



# 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-for-purpose 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.

## 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 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.

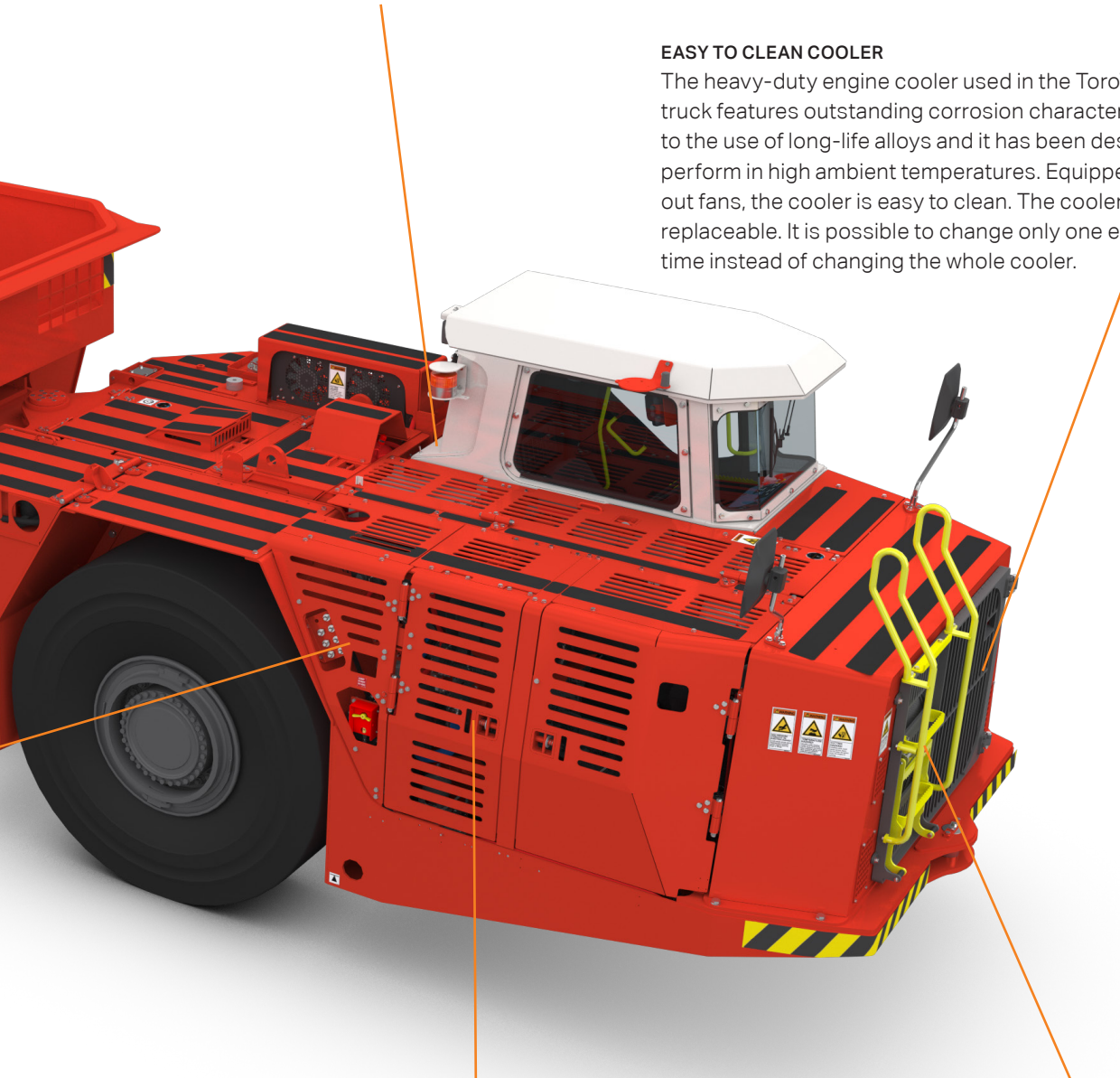


#### **ELECTRICS FOR THE UNDERGROUND**

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.



# 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 <sup>3</sup>  |
| Dump box range                            | 14-18 m <sup>3</sup> |

### 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 |
| Front axle          | 23 900 kg |
| Rear axle           | 30 600 kg |

\* Unit weight is dependent on the selected options



## OPERATIONAL CONDITIONS AND LIMITS

|                             |  |
|-----------------------------|--|
| Environmental temperature   | From -30°C to +50°C  |
| Standard operating altitude | With engine Volvo TAD853VE<br>from -1500 m to + 3000 m at<br>25°C without rated power derate |

## REQUIREMENTS AND COMPLIANCE

|  |
|--|
| Compliance with 3006/95/EC Low voltage directive   |
| Compliance with 3004/108/EC<br>Electromagnetic compatibility directive   |
| Design based on EN 1889-1. Machines for underground mines.<br>Mobile machines working underground. Safety.<br>Part 1: Rubber tyred vehicles.   |
| Electrical system based on IEC 60304-1. Safety of machinery –<br>Electrical equipment of machines – Part 1: General requirements   |
| CONTAINS FLUORINATED GREENHOUSE GASES<br>(closed cabin option)<br>Refrigerant R134a under pressure max 38 bar/550 PSI:<br>Filled weight: 1,8 kg<br>CO2e: 2,574 tons<br>GWP: 1430<br>Information based on the F Gas Regulation (EU) No 517/3016 |

## POWER TRAIN

### ENGINE

|  |   |
|--|---|
| 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 l   |
| Cooling system                                       | Liquid cooled   |
| Combustion principle                                 | 4-stroke, direct injection,<br>turbo, after cooler                  |
| Air Filtration                                       | Dry type  |
| Electric system                                      | 24 V  |
| Emissions  | Tier 3, Euro Stage III A  |
| Ventilation rate<br>(Ultra low sulphur diesel)       | CANMET 16,700 CFM 7,88 m³/s<br>MSHA particulate index<br>12,000 CFM |
| Exhaust system                                       | Catalytic converter with muffler                                    |
| Average fuel consumption<br>at 50% load              | 34 l/h  |
| Fuel tank capacity                                   | 340 l   |
| Compatible with paraffinic<br>diesel fuel (EN 15940) | Yes   |

## CONVERTER

|                                |
|--------------------------------|
| Dana C8000 Series with Lock up |
|--------------------------------|

## TRANSMISSION

|   |
|---|
| Fully automatic transmission with electric shifting system.<br>Four gears forward and two reverse |
| Dana 6000 Series  |

## AXLES

|            |   |
|------------|---|
| Front axle | Kessler D91 spring applied<br>hydraulic operated brakes,<br>equipped with standard<br>differential, oscillation |
| Rear axle  | Kessler D91 spring applied<br>hydraulic operated brakes,<br>equipped with standard<br>differential, fixed       |

## TIRES

|  |                   |
|--|-------------------|
| Tire size (Tires are application<br>approved.) | 23.5 R 25 VSDT L5 |
|--|-------------------|

## OPERATOR'S COMPARTMENT

|  |
|--|
| CABIN (Cabin option replaces the standard canopy)  |
| ROPS certification according to EN ISO 3471  |
| FOPS certification according to EN ISO 3449  |
| Sealed, air conditioned, over pressurized,<br>noise suppressed closed cabin              |
| Sound absorbent material to reduce noise   |
| Laminated glass windows  |
| Cabin mounted on rubber mounts to the frame to reduce vibrations                         |
| Air conditioning unit located outside the cabin<br>to reduce noise inside the cabin      |
| Cyclone pre-filter for A/C device  |
| 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<br>replaceable and colour coded handles and steps |
| Remote circuit breaker switch  |

### CANOPY (Standard)

|  |
|--|
| 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<br>colour coded handles and steps |
| Remote circuit breaker switch  |

## OPERATOR'S SEAT

|   |
|---|
| Low frequency suspension  |
| Height adjustment   |
| Adjustment according to the operator's weight                   |
| Fore & aft isolator to minimise vibrations in driving direction |
| Padded and adjustable arm rests                                 |
| Adjustable lumbar support                                       |
| Selectable damping  |
| 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<br>$L_{pA}$ [dB re 30 $\mu$ Pa] | 86 dB  |
| Sound power level<br>$L_{WA}$ [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/s <sup>2</sup> ] | 0,55 (driving with load) |
| VDVW over 15 min period [m/s <sup>1.75</sup> ] | 7,54 (driving with load) |

## DASHBOARD AND DISPLAYS

|                                    |                               |
|------------------------------------|-------------------------------|
| Sandvik Intelligent Control System |                               |
| 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           |  |
| Filtration                                    |  |
| Oil cooler for hydraulic and transmission oil | Capability up to 50 °C ambient temperature |
| Fittings                                      | ORFS                                       |
| Hydraulic oil tank capacity                   | 380 l                                      |
| 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, brake activates after 3sec in neutral gear |
| Automatic brake activation system, ABA                    |
| Electrically driven emergency 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:<br>4 pcs in front<br>2 pcs in rear |
| Working lights                                 | LED light, 1 pc rear of cabin                  |
| Reverse camera                                 | Standard                                       |
| Parking, brake and indicator (blinkers) lights | LED lights:<br>2 pcs in front<br>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™ TH330 is compliant with the South African Mine health and safety act 29 of 1996, as the average light intensity in the direction

## INCLUDED SAFETY FEATURES

### FIRE SAFETY

|   |
|---|
| Portable fire extinguisher, 6 kg (CE)                                 |
| 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   |
| Automatic discharge for pressure accumulators (brake system and pilot circuit) |
| Frame articulation locking device  |
| Mechanical dump box 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 and other EU languages                        |

### OPTIONAL ENGINE

|   |  |
|---|--|
| Diesel engine   | Volvo TAD883VE   |
| Output  | 235 kW (320 hp) @ 2200 rpm                                     |
| Emissions   | Euro Stage V   |
| Engine brake  | Yes  |
| Ventilation rate<br>(Ultra low sulphur diesel and AdBlue) | MSHA 10,500 CFM<br>CANMET 11,200 CFM                           |
| Particulate index<br>(Ultra low sulphur fuel, AdBlue)     | MSHA 500 CFM   |
| CO2 NRTC cycle  | 669 g/kWh  |
| Exhaust system  | Diesel Particulate Filter and<br>Selective Catalytic Reduction |
| Fuel consumption  | 30 l/h   |
| Compatible with paraffinic<br>diesel fuel (EN 15940)      | Yes  |

## OPTIONS

|   |
|---|
| ANSUL Twin fire suppression system with CHECKFIRE (CE)  |
| ANSUL Twin fire suppression system without CHECKFIRE (CE)   |
| Arctic package 230 V (preheater for hydr. oil tank, transmission and engine block)                      |
| CE declaration of conformity  |
| Clear flashing beacon   |
| Cover grills for lamps  |
| Driving direction lights (red/green)  |
| Eclipse™ Fire suppression system with auto shutdown, Sustain or Extreme agent delivered separately (CE) |
| Electric filling pump for hydraulic oil   |
| Emergency steering (CE)   |
| Gear limit (specify max gear to factory)  |
| Jump start interface  |
| My Sandvik Digital Services Knowledge Box™: on-board hardware   |
| Proximity Detection System Interface  |
| ROPS/FOPS closed cabin with 2-point seat belt, air conditioning and heater                              |
| Spare rim   |
| Starter isolator  |
| Video recorder  |
| Water cooled alternator   |
| Wheel chocks and brackets   |
| Wiggins fuel fill system  |
| 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

Note that more boxes can be available, please contact your local Sandvik representative for more information.

## GRADE PERFORMANCE

Volvo TAD853VE Tier 3 (3% rolling resistance assumed, with lock-up 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 |      |      |      |      |      |

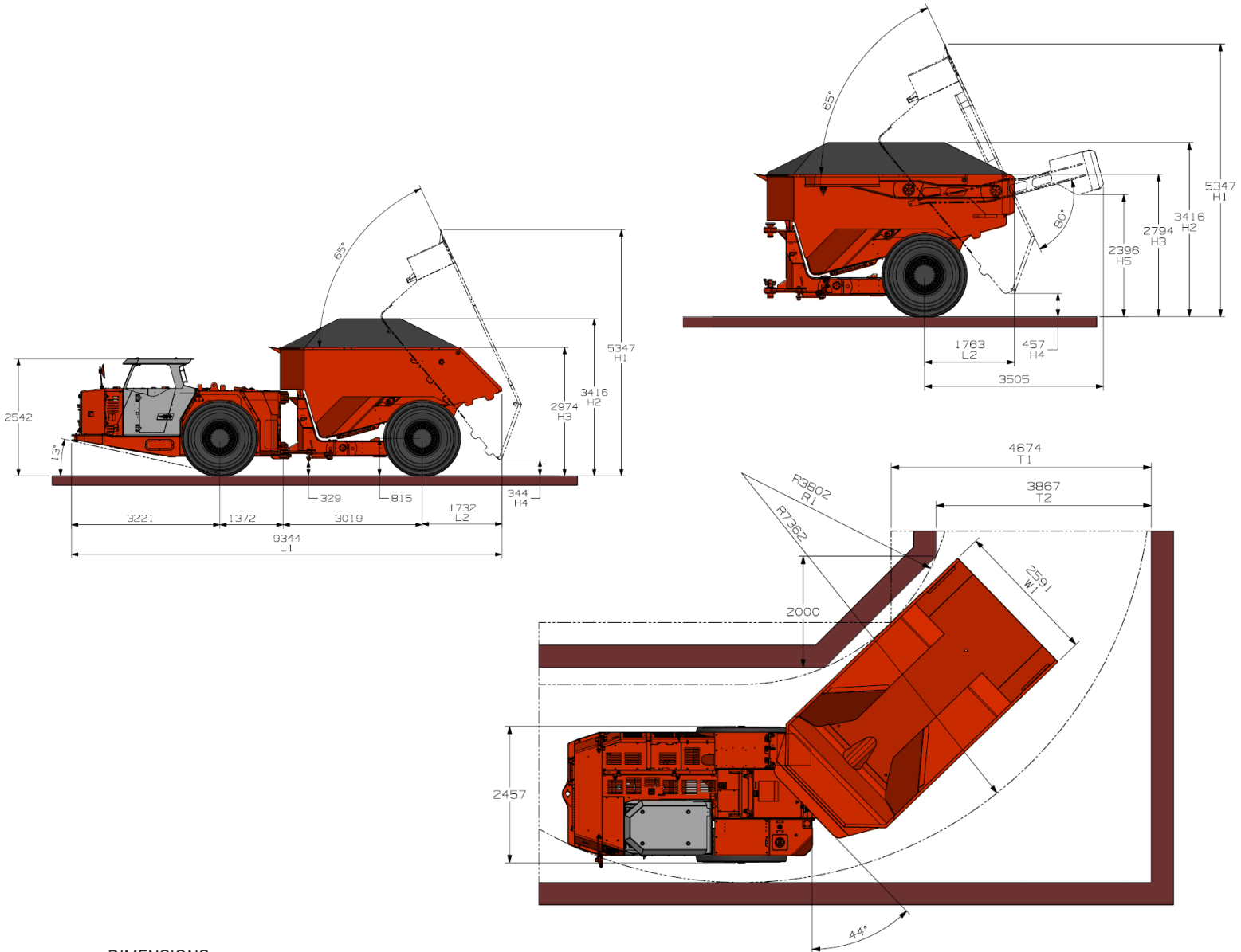
### Loaded

|                 |      |      |      |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| 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 |      |      |      |      |      |      |
| 4th gear (km/h) | 25.2 | 21.5 |      |      |      |      |      |      |      |      |



DIMENSIONS WITH 16.5m³ DUMP BOX (STANDARD)

The dimensions are indicative only



DIMENSIONS

| Dump Boxes                                       |         | STD  |      |      |      |
|--|---------|------|------|------|------|
| Volume SAE heaped 2:1*                           | (m³)    | 14.0 | 16.5 | 15.0 | 18.0 |
| Maximum material density with fill factor of 90% | (t/m³)  | 2.4  | 2.0  | 2.2  | 1.9  |
| Overall Machine Length                           | L1 (mm) | 9282 | 9344 | 9375 | 9375 |
| Rear Axle to Rear of Machine                     | L2 (mm) | 1670 | 1732 | 1763 | 1763 |
| Dump Position Height Max                         | H1 (mm) | 5246 | 5347 | 5246 | 5347 |
| SAE Heap Height                                  | H2 (mm) | 3377 | 3416 | 3185 | 3416 |
| Dumpbox Spillguard                               | H3 (mm) | 2540 | 2794 | 2540 | 2794 |
| Discharge Height                                 | H4 (mm) | 344  | 344  | 469  | 457  |
| Tailgate height                                  | H5 (mm) |      |      | 2507 | 2396 |
| Dumpbox width                                    | W1 (mm) | 2591 | 2591 | 2988 | 2988 |
| Dumpbox turn radius                              | R1 (mm) | 3804 | 3802 | 3680 | 3685 |
| Minimum tunnel width                             | T1 (mm) | 4672 | 4674 | 4760 | 4757 |
| Tunnel width                                     | T2 (mm) | 3865 | 3867 | 3960 | 3956 |

\* According to SAE 1363/ISO 6483

# 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 low-emission 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

|                       |           |
|-----------------------|-----------|
| Tramming capacity     | 7 000 kg  |
| Break out force, lift | 14 015 kg |
| Break out force, tilt | 11 690 kg |
| Standard bucket       | 3.1 m³    |

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

|          |           |
|----------|-----------|
| 1st gear | 4.2 km/h  |
| 2nd gear | 7.8 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  |

