



Charmec RM 905&125 D(T)(V)

INTRODUCTION

Charmec RM905&125 D(T)(V) are bulk emulsion charging machines for underground excavation and tunnelling. Twin boom configuration enables independent charging work for both baskets shortening charging cycle time and at same time providing large face reach and coverage.



Normet basket booms are specially engineered for underground work having strong and robust structure withstanding corrosive underground environment and aggressive explosives chemicals.

POWER TRAIN

M-series units have powerful 4-cylinder liquid cooled turbo-charged engines, which power range is between 110-121 kW, depending of the selected engine model. Available emission standards are Tier 3 / Stage IIIA and Stage V that provide clean and efficient operation.

Machine is equipped with Hydrostatic 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

Normet's FOPS and ROPS approved safe and spacious cabin provides superior visibility and comfortable compartment for the driver. 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. Optional enclosed cabin provides low noise level ensuring safe and comfortable driving.



Emulsion charging system is designed to be safest possible having given extra care to electric current groundings, fire safety and safety when working in vicinity of face wall.

Two handheld fire extinguishers are standard and fire suppression system for diesel engine is automatic or manual having actuating points in all operating places.

Person lifting basket has latest safety features like design according to prevailing standards and safety roofs tested through FOPS level II criteria.

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

PRODUCTIVITY

Development charging can be mechanized by using face charging hose reel which will extract and retract charging hose mechanically with extreme speed accuracy.

Installation of external emulsion unit can be provided as a service which makes possible customer to receive unit ready to work.

TECHNICAL SPECIFICATION

CHARGING SYSTEM

Process platform on rear end of unit

Inner dimensions	1885 x 2140 mm
Max. load (905 T)	4500 kg
Max. load (125 T)	5000 kg

Center of gravity shown in the dimensional picture

- Readiness for external emulsion unit:
 - Basic upfit for external emulsion charging system
18 x 1,5 mm² cable between charging system and basket
Hydraulic hoses for charging system: pressure 3/4", tank 1", leak 1/4", LS 1/4"
24 VDC supply for charging system
 - Readiness according customer specification

NBB BASKET BOOM

Boom:

- 1 x NBB3 basket boom (905)

Lifting capacity (without optional equipment)	500 kg
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- 2 x NBB3 basket boom (905 T)

Lifting capacity (without optional equipment)	500 kg
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- 2 x NBB5 basket boom (125 T)

Lifting capacity (without optional equipment)	400 kg
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Standard 2-operator basket

Max. lifting height and wall coverage specified in dimensional drawing

Automatic levelling of basket

Start/stop from basket

Battery operated emergency lowering system

Basket installation position:

- Regular
- Hanging (reduce max. lifting height 500 mm)

Person lifter safety system:

- Dangerous movement preventing system (mandatory in NAP, NAS, CE area)
- Dangerous movement warning system with overload monitoring
- Dangerous movement warning system without overload monitoring

ENGINE AND TRANSMISSION

- **Cummins QSB4.5 110 kW/2300 rpm, Tier 3 / Stage IIIA approved**
Catalytic exhaust gas purifier and muffler
Fuel tank capacity: 140 l
Hydrostatic 4-wheel transmission
- **Cummins B4.5, 121 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: 140 l

Hydrostatic 4-wheel transmission

PERFORMANCE

Tramming speed 905 (T) (horizontal):	25 km/h
Tramming speed 125 T (horizontal):	11 km/h
Lateral gradient for tramming (continuous)	4°
Longitudinal gradient for tramming (continuous)	9°
Lateral gradient for operation	3°

AXLES AND BRAKES

Planetary type axles:

Front: Dana 213

Rear: Dana 223

Fixed axle at the front of the carrier

Oscillating axle +/-8° at the rear end of the carrier

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

Tyres:

- Nokian Tyres 12.00–20"
- Bridgestone 12.00–20"

Rims:

- Standard rims
- NDT inspected rims

STEERING

Two- and four-wheel steering and crabwalk.
Steering wheel and orbital type power steering control unit.

HYDRAULIC SYSTEM

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

Oil tank capacity, stainless steel 130 l

Return oil filtration 10 µm

Oil level and return filter contamination indicator

Carrier hydraulic system (hydrostatic):

Pump 115 cm³

Motor 160 cm³

Oil tank capacity, stainless steel 110 l

Return oil filtration 10 µm

Oil level and return filter contamination indicator

Hydraulic oil type for process and carrier (hydrostatic drive system):

- Mineral hydraulic oil
- Biodegradable hydraulic oil (ISO 15'380/HEES)

24 VDC ELECTRICAL SYSTEM

Mechanical main switch in battery box

LED driving and indicator lights

LED work lights on cabin

LED work lights in basket

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 air conditioning and heating

*ROPS not available with 125 T

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

Seat belt safety interlock for driver:

- Warning indicator in display
- Safety brake application

Cabin door interlock switch with safety brake application

MACHINE CONNECTIVITY

- Machine connectivity hardware (WLAN/3G/4G/LTE)
- Data lifetime license (Include connectivity hardware)
- Analytics lifetime license (Include connectivity hardware and data lifetime license)

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

Powder extinguisher:

- 12 kg
- Ansul Sentry

Number of extinguishers:

- 2
- 3

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

Front and rear grounding straps:

- Flat cable
- Chain

Text labels in:

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

Measurements:

- Noise
- Vibration
- Emissions

ACCESSORIES

PROCESS PRODUCTIVITY

- Installation service for external emulsion charging system
 - CE-marking for installation of external emulsion charging system
- Compressed air inlets with water separator on carrier
- Compressed air outlet and oil lubrication unit in basket
- Water inlet with filter and pressure regulator
- Electrically controlled face charging reel and valve with face charging hose 25 x 20 mm, 15 m
- Onboard compressor
 - 2.6 m³/min
 - 0.45 m³/min
- 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
- Extra oil cooler
- Hydraulic outlet in basket (PTO)

- 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:

Hydraulically driven reel with spooling device

Cable in / out reeling function from the cabin and near the reel

- With supply cable (excluding plug)
 - Without supply cable (must be sourced and installed locally)

Pilot circuit

- No
- Yes

Hydraulic power pack 30 kW: Single pump for carrier and process 110 l/min at 1500 rpm

Socket supply voltage:

- 220/230/240 V (no UL/CSA or AS/NZS approval)
 - 110/120 V
- 400 V 16 A outlet socket for accessories like submersible pump
- 3 x 100 W LED working lights on cabin roof (no UL or AS/NZS approval)

CARRIER PRODUCTIVITY

- Audio system for enclosed cabin
- 12 V, 18 A power supply in cabin with socket and connector
- 24 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)
- Fuel operated pre-heater
- Fast fuel filling system
- Hand pump for filling of hydraulic tank
- Fluid evacuation panel with sampling points
- Automatic lubrication system for carrier and lifting boom(s)
- Reversing camera:
 - 2 camera, 2 displays
 - 4 cameras, 3 displays
- Spare rim and tyre
- Toolbox and maintenance tools
- Stainless steel box for equipments
- Interior cooling fan
- Wax tape for electric connectors

SAFETY BASKET BOOM

- Safety roof or bar on basket(s)
 - Safety bar
 - Safety bar with hydraulic lift
Reduces lifting capacity 60 kg
 - Safety roof with hydraulic lift
Reduces lifting capacity 100 kg
 - Safety roof with hydraulic lift and slide
Reduces lifting capacity 200 kg

NOTE: safety roofs and bars for the basket boom affect to the lifting capacity.

Accessories for basket boom(s):

- Boom suspension
- LED working lights on safety roof/bar
- Operator present: Foot pedal switch on basket
- Operator present: Spring loaded valve levers
- 24 V fan in the basket

SAFETY

- Extra warning LED light (From the options below it is possible to choose 1-2 combinations)
 - 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, 3 point activation (basket, cabin, rear frame)
 - Dry chemical
Ansul A-101
 - Manual
 - Automatic, Checkfire 110
 - Liquid agent
Fogmaker (Automatic)
- Higher speed range disabling (standard in 125 T)
- Electric pump for brake release
- Tyre pressure indicators
- Warning triangles
- Flashlight with charger
- Hearing protectors
- Wheel chocks with brackets

SERVICES

NORMET SERVICES

Our services cover the whole life cycle of your equipment. They include start-up and commissioning, genuine spare parts, upgrades & modifications, and remanufacturing, as well as rental and leasing offerings, and field services. We also offer improvement services such as operator training and process audits.

SPARE PARTS

Genuine parts from Normet Services ensure that you always have the highest quality parts available to keep your equipment up and running. Depending on your needs, we can offer everything from individual parts to complete parts contracts, and our professionals around the world have the experience to ensure that you have the parts you need when you need them.

Initial spare parts package:

Available for 1000h of use*. Includes periodical service, most common wearing parts and most critical safety parts.

Spare parts packages made for customer needs:

Available based on hours of use*. Includes periodical service, most common wearing parts and most critical safety parts.

* Recommendations are based on average hours – can vary a lot depending on work site conditions.

UPGRADES AND MODIFICATIONS

Our Upgrades and Modifications services are designed to ensure the economical, efficient and purposeful performance of your equipment over its entire life cycle. A service provided by a reliable OEM like Normet ensures the safety and performance of your equipment. Normet Upgrades and Modifications save you both time and money, while delivering the high quality you expect from us.

SERVICE CONTRACTS



With a service agreement, Normet manages your fleet with guaranteed availability and agreed costs, giving you transparency for your life cycle costs, annual operational budget and fleet uptime. This lets you focus on your core operations. Each service agreement is built and customized to meet the individual customer's needs from our portfolio of services. Depending on the level of service agreement you need, you can choose anything from basic technical support for an individual machine all the way up to services for your entire fleet, as well as process performance. The service levels we offer are:

- Parts Availability
- Fleet Support
- Fleet Availability
- Process Performance

The content of a service level can be tailored to meet your particular requirements.

TRAINING SERVICE

Our Training Services are available for you and your operators throughout the equipment lifecycle and they include:

				
	Operation & Maintenance	Spraying	Charging	Scaling
ADVANCED	Advanced fault diagnostics & troubleshooting	Concrete chemicals, testing and preparing for EFNARC-certificate test		
INTERMEDIATE	Troubleshooting training Foundations of electrics, hydraulics and mechanics NorSmart	Advanced training in concrete spraying Economics of concrete spraying	Advanced training in explosives Economics of charging	Advanced training in scaling Economics of scaling
BASIC	Operation and Maintenance Training Basic Product Training	Basic understanding of concrete spraying	Basic understanding of charging	Basic understanding of scaling
LEVEL	SERVICE	PROCESS KNOWLEDGE		

START-UP AND COMMISSIONING

1. OPERATOR TRAINING

	Start-up training	Commissioning
1.1 Classroom training		
General introduction and operation of machine	Basic	No classroom training included in commissioning
Safety instructions	Basic	
Use of manuals	Basic	
Technical introduction of equipment	Basic	
Hands-on service and pre-operation checks	Basic	
Controls and driving (starting, driving, stopping, parking)	Basic	
1.2 Practical training		
Pre-operation checks	Basic	Introduction
Driving, starting, stopping, parking	Basic	Introduction
Preparing the machine for specific operation conditions	Basic	Not covered
Operation	Basic	Introduction
Washing the machine	Basic	Introduction
Troubleshooting	Basic	Basic

2. MAINTENANCE AND REPAIR TRAINING

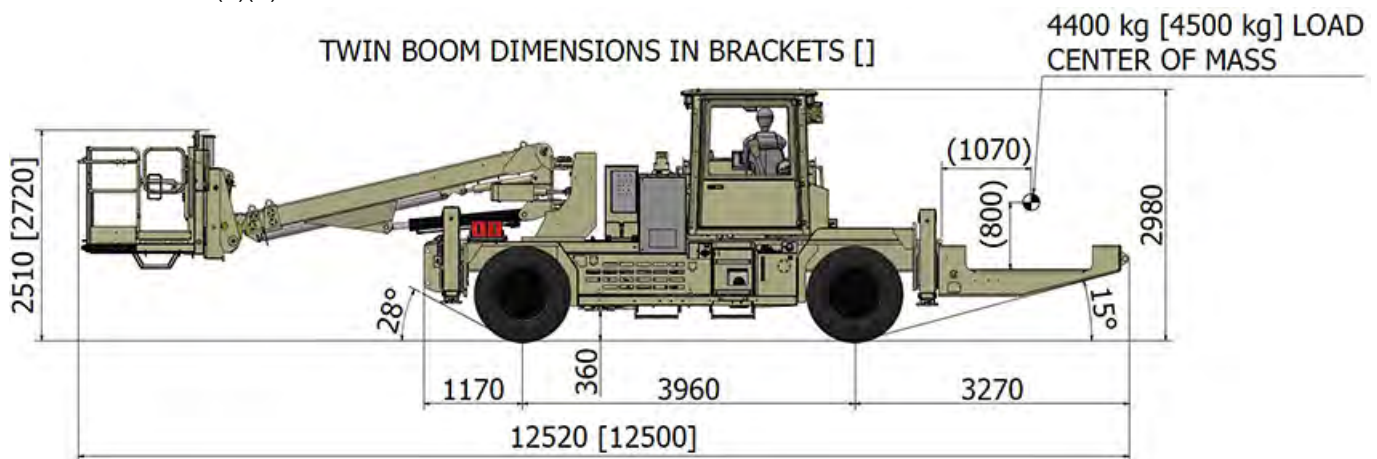
General operation of machines	Basic	Introduction
Symbols of drawings and codes	Basic	Not covered
Understanding hydraulic and electric schematics	Basic	Introduction
Control systems	Basic	Introduction
Function of main components (depending on equipment)	Basic	Introduction
Locations of components in the machine	Basic	Not covered
Periodical maintenance	Basic	Introduction
Troubleshooting	Basic	Not covered
Use of manuals	Basic	Introduction
Connection of hydraulic and electrical equipment	Basic	Not covered

DIMENSIONS

	905	905 T	125	125 T
Length	12520 mm	12500 mm	13480 mm	13460 mm
Width	2450 mm	2450 mm	2450 mm	2450 mm
Height	2980 mm	2980 mm	2980 mm	2980 mm
Wheel base	3960 mm	3960 mm	3960 mm	3960 mm
Track	1930 mm	1930 mm	1930 mm	1930 mm
Ground clearance	360 mm	360 mm	360 mm	360 mm
Turning radius outer	7620 mm	9590 mm	8750 mm	10140 mm
Turning radius inner	3260 mm	3950 mm	3980 mm	3900 mm

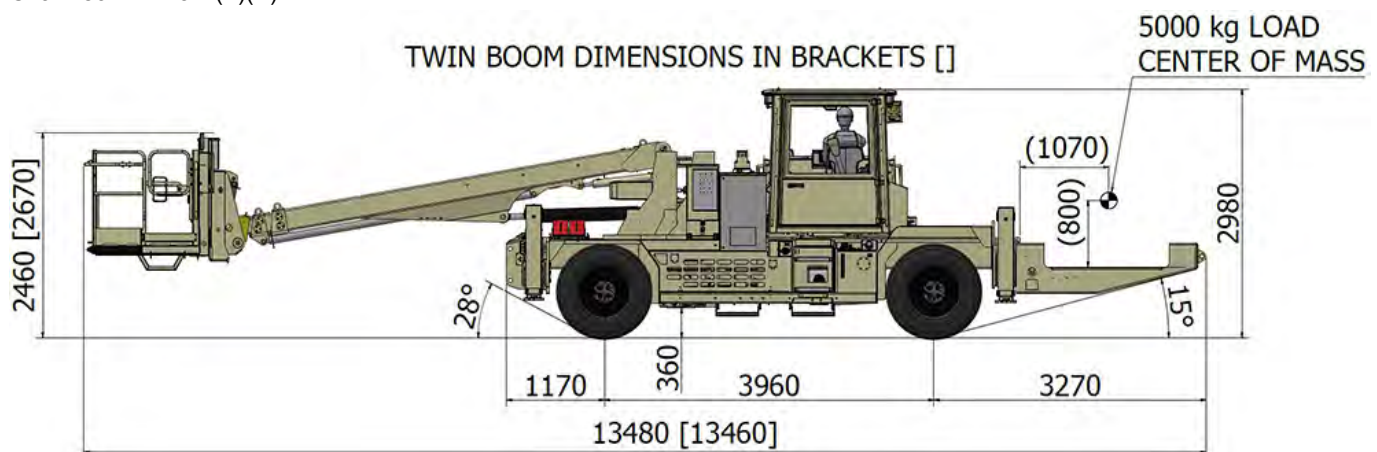
SIDE VIEW – BASIC MACHINE

Charmec RM905 D(T)(V)



SIDE VIEW – BASIC MACHINE

Charmec RM125 D(T)(V)



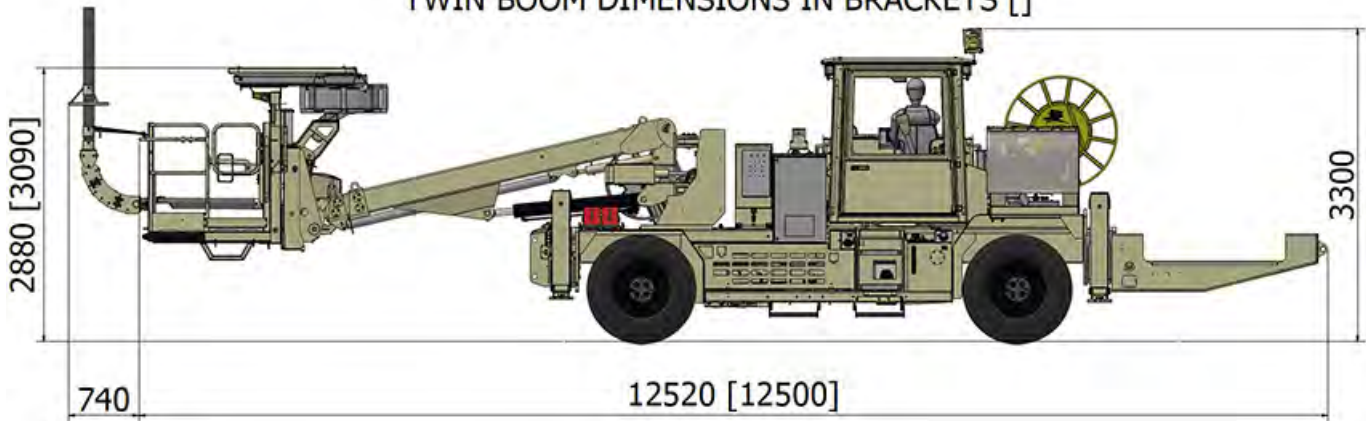
Normet reserves the right to change this specification without further notice

Pictures may include options and additional equipment.

SIDE VIEW – MACHINE WITH OPTIONS

Charmec RM905 D(T)(V)

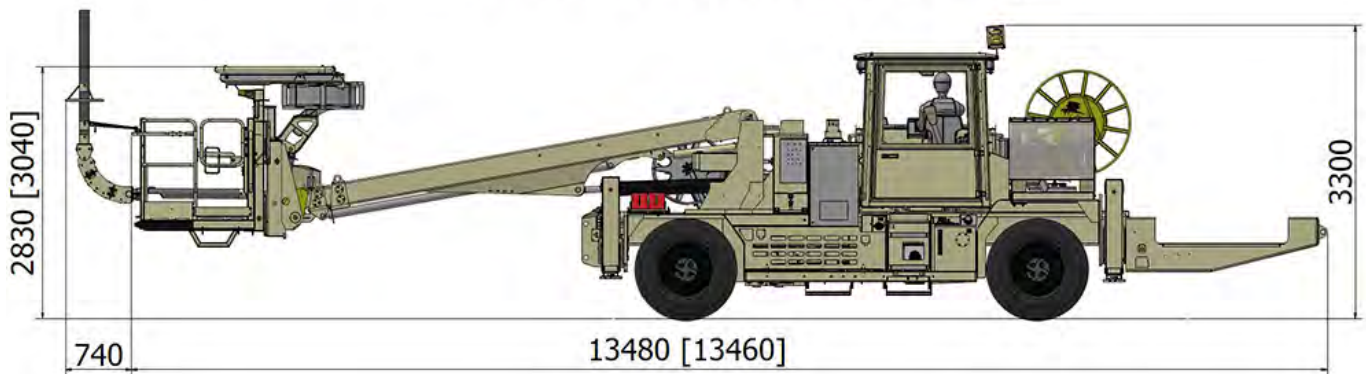
TWIN BOOM DIMENSIONS IN BRACKETS []



SIDE VIEW – MACHINE WITH OPTIONS

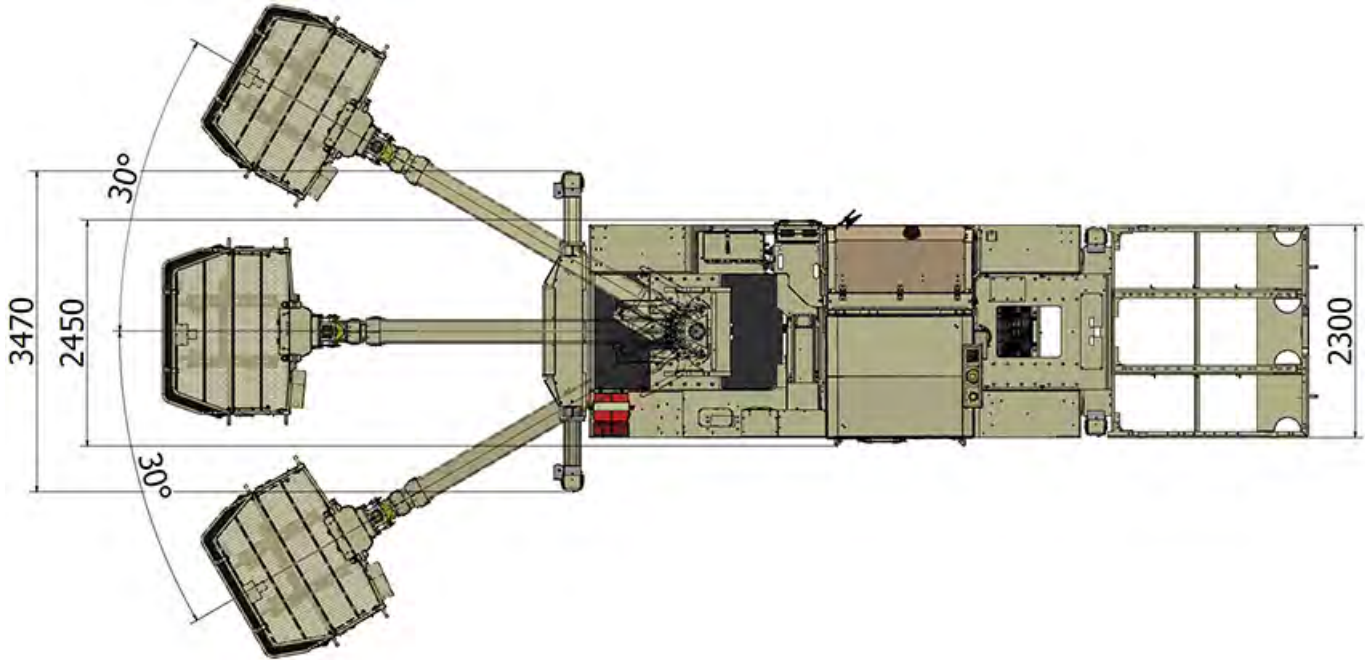
Charmec RM125 D(T)(V)

TWIN BOOM DIMENSIONS IN BRACKETS []



TOP VIEW

Charmec RM905 D(V)

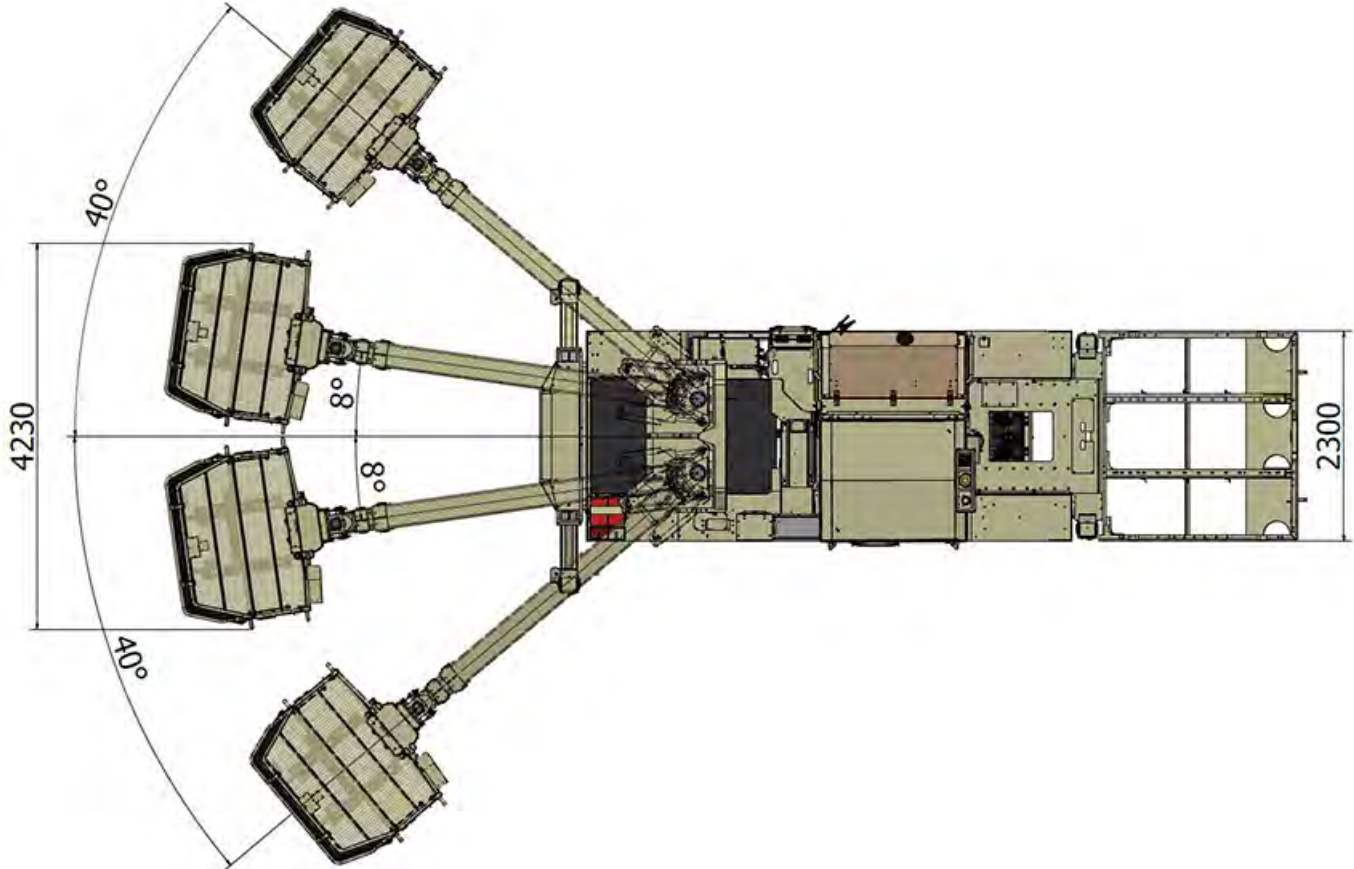


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TOP VIEW

Charmec RM905 D(T)(V)



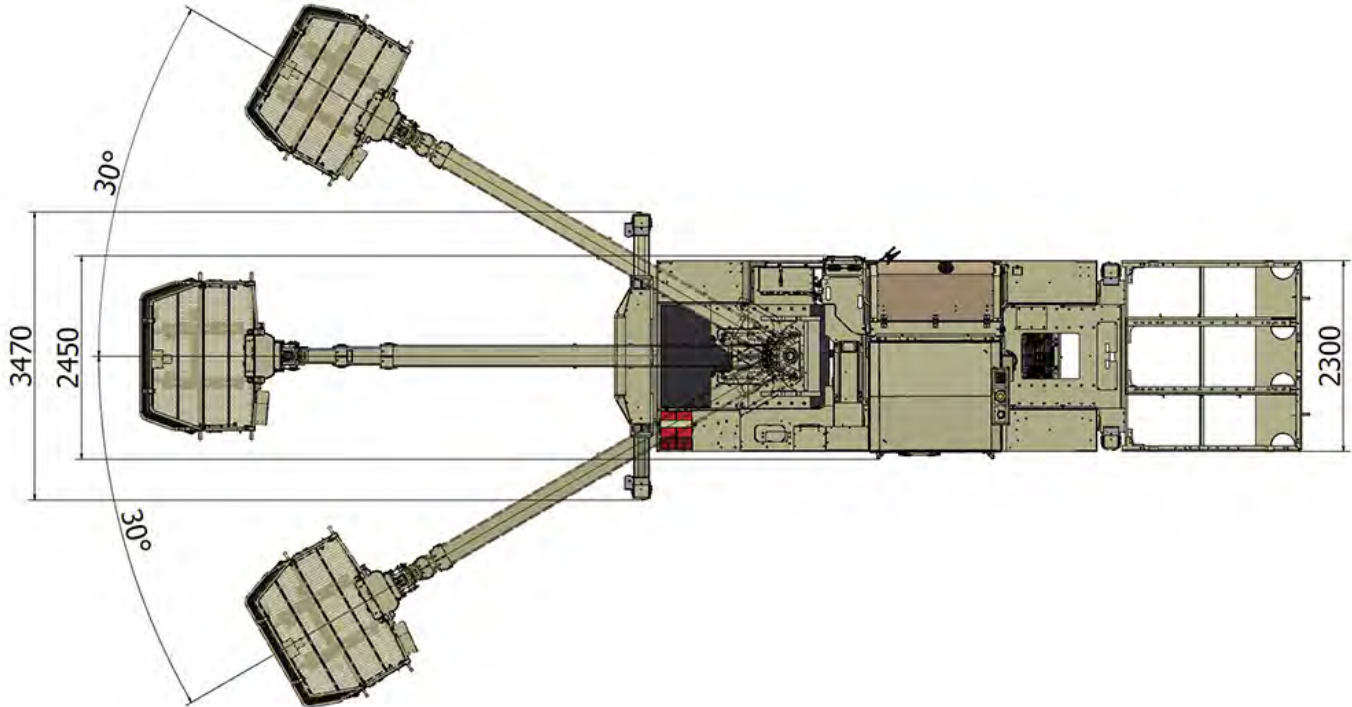
Machine equipped with twin boom

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TOP VIEW

Charmec RM125 D(V)

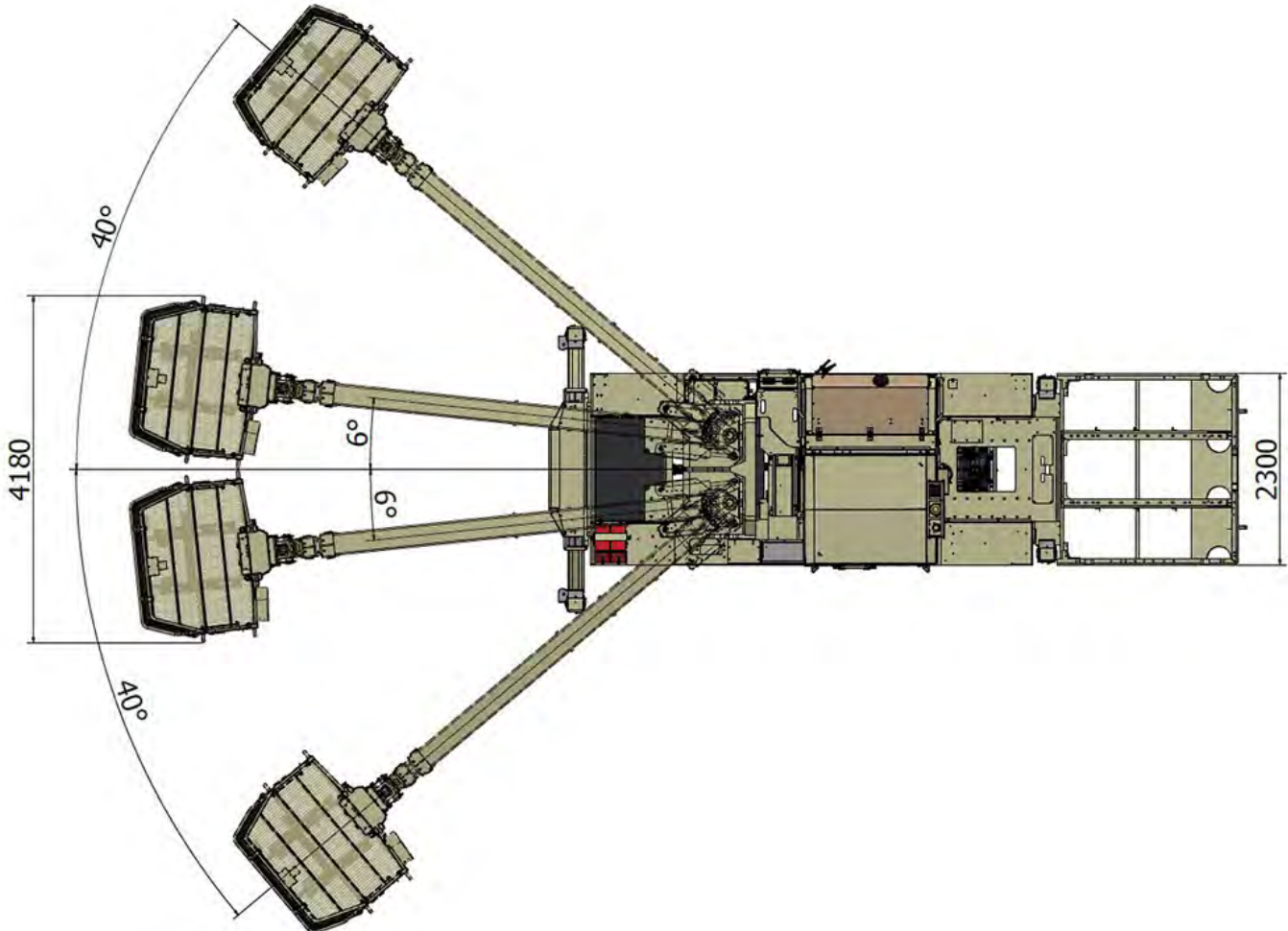


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TOP VIEW

Charmec RM125 D(T)(V)



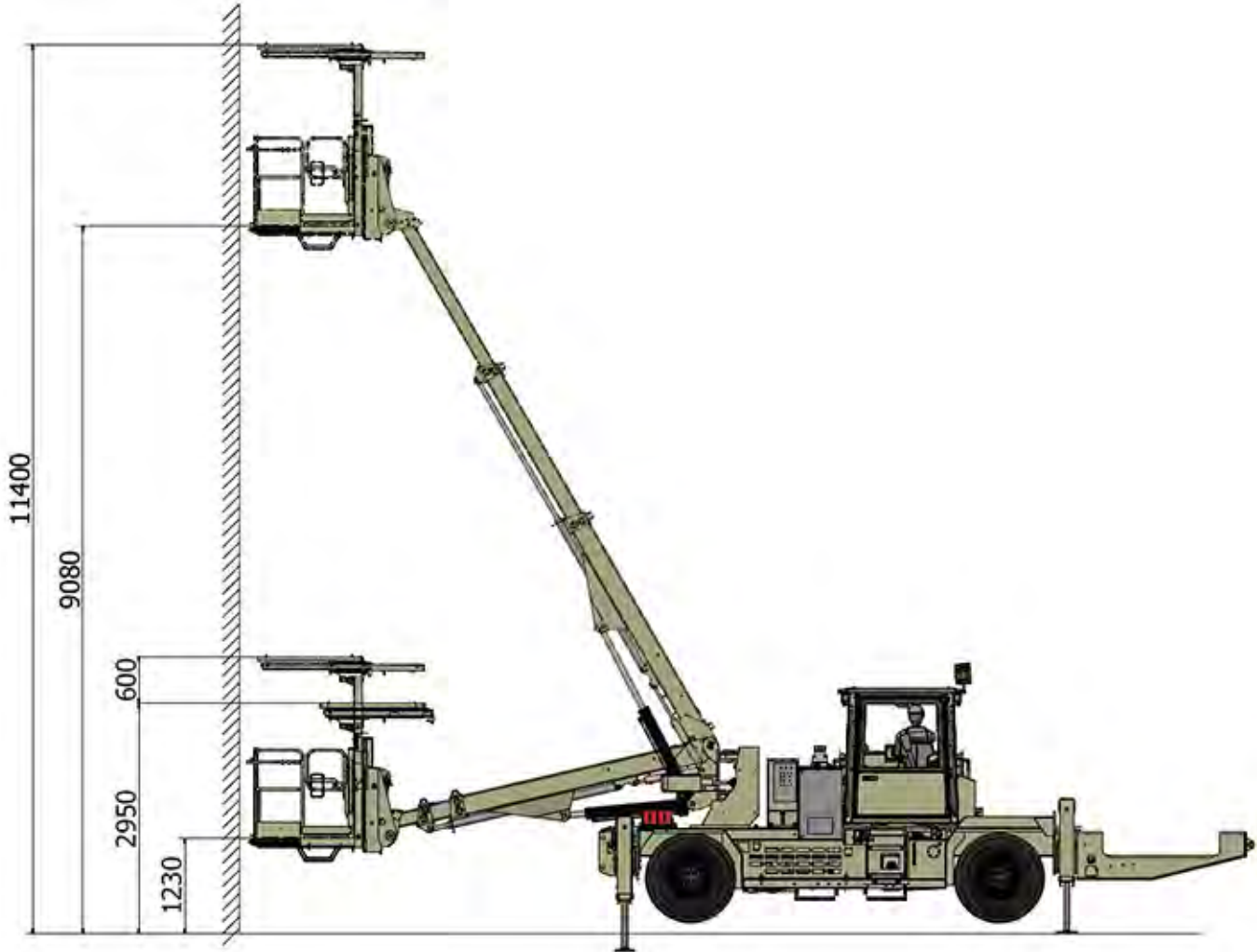
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BOOM REACH

Charmec RM905 D(T)(V)

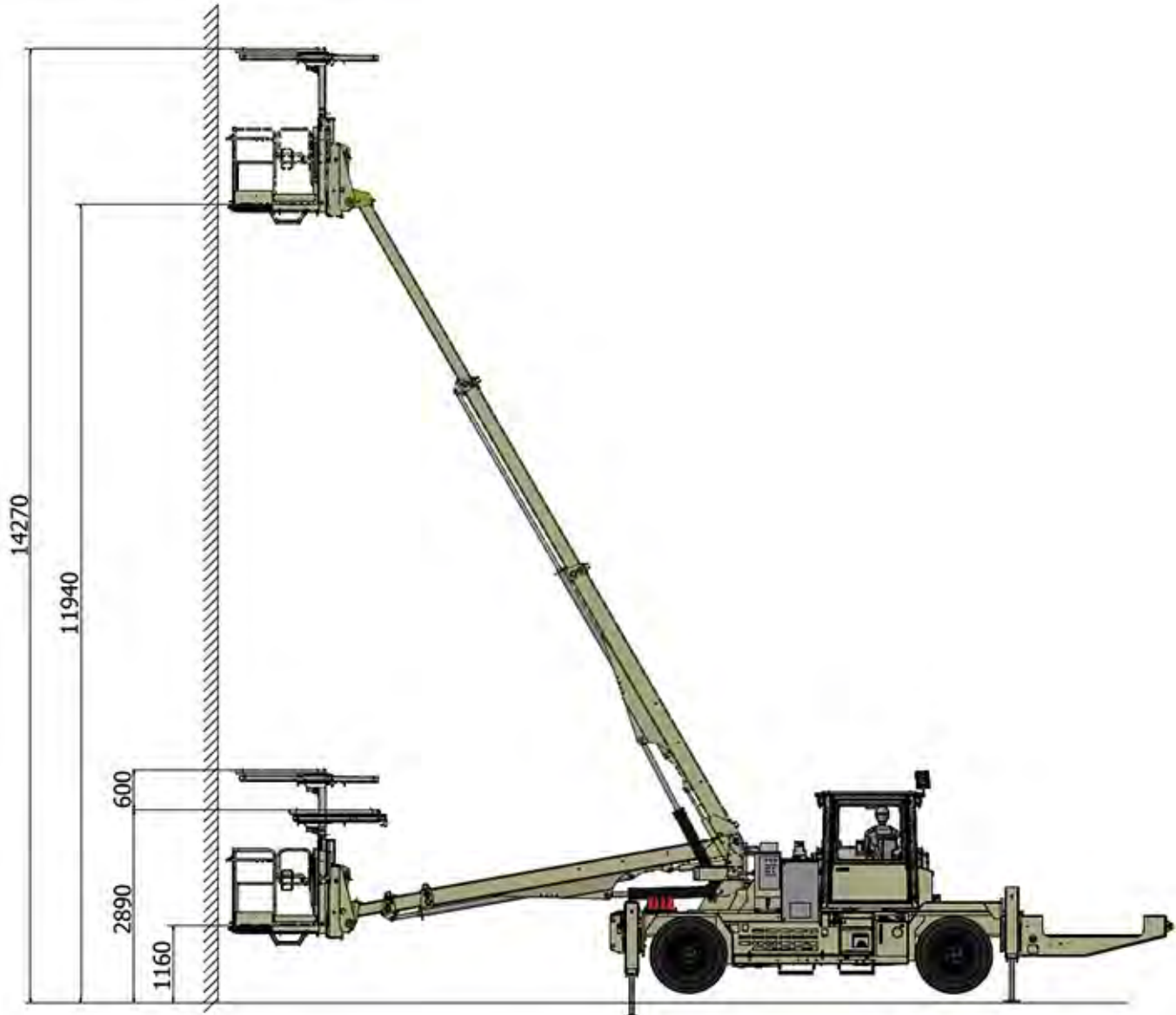


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BOOM REACH

Charmec RM125 D(T)(V)

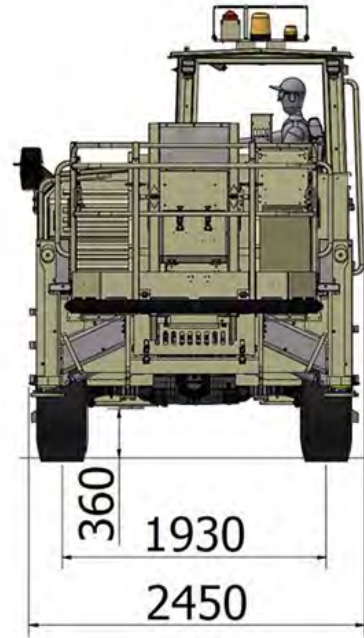
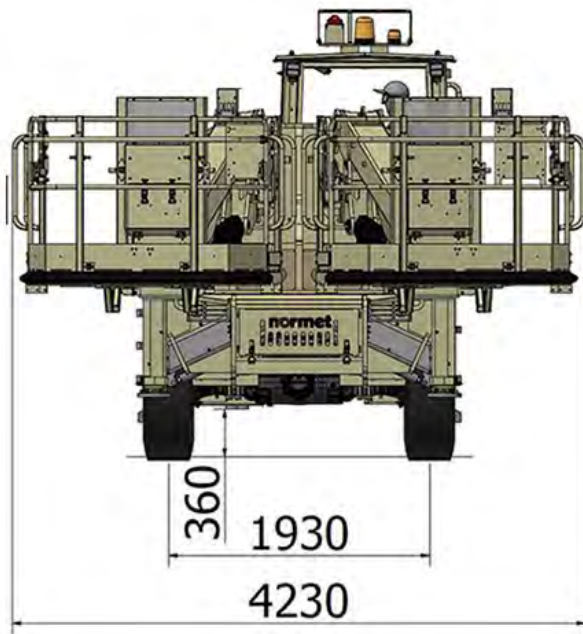


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FRONT VIEWS

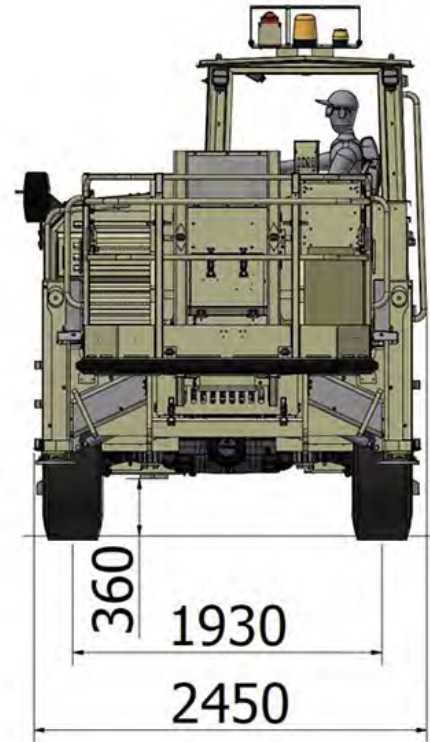
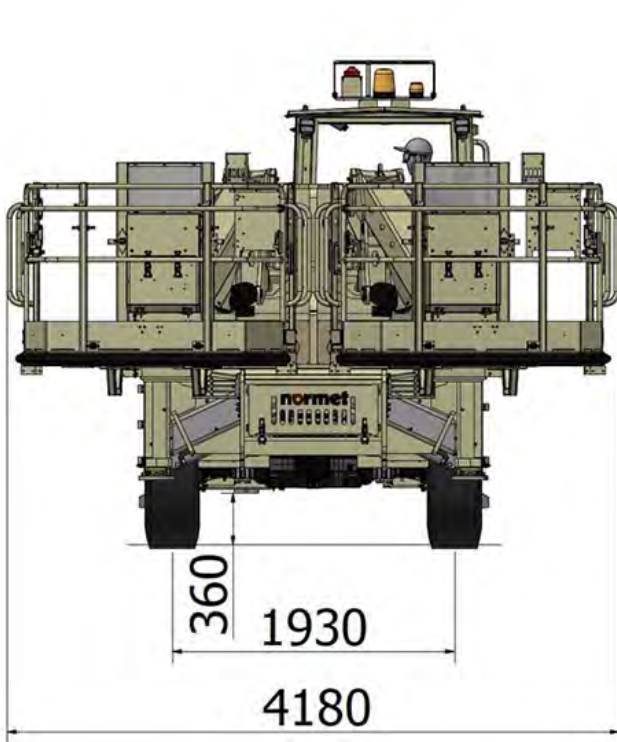
Charmec RM905 D(T)(V) and RM905 D(V)



Machine equipped with and without twin boom

FRONT VIEWS

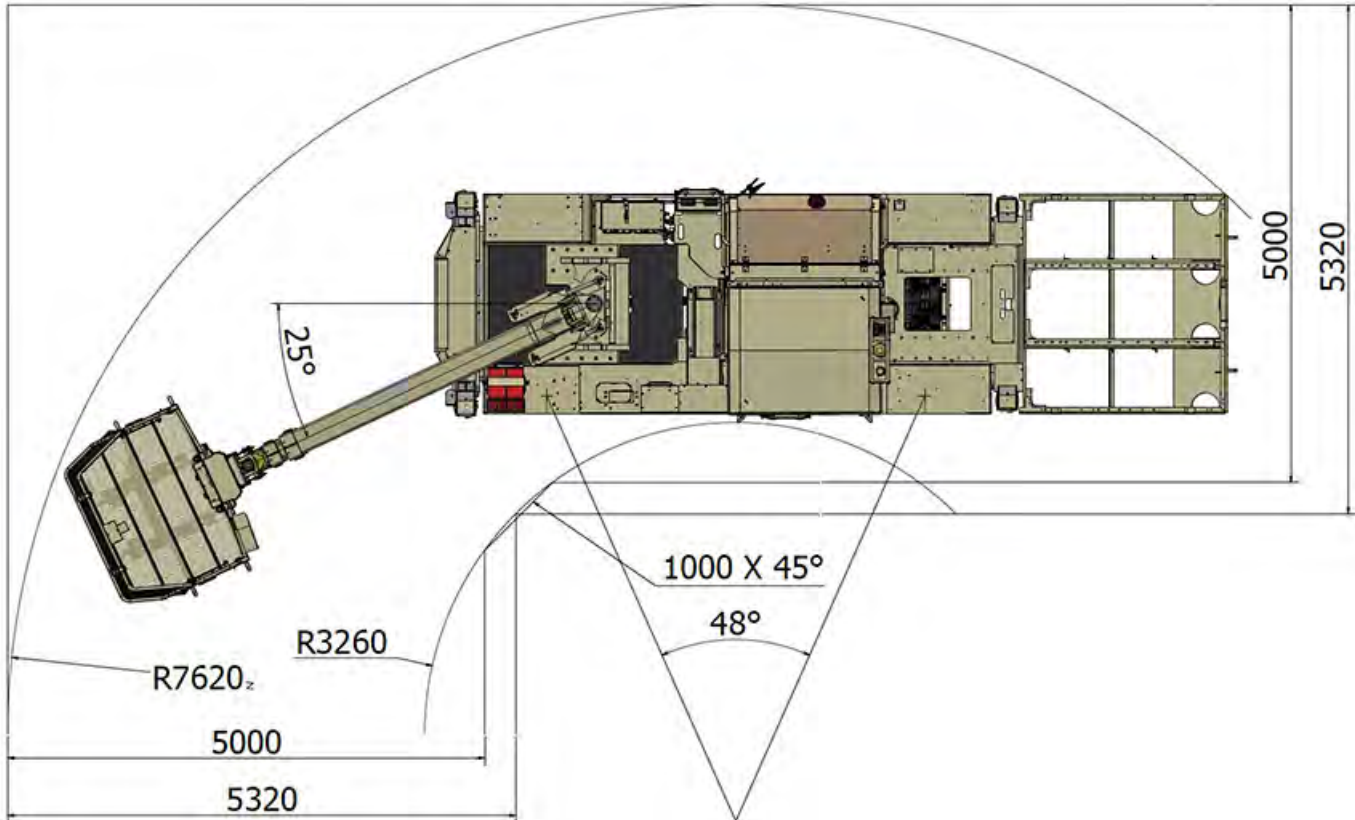
Charmec RM125 D(T)(V) and RM125 D(V)



Machine equipped with and without twin boom

TURNING RADIUS

Charmec RM905 D(V)

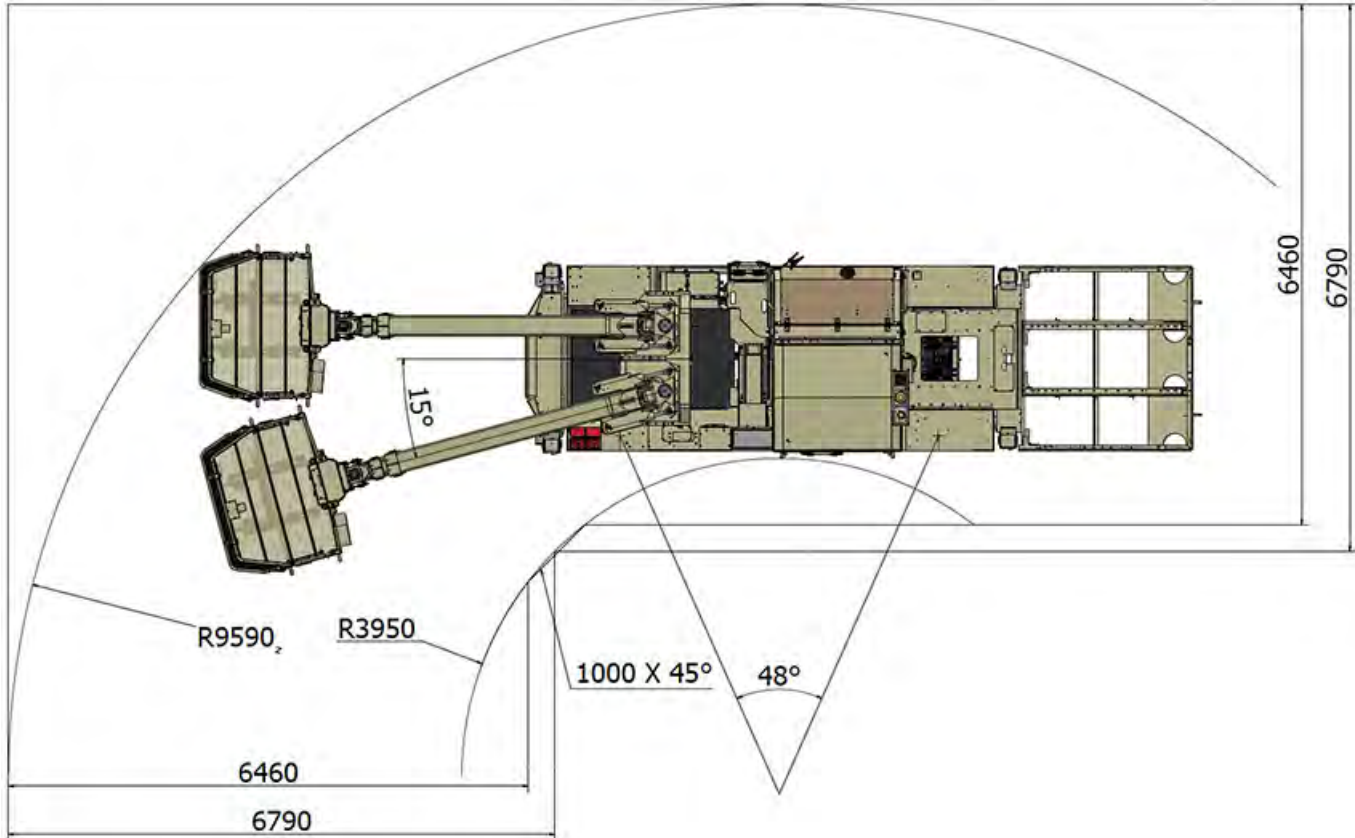


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TURNING RADIUS

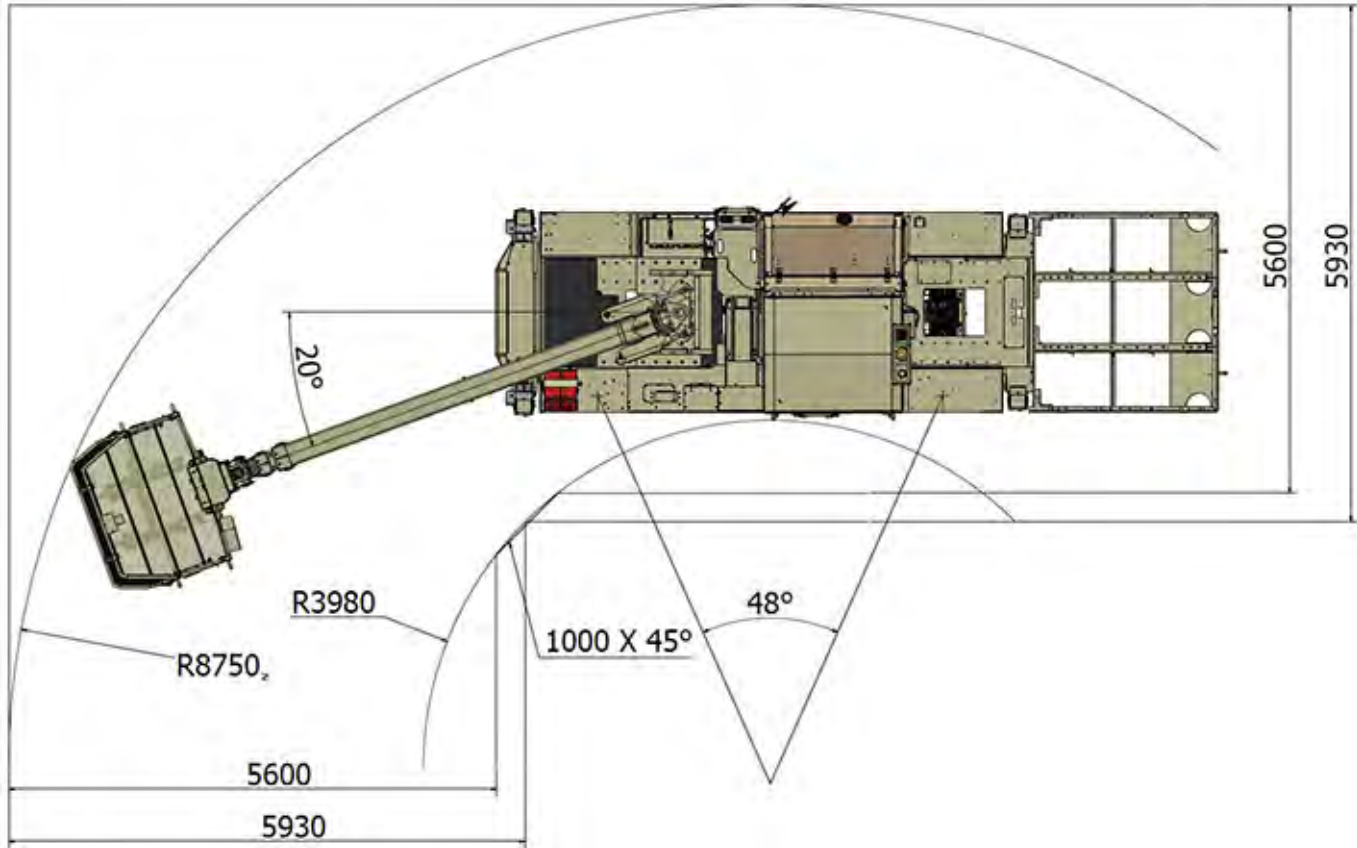
Charmec RM905 D(T)(V)



Machine equipped with twin boom

TURNING RADIUS

Charmec RM125 D(V)

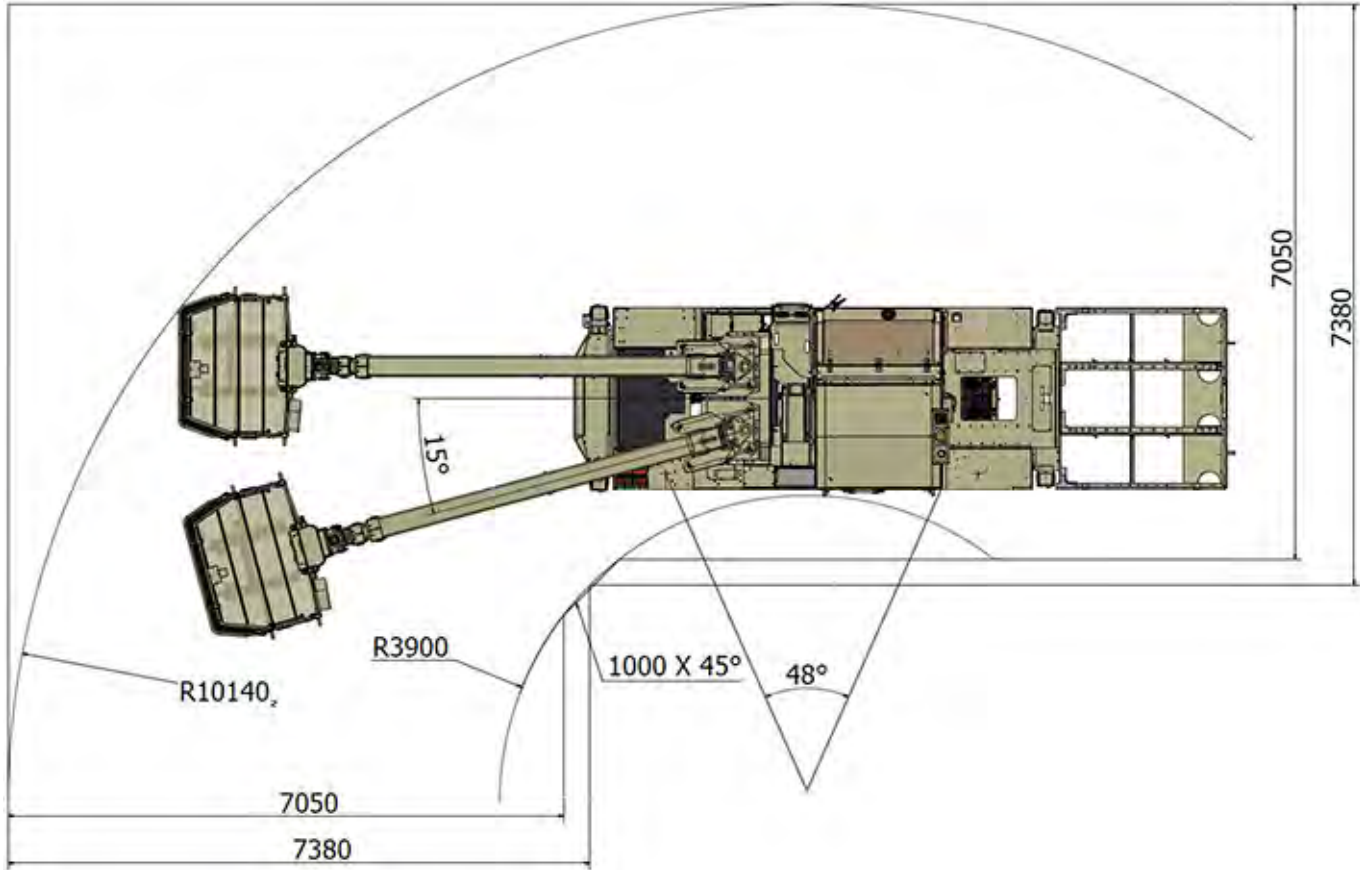


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TURNING RADIUS

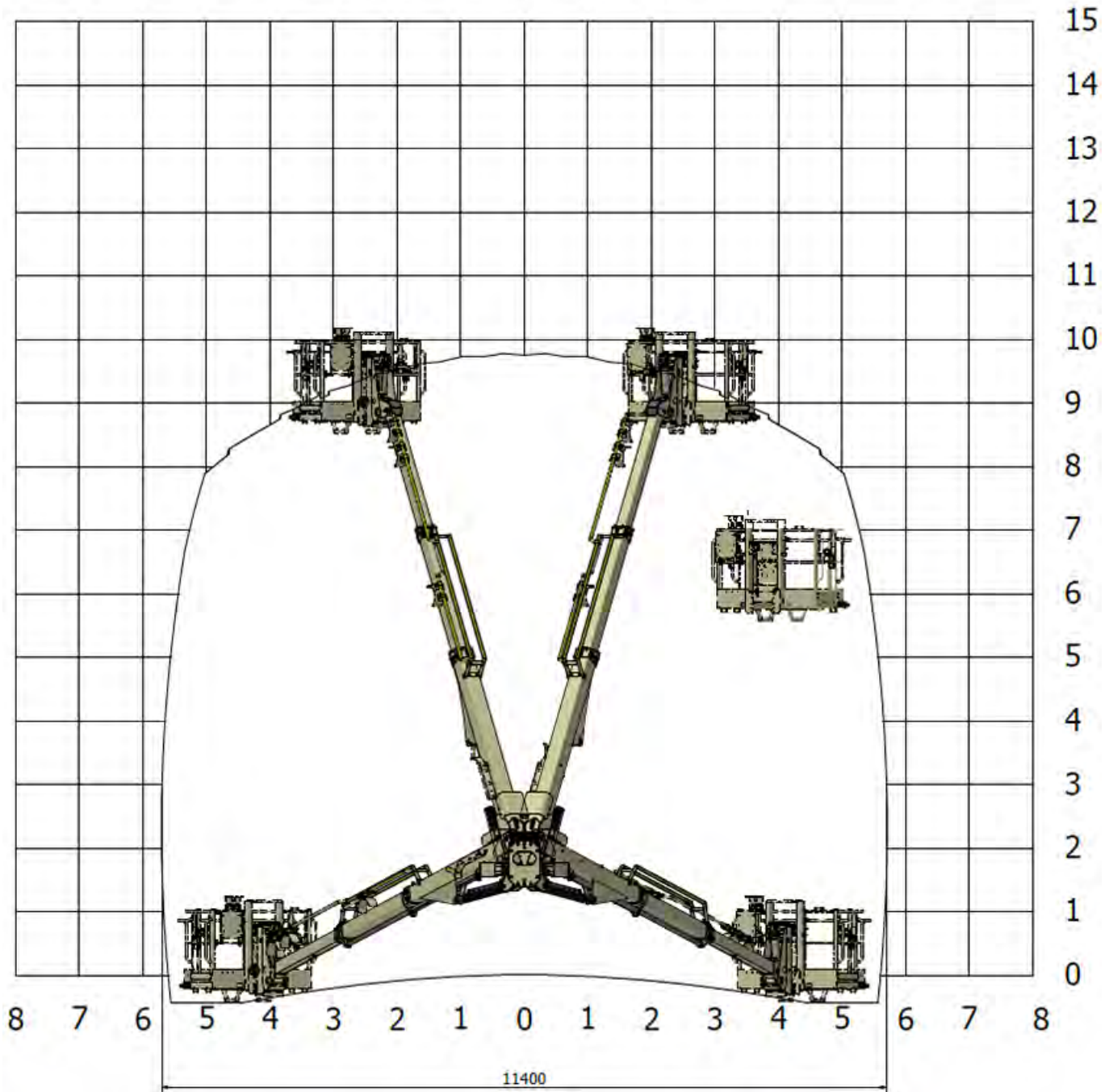
Charmec RM125 D(T)(V)



Machine equipped with twin boom

BOOM REACH – NBB 3 WITH 30° TURN

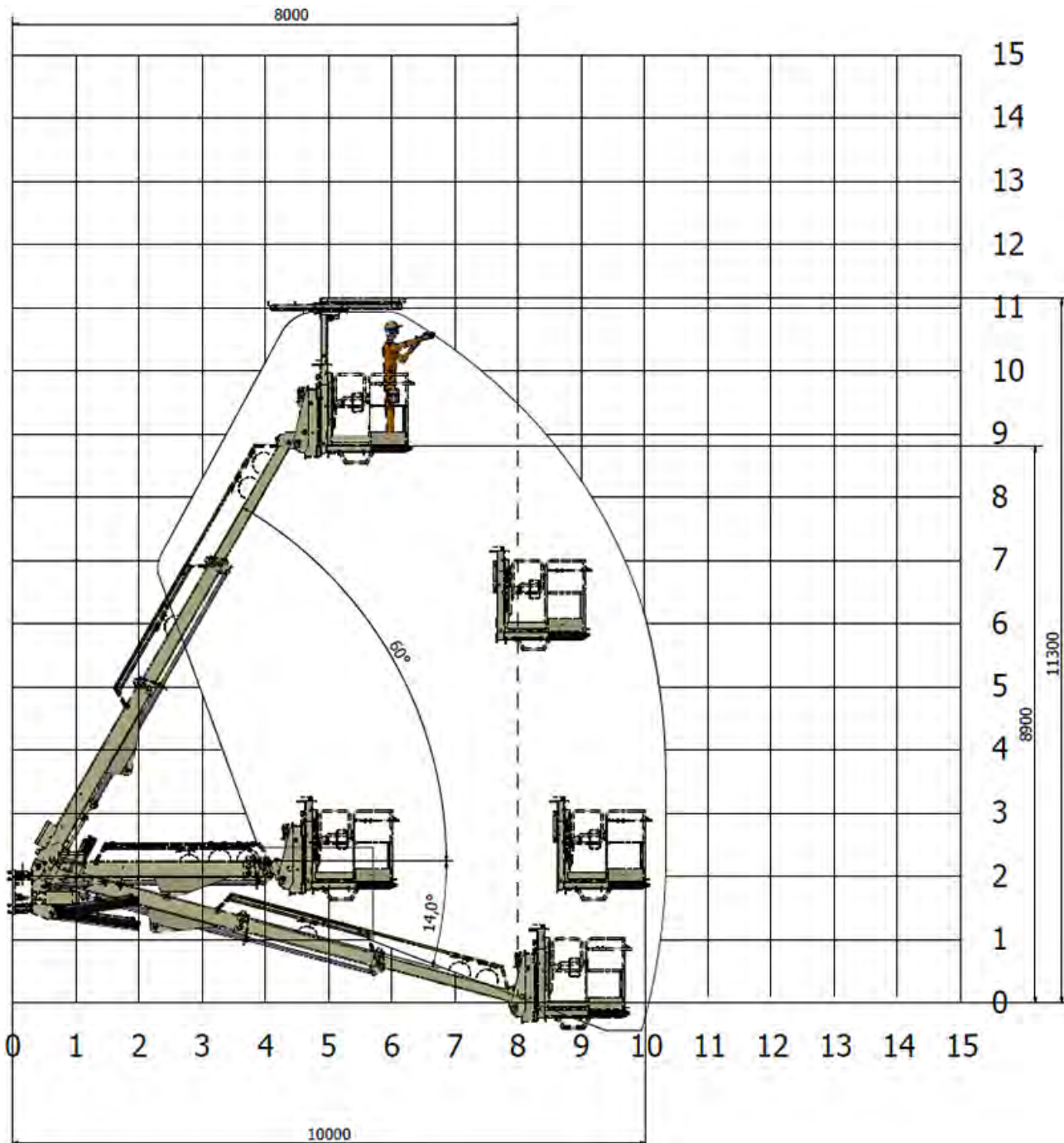
Reach area in the tunnel 8 m from the base of the boom



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BOOM REACH – NBB 3 WITH 30° TURN

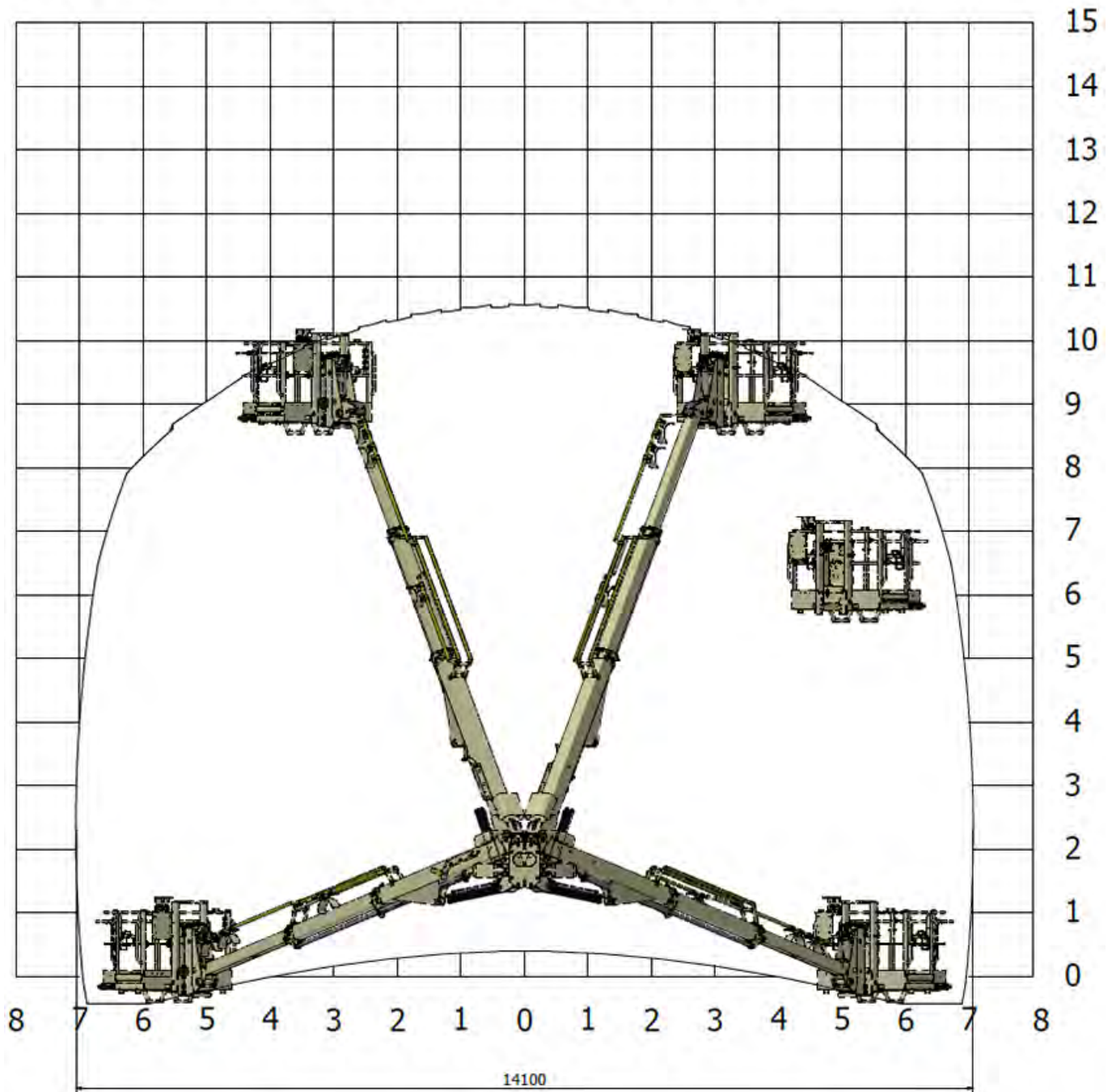


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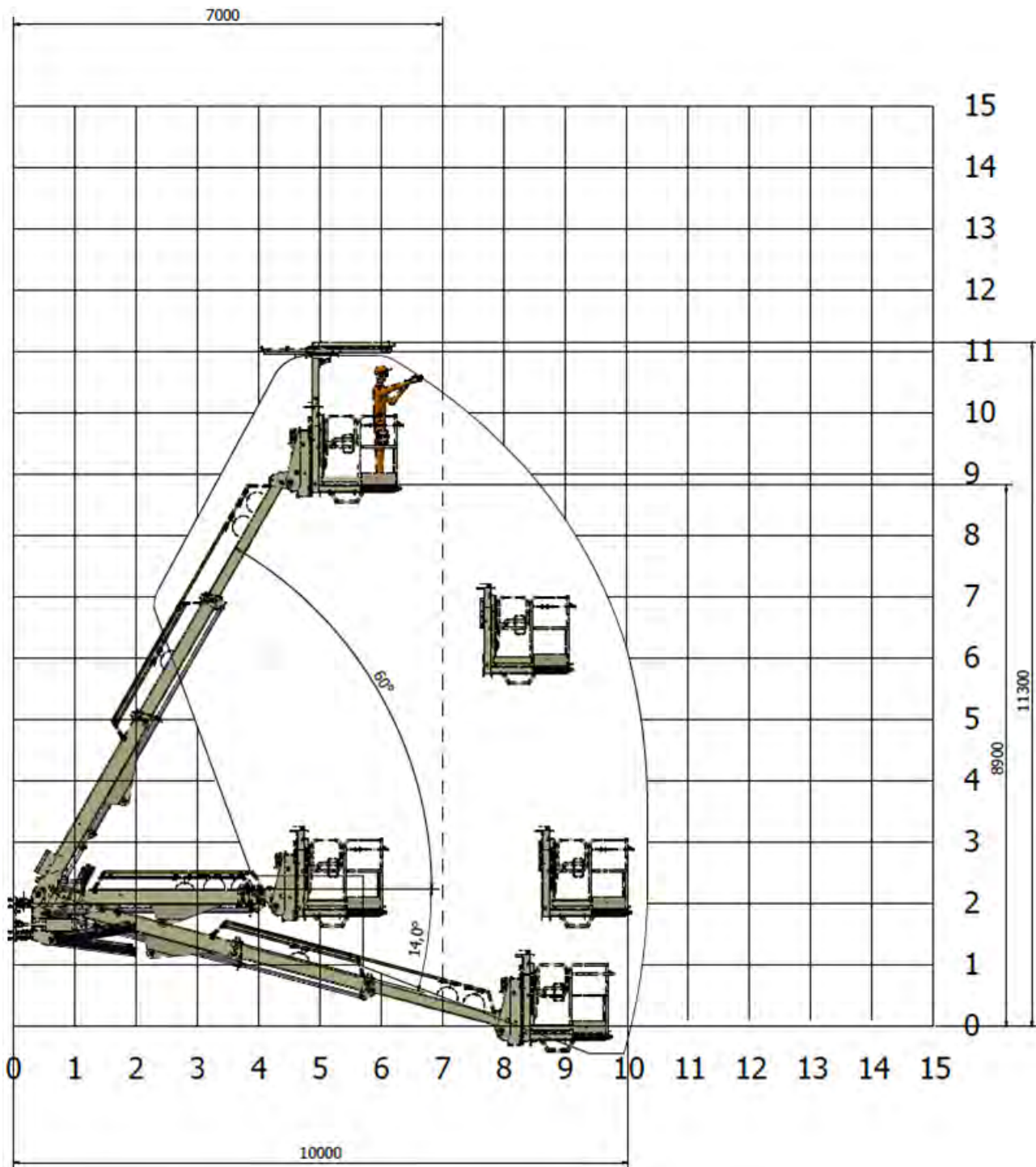
Pictures may include options and additional equipment.

BOOM REACH – NBB 3 WITH 40° TURN

Reach area in the tunnel 7 m from the base of the boom



BOOM REACH – NBB 3 WITH 40° TURN

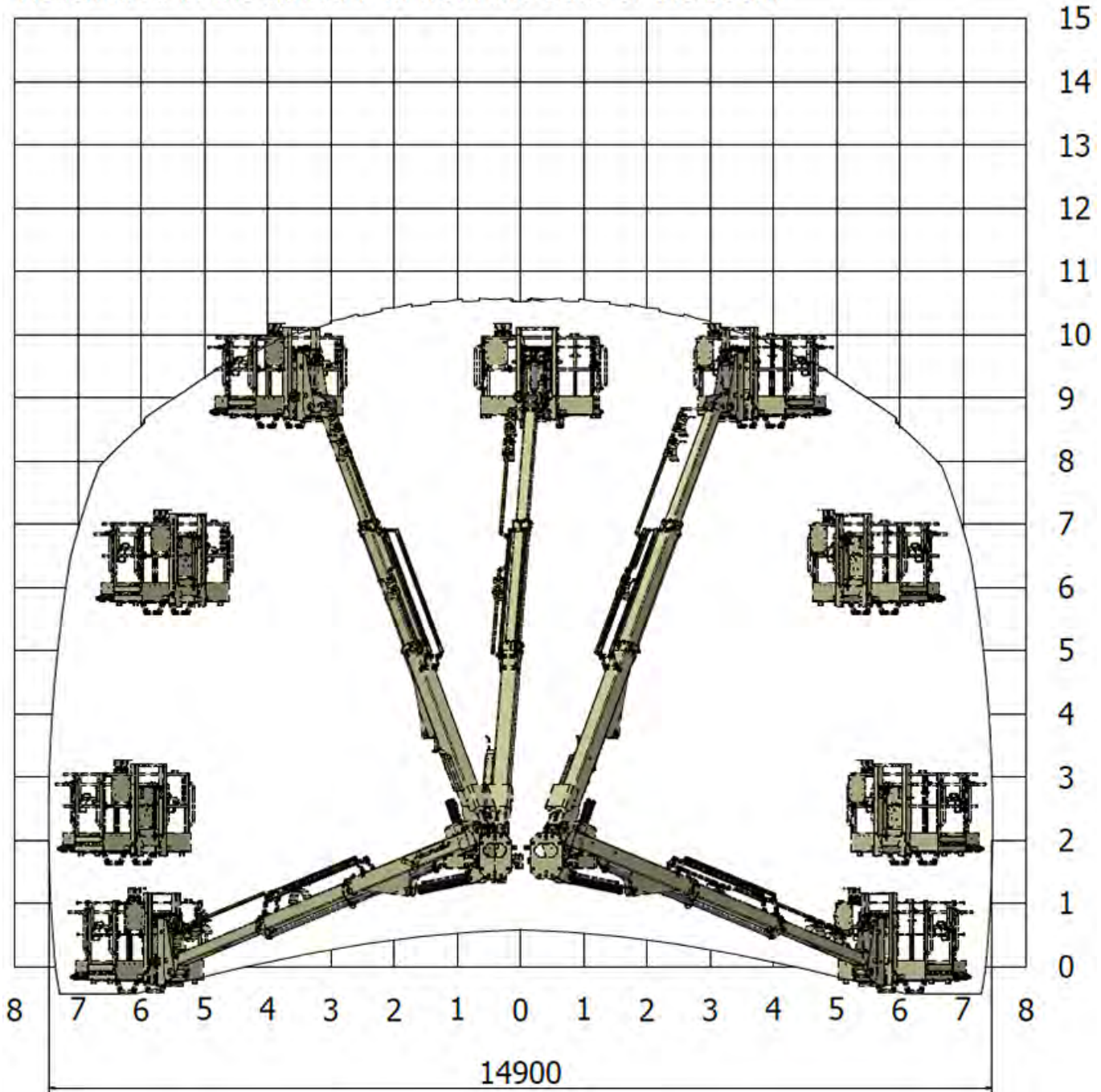


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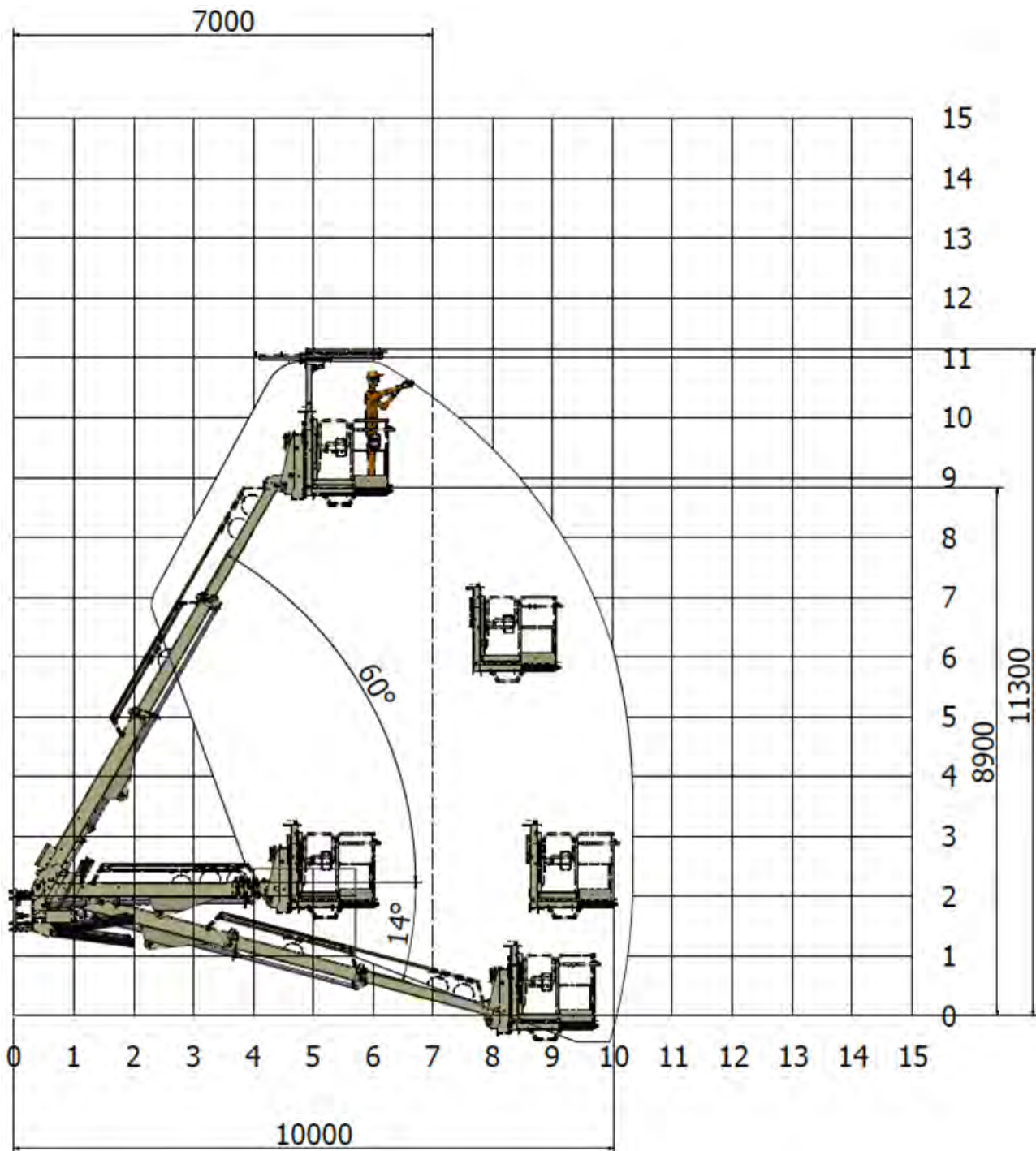
Pictures may include options and additional equipment.

BOOM REACH – NBB 3 TWIN BOOM WITH 40° TURN

Reach area in the tunnel 7 m from the base of the boom



BOOM REACH – NBB 3 TWIN BOOM WITH 40° TURN

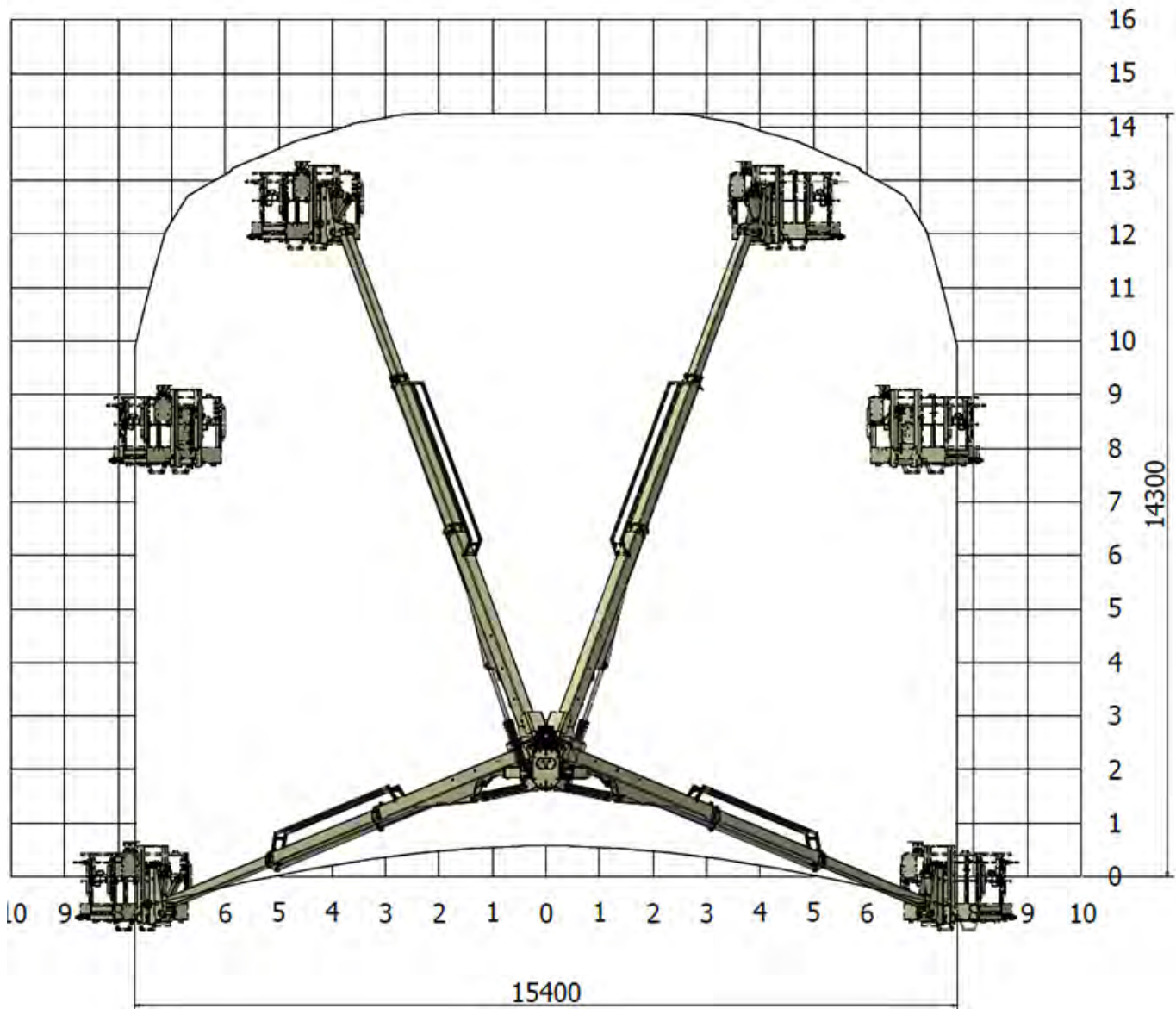


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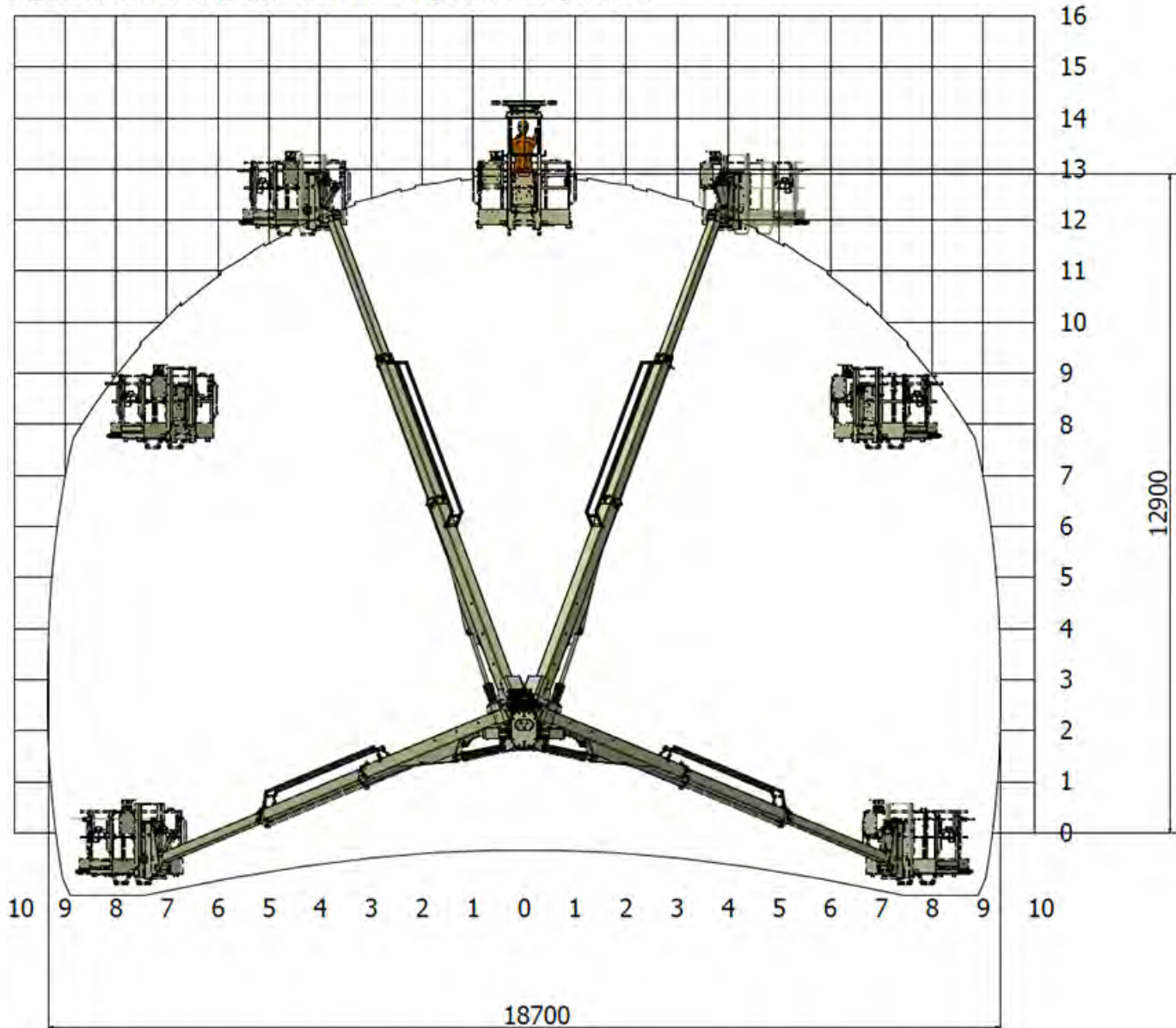
BOOM REACH – NBB 5 WITH 40° TURN

Reach area in the tunnel 7,5 m from the base of the boom.

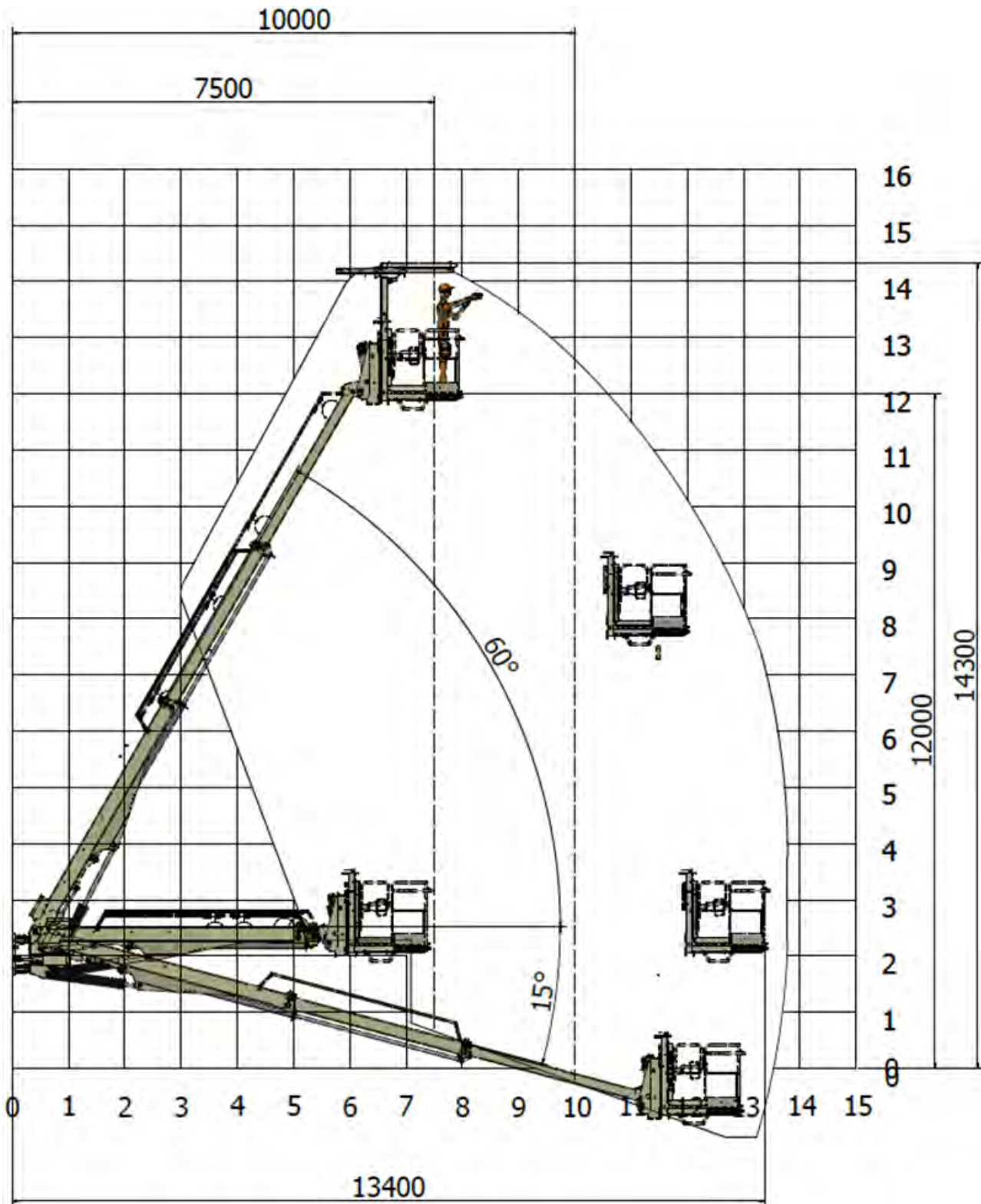


BOOM REACH – NBB 5 WITH 40° TURN

Reach area in the tunnel 10 m from the base of the boom.



BOOM REACH – NBB 5 WITH 40° TURN

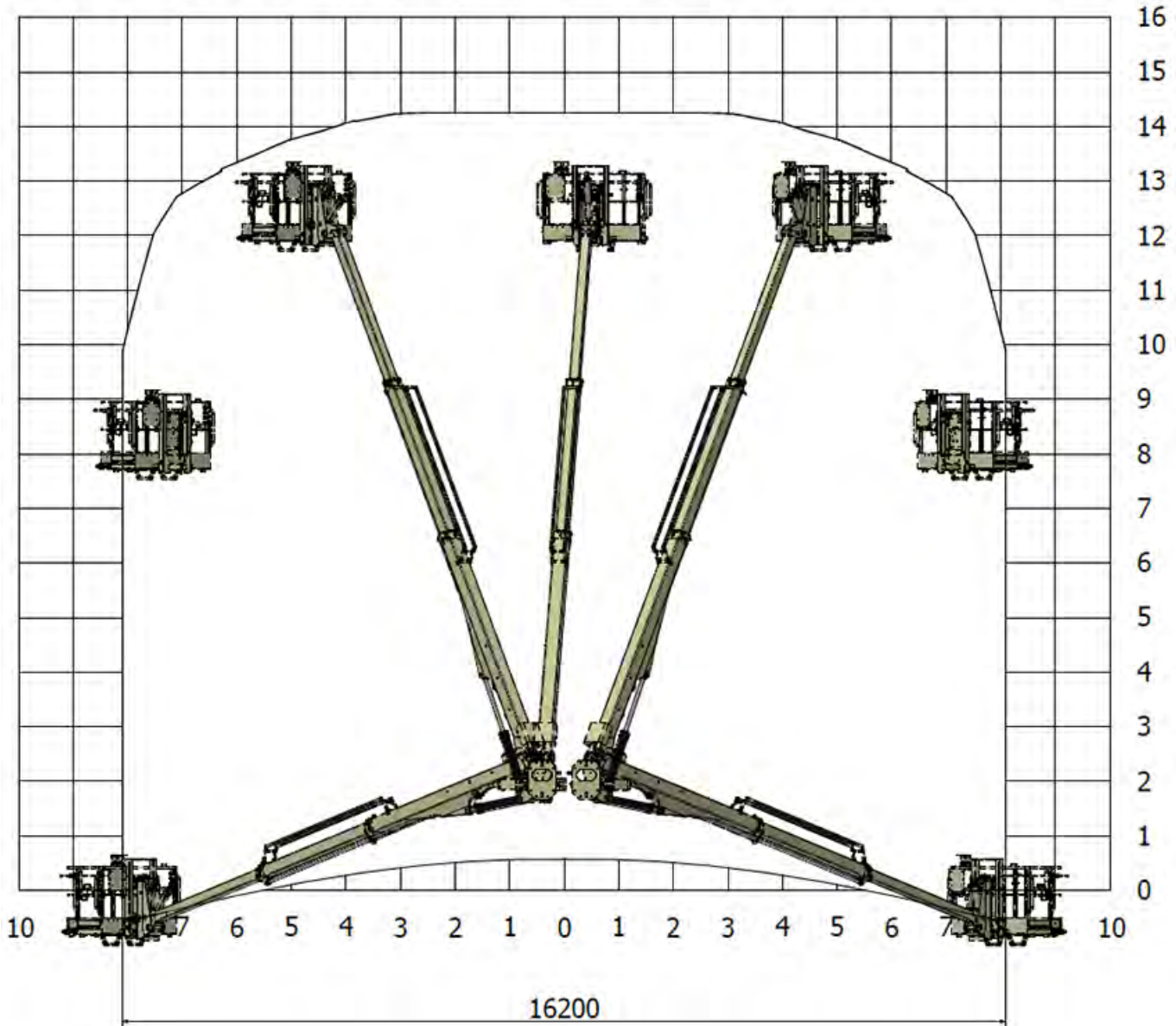


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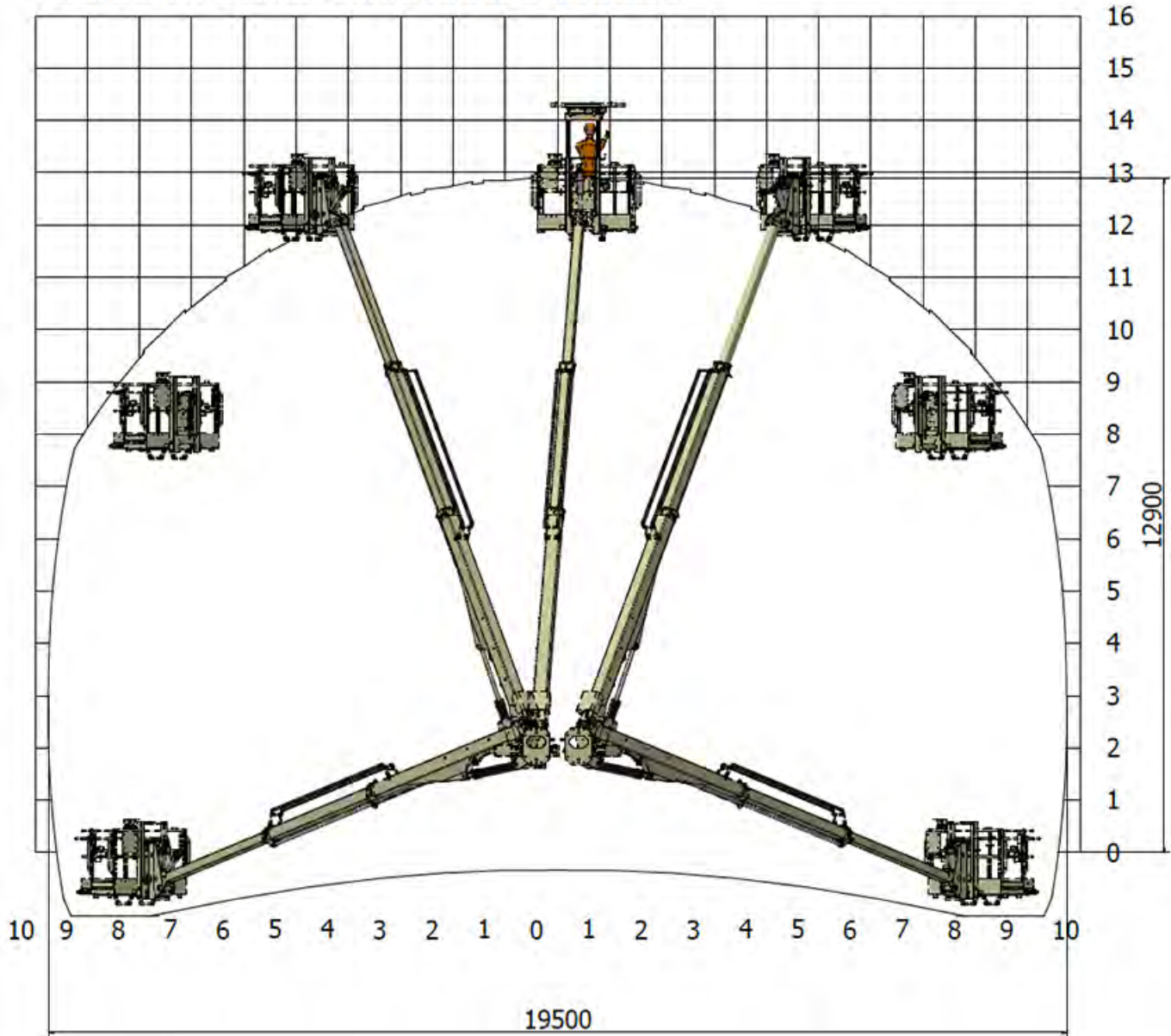
BOOM REACH – NBB 5 TWIN BOOM WITH 40° TURN

Reach area in the tunnel 7,5 m from the base of the boom.

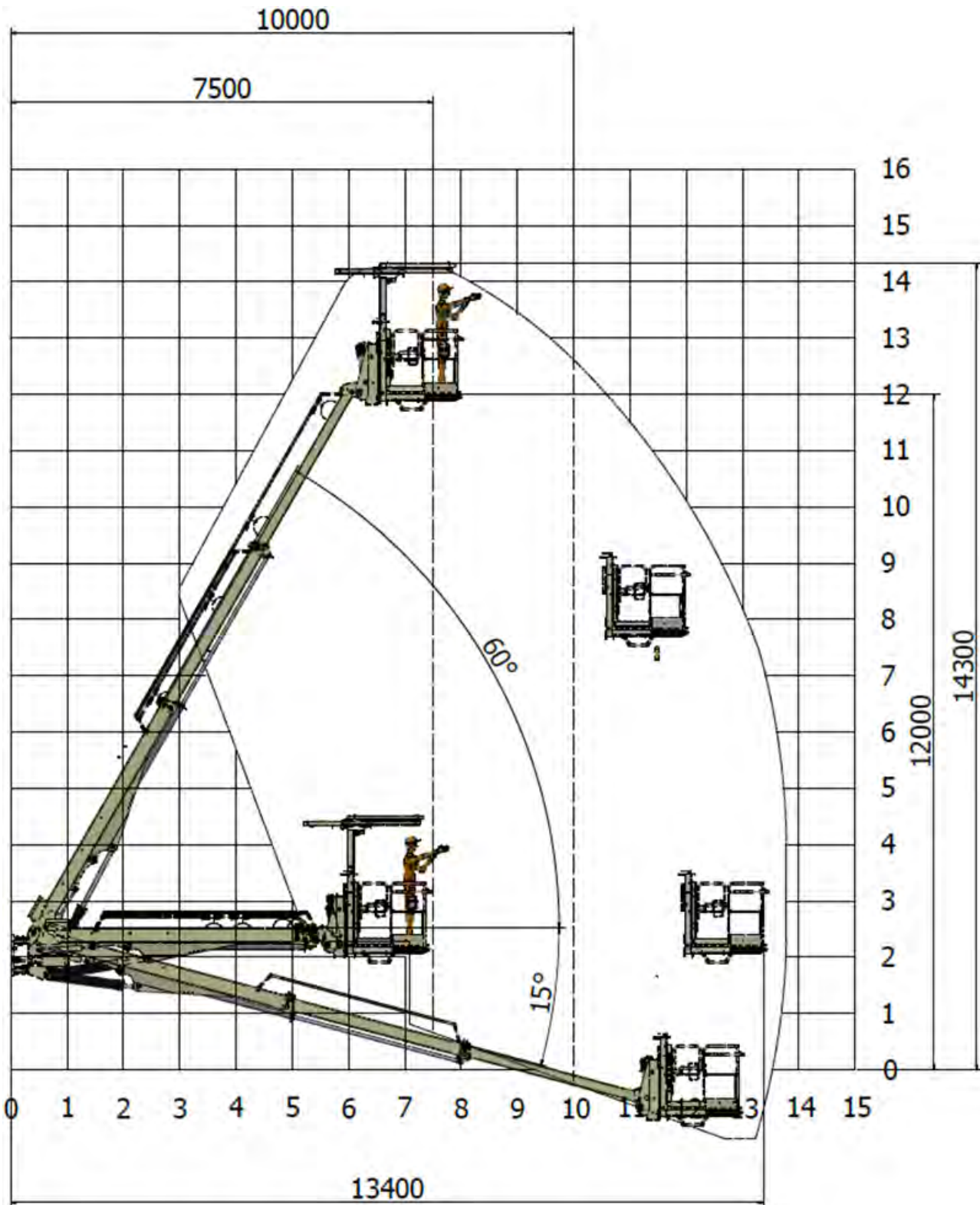


BOOM REACH – NBB 5 TWIN BOOM WITH 40° TURN

Reach area in the tunnel 10 m from the base of the boom.



BOOM REACH – NBB 5 TWIN BOOM WITH 40° TURN



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Pictures may include options and additional equipment.

TRACTIVE EFFORTS

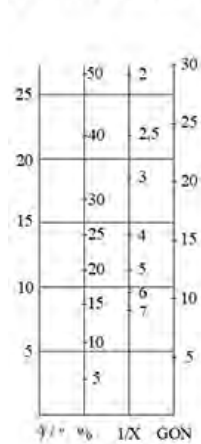
OPERATING WEIGHT

Empty (905 T)	22 500 kg
Fully loaded (905 T)	28 500 kg
Empty (125 T)	22 500 kg
Fully loaded (125 T)	28 500 kg

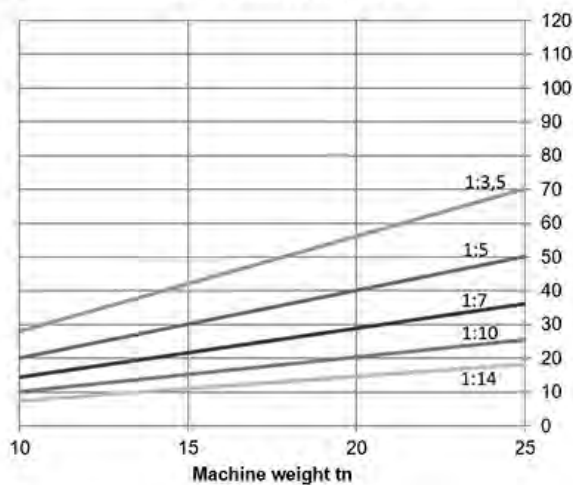
CUMMINS QSB4.5 110 KW

Performance curve DOC033669

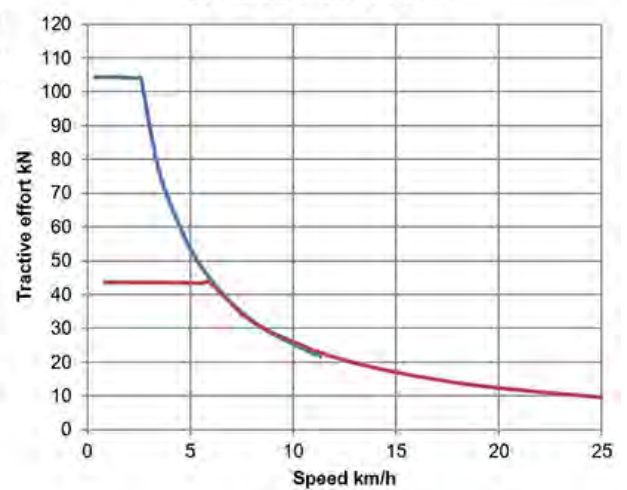
Conversion chart



Gradeability kN



Tractive effort kN



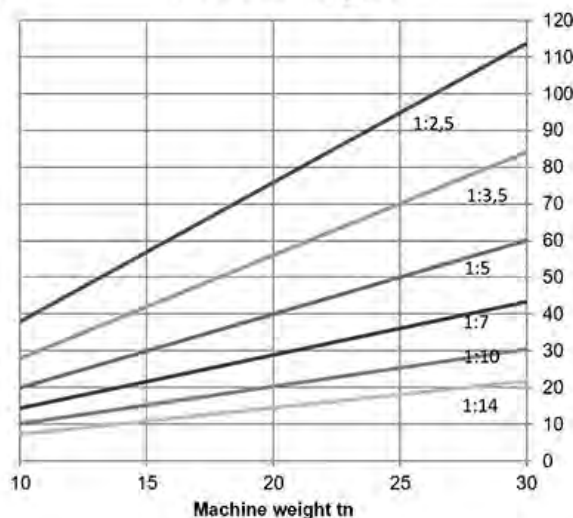
CUMMINS B4.5 121 KW

Performance curve DOC059936

Conversion chart



Gradeability kN



Tractive effort kN

