



100%

## BALLAST REGULATORS



**MATISA**



*la passion du rail*



BALLAST REGULATORS

R 20  
R 21  
R 24



The road to

100%  
success

Imagined by yourself and constructed by us

For the new generation of Ballast Regulators, we have fulfilled your wishes by optimizing their performance in six key areas:

power, quality, comfort, reliability, drivability and economics

It was a major challenge but we did it. And in order to meet your requirements, our 3 machine types can be equipped with a wide range of innovations. You liked our ballast regulators, you will love our New ones!

Our philosophy: MORE with LESS

When introducing innovations, the target of our engineers is to allow you to obtain a better result in less time, with less fuel and by optimizing the workforce.

Discover how MATISA brought crucial advantages in terms of savings and profitability in order to significantly improve your daily efficiency.



# R20/R20E

## Savings with full reliability

The R 20 / 20 E are high-performance, compact and economic ballast regulators with high efficiency, designed for plain line work. These machines are particularly suitable for narrow gauge networks or for networks with limited axle load, but are also comfortable on the standard gauge networks. Their independent running mode speed is 80 km/h.

While maintaining the same quality of work as its big sisters, these ballast regulators are built with a compact and simplified design. The R 20/ R 20 E demonstrate excellent reliability among its users.

They can be equipped with a road trailer loading system, which makes it possible to raise the machine and move it laterally. Thanks to this system, it is also possible to park the machines at the side of the track after they have been used, which reduces transport costs.

The R 20 ballast regulators are equipped with cameras at each end of the machine and with two displays in the cabin. During operating, they allow the operator to ensure that no one is on the track. The ballast regulators R 20 E are dedicated for the non EC market.



R 20 RD, metric gauge specifically developed for Switzerland

## Optional equipment

The R 20 can be equipped with a 5m<sup>3</sup> hopper to recover the excess of ballast on the sleepers. 4 independent distribution flaps under the hopper discharge the ballast precisely and spread it again in the same pass.





# R 21

## Versatility, high-output & simplicity

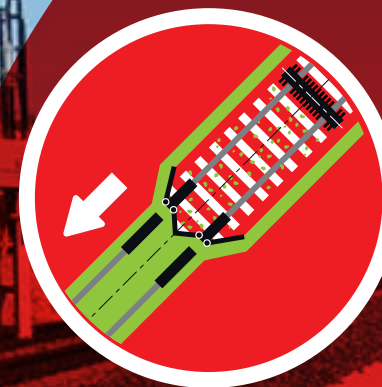
The R 21 is a high-output ballast regulator which can be used on both plain lines and switches work sites. Its large cabin generously dimensioned and with ergonomic design offers an excellent view on the working tools.

Thanks to the arrangement of these tools designed to see the flow of ballast from the work stations, it is possible to directly correct the surplus or lack of ballast. This exceptional result is obtained in only one single pass.

## Easy to operate and bidirectional

The ballast ploughs have been developed to enable the design of any profile type.

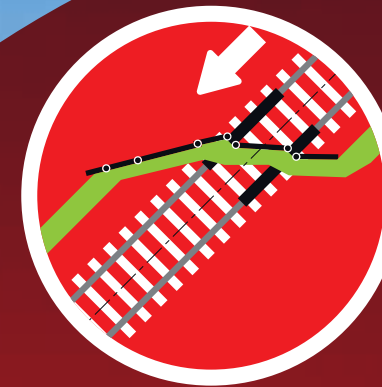
The R 21 can operate in both directions, thanks to the central pivot center and the symmetry of the lateral blades. The number of passes during the same shift is thus optimized.



Shoulder profiling and  
sleeper-head filling



Space filling, transfer  
of excess from center  
outwards and brushing



Ballast transfer from one  
shoulder to the other



Transfer to the tamping  
areas



# R 21

## A complete equipment for a perfect work

### Our ballast regulators, your best work tool!

The tools represented in yellow are placed optimally.

The efficiency of our machines is higher.

Ballast regulators, a MATISA invention.

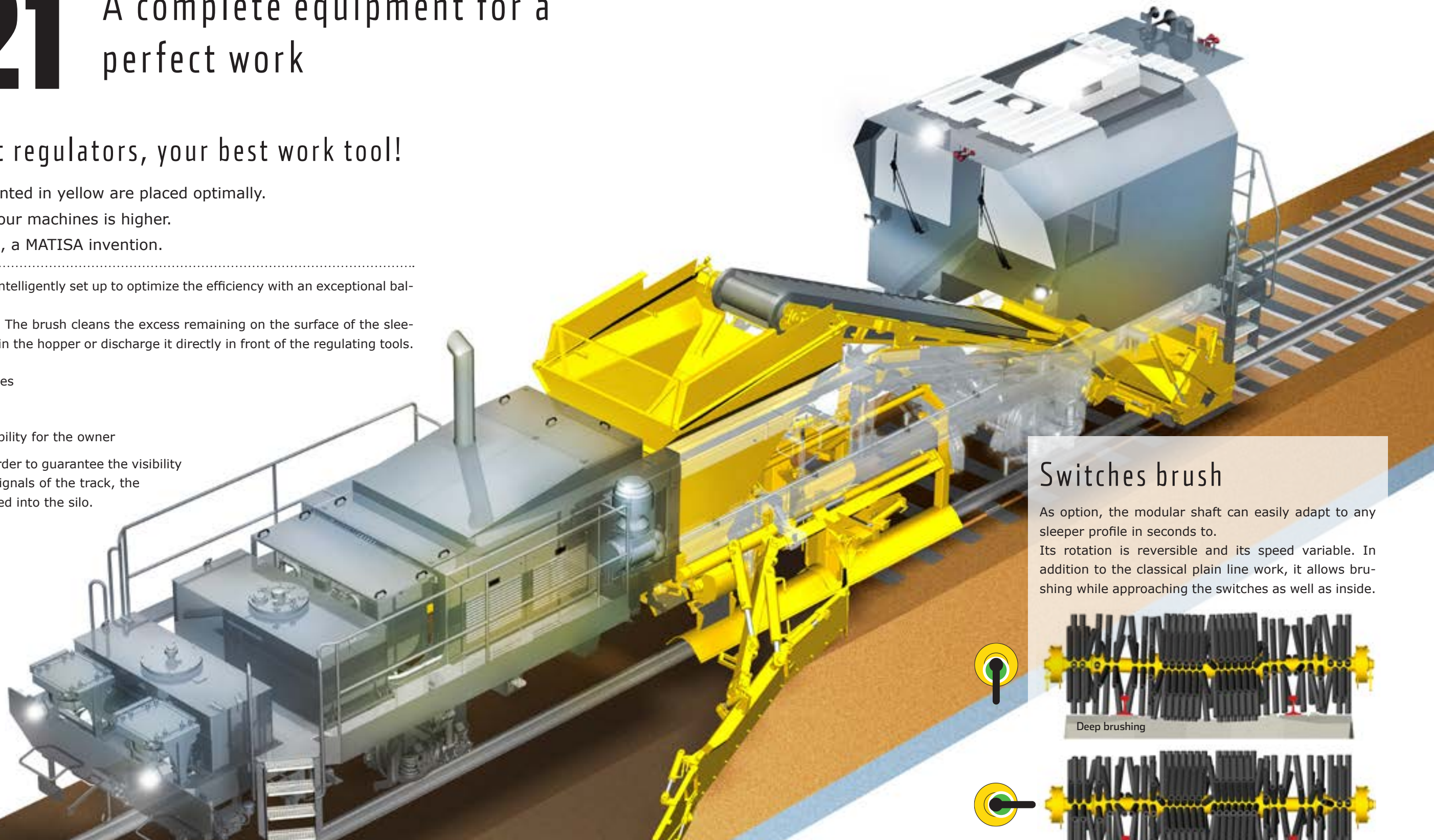
The tools have been intelligently set up to optimize the efficiency with an exceptional ballast distribution.

Excess is not wasted. The brush cleans the excess remaining on the surface of the sleepers and can store it in the hopper or discharge it directly in front of the regulating tools.

Conclusion:

- > less working passes
- > gain in time
- > higher efficiency
- > maximum profitability for the owner

When transiting, in order to guarantee the visibility of the high and low signals of the track, the top of the belt is folded into the silo.



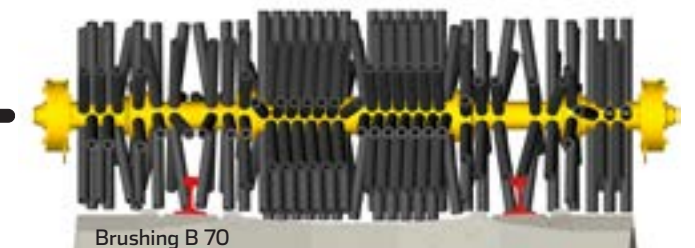
### Switches brush

As option, the modular shaft can easily adapt to any sleeper profile in seconds to.

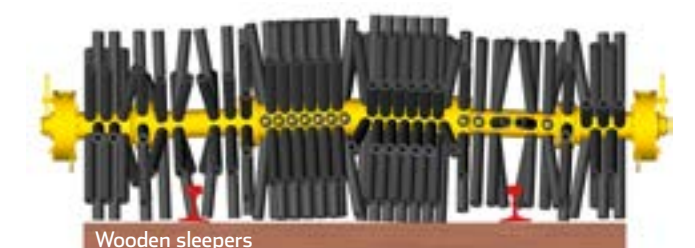
Its rotation is reversible and its speed variable. In addition to the classical plain line work, it allows brushing while approaching the switches as well as inside.



Deep brushing



Brushing B 70



Wooden sleepers

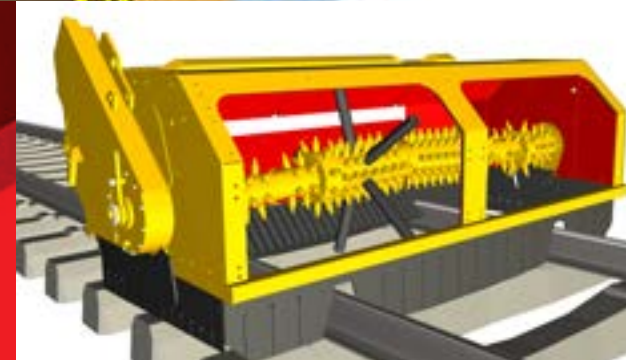
### Brush cover equipped with tiles (option)

In order to greatly reduce the immobilization time of the machine during the maintenance of the brush cover (change of the internal rubber, we can replace the bonded rubber by tiles screwed on the cover structure.

No more need to go out and remove the rubber completely before bonding a new one. The change of the tiles can be made on the rails in a few minutes.

No more need of a pit or workshop. This option will allow you to reduce the immobilization time.

Moreover, the brush access is direct thanks to the removable panels located at the back of the brush box.





# R 21

on bogies

Ingenious & versatile,  
even more options

Ballast ploughs are able to work on any kind of ballast profile. The central pivot and the design symmetry of the lateral blades allow the R 21 to operate in both directions. The number of passes during the same shift is thereby optimized.

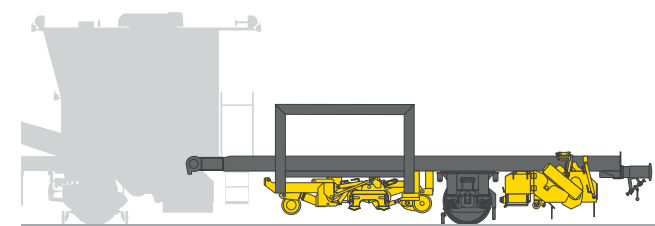


A wide variety of trailers

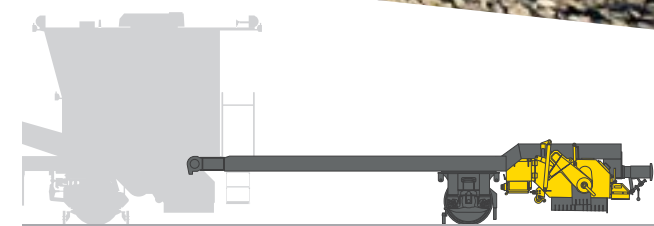
Thanks to our various trailers and their multiple options, our ballast regulators are versatile and perfectly adapted to your needs.

Example of one of our creations :

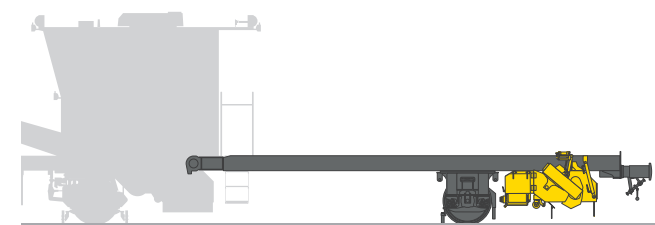
- > Compacting system
- > Plain line brush
- > Two fastening brushes with a device for blowing off dust residues.
- > Additional oil tank of 2,000 l



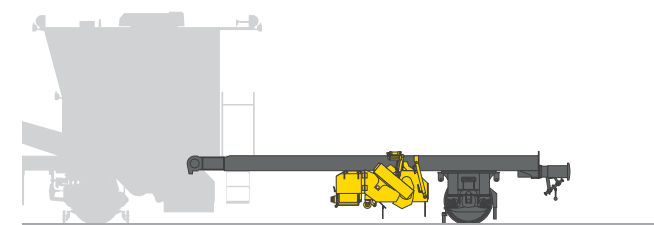
Long trailer with compacting system equipped with one plain line brush



Long trailer with one switches brush



Long trailer with one plain line brush



Short trailer with one plain line brush between the axles



# R 21

## An ergonomic and high quality workspace

Everything on board has been designed for an efficient work and driving: perfect view on the working tools, ergonomic control panel with perfectly clear displays allowing the check of functions and key indicators at a glance.

## Look beyond

Thanks to the cameras, no more blind spots to the extremities of the machine. Security is significantly improved.

## Everything is at fingertips

The cabin has been designed to offer perfect ergonomics. Users easily find their ideal position on their seat. Extensive leg room. Result: an unprecedented level of comfort.

## Optimal driving workplace

The control cabin allows control of driving in both directions.

For maximum cabin volume control, the front and rear brake controls, the driver's seat and the companion's seat turn 180 degrees. Thus, the crew is always oriented in the direction of travel.

The console displays all the information necessary for driving:

- > engine speed
- > gas oil level
- > pre-pressure
- > battery charge
- > driving lights, etc...

12V and 24V plugs allow mobiles, tablets and other electrical devices charging.

The left armrest is equipped with all joysticks for the management of the machine progress.

The right armrest is equipped with all joysticks linked to the braking system (direct and automatic brakes).

The two control stations arranged frontally and on each side of the cabin have the necessary controls for the lateral and central plows. The main distributors are electrically operated. All control instruments are illuminated and the manipulators are identified by inscriptions. The controls for the brush and the excess ballast are located on a separate housing. From each workstation, the operator can operate all working parts without having to leave his cabin.

Plow Deployment Monitoring:  
The R 21 and R 24 can be equipped with a system for monitoring the deployment of side plows. This safety system greatly reduces the risk of engaging the working gauge on the side of the track. It is managed by an automaton that limits the movement of side plows according to the parameters and the geometry of the tracks.





# R 24

## Simply the best

The R 24 is a high-output ballast regulator on bogies, especially designed for the construction and maintenance of high speed lines. It is equipped with a 10m<sup>3</sup> hopper, expandable to 13m<sup>3</sup> which allows the excess ballast recovery and redistribution to the areas with low ballast density.

More powerful, it also offers more comfort as well as a more spacious and customizable cabin. This ballast regulator offers excellent modularity and will satisfy your most demanding needs.



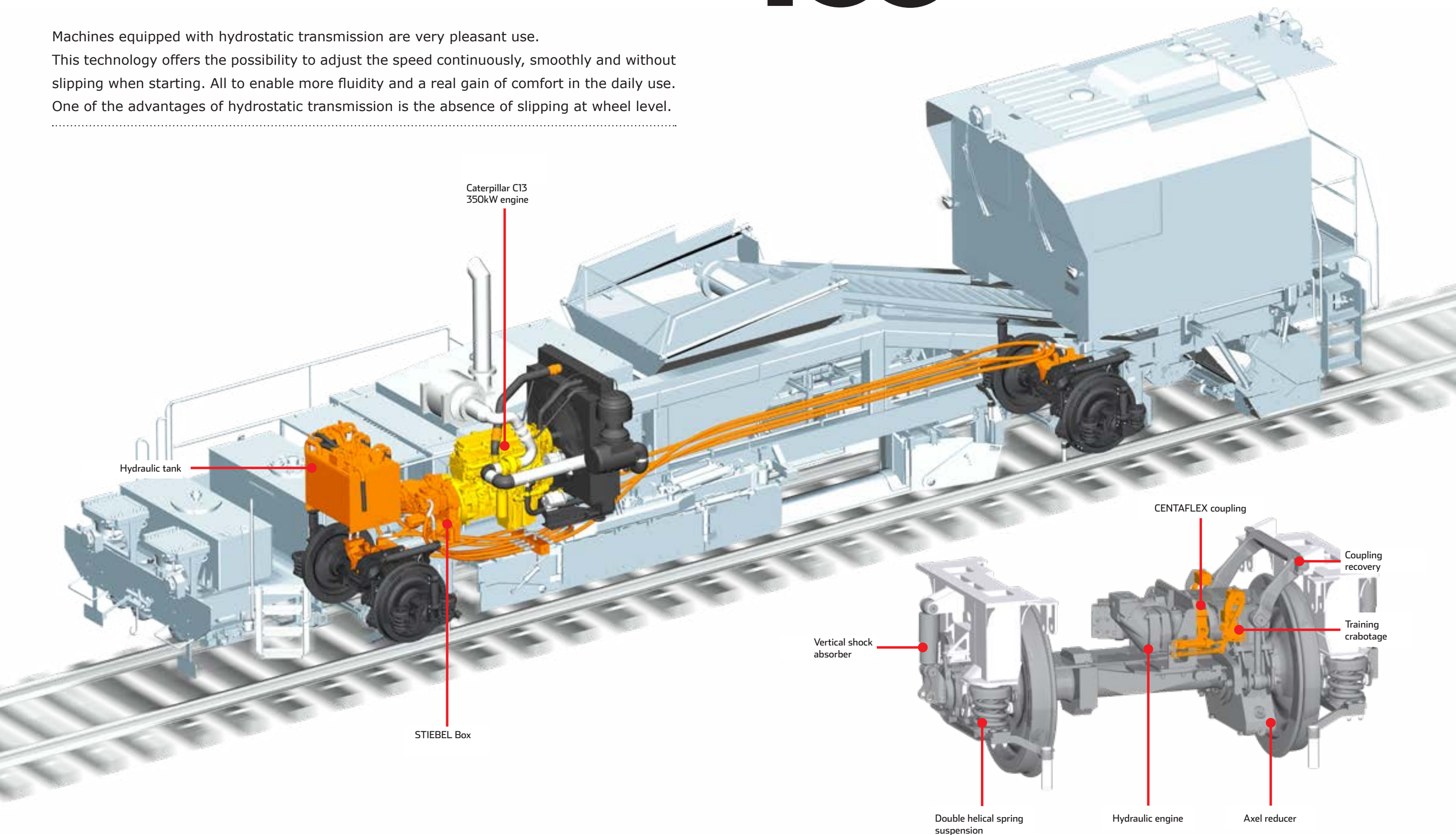


# Hydrostatic transmission, a unique comfort

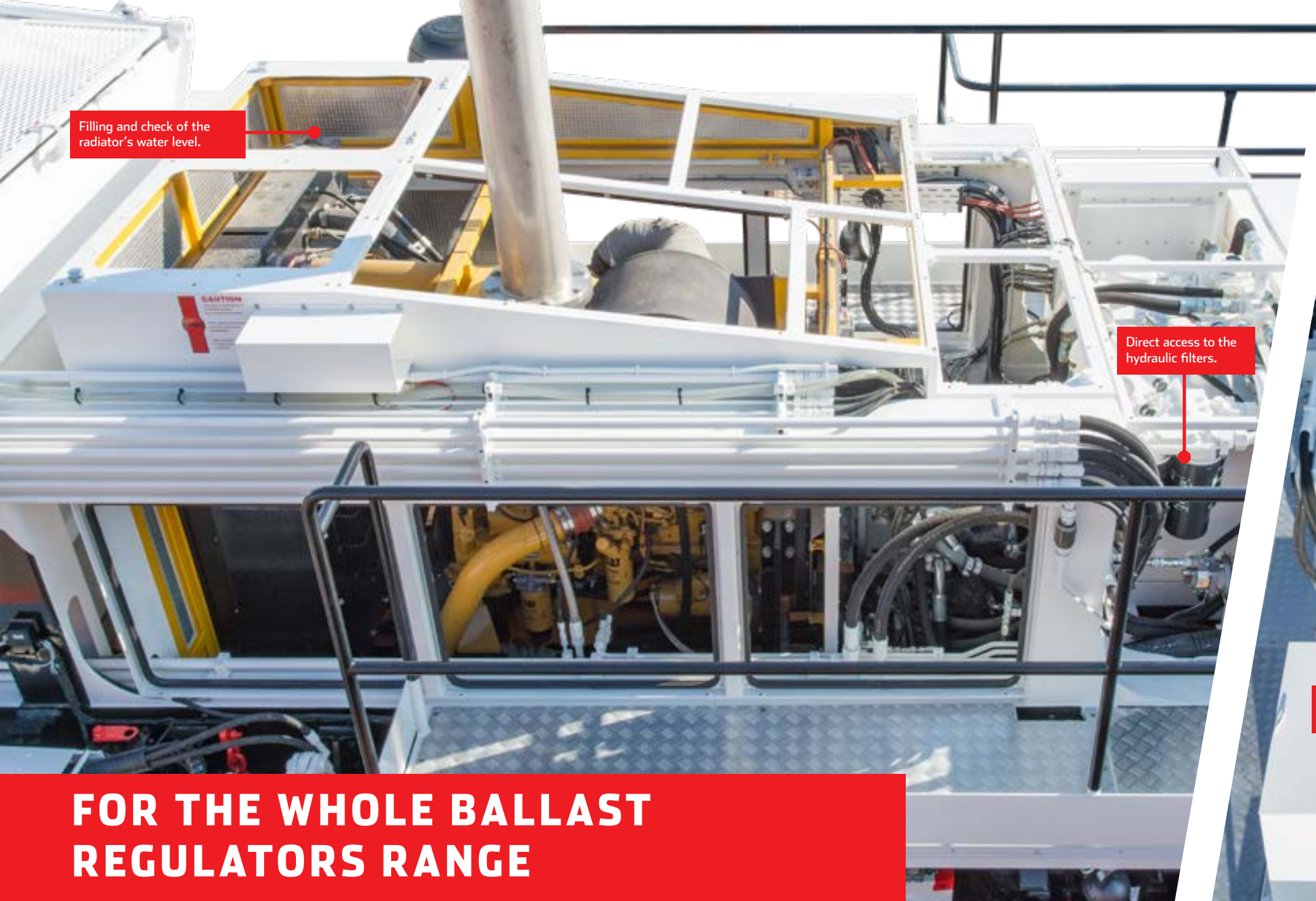
Machines equipped with hydrostatic transmission are very pleasant use.

This technology offers the possibility to adjust the speed continuously, smoothly and without slipping when starting. All to enable more fluidity and a real gain of comfort in the daily use. One of the advantages of hydrostatic transmission is the absence of slipping at wheel level.

# 100%

 of our ballast regulators can be used by a single operator





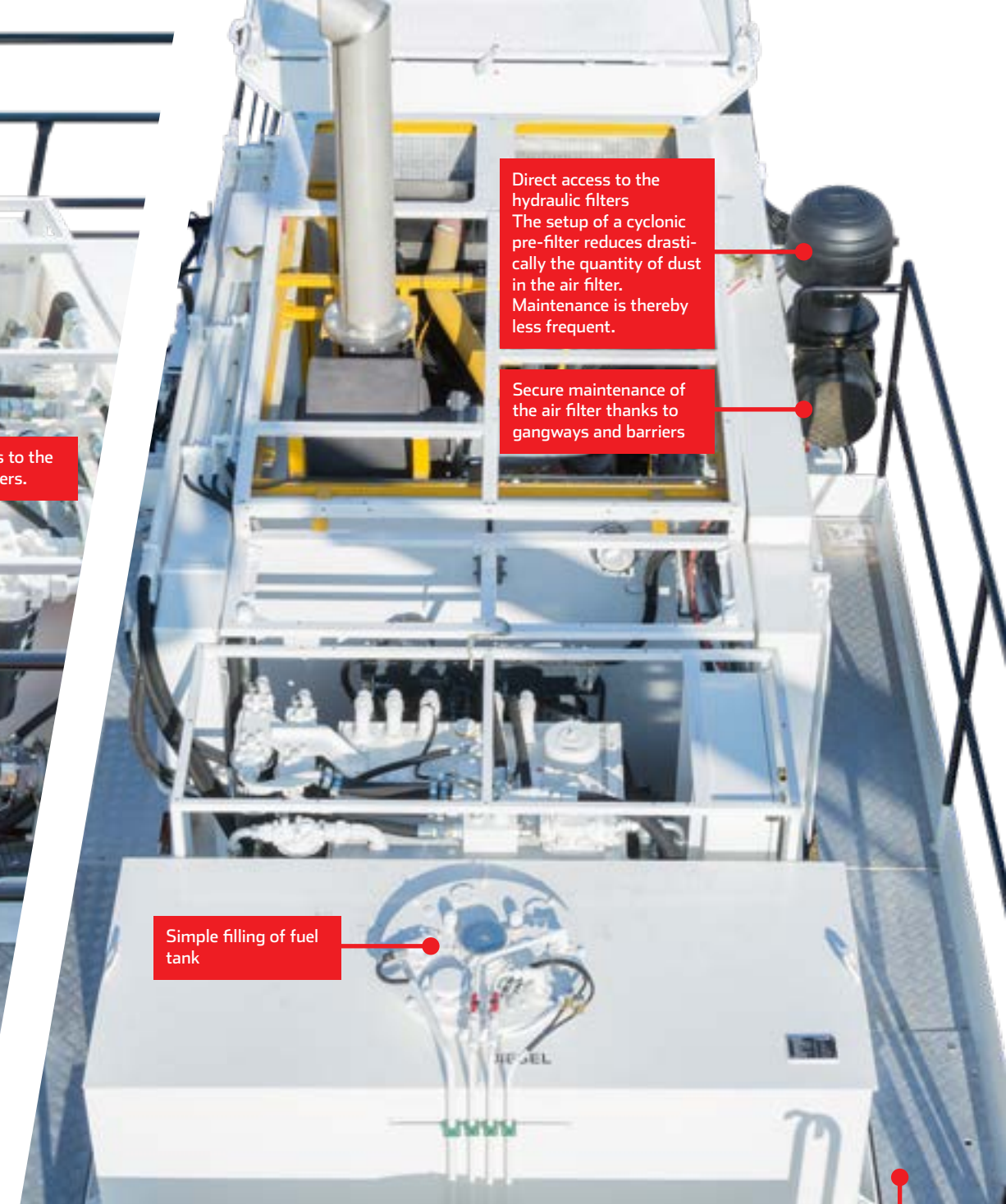
Filling and check of the radiator's water level.

Direct access to the hydraulic filters.

## FOR THE WHOLE BALLAST REGULATORS RANGE

### Exceptional accessibility Limited immobilizations

Maintenance operations such as checking of oil levels or change of filters can be carried out easily and rapidly. Access to the engine compartment is particularly easy thanks to the surrounding panels. Gangways and barriers around the engine box ensure a high security level to the staff.



Direct access to the hydraulic filters  
The setup of a cyclonic pre-filter reduces drastically the quantity of dust in the air filter. Maintenance is thereby less frequent.

Secure maintenance of the air filter thanks to gangways and barriers

Simple filling of fuel tank

Accessibility on both sides of the machine

### Maximum work capacity, Minimum maintenance cost

Thanks to MATISA technology, you work a maximum but limit maintenance and immobilizations to the minimum.



# Technical data

Basic equipment	R 20/E	R 21	R 24
Frame on 2 axles	•	•	–
Frame on 2 bogies	–	x	•
CATERPILLAR® engine	•	•	•
Hydrostatic drive circuit	•	•	•
Pneumatic and –UIC brake circuit	•	•	•
1 air-conditioned working and driving cabin	•	•	•
3 air-conditioned cabins (1 working and 2 driving cabins)	–	–	x
Driving lights	•	•	•
Working lights	•	•	•
Fire detection system for power unit	x	x	x
Loading system on trailer	x	x	–
Plain line brush	•	•	•
Hopper with loading conveyor	x	x	•
Bidirectional ballast regulating	•	•	•

Technical data	R 20/E	R 21	R 24
Kinematic gauge	UIC 505-1	UIC 505-1	UIC 505-1/W6A
Gauge	1,000-1,676 mm	1,000-1,676 mm	1,435-1,676 mm
Minimum radius in working mode	100 m	150 m	250 m
Minimum radius in self-propelled mode	90 m	100 m	125 m
Minimum radius in convoy	90 m	100 m	125 m
Travelling speed in self-propelled mode	80 km/h	100 km/h	100 km/h
Travelling speed in convoy	80 km/h	100 km/h	100 km/h
Axle wheel-base	6,000 mm	9,500 mm	–
Bogie wheel-base	–	–	13,000 mm
Power	194 kW	350 kW	440 kW
Driven axles in self-propelled mode	2	2	2
Driven axles in working mode	2	2	3
Basic fuel tank capacity	1,000 l	1,200 l	2,000 l
Hopper capacity	5 m³	5 m³	10 m³
Hopper loading	3 min.	3 min.	5 min.
Ballast regulating speed	15 km/h	15 km/h	15 km/h
Brushing speed	3 km/h	3 km/h	6 km/h
Operating range of the basic side ploughs	4,000 mm	4,000 mm	4,000 mm

Additional equipment	R 20/E	R 21	R 24
Trailer	–	x	–
Switches brush	x	x	x
2nd plain line or switches brush	–	–	x
Modular brush	–	x	x
Quick attachment system for bristles (solid and hollow bristles)	x	x	x
Protective tiles mounted inside the brush box	–	x	x
Site plows type «Germany»	–	x	x
Compressor to inject the clips, on trailer	–	x	x
Cooling fan of the CATERPILLAR® motor can be reversed	–	x	x
Small iron brush	–	x	x
Working gauge monitoring system	–	x	x
Ballast compaction tools	–	x	–
Rail clearing	x	x	x
Spraying system	–	x	x
Dust-fogging system	–	x	x
Fire extinguishing system	–	x	x
Hydro-electric equipment for emergency packing up	x	x	x
Additional fuel tank	x	x	x



The road to

**100%**  
success





Subsidiaries and a network of agents

100%

at your service

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