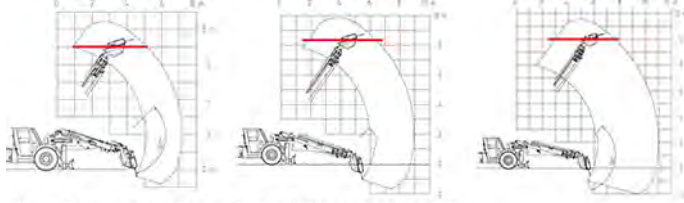


Scamec 2000 S/M/L

INTRODUCTION

Scamec 2000 -series scalers are purpose built machines for scaling applications with practical effective vertical reach from 7 meters up to 10 meters depending on the boom length. Machine has mature construction and it has seen many improvements during the years. The minimum tunnel width for this machine is 4 meters and minimum height is 2,4 meters.



Practical vertical boom reach of Scamec 2000 with S, M or L boom



Scamec 2000 with fixed style pick and with hydraulic scaling hammer.

Scamec 2000 is available with standard straight push plate or optional turn able push plate.

CABIN

Scamec cabin is FOPS and ROPS certified and tested. Cabin can be lifted 600 mm for enhanced overall view and tilted 15 degrees for minimizing the strain to operator's neck. Cabin has low noise levels, it is dust sealed with replaceable air filters and with air condition/ cabin heating provides comfortable and ergonomic working environment. There are three point contact rails and non-slippery steps ensuring safe passage in and out of the cabin.

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

Operator seat is comfortable cushioned and adjustable to operator's weight and size. Seat is turning 90 degrees sideways providing enhanced field of vision while reversing the machine.

DRIVETRAIN

Scamec 2000 series is equipped with powerful 6 -cylinder diesel engines. There are two ubiquitous engine options available; Mercedes-Benz OM906 or Deutz TCD2012, both Tier III classified, liquid cooled engines ranging from 155 to 170 kW of engine power. Emission reducing equipment consists of catalyzators and optional DPF -filters.

Scamec drivetrain consist of Dana 32000 -series, 3 -speed transmission. Machine has continuous 4 wheel drive. Both axles are Dana 113 planetary gear axles with dual circuit hydraulic SAHR brakes. (Spring Applied and Hydraulically Released). In case of loss of hydraulic pressure safety brakes will automatically apply. Safety and service brakes can be tested from the cabin prior every operation. Power to the ground is delivered through 14.00-24 mining grade tires.

PROCESS EQUIPMENT

For Scamec 2000 -series scaling machines there are three lengths of scaling booms available; S, M and L. Maximum vertical reach for each boom is:

- 8,5 meters for S-length boom with the hydraulic hammer.
- 10 meters for M-length boom with the hydraulic hammer.
- 11,5 meters for L-length boom with the hydraulic hammer.

See the reach diagrams at the end of the Technical Data Sheet.

Extension type scaling boom is attached to the front frame with heavy duty slew frame. Scaling boom can be equipped with Epiroc SB302T hydraulic hammer which is specifically designed for scaling. Hammer has reinforced tool shank, improved dust sealing for the tool and shank, pressurized air for keeping the dust particles out and automatic greasing function. Hammer has also two dust suppression water nozzles with hydraulically operated dust suppression water pump and also optional 200 l water tank is available.

For more traditional mechanized scaling fixed pick tool is also available. Changing from pick unit to hammer takes around 2 hours in workshop conditions with lifting equipment.

SAFETY AND PRODUCTIVITY

Scaling being one of the most dangerous works underground, it needs well thought safety features. During scaling operation there are two kinds of occupational hazards; imminent and longtime hazards. In Scamec 2000 scaling machine operator is protected against both type of hazards from the beginning of the shift to the end.

The automatic fire suppression system brand with additional handheld fire extinguishers can be selected by customer demand. There is also variety of other standard and optional safety equipment available filling the demands of the most rigorous safety requirement existing.

Machine reliability is one factor affecting most to the productivity in the customer work site. Machine must be able to keep up with the production. Scamec 2000 series are designed and build to keep the promise and ultimately offering the best whole life time costs available. The extension -style scaling boom provides optimal tool angles when working in tunnel roof and walls.



Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.

TECHNICAL SPECIFICATION

NSB BOOM

• Normet scaling boom NSB 1000 (S-series)	
Max. vertical reach of hammer	8.4 m
Max. horizontal reach of hammer	11 m
◦ Normet scaling boom NSB 1000 (M-series)	
Max. vertical reach of hammer	9.8 m
Max. horizontal reach of hammer	14 m
◦ Normet scaling boom NSB 1000 (L-series)	
Max. vertical reach of hammer	11.5 m
Max. horizontal reach of hammer	15.5 m
Heavy duty telescopic scaling boom	
Boom slew	+/-40°
Hammer turn	+/-45°
Hammer tilt	120°

SCALING TOOLS

Epiroc (Atlas-Copco) SB 302 Tunnel, hydraulic impact hammer:

Impact rate	max. 1400 bpm
Weight	300 kg

Push plate:

- Fixed
- Turnable

FOR 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:

- Manually operated reel. Hose ID 1", length on the reel 30 m
- Hydraulically operated reel. Hose ID 1 ¼", length on the reel 100 m
- Without hose reel

ENGINE AND TRANSMISSION

- **Deutz TCD 2012 L6, 155 kW/2300 rpm, Tier 3 / Stage IIIA approved (This selection includes hydraulic boom control)**
- Catalytic exhaust gas purifier and muffler
- Fuel tank capacity 160 l
- Dana 32000 series powershift transmission
- 3 speeds forward and reverse
- 4-wheel drive

Normet reserves the right to change this specification without further notice

- **Mercedes-Benz OM 906 LA, 170 kW/2200 rpm, Tier 3 / Stage IIIA approved (This selection includes electric boom control)**

Exhaust system for MB engine:

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

Fuel tank capacity 160 l

Dana 32000 series powershift transmission

3 speeds forward and reverse

4-wheel drive

PERFORMANCE

Tramming speed (horizontal):

Deutz	17 km/h
Mercedes-Benz	17 km/h

Lateral gradient for tramming (continuous) 4°

Longitudinal gradient for tramming (continuous) 9°

Lateral gradient for operation 4°

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

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

Brake testing possible from cabin

TYRES AND RIMS

Tyres:

- Nokian Tyres 14.00-24"
- Bridgestone 14.00-24"

Rims:

- Standard rims
- NDT inspected rims

STEERING

Orbitrol type hydraulic frame steering

Frame articulation +/- 40°

Pictures may include options and additional equipment.

HYDRAULIC SYSTEM

Variable displacement pump system for carrier and boom:

190 bar, 155 l/min at 2200 rpm

Variable displacement pump system for scaling tool:

190 bar, 95 l/min at 2200 rpm

Additional bypass filtering system

Hydraulic oil tank capacity 240 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

- 2 point retractable lap seat belt
- 3 point retractable seat belt

Cabin door interlock switches with safety brake application

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:

- 12 kg
- Ansul Sentry

Number of extinguishers:

- 1
- 2

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

- Normet fixed pick unit
- Hammer maintenance tools for Epiroc SB 302
- Hammer tools
 - Moil point (Conical)
 - Blunt
 - Chisel
- Hammer hour meter kit
- Water tank 200 l
- Additional water tank 600 l
- Pressure washer
 - Standard pressure washer
 - Stainless steel reel and rod

CARRIER PRODUCTIVITY

- Accessories for enclosed cabin:
 - Audio system
 - Air conditioning with heating
- 12 V, power supply in cabin
- 24 V, power supply in cabin
- Additional hydraulic oil cooler (required for ambient temperatures above 30°C)
- Inlet plug for jump start
- Block heater with interior heater and battery charger 230 V (Interior heater available with enclosed cabin)
- Fast fuel filling system
- Fluid evacuation panel with sampling points
- Automatic lubrication system
- Reversing camera:
 - 1 camera, 1 display
 - 4 cameras, 1 display. OACR/VCR system recording device with 72 hour memory
- Machine connectivity hardware
 - WLAN
 - 3G
 - LTE
- Spare rim and tyre
- Tyre rack and spare tyre
- Toolbox and maintenance tools (Handheld tools)
- Toolbox over fender for accessories
- Wax tape for electric connectors

- Electrical system:

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)

Hydraulically driven cable reel:

- Slipping with pilot contact
- Slipping without pilot contact

Cable size: 3x25+3G6+2x1x1

Cable reel capacity: 150 m

SAFETY

- Cabin door interlock switches:
 - Safety brake application
- Extra warning LED light (From the options below it is possible to choose 1-2 combinations)
 - Color
 - Amber
 - Blue
 - Red
 - Green (n/a with rotating light pattern)
 - White (n/a with rotating light pattern)
 - Light pattern
 - Strobe
 - Rotating
- Emergency escape system (Available only with MB engine)
- Seat belt interlock switch applies safety brake
- Fire extinguisher system
 - Dry chemical
Ansul A-101
 - Manual
 - Automatic, Checkfire 110
 - Liquid agent
Fogmaker (Automatic)
- Highest gear locked out
- Pump for brake release
 - Electric pump
 - Hand pump
- Methane monitoring system
- Brake pressure monitoring kit
- Additional wide angle mirrors (n/a with heated mirrors)
- Warning triangles
- Flashlight with charger
- Hearing protectors
- Wheel chocks with brackets

SERVICES

NORMET SERVICES

Our services cover the whole life cycle of your equipment. They include start-up and commissioning, genuine spare parts, upgrades & modifications, and remanufacturing, as well as rental and leasing offerings, and field services. We also offer improvement services such as operator training and process audits.

SPARE PARTS

Genuine parts from Normet Services ensure that you always have the highest quality parts available to keep your equipment up and running. Depending on your needs, we can offer everything from individual parts to complete parts contracts, and our professionals around the world have the experience to ensure that you have the parts you need when you need them.

Initial spare parts package:

Available for 1000h of use*. Includes periodical service, most common wearing parts and most critical safety parts.

Spare parts packages made for customer needs:

Available based on hours of use*. Includes periodical service, most common wearing parts and most critical safety parts.

* Recommendations are based on average hours – can vary a lot depending on work site conditions.

UPGRADES AND MODIFICATIONS

Our Upgrades and Modifications services are designed to ensure the economical, efficient and purposeful performance of your equipment over its entire life cycle. A service provided by a reliable OEM like Normet ensures the safety and performance of your equipment. Normet Upgrades and Modifications save you both time and money, while delivering the high quality you expect from us.

SERVICE CONTRACTS

With a service agreement, Normet manages your fleet with guaranteed availability and agreed costs, giving you transparency for your life cycle costs, annual operational budget and fleet uptime. This lets you focus on your core operations. Each service agreement is built and customized to meet the individual customer's needs from our portfolio of services. Depending on the level of service agreement you need, you can choose anything from basic technical support for an individual machine all the way up to services for your entire fleet, as well as process performance. The service levels we offer are:

- Parts Availability
- Fleet Support
- Fleet Availability
- Process Performance

The content of a service level can be tailored to meet your particular requirements.

TRAINING SERVICE

Our Training Services are available for you and your operators throughout the equipment lifecycle and they include:

	 Operation & Maintenance	 Spraying	 Charging	 Scaling
ADVANCED	Advanced fault diagnostics & troubleshooting	Concrete chemicals, testing and preparing for EFNARC-certificate test		
INTERMEDIATE	Troubleshooting training Foundations of electrics, hydraulics and mechanics NorSmart	Advanced training in concrete spraying Economics of concrete spraying	Advanced training in explosives Economics of charging	Advanced training in scaling Economics of scaling
BASIC	Operation and Maintenance Training Basic Product Training	Basic understanding of concrete spraying	Basic understanding of charging	Basic understanding of scaling
LEVEL	SERVICE	PROCESS KNOWLEDGE		

START-UP AND COMMISSIONING

1. OPERATOR TRAINING

	Start-up training	Commissioning
1.1 Classroom training		
General introduction and operation of machine	Basic	No classroom training included in commissioning
Safety instructions	Basic	
Use of manuals	Basic	
Technical introduction of equipment	Basic	
Hands-on service and pre-operation checks	Basic	
Controls and driving (starting, driving, stopping, parking)	Basic	
1.2 Practical training		
Pre-operation checks	Basic	Introduction
Driving, starting, stopping, parking	Basic	Introduction
Preparing the machine for specific operation conditions	Basic	Not covered
Operation	Basic	Introduction
Washing the machine	Basic	Introduction
Troubleshooting	Basic	Basic

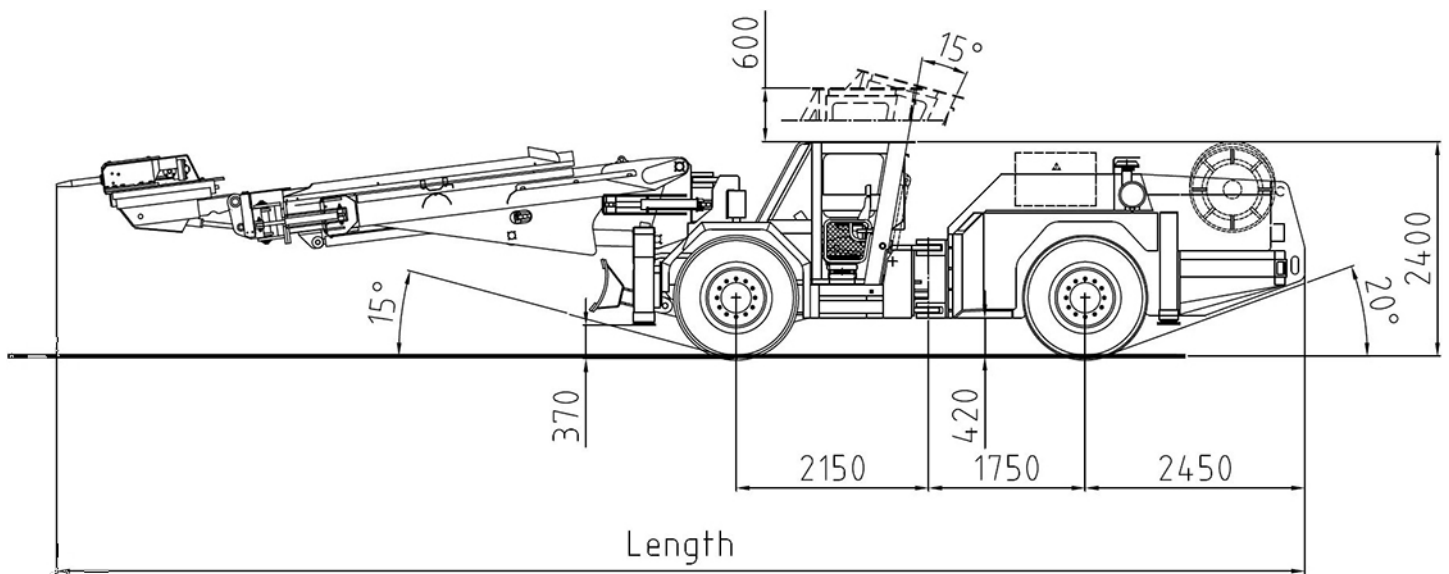
2. MAINTENANCE AND REPAIR TRAINING

General operation of machines	Basic	Introduction
Symbols of drawings and codes	Basic	Not covered
Understanding hydraulic and electric schematics	Basic	Introduction
Control systems	Basic	Introduction
Function of main components (depending on equipment)	Basic	Introduction
Locations of components in the machine	Basic	Not covered
Periodical maintenance	Basic	Introduction
Troubleshooting	Basic	Not covered
Use of manuals	Basic	Introduction
Connection of hydraulic and electrical equipment	Basic	Not covered

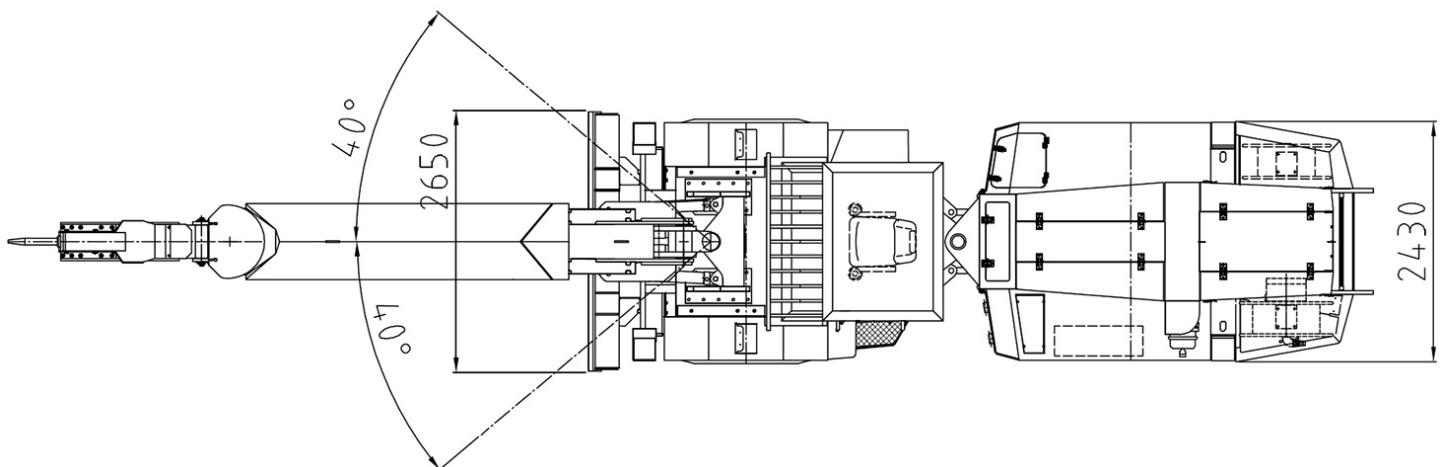
DIMENSIONS

Series	S	M	L
Length	12580 mm	13850 mm	13950 mm
Width	2430 mm	2430 mm	2430 mm
Height (max. height cabin up)	3000 mm	3000 mm	3000 mm
Wheel base	3900 mm	3900 mm	3900 mm
Ground clearance as shown	370 mm	370 mm	370 mm
Turning radius outer	6790 mm	6790 mm	6790 mm
Turning radius inner	4050 mm	4050 mm	4050 mm

SIDE VIEW –BASIC MACHINE



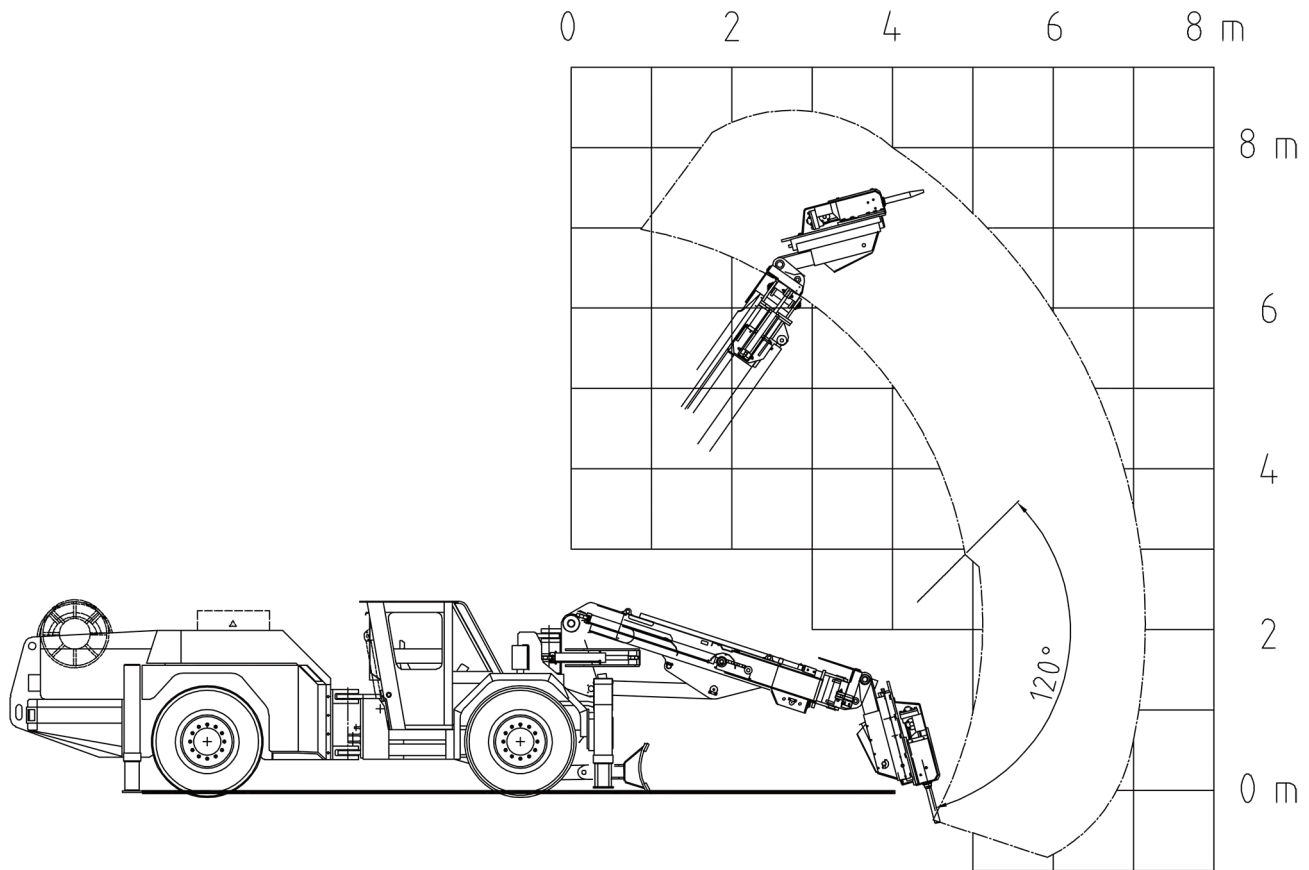
TOP VIEW MACHINE WITH OPTIONS



Normet reserves the right to change this specification without further notice

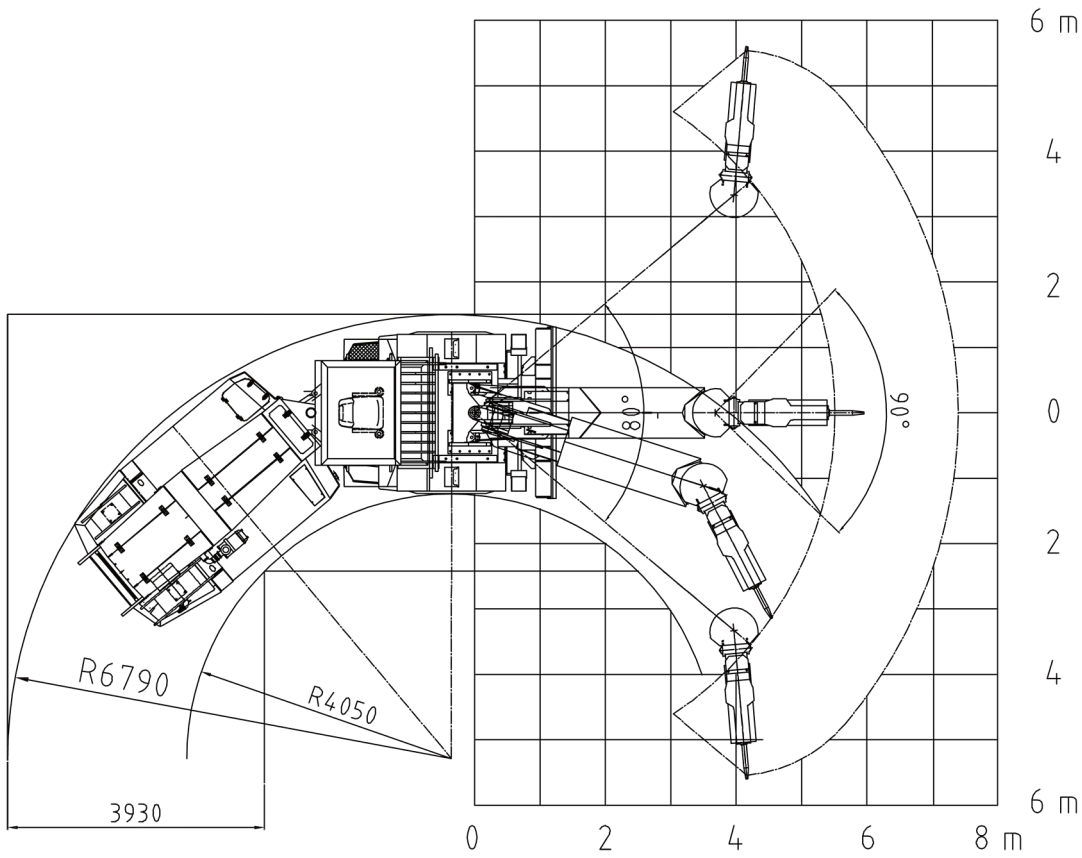
Pictures may include options and additional equipment.

BOOM REACH AND TURNING RADIUS S-SERIES

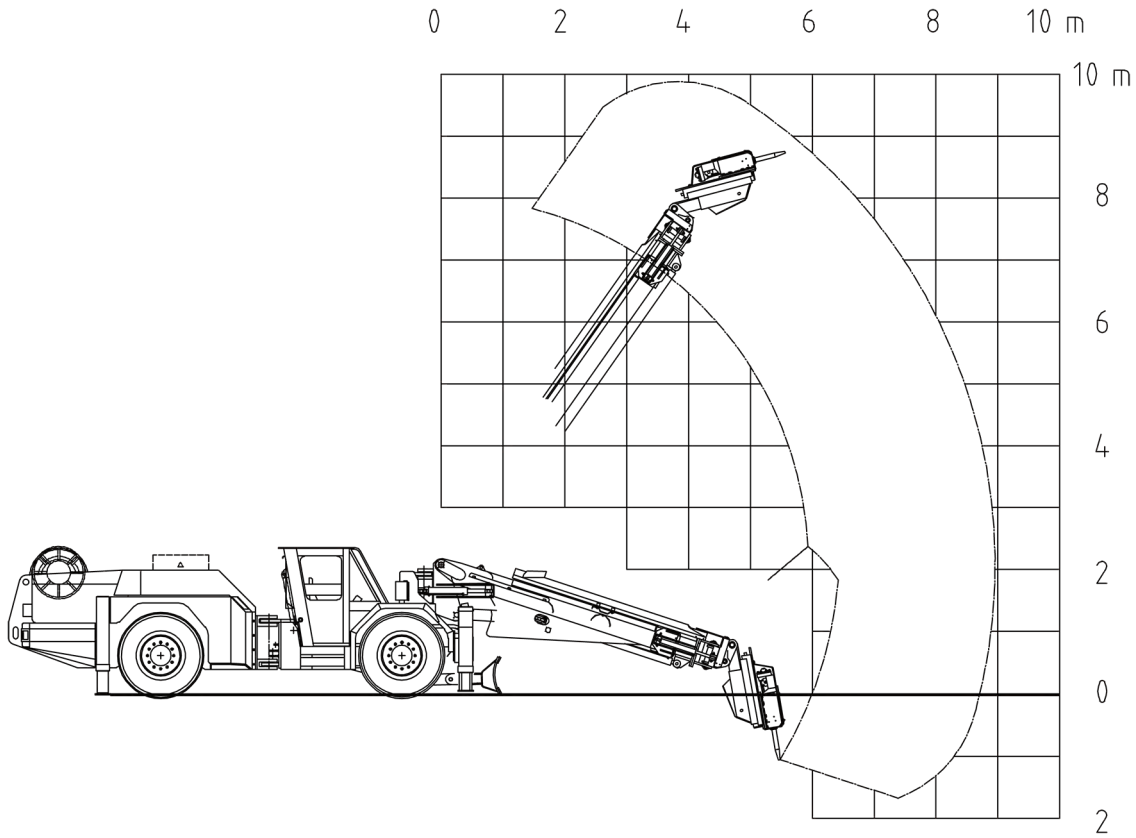


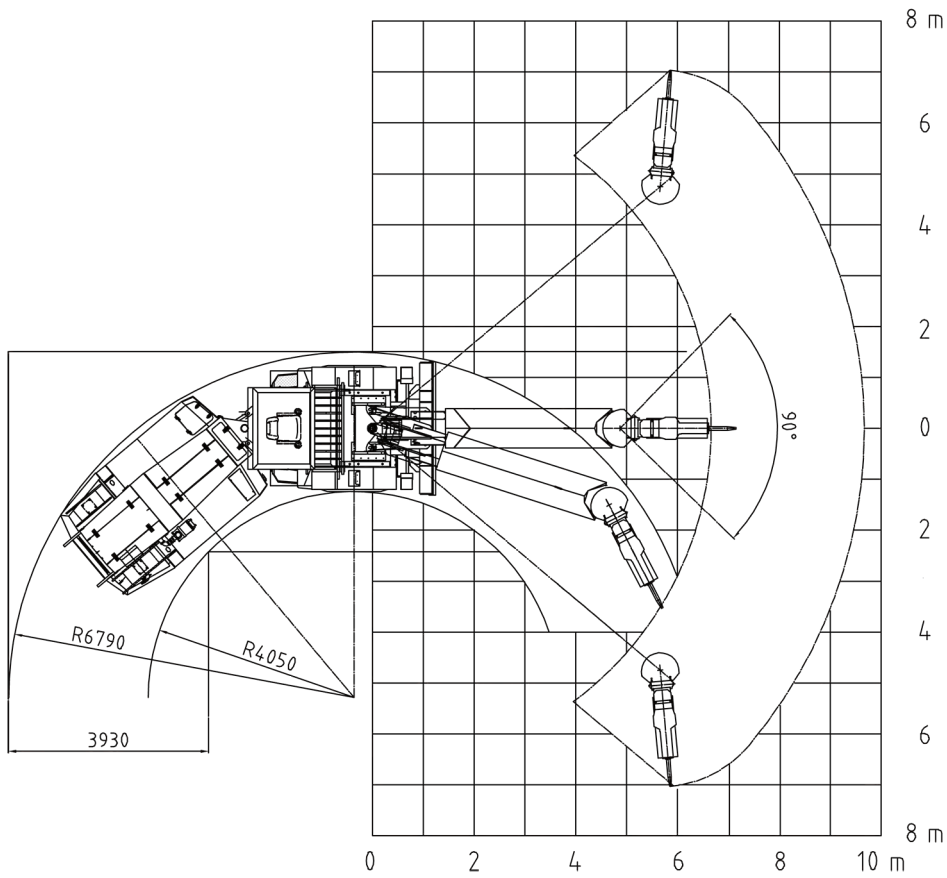
Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.



BOOM REACH AND TURNING RADIUS M-SERIES

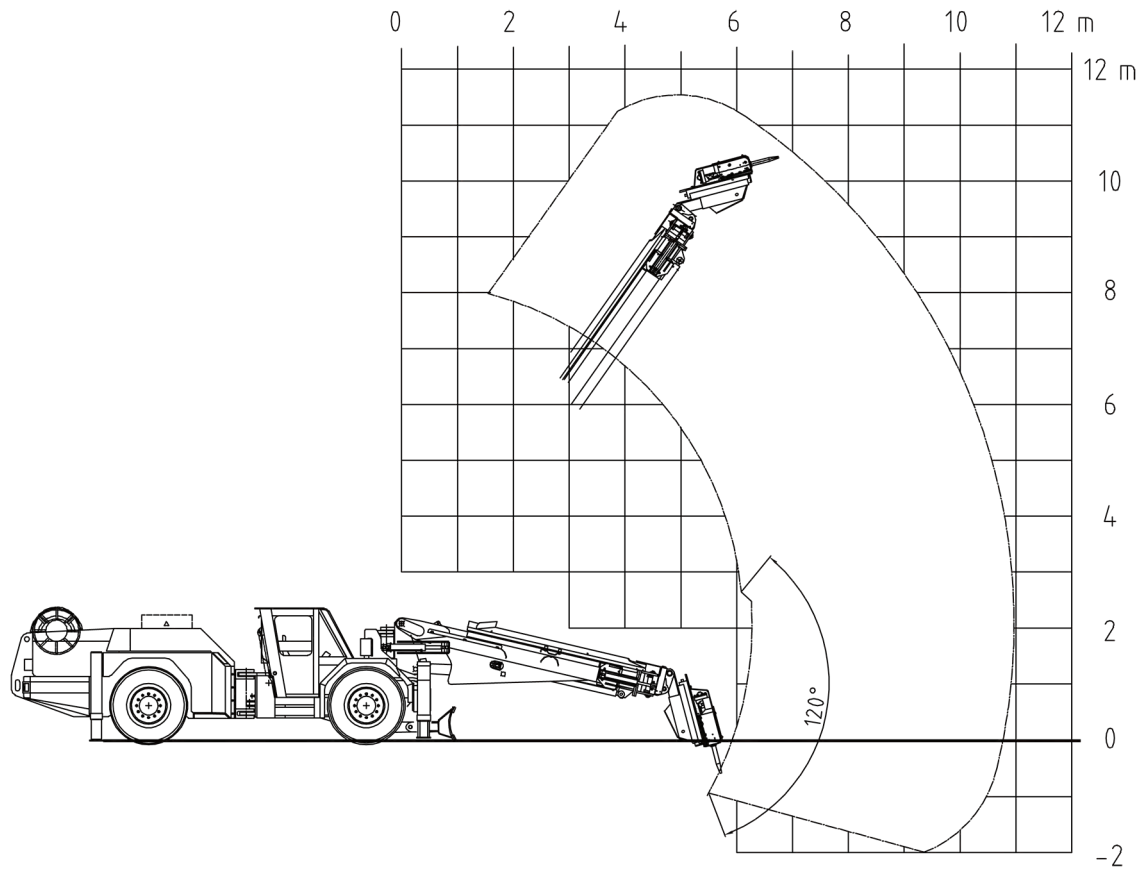




Normet reserves the right to change this specification without further notice

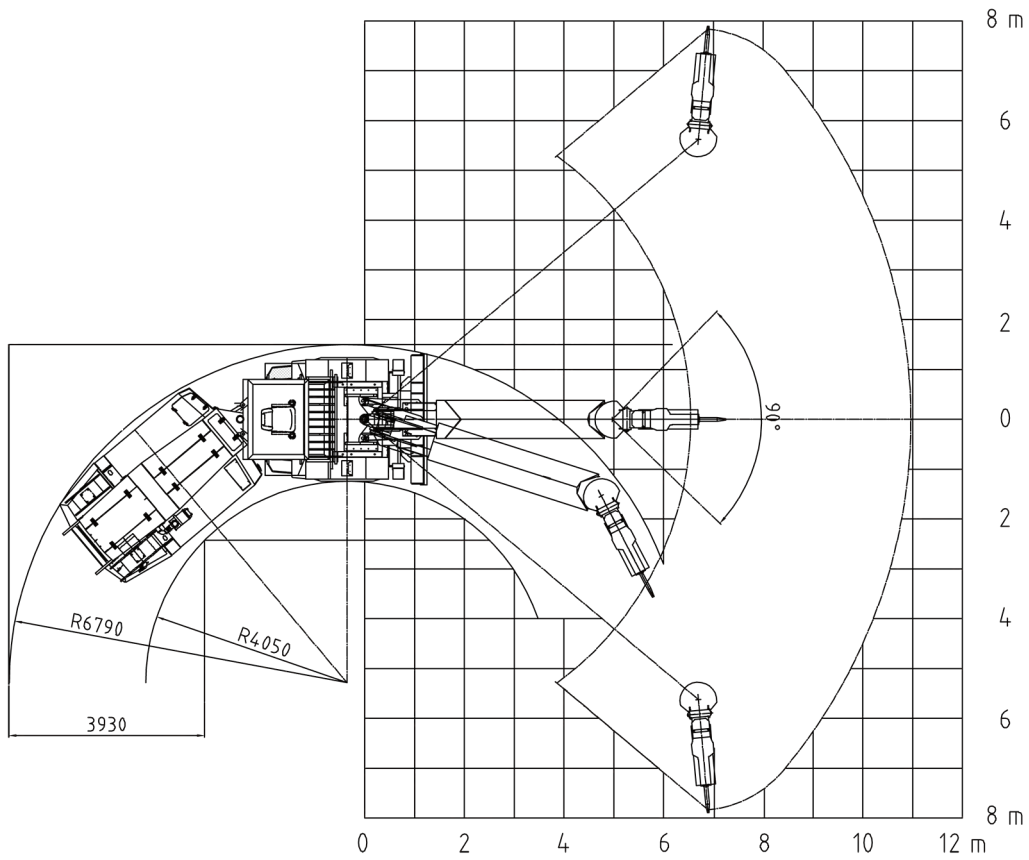
Pictures may include options and additional equipment.

BOOM REACH AND TURNING RADIUS L-SERIES



Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.



TRACTIVE EFFORTS

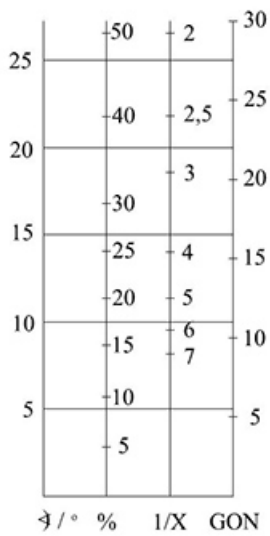
OPERATING WEIGHT

S	24 200 kg
M	26 200 kg
L	27 500 kg

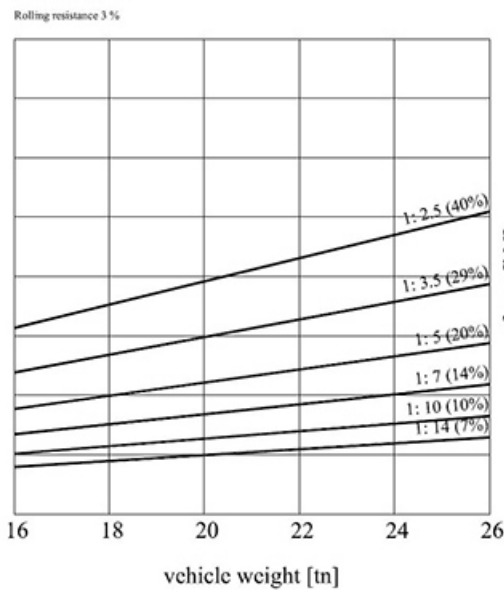
DEUTZ TCD 2012 L6, 155 KW

Performance curve 100022484

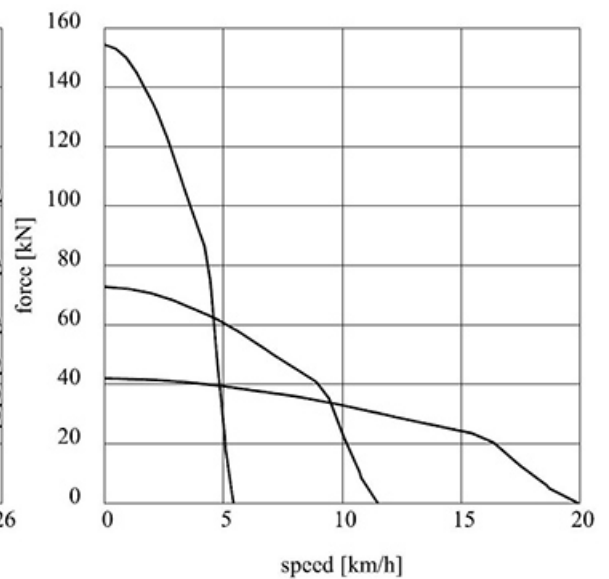
CONVERSION CHART



GRADIENT



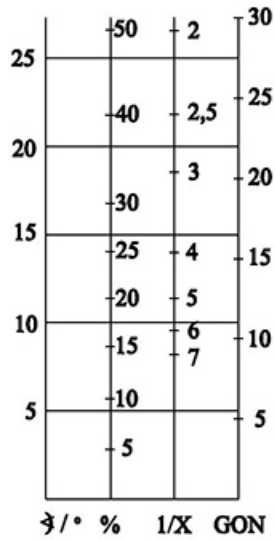
TRACTIVE EFFORT



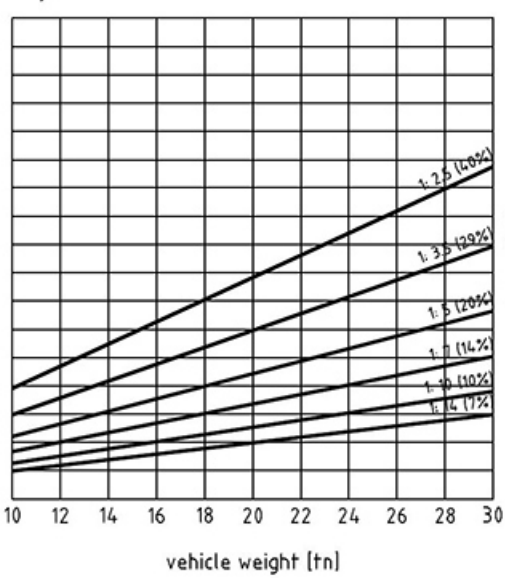
MERCEDES-BENZ OM 906 LA, 170 KW

Performance curve D100003433

CONVERSION CHART



GRADIENT



TRACTIVE EFFORT

