

ALPHA ZULU 140

RoPAC-Class ZeroFF Sail Cargo Trimaran

Predicted Sailing Performance — Polar Diagrams by Load Condition

Prepared by Champion Maritime Limited • September 2026 • Preliminary — for discussion

Basis and load conditions

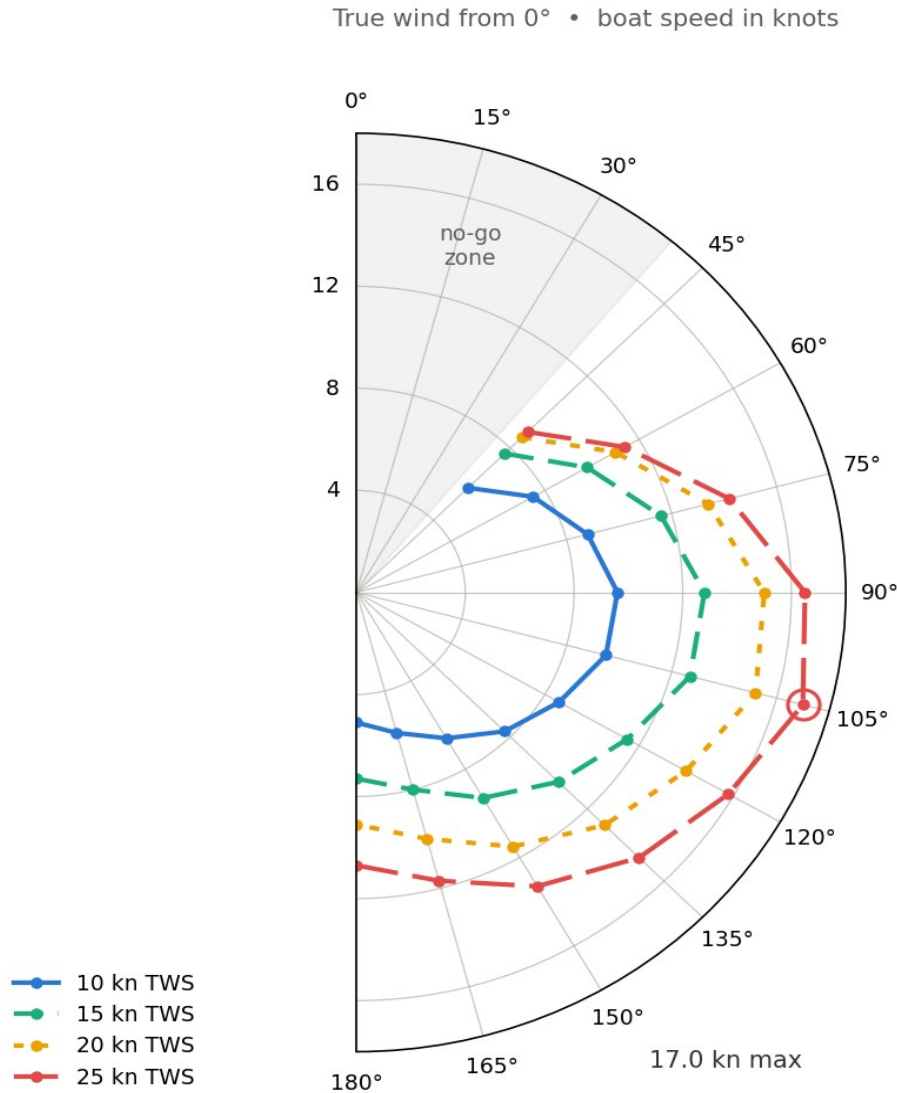
Predicted boat speeds are presented for two load conditions spanning the operational envelope. Condition A represents the vessel light, at or near the design waterline (hull hydrostatics, July 2022; design displacement 239,619 lbs saltwater). Condition B represents the maximum load condition of approximately 400,000 lbs per the preliminary weight estimate (lightship plus 90 t cargo deadweight), sitting approximately 23–24 inches below the design waterline per the immersion rate of 6,829 lbs per inch.

Speeds are engineering estimates calibrated to the hull hydrostatics, a working sail area of 1,060 m², and a stated maximum speed of 17.0 knots. They are not the output of a formal velocity prediction program. A VPP run by the naval architect should supersede these figures before any submission for class review or charter commitment.

The 25-knot true wind speed curve for Condition B assumes first reefs taken. True wind angles below approximately 40° are shown as a no-go zone; auxiliary electric propulsion (5–8 kn) applies there.

Condition A — Light / design displacement (~240,000 lbs)

Maximum speed potential. Cargo hold empty, vessel at or near design waterline, full working sail carried to rig limits. Peak predicted speed 17.0 knots at approximately 105° TWA in 25 knots true wind.

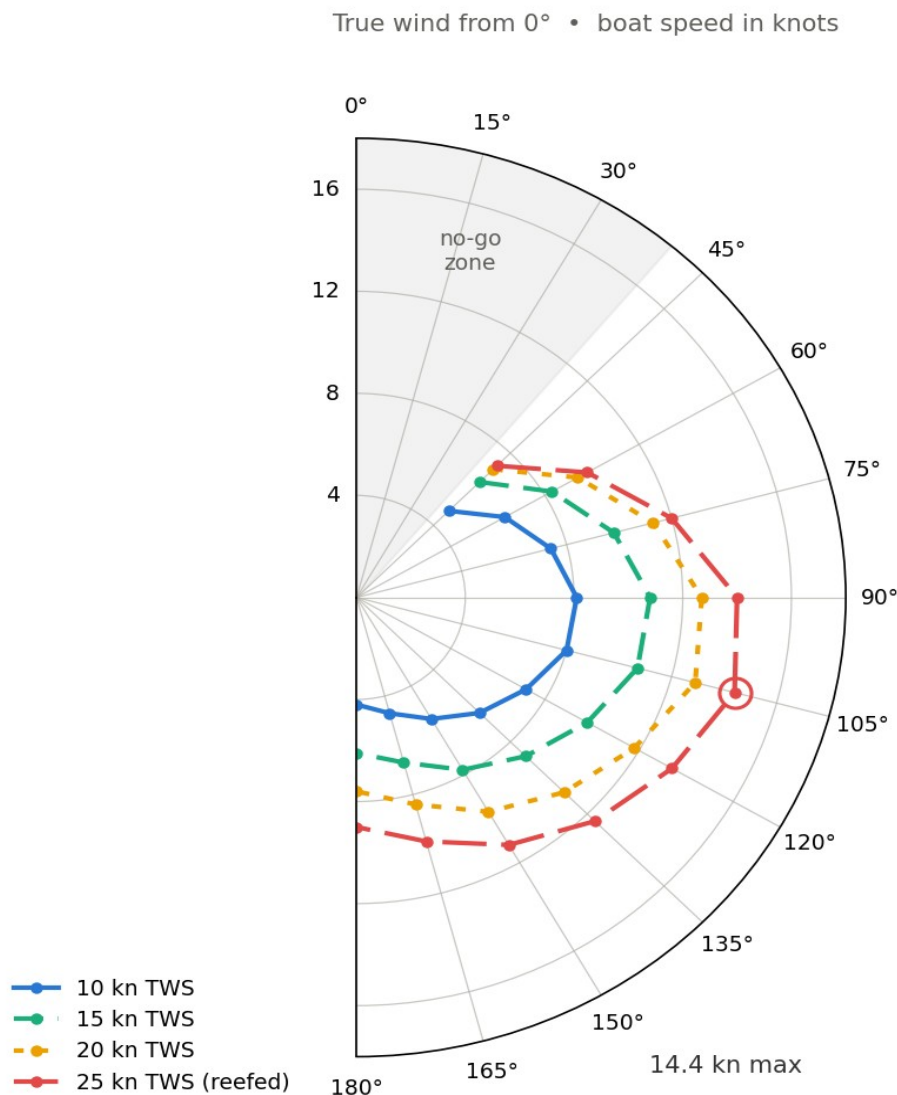


Condition A — predicted boat speed (knots)

TWA	10 kn TWS	15 kn TWS	20 kn TWS	25 kn TWS
45°	5.8	7.7	8.6	8.9
60°	7.5	9.8	11.0	11.4
75°	8.8	11.6	13.4	14.2
90°	9.6	12.8	15.0	16.5
105°	9.5	12.7	15.2	17.0
120°	8.6	11.5	14.0	15.8
135°	7.7	10.5	12.9	14.7
150°	6.6	9.3	11.5	13.3
165°	5.7	8.0	10.0	11.7
180°	5.1	7.3	9.1	10.7

Condition B — Fully loaded (~400,000 lbs maximum displacement)

Maximum load condition per the preliminary weight estimate: lightship plus 90 t cargo deadweight, approximately 400,000 lbs total. Draft increases to approximately 6'-10" with correspondingly reduced freeboard; ama reserve buoyancy reduces from ~350% to ~210% per float. Peak predicted speed 14.4 knots at approximately 105° TWA in 25 knots true wind, reefed. Deep-condition hydrostatics, trim, and Load Line freeboard assignment remain to be confirmed by the naval architect.



Condition B — predicted boat speed (knots)

TWA	10 kn TWS	15 kn TWS	20 kn TWS	25 kn (reefed) TWS
45°	4.8	6.4	7.1	7.3
60°	6.3	8.3	9.4	9.8
75°	7.4	9.8	11.3	12.0
90°	8.1	10.8	12.7	14.0
105°	8.0	10.7	12.9	14.4
120°	7.2	9.8	11.8	13.4
135°	6.4	8.8	10.8	12.4
150°	5.5	7.8	9.7	11.2
165°	4.7	6.7	8.4	9.9
180°	4.2	6.1	7.6	9.0

Notes

1. The spread between conditions is approximately 2.5 knots at the reaching peak, narrowing to about one knot in light airs — passage schedules built on the Condition B curves therefore hold across the full loading range, with Condition A performance available as recovery margin.
2. Condition B speeds will be revised on receipt of deep-condition hydrostatics at ~400,000 lbs; the safe load waterline (Load Line freeboard assignment) governs whether the full 90 t cargo deadweight is achievable.