



OKOndt GROUP



UDS2-73 SWP

Ultrasonic double-rail flaw detector for nondestructive testing of :

- standard profile rails
- rails for metro infrastructure.

www.okondt.com

The UDS2-73 SWP flaw detector ensures inspection of the entire length and cross-section of rails, excluding the rail foot flanges, using echo impulse and echo-image techniques.

The UDS2-73 SWP provides a testing speed of up to 3.1 mph (5 km/h). The flaw detector features an ergonomic, lightweight, and robust design with adjustable control mechanisms compatible with all existing track gauges ranging from 37.4 to 66 in. (950 to 1676 mm) and can be adapted to any regional standards governing gauge tolerances.



The position of the electronic control and visualization unit (monitor) can be adjusted in three axes. The electronic unit has protection class IP65 according to EN60529.

The position of the search wheel equipped with immersion ultrasonic probes (SWP) can be adjusted in three directions to ensure stable acoustic coupling and optimal ultrasonic rail inspection. The SWP is electrically isolated from interference caused by the electrical potential of the rail. Additionally, the measurement electronics incorporate multiple physical filters that eliminate the influence of interfering frequencies on the quality of the received signals.

Flaw detector's key features:

- Scanning of two rails in one pass in one direction
- Control according to AREMA, EN 16729-1
- The step of sounding the rail at

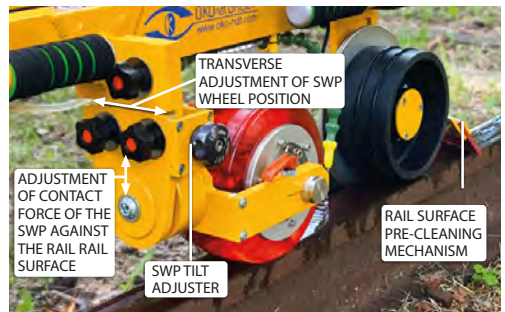
a testing speed of up to 3,1 m/h (5 km/h) is no more than 0.100 in. (2,5mm)

- Representation of test results in the form of A-scan, multi-A-scan, B-scan for all channels
- Real-time display of test results in the form of B-scan
- Data recording (operator's name, track name/number, control section (interstation), initial track coordinate, date, time, track coordinate)
- Screenshot saving (PrintScreen)
- Saving of test results in the form of data array (B-scan) to the internal memory
- Use of USB flash drive for transferring results to PC

- Saving track coordinate (Encoder) and global coordinate (GPS or GNSS)
- Two flaw gates that work in echo and echo-image techniques
- Post-viewing of test result on the flaw detector with the ability to measure sizes of defects
- Ability to put track markers (e.g. "Bridge", "Crossing", "Bolt hole", etc.).
- Signaling presence of defects: sound, light, visual indication
- Continuous operation time of the flaw detector from a fully charged battery is at least 8 hours.
- 10-inch high resolution flaw detector screen for quality test results displays in flaws in as A-Scan and B-scan with color amplitude gradation
- The flaw detector is resistant to weather conditions: temperature range from -22° to 131°F (-30° to +55°C) and humidity 95%.

SWP (wheel-type search system)

The probe units are wheel-type (SWP) with a diameter of 6.4 in. (160 mm). Probe types and frequencies: 0°/4 MHz, 6 × ±70°/2 MHz, ↑ ↓ 50°/2 MHz, ±45° (37°)/2 MHz. The flaw detector includes 11 probes per rail (22 in total), which ensures a scanning pitch of 0.100 in. (2.5 mm) at a testing speed of 2.5 to 3.1 mph (4–5 km/h).



Each search wheel (SWP) is positioned through mechanical adjustments.

- Adjusting the SWP pressure against the rail surface enables the operator to swiftly set the optimal pressure for stable acoustic coupling.
- Adjusting the transversal position of the SWP on the rail head surface enables the operator to swiftly correct the lateral alignment of the measuring wheel. This is required when changing track types or compensating for rail head wear.
- Adjusting the SWP tilt inward or outward relative to the rail allows for quick changes to the angular position of the SWP.

Design features of UDS2-73 SWP

The flaw detector frame and adjacent elements are made of high-quality aluminum profile with a coating resistant to atmospheric precipitation, ultraviolet radiation and mechanical loads. All elements of the are made as lightweight as possible to ensure comfortable use of the inspection system.



The design includes a system that ensures the search wheel (SWP) is always in the optimal position relative to the rail head during inspection.



For operation under low-light conditions, the UDS2-73 SWP system can be equipped with a lighting system. Front and rear lights illuminate the scanner area, simplifying the ultrasonic inspection process. The main directional lighting, mounted on a retractable bar, significantly increases safety for personnel during ultrasonic inspection and provides long-range illumination.

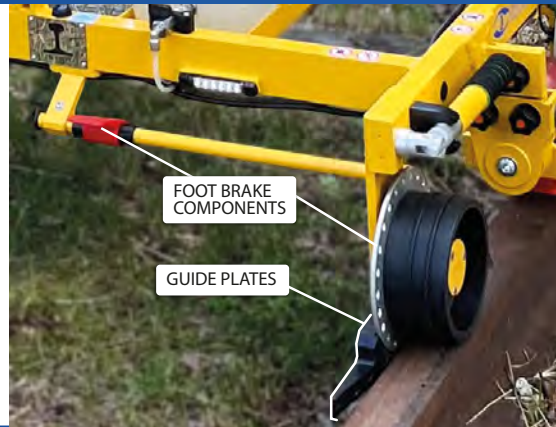


The UDS2-73 SWP has design features installed on the frame to illuminate the front part of the track and the walking zone of the operator. There are also LED lamps to illuminate the inspection area, the measuring devices, and the search wheels (SWP), as well as bar lighting.



The flaw detector is equipped with special devices that ensure the reliable trajectory of the flaw detector's movement on switches and crosspieces regardless of the direction of movement. This function allows to perform continuous testing of all railway track elements.

A foot brake is provided for parking on track as well as transportation and securing.



ADDITIONAL OPTIONS

With the help of GPS or GNSS modules, geolocation coordinates of the defects can be recorded, which facilitates the identification of defective railroad track section during post-processing.



SWP Setup Post.

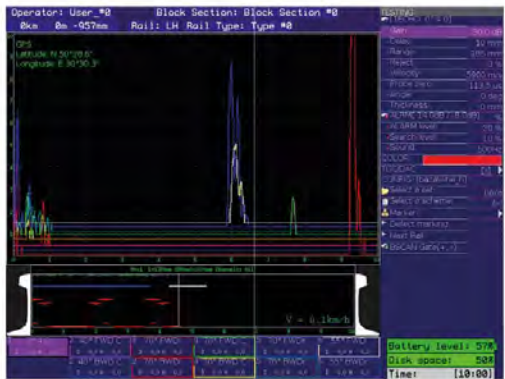
Used for the adjustment and inspection of search wheels (SWPs). The setup post consists of a frame and a rail fragment with artificial defects according to AREMA, EN 16729-1, and other standards. It also includes an SWP wheel fixing and moving device.

REPORTS

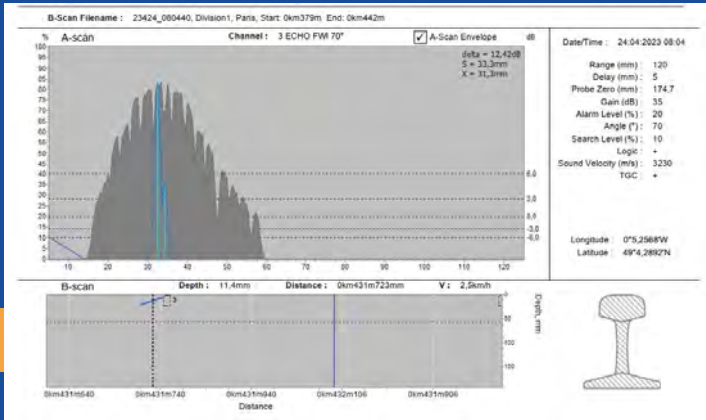
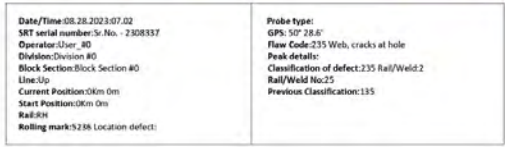
The user has access to 3 types of quick (instrument) reports generated from the instrument menu, as well as 4 analytical reports (post-processing), which can be generated on any computer using special pre-installed software "RailInspector". In any of these reports, the descriptive part of the registered defect parameters contains the following basic information:

- track and global coordinate of the defect (saved automatically);
- defect number according to the catalog (entered manually by the operator);
- the length of the defect (saved automatically during B-scan measurement or entered manually by the operator during visual inspection);
- features of the railway transport (filled in manually by the operator);
- The type of rail according to the marking (for example: S60, S49 or others; entered manually by the operator);
- Type of rails according to manufacturing technology (U – hardened; S – raw; C – cold drawn; manually entered by the operator or selected from the list);
- comments (filled in manually by the operator);

EXAMPLES OF SOME "INSTRUMENT" REPORTS



EXAMPLES OF SOME POST-PROCESSING REPORTS USING THE "RAILINSPECTOR" PROGRAM







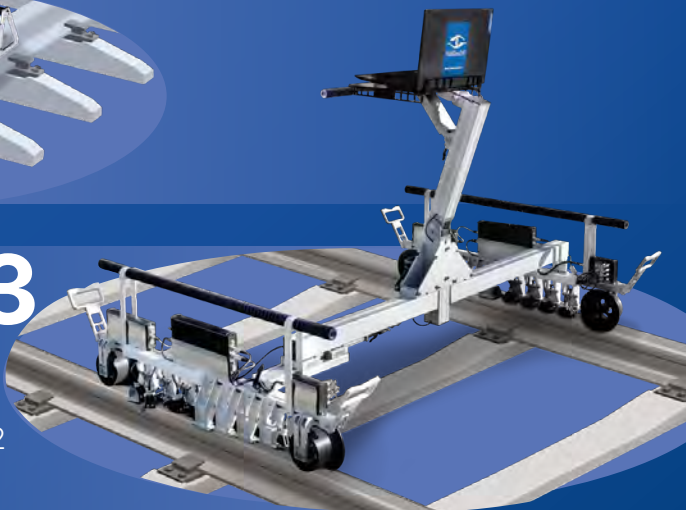
UDS2-77

Ultrasonic single rail flaw detector
Complies with: EN 16729

You can choose from two search system types: the Search Wheel (SWP) or the Slide Probe Unit.

ETS2-73

Eddy current double rail flaw detector
Complies with: EN 16729-2



OKOSCAN 73HS

High-Speed Ultrasonic Testing
System For Track Rails

Compliant with:
AREMA
EN 16729-1
EN 13977

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