Kobra Formen GmbH, 08485 Lengenfeld, Germany

Bolted individual plungers – a solution for all paving products

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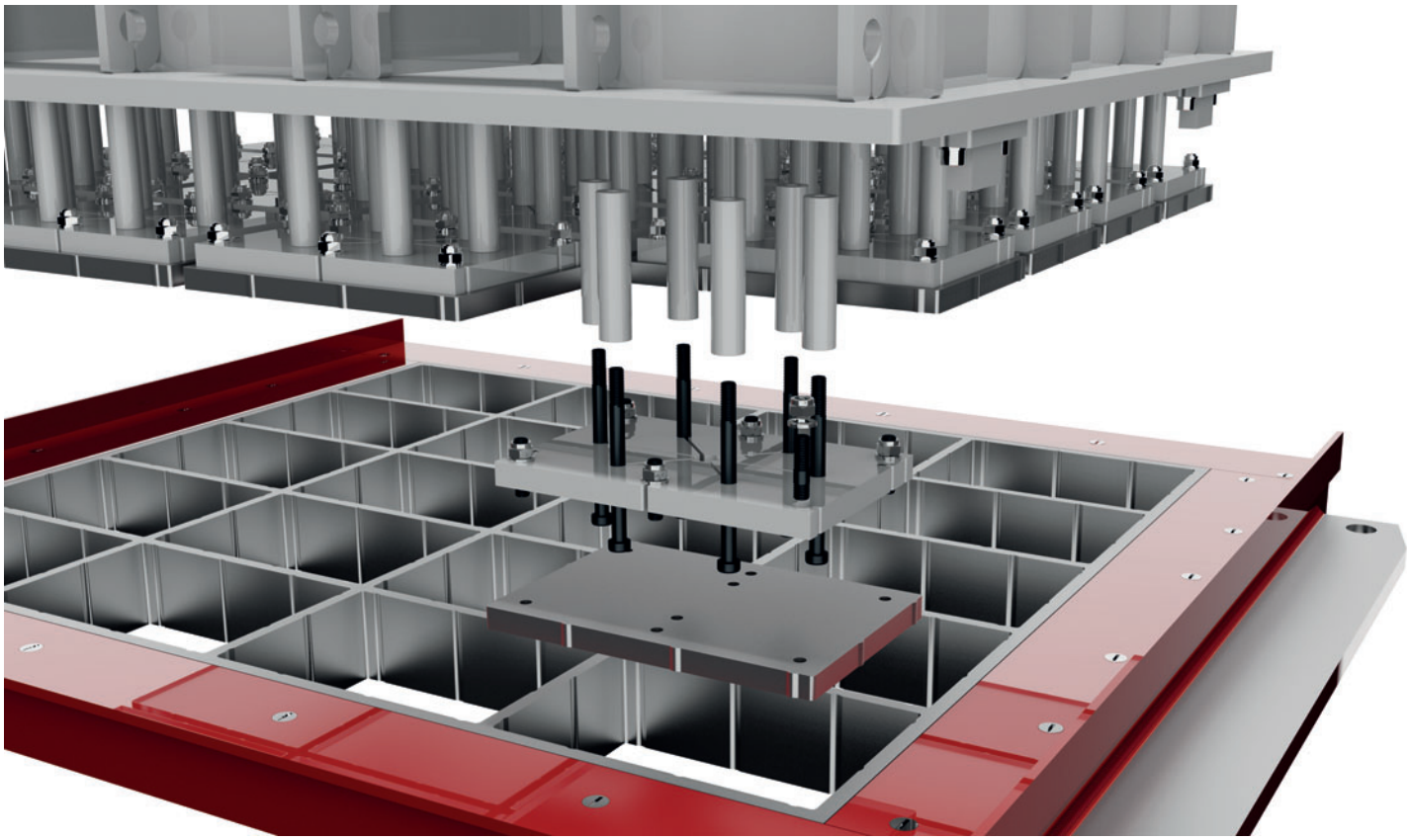
With the further development of the Singlebolt™ bolted individual plunger, Kobra Formen GmbH has consistently extended the concept of the bolted concrete block mould by an additional element which, because of its design, offers numerous advantages both in the concrete block manufacturing process and in the ease of repairs and maintenance.

Method of construction

The central element of the Singlebolt 2™ plunger is formed by round sleeves, which are 114 mm long in the standard design and arranged in parallel. They are connected directly to the bolting plate and tamper shoe with the help of a cheese head screw. A dynamically loadable connection is thus created which, compared with the welded variant, guarantees considerably higher flexibility. In other words: during the production process there is a significantly reduced risk of cracking, which represents a typical overloading pattern with welded plungers.

Advantages of the Singlebolt 2

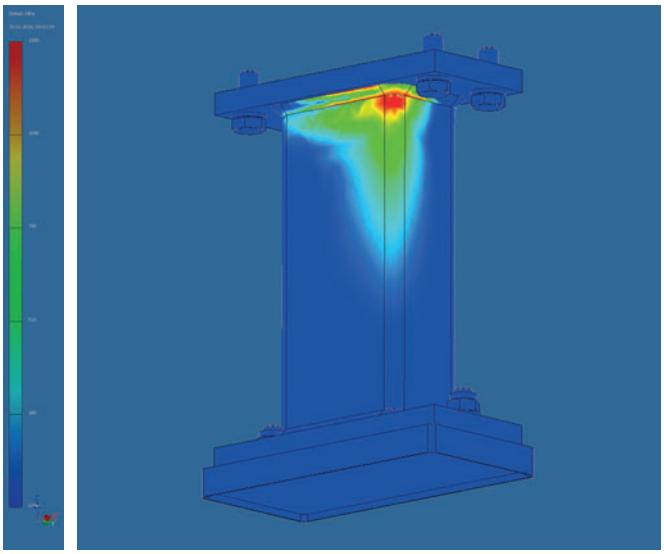
The new individual plunger is characterised by particularly high stability, which is achieved through the length, geometry and arrangement of the plunger sleeves within the mould upper part. Because the components are standardized spare parts are quickly available and can be used for the majority of paver moulds and replaced in just a few assembly steps.

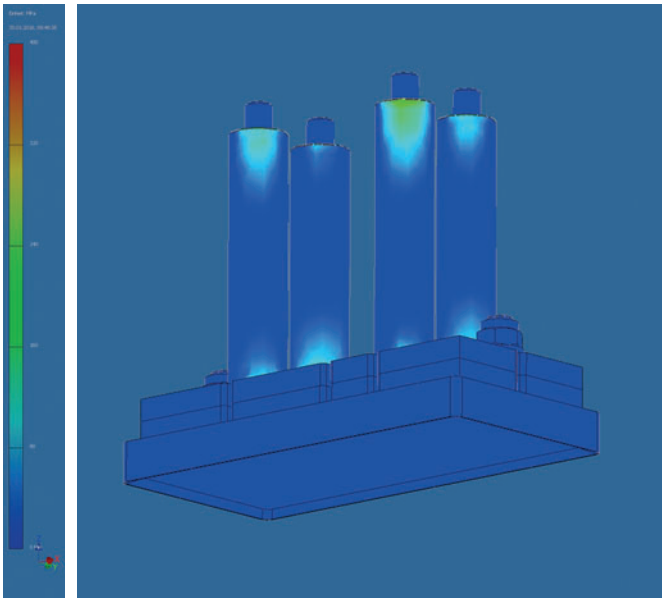


Exploded view of the Singlebolt 2 in the mould upper part

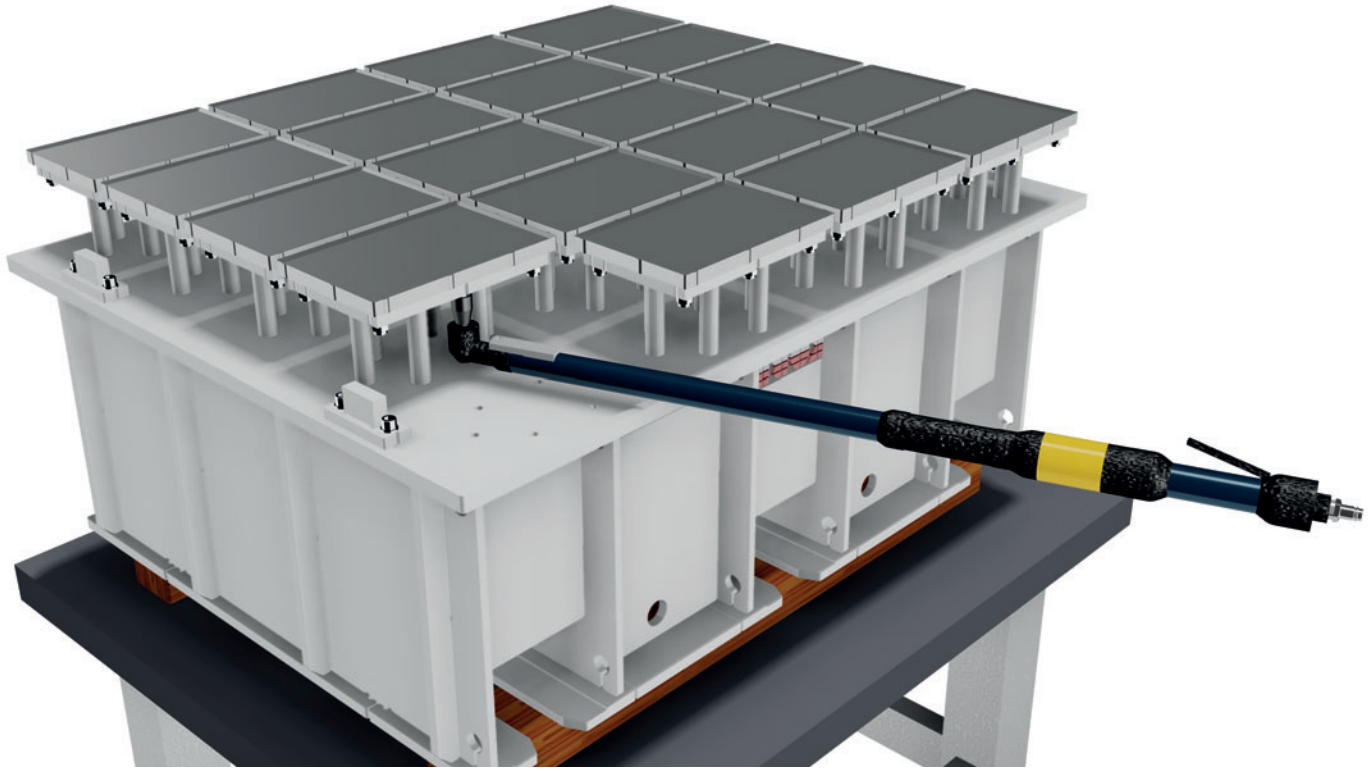
By means of an FEM simulation (Finite Element Method), where a component is divided into a finite number of sub-areas and the overall behaviour of a structure is calculated from the behaviour of the sub-areas using defined algorithms, the Kobra design engineers calculated the stresses occurring in the application process during the development phase of the new individual plunger and in this way optimised the overall design. Practical tests have largely confirmed these theoretical findings. Improvements have taken place, for example, in the arrangement of the round sleeves in the production orientation to facilitate their assembly and disassembly. This is a great advantage, in particular all for self-assemblers, due to the simplified handling.

Furthermore, a comparison was also made with the previously installed variants of the Singlebolt 2. The typical crack formations that occurred in the previous design are no longer visible in the further development. This is attributable not only to





Comparison of the Singlebolt design variants by means of a simulation according to the Finite Element Method



Offset screwdriver for assembling and disassembling the individual plungers

welding seams having been dispensed with, but also to the aforementioned length of the round sleeves. A short plunger with homogeneous pressure distribution results in a higher dynamic load capacity and thus greater durability, which creates higher added value for reusable groups.

Tools

In the case of repair and maintenance, the replacement of one or more plunger groups can be done directly in the concrete block plant by the operator. A suitable offset screwdriver that is usable for all pavingstone moulds can be procured from Kobra for this. This is possible with special modifications of the screwdriver, which can also be ordered from Kobra and comprise the extension of the handle and the exchange of the screwdriver head. The Kobra sales team is at your disposal for further information on the procurement and functional extension of the offset screwdriver.

Kobra offers customer-specific training courses on the subject of mould technology and mould maintenance. These courses are especially centered around the structural properties of the concrete block moulds and the replacement of spare and wearing parts. Workshops both at Kobra's headquarters in Lengenfeld and on-site at the concrete block plant have become standard practice where required. These can be arranged with Kobra's Service department throughout the year.

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FURTHER INFORMATION

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