



# WOODS HOLE OCEANOGRAPHIC INSTITUTION

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## Maximum Capability Document

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### *ECWP Hawboldt MD-1 SPR-1640/S*

This document has been prepared in accordance with Appendices A & B from the UNOLS RVSS. This machine is primarily used for 0.322/0.393 tension members, with 11,600 lbf and 16,000 lbf breaking strengths, respectively. Per Appendix A, the machine in its' current configuration is limited to a Factor of Safety (FS) of 5.0 on the tension member due to the lack of cable monitoring system. The FS on the tension member could be lowered if a monitored over-boarding block is employed in accordance with Appendix A. Per Appendix B this machine is only rated for "Lifting & Towing - Mid Water" (Section B.3.5.2 & 5) with .322/.393 or stronger tension members as currently configured due to the lack of load limiting equipment. This strictly limits tension member deployed length to 75% of water depth. This machine could be rated for "Lifting and Towing - Deep Water" if proper load limiting equipment were employed per Appendix B.

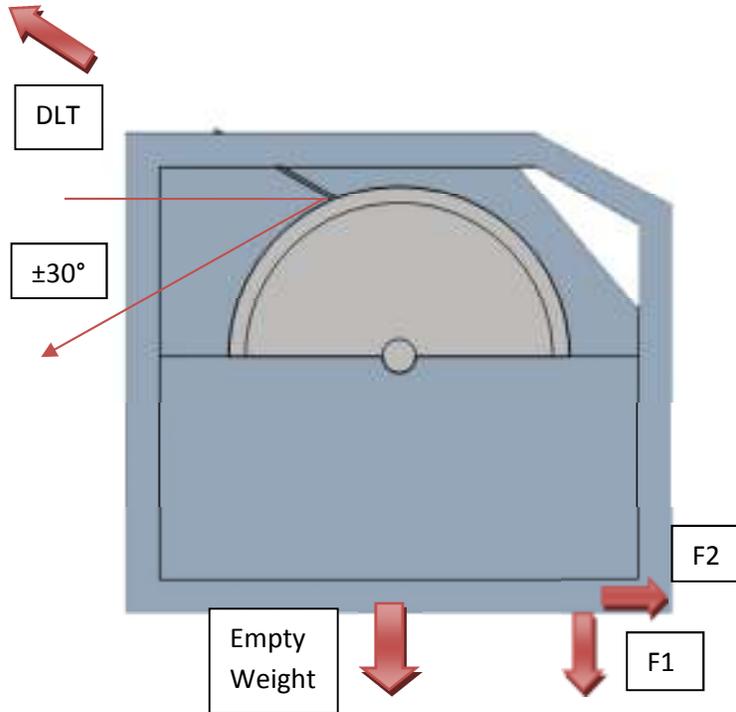
### **System Characterizations**

Empty Weight	5,000	lbf
Maximum Weight	6,300	lbf
Maximum Pull at Bottom Layer / MPT	4,160	lbf
Maximum Continuous Allowed Structure Load / DLT <sup>1</sup>	9,500	lbf
Maximum Speed at Bottom Layer	40	m/min
Maximum Oil Operating Temperature	180	F
Power Requirements	3 Phase 480VAC 60 Hz	60 Amp Circuit

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<sup>1</sup> At this tension the brake will slip causing the winch to render cable

## Free Body Diagram



At DLT

F1 = 3,000 lbf

F2 = 2075 lbf

Forces are maximum forces per bolt, at DLT, for a 4 bolt hold down pattern (Rows spaced at 48"). Analysis is good for a vertical fleet angle of  $\pm 30^\circ$  and a horizontal fleet angle of  $\pm 8^\circ$ .

