

# FLEX Ultrasonic Rail Flaw Detection System

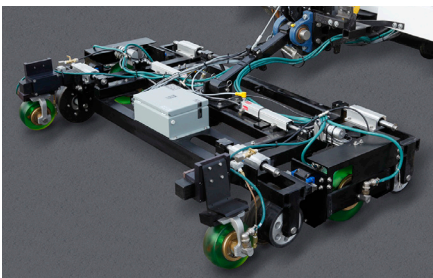


## Key Features

- Ease of maneuverability and compact size for tight clearances
- Carriage can be mounted to multiple vehicle platforms (Nordco or customer provided)
- Flex carriage can be raised in seconds
- Multiple wheel probe configurations available to suit any application
- Enhanced pattern recognition & defect classification software
- GPS tagging of system movement and defect location, to the thousandth of a mile



FLEX digital control electronics can be located in a climate controlled cabinet in the utility box or inside the vehicle.



FLEX Carriage with XL 9-11 & Tracer Wheel

## Versatile Ultrasonic Rail Inspection Platform

Nordco's FLEX ultrasonic rail flaw detection system is a rugged, mobile and efficient operating platform that can be custom-configured and mounted on a vehicle of your choice at Nordco's facility or under our supervision at your location.

The increasing need for compact vehicles with easy maneuverability, make the Nordco FLEX system the perfect solution, with its outstanding versatility whether testing main-line, metro, transit, siding, yard or short-line around the world.

## Digital, high-speed data system

Nordco's FLEX Rail Flaw Detection System features a 24 to 48-channel digital signal processing system (depending on wheel probe configuration) allowing real-time sequential data processing, superior signal-to-noise ratios, and higher testing speeds with fewer false positive test results. The system is designed to allow for easy upgradeability as technology advances. With a Nordco FLEX you can be assured that potentially dangerous defects are not being overlooked.

## Pattern recognition and defect analysis

Nordco's FLEX Rail Flaw Detection Systems include the following key features:

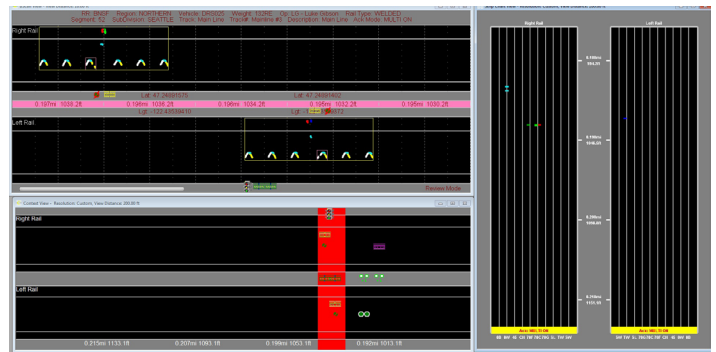
- **Pattern recognition defect classification** - Incorporates artificial intelligence to recognize common rail conditions, as well as recognize and classify defects.
- **Off-Line Reviewing Software** - All test data is tagged by a precise encoder signal and further referenced to the onboard GPS system. This allows for off-line reviewing and developing comparison histograms over multiple tests to monitor rail condition and changes over time.

## Product Specifications

Category	Specification	Description
<b>Flaw Detection Technology</b>	Test Speed	Up to 30 mph (50 km/h) under optimum rail conditions. Slower speeds may be required through switches.
<b>RSU Options</b>	XL9-11 Wheel	9" Rolling Search Unit featuring 11 independent transducers for full coverage of the rail head, web and loss of base. Field and gage side looking transducers for vertical split head detection.
	Tracer Wheel	6.5" Rolling Search Unit optimized for detection of small gage corner defects.
	Sweeper Wheel	9" Rolling Search Unit optimized to detect sub surface shelling and transverse detail fractures.
<b>General</b>	Carriage dimensions (varies depending on configuration)	66 inches (167cm) x 31 inches (79cm) x 15 inches (38cm) (not including lift mechanism)
	Operator Station Kit	LCD Monitor, Carriage Controls, Couplant Control, Keyboard, Mouse, Icon device
	Operating Conditions	-15°F to 110°F (-26°C to 43°F), all weather
<b>Capacities</b>	Couplant	160 gal (606 l) - recommended quantity
	Fuel	50 gal (189 l) - recommended quantity
<b>Vision</b>	Rail Vision (Optional)	Non-contact precision, line-scanning rail surface imaging system.
<b>Weather Packages</b>	Cold or Hot Weather Kit (Optional)	Vehicle and system extensions to enable operation in extreme climate conditions.

### Advanced Software Capability

- Multiple System Views: Strip Chart, B-Scan
- Independent Channel Settings
- Automatic Gain Control
- Time Corrected Gain (TCG)
- Syntactic Pattern Recognition to identify & classify defects
- Adaptive Learning System for future defect additions
- Audible & Visual alarms
- Preloaded rail data (rail profile, system settings)



### XL9-11 Rolling Search Unit

Nordco's XL9-11 wheel probe includes eleven ultrasonic transducers:

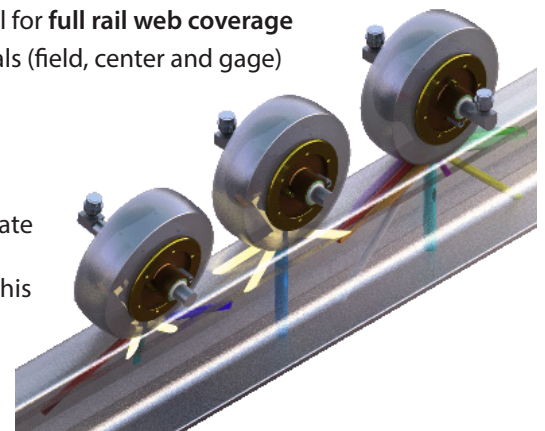
- One zero-degree crystal for both **web coverage** and **base detection**
- One 37.5-degree forward-facing crystal and one 37.5-degree rear-facing crystal for **full rail web coverage**
- Three 70-degree forward-facing crystals and three 70-degree rear-facing crystals (field, center and gage) for **full head coverage**

### Sweeper Rolling Search Unit

Nordco's Sweeper wheel probe is optimized to detect transverse detail fractures beneath sub-surface shelling where field or gage surface conditions are inadequate for traditional detection. One zero-degree transducer and four proprietary shear wave angle transducers focus on head inspection in the field and gage corners. This enables the detection of small transverse defects in these compromised surface zones of the rail head.

### Tracer Rolling Search Unit

Nordco's Tracer wheel probe is oriented at a cant angle, optimized to inspect worn gage corners that cannot be sufficiently inspected with perpendicular oriented RSUs due to contact loss. A set of shear wave transducers detects defects in the gage volume of the rail head. A zero degree transducer is used to detect compound features of gage defects that are typically caused by WRI mismatches.



Nordco Rail Services, LLC  
125 Railroad Ave., Beacon Falls, CT 06403 USA  
Tel: +1-203-438-9696 Email: sales@nordco.com

