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This document is not legally binding. SALOMON S.A. reserves the right not to sell all products in certain countries and to effect any useful or necessary changes. All rights reserved. Reproduction prohibited. Indicated wheel weights +/- 5 %, without rim tape, or quick release skewer, but with valve for the Tubeless wheels on the industrial pre-series models. Rim weight +/- 10 %. MAVIC® is a deposited brand of SALOMON S.A.

Please read carefully the recommendations for rim use in this document.

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TECHNICALMANUAL

WHEELS+RIMS+SYSTEMS&ACCESSORIES

05 TECHNICAL MANUAL

A BETTER BIKE *BEGINS HERE*



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2005

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WARRANTY AND MAVIC® CUSTOMER SERVICE / TO CONTACT YOUR MSC

THIS DOCUMENT ONLY CONCERNS THE NEW PRODUCTS IN 2005.

THIS DOCUMENT UPDATES THE EXISTING TECHNICAL INFORMATION AND SHOULD THEREFORE BE KEPT IN A SAFE PLACE FOR AN UNLIMITED LENGTH OF TIME ALONG WITH THE MANUALS FROM PREVIOUS YEARS.

ALL THE INFORMATION CONCERNING THE EXISTING PRODUCTS IN THE PREVIOUS RANGES CAN BE FOUND IN THE TECHNICAL MANUALS PRINTED SINCE 1997.

YOU CAN GO ON-LINE TO THE WEBSITE www.tech-mavic.com TO FIND ALL THE EDITIONS OF THIS MANUAL SINCE 1997.

THE NEW 2005 TECHNICAL MANUAL

THE 2005 TECHNICAL MANUAL, WHICH IS ESSENTIAL TO ENSURING THE MAINTENANCE OF MAVIC PRODUCTS, CONSISTS OF 4 MAIN PARTS:

- Wheels
- Rims
- Components
- Tools and customer service.

You will find two types of technical information in each of these parts:

- Product drawings showing individual part numbers;
- Procedures to properly maintain our products as well as those to follow concerning the warranty and Mavic Service Center.

As we have already mentioned, this document only offers technical information regarding the modifications of the existing products and new products in the 2005 product range. Therefore, it concerns:

MAVIC CUSTOMER SERVICE



Our objective is that you be the only service partner for the consumer.

You are also assured that through the use of our worldwide Mavic Service Center (MSC), you will benefit from maximum assistance, the best possible service and professional advice.

Mavic MSC will be at your disposal to guide you through the necessary procedures in the event you need to return a part, make repairs, make standard replacements, or to send you spare parts needed for product maintenance.

We simply ask that you **contact your MSC prior to all returns (see page 47)**, to obtain the proper return procedures. Mavic will only accept authorized returns.

For additional information, contact your MSC or consult the end pages of this technical manual.

- The wheels: Ellipse®, Cosmic® Elite, Cosmic® Carbone SL, Ksyrium® Elite, Speedcity®, Crossland® Center-Lock*, Crossmax® Enduro Disc Center-Lock*, Crossmax® SL Disc Center-Lock* and Deemax® UST.

- The rims: A319, XM 317, XM 317 Disc, XM 517, EX 325 Disc, EX 823 Disc.

- The components: WIN-Tech® FS, Home-Trainer Kit

We hope this document will meet your needs and we are always open to listen to any suggestions to improve on it.

Thank you for your confidence in us and have a good 2005 season.

www.tech-mavic.com

This website is at your complete disposal. Every bit of information about Mavic products released since 1997 is available in PDF format both in English and French.

Visit: **www.tech-mavic.com** where you will find all of this information. To connect to this website you will need a code and password. These codes will be communicated by your usual contacts: reps, sales assistants, Customer service, Mavic Service Center...

Among other things on the site, you will find:

- All the technical details on all the Mavic products on the market since 1997 - wheels, rims, components – organised by discipline and by product;
- 4 recap charts of spoke lengths and references on all our wheels, which will help you to better manage your spoke stock;
- A program for calculating spoke length: starting with a given Mavic rim, select the drilling and lacing pattern, the width of your hub, as well as the diameter of the flanges and the distance between the flanges and the frame support or fork; the spoke length required for building your wheel will automatically be calculated.



We hope that this tool will meet your needs. Do not hesitate to inform us of any possible malfunction or improvements that you would like us to make.

* Center-Lock disc assembly system, under Shimano® Inc licence

MAVIC® WHEELS

SEGMENTATION OF THE 2005 WHEEL RANGE

| TRACK | ROAD & TRIATHLON | | | ASPHALT | MTB | | |
|-----------------------|--|---|---------|----------------------------|--|---------------------------------|--------------------------|
| | AERODYNAMIC | MULTI PERFORMANCE | CLASSIC | | CROSS COUNTRY RACING | CROSS MOUNTAIN | EXTREME MTB |
| iO COMETE | COMETE ROAD COSMIC CARBONE SL NEW | KSYRIUM SSC SL | | | CROSSMAX SL DISC CL NEW CROSSMAX SL DISC LEFTY CROSSMAX SL | CROSSMAX XL DISC CROSSMAX XL | DEEMAX UST NEW |
| ELLIPSE NEW | COSMIC ELITE NEW | KSYRIUM ELITE 650 + 700 NEW KSYRIUM EQUIPE | COSMOS | SPEEDCITY CL NEW | CROSSMAX ENDURO DISC CL NEW CROSSMAX ENDURO CROSSLAND CL NEW | | |

GENERAL POINTS

Dear dealers, we would like to remind you that it is your responsibility to give the customer all wheel instructions and have them fill out the warranty guide.

It is also your responsibility to provide the customer with the following recommended Mavic wheel instructions:

- Choose a suitable wheel designed for the type of riding you wish to do;
- It is imperative to respect the instructions in the Technical Manual for tire pressure and sizes (see charts below);
- Respect the appropriate spoke tensions. For more specific information about each of our products, please consult the product pages, the technical manuals from previous years or the website www.tech-mavic.com. Inappropriate spoke tension can generate much stress and quickly cause damage to the rim;
- Clean the rims on a regular basis with the Mavic soft stone (M40410);
- Remove stones and particles from the brake pads;
- Replace the brake pads when they are worn;
- Do not use a rim if the braking surfaces are worn, if eyelets are missing, or in any other case where safety might be compromised. **Indeed, a rim is a part that wears out as do brake pads, and must be replaced if it is worn** (sidewall hollowed by wear, or cut out, cracked rim...);
- Check or have your rims checked on a regular basis, at least at the start of each season and if possible after intensive use should you have a doubt about spoke tensions or the type of tire used. When checking, look inside (especially under the rim tape) and outside the rim. Check for signs of fatigue or wear: deterioration of braking surfaces, cracks in the sidewalls or around the eyelets.
- Mavic recommends that the total weight of the rider and his/her equipment (not including the bike) does not exceed the values below:
 - Road and Asphalt wheels: 100 kg; above this value see the Mavic rim offer;
 - MTB wheels: 85 kg for Crossmax SL and Crossmax SL Disc wheels; 100 kg for Crossmax XL, Crossmax XL Disc, Crossmax Enduro, Crossmax Enduro Disc and Crossland wheels; 115 kg for Deemax UST wheels.

Following these recommendations will guarantee longer product life for the wheels, maximum performance and riding enjoyment.

ELLIPSE™

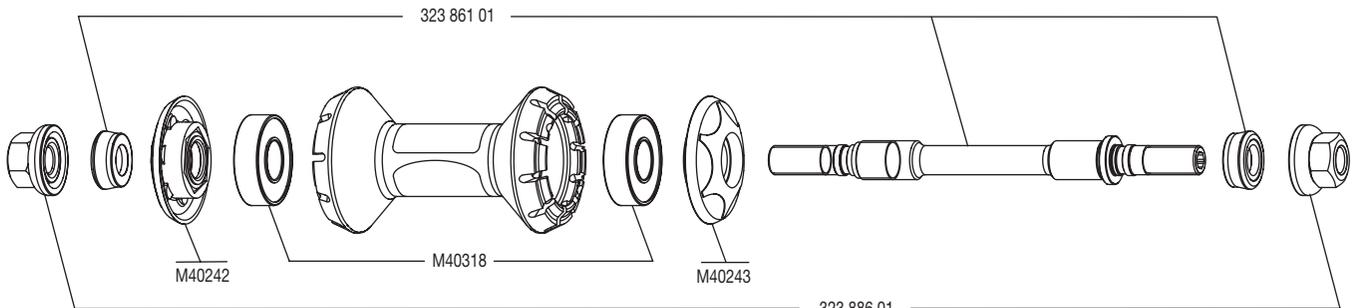
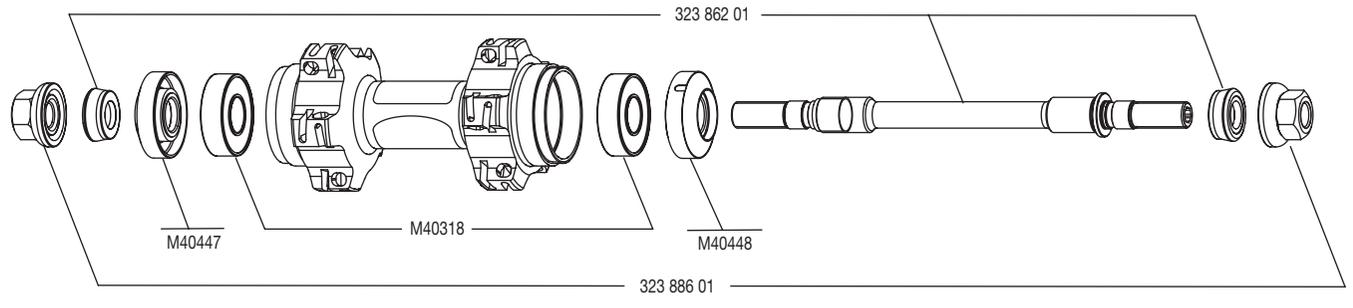
UTILIZACIÓN: utilícese exclusivamente en una bicicleta de pista. Cualquier otro uso (como bici de ruta, tándem, bici de ciclo-cross, todo terreno...) está formalmente desaconsejado, recayendo toda la responsabilidad en el usuario, y conlleva la pérdida de la garantía Mavic.

PESO RUEDAS SIN TUERCAS DE APRIETE:

Delantera: 957 g
Trasera: 1039 g

REFERENCIAS:

Delantera: 323 610 10
Trasera: 323 612 13
Par: 323 743 14

| | | |
|--|--|---|
| LLANTAS | REFERENCIAS COMERCIALES: Delantera y trasera: 120 334 15 (llantas 15c con 20 radiados) | |
| SECCIÓN | Ø DE LA VÁLVULA  Ø: 6,5 mm Prolongador de válvula M40012 Long.: ≥ 55 mm | SECCIÓN DE NEUMÁTICO Y PRESIÓN ACONSEJADAS Dimensiones: Ø 700 solamente Compatible ETRTO 622 x 13c / 622 x 15c Sección de neumático aconsejada: 19 a 28 / 19 a 32  Consejos de hinchado: Ver pág. 16  |
| BUJES | MANTENIMIENTO: Limpieza con un trapo seco, y, si es necesario, con agua jabonosa. Evite el lavado con mangueras de alta presión. | |
|  | | |
|  | | |
| RADIADO | REFERENCIAS Y LONGITUDES: Delantera: 323 906 01 para llantas 13c / 120 337 01 para llantas 15c (en paquetes de 10 con sus cabecillas) Trasera: 323 907 01 para llantas 13c / 120 338 01 para llantas 15c (en paquetes de 10 con sus cabecillas) | |
| CARACTERÍSTICAS: Radios inoxidables rectos ultra-perfilados negros con cabecillas de tipo ABS (autoblocantes). | CRUCES: Delantera: radial Trasera: a 2 cruces en ambos lados | TENSIÓN: Delantera: 110 a 135 kg Trasera: 110 a 135 kg |
| ACCESORIOS | RUEDA ENTREGADA CON: | MANTENIMIENTO |
| <ul style="list-style-type: none"> • Tuercas de cierre 323 886 01 • Fondo de llanta • Prolongador de válvula M40012 • Llave de ajuste de holgura de rodamientos M40123 • Llave de sujeción de radios aerodinámicos M40567 (con la rueda trasera) • Guía de instrucciones y tarjeta de garantía | | <ul style="list-style-type: none"> • Sustitución del eje y de rodamientos delanteros y traseros Ver pág. 20 • Sustitución de radio Ver pág. 23 • Sustitución de la llanta delantera Ver pág. 24 • Sustitución de la llanta trasera Ver pág. 26 |

RUEDAS

COSMIC® ELITE

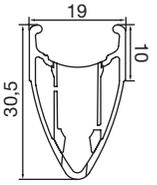
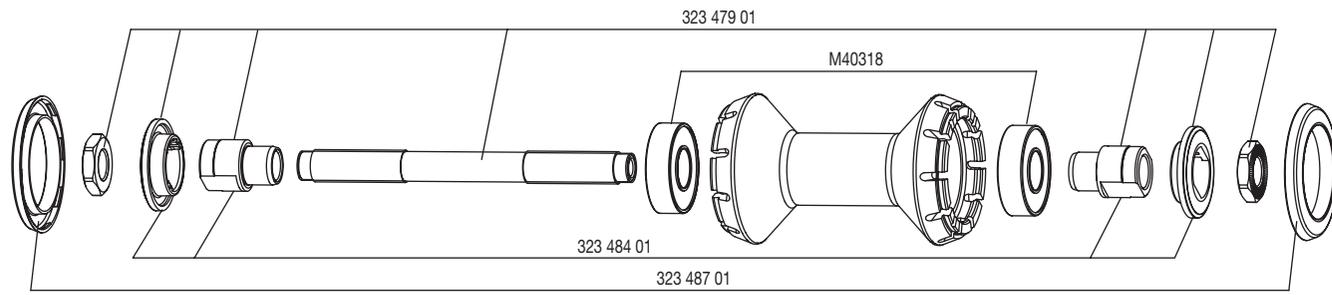
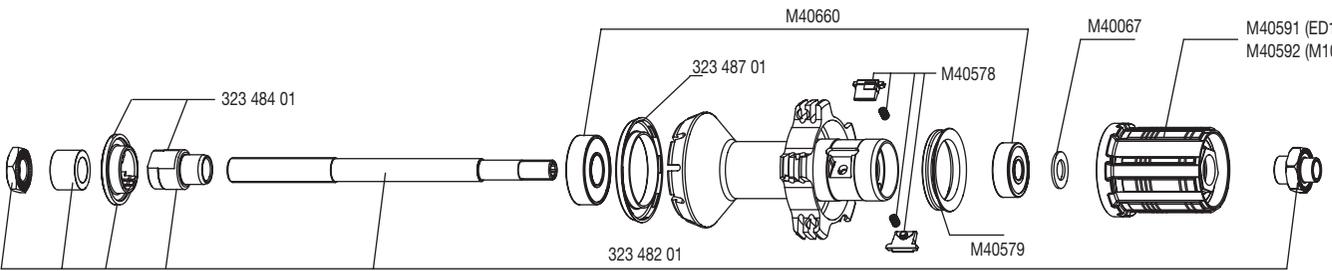
UTILIZACIÓN: Utilícese exclusivamente en una bicicleta de carretera. Cualquier otro uso (como tándem, bici de ciclo-cross, todo terreno...) está formalmente desaconsejado, recayendo toda la responsabilidad en el usuario, y conlleva la pérdida de la garantía Mavic.

PESO RUEDAS SIN CIERRE RÁPIDO:

Delantera: 890 g
Trasera: 1010 g (ED10)

REFERENCIAS:

Delantera: 323 660 10
Trasera M10: 323 662 11
Trasera ED10: 323 663 12
Par M10: 323 746 14
Par ED10: 323 747 14

| | | |
|--|--|--|
| LLANTAS | REFERENCIAS COMERCIALES: Delantera: 128 343 10 (Llantas 15c con 20 radios) Trasera: 128 343 13 (Llantas 15c con 20 radios) | |
| SECCIÓN | Ø DE LA VÁLVULA Ø: 6,5 mm Prolongador de válvula M40012 Long.: ≥ 55 mm | SECCIÓN DE NEUMÁTICO Y PRESIÓN ACONSEJADAS Dimensiones: Ø 700 solamente Compatible ETRTO 622 x 13c / 622 x 15c Sección de neumático aconsejada: 19 a 28 / 19 a 32 |
|  |  |  |
| | | Consejos de hinchado: Ver pág. 16  |
| BUJES | MANTENIMIENTO: Limpieza con un trapo seco, y, si es necesario, con agua jabonosa. Evite el lavado con mangueras de alta presión. Atención: las piezas de la rueda libre (trinquetes, muelles, núcleo de rueda libre) FTS-L no son compatibles con las de las ruedas libres FTS. | |
|  | | |
|  | | |
| RADIADO | REFERENCIAS Y LONGITUDES: Delantera y trasera lado opuesto rueda libre: 323 946 01 para 622x13c llantas / 120 337 01 para 622x15c (10 con sus cabecillas) Trasera lado rueda libre: 323 947 01 para 622x13c llantas / 120 338 01 para 622x15c (10 con sus cabecillas) | |
| CARACTERÍSTICAS: Radios inoxidables rectos ultra-perfilados negros con cabecillas de tipo ABS (autoblocantes). | CRUCES: Delantera: radial Trasera: a 2 cruces lado piñón, radial lado opuesto. | TENSIÓN: Delantera: 100 a 140 kg Trasera lado rueda libre: 135 a 165 kg |
| ACCESORIOS | RUEDA ENTREGADA CON: | MANTENIMIENTO |
| <ul style="list-style-type: none"> • Cierre rápido delantero M40350 • Cierre rápido trasero M40351 • Fondo de llanta • Llave de sujeción de radios aerodinámicos M40567 (con la rueda trasera) • Prolongador de válvula M40012 • Tuerca de cierre piñón ED10 12D M40640 (con la rueda trasera ED10) • Guía de instrucciones | | <ul style="list-style-type: none"> • Sustitución de un radio Ver pág. 23 • Sustitución de la llanta delantera Ver pág. 24 • Sustitución de la llanta trasera Ver pág. 27 <p>Bujes: para cualquier tarea de mantenimiento (sustitución de ejes, de rodamientos, de núcleo de rueda libre), consulte el Manual Técnico 2004, en el apartado concerniente a las Cosmos, o el sitio Internet www.tech-mavic.com.</p> |

COSMIC® CARBONE™ SL

USE: Use only on a road bike. Any other use (such as on a tandem, Cyclo-Cross bike, mountain bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

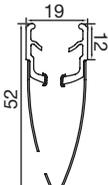
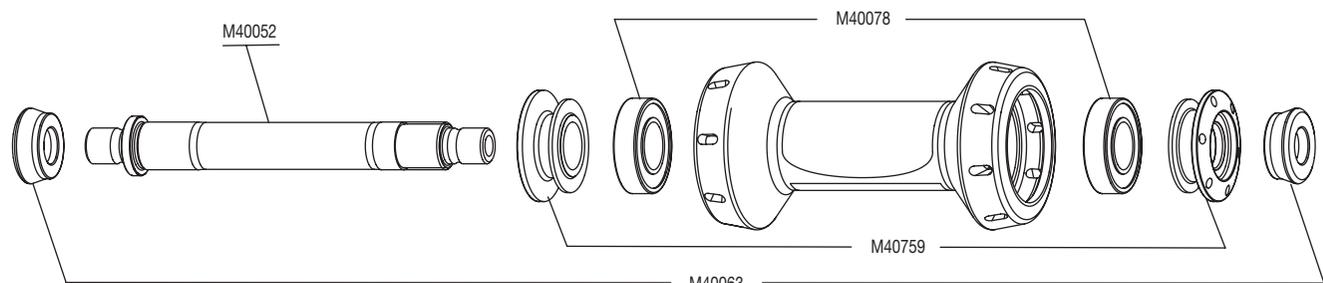
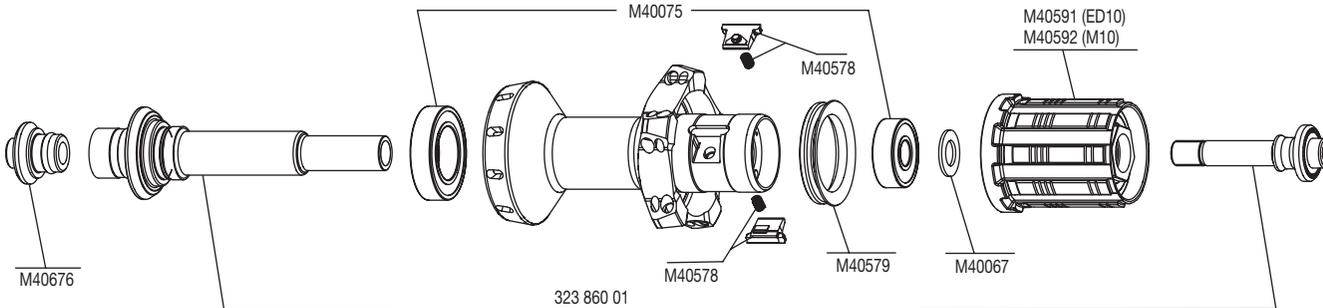
Clincher: Front: 787 g
Rear: 978 g (ED10)
Tubular: Front: 762 g
Rear: 953 g (ED10)

REF. CLINCHER WHEELS:

Front: 323 604 10
Rear M10: 323 607 11
Rear ED10: 323 608 12
Pair M10: 323 759 14
Pair ED10: 323 760 14

REF. TUBULAR WHEELS:

Front: 323 666 10
Rear M10: 323 667 11
Rear ED10: 323 668 12
Pair M10: 323 737 14
Pair ED10: 323 738 14

| | | |
|---|---|---|
| RIMS | <p>SALES REFERENCES: Clincher: Front: 323 852 10 Rear: 323 852 13 Tubular: Front: 332 853 10 Rear: 323 853 13</p> | |
| <p>WIDTH</p>  | <p>VALVE HOLE Ø</p>  <p>Ø: 6,5 mm Valve extender M40013. Length: ≥ 55 mm</p> | <p>RECOMMENDED TIRE WIDTH AND PRESSURE</p>  <p>Dimensions: Ø 700 only Clincher: ETRTO 622 x 13 compatible Recommended tire width: 19 to 28 Tubular: 28"</p> <p style="text-align: right;">Recommended tire pressure: See page 16</p>  |
| HUBS | <p>MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels.</p> | |
|  | | |
|  | | |
| WHEEL BUILDING | <p>REFERENCES AND LENGTHS: Front: 323 903 01, length 291 (per 8 with nipples) (Ø thread: 2.3 mm). Rear free wheel side: 323 904 01, length 307 (per 10 with nipples) (Ø thread: 2.6mm). Rear non drive side: 323 905 01, length 289 (per 10 with nipples) (Ø thread: 2.6mm).</p> | <p>LACING PATTERN: Front: radial Rear: crossed 2 drive side, radial non drive side.</p> |
| <p>FEATURES: Black, ultra bladed, stainless steel, straight pull spokes with ABS nipples (self-locking). Yellow front nipples (Ø thread 2.3 mm). Rear nipples (Ø thread 2.6 mm).</p> | | <p>TENSION: Front: 105 to 145 kg Rear free wheel side: 120 to 160 kg</p> |
| ACCESSORIES | <p>WHEEL DELIVERED WITH:</p> <ul style="list-style-type: none"> • High tightening front quick release composite skewer BR 601: M40149 • High tightening rear quick release composite skewer BR 601: M40150 • Valve extender M40013 • Black padded wheel bags M40135 • Computer magnet M40540 (with front wheel) • Angled spoke wrench M40001 (with rear wheel) • Wrench for aerodynamic spokes M40567 (with rear wheel) • Free play adjustment wrench M40123 (with rear wheel) • ED10 12D locking ring M40640 (with rear wheel ED10) • Rim tape (clincher version) • User guide and warranty card | MAINTENANCE |
| | | <ul style="list-style-type: none"> • Replacing the front axle See page 20 • Replacing the front bearings See page 20 • Replacing the rear axle See 2003 TM, p.19 • Replacing the free wheel body See 2003 TM, p.21 • Replacing the rear bearings See 2003 TM, p.22 • Replacing a spoke See page 23 • Replacing the front rim See page 24 • Replacing the rear rim See page 27 |

WHEELS

KSYRIUM™ ELITE

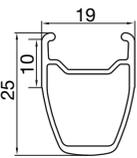
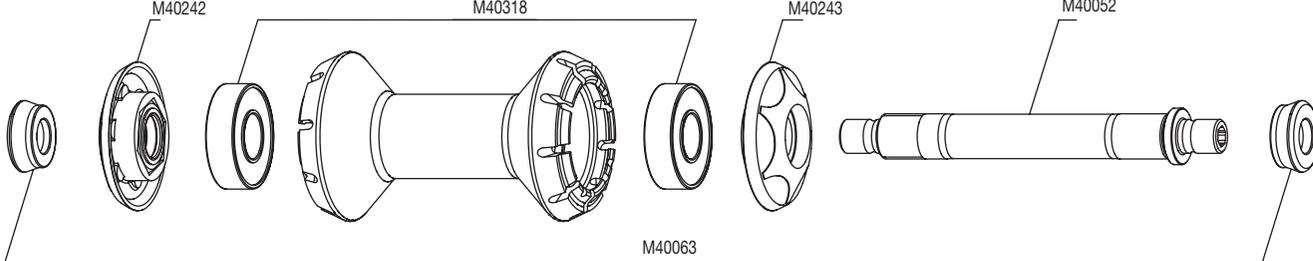
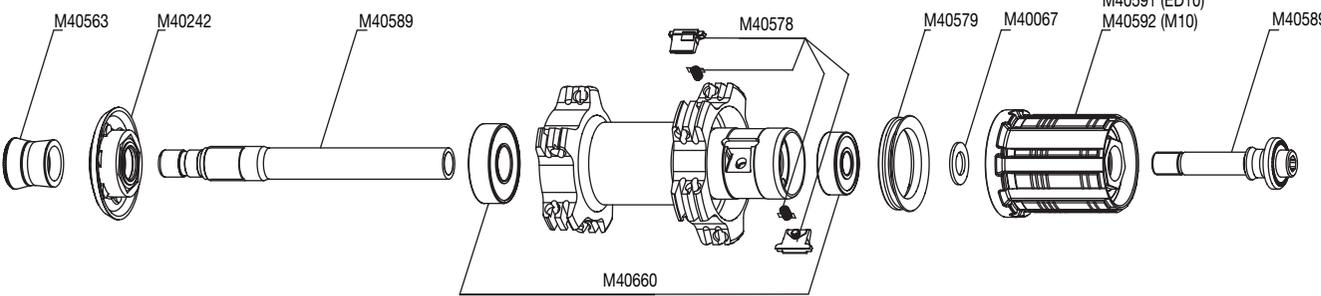
USE: Use only on a road bike. Any other use (such as on a tandem, Cyclo-Cross bike, mountain bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WEIGHT Ø 700:
 Front: 772 g
 Rear: 960 g (ED10)

REFERENCES:
 Front: 323 625 10
 Rear M10: 323 626 11
 Rear ED10: 323 627 12
 Pair M10: 323 739 14
 Pair ED10: 323 740 14

WEIGHT Ø 650:
 Front: 722 g
 Rear: 908 g (ED10)

REFERENCES:
 Front: 323 635 10
 Rear M10: 323 636 11
 Rear ED10: 323 637 12
 Pair M10: 323 722 14
 Pair ED10: 323 744 14

| | | |
|--|---|---|
| RIMS | SALES REFERENCES: 700: Front: 323 911 10 Rear: 323 911 13 650: Front: 323 910 10 Rear: 323 910 13 | |
| WIDTH  | VALVE HOLE Ø Ø: 6,5 mm Length: ≥ 32 mm  | RECOMMENDED TIRE WIDTH AND PRESSURE  Dimensions: Ø 700 or 650 Compatible ETRTO 622 x 13 (700) or 571x13 (650) Recommended tire width: 19 to 28 Recommended tire pressure: See page 16  |
| HUBS | MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels. | |
|  | | |
|  | | |
| WHEEL BUILDING | REFERENCES AND LENGTHS: Front 700: 323,898 01, length 287 (per 9, integrated nipples). Rear 700: 323,899 01, length 307 (per 10, integrated nipples). Front 650: 323,896 01, length 262 (per 9, integrated nipples). Rear 650: 323,897 01, length 282 (per 10, integrated nipples). | |
| FEATURES: Silver, ultra bladed, stainless steel, straight pull spokes with integrated M7 nipples (self-locking). | LACING PATTERN: Front: Radial Rear: Crossed 2 on both sides. | TENSION: Front: 115 to 135 kg Rear free wheel side: 140 to 165 kg |
| ACCESSORIES | WHEEL DELIVERED WITH: <ul style="list-style-type: none"> • Front quick release skewer M40350 • Rear quick release skewer M40351 • Free play adjustment wrench M40123 (with rear wheel) • Wrench for aerodynamic spokes M40567 (with rear wheel) • ED10 12D locking ring M40640 (with rear wheel ED10) • User guide and warranty card | MAINTENANCE |
| | | <ul style="list-style-type: none"> • Replacing a spoke See page 23 • Replacing the front rim See page 24 • Replacing the rear rim See page 27 <p>Hubs: For all maintenance procedures (replacement of an axle, bearings, free wheel body), refer to the 2002 technical manual or to our website www.tech-mavic.com.</p> |

SPEEDCITY™ Disc fixing: "International Standard"

Warning: new hub

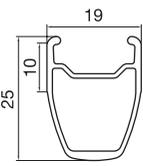
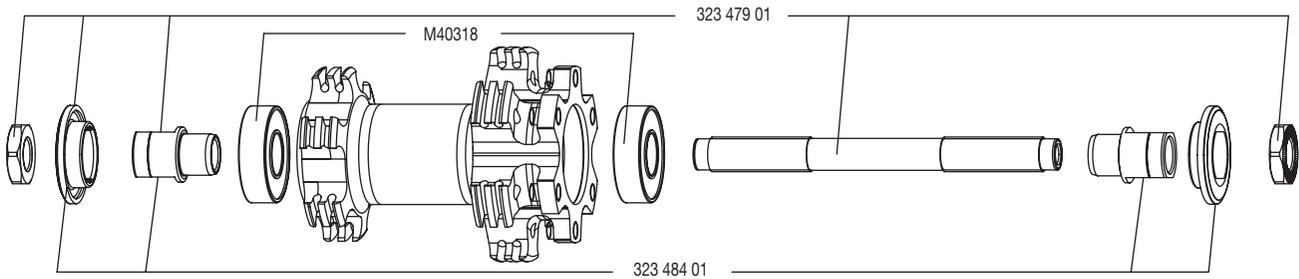
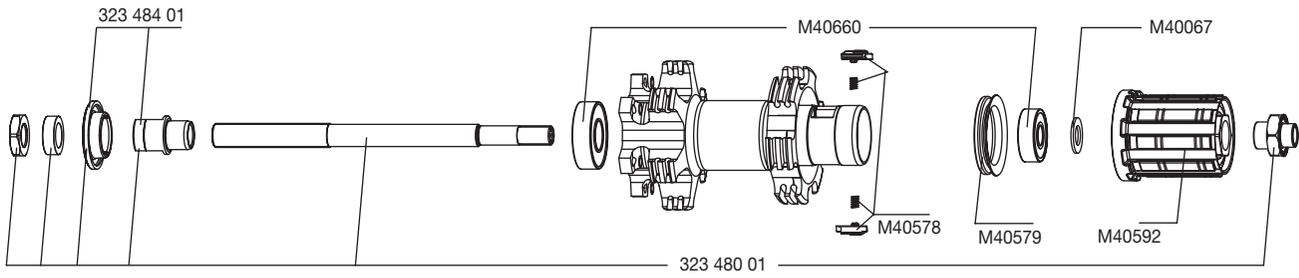
USE: Use only on the road, on a MTB, city or road bike (135 mm rear axle width) fitted with disc brakes or rim brakes. Any other use (such as on a tandem, Cyclo-Cross bike, mountain bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

Front: 865 g
Rear: 1095 g

REFERENCES:

Front: 323 688 10
Rear: 323 689 13
Pair: 323 763 14

| | | |
|---|---|--|
| RIMS | SALES REFERENCES: Front and rear: M40706 (supplied with eyelets to be screwed) | |
| WIDTH  | VALVE HOLE Ø Ø: 6,5 mm Length: ≥ 32 mm  | RECOMMENDED TIRE WIDTH AND PRESSURE Dimensions: Ø 700 only ETRTO 622 x 13 compatible Recommended tire width: 19 to 32 (35 with disc brakes)  Recommended tire pressure: See page 16  |
| HUBS | MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels. | |
|  | | |
|  | | |
| WHEEL BUILDING | REFERENCES AND LENGTHS: Front and rear: 323 453 01, length 300 (per 14 with nipples). | |
| FEATURES: Black, round, stainless steel, straight pull spokes with ABS nipples (self-locking). | LACING PATTERN: Front and rear: crossed 2 on both sides | TENSION: Front: 105 to 145 kg Rear free wheel side: 105 to 145 kg |
| ACCESSORIES | WHEEL DELIVERED WITH: | MAINTENANCE |
| <ul style="list-style-type: none"> • Front quick release skewer M40350 • Rear quick release skewer M40352 • User guide and warranty card | | <p>Hubs: For all maintenance procedures (replacement of an axle, bearings, free wheel body), refer to the 2004 technical manual (section concerning the Crossland).</p> <p>Lacing: For all procedures (replacement of a spoke or rim), refer to the 2003 technical manual.</p> <p>You can also consult our website www.tech-mavic.com.</p> |

WHEELS

SPEEDCITY™

Disc fixing: "Center Lock"

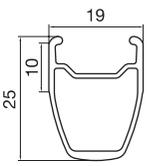
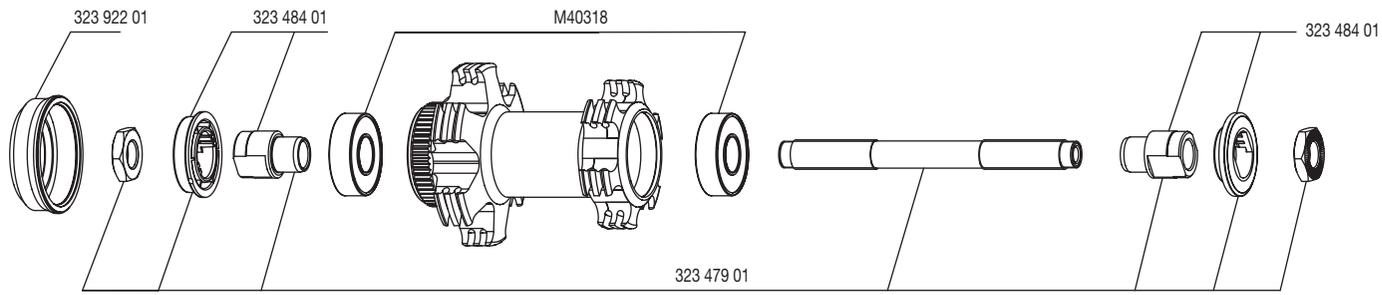
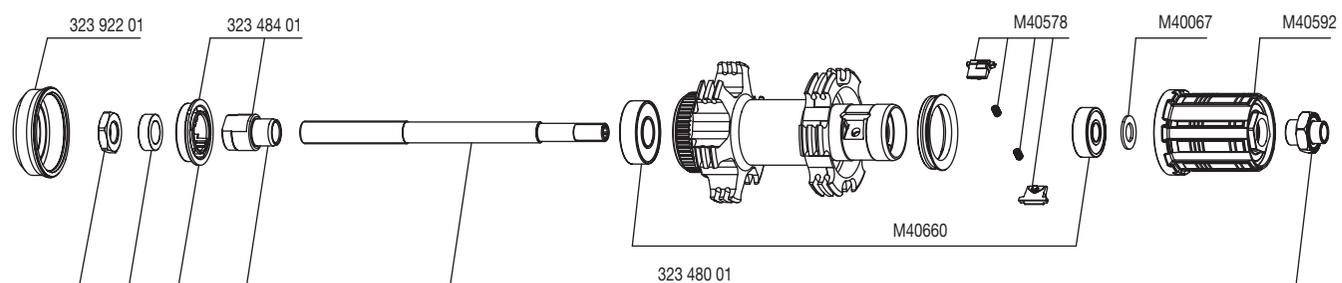
USE: Use only on the road, on a MTB, city or road bike (135 mm rear axle width) fitted with disc brakes or rim brakes. Any other use (such as on a tandem, Cyclo-Cross bike, mountain bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

Front: 865 g
Rear: 1095 g

REFERENCES:

Front: 323 650 10
Rear: 323 651 13
Pair: 323 745 14

| | | |
|--|---|--|
| RIMS | SALES REFERENCES: Front and rear: M40706 (supplied with eyelets to be screwed) | |
| WIDTH | VALVE HOLE Ø Ø: 6,5 mm Length: ≥ 32 mm | RECOMMENDED TIRE WIDTH AND PRESSURE Dimensions: Ø 700 only ETRTO 622 x 13 compatible Recommended tire width: 19 to 32 (35 with disc brakes) |
|  |  |  |
| | | Recommended tire pressure: See page 16 |
| HUBS | MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels. | |
|  | | |
|  | | |
| WHEEL BUILDING | REFERENCES AND LENGTHS: Front and rear: 323 453 01, length 300 (per 14 with nipples). | |
| FEATURES: Black, round, stainless steel, straight pull spokes with ABS nipples (self-locking). | LACING PATTERN: Front and rear: crossed 2 on both sides. | TENSION: Front: 105 to 145 kg Rear free wheel side: 105 to 145 kg |
| ACCESSORIES | WHEEL DELIVERED WITH: | MAINTENANCE |
| <ul style="list-style-type: none"> • Front quick release skewer M40350 • Rear quick release skewer M40352 • Disc fixing protection hood 323 922 01 • User guide and warranty card <p>Discs and disc locking rings not supplied.</p> | | <p>Hubs: For all maintenance procedures (replacement of an axle, bearings, free wheel body), refer to the 2004 technical manual (section concerning the Crossland).</p> <p>Lacing: For all procedures (replacement of a spoke or rim), refer to the 2003 technical manual.</p> <p>You can also consult our website www.tech-mavic.com.</p> <p>For all specifications concerning the assembly of the disc on the hub, refer to the technical documents supplied by Shimano®.</p> |

CROSSMAX™ SL DISC

Disc fixing: "Center Lock"

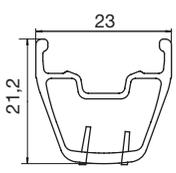
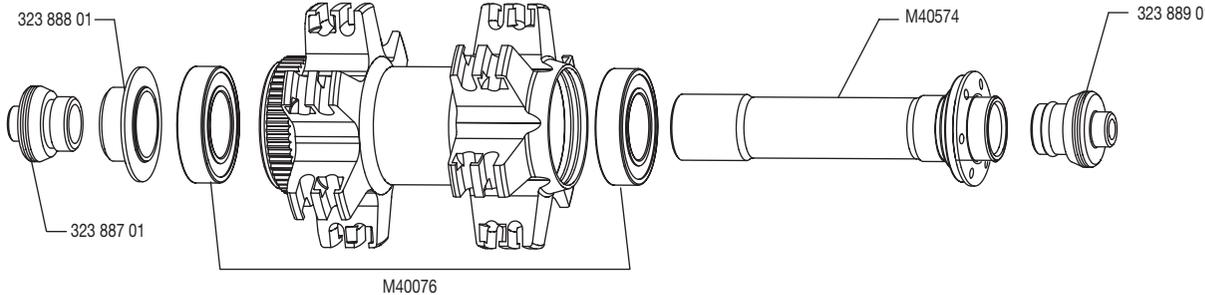
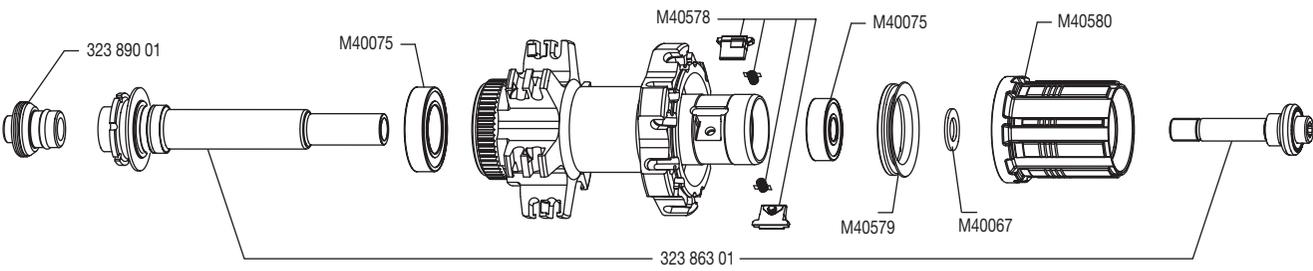
USE: Use only on a Cross Country MTB fitted with disc brakes. Any other use (such as on a tandem, Cyclo-Cross bike, road bike, free-ride or downhill bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

Front: 770 g
Rear: 915 g

REFERENCES:

Front: 323 680 10
Rear: 323 681 13
Pair: 323 753 14

| | | |
|---|---|--|
| RIMS | <p>SALES REFERENCES: (applicable to Crossmax SL Disc International Standard and Crossmax SL Disc Center lock wheels) Front: M40741 / Rear: M40742</p> | |
| <p>WIDTH</p>  | <p>VALVE HOLE Ø</p>  <p>Ø: 6,5 mm UST valve + Schrader adapter: M40495 Length: ≥ 32 mm</p> | <p>RECOMMENDED TIRE WIDTH AND PRESSURE</p>  <p>Dimensions: Ø 26" only Compatible ETRTO 559 x 19 Recommended tire width: 1,00 to 2,10</p> <p>Recommended tire pressure: See page 16</p>  |
| HUBS | <p>MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels.</p> | |
|  | | |
|  | | |
| WHEEL BUILDING | <p>REFERENCES AND LENGTHS: Front and rear non drive side: M40743, length 268 (per 12, integrated nipples). Rear free wheel side: M40745, length 250 (per 12, integrated nipples).</p> | |
| <p>FEATURES: Silver, ultra bladed, zicral, straight pull spokes with integrated M7 nipples (self-locking).</p> | <p>LACING PATTERN: Front and rear: Crossed 2 on both sides</p> | <p>TENSION: Front: 120 to 155 kg Rear free wheel side: 120 to 155 kg</p> |
| ACCESSORIES | <p>WHEEL DELIVERED WITH:</p> <ul style="list-style-type: none"> • High tightening front quick release composite skewer BX 601: M40140 • High tightening rear quick release composite skewer BX 601: M40141 • UST Valve M40495 • Computer magnet M40540 (with front wheel) • Free play adjustment wrench M40123 (with rear wheel) • Spoke wrench M40494 (with rear wheel) • User guide and warranty card <p>Discs and disc locking rings not supplied</p> | MAINTENANCE |
| | | <p>For all maintenance procedures (hubs, spoke lacing), refer to the 2003 technical manual or consult the website www.tech-mavic.com.</p> <p>For all specifications concerning the assembly of the disc on the hub, refer to the technical documents supplied by Shimano®.</p> |

WHEELS

CROSSMAX™ ENDURO DISC Disc fixing: "Center Lock"

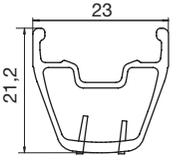
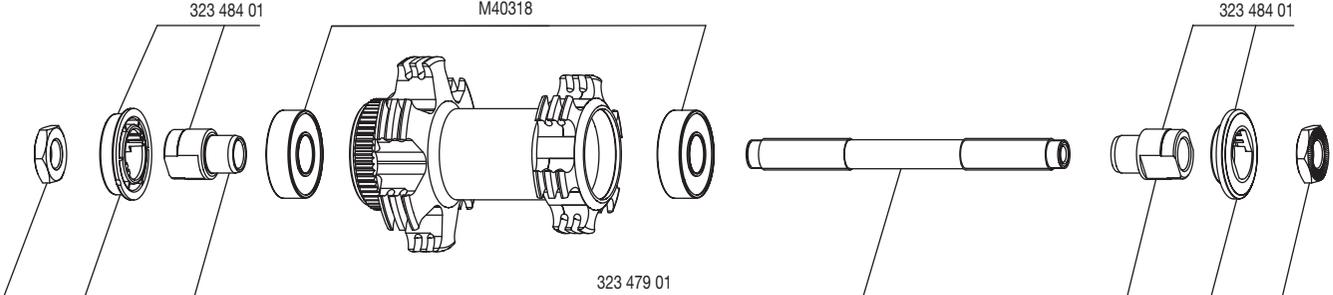
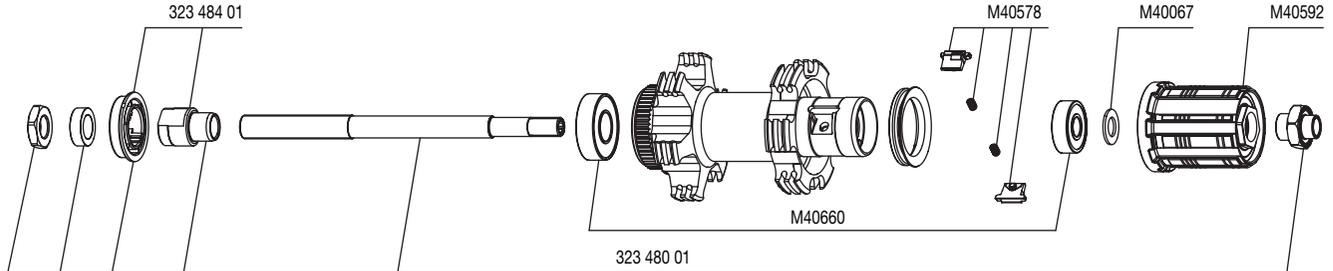
USE: Use only on a Cross Mountain or Cross Country MTB fitted with disc brakes. Any other use (such as on a tandem, Cyclo-Cross bike, road bike, downhill bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

Front: 850 g
Rear: 985 g

REFERENCES:

Front: 323 682 10
Rear: 323 683 13
Pair: 323 755 14

| | | |
|--|--|---|
| RIMS | <p>SALES REFERENCES: (applicable to Crossmax Enduro Disc International Standard and Crossmax Enduro Disc Center lock wheels) Front: 323 494 10 / Rear: 323 494 13</p> | |
| <p>WIDTH</p>  | <p>VALVE HOLE Ø</p>  <p>Ø: 6,5 mm UST valve + Schrader adapter: M40495 Length: ≥ 32 mm</p> | <p>RECOMMENDED TIRE WIDTH AND PRESSURE</p>  <p>Dimensions: Ø 26" only Compatible ETRTO 559 x 19 Recommended tire width: 1,00 to 2,30</p> <p style="text-align: right;">Recommended tire pressure: See page 16</p>  |
| HUBS | <p>MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels.</p> | |
|  | | |
|  | | |
| WHEEL BUILDING | <p>REFERENCES AND LENGTHS: Front and rear: 323 440 01, length 273 (per 12, integrated nipples).</p> | |
| <p>FEATURES: Silver, ultra bladed, stainless steel, straight pull spokes with integrated M7 nipples (self-locking).</p> | <p>LACING PATTERN: Front and rear: crossed 2 on both sides</p> | <p>TENSION: Front: 100 to 120 kg Rear free wheel side: 110 to 130 kg</p> |
| ACCESSORIES | <p>WHEEL DELIVERED WITH:</p> <ul style="list-style-type: none"> • Front quick release skewer M40350 • Rear quick release skewer M40352 • UST Valve M40495 • User guide and warranty card <p>Discs and disc locking rings not supplied.</p> | MAINTENANCE |
| | | <p>For all maintenance procedures (hubs, spoke lacing), refer to the 2004 technical manual or consult the website www.tech-mavic.com.</p> <p>For all specifications concerning the assembly of the disc on the hub, refer to the technical documents supplied by Shimano®.</p> |

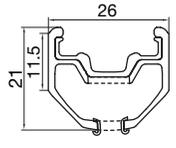
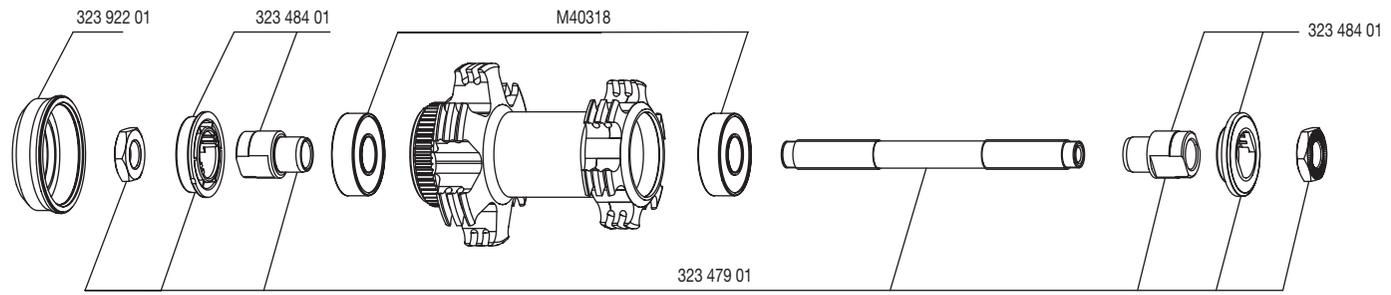
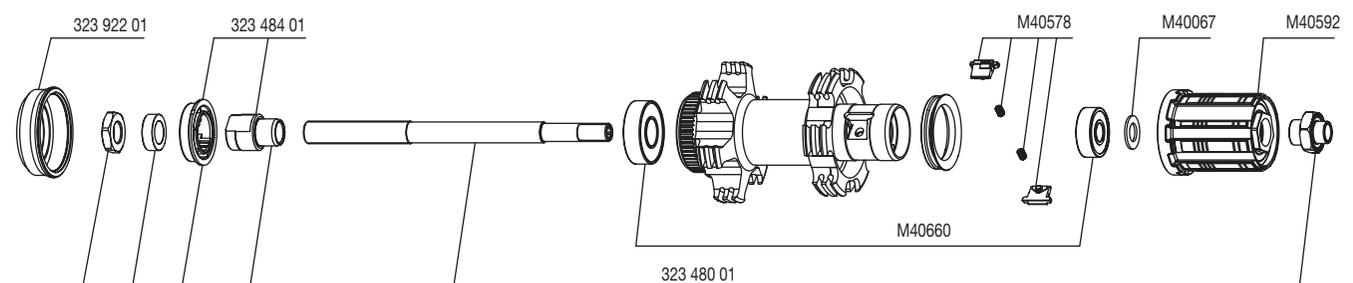
CROSSLAND™ Disc fixing: "Center Lock"

USE: Use only on a Cross Mountain or Cross Country MTB fitted with a disc or rim braking system. Any other use (such as on a tandem, Cyclo-Cross bike, road bike, downhill bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:
 Front: 970 g
 Rear: 1105 g

BLACK WHEEL REFERENCES:
 Front: 323 671 10
 Rear: 323 672 13
 Pair: 323 749 14

SILVER WHEEL REFERENCES:
 Front: 323 669 10
 Rear: 323 670 13
 Pair: 323 750 14

| | | |
|--|--|--|
| RIMS | <p>SALES REFERENCES: (applicable to Crossland International Standard and Crossland Center Lock wheels) Black front and rear: 323 941 14 Silver front and rear: 323 942 14</p> <p>UST rim tape: 323 478 01 to replace yellow rim tapes 323 943 01 to replace grey rim tapes See explanations on page 30.</p> <p>Always use UST rim tape with Crossland wheels</p> | |
| WIDTH |  | <p>VALVE HOLE Ø</p> <p>Ø: 6,5 mm UST valve + Schrader adapter: M40495 Length: ≥ 32 mm</p> |
| | <p>RECOMMENDED TIRE WIDTH AND PRESSURE</p> <p>Dimensions: Ø 26" only Compatible ETRTO 559 x 19 Recommended tire width: 1,00 to 2,30</p> | <p>Recommended tire pressure: See page 16</p> |
| HUBS | <p>MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels.</p> | |
| |  | |
| |  | |
| WHEEL BUILDING | <p>REFERENCES AND LENGTHS: Silver front and rear: 323 437 01, length 270 (per 12 with nipples). Black front and rear: 323 601 01, length 270 (per 12 with nipples).</p> | |
| FEATURES: | LACING PATTERN: | TENSION: |
| Silver or black, round, stainless steel, straight pull spokes with ABS nipples (self-locking). | Front and rear: crossed 2 on both sides | Front and rear drive side: 100 to 120 kg |
| ACCESSORIES | WHEEL DELIVERED WITH: | MAINTENANCE |
| <ul style="list-style-type: none"> • Front quick release skewer M40350 • Rear quick release skewer M40352 • Disc fixing protection hood 323 922 01 • UST Valve M40495 • User guide and warranty card <p>Discs and locking rings not supplied.</p> | | <p>For «hub and spoke lacing» maintenance procedures, refer to the 2004 technical manual or consult the website www.tech-mavic.com.</p> <p>The new UST rim tape See page 30</p> <p>For all specifications concerning the assembly of the disc on the hub, refer to the technical documents supplied by Shimano®.</p> |

WHEELS

DEEMAX UST® 05

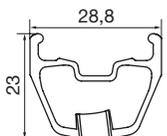
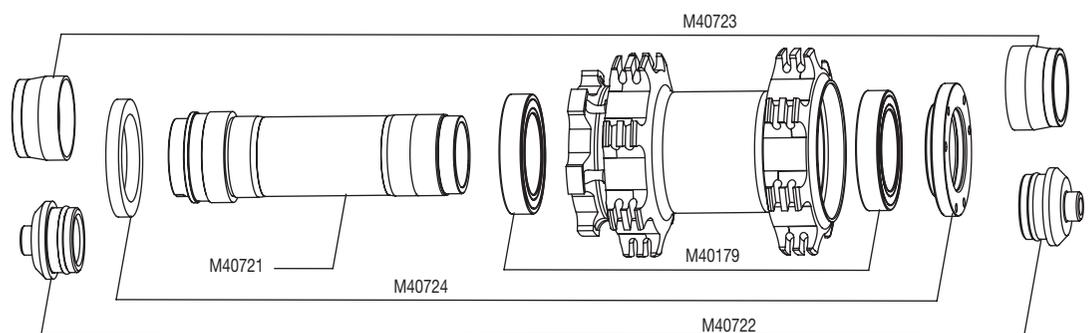
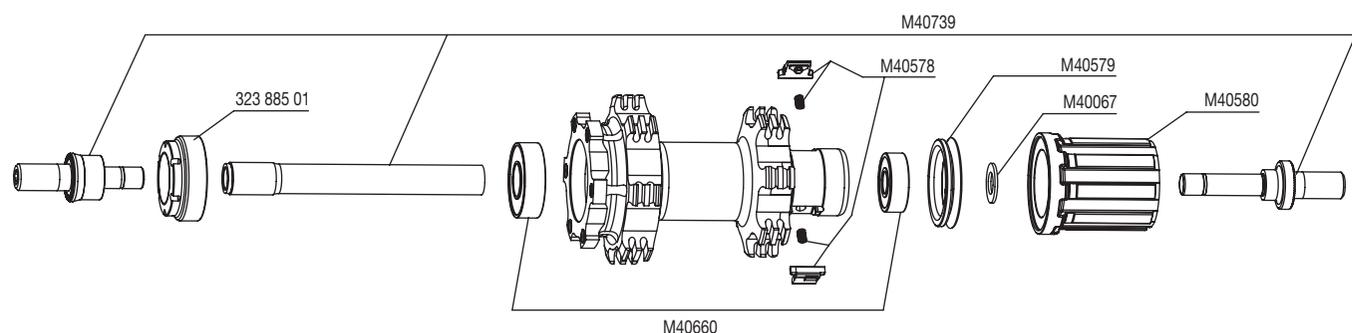
USE: Use only on a MTB fitted with disc braking system. Any other use (such as on a tandem, Cyclo-Cross bike, road bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WHEEL WEIGHTS WITHOUT QUICK RELEASE SKEWER:

Front: 1119 g
Rear: 1328 g

REFERENCES:

Front: 323 691 10
Rear: 323 692 13
Pair: 323 748 14

| | | |
|--|---|--|
| RIMS | SALES REFERENCES: Front: 323 857 10 Rear: 323 857 13 | |
| WIDTH | VALVE HOLE Ø | RECOMMENDED TIRE WIDTH AND PRESSURE |
|  |  <p>Ø: 6,5 mm UST valve + Schrader adapter: M40495 Length: ≥ 32 mm</p> |  <p>Dimensions: Ø 26" only Compatible ETRTO 559 x 23 Recommended tire width: 2,10 to 3,00</p>  <p>Recommended tire pressure: See page 16</p> |
| HUBS | MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water. Warning: The parts of the FTS-L free wheels (pawl assembly, springs, free wheel body) are not compatible with those on the FTS free wheels. | |
|  | | |
|  | | |
| WHEEL BUILDING | REFERENCES AND LENGTHS: Front and rear non drive side: 323 894 01, length 278 (per 14, integrated nipples). Rear free wheel side: 323 895 01, length 276 (per 14, integrated nipples). | |
| FEATURES: Black, round, stainless steel, straight pull spokes with integrated black M7 nipples (self-locking). | LACING PATTERN: Front and rear: crossed 3 on both sides | TENSION: Front: 110 to 140 kg Rear free wheel side: 120 to 150 kg |
| ACCESSORIES | WHEEL DELIVERED WITH: | MAINTENANCE |
| <ul style="list-style-type: none"> • UST Valve M40495 • 9 mm fork support nut (with front wheel) • 20 mm adapter (with front wheel) • Fixing nuts (with rear wheel) • Free play adjustment wrench M40123 (with rear wheel) • Spoke wrench M40494 (with rear wheel) • User guide and warranty card | <ul style="list-style-type: none"> • Replacing a spoke • Replacing the front rim • Replacing the rear rim | <p>See page 23 See page 25 See page 29</p> <p>Hubs: For all maintenance procedures (replacement of an axle, bearings, free wheel body), refer to the 2003 technical manual or to our website www.tech-mavic.com.</p> |

DEEMAX UST® AXLE KITS

Saint derailleur axle kit
Quick release axle kit

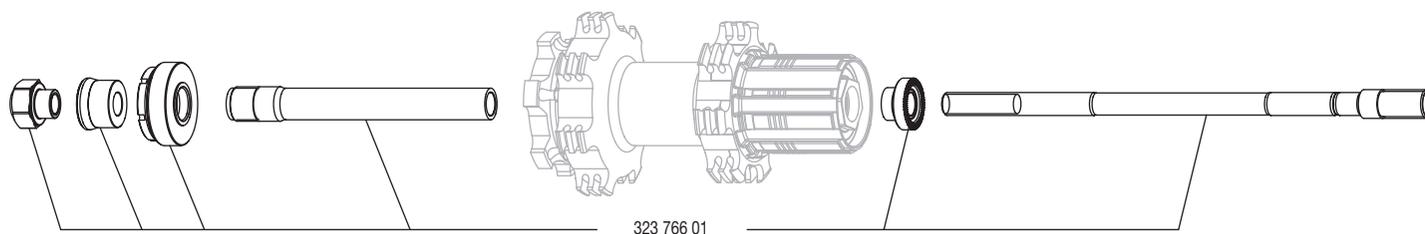
USE: Use only with Deemax UST rear wheels (silver or yellow rims).
The Saint derailleur axle kit is only to be used with the Shimano® Saint derailleur.
The quick release axle kit is only to be used with a 135 mm wide quick release skewer.

WEIGHT:
Saint derailleur axle kit: 152 g
Quick release axle kit: 94 g (without skewer)

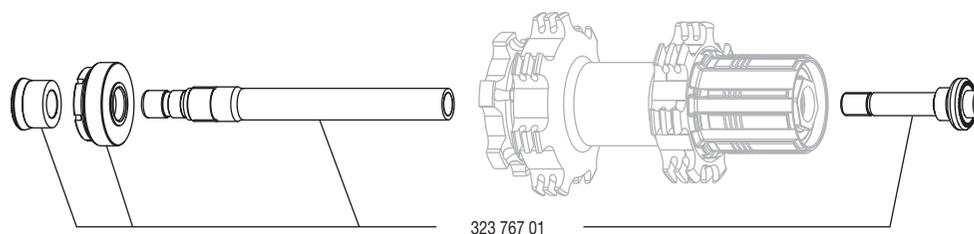
REFERENCES:
Saint derailleur axle kit: 323 766 01
Quick release axle kit: 323 767 01

ASSEMBLY ORDER

SAINT DERAILLEUR AXLE KIT



QUICK RELEASE AXLE KIT



WHEELS

KIT COMPOSITION

SAINT DERAILLEUR AXLE KIT

- Fixing nuts
- Right and left fork support nuts
- Free play adjustment nut
- Axle tube
- Axle shaft

QUICK RELEASE AXLE KIT

- Left fork support nut
- Free play adjustment nut
- Axle end screw
- Axle

INSTALLATION

- Installation of Saint derailleur axle kit See page 21
- Installation of quick release axle kit See page 22

INDEXATION COMPATIBILITY OF ROAD WHEELS

SINCE 2004, ALL THE MAVIC ROAD WHEELS ARE OFFERED WITH THE FTS-L FREE WHEEL BODY DESIGN, AND ARE CONSEQUENTLY M10 AND ED10 COMPATIBLE (YOU CHOOSE WHEN ORDERING THE WHEEL).

Refer to the following chart to know which wheel and which cassette to use according to your transmission:

| Your transmission: | | SHIMANO | | | | CAMPAGNOLO | | | | | |
|--------------------------------|--------|----------|----------|--------|----------|------------|--------|----------|--------|----------|--------|
| Number of speeds: | | 8 | 9 | 10 | | 8 | 9 | 10 | | | |
| Mavic wheel to be used: | | M10 | | | | ED10 | M10 | ED10 | M10 | ED10 | M10 |
| M9* positioning spacer M40417: | | With | | | | Without | | | | | |
| Type of cassette to be used: | | HG8 | HG9 | M10 | HG10 | ED8 | M10 | ED9 | M10 | ED10 | M10 |
| Spacer | Ref.: | Original | Original | M40409 | Original | Campagnolo | M40182 | Original | M40181 | Original | M40573 |
| | Color: | | | Grey | | | Alu | | Yellow | | Black |

* The M9 positioning spacer is also supplied with the M10 wheels and the grey spacer kit M40409.

It must be: • Kept for mounting with a Shimano 8, 9 or 10 speed transmission.

• Removed for mounting with a Campagnolo 8, 9 or 10 speed transmission.

** To obtain information on the M10 cassette, refer to our website www.mavic.com, our retailer catalogue or to the cassette user guide.

SPECIAL CASE FOR THE SPEEDCITY WHEEL

Since 2004, the Speedcity wheel is offered with M10 compatibility (in place of HG9 in 2003). It is, of course, supplied with the positioning spacer M40417.

Consequently, it can be used with:

- the HG 8 or 9 speed cassettes, by keeping the M9 positioning spacer M40417;
- the M10 Mavic cassettes with 8 (alu spacers), 9 (grey spacers) or 10 (yellow spacers) speeds, by removing the M9 positioning spacer M40417;

Now with the FTS-L technology in 2005, it is also possible to mount an ED10 free wheel body on a Speedcity wheel and therefore an ED9 or ED10 cassette.

RECOMMENDED MAXIMUM TIRE PRESSURES FOR MAVIC WHEELS

| ROAD, TRIATHLON and ASPHALT* | | | |
|------------------------------|--|-------------------------|------------------------|
| Tire width | | Maximum pressure (bars) | Maximum pressure (PSI) |
| in mm | | | |
| 19 | | 10,0 | 146 |
| 23 | | 9,5 | 138 |
| 25 | | 9,0 | 131 |
| 28 | | 8,0 | 117 |

| CROSS COUNTRY and CROSS MOUNTAIN* | | | |
|-----------------------------------|-------|-------------------------|------------------------|
| Tire width | | Maximum pressure (bars) | Maximum pressure (PSI) |
| in " | in mm | | |
| 1,50 | 38 | 6,00 | 88 |
| 1,75 | 45 | 5,20 | 76 |
| 1,85 | 47 | 4,80 | 71 |
| 1,90 | 48 | 4,70 | 69 |
| 1,95 | 50 | 4,50 | 66 |
| 2,00 | 51 | 4,30 | 63 |
| 2,10 | 53 | 4,00 | 59 |
| 2,20 | 56 | 3,70 | 55 |
| 2,30 | 58 | 3,30 | 49 |

| EXTREME MTB* | | | |
|--------------|-------|-------------------------|------------------------|
| Tire width | | Maximum pressure (bars) | Maximum pressure (PSI) |
| in " | in mm | | |
| 2,10 | 53 | 3,70 | 55 |
| 2,20 | 56 | 3,50 | 52 |
| 2,30 | 58 | 3,30 | 49 |
| 2,40 | 61 | 3,20 | 47 |
| 2,50 | 63 | 3,00 | 44 |
| 2,60 | 66 | 2,80 | 41 |
| 2,70 | 69 | 2,70 | 39 |
| 2,80 | 71 | 2,50 | 36 |
| 2,90 | 74 | 2,40 | 34 |
| 3,00 | 76 | 2,20 | 32 |

* See riding segmentation chart on page 4.



WHEEL MAINTENANCE

REMINDER OF THE WARRANTY

Before any repair of a Mavic wheel (or any other Mavic product), please note that it has a warranty against manufacturing or material defects for a period of 2 years from the date of original purchase by the original buyer (see Mavic warranty on page 47).

This means that:

- During the warranty period, and when it definitely applies to the warranty (first contact your MSC), you must return the Mavic wheel (or any other Mavic product) directly to your MSC following the procedure explained on page 46 to get the Mavic warranty.

However, if you decide to repair the wheel by yourself (or any other Mavic product), your customer will lose the Mavic warranty.

- After the warranty period and in case of repair, we advise you to refer to the following pages to intervene on the Mavic wheel. If replacing the rim, please note the new serial number of the rim on the original warranty card and the date of intervention.

Only this procedure will allow your customer to get the Mavic warranty on the replaced rim.

REPAIRS

The following pages will help you to maintain the wheels in the 2005 range and are organized as follows:

| | |
|--|--------------------|
| 1. HUBS | P. 18 to 22 |
| 1.1. FREE PLAY ADJUSTMENT | P. 18 |
| 1.1.1. QRM+ HUB | P. 18 |
| 1.1.2. QRM HUB | P. 19 |
| 1.2. AXLES AND BEARINGS (FRONT AND REAR ELLIPSE WHEELS, FRONT COSMIC CARBONE SL) | P. 20 |
| 1.3. DEEMAX UST WHEELS: FITTING AXLE KITS | P. 21 |
| 1.3.1. FITTING THE SAINT DERAILLEUR AXLE KIT AND FITTING THE WHEEL AND DERAILLEUR TO THE FRAME | P. 21 |
| 1.3.2. FITTING THE QUICK RELEASE AXLE KIT | P. 22 |
| 2. LACING | P. 23 to 29 |
| 2.1. REPLACING A SPOKE ON ELLIPSE, COSMIC ELITE, COSMIC CARBONE SL, KSYRIUM ELITE AND DEEMAX UST WHEELS | P. 23 |
| 2.2. REPLACING A RIM | P. 24 |
| 2.2.1. REPLACING THE FRONT RIM | P. 24 |
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| 2.2.2. REPLACING A REAR RIM | P. 26 |
| 2.2.2.1. ELLIPSE WHEEL | P. 26 |
| 2.2.2.2. COSMIC ELITE, COSMIC CARBONE SL WHEELS | P. 27 |
| 2.2.2.3. KSYRIUM ELITE WHEEL | P. 28 |
| 2.2.2.4. DEEMAX UST WHEEL | P. 29 |
| 3. THE NEW UST RIM TAPE FOR THE CROSSLAND WHEEL | P. 30 |

All maintenance operations not detailed in the following pages can be found in the 2002, 2003 and 2004 technical manuals.

Refer to the product sheets (pages 5 to 15 of this manual) for more details.

Before any operation, we recommend removing:

- The wheel from the bike by releasing the quick release skewer;
- The skewer, the tire;
- The cassette and chain-disc (if necessary) for the rear wheel;
- The brake disc (if necessary).





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1. HUBS

1.1 FREE PLAY ADJUSTMENT

Hub play must always be gauged with the wheel fitted and tightened in the frame or fork. Tightening the quick release skewer significantly increases the lateral pressure exerted on the bearings. Therefore:

- if there is play in a wheel not fitted into the frame or fork, it may disappear once the wheel has been fitted;
- if there is no play in a wheel not fitted into the frame or fork, it is possible that tightening the quick release skewer will over-stress the bearings, thus damaging them.

Adjust the adjustment nut by fully tightening it and then untightening it by a 1/4 turn, so as to close the quick release lever (CLOSE position) with a suitably large force. However, a too large tightening force may damage the bearings.

This tightening force is a subjective parameter that is directly dependent on the end user, and as such it is difficult to accurately determine the optimum bearing adjustment at the factory.

In order to avoid any problems for your customers, we factory set bearing play by simulating an extreme quick release tightening force.

There is therefore likely to be some play in the hub of a new wheel fitted to a bike with a lower quick release tightening force than that used in the factory. Apply the following procedures to set the amount of play.

WARNING: Adjusting the play is a delicate operation which consists of identifying the balance point between play and no play. Having no play does not necessarily mean that the hub is correctly adjusted as the bearings may be over-stressed.

1.1.1. QRM+ HUB

QRM+ designates Mavic hubs that can be adjusted using the hub wrench M40123. For the 2005 range, this concept is used on the following wheels:

- iO
- Comete road and track
- Cosmic Carbone SL
- Ksyrium SL
- Ksyrium Elite
- Crossmax SL and SL Disc
- Crossmax XL and XL Disc
- Deemax UST

This hub has an adjustment nut on the left hand side of the wheel compatible with the hub wrench M40123.

This very simple system allows very accurate and quick adjustment of bearing play.

PROCEDURE

Tools needed

- 1 hub wrench M40123

1. Fit the wheel in the frame or fork and tighten the quick release skewer using a reasonable force;
2. Delicately move the top of the wheel to the right and then the left of the bike to feel the play;
 - If there is some play, lightly tighten the adjustment nut using the hub wrench M40123 and check for play: repeat the operation as many times as required until there is no play;
 - If there is no play, to be sure the bearings are not over-stressed, untighten the adjustment nut until some play can be felt and then carry out the above operation.

The 4 lugs of the hub wrench M40123 must be fully inserted into the holes of the adjustment nut, making sure to correctly position the wrench against the nut (on Crossmax XL Disc and Deemax UST front wheels, only the 2 lugs at the extremities of the wrench are used).

To avoid damaging the bearings due to over tightening of the adjustment nut, the wrench M40123 is made from resin: a sort of safety valve; the lugs will break before the bearings are damaged.





1.1.2. QRM HUBS

Since 2004, a new technology has enabled Mavic to use its top of the range FTS-L free wheel concept on its entire wheel range.

On the 2005 range, this new type of hub is used on the following front and rear wheels:

- Cosmos
- Cosmic Elite
- Ksyrium Equipe
- Speedcity 05 (International Standard and Center-Lock)
- Crossland (International Standard and Center-Lock)
- Crossmax Enduro
- Crossmax Enduro Disc (International Standard and Center-Lock)

Hubs for these wheels therefore use the same assembly and removal procedures.

The specific feature of these hubs is the "bearing support ring", which provides the interface between the bearing and the axle. When tightening the axle, this support allows hub play to be adjusted.

These bearing support rings are SINGLE use and must be replaced each time the axle is removed, whether the bearings are changed or not.

A specific tool, called the «Multi-function tool» (see page 44), will help you correctly refit and adjust the axles for these hubs.

To adjust the free play of these hubs, please follow the following procedure.

PROCEDURE

Tools needed

- 1 thin 13 mm flat wrench
- 1 x 17 mm flat wrench

This procedure can be applied to either side of the hub for a front wheel. It can only be applied to the non drive side of a rear wheel.

1. Block one of the 2 fork support nuts (disc side for wheels with a disc) in a vice;
2. Insert the thin 13 mm flat wrench on the grey part of the axle and keep the wrench positioned opposite a spoke;
3. Place the 17 mm flat wrench on the axle end nut, positioning it opposite another spoke;
4. Simultaneously turn the 2 wrenches clockwise the equivalent of the space between two spokes (see photo);
5. Put the wheel back into the frame, re-tighten the quick release (see page 18), and then delicately move the top of the wheel to the right and then the left of the bike to check that play has been eliminated.

You can carry out this procedure a maximum of 2 times consecutively. If there is still play, the bearing should be replaced, as should the bearing support ring. For the full fitting and removal procedures for QRM hubs, refer to pages 19 to 22 in the 2004 technical manual.





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1.2 REPLACING AXLES AND BEARINGS

Follow the procedures below to remove and refit axles and bearings for:

- Front and rear Ellipse wheels
- Front Cosmic Carbone SL wheels

Tools needed

- 1 x 5 mm Allen wrench
- 1 hub wrench M40123
- Bearing press kit M40373
- Bearing press kit M40120 (Cosmic Carbone SL)

Removing:

1. Remove the fork support nut on the adjustment nut side. This is clipped to the axle end;
2. Place the 5 mm Allen wrench into the end of the axle, at the opposite side to the adjustment nut;
3. Whilst maintaining the adjustment nut using the hub wrench M40123, unscrew the axle by turning the 5 mm Allen wrench counter-clockwise;
4. Remove the axle;
5. Use the bearing press kit to remove the bearings.



Refitting:

1. Use the bearing press kit to fit the new bearings:
 - M40373: for front and rear Ellipse wheels
 - M40119: for front Cosmic Carbone SL wheels
2. Introduce the axle at the «C» side of the “Mavic” inscription on the hub label;
3. Place the adjustment nut on the axle and keep it in place using the hub wrench M40123;
4. Place the 5 mm Allen wrench into the axle at the opposite side to the adjustment nut and turn it clockwise;
5. Continue screwing until it touches the bearing and unscrew it $\frac{1}{2}$ a turn (except for Ellipse wheels);
6. Fit the wheel into the frame or fork, tighten the fixing nuts (torque: 40 Nm max) for Ellipse wheels, or the quick release skewer for Cosmic Carbone SL wheels, and adjust bearing play using the hub wrench M40123 (see procedure page 18).





1.3 DEEMAX UST REAR WHEEL: FITTING AXLE KITS

1.3.1. FITTING THE SAINT DERAILLEUR AXLE KIT AND FITTING THE WHEEL AND DERAILLEUR TO THE FRAME

Fitting the axle kit to the Deemax UST rear wheel

Tools needed

- 2 x 5 mm Allen wrench

1. Start by removing the existing axle:

- 1.1. Insert a 5 mm Allen wrench into both ends of the axle
- 1.2. Unscrew the axle end screw on the free wheel side;

The original axle in the Deemax UST rear wheel is in 3 parts (see product file page 16, reference M40739). It is possible that when carrying out this operation, the fork support nut on the non drive side unscrews first, thus preventing the axle from being removed. If this happens, repeat operation -2- by inserting a 5 mm Allen wrench instead of the fork support nut.

- 1.3. Extract the axle by pushing the axle end screw on the free wheel side and then remove the axle end screw.

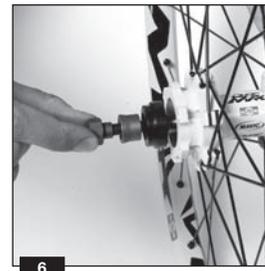
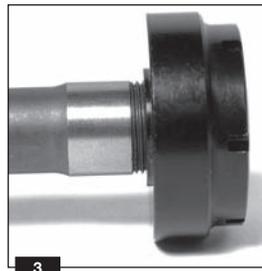
Warning: the free wheel body is no longer held in place and is easily knocked out of position, causing the pawl to malfunction.

2. Place the thinnest fork support nut on the axle pin, grooved side first, then place the assembly into the hub from the free wheel side. It must come out of the other side of the hub;

The FTS-L spacer (M40067) may no longer be centred once the original axle end screw has been removed, thus preventing the new axle from being inserted. It should be recentered using, for example, a screwdriver.

3. Fit the bearing free play adjustment nut by screwing it onto the axle tube such that 2 threads remain visible (see photo 3 below);
4. Insert the axle tube into the hub through the axle from the non-drive side;
5. Place the thickest fork support nut onto the axle, grooved side facing out;
6. Pre-screw the wheel fixing nut onto the axle, on the non-drive side.

WHEELS



Fitting the Deemax UST rear wheel (fitted with the Saint derailleur axle kit) and the Saint derailleur to the bike

Tools needed

- 1 x 5 mm Allen wrench
- 1 x 15 mm flat wrench

These operations are more easily done with the bike on the ground.

1. First of all, position the wheel in the frame as for a wheel fitted with a traditional axle;
2. Insert the 5 mm Allen wrench into the axle on the non-drive side;
3. Screw the derailleur to the axle by turning the Allen wrench clockwise as far as it will go;
4. Tighten the non-drive side fixing nut using a 15 mm flat wrench (tightening torque: 37 to 45 Nm).
5. You can now adjust bearing play using the hub wrench M40123 (see procedure on page 18).





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1.3.2. FITTING THE QUICK RELEASE AXLE KIT

Tools needed

- 2 x 5 mm Allen wrench

1. Start by removing the existing axle:

- 1.1. Insert a 5 mm Allen wrench into both ends of the axle
- 1.2. Unscrew the axle end screw on the free wheel side;

The original axle in the Deemax UST rear wheel is in 3 parts (see product file page 16, reference M40739). It is possible that when carrying out this operation, the fork support on the non drive side unscrews first, thus preventing the axle from being removed. If this happens, repeat operation -2- by inserting a 5 mm Allen wrench instead of the fork support nut.

- 1.3. Extract the axle by pushing the axle end screw on the free wheel side and then remove the axle end screw.

Warning: the free wheel body is no longer held in place and is easily knocked out of position.

2. Tighten the free play adjustment nut onto the axle such that 2 threads are visible and then clip the fork support nut to the axle, grooved side facing out;
3. Insert the quick release axle into the hub from the non-drive side and the axle end screw from the free wheel side;

The FTS-L spacer (M40067) may no longer be centred once the original axle end screw has been removed, thus preventing the new axle from being inserted. It should be recentered using, for example, a screwdriver.

4. Insert an Allen wrench into the axle and the axle end screw and tighten (tightening torque: 10 Nm);
5. Fit the quick release;
6. Place the wheel in the frame, tighten the quick release and adjust the free play using a hub wrench M40123 (see procedure on page 18).





2. WHEEL BUILDING

WHAT YOU NEED TO KNOW ABOUT THE KSYRIUM ELITE 2005 AND DEEMAX UST 2005 SPOKES

The spokes used for the Ksyrium Elite 05 (700 and 650) and Deemax UST 05 wheels use the same design principles as those for Crossmax Enduro and Crossmax Enduro disc.

They are made of stainless steel, with integrated nipples, in the same manner as the Zicral spokes: the nipple cannot be separated from the spoke. This system avoids the use of screw-on eyelets, making an interface between the Fore® drilling in the rim and the spoke nipple.

If a nipple gets damaged, you should replace the spoke. **You must never try to take the nipple off the spoke, due to the risk of never being able to install it safely enough.**

As with Zicral spokes, the spoke nipples screw directly into the rim.

The spoke nipples on these wheels integrate a red, polyamide brake ring, which eliminates the need to use thread lock.

To maintain the integrity of these nipples and the thread on the rim while building a wheel, we advise you to tighten each nipple until the brake ring disappears. Once all the spokes have been fitted to the rim, tighten each nipple 2 turns. At this point, you can start adjusting the tension and balancing the wheel.

Since the possibility of the spoke swiveling in the nipple is reduced, every Fore drilled hole in the rim is specifically orientated according to the direction that the spoke will go once it is screwed in the rim: free wheel side or non-drive side, disc side or opposite disc, braking spoke or pulling spoke.

Consequently, you must build the wheel in the proper direction on the rim and follow the instructions below.

WHEELS

2.1. REPLACING A SPOKE ON ELLIPSE, COSMIC ELITE, COSMIC CARBONE SL, KSYRIUM ELITE AND DEEMAX UST WHEELS

Tools needed

- 1 spoke wrench (Ellipse and Cosmic Elite wheels)
- 1 alu spoke wrench M40494 or M40652 (Ksyrium Elite and Deemax UST wheels)
- 1 spoke wrench M40001 (Cosmic Carbone SL wheel)
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (page 6 to 16).

- For the Cosmic Carbone SL wheel you must remove the tire and rim tape.
- For Ellipse and Cosmic Elite wheels, if you also have to replace the spoke nipple, you must remove the rim tape beforehand.
- For Ksyrium Elite and Deemax UST wheels, if you have to repair a wheel with at least 3 broken spokes, we recommend that you reduce the tension of the entire wheel by loosening every nipple to the limit of the brake ring before replacing the broken spokes.

1. Loosen the spoke nipple using the appropriate spoke wrench to reduce the tension;
2. Take the spoke out of its slot:
 - For Ellipse and Ksyrium Elite front wheels and Cosmic Carbone SL front and rear wheels, non-drive side, the axle must be removed beforehand (see product sheets for axle removal procedures);
 - For Cosmic Elite front and rear wheels, non-drive side, the hub caps must be unclipped beforehand;
3. Put the new spoke in its slot and make sure the cross pattern is correct;
4. Tighten the spoke nipple to set the tension (refer to product pages for the tension adapted to each wheel);
5. Refit the axle or hub cap as necessary (the tension of the replaced spoke must be sufficient to prevent trapping the spoke head in the free play adjustment nut);
6. Check the lateral and radial truing of the wheel.

The nipples of Ellipse, Cosmic Elite, Cosmic Carbone SL, Ksyrium Elite and Deemax UST wheels are of the ABS type or integrate a brake ring, and therefore do not require thread lock.

Aerodynamic spokes can be locked using a special spoke wrench for aerodynamic spokes, which prevents them turning when being tightened.

WARNING: Manipulating spoke nipples on Ksyrium Elite and Deemax UST wheels greatly affects the spoke tension and consequently the wheel adjustment. In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.





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2.2. REPLACING THE RIM

2.2.1. REPLACING THE FRONT RIM

2.2.1.1. Replacing the front rim on Ellipse, Cosmic Elite and Ksyrium Elite wheels

Tools needed

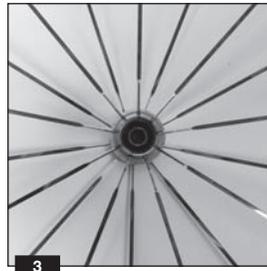
- 1 spoke wrench (Ellipse and Cosmic Elite wheels)
- 1 alu spoke wrench M40494 or M40652 (Ksyrium Elite wheels)
- 1 spoke wrench for aerodynamic spokes M40567
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (pages 6, 7 and 10).

1. Remove the axle (Ellipse and Ksyrium Elite wheels) or unclip the hub caps (Cosmic Elite wheel);
2. Put each spoke on the rim:
 - For Ellipse and Cosmic Elite wheels: by tightening the nipples on the spokes until the nipples start braking;
 - For Ksyrium Elite wheels: by tightening the nipple in the rim until the red brake ring disappears;
3. Put the spokes in the hub;
4. Fix the spokes into their housing by refitting the axle (Ellipse and Ksyrium Elite wheels) or by re-clipping the hub caps (Cosmic Elite wheel);
5. Tighten each spoke 2 turns;
6. Starting with the 2 spokes at either side of the valve, and then the 2 spokes at either side of the weld, tighten each spoke evenly in the rim to tension the wheel;
7. Set the final tension and center the wheel (refer to pages 6, 7 and 10 for the tension adapted to the wheel).

The nipples being of the ABS type (Ellipse and Cosmic Elite) or integrating a brake ring (Ksyrium Elite), it is not necessary to use thread lock.

WARNING: Manipulating spoke nipples on Ksyrium Elite and Deemax UST wheels greatly affects the spoke tension and consequently the wheel adjustment. In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.



2.2.1.2. Replacing the front rim of the Cosmic Carbone SL wheel

Tools needed

- 1 spoke wrench M40001
- 1 spoke wrench for aerodynamic spokes M40567
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (pages 8 to 9).

1. Remove the axle (for axle removal procedures, refer to section 1.2. above);
2. Put the spokes into the holes in the hub;
3. Put a nipple in the hole in the rim
4. Screw it to the spoke until the nut brakes
5. Do the same for all of the spokes and nipples;
6. Tighten each spoke evenly to tension the wheel;
7. Refit the axle (spoke tension must be sufficient to avoid trapping the spoke head in the free play adjustment nut) and adjust bearing play using a hub wrench M40123 (see procedure page 18);
8. Set the final tension and center the wheel (refer to pages 8 and 9 for the tension adapted to the wheel).

The Cosmic Carbone SL uses ABS type nipples, it is therefore not necessary to use thread lock.





2.2.1.3. Replacing the front rim of the Deemax UST wheel

The 2 basic principles for building the Deemax UST front wheel are the following:

- The **non-braking spokes** are placed **in the inside slots** on the hub, disc side as well as non-disc side;
- The **braking spokes** are placed **in the outside slots** on the hub, disc side as well as non-disc side.

Tools needed

- 1 alu spoke wrench M40494 or M40652
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given on page 16.

1. Start on the disc side;
2. Turn the rim in front of you so the raised indicator bump is to **the left** of the valve hole (valve hole near you) and prepare for building the **1st half of the disc side (non-braking spokes)**:
 - 2.1. Put a spoke in the **1st hole** to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 2.2. Do the same for all the spokes, 1 hole in 4.
 - 2.3. Insert these spokes in the **inside slots** on the disc side of the hub;
3. Prepare building the **2nd half of the disc side (braking spokes)**:
 - 3.1. Put a spoke in the **3rd hole** to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 3.2. Do the same for all the spokes, 1 hole in 4.
 - 3.3. Insert these spokes in the **outside slots** on the disc side of the hub;
4. Turn the wheel over to prepare building the **1st half of the non-disc side (non-braking spokes)**:
 - 4.1. Put a spoke in the **3rd hole** to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 4.2. Do the same for all the spokes, 1 hole in 4.
 - 4.3. Insert these spokes in the **inside slots** on the disc side of the hub;
5. Finally prepare building the **2nd half of the non-disc side (braking spokes)**:
 - 5.1. Put a spoke in the **1st hole** to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 5.2. Do the same for all the spokes, 1 hole in 4.
 - 5.3. Insert these spokes in the **outside slots** on the disc side of the hub;
6. Tighten each spoke 2 turns;
7. Starting with the 2 spokes at either side of the valve, and then the 2 spokes at either side of the weld, tighten each spoke evenly in the rim to tension the wheel;
8. Set the final tension and center the wheel (refer to page 16, for the tension adapted to the wheel).

A brake ring is integrated in the nipples, it is therefore not necessary to use thread lock.

WARNING: Manipulating spoke nipples greatly affects the spoke tension and consequently the wheel adjustment.
In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.





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2.2.2. REPLACING THE REAR RIM

2.2.2.1. Replacing the Ellipse rear rim

Tools needed

- 1 spoke wrench
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (page 6).

1. With the rim flat and the valve hole near you, start with the hub adjustment nut side;
2. Prepare the 1st half of the adjustment nut side (**non-traction spokes**):
 - 2.1. Insert the spokes in the **inside slots** of the hub such that the head of the spoke locates into the oblong hole;
 - 2.2. Screw one of these spokes into the **1st hole to the right of the valve hole**, then 1 hole in 4;
3. Prepare the 2nd half of the adjustment nut side (**traction spokes**):
 - 3.1. Insert the spokes in the **outside slots** of the hub such that the head of the spoke locates into the oblong hole;
 - 3.2. Screw one of these spokes into the **3rd hole to the right of the valve hole**, then 1 hole in 4;
4. Turn the wheel over and repeat operations 2 and 3 above;
5. Tighten each spoke evenly in the rim to tension the wheel;
6. Set the final tension and center the wheel (refer to page 6, for the tension adapted to the wheel).

A brake ring is integrated in the nipples, it is therefore not necessary to use thread lock.





2.2.2.2. Replacing the rear rim on Cosmic Elite and Cosmic Carbone SL wheels

Tools needed

- 1 traditional spoke wrench (Cosmic Elite)
- 1 spoke wrench M40001 (Cosmic Carbone SL)
- 1 spoke wrench for aerodynamic spokes M40567
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (pages 7, 8 and 9).

For the Cosmic Carbone SL wheel, the hub axle must be removed (see procedure in the 2003 technical manual, page 19). The free wheel body does not need to be removed. Nevertheless, do not manipulate it so as not to knock it out of position.

1. Start with the free wheel side and place the rim so it faces you with the valve hole near you;

Warning: For the Cosmic Carbone SL wheel, the rim must be turned such that the traceability label (bar code) cannot be seen.

2. Prepare for building the **1st half of the free wheel side (non-traction spokes):**

2.1. Thread the spokes into the **inside slots** of the hub:

- For the Cosmic Elite, such that the head of the spoke locates into the oblong hole;
- For the Cosmic Carbone, from the largest hole side;

2.2. Put one of these spokes in the **1st hole to the right of the valve hole** and screw the nipple until braking;

2.3. Do the same for all the spokes in this half, 1 hole in 4 on the rim;

3. Then build the **2nd half (traction spokes):**

3.1. Thread the spokes into the **outside slots** of the hub:

- For the Cosmic Elite, such that the head of the spoke locates into the oblong hole;
- For the Cosmic Carbone SL, from the largest hole side;

3.2. Put one of these spokes in the **3rd hole to the right of the valve hole** and screw the nipple until braking;

3.3. Do the same for all the spokes in this half, 1 hole in 4 on the rim;

4. Turn the wheel over to prepare for building the non-drive side (radial lacing):

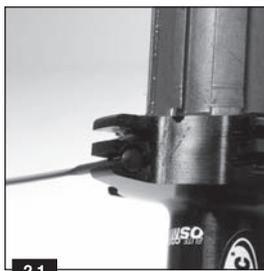
4.1. Put the spokes in the hub:

- Cosmic Elite: unclip the hub cap, insert the spokes and clip the hub cap back on;
- Cosmic Carbone SL: thread the spokes from the inside of the hub;

4.2. Put the spokes into the remaining holes of the rim and tighten the nipple until braking;

5. Tighten each nipple evenly to tension the wheel;

6. Set the final tension and center the wheel (refer to pages 6 and 7 for the tension adapted to the wheel).





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2.2.2.3. Replacing the rear rim of the Ksyrium Elite wheel

The 2 basic principles for building the Ksyrium Elite rear wheel are the following:

- The **non-traction spokes** are placed **in the inside slots** of the hub, free wheel side as well as non-drive side;
- The **traction spokes** are placed **in the outside slots** of the hub, free wheel side as well as non-drive side;

Tools needed

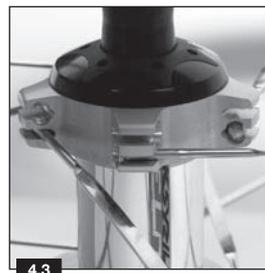
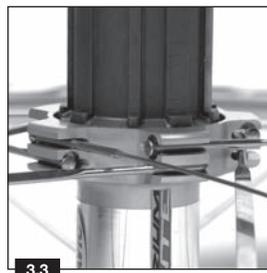
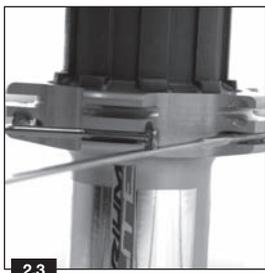
- 1 alu spoke wrench M40494 or M40652
- 1 spoke wrench for aerodynamic spokes M40567
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given in the product pages (page 10).

1. Start with the free wheel side;
2. Turn the rim in front of you so the 2 raised indicator bumps are to the right of the valve hole (valve hole near you) and prepare for building the **1st half of the free wheel side (non-traction spokes)**:
 - 2.1. Put a spoke in the 1st hole to the right of the valve hole (hole near raised indicator bumps) and screw the nipple into the rim until the red brake ring disappears;
 - 2.2. Do the same for all the spokes, 1 hole in 4;
 - 2.3. Insert these spokes in the **inside slots** on the free wheel side of the hub. The spoke heads must locate into the oblong holes of the slots;
3. Prepare for building the **2nd half of the free wheel side (traction spokes)**:
 - 3.1. Put a spoke in the 3rd hole to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 3.2. Do the same for all the spokes, 1 hole in 4;
 - 3.3. Insert these spokes in the **outside slots** on the free wheel side of the hub. The spoke heads must locate into the oblong holes of the slots;
4. Turn the wheel over to prepare for building the **1st half of the non-drive side (non-traction spokes)**:
 - 4.1. Put a spoke in the 3rd hole to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 4.2. Do the same for all the spokes, 1 hole in 4;
 - 4.3. Insert these spokes in the **inside slots** on the non-drive side of the hub.
5. Prepare for building the **2nd half of the non-drive side (traction spokes)**:
 - 5.1. Put a spoke in the 1st hole to the right of the valve hole and screw the nipple into the rim until the red brake ring disappears;
 - 5.2. Do the same for all the spokes, 1 hole in 4;
 - 5.3. Insert these spokes in the **outside slots** on the non-drive side of the hub.
6. Tighten each spoke 2 turns;
7. Starting with the 2 spokes at either side of the valve, and then the 2 spokes at either side of the weld, tighten each spoke evenly in the rim to tension the wheel;
8. Set the final tension and center the wheel (refer to page 10, for the tension adapted to the wheel).

A brake ring is integrated in the nipples, it is therefore not necessary to use thread lock.

WARNING: Manipulating spoke nipples greatly affects the spoke tension and consequently the wheel adjustment.
In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.





2.2.2.4. Replacing the rear rim of the Deemax UST wheel

The 2 basic principles for building the Deemax UST rear wheel are the following:

- **Free wheel side:** the **braking spokes** are inserted in the **inside slots of the hub**, and the **traction spokes** in the **outside slots**;
- **Disc side:** the **braking spokes** are inserted in the **outside slots of the hub**, and the **traction spokes** in the **inside slots**;

Tools needed

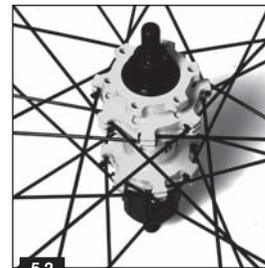
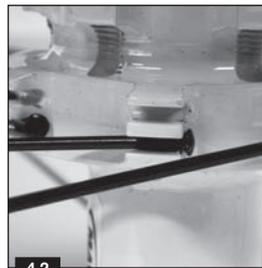
- 1 alu spoke wrench M40494 or M40652
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

The references and lengths of spokes to be used are given on page 16.

1. Start with the free wheel side;
2. Turn the rim in front of you so the 2 raised indicator bumps are to the right of the valve hole (valve hole near you) and prepare for building the **1st half of the free wheel side (braking spokes)**:
 - 2.1. Put a spoke in the **1st hole to the right of the valve hole** (hole near raised indicator bumps), then 1 hole in 4, and screw the nipple into the rim until the red brake ring disappears;
 - 2.2. Insert these spokes in the **inside slots** on the free wheel side of the hub;
3. Prepare for building the 2nd half of the free wheel side (traction spokes):
 - 3.1. Put a spoke in the **3rd hole to the right of the valve hole**, then 1 hole in 4, and screw the nipple into the rim until the red brake ring disappears;
 - 3.2. Insert these spokes in the **outside slots** on the free wheel side of the hub;
4. Turn the wheel over to prepare for building the **1st half of the non-drive side (traction spokes)**:
 - 4.1. Put a spoke in the **1st hole to the right of the valve hole**, then 1 hole in 4, and screw the nipple into the rim until the red brake ring disappears;
 - 4.2. Insert these spokes in the **inside slots** on the non-drive side of the hub.
5. Prepare for building the **2nd half of the non-drive side (braking spokes)**:
 - 5.1. Put a spoke in the **3rd hole to the right of the valve hole**, then 1 hole in 4, and screw the nipple into the rim until the red brake ring disappears;
 - 5.2. Insert these spokes in the **outside slots** on the non-drive side of the hub;
6. Tighten each spoke 2 turns;
7. Starting with the 2 spokes at either side of the valve, and then the 2 spokes at either side of the weld, tighten each spoke evenly in the rim to tension the wheel;
8. Set the final tension and center the wheel (refer to page 16, for the tension adapted to the wheel).

A brake ring is integrated in the nipples, it is therefore not necessary to use thread lock.

WARNING: Manipulating spoke nipples greatly affects the spoke tension and consequently the wheel adjustment.
In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.





3. THE NEW CROSSLAND WHEEL UST RIM TAPE

The Crossland wheel was launched in 2004 with a yellow UST rim tape, the fitting and removal procedures for which are detailed in the 2004 technical manual, pages 23 and 24.

For 2005, as part of the permanent improvement programme for our products, we have not only evolved this UST rim tape, but the rim, and hence the rim kits, as well. Now grey in color, this new UST rim tape distinguishes itself from the yellow by the addition of a collar, approximately 4 mm high, at the valve hole (see photo 2 below). The valve hole drilling of the upper part of the rim has been enlarged to accommodate this collar (from 6.5 mm to 7.85 mm for the valve hole drilling on the upper part).

Consequently:

- On the 2005 range, all the Crossland wheels will be supplied with the grey rim tape and the new rim.
- A new reference for the grey rim tape has been created (323 943 01) and must be fitted to the new rims (7.85 mm valve hole);
- On the 2005 range, the rim kits will be systematically packaged with the grey rim tape ((323 943 01) and the new rim. Consequently, their sales reference has changed:
 - 323 942 14 Crossland Silver rim kit
 - 323 941 14 Crossland Black rim kit

These new rims can of course be fitted instead of and in place of rims for yellow rim tape.

- The yellow rim tape (323 478 01) is still available but can only be fitted to the old rims (6.5 mm valve hole).

Warning: you must refer to the following compatibility chart to be sure of fitting the correct rim tape to the correct rim.

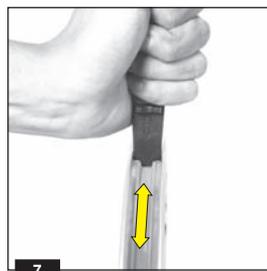
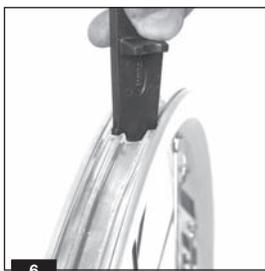
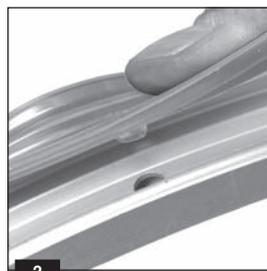
| | Yellow rim tape 323 478 01 | Grey rim tape 323 943 01 |
|---------------------------|-------------------------------|-----------------------------|
| Rim with 6.5 mm drilling | Compatible | Non Compatible |
| Rim with 7,85 mm drilling | Non Compatible | Compatible |

(RE)FITTING PROCEDURE FOR THE NEW UST GREY RIM TAPE

Tools needed

- Multifunction tool
- Moistening product (soapy water...)

1. Wet the bottom of the rim with soapy water;
2. Place the collar of the UST rim tape on the valve hole;
3. Move the UST rim tape over the edge of the rim by sliding it symmetrically on both sides of the valve hole finishing up opposite the valve. Try your best to center the rim tape in the bottom of the rim;
If the UST rim tape turns over, you must put it back in place by hand. If the UST rim tape is damaged during installation, do not use it due to the risk of compromising the seal of the tubeless system.
4. Insert a new UST valve in the valve hole of the UST rim tape and tighten its fixing nut;
5. Wet the UST rim tape with soapy water;
6. Insert part C of the multifunction tool at an angle into the UST rim tape where the valve is, and turn it one quarter of a turn to lock it in the bottom of the rim;
7. Slide it over the UST rim tape to make sure it is well placed in the rim (groove inside and lip sideways).
8. Make sure the UST rim tape is well placed by turning the wheel: the UST rim tape must be placed in a linear manner.



The removal procedure for the Grey UST rim tape is the same as that for the Yellow UST rim tape. Refer to page 23 of the 2004 technical manual.



MAVIC® RIMS

SEGMENTATION OF THE RIM RANGE

| ROAD & TRIATHLON | | | ASPHALT | MTB | | |
|------------------|----------|---------|--|---------------------------------------|--|--|
| CLINCHER | | TUBULAR | | CROSS COUNTRY RACING | CROSS MOUNTAIN | EXTREME MTB |
| CLASSIC | PROFILED | CLASSIC | | | | |
| OPEN PRO | CXP33 | REFLEX | A 719 (T 520) | XC 717 DISC (X 317 Disc) XC 717 | XM 819 DISC (UST) (X 3.1 Disc) XM 819 (UST) (X 3.1) XM 719 (F 519) | EX 823 DISC (UST) NEW EX 729 DISC (D 321 DISC) EX 721 (D 521) |
| | CXP23* | | A 319 (T 224) NEW A 317 DISC* | | XM 517* XM 321 DISC (F 219) X 317 DISC* X 317 | EX 325 DISC NEW |
| MA3 | CXP22 | | A 119* | | XM 117 DISC* XM 117* | |

RIMS

* O.E.M. specific rims

GENERAL POINTS

All the Mavic rims are based on these four principles:

- Aluminium alloy profile (6000 series) specified by Mavic;
- Double wall profile for greater strength and rigidity;
- Anodization for its corrosion resistance and aesthetic qualities while facilitating maintenance;
- The eyelet for better distribution of the pressure exerted by the spoke and increased strength and durability of the Mavic rim.

The profiled eyelet (Mavic patent) combines the benefits of both the profiled rim and eyelet.

WHAT'S NEW FOR 2005

REMINDER OF THE NEW NAME FOR MAVIC MTB AND ASPHALT RIMS

Mavic has identified 3 different types of MTB riding: Cross Country Racing, Cross Mountain and Extreme MTB. To clarify our MTB rim offer, we have decided to change their names.

Since the trekking segment was baptized Asphalt, it seemed appropriate to have the name of our Asphalt rims evolve accordingly.

Therefore:

- The rims dedicated to Cross Country Racing have the prefix XC;
- Those dedicated to Cross Mountain riding have the prefix XM;
- Those dedicated to Extreme MTB have the prefix EX;
- Those dedicated to Asphalt have the prefix A;
- The 1st digit indicates the level of the rim range. **If this digit is even, the rim is UST Tubeless compatible;**
- The last 2 digits indicate its interior width (size in accordance with ETRTO standards);
- The suffix Disc differentiates the rims that are compatible only with disc brakes from those that are not.

Example: EX 325 Disc

An intermediate (3) Extreme MTB (EX) rim, 25 mm wide (ETRTO: 559 x 25).

Using the same principle, X221, X223 Disc and X225 become: XM 317, XM 317 Disc and XM 517 respectively.

MTB RIM VALVE ADAPTER

All the valves holes in the MTB Cross Country Racing and Cross Mountain rims (except the UST Tubeless rims) are now drilled with an 8.5 mm diameter hole (Schrader valve). These rims are systematically fitted with a specific valve adapter which reduces the valve hole to a diameter of 6.5 mm, for use with a rim with an inner tube with a Presta type of valve.

The special feature of this new valve adapter is that it automatically ejects when fitting a Schrader valve inner tube (Ø 8,5 mm) on to the rim.

THE NEW PROFILES FOR 05

3 new rim profiles make their appearance in the 2005 rim range:

- **A 319:** this rim, now with a double eyelet, is the perfect combination between solidity, long life and reasonable price.
- **EX 325 Disc:** wide and solid and at an unbeatable price for all Extreme MTB riding.
- **EX 823 Disc:** the extremely solid UST Tubeless rim for all MTB extreme riding.

TECHNICAL FEATURES OF THE NEW 2005 RIMS

| | ASPHALT RIMS | MTB RIMS | | | | |
|--|----------------|----------------------------------|----------------------------------|----------------------------------|----------------|-------------------------------------|
| | | CROSS MOUNTAIN | | | EXTREME MTB | |
| | | Disc | Cantilever/V-Brake | | Disc | |
| | A 319 | XM 317 Disc | XM 317 | XM 517 | EX 325 Disc | EX 823 Disc |
| Rim width | | | | | | |
| Technologies | | | | | | |
| Material | 6106 | 6106 | 6106 | 6106 | 6106 | Maxtal |
| Valve hole diameter (in mm) | 6,5 | 8,5 delivered with valve adapter | 8,5 delivered with valve adapter | 8,5 delivered with valve adapter | 8,5 | 6,5 delivered with UST valve M40495 |
| ETRTO compatibility | 622 x 19 | 559 x 17 | 559 x 17 | 559 x 17 | 559 x 25 | 559 x 23 |
| Recommended tire width (in mm) | 28 to 47 | 1,0 to 2,3 | 1,0 to 2,3 | 1,0 to 2,3 | 2,1 to 3,0 | 2,1 to 3,0 |
| Eyelets | Double | Single | Single | Single | Single | Fore hollow screws |
| Average weight (in grams) | 597 | 440 | 440 | 410 | 716 | 657 |
| Finish and drilling | Ceramic | - | - | - | - | - |
| | Black | 32, 36 | 32, 36 | 28, 32 | 32, 36 | 32, 36 |
| | Silver | 32, 36 | - | - | - | - |
| Recommended spoke nipple length (in mm) | 12 | 12 | 12 | 12 | 12 | 16 |
| Spoke support diameter (in mm) | 600 | 536 | 539,5 | 538 | 534 | 528 |
| Recommended rim tape (ETRTO x width x thickness) | 622 x 20 x 0,6 | 559 x 18 x 0,6 | 559 x 18 x 0,6 | 559 x 18 x 0,6 | 559 x 28 x 0,6 | Do not use rim tape |
| Wear indicator | Internal | - | No | No | - | - |

RIMS

For building the EX 823 Disc rim, go to the website www.tech-mavic.com, to the wheel building instructions delivered with the rim or to the 2002 technical manual, page 21.

The Mavic rims not mentioned in the above chart have not changed. Their technical features can therefore be found in previous years' technical manuals or on the technical manual website: www.tech-mavic.com.



034 TECHNICALMANUAL05

THE WEAR INDICATOR

Mavic has chosen to provide certain of its rim profiles that have a braking surface with a wear indicator.

2 types of wear indicator are used on our rims:

INTERNAL:

Process: The inside of the braking surface of the rim is machined on both of the wings of the rim.

Principle: When there is too much wear on the rim, a little hole appears on each of the 2 braking surfaces of the rim. Depending on the adjustment of the brake pads, it is possible for the wear indicator to appear on only one of the 2 braking surfaces. In any case, **the appearance of the wear indicator on at least one of the 2 braking surfaces means that the sidewalls are too thin, and it could be dangerous to continue to use the rim. It should be replaced as soon as possible.**

The position of the wear indicator is marked by 2 yellow arrows on the stickers on the rim, opposite the valve hole.

Refer to the above chart to find out which rims offer this internal wear indicator.

INTEGRATED IN THE PROFILE:

Process: The wear indicator is an integral part of the rim. There is a groove on the entire circumference of the rim, at the center of the braking surface.

Principle: The groove becomes more shallow as the braking wears down the surface of the rim. **Its disappearance, on one side of the rim or the other, means that the thickness of the braking surface is too thin and it could be dangerous to continue to use the rim. It should be replaced as soon as possible.**

Refer to the above chart to find out which rims offer this internal wear indicator.

The Ceramic® coating, by preventing the braking surfaces to become hollow, can be used as a wear indicator.

CONDITIONS OF USE FOR A RIM

CONDITIONS OF USE TO BE GIVEN TO YOUR CUSTOMERS

Mavic uses the most advanced technology in the design of its rims and wheels. However, a rim cannot last forever and wears down according to its use: type of riding, terrain, brake pad, spoke tension, tires, tire pressure, weather conditions, etc.

Each rim has been designed for a specific use and discipline (road, cross-country, downhill, touring...). Any other use of a rim for which it has not been designed is highly inadvisable, the sole responsibility of the user and voids the Mavic warranty.

Please advise your customers of the following points:

- Choose a suitable rim designed for the type of riding you wish to do: Do not use cross-country rims on wheels that will be mounted on free-ride, downhill or dual bikes;
- You must follow the instructions in this technical manual for tire pressure and sizes (see following charts);
- Respect the appropriate spoke tensions. Mavic recommends spoke tensions between 70 and 90 kg (for a front or rear wheel on the free wheel side with 3 cross pattern). Inappropriate spoke tension can generate too much stress and damage the rim;
- Clean the rims on a regular basis with the Mavic soft stone (M40410);
- Remove stones and particles from the brake pads;
- Replace the brake pads when they are worn;
- Do not use a rim if the braking surfaces are worn, if eyelets are missing, or in any other case where safety might be compromised. The rim is a part that wears out as do brake pads, and must be replaced if it is worn (sidewall hollowed by wear, or cut out, cracked rim...);
- For rims fitted with a wear indicator (internal or external) do not continue to use the rim if the indicator appears (internal wear indicator) or disappears (external wear indicator) on at least one of the 2 braking surfaces;
- For rims not fitted with a wear indicator, check using a depth gauge that the maximum wear on each side is not more than 0.4 mm;
- Check or have your rims checked on a regular basis, at least at the start of each season and if possible after intensive use or if you have a doubt about spoke tension or the type of tire used. When checking, look inside (especially under the rim tape) and outside the rim. Check for signs of fatigue or wear: damage to braking surfaces, appearance or disappearance of the wear indicator (only on rims fitted with a wear indicator), cracks in the sidewalls or around the eyelets...
- The total weight of the rider and his/her equipment (not including the bike) must not exceed the following values:
 - Road rims: 100 kg (except for MA3: 85 kg);
 - MTB rims: 90 kg for XM 117, XM 117 Disc, XM 317, XM 317 Disc, XM 517, XC 717 and XC 717 Disc rims; 115 kg for XM 321 Disc, XM 719, XM 819, XM 819 Disc, EX 325 Disc, EX 721, EX 729 Disc and EX 823 Disc rims.
 - ASPHALT rims: 105 kg for A 119, A 319 and A 317 Disc rims, 125 kg for the A 719 rim.

Following these recommendations will guarantee longer product life for the rims, maximum performance and riding enjoyment.





RECOMMENDATION FOR MAXIMUM TIRE PRESSURE

| CROSS COUNTRY AND CROSS MOUNTAIN* | | | |
|-----------------------------------|-------|-------------------------|------------------------|
| Tire width | | Maximum pressure (bars) | Maximum pressure (PSI) |
| in " | in mm | | |
| 1,00 | 25 | 7,70 | 113 |
| 1,20 | 30 | 7,00 | 103 |
| 1,50 | 38 | 6,00 | 88 |
| 1,75 | 45 | 5,20 | 76 |
| 1,85 | 47 | 4,80 | 71 |
| 1,90 | 48 | 4,70 | 69 |
| 1,95 | 50 | 4,50 | 66 |
| 2,00 | 51 | 4,30 | 63 |
| 2,10 | 53 | 4,00 | 59 |
| 2,20 | 56 | 3,70 | 55 |
| 2,30 | 58 | 3,30 | 49 |

| EXTREME MTB | | | |
|-------------|-------|-------------------------|------------------------|
| Tire width | | Maximum pressure (bars) | Maximum pressure (PSI) |
| in " | in mm | | |
| 2,10 | 53 | 3,70 | 55 |
| 2,20 | 56 | 3,50 | 52 |
| 2,30 | 58 | 3,30 | 49 |
| 2,40 | 61 | 3,20 | 47 |
| 2,50 | 63 | 3,00 | 44 |
| 2,60 | 66 | 2,80 | 41 |
| 2,70 | 69 | 2,70 | 39 |
| 2,80 | 71 | 2,50 | 36 |
| 2,90 | 74 | 2,40 | 34 |
| 3,00 | 76 | 2,20 | 32 |

| ROAD + TRIATHLON* | | |
|-------------------|-------------------------|------------------------|
| Tire width in mm | Maximum pressure (bars) | Maximum pressure (PSI) |
| 19 | 10,00 | 146 |
| 23 | 9,50 | 138 |
| 25 | 9,00 | 131 |
| 28 | 8,00 | 117 |

| ASPHALT* | | |
|------------------|-------------------------|------------------------|
| Tire width in mm | Maximum pressure (bars) | Maximum pressure (PSI) |
| 28 | 7,00 | 103 |
| 30 | 7,00 | 103 |
| 32 | 7,00 | 103 |
| 35 | 6,00 | 88 |
| 37 | 6,00 | 88 |
| 40 | 5,60 | 82 |
| 44 | 5,20 | 76 |
| 47 | 4,80 | 71 |
| 50 | 4,50 | 66 |

*See riding segmentation chart on page 31.



DURABILITY

A rim has 2 main functions: support the tire and serve as a brake disc.

In the framework of this second function as a braking surface, rims may be subject to wear, especially from intensive or prolonged use. Rims may experience wear for reasons as diverse as the build-up of gravel or mud in the brake pads or the use of worn or poorly adjusted brake pads. These can wear down or damage the rim sidewalls, and may not be noticed by the user.

It is consequently common practise for the user to replace the rims as he would the brake pads. You must make your customers aware of this.

To reduce wear, we have developed a Ceramic coating on our top-of-the-line rims (see below).

If the rim is heavily out of true following a violent shock, it should be replaced as soon as possible in order to avoid overloading or possibly broken spokes.

MAINTENANCE

Rims and brake pads must be cleaned with soap and water on a regular basis. Abrasive substances (sand...) may have been deposited during use and could scratch or cause unnecessary damage to the sidewalls of rims.

If cleaning is not sufficient on the braking surfaces, use a Mavic soft stone (M40410), except on rims designed specifically for disc brakes. Only use the Mavic soft stone, a sponge or a cloth.

If there is still grease on the rim, it can be removed with any type of solvent without risking damage to the rim (except for the Deemax rim). However, do not use any solvents in the area of the sticker or tire, as there is risk of damage to these areas.



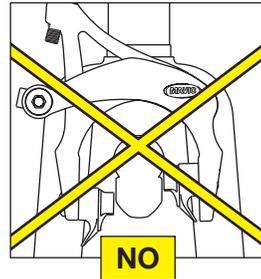
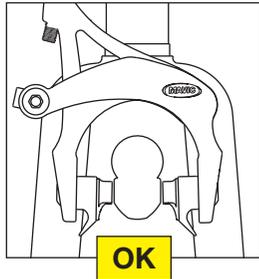


BRAKE PADS

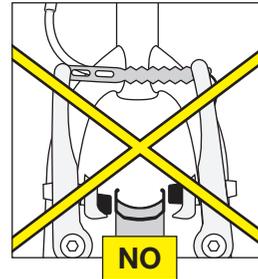
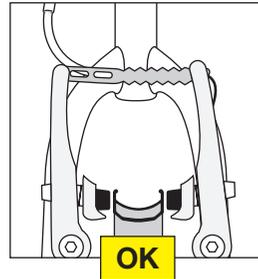
Adjusting the brake pads:

The brake pads should be positioned on the braking surface of the rim, as shown in the diagrams below:

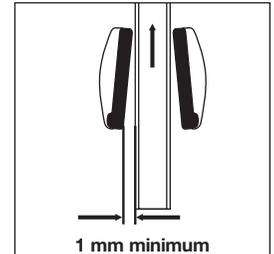
Road rim



MTB rim



Pad angles (Road and MTB)



Recommendations for use and type of brake pad:

For proper braking:

- Clean the brake pads with the Mavic soft stone M40410;
- Avoid all types of greasy substances on the braking surfaces;
- Use brake pads that are adapted to the specific rim coating. Certain brake manufacturers offer specific Ceramic pads. These pads should only be used with Ceramic rims to avoid prematurely damaging the braking surface. Nevertheless, Mavic will never be able to guarantee the perfect appropriateness between the brake pads of different manufacturers with its different coatings on the braking surface (UB Control, Ceramic,...);
- On most road calipers, you can use the Mavic brake pads M40498. The rubber of these brake pads is perfectly adapted to the Mavic rims (excluding Ceramic);
- Check the degree of wear and the smoothness of the brake pads. Replace them on a regular basis.

To avoid braking noise, optimize the adjustment of the braking system by following the recommendations above, but also by trying to adjust the different pad angles, and by mounting (if necessary) a stiffener.

Characteristics of the Ceramic® coating:

The main advantage of this coating is that it **reduces the braking distance**, even in wet conditions, and it **increases the durability of the rim**. Initially, the wear of the brake pads will be greater with this type of coating than with a conventional treatment. Consequently, use brake pads specifically manufactured for rims with Ceramic coating.

Since this coating is very hard, it is also sensitive to impacts. Chipping may therefore occur following a major shock in which the rim has been deformed. **A limited amount of chipping does not mean the rim must be replaced and does not affect braking performance.**

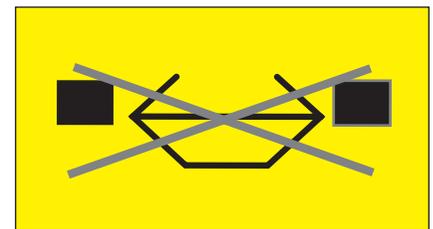
SPECIAL CONDITIONS OF USE FOR A RIM WITH DISC BRAKES

This type of rim is specifically designed to be used with disc brakes and is characterized by:

- The absence of a braking surface;
- The specific shape and thickness of the profile.

For these reasons, these rims must only be used with disc brakes and never with Cantilever or V-brakes.

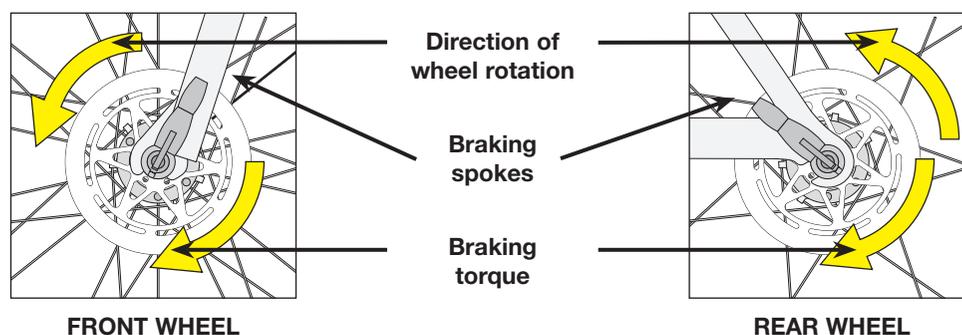
These conditions also apply to the rims XM 117 Disc, X 223 DISC, XM 321 DISC, XC 717 DISC, XM 819 DISC, EX 729 Disc, EX 823 DISC and A 317 Disc, and also to the wheels Deemax UST, Crossmax SL Disc, Crossmax XL Disc and Crossmax Enduro Disc, or when the following sticker is positioned on your rim:



Wheel building recommendations:

Wheel building for this type of rim must be adapted to the strong forces that result from disc braking. Mavic recommends to specifically orientate the disc-side braking spokes (spokes on the outside of the hub flange) so they can work in the direction of the torque exerted by the disc on the hub.

Therefore, please follow the direction of the spokes on the hub flanges as shown in these diagrams:





SPECIAL CONDITIONS FOR USING A UST™ TUBELESS RIM

MAKING SURE THE TUBELESS SYSTEM (UST TUBELESS RIM WITH A UST TUBELESS TIRE) IS AIRTIGHT

We advise you to make sure that your UST Tubeless system (UST Tubeless rim or wheel combined with a UST Tubeless tire) is airtight in the following cases:

- After building the UST Tubeless rim;
- After fitting the UST Tubeless tire;

If you are not sure the tubeless system is airtight, proceed in the following manner:

- Check the outside condition of the tire (cuts, any type of damage...).
- Make sure the tire is locked in place: inflate to 110% of the maximum pressure indicated on the tire and then completely deflate: the tire must stay locked in the rim.
- Make sure the inside of the tire and rim are clean (clean with a cloth if necessary).
- Check the condition of the heel of the tire and the wings on the rim.
- Wet the tire and rim abundantly with soap and water, and then fit the tire.
- Since the UST Tubeless unit is under 3 bars of pressure, immerse the base of the wheel mounted with its tire in a container or spray a leak detector on the rim/tire interface to find a possible leak. If there is a leak:
 - Between the rim and the tire: replace or repair the UST Tubeless tire with a repair patch, after having removed any grease from the tire with trichlorethylene or acetone;
 - Around the UST valve: Remove the valve, grease the rubber part that is in contact with the rim, and then refit it. If there is no improvement, replace the valve;
 - Around the hollow screws, spoke nipples or Zicral spoke nipples: replace the rim.

Warning: The air contained between the 2 bridges of the rim will naturally have a tendency to escape because of the pressure of the water and could be the origin of the air bubble. Therefore, check this phenomena before replacing the rim.

- Fit another tire that you know is perfectly airtight.
- If there is a leak around the valve: Remove the valve, grease the rubber part that is in contact with the rim, and then refit it.

If the tubeless system still isn't airtight after following all these procedures, contact Mavic customer service or your MSC.

RIMS

USING A UST TUBELESS RIM WITH A CLASSIC TIRE AND A TUBE

The ETRTO standard now integrates the tubeless concept. As a result, and on condition of respecting certain conditions of use, a UST rim can officially, and without risk, be combined with a classic tire and tube.

The 3 main conditions for using a UST tubeless rim with a classic tire and tube are:

- Only use ETRTO compatible tires;
- Only use tubes with a Presta type of valve (Ø 6.5);
- Use a UST Tubeless WITHOUT rim tape (except for the rim on the Crossland wheel);

Once the UST Tubeless valve has been removed, you can only insert a Presta type of tube (small valve, Ø 6.5 mm) into the valve hole of the UST Tubeless rim.

Warning: Never try to make the valve hole bigger or drill it. If you do so, you could permanently damage the rim and would not be able to use the UST valve, which is necessary to keep the rim airtight.

When fitting a classic tire on a UST Tubeless rim, follow the same procedure as when using a UST Tubeless tire. That is:

1. Abundantly moisten the rim tape and tire beads with soap and water;
2. Insert the first tire groove into the bottom of the rim groove;
3. Place the Presta tube in the classic manner;
4. Then fit the second bead by starting on the opposite side of the valve and finishing at the valve;
5. Center the heels of the tire on both sides of the valve;
6. Rotate the tire to make sure the beads are properly placed at the bottom of the rim groove;
7. Inflate the tire energetically until the tire beads lock into place. The locking action can generate a series of short sounds due to the tire rising to its final position. **Inflate up to 5 bars to be sure the tire is firmly in place. Being locked in place does not make the tire/rim system completely airtight, but it does guarantee that the tire is properly held in place. In this way, the tire will be properly placed in the rim groove and you can ride without risk of it rolling off the rim.**
8. Adjust the tire pressure to your type of riding and preference. Warning: When using a UST rim with a classic tire and tube, the adjustment of the pressure is not «without risk», just like on an «all UST» assembly (tire + rim).



SYSTEMS & ACCESSORIES

GENERAL POINTS

Dear dealers, we would like to remind you that it is your responsibility to give the customer all component instructions and have them fill out the warranty card.

On the other hand, we advise the users of Mavic components to follow the instructions below:

- Follow the conditions of use described at the top of each Mavic component product page (pages 39 to 40). Any other use outside of these conditions is inadvisable, the sole responsibility of the user and voids the Mavic warranty.
- Although water resistant, it is strongly inadvisable to use pressurized water on electronic and mechanical components.
- It is also inadvisable to use solvents and petroleum products to clean the various components. It is preferable to use warm water, or soap and water, and to dry with a cloth.
- Do not leave the liquid crystal screens exposed to the sun (e.g. behind the windshield of your vehicle).



- Each of WIN-Tech's electronic components has its own digital code. **The synchronisation operation** allows components of the same system to function with the same digital code and therefore be impenetrable to outside signals. This means that each component of a system cannot be used with the components of another system fitted to another bike (WIN technology).

This synchronization operation is vital for the correct operation of the system. It must be carried out before using the system for the first time and each time one of the batteries is replaced.

Following these recommendations will guarantee longer product life for the components, maximum performance and riding enjoyment.

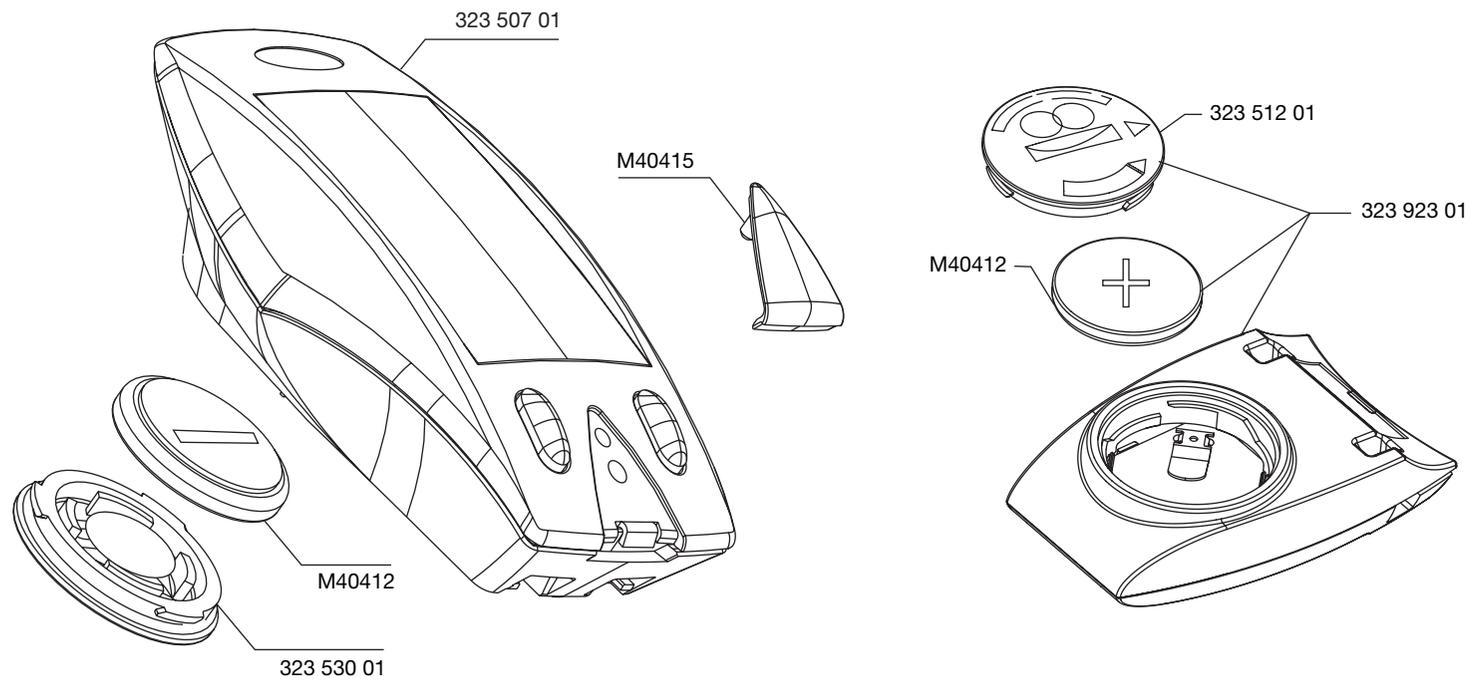
WIN-Tech® FS

USE: Use only on a Cross Country or Cross Mountain MTB, a road bike, a tandem or an Asphalt type of bike. Any other use (such as on an Extreme MTB, Cyclo-Cross bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.

WEIGHT:
 Computer: 46 g
 Computer bracket: 8 g
 Fork sensor: 18 g

REFERENCES:
 WIN-Tech FS: 323 687 01
 WIN-Tech FS + cadence: 323 932 01

SPARE PARTS



MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water.
 Do not store near a window exposed to the sun for a long period of time.

REFERENCES OF ACCESSORIES

Fixing ties: M40390, pack of 50 ties
Wheel magnet bracket: M40540
Computer bracket kit: 323 511 01 (includes the bracket, double-sided tape, orientation wedge and 3 fixing ties)

FUNCTIONING FEATURES

| | |
|---|---|
| Power supply: battery CR2032 (Computer, speed sensor) | Operating temperature range: -10 to + 50°C / 14 to 122°F |
| Circumference: minimum: 180 cm, maximum: 229 cm. | Cumulative odometer: up to 99,999 km or m |
| Unit: distance and speed in miles or kilometers | Trip distance: up to 9,999.9 km or m |
| Time format: 24 H | Stopwatch: up to 9:59:59 |
| Water resistance: Resistant to rainwater. Avoid total immersion of the electronic components and do not use pressurized water. | Speed: up to 99.9 km/h or m/h |
| Maximum transmission distance: 60 cm | Cadence: up to 180 revs / min |

INSTALLATION, USE AND PROGRAMMING

| | |
|--|--|
| • Installing the computer See 2004 technical manual, page 42 | • Use See 2004 technical manual, page 44 |
| • Installing the speed sensor See page 41 | • Programming See 2004 technical manual, pages 44 to 45 |
| • Installing the magnet bracket See page 41 | • Digital synchronization See page 42 |
| • Installing the batteries See 2004 technical manual, page 43 | |

SYSTEMS & ACCESSORIES

PEDALING CADENCE KIT HOME TRAINER KIT

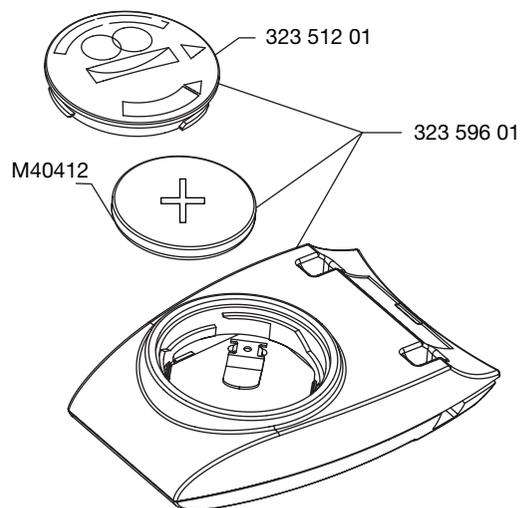
USE: Use only on a Cross Country or Cross Mountain MTB, a tandem or an Asphalt type of bike. Any other use (such as on an Extreme MTB, Cyclo-Cross bike...) is strongly inadvisable, is the sole responsibility of the user and voids the Mavic warranty.
The Home-Trainer Kit is designed for INDOOR use only.

WEIGHT:
Pedaling cadence sensor: 18 g
Home Trainer sensor: 22 g

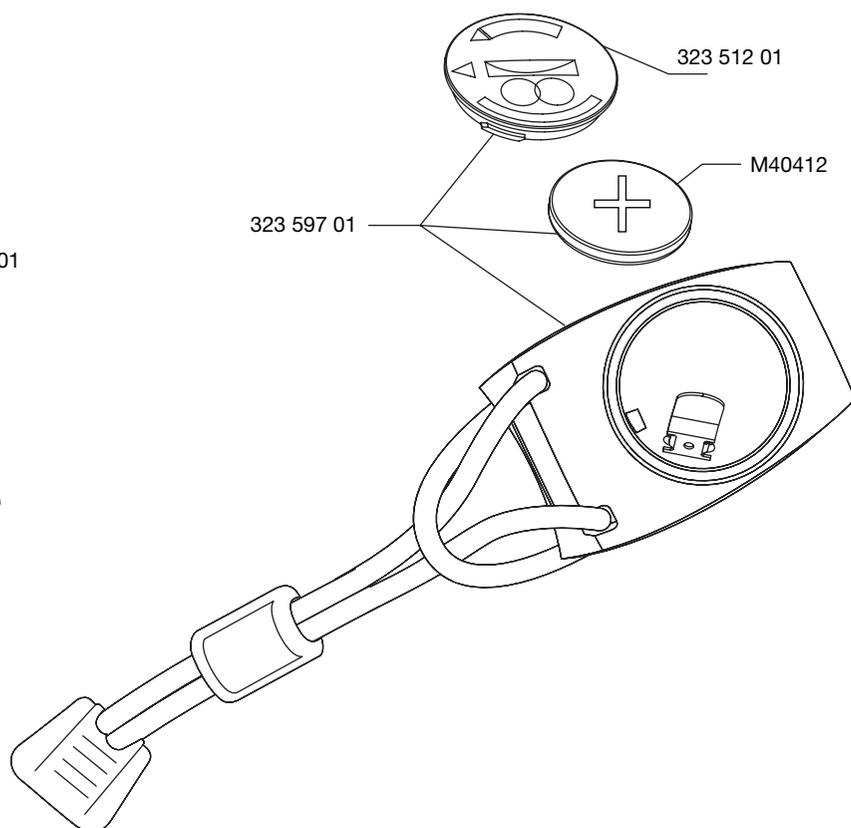
REFERENCES:
Pedaling cadence kit: 323 596 01
Home Trainer kit: 323 597 01

SPARE PARTS

PEDALING CADENCE SENSOR



HOME TRAINER SPEED SENSOR



MAINTENANCE: Clean with dry cloth or soap and water. Do not use pressurized water.
Do not store near a window exposed to the sun for a long period of time.

REFERENCES OF ACCESSORIES

Fixing ties: M40390, pack of 50 ties
Wheel magnet bracket: M40540
Crank magnet: 323 510 01

FUNCTIONING FEATURES

Power supply: battery CR2032 (pedaling cadence sensor and Home Trainer sensor)
Water resistance: Resistant to rainwater. Avoid total immersion of the electronic components and do not use pressurized water. The Home Trainer kit is only to be used indoors.

Maximum transmission distance: Cadence sensor: 70 cm
Home Trainer sensor: 85 cm
Operating temperature range: -10 to +50°C / 14 to 122°F
Speed: up to 99.9 km/h or m/h
Cadence: up to 180 revs / min

INSTALLATION, USE AND PROGRAMMING

- **Installing the cadence sensor** See 2004 technical manual, page 43
- **Installing the Home Trainer sensor** See page 42
- **Digital synchronization** See page 42



WIN-TECH: INSTALLATION

1. INSTALLATION OF THE WIN-TECH FS FORK SENSOR

Tools needed

- 1 wire cutter

1. Insert a fixing tie in each of the dedicated positions of the fork sensor. Make sure the head of the tie is correctly located;
2. Place the sensor on the right hand fork (the sensor must be pointing towards the front) and close the fixing ties without tightening them fully;
3. Fit the wheel magnet bracket to the front wheel (see below);
4. Adjust the position of the fork sensor such that the wheel magnet passes **in front of one of the marks** on the sensor. The distance between the magnet and the sensor must be between 5 and 10 mm.
5. Tighten the fixing ties and cut the ends flush;



Your computer is not yet operational. You must first carry out the system synchronization operation (see page 42).

The maximum allowable distance between the speed sensor and the computer is 60 cm.

For certain telescopic forks it may be necessary to install the speed sensor on the inside of the right fork, with the Mavic logo facing the wheel.



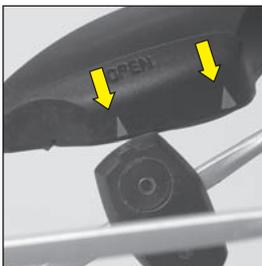
2. INSTALLATION OF THE MAGNET BRACKET

Tools needed

- 1 flat screwdriver

Position the magnet bracket on a spoke on the right hand side of the wheel.

The magnet must be facing the outside of the wheel.



If the magnet bracket is fitted to a profiled Zicral spoke, the centering lugs must be removed using a pair wire cutters.





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3. INSTALLATION OF THE HOME-TRAINER OPTION

Tools needed

- None!

1. Install the wheel magnet bracket on a rear wheel spoke, on either the right or left side (see above procedure);
2. Position the Home-Trainer sensor on the frame stand, facing downwards, at the same height as the wheel magnet bracket;
3. Wrap the elastic string around the stand and then through the loop at the other side of the sensor;
4. Pull strongly on the string and tighten the wedge so that the sensor is correctly adjusted on the frame;
5. Adjust the position of the Home Trainer sensor such that the wheel magnet passes **in front of one of the marks** on the sensor.



4. DIGITAL SYNCHRONIZATION OF THE COMPUTER AND SENSORS

This operation must be carried out for the system to function correctly.

It must be done each time you:

- Install the system on a bike for the first time;
- Replace a battery in one of the components of the system (speed or cadence sensor, computer);
- Add or remove a component from the system.

Example:

When you install the Home Trainer option, you must carry out this operation to make the new sensor operational; this deactivates the connection with your skewer sensor or fork sensor.

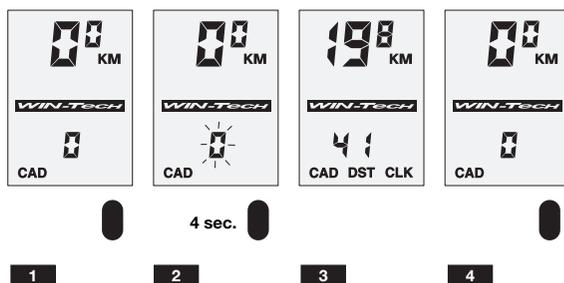
When you ride outdoors again, after removing the Home Trainer option, you must once again carry out this synchronization operation to reactivate the computer – skewer sensor or computer – fork sensor connection.

When you carry out a synchronization operation in order to use the Home Trainer option, make sure that the front wheel is fixed so as to deactivate the skewer sensor or fork sensor.

Similarly, make sure you remove the Home Trainer option from the frame when you carry out synchronization with the skewer sensor or fork sensor.

PROCEDURE

1. Using the right button, go to the display «Current speed and pedaling cadence»;
2. Press the right button for 4 seconds;
3. Turn the following until the speed or cadence is displayed:
 - The front wheel if using the fork sensor or skewer sensor;
 - The pedals if using the pedaling cadence option;
 - The rear wheel if using the Home Trainer option.
4. Confirm by pressing the right button (hold down).





5. HELP FOR RESOLVING PROBLEMS

Below is a list of faults that you may encounter with the WIN-Tech systems, along with their possible causes and the checks to be carried out before contacting Mavic customer service.

WARNING: You **MUST** carry out the digital synchronization operation whenever you:

- Install a WIN-Tech system on a bike for the first time;
- Remove a battery cover, whether you replaced the battery or not;
- Add or replace a sensor (speed or cadence).

Each manipulation of the battery deletes all saved information (resetting of the cumulative odometer, time, wheel circumference...). Remember to note this information beforehand.

The batteries lose part of their capacity in the cold. Incorrect functioning may occur during an early morning ride, but become normal again when the temperature increases.

1. Speed or cadence information is not/no longer displayed on the screen

Possible cause No.1: Transmission problem.

Checks: Carry out the synchronization operation (refer to the installation guide or paragraph 4 above).

Possible cause No.2: Wheel magnet or crank magnet bracket absent or incorrectly positioned.

Checks:

1. Check the wheel magnet or crank magnet bracket is present;
2. Check the position of the magnet with respect to the sensor: the center of the magnet itself must be opposite one of the two marks on the sensor.

Possible cause No.3: Bad battery contact in the speed or cadence sensor.

Checks: Open the battery cover and check that the battery makes good contact with the 2 contacts. If this is not the case, **gently** bend the lateral contact in using a small screwdriver. Refit the battery, close the cover and proceed with the synchronization operation.

Possible cause No.4: Speed or cadence sensor battery contact broken.

Checks: Open the battery cover and check the 2 contacts are present. If the contact is absent, contact Mavic Customer Service.

Possible cause No.5: Speed or cadence sensor battery dead.

Checks: Change the battery and carry out the synchronization operation.

2. No display on the screen.

Possible cause No.1: Computer battery contact broken.

Checks: Open the battery cover and check the 2 contacts are present. If the contact is absent, contact Mavic Customer Service.

Possible cause No.2: Battery dead.

Checks: Change the battery and carry out the synchronization operation.

3. Deterioration of computer display or low contrast

Cause possible: Battery dead.

Checks: Change the battery and carry out the synchronization operation.

4. Spurious resetting of all computer information

Cause possible: Bad battery contact in the computer.

Checks: Open the battery cover and check that the battery makes good contact with the 2 contacts. If this is not the case, **gently** bend the lateral contact in using a small screwdriver. Refit the battery, close the cover and proceed with the synchronization operation.

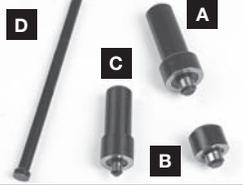
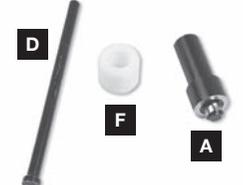
In all cases, contact Mavic Customer Service if:

- The problem persists after having carried out these checks;
- The fault is not listed above;
- One of the above faults occurs again abnormally.



TOOLS AND CUSTOM

MAVIC TOOLS

| REFERENCE | NAME | PRODUCT |
|------------|---|---|
| 323 477 01 | Multifunction tool: Removing the UST Tubeless rim tape (A) Fitting the UST rim tape (C) Adjusting the front axles on the Cosmos, Ksyrium Equipe, Crossland and Crossmax Enduro wheels Crossmax Enduro Disc, Cosmic Elite 05 and Speedcity 05 (B) |  |
| M40119 | Bearing press kit for the wheels Crossmax, Crossmax UST, Crossmax XL and Crossmax SL (rear wheel only) Crossmax Disc, Crossmax UST Disc, Crossmax XL Disc and Crossmax SL Disc Crossland (98) Deemax and Deemax UST (rear wheel only) Helium Ksyrium SSC, Ksyrium SSC SL Ksyrium Elite (rear free wheel side only) Cosmos, Ksyrium Equipe, Crossland (2000), Crossmax Enduro, Crossmax Enduro Disc, Cosmic Elite 05 and Speedcity 05 (rear free wheel side only) Cosmic Carbone SL (rear) |  |
| M40120 | Bearing press kit for the wheels Cosmic Carbone, Cosmic Carbone SSC, Cosmic Carbone SL (front) Classics Pro, Classics Pro CD, Classics SSC Cosmic Pro, Cosmic Expert, Cosmic Equipe Comete Crossmax SL (front wheel only) |  |
| M40631 | Bearing press kit for the wheels: Crossroc UST Crossroc UST Disc |  |
| M40373 | Bearing press kit and guide ring for the wheels: Crosslink, Crosslink Disc Crossride, Crossride Ceramic Classics Elite, Cosmic Elite (1st and 2nd generation) Cosmos (all colors) Ksyrium Elite (except rear free wheel side) iO Speedcity Cosmos, Ksyrium Equipe, Crossland (2000), Crossmax Enduro, Crossmax Enduro Disc, Cosmic Elite 05 and Speedcity 05 (front and rear non-drive side only) |  |
| M40128 | Bearing press kit for front wheels: Deemax, Deemax UST and Deemax UST 05 Crossmax XL Disc Crossmax SL Disc Lefty (disc side) |  |
| 323 945 01 | Bearing press kit for the Crossmax SL Disc Lefty front wheel (non-disc side) |  |
| M40410 | Mavic soft stone for cleaning the braking surface of the rim, Ceramic or UB Control |  |

A+B: Bearing press kit for the front wheel.

A+C: Bearing press kit for the rear wheel.

D: Bearing press kit for the front and rear wheels.

E: Bearing press kit for the front and rear wheels.

F: Guide ring for the 12 mm Allen wrench needed for removing the free wheel on the Crossroc UST, Crossroc UST Disc, Crossride, Crossride Ceramic, Cosmos and Cosmic Elite wheels.

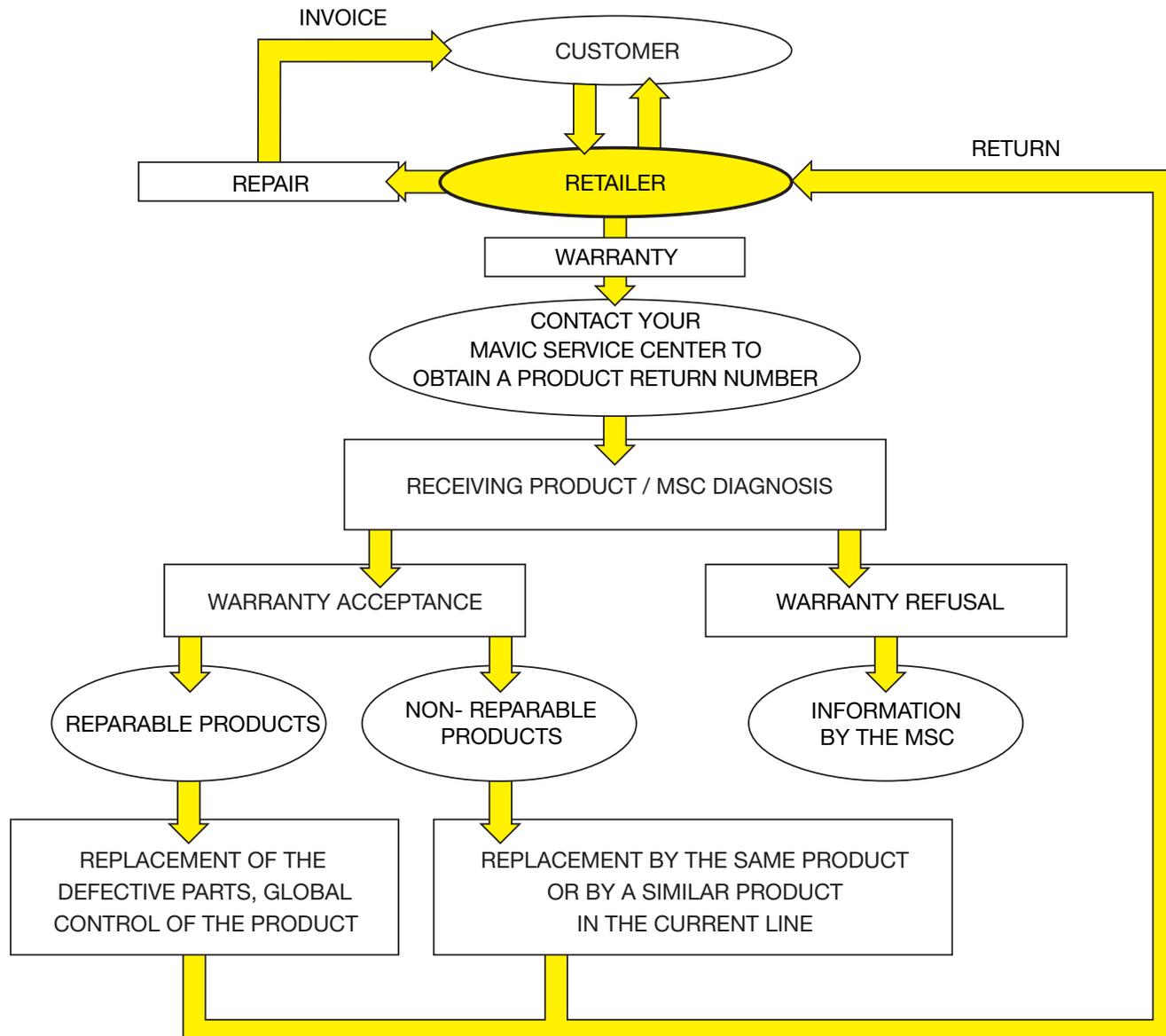
CUSTOMER SERVICE

MAVIC TOOLS

| REFERENCE | NAME | PRODUCT |
|-----------|--|---|
| M40001 | Spoke wrench for Cosmic Carbone, Cosmic Carbone SSC and Cosmic Carbone SL wheels |  |
| M40494 | Wrench Kit for maintenance and spoke tension on the wheels: Ksyrium SSC, Ksyrium SSC SL, Ksyrium SL 04, Ksyrium Elite 05, Ksyrium Elite 650 05 Crossmax UST, Crossmax XL and Crossmax SL Crossmax UST Disc, Crossmax XL Disc and Crossmax SL Disc Crossmax Enduro and Crossmax Enduro Disc Deemax UST 05 |  |
| M40567 | Wrench kit for maintenance of aerodynamic spokes |  |
| M40652 | Zamac wrench for adjusting spokes on the wheels: Crossmax UST, Crossmax XL and Crossmax SL Crossmax UST Disc, Crossmax XL Disc and Crossmax SL Disc Ksyrium SSC and Ksyrium SSC SL Crossmax Enduro and Crossmax Enduro Disc |  |
| M40630 | Wrench for adjusting hollow screws on the Deemax UST, Crossroc, Crossroc Disc, Ksyrium Elite wheels and the EX 823 Disc, XM 819 and XM 819 Disc rims |  |
| M40123 | Hub wrench for adjusting free play on Mavic hubs: iO and Comete (road and track) Cosmic Carbone SSC, Cosmic Carbone, Cosmic Elite (except 05), Cosmic Carbone SL Classics SSC, Classics Elite, Classics Pro (and CD) Ksyrium SSC SL, Ksyrium SSC, Ksyrium Elite 05 and Ksyrium Elite 650 05 Cosmos Crossmax, Crossmax Disc Crossmax UST, Crossmax UST Disc Deemax Crossmax SL, Crossmax SL Disc Crossmax XL, Crossmax XL Disc Deemax UST |  |
| M40122 | Mavic mineral oil for lubricating the FTS and FTS-L free wheel bodies. Capacity 60 ml. Only use this oil for lubricating FTS and FTS-L free wheel bodies |  |
| M40315 | Mavic thread lock |  |

CUSTOMER SERVICE

GENERAL PROCEDURE FOR ANY REQUEST FOR SERVICE SUPPORT



1. Contact the Mavic Service Center in your geographical zone to obtain a PRODUCT RETURN NUMBER.

2. Follow the directions of your Mavic Service Center, send the damaged part or product to them with a note containing the following information:

- Your name and address;
- The product return number that was given to you. This number should also be indicated on the outside of your package;
- The reason for the return;
- **Proof of date of purchase attesting that the product was sold within the last 2 years (receipt or warranty card filled out);**

WARNING: The wheels must be sent without the tire, cassette, skewer, bag or anything else in order to avoid any risk of loss or damage. To be able to process your request as quickly as possible, we ask you to follow this procedure. ANY OTHER TYPE OF RETURN WILL BE REFUSED.

3. After the Mavic Service Center receives your package, it will make a diagnosis and will declare whether the damaged product will be covered by the warranty or not. Then the product will be exchanged or repaired.

NOTE: If the warranty is refused, your Mavic Service Center will inform you about the cost of the repair. If the product cannot be repaired, it will be destroyed by Mavic unless you have given prior contrary instructions.

If you decide to repair the Mavic product, please read the preceding pages.

Your Mavic Service Center is available for information regarding repairs and the Mavic warranty. Please do not hesitate to contact them.

MAVIC WARRANTY AND CUSTOMER SERVICE

MAVIC WARRANTY

Mavic products purchased from a Mavic authorized dealer are guaranteed against manufacturing and material defects for a period of 2 years from the date of original purchase, under the following conditions.

OBLIGATIONS

Mavic will replace or repair the product or the part considered to be defective by Mavic. This is Mavic's only liability.

Complementary warranties may exist according to regional laws. In France, Mavic guarantees against hidden defects as required by French law, within the conditions and limits laid down by articles 1641 and following of the Civil Code.

RESTRICTIONS

This warranty does not cover the consequences of normal wear & tear, damage resulting from misuse in shipping, storage, accidents, negligence, shocks or falls, failure to follow instructions for use, improper installation or installation with incompatible products, poor maintenance, normal wear & tear, abnormal or improper use, modification or alteration of the product.

The conditions of the Mavic warranty do not apply to products purchased from dealers other than Mavic authorized dealers, including the conformity of products warranty.

This warranty is not transferable and only applies to the original purchaser.

This warranty does not cover the consequences of normal wear & tear of parts that can wear out such as braking surfaces on rims (with rim braking system), brake pads, bearings, pawl assemblies, seals, rear derailleur jockey wheels, batteries...

This warranty does not cover products whose repair has not been carried out by the Mavic Service Center or its representative in certain countries (1).

This warranty does not cover any product whose item number or identification has deteriorated or been removed.

This warranty does not apply to «Mavic Special Race Service» products (2).

This warranty does not exclude the specific rights in each country. A consumer may have other rights depending on his/her place of residence. Certain jurisdictions do not allow for the exclusion or limitation of specific damages, secondary or as a result of, or limitations on the duration of the warranty. Therefore, these exclusions and limitations do not apply to everyone. Local taxes, customs tariffs or shipping fees may be applied. In the United States, additional rights that are different from one state to another may also be applied. If one part of this warranty was found to be inapplicable by an administrative or judicial procedure, the other parts would remain applicable.

APPLICATION PROCEDURE

Mavic authorized dealers are responsible for managing all claims under the warranty. The authorized dealer must obtain authorization from the Mavic Customer Service (or its representative in certain countries (1)) prior to the return of the defective product (3).

The complete product with proof and date of purchase (sales receipt, copy of the warranty card...) has to be sent by the authorized dealer to the Mavic Customer Service (or its representative in certain countries (1)) who will ensure the proper procedures.

The new or repaired product will be returned to the authorized dealer.

WARRANTY CARD

The warranty card that is printed on the user guide delivered with each product must be dated, signed and stamped by the authorized dealer, and saved by the customer with no limitation in the duration. It must be used in any claims.

(1) Updated lists are available upon request to: Mavic – F-74996 Annecy Cedex 09 or on the Mavic website: <http://www.mavic.com>.

(2) Products engraved with «SSC» or for which the serial numbers have been used by the Mavic Race Department.

(3) Any claims made by any other means or without prior agreement for the return cannot be taken into account.

TO CONTACT YOUR MAVIC SERVICE CENTER

| PAYS | TÉLÉPHONE | FAX |
|-----------------------------|--|----------------------|
| MSC AUSTRALIA | (+61) 3 8878 1000 | (+61) 3 8878 1001 |
| MSC AUSTRIA | (+49) 08033 305163 | (+49) 08033 305169 |
| MSC BENELUX | (+32) 01 434 7470 | (+32) 01 432 39 04 |
| MSC CANADA EAST | (+1-514) 332 1320 or 1-800 363 0693 | (+1-514) 335 1691 |
| MSC CANADA WEST | (+1-604) 324 6900 or 1-800 363 0693 | (+1-604) 258 9343 |
| MSC CZECH REPUBLIC | (+420) 566 624 336 | (+420) 566 626 240 |
| MSC FRANCE | (+33) 04 50 65 72 81 | (+33) 04 50 65 71 45 |
| MSC GERMANY | (+49) 08033 305163 | (+49) 08033 305169 |
| MSC HOLLAND | (+31) 049334 1674 | (+31) 049334 2550 |
| MSC ITALY | (+39) 03 5499 3975 | (+39) 03 5499 3912 |
| MSC JAPAN | (+81) 04 8997 4501 | (+81) 04 8997 2701 |
| MSC NEW ZEALAND | (+64) 4 528 3608 | (+64) 4 528 3601 |
| MSC POLAND | (+48) 07137 21 570 or (+48) 07132 19 690 | (+48) 07132 78 092 |
| MSC SPAIN - PORTUGAL | (+34) 93 729 24 74 | (+34) 93 729 04 93 |
| MSC SWITZERLAND | (+41) 041 784 12 78 | (+41) 041 784 12 73 |
| MSC UK | (+33) 04 50 65 72 88 | (+33) 04 50 65 71 45 |
| MSC USA | (+1-888) 466 28 42 | (+1-978) 373 1113 |

CUSTOMER SERVICE