

# Toro<sup>®</sup> LH202

Safer.  
Stronger.  
Smarter.



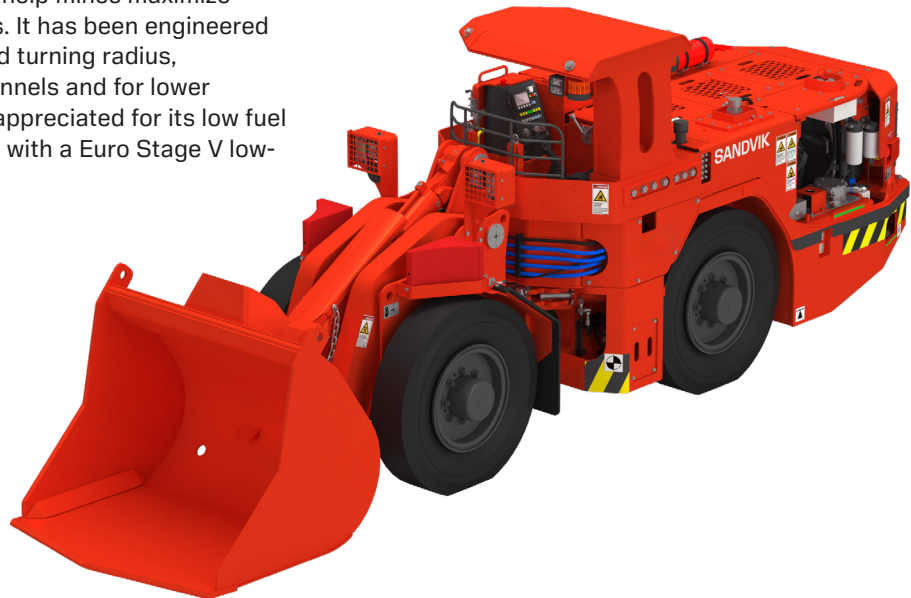
# Technical specification

## Toro® LH202

Toro® LH202 is a compact and lightweight loader for narrow vein mining with the best payload to own weight ratio in its class. The small-size loader offers reduced dilution, better flexibility and operator safety when working in narrow vein operations. The loader is easy to operate and maintain, and it features an operator's compartment that is located in the rear frame of the machine for increased operator safety.

Toro® LH202 is full of features which help mines maximize tonnes and minimize extraction costs. It has been engineered to optimize machine width, length and turning radius, enabling operation in more narrow tunnels and for lower operational costs. The equipment is appreciated for its low fuel consumption, and it can be equipped with a Euro Stage V low-emission engine from Deutz.

In addition to mining applications, the compact and agile equipment fits well for civil engineering and construction projects for building new and improving existing infrastructure. Due to its relatively light weight and the possibility to disassemble the equipment for transport, Toro® LH202 is a fit match for small-dimensioned construction sites, even if located in remote areas within challenging access.



Capacities	
Tramming capacity	3 000 kg
Break out force, lift	5 810 kg
Break out force, tilt	6 425 kg
Standard bucket	1.3 m <sup>3</sup>
Speeds forward & reverse (level/loaded) with Deutz BF4L914 engine	
Tramming speed	10 km/h

Bucket motion times	
Raising time	4.8 sec
Lowering time	3.3 sec
Dumping time	5.5 sec

Operating weights	
Total operating weight	8 800 kg
Front axle	3 300 kg
Rear axle	5 500 kg

Loaded weights	
Total loaded weight	11 800 kg
Front axle	7 900 kg
Rear axle	3 900 kg

**Operational conditions and limits**

Environmental temperature	From -20° C to +48° C
Standard operating altitude	Below 4500 m

**Requirements and compliance**

Compliance with 2006/95/EC Low voltage directive
Compliance with 2006/42/EC Machinery directive (Equipment for EU area, achieved with relevant options)
Design based on ISO 19296. Machines for underground mines. Mobile machines working underground. Safety. Part 1: Rubber tyred vehicles.
Compliance with ISO 13766-1 and -2 Electromagnetic compatibility standard
Electrical system based on IEC 60204-1. Safety of machinery – Electrical equipment of machines – Part 1: General requirements

**Engine**

Diesel engine	Deutz BF4L914
Output	50 kW @ 2300 rpm
Torque	245 Nm @ 1600 rpm
Number of cylinders	In-line 4
Displacement	4.314 l
Cooling system	Air cooled
Combustion principle	4-stroke, turbo-charger
Air filtration	Two stage 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 50 % load	9.0 l / h
Fuel tank refill capacity	80 l

**Transmission**

Hydrostatic transmission with forward and reverse. Two speed areas.

**Axles**

Front axle	Kessler D41, SAHR brakes, Limited slip differential
Rear axle	Kessler D41, SAHR brakes, No-slip differential, oscillating $\pm 8$ degrees

**Tires**

Tire size (Tires are application approved. Brand and type subject to availability.)	9.00 R20 L5S
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**Rear and front frame**

High strength welded steel structure with optimized material thicknesses
Central hinge with adjustable upper bearing
Tanks bolted to the frame

**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
12/24 V output for communication radio connection
Remote circuit breaker switch

**Operator's seat**

Low frequency suspension
Height adjustment
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 displayed as warning lights
Instrument panel with electric gauges and illuminated switches

**Hydraulics**

Door interlock for brakes and boom, bucket, and steering hydraulics
Oil cooler for hydraulic oil
ORFS fittings
ORFS hoses
Hydraulic oil tank capacity 120 l
Sight glass for oil level, 2 pcs

**Steering hydraulics**

Hydraulically operated, center-point articulation, power steering with one double acting cylinder. Steering controlled by hydraulic joystick. Interlock protection.	
Steering main valve	Open center type
Steering hydraulic cylinders	80 mm, 1 pc
Steering pump	Gear type
Steering and servo hydraulic pumps	Gear type

### Bucket hydraulics

The oil flow from steering hydraulic pump is directed to bucket hydraulics when steering is not used.	Joystick bucket and boom control (hydraulic), equipped with gear pump that delivers oil to the bucket hydraulic main valve.
Boom system	Straight boom
Lift cylinders	100 mm, 2 pcs
Dump cylinder	125 mm, 1 pc
Main valve	Open center type
Pump for bucket hydraulics	Gear type

### Brakes

Service brakes are spring applied; hydraulically released multidisc wet brakes on all wheels. Two independent circuits: one for the front and one for the rear axle. Service brakes also function as an emergency and parking brake. Brake system performance complies with requirements of EN ISO 3450, AS2958.1 and SABS 1589.

Neutral brake

Automatic brake activation system, ABA

Emergency brake release pump

### Main components

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

### 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

Pressure release in the radiator cap (Standard in Stage V engine. Not available for Tier 2 engine)

Automatic discharge for pressure accumulators (brake system and pilot circuit)

Frame articulation locking device

Mechanical boom locking device

### 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 × USB stick in PDF format, includes all the manuals
Decals	English, French, Spanish, German

### Options

ANSUL® LVS fire suppression system ANSUL, with or without CHECKFIRE, including auto shutdown

Eclipse® fire suppression system with auto shutdown, Sustain or Extreme agent delivered separately

Arctic package (240V heater elements) for Stage V engine only

Automatic central lubrication

Boom floating

CE Declaration of conformity

Cover grills for lamps

Direct feed for beacon

Driving direction lights (red / green)

Electric filling pump for hydraulic oil

Emergency steering (CE)

Line of sight radio remote control HBC, analogue

Lower canopy (2017 mm)

Radio remote control interface HBC, analogue

Recovery kit (brake release by radio signal), hook included

Spare rim 10.00–25/1.5 (for tyres 14.00 R25)

Starter isolator

Wheel chocks and brackets

Wiggins fuel fill system

### Optional engines

Engine Deutz F4L914 air cooled, natural aspirated, 56 kW, 2300 rpm, Tier 2

Engine Deutz TD3.6 L4 liquid cooled, Turbo Charged, 55 kW, 2300 rpm, Stage V  
Ventilation rate: CANMET 4.63 m<sup>3</sup>/s, MSHA 5500 cfm  
Particulate index: MSHA 500 cfm

**Grade performance****Deutz BF4L914****Empty**

Percent grade	0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17
Speed (km/h)	10	10	10	10	10	10	8.8	7.9	7.0

**Loaded**

Percent grade	0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17
Speed (km/h)	10	10	10	10	9.3	7.9	6.8	6	5.3

**Dimensions**

	Standard	
Bucket alternatives (m <sup>3</sup> )	1.3 m <sup>3</sup>	1.5 m <sup>3</sup>
Lip plate type	Bare lip	Bare lip
L1 (mm)	6220	6358
L2 (mm)	5864	5774
L3 (mm)	5649	5760
L4 (mm)	1980	2054
L5 (mm)	1000	1000
L6 (mm)	1050	1050
L7 (mm)	1840	1840
L8 (mm)	1702	1804
L9 (mm)	2407	2540
L10 (mm)	1931	1999
H1 (mm), open cabin, STD	2134	2134
H1 (mm), open cabin, Low	2017	2017
H2 (mm)	1468	1468
H3 (mm)	230	230
H4 (mm)	188	188
H5 (mm)	500	500
H6 (mm)	926	1022
H7 (mm)	1259	1373
H8 (mm)	752	653
H9 (mm)	1770	1772
H10 (mm)	2035	2035
H11 (mm)	3150	3273
W1 (mm)	1450	1450
W2 (mm)	1450	1450
W3 (mm)	1400	1400
A1	14°	14°
A2	40.0°	40.0°
R1, left turn (mm)	2107	2107
R2, left turn (mm)	4021	4054
T, left turn (mm)	2531	2564
R1, right turn (mm)	2107	2107
R2, right turn (mm)	4021	4054
T, right turn (mm)	2531	2564

Dimensions

