50MM DOUBLEDISC MB50 BALUSTRADE SYSTEM

Design Tables

Safety From Falling Barriers

Occupancy A

All areas within or serving one dwelling including stairs, landings etc. but excluding external balconies and edges of roofs.

Glass Thickness t (mm)	Maximum Height H (mm)	Substrate Material	Fixing Dimensions (mm)			Design loads to deck structure			
			Max x	Min y	Max y	M* (kNm/m)	T* (kN)	SLS Wind (kPa)	ULS Wind (kPa)
12, 13.52, 15.2 15, 17.2, 17.52	1150	T, C, S	500	110	600	1.04	4.63	-	-
		M, T, C, S	500	200	600	1.04	2.95	-	-

Occupancy A/A Other/C3/B/E

As per NZS1170.1 Table 3.3

Glass Thickness t (mm)	Maximum Height H (mm)	Substrate Material	Fixing Dimensions (mm)			Design loads to deck structure			
			Max x	Min y	Max y	M* (kNm/m)	T* (kN)	SLS Wind (kPa)	ULS Wind (kPa)
12, 13.52, 15.2	950	T, C, S	425	110	600	1.29	5.79	1.92	2.70
	1050	T, C, S	400	110	600	1.29	5.69	1.67	2.35
	1100	T, C, S	400	110	600	1.29	5.65	1.52	2.14
	1150	T, C,S	400	110	600	1.29	5.60	1.39	1.96
	950	M, T, C, S	425	200	600	1.29	3.68	1.92	2.70
	1050	M, T, C, S	400	200	600	1.29	3.57	1.67	2.35
	1100	M, T, C, S	400	200	600	1.29	3.53	1.52	2.14
	1150	M, T, C,S	400	200	600	1.29	3.49	1.39	1.96
15, 17.2, 17.52	950	T, C, S	400	110	600	1.41	6.01	2.11	2.98
	1050	T, C, S	400	110	600	1.41	6.01	1.76	2.48
	1100	T, C, S	400	110	600	1.41	6.01	1.62	2.28
	1150	T, C, S	400	110	600	1.41	6.01	1.49	2.10
	1200	T, C, S	400	110	600	1.41	6.01	1.38	1.94
	1250	T, C, S	400	110	600	1.41	6.01	1.28	1.80
	950	M, T, C, S	400	200	600	1.41	3.71	2.06	2.89
	1050	M, T, C, S	400	200	600	1.41	3.71	1.73	2.44
	1100	M, T, C, S	400	200	600	1.41	3.71	1.60	2.25
	1150	M, T, C, S	400	200	600	1.41	3.71	1.48	2.08
	1200	M, T, C, S	400	200	600	1.41	3.71	1.37	1.93
	1250	M, T, C, S	400	200	600	1.41	3.71	1.28	1.80

Side Fix Free Standing Pool Fences

(Not protecting a fall of 1.0m or more) Steel, Concrete and Timber

Glass Thickness t (mm)	NZS3604 Wind Zone up to	Maximum Height H (mm)	Substrate Material	Fixing Dimensions (mm)			Design loads to deck structure	
				Max x	Min y	Max y	M* (kNm/m)	T* (kN)
12	Very High	1250	T, C, S	400	110	600	1.29	4.81
			M, T, C, S	400	200	600	1.29	2.97
15	Extra High	1250	T, C, S	400	110	600	1.41	5.81
			M, T, C, S	400	200	600	1.41	3.59

Key:
T = Timber, C = Concrete, S = Steel, M = Reinforced block masonry

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Design Tables

Glass thickness key:

Glass Thickness t (mm)	Inner layer[3] glass thickness (mm)	Interlayer thickness (mm) and type	Outer layer glass thickness (mm)	Panel size requirements	
				Minimum panel width (mm)	Maximum panel width (mm)
12	-	-	-	1000	1700/1900 (see below)
13.52	6	1.52 Laminated STF	6	1700	Refer manufacturing limits
15	-	–	6	1000	1700/1900 (see below)
15.2	8	1.2 Laminated EVA	-	1000	1700/1900 (see below)
17.2	8	1.2 Laminated EVA	8	1000	1700/1900 (see below)
17.52	8	1.52 Laminated STF	8	1100	Refer manufacturing limits

Note: Inner layer refers to balcony side

Maximum panel widths for Interlinking Rail/Bracket systems:

Applies where barrier is protecting a fall of 1.0m or more

Interlinking Rail System	Maximum panel width (mm)	Position
S25 S40 Edgetec® 220	1700 1700/1900 1700/1900	on glass only HB50 bracket/on glass HB50 bracket/on glass
MFG SB Bracket on Laminated only	1900	100 - 200mm from top of glass

Post failure requirements:

Applies where barrier is protecting a fall of 1.0m or more

Glass Type	Requirement
TEMPAFLOAT®	Interlinking rail required in all cases
Laminated EVA	Interlinking rail or SB brackets required all cases
Laminated STF	No interlinking rail required, minimum panel widths apply

NOTES:

1. Design tables only valid for use with Metro MB50 balustrade system.
2. Refer to installation and elevation drawings for Height 'H'.
3. The specifier must ensure the balustrade height above floor level requirements as per the NZ Building Code are complied with.
4. M* & T* refer to the critical ULS bending moment (kNm/m width) and tension loads (kN/fixing) respectively to be supported by the substructure.
5. Design loads are in accordance with AS/NZS 1170.1:2002 table 3.3 and NZBC B1/VM1 and DBH Guidance on Barrier Design (March 2012).
6. Capacity of all substructure is to be verified by building engineer or checked for accordance with NZS3604 (where applicable) prior to fixing.
7. Fixing centres in tables above are applicable to concrete, steel, masonry and timber substructures as noted. Refer to fixing detail drawings for further details.
8. All glass is to be toughened safety glass supplied by Metro Performance Glass, in either Toughened Monolithic, Laminated EVA or Laminated STF variants subject to requirements of the tables above. Minimum glass strength 100MPa, all edges polished.
9. Glass & interlayer thicknesses shown are nominal thickness. Table is based on glass minimum tolerance as per NZS 4223.1:2008.
10. The tables for this balustrade system are based on an SLS deflection limit of 50mm. While greater than the suggested limit of height/60 as specified in NZS1170.0 for post and rail handrail systems, this is deemed acceptable based on the nature of the cantilevered glass system.
11. In all cases the MB50 fixings must be fixed with Nylon washer directly to the relevant supporting structure.
12. For designs outside the scope of these tables and ULS wind pressures exceeding those shown, specific design is required.
13. Maximum 10mm tolerance allowed to H heights noted in table.
14. Pool fences listed above refer to free standing structures where safety from falling is not applicable, design is based on Importance Level 1.