ORR-Ez Performance Pack

ORR-Ez – May 2022

Your ORR – Ez Performance Pack includes:

1. This introduction with notes and instruction.

2. Your ORR-Ez Polars with the numbers for YOUR Boat - which include 6 Printable Tables for your bulkhead along with downloadable polar files compatible with "Expedition" tactical navigation software.

Table 1 - Polar Tables.
Table 2 - A VPP Handy Guide (Spinnaker)
Table 3 - A VPP Handy Guide (Non Spinnaker)
Table 4 - An Upwind Only Quick Glance Table.
Table 5 - A Downwind Only (Spinnaker) Quick Glance Table.
Table 6 - A Downwind Only (Non Spinnaker) Quick Glance Table.

Some notes on how some successful racers use their polars.

Sailmaker Dave Ullman using his "Targets" to win the 2007 Melges 24 Worlds:

"I'm a huge believer in sailing by the speedo and following my target numbers. Without the speedo you're going to sail around three- or four-tenths too slow all the time. Our target range is 5.8 to 6.0, so let's say I'm sailing along and my target at the moment is 5.8.

If I'm sailing at 5.4, all I do is let the sheet out 2 inches and within 10 seconds I'll be sailing at 5.8 again. You couldn't possibly do that without a speedo.

The key is that you want to go as high as you can while keeping to that target range.

Your targets will tell you - the best speed and point of sail - for the best VMG. (VMG: Velocity (speed) made good. (To the next turning mark on your course).

Races are lost in your extra time on the race course. The extra time ads up when you are sailing LESS THAN your optimal VMG. That's the whole point in having access to, and using your polars correctly.

The first place to start using targets successfully is making sure your speedo is correctly calibrated! Then the strategy is: trim, steer and match the sail plan to what best suits your boat for the conditions.

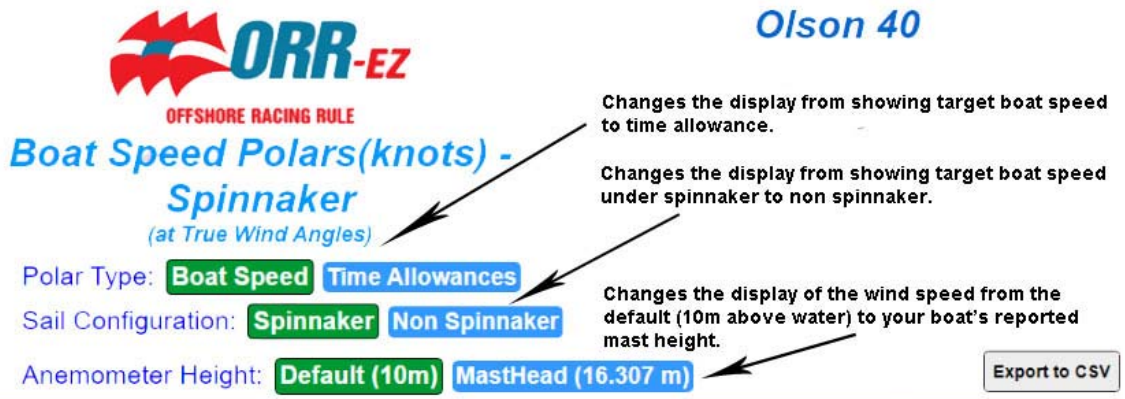
From Ed Tracey, co-owner & skipper of *Incommunicado, Best Boat Overall in the Chesapeake 2015:*

One of the crew's first pre-race tasks is to tape the laminated Target Sheets to the cockpit bulkheads.

"Targets are such a huge help to our program. We try to get the boat dialed in to whatever the number is on the target boat speed chart. If we don't get *Incommunicado* to targets quickly, we know something is wrong and we run through the protocols quickly, pre-race, to set car positions, halyard tension, etc. Then when the starting gun goes off, we race with confidence when the numbers match the speedo."

Polar Tables: Introduction and Instruction.

The instructional mock-up's numbers are for a – pretend - boat. Not yours.



True Wind Speed	4 kts	6 kts	8 kts	10 kts	12 kts	16 kts	20 kts	24 kts
Opt Beat Angle	45.8°	45.0°	44.0°	40.9°	38.5°	35.9°	35.0°	35.1°
Optimum Beat	3.90	5.32	6.38	6.81	7.01	7.22	7.31	7.39
52°	4.29	5.86	7.04	7.55	7.82	8.10	8.24	8.30
60°	4.74	6.33	7.40	7.84	8.09	8.36	8.51	8.57
75°	5.23	6.82	7.73	8.19	8.45	8.78	8.96	9.06
90°	5.29	6.89	7.79	8.36	8.72	9.13	9.37	9.54
110°	4.81	6.46	7.59	8.26	8.79	9.46	9.92	10.27
120°	4.41	6.04	7.29	8.00	8.56	9.58	10.27	10.78
135°	3.37	4.90	6.33	7.34	7.98	9.06	10.27	11.80
150°	2.66	3.94	5.17	6.34	7.28	8.46	9.51	10.88
165°	2.25	3.37	4.48	5.54	6.55	7.95	8.95	10.02
180°	2.07	3.12	4.16	5.17	6.13	7.63	8.64	9.61
Optimum Run	3.33	4.65	5.74	6.54	6.92	7.82	8.78	9.87
Opt Run Angle	135.4°	138.3°	141.9°	147.2°	157.3°	170.0°	171.9°	169.0°

The Quick Glance Upwind.

Olson 40

UPWIND TARGETS

Wind Display: **True** Apparent Both

Anemometer Height: **Default (10m)** MastHead (16.307 m)

The data for sailing upwind in 10 knots of True wind →

With 10 knots of breeze your boatspeed should be 6.8 kts at a heading of 41 degrees off the True Wind direction

TWS	TARGET BOAT SPEED	TWA
4.0	3.9	46
6.0	5.3	45
8.0	6.4	44
10.0	6.8	41
12.0	7.0	38
16.0	7.2	36
20.0	7.3	35
24.0	7.4	35

As Dave Ullman mentioned above, get your true wind speed, read the target and make sure you have the boat making speed through the water equal to the number. Consistently faster than the Target? Then you are most likely sailing too low and your VMG will suffer.

The Quick Glance Downwind

Olson 40

DOWNWIND TARGETS (Spin)

Wind Display: **True** Apparent Both

Anemometer Height: **Default (10m)** MastHead (16.307 m)

Sail Configuration: **Spinnaker** Non Spinnaker

Likewise, sailing downwind in 10 kts of breeze, you'd consult the card to see what your target boatspeed should be and what angle to the True Wind will results in the best VMG →

TWS	TARGET BOAT SPEED	TWA
4.0	3.3	135
6.0	4.7	138
8.0	5.7	142
10.0	6.5	147
12.0	6.9	157
16.0	7.8	170
20.0	8.8	172
24.0	9.9	169

Note - the data is large and easily read. That means the helm or tactician can very quickly glance and see how the speedo compares to the target. Each table also has options for the display of wind speed data:

- True vs Apparent angles
- Measured at the default of 10m above water or at actual mast height of your boat.

The ORR-Ez VPP Handy Guide

The more complex set of numbers is contained in the “Handy Guide”. This might be more useful for a distance race or a Random Leg Course that would involve one or more reaching legs.

The ORR-Ez Handy Table gives you optimum sailing angles for 8 wind speeds.

- Left hand column Tables: Boxes for 4, 8, 12 and 20 knots

- Right Hand column Tables: Boxes for 6, 10, 16, and 24 knots

For each wind speed box there is an optimum VMG - upwind and downwind- angle for your boat. These are the highlighted colored rows.

For each wind speed box there are also targets if you need to sail at a given angle for your race course.

The table also has the option to display wind speed data measured at the default of 10m above water or at actual mast height of your boat.

VPP - Velocity Prediction Program. ORR’s VPP generates the ratings for your boat as well as for your Performance Pack. The VPP uses the information that you supplied about your boat in applying for your Ez Certificate.

ORR-EZ
OFFSHORE RACING RULE

Olson 40

VPP Handy Guide (Spin)

Anemometer Height: **Default (10m)** MastHead (16.307 m)

Sail Configuration: **Spinnaker** Non Spinnaker

True Wind Speed (kts)	True Wind Angle (deg)	TARGET BOAT SPEED (kts)	App Wind Speed (kts)	App Wind Angle (deg)	True Wind Speed (kts)	True Wind Angle (deg)	TARGET BOAT SPEED (kts)	App Wind Speed (kts)	App Wind Angle (deg)
4.0	46	3.9	7.3	23	6.0	45	5.3	10.4	24
	60	4.7	7.5	27		60	6.3	10.7	29
	90	5.3	6.6	37		90	6.9	9.1	41
	120	4.4	4.2	55		120	6.0	6	60
	135	3.3	2.9	81		138	4.7	[illegible]	87
	180	2.1	1.9	180		180	3.1	2.9	180
8.0	44	6.4	13.4	25	10.0	41	6.8	15.8	25
	60	7.4	13.3	31		60	7.8	15.5	34
	90	7.8	11.2	46		90	8.4	13.1	50
	120	7.3	7.7	65		120	8.0	9.2	71
	142	5.7	5	97		147	6.5	5.8	109
	180	4.2	3.8	180		180	5.2	4.8	180
12.0	38	7.0	18	24	16.0	36	7.2	22.2	25
	60	8.1	17.5	36		60	8.4	21.5	40
	90	8.7	14.8	54		90	9.1	[illegible]	60
	120	8.6	10.7	76		120	9.6	13.9	83
	157	6.9	6.3	131		170	7.8	8.4	161
	180	6.1	5.9	180		180	7.6	8.4	180
20.0	35	7.3	26.3	26	24.0	35	7.4	30.4	27
	60	8.5	25.3	43		60	8.6	29.3	45
	90	9.4	22.1	65		90	9.5	25.8	68
	120	10.3	17.3	89		120	10.8	20.8	93
	172	8.8	11.4	166		169	9.9	14.4	161
	180	8.6	11.4	180		180	9.6	14.4	180

46 in green refers to the optimum angle to the true wind direction for the best VMG at this wind speed (4kts)

142 in green refers to the optimum angle to the true wind direction for the best VMG at this wind speed (8kts)

The green numbers in this column, highlighted in orange, are your target boat speeds

Numbers highlighted in this blue and orange band represent the best predicted wind angle and boat speed for this wind speed

Numbers in this orange band show expected target speeds for this wind speed. In this case if you are sailing at 90 degrees to the true wind angle.

- - End of Introduction - -