

William Hackett launch the newest addition to its world leading range of offshore Grade 8 master links and quad assemblies



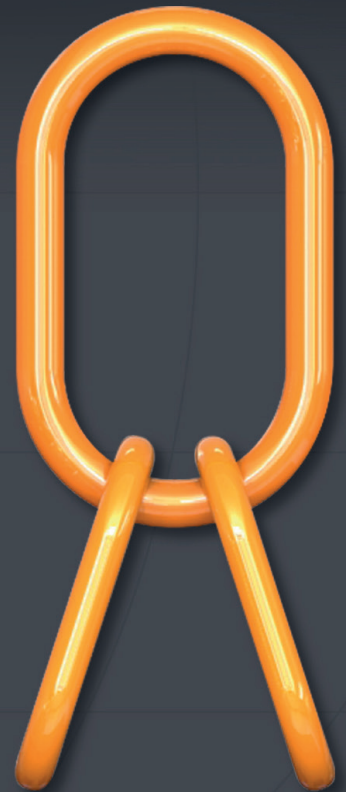
HA Master Links and Quads: Zinc Tough™

New generation corrosion resistant Grade 8 master links and quad assemblies incorporating the latest in

Zinc Tough™ Technology

Designed and manufactured in accordance with international standards and accreditations

Available now - contact us for further details



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HA Master Links and Quads: Zinc Tough™

The HA range of Grade 8 master links and quad assemblies are global industry leaders and are widely used for offshore rigging as well as container lifting sets.

Certified to International Standards: DNV2.7-1, DNV2.7-3, BSEN ISO 10855-2, EN1677-4, ASME B30.26 and API-2CCU – Aug.2017.

- DNV Type Approval TAS0000333.
- Product available in diameters from 16mm up to 75mm and working load limits from 4.1 tonnes to 100 tonnes.
- The master link and quad assemblies are individually proof load tested to 2.5 times working load limit and 100% MPI.
- MPF (Manufacturing Proof Force): based on $2.5 \times 9.81 \times \text{Working Load Limit (kN)}$ (min.)
- BF (Break Force): $\text{WLL} \times \text{Factor of Safety}$.
- WLL (Working Load Limit) @ 45° to vertical.
- Factor of Safety: 5:1.
- Embossing provides product identity plus individual manufacturing batch and date.
- Average impact energy (charpy) 42 Joules minimum impact resistance at -40°C up to 50mm diameter.
- Operational temperature range is -40°C to + 200°C.
- Non-spark attributes in accordance with ISO 80079-37: 2016 Ed. 1.
- Incorporating Zinc Tough™ Technology reducing the rate of corrosion by 80%.

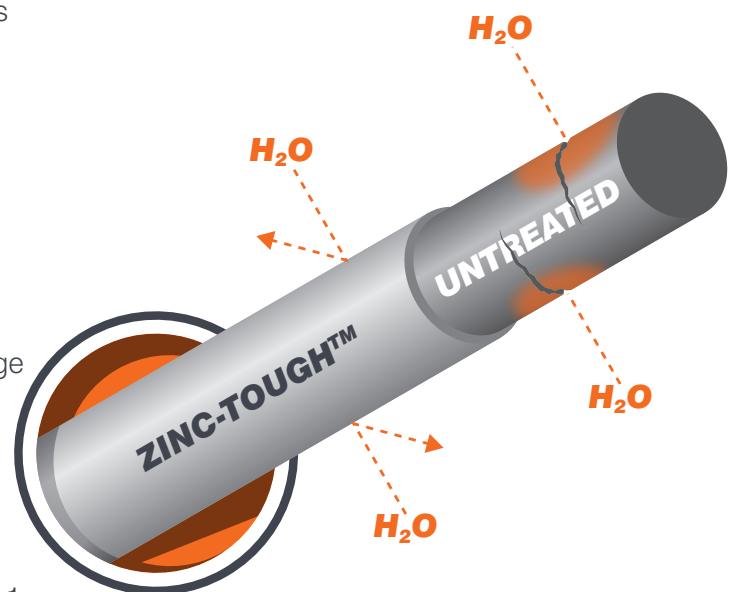
ZINC-TOUGH™ TECHNOLOGY

The ZINC-TOUGH™ TECHNOLOGY HA range of Grade 8 master links and Quad Assemblies provide superior protection from Hydrogen embrittlement and stress corrosion cracking - making them perfect for lifting operations in offshore environments.

Hydrogen embrittlement is the process by which metals such as steel become brittle and fracture under stress due to the introduction and subsequent diffusion of hydrogen into the metal - it can also be described as hydrogen assisted stress cracking and is particularly prevalent in the extreme conditions of the offshore environment where corrosion is a consistent threat. William Hackett and McKinnon Chain combined their technical knowledge and worked alongside a wide range of stakeholders, including several major oil and gas operators, to develop

ZINC-TOUGH™ TECHNOLOGY.

This unique manufacturing process delivers a master link with the tensile strength requirements to deliver a 5:1 safety factor with a hardness value as low as 34-36 HRC. The DNV charpy impact values are achieved at -40C, making the links ability to withstand a shock load at any operating temperature.



Hydrogen embrittlement

occurs offshore due to corrosion in water and the cathodic processes linked to the pH content of moisture in the air.



HA MASTER LINKS AND QUAD ASSEMBLIES: ZINC TOUGH™

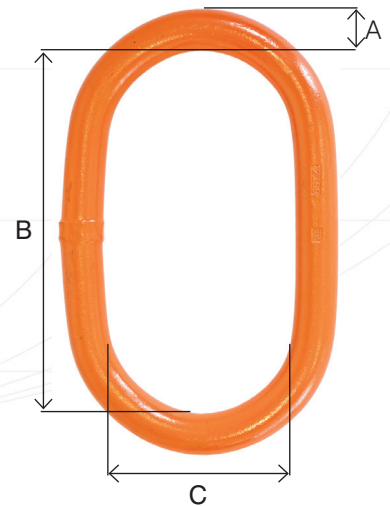


HA MASTER LINKS OS+ ZT: Type Approval No. TAS0000333

Certified to: DNV 2.7-1, DNV 2.7-3, EN 12079-2, BSEN ISO 10855-2, EN 1677-4, ASME B30.26 and API-2CCU - Aug. 2017

Description	A mm	B mm	C mm	WLL tonnes	MPF kN	MBL kN	Mass kg
HA22ML OS+ ZT	22.0	270	140	7.00	172	343	2.28
HA25ML OS+ ZT	25.5	270	140	9.30	229	456	3.11
HA28ML OS+ ZT	28.0	270	140	14.50	356	711	3.78
HA32ML OS+ ZT	32.0	270	140	19.00	466	932	5.02
HA36ML OS+ ZT	36.0	270	140	26.00	638	1275	6.46
HA40ML OS+ ZT	40.0	280	155	30.50	749	1496	8.46
HA45ML OS+ ZT	45.0	320	175	40.00	981	1962	12.18
HA50ML OS+ ZT	50.0	350	195	51.00	1251	2502	16.54
HA65ML OS+ ZT	65.0	410	220	75.00	1840	3679	33.02
HA75ML OS+ ZT	75.0	450	250	100.00	2453	4905	48.98

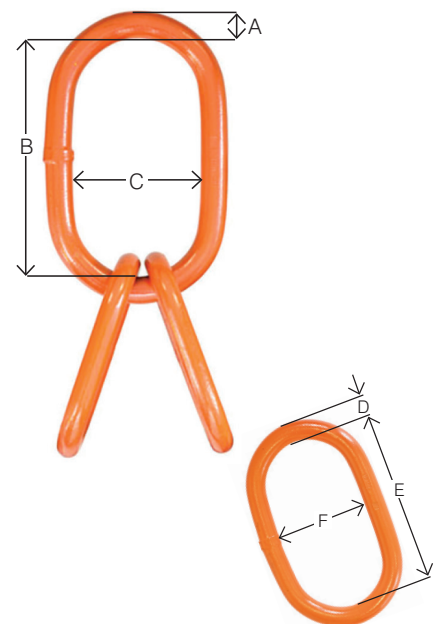
Average impact energy (charpy)
42 Joules minimum impact resistance
at -40°C up to 50mm diameter



HA QUAD ASSEMBLIES OS+ ZT: Type Approval No. TAS0000333

Certified to: DNV2.7-1, DNV2.7-3, EN 12079-2, BSEN ISO 10855-2, EN1677-4, ASME B30.26 and API-2CCU - Aug. 2017

Description	A mm	B mm	C mm	D mm	E mm	F mm	WLL tonnes	MPF kN	MBL kN	Mass kg
HA23QA OS+ ZT	22.0	270	140	22.0	162	90	7.00	172	343	5.22
HA25QA OS+ ZT	25.5	270	140	22.0	162	90	9.30	229	456	6.05
HA26QA OS+ ZT	28.0	270	140	22.0	162	90	14.50	356	711	6.73
HA32QA OS+ ZT	32.0	270	140	28.0	200	110	19.00	466	932	10.92
HA36QA OS+ ZT	36.0	270	140	28.0	200	110	26.00	638	1275	12.35
HA40QA OS+ ZT	40.0	280	155	32.0	270	140	30.50	749	1496	18.50
HA45QA OS+ ZT	45.0	320	175	36.0	270	140	40.00	981	1962	25.09
HA50QA OS+ ZT	50.0	350	195	45.0	320	175	51.00	1251	2502	40.89
HA65QA OS+ ZT	65.0	410	220	50.0	350	195	75.00	1840	3679	66.10
HA75QA OS+ ZT	75.0	450	250	65.0	410	220	100.00	2453	4905	115.02



Operational temperature range is
-40°C to 200°C



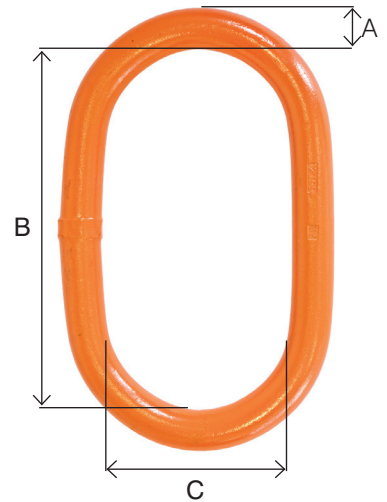
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HA MASTER LINKS OS+ ZT: Type Approval No. TAS0000333

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Description	A inches	B inches	C inches	WLL lbs	MPF lbs	MBL lbs	Mass lbs
HA22ML OS+ ZT	7/8"	10-3/4"	5-5/8"	15,432	38,667	77,109	5.03
HA25ML OS+ ZT	1"	10-3/4"	5-5/8"	20,503	51,481	102,512	6.86
HA28ML OS+ ZT	1-1/8"	10-3/4"	5-5/8"	31,967	80,031	159,838	8.33
HA32ML OS+ ZT	1-1/4"	10-3/4"	5-5/8"	41,887	104,760	209,521	11.07
HA36ML OS+ ZT	1-7/16"	10-3/4"	5-5/8"	57,320	143,427	286,630	14.29
HA40ML OS+ ZT	1-9/16"	11"	6"	67,240	168,381	336,313	18.65
HA45ML OS+ ZT	1-3/4"	12-3/4"	7"	88,184	220,537	441,074	26.85
HA50ML OS+ ZT	2"	14"	7-3/4"	112,436	281,235	562,470	36.46
HA65ML OS+ ZT	2-9/16"	16-9/64"	8-21/32"	165,347	413,647	827,070	72.80
HA75ML OS+ ZT	2-61/64"	18"	10"	220,462	551,455	1102,685	108.00

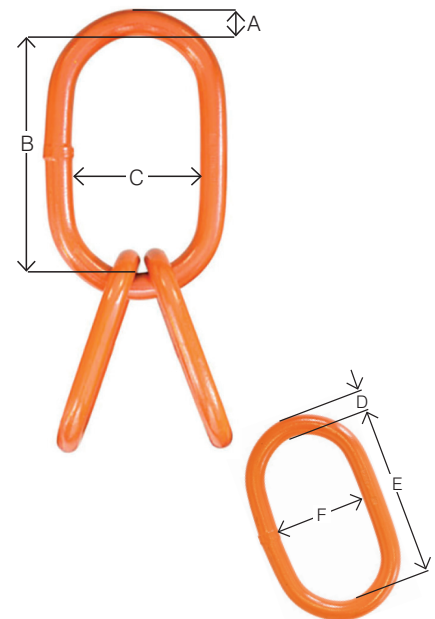
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Description	A inch	B inch	C inch	D inch	E inch	F inch	WLL lbs	MPF lbs	MBL lbs	Mass lbs
HA23QA OS+ ZT	7/8"	10-3/4"	5-5/8"	7/8"	6-3/8"	3-9/16"	15,432	38,667	77,109	11.50
HA25QA OS+ ZT	1"	10-3/4"	5-5/8"	7/8"	6-3/8"	3-9/16"	20,503	51,481	102,512	13.33
HA26QA OS+ ZT	1-1/8"	10-3/4"	5-5/8"	7/8"	6-3/8"	3-9/16"	31,967	80,031	159,838	14.83
HA32QA OS+ ZT	1-1/4"	10-3/4"	5-5/8"	1-1/8"	7-7/8"	4-5/16"	41,887	104,760	209,521	24.07
HA36QA OS+ ZT	1-7/16"	10-3/4"	5-5/8"	1-1/8"	7-7/8"	4-5/16"	57,320	143,427	286,630	27.22
HA40QA OS+ ZT	1-9/16"	11"	6"	1-1/4"	10-5/8"	5-1/2"	67,240	168,381	336,313	40.78
HA45QA OS+ ZT	1-3/4"	12-3/4"	7"	1-7/16"	10-5/8"	5-1/2"	88,184	220,537	441,074	55.31
HA50QA OS+ ZT	2"	14"	7-3/4"	1-3/4"	12-5/8"	6-7/8"	112,436	281,235	562,470	90.14
HA65QA OS+ ZT	2-9/16"	16-9/16"	8-21/32"	2"	13-3/4"	7-11/16"	165,347	413,647	827,070	145.72
HA75QA OS+ ZT	2-61/64"	18"	10"	2-9/16"	16-1/8"	8-11/16"	220,462	551,455	1102,685	253.57



Operational temperature range is
-40°C to 200°C