



Scamec LC Thor



Normet reserves the right to change
this specification without further notice

Pictures may include options and additional equipment.

INTRODUCTION

Scamec LC Thor is new generation scaling machine utilizing Normet modularity design principle. With Scamec Thor the scaling productivity; boom handling, work area visibility and operator ergonomics are brought up to superior level. Scamec Thor is purpose built machine for scaling applications with effective vertical reach up to 9,5 meters. The minimum tunnel width for this machine is 4 meters and minimum height 2,4 meters.



PROCESS EQUIPMENT

Scamec Thor is equipped with NASB95 -boom (Normet Articulated Scaling Boom). Boom is designed for equally efficient scaling of all tunnel surfaces; roof, walls and the back face. Also scaling the lower corners is easy with the boom.

The boom is anchored to the frame with heavy duty slew ring which improves the visibility to the scaling tool as the boom turns away from the field of view just by turning the boom slightly sideways. All boom movements are done by hydraulic cylinders which tackle the scaling work forces and provide the easiest possible serviceability.

Scaling boom can be equipped with Epiroc SB 302 T or optional SB 452 T hydraulic hammers which are specifically designed for scaling. Hammers have reinforced tool shank, improved dust sealing for the tool and shank, pressurized air for keeping the dust particles out and automatic greasing function.

Optional dust suppression has variability; Hammers have dust suppression water nozzles in the front piece and boom is possible to equip with additional water nozzles for suppressing the surrounding dust. Water supply can be organized from on board 550 l water tank and hydraulically operated dust suppression pump or from the mine water line through 120 m hydraulically operated water reel.

Scamec Thor is available with optional dozer blade for clearing the way in the tunnel faces.

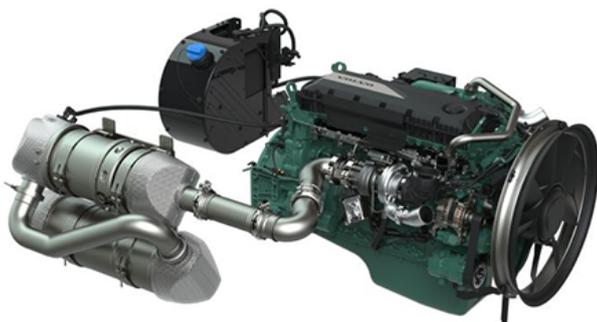
CHASSIS

In scaling applications, a solid chassis is required to carry the scaling boom. Mechanical forces projected to equipment in this process are demanding and wear out lighter and carelessly designed structures quickly. In Scamec Thor the chassis is designed to withstand these forces and improved chassis lifetime is one of the primary design factors. Component locations are carefully thought, and spacious structures enable ease of access for maintenance purposes.

POWER TRAIN

L-series units have powerful 6-cylinder liquid cooled turbo-charged 185 kW Volvo Penta engine. Available emission standards are Tier 3 / Stage IIIA and Stage V that provide clean and efficient operation. Automatically controlled engine brake and transmission lock up turbine ensure safe and efficient decline driving features.

Machine is equipped with Dana hydrodynamic transmission and planetary type axles which have hydraulically powered dual-circuit oil immersed multidisc service brakes. Moreover, axles have spring applied hydraulically released fail-safe -type parking/safety brake.



CABIN

Scamec Thor cabin is FOPS and ROPS certified and tested. Cabin can be lifted 600 mm for enhanced visibility and tilted 15 degrees backwards for better operator ergonomics on roof scaling. Silent cabin design with replaceable air filters and optional AC/heater provides superior comfort to operator. Three point contact rails and non-slippery steps ensure safe passage in and out of the cabin.

Windscreen is 22 mm thick multi-layer glass and has protective grill in front against falling rock debris.

Operator seat is comfortably cushioned and adjustable to operator's weight and size. Optional camera systems increase safety and visibility around the machine.

All frequently needed operating controls are located in the hand control panels and provide great ergonomics.

There is also retractable trainer's seat available as option.



SAFETY AND PRODUCTIVITY

Scaling includes more rock fall risks than any other underground work process. Scamec Thor has safety features build to minimize the effects of these risks. The boom design minimizes the risk of rocks falling on the boom to the cabin. Both longitudinal boom sections are covered with rock covers including guides projecting falling rocks to the side.

In scaling process fatal accidents can happen fast and therefore Scamec Thor offers emergency escape function.

Fire safety is done with standard hand held fire extinguishers and optional fire suppression system.

Scamec Thor scalers are designed for reliable and productive scaling works.

TECHNICAL SPECIFICATION

NASB95 BOOM

Fully articulating scaling boom made of high strength steel

Vertical reach	9.5 m
Horizontal reach	14.5 m
Slew angle	105°
Max. linear tool movement	4m
Heavy duty shielding for falling objects	

SCALING TOOLS

- Epiroc SB 302 T, hydraulic impact hammer:

Impact rate	max. 1400 bpm
Weight	300 kg
Max. hydraulic input	20 kW
Tool diameter	80 mm
- Epiroc SB 452 T, hydraulic impact hammer:

Impact rate	max. 1250 bpm
Weight	450 kg
Max. hydraulic input	25 kW
Tool diameter	95 mm

SCALING PROCESS

Hydraulically powered 0.4 m³/min compressor for air flushing of hammer's tool

Dust suppression system (hydraulic operated water pump, piping and valves) with:

- Without hose reel (only hose coupling)
 - Manually operated reel. Hose ID 1", length on the reel 30 m
 - Hydraulically operated reel. Hose ID 1", length on the reel 120 m

Automatic hammer lubrication

ENGINE AND TRANSMISSION

- **Volvo Penta TAD851VE, 185 kW/2200 rpm, with engine brake, Tier 3 / Stage IIIA approved**

Exhaust system:

- Catalytic exhaust gas purifier and muffler
 - Diesel particulate filter (DPF)

Fuel tank capacity: 280 l

Dana T14 series powershift transmission with lock-up

4 speeds forward and 3 reverse

4-wheel drive

Gear selector:

- Manual
 - Automatic
- **Volvo Penta TAD881VE, 185 kW/2200 rpm, with engine brake, Stage V approved**

Requires diesel exhaust fluid (DEF) and Ultra-low sulphur diesel (ULSD)

Diesel particulate filter (DPF)

Selective catalytic reduction (SCR)

Fuel tank capacity: 280 l

DEF tank capacity: 25 l

Dana T14 series powershift transmission with lock-up

4 speeds forward and 3 reverse

4-wheel drive

Gear selector:

- Manual
 - Automatic

PERFORMANCE

Tramming speed (horizontal) 30 km/h

Lateral gradient for tramming (continuous) 4°

Longitudinal gradient for tramming (continuous) 9°

Depending of machine configuration, lateral and longitudinal tramming gradient can temporarily be higher.

CONTROL SYSTEM

NorSmart 3 control and diagnostic system to control:

- Scaling boom
- Process functions
- Carrier functions
- Safety elements
- Fault diagnostics
- Data logging

AXLES AND BRAKES

Load end axle:

Dana 113 series fixed

Engine end axle:

Dana 113 series with +/-7° oscillation

Service brake: hydraulically powered dual-circuit oil immersed multi-disc brakes in both axles

Safety/Parking brake: spring applied hydraulically released fail-safe -type brake

Interactive brake testing possible from cabin

TYRES AND RIMS

Tyres:

Nokian Tyres 14.00–24"

Rims:

- Standard rims
- NDT inspected rims

STEERING

Orbitrol type hydraulic frame steering

Frame articulation +/- 40°

HYDRAULIC SYSTEM

Dual circuit hydraulic system (separate circuits for chassis and scaling process)

Variable displacement pump system for carrier and boom:

190 bar, 180 l/min at 2200 rpm

Variable displacement pump system for scaling process:

190 bar, 150 l/min at 2200 rpm

Additional bypass filtering system

Hydraulic oil tank capacity (chassis circuit) 180 l

Hydraulic oil tank capacity (process circuit) 215 l

24 VDC ELECTRICAL SYSTEM

LED driving and indicator lights

LED work lights

LED side lights (left/right):

- White / White
- Green / Red
- Red / Green

Warning LED light:

Color

- Amber
- Blue
- Red
- Green (n/a with rotating light pattern)
- White (n/a with rotating light pattern)

Light pattern

- Strobe
- Rotating

DRIVER'S COMPARTMENT

Cabin type:

Enclosed cabin FOPS/ROPS approved

Cabin lift: + 600 mm

Cabin tilt: 15°

Driver's seat and seat belt:

- Mechanically suspended seat with 3-point seat belt
- Air suspended seat with 3-point seat belt

Cabin safety features:

Cabin door safety interlock switch applies safety brake

Cabin up-position warning

Puddle lights

Wide-angle mirrors

Neutral gear interlock applies safety brake

Powder extinguisher 6 kg

Operator controls:

Ergonomically designed operating controls for efficient scaling work

Foot pedal for hammer operation

Touch screen display for monitoring machine's operational functions and NorSmart 3 operating system interface

MACHINE CONNECTIVITY

- Machine connectivity hardware (WLAN/3G/4G/LTE)
- Analytics license (includes connectivity hardware)

TECHNICAL DOCUMENTATION

Standard documents:

Instruction manuals, hard copy 2 pcs:

- English
- Russian
- One of destination EU languages

Spare parts manuals, hard copy 2 pcs:

- English
- Russian

PDF manuals on USB-stick 2 pcs, includes instruction and spare parts manuals

Additional documentation:

- Extra hard copies of manuals
- Extra PDF manuals
- LinkOne WebView electronic manuals
- Other than standard language manuals

OTHER

Powder extinguisher:

- 6 kg
- 12 kg
- Ansul Sentry

Number of extinguishers:

- 1
- 2

Front support legs

Rear support legs

Painting and taping:

- Standard painting and taping
- Painting and taping according to customer specifications

Text labels in:

- En/Ru/One of destination EU languages
- Other language

Measurements:

- Noise
- Vibration
- Emissions

ACCESSORIES

PROCESS PRODUCTIVITY

- Hammer maintenance tools for Epiroc SB 302 T
- Hammer maintenance tools for Epiroc SB 452 T
- Hammer tools for Epiroc SB 302 T
 - Moil point (Conical)
 - Blunt
 - Chisel
- Hammer tools for Epiroc SB 452 T
 - Moil point (Conical)
 - Blunt
 - Chisel
- Hydraulic operated dozer blade
- Chassis hydraulic circuit oil cooler for hot climate
- Radio remote control for remote drive (RDS) and process functions
- Water tank for dust suppression system 550 l
- Additional dust suppression nozzles for boom
- Boot and cabin floor washer
- Pressure washer gun with reel and hose 20 m (operated by dust suppression system)

- High voltage electrical system:

Hydraulic power pack 55 kW:

Pump for carrier 125 l/min at 1500 rpm

Pump for process 100 l/min at 1500 rpm

Main supply voltage

Power supply for the electrical functions

- 50 Hz
 - 380 V (IEC)
 - 400 V (IEC)
 - 415 V (IEC)
 - 525 V (IEC)
 - 690 V (IEC)
 - 1000 V (IEC)
 - 1000 V (AN/NZS)
- 60 Hz
 - 440 V (UL/CSA)
 - 440 V (IEC)
 - 480 V, (460 V) (UL/CSA)
 - 600 V, (575 V) (UL/CSA)
 - 1000 V (UL/CSA)

Robust and abrasion-resistant mains voltage supply cable with PUR outer sheath:

Hydraulically driven reel with spooling device

Cable in / out reeling function from the cabin and near the reel

- With supply cable (excluding plug)
- Without supply cable (must be sourced and installed locally)

Supports pilot circuited electric supply

Cable size: 3x25+3G6+2x1x1

Cable reel capacity: 150 m

CARRIER PRODUCTIVITY

- Accessories for enclosed cabin:
 - Audio system
 - Air conditioning with heating
 - Heated mirrors
- 12 V, 20 A power supply in cabin with socket and connector
- Deutch connector for 24 V, 10 A for external power supply
- Auto engine shutdown during idling
- Engine shutdown delay
- Inlet plug for jump start
- Block heater with interior heater and battery charger 230 V
- Block heater with interior heater, battery charger, hydraulic oil and filter heaters 400 V
- Fuel operated pre-heater
- Fast fuel filling system
- Hand pump for filling of hydraulic tank
- Fluid evacuation panel with sampling points
- Automatic lubrication system
- Reversing camera
 - 2 cameras, 1 display
 - 6 cameras, 3 displays
 - 6 cameras, 3 displays with recording support
- Spare rim and tyre
- Seat cover
- Toolbox and maintenance tools
- Stand-alone vacuum pump for hydraulics service
- Wax tape for electric connectors

SAFETY

- Extra warning LED light
 - Color
 - Amber
 - Blue
 - Red
 - Green (n/a with rotating light pattern)
 - White (n/a with rotating light pattern)
 - Light pattern
 - Strobe
 - Rotating
- Direction lights (Green/Red)
 - Both lights always on
 - Lights follows driving direction
- Emergency escape system (When activated machine automatically lifts support legs, dozer blade and engage reverse gear with audible and lights alarm)
- Trainers seat and safety belt
- Seat belt interlock switch applies safety brake

- Fire extinguisher system
 - Dry chemical
 - Ansul A-101
 - Manual
 - Automatic, Checkfire
 - 110
 - 210
 - Liquid agent
 - Ansul LVS
 - Manual
 - Automatic, Checkfire
 - 110
 - 210
 - Twin-agent
 - Ansul A-101/LVS
 - Manual
 - Automatic, Checkfire
 - 110
 - 210
 - Gear lockout:
 - Forward:
 - Highest gear locked out
 - 2 highest gears locked out
 - Reverse:
 - Highest gear locked out
 - 2 highest gears locked out
 - Front and rear grounding straps
 - Flat cable
 - Chain
 - Pump for brake release
 - Electric pump
 - Hand pump
 - Redundant brake monitoring system
 - Methane monitoring system
 - Tyre pressure indicators
 - Warning triangles
 - Flashlight with charger
 - Hearing protectors
 - Wheel chocks with brackets
 - Service isolator for starter

SERVICES

NORMET SERVICES

Normet is committed to servicing its customers all over the world. We provide service from a single machine to an entire fleet. The Normet service offering consists of many different products from delivery of parts and training to fleet performance agreements.

More information check [normet.com](https://www.normet.com):

<https://www.normet.com/en/products-and-services>

For any questions about Normet Services contact local Normet.

<https://www.normet.com/en/contact/>

SPARE PARTS

As a leading global Original Equipment Manufacturer, we are committed to providing a complete solution to your spare parts needs. All of Normet's spare parts are manufactured to the highest possible standards to help maintain the safety and profitability of your projects. Our spare parts improve efficiency and total cost of ownership throughout your operations.

Start a carefree journey with Normet equipment by having the right selection of parts available from the beginning.

Spare part recommendation / Start-up Spare Part package:

Available for the first 2000h*: includes periodical service parts, most common wearing parts and other recommended parts. (*Recommendations are based on average hours that can vary depending on worksite conditions.)

Underground, every part is critical!

More information check <https://www.normet.com>

SERVICE AGREEMENTS

Service agreements are always customized to meet our customer needs, consisting of various Normet service products. The service solution is created together with the customer and the level of an agreement can vary with different support agreements (including e.g. parts, periodical maintenance, on-call services, and audits) up to guaranteed fleet availability or process performance (including e.g. parts, all maintenance activities, operator trainings and process audits).

Note that we can provide Digital solutions with connected equipment.

More information check [normet.com](https://www.normet.com).

TRAININGS

Training services can be tailored to your individual needs and range from equipment service training to process application training.

We offer a sustainable training path from the beginning of your operation to the execution stage of your project.

More information check [normet.com](https://www.normet.com).

COMMISSIONING

Equipment commissioning concerns **equipment familiarization**. This is included as part of Normet vehicle delivery. Safety introduction and operating basics for Normet Equipment. Review of Normet user and spare parts manuals. Hands-on equipment safety device operational training. Ensure product quality and customer satisfaction during handover.

Commissioning includes machinery handover to customers and safety operating principles without technical insights or process application training.

EXTENDED COMMISSIONING

We offer an extended training package on top of standard commissioning. Normet provides extended commissioning services that offer basic insights into maintenance manuals, periodical and daily maintenance, as well as modern operating perspectives to maximize handling efficiency. Safety-oriented training ensures reliable operations for Battery Electric Vehicles and Diesel-Driven based on your vehicle fleet. This cost-effective solution covers the essential aspects of equipment operation, safety, and maintenance schedules.

To ensure continuous and maximized safe operations with your new equipment and to expand your knowledge scale of operations, this option is the most suitable and recommended option for extending your new equipment training. This cost-effective solution covers the essential aspects of equipment operation, safety, and maintenance schedules.

UPGRADES AND MODIFICATIONS

We build our machines to last. We also understand that your needs on the ground can change - and reacting to that change makes a big difference in your productivity. Normet Upgrades & Modifications provide you with access to product improvements that meet your evolving requirements and let you stay one step ahead of the curve.

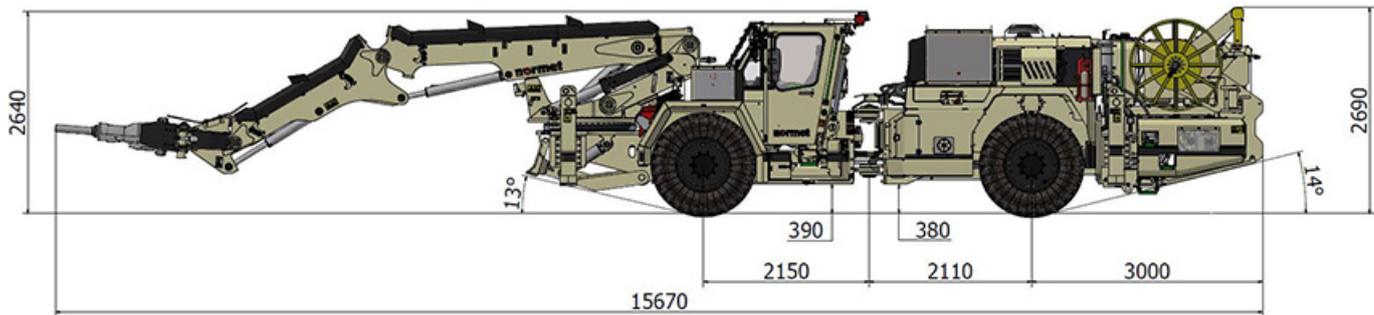
Contact your local Normet office for Upgrade offering to your fleet.

More information check [normet.com](https://www.normet.com).

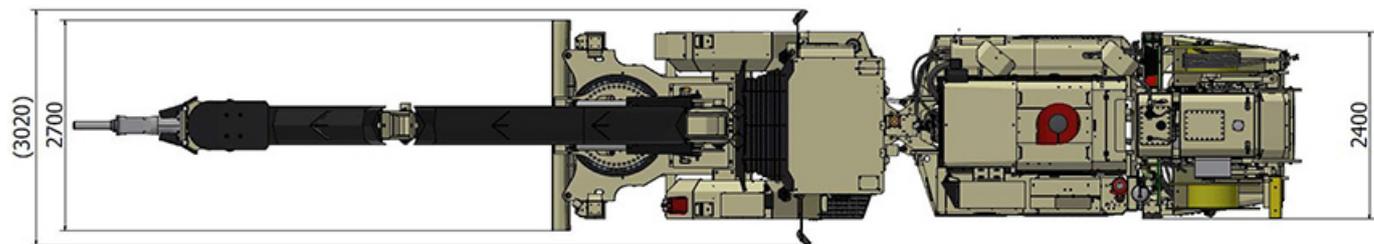
DIMENSIONS

Length	15670 mm	Track	1950 mm
Width	2700 mm	Ground clearance as shown	260 mm
Height	2690 mm	Turning radius outer	7550 mm
Wheel base	4260 mm	Turning radius inner	4660 mm

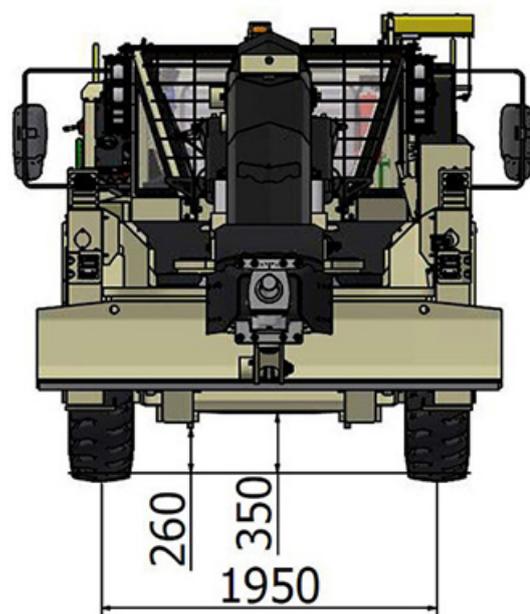
SIDE VIEW – BASIC MACHINE



TOP VIEW



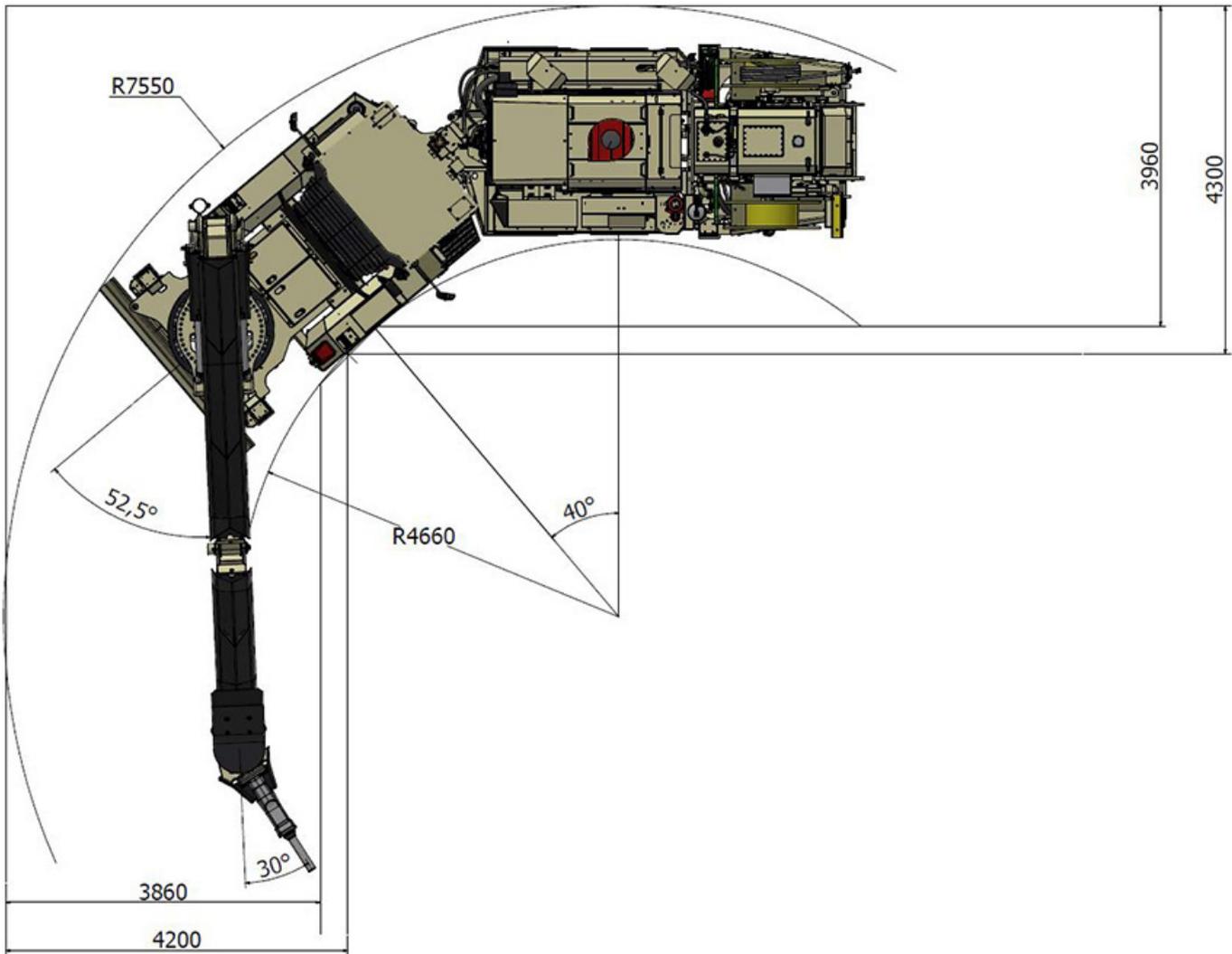
FRONT VIEW



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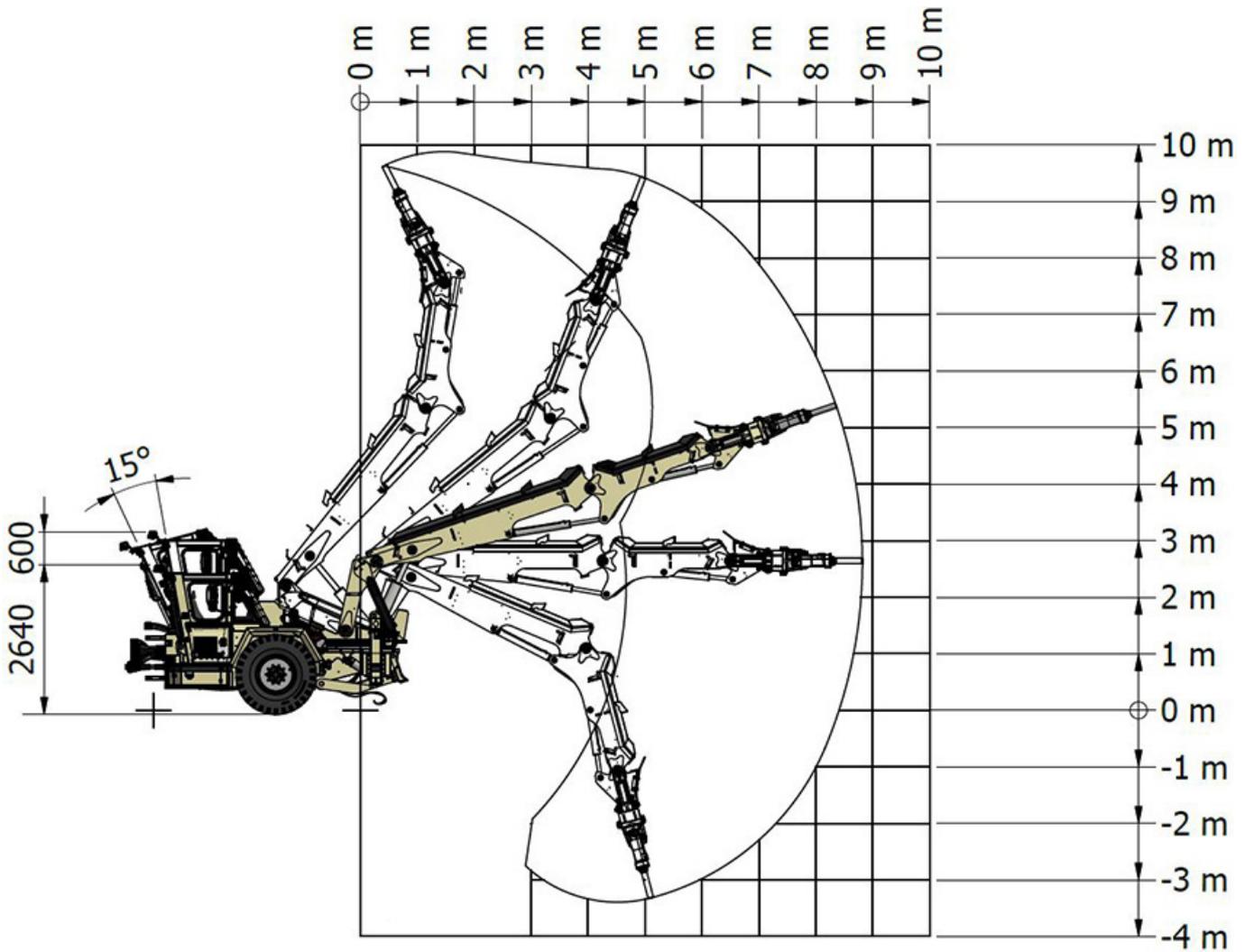
TURNING RADIUS



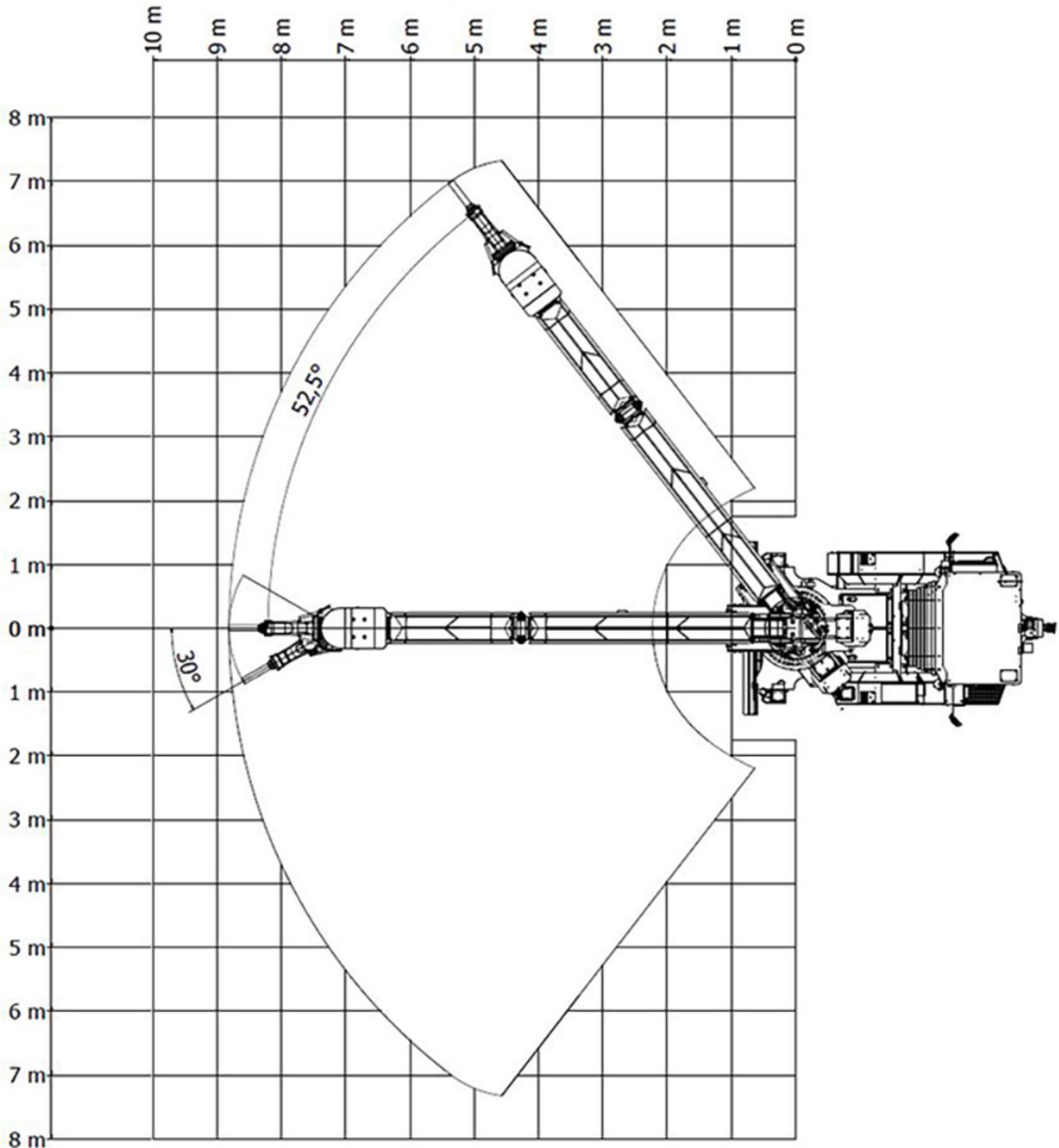
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BOOM REACH



BOOM REACH

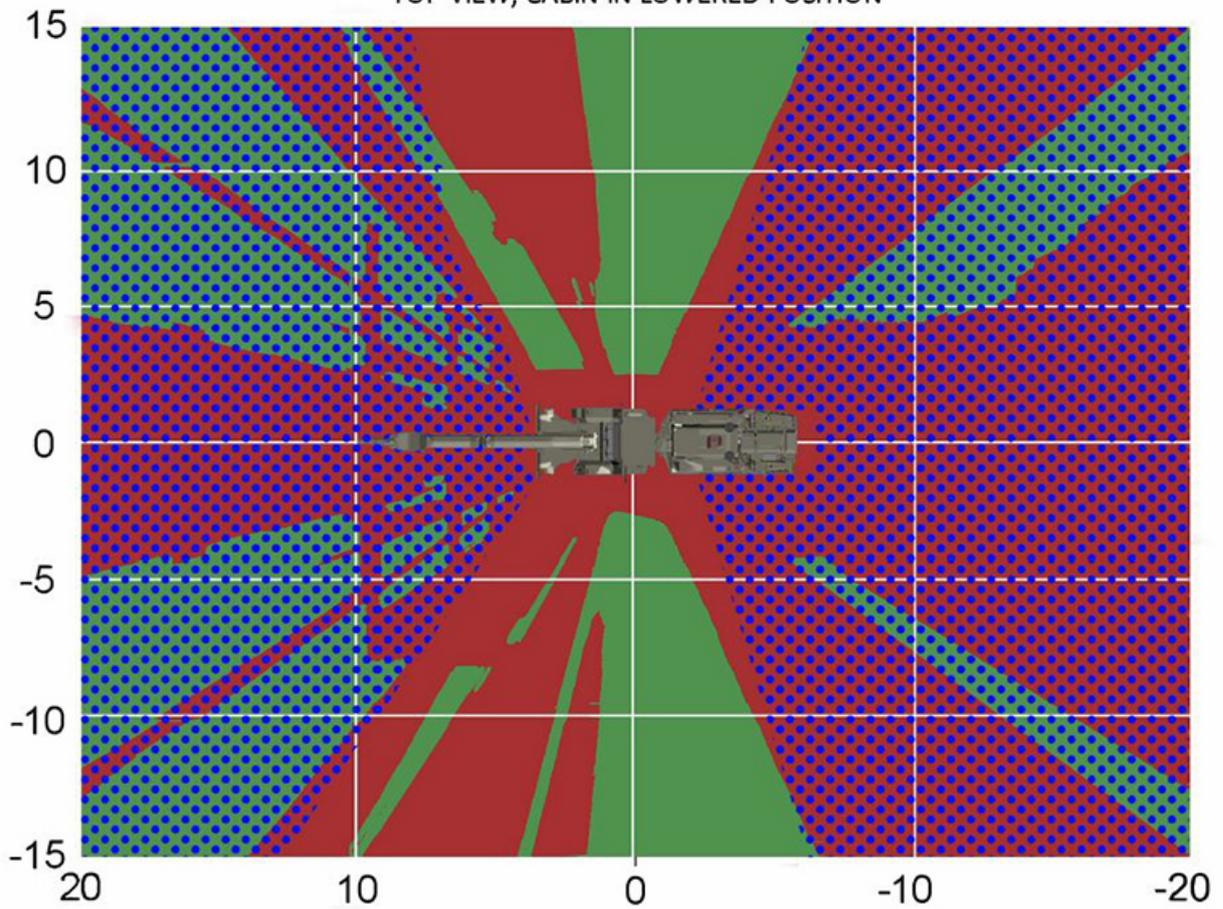


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VISIBILITY MAP

TOP VIEW, CABIN IN LOWERED POSITION



-  Visible area
-  Blind area
-  Camera visibility area

TRACTIVE EFFORTS

OPERATING WEIGHT

Operating weight

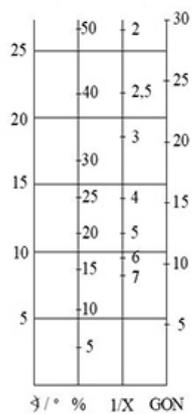
26 000 kg

final machine weight variate in agree with selected options

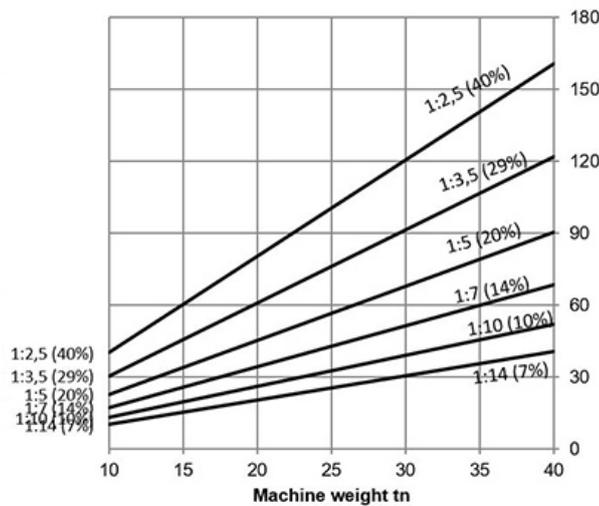
VOLVO PENTA TAD 851/881 185 KW

Performance curve with turbine lock-up DOC059932

Conversion chart



Gradeability kN



Tractive effort kN

