

TORO[™] TH330 UNDERGROUND TRUCK



RELIABLE AND PRODUCTIVE

DESIGNED FOR THE UNDERGROUND

Toro[™] TH330 is a reliable, hard-working dump truck designed especially for underground conditions. With its hardy structure, compact size and fit-forpurpose components, the truck is tailored to match productivity targets in challenging environments. An improved front approach angle helps to reduce ground impacts and bumps when the road is rough. New heavy-duty axles, using limited slip differentials to maintain traction, improve availability and reduces total costs of ownership.

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HIGH PAYLOAD CAPACITY AND RAMP SPEED

The equipment's low weight, 30 tonne payload capacity and high ramp speed enable better productivity and shorter cycle times. The standard Tier 3 engine with a gross power of 235 kW makes Toro™ TH330 a fast and powerful mining truck. High engine peak torque and torque rise allow less downshifting and better acceleration, while the new transmission automatic gear shifting and torque converter lock-up ensure fast speeds. High power and low engine torque rpm improve fuel economy and reduce noise.

ACHIEVE FULL CAPACITY WITH A RANGE OF BOX OPTIONS

Sandvik dump boxes are designed with extra volume when selecting the right box for the broken material density. Sandvik uses a 90% fill factor in the box selection to ensure that the truck can be loaded to its full 30 tonne capacity and reduce spillage during tramming. The reinforced steel structure is made from wear resistant steel for extended box lifetime. Further, a tailgate option which is available for all box sizes improves productivity and reduces spillage.

FUEL EFFICIENT TIER 3 ENGINE FOR HIGH ALTITUDES

A robust 235 kW Tier 3 Volvo engine with catalytic purifier and muffler delivers extremely long engine lifetime in underground mining conditions. This fuel efficient 8 litre engine with a high technology injection system contributes to an efficient combustion and low fuel consumption. Further, the engine is calibrated for use in high altitude conditions to maintain performance, low emissions and reliability.

MAXIMIZING PRODUCTIVITY

My Sandvik Digital Service Solutions are designed to help you maximize your productivity, operational efficiency and safety. Once activated, the Knowledge Box™ collects equipment data into easy-to-use insights about your fleet's performance. The monitoring data is available from the truck through a USB port.

EASE OF MAINTENANCE & SERVICEABILITY

Toro[™] TH330 is designed for ground level daily maintenance. Standard features improving safety include a lockable main switch, articulation lock and box maintenance support, among others. Sandvik Intelligent Control System monitors the equipment health and provides early warnings. The control system user interface is available in multiple different languages, according to the customer needs.

CORRECT CHOICE OF LUBRICANTS

The right oil can make a major difference in equipment lifetime. Low-quality fluids can reduce productivity and shorten equipment life. All oils in the Sandvik range are specifically designed and carefully tested, paying close attention to extreme operating conditions. As a result, Sandvik Performance Fluids are long lasting, ideal for different climate conditions and most importantly, formulated based on the specific needs of your Sandvik truck. They ensure increased reliability, higher availability and reduced breakdown risk.

OPTIMIZED GREASE CONSUMPTION

The standard automatic central lubrication system optimizes grease consumption and extends the life of the bushes and bearings. Activated by Sandvik Intelligent Control System when the parking brake is released, hard to reach areas are well lubricated and service time is reduced.

SANDVIK

SANDVIK MAINTENANCE KITS

Sandvik maintenance kits are made to protect your Sandvik machine and to allow you to meet peak performance levels. The kit components are selected according to our recommended service intervals to ensure trouble-free and economical operations.

ELECTRICS FOR THE UNDERGROUND

To improve safety and reliability of the truck electrics, the new Toro™ TH330 main fuse and battery have been relocated to a higher location which offers better protection against water and mud.

EASY TO CLEAN COOLER

The heavy-duty engine cooler used in the Toro™ TH330 truck features outstanding corrosion characteristics due to the use of long-life alloys and it has been designed to perform in high ambient temperatures. Equipped with swing out fans, the cooler is easy to clean. The cooler elements are replaceable. It is possible to change only one element at a time instead of changing the whole cooler.

GROUND LEVEL DAILY SERVICE

Toro[™] TH330 is designed for ground level daily service with smart placement of key service areas and maintenance accesses. All covers and hatches can be opened without any special tools. An efficient engine filter is placed within the frame for impact protection and it utilizes an ejector valve system for increased filter lifetime. An optional Wiggins fast filling system for fuel and oil eliminates spills and increases equipment availability by reducing fueling time up to 80%.

NEW ACCESS SYSTEM

For getting to the top of the equipment, the totally new access system provides steady grip with 3-point contact high contrast handles and anti-slip steps. Top covers are fitted with anti-slip tapes to reduce risk of slipping.

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SAFETY AND OPERATOR ENVIRONMENT

Toro[™] TH330 is available with a robust Roll Over Protective Structure (ROPS) and Falling Objects Protective Structure (FOPS) certified open canopy or closed cabin, both protecting the operator in case of rolling over or falling objects. The closed cabin is air-conditioned and noise resistant. The seat is covered with dust resistant upholstery materials. It also includes laminated safety glass windows, three-point contact handles, anti-slip steps and an emergency exit. The cabin door includes a door lock and latch mechanism with an interlock switch which automatically applies brakes when the door is opened. Further, neutral brake is a standard feature in the Toro[™] TH330 truck.

ADJUSTABLE ARMRESTS AND LOW FREQUENCY SUSPENSION SEAT

This truck is fitted with an adjustable low frequency suspension seat to perfectly match the operator weight, with two-point seat belt and padded armrests as a standard. Small storage boxes are located in the cabin/canopy for the miner's gear. In the cabin there is a special place for storing safely a water bottle. In addition, the cabin/canopy is mounted on bushings to the truck frame to reduce whole body vibration. The well-balanced engine from Volvo Penta delivers smooth operation and low noise levels.





TOUCH SCREEN COLOR DISPLAY

A 7" color display with clear symbols and advanced touch screen functionality brings valuable information e.g. alarms to the display, giving the operator more time to keep eyes on the road. The Sandvik Intelligent Control System monitors and warns the operator before failures occur, preventing severe damage and potential loss of production.

IMPROVED VISIBILITY

To improve operator visibility, the truck is equipped with a reversing camera as a standard. Naturally, adjustable high-power LED lights are in the standard configuration on every Toro[™] TH330, and the lights can be equipped with additional cover grills to provide protection against hits and rocks. Red and green directional lights are available as options to indicate direction of travel.

FIRE SAFETY

Significant efforts have been made to achieve top-level fire safety in Toro[™] TH330. These include e.g. isolation of combustibles and ignition sources, heat insulation on exhaust manifold and turbo, and insulated exhaust pipe. For fire suppression, Eclipse[™] from Sandvik is available as an option. The Eclipse[™] equipped with Sustain fire suppression system agent is a sustainable choice, as it is the world's first fluorine-free fire suppression liquid for mobile equipment. For environmental conditions where the temperature may drop under zero, the Eclipse[™] Extreme provides fire protection.

PROXIMITY DETECTION SYSTEM INTERFACE

A Proximity Detection System (PDS) interface option is also available on Toro™ TH330 for mines to interface with their site PDS system. The PDS interface offers easy installation and connection to the Sandvik Intelligent Control System with the capability to slow down and stop the truck with a signal from a PDS system.

LOW COST OF OWNERSHIP



ROBUST AND RELIABLE POWER TRAIN

Toro[™] TH330 is equipped with new heavy-duty axles that have a longer lifetime to improve the truck availability and reduce total costs of ownership.

SUPERIOR BRAKING POWER

As with all Sandvik trucks, Toro™ TH330 is equipped with spring applied hydraulic release brakes for safer braking. Top speeds can be reduced by an optional gear limiting to improve safety in narrow tunnels and rough roads.

FUEL EFFICIENT TIER 3 ENGINE FOR HIGH ALTITUDES

A robust 235 kW Tier 3 Volvo engine with catalytic purifier and muffler delivers a long engine life in underground mining conditions. The fuel efficient 8 liter engine is also calibrated for use in high altitude conditions to maintain performance, low emissions and reliability. The heavy-duty efficient aluminum cooler is easy to clean, helping to reduce total cost of ownership. The standard engine brake provides better control of the vehicle speed downhill, minimizes brake and transmission overheating and brake wear.

SIMPLE AND RELIABLE HYDRAULICS

The proven hydraulic system with fixed displacement pumps provides pressure and flow, enabling fast and efficient unloading. The hydraulic system is simple and reliable, contributing to ease of maintenance and lower total cost of ownership. An electric filling pump for hydraulic oil is available as an option to quickly fill the hydraulic tank through a filter ensuring clean oil to protect the hydraulic system components.

EFFICIENT COOLING FOR INCREASED PERFORMANCE

Separate brake, hydraulic and transmission cooling provide increased performance in hot conditions underground. A more efficient cooling circuit leads to lower oil temperatures, reducing stress on the system, extending component lifetimes, and minimizing oil leaks.

FEA OPTIMISED FRAMES

Toro[™] TH330 welded steel structures used in the frame provide strong resistance to shock loads. They are optimized to reduce stresses and extend frame lifetime. The frames are computer designed using Finite Element Analysis (FEA) and made from high strength structural steel.

SANDVIK 365 PARTS & SERVICES

LIFETIME SUPPORT

Having great equipment is only part of the story. What makes working with Sandvik an unbeatable experience is the blend of lifetime support we can provide through our broad offering of genuine parts & components, services and digital innovations.

At the heart of this package lies a combination of skilled people, integrated processes & systems and a global footprint.

QUALITY SERVICE TAILORED TO YOUR NEEDS

We offer different type of service agreements and advisory services that can be adapted to suit the support you require – helping you to maintain your fleet in the optimal way.

It's our job to keep your equipment in full health and to make sure that major components of your loader are being replaced or repaired at optimum intervals. With our solutions, you can expect superior reliability and longer life than with non-OEM alternatives.

DIGITAL SERVICES FROM THE EXPERTS

As a long established and trusted OEM we understand the challenges our customers face in their mines with our equipment. In addition to that, we have the highest number of connected mining equipment.

Our learnings over this time have helped us to understand not only capturing the data but analyzing it to provide insights which deliver tangible value to our customers. Remote Monitoring Service is one example - the service leverages state of the art cloud technologies and AI to convert machine data into actionable information, hence enabling the prevention and prediction of breakdowns before they happen.



TECHNICAL SPECIFICATION TORO™ TH330

Toro[™] TH330 is a narrow 30 metric tonne truck designed for small and medium-sized hard rock mines, fitting in a 3 x 3 meter heading. This underground truck has the same overall width as most 15-ton trucks on the market, but due to its 30 tonne payload capacity, it doubles the productivity. As with all Sandvik underground mining trucks, it is designed to operate fully loaded and at high speeds on long spiral haulage ways with up to 20% gradients.

Available with a standard forward facing, open operator compartment or with an optional forward facing, fully enclosed and air conditioned cabin, Toro[™] TH330 offers comfort without compromising visibility.

Advantages:

- Narrow size enables operation in 3x3 meter headings
- Excellent payload capacity reduces the need for additional trucks
- Efficient LED lights reduce eye fatigue and risk of collision, while long LED lifetime offers lower cost of ownership compared to halogen lights
- Ground-level daily maintenance for safer service
- Optional ejector box for tight backfill haulage

CAPACITIES

Maximum payload capacity (SAE heaped 2:1)	30 000 kg
Standard dump box	16.5 m ³
Dump box range	14-18 m ³

SPEEDS (LEVEL/LOADED) WITH VOLVO TAD853VE

1st gear	5.3 km/h
2nd gear	9.3 km/h
3rd gear	16.2 km/h
4th gear	28.4 km/h

DUMP BOX MOTION TIMES & MOVEMENTS

Discharging time	11 sec
Dumping angle	65°

OPERATING WEIGHTS*

Total operating weight	24 500 kg
Front axle	17 500 kg
Rear axle	7 000 kg

LOADED WEIGHTS*

Total loaded weight	54 500 kg
Frontaxle	23 900 kg
Rearaxle	30 600 kg

* Unit weight is dependent on the selected options



TS3-TH330-09/ENG/METRIC

Environmental temperature	From -30°C to +50°C
Standard operating altitude	With engine Volvo TAD853VE from -1500 m to + 3000 m at 25°C without rated power derate
REQUIREMENTS AND COMPL	IANCE
Compliance with 3006/95/EC	Low voltage directive
Compliance with 3004/108/EC Electromagnetic compatibility	
Design based on EN 1889-1. M Mobile machines working unde Part 1: Rubber tyred vehicles.	lachines for underground mines. erground. Safety.
	C 60304-1. Safety of machinery – nes – Part 1: General requirements
Refrigerant R134a under press Filled weight: 1,8 kg CO2e: 2,574 tons GWP: 1430 Information based on the F Ga	
POWER TRAIN	
Diesel engine	Volvo TAD853VE
Engine brake	Yes
Output	235 kw (315 hp) @ 2300 rpm
Torque	1310 Nm @ 1450 rpm
Number of cylinders	In-line 6
Displacement	7.7
Cooling system	Liquid cooled
Compution principle	4-stroke, direct injection,
Combustion principle	turbo, after cooler

Air FiltrationDry typeElectric system24 VEmissionsTier 3, Euro Stage III AVentilation rate
(Ultra low sulphur diesel)CANMET 16,700 CFM 7,88 m³/s
MSHA particulate index
12,000 CFMExhaust systemCatalytic converter with mufflerAverage fuel consumption
at 50% load34 l/hFuel tank capacity340 l

CONVERTER

Dana C8000 Series with Lock up

TRANSMISSION

Fully automatic transmission with electric shifting system. Four gears forward and two reverse

Dana 6000 Series

AXLES	
ront axle	Kessler D91 spring applied hydraulic operated brakes, equipped with standard differential, oscillation
Rearaxle	Kessler D91 spring applied hydraulic operated brakes, equipped with standard differential, fixed

TIRES

Tire size (Tires are application approved.)	23.5 R 25 VSDT L5
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OPERATOR'S COMPARTMENT

CABIN (Cabin	option replaces the standard canopy)
ROPS certific	ation according to EN ISO 3471
FOPS certific	ation according to EN ISO 3449
	nditioned, over pressurized, ssed closed cabin
Sound absorb	pent material to reduce noise
Laminated gla	ass windows
Cabin mounte	ed on rubber mounts to the frame to reduce vibrations
	ng unit located outside the cabin se inside the cabin
Cyclone pre-f	filter for A/C device
No high press	sure hoses in the operator's compartment
Inclinometers	to indicate operating angle
Emergency e	xit
Floor washab	le with water to reduce dust
	contact access system with nd colour coded handles and steps
Remote circui	it breaker switch
CANOPY (Sta ROPS certific	andard) cation according to EN ISO 3471
	cation according to EN ISO 3449
No high pres	sure hoses in the operator's compartment
Inclinometer	s to indicate operating angle
Emergency e	exit
Floor washab	ole with water to reduce dust
	contact access system with replaceable and d handles and steps
Remote circu	uit breaker switch
OPERATOR'S	S SEAT
Low frequen	cy suspension
Height adjus	tment
Adjustment a	according to the operator's weight
Fore & aft isc	plator to minimise vibrations in driving direction
Padded and	adjustable arm rests
Adjustable lu	imbar support
Selectable d	amping

Two-point seat belt

MEASURED SOUND LEVEL

The sound pressure level and sound power level at the operator's compartment have been determined in stationary conditions on high idle and at full load, with engine Volvo TAD853VE

Sound pressure level L _{pA} [dB re 30 µPa]	86 dB
Sound power level L _{wa} [dB ew 1 p W]	117 dB

MEASURED VIBRATION LEVEL

Whole body vibration was determined while operating the truck in a simulated working cycle consisting of loading, unloading and driving with and without load. The value is determined applying standards EN 1032 and ISO 2631-1.

Maximum r.m.s. value a _w [m/s²]	0,55 (driving with load)
VDVW over 15 min period [m/s ^{1.75}]	7,54 (driving with load)

DASHBOARD AND DISPLAYS

Sandvik Intelligent Control System	1
Critical warnings and alarms	Displayed with light
Instrument Panel	Electrical gauges, 7" Display
Instrument Panel	Illuminated switches

FRAME

REAR AND FRONT FRAME

High strength structure with optimized material thicknesses. Reduced own weight for higher overall hauling capacity and long structural lifetime. Welded steel construction.

Adjustable lower bearing
Tanks are part of the frame structure
Automatic central lubrication

HYDRAULICS

Door interlock for brake hydraulics	S
Oil cooler for hydraulic and transmission oil	Capability up to 50 °C ambient temperature
Fittings	ORFS
Hydraulic oil tank capacity	380
Sight glass for oil level	2 pcs

STEERING HYDRAULICS

Full hydraulic power steering, center articulated with double acting steering Cylinders. Open-center system with a gear pump and wheel steer control.

Steering main valve	Pilot operated
Steering hydraulic cylinders	114 mm, 2 pcs
Steering pump	Gear pump

DUMP BOX HYDRAULICS

Full hydraulic open-center system with one gear pump. Oil flows to the dump box hydraulic system from the pump when the steering system is not in use. Joystick dump box control.

Hydraulic pump	Gear pump
Control valve	Pilot operated
Main valve	Pilot operated
Cylinders	159 mm, 2 pcs

BRAKES

Service brakes are spring applied; hydraulically operated multi disc 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			
Electrically driven emerger	ncy brake release pump		
Brake pedal valve	Foot operated pedal,		

fully modulated

ELECTRICAL EQUIPMENT

MAIN COMPONENTS

Alternator	28 V 110 A
Batteries	2 X 12V, 950 CCA
Starter	24 V 5,5 kW
Driving lights	LED lights: 4 pcs in front 2 pcs in rear
Working lights	LED light, 1 pc rear of cabin
Reverse camera	Standard
Parking, brake and indicator (blinkers) lights	LED lights: 2 pcs in front 2 pcs in rear
Control system	Color display, inbuilt system diagnostics
Reverse alarm (CE)	
Flashing beacon	
Marker lights	

ILLUMINATION

Illuminance Eav with 2 pieces of 50 W led lights at a distance of 30 m in front of the truck:	
Head lights, low beam Eav	30 lx
Illuminance Eav with 2 pieces of 50 W led lights at a distance of 30 m behind the truck:	
Reversing lights, low beam Eav	29 lx
Toro™ TH330i is compliant with the South Africar safety act 29 of 1996, as the average light intensi	

INCLUDED SAFETY FEA	TURES	OPTIONS				
FIRE SAFETY		ANSUL Twin fire suppression system with CHECKFIRE (CE)				
Portable fire extinguisher, 6 kg	g (CE)	ANSUL Twin fire suppression system without CHECKFIRE (CE)				
Hot side – cold side design		Arctic package 230 V (preheater for hydr. oil tank, transmission and				
Isolation of combustibles and	l ignition sources	engine block)				
Heat insulation on exhaust ma	anifold, turbo, and isolated exhaust pipe	CE declaration of conformity				
		Clear flashing beacon				
ENERGY ISOLATION		Cover grills for lamps				
Lockable main switch, ground	l level access	Driving direction lights (red/green)				
Emergency stop push button	0	Eclipse™ Fire suppression system with auto shutdown, Sustain or Extreme agent delivered separately (CE)				
Pressure release in the radiate	or cap	Electric filling pump for hydraulic oil				
Automatic discharge for pres (brake system and pilot circuit		Emergency steering (CE)				
Frame articulation locking dev		Gear limit (specify max gear to factory)				
Mechanical dump box locking		Jump start interface				
		— My Sandvik Digital Services Knowledge Box™: on-board hardware				
		Proximity Detection System Interface				
DOCUMENTATION STANDARD MANUALS		ROPS/FOPS closed cabin with 2-point seat belt, air conditioning and heater				
Operator's Manual	English and other EU languages	Spare rim				
Maintenance Manual	English and other EU languages	Starter motor isolator				
Parts Manual	English	Video recorder				
Service and Repair Manual	English	Water cooled alternator				
ToolMan	2 x USB stick in pdf format, includes	Wheel chocks and brackets				
IUUIIVIAN	all the manuals	Wiggins fuel fill system				
Decals	English and other EU languages	Wiggins quick fill set for oils and coolant				

AVAILABLE BOXES

Box capacity SAE heaped 2:1 (m³) *	16.5 (standard)	14.0	15.0	18.0
Material broken density with 90 % fill factor (t/m³)	2.0	2.4	2.2	1.9
* According to SAE 1363 / ISO 6483				

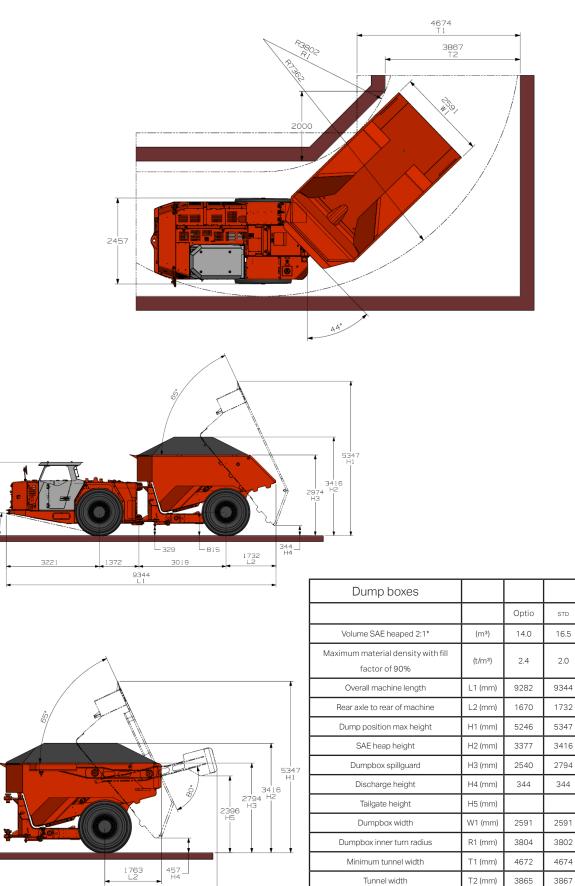
GRADE PERFORMANCE

$\lambda_{0} = T = T = T = T = T = T = T = T = T = $	(3% rolling resistance assumed,	with look up apagad)
	5% 10000 (ESISTANCE ASSUMED)	WITH IOCK-UD ENGAGED

Empty										
Percent grade	0.0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17.0	20.0
Ratio					1:12	1:10	1:8	1:7	1:6	1:5
1st gear (km/h)	4.7	4.7	4.7	4.7	4.7	4.6	4.6	4.6	4.6	4.6
2nd gear (km/h)	8.4	8.4	8.3	8.3	8.2	8.1	8.1	8.0	8.0	7.9
3rd gear (km/h)	14.7	14.6	14.4	14.2	14.0	13.9	13.7	13.4	12.1	10.7
4th gear (km/h)	26.2	25.6	25.1	24.5	21.7					
Loaded										
Percent grade	0.0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17.0	20.0
Ratio					1:12	1:10	1:8	1:7	1:6	1:5
1st gear (km/h)	4.7	4.6	4.6	4.6	4.5	4.5	4.4	4.4	4.4	4.3
2nd gear (km/h)	8.3	8.2	8.1	7.9	7.8	7.7	6.9	6.3		
3rd gear (km/h)	14.4	14.0	13.7	12.0						

DIMENSIONS WITH 16.5m³ DUMP BOX (STANDARD)

The dimensions are indicative only



* According to SAE 1363/ISO 6483

Tailgate

15.0

2.2

Tailgate

18.0

1.9

MATCHING PAIR TORO™ LH307

Toro[™] LH307 is a 7 tonne loader developed specifically for narrow-vein underground mines. The loader comes with a Stage III A / Tier 3 fuel efficient Volvo engine with Canmet and MSHA approvals as standard, providing long engine lifetime. Other available engines include a Tier 4f / Stage IV lowemission engine from Volvo for use with Ultra Low Sulphur Diesel fuel.

To improve operator safety and comfort, Toro™ LH307 can be equipped with a closed, air conditioned cabin. For improved safety of maintenance work, safety rails are available as an option. Camera systems and Proximity Detection System Interface are available for monitoring the loader immediate vicinity.

Toro™ LH307 is equipped as standard with Sandvik Intelligent Control System and My Sandvik Digital Services Knowledge Box ™ on-board hardware. The control system monitors the equipment productivity and health.

Bucket sizes vary from 3 m³ to 3.7 m³, including bare lip, ejector and SHARK[™] G.E.T. buckets. The G.E.T. solutions optimize loader productivity and extend bucket service life.

CAPACITIES

Maximum tramming capacity	7 000 kg
Break out force, lift	14 015 kg
Break out force, tilt	11 690 kg
Standard bucket	3.0 m ³

SPEEDS FORWARD & REVERSE (LEVEL/LOADED) WITH ENGINE VOLVO TAD850VE

1st gear	4.2 km/h
2nd gear	9.0 km/h
3rd gear	13.0 km/h
4th gear	21.1 km/h

BUCKET MOTION TIMES

Raising time	6.5 sec
Lowering time	3.9 sec
Dumping time	2.7 sec

OPERATING WEIGHTS*

Total operating weight	19 307 kg
Front axle	8 310 kg
Rear axle	10 997 kg

LOADED WEIGHTS*

Total loaded weight	26 307 kg	
Front axle	19 874 kg	
Rear axle	7 333 kg	

* Unit weight is dependent on the selected options





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