



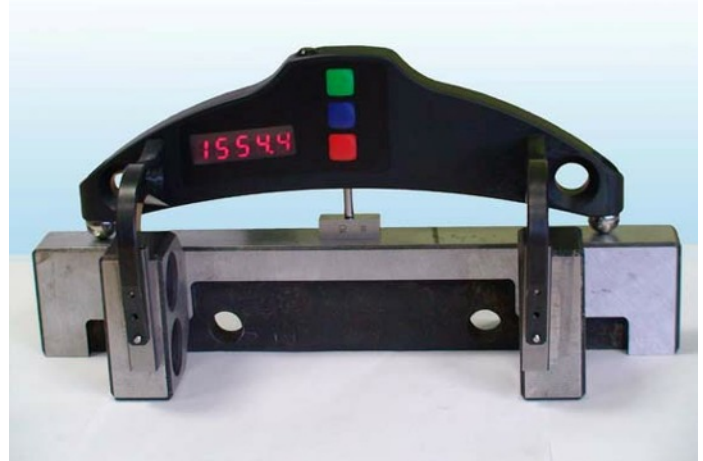
Devices for measuring geometrical parameters of rolling stock wheel sets

■ Application domain

The devices are intended for measuring diameter of wheel rolling circle, geometric parameters of wheel flanges, tire thickness and for taking roll surface wear profile of wheel sets of railway, tube and tram vehicles.

Wheel diameter measuring gauge, FDK Series

Electronic gauge is designed for measuring wheel rolling circle diameter. Measurements are made directly on rolling stock without wheel set roll-out. The measurement of the diameter is performed according to the "three points" technique, without the complete wheel coverage. The gauge contains numeric display to show the value of the wheel diameter



Laser wheel profilometer, FDKP Series

The laser profilometer is employed for measuring geometrical parameters of the wheel flange (thickness, slope, height), tire thickness and for taking full profile of the wheel roll surface. An FDRF603 laser module placed inside the profilometer casing performs linear scanning of the wheel surface being driven by a mini-stepper. A sensor placed inside the grip makes it possible to measure the tire thickness. The mobile computer connected to the profilometer performs conversion co-ordinates with respect to the wheel, calculation, display and storage of parameters and profiles (up to 1000 in number) for subsequent transmission to a wheel-set wear database management system.



■ Devices performance specification

Wheel diameter measurement range, mm	on request
Flange height measurement range, mm	20...45
Flange slope measurement range, mm	3...15
Flange thickness measurement range, mm	20...40
Profile taking range	full profile
Diameter measurement error, mm	±0.2
Measurement error for other parameters	±0.1

Software for automated wear control of wheel sets

- manual and automatic (using FDKP series devices) entry of data about wheel sets wear level for the locomotive fleet of a depot;
- automatic control of the wear in excess of the permissible level;
- maintenance of inspection reports and wear records log;
- automatic formation of reports on the intensity of wheel sets wear;
- general analysis of the wheel sets condition;
- projection of the date the limiting wear is reached;
- automatic analysis and optimisation of end re-rolling operations taking the wheel sets reserve into account;
- in-process examination of wheel sets profile changes as compared to any normal profile (using an FDKP laser profile-meter);
- automatic formation of any records and reports.

Electronic gauge is designed for measuring wheel rolling circle diameter (amount of wear) of railway, metro and tram in the course of checkup, examination, repair and formation of wheel sets. Measurements are made directly on rolling stock without wheel set roll-out.

1 BASIC TECHNICAL CHARACTERISTICS

Model	FDK
Measurement range, mm	600...1300 or on request
Measurement error, mm	±0.2
Indication discreteness, mm	0.1mm, 0.01mm* or 0.01'
Position of measurement, S, mm	on request
Distance between axes of ball bearings of the gauge (base), B, mm	200±0,5 or 250±0,5 or 350±0,5
Display	build-in, LED
Operating temperature, °C	-5...+40
Weigh, kg	0,5
Dimensions	figure 1,
Power supply	rechargeable battery, 2 x AAA 1.2V

2 EXAMPLE OF ITEM DESIGNATION WHEN ORDERING

FDK-S/B-MIN/MAX-X

Symbol	Description
S	Position of measurement, mm
B	Base, mm
MIN	Bottom of measuring range, mm
MAX	Up of measuring range, mm
X	Position of indication. A – Indication is at the side of side supports (figure A), B – Indication is at opposite side (figure B)

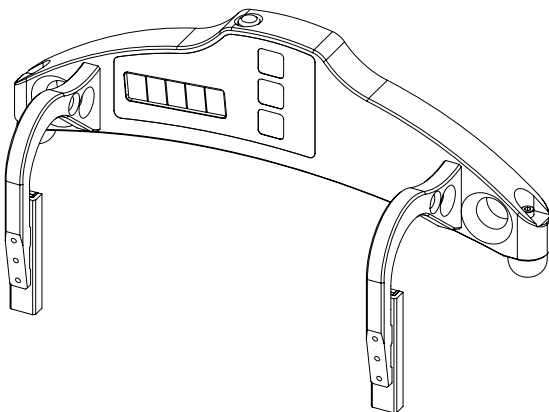


Fig.A

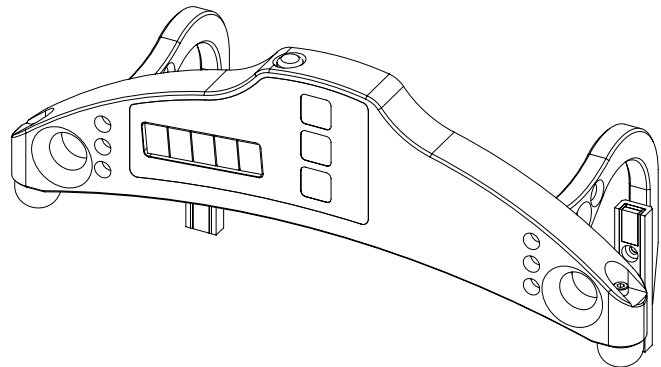


Fig.B

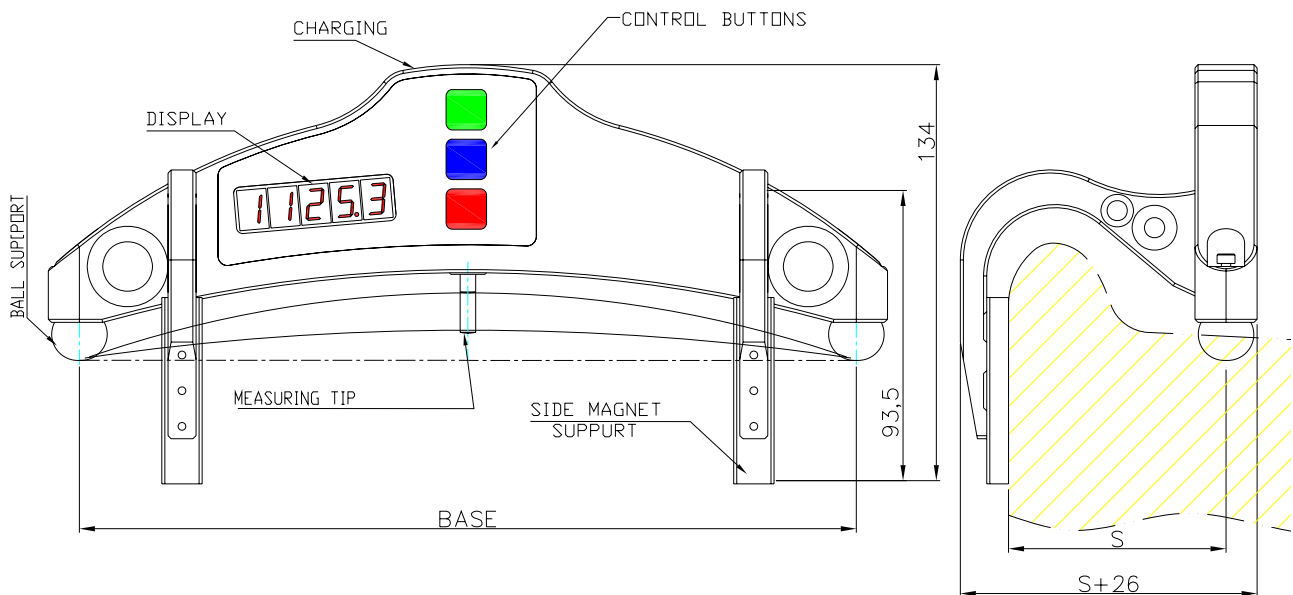
3 DELIVERY SET

Name	Quantity	Weight, kg
Wheel diameter measuring gauge FDK series	1 piece	0,5
Charger	1 piece	0,2
Manual	1	piece
Case	1 piece	
Calibration tools (option)	on	request
Flat block RF510.11.000 (fig.2)	-	
Reference wheel block for calibrating (fig/3)	-	

4 DESIGN

Electronic gauge contains two ball supports to place the gauge onto the roll surface, two side supports to base the gauge to the wheel edge and a measuring tip.

There is a digital numeric display and control buttons on the front panel of the gauge. "Charge" connector for charging device connection is situated on the top panel of the gauge. An accumulator batteries are a source of power supply. The accumulator batteries are easy to change.



5 OPERATION PRINCIPLE

The measurement of the diameter is performed according to the "three points" technique, without the complete wheel coverage. The measurement method is based on the diameter calculation by the known length of the segment chord (the distance between the ball bearings centers), which is obtained at placing the gauge onto the wheel. The saggitta of the segment is measured by means of the displacement converter.

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