

HC Sinus Slide® joints for lasting repairs in industrial floors

Damaged joints in floors are a real nightmare for every warehouse and facility manager. It is a source of continuous frustration and annoyance for owners and users of logistic buildings and warehouses.

Once a jointing problem with damage is arising there is started an irreversible spiral movement of damage which becomes worse, worse and worse until situation is intolerable.

The damage is not only existent on joint and floor but also material handling equipment, transported goods and even the forklift operators will be damaged due to liability of constantly recurring shocks and striking impacts of the wheels.

This vicious circle of damage can only be stopped by lasting repairs which neutralise the cause of damage. The cause of damage is the striking impact of the passing wheel of the forklift which will fall in the opening gap of the joint. The solution is to create a situation where wheels are continuously supported and slide, vibration and shock free, from one floor slab to another. As this feature is the specific quality of the Sinus Slide® joint, they are extremely useful for joint repair.

The power of the HC-Sinus Slide® joint is that it neutralises the impact of the shocks of the striking wheels, which is the cause of damage. With the HC Sinus Slide joint 100 % shock- and even vibration free transfers are realised, so future damage is impossible.

We have developed 2 kinds of repair solutions which, depending from the damaged situation, are extremely useful.



1. HC-Sinus Slide® repairs with jointing system

In this case the complete joint needs to be replaced or there is no joint at all between the floor slabs. The complete joints needs to be replaced if the joint is from dubious quality or there is so much vertical displacement that a fundamental repair is the only solution. The original joint normally had the following functions.



- **Free horizontal expansion and contraction** of the industrial floor. As the poured concrete dries, the inevitable contraction is taken up by the horizontal spreading of the expansion joint. Once the dilatation process is stabilised the joint only will expand slightly by extreme fluctuating temperature. The existing joint opening is a result of the shrinkage movement of the of the concrete slabs. The shrinkage of a floor slab is strongly dependent on a number of thermal variables as well as the quality of the concrete. Shrinkage can vary between 0,3 to 0,5 mm/meter. In any case, an attempt must be made to limit the opening of the joints to a maximum of 20 mm. An indication in normal conditions would be floor sections of 30 to 40 metres. However, the advice of a local expert is always recommended because shrinkage can vary considerably from country to country due to local environmental factors and concrete quality. Anyway, the problems of shrinkage and cracks is under control but there arose a new problem which can be a source of annoyance, lead to uncomfortable and unsafe work stations and big costs. That problem is the straight traditional joint opening gap.
- **Load transfer and the limit of any vertical movement.** The construction of the joint takes care the floor slabs are connected and that any vertical movement is limited. This principle enables also to realize the necessary load transfer which gives much better support of the slab and extends its life.

- The traditional straight expansion joint provides **edge protection** which is **however not sufficient by some kind and/or intense traffic**
- An expansion joint is also suitable for use **as day joint profile** and a help when finishing the floor.

Once the shrinkage process is stabilised the only functions of the expansion joints are horizontal movement of the floor slabs in case of extreme fluctuating temperatures, the limitation of any vertical movement, load transfer and edge protection. In case of intense forklift traffic the opening gap of the joints is a source of continuous frustration and will cause huge costs and problems. The HC Sinus Slide® Joint has a sliding capacity which enables smooth load transfers and vibration- and shock free wheel crossings on the joint. You can still see a opening gap but you don't feel or hear it anymore. So if joint repair is necessary the HC-Sinus Slide® joint is the only lasting and final solution. If was chosen for the Sinus Slide® technology by the start of the project no repair would have been necessary as there would be no damage

The repair has to be done as follows

Saw-cut the concrete full depth on both sides of the damaged joint on a width of approximately 800 to 1000 mm. Remove carefully the concrete and re-level and re-compact the sub-base material.



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Then drill and fix deformed bars ($\varnothing 16 \times 600$ lg) in each concrete slab. At least 3 dowels per meter in each concrete slab. 300 mm of the dowel must be fixed in the concrete (ideally with resin anchorage system) and 300 mm must stick out. Put also special primer on all vertical sides of the concrete slab.



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Install a HC Sinus Slide® joint in the middle of the gap opening between the concrete slabs. Level out the HC Sinus Side® joints down and across. Eventually, weld the dowels fixed in the concrete slabs to the anchorage system of the HC Sinus Slide joint or use reinforcing mesh to link dowels and joint connectors.



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Then fill up the opening gap with (reinforced) concrete or special repair concrete. Finish the floor by polishing. It is recommended to use a HC Sinus Slide® joint with 5 mm foam between the undulated lips to permit a horizontal movement in the two directions in case of extreme fluctuating temperatures. This repaired jointing system with sliding capacity will realise optimal smooth load transfers by 100% shock- and even vibration free wheel crossings. Future damage is almost impossible and unprecedented comfort is achieved. Yearly savings on forklifts wheels are huge.



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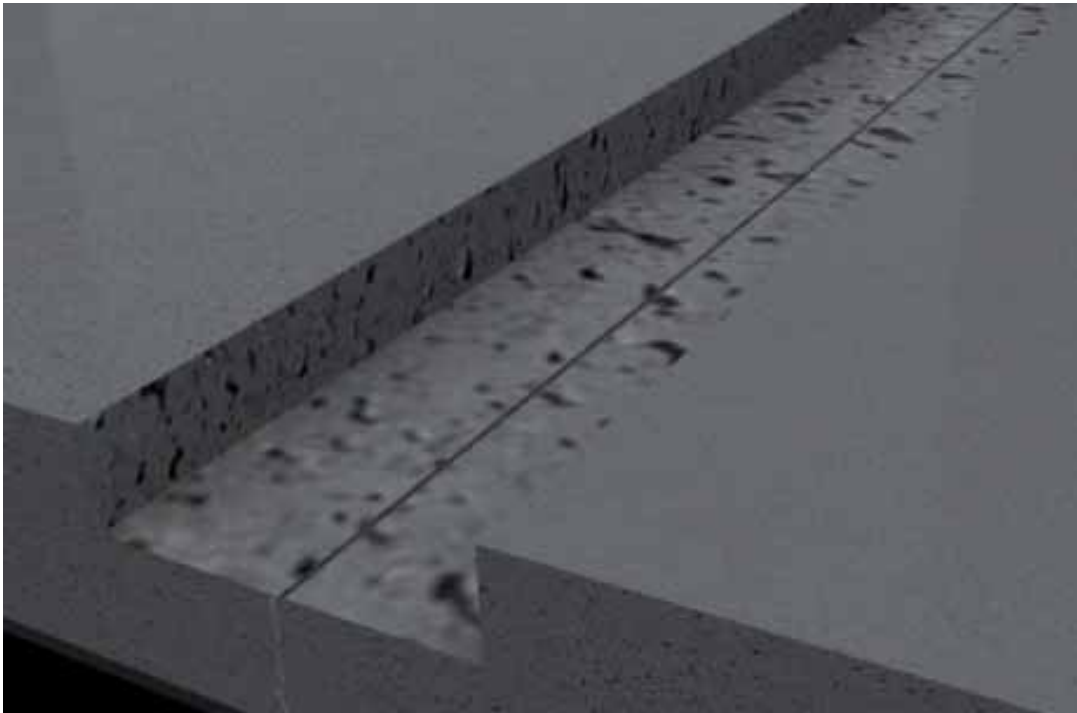
2. HC-Sinus Slide® repair joint without jointing system

For repairs on elevated slabs the procedure is similar but there is no need for a complete joint as the load transfer will be realised by the pre-stressed hollow core slabs or underlying supporting floor. Also if the connecting jointing system is still in good condition the whole joint doesn't need to be removed. What is good can stay in the concrete. You only need to remove the damaged surface of concrete and joint.

Here our special designed HC-Sinus Slide® repair joint is a sustainable and reliable solution. This repair joint is standard with 5 mm foam between the undulated plates and with a round foam on bottom to separate the filling substance.

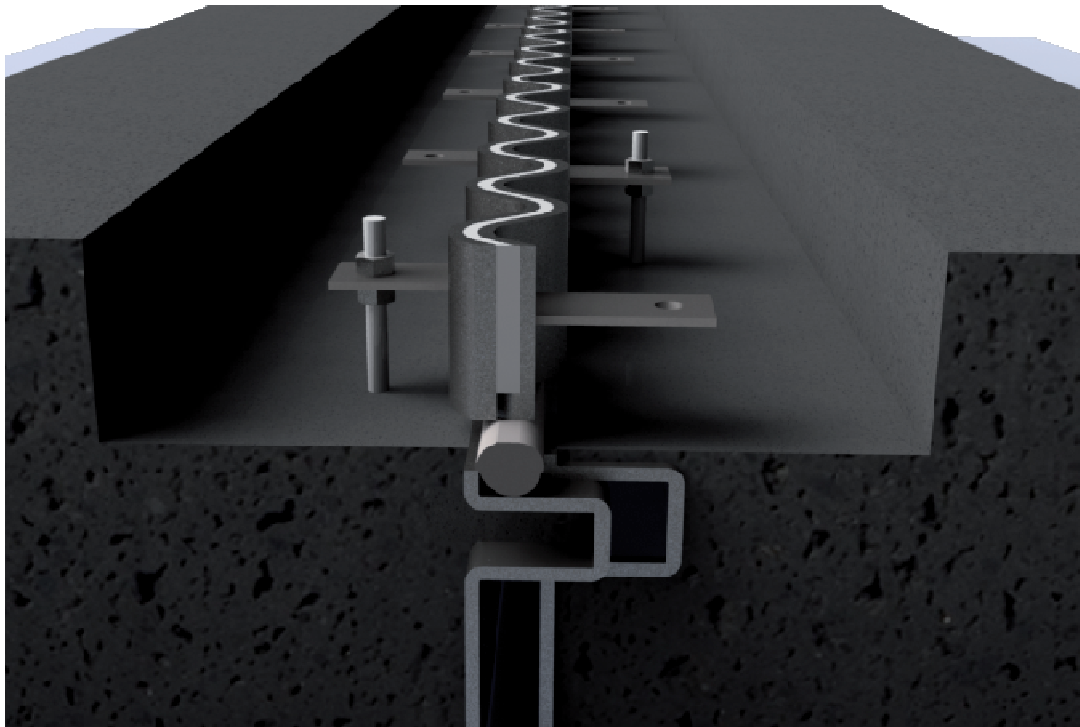
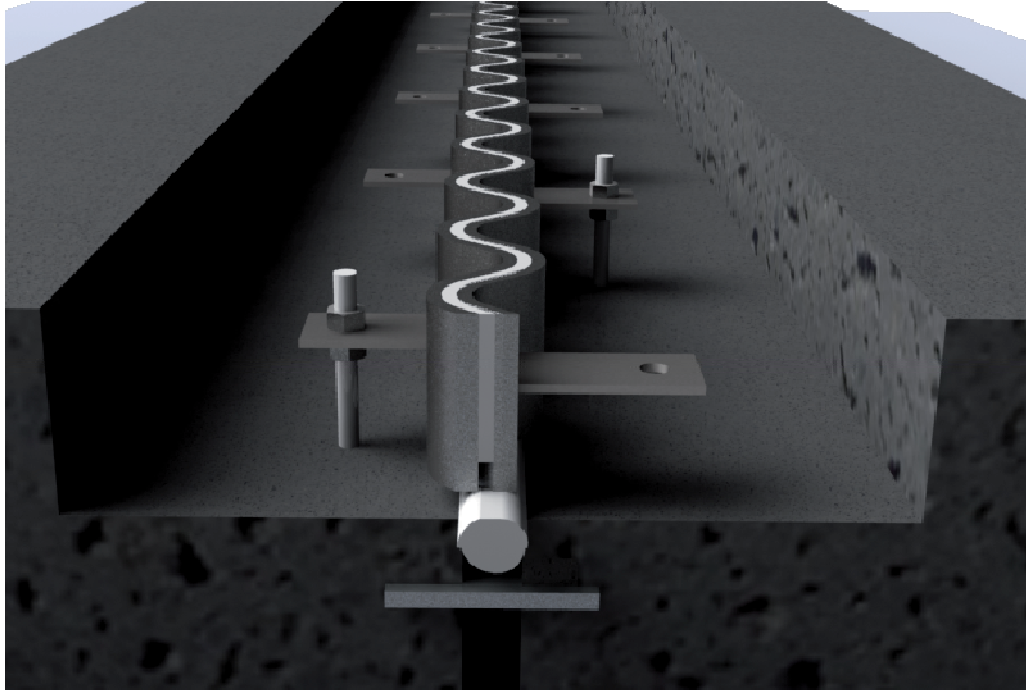
The repair has to be done as follows

Saw-cut away the concrete on both sides of the joint on a width of approximately 100 to 150 mm and a depth of about 100 mm accordingly to the accessed damage.



Put also special primer on all sides of the concrete slab for good adhesion of filling substance. Drill some holes in the concrete bottom positioned at the same distance as the anchorage of the HC-Sinus Slide® repair joint. Install screwed rod trough the anchorage openings and fix into the drilled holes. Level out the HC Sinus Slide® joints down and across.

Fill up the opening gap with (reinforced) concrete or special repair concrete and finish the floor by polishing as soon as possible.



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