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LIFTING SYSTEM

Audited 1-click RAMPA® Lifting System

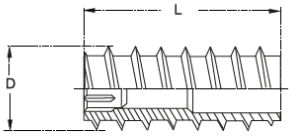
Secure hold. Ideal for:

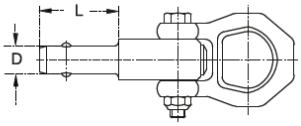
- Cross laminated timber
- Glue laminated timber
- Construction timber
- Laminated veneer timber

RAMPA® Lifting System type X
consisting of: Load suspension type X and Insert type X

- Safe lifting for loads up to 3,75 tons
- 1-click self-locking system
- Simple and fast connection
- All-rounder solution for lifting walls and ceilings
- Self-acting shackle adjustment
- Constant load capacity even in moist timber conditions
- Suitable drills and sockets from RAMPA in stock

RAMPA® Lifting System | Type: X





Description	Art. No.	Outer-Ø D (mm)	Length L (mm)	Hex Drive	Pre-drill Ø (mm)	Steel
Insert Type X D25	610101	25	50	16	23	✓
Load suspension Type X (suitable for 25x50 mm)	610102	16	25	-	-	✓
Insert Type X D33	610301	33	73	20	31	✓
Insert Type X D36	610201	36	73	20	34	✓
Load suspension Type X (suitable for 33x73 mm and 36x73mm)	610202	20	50	-	-	✓

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Recommended RAMPA® driving tools:

Sockets | Type X
Art.no. 610 105 SW16
1/2" drive,
for impact use

Sockets | Type X
Art.no. 610 205 SW20
1/2" drive,
for impact use

Recommended RAMPA® drills:

Drills | Type X (ø23 mm)
Art.no. 610 104
Made of carbon steel,
always centric drilling,
ideal pre-drilling diameter

Drills | Type X (ø31 mm)
Art.no. 610 304
Made of carbon steel,
always centric drilling,
ideal pre-drilling diameter

Drills | Type X (ø34 mm)
Art.no. 610 204
Made of carbon steel,
always centric drilling,
ideal pre-drilling diameter

RAMPA® Lifting System in use:

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Type X Load tables

The following load tables are based on the expert opinion „Load-bearing capacity of RAMPA® inserts with lifting pins as lifting gear" by H.J. Blass, 2018/09/20 and 2021/09/06.

The tables in this document map the following load cases:

1. Lifting a standing wooden component
2. Lifting a lying wooden component
3. Putting up and lifting a lying wooden component

Application instructions:

- The inserts are to be screwed in the center plane of the components at right angles and in flush to the surface of the narrow sides. If the outer thread diameter D is greater than or equal to the ply thickness in the cross laminated timber (CLT) into which the insert is screwed in, or if the insert is screwed into at least 2 plies, the most unfavorable value ε should be considered.
- The components are to be pre-drilled with 23 mm for inserts 25 x 50 mm, with 31 mm for inserts 33 x 73 mm and with 34 mm for inserts 36 x 73 mm.
- The cross section should have a minimum thickness of 60 mm for inserts 25 x 50 mm, of 80 mm for inserts 33 x 73 mm, and of 120 mm for inserts 36 x 73 mm.
- The minimum distance to the edge at component level should be 150 mm for inserts 25 x 50 mm or 200 mm for inserts 33 x 73 mm or inserts 36 x 73 mm.
- The table values apply only to lifting or assembly conditions and to characteristic gross densities of at least 350 kg/m3 for KVH made of softwood, sawn timber made of hardwood, cross laminated timber or glue laminated timber made of softwood and laminated veneer timber made of softwood or hardwood. The respective table values are calculated with a vibration coefficient of Φ2 = 1.3.
- Before each use of the RAMPA Lifting System Type X, all vibration coefficients must be validated. The vibration coefficient of Φ2 = 1.3 must not be undershot.
- If the vibration coefficients of the lifting equipment used (crane truck or similar) differ, the load capacities must be adjusted accordingly.
- If the vibration coefficient of the lifting medium cannot be determined, a vibration coefficient of Φ2 = 2 must be assumed!

⇨ All requirements must always be validated by the responsible planner / structural engineer. RAMPA inserts type X are component-bound which means that the respective insert must only be used in the wooden component (for lifting/transporting) in which it was assembled for the first time. Multiple use is not permitted.

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LIFTING SYSTEM

Type X Load tables

1 Load case: Lifting a standing wooden component

1.1 Angle between axis direction and fiber direction ε = 0°

1.1.1 Normal case:

Thickness cross laminated timber d ≥ 60 mm (insert 25 x 50 mm), d ≥ 80 mm (insert 33 x 73 mm) or rather d ≥ 120 mm (insert 36 x 73 mm)

Insert	1-strand 25x50 (Load-carrying capacities in kg)	1-strand 33x73 (Load-carrying capacities in kg)	1-strand 36x73 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)	2-strand 36x73 (Load-carrying capacities in kg)
0° angle	268	516	563	535	1033	1127
30° angle	-	-	-	296	565	828

1.1.2 Special case 25 x 50 mm:

Thickness cross laminated timber 60mm ≤ d ≤ 62,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 25x50 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)
0° angle	268	535
30° angle	-	296

1.1.3 Special case 33 x 73 mm:

Thickness cross laminated timber 80mm ≤ d ≤ 82,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 33x73 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)
0° angle	516	1033
30° angle	-	565

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LIFTING SYSTEM

Type X Load tables

1.2 Angle between axis direction and fiber direction ε = 90°

1.2.1 Normal case:

Thickness cross laminated timber d ≥ 62,5 mm (insert 25 x 50 mm), d ≥ 82,5 mm (insert 33 x 73 mm) or rather d ≥ 120 mm (insert 36 x 73 mm)

Insert	1-strand 25x50 (Load-carrying capacities in kg)	1-strand 33x73 (Load-carrying capacities in kg)	1-strand 36x73 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)	2-strand 36x73 (Load-carrying capacities in kg)
0° angle	446	861	939	893	1722	1878
30° angle	-	-	-	631	1205	1599

1.2.2 Special case 25 x 50 mm:

Thickness cross laminated timber 60mm ≤ d ≤ 62,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 25x50 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)
0° angle	446	893
30° angle	-	631

1.2.3 Special case 33 x 73 mm:

Thickness cross laminated timber 80mm ≤ d ≤ 82,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 33x73 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)
0° angle	861	1722
30° angle	-	1205

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LIFTING SYSTEM

Type X Load tables

2 Load case: Lifting a lying wooden component

- **Angle between axis direction and fiber direction ε = 90°**

  - **Normal case:**
    Thickness cross laminated timber d ≥ 60 mm (insert 25 x 50 mm), d ≥ 80 mm (insert 33 x 73 mm) or rather d ≥ 120 mm (insert 36 x 73 mm)

Insert	1-strand 25x50 (Load-carrying capacities in kg)	1-strand 33x73 (Load-carrying capacities in kg)	1-strand 36x73 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)	2-strand 36x73 (Load-carrying capacities in kg)	4-strand 25x50 (Load-carrying capacities in kg)	4-strand 33x73 (Load-carrying capacities in kg)	4-strand 36x73 (Load-carrying capacities in kg)
0° angle	446	861	939	893	1722	1878	1787	3444	3758
30° angle	-	-	-	631	1205	1599	1262	2412	3198

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LIFTING SYSTEM

Type X Load tables

3 Load case: Putting up and lifting a lying wooden component

3.1 Angle between axis direction and fiber direction ε = 0°

3.1.1 Normal case:

Thickness cross laminated timber d ≥ 62,5 mm (insert 25 x 50 mm), d ≥ 82,5 mm (insert 33 x 73 mm) or rather d ≥ 120 mm (insert 36 x 73 mm)

Insert	1-strand 25x50 (Load-carrying capacities in kg)	1-strand 33x73 (Load-carrying capacities in kg)	1-strand 36x73 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)	2-strand 36x73 (Load-carrying capacities in kg)
0° angle	205	390	563	412	780	1127
30° angle	-	-	-	296	565	828

3.1.2 Special case 25 x 50 mm:

Thickness cross laminated timber 60mm ≤ d ≤ 62,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 25x50 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)
0° angle	86	173
30° angle	-	168

3.1.3 Special case 33 x 73 mm:

Thickness cross laminated timber 80mm ≤ d ≤ 82,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 33x73 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)
0° angle	159	318
30° angle	-	310

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Type X Load tables

3.2 Angle between axis direction and fiber direction ε = 90°

3.2.1 Normal case:

Thickness cross laminated timber d ≥ 62,5 mm (insert 25 x 50 mm), d ≥ 82,5 mm (insert 33 x 73 mm) or rather d ≥ 120 mm (insert 36 x 73 mm)

Insert	1-strand 25x50 (Load-carrying capacities in kg)	1-strand 33x73 (Load-carrying capacities in kg)	1-strand 36x73 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)	2-strand 36x73 (Load-carrying capacities in kg)
0° angle	298	528	932	596	1057	1300
30° angle	-	-	-	565	1008	1300

3.2.2 Special case 25 x 50 mm:

Thickness cross laminated timber 60mm ≤ d ≤ 62,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 25x50 (Load-carrying capacities in kg)	2-strand 25x50 (Load-carrying capacities in kg)
0° angle	86	173
30° angle	-	168

3.2.3 Special case 33 x 73 mm:

Thickness cross laminated timber 80mm ≤ d ≤ 82,5mm and cover layers perpendicular to the axis direction

Insert	1-strand 33x73 (Load-carrying capacities in kg)	2-strand 33x73 (Load-carrying capacities in kg)
0° angle	159	318
30° angle	-	317

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