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GROOVE TUBE

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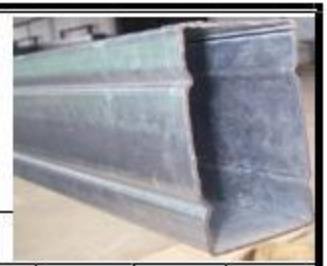
GROOVE TUBE

SPAN TABLES FOR ROOFING



Dimensions and Properties (Full Section)
GROOVE TUBE RECTANGULAR HOLLOW SECTIONS

Groove Tube Designation	WEB	FLANGE	THICKNESS	RADIUS	Nominal Mass per m	Perimeter	Full Section Area	2nd Moment of Area		Section Modulus		Plastic Modulus		Radius of Gyration		Torsion Constant	Yield Strength	Tensile Strength
	D	B	T	r_i			A	Ix	Iy	Zx	Zy	S_x	S_y	r_x	r_y	J	f_y	f_u
	mm	mm	mm	mm	kg/m	mm	mm^2	10^6 mm^4	10^6 mm^4	10^3 mm^3	10^3 mm^3	10^3 mm^3	10^3 mm^3	mm	mm	10^6 mm^4	Mpa	Mpa
1005012	100	50	1.2	1.8	2.79	298	354	0.4697	0.1614	9.394	6.457	11.51	7.14	36.5	21.4	0.3726	300	340
1505015	150	50	1.5	1.8	4.63	398	590	1.596	0.2871	21.289	11.483	27.115	12.485	52	22.1	0.7832	300	340

GROOVE TUBE SPAN TABLES FOR ATTACHED FLAT ROOF

Designation	RAFTER SPACING	MAXIMUM RAFTER SPAN (m)					
		WIND CATEGORY					
		N1	N2	N3	N4	N5	N6
		Design Pressures (Kpa)					
		0.69	0.95	1.5	2.2	3.2	4.4
100x50x1.2	900	5.0 (4.4)	4.8 (4.4)	3.8	3.2	2.6	2.2
	1200	4.6 (4.1)	4.2 (4.1)	3.3	2.7	2.3	1.9
	1500	4.0 (3.7)	3.4	2.7	2.2	1.8	1.6
	2100	3.7 (3.6)	3.2	2.5	2.1	1.7	1.5
150x50x1.5	900	7.6 (6.0)	7.3 (6.0)	5.9 (5.4)	4.8	4.0	3.4
	1200	6.9 (5.6)	6.4 (5.6)	5.1	4.2	3.4	3.0
	1500	6.0 (5.0)	5.2 (5.0)	4.1	3.4	2.8	2.4
	2100	5.6 (4.8)	4.8	3.8	3.1	2.6	2.2

The above load table has been prepared to give guidance to span capabilities of Groove Tube Sections used in domestic applications applying to verandah, patio, awning and carport.
Allowable spans apply to open structures as defined in the Australian Standards. Generally two or more sides are open and clear of walls.
Rafters are to be connected to beams with suitable brackets through both webs of the section.
Roof pitch should not exceed 5 degrees.
The above table includes a dead load of 0.1 Kpa for roof cladding and excludes any ceiling loads.
The span table is for a non trafficable roof.
Span table has been designed for Wind Classification regions as indicated in AS 4055 -2006.
A deflection serviceability limit of Span/150 has been applied to the above tables. Spans shown in brackets indicate a 20mm maximum deflection limit.
The table is for use in non cyclonic areas as defined in AS/NZ 1170.2 - 2002.
The structural sections comply the following Australian Standards.
- AS/NZ 4600 - 2005 Cold-formed Steel Structures.
- AS/NZ 1170.1 - 2002 Structural design actions-Permanent imposed and other actions
- AS/NZ 1170.1 - 2002 Structural design actions-Wind actions
-AS/NZ 4055 - 2006 Wind Loads for Housing
Minimum strength steel used in above table is based on a Yield stress of 300Mpa and Tensile strength of 340Mpa.
The site conditions and use of sections for design should be determined by a suitably qualified person.
DISCLAIMER: The site conditions and use of sections for design should be determined by a Engineer or suitably qualified person. These tables are to be used as a guide only.

GrooveTube

REV K

Joist and Bearer Spans MAXIMUM ALLOWABLE SPANS

18/03/2018

1.5 KPa LIVE LOAD

SINGLE SPAN BEAM

	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	1600	1600	1600	1600	1600	1500	1350	1300	1200	1150	1100	1050	1050	1000	950	950	900	900	850
100 x 50 x 1.6 GROOVETUBE	3100	3000	2800	2550	2350	2200	2000	1950	1850	1800	1750	1700	1650	1600	1600	1550	1550	1500	1450
150 x 50 x 1.6 GROOVETUBE	4350	4250	3950	3550	3300	3050	2850	2700	2600	2550	2450	2400	2350	2300	2250	2200	2150	2100	2050
150 x 50 x 3 RHS	5250	5100	4750	4300	4000	3700	3400	3300	3200	3100	3000	2900	2850	2750	2700	2650	2650	2550	2500
150 x 50 x 4 RHS	5650	5500	5100	4650	4300	4000	3700	3550	3400	3300	3200	3150	3050	3000	2900	2850	2850	2750	2700
150 x 50 x 5 RHS	5950	5850	5450	4950	4550	4250	3900	3750	3650	3500	3400	3300	3250	3150	3100	3050	3000	2950	2850
150 x 50 x 6 RHS	6250	6100	5650	5150	4800	4450	4100	3900	3800	3650	3550	3450	3400	3300	3250	3150	3150	3050	3000

CONTINUOUS BEAM

	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	2950	2850	2550	2200	2000	1750	1550	1450	1400	1350	1250	1200	1150	1150	1100	1050	1050	1000	1000
100 x 50 x 1.6 GROOVETUBE	4500	4450	4100	3750	3450	3100	2700	2550	2450	2300	2200	2150	2050	2000	1900	1850	1850	1750	1700
150 x 50 x 1.6 GROOVETUBE	6350	6200	5750	5250	4700	4200	3700	3500	3300	3150	3000	2900	2800	2700	2600	2550	2500	2400	2350
150 x 50 x 3 RHS	7700	7500	7000	6300	5600	5000	4450	4200	3950	3800	3600	3450	3350	3250	3150	3050	3000	2900	2800
150 x 50 x 4 RHS	8300	8100	7500	6850	6300	5600	4950	4700	4450	4250	4050	3900	3750	3600	3500	3400	3350	3250	3150
150 x 50 x 5 RHS	8750	8600	7950	7250	6700	6150	5450	5150	4850	4650	4450	4250	4100	3950	3850	3750	3650	3550	3450
150 x 50 x 6 RHS	9150	8950	8300	7550	7000	6500	5800	5450	5150	4950	4700	4550	4350	4200	4100	3950	3900	3750	3650

2.0 KPa LIVE LOAD

SINGLE SPAN BEAM

	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	1600	1600	1600	1600	1500	1400	1200	1150	1100	1050	1000	950	900	900	850	800	800	800	750
100 x 50 x 1.6 GROOVETUBE	2850	2800	2600	2350	2200	2000	1850	1800	1700	1650	1600	1600	1550	1500	1450	1450	1450	1400	1350
150 x 50 x 1.6 GROOVETUBE	4000	3900	3650	3300	3050	2850	2600	2500	2400	2350	2300	2200	2150	2100	2050	1950	1950	1900	1800
150 x 50 x 3 RHS	4850	4750	4400	4000	3700	3450	3150	3050	2950	2850	2750	2700	2600	2550	2500	2450	2450	2400	2350
150 x 50 x 4 RHS	5200	5100	4750	4300	4000	3700	3400	3300	3150	3050	3000	2900	2850	2750	2700	2650	2600	2550	2500
150 x 50 x 5 RHS	5500	5400	5000	4550	4250	3900	3600	3450	3350	3250	3150	3050	3000	2950	2850	2800	2800	2700	2650
150 x 50 x 6 RHS	5750	5650	5250	4750	4400	4100	3750	3650	3500	3400	3300	3200	3150	3050	3000	2950	2900	2850	2800

CONTINUOUS BEAM

	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	2650	2550	2300	1950	1750	1550	1400	1300	1250	1200	1150	1100	1050	1000	950	950	950	900	850
100 x 50 x 1.6 GROOVETUBE	4200	4100	3800	3450	3050	2750	2400	2300	2150	2050	1950	1900	1800	1750	1700	1650	1650	1550	1500
150 x 50 x 1.6 GROOVETUBE	5850	5750	5350	4650	4150	3750	3300	3100	2950	2800	2700	2600	2500	2400	2300	2250	2200	2150	2050
150 x 50 x 3 RHS	7100	6950	6450	5550	4950	4450	3950	3700	3500	3350	3200	3050	2950	2850	2750	2700	2650	2550	2450
150 x 50 x 4 RHS	7650	7500	6950	6200	5550	4950	4400	4150	3950	3750	3600	3450	3300	3200	3100	3000	2950	2850	2750
150 x 50 x 5 RHS	8100	7950	7350	6700	6100	5450	4800	4550	4300	4100	3950	3750	3650	3500	3400	3300	3250	3150	3050
150 x 50 x 6 RHS	8450	8300	7700	7000	6500	5800	5100	4850	4600	4350	4200	4000	3850	3750	3600	3500	3450	3350	3250

4.0 KPa LIVE LOAD

SINGLE SPAN BEAM

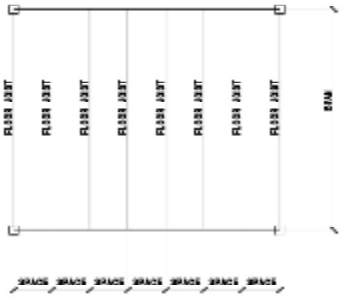
	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	1600	1550	1450	1250	1150	1000	900	850	800	750	700	700	650	650	600	600	600	550	550
100 x 50 x 1.6 GROOVETUBE	2300	2250	2100	1900	1750	1650	1500	1450	1400	1350	1250	1200	1150	1150	1100	1050	1050	1000	1000
150 x 50 x 1.6 GROOVETUBE	3250	3200	2950	2700	2500	2300	2100	2000	1900	1800	1750	1650	1600	1550	1500	1450	1450	1400	1350
150 x 50 x 3 RHS	3950	3850	3600	3250	3000	2800	2600	2500	2400	2300	2250	2150	2100	2000	1950	1900	1850	1800	1750
150 x 50 x 4 RHS	4250	4150	3850	3500	3250	3000	2800	2650	2600	2500	2450	2350	2300	2250	2150	2100	2100	2000	1950
150 x 50 x 5 RHS	4500	4400	4100	3700	3450	3200	2950	2850	2750	2650	2550	2500	2450	2400	2350	2300	2250	2200	2150
150 x 50 x 6 RHS	4700	4600	4300	3900	3600	3350	3100	2950	2850	2750	2700	2600	2550	2500	2450	2400	2350	2300	2250

CONTINUOUS BEAM

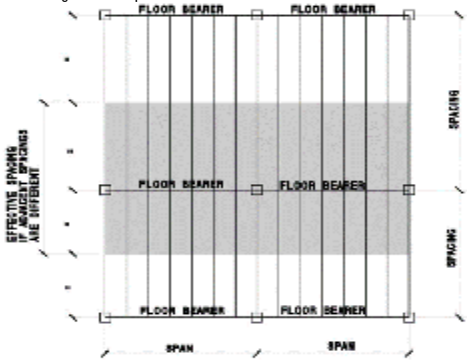
	JOISTS		BEARERS																
Spacing	450	480	600	800	1000	1250	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3500	3750	4000
100 x 50 x 1.2 GROOVETUBE	1950	1900	1700	1450	1300	1150	1000	950	900	850	850	800	750	750	700	700	700	650	650
100 x 50 x 1.6 GROOVETUBE	3400	3250	2900	2550	2250	2000	1800	1700	1600	1500	1450	1400	1350	1300	1250	1200	1200	1150	1100
150 x 50 x 1.6 GROOVETUBE	4600	4450	4000	3450	3050	2750	2400	2300	2150	2050	2000	1900	1850	1750	1700	1650	1650	1600	1500
150 x 50 x 3 RHS	5450	5250	4700	4050	3650	3250	2850	2700	2550	2450	2350	2250	2150	2100	2000	1950	1950	1850	1800
150 x 50 x 4 RHS	6100	5900	5250	4550	4050	3650	3200	3050	2850	2750	2600	2500	2400	2350	2250	2200	2150	2100	2000
150 x 50 x 5 RHS	6600	6450	5750	5000	4450	4000	3500	3300	3150	3000	2850	2750	2650	2550	2500	2400	2350	2300	2200
150 x 50 x 6 RHS	6900	6750	6150	5300	4750	4250	3750	3550	3350	3200	3050	2950	2800	2750	2650	2550	2500	2450	2350

Notes

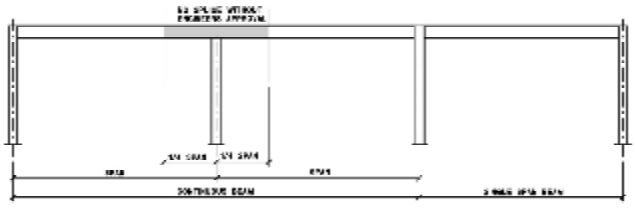
1 Design is in accordance with AS 4600-2005 Cold Formed Steel Structures and AS 1170.1-2002 Structural Design Actions
2 Assumed dead load is 0.4 KPa. If dead load is greater than 0.4 Kpa then refer to Engineer for specific design.
3 Ajacent spans for continuous beams cannot vary by more than 25%. If the variation is as large as 25% then use single span values.
4 Splices in beam must be made with the approved Groovetube joiner. Refer to Engineer for splices in RHS made in the critical quarter of the beam span.
5 Tables are based on 3-off #14 22-20 Tek screws at each end of beams and 6-off #14 22-20 Tek screw at centre support of continuous beams.
6 For internal load bearing partion walls and external walls refer to Engineer for specific design.
7 Refer to Engineer if concentrated loads greater than 200 Kg are required to be supported.
8 Use 1.5 KPa for interiors of domestic dwellings. Use 2.0 KPa for verandas and patios for domestic dwellings. Use 4.0 Kpa for commercial decks and verandas and industrial mezzanine floors.



Definition of Floor Joist Terms



Definition of Floor Bearer Terms



GROOVE TUBE BRACKETS AND ACCESORIES

FRAMING BRACKETS 0⁄ 5⁄PITCH

FB100

FB150

To fix rafters to beams or supports (mill finish)

ARCHITECTURAL FRAMING BRACKET

AFB10015

AFB15015

AFB10022.5

AFB10022.5

To fix rafters to beams or support (mill finish)

APEX BRACKET

APX10015

APX15015

APX10022.5

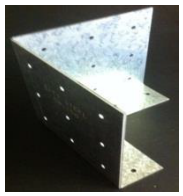
APX15022.5

External fixing of two rafters (mill finish)

CORNER BRACKETS

CB100

CB150



For joining perimeter beams at 90 (mill finish)

BEARER TO JOIST BRACKETS

JC100/150

For joining bearers to joists (mill finish)

FLOORING ADJUSTERS

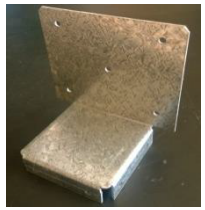
FLA89

Adjustable flooring to fit on 89x89 rhs (hdg finish)

POST TOPS

TOP075

TOP089

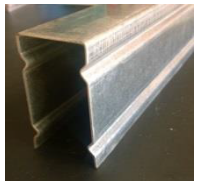


Post top to fit on top of 89x89 or 75x75 posts.

ENGINEERED INTERNAL JOINERS

JOIN100

JOIN150



Engineered internal floor groove tube joiners.

SIZE RANGE

100x50x1.2mm THICK x6.1M

100x50x1.2mm THICK x8M

150x50x1.5mm THICK x8M

Applications for GROOVE TUBE:

- FLOORING SYSTEMS
- SHED PURLINS
- PERGOLA BEAMS
- PATIOS
- STOCK YARDS
- PROPERTY ENTRANCES
- FENCING ALL TYPES
- CONCRETE BOXING
- INNOVATIVE BUILDING

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GROOVE TUBE

SPAN TABLES FOR FLOORING

100x50x1.2RHSJoists				
1.5kPaLiveLoad				
	SingleSpan		Continuous	
Spacing	450mm	600mm	450mm	600mm
Span	2500	2400	3000	2800

150x50x1.5RHSJoists				
1.5kPaLiveLoad				
	SingleSpan		Continuous	
Spacing	450mm	600mm	450mm	600mm
Span	3850	3650	4550	4150

SingleSpan150x50x1.5RHSFloorBearers										
1.5kPaLiveLoad										
LoadWidth	900mm	1200mm	1500mm	1800mm	2100mm	2400mm	2700mm	3000mm	3300mm	3600mm
Span	3100	3000	2800	2600	2400	2200	2100	2000	1900	1800

ContinuousSpan150x50x1.5RHSFloorBearers										
1.5kPaLiveLoad										
LoadWidth	900mm	1200mm	1500mm	1800mm	2100mm	2400mm	2700mm	3000mm	3300mm	3600mm
Span	3500	3200	2800	2600	2400	2200	2100	2000	1900	1800

The above span tables comply with the following specs:

AS1170 – "Structural Design Actions"
AS1684.2: "Residential Framed Construction"
AS4100 – "Steel Structures

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