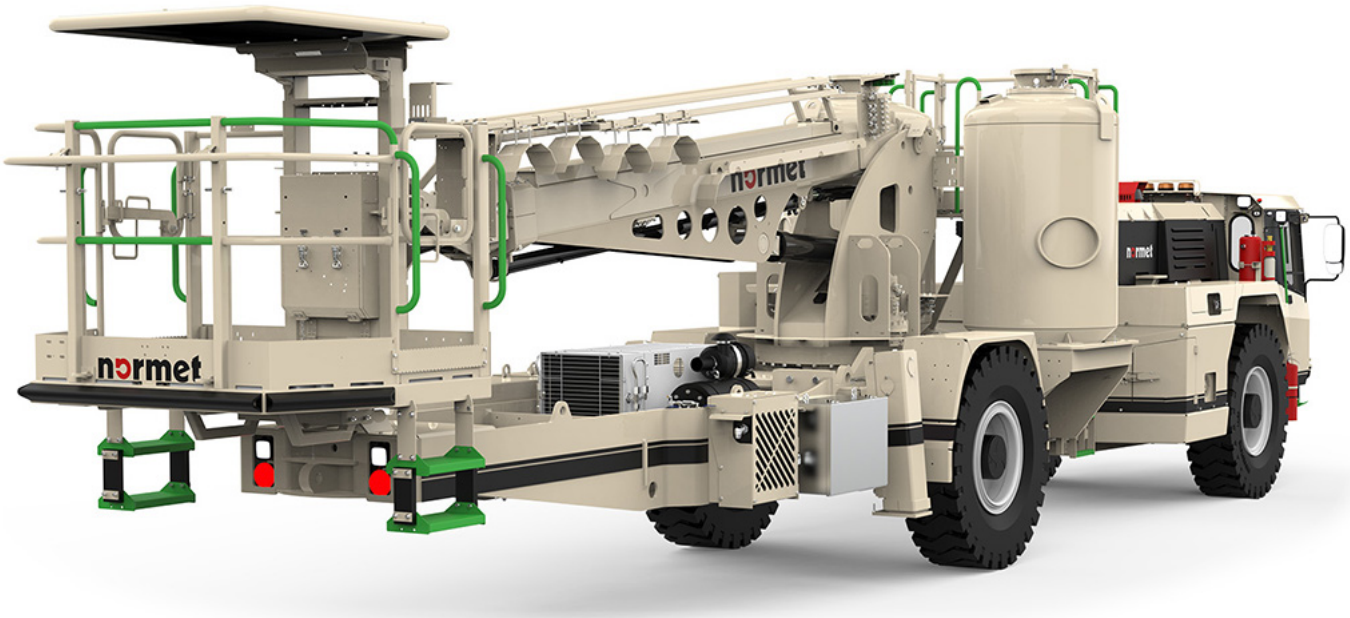
Charmec LF 1105 A



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Normet Oy
Ahmolantie 6
FI-74510 IISALMI, FINLAND

www.normet.com

Tel +358 (0) 17 83 241
info@normet.com

INTRODUCTION

Charmec LF 1105 A is an efficient and versatile ANFO loader designed to meet the special needs of underground aggregate mining.

The new NHB5ER super-slewing basket boom enables extended reach and coverage for the widest and highest faces and features 90 degrees of slew to both sides for cross-tunnel charging and auxiliary work. With up to 2600 Liters / 5,000 lbs of total bulk ANFO capacity, two ASME or PED-conforming ANFO pots, and a 500 kg/ 1,100 lbs basket lifting capacity, the vehicle is designed for efficient charging operations.

An optional dual-delivery system makes it possible to charge from both ANFO pots simultaneously, thereby reducing cycle time.

POWER TRAIN

L-series units have a powerful 6-cylinder liquid cooled turbocharged 185 kW Volvo Penta engine. Available emission standards are Tier 3 / Stage IIIA and Stage V, providing clean and efficient operation.

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

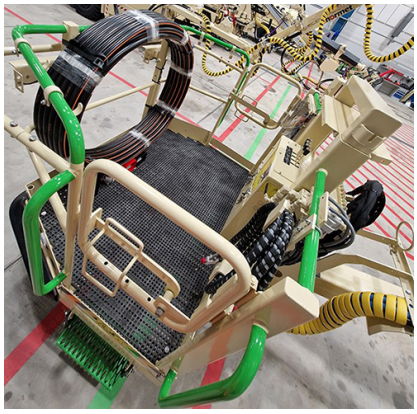
SAFETY AND USABILITY

The vehicle has a front axle suspension system, which improves safety, driving comfort and extends component lifetime.

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

ANFO charging system is designed to be as safe as possible, with special attention given to electrical grounding, fire safety and safety when working in the vicinity of the face wall. All Normet ANFO charging hoses have an antistatic construction.

The fire suppression system for the diesel engine is automatic or manual, with actuating points at each operating location.



Person-lifting basket has the latest safety features, including a design compliant with prevailing standards and safety roofs tested to FOPS level II criteria.

The electric system is designed for harsh underground environments. In addition, the vehicle layout allows easy access to all service points, and all daily checks can be done from ground level.

PRODUCTIVITY

Air volume is a key factor in delivering high and uniform ANFO flow into boreholes. A large-capacity 160 CFM onboard compressor ensures maximum ANFO flow, and the ANFO moistening system will further increase in-hole density and the explosive's detonation velocity, as well as reduce dust creation.

The basket slew function makes it possible to align the basket parallel to the face wall, making charging work more ergonomic and productive. The rear tray structure protects the basket boom during driving and extends the lifetime of the basket boom.

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TECHNICAL SPECIFICATION

CHARGING SYSTEM

Pressure max. 7 bar [101 PSI]

Extra air for charging

Control in basket to switch between vessels

Storage boxes for primers and detonators

Detonator box lining:
- Antistatic rubber lining
- IME SLP 22 lining

The mass of the empty charging kit must be at least 2000 kg [4410 lbs]

Number of operators:
- 1 charging operator
- 2 charging operators

ANFO module:
- 2 ANFO vessels and work stand
- 2 ANFO vessels, 4,5 m^3/min [160 CFM] onboard compressor and work stand

ANFO pot capacity:
- 2 x 1300 l PED -approved
- 2 x 1360 l [2 x 2500 lbs] ASME -approved

Pneumatic charging hand and foot control for charging and blowing

ANFO hose diameter for manual face charging, 30 m [100 ft] hose:
- 19 x 25 mm [0,8" x 1"]
- 22 x 28 mm [0,9" x 1.1"]

NHB5ER BASKET BOOM

Aerial work platform

Standard 2-operator basket

Lifting capacity (without optional equipment)	500 kg [1100 lbs]

Max. lifting height and wall coverage specified in dimensional drawing

Automatic levelling of basket

Electric boom control

Start/stop from basket

Battery operated emergency lowering system

Operator present: Foot pedal switch on basket

Hanging basket installation position

Basket slew

Antistatic composite basket floor

Dangerous movement preventing system, follows EN280 MEWP standard

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

  3 speeds forward and 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

  3 speeds forward and reverse

  4-wheel drive

  Gear selector:
  - Manual
  - Automatic

PERFORMANCE

Tramming speed (horizontal)	14 km/h
Lateral gradient for tramming (continuous)	4°
Longitudinal gradient for tramming (continuous)	9°
Lateral gradient for operation	3°

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AXLES AND BRAKES

Load end axle:

Dana 113 series fixed

Engine end axle:

Dana 113 series

Hydro-pneumatic suspension and +/– 7° oscillation

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 14.00–24” with NDT inspected rims
- Bridgestone 14.00–24” Tubeless tires
  NDT inspected rims with Mechanical Interference Device

STEERING

Orbitrol type hydraulic frame steering

Frame articulation +/– 40°

HYDRAULIC SYSTEM

Variable displacement pump system:
190 bar [2755 PSI], 95 l/min [5790 in^3/min] at 2200 rpm

Hydraulic oil tank capacity 160 l [42 gal]

24 VDC ELECTRICAL SYSTEM

LED driving and indicator lights

LED work lights on cabin

LED work lights in basket

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

Cabin type:
- Open cabin FOPS/ROPS approved
- Enclosed cabin FOPS/ROPS approved

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

Cabin door interlock switches with safety brake application

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
  (n/a with side facing pedals)

Throttle and brake pedal layout:
- Front facing pedals
- Front and side facing pedals with seat swivel

MACHINE CONNECTIVITY

Machine connectivity hardware (WLAN/3G/4G/LTE)

Connectivity services:
- Analytics license for three years
  (includes access to analytics portal)
- Remote monitoring for one year

TECHNICAL DOCUMENTATION

Standard documents:

Instruction manuals, hard copy 2 pcs:
- English
- One of destination EU languages

Spare parts manuals, hard copy 2 pcs:

English

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

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OTHER

Powder extinguisher:
- 2 x 12 kg
  - 2 x Ansul Sentry

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

2 pairs of support legs; extendable legs at the load end and standard at the engine end

Grounding straps:
- Flat cable
  - Chain

Text labels in:
- En/One of destination EU languages
  - Other language

Measurements:
  - Noise
  - Vibration
  - Emissions

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ACCESSORIES

PROCESS PRODUCTIVITY AND SAFETY

- Extra remote controller and hoses
  (only with pneumatic controlled charging, not available 2-2 charging system)
- ANFO tank vibrator
- Water for ANFO system: 35 l [9,2 gal] container
- Extra oil cooler
- Safety roof or bar on basket*
  - Safety bar
  - Safety bar with hydraulic lift
    Reduces lifting capacity 60 kg [132 lbs]
  - Safety roof with hydraulic lift
    Reduces lifting capacity 100 kg [220 lbs]
  - Safety roof with hydraulic lift and slide
    Reduces lifting capacity 200 kg [440 lbs]
- Boom movement alarm
- LED working lights on safety roof/bar
- 24 V fan in the basket
- 230 l water tank above the cabin
- Hydraulically driven pressure washer with hose reel:

Water pressure, max.	180 bar [2610 PSI]
Water flow, max.	30 l/min [8 gal/min]
Hose length	20 m [66 ft]
Stainless steel reel and rod	

*Reduces lifting capacity of boom

CARRIER PRODUCTIVITY

- Protective grids for open cabin
- Accessories for enclosed cabin:
  - Two-piece windscreen
  - Sliding rear window
  - Cabin pressurization and
    air filtration system (ISO 23875-compliant)
  - Audio system
  - Air conditioning with heating
  - Heated mirrors
- 12 V, 20 A power supply in cabin
  with socket and connector
- Auto engine shutdown during idling
- Engine shutdown delay
- 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
- 24 VDC pump for filling of hydraulic tank
- 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

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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
- Fire extinguisher system
  - Ansul A-101 dry chemical
    - Manual activation
    - Automatic detection, Checkfire 210
  - Ansul LVS liquid agent
    - Manual activation
    - Automatic detection, Checkfire 210
- Gear lockout for third gear
- Engine end safety rails and ladder
- Emergency pump for brake release and steering
- Redundant brake monitoring system
- Protection guards for tunnel curtains
- Tyre pressure indicators
- Warning triangles
- Flashlight with charger
- Wheel chocks with brackets
- Service isolator for starter

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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/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.

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.

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 breaker boom systems. 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.

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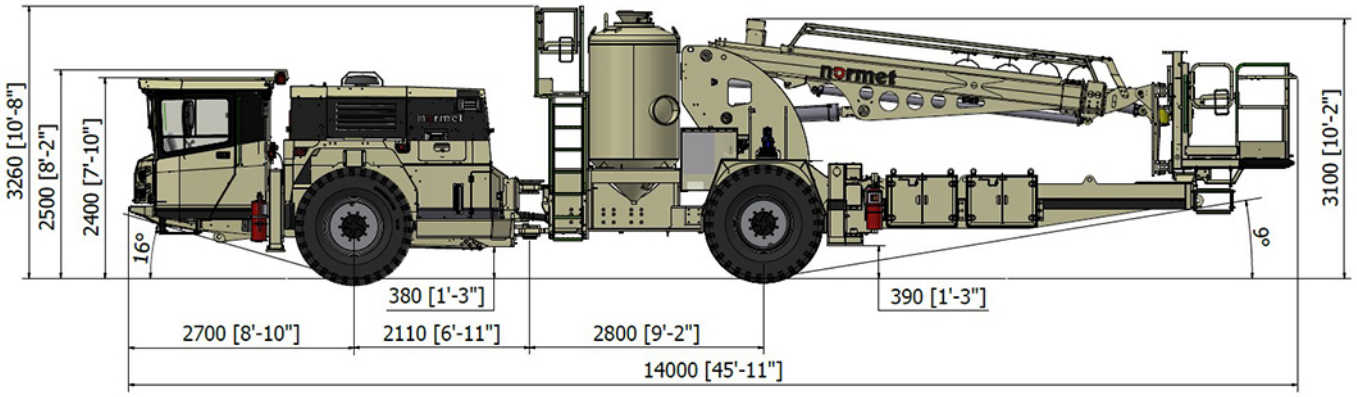
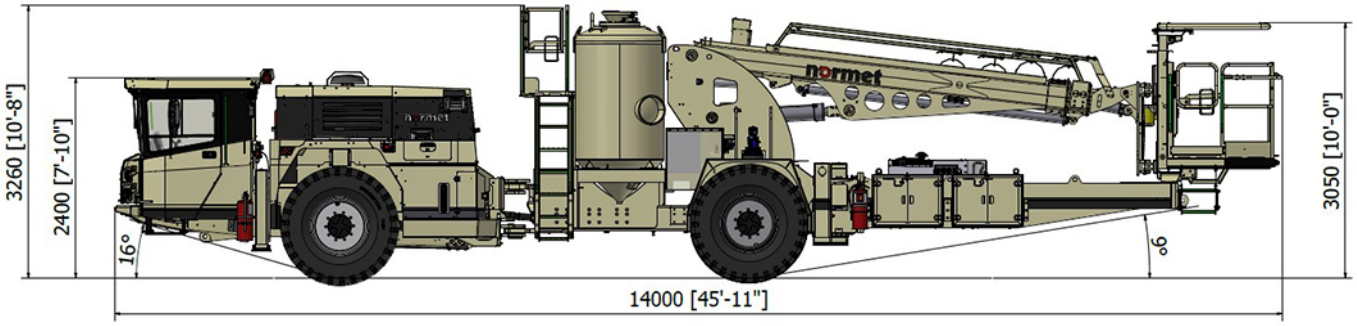
DIMENSIONS

Length	14000 mm [45'-11"]	Track	1920 mm [6'-4"]
Width	2500 mm [8'-2"]	Ground clearance as shown	380 mm [1'-3"]
Height	3260 mm [10'-8"]	Turning radius outer	9380 mm [30'-9"]
Height of cabin	2400 mm [7'-10"]	Turning radius inner	5000 mm [16'-5"]
Wheel base	4910 mm [16'-1"]		

SIDE VIEW – BASIC MACHINE



SIDE VIEW – MACHINE WITH OPTIONS



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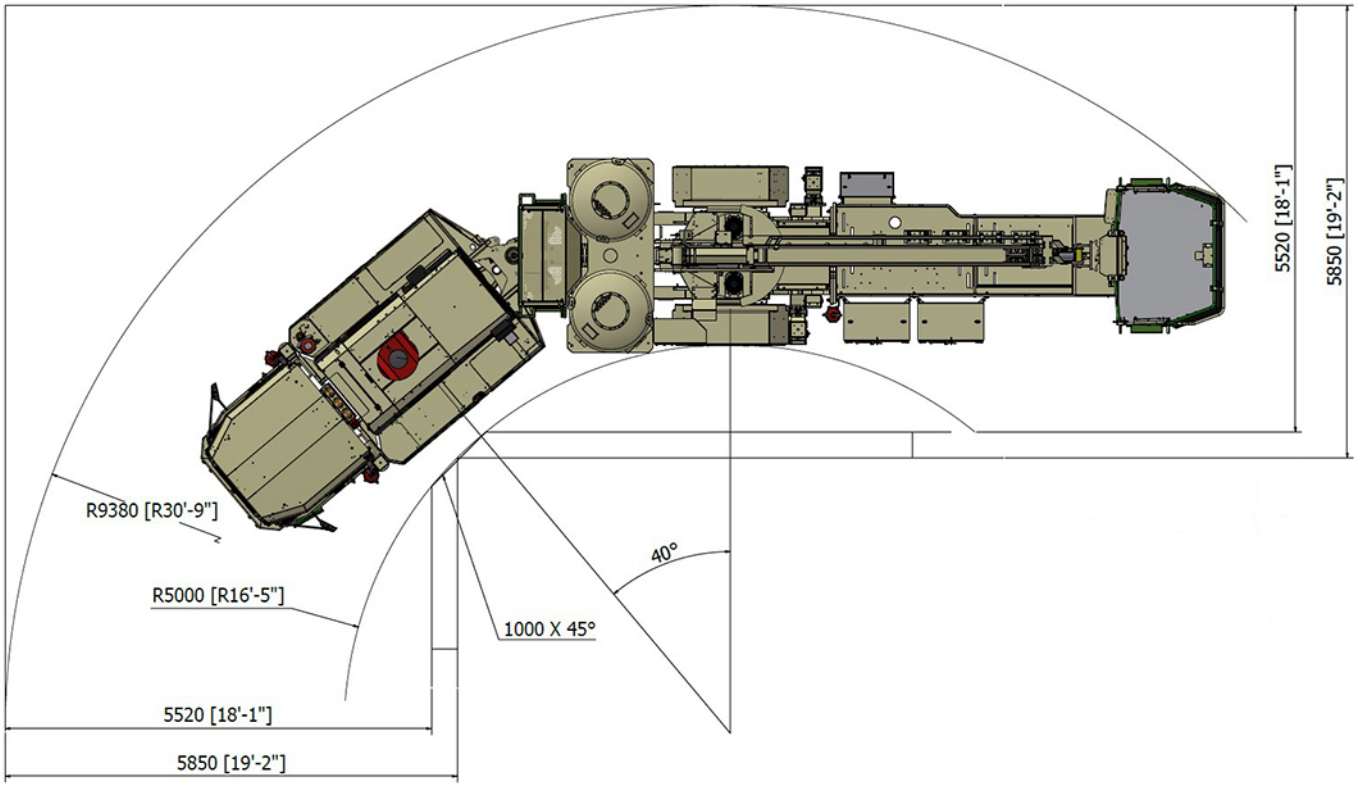
TURNING RADIUS



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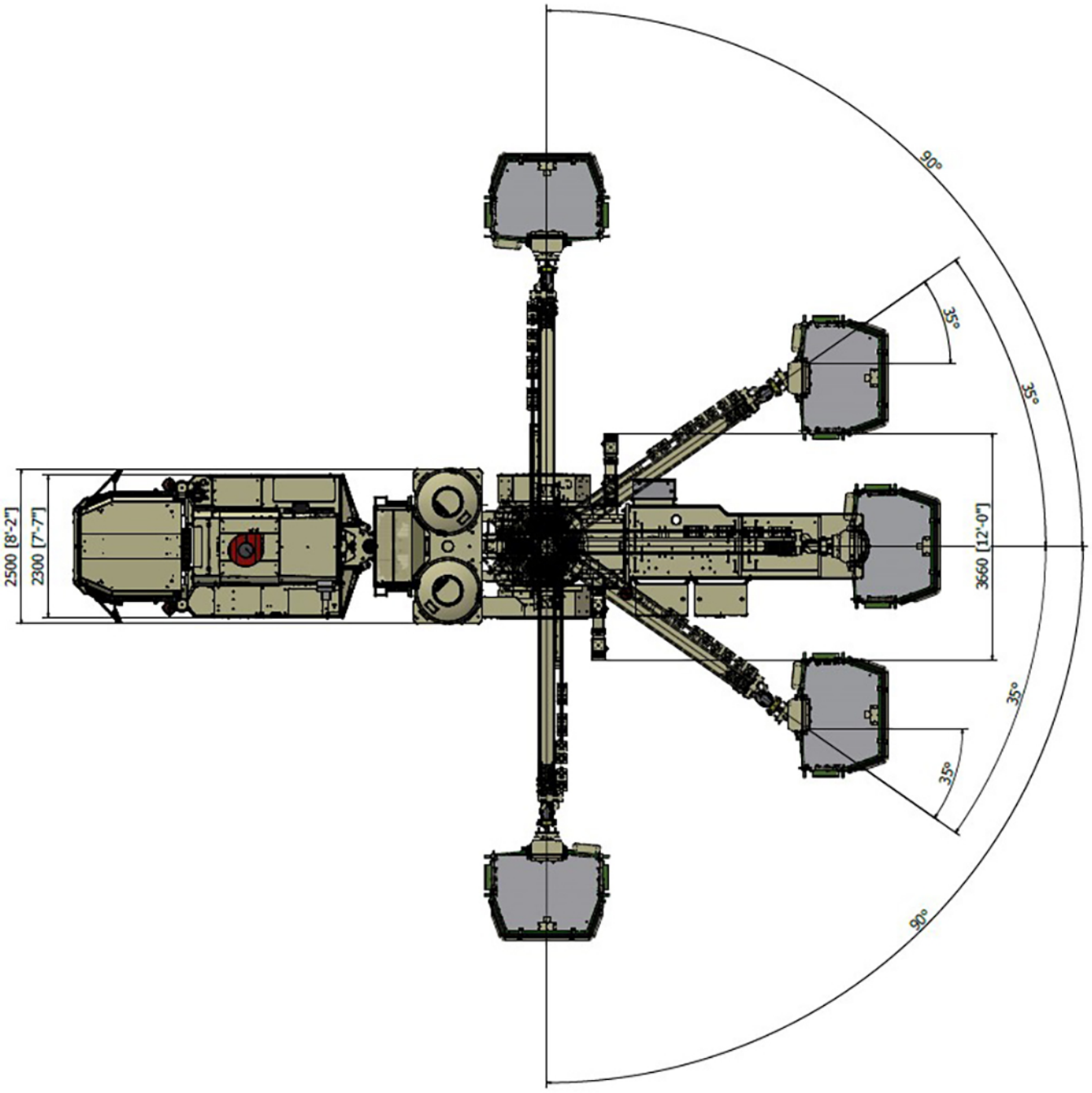
BOOM REACH



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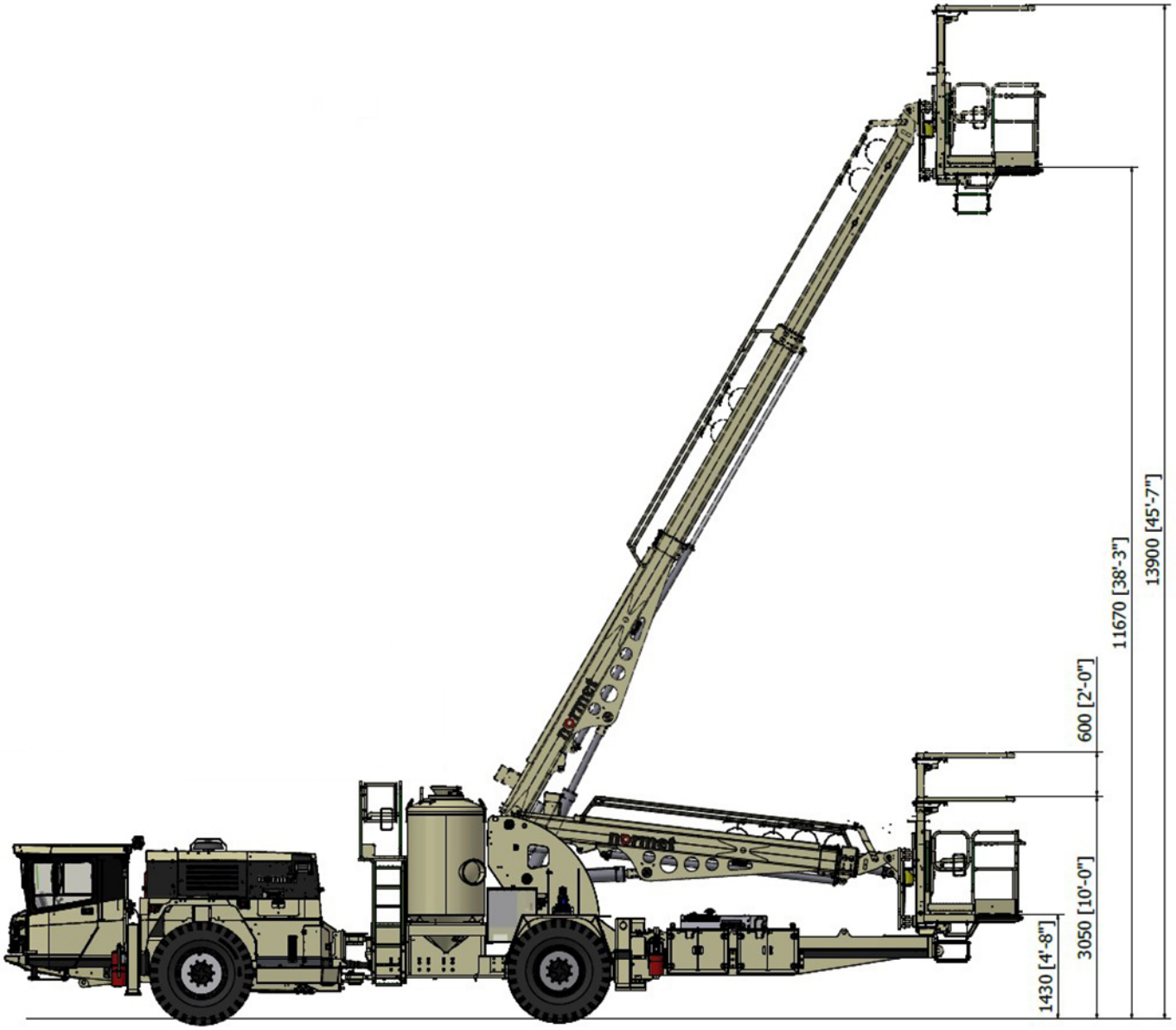

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FRONT VIEW

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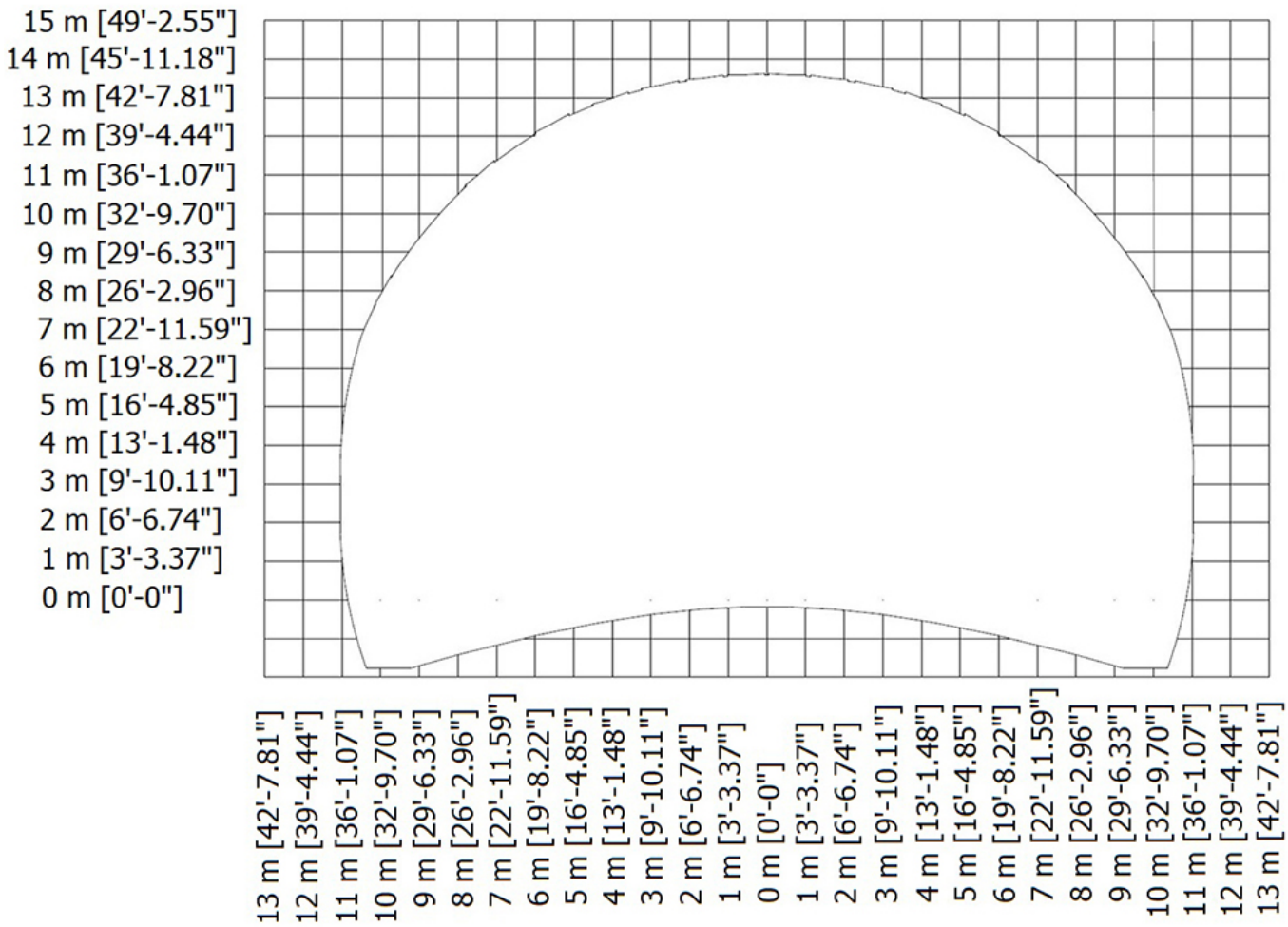
BOOM REACH – NHB5ER WITH 90° TURN

Maximized face coverage with single position of machine



Dimensions in the reach area drawings are dimensioned with standard basket, optional accessories could change dimensions.

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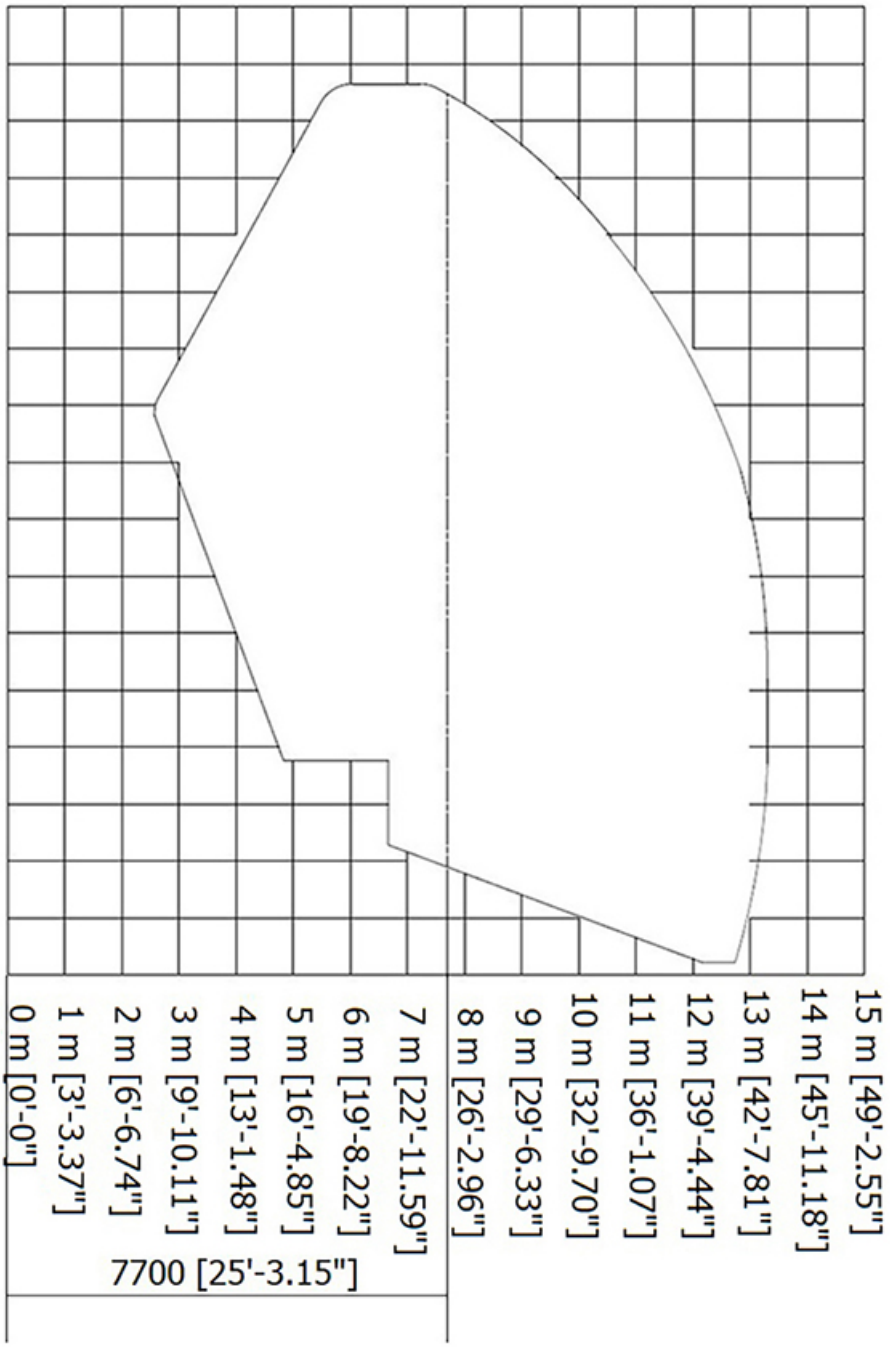

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TRACTIVE EFFORTS

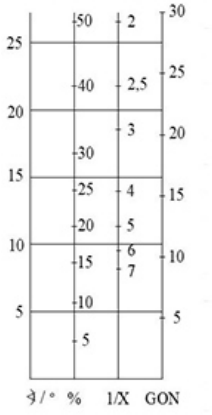
OPERATING WEIGHT

Empty	25 000 kg [55 100 lbs]
Fully loaded	30 000 kg [66 100 lbs]
	final machine wieght variate in agree with selected options

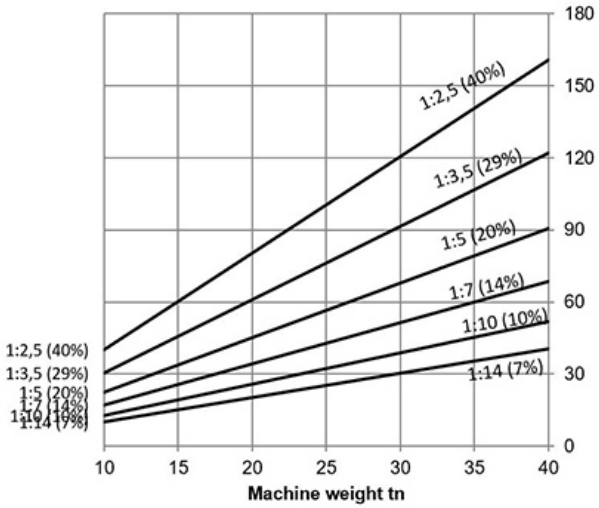
VOLVO PENTA TAD 851/881 185 KW

Performance curve with turbine lock-up DOC059934

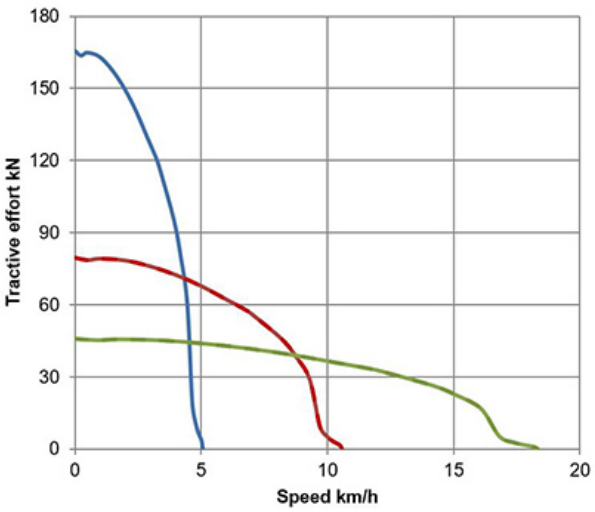
Conversion chart



Gradeability kN



Tractive effort kN



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