

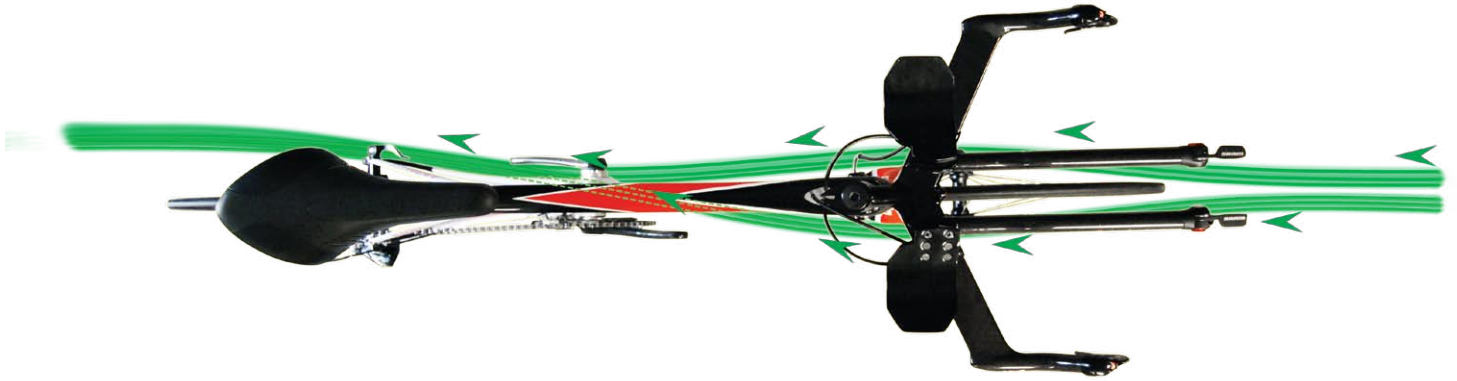
Wind Tunnel Data Analysis: *Drag and Stability*



Date: September 3, 2008

Location: A2 Wind Tunnel

Bicycle frames tested: QR Seduza, Cervelo P2C, Cervelo P3C, QR Cd0.1



SHIFT TECHNOLOGY:

Redirecting 80% of the airflow from the front wheel to the “clean” side of the bike.

Revolutionary -and quick!



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D1 Testing Protocol Explained

To ensure a fair comparison between tested frames, the wind tunnel was set up using the following standards:

- Same wheels, tires, air pressure, wind velocity, drive train components, seat mast height (saddle rail location)
- All bikes equipped with standard brakes
- Steerer tube lengths equalized above headset top cap

The D1 protocol allows for no “manipulation” of the test results by changing components on the frame or adjusting significant frame parts such as the handlebar and saddle angle/heights to give a favorable result on a certain frame.



Definitions of Terms in Results Table

Yaw: The angle of wind “hitting” the bike, i.e. any wind not directly along the line of bike travel

Cd: Coefficient of drag

Wind Axis Cd: How much drag is measured from the direction of wind

Body Axis Cd: How much drag is measured from the direction of travel

Wind Axis Side Force: The force in grams that the wind exerts of the frame, directly affecting ride stability

Aero Watts: The energy in watts that is needed to propel the system through the air at a given speed

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Frame Model	YAW	Wind Axis Cd	Body Axis Cd	Body Axis Drag (Grams)	Aero (Watts)	Wind Axis Side Force (Grams)*
QR Seduza	0	0.179	0.179	517	60	28
	10	0.305	0.157	454	103	2371
	average readings	0.242	0.168	485	82	1200
Cervelo P2C	0	0.185	0.185	538	63	71
	10	0.318	0.154	451	109	2671
	average readings	0.252	0.170	495	86	1371
Cervelo P3C	0	0.180	0.180	522	61	73
	10	0.312	0.152	444	106	2593
	average readings	0.246	0.166	483	84	1333
QR Cd0.1	0	0.175	0.175	504	59	-33
	10	0.300	0.149	426	100	2394
	average readings	0.238	0.162	465	79	1181

*Positive values indicate force applied to the right side, negative values indicate force applied to left side.

Interpretation of Data:

Drag: The lowest drag and aero watts at 0 and 10 degree yaw angles due to Shift Technology. Significant time savings guaranteed.

Stability: Stability is at least as valuable, if not more valuable than aerodynamics. Shift Technology facilitates a very low Wind Axis side force, making the Cd0.1 incredibly stable and planted during riding/racing conditions, meaning more energy can be used by the rider to propel the bike as fast as possible rather than fighting to keep the bike stable under real world rider conditions.

The Cd0.1 was conceived, designed, refined and tested in the wind tunnel.

Combined with the Dan Empfield/FIST-approved fit, the Cd0.1 is the perfect combination of fit, stability and aerodynamics.