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# UDS2-77 Ultrasonic Single Rail Flaw Detector



Complies with: EN 16729

## UDS2-77 Ultrasonic Single Rail Flaw Detector

The UDS2-77, an ultrasonic flaw detector, is intended for continuous inspection of rails and railway switches, as well as for confirmatory testing of quick test system results. The flaw detector ensures flaw detection in the entire rail cross section, excluding rail base blades.

### Main technical specifications

- ▶ Rail inspection complies with EN 16729 requirements.
- ▶ Number of inspection channels (probes) – 13 psc.
- ▶ Probe type and frequency:  
0°/4 MHz,  
±70°, ±58°, ±45°/2.5 MHz.
- ▶ Inspected rail types: S60, S49, UIC60, 60E1, 49E1 and others.
- ▶ Scanning pitch is 1mm at a speed of 4 km/h.
- ▶ Display modes: A-Scan, B-Scan, A-Scan+B-Scan.
- ▶ Continuous test result recording in a database format linked to path an GPS coordinates.
- ▶ Test result reviewing mode on the screen of the flaw detector.
- ▶ Flaw detector weight without couplant: no more than 17kg.
- ▶ Couplant tank volume: 5 l.
- ▶ Couplant consumption: up to 1.5 l/km, at a speed of 4 km/h.



## MAIN FEATURES OF THE FLAW DETECTOR



- ▶ Weighs just 17kg due to light and shock-resistant plastic.
- ▶ Flaw detector parking mode.
- ▶ Module structure: a frame on rollers, a central electronic unit, multiplexer units, a storage battery, a tank, a couplant supply system, probe units, an encoder.
- ▶ All modules are easy to assemble and disassemble; they are safely fixed on the flaw detector frame.
- ▶ Adjustable probe unit position in the transverse plane of the rail.
- ▶ Centering probe units along the rail axis with adaptive rollers.
- ▶ The probe unit suspension system ensures stable acoustic contact in case of lateral inclination of the trolley at up to  $\pm 15^\circ$ .

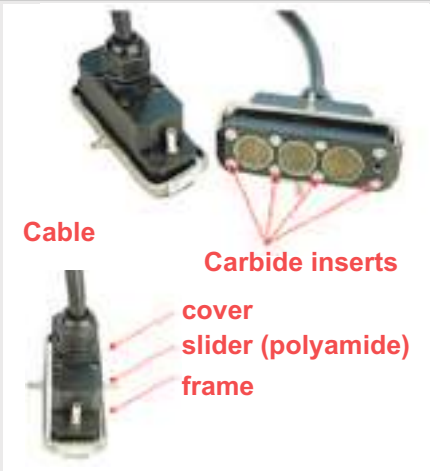






## PROBE UNITS

The flaw detector comprises two probe units:



### Probe Unit 1:

- ▶ Probe 0° – 4 MHz;
- ▶ Probe 70° – 2.5 MHz (Forward scanning);
- ▶ Probes 4x58° x34° – 2.5 MHz (Forward / backward scanning).

### Probe Unit 2:

- ▶ Probes 4x58° x34° – 2.5 MHz (Forward / backward scanning);
- ▶ Probe 70° – 2.5 MHz (Backward scanning);
- ▶ Probes 2x45° – 2.5 MHz (Forward / backward scanning).

## SCANNING SCHEMES

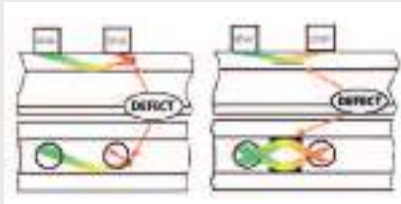
### SCHEME 1

Pulse-echo method of rail head inspection with 58° x34° probe.



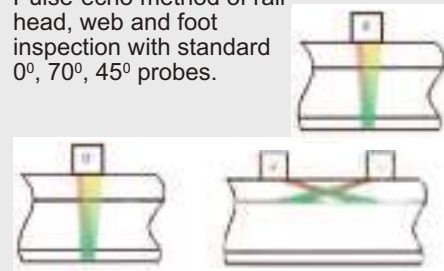
### SCHEME 2

Echo-mirror method of rail head inspection with two 58° x34° probes



### SCHEME 3

Pulse-echo method of rail head, web and foot inspection with standard 0°, 70°, 45° probes.



## Probe units

Transportation position  
(handle down)



Operating position  
(handle up)



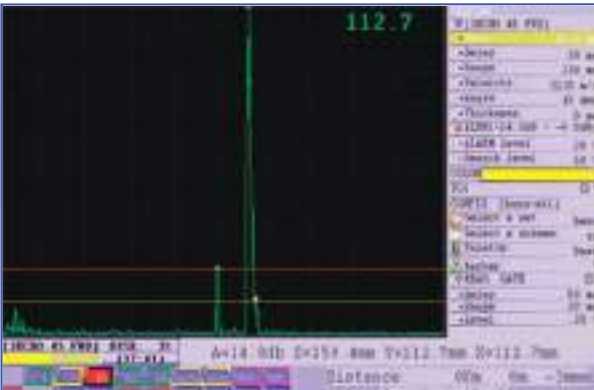
# Interface and main modes of the flaw detector software



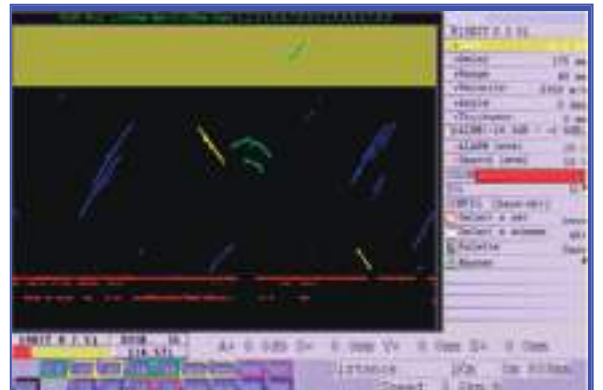
General flaw detector interface



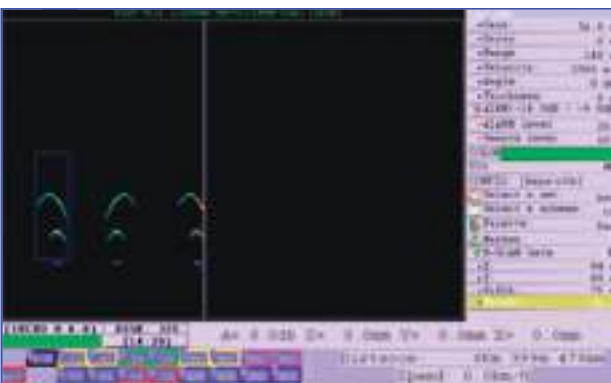
Display mode: Multi A-Scan



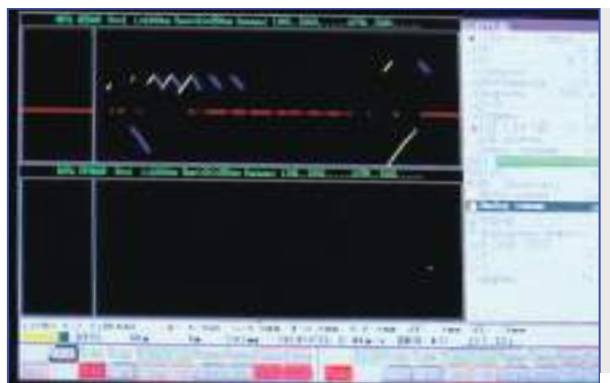
Display mode: A-Scan for one channel;



Display mode: B-Scan for all channels

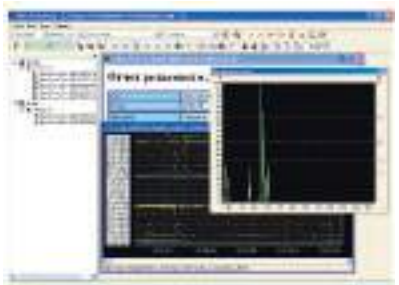


Display mode: B-Scan for one channel



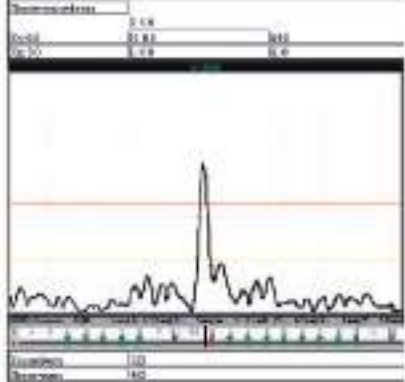
Display mode: A-Scan + B-Scan for one channels

## SOFTWARE FOR TEST RESULT ANALYSIS AND EVALUATION



Отчет реального дефектоскопа УДС2-73

Тип	120 80 200		
Скорость	110 300		
Адрес	10.10.10.10		
Адрес сервера	10.10.10.10		
Серия	01/001		
Тип	0	Нов	08
Угол	0.000	0.000	0.000
Угол	0.000	0.000	0.000



№	Координаты	Высота
1	100.000	100.000
2	100.000	100.000
3	100.000	100.000

The "Rail Inspector" program is intended for display, analysis and evaluation of test results on PC.

The program utilizes all the necessary tools to process data.

### The major advantages of the program are:

- ▶ Convenient work with the database of inspected sections (stages);
- ▶ Selection of the layout of inspection channels, selection of an inspected rail, inspected rail segment, testing method;
- ▶ Measuring the notional size of defects in B-Scan mode;
- ▶ Viewing A-Scan based on the data recorded in B-Scan;
- ▶ Viewing a defectogram (B-Scan) in scroll mode or in mode of fast switch to the given coordinate;
- ▶ Path marking mode to mark suspicious segments of rail track while viewing test results;
- ▶ Sorting out test results by sensitivity level from -6 to +6 dB above or below the measuring gate level;
- ▶ Mode of viewing and producing reports on the inspected segment;
- ▶ Mode of viewing reports on confirmatory testing.

# UDS2-77







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