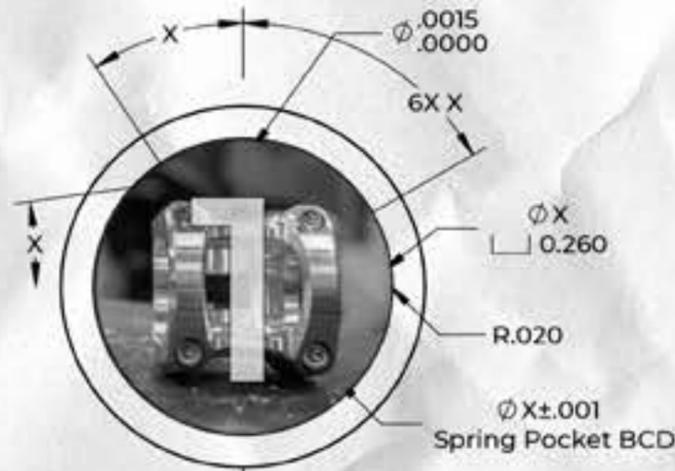
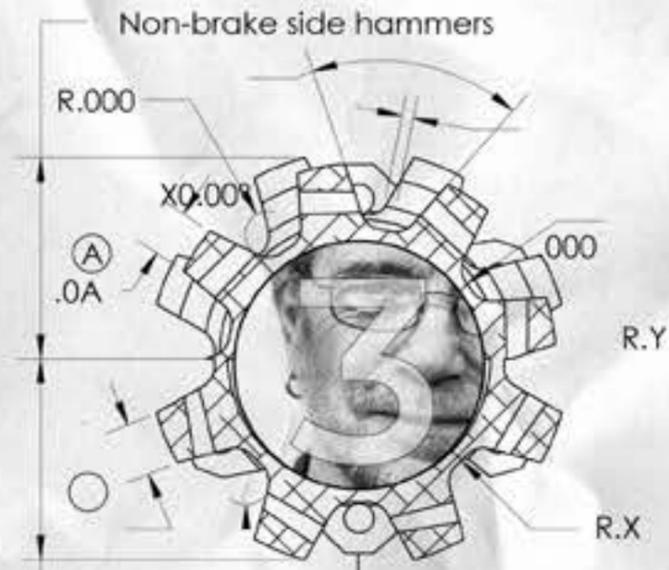




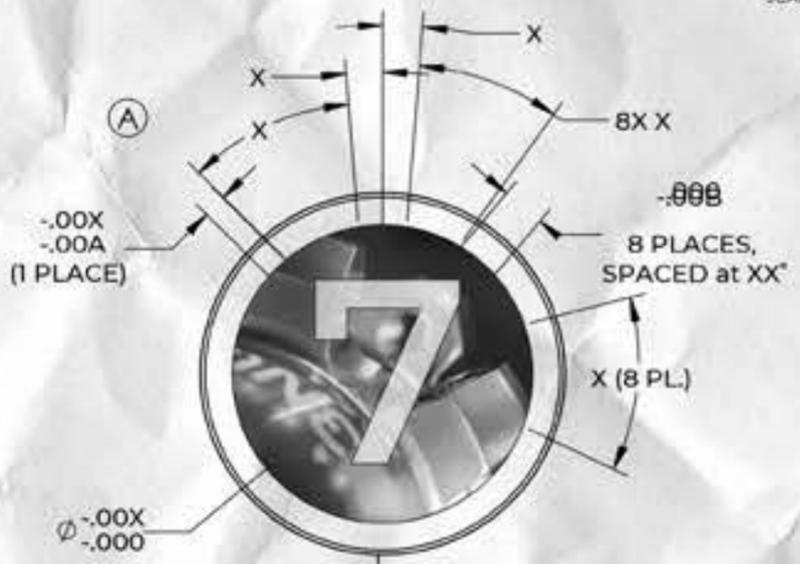
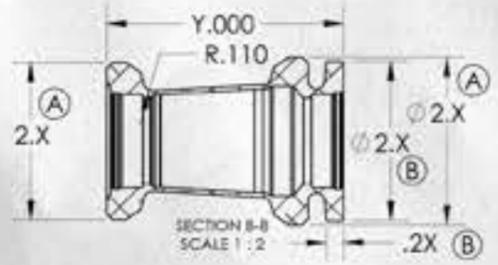
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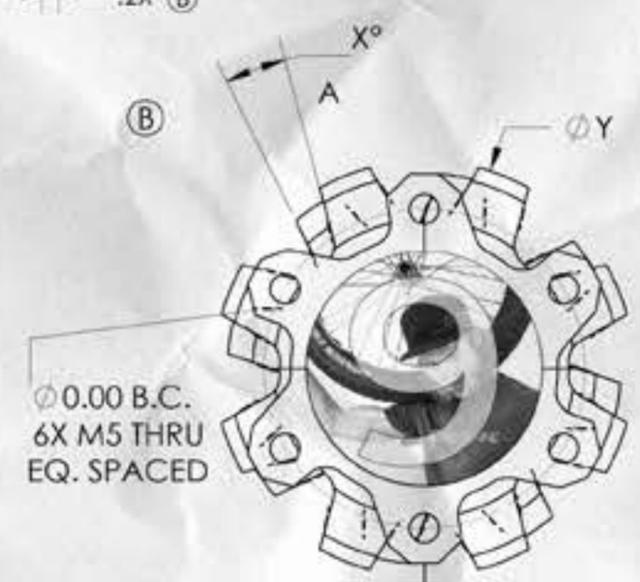
5-AXIS CNC



LEGACY

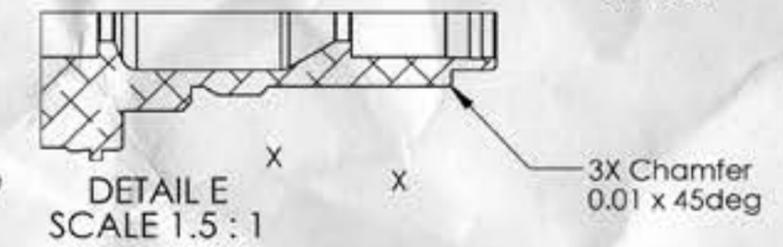
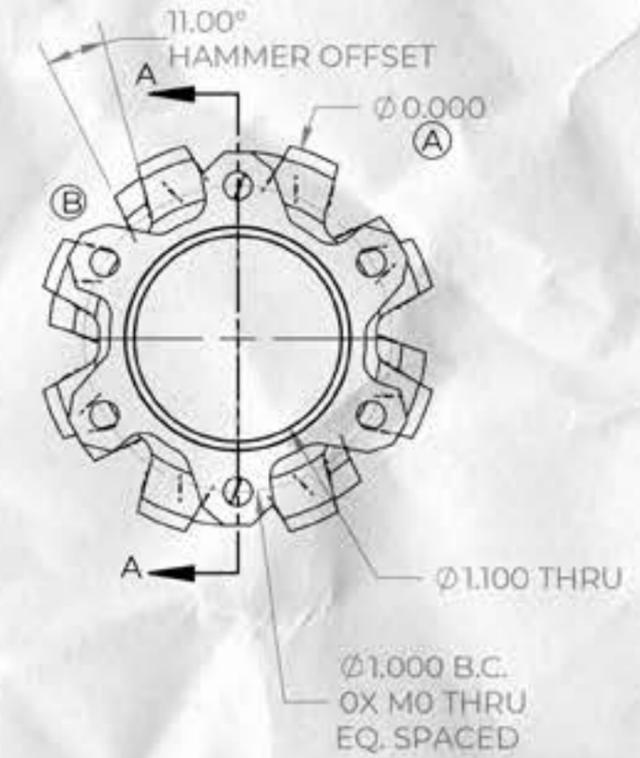
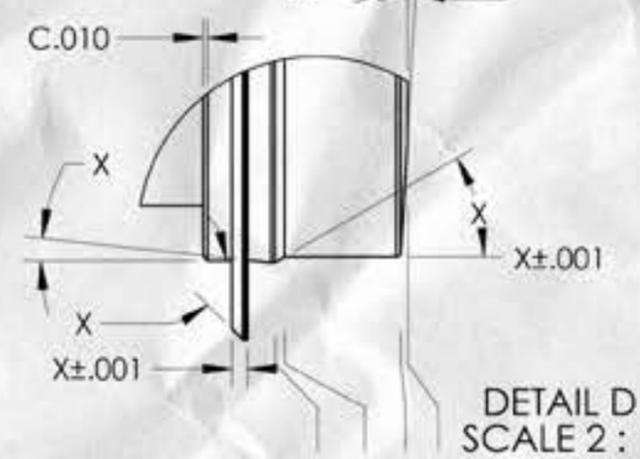
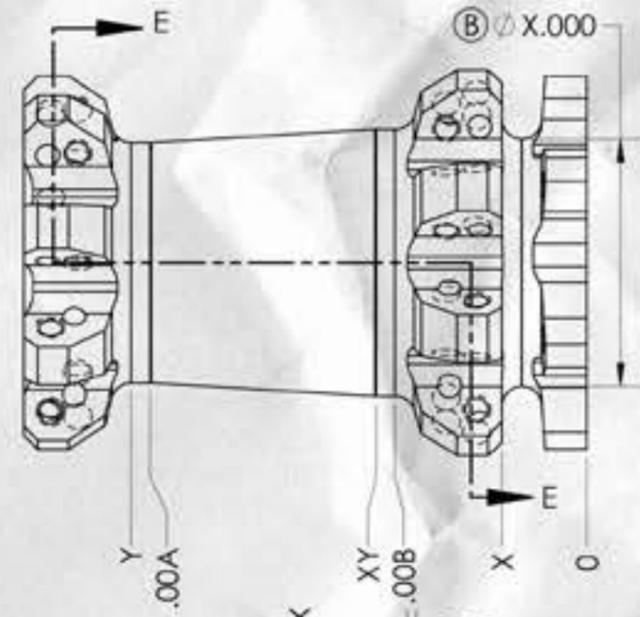


ANODIZING



SHAQUILLE O' WHEEL

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
-	-	See Sheet1	-



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	
TOLERANCES:		CHECKED	
FRACTIONAL: $\pm 1/32$		ENG APPR.	
ANGULAR: $\pm 0.5$ DEG		MFG APPR.	
TWO PLACE DECIMAL: $\pm 0.01$		G.A.	
THREE PLACE DECIMAL: $\pm 0.005$		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL: 7068-T6			
FINISH: Blk Anodize			
NEXT ASSY	USED ON		
APPLICATION: DO NOT SCALE DRAWING			

INDUSTRY NINE		
TITLE: Hydra MTN Freehub XD LATHE OP		
SIZE: A	DWG. NO.: HFH2515	REV: A
SCALE: 1:1	WEIGHT: 36.87	SHEET 2 OF 2

# 5-AXIS CNC MACHINING

We strive to create the planet's most desirable bicycle components—capable of exceeding the demands of riders around the world. That's why Industry Nine takes a “no shortcuts” approach to every part our name is engraved on, from our in-house anodized lab to our custom tension and truing machines to increase productivity.

Our computer applications for custom wheel builds are engineered from the ground up. It's not just because we're hardy DIYers (though we are). We've developed these tools out of necessity. **No one does exactly what Industry Nine does, so we need unique processes, products, and solutions.**

Our A-Series stems are a prime example of this innovative approach to manufacturing. Instead of the traditional “table” mills that utilize three axes, our A-Series stems are crafted with a five-axis CNC. This means our machines can create more involved shapes—configurations with complex curves, cavities, and contours. The “A” in our A35 or A318 is a direct reference to the “A” rotational axis—the one used to rotate the stem during its birth in our five-axis machine centers.

Employing five-axis machining to create our A-Series stems opens up the playbook, allowing us to remove excessive material, limit the tool set-ups that rob efficiency and accuracy, and to deliver parts that are light, strong, and beautiful. **This is how we bring i9 aesthetics and performance philosophy to new frontiers.**





FRED SCHULDT  
MACHINE SHOP FOREMAN



Legacy "Enduro" Hubset, 2006-2012



## LEGACY

Fred Schuldt was a part of the original i9 team to bring the first wheelsets from prototype to production and trail. We sat down with Fred to learn what makes him tick.

Tell us a little about your history with Industry Nine.

**Fred:** I owned a bike shop in Asheville with a reputation for service. [i9 owner] Clint Spiegel and John Kiffmeyer came in one day with the original i9 prototype. I was blown away—the aluminum spokes, the radical and distinctive milling of the hubshell. I asked Clint on the spot if they were hiring. He said they were always looking for talented people, so I put the shop up for sale and started a month or two later.

Industry Nine was just an idea, but I began to learn CNC machining having been to manual machinist school in the Navy. I used my contacts in the bicycle industry to promote this new technology. As you might imagine, there was skepticism about the alloy spokes and the CNC bling. We put a set of gold-spoked wheels under George Ryan at Crankworx Snowshoe in 2006, and he over-rotated a big step-down 360 that would have destroyed any other wheelset, and a few of the right people noticed. That was the moment things began to happen. This is the perfect job

## 5 When I saw the original i9 prototype, I was blown away...



for me. It is equal parts creativity, math, and logistics, with a dollop of management. I can "see" the timelines, respond to unexpected demands, and develop new parts, even do production if I need some Zen. And I'm still in love with bicycles.

**What parts of your work history inform your wide skill set as Production Shop Foreman?**

The most important characteristic is having been raised by a career Navy aircraft mechanic who taught me to keep showing up and giving your all. A production boss is equal parts expert and politician—I have to know the job well enough to teach, but also the expertise to earn the respect of the veterans. My own time in the Navy taught

me how to tread this line, especially as I attained rank. I have a head for numbers, and mechanical aptitude. Machining came naturally. Having owned a bicycle shop, I also understand business, how to maintain efficiency and reduce waste, especially of the most precious resource, time.



**So... What is CNC machining?**

A CNC (Computer Numeric Control) machine is a lathe or mill that is driven by servo motors on each axis. We write code that tells the machine how to move—and move the same way every time. It's metal that uses metal to cut metal. There are nuances, but that's the gist. We have roughly 50 dedicated to Industry Nine production: 25 lathes, 15 mills, and all 8 EDMs. That number increases during peak times of the year.

**Does your time spent on two wheels, bikes and moto, give you any insights you can apply when making bike components?**

I have always had an appreciation for high-quality machines and components. In the bike shops "bread and butter" bikes were boring to me. I was an early adopter of high-end frames and quality components, and clever or elegant engineering is just as important to me as aesthetics. Industry Nine checks those boxes, so I am inspired to find my own clever or elegant solutions to production.

**\* After several years leading production in the machine shop for Industry Nine parts, Fred has left the company to pursue other endeavors. He's still a regular on his local Pisgah NF trails and can be found leading the charge on some of the lesser known trails in the region.**

**Thank you, Fred, for your many years of service and stoke. \***

# ANODIZING

The anodization process is often, and appropriately, described as “half science, half magic.”

The science part is understandable. We’re creating chemical reactions in a controlled environment with predictable results based on previous outcomes. Not only does the ano process make your wheels gorgeous, it also adds a degree of surface hardness and corrosion resistance to allow your wheels to hold up through years of abuse in the harshest conditions.

We’re using processes that can be repeated and adjusted according to needs. To consider the “magic” perhaps the best way to think about it would be baking—bakers using the same recipe and ingredients can bake cookies with different taste. **99% of the variables are the exact same, but the best batch of cookies comes from the most infinitesimal considerations.** It’s not just about the recipe or ingredients; it’s about the experience, the equipment, and all the cookies that came before.

Now here’s the fun part: take that recipe you have perfected, narrow the margin of acceptable standards to a smallest window

imaginable and times it... by eleven. **Eleven flavors, all available to mix and match, with nearly unlimited combinations.** Despite the consistency of the parts, the process between colors does vary. Running a rack of parts in gold takes entirely different considerations than the next batch of parts, which might be purple. The dye bath saturation time is one variable, but the stage immediately preceding the dye tank, in this case the anodization tank where we create aluminum oxide, will have a different saturation time prescribed according to the color. There is no “set it and forget it” when it comes to anodizing parts. Operator input and control is paramount—even when all the chemicals, temperatures and times are known and controlled for optimal results.

**Industry Nine is about expression and customization.** We built our business on riders configuring wheels that are a reflection of themselves, on wheels that match their bike perfectly. Breathtaking vibrant ano colors just aren’t part of the enticement proposition, they’re our DNA.





## SHAQUILLE O' WHEEL

Attracted by some of the finest riding on the East Coast and a loose job offer, Ricky Muehl packed his bags and moved to Asheville a decade ago.

While working at a shop in Michigan, I had become obsessed by the idea of working at Industry Nine," he remembers, "But [i9 owner] Clint told me that I needed to live in the area to have a chance at a job. It was a risk, but I took the chance."

When Ricky landed the job in 2009, Industry Nine was far from being the internationally known brand it is today. With an emphasis on

high-engaging hubs and a radical idea of using anodized, aluminum spokes, Ricky came on board as a wheel builder and the company's 10th employee. In a room full of mountain bikers, Ricky was a passionate road biker and informally assigned to building the majority, if not all, road wheels that came down the line.

During those early days, Ricky saw many of the prototypes—the brainchild borne of Clint's long nights in the machine shop. "We briefly experimented building road wheels where a flat-bladed aluminum spoke threaded directly into the hub itself with no flange at all," he explains. "Those were horribly tedious to build. Sometimes it'd take an entire day to build just one wheelset."

Blurring the lines between a bicycle historian and collector of all things i9, Ricky's current workspace is decorated with prototypes that never made it to production. With over a decade of experience building i9 wheels, Ricky approaches the craft with unrivaled precision. "Obviously we have tolerance ranges that we hit for all of our builds, but it's really hard for me to say, 'oh, that's good enough.'

Ricky's artistic view on the process of building wheels has extended beyond his hours at the wheel table and is proudly displayed on his two custom fat bikes. A far cry from his





**"I always find it worth it to strive for perfection."**

early days as a self-proclaimed "weight weenie," Ricky now almost exclusively rides fat bikes. His current stable includes a Wilco trail bike named Gary Laser Eyes, complete with a rainbow pin-striping paint job, and his custom-built Altruiste named Gallagher. Ricky and Gallagher can often be spotted ripping around the local CX race or i9 pump track with 80mm-wide carbon fatbike rims.

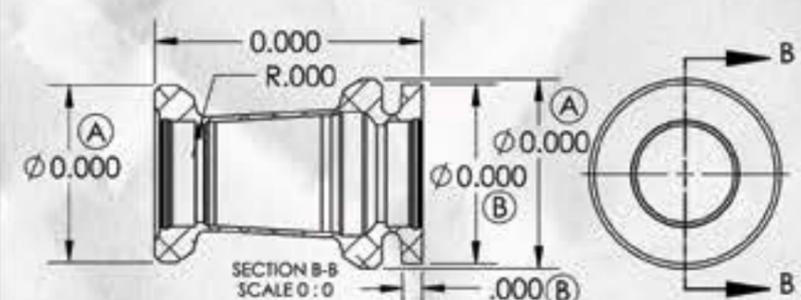
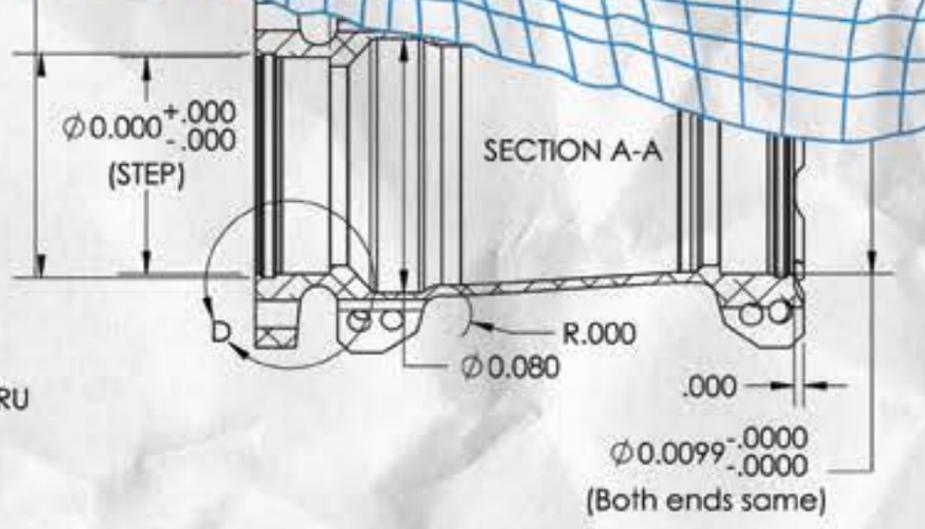
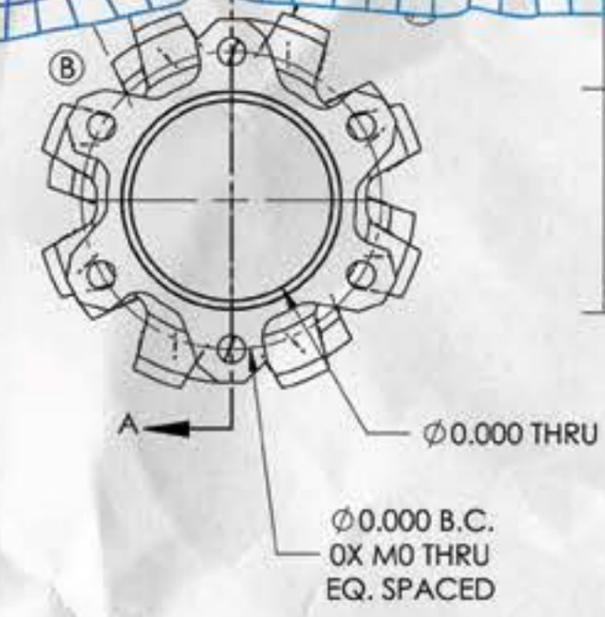
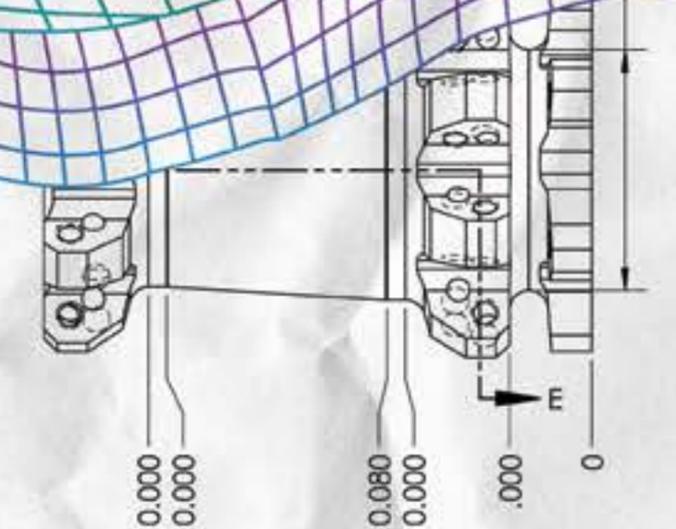
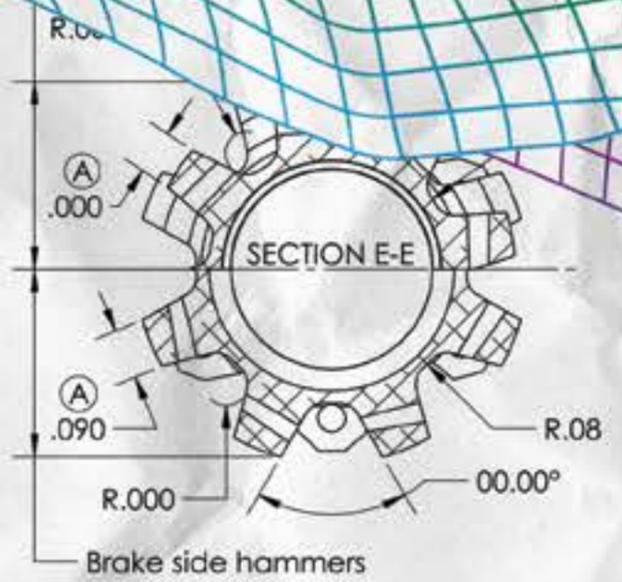
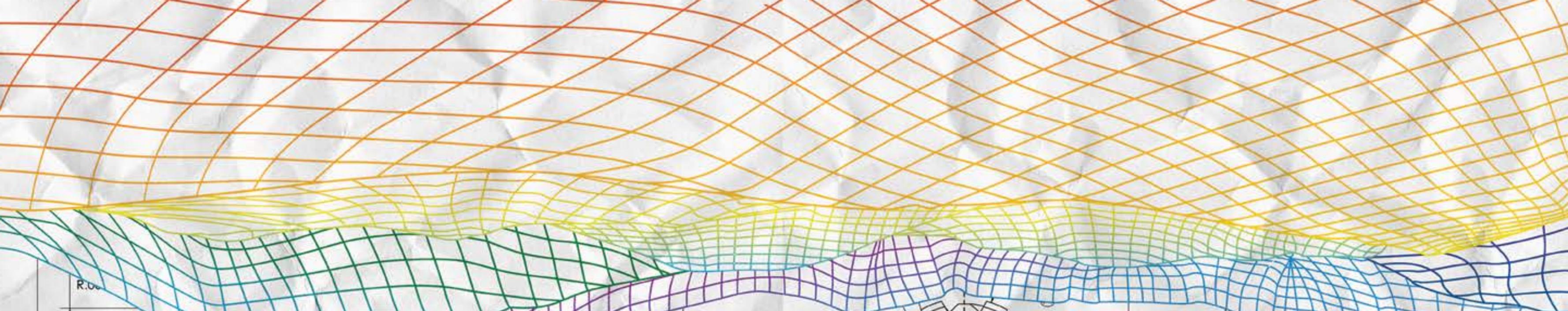
After many years as a wheel builder, Ricky now works in the service department, keeping hard-riden or older wheels rolling. **A company built on the concept of rebuilding over replacing wheels, there's rarely a wheelset that isn't salvaged.** "I've

seen 12-year-old wheels with heavy mileage that just need fresh bearings to be good as new," he says. "I've also seen wheels that were seemingly stored in a lake between rides. Those need a little extra love."

**An unexpected byproduct of Ricky's lengthy tenure with the company is his popular Instagram persona, @shaquille\_owheel.** Featuring custom builds and some creative service work, his thousands of followers get treated to behind-the-scenes i9 imagery. Ricky serves as the company's historian while lacing up the highest-performing wheels on the planet.



Ricky (@shaquille\_owheel) and his two completely custom fatbikes, Gallagher & Gary Laser Eyes



Use CAD lines from these views for CNC (FeatureCAM) programming of Lathe OP's. (Verify scale prior to use)



Same Lathe profile for 32 & 24H  
Use this print for both  
THU001 & THU003.

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<b>INDUSTRY NINE</b>					
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SCALE: 0:0		WEIGHT: 82.84		SHEET 0 OF 0	



## **i9** SERIES

90 POINTS OF ENGAGEMENT

BUILT WITH TRADITIONAL  
J-BEND SPOKES

LOWEST-COST OPTION, YET  
CONFIDENT AND CAPABLE

28 SPOKES,  
3 CROSS CONFIGURATION

CLASSIC BLACK



## **HYDRA S** SERIES

690 POINTS OF ENGAGEMENT

STEEL STRAIGHT PULL SPOKES  
BALANCE STRENGTH  
AND RIDE QUALITY

HIGH PERFORMANCE  
FEATURES AT A LOWER COST

28-SPOKE CHASSIS

CLASSIC BLACK



## **HYDRA 24-SPOKE**

690 POINTS OF ENGAGEMENT

ALUMINUM STRAIGHT  
PULL SPOKES

LIGHT WEIGHT  
YET DURABLE

COMPLIANT RIDE QUALITY

11 ANODIZED COLOR OPTIONS



## **HYDRA 32-SPOKE**

690 POINTS OF ENGAGEMENT

ALUMINUM STRAIGHT  
PULL SPOKES

MOST ROBUST i9 CHASSIS

MAXIMUM STIFFNESS

11 ANODIZED COLOR OPTIONS



\$\$\$\$



**EN 305**  

BEST RIDING APPLICATION RIM INNER DRIVE SPOKE WIDTH (mm) MECHANISM COUNT

**UL** ULTRALITE // High Performance XC | Trail

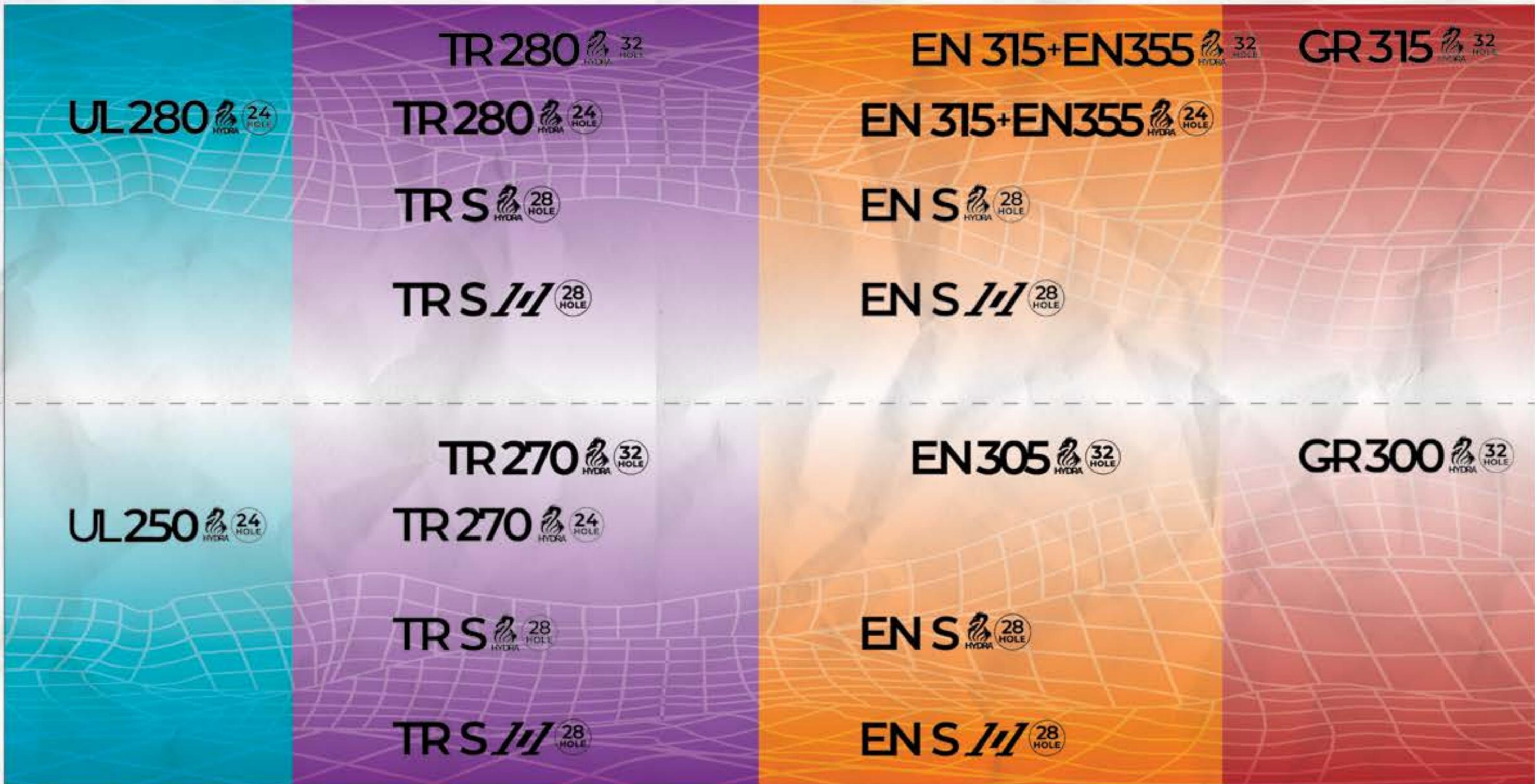
**TR** TRAIL // Trail | All-Mountain

**EN** ENDURO // D3 | All-Mountain | Enduro

**GR** GRADE // Enduro | Downhill



\$



■ UL    ◆    TR    ◆◆    EN    ◆◆    GR

# Your style for every adventure



5-AXIS CNC DESIGN

Swiss Alps

## A31 EIGHT STEMS A35

BUILT FOR:  
XC TO AGGRESSIVE TRAIL

Taking name and shape from the A-axis in our five-axis machining centers, the A318 and A35 are designed for everything from your local trails to that bucket-list trip in the Alps.

Add our expressive mix of 11 anodized colors and endless color combo options, and you've arrived at the intersection of execution and style.

Remember, eyes on the trail.

FORM MEETS FUNCTION  
i9.BIKE/VIP





**VAEA VERBEECK**  
**QUEEN OF CRANKWORX**  
 2019

UNCOMPROMISING CARBON  
 FOR ANY TERRAIN

## EN 315

**BUILT FOR:**  
**AGGRESSIVE ALL-MOUNTAIN**

Our category-defying EN315 carbon wheelset is a gladiator crossed with a gymnast.

This all-mountain wheelset is at home during any stage during your most demanding rides.

Whether railing through a switchback or hucking to a blind landing, EN315 always keeps pace. Built on our Hydra 24 or 32-spoke chassis, EN315 places emphasis on rowdy-readiness while still being light enough to pedal all day.

DESIGN MY WHEELS  
 i9.BIKE/VIP



The fatigue in my body becomes temporary, and the magical moments of riding alone through the wildness of the backcountry are illuminated. Such was the story of navigating an external fixation in a wheelchair and on crutches for 10 weeks. That journey was the longest ultra-endurance race I have ever endured. [But focusing on the present, my body, my breath, gratitude for what I could do, and the highlights of recovering took me hour-by-hour into day-by-day and week-by-week.](#) Finally, I ditched my crutches for a cane. Two days later, I swung my legs over a bike. The skills I had practiced to ride for 52 hours non-stop are those that equipped me to go from the ICU to rolling freely again. Just three months after facing the serious possibility that I might never again ride a bike outside, I pushed my feet into my pedals.

I felt my atrophied quads respond in a way that must be ingrained at the cellular level, and my wheels rolled forward. In that two-mile gravel road ride, I felt the joy, flow, inspiration, and gratitude that I seek when racing and adventuring on my bike. And every struggle, doubt, fear, pain, desperation and fatigue that arose in the prior three months dissipated as my wheels rolled down the road. [It was the best ride of my life.](#)

—Kait Boyle



LIGHTWEIGHT YET  
RUGGED CARBON WEAVE

## UL280

BUILT FOR:  
HIGH PERFORMANCE  
XC RACING

Our Ultralite 280 carbon wheelset shares your obsession over every detail to offer the best XC race wheelset available.

Combining the instantly engaging 24-Spoke Hydra chassis wrapped in a 370g rim screams speed and looks fantastic doing it.

When crossing the finish line is the primary goal, UL280 is your weapon of choice.





**KAIT BOYLE**

ULTRA-ENDURANCE &  
ADVENTURE ATHLETE

## TRAIL TO RECOVERY

I watched the headlights coming at me until the moment before the other vehicle was crashing into my driver-side door, and at the last second I closed my eyes for the whipping spin that followed.

When my truck came to a stop, I opened my eyes to a quiet and still world. I was immediately aware of a burning sensation in my pelvis and that I was unable to feel my legs. Time slowed as I was faced with a decision: I could freak out because I might be paralyzed, or remain calm, accept what I couldn't control, and



control what I could—my headspace.

I took a deep breath and resolved to remain calm. I had practiced this for the past few years as I trained to set ultra-endurance records on my mountain bike. I decided that even if I never walked or pedaled a bike again, I would be okay. After all, I have pedaled all over the world in some of the most wild and inspiring landscapes. I woke up the following morning in the ICU. It was Christmas Day. I learned I had a quadruple fracture to my pelvis, a broken sacrum, and a ruptured bladder. [I also had an opportunity for a full recovery.](#)

It was truly a Christmas miracle—but like all big goals, the journey to riding my bike outside again would be long, twisting, seemingly endlessly uphill, strewn with uncertainty and swing between high highs and low lows. I relied on advice I had been given earlier that year from my good friend and coach as I prepared to set a new record on the Arizona Trail 300 race (a self-supported, point-to-point race where the clock doesn't stop until you reach the finish), [it always gets better.](#)

When racing my bike, I had learned how to pedal in the present moment. To do that, one must let go of the past and resist future thinking. By learning to focus on the rhythm of the pedals, the rotation of the wheels, the crunch of the tires, and the pattern of my breath, I let myself forget how far I have to go.

# MOUNTAIN CARBON COLLECTION

Uncompromising carbon, built for any terrain. Delivering ultimate performance from XC to Downhill.

Cutting-edge carbon meets the groundbreaking Industry Nine Hydra hub to offer wheelsets that range from high performance XC, to Rampage ready downhill riding.

Available exclusively with our straight pull alloy spoke chassis, the rims are hand laid in partnership with Canadian carbon manufacturer We Are One Composites.

Wider bead wall designed to [reduce pinch flat risk](#)

[Increased impact strength](#)

Shallow rim depth and enhanced layup schedule for a [more comfortable ride](#)

[Improved tracking](#) in challenging terrain for reduced ride fatigue

[Lifetime warranty](#)





**BRANDON SEMENUK**  
REDBULL RAMPAGE CHAMPION  
2008, 2016, 2019

RAMPAGE APPROVED  
OUR BURLIEST RIM + SPOKE PAIRING

## GR300

**BUILT FOR:**  
DOWNHILL RACING, BIG HITS,  
EXTREME CONDITIONS

Built for the most demanding riding conditions, our Grade 300 wheelset withstands landings and impacts that take other downhill wheels off the track. The Rampage-winning downhill wheelset pairs a burly rim with lightning-quick 32-Spoke Hydra chassis.

Increased stiffness and maximum impact resistance give you the confidence to ride any line, hit any gap, and shave every second. Grade 300 pulls no punches when the objective is getting down the mountain as fast as possible. Climb in the hot seat with Grade 300.





# 1 TR 270

BUILT FOR:  
XC TO AGGRESSIVE TRAIL

Cross-country soul with all-mountain heart—meet Trail 270. A clever pairing of our agile 27mm-wide rim and our lightning-quick Hydra mountain system chassis.

Monday - recovery ride  
Tuesday - shuttle  
Thursday - trail ride  
Saturday - all day hammer-fest  
Sound like your kind of week?

Trail 270 is your quiver killer wheelset that does it all.



LIGHTWEIGHT YET CAPABLE  
24-SPOKE CHASSIS

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TRAIL 270



ENDURO 305



GRADE 300



MOUNTAIN CARBON



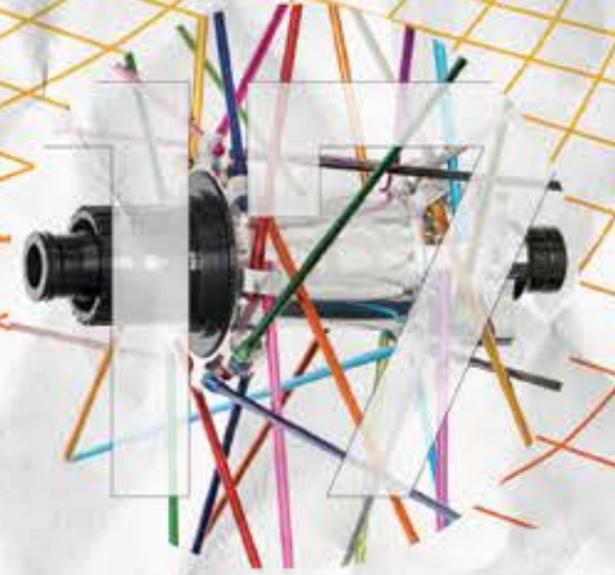
ULTRALITE 280 CARBON



ENDURO 315 CARBON



ALL-MOUNTAIN STEMS



FIND YOUR WHEELS

# INDUSTRY NINE



Rider: Reece Wallace