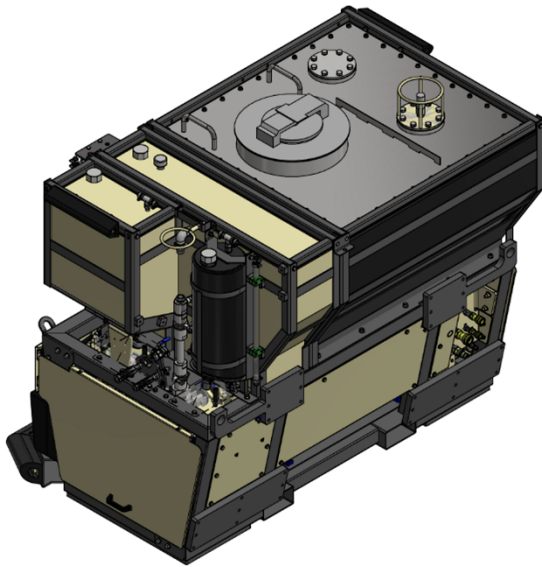


ECM Emulsion Charging Module

INTRODUCTION



NORMET EMULSION CHARGING MODULE

ECM Emulsion Charging Module has capability for development and production charging. It is designed to work with modern site sensitized bulk emulsions. It has capability to deliver decoupled charges in development charging or different densities in production charging. An optional hose pusher eliminates the physical stress of manual hose handling and makes production charging fast. Graphical user interface is standard enabling ergonomic and fast operation. Different tank capacities cover matrix payloads of 1500 kg, 2200 kg and 3000 kg. Payload is optimized for different Normet Charmec underground mining carriers depending of the machine size and layout.

SAFETY

Low and high pumping pressure, temperature limits and flow are used to stop process and reason for it is indicated in graphical user interface on man lifting basket. Pumping pressures and other safety demands could be customized based on customer needs. User interface has different access levels enabling safe use starting from limited access of base operating to full access of service and maintenance

ERGONOMY

Graphical user interface with radio control creates ergonomic user environment. Development hose reel push and pull charging hose in development charging, which reduces operator need to manually operate the charging hose. For production charging, hose pusher with hose reel ensures that charging operation is efficient for long hole charging.

PRODUCTIVITY

Pumping system has capability up to 95 kg/min matrix delivery which allows convenient and fast charging work to production holes up to diameter of 102 mm. Automatic hose retraction function helps operator to manage double or triple detonator placing in long hole charging.

ACCURACY

Charging system can be calibrated to accuracy +/- 5%. Closed loop control system enables fast and accurate process control among other if ambient temperature changes.

REPORTING AND DATA TRANSFERRING

Emulsion charging round reports are available extracted by USB or wireless for detailed analysis and to support customer charging process development.

TECHNICAL SPECIFICATION

STANDARD DELIVERY

Emulsion mixing and pumping unit.

Emulsion charging process controlled by NorSmart.

Carrier type for ECM installation:

- SF/MF
- MC
- RM
 - Single boom
 - Twin boom

Boom type:

- NBB435/455
- NBB3S
- NBB3
- NBB5

Wireless remote control:

- Dual channel 434/870 MHz
- Single channel 418 MHz

Process control box in basket.

Low height matrix tank filling / emptying point with 3" camlock.

Additive pumping system for matrix sensitizing.

Mixing point after process pump.

Pressure water system for charging hose blockage opening.

Pressure air for emulsion line cleaning (requires compressor or external air).

MATRIX DELIVERY RATE

Matrix pump delivery capacity	15 - 95 kg/min
Face charging max. pressure	16 bar
Production charging max. pressure	30 bar

MATRIX TANK

Tank capacity

- 1500 kg
- 2200 kg
- 3000 kg

Matrix tank lid type

- Non lockable freely opening hatch
- Lockable 20" hatch

Mesh for filling hatch

- Stainless steel screen

OPERATING ENERGY REQUIREMENT

Load sense hydraulics:

Oil flow	80 l/min
Pressure	25 - 130 bar
Electrics for control system:	
Voltage	24 VDC
Current	10 A

PRODUCTION CHARGING REPORTING

- Standard round reporting
- Improved reporting system with identification for ring, borehole and multiple priming

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

Calibration report:

- Safety shut down system
- Water testing

PDF manuals on USB-stick 2 pcs, includes instruction and spare parts manuals

Additional documentation:

- Matrix pump rotor design confirmation
- 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/Ru/One of destination EU languages
- Other language

ACCESSORIES

PRODUCTION CHARGING SYSTEM

- Electrically controlled hose pusher and reel
 - Standard installation above the basket floor
 - Middle installation below the basket floor (available only for standard 2 operator basket)
- Charging hose for hose pusher (includes 4 pcs of groove pulleys)
 - Without hose
 - 32 x 23 mm, 50 m
 - 40 x 31 mm, 50 m
- Nozzle for upward charging
 - For 32 mm hose
 - For 40 mm hose
- Hose guides
 - Hose guide for upward production charging
 - Diverting pulley for downward production charging
- Production charging hose reel material
 - Steel
 - Stainless steel

CARRIER PRODUCTIVITY

- High voltage cable channel
- 2.6 m³/min onboard compressor to be mounted on Normet carrier
- Hydraulically driven pressure washer with hose reel:

Water pressure, max.	180 bar
Water flow, max.	30 l/min
Hose length	20 m

 - Standard pressure washer
 - Stainless steel reel and rod
- 24 V fan in the basket
- Wax tape for electric connectors

DEVELOPMENT CHARGING SYSTEM

- Face charging reel for decoupled hole charges and mechanized hose handling
 - Regular basket installation
 - Hanging basket installation

Includes face charging hose 20 x 25 mm

Foot pedal for hose extracting

CHARGING PRODUCTIVITY

- Hand operated valve to switch between development and production charging frame lines
- Acetic acid dosing system, injection point in matrix pump
 - 0.08 - 0.8 lpm flow
 - 0.2 - 2.5 lpm flow
- Matrix tank level sensor
- Matrix filling pump (n/a for front cabin models)
- Performance parts for uphole production charging:
 - Light weight hose guide for upward production charging
 - Extension for hose upward hose pusher
- Additional groove pulleys, 4 pcs
 - 32 mm
 - 40 mm
- Tools for process calibration
 - Basic calibration kit
 - Full calibration kit

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 Battery Electric Vehicles and Diesel-Driven based on your vehicle fleet. 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

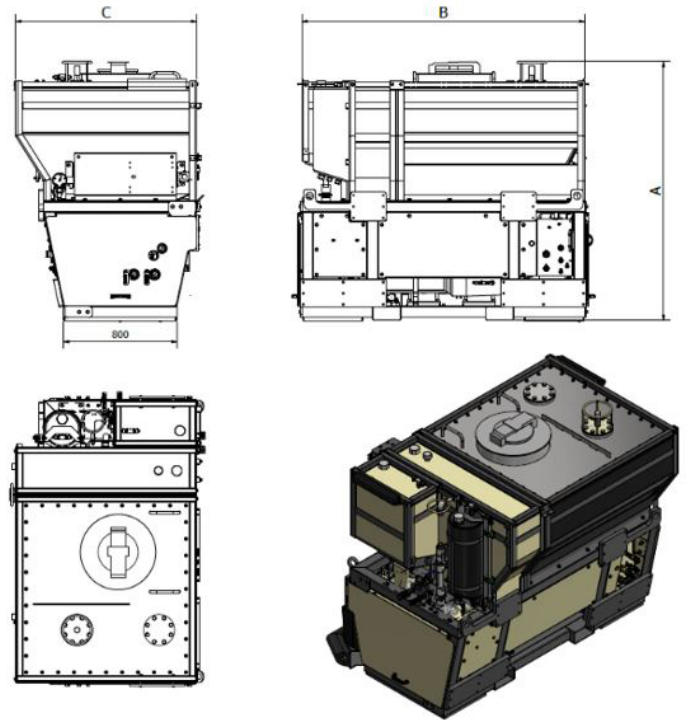
We build our machines to last. We also understand that your needs on the ground can change - and reacting to that change makes a big difference in your productivity. Normet Upgrades & Modifications provide you with access to product improvements that meet your evolving requirements and let you stay one 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

Model [kg]	A [mm]	B [mm]	C [mm]	Weight: Empty Full [kg]
1500	1820	2000	1280	1650 3550
2200	2120	2000	1280	1680 4230
3000	2380	2000	1400	1750 5550



CHARMEC SF 504 D, 1500 KG EMULSION MODULE



Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.

CHARMEC LC605, 3000 KG EMULSION MODULE. FACE AND PRODUCTION CHARGING SYSTEM



CHARMEC RM125 TVE, 1500 KG EMULSION MODULE. DOUBLE FACE REELS WITH 12 M REACH



Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.

CHARMEC RM905 DEV, 3000 KG EMULSION MODULE. SINGLE BOOM FOR 9 METER REACH



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