



Terms of reference for manufacturing of self-propelled underground mining machine - loader

Parameters	
<b>Geometric characteristics of mine workings</b>	
Height of mine working:	4020 mm
Width of mine working:	3440mm.
Turning width (T-section):	3500mm.
Maximum slope of inclined exit:	14°
Pavement	Rock
<b>Ore and rock properties</b>	
Ore type:	Polymetals
Material density (t/m <sup>3</sup> ):	2.7
Rock type:	Rheodocites, Quartzites, Tuffs, Agglomerates
Ore hardness: mPa:	5-60
Rock hardness: mPa:	5-120
Fracturing of ore and rocks:	Medium to highly fractured
Abrasiveness of rocks and ores:	Moderately abrasive rocks, ores of medium abrasiveness
Rock and ore strength and stability:	Unstable
<b>Environmental properties</b>	
Air temperature:	15-24°C
Deposit inundation (humidity), %:	50
Air supply: m <sup>3</sup> /min:	6000 m <sup>3</sup>
Content of aggressive impurities in water, pH:	5-7
Carbonization:	No
Dust content:	1.6
<b>Type of works</b>	Unloading and transportation of rock mass

**MACHINE SPECIFICATION AND EQUIPMENT**

Overall dimensions and weight	
Length:	8 800 mm
Idth (by ladle):	1 800 mm
Width (at wheelbase):	1 900 mm
Unloading height:	3 300 mm

Cabin height:	2 300 mm
Ladle volume:	3 m <sup>3</sup>
Loading capacity:	7 000 kg
<b>Engine</b>	
Type of engine:	Radiator cooled diesel engine. Diesel emission standards Euro 3, Tier III
Air intake system:	Dry air filter
Exhaust system:	Catalyst, muffler
Starter voltage: 24 V	24 V
<b>Transmission</b>	
<b>Converter (Hydrotransformer):</b>	Single-stage converter with lock-up converter
<b>Transmission:</b>	Hydromechanical gearbox, Four forward and four reverse gears
<b>Axles</b>	
<b>Front axle:</b>	High friction differential
<b>Rear axle:</b>	Balancer. High friction differential
<b>Tires</b>	
<b>Front wheels:</b>	Tire size and type: 17.5x25 L5S
<b>Rear wheels:</b>	Tire size and type: 17.5x25 L5S
<b>Braking system</b>	
Design:	Multidisc spring brake (SAHR)
Service brake: hydraulic dual-circuit brake system of closed design on both axles multi-disc brakes in oil bath.	Hydraulic dual-circuit brake system of closed design on both axles multi-disc brakes in oil bath.
Safety/Parking Brake:	Reverse, normally spring-applied, hydraulic disengagement.
<b>Performance</b>	
Max. speed:	(loaded forwards/reverse, on a level road): 1st gear: 4 km/h 2nd gear: 8 km/h 3rd gear: 13 km/h 4th gear: 22 km/h
Maximum gradient:	15°
Turning radius (internal):	3 050 mm
Turning radius (external):	5 800 mm
<b>Steering</b>	
Steering:	Hydraulic steering with articulated frame
Angle of rotation of the frame joint:	± 42,5°
<b>Ladle</b>	
Ladle	3 m <sup>3</sup> , external width: 2 200 mm, maximum useful load: 7 t.
<b>Electrical system</b>	
Operating voltage:	24 V
Battery:	2 x 12 V
Protection Class:	IP65
Main and rear lights:	LED
Additional headlights and signal lamps:	LED
Sound and light reverse signaling:	Sound and light reverse signaling

Electrical wiring:	Wiring harnesses in fireproof and waterproof casing
Other: Battery switch	Battery switch
<b>Operator's cabin</b>	
Type of operator's cabin:	Open cabin ROPS/FOPS certificate
Operator seat:	Ergonomic seat with safety belt
Other:	Seat for mine self-rescuer.
<b>Other equipment</b>	
Safety:	Emergency stop buttons on the machine body
Option:	Boom suspension system
Option:	Remote radio control vehicle
Option:	Headlight protection grilles
Lubrication/Greasing system:	Central automated lubrication system
Fire extinguisher:	Portable fire extinguisher 2 x 8 kg
Information plates:	Warning signs (plates) and inscriptions in Russian and English.
Signal lights:	Amber flashing light beacon
Spare tire (with rim):	2 pcs.
Fire extinguishing system:	Headlight protection grilles
Documentation:	2 operating manuals and spare parts in Russian and English; spare parts catalog on CD.
Emergency braking system:	Hydraulic brake release
Wheel blocks:	With brackets, 2 pcs.
Сертификация CE, сертификация ROPS и FOPS уровня 2 для подземных работ	ROPS and FOPS certification, Tier 2 for underground works.