

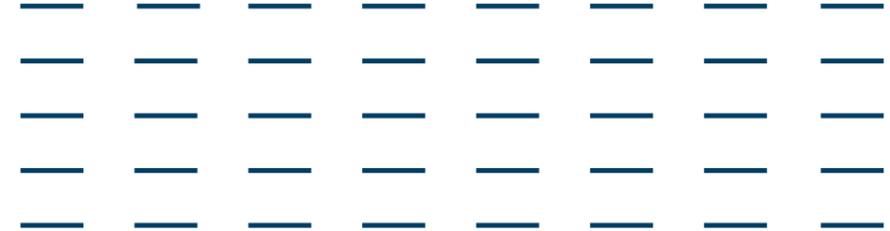
SpanSet®

Tower Handling

02

Height Safety
Lifting
Load Control
Safety Management





How we're ensuring today that our name will be valued tomorrow.

The SpanSet group is the world specialist in lifting and securing loads. With its own branches in all of the major developed countries and a global network of dealerships, SpanSet understands the rules and is able to guarantee the whole spectrum of services on site.

From wire rope to lifting slings, from ratchets to lashing straps, even from steel to load suspension equipment. We manufacture it all and, as such, we can provide you with custom-made designs and specialist solutions to the serious challenges which are part and parcel of the transportation and assembly of wind turbines.



02 LIFTING
TOWER LIFTING EQUIPMENT

TAP
Tower attachment point



SPANSET TAP

- Lashing
- Lifting
- Erection

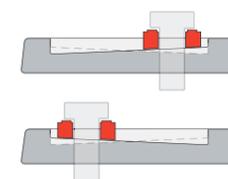
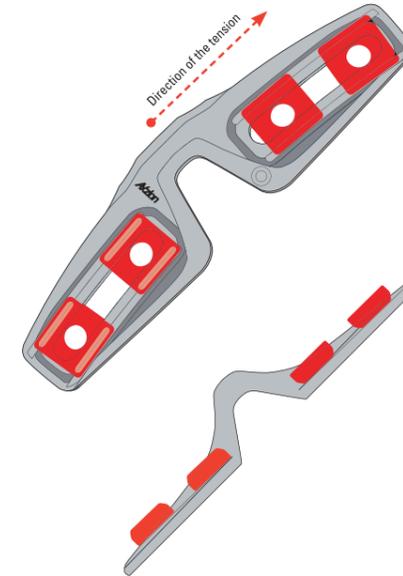
- proven, high-strength
- load-carrying capacity up to 125 to*
- Tower segment up to 100 to
- Pitch diameter from 2.3m.
- Single TAP WLL 25 to
- Deadweight 30 kg

Higher performance installations, offshore use, ever heavier tower segments for wind turbines. The lifting brackets developed in the past are no longer strong enough; the usual three attachment screws are no longer enough to ensure lifting capacity. Limit plates with four or more single pressure-tap holes must be additionally fitted to each flange, and these heavy construction solutions can only be handled with the aid of a crane.

The Tower Attachment Point (TAP) was redeveloped for tower segments of up to 100 tonnes with the common bolt pitches from 2.5 – 4.2m flange diameter. Each individual TAP bracket has a load capacity of 25 tonnes at a maximum acceptable angle of 30° to the lifting device. The TAP brackets are drop-forged and are made of high-quality heat-treated steel. Because of the high-tensile material the brackets weigh a maximum of 30 kg and two people can easily rig them by hand. On the load side, a standard high-tensile shackle with a 25 tonne nominal rating can be threaded into the TAP bracket, making the connection to the usual round slings or wire ropes as simple as possible. The securing of the load has also been considered: multiple lashing

hooks can be attached to the TAP bracket simultaneously. On the tower side, the Tower Attachment Point, (TAP) is mounted using 2 x 2 screws with an 8.8 rating of sizes M36, M42 to a maximum of M48. Both long slots are slightly curved to match the radius of the tower (patent pending), allowing mounting to almost any tower segment with a diameter between a maximum of 4.2m and a minimum of 2.5m. As any technician knows, two long slots in the same direction do not work as the fitting could suddenly slip under a full load. This is where the second patent from GKS-AXZION's development group comes into effect: each long slot has two bevels alongside it which run in opposite directions. The screws are attached to these bevels by means of wedge-shaped tapered base plates. Under lateral tension the load on the screw is increased in the direction of the tension, the contact pressure increases and lateral movement becomes impossible. On our test bed, the forged TAP brackets were tested to 125 tonnes, five times their rated load capacity. The requirements of EN 13155 "Lifting Devices" are therefore exceeded. This proven 5:1 safety factor permits use in the United States. In addition to the brackets mounting with screws from M36, 8.8 has also been fully tested.

Lateral pull increases the contact pressure. Lateral shift is no longer possible.



Lateral tension increases the contact pressure. Sideways slipping is no longer an issue.

TAP-Types	WLL [ton]	ø [m]	ø [inches]	DW [kg]	Screws
S	17	2,3 - 3,5	98 - 138	18	M36
M	25	3,0 - 4,5	118 - 177	30	M36 I M42
L	35	3,0 - 4,5	118 - 177	30	M36 I M42
XL	55	3,0 - 4,5	118 - 177	30	M36 I M42 I M48 I M52
XXL	> 55	> 4,5	> 177	--	--



02 LIFTING
TOWER LIFTING EQUIPMENT

VarioTAP
For every tower diameter



SpanSet VarioTAP

- Repowering
- Lashing
- Lifting
- Erecting
- For every tower diameter
- load-carrying capacity up to 125 to
- Tower segment up to 100 to
- For very tower diameter
- Deadweight 30 kg

M56 or M20, diameter of 2 meters to 6 meters: Wind energy plant assembly teams need to lift and turn the various tower segments. Standard tower suspension points are not flexible enough and are also far too heavy for the assembly at the construction site. Several suspension points often need to be included in various sizes for the different tower sizes.

The new Vario-TAP will fit into all types of system. The extra wide long slots, combined with the variable pressure

plate with transverse hole can be used to create different hole diameters. It is no longer necessary to use an auxiliary crane or mobile forklift truck for assembly, as the dead weight of the Vario-TAPs is a "portable" 30 kg. Whether 25to or 35to, the load bearing capacity of the new Vario-TAPs is only limited by the maximum bearing capacity of the screws. The respective input side is coloured and also identified with a label and is therefore clear: RED = LEFT and GREEN = RIGHT. The extra-stable variable pressure plates are available for all screw sizes from M20 to M56* .

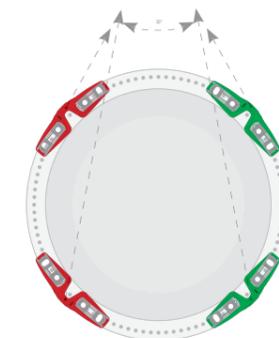
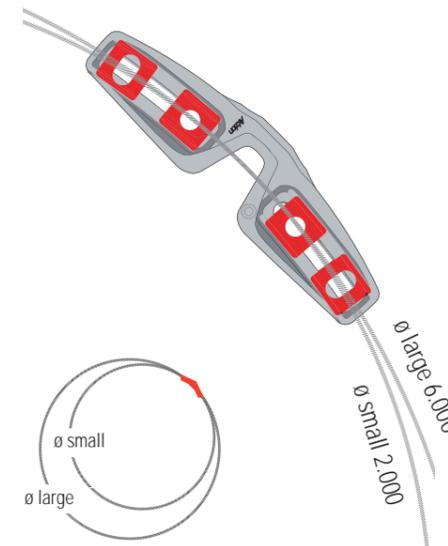
Screws	WLL I TAP [kg]
M20	8.000
M24	14.000
M30	20.000
M36	25.000

Screws	WLL I TAP [kg]
M42	25.000
M48	25.000
M52	25.000
M56	25.000

8-ton-Wrigger-Set

Repowering-Set [Piece]	[Article]	Working load limit: max. 80.000 kg [kg]
3	VarioTAP Left	25.000
3	VarioTAP Right	25.000
2	Magnum-X	80.000
1 Set	Pulley-Set	80.000
25 x 5	Pressure Plates	

For Repowering and every tower diameter



02 LIFTING

TOWER LIFTING EQUIPMENT

J-Hook
Pulley – Sheave blocks



J-Hook

J-Hook

- Erecting
- Repowering

The J-Hook is simply attached to the flange of the tower segment allowing the tower segment to be lifted. During the turning process, the robust stop device hooks behind the flange, and all contact surfaces are equipped with the robust secutex impact protection (PUR). The J-Hook securely “rolls” into the top position of the pipe segment. The hook has two rounded teeth with rotating embedded secutex pipe modules for this purpose.

Significant time-saving and safety: After the lifting/ turning process, the J-Hook can be easily removed by lifting it with a crane. Time-consuming assembly work is not required. In contrast, securely fastened suspension points need to be disassembled after the turning process, which requires work to be carried out under the load. Work under a suspended load is absolutely impermissible. The load therefore needs to be placed on trestles, which significantly delays the process.

Pulley – Sheave blocks

- Lifting
- Erecting
- Repowering

The new sheave blocks can be used for lifting and turning. The compact and highly compressed wire rope evenly distributes the force across the suspension points. The

wire rope slings thimbles are suitable for continuous use with shackles. On the crane side, the sheave blocks have robust Magnum round slings.



SPANSET

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 - Load test | Certification
 - Supervision in operation
 - Worldwide service
-

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