Betonelli

BetonJoint SYSTEM

Beton Armoured Floor Joint System

FREE MOVEMENT JOINT SYSTEM
FOR HEAVY DUTY CONCRETE FLOOR

Introduction

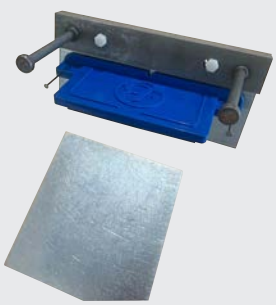
Beton prefabricated armoured floor joint system is designed as per TR34.4 to meet the demanding needs of today's industrial concrete ground bearing and piled floors.

System Benefits

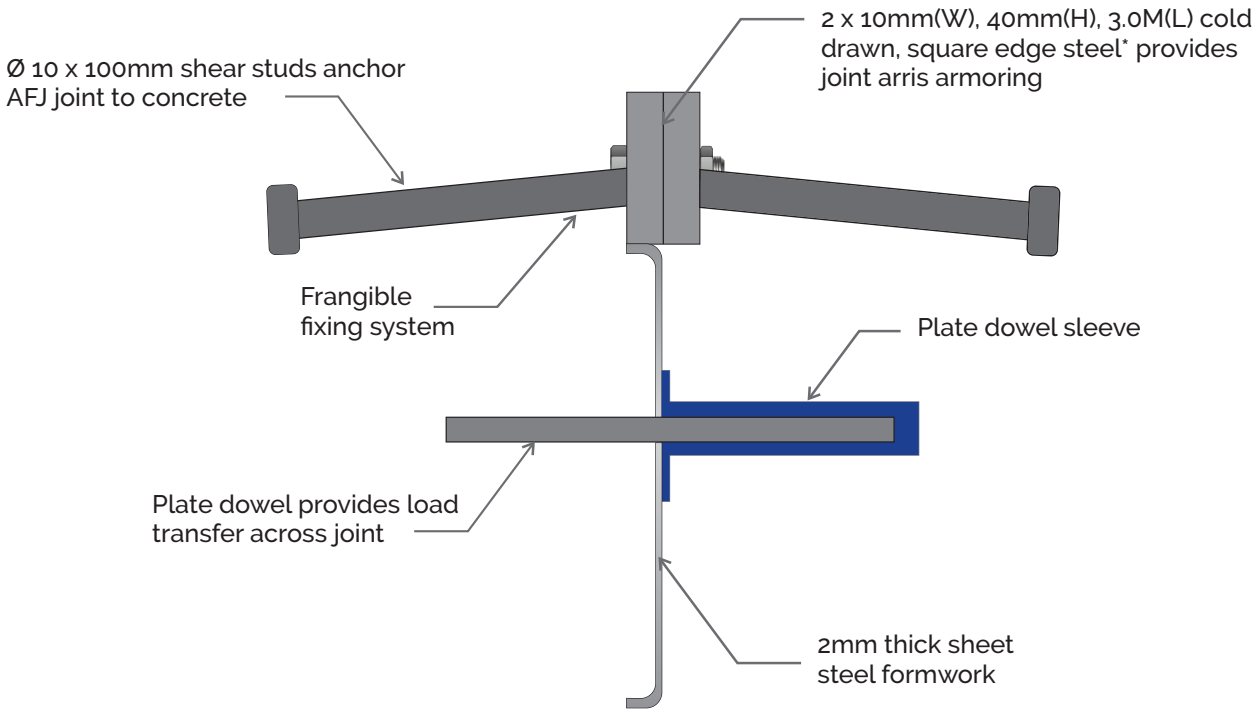
- ★ Easy and fast installation with a help of fixing devices
- ★ Prefabricated leave-in-place free movement joint system with a function of formwork
- ★ A wide range of integral load transfer mechanisms to suit all floor loadings.
- ★ Heavy Duty performance with cold drawn steel for extreme armoring of joint arises.
- ★ Easy and fast installation with a help of fixing devices
- ★ The system enables flooring contractors to cast industrial concrete floors for the high flatness category and super flat floor construction.

System is suitable for the following facilities:

- ★ Warehouses
- ★ Factories
- ★ Logistics Centers
- ★ Car Parks
- ★ Depots



Configuration of BNAJF Joint



Material and Dimensions

Beton Joint is designed for floor slab thickness from 100mm to 300mm, and joint opening up to 20mm. For the rest of slab thickness and joint opening,

Beton Joints provided variant versions such as plain steel, hot dip galvanized, stainless steel to all working environments.

Beton Joint covers not only all standard products, but also intersections, such as 4-ways section, 3-ways section, "L" 2-ways section and rounded section.

We provides the column isolators with circular and rectangular versions for customer to select.

Table 1. Plate Dowel Type

Plate Type	Size B x H	Plate Thickness T	Joint Opening
BNFJD6	146 x 150mm	6mm	0~15mm
BNFJD10	146 x 150mm	10mm	15~20mm

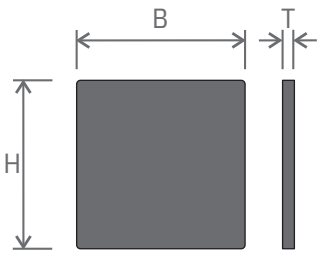
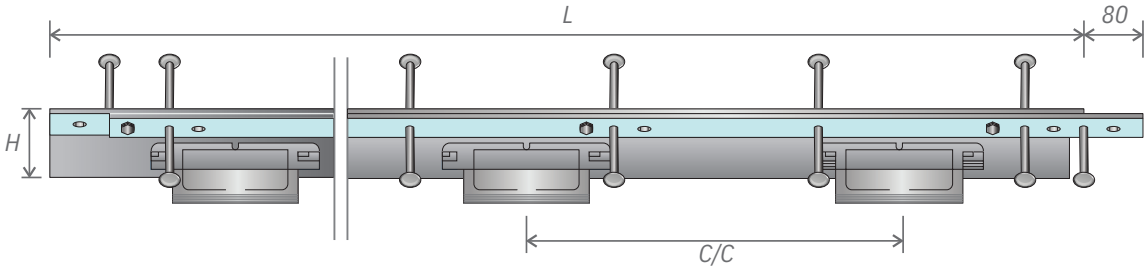


Table 2. Materials

Version	Joint Arris Armoring	Sheet Steel Divider	Plate Dowel	Shear Stud	Dowel Sleeve
BETON JOINT **Plain Steel**	S235JRC+C	DC01 HDG	S355J2+N	S275JR	HDPP BLUE
BETON JOINT **HDG**	S235JRC+C HDG	DC01 HDG	S355J2+N HDG	S275JR HDG	HDPP BLUE
BETON JOINT **Stainless Steel**	1.4301	DC01 HDG	S355J2+N HDG	S275JR	HDPP BLUE
BETON JOINT **Acid Proof**	1.4401	1.4401	1.4401	1.4301	HDPP BLUE

Types and Availability

Table 3. Dimensions



AFJ Type	Joint Height	Dowel Type	Dowel Centers C/C	Joint Length L	Suitable Slab Thickness H
With 6 mm Dowel Plate					
BNAJF6-90-3000	90 mm	FJD 6	500 mm	3000 mm	100-120 mm
BNAJF6-115-3000	115 mm	FJD 6	500 mm	3000 mm	120-145 mm
BNAJF6-135-3000	135 mm	FJD 6	500 mm	3000 mm	125-145 mm
BNAJF6-145-3000	145 mm	FJD 6	500 mm	3000 mm	145-170 mm
BNAJF6-160-3000	160 mm	FJD 6	500 mm	3000 mm	170-195 mm
BNAJF6-185-3000	185 mm	FJD 6	500 mm	3000 mm	195-225 mm
BNAJF6-215-3000	215 mm	FJD 6	500 mm	3000 mm	225-250 mm
BNAJF6-230-3000	230 mm	FJD 6	500 mm	3000 mm	245-270 mm
BNAJF6-245-3000	245 mm	FJD 6	500 mm	3000 mm	260-300 mm
With 10 mm Dowel Plate					
BNAJF 10-135-3000	135 mm	FJD 10	500 mm	3000 mm	125-145 mm
BNAJF10-145-3000	145 mm	FJD 10	500 mm	3000 mm	145-170 mm
BNAJF 10-160-3000	160 mm	FJD 10	500 mm	3000 mm	170-195 mm
BNAJF 10-185-3000	185 mm	FJD 10	500 mm	3000 mm	195-225 mm
BNAJF 10-215-3000	215 mm	FJD 10	500 mm	3000 mm	225-250 mm
BNAJF 10-230-3000	230 mm	FJD 10	500 mm	3000 mm	245-270 mm
BNAJF 10-245-3000	245 mm	FJD 10	500 mm	3000 mm	260-300 mm

Beton Joints can design and manufacture the special heights of joint as per customer requirements.

Table 4. BNAJF4 WAY "+" 4-ways sections

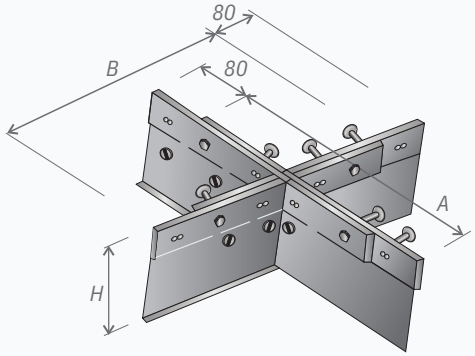
Figure	Section Type	Joint Height H	Size A	Size B
	BNAJF+90	90 mm	400 mm	400 mm
	BNAJF+115	115 mm	400 mm	400 mm
	BNAJF+135	135 mm	400 mm	400 mm
	BNAJF+145	145 mm	400 mm	400 mm
	BNAJF+160	160 mm	400 mm	400 mm
	BNAJF+185	185 mm	400 mm	400 mm
	BNAJF+215	215 mm	400 mm	400 mm
	BNAJF+230	230 mm	400 mm	400 mm
	BNAJF+245	245 mm	400 mm	400 mm

Table 5. BNAJF "T" 3-ways Sections

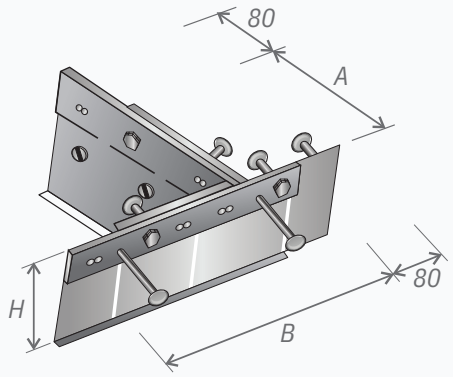
Figure	Section Type	Joint Height H	Size A	Size B
	BNAJF-T90	90 mm	160 mm	400 mm
	BNAJF-T115	115 mm	160 mm	400 mm
	BNAJF-T135	135 mm	160 mm	400 mm
	BNAJF-T145	145 mm	160 mm	400 mm
	BNAJF-T160	160 mm	160 mm	400 mm
	BNAJF-T185	185 mm	160 mm	400 mm
	BNAJF-T215	215 mm	160 mm	400 mm
	BNAJF-T230	230 mm	160 mm	400 mm
	BNAJF-T245	245 mm	160 mm	400 mm

Table 6. BNAJF "L" 2-ways sections

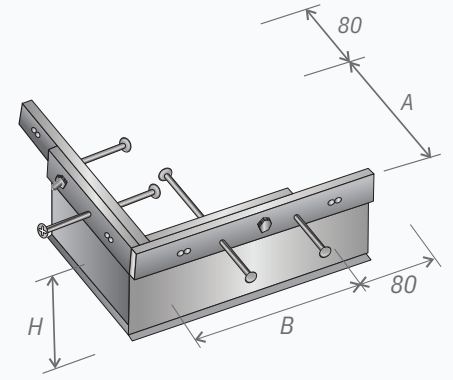
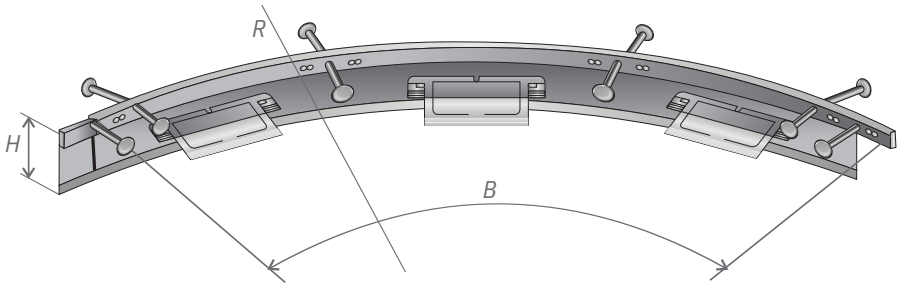
Figure	Section Type	Joint Height h	Size A	Size B
	BNAJF-L90	90 mm	160 mm	400 mm
	BNAJF-L115	115 mm	160 mm	400 mm
	BNAJF-L135	135 mm	160 mm	400 mm
	BNAJF-L145	145 mm	160 mm	400 mm
	BNAJF-L160	160 mm	160 mm	400 mm
	BNAJF-L185	185 mm	160 mm	400 mm
	BNAJF-L215	160 mm	160 mm	400 mm
	BNAJF-L230	160 mm	160 mm	400 mm
	BNAJF-L245	160 mm	160 mm	400 mm

Table 7. BNAJF "C" Circular Sections



Section Type	Angle	Radius
With 6 mm Dowel Plate		
BNAJF6-90	B	R
BNAJF6-115	B	R
BNAJF6-135	B	R
BNAJF6-145	B	R
BNAJF6-160	B	R
BNAJF6-185	B	R
BNAJF6-215	B	R
BNAJF6-230	B	R
BNAJF6-245	B	R
With 10mm Dowel Plate		
BNAFJ10-135	B	R
BNAFJ10-145	B	R
BNAFJ10-160	B	R
BNAFJ10-185	B	R
BNAFJ10-215	B	R
BNAFJ10-230	B	R
BNAFJ10-245	B	R

Resistances for BNAJF Joint

All the resistances of BNAJF Joint dowels are worked out according to TR 34, Concrete Industrial Ground Floors, 4 th Edition. The data shown in below tables for single plate dowels only.

Table 8. Design resistances of dowels in shear and bearing / bending [kN] according TR34.4 for C32/40

Dowel Type	Concrete Grade	Joint Opening	Shear Psh	Bearing / Bending Pmax plate
BNFJD 6	C35	15 mm	141.9 kN	40.7 kN
BNFJD 10	C35	20 mm	236.5 kN	77.4 kN

Table 9. Design punching shear resistance [kN] of BNFJD 6 according TR34.4 for 15 mm joint opening

Slab thickness	Punching Pp				
	C30	C35	C40	C45	C50
100 mm	12.7 kN	13.5 kN	14.4 kN	15.1 kN	16.1 kN
150 mm	20.2 kN	21.4 kN	22.9 kN	23.9 kN	25.6 kN
200 mm	29.0 kN	30.7 kN	32.9 kN	34.4 kN	36.7 kN
250 mm	39.2 kN	41.5 kN	44.4 kN	46.4 kN	49.6 kN
300 mm	50.7 kN	53.7 kN	57.4 kN	60.0 kN	64.1 kN

Table 10. Design punching shear resistance [kN] of UDR 8 according TR34.4 for 20 mm joint opening

Slab thickness	Punching Pp				
	C30	C35	C40	C45	C50
100	12.6 kN	13.3 kN	14.2 kN	14.9 kN	15.9 kN
150	20.0 kN	21.2 kN	22.6 kN	23.7 kN	25.3 kN
200	28.8 kN	30.5 kN	32.6 kN	34.0 kN	36.4 kN
250	38.9 kN	41.2 kN	44.0 kN	46.0 kN	49.2 kN
300	50.4 kN	53.3 kN	57.0 kN	59.6 kN	63.7 kN

The punching shear resistances are calculated for plain concrete ONLY, and according TR34.4 should be used also for steel and macro-synthetic fiber reinforced concrete.

Beton Joint are able to design and manufacture the Beton Joints with resistances for other joint openings or concrete grades are needed.

Guide for BNAJF Joint Installation

Step 1. Sub-base level

The sub-base must be made as accurate and level as possible to the requirements on the slab drawing. The tolerance of the level must be considered when ordering joints. Typically, the joint height will be 10 mm to 35 mm less than the slab depth.

Step 2. Joint location

The required layout, position and height of the joints will be specified on the floor slab drawing which must be followed closely. String lines are placed to identify the position of joints according to the slab layout dimensioned drawings.

Step 3. Joint Installation with help of BNAJF & Alpha-Fix

1. Joints are placed sequentially away from junction pieces or from vertical column/wall.
2. The joints are placed in the correct position according to the string line,
3. An alternative method is to use steel star pickets to fix and support each joint at 1.5m (slab thickness≤220mm) and 1.0m (slab thickness >220mm) pacing and the height is adjusted with bolts and nuts.
4. The height should be verified by laser level or similar at both ends, and the joint should be set vertical using a spirit level which can be placed across the top edges.

Step 4. Pouring concrete

Once joints are correctly positioned pouring of concrete can commence. Concrete should be poured to the surface level of the top strip with particular attention to consolidation around the dowels and sleeves. All plate type dowels require close attention to filling around the dowels to eliminate the possibility of air entrapment. This should be done with a suitable concrete vibrating. Both sides of joints can be poured at the same time if so required.

Step 5. Re-check joint height

After the use of the poker vibrator, check the installed height of the joint once again. The joint may lift within the concrete when compacted following the use of the concrete vibrator.

Step 6. Remove concrete excess.

It's important that any concrete excess is removed from the top of the joint during finishing operations, so that the top of the joint is visible when concrete works are complete.

BeatonJoint
S-TYPE

IDEAL FOR HIGH-TRAFFIC AREAS

This Beaton Joint S-Type armoured joint system offers superior load transfer, ensuring stability and strength. Its unique design also provides exceptional noise reduction.

Choose from a variety of materials including Plain Steel, HDG, Stainless Steel, and Acid Proof. Beaton Joint S-Type is available for slabs ranging from 100 to 300 mm in thickness.

Load distribution at joint for straight type

Load distribution at joint for S- Type

Betonelli

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