



NOVATOP STATIC

Technical documentation



NOVATOP 

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NOVATOP STATIC

For roof overlaps

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CERTIFICATES, ATTESTS AND REPORTS


Declaration of Properties NT STATIC
Certificate of factory production control (SWP/1, SWP/2, SWP/3), DÚ
Certificate of factory production control (SWP/1SD, SWP/2SD, SWP/3SD), DÚ
Emissions of harmful substances – a test report
Analysis of formaldehyde emissions – a test certificate
Vapour permeance – a test certificate, CSI
NATUREPLUS – Certificate
PEFC – Certificate
ISPM – Certificate

Airborne and impact sound insulation – a test certificate, CSI

NOVATOP STATIC

TECHNICAL DATA SHEET

NOVATOP STATIC – a multilayer panel with two parallel upper layers from each side and a middle layer with the fibres perpendicular to the course of the fibres of the surface layers.

Application	Especially for roof overlaps	
Demands	EN13353, EN13986 	
Operation classes	SWP/1, SWP/2 according to EN 13353	
Technical classes	SWP/1 NS, SWP/2 NS according to EN 13353	
Wood Species	Local spruce	
Surface quality	No-visual construction (corresponds to C) Visual living space (corresponds to B) Sorting of quality according to internal regulations of AGROP NOVA a.s.	
Large format (mm)	max. 12.000 x 2.500 (Junctions: finger joint)	
Large format (mm)	NOVATOP STATIC L (Bending strength parallel)	NOVATOP STATIC Q (Bending strength perpendicular)
	Length: 2.500, 5.000, 6.000 Width: 1.040, 1.250, 2.100, 2.500 Thickness: 45, 60	Length: 4.950 Width: 2.500 Thickness: 45, 60
Dimensional tolerances according to EN 13 353	Tolerance of nominal width and length: ± 2 mm Straightness of the sides: ± 1 mm/m Rectangularity: ± 1 mm/m	
Surface	Sanded – K 50, 100	
Glueing	AW100 according to DIN 68705, SWP/3 according to EN 13354	
Adhesive	Melamine adhesive	
Formaldehyde emission class	E1 according to EN 717-1, EN 16516, for values refer to the test reports	
Moisture	10 % \pm 3 %	
Coefficient of shrinkage and swelling	α (%/%) 0,002 – 0,012 %	
Density	ca 490 kg/m ³	
Reaction to fire	D-s2,d0 according to EN 13501-1	
Design value of thermal conductivity (λ)	for spruce 0,13 W/mK at a density of panels of 490 kg/m ³ according to EN ISO 10456	
Specific thermal capacity (c_p)	1600 J/kgK according to EN ISO 10456	
Factor of diffusion resistance (μ)	200/70 (dry/wet) according to EN ISO 10456	
Sound absorption	250 – 500 Hz – 0,1 1000 – 2000 Hz – 0,3	
Airborne sound insulation (dB)	$R = 13 \times \log(m_a) + 14$ m_a – surface weight kg/m ²	

CROSS-SECTIONAL VALUES

45 mm

(9p-9p-9q-9p-9p)



60 mm

(9p-9p-24q-9p-9p)



Thickness	45 mm	60 mm
Structure pattern	9p-9p-9q-9p-9p	9p-9p-24q-9p-9p
Moment of inertia I	6.05E+06 mm ⁴	1.31E+07 mm ⁴
Section modulus W	2.69E+05 mm ³	4.37E+05 mm ³

The cross-sectional values NOVATOP STATIC relate to panel width of 1 m. While determining the deflexion, take care especially of the deformation by sparing.

COMPOSITION OF LAMELLAS



NOVATOP STATIC L
Longitudinal direction of the grain of the surface lamellas



NOVATOP STATIC Q
Transverse direction of the grain of the surface lamellas

MECHANICAL PROPERTIES

Property		Testing method	Thickness	
			45 (9-9-9-9-9)	60 (9-9-24-9-9)
ρ	Density kg/m ³	EN 323	420	420
$f_{m,k}$	Characteristic bending strength perpendicular to the panel plane (N/mm ²)			
$f_{m,0,k}$	Bending strength parallel to the fibres of the outer layers	EN 789	48	35
$f_{m,90,k}$	Bending strength perpendicular to the fibres of the outer layers	EN 789	3,3	6
$E_{m,mean}$	Characteristic value of the modulus of elasticity perpendicular to the panel plane (N/mm ²)			
$E_{m,0}$	Modulus of elasticity parallel to the fibres of the outer layers	EN 789	10300	10400
$E_{m,90}$	Modulus of elasticity perpendicular to the fibres of the outer layers	EN 789	320	1000

NOVATOP STATIC

TECHNICAL DATA SHEET

Characteristic strength values of selected types of panels in N/mm² for dimensioning according to DIN 1052: 2008 - 12

Panels with butted joints in the middle layer			
Type plate		45 (9-9-9-9-9)	60 Type A (9-9-24-9-9)
Number of layers		5	5
Thickness [mm]		45	60
Thickness of surface lamellas [mm]		18,0	18,0
Thickness of middle lamellas [mm]		9,0	24,0
Stress perpendicular to the panel plane [N/mm²]			
f _{m,0,k}	Bending strength parallel to the fibres of the outer layers	29,8	28,1
f _{m,90,k}	Bending strength perpendicular to the fibres of the outer layers	3,1	3,6
E _{m,0}	Modulus of elasticity parallel to the fibres of the outer layers	11400	10800
E _{m,90}	Modulus of elasticity perpendicular to the fibres of the outer layers	250	550
f _{v,k}	Shear strength	1,1	
G	Shear modulus of elasticity	90	
Stress in the panel plane [N/mm²]			
f _{m,0,k}	Bending strength parallel to the fibres of the outer layers	24,2	18,4
f _{m,90,k}	Bending strength perpendicular to the fibres of the outer layers	3,4	6,3
f _{t,0,k}	Tensile strength parallel to the fibres of the outer layers	16,1	12,3
f _{t,90,k}	Tensile strength perpendicular to the fibres of the outer layers	2,3	4,2
f _{c,0,k}	Compressive strength parallel to the fibres of the outer layers	24,2	18,4
f _{c,90,k}	Compressive strength perpendicular to the fibres of the outer layers	3,4	6,3
f _{v,k}	Shear strength	3,0	
E _{m,0}	Modulus of elasticity parallel to the fibres of the outer layers	9300	7100
E _{m,90}	Modulus of elasticity perpendicular to the fibres of the outer layers	1300	2400
G	Shear modulus of elasticity	600	

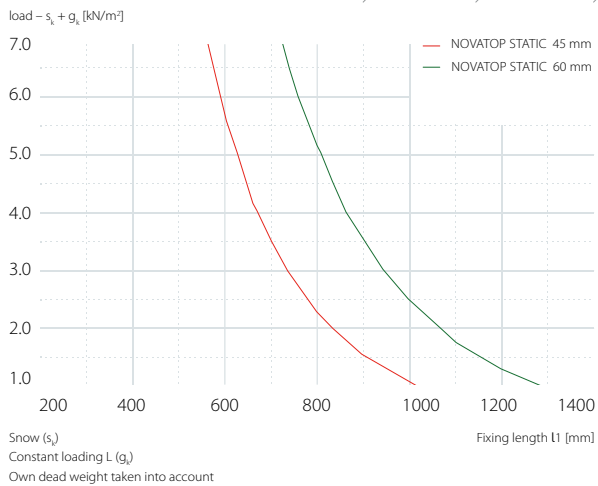
Note: the factor k_h is incorporated in the table.

A large grid of small dots for taking notes, consisting of 30 columns and 30 rows.

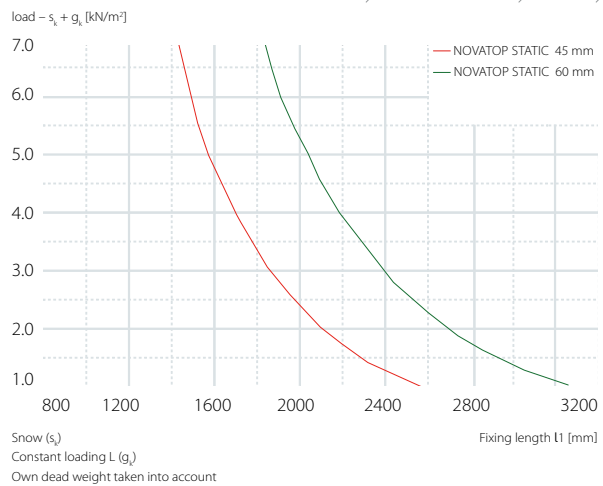
NOVATOP STATIC

PRELIMINARY DIMENSIONING

Preliminary dimensioning l/450 l1 : c = 1 : 1



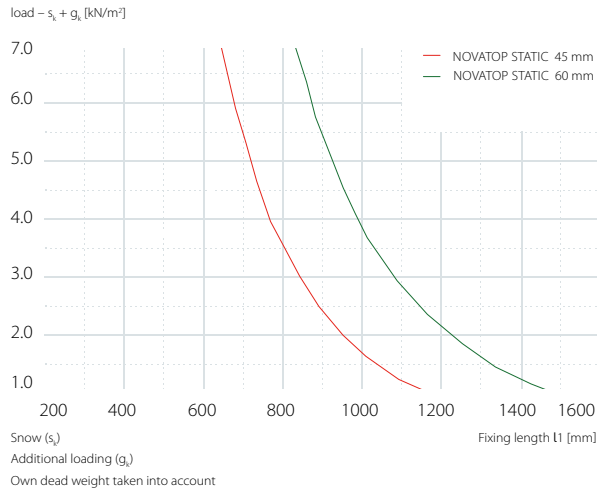
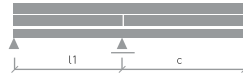
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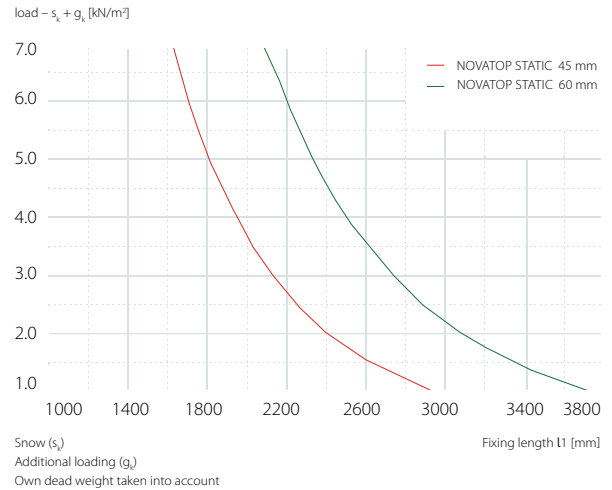
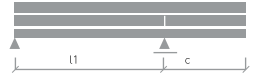
Note: The preliminary dimensioning charts are for the initial assessment. The results must be professionally technically tested and must be accompanied with their static appropriateness.

NOVATOP STATIC PRELIMINARY DIMENSIONING

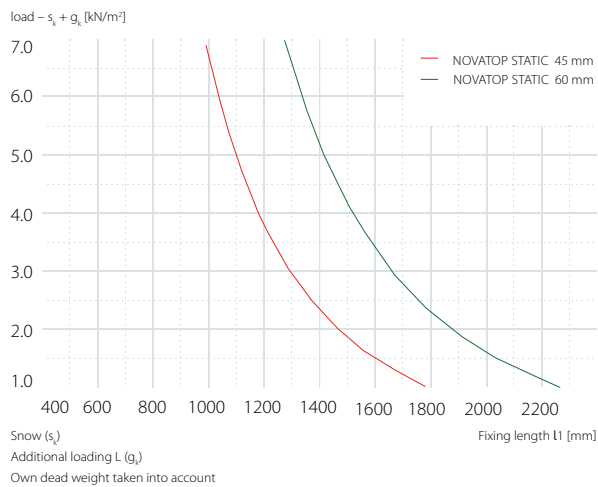
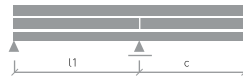
Preliminary dimensioning $l/300$ $l1 : c = 1 : 1$



Preliminary dimensioning $l/300$ $l1 : c = 2 : 1$



Preliminary dimensioning $l/300$ $l1 : c = 1.5 : 1$

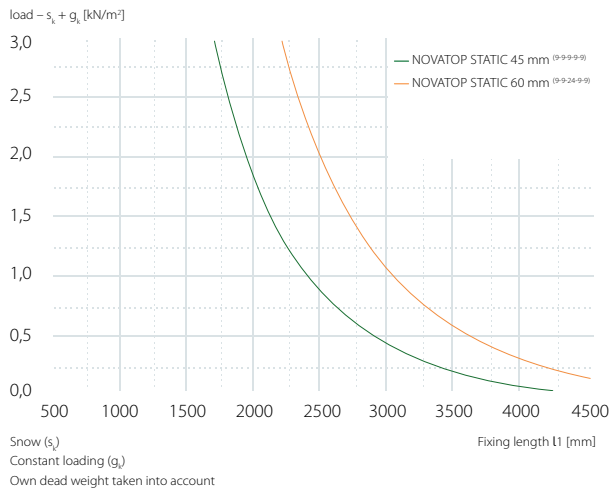


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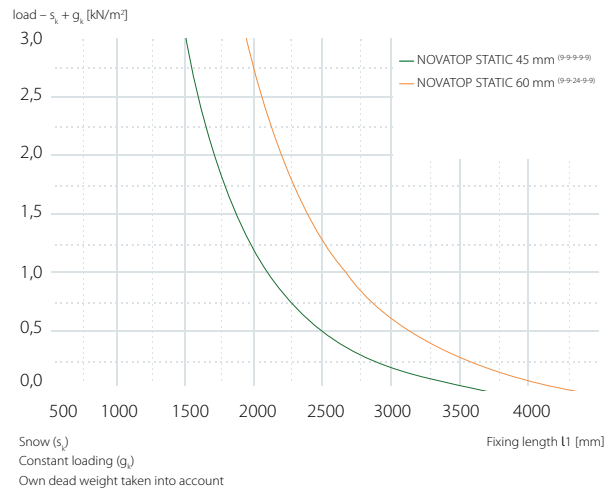
NOVATOP STATIC

PRELIMINARY DIMENSIONING

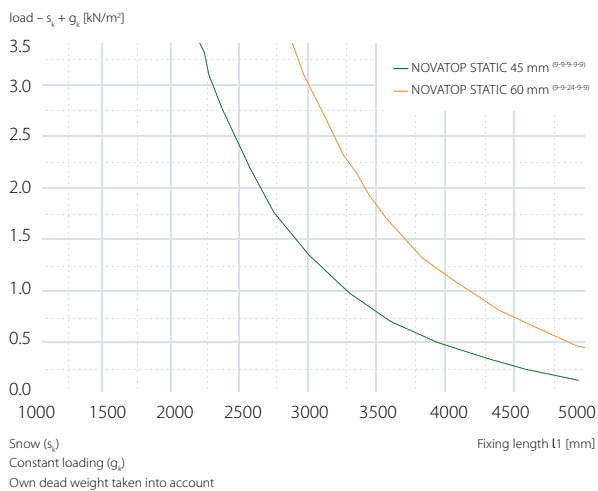
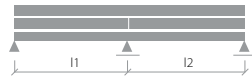
Preliminary dimensioning 1 field $l/3000$



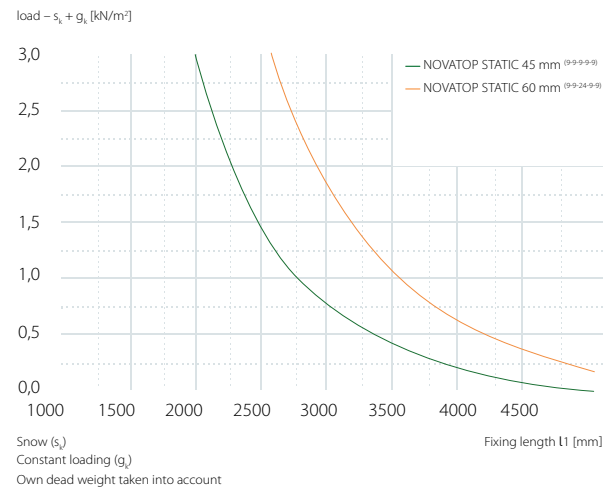
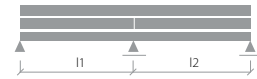
Preliminary dimensioning 1 field $l/450$



Preliminary dimensioning 2 field $l/3000$ $l_1 : l_2 = 1 : 1$




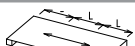

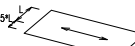
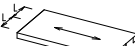



Preliminary dimensioning 2 field $l/450$ $l_1 : l_2 = 1 : 1$

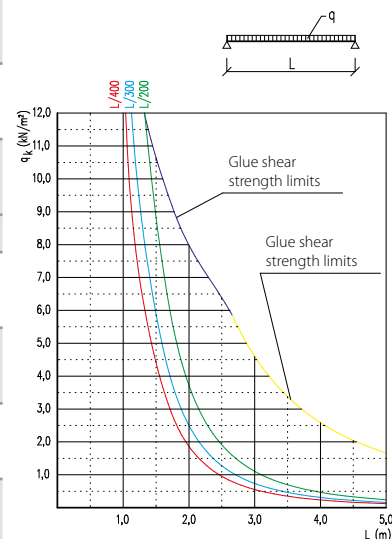







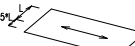


Note: The preliminary dimensioning charts are for the initial assessment. The results must be professionally technically tested and must be accompanied with their static appropriateness.

NOVATOP STATIC PRELIMINARY DIMENSIONING

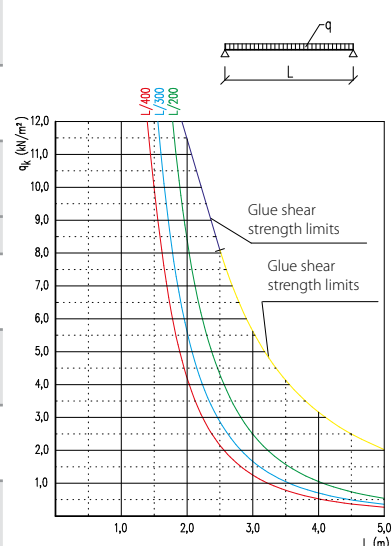
Panel of thick. 45 mm	CHARACTERISTIC STANDARD VALUES OF UNIFORM LOAD OF THE PANEL DURING SAGGING $l/300$										
Spacing of supports in m	0.5	1.0	1.5	1.66	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	31.90	15.95	5.88	4.34	2.48	1.27	0.73	0.46	0.31	0.21	0.15
	25.52	12.76	8.50	7.24	4.14	2.11	1.22	0.77	0.51	0.36	0.26
	25.52	12.76	8.50	7.68	6.05	1.77	3.10	–	–	–	–
	26.59	13.29	8.86	8.00	4.77	–	–	–	–	–	–
Spacing of supports in m	0.20	0.30	0.35	0.42	0.52	0.62	0.70	0.83	0.90	1.05	1.25
	71.55	23.03	14.50	8.39	4.42	2.61	1.81	1.08	0.85	0.53	0.31
	64.32	31.80	23.36	13.99	7.37	4.35	3.02	1.81	1.42	0.89	0.53
	64.32	31.80	23.36	16.22	10.58	6.36	4.42	2.65	2.08	1.31	0.77
	67.00	39.75	27.92	16.15	8.51	5.02	3.49	2.09	–	–	–

5 – layer panels of thick. 45mm (9-9-9-9-9)
one field girders



Panel of thick. 60 mm	CHARACTERISTIC STANDARD VALUES OF UNIFORM LOAD OF THE PANEL DURING SAGGING $l/300$										
Spacing of supports in m	0.5	1.0	1.5	1.66	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	45.87	22.93	13.29	9.80	5.60	2.87	1.66	1.04	0.70	0.49	0.35
	36.70	18.35	12.23	11.05	9.16	4.78	2.77	1.74	1.16	0.82	0.59
	36.70	18.35	12.23	11.05	9.17	7.00	–	–	–	–	–
	38.23	19.11	12.74	11.51	9.55	–	–	–	–	–	–
Spacing of supports in m	0.20	0.30	0.35	0.42	0.52	0.62	0.70	0.83	0.90	1.05	1.25
	122.54	81.69	70.02	52.42	32.77	19.33	13.43	8.05	6.32	3.98	2.35
	98.03	65.35	56.01	46.68	34.20	24.05	18.87	13.42	10.53	6.63	3.93
	98.03	65.35	56.01	46.68	34.20	24.25	18.87	13.42	11.41	8.38	5.75
	102.11	68.07	58.35	48.62	39.27	30.07	23.59	15.51	–	–	–

5 – layer panels of thick. 60mm (9-9-24-9-9)
one field girders



The tables and graphs are prepared for the limit values of sagging of beams $l/200, l/300, l/400$, (brackets $l/100, l/150, l/200$). In the case of smaller distances of supports, the load values are limited by the bending strength of the panels and the shear strength of the glue. In these cases, the characteristic values are obtained from the designed load values by division thereof by a load coefficient of 1.5.

The graphs are prepared for the orientation of the panels with the direction of the fibres of the upper lamellas perpendicularly to the direction of the supports. The values in the tables and graphs serve for preliminary dimensioning and do not substitute a structural analysis.

STORAGE

The panels must be stored in closed and dry areas, placed horizontally and supported by timber beams with the spacing of approximately 1 m. After the removal of the protective casing, they must be carefully covered, preferably with a different sheet material.

The panels must be protected from adverse weather conditions, even on the construction site, and stored there for only the necessary time. It is essential to avoid exposing of the panels to rain and flowing water. For the protection against water, dirt and excessive solar radiation, we recommend using tarps or tarpaulins.

Warning: Improper storage may result in damage, for which the producer assumes no liability.

TRANSPORT

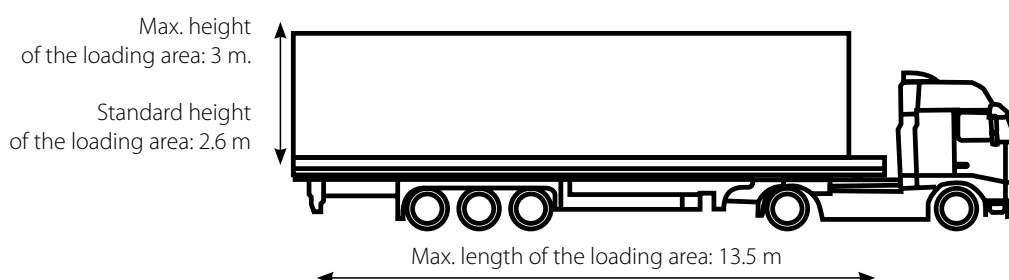
As a standard, the panels are transported in lorries (covered semi-trailers), possibly in containers. For the lorries, it is necessary to ensure entry in and exit from the construction site.

Warning: The panels must be at all times protected against adverse weather conditions. During longer transport under adverse climatic conditions, a change in the moisture of the panels may occur; that is why we recommend acclimatisation before processing it.

Maximum parameter of the load: 50 m³/24 t

At present, only horizontal loading of packages is possible. The transport of NOVATOP components is possible with different types of trucks and depends on the dimensions of the packages, ways of unloading and transport accessibility to the building site. It is necessary to ensure entry and exit of these vehicles onto the site. According to the particular conditions, when the cargo is smaller, a surcharge will be imposed due to inefficient utilization of the transport capacity.

package width	length packet	way of landing	transportation facilities	supplementary charge
≤ 2,1 m	max. 6 m	electric crane	trailer with a standard-size sheet	
		lift truck	trailer with a standard-size sheet	
max. 2,4 m	max. 12 m	electric crane	trailer with a sheet with a possibility of removing the support in the upper part	
		lift truck	trailer with a sheet with the possibility of displacement of the central pillars	
max. 2,5 m	max. 6,5 m	electric crane	uncovered trailer	✓
		lift truck	trailer with a sheet with the possibility of displacement of the central pillars	
max. 2,48 m	max. 12 m	electric crane	uncovered trailer	✓
		lift truck	trailer with a sheet with the possibility of displacement of the central pillars	
2,5–3 m	max. 12 m	electric crane	uncovered trailer	✓
		lift truck	uncovered trailer	✓



NOVATOP STATIC MANIPULATION, ASSEMBLY

MANIPULATION

Due to the high weights of the panels, cranes and special vehicles (forklift trucks) are suitable for manipulation; it is always necessary to define the maximum lifting load and range. The orientation weight of one standard package with the dimensions of 2,100 x 5,000 mm is approximately 2,500 kg. During manipulation, it is necessary to ensure protection of the packaging material, surfaces and edges of the panels to avoid damage.

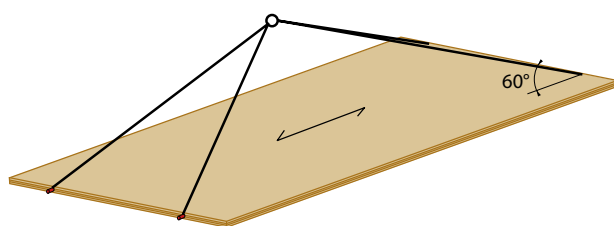
When handling NOVATOP STATIC panels, there are used suspension screws (price list item 011.001) and suspension metal shackles (price list item 011.002), which can be ordered from the manufacturer.

When screwing the screws, it is necessary to take into account the centre of gravity of each board. The maximum load of the suspension screws screwed into the depth of 145 mm is given by their load capacity: When screwing perpendicularly to the fibres, one screw has load capacity of 850 kg, and, when screwing longitudinally to the fibres, one screw has load capacity of 260 kg. The number of screws per panel is determined by the load capacity of individual screws, usually two screws per one manipulated panel are used.

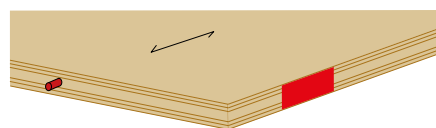
Crane straps, chains and thimbles must be provided by the customer.

Warning: The panels must be at all times protected against adverse weather conditions.

Recommended manipulation



Recommended placement of the screw in the direction of fibers



ASSEMBLY

The custom-made panels (in exact formats, with selected processing of joints) are forwarded directly to the assembly point. Individual panels are fitted by means of a crane. You can build directly from the truck, without further intermediate warehouse manipulation. The panels are connected with wood screws and the connection with other structures is carried out using various kinds of building hardware. The exact position can be secured with the help of tightening ratchets. For more information, see "Instructions for assembly".

Warning: The panels must be at all times protected against adverse weather conditions.

Warning: The producer assumes no liability for the damage of the product due to improper storage, processing, unsuitable use or nonobservance of work procedures during the assembly.

A large grid of small dots for taking notes, consisting of 30 columns and 30 rows.

NOTES



Manufacturer: AGROP NOVA a.s.
 Ptenský Dvůrek 99
 798 43 Ptení
 Czech Republic
 Tel.: +420 582 397 856
novatop@agrop.cz
novatop-system.com

Manufacturer certificates:



The technical documentation and the certificates
 can be downloaded at www.novatop-system.com