

Technical Specification of a Special Road and Rail Vehicle manufactured by Copma Polska type ZDS 11 – rail grinder.

I. Type of road vehicle.

The vehicle meets the technical conditions and conditions for admission to road traffic and movement in force in the Republic of Poland, including in particular the provisions of the Act of 20 June 1997 – Road Traffic Law (consolidated text: Journal of Laws of 2018, item 1990, as amended).

Product description.

Delivery of a new self-propelled, two-way machine understood as a set of vehicles performing jointly the function of a machine for rail reprofiling, one of which is used for the transport and installation of equipment such as hydraulic equipment, grinding material extractors, electric aggregate, etc. and acts as a grinding unit tractor.

The concept of rail reprofiling should be understood as mechanical machining of rails consisting in removing a layer of metal in a specific range using tools built on the machine in order to obtain the required cross-section and longitudinal section of rails, eliminate corrugated deformations of the rolling surface and reduce surface defects. Mechanical machining of rails performed, inter alia, by grinding, which in its scope covers the area of the rolling surface of the rail head in a specific range of the reprofiling angle (mechanical processing of rails).

Reprofiling performed by mechanical grinding described above is aimed at removing metallurgical defects, corrugated deformations, shallows and contacts and removing irregular wear of the rolling surface of the rail head in the cross-section and should not be understood as additional treatments related to the reconstruction of the cross-section of rails other than grinding with the task of parameters. The machine allows the grinding spindles to be set up to optimize the grinding process depending on the wear and tear of the rails.

II. After the vehicle

1.	Chassis brand new.		
2.	Permissible gross weight: up to 19 000 kg		
3.	Maximum vehicle height: up to 3 800 mm		
4.	Total vehicle length: up to 9 500 mm		
5.	Engine: – diesel with direct fuel injection, turbocharged, six-cylinder, with a power of not less than 200 kW, meeting the minimum EURO 6 emission standard, enabling the registration of the vehicle in the		

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	competent body for the Ordering Party's headquarters.		
6.	Chassis: – biaxial		
7.	Axle load and type of suspension: – load capacity of the front axle min. 7500 kg – load capacity of the rear axle min. 9,000 kg – front axle suspension: parabolic with stabilizer or pneumatic . – rear axle suspension: parabolic with anti roll bar or pneumatic		
8.	Tyres: – Road/Off-Road Size: 22.5"		
9.	Brakes: – ABS discs		
10.	Speed of the vehicle in traffic: – up to 90 km/h		
11.	Road wheel drive: – 4x2 drive		
12.	Transmission: – Manual or automatic synchronized with the power take-off		
13.	Wheel guards: – fenders made of corrosion-resistant materials		
14.	Fuel tank: – min capacity 150 l. lockable fuel filler cap		
III. Cabin			
1. Interior fittings			
1.1.	Cabin: Number of seats - minimum 2nd (1 driver + 1 passenger).		
1.2.	Cab plating: – corrosion resistant		
1.3.	Cab windows: – windshield: dyed, side windows: electrically controlled.		
1.4.	Interior lighting: – 1 circumferential (driver + rest of the cabin)		
1.5.	Driver's seat:		

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	– air suspension seat integrated headrest and three-point seat belt		
1.6.	Air conditioning: – with temperature control		
1.7.	Mirrors: – electrically adjustable and heated side mirrors, equipped with a main mirror and a wide-angle mirror (meeting the requirements of Directive 2003/97/EC concerning the front field of vision)		
1.8.	Installation for connecting a radio with a pin.		
1.9.	Windshield sun visor		
1.20.	Central locking		
1.21.	Full-service on-board computer in Polish		
IV. Monitoring system			
1.	Camera and lighting at the rear of the vehicle, a monitor in the cabin that allows you to observe the image from the camera to ensure safe reversing and driving on the track.		
2.	Audible signal of the engaged reverse gear.		
3.	Camera and lighting system for grinding control with a preview on the monitor.		
V. Outdoor lighting			
1.	Lamps: – automatic daytime running lights – rear and front fog lamps – side marker lamps – lighting of the rail grinder working field – lighting of track trolleys		
2.	Light beam: – mounted at the front on the roof of the cabin in orange, flashing.		
VI. Safety equipment			
1.	Warning triangle		
2.	First aid kit		

3.	Fire extinguisher: – 1 pc. with a lever valve, a pressurized steel with ABC powder with a load of 2 kg, placed in the cabin		
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VI Color of the vehicle cabin.

1	Colour RAL 1021 (yellow) or other		
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VII Body – container body.

1.	Container adapted for transporting and unloading / loading rail grinder. – a separate place for control and a rail grinder (cabinets with electronics, computer server room, monitors, automation, etc.)		
2.	Internal container light - led.		
3.	Inside the container built-in with an espola of equipment intended for unloading / loading the rail grinder.		
4.	Suction devices: Grinding dust extraction system equipped with extinguishing system to increase work safety.		
5.	Maximum vehicle width: – up to 2 500 mm (without vehicle mirrors) ..		
6.	Control over elements: – hydraulics, pneumatics, electrical appliances.		
7.	A tow for connecting a rail grinder to the vehicle.		
8.	Rear Tow hitch .		

9.	Container color to be agreed.		
10.	Side entrance to the container by means of stairs located on the right side of the vehicle.		
11.	The back wall of the container opens.		

VIII.Uk rail system – rail chassis

1.	Track width: – 1 435 mm – wheel profile: railway or tram to be selected and agreed at the order stage. – 1520 mm – delivery for a separate fee. Mpossibility to purchase certified adapters extending the track system from 1435mm to 1520 mm.		
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2.	– Hydrostatic track running system - the tire of the vehicle's wheel raised above the rail to a height of at least 50 mm.		
3.	Rail drive system: – forward and reverse driving at speeds up to 40 km/h, parking and safety brake. – Rail wheels with a diameter of min. 350 mm. – Turning radius of the swivel trolley min. R18 forward and backward.		
4.	Rail travel control: – from the driver's cab and from a separate radio-controlled pilot.		
5.	Rail trolley equipment: 1) hydraulic system of setting up and folding the rail chassis 2) a minimum of two hydraulic cylinders for the spacing of each track chassis arm 3) Single-arm front track bogie equipped with two independent hydraulic drive engines. 4) Rear track trolley - rotary (angle of rotation of the trolley minimum 90, preventing by turning the trolley wedging the vehicle on curves) four-wheel ^o equipped with two independent hydraulic drive engines.		
6.	Emergency lifting of rail trolleys: – possibility of emergency manual lifting of the rail trolley.		
7.	The track system is not a prototype.		

IX. Grinder.

The range of minimum technical and functional parameters.

1.	Reprofiling in a track with a spacing of 1435 mm, 1520 mm additional option.		
2.	14 grinding spindles, arranged symmetrically over two rail torches of 6 per side + 1 rail groove grinding disc per side, equipped with a system for adjusting the angle of position of grinding stones individual for each paired spindle into maximum groups of two grinding spindles during the operation of the device		

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	in order to guide facets simultaneously in a different range of rail head contour.		
3.	Grinding stones, pot and disc stones" assembly and replacement in time up to 30 minutes for the whole set.		
4.	Reprofiling of rails type 60R2, RI60, 180S, 49E1 and 60E1.		
5.	Reprofiling of rail type 49E1, 60E1 in the range from +5° to (-70°).		
6.	Reprofiling of built-in rails in classic and ballast-free technology with an integrated road and track surface.		
7.	Minimum capacity 0.1 mm/passage/facet.		
8.	Grinding dust extraction system equipped with extinguishing system to increase work safety.		
9.	Adjustable vehicle speed during reprofiling (minimum speed range 1-4 km/h).		
10.	Min. radius of horizontal arc during grinding R=25m.		
11.	Operating temperature range -10/+35 [°C].		

X. Accessories

1.	A vehicle equipped with a drive that allows you to move on the track as well as on public roads.		
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2.	Vehicle marking: – warning strips made of fluorescent paints in yellow – red color placed in accordance with road traffic regulations.		
3.	Full-size spare wheel.		
4.	Hydraulic jack and tool set, factory set of keys, including wheel wrench.		
5.	Vehicle operating temperature from -20 °C to +40 °C		
6.	Towing the rail grinder during operation.		
7.	A vehicle equipped with a power generator to supply all required additional devices such as lashings, electronic control systems, pneumatic and		

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	hydraulic systems, electric drives, lighting, etc. The unit is equipped with a 230 V AC and 400 V AC power supply system		
8.	A vehicle equipped with a set of devices allowing for unloading and loading of a grinding device (rail grinders for working on the track) and handles (torpedoes) enabling lifting of the entire vehicle using a separate external car crane.		
9.	Vehicle and grinding module equipped with cameras with continuous monitoring of the workpiece in order to observe the quality of the works carried out.		
10.	The vehicle is controlled during grinding work from remote desktops operated by operators from outside the machine with a preview of parameter settings and their adjustments such as: pressure of grinding stones, condition of grinding stones, rotational speed of grinding stones, speed of machine travel during operation, rail machining angles.		
11.	The minimum number of people needed to operate the machine - 2.		
12.	A measuring system that allows you to make and record measurements before grinding and after grinding (the possibility of printing measurement records).		

Warranty for a complete road and rail vehicle -24 months.