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For the attention of: CK Leong

Technical Report

Subject: TESTING OF TRIPOD AND WINCH DESCRIBED AS “HD-240” IN
ACCORDANCE WITH EN 795: 2012 TYPE B AND EN 1496: 2006 TYPE A

Your ref: TA14/0021

Our ref: SPC0222491/1408/2 Issue 2

Date: 21st November 2014

This replaces report reference SPC0222491/1408/2 dated 27th May 2014

Conditions of Issue:

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Report signed by: D Harrison
Position: PPE Technologist
Department: Safety Product Centre



WORK REQUESTED

Samples of tripod and winch, described as “HD-240”, were received by SATRA on 21st February & 19th September 2014, for testing in accordance with EN 795: 2012 type B & EN 1496: 2006 Type A

CONCLUSIONS

SAMPLE REFERENCE	STANDARD	CLAUSE / PROPERTY	PASS / FAIL
HD-240 (with 20m and 35m winches)	EN 795: 2012	4.1 General	PASS
		4.2 Materials	Not fully assessed
		4.3 Design and ergonomics	PASS
		4.4 Specific requirements – type B	PASS
	EN 1496: 2006	4.1 General	PASS
		4.2 Ergonomics	PASS
		4.3 Materials and construction	Not fully assessed
		4.4 Function for class A rescue lifting devices	PASS
		4.6 Static strength	PASS
		4.7 Corrosion resistance	PASS

TESTING

Testing was carried out in accordance with EN 795: 2012 between 30th April & 19th November 2014

The anchor device is intended as a type B (temporary transportable) device, intended to be used on a solid structure

For the purposes of testing, the anchor device was installed on concrete, with test forces applied in a vertical direction

Samples were tested as received, and were not subject to any pre-conditioning processes other than those stated in individual test clauses



Figure 1 – Tripod and winch described as “HD-240”

TEST RESULTS

Table 1 – Testing of anchor device described as “HD-240” in accordance with EN 795: 2012 as a type B device

EN 795: 2012 CLAUSE / TEST	EN 795: 2012 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL	
4.1 General	Anchor devices shall be designed so that they can be removed from the structure, without damaging the structure or anchor, thus allowing reuse	Anchor device can be removed without damaging itself or the structure		PASS	
	U-bolt clamps shall not be used for terminations in any part of an anchor device	No U-bolt clamps used on product		PASS	
	It shall not be possible for elements with an anchor point to become detached unintentionally. If an element can be removed it shall be designed to have at least 2 separate deliberate manual actions	Unintentional detachment unlikely during normal use. All components require at least 2 deliberate manual actions to remove		N/A	PASS
	Anchor devices shall allow connectors to rotate freely and sit in the anchor in the preferred load-bearing position	Connectors are free to rotate and sit in the preferred load bearing position			PASS
	Where an anchor device comprises more than one element, the design shall be such that those elements cannot appear to be correctly assembled without being positively locked together	Incorrect assembly would be visually evident			PASS

EN 795: 2012 CLAUSE / TEST	EN 795: 2012 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.1 General (continued)	<p>The mass of any element of an anchor device that is intended to be transported shall be less than 25kg</p> <p>If a fall indicator is incorporated, the indicator shall clearly show when a fall has occurred</p> <p>If an anchor device consists of a combination of several types, it shall be tested for each type and for the combination</p> <p>If the manufacturer permits loading in more than one direction, then each safety critical direction shall be tested</p>	<p>Anchor device including largest winch has a weight of 12kg</p> <p>Indicator deployed during tests on winch attachment</p> <p>Not applicable – Anchor device is only type B</p> <p>Not applicable – Loading can only occur in one direction</p>	N/A	<p>PASS</p> <p>PASS</p> <p>N/A</p> <p>N/A</p>
4.2.1 Materials – Metal parts	<p>Metallic parts shall show no evidence of any corrosion that could affect the function of the device (white scaling or tarnishing is acceptable)</p> <p>If steel wire ropes are galvanised, this shall be done in accordance with ISO 2232</p>	<p>Corrosion test in accordance with ISO 9227: 2012 - 24 hours Neutral Salt Spray, followed by 1 hour drying, followed by a further 24 hour exposure Temperature: 35 °C Fall out rate: 1.96 ml/hr pH of test solution: 6.8 Specific gravity of test solution: 1.030</p> <p>Very light white scaling present on all metallic components. Heavy white scaling present on chain. No other visual evidence of any corrosion present</p> <p>Not assessed</p>	<p>See table 4 See note 2</p>	<p>PASS See note 4</p> <p>Not assessed</p>
4.2.3 Materials - Connectors	Connectors shall conform to EN 362	Connectors are marked as being compliant with EN 362	N/A	PASS

EN 795: 2012 CLAUSE / TEST	EN 795: 2012 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.3 Design and ergonomics	Anchor devices shall not have sharp edges or burrs that may cause injury to the user or that may damage itself or any other equipment it may come into contact with	No sharp edges or burrs that could add additional risk to the user	N/A	PASS
4.4.2.1 Specific requirements – Type B anchor deformation test	No part of a type B anchor excluding rope and webbing slings manufactured from man-made fibres, which is intended to deform, shall demonstrate permanent deformation of more than 10mm	Attachment point: Winch 0.7kN load applied for 1 minute Permanent deformation: 0 Attachment point: Eyebolt 0.7kN load applied for 1 minute Permanent deformation: 0	± 50 N See note 2	PASS
4.4.2.2 Specific requirements – Type B anchor dynamic strength & integrity test	When tested dynamically with a rigid steel mass of 100 kg, the test mass shall be arrested. The anchor must then hold an increased mass of 300kg for 3 minutes	Attachment point: Winch 100kg mass held following 3.6m freefall using 2m EN 892 reference lanyard Peak arrest force: 7.2kN (see figure 2) Displacement of anchor point: 0 Residual strength: 300kg held for 3 minutes following dynamic test Attachment point: Eyebolt 100kg mass held following 3.6m freefall using 2m EN 892 reference lanyard Peak arrest force: 8.7kN (see figure 3) Displacement of anchor point: 0 Residual strength: 300kg held for 3 minutes following dynamic test	± 40 mm See note 2	PASS
4.4.2.3 Specific requirements – Type B anchor static strength test	Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release	Attachment point: Winch 12kN sustained for 3 minutes without failure See note 3	± 50 N See note 2	PASS

EN 795: 2012 CLAUSE / TEST	EN 795: 2012 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.4.2.3 Specific requirements – Type B anchor static strength test (continued)	Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release	Attachment point: Eyebolt 12kN sustained for 3 minutes without failure See note 3	± 50 N See note 2	PASS

Table 2 – Testing of rescue device described as “HD-240-20” in accordance with EN 1496: 2006

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.1 General	A rescue lifting device integrated into a fall protection system shall meet the requirements of EN 1496: 2006 whilst in rescue mode If the rescue lifting device is intended to be fitted to a tripod or similar anchor device according to EN 795, the whole unit combined shall meet EN 1496: 2006	Rescue lifting device passes the requirements of EN 1496: 2006 Rescue lifting device tested together with the tripod that it is intended to be used with	N/A	PASS PASS
4.2 Ergonomics	When tested in accordance with 5.5 (operating force test) with a mass equivalent to the maximum rated load, the operating force for lifting the test mass shall not exceed 250 N	Maximum rated load: 100kg Force required on handle to lift maximum rated load: 87N	± 5%	PASS

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.3.1 Materials and construction – General	Materials used in the rescue lifting device that may come into contact with the skin of a user shall not be known to cause irritating or sensitization effects during intended use	Not assessed	N/A	Not assessed
	The rescue lifting device shall have no sharp edges and burrs that may cause injury to the user	No sharp edges or burrs that could add additional risk to user		PASS
4.3.2 Materials and construction – Lines	Lines shall be made from textile rope or webbing or from steel wire	Winch line is made from steel wire	N/A	PASS

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.3.3 Material and construction – Ropes and webbings	Fibre ropes of a non-sheathed core construction shall conform to EN ISO 1140 or EN ISO 1141	Not applicable		N/A
	Fibre ropes of kernmantel construction shall conform to EN 1891: 1998, type A	Not applicable		N/A
	Wire ropes shall conform to ISO 2232	Not assessed		Not assessed
	Webbings and yarns shall be made of filament or multifilament synthetic fibres, suitable for the use intended. The breaking tenacity of the synthetic fibre shall be known to be at least 0.6 N/tex	Not applicable		N/A
	Threads used for sewing shall be physically compatible with the rope or webbing and their quality shall be comparable to those of the rope or webbing. They shall, however, be of a contrasting shade in order to facilitate visual inspection	Not applicable		N/A
4.3.4 Materials and construction – Connectors	Connectors shall conform to EN 362	Connectors are marked as compliant with EN 362	N/A	PASS
4.4 Function for class A rescue lifting devices	The test mass shall be arrested within a vertical distance of 100 mm	Test 1 Conditions: As received Test mass: 150kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm	± 20 mm	PASS

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.4 Function for class A rescue lifting devices	The test mass shall be arrested within a vertical distance of 100 mm	Test 2 Conditions: As received Test mass: 30kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm	± 20 mm	PASS
		Test 3 Conditions: under simulated rain fall for 24 hours Test mass: 150kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm		
		Test 4 Conditions: under simulated rain fall for 24 hours Test mass: 30kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm		
4.6 Static strength	When tested with a test force equivalent to 10 times the maximum rated load (minimum 12kN), the rescue lifting device shall withstand the force applied for 3 min without tearing or rupture	See table 1 clause 4.4.2.3 for test result See note 3	± 50 N See note 2	PASS
4.7 Corrosion resistance	Metal parts shall show no evidence of corrosion that would affect the function of the rescue lifting device (white scaling or tarnishing is acceptable if the function is not impaired)	Corrosion test in accordance with ISO 9227: 2012 – 24 hours Neutral Salt Spray, followed by 1 hour drying, then a further 24 hours exposure Temperature: 35 °C Fall out rate: 1.96 ml/hr pH of test solution: 6.8 Specific gravity of test solution: 1.030 Very light white scaling present on all metallic components. No other visual evidence of any corrosion present	See table 4 See note 2	PASS See note 4

Table 3 – Testing of rescue device described as “HD-240-35” in accordance with EN 1496: 2006

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.1 General	A rescue lifting device integrated into a fall protection system shall meet the requirements of EN 1496: 2006 whilst in rescue mode	Rescue lifting device passes the requirements of EN 1496: 2006		PASS
	If the rescue lifting device is intended to be fitted to a tripod or similar anchor device according to EN 795, the whole unit combined shall meet EN 1496: 2006	Rescue lifting device tested together with the tripod that it is intended to be used with	N/A	PASS
4.2 Ergonomics	When tested in accordance with 5.5 (operating force test) with a mass equivalent to the maximum rated load, the operating force for lifting the test mass shall not exceed 250 N	Maximum rated load: 100kg Force required on handle to lift maximum rated load: 89N	± 5%	PASS
4.3.1 Materials and construction – General	Materials used in the rescue lifting device that may come into contact with the skin of a user shall not be known to cause irritating or sensitization effects during intended use	Not assessed		Not assessed
	The rescue lifting device shall have no sharp edges and burrs that may cause injury to the user	No sharp edges or burrs that could add additional risk to user	N/A	PASS
4.3.2 Materials and construction – Lines	Lines shall be made from textile rope or webbing or from steel wire	Winch line is made from steel wire	N/A	PASS

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.3.3 Material and construction – Ropes and webbings	Fibre ropes of a non-sheathed core construction shall conform to EN ISO 1140 or EN ISO 1141	Not applicable		N/A
	Fibre ropes of kernmantel construction shall conform to EN 1891: 1998, type A	Not applicable		N/A
	Wire ropes shall conform to ISO 2232	Not assessed		Not assessed
	Webbings and yarns shall be made of filament or multifilament synthetic fibres, suitable for the use intended. The breaking tenacity of the synthetic fibre shall be known to be at least 0.6 N/tex	Not applicable		N/A
	Threads used for sewing shall be physically compatible with the rope or webbing and their quality shall be comparable to those of the rope or webbing. They shall, however, be of a contrasting shade in order to facilitate visual inspection	Not applicable		N/A
4.3.4 Materials and construction – Connectors	Connectors shall conform to EN 362	Connectors are marked as compliant with EN 362	N/A	PASS
4.4 Function for class A rescue lifting devices	The test mass shall be arrested within a vertical distance of 100 mm	Test 1 Conditions: As received Test mass: 150kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm	± 20 mm	PASS

EN 1496: 2006 CLAUSE / TEST	EN 1496: 2006 REQUIREMENT	RESULT / COMMENT	UoM (See note 1)	PASS / FAIL
4.4 Function for class A rescue lifting devices	The test mass shall be arrested within a vertical distance of 100 mm	Test 2 Conditions: As received Test mass: 30kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm	± 20 mm	PASS
		Test 3 Conditions: under simulated rain fall for 24 hours Test mass: 150kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm		
		Test 4 Conditions: under simulated rain fall for 24 hours Test mass: 30kg Pre-test mass height: 1.0m Post-test mass height: 1.0m Arrest distance: <5mm		
4.6 Static strength	When tested with a test force equivalent to 10 times the maximum rated load (minimum 12kN), the rescue lifting device shall withstand the force applied for 3 min without tearing or rupture	12kN sustained for 3 minutes without failure See note 3	± 50 N See note 2	PASS
4.7 Corrosion resistance	Metal parts shall show no evidence of corrosion that would affect the function of the rescue lifting device (white scaling or tarnishing is acceptable if the function is not impaired)	Corrosion test in accordance with ISO 9227: 2012 – 24 hours Neutral Salt Spray, followed by 1 hour drying, then a further 24 hours exposure See table 2 clause 4.7 for test result	See table 4 See note 2	PASS See note 4

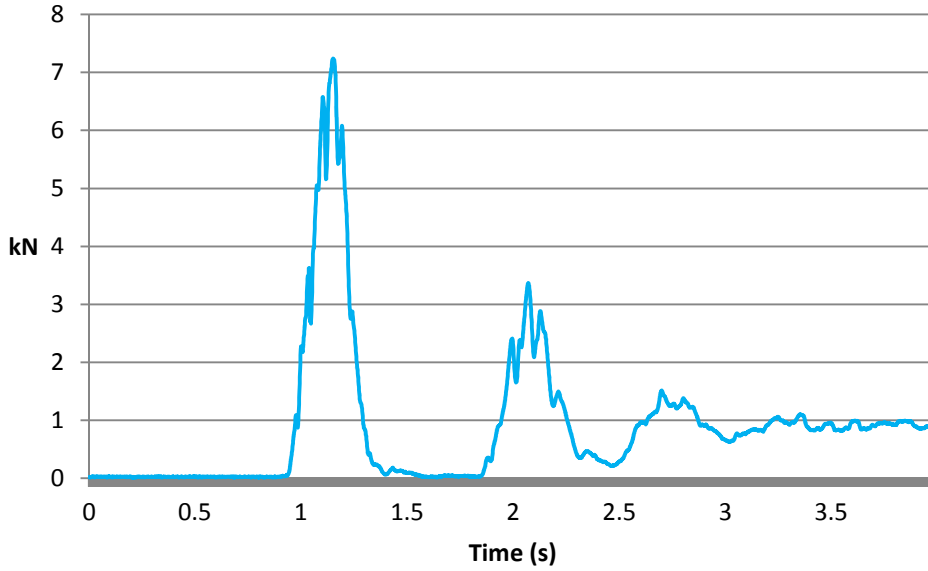


Figure 2 – Dynamic performance test: Graph of force vs. time

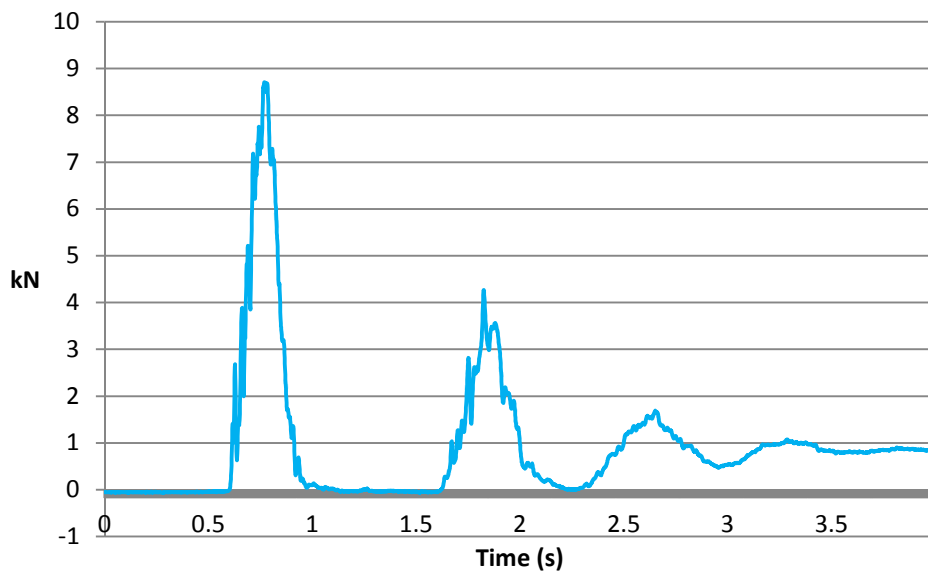


Figure 3 – Dynamic performance test: Graph of force vs. time

ADDITIONAL INFORMATION / NOTES

Table 4 – Additional uncertainty of measurement information (see note 1)

CLAUSE	TEST / COMPONENT	UoM (see note 1)
4.7 Corrosion resistance	Temperature	± 0.99 °C
	Fall-out rate of collected solution	± 2.25 ml (± 0.04 ml/hour for 24 hours)
	Specific gravity of collected solution	± 0.0010 g/ml
	pH value of collected solution	± 0.1
	Angle of sample mounting (if applicable)	± 1.44°

Note 1 – ‘UoM’ denotes estimated Uncertainty of Measurement for stated test results. This uncertainty value is based on a standard uncertainty multiplied by a coverage factor $k = 2$, which provides for a confidence level of approximately 95%

Note 2 – Estimated uncertainty of measurement applied at point of test (e.g. to applied force or to tolerance limits) to ensure product meets requirements of the standard

Note 3 – Static strength testing carried out by manually increasing loading, therefore rate of stressing / crosshead velocity as per EN 364: 1992 Clauses 4.1.2.1 & 4.1.2.2 cannot be accurately determined (see VG11 recommendation for use sheet CNB/P/11.023 dated 25.10.2007)

Note 4 – Testing carried out under job reference SPC0229252/1443

***** END OF REPORT *****



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