Utimec MF 660 Fire

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Pictures may include options and additional equipment.

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INTRODUCTION

MF 660 Fire is fully equipped fire-fighting vehicle for underground environment. MF 660 have 6600 l water tank capacity with high capacity water pump and water cannon.
MF 660 can be used also for tunnel wall/roof washing purposes.

POWER TRAIN

M-series units have powerful 4-cylinder liquid cooled turbocharged engines, which power range are between 110 kW to 120 kW. Available emission standards are Tier 3 / Stage IIIA and Stage V that provides clean and efficient operation.

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.

SAFETY AND USABILITY

Vehicle has an optional front axle suspension system, which improve safety, driving comfort and increases component lifetime.

Normet's FOPS and ROPS approved safety cabin provides superior visibility and 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.
Enclosed cabin provides low noise level ensuring safe and comfortable driving.

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

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TECHNICAL SPECIFICATION

WATER MODULE

Water spraying cannon

Water tank	3 X 2200 l
Pumping capacity	1000 l/min

0.4 m^3/min hydraulic driven compressor

Fire fighting equipment:

- Hoses 20 m (6 pcs)
- Hand held water nozzles (2 pcs)

ENGINE AND TRANSMISSION

- **Deutz TCD 2013 L4, 120 kW/2300 rpm, Tier 3 / Stage IIIA approved**

  Exhaust system for Deutz engine:
  - Catalytic exhaust gas purifier and muffler
  - ◦ Diesel particulate filter (DPF)

  Fuel tank capacity 110 l

  Dana 24000 series powershift transmission
  3 speeds forward and reverse
  4-wheel drive
  Manual gear selector

- ◦ **Cummins QSB4.5, 110 kW/2300 rpm with exhaust brake, Tier 3 / Stage IIIA approved**

  Exhaust system for Cummins engine:
  - Catalytic exhaust gas purifier and muffler
  - ◦ Diesel particulate filter (DPF)

  Fuel tank capacity 110 l

  Dana 24000 series powershift transmission with lock-up
  3 speeds forward and reverse
  4-wheel drive

  Gear selector:
  - Manual
  - ◦ Automatic

- ◦ **Cummins B4.5, 120 kW/2500 rpm with exhaust brake, Stage V approved**

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

  Diesel particulate filter (DPF)

  Selective catalytic reduction (SCR)

  DEF tank capacity: 19 l

  Fuel tank capacity: 105 l

  Dana 24000 series powershift transmission with lock-up
  3 speeds forward and reverse
  4-wheel drive

  Gear selector:
  - Manual
  - ◦ Automatic

PERFORMANCE

Tramming speed (horizontal):

Deutz	26 km/h
Cummins	26 km/h
Lateral gradient for tramming (continuous)	4º
Longitudinal gradient for tramming (continuous)	9º

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

AXLES AND BRAKES

Load end axle:
Dana 123 series fixed

Engine end axle:
Dana 123 series
- +/– 8° oscillation
- ◦ Hydro-pneumatic suspension and +/– 8° 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

TYRES AND RIMS

Nokian Tyres 12.00–20” with NDT inspected rims

STEERING

Orbitrol type hydraulic frame steering

Frame articulation +/– 40°

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HYDRAULIC SYSTEM

Variable displacement pump system:
190 bar, 135 l/min at 2200 rpm

Hydraulic oil tank capacity 110 l

24 VDC ELECTRICAL SYSTEM

Main switch:
- Mechanical switch in battery box
- Electric switch with control in cabin and service switch in battery box
- Electric switch with control in cabin, start isolator and service switch in battery box

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:
- Open cabin FOPS/ROPS approved
- Enclosed cabin FOPS/ROPS approved with sliding rear window

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

Seat belt safety interlock for driver:
- Warning indicator in display
- Safety brake application

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 person seat with fixed lap seat belts

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

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:
- 6 kg
- 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/One of destination EU-languages
- Other language

Measurements:
- Noise
- Vibration
- Emissions

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ACCESSORIES

PROCESS PRODUCTIVITY

- Pressure washer with 230 l tank
- Road watering system
- Front support legs

CARRIER PRODUCTIVITY

- Accessories for open cabin:
  - Protective grids
  - Windshield with wipers
- Accessories for enclosed cabin:
  - Audio system
  - Air conditioning with heating
  - Cabin pressurization and air filtration system (ISO 23875-compliant)
  - Heated mirrors
- 12 V, 18 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 operated pump for filling of hydraulic tank
- Fluid evacuation panel with sampling points
- Automatic lubrication system
- Reversing camera:
  - 1 camera, 1 display
  - 3 cameras, 2 displays
  - 1 camera, 1 display and reversing radar
  - 4 cameras, 1 display with recording support
- 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
- Fire extinguisher system
  Ansul A-101 dry chemical
  - Manual activation
  - Automatic detection, Checkfire 110
- Gear lockout:

  Forward:
  - Highest gear locked out
  - 2 highest gears locked out

  Reverse:
  - Highest gear locked out
  - 2 highest gears locked out
- Engine end safety rails and ladder
- Grounding straps:
  - Flat cable
  - Chain
- Emergency pump for brake release and steering
- Redundant brake monitoring system
- Hydraulic pressure monitoring kit
- Protection guards for tunnel curtains
- Tyre pressure indicators
- Additional wide angle mirrors (n/a with heated mirrors)
- Warning triangles
- Flashlight with charger
- Wheel chocks with brackets

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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.

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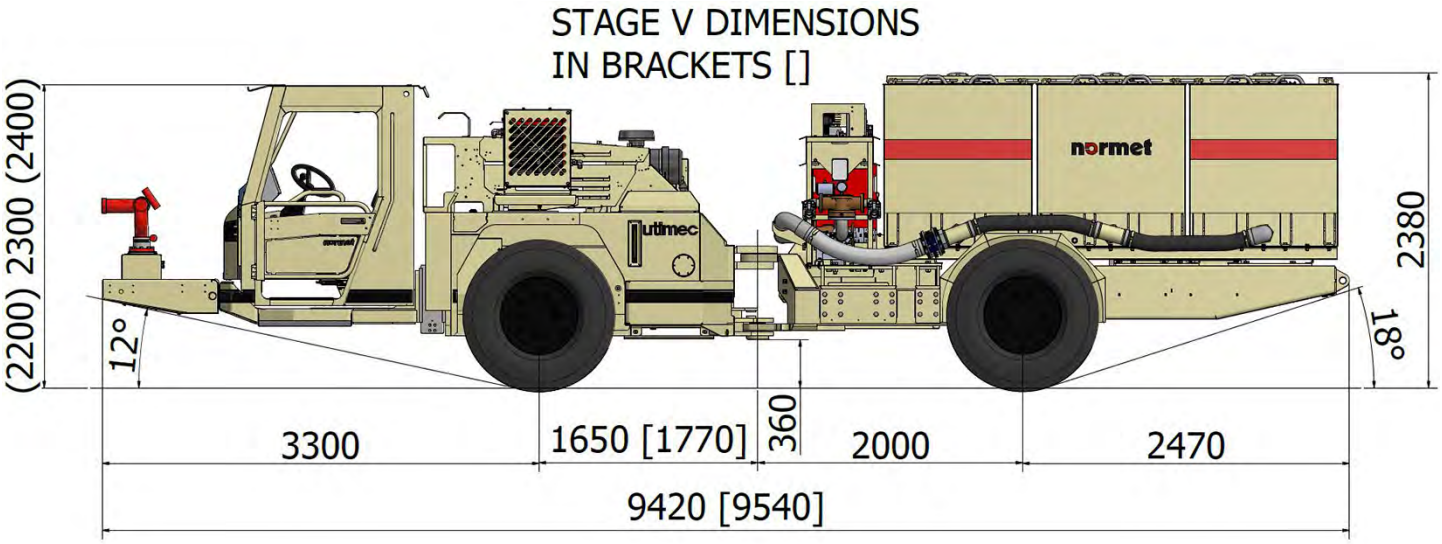
DIMENSIONS

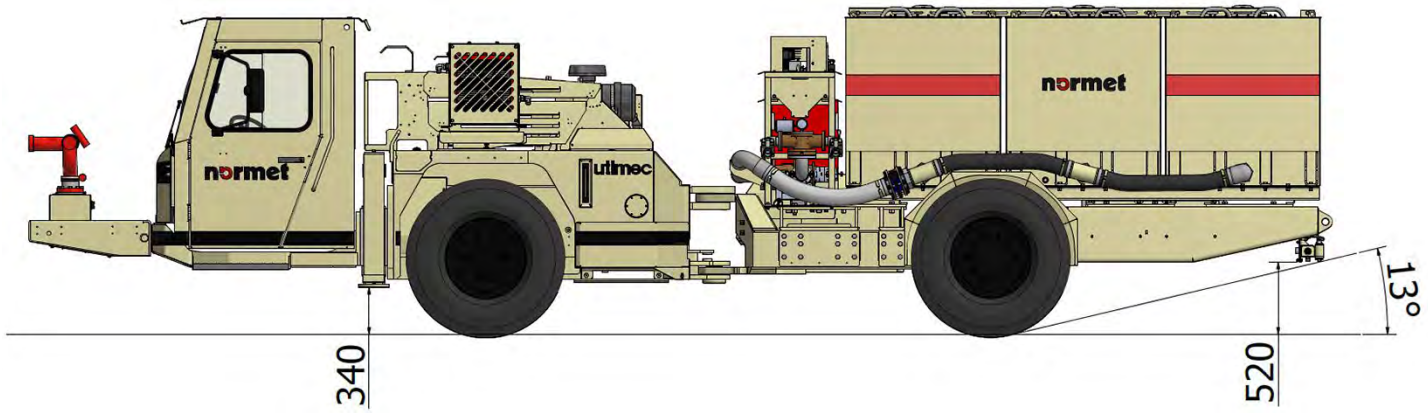
Length	9420 mm	Track	1670 mm
Width	2050 mm	Ground clearance as shown	360 mm
Height	2380 mm	Turning radius outer	6610 mm
Height of cabin	2300 mm	Turning radius inner	3930 mm
Wheel base	3650 mm		

SIDE VIEW – BASIC MACHINE

Dimensions in () apply when the cabin is installed in the upper or lower position.



SIDE VIEW – MACHINE WITH OPTIONS



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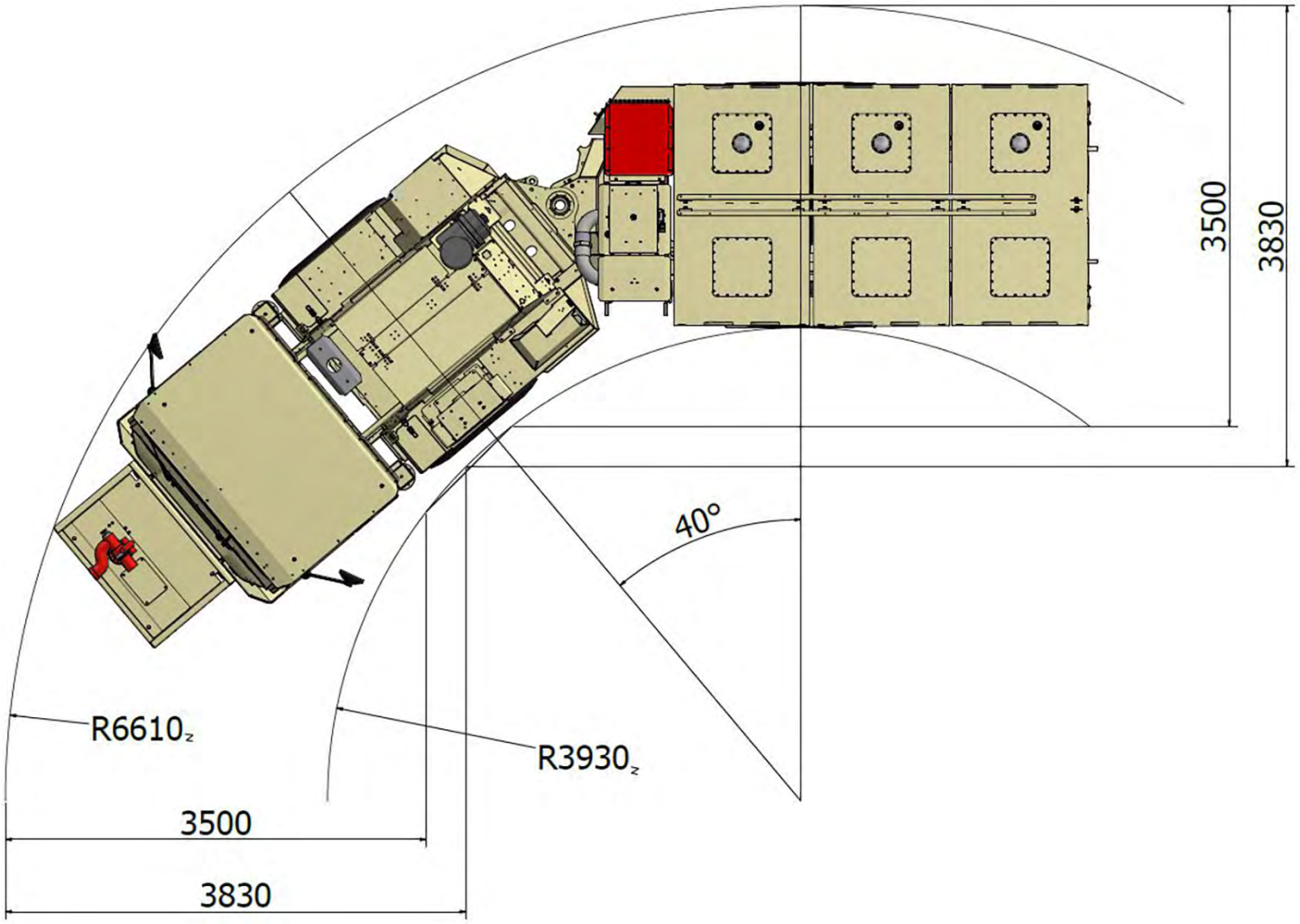
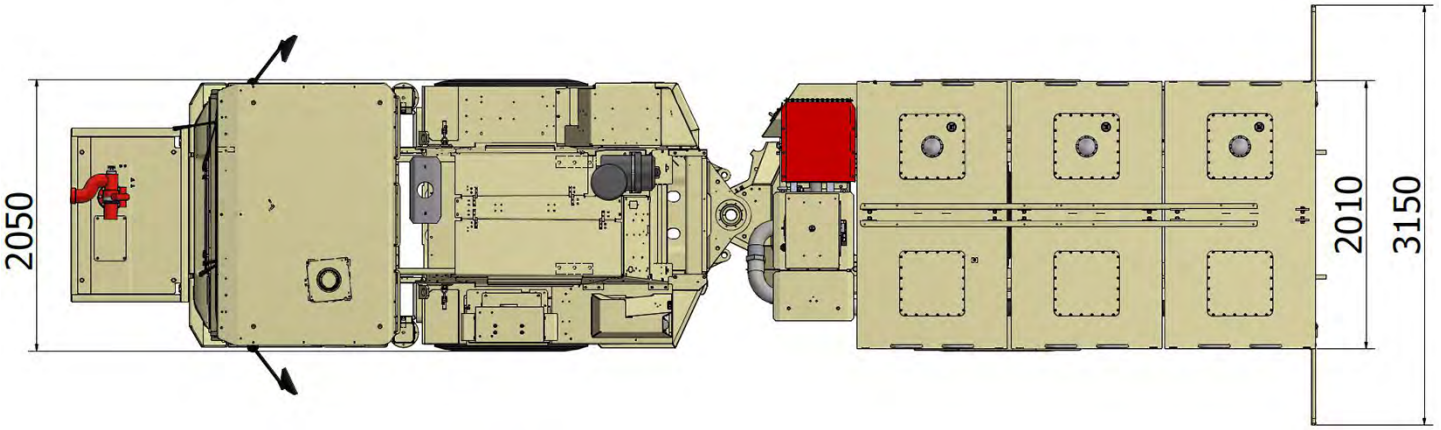
TURNING RADIUS



TOP VIEW



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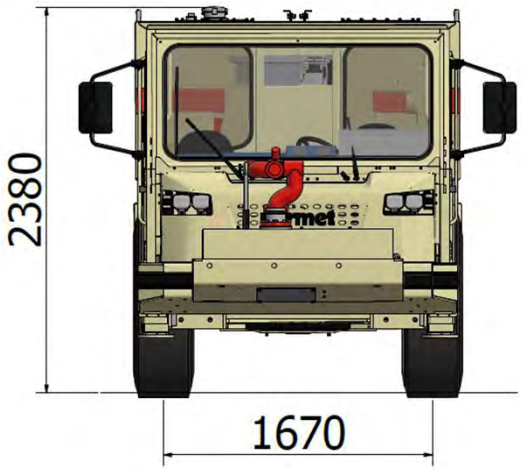
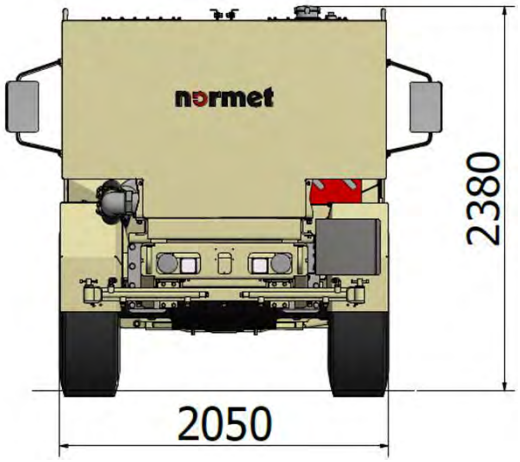
FRONT AND BACK VIEWS





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TRACTIVE EFFORTS

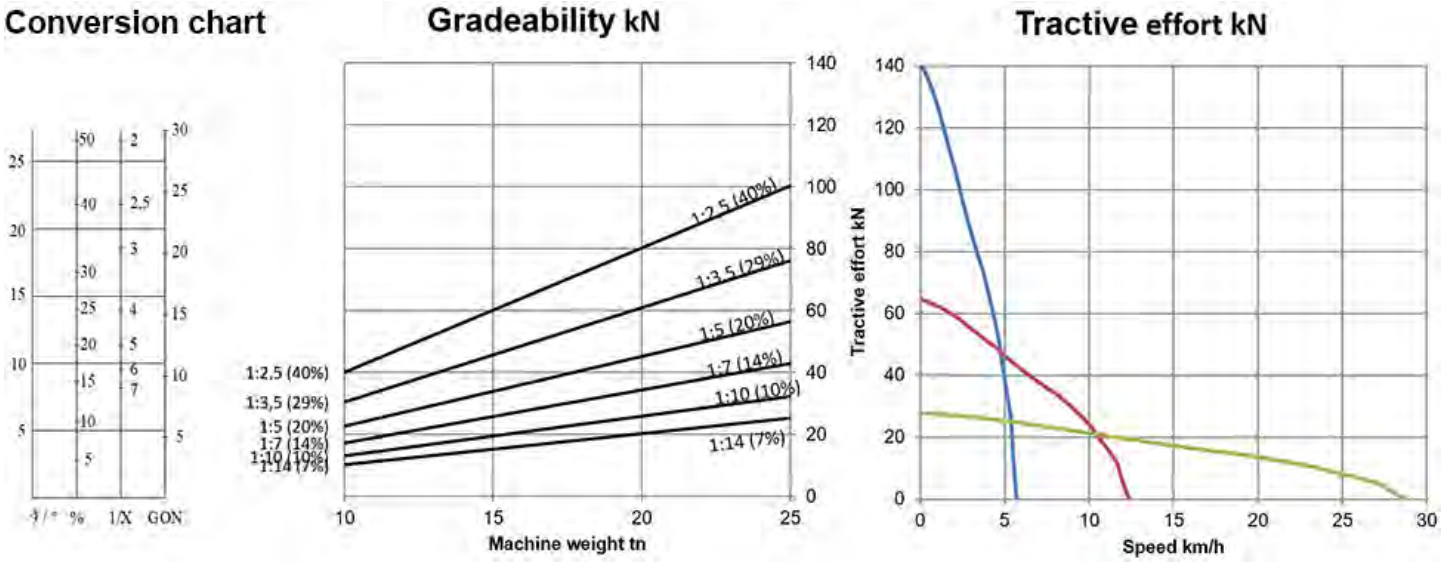
OPERATING WEIGHT

Empty	12 200 kg
Fully loaded	18 800 kg

final machine weight variate in agree with selected options

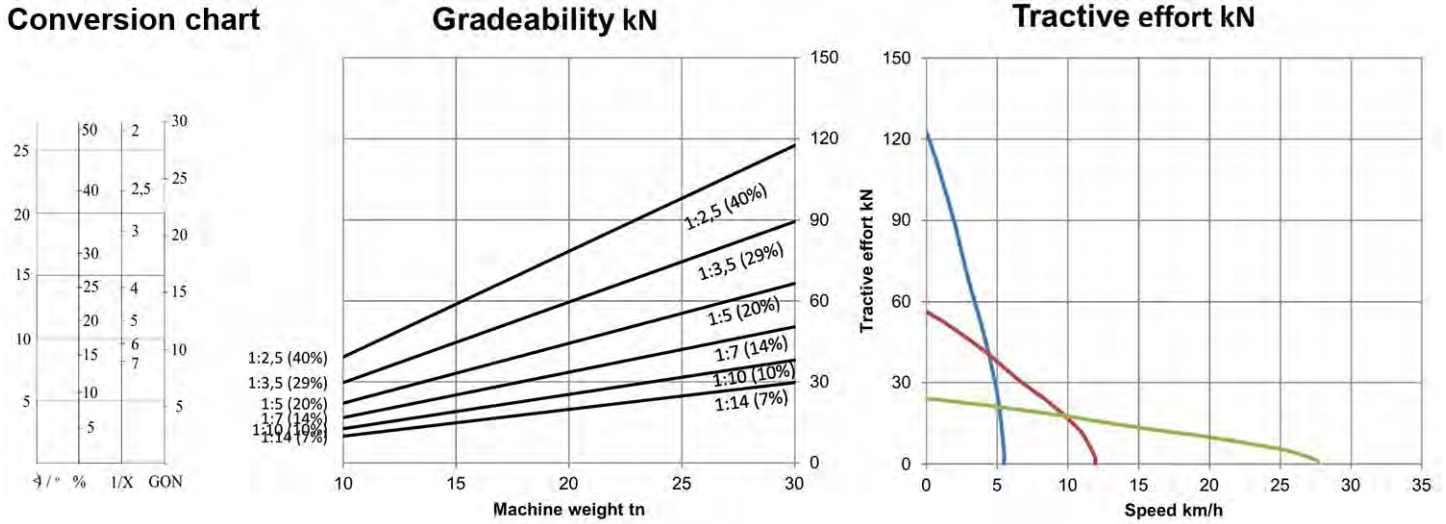
DEUTZ TCD 2013 L4, 120 KW WITH 12.00-20" TIRES

Performance curve DOC060005



CUMMINS QSB 4.5 110 KW 12.00-20" TIRES

Performance curve with lock-up DOC088121



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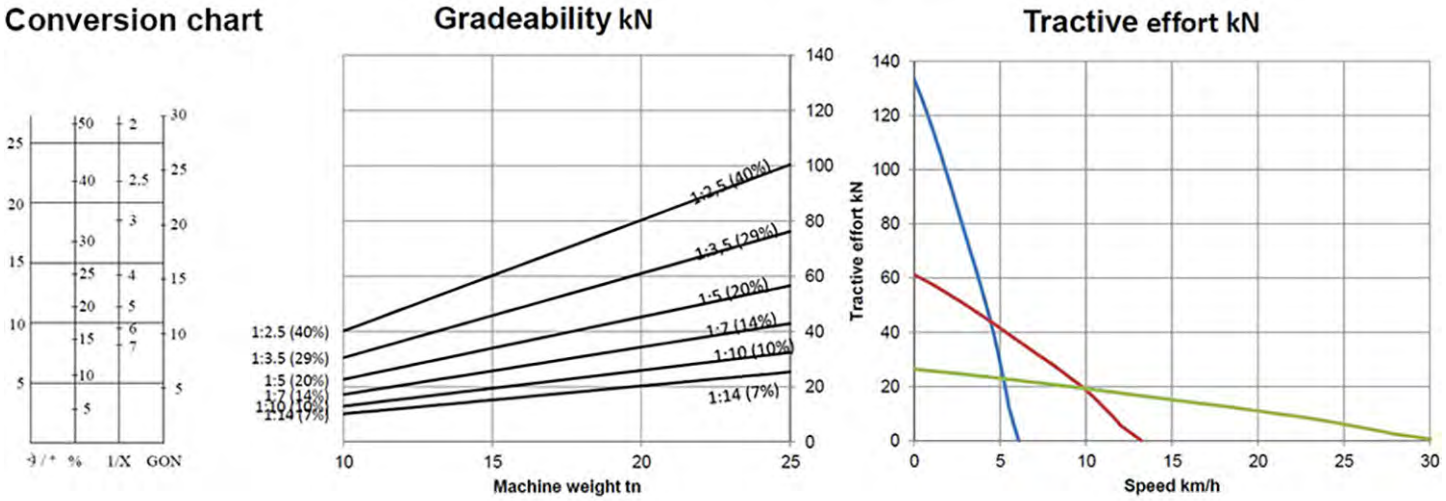
CUMMINS B 4.5 120 KW 12.00-20" TIRES

Performance curve with lock-up DOC028557



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