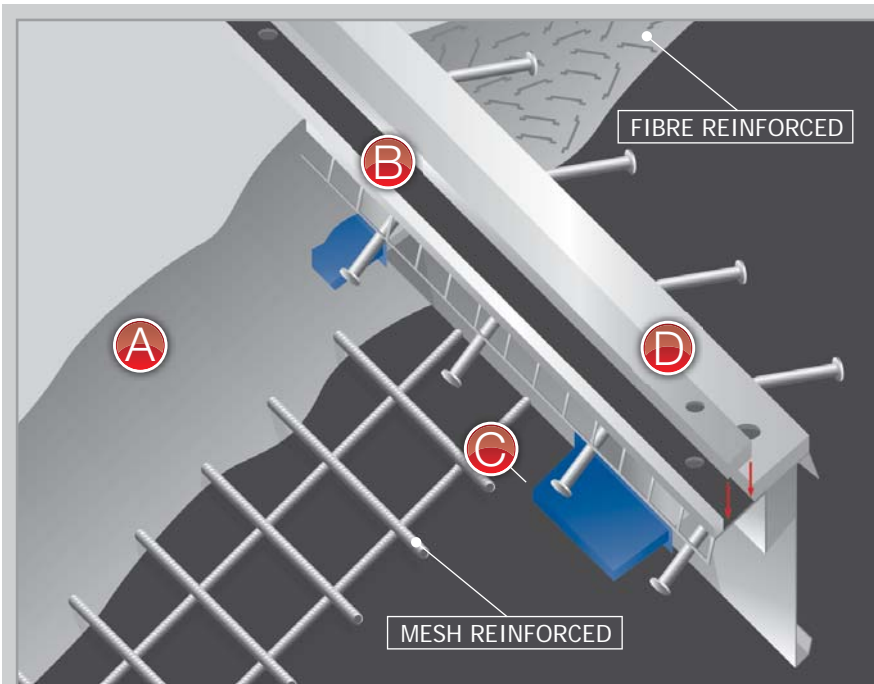


AlphaSLIDE

DATASHEET ISSUE 1.1
7 December 2009



APPLICATION:

- For heavy-duty applications on jointed, jointless, steel fibre or mesh reinforced ground bearing and suspended floor slabs on piles, bar or steel fibre reinforced.
- For joint openings up to 40mm maximum.



We recommend that load transfer is calculated for all slabs by the engineer

FEATURES:

- 'Leave-in-place' steel joint and formwork system with 10mm thick cold drawn square edge steel strips mounted on steel divider plates.
- 10mm thick AD10 Plate Dowels and Sleeves at 600mm centres provides load transfer across the joint.
- 10mm diameter x 100mm long shear studs induction welded to the divider plates.
- Unique steel infill strip that when fastened in place eliminates gap at joint. Infill strip available in various sizes to suit joint opening.
- Simple end to end lapped connection.
- Installation by AlphaFix Installer or Pin Fixing method.

BENEFITS:

- Narrow profile means the joint system is easy to install level with the floor compared with other 'S' curve type joint systems that are much wider.
- Continuous bridge across the joint by 10mm thick cold drawn steel strips.
- The 10mm thick steel strips provide heavy duty joint edge (arris) armoured protection which significantly reduces the joint maintenance requirement compared to other joint types.
- Joint load transfer by AD10 Plate Dowel is superior to round dowels and allows 2-way lateral movement, negligible vertical movement between adjacent slabs (4 times less than any other joint tested) and 4 times greater joint stiffness at 20mm joint opening.
- Shear studs firmly anchor the steel strips into the concrete and resist movement of the strip from wheel impact.
- Lapped end bolted connection speeds up accurate installation and eliminates on-site welding requirements.
- Reusable AlphaFix Installer facilitates very accurate floor levels to be achieved with the simple micro height adjustable levelling system.

A: Slab Depth B: AlphaSLIDE to suit

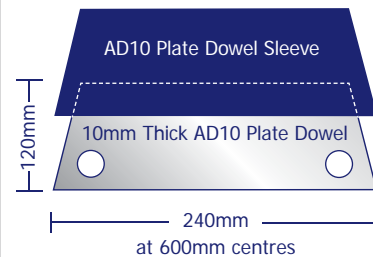
Standard heights available

210 - 240mm	SL - 200
235 - 265mm	SL - 225
260 - 290mm	SL - 250
285 - 315mm	SL - 275
310 - 340mm	SL - 300



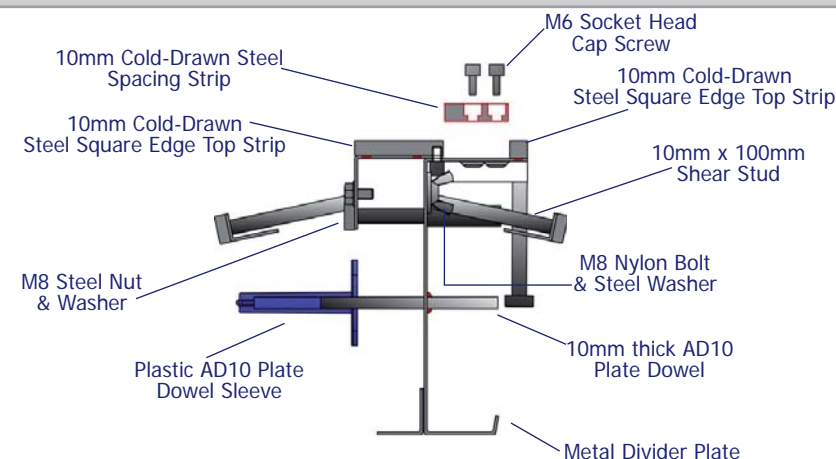
For slab depths less than 130mm or greater than 340mm please contact Permaban.

C: AD10 Plate Dowel



D: Infill Strips (width)

10mm	20mm
12mm	25mm
16mm	35mm



UK Patent Application No. 0817445.0



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The load transfer from one concrete panel to the adjacent panel has traditionally been by the use of round steel dowels across the joint. Round dowels do not allow lateral movement which was not generally appreciated as required until the development of plate dowels allowed lateral movement and also provided a better load transfer efficiency.

When the 'Ultimate Load' (see table 1) is reached, failure of the dowel or concrete will occur. The failure mode of the dowel will be either by shear or bending or a combination (see table 1) of the two. However, it is more likely that the concrete will fail due to bearing or bursting. A number of factors determine the Ultimate Load. These factors are concrete strength, joint opening, slab depth, the improvement to the concrete flexural strength

provided by the reinforcement (steel mesh or steel fibre) at the area of the joint (the Re3 factor), geometry of the dowel, dowel steel strength at yield, thickness of the dowel, the amount of embedment of the dowel in the concrete and the dowel centres. Some of these factors are fixed by the product design, such as the factors relating to the dowel i.e dowel geometry, dowel centres and dowel steel strength. However, the other factors outlined above will vary and influence the Ultimate Load. The table below indicates the theoretical calculated Ultimate Load per dowel, concrete limit and Ultimate Load per metre for various typical slab thicknesses non-reinforced and reinforced with steel fibres.

For extra heavily loaded joints in excess of the loads in Table 1 on suspended slabs additional

reinforcement can be incorporated into the joint at extra cost.

Physical ultimate load tests on a 200mm thick concrete slab reinforced with 40kg/m³ steel fibre, unsupported under the AlphaJoint showed no failure at the joint but a shear failure within the concrete at a load in excess of 175kN.

For slabs suspended on piles, each slab must be designed taking into account the ultimate load transfer capacity of the joint. As a general rule of thumb, where the distance between the applied concentrated load and the joint exceeds 1 metre and the working load does not exceed either a 'back-to-back' rack leg load of 60kN/leg or a single concentrated load of 300kN, the joint load transfer capacity is unlikely to be exceeded.

be at the joint. It is also necessary to ensure that the load transfer requirement at the joint is within the Ultimate Load capability of the concrete and dowel system at the joint position.

Please note that the figures shown in Table 1 relate to one specific set of slab factors only. We strongly recommend that for each slab design the engineer determines the load transfer requirement at the joint based on the loads on the slab and Permaban can recommend consulting engineering practices to assist with this. The engineer should also determine the Ultimate Load capability for the concrete and dowel system at the joint and Permaban can provide assistance with this.

Table 1: Theoretical calculated ultimate loads at failure of dowel or concrete

(For four typical slab thicknesses, 40N/mm² concrete strength and 30mm joint opening. For other joint openings and load transfer capacities please contact Permaban)

	Slab Thickness (mm)	Dowel Centres (mm)	ULTIMATE LOAD per DOWEL (kN)					ULTIMATE LOAD per METRE at joint (kN/m)
			Dowel Limit			Concrete Limit		
			Shear	Bending	Combined Shear & Bending	Bearing	Bursting	
			AD10 Plate Dowel					AD10 plate dowel @600mm centres
Non-reinforced concrete (Re3 Factor = 0)	200	600	246.5	76.1	81.4	108.0	38.5	64.2
	250	600	246.5	76.1	81.4	108.0	44.9	74.9
	300	600	246.5	76.1	81.4	108.0	50.4	83.9
	350	600	246.5	76.1	81.4	108.0	54.9	91.5
Steel fibre reinforced concrete at 40kg/m ³ (Re3 Factor = 0.8)	200	600	246.5	76.1	81.4	108.0	66.5	110.8
	250	600	246.5	76.1	81.4	108.0	75.8	126.4
	300	600	246.5	76.1	81.4	108.0	85.0	126.8
	350	600	246.5	76.1	81.4	108.0	93.5	126.8

Table 2: Joint Weights & Pack Sizes (approx.)

	AlphaSLIDE 200	225	250	275	300
Joints per bundle	20	20	15	15	15
Single 3m joint weight (kg)	38.4	39.9	41.4	42.9	44.4
Total bundle weight (kg)	848	878	701	724	746



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