



Utimec MF 100 Material SD



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Pictures may include options and additional equipment.

INTRODUCTION



Utimec MF 100 Material SD is designed for bulk material transportation in underground mines and tunnels. Vehicle has ten ton payload capacity and two different platform versions with optional crane, loading and unloading can be done in everywhere.

The fully electric vehicle architecture (SmartDrive) includes latest Li-ion battery technology, fast charging capability, and two high-torque direct drive electric motors, which provide instant torque and efficient operation without any local emissions. Energy recuperation technology comes as a standard feature. Batteries are charged during downhill driving and deceleration which further increases total efficiency of the operation.

Maximum speed is 20 km/h. The fully reversible 4WD with high traction capability and instant torque ensures safe and sure movement in difficult ground conditions. Majority of the braking is done via electric motors recuperating energy, but the vehicle also includes efficient hydraulic dual-circuit oil immersed multi-disc brakes to provide additional braking power when it is needed.

Vehicle has a front axle suspension system, which improves safety, driving comfort and increases component lifetime.

Normet's FOPS and ROPS approved safety cabin provides superior visibility and a comfortable compartment for the driver and the passenger. Cabin controls are easy and ergonomic to use, and the multifunctional display (MID) provides driving information (speed, RPM, temperatures, safety warnings & alarms etc.), which can be recorded for further analysis. The enclosed cabin and SmartDrive provide a low noise level.



NorSmart 3 electric system is designed for a harsh underground environment. The system consists of self-extinguishing wire harnesses with tinned wires, water-tight conduits, and all exposed components are minimum IP65 protection class. In addition, the vehicle layout allows easy access to all service points, and all daily checks can be done from the ground level.

TECHNICAL SPECIFICATION

MATERIAL PLATFORM

Carrying capacity 10 000 kg

- Standard platform with fixed edges
 - Walking platform in front of material platform
 - Crane, HIAB 029 non-CE
 - Crane, HIAB 029 CE
 - Crane, HIAB 044 non-CE
 - Long platform with high openable edges
 - Crane, Palfinger PC2700 non-CE

Installation position:

- Front of platform
- Rear of platform

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 (AS/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 (excluding plug)

- 7 m cable without cable reel
- Hydraulically driven cable reel
 - No cable
 - 25 m cable

Pilot circuit

- No
- Yes

ELECTRIC MOTORS

Two direct drive permanent magnet electric motors

4-wheel drive, no separate transmission

Combined power rating 200 kW

PERFORMANCE

Max. tractive effort 99 kN

Tramming speed (horizontal) 20 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.

BATTERY

Li-ion battery technology

Nominal voltage 663 V

Energy content 90 kWh

Liquid cooled

Fast charging capability

BATTERY CHARGING

25-30 kW on-board 3-phase AC charging system

for up to 2.5 hours of charging time (from 0 to 80%)

CCS type 2 fast-charging socket

to charge batteries from 0-80% in up to 40 min depending on charger

NOTE: compatible CCS charging station required with type 2 plug

AXLES AND BRAKES

Dana planetary type axles

Fixed load end axle

Suspended battery module axle

Electronic braking: energy recuperation via electric motor braking

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

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

Brake testing possible from cabin

TYRES AND RIMS

- Nokian Tyres 12.00–20" with NDT inspected rims
- Bridgestone 12.00–20" with NDT inspected rims

STEERING

Orbitrol type hydraulic frame steering

Frame articulation +/- 42°

HYDRAULIC SYSTEM

Hydraulic oil tank capacity 145 l

Variable displacement pump system for carrier:
200 bar, 100 l/min

24 VDC ELECTRICAL SYSTEM

2 x 12 V deep cycle batteries

24 V battery charger (DC/DC converter)

LED driving and indicator lights

LED work lights

LED side lights

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

Enclosed 2-operator cabin FOPS/ROPS approved

Air conditioning and heating

Driver's seat and seat belt:

- Air suspended T-back seat with 3-point seat belt
- Air suspended heavy duty seat with 3-point seat belt

Passenger's seat:

- T-back seat with 3-point seat belt
- Heavy duty seat with 3-point seat belt
- 2 seats with retractable lap seat belts

Cabin door interlock switches with safety brake application

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

Dry chemical fire extinguisher system

Ansul A-101:

- Checkfire 110
- Checkfire 210

Powder extinguisher:

- 6 kg
- 12 kg
- Ansul Sentry

Number of extinguishers:

- 1
- 2

Painting and taping:

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

Reversing camera:

- 3 cameras, 3 displays
- 6 cameras, 3 displays with recording support

Electric pump for brake release

Text labels in:

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

Measurements:

- Noise
- Vibration

ACCESSORIES

PROCESS PRODUCTIVITY

- Front support legs

CARRIER PRODUCTIVITY

- Accessories for enclosed cabin:
 - Two-piece windscreen
 - Sliding rear window for driver's side
 - Audio system
 - Heated mirrors
- 12 V, 20 A power supply in cabin with socket and connector
- Drive battery coolant heater with interior heater and 24 VDC battery charger (230 V)
- Fluid evacuation panel with sampling points
- Automatic lubrication system
- Spare rim and tyre
- Toolbox and maintenance tools
- Interior cooling fan
- Wax tape for electric connectors

SAFETY

- Cabin door puddle lights
- 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
- Extra warning LED light with battery backup
 - Color
 - Amber
 - Blue
 - Red
 - Green (n/a with rotating light pattern)
 - White (n/a with rotating light pattern)
 - Light pattern
 - Strobe
 - Rotating
- Seat belt interlock switch applies safety brake
- Front and rear grounding straps
 - Flat cable
 - Chain
- Redundant brake monitoring system
- Methane monitoring system
- Protection guards for tunnel curtains
- Tyre pressure indicators
- Warning triangles
- Flashlight with charger
- Hearing protectors
- Wheel chocks with brackets

BEV SAFETY FEATURES

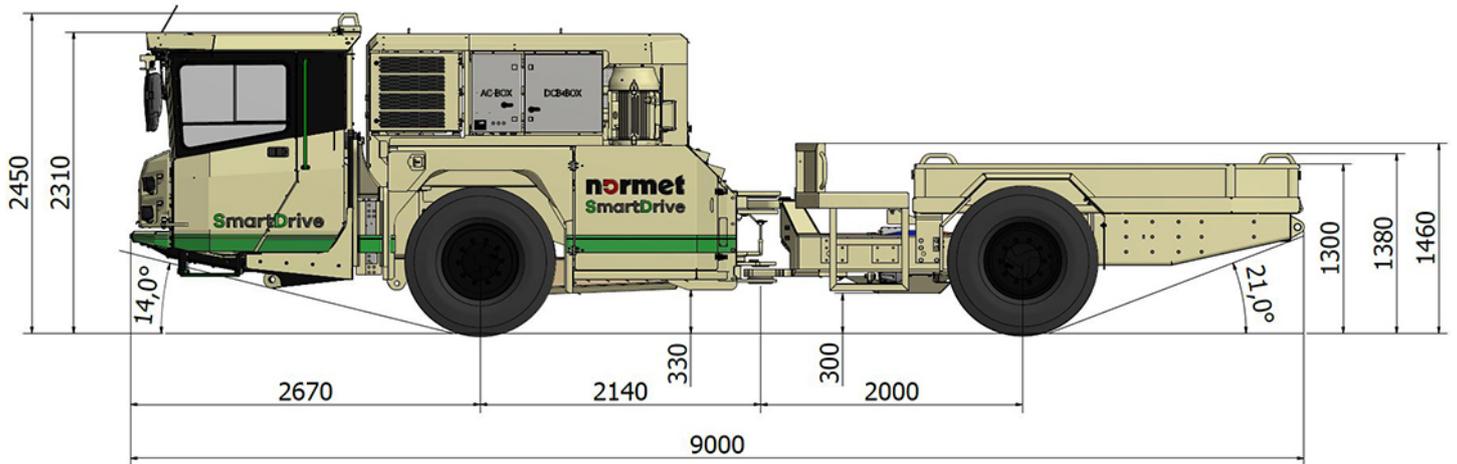
- Battery safe box (for transportation and storage)

DIMENSIONS

Length	9000 mm	Track	1670 mm
Width	2160 mm	Ground clearance	300 mm
Height	2450 mm	Turning radius outer	6850 mm
Wheel base	4140 mm	Turning radius inner	4300 mm

SIDE VIEW – BASIC MACHINE

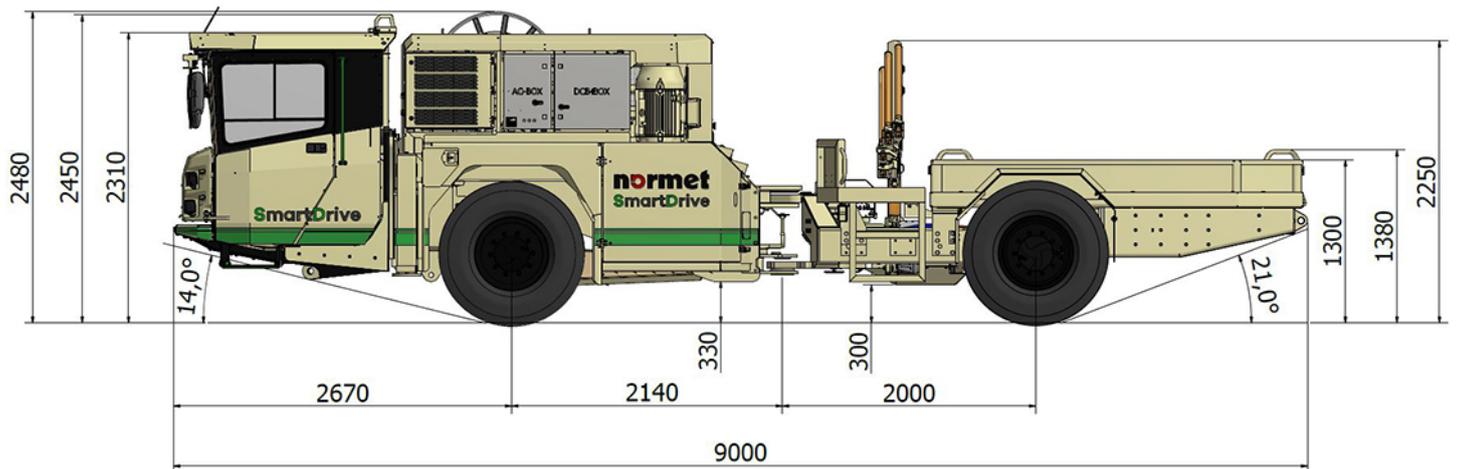
LOW PLATFORM AND WALK STAND



SIDE VIEW – MACHINE WITH OPTIONS

Low platform with HIAB 029

LOW PLATFORM AND HIAB 029



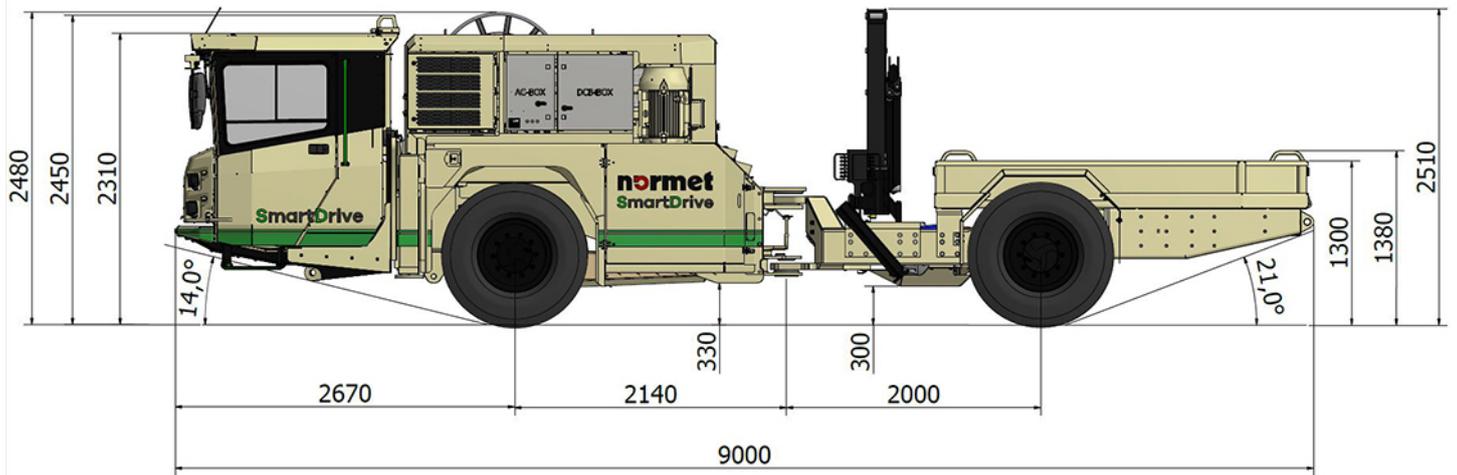
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SIDE VIEW – MACHINE WITH OPTIONS

Low platform with HIAB 044

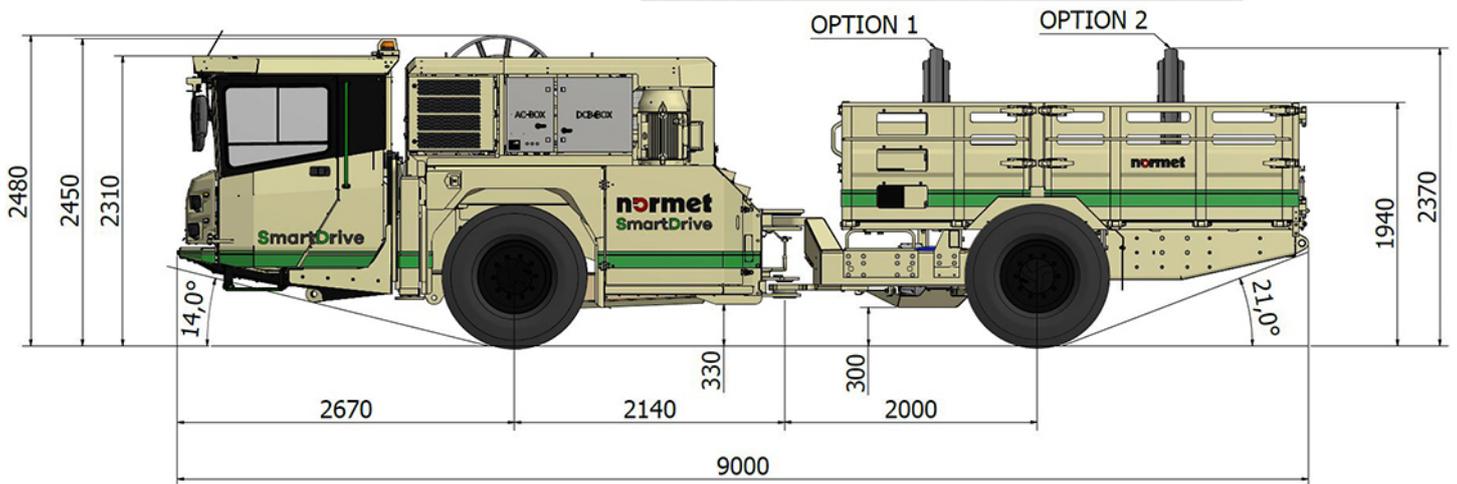
LOW PLATFORM AND HIAB 044



SIDE VIEW – MACHINE WITH OPTIONS

HIGH PLATFORM AND PALFINGER 2700 CRANE

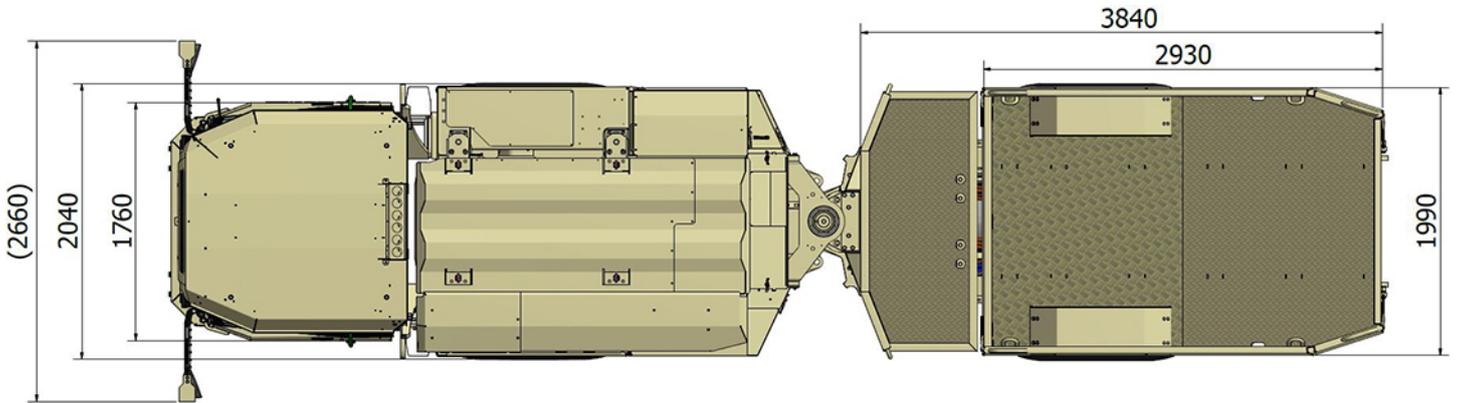
CRANE INSTALLATION POSITION 2 OPTIONAL PLACES.



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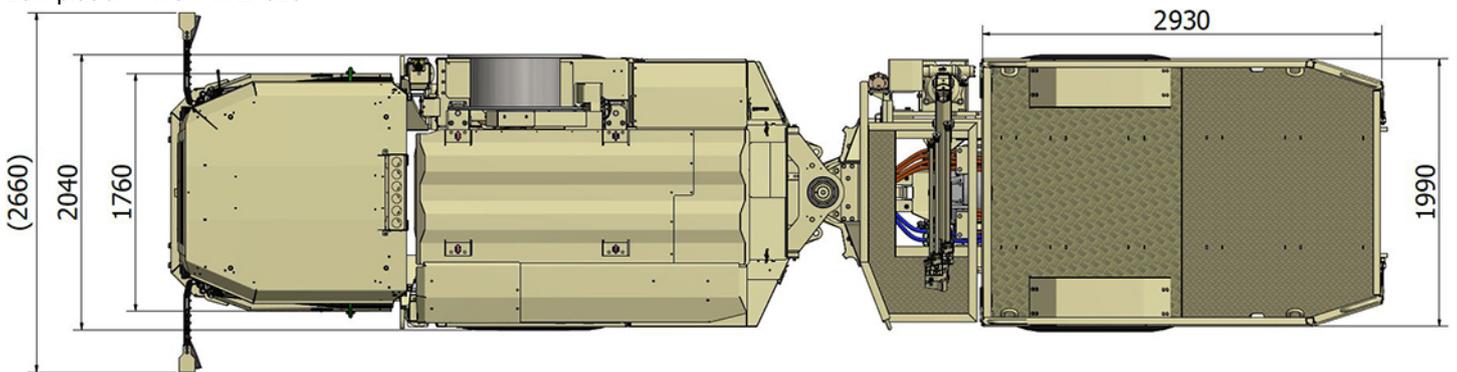
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TOP VIEW – BASIC MACHINE



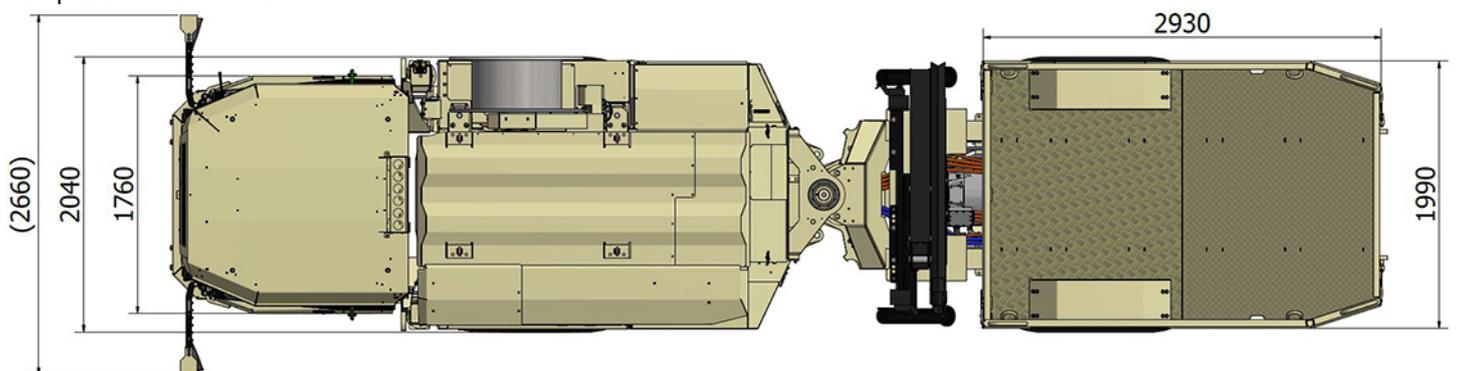
TOP VIEW – MACHINE WITH OPTIONS

Low platform with HIAB 029



TOP VIEW – MACHINE WITH OPTIONS

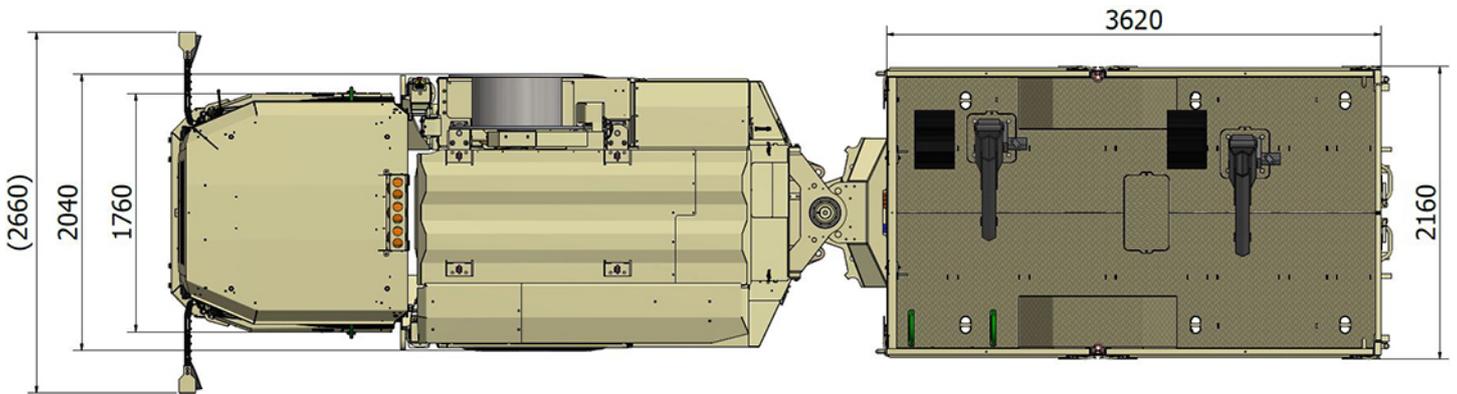
Low platform with HIAB 044



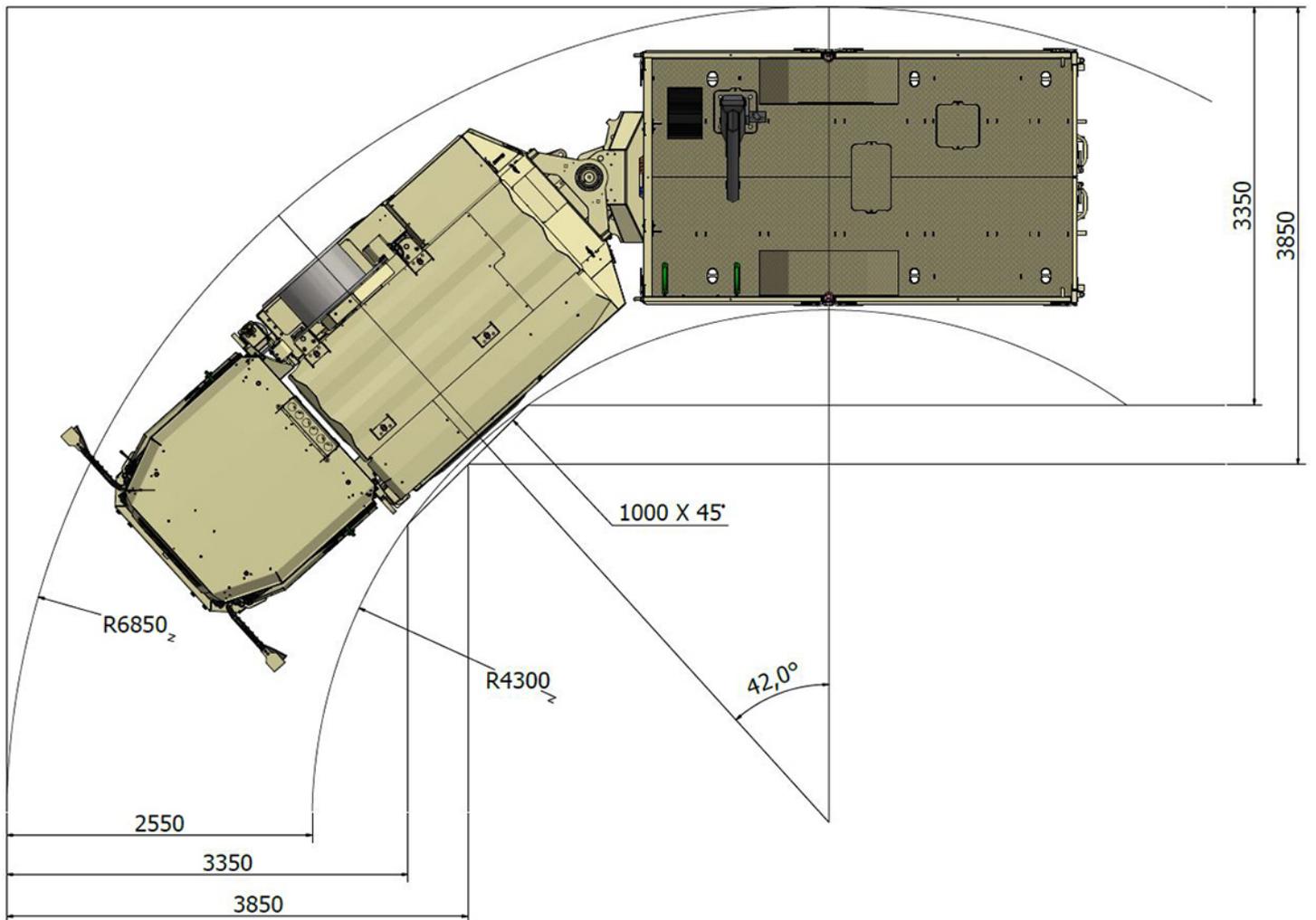
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TOP VIEW - MACHINE WITH OPTIONS



TURNING RADIUS

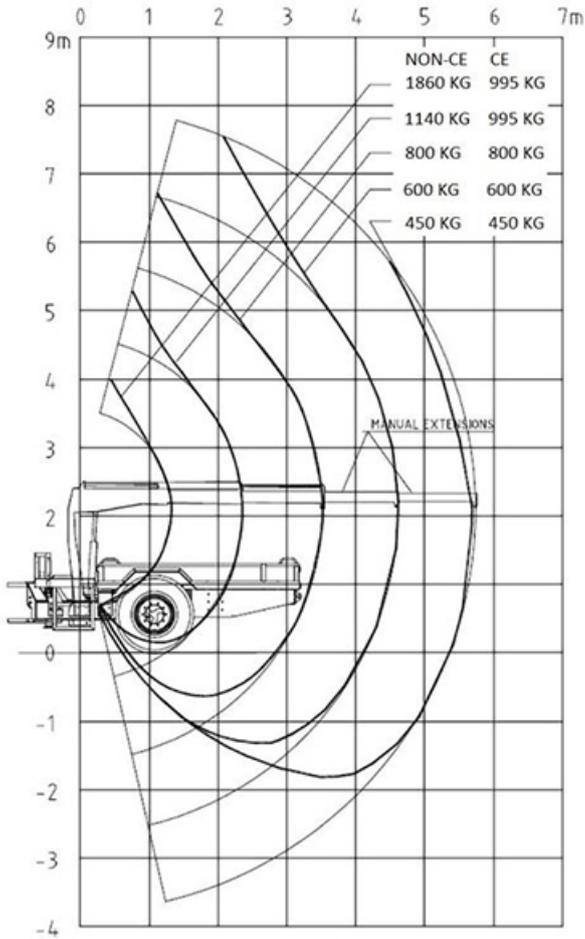


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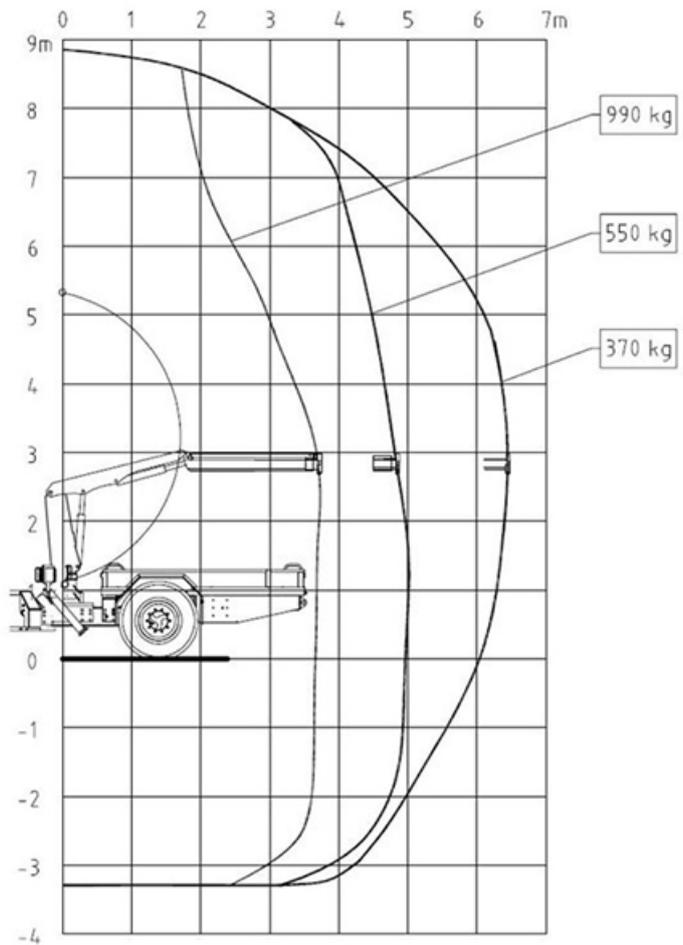
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REACH AREA

Crane HIAB 029

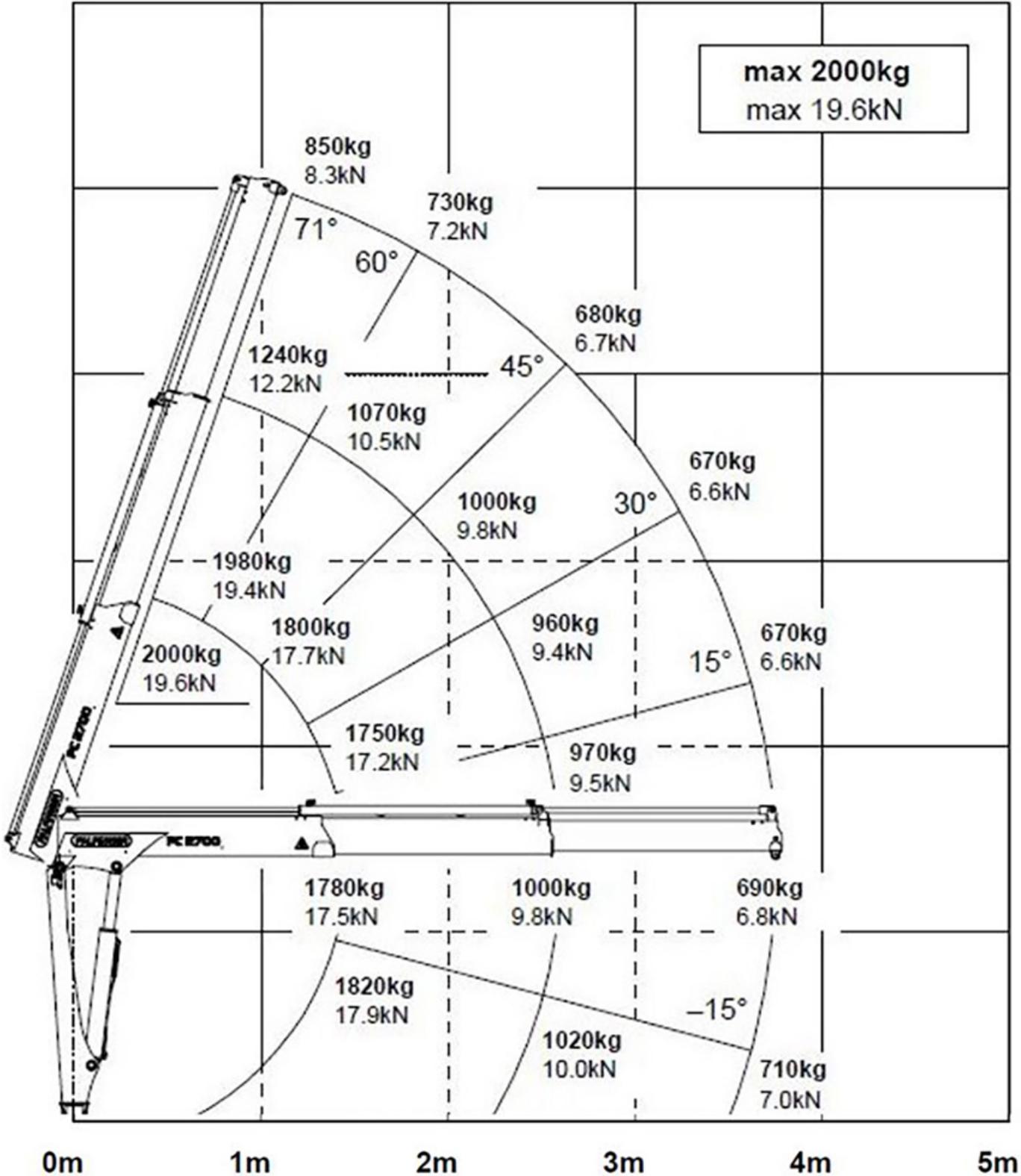


Crane HIAB 044



REACH AREA

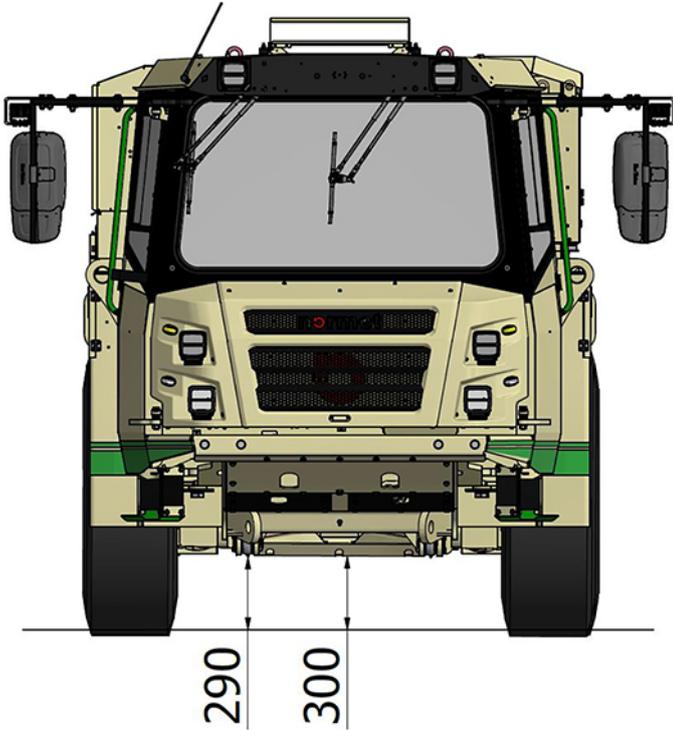
Crane, Palfinger PC2700



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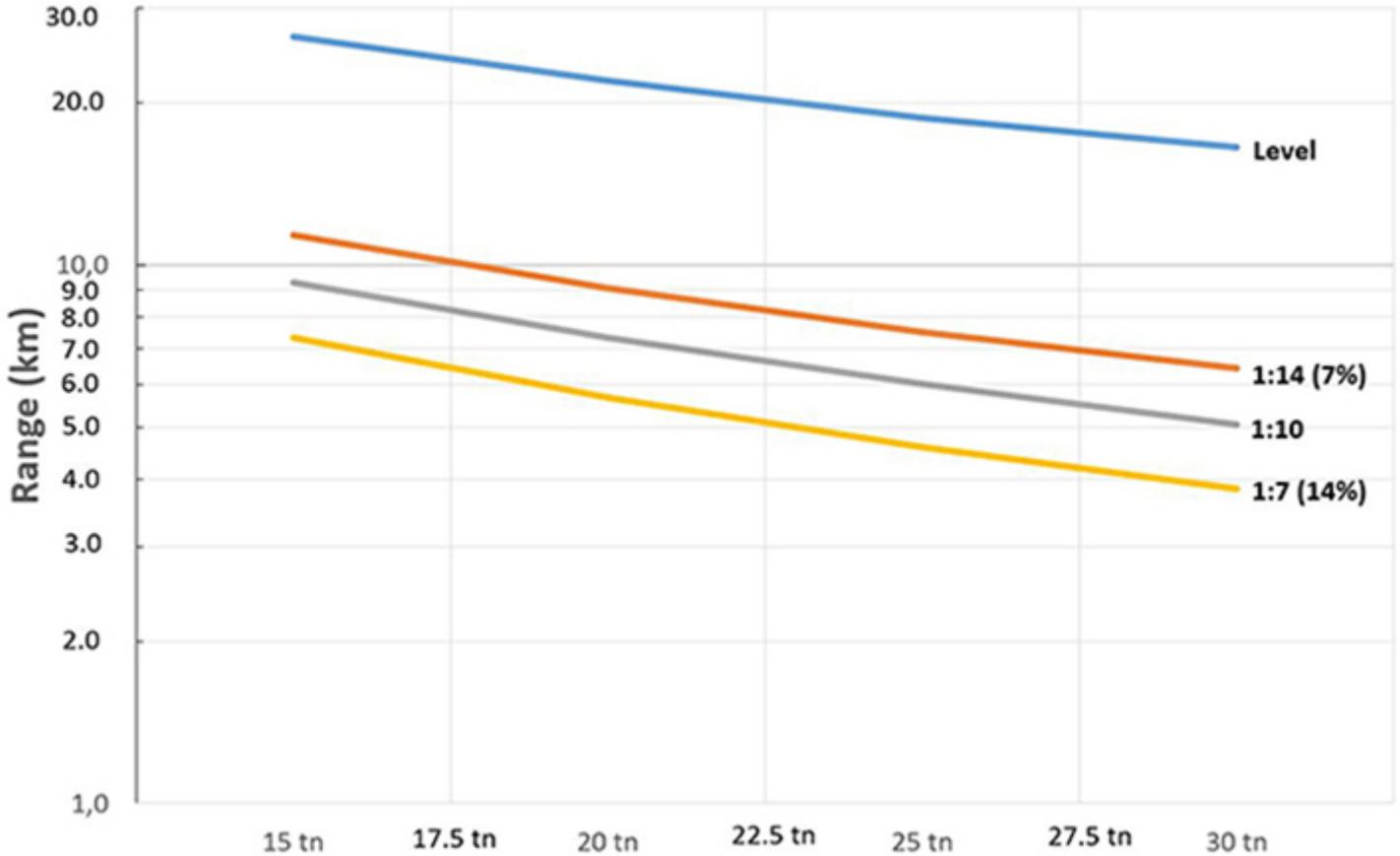
FRONT VIEW



DRIVING RANGE AND TRACTIVE EFFORT

DRIVING RANGE

Driving range curve: DOC060017



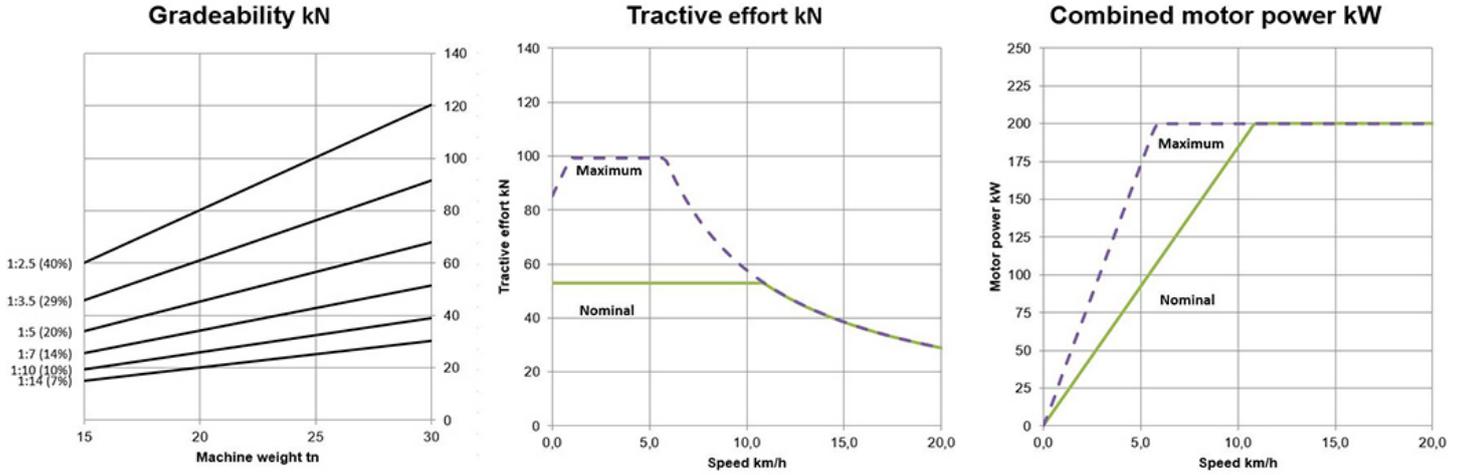
OPERATING WEIGHT

Empty	14 000 kg
Fully loaded	24 000 kg

final machine weight variate in agree with selected options

TRACTIVE EFFORT

Performance curve: DOC059935



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