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Technical Services Report

Subject: TESTING OF RETRACTABLE LANYARDS IN ACCORDANCE WITH EN 360: 2002
Firm: QSS Safety Products (S) Pte Ltd
Our ref: SPC0159816/0802/NW
Your ref:
Date: 23 January 2008

Tests marked † are not UKAS accredited.

Technical Services Report

INTRODUCTION

Samples of retractable lanyards, reference “PCGS03” & “PCGS15”, were received by SATRA on 10 January 2008, for testing in accordance with EN 360: 2002. Testing was carried out between 21 & 23 January 2008.

CONCLUSIONS

The samples of retractable lanyards, reference “PCGS03” & “PCGS15”, as received by SATRA on 10 January 2008, have been tested in accordance with EN 360: 2002, and found to achieve the following requirements

SAMPLE REFERENCE	STANDARD	CLAUSE / PROPERTY	PASS / FAIL
PCGS03 & PCGS15	EN 360: 2002	4.1 Design and Ergonomics	PASS
		4.2 Materials and construction	Not fully assessed
		4.3.1 Locking after conditioning	PASS
		4.4 Static strength	PASS
		4.5 Dynamic performance	PASS
		4.7 Corrosion resistance	PASS

TEST RESULTS

Table 1 – Testing of retractable lanyard reference "PCGS" in accordance with EN 360: 2002

EN 360: 2002 CLAUSE / TEST	EN 360: 2002 REQUIREMENT	RESULT / COMMENT	PASS / FAIL
4.1 Design and Ergonomics	Able to perform risk related activity while enjoying appropriate protection at the highest level	Retractable lanyard was found to PASS mandatory performance requirements stated in EN 360: 2002	PASS
	Preclude risks and other nuisance factors	No rough or sharp edges likely to add significantly to overall mass	PASS
	Facilitate correct positioning on user and remain in place	Not applicable – positioning dependant on harness in use	N/A
	Light as possible without prejudicing design strength	No uneccessary components likely to add significantly to overall mass	PASS
	Not become incorrectly adjusted without user's knowledge	No applicable – no adjustment provided	N/A
	Vertical drop of user to be minimised and peak arrest forces to be maintained at acceptable levels.	Vertical drop and peak arrest forces were found to fall within the requirements of EN 360: 2002 Clause 4.5	PASS
	After arrest user maintained in upright position	Not applicable – positioning dependant on harness in use	N/A
4.2 Materials and construction	Lanyard wire rope to conform to EN 354: 2002 clause 4.2.3	See table 2	PASS
	Internal end of lanyard to meet strength requirements of clause 4.4	Entire retractable lanyard was found to PASS static strength test requirements – see clause 4.4	PASS
	The external end of the lanyard shall be suitable terminated	External end of lanyard terminated with thimble and ferrules	PASS
	Energy absorbers integrated in the retractable lanyard shall conform to EN 355 (Except clause 5.2)	Not applicable – no energy absorber included	N/A
	Connectors shall conform to EN 362 and shall incorporate a swivel function	Swivel function included Conformity to EN 362 not assessed	Not assessed

EN 360: 2002 CLAUSE / TEST	EN 360: 2002 REQUIREMENT	RESULT / COMMENT		PASS / FAIL
4.3.1 Locking after conditioning (EN 364: 1992 Clause 5.11)	After conditioning, the guided type fall arrester shall lock and remain locked until released when tested with a mass of at least 5 kg.	Conditioned at –30 ^{0}C for 2 hours	Locked & released	PASS
		Conditioned at +50 ^{0}C 85% rh for 2 hours	Locked & released	PASS
		Wet conditioned for 3 hours	Locked & released	PASS
4.4 Static strength (EN 364: 1992 Clause 5.7.4)	Shall sustain a force of at least 12 kN	12 kN sustained for 3 minutes without release		PASS
4.5 Dynamic performance (EN 364: 1992 Clause 5.7.2)	When tested with a rigid steel mass of 100 kg: Arrest force ≤ 6.0 kN Arrest distance ≤ 2.0 m	Sample reference “PCGS03” (3 m version): 100 kg mass arrested by retractable lanyard Arrest force: 3.0 kN Arrest distance: 1.23 m		PASS
		Sample reference “PCGS15” (15 m version): 100 kg mass arrested by retractable lanyard Arrest force: 4.0 kN (See figure 1) Arrest distance: 1.39 m		
4.7 Corrosion resistance (EN 364: 1992 Clause 5.13)	No corrosion to be evident that could affect the function of the device (white scaling or tarnishing is acceptable)	Corrosion test in accordance with ISO 9227: 1990 - 24 hours Neutral Salt Spray @ 35 ^{o}C, Fall out rate = 1.9 ml/hr, pH of test solution 8.0, followed by 1 hour drying. Evidence of moderate white scaling on top eye and cable ferrules. No other visual evidence of corrosion present on any surface. Device capable of locking and releasing, and subsequently used for and passed dynamic performance test - hence function not considered impaired		PASS

Table 2 – Testing of retractable lanyard reference “PCGS” in accordance with EN 354: 2002

EN 355: 2002 CLAUSE / TEST	EN 355: 2002 REQUIREMENT	RESULT / COMMENT	PASS / FAIL
4.2.3 Wire ropes	Wire ropes for lanyards shall be made from steel, the ferrules of a termination from ductile metallic material	Steel wire used for lanyard material End terminations constructed using a thimble & steel ferrules	PASS
	Wire ropes which are not made from stainless steel shall be galvanised in accordance with ISO 2232	Stainless steel wire used	PASS

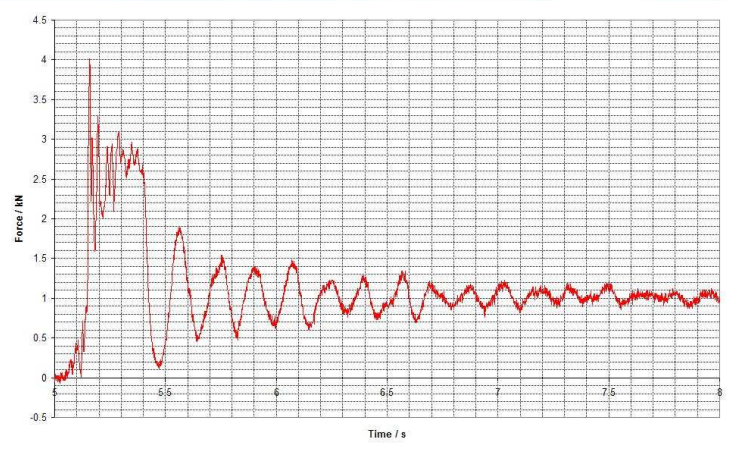

Figure 1 – Dynamic performance test (PCGS15): Graph of force vs. time

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