



# **DOGMATA**

**WHITE PAPER 1.0**





# CONTENTS

<b>4</b>	1. INTRODUCTION
	A. PINARELLO
	B. TEAM INEOS
	C. GC BIKE
<b>5</b>	2. SUMMARY OF THE IMPROVEMENTS
<b>6</b>	3. WEIGHT
<b>7</b>	4. AERODYNAMIC
<b>15</b>	5. TECHNICAL SPECIFICATIONS
<b>19</b>	6. RACING

# 1. INTRODUCTION

### A. PINARELLO

Founded in Treviso, in the northeast heart of Italy, by Giovanni “Nani” Pinarello, the company has been making the highest quality bikes since establishing in 1952. The Pinarello name evokes legendary and epic victories from the greatest cyclists of all time: Since the very first Giro d’Italia victory by Fausto Bertoglio in 1975, Pinarello has gone on to dominate the podium at Olympic Games, World Championships, monument Classics and of course, the Tour de France.

Pinarello has always been synonymous with innovation and performance. The endless research for technical solutions to better integrate rider’s feedback has yielded for continued advancement of a new weapon of choice to Team Ineos’ performances. The PinaLab is proud to introduce our newest project: the Dogma F.

### B. TEAM INEOS

Pinarello has proudly been the bike partner of team Ineos since its formation in 2009. At that time better known as Team Sky. This long-term partnership has led to the creation of 9 different road bike projects as well as 3 time trial projects. The results of which have been a legacy of mutual success..

The primary feedback received from the team, aligns with Pinarello’s belief that the same bike used in crosswinds and on fast stages has to be the same bike for the queen stage and mountainous terrain. A perfect balance of aero, stiffness, and weight, allowing the team to maintain competitiveness in the Peloton.

### C. GC BIKE

Pinarello is, by far the winningest of Gran Tour race brands.

Since the first GT victory in 1975, Pinarello has embodied the art of building the highest performing bikes for all terrains. Pro riders are given the ability to connect with the bike like no other. Hours and hours every day on the same bike have raised their level of discernment to the highest. Changing bikes between an aero and a climbing bike for example can have negative consequences for their cohesiveness with the ride and muscles. PinaLab has always been focused on one mission: create a single bike to handle all conditions.

The best combination of aerodynamics and lightweight efficiencies from the PinaLab is now named: the Dogma F.



## 2. SUMMARY OF THE IMPROVEMENTS

### A. TARGET

Building the best Grand Tour winning bike requires constant innovation and research. Utilizing new materials guaranteeing the same or even improved stiffness, while decreasing the overall weight of the frameset. The goal is always the same: having a bike at its best on flat and windy stages, and ride the same for a crucial mountain stage. The Dogma F will offer both rim and disc brake options. With a different approach for each project, the rim has had specific development, as has the disc. There remains a significant number of Rim brake consumers and they continually ask us to develop high end frames specific for these systems. The rim brake riding experience still offers the "Pinarello riding feeling" and both brake versions for our highest end model is a must.

# 3. WEIGHT

### A. FRAMESET

The total frameset weight has been improved considerably. The fork, handlebar and seatpost have been dramatically decreased weight-wise, with improvements on both aerodynamics and stiffness.

### B. FRAME

The frame weight is now 9% lighter than the F12, without any adverse effect on the stiffness and aerodynamic quality.

### C. FORK

The fork weight has been reduced by 16%. Pinarello safety standards always come first, we strive to maintain our quality and safety standards even with this weight reduction, which is mainly due to the new carbon fiber materials available today.

### D. SEATPOST

The seatpost design has been modified to achieve a significant improvement weight wise, with better aero data. On top of that, a big improvement has been made on the seat top clamp. Now made of SLM (Selective Laser Melting) titanium, which is a consistent gram saving solution.

### E. HANDLEBAR

A new carbon layup construction of the newest generation of carbon fiber has helped the Talon Ultra to have a 13% reduction in weight. Same safety protocol, same design, same stiffness data. Just lighter.



## 4. AERODYNAMIC

### CFD

Development of the rim and disc frames as two separate bikes has resulted in improved aerodynamic performance of both. For the first time, the Dogma F disc has lower aero drag than the rim brake version (7.3% lower drag for Dogma F disc frame and fork than Dogma F rim):

	TOTAL	TOTAL NO RIDER	FRAME & FORK
Dogma F compared to Dogma F12	-0.6%	-3.2%	-7.5%
Dogma F disc compared to Dogma F12 disc	-1.1%	-4.8%	-8.7%
Dogma F disc Vs Dogma F	-0.2%	-0.8%	-7.3%

### Implemented changes:

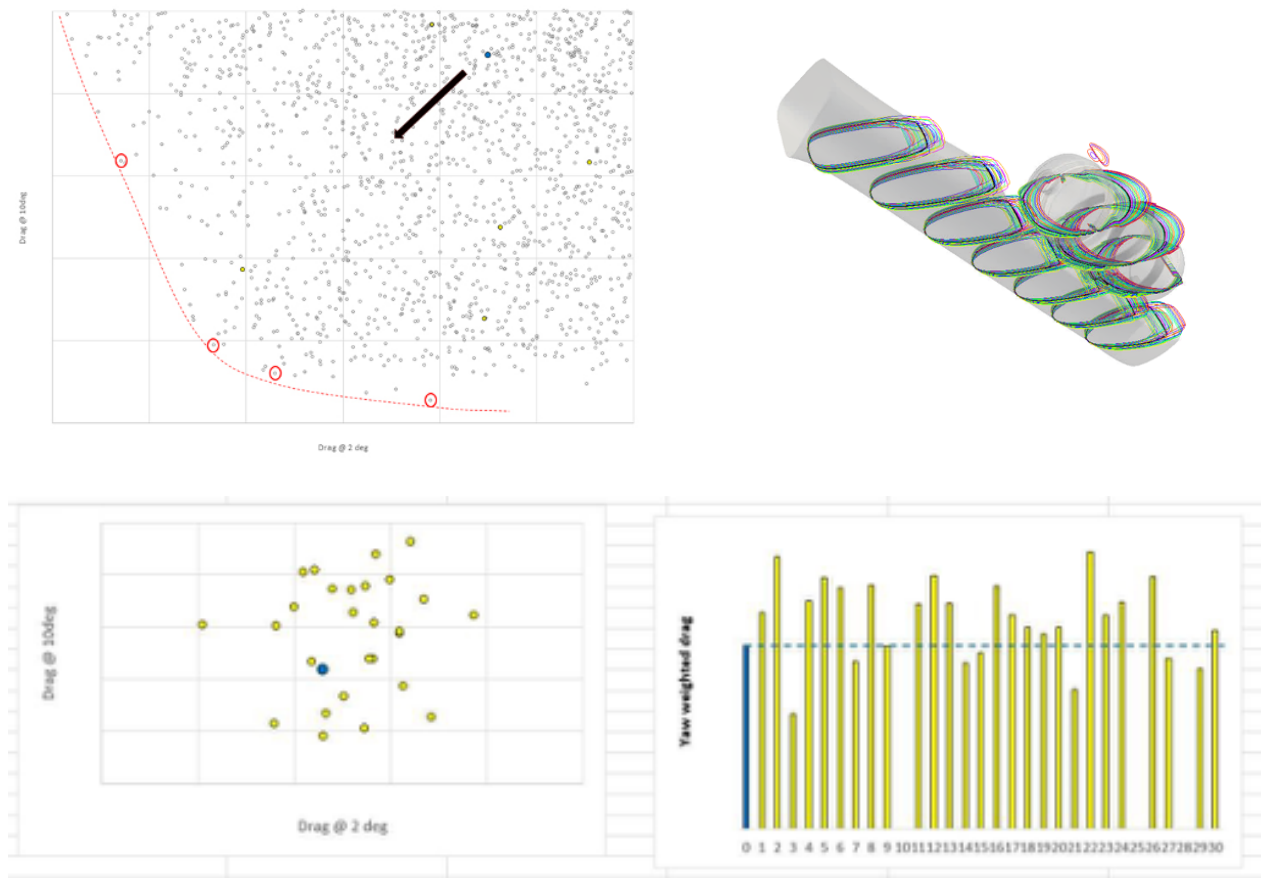
- Narrower seat tube and seat post, taking advantage of the UCI rules for 2021 reducing minimum tube width.
- New down tube cross sections improve aerodynamics of both the down tube and front bottle.
- Seat stays use new cross sections to improve interactions with rear wheel and are lowered (especially on disc version) reducing frontal area.
- Development of the fork profile and cross sections to improve interaction with the front wheel on the disc brake version.

### 1. -30% DRAG REDUCTION OF SEATPOST, COMPARED TO DOGMA F12

# DOGMA F WHITE PAPER

## 4. AERODYNAMIC

### 2. OPTIMIZATION STUDY WITH AUTOMATIC SOFTWARE. TESTED MORE THAN 30 CONFIGURATIONS AT 3 DIFFERENT YAW ANGLE.



### Results:

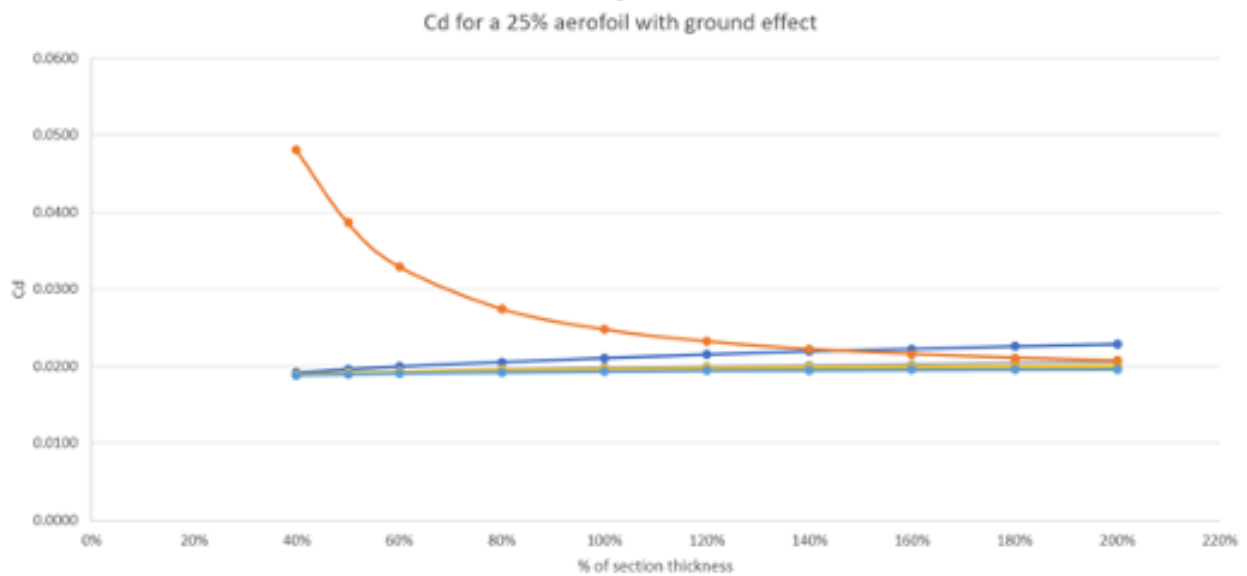
- 12% drag reduction Vs Dogma F12





### 3. 2D AEROFOIL OPTIMIZATION

In the disc brake version PinaLab has optimized the shape of the section, asymmetric, and its distance from the rim. Below the  $C_d$  data comparison of different aero profiles with different rim distance.



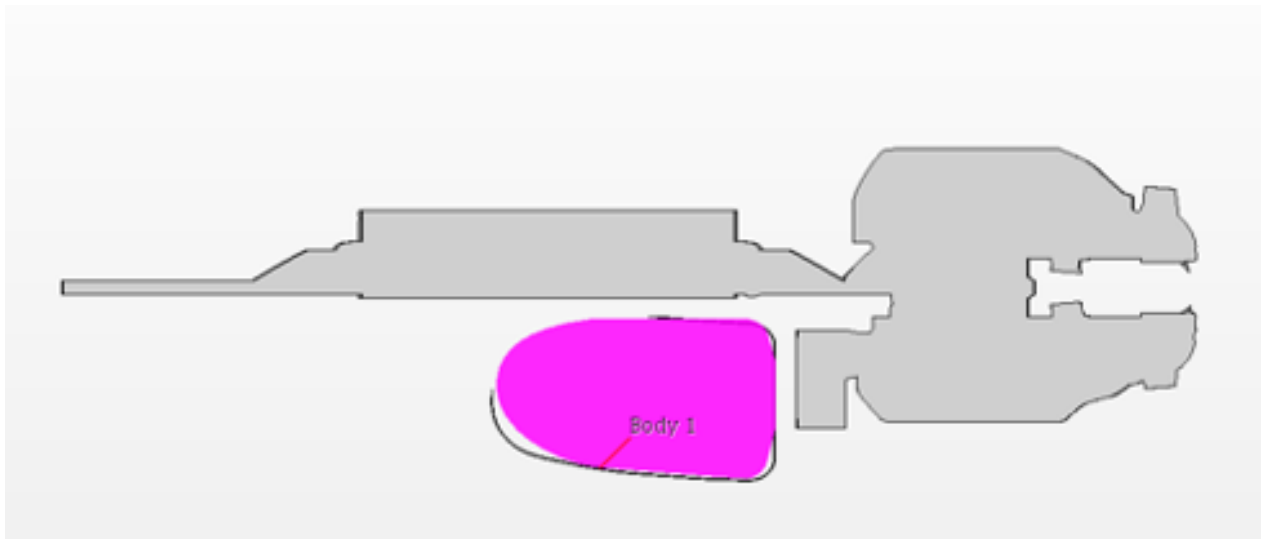
#### Results:

- 25% average drag reduction Vs Dogma F12 (both disc and rim).

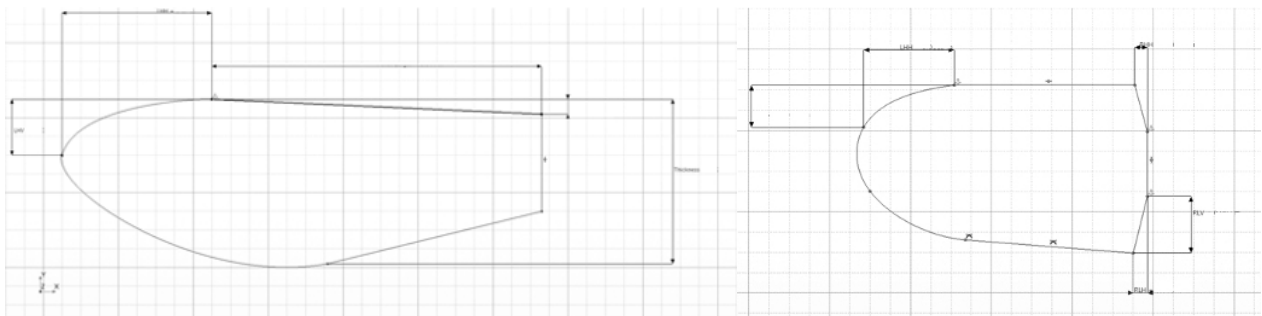
# DOGMA F WHITE PAPER

## 4. AERODYNAMIC

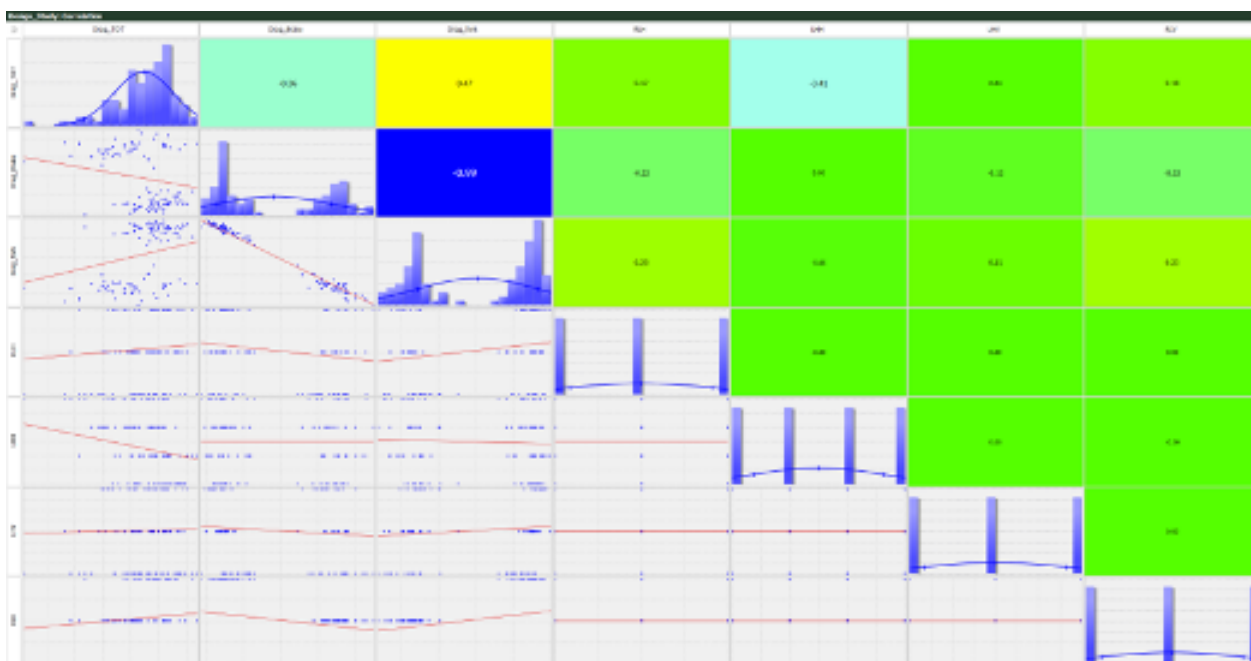
### 4. DISC BRAKE SECTION OPTIMISATION. 2D ANALYSIS FIRST, THEN 3D ONE FOR THE FINAL AND OPTIMAL RESULT.



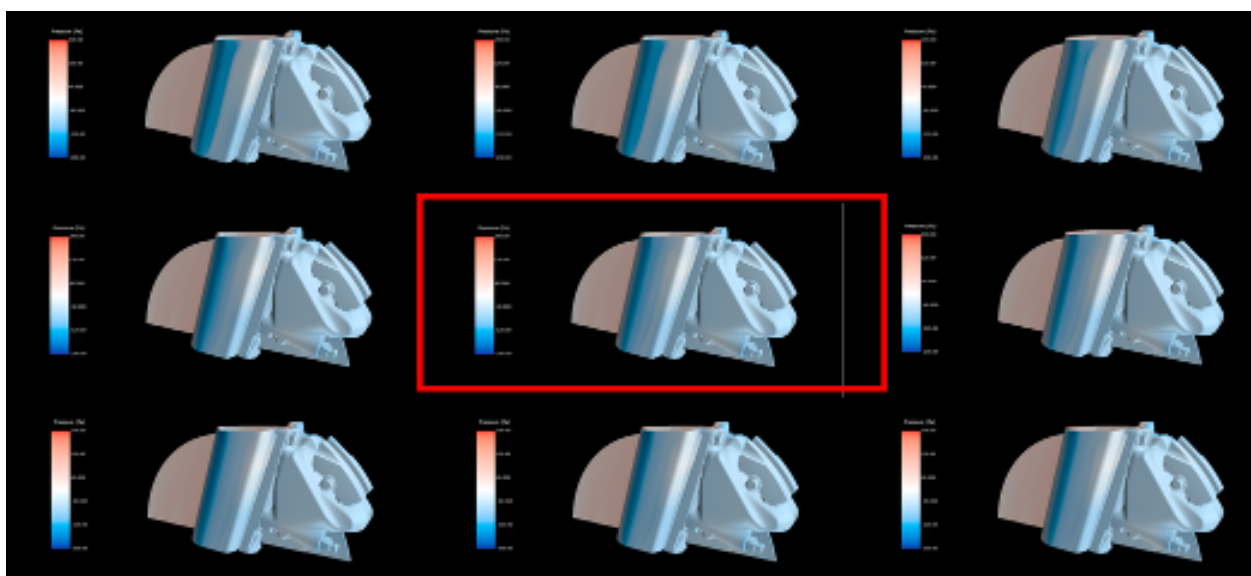
Parameters definition



PinaLab collected 750 different configurations in order to optimize the result accomplished.



9 3D option chosen and tested



# DOGMA F WHITE PAPER

## 4. AERODYNAMIC

Same as for the rim section: 4 parameters, 3 yaw angles, 750 runs.

Optimization of the fitting spokes on the most promising configurations.

	2Deg			10deg			18deg			Weighted			Gains		
	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork
0.06	0.0061	0.0003	0.0058	-0.0205	-0.0311	0.0105	-0.0038	-0.0225	0.0187	-0.0068	-0.0173	0.0105	-30.5	-14.9	9.7
0.012	0.0066	0.0009	0.0057	-0.0181	-0.0281	0.0100	-0.0019	-0.0188	0.0169	-0.0052	-0.0151	0.0099	0.0	0.0	0.0
3mm Fillet	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork			
0.006	0.0055	0.0004	0.0051	-0.0251	-0.0351	0.0100	0.0044	-0.0152	0.0196	-0.0070	-0.0173	0.0102	-35.5	-14.8	4.0
0.008	0.0054	0.0003	0.0051	-0.0216	-0.0314	0.0099	-0.0101	-0.0282	0.0181	-0.0089	-0.0187	0.0099	-70.2	-24.3	0.1
0.01	0.0058	0.0007	0.0051	-0.0200	-0.0298	0.0098	-0.0009	-0.0187	0.0178	-0.0060	-0.0158	0.0098	-16.0	-4.9	-0.9
0.012	0.0056	0.0006	0.0050	-0.0237	-0.0331	0.0094	-0.0238	-0.0402	0.0164	-0.0126	-0.0219	0.0093	-142.7	-45.5	-6.0
0.014	0.0056	0.0006	0.0050	-0.0192	-0.0286	0.0094	-0.0164	-0.0325	0.0161	-0.0092	-0.0184	0.0092	-77.0	-22.2	-6.9
0.016	0.0056	0.0007	0.0049	-0.0181	-0.0272	0.0092	-0.0238	-0.0390	0.0152	-0.0104	-0.0193	0.0089	-99.6	-27.9	-10.2
0.018	0.0056	0.0009	0.0047	-0.0179	-0.0268	0.0090	-0.0084	-0.0233	0.0149	-0.0069	-0.0156	0.0087	-32.7	-3.3	-12.5
0.02	0.0061	0.0013	0.0048	-0.0212	-0.0298	0.0087	-0.0114	-0.0258	0.0144	-0.0087	-0.0172	0.0084	-67.7	-14.0	-14.7
0.022	0.0051	0.0005	0.0046	-0.0195	-0.0280	0.0086	0.0023	-0.0123	0.0147	-0.0054	-0.0138	0.0084	-3.4	8.4	-15.1
0.024	0.0057	0.0012	0.0045	-0.0221	-0.0303	0.0082	-0.0248	-0.0380	0.0132	-0.0122	-0.0201	0.0079	-134.2	-33.5	-20.2
8mm Fillet	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork	Tot	Rim	Fork			

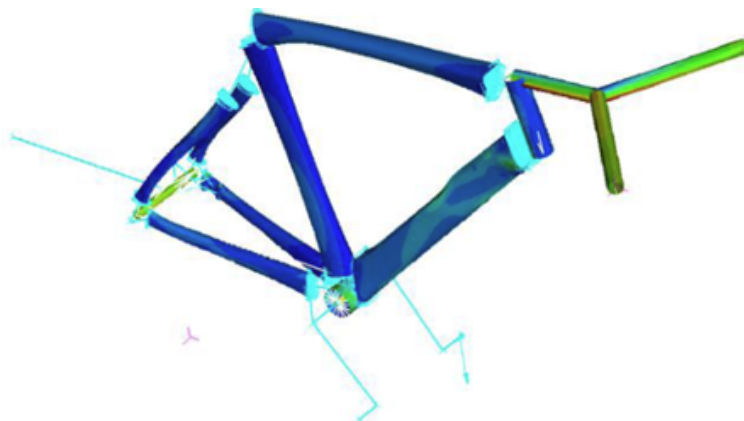
### Results:

- Dogma F disc fork vs Dogma F12 disc fork -12% drag
- Dogma F rim fork vs Dogma F12 rim fork -8% drag

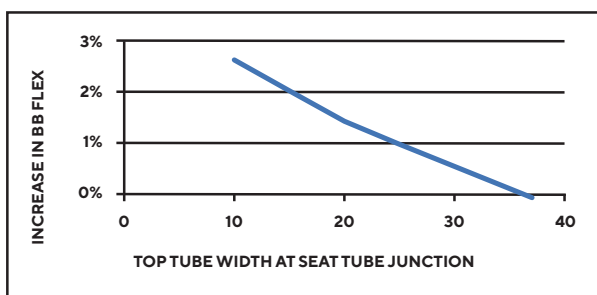


## FEM

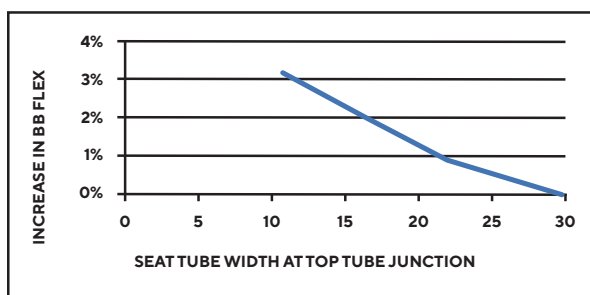
- FEM model (simplified)
- Purpose: ST,SP, SS drag reduction



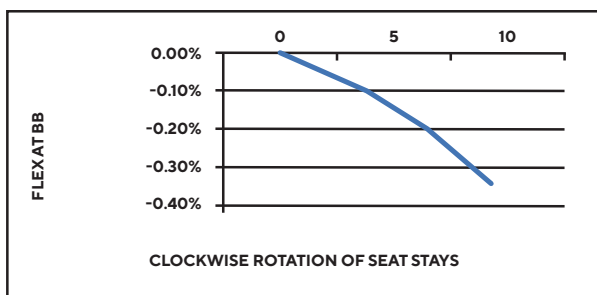
- TT width



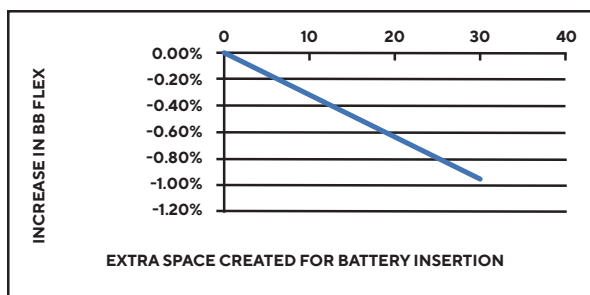
- SeatTube Junction



- Lower SS – lower seatstays shows also more vertical compliance



- DT rotation to allow battery space



**CONCLUSION:** After complete data collection, the best solution is for 20mm seat tube width at the top junction. This conclusion brings an aero and weight advantage at the seatpost with just a 2.1% less bottom bracket stiffness.

The 15mm clockwise rotation of seat stays increases the bottom bracket stiffness to compensate the loss from the reduction of the seat tube width above for the aero and lightweight seatpost.

## **DOGMA F WHITE PAPER**



# 5. TECHNICAL SPECIFICATION

## A. SPECIFICATION

### DOGMA F DISC

- Carbon Toraya T1100 1K Dream Carbon with Nanoalloy Technology
- Asymmetric frame
- Onda Fork Dogma F with ForkFlap
- TiCR (total integrated cable routing)
- 1.5 upper and lower steerer
- Italian thread BB
- Seatclamp Twin Force
- 3D printed titanium top seatclamp
- 3XAir two positions option for the second bottle cage (as of 515 and above)
- FlatBack profile
- UCI approved
- Rad System disc brake
- TA142
- Disc flat mount max 160mm
- Max tire 622x28c
- Weight: 865g Size 530; raw frame (not painted)
- Electronic Groupsets Only

### DOGMA F

- Carbon Toraya T1100 1K Dream Carbon with Nanoalloy Technology
- Asymmetric frame
- Onda fork Dogma F with ForkFlap
- TiCR (total integrated cable routing)
- 1.5 upper and lower steerer
- Italian thread BB
- Seatclamp Twin Force
- 3D printed titanium top seatclamp
- 3XAir two positions option for the second bottle cage (as of 515 and above)
- FlatBack profile
- UCI approved
- Direct mount rim brake
- Max tire 622x28c
- Weight: 860g Size 530; raw frame, not painted
- Electronic Groupsets Only

# DOGMA F WHITE PAPER

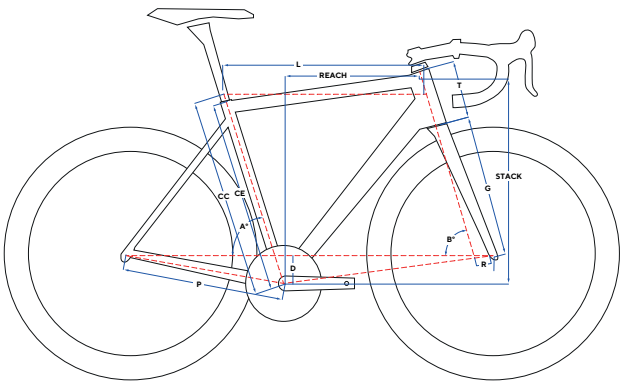
## 5. TECHNICAL SPECIFICATION

### B. FRAMES SIZES

We build dream bikes. Pinarello has always offered a wide range of sizes, to better meet the needs of our customers. Bigger sizes are offered to better meet the needs of heavier stress and power. On the other end, smaller sizes with a material reduction to yield a lighter solution.

Dogma F rim and disc brakes share the same size chart and geometry, which is typically offered from Pinarello. This is our unique trademark of handling and responsiveness.

Due to the integrated headset top cap, reach and stack are calculated on top of the 9mm headset cap.



CE	CC	L	A [°]	B [°]	P	T	D	R	G	REACH	STACK
425	430	500	74,40	69,50	406	97	67	43	373	351,4	502,4
450	465	515	74,40	70,50	406	104	72	43	373	364,8	517,6
465	500	525	74,00	71,40	406	109	72	43	373	372,1	525,4
485	515	535	73,70	72,00	406	114	72	43	373	378	532,3
500	530	545	73,70	72,50	406	123	72	43	373	383,3	542,6
510	540	550	73,40	72,80	408	131	72	43	373	385	551,2
520	550	557	73,40	72,80	408	142	72	43	373	388,8	561,6
525	560	565	73,00	73,20	408	149,5	72	43	373	390,7	570,2
540	575	575	73,00	73,70	408	163	72	43	373	396,7	584,8
560	595	587	72,40	73,40	408	199	67	43	373	393,3	613,3
600	620	620	72,00	73,40	411	239	67	43	373	410,1	651,7

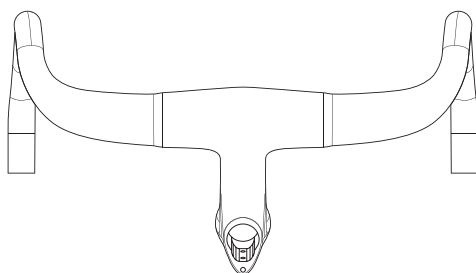
CE: SEAT TUBE CENTER - END | CC: SEAT TUBE CENTER - CENTER | L: TOP TUBE CENTER - CENTER | A [°]: SEAT TUBE ANGLE | B [°]: HEADTUBE ANGLE | P: CHAINSTAY | T: HEADTUBE | D: BB DROP | R: FORK RAKE | G: FORK HEIGHT | REACH | STACK





## C. TALON ULTRA

As mentioned before, same design with different carbon fiber making the new version 13% lighter. Below is the complete chart:



<b>ST0TA1KM902AM</b>	Integrated Handlebar TALON ULTRA 90/420mm BoB AM
<b>ST0TA1KM904AM</b>	Integrated Handlebar TALON ULTRA 90/440mm BoB AM
<b>ST0TA1KM102AM</b>	Integrated Handlebar TALON ULTRA 100/420mm BoB AM
<b>ST0TA1KM104AM</b>	Integrated Handlebar TALON ULTRA 100/440mm BoB AM
<b>ST0TA1KM106AM</b>	Integrated Handlebar TALON ULTRA 100/460mm BoB AM
<b>ST0TA1KM112AM</b>	Integrated Handlebar TALON ULTRA 110/420mm BoB AM
<b>ST0TA1KM114AM</b>	Integrated Handlebar TALON ULTRA 110/440mm BoB AM
<b>ST0TA1KM116AM</b>	Integrated Handlebar TALON ULTRA 110/460mm BoB AM
<b>ST0TA1KM122AM</b>	Integrated Handlebar TALON ULTRA 120/420mm BoB AM
<b>ST0TA1KM124AM</b>	Integrated Handlebar TALON ULTRA 120/440mm BoB AM
<b>ST0TA1KM126AM</b>	Integrated Handlebar TALON ULTRA 120/460mm BoB AM
<b>ST0TA1KM132AM</b>	Integrated Handlebar TALON ULTRA 130/420mm BoB AM
<b>ST0TA1KM134AM</b>	Integrated Handlebar TALON ULTRA 130/440mm BoB AM
<b>ST0TA1KM136AM</b>	Integrated Handlebar TALON ULTRA 130/460mm BoB AM
<b>ST0TA1KM144AM</b>	Integrated Handlebar TALON ULTRA 140/440mm BoB AM
<b>ST0TA1KM146AM</b>	Integrated Handlebar TALON ULTRA 140/460mm BoB AM

**DROP:** 125mm  
**REACH:** 80mm  
**OUTWARD BENDING:** 4°  
**WEIGHT:** 350g  
**CABLE ROUTING:** TiCR  
**OPTIONAL:** iTalon ULTRA

**COMPATIBLE ONLY WITH PINARELLO DOGMA F/F12**

## **DOGMA F WHITE PAPER**



## 6. RACING

### A. UCI APPROVED

Both Dogma F rim and disc are UCI approved.



### B. DEBUT

Dogma F will start to race in June 2022 with Team Ineos Grenadiers, with the same goal as the previous Dogma generations: win.



## **CICLI PINARELLO SRL**

Viale della Repubblica 12

31020 Villorba (TV) Italy

tel. +39 0422 420877 fax +39 0422 421816

infobike@pinarello.com

**[www.pinarello.com](http://www.pinarello.com)**