

RAIL UNLOADING SYSTEM

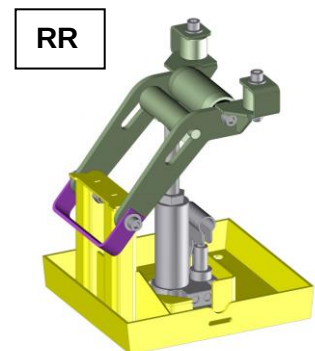
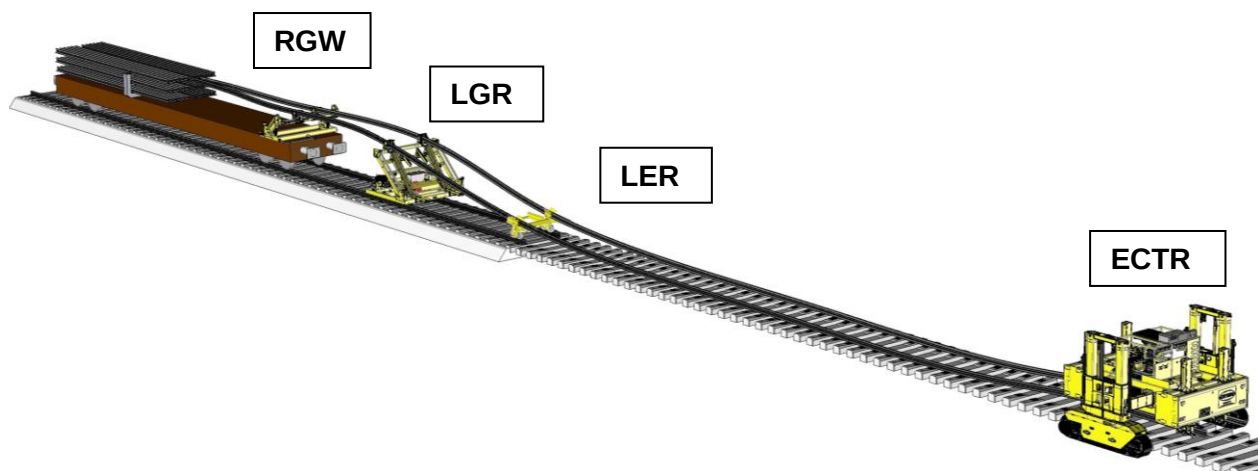
MODEL STR

The **Rail Unloading System model STR** is designed for simultaneously laying of two long welded rails on to pre-positioned sleepers at the travelling for the creation of a new track. Its purpose is to unload, guide and position the rails at the specified track gauge from a rail transport wagon. It can unload two rails at once.

The rails are stored on a specially fitted wagon on storage racks.

- The **Rail Unloading System model STR** consists of several main elements:
- One Rail Unloading Machine with Caterpillar Tracks model ECTR;
- One rail guiding trolley model LGR;
- One Lorry of End Rail model LER ;
- Wagon mounted Guiding rollers model RGW;
- Retractable rollers model RR ;

The **Rail Unloading System model STR** can unload an average yield of 4 draws of 2 bars of 432 m per day on 8 hours for the installation (hooking + traction + fixing) depending on the conditions of the sites which must be optimal.



1. DESCRIPTION

Caterpillar Rail Unloading machine model ECTR

ECTR directly recovers rails from the wagon by clamping on to and then pulling the LWR's while moving on its Caterpillar tracks. The Caterpillar track spacing can be adjusted to ensure clearance of different sleeper lengths and for travelling to site by truck or low bed wagon. Direction changes during travel are carried out by independently controlling the speed of each Caterpillar track.

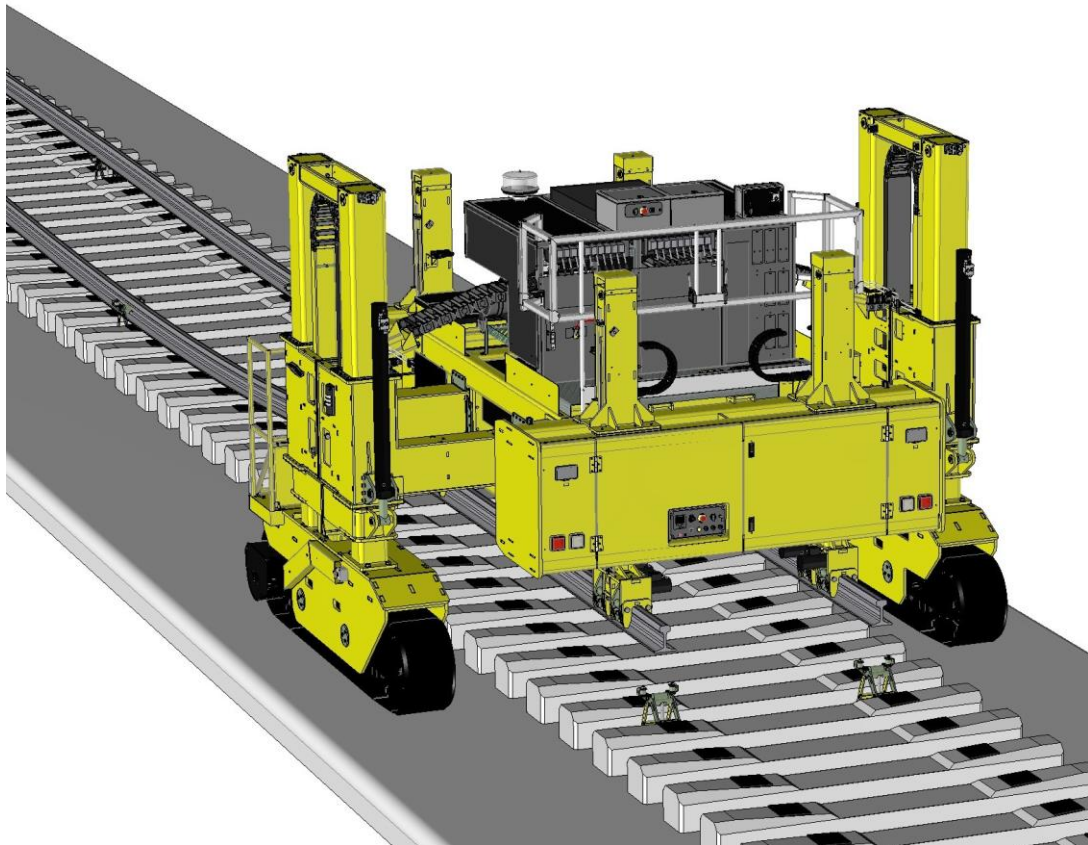
Clamps can be adjusted to the correct rail position for picking up rails and for laying them to the right gauge and lay it on the LGR or on retractable rail laid between the sleepers.

All movements are remote controlled.

Hydraulic power is provided by a hydraulic power pack.

ECTR includes the following safety devices:

- Emergency stop buttons located around the machine;
- Acoustic warning horn;
- Warning lights for Caterpillar parking brake;
- Hydraulic lifting rams equipped with safety valves.



Rail guiding trolley model LGR

The LGR is positioned between the wagon and the track end.

It receives and guides the rails from the storage wagon. An elevating table can be set to height and guiding trolleys are transversally adjusted at the start of the site operations to meet the desired track gauge. The LER accompanies and supports the rails.

The Lifting / Lowering functions of the elevating table, as well as the travelling of the lorry are remote controlled.

Hydraulic power is provided by a hydraulic power pack.

The LGR includes the following safety devices:

- Off emergency stops;
- Acoustic warning horn;
- Hydraulic rams for rail clamping operations equipped with safety valves;
- Hydraulic rams for lifting operations equipped with safety valves.

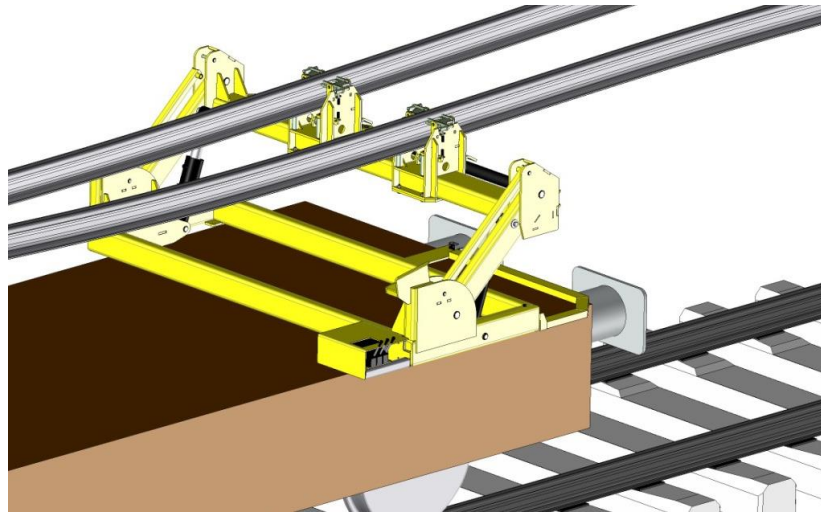


Wagon mounted guiding rollers model RGW

The RGW is fixed on the rear of the last storage wagon.

It includes an elevating table which is adjustable in height to remain level with the storage racks of the rails being unloaded. It includes 2 variable track gauge rollers. Hydraulic power for these is provided by the rail guiding trolley and they are controlled remotely from the same transmitter as the LGR.

Guiding rollers on wagon model RGW (cont'd)



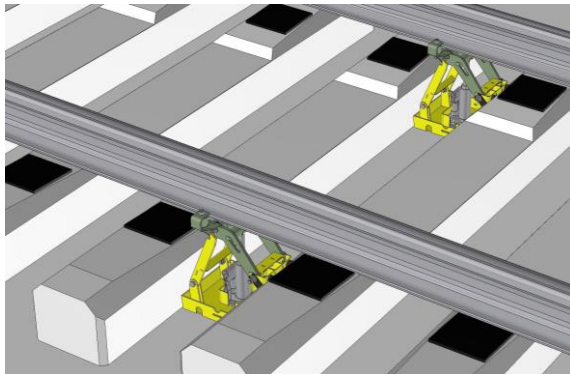
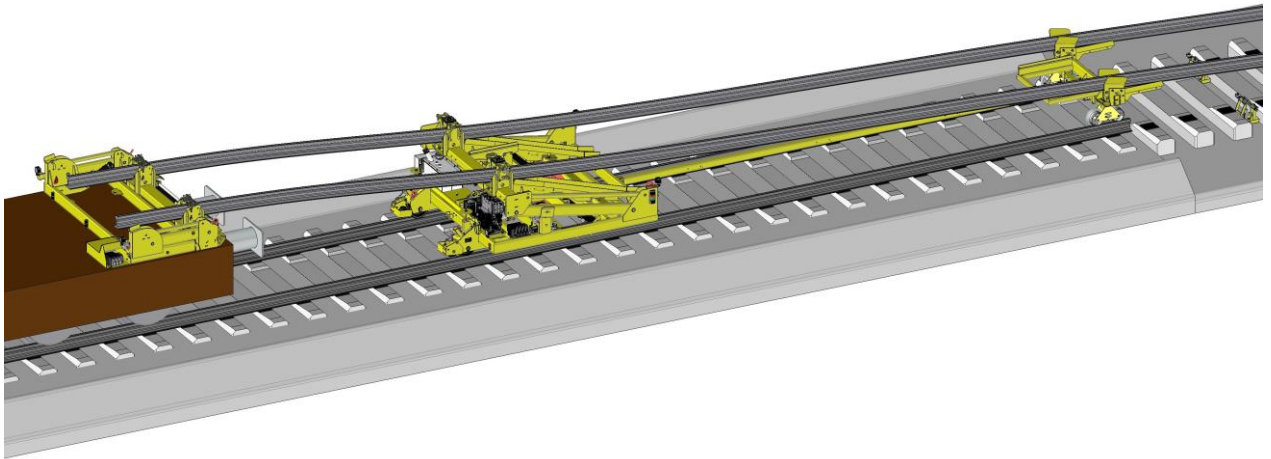
The RGW includes the following safety devices:

- Off emergency stops;
- Acoustic warning horn;
- Hydraulic rams for lifting operations equipped with safety valves;
- Hydraulic rams for slewing operations equipped with safety valves.

2. DESCRIPTION

Site procedures can be summarised as follows (a full working sequence scheme is shown as an annex at the end of the document):

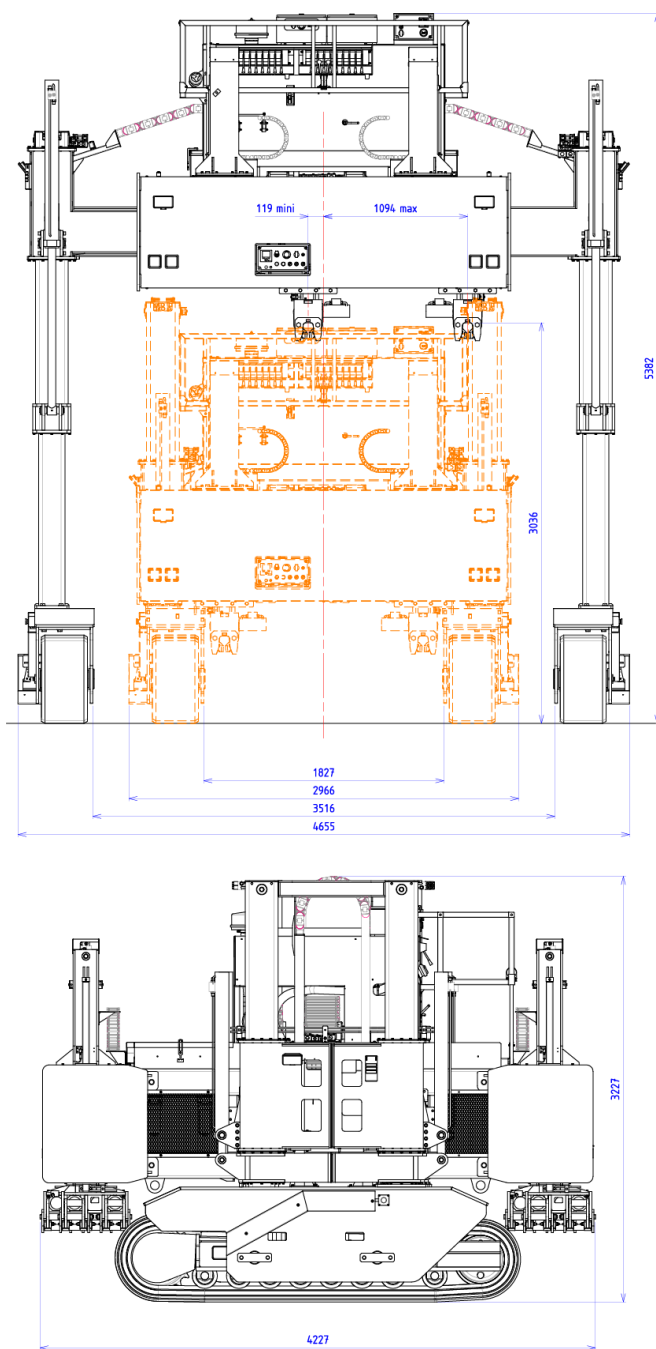
- Storage wagons with LWR's are standing by on track;
- Sleepers have been placed in the correct position on track;
- Retractable rail rollers RR type have been laid every 10 m between the sleepers;
- ECTR drives to its position on its caterpillars ready to recover rails from the storage wagon;
- All rail clamps on ECTR grab two rails;
- ECTR moves forward and passes over the RGW which will laterally and vertically set its rollers;
- When the rails are in contact with the rollers of the RGW the upper clamps are then locked;
- ECTR moves forward and passes over LGR which has its own rollers set to gauge. Rails are then laid by the rail clamps at the correct track gauge on the rollers of the LGR which have been suitably adjusted height. The upper clamps are then automatically locked.
- ECTR moves forward with the rails and comes into position over the LER and lays the rails on it.
- ECTR moves forward with both rails and comes into position over retractable rail rollers RR type located every 10 m;
- Once both LWR's are totally removed from their racks, the ECTR slows its moving;
- LGR lowers its table to remove the stress in the rails;
- ECTR continues to move forward until the rails are deposited at the junction with the existing track by the arms of the LER.
- The Operators lower the retractable rollers and then retrieve them. The rails are then in their final location. Fixing of rails on sleepers



3. TECHNICAL DATA

Caterpillar rail Unloading machine model ECTR

Performance	Travelling speed on caterpillars (in both directions)		High speed		0 à 4 kph		
			Low speed		0 à 2 kph		
	Caterpillar foot		Distance stroke		850 mm		
			Slewing stroke		925 mm		
			Lifting stroke		2 380 mm		
	Rail clamps		Slewing stroke		975 mm		
			Lifting stroke		750 mm		
	Maximum useful load		12 000 kg				
	Traction force		9 000 kg (with clamps in high position)				
Hydraulic unit	Hydraulic power pack	Diesel engine	Power		90 kW at 2 000 rpm		
			Fuel		Diesel		
		Hydraulic pumps	2 Variable flow pump 60 cm3 - closed circuit				
			1 Pump Load Sensing 38 cm3 - open circuit				
	1 Pump fixed displacement 11cm3						
	Emergency hydraulic power pack	Diesel engine	Power		15 kW at 2400 rpm		
			Fuel		Diesel		
		Hydraulic pumps	2 Variable flow pump 11cm3				
			1 Pump Load Sensing manually driven				
	Hydraulic electro-distributors manually driven.			Alimentation		24 volts	
				Elements nb		10 + 9	
	Manual emergency hydraulic pump			Admission		25 cm3	
	Hydraulic tank capacity		315 l				
Fuel tank capacity		280 l					
Radio remote control	Yes						
Caterpillars	Moto-reducers		Intake		55 cm3		
			Ratio reduction		101		
	Ground pressure		1 bar without load / 1,6 bar on load				
38 tiles		350 mm/flat					
Remote control	Wired emergency control						
Safety device	3 off emergency stops						
	Acoustic warning horn						
	Hydraulic cylinders equipped with safety valves						
Lighting	6 White LED's floodlights for site lighting (2 in front, 2 at rear and 2 on feet)						
	4 White LED's signalling lights for lighting beneath the machine						
	4 White signalling lights, 4 Red signalling lights, with interchange according the direction of travel						
Dimensions	Length x Width x Height (en mm)		Mini 4227 x 2966 x 3227		Maxi 4227 x 4655 x 5382		

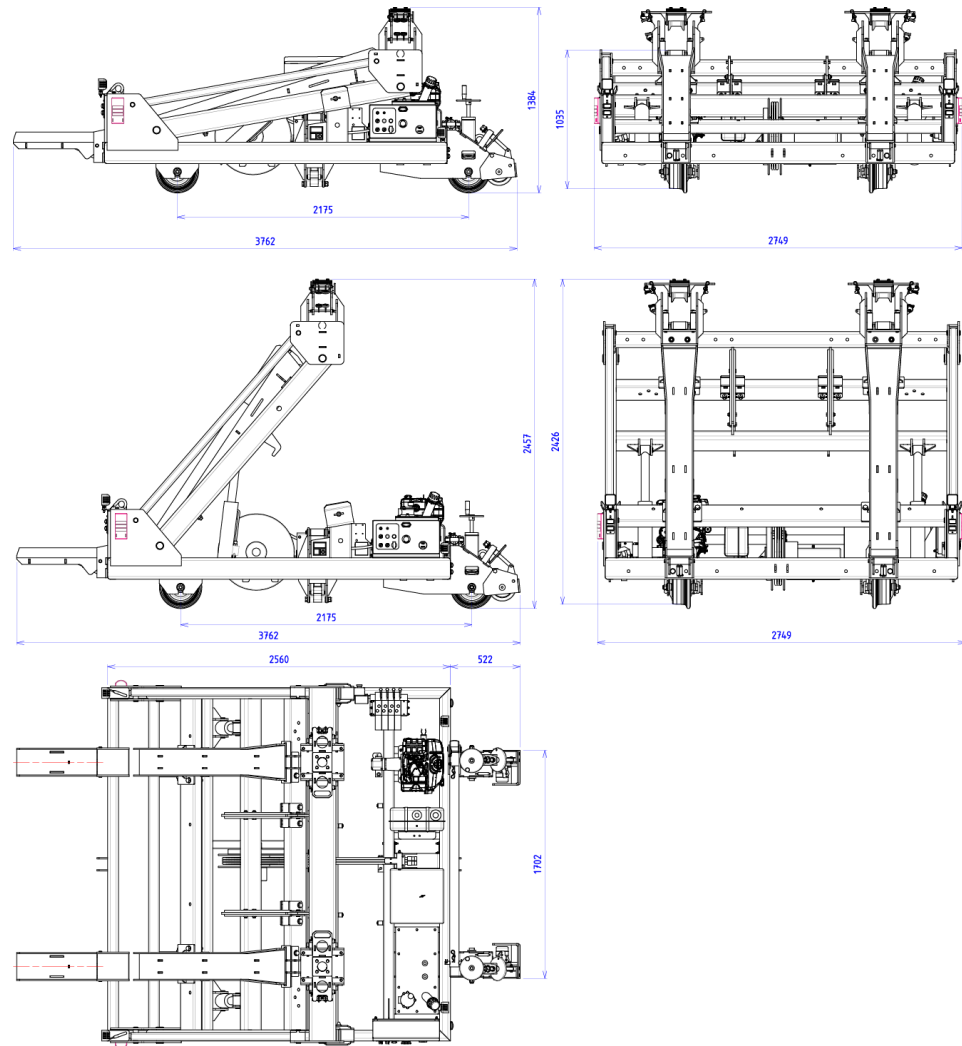


Machine weight

18 200 kg

Rail guiding trolley model LGR

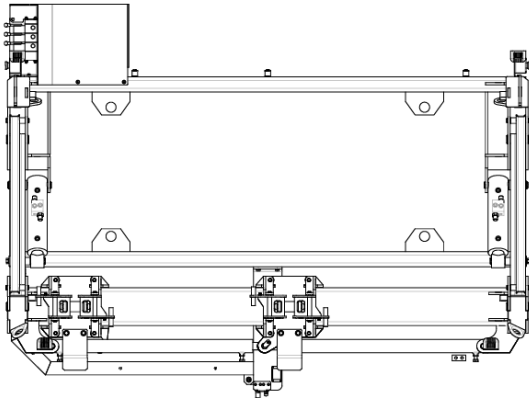
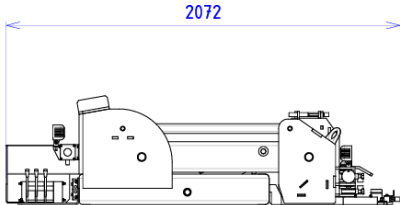
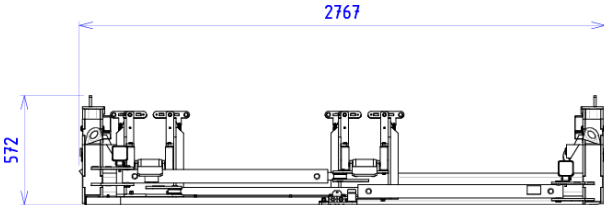
Performance	Travelling speed on rail wheels (2 directions)			0 à 5 kph
	Lifting platform	Lifting stroke		1070 mm
	Unloading ramp (x2)	3 distance positions	inside	1105 mm
			Central	1435 mm
			outside	1765 mm
	Rail clamps type (x2)	Flat bottom rail		
Maximum useful load	1 200 kg (600 kg per roller)			
Hydraulic unit	Diesel engine	power	8.1 kW at 3600 rpm	
		Fuel	Diesel	
	Hydraulic pump	Type	fixed pump	
		Displacement	8 cm3	
		Operating pressure	160 bars max.	
	Hydraulic electro-distributors manually driven			
	Manual emergency hydraulic pump		Admission	25 cm3
Hydraulic tank capacity		55 l		
Radio remote control	Yes			
Safety device	2 off emergency stops			
	Acoustic warning horn			
	Hydraulic cylinders equipped with safety valves			
Lighting	4 White LED's floodlight for site lighting			
	4 White signalling lights, 4 Red signalling lights, with interchange according direction of travel			
Displacement device	Rail wheels	Diameter	250 mm	
		Profile	Standard UIC	
		Gauge	1435 mm	
	Motorization	Motorization by friction gear on the rail wheels		
	Manual parking brake on each rail wheel			
Handling	4 Lifting rings			
Dimensions	Length x Width x Height (en mm)		3762 x 2749 x 1384	



Machine weight

2 000 kg

Wagon mounted guiding rollers model RGW

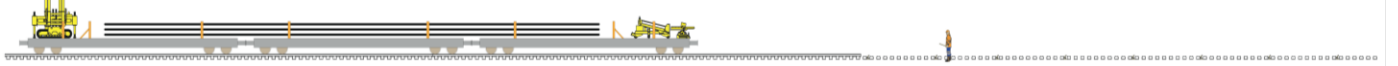
Performance	Lifting platform	Lifting stroke	590 mm
	Distance between rails	Slewing stroke	900 mm / roller
		Minimum distance between rails	354 mm
		Maximum distance between rails	2029 mm
	Maximum useful load	1 200 kg (600 kg per roller)	
Hydraulic unit	Hydraulic electro-distributors with manually driven		
Radio remote control	Yes		
Safety device	2 off emergency stops		
	Acoustic warning horn		
	Hydraulic cylinders equipped with safety valves		
Lighting	2 White LED's floodlight for site lighting		
Dimensions			
Machine weight	1 000 kg		

4. ANNEX : WORKING SEQUENCE

-1. Routing on site, placing rollers



- 2. Unloading the ECTR



- 3. The train moves back



- 4. Recovery of the LGR/LER with the ECTR



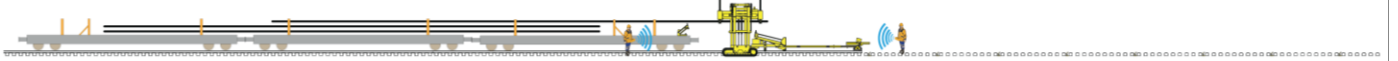
- 5. Routing on work zone



- 6. Clamping of two rails



- 7. Pulling of rails, height adjustment of the RGW and the LGR



- 8. Pulling of rails



- 9. Height adjustment of LGR for the final lay



- 10. Final lay of the rails, taking off the rollers, connecting the track



We reserve the right to modify any equipment specification of the present offer to take into account the latest technical improvements and working conditions at the date of manufacturing .Pictures and drawings may include some options and are not contractual.