceptance for gauge position in vehicle, beginning and end of registration,

STOP – used by calibration.

There are following junctions on the left side of housing:

- 6-PIN female to connect the force sensor on brake pedal,
- 4-PIN female to connect the external switch START.

There are following junctions on the right side of housing:

- 4-PIN female RS 232 to communication with PC or printer,
- 3-PIN female to connect the gauge to the vehicle electric system or to the external feeder 12 V/250 mA.

CL170 was designed with the idea to do the usage maximal easy. Due to an external switch START, the measurement can be done by an individual. The external switch START has exactly the same functions as the key button START in gauge interface. The switch housing has additional a hook to hitch the switch in any for the operator suitable place, what makes the measurement safe and easy.

Computer program CL170PC

The computer program CL170PC makes possible:

- readout of measurements from decelerometer CL170 by use of COM1 or COM2
- automatic write of measurements in files of program CL170PC
- presentation of results in test version and as a graph, showing deceleration of braking in time function
- introducing of detailed vehicle information,
- printout of protocol with graphs concerning deceleration and force on brake pedal in time function,
- storage of measurement results in PC, which can be read out with a text editor or a calculation sheet,
- readout from PC of measurement results in an internal mode of decelerometer.

System and equipment requirements



motor-cycle clamp

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printout page 1



printout page 2



Zakład Elektroniki Pomiarowej Wielkości Nieelektrycznych

System and equipment requirements

The CL170PC program requires Windows(R) 95 or Windows (R) 98 on PC. The computer ought to have 32 MB RAM-memory at least, a VGA card with resolution 800×600 at least and one free input COM1 or COM2 for communication with the decelerometer.

The CL170PC program consists of only one file: CL170PC.EXE, which has to copied into a new folder renamed optionally (recommended folder C:\CL170). For a faster start is recommended to create an abbreviation on the screen.

The files with identified measurement results from decelerometer are automatically stored in folders corresponding to the year of measurements. The name of file is identic as the vehicle identification, which is created by decelerometer before measurement.

