

Offshore Components



GUNNEBO
Industries

Arctic Offshore

Innovation and Quality With a Purpose

We have developed products to meet the stringent requirements of the offshore oil & gas industry for many years. The working conditions are tough and products have to be able to sustain extreme conditions. Our double latch hook, BKD, was developed with the aerospace industry as a role model; if one system fails another one is ready to save the situation. The extra latch on the BKD will retain the load in case an unintended opening of the first latch should occur.

Our lifting systems have been valued for their long durability and quality. Regardless of the environmental conditions, our systems have provided lifting operations with high safety. Our quality systems give us the tools to work with continuous improvements and we will always put our great efforts into our mission to create the best available in the market. Our quality is there with a purpose.

DNV 2.7-1 certificate

We are type-approved by DNV to manufacture master links and shackles in accordance with DNV 2.7.1 specification. The approval verifies that Gunnebo Industries has a high consistent level of production stability in the entire process, from raw material to the finished product.



Arctic Offshore Master Links

Type Approved to DNV 2.7-1



Adverse weather and rough sea conditions - sometimes in combination with extremely low temperatures - must be included in the design and safety factor of container lifting sets. The heat treatment of the components must ensure proper ductility and strength to sustain shock loads which may be imposed when the container is lifted from the deck of a vessel.

The lifting sets and its included components must be specially designed for the purpose to lift offshore containers. One of the main differences compared to the onshore standard or specification, is that it allows for the dynamic forces at sea by adding an extra enhancement factor to increase the level of safety. Another difference is that the requirements and testing of materials that will be used in cold environments, are more extensive.

Arctic Offshore Master Link MT



Arctic Offshore Master Link M



Engineered to Excellence

The Master Links have been engineered to be resistant towards environmental hydrogen embrittlement failures which are always a risk due to the corrosive environment present at sea. High quality steel that is homogenous with favourable microstructure, small grain size and low amount of impurities is being used in order to produce this high end component. In addition the hardness of the Master Links is below 38 on the Rockwell C scale giving high impact strength even at low operating temperatures ($\geq 27J$ at $-40^\circ C$ in the weld) and increased resistance towards hydrogen embrittlement failures in an offshore environment.

100% Proof Loading

All lifts require reliable products with the highest safety to ensure a safe working environment as well as to protect the load. Gunnebo Industries perform rigorous testing in their factories before the product is released. 100 % of the components of all batches are proof loaded 2.5 times their working load limit and visually inspected by competent personnel. This is done without exception to guarantee highest quality and safety for the end user. To make the master links as suitable as possible for the harsh marine environment, an additional stress relieving heat treatment is performed before the master link is delivered to the end user. This is executed in order to remove any stress that might have formed during the proof loading, which might decrease the life length of the product.

Improved Working Load Limits

The Arctic Offshore Master Links comes in an optimized range where each master link will have a wider and higher working load limit span than the old range. This makes it easier from a purchasing point of view, as well as decreasing the risk of incorrect use. A table for the container ratings and recommended master links can be found on page 2:26.

Design Temperature $-40^\circ C$

The Arctic Offshore Master Links are highly suitable to withstand shock loads and fatigue, even in extremely cold conditions. The new master link range has a design temperature of $-40^\circ C$, making it suitable for even the harshest weather conditions such as in the North Sea.

NEW



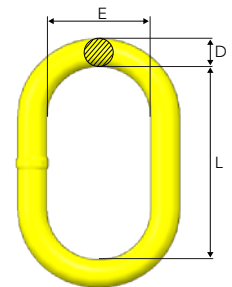
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Arctic Offshore Master Link M

DNV 2.7-1 and DNV 2.7-3 Type Approved.

Art. no.	Code	Working Load Limits				L	E	D	Weight kgs
		DNV 2.7-1		EN1677-4	A-952/A952M ASME B30.26				
		tonnes	Max. Container rating* kgs	SF 5:1 tonnes	SF 5:1 tonnes				
Z101486	M-9T- OS	9.3	4 500	9.3	9.3	270	140	25	3.0
Z101487	M-12T- OS	12.5	7 500	12.5	12.5	270	140	28	3.8
Z101488	M-18T- OS	18.5	13 500	18.5	18.5	270	140	32	5.1
Z101489	M-24T- OS	24.0	21 000	24.0	24.0	270	140	36	6.5
Z101490	M-30T- OS	30.5	25 000	30.5	30.5	270	140	40	8.2
Z101491	M-40T- OS	40.0	N/A	40.0	40.0	300	180	45	11.9
Z101492	M-50T- OS	50.0	N/A	50.0	50.0	300	200	50	15.3
Z101493	M-65T- OS	65.0	N/A	65.0	65.0	350	200	55	20.7
Z101494	M-90T- OS	90.0	N/A	90.0	90.0	450	250	70	42.7
Z101495	M-125T- OS	125.0	N/A	125.0	125.0	450	260	80	57.5

* For further information, see DNV 2.7-1



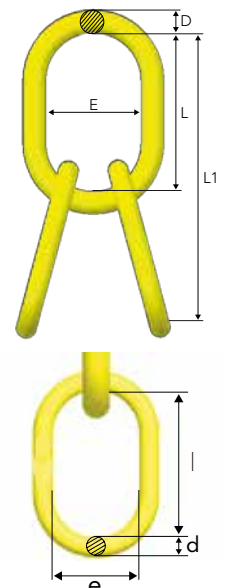
Arctic Offshore Master Link MT

DNV 2.7-1 and DNV 2.7-3 Type Approved.

Art. no.	Code	Working Load Limits				L1	L	E	D	I	e	d	Weight kgs
		DNV 2.7-1		EN 1677-4	A-952/A952M ASME B30.26								
		tonnes	Max. container rating* kgs	SF 5:1 tonnes	SF 5:1 tonnes								
Z101586	MT-9T- OS	9.3	4 500	9.3	9.3	430	270	140	25	160	95	22	6.0
Z101587	MT-12T- OS	12.5	7 500	12.5	12.5	430	270	140	28	160	95	25	7.8
Z101588	MT-18T- OS	18.5	13 500	18.5	18.5	460	270	140	32	190	110	28	10.8
Z101589	MT-24T- OS	24.0	21 000	24.0	24.0	540	270	140	36	270	140	32	16.7
Z101590	MT-30T- OS	30.5	25 000	30.5	30.5	540	270	140	40	270	140	36	21.2
Z101591	MT-40T- OS	40.0	N/A	40.0	40.0	570	300	180	45	270	140	40	28.3
Z101592	MT-50T- OS	50.0	N/A	50.0	50.0	600	300	200	50	300	180	45	39.1
Z101593	MT-65T- OS	65.0	N/A	65.0	65.0	650	350	200	55	300	200	50	51.2

* For further information, see DNV 2.7-1

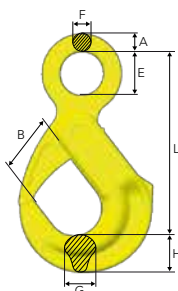
All sublinks have a WLL of min. 75% of the top link.



Master Link Selection Chart

Reference: DNV 2.7-1, Table 8.1

Container rating (kgs)	Enhancement factor	Min. required WLL (t)	Recommended Master link M	Recommended Master link MT
500	-	7.00		
1000	-	7.00		
1500	-	7.00		
2000	3.500	7.00		
2500	2.880	7.20	M-9T OS	MT-9T OS
3000	2.600	7.80		
3500	2.403	8.41		
4000	2.207	8.83		
4500	2.067	9.30		
5000	1.960	9.80		
5500	1.873	10.30		
6000	1.766	10.60	M-12T OS	MT-12T OS
6500	1.733	11.26		
7000	1.700	11.90		
7500	1.666	12.50		
8000	1.633	13.07		
8500	1.600	13.60		
9000	1.567	14.10		
9500	1.534	14.57		
10000	1.501	15.01		
10500	1.479	15.53	M-18T OS	MT-18T OS
11000	1.457	16.02		
11500	1.435	16.50		
12000	1.413	16.95		
12500	1.391	17.38		
13000	1.368	17.79		
13500	1.346	18.18		
14000	1.324	18.54		
14500	1.302	18.88		
15000	1.280	19.20		
15500	1.267	19.64		
16000	1.254	20.06		
16500	1.240	20.47		
17000	1.227	20.86		
17500	1.214	21.24	M-24T OS	MT-24T-10 OS
18000	1.201	21.61		
18500	1.188	21.97		
19000	1.174	22.31		
19500	1.161	22.64		
20000	1.148	22.96		
20500	1.143	23.44		
21000	1.139	23.92		
21500	1.135	24.39		
22000	1.130	24.86		
22500	1.126	25.33		
23000	1.121	25.79	M-30T OS	MT-30T OS
23500	1.117	26.25		
24000	1.112	26.70		
24500	1.108	27.15		
25000	1.104	27.59		



Safety Hook BK Offshore

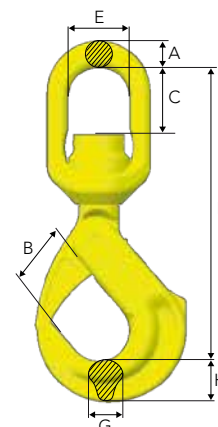
Requirements acc. to DNV 2.7-1

Art. no.	Code	WLL tonnes 4:1	WLL tonnes 5:1	L	B	E	F	G	H	Weight kgs
Z101355	BK-26-10 OS	27.0	21.2	342	100	80	25	54	68	16.5
Z101364	BK-32-8 OS	32.8	25.0	400	120	90	30	62	86	23.6

Swivel Safety Hook BKLK Offshore

Requirements acc. to DNV 2.7-1

Art. no.	Code	WLL tonnes 4:1	WLL tonnes 5:1	L	B	C	E	A	G	H	Weight kgs
Z101370	BKLK-13-10 W OS	6.7	5.4	307	55	72	61	25	30	40	4.9
Z101371	BKLK-16-10 W OS	10.0	8.0	367	62	88	82	26	37	50	8.4
Z1013561	BKLK-18/20-10 OS	16.0	12.8	395	68	88	80	35	46	64	13.5
Z101294	BKLK-22-10 OS	20.0	16.0	436	79	80	80	35	50	62	16.8
Z101295	BKLK-26-10 OS	27.0	21.2	486	100	110	102	45	54	68	26.5
Z101344	BKLK-32-8 OS	32.8	25.0	533	120	110	102	45	62	86	32.3
With double latch											
GS1167	BKLD-13-10 W OS	6.7	5.4	307	44	72	61	25	30	40	5.0
GS1168	BKLD-16-10 W OS	10.0	8.0	367	48	88	82	26	37	50	8.8
GS1169	BKLD-18/20-10 OS	16.0	12.8	368	52	60	72	31	44	65	12.4
GS1170	BKLD-26-10 OS	27.0	21.2	486	72	110	102	45	54	68	27.0



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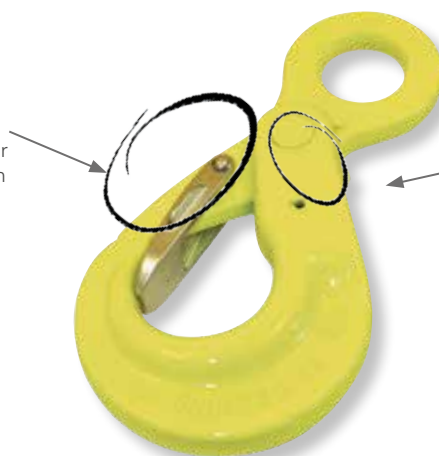
Safety Hook BK and BKLK with Double Latch

With recessed trigger

Due to the motion of the sea when loading and unloading offshore, direct impact on the hook could cause the latch to unintentionally open when not being under load, risking the load to unhitch. The double latch safety hook has an extra latch retaining the load in this case, keeping both load and personnel safe.

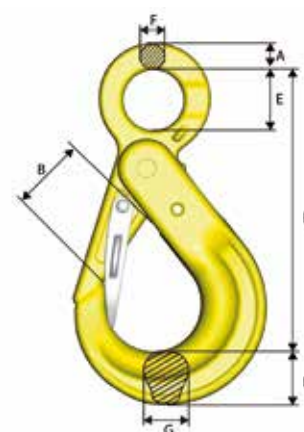
Double Latch

Should the hook latch accidentally open, either through direct impact or excessive wear on the trigger, the extra latch is there to retain the load safely. The latch does not cause inconvenience for the operator and may save their lives if something goes wrong.



Recessed Trigger

To avoid the trigger from being hit or damaged it has been recessed into the hook. This prevents the latch further from accidentally opening.



Art. no.	Code	WLL tonnes*	A	L	B	E	F	G	H	Weight kgs
Z101154	BKD-13-10	6.7	20	207	44	45	16	30	40	3.2
Z101155	BKD-16-10	10.0	26	254	48	56	20	37	50	5.8
Z101156	BKD-18/20-10	16.0	30	290	52	60	22	44	62	9.1
Z101373	BKD-26-10 OS	27.0	35	345	72	80	25	54	68	16.8

See our Offshore shackles in Chapter 4



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All dimensions in mm

*Safety factor 4:1