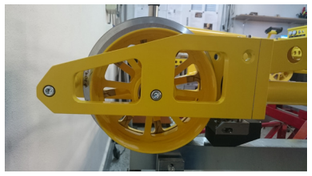
Wheel diameter 180 mm

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).



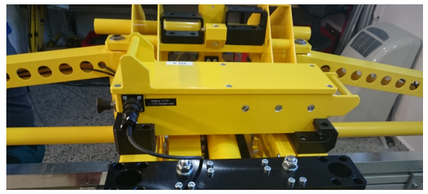
Reinforced, heavier construction of the trolley

Robust construction of the trolley frame helps to keep stability on the track.

Removable battery box

Battery type: Li-Ion

20 hours without battery charge

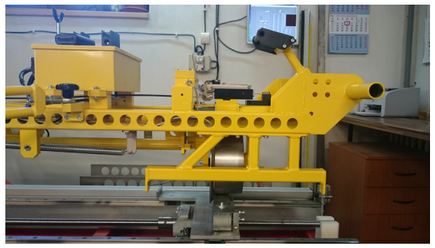


Proximity sensors

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.

Protection brackets

Protection brackets are installed on the front, rear and single wheel. In case of derailment it could reduce damage to the trolley. Another function of these brackets is to increase the load on these wheels.



Failsafe brake

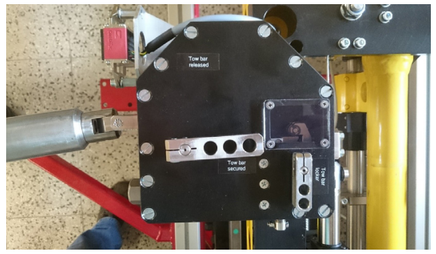
An automatic trolley brake is activated when one of the wheels of the trolley loses contact with the rail. It is also possible to activate brake by using the remote control unit.

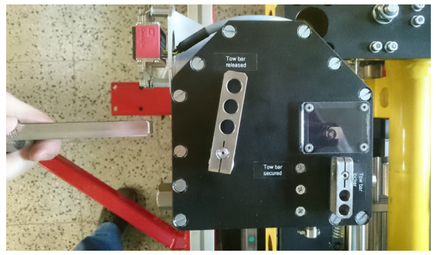
Switch brake (spring arresting system)

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

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.





KŽV s.r.o.
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Track Recording Trolley

for track geometry, towing version

KRAB 84.09SA

Approved by CD, RENFE, DB

The Krab 84.09SA is specially designed for towing. The measuring system contains mechanisms protecting the trolley from derailment. During the operation with the trolley some security requirements must be kept in order to avoid damage to the trolley and injury to operators.

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The trolley can also be used manually where measuring by towing is not practical. Especially station tracks, places with many switches and tracks in poor geometry conditions where the towing could be risky. Manual measurement is safe from the derailment point of view.

MEASURING PRINCIPLE

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**

The following derived geometric signals are computed in real time:

- **twist for selectable length of chord**
- **radius R**
- **gauge variation over 1 or 2 m**

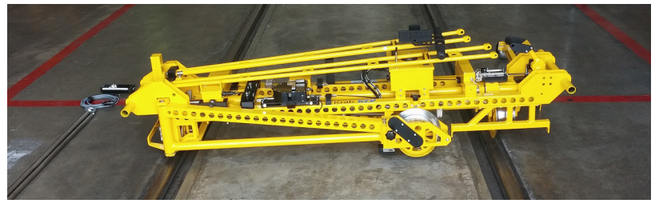
TRANSDUCERS TO BE USED

The trolley uses contact potentiometric sensors combined with an electronic inclinometer. A rotary encoder is used for track length measuring. Special attention is given to the selection of the asymmetrical chord length.

ON BOARD COMPUTER

The real time processing of signals from the sensors is performed by rugged measuring computer (Android operating system) with KrabDroid 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 (e.g. mud spots in ballast, damaged sleepers etc.) 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

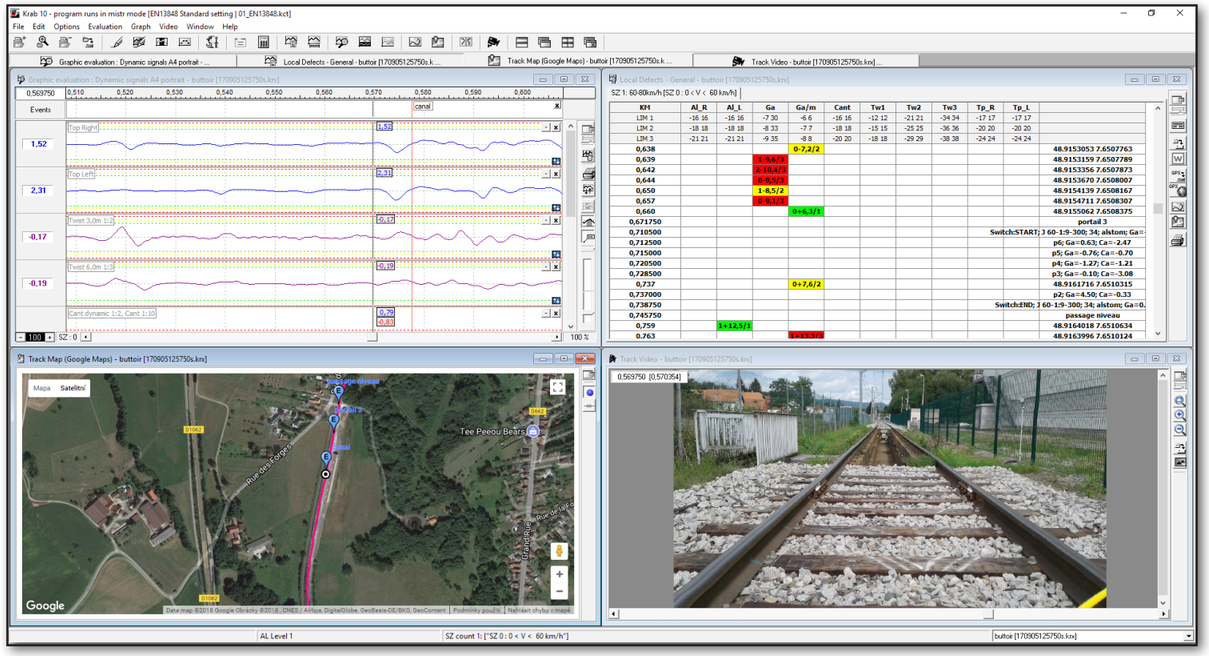
*) EN13848-2, 4, **) For gauge 1435 mm

Screen of the KrabDroid measuring software

ASSESSMENT OF THE COLLECTED DATA BY KRAB 10 SOFTWARE

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

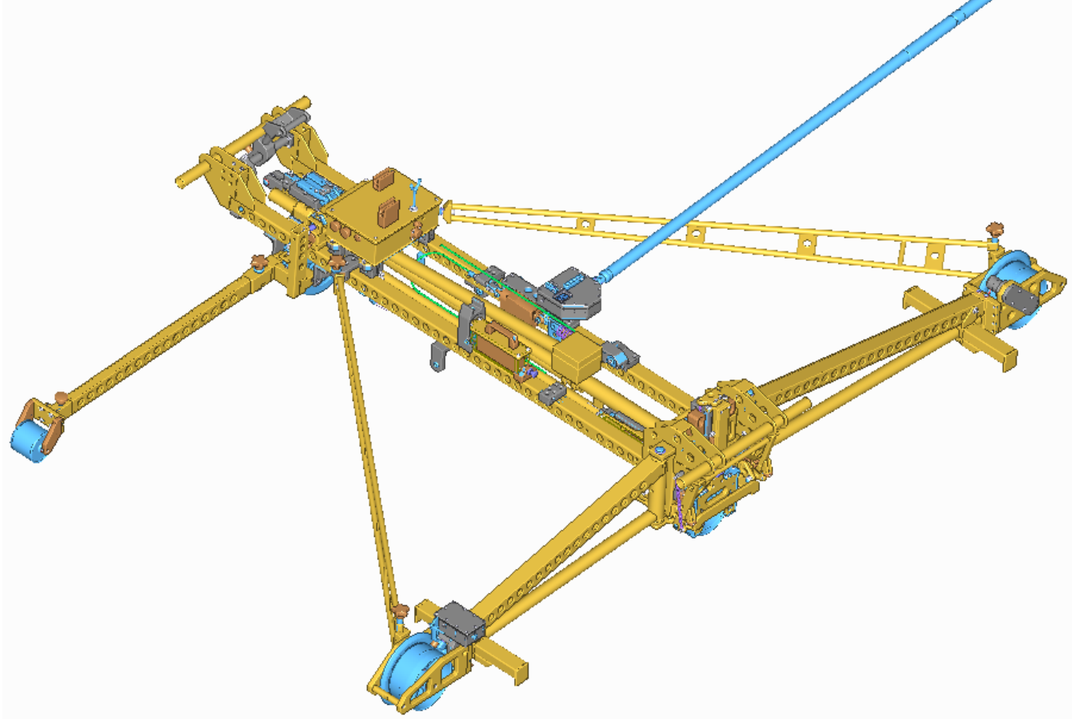
- actual alignment and level in waveband l=1÷25 m
- separation of all geometric signals into long wave (l>25 m) and short wave (l<25 m) parts
- so called section assessment - statistic evaluation of the track geometry based on standard deviation and quality index
- table of local defects, print out of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



The example of evaluation in Krab 10

THE BASIC TECHNICAL DATA

Mass: 110 kg basic form
Maximum speed: depends on individual track conditions
Working temperature: -20÷55°C
Water resistant



KRAB 84.09SA