

Optimized Spreader Performance

Total Cost of Ownership in a Macro Perspective

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Spreader Impact

- Critical Part
- Big Influence on Crane Productivity
- Cost vs. RoI



Wide-reaching spreader installations



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● Clients/Terminals

References (15 years)

STS Spreaders

- 3700 (all models)
- 2900 STS45

Yard Spreaders

- 5800 (all models)
- 4200 YSX40/45E

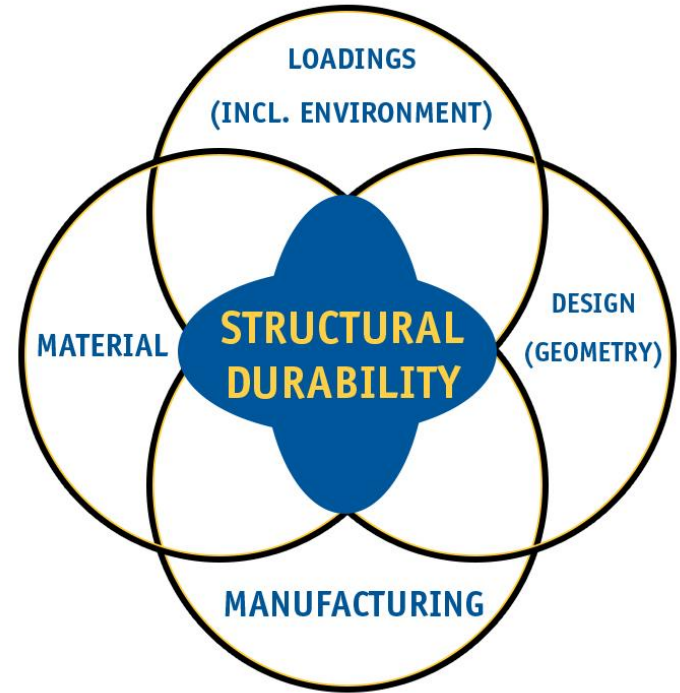


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Structural Durability

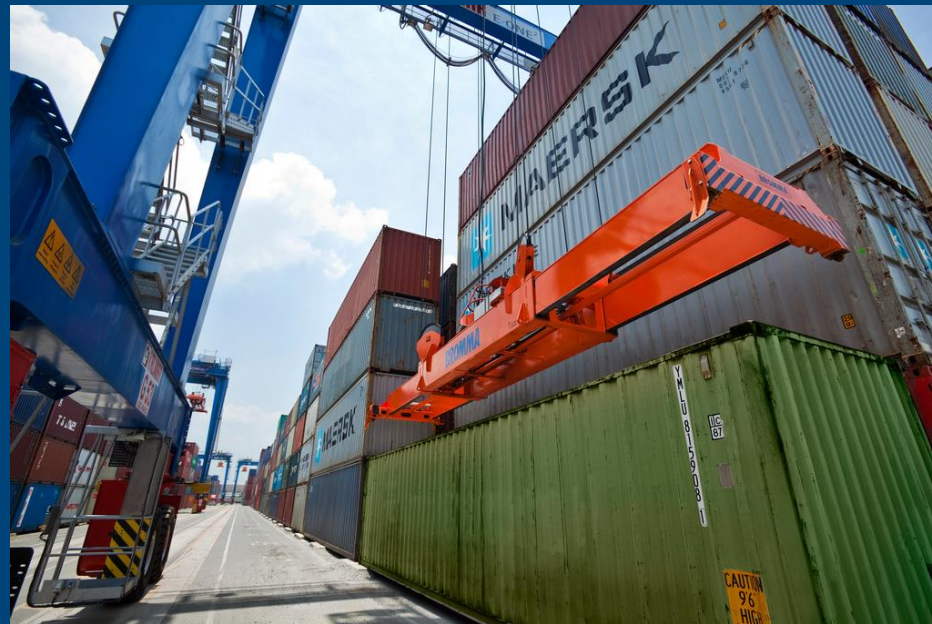
- The structural durability of a spreader and its sub-component depends on a few factors:
 - Design (Geometry)
 - Material
 - Manufacturing
 - Loadings (including environment)



Bromma Spreaders are Lighter

	Compared to other brands
STS45	1-2 tons lighter
YSX40E YSX45E	>0,8 tons lighter

Conforming to EN 13001; DIN 15018 H2B4,
FEM 1.001; British Standard BS 2573



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Collaboration with KTH

- Royal Institute of Technology
- Research areas
 - Optimized lightweight steel structures
 - Simulation of welding distortions in manufacturing

Bromma Partners with World-Leading University

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Spreader manufacturer Bromma has positioned one of its experts at the KTH Royal Institute of Technology technical university in Stockholm, Sweden.

Bromma's Structural Calculation Specialist, Mansoor Khurshid, Ph.D. (pictured below) is now the Affiliated Faculty in lightweight structures at KTH's Department of Aeronautical and Vehicle Engineering.

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World class engineering

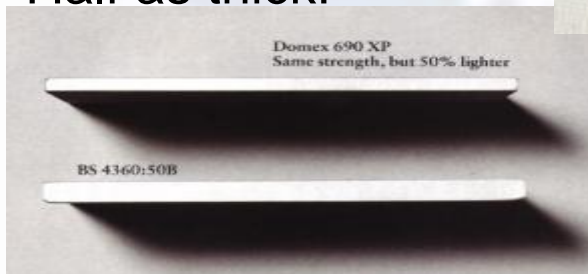
Twice as strong!



Smaller bending radius!



Half as thick!

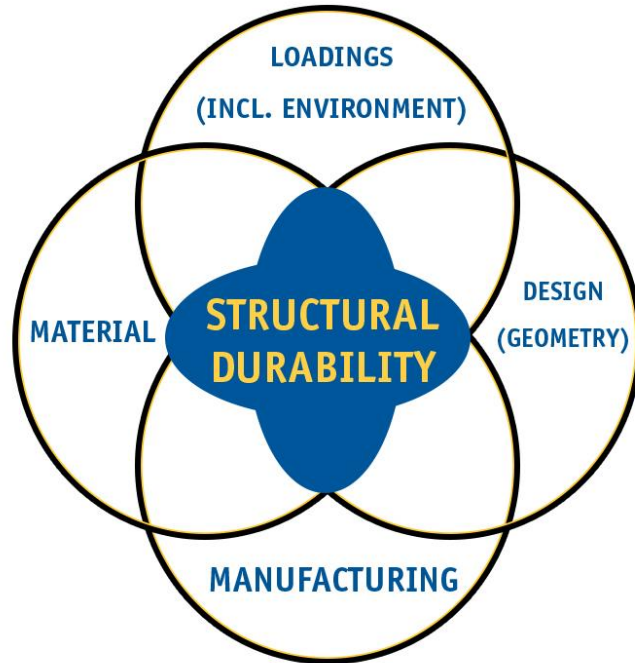


Effects

(per ton weight difference & 60 000 moves)

STS	
Energy consumption	1 500 USD / year
Crane life length	+ 5% (or 1 year on a 20y crane life)
Yard	
Energy consumption (electric)	400 USD / year
Energy consumption (diesel driven RTG)	1 000 USD / year
Crane life length	+ 6%

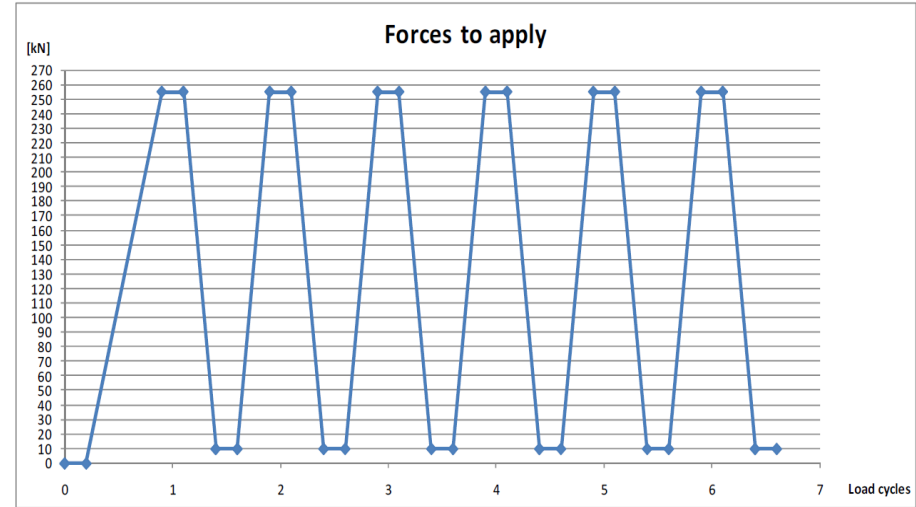
More Durable Twistlock Pin example



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Evaluation of twistlocks



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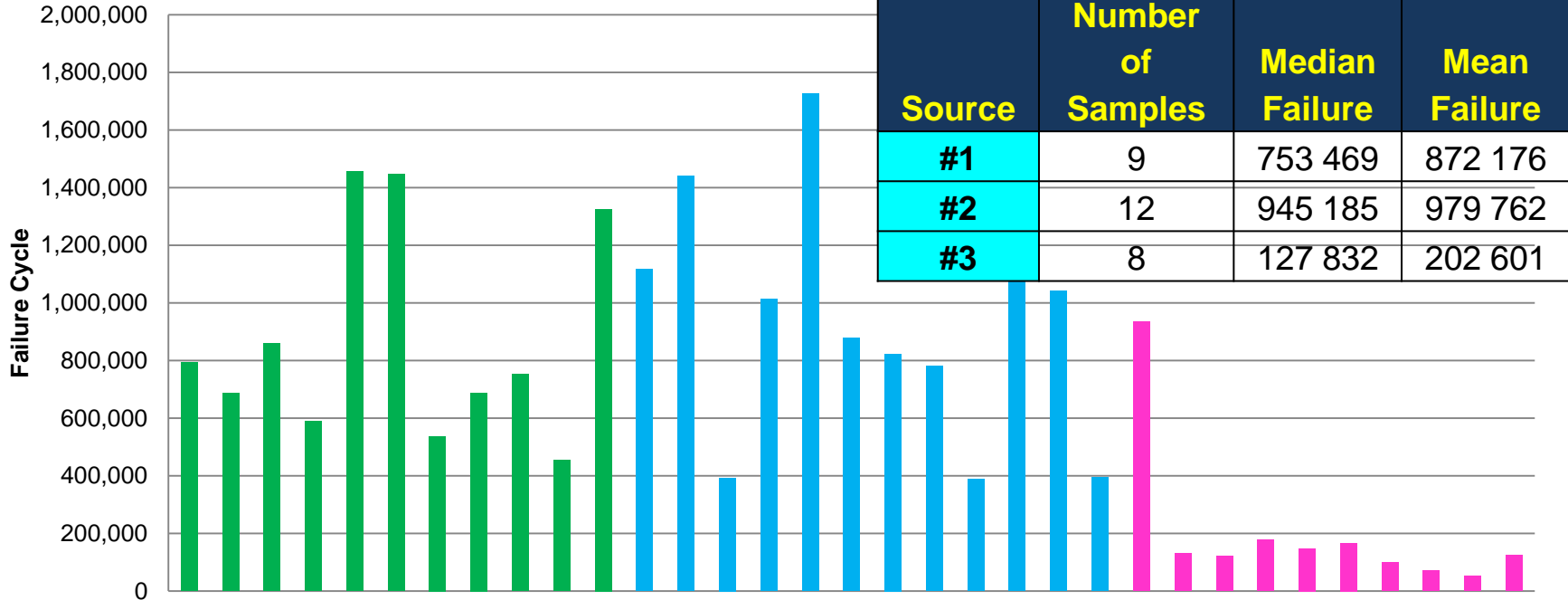
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Results from twistlock tests

Source 1 – Bromma Supplier 1

Source 2 - Bromma Supplier 2

Source 3 - Non Bromma



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More Durable

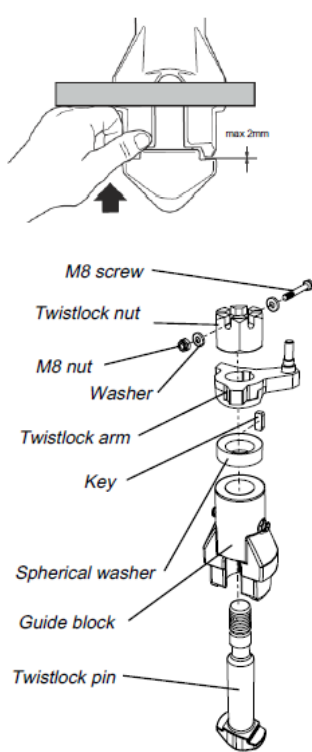
> 4x



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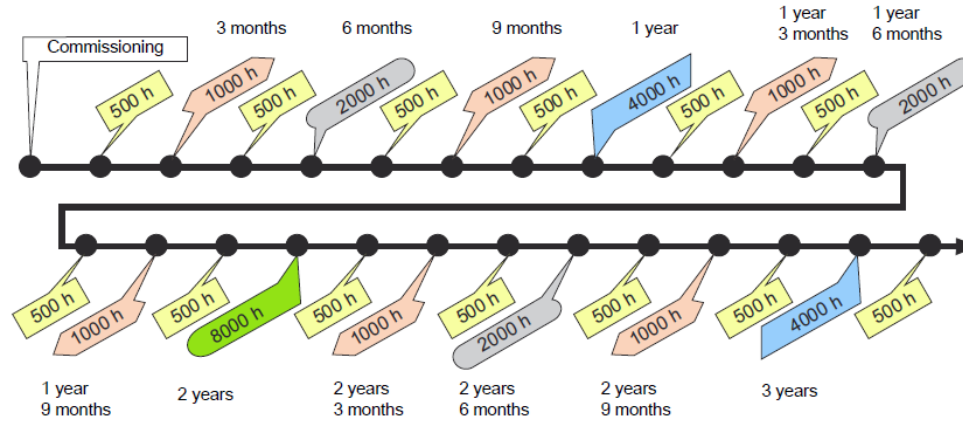
Maintenance intervals



6.1.2 Maintenance actions

This summary table lists maintenance actions to be taken after certain operating time intervals.

Maintenance actions:	Intervals					More information see:
	500 hours (every 6th week)	1000 hours (Every 3 months)	2000 hours (Every 6 months)	4000 hours Annually	8000 hours (Every second year)	
General						
Inspect for visible damage	X					
Lubrication ¹	X					Section 6.1.3
Tighten all screws (only the first 500 h service).	X					Section 6.1.4
Twistlock assembly						
Tighten, check function	X					Section 6.4 REP 01
Dismantle, inspect and perform crack detection				X		Section 6.4 REP 01
Replace pins and spherical washers					X	Section 6.4 REP 01
Test landing pin function. Adjust if necessary.	X					Section 6.4 REP 31



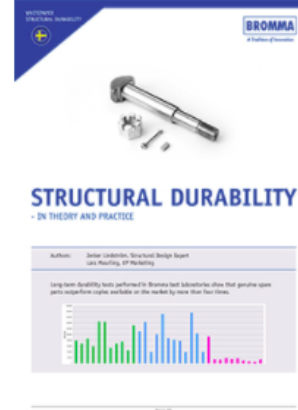
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White paper published

www.bromma.com

New whitepaper: Structural durability



Long-term durability tests performed in Bromma test laboratories show that the market by more than four times...

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Conclusions

- Lighter spreaders result in lower energy cost and increased crane life length
- Significant differences in durability exist between genuine parts and alternatives available on the market.
- As the maintenance instructions from the original equipment manufacturer is based on “original” components, the owner of equipment should consider revising maintenance plans when non-original parts are used or thoroughly verify equal performance as the original parts.

The image features the word "BRAND" in a large, bold, blue, sans-serif font. The letters are set against a bright yellow background. The letter 'B' is particularly large and occupies the left side of the frame. The letters 'R', 'A', 'N', and 'D' are also large and positioned to the right of the 'B'. The text "SWEDISH HERITAGE" and "QUALITY ASSURED" is centered over the middle of the word "BRAND".

SWEDISH HERITAGE
QUALITY ASSURED