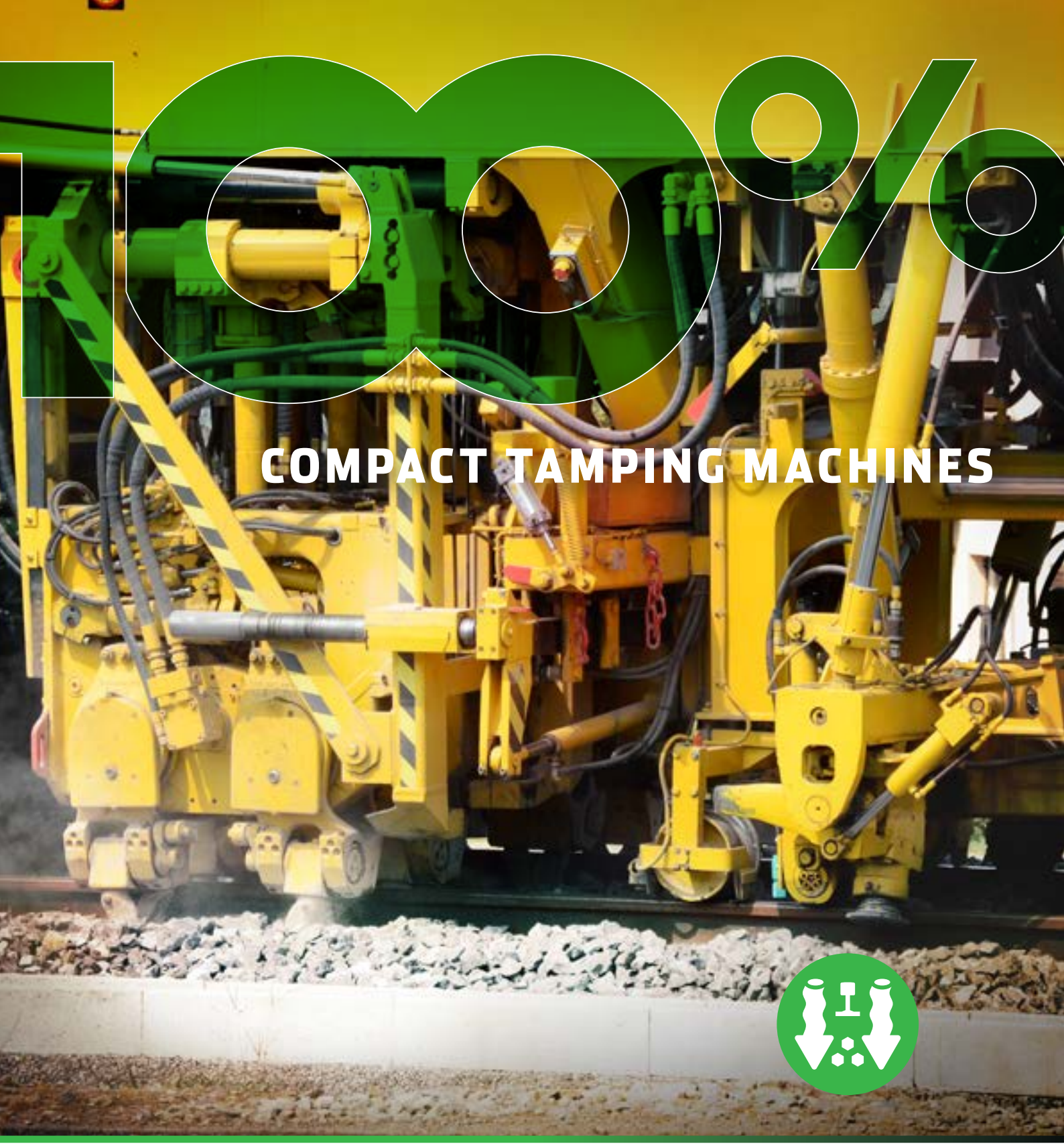
100%

COMPACT TAMPING MACHINES



MATISA

la passion du rail

COMPACT TAMPING MACHINES

B 45 D
B 45 UE
B 38 AC/C

The road to
100%
success

When compact also means simple, economic and very efficient

The MATISA compact tamping machine range features different universal and plain line machines. Equipped with the same tools as the high-performance machines, the compact tamping machines can compete with the latter in terms of performance. Simple and robust, these machines are particularly economical to use and to service due to low maintenance costs.

Whilst efficient when working on track maintenance worksites, the B 45 are particularly valuable on track renewal worksites thanks to their outstanding lifting capacities and their substantial wheelbase.

The B 38 machines are designed for narrow gauge networks, especially for mountain networks with small radius curves and steep gradients.

Welcome to the future

The compact tampers have recently received a significant technology upgrade. The optimisation improves comfort, flexibility of use, reduction of fuel consumption and maintenance costs even further.

The B 45 tamping machines can be equipped with crib and shoulder ballast compaction tools. Fitted on a shuttle located under the trailer, these tools increase the vertical and lateral resistance of the track after tamping.

Discover this range of machines and allow yourself to be surprised by their capabilities.

B 45 D

Two sleepers at a time

The B 45 D is a plain line, double head tamping machine designed for both normal and high-speed lines. Supported by two bogies, the machine has two cabins fitted with working and driving posts.

This machine is equipped with a double roller plain line clamp and two independent, double head tamping units totalling 32 tamping tools.
Fitted with high-frequency elliptical tamping technology, these units ensure an output of approximately 1,200 metres per hour, depending on worksite conditions and machine settings.

The B 45 D is commonly used after high-output track renewal and ballast cleaning machines. The double roller clamp capacities, as well as the high tamping quality, enables substantial lifting corrections while ensuring a limited track settlement.

Perfectly suited for all network conditions

Well adapted for standard gauge and broad gauge networks, the B 45 D tamping machine is also perfectly suited for narrow gauge, limited axle load and very restrictive clearance gauge networks.

Additional tools such as a plain line ballast clearing brush, ballast profiling ploughs, crib and shoulder ballast compaction tools for plain line, as well as track geometry recording trolleys or additional cabins can be fitted on a trailer.
Equipped in such a way, the machine will be perfectly suited for your needs.

B 45 UE

Versatility to serve the track

The B 45 UE is a universal, single head, tamping machine mainly used on normal lines.

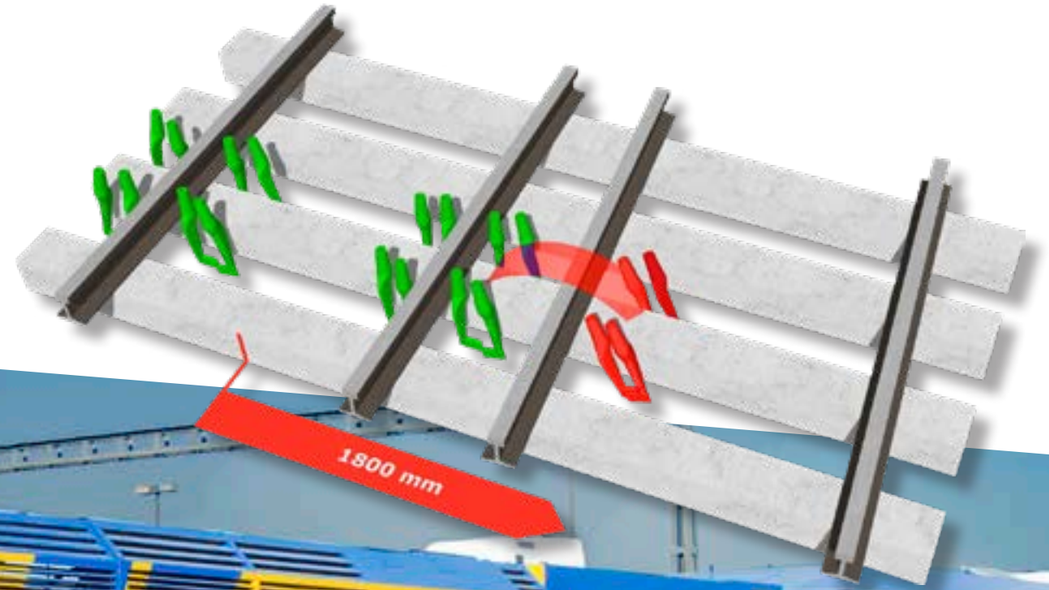
This machine configuration is similar to that of the B 45 D, however, the tools are suited for switches and crossings, as well as plain line.

The B 45 UE is fitted with a hook and roller clamp and 4 C 1,800 mm type combined tamping units. The 16 tamping tools are driven by MATISA's high frequency elliptical tamping technology.
The combination of these tools gives a great potential. The B 45 UE can easily work on switches and crossings or follow track renewal and ballast cleaning machines while also ensuring good performance on plain line.

From versatility to excellence

To ease the switches and crossings tamping, the B 45 UE can be fitted with diverging track lifting devices. Additional tools, such as a switch or a plain line ballast clearing brush, a ballast storage hopper, ballast profiling ploughs, or crib and shoulder ballast compaction tools can be fitted on a trailer.
As for the B 45 D, track geometry recording trolleys and additional cabins can also be fitted on a trailer.

This tamping machine can be used on standard, broad and narrow gauges as well as networks with limited axle load and very restrictive clearance gauge.
"Double track gauge" equipment is also available.
With its simple design, this highly versatile machine is easy to use and excels in the different encountered worksite situations.



B 38 AC/C

Like an ibex on the mountain

The B 38 ultra-compact machine range is limited to narrow gauge networks. On two bogies, these machines are able to tamp and to run on very small radius curves. With at least three motorised axles, they can climb very steep gradients up to 70‰.

Mainly used for plain line or for switches and crossings?

The B 38 is available in two different types of universal tamping machines. The first one enjoys the plain line where the second prefers to tamp switches and crossings.

The B 38 AC is a single head tamping machine fitted with a combined hook and roller clamp and two AC4 type tamping units totalling 8 tamping tools.

This machine is primarily designed to work on plain line within an output of approximately 500 meters per hour, depending on worksite conditions and machine settings.

With their substantial lateral movements, as well as with their outer tamping tools swivelling to 90°, these tamping units can tamp very small radius curves and wedge the switch diverging track up to 1,524 mm from the track axis.

The B 38 C is a single head universal tamping machine fitted with a combined hook and roller clamp and two C 1,580 mm type combined tamping units.

Fitted with 8 tools of which 4 can be overlaid, this machine can easily tamp the switches and crossings.

In plain line, the tamping units tamp on each side of the rails alternately, within an output of approximately 300 meters per hour.

60 to 70‰

B 38 AC/C

In order to move the machine discreetly...

The B 38 range can be fitted with devices to load the machine onto a road trailer.

These devices allow the machine to be lifted and shifted laterally, giving a wide range of applications:

- The tamping machine can be easily and safely loaded onto a road trailer, thus allowing to quickly move the machine to another network
- The machine can be parked on the sides of the track in between working shifts, thus limiting the transportation costs
- Maintenance of the running gear, as well as access to lower parts of the machine, is made easier when the machine is lifted
- The substitution of the running gear is carried out quickly and safely, in particular when the machine needs to be fitted with another network specific wheel profile

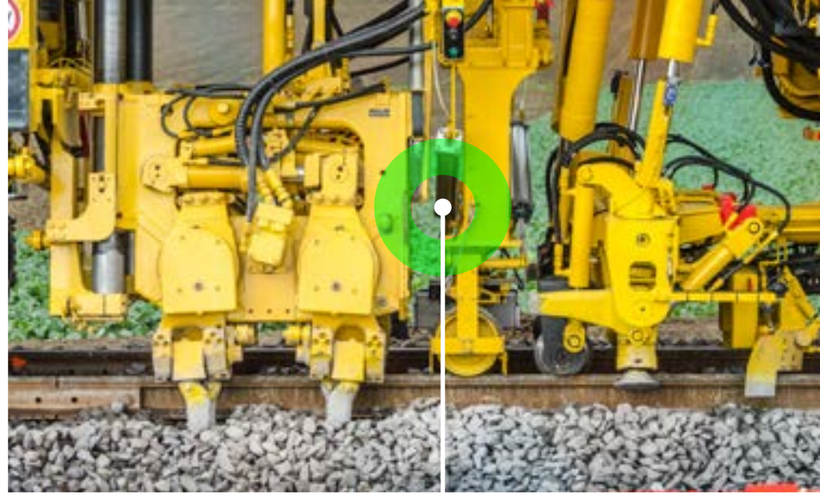
In addition, track circuit actuators or specific circulation equipment, such as events recorder, are generally not needed.

The procedures and costs in relation to the circulation approval are furthermore reduced for the machines “leaving the rails”.

COMPACT TAMPING MACHINES

Specific tools for each machine

Each tamper of the range of compact machines is designed for specific worksite conditions and requirements. Their specific tools are perfectly suited for the encountered situations.
All tamping machines benefit from MATISA's unique high frequency elliptical tamping technology to achieve unequalled compaction quality.



B 45 UE

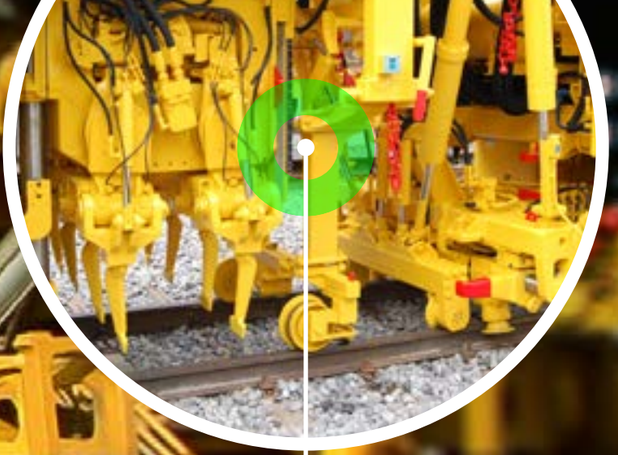
The B 45 UE is fitted with a C type combined hook and roller clamp. The four C 1,800 mm type combined tamping units are suited for working on conventional switches and crossings, as well as on plain line. Both external tamping units have a 200 mm longitudinal stoke.
The longitudinal stroke of the four tamping units can be extended to 460 mm on machines dealing with Y shaped sleepers. These units have a lateral outer reach of 1,900 mm.

B 45 D

The B 45 D has a D type double roller clamp fitted with two pairs of rollers and a fishplate detection device. Totalling 32 tamping tools, the two D type tamping units work on plain line at a rate of two sleepers at a time.

B 38 C

The B 38 C is fitted with a C type combined hook and roller clamp. The C 1,580 mm type combined tamping units tamp the track on each side of the rails alternately. They are primarily designed to handle switches and crossings.



B 38 AC

The B 38 AC is fitted with a C type combined hook and roller clamp as well as two AC4 tamping units. Primarily used on plain line, this machine can also be used on switches and crossings thanks to its swivelling tamping tools.

ADVANCED TECHNOLOGIES

A comfortable and user-friendly workplace

The tamping cabin operator has a significant number of controls to deal with during the tamping process.
These actions are no longer necessary in the new MATISA tamping machine workspace.
The operator's tasks are simplified as a result of the machine settings being managed through a central control unit with a touch-screen display, the tools being positioned through multifunction joysticks as well as by many automated controls.

The front cabin operator also has very simple and intuitive touch-screen interface, both for the machine guiding computer and the machine manual guiding. This reduces the risk of hazardous actions.
Efficient heating and air conditioning complement the workspace equipment. All these amenities contribute to maintain the operator and machine performance during the whole worksite.

Job sharing for higher efficiency

The B 45 range is fitted with very spacious tamping cabins. A second working post can be added in the B 45 UE tamping cabin. This allows reducing the processing time for conventional switches and crossings or making easier the handling of those ones fitted with electrified rails, as typically encountered on metro lines.

The touch-screen allows setting the parameters of the machine. It also provides valuable information about the machine working cycles as well as assistance for troubleshooting.

The armrests are fitted with fast and accurate multifunction joysticks, thus easing the handling of the tamping units and the lifting-slewing clamp.

NEMO

For ultra-accurate measurement

MATISA tamping machines have been fitted with a relative optical measuring base for several decades. This is a MATISA's unique technology.
The latest generation of the "**NEMO**" optical measuring base is now fitted with LED lights as well as a high-tech and very accurate optical sensor.
The optical sensor automatically adjusts the light intensity to suit the worksite conditions, in particular in the presence of dust. It has constant self-diagnosis, ensuring very high accuracy and reliability.
The "**NEMO**" optical measuring base is particularly suited for universal machines. The absence of moving mechanical components and measuring wires, which could be hit or cut by tamping tools, ensures very high reliability.
Furthermore, vibrations, light reflection or wind gusts affect neither the reliability nor the accuracy of the "**NEMO**" base.

CATT and EMB

For a smooth guiding

The "**CATT**" guiding computer combines reliability, flexibility and user-friendliness. Its modular architecture can integrate numerous additional functionalities, whether for calculating rebuilt absolute measuring bases or for dealing with known or unknown geometries.
In addition to the touch-screen located in front cabin, a second interface can be added in the tamping cabin.
The "**EMB**" manual guidance device is fitted with manual controls as well as a touch-screen for correcting and monitoring the geometry. User-friendly and intuitive, this interface also enables checking the machine working parameters set by the tamping operator.

Additional guiding devices

For one-off corrections

The "**PDM**" is an additional module of the **CATT** enabling to correct defects that are local, very short and with small wavelength.
This module is generally used on high-speed lines for one-off corrections on a few sleepers.

Absolute measuring bases to steer a steady course

- The **absolute optical measuring base** positions the straight track in an absolute position
- The **absolute laser measuring base** positions the straight track in an absolute position. Its additional laser enables to level the track curves in an absolute levelling position
- The "**MIRIS**" is an additional module of the **CATT**. It is able to calculate a rebuilt absolute measuring base in order to correct long wavelength defects
- The "**MATS**" is a new-generation absolute measuring base using a total station and an active prism for both straight and curved tracks
- The "**PALAS**" is an absolute measuring base for both straight and curved tracks. The prisms installed during the shift on the overhead line structural equipment enable to geo-localise the track

CUSTOM-MADE TRAILERS

To enhance functionalities and space

A wide range of trailers can be coupled to the B 45 tamping machines providing numerous possibilities in terms of custom-made solutions.

Additional functionalities can be added to the trailer to meet the intended use:

- Track geometry recording base
- Switch or a plain line brush
- Ballast storage hopper
- Rail fastening cleaning brushes
- Ballast profiling ploughs
- Ballast sprinkling device
- Crib and shoulder ballast compaction tools for plain line

Additional equipment can be added to the trailer for enhanced comfort and space:

- Extra fuel capacity
- Auxiliary power unit
- Workshop compartment including storage facilities
- Rear driving cabin including a social compartment

Technical features

Basic equipment	B 45 D	B 45 UE	B 38 AC	B 38 C
Frame on 2 bogies	•	•	•	•
UIC continuous and automatic brake	•	•	•	•
Parking brakes	•	•	•	•
UIC couplers	•	•	–	–
CATERPILLAR® engine	•	•	–	–
DEUTZ® engine	–	–	•	•
Hydrostatic circuits for machine drive	•	•	•	•
Hydraulic circuits for tools and accessories	•	•	•	•
Pneumatic circuits for direct brake and accessories	•	•	•	•
24 V DC electrical circuits	•	•	•	•
Air-conditioned driving and tamping cabins	•	•	•	•
Tamping unit type	D	C 1,800 mm	AC4	C 1,580 mm
Lifting and slewing clamp type	Double	Combined	Combined	Combined
Human-machine interface with joysticks and touch-screens	•	•	•	•
"NEMO" relative optical measuring base	•	•	•	•
"CATT" guiding computer	•	•	•	•
Driving mode lighting	•	•	•	•
Working mode lighting	•	•	•	•
Power unit fire detection device	•	•	•	•

Main additional equipment	B 45 D	B 45 UE	B 38 AC	B 38 C
1 axle trailer	x	x	–	–
Additional driven axle	x	x	x	x
Lifting device for road trailer transportation	–	–	x	x
400 V AC auxiliary power unit	x	x	–	–
Workshop compartment on trailer	x	x	–	–
Rear driving cabin on trailer	x	x	–	–
Railhead ballast removing ploughs	x	x	x	x
Diverging track lifting devices	–	x	x	x
Ballast compaction tools	x	x	x	x
Ballast profiling ploughs	x	x	–	–
Switch, plain line, rail fastenings cleaning brushes	x	x	–	–
Ballast storage hopper	x	x	–	–
Ballast sprinkling devices	x	x	–	–
Absolute measuring bases	x	x	x	x
Geometry recording base	x	x	x	x
Electro-hydraulic equipment for machine emergency pack away	x	x	x	x

Legend: ● basic | **x** optional | **–** not available

Technical data	B 45 D	B 45 UE	B 38 AC	B 38 C
Kinematic gauge	UIC 505-1	UIC 505-1	According to network	According to network
Track gauges	1,000-1,676 mm	1,000-1,676 mm	950-1,067 mm	950-1,067 mm
Minimum radius in working mode	150 m	120 m	45 m	45 m
Minimum radius in self-propelled mode	90 m	90 m	20 m	20 m
Minimum radius in convoy	150 m [1)]	150 m [1)]	x	x
Travelling speed in self-propelled mode	100 km/h	100 km/h	60 km/h	60 km/h
Travelling speed in convoy	100 km/h	100 km/h	x	x
Bogie wheelbase	11,500 mm	11,500 mm	8,650 mm	8,650 mm
Engine power	403 kW	403 kW	230 kW	230 kW
Driven axles in self-propelled mode	2	2	2	2
Driven axles in working mode	2	2	2	2
Basic fuel tank capacity	1,200 l	1,200 l	500 l	500 l
Tamping tools	32	16	8	8
Tamping tool vibration frequency	42 Hz	42 Hz	42 Hz	42 Hz
Tamping tool lateral reach [2)]	± 5°	1,800 mm[3)]	1,524 mm	1,580 mm
External tamping unit longitudinal stroke	–	200 mm [4)]	–	–
Clamp lifting stroke	150 mm	150 mm	150 mm	150 mm
Clamp lining stroke	± 200 mm	± 200 mm	± 200 mm	± 200 mm
Clamp lifting force	2 x 110 kN	2 x 125 kN	2 x 125 kN	2 x 125 kN
Clamp slewing force	150 kN	150 kN	150 kN	150 kN
Clamp longitudinal stroke	–	760 mm	600 mm	600 mm
Combined clamp front attachment lateral stroke	–	x	± 180 mm	± 180 mm
Plain line output with 1 insertion [5)]	1,200 m/h	650 m/h	500 m/h	300 m/h
Treatment time for a simple switch [5)]	–	30-40 min	40 min	40-50 min

[1)] 125 m in France
[2)] From the track axis
[3)] 1,900 mm for the B 45 UE fitted with tamping units suitable for Y shaped sleepers
[4)] 460 mm for all B 45 UE tamping units suitable for Y shaped sleepers
[5)] Depending on worksite conditions and machine settings

The road to 100% success

Subsidiaries and a network of agents

100%

at your service

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