PINARELLO GREVIL WHITE PAPER 1.0

PINARELLO GREVIL

PINARELLO GREVIL WHITE PAPER 1.0

CONTENTS

© Cicli Pinarello Srl - All rights reserved - 2018

INTRODUCTION

a. Pinarello

Cicli Pinarello S.R.L. is one of the most famous and winning bike manufacturers in the world. Founded in Treviso (Italy) in 1952 by Giovanni (Nani) Pinarello, its focus was to produce the highest end racing bikes. The name, Pinarello, recalls legendary victories of the greatest cyclists of all time: since 1975, the first victory in Giro d'Italia with Fausto Bertoglio, Pinarello has won all of the most important races in the world, including Olympics, World Championships and Tour de France.
Pinarello has always been synonymous with innovation and performance. Our DNA targets research and development of technical solutions that best represent the rider's needs. Using this same philosophy, our next project was to create a bicycle for the gravel world. With this careful analysis of specific rider needs we were able to find technical solutions that bring the Pinarello spirit to the world of "mud-tires". Now after several months of research and development, the PinaLab is proud to present our new project…the PINARELLO GREVIL.

b. Purposes of the PINARELLO GREVIL project

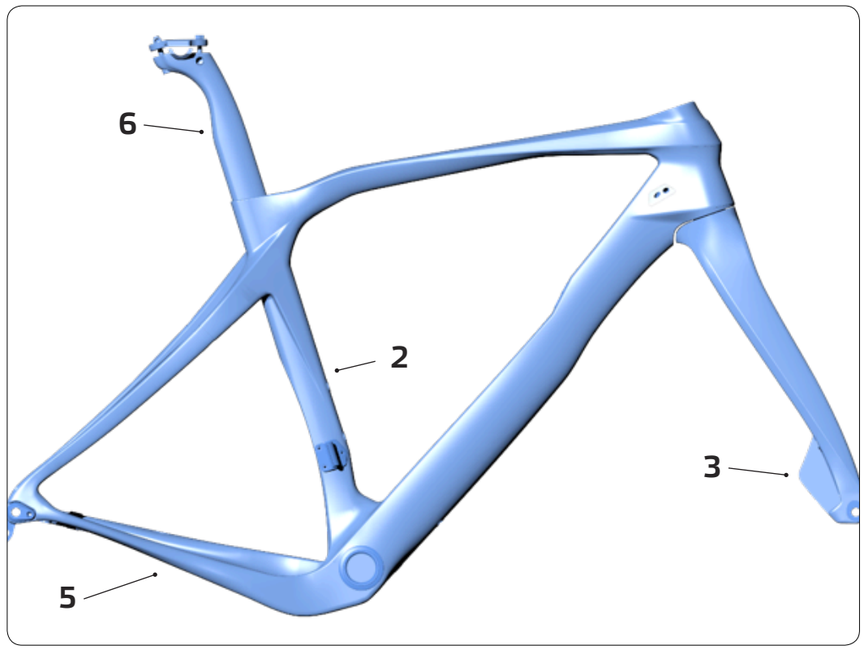
The analysis of the Gravel riding is decidedly complex as this niche of riders contains many facets and different needs. In fact, within this group you can find riders who want a bike able of tackling all types of terrain, from asphalt to challenging dirt. In the same way you will find riders who have the need to brave long distances on less rugged terrain but still require a comfortable, versatile and responsive bike.
In the development of the GREVIL project, the PinaLab has taken into account these needs and here, in short, were the project objectives:

- Create a gravel bike with true Pinarello DNA. This means a comfortable bike for all terrains and distances but without compromising the handling, stability and responsiveness typical of the products made in Treviso.
- Wheel versatility was a key objective. Allowing the rider to be able to choose the most suitable wheels for the route ahead.
- A bike suitable both for use on uneven roads and long distances. So, a specifically designed frame geometry with continued consideration for aerodynamics.

1. FEATURES AND SPECIFICATIONS

a. Dedicated Gravel Geometry

To develop the geometries of the new Pinarello Grevil we started from from sratch. In fact, PinaLab did not want to be influenced by previous projects or well-known road racing geometries. Approaching this group of cyclists, we studied every single detail in order to guarantee the best combination of performance and comfort for the gravel rider. The Pinarello labs detailed areas of focus were:



1 - REACH & STACK: The Grevil's reach is shorter and the stack is higher than a traditional road bike. This enables a position in the saddle with greater extension of the arms. This allows the riders arms to flex better cushioning the terrain and the shoulders can be more relaxed for longer distances. The geometry of the frame therefore is more compact and with a slightly higher center of gravity to promote agility in tight corners and difficult terrains.

2 - SEAT TUBE ANGLE: moved backward compared to a road bike reducing frame stress that propagates from the ground towards the saddle. The result is a greater comfort for the rider.

3 - FORK ANGLE and RAKE: fork angle is moved backward to 71º. This enables the ONDA fork to work the best way possible to reduce vibration. In addition, the rake is increased to 50mm improving the bike stability in rough terrain.

4 - WHEELBASE: to ensure comfort and stability on all terrains normally the wheelbase would be increased. However this leads to having a slower bicycle in curves and not very responsive. The geometry of the Grevil has managed to achieve the desired comfort value with an increase to the wheelbase by only 2.5% compared to a traditional road bike.

5 - CHAINSTAYS: extensive research and development was done to determine the correct chainstay dimension. The result is a length of only 420mm which grants the best equilibrium between power transfer to the rear axle and vibration absorption. At the same time, it allows accommodation of both 700c and 650b wheels.

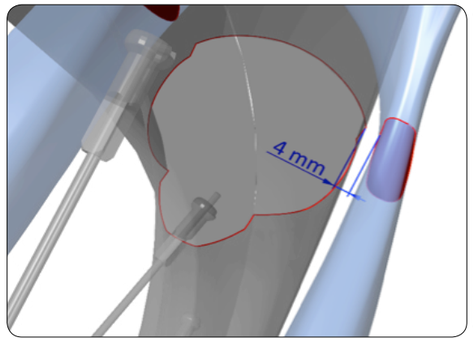
6 - SEAT POST: the seat post outstanding is particularly accentuated. This way the seat post can flex more and absorb the stress in the best possible way. This increases the rider comfort but also the power transfer from the legs to the bottom bracket.

b. Tire Clearance

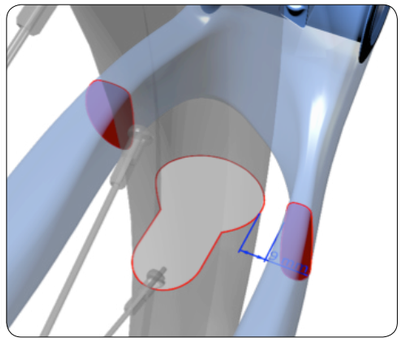
One of the main objectives of the project was to make the bicycle extremely versatile and therefore make the frame compatible with the largest number of wheels possible. The new Pinarello Grevil was designed to be able to mount road, cross and MTB tires. This way every rider can use the bike on every terrain and condition simply by equipping the wheels that best suits their needs.
Possible combinations allowed by the Grevil frame:

- Road tire: from 25mm and up. Wheel size 700c
- Cross tire: from 32mm to 42mm. Wheel size 700c
- MTB tire: up to 2.1". Wheel size 650b (27.5")

All of these tires have a diameter from 680mm to 700mm and a maximum width of 52-53mm (in the case of 2.1"). The specific chain stay design allows mounting of all of these tires without affecting the handling of the bike. The PinaLab decided not to include compatibility with 29r MTB tires, to avoid increasing the length of the chainstay which in turn would modify the handling of the bicycle.
The frame is compatible with 12mmx100mm through axle on the front and 12mmx142mm axle on the rear. This offers the most complete compatibility with rims on the market both for road and MTB riding.



650B X 2.1"

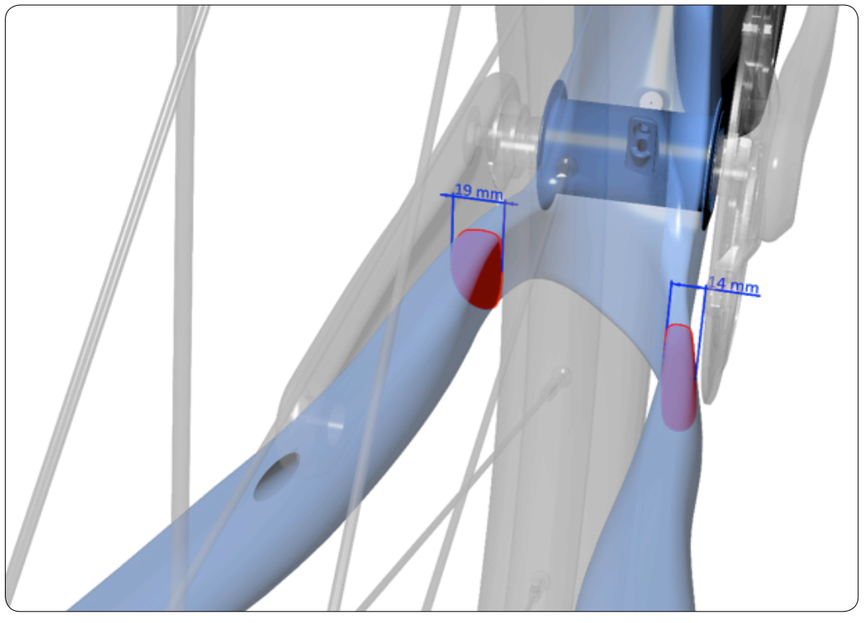


700C X 42MM

c. Frame Design

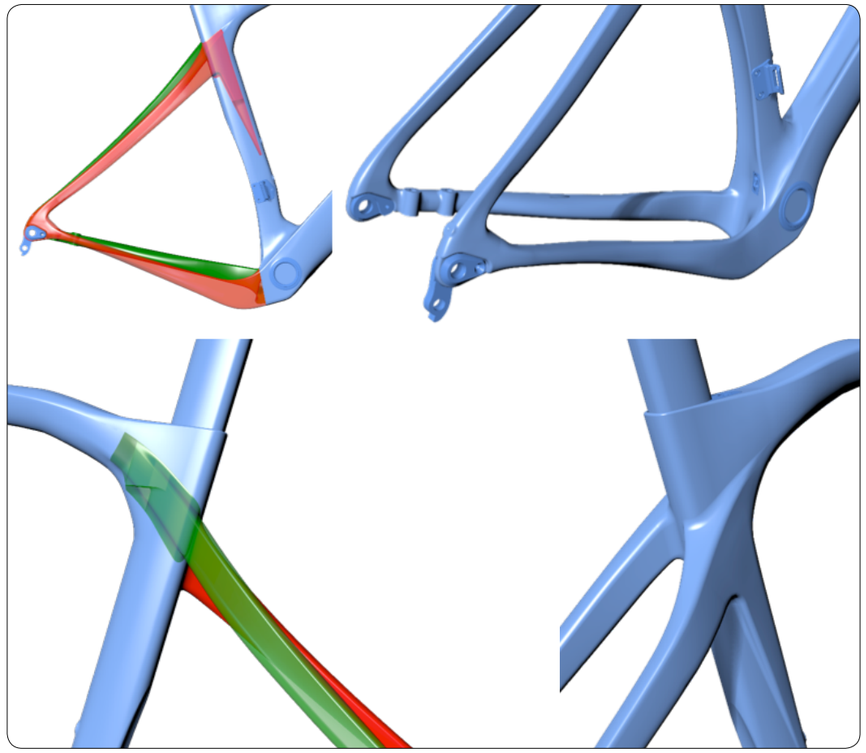
1. Chain Stay design
The goal of making the Pinarello Grevil frame compatible with 700c wheels up to 42mm and with 650b wheels up to 2.1" represents a significant challenge in the design of the chainstay. In fact, the area behind the BB is critical due to its intersection between chainrings, wheel and chainstay.

We wanted to keep the Q-factor similar to a road bike and without the need of lengthening the chainstay as to not affect the rideability. So, it was necessary to move the chainstay downwards in order to free the critical intersection zone. This made it possible to guarantee a cross tube section of 14mm for chainstay, therefore guaranteeing the optimal rigidity of the component.
To guarantee the comfort of the frame on gravel roads, the chain stays profile has been designed with the well-known Flexstay concept.



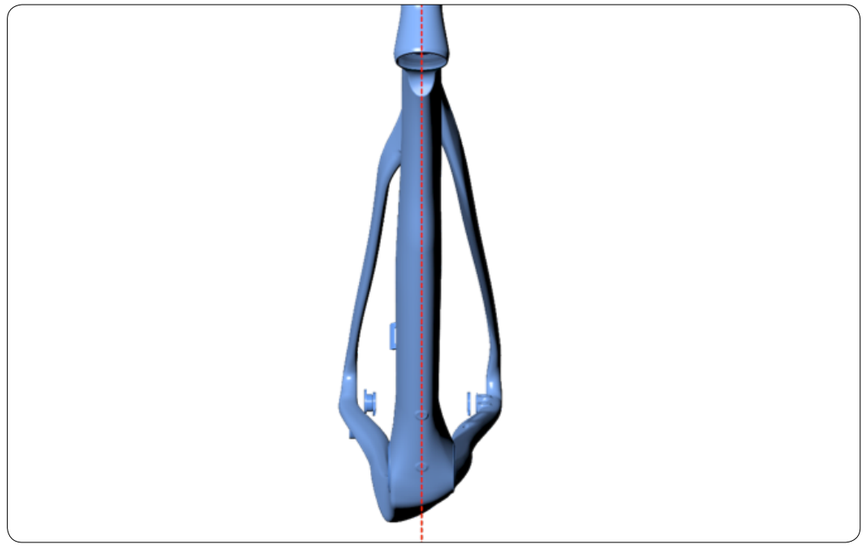
2. Twin Arms

Designing the right chainstay rotating downwards shows that there is no symmetry behavior between right rear triangle and left one (chainstay + seatstay). In fact, the right seatstay will be longer and therefore transfer energy from the wheel to the saddle vastly different than from the left seatstay.
For this reason, PinaLab has designed Twin Arms technology, which provides a downward rotation of the right seatstay in order to guarantee the same triangle geometry between left and right sides. Advantages of this include: the rear triangles have a similar geometry and consequently they respond symmetrically to stress. Moreover, having two different connection points between seatstays and seattube disperses and off loads the energy received through the rear axle. Allowing the seattube to absorb this energy in a more efficient way.



3. Pinarello asymmetry concept

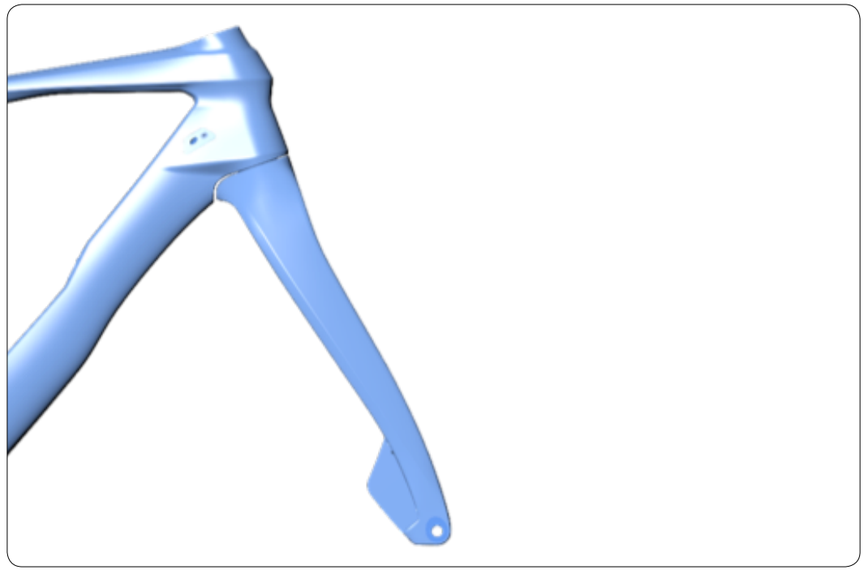
The asymmetry in the frame of the Pinarello Grevil does not stop at the rear triangle. In fact, as a Pinarello tradition the downtube and BB are also asymmetric. This is to ensure a symmetrical behavior from the frame due to the pull of right pedal and chain.



4. ONDA Fork

The fact that during a Gravel ride the shock that a frame and fork transmits to a rider is considerably more than that of a road ride, we have designed a fork with a dedicated and typical Onda shape. Coupling this shape with the rake dimension equal to 50 mm we can achieve the ultimate damping effect through the fork.

The combination of the Flexstays and the Onda shape, gives the Pinarello Grevil outstanding comfort without penalizing the responsiveness and precision typical of a Pinarello bike.

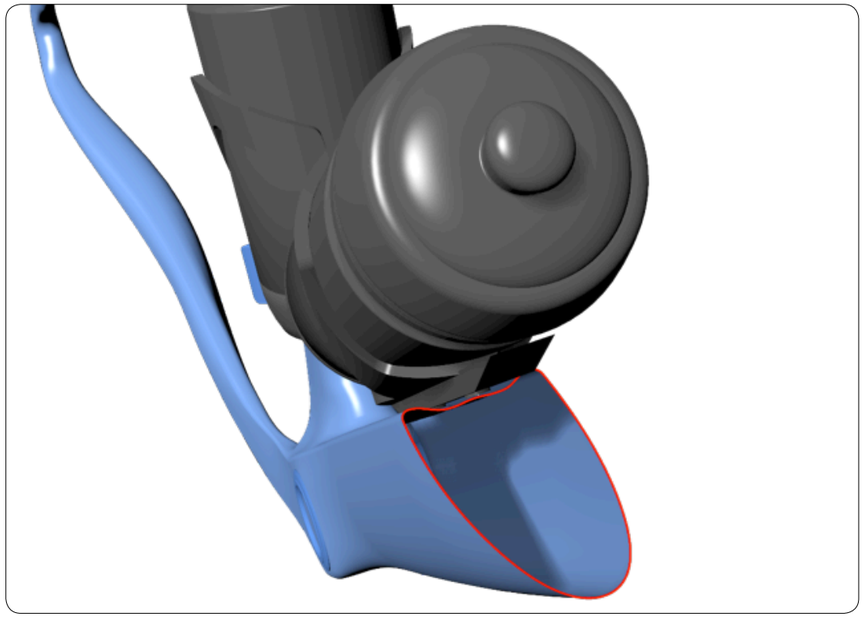


5. Material Choice

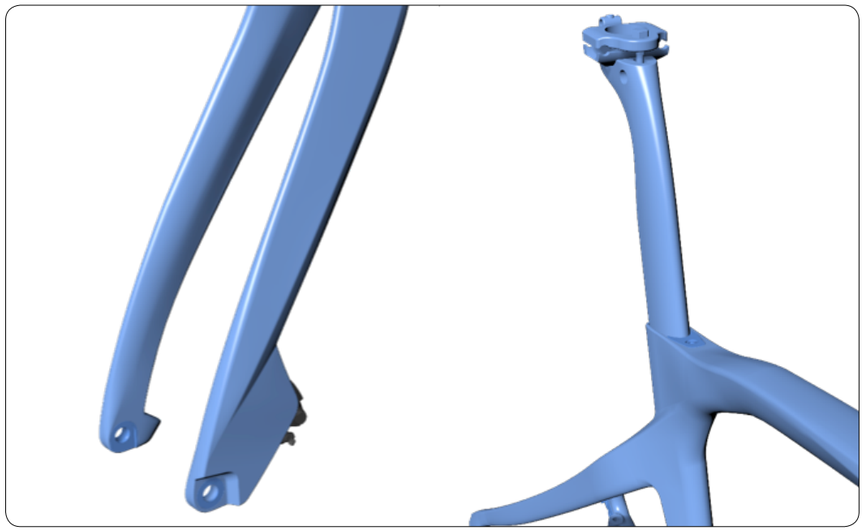
The proper choices of material deeply influence the frames performance. Carbon Reinforced Polymer (CFRP), can be used to optimize every single section of the frame to achieve the desired stiffness and lightness. For example, in areas where the stiffness must be favored, a high modulus fiber (HM) can be used, while where the strength is primary, a high strength fiber (HT) is preferred.
In order to satisfy all riders, the Grevil will be available in two different construction.
The high-end version GREVIL + will use a Torayca T1100 1K finish. The mid-end version GREVIL will use T700 UD finish. Both materials ensure the highest tensile strength. This choice contributes to increased impact strength, to prevent breakage. Torayca T1100 will be a lighter frame in comparison to the T700 frame.

2. AERODYNAMICS

Typically, aerodynamics are not the first thought when thinking about gravel bikes, however PinaLABs has decided to introduce into the frame. The reason for this decision is simple: even a small aerodynamic gain multiplied by several hundred kilometers can be a great overall gain.
The first aero aspect that a careful observer will notice is the concave down tube. This feature derives directly from the Dogma F10. As a well-known particular shape the down tube section sensibly reduce the drag of this area, especially when a bottle is present. Taking in mind that the down tube influences a considerable amount of the overall drag, it is easy to understand the aero benefits.



Another important aero feature that derives directly from the Dogma F10 is the introduction of the fork flaps. Again, an important drag generating zone on a bike is the area around the quick release of the front wheel. Adding material with right shape and position imply a considerable stabilization of the air flow and then a sensible decrease of the drag.
The concepts at the base of the fork flaps and their benefits to the overall bike aerodynamics are well-known. With this project the PinaLAB has gone further, designing a special fork flap dedicated specifically for disc brakes. On the fork the right flap is unchanged however the left has introduced a totally new flap that maintains the same aero performances of the previous versions and acts as protection for the disc brake caliper. Indeed during the gravel activity, the bumps in the zone around the front wheel hub are frequent, and any kind of protection that prevents damages to the disc brake caliper is certainly appreciated.
Previous versions of the fork flaps have been designed specifically for the rim brake bikes, clearly the introduction of the disc brakes changes the air flow around the front wheel hub considerably. This fact clearly requires new aero analysis around this zone. The result, that combines the aero requirements and the protection needs, is the particular shape that we can observe on to the new Grevil.



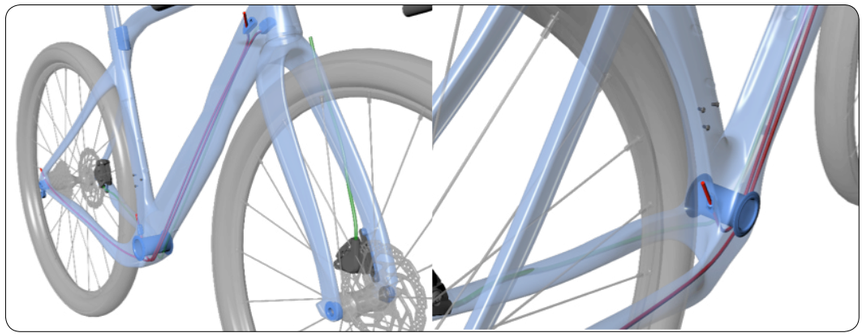
Finally, we can note that the Grevil uses the seat post borrowed from the Dogma K10. The motivation behind this is due to the particular profile designed to ensure maximum vibration dampening. This improves comfort while are the same time compliments the aerodynamics so drag is considerably reduced.

3. SPECIFIC PINARELLO GREVIL FEATURES

1. Internal cable routing

Mechanical group set cables and the disc brake hoses can be completely housed and protected inside the frame, from the lever to the derailleurs as to the brake calipers.

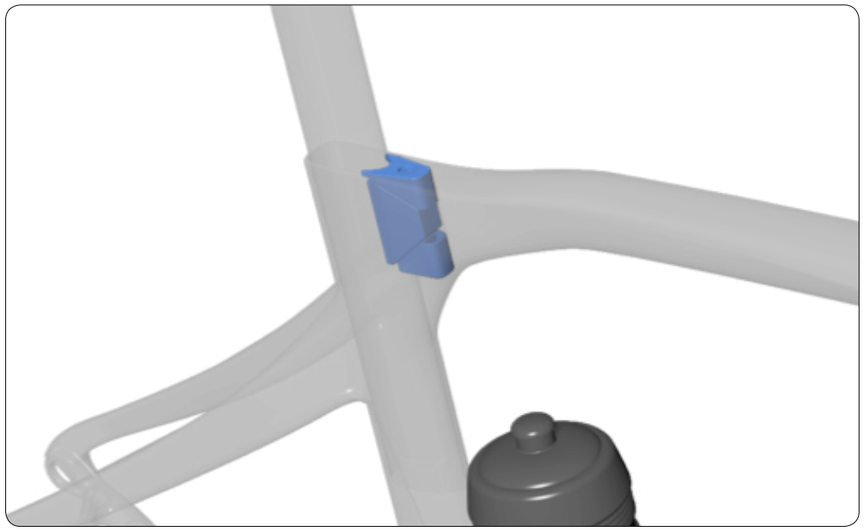
This decision was to prevent dust, dirt and mud that could penetrate inside the frame risking compromised functionality of the groupset.



2. Dedicated Seat Clamp

Mud, dirt and dust are a typical aspect off the gravel riding, so we cannot adopt the "Dogma" seat clamp system placed in the upper rear part of the seat tube. Hence, we decided to use a system like the one adopted in the new Prince family, placed in front of the seat post and hidden from the elements.

As mentioned the seat clamp is similar but not the same as the new Prince family: the stress that this component must withstand during a gravel ride are considerably higher than what would occur during a normal road ride. For this reason, we have redesigned the existing Prince seat clamp in order to obtain stronger clamping force. To do this we have increased the clamping surface by 42%, in addition a new wedge profile guarantees better pressure distribution on the seat post.

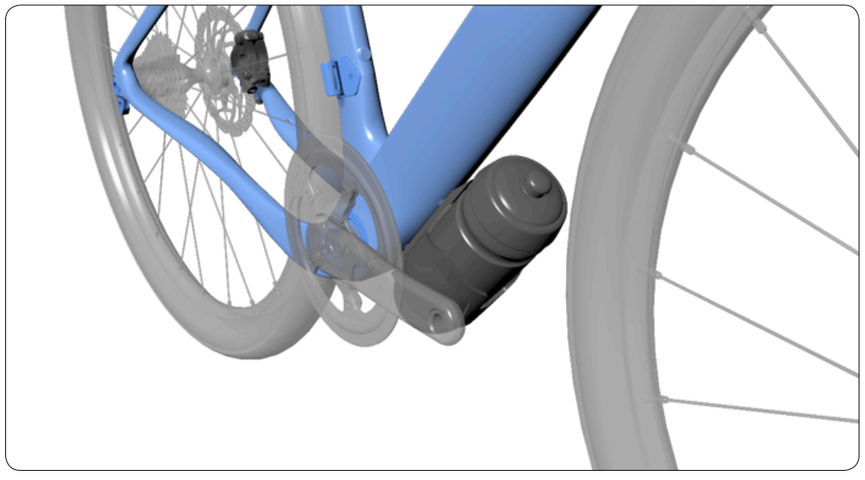


3. SPECIFIC PINARELLO GREVIL FEATURES

3. Downtube Bottle Cage inserts

Gravel bikes are often used for long trails. Riders can pedal for days in all different conditions, so they need to bring a lot of stuff along the way. It is not uncommon to see gravel bikes loaded with bags on the handlebars, the saddle and inside the main triangle.

This allows to have a bag convenient to reach but takes away the possibility of having a double water bottle. To overcome this, it was decided on the Pinarello Grevil to adopt a frame design that put a bottle cage insert on the lower part of the downtube by the BB.



PINARELLO GREVIL WHITE PAPER 1.0

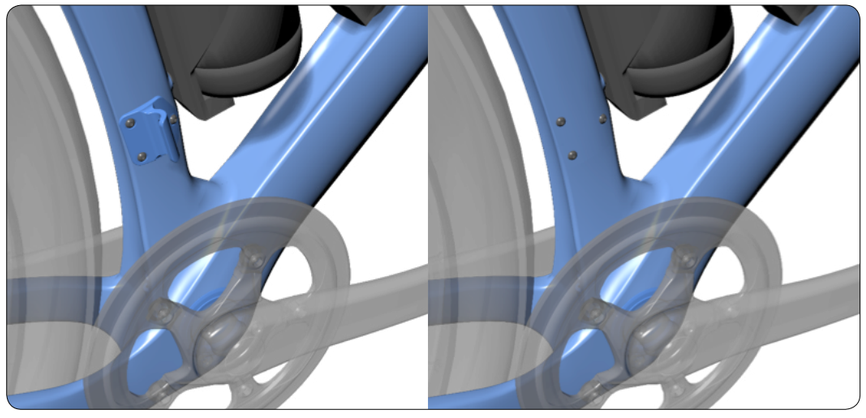
3. SPECIFIC PINARELLO GREVIL FEATURES

4. Removable front derailleur hanger.

As said versatility is one of the key words of the Gravel world and consequently also for Pinarello Grevil.

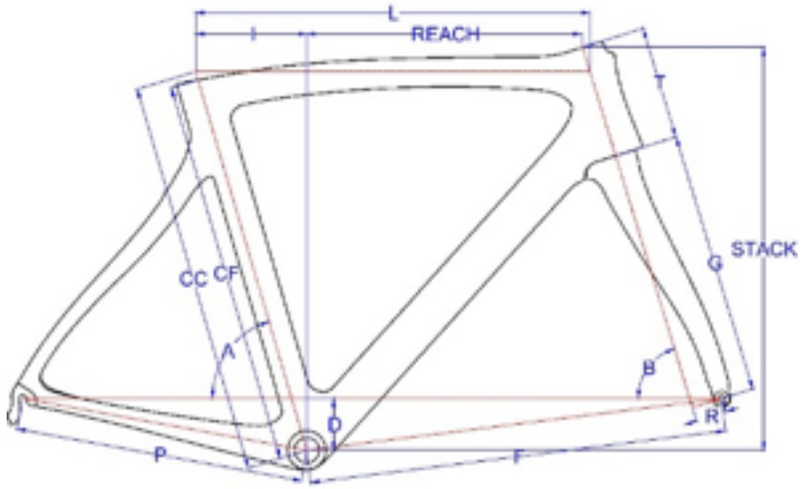
One of the aspects of versatility is allowing the rider to run a 1x or 2x groupset. In fact, those who prefer the use of the bike on long and hilly asphalt routes typically adopt the 2x solution. While those who prefer dirt and demanding roads typically take the choice of a 1x option in order to have a lighter and less complex bike.

Pinarello Grevil is designed for the rider to make their own choice. The front derailleur hanger is fixed on the frame by 3 removable screws.



4. SIZES AND GEOMETRIES

Pinarello continues to offer every single rider the best bike. The well-known “Made4you” concept was applied during development of the Grevil. The result is 6 sizes available that can perfectly fit every rider.
Every single size of the frame is design on its own, for example the larger sizes are dimensioned in order better to absorb the increased stress. The main purpose is that every rider can ride his Pinarello with the same feeling and performance.
Here are the details of the Pinarello Grevil geometries:



CC	L	I	A [º]	B [º]	F	P	T	D	R	G	REACH	STACK
440	510	121	74,00	69,50	579	420	105	67	50	395	353	519
470	520	133	73,50	70,00	583	420	110	67	50	395	359	525
500	535	146	73,00	70,50	591	420	120	67	50	395	368	537
530	550	159	72,50	71,00	598	420	135	67	50	395	374	553
560	575	173	72,00	72,00	610	425	160	67	50	395	386	580
590	600	182	72,00	72,50	630	425	190	67	50	395	402	611

5. TECHNICAL SPECIFICATIONS

GREVIL+

- Carbon Torayca T1100 1K Dream Carbon with Nanoalloy Technology
- Asymmetric frame
- Twin Arms
- Flexstays
- Dedicated Onda fork
- Dedicate aero seat post
- Dedicated FSC Frontal seat clamp, integrated and aerodynamic
- Think 2, to fit electronical or mechanical groupsets on the same frame
- ICR internal cable routing
- Drop In bearing system with tapered headset (1” 1/8 up; 1” 1/2 down)
- Italian thread BB
- Flatback profiles
- Fork Flap
- E-link
- Down tube bottle cage
- Max Tire: 700c x 42 mm
- Max Tire: 650b x 2,1”
- 1x and 2x crankset option.
- RAD SYSTEM disc brakes
- Disc Flat Mount (max Ø160 mm)
- Front Axle Ø12 x 100 mm Shimano®
- Rear Axle Ø12 x 142 mm Shimano®

GREVIL

- Carbon T700 UD finish
- Asymmetric frame
- Twin Arms
- Flexstays
- Dedicated Onda fork
- Dedicate aero seat post
- Dedicated FSC Frontal seat clamp, integrated and aerodynamic
- Think 2, to fit electronical or mechanical group sets on the same frame
- ICR internal cable routing
- Drop In bearing system with tapered headset (1” 1/8 up; 1” 1/2 down)
- Italian thread BB
- Flatback profiles
- Fork Flap
- E-link
- Down tube bottle cage
- Max Tire: 700c x 42 mm
- Max Tire: 650b x 2,1”
- 1x and 2x crankset option.
- RAD SYSTEM disc brakes
- Disc Flat Mount (max Ø160 mm)
- Front Axle Ø12 x 100 mm Shimano®
- Rear Axle Ø12 x 142 mm Shimano®

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