

RORUNNER System



**Modern Maintenance for
London's Elizabeth line**

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 **ROBEL**

VERSATILE COMBINATION.

RORUNNER Level 3 Power Car

RORUNNER and its modular working units provide suitable combinations for every job in maintenance and construction of railway infrastructure

The Power cars and modular equipment for the Elizabeth line was tailored especially for maintenance tasks in the confined underground tunnels in London. Three RORUNNER variants will be in service; one with a flatbed loading area, a second with a crane with workman basket or hydraulic rail tongs attachment and a third with a messroom.

- Modular design allows for different work configurations
- Powerful to serve as a shunting locomotive and emergency recovery train
- Transports all personnel, material and tools to the work site

TECHNICAL SPECIFICATIONS

Drivetrain	4 axle drive, hydrostatic
	8 cylinder Diesel engine 520 kW
	6 cylinder Diesel engine 240 kW
	Multi-traction mode
Max. traction	0-30 km/h, 140 kN
	0-80 km/h, 70 kN
Max. speed	80 km/h towed and self-propelled
Weight	66 t (depending on equipment)
Payload	max. 7 t at max. axle load of 19 t
Track gauge	1435 mm
Equipment	crane module, 54 mt
	Messroom for 10 people
	Flatbed loading area
	Transport module and crane
In operation in	GB
Kinematic Envelope	W6A, G1, Crossrail Structural Gauge



ROTRAILER Level 4 Transport Wagon

ROTRAILER reliably carries heavy loads and is a versatile basis for additional components and measuring equipment

The ROTRAILERS for the Elizabeth line are designed with Twist Locks which enable the mounting of additional modules, such as a scissor lift, a drainage cleaning system or a wire drum carrier. The ROTRAILER also transports a range of materials including rails and switch and crossing units.

- Trailers can be used in combination to accommodate longer loads such as switches up to 36 meters in length
- Each trailer is strong enough to carry a maximum payload of 25 tonnes
- Equipped with Twist Locks for quick mounting of components
- Adapted for installation of measurement equipment for rail condition testing

TECHNICAL SPECIFICATIONS

Max. speed	80 km/h
Weight	31 t
Payload	25 t
Loading length	21.4 m



ROLIFT System Mobile Exchange System

For quick exchange of rails and switch and crossing units in confined locations

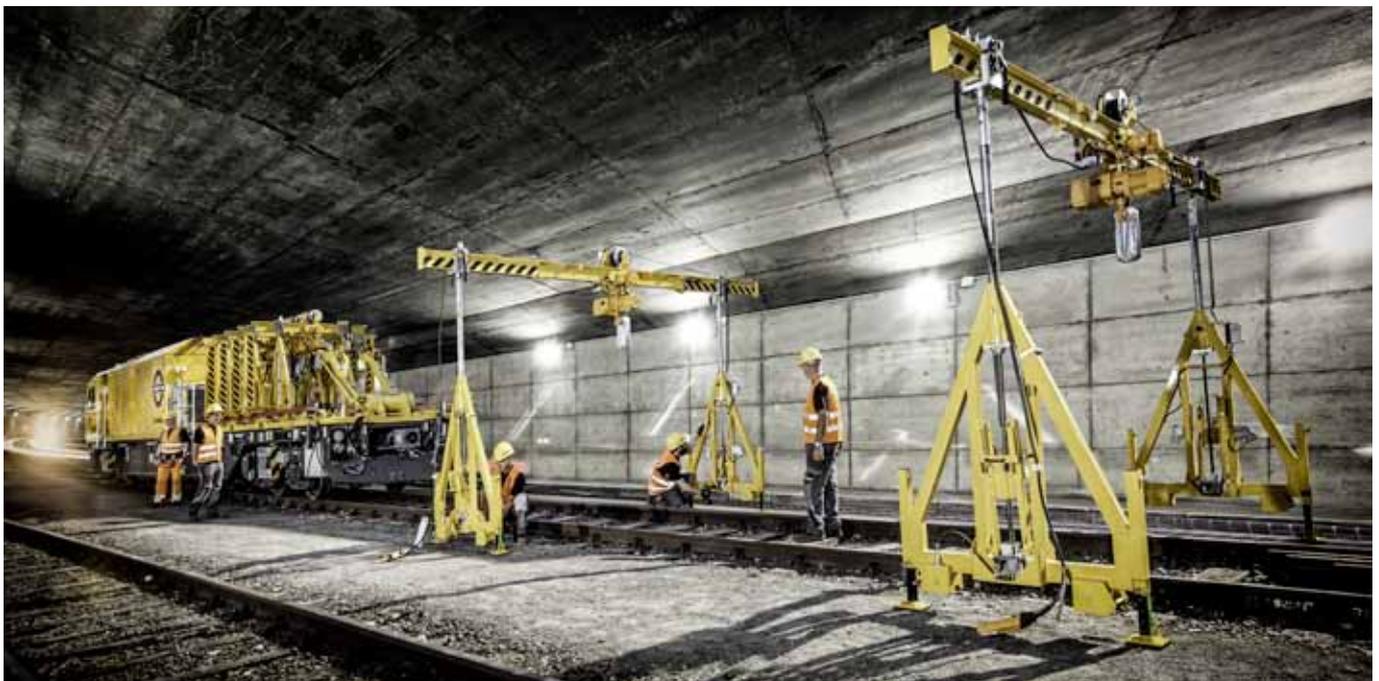
The ROLIFT system offers an alternative to cranes and heavy machinery when exchanging rails and switch and crossing units, particularly in areas of restricted access such as stations platforms, viaducts and tunnels. The system consists of 6 preassembled electrical gantries housed on a twist lock frame mounted on a ROTRAILER. A rotary actuator is used to quickly on and off load the gantries which are used of the exchange of rail and switch and crossing units.

- Automated deployment and pre-assembled gantries allow for a significantly quicker workflow and thus shorter maintenance periods
- Units are delivered, exchanged and recovered in the same shift
- Electrical remote operation of gantries allows for careful handling of rails and switch and crossing units



TECHNICAL SPECIFICATIONS

Mount	Twist Lock
Lifting capacity	1000 kg
Range	Lift range 2300 mm, lateral range 4850 mm



RODRAIN Drainage Cleaning Unit

Independent cleaning module for drainage clearance and cleaning tasks

RODRAIN is mounted to ROTRAILER by using Twist Lock mounts, clears drainage with vacuum suction and jetting and also undertakes cleaning services in stations.

- Two high performance pumps serve for drainage vacuum cleaning and jetting track surroundings
- Independent operation from power car by using its own power supply



TECHNICAL SPECIFICATIONS

Mount	Twist Lock
Power supply	Independent power supply, 48 kW
Tank volume	3000 l fresh water, 7000 l service water
Flow	High pressure pump 60 l/min at 170 bar, vacuum pump 9700 l/min
Weight	8 t empty, 18 t filled
Hose length	High pressure hose 50/80 m, suction hose 15 m

ROHOIST Scissor Lift

Comfortable, spacious working area for high level maintenance

ROHOIST offers versatile platform when working with overhead catenary systems or other high level assets such as platform screen doors. The spacious working area slews sideways for better access and is equipped with power supplies and lighting for ergonomic working.

- Ability to lift vertically and slew horizontally
- Equipped with platform lighting and power supplies for handtools
- Serves for inspection, maintenance, exchange and cleaning of high level assets



TECHNICAL SPECIFICATIONS

Mount	Twist Lock
Working area	10 m x 2,5 m
Lift range/Payload	1730 mm/1000 kg
Slew range	± 1000 mm
Weight	11 t

ROPORT Wire Drum Carrier

Reliable transport and supply of lineside cables

ROPORT is used as an accessory to ROHOIST for the exchanging of overhead conductor wire ensuring a safe and controlled delivery of the cable. ROPORT can also be used to deliver lineside cables safely and efficiently.

- Eases exchange of wire and cables both for the overhead and lineside
- Controls unrolling speed with adjustable hydraulic brake



TECHNICAL SPECIFICATIONS

Mount	Twist Lock
Max. wire drum specs	Outer diameter 2100 mm, width 1130 mm, inner diameter 85-125 mm

Dimensions and weights approximated. We reserve the right to modify in the course of technical development. Copyright secured.



The Task: Ambitious

The new Elizabeth line is going to transport up to 200 million passengers per year over a distance of more than 100 kilometers, passing through central London. Narrow tunnel systems and short time slots demand a new approach for the maintenance of urban track infrastructure.

Critical to the assignment was the completion of three specific case studies within given timescales:

- Replacement of a half set of switch in less than 5 h 30 min
- Replacement of 18 meter rail in less than 4h
- Replacement of minimum 50 meters contact wire in rigid overhead conductor

With the RORUNNER System, ROBEL has developed a solution which exceeds all targets set.

The Solution: Custom-made

The modular construction of the RORUNNER System allows the realization of a variety of work processes by only one train set:

- Replacement of rails, switches and crossings
- Maintenance of overhead catenary systems
- Transport of material, plant and workforce
- Drainage jetting and vacuum clearance
- Emergency recovery of other vehicles

According to the planned work tasks, the basic combination, consisting of two track vehicles and one transport wagon, is then additionally equipped with a drainage cleaning system, a wire drum or a scissor lift module as required. This reduces the fleet, saves time and cuts cost.

The Challenge: Switch Replacement in the Tunnel

One of the main challenges in maintaining track within tunnels is the lack of space, particularly when exchanging heavy switches, crossings and rails.

With a mobile gantry system ROBEL provides the solution: The ROLIFT System is twistlock mounted to the platform of the track vehicle. The system transports the pre-assembled electric gantries to site and a specially designed on/off loading device then places them on the track. Simple, safe and efficient.

The delivery: On schedule and as contracted

At the factory acceptance test, the RORUNNER System demonstrated its capability.

- All work tasks delivered as specified
- Targeted times for the processes achieved with a considerable margin
- Test run under extreme conditions passed

Precisely as scheduled and exactly two years after the contract award, two RORUNNER Systems have been handed over ready to go into service for the Elizabeth line.



"ROBEL and Plasser UK have demonstrated their ability to innovate new solutions throughout this project. Their concept for switch rail changes using a gantry system, deployed directly from the train, working around the wagons to deliver, install and remove the scrap was particularly impressive, addressing a key maintenance challenge. The system worked correctly first time at the recent successful Factory Acceptance Tests in Salzburg. It has been a great experience working with Plasser UK and ROBEL and I'm excited to see the trains start work on the Elizabeth line."

Stuart Hines-Randle, TfL Yellow Plant Project Manager

"TfL challenged us to develop a versatile maintenance concept. ROBEL, applying their special skill in delivering customized solutions, have designed and produced a modular vehicle system which exceeded the case study targets. Plasser UK, ROBEL and TfL worked in close collaboration, integrating user suggestions throughout the whole project. The result is a solution that delights the customer."

Mark Simmons, CEO Plasser UK



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