

RideDNA

Handling Index Analysis

Generated June 25, 2026

Zeppelin MK-V

Size: XM | 55cm | Configuration: Airborne Zeppelin MK-V XM | 55cm

Trail: 64.7mm	Wheel Flop: 19.3mm	HTA: 71.7°	Fork Offset: 47.0mm
Front Center: 601mm	Chainstay: 416mm	Wheelbase: 1006mm	BB Drop: 77.0mm

AGILITY INDEX™

Score: 77.5/100

32% Ground Trail	-20.4
26% Wheel Flop	+7.4
10% Front Center	-16.3
10% Chain Stay	-16.5
8% Gyroscopic MOI	+4.0
6% BB Drop	-11.4
4% Axle Height	+2.7
4% Pneumatic Trail	-1.8

STABILITY INDEX™

Score: 57.3/100

20% Wheel Flop	-4.8
15% Ground Trail	+17.3
15% Front Center	+13.0
15% Gyroscopic MOI	+15.1
10% Chain Stay	0.0
10% Axle Height	-2.7
8% BB Drop	+17.1
7% Pneumatic Trail	+12.4

AGILITY: Higher contributions → more reactive

STABILITY: Higher contributions → more planted

Airborne Zeppelin MK-V XM | 55cm

RideDNA AI Analysis

Zeppelin MK-V (XM | 55cm) — Handling Analysis

1. First Impressions

This is a titanium all-road bike with a split personality—endurance road composure with performance road responsiveness. The 64.7mm trail and 71.7° head angle create stable, confidence-inspiring handling, while the 416mm chainstays deliver snappy acceleration that belies the bike's planted character. Grade 9 Titanium frames excel in this configuration: the material's natural compliance transforms rough pavement into butter-smooth riding, while the geometry's moderate trail ensures the bike never feels vague or wandering. This is a spirited all-road explorer that rewards long rides with supple comfort and engaging handling.

2. Agility Index Analysis — Score: 77.5/100

The 601mm front center creates a responsive front end that willingly changes direction without feeling nervous—weight distribution stays balanced even when climbing steep grades where shorter front centers can make the bike feel front-heavy. The 416mm chainstays sit at the short end of endurance/all-road territory, delivering immediate rear-wheel traction and a lively pivot point for cornering. This front/rear balance produces high agility (77.5) that manifests as spirited, engaging handling: the bike accelerates crisply out of corners, responds quickly to steering input, and feels alive under the rider without sacrificing the planted confidence needed for fast descents or rough roads.

3. Stability Index Analysis — Score: 57.3/100

The 1006mm wheelbase provides composed high-speed tracking—this bike holds a line confidently through sweeping descents and doesn't get knocked around by crosswinds or rough pavement. The 77mm BB drop is notably low, lowering the system's center of mass and creating exceptional cornering confidence: the rider can lean deeper into turns with a planted, connected feel. The 77.5 agility versus 57.3 stability split reveals this bike's character—it's responsive and engaging (high agility) but never twitchy, with enough stability to inspire confidence on technical descents and long, fast group rides. This is not a slow-steering comfort bike; it's a lively all-roader with reassuring composure.

4. Steering Dynamics

The 64.7mm trail creates moderate self-centering torque—enough to keep the bike tracking predictably through corners and straight-line riding, but not so much that steering feels heavy or requires constant input. This trail value sits above typical performance road geometry (50-58mm), delivering stability that builds confidence on fast descents and rough surfaces without sacrificing responsiveness. The 19.3mm wheel flop acts as "power steering," assisting turn initiation: when the rider leans the bike, the front end naturally drops into the turn, making corner entry feel fluid and intuitive rather than forced.

In high-flop geometry like this, cornering character differs from low-flop race bikes. The rider initiates the turn with counter-steering (push right bar to turn right), the bike leans, and the wheel flop assists by dropping the front end into the arc. The trade-off: mid-corner, the bike wants to tighten the radius slightly as flop continues pulling the wheel inward. On smooth, predictable roads, this creates engaging, lively cornering. On rough or loose surfaces, the rider may need subtle mid-corner corrections to maintain a constant radius—not a flaw, but a handling characteristic that rewards active riding.

At speed, the 71.7° head angle and 64.7mm trail combination shines. Below 15 mph, steering requires deliberate input for tight maneuvers. Above 20 mph, the bike feels planted and composed. At 30+ mph descending speeds, trail's stabilizing effect dominates—the front end tracks confidently, and the bike resists deflection from road imperfections. This geometry favors spirited road riding, fast group rides, and technical descents over slow-speed urban navigation.

5. Comfort & Compliance

Grade 9 Titanium's natural compliance transforms this bike's ride quality. The frame absorbs high-frequency vibration from chip-seal, expansion joints, and rough pavement before it reaches the rider's hands and shoulders—this isn't just marketing; titanium's lower modulus of elasticity (~104 GPa versus steel's ~200 GPa) allows controlled flex that dissipates road buzz without feeling noodly. The 35mm tires amplify this effect: combined with titanium's inherent damping, the bike smooths deteriorated roads into rideable surfaces that would feel harsh on aluminum or aggressive carbon layups.

Long-ride freshness is where titanium's compliance pays dividends. After 100+ km, the rider's hands stay comfortable, shoulders remain relaxed, and lower back fatigue is reduced compared to stiffer frame materials. The 77mm BB drop and relaxed 1.52 stack-to-reach ratio create a sustainable position that doesn't demand

aggressive core engagement. This bike adapts beautifully across road surfaces: on smooth tarmac, it's lively and responsive; on rough back roads, it's supple and confidence-inspiring, never transmitting harsh impacts that cause the rider to tense up or choose slower lines.

6. Climbing & Endurance Profile

The 416mm chainstays create excellent climbing traction—weight stays centered over the rear wheel even on steep pitches (8%+), preventing wheel spin on loose or wet surfaces. This chainstay length rewards seated climbing: the rider can settle into a rhythm, maintain smooth power delivery, and let the titanium frame's compliance absorb road imperfections without breaking cadence. Standing climbing feels responsive but not hyper-aggressive—the bike accelerates willingly out of the saddle without the nervous, twitchy character of ultra-short chainstay race bikes.

For long-distance riding, the 1.52 stack-to-reach ratio and 167mm head tube create a comfortable, sustainable position. The front end is tall enough to reduce lower back strain over 100+ km rides, but not so upright that descending confidence suffers. After fast descents, the bike transitions smoothly back to climbing or flat terrain—the moderate trail and balanced weight distribution mean the rider doesn't fight heavy steering or sluggish response when accelerating out of corners onto the next climb.

7. Fit Context

The 579.8mm stack and 380.6mm reach create a moderately upright position—comfortable for all-day riding without being overly relaxed. The 1.52 stack-to-reach ratio sits firmly in endurance/all-road territory (1.45-1.55 is the sweet spot), providing enough engagement for spirited riding while prioritizing sustainable comfort over aggressive performance positioning. The 167mm head tube offers spacer flexibility: riders can dial in their ideal front-end height without excessive spacer stacks, and as flexibility improves over time, lowering the bars remains an option without replacing the frame.

The 556mm effective top tube creates a balanced cockpit—not stretched, not cramped. This fit serves riders who want versatile all-road capability: comfortable enough for century rides, engaged enough for fast group rides and technical descents. The rider comprises 80-90% of the system's total mass (Cain et al., 2016), meaning body position profoundly affects handling. In this configuration, the rider's center of mass sits slightly rearward, complementing the 416mm chainstays for balanced weight distribution. On descents, shifting weight back increases front-wheel grip and reduces the sensation of going over the bars—the moderate chainstay length provides room for this weight shift without requiring dramatic position changes. This geometry best serves riders seeking one versatile bike: spirited road riding, long endurance rides, and light gravel/rough-road exploration.

8. Competition Comparison

- ****ENVE Fray (54)****: Trail 59.5mm, HTA 72.0°, CSL 415mm
 - 5mm less trail means lighter, quicker steering initiation but reduced self-centering stability at high speeds
 - 1mm shorter chainstays create marginally snappier acceleration; titanium compliance advantage remains unchanged
 - Fork A2C 382mm rigid; this tight race-oriented geometry is highly fork-sensitive—owner must match replacement forks within ± 5 mm or handling character shifts noticeably
- ****Cervelo Caledonia (56)****: Trail 60.0mm, HTA 72.0°, CSL 415mm
 - 5mm less trail produces quicker turn-in response; this Zeppelin's higher trail builds more high-speed descending confidence
 - 1mm shorter chainstays deliver slightly quicker rear-end response; tire clearance and compliance differences favor titanium on rough roads
 - Fork A2C 386mm rigid; calibrated around a short race fork, limiting owner's flexibility to experiment with different fork options
- ****Pinarello Pinarello X (545)****: Trail 60.4mm, HTA 72.3°, CSL 422mm
 - 4mm less trail creates lighter steering effort in tight corners; this Zeppelin's extra trail enhances straight-line stability
 - 6mm longer chainstays increase stability and climbing traction; this Zeppelin's shorter stays feel livelier and more responsive
 - Fork A2C 375mm rigid; extremely short race fork locks geometry tightly—owner has minimal fork replacement options without altering handling

9. Versatility

Tire size flexibility transforms this bike's character. The current 35mm setup balances road speed with rough-surface confidence; dropping to 28-32mm tires sharpens road performance and reduces rolling resistance on smooth pavement, while stepping up to 38-40mm unlocks light gravel capability and maximum comfort on

deteriorated roads. Lowering tire pressure (enabled by tubeless setup) increases compliance and grip without harsh ride quality, thanks to titanium's natural damping. Minor fit adjustments—lowering the stem or adjusting saddle setback—can shift the agility/stability balance: moving weight forward quickens steering response, while rearward positions enhance descending confidence. For seasonal riding, this platform adapts beautifully: fast road tires for summer group rides, wider rubber for autumn's rough roads and winter training.

10. Summary

This Zeppelin MK-V serves riders seeking a spirited, versatile all-road bike that rewards long rides with supple comfort and engaging handling. The defining characteristic is the balance between lively responsiveness (77.5 agility) and planted confidence (64.7mm trail, 77mm BB drop)—this bike accelerates crisply, corners with precision, and descends with composure that inspires the rider to carry more speed. Grade 9 Titanium's natural compliance transforms rough roads into rideable surfaces, ensuring the rider stays fresh and comfortable even after 100+ km of mixed-surface exploration.

Citations

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