FARR YACHT DESIGN

PERFORMANCE PREDICTION

DESIGN # 608
Beneteau First 40 – Shallow Keel and Jib
for
Chantiers Beneteau

Farr Yacht Design, Ltd.

PO Box 4964, Annapolis, MD 21403 USA
Tel: +1 410 267 0780, Fax: +1 410 268 0553
Email: info@farrdesign.com

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.

Course Times

This page shows the predicted boat performance over a series of 1.0 nautical mile courses in various windspeeds. Times around the course are expressed as seconds. The courses reflect five different course conditions:- LEEWARD, LINEAR RANDOM (LR), WINDWARD-LEEWARD (WL), WINDWARD and CIRCULAR-RANDOM (CR).

Times for 1 nm (secs)

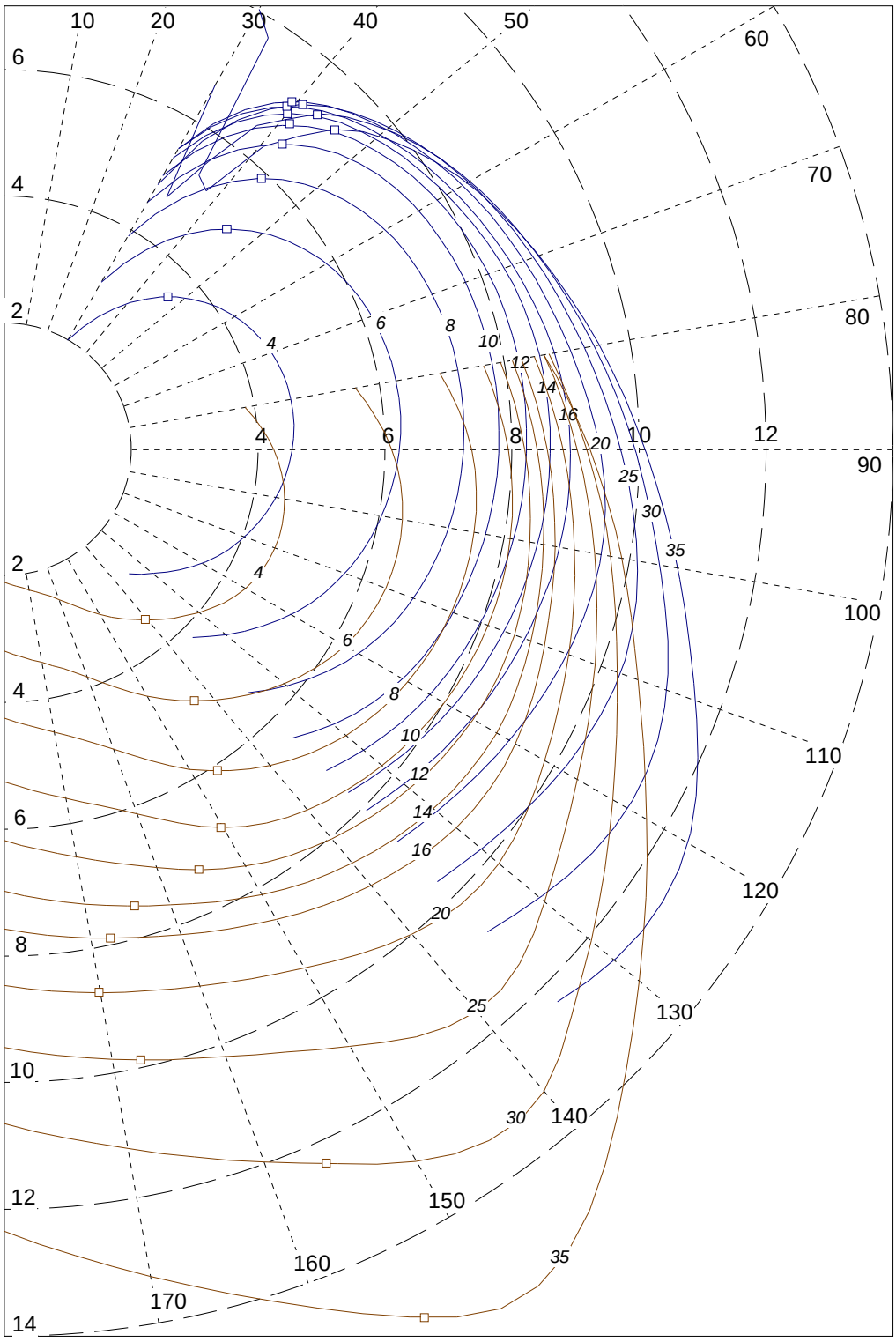
This page is similar to the Best Boatspeeds page in that it represents the boatspeeds for a series of true windspeeds and true wind angles. Boatspeeds are expressed as seconds/nautical mile. Shaded areas again depict the off optimum conditions. Optimum upwind and downwind values, in terms of VMG, are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

FARR YACHT DESIGN LTD
613 THIRD STREET SUITE 20 P. O. BOX 4964 ANNAPOLIS MD 21403 U.S.A.
T. 410 267 0780 F. 410 268 0553 info@farrdesign.com www.farrdesign.com

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 608 - First 40
For Chantiers Beneteau



Best Boatspeeds (kt)

	4	6	8	10	12	14	16	20	25	30	35
30.0	1.99	3.05	3.89	4.51	4.99	5.31	5.49	5.49	4.83	6.64	8.02
33.0	2.34	3.54	4.48	5.18	5.66	5.96	6.12	6.18	5.89	4.68	7.47
36.0	2.64	3.96	4.97	5.72	6.16	6.44	6.60	6.68	6.51	5.97	4.85
39.0	2.92	4.32	5.39	6.14	6.56	6.82	6.97	7.06	6.97	6.62	5.78
42.0	3.17	4.64	5.74	6.49	6.88	7.11	7.24	7.35	7.32	7.11	6.58
45.0	3.40	4.92	6.04	6.77	7.14	7.34	7.46	7.57	7.57	7.45	7.13
50.0	3.72	5.32	6.43	7.13	7.46	7.63	7.73	7.86	7.91	7.85	7.69
60.0	4.20	5.86	6.93	7.53	7.87	8.05	8.17	8.33	8.44	8.47	8.41
70.0	4.47	6.15	7.17	7.73	8.11	8.37	8.52	8.71	8.87	8.95	8.96
80.0	4.58	6.26	7.25	7.80	8.22	8.56	8.79	9.04	9.27	9.43	9.51
90.0	4.53	6.22	7.36	7.94	8.22	8.60	8.91	9.38	9.71	9.93	10.08
100.0	4.48	6.36	7.51	8.09	8.40	8.62	8.88	9.55	10.12	10.47	10.77
110.0	4.53	6.39	7.49	8.11	8.55	8.82	9.05	9.46	10.32	11.10	11.58
120.0	4.38	6.19	7.33	7.99	8.52	8.95	9.29	9.82	10.42	11.33	12.43
130.0	4.00	5.75	7.02	7.76	8.33	8.81	9.29	10.16	11.10	12.06	13.05
135.0	3.76	5.47	6.79	7.61	8.18	8.68	9.15	10.15	11.47	12.64	13.85
140.0	3.51	5.16	6.51	7.42	8.02	8.52	8.98	9.98	11.58	13.22	14.72
150.0	3.00	4.50	5.82	6.89	7.59	8.11	8.56	9.45	10.87	12.97	15.65
160.0	2.52	3.82	5.03	6.12	7.02	7.65	8.15	9.01	10.19	11.96	14.41
170.0	2.25	3.41	4.53	5.59	6.53	7.28	7.82	8.70	9.77	11.20	13.24
180.0	2.09	3.18	4.24	5.24	6.17	6.97	7.56	8.45	9.44	10.63	12.33
Up.Vs(kts)	3.53	4.94	5.89	6.51	6.82	6.93	7.01	7.12	7.19	7.23	7.25
Up.Vs(s/m)	1020.0	729.0	610.9	552.8	527.8	519.4	513.5	505.6	500.7	497.9	496.8
Up.Vs(s/L)	6.7	4.8	4.0	3.7	3.5	3.4	3.4	3.3	3.3	3.3	3.3
Up.Bt	46.9	45.2	43.5	42.2	41.2	40.1	39.5	39.6	40.8	43.0	45.9
Up.Vmg(kts)	2.41	3.48	4.28	4.82	5.13	5.30	5.41	5.49	5.44	5.29	5.04
Up.Vmg(s/m)	1493.7	1035.1	841.7	746.7	701.3	678.9	665.1	655.9	661.7	681.2	714.5
Up.Heel	2.5	5.5	9.4	14.9	18.8	20.9	22.5	23.3	23.9	24.2	24.7
Up.Reef	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.79	0.69	0.61
Up.Flat	1.00	1.00	1.00	1.00	0.89	0.77	0.67	0.64	0.67	0.73	0.80
Up.Va	6.91	10.10	12.90	15.36	17.53	19.55	21.52	25.39	30.08	34.63	38.99
Up.Ba	25.0	24.8	24.9	25.0	25.3	25.5	25.9	27.4	29.8	32.6	35.9
Up.Leewy	2.86	3.07	3.48	4.12	4.45	4.70	4.91	5.30	5.89	6.47	7.15
Dn.Vs(kts)	3.49	4.97	6.08	6.87	7.30	7.49	7.89	8.70	9.87	12.36	15.21
Dn.Vs(s/m)	1032.3	724.8	591.9	523.9	492.9	480.8	456.4	413.9	364.9	291.4	236.6
Dn.Vs(s/L)	6.8	4.8	3.9	3.5	3.3	3.2	3.0	2.7	2.4	1.9	1.6
Dn.Bt	140.4	142.9	146.5	150.2	155.2	164.1	167.8	170.1	167.4	155.8	154.2
Dn.Vmg(kts)	2.69	3.96	5.07	5.96	6.63	7.20	7.71	8.57	9.63	11.27	13.70
Dn.Vmg(s/m)	1340.2	908.3	710.2	603.5	542.9	500.0	467.0	420.2	373.8	319.5	262.8
Dn.Heel	0.7	1.2	1.6	1.7	1.4	1.0	1.0	1.3	3.0	10.1	16.6
Dn.Reef	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
Dn.Va	2.58	3.62	4.46	5.28	6.18	7.10	8.46	11.53	15.52	19.29	21.88
Dn.Ba	80.9	87.2	97.5	110.0	125.5	147.3	156.4	162.7	159.5	141.0	138.2
Dn.Leewy	0.63	0.56	0.47	0.38	0.29	0.19	0.17	0.18	0.28	0.49	0.37

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Course Times

	WL 1.00 nm.	LR 1.00 nm.	OCEAN 1.00 nm.	OLYMPIC 1.00 nm.	CR 1.00 nm.
4.0	1417.0	1003.4	0.0	1325.5	1057.0
6.0	971.7	704.5	0.0	913.3	736.3
8.0	776.0	581.2	0.0	736.1	601.9
10.0	675.1	522.3	0.0	648.9	537.0
12.0	622.1	489.9	0.0	603.7	502.7
14.0	589.4	468.5	0.0	576.8	481.0
16.0	566.0	452.3	0.0	557.5	465.4
20.0	538.0	428.0	0.0	533.6	443.9
25.0	517.8	402.9	0.0	517.7	425.3
30.0	500.3	377.9	0.0	510.9	411.2
35.0	488.6	353.0	0.0	512.3	403.0

Times for 1 nm (secs)

	4	6	8	10	12	14	16	20	25	30	35
30.0	1807.1	1181.5	924.4	798.6	721.1	677.9	655.7	656.0	745.0	541.9	448.6
33.0	1541.5	1017.5	803.0	694.9	635.9	604.4	587.8	582.6	611.6	769.7	481.8
36.0	1363.2	910.2	724.3	629.7	584.5	559.3	545.5	538.9	553.2	603.4	743.0
39.0	1233.3	833.7	668.0	586.3	548.8	528.1	516.8	509.6	516.2	543.5	623.1
42.0	1135.5	776.4	626.8	554.8	523.0	506.0	497.0	489.9	491.9	506.3	547.5
45.0	1059.8	731.8	596.3	531.7	504.1	490.3	482.8	475.8	475.3	483.2	505.0
50.0	967.2	677.3	560.0	504.9	482.7	472.0	465.6	458.1	455.3	458.3	468.0
60.0	857.7	614.2	519.4	477.8	457.2	447.4	440.8	432.0	426.4	425.2	427.9
70.0	804.5	585.1	502.1	466.0	443.6	429.9	422.8	413.1	405.9	402.4	401.9
80.0	785.8	574.8	496.4	461.6	437.9	420.8	409.5	398.0	388.2	381.8	378.6
90.0	794.2	578.9	489.4	453.6	437.9	418.8	403.9	383.8	370.9	362.4	357.0
100.0	803.8	565.8	479.4	445.0	428.5	417.7	405.5	377.1	355.7	343.7	334.3
110.0	793.9	563.3	480.4	444.1	421.2	408.0	397.9	380.7	348.8	324.3	310.9
120.0	821.3	581.7	490.9	450.5	422.5	402.4	387.4	366.6	345.5	317.7	289.7
130.0	900.4	626.1	513.1	463.9	432.4	408.5	387.6	354.3	324.3	298.5	275.8
135.0	958.3	658.4	530.4	473.3	439.9	414.7	393.2	354.5	313.8	284.9	259.9
140.0	1026.7	698.1	553.1	485.2	449.1	422.5	400.9	360.6	311.0	272.3	244.5
150.0	1199.0	800.9	618.1	522.7	474.3	444.0	420.5	381.0	331.1	277.6	230.0
160.0	1429.1	943.2	715.8	588.2	512.9	470.8	442.0	399.8	353.1	301.0	249.8
170.0	1601.5	1055.4	794.6	644.5	551.6	494.5	460.1	413.8	368.5	321.4	271.8
180.0	1720.2	1132.8	850.0	686.8	583.7	516.7	476.0	425.9	381.5	338.6	291.9
Up	1493.7	1035.1	841.7	746.7	701.3	678.9	665.1	655.9	661.7	681.2	714.5
Dn	1340.2	908.3	710.2	603.5	542.9	500.0	467.0	420.2	373.8	319.5	262.8

Equivalent ILC Average (using IMS formula): 657.99

Best Performance

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	4.0	30.0	1.992	1.725	1.7	1.000	1.000	5.81	20.1	5.96	Up	60el
	4.0	33.0	2.335	1.959	1.9	1.000	1.000	6.09	20.9	4.85	Up	60el
	4.0	36.0	2.641	2.136	2.0	1.000	1.000	6.33	21.8	4.15	Up	60el
	4.0	39.0	2.919	2.268	2.2	1.000	1.000	6.53	22.7	3.66	Up	60el
	4.0	42.0	3.170	2.356	2.3	1.000	1.000	6.70	23.5	3.30	Up	60el
	4.0	45.0	3.397	2.402	2.4	1.000	1.000	6.84	24.4	3.01	Up	60el
OptUp >	***4.0***	***46.9***	***3.529***	***2.410***	***2.5***	***1.000***	***1.000***	***6.91***	***25.0***	***2.86***	***Up***	***60el***
	4.0	50.0	3.722	2.392	2.6	1.000	1.000	7.00	25.9	2.65	Up	60el
	4.0	60.0	4.197	2.099	2.7	1.000	1.000	7.10	29.2	2.15	Up	60el
	4.0	70.0	4.475	1.530	2.6	1.000	1.000	6.95	32.7	1.80	Up	60el
	4.0	80.0	4.581	0.796	2.3	1.000	1.000	6.58	36.7	1.51	Up	60el
	4.0	90.0	4.533	-0.000	1.8	1.000	1.000	6.04	41.4	1.27	Up	60el
	4.0	100.0	4.478	-0.778	2.5	1.000	1.000	5.46	46.1	1.46	Dn	60el
	4.0	110.0	4.535	-1.551	2.3	1.000	1.000	4.91	49.9	1.29	Dn	60el
	4.0	120.0	4.383	-2.192	1.9	1.000	1.000	4.20	55.5	1.10	Dn	60el
	4.0	130.0	3.998	-2.570	1.2	1.000	1.000	3.38	65.0	0.89	Dn	60el
	4.0	135.0	3.757	-2.656	0.9	1.000	1.000	2.98	71.8	0.76	Dn	60el
	4.0	140.0	3.506	-2.686	0.7	1.000	1.000	2.61	80.2	0.64	Dn	60el
OptDn >	***4.0***	***140.4***	***3.487***	***2.686***	***0.7***	***1.000***	***1.000***	***2.58***	***80.9***	***0.63***	***Dn***	***60el***
	4.0	150.0	3.002	-2.600	0.3	1.000	1.000	2.05	103.0	0.39	Dn	60el
	4.0	160.0	2.519	-2.367	0.1	1.000	1.000	1.85	132.2	0.20	Dn	60el
	4.0	170.0	2.248	-2.214	0.0	1.000	1.000	1.83	157.7	0.10	Dn	60el
	4.0	180.0	2.093	-2.093	0.0	1.000	1.000	1.91	180.0	-0.00	Dn	60el
	6.0	30.0	3.047	2.639	3.8	1.000	1.000	8.77	20.0	5.79	Up	60el
	6.0	33.0	3.538	2.967	4.3	1.000	1.000	9.17	20.8	4.76	Up	60el
	6.0	36.0	3.955	3.200	4.6	1.000	1.000	9.48	21.8	4.13	Up	60el
	6.0	39.0	4.318	3.356	5.0	1.000	1.000	9.74	22.7	3.69	Up	60el
	6.0	42.0	4.637	3.446	5.2	1.000	1.000	9.94	23.7	3.35	Up	60el
	6.0	45.0	4.919	3.478	5.5	1.000	1.000	10.09	24.7	3.08	Up	60el
OptUp >	***6.0***	***45.2***	***4.939***	***3.478***	***5.5***	***1.000***	***1.000***	***10.10***	***24.8***	***3.07***	***Up***	***60el***
	6.0	50.0	5.315	3.417	5.7	1.000	1.000	10.25	26.5	2.73	Up	60el
	6.0	60.0	5.861	2.931	5.7	1.000	1.000	10.26	30.3	2.23	Up	60el
	6.0	70.0	6.153	2.105	5.3	1.000	1.000	9.94	34.4	1.86	Up	60el
	6.0	80.0	6.263	1.088	4.6	1.000	1.000	9.38	38.9	1.56	Up	60el
	6.0	90.0	6.218	-0.000	3.7	1.000	1.000	8.63	43.9	1.30	Up	60el
	6.0	100.0	6.363	-1.105	5.9	1.000	1.000	7.93	47.8	1.56	Dn	60el
	6.0	110.0	6.391	-2.186	5.2	1.000	1.000	7.10	52.3	1.37	Dn	60el
	6.0	120.0	6.189	-3.095	4.0	1.000	1.000	6.09	58.4	1.14	Dn	60el
	6.0	130.0	5.749	-3.696	2.7	1.000	1.000	4.97	67.6	0.89	Dn	60el
	6.0	135.0	5.468	-3.866	2.0	1.000	1.000	4.41	73.9	0.76	Dn	60el
	6.0	140.0	5.157	-3.951	1.5	1.000	1.000	3.90	81.7	0.63	Dn	60el
OptDn >	***6.0***	***142.9***	***4.967***	***3.963***	***1.2***	***1.000***	***1.000***	***3.62***	***87.2***	***0.56***	***Dn***	***60el***
	6.0	150.0	4.495	-3.893	0.7	1.000	1.000	3.08	103.2	0.38	Dn	60el
	6.0	160.0	3.817	-3.587	0.2	1.000	1.000	2.74	131.6	0.19	Dn	60el
	6.0	170.0	3.411	-3.359	0.1	1.000	1.000	2.71	157.4	0.10	Dn	60el
	6.0	180.0	3.178	-3.178	0.0	1.000	1.000	2.82	180.0	-0.00	Dn	60el

Best Performance (cont)

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	8.0	30.0	3.895	3.373	6.8	1.000	1.000	11.53	20.2	6.14	Up	60el
	8.0	33.0	4.483	3.760	7.6	1.000	1.000	12.00	21.1	5.09	Up	60el
	8.0	36.0	4.970	4.021	8.2	1.000	1.000	12.35	22.1	4.44	Up	60el
	8.0	39.0	5.389	4.188	8.8	1.000	1.000	12.63	23.2	3.97	Up	60el
	8.0	42.0	5.743	4.268	9.2	1.000	1.000	12.83	24.3	3.62	Up	60el
OptUp >	***8.0***	***43.5***	***5.893***	***4.277***	***9.4***	***1.000***	***1.000***	***12.90***	***24.9***	***3.48***	***Up***	***60el***
	8.0	45.0	6.037	4.269	9.5	1.000	1.000	12.96	25.5	3.35	Up	60el
	8.0	50.0	6.429	4.132	9.7	1.000	1.000	13.05	27.6	2.99	Up	60el
	8.0	60.0	6.931	3.465	9.4	1.000	1.000	12.89	32.0	2.45	Up	60el
	8.0	70.0	7.170	2.452	8.3	1.000	1.000	12.39	36.9	2.04	Up	60el
	8.0	80.0	7.253	1.259	7.0	1.000	1.000	11.66	42.1	1.69	Up	60el
	8.0	90.0	7.356	-0.000	11.5	1.000	1.000	10.75	46.8	2.08	Dn	60el
	8.0	100.0	7.509	-1.304	10.8	1.000	1.000	9.87	51.7	1.87	Dn	60el
	8.0	110.0	7.493	-2.563	8.9	1.000	1.000	8.82	57.4	1.57	Dn	60el
	8.0	120.0	7.333	-3.667	6.5	1.000	1.000	7.65	64.2	1.24	Dn	60el
	8.0	130.0	7.016	-4.510	4.3	1.000	1.000	6.39	73.0	0.92	Dn	60el
	8.0	135.0	6.788	-4.800	3.4	1.000	1.000	5.76	78.7	0.78	Dn	60el
	8.0	140.0	6.509	-4.986	2.5	1.000	1.000	5.15	85.8	0.64	Dn	60el
OptDn >	***8.0***	***146.5***	***6.082***	***5.069***	***1.6***	***1.000***	***1.000***	***4.46***	***97.5***	***0.47***	***Dn***	***60el***
	8.0	150.0	5.824	-5.044	1.2	1.000	1.000	4.15	105.4	0.38	Dn	60el
	8.0	160.0	5.029	-4.726	0.0	1.000	1.000	3.70	132.3	0.19	Dn	60el
	8.0	170.0	4.531	-4.462	0.0	1.000	1.000	3.62	157.5	0.10	Dn	60el
	8.0	180.0	4.235	-4.235	0.0	1.000	1.000	3.76	180.0	-0.00	Dn	60el
	10.0	30.0	4.508	3.904	10.1	1.000	0.950	14.06	20.5	6.55	Up	60el
	10.0	33.0	5.180	4.345	12.1	1.000	0.996	14.57	21.4	5.70	Up	60el
	10.0	36.0	5.717	4.625	13.3	1.000	1.000	14.95	22.5	5.00	Up	60el
	10.0	39.0	6.140	4.772	14.2	1.000	1.000	15.19	23.7	4.51	Up	60el
	10.0	42.0	6.488	4.822	14.9	1.000	1.000	15.35	24.9	4.14	Up	60el
OptUp >	***10.0***	***42.2***	***6.512***	***4.821***	***14.9***	***1.000***	***1.000***	***15.36***	***25.0***	***4.12***	***Up***	***60el***
	10.0	45.0	6.771	4.788	15.3	1.000	1.000	15.43	26.2	3.85	Up	60el
	10.0	50.0	7.130	4.583	15.4	1.000	1.000	15.44	28.6	3.45	Up	60el
	10.0	60.0	7.534	3.767	13.9	1.000	1.000	15.09	33.8	2.83	Up	60el
	10.0	70.0	7.725	2.642	11.7	1.000	1.000	14.45	39.5	2.33	Up	60el
	10.0	80.0	7.799	1.354	9.5	1.000	1.000	13.61	45.5	1.91	Up	60el
	10.0	90.0	7.936	-0.000	20.2	1.000	1.000	12.29	49.8	2.72	Dn	60el
	10.0	100.0	8.090	-1.405	17.7	1.000	1.000	11.33	55.9	2.32	Dn	60el
	10.0	110.0	8.107	-2.773	13.3	1.000	1.000	10.28	62.9	1.85	Dn	60el
	10.0	120.0	7.991	-3.996	9.3	1.000	1.000	9.05	70.7	1.41	Dn	60el
	10.0	130.0	7.760	-4.988	6.1	1.000	1.000	7.73	80.1	1.02	Dn	60el
	10.0	135.0	7.606	-5.378	4.8	1.000	1.000	7.07	85.7	0.84	Dn	60el
	10.0	140.0	7.420	-5.684	3.6	1.000	1.000	6.42	92.1	0.68	Dn	60el
	10.0	150.0	6.887	-5.965	1.7	1.000	1.000	5.30	109.5	0.39	Dn	60el
OptDn >	***10.0***	***150.2***	***6.872***	***5.965***	***1.7***	***1.000***	***1.000***	***5.28***	***110.0***	***0.38***	***Dn***	***60el***
	10.0	160.0	6.121	-5.752	0.0	1.000	1.000	4.74	133.8	0.20	Dn	60el
	10.0	170.0	5.586	-5.501	0.0	1.000	1.000	4.60	157.8	0.10	Dn	60el
	10.0	180.0	5.241	-5.241	0.0	1.000	1.000	4.76	180.0	-0.00	Dn	60el

Best Performance (cont)

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	12.0	30.0	4.993	4.324	13.4	1.000	0.859	16.45	20.8	6.71	Up	60el
	12.0	33.0	5.661	4.748	15.3	1.000	0.868	16.94	21.8	5.70	Up	60el
	12.0	36.0	6.159	4.983	16.8	1.000	0.875	17.24	23.0	5.11	Up	60el
	12.0	39.0	6.560	5.098	18.0	1.000	0.882	17.43	24.3	4.70	Up	60el
OptUp >	***12.0***	***41.2***	***6.821***	***5.134***	***18.8***	***1.000***	***0.889***	***17.53***	***25.3***	***4.45***	***Up***	***60el***
	12.0	42.0	6.883	5.115	19.1	1.000	0.896	17.53	25.7	4.42	Up	60el
	12.0	45.0	7.141	5.050	19.9	1.000	0.914	17.55	27.0	4.22	Up	60el
	12.0	50.0	7.458	4.794	21.0	1.000	0.954	17.43	29.5	4.01	Up	60el
	12.0	60.0	7.874	3.937	20.1	1.000	1.000	16.96	35.1	3.41	Up	60el
	12.0	70.0	8.115	2.775	16.4	1.000	1.000	16.32	41.5	2.71	Up	60el
	12.0	80.0	8.222	1.428	12.7	1.000	1.000	15.46	48.2	2.17	Up	60el
	12.0	90.0	8.222	-0.000	9.6	1.000	1.000	14.41	55.2	1.73	Up	60el
	12.0	100.0	8.402	-1.459	23.3	0.973	1.000	12.56	59.8	2.74	Dn	60el
	12.0	110.0	8.546	-2.923	19.4	1.000	1.000	11.53	67.3	2.19	Dn	60el
	12.0	120.0	8.521	-4.260	12.9	1.000	1.000	10.44	76.0	1.60	Dn	60el
	12.0	130.0	8.326	-5.352	8.2	1.000	1.000	9.12	86.1	1.14	Dn	60el
	12.0	135.0	8.185	-5.787	6.3	1.000	1.000	8.44	92.0	0.93	Dn	60el
	12.0	140.0	8.016	-6.141	4.7	1.000	1.000	7.78	98.7	0.74	Dn	60el
	12.0	150.0	7.590	-6.573	2.3	1.000	1.000	6.62	115.1	0.42	Dn	60el
OptDn >	***12.0***	***155.2***	***7.304***	***6.632***	***1.4***	***1.000***	***1.000***	***6.18***	***125.5***	***0.29***	***Dn***	***60el***
	12.0	160.0	7.019	-6.595	1.0	1.000	1.000	5.91	136.1	0.22	Dn	60el
	12.0	170.0	6.526	-6.427	0.0	1.000	1.000	5.69	158.5	0.10	Dn	60el
	12.0	180.0	6.168	-6.168	0.0	1.000	1.000	5.83	180.0	-0.00	Dn	60el
	14.0	30.0	5.311	4.599	16.1	1.000	0.748	18.69	21.1	6.78	Up	60el
	14.0	33.0	5.957	4.996	18.0	1.000	0.752	19.13	22.3	5.79	Up	60el
	14.0	36.0	6.437	5.207	19.4	1.000	0.756	19.38	23.6	5.21	Up	60el
	14.0	39.0	6.817	5.297	20.4	1.000	0.762	19.53	25.0	4.80	Up	60el
OptUp >	***14.0***	***40.1***	***6.931***	***5.303***	***20.9***	***1.000***	***0.767***	***19.55***	***25.5***	***4.70***	***Up***	***60el***
	14.0	42.0	7.115	5.287	21.4	1.000	0.775	19.57	26.5	4.54	Up	60el
	14.0	45.0	7.343	5.192	22.1	1.000	0.791	19.53	28.0	4.35	Up	60el
	14.0	50.0	7.628	4.903	23.0	1.000	0.827	19.34	30.7	4.12	Up	60el
	14.0	60.0	8.046	4.023	23.9	1.000	0.924	18.69	36.4	3.79	Up	60el
	14.0	70.0	8.374	2.864	22.2	1.000	1.000	17.94	42.8	3.23	Up	60el
	14.0	80.0	8.556	1.486	17.0	1.000	1.000	17.16	50.2	2.48	Up	60el
	14.0	90.0	8.596	-0.000	12.3	1.000	1.000	16.15	57.8	1.93	Up	60el
	14.0	100.0	8.619	-1.497	23.6	0.898	1.000	14.07	63.9	2.79	Dn	60el
	14.0	110.0	8.824	-3.018	24.0	0.976	1.000	12.68	71.4	2.50	Dn	60el
	14.0	120.0	8.947	-4.474	17.9	1.000	1.000	11.70	80.4	1.84	Dn	60el
	14.0	130.0	8.814	-5.665	10.7	1.000	1.000	10.54	91.0	1.27	Dn	60el
	14.0	135.0	8.681	-6.139	8.1	1.000	1.000	9.88	97.1	1.03	Dn	60el
	14.0	140.0	8.521	-6.527	6.0	1.000	1.000	9.22	103.8	0.82	Dn	60el
	14.0	150.0	8.109	-7.022	2.9	1.000	1.000	8.06	119.9	0.46	Dn	60el
	14.0	160.0	7.646	-7.185	1.4	1.000	1.000	7.30	139.0	0.25	Dn	60el
OptDn >	***14.0***	***164.1***	***7.487***	***7.200***	***1.0***	***1.000***	***1.000***	***7.10***	***147.3***	***0.19***	***Dn***	***60el***
	14.0	170.0	7.280	-7.169	0.0	1.000	1.000	6.95	159.5	0.12	Dn	60el
	14.0	180.0	6.968	-6.968	0.0	1.000	1.000	7.03	180.0	-0.00	Dn	60el

Best Performance (cont)

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	16.0	30.0	5.490	4.755	18.3	1.000	0.655	20.78	21.4	7.01	Up	60el
	16.0	33.0	6.125	5.137	20.0	1.000	0.653	21.19	22.7	5.96	Up	60el
	16.0	36.0	6.599	5.339	21.3	1.000	0.657	21.42	24.1	5.35	Up	60el
	16.0	39.0	6.966	5.413	22.4	1.000	0.664	21.52	25.6	4.95	Up	60el
OptUp >	***16.0***	***39.5***	***7.011***	***5.413***	***22.5***	***1.000***	***0.666***	***21.52***	***25.9***	***4.91***	***Up***	***60el***
	16.0	42.0	7.243	5.383	23.1	1.000	0.675	21.52	27.2	4.68	Up	60el
	16.0	45.0	7.456	5.272	23.5	0.988	0.708	21.44	28.9	4.49	Up	60el
	16.0	50.0	7.732	4.970	23.7	0.956	0.797	21.23	31.9	4.27	Up	60el
	16.0	60.0	8.166	4.083	23.7	0.915	0.982	20.55	38.1	3.90	Up	60el
	16.0	70.0	8.515	2.912	24.2	0.960	1.000	19.59	44.4	3.48	Up	60el
	16.0	80.0	8.790	1.526	22.0	1.000	1.000	18.64	51.6	2.89	Up	60el
	16.0	90.0	8.914	-0.000	15.9	1.000	1.000	17.79	59.9	2.15	Up	60el
	16.0	100.0	8.877	-1.541	10.9	1.000	1.000	16.63	68.5	1.63	Up	60el
	16.0	110.0	9.047	-3.094	24.3	0.910	1.000	14.16	75.4	2.53	Dn	60el
	16.0	120.0	9.293	-4.646	23.6	1.000	1.000	12.76	84.2	2.13	Dn	60el
	16.0	130.0	9.287	-5.969	14.0	1.000	1.000	11.94	94.8	1.39	Dn	60el
	16.0	135.0	9.155	-6.473	10.3	1.000	1.000	11.34	101.0	1.13	Dn	60el
	16.0	140.0	8.979	-6.879	7.5	1.000	1.000	10.71	107.8	0.89	Dn	60el
	16.0	150.0	8.562	-7.415	3.7	1.000	1.000	9.58	123.6	0.51	Dn	60el
	16.0	160.0	8.145	-7.654	1.9	1.000	1.000	8.80	141.6	0.29	Dn	60el
OptDn >	***16.0***	***167.8***	***7.888***	***7.710***	***1.0***	***1.000***	***1.000***	***8.46***	***156.4***	***0.17***	***Dn***	***60el***
	16.0	170.0	7.824	-7.705	0.0	1.000	1.000	8.41	160.7	0.14	Dn	60el
	16.0	180.0	7.563	-7.563	0.0	1.000	1.000	8.44	180.0	-0.00	Dn	60el
	20.0	30.0	5.488	4.752	20.9	1.000	0.504	24.65	22.3	7.88	Up	60el
	20.0	33.0	6.180	5.183	22.2	0.967	0.544	25.07	23.7	6.58	Up	60el
	20.0	36.0	6.681	5.405	22.8	0.937	0.586	25.30	25.4	5.84	Up	60el
	20.0	39.0	7.064	5.490	23.2	0.911	0.632	25.39	27.1	5.36	Up	60el
OptUp >	***20.0***	***39.6***	***7.120***	***5.489***	***23.3***	***0.909***	***0.637***	***25.39***	***27.4***	***5.30***	***Up***	***60el***
	20.0	42.0	7.349	5.461	23.9	0.897	0.670	25.36	28.9	5.08	Up	60el
	20.0	45.0	7.567	5.350	24.0	0.875	0.726	25.26	30.8	4.87	Up	60el
	20.0	50.0	7.859	5.051	24.1	0.843	0.826	25.00	34.0	4.60	Up	60el
	20.0	60.0	8.334	4.167	24.1	0.814	1.000	24.21	40.8	4.14	Up	60el
	20.0	70.0	8.714	2.980	24.6	0.862	1.000	23.11	47.7	3.66	Up	60el
	20.0	80.0	9.044	1.571	24.8	0.923	1.000	21.83	55.0	3.22	Up	60el
	20.0	90.0	9.381	-0.000	24.5	1.000	1.000	20.47	62.7	2.76	Up	60el
	20.0	100.0	9.546	-1.658	16.9	1.000	1.000	19.80	72.1	1.93	Up	60el
	20.0	110.0	9.457	-3.234	25.1	0.803	1.000	17.23	81.3	2.60	Dn	60el
	20.0	120.0	9.820	-4.910	25.9	0.902	1.000	15.58	90.7	2.23	Dn	60el
	20.0	130.0	10.162	-6.532	22.9	1.000	1.000	14.37	100.8	1.66	Dn	60el
	20.0	135.0	10.155	-7.181	16.7	1.000	1.000	14.12	106.4	1.28	Dn	60el
	20.0	140.0	9.982	-7.647	11.5	1.000	1.000	13.68	113.0	1.00	Dn	60el
	20.0	150.0	9.449	-8.183	5.7	1.000	1.000	12.69	128.3	0.61	Dn	60el
	20.0	160.0	9.005	-8.462	3.2	1.000	1.000	11.94	145.1	0.38	Dn	60el
	20.0	170.0	8.700	-8.567	0.0	1.000	1.000	11.53	162.5	0.18	Dn	60el
OptDn >	***20.0***	***170.1***	***8.698***	***8.568***	***1.3***	***1.000***	***1.000***	***11.53***	***162.7***	***0.18***	***Dn***	***60el***
	20.0	180.0	8.453	-8.453	0.0	1.000	1.000	11.55	180.0	-0.00	Dn	60el

Best Performance (cont)

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	25.0	30.0	4.832	4.185	20.6	0.907	0.470	28.95	23.8	11.01	Up	60el
	25.0	33.0	5.886	4.937	22.7	0.875	0.517	29.65	25.1	8.10	Up	60el
	25.0	36.0	6.507	5.264	23.2	0.838	0.572	29.95	26.8	6.86	Up	60el
	25.0	39.0	6.974	5.420	23.8	0.809	0.630	30.07	28.6	6.18	Up	60el
OptUp >	***25.0***	***40.8***	***7.190***	***5.441***	***23.9***	***0.793***	***0.667***	***30.08***	***29.8***	***5.89***	***Up***	***60el***
	25.0	42.0	7.319	5.439	24.0	0.784	0.691	30.07	30.5	5.72	Up	60el
	25.0	45.0	7.574	5.355	24.2	0.762	0.754	29.96	32.6	5.43	Up	60el
	25.0	50.0	7.908	5.083	24.3	0.734	0.862	29.66	36.1	5.08	Up	60el
	25.0	60.0	8.443	4.222	24.6	0.721	1.000	28.74	43.2	4.48	Up	60el
	25.0	70.0	8.869	3.033	25.1	0.764	1.000	27.50	50.7	3.92	Up	60el
	25.0	80.0	9.273	1.610	25.3	0.821	1.000	26.09	58.5	3.41	Up	60el
	25.0	90.0	9.706	-0.000	25.8	0.899	1.000	24.51	66.7	2.93	Up	60el
	25.0	100.0	10.121	-1.758	26.2	0.998	1.000	22.84	75.3	2.48	Up	60el
	25.0	110.0	10.322	-3.530	17.9	1.000	1.000	22.42	85.5	1.69	Up	60el
	25.0	120.0	10.420	-5.210	27.2	0.795	1.000	19.37	96.2	2.24	Dn	60el
	25.0	130.0	11.099	-7.134	28.7	0.934	1.000	17.51	106.5	1.75	Dn	60el
	25.0	135.0	11.472	-8.112	27.1	0.999	1.000	16.92	111.5	1.41	Dn	60el
	25.0	140.0	11.575	-8.867	19.6	1.000	1.000	16.93	116.6	1.02	Dn	60el
	25.0	150.0	10.873	-9.416	9.4	1.000	1.000	16.38	131.2	0.67	Dn	60el
	25.0	160.0	10.194	-9.579	5.3	1.000	1.000	15.79	147.4	0.46	Dn	60el
OptDn >	***25.0***	***167.4***	***9.867***	***9.630***	***3.0***	***1.000***	***1.000***	***15.52***	***159.5***	***0.28***	***Dn***	***60el***
	25.0	170.0	9.769	-9.621	0.0	1.000	1.000	15.47	163.7	0.22	Dn	60el
	25.0	180.0	9.437	-9.437	0.0	1.000	1.000	15.56	180.0	-0.00	Dn	60el
	30.0	30.0	6.643	5.753	35.0	0.976	0.984	34.86	20.6	0.51	Up	60el
	30.0	33.0	4.677	3.923	21.2	0.798	0.498	33.50	27.0	13.35	Up	60el
	30.0	36.0	5.966	4.827	23.3	0.756	0.575	34.30	28.2	8.99	Up	60el
	30.0	39.0	6.623	5.147	23.8	0.725	0.637	34.57	30.0	7.51	Up	60el
	30.0	42.0	7.110	5.284	24.1	0.700	0.702	34.65	31.9	6.65	Up	60el
OptUp >	***30.0***	***43.0***	***7.231***	***5.285***	***24.2***	***0.692***	***0.725***	***34.63***	***32.6***	***6.47***	***Up***	***60el***
	30.0	45.0	7.451	5.269	24.5	0.680	0.770	34.56	34.0	6.20	Up	60el
	30.0	50.0	7.855	5.049	24.6	0.655	0.876	34.25	37.6	5.67	Up	60el
	30.0	60.0	8.467	4.233	25.1	0.648	1.000	33.22	45.1	4.91	Up	60el
	30.0	70.0	8.947	3.060	25.7	0.687	1.000	31.85	52.9	4.26	Up	60el
	30.0	80.0	9.428	1.637	26.1	0.740	1.000	30.31	61.1	3.66	Up	60el
	30.0	90.0	9.934	-0.000	26.7	0.812	1.000	28.59	69.7	3.11	Up	60el
	30.0	100.0	10.473	-1.819	27.2	0.904	1.000	26.79	78.7	2.59	Up	60el
	30.0	110.0	11.101	-3.797	26.5	0.999	1.000	25.23	88.1	2.01	Up	60el
	30.0	120.0	11.332	-5.666	18.2	1.000	1.000	24.95	98.5	1.34	Up	60el
	30.0	130.0	12.060	-7.752	30.5	0.846	1.000	21.08	110.0	1.61	Dn	60el
	30.0	135.0	12.636	-8.935	31.5	0.935	1.000	20.02	115.4	1.34	Dn	60el
	30.0	140.0	13.220	-10.127	29.1	0.999	1.000	19.47	120.1	1.00	Dn	60el
	30.0	150.0	12.969	-11.232	14.8	1.000	1.000	19.49	131.9	0.58	Dn	60el
OptDn >	***30.0***	***155.8***	***12.356***	***11.266***	***10.1***	***1.000***	***1.000***	***19.29***	***141.0***	***0.49***	***Dn***	***60el***
	30.0	160.0	11.962	-11.240	7.9	1.000	1.000	19.15	147.9	0.42	Dn	60el
	30.0	170.0	11.202	-11.031	0.0	1.000	1.000	19.07	164.1	0.23	Dn	60el
	30.0	180.0	10.632	-10.632	0.0	1.000	1.000	19.37	180.0	-0.00	Dn	60el

Best Performance (cont)

	TWS	TWA	V	VMG	Heel	Reef	Flat	AWS	AWA	Lee	Sail	Flot
	35.0	30.0	8.025	6.950	35.0	0.999	0.998	40.93	20.5	0.45	Up	60el
	35.0	33.0	7.472	6.266	35.0	0.993	0.997	40.00	23.0	0.62	Up	60el
	35.0	36.0	4.845	3.920	18.6	0.500	0.782	38.47	30.5	10.43	Up	60el
	35.0	39.0	5.778	4.490	23.4	0.662	0.639	38.68	31.5	10.66	Up	60el
	35.0	42.0	6.576	4.887	24.2	0.637	0.707	38.96	33.2	8.50	Up	60el
	35.0	45.0	7.128	5.040	24.6	0.617	0.774	39.02	35.2	7.36	Up	60el
OptUp >	***35.0***	***45.9***	***7.247***	***5.039***	***24.7***	***0.612***	***0.795***	***38.99***	***35.9***	***7.15***	***Up***	***60el***
	35.0	50.0	7.692	4.945	24.9	0.594	0.878	38.76	38.8	6.42	Up	60el
	35.0	60.0	8.413	4.206	25.7	0.588	1.000	37.65	46.5	5.43	Up	60el
	35.0	70.0	8.956	3.063	26.4	0.624	1.000	36.14	54.6	4.68	Up	60el
	35.0	80.0	9.509	1.651	27.0	0.674	1.000	34.45	63.1	3.98	Up	60el
	35.0	90.0	10.084	-0.000	27.7	0.741	1.000	32.59	72.0	3.36	Up	60el
	35.0	100.0	10.768	-1.870	28.4	0.825	1.000	30.67	81.2	2.73	Up	60el
	35.0	110.0	11.579	-3.960	28.9	0.924	1.000	28.80	90.8	2.11	Up	60el
	35.0	120.0	12.428	-6.214	26.1	1.000	1.000	27.69	100.6	1.43	Up	60el
	35.0	130.0	13.051	-8.389	32.1	0.775	1.000	24.59	112.6	1.46	Dn	60el
	35.0	135.0	13.851	-9.794	33.2	0.857	1.000	23.41	117.7	1.16	Dn	60el
	35.0	140.0	14.723	-11.278	34.1	0.953	1.000	22.20	123.0	0.89	Dn	60el
	35.0	150.0	15.652	-13.555	22.1	1.000	1.000	21.86	132.1	0.43	Dn	60el
OptDn >	***35.0***	***154.2***	***15.213***	***13.697***	***16.6***	***1.000***	***1.000***	***21.88***	***138.2***	***0.37***	***Dn***	***60el***
	35.0	160.0	14.413	-13.544	11.0	1.000	1.000	21.90	147.5	0.32	Dn	60el
	35.0	170.0	13.245	-13.044	4.6	1.000	1.000	22.07	164.1	0.18	Dn	60el
	35.0	180.0	12.332	-12.332	0.0	1.000	1.000	22.67	180.0	-0.00	Dn	60el