

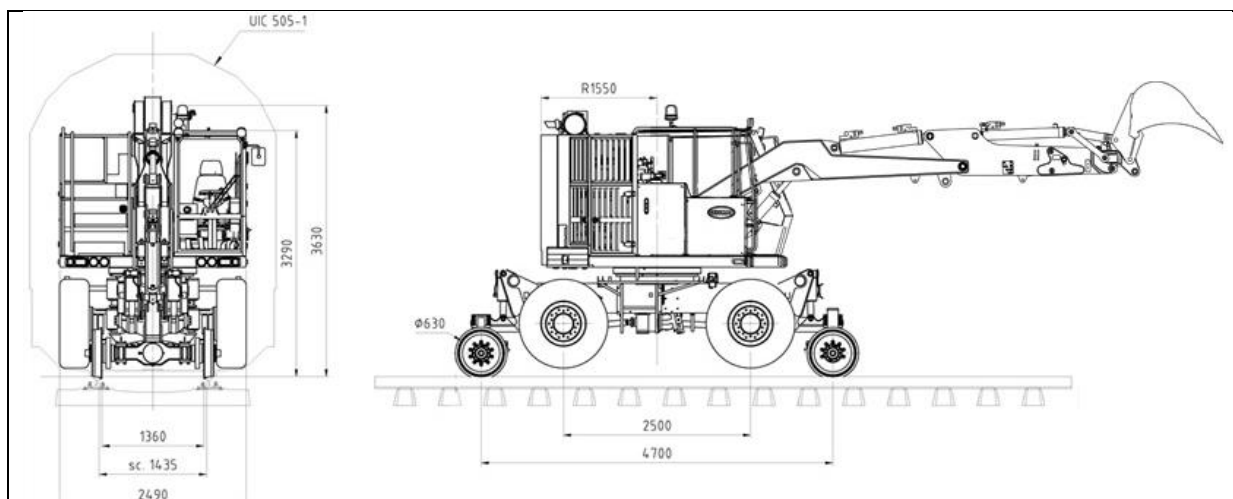
MULTIPURPOSE RAIL-ROAD LOADER

MODEL **KGT-E** Europe

The multipurpose rail-road loader model KGT-E is designed for efficient and safe use on rail construction sites. It is able to realize lifting, excavating tasks and also to work with tools demanding up to 110 kW.

KGT-E is composed with an efficient electronic system which manage running of engine (optimized fuel consumption, emissions reduction,...) assists for maintenance operations and controls in real time loader's safety.





GENERAL CHARACTERISTICS – RAILWAY MODE

Track gauge	1 000, 1 067, 1 435, 1 520, 1 600, 1 676 mm (Others available)
Mass	approx. 23 t
Nominal lifting load with jib on longitudinal position	5.5 t at 7.38 m – Counterweight in
Fuel tank	275 l
	24 h depending on work conditions
Hydraulic oil tank	220 l
Counterweight radius	1 550 – 2 150 mm
Max. speed on rail	27 km/h
Max. speed when towed on rail	10 km/h
Max. cant on rail	200 mm
Max. gradient on rail	60 ‰

HYDRAULIC CIRCUIT

Hydraulic pumps:

- Pump, closed circuit, for transmission
- Pump, closed circuit, for turret's rotation
- Pump for jib's and tool's movements
- Triple gear pump for direction, load stabilization, lorry's movements, counterweight, radiator and gearbox.

LIFTING AND EXCAVATING

Max. length	7.38 m
Max. available power for tools	110 kW
Max. flow	250 l/min
Max. pressure	335 bars
Quick couplers	S60
High limitation	According to gauge
Rotating limitation	According to gauge
Lifting capacities & tools	see appendices

THERMIC ENGINE

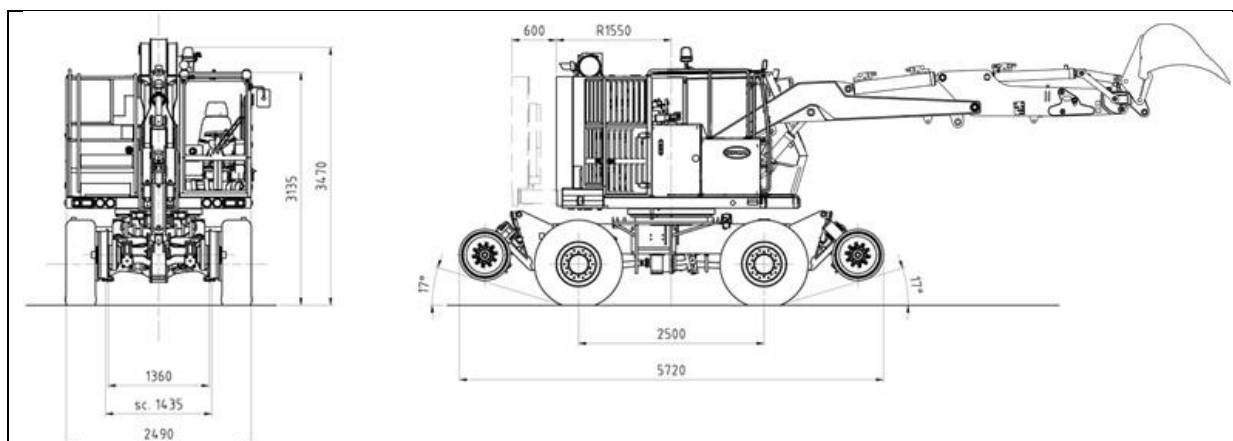
Manufacturer	John Deere
Type	PVX 4.5
Nominal power	129 kW – 175 hp
Pollution	Stage III B

RAILWAY TRANSMISSION

Railway axle	hydrostatic
	4 speeds in both directions
Front swinging axle	± 4°
	hydraulic stabilization
Unit capacity	34 t

RAILWAY BRAKING

Positive disk brake on each wheel	
Negative parking brake on each axle	
Maximum gradient	65 ‰
	switch in cabin
	emergency stop button activated



GENERAL CHARACTERISTICS – ROAD MODE

Mass	approx. 23 t
Nominal lifting load with jib on longitudinal position	4.8 t at 7.38 m – Counterweight out
Fuel tank	275 l
	24 h depending on work conditions
Hydraulic oil tank	220 l
Counterweight radius	1 550 – 2 150 mm
Max. speed on road	27 km/h
Max. speed when towed on road	10 km/h
Max gradient on road	37 %
Directional and motorized wheels	4
	three selections for direction setting
Minimum turning radius	2.2 m
Antiskid	auto-blocking differentials
Transportation	on heavy equipment transportation

HYDRAULIC CIRCUIT

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Lifting capacities & tools	see appendices

THERMIC ENGINE

Manufacturer	John Deere
Type	PVX 4.5
Nominal power	129 kW
Pollution	Stage III B

ROAD TRANSMISSION

Road axle	hydrostatic
	4 speeds in both directions
Front swinging axle	± 4°
	hydraulic stabilization
Unit capacity	34 t

RAILWAY BRAKING

Positive brake on each wheel	
Negative parking brake on gearbox	
	switch in cabin
	emergency stop button activated

SUMMARY

Summary	4
1. DESCRIPTION AND FUNCTION.....	5
1.1. Lifting and excavating.....	5
1.2. Safety management	7
1.3. Hydraulic system	9
1.4. Driving cab.....	11
1.5. Auxiliaries	14
2. ACCESSORIES AND OPTIONS.....	16
2.1. Options (with price lowering)	16
2.2. Accessories and options (with price increase)	17
ANNEX 1 – Main dimensions.....	20
ANNEX 2 – Working area	21
ANNEX 3 – Lifting capacities on RAILS – Counterweight in.....	22
ANNEX 4 – Lifting capacities on RAILS – Counterweight out	23
ANNEX 5 – Lifting capacities on Tires	24
ANNEX 6 – KGT-E-with triple-articulated boom	25
ANNEX 7 – KGT-E with Mono-boom and 27” stick	26
ANNEX 8 – Accessories.....	27

1. DESCRIPTION AND FUNCTION

1.1. Lifting and excavating

a. Significant lifting capacities

- On rail with jib in longitudinal position the KGT-E nominal capacity is up to 5.5 tons (at 7.38 meters from rotation axle – counterweight in). Also see in appendices all lifting performances in different configurations.

Nota: All lifting capacities are indicated without any safety factor.

Max. range radius of the boom	7.38 m
Max. available power for tools	110 kW
Max. flow	250 l/min
Max. pressure	335 bars
Quick couplers	S60
Jib's spindle	L 210 mm Φ 50H8 mm

- An electronic system alarms the conductor if the maximal authorized loads are over passed. This system calculates the loading configuration thanks to cylinder's hydraulic pressure and positions, track's cant and turret's angle. The conductor has a feedback:
 - All the time on display with
 - Moment arm value
 - Lifted load value
 - and its proportion regarding the maximal load
 - At 90% and 100% of maximal authorized load with audible alarm.
- A mobile counterweight is mounted on the turret of the loader. This counterweight is set in motion by an hydraulic cylinder controlled from the driving cab:
 - Rising and lowering of the lorries is only possible when counterweight is completely inside. Counterweight can also be moved out in rail mode.
 - The mobile counterweight (1 550 – 2 150 mm) increase of 10% lifting capacities (see appendices)
 - Access to the engine is easier thanks to moveable counterweight.



1. 1. DESCRIPTION AND FUNCTION (following)

b. Multipurpose boom

The boom is polyvalent and allow to:

- Lift important loads (see lifting diagrams in appendices)
- Excavate with high efficiency (see working curves in appendices)
- Bring up to 110 kW hydraulic power for tools
(max. 250 l/min – max. 335 bars)

First boom	approx. 4 m
Second boom	approx. 3 m
Jib range (extension in)	6.5 m
Jib range (extension out)	7.38 m



c. A large range of tools adapted to railway works

All GEISMAR's tools are easily exchangeable thanks to a S60 quick couplers type set up at the end of the stick. The following commands are proportionally actionable from the driving cab:

- "Average hydraulic flow" function
- Hammer / Brush cutter function
- High flow / High pressure function (up to 110 kW)
- Multidirectional tools coupler (rototilt type) designed by GEISMAR

Nota: see appendices for presentation of tools range.

1. DESCRIPTION AND FUNCTION (following)

1.2. Safety management

a. Fast movements with respect of railway gauge

Turret rotation limitation:

- A hydraulic pump is dedicated to turret's rotation (360°). Pivoting speed is up to 12rpm and completely independent from jib's movements.
- On rail, counterweight can be blocked inside working gauge.
- When adjacent track is not closed rotation of turret is limited with an electro-hydraulic system doubled with mechanical stops.

Lifting boom limitation:

- An electro-hydraulic system limits automatically boom's horizontal movements to avoid any contact with over-head line when not shut down.
- Moreover, a stop cylinder limits vertical boom's displacements.

Like the rotation limitation system, the height limitation one is completed by an additional mechanic safety



1. DESCRIPTION AND FUNCTION (following)

b. Safety regarding EN 15 746 standards:

- A standards compliant torque limiter
- A system that control load on rail in order to don't exceed limit values imposed by standards
- A $\Delta Q/Q$ system that checks road offload
- Shunting railway axles

(All those standards requirements are non-blocking systems, but are indicated by visual and audible alarms)

c. Additional safety systems:

- A sensor is placed inside the left hand side armrest; when in the upper position, it disables all machine controls and activates parking brakes.
- In addition, a presence sensor: in the seat, inhibits controls when empty.
- Two blind spot cameras; Can work day and night, the first one on the counterweight and the second one on the opposite side of the cabin, over the tanks.
- In railway mode, road axles are locked in track's direction.

Camera



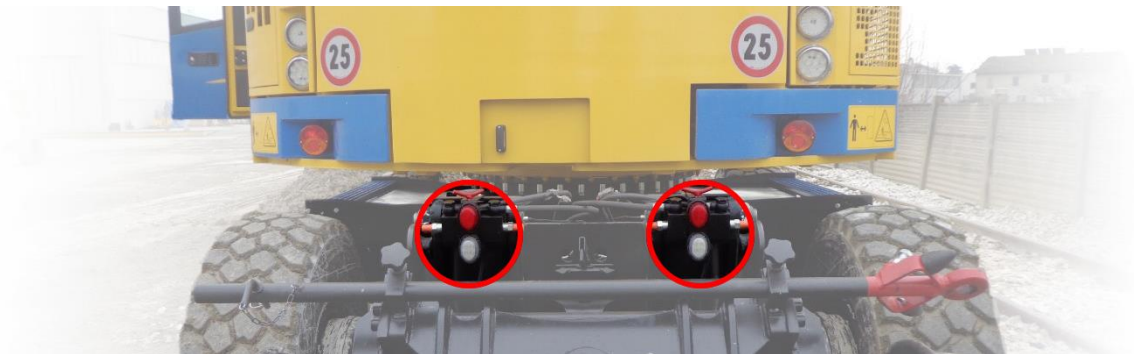
Cabin control screen



1. DESCRIPTION AND FUNCTION (following)

- The loader is equipped with electric and manual emergency pumps that allow setting KGT-E in trailing position in less than 5 minutes.
- Emergency stop buttons are installed inside the cabin: one at the driver's position, the other one near attendant's seat.
- The turret rotation motor has an auto-brake in case of hydraulic failure.
- The jib's hydraulic cylinders have safety valves to prevent any boom movement in case of breakdown.
- On lower frame, 4 railway signaling lights are installed. They indicate the KGT-E feed direction.

Lower signaling lights complement those on the turret



1.3. Hydraulic system

a. A high performance hydraulic circuit composed by:

- 1 pump, closed circuit, for transmission (road or rail)
- 1 pump, closed circuit, for turret's rotation
- 1 pump for jib's and tools' movements
- 1 triple gear-pump for direction, load stabilization, lorry downing, counterweight, radiator and gearbox.
- 1 hydraulic oil tank, 220 liters
- 1 air radiator with a fan

b. Safe displacements

- Front railway axle can swing in order to drive easily even on important track distortion.
- Front road axle can swing so the loader can evolve on difficult ground.
- Both oscillations can be blocked by the conductor from the driving cab.
- Loader is equipped with one hydrostatic circuit (closed). The thermic engine drives a hydraulic pump which furnishes hydraulic energy to hydraulic motor.

1. DESCRIPTION AND FUNCTION (following)

- The vehicle also is equipped with two pneumatic-hydraulic brake circuits (one for front axle, the other for rear axle). They are both controlled thanks to a pedal in driving cab.
- Change of displacement mode (rail or road) can be operated in less than 60 seconds. Any drift is prevented by brakes on axles.
- On rail:
 - Hydrostatic transmission:

Speed selection in both direction	4
Max. speed on rail	27 km/h
Max. speed when towed on rail	10 km/h
Max. gradient on rail	60 ‰
Max. cant	200 mm
Front railway swinging axle	± 4°
 - Railway raking system

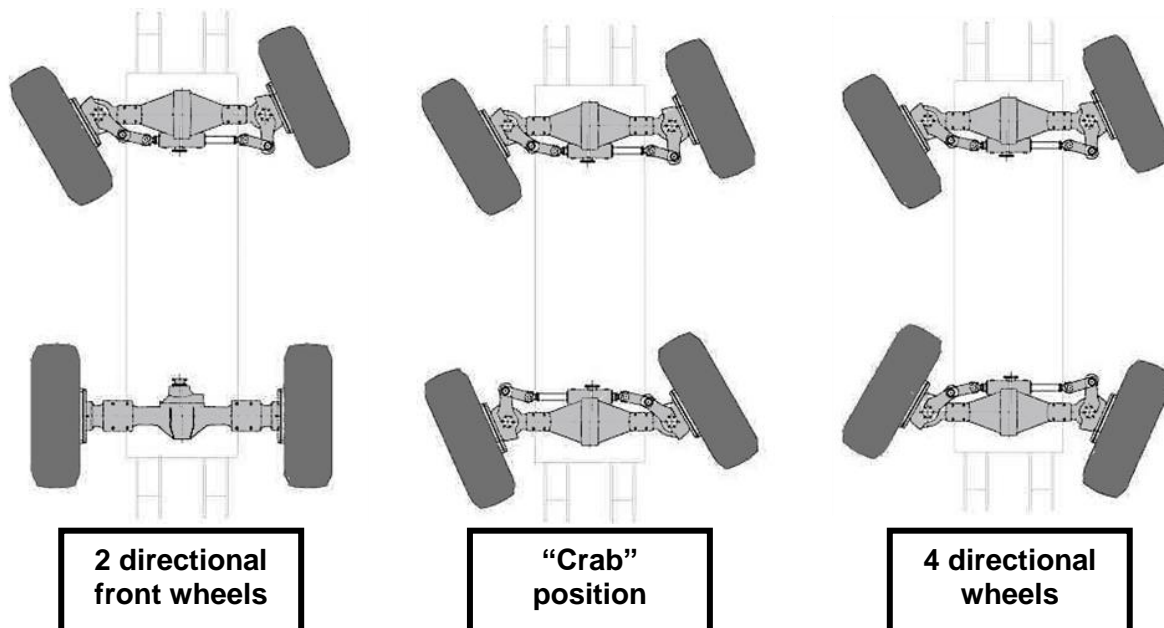
Positive service brake	on each wheel
Negative parking brake	inside axles
Max. parking gradient	65‰
- On road:
 - Hydrostatic transmission:

Speed selection in both directions	4
Max. speed on road	27 km/h
Max. gradient on road	37%
Minimum turning radius	2.2 m
Directional and motorized wheels	4
Antiskid	auto-blocking differentials
Front road swinging axle	± 4°
 - Road braking system

Positive service brake	on each tire
Negative parking brake	inside gearbox

1. DESCRIPTION AND FUNCTION (following)

Three selections for direction setting from driving cab



1.4. Driving cab

a. Ergonomic driving cab

- Driving cab complies with international standards ISO 6682, ISO 3411 regarding excavators driving cab ergonomics.
- Also the cab is FOPS/ROPS designed.
- Equipped by two lateral doors, driving cab is designed to welcome the conductor and an attendant. The conductor is facing the track and attendant's seat is perpendicular to the way.
- An antifreeze and anti-fog disposal is completing the windshield wiper system.
- Driving cab is compliant with standards specifications NF EN 15 746 and includes:
 - Air conditioned and air filtration system.
 - Front windshield complies with UIC n°651 and is divided in two parts. Thanks to a wide visibility the operator can even see the loads down to the wheels.
 - At each end, there are specific railway signals for circulation and projectors for works.
 - Control console is composed with a colored display that manages safety, tools and vehicle's parameters.

1. DESCRIPTION AND FUNCTION (following)



b. Safety management from the cabin

- The loader is managed by a Programmable Logic Controller (PLC), but also remains with reactive hydraulic commands.
- The driver has monitoring instruments in the driving cab such as:
 - Color display
 - Air pressure manometer
 - Engine failure light
- The KGT-E is controlled through the display which is positioned on the right corner of the driving cab. Its luminosity is automatically adapted to the ambient light.

1. DESCRIPTION AND FUNCTION (following)



View from driving cab

- On the main menu are displayed:
 - Gasoil level in fuel tank
 - Engine revolution counter
 - Cooling liquid temperature of thermic engine
 - Hydraulic oil temperature
 - Milestone
 - General parameters icons: failure and machine's configuration, engine failure
 - Stability, limiting load on each wheel, torque limitation
 - Status of parking brake
 - Specific railway and road lights
 - Directional wheels configuration
- The operator has access to following functions:
 - Height and rotating limitation management
 - Turret rotation speed management
 - Selection of pre-recorded tools parameters (automatic flow adjustment to the selected tool)
 - Alarms display
 - Thermic engine's parameters
 - Sensors' adjustment
 - Particle filter management
 - Factory reset

1. DESCRIPTION AND FUNCTION (following)

1.5. Auxiliaries

- S60 quick coupling system
Allows quick and easy tool changing



- European agreement
The KGT-E is EN 15 746 compliant
- Emergency pumps
In case of failure, electric and manual hydraulic pumps are provided in order to set KGT-E in towing position in less than 5 minutes
- Heating of hydraulic oil system
In less than 15 minutes the hydraulic oil is heated up at running temperature and then maintained.
- Work projectors
5 in total (of whom 3 multi-directional) are positioned on the boom, driving cab and counterweight.
- Road headlights and signals
Fixed at each end of the turret.
- Klaxons
One service pneumatic klaxon and one emergency electric klaxon.

1. DESCRIPTION AND FUNCTION (following)

- Rockinger coupling system with coupling bar
Installed on each end of lower frame, it allows KGT-E to be towed by a vehicle equipped of an UIC hook.



- Toolbox
All tools needed for loader's maintenance is furnished with and placed into a toolbox.
- Guard-iron
4 in total, one in front of each wheel
- Demisting
Electric system integrated into the front pane
- Sunshade
They are two: reel for the upper pane and plastic protection on the top of the front pane.

2. ACCESSORIES AND OPTIONS

2.1. Options (with price lowering)

a. Pneumatic-drum transmission

In order to improve KGT-E towing capacities, it is possible to replace hydrostatic lorries by a pneumatic-drum transmission.



2. ACCESSORIES AND OPTIONS (following)

2.2. Accessories and options (with price increase)

a. Triple-articulated boom

The KGT-E can be equipped with a triple-articulated boom with allow great improvement in excavating work and also a wider working range. On this boom, the stick has no extension.

Jib range 7.8 m



b. Two booms jib with 27" second boom

Another version of the 2 booms jib is available with a 27" second boom. This allows to have an extended range thanks to a longer second boom.

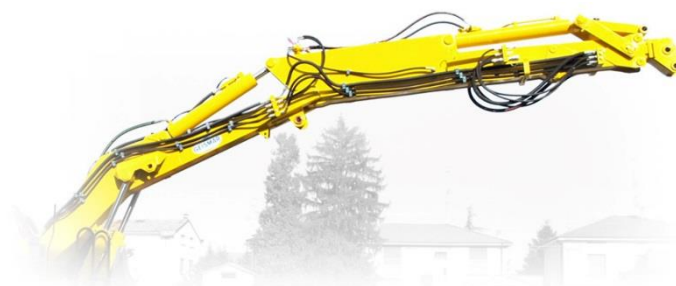
First boom approx. 4 m

Second boom approx. 3.9 m

Jib range (extension in) 7.8 m

Jib range (extension our) 8.5 m

See in annex an example installed on KGT-4RS



2. ACCESSORIES AND OPTIONS (following)

c. Engine Stage IV

In order to respect the environment, the KGT-E can be delivered with a motor Stage IV.

d. Tools

A large range of tools can be delivered with the vehicle (see appendices for designations and compatibility)

e. Gasoil pump

A gasoil pump can be added to help the filling of fuel tank – it stops automatically as soon as the tank is full.

f. Maintenance modem

A modem can be installed on the vehicle in order to diagnostic failures from our client service office (GPRS), so the availability is increased.

2. ACCESSORIES ET OPTIONS (following)

g. Pneumatic connections

Allowing to tow and brake trailers/wagons



h. Others options

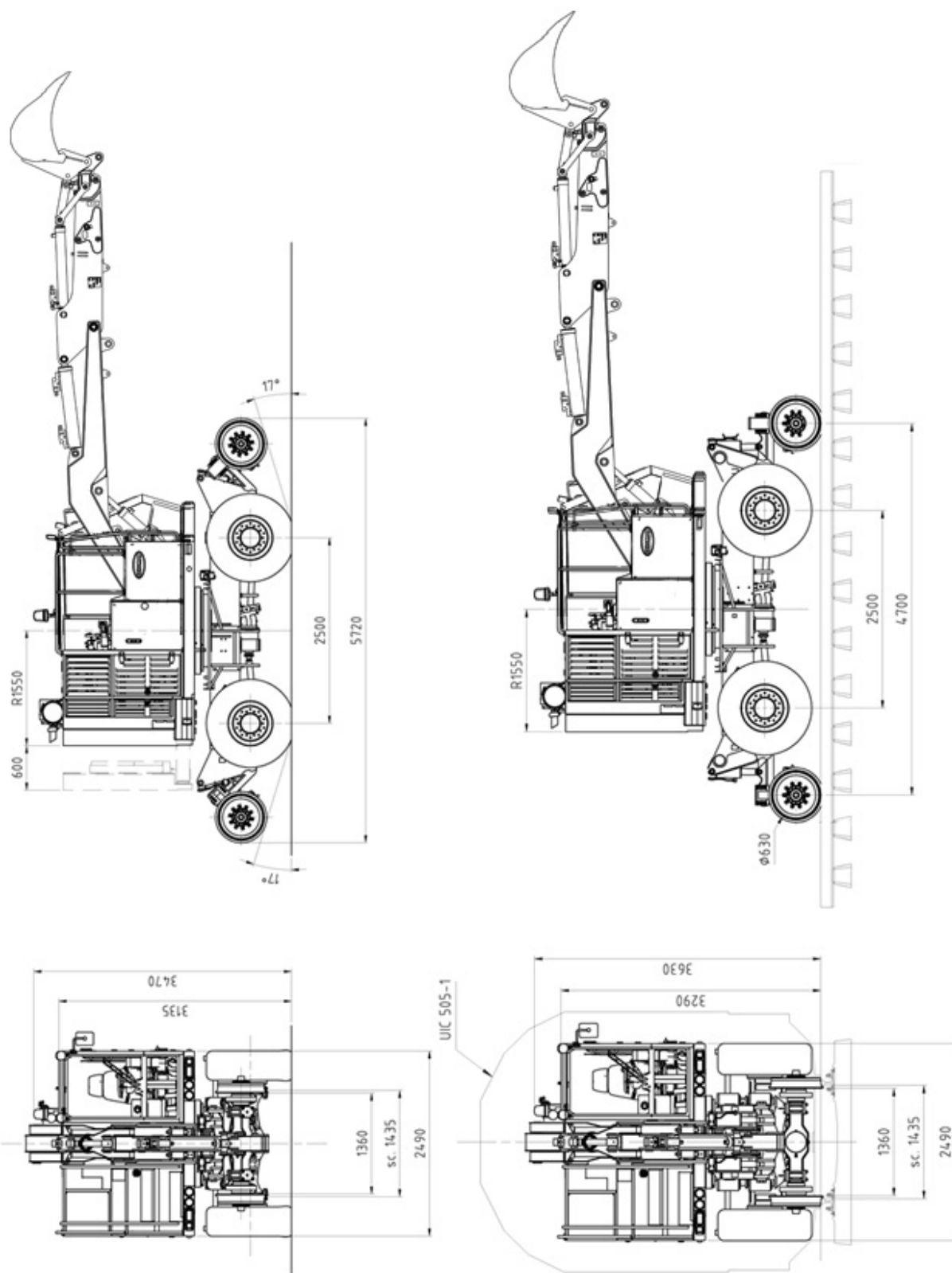
- Turret centralized greasing
- Lower frame centralized greasing
- Non-shunting railway axles
- Foam filled tires (prevent puncture and increase stability)
- Automatic coupling system with pneumatic pipe
- Specific wheel profile
- Removable 3.5 tons lifting hook installed under stick
- Specific painting
- Event recorder
- Radio dialog system
- Guards on front panes
- Tools fixing bar for road travels
- Others Jib's spindle diameter and length
- Specific hydraulic couplings
- Spare wheel

We reserve the right to modify any equipment specification of the present offer to take into account the latest technical improvements and working conditions at the date of manufacturing.

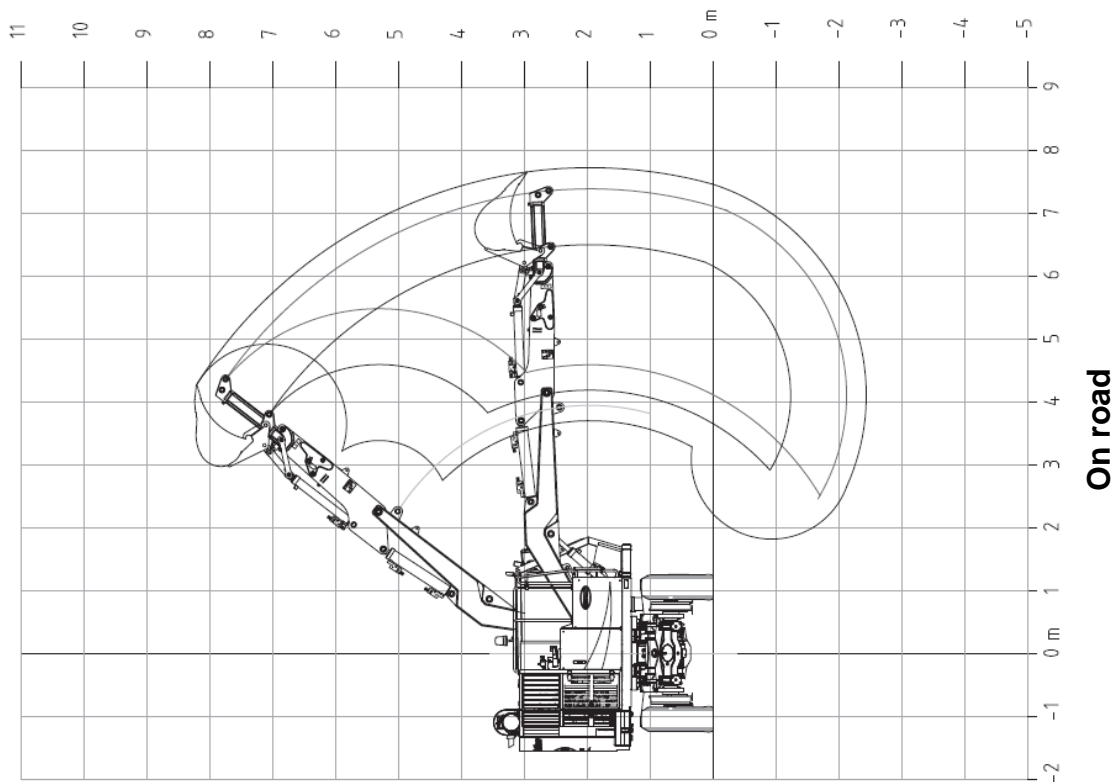
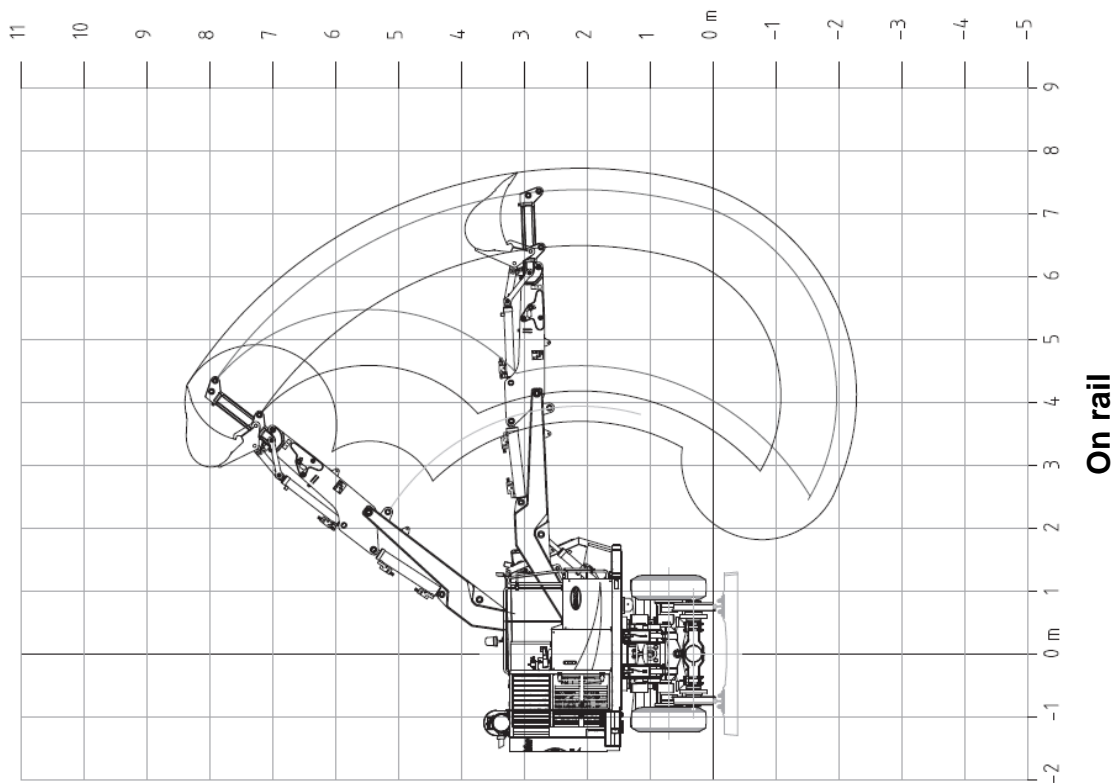
In case of any discrepancy between our offer and the attached documentation, the technical specification of our offer should be taken into consideration. Photographs may include options.

Some values given in this document may changes up to 15% in comparison to reality.

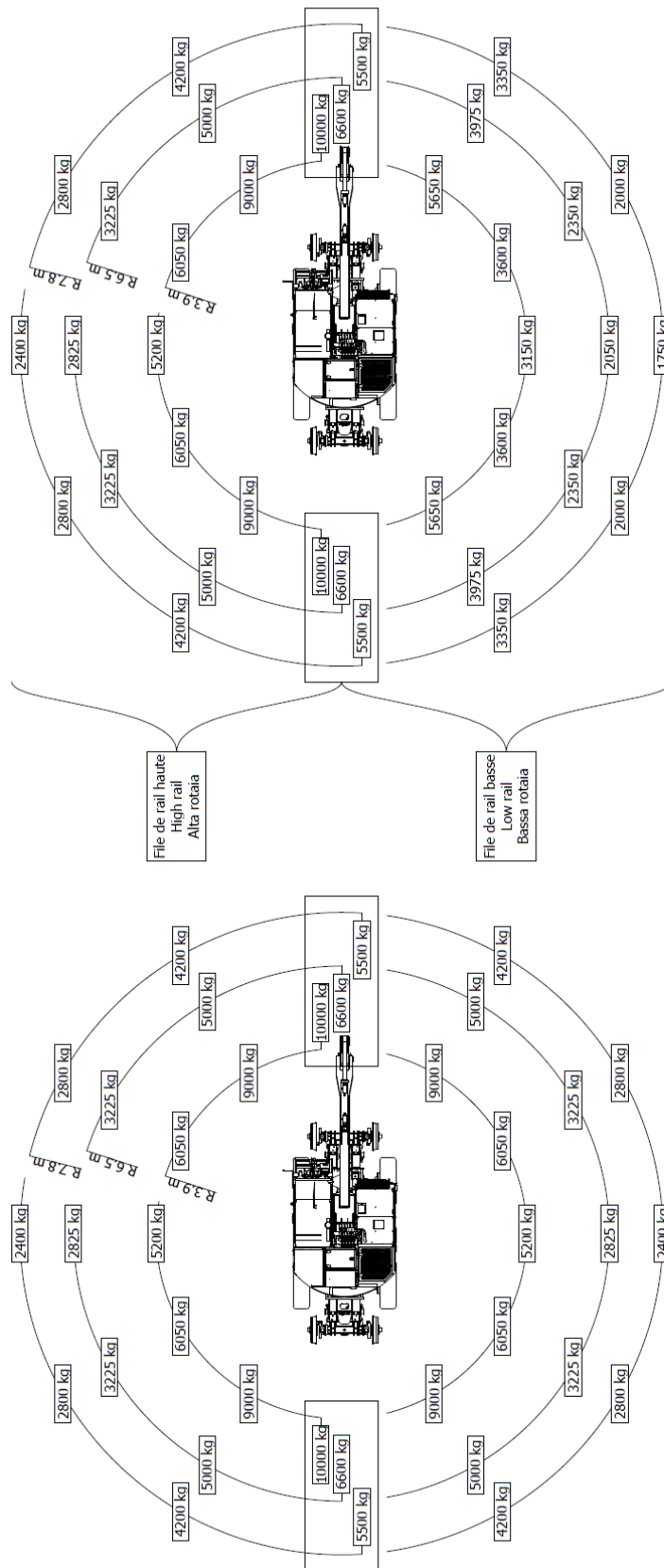
ANNEX 1 – MAIN DIMENSIONS



ANNEX 2 – WORKING AREA



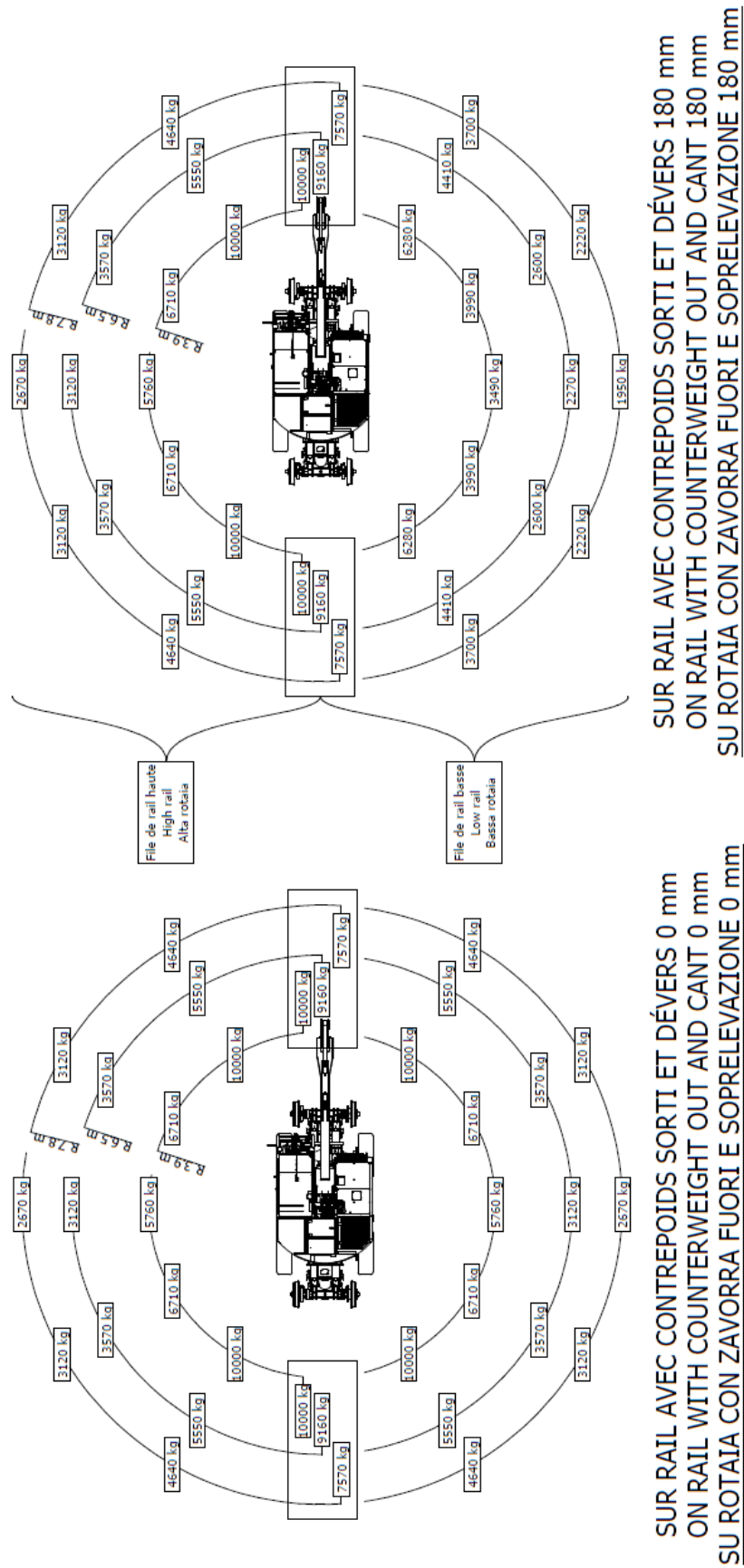
ANNEX 3 – LIFTING CAPACITIES ON RAILS – COUNTERWEIGHT IN



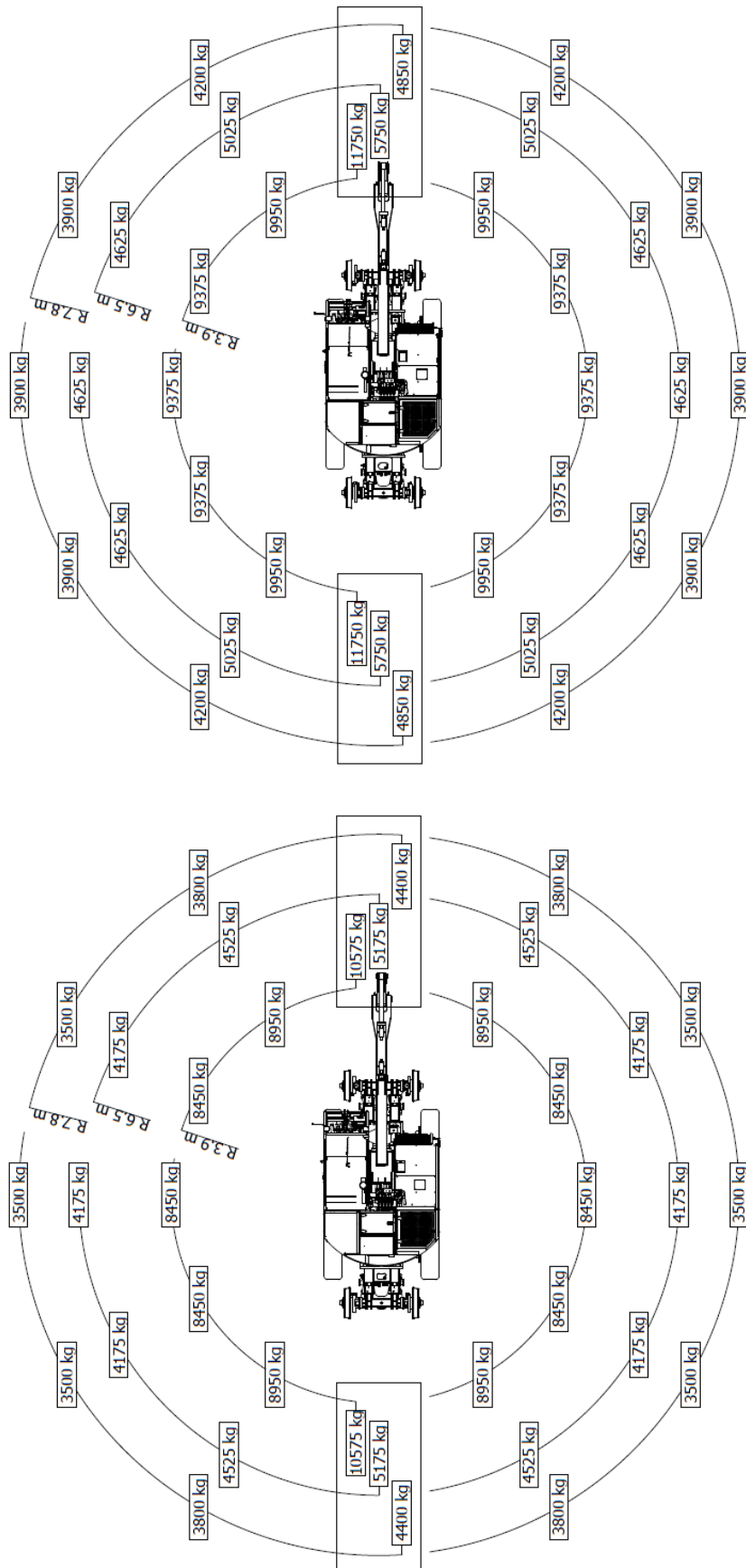
SUR RAIL AVEC CONTREPOIDS RENTRÉ ET DÉVERS 180 mm
ON RAIL WITH COUNTERWEIGHT IN AND CANT 180 mm
SU ROTAIA CON ZAVORRA IN E SOPRELEVAZIONE 180 mm

SUR RAIL AVEC CONTREPOIDS RENTRÉ ET DÉVERS 0 mm
ON RAIL WITH COUNTERWEIGHT IN AND CANT 0 mm
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ANNEX 4 – LIFTING CAPACITIES ON RAILS – COUNTERWEIGHT OUT



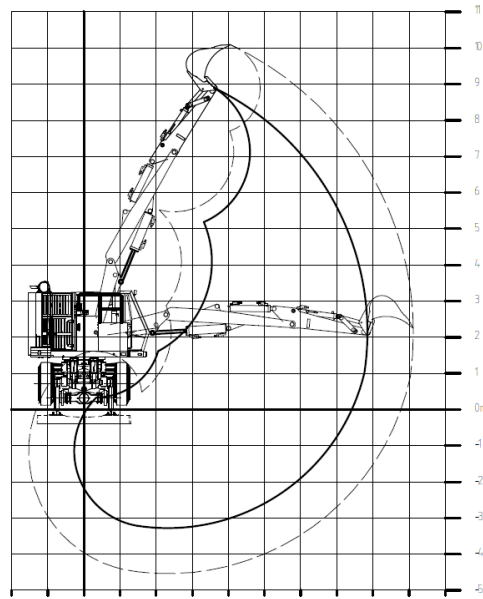
ANNEX 5 – LIFTING CAPACITIES ON TIRES



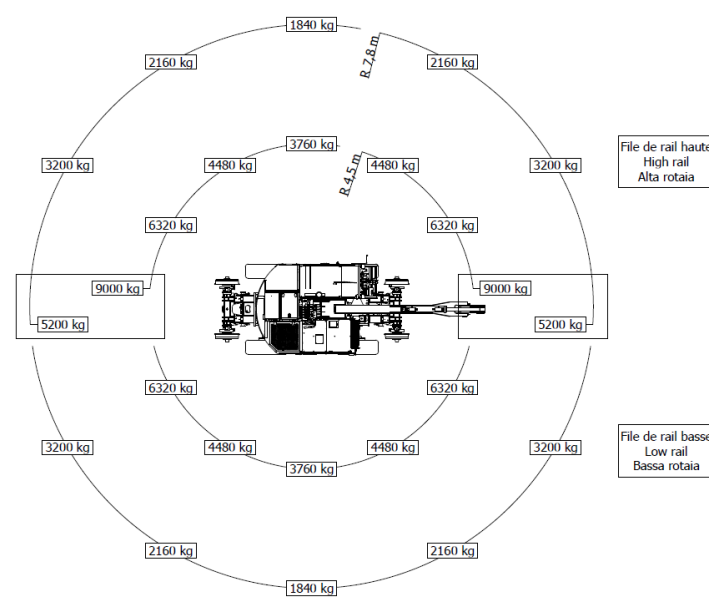
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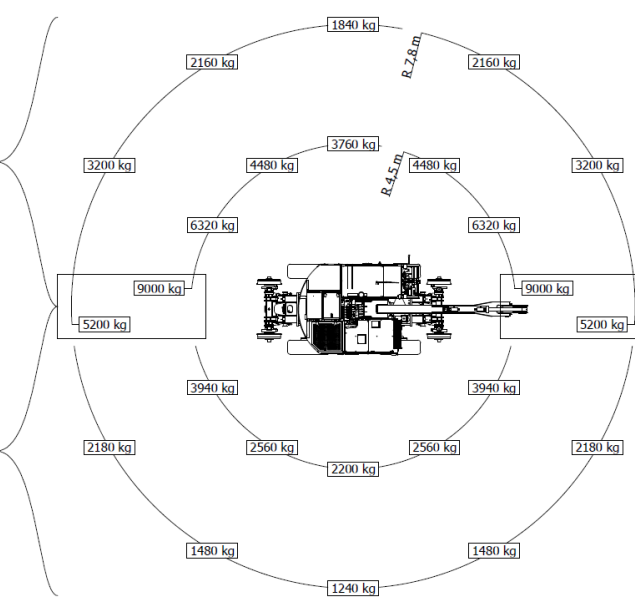
ANNEX 6 – KGT-E-WITH TRIPLE-ARTICULATED BOOM



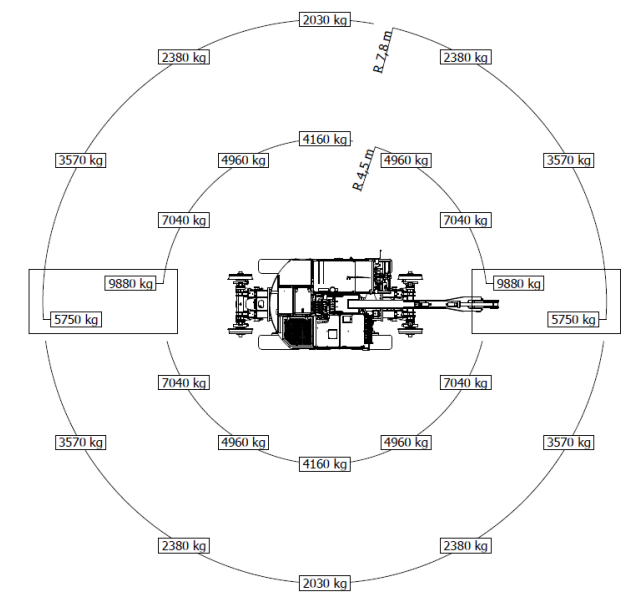
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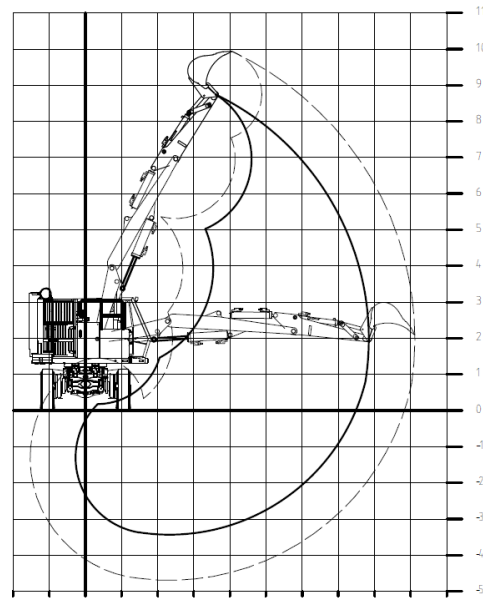
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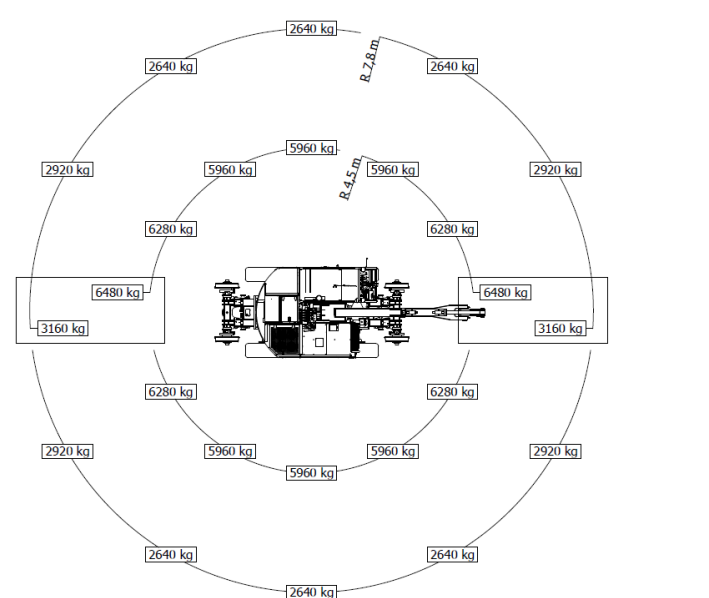
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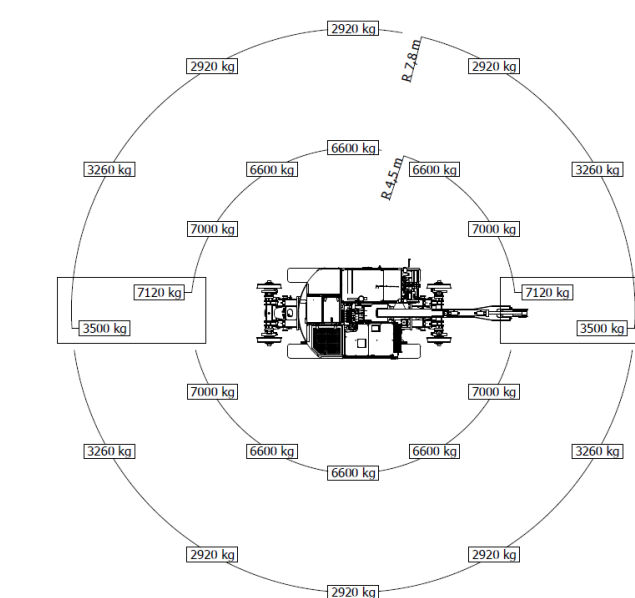
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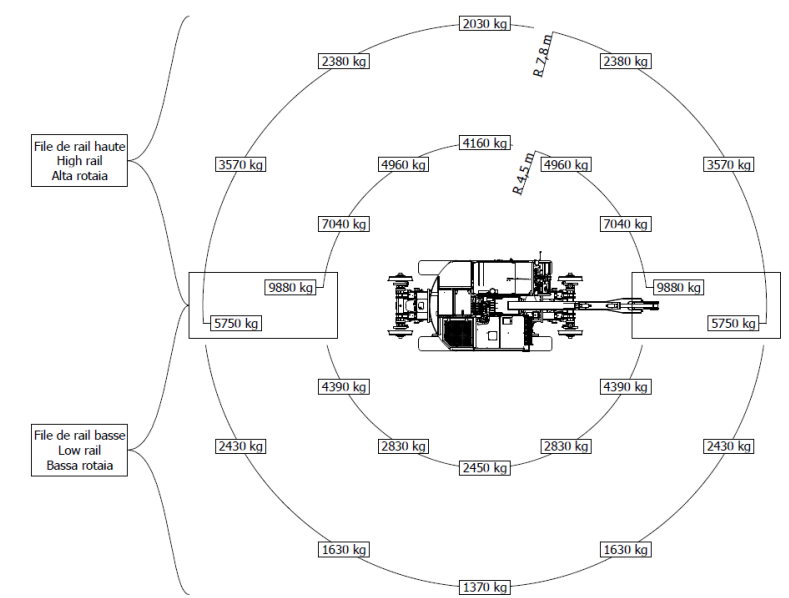
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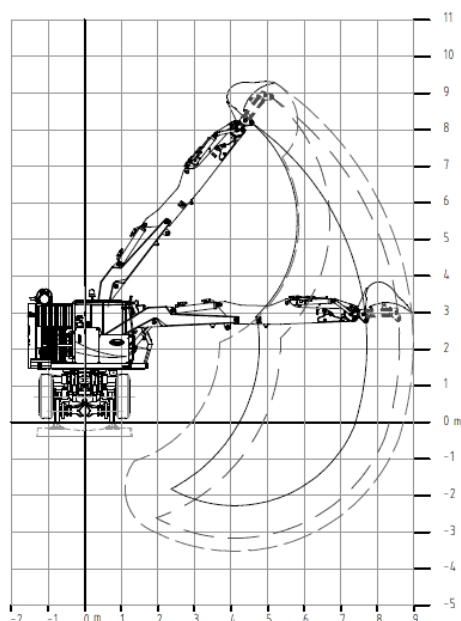
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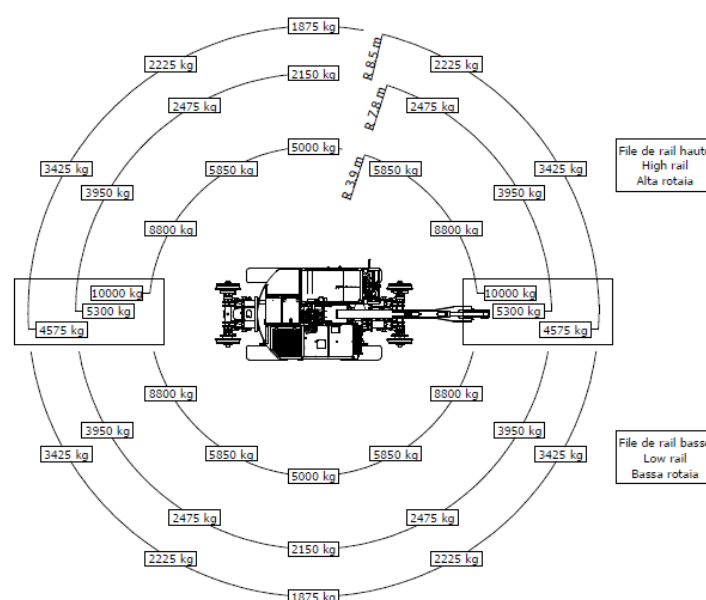
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Values with a 25% safety factor*

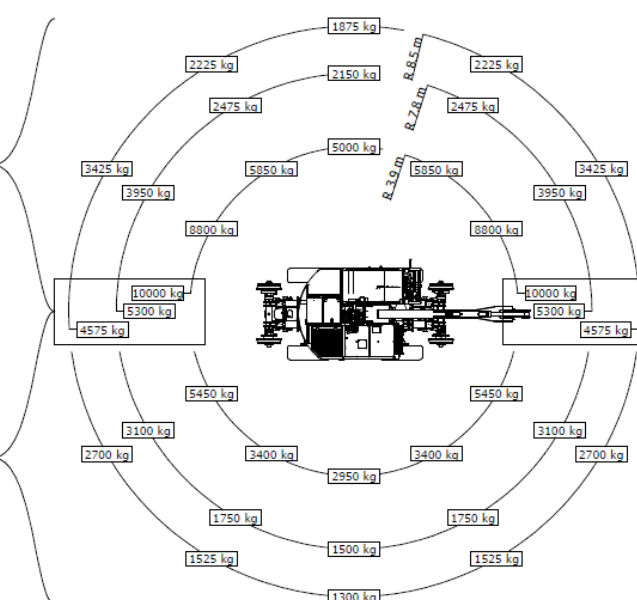
ANNEX 7 – KGT-E WITH MONO-BOOM AND 27" STICK



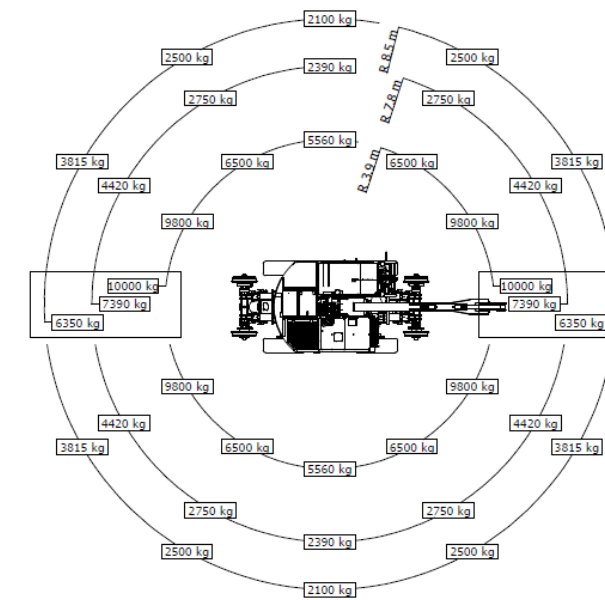
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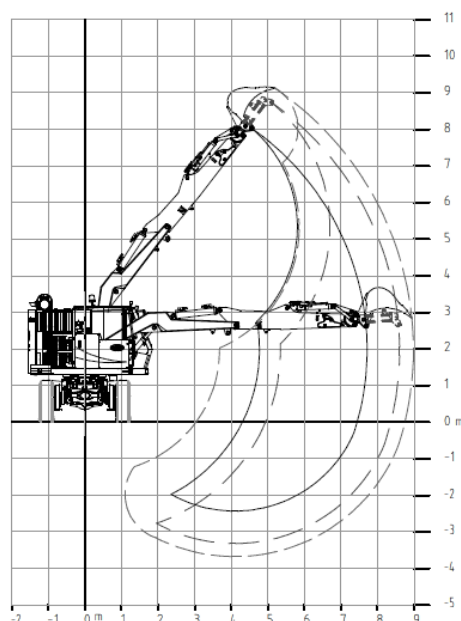
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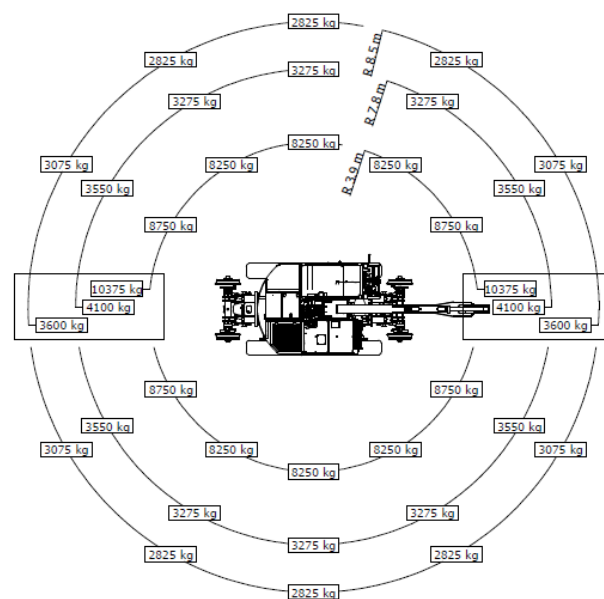
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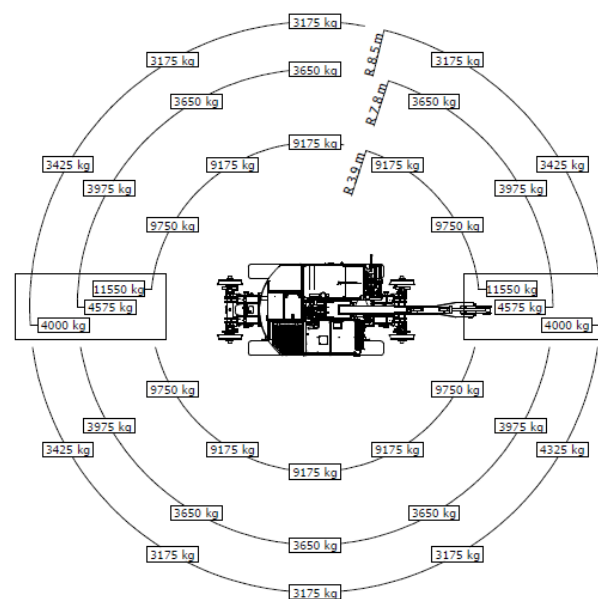
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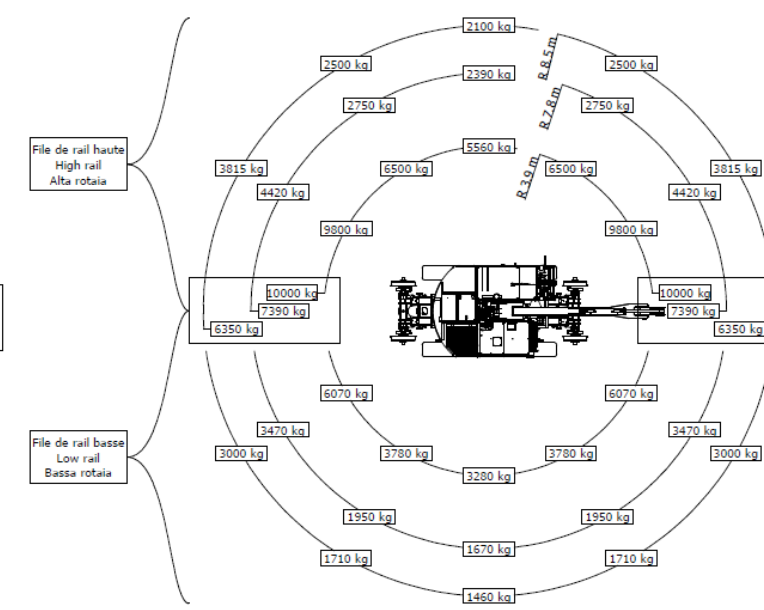
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SUR PNEUMATIQUES AVEC CONTREPOIDS SORTI
ON TIRES WITH COUNTERWEIGHT OUT
SU PNEUMATICO CON ZAVORRA FUORI



SUR RAIL AVEC CONTREPOIDS SORTI ET DÉVERS 180 mm
ON RAIL WITH COUNTERWEIGHT OUT AND CANT 180 mm
SU ROTAIA CON ZAVORRA FUORI E SOPRELEVAZIONE 180 mm

ANNEX 8 – ACCESSORIES

Non-exhaustive list

- Accessoires pour bras «excavation» (3pcs)
- Accessoires pour balancier «universel»
- Accessoires pour balancier «levage + excavation»
- Accessoires pour balancier «levage»
- Accessoires pour bras «l-frontal»

