PRODUCT
CATALOGUE
2026



alpina
SINCE 1926

# SPOKES & NIPPLES

## MOTORCYCLE

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# THE COMPANY

**Alpina is an Italian, family-owned company and a leading manufacturer of spokes and nipples for motorcycles and bicycles.**

**TECHNICAL EXCELLENCE**
Continuous research and innovation drive the development of new technologies and high-performance solutions. This ongoing commitment has led to proprietary technologies and patented solutions.

**TECHNOLOGY AND PRECISION**
We design and manufacture our own machinery in-house, ensuring maximum process control and the highest standards of precision and quality.

**CROSS-SECTOR SYNERGIES**
Unique expertise spanning both the motorcycle and bicycle industries. Processes, materials and technologies developed across the two sectors interact and complement one another, fostering cross-sector solutions and innovation.

## Product ranges



**BICYCLE SPOKES AND NIPPLES**
OEM components.



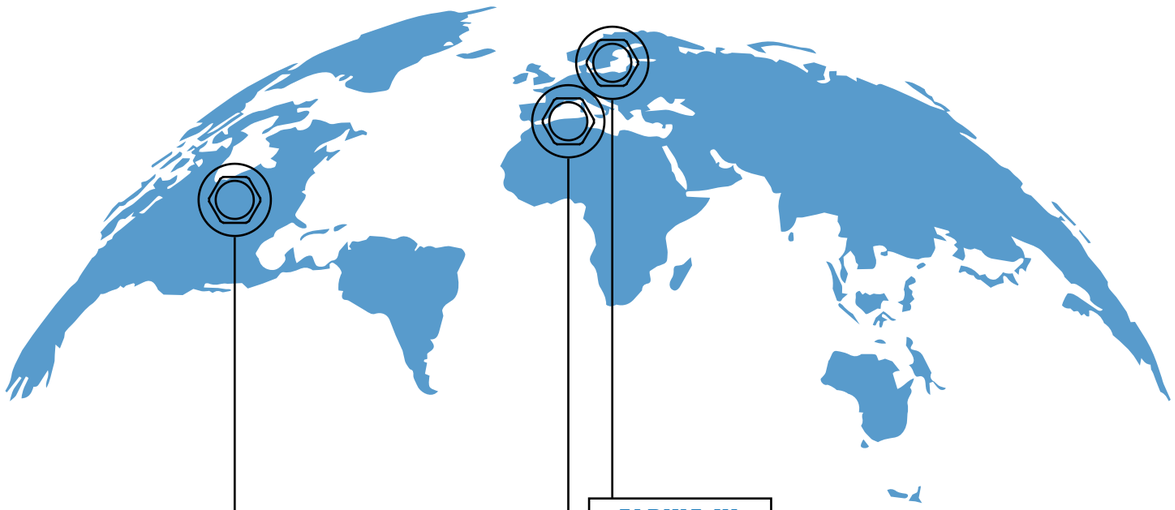
**MOTORCYCLE SPOKES AND NIPPLES**
OEM components.



**COMPLETE MOTORCYCLE WHEELS**
Consumer and aftermarket.

# GLOBAL NETWORK

**Alpina is expanding its global network to better serve its customers worldwide.**



### ALPINA NL

Warehouse & Worldwide distribution to bicycle wheel builders & dealers.

### ALPINA IT

Headquarters, main production & distribution to OEMs worldwide.

### ALPINA USA

Warehouse & USA distribution to bicycle wheel builders & dealers.



# ALPINA PROFILE

**Alpina in Numbers**

**60+** Patents Filed

**90+** Employees

**100+** Customers Served

**15 K** m² Manufacturing Area

**250 M** Parts Produced Annually

**Our Partners**

# HISTORY

A CENTURY ONE VISION

ROAD TO NEXT 100

**1926**

In Laorca (Lecco), Guido Cappellotto founds the “Fabbrica Italiana di Raggi per Cicli e Motocicli”, naming it Alpina after the Alps.

**1935/70**

Alpina moves to a new site in Arcore, where spoke production runs alongside textile manufacturing.

**1970/80**

Alpina moves to Lomagna, still its home today, in the golden age of Italian motorcycling, led by brands such as Piaggio and Gilera.

**1980/05**

Born in the USA, the mountain bike takes Europe by storm and Alpina rides the boom. Meanwhile, cast wheels of supersport bikes gradually replace spokes and nipples.

**2005/10**

Alpina shifts gear: from mass production to high-end components for racing bicycles and launches its tubeless spoked wheel for motorcycles.

**2010/20**

Alpina grows its share of the motorcycle market, working alongside leading manufacturers such as KTM, BMW, Ducati and Piaggio.

**2026**

A hundred years on, eyes forward: Alpina enters its centenary ready for a new era enlarging its global network with Alpina Netherlands and facing a deep business transformation.








# SPOKE PRODUCTION

**The journey of a motorcycle spoke, from raw wire to the wheels of the world's leading manufacturers.**



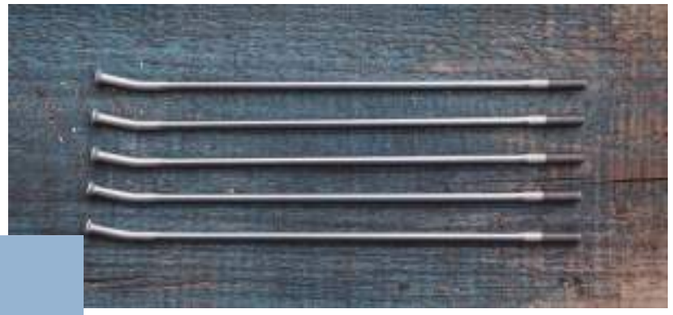
## Steel Wire

In a motorcycle wheel, the spoke is a safetycritical component, exposed to impacts, drive torque and braking forces. We select only highquality EU stainless and carbon steels and inspect every wire coil we receive.



## Bar

With machines engineered in-house, we transform steel wire into bars, reducing diameter and weight, while a special manufacturing process makes the spoke even stronger.



## Spoke

On mechanical stations designed and built inhouse, each bar becomes a finished spoke, complete with head and thread. 100% dimensional and visual inspection: only compliant parts move forward.

CARBON-STEEL SPOKES ONLY

## Finishing

Carbon-steel spokes undergo a surface treatment that ensures corrosion resistance for the entire life of the motorcycle. Stainless steel spokes do not require it.



# NIPPLE PRODUCTION

**The journey of a motorcycle nipple, from raw wire to the wheels of the world's leading manufacturers.**



## High-Strength Steel Wire

In a motorcycle wheel, the nipple is a safetycritical component, exposed to impacts, drive torque and braking forces. We select only highstrength EU steels and inspect every wire coil.

## Rivet

The wire is cold-formed into a "rivet": a solid nipple, not yet drilled or threaded.



## Nipple

Drilling and threading demand micron-level precision and plenty of cutting oil, which we recover and reuse to reduce our environmental impact.



## Treatments

Depending on the material, heat and surface treatments are carried out by selected Alpina partners.



ABS NIPPLES ONLY

## Self-locking Insert

On machines designed by Alpina, a plastic insert is added that makes the nipple self-locking. The result is ABS, Alpina's best-selling nipple family.

# CERTIFICATIONS

## Recognised standards for quality, safety and sustainability in manufacturing processes.

Operating in both the motorcycle and bicycle industries, we adhere to rigorous standards of quality, safety and sustainability, with the aim of ensuring reliable products and responsible manufacturing processes.

**QUALITY**

Controlled processes and continuous improvement to ensure products meet the required specifications.

CERTIFIED
IATF 16949

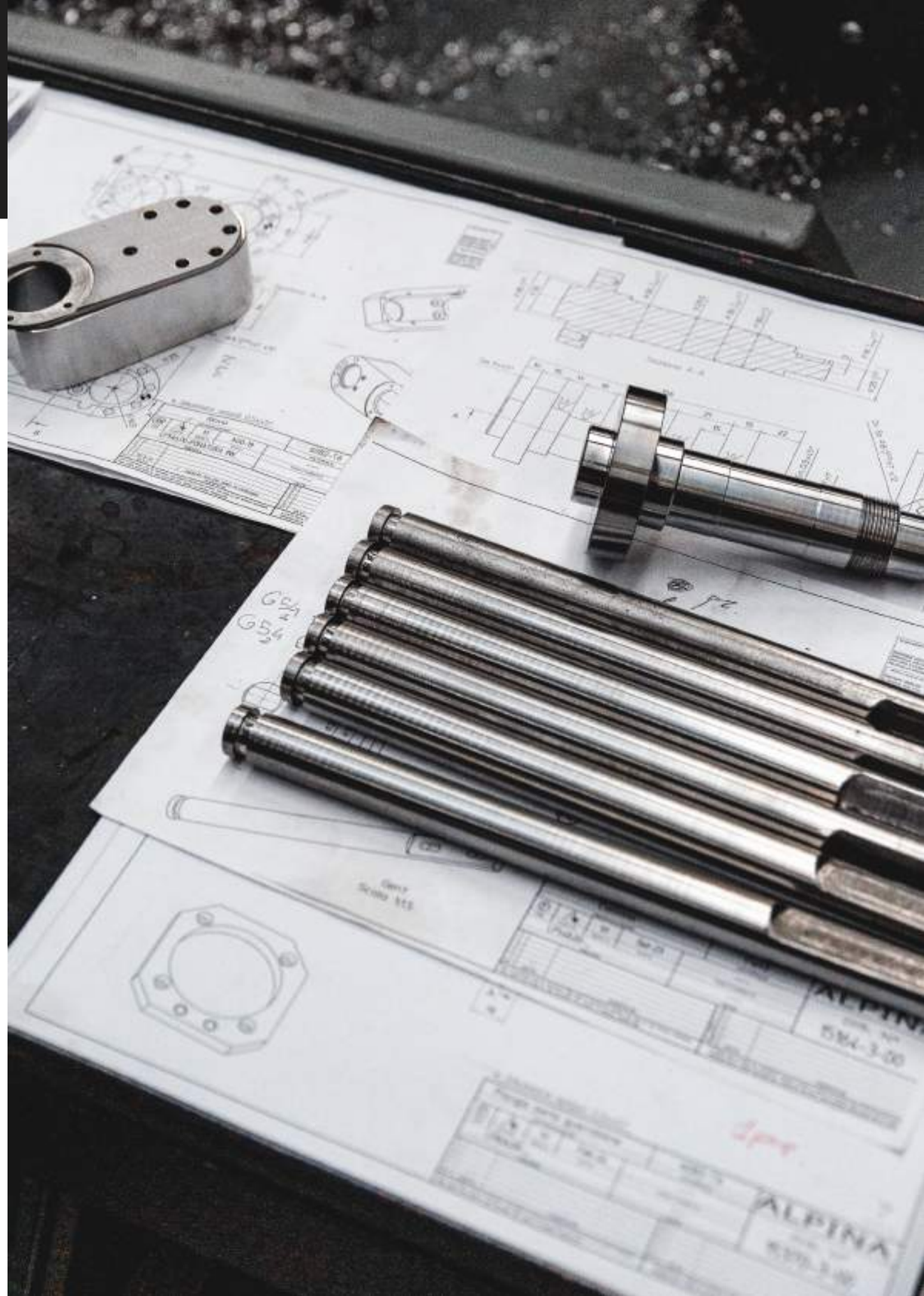
CERTIFIED
ISO 9001

**SAFETY AND ENVIRONMENT**

A commitment to protecting people, ensuring workplace safety and managing environmental impacts.

CERTIFIED
ISO 45001

CERTIFIED
ISO 14001






# ALPINA SPOKES

## TECHNICAL SOLUTIONS

ZERO HEAD
TORQUE CONTROL SYSTEM (TCS)

## STAINLESS STEEL SPOKES

BUTTED SPOKES
PLAIN SPOKES

## CARBON-STEEL SPOKES

BUTTED SPOKES
PLAIN SPOKES

## ZINC-PLATED SPOKES

PLAIN SPOKES

Technical Solutions

# ZERO HEAD

PATENTED

On standard spokes, the cold-formed head leaves excess material, so in the hub or rim the entire tensile load concentrates on just two points. Zero Head, patented by Alpina, removes these stress peaks: two relief cuts under the head spread the load over the entire under-head surface.

**WHAT IT IS:**
A specially shaped spoke head with two hollow sections in the under-head area.

**WHAT IT DOES:**
Distributes stress evenly across the head, reducing the risk of breakage at its most loaded point and making spoke insertion into hub or rim easier.

**IDEAL FOR:**
Every wheel type, especially tubeless cross-spoke wheels, where the spoke head sits directly on the rim.




USED BY



Technical Solutions

Technical Solutions

# TCS Torque Control System

During assembly, especially on automatic machines, straight-pull spokes tend to rotate with the nipple. The resulting twist reduces spoke strength and leaves residual stress in the spoke once the wheel is in service. With TCS, the tooling holds the spoke still while the nipple is tightened, ensuring precise, twist-free tensioning.

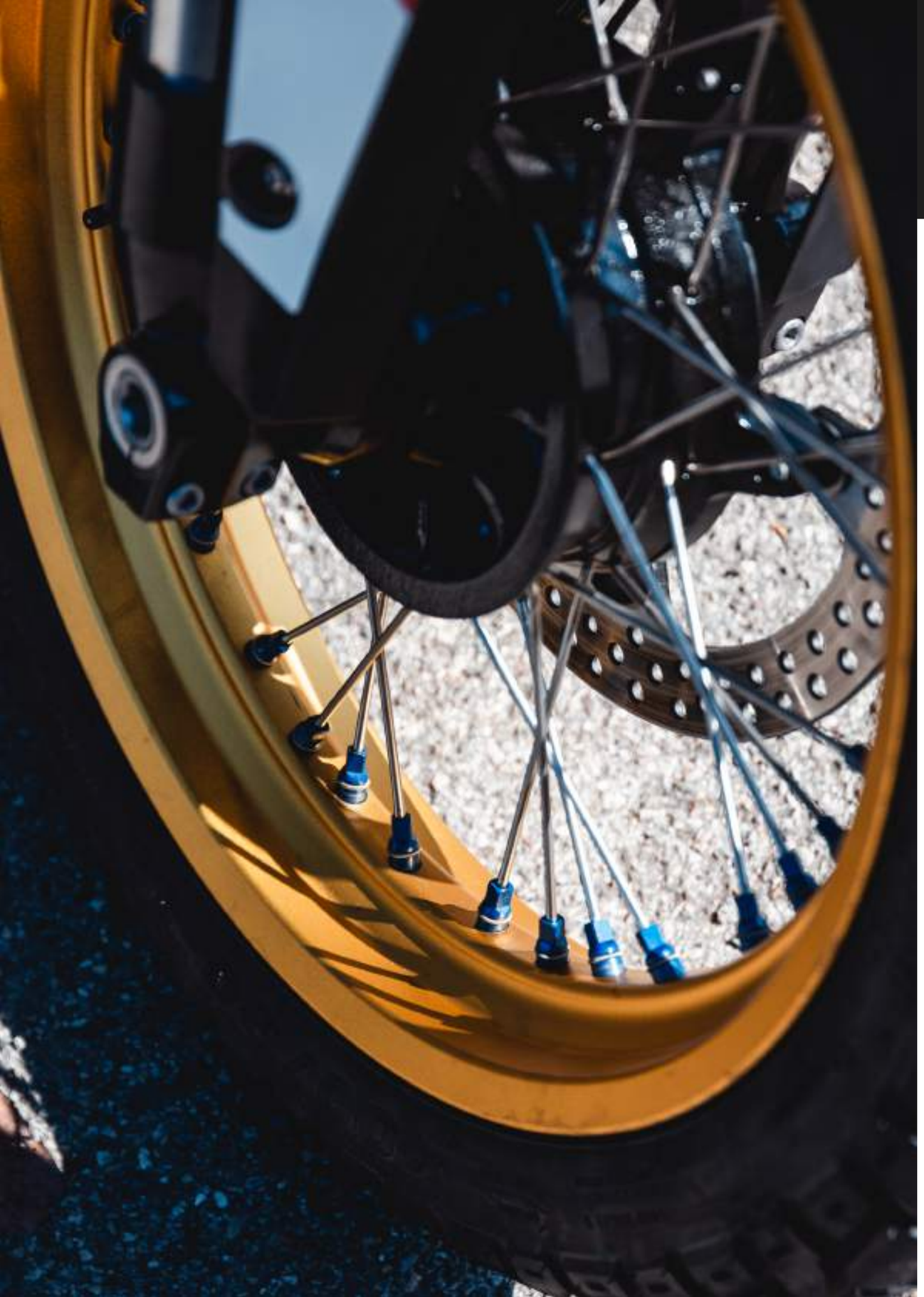
**WHAT IT IS:**
A small square key positioned on the spoke body, close to the thread.

**WHAT IT DOES:**
Holds the spoke in place during tightening, preventing unwanted twisting, for more accurate tensioning and faster assembly.

**IDEAL FOR:**
Cross-spoke wheels with straight-pull spokes, recommended in combination with Alpina's ABS self-locking nipples.




USED BY



# STAINLESS STEEL

## BUTTED SPOKES

BUTTED M4 RACE

BUTTED M4.5 RACE

BUTTED M4.5 STRONG

BUTTED M5 RACE

BUTTED M5 STRONG

## PLAIN SPOKES

ONE M3.5

ONE M4

ONE M4.5

Our All-Terrain spokes are designed for Adventure motorcycles and mixed road/moderate off-road use. Stainless steel provides exceptional resistance to harsh elements such as rain, mud and salt, while preserving excellent mechanical performance.

Stainless Steel Butted Spokes

# M4 RACE

Stainless-steel spokes, butted with variable diameter: reinforced where stress peaks for maximum durability.

Corrosion-resistant in rain, mud and salt. Ideal for Adventure and Cross-Tourer bikes.




| | |
|---|---|
| **MATERIAL** | Stainless Steel<br>AISI 304 |
| **LENGTHS** | 145 - 300 mm |
| **SURFACE TREATMENTS** | Natural |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

**Weight calculated (CAD) for a spoke length of 220 mm*

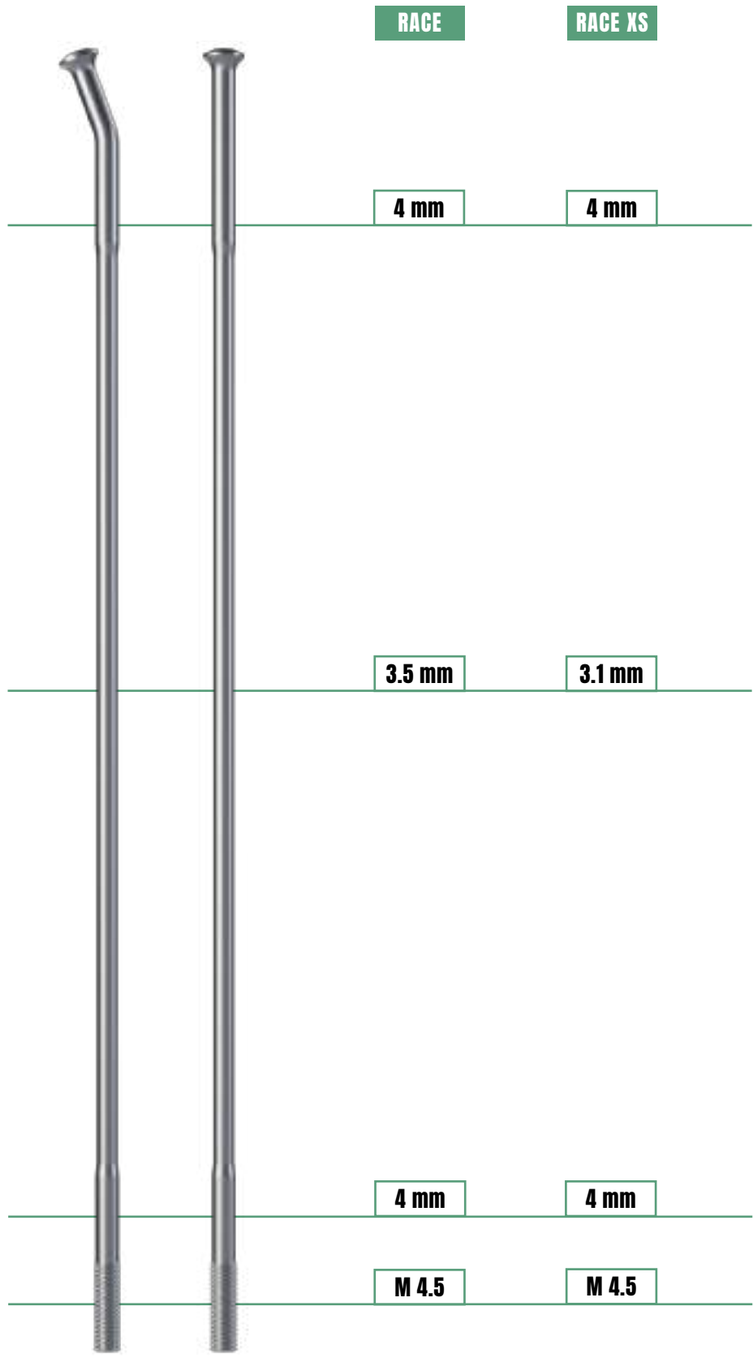
Butted spokes

Stainless Steel Butted Spokes

# M4.5 RACE

Stainless-steel spokes, butted with variable diameter: reinforced where stress peaks for maximum durability.

Corrosion-resistant in rain, mud and salt. Ideal for Adventure and Cross-Tourer bikes.




| | |
|---|---|
| **MATERIAL** | Stainless Steel<br>AISI 304 |
| **LENGTHS** | 145 - 300 mm |
| **SURFACE TREATMENTS** | Natural |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

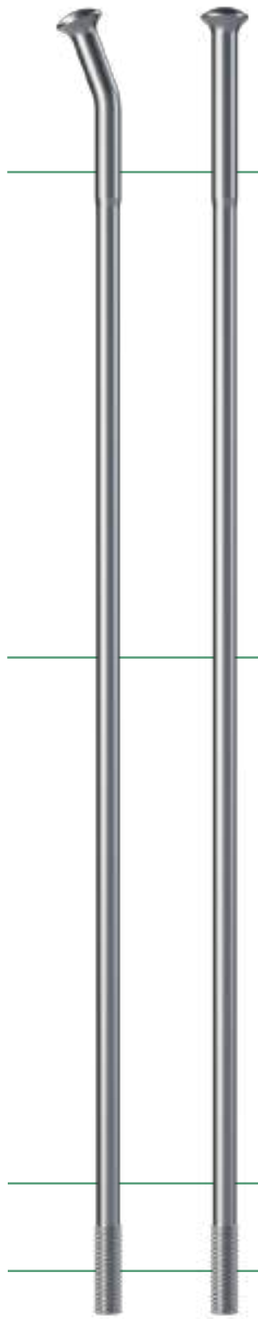
**Weight calculated (CAD) for a spoke length of 220 mm*

Stainless Steel Butted Spokes

# M4.5 STRONG

Stainless-steel spokes, butted with variable diameter: reinforced where stress peaks for maximum durability.

Corrosion-resistant in rain, mud and salt. Ideal for Adventure and Cross-Tourer bikes.



| | STRONG XS | STRONG | STRONG XL |
|---|---|---|---|
| MATERIAL | Stainless Steel AISI 304 | | |
| LENGTHS | 140 - 300 mm | | |
| SURFACE TREATMENTS | Natural | | |
| OPTIONS & ADD-ONS | - Straight Pull Head<br>- Zero Head<br>- TCS | | |
| | 4.4 mm | 4.4 mm | 5 mm |
| | 3.5 mm | 4 mm | 3.9 mm |
| | 4 mm | - | - |
| | M 4.5 | M 4.5 | M 4.5 |
| | 19.5 g* | 23.5 g* | 24.5 g* |

**Weight calculated (CAD) for a spoke length of 220 mm*

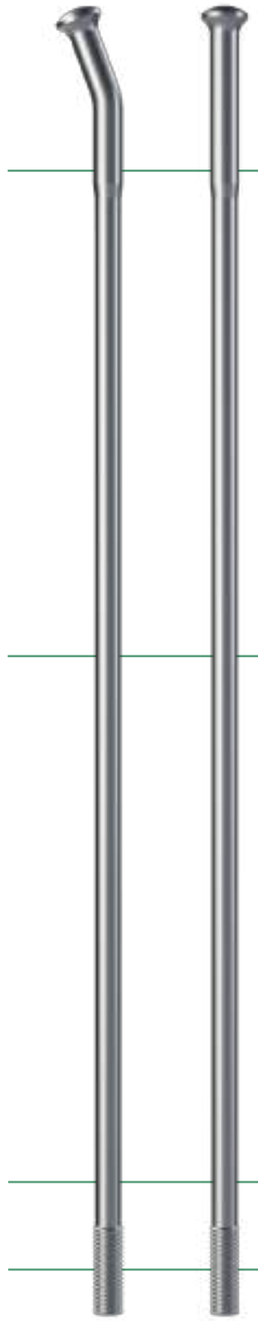
Butted spokes

Stainless Steel Butted Spokes

# M5 STRONG

Stainless-steel spokes, butted with variable diameter: reinforced where stress peaks for maximum durability.

Corrosion-resistant in rain, mud and salt. Ideal for Adventure and Cross-Tourer bikes.



| | STRONG XS | STRONG |
|---|---|---|
| MATERIAL | Stainless Steel AISI 304 | |
| LENGTHS | 140 - 300 mm | |
| SURFACE TREATMENTS | Natural | |
| OPTIONS & ADD-ONS | - Straight Pull Head<br>- Zero Head<br>- TCS | |
| | 5 mm | 5 mm |
| | 3.9 mm | 4.4 mm |
| | 4.4 mm | - |
| | M 5 | M 5 |
| | 24.5 g* | 28.5 g* |

**Weight calculated (CAD) for a spoke length of 220 mm*

Stainless Steel Plain Spokes

# M3.5 ONE

Stainless-steel spokes, constant diameter. Simple and essential, with natural corrosion resistance and no coating to wear off. Lasting reliability for Street, Touring and Adventure bikes.



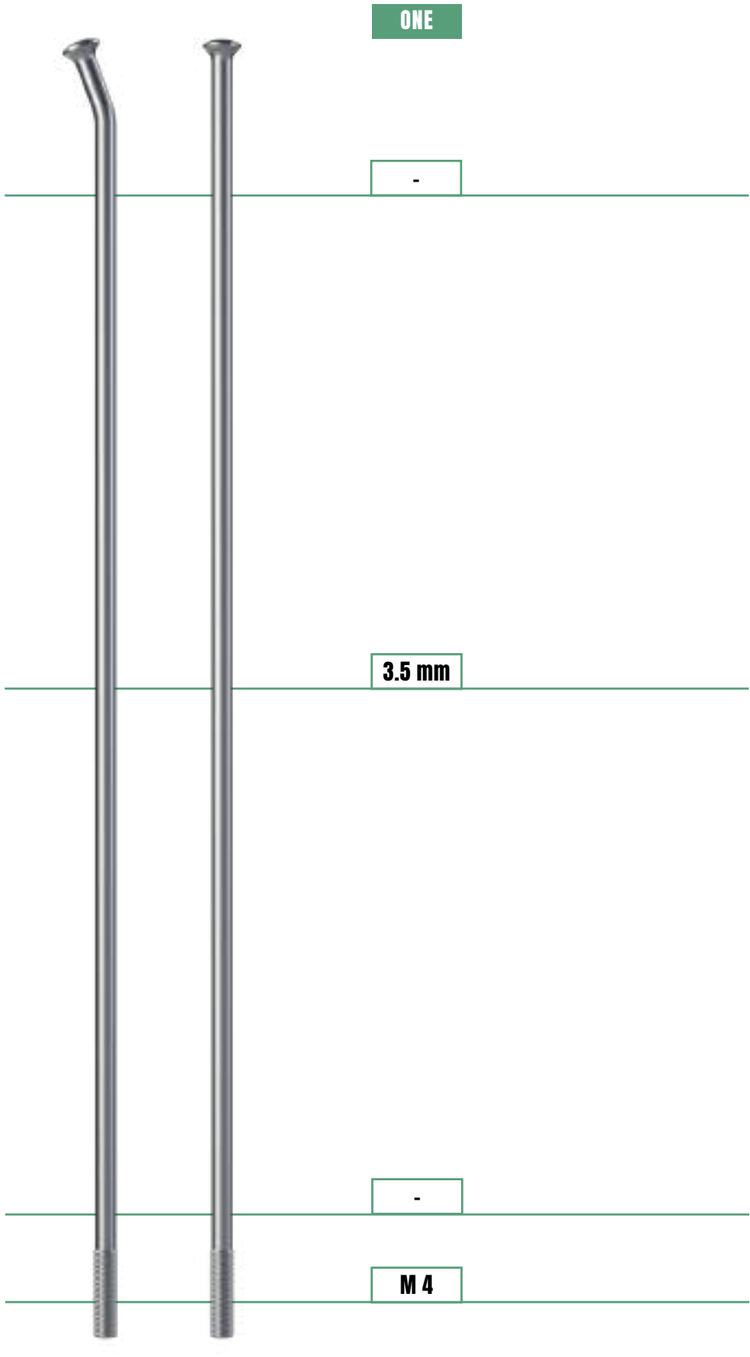

| | |
|---|---|
| **MATERIAL** | Stainless Steel<br>AISI 304 |
| **LENGTHS** | 100 - 300 mm |
| **SURFACE TREATMENTS** | Natural |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

**Weight calculated (CAD) for a spoke length of 220 mm*

Stainless Steel Plain Spokes

# M4 ONE

Stainless-steel spokes, constant diameter. Simple and essential, with natural corrosion resistance and no coating to wear off. Lasting reliability for Street, Touring and Adventure bikes.




| | |
|---|---|
| **MATERIAL** | Stainless Steel<br>AISI 304 |
| **LENGTHS** | 120 - 300 mm |
| **SURFACE TREATMENTS** | Natural |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

**Weight calculated (CAD) for a spoke length of 220 mm*

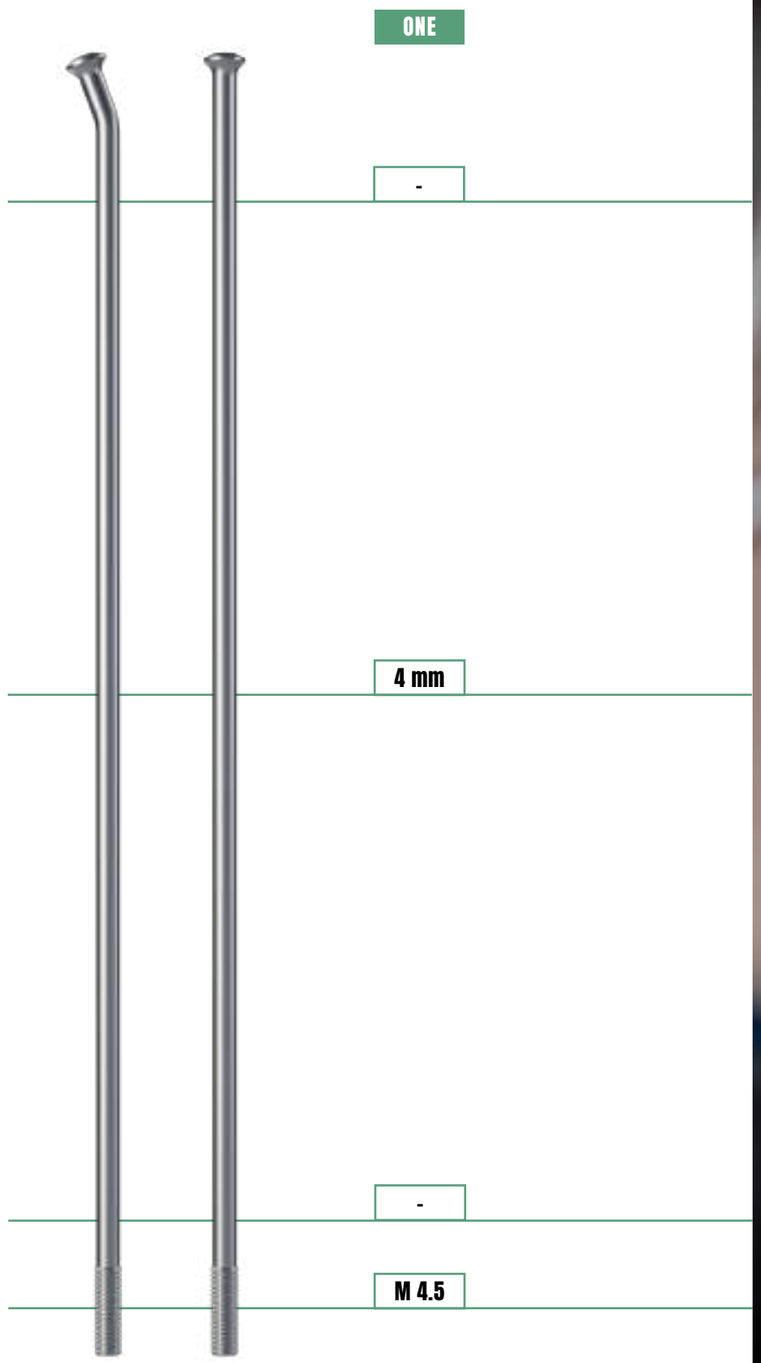
Plain spokes

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## Stainless Steel Plain Spokes

# M4.5 ONE

Stainless-steel spokes, constant diameter. Simple and essential, with natural corrosion resistance and no coating to wear off. Lasting reliability for Street, Touring and Adventure bikes.




| | |
|---|---|
| **MATERIAL** | Stainless Steel<br>AISI 304 |
| **LENGTHS** | 125 - 300 mm |
| **SURFACE TREATMENTS** | Natural |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

**Weight calculated (CAD) for a spoke length of 220 mm*





# CARBON-STEEL

## BUTTED SPOKES

BUTTED M4 RACE

BUTTED M4.5 RACE

BUTTED M4.5 STRONG

BUTTED M5 RACE

BUTTED M5 STRONG

## PLAIN SPOKES

ONE M4

ONE M4.5

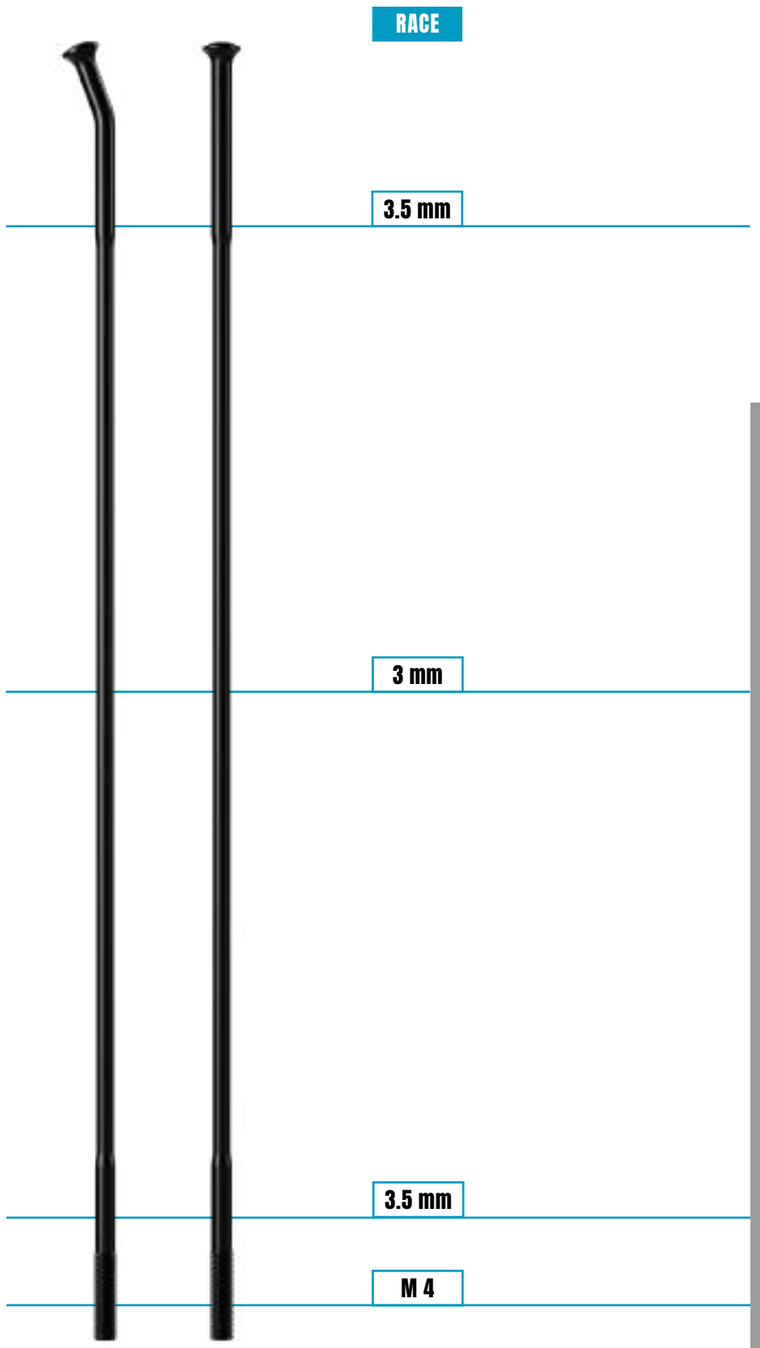
Our Off-Road range is engineered for extreme off-road riding. The carbon steel used in these spokes combines high fatigue resistance and resilience, allowing them to absorb the impacts and torsional loads typical of rough terrain.

Carbon-Steel Butted Spokes

# M4 RACE

Carbon-steel spokes, butted with variable diameter: extra thickness where stress peaks, for superior durability.

Combined with the elasticity of carbon steel, it absorbs hard landings and torsional loads. Built for Motocross, Enduro and Supermoto.




| | |
|---|---|
| **MATERIAL** | Carbon Steel<br>C60 |
| **LENGTHS** | 145 - 300 mm |
| **SURFACE TREATMENTS** | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head |

**Weight calculated (CAD) for a spoke length of 220 mm*

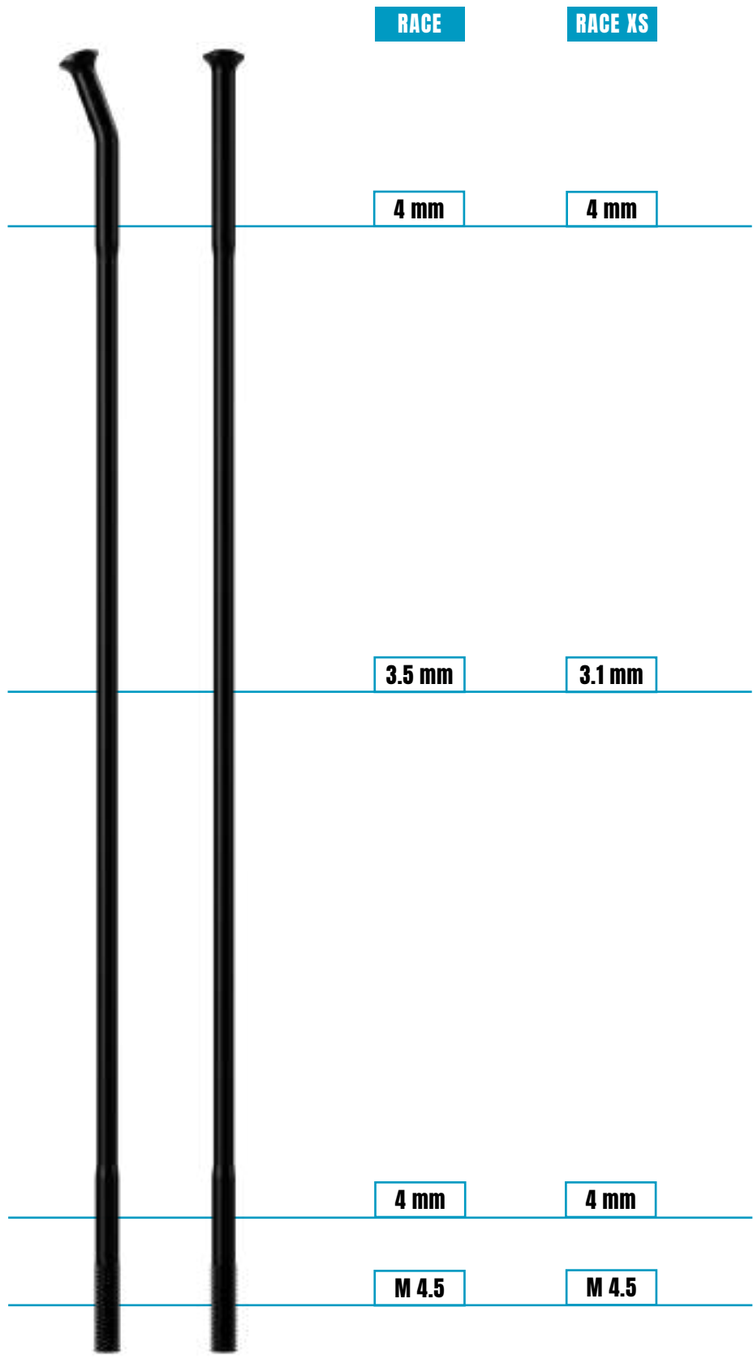
Butted spokes

Carbon-Steel Butted Spokes

# M4.5 RACE

Carbon-steel spokes, butted with variable diameter: extra thickness where stress peaks, for superior durability.

Combined with the elasticity of carbon steel, it absorbs hard landings and torsional loads. Built for Motocross, Enduro and Supermoto.




| | |
|---|---|
| **MATERIAL** | Carbon Steel<br>C60 |
| **LENGTHS** | 145 - 300 mm |
| **SURFACE TREATMENTS** | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head |

**Weight calculated (CAD) for a spoke length of 220 mm*

Carbon-Steel Butted Spokes

# M4.5 STRONG

Carbon-steel spokes, butted with variable diameter: extra thickness where stress peaks, for superior durability.

Combined with the elasticity of carbon steel, it absorbs hard landings and torsional loads. Built for Motocross, Enduro and Supermoto.



| | STRONG XS | STRONG XL |
|---|---|---|
| MATERIAL | Carbon Steel C60 | |
| LENGTHS | 160 - 300 mm | |
| SURFACE TREATMENTS | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED | |
| OPTIONS & ADD-ONS | - Straight Pull Head<br>- Zero Head | |
| | 4.4 mm | 5 mm |
| | 3.5 mm | 3.9 mm |
| | 4 mm | - |
| | M 4.5 | M 4.5 |
| | 19.5 g* | 24.5 g* |

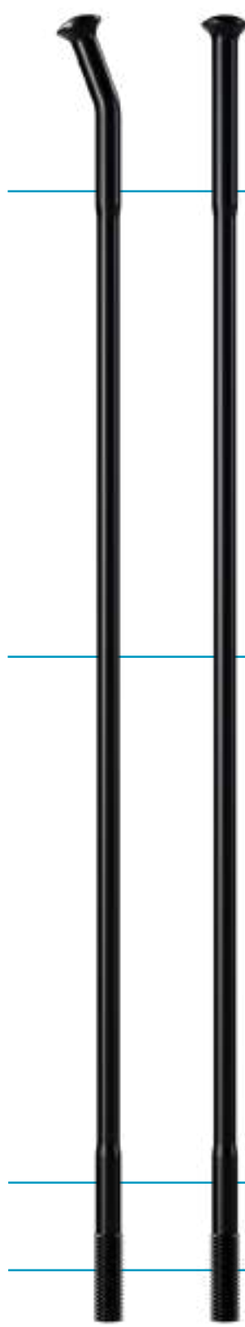
*Weight calculated (CAD) for a spoke length of 220 mm

Carbon-Steel Butted Spokes

# M5 RACE

Carbon-steel spokes, butted with variable diameter: extra thickness where stress peaks, for superior durability.

Combined with the elasticity of carbon steel, it absorbs hard landings and torsional loads. Built for Motocross, Enduro and Supermoto.



| | RACE | RACE XS |
|---|---|---|
| MATERIAL | Carbon Steel C60 | |
| LENGTHS | 160 - 300 mm | |
| SURFACE TREATMENTS | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED | |
| OPTIONS & ADD-ONS | - Straight Pull Head<br>- Zero Head | |
| | 4.4 mm | 4.4 mm |
| | 3.9 mm | 3.5 mm |
| | 4.4 mm | 4.4 mm |
| | M 5 | M 5 |
| | 23 g* | 20.5 g* |

*Weight calculated (CAD) for a spoke length of 220 mm

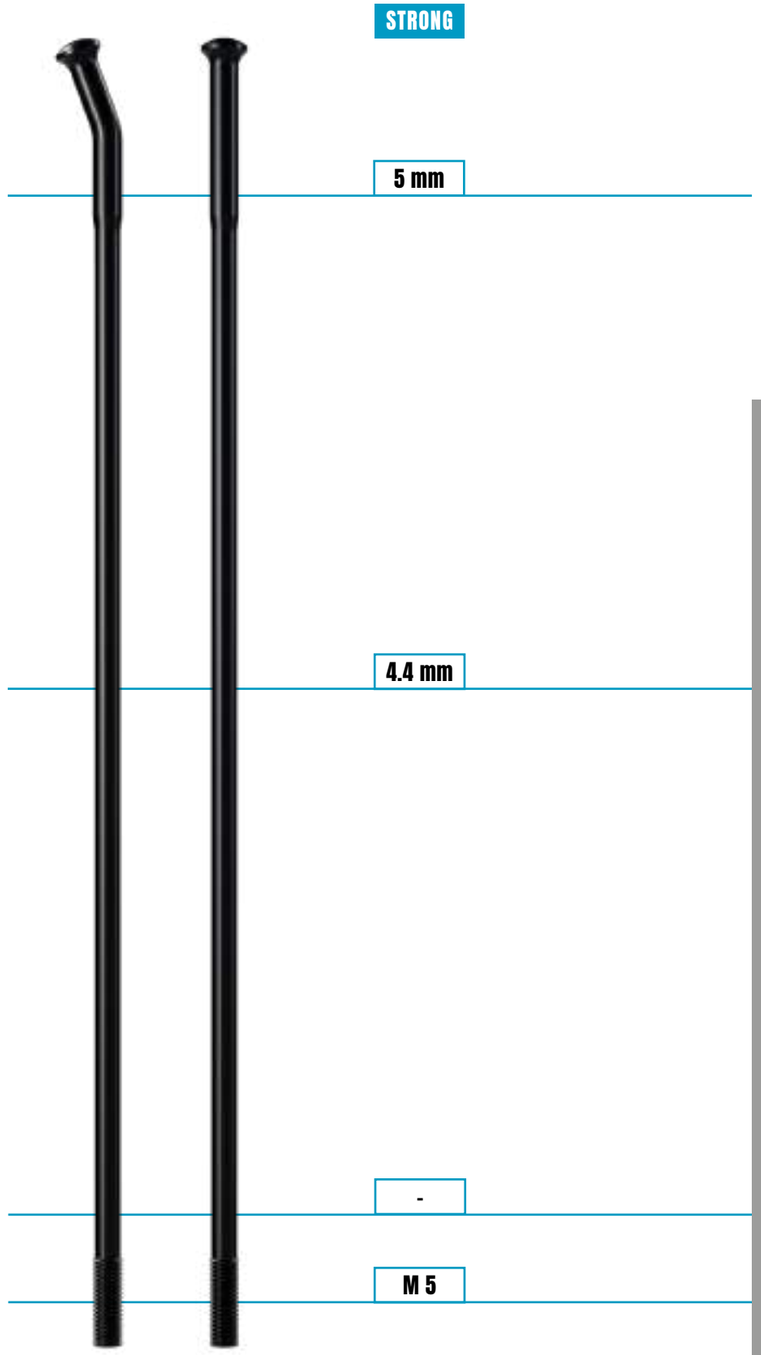
Butted spokes

Carbon-Steel Butted Spokes

# M5 STRONG

Carbon-steel spokes, butted with variable diameter: extra thickness where stress peaks, for superior durability.

Combined with the elasticity of carbon steel, it absorbs hard landings and torsional loads. Built for Motocross, Enduro and Supermoto.




| | |
|---|---|
| **MATERIAL** | Carbon Steel C60 |
| **LENGTHS** | 160 - 300 mm |
| **SURFACE TREATMENTS** | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head |

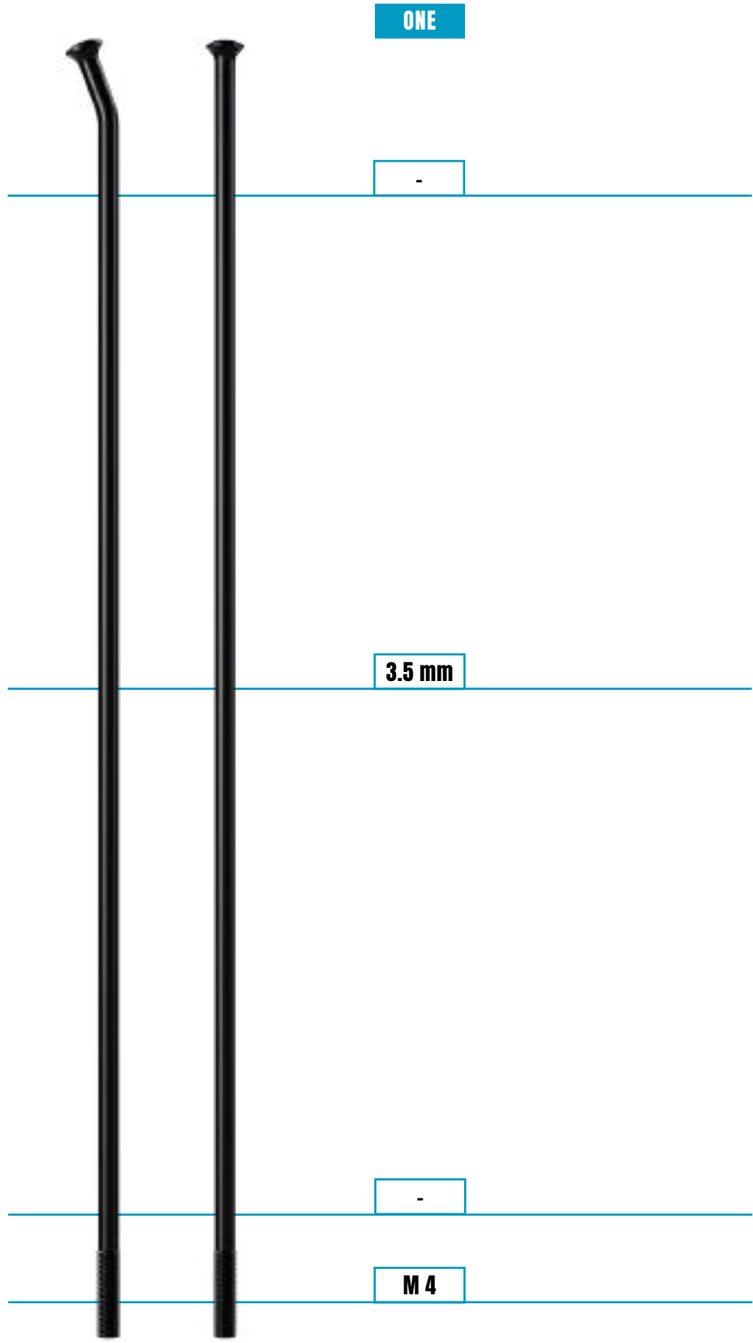
**Weight calculated (CAD) for a spoke length of 220 mm*



Carbon-Steel Plain Spokes

# M4 ONE

Carbon-steel spokes, constant diameter. Simple and essential, with high fatigue resistance and natural elasticity to keep wheels true on the roughest off-road terrain.




| | |
|---|---|
| **MATERIAL** | Carbon Steel C60 |
| **LENGTHS** | 120 - 300 mm |
| **SURFACE TREATMENTS** | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head<br>- TCS |

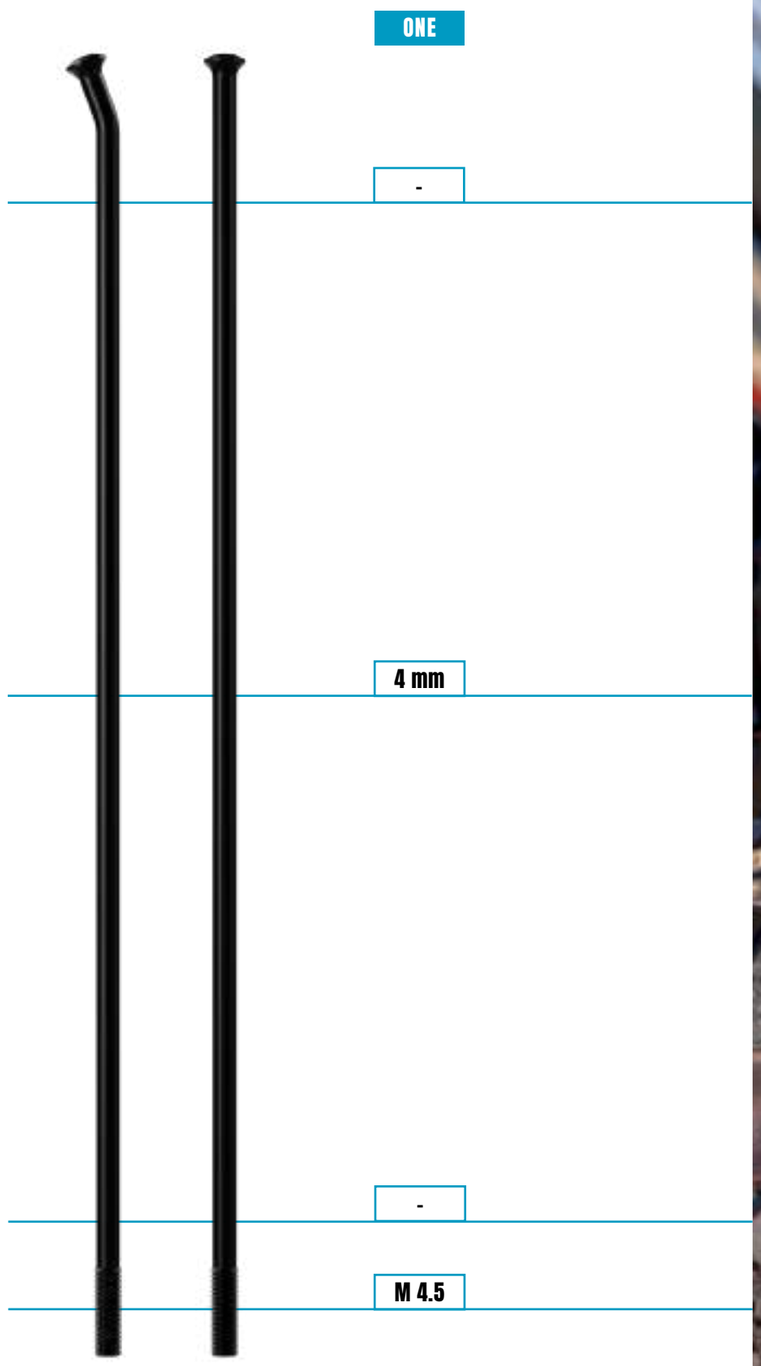
**Weight calculated (CAD) for a spoke length of 220 mm*

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## Carbon-Steel Plain Spokes

# M4.5 ONE

Carbon-steel spokes, constant diameter. Simple and essential, with high fatigue resistance and natural elasticity to keep wheels true on the roughest off-road terrain.




| | |
|---|---|
| **MATERIAL** | Carbon Steel<br>C60 |
| **LENGTHS** | 125 - 300 mm |
| **SURFACE TREATMENTS** | - Zinc-Nickel Black<br>- Zinc-Nickel Silver<br>- Black ED |
| **OPTIONS & ADD-ONS** | - Straight Pull Head<br>- Zero Head |

**Weight calculated (CAD) for a spoke length of 220 mm*





# ZINC-PLATED

## PLAIN SPOKES

ONE M3.5

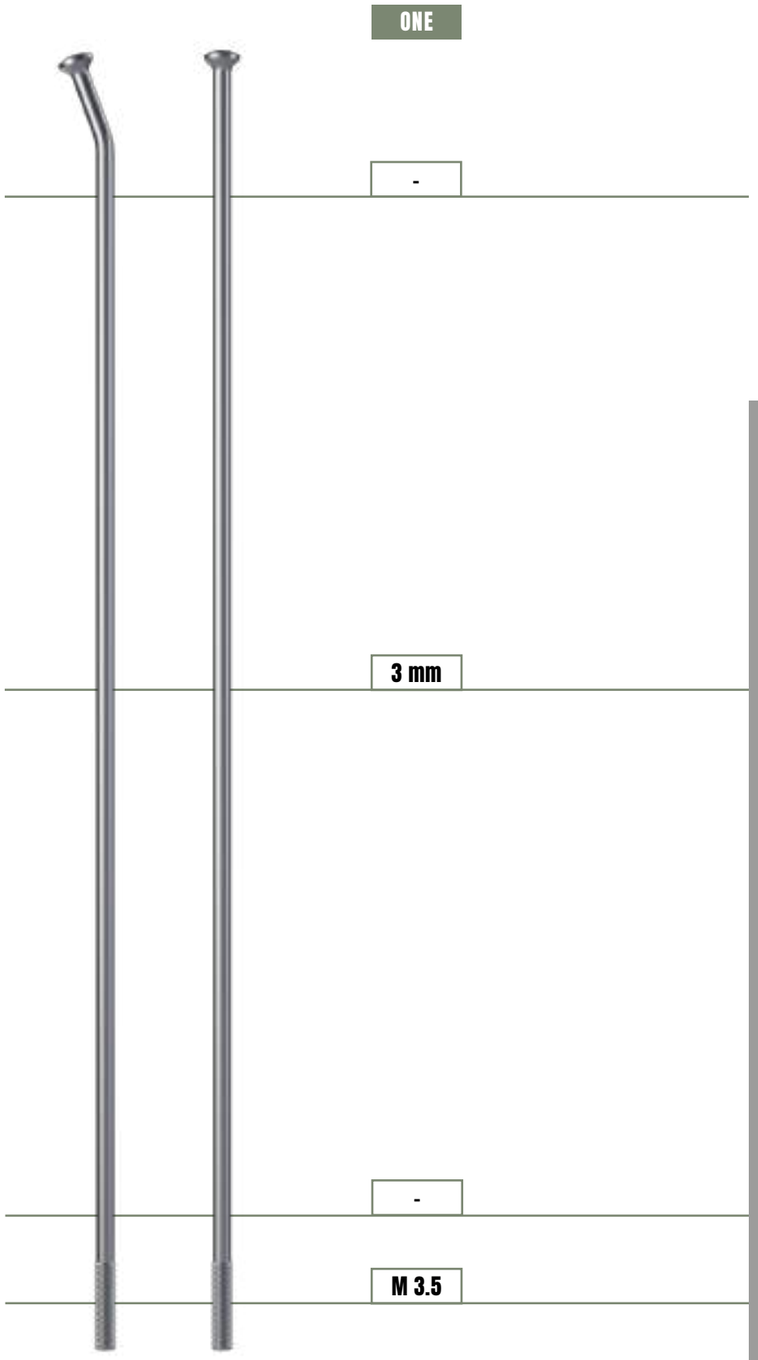
ONE M4

ONE M4.5

Zinc-plated carbon-steel spokes, constant diameter. Careful material selection and precise manufacturing for consistent performance: the cost-effective choice for standard applications.

# Zinc-Plated Plain Spokes
# M3.5 ONE

Zinc-plated carbon-steel spokes, constant diameter. Careful material selection and precise manufacturing for consistent performance: the cost-effective choice for standard applications.

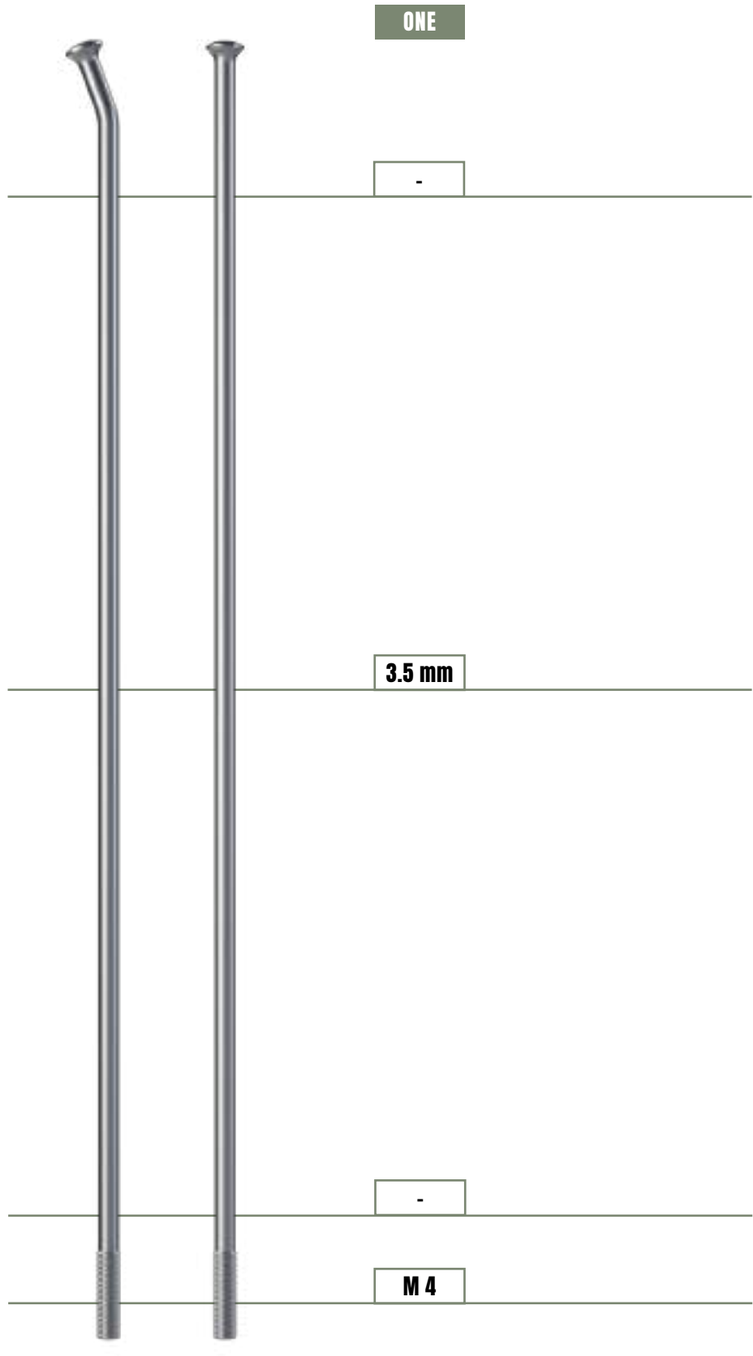



| | |
|---|---|
| **MATERIAL** | Carbon Steel<br>C47 |
| **LENGTHS** | 100 - 300 mm |
| **SURFACE TREATMENTS** | Zinc-Plating |
| **OPTIONS & ADD-ONS** | - Straight Pull Head |

**Weight calculated (CAD) for a spoke length of 220 mm*

# Zinc-Plated Plain Spokes
# M4 ONE

Zinc-plated carbon-steel spokes, constant diameter. Careful material selection and precise manufacturing for consistent performance: the cost-effective choice for standard applications.




| | |
|---|---|
| **MATERIAL** | Carbon Steel<br>C52 |
| **LENGTHS** | 120 - 300 mm |
| **SURFACE TREATMENTS** | Zinc-Plating |
| **OPTIONS & ADD-ONS** | - Straight Pull Head |

**Weight calculated (CAD) for a spoke length of 220 mm*

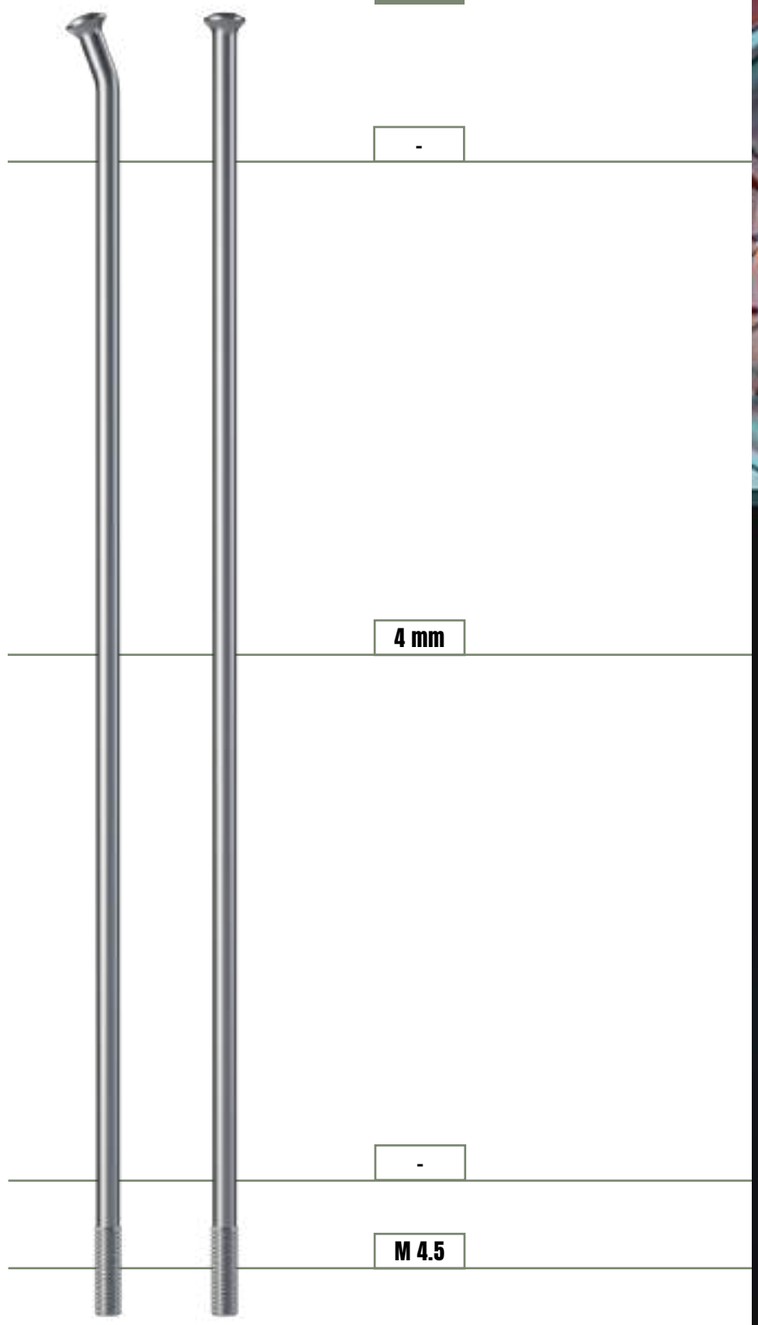
Plain spokes

alpina SINCE 1926

## Zinc-Plated Plain Spokes

# M4.5 ONE

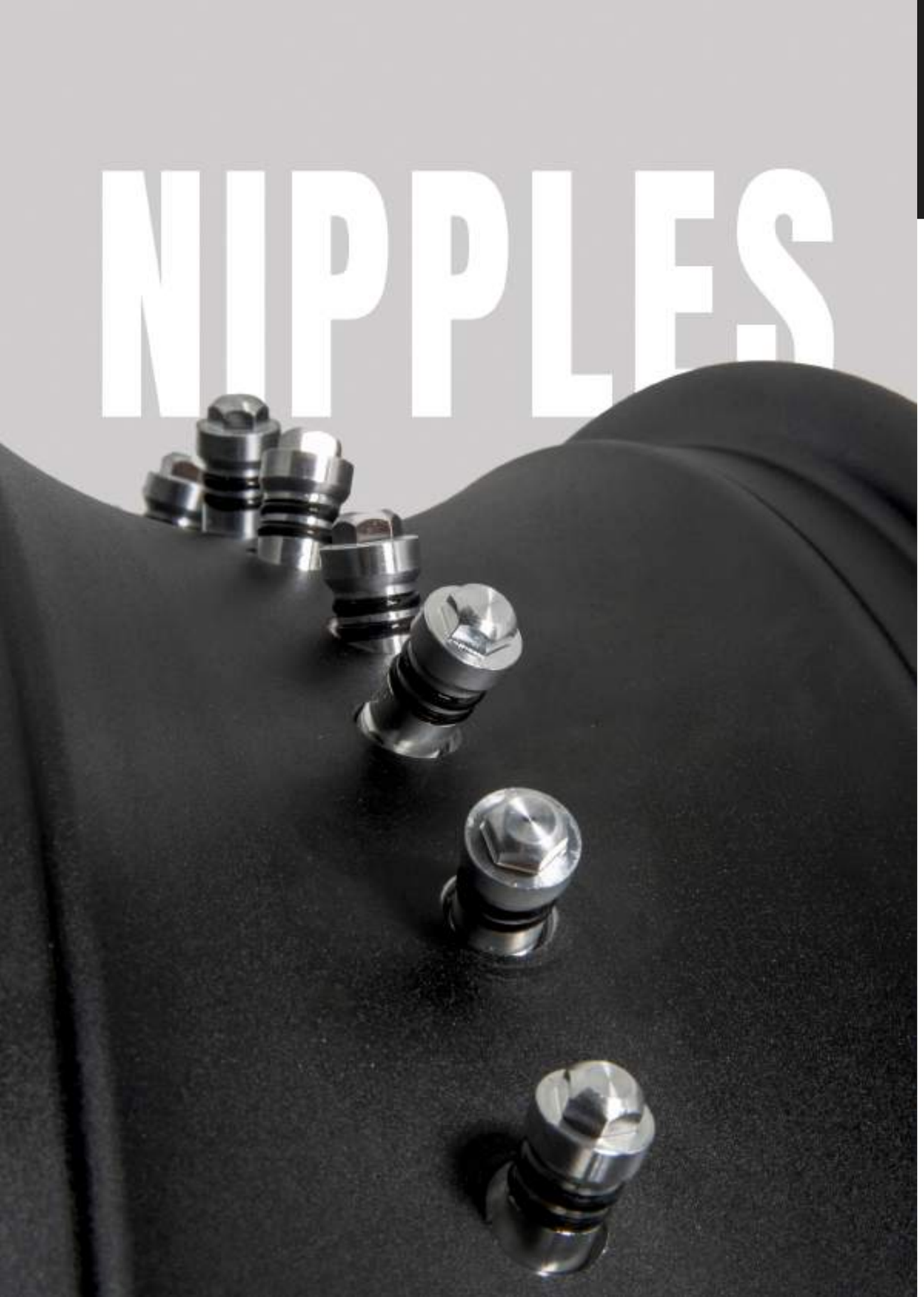
Zinc-plated carbon-steel spokes, constant diameter. Careful material selection and precise manufacturing for consistent performance: the cost-effective choice for standard applications.



| | ONE |
|---|---|
| MATERIAL | Carbon Steel C60 |
| LENGTHS | 125 - 300 mm |
| SURFACE TREATMENTS | Zinc-Plating |
| OPTIONS & ADD-ONS | - Straight Pull Head |
| | - |
| | 4 mm |
| | - |
| | M 4.5 |
| | 22.5 g |

**Weight calculated (CAD) for a spoke length of 220 mm*






# NIPPLES RANGE

## STANDARD NIPPLES

STEEL STANDARD NIPPLES
ALUMINIUM STANDARD NIPPLES

## SELF-LOCKING NIPPLES (ABS)

STEEL ABS NIPPLES
ALUMINIUM ABS NIPPLES

## TUBELESS NIPPLES (STS2)

STEEL STS2 NIPPLES
ALUMINIUM STS2 NIPPLES



# STANDARD NIPPLES

## STANDARD NIPPLES

STEEL STANDARD NIPPLES
ALUMINIUM STANDARD NIPPLES

APPLICATION

### Safety-critical wheel component

The nipple transfers spoke tension to the rim and is loaded by impacts, drive torque and braking forces. Dimensional consistency between batches is required for automatic and manual wheel assembly.

DESIGN

### Cold-formed, drilled and threaded in-house

High-strength EU steel with zinc-nickel finish, or aluminium with anodized finish. Drilling and threading on machines designed by Alpina.

KEY FEATURES

### Materials

Steel for Adventure and Touring applications; aluminium for weight-sensitive Off-Road applications.

### Key types and threads

Hex, Quadrix and Torx keys. Threads M3.5 to M5, body Ø 6 to 8 mm.

### Assembly

Suitable for automatic and manual lacing and truing.

Standard Nipples

# STEEL NIPPLES

| HEX KEY | QUADRIX KEY | TORX KEY |
|---|---|---|
|  |  |  |

| | | | | | | |
|---|---|---|---|---|---|---|
| **MATERIAL** | High-strength steel, class 8 | High-strength steel, class 8 | High-strength steel, class 8 | | | |
| **FINISH** | Silver Black<br>Zinc-Nickel | Silver Black<br>Zinc-Nickel | Silver Black<br>Zinc-Nickel | | | |
| **KEY SIZE** | **Hex 8** | **Quadrix 4** | **Torx T40** | | **Torx T35** | |
| **BODY** | 8 mm | 8 mm | 8 mm | 7 mm | 6 mm | 6.5 mm |
| **M3.5** | — | — | — | — | ✓ 3.2 g | ✓ 3.9 g |
| **M4** | — | — | — | ✓ 5.5 g | ✓ 2.9 g | ✓ 4.2 g |
| **M4.5** | — | ✓ 7.3 g | — | ✓ 5 g | — | — |
| **M5** | ✓ 7 g | ✓ 6.8 g | ✓ 7.5 g | — | — | — |

✓ Available · weight per single nipple — Not available



Standard Nipples

Standard Nipples

# ALUMINIUM NIPPLES

| QUADRIX KEY |
|---|
|  |

| | | |
|---|---|---|
| **MATERIAL** | Aluminium alloy 2024 | |
| **FINISH** | Silver Black<br>Anodized | |
| **KEY SIZE** | **Quadrix 4** | **Quadrix 3** |
| **BODY** | 8 mm | 6.5 mm |
| **M3.5** | — | ✓ 1.5 g |
| **M4** | ✓ 2.7 g | — |
| **M4.5** | ✓ 2.5 g | — |
| **M5** | — | — |

✓ Available · weight per single nipple — Not available



PATENTED

# ABS NIPPLES

## SELF-LOCKING NIPPLES (ABS)

STEEL ABS NIPPLES

ALUMINIUM ABS NIPPLES

THE PROBLEM

### Spoke tension loss over time

On cross-spoke wheels the nipples sit inside the hub, where vibration and rolling progressively back them off and reduce spoke tension. Conventional systems such as lock nuts or threadlockers have drawbacks: lock nuts add parts, cost and weight and are subject to corrosion; threadlockers work at first assembly, but lose effectiveness every time the wheel is re-trued.



Cross-spoke: nipples in the hub

THE ALPINA SOLUTION

### Self-Locking Nipples

A nylon insert, added on machines designed by Alpina, grips the spoke thread and holds the set torque in service. No lock nut, no adhesive and no extra assembly step: the nipple is fitted exactly like a standard one.

KEY ADVANTAGES

### Plug & play

Fits any automatic wheel-assembly machine, with no changes to the assembly process or tooling.

### Shock absorption

The nylon insert damps the micro-vibrations transmitted through the spoke, extending the life of spokes, hub and rim.

### Long-lasting centering

Spoke tension and wheel trueness are maintained in service: safe braking, riding comfort and no periodic re-tensioning.

USED BY

Self-Locking Nipples (ABS)

# STEEL NIPPLES

| | TORX KEY | HEX KEY | |
|---|---|---|---|
| |  |  | |
| MATERIAL | High-strength steel, class 8 | High-strength steel, class 8 | |
| FINISH | Silver Black<br>Zinc-Nickel | Silver Black<br>Zinc-Nickel | |
| KEY SIZE | Torx T40 | Hex 8 | Hex 7 |
| BODY | 7 mm | 8 mm | 7 mm |
| M3.5 | — | — | — |
| M4 | ✓ 5.4 g | — | ✓ 5.2 g |
| M4.5 | ✓ 5 g | — | ✓ 4.5 g / ✓ 4.9 g |
| M5 | — | ✓ 6 g | — |

✓ Available · weight per single nipple — Not available



ABS Nipples

Self-Locking Nipples (ABS)

# ALUMINIUM NIPPLES

| | QUADRIX KEY | HEX KEY |
|---|---|---|
| |  |  |
| MATERIAL | Aluminium alloy 2024 | Aluminium alloy 2024 |
| FINISH | Silver Black<br>Anodized | Silver Black<br>Anodized |
| KEY SIZE | Quadrix 4 | Hex 8 |
| BODY | 8 mm | 8 mm |
| M3.5 | — | ✓ 2.7 g |
| M4 | — | ✓ 2.5 g |
| M4.5 | ✓ 2.6 g | ✓ 2.3 g |
| M5 | — | — |

✓ Available · weight per single nipple — Not available



PATENTED

# STS2 NIPPLES

## TUBELESS NIPPLES (STS2)

STEEL STS2 NIPPLES
STS2 EVOLITE (NEW)
ALUMINIUM STS2 NIPPLES

THE PROBLEM

### Tubeless with central lacing

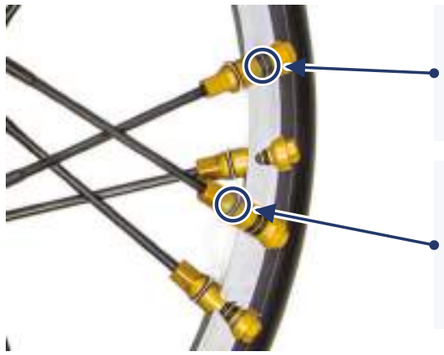
Most centrally laced wheels on the market are tube-type only. To stop air leaking from the rim channel drilled for the nipples, rubber band systems can be used, but they add weight on the outermost part of the rotating mass, where weight matters most, and make adjusting or removing the nipples for replacement difficult.

THE ALPINA SOLUTION

### STS2: standard tubeless, by design

Alpina's idea: a standard, patented tubeless system that is effective, reliable and easy to service. STS2 nipples seat inside the profile of a forged aluminium rim and seal each spoke hole with two O-rings; every nipple can be adjusted or replaced individually, even after a spoke breaks.

HOW STS2 TUBELESS NIPPLES WORK



**2 O-rings**

The nipples insert inside the rim profile and are fitted with 2 O-rings. Besides ensuring an airtight seal, the O-rings improve vibration absorption while riding.

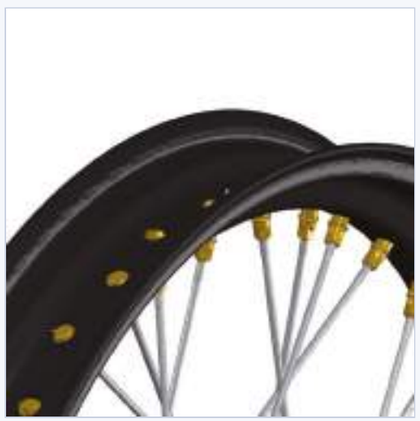
**Stainless steel spring**

Prevents the nipple from being ejected from the rim by centrifugal force if a spoke breaks. The spring traps the nipple inside the rim: the wheel and the tubeless seal are not compromised, and the rider can continue safely.

USED BY

# CENTRAL LACING VS CROSS-SPOKE

STS2 keeps traditional central lacing and seals at the nipple; cross-spoke systems use a sealed rim, with spokes anchored on its outer edge and nipples in the hub.

| | STS2 · CENTRAL LACING | CROSS-SPOKE SYSTEMS |
|---|---|---|
| 3D VIEW |  |  |
| NIPPLE POSITIONS |  **In the rim** Nipples seated in the rim profile, sealed by 2 O-rings |  **In the hub** “Inverted” spokes: nipples laced in the hub flange |



# THE STS2 ADVANTAGE

| | STS2 · CENTRAL LACING | CROSS-SPOKE SYSTEMS |
|---|---|---|
| LACING | **36** SPOKES<br>Standard central lacing: 4 fewer spokes and nipples to lace | **40** SPOKES<br>Tangential “inverted” spokes, nipples laced in the hub |
| SPOKES | Standard J-bend | Straight pull: locking systems needed to prevent loosening over time |
| STRESS | ★★★★☆<br>Central lacing minimises spoke stress | ★★☆☆☆<br>Extreme spoke angle: high mechanical stress and higher risk of bending the rim |
| MAINTENANCE | ★★★★★<br>No re-tensioning needed over time | ★★★☆☆<br>Straight-pull spokes may need re-tensioning; skilled / trained mechanics required |
| DESIGN | ★★★★★<br>Fresh twist on a classic look: traditional central lacing, now tubeless | ★★★★☆<br>Once distinctive, now on every adventure bike: no longer differentiating |
| PERFORMANCE | **SUPERIOR RADIAL DYNAMICS**<br>Better compliance under radial loads, the loads most felt in pure off-road riding. Maximum strength at the lowest weight, with better weight distribution in the rotating mass. | Less compliance under radial loads. The rim needs local reinforcement where the spoke heads anchor on its outer edge, the point farthest from the centre: more rotating mass. |
| ASSEMBLY | **SHORTER ASSEMBLY TIME**<br>Standard J-bend spokes and simpler truing.<br>**+20%**<br>**PRODUCTION OUTPUT*** | Straight-pull spokes: truing is much more complex and requires special calibrated equipment. |

** Internal Alpina test with equal operator skills; output of a single operator over an 8-hour shift.*

Tubeless Nipples (STS2)

# STEEL NIPPLES

## SAME KEY, SAME THREAD, 35% LIGHTER.

Lightweight version of the STS2 Tubeless nipple. Weight reduced from 13 g to 8.5 g (–35%) at the same key size and thread. Double O-ring sealing for reliable air tightness.

| | QUADRIX KEY | HEX KEY | STS2 EVOLITE NEW |
|---|---|---|---|
| |  |  |  |
| MATERIAL | High-strength steel, class 8 | High-strength steel, class 8 | High-strength steel, class 8 |
| FINISH | Silver Black<br>Zinc-Nickel | Silver Black<br>Zinc-Nickel | Silver Black<br>Zinc-Nickel |
| KEY SIZE | **Quadrix 4** | **Hex 7** | **Hex 7** |
| BODY | 8.8 mm | 8.8 mm | 9.1 mm |
| M3.5 | — | — | — |
| M4 | — | — | — |
| M4.5 | ✓ 13 g | ✓ 13 g | ✓ 8.5 g –35% |
| M5 | — | — | — |

✓ Available · weight per single nipple — Not available



STS2 Nipples

Tubeless Nipples (STS2)

# ALUMINIUM NIPPLES

| | HEX KEY |
|---|---|
| |  |
| MATERIAL | Aluminium alloy 2024 |
| FINISH | Silver Black Polished<br>Anodized (silver, black) · Polished |
| KEY SIZE | **Hex 7** |
| BODY | 10.6 mm |
| M3.5 | — |
| M4 | ✓ 6.3 g |
| M4.5 | ✓ 6.1 g |
| M5 | — |

✓ Available · weight per single nipple — Not available




# CONTACTS

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# NOTES

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