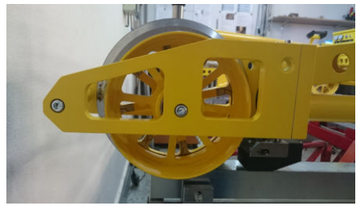
Wheel diameter 150 mm

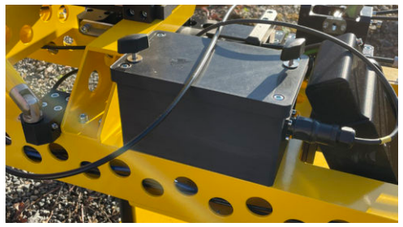
The main function of the enlarged wheels to be used on the trolley is to more easily overcome obstacles that could be on the track, especially joints, level crossings and switches (switch blade tip and frog area).



External removable battery box

Battery type: Li-Ion 21.6 V / 10 Ah

20 hours without battery charge

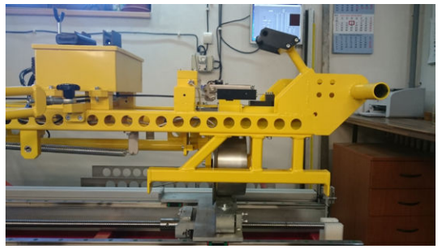


Two Rail profiles laser cameras

Allows precise measurement of rail profiles both left and right.

Protection bracket

Protection brackets is installed on the single wheel. In case of derailment it could reduce damage to the trolley.



Proximity sensors

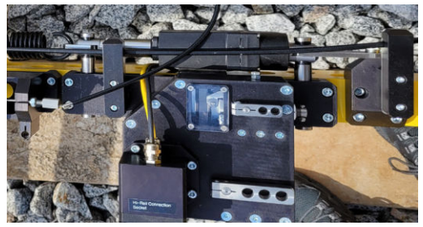
There are three contactless inductive sensors installed on the trolley to monitor contact with the rails. In the event that one of the sensors loses contact with the rail there are both visual and acoustic indications (on the trolley and inside the cabin of the towing vehicle). This warning may indicate that the trolley has derailed, but it also indicates passing of joints and frogs.

Failsafe brake

An automatic trolley brake is activated when one of the wheels of the trolley loses contact with the rail. It is also possible to activate brake by using the remote control unit.

Tow bar automatic decoupling mechanism

The tow bar is automatically disconnected when one of the wheels of the trolley loses contact with rail. The same effect can be achieved if the failsafe brake is activated by the remote control unit. In case of derailment the tow bar is decoupled immediately and the automatic brake is activated with 1,5 s delay.



Switch brake (spring arresting system)

The switch brake eliminates the spring force, reduces the trolley gauge and allows the trolley to pass frog area.

Manufacturer:
Komercni zeleznicni vyzkum, spol. s r.o.
U Kaplicky 1199
165 00 PRAGUE
Czech Republic

www.kzv.cz

Track recording trolley for track geometry and rail profiles designed for towing

KRAB 84.09 NCI

The Krab 84.09 NCI is specially designed for towing. The measuring system contains mechanisms protecting the trolley from derailment. The trolley can be used in tracks with gauge from 762 mm. The track Alignment, Top, Gauge and guarding rails are measured optically using two 3D cameras and IMU.

Non-contact measuring technology is achieved using 3D cameras and the IMU. The main advantage of the non-contact concept is the measuring of track geometry and profiles of both rails using one device. Wear of the rails is determined by reading the track rail profiles (vertical, horizontal, by user-defined angle, etc.). Using of the IMU improves the accuracy of track curvature measurements, which is essential for determining the correct track layout parameters

MEASURED VALUES

During the measuring run the following track parameters are scanned:

- **alignment** (horizontal versines) of the right rail
- **top** (vertical versines) of the right rail
- **gauge**
- **cant**
- **twist**
- **distance**
- **speed**
- **rail profiles**

The following derived geometric signals are computed in real time:

- **Twist for selectable length of chord**
- **Track curvature (radius R)**
- **Track rail lateral/vertical wear, running edge angle**
- **Guarding rail height and groove width.**

TRANSDUCERS TO BE USED

The trolley also uses contact potentiometric sensors combined with an electronic inclinometer. It is equipped with two oedometers for independent measurement of the distance traveled on the left and right rails.

ON BOARD COMPUTER

The real time processing of signals from the sensors is performed by rugged measuring computer Getac (Windows operating system) with Krab OnBoard 2.0 measuring software, whereby the following items are determined:

- reading and scanning of signals given above
- on-line processing of the signals:
  - anti-aliasing
  - smoothing of long wave part
  - optical and acoustical signalling when the geometry data exceed the selectable thresholds
- display of numerical values of the geometry data
- entry of the geometry data into non-erasable storage of the on-board computer at the distance 0,25 m (the measuring distance depends on memory, e.g. 1000 km)
- entry of the information describing the track section to be measured
- entry selected events (with the exact position along the route

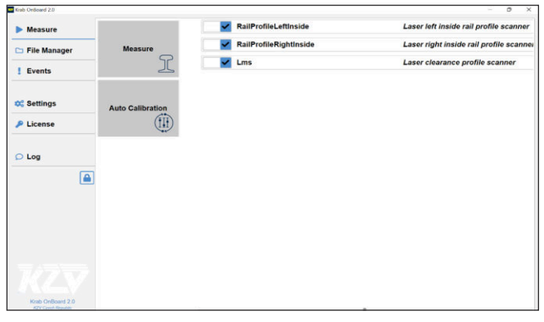
For easier transportation the trolley can be easily fold

RESOLUTION OF GEOMETRICAL VALUES:

Geometric quantity to be measured	Resolution [mm]	Reproducibility 95% [mm] *)	Range [mm]
Vertical alignment - Top (waveband 1÷25 m)	0,01	± 0,5	± 50
Horizontal alignment (waveband 1÷25 m)	0,01	± 0,8	± 50
Gauge	0,01	± 0,4	-20+50
Cant (cross level)	0,1	± 1,0	± 200 **)
Track distance	1,0	1 m/km	No limits

*) EN13848-2, 4, **) For gauge 1435 mm

Measuring computer with Krab OnBoard 2.0 SW

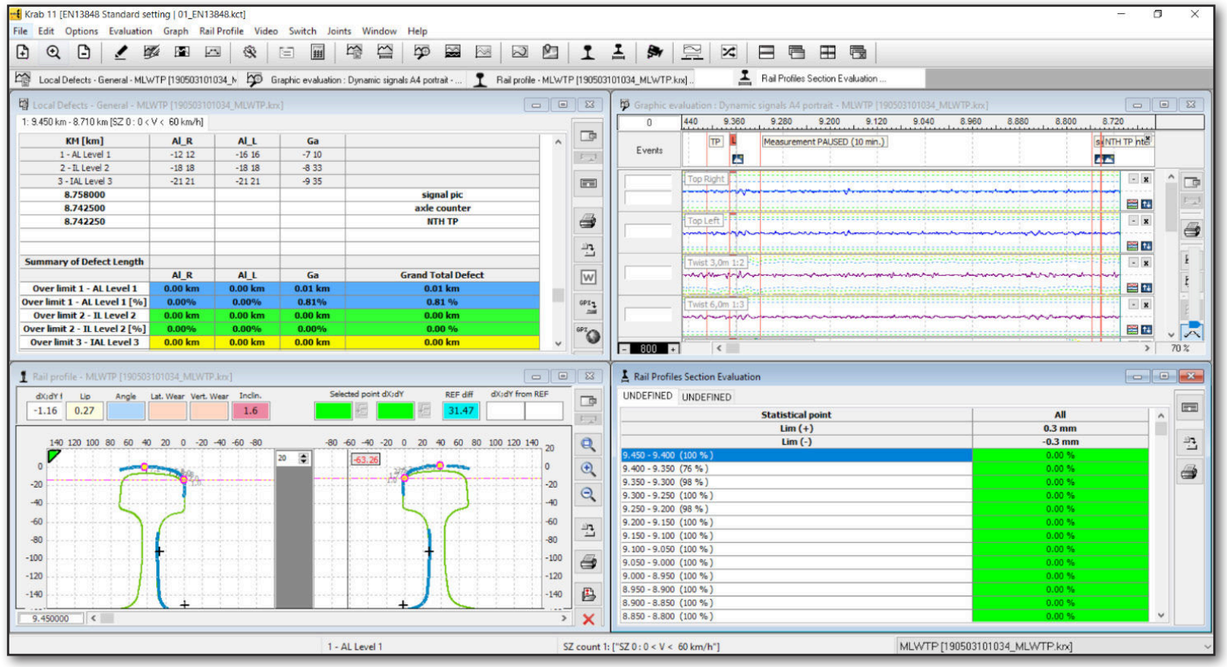


Screen of the Krab OnBoard 2.0 measuring software

ASSESSMENT OF THE COLLECTED DATA BY KRAB 11 SOFTWARE

After the measuring, the collected raw geometry data are transferred from the on-board computer into any PC computer. Sophisticated assessment software computes all data (with unit transfer function) in the waveband l=1÷25 m via FFT (Fast Fourier Transformation) technique. Thus the following items are available:

- actual alignment and level in waveband l=1÷25 m
- separation of all geometric signals into long wave (l>25 m) and short wave (l<25 m) parts
- Section evaluation - statistic evaluation of the track geometry based on standard deviation and quality index
- table of local defects, print out of geometrical lay and tables
- rail profiles evaluation



The example of evaluation in Krab 11

THE BASIC TECHNICAL DATA

Mass: 85 kg basic form
Maximum speed: 20 km/h
Working temperature: -20÷55°C
Water resistant

KRAB 84.09 NCI