



# SANDVIK LH203 UNDERGROUND LOADER

## TECHNICAL SPECIFICATION

The LH203 is a compact and lightweight underground loader for narrow vein mining applications. The robust loader is a productive and strong unit with a best-in-class power to weight ratio, featuring a tramming capacity of 3.5 metric tons.

The LH203 loader offers two engine alternatives; a Tier 3 / Stage III A and a Tier 2 / Stage II, both from Deutz. The unit uses Kessler axles, equipped with spring applied, hydraulically released brakes. The bucket alternatives include traditional bare lip buckets and an ejector bucket.

The operator's compartment is ROPS and FOPS certified to improve safety underground, and efficient LED lights improve visibility. Safety can be further improve by equipping the loader with a fire suppression system, radio remote control and recovery kit.



### CAPACITIES

Maximum tramming capacity	3 500 kg
Break out force, lift	6 220 kg
Break out force, tilt	5 610 kg
Standard bucket	1.5 m <sup>3</sup>

### SPEEDS FORWARD & REVERSE (LEVEL/LOADED) WITH DEUTZ BF6L914

1st gear	5.5 km/h
2nd gear	10.3 km/h
3rd gear	25.5 km/h

### BUCKET MOTION TIMES

Raising time	5.5 sec
Lowering time	2.9 sec
Dumping time	3.0 sec

### OPERATING WEIGHTS

Total operating weight	8 700 kg
Front axle	3 700 kg
Rear axle	5 000 kg

### LOADED WEIGHTS

Total loaded weight	12 200 kg
Front axle	9 050 kg
Rear axle	3 150 kg

## OPERATIONAL CONDITIONS AND LIMITS

Environmental temperature	From -20° C to +50° C
Standard operating altitude	Below 3 000 m

## REQUIREMENTS AND COMPLIANCE

Compliance with 2006/95/EC Low voltage directive

Design based on EN 1889-1. Machines for underground mines. Mobile machines working underground. Safety. Part 1: Rubber tyred vehicles.

Design based on MDG 15. Guideline for mobile and transportable equipment for use in mines. (Equipment for Australia, achieved with relevant options)

Electrical system based on IEC 60204-1. Safety of machinery – Electrical equipment of machines – Part 1: General requirements

## POWER TRAIN

### ENGINE

Diesel engine	Deutz BF6L914
Output	71.5 kW @ 2 300 rpm
Torque	400 Nm @ 1 650 rpm
Number of cylinders	In-line 6
Displacement	6.47 l
Cooling system	Air cooled
Combustion principle	4-stroke, turbo, direct injection
Air filtration	Dry type
Electric system	24 V
Emissions	Tier 2, Euro Stage II
Exhaust system	Double wall exhaust pipe with catalytic purifier/muffler
Average fuel consumption at 40 % load	8.5 l/h
Fuel tank refill capacity	110 l

### CONVERTER

Dana SOH C2000 series

### TRANSMISSION

Power shift transmission with modulation	Dana SOH RT20000 series, power shift (mechanical control) transmission with modulation. Manual electrical gear shift control as option.
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### AXLES

Front axle	Kessler D71, spring applied hydraulically released brakes, limited-slip differential
Rear axle	Kessler D71, spring applied hydraulically released brakes, limited-slip differential

### TIRES

Tire size	12.00 x 20 L5S, 20 ply
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## OPERATOR'S COMPARTMENT

### OPEN CANOPY

ROPS certification according to EN ISO 3471
FOPS certification according to EN ISO 3449
No high pressure hoses in the operator's compartment
Inclinometers to indicate operating angle
Emergency exit
Floor washable with water to reduce dust
Three-point contact access system with replaceable and colour coded handles and steps

### OPERATOR'S SEAT

Low frequency suspension
Adjustment according to the operator's weight
Fore-aft isolation
Padded and adjustable arm rests
Adjustable lumbar support
Two-point seat belt

### DASHBOARD AND DISPLAYS

Critical warnings and alarms	Audible and visible alarms
Instrument panel	Electric gauges
Instrument panel	Illuminated switches

## FRAME

### REAR AND FRONT FRAME

Welded structure, high strength steel, optimized material thickness
Central hinge with adjustable lower bearing
Tanks welded to the rear frame
Automatic central lubrication

## HYDRAULICS

Door interlock for brakes, boom, bucket, and steering hydraulics	
Cooler for transmission oil	
Fittings	JIC
Hoses	JIC
Hydraulic oil tank capacity	120 l
Sight glass for oil level	2 pcs

### STEERING HYDRAULICS

Full hydraulic, centre-point articulation, power steering with one double acting cylinder. Steering controlled by stick. Emergency steering is optional.

Steering main valve	Open center type
Steering hydraulic cylinders	100 mm, 1 pcs
Steering pump	Gear type
Steering and servo hydraulic pumps	Gear type

## BUCKET HYDRAULICS

Dual stick bucket and boom control. Full hydraulic, mechanically controlled system, equipped with one gear type pump.

Boom system	Straight boom
Lift cylinders	180 mm, 1 pcs
Dump cylinder	140 mm, 1 pcs
Main valve	Open center type
Pump for bucket hydraulics	Gear type

## BRAKES

Service brakes are hydraulically operated multidisc wet brakes on all wheels. Two independent circuits: one for the front and one for the rear axle. Parking brake is spring applied, hydraulically released dry disk brake affecting on the front axles drive line. In case of a sudden pressure drop in brake hydraulics the parking brake functions as an emergency brake. Brake system performance complies with requirements of EN ISO 3450, AS2958.1 and SABS 1589.

Neutral brake
Automatic brake activation system, ABA
Electric emergency brake release pump, 2 kW

## ELECTRICAL EQUIPMENT

### MAIN COMPONENTS

Alternator	24 V, 55 A
Batteries	2 x 12 V, 70 Ah
Starter	4 kW, 24 V
Driving lights	LED lights: 2 pcs in front 2 pcs in rear
Parking, brake and indicator (blinkers) lights	LED lights: 2 pcs in front 2 pcs in rear
Reverse alarm	
Flashing beacon	

## INCLUDED SAFETY FEATURES

### FIRE SAFETY

Portable fire extinguisher, 6 kg
Hot side - cold side design
Isolation of combustibles and ignition sources
Heat insulation on exhaust manifold, turbo, and isolated exhaust pipe

### ENERGY ISOLATION

Lockable main switch, ground level access
Emergency stop push buttons according to EN ISO 13850
Automatic discharge for pressure accumulators (brake system and pilot circuit)
Frame articulation locking device
Mechanical boom locking device

## DOCUMENTATION

### STANDARD MANUALS

Operator's Manual	English and other EU languages
Maintenance Manual	English and other EU languages
Parts Manual	English
Service and Repair Manual	English
ToolMan	2 x USB stick in PDF format, includes all the manuals
Decals	English, Finnish, Swedish, Spanish, Russian, French, Polish, Portuguese, German, Bulgarian

## OPTIONS

Wider canopy, ROPS/FOPS approved, width 1015 mm, height 1990 mm
Cover grills for lamps
Disabled 3 <sup>rd</sup> gear
Electrical gear shift control
Spare rim 8.5 - 20 (for tyres 12.00 R20)
Line of sight radio remote control HBC, analogue, including electrical gear shift
Radio remote control interface HBC, analogue, including electrical gear shift, not with automation
Recovery kit (brake release by radio signal)
Wiggins fuel fill system
Arctic package (preheater for engine, hydraulic oil tank and glow plug)
Eclipse™ fire suppression system with auto shutdown, Sustain or Extreme agent delivered separately
ANSUL LVS fire suppression system, with or without CHECKFIRE
Emergency steering
Wheel chocks and brackets

### OPTIONAL ENGINE

Diesel engine	Deutz TCD914 L06
Output	72 kW @ 2300 rpm
Emissions	Euro Stage III A (Tier 3)
Average estimated fuel consumption at 40% load	10 l/h

## AVAILABLE BUCKETS

Type	Volume	Width	Max. material density
Bare Lip (standard)	1,5 m <sup>3</sup>	1480 mm	2330 kg/m <sup>3</sup>
Bare Lip	1,5 m <sup>3</sup>	1690 mm	2330 kg/m <sup>3</sup>
Bare Lip	1,75 m <sup>3</sup>	1690 mm	2000 kg/m <sup>3</sup>
Bare Lip	2 m <sup>3</sup>	1690 mm	1830 kg/m <sup>3</sup>
G.E.T. Half Arrow	1,5 m <sup>3</sup>	1480 mm	2300 kg/m <sup>3</sup>
Ejector bucket	1,5 m <sup>3</sup>	1690 mm	2130 kg/m <sup>3</sup>

## GRADE PERFORMANCE

Deutz BF6L914, 71.5 kW

Calculated with 2% rolling resistance

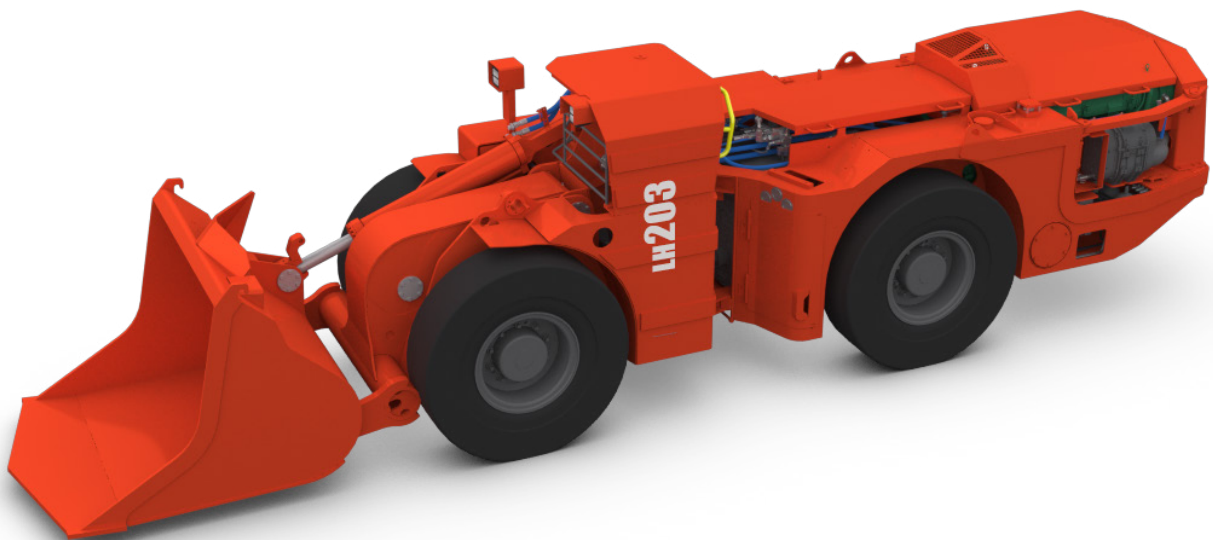
Without lock-up

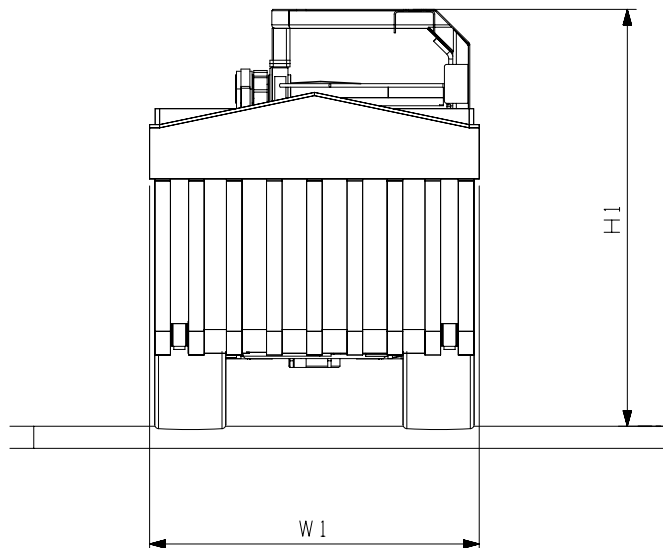
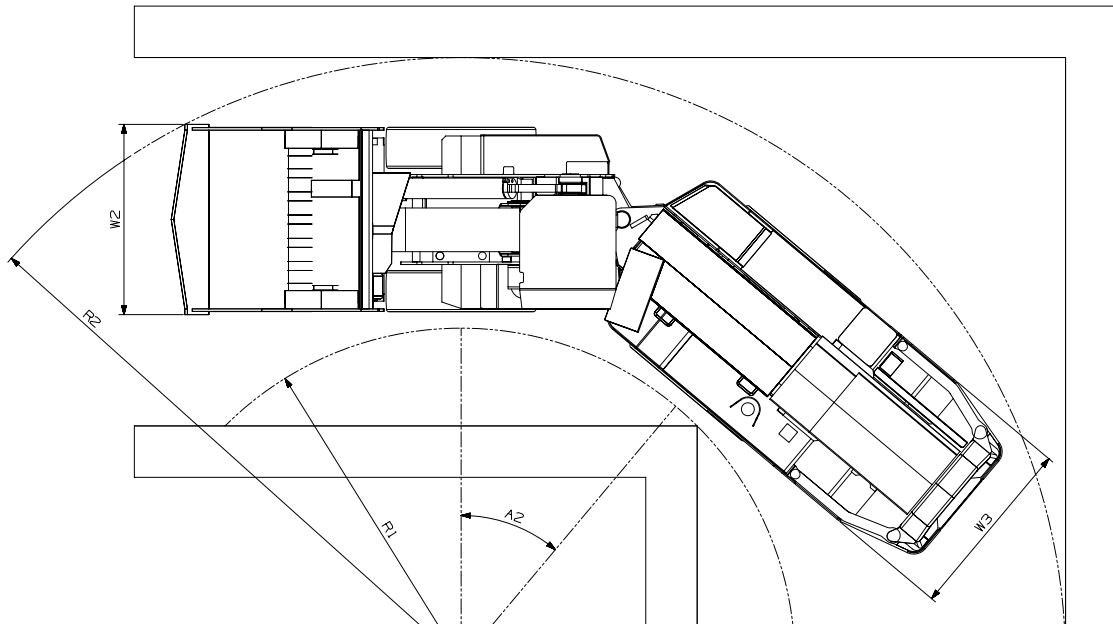
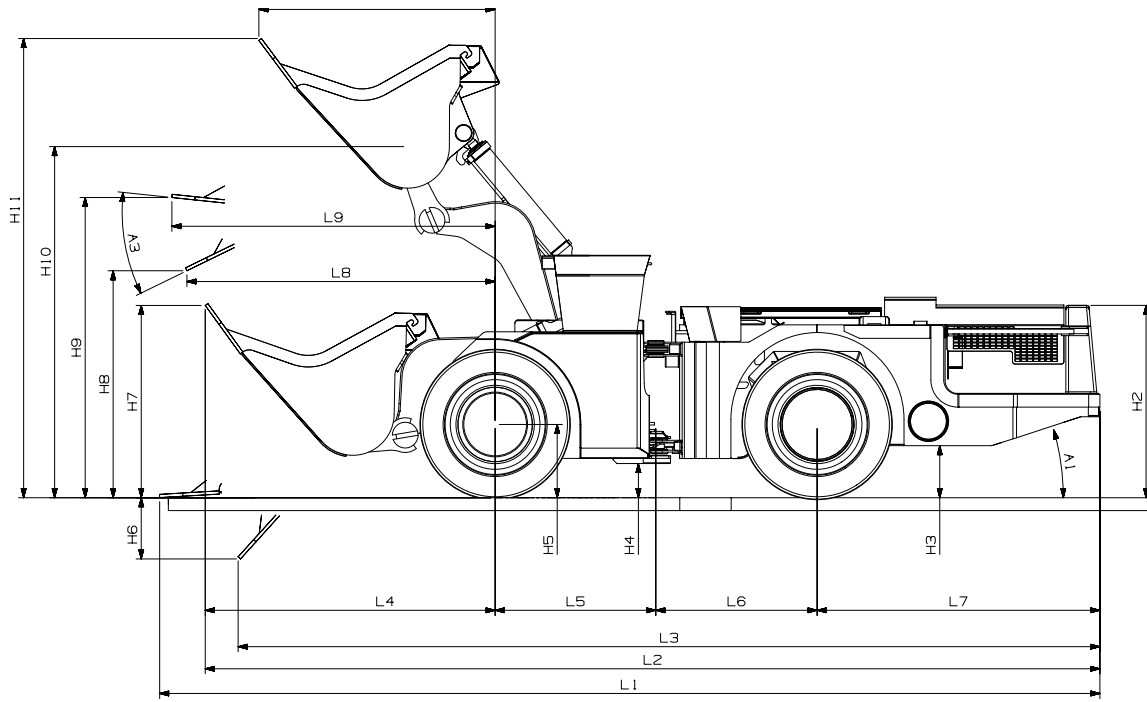
Empty

Percent grade	0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17
Ratio					1:12	1:10	1:8	1:7	
1st gear(km/h)	5.6	5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.7
2nd gear(km/h)	10.6	10.2	9.8	9.4	9.1	8.7	8.1	7.6	6.9
3rd gear(km/h)	27.0	23.9	19.4	14.4	10.0				

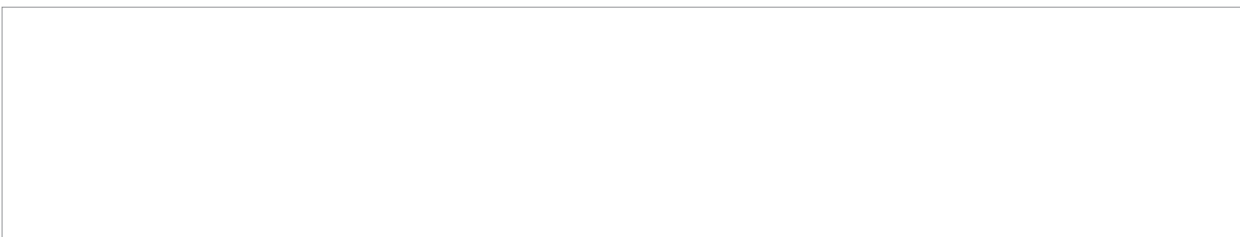
Loaded

Percent grade	0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17
Ratio					1:12	1:10	1:8	1:7	
1st gear(km/h)	5.5	5.3	5.2	5.0	4.9	4.8	4.6	4.5	4.3
2nd gear(km/h)	10.3	9.8	9.3	8.8	8.1	7.3	6.3	5.5	4.5
3rd gear(km/h)	25.2	19.4	12.6						





Sandvik ID	00321520	00323410	56006168	B600993519	56210497	56207517
	Bucket			Half Arrow		
Size (m3)	1.5	1.75	2.0	1.5	1.75	1.75
Dimension	STD					
L1	7315	7316	7445	7292	7491	7372
L2	6960	6960	7034	6945	7106	7026
L3	6594	6594	6565	6565	6663	6591
L4	2255	2255	2255	2240	2401	2321
L5	1250	1250	1250	1250	1250	1250
L6	1255	1255	1255	1255	1255	1255
L7	2200	2200	2200	2200	2200	2200
L8	2398	2409	2225	2380	2540	2437
L9	2226	2223	2353	2202	2409	2289
L10	1838	1838	1913	1823	1986	1904
H1, STD	1886	1886	1886	1886	1886	1886
H1, High	2035	2035	2035	2035	2035	2035
H2	1497	1497	1497	1497	1497	1497
H3	407	407	407	407	407	407
H4	266	266	266	266	266	266
H5	570	570	570	570	570	570
H6	958	958	1053	940	1121	1028
H7	1511	1511	1613	1481	1612	1525
H8	1078	1078	1022	1095	955	1018
H9	2336	2336	2348	2340	2305	2304
H10	2504	2504	2507	2504	2504	2504
H11	3572	3557	3674	3543	3674	3585
W1, STD	1480	1690	1690	1491	1540	1756
W1, High	1580	1690	1690	1585	1610	1756
W2	1480	1690	1690	1491	1540	1756
W3	1410	1410	1410	1410	1410	1410
A1	16°	16°	16°	16°	16°	16°
A2	40°	40°	40°	40°	40°	40°
A3	26°	26°	26°	26°	26°	26°
R1, Left Turn	2597	2597	2727	2597	2672	2564
R2, Left Turn	4702	4796	4864	4702	4829	4879
T, Left Turn	2866	2959	2137	2105	2940	3066
R1, Right Turn	2702	2597	2727	2725	2672	2564
R2, Right Turn	4702	4796	4864	4702	4829	4879
T, Right Turn	2792	2959	2727	2105	2940	3066



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