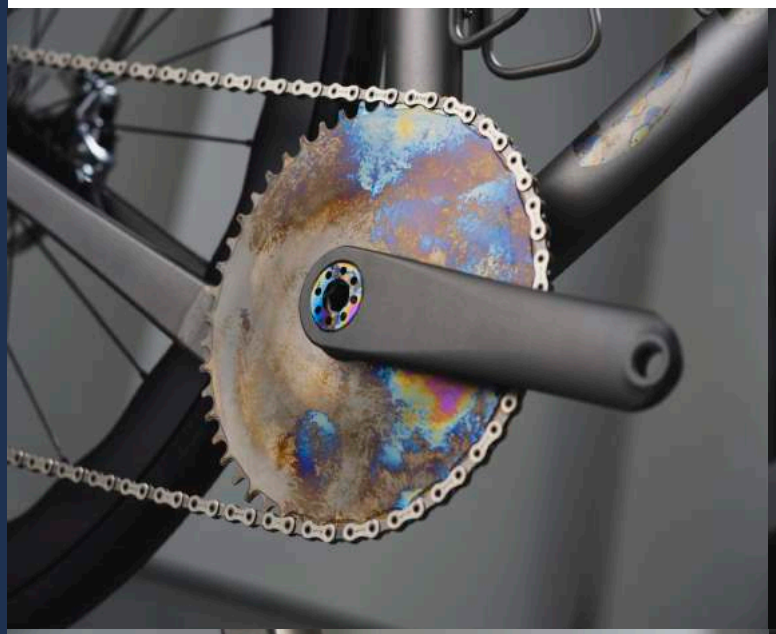
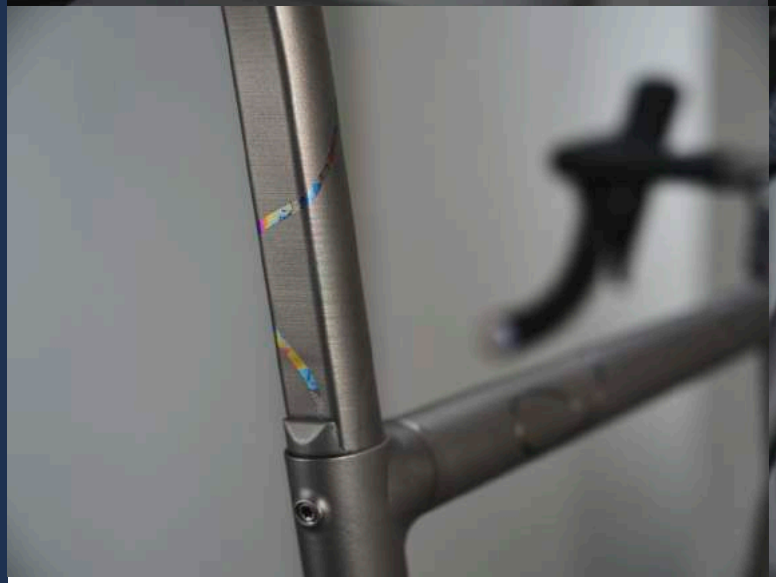
Sturdy

Product Brochure 2023


DIVINO PRIX 5000
PERRY
PRINCETON CARBONWORKS
450



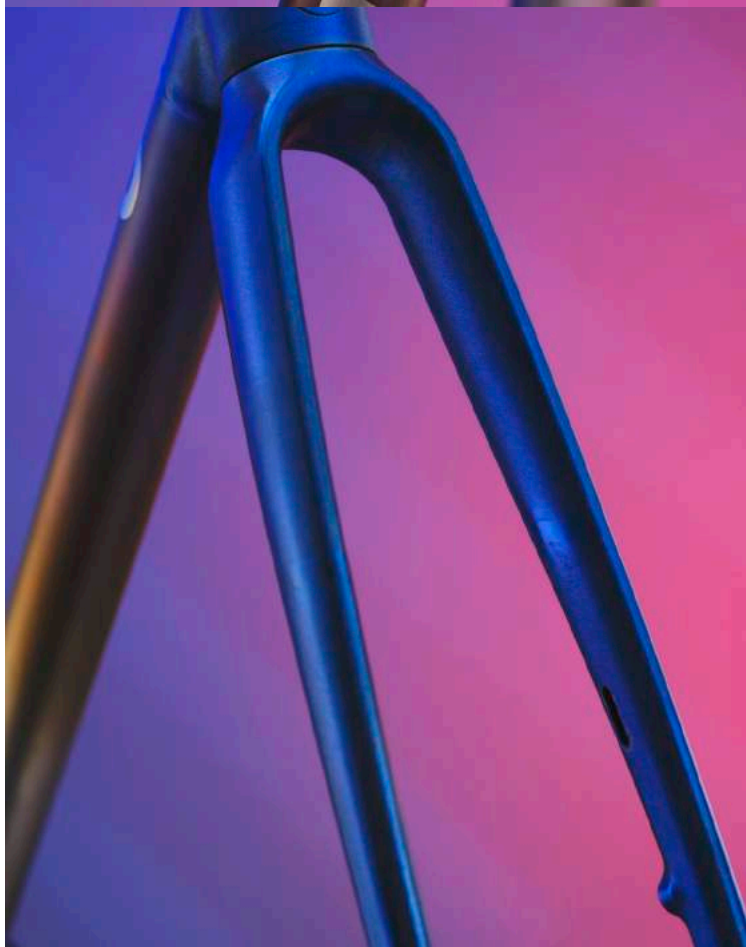



Sidhe


vittoria MEZCAL
vittoria BARZO
DT SWISS

Product Brochure 2023

Contents:



Who we are

Sturdy Cycles was established by combining Tom's lifelong love of bikes with his academic background in Aerospace Engineering and Sports Biomechanics. Along with his experience as an elite level athlete Tom has a unique perspective from which to design and optimise made to measure bike design. As the demand for Sturdy Cycles has increased Tom has hired some additional members of staff. We work together as a small but dedicated team to create some of the most beautiful, technologically advanced titanium bicycles in the world. Each bicycle is a unique piece of engineering that aims to provide the owner with a truly one of a kind cycling experience.

Tom is the founder and namesake of Sturdy Cycles. He has a skillset that lends itself perfectly to making beautiful and technologically advanced custom bicycles.

Tom is the 'builder' and on a day to day basis works on, designing, engineering, fabricating and finishing customer builds. He also runs the business!

Omar joined Tom in 2022 and brought with him a background in Mechanical Engineering from a diverse range of applications. Naturally he has a personal interest in cycling.

On a day to day basis Omar is involved in the assembly of builds and components and management of what is an exceptionally busy workshop.

Jack joined in 2022. He has extensive work experience in frame building and bike design. With a background in art and design he brings his visual creativity and a keen eye for detail.

As with all members of the team, Jack is involved with a wide range of tasks across the business from frame finishing to sales admin and social media.

Making a Sturdy Cycle

Sturdy Cycles was first established in 2014 in a small town on the edge of the Brecon Beacons National Park. This might seem an unlikely birthplace for some of The World's most exciting and technologically advanced titanium bicycle frames. This quiet and secluded location is where Tom first officially began making bikes however the story actually starts a little further back.

Tom's lifelong passion for sports first started mixing with his interest in engineering whilst studying Aerospace engineering at Loughborough University. During his time at Loughborough Tom began racing and competing in road cycling and elite level triathlon. It wasn't long before his search for performance enhancement began to extend beyond training and conditioning his body. Just as anyone that races bikes will know; it isn't hard to find equipment and technology that claims to make you a better cyclist. Tom's predisposition to engineering quickly saw him focusing his attention on the bikes and associated technology.

His interest and involvement in professional sporting competition drove his academic focus towards the topic of human performance. In 2009 Tom began studying for a postgraduate degree in Sports Biomechanics. During his time studying Tom started identifying some of the key curiosities that he has endeavoured to address throughout his bicycle making career.

Amongst other questions Tom started to wonder: Why do some bikes 'feel' better than others? Why do some riders perform better when using certain equipment? What really makes a bike 'good'?

After completing his studies Tom began working in a series of different jobs within the cycling world, all of which provided valuable insight into different aspects of the cycling industry. Working as a sales rep for a cycling brand distributor helped him to differentiate the hype from the genuine technological advances within the industry. Managing a busy bike workshop granted him first hand experience of a vast array of cycling technology and contact with riders from a range of riding demographics. All of this meant that he could tell you exactly which products worked best, who should be using them and how they would behave in a variety of use cases. During this time Tom also worked contracting as an analyst in a wind tunnel. His exposure to this resource was an opportunity to explore some of the ideas and questions he had in relation to his own racing career. "How much faster can I complete the local time trial if I can stay in the aero position whilst navigating the roundabout halfway through the course?"

All of these experiences and areas of expertise began to combine with Tom's first experiments making bespoke bicycles. The first bikes were

made using the most accessible and low cost fabrication process - fillet brazing and steel construction. Tom's engineering background provided him with a theoretical appreciation of the structural considerations relevant to bicycle design but this didn't feel like enough - He wanted to test these theories in the real world. Some of his first experiments included building a selection of different bikes, all with subtly different geometries. He wanted to isolate individual geometry characteristics in order to feel the subtle differences that each change produced. A range of bikes with varied tube stiffness, wheelbases, bottom bracket heights, head angles, seat angles, etc were all produced and thoroughly tested. The rugged landscape of the Brecon Beacons provided the perfect range of riding conditions to properly test each bike and fully interrogate the various perceived learning outcomes.

Tom has worked continuously producing fully bespoke and custom bicycles for riders from a diverse range of backgrounds. In this time he experimented with, and explored, every fabrication and finishing process within his reach, from painting his own frames to producing custom made carbon tubing and shoes. Alongside this work Tom has also worked as a frame building teacher assisting hundreds of novice builders in the design and fabrication of their own custom bicycle frames. His switch to fully titanium fabrication was driven by an urge to offer his customers the best possible product that he was capable of making. Titanium is extremely durable, easy to maintain and provides a stiffness profile that he believes best suits the human body. His first experiments with 3D printing titanium began in 2017 and were intended to help streamline the frame fabrication and finishing process. The Sturdy Cycles 3D printed parts have now benefitted from over 5 years of continuous development and improvement. Tom is working at the vanguard of metal 3D printing technologies, always adjusting to exploit the most recent improvements of this continuously developing technology.

In the intervening years Sturdy Cycles has progressed through a variety of different design approaches and fabrication methods whilst always remaining focused on two governing concerns:

- ***We believe in maximising the potential for positive interaction between rider and bike by focusing on a customer's individual biomechanics through bike fit.***
- ***We want to take the potential for better biomechanic performance and combine it with the benefits presented by technological advances in manufacturing technologies. Some of the benefits include improved aerodynamics, structural superiority, technology and component integration and of course, aesthetic characteristics.***

Each Sturdy Cycle that leaves our workshop represents the culmination of years of experience, testing and dedicated development.

Sturdy Cycles base models

Fiadh

(Pronounced 'Fia' or 'Fee-ah')

Fiadh is an Old Irish name meaning 'Wild' or 'Free'. Fiadh is the Sturdy Cycles answer to the every day, dependable road bike. We have a customisable geometry set that allows us to tune the ride quality and handling to your individual preference. Maybe you want a bike for the midweek chain gang - fast, aggressive and exciting.

Perhaps this is going to be the dream bike you take on your next trip to the Alps - reliable, responsive and comfortable for those long climbs. This could be the bike you use to escape the day to day grind - dependable and capable on a variety of surfaces and road conditions.

Wherever you're riding - this bike will allow you to roam free.

Features:

- Variable geometry to suit any road riding style
- Fully integrated routing for electronic shifting systems
- Customisable design features including rear disc standard, dropout details and boss locations
- Optional mudguard compatibility
- Custom finish options including logo placement, custom details, anodising, polishing, shot peening and masking.
- Customisable Ti frame accessories included

Frameset includes:

- **Frame** - 3D printed Ti construction with fully internal cable routing and custom geometry
- **Fork** - 3D printed Ti with internal cable routing
- **Seatpost and seat clamp** - 3D printed Ti seatpost topper - integrated seatpost clamp
- **Cockpit** - 3D printed Ti with fully internal cable routing and custom geometry
- **Crankset** - 3D printed Ti in custom length
- **Chainring** - Custom machined Ti 1X chainring included as standard - additional charge for 2X
- **Computer and accessory mount** - 3D printed fully adjustable mount with Garmin or Wahoo mount and lower accessory mount.
- **Bottom bracket** - Custom machined Ti T47 bottom bracket with Enduro bearings and Sturdy BB tool
- **Through axles** - Custom machined Ti through axles
- **Bolts** - Custom machined Ti Torx head bolts with included tool
- **Bar end plugs** - Custom machined Ti bar end plugs
- **Brake rotor lockrings** - 3D printed Ti - same installation tool as BB
- **Front derailleur mount** - 3D printed Ti
- **Replaceable derailleur hanger** - Custom machined Ti

Assembly Standards:

- T47-68mm Ti bottom bracket
- IS42-IS47 Enduro headset
- 1X and 2X compatibility
- 142mm rear axle
- 140mm or 160mm flat mount
- 35mm maximum tyre size
- Approximate final weight 7.3 - 8.5kg (depending on selected build kit)

"Whether you're chasing gains, hunting Cols or seeking cafe stops the Fiadh is designed to be your 'go to' bike for the job."

Fiadh

Cilla

This bike is named after Tom's late mother Cilla Sturdy. Cilla was an enthusiastic cyclist with a real sense of adventure. Cilla's tendency to reject the classic 'out and back' style route would often find her rambling through farmers fields and skipping gates in search of a more intrepid route. This bike is a tribute to her curiosity for the great British countryside and love of the natural world.

With a fully customisable geometry set this bike is the Sturdy answer to a modern multi surface drop bar bicycle. Whether you think of it as adventure, cyclocross, fast touring, all-road or gravel style riding this bike has got you covered. We developed and tested this bike on the numerous gravel and single track routes in our home counties of Somerset and Wiltshire. We're happy to say that our customers have also been enjoying these bikes far beyond our county borders.

Cilla is perfectly adapted for a variety of off-road adventures; featuring clearance for tyre widths up to 50mm, comfortable geometry and the option to customise bottle cage and cargo mounting locations. This bike has everything you need to ride with the spirit of Cilla.

Features:

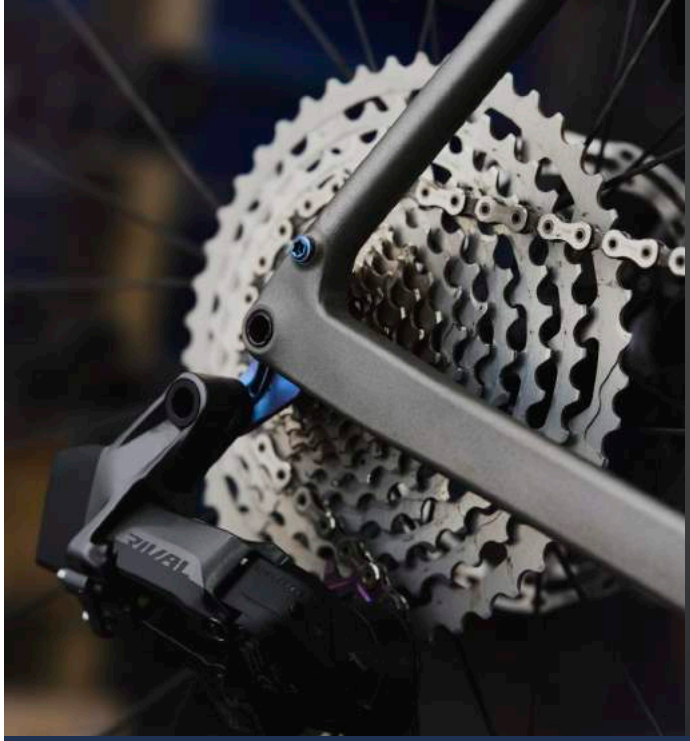
- Variable geometry to suit any riding style
- Fully integrated routing for electronic shifting systems
- Customisable design features including rear disc standard, dropout details and boss locations
- Optional mudguard and rack compatibility
- Custom finish options including logo placement, custom details, anodising, polishing, shot peening and masking.
- Customisable Ti frame accessories included as standard

Frameset includes:

- **Frame** - 3D printed Ti construction with fully internal cable routing and custom geometry
- **Fork** - 3D printed Ti with internal cable routing
- **Seatpost and seat clamp** - 3D printed Ti seatpost topper - integrated seatpost clamp
- **Cockpit** - 3D printed Ti with fully internal cable routing and custom geometry
- **Crankset** - 3D printed Ti in custom length
- **Chainring** - Custom machined Ti 1X chainring included as standard - additional charge for 2X
- **Computer and accessory mount** - 3D printed fully adjustable mount with Garmin or Wahoo mount and lower accessory mount.
- **Bottom bracket** - Custom machined Ti T47 bottom bracket with Enduro bearings and Sturdy BB tool
- **Through axles** - Custom machined Ti through axles
- **Bolts** - Custom machined Ti Torx head bolts with included tool
- **Bar end plugs** - Custom machined Ti bar end plugs
- **Brake rotor lockrings** - 3D printed Ti - same installation tool as BB
- **Front derailleur mount** - 3D printed Ti
- **Replaceable derailleur hanger** - Custom machined Ti

Assembly Standards:

- T47-68mm Ti bottom bracket
- IS42-IS47 Enduro headset
- 1X and 2X compatibility
- 142mm rear axle
- 140mm or 160mm flat mount
- 50mm maximum tyre size (recommended 40-45mm for best mud clearance)
- Approximate final weight 7.8 - 8.8kg (depending on selected build kit)



"With a fully customisable geometry set this bike is the Sturdy answer to a modern multi surface drop bar bicycle."

Sidhe

(Pronounced 'Seed')

The name of this bike refers to the Old Irish mythology of the Sidhe people. A race of mysterious spirits that held power over all the mysteries of nature. Often their presence was indicated by a swift wind whipped up as if from nowhere. It is this wind that we had in mind when naming our aerodynamic road bike. Designed in tandem with Éimear our dedicated time trial bike and benefitting from the same simulated and real world testing.

Tom's background in triathlon, time trial racing and wind tunnel testing is the genesis of this model - Sidhe is designed to slice through the air and ride with the wind.

The tubing on this bike is a departure from the classic rounded tubing profile of our Road and Gravel focused framesets. This change is driven by Tom's specific area of interest in aerodynamics. Contemporary bicycle manufacturers often focus on reducing drag by increasing tubing depth. Tom's specific focus is reducing frontal area as this contributes hugely to aerodynamic drag. In response to this concern the bike is notably slimmer than our standard road model. The 3D printed head tube and seat tube junctions share a slim form factor which blends with the custom ellipse shaped Ti tubing.

Frameset includes:

- **Frame** - 3D printed Ti construction with fully internal cable routing and custom geometry
- **Fork** - 3D printed Ti with internal cable routing
- **Seatpost and seat clamp** - Fully 3D printed Ti seatpost - integrated seatpost clamp
- **Cockpit** - 3D printed Ti with fully internal cable routing and custom geometry
- **Crankset** - 3D printed Ti in custom length
- **Chainring** - Custom machined Ti 1X chainring included as standard - additional charge for 2X
- **Computer and accessory mount** - 3D printed fully adjustable mount with Garmin or Wahoo mount and lower accessory mount.
- **Bottom bracket** - Custom machined Ti T47 bottom bracket with Enduro bearings and Sturdy BB tool
- **Through axles** - Custom machined Ti through axles
- **Bolts** - Custom machined Ti Torx head bolts with included tool
- **Bar end plugs** - Custom machined Ti bar end plugs
- **Brake rotor lockrings** - 3D printed Ti - same installation tool as BB
- **Front derailleur mount** - 3D printed Ti
- Replaceable derailleur hanger - Custom machined Ti

Assembly Standards:

- T47-68mm Ti bottom bracket
- IS42-IS47 Enduro headset
- 1X and 2X compatibility
- 142mm rear axle
- 140mm or 160mm flat mount
- 32mm maximum tyre size (although the design is aerodynamically optimised for 28mm)
- Approximate final weight 7.3 - 8.5kg (depending on selected build kit)

"Sidhe is tested and proven to give you an aero advantage - perhaps you're chasing KOMs or hitting PBs this bike will whisk you along the road as you ride with elements."

Features:

- Variable geometry to suit any riding style
- Fully integrated routing for electronic shifting systems
- Customisable design features including rear disc standard, dropout details and boss locations
- Optional mudguard and rack compatibility
- Custom finish options including logo placement, custom details, anodising, polishing, shot peening and masking.
- Customisable Ti frame accessories included as standard

Éimear

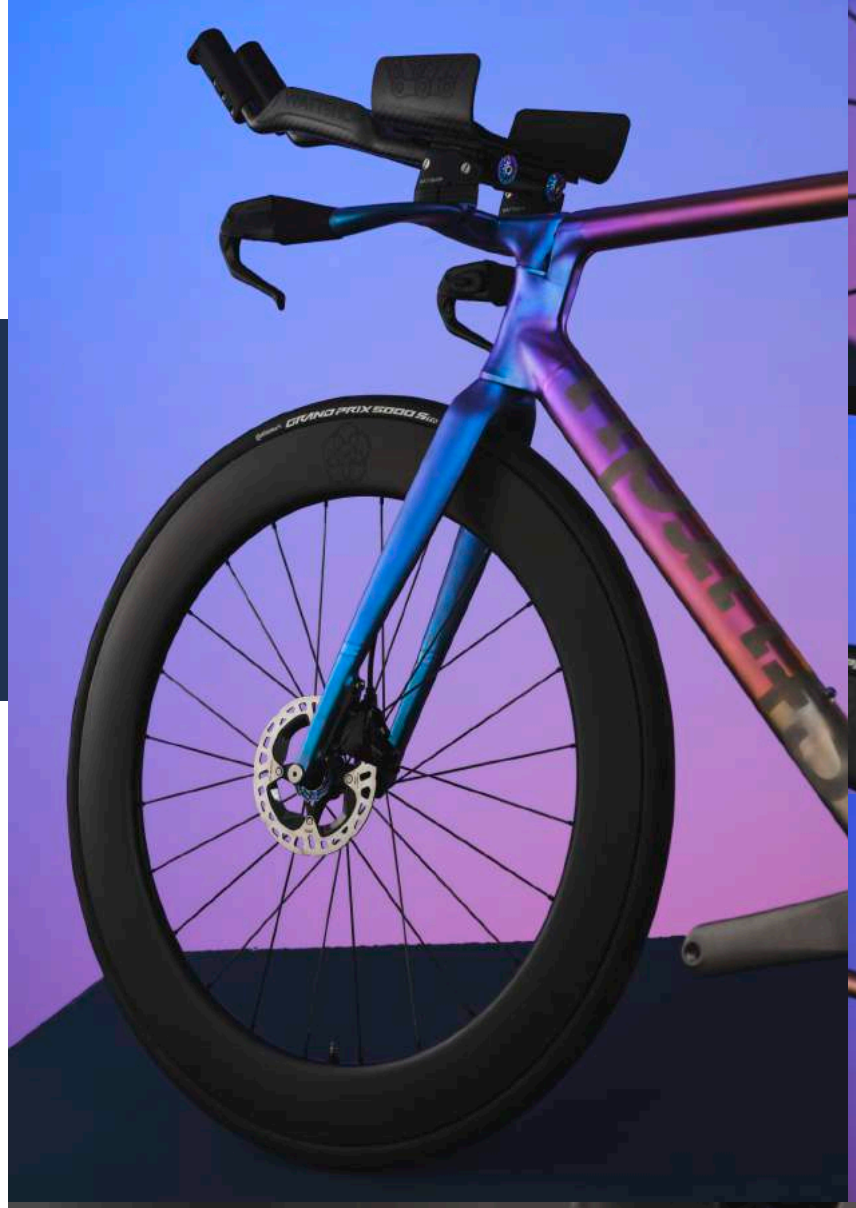
(Pronounced 'Ee-mur')

Éimear is an old Irish name which is believed to be derived from the word 'eimh' meaning Swift, Fast, Ready or Quick.

Éimear is our all out, super fast, time trial dedicated bike. Éimear is a seriously unique proposition in the cycling world - fully custom fit and geometry with a legitimately aerodynamic advantage over bikes produced using traditional fabrication methods.

A rare beast built for the most committed athletes.
The increased comfort and biomechanical advantage that can be achieved from a custom fit process allows the rider to remain comfortable in a compromised position for longer. The 3D printed base bar is integrated with the Wattshop Anemoi adjustable aero extension systems - manufactured in the UK and easily adaptable for testing and perfecting a range of rider positions.

In designing this bike Tom has combined his experience working in a wind tunnel with his extensive knowledge of 3D printed structures. We aren't providing hard statistics or watt saving figures as these are exactly the types of claims that are easily manipulated or more often don't stack up in real world scenarios. This is also complicated due to the fact the bike will vary in overall shape based on your specific bike fit and chosen geometry. Aerodynamics are optimised for a 25mm or 28mm tyre size.



Frameset includes:

- **Frame** - 3D printed Ti construction with fully internal cable routing and custom geometry
- **Fork** - 3D printed Ti with internal cable routing
- **Seatpost and seat clamp** - Fully 3D printed Ti seatpost - integrated seatpost clamp
- **Cockpit** - 3D printed Ti basebar with fully internal cable routing and custom geometry
- **Crankset** - 3D printed Ti in custom length
- **Chainring** - Custom machined Ti 1X chainring included as standard - additional charge for 2X
- **Computer and accessory mount** - 3D printed fully adjustable mount with Garmin or Wahoo mount and lower accessory mount.
- **Bottom bracket** - Custom machined Ti T47 bottom bracket with Enduro bearings and Sturdy BB tool
- **Through axles** - Custom machined Ti through axles
- **Bolts** - Custom machined Ti Torx head bolts with included tool
- **Bar end plugs** - Custom machined Ti bar end plugs
- **Brake rotor lockrings** - 3D printed Ti - same installation tool as BB
- **Front derailleur mount** - 3D printed Ti
- **Replaceable derailleur hanger** - Custom machined Ti

Assembly Standards:

- T47-68mm Ti bottom bracket
- IS42-IS47 Enduro headset
- 1X and 2X compatibility
- 142mm rear axle
- 140mm or 160mm flat mount
- 32mm maximum tyre size (although the design is aerodynamically optimised for 28mm)
- Approximate final weight 7.3 - 8.5kg (depending on selected build kit)

Features:

- Variable geometry to suit any riding style
- Fully integrated routing for electronic shifting systems
- Customisable design features including rear disc standard, dropout details and boss locations
- Optional mudguard and rack compatibility
- Custom finish options including logo placement, custom details, anodising, polishing, shot peening and masking.
- Customisable Ti frame accessories included as standard

Tara

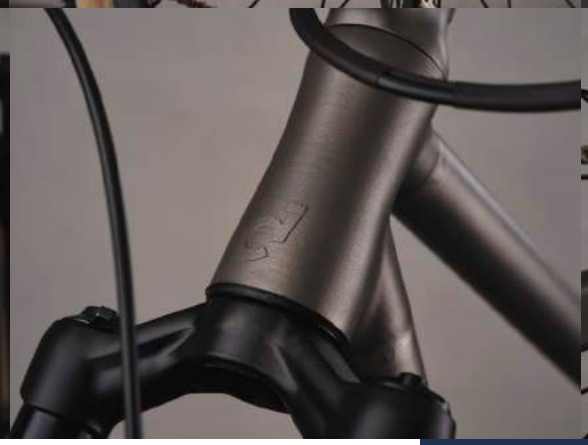
Tara is an Old Irish name meaning hill and referring to the ancient archaeological site "The Hill of Tara" in Meath, Ireland. In Irish mythology the hill of Tara is believed to be an entrance to the otherworld. Much of Irish mythology is connected to the landscape and sacred places - We like to celebrate Tom's Irish ancestry whenever possible and what better connection than a bike designed for exploring the great outdoors.

Tara is the Sturdy answer to a versatile short travel hardtail. With a fully custom geometry set this bike can be tuned to your specific riding scenario.

This bike could be the perfect adventure hardtail for any off-road endurance race, it could be an ideal cross country racing machine or even your weekend bike for taking to the local trail centre. We believe short travel hardtails are the ideal way to preserve the handling characteristics of a frame so we recommend maximum 130mm travel forks.

Features:

- Variable geometry to suit any riding style
- Semi integrated routing for electronic shifting systems
- Customisable design features including rear disc standard, dropout details and boss locations
- Optional mudguard and rack compatibility
- Custom finish options including logo placement, custom details, anodising, polishing, shot peening and masking.
- Customisable Ti frame accessories included as standard



Frameset includes:

- **Frame** - 3D printed Ti construction with fully internal cable routing and custom geometry
- **Cockpit** - 3D printed Ti stem with semi internal cable routing and custom geometry
- **Crankset** - 3D printed Ti in custom length
- **Chainring** - Custom machined Ti 1X chainring included as standard - additional charge for 2X
- **Computer and accessory mount** - 3D printed fully adjustable mount with Garmin or Wahoo mount and lower accessory mount.
- **Bottom bracket** - Custom machined Ti T47 bottom bracket with Enduro bearings and Sturdy BB tool
- **Through axles** - Custom machined Ti through axles
- **Bolts** - Custom machined Ti Torx head bolts with included tool
- **Bar end plugs** - Custom machined Ti bar end plugs
- **Brake rotor lockrings** - 3D printed Ti - same installation tool as BB
- **Replaceable derailleur hanger** - Custom machined Ti

Assembly Standards:

- T47-73mm Ti bottom bracket
- Customisable fork compatibility from 100-130mm travel
- IS52-IS52 Enduro headset
- 1X Boost compatibility
- 148mm Boost rear axle
- 160mm or 180mm flat mount
- 2.4" maximum tyre size
- Approximate final weight 9.8-10.5kg (depending on selected build kit)

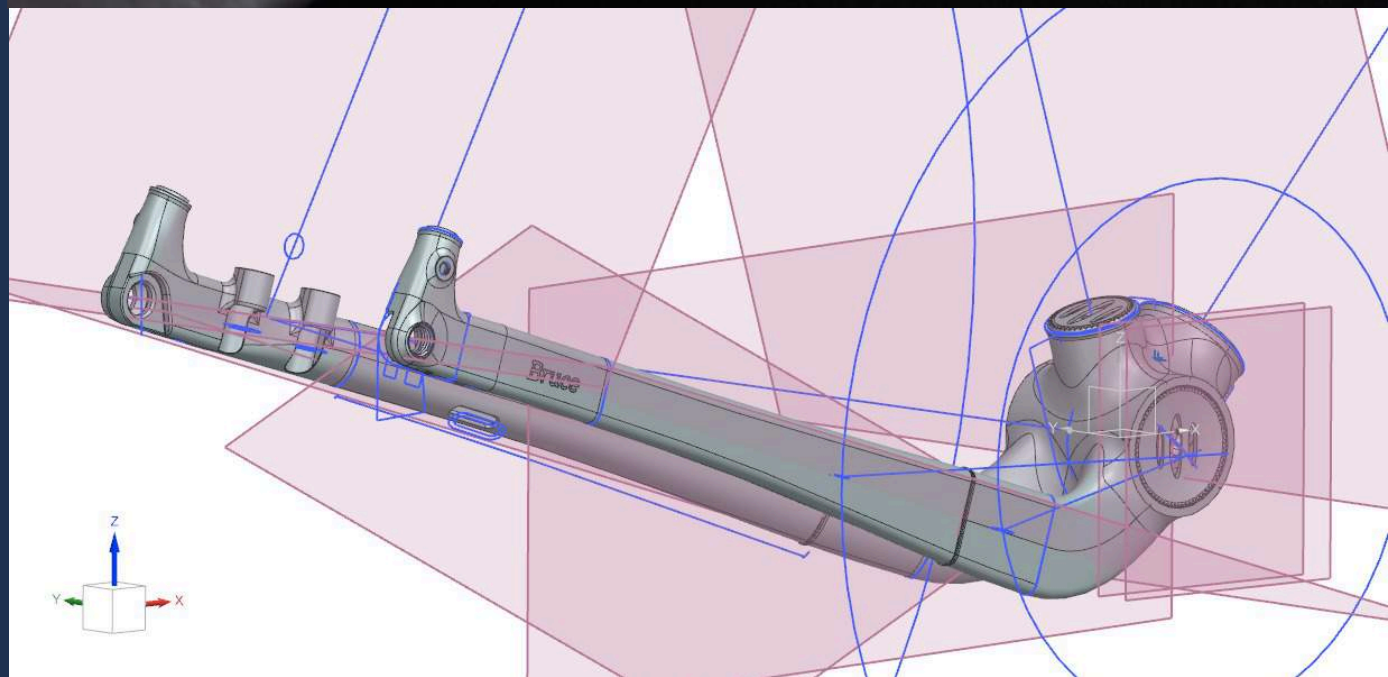
Product development

Material limitations

Although it has become a common topic of discussion the world of 3D printing is still an incredibly new and developing technology. Tom began his bicycle making practice using manufacturing processes that were established and thoroughly tested long before the invention of the bicycle. There are many favourable characteristics associated with these processes, as such it isn't uncommon that riders will have a preference for a particular material.

Unfortunately, as with any manufacturing process, there are a range of limitations inherent to each method and material. These limitations can impact almost every aspect of a bicycle's performance and appearance. Tom began experimenting with 3D printing whilst searching for alternative ways to overcome some of these challenges.

New technologies and materials offer us the opportunity to break away from the restrictions and constraints associated with traditional bicycle building processes.



Why chose 3D printing?

In the early days of Sturdy Cycles Tom mostly built bikes using Steel tubing - steel bicycle tubing is an easily sourced product which can be joined using a variety of processes that can be learned and mastered in a relatively short space of time - it's perfect for those that are new to bike making. It's a relatively inexpensive and forgiving material and the industry is well supported by associated brands that produce all the extra parts you need to put a bike together.

Tom wanted to offer his customers a greater level of customisation so he began designing and making custom machined parts such as dropouts and cable guides. These little details helped to elevate his bikes above the usual 'off the shelf' approach of some builders.

As Tom pushed the limits of the materials he found that as each bike became more complex it also became more time consuming to make, and therefore, much more expensive. Projects such as creating an aerodynamic time trial frame could involve complex processes such as hand making fairing panels using sheet steel. Any Technology integration involved a complex game of cable routing wrestling and convoluted component navigation. During this period of time 3D printing technologies were making huge leaps and bounds - it was impossible to ignore the exciting potential to create fully computer modelled forms in solid metal.

Early Development

Tom's first experiments with 3D printing began shortly after he had switched his production processes to fully Titanium construction.

The durability and resilience of Titanium suited the Sturdy ideal of creating legitimately well designed bikes that would last a lifetime of riding.

Part of the initial interest in printing technologies was driven by Tom's specific lifestyle, as well as running Sturdy Cycles he was also working full time in another job and raising two children. 3D printing presented the opportunity to potentially reduce the amount of time required to fully manufacture a bicycle frame. The balance of production time started shifting toward computer modelling thus allowing fabrication time to reduce - less time in the workshop, more people riding Sturdy Cycles.

Continued on next page...

Early Development continued...

The first parts that Tom developed were the frame dropouts - often regarded as a bit of a calling card in the frame building world. With the rising popularity of disc brakes Tom was also able to integrate this feature with greater control over the final aesthetic. The next part was the seat tube junction - fabricating seat stays is one of the more time consuming parts of a custom frame build so it was an obvious area for development. These parts also presented the opportunity for better integration of components. The first version of the seat tube junction included an integrated seat post clamp and the dropouts included internal routing channels for a rear derailleur.

Continuous Improvement

Since those early printed parts Tom has continuously worked on iterating and improving the function, appearance and structural performance of the parts. A continuous series of real world and simulated testing procedures ensures that each development is structurally appropriate for the task. ***Notable improvements include the development of a fully printed Ti cockpit which features fully internal cable routing, anatomically designed handlebar drops, completely custom dimensions and a matched computer mount.*** With over 4 years of continuous development Sturdy cycles now feature fully printed bottom bracket junction, headtube junction, combined dropout and chainstay assembly, cranks, cockpit, seatpost and various other matching small components. As 3D printing has become more widespread Tom has explored and tested each new development in the technology - with a range of parts made using SLS technologies and developmental collaborations with a range of suppliers across the globe. Tom also provides consultation and design services for other bicycle manufacturers that use or are investigating the potential for 3D printing to improve their product offering. In recent years some of the product development has focused on less structurally focused development, each component is being aesthetically optimised in a way that creates a holistic design harmony that is unique in the industry. We also now offer a range of different finishing options including polishing and anodising - these processes allow for an even greater range of customisation in the Sturdy product catalogue.

The current range of Sturdy Cycles incorporates years of cutting edge evolution and innovation in the bicycle making industry. Buying a Sturdy Cycle means you can be confident that it represents our commitment to using the most advanced technological developments available to us at that time. We will continue to push the envelope and pioneer right at the boundaries of this technology and material.


Fiedh

Design details

Chainrings and cranks

The Sturdy crankset was one of the first proprietary Sturdy components to be released. Tom's interest in creating a perfect bike fit for each rider and the current trend for shorter and shorter crank lengths drove the development of this part.

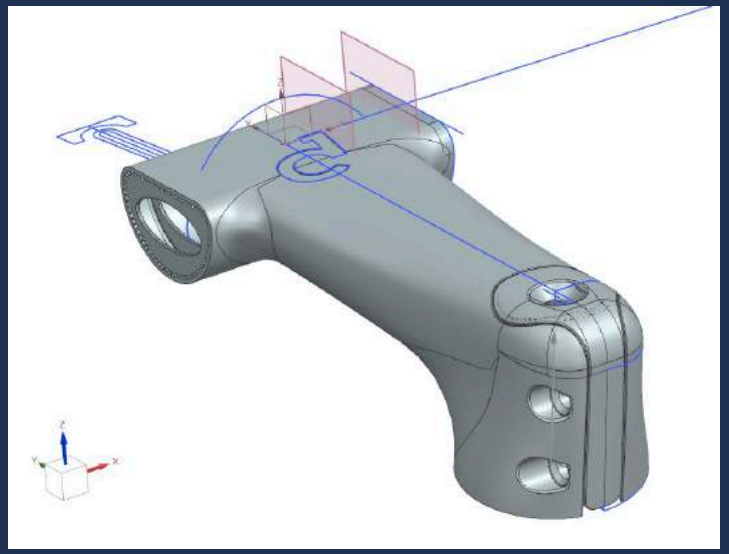
The crank arms have been through a variety of iterations and improvements meaning that their weight and stiffness has been fully optimised to create what we believe is the perfect crank available in any custom length. We combine the cranks with our custom machined titanium spindle and chainrings to create the dream titanium crankset.

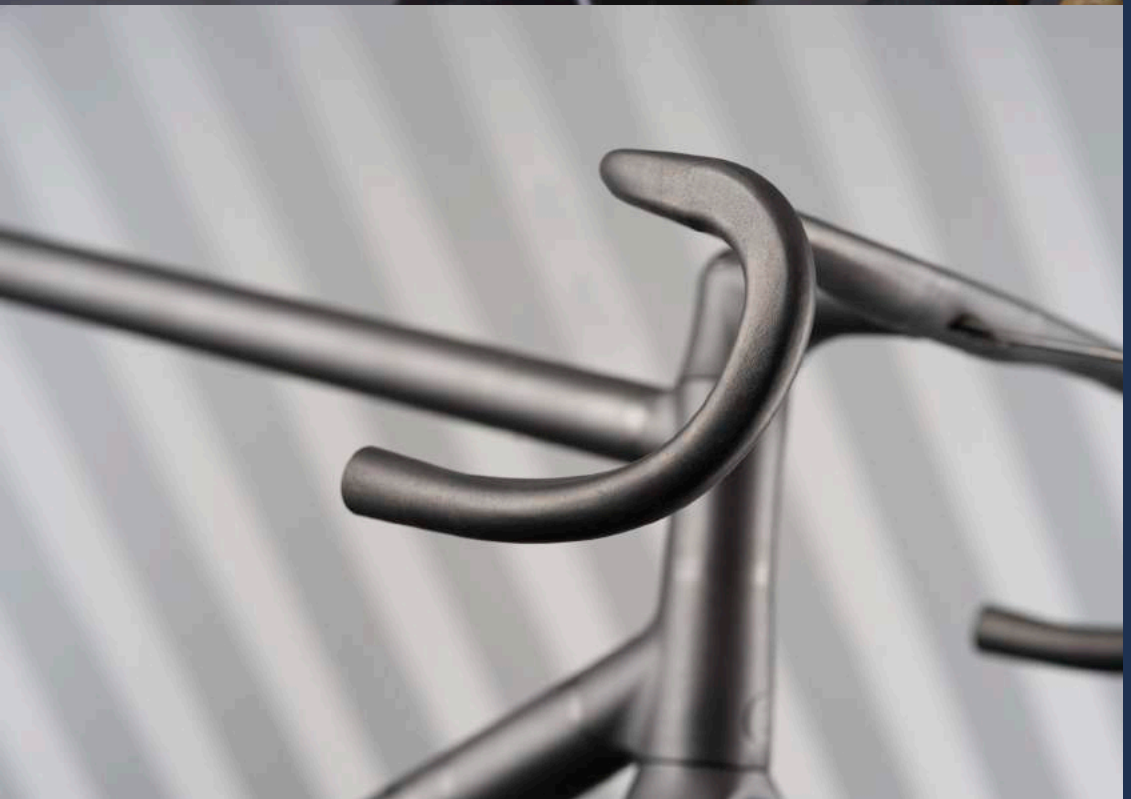
Design details

Cockpit

The Sturdy cockpit is one of the most complex pieces of design in the catalogue of sturdy parts - skilfully balancing structural requirements and component integration with ergonomics and aesthetics. The System features fully internal cable routing, elegant clamping system, a made to match computer mount and customisable geometry. Handlebar drops are available in both 20mm and 50mm flare with a contemporary 120mm drop and 70mm reach. Including an ergonomically flattened profile in the deepest part of the drops and a flat platform behind the lever mounting position for the heel of your palm.

The integrated, adjustable and removable computer mount can be provided with a replaceable Garmin or Wahoo mounting plate as well as a GoPro style accessory mount underneath.



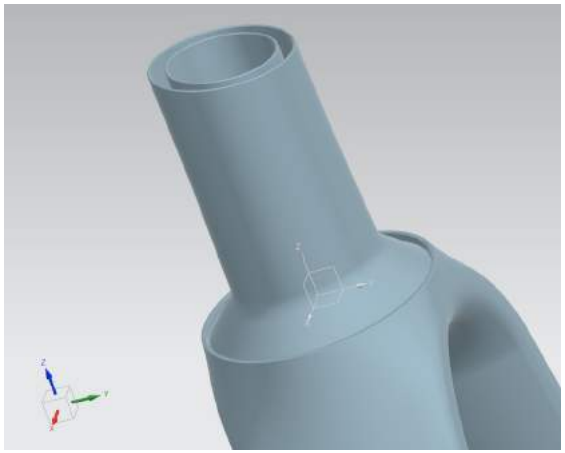


Design details

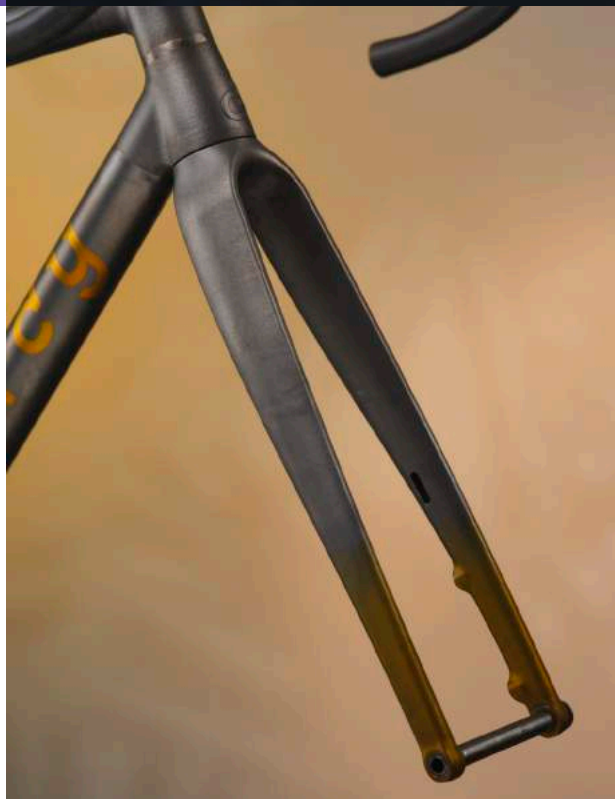
Fork

The printed titanium Sturdy fork was, to our knowledge, the world's first fully 3D printed, titanium bicycle fork.

Making our own forks allows us to more closely control the handling and structural behaviour of the steering geometry. Our latest version of the fork consists of 4 separate elements - A combined printed fork crown and uppers, fork dropouts and a custom made carbon steerer tube. The dropouts feature subtle Sturdy Cycles branding and can optionally include mudguard mounts.

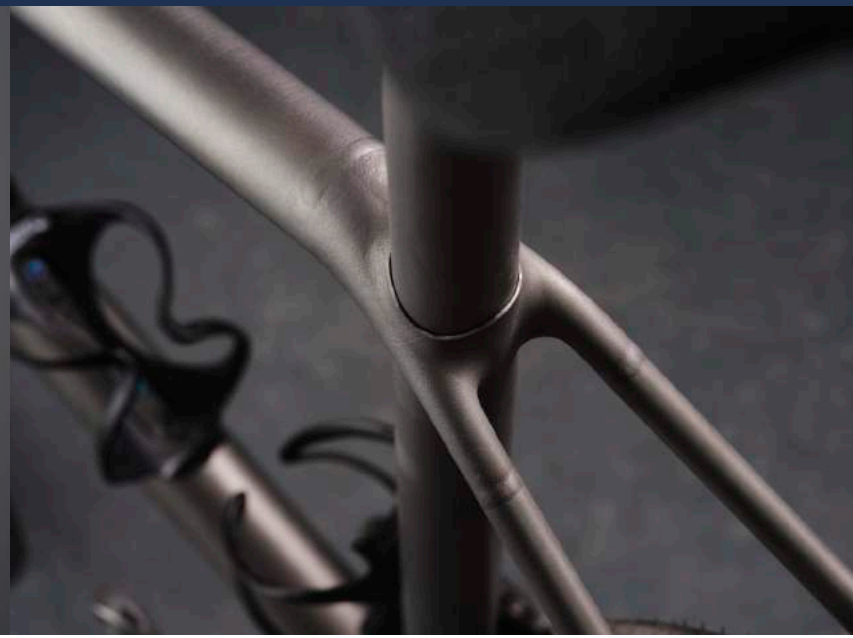


"The fork integrates smoothly with the lower headset race to create a flowing visual link between the two components."



Design details

Seatpost



The Sturdy seatpost functions as the proverbial cherry on the cake.

An elegantly formed body proudly emblazoned with the Sturdy D.

Cilla and Fiadh include a 3D printed seatpost topper welded to a round titanium tube. Sidhe and Éimear feature a fully printed aerodynamically shaped seat tube. As with all our titanium frameset components you can choose from a range of finishing processes to perfectly customise your Sturdy Cycle.

Design details

Dropouts and chainstays

The Sturdy Cycles dropout and chainstay assembly is one of our favourite areas of the bike. The large and relatively flat surface area of the dropout provides some excellent opportunity for rider customisation. The non-drive side dropout features the model name 'embossed' into the surface of the print but the drive side is left empty for each rider to customise. Maybe you want to dedicate this build to a loved one or perhaps you just want to go classic pro team style and include your own initials and surname. The choice is yours, we can even include simple graphics if you can provide them.

Previous models of this assembly included an additional weld location halfway along that chainstay but our latest model is a single piece with a single join next to the bottom bracket - this gives the assembly a much cleaner aesthetic.

Details include a replaceable titanium mech hanger which is secured by a replaceable encapsulated nut hidden underneath the dropout. Mudguard mounts are also available on request.

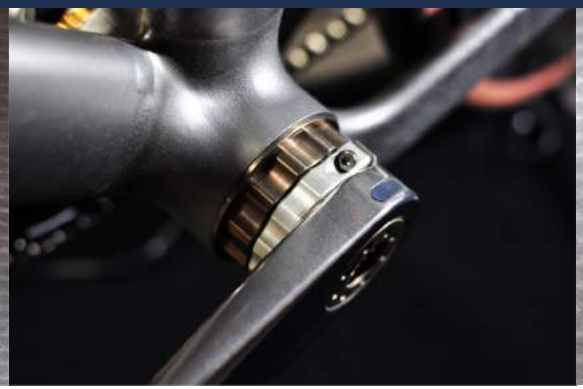

Fiadh
LOCK 40N.m
MIN. THICKNESS 1.5mm
FACE LINE 140mm


DB-140C3
CAMPAGNOLO
Sidhe

Design details

Build kit and other small parts

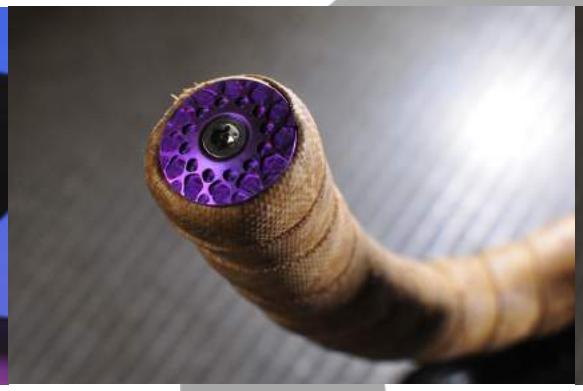
The Sturdy Cycles frameset is complemented by a range of additional small parts, all of which are designed in house. Each component can be finished to match your frameset.

Bottom Bracket

We produce our own titanium T47 bottom brackets. T47 is a large diameter threaded bottom bracket standard similar to a traditional BSA. It is compatible with a wide range of cranksets however we typically pair them with our printed crankset. Each frame is supplied with a bottom bracket tool which doubles as a lockring removal tool.






Bar end Plugs

Our machined titanium bar end plugs feature a radial pattern that references the pattern of the crankset. These plugs are a real customer favourite and are machined with impressive detail - an ideal surface finish for anodising.

Design details

Build kit and other small parts

Brake rotor lockrings
The Sturdy 3D printed rotor lockrings are another perfect finishing touch for your frame. The lockrings feature the radial pattern common on the chainring and bar end plugs. These are another customisable feature of the frame - subtle but impactful.

Torx bolts
Sometimes the smallest details are the most satisfying. Our custom made titanium bolts are hollow to reduce weight, shallow to reduce protrusion and they all share a common Torx T25 fitting. Each frame is supplied with a Torx T25 tool which is almost the only tool you will need to make adjustments to your finished bike.

Jockey Wheels
These 3D printed jockey wheels are a real luxury addition to any rear derailleur. Designed to be compatible with a wide range of rear derailleur systems and gearing setups. Titanium is a really durable material and perfect for this high wear component - it's a huge step up from the plastic versions supplied with most groupsets. Featuring super reliable stainless steel enduro bearings and custom machined aluminium bearing caps. As with all of our titanium frame accessories these can be anodised in a range of colours to best suit your particular build.

Designed, engineered & built to suit you

Commissioning your own Sturdy Cycle will be a collaborative experience that will allow you to contribute towards the creation of something truly unique and meaningful.

We will create a brief together, agree on the details and then sign off the design for production. We are flexible and can accommodate your specific level of existing knowledge and experience; don't feel as though you need to be fully clued up on frame design.

How does it work?

The first step is choosing a model and placing a deposit - please read the descriptions in our base model pages don't worry if you aren't certain which model will suit you best, we can always change this based on the consultation process. Placing a deposit secures your place in the build queue and provides you with an estimated delivery date.

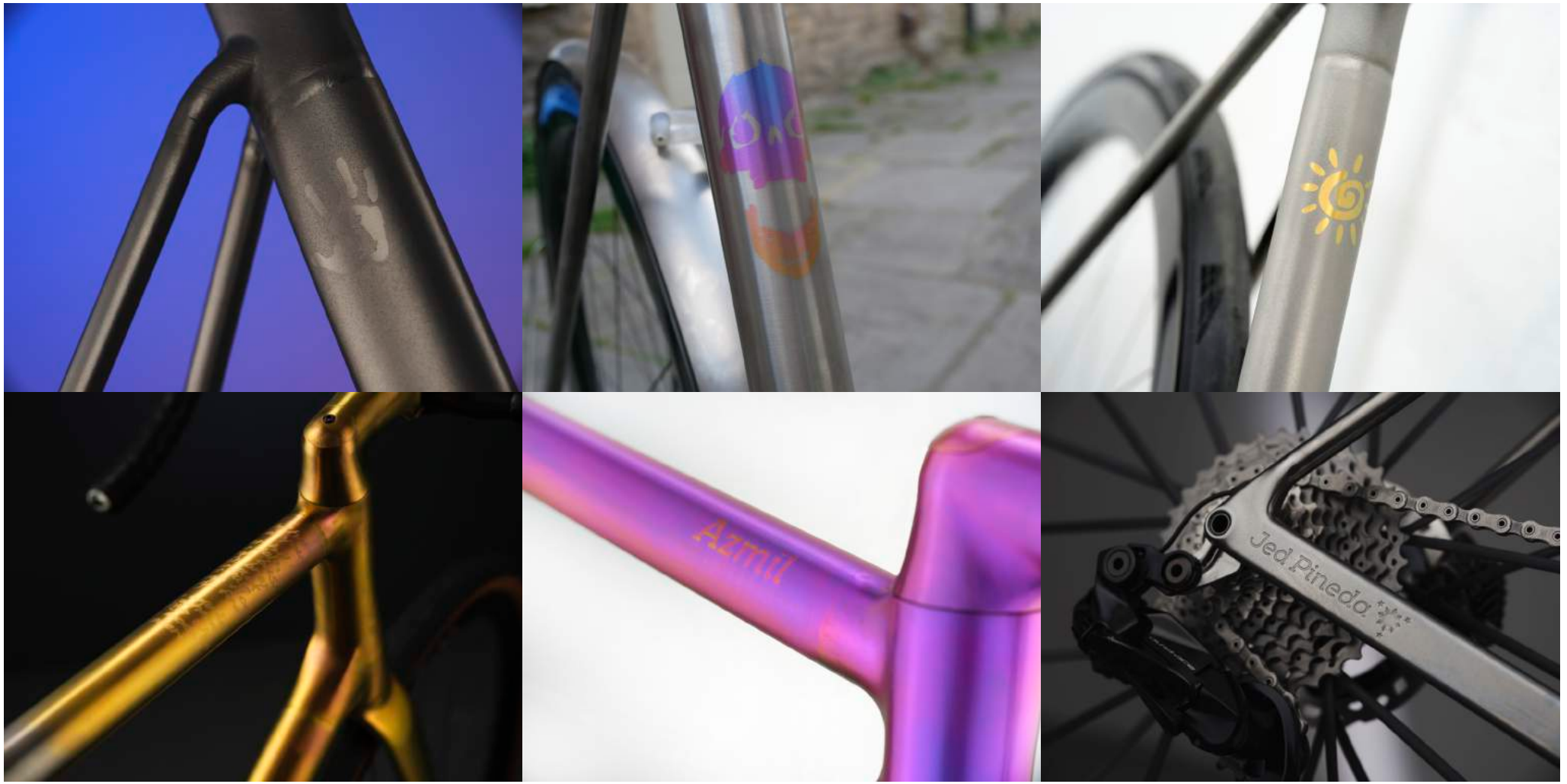
During the next step we will create a customer build sheet to record all of your specific requests, you will be given shared access to this document and together we will work to populate it with all necessary information. This will include creating a detailed design brief for your bike. Amongst other details we will discuss your specific handling requirements, riding preferences, personal riding goals, aesthetics and the general 'personality' of your future bike. We will also ask you to select between any model variations and to stipulate any specific customisation. E.g. Your name printed on the dropout.

An optional step in the process is a bespoke bike fit - we highly recommend this step unless you already have a very clear idea of your specific bike fit requirements or concerns. We are based in Frome, Somerset and we will personally conduct a bike fit at our workshop. If you are unable to make the journey to our workshop then we will be happy to recommend a bike fitting expert closer to your locality, we are also happy for you to use your own choice of bike fitter.

Once we have all the necessary data Tom will begin creating a suggested geometry set. This will be sent to you for review alongside an explanation of the proposed design. Any changes or adjustments will be made and we will define a final design through a process of communication and iterative development. When a design is finalised we will require the next deposit instalments. Once payment is made we will finalise your design and order the 3D printed parts.

Whilst your parts are being printed we will begin to prepare all of the associated materials. Printing can take anything from a few weeks to a few months depending on the current workload of the printing company. Unfortunately this part of the process is slightly out of our control however whilst we're awaiting the delivery of parts we will begin preparing everything else. Tubing will be selected and cut to size, components will be gathered and some of the smaller sub assemblies will be prepared.

Continued on next page...



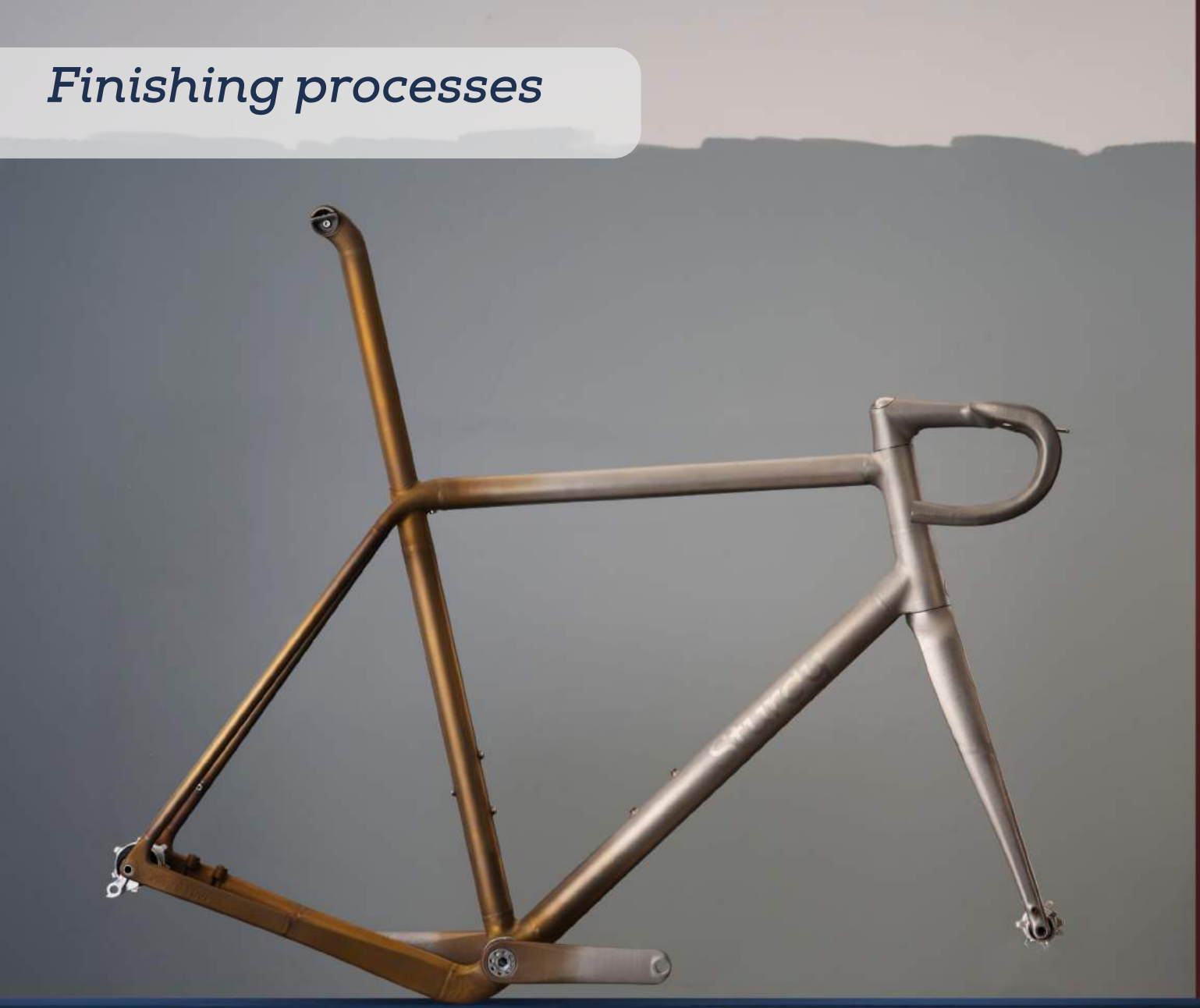
When your 3D printed parts have been delivered it is necessary for us to complete some machining or finishing processes on all of the critical interfaces. The bottom bracket, cranks and various other parts all require post machining in order for them to conform to the necessary tolerances for each component.

Once these processes have been completed we will begin the fabrication process. The fabrication process is staged. First we assemble and weld the bicycle frame and other parts. The completed frameset is taken to a 'shot peening' facility (read more about this in the **Finishing Processes** section of the product brochure).

Next we complete any finishing processes that you have selected such as anodising or polishing. Once we're happy with the finish we will begin the final assembly. You will receive updates during the fabrication process and any fine details relating to build kit or finishing processes will be finalised. When your bike is fully assembled the last balance payment will be due and we will complete a final QC before preparing it for shipping or collection.

Congratulations, your Sturdy Cycle is ready to ride!

Finishing processes



We offer a range of frame finishing processes from which you can choose.

We understand that many of our riders spend a great deal of time on their bikes and so we like to help them add detail and meaning to their individual frameset. All titanium frameset components can be matched to the main frame and fork. Our frame finishing processes are split into tiers based on how labour intensive each process is.

Tier 1
This tier is included in the frameset price and includes:
- Shot peening and logo masking
- Basic custom detail masking (often something of personal significance)
- Anodising on printed parts, logo and accessories (anodising on printed parts will not extended beyond the junction boundary)

Tier 2
This tier will incur a surcharge and includes:
- Shot peening and logo masking
- Extensive custom detail masking (often something of personal significance)
- Extensive anodising across printed parts and tubes - E.g. Half frame fades, complex multiple anodised colour areas

-Polishing of a single component E.g. Crankset, cockpit

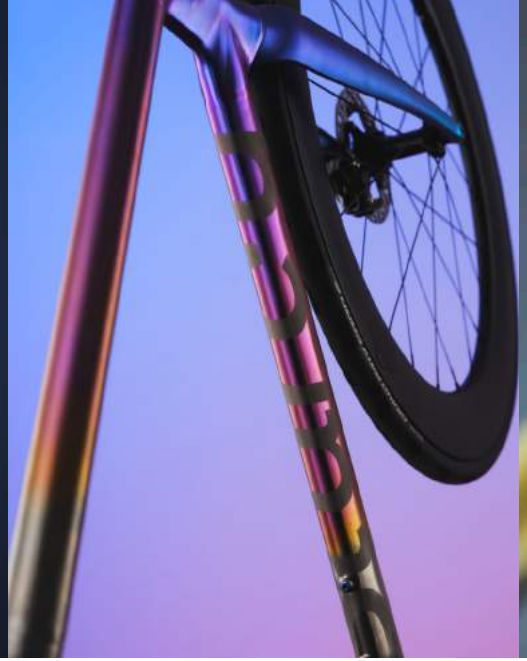
Tier 3
This tier will incur a surcharge and includes:
- Shot peening and logo masking
- Extensive custom detail masking (often something of personal significance)
- Extensive anodising across printed parts and tubes - E.g. Half frame fades, complex multiple anodised colour areas
- Extensive polishing of parts or whole frame

Alternative finishing options

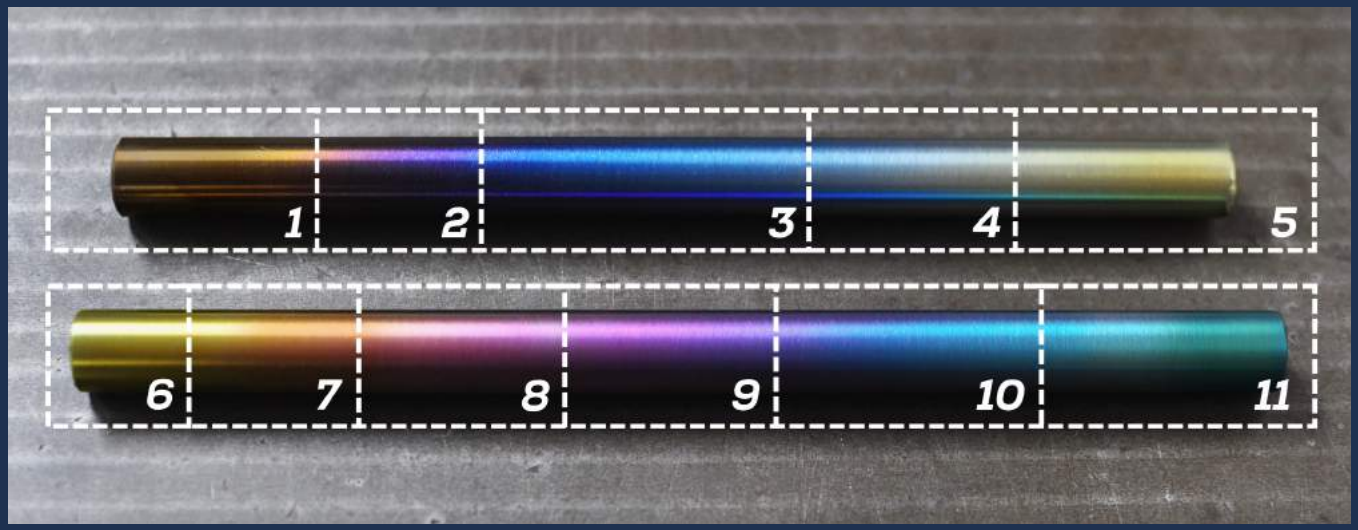
There are a variety of alternative frame finishing services available from other organisations . If you are interested in any of the following options they will be undertaken at your own risk and cost. We have worked with suppliers that provide the following services:
- Cerakote
- Wet paint
- Powder coating

Please send us a custom enquiry if you have something special in mind.

Anodised



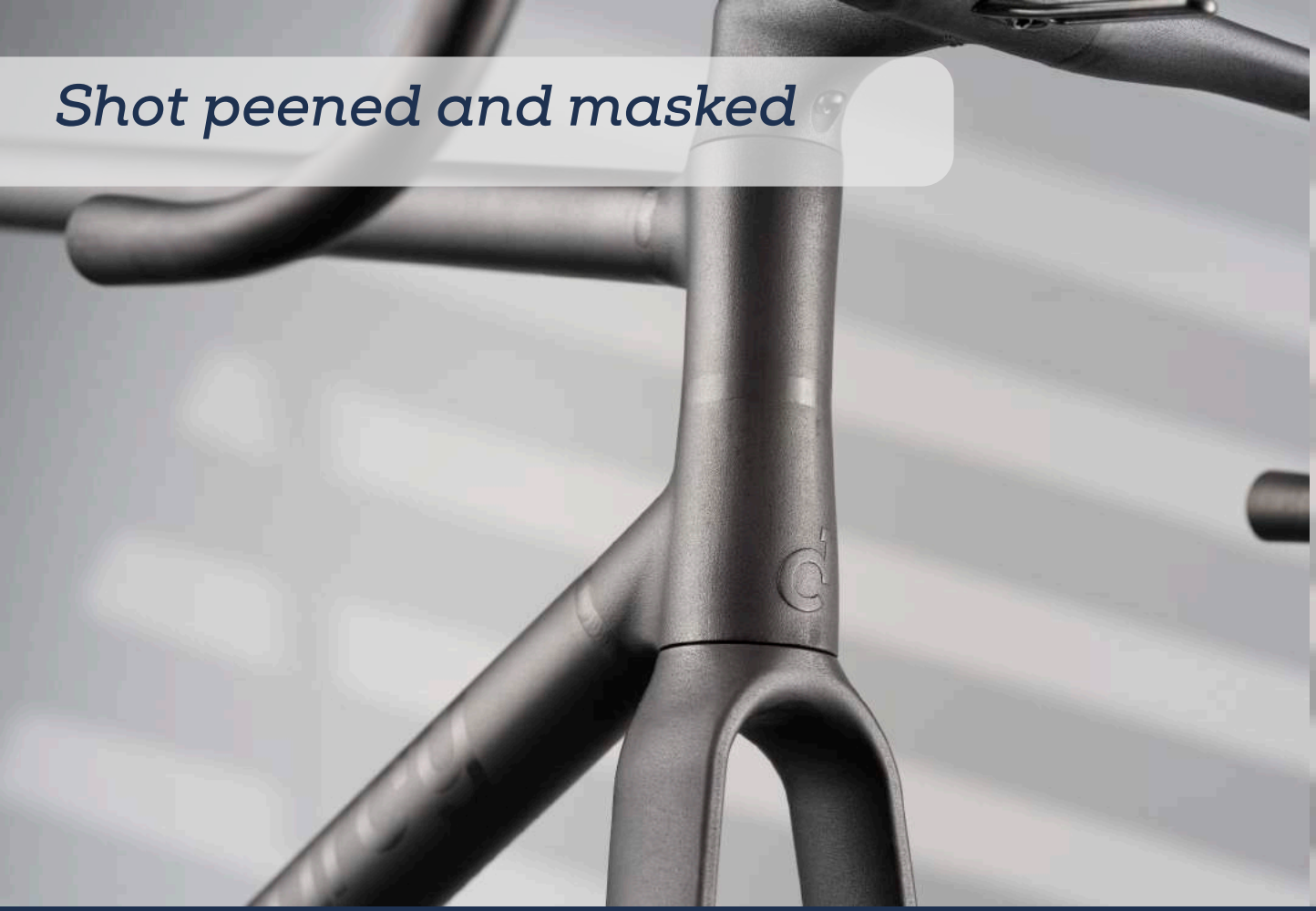
Titanium is highly corrosion resistant due to the hard oxide layer which covers the surface of the material. The appearance of this oxide layer can be manipulated using an electrochemical process called anodising. ***Anodising alters the depth of the oxide layer on the surface of the titanium - different depths alter the refraction, reflection, and absorption of light hitting the surface.*** This has the effect of creating a range of different surface colours. Because the colour is created by light this finish can often vary under different lighting conditions - sometimes looking brighter, darker or even iridescent in certain conditions.



We can anodise your frame with a range of different colours although it is worth noting that the process is relatively difficult to control precisely so we ask that riders choose a colour range from the included diagram.

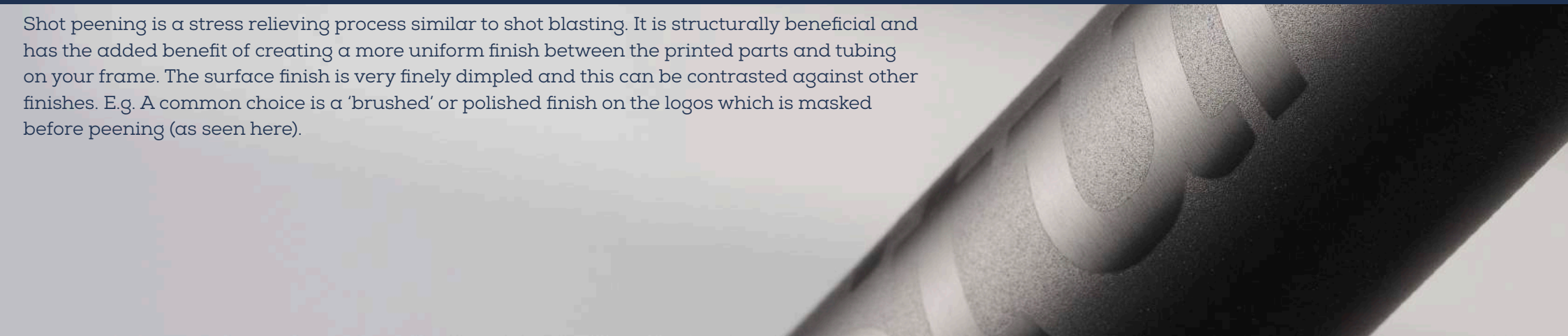
We can create fade effects using anodising however it is only possible to fade between two colours that are next to each other on the diagram below - this is because the oxide layer is generated by passing an electrical current through the material - different voltages create different colours. Think of the diagram below as a scale from low to high voltage.

Shot peened and masked



Our standard finish is a masked and shot peened finish.

Shot peening is a stress relieving process similar to shot blasting. It is structurally beneficial and has the added benefit of creating a more uniform finish between the printed parts and tubing on your frame. The surface finish is very finely dimpled and this can be contrasted against other finishes. E.g. A common choice is a 'brushed' or polished finish on the logos which is masked before peening (as seen here).



Polished

Polishing is one of the more desirable finishing processes and by far the most labour intensive.

It is possible to fully polish an entire frameset, this process is conducted using a mixture of mechanical and hand polishing processes. It is worth noting that whilst polishing looks incredible when fresh it can highlight the normal scuffing or scratching that any bicycle frame will experience in everyday usage. For this reason we tend to prefer to polish smaller areas of the bike such as the crankset or cockpit.

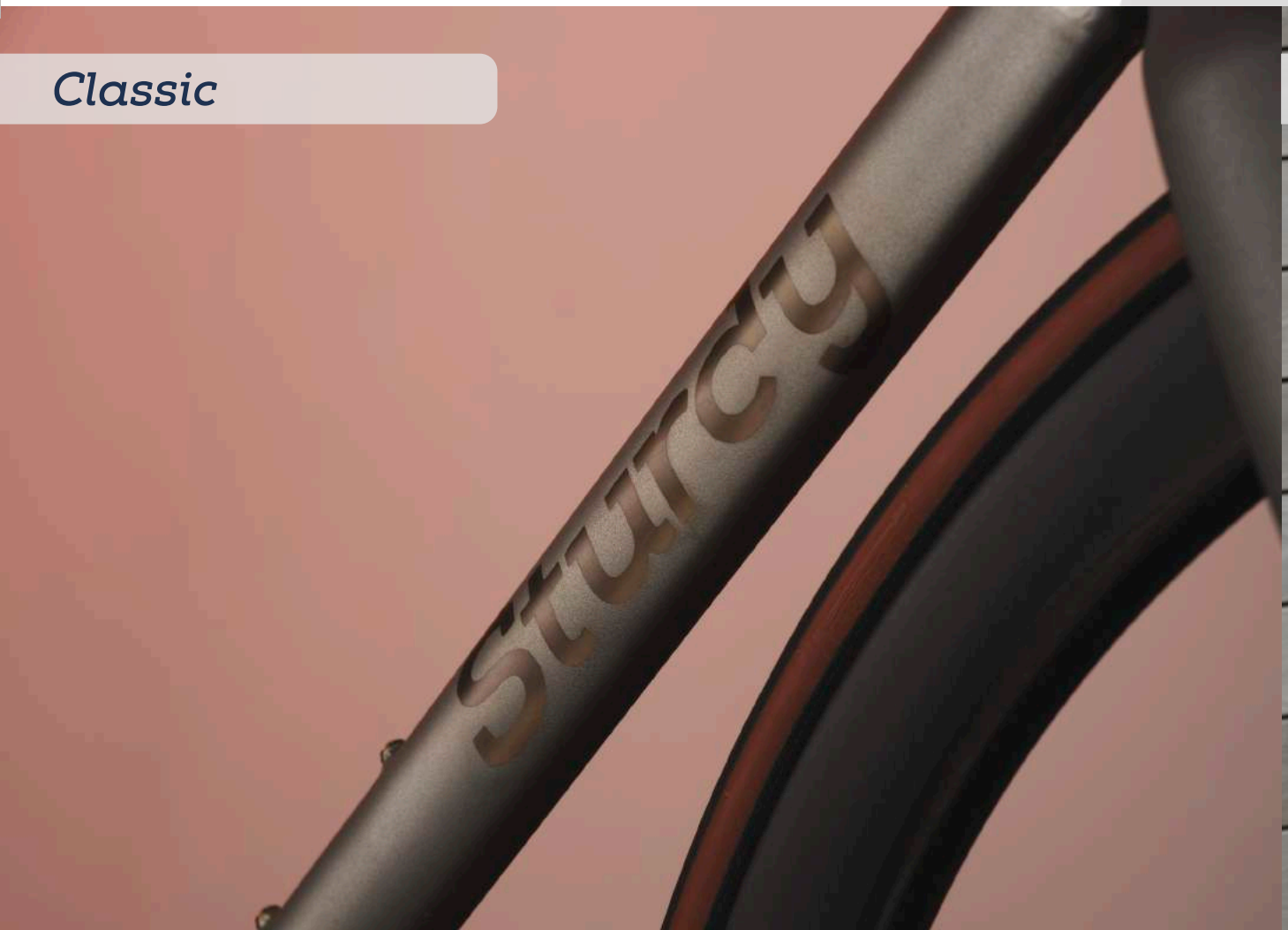
Downtube logo

As part of the customisation process you can select your preferred style of downtube logo.

Classic
Probably considered by most as the traditional logo placement - one logo proudly emblazoned on each side of the downtube.

Oversized
A more contemporary approach to branding - logo clarity is eschewed in favour of a more abstract appearance. This is probably our preferred branding style but the choice is yours.

Classic



Oversized

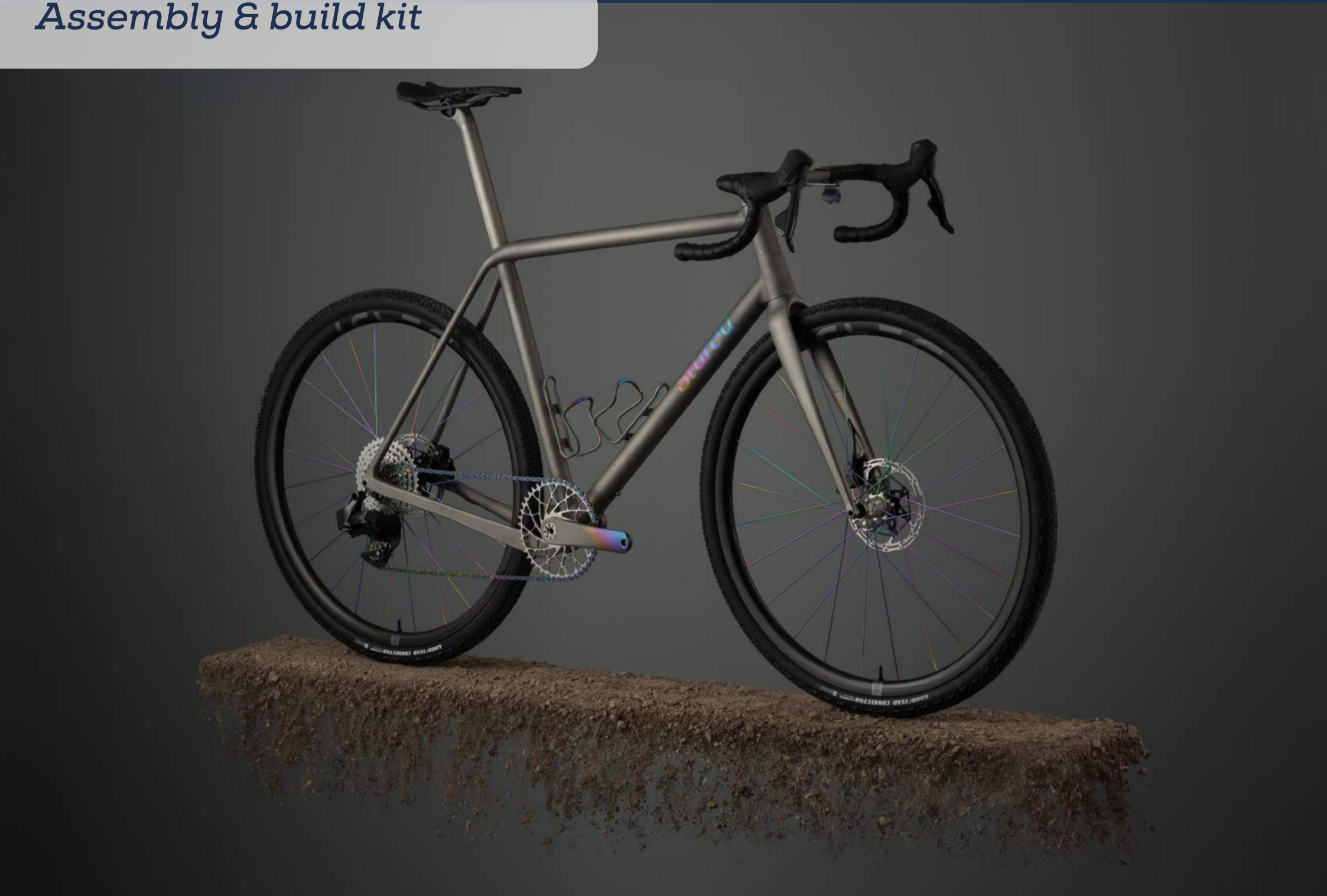
Frame builders choice

Not sure which finishing process to choose? Leave it to us and we will create something unique.

If you're feeling uncertain about which finish to choose then consider letting us decide. We love experimenting with new anodising techniques and we occasionally stumble across some really wonderful new methods of finishing titanium. The serendipitous nature of these processes means that your finish will be completely unique to your bicycle. Feel free to provide a little guidance or perhaps just leave it completely to us - either way we will get creative and produce a one of a kind finish. The frame builders choice option is available with every tier of finishing.
All of the additional finishing options such as custom masking and logo choice are still available as part of this option.

Please see the anodising section of this brochure to view the range of colours that are available. More information relating to the finishing tiers is available on the finishing processes page.

Assembly & build kit



Bjōrn saddles

Bjōrn are our favoured carbon composite partner. We work with them to create the carbon steerer tubes on our forks and the other carbon accessories.

Based in Slovenia and dedicated to creating products that are both functional and aesthetically pleasing. Bjōrn are our go to saddle manufacturers.

Check out their **website** to find out more about their range of super light and versatile saddles.

Classified hubs

We love the simple aesthetics achievable using the classified groupset system - it is quickly becoming one of the most popular requests in our build queue. Heralded as 'The Ultimate Shifting Experience' and 'The Front Derailleur Killer'. Here's what classified have to say:

"The Powershift hub offers unrivalled shift quality, high gearing range and small steps in between gears combining the benefits of both 1x and 2x. It's the most efficient drivetrain in the market."

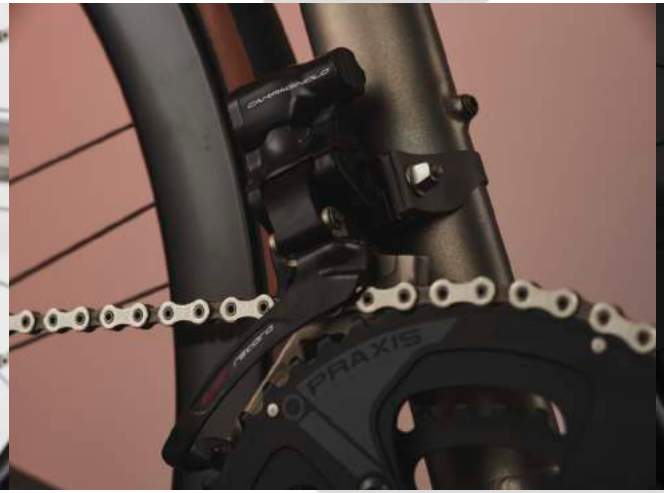
Check out their **website** for more information and feel free to get in touch if you want to discuss using Classified on your Sturdy Cycles dream build.

Groupsets




The perfect bike isn't complete without your choice of groupset.

Our frames are designed to be used exclusively with electronic shifting systems and we can customise the frame design to suit all available manufacturers. This means you won't have to look at any redundant routing ports - each frame will be designed to marry perfectly with your chosen system. We're happy to discuss each option and recommend, what we believe, is the most suitable system for your individual requirements.

Wheelsets

We're happy to source wheels from a variety of different manufacturers however there are certain brands that we trust and prefer to work with as a preference.

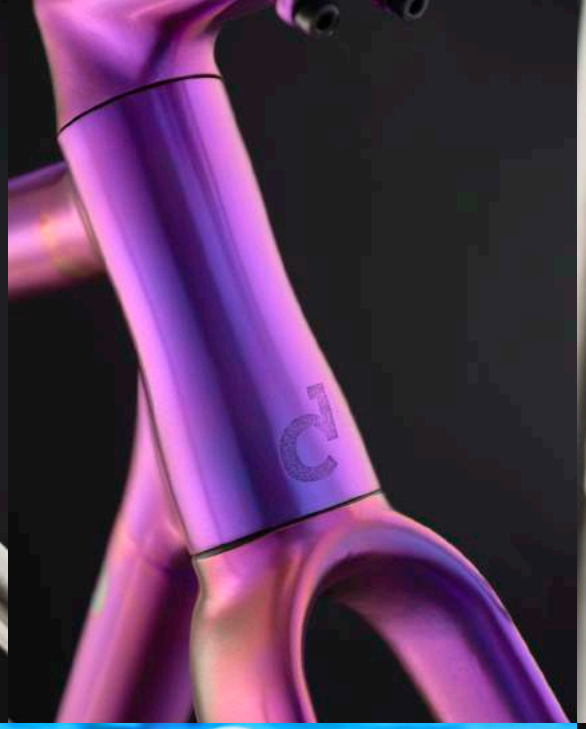
DT Swiss

DT offer an amazing range of high quality wheelsets. They are world renowned for producing incredibly reliable and high quality hubs. We can help you select a set of wheels most suitable for tour build, whether that's robust gravel, super lightweight climbing or deep section aerodynamics.

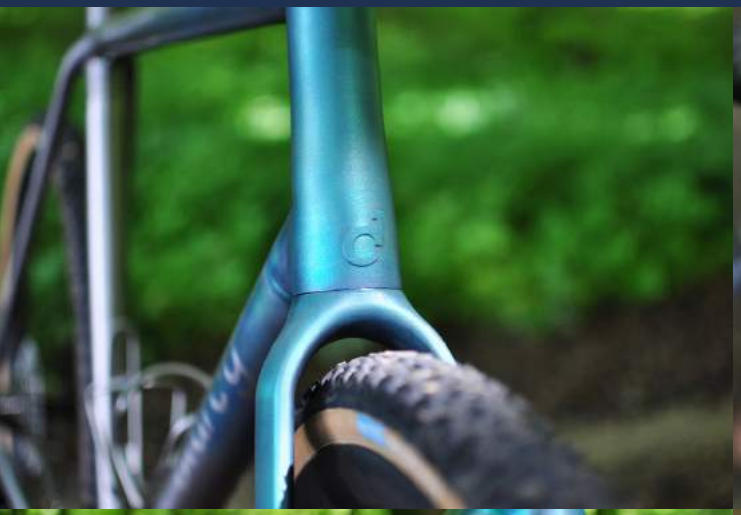
Manuka Cycleworks

Manuka Cycleworks is based in the beautiful Cumbrian countryside and run by our friend Sam. He makes custom hand built wheelsets on our behalf. If you're looking for something a little more bespoke then this is our recommendation. With a history working as a pro level mechanic and years of wheel building experience he is happy to create wheels using your choice of parts or his own Manuka branded rims and hubs. These are incredible wheelsets made with care and attention here in the UK.

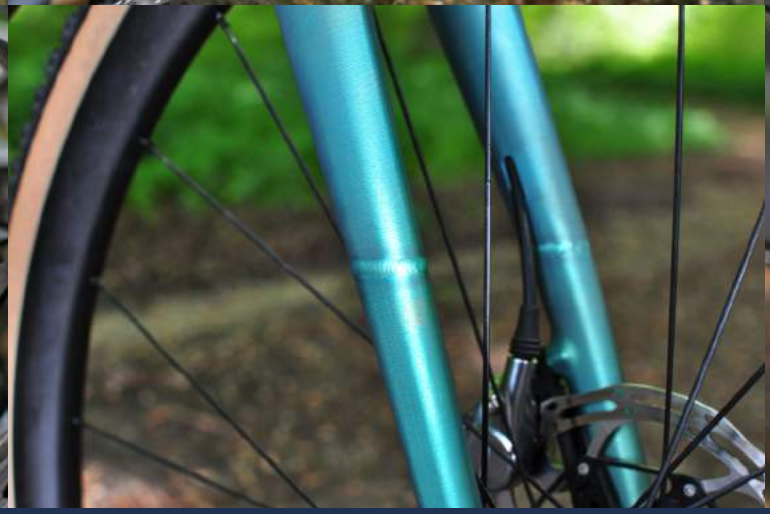
Customer gallery




anti
PIRELLI
PIRELLI




OLIVIA




OLIVIA


3=ST
GOODYEAR VECTOR 4SEASONS

Payment, shipping & warranty

Payment:

Placing a deposit secures your place in the build queue. The product page for each bike model includes a list of estimated delivery dates from which you can select. Balance payments are staged throughout the process, please see the **'Designed, engineered & built to suit you'** pages for more detail.

Shipping:

We ship internationally using a specially designed packaging system in order to ensure your Study Cycles arrives in perfect condition. Shippings fees are not included in the purchase price and will be charged separately. You are also welcome to collect your bicycle from our workshop in Frome, Somerset.

Warranty:

We offer a lifetime warranty for all the parts that we produce. This warranty is limited to the original owner and is non transferable. Please see the full terms and conditions on our website for more information.

Terms of Sale:

Please see our **website** for detailed terms of sale.