William Hackett/McKinnon Chain

DNV 2.7-1 Offshore Welded Chain Slings User Manual Grade 8

WHM-0036


William Hackett Lifting Products Limited
YOKE

DNV 2.7-1 Offshore Welded Chain Slings

The lifting of containers in an offshore environment can create many challenges with constant exposure to dynamic forces and impact loading due to the harsh environment. Special consideration needs to be given to the material and manufacturing processes used to produce the lifting sets for containers used in the offshore sector to control the material hardness to ≤38HRC. Unsuitable material with a high hardness value will affect resilience causing unsuitable material to become brittle leading to the possibility of a lifting set failure.

DNV2.7-1 Type Approval

William Hackett/McKinnon Chain DNV2.7-1 fully welded chain slings have been issued with DNV type approval. In addition to the fully welded chain slings each component that part of the chain sling also goes through the DNV type approval process and is individually awarded DNV2.7-1 type approval.

With all welded chain slings and chain sling components type approved William Hackett and McKinnon Chain has the ability to supply fully welded chain slings at short notice. A range of DNV welded chain slings are also held in stock in Europe.

William Hackett/McKinnon Chain
DNV 2.7-1 Fully Welded Offshore Lifting Sets

The manufacturing process of the DNV2.7-1 welded chain slings includes

- The entire sling is G8 with a max hardness of 38HRC
- Specialised heat treatment process unique to William Hackett / McKinnon removes any residual stresses inherent in the chain sling after 100% proof testing
- Each lifting set is supplied with Charpy V-notch impact testing results 42J (27J at the weld) @ -20°C
- Proof tested to 2.5 x working load limit
- Fully compliant with
    - EN818-4 Short link chain for lifting purposes – Safety – Part 4: Chain slings – Grade 8
    - ISO 10855-2:2018 Offshore containers and associated lifting sets – Part 2: Design, manufacture and testing of lifting sets

DNV Type Approval Certificates TAS000013X Rev1. and TAS00001BN

Description	Lifting Angle 30˚ to the Vertical			Lifting Angle 45˚ to the Vertical		
	Sling WLL	Enhancement Factor	Container MGW	Sling WLL	Enhancement Factor	Container MGW
13mm 2 Leg Set (2 x 2 Leg)	13,8t	1.586	8,700kg	11,26t	1.732	6,500kg
13mm 4 Leg	13,8t	1.586	8,700kg	11,26t	1.732	6,500kg
13mm 5 Leg	13,8t	1.586	8,700kg	11,26t	1.732	6,500kg
16mm 2 Leg Set (2 x 2 Leg)	20,78t	1.23	16,900kg	16,95t	1.413	12,000kg
16mm 4 Leg	20,78t	1.23	16,900kg	16,95t	1.413	12,000kg
16mm 5 Leg	20,78t	1.23	16,900kg	16,95t	1.413	12,000kg
20mm 2 Leg Set (2 x 2 Leg)	27,59t	1.104	25,000kg	26.5t	1.114	23,800kg
20mm 4 Leg	27,59t	1.104	25,000kg	26.5t	1.114	23,800kg
20mm 5 Leg	27,59t	1.104	25,000kg	26.5t	1.114	23,800kg

Larger sizes in both diameter and WLL to DNV 2.7-3 are available upon request

Pre Use Inspection and DNV Sling Consideration

Prior to the use of the lifting set for the first time make sure that:

- The lifting set complies with the requirement for the container it is to be connected to
- The lifting set paperwork such as the EC Declaration of Conformity and the DNV 2.7-1 Offshore Chain Sling User Manual
- The marking on the lifting set chain tag corresponds with the lifting set paperwork
- If there are visible signed of the welded chain sling components or chain that show signs of bending, twisting or elongation do not put into service
- Only lift a load that is less than or equal to the working load limit (WLL) of the slings taking into account the enhancement factor detailed in Table 8.1 of the DNV 2.7-1 Standard January 2021.
- Make sure the attachment components are of the correct capacity to suit the lifting set and WLL required to lift the load
- Make sure the container attachment points that the lifting set is connected to can take the forces without suffering deformation
- Make sure the lifting set legs are not twisted when attached to the container to be lifted
- Do not exceed to maximum angle shown on the chain tag is not exceeded.
- Make sure the container to be lifted is free to move and not attached or fastened
- Never move a suspended load over a person or personnel.
- In the event of any doubt about the use, inspection or maintenance of the lifting set contact the supplier or manufacturer

DNV Chain Tag Design – Example

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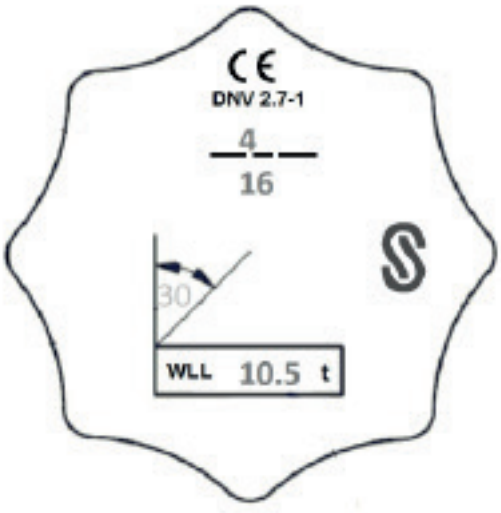

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Inspection of DNV 2.7-1 Welded Chain Slings

Inspection of DNV 2.7-1 lifting sets must fulfil the requirements of DNV 2.7-1 Offshore Containers January 2021 Section 9 Periodic Tests and Repair

Do not use or put into service any DNV welded chain sling that shows the following defects

- The chain tag identification markings are illegible or is missing from the chain sling
- Any deformation including cuts, notches or fractures/cracks of the chain or components
- Severe corrosion
- Signs of elongation of the chain ≥5%
- A reduction in material thickness of the lifting set chain by more than 10% as a mean value of measurements taken perpendicularly towards each other

Particular attention should be paid to the following section

9.3 Inspection, test and repairs on lifting sets

9.3.1 Schedule of inspection and tests

Lifting sets shall be inspected at intervals not exceeding 12 months in accordance with the schedule listed in Table 9-3. The inspector may require other or additional inspections or tests.

On satisfactory completion of the inspection, the inspector shall check the lifting set is marked as described in (8.7).

When the schedule requires a load test, any destructive testing and visual inspection shall be carried out after the load test.

Shackjles that are not assembly secured, see Table 1-5, may be inspected independently of the lifting set.

Shackles that are assembly secured shall be inspected as part of the lifting set. See also (9.4).

Table 9-3 Schedule of inspection and tests of lifting sets for offshore containers

Description	Applicable To	Type of Inspection			
		Load Test	NDT	Visual inspection	Suffix to be marked on sling tag
At intervals not exceeding 12 months	Complete Lifting Set	N/A	N/A	Yes	V
At intervals not exceeding 48 months	Sling components and joining links excluding legs	Either NDT or Load Test [2]		Yes	VN or T[5]
	Chain Sling Legs	Either NDT or Load Test [2] [3]		Yes	VN or T[5]
	Shackles	N/A	N/A	Yes	V
	Wire Rope Legs	N/A	N/A	Yes	N/A
After substantial repair or alteration[1]	Complete Chain Lifting Set[6]	Yes[4]	Yes[4]	Yes	T

Notes

William Hackett

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