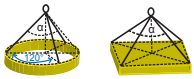
MARTEC Chain Slings

User Manual / Inspection Standard

SIAM MARTEC SALES

Working Load Limits depending on Lifting Method

Safety factor 4:1

Lifting Method	1-leg	2-leg			3-leg / 4-leg		
							
Lifting Angle (α)	-	60°	90°	120°	60°	90°	120°
Mode Coefficient	1.0	1.73	1.41	1.0	2.59	2.12	1.5
Chain Diameter (mm)	Working Load Limit (WLL) Grade 10 Chain (t)						
6	1.5	2.5	2.1	1.5	3.8	3.1	2.2
8	2.6	4.5	3.6	2.6	6.7	5.5	3.9
10	4.0	6.9	5.6	4.0	10.3	8.4	6.0
13	6.8	11.7	9.6	6.8	17.6	14.4	10.2
16	10.0	17.3	14.1	10.0	25.9	21.2	15.0
20	16.0	27.7	22.6	16.0	41.5	33.9	24.0
22	20.0	34.6	28.2	20.0	51.9	42.4	30.0
26	27.0	46.7	38.1	27.0	70.1	57.2	40.5
32	40.0	69.2	56.5	40.0	103.9	84.8	60.0

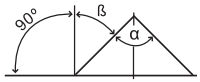
Lifting Method	1-leg Choke	2-leg Choke			1-leg 2-point Basket		
							
Lifting Angle (α)	-	60°	90°	120°	60°	90°	120°
Mode Coefficient	0.8	1.4	1.1	0.8	1.4	1.1	0.8
Chain Diameter (mm)	Working Load Limit (WLL) Grade 10 Chain (t)						
6	1.2	2.0	1.6	1.2	2.0	1.6	1.2
8	2.0	3.6	2.9	2.0	3.6	2.9	2.0
10	3.2	5.5	4.5	3.2	5.5	4.5	3.2
13	5.4	9.4	7.6	5.4	9.4	7.6	5.4
16	8.0	14.0	11.0	8.0	14.0	11.0	8.0
20	12.8	22.1	18.1	12.8	22.1	18.1	12.8
22	16.0	27.7	22.6	16.0	27.7	22.6	16.0
26	21.6	37.4	30.5	21.6	37.4	30.5	21.6
32	32.0	55.4	45.2	32.0	55.4	45.2	32.0

Lifting Method	2-leg 4-point Basket		
			
Lifting Angle (α)	60°	90°	120°
Mode Coefficient	2.1	1.7	1.2
Chain Diameter (mm)	Working Load Limit (WLL) Grade 10 Chain (t)		
6	3.1	2.5	1.8
8	5.4	4.4	3.1
10	8.3	6.7	4.8
13	14.1	11.5	8.1
16	21.0	17.0	12.0
20	33.2	27.1	19.2
22	41.5	33.9	24.0
26	56.1	45.8	32.4
32	83.1	67.8	48.0

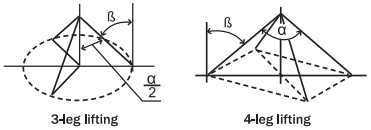
JIS B 8816 Appendix 2

Chain Sling Working Load Limit
Mode Coefficient (M) Calculation Method

2-leg lifting:
M = 2 x COS β



3-leg and 4-leg lifting: M = 3 x COS β



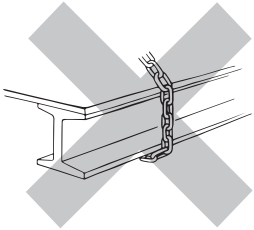
* The above working load limits are based on the condition that the center of gravity is not biased and the load is evenly distributed on each sling. When using two or more chain slings to lift unbalanced (asymmetric) load by adjusting the chain length, refer to the WLL values for 1-leg lifting.

Safety Precautions for the Use of Chain Slings

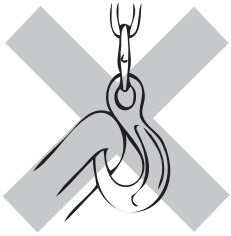
When using MARTEC chain slings, please pay attention to the following:

1. Lifting operations shall be carried out by qualified persons only who have completed training in accordance with crane safety regulations.
2. Before use perform a visual inspection of the chain sling.
3. Use within the working load limits indicated on the metal tag.
4. Do not use twisted or tangled chain.

5. When the chain hits corners of the load, apply pads to protect the load and the chain.

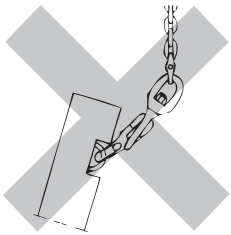


6. Always lift the load from the center of the hook, never with the tip of the hook.

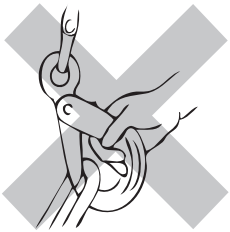


Safety Precautions for the Use of Chain Slings

7. Do not use the sling in a way, hooks hit the load or get kneaded.



8. Never put your fingers inside the hook while lifting.

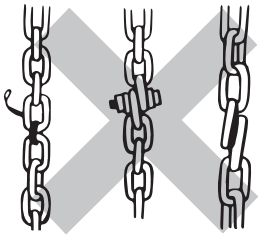


9. Beware of the limited use of chain, hooks and couplings due to wear and elongation.
   Do not use any items that show deformation or cracks.

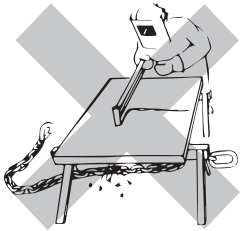
10. Within temperature range from -40°C to 200°C chain slings can be used without any working load limit reduction.
    Caution: Chain slings must not be used in hot ambient temperatures above 200°C.

Safety Precautions for the Use of Chain Slings

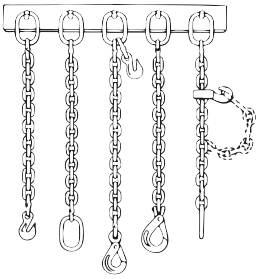
11. Do not apply weldig or heat treatment to try to reuse a defective chain sling.



12. Chain slings must not be used as a substitute for earthing during welding operations.
13. Do not expose chain slings to welding, cutting or any other heat-related operation.



14. Please contact us if you plan to use our chain slings in special conditions such as low or high temperatures or in a corrosive atmosphere.
15. If you are using a chain sling in an environment where it is subjected to constant vibration, please contact us as this may shorten its lifespan.
16. Lift the load slowly and lower it gently. Do not apply any significant impact force.
17. Do not leave the load suspended for long periods of time.
18. Lift the load in a way it is well-balanced.
19. When carrying a chain sling, do not throw or drag it.
20. When chain slings are not in use, store them in a suitable location equipped with a hanging device, where the slings can be attached to and where they are prevented from rusting.



Chain Sling Inspection Standard

Chain slings shall be inspected daily [1] and periodically [2] as specified in Table 1.
(1) Inspection to be carried out before use.
(2) Inspection to be carried out on a regular basis depending on the frequency of use, in principle to be performed once a month.

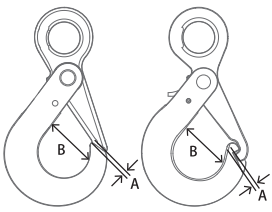
Table 1: Inspection Standard

Inspection Items	Inspection Type		Inspection Method	Inspection Criteria
	Daily	Periodic		
COMPLETE CHAIN SLING				
Working Load Limit	○	○	Visual check	Confirm the working load limit (WLL) on the tag attached to the chain sling.
Assembly condition	○	○	Visual check	All parts shall be properly assembled, no loose fastenings.
CHAIN				
Elongation of 5 chain links		○	Measurement	If elongation exceeds 5% of the original dimensions, the chain shall not be used. Prepare a dimension table before use.
Chain link wear	○		Visual check	If diameter wear exceeds 10% of the original dimension, the chain shall not be used.
		○	Measurement	
Chain link bent	○		Visual check	If link bent exceeds 10% of the original dimension, the chain shall not be used.
		○	Measurement	
Chain link twists	○	○	Visual check	Chain with twisted links shall not be used.
Scratches, other harmful defects	○	○	Visual check, particle test [3] or penetration test [4]	The chain shall be free from scratches, cracks and other harmful defects.
Corrosion	○	○	Visual check	The chain shall be free from significant rust.
MASTER LINKS, INTERMEDIATE LINKS				
Deformation	○		Visual check	If horizontal or vertical deformation exceeds 5% of the original dimensions, the link shall not be used. Prepare a dimension table before use.
		○	Measurement	
Wear	○		Visual check	If wear exceeds 10% of the original dimensions, the link shall not be used.
		○	Measurement	
Scratches, other harmful defects	○	○	Visual check, particle test [3] or penetration test [4]	The link shall be free from scratches, cracks and other harmful defects.
Corrosion	○	○	Visual check	The link shall be free from significant rust.
HOOKS				
Hook opening	○		Visual check	There shall be no deformation compared to the original B dimension (see Figure 1). Prepare a dimension table before use.
		○	Measurement	
Deformation	○	○	Visual check	The hook shall be free from bents or twists.
Latch	○	○	Visual / manual check	Latch shall be free from significant wear, show no deformation, shall move properly.
Latch gap (BK, OBK type hooks)	○	○	Visual check Caliper measurement	Hooks with a gap between hook and latch tip exceeding dimension A in table 2 shall not be used.
Wear, corrosion	○	○	Visual check	Hooks with severe wear or corrosion shall not be used.
Rotation (swivels)	○	○	Manual check	The hook shall rotate smoothly.
Scratches, other harmful defects	○	○	Visual check, particle test [3] or penetration test [4]	The hook shall be free from scratches, cracks and other harmful defects.
CONNECTING ITEMS, COUPLINGS				
Deformation	○	○	Visual check	The item shall be free from deformation.
Wear, corrosion	○	○	Visual check	Items with severe wear or corrosion shall not be used.
Scratches, other harmful defects	○	○	Visual check, particle test [3] or penetration test [4]	The item shall be free from scratches, cracks and other harmful defects.
Pin looseness	○	○	Visual / manual check	Coupling pins shall not be loose.

Table 2

Hook Size	Dimension A (mm)
BK/OBK-6	2.2
BK/OBK-7/8	2.7
BK/OBK-10	3
BK/OBK-13	3.3
BK/OBK-16	4
BK/OBK-18/20	5.5
BK/OBK-22	6
BK-26	6.5
BK-28	7
BK-32	7

Figure 1



(3) According to JIS G 0565 (Methods of magnetic particle inspection for steel materials and classification of defective magnetic particle patterns).

(4) According to JIS Z 2343 (Methods of penetrant inspection and classification of defective indication patterns).

Chain Sling Inspection Standard

Sling Name / Code:

Registration No.:

Work Manager:

Start Date of Use:

Safety Manager:

Part	Inspection item	Inspection Results					
		Date	Check	Date	Check	Date	Check
Complete Sling	Working Load Limit (WLL)						
	Assembly condition						
Chain	Elongation of 5 chain links						
	Chain link wear						
	Chain link bent						
	Chain link twists						
	Scratches, other defects						
	Corrosion						
Master Links, Intermediate Links	Deformation						
	Wear						
	Scratches, other defects						
	Corrosion						
Hooks	Hook opening						
	Deformation						
	Latch						
	Latch gap (BK, OBK)						
	Wear, corrosion						
	Rotation (swivel hook)						
	Scratches, other defects						
Connecting Items, Couplings	Deformation						
	Wear, corrosion						
	Scratches, other defects						
	Pin looseness						

Notes:

For more Information about our products and how to get in touch with us, please visit our website.
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