

# User manual

## Flatbraided wire slings “FWS” series

CERTEX Danmark A/S  
Olievej 4 DK-6700 Esbjerg  
Tel. +45 7513 0844



Revision 7  
Original instructions  
Date: 11.10.2021  
Approved by: AAN

## Product description

The FWS series is manufactured and tested by CERTEX Danmark A/S, Olievej 4, DK-6700 Esbjerg, Tel. +45 7513 0844

The manufacturing, testing and calculation is according to Machinerydirective 2006/42/EC, and has been witnessed by DNV GL.



### Product identification

Ex. FWS16002 (stock number, WLL, wire length)

Manufactured of preformed aircraft wire – construction 7X19.

10 single wires are crossbraided together to one wire sling.

Standard end fitting: Taluritspliced – soft eyes

The wire slings are solely designed for lifting equipment and must be used as shown in the load diagram below. The wire slings are calculated with a safety factor of minimum 5:1

The wire slings must not be used for basket-lift with an angle exceeding 60°.

The wire slings must not be used for lifting people.

## Load diagram



**IMPORTANT:**

Do not exceed the WLL/capacity and follow the instructions on the labeling.

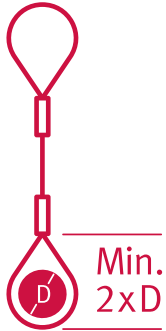
Type	Sling width / Thickness (mm)	Weight (kg/m)	Diameter of used rope (mm)	Working diameter (mm)*	Straight lift WLL (ton)	Laced lift WLL (ton)	U-lift WLL (ton)	Basket lift 0-45° WLL (ton)	Basket lift 45-60° WLL (ton)
				D					
		Load factor			1	0.8	2	1.4	1
FWS0950	18/6	0.3	2.4	115	0.95	0.76	1.90	1.33	0.95
FWS1600	25/9	0.5	3.2	150	1.6	1.2	3.2	2.2	1.6
FWS2500	30/11	0.8	4.0	190	2.5	2.0	5.0	3.5	2.5
FWS3200	34/12	1.1	4.8	230	3.2	2.5	6.4	4.4	3.2
FWS4800	42/15	1.5	5.6	265	4.8	3.8	9.6	6.7	4.8
FWS5800	46/17	1.8	6.4	300	5.8	4.6	11.6	8.1	5.8
FWS8000	58/22	2.9	8.4	400	8.0	6.4	16.0	11.2	8.0
FWS11000	65/28	3.2	9.5	450	11.0	8.8	22.0	15.4	11.0

\* The working diameter is determined by test results for u-lift and laced lift and must be complied with to meet SF 5:1

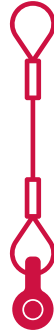
All FWS wireslings in this series are marked in ferrule with WLL and date of manufacturing. Additional calculations/ tests on WLL are available for documentation of the above load diagram including the 5:1 safety factor.

## Visualizing bending diameter D/d

Different types of lifts.



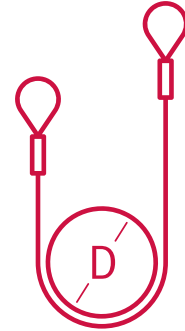
Eye length must not be smaller than twice the object diameter. e.g. hook or shackle.



The diameter of the shackle has to be as wide as possible. Recommended shackles\* for straight lift:

FWS0950 - 1,5 T shackle  
FWS1600 - 2 T shackle  
FWS2500 - 3,25 T shackle  
FWS3200 - 4,75 T shackle  
FWS4800 - 6,50 T shackle  
FWS5800 - 8,5 T shackle  
FWS8000 - 9,5 T shackle  
FWS11000 - 12 T shackle  
SF: 5:1

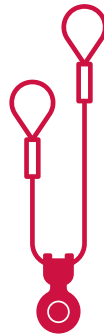
\* Van Beest GP G-4163



When the lift is a hitch lift, then it is very important that the minimum diameter complies with the table to reach the sling SF 5:1. See table on page 2.



If the shackle or other object has a small diameter, then the max capacity of the sling is reduced significantly. Fx. hitch lift with FWS0950 with 115 mm installation diameter, then the sling is WLL 1900 kg SF 5:1 U-Lift with FWS0950 around a smaller installation diameter may affect the safety factor.



It's better to use a larger shackle or object to get a large working diameter and therefore get SF 5:1. See table on page 2.

# Correct use of Flat Braided Wire Sling

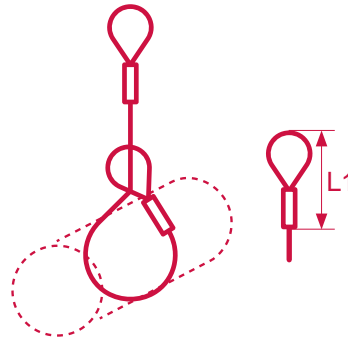
Single sling.



## Straight lift:

Straight lift in eyes.  
No sharp edges and correct working diameter.

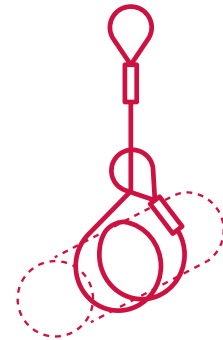
Ex. FWS0950  
WLL = 0,95 ton



## Choke hitch:

Straight lift in the eyes.  
No sharp edges and correct working diameter.  
Recommendation for working diameter is  $D > 3 \times L1$ .

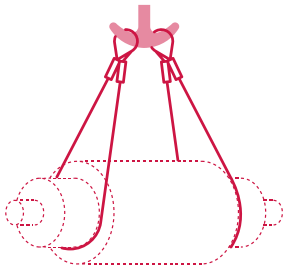
Ex. FWS0950  
WLL = 0,76 ton



## Double wrap choke hitch

Straight lift in the eyes.  
No sharp edges and correct working diameter.

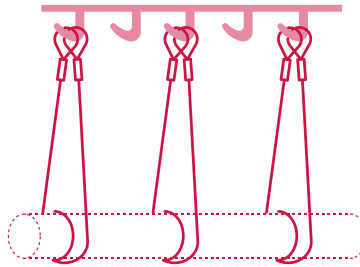
Ex. FWS0950  
WLL = 0,76 ton



## Basket lift:

Basket lift in the eyes with the correct working diameter (at least 15:1)  
No sharp edges and correct working diameter.

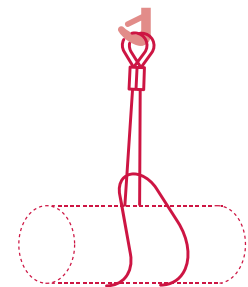
Ex. FWS0950  
WLL = 1,33 ton  
(pr. sling)



## Basket lift with double laced:

Basket lift, with lift in the eyes and double laced.  
No sharp edges and correct working diameter.

Ex. FWS0950  
WLL = 1,33 ton  
(pr. sling)



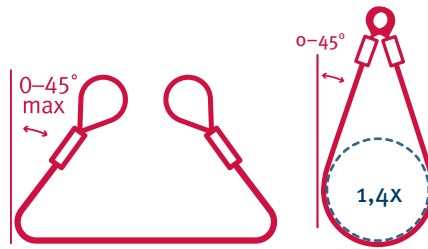
## Basket lift with double and choke hitch:

Basket lift with single sling double and choke hitch.  
No sharp edges and correct working diameter.

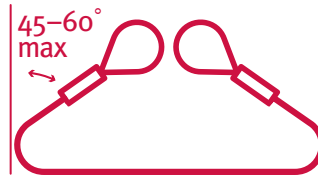
Ex. FWS0950  
WLL = 2 x 0,76 ton = 1,52 ton

When the Flat Braided sling is used as basket sling, with both eyes in the hook, or correct sized shackle, and it has an angle 0–45° from vertical. The max load must not exceed 1,4 x WLL, as marked on the sling.

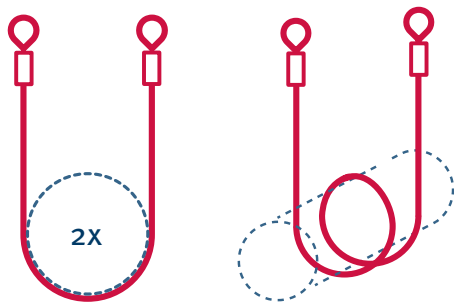
Ex. WLL FWS0950  
WLL 1,33 ton



Ex. WLL FWS0950  
WLL 0,95 ton

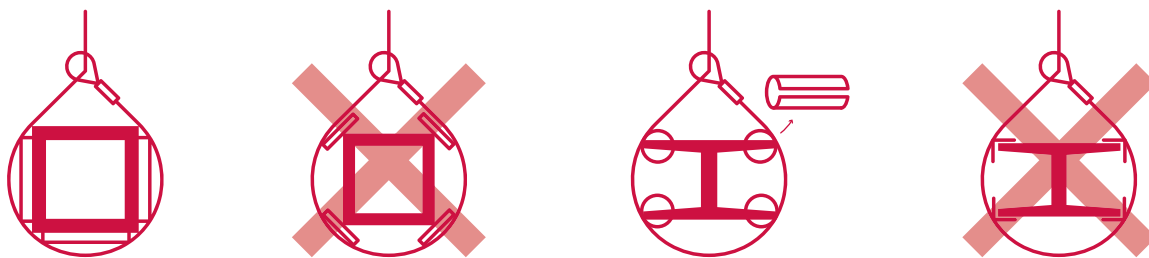


2x WLL as long as the sling is vertical. Taking one or two turns around the load does not affect WLL.

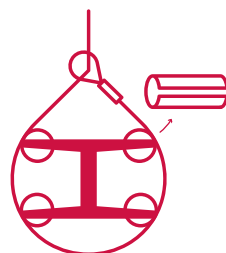


## Protection and distribution of weight

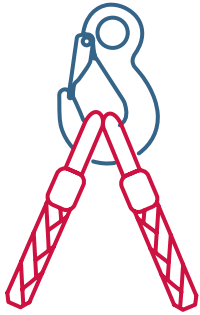
Always make sure to place the load correct in the sling, to prevent chock affect.



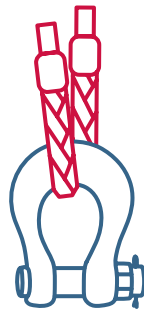
It's always important to protect the edges against sharp edges. It can cause the cuts in the wire, and damaged the sling lifetime and the slings capacity. It's also important to have as large round edges as possible, to have a diameter large enough. Working diameter in Load diagram on page 2 has to be followed to ensure SF 5:1



## Recommendations when using flat braided wire sling



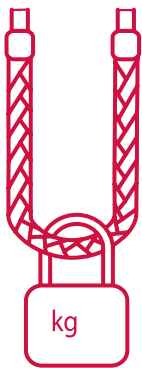
**1. Two eyes on a hook may only be done acc. to the illustration.**



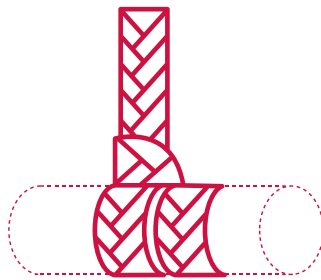
**2. If shackles are to be used with the wire sling, wide body shackles should be used. Also observe the diameter. Ensure a larger radius around the wire eyes.**



**3. If there is a need to assemble two wires, then it should be done acc. to the illustration.**



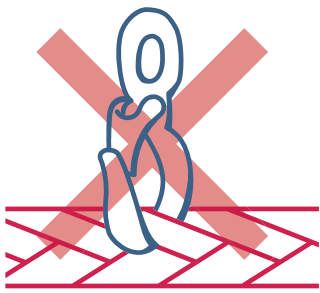
**4. Lifting where the item is between the eyes may only take place if the requirements for working diameter are met: To avoid creating sharp edges.**



**6. Correct, without twist when lifting.**

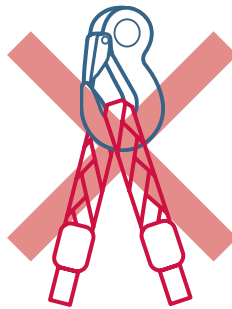
## Improper use of Flat Braided Wire Sling

If the sling is attached to a hook or shackles, the hook **MUST** be classified as at least 1xWLL flat braided sling.



### 1. Do not hook between the braids

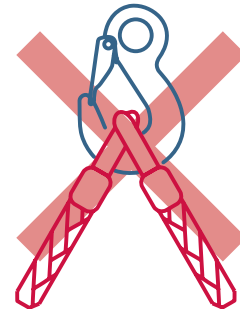
Is not suitable for the purpose, and weakens the wire sling.



### 2. Do not hook between the eyes of the sling.

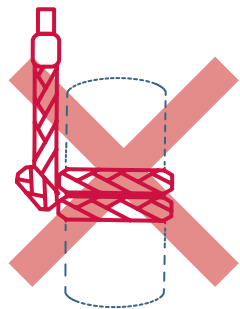
#### Hook only in the lifting eyes

The item you lift can slip in the hook. Can have fatal consequences. May damage wire sling.



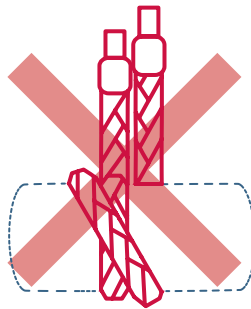
### 3. The eyes of the sling must not cross each other, as shown in the drawing

Under load, the wires can cut into each other. This will result in breakage of the wire.



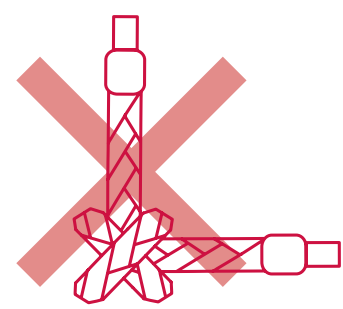
### 4. Do not lift where the item is standing vertically, as in the picture

The item may slip out, and thus be lost.



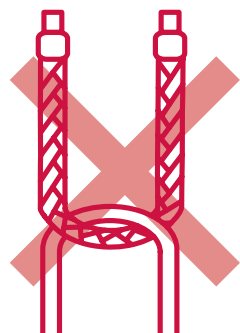
### 5. Do not wrap the wire sling around itself

This damages the wire sling.



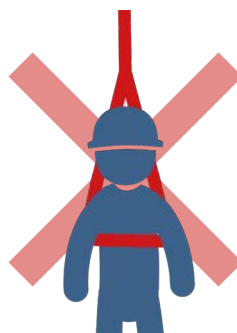
### 6. Do not make a knot on the wire sling

This damages the wire sling.



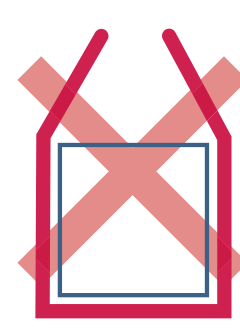
### 7. Do not connect the wire sling with other slings/ chains/wire sling

Wires, chains or wire slings can damage each other.



### 8. The wire sling must not be used for personal lifting

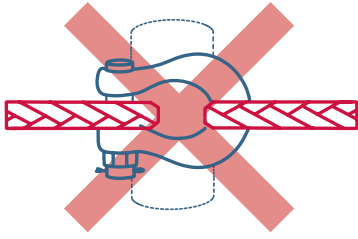
The wire sling is not suitable for the purpose. Dangerous.



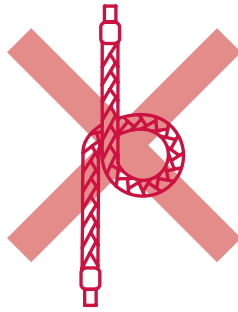
### 9. Do not lift in such a way that the wire may cut at an edge

Damages the wire sling so it can break.

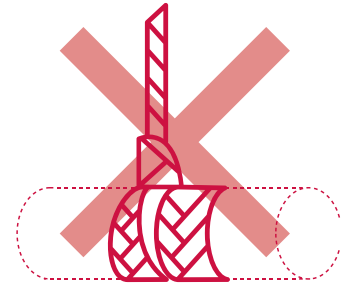
## Improper use of Flat Braided Wire Sling



**10. Do not lift so that a shackle is squeezed around an item**  
Large stress occurs, which results in the wire being damaged. The item being lifted may slip in the shackle.



**11. Do not kink when lifting**  
The wire sling is damaged and thereby loses strength.



**12. Do not twist when lifting**  
The wire sling is damaged and thereby loses strength.

## Warnings when using wire sling



**11. When lifting, make sure that all personnel have a safe distance**

And also that there are no objects under the lifting zone.



## Instructions for use and safety

All lifts using the wire slings must be planned, possibly, according to the individual instructions.

The personal who is using the lifting gear, should be trained and instructed in safe use and safe work.

The user is obliged to familiarise himself with the national requirements.

This document must be available to users for planning the lift.

### As a minimum planning must include:

1. Choosing the correct wire sling, according to the load diagram.  
(when using more than one wire sling WLL and length must be the same).
2. Checking the WLL as well as the date on the sling (must be present).
3. Checking the weight of the load and the balance.
4. Checking for no sharp edges and that it is installed with correct working diameter.
5. The condition of the wire sling (must be checked for defects before and after use).
6. Securing and the actual lift (make sure if there are special requirements to training).
7. No twisting of the sling (see page 6 and 8)

At no time during use must the wire sling be:

- Overloaded.
- Twisted.
- Exposed to shock impacts .
- Exposed to or very sharp edges.

If this can not be avoided, the sling must not be used again until it has been inspected by an expert

One must use an appropriate protection if the sling is used around sharp edges. One must show caution during use and pay attention to whether the protection or sling slides.

Steel wires, in general, must not be unnecessarily exposed to damaging chemicals, e.g. acid, lime etc.

General visual control must be carried out before every use of the wire sling. If the sling is significantly damaged or worn it must be discarded immediately.

### The wire sling must be discarded when, the following points apply:

- the individual strands are worn and this has an effect on the nominal diameter of the strands in relation to the lifting capacity. Check for wear due to friction on the individual wires. Especially where the sling is bent
- the individual strand is not worn or there are wire breaks that affect the strap's lifting capacity
- the number of breaches on a rotation length exceeds 10
- there are kinks (i.e. a loop that is pulled out )
- the sling is flattened or edged
- the wires in a strand are bent, e.g. due to exposure to sharp edges
- the sling is damaged by rust or chemical exposure

And / or other damages that questions the ability of the wire sling.

## Maintenance

Lifting slings must be kept in a good condition and undergo thorough examination by a competent person at least every 12 months. Local regulations might stipulate more frequent examination interval.

When inspecting and maintaining the wire sling it is important to pay attention to the critical places e.g. eye /sling deformation.

If a wire sling has been exposed to damaging chemicals a particularly thorough examination may be necessary to reveal possible damages.

Wire slings must, if possible, be kept in a dry, airy place.

## Information

Instructions should be according to this “instruction for use” and should include all safety actions demanded on how to hook.

Before using the lifting gear, the instructions for use should be read and understood. It's attended as help to get a well and safe use of the gear. The instructions of use are containing information on how the lifting gear is working in a safe and correct way.

If the Lifting gear is used in correct compliance with these instructions, then danger and accidents can be avoided.

Every personal using the lifting gear should read and act in correct compliance to instructions for use. We also refer to all national instructions and laws on sites.

**IMPORTANT! – WLL CAPACITY MUST NOT BE EXCEEDED AND INSTRUCTIONS ON THE MARKING HAS TO BE FOLLOWED.**