



# SANDVIK TH540 UNDERGROUND TRUCK

## TECHNICAL SPECIFICATION

The Sandvik TH540 is a high performance 40 tonne articulated underground dump truck for use in 5 x 5 meter haulage ways. Operator safety, health and comfort are enhanced by the enclosed, vibration isolation, ISO approved cabin.

The TH540 is well suited for:

- level or steep ramp production haulage in medium to large mines
- mine development projects in medium to large mines
- tunneling projects with restricted height
- 3 pass loading with the Sandvik LH514 loader



### CAPACITIES

Payload capacity	40 000 kg
Dump box	22.0 m <sup>3</sup>
Dump box range	18 – 24 m <sup>3</sup>

### SPEEDS FORWARD & REVERSE (LEVEL/LOADED)

1st gear	5.5 km/h
2nd gear	7.2 km/h
3rd gear	9.8 km/h
4th gear	12.9 km/h
5th gear	17.1 km/h
6th gear	22.6 km/h
7th gear	30.6 km/h
Reversing with 1st and 3rd	

### DUMP BOX MOTION TIMES & MOVEMENTS

Discharging time	14.0 sec
Dumping angle	62 °

### OPERATING WEIGHTS\*

Total operating weight	34 700 kg
Front axle	25 900 kg
Rear axle	8 800 kg

### LOADED WEIGHTS\*

Total loaded weight	74 700 kg
Front axle	37 200 kg
Rear axle	37 500 kg

\*Unit weight is dependent on the selected options

## OPERATIONAL CONDITIONS AND LIMITS

Environmental temperature	From -20 ° to +50° C
Standard operating altitude	With engine Volvo TAD1640VE from -1500 m to +1000 m at 25 °C without rated power derate
Standard operating altitude	With engine Volvo TAD1660VE from -1500 m to +1000 m at 25 °C without rated power derate

## REQUIREMENTS AND COMPLIANCE

Compliance with 2006/95/EC Low voltage directive
Compliance with 2004/108/EC Electromagnetic compatibility directive
Compliance with 2006/42/EC Machinery directive (Equipment for EU area, achieved with relevant options)
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.
Electrical system based on IEC 60204-1. Safety of machinery – Electrical equipment of machines – Part 1: General requirements
CONTAINS FLOURINATED GREENHOUSE GASES Refrigerant R134a under pressure max 38 bar/550 PSI: Filled weight: 2,000 kg CO2e: 2,860 tons GWP: 1430 Information based on the F Gas Regulation (EU) No 517/2016

## POWER TRAIN

### ENGINE

Diesel engine	Volvo TAD1640VE (Tier 2)
Output	405 kW (543 hp) @ 1 900 rpm
Torque	2 761 Nm @ 1 200 rpm
Number of cylinders	In-line 6
Displacement	16.1 l
Cooling system	Liquid cooled
Combustion principle	Direct injected, 4-stroke, turbo with intercooler
Air Filtration	Dry type
Electric system	24 V
Emissions	Tier 2, Euro Stage II
Ventilation rate (Ultra low sulphur diesel)	CANMET 31,400 CFM m3/s, MSHA 27,000 Ventilation Rate
Particulate index (Ultra low sulphur diesel)	MSHA Particulate Ventilation Index 5,000 CFM
Average fuel consumption at 50 % load	40.0 l/h
Exhaust system	Catalytic Converter
Fuel tank capacity	700 l

### CONVERTER

Dana C9000 series with lock-up

## TRANSMISSION

Fully automatic transmission with electric remote shifting system and retarder. Seven gears forward and two reverse.

Dana 8000 Series

## AXLES

Front axle	Kessler D106 series spring applied hydraulic operated brakes, equipped with standard differential, oscillation
Rear axle	Kessler D106 series spring applied hydraulic operated brakes, equipped with standard differential

## TIRES

Tire size (Tires are application approved. Brand and type subject to availability.) 29.5 R 25 E4\*\*

## STANDARD 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 unit located outside the cabin 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
Three-point contact access system with replaceable and colour coded handles and steps
Illuminated steps to the cabin
12 V output for communication radio connection
Remote circuit breaker switch
Adjustable steering wheel

### OPERATOR'S SEAT

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

## CONTROL SYSTEM, DASHBOARD AND DISPLAYS

Sandvik Intelligent Control system Standard	
Critical warnings and alarms	Displayed as text and with light, warnings and alarms recorded to the control system log
Instrument Panel	5.7" Display with adjustable contrast and brightness
Instrument Panel	Illuminated switches
My Sandvik Digital Services Knowledge Box™ on-board hardware	Standard

## 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.

Central hinge	Adjustable lower bearing
Tanks	Tanks are part of frame structure
Automatic central lubrication	Standard

## HYDRAULICS

Filling pump for hydraulic oil	Standard
Door interlock for brakes and box hydraulic	Standard
Oil cooler for hydraulic and transmission oil	Capability up to 55°C ambient temperature
Fittings	ORFS
Hydraulic oil tank capacity	225 l
Sight glass for oil level	2 pcs

### STEERING HYDRAULICS

Fully hydraulic, center articulated, power steering with two double acting cylinders.

Steering main valve	Pilot operated
Steering hydraulic cylinders	125 mm, 2 pcs
Steering pump	Variable displacement piston pump
Emergency steering	Option

### DUMP BOX HYDRAULICS

Full 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	160 mm, 2 pcs

## BRAKES

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

Neutral brake	Standard
Automatic brake activation system, ABA	Standard
Electrically driven emergency brake release pump	Standard
Brake pedal valve	Foot operated pedal, fully modulated
Brake oil tank capacity	100 l

## ELECTRICAL EQUIPMENT

### MAIN COMPONENTS

Alternator	28V, 150 A
Batteries	2 pcs, 12V 160 Ah
Starter	24 V, 7 kW
Driving lights	4 pcs in front, H3 70W 2 pcs in rear, H3 70W
Working light	2 pcs in rear of cabin, H3 70W 2 pcs side of unit, H3 70W
Reverse camera	Standard
Parking, brake and indicator (blinkers) lights	2 pcs in front, LED 2 pcs in rear, LED
Control system	5,7" Colour display, 5 modules, inbuilt system diagnostics
Lockable main switch	Standard
Reverse alarm (CEN)	Standard
Flashing beacon	Standard

## INCLUDED SAFETY FEATURES

### FIRE SAFETY

Portable fire extinguisher	Standard ,12 kg (CEN)
Hot side - cold side design	Standard
Isolation of combustibles and ignition sources	Standard
Heat isolation on exhaust manifold, turbo, and isolated exhaust pipe	Standard

### ENERGY ISOLATION

Lockable main switch, ground level access	Standard
Emergency stop push buttons according to EN ISO 13850	Standard 1 pc in cabin 1 pc in front frame 2 pcs in rear frame
Pressure release in the radiator cap	Standard
Automatic discharge for pressure accumulators (brake system and pilot circuit)	Standard
Frame articulation locking device	Standard
Mechanical dump box locking device	Standard
Wheel chocks and brackets	Standard

## 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 CD and 2 x USB stick in pdf format, includes all the manuals
Decals	English and other EU languages

## OPTIONS

### SAFETY OPTIONS

Lower cabin height, 2716 mm, with Tier 4i engine oscillation max 9 °
Cold climate package (incl. cabin heater, cabin window defroster and side mirror with defrost system)
Driving direction lights (red / green)
Proximity Detection Interface
Control system tool kit
Fire suppression system ANSUL, 2 tanks, 8 nozzles (CEN) including auto shutdown (not for automation)
Fire suppression system ANSUL, 2 tanks, 8 nozzles (CEN) CHECKFIRE, including auto shutdown
Fire suppression system Sandvik FS1000 with auto shutdown, Eclipse foam delivered separately
Safety rails
Emergency steering (CEN)
AutoMine™ Onboard Package

### ALTERNATIVE ENGINES

Engine Volvo TAD1660VE, 405 kW (543 hp), Euro Stage III B (Tier 4i)
Engine Volvo TAD1670VE, 405 kW (543 hp), Euro Stage IV (Tier 4f)
Engine Volvo TAD1670VE, 405 kW (543 hp), MSHA, Canmet (US & Canada only) (Tier 4f)

### ELECTRICAL OPTIONS

Jump start interface
----------------------

### OTHER OPTIONS

Cover grills for lamps
Gear limit
Spare rim 22.00-25/3.0 (for tyres 26.5R25)
Spare rim 25.00-25/3.0 (for tyres 29.5R25)
Low profile tyres 26.5R25
Aggressive water package (stainless steel pipes and fittings, sealed alternator)
Wiggins quick filling set for fuel and oils (hydraulic, engine and transmission)
Wiggins fuel fill system
Accordance with CE-norms (CEN)

**GRADE PERFORMANCE**

Volvo TAD1640VE Tier 2 and TAD1660 Tier 4i

Calculated with 2% rolling resistance

With lock-up

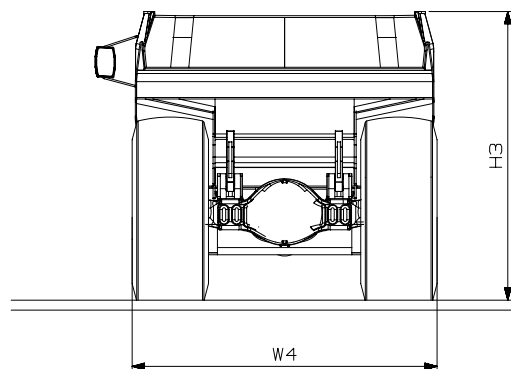
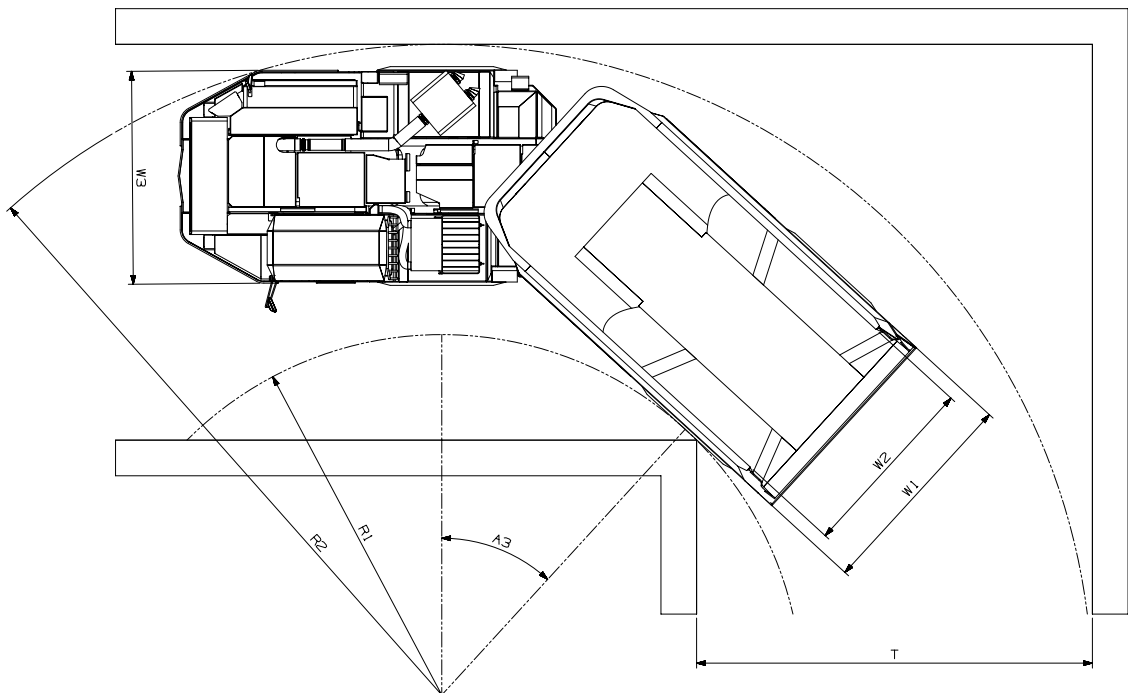
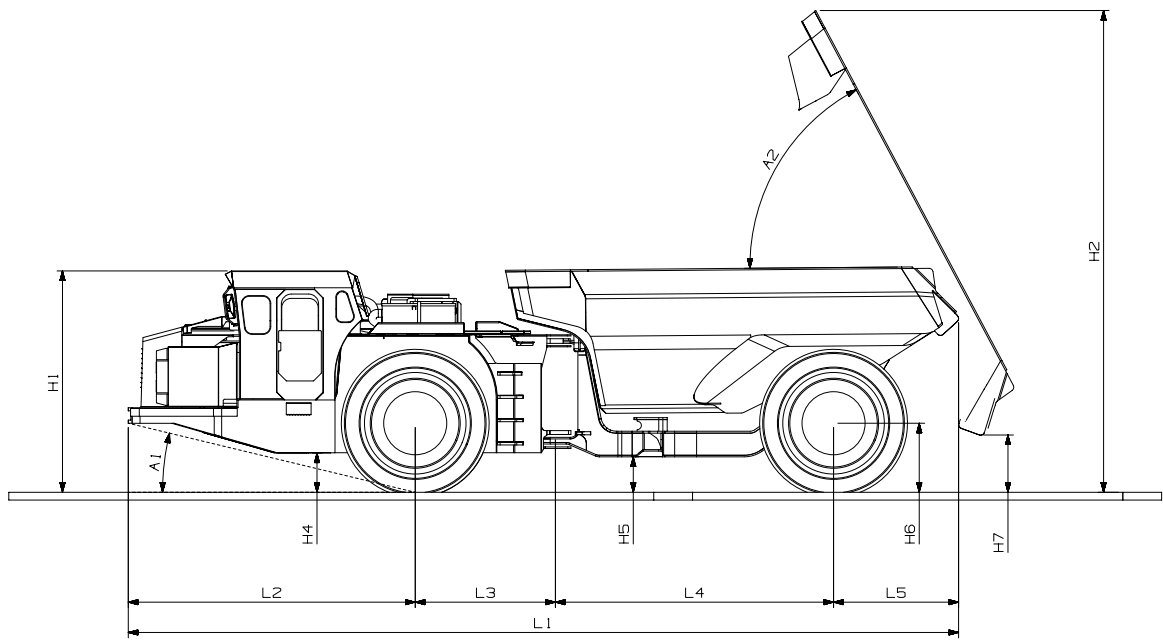
**Empty**

Percent grade	0	5	10	15	20
1st gear (km/h)	5.5	5.4	5.4	5.4	5.4
2nd gear (km/h)	7.2	7.2	7.1	7.1	7.0
3rd gear (km/h)	9.8	9.7	9.7	9.6	9.5
4th gear (km/h)	13.0	12.8	12.7	12.5	12.4
5th gear (km/h)	17.2	16.9	16.6	16.4	14.4
6th gear (km/h)	22.8	22.3	21.8	19.4	
7th gear (km/h)	31.1	30.1	26.1		

**Loaded**

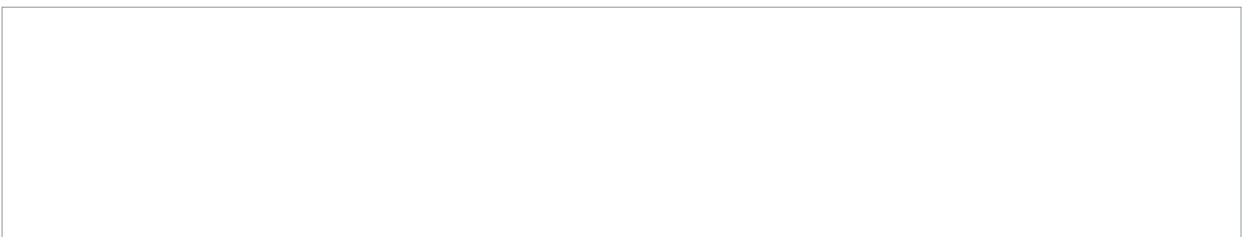
Percent grade	0	5	10	15	20
1st gear (km/h)	5.5	5.4	5.3	5.3	5.2
2nd gear (km/h)	7.2	7.1	7.0	6.9	6.6
3rd gear (km/h)	9.8	9.6	9.4	8.8	5.0
4th gear (km/h)	12.9	12.6	11.8	9.2	
5th gear (km/h)	17.1	16.5	12.4		
6th gear (km/h)	22.6	20.3			
7th gear (km/h)	30.6				

DIMENSIONS



**DIMENSIONS**

	<b>Standard</b>			
Dump box alternatives (m <sup>3</sup> )	18 m <sup>3</sup>	20 m <sup>3</sup>	22 m <sup>3</sup>	24 m <sup>3</sup>
L1 (mm)	10700	10700	10700	10700
L2 (mm)	3698	3698	3698	3698
L3 (mm)	1807	1807	1807	1807
L4 (mm)	3585	3585	3585	3585
L5 (mm)	1610	1610	1610	1610
H1 (mm)	2906	2906	2906	2906
H2 (mm)	5977	6062	6123	6146
H3 (mm)	2586	2731	2886	2946
H4 (mm)	505	505	505	505
H5 (mm)	457	457	457	457
H6 (mm)	890	890	890	890
H7 (mm)	655	657	656	656
W1 (mm)	3000	3050	3000	3150
W2 (mm)	2614	2614	2614	2764
W3 (mm)	2986	2986	2986	2986
W4, axle (mm)	3065	3065	3065	3065
A1	13.5°	13.5°	13.5°	13.5°
A2	62°	62°	62°	62°
A3	42.5°	42.5°	42.5°	42.5°
R1 (mm)	5055	5055	5055	5010
R2 (mm)	9120	9120	9120	9120
T (mm)	5546	5546	5546	5578



Sandvik Mining and Rock Technology reserves the right to make changes to the information on this data sheet without prior notification to users. Please contact a Sandvik representative for clarification on specifications and options.