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Submersion and Overpressure Test

Part Number: 497-VOT



PROPRIETARY & CONFINDENTIAL

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INTRODUCTION

This report documents the results of the submersion and overpressure tests required for the Triton vest (#497-VO) per FAA TSO-C13G. The tests described herein were performed in accordance with the applicable requirements listed in SAE International Aerospace Standard (AS) 1354, Individual Inflatable Life Preserver, dated February 2016, as modified by Appendix 1 of the TSO.

TEST LOCATION

Testing and inspection will be performed at Lifesaving Systems Corporation's (LSC) manufacturing facility located in Apollo Beach, Florida by LSC personnel.

REFERNCES

Technical Standard Order TSO-C13G	*Life Preservers*, dated February 3rd, 2017
SAE International Aerospace Standard (AS) 1354	*Individual Inflatable Life Preserver*, dated February 2016

ACRONYMS AND ABBREVIATIONS

°C- Celsius
°F- Fahrenheit
N-Newtons
lb-pounds
kg- kilograms
m – Meters
cm- Centimeters
N/A – Not Applicable
P/N – Part Number
S/N – Serial Number

SECTION 1-SUBMERSION TESTING

1.1 Buoyancy Requirement:

The life preserver shall be shown to provide a buoyant force not less than that required in Table 1. The buoyant force of the life preserver is equal to the weight of the volume of the fresh water displaced by the life preserver when totally submerged. Buoyancy shall be demonstrated using only the standard gas reservoirs starting from a vacuum flat unit.

1.2 Test Method:

Start the test with the life preserver in its stowage package. Remove the life preserver from the package and activate the gas cylinder(s). Submerge the life preserver in 70°F ± 5°F (21.1°C ± 2.8°C) fresh water, so that no part of it is less than 24 inches (60.96 cm) below the surface of the water. Measure the buoyancy to show compliance with the applicable requirement in Table 1. Maintain submersion of the life preserver for at least 8 hours, after which time it shall be shown to meet or exceed the requirement in Table 1.

Alternatively, the test may be discontinued in less than 8 hours if buoyancy measurements taken at four successive 30-minute intervals show that the buoyant force of the life preserver has stabilized at or above the value specified in Table 1.

SECTION 2-OVERPRESSURE TESTING

2.1 Overpressure Requirement:

With the flotation chamber(s) orally inflated, the flotation chamber(s) shall not burst or deflate when the manual inflation means are activated.

2.2 Test Method:

The life preserver shall meet the minimum buoyancy requirements defined in Table 1 when subjected to overpressure. Inflate each flotation chamber via the oral inflation tube to 1 psig (6.89kPa), then manually actuate the discharge of the gas reservoir for each chamber. Submerge the life preserver in 70°F ± 5°F (21.1°C ± 2.8°C) fresh water, so that no part of it is less than 24 inches (60.96 cm) below the surface of the water. Measure the buoyancy to show compliance with the applicable requirement in Table 1. Maintain submersion of the life preserver for at least 8 hours, after which time it shall be shown to meet or exceed the requirement in Table 1.

Alternatively, the test may be discontinued in less than 8 hours if buoyancy measurements taken at four successive 30-minute intervals show that the buoyant force of the life preserver has stabilized at or above the value specified in Table 1.

TABLE 1.

Category of Life Preserver	Weight of Wearer (lb/kg)	Minimum Buoyant Force in Fresh Water at 70°F ± 5°F (21.1°C ± 2.8°C) (lb/N)
Adult	Above 90/40.82	35/155.69

SECTION 3-EQUIPMENT UNDER TEST

Equipment Under Test (EUT)	Part Number	Serial Number
Triton Vest	497-VO	n/a

SECTION 4-EQUIPMENT TEST CALIBRATION

Equipment	Description	LSC Tool Number	Calibration Date	Calibration Due Date
RH/Temp Monitor	Humidity and Temperature Monitor	57	5/24/2018	5/24/2019
GEI Ruler	48” Steel Ruler	27	5/24/2018	5/24/2019
Handheld Pull Tester	AWS 440lb TL-440 Pull Tester	91	5/30/2018	5/30/2020

SECTION 5-RESULTS

5.1 Submersion:

Success Criteria: Triton vest must pass the noted inspection criteria. Vest has a single flotation chamber.

Examination Table:

Test Criteria	Measurement	Pass/Fail	Notes:
Fresh Water: 70°F ± 5°F (21.1°C ± 2.8°C)	69°F	PASS	
Submerge the vest not less than 24 inches (60.96 cm) below the surface of the water.	29 inches	PASS	
*Maintain submersion of the life preserver for at least 8 hours. The buoyant force of the life preserver has stabilized at or above 35lb/155.69N	@0 min- 37.6lb	PASS	38.2lb bag weight -.6lb with vest inside
	@30 min-37.8lb	PASS	38.2lb bag weight -.4lb with vest inside
	@1.0 hr -37.8lb	PASS	38.2lb bag weight -.4lb with vest inside
	@1.5 hr-37.8lb	PASS	38.2lb bag weight -.4lb with vest inside
	@2.0 hr-37.8lb	PASS	38.2lb bag weight -.4lb with vest inside

*Alternatively, the test may be discontinued in less than 8 hours if buoyancy measurements taken at four successive 30-minute intervals show that the buoyant force of the life preserver has stabilized at or above 35lb/155.69N.

Note: The weight of the harness is 1.5 lbs underwater

5.2 Overpressure:

Success Criteria: Triton vest must pass the noted inspection criteria. Vest has a single flotation chamber.

Examination Table:

Test Criteria	Measurement	Pass/Fail	Notes:
Fresh Water: 70°F ± 5°F (21.1°C ± 2.8°C)	69°F	PASS	
Submerge the vest not less than 24 inches (60.96 cm) below the surface of the water.	29 inches	PASS	
*Maintain submersion of the life preserver for at least 8 hours. The buoyant force of the life preserver has stabilized at or above 35lb/155.69N	@0 min- 49lb	PASS	50.2lb bag weight – 1.2lb with vest inside
	@30 min- 50lb	PASS	50.2lb bag weight – 0.2lb with vest inside
	@1.0 hr – 50lb	PASS	50.2lb bag weight – 0.2lb with vest inside
	@1.5 hr- 50lb	PASS	50.2lb bag weight – 0.2lb with vest inside
	@2.0 hr- 50lb	PASS	50.2lb bag weight – 0.2lb with vest inside

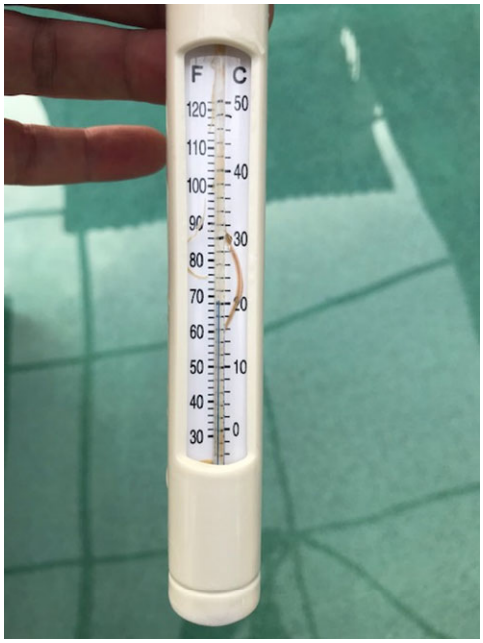
*Alternatively, the test may be discontinued in less than 8 hours if buoyancy measurements taken at four successive 30-minute intervals show that the buoyant force of the life preserver has stabilized at or above 35lb/155.69N.

Note: The weight of the harness is 1.5 lbs underwater

SECTION 6-PHOTOGRAPHS



Overpressure: 1 PSI added to bladder before cylinder is emptied



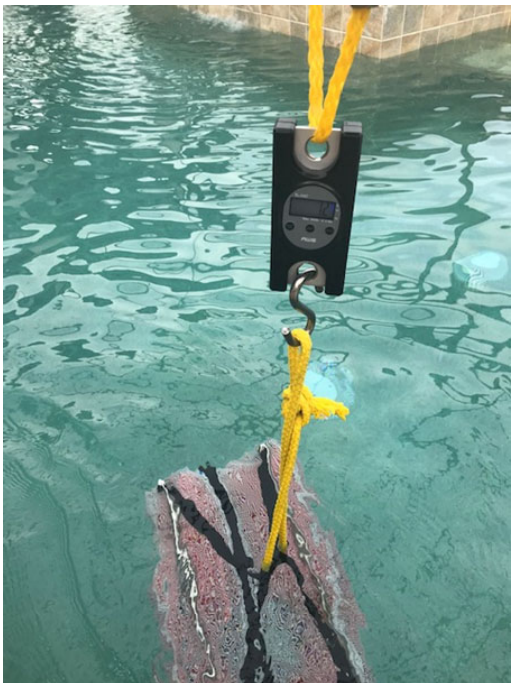
Water Temperature: 69°F Fresh Water



Bag weight in water for overpressure test



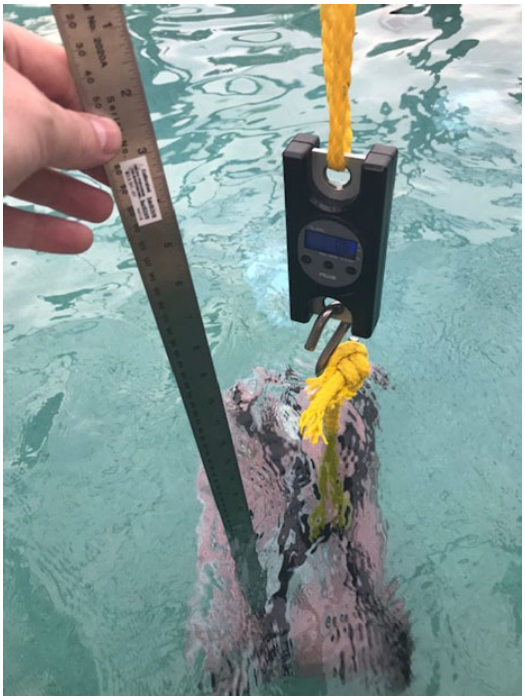
Bladder/Vest placed inside bag for buoyancy calculation



Bladder/Vest placed inside bag for buoyancy calculation



Bag weight in water for submersion test



Measurement: Bag under surface of water for all readings