SpanSet®

02

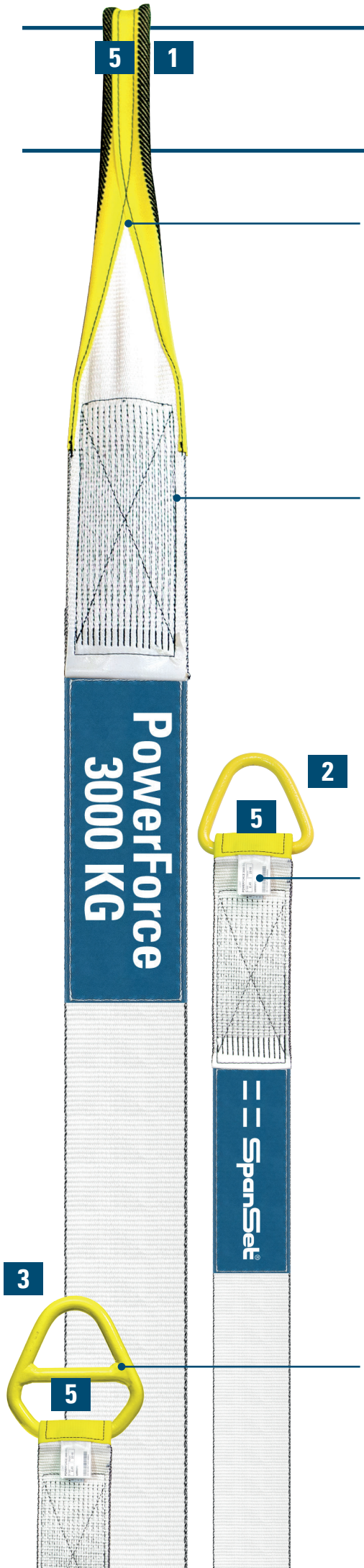
Height Safety
Lifting
Load Control
Safety Management

PowerForce

Lifting straps

NEW

PowerForce lifting straps



Increased safety, longer service life

The thing that makes PowerForce lifting straps special is the fact that the cloth is made out of extremely cut and tear-resistant high-performance fabric (high-modulus polyethylene). They require no additional protection when fastened around sharp edges with a radius of more than 2 mm. For conventional two-layer lifting straps, a radius that small is sharp enough to be strictly prohibited – for polyester lifting straps, an edge is considered sharp if the thickness of the sling material is greater than the edge radius. A protective sleeve is therefore required for the commonly used two-layer lifting straps when the edge radius is still as big as 6 mm. The low elasticity of the fabric is also a plus point – it ensures lifting force is quickly generated and allows for good control of the lifting manoeuvre.

Well thought-out seam construction

State-of-the-art, computer-controlled sewing machines ensure a consistently high seam quality – proudly Made in Germany. The main seam (box seam) in PowerForce lifting straps, sewn in black thread, is very small and therefore space-saving, which leaves a larger contact area for the load than with conventional lifting straps of similar length. What's more, the black thread on a white fabric makes visual inspections easier.

Reinforced selvedge

In addition, an integrated selvedge means that the outer edges of PowerForce lifting straps are reliably protected – as you'll be familiar with from SpanSet's conventional lifting straps.

Robust, tear-resistant label with RFID tag

Each PowerForce lifting strap is equipped with a tear-resistant SpanSet quality label with an RFID transponder. PowerForce was designed based on the EN 1492-1 standard, which applies to polyester lifting straps, amongst other things. We say "based on" because the standard does not take HMPE into account, since the fabric and the label are in white.

You can rely on it!

SpanSet has examined and thoroughly tested the cut resistance of PowerForce lifting straps in both laboratory tests and field trials. Amongst other things, the lifting straps have been subjected to alternating stress testing in which they were loaded up to capacity on a 2 mm edge radius 20,000 times – convincingly demonstrating the enormous cut resistance. And in the subsequent residual strength testing, the safety factor of 7 prescribed in the standard for production controls on new lifting straps was reached, surprising even the developer.

The results achieved by the PowerForce lifting straps, and therefore their operational fitness, were confirmed by DNV GI (Det Norske Veritas Germanischer Lloyd).

Extra convenience

A combination of D1 and D2 shackles (pass-through shackles) is available especially for use when hitching up a load.

When just one can (almost) do it all

High cut and wear resistance set PowerForce lifting straps apart from polyester lifting straps with the same load capacity.

With its ever-expanding range of applications, the new PowerForce lifting strap is the ideal sling for the construction industry and mechanical engineering. Sometimes, you need to lift a precast concrete part with a rough surface, directly followed by a roof component or steel beam with extremely small edge radii. The PowerForce lifting strap is capable of withstanding any edge radius of more than 2 mm, even when dealing with the widest variety of mechanical components.

Metal parts

Concrete parts

Industrial hall construction

Civil engineering

Mechanical engineering

Construction industry

Verification Report

DNV·GL

Statement No.:
A0535834 / VR02

Manufacturer:
Product:
Product Trading Name:

SpanSet GmbH & Co. KG
Hoisting Belt
Power Force

Work Load Limit:

Power Force 1000 HA	1,0 metric t
Power Force 2000 HA	2,0 metric t
Power Force 2000 DD	2,0 metric t
Power Force 4000 HD	4,0 metric t

Safety Factor: 1:7

This is to verify:

That the above products have be
EN 1492-1:2009-05, for the main
reference documents listed below

Verification involvement

The verification of the above proc
EN 1492-1:2009-05, with the det
document, and in the reference d

Validity:
This statement is valid from date

Issued at Hamburg on 2018-09-

for DNV GL

Holger BENDER
Sales and Project Manager
Certification
Project Manager

Page 1 of 2

Verification Report

DNV·GL

Statement No.:
A0643115 / VR01

Manufacturer:
Product:
Product Trading Name:

SpanSet GmbH & Co. KG
Hoisting Belt
PowerForce

Work Load Limit:

Power Force 1000 D1D1	1,0 metric t	Power Force 3000 D1D1	3,0 metric t
Power Force 1000 D1D2	1,0 metric t	Power Force 3000 D1D2	3,0 metric t
Power Force 2000 D1D1	2,0 metric t	Power Force 3000 HA	3,0 metric t
Power Force 2000 D1D2	2,0 metric t	Power Force 6000 HD	6,0 metric t
Power Force 2000 HD	2,0 metric t		

Safety Factor: 1:7

This is to verify:

That the above products have been tested satisfactorily based on the requirements of DIN EN 1492-1:2009-05, for the main operational limits above, and further outlined in the reference documents listed below.

Verification involvement

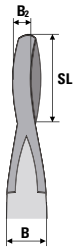
The verification of the above products has been performed based on requirements of DIN EN 1492-1:2009-05, with the detailed scope of work described on page two of this document, and in the referenced documents mentioned below.


SpanSet

PowerForce lifting strap variants

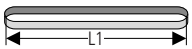
The new lifting straps are available as single-layer looped lifting straps [1], with D1 shackles at either end [2], with a D2 shackle at one end and D1 shackle at the other end [3] or as single-layer band loops [4]. PowerForce lifting straps are manufactured based on DIN EN 1492-1. The load capacity colour coding is based on the colour coding in EN 1492-1 and is shown by coloured marking [5] on the loops and by plainly visible patches.

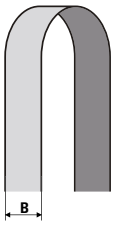
PowerForce looped lifting strap



WLL [t]	Loop colour coding	approx. strap thickness [mm]	approx. B [mm]	approx. B_2 [mm]	approx. SL [mm]	min. Length L1 [mm]	approx. weight first m [kg]	approx. weight running m [kg]
1	violet	3	40	30	300	1,0	0,18	0,08
2	green	3	80	40	300	1,2	0,36	0,16
3	yellow	3	120	50	400	1,5	0,59	0,24

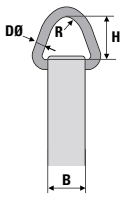
PowerForce band loop





WLL [t]	Patch colour coding	approx. strap thickness [mm]	approx. B [mm]	min. Length L1 [mm]	approx. weight first m [kg]	approx. weight running m [kg]
2	green	3	40	1,0	0,24	0,16
4	gray	3	80	1,0	0,39	0,32
6	brown	3	120	1,5	0,62	0,48

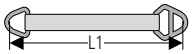
PowerForce lifting strap with D1 shackle [2]

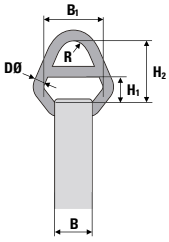


WLL [t]	Shakle colour coding	approx. strap thickness [mm]	approx. B [mm]	approx. DØ* [mm]	approx. R* [mm]	approx. H* [mm]	min. length L1 [mm]	approx. weight first m [kg]	approx. weight running m [kg]
1	violet	3	40	16	22	80	1,0	0,57	0,08
2	green	3	80	18	30	85	1,0	0,93	0,16
3	yellow	3	120	20	40	125	1,0	1,58	0,24

* Dimensions are „approx." because the shackles are a free-forged product.

PowerForce lifting strap with D2 shackle at one end and D1 shackle at other end [3]

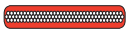




WLL [t]	Shakle colour coding	approx. strap thickness [mm]	approx. B [mm]	approx. DØ* [mm]	approx. R* [mm]	approx. H_1* [mm]	approx. H_2* [mm]	approx. B_1* [mm]	min. length L1 [mm]	approx. weight first m [kg]	approx. weight running m [kg]
1	violet	3	40	16	30	60	150	94	1,0	0,93	0,06
2	green	3	80	18	32,5	70	165	150	1,0	1,59	0,16
3	yellow	3	120	20	45	80	200	200	1,0	2,43	0,24

* Dimensions are „approx." because the shackles are a free-forged product.

Edge protection: permanently coated lifting straps and PowerForce

Type	No protection	NEW PowerForce	Powerflex [PF]	secuflex [SX]	Single sided [S1]	Double sided [S2]
Variant	No coating	No coating, HMPE[4] fabric	Fully covered with PU	PU coating on one side, sealed on other side	PU coating on one side	PU coating on both sides
Cross section						
Smooth edge Not sharp	●	○	○	○	○	○
Rough edges Not sharp		●	●	○	○	○
Jagged edge Sharp		●		●	●	●
Milling edges r > 2 mm, sharp		●		●	●	●
Very sharp edges r < 2 mm, very sharp					○*	○*

Key: ✳ Expert advice required!, ● Our recommendation, ○ Suitable

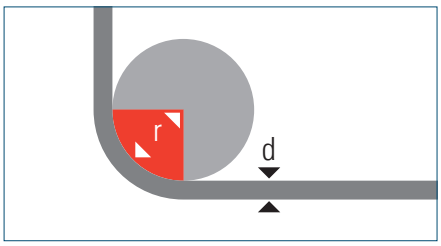
[1] The DIN EN 1492-1 standard does not explicitly list "HMPE" or the "white label". HMPE is suitable for use at temperatures of +60°C compared to the standard.

[2] Lifting straps with "C1" fitting components at both ends, [3] Lifting straps with fitting components at both ends: "C1" at one end and "Cr1" pass-through fitting components at the other.

[4] high-modulus polyethylene

A SIDE NOTE: sharp edges

Edges that count as sharp edges in the official definition are often not recognised as such, since they can still appear round and smooth.



§ Definition

As per Section 2.8 of the German BGR 500 regulation, a sharp edge is one in which the radius of the edge **r** is smaller than the material thickness **d** of the sling.

! Surface texture

Very rough surfaces, such as those of precast concrete parts, can quickly damage fabric slings or wire rope even after only limited contact with them.

! Anomalous shape profiles

As well as "square" edges, some items have anomalous shape profiles, including protruding ridges, flash and points, or jagged outer contours. The normal rules cannot be used to assess edges like these.

The 10 Commandments of Sharp Edges

01 Do not lift loads without completing training beforehand!

02 Plan lifting operations carefully using design documentation!

03 Read the directions for use for fabric slings before lifting!

04 If you don't know the edge radius, ascertain it using measuring tools!

05 Slings must always be protected against sharp edges!

06 Always seek expert advice before attempting to lift an edge radius smaller than 1 mm![1]

07 Always use fitting components when hitching using coated lifting straps!

08 Use flexible edge protection in the case of narrow passages or winding paths!

09 Use protective sleeves to balance out the sling when lifting loads with sharp edges!

10 The load and the cut protection may not move relative to each other!

i Our recommendation

[1] **Attention**: This statement applies to protective sleeves and solid coatings and not to PowerForce lifting belts, which may only be used up to 2 mm edge radii

Tools are necessary for assessing sharp edges.

Radius gauges, callipers or folding rulers, amongst other things, are suitable for determining radii.