

A red wireframe model of a yacht hull, showing the complex structure of the hull and the deep bulb keel. The hull is shown from a side-on perspective, slightly angled.

PERFORMANCE PREDICTION

**DESIGN 680
BAVARIA CRUISER 50
DEEP BULB KEEL
FOR
BAVARIA**



DESCRIPTION OF SYMBOLS IN VPP OUTPUT

The accompanying document contains a large amount information about the predicted performance of your boat. To allow this document to be used as a valuable racing tool we have prepared the following explanation of the important terms it contains.

General Terms:

Vt or TWS	True Wind Speed
Bt or TWA	True Wind Angle
V or Vs	Boat Speed
VMG	Boat Velocity Made Good
HEEL	Heel Angle
REEF	Measure of Reduction in Sail Area
FLAT	Measure of Reduction in Sail Lift
Va, AWS	Apparent Wind Speed
Ba, AWA	Apparent Wind Angle
Lee	Leeway Angle
Sail	Sail Combination Designator (Upwind or Downwind)
Flot	Flotation Designator (Varies Only For Water Ballasted Boats)

VPP Polar Diagram

This is a graphical representation of the boats performance across a range of windspeeds and true wind directions. Optimal upwind and downwind conditions are marked as small rectangles on the boat speed contours for each windspeed.

Best Boatspeeds

The upper portion of this page gives a numerical representation of the polar diagram. Boatspeeds in knots are given for a series of true windspeeds at masthead height, across a range of true wind angles. All boatspeeds and windspeeds are given in knots. The shaded cells lie beyond the upwind and downwind optimum points. The two tables on the lower portion of the page provide a ready reference of useful details about the optimum upwind and downwind sailing conditions as a function of the true windspeeds (Vt's) across the top of the page. In addition to indicating the optimum upwind and downwind boat speeds in knots, they are also expressed in seconds/mile and in seconds/boat length. VMG is also expressed in seconds/mile.

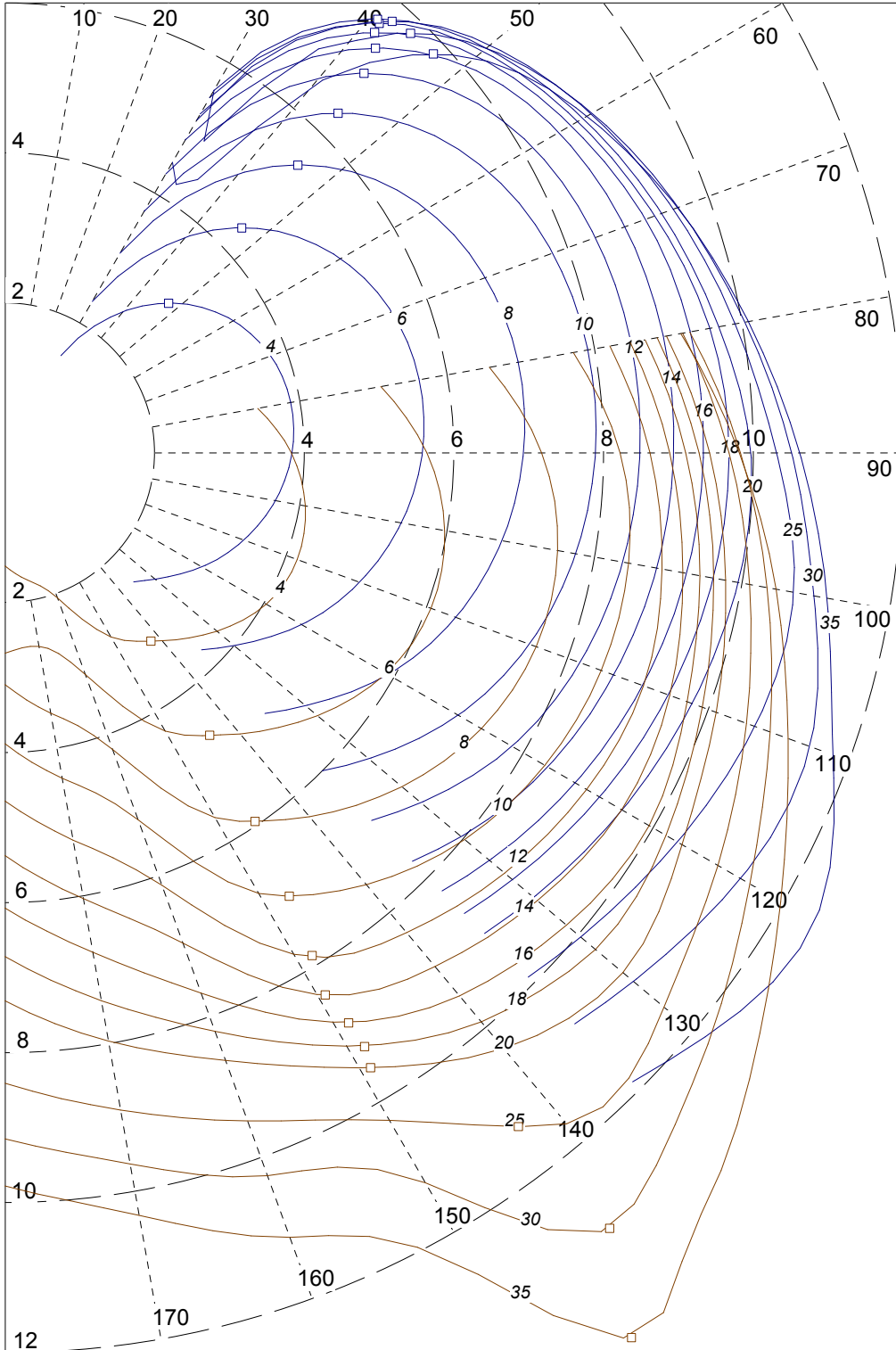
Times for 1 nm (secs)

This page is similar to the Best Boatspeeds page in that it represents the boatspeeds for a series of true windspeeds and true wind angles. Boatspeeds are expressed as seconds/nautical mile. Shaded areas again depict the off optimum conditions. Optimum upwind and downwind values, in terms of VMG, are presented underneath the table.

Best Performance

This page is a detailed representation of the polar diagram showing a list of predicted performance variables for each windspeed over the range of true wind angles. All of those items listed in the "General Terms" section are listed and optimum upwind and downwind settings are included in bold type.

Design 680 - Bavaria 50 - Deep Keel
Final VPP



Best Boatspeeds (kt)

	4	6	8	10	12	14	16	18	20	25	30	35
30.0	1.50	2.33	3.07	3.72	4.30	4.82	5.22	5.47	5.58	5.12	5.59	4.48
33.0	1.85	2.85	3.76	4.52	5.17	5.70	6.09	6.33	6.44	6.23	4.98	4.24
36.0	2.14	3.28	4.29	5.13	5.84	6.36	6.70	6.91	7.00	6.87	6.32	4.68
39.0	2.39	3.64	4.73	5.64	6.38	6.86	7.17	7.35	7.43	7.35	6.99	6.03
42.0	2.61	3.96	5.11	6.06	6.80	7.26	7.54	7.71	7.77	7.75	7.49	6.89
45.0	2.80	4.24	5.43	6.41	7.15	7.60	7.85	7.99	8.05	8.07	7.91	7.48
50.0	3.09	4.63	5.88	6.87	7.60	8.03	8.23	8.33	8.40	8.46	8.40	8.19
60.0	3.52	5.18	6.50	7.48	8.15	8.54	8.73	8.84	8.92	9.04	9.06	8.98
70.0	3.78	5.50	6.83	7.79	8.39	8.81	9.11	9.24	9.34	9.50	9.57	9.56
80.0	3.88	5.62	6.96	7.91	8.49	8.93	9.30	9.56	9.69	9.91	10.04	10.08
90.0	3.83	5.64	7.17	8.22	8.62	8.93	9.33	9.67	9.96	10.31	10.51	10.62
100.0	4.07	5.97	7.50	8.46	8.91	9.20	9.43	9.62	9.95	10.70	10.97	11.15
110.0	4.16	6.06	7.55	8.48	9.08	9.45	9.70	9.91	10.11	10.66	11.44	11.77
120.0	4.03	5.88	7.35	8.33	8.97	9.51	9.94	10.20	10.44	11.00	11.49	12.49
130.0	3.69	5.45	6.92	8.02	8.71	9.28	9.79	10.30	10.78	11.50	12.26	12.98
135.0	3.49	5.18	6.64	7.79	8.54	9.13	9.64	10.13	10.66	11.79	12.66	13.53
140.0	3.27	4.89	6.33	7.51	8.35	8.94	9.45	9.90	10.36	11.68	13.07	14.07
150.0	2.83	4.28	5.61	6.78	7.72	8.34	8.76	9.13	9.46	10.27	11.24	12.65
160.0	2.06	3.14	4.21	5.20	6.13	6.95	7.66	8.20	8.62	9.48	10.25	11.13
170.0	1.72	2.62	3.52	4.40	5.24	6.03	6.76	7.41	7.96	8.89	9.62	10.32
180.0	1.51	2.67	3.09	3.88	4.64	5.37	6.07	6.71	7.30	8.40	9.14	9.77
Up.Vs(kts)	2.96	4.36	5.48	6.35	6.97	7.32	7.47	7.60	7.63	7.74	7.79	7.81
Up.Vs(s/m)	1215.9	825.7	656.8	566.9	516.3	491.7	482.0	473.5	471.8	465.2	462.2	460.7
Up.Vs(s/L)	9.8	6.7	5.3	4.6	4.2	4.0	3.9	3.8	3.8	3.7	3.7	3.7
Up.Bt	47.6	46.5	45.5	44.5	43.5	42.5	41.4	41.1	40.7	41.9	44.1	47.1
Up.Vmg(kts)	2.00	3.00	3.84	4.53	5.06	5.40	5.61	5.73	5.78	5.76	5.59	5.32
Up.Vmg(s/m)	1803.6	1199.1	937.6	794.4	711.2	667.0	642.3	628.5	622.4	625.4	643.5	676.7
Up.Heel	2.0	4.5	7.7	11.9	17.2	21.9	23.7	25.1	26.1	25.8	25.5	25.1
Up.Reef	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.74	0.65
Up.Flat	1.00	1.00	1.00	1.00	1.00	0.93	0.81	0.70	0.62	0.66	0.72	0.79
Up.Twist	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Up.Va	6.38	9.54	12.47	15.20	17.72	20.02	22.16	24.25	26.26	31.19	36.00	40.72
Up.Ba	27.6	27.1	27.2	27.4	27.8	28.2	28.5	29.2	29.8	32.4	35.4	39.0
Up.Leewy	3.47	3.55	3.81	4.24	4.93	5.56	5.75	5.86	6.07	6.52	7.09	7.63
Dn.Vs(kts)	3.17	4.65	5.94	7.02	7.86	8.39	8.87	9.26	9.54	11.30	13.12	14.46
Dn.Vs(s/m)	1134.0	773.9	606.2	512.6	458.2	428.8	405.7	388.9	377.3	318.6	274.4	249.0
Dn.Vs(s/L)	9.1	6.2	4.9	4.1	3.7	3.5	3.3	3.1	3.0	2.6	2.2	2.0
Dn.Bt	142.2	144.0	145.8	147.3	148.5	149.4	148.9	148.7	149.2	142.6	142.0	144.6
Dn.Vmg(kts)	2.51	3.76	4.91	5.91	6.70	7.22	7.60	7.91	8.20	8.98	10.34	11.79
Dn.Vmg(s/m)	1436.0	956.4	733.2	609.4	537.2	498.4	473.9	455.0	439.2	400.9	348.2	305.3
Dn.Heel	0.5	1.0	1.6	2.1	2.6	3.0	3.7	4.4	4.9	13.8	25.3	28.8
Dn.Reef	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dn.Flat	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dn.Twist	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dn.Va	2.45	3.53	4.55	5.58	6.70	8.01	9.58	11.17	12.77	17.43	21.26	24.67
Dn.Ba	89.6	93.3	98.5	104.4	110.8	117.1	120.2	123.3	126.7	119.5	119.7	124.8
Dn.Leewy	0.64	0.58	0.53	0.50	0.48	0.47	0.52	0.56	0.58	1.03	1.22	1.05