

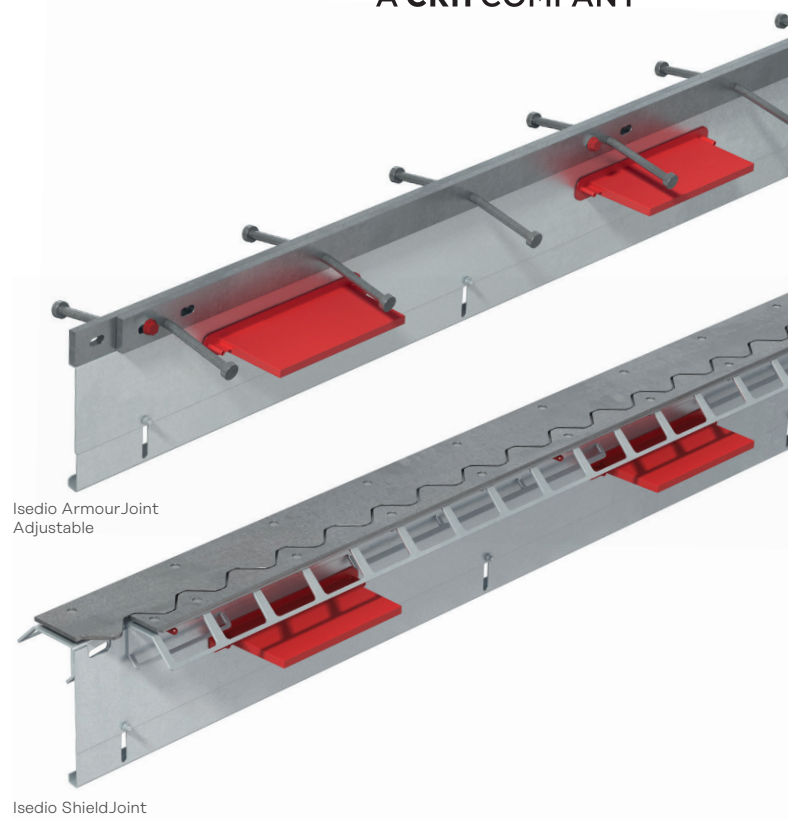


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Using Ise dio products ensures that shear loads are safely transferred across the joint through dowels. We recommend referring to **TR34 – Fourth Edition – Concrete Industrial Ground Floors** to determine the dowel capacity.

Section 6.5 of TR34 provides guidance on the calculation of dowel capacities for the following failure modes.



Dowel Shear Capacity

The shear capacities for the plate dowels provided in the table below have been calculated using equation 18 of TR34.

Dowel Type	Width (mm)	Length (mm)	Thickness (t) (mm)	Finish*	Shear Area (0.9xA) (mm ²)	Capacity (P _{sh plate}) (kN)
135 x 150 x 6	135	150	6	Black	810	104.6
150 x 150 x 8	150	150	8	Black	1080	200.0
150 x 150 x 12	150	150	12	Black	1620	300.1

* Dowels are available in HDG and stainless steel upon request.

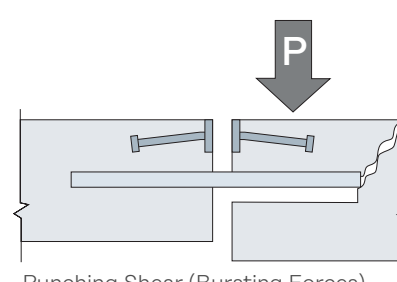
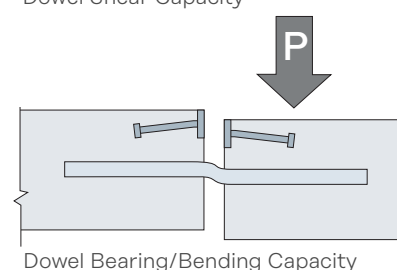
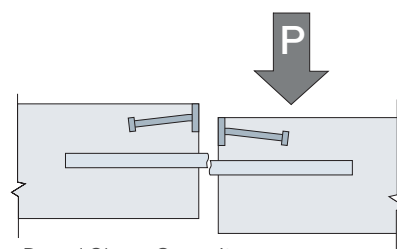
In most situations, at the point of ultimate load, the concrete would typically fail before the dowel.

Dowel Bearing/Bending Capacity

Bearing/Bending is a combined failure mode that checks the bending capacity of the dowel as well as the bearing capacity of the surrounding concrete. Equation 19 of TR34 defines the bearing/bending capacity of a dowel.

Punching Shear (Bursting Forces)

Section 6.5.3 of TR34 recommends calculating the bursting load of the concrete by adapting the EC2 approach for punching failure using an effective depth of 0.75 times the minimum depth between the dowel and the surface of the concrete slab, either on the top or bottom.

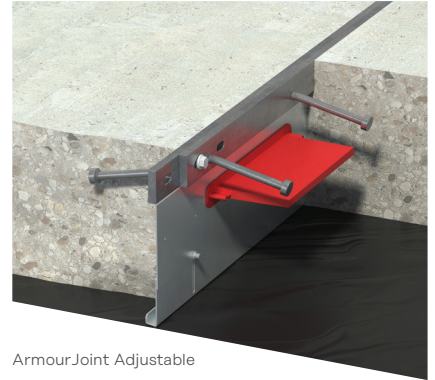


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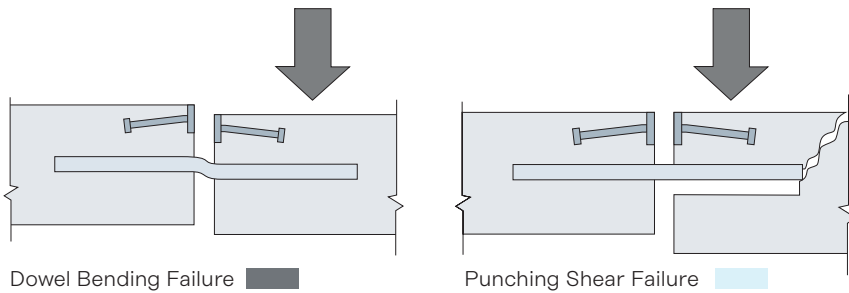
Datasheet

Design Capacities: Iседio ArmourJoint Adjustable

The table below provides the ultimate limit state (ULS) design capacity for 6mm, 8mm and 12mm plate dowels with 600mm spacing in C32/40 concrete.



ArmourJoint Adjustable



Design shear capacity of Iседio ArmourJoint Adjustable in C32/40 concrete with a dowel spacing of 600mm (kN/m)

Dowel Size (mm)	Joint Opening	Joint Size 100 - 130 Slab Depth (mm)			Joint Size 130 - 150 Slab Depth (mm)		
		100	110	120 - 130	130	140	150
135 x 150 x 6	mm						
	10	11.1	15.6	20.8	20.3	26.1	27.3
	20	11.1	15.6	20.8	20.3	26.1	27.3
	30	11.1	15.6	20.8	20.3	26.1	27.3
150 x 150 x 8	10	11.1	15.6	20.9	20.3	26.2	27.4
	20	11.1	15.6	20.9	20.3	26.2	27.4
	30	11.1	15.6	20.9	20.3	26.2	27.4

Dowel Size (mm)	Joint Opening	Joint Size 150 - 200 Slab Depth (mm)			Joint Size 200 - 250 Slab Depth (mm)			
		150	160	170 - 200	200	210	220	230 - 250
135 x 150 x 6	mm							
	10	25.5	31.9	34.6	38.2	45.9	54.2	59.5
	20	25.5	31.9	34.6	38.2	42.2	42.2	42.2
	30	25.5	30.1	30.1	30.1	30.1	30.1	30.1
150 x 150 x 8	10	25.6	32.0	34.8	38.4	46.1	54.4	59.7
	20	25.6	32.0	34.8	38.4	46.1	54.4	59.7
	30	25.6	32.0	34.8	38.4	46.1	54.4	59.7
150 x 150 x 12	10	24.4	30.7	33.4	36.9	44.5	52.7	57.9
	20	24.4	30.7	33.4	36.9	44.5	52.7	57.9
	30	24.4	30.7	33.4	36.9	44.5	52.7	57.9

Dowel Size (mm)	Joint Opening	Joint Size 250 - 300 Slab Depth (mm)				Joint Size 300 - 350 Slab Depth (mm)			
		250	260	270	280 - 300	300	310	320	330 - 350
135 x 150 x 6	mm								
	10	58.6	66.3	66.3	66.7	66.3	66.3	66.3	66.3
	20	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2
	30	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1
150 x 150 x 8	10	58.8	68.2	78.2	84.5	88.9	100.2	105.2	105.2
	20	58.8	68.2	78.2	84.5	88.9	95.1	95.1	95.1
	30	58.8	68.2	71.6	71.6	71.6	71.6	71.6	71.6
150 x 150 x 12	10	57.1	66.3	76.1	82.4	86.7	97.9	103.9	103.9
	20	57.1	66.3	76.1	82.4	86.7	97.9	103.9	103.9
	30	57.1	66.3	76.1	82.4	86.7	97.9	103.9	103.9

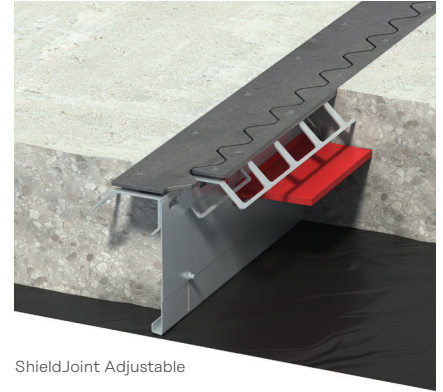
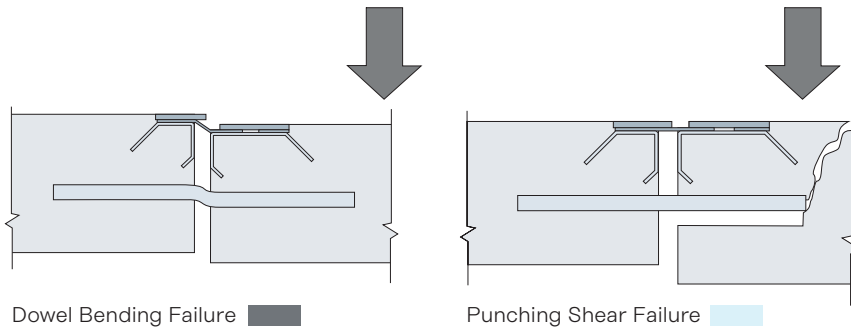
Note: For any other configurations and for Iседio ArmourJoint Fixed capacities, please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.

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Design Capacities: Ise dio ShieldJoint Adjustable

The table below provides the ultimate limit state (ULS) design capacity for 6mm, 8mm and 12mm plate dowels with 650mm spacing in C32/40 concrete.



ShieldJoint Adjustable

Design shear capacity of Ise dio ShieldJoint Adjustable in C32/40 concrete with a dowel spacing of 650mm (kN/m)

Dowel Size (mm)	Joint Opening	Joint Size 100 - 130 Slab Depth (mm)			Joint Size 130 - 150 Slab Depth (mm)		
		100	110 - 130	130	140	150	
135 x 150 x 6	10	13.6	15.4	18.8	24.1	25.3	
	20	13.6	15.4	18.8	24.1	25.3	
	25	13.6	15.4	18.8	24.1	25.3	
150 x 150 x 8	10	13.6	15.4	18.8	24.2	25.4	
	20	13.6	15.4	18.8	24.2	25.4	
	25	13.6	15.4	18.8	24.2	25.4	

Dowel Size (mm)	Joint Opening	Joint Size 150 - 200 Slab Depth (mm)		Joint Size 200 - 250 Slab Depth (mm)			
		150	160 - 200	200	210	220	230 - 250
135 x 150 x 6	10	24.7	30.7	36.7	43.9	51.7	53.3
	20	24.7	30.7	36.7	39.0	39.0	39.0
	25	24.7	30.7	32.6	32.6	32.6	32.6
150 x 150 x 8	10	24.8	30.9	36.8	44.1	51.9	53.5
	20	24.8	30.9	36.8	44.1	51.9	53.5
	25	24.8	30.9	36.8	44.1	51.9	53.5
150 x 150 x 12	10	23.6	29.6	35.5	42.6	50.3	51.9
	20	23.6	29.6	35.5	42.6	50.3	51.9
	25	23.6	29.6	35.5	42.6	50.3	51.9

Dowel Size (mm)	Joint Opening	Joint Size 250 - 300 Slab Depth (mm)				Joint Size 300 - 350 Slab Depth (mm)			
		250	260	270	280 - 300	300	310	320	330 - 350
135 x 150 x 6	10	55.8	61.2	61.2	61.2	61.2	61.2	61.2	61.2
	20	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
	25	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6
150 x 150 x 8	10	56.0	64.8	74.1	76.1	79.0	89.3	100.2	102.4
	20	56.0	64.8	74.1	76.1	79.0	87.9	87.9	87.9
	25	56.0	64.8	74.1	75.7	75.7	75.7	75.7	75.7
150 x 150 x 12	10	54.4	63.0	72.2	74.1	77.1	87.2	98.0	100.2
	20	54.4	63.0	72.2	74.1	77.1	87.2	98.0	100.2
	25	54.4	63.0	72.2	74.1	77.1	87.2	98.0	100.2

Note: For any other configurations please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.

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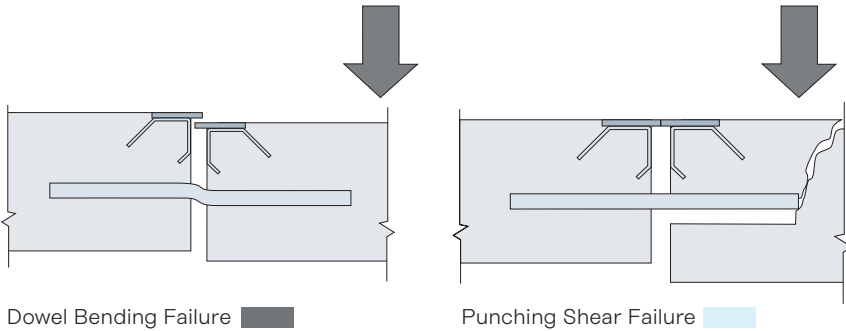
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Design Capacities: Iseديو GuardJoint Adjustable

The table below provides the ultimate limit state (ULS) design capacity for 6mm, 8mm and 12mm plate dowels with 560mm spacing in C32/40 concrete.



GuardJoint Adjustable



Design shear capacity of Iseديو GuardJoint Adjustable in C32/40 concrete with a dowel spacing of 560mm (kN/m)

Dowel Size (mm)	Joint Opening (mm)	Joint Size 100 - 130 Slab Depth (mm)			Joint Size 130 - 150 Slab Depth (mm)		
		100	110	120 - 130	130	140	150
135 x 150 x 6	10	15.8	17.9	17.9	21.8	28.0	29.4
	20	15.8	17.9	17.9	21.8	28.0	29.4
	25	15.8	17.9	17.9	21.8	28.0	29.4
150 x 150 x 8	10	15.8	17.9	17.9	21.8	28.1	29.4
	20	15.8	17.9	17.9	21.8	28.1	29.4
	25	15.8	17.9	17.9	21.8	28.1	29.4

Dowel Size (mm)	Joint Opening (mm)	Joint Size 150 - 200 Slab Depth (mm)			Joint Size 200 - 250 Slab Depth (mm)		
		150	160 - 200	200	210	220 - 250	
135 x 150 x 6	10	28.7	35.7	42.6	50.93	60.0	
	20	28.7	35.7	42.6	45.3	45.3	
	25	28.7	35.7	37.8	37.8	37.8	
150 x 150 x 8	10	28.8	35.8	42.8	51.1	60.2	
	20	28.8	35.8	42.8	51.1	60.2	
	25	28.8	35.8	42.8	51.1	60.2	
150 x 150 x 12	10	27.4	34.3	41.2	49.4	58.4	
	20	27.4	34.3	41.2	49.4	58.4	
	25	27.4	34.3	41.2	49.4	58.4	

Dowel Size (mm)	Joint Opening (mm)	Joint Size 250 - 300 Slab Depth (mm)			Joint Size 300 - 350 Slab Depth (mm)		
		250	260	270 - 300	300	310	320 - 350
135 x 150 x 6	10	64.8	71.0	71.0	71.0	71.0	71.0
	20	45.2	45.2	45.2	45.2	45.2	45.2
	25	37.8	37.8	37.8	37.8	37.8	37.8
150 x 150 x 8	10	65.0	75.2	86.1	91.8	99.2	105.9
	20	65.0	75.2	86.1	91.8	99.2	102.0
	25	65.0	75.2	86.1	87.8	87.8	87.8
150 x 150 x 12	10	63.1	73.1	83.8	89.5	97.9	104.5
	20	63.1	73.1	83.8	89.5	97.9	104.5
	25	63.1	73.1	83.8	89.5	97.9	104.5

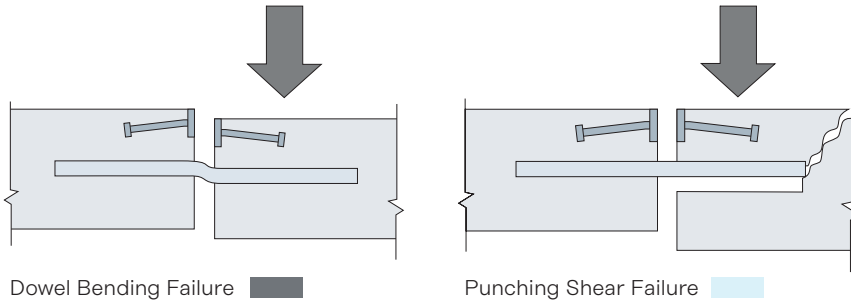
Note: For any other configurations please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.

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Design Capacities: Isedio ArmourJoint, Isedio EsseJoint, Isedio ArmourJoint-Lite and ExpaJoint with fixed height divider plate

The table below provides the ultimate limit state (ULS) design capacity for 6mm, 8mm and 12mm plate dowels with 600mm spacing in C32/40 concrete. Dowel position is considered at the mid height of the slab.



Design shear capacity of Isedio ArmourJoint, Isedio EsseJoint, Isedio ArmourJoint-Lite and ExpaJoint in C32/40 concrete with a dowel spacing of 600mm (kN/m)

Dowel Size (mm)	Joint Opening	Joint Height (mm)					
		130	140	150	160	170	190
135 x 150 x 6	mm						
	10	22.0	24.9	28.0	31.3	34.7	42.0
	20	22.0	24.9	28.0	31.3	34.7	42.0
	30	21.9	24.8	27.9	30.1	30.1	30.1
150 x 150 x 8	10	23.8	26.8	30.0	33.4	37.0	44.5
	20	23.8	26.8	30.0	33.4	37.0	44.5
	30	23.7	26.7	29.9	33.2	36.8	44.3
150 x 150 x 12	10	22.6	25.6	28.7	32.0	35.5	42.9
	20	22.6	25.6	28.7	32.0	35.5	42.9
	30	22.5	25.5	28.6	31.9	35.3	42.7

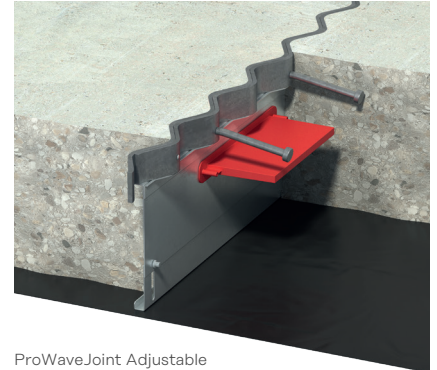
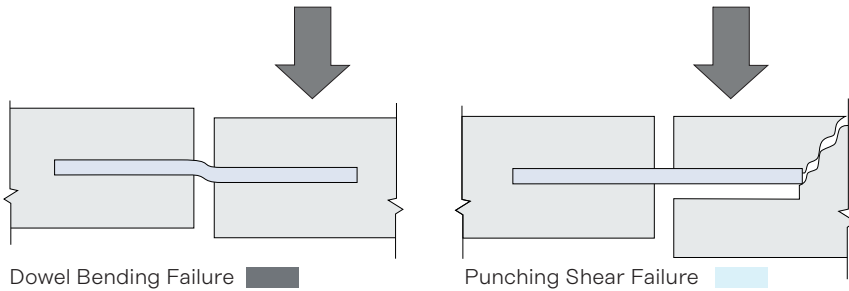
Note: For any other configurations please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.

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Design Capacities: Iседio ProWaveJoint Adjustable

The table below provides the ultimate limit state (ULS) design capacity for 6mm, 8mm and 12mm plate dowels with 600mm spacing in C32/40 concrete.



Design shear capacity of Iседio ProWaveJoint Adjustable in C32/40 concrete with a dowel spacing of 546mm (kN/m)

Dowel Size (mm)	Joint Opening	Joint Size 100 - 130 Slab Depth (mm)			Joint Size 130 - 150 Slab Depth (mm)		
		100	110	120 - 130	130	140	150
135 x 150 x 6	mm	100	110	120 - 130	130	140	150
	10	12.2	17.2	23.0	22.3	28.7	30.1
	20	12.2	17.2	23.0	22.3	28.7	30.1
	25	12.2	17.2	23.0	22.3	28.7	30.1
150 x 150 x 8	10	12.2	17.2	23.0	22.3	28.7	30.1
	20	12.2	17.2	23.0	22.3	28.7	30.1
	25	12.2	17.2	23.0	22.3	28.7	30.1

Dowel Size (mm)	Joint Opening	Joint Size 150 - 200 Slab Depth (mm)			Joint Size 200 - 250 Slab Depth (mm)			
		150	160	170 - 200	200	210	220	230 - 250
135 x 150 x 6	mm	150	160	170 - 200	200	210	220	230 - 250
	10	28.0	35.1	38.1	42.0	50.4	59.6	65.4
	20	28.0	35.1	38.1	42.0	46.4	46.4	46.4
	25	28.0	35.1	38.1	38.7	38.7	38.7	38.7
150 x 150 x 8	10	28.1	35.2	38.2	42.2	50.6	59.8	65.7
	20	28.1	35.2	38.2	42.2	50.6	59.8	65.7
	25	28.1	35.2	38.2	42.2	50.6	59.8	65.7
150 x 150 x 12	10	26.8	33.7	36.7	40.6	48.9	57.9	63.7
	20	26.8	33.7	36.7	40.6	48.9	57.9	63.7
	25	26.8	33.7	36.7	40.6	48.9	57.9	63.7

Dowel Size (mm)	Joint Opening	Joint Size 250 - 300 Slab Depth (mm)				Joint Size 300 - 350 Slab Depth (mm)			
		250	260	270	280 - 300	300	310	320	330 - 350
135 x 150 x 6	mm	250	260	270	280 - 300	300	310	320	330 - 350
	10	64.4	72.8	72.8	72.8	72.8	72.8	72.8	72.8
	20	46.4	46.4	46.4	46.4	46.4	46.4	46.4	46.4
	25	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7
150 x 150 x 8	10	64.7	75.0	86.0	91.9	94.5	101.2	105.2	105.2
	20	64.7	75.0	86.0	91.9	94.5	101.2	104.5	104.5
	25	64.7	75.0	86.0	90.1	90.1	90.1	90.1	90.1
150 x 150 x 12	10	62.7	72.8	83.7	90.5	93.2	99.1	103.9	103.9
	20	62.7	72.8	83.7	90.5	93.2	99.1	103.9	103.9
	25	62.7	72.8	83.7	90.5	93.2	99.1	103.9	103.9

Note: For any other configurations and for Iседio ProWaveJoint Adjustable capacities, please contact the Leviat technical team on 0114 275 5224 or email info.isedio.uk@leviat.com.