VÖGELE SUPER 1800-2 with SprayJet Module

SprayJet Module
Emulsion Tank 2,000 – 7,000 litres
Spray Width 2.55 – 6m
Rate of Spread 0.2 – 1.6kg/m²

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At a Glance

VÖGELE present an innovative and highly economical concept for spraying bitumen emulsion. Rehabilitating roads by replacing wearing course is a highly cost effective and eco-friendly process, very popular in numerous countries. By offering the SUPER 1800-2 with SprayJet Module, VÖGELE make available a spray paver which is ideally suited to paving thin layers on spray seal, hot on hot. But for non-specialized road building contractors, too, the SUPER 1800-2 with SprayJet Module is an economical and clean alternative wherever spraying and subsequent paving are to be carried out.

The SUPER 1800-2 with SprayJet Module meets highest standards in terms of eco-friendliness.

The machine concept is based on a SUPER 1800-2 which, combined with a newly developed SprayJet module, can be used as a spray paver. The motif behind this concept primarily was an economic aspect: the paver can be used for conventional paving jobs, too, at all times. Within just a few hours, the spray paver can even be fully converted back into a standard paver.
Compact, powerful and conceived for versatile applications. SUPER 1800-2 can be used with the SprayJet module as a spray paver, or without the module as a conventional paver for jobs as usual.

The SprayJet module offers a host of technological advantages. For instance, the rate of spread can be set from 0.2kg/m²*, allowing the bitumen emulsion to be finely metered and applied in small volumes at slow pave speeds. Thanks to an extremely low and constant spraying pressure of no more than 3 bar prevailing in the system, the spraying work can be performed with a minimum of spray mist and pollution. As this was not possible with previous systems, the SprayJet module is a trailblazer in both economical and ecological terms.

For classic road construction, with spray system for bitumen emulsion integrated in the paver.
For paving thin layers on spray seal, hot on hot.
Easy demounting of the SprayJet module allows use of the paver for conventional paving tasks, thus increasing economic efficiency.
Compact design renders paver ideal for inner-city applications, advantage of low-cost transport.
Vehicles on the job site never pass over the emulsion, as emulsion is immediately covered with asphalt. No soiling of other roads.
The rate of spread can be selected between 0.2 and 1.6kg/m².

*See note on page 23.
Paving thin overlay on spray seal or tack coat, hot on hot, is a cost-effective alternative when it comes to resurfacing existing roads. This method of pavement rehabilitation is appropriate for all kinds of traffic areas, from cross-town links through to highly trafficked motorways.

The thickness of the wearing course when paving thin overlay normally is no more than 1.2 to 2cm. In this context, this method displays its cost-effectiveness by saving expensive wearing course material. As paving thin overlay on spray seal does not require a costly adaptation or new installation of kerbs, this procedure is ideal, above all, for cross-town links or pavement rehabilitation in municipal areas. When placing thin overlay using the VÖGELE paver with SprayJet module, the spreading of spray seal and paving of asphalt take place in a single pass.

As a result, no vehicles travel on the freshly sprayed bitumen emulsion, which offers three significant advantages:

1. Complete coverage of the existing surface with spray seal is achieved and an optimal bond of layers. This adds to a long service life of the new surfacing.
2. Vehicles on the job site never pass over the emulsion, thus no soiling of adjacent areas.
3. As separate spraying of tack coat is eliminated, less preparatory work for the job. This reduces the duration of the roadworks.

The technique is appropriate for all kinds of traffic areas, from cross-town links through to busy motorways.
Advantages of the Technique

1. Saving of Cost
   - Thin layer saves up to 50% of material cost.
   - No costly adaptation or new installation of kerbs required.
   - Vehicles on the job site never pass over the sprayed surface. Therefore, no soiling of adjacent areas, no need for cleaning.
   - Fast progression of the roadworks. The resurfaced section can be quickly re-opened to traffic.

2. High Quality
   - Optimal bond of layers provides for longevity of the road.
   - Seals and protects the existing surface.
   - High initial and permanent roughness of the resurfaced road.

The thin overlay just 1.2 to 2cm thick saves cost and, thanks to an excellent bond of layers, adds to the pavement’s longevity.
Machine Technology: SUPER 1800-2 with SprayJet Module

As a basis for the VÖGELE SUPER 1800-2 with SprayJet Module serves a normal SUPER 1800-2 of standard design which, for use as a spray paver, undergoes just slight modification and addition of the SprayJet module. All components are adapted to each other in an optimal manner and easy to operate.

Standard Emulsion Tank

The standard emulsion tank insulated against loss of heat holds 2,000 litres. The tank is heated electrically, thus maintaining an ideal emulsion temperature for spraying.

Screed Options

The AB 500 and AB 600 Extending Screeds in TV version (with tamper and vibrators) or TP1 version (with tamper and 1 pressure bar) are available for use on the SUPER 1800-2 with SprayJet Module.

SprayJet Module

The SprayJet module is based on sophisticated spray technology allowing tack coat to be spread evenly for complete coverage of the existing surface with emulsion, there are no "bald" spots. The rate of spread can be selected accurately within the range of 0.2 and 1.6kg/m²*.

*See note on page 23.
Operating Concept
Control of the SprayJet module is from a control panel provided on the module itself. Just like the ErgoPlus® operating concept for the paver, handling is extremely easy due to self-explanatory symbols.

Extra Emulsion Tank
For contracts requiring large rates of spread, an extra emulsion tank is available. The extra tank holds another 5,000 litres.
The SprayJet module in its standard version is equipped with an emulsion tank holding 2,000 litres. As a matter of principle, the tank should be filled with hot emulsion. In order to keep the bitumen emulsion at the desired temperature, a heating unit (2 x 7kW) is installed. In addition, effective insulation of the tank avoids loss of heat. Temperature sensors are fitted in order to prevent the emulsion from burning and to automatically turn off heating as soon as the emulsion level drops below a defined limit. The emulsion temperature can be set via controller to a value between 0 and 80 °C. In case the emulsion supplied is too cold, an auxiliary gas heating system quickly heats it to the desired temperature.

In order to maintain the bitumen emulsion in a highly homogeneous state, the tank of the SprayJet module comes with a powerful heated pump circulating the emulsion. Beyond that, if the tanker supplying the emulsion does not have its own on-board pump, this circulation pump can be used for filling the paver’s emulsion tank. The pump delivers up to 270 litres/min.

The standard emulsion tank of the SprayJet module holds 2,000 litres.
The Extra Emulsion Tank

For contracts requiring very large rates of spread, an extra emulsion tank is available as an option for the VÖGELE spray paver. The extra tank holds 5,000 litres, so that a total of 7,000 litres of bitumen emulsion can be carried on board the paver. The extra tank is accommodated in the paver’s material hopper. A stand-alone heating unit operated with diesel fuel and featuring a heating capacity of 30kW is installed in the extra tank, thus keeping the emulsion at the desired temperature. Furthermore, the extra tank comes with its own pump circulating the emulsion and maintaining it in a highly homogeneous state. If the emulsion level in the standard tank drops below 1,000 litres, emulsion is automatically delivered from the extra tank into the standard tank.

When equipped with the extra emulsion tank, supply of the paver with mix is by a feeder transferring the material, via a receiving bin in the extra tank, right onto the paver’s conveyors.

With the extra tank, a total of 7,000 litres of bitumen emulsion are available for spraying.

With the extra emulsion tank installed, supply of the paver with mix is by a feeder via receiving bin.

A heating unit (diesel fuel) featuring a heating capacity of 30kW maintains an ideal emulsion temperature.
VÖGELE Spray Technology

The SUPER 1800-2 with SprayJet Module is equipped with five spray bars. The front spray bar has six spray nozzles and is located between the machine’s crawler tracks right behind the push-rollers. An articulated spray bar installed on each side of the paver comes with 7 nozzles per side. Finally, a short spray bar with two nozzles is provided right behind each crawler track. This arrangement of the spray bars allows full coverage of the existing surface with emulsion, even when the pave width varies.

Much like the functionality of an ink jet printer, the nozzles of the VÖGELE spray paver do not spray continuously but in pulsed operation. The frequency of the spray pulses is adjusted automatically as a function of the selected rate of spread, pave speed and pave width. As a result, complete coverage of the existing surface with a uniform film of emulsion is achieved, without any overlaps.

VÖGELE Spray Technology also reduces substantially the formation of spray mist. This is due to a very low spray pressure of no more than 3 bar on the one hand, and larger droplets on the other. As a result, the VÖGELE SprayJet system is beneficial to the job site teams, too, as spray mist is reduced to a minimum. Furthermore, the system allows spraying along kerbstones without getting emulsion on them.
The spray nozzles are opened and closed pneumatically. Compressed air tanks with a total capacity of 60 litres are installed in the paver.

A very low spraying pressure of no more than 3 bar allows absolutely uniform spreading of bitumen emulsion and a clean result when spraying along kerbs.

The double slotted high-quality spray nozzles guarantee perfect spraying.

Much like the functionality of an ink jet printer, the nozzles of the VÖGELE spray paver do not spray continuously but in pulsed operation. The frequency of the spray pulses is adjusted automatically as a function of the selected rate of spread, pave speed and pave width.
The VÖGELE SprayJet module allows to precisely select a rate of spread ranging from a very small quantity of emulsion through to a large quantity. The range extends from 0.2 to 1.6kg/m². Rate of spread and pave width can be selected independently of the pave speed. The possibility of spreading emulsion accurately at a very small rate of just 0.2kg/m² makes VÖGELE SprayJet Technology unique in the market. Attention shall be paid to the fact that the spread rates are dependent upon the kind of emulsion used, the emulsion viscosity and the temperature when applied.

*See note on page 23.
The SprayJet module’s colour touchscreen display provides the operator with all important information and allows him to easily set the desired rate of spread.

For the spray bars of the SprayJet module, 3 different types of slotted spray nozzles are available: nozzles of the sizes 07, 10 or 16. The spray nozzles size 07 have a throughput of 70% compared with the nozzles of size 10 (100%). The nozzles size 16 have a throughput of 160%.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Unit</th>
<th>Nozzles Size 07</th>
<th>Nozzles Size 10</th>
<th>Nozzles Size 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spraying Pressure</td>
<td>bar</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rate of Spread</td>
<td>kg/m²</td>
<td>0.2 - 0.5</td>
<td>0.3 - 0.8</td>
<td>0.8 - 1.6</td>
</tr>
<tr>
<td>Length of Spread Area in Direction of Motion</td>
<td>mm</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>
The Operating Concept

Just like the ErgoPlus® paver operating system, the SprayJet module is very easy to control and uses self-explanatory symbols. The specified rate of spread or desired emulsion temperature, for example, can thus be set very conveniently.

Like all “dash 2” generation pavers, the SUPER 1800-2 with SprayJet Module comes with the VÖGELE ErgoPlus® operating concept, which substantially facilitates handling of the paver for the paving team. For use with the SprayJet module, an additional menu for spraying is integrated in the display of the ErgoPlus® operating console.

In addition to the functions for activating and deactivating the spray system, this menu also provides two other very useful features that allow the “Start of Job” and “End of Job” to be selected at the push of a button. The “Start of Job” function ensures that the various spray bars are activated in staggered intervals, so that the spraying process over the entire pave width starts precisely at the specified point. When activating the “End of Job” function, spraying stops accordingly.

It is this easy:

On the ErgoPlus® console, the controls are clearly arranged. Via the display panel, paver functions can be easily set up.

Just press the F7 key to call up the screen for the SprayJet module.
The ErgoPlus® operating system is well liked by paver operators the world over.

For control of the SprayJet module, a separate on-board computer is installed. A control panel is provided on the module.

Press the F2 key to activate the automatics for spraying.

By pressing the F6 or F8 key, the “Start of Job” or “End of Job” function is selected.
For the SUPER 1800-2 with SprayJet Module, two screed options are available: AB 500 and AB 600. Either of the Extending Screeds handles pave widths up to 6m. AB 600 comes with a basic width of 3m and extends hydraulically up to 6m. AB 500 builds up to its maximum width of 6m with additional bolt-on extensions (75cm). The widths of the screeds are limited electronically to a maximum of 6 metres. Either screed is available in TV version (with tamper and vibrators) or in TP1 version (with tamper and 1 pressure bar).

Like all VÖGELE screeds, the AB 500 and AB 600 Extending Screeds, too, feature electric heating. Screed and emulsion tanks are heated independently, so that heating of the emulsion can take place without having to heat the screed.

On the two ErgoPlus® operating consoles for the screed operators, all vital information is displayed. Thanks to self-explanatory symbols, set-up and adjustments can easily be made.

The AB 500 extends hydraulically from 2.55m to 5m. For 6m applications, 75cm bolt-on extensions are added. The screed’s pave and spray width is limited electronically to 6 metres.
Possible Configurations

<table>
<thead>
<tr>
<th>SUPER 1800-2 with SprayJet Module</th>
<th>Maximum Pave Width 5m</th>
<th>Maximum Pave Width 6m</th>
<th>Extra Emulsion Tank 5,000 litres</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB 500 TV Extending Screed</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AB 500 TP1 Extending Screed</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AB 600 TV Extending Screed</td>
<td>–</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AB 600 TP1 Extending Screed</td>
<td>–</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The AB 600 comes with a basic width of 3m and extends hydraulically up to its maximum pave and spray width of 6 metres.
Conversion of the Machine for High Productive Utilization

When it comes to innovative developments, VÖGELE always focus on designing machines featuring economical and versatile utilization. Thus, SUPER 1800-2 can be used as a conventional paver or a spray paver. For pave widths larger than 6m, all that needs to be done is remove the lateral spray bars.

If there are currently no jobs requiring emulsion spraying, the SprayJet module can be removed in just 6 hours. This allows the paver to be available for all kinds of paving jobs at any time.

Just a few steps are required to convert the SUPER 1800-2 with SprayJet Module back into a standard paver.

1. Loosen screwed joints

Conversion begins with separation of the hydraulic, pneumatic and electrical connections at the interface between the paver and the SprayJet module.

2. Separate emulsion piping

Then the emulsion pipes leading to the spray bars are separated as well.
Versatile Utilization

➢ The modular design of the SUPER 1800-2 with SprayJet Module allows quick and uncomplicated conversion back into a standard paver.

➢ The paver is ready for universal use – as a spray paver or conventional paver for all kinds of paving jobs.

➢ Enhanced productivity through high utilization of the machine.

➢ A SUPER 1800-2 of standard design, serving as a basis for the spray paver, simplifies maintenance and upkeep.

3. Remove spray bars

For pave widths larger than 6 metres, the lateral spray bars need removing. All other spray bars can remain on the paver.

4. Lift SprayJet module from the paver

Now the SprayJet module is lifted off the machine. Then the operator’s seat on the right and the guard-rail are fitted in place.

5. Refit hardtop in place

After just 6 hours, conversion is completed and the paver ready for work again.
Wide Range of Applications

The SUPER 1800-2 with SprayJet Module is a sophisticated piece of equipment for versatile application. The machine is ideal for paving thin wearing course. But thanks to modern spray technology, the paver with SprayJet module also perfectly handles all conventional paving jobs where two layers need to be bonded with bitumen emulsion. The VÖGELE spray paver’s advantage: spreading tack coat and paving asphalt take place in a single pass. This reduces the duration of roadworks and avoids soiling of adjacent areas. Vehicles on the job site never travel on the emulsion, as it is immediately covered with asphalt.

The wide range of applications offered for the SUPER 1800-2 with SprayJet Module provides for a high productive utilization of the machine and high cost-efficiency.

**Resurfacing Motorway**
Thin overlay paved on spray seal, “hot on hot”.

- Pave Width: 8m
- overlay paved in 2 strips of 4m each, “hot to hot”
- Layer Thickness: 1.5cm
- Rates of Spread: 0.45kg/m² on concrete, 0.8kg/m² on asphalt

**Resurfacing Rural Road**
Conventional paving after spraying tack coat with the SprayJet module. Roadway kept open to traffic.

- Pave Width: 7m
- 2 strips of 3.5m each, paved “hot to cold”
- Layer Thickness: 4.5cm
- Rate of Spread: 0.2kg/m² on asphalt
Resurfacing National Highway
Thin overlay paved on spray seal, “hot on hot”.

Pave Width: 13 m
3 strips of 4 – 4.5 m each,
paved “hot to cold”

Layer Thickness: 2 cm
Rate of Spread: 1 kg/m² on asphalt

Resurfacing Roadway in Residential Area
Conventional paving after spraying tack coat with the SprayJet module.

Pave Width: 5 m
paved in 1 strip

Layer Thickness: 4 cm
Rate of Spread: 0.35 kg/m² on asphalt

Pavement Rehabilitation on Motorway
Thin overlay of noise-reducing asphalt.

Pave Width: 7.6 m
2 strips of 3.8 m each,
paved "hot on hot"

Layer thickness: 1.5 cm
Rate of Spread: 0.35 kg/m² on asphalt
The Facts in Brief

- Standard emulsion tank holding 2,000 litres, heated electrically.
- Extra emulsion tank holding 5,000 litres available as an option.
- Sensor-controlled safety shutdown of heating unit to prevent the emulsion from burning when the level of emulsion in the tank is low.
- Operation of the SprayJet module is easy thanks to ErgoPlus®.
- The rate of spread can be easily selected, from small quantities (0.2kg/m²) up to large ones (1.6kg/m²).
- SUPER 1800-2 with SprayJet Module handles a maximum pave width of 6m.
- The SprayJet module allows low-cost resurfacing of pavements with thin overlay on tack coat or spray seal, hot on hot.
- The machine is designed for universal use - as a spray paver or a standard paver for conventional paving jobs.
- Conversion of the spray paver back into a conventional standard paver takes no more than 6 hours.
SUPER 1800-2 with SprayJet Module

**Power Unit**
- Engine: PERKINS Type: 1106D-E66TA
- Output: Nominal: 129.6kW at 2,000 rpm (according to DIN)
- ECO Mode: 125kW at 1,800 rpm
- Fuel Tank: 300 litres
- Electrical System: 24 V

**Undercarriage**
- Crawler Tracks: provided with rubber pads
- Ground Contact: 2,830mm x 305mm
- Traction Drive: hydraulic, separate drive and electronic control provided for each crawler track
- Speeds: Paving: up to 20m/min., infinitely variable
- Travel: up to 4.5km/h, infinitely variable

**Conveyors and Augers**
- Drive: separate hydraulic drive provided for each conveyor and each auger
- Conveyors: 2, with replaceable feeder bars, conveyor movement reversible for a short time
- Augers: 2, with replaceable auger blades, auger rotation reversible
- Auger Height: infinitely variable by 20cm, hydraulic

**Material Hopper**
- Hopper Capacity: 13 tonnes
- Width: 3,265mm

**Screed Options**
- AB 500: basic width 2.55m, infinitely variable range 2.55m to 5m
- maximum pave width 8.5m
- maximum spray width 6m
- AB 600: basic width 3m, infinitely variable range 3m to 6m
- maximum pave width 9m
- maximum spray width 6m

**Screed Versions:**
- TV, TP1

**SprayJet Module**
- Emulsion Tank: heated electrically, regulated by thermostat
- Holding Capacity: 2,000 litres as standard, with extra tank (option) 7,000 litres
- Tank Shell: insulated against loss of heat
- Emulsion Level Indicator: mechanical
- Spray Bars: Width: extending from 2.55m to 6m
- Number of Units: 5
- Distance between Nozzles: 250mm
- Spray Nozzles: double slotted
- Rate of Spread: 0.2 to 1.6kg/m²*
- Spray Cone: 120°
- Spraying Pressure: max. 3 bar

**Dimensions and Weights**
- Width: 2.55m
- Length: Tractor Unit and Screed in Transport Position:
  - AB 500/AB 600 TV: 6m
  - AB 500/AB 600 TP1: 6.1m
- Weight: 20.8 tonnes (with AB 500 TV and SprayJet Module, no emulsion)

**Key:**
- T = equipped with Tamper
- P1 = equipped with 1 Pressure Bar
- AB = Extending Screed

*The rate of spread per square metre must be determined as a function of the emulsion to be used. The rate of spread depends on the emulsion’s consistency and temperature when applied, and on the size of nozzles used for spraying.

**Technical alterations reserved.**