



Normet Emulsion Charging Module



Normet reserves the right to change
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Pictures may include options and additional equipment.

INTRODUCTION

NORMET EMULSION CHARGING MODULE

Normet Emulsion Charging Module (ECM) is a industry-leading, fully in-house designed emulsion charging system with an advanced NorSmart 3 control system. It is engineered to deliver high reliability in demanding underground mining environments, with high component rating classes and a streamlined process component design that simplifies maintenance and ensures durability in harsh conditions.



ECM is capable of both development and production charging. It is designed to operate with site-sensitized bulk emulsions that may include one or two additives. The pumping system delivers matrix at rates of up to 95 kg/min, making it suitable for production holes with diameters up to 102 mm.

The system allows the definition of up to ten charging recipes for both, development and production charging, ensuring that the correct amount of gasser is used in each charging hole to achieve optimal product density and energy content for effective rock fragmentation. Standard delivery includes a pumping unit that enables manual charging from the basket, with the pumping process stopping automatically once the required emulsion volume has been delivered to the borehole.

ECM is available with different matrix tank sizes, each optimized for Normet Charmec platforms depending on machine load carrying capacity. Charmec LF platform provides a matrix capacity of up to 6000 kg, allowing stopes to be charged without repeated trips to the matrix warehouse.

SAFETY AND ERGONOMICS

Safety and process control are ensured through piping and instrumentation configured according to emulsion supplier specifications. This guarantees that additives are mixed at the correct point in the emulsion line and prevents unintended chemical reactions. Multiple level pressure and temperature monitoring system with adjustable operating values enable ECM to be adapted to different site requirements, including the setting of different maximum pressures for both development and production charging. If any safety parameter is exceeded, the system provides a clear indication on the graphical user interface located in the man-lifting basket.

Automatic reeling functions simplify the placement of double or triple detonators. NorSmart 3 control system automatically adjusts pump and reel speeds during charging to ensure optimal accuracy.

The user interface has tiered access levels, ranging from basic operation to full service and maintenance, ensuring safe and controlled use. The radio-controlled graphical interface creates an ergonomic environment for operators, with the ability to name and select hole presets for efficient operation. Hose handling is supported by optional systems that reduce manual effort. For development charging, a hose reel with push and pull functionality minimizes operator strain, while for production charging, a hose pusher with reel enables efficient long-hole charging. Advanced options include decoupled charging reels and hose pushers for uphole and downward charging, which eliminate physical stress and improve accuracy.

REPORTING AND DATA TRANSFERRING

Reporting and data management are integrated into the system. Development and production charging reports can be exported to Excel, presenting all key information clearly. Advanced reporting functions allow operators to modify ring and hole numbers and record multiple detonators for a single borehole. Data delivery is provided via USB as standard.

TECHNICAL SPECIFICATION

STANDARD DELIVERY

- Adjustable matrix pump capacity 15 – 95 kg /min up to 36 bar.
- Emulsion line cleaning system
(requires compressor or external air source)
- Pressure water system for emulsion line block opening
- Basic calibration kit for pump adjustment
- Operator HMI interface box located in the basket
- Production charging reporting to allow multiple detonator and ring number change
- Primary additive pump for matrix sensitizing.
 - 0.1 - 0.8 lpm flow
 - 0.2 - 2.5 lpm flow
- Carrier model for ECM installation:
 - Charmec MF 504/404
 - Charmec MF/LF 605/607 Long End
 - Charmec MC 605/607
 - Charmec RM
- Wireless remote control:
 - Dual channel 434/870 MHz
 - Single channel 418 MHz

MATRIX TANK

- Matrix tanks made from HDPE plastic with low melting point to prevent matrix reaching its critical temperatures and pressures.
- Stainless steel lid with 20" manhole and breathing vent.
- Ground level matrix filling / emptying point with 3" camlock
- Tank size
 - 1500 kg (suggested for MF 504/404)
 - 2200 kg (suggested for MC 605)
 - 3000 kg (suggested for MC 607 and RM)
 - 4000 kg (available for Charmec MF/LF 605/607 LE)
 - 6000 kg (available for Charmec LF 605/607 LE)

SAFETY SYSTEMS

- Process components made from stainless-steel material for safe chemical operation to avoid TACN formation
- Safety system specified according to the emulsion supplier requirements with multiple level overpressure protection
- Temperature monitoring for matrix pump inlet and outlet with adjustable parameters to prevent matrix overheating.

OPERATING ENERGY REQUIREMENT

- Load sense hydraulics:
 - Minimum oil flow 80 l/min
 - Minimum pressure 130 bar
- Electrics:
 - Voltage 24 VDC
 - Current 20 A

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

OTHER

- 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

ACCESSORIES

PRODUCTION CHARGING SYSTEM

- Electrically controlled hose pusher and stainless-steel reel for Normet standard basket
Includes foot pedal for hose extracting and groove pulleys

Production charging hose outer diameter

- 32 mm
- 40 mm
- Without hose
- 50 m charging hose
- Additional groove pulleys, 4 pcs
- Hose guide for upward production charging
- Diverting pulley for downward production charging

DEVELOPMENT CHARGING SYSTEM

- Coupling in the basket for manually operated charging hose
- Face charging reel for decoupled hole charges and mechanized hose handling

Includes 10 m of 20 x 25 mm charging hose

Foot pedal for hose extracting

- Pressure relief valve (20 bar) for development charging reel

CHARGING PRODUCTIVITY AND SAFETY

- Secondary sensitizer system for 2nd additive
 - 0.1 - 0.8 lpm flow
 - 0.2 - 2.5 lpm flow
- Matrix tank level sensor
- Mesh screen for matrix tank filling hatch
- Wax tape for electric connectors
- Hard wired pressure sensor to shut down process hydraulics
- Burst disc monitoring system

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 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.

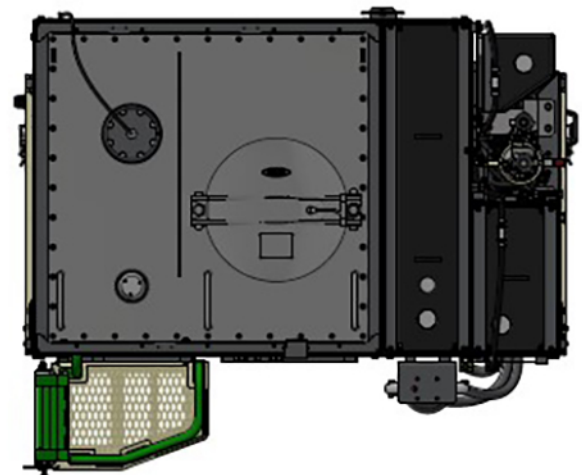
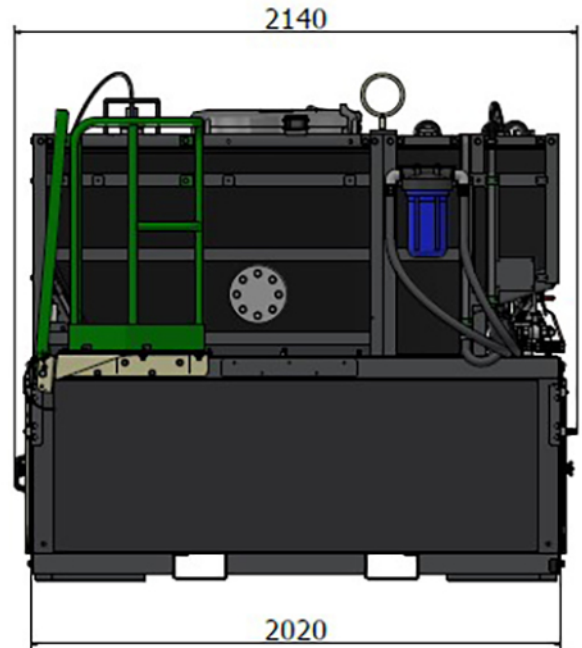
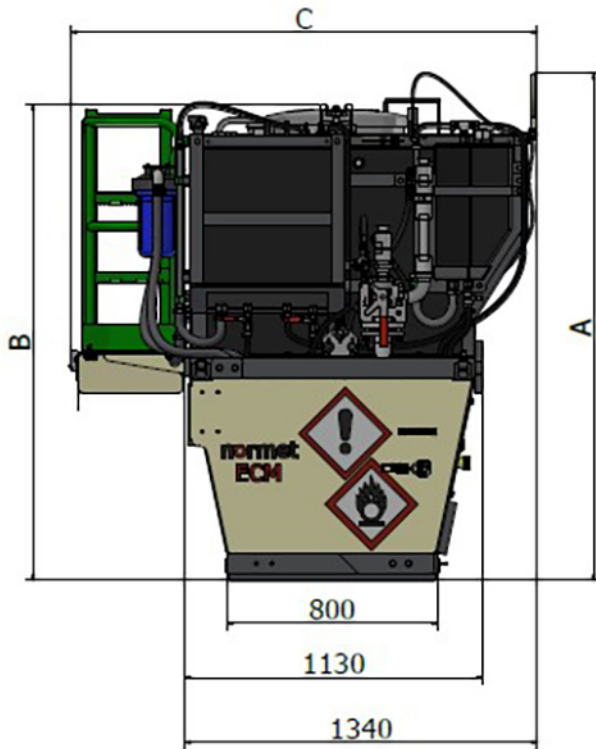
More information check [normet.com](https://www.normet.com).

DIMENSIONS

DIMENSIONAL DRAWINGS

1500 kg, 2200 kg and 3000 kg pumping units

Front cabin installation



Dimensions				
Model [kg]	A [mm]	B [mm]	C [mm]	Weight: Empty Full [kg]
1500	1930	1810	1670	1650 3550
2200	2230	2110	1670	1680 4230
3000	2490	2370	1770	1750 5550

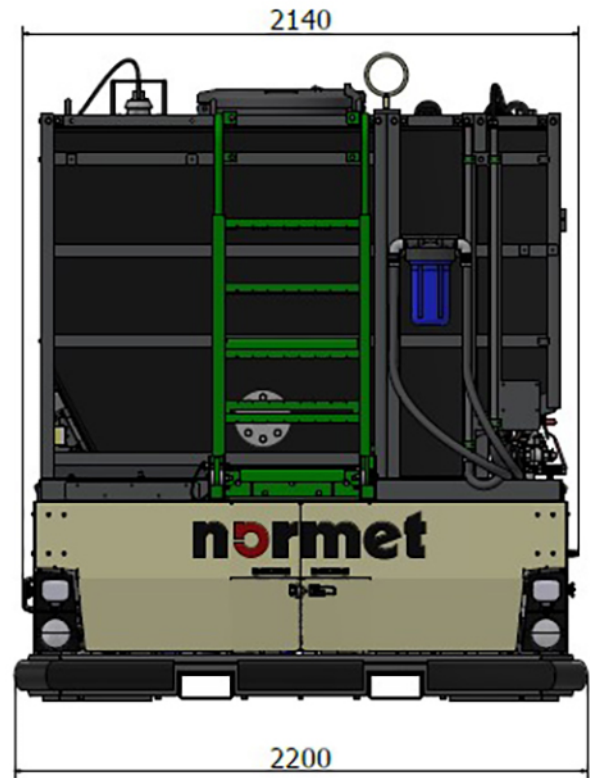
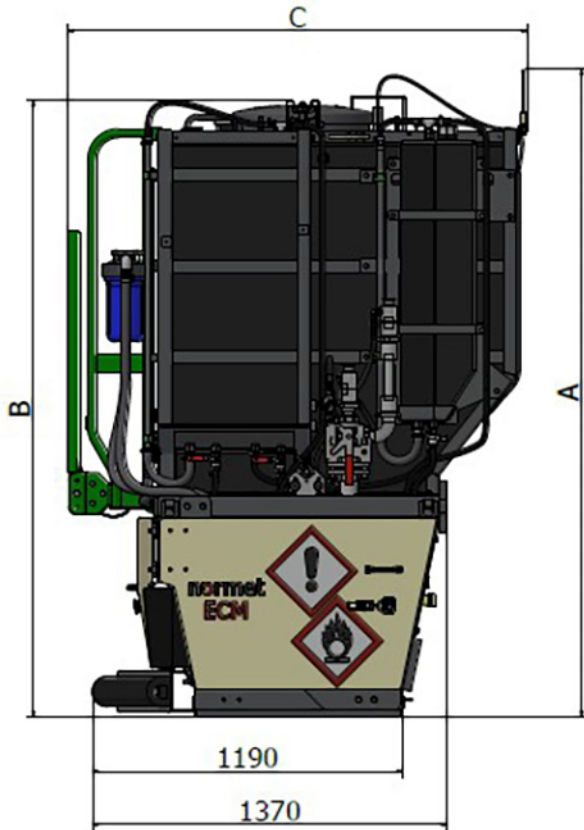
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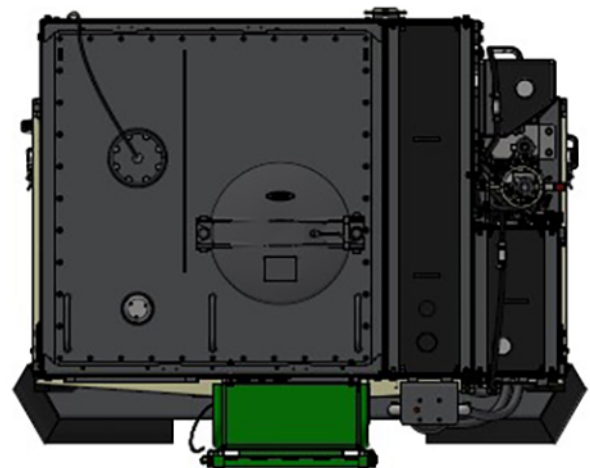
DIMENSIONAL DRAWINGS

1500 kg, 2200 kg and 3000 kg pumping units

Center cabin installation



Dimensions				
Model [kg]	A [mm]	B [mm]	C [mm]	Weight: Empty Full [kg]
1500	1930	1810	1670	1650 3550
2200	2230	2110	1670	1680 4230
3000	2490	2370	1770	1750 5550



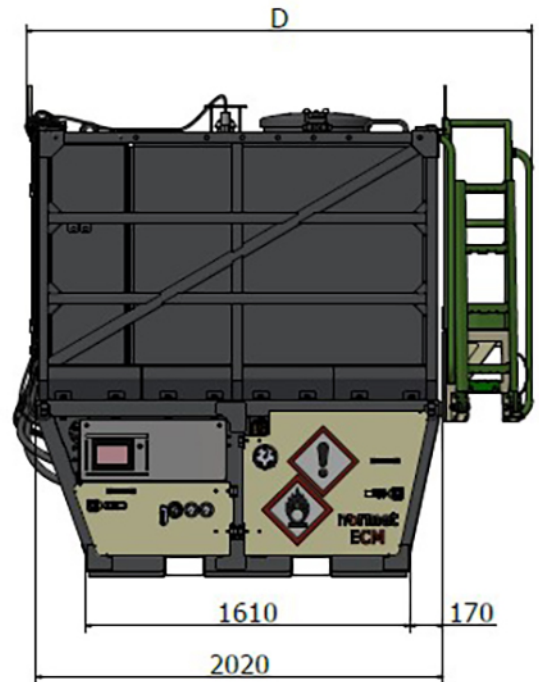
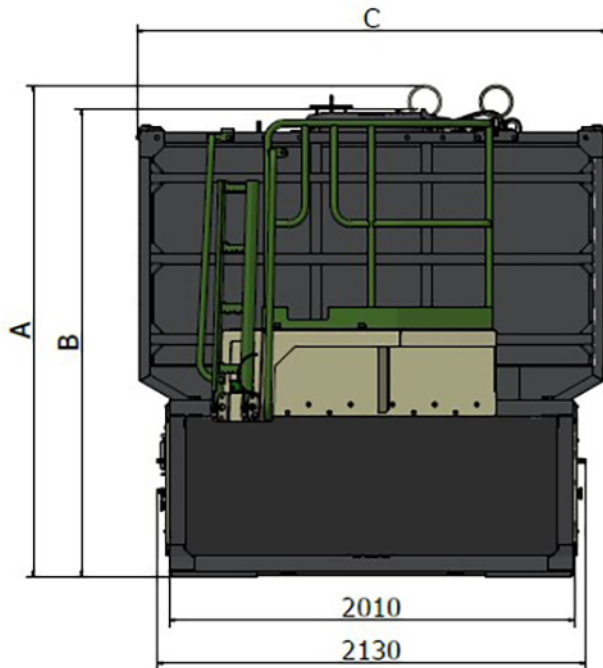
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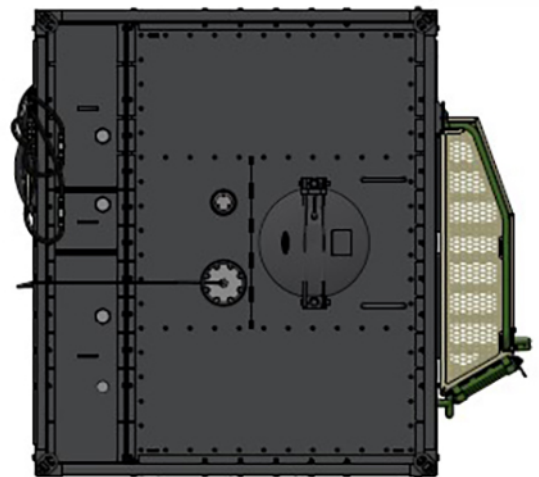
DIMENSIONAL DRAWINGS

4000 kg and 6000 kg pumping units

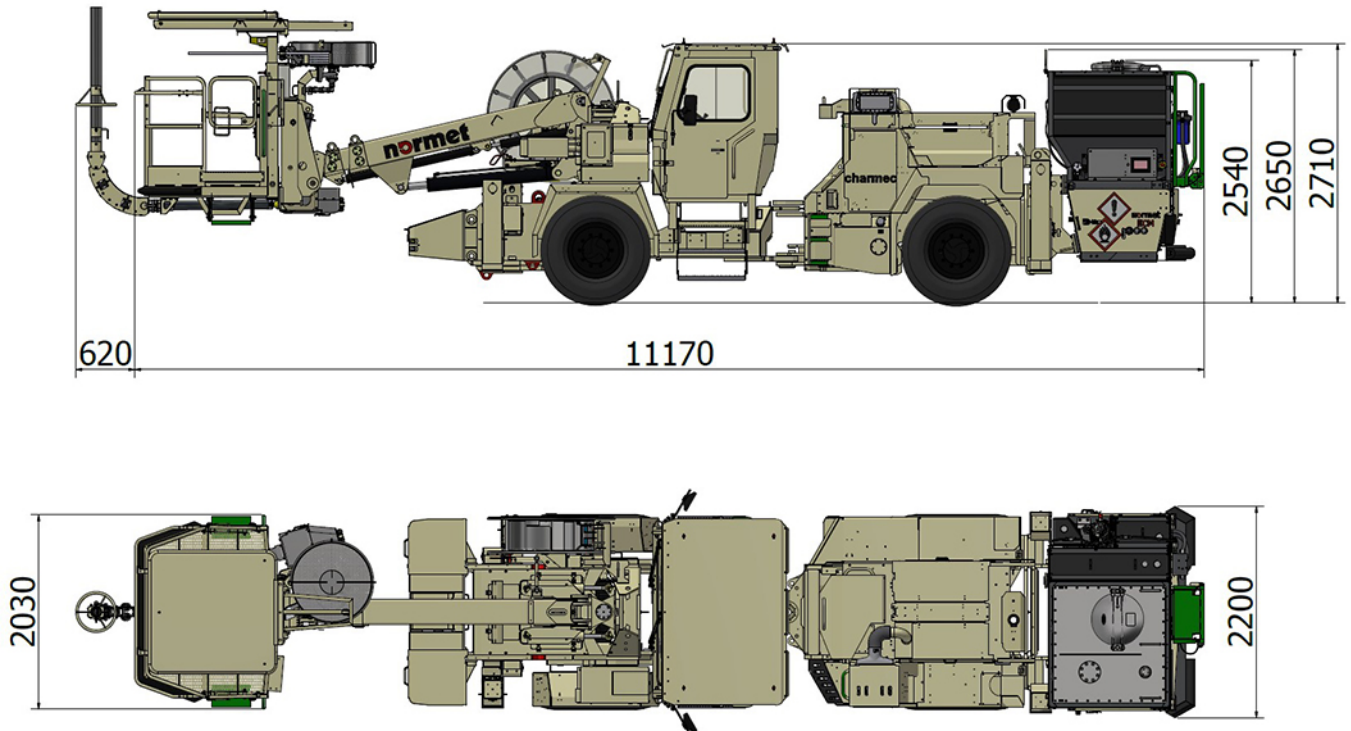
Front cabin installation



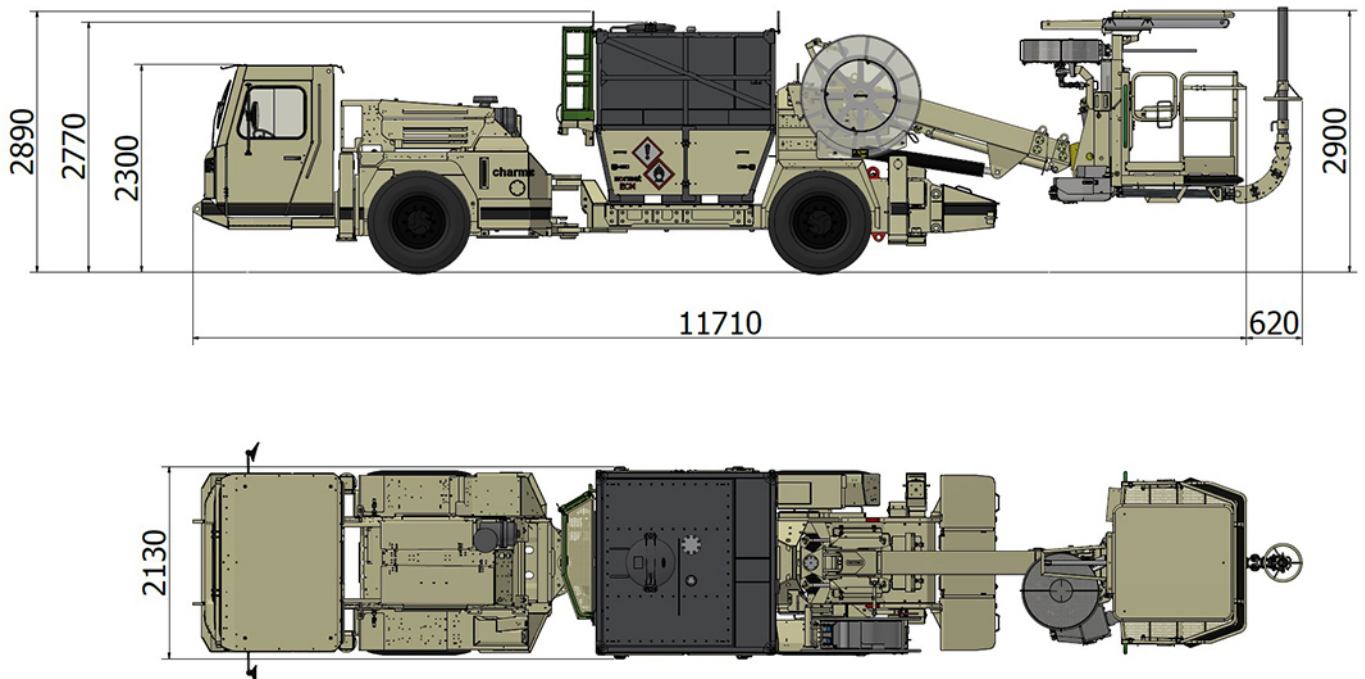
Dimensions					Weight: Empty Full [kg]
Model [kg]	A [mm]	B [mm]	C [mm]	D [mm]	
4000	2140	2020	1920	2460	2600 7250
6000	2440	2320	2330	2510	2900 9900



CHARMEC MC 605 DE WITH REAR MOUNTED 2200 KG ECM



CHARMEC MF 605 DE WITH MIDDLE MOUNTED 4000 KG ECM



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CHARMEC LF 605 WITH MIDDLE MOUNTED 6000 KG ECM

