

02.5





SpanSet®

Engineered Lifting Solutions

Exoset	68-75
Joker Hooks	76-77
Axzion	78-87
– TAPs	82-83
– J Hooks	84-85

02.5 ENGINEERED LIFTING SOLUTIONS

Exoset

Joker Hooks

Axzion

- TAPs
- J Hooks



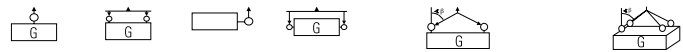
Exoset Swivel Eye Bolt

Exoset Lifting Points

- Half a century experience in handling loads in total safety
- 24 months warranty
- Suitable for lifting and load control
- WLL visible in any working condition: marked on all pieces, printed label with product information securely connected to the lifting point
- User manual connected to product upon delivery
- EN 1677- 4 conformity
- **CE** conformity
- Self positioning under load with a minimum 4 :1 safety factor in all directions
- A perfect combination for lifting with textile slings using Joker hooks
- Made in Europe.

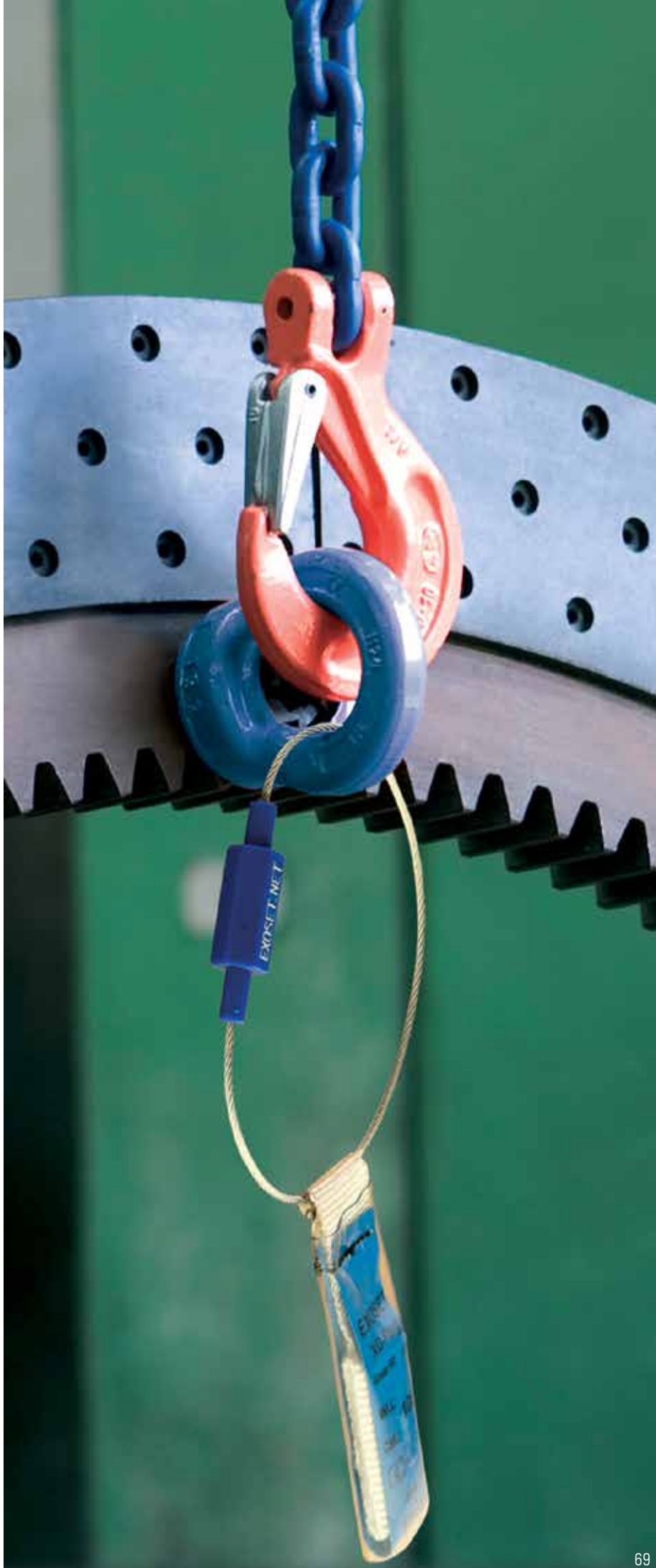
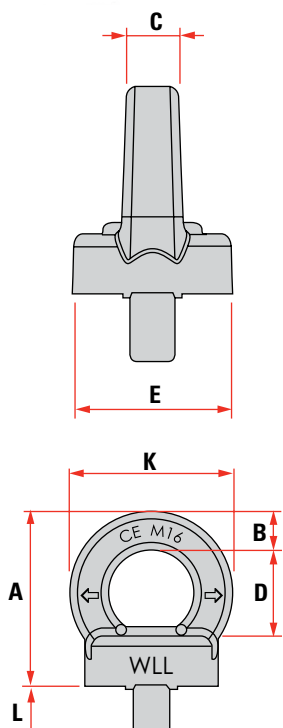
Grade 100

- Rotates through 360°
- Self-aligning to load direction
- Minimum safety factor of 4:1 in any direction
- Hand tighten by hex key for single lifts
- Safe in every direction.



Code	0°	0°	90°	90°	0–45°	45–60°	0–45°	45–60°
CHKPSP-P101A1	1.0	2.0	0.4	0.8	0.56	0.4	0.84	0.6
CHKPSP-P102A1	1.0	2.0	0.4	0.8	0.56	0.4	0.84	0.6
CHKPSP-P103A1	2.0	4.0	0.75	1.5	1.0	0.75	1.6	1.12
CHKPSP-P104A1	4.0	8.0	1.5	3.0	2.0	1.5	3.15	2.25
CHKPSP-P105A1	6.0	12.0	2.3	4.6	3.22	2.3	4.83	3.45
CHKPSP-P106A1	8.0	16.0	3.2	6.4	4.48	3.2	6.7	4.8
CHKPSP-P107A1	12.0	24.0	4.5	9.0	6.3	4.5	9.4	6.7
CHKPSP-P108A1	16.0	32.0	7.0	14.0	9.8	7.0	14.7	10.5
CHKPSP-P109A1	24.0	48.0	9.0	18.0	12.6	9.0	18.9	13.5
CHKPSP-P110A1	32.0	64.0	12.0	24.0	16.8	12.0	25.2	18.0

Code	M	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	K (mm)	L (mm)	kg
CHKPSP-P101A1	M8	52.5	8	10	29	32	45	15	0.30
CHKPSP-P102A1	M10	52.5	8	10	29	32	45	15	0.30
CHKPSP-P103A1	M12	64.5	11	11	34	44	56	18	0.46
CHKPSP-P104A1	M16	72.5	13	14.5	39	56	65	24	0.90
CHKPSP-P105A1	M20	81	14	17	42	58	70	30	1.15
CHKPSP-P106A1	M24	98	18	19	52	73	88	36	2.05
CHKPSP-P107A1	M30	123	22	27	62	80	103	45	4.00
CHKPSP-P108A1	M36	162	37	38	80	95	154	54	6.70
CHKPSP-P109A1	M42	188	40	41	90	105	170	63	9.50
CHKPSP-P110A1	M48	210	45	47	95	120	185	72	13.40



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset

Joker Hooks

Axzion

- TAPs
- J Hooks

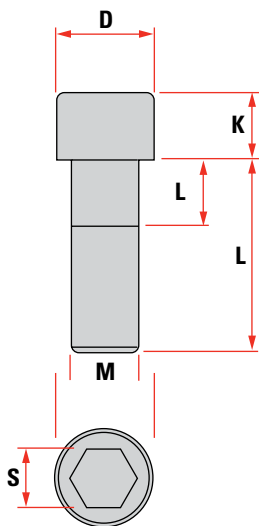


Exoset Swivel Eye Bolt

Grade 100

- Rotates through 360°
- Self-aligning to load direction
- Minimum safety factor of 4:1 in any direction
- Hand tighten by hex key for single lifts.

Code	M	D	K	S	L (mm)							
CHKPSL-P101A1	M8	13	8	6	25	30	40	45	50	55	60	65
					70	75	80	85	90	100	110	120
					130	140	150	160				
CHKPSL-P102A1	M10	16	10	8	30	40	45	50	55	60	65	70
					75	80	85	90	100	110	120	130
					140	150	160	180				
CHKPSL-P103A1	M12	18	12	10	30	40	45	50	55	60	65	70
					75	80	85	90	100	110	120	130
					140	150	160	180				
CHKPSL-P104A1	M16	24	16	14	40	45	50	55	60	65	70	75
					80	85	90	100	110	120	130	140
					150	160	180	200	220	240		
CHKPSL-P105A1	M20	30	20	17	45	50	55	60	65	70	75	80
					85	90	100	110	120	130	140	160
					180	200	220	240				
CHKPSL-P106A1	M24	36	24	19	50	55	60	65	70	75	80	85
					90	100	110	120	130	140	160	180
					200	220	240					
CHKPSL-P107A1	M30	45	30	22	60	65	70	75	80	85	90	100
					110	120	130	140	160	180	200	220
					240							



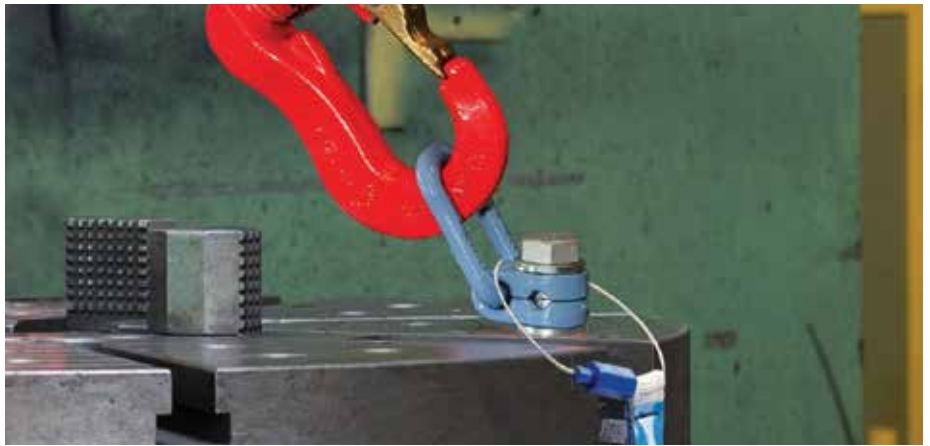
02.5 ENGINEERED LIFTING SOLUTIONS

Exoset

Joker Hooks

Axzion

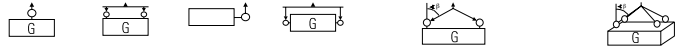
- TAPs
- J Hooks



Swivel Lifting Point with Offset Ring

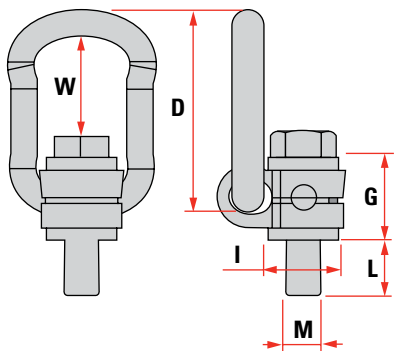
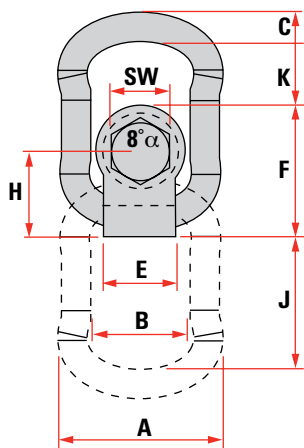
Grade 100

- Rotates through 360°
- Self-aligning to load direction
- Minimum safety factor of 4:1 in any direction
- Hand tighten by hex key for single lifts.



Code	0°	0°	90°	90°	0–45°	45–60°	0–45°	45–60°
CHKPSR-P101A1	0.30	0.60	0.30	0.60	0.42	0.30	0.63	0.45
CHKPSR-P102A1	0.63	1.26	0.63	1.26	0.88	0.63	1.32	0.95
CHKPSR-P103A1	1.0	2.0	1.0	2.0	1.4	1.0	2.1	1.5
CHKPSR-P104A1	1.5	3.0	1.5	3.0	2.1	1.5	3.15	2.25
CHKPSR-P105A1	2.5	5.0	2.5	5.0	3.5	2.5	5.25	3.75
CHKPSR-P106A1	4.0	8.0	4.0	8.0	5.6	4.0	8.4	6.0
CHKPSR-P107A1	4.0	8.0	4.0	8.0	5.6	4.0	8.4	6.0
CHKPSR-P108A1	5.0	10.0	5.0	10.0	7.0	5.0	10.5	7.5
CHKPSR-P109A1	7.0	14.0	7.0	14.0	9.8	7.0	14.7	10.4
CHKPSR-P110A1	8.0	16.0	8.0	16.0	11.2	8.0	13.8	12.0
CHKPSR-P111A1	10.0	20.0	10.0	20.0	14.0	10.0	21.0	15.0
CHKPSR-P112A1	15.0	30.0	15.0	30.0	21.0	15.0	31.5	22.5
CHKPSR-P113A1	20.0	40.0	20.0	40.0	28.0	20.0	42.0	30.0

Code	M	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	K (mm)	L (mm)	W (mm)	J (mm)	SW (mm)	kg
CHKPSR-P101A1	M8	57	34	10	78	24	41	30	26.5	35	11	43	51	13	0.275
CHKPSR-P102A1	M10	57	34	10	78	24	41	30	26.5	35	16	42	51	17	0.29
CHKPSR-P103A1	M12	66	38	13.5	85	30	50	36	33	28	21	40	52	19	0.50
CHKPSR-P104A1	M16	66	38	13.5	85	30	50	36	33	28	24	38	52	24	0.51
CHKPSR-P105A1	M20	87	55	16	111	48	68	43	42.5	36	32	54	71	30	1.25
CHKPSR-P106A1	M24	87	55	16	111	48	68	43	42.5	36	37	51	71	36	1.30
CHKPSR-P107A1	M27	109	66	22.5	154	54	91	61	58.5	47	39	64	86	41	3.15
CHKPSR-P108A1	M30	109	66	22.5	154	54	91	61	58.5	47	39	62	86	46	3.25
CHKPSR-P109A1	M36	109	66	22.5	154	54	91	56	58.5	43	48	60	86	55	3.30
CHKPSR-P110A1	M36	136	78	28	190	62	108	83	72.5	74	58	88	115	55	5.90
CHKPSR-P111A1	M42	136	78	28	190	62	108	73	72.5	70	73	86	115	65	6.50
CHKPSR-P112A1	M42	169	97	36	242	68	131	87	87.5	97	63	121	151	65	11.20
CHKPSR-P113A1	M42	97	97	36	242	68	131	87	87.5	93	73	117	151	75	11.60



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset

Joker Hooks

Axzion

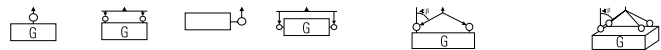
- TAPs
- J Hooks



Swivel Eye-Bolt with Ball Bearings

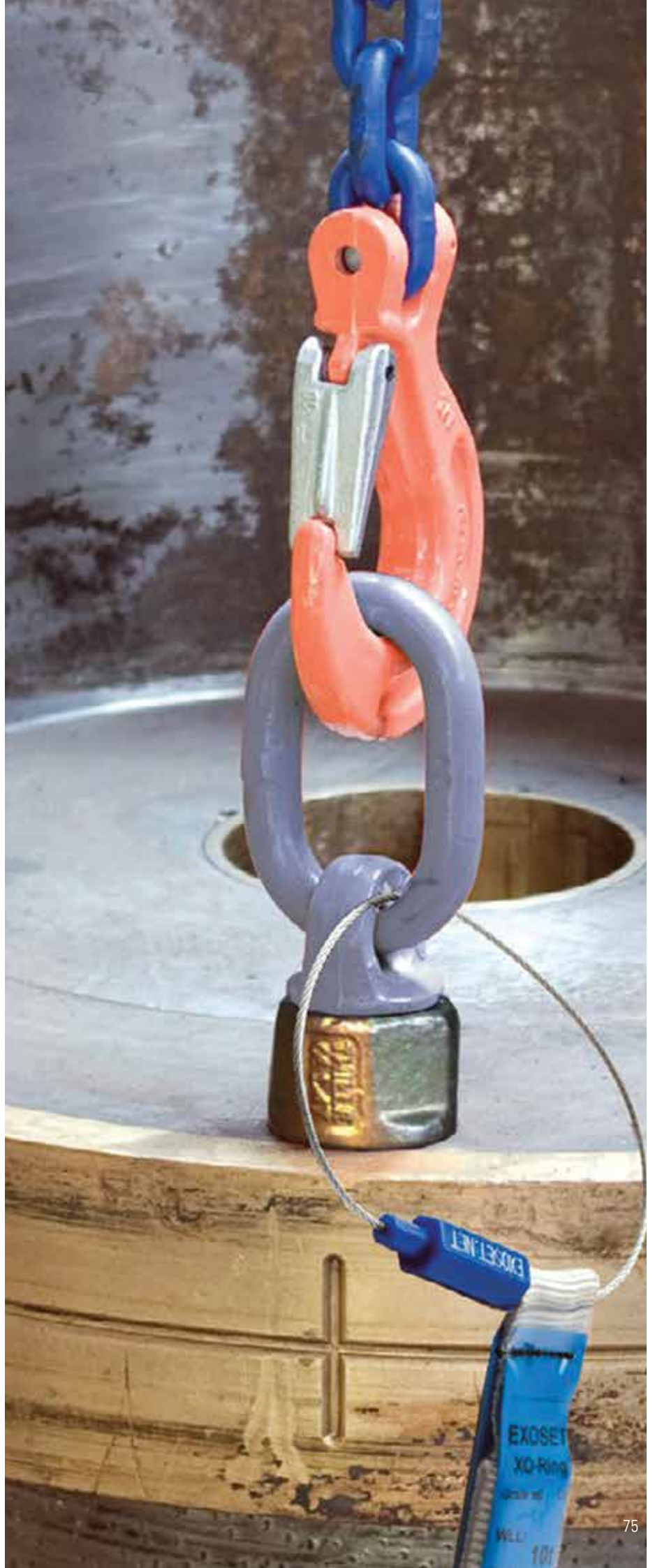
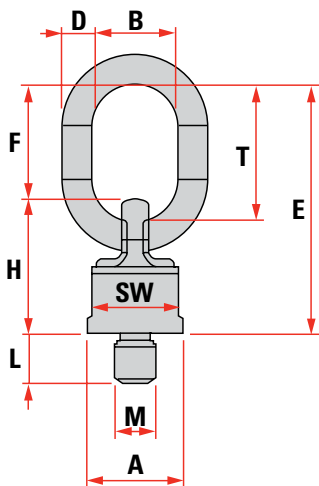
Grade 100

- Rotates through 360°
- Self-aligning to load direction
- Minimum safety factor of 4:1 in any direction
- Hand tighten by hex key for single lifts.



Code	0°	0°	90°	90°	0-45°	45-60°	0-45°	45-60°
CHKPSS-P205A1	0.90	1.80	0.45	0.90	0.63	0.45	0.95	0.67
CHKPSS-P206A1	1.2	2.4	0.60	1.20	0.85	0.60	1.25	1.90
CHKPSS-P101A1	2.80	5.60	1.40	2.80	2.00	1.40	3.00	2.10
CHKPSS-P102A1	5.00	10.00	2.50	5.00	3.55	2.50	5.30	3.75
CHKPSS-P103A1	8.00	16.00	4.00	8.00	5.60	4.00	8.00	6.00
CHKPSS-P207A1	10.00	20.00	5.30	10.60	7.50	5.30	11.20	8.00
CHKPSS-P104A1	13.40	26.80	6.70	13.40	9.50	6.70	14.00	10.00
CHKPSS-P208A1	18.00	36.00	10.00	20.00	14.00	10.00	21.20	15.00
CHKPSS-P209A1	20.00	40.00	12.50	25.00	17.50	12.50	26.50	18.80
CHKPSS-P210A1	25.00	50.00	15.00	30.00	12.20	15.00	31.50	22.40

Code	M	L (mm)	E (mm)	F (mm)	D (mm)	T (mm)	B (mm)	A (mm)	SW (mm)	H (mm)	kg (mm)
CHKPSS-P205A1	M10	15	101	46.5	13	55	33	39	36	54.5	0.50
CHKPSS-P206A1	M12	18	101	46.5	13.55	33	39	36	45.5	54.5	0.50
CHKPSS-P101A1	M16	20	105	46	13	54	30	38	30	50	0.50
CHKPSS-P102A1	M20	30	131	57	16	58	34	50	40	61	1.00
CHKPSS-P103A1	M24	30	153	70	19	80	40	58	48	68	1.60
CHKPSS-P207A1	M30	40	170.5	83	22	100	50	73	65	87.5	2.70
CHKPSS-P104A1	M36	54	165	65	20	85	40	75	65	80	2.20
CHKPSS-P208A1	M42	60	244	116	32	140	70	106	95	128	8.30
CHKPSS-P209A1	M48	68	244	116	32	140	70	106	95	128	8.60
CHKPSS-P210A1	M56	68	244	116	32	140	70	106	95	128	9.10



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset

Joker Hooks

Axzion

- TAPs
- J Hooks



Joker Hooks

Joker Hooks are the ideal complement to your round and flat slings. After all, they are all-rounders: They can either be used to extend the length of slinging gear or as terminal hooks which guarantee a secure connection at anchor points. Combined with one or more roundslings, multi-leg suspension gear can be created on the spot.

Joker Hooks have been designed so that their characteristics make them ideally suited to combine with textile slinging gear. The objective: easy to handle and reliable in use. Intelligent details such as the specially shaped tip of the hook make it easier to insert in fixed lifting points. The raised side cheeks on the hook guide the textile lifting gear as if in a groove. This prevents abrasion on the edges.

The special quality steel (8 Plus) is forged and thus particularly robust. The construction of the Joker Hook according to the Skeletto principle saves weight on the 1, 2 and 3t Jokers and makes for easy handling. And in order to exclude any errors, the hooks are painted the same colour as the textile slings with the same lifting capacity. This way, you can identify the right hook for your use at a glance.

Part	WLL (kg)	1 (mm)	2 (mm)	3 (mm)	4 (mm)	5 (mm)	6 (mm)	7 (mm)	kg
ASH 1t	1000	30	110	29	32	20	15	73	0.6
ASH 2t	2000	38	143	34	42	26	21	93	1.6
ASH 3t	3000	46	151	34	50	32	26	111	2.2
ASH 4t	4000	55	180	49	60	35	31	130	3.2
ASH 5t	5000	55	180	49	60	35	31	130	3.3
ASH 6t	6000	–	180	49	60	35	55	130	3.3



ASH 1t

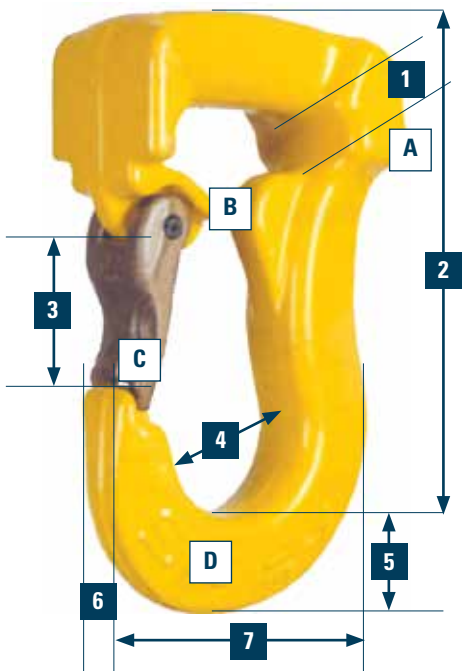
ASH 2t

ASH 3t

ASH 4t

ASH 5t

ASH 6t



- A** Enlarged shoulder areas to protect slings from chaffing
- B** Throat opening to accept roundslings and webslings
- C** Forged hook and safety catch
- D** Colour coded to the lifting sling



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset
Joker Hooks

Axzion

- TAPs
 - J Hooks
-



Axzion Lifting Solutions

As part of the SpanSet group, Axzion have heavy engineering capabilities to tackle the most technical of lifting tasks. This capability is fully supported by the ability to proof test up to 600T on a purpose built test rig designed for spreader beams and associated equipment.

From selected grades of steel, to welding consistency and standards adherence, customers can be assured of the safety and quality of any product carrying the Axzion brand.

Intelligent Load-Carrying Equipment

The correct guidance is always a question of one's own capabilities. As the manufacturer, we are always able to find the best solution for you. This is true from both a price and a solution-orientated point of view. The fact that approximately 84% of the solutions we provide are modified or entirely individual solutions speaks volumes.

Only every sixth piece of load-carrying equipment that leaves our factory is a standard solution.

Who is Responsible?

The manufacturer is the one who is responsible for the development and production of a product which enters the market bearing its name. As the operators construct and assemble load-

carrying equipment, they themselves become the manufacturer.

Insufficient attention is often paid to the risks and liabilities involved in the lifting and moving of heavy loads – sometimes with dramatic consequences for those responsible and for those affected. Even the selection of an inappropriate manufacturer may result in personal liability for the group of people responsible. We bear the responsibility for you. You are dealing with a company which always works in accordance with regulations.

Starting with the Major Proof of Suitability for Welding according to DIN 18800 and DIN 15018 for static and dynamic load-bearing structures and extending to the material inspection certificate EN 10 204/3.1, not to mention the test report, operating instructions and CE declaration according to the new machine directive 2006/42/EC.

Standard or Individual Solution – We Give You the Correct Advice

Because we carry out our own construction and assembly, Axzion-GKS possesses a variety of individual construction elements which form a construction kit which can be assembled as needed to create a comprehensive solution. Our strength lies in the fact that we are able to create custom-built machinery within short

delivery times. We find the correct solution for you, whether it is an affordable standard construction or a custom solution.

Materials from renowned manufacturers:

- A safe and good solution can only be created using good ingredients. We have worked with the best manufacturers for many years; for example, the tested blasted steels are sourced from Thyssen and Arcelor.
- The chain construction components come from the RUD Chain Factory in Aalen and the shackles are from van Beest. Forged crane hooks and suspension lugs are delivered by Stahlhammer Bommern and the Peter Schöttler drop forge in Hagen.
- The textile lifting accessories such as trusses and round slings of course come from our parent company SpanSet in Übach-Palenberg.

We Provide Everything You Need

We have our own electrical engineers and hydraulics specialists who are very experienced in the field of materials handling. This is the only way to deliver innovative individual solutions and ensure quick service.

Axzion Specialist Products For Industry

- Rotator lifting beams
- Spreader bars
- Coil hooks
- Grippers
- Tongs
- Fork attachments.



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset
Joker Hooks

Axzion

- TAPs
 - J Hooks
-



Axzion Wind Energy Products

No Room For Experiments

We can provide you with the right quality of equipment for each and every one of your applications. Whether you require something strong and sturdy, something extremely compact or simply our standard solutions for one-way transport, we can supply you with every single variant. The SpanSet Group is always ready for any field of application and, no less importantly, our insurance cover is valid worldwide.

Quicker Assembly, Even Under Difficult Conditions

Time is money, and the assembly of wind turbines has a significant impact on costs. Lifting problems are often misdiagnosed and intelligent solutions are often overlooked, meaning that valuable opportunities are missed. We know our stuff; our SpanSet lifting specialists have already developed a large number of smart, time-saving solutions for some well-known manufacturers of wind turbines.



We are particularly proud of the following examples:

- **Lifting-beam assemblies:** with adjustable suspension equipment for nacelles and gearboxes, even when loaded (can also be angled when loaded).
- **Variobeam modular beams:** for assembling individual rotor blades in the ground position
- **Automated hooks:** electrical or mechanical with cable-release or remote-control functions
- **TAP (Tower Attachment Points):** the specially designed attachment point for segments of the turbine tower. Maximum weight of 100 tonnes, can be adjusted between the diameters 2.5 and 4.2 metres
- **Rotor lifting equipment:** pivotable, with adjustable suspension equipment, even when loaded (can also be angled when loaded).



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset
Joker Hooks
Axzion
– TAPs
– J Hooks



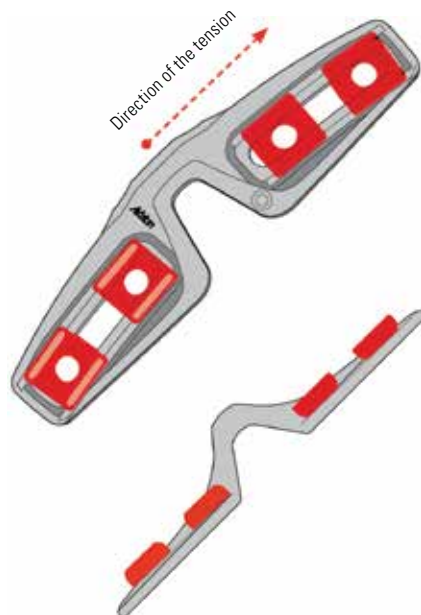
TAPs

- Proven, high-strength
- Load-carrying capacity up to 125 tonnes
- Tower segment up to 100 tonnes
- Hole diameter from 2.3m
- Single TAP WLL 25 tonnes
- Deadweight 30kg.

Tap - The New Attachment Point for Tower Segments

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.

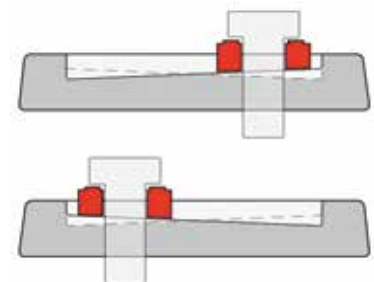


The Tower Attachment Point (TAP) was redeveloped for tower segments of up to 100 tonnes with the common bolt pitches from 2.5 – 4.2m flange diameter.

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 30kg 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.



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

Both long holes 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 holes 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 hole 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.

Safety is a Priority For Us

Safety is naturally very important. On our test stand, 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 even permits use in the United States. In addition to the brackets mounting with screws from M36, 8.8 has also been fully tested.



02.5 ENGINEERED LIFTING SOLUTIONS

Exoset
Joker Hooks
Axzion
– TAPs
– **J Hooks**



J Hooks

Lift and Turn with the Newly Developed J-Shaped Hook

The J-Hook is simply attached to the flange of the tower segment and the tower segment can then 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: After the lifting / turning process, the J-Hook can be easily removed, using gravity by lowering 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.



