



TORO™ TH551i

SAFER. STRONGER. SMARTER.



INCREASED PRODUCTIVITY

Efficient ore moving and lower costs

The highly maneuverable Toro™ TH551i truck with low own weight, 51 tonnes payload capacity and high ramp speed enables an efficient ore moving process. In addition to boosting productivity, reduced own weight also results in reduced fuel consumption and less tire wear, lowering equipment total operating costs.

Full utilization of the truck capacity

With wide range of box options, you can achieve the truck's rated capacity. Sandvik dump boxes are already designed with extra volume when selecting the right box for your broken material density. A built-in 90% fill factor in box selection ensures the truck can be loaded to its true rated capacity and reduces spillage during tramming. The smooth box design improves material flow during dumping, while the reinforced steel structure uses wear resistant steel for extended box lifetime. Optional features include an ejector box for backfilling and unloading in areas of restricted dump height and as well as a spill guard for the front of the dump box to protect machine covers from falling material when loading the dump box.

Shorter cycle times

Toro™ TH551i truck has a Dana TE-50 transmission that provides easy downhill control and high speeds, contributing to shorter cycle times. The transmission control module has eight gears, fault notifications for the operator, optimized axle ratio, and a quick and smooth lock-up to lock-up shifting for maximum speed and efficiency on varying ramps and with different loads. Key components such as the turbine hub, impeller housing and rear cover are specially designed for longer lifetimes, keeping equipment in production longer by increasing service interval times.

Production monitoring

To ensure maximum utilization of the rated payload on every trip, the truck can be equipped with Sandvik's Integrated Weighing System (IWS) for trucks. For an accurate result, the IWS considers the environmental temperature and the truck's inclination angle and is equipped with three-point measurement of the weight in the box. Real-time weighing and signal lights advise the loader operator to ensure the rated capacity is reached before moving forward. IWS combined with the Vehicle Control System (VCM) features a patented carryback reduction system. The operator is notified when there is material left in the box and can activate a plate to push out the remaining material. This reduces fuel consumption and increases carrying capacity and accuracy of the IWS.

In addition to accurately measuring the payload, the IWS also records the results to My Sandvik Digital Services Knowledge Box™. The Knowledge Box™ can transfer this production monitoring data through Wi-Fi connection for customer access via My Sandvik internet portal. Alternatively, data can be downloaded manually in the operator's compartment onto a USB stick.





READY FOR DIGITALIZATION

AUTOMINE®

AutoMine® is the industry leader in automation for underground loaders and trucks. This high-performing, comprehensive solution is working around the world, backed by Sandvik experts across the globe.

AutoMine® readiness is built into Toro™ TH551i for faster retrofitting later in the truck's lifetime. To maintain a fast retrofit time, the AutoMine® Onboard Package now has one small enclosure and electrical quick connectors for fast installation, and no hydraulic changes are needed. All sensors have increased protection from rock fall. With AutoMine®, a fleet of trucks is converted into a high performing autonomous production system, providing significant safety and productivity improvements for mine operations.

OPTIMINE®

OptiMine® is the most comprehensive solution for optimizing underground hard rock mining production and processes. It integrates all assets and people - including Sandvik and non-Sandvik equipment - delivering descriptive and predictive insights to improve operations.

OptiMine® is interoperable and able to connect to any system and technology, including Newtrax IoT devices, providing a real-time view of mining operations. It is an

open and scalable modular suite that gives you flexibility to expand and work with a full range of equipment, systems and networks.

KNOWLEDGE BOX™

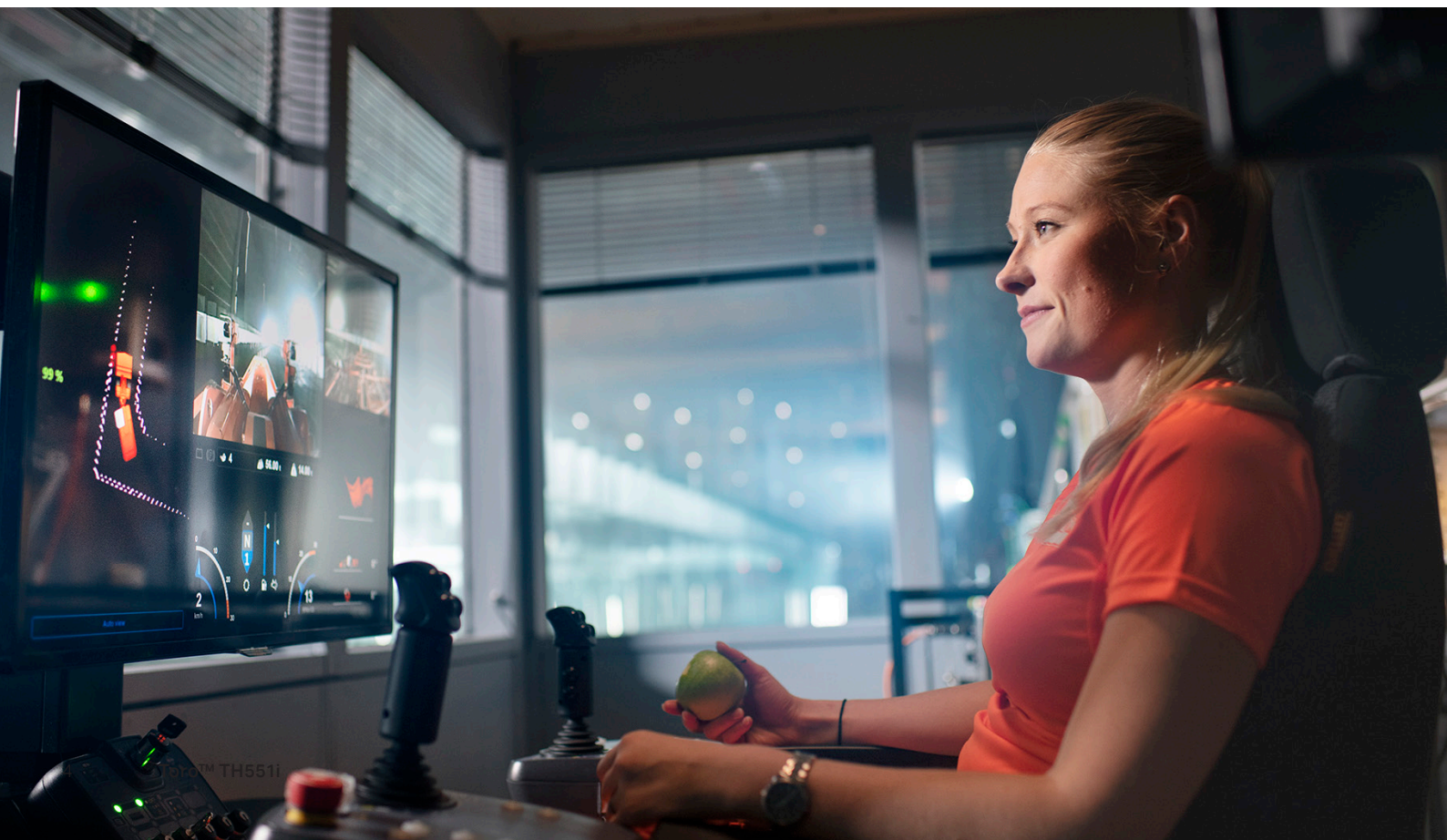
The Knowledge Box™ onboard Toro™ TH551i transfers monitoring data through a Wi-Fi connection to the My Sandvik internet portal for visualization of fleet health, productivity and utilization. Transferred data can also be used by OptiMine®, an analytics and process optimization suite to improve mining process efficiency.

PROXIMITY DETECTION SYSTEM INTERFACE

A Proximity Detection System (PDS) interface option is also available on the Toro™ TH551i truck 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 on the signal from a proximity detection system.

MY SANDVIK DIGITAL SERVICE SOLUTIONS 365

My Sandvik Digital Service Solutions are designed to help you maximize your productivity, operational efficiency and safety. Once activated, the Knowledge Box™ on board truck collects and transfers equipment data into easy-to-use knowledge about your fleet's performance in the form of dashboards.



SUPERIOR OPERATOR ENVIRONMENT & SAFETY



CABIN COMFORT

Comfortable working conditions contribute to utilizing the truck's full capacity. This industry leading cabin offers premium ergonomics, low noise and a controlled temperature environment through air conditioning, dust and noise resistant upholstery materials, and a significant number of adjustment possibilities.

FOR OPERATOR SAFETY

The cabin is ROPS and FOPS certified to protect the operator in case of roll over or falling objects, has 3-layer laminated safety glass windows, illuminated cabin entrance with three-point contact handles and anti-slip steps and emergency exits. The door system features a magnetic interlock switch, which automatically applies brakes when the door is opened.

SMOOTH RIDE OVER ROUGH TERRAIN

Front frame suspension provides a smooth ride even on a rough terrain. Easy operation and extremely smooth gear shifting improve comfort, making Toro™ TH551i the operators' preference underground.

OPERATOR SPEED ASSIST

The operator speed assist, a standard feature in the Toro™ TH551i truck, limits vehicle top speed. It improves mine safety by limiting the maximum driving speeds and helps the operator to keep speed in downhill driving. Further, it allows easier operation and improved focus on driving as well as reduces brakes wear by using the engine brake as a primary speed control device.

BEST IN CLASS VISIBILITY

Flat equipment covers help to achieve a good visibility from the cabin, supported by efficient, adjustable LED lights as standard. A 5.7" LCD color display with adjustable contrast and brightness has all the needed information and alarms on one display, giving the operator more time to keep eyes on the road. Further, the truck is equipped with reversing and right hand side cameras as standard. In humid conditions heated windows and mirrors keep free of condensed water.

COMFORTABLE SEATING

The operator's seat has low frequency pneumatic suspension, adjustable arm rests and lumbar support, selectable damping and adjustable steering wheel, to name a few of the adjustments. Additionally, the cabin incorporates a trainer seat with three-point safety belt.

FIRE SAFETY

To reduce fire risks, fire prevention features have been designed in the equipment. To name a few solutions, the turbo charger, the double wall exhaust manifold, and the fuel tank are all covered. A remote circuit breaker is located in the cabin for isolating the batteries and electric system in case of fire.

For fire suppression, Eclipse™ from Sandvik is available as an option. The Eclipse™ equipped with Sustain fire suppression agent is a sustainable choice, as it is a fluorine-free fire suppression liquid. For environmental conditions where the temperature may drop under zero, the Eclipse™ Extreme provides fire protection.

MAINTENANCE FRIENDLY

Toro™ TH551i is designed for ground level daily maintenance. When getting to the top of the equipment is required, the access systems provide a steady grip, including 3-point contact high contrast handles and anti-slip steps. The top covers are perforated to reduce risks for slipping, and where perforation is not practical, anti-slip tapes are fitted. Standard features improving safety of maintenance work include lockable main switch, starter isolator switch, articulation lock, box support and wheel chocks, among others. Optionally available safety rails improve safety on top of the equipment, and they are recommended for all conditions. For Toro™ TH551i truck, they are attached to the frame and can be folded up manually.

SMART MAINTENANCE

To minimize the need to move around the machine or use special tools, Sandvik Intelligent Control System with the 5.7" touch screen color display provides service information, easy system diagnostics and alarm log files. For example, for identifying the need for a filter change, the control system monitors the condition of engine air filters as well as hydraulic and transmission filters. The transmission includes improved self-diagnostics, integrated fully in Sandvik Intelligent Control System. Further, an automatic brake test with diagnostics and logging can also be performed from the display.

EASY FUEL FILTER FILLING

Filling up fuel filters can be easily done by pushing a button instead of doing the work manually. Potential fuel spills are collected on a tray under the filters, from where the fuel can be drained to a container, avoiding spills to the ground.

MAINTENANCE KITS AND PERFORMANCE FLUIDS

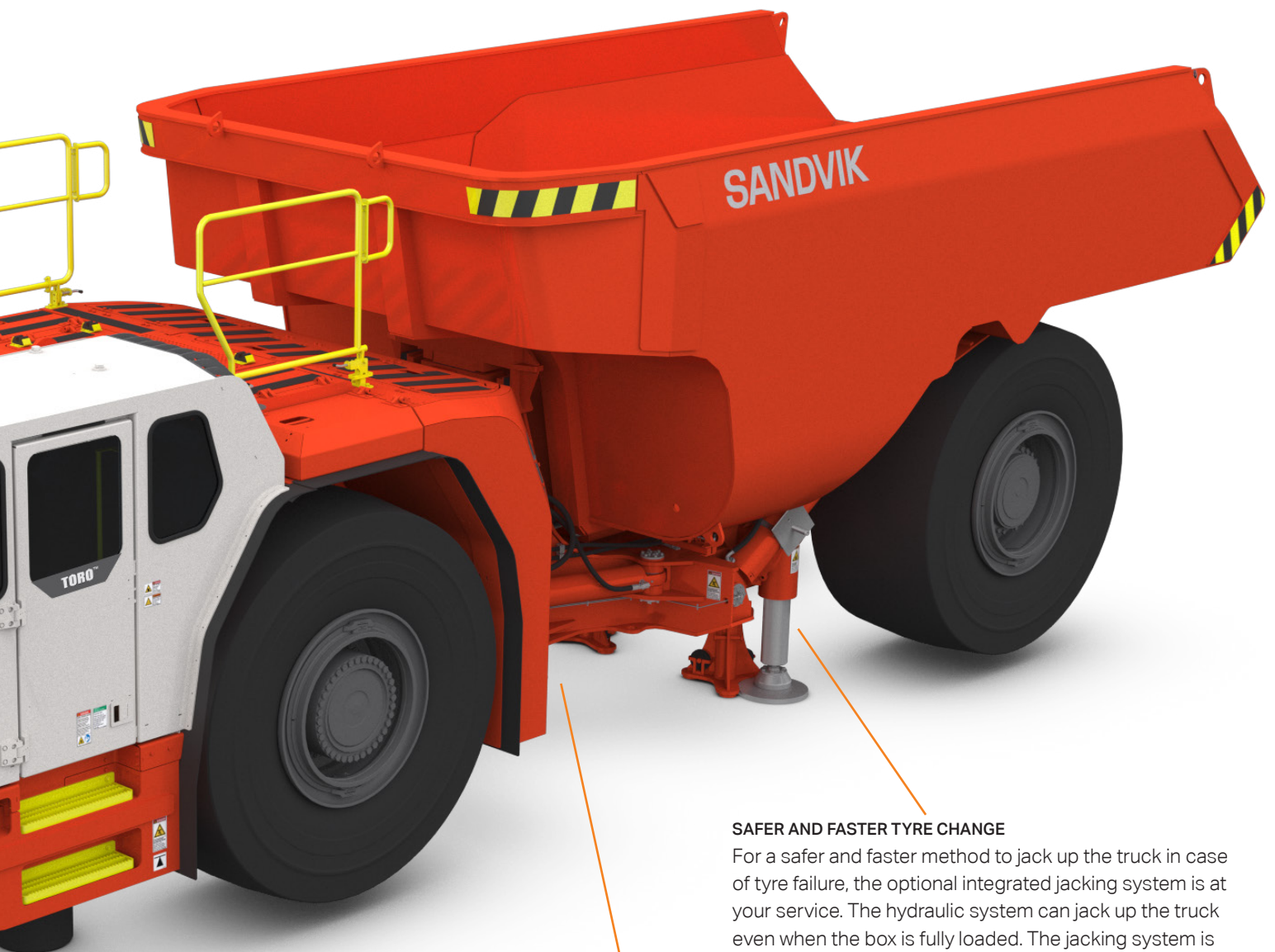
Tailor-made maintenance kits include all relevant parts and other materials for planned maintenance.

Sandvik Performance Fluids preserve the machine's high performance. Smooth operation throughout its lifetime can be ensured with Sandvik Long-Life Engine, Transmission and Hydraulic Oils, which are available in different viscosity grades.

LONGLIFE STEEL PIPING

Extensive use of hydraulic steel piping throughout the truck delivers longer lifetime and easier maintenance access than hydraulic hoses. Stainless steel piping is used extensively for corrosion protection. Zinc aluminum coated fasteners throughout the truck provide corrosion protection and prevent seizing. For aggressive operating environment, a harsh conditions package is available, including a water cooled alternator, among others.





SAFER AND FASTER TYRE CHANGE

For a safer and faster method to jack up the truck in case of tyre failure, the optional integrated jacking system is at your service. The hydraulic system can jack up the truck even when the box is fully loaded. The jacking system is operated with a remote controller.

ACCURATE OIL SAMPLING

Monitoring the condition of the equipment fluids helps to understand component health and enables informed maintenance decisions to extend the equipment lifetime and reduce total lifecycle cost. Toro™ TH551i live oil sampling option enables taking oil samples when the engine is running, contributing to accurate results. Naturally, all oils are easy to drain with hoses or with the optionally available Wiggins quick fill system.

LOW COST PER TONNE

FUEL EFFICIENT VOLVO ENGINE WITH LONG ENGINE LIFETIME

A fuel efficient 515 kW Stage II / Tier 2 Volvo engine offers long lifetime and low cost of ownership. Equipment low own weight, efficient engine technology, fast ramp speeds and up to 25% lower fuel consumption compared to competition result in low cost per hauled tonne. Reduced fuel consumption supports reduction of CO₂ emissions. The heavy-duty, efficient Aluminum cooler is easy to clean, helping to reduce total cost of ownership. The exhaust system is well protected with covers to contribute to long lifetime.

STATE OF THE ART STAGE V ENGINE

When ultra-low Sulphur diesel fuel is available, Sandvik also offers a powerful and fast 585 kW Stage V engine as an option, meeting the relevant European emission regulations. The exhaust after treatment contains a Selective Catalytic Reduction system (SCR), which uses diesel exhaust fluid to reduce emissions of nitrogen oxides. The SCR reduces NOx emissions without sacrificing performance or fuel efficiency. The common rail injection and dual-stage turbo charging both in use in the 16 litre diesel engine of the Toro™ TH551i truck, provide high power density, low fuel consumption, low noise and low emissions.

MINIMIZED TRANSMISSION AND BRAKE WEAR

The truck has a combined engine brake and fully proportional hydraulic retarder which operate simultaneously, minimizing brake and transmission overheating and brake wear. Activated automatically, the engine brake provides smooth and responsive braking to control vehicle speed downhill. The transmission limits the engine revolutions to maximum 2400 rpms, protecting the engine and allowing the operator to focus on driving itself. The transmission robust design is made for heavy off-road application, extending transmission lifetime and lowering total cost of ownership.

OPTIMIZED GREASE CONSUMPTION, EXTENDED COMPONENT LIFETIMES

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

EFFICIENT COOLING FOR INCREASED PERFORMANCE

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



SANDVIK 365 PARTS & SERVICES

MAKING A DIFFERENCE THROUGH SERVICE AND DIGITAL EXPERTISE

You may wonder what you get when choosing Sandvik Parts & Service solutions?

PERSONALIZED, PROACTIVE SERVICE AND HIGH QUALITY

We strive to serving our customers in a personalized manner and we give high emphasis to quality, which is not only about using genuine parts & components, you can also expect consistent service quality from us. The backbone of our service is a unique mix of skilled people, our system, tools & global infrastructure, our long experience from the field and the great collaboration with our customers.

Instead of just waiting for issues to pop up and reacting only after they have happened, we are able to offer solutions that take the whole lifecycle of the machine into account, which allows us to be supportive in a proactive way.

SCALABLE OFFERINGS

It starts with the basic support at site including operator training, parts availability and of course technical and advisory support to ensure a trouble-free and economical operation.

All major components of your loader can be replaced or repaired. With our solutions, you can expect superior reliability and longer life than with non-OEM alternatives.

We offer different type of service agreements and advisory services which can be adapted to the specific level of support you require – helping you to proactively manage your fleet and to find the optimal maintenance strategy.

A UNIQUE COMBINATION: SANDVIK DIGITAL SERVICES + APPLIED OEM KNOWLEDGE

As an in-house digital services developer, we know the machines and their features through and through. This means that we can tailor our services to offer exactly the information and features the machines, their owners and their operators need. Besides our standard telemetry reporting we also offer assisted & advanced digitalization-based services.

Through analyzing the data and referencing it against our big pool of data, then, combined with our product expertise, we can offer insights into how to get the most out of your equipment. From a sustainability point of view, digital services provide clear insights into fuel consumption and excessive idle time, which can drastically reduce emissions underground. Equipment alerts on speeding, brake violations and freewheeling in neutral are just some examples which improve safety for operators and other staff in the mine.



TECHNICAL SPECIFICATION

TORO™ TH551i

Toro™ TH551i is a high productivity 51 tonne articulated underground dump truck for use in 5 x 5 meter haulage ways.

This intelligent truck is a safer, efficient, high capacity and easy to maintain underground truck for optimized fleet management.

Toro™ TH551i truck features a wide range of intelligence integrated technology, such as Sandvik Intelligent Control system, My Sandvik Digital Services and Automation Readiness as standard, supplemented with Onboard Weighing System option for tracking the payload. With the latest addition of the AutoMine® Trucking Onboard option, the truck enables autonomous haulage for both transfer level and decline ramp application.

Toro™ TH551i offers a reliable and safer solution that can significantly increase the efficiency and productivity of operations while decreasing the cost per tonne, providing smart productivity.

Operator safety, health and comfort are enhanced by the mining focused, sound suppressed, ROPS and FOPS certified cabin.

CAPACITIES

| | |
|---|------------------------|
| Maximum payload capacity (SAE heaped 2:1) | 51 000 kg |
| Standard dump box | 28.0 m ³ |
| Dump box range | 24 - 30 m ³ |

SPEEDS (LEVEL/LOADED)

| | |
|----------|-----------|
| 1st gear | 5.8 km/h |
| 2nd gear | 7.7 km/h |
| 3rd gear | 10.0 km/h |
| 4th gear | 12.7 km/h |
| 5th gear | 15.6 km/h |
| 6th gear | 20.5 km/h |
| 7th gear | 26.3 km/h |
| 8th gear | 33.4 km/h |

DUMP BOX MOTION TIMES & MOVEMENTS

| | |
|------------------|--------|
| Discharging time | 14 sec |
| Dumping angle | 62° |

OPERATING WEIGHTS *

| | |
|------------------------|-----------|
| Total operating weight | 46 870 kg |
| Front axle | 32 860 kg |
| Rear axle | 14 010 kg |

LOADED WEIGHTS *

| | |
|---------------------|-----------|
| Total loaded weight | 97 870 kg |
| Front axle | 44 470 kg |
| Rear axle | 53 400 kg |

* Unit weight is dependent on the selected options



OPERATIONAL CONDITIONS AND LIMITS

| | |
|-----------------------------|---|
| Environmental temperature | From -20°C to +50°C |
| Standard operating altitude | With engine Volvo TAD1642VE-B from -1500 m to +1000 m at 25 °C without rated power derate |

REQUIREMENTS AND COMPLIANCE

| |
|---|
| Compliance with 2004/108/EC Electromagnetic compatibility directive |
| Compliance with 2006/42/EC Machinery directive (Equipment for EU area, achieved with relevant options) |
| 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 |
| CONTAINS FLUORINATED GREENHOUSE GASES Refrigerant R134a under pressure max 38 bar/550 PSI: Filled weight: 1,5 kg CO2e: 2,145 tons GWP: 1430 Information based on the F Gas Regulation (EU) No 517/2016 |

POWER TRAIN

ENGINE

| | |
|---|---|
| Diesel engine | Volvo TAD1642VE-B (Tier 2) |
| Engine brake | 345 kW @ 2200 rpm |
| Output | 515 kW (691 hp) @ 1900 rpm |
| Torque | 3221 Nm @ 1300 rpm |
| Number of cylinders | In-line 6 |
| Displacement | 16.1 l |
| Cooling system | Liquid cooled |
| Combustion principle | 4-stroke, direct injection, turbo, after cooler |
| Air filtration | Dry type |
| Electric system | 24 V |
| Emissions | Tier 2, Euro Stage II |
| Ventilation rate (Ultra low sulphur diesel) | CANMET 48,100 CFM m3/s, MSHA 45000 Ventilation Rate |
| Particulate index (Ultra low sulphur diesel) | MSHA Particulate Ventilation Index 5,000 CFM |
| Exhaust system | Catalytic converter with muffler |
| Average fuel consumption at 50% load | 46 l/h |
| Fuel tank capacity | 840 l |
| Compatible with paraffinic diesel fuel (EN 15940) | Yes |

TRANSMISSION

Fully automatic Dana transmission with electric shifting system and retarder. Includes converter with lock-up and drop box. Standard Operator Speed Assist helps operators maintain speed control when traveling downhill. Eight gears forward and two reverse. Dana self-diagnostics fully integrated into Sandvik Intelligent Control System.

UP BOX

| | |
|-------|-----------|
| Katsa | Ratio 1:1 |
|-------|-----------|

AXLES

| | |
|------------|---|
| Front axle | Kessler D106 series, spring applied hydraulic operated brakes, hydraulic suspension |
| Rear axle | Kessler D106 series, spring applied hydraulic operated brakes, fixed |

TIRES

| | |
|---|---------------|
| Tire size (Application approved. Brand and type subject to availability.) | 35/65 R33 -E4 |
|---|---------------|

OPERATOR'S COMPARTMENT

CABIN

| |
|---|
| ROPS certification according to EN ISO 3471 |
| FOPS certification according to EN ISO 3449 |
| Sealed, air conditioned, over pressurized, 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 and heating unit as a standard |
| Cyclone pre-filter for A/C device |
| Adjustable steering wheel |
| No high pressure hoses in the cabin |
| Inclinometers to indicate operating angle |
| Emergency exit |
| Illuminated steps to the cabin |
| Three-point contact access system with replaceable and colour coded handles and steps |
| 12 V output |
| Remote circuit breaker switch |
| Mirrors defrost |
| Trainer's seat (behind operator) |

CONTROL SYSTEM, DASHBOARD AND DISPLAYS

| |
|---|
| Sandvik Intelligent Control System |
| Critical warnings and alarms displayed as text and with light, warnings and alarms recorded to the control system log |
| 5.7" display with adjustable contrast and brightness |
| Instrument panel with illuminated switches |
| My Sandvik Digital Services Knowledge Box™ on-board hardware |
| AutoMine® Trucking readiness |

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 |
| Four-point seat belt on operator's seat |
| Three-point seat belt on trainer's seat |

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 ²] | 0,69 (driving with load) |
|--|--------------------------|

| | |
|--|--------------------------|
| VDV _w over 15 min period [m/s ^{1.75}] | 8,37 (driving with load) |
|--|--------------------------|

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 TAD1642VE:

| | |
|--|-------|
| Sound pressure level L_{pA} [dB re 20 μ Pa] | 75 dB |
|--|-------|

| | |
|---|--------|
| Sound power level L_{WA} [dB ew 1 p W] | 121 dB |
|---|--------|

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.

Automatic central lubrication

Central hinge with adjustable lower bearing

Tanks are stand alone structures and bolted onto main frame

HYDRAULICS

Filling pump for hydraulic oil

Door interlock for brake hydraulics

Oil cooler for hydraulic and transmission oil, capability up to 55°C ambient temperature

ORFS fittings

Hydraulic oil tank capacity 280 l

Sight glass for oil level, 2 pcs

STEERING HYDRAULICS

Fully hydraulic, center articulad, power steering with two double acting cylinders. Closed-center system with a load sensing piston type pump and pilot operated orbital wheel steering.

| | |
|---------------------|----------------|
| Steering main valve | Pilot operated |
|---------------------|----------------|

| | |
|------------------------------|---------------|
| Steering hydraulic cylinders | 140 mm, 2 pcs |
|------------------------------|---------------|

| | |
|---------------|-----------------------------------|
| Steering pump | Variable displacement piston pump |
|---------------|-----------------------------------|

DUMP BOX HYDRAULICS

Fully hydraulic system, equipped with variable displacement piston pump. Oil flows to box hydraulic system from the steering hydraulics. Oil flow from the brake circuit pump is divided to the brake system and oil cooler motor.

| | |
|----------------|-----------------------------------|
| Hydraulic pump | Variable displacement piston pump |
|----------------|-----------------------------------|

| | |
|---------------|-------------------|
| Control valve | Solenoid operated |
|---------------|-------------------|

| | |
|------------|-------------------|
| Main valve | Solenoid operated |
|------------|-------------------|

| | |
|-----------|---------------|
| Cylinders | 180 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 emergency brake release pump

Foot operated brake pedal valve, fully modulated

Brake oil tank capacity, 100 l

ELECTRICAL EQUIPMENT

MAIN COMPONENTS

| | |
|------------|-------------|
| Alternator | 28 V, 150 A |
|------------|-------------|

| | |
|-----------|----------------|
| Batteries | 2 X 12V 180 Ah |
|-----------|----------------|

| | |
|---------|------------|
| Starter | 24 V, 7 kW |
|---------|------------|

| | |
|----------------|---|
| Driving lights | LED lights 4 pcs in front 4 pcs in rear |
|----------------|---|

| | |
|----------------|--|
| Working lights | LED lights: 4 pcs in front 4 pcs in rear |
|----------------|--|

| | |
|--|--|
| Parking, brake and indicator (blinkers) lights | LED lights: 2 pcs in front 2 pcs in rear |
|--|--|

| | |
|----------------|---|
| Control system | 5,7" Color display, 5 modules, inbuilt system diagnostics |
|----------------|---|

Reverse Camera

Reverse alarm (CE)

Flashing beacon

ILLUMINATION

Illuminance E_{av} with 2 pieces of 50 W led lights at a distance of 20 m in front of the truck:

| | |
|--------------------------------|-------|
| Head lights, low beam E_{av} | 12 lx |
|--------------------------------|-------|

Illuminance E_{av} with 2 pieces of 50 W led lights at a distance of 20 m behind the truck:

| | |
|-------------------------------------|-------|
| Reversing lights, low beam E_{av} | 13 lx |
|-------------------------------------|-------|

Toro™ TH551i is compliant with the South African Mine health and safety act 29 of 1996, as the average light intensity in the direction of travel is more than 10 lux at a distance of 20 m.

INCLUDED SAFETY FEATURES

FIRE SAFETY

Portable fire extinguisher, 12 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

Starter isolator

Emergency stop push buttons according to EN ISO 13850: 1 pc in cabin, 1 pc in front frame. 2 pcs in rear frame

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

Wheel chocks and brackets

AVAILABLE BOXES

| | | | | | | |
|--|------|------|------|------|-------------------|-------------------|
| Box capacity SAE heaped 2:1 (m ³) | 24 | 26 | 28 | 30 | 25 ejector box | 28 ejector box |
| Material broken density with 90% fill factor (t/m ³) | 2.3 | 2.1 | 2.0 | 1.8 | 1.8 | 1.6 |
| Total height (mm) | 2936 | 3048 | 3157 | 3304 | 3167 | 3402 |

* According to SAE 1363/ISO 6483

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 TWD1683VE |
| Engine brake | 305 kW @ 1900 rpm |
| Requirements | Ultra low sulphur fuel and AdBlue |
| Output | 585 kw (784 hp) @ 1900 rpm |
| Torque | 3650 Nm @ 1200 rpm |
| Emissions | Euro Stage V (CE) |
| Ventilation rate | CANMET 27 000 CFM |
| (Ultra low sulphur diesel) | MSHA 25 000 CFM |
| Particulate index | MSHA Particulate Ventilation Index |
| (Ultra low sulphur diesel) | CFM 3000 |

OPTIONS

| |
|--|
| ANSUL Twin fire suppression system (CE) |
| Arctic package 120V or 230V (preheater for hydr. oil, brake oil transmission, up-box, drop box and engine) |
| AutoMine® Trucking: Onboard Package |
| Box-up support device |
| Carryback reduction system |
| CE Declaration of conformity |
| Cover grills for lamps |
| Diesel particulate filter (for Tier 2, Euro Stage II engine) |
| Door latch and seat belt monitoring system |
| Emergency steering |
| Fire suppression system Sandvik Eclipse with auto shutdown |
| Harsh conditions package |
| Integrated jacking system |
| Integrated weighing system (IWS) |
| Integrated weighing system (IWS) with external screens |
| Jump start interface |
| Live oil sampling kit |
| Proximity Detection System (PDS) interface |
| Safety rails |
| Service stand |
| Spare rim 33-28.00/3.5 (for tyres 35/65R33) |
| Tyre Pressure Monitoring System |
| Water cooled alternator |
| Wiggins fuel fill system |
| Wiggins quick filling set for fuel and oils (hydraulic, engine and transmission) |



GRADE PERFORMANCE

Volvo TAD1642VE-B, 3 % rolling resistance, with lock-up

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) | 5,9 | 5,8 | 5,8 | 5,8 | 5,8 | 5,8 | 5,8 | 5,8 | 5,7 | 5,7 |
| 2nd gear (km/h) | 7,7 | 7,7 | 7,7 | 7,7 | 7,6 | 7,6 | 7,6 | 7,6 | 7,5 | 7,5 |
| 3rd gear (km/h) | 10,0 | 10,0 | 9,9 | 9,9 | 9,9 | 9,8 | 9,8 | 9,7 | 9,7 | 9,6 |
| 4th gear (km/h) | 12,8 | 12,8 | 12,7 | 12,6 | 12,6 | 12,5 | 12,4 | 12,4 | 12,3 | 12,2 |
| 5th gear (km/h) | 15,7 | 15,6 | 15,5 | 15,4 | 15,3 | 15,2 | 15,1 | 15,0 | 14,9 | 14,1 |
| 6th gear (km/h) | 20,8 | 20,6 | 20,4 | 20,2 | 20,0 | 19,9 | 19,6 | 18,6 | 16,3 | |
| 7th gear (km/h) | 26,8 | 26,5 | 26,2 | 25,9 | 25,6 | 24,3 | 20,7 | | | |
| 8th gear (km/h) | 34,3 | 33,8 | 33,3 | 32,8 | 29,2 | | | | | |

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) | 5,8 | 5,8 | 5,8 | 5,7 | 5,7 | 5,7 | 5,7 | 5,6 | 5,6 | 5,5 |
| 2nd gear (km/h) | 7,7 | 7,7 | 7,6 | 7,6 | 7,5 | 7,5 | 7,4 | 7,3 | 7,3 | 6,8 |
| 3rd gear (km/h) | 10,0 | 9,9 | 9,8 | 9,7 | 9,6 | 9,5 | 9,4 | 8,9 | 7,8 | |
| 4th gear (km/h) | 12,7 | 12,6 | 12,5 | 12,3 | 12,2 | 11,6 | 10,0 | | | |
| 5th gear (km/h) | 15,6 | 15,4 | 15,1 | 14,9 | 13,9 | | | | | |
| 6th gear (km/h) | 20,5 | 20,1 | 19,7 | 17,2 | | | | | | |
| 7th gear (km/h) | 26,3 | 25,7 | 22,1 | | | | | | | |
| 8th gear (km/h) | 33,4 | 30,5 | | | | | | | | |

GRADE PERFORMANCE

Volvo TWD1683VE, 3 % rolling resistance, with lock-up

Empty

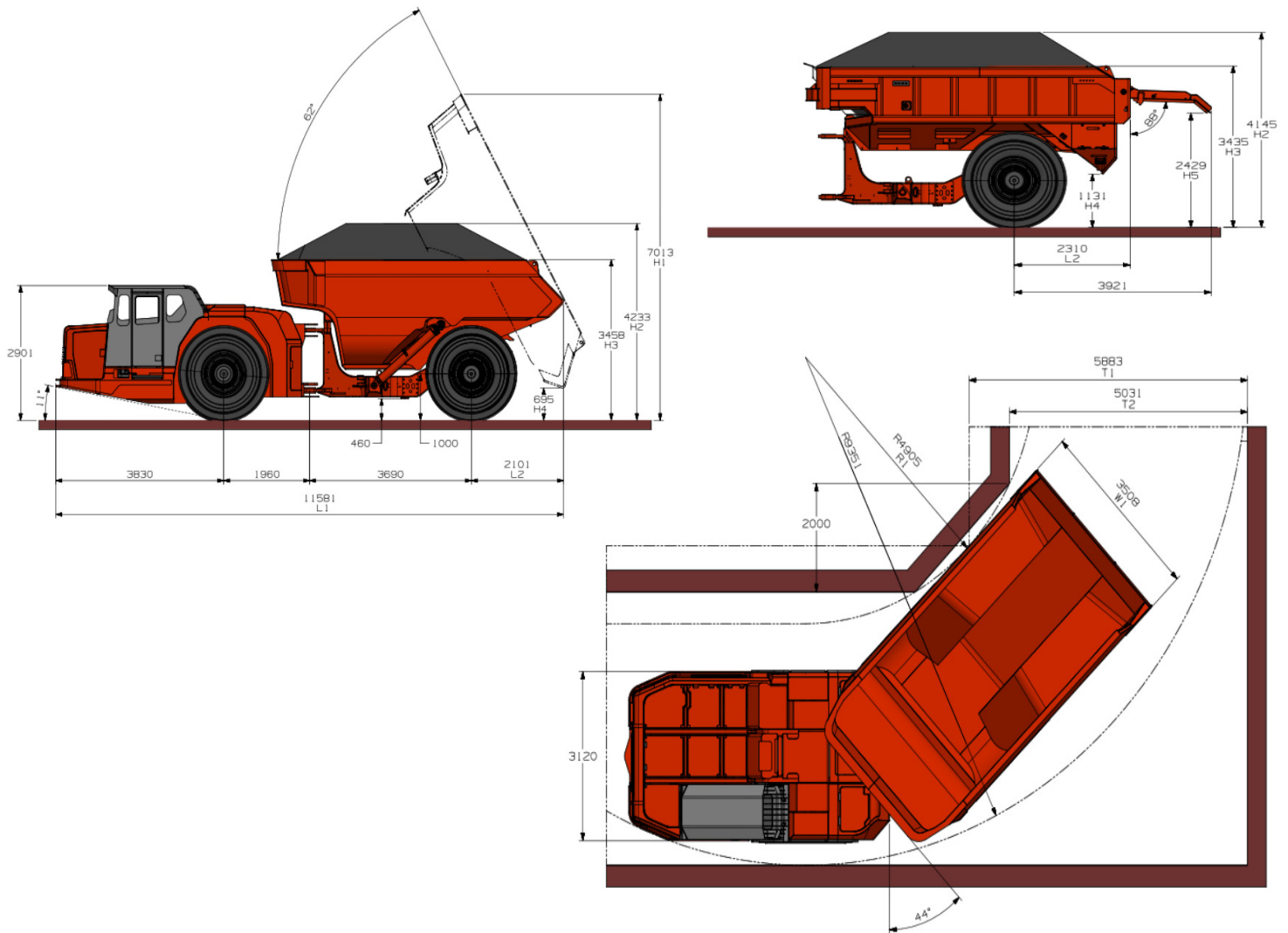
| | | | | | | | | | | |
|-----------------|------|------|------|------|------|------|------|------|------|------|
| Percent grade | 0.0 | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.5 | 14.3 | 17.0 | 20.0 |
| Ratio | | | | | 1:12 | 1:10 | 1:8 | 1:7 | 1:6 | 1:5 |
| 1st gear (km/h) | 6,2 | 6,2 | 6,1 | 6,1 | 6,1 | 6,1 | 6,1 | 6,1 | 6,0 | 6,0 |
| 2nd gear (km/h) | 8,2 | 8,1 | 8,1 | 8,1 | 8,1 | 8,0 | 8,0 | 8,0 | 7,9 | 7,9 |
| 3rd gear (km/h) | 10,6 | 10,5 | 10,5 | 10,4 | 10,4 | 10,3 | 10,3 | 10,2 | 10,2 | 10,1 |
| 4th gear (km/h) | 13,5 | 13,5 | 13,4 | 13,3 | 13,2 | 13,2 | 13,1 | 13,0 | 12,9 | 12,8 |
| 5th gear (km/h) | 16,6 | 16,5 | 16,3 | 16,2 | 16,1 | 16,0 | 15,9 | 15,8 | 15,6 | 15,2 |
| 6th gear (km/h) | 21,9 | 21,7 | 21,5 | 21,3 | 21,1 | 20,9 | 20,5 | 20,1 | 18,5 | 16,5 |
| 7th gear (km/h) | 28,2 | 27,9 | 27,6 | 27,2 | 26,9 | 26,1 | 23,8 | 21,7 | | |
| 8th gear (km/h) | 36,1 | 35,5 | 35,0 | 34,3 | 32,8 | 28,6 | | | | |

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) | 6,1 | 6,1 | 6,1 | 6,0 | 6,0 | 6,0 | 5,9 | 5,9 | 5,9 | 5,9 |
| 2nd gear (km/h) | 8,1 | 8,1 | 8,0 | 7,9 | 7,9 | 7,8 | 7,8 | 7,7 | 7,6 | 7,4 |
| 3rd gear (km/h) | 10,5 | 10,4 | 10,3 | 10,2 | 10,1 | 10,0 | 9,8 | 9,6 | 8,9 | 7,9 |
| 4th gear (km/h) | 13,4 | 13,3 | 13,1 | 12,9 | 12,8 | 12,4 | 11,4 | 10,4 | | |
| 5th gear (km/h) | 16,4 | 16,1 | 15,9 | 15,7 | 15,1 | 13,6 | | | | |
| 6th gear (km/h) | 21,5 | 21,1 | 20,7 | 19,3 | 15,2 | | | | | |
| 7th gear (km/h) | 27,7 | 27,0 | 24,8 | | | | | | | |
| 8th gear (km/h) | 35,2 | 33,3 | | | | | | | | |

DIMENSIONS

The dimensions shown in the pictures are from Toro™ TH663i truck. Refer to the table below for accurate measurements of Toro™ TH551i.



DIMENSIONS

| Dump Boxes | | STD | EJECTOR | EJECTOR |
|--|---------|-------|---------|---------|
| Volume SAE heaped 2:1* | (m³) | 24 | 26 | 28 |
| Maximum material density with fill factor of 90% | (t/m³) | 2.3 | 2.1 | 2.0 |
| Overall Machine Length | L1 (mm) | 11581 | 11581 | 11581 |
| Rear Axle to Rear of Machine | L2 (mm) | 2101 | 2101 | 2101 |
| Dump Position Height Max | H1 (mm) | 6759 | 6829 | 6875 |
| SAE Heap Height | H2 (mm) | 3655 | 3765 | 3863 |
| Dumpbox Spillguard | H3 (mm) | 2961 | 3071 | 3173 |
| Discharge Height | H4 (mm) | 690 | 690 | 690 |
| Ejector bucket tailgate height | H5 (mm) | | 2429 | 2429 |
| Dumpbox width | W1 (mm) | 3228 | 3228 | 3228 |
| Dumpbox inner turn radius | R1 (mm) | 5038 | 5038 | 5038 |
| Minimum tunnel width | T1 (mm) | 5789 | 5789 | 5789 |
| Tunnel width | T2 (mm) | 4932 | 4932 | 4932 |

* According to SAE 1363/ISO 6483

MATCHING PAIR

TORO™ TH551i AND LH517i

Be safer, be stronger, and be smarter – together.

Toro™ LH517i is a high capacity loader for 5 x 5 meter mining tunnels. With superior hydraulic power for fast bucket filling and drivetrain power for high ramp speed, the loader is designed to quickly clear tunnel headings for rapid advance rates.

Toro™ LH517i is equipped with fuel efficient 310kW Tier 2 / Stage II engine as standard. When ultra low Sulphur diesel fuel is available, Sandvik offers Volvo Stage V and Tier 4f low emission engine options. The Stage V engine meets the relevant European emission regulations whereas the Tier 4f delivers significantly reduced MSHA and CANMET ventilation rates - still maintaining loader performance and fuel efficiency.

This intelligent loader features many improvements in operator and maintenance ergonomics. The already high level of safety has been further increased to make the operation and maintenance more fluent.

Higher productivity and profitability is achieved by better balanced machine and larger bucket size. Rebalancing makes the bucket filling easier and reduces tire wear. Combined with unique bucket filling, the loader can boost operations to the next level.

Toro™ LH517i has integrated intelligence in the form of Sandvik Intelligent Control system, My Sandvik Digital Services Knowledge Box™ on-board hardware and automation readiness. Additional examples of available options are Integrated weighing system and AutoMine® Loading Onboard Package.

CAPACITIES

| | |
|---------------------------|-----------|
| Maximum tramming capacity | 17 200 kg |
| Break out force, lift | 35 000 kg |
| Break out force, tilt | 29 450 kg |
| Standard bucket | 7.0 m³ |

BUCKET MOTION TIMES

| | |
|---------------|---------|
| Raising time | 8.3 sec |
| Lowering time | 4.3 sec |
| Dumping time | 2.0 sec |

OPERATING WEIGHTS *

| | |
|------------------------|-----------|
| Total operating weight | 46 500 kg |
| Front axle | 19 700 kg |
| Rear axle | 26 300 kg |

LOADED WEIGHTS *

| | |
|---------------------|-----------|
| Total loaded weight | 63 200 kg |
| Front axle | 47 000 kg |
| Rear axle | 16 200 kg |

* Unit weight is dependent on the selected options

SPEEDS FORWARD & REVERSE (LEVEL/LOADED, WITH LOCK-UP)

| ENGINE | STAGE II / TIER 2 | TIER 4F AND STAGE V |
|----------|----------------------|------------------------|
| 1st gear | 5.3 km/h | 5.4 km/h |
| 2nd gear | 9.5 km/h | 9.6 km/h |
| 3rd gear | 16.5 km/h | 16.8 km/h |
| 4th gear | 29.3 km/h | 29.7 km/h |



