cross

A NEW GENERATION OF E-BIKES

BICYCLE USER MANUAL
Translation of the original
operating instructions
EN 15194 and EN 17404

Congratulations on the purchase of your new CROSS e-bike. Discover freedom on two wheels. No matter whether for the city, off-road or long tours, your e-bike offers the highest quality, maximum comfort and the latest state-of-the-art technology.

Read this CROSS manual thoroughly before setting off for your first ride.

ATTENTION!
Read pages 5 to 20 before your first ride!
Perform the functional check on pages 21 to 24 before every ride!


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ROCKET RON

COMPONENTS

Frame:

- ⓐ Top tube
- ⓑ Down tube
- ⓒ Seat tube
- ⓓ Rear stay
- ⓔ Chainstay
- ⓕ Head tube

Suspension fork:

- Ⓐ Fork crown
- Ⓑ Stanchion tube
- Ⓒ Lower leg
- Ⓓ Dropout

- Ⓘ Motor/drive unit
- Ⓘⓘ Rechargeable battery

1 Saddle
2 Seat post
3 Seat post clamp
4 Rear brake
5 Cassette sprockets
6 Kickstand
7 Rear derailleur
8 Chain
9 Pedal
10 Crank
11 Handlebar
12 Brake lever
13 Stem
14 Shifter
15 Headset
16 Mudguard
17 Valve
18 Front brake
19 Brake disc/rotor
20 **Wheel:**
21 Quick-release/ thru axle
22 Spoke
23 Rim
24 Tyre
25 Hub

Pay particular attention to the following symbols:

⚠ WARNING

This symbol indicates a hazardous situation which could result in death or serious injury – if the relevant operational instructions are not followed or if the relevant protective measures are not taken.

⚠ CAUTION

This symbol indicates a hazardous situation which could result in minor or moderate injury – if the relevant operational instructions are not followed or if the relevant protective measures are not taken.

NOTICE

This symbol is used to address practices not related to physical injury – which may, however, result in damage to property and the environment.

SAFETY INSTRUCTIONS

This symbol indicates specific safety-related instructions or procedures about how to handle the product or refers to a section in the operating instructions that deserves your particular attention.

The described possible consequences will not be repeated in the translation of the original CROSS operating instructions for CROSS EPACs/EAPCs/e-MTBs every time one of the symbols appears.

NOTES ON THIS TRANSLATION OF THE ORIGINAL CROSS OPERATING INSTRUCTIONS

The illustrations show typical CROSS EPACs/EAPCs/e-MTBs (c+d) – one of these types corresponds to the CROSS EPAC/EAPC/e-MTB you bought. Today's EPACs/EAPCs come in various types that are designed for specific uses and equipped accordingly.

This CROSS manual is not intended to help you assemble a CROSS EPAC/EAPC/e-MTB from individual components, to repair it or to make a partly assembled CROSS EPAC/EAPC/e-MTB ready-for-use!

For other than the shown or designated EPAC/EAPC/e-MTB types this translation of the original CROSS operating instructions is not applicable.

Technical details in the text and illustrations of the translation of the original CROSS operating instructions are subject to change.

This translation of the original CROSS operating instructions complies with the requirements of the standards EN ISO 4210-2, EN 15194 Cycles – Electrically power assisted cycles – EPAC, EN 17404 (e-MTBs) in the respective current version as well as with the Regulation on Machinery 2023/1230/EC.

c

Without lighting
not suitable for use on public roads!

d

Without lighting
not suitable for use on public roads!

This translation of the original CROSS operating instructions is subject to European law. If the CROSS EPAC/EAPC/e-MTB is delivered to countries outside Europe, supplementary operating instructions have to be provided by the manufacturer.

This translation of the original CROSS operating instructions includes instructions as to the characteristics of CROSS EPACs/EAPCs/e-MTBs and bicycle technology in general. It forms a system together with the drive system manufacturer's system instructions that you received with your CROSS EPAC/EAPC/e-MTB.

Also observe the manuals of the component manufacturers possibly enclosed.

Bicycles with drive support designated as EPAC bicycles in the European standards EN 15194 and EN 17404 (e-MTBs) are referred to as CROSS EPAC/EAPC/e-MTB in this translation of the original CROSS operating instructions. For a precise description of the different EPAC/EAPC types see the chapter **"Intended Use"**.

SAFETY INSTRUCTIONS

Keep this translation of the original CROSS operating instructions for future reference and hand it over to the respective user, in case you sell, lend or pass on the CROSS EPAC/EAPC/e-MTB otherwise.

For the sake of better legibility, the male form is used with personal names and personal nouns throughout these operating instructions. The terms in question principally apply to all genders in the spirit of equal treatment. The abbreviated language form is used solely for editorial reasons and does not represent any value judgement.

Edition 5.1, September 2024

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GENERAL SAFETY INSTRUCTIONS

Dear CROSS Customer,

In purchasing this CROSS EPAC/EAPC/e-MTB (e) you have chosen a product of high quality and technology. Your new CROSS EPAC/EAPC/e-MTB has been assembled from carefully designed and manufactured parts with expertise. It has been fully assembled and subjected to a functional check by your CROSS dealer. So you can pedal with joy and a secure feeling from the very first metres and enjoy the tailwind from the auxiliary drive.

This CROSS manual contains many tips for the operation of your CROSS EPAC/EAPC/e-MTB, and a lot of interesting facts about bicycle and EPAC/EAPC technology, maintenance and care.

Read this CROSS manual thoroughly. We are sure that even if you have been cycling (bicycle or EPAC/EAPC) all your life you will find useful and detailed information. In particular the EPAC/EAPC technology has developed bicycles at a rapid pace in recent years (f). Therefore, before setting off on your new CROSS EPAC/EAPC/e-MTB, be sure to read at least the chapters **"Intended Use"** and **"Before Your FIRST Ride"**.

In order to have fun and to be safe during cycling, be sure to carry out the functional check described in the chapter **"Before EVERY Ride"** before setting off on your CROSS EPAC/EAPC/e-MTB.

Even a manual as big as an encyclopaedia could not describe any possible combination of EPAC/EAPC models and components or parts on the market. Therefore, this CROSS manual together with the system instructions of the drive system manufacturer focus on your newly purchased CROSS EPAC/EAPC/e-MTB and standard components and provide useful information and warnings.

When carrying out the adjusting and maintenance work (g) described in detail, be aware that the instructions and notes exclusively refer to this CROSS EPAC/EAPC/e-MTB. The tips are not applicable to other EPAC/EAPC or e-MTB types. As bicycles come in a wide variety of designs with frequent model changes, the described operations may require complementary information. Be sure to also observe the manuals of the component suppliers (h) that you may have obtained from your CROSS dealer.

Be aware that these instructions may require further explanation, depending on the experience and/or skills of the person doing the work. For some jobs you may require additional (special) tools or supplementary instructions. This CROSS manual cannot teach you the skills of a bicycle mechanic. If you have the slightest doubt ask your CROSS dealer.

e

Without lighting
not suitable for use on public roads!

f

g

h

Be sure to always ride carefully in traffic and on roads and observe the traffic rules so that you do not endanger yourself or others. Before you set off, let us point out a few things to you that are very important to every cyclist: Never ride without a properly adjusted helmet and without glasses **(a)** and take care to always wear suitable, bright clothing. As a minimum you should wear straight cut trousers or use trouser clips and shoes **(b)** fitting the pedal system.

This CROSS manual cannot teach you how to ride a CROSS EPAC/EAPC/e-MTB. Be aware that riding a CROSS EPAC/EAPC/e-MTB is a potentially dangerous activity, that may be especially dangerous when riding on public roads. You should therefore always be able to keep your CROSS EPAC/EAPC/e-MTB under control. Be aware from the moment you set off that you ride at a higher speed. Always keep this fact in mind and ride considerately!

Like in any sport, you can injure yourself when riding a CROSS EPAC/EAPC/e-MTB. When you get on a CROSS EPAC/EAPC/e-MTB you should be aware of this danger and accept it. Always keep in mind that CROSS EPACs/EAPCs/e-MTBs do not have the safety devices of a car (e.g. bodywork, ABS, airbag). Therefore, always ride carefully and respect the other road and trail users.

Never ride under the influence of drugs, medication, alcohol or when you are tired. Do not ride with a second person on your CROSS EPAC/EAPC/e-MTB and always keep both hands on the handlebar. Observe the legal regulations for the off-road use of CROSS EPACs/EAPCs/e-MTBs. These regulations differ in the different countries.

Respect nature when riding through the forest and meadows. Be sure to use your CROSS EPAC/EAPC/e-MTB only on signposted, well maintained trails and hard-surface roads. Always bear in mind that you travel rapidly and quietly. Do not startle pedestrians or other cyclists. Always make others aware of your presence well ahead of time and by ringing your bell or make use of the brakes so as to avoid accidents. Make yourself familiar with your CROSS EPAC/EAPC/e-MTB.

First we would like to familiarise you with the components of your CROSS EPAC/EAPC/e-MTB. Unfold the cover of the translation of the original CROSS operating instructions. There you will find one exemplary CROSS EPAC/EAPC/e-MTB showing all necessary components. Leave the page unfolded as you read so that you can easily locate the components as they are referred to in the text (see also chapter **"Component description"**).

⚠ WARNING

For your own safety, never do any adjusting or maintenance work on your CROSS EPAC/EAPC/e-MTB unless you feel absolutely sure about it. If you are in doubt or if you have any questions, contact your CROSS dealer.

Displays of Different Manufacturers

1. Level/mode of assistance
2. State of charge
3. Current speed
4. Average speed
5. Gear
6. Time
7. Total kilometres/miles

COMPONENT DESCRIPTION

Frame:
- (a) Top tube
- (b) Down tube
- (c) Seat tube
- (d) Rear stay
- (e) Chainstay
- (f) Head tube
- (g) Rear shock

Suspension fork:
- (A) Fork crown
- (B) Stanchion tube
- (C) Lower leg
- (D) Dropout

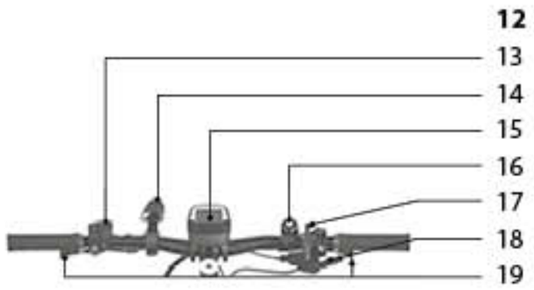
- (I) Motor/drive unit
- (II) Rechargeable battery

1 Saddle
2 Seat post
3 Height-adjustable seat post/ dropper post
4 Seat post clamp
5 Rear brake
6 Cassette sprockets
7 Rear derailleur
8 Kickstand
9 Chain
10 Pedal
11 Crank

12 Handlebar:
13 Control unit
14 Front lamp
15 Display
16 Bell
17 Remote control lever dropper post
18 Shifter
19 Brake lever

20 Stem
21 Headset
22 Mudguard
23 Suspension fork
24 Front brake
25 Valve
26 Rotor/brake disc

Wheel:
27 Quick-release/thru axle
28 Spoke
29 Rim
30 Tyre
31 Hub



E-MTB Fully

E-MTB Hardtail

INTENDED USE

CROSS EPACs/EAPCs/e-MTBs are on the one hand available in different speed and performance classes and on the other hand in different categories with regard to their possible use in the terrain.

Categories (Suitability for Type of Terrain)

Note that each type of bicycle, referred to as **category** in the following, is designed for a specific use. Be sure to use your CROSS EPAC/EAPC/e-MTB (e) only according to its intended use, as it may otherwise not withstand the loads, fail and cause an accident with unforeseeable consequences! In addition, improper use will invalidate the warranty.

Ask your CROSS dealer to confirm the category to which your CROSS EPAC/EAPC/e-MTB belongs. Have a look at your e-MTB card.

The **maximum permissible overall weight** is specified on the type plate on the CROSS EPAC/EAPC/e-MTB or in the e-MTB card (f) in these operating instructions.

Category 3: e-cross-country, e-marathon (g) and e-touring mountain bikes

In general, this category includes hardtail and full-suspension mountain bikes with short travel (100–120 mm).

CROSS EPACs/EAPCs/e-mountain bikes and components of the category 3 are used for sports and competition rides with moderate to challenging technical trail features. CROSS EPACs/EAPCs/e-mountain bikes and components of this category are intended for rides on rough paths, uneven, unpaved roads as well as in difficult terrain and on undeveloped trails (h). Their use requires technical riding skills. Jumps may be performed up to a height of 60 cm.

However, less experienced riders may lack the proper technique when landing their jumps, which increases the forces acting on the equipment significantly, and thus the risk of damage and injuries. The participation in a driving technique course is recommended.

e

f

g

h

CROSS EPACs/EAPCs/e-mountain bikes and components of the category 3 are however not suitable for blocked terrain (a), higher jumps, etc. and higher category competitions.

CROSS EPACs/EAPCs/e-MTBs of this category should be inspected by your CROSS dealer at least according to the service and maintenance schedule.

Due to their design and equipment, EPACs/EAPCs/e-mountain bikes of the category 3 are generally not intended to be used on public roads. Prior to use on public roads, these bikes must be equipped according to the respective rules (lighting system, bell). Observe the traffic rules when riding on public roads. For more information see the chapter **"Legal Requirements for Riding on Public Roads"**.

⚠ WARNING

CROSS EPACs/EAPCs/e-MTBs of the category 3 are not suitable for use on blocked terrain (b), tricks, stair riding, etc., training and competitive use in the categories freeride, dirt, downhill as well as hardest freeriding, extreme downhill, dirt jump, slope style or very aggressive or extreme riding, etc.

Category 4: e-enduro and e-all mountain bikes (c+d), e-trail bikes

In general, this category includes full-suspension mountain and trail bikes with medium travel (130–160 mm).

CROSS EPACs/EAPCs/e-mountain bikes and components of the category 4 are used for sports and competition rides with very challenging trail features. CROSS EPACs/EAPCs/e-mountain bikes and components of this category are intended for rides on uneven, rough and partly blocked paths and unpaved trails at speeds less than 40 km/h (24.9 mph). Jumps may be performed up to a height of 120 cm.

CROSS EPACs/EAPCs/e-mountain bikes and components of the category 4 are however not suitable for regular and long-term use in bike parks and for higher category competitions.

However, less experienced riders may lack the proper technique when landing their jumps, which increases the forces acting on the equipment, and thus the risk of damage and injuries. The participation in a driving technique course is recommended.

a

b

c

Without lighting
not suitable for use on public roads!

d

CROSS EPACs/EAPCs/e-MTBs of this category should be inspected by your CROSS dealer more often than indicated according to the service and maintenance schedule.

Due to their design and equipment, CROSS EPACs/EAPCs/e-mountain bikes of the category 4 are generally not intended to be used on public roads. Prior to use on public roads, these bikes must be equipped according to the respective rules (e) (lighting system, bell). Observe the traffic rules when riding on public roads. For more information see the chapter **"Legal Requirements for Riding on Public Roads"**.

⚠ WARNING

CROSS EPACs/EAPCs/e-MTBs of category 4 are not intended for regular and permanent use in bike parks. They are neither suitable for training and competitive use in the categories freeride, dirt, downhill as well as hardest freeriding, extreme downhill, dirt jump, slope style or very aggressive or extreme riding.

Category 5: e-freeride and e-downhill mountain bikes

CROSS EPACs/EAPCs/e-mountain bikes and components of the category 5 are used for extreme sports, e.g. in bike parks (f), on specific downhill trails and in competitions. CROSS EPACs/EAPCs/e-mountain bikes and components of this category are intended for extreme jumps (g) or descents on unpaved, severely blocked trails at speeds of more than 40 km/h (24.9 mph). Jumps may also be performed above a height of 120 cm.

This kind of riding is, however, extremely dangerous and introduces unforeseeable forces in a bike which can overstress the frame, the fork or the components.

When you decide to ride off-road on an e-freeride and e-downhill mountain bike, you have to take appropriate safety measures, such as more frequent servicing of your bike and the replacement of the equipment. You should also wear comprehensive safety equipment, such as a full-face helmet (h), protection pads and body protectors.

e

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h

Due to the extreme loads, CROSS e-MTBs of the category 5 should be checked, adjusted and, if necessary, repaired very carefully after each use and especially after each fall.

Due to their design and equipment, CROSS EPACs/EAPCs/e-mountain bikes of the category 5 are generally not intended to be used on public roads. Prior to use on public roads, these bikes must be equipped according to the respective rules (lighting system (a), bell). Observe the traffic rules when riding on public roads. For more information see the chapter **"Legal Requirements for Riding on Public Roads"**.

⚠ WARNING

- ***Note: During cycling you must not hold onto a moving vehicle or trailer. Keep both hands on the handlebar. Only take your feet off the pedals, if required by the condition of the road. Also bear in mind that riding with headphones is in some countries allowed as long as the acoustic perception is not impaired. Inform yourself about the law situation in the country where you use your CROSS EPAC/EAPC/e-MTB.***

⚠ WARNING

- ***Due to the rather considerable loads, CROSS EPACs/EAPCs/e-MTBs of category 5 have to be checked for possible damage after every ride. Be sure to have your bicycle serviced at your CROSS dealer at least every 50 hours of use (b).***
- ***For your own safety, do not overestimate your riding skills. Note that though looking easy the riding manoeuvres of a professional are hazardous to your life and limb. Be sure to always wear adequate protective equipment.***
- ***Be sure to use your CROSS EPAC/EAPC/e-MTB only for its intended purpose, as it may otherwise not withstand the loads and fail (c+d). Risk of accident!***
- ***Regular maintenance of your CROSS EPAC/EAPC/e-MTB is essential for its suitability and crucial for its safety. You as owner are the only one who knows how often you use your CROSS EPAC/EAPC/e-MTB, where you use it and how hard you do. It is therefore your responsibility, to have regular servicing and maintenance carried out. For more information see the chapter "Service and Maintenance Schedule" or contact your CROSS dealer.***

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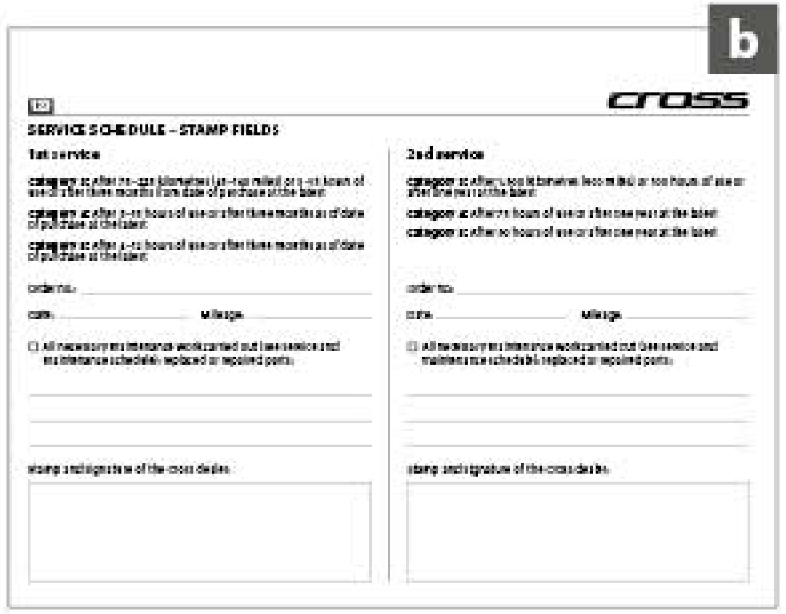
b



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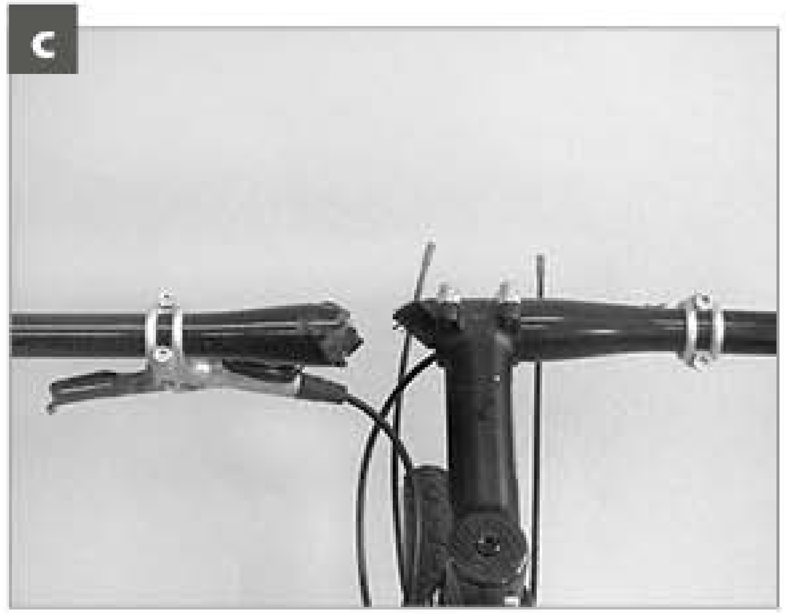

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EPAC/EAPC/E-MTB Classes

1. **EPACs** (**E**lectrically **P**ower **A**ssisted **C**ycle**s**), in the UK also referred to as **EAPCs** (**E**lectrically **A**ssisted **P**edal **C**ycle**s**), are bicycles (e) with auxiliary motor that only switches on when the pedals are moved by the rider. When you stop pedalling, the motor switches off. The continuous rated power of EPACs/EAPCs/e-MTBs with a maximum design speed of 25 km/h (15.5 mph) is 250 Watt. The starting or pushing aid (f) provides assistance during pushing or when doing a hill start, even without pedalling, up to a speed of 6 km/h / 3.7 mph.

   The legal regulations for riding an EPAC/EAPC with regard to driving licence, registration, type approval, requirement to wear a helmet, insurance, regulations on the use of cycle lanes, etc. are listed in the **"Overview on EPACs/EAPCs/e-MTBs, Speed Pedelecs and 'Twist and Gos' – Legal Regulations in Great Britain"** at the end of this chapter. Do not confuse your CROSS EPAC/EAPC/e-MTB with a "speed pedelec" 45 km/h (28 mph, see item 2.).

Today, you find nearly all types of bicycles also as electric bicycles. The bicycle types are subdivided in different categories

Be sure to read the chapters **"Intended Use"** and **"Before Your First Ride"** in full. There you will find detailed information on the use of the bicycles of the respective category.

⚠ WARNING

Do not modify or manipulate ("tuning") your CROSS EPAC/EAPC/e-MTB. Risk of accident! Modifications and manipulations (e.g. dongels, etc.) will render the warranty void and result in a loss of the private liability insurance cover. The CROSS EPACs/EAPCs/e-MTBs are then no longer approved for use on public roads and on forest trails (according to the legal requirements for riding on public roads). For more information read "Risks related to the tuning of e-bikes 25 (15.5)/EPACs/EAPCs" in the chapter "Guidelines".

NOTICE

We recommend that you take out private liability insurance. Make sure that your insurance provides cover for damage caused while riding a CROSS EPAC/EAPC/e-MTB. Contact your insurance company or agency.

SAFETY INSTRUCTIONS

The regulations and rules for EPACs/EAPCs and speed pedelec are continuously revised. Read the daily press to keep yourself informed about current legislative changes.

More information on the approval of using trailers (g) and child seats (h) on your CROSS EPAC/EAPC/e-MTB is provided in the e-MTB card.

e

Without lighting not suitable for use on public roads!

f

g

h

2. **Speed pedelecs** (a) are bicycles with an auxiliary motor which provides assistance to the rider even beyond a speed of 25 km/h to max. 45 km/h (15.5 mph to max. 28 mph), as long as you continue pedalling. Without pedalling a speed pedelec provides assistance to a maximum speed of 20 km/h (12.4 mph).

   In road traffic speed pedelecs are no bicycles, but motor vehicles with far-reaching impacts.

   The legal regulations for riding a speed pedelec with regard to driving licence, registration, type approval, requirement to wear a helmet, insurance, regulations on the use of cycle lanes, etc. are listed in the **"Overview on EPACs/EAPCs/e-MTBs, Speed Pedelecs and 'Twist and Gos' – Legal Regulations in Great Britain"** at the end of this chapter. Speed pedelecs are considered motor vehicles and therefore subject to strict regulations relating to the replacement of components and changes.

   One-way streets with signs stating it is permitted for cyclists to ride the wrong way down are not open for speed pedelec riders. Roads which are closed for motor vehicles, motor cycles and mopeds, must neither be used by speed pedelecs.

   If you ride a speed pedelec in the UK, wearing a motorcycle helmet (b) is compulsory.

Today, many types of bicycles are also available as electric speed bicycles which belong to different categories. Be sure to read the chapters **"Intended Use"** and **"Before Your First Ride"** in full. There you will find detailed information on the use of the bicycles of the respective category.

⚠ WARNING

Do not modify or manipulate ("tuning") your speed pedelec. Risk of accident! Modifications and manipulations will render the warranty void and result in a loss of the private liability insurance cover. The speed pedelecs are then possibly no longer approved for use on public roads.

SAFETY INSTRUCTIONS

The regulations and rules for EPACs/EAPCs and speed pedelec are continuously revised. Read the daily press to keep yourself informed about current legislative changes.

a

b

c

d

Overview on EPACs/EAPCs/e-MTBs, Speed Pedelecs and 'Twist and Gos' – Legal Regulations in Great Britain[1]

	EAPC (also with pushing aid)	**Speed pedelec**	**'Twist and go' EAPC**
Pedal assistance up to max. km/h (mph)	25 km/h (15.5 mph) MDS[2] without pedal assistance 6 km/h (3.7 mph)	45 km/h / 28 mph (with pedalling) 20 km/h / 12.4 mph (without pedalling) MDS[2]	Propulsion without pedalling, with throttle
Requirement to wear a helmet	recommended	compulsory (motorcycle helmet)[3]	compulsory (protective helmet)[3]
Rear-view mirror (c)	no	yes	yes
Horn	no	yes	yes
Driving licence	no	yes (cat. AM)	yes (cat. AM)
Registration or type aproval	no, however UKCA mark and UKNI mark (North Ireland) and/or CE mark (until 2024/12)[4]	yes, tax disc, number plate, MOT certificate	yes, tax disc, number plate, MOT certificate
Insurance	no	yes	yes
Riding on cycle lanes permitted	**in town:** yes **out of town:** yes	**in town:** no **out of town:** no	**in town:** no **out of town:** no
Riding on forest trails permitted	yes	no	no
Vehicle class	bicycle	moped	moped
Legal age	14 years	16 years	16 years
Child seat	yes[5]	forbidden (d)	forbidden (d)
Child trailer	yes[5]	forbidden	forbidden

[1] In accordance with www.gov.uk/electric-bike-rules
The regulations and rules are continuously revised. Read the daily press to keep you informed about current legislative changes.

[2] MDS – maximum design speed

[3] All helmets worn must meet either the British Standard BS 66558:1985 and carry the BSI Kitemark or the UNECE Regulation 22.05

[4] UKCA (UK conformity assessed) plus UKNI where North Ireland is involved, see www.gov.uk/guidance/using-the-ukca-marking

[5] For many bike models this legal authorisation is restricted. Observe the e-MTB card.

Last update 2024/01

⚠ WARNING

Tuning, i.e. improvement in performance and speed, is not a trivial offence, but has far-reaching consequences ranging from loss of insurance cover, prohibition of use on public roads and paths, to possible material failure due to overload, see "Risks related to the tuning of e-bikes 25 (15.5)/EPACs/EAPCs" in the chapter "Guidelines".

BEFORE YOUR FIRST RIDE

1. Your CROSS EPAC/EAPC/e-MTB is designed for a **maximum permissible overall** weight including the rider, the luggage, the CROSS EPAC/EAPC/e-MTB and the child seat or trailer load, if permitted. The maximum permissible overall weight is specified on the type plate on the CROSS EPAC/EAPC/e-MTB or in the e-MTB card (a) in these operating instructions. If you are in doubt, contact your CROSS dealer.
2. If you want to use your bicycle on public roads, it has to comply with the respective legal requirements, in particular as regards the **lighting**. These requirements differ from country to country. The equipment of your CROSS EPAC/EAPC/e-MTB is, therefore, not necessarily complete. Ask your CROSS dealer for the laws and regulations applicable in your country or in the country where you intend to use the CROSS EPAC/EAPC/e-MTB. Have your CROSS EPAC/EAPC/e-MTB equipped accordingly (b), before using it on public roads.
3. Have you ever ridden a CROSS EPAC/EAPC/e-MTB? Note the particular **riding characteristics of this revolutionary hybrid drive concept** (c+d). Set off for your first ride by selecting the lowest level of drive assistance. Slowly approach the potential of your CROSS EPAC/EAPC/e-MTB in an area free of traffic.

For more information in this regard, read the chapter **"Useful Tips for Riding a CROSS EPAC/EAPC/e-MTB"**.

⚠ WARNING

- ***Do not hang any bags or other heavy or big objects (such as umbrellas) to the handlebar of your CROSS EPAC/EAPC/e-MTB. This can result in a loss of control!***
- ***Strictly observe the category to which your CROSS EPAC/EAPC/e-MTB belongs. From the category you can conclude the surface on which you are allowed to ride and for which riding actions your CROSS EPAC/EAPC/e-MTB is suitable. The categories are described in the chapter "Intended Use" and in the e-MTB card.***
- ***Do not wear long skirts, wide trousers or ponchos and do not hang long cords, ribbons or the like on your CROSS EPAC/EAPC/e-MTB during the ride. There is the risk that they get caught in the wheels or in the drive. Risk of accident!***

a


E-MTB CARD

Intended Use

b

c

d

⚠ CAUTION

The weight or the weight distribution on EPACs/EAPCs/e-MTBs differs significantly from that on bicycles without drive system. A CROSS EPAC/EAPC/e-MTB is clearly heavier than a bicycle without drive system. This makes it difficult to park, push, lift and carry the CROSS EPAC/EAPC/e-MTB. Bear this also in mind when loading your CROSS EPAC/EAPC/e-MTB into a car and unloading it or when mounting it on a bicycle carrier system (e).

4. **The rechargeable battery of your CROSS EPAC/EAPC/e-MTB must be charged** before you set off for the first time (f-h). Are you familiar with the handling and mounting of the rechargeable battery? Before you set off for the first time, check that the battery is properly mounted, that it has engaged audibly and that it is locked.

   For more information, read the chapter **"Safe Handling of the Rechargeable Battery"**.

⚠ WARNING

We recommend that you charge your battery during the day and only in dry rooms which have a smoke or a fire detector; but keep it out of your bedroom. Place the battery during the charging process on a big, non-inflammable base made e.g. of ceramics, glass, cement or stone!

⚠ WARNING

Charge your battery only with the supplied charger. Do not use the charger of any other manufacturer, not even when the connector of the charger matches your rechargeable battery. The rechargeable battery can heat up, catch fire or even explode!

Do not charge and park the CROSS EPAC/EAPC/e-MTB in the blazing sun. Temperatures above 40 °C (104 °F) may result in a failure of the battery.

SAFETY INSTRUCTIONS

Note that the rechargeable battery of some systems switches into the sleep mode after a few days of non-use. Information on how to wake up the battery is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha. If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

e

f

g

h

5. The **functions of your CROSS EPAC/EAPC/e-MTB** are operated with the buttons on the control element on the handlebar. Are you familiar with all functions and displays? Check whether you know the functions of all buttons **(a)**.

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

6. **Are you familiar with the brake system?** Have a look at the e-MTB card and check whether you can actuate the front brake with the same brake lever (right or left) you are used to. If this is not the case, have it modified by your CROSS dealer before you set off for the first time! Make sure the assignment of the brake levers to the brake is the same on all your bicycles.

   Modern brakes of CROSS EPACs/EAPCs/e-MTBs **(b+c)** may have a much stronger braking effect than your previous brake.

   Be sure to first practise using the brakes on a level, non-slip surface in an area free of traffic! With an e-MTB you also have to practise on loose surfaces.

   Slowly approach higher brake performances and speeds. For more information see the chapter **"Brake System"** and the enclosed operating instructions.

⚠ WARNING

- ***The brakes of your CROSS EPAC/EAPC/e-MTB are always more effective than the drive system. If you have problems with your drive (e.g. because it pushes you forward in front of a bend), stop pedalling and actuate both brakes of your CROSS EPAC/EAPC/e-MTB carefully.***
- ***Pulling the brake lever of the rear brake stops the motor/drive unit – Emergency stop/Emergency switching off!***

7. **Are you familiar with the type and functioning of the gears** **(d)**? Ask your CROSS dealer to explain the gear system to you and make yourself familiar with your new gears in an area free of traffic, if necessary. For more information see the chapter **"Gears"** and the enclosed operating instructions.

a

b

c

d

8. **Are both saddle and handlebar properly adjusted?** The saddle should be set to a height from which you can just reach the pedal in its lowest position with your heel. Check whether your toes reach to the floor when you are sitting on the saddle.

   Your CROSS dealer will be pleased to help you, if you are not happy with your seating position. For more information see the chapter **"Adjusting the CROSS EPAC/EAPC/e-MTB to the Rider"**.

⚠ CAUTION

In particular, make sure there is enough clearance between your crotch and the top tube (e) ***so that you do not hurt yourself, if you have to get off quickly.***

9. **If your CROSS EPAC/EAPC/e-MTB is equipped with clipless or step-in pedals** (f)**:** Have you ever tried the shoes they go with? Do not set off until you have practised engaging and disengaging the shoes from the pedals at standstill. Ask your CROSS dealer to explain the pedals to you. For more information see the chapter **"Pedals and Shoes"** and the enclosed operating instructions.

10. **If you have bought a CROSS EPAC/EAPC/e-MTB with suspension** (g), you should ask your CROSS dealer to properly adjust the chassis. Improperly adjusted suspension forks or suspension elements can result in malfunction or damage to the suspension elements. In any case, the riding behaviour deteriorates and you do not achieve maximum riding safety and riding pleasure.

    For more information see the chapters **"Suspension Forks"** (g) and **"Rear Shock"** (h). Further notes regarding full-suspension bikes and and suspension forks may be enclosed with these operating instructions.

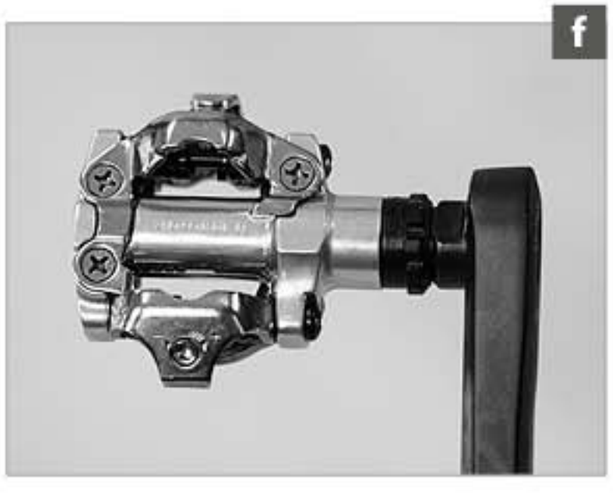
11. **Are parts of your CROSS EPAC/EAPC/e-MTB made of carbon?** Note that this material requires special care and must be used carefully. Read in any case the chapter **"Special Characteristics of Carbon"**.

⚠ WARNING

Be sure to use your CROSS EPAC/EAPC/e-MTB only for its intended purpose (category), as the CROSS EPAC/EAPC/e-MTB may otherwise not withstand the loads and fail. Risk of accident!

e

f



g

h

⚠ WARNING

- *When getting on your CROSS EPAC/EAPC/e-MTB make sure not to step in the pedals until you sit in the saddle and have a firm grip on the handlebars or the pedal is at its lowest point when getting on. The motor assistance may switch on unexpectedly and result in an uncontrolled start of your CROSS EPAC/EAPC/e-MTB. Risk of accident!*
- *Be aware that the distance you need to stop may increase, when you are riding with your hands on bar ends (a). The brake levers are not in all gripping positions within easy reach.*
- *Note that in wet conditions the braking effect and the tyre grip may decrease considerably. Look well ahead when riding on wet roads and on loose ground and ride clearly slower than you would in dry conditions.*
- *A lack of practice when using step-in pedals or too much spring tension in the mechanism can lead to a very firm connection, from which you cannot quickly step out. Risk of accident!*

⚠ CAUTION

- *The A-weighted emission sound pressure level at the rider's ears is less than 70 dB(A).*

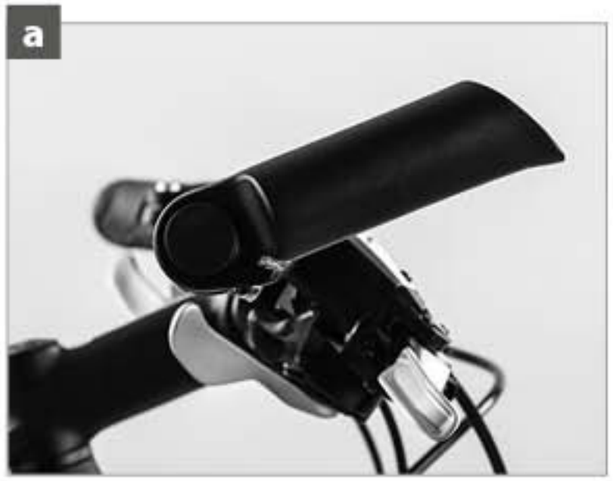
NOTICE

- *Note that not all CROSS EPACs/EAPCs/e-MTBs are equipped with a kickstand (b). Therefore, when parking your CROSS EPAC/EAPC/e-MTB, make sure it stands safe and secure and is not at risk of toppling over or being knocked over. If your CROSS EPAC/EAPC/e-MTB topples over, it can suffer from damage. Pull one of the brake levers and fix it with an elastic (c). The braking effect prevents the CROSS EPAC/EAPC/e-MTB from rolling away and from toppling over subsequently.*

SAFETY INSTRUCTIONS

- *Check with your insurers that the CROSS EPAC/EAPC/e-MTB as well as the storage and charging of lithium-ion batteries are covered by your household and fire insurance. Read the daily press to keep yourself informed about current legislative changes.*
- *We recommend that you take out private liability insurance. Make sure that coverage for this kind of damage is provided by your insurance. Contact your insurance company or agency.*
- *Prior to pulling a trailer (d) with your CROSS EPAC/EAPC/e-MTB or mounting a child seat, have a look at the e-MTB card and contact your CROSS dealer.*

a



b

c

d

BEFORE EVERY RIDE

Your CROSS EPAC/EAPC/e-MTB has undergone numerous tests during production and a final check has been carried out by your CROSS dealer.

Nevertheless, be sure to check the following points before every ride to exclude any malfunctioning that may be due to the transport of your CROSS EPAC/EAPC/e-MTB or to modifications a third person may have performed on your CROSS EPAC/EAPC/e-MTB during a standing time:

1. Are the **quick-release levers** (e), **thru axles or the bolts** of the front and rear wheel, the seat post and other components properly closed?

   For more information see the chapter **"How to Use Quick-Releases and Thru Axles"** and the enclosed operating instructions.

⚠ CAUTION

Remove, as far as possible, the rechargeable battery or the display before doing any work on your CROSS EPAC/EAPC/e-MTB (e.g. servicing, repairs, assembly, maintenance, work on your drive, etc.). Activating the drive systems unintentionally bears the risk of injury!

2. **Is the rechargeable battery tight in its holder** (f) and properly locked up (g)? Never set off with a loose and unlocked battery.

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

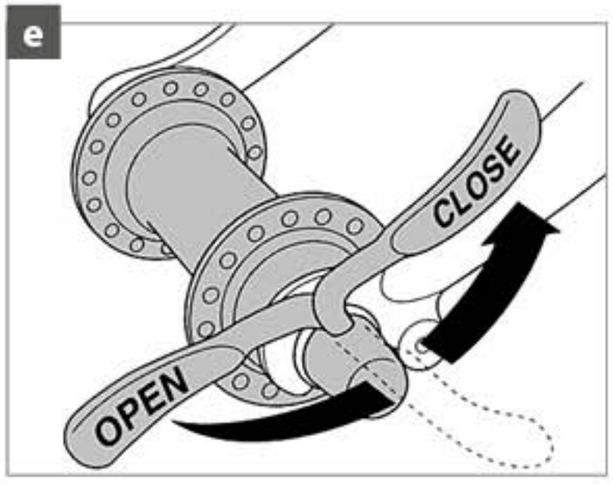
   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

3. **Does the display of the control element and the cycle computer on the handlebar show all values** (h)**?** Is there any error message or warning on the display? Check the values are correct before every ride. Do not set off on your CROSS EPAC/EAPC/e-MTB when the control element shows a warning.

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

e



f

g

h

4. **Are the plug connections on the rechargeable battery, on the control element on the handlebar and on the drive** (a+b) **properly connected?**

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

5. **Is your battery fully charged?** Remember to fully recharge the battery after each longer ride (e.g. less than 50 % charged). Modern lithium-ion batteries have no memory effect. But leaving your CROSS EPAC/EAPC/e-MTB with a state of charge less than 50 % at short-term (e.g. overnight) will not impair the battery. However, you should not wait until the battery is fully discharged!

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

6. **Are the tyres in good condition and do they have sufficient pressure** (c)**?** Note that a CROSS EPAC/EAPC/e-MTB weighs heavier and that your usual tyre pressure may be insufficient. A higher pressure gives a better riding stability and reduces the risk of a puncture. The minimum and maximum pressure (in bar or PSI) is indicated on the tyre side.

   For more information see the chapter **"Wheels and Tyre Equipment"**and the enclosed operating instructions.

7. **Let both wheels rotate freely to check whether the rims run true.** In doing so watch the gap between frame and tyre in the case of wheels with disc brakes. Poor concentricity can also be an indication of laterally burst tyres, broken axles or torn spokes.

   For more information see the chapter **"Wheels and Tyre Equipment"**and the enclosed operating instructions.

8. **Test the brakes at standstill** by firmly pulling the brake levers towards the handlebar (d). You should not be able to pull the lever all the way to the handlebar. If you have hydraulic brakes, check the hydraulic brake hoses for oil or brake fluid leaks! Also check the thickness of the brake pads.

With disc brakes you should have a stable pressure point at once. If a stable pressure point can only be felt after repeated actuation of the brake lever, have the CROSS EPAC/EAPC/e-MTB checked by your CROSS dealer before your next ride.

For more information see the chapter **"Brake System"** and the possibly enclosed operating instructions.

9. **Let your CROSS EPAC/EAPC/e-MTB bounce on the ground from a low height.** If there is any rattling, check where it comes from. Check the bearings, the bolts and the proper seat of the battery, if necessary.

10. **If you want to ride on public roads, make sure your CROSS EPAC/EAPC/e-MTB is equipped according to the regulations of the respective country** (e)**.** Riding without lights and reflectors in poor visibility and in the dark is very dangerous.

You will be seen too late or not at all by other road and trail users. If you ride on public roads, you always need an approved lighting system. Switch on the light as soon as it gets dark.

For more information see the chapter **"Legal Requirements for Riding on Public Roads"**.

11. **If your CROSS EPAC/EAPC/e-MTB has suspension** (f)**, carry out the following check:** Lean on your CROSS EPAC/EAPC/e-MTB and check that the spring elements retract and extend as usual (g).

For more information see the chapters **"Suspension Forks"**, and **"Rear Shock"** as well as the possibly enclosed operating instructions.

12. **If necessary, make sure the kickstand is fully raised** before you set off. **Risk of accident!**

13. **Do not forget to take a high quality folding** (h)**, D- or chain lock with you on your ride.** The only way to effectively protect your CROSS EPAC/EAPC/e-MTB against theft is to connect it to an immovable object.

⚠ WARNING

Do not use your CROSS EPAC/EAPC/e-MTB, if it fails at one of these points! Riding a defective CROSS EPAC/EAPC/e-MTB can result in serious accidents! If you are in doubt or if you have any questions, contact your CROSS dealer.

e

f

Without lighting not suitable for use on public roads!

g

h

⚠ WARNING

- *Improperly closed fastenings (a) can cause components of the CROSS EPAC/EAPC/e-MTB to come loose and result in severe accidents!*
- *The drive is free of vibrations. Due to the influences of the ground and the forces you introduce into the CROSS EPAC/EAPC/e-MTB, your CROSS EPAC/EAPC/e-MTB is subjected to considerable loads. Due to these dynamic loads, the different parts react with wear and fatigue. Check your CROSS EPAC/EAPC/e-MTB regularly for signs of wear, scratches, deformations, colour changes or incipient cracks (b). Components which have reached the end of their service life may suddenly fail. Bring your CROSS EPAC/EAPC/e-MTB regularly to your CROSS dealer so that he can replace the components in question if necessary.*
- *Be aware that the distance you need to stop increases, when you are riding with your hands on bar ends (c). The brake levers are not in all gripping positions within easy reach.*

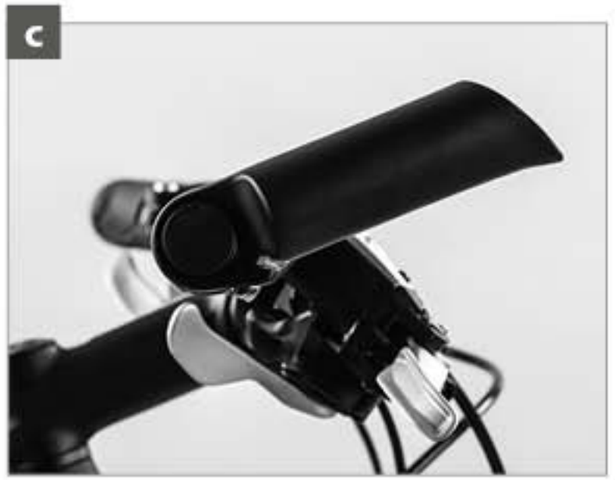
NOTICE

- *Remove, if possible, the display (d) when parking the CROSS EPAC/EAPC/e-MTB. This is a first step to protect the CROSS EPAC/EAPC/e-MTB against theft and it cannot be used ad hoc with drive assistance. In addition, lock your CROSS EPAC/EAPC/e-MTB to an immovable object.*

a

b

c



d

AFTER AN ACCIDENT

After an accident or if your CROSS EPAC/EAPC/e-MTB has toppled over, carry out all functional checks further below before you continue your ride.

Deformed components can break without previous warning. They must not be repaired, i.e. straightened, because even then there is an imminent risk of breakage. This applies in particular to the fork, the handlebar, the stem, the cranks, the seat post and the pedals. When in doubt, it is always recommendable to have these components replaced, as your safety comes first. Ask your CROSS dealer for help.

1. **Check the rechargeable battery** (e)**.** If the rechargeable battery is no longer properly in its holder or shows any damage, do not use your CROSS EPAC/EAPC/e-MTB any longer, at least not in the assistance mode. Switch off the motor/drive unit and the battery separately, if necessary. A damaged battery may cause short-circuits resulting in a sudden failure of the EPAC/EAPC assistance right at the moment when you need it.

   If the battery housing is damaged, contact your CROSS dealer immediately. Water or moisture may enter, causing short circuits or electric shocks. The rechargeable battery may catch fire or even explode!

2. **Check the display.** Are all values displayed as usual (f)? Do not use your CROSS EPAC/EAPC/e-MTB, if the display shows an error message or a warning. If necessary, switch off the system and wait ten seconds at least before you check it again. Do not set off on your CROSS EPAC/EAPC/e-MTB with motor assistance when a warning is displayed. In such a case, contact your CROSS dealer immediately.

   More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

   If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

3. **Check that the wheels are still firmly fixed in the dropouts** (g) and that the rims are still centred with respect to the frame or fork. Spin the wheels and observe the gap between frame and tyres.

For more information see the chapters **"How to Use Quick-Releases and Thru Axles"**, **"Brake System"** and **"Wheels and Tyre Equipment"** and the possibly enclosed operating instructions.

e

f

g

h

4. **Check that the handlebar and the stem are neither bent nor broken** and that they are level and upright. Make sure the stem is firmly fixed on the fork by trying to turn the handlebar relative to the front wheel (h p. 25). Briefly lean on the brake levers to make sure the handlebar is firmly fixed in the stem.

   Realign the components, if necessary, and gently tighten the bolts to ensure a reliable clamping of the components. You find the torque values on the components themselves, in the chapter **"Recommended Torque Values"** or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

   For more information see the chapters **"Adjusting the CROSS EPAC/EAPC/e-MTB to the Rider"**, **"Headset"** and the possibly enclosed operating instructions.

5. **Check that the chain still runs on the chainrings and the sprockets.** If your CROSS EPAC/EAPC/e-MTB dropped to the chain side, verify the proper functioning of the gears. Ask somebody to lift the CROSS EPAC/EAPC/e-MTB by the saddle and carefully shift through all the gears. Especially towards the lower gears, when the chain climbs onto the larger sprockets, you must pay attention to how far the rear derailleur approaches the spokes (a+b).

   If the rear derailleur or the dropouts/derailleur hanger are bent, the rear derailleur may collide with the spokes or the chain may slip over the chainrings. This can result in damage to the rear derailleur, the rear wheel and the frame. If necessary, check the function of the front derailleur, as a displaced front derailleur can throw off the chain, thus interrupting suddenly the drive of the CROSS EPAC/EAPC/e-MTB.

   For more information see the chapter **"Gears"** and the possibly enclosed operating instructions.

6. **Make sure the saddle is not out of alignment using the top tube or the bottom bracket shell** as a reference. If necessary, open the clamping, realign the saddle and retighten the clamping (c).

   For more information see the chapters **"How to Use Quick-Releases and Thru Axles"**, **"Adjusting the CROSS EPAC/EAPC/e-MTB to the Rider"** and the possibly enclosed operating instructions.

7. **Let your CROSS EPAC/EAPC/e-MTB bounce on the ground from a low height.** If there is any rattling, check where it comes from. Check the bearings, the bolts and the proper seat of the battery (d) and the connector (e+f), if necessary. Tighten loose bolted connections slightly, if necessary.

More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

8. **Finally, look over the whole CROSS EPAC/EAPC/e-MTB again** to detect any deformations, colour changes or cracks (g).

Be sure to only ride back very carefully by taking the shortest route, if your CROSS EPAC/EAPC/e-MTB passed all checks without any faults. Do not accelerate or brake hard and do not ride out of the saddle.

If you are in doubt about the performance of your CROSS EPAC/EAPC/e-MTB, have yourself picked up by car, instead of taking any risk. Once at home, you need to check your CROSS EPAC/EAPC/e-MTB thoroughly again. The damaged parts must be replaced. Ask your CROSS dealer for help. For more information about carbon components see the chapter **"Carbon – Important Information"**.

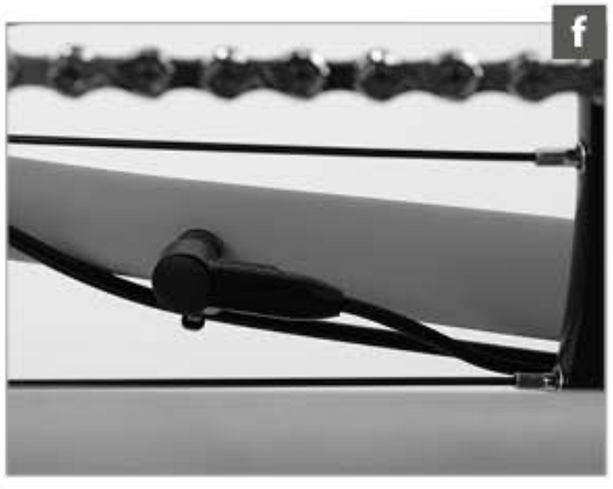
⚠ WARNING

Deformed components can break without previous warning. They must not be repaired, i.e. straightened, because even then there is an imminent risk of breakage. This applies in particular to the fork, the handlebar, the stem, the cranks, the seat post and the pedals. When in doubt, it is always recommendable to have these components replaced, as your safety comes first. Ask your CROSS dealer for help.

If your CROSS EPAC/EAPC/e-MTB is assembled with carbon components (h), it is imperative that you have your CROSS EPAC/EAPC/e-MTB checked by your CROSS dealer after an accident or similar incident. Carbon is an extremely strong material which combines high resistance with low weight. It is, however, one of the inherent properties of carbon that possible overstress may compromise the inner carbon-fibre structure without showing any visible deformation as is the case with steel or aluminium. A damaged component can fail without previous warning. Risk of accident!

NOTICE

After an accident or after your CROSS EPAC/EAPC/e-MTB has toppled over, make it a rule to check the functioning and in particular the limit stops of the rear derailleur.



USEFUL TIPS FOR RIDING A CROSS EPAC/EAPC/E-MTB

You can ride your CROSS EPAC/EAPC/e-MTB like a conventional bicycle. The unique riding experience, however, only starts when you activate the drive system (a), when the powerful motor/drive unit with its high torque provides you assistance all the more the stronger you pedal yourself.

Set off for your first ride by selecting the lowest level of drive assistance. Gradually get used to the additional propulsion. Slowly approach the potential of your CROSS EPAC/EAPC/e-MTB in an area free of traffic.

Practise typical riding situations such as starting and braking, tight corners and riding on narrow cycle paths and lanes. This is where a CROSS EPAC/EAPC/e-MTB clearly differs from a conventional bicycle.

⚠ WARNING

- ***The brakes of your CROSS EPAC/EAPC/e-MTB are always more effective than the drive system. If you have problems with your drive (e.g. because it pushes you forward in front of a bend), stop pedalling and slow down your CROSS EPAC/EAPC/e-MTB carefully.***
- ***Pulling the brake lever of the rear brake stops the motor/drive unit – Emergency stop/Emergency switching off!***

Riding with Drive Assistance

You can switch on and off the system at the buttons of the control element, the battery (b) or the handlebar (c). Furthermore, different assistance modes can be selected, the remaining capacity of the rechargeable battery is displayed and different functions of the cycle computer (d) can be selected, if necessary.

When switched on, the system is activated by pedalling and the drive assistance is available. Sensors measure your pedalling movements and control the fully automated drive assistance according to the selected assistance mode. The level of the additional propulsion depends on the assistance mode, your speed and possibly the amount of force applied to the pedals.

The assistance switches off when you reach a speed of more than 25 km/h (15.5 mph) (exception: with speed pedelec 45 km/h (28 mph)).

Keep in mind that you may have to change your riding habits:

Do not get on the CROSS EPAC/EAPC/e-MTB by placing one foot on the pedal and by trying to throw the other leg over the saddle. The CROSS EPAC/EAPC/e-MTB would set off suddenly. **Risk of accident!**

a

b

c

d

Stop pedalling earlier than you are used to before riding a turn or bend. Otherwise there may be too much propulsion and your cornering speed may be too high.

Do not allow yourself to always ride in a high gear, due to the powerful motor/drive unit. Shift gears frequently (e) as you might be used to from a conventional bicycle to make your contribution of moving forward as efficient as possible. Your cadence should always be in a smooth flow. In other words, you should pedal at more than 60 crank rotations per minute. Shift down before stopping.

Keep in mind that the other road and trail users are not yet used to the CROSS EPACs/EAPCs/e-MTBs and their higher speeds. Ride with this fact in mind and anticipate the actions of other road and trail users. Be aware that the speed you ride at will be clearly faster than you are used to. Therefore, keep these facts in mind and be ready to brake whenever an unclear or a possibly dangerous situation comes into your field of vision.

⚠ WARNING

- ***Do a test ride in an unfrequented area to make yourself familiar with the riding characteristics of your CROSS EPAC/EAPC/e-MTB (f) and the possibly higher speed and acceleration before riding on public roads. Risk of accident! Never ride without a helmet!***

⚠ WARNING

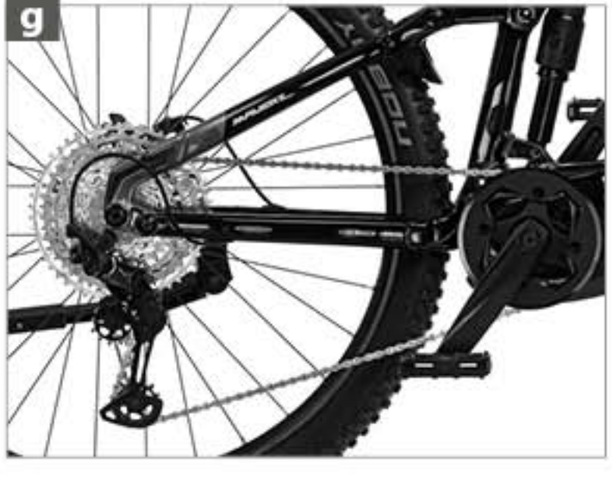
- ***When getting on your CROSS EPAC/EAPC/e-MTB make sure not to step in the pedals until you sit in the saddle and have a firm grip on the handlebars or that the pedal is at its lowest point when getting on. The motor assistance may switch on unexpectedly and result in an uncontrolled start of your CROSS EPAC/EAPC/e-MTB. Risk of accident!***
- ***Keep in mind that due to the higher drive power at the rear wheel (g) the risk of an accident increases with slippery roads (due to wetness, snow, gravel, etc.). This applies all the more when riding bends. Risk of accident!***
- ***Note that car drivers and other road and trail users may underestimate your speed. Always wear bright clothing. Therefore, always ride on public roads with this fact in mind and anticipate the actions of other road and trail users. Risk of accident!***
- ***Keep in mind that pedestrians do not hear you when you approach at high speed. Therefore, ride particularly defensive and with foresight when using trails, cycle lanes and paths for both cycles and pedestrians to avoid accidents. If necessary, ring the bell to warn others (h).***

e

f

Without lighting
not suitable for use on public roads!

g



h

Range and Elevation Gain – Useful Information for a Long Ride

How long and how far you can benefit from the auxiliary drive depends on several factors: the road conditions, the weight of the rider and any additional load, the rider's pedal force, the level or mode of assistance, (head)winds, inclination, frequent starting, temperature, weather conditions, topography, tyre pressure, etc.

The charge state of your rechargeable battery can be read from the display of the control element on the handlebar **(a+b)** or, additionally, on the rechargeable battery **(c)**.

More information is provided in the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.

If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

To extend the range/elevation gain it is recommended that you ride with low or no assistance at all on level or downhill trails and only select maximum drive assistance with headwinds, heavy additional loads and/or when climbing hills.

Furthermore, you can affect the range/elevation gain by

- checking the tyre pressure regularly, i.e. once a week, with a pressure gauge, and adjusting it, if necessary **(d)**
- shifting gears down in front of traffic lights and intersections or in general in cases of stops and by setting off in low gears
- shifting regularly, as you might be used to from a bicycle without drive system, i.e. by not only riding in high gears
- riding with these facts in mind and always looking ahead to avoid any unnecessary stops
- reducing your additional load, i.e. riding without unnecessary luggage
- storing your battery in your home and installing it only shortly before you set off on your CROSS EPAC/EAPC/e-MTB at low temperatures, in particular when it is cold
- not parking the CROSS EPAC/EAPC/e-MTB in the blazing sun

Some CROSS EPACs/EAPCs/e-MTBs offer the possibility to switch downhill into the recuperation mode for power recuperation. For more information on whether your CROSS EPAC/EAPC/e-MTB provides the possibility of power recuperation, read the system instructions of the drive system manufacturer.

If your battery has not enough capacity to reach your destination, benefit from the decisive advantage of the hybrid concept of your CROSS EPAC/EAPC/e-MTB: Without drive assistance you can ride it like a conventional bicycle with an unlimited range and nearly without loss of riding characteristics.

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b

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⚠ WARNING

If your rechargeable battery runs empty during the ride, be sure to charge it only with the supplied charger (e). Do not use the charger of any other manufacturer, not even when the connector of the charger matches your rechargeable battery. The rechargeable battery can heat up, catch fire or even explode!

NOTICE

The batteries of CROSS EPACs/EAPCs/e-MTBs have no memory effect. It is recommended that you charge the battery after every long ride. Do not park the CROSS EPAC/EAPC/e-MTB with a fully discharged battery. Risk of the battery's deep discharge.

Fully discharge your rechargeable battery every three month and recharge it then immediately. This calibrates the capacity indicator and restores its accuracy.

Keep in mind that the battery of your CROSS EPAC/EAPC/e-MTB shows signs of wear over the years. This results in a continuous reduction of the battery's capacity and in a reduced range compared to its state as new. After a certain period of time the battery even needs to be replaced.

SAFETY INSTRUCTIONS

Tips on how to exploit the battery's capacity to the maximum are given in the chapter "Safe Handling of the Rechargeable Battery".

Riding without Drive Assistance

You can also use your CROSS EPAC/EAPC/e-MTB without drive assistance, i.e. just like a conventional bicycle.

Observe the following points when riding with the drive switched off or with a discharged rechargeable battery:

- Even if you want to ride without drive assistance, you can switch on the control element on the handlebar of your CROSS EPAC/EAPC/e-MTB to have the functions of your cycle computer available.
- If the lighting system (f) is powered by the rechargeable battery, it can even be used when the battery is empty. It is, however, recommended that you recharge the battery immediately after you have returned.
- After you have removed the battery of your CROSS EPAC/EAPC/e-MTB from the down tube (g): Keep the connections of the rechargeable battery (h) free of dirt and moisture. Protect the connections of your rechargeable battery with the protective covers, if supplied. With the battery removed the display and in particular the lighting system will, however, no longer work. You should no longer use the CROSS EPAC/EAPC/e-MTB on public roads and under no circumstances ride in poor visibility, twilight or darkness.

e

f

g

h

SAFE HANDLING OF THE RECHARGEABLE BATTERY

When you do not use your CROSS EPAC/EAPC/e-MTB for a longer period of time (e.g. in winter) observe some particularities. Store the rechargeable battery or, if the battery is integrated in the frame (a), the complete CROSS EPAC/EAPC/e-MTB in a dry room at temperatures between 5 and 20 °C (41 to 68 °F). The state of charge should be 50 to 70 % of the charging capacity. Check the state of charge (b) when the rechargeable battery is left unused for more than two months and recharge it in between, if necessary (c).

Clean the battery housing with a dry or, if at all, a slightly moist rag. Look out for possible defects of the housing. Do not direct the water jet of a high-pressure cleaner (d) at the rechargeable battery, as there is a risk of water entry and/or short-circuit. Check after every cleaning whether the area around the rechargeable battery is free of water and whether the contacts are dry.

For more information on the proper handling of your rechargeable battery the system instructions of the drive system manufacturer, e.g. Bafang, Bosch, Brose, Fazua, Mahle, Neodrives, Panasonic, Pinion, Shimano, TQ, Yamaha.
If you are not absolutely sure about the manufacturer of your drive system, contact your CROSS dealer.

⚠ WARNING

- ***Charge your battery (e) only with the supplied charger. Do not use the charger of any other manufacturer, not even when the connector of the charger matches your rechargeable battery (f). The rechargeable battery can heat up, catch fire or even explode!***
- ***Charge the battery with an ambient temperature of 15 to 25 °C (59 to 77 °F). Let hot batteries cool down beforehand. You should also let the battery warm up to room temperature before connecting it to the charger in winter or after a ride in cold weather.***

⚠ WARNING

- *We recommend that you charge your battery during the day and only in dry rooms which have a smoke or a fire detector; but keep it out of your bedroom. Place the battery during the charging process on a big, non-inflammable plate (g) made of ceramics, glass, cement or stone! Unplug the battery once it has been charged up.*
- *Make sure your rechargeable battery (h) is in sound condition. Do not open, disassemble or crush the battery. Risk of explosion!*
- *Do not use a rechargeable battery or a charger that is defective. If you are in doubt or if you have any questions, contact your CROSS dealer.*
- *Keep the rechargeable battery and the charger out of the reach of children!*
- *Do not charge any other electrical devices with the supplied charger of your CROSS EPAC/EAPC/e-MTB!*
- *Keep your battery away from fire and heat. Risk of explosion!*
- *Batteries may only be used in the CROSS EPACs/EAPCs/e-MTBs for which they are intended.*

⚠ WARNING

- *The individual drive components can be cleaned with a soft rag and commercial neutral detergents or moistened with water, but do not use excessive water. The drive unit is not approved for steam cleaning, high-pressure cleaning or cleaning with a water hose. The penetration of water into the electrics or the drive unit can destroy the devices. Risk of explosion!*
- *Do not short-circuit rechargeable batteries. Store them therefore in a safe storage place and make sure there is no accidental contact with other conductive materials, e.g. metal parts, which may cause a short-circuit with each other. Do not deposit any objects in the storage area (e.g. clothes).*
- *Keep the rechargeable battery and the charger away from moisture and water during the charging process to exclude electric shocks and short circuits.*
- *Do not expose your battery or the charger to the blazing sun. Temperatures above 40 °C (104 °F) may result in a failure of the battery.*
- *If the rechargeable battery or the charger (or parts of it) must be replaced, only use original spare parts. Contact your CROSS dealer.*

e

f

g

h

NOTICE

- *When you remove your battery from the holder for charging it (a) with your CROSS EPAC/EAPC/e-MTB left in the open during the charging process, you should protect the connections, e.g. with a plastic bag (b) against rain, water, moisture and dirt. If the connections of the rechargeable battery are soiled, clean them with a dry rag.*
- *Make sure not to discharge your rechargeable battery completely (also referred to as deep discharge). This often occurs when the battery has been run to complete discharge and the CROSS EPAC/EAPC/e-MTB is then left standing for a few days. Deep discharge affects the rechargeable battery of your CROSS EPAC/EAPC/e-MTB permanently. A deep-discharged battery can only be recharged in exceptional cases and with special chargers. Contact your CROSS dealer.*
- *If possible, remove the rechargeable battery from your CROSS EPAC/EAPC/e-MTB if you do not use your CROSS EPAC/EAPC/e-MTB for a longer period of time and keep it clean and dry.*
- *Do not charge your battery over a long period of time, when you do not need it. When the battery is fully charged, remove the charger at short term.*

NOTICE

- *Do not dispose of your rechargeable battery in the normal household rubbish (c)! It must be disposed of according to battery disposal regulations. Therefore, sellers of new rechargeable batteries must provide collection of old batteries and appropriate disposal. If you are in doubt or if you have any questions, contact your CROSS dealer.*

SAFETY INSTRUCTIONS

- *Lithium-ion batteries do not have a memory effect; they can therefore be charged regardless of their state of charge without affecting their charging capacity.*
- *Also observe any instructions on the respective stickers on the rechargeable battery or on the charger (d).*

a

b

c

d

HOW TO USE QUICK-RELEASES AND THRU AXLES

Quick-Releases

Many CROSS EPACs/EAPCs/e-MTBs are equipped with quick-releases to ensure quick adjusting, assembly and removal. Be sure to check that all quick-releases are tight before you set off on your CROSS EPAC/EAPC/e-MTB. Quick-releases should be handled with greatest care, as they directly affect your safety.

Practise the proper use of quick-releases to avoid any accidents.

Quick-release mechanisms essentially consist of two operative elements:

1. The hand lever on one side of the hub which creates a clamping force via a cam when you close it (e).
2. The tightening nut on the other side of the hub setting the preload on the threaded rod (quick-release axle) (f).

⚠ WARNING

Make sure the levers of both wheel quick-releases are always on the opposite side of the chain drive. This will help you to avoid mounting the front wheel accidentally the wrong way round. In the case of CROSS EPACs/EAPCs/e-MTBs with disc brakes and quick-releases having a 5-mm-axle, it can be reasonable to mount the quick-release with the levers on the side of the chain drive (g). This prevents you from coming into contact with the rotor and from having your fingers burnt. If you are in doubt or if you have any questions, contact your CROSS dealer.

Never ride a bicycle without having checked first that the wheels are securely fastened! Risk of accident!

⚠ CAUTION

Do not touch the rotor directly after having stopped – you may burn your fingers! Always let the rotor cool down before opening the quick-release!

NOTICE

When you park the CROSS EPAC/EAPC/e-MTB, connect the wheels that are fastened with quick-releases together with the frame to an immovable object.

e

f

g

h

How to Fasten Components Securely with a Quick-Release

Open the quick-release. The marking "Open" on the lever should be visible now (h, p. 35).

Make sure the component to be fastened is in the accurate position. For more information see the chapters **"Wheels and Tyre Equipment"** and **"Adjusting the CROSS EPAC/EAPC/e-MTB to the rider"**.

Move the lever back, as if to close it. Now you should be able to read "Close" on the outside of the lever. When you start closing the lever you should feel virtually no resistance with your hand until the lever is at right angle to the frame/fork (a). Over the second half of its travel the resistance you feel should increase significantly. Towards the end of its travel you should need very much strength to close the lever. Use the ball of your thumb to push it in all the way while your fingers pull on an immovable part, such as the fork (b) or the rear stay, but not on a rotor or spoke.

In its end position, the lever should be at right angle to the quick-release axle, i.e. it should not stick out to the side. The lever should lie close to the frame or the fork so that it does not open accidentally. Make sure, however, the lever is easy to grasp for an actually quick use.

To check whether the lever is securely locked apply pressure to the end of the hand lever and try to turn it while it is closed (c). If you can turn the lever around, open it and increase the initial tension. Screw the tightening nut on the opposite side clockwise by half a turn. Close the quick-release lever and check it again for tightness.

Finally, lift the wheel a few centimetres off the ground and hit the tyre from above (d). A securely fastened wheel remains in the axle mounts of frame or fork and will not rattle.

To check the quick-release of the saddle try turning it relative to the frame.

⚠ WARNING

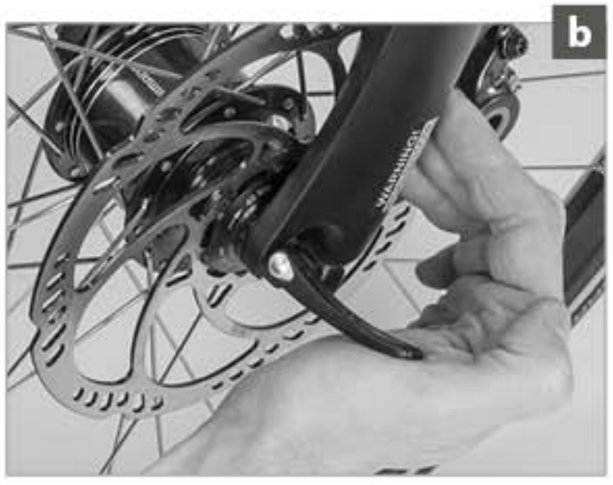
With an insufficiently closed quick-release the wheel can come loose or the saddle turn. Imminent risk of an accident!

NOTICE

To be on the safe side you can have the quick-releases replaced by special locks. They can only be opened and closed with a special, coded key or an Allen key. If you have any questions, contact your CROSS dealer.

a

b



c

d

Thru Axles

Thru axles (e) are mounted when the CROSS EPAC/EAPC/e-MTB has to withstand high loads, e.g. during sporting use, such as cross-country, marathon, all mountain, etc. They provide suspension forks and rear frames with suitable stiffness.

SAFETY INSTRUCTIONS

Before mounting or replacing a fork/wheel combination with thru axle system, be sure to read the operating instructions of the respective suspension fork or wheel manufacturer first.

There is currently a wide range of thru-axle systems available on the market. Some systems are tightened with quick-releases. Other systems require special tools for assembly or disassembly.

Whatever system you use, make sure during the assembly that the thru axles, the dropouts in forks and hubs are clean. Clean the components with an absorbent cloth, if necessary, by using water and a little detergent. In case you do not succeed in adjusting and fixing the wheel, as described, contact your CROSS dealer.

Thru Axles on Suspension Fork

RockShox Maxle and Maxle-Lite Thru-Axle System 15 or 20 mm

Wheel Mounting
If you have a Maxle thru-axle system with quick-release, mount the wheel into the fork and slide the rotor in the brake calliper at the same time. Bring the front wheel into the correct position between the dropouts and slide the axle with the open Maxle quick-release lever from the right side through the dropout and the hub (f).

Make sure the quick-release lever is completely open (g) and in the axle recess. When the axle thread engages with the thread of the left fork leg, turn the axle clockwise. During the first turns the thru axle should be able to turn easily.

Now turn the lever clockwise as tight as you can with your hand. Make sure the quick-release lever does not slip out of the axle recess while tightening. Finish by closing the Maxle quick-release lever like you would close a standard quick-release lever (h). The quick-release lever should not stand out to the front or to the side and should fit snugly against the lower leg.

Wheel Removal
In the case of the Maxle thru-axle system open the quick-release lever completely. Make sure the open quick-release lever lies in the axle recess. Now open the thru axle anticlockwise. Make sure the open quick-release lever does not slip out of the axle recess when it is loosened. When the thru-axle thread no longer engages with the thread of the lower leg, you can remove the thru axle fully.

SAFETY INSTRUCTIONS

You find more information at www.rockshox.com

Fox E-Thru 15 mm **(a)**

Wheel Mounting
Mount the front wheel into the fork and insert the rotor into the brake calliper at the same time. Bring the front wheel into the right position between the dropouts and slide the axle with the E-Thru quick-release lever open from the left side through the dropout and the hub **(b)**.

When the axle thread engages with the thread of the right fork leg, turn the axle clockwise **(c)**. During the first turns the thru axle should be able to turn easily. Tighten the axle a little and then release it by about a third of a turn.

Close the E-Thru quick-release lever like a usual quick-release lever. When you start closing the lever you should feel virtually no resistance with your hand, during the second half of the way the resistance you feel should increase significantly. Towards the end moving the lever must be very difficult.

In case you do not succeed in closing the lever fully, re-open it and turn the axle a little anticlockwise. Try again to close the quick-release lever. Use the palm of your hand while your fingers pull on the fork leg **(d)**, but never on a spoke or the rotor. In its end position the quick-release lever should be tight so that it can no longer be turned. Make sure the quick-release lever does not stand out to the front or to the side. The best closing position is in nearly upright position in front of the lower leg.

Wheel Removal
If you have an E-Thru 15 mm thru-axle system, open the quick-release lever fully. Now open the thru axle anticlockwise.

When the thru-axle thread no longer engages with the thread of the lower leg, you can remove the thru axle fully.

SAFETY INSTRUCTIONS

You find more information at www.ridefox.com

SR SUNTOUR Q-LOC2 (e)

Wheel Mounting
If you have an SR SUNTOUR Q-LOC system 15 mm, put the front wheel into the fork and slide the rotor into the brake calliper at the same time. Align the front wheel between the dropouts.

Open the quick-release lever of the SR SUNTOUR thru axle fully. Turn the fixing nut on the thru axle anticlockwise until the locking mechanism opens.

Slide the axle with the quick-release lever open and the locking mechanism released from the left (f) through the dropout and the hub until the thru axle engages with an audible click. Now turn the quick-release lever clockwise as tight as you can with your hand.

Finish by closing the quick-release lever like a usual quick-release lever (g). The quick-release lever must not stand out to the front or to the side (h). The best closing position is in nearly upright position in front of the lower leg.

Wheel Removal
If you have an SR SUNTOUR Q-LOC system 15 mm open the quick-release fully. Apply a little pressure on the fixing nut and turn the nut anticlockwise until the locking mechanism opens. Now you can remove the thru axle fully.

⚠ WARNING

- ***Improperly mounted wheels may throw you off your bicycle or result in serious accidents!***
- ***After the wheel mounting do a brake test at standstill. You should reach the pressure point of the brake before the brake lever reaches the handlebar. In the case of hydraulic brakes pump them, if necessary, until you reach a precise pressure point. Check it by compressing the suspension fork several times.***
- ***Be sure to never use other tools to fasten the axle than the tools recommended by the manufacturer. Always use a torque wrench. Never exceed the maximum torque value indicated by the manufacturer! Overtightening the axle can damage the axle or the fork leg.***

SAFETY INSTRUCTIONS

- ***More information is provided at www.srsuntour-cycling.com***

Thru Axles on the Rear Frame

More and more CROSS EPACs/EAPCs/e-MTBs have a threaded thru-axle system.

The system typically consists of two operative elements:

1. There is a nut on the right side which is often integrated into the frame.
2. On the left side there is either a clamping lever which can be folded, a rigid lever for tightening or a tool mount hole, e.g. for an Allen key, 5 mm.

Wheel Mounting
Slide the rear wheel into the rear frame, mount the rotor at the same time into the brake calliper and guide the chain over the outmost sprocket of the cassette sprockets (a).

Make sure that in the area of the rear wheel the chain runs over the cassette sprockets and over both pulleys of the rear derailleur.

Align the rear wheel between the dropouts and slide the axle (b) with the quick-release lever open from the left side through the dropout and the hub.

When the axle thread engages with the nut thread, turn the axle clockwise. During the first turns the thru axle should be able to turn easily. Tighten the axle slightly (c).

Close the possibly available quick-release lever like a usual quick-release lever (d).

When you start closing the lever you should feel virtually no resistance with your hand, during the second half of the way the resistance you feel should increase significantly. Towards the end moving the lever must be very difficult.

In case you do not succeed in closing the lever fully, re-open it and turn the axle a little anticlockwise. Try again to close the quick-release lever.

Use the palm of your hand while your fingers pull on the rear frame, but never on a spoke or the rotor.

In its end position the quick-release lever should be tight so that it can no longer be turned. Make sure the quick-release lever does not stand out to the rear or to the side. The best position is in parallel to a frame tube.

If necessary, modify the nut to change the position.

In the case of rigid levers or thru axles with a tool mount hold the axle tight. Observe the torque specifications, if available. Be sure to use a high-value torque wrench (e).

Wheel Removal
If there is a thru-axle system, open the quick-release lever fully (f). If there are levers, loosen the axle by turning.

Unscrew all types of thru axles anticlockwise (g). After the thru-axle thread has fully loosened from the nut thread, you can pull out the thru axle.

Hold the frame (h) and the wheel tight while doing so, to ensure that parts do not fall down or topple over.

⚠ WARNING

Be sure to never use other tools to fasten the axle than the tools recommended by the manufacturer. Always use a torque wrench. Never exceed the maximum torque value indicated by the manufacturer! A too tight fixing of the axle can impair the axle or the frame.

SAFETY INSTRUCTIONS

The manufacturers of thru-axle systems usually make available detailed operating instructions. Read them carefully before removing the wheel or doing any maintenance work.

More information is for ex. provided at
https://bike.shimano.com – Shimano E-Thru
www.syntace.com – X-12
www.dtswiss.com – RWS system

ADJUSTING THE CROSS EPAC/EAPC/E-MTB TO THE RIDER

Your body height and proportions are decisive for the frame size of your bicycle. Make particularly sure there is enough space between your crotch and the top tube so that you do not hurt yourself, if you have to get off your bicycle quickly (a).

By choosing a specific type of bicycle you roughly determine the posture you will be riding in (b). However, various components of your CROSS EPAC/EAPC/e-MTB are designed in a way that you can adjust them to your body proportions up to a certain extent. This includes the seat post, the stem (c) and the brake lever units.

As all works require know-how, experience, appropriate tools and a certain amount of skill, you should restrict yourself to adjusting the seating position. Ask your CROSS dealer for the correct seating position or if you want something changed. He will see to your wishes the next time you leave your bicycle at the workshop, e.g. for the first inspection.

If sitting on the saddle causes you trouble, e.g. because it numbs your crotch, this may be due to the saddle. Your CROSS dealer has a very wide range of saddles available and can offer advice on position (d).

After any adjusting/assembly work, be sure to make a short functional check as described in the chapter **"Before Every Ride"** and do a test ride on your CROSS EPAC/EAPC/e-MTB in an area free of traffic.

⚠ WARNING

- ***In case of very small frame sizes, there is the risk of the foot colliding with the front wheel. Therefore, make sure the cleats of your clipless pedals are properly adjusted.***
- ***All tasks described in the following require the know-how of a mechanic and appropriate tools. Make it a rule to tighten the bolted connections always with greatest attention. Increase the torque values bit by bit and check the fit of the component in between. Use a torque wrench and never exceed the maximum torque values! You find the torque values on the components themselves, in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.***

a

b

c

d

Adjusting the Height of the Saddle

The correct saddle height for almost all bicycle types is the height which gives maximum pedalling comfort and efficiency. During pedalling the ball of your foot should be positioned above the centre of the pedal axle. With your feet in this position your leg should not be fully extended at the lowest point, otherwise your pedalling will become awkward.

Check the height of your saddle with flat-soled shoes. This is best done with suitable cycling shoes.

Sit on the saddle and put your heel on the pedal at its lowest point (e). Your leg should be fully extended and your hips should remain horizontal.

To adjust the saddle height loosen the quick-release lever (f) (see the chapter **"How to Use Quick-Releases and Thru Axles"**) or the binder bolt of the seat post clamp at the top of the seat tube.

The latter requires suitable tools, e.g. an Allen key, with which you turn the bolt two to three turns anticlockwise. Now you can perform the vertical adjustment of the seat post.

Be sure not to pull out the seat post too far – the mark on the seat post (g) (max., min., stop or the like) should always remain within the seat tube – and to grease the surface of an aluminium or titanium seat post that is inserted into a seat tube made of aluminium, titanium or steel.

Do **not grease carbon seat posts** and/or **carbon seat tubes** in the clamping area! Use special **carbon assembly paste** instead.

Align the saddle with the frame by using the saddle nose and the bottom bracket or top tube as a reference point (h).

Clamp the seat post. Close the quick-release, as described in the chapter **"How to Use Quick-Releases and Thru Axles"** or tighten the seat post binder bolt clockwise in half turns. You should not need much strength in your hands to clamp the seat post sufficiently tight. Otherwise the seat post does not match the frame.

Check in between that the seat post is sufficiently tight by taking hold of the saddle at both ends and then trying to rotate the seat post inside the seat tube. If it does rotate, gently retighten the clamping bolt by half a turn and do the check again.

e

f

g

h

Does the leg extension test now produce the correct result? Carry out the check by moving your foot and pedal to the lowest point (a). When the ball of your foot is in the middle of the pedal in the ideal pedalling position, your knee should be slightly bent. If it is, you have adjusted the saddle height correctly.

Check whether you can still reach the ground safely from the saddle (b). If you cannot, you should lower the saddle a little, at least to begin with.

⚠ WARNING

- ***Never ride your bike with the seat post drawn out beyond the limit, maximum, or stop mark! The seat post might break or cause severe damage to the frame. If the seat post and the frame require different minimum insertion depths, you should opt for the deeper insertion depth.***
- ***Never apply grease to the seat tube of a frame made of carbon, unless an aluminium sleeve is inside the frame. If you mount a carbon seat post, do not even grease a frame made of metal. Once greased carbon fibre components may never again be clamped reliably! Use special carbon assembly paste instead.***

⚠ WARNING

- ***On steep descents it can be useful to lower the saddle. This improves control over the bicycle.***
- ***With some full-suspension e-MTBs the seat post should only project to a limited extent from the seat tube when the saddle is in its lowest position, otherwise the rear shock arm will collide with the seat post during compression.***

⚠ CAUTION

- ***Tighten carefully by approaching the prescribed maximum torque value in small steps (0.5 Nm increments) and check in between the proper fit of the component. Do not exceed the maximum torque value indicated by the manufacturer! You find the torque values on the components themselves, in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.***

NOTICE

- ***If the seat post does not move easily inside the seat tube or if it cannot be tightened sufficiently, ask your CROSS dealer for advice! Do not use brute force!***

SAFETY INSTRUCTIONS

- ***In the case of dropper posts, such as those from RockShox and Kind Shock, the height can be adjusted by pressing a button on the handlebar. For more information see the chapter "Height-Adjustable Seat Post/Dropper Post". Also read the instructions of the manufacturer.***

Adjusting the Height of the Handlebar

The height of the handlebar compared to the saddle and the distance between saddle and handlebar determines how much your upper body is inclined forward. Lowering the handlebar gives you a streamlined position and brings more weight to bear on the front wheel. However, it also entails an extremely forward leaning posture which is tiring and less comfortable, because it increases the strain on your wrists, arms, back, upper body and neck.

Nearly all e-MTBs are equipped with the threadless stem system, also referred to as the Ahead®-system. This system require special knowledge. In this regard, the descriptions hereafter may be incomplete.

If you are in doubt or if you have any questions, contact your CROSS dealer.

⚠ WARNING

- ***The stem is one of the load bearing parts of your bicycle. Changes to it can impair your safety. If you are in doubt or if you have any questions, contact your CROSS dealer!***

⚠ WARNING

- ***Stems are available in different lengths (e) shaft and binder tube diameters. A stem of inappropriate dimension can become a source of danger: Handlebars or stems can break, resulting in an accident. When replacing any parts, be sure to only use suitable original spare parts that bear the appropriate mark. Your CROSS dealer will be pleased to help you.***
- ***The bolted connections of the stem and the handlebar have to be tightened to the prescribed torque values (f). Otherwise the handlebar or the stem may come loose or break. Use a torque wrench (g) and do not exceed the maximum torque value! You find the torque values on the components themselves (h), in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.***
- ***Make sure the handlebar-stem-combination is approved by the e-MTB manufacturer.***
- ***Make sure the handlebar clamping area is free of sharp edges.***

e

f

g

h

Stems for Threadless Systems, the Aheadset®-System

(Aheadset® is a registered trade mark of Dia-Compe)

In the case of CROSS EPACs/EAPCs/e-MTBs with Aheadset® the stem also serves to adjust the bearing preload. If you change the position of the stem you have to readjust the bearing play (see the chapter **"Headset"**). You can adjust the height to a limited extent by moving the spacers or by turning the stem around in the case of so-called flip-flop models.

Unscrew the bolt at the top of the fork steerer tube which serves to adjust the bearing preload, remove the Ahead cap and release the bolts on either side of the stem by up to three turns (a). Remove the stem and the spacers from the fork steerer tube. In doing so keep hold of both frame and fork to prevent the fork from slipping off the head tube.

You can determine the handlebar height by the arrangement of stem and spacers (b). Slip the remaining spacers onto the fork steerer tube above the stem. Adjust the headset, as described in the chapter **"Headset"**.

If you want to turn the stem around, you also have to release the bolts of the faceplate securing the handlebar (c). If the stem has a faceplate, you can simply remove the handlebar. If it has no faceplate, you have to remove the handlebar equipment.

Mount the handlebar and, if necessary, the handlebar equipment, as described in the chapter **"Adjusting the Tilt of the Handlebar, Bar Ends and Brake Levers"** and/or in the manuals of the component manufacturers.

Check the secure fit of the handlebar in the stem by trying to rotate the handlebar downwards. Verify whether the handlebar/stem-combination can be turned relative to the fork. Do this by taking the front wheel between your knees and trying to twist the handlebar (d). If there is movement, carefully tighten the bolts a little more and check the proper fit again.

Tighten carefully by approaching the prescribed maximum torque value in small steps (0.5 Nm increments) and check in between the proper fit of the component. Do not exceed the maximum torque value indicated by the manufacturer! You find the torque values on the components themselves, in the chapter **"Recommended Torque Values"** or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

a

b

c

d

If you want your handlebar in a higher position, you may opt for a riser bar model which has an upward bend. Ask your CROSS dealer for advice.

⚠ WARNING

These works require a certain amount of manual skill and (special) tools. This job is best left to your CROSS dealer. If you nevertheless want to try it by yourself, read the operating instructions of the stem manufacturer carefully before you start.

With a turned stems, the cables may be too short. Riding with too short cables is dangerous. Ask your CROSS dealer for help.

NOTICE

If spacers are removed, the fork steerer tube must be shortened. This procedure is irreversible. The shortening should by carried out by you CROSS dealer, but only after you have found your preferred position.

Adjusting the Tilt of the Handlebar, Bar Ends and Brake Levers

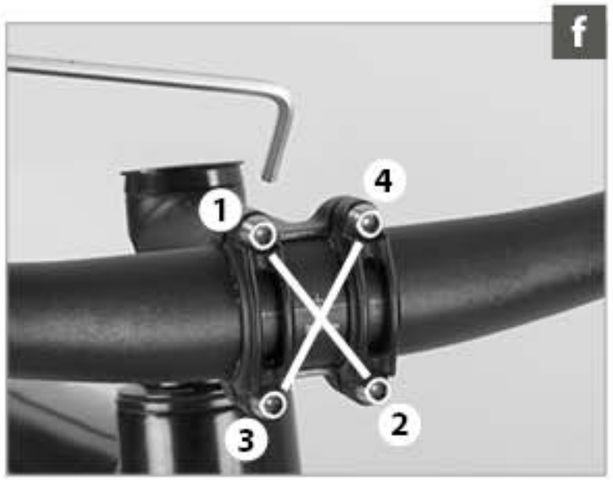
The handlebars of CROSS EPACs/EAPCs/e-MTBs are usually slightly bent at the ends. Set the handlebar to a position in which your wrists are relaxed and not turned too much outwards.

To adjust the angle of the handlebar, release the Allen bolt(s) on the underside or front side of the stem. Turn the handlebar to the desired position. Make sure the handlebar is accurately centred in the stem (e). Carefully retighten the bolt(s) in a cross pattern by using the Allen key until they slightly hold the handlebar in place (f). Make sure the upper and lower clamping slots of the stem are parallel and identical in width (g). Tighten the bolt(s) evenly in a cross pattern by using a torque wrench and observe the recommended torque values (h).

Once clamped in the stem try rotating the handlebar (d) and tighten the bolt(s) a little more, if necessary. Use a torque wrench and never exceed the maximum torque values! You find the torque values on the components themselves, in the chapter **"Recommended Torque Values"** or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

e

f



g

h

After adjusting the handlebar you have to adjust the brake lever/shifter units.

Release the Allen bolt at either brake lever unit. Turn the levers on the handlebar. Sit in the saddle and place your fingers on the brake levers. Check that the back of your hand forms a straight line with the line of your forearm (a). Retighten the brake lever/shifter units with a torque wrench (b) and do a twist test!

Bar ends provide additional ways of gripping the handlebar. They are usually fixed in a position that gives the rider a comfortable grip when pedalling out of the saddle. The bar ends are then almost parallel to the ground or tilted slightly upwards (by about 25°).

If you intend to mount bar ends to a handlebar, verify first that the handlebar is suitable and approved for mounting the bar ends. Some handlebars must be equipped with specific reinforcing sleeves (handlebar plugs). If you are in doubt or if you have any questions, contact your CROSS dealer.

Release the bolts, which are usually located on the underside of the bar ends, by one to two complete turns. Turn the bar ends to the desired position making sure the angle is the same on both sides. Retighten the bolts to the prescribed torque value (c). Check that the bar ends are firmly fixed by trying to turn them out of position.

⚠ WARNING

- ***Note that the bolted connections of the stem, the handlebars, the bar ends and the brakes have to be tightened to the prescribed torque values. Use a torque wrench and never exceed the maximum torque values! You find the torque values on the components themselves, in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.***
- ***Never fix bar ends in vertical position or with their ends pointing rearwards as this would increase the risk of injury in the event of an accident.***
- ***Be aware that the distance you need to stop your bicycle increases, when you are riding with your hands on bar ends (d). The brake levers are not in all gripping positions within easy reach.***

Adjusting the Brake Lever Reach

With most brake lever units the distance between the brake lever and the handlebar grip (e) is adjustable. This gives in particular riders with small hands the convenience of bringing the brake levers closer to the handlebar. The first knuckle of middle and index fingers should be able to grip around the lever (f).

On most bicycles there is a small adjusting screw near the point where the brake cable of a cable brake enters the brake lever unit or at the lever itself. Turn the bolt clockwise and watch, whether and how the lever adjusts as you do so.

Hydraulic brakes also have adjusting devices at the brake lever (g). There are different systems. Ask your CROSS dealer for help or read the possibly enclosed manual.

When adjusting the lever reach, make sure the first knuckle of the middle and index finger reaches around the brake lever. Check the proper setting and functioning of the brake system subsequently, as described in the chapter **"Brake System"** and/or in the operating instructions of the brake manufacturer. With some brakes both the lever distance and the pressure point can be adjusted (h).

⚠ WARNING

After the adjusting do a test ride in an area free of traffic and then only on easy terrain.

Make sure you cannot pull the brake levers all the way to the handlebar. Your maximum brake force should be reached before.

SAFETY INSTRUCTIONS

Observe the possibly enclosed manuals of the brake manufacturer. If you are in doubt or if you have any questions, contact your CROSS dealer.

e

f

g

h

Correcting the Fore-to-Aft Position and Tilt of the Saddle

The position of the saddle is essential for your ride and for painless riding.

The distance between the handlebar grips and the saddle has an effect on the inclination of your upper body (a) and hence on your riding comfort and riding dynamics. This distance can be modified to a small extent by changing the position of the saddle rails in the seat post. However, moving the saddle rails in the seat post also influences pedalling. The rider pedals more or less from the back.

If the saddle is not in horizontal position, the rider cannot pedal in a relaxed manner. He must constantly support himself or hold on the handlebar to avoid sliding off the saddle.

Make sure that the seat of the saddle remains horizontal (b) as you retighten the bolt(s). The CROSS EPAC/EAPC/e-MTB should stand on level ground while you adjust the saddle.

With a full suspension CROSS EPAC/EAPC/e-MTB, it can be advantageous to lower the saddle nose, i.e. to tilt it slightly.

The adjustment range of the saddle is very small. With adjustable stems or stems at different lengths you can realise more important adjustments in length. In parts, you can realise a difference of more than 10 cm. In most of the cases you also have to adjust the Bowden and brake cables; a job best left to your CROSS dealer!

After the mounting check whether the re-tightened saddle tilts (c) or can be twisted (d) when you alternately apply load with your hands on the nose and the end of the saddle.

⚠ WARNING

There bolts of the saddle clamp are among the most sensitive ones on the entire CROSS EPAC/EAPC/e-MTB. Therefore, make absolutely sure that you do not fall below the recommended minimum torque value and do not exceed the recommended maximum torque value and always use a torque wrench.
You find the torque values on the components themselves, in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

a

b

c

d

⚠ WARNING

- *Make sure the saddle rails are only clamped within the range of the marking (e). Otherwise the saddle rails can fail!*
- *If the saddle rails do not fit, do not try to force them into the clamp grooves of the seat post. The clamp device or the saddle rails could break. Use another saddle model instead or ask your CROSS dealer.*
- *Poorly tightened or loosening bolts can fail. Check the bolts once a month by using a torque wrench (f) according to the values indicated on the components themselves (g), in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers.*

SAFETY INSTRUCTIONS

- *The saddle and/or seat post manufacturers possibly supply their products with detailed instructions. Read them carefully before adjusting the position of your saddle. If you are not absolutely sure or have any questions, contact your CROSS dealer.*

e

f

g

Patent Clamp with one or two Parallel Bolts

In the case of patent seat posts one (a) or two (b) central Allen bolts hold the head that fixes both the tilt and the horizontal position of the saddle. Most seat posts have two bolts side by side.

To adjust the saddle position undo the bolt (c) or the bolts (d) at the seat post head. To do so loosen both bolt(s) two to three turns at the most, otherwise there is a risk that the entire mechanism will fall apart. Move the saddle horizontally to adjust the fore-to-aft position. Often you have to give the saddle a light tap to move it. Observe the marking on the saddle rails and do not go beyond (e+f).

After you have found the desired position, check that both halves of the clamp mechanism fit snugly around the saddle rails.

Make sure that the saddle or the clamp mechanism engages in one of the serrations on the seat post head while you start to tighten. Tighten the bolt(s) step by step.

If everything fits turn the bolt (g) or the bolts (h) by using a torque wrench according to the instructions of the manufacturer.

SAFETY INSTRUCTIONS

Also read the general part at the beginning of the chapter.

Yoke Clamp with two Bolts in Line

In the case of seat posts with yoke clamp (i) two vertical Allen bolts hold the head that fixes both the tilt as well as the horizontal position of the saddle. One bolt is behind the seat post, another one in front of it or in the centre (k) of the seat post.

To adjust the saddle position undo both bolts two to three turns at the most (l+m), otherwise there is a risk that the entire mechanism will fall apart. Move the saddle horizontally to adjust the fore-to-aft position. Often you have to give the saddle a light tap to move it. Observe the marking on the saddle rails (n) and do not go beyond. After you have found the desired position, check that both halves of the clamp mechanism fit snugly around the saddle rails.

Tighten both bolts evenly so that the saddle remains at the same angle. If you wish to lower the saddle nose a little, turn the front bolt clockwise. If necessary, you even have to loosen the rear bolt a little. To lower the rear part of the saddle, the rear bolt has to be turned clockwise and the front bolt to be loosened, if necessary.

If everything fits turn the bolts by using a torque wrench according to the instructions of the manufacturers (o+p).

SAFETY INSTRUCTIONS

Also read the general part at the beginning of the chapter.

i

k

l

m

n

o

p

Single or Two Bolt System (Horizontal)

In the case of seat posts with horizontal clamp one (a) or two (b) Allen bolts hold the head that fixes both the tilt and the horizontal position of the saddle.

To adjust the saddle position undo the transverse fixing bolt (c) or bolts (d) one to two turns at the most, otherwise there is a risk that the entire mechanism will fall apart.

Move the saddle horizontally to adjust the fore-to-aft position. Often you have to give the saddle a light tap to move it. Observe the marking (e+f) on the saddle rails and do not go beyond. Bring the saddle now in the desired position. Tighten the bolt(s) step by step.

If it is necessary to dismantle the clamping device, unscrew the fixing bolt(s) completely. This will release the outer clamp pieces. The inner clamp pieces may remain in their position due to a rubber fixing. Mount the saddle rails into the inner clamp pieces, add the outer pieces and re-insert the fixing bolt(s).

If the saddle fits slide it into the desired position, as above described. Check that the clamping device is still positioned exactly on the seat post head and that the saddle rails fit snugly in both halves of the clamping mechanism. Tighten the bolt(s) step by step.

If everything fits turn the bolt **(g)** or the bolts **(h+i)** by using a torque wrench according to the instructions of the manufacturer.

⚠ WARNING

For most of the sports saddles the seat post is usually designed for a saddle rail diameter of 7 mm. Replacement outer clamps for ovalized saddle rails sized 8 mm x 8.5 mm (W x H) as well as for carbon saddle rails sized larger than 8 x 8.5 mm are also available. If you are not sure which type of saddle rail you have or if you need further information, contact your CROSS dealer.

SAFETY INSTRUCTIONS

Also read the general part at the beginning of the chapter.

g

h

i

CARBON – IMPORTANT INFORMATION

For products made of carbon-fibre-reinforced plastics (e), also referred to as carbon or CRP, special characteristics have be taken into account.

Carbon is an extremely strong material which allows producing components of high strength and low weight. When used in a typical and reasonable riding scenario in accordance with its respective category of use, the resistance it offers equals or even exceeds that of aluminium or steel. However, keep in mind that carbon, unlike metals, does not show visible deformation after undue stress, even though its internal fibre structure may already be damaged.

In further use, a carbon component that was damaged previously in an overload event may fail just like a component made of metal would, potentially resulting in a fall with unforeseeable consequences. If a carbon component was exposed to a high load, we strongly recommend that you take the component, or ideally even your complete CROSS EPAC/EAPC/e-MTB, to your CROSS dealer for inspection. He will check the damaged CROSS EPAC/EAPC/e-MTB and replace defective components as necessary.

For safety reasons, damaged components made of carbon (f) must never be straightened or repaired. Damaged components must be replaced at once!

Prevent further use by taking appropriate measures, i.e. saw the component into pieces. The only components that may be repaired are damaged bicycle frames.

Components made of carbon must never and under no circumstances be exposed to excessive heat. Therefore, never have a carbon component enamelled or powder-coated. The temperatures required for enamelling or powder-coating could destroy the component. Do not leave carbon fibre components near a source of heat or in a car or boot during hot or sunny weather.

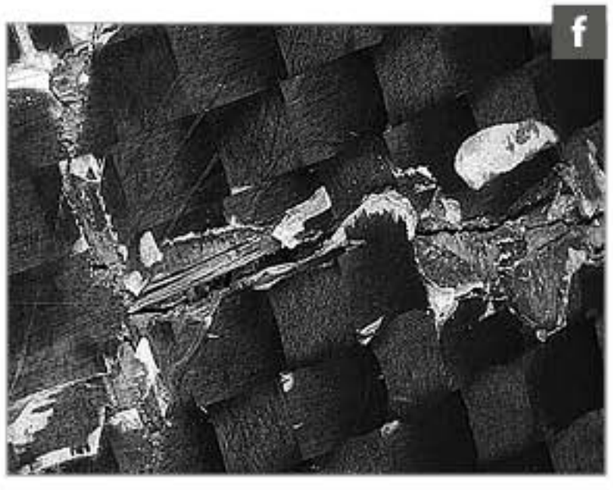
Carbon components have, like all lightweight bike components, a limited service life. For this reason, change stem and handlebar at regular intervals (e.g. every 3 years), even if they have not experienced any undue stress, such as an accident.

Be sure to protect your CROSS EPAC/EAPC/e-MTB or its carbon frame and components when you transport it in the boot or on the back seat of your car (g). Blankets, foam tubes or the like are suitable padding material to protect the sensitive material from damage.

Always park your CROSS EPAC/EAPC/e-MTB carefully and make sure it does not topple over (h). Carbon frames and components may already sustain damage by simply toppling over, when hitting e.g. a sharp edge.

e

f



g

h

⚠ WARNING

- *If components of your CROSS EPAC/EAPC/e-MTB made of carbon produce any creaking or cracking noises or show any external sign of damage, such as notches, cracks, deformations, dents or discolourations, etc., do not use the CROSS EPAC/EAPC/e-MTB until the components have been replaced. Following high loads, an accident or a severe impact, have the component replaced or examined by your CROSS dealer before using it again.*
- *Do not combine carbon handlebars with bar ends, unless they are specifically approved. Do not shorten carbon handlebars or clamp the brake levers and shifters more in the middle than indicated or needed. Risk of breakage!*
- *With a carbon component as clamping partner make sure all clamping areas are absolutely free of grease and other lubricants. The grease penetrates the surface of the carbon component and prevents secure clamping within the permissible torque values by reducing the coefficient of friction. Once greased carbon fibre components may never again be clamped reliably! Use a special carbon assembly paste (a) instead as offered by various manufacturers.*

⚠ WARNING

- *Do not clamp a carbon frame or seat post in the holding jaws of a workstand! The components may sustain damage. Mount a sturdy (aluminium) seat post (b) instead and use it to clamp the frame, or choose a work stand that holds the frame at three points inside the frame triangle or which clamps the fork and bottom bracket shell.*
- *Most clamps of bicycle carrier systems are potential sources of damage to large-diameter frame tubes! As a result thereof carbon frames can fail during use without previous warning. However, there are special-purpose models which are suitable, available in the car accessory trade (c). Inform yourself there or ask your CROSS dealer for advice.*
- *Do not sit on the top tube of your carbon frame, when you take a rest or stop for example at traffic lights. The frame may sustain damage.*

NOTICE

- *Protect the exposed areas of your carbon frame (e.g. the underside of the down tube) against rubbing cables or stone chips with special pads (d) that you get from your CROSS dealer.*

a

b

c

d

BRAKE SYSTEM

General Information on Brakes

By means of the brakes (e+f) you can adjust your riding speed to the terrain and the traffic conditions. When necessary, the brakes must be able to bring the CROSS EPAC/EAPC/e-MTB to a standstill as quickly as possible.

During such an emergency braking, the rider's weight shifts forward abruptly, thus reducing the load on the rear wheel. That's why it is more likely that the rear wheel loses contact with the ground (g) and that the CROSS EPAC/EAPC/e-MTB overturns than that the tyres will lose grip. This problem becomes particularly acute when riding downhill. Therefore, in case of an emergency braking situation you must try to put your weight back and down as far as possible.

Actuate both brakes at the same time and bear in mind that the front brake can transmit far greater forces on a surface with good grip due to the shifting weight.

On loose ground there are other conditions (h). There, overbraking the front wheel can make the wheel slip away. Therefore, be sure to practise braking on different surfaces.

Wet weather reduces the braking power. Actuate the brakes carefully when riding on wet or slippery ground, as the tyres can easily slip away. Therefore, reduce your speed.

In the case of **disc brakes** prolonged braking or permanent dragging of brake pads can also lead to an overheating of the brake system. This can result in a reduction of the brake force or even lead to brake failure. **Risk of accident!**

When riding downhill, get used to braking hard and releasing the brake again, whenever the road and trail surface and the situation allow for it. If in doubt, stop and let the brake system cool down.

⚠ WARNING

The assignment of the brake levers to the front and rear brake can vary, e.g. left lever acts on front brake. Have a look at the e-MTB card and check that you can actuate the front brake (a) with the same brake lever (right or left) you are used to (b). If this is not the case, ask your CROSS dealer to change the brake levers before you set off for the first time.

Make sure the assignment of the brake levers to the brake is the same on all your bicycles.

Get used to your brakes carefully. Practise emergency braking in an area free of traffic (c) until you have your CROSS EPAC/EAPC/ e-MTB safely under control. This can save you from having accidents.

⚠ WARNING

Wet weather reduces the braking effect and makes the tyres slip easily. Be aware of longer stopping distances when riding in the rain, reduce your speed and actuate the brakes carefully.

Make sure the brake discs, also referred to as rotors, and the brake pads are absolutely free of wax, grease and oil. Risk of accident!

SAFETY INSTRUCTIONS

When replacing any parts, be sure to only use suitable original spare parts that bear the appropriate mark (d). Your CROSS dealer will be pleased to help you.

a

b

c

d

Disc Brakes

Operation and wear
The most striking feature of disc brakes is their outstanding braking effect. They respond a lot faster in wet conditions than rim brakes do and achieve their normal high braking power within a very short time. They require little maintenance and do not wear down the rims as rim brakes do.

Disc brakes (e) consist of the brake calliper (1), the rotor (2), the brake hose or cable (3) as well as the brake lever unit/lever (f). Actuating the brake lever compresses the hydraulic pistons through hydraulic pressure or mechanically by pushing the brake pads against the rotor.

The friction generated by braking causes wear to the brake pads (g) as well as to the rotors. Frequent rides in the rain and dirt and over hilly terrain can accelerate wear of the rotors. Depending on the manufacturer and the model there are different ways of checking the brake pads and rotors for their wear limits.

⚠ WARNING

New brake pads have to be bedded in before they reach their optimal braking performance. For this purpose, accelerate the CROSS EPAC/EAPC/e-MTB 30 to 50 times to around 30 km/h (18 mph) and bring it to a standstill each time. This procedure is finished, when the force required at the lever for braking has stopped decreasing.

⚠ WARNING

Dirty brake pads and rotors can result in a drastically reduced brake force. Therefore, make sure the brake remains free of oil and other fluids, especially when you clean your CROSS EPAC/EAPC/e-MTB or grease the chain. Dirty brake pads can under no circumstances be cleaned, they must be replaced! Rotors can be cleaned with special brake cleaners and with a clean absorbing cloth or with warm water and mild soap (h).

Unusual noises (scratching, chafing, etc.) during braking and/or a noticeable change of the brake force (stronger or weaker) are indications that the brake pads are soiled or worn down. Check the brake pads and replace them, if necessary. Otherwise you risk further damage, e.g. to the rotor, or even an accident due to brake failure! If you are in doubt, contact your CROSS dealer.

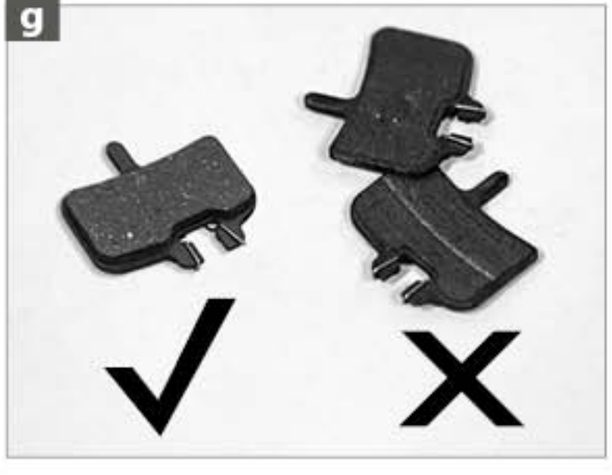
⚠ CAUTION

Disc brakes get hot in use. For this reason do not touch the rotors directly after stopping, especially after a long downhill ride.

e

f

g



h

Hydraulic Disc Brakes

Functional check
Regularly check the hoses (a) and connections for leaks while pulling the lever. In case of a brake liquid leakage, contact your CROSS dealer immediately. A leak in the brake lines can render the brake ineffective. **Risk of accident!**

Wear and maintenance
Check the pads for wear at regular intervals (b) and follow the service instructions of the respective manufacturer available on the website.

Measure the thickness of the brake pad on the mount by using a calliper gauge (c). The brake pad must all over be 0.5 mm thick at least. Measure the pad and the mount together as well as the mount alone; the difference is the thickness of the pad. Re-insert the cleaned brake pads into the cleaned calliper.

⚠ WARNING

Loose connections and leaky brake hoses drastically impair the braking effect. If you find leaks in the brake system or buckled hoses, contact your CROSS dealer immediately.

⚠ WARNING

Do not place a CROSS EPAC/EAPC/e-MTB with hydraulic disc brakes upside down (d). Air could get into the system. This could render the brake ineffective. Risk of accident!

If your brake system works with DOT brake fluid, the latter needs to be replaced regularly according to the intervals prescribed by the manufacturer.

⚠ CAUTION

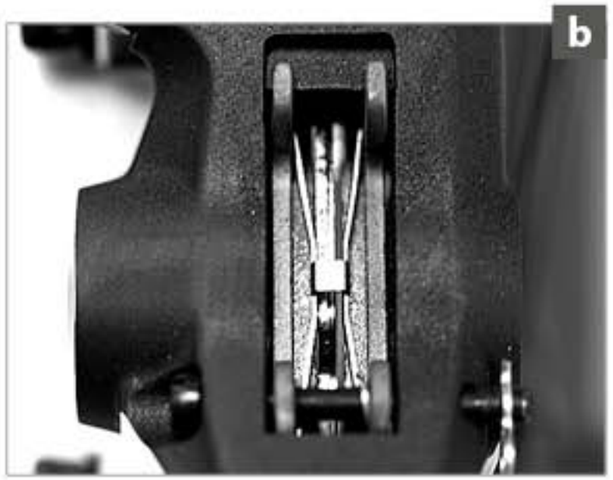
Do not open the brake hoses. Brake fluid that can be very unhealthy and damaging to the paint could leak out.

SAFETY INSTRUCTIONS

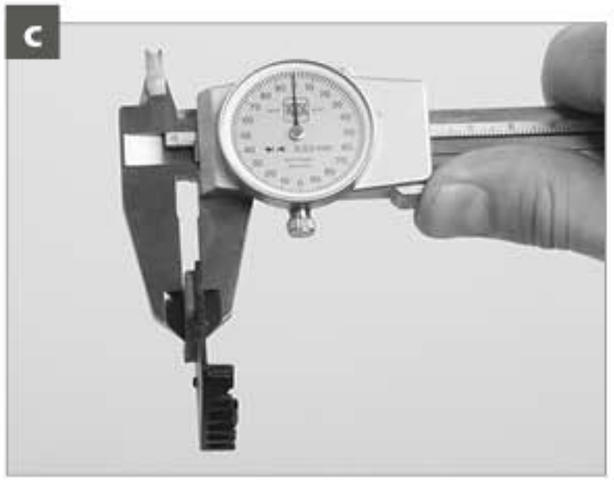
The manufacturers of hydraulic disc brakes possibly supply their products with detailed instructions. They are most certainly available on the respective websites. Be sure to read them carefully before removing a wheel or doing any maintenance work.
https://si.shimano.com
www.sram.com
www.magura.com
www.rideformula.com
www.hopetech.com

a

b



c



d

Mechanical Disc Brakes

Functional check
The more brake pads of mechanical disc brakes wear down, the longer is the brake lever travel. Regularly check whether you get a positive braking response before the lever touches the handlebar. Make sure the brake cables are in sound condition!

⚠ WARNING

Damaged hoses (e) should be replaced immediately, as they can snap. Risk of accident!

Wear and maintenance
To a certain extent, wear of the brake pads can be compensated directly at the brake lever unit. Unscrew the union nut on the bolt through which the cable enters the grip (f) and then unscrew the bolt until the lever has the desired travel. Retighten the lock nut thereby taking care that the slot of the bolt does not face upward or forward, as this would permit an unnecessarily high amount of water or dirt to enter.

Now check the functioning of the brake and make sure the brake pads do not drag on the rotor (g+h) when you release the brake lever and let the wheel rotate.

Repeated readjusting at the brake lever makes the arm on the brake calliper change its position. This can reduce braking power and result in a complete brake failure in an extreme case. **Risk of accident!**

Some models offer further ways of adjusting the brakes directly at the brake calliper, though this requires a certain amount of skill. In any case, be sure to read the original instructions of the brake manufacturer before adjusting the brakes. If you are in doubt or if you have any questions, contact your CROSS dealer.

⚠ WARNING

Repeated readjustment at the brake lever unit only can severely reduce the maximum achievable braking effect.

SAFETY INSTRUCTIONS

Some systems must be readjusted directly at the brake calliper to compensate wear. For more information read the operating instructions of the brake manufacturer.

The manufacturers of mechanical disc brakes possibly supply their products with detailed instructions. They are most certainly available on the respective websites. Be sure to read them carefully before removing a wheel or doing any maintenance work.

e

f

g

h

DERAILLEUR GEARS

The gears (a+b) of your CROSS EPAC/EAPC/e-MTB serve to adjust the transmission ratio to the terrain you are riding on and the desired speed. A low gear with the chain running over the small chainring at the front and a large sprocket in the rear allows you to climb steep hills with moderate force. You must, however, pedal at a faster pace.

High gears (large chainring, small sprocket) are for riding downhill. Every turn of the pedals takes you many metres forward at correspondingly high speed.

⚠ WARNING

Practise shifting in an area free of traffic until you are familiar with the functioning of the levers or twist grips of your CROSS EPAC/EAPC/e-MTB.

SAFETY INSTRUCTIONS

Read in any case the possibly enclosed manual of the gear manufacturer and make yourself familiar with gear shifting before you set off for the first time.

Operation and Control

Derailleur gears always work according to the following principle:

Large front chainring – high/heavy gear – bigger gear ratio
Small front chainring – low/easy gear – smaller gear ratio
Large rear sprocket – low/easy gear – smaller gear ratio
Small rear sprocket – high/heavy gear – bigger gear ratio

Normally, the shifters are mounted as follows:

Right-hand shifter – rear sprockets
Left-hand shifter – front chainrings

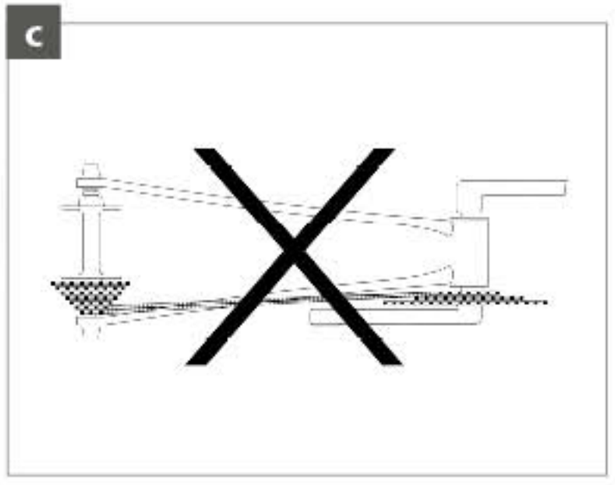
There are meanwhile various gear systems with one, two or three front chainrings. However, most e-MTBs have only one chainring.

If your e-MTB has two or three chainrings, keep in mind that the numeric number of speeds is only theoretical, as there is an overlap. The chain should not run at an extreme angle, otherwise it wears down and the efficiency decreases. An unfavourable run of the chain is when the smallest chainring is used with one of the two or three outermost (smallest) sprockets (c) or when the largest chainring is used with one of the inmost (largest) sprockets (d).

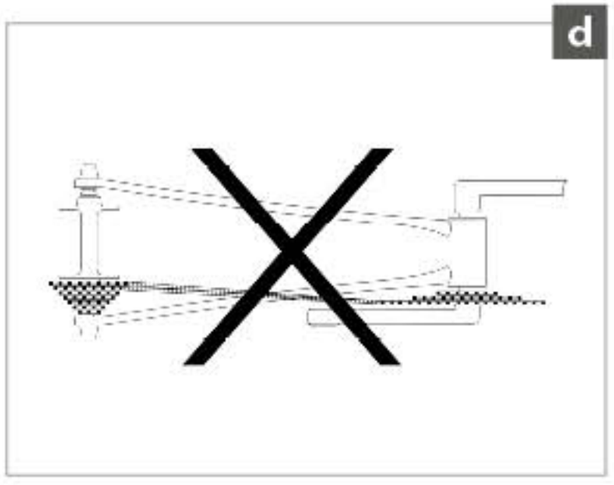
a

b

c



d



Depending on the gear system, gear shifting is initiated by actuating a shifter or by a short turn of the wrist in the case of twist grips (e). Continue pedalling during gear shifting, however, at reduced pedalling force.

The principles of the different shifters and their functioning is described in the following. It is, however, also possible that your new CROSS EPAC/EAPC/e-MTB has a gear system that is not mentioned below.

In the case of shifters pressing the large shifter (f) (thumb shifter) moves the chain towards the larger chainrings/sprockets.

Shifting with the right thumb shifter therefore leads to a lower gear. This is an indexed shifting system with the option of shifting several gears with one action. Actuating the left thumb shifter, if available, leads to a higher gear.

Pulling the small lever, which is located in front of the handlebar from the rider's viewpoint and actuated with the index finger (g) or also with the thumb, moves the chain towards the smaller chainrings/sprockets, i.e. on the right side to the heavy gears and on the left side to the easy gears.

SAFETY INSTRUCTIONS

The manufacturers of gear systems possibly supply their products with detailed instructions. Read them thoroughly. Make yourself familiar (h) with your new gears in an area free of traffic, if necessary. If you are in doubt or if you have any questions, contact your CROSS dealer.

The principle is different with **twist grips**. While a turn of the right-hand grip towards the rider leads to an easier gear ratio, the same movement on the left-hand side leads to a heavier gear – and vice versa. The shifting direction may vary in this case, as well.

⚠ WARNING

Shifting gears under load, i.e. while pedalling hard, can make the chain slip. At the front derailleur, if available, the chain may even slip off the chainrings and cause an accident!

⚠ WARNING

Always wear straight-cut trousers or use trouser clips or the like (a) to make sure your trousers do not get caught in the chain or the chainrings. Risk of accident!

NOTICE

If you have several chainrings avoid gears with the chain running at an extreme angle as this will increase wear!

It is therefore crucial when switching gears to continue pedalling smoothly and without too much force. Do not shift under load, in particular not at the front derailleur, if available, (b), as this will shorten the service life of your chain considerably. Furthermore, this can lead to a chain-suck, i.e. the chain can get jammed between chainstay and chainrings.

Checking and Readjusting

Before your CROSS EPAC/EAPC/e-MTB was handed over the derailleur gears were carefully adjusted by your CROSS dealer (c). However, Bowden cables may extend a little on the first kilometres/miles, making gear shifting imprecise and the chain rattle.

Adjusting the rear derailleur and the front derailleur, if available, (d) accurately is a job for an experienced mechanic. If you want to try it by yourself, also observe the manuals made available on the gear manufacturer's website. If you have any problems with the gears, contact your CROSS dealer.

⚠ WARNING

For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 3 to your CROSS dealer for its first inspection after 75 to 225 kilometres (45 to 140 miles), 5 to 15 hours of initial use or four to six weeks, at the very latest, however, after three months.

For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 4 to your CROSS dealer for its first inspection after 5 to 15 hours of initial use or four to six weeks, at the very latest, however, after three months.

For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 5 to your CROSS dealer for its first inspection after 4 to 12 hours of initial use or four to six weeks, at the very latest, however, after three months.

Adjusting the Rear Derailleur

Increase the tension of the Bowden cable by turning the adjustable cable stop at the shifter (e) or the adjusting bolt through which it runs into the rear derailleur (f). To do so, shift to the smallest sprocket and turn the bolts anticlockwise in half turns until the cable is slightly tensioned.

After tensioning the Bowden cable check that the chain immediately climbs onto the next larger sprocket. To find out you either have to turn the cranks by hand or ride the CROSS EPAC/EAPC/e-MTB and shift through the gears.

If the chain easily climbs onto the next larger sprocket, check that it just as easily shifts to the small sprockets. If it does not, release the respective adjusting bolt a little. You may need several trials.

⚠ WARNING

Adjusting the possibly available front and rear derailleur accurately is a job for an experienced mechanic. Observe the instructions of the gear manufacturer. If you have any problems with the gears, contact your CROSS dealer.

SAFETY INSTRUCTIONS

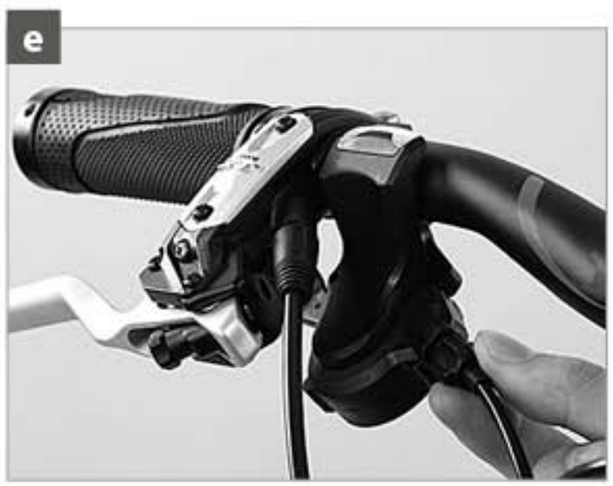
Ask a helper to lift up the rear wheel. By turning the cranks and shifting through you can easily check the function.

Adjusting the Limit Stops

The rear derailleur is equipped with limit screws (g) which limit the movement range of the derailleur, thus preventing the derailleur and chain from colliding with the spokes or the chain from dropping off the smallest sprocket. The limit screws are adjusted by your CROSS dealer. They do not change their position during normal use.

If necessary, correct the position by means of the limit screws. The limit screws on rear derailleurs are often marked "H" for high gear and "L" for low gear. High gear means that the chain is running on the smallest sprocket. Turn the screw clockwise to move the rear derailleur towards the wheel and anticlockwise to move it away from the wheel.

Shift to the biggest (inmost) sprocket and check that the guide pulley of the rear derailleur is exactly below the teeth of the sprocket. Turn the limit screw marked "L" clockwise until the rear derailleur stops moving towards the spokes and can neither be moved by actuating the shifter nor by pushing it with your hand (h).



This adjustment prevents the chain from getting stuck between sprocket and spokes or the rear derailleur or the derailleur cage from colliding with the spokes, which could result in damage to the spokes, the rear derailleur and the frame. In the worst case, it could be impossible to continue cycling.

⚠ WARNING

- ***If your CROSS EPAC/EAPC/e-MTB has toppled over or the rear derailleur received an impact, there is the risk that the rear derailleur or its mount, also referred to as derailleur hanger, is bent. You should check its range of movement and readjust the limit screws (a), if necessary, after such an incident or after mounting a new rear wheel.***
- ***Do a test ride in an area free of traffic, after you have adjusted the gears.***

NOTICE

- ***Poorly adjusted gears are one of the main causes for irreparable damage to frame, rear derailleur and wheel. Let your CROSS dealer maintain and service your CROSS EPAC/EAPC/e-MTB regularly.***

Adjusting the Front Derailleur (if available)

The range within which the possibly available front derailleur keeps the chain on the chainring without colliding with the chain is very small. As is the case with the rear derailleur, limit screws marked "H" and "L" limit the swivelling range (g, p. 67). The limit screws are adjusted by your CROSS dealer. They do not change their position during normal use.

As with the rear derailleur, the cable of the front derailleur (b) is subject to lengthening which leads to a reduced precision in gear changing. Shift to the small chainring (c) and increase, if necessary, the tension of the Bowden cable by turning the adjusting bolt through which it passes at the entry to the gear shifter (d).

⚠ WARNING

- ***After an accident check that the guide plates of the front derailleur are still parallel to the chainrings. Make sure they do not collide with the large chainring which would block the drive. Risk of accident!***
- ***Adjusting the front derailleur is a very delicate job. Improper adjustment can cause the chain to jump off, thus interrupting the driving force. Risk of accident!***
- ***Do a test ride in an area free of traffic, after you have adjusted the gears.***

CHAIN – CARE AND WEAR

To ensure a long service life of the chain and its noise-free running, it is not the quantity but the distribution and regular application of lubricant that counts. Clean the chain from time to time by using an oily rag and remove dirt and oil (e). Special degreasers are not necessary; they even have a damaging effect.

Having cleaned the chain as thoroughly as possible, apply chain oil, wax or grease to the chain links (f). Turn the crank and apply the lubricant to the rollers on the inner side of the chain. Once this is done, turn the chain a few more times; then let the CROSS EPAC/EAPC/e-MTB rest for a few minutes so that the lubricant can disperse on the chain. Finally wipe off excess lubricant with a rag so that it does not spatter around during riding or can collect road dirt.

⚠ WARNING

Make sure the rotors or the brake pads remain clear of lubricants. This would render the brake ineffective.

NOTICE

For the sake of the environment, only use biodegradable lubricants, because in operation there is always some chain lubricant that ends up on the ground, especially in wet conditions.

Although chains are wearing parts on a bicycle, you can have an influence on its service life. Make sure the chain is lubricated regularly, especially after riding in the rain. Try to only use gears which run the chain in the straightest line between the sprockets and chainrings and get in the habit of high cadence pedalling.

Chains of derailleur gears are worn out after approx. 800 to 2,500 km (480 to 1,500 miles) or 40 to 125 hours of use. Heavily lengthened chains make gear shifting imprecise. Cycling with a worn-out chain also accelerates the wear of the sprockets and chainrings. Replacing these components is expensive compared to changing the chain. Therefore, check the condition of the chain at regular intervals.

Your CROSS dealer has accurate measuring instruments for checking the chain wear (g). Replacing the chain should ideally be left to a CROSS dealer, as this requires special tools. In addition, you need to select a chain matching your gear system.

⚠ WARNING

An improperly joined or heavily worn chain can break and cause an accident.

SAFETY INSTRUCTIONS

When replacing your chain, only use appropriate and suitable original spare parts (h). Your CROSS dealer will be pleased to help you.

e

f

g

h

HEIGHT-ADJUSTABLE SEAT POST/DROPPER POST

If you want to change your saddle height frequently, e.g. in the terrain, to achieve more mobility when riding downhill on the e-MTB, it is recommended that you use a dropper post. In ready-to-ride condition, the dropper post is connected with a cable running through the seat tube to a control lever or button (a) on the handlebar.

Mounting a dropper post, in particular one with remote control from the handlebar, can be complicated. It is recommended that you ask your CROSS dealer to do this job.

Before adjusting the saddle height (b), read the chapter **"Adjusting the Height of the Saddle"**.

Observe the instructions of the manufacturer when adjusting the control lever of the dropper post on the handlebar.

⚠ WARNING

In general, it requires a considerable degree of manual skills and (special) tools to mount a dropper post (c). This job is best left to your CROSS dealer. If you want to try it by yourself, nevertheless, read the manual of the seat post manufacturer carefully before you start.

⚠ WARNING

Observe the provisions of the frame or bicycle manufacturer in terms of minimum insertion depth.

NOTICE

Do not clamp a CROSS EPAC/EAPC/e-MTB which has a dropper post with the movable part of the seat post into a workstand, but exclusively with the bottom part pulled out far enough (d). When inserting or pulling out the dropper post, make sure to pull in or out the cable where it comes out of the frame to prevent the cable from breaking.

Service the dropper post regularly and keep the adjusting area particularly clean.

SAFETY INSTRUCTIONS

In the case of dropper posts, e.g. from RockShox, Kind Shock, etc., the height is adjusted by pressing a button or by actuating a lever on the handlebar. Read the manual of the seat post manufacturer.

More information is provided at the websites of the seat post manufacturers, like e.g. www.rockshox.com and www.kssuspension.com

a

b

c

d

WHEELS AND TYRE EQUIPMENT

The wheel consists of the hub, the spokes and the rim. The tyre is mounted onto the rim so that it encases the tube. To protect the sensitive inner tube a rim tape (e) is placed or glued on the spoke nipples and the often sharp-edged rim well.

The rider's weight and the luggage as well as unevennesses in the field are considerable loads for the wheels. Although wheels are manufactured with great care and delivered accurately trued, spokes and nipples can lose a little tension on the first kilometres/miles. Therefore, ask your CROSS dealer to check and true up the wheels after a short "break-in" period already, i.e. after about 75 to 225 kilometres (45 to 140 miles) (category 3), 5 to 15 (category 3 and 4), or 4 to 12 hours of use (category 5).

After the initial "break-in" period, check the wheels regularly (f). It will, however, rarely be necessary to tighten the spokes.

SAFETY INSTRUCTIONS

There are two tyre systems for CROSS EPACs/EAPCs/e-MTBs. Tubeless tyres, also referred to as UST tyres which require specific milk sealants and conventional clincher and folding tyres which require an inner tube.

Tyre Systems

The tyres should provide grip and traction. At the same time, they should run smoothly and absorb minor shocks from the road surface. Both rolling friction and grip depend on the nature of the tyre carcass, the rubber compound and the tyre tread. Your CROSS dealer has various types to choose from (g).

If you want to mount a new tyre, you have to take into account the system and the dimension of the previously mounted tyre. The latter is specified in two different units on the side of the tyre. One of the sizes is the standardised size in millimetres which is more precise, e.g. the number sequence 57-622 means that the tyre is 57 mm wide when fully inflated and has an (inner) tyre diameter of 622 millimetres (h). The other size is indicated in inches (e.g. 29 x 2.25").

For good reason, specific tyres suitable for e-MTBs are strongly recommended. They are typically more durable.

Tyres must be inflated to the proper inflation pressure to provide an optimal compromise between smooth running and riding comfort. Properly inflated tyres are also more resistant to punctures. An insufficiently inflated tyre can result in a "snakebite" by pinching the inner tube, when it goes over a sharp kerb.


e


f


g

h

The air pressure recommended by the manufacturer is given on the tyre side or on the type label. The lower limit of the pressure specification means maximum comfort for light riders which is optimal for riding on rough surfaces. As the pressure increases, rolling resistance on level ground is minimized, while comfort decreases. Tyres inflated to maximum pressure are therefore best suited for heavy riders and for riding on tarred roads.

Inflation pressure is often given in the old system of units, i.e. in psi (pounds per square inch). The table (a) gives the most common pressure values in terms of both systems.

The tyre alone with the rim does not hold the air. Therefore, an inner tube (b) is placed inside and filled through a valve to retain the air pressure.

Exceptions to this are the tubeless wheel/tyre systems. With these systems rim and tyres are tight without inner tube (tubeless/UST tyres) or sealed with specific rim tapes and/or sealed with liquid sealants (Tubeless-Ready/NoTubes system). For more information read the respective instructions before starting any work with such tyres.

Valves

There are two valve types in general use on CROSS EPACs/EAPCs/e-MTBs:

1. **Sclaverand** or **Presta valve** (c): Meanwhile, this valve is used on almost all types of bicycles. It is designed to withstand extremely high pressures.
2. **Schrader** or **American valve** (d): This is an adapted car tyre valve.

Both valve types have a plastic cap to protect them from dirt.

With **Presta valves** you first have to undo the small knurled nut a little and depress it carefully until air starts to escape. Check the fit of the valve body in the stem, otherwise air may slowly leak out. Do not forget to tighten by hand the valve nut after inflating.

Presta valves can be filled with a specific adapter with the compressed air pump at the petrol station.

The **Schrader valve** can be inflated with a suitable pump directly after removing the protective cap or filled at the petrol station with the compressed air pump.

a

psi	bar	psi	bar
10	0.7	40	2.8
15	1.0	45	3.1
20	1.4	50	3.4
25	1.7	55	3.8
30	2.1	60	4.1
35	2.4	65	4.5

b

c

d

A compressed air pump must be used very carefully as you may otherwise overinflate the tyre and make it burst.

To let out air, shortly press the pin in the centre of the Schrader valve (e) or the knurled nut of the Presta valve (f).

It can be hard to inflate tyres to the necessary pressure by using hand pumps. It is much easier with a foot-operated or a track pump equipped with a pressure gauge (g).

⚠ WARNING

- ***Replace tyres with a worn tread or with brittle or frayed sides. Dampness and dirt penetrating the tyre can cause damage to its inner structure. The inner tube could burst. Risk of accident!***
- ***Mounting a tyre of another size than the one that was mounted in series, can result in a toe overlap, i.e. your foot may collide with the front wheel while steering at reduced speed. During compression of the suspension element a wheel can get jammed, as well. Risk of accident!***
- ***Treat your tyres with care. Never inflate your tyres beyond the maximum permissible pressure. The tyres might come off the rim or burst during the ride. Risk of accident!***

⚠ WARNING

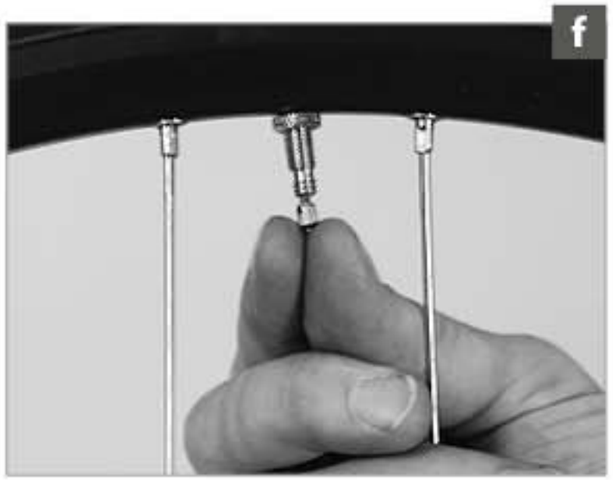
- ***Tyres allowing an inflation pressure of 5 bars and more have to be mounted on hooked-bead rims, identifiable by the designation "C". If you are in doubt or if you have any questions, contact your CROSS dealer.***
- ***A higher pressure gives a better riding stability and reduces the risk of a puncture. The minimum and maximum pressure (in bar or psi) is indicated on the tyre side. Always ride with the prescribed tyre pressure and check the pressure at regular intervals, at least once a week (h).***

SAFETY INSTRUCTIONS

- ***Also observe the maximum permissible pressure value of the rim. The pressure is dependent on the tyre width. You find the values in the enclosed instructions of the rim or wheel manufacturers.***
- ***If you have a CROSS EPAC/EAPC/e-MTB with tubeless tyres, also read the manuals of the tyre and rim manufacturer.***

e

f



g

h

Rim Trueness and Spoke Tension

For the true running of the wheel it is imperative that the tension exerted by the spokes is distributed evenly around the rim. If the tension of a single spoke changes, e.g. as a result of riding fast over a kerb or of a loose nipple, the tensile forces acting on the rim become unbalanced and the wheel will no longer run true. The function of your CROSS EPACs/EAPCs/e-MTBs may be affected before you notice this irregularity due to the swerving.

Therefore, check the wheels from time to time for trueness. Check that all spokes are evenly tensioned (a). Lift up the wheel and spin it by hand (b). Observe the gap between tyre and fork or frame (c). If the gap varies by more than one millimetre, you should ask your CROSS dealer to true the wheel (d).

NOTICE

- ***Do not ride with untrue wheels. Loose spokes must be tensioned at once. Otherwise the load on the other spokes and the rim will increase.***
- ***Truing (retruing) wheels is a difficult job which you should definitely leave to your CROSS dealer.***

TYRE PUNCTURE

Flat tyres are the most common cause of puncture during cycling. However, as long as you have the necessary tools and a spare tube or a repair kit, this need not mean the end of your cycle tour. If your wheels are attached with quick-releases and most of the thru axles to the frame and the fork, you only need two tyre levers and a pump (e).

SAFETY INSTRUCTIONS

Before removing a wheel, read the chapters "Wheel Removal" and "How to Use Quick-Releases and Thru Axles". If you are in doubt or if you have any questions, contact your CROSS dealer.

Wheel Removal

If you have (hydraulic or mechanical) **disc brakes**, you should check first the exact position of the brake pads and/or their wear indicators (f). This will help you to verify subsequently, whether the brake pads are still in the proper position after dismounting. Read the possibly enclosed manual of the brake manufacturer. Do not actuate the brake lever when the wheel is removed.

If you have **derailleur gears**, you should shift the chain to the smallest sprocket before removing the rear wheel. This shifts the rear derailleur right to the outside where it does not interfere with the removal of the wheel.

Open the quick-release of the wheel (g) or remove the thru axle, as described in the chapter **"How to Use Quick-Releases and Thru Axles"**. In case you are in doubt about how to handle quick-releases and thru axles, ask your CROSS dealer to explain it to you.

If you still cannot remove the front wheel, this is in the case of quick-releases due to the dropout safety tabs. These are tabs in the fork ends (dropouts) (h). You have to release the preload nut of the quick-release a little and slip the wheel from the safety tabs.

e

f

g

h

It is easier to remove the rear wheel, when you pull the rear derailleur slightly backwards (a). Lift up the CROSS EPAC/EAPC/e-MTB and give the wheel a gentle tap with your hand, it then drops.

⚠ CAUTION

Rotors can become hot, so let them cool down before removing the wheel.

NOTICE

Do not pull the (disc) brake lever with a removed wheel and make sure to mount the safety locks when removing the wheel.

SAFETY INSTRUCTIONS

Observe the possibly enclosed manuals of the brake and gear manufacturers.

Dismounting a Rohloff rear wheel requires special handling. Follow the possibly enclosed Rohloff instructions, if necessary.

Clincher and Folding Tyres

Tyre Removal

Remove the cap and the fastening nut from the valve and deflate the tyre completely (b). Press the tyre from the rim side towards the centre of the rim. This will ease the removal.

Apply a plastic tyre lever under one bead of the tyre about 5 cm beside the valve and lever the tyre side over the rim edge (c). Hold the lever in this position. Slip the second tyre lever between rim and tyre at a distance of about ten centimetres on the other side of the valve and lever the next portion of the bead over the edge of the rim.

After levering a part of the tyre side over the edge of the rim you should normally be able to slip off the whole tyre on one side by moving the tyre lever around the whole circumference (d). Now you can remove the inner tube. Make sure the valve does not get caught in the rim, as this can damage the inner tube. If necessary, you can remove the whole tyre by pulling the other tyre side off the rim.

Repair the puncture according to the instructions of the repair kit manufacturer or replace the inner tube.

When you have removed the tyre, you should also check the rim tape (e). It should be positioned evenly, covering all spoke nipples and holes, and must not be damaged or brittle.

In the case of double wall rims the tape must cover the entire rim base, but it should not be so broad as to stand up along the inside edges of the rim. Rim tapes for this type of rim should only be made of fabric or durable plastic. If you are in doubt or if you have any questions, contact your CROSS dealer.

If you have a puncture en route, inflate the inner tube and bring it close to your ear. In most cases you can hear the air coming out. At home you can help yourself with a bucket of water where you can locate the hole by the bubbles. When you have found the hole, look for the corresponding place on the tyre and check it, as well. Often the foreign body sticks in the tyre. Be sure to remove it, otherwise the next puncture is likely to occur.

⚠ WARNING

If the fabric of the tyre is destroyed by the perforating object, replace the tyre to be on the safe side.

Replace spoilt rim tapes immediately.

NOTICE

When buying spare tubes, make sure you choose a valve matching the rim. Presta and/or Sclaverand valves can sustain damage when mounted on rims for Schrader valves. Risk of a sudden loss of air. Schrader valves neither fit all rims.

Tyre Mounting

When mounting a tyre make sure no foreign matter, such as dirt or sand, gets inside the tyre and you do not damage the inner tube in the process.

Slip one bead of the tyre onto the rim. Press one side of the tyre with your thumbs over the edge of the rim around the entire circumference. This should normally be possible without using tools.

Stick the valve of the inner tube through the hole in the rim (f). Inflate the inner tube slightly so that it becomes round and push it into the tyre all the way round. Make sure not to leave any folds in the inner tube.

To finish mounting the tyre, start at the opposite side of the valve. Press the tyre as far as possible with your thumbs all around over the rim side.

Make sure the inner tube does not get pinched and squashed between the tyre and the rim. You can prevent this by pressing the inner tube into the hollow of the tyre (g, p. 77) with your hand as you work along.

Work the tyre into the rim by approaching the valve symmetrically from both sides. Towards the end, you have to pull the tyre forcefully downwards (h, p. 77) to make the already mounted section of the tyre slip towards the deepest part of the rim well. This will ease mounting noticeably on the last centimetres.

Before pressing the tyre completely on the rim, check the position of the inner tube once again and then press the tyre over the edge of the rim by using the ball of your thumb (a).

If this does not work, you have to use the tyre levers (b). Make sure the bent ends point towards the inner tube and do not damage the inner tube.

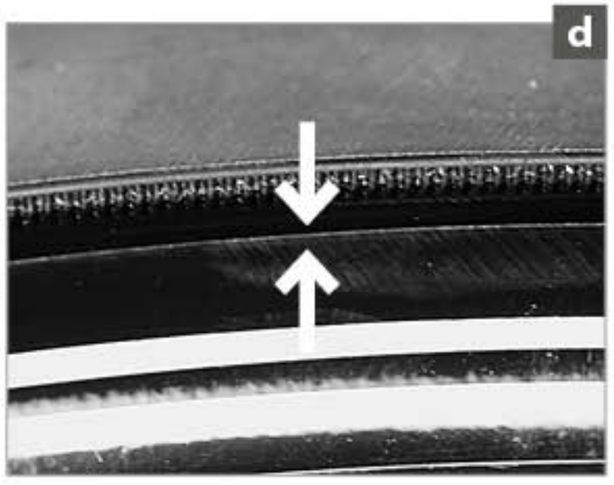
Push the valve a little into the tyre (c) so that the inner tube is not pinched under the tyre. Check that the valve stands upright. If not, dismount one tyre side again and reposition the inner tube.

To make sure the inner tube is not pinched between the rim and the bead, move it sideways back and forth between the sides of the rim. While doing so, also check whether the rim tape has shifted.

Inflate the inner tube to the desired pressure. The maximum pressure is indicated on the side of the tyre.

Check that the tyre is properly seated by inspecting the fine indicator line (d) just above the rim edge. This line should be at an even distance from the rim all around the tyre.

Now adjust the pressure through the valve by starting with the maximum tyre pressure. Observe the recommended tyre pressure range.



Tubeless Tyres (UST tyres)

Tubeless tyres (e) are also referred to as "tubeless ready". The rims are provided with specific valves, have an entirely enclosed rim base and partly also a specific rim shape. There is no inner tube.

Tyre Removal

Deflate the tubeless/UST tyre completely (f). Press the tyre from one side towards the centre of the rim, until the tyre bead is loose in the rim base.

Start removing the tyre close to the valve and lift one tyre side over the edge of the rim with your fingers.

After you have pulled the entire tyre side over the rim edge press, if necessary, the other tyre side into the rim base and remove this side also from the rim.

NOTICE

- ***Be sure to only use plastic tyre levers in exceptional cases to avoid damage to the sensitive sealing lip on the tyre bead!***
- ***It is recommended that you use the tools of the respective tyre manufacturer (g) for removal and mounting as they are designed to be used together.***

Puncture Assistance – Repair

In case of a puncture, tubeless tyres can also be used with inner tubes. Remove any available perforating object from the tyre first and remove the valve from the rim. Insert a slightly inflated new inner tube into the tyre. Mounting is carried out as described in the following chapter. You may need tyre levers for this purpose.

In case of a puncture in your tubeless tyre, you can repair the tyre inside as you would usually repair an inner tube. If you have filled latex milk inside beforehand, the milk must be removed thoroughly in the area of the puncture, otherwise the patch will not stick. Inflate the tyre with the spray subsequently. Minor damage can also be repaired by only using the spray.

You can repair large cracks or holes up to a maximum length of 10 mm with a special repair kit, also referred to as "strips", "plugs" or "tubes". Prepare the area and thread the strip through the tool. Press the strip and the tool into the damaged area (h) so that both ends of the strip just stand out a little. Pull out the tool. Fill in some more sealant or make already applied sealant run on the area. Inflate subsequently. When you are on a cycle tour, this is best done with a repair spray.

e

f

g

h

⚠ WARNING

Improper mounting can lead to malfunctioning, tyre damage or even brake failure. Therefore, strictly observe the instructions of the component manufacturer.

SAFETY INSTRUCTIONS

There are specific patches available for tubeless tyres. They are mounted to the inside. If need be, you can also use a conventional repair patch. Always observe the operating instructions of the repair kit manufacturer.

Tyre Mounting

Before you start mounting make sure the inside of the tyre and the tyre bead are free of dirt and lubricant.

NOTICE

Be sure to only use plastic tyre levers in exceptional cases to avoid damage to the sensitive sealing lip on the tyre bead. Press the tyre on the rim by exclusively using your hands to avoid damage to the tyre bead.

It is recommended that you use the tools of the respective tyre manufacturer for mounting as they are designed to be used together.

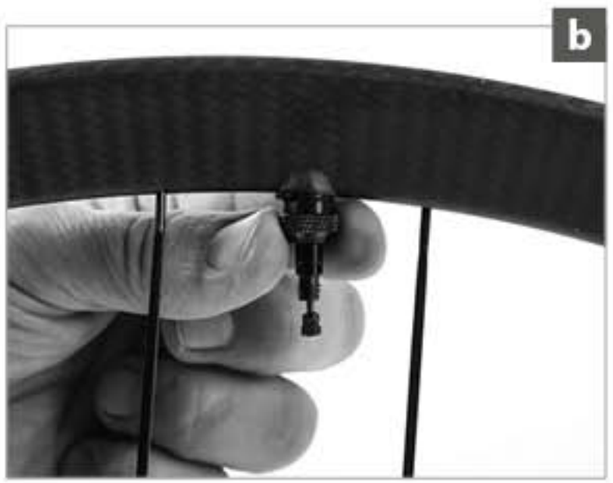
Insert the valve from the inside through the valve hole (a) and slide the rubber seal as well as the plastic washer matching the shape of the rim on the valve stem (b). Screw on the valve nut with its flat side first until the valve fits reliably and is tight.

Check whether a running direction of the tyre is specified. Tubeless tyres are mounted in the same way as clincher tyres. Start in the area opposite the valve and press the tyre into the rim base, as far as possible, by using your hands and without tools. Work yourself around until you reach the valve (c). Align the tyre equally.

Observe the position of the valve between the sides of the tyre. Apply some assembly liquid provided by the tyre manufacturer to the tyre bead and the inside of the rim edges (d). This makes the tyre slide easier into its position. To do this, press the tyre to the side so that the sponge reaches the tyre base in the bottom.

Check again at the valve that the tyre is properly in place. Press from above on the tyre and work yourself around (e); make sure it fits evenly all around and is in contact with the tyre base.

The first air blast is crucial for the mounting. The tyre must inflate and be in contact with the rim immediately to make sure no air escapes. It is therefore recommended that you use a compressor or a powerful track pump (f). Inflate the tyre with quick blasts. A CO_2-cartridge is reasonable on a cycle tour. As soon as you are back home deflate the tyre completely and refill it once again by using a pump with pressure gauge.



Once in contact, i.e. the tyre is tight, continue inflating until you hear two pops. This noise indicates that the tyre fits properly. If you do not succeed until you have reached the maximum tyre pressure deflate the tyre and carefully apply mounting liquid once again **(d)**.

Once the tyre fits properly check along the indicator line **(g)** that the tyre lies evenly with both sides in the rim around the entire circumference. Spin the wheel slowly and observe the course of the indicator line along the top edge of the rim. If necessary, deflate the tyre a little and align it.

When everything fits, deflate the tyre and unscrew the valve from the valve stem. Shake the latex milk bottle strongly so that the ingredients mix up evenly. Fill the tyre with 60 to 120 ml of the sealant depending on the tyre size or with the quantity recommended by the tyre manufacturer **(h)**.

Clean the area inside and outside the valve by using an absorbent cloth. Screw in the valve again. Inflate the tyre as described above. Spin the wheel slowly for a few rotations to make sure the liquid spreads inside the tyre.

Take the wheel with both hands, continue turning it gradually and shake or tilt it in both directions. This will spread the sealant reliably in all areas inside.

Finish by adjusting the air pressure to your needs or weight and the tyre width. Do not exceed the permissible maximum pressure. Tubeless tyres can be used with about half a bar to one bar less than clincher or folding tyres.

⚠ WARNING

Tubeless tyres must be mounted with a UST rim/UST wheel or a tubeless ready rim.

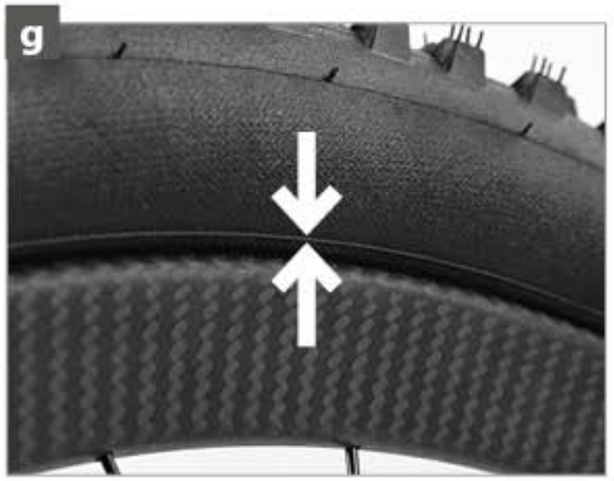
⚠ CAUTION

Tubeless tyres are usually tight even without latex milk. However, as latex milk increases puncture protection significantly, it should be applied nevertheless.

e

f

g



h

If necessary, you can also inflate the tyre with the repair spray actually designed for repairing the tyre during the ride which provides puncture protection.

To do so slide the spray head on the valve. Align the bottle in a way that the opening of the head is flush with the valve. Keep the top of the head tight with one finger and press the bottle for about two minutes depending on the supplier against the head. Remove the bottle quickly from the valve.

Subsequently make a test ride in an area free of traffic and in easy terrain so that the latex milk can spread inside the tyre.

Also read the instructions of the repair spray manufacturer.

⚠ CAUTION

On tubeless tyres it must be checked regularly that the valve nut is tight (a). With a loose valve the tyre loses air quickly.

NOTICE

When mounting tubeless tyres, the tyre bead and the rim edges must be moistened with a specific solution on both sides (b). Normally, you can also use detergent diluted with water. This is the only way to make the tyre slip into its base (c) which makes it air tight.

SAFETY INSTRUCTIONS

It is not only possible to ride with UST/tubeless tyres, but also with typical folding tyres without inner tube and filled with latex milk, if necessary. Read and observe the instructions of the supplier.

Wheel Mounting

Mounting the wheel is done in the reverse order of dismounting. Make sure the wheel is correctly seated in the dropouts and accurately centred between the fork legs or the seat and chainstays. Make sure the quick-release (e), the dropout safety tabs and the thru axle (f), if available, fit properly. For more information see the chapter **"How to Use Quick-Releases and Thru Axles"**.

If you have **disc brakes**, check before mounting the wheel whether the brake pads are in proper position in the holders in the brake calliper. The gap between the brake pads (g) should be parallel and the wear indicators in their correct position. Make sure you slide the rotor carefully between the brake pads.

After you have mounted the wheel and closed the quick-release or the thru axle pull the brake lever (h) (several times, if you have disc brakes). Lift up the CROSS EPAC/EAPC/e-MTB and then spin the wheel with your hand. The rotor should not drag along the brake calliper or the brake pads.

⚠ WARNING

- ***If you have disc brakes, pull the brake levers several times after you have mounted the wheel. You must reach a precise pressure point.***
- ***After the mounting check that the rotors are still free of dirt and grease. Before you set off clean them, if necessary, with a special brake cleaner and an absorbent cotton cloth. Water and detergent will also do.***

HEADSET

The headset connects the fork to the frame and allows the fork to rotate freely. This steering area must be able to rotate easily for the CROSS EPAC/EAPC/e-MTB to stabilise itself and to ride straight ahead. Shocks caused by uneven road surfaces expose the headset to considerable levels of stress. In this way it can become loose and go out of correct adjustment.

⚠ WARNING

Riding the bicycle with a loose headset increases the loads on the fork and the bearing. The fork can break. Risk of accident!

Checking and Readjusting

Check the headset for play by placing your fingers around the upper headset cup (a).

Bring your weight to bear on the saddle, pull the front brakes with your other hand and push the CROSS EPAC/EAPC/e-MTB firmly back and forth with the wheel remaining on the ground (b). If the bearing has play, you will feel the upper head tube race moving in jerks relative to the lower head tube race – visible as a small gap between the head tube races.

To check whether the headset runs smoothly, lift up the frame until the front wheel no longer touches the ground. The handlebar should turn from far left to far right without feeling roughness or tightness at any point. With a gentle tap on the handlebar the fork should turn easily from the middle position (c).

If you face any problems during the test, contact your CROSS dealer.

⚠ WARNING

Check the secure seat of the stem after having adjusted the headset, by holding the front wheel between your knees and trying to turn the handlebar relative to the front wheel (d). Otherwise, a loose stem can cause an accident.

SAFETY INSTRUCTIONS

Adjusting the headset requires a certain amount of experience and should therefore be left to your CROSS dealer.

Threadless Headset – Aheadset®

(Aheadset® is a registered trade mark of Dia-Compe)

The distinct feature of this system is that the stem does not sit within the fork steerer tube, but rather slips over the fork steerer tube, which in this case is threadless. The stem is thus an important part of the headset, as the stem clamping fixes its adjustment (e).

Instead of special tools you need in most cases only one or two Allen keys as well as a torque wrench to adjust the Aheadset®.

Release the clamping bolt(s) located on the side of the stem by one to two turns (f). Gently tighten the countersunk adjusting bolt on top a little, e.g. by a quarter turn (g), by using an Allen key.

Realign the stem to ensure that the handlebar is at right angle to the wheel. Make sure the front wheel is in line with the top tube and the stem.

Tighten the clamping bolts of the stem. Use a torque wrench and never exceed the maximum torque values (h)! You find the torque values on the components themselves, in the chapter **"Recommended Torque Values"** or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

Check the headset for play as described above. Do not to overtighten the headset. Risk of headset failure.

⚠ WARNING

Check the secure fit of the stem by taking the front wheel between your legs and trying to turn the handlebar and stem relative to the wheel. A loose stem can cause an accident.

NOTICE

Do not overtighten the upper bolt, it only serves to adjust the headset play.

SAFETY INSTRUCTIONS

If you do not succeed in adjusting the headset, this can have several reasons. If you are not absolutely sure, ask your CROSS dealer for help.

SUSPENSION

Glossary

Suspension fork
Bicycle fork absorbing and damping shocks via moving components. The most common among these forks are telescopic suspension forks (a). What is designated as stanchion tubes are the thinner tubes press fitted or screwed to the fork crown of a telescopic fork. What is designated as lower legs are the lower tubes the stanchion tubes slide in.

Rear shock
The rear shock is the element which combines the spring as well as the damping in the rear frame (b) of a full-suspension CROSS EPAC/EAPC/e-MTB. Often the rear shock is also referred to as shock absorber.

Spring rate or hardness
Force required to compress the spring by a certain travel – measured in Newton per millimetre (N/mm) or pound per inch (lbs/in). A higher spring rate requires more force for the travel. With air spring elements a higher rate means a higher pressure.

Spring preload
In the case of the widespread air spring systems, the air pressure in the fork (c) is crucial for the spring rate and the spring preload. Observe the manufacturer's recommendations.

Within a certain range a preload can be applied to the steel springs. Then the suspension only responds at a higher load. The spring rate remains, however, unchanged. Heavier riders cannot compensate a too soft spring rate with a higher preload.

Sag (d)
The travel of the rear frame or the fork during compression when the rider takes up his or her usual riding position at a standstill. This is usually specified as a percentage of the overall travel.

Travel adjust
In most cases the travel is reduced by turning a knob. On some forks the reduction is only activated after a deep spring compression. In the case of full-suspension rear frames this is typically done by screwing off segments to which the rear shock is mounted or by loosing or readjusting screws.

Compression damping
In most cases a blue adjusting knob (e). Decelerates or slows down the force that moves a fork or shock through its travel. Prevents the suspension fork from bottoming out when compensating very fast impacts.

Especially high-quality suspension elements distinguish between "high speed" (for hard impacts = rapid spring compression) and "low speed" (for slow compression, e.g. bouncing when riding out of the saddle) compression damping.

Rebound damping (f)
In most cases a red adjusting knob. Decelerates and/or slows down the speed at which the fork or shock recovers or bounces back. Prevents bike bobbing.

Lockout
In most cases a lever on the suspension element or the handlebar (g). A device to block the fork or the rear shock so that the suspension element does not cause bob when riding on tarred roads or smooth surfaces. Not to be used when riding off road.

Platform damping (h)
Increases the (low speed) compression damping rate and eliminates bobbing. In contrast to the lockout function, the suspension is not blocked completely.

e

f

g

h

SUSPENSION FORKS

Most e-MTBs are equipped with suspension forks (a+b). This feature gives you better control of your CROSS EPAC/EAPC/e-MTB when riding in the terrain or on poor road surfaces, because the tyre remains more in contact with the ground. The (impact) loads on CROSS EPAC/EAPC/e-MTB and rider are noticeably reduced.

Suspension forks differ in their types of spring elements and damping. The suspension is usually provided by coil springs, specific types of plastic (elastomers) or sealed air compartments or combinations of them. Damping is usually done with oil or the self-damping properties of the elastomers.

SAFETY INSTRUCTIONS

Suspension fork manufacturers normally supply their products with instructions. Read them carefully before changing any settings or doing any maintenance work on your suspension fork.

Adjusting the Spring Rate

To work perfectly, the fork has to be adjusted to the weight of the rider, the sitting posture and the intended use. The suspension fork should yield by about 10–25 % of its total travel (sag) under the rider's weight.

Be sure to have this adjustment carried out by your CROSS dealer at the moment of delivery.

If you can hear the fork hit the end of its travel in the terrain or on poor road surfaces, the spring is adjusted too soft. In this case the spring preload/pressure must be increased (c). If the setting range with coil springs is too small, have the springs replaced by your CROSS dealer.

⚠ WARNING

Suspension forks are designed in a way that they can or must absorb shocks. If the fork is too rigid and jammed, shocks are undiminished introduced in the frame which is usually not designed for that in these areas. If your suspension fork has a lockout mechanism (d), be sure not to activate the lockout function when riding over rough terrain, but only on smooth terrain (roads, field tracks).

The suspension fork must be designed and adjusted in a way that it only bottoms out in extreme cases. A spring rate which is too soft (or too low an air pressure) can usually be heard or felt as a "clunk" type noise. This noise is caused by the sudden complete compression of the suspension fork as it reaches bottom out. If the suspension fork frequently reaches bottom out, it will sustain damage over time, and so will the frame.

a

b

c

d

Adjusting the Damping Control

Damping is adjusted via valves inside. The oil circulation through these valves slows down the speed at which the suspension fork is extended or compressed preventing the suspension from "bouncing" after hitting an obstacle. In this way the reaction to obstacles can be optimised.

Suspension forks with adjustable **rebound damping** have an adjusting knob (mostly red) (e) to slow down or accelerate the rebound movement (rebound). If a second (mostly blue) knob (f) is available, the compression speed can be set and/or the lockout function can be activated.

Start the setting with a completely open damping (rebound and compression on "-"). Take hold of the handlebar with both hands and pull the front brake lever. Lean with your entire weight on the suspension fork (g) and remove your weight immediately. The fork will rebound at nearly the same speed as you made it compress.

Turn the red adjusting knob in the direction "+" until you hear a click. Compress the fork once again with the front wheel brake pulled and then remove the weight abruptly once again. You will notice that the rebound process is somewhat slower.

Repeat the compression and the release by continuously turning the rebound damping. You will get a feeling for the working of the rebound damping.

The typical setting of the rebound damping is an extension of the suspension components at reduced speed, however not at a sluggish pace. A rebound movement at reduced speed ending up in a sluggish movement is definitely a too high damping.

Ride over an obstacle (e.g. down a kerb) subsequently and turn the rebound damping in small steps towards the "+" setting. You have found the proper rebound setting when the suspension fork does not cycle more than once. Always check a changed setting during a test ride in the terrain (h).

e

f

g

h

Some suspension forks also have a **compression damping** (a). The typical compression damping, or on some suspension forks the high-speed compression damping, slows down the compression when riding at high speed over an obstacle. A high compression speed would possibly make the fork bottom out.

A weaker damping ensures a good responsive performance, leads however to an excessive compression of the suspension fork when riding at high speed over obstacles, e.g. steps, or to a bouncing when riding out of the saddle under certain conditions. A too strong damping hardens the suspension and thus reduces the riding comfort.

If you have set the sag correctly, as above described, and the fork works properly during a normal test ride, but bottoms out in an extreme situation, you can increase the compression damping (b).

Proceed click by click because a too strong compression damping prevents the suspension fork from using the complete travel. The setting of the compression damping can be a long process which must be carried out consciously and always in small steps.

Start at the lowest level, i.e. the adjusting knob must be turned fully towards the marking "-" or "open".

Always check a changed setting during a test ride in the terrain. If you are not sure about how to adjust the damping or if you face any problems during setting, contact your CROSS dealer and follow the respective instructions in the operating instructions of the suspension fork manufacturer (c).

⚠ WARNING

- ***If the fork is damped too much (rebound), it may no longer be able to bounce when taking a quick series of obstacles. Risk of accident!***
- ***Do not turn any screws by using tools in the vague hope these were adjusting devices. You could release the fastening mechanism, thus causing a fall. The adjusting devices are usually operated with the fingers and marked by all manufacturers with a scale or with "+" (for stronger damping/harder suspension) and "-" signs*** (d)**.**

a

b

c

d

⚠ WARNING

- ***When mounting a new front tyre, make sure there is enough clearance between tyre and fork crown as the fork compresses entirely. If necessary, deflate the suspension fork completely and press the handlebar forcefully downward (e), to check this. The front wheel can get jammed. Risk of accident!***
- ***Do not ride when the suspension fork bottoms out. This could damage the fork itself and the frame. The spring rate should always be adjusted to the weight of the rider and the luggage (f) as well as to the riding conditions.***

SAFETY INSTRUCTIONS

- ***Contact your CROSS dealer and follow the respective instructions in the operating instructions of the fork manufacturer.***

Lockout

When taking long uphill rides involving hard pedalling out of the saddle, a suspension fork is typically bobbing. It is advisable to lock the damping, if the suspension fork has a lockout mechanism (g). For downhill rides on uneven ground the lockout mechanism must be open.

⚠ WARNING

- ***Do not actuate the lockout function when riding over rough terrain (h), but only when riding over level terrain (roads, field tracks).***

Maintenance

Suspension forks are components of sophisticated design that require regular maintenance and care. This has led almost all suspension fork manufacturers to establish service centres where you can have your fork thoroughly checked and overhauled at regular intervals according to use, e.g. once a year. Be sure to have all bolted connections checked at regular intervals by your CROSS dealer.

The following routines are essential for maintenance:

Make sure the sliding surfaces of the stanchion tubes are absolutely clean. Clean the fork with water and a soft sponge (a) when soiled.

After washing the CROSS EPAC/EAPC/e-MTB, spray the stanchion tubes of the suspension fork with a little lubricant (b) approved by the manufacturer or apply a very thin film of hydraulic oil. Compress the fork several times and wipe off excess lubricant with a clean rag before you set off for your next ride.

Do not use a steam jet (c) or aggressive cleaning agents for cleaning! Ask your CROSS dealer for an appropriate lubricant.

In the case of forks with **elastomer suspension** the plastic springs should be cleaned and lubricated regularly with a non-corrosive resin-free grease. Some fork manufacturers supply special grease (d) for fork maintenance. Strictly observe the recommendations of the manufacturers. Suspension forks with **air suspension** have to be checked regularly for pressure, as pressure escapes over time.

NOTICE

Suspension forks are constantly exposed to water and dirt from the front wheel. Clean them with plenty of water after every ride.

SAFETY INSTRUCTIONS

Suspension elements are of sophisticated design. The maintenance work and above all the disassembly of the suspension elements are jobs best left to your CROSS dealer.

Be sure to have your CROSS EPAC/EAPC/e-MTB with suspension fork checked by a service centre of the fork manufacturer once a year at least.

REAR SHOCK

Full-suspension CROSS EPACs/EAPCs/e-MTBs (e) do not only have a suspension fork but also a movable rear frame which has suspension and is damped by a rear shock (f). This feature gives you better control of your CROSS EPAC/EAPC/e-MTB when riding in the terrain or on poor road surfaces. The (impact) loads on CROSS EPAC/EAPC/e-MTB and rider are noticeably reduced. The rear shock normally works with an air spring element or – less frequently – with coil springs. Damping is usually achieved with oil. Depending on the system the rear shock has one or more bearing axles.

What to Bear in Mind When Adjusting the Seating Position

Depending on the rear shock setting the saddle can tilt a little backwards. Keep this in mind when adjusting the saddle tilt. If you have trouble sitting, try lowering the nose of the saddle a little compared to your usual position.

SAFETY INSTRUCTIONS

Full-suspension CROSS EPACs/EAPCs/e-MTBs have a greater ground clearance than bicycles without rear suspension. With a properly adjusted saddle height you are normally not able to reach the floor with your feet. Set the saddle a little lower to begin with and practise getting on and off the saddle.

Adjusting the Spring Rate

For an optimal functioning of the rear frame, the rear shock has to be adjusted to the weight of the rider, the sitting posture and the intended purpose (g). Be sure to have this setting carried out by your CROSS dealer at the moment of delivery.

If you can hear the rear shock hit the end of its travel in the terrain, the spring is adjusted too soft. In this case the spring preload/the pressure must be increased. If the setting range of the coil spring is too small, have the spring replaced by your CROSS dealer.

⚠ WARNING

On full-suspension frames the rear frame is designed in a way that it can or must compensate shocks. If the rear shock is too rigid and jammed, shocks hit the frame undiminished. In these areas the frame is normally not designed to bear these loads. If your rear shock has a lockout mechanism, do not activate the lockout function when riding over rough terrain, but only when riding over smooth terrain (h) (roads, field tracks).

e

Without lighting not suitable for use on public roads!

f

g

h

NOTICE

The rear shock must be designed and adjusted in a way that it only bottoms out in extreme cases. A spring rate which is too soft (or too low an air pressure) can usually be heard or felt as a "clunk" type noise. This noise is caused by the sudden complete compression of the rear shock as it reaches bottom out. If the rear shock frequently reaches bottom out, it will sustain damage over time, and so will the frame.

SAFETY INSTRUCTIONS

Rear shock manufacturers normally supply their products with instructions. Read them carefully before changing any settings or doing any maintenance work on your rear shock.

Adjusting the Damping Control

Damping is adjusted via valves inside. The oil circulation through these valves slows down the speed with which the rear shock is extended or compressed and prevents the suspension "bouncing" after hitting an obstacle. In this way the reaction to obstacles can be optimised.

Rear shocks (a) with adjustable **rebound damping** have an adjusting knob (mostly red) (b) to slow down or accelerate the rebound movement. If a second (mostly blue) knob is available, the compression speed can be set and/or the lockout function can be activated.

Start the setting with a completely open damping (rebound and compression level on "-" or "fast"). Hold the saddle with both hands. Lean with your entire weight on the saddle (c) and remove your weight immediately. The rear shock will rebound at the same speed as you made it compress.

Turn the red adjusting knob in the direction "+" or "slow" until you hear a click (d). Press the saddle down once again and remove your weight abruptly. You will notice that the rear shock extends more slowly. Repeat the compression and the release by continuously turning the rebound damping. You will get a feeling for the working of the rebound damping.

The typical setting of the rebound damping is an extension of the suspension components at reduced speed, however not at a sluggish pace. A rebound movement at reduced speed ending up in a sluggish movement is definitely a too high damping.

Ride over an obstacle (e.g. down a kerb) subsequently and turn the rebound damping in small steps towards the "+" or "slow" setting. You have found the proper rebound setting when the rear frame does not cycle more than once. Always check a changed setting during a test ride in the terrain.

Some rear shocks also have a **compression damping** (e+f). The typical compression damping – or in the case of some rear shocks the high-speed compression damping – reduces the rate at which the rear shock compresses when riding at high speed over an obstacle. Otherwise a high compression speed could make the rear shock bottom out.

A weak damping ensures good response behaviour, may however lead under certain conditions (when riding too fast over obstacles, e.g. steps) to a too strong compression of the rear frame or to a bouncing when riding out of the saddle. A strong damping hardens the suspension, i.e. reduces the riding comfort.

When you have set the sag correctly, as above described, and when the rear shock works properly during a normal test ride, but if then the rear shock bottoms out nevertheless, you can increase the compression damping a little.

Proceed in this case also click-by-click because a too strong compression damping prevents the rear shock from using the complete travel. The setting of the compression damping can be a long process which must be carried out consciously and always in small steps.

Start at the lowest level, i.e. the adjusting knob must be turned fully towards the marking "-" or "firm". Always check a changed setting during a test ride in the terrain (g).

If you are not sure about how to adjust the damping or if you face any problems during setting, contact your CROSS dealer and follow the respective instructions in the rear shock manufacturer's manual.

Lockout

When taking long uphill rides involving hard pedalling out of the saddle, a rear frame is typically bobbing. It is advisable to lock the damping, if the rear shock has a lockout mechanism. For downhill rides on uneven ground the lockout mechanism must be open.

Many mountain bikes have a lockout lever on the handlebar. In the case of Fox suspension elements the "Climb mode" corresponds to a lockout (h).

⚠ WARNING

- ***Do not turn any screws in the vague hope of adjusting them somehow. You could release the fastening mechanism, thus causing a fall. All manufacturers usually mark adjusting devices with a scale or with "+" signs (for stronger damping/harder suspension) and with "-" signs*** (a).
- ***Do not ride when the rear shock often bottoms out. This could damage the rear shock itself as well as the frame. Always adjust the spring rate to the rider's weight and riding conditions.***
- ***If the rear shock is damped too much (rebound) the rear frame may lo longer be able to bounce when taking a quick series of obstacles. Risk of accident!***
- ***When mounting a new rear tyre, make sure it does not collide with the frame when the rear frame compresses entirely. If necessary, deflate the rear shock completely and press the saddle forcefully downward to check this. The rear wheel can get jammed. Risk of accident!***
- ***Do not actuate the lockout function when riding over rough terrain*** (b), ***but only when riding over smooth terrain (roads, field tracks).***

Maintenance

Rear shocks and rear frames are components of sophisticated design that require regular maintenance and care. This has led almost all rear shock manufacturers to establish service centres where you can have your rear shock thoroughly checked and overhauled at regular intervals according to use, e.g. once a year.

Be sure to have all bolted connections checked at regular intervals by your CROSS dealer.

The following routines are essential for maintenance:
Rear shocks with air spring have to be checked regularly for air pressure, as pressure escapes over time. Make sure the sliding surfaces of the piston rod are clean. Clean the rear shock and the rear frame, in particular the bearings with water and a soft rag after every ride (c). After you have washed the CROSS EPAC/EAPC/e-MTB, apply a little grease spray approved by the damper manufacturer (d) on the piston rod of the rear shock and the bearings or apply a very thin layer of hydraulic oil.

Then compress the rear frame several times (e) and wipe off excess lubricant with a clean rag before you set off for your next ride.

Do not use a steam jet (f) or aggressive cleaning agents for cleaning! Ask your CROSS dealer for an appropriate lubricant.

Check the proper fit of all bolted connections of the rear frame regularly. Also check whether the rear frame bearings show lateral or the bearing of the rear shock vertical play.

Lift up the CROSS EPAC/EAPC/e-MTB by the saddle and try to move the rear wheel to the left and to the right. If you need help, ask a helper to hold the front part of the frame tight.

To check whether the rear shock has play, gently place down the rear wheel and then lift it up again (g). Listen for rattling noises. If you find any play, ask your CROSS dealer to eliminate it immediately.

NOTICE

Rear shocks are constantly exposed to water and dirt from the front and rear wheel. Clean them with plenty of water and a rag after every ride (h)**.**

SAFETY INSTRUCTIONS

Rear shocks and rear frames are of sophisticated design. The maintenance work and above all the disassembly of the suspension elements are jobs best left to your CROSS dealer.

Be sure to have your CROSS EPAC/EAPC/e-MTB with rear shock checked by a service centre of the manufacturer once a year at least.

e

f

g

h

THINGS WORTH KNOWING ABOUT CROSS EPACS/ EAPCS/E-MTBS AND CYCLING

Cycling Helmets and Glasses

Cycling helmets are highly recommended. Your CROSS dealer has a wide range in different sizes (a).
Cycling helmets are only approved for use during cycling. Observe the manufacturer's instructions.

⚠ WARNING

Never ride without a helmet and glasses (b)! But remember that even the safest helmet is useless unless it fits properly and is correctly adjusted and fastened.

Apart from a cycling helmet and suitable clothing, cycling glasses are absolutely essential when you set off on your CROSS EPAC/EAPC/ e-MTB. They do not only protect your eyes from the sun and the wind, but also keep out flies and other impurities that may impede your vision when they fly into your eyes. **Risk of accident!**

Your CROSS dealer has a wide range of cycling glasses available and will be pleased to advise you!

Clothing

⚠ WARNING

Never ride with wide-cut trousers or skirts that might get caught in the spokes, chain or chainrings. To avoid any such mishap, use suitable clips or straps, if necessary (c).

Be sure to wear bright-coloured clothing to be seen by other road and trail users! In the dusk or darkness wearing reflecting clothes helps to be seen better.

Pedals and Shoes

Cycling shoes should be made of solid material to provide firm support for your feet. In addition, they should have a stiff sole so that the pedal cannot press through. The sole should not be too wide; otherwise you will not be able to assume a natural foot position.

Specific cycling shoes are particularly necessary when your CROSS EPAC/EAPC/e-MTB bike is equipped with clipless pedals (d). With these shoes small cleats are fixed to the sole. They give you a firm connection between shoe and pedal and allow an acceptable walking position.

a

b

c

d

The main advantage of these step-in pedals (e) is that they prevent your feet from slipping off when pedalling fast or when riding over rough terrain. They enable you not only to push but also to pull the pedals.

The usual way to engage with the pedal is to turn it from the lowest position of the crank to the horizontal using the tip of the cleat and push down on the back of it. Normally, the shoe engages with the pedal with a click which you will hear and feel clearly.

The release force of clipless pedals is adjusted by means of an Allen key (f). Creaking or squeaking noises can often be removed by applying some grease to the contact points. But they could also be signs of wear, just like a wobbling feeling. Check the cleats at regular intervals.

⚠ WARNING

- ***Make sure the fastening bolts of the cleats are always properly tightened. If they are loose, disengaging your shoe from the pedal is nearly impossible. Risk of accident!***
- ***Taking up the pedals, engaging and disengaging the shoes should first be practised at standstill (g). Later you can refine your technique in a place free of traffic.***

⚠ WARNING

- ***Be sure to only use a pedal systems that allows you to engage and disengage smoothly. A defective pedal or a badly worn cleat can make the shoe disengage from the pedal. In some cases, it may be difficult or impossible to disengage. In both cases, there is the danger of an accident!***
- ***Make sure pedals and shoe soles are always free of dirt and other impurities (h) and lubricate the lock-in mechanism at regular intervals.***

⚠ CAUTION

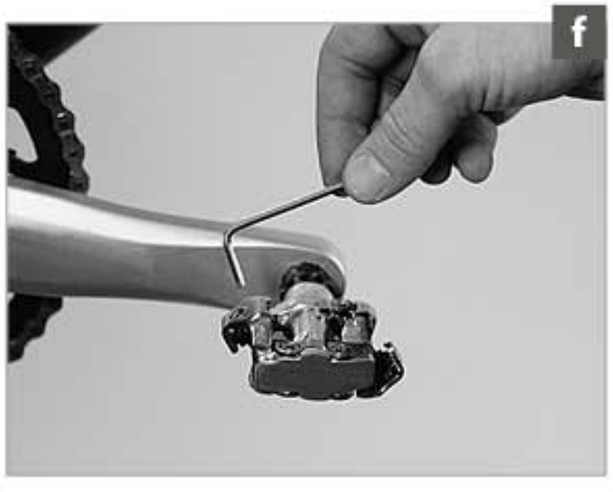
- ***Some mountain bike pedals, also referred to as platform pedals, are designed for maximum grip of the shoes, e.g. during dirtbiking and freeriding. For this reason they have sharp edges and/or bolted pins. As they enhance the risk of injuries during riding, you should wear protective clothing, e.g. knee and shin guards.***

SAFETY INSTRUCTIONS

- ***Read the operating instructions of the pedal manufacturer and ask your CROSS dealer to inform you about the different shoe models.***

e

f



g

h

Accessories

In purchasing this CROSS EPACs/EAPCs/e-MTBs you laid the foundation for a lot of riding fun. Whatever you are planning to do with your bicycle, be sure to have proper equipment and to keep a few tips in mind. Your CROSS dealer has a variety of useful accessories on offer enhancing both your safety and convenience.

Your CROSS EPAC/EAPC/e-MTB can be equipped with various kinds of accessories (a). However, make sure that the requirements of the road vehicles regulations in your country and of the EN standards are observed. All parts that you retrofit must be compatible with your CROSS EPAC/EAPC/e-MTB.

⚠ WARNING

Unsuitable accessories can change the properties of your CROSS EPAC/EAPC/e-MTB and even result in an accident. Therefore, before mounting any accessories always contact your CROSS dealer and strictly observe the instructions on the intended use of the CROSS EPAC/EAPC/e-MTB as well as the information given in the "Guidelines for the parts replacement on CE marked e-bikes/EPACs/EAPCs with 250 watts and a pedal assist of up to 25 kmh (15.5 mph)".

Bicycle Locks

Do not forget to take a high quality D-, folding or chain lock (b) with you on your ride. The only way to effectively protect your CROSS EPAC/EAPC/e-MTB against theft is to connect it to an immovable object.

Puncture Kit

The most important accessories for a successful cycle tour are a tyre pump, a small tool kit and possibly your mobile phone. The tool kit should include two plastic tyre levers, the most commonly used Allen keys, an inner tube, a tyre repair kit, if necessary, and a little cash (c). In this way you will be well prepared in the event of a puncture or some other mishap.

SAFETY INSTRUCTIONS

- ***Retrofitted accessories, such as mudguards, pannier racks, etc. can impair the functioning of your CROSS EPAC/EAPC/e-MTB. Ask your CROSS dealer for advice before mounting any kind of accessories to your CROSS EPAC/EAPC/e-MTB.***
- ***Before buying any additional bells, horns or lighting accessories, inform yourself thoroughly whether they are permitted and tested and thus approved for use on public roads. Make sure additional battery/accumulator-powered lamps are marked with the wavy line and the letter "K" (d).***

a

b

c

d

TRANSPORTING LUGGAGE

There are various ways of carrying luggage on a CROSS EPAC/EAPC/e-MTB. The best way to transport luggage depends primarily on the weight and the volume of the luggage. An uncomplicated way of transporting luggage is in a specific bicycle rucksack (e).

You can also use pannier racks or handlebar bags, but this is not possible with some e-MTBs. If you are in doubt or if you have any questions, contact your CROSS dealer.

Some e-MTBs without rear shock can be equipped with a pannier rack (f). Ask your CROSS dealer for the fixing points and suitable pannier racks.
If a pannier rack can be mounted, it is advisable to carry luggage in stable pannier bags (g) with a very low centre of gravity.
When buying pannier bags, make sure they are watertight so that you will not have any unpleasant surprises after the first rain shower.

We generally recommend, however, that you do not fasten any luggage to suspension forks.

Make sure the weight of your luggage is favourably distributed when loading your CROSS EPAC/EAPC/e-MTB. Heavy pieces of luggage should be packed as far down as possible. If allowed with your specific model, lighter pieces should be packed in the handlebar bag and on top of the pannier rack.

⚠ WARNING

- ***Do not overload your CROSS EPAC/EAPC/e-MTB, if possible, (see the e-MTB card and the type plate on the frame) and also observe the maximum permissible load capacity possibly marked on or impressed in your pannier rack.***
- ***Adjust the suspension fork (h), the tyre pressure and the rear shock, if mounted, to the additional load.***
- ***Luggage changes the riding characteristics of your CROSS EPAC/EAPC/e-MTB in general and increases your stopping distance! Therefore, practise riding a loaded CROSS EPAC/EAPC/e-MTB in a place free of traffic.***

e

f

g

h

TAKING CHILDREN WITH YOU

The only possible and legal way of transporting children is in special child seats (a) or child trailers.

SAFETY INSTRUCTIONS

Prior to mounting and pulling a trailer (b+c) with your CROSS EPAC/EAPC/e-MTB check that it is designed for this purpose. Have a look at the e-MTB card or ask your CROSS dealer for advice.

Child Seats

⚠ WARNING

Most e-MTBs are not designed for mounting child seats. This applies in particular to extremely lightweight frames. Ask your CROSS dealer for advice and have a look at the e-MTB card. Also read the instructions of the child seat manufacturer.

(Child) Trailers

⚠ WARNING

Prior to pulling a trailer with your CROSS EPAC/EAPC/e-MTB make sure before you set off it is equipped according to the regulations prescribed in your country and switch on the lighting as soon as darkness sets in or with poor visibility.

Always secure your child(ren)/your pet(s) with the seat belts, as uncontrolled movements can make the CROSS EPAC/EAPC/e-MTB or the trailer topple over.

Kids' Tandem Bicycles/Trailer Systems (d)

⚠ WARNING

Make sure your child always wears a suitable helmet. A child seat or a trailer only provide insufficient protection in the event of an accident! Keep in mind that you always wear a helmet, as well.

Be sure to only buy tested child seats, child trailers and trailer systems (e.g. EN tested systems) and always make sure they are properly mounted. Detailed information in this regard is provided in the manuals of the manufacturers that you have obtained with your purchase.

a

b

c

d

TRANSPORTING THE CROSS EPAC/EAPC/E-MTB

By Car

Nearly every car accessory dealer and nearly all car companies offer carrier systems (e) for CROSS EPAC/EAPC/e-MTB transport wich allow a transport without disassembly of the CROSS EPAC/EAPC/e-MTB.

The CROSS EPACs/EAPCs/e-MTBs are usually placed in a rail and fastened with a clamp gripping the down tube. This can result in irreparable damage to the frame. High-end, very thin-walled aluminium or carbon frames are particularly susceptible to such kind of damage. Due to the material properties of carbon, you may not see a severe damage at first sight. This can result in an unforeseeable severe accident at a later date. There are, however, specific suitable models available in the car accessory trade.

Always make sure the CROSS EPAC/EAPC/e-MTB is securely fastened to the outside or inside the car and check the fastenings regularly. In addition, you should always remove the battery from the CROSS EPAC/EAPC/e-MTB (f), as far as possible, prior to transporting the CROSS EPAC/EAPC/e-MTB on the car roof.

Stow the battery in its original cardboard box (from the CROSS dealer) and stow the removable display, if possible, safely inside the car to prevent damage during the journey. Also dismount accessories, such as tyre pumps, pannier bags, etc. (g).

Rear carriers are becoming more and more popular. Their big advantage over roof carriers is that you do not have to lift up the CROSS EPAC/EAPC/e-MTB so high. Make sure the clamps do not cause any damage to the fork or frame. **Risk of breakage!**

Whatever system you opt for, make sure it complies with the relevant safety standards of your country!

Read the operating instructions of your bicycle carrier and comply with the maximum load capacity and recommended or prescribed driving speed. Observe the necessary drawbar load, if available.

⚠ WARNING

Pull the brake levers and secure them with a strong elastic band (h), when transporting a CROSS EPAC/EAPC/e-MTB with hydraulic disc brakes horizontally or hanging.

e

f

g

h

⚠ WARNING

- *Do not buy any carrier systems on which the CROSS EPAC/EAPC/e-MTB is mounted with the crankset. This puts these parts under heavy strain. Risk of breakage!*
- *Make sure to remove all movable and loose parts, parts which might come loose during transport (tools, pannier bags, child seats, etc.) and above all the rechargeable battery, the control element and the cycle computer on the handlebar before transporting it outside or on the car. Risk of accident! When you transport your CROSS EPAC/EAPC/e-MTB without battery on a bike carrier system, protect the connections against water, moisture and dirt, e.g. with a plastic bag.*
- *Check the fastening of the CROSS EPACs/EAPCs/e-MTBs before and also regularly during the journey. A CROSS EPAC/EAPC/e-MTB that detaches from the carrier system may endanger other road users.*
- *Do not place the e-MTB or parts of it unsecured inside the car (a). Parts shifting around can endanger your safety.*
- *Make sure the lights and the number plate of your car are not hidden from view. For some carriers, a second exterior rear view mirror is required by the road traffic regulations.*

⚠ CAUTION

- *The weight or the weight distribution on EPACs/EAPCs/e-MTBs differs significantly from that on bicycles without drive system. A CROSS EPAC/EAPC/e-MTB is clearly heavier than a bicycle without drive system. This makes it difficult to park, push, lift and carry the CROSS EPAC/EAPC/e-MTB. Bear this in mind when loading your CROSS EPAC/EAPC into a car and unloading it or when mounting it on a bicycle carrier system.*

NOTICE

- *Before transporting several CROSS EPACs/EAPCs/e-MTBs with a roof mounting or a rear mounting carrier system, inform yourself about the maximum load capacity of the bicycle carrier. Keep in mind that the weight of a CROSS EPAC/EAPC/e-MTB is higher than the weight of a bicycle without drive. It could be that you are only allowed to transport one or two CROSS EPACs/EAPCs/e-MTBs instead of three bicycles without drive.*
- *Most clamps are a potential source of damage to large-diameter frame tubes that are not designed to be fixed in such clamps! Do not use such systems with carbon frames.*
- *Observe the greater height and the respective width of your vehicle. Measure the overall height and place a sign stating the height somewhere in the cockpit or on the steering wheel so that it can be easily seen.*
- *If you have disc brakes, be sure to mount the safety locks (b) before transporting the CROSS EPAC/EAPC/e-MTB with the wheels dismounted.*
- *Secure the bicycles on the bicycle carrier with an additional lock e.g. during a halt.*

SAFETY INSTRUCTIONS

- *If necessary, also inform yourself about the laws and regulations concerning bicycle or CROSS EPAC/EAPC/e-MTB transport in the countries that you travel through during your journey. The laws and regulations differ, e.g. with regard to the marking.*

By Train / By Public Transport

CROSS EPACs/EAPCs/e-MTBs can be transported like conventional bicycles by public transport.

Taking bicycles or CROSS EPACs/EAPCs/e-MTBs with you by public transport is generally permitted (e), the regulations applicable in the cities may differ, however. In some places there are for example blocking times where you are not allowed to take your CROSS EPAC/EAPC/e-MTB with you or only with an extra ticket. Inform yourself in time about the regulations of carrying the bicycle before you start the trip!

In some trains you can stow your CROSS EPAC/EAPC/e-MTB in multi-purpose compartments. They are often at the front or end of a train and marked with a bicycle sign.

⚠ CAUTION

If the rechargeable battery of your CROSS EPAC/EAPC/e-MTB is mounted to the down tube (f+g), you can remove the battery as well as pieces of luggage for an easier boarding and disembarking (h).

SAFETY INSTRUCTIONS

Before you start your journey inform yourself in time about the transport conditions and also observe the regulations and rules for bicycle transport in the countries through which you travel during your journey.

By Plane

If you intend to transport your CROSS EPAC/EAPC/e-MTB by plane or to dispatch it by a forwarding agent, you have to observe particular packing and labelling requirements for rechargeable batteries which are considered hazardous goods. Contact the airline, an expert for hazardous items or the forwarding agent in time.

SAFETY INSTRUCTIONS

Contact the airline with which you intend to travel in time and inform yourself about the conditions and possibilities of taking your CROSS EPAC/EAPC/e-MTB with you.

e

f

g

h

GENERAL NOTES ON CARE AND SERVICING

Service and Maintenance

When you come to collect your CROSS EPAC/EAPC/e-MTB your CROSS dealer will have assembled it so that it is ready for use. Nevertheless, your CROSS EPAC/EAPC/e-MTB needs regular care (a). Have your local CROSS dealer do the scheduled maintenance work. This is the only way to ensure the durable functioning of all components.

The first inspection is already due after 75 to 225 kilometres (45 to 140 miles) (category 3), 5 to 15 (category 3 and 4), or 4 to 12 hours of initial use (category 5), or four to six weeks. The CROSS EPAC/EAPC/e-MTB must be serviced, because in this initial "break-in" period of use, safety-relevant bolted connections and spokes can slightly lose tension or gears may go out of adjustment. This "break-in" period is unavoidable.

Therefore, remember to make an appointment with your CROSS dealer for the first inspection of your new CROSS EPAC/EAPC/e-MTB. The first service is very important for both functioning and durability of your CROSS EPAC/EAPC/e-MTB.

⚠ CAUTION

Remove the rechargeable battery (b) or the display before doing any work on your CROSS EPAC/EAPC/e-MTB (e.g. servicing, repairs, assembly, maintenance, work on your drive, etc.). Activating the drive systems unintentionally bears the risk of injury!

NOTICE

Keep in mind that the battery of your CROSS EPAC/EAPC/e-MTB shows signs of wear over the years. This results in a continuous reduction of the battery's capacity and in a reduced range compared to its state as new (c). After a certain period of time the battery even needs to be replaced.

Keep in mind that the auxiliary drive may lead to partly higher wear than you are used to. This applies in particular to the brakes and the tyres and in the case of mid-mounted motors/drive units to the chain and the sprockets.

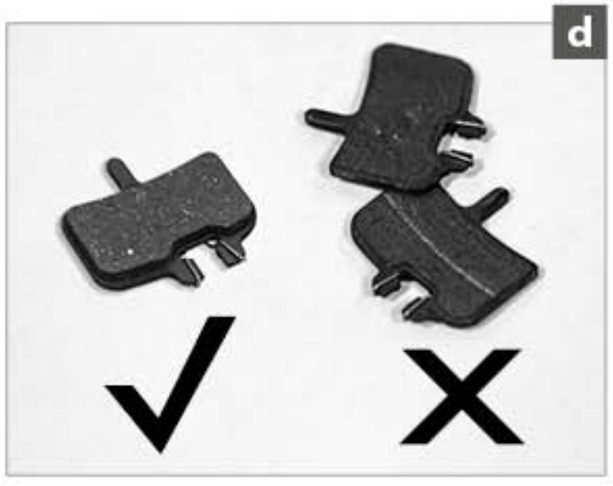
The intended use of the CROSS EPAC/EAPC includes regular servicing and the replacement of worn out parts in time, e.g. chains, brake pads (d) or Bowden and brake cables, and therefore has an influence on the warranty and the guarantee, as well.

a

b

c

d



You should have your CROSS EPAC/EAPC/e-MTB serviced regularly by your CROSS dealer after the initial "break-in" period of use. If you ride often on challenging trails and with adverse weather conditions, the time between the service intervals (e) will shorten according to the harder use. The off-season during the winter months is a very good time to take your CROSS EPAC/EAPC/e-MTB to your CROSS dealer for the strongly recommended, comprehensive annual inspection, as they will have plenty of time for you and your CROSS EPAC/EAPC/e-MTB.

If in case of a repair no original spare parts are available, observe the **"Guidelines for the parts replacement on CE marked e-bikes/ EPACs/EAPCs with 250 watts and a pedal assist of up to 25 kmh (15.5 mph)"** (f). You find them in the chapter **"Guidelines"**. In case of inquiries contact your CROSS dealer.

SAFETY INSTRUCTIONS

More information about the parts replacement on your CROSS EPAC/EAPC is provided in the "Guidelines for the parts replacement on CE marked e-bikes/EPACs/EAPCs with 250 watts and a pedal assist of up to 25 kmh (15.5 mph)" in the chapter "Guidelines".

Note that the components of your **speed pedelec** (g) must be replaced by original spare parts only to grant type approval and provide insurance cover. In case of inquiries contact your CROSS dealer.

⚠ WARNING

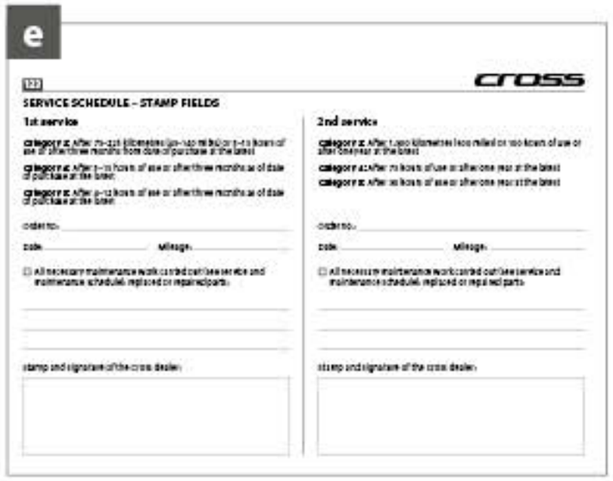
Servicing and repairs are jobs best left to your CROSS dealer. If the inspections are not performed or unprofessionally, this can result in the failure of parts of your CROSS EPAC/EAPC/e-MTB/ speed pedelec. Risk of accident!

When working on your CROSS EPAC/EAPC, restrict yourself to jobs for which you are equipped, e.g. with a torque wrench including bits, and have the necessary knowledge.

SAFETY INSTRUCTIONS

More information about the parts replacement on your speed pedelec is provided in the "Guidelines for the parts replacement on speed pedelecs with type or individual approval with a pedal assist of up to 45 kmh (28 mph)" (h) in the chapter "Guidelines".

e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cross

SERVICE SCHEDULE – STAMP FIELDS

1st service

Category X: After 75–125 kilometres (50–100 miles) or 5–10 hours of use or after three months from date of purchase at the latest

Category Y: After 75–125 kilometres (50–100 miles) or 5–10 hours of use or after three months as of date of purchase at the latest

Category Z: After 50–75 hours of use or after three months as of date of purchase at the latest

order no.:

date: Mileage:

☐ All necessary maintenance work carried out (service and maintenance schedule), replaced or repaired parts:

stamp and signature of the cross dealer:

2nd service

Category X: After 1,500 kilometres (1,000 miles) or 100 hours of use or after 24 months at the latest

Category Y: After 75 hours of use or after one year at the latest

Category Z: After 50 hours of use or after one year at the latest

order no.:

date: Mileage:

☐ All necessary maintenance work carried out (service and maintenance schedule), replaced or repaired parts:

stamp and signature of the cross dealer:

f


Guidelines for the parts replacement on CE marked e-bikes / EPACs / EAPCs with 250 watts and a pedal assist of up to 25 kmh (15.5 mph)

Category X | Category Y | Category Z | Category A

ZIV

g

h


Guidelines for the parts replacement on speed pedelecs with type or individual approval with a pedal assist of up to 45 kmh (28 mph)

Category X | Category Y | Category Z | Category A

ZIV

⚠ WARNING

- *If a component needs to be replaced, make it a rule to only use original spare parts. Wearing parts of other manufacturers, e.g. brake pads (a) or tyres that are not of identical size, can make your CROSS EPAC/EAPC/e-MTB unsafe. Risk of accident! In the case of EPACs/EAPCs both the CE mark and the warranty become void, in the case of speed pedelecs the operating licence expires if parts are not replaced by the original spare parts.*
- *Do not place your CROSS EPAC/EAPC/e-MTB upside down in general (b). When turning the CROSS EPAC/EAPC/e-MTB upside down, the add-on parts, in particular those of the handlebar, may sustain damage. This can render the brakes ineffective!*

⚠ CAUTION

- *Do not touch in or on rotating wheels or disc brakes during the ride or servicing. Risk of injury!*
- *Do not reach between chain and cassette sprockets during servicing and repair work of the chain and the sprockets with the chainguard removed. Risk of injury!*

NOTICE

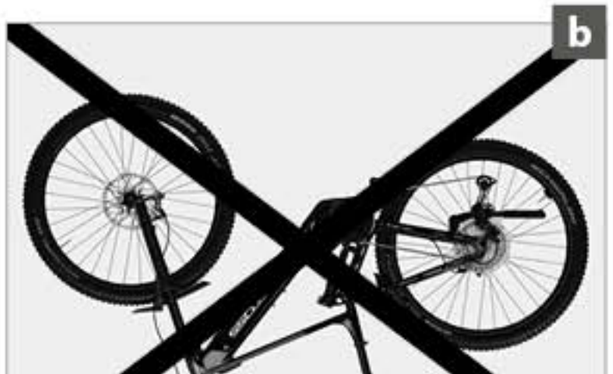
- *A rechargeable battery that has reached the end of its service life must not be disposed of with normal household rubbish (c). Bring the rechargeable battery instead to the dealer, where you buy your new one. For more information see the system instructions of the drive system manufacturer. Ask your CROSS dealer for advice.*

SAFETY INSTRUCTIONS

- *For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 3 to your CROSS dealer for its first inspection after 75 to 225 kilometres (45 to 140 miles), 5 to 15 hours of initial use or four to six weeks, at the very latest, however, after three months.*
- *For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 4 to your CROSS dealer for its first inspection after 5 to 15 hours of initial use or four to six weeks, at the very latest, however, after three months.*
- *For your own safety, bring your CROSS EPAC/EAPC/e-mountain bike of category 5 to your CROSS dealer for its first inspection after 4 to 12 hours of initial use or four to six weeks, at the very latest, however, after three months.*
- *Note and follow the instructions given in the chapters on service and maintenance of the system instructions of the drive system manufacturer.*

a

b



c

Cleaning and Caring for the CROSS EPAC/EAPC/e-MTB

Dried sweat, dirt and salt from riding during the winter or in sea air can harm your CROSS EPAC/EAPC/e-MTB. You should therefore make it a habit of cleaning all components at regular intervals.

Avoid cleaning your bicycle with a pressure water washer. The high-pressure water ejected in a narrowly focused jet may pass through seals and penetrate bearings. This leads to the dilution of lubricants and consequently to greater friction. This destroys and impairs the functioning of the bearing races in the long term. Pressurised water also tends to abrade frame stickers.

A much more gentle way of cleaning your CROSS EPAC/EAPC/e-MTB is with a low pressure water jet or a bucket of water and a sponge or a large brush. Cleaning your bicycle by hand has another positive side-effect: you may discover defects in the paint (e) as well as worn or defective components at an early stage.

Inspect the chain after you have finished cleaning and oil it, if necessary (f) (see the chapter **"Chain – Care and Wear"**).

Apply a coat of standard hard wax (g) on painted, metal and carbon surfaces (except from rotors/brake discs). Polish the waxed surfaces after drying to give them a nice shine. Also maintain the suspension elements with the recommended lubricants.

⚠ WARNING

While cleaning, watch for cracks, scratches, dents as well as bent or discoloured material. Have defective components replaced immediately and touch up paint defects. If you are in doubt or if you have any questions, contact your CROSS dealer.

Keep the brake pads and the rotors/brake discs free of cleaning agents and chain oil. This could render the brake ineffective (see the chapter "Brake System")! Never grease or lubricate the clamping areas of a frame made of carbon (h), e.g. handlebar, stem, seat post and seat tube. Once greased, carbon fibre components may never again be clamped reliably!

The individual drive components can be cleaned with a soft rag and commercial neutral detergents or moistened with water, but do not use excessive water. The drive is not approved for steam cleaning, high-pressure cleaning or cleaning with a water hose. The penetration of water into the electrics or the drive can destroy the devices. Risk of explosion!

NOTICE

Only use petroleum based solvents for cleaning tough oil or grease stains from paint and carbon surfaces. Never use degreasing agents containing acetone, methyl chloride or the like, or solvent-containing, non-neutral or chemical cleaning agents that could attack the surface!

SERVICE AND MAINTENANCE SCHEDULE

You should have your CROSS EPAC/EAPC/e-MTB serviced regularly after the initial "break-in" period of use. The schedule given in the table below is a rough guide for cyclists who ride between 1,000 and 1,500 km (600 and 900 miles) or 50 to 100 hours of use a year.

If you consistently ride more or if you ride a great deal on poor road surfaces or more over challenging trails, the maintenance periods will shorten accordingly. This applies in particular to dirt, freeride, downhill bikes, etc.

Component	What to do	Before every ride	Monthly	Annually	Other intervals
Lighting	Check function	■			
Tyres	Check pressure	■			
	Check tread and side walls		■		
Brake cables, pads, hoses	Visual inspection		■		
Brakes (disc brakes)	Check lever travel, brake pad thickness, for leaks, test brakes at standstill	■			
	Replace brake liquid (DOT-liquids)			✕	
Suspension fork and rear shock	Check bolts			✕	
	All-inclusive service (at manufacturer's service centre)			✕	
Height-adjustable/dropper or suspension seat post	Service			✕	
	Check for play		■		
Rear shock	Check for bearing play		■		
	Check mounting bolts			✕	
Motor shaft with mid-mounted motors, bottom bracket	Check for bearing play		■		
	Dismount and regrease (cups) only bottom bracket with rear wheel motors			✕	
Chain	Check and grease, if necessary	■			
	Check wear, replace, if necessary				✕ After 800 km (480 miles) or 40 hours of use
Crank	Check and retighten, if necessary (with a torque wrench)		■		

Component	What to do	Before every ride	Monthly	Annually	Other intervals
Painted/anodized/carbon	Polish				■ At least every 6 months
Wheels/spokes	Check for trueness and tension		■		
	True or retension				✕ If necessary
Handlebar and stem (aluminium and carbon)	Check and replace, if necessary				✕ Every 2 years at the latest
Headset	Check for bearing play		■		
	Regrease			✕	
Metal surfaces	Polish (except from rotors/brake discs)				■ At least every 6 months
Hubs	Check for bearing play		■		
	Regrease			✕	
Pedals (all)	Check for bearing play		■		
Pedals (clipless)	Clean and grease locking mechanism		■		
Seat post/stem	Check bolts		■		
	Disassemble and regrease Carbon: new assembly paste (no grease!)			✕	
Front/rear derailleur	Clean and grease		■		
Quick-release/thru axle	Check seat	■			
Bolts and nuts	Check and retighten, if necessary (with a torque wrench)		■		
Valves	Check seat	■			
Cables gears/brakes	Dismount and regrease			✕	

If you have a certain degree of mechanical skills, experience and suitable tools, such as a torque wrench, you should be able to do the checks marked ■ by yourself. If you come across any defects, take appropriate measures without delay. If you are in doubt or if you have any questions, contact your CROSS dealer.

Jobs marked ✕ are best left to your CROSS dealer.

RECOMMENDED TORQUE VALUES

All bolted connections of the components have to be tightened carefully and checked regularly to ensure the safe and reliable operation of the CROSS EPAC/EAPC/e-MTB. This is best done with a torque wrench that disengages as soon as the desired torque value is reached or a click-type torque wrench.

Tighten carefully by approaching the prescribed maximum torque value in small steps (0.5 Nm increments) and check in between the proper fit of the component. Never exceed the maximum torque value indicated by the manufacturer!

Where no maximum torque setting is given start with 2 Nm. Observe the indicated values and follow the possibly enclosed manuals of the component manufacturers.

⚠ WARNING

Always use a torque wrench and do not exceed the maximum torque values! You find the torque values on the components themselves, in the chapter "Recommended Torque Values" or in the possibly enclosed instructions of the component manufacturers. Alternatively, you find them in the download area on the websites of the respective component manufacturers.

Component	Manufacturer	Type	Fixing bolt	Cable clamp	Pulleys
Rear derailleur	Shimano	all (incl. Di2)	8–10	6–7	2.5–5
	SRAM	Single (Eagle)	11	4–5	
		Single (Eagle Transmission)	35		3

Component	Manufacturer	Type	Fixing bolt/nut/ bolts	Fixing bolt lever (2 pieces)	Adjusting bolt I-Spec
Shifter/ control unit	Shimano	XTR / Deore XT / SLX / Deore / Cues (U8000)	3		
		Alivio / Acera / Altus / Cues (U6000)	5		
		Tourney	2.5		
		I-Spec adapter	4–6		
		I-Spec adjusting bolt	3 (4 – M9100)		
		STePS – SW-M8150	3	2	3
		STePS – SW-E8000-L	2–2.2	0.5–0.7	
		STePS – SW-EN600-L/-R	0.8		
		STePS – SW-EM800-L / SW-E7000 / SW-E6010 / SW-E6000	1.5		
	SRAM	Discrete / Infinity Clamp	2		
		Discrete Clamp AXS	2 / 3 / 2		
		MatchMaker X – adapter	3		
		MatchMaker X – clamp	5.5		
		MatchMaker X – Pod Controller	2 / 2		

Component	Manufacturer	Type	Fixing bolt/nut/ bolts	Fixing bolt lever (2 pieces)	Adjusting bolt I-Spec
Shifter/ control unit	SRAM	Split clamp / MatchMaker – adapter	2		
		Split clamp / MatchMaker – clamp	3		
		Single bolt clamp	3 / 4		
		Twist grip (XX1 / X0)	2.8–4		
		Twist grip (GX / S-series / Via GT)	2		

Component	Manufacturer	Type	Fixing bolt (clamp)	Fixing screw housing	Fixing bolt housing
Display	Shimano	STePS- SC-EM800 / SC-E8000 / SC-E7000 / SC-EN500 / SC-E5003 / SC-E5000	0.8		0.6
		STePS – SC-EN600	0.8	0.6	

Component	Manufacturer	Type	Fixing bolt motor block	Fixing bolt cover	Fixing bolt light cable
Motor/drive unit	Shimano	STePS (reference value – observe the frame manufacturer's specification)	10–12.5	0.6	0.6

Component	Manufacturer	Type	Fixing/ adjusting bolts	Fixing screws	Integration cap
Crankset	Shimano	Shimano (all)	0.7–1.5	12–14	
		Shimano (FC-E5000 / FC-E5010)	35		
	SRAM	Bosch / Brose	54		0.4
	Miranda	Bosch (Gen4 / Gen3)	57–64		
		Shimano (EP8 / E8000 / E7000 / E6100)	2–3	10–14	
		Yamaha (PW-X / PW-X2 / PW-ST)	47–54		

Component	Manufacturer	Type	Lock/ safety ring
Crank spider	Shimano	Shimano (all)	35–45
	SRAM	Bosch / Brose	30
	Miranda	Bosch (Gen4 / Gen3)	25–30
		Shimano (EP8 / E8000 / E7000 / E6100)	35–45
		Yamaha (PW-X / PW-X2 / PW-ST)	40

Component	Manufacturer	Type	Chainring bolt	Fixing bolt chainguard	Fixing bolt crank arm cover
Chainring	Shimano	Shimano (all)	12–14	0.7	0.8
	SRAM	Bosch / Brose – see crank spider			
	Miranda	Bosch (Gen4 / Gen3)	10–12		
		Shimano (EP8 / E8000 / E7000 / E6100)	10–12		
		Yamaha (PW-X / PW-X2 / PW-ST)	9–11.5		

Component	Manufacturer	Type	Lock/ safety ring
Cassette sprockets	Shimano	HG / Microspline	40
	SRAM	XDR / XD	40
		Splined non-XD	40

Component	Manufacturer	Type	Fixing bolt
Charging port external	Shimano	STePS	0.6
On/off switch	Shimano	STePS	5–6

Component	Manufacturer	Type	Fixing bolt	Fixing bolt magnet
Speed sensor	Shimano	STePS – EW-SS300 / SM-DUE10	1.5–2	1.5–2
		STePS – EW-SS301 / SM-DUE11	0.6	1.5–2
		STePS – EW-SS302	0.8–1.3	1.5–2

Component	Manufacturer	Type	Fixing bolt/ nut	Cable clamp	Bleeder screw/valve
Brake calliper	Magura	Disc – calliper, adapter (PM / IS2000)	6		4
	Shimano	Disc – post mount / flat mount	6–8		4–6
	SRAM	Disc – post mount	6		1.6
		Disc (mech) – post mount / IS2000	9.5 (9–10)	8–10	
	Tektro	V-brake	8–10	6–8	
		Disc – IS2000 adapter	6–8		
		Disc – post mount	6–8		6–8
		Disc (mech) – flat mount – front	5–7	6–8	6–8
		Disc – flat mount – rear – adapter	5–7		
		Disc – flat mount – rear	6–8		6–8

Component	Manufacturer	Type	Fixing bolt/ nut	Safety bolt disc
Brake pad	Magura	Disc		2.5
	Shimano	V-brake	6–8	
		Disc – slot		0.2–0.4
		Disc – hexagon socket		2–4
	SRAM	Disc – hexagon socket		1.1
	Tektro	V-brake	6–8	
		Disc – hexagon socket		0.8–1.2

Component	Manufacturer	Type	Fixing bolt (clamp)	Bleeder screw/valve adjusting bolt
Brake lever	Magura	Disc	4	0.5
	Shimano	Disc	4–6	0.5–1.0
		V-brake	6–8	
	SRAM	Disc	4–5	1.6
		Split clamp / MatchMaker X clamp	5.5	
		Split clamp / MatchMaker – clamp / single bolt clamp	3	

Component	Manufacturer	Type	Union nut/screw	(Banjo) connector fixing bolt
Brake hose	Magura	Disc – brake lever	4	
		Disc – brake calliper – (RHR)		3
	Shimano	Disc – brake lever – (post mount)	5–7	
		Disc – brake calliper – (flat mount / post mount)	5–6/7	depending on model
	SRAM	Disc – brake lever	8	
		Disc – brake calliper – (flat mount / post mount)	5–6	
		Disc – brake calliper – (post mount) – Torx		5
		Disc – brake calliper – (post mount) – outside hex		10.8
		Disc – brake calliper – (post mount) – inside hex		9.3
	Tektro	Disc – brake lever	5–7	
		Disc – brake calliper		6–8

Component	Manufacturer	Type	Lock nut/disc	Fixing bolts
Brake disc/rotor	Magura	6-hole		4
	Shimano	Center Lock	40	
		6-hole / 5-hole		2–4
	SRAM	Center Lock	40	
		6-hole		6.2
	Tektro	6-hole		4–6

Component	Manufacturer	Type	Pedal axle
Pedals	Shimano		35–55
	SRAM	Crank – non-DUB	47–54
		Crank – DUB	54

Component	Manufacturer	Type	Fixing bolt
Shoes	Shimano	Cleat	5–6

These values do not apply to the components of other manufacturers. Also observe the values given in the possibly enclosed instructions of the component manufacturers.

https://si.shimano.com
www.sram.com
www.magura.com
https://mirandabikestore.com/
www.tektro.com

Sheltering and Storing the CROSS EPAC/EAPC/ e-MTB

If you regularly service your CROSS EPAC/EAPC/e-MTB during the year, you will not need to take any special precautions when storing it for a short time, apart from securing it against theft. It is advisable to store the bicycle in a dry and airy place.

There are some things to bear in mind, when storing the CROSS EPAC/EAPC/e-MTB for a longer period of time, i.e. during the winter: During the long storing inflated tubes gradually lose air. If the CROSS EPAC/EAPC/e-MTB is left standing on flat tyres for a long time, the tyre structure can suffer from damage. It is therefore better to hang the wheels or the entire CROSS EPAC/EAPC/e-MTB or to check the tyre pressure regularly (e).

The same applies to the battery; it will lose its charge. Be sure to read and observe the tips in chapter **"Safe Handling of the Rechargeable Battery"**.

Clean the CROSS EPAC/EAPC/e-MTB (f) and protect it against corrosion. Your CROSS dealer offers a variety of care products, such as spray wax (g).

Dismount the seat post and let dry away possibly penetrated humidity. Spray atomized oil into the seat tube exclusively in the case of metal frames. Shift the gear to the smallest chainring and the smallest sprocket (h). This relaxes both cables and springs.

⚠ WARNING

Never apply grease to the seat tube of a frame made of carbon, unless an aluminium sleeve is inside the frame. If you mount a carbon seat post, do not even grease a frame made of metal. Once greased, carbon fibre components may never again be clamped reliably!

SAFETY INSTRUCTIONS

There is usually hardly any waiting time at your CROSS dealer during the winter months. In addition, many dealers offer annual checks at a special price. Use the off-season to take your CROSS EPAC/EAPC/e-MTB to your CROSS dealer for inspection!

Be sure to observe the special requirements on the storage of rechargeable batteries in the chapter "Safe Handling of the Rechargeable Battery".

e

f

g

h

GUIDELINES

Guidelines for the parts replacement on CE marked e-bikes/EPACs/EAPCs with 250 watts and a pedal assist of up to 25 kmh (15.5 mph)

CATEGORY 1

Parts that may only be replaced after the vehicle manufacturer/system provider has given approval

> Motor

> Sensors

> Electronic control unit

> Electric cables

> Control unit on the handlebar

> Display

> Battery pack

> Charger

Parts that may only be replaced the vehicle manufacturer has given approval

> Frame

> Rear shock

> Rigid and suspension fork

> Wheel for hub motor

> Brake system

> Brake pads (rim brakes)

> **Luggage carrier** (Luggage carriers directly affect the load distribution on the bicycle. Both negative and positive modifications potentially result in a riding behaviour that differs from that implied by the manufacturer)

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CATEGORY 2

Parts that may be replaced after the vehicle or parts manufacturer has given approval*

> **Crank arms** (Provided that both the length (centre of axle mount – centre of pedal thread) as well as the distance crank arms – frame centre (Q-factor) are observed)

> **Wheel without hub motor** (Provided that the ETRTO is observed)

> **Chain / Toothed belt** (Provided that the original width is observed)

> **Rim tape** (Rim tapes and rims must be compatible. Modified combinations may result in rim tape shifting and thus in defective inner tubes)

> **Tyres** (The stronger acceleration, the additional weight and the more dynamic cornering require the use of tyres approved for e-bike use. In this respect, observance of the ETRTO is essential)

> **Brake cables / Brake hoses**

> **Brake pads** (Disc, roller, drum brakes)

> **Handlebar-stem unit** (Provided that there is no need of changing the lengths of cables and/or hoses. A modification of the seating position for the benefit of the consumer should be possible within the original cable lengths. A modification beyond results in a significantly changed load distribution on the bicycle and may potentially lead to critical steering properties)

> **Saddle and seat post unit** (Provided that the offset to the rear does not exceed 20 mm with regard to the series / original field of use. In the case of a suspension seat post this applies when the cyclist adopts the typical riding position. In this case, as well, a modified load distribution beyond the intended adjustment range may lead to critical steering properties. The length of the saddle rails at the saddle frame as well as the saddle form are also an issue)

> **Headlights** (Headlights are designed for a specific voltage which must be compatible with the rechargeable battery of the vehicles. In addition, the electromagnetic compatibility (EMC) must be ensured whereas the headlight may be responsible for a part of the potential disturbance)

*** Note: Approval can only be given by the component manufacturer, if the component was tested sufficiently according to its intended use and the respective standards in advance and if a risk analysis was made.**

CATEGORY 3

Parts that do not require specific approval

> Headset

> Bottom bracket

> **Pedals** (Provided that the pedal is not wider than the series / original pedal)

> Front derailleur

> **Rear derailleur** (All gear change parts must be suitable for the number of gears and compatible with one another)

> Shifters / Twist grip

> Cables and housings

> **Chainwheels / Belt sprockets / Cassette sprockets** (Provided that the number of teeth and the diameter is identical to the series/original field of use)

> Chainguard

> **Mudguards** (Provided that the width is not smaller than that of the series/original parts and the dearance to the tyre is 10 mm at least)

> Spokes

> Inner tube of identical design and with identical valve

> Dynamo

> **Battery/rechargeable battery-operated headlights** Only, if provided with a K-number)

> **Rear light** (Dynamo-operated or powered by rechargeable e-bike battery)

> Reflector

> Spoke reflector

> Kickstand

> Grips with screw clamps

> Bell

CATEGORY 4

Special notes for mounting accessories

> **Bar ends are permissible, provided that they are mounted appropriately towards the front** (The load distribution must not be modified severely)

> **Rear-view mirrors are permissible.**

> **In Germany, additional battery/rechargeable battery-operated headlights with K-number (test certificate) are permissible according to section 67 of the German road traffic licensing regulations. (Inform yourself about the legislation in your country).**

> **Trailers are only permissible after approval by the vehicle manufacturer.**

> **Child seats are only permissible after approval by the vehicle manufacturer.**

> **Front baskets are to be considered critical due to the undefined load distribution. Permissible after approval by the vehicle manufacturer only.**

> **Pannier bags and top cases are permissible. The permissible total weight, the maximum loading of the luggage carrier and a correct load distribution have to be observed.**

> **Permanently mounted weather protection devices are only permissible after approval by the vehicle manufacturer.**

> **Front and rear luggage carriers are only permissible after approval by the vehicle manufacturer.**

This is the translation of the original guidelines issued by ZIV, VSF, BIV (German umbrella organisation for the German cycle industry guilds) and velotech.de in cooperation with Zedler-Institut, updated in 2023. In the event of any misunderstandings, the original German version (Leitfaden für den Bauteiletausch bei CE-gekennzeichneten E-Bikes/Pedelecs mit 250 Watt und einer Tretunterstützung bis 25 km/h) shall be applicable.

Experts of the following associations/companies were involved in drawing up the present guidelines (in alphabetic order):

Zweiradmechaniker-Handwerk · velotech.de · VSF · zedler-Institut Technology and Passion for Bicycles · ZIV

Guidelines for the parts replacement on speed pedelecs with type or individual approval with a pedal assist of up to 45 kmh (28 mph)

CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
Important basic information	**Parts that may only be replaced upon presentation of a valid test report (parts approval (ABE, EC, ECE) or part certificate*)**	**Parts that may be replaced in consideration of the conditions described further below**	**Special notes for mounting accessories**
> Fast e-bikes with a motor assistance of up to 45 kmh (28 mph) are considered motor vehicles and subject to the EU Directive 2002/24/EC or the EU Regulation No. 168/2013. > Depending on the vehicle there may be different requirements which must be strictly observed when replacing a component. Therefore, always check the indications given in the vehicle documents prior to doing any work on the vehicles. > Note: At present, vehicles with an individual type approval are mainly subject to the regulations of the EU Directive 2002/24/EC. > All parts that are not included in the list must only be replaced by original spare parts of the vehicle and/or component manufacturer	> **Brake systems** > **Brake discs / Brake hoses / Brake pads** (With valid type approval acc. to ECE-R 90 or general operating licence only) > **Handlebar-stem unit** (Provided that there is no need of changing the lengths of cables and/or hoses. A modification of the seating position for the benefit of the consumer should be possible within the original cable lengths. A modification beyond results in a significantly changed load distribution on the bicycle and may potentially lead to critical steering properties) > **Seat post** (Provided that the offset to the rear does not exceed 20 mm with regard to the series/original field of use. Note that a modified load distribution beyond the intended adjustment range may lead to critical steering properties. The length of the saddle rails at the saddle frame as well as the saddle form are also an issue) > **Headlight** (With valid type approval, identical mounting position as well as EMC proof only) > **Rear light with brake light, and licence plate light, if available** (With valid type approval and identical mounting position only as far as tested in accordance with ECE-R 50 as well as EMC proof) > **Reflector** (With valid type approval only) > **Rear view mirror** (If tested in accordance with ECE-R 81 and identical mounting position only) > **Acoustic signalling device (horn)** (If tested in accordance with ECE-R 28 and identical mounting position only) > **Pedals** (Vehicles with 168/2013 approval) * **Note: In the case of components with part certificate the field of application must be observed. The proper assembly must be certified by a testing engineer or an expert of a technical control board like TUEV or DEKRA in Germany.**	> **Pedals** (Incl. approved reflectors, provided that the pedal is not wider than the series/original pedal (vehicle with 2002/24/EC approval)) > **Tyres** (As specified in the vehicle documents, either in accordance with ECE-R 75 or with approval of the tyre manufacturer. With a permissible overall weight less than 150 kg and a width less than 67 mm the tyres do not require approval according to UN ECE-R 75) > **Grips with screw clamps** (In this case, the vehicle width must not be modified) > **Headset** > **Bottom bracket** > **Rear and front derailleur** (All gear change parts must be suitable for the number of gears and compatible with one another) > **Shifters / Twist grip** (Provided that position on the handlebar remains unchanged) > **Cables and housings** > **Chainwheels / Belt sprockets / Cassette sprockets** (Provided that the number of teeth and the diameter is identical to the series/original field of use) > **Chainguard** (Provided that it is free of sharp outer edges and complies with the Delegated Regulation No. 44/2014, Annex VIII) > **Mudguard** (Provided that it is free of sharp outer edges and complies with the Delegated Regulation No. 44/2014, Annex VIII. The clearance to the tyre, which should be 10 mm at least, must also be taken into account) > **Spokes** (Provided that the dimensions correspond to the original part) > **Inner tube** (Provided that the design and the valve are identical) > **Crank arms** (Provided that both the length (centre of axle mount – centre of pedal thread) as well as the distance crank arms – frame centre (Q-factor) are observed) > **Chain / Toothed belt** (Provided that the original width is observed) > **Rim tape** (Rim tapes and rims must be compatible. Modified combinations may result in rim tape shifting and thus in defective inner tubes) > **Saddle** (Provided that the offset to the rear does not exceed 20 mm with regard to the series/original field of use. Note that a modified load distribution beyond the intended adjustment range may lead to critical steering properties. The length of the saddle rails at the saddle frame as well as the saddle form are also an issue)	> **Additional battery/rechargeable battery-operated headlights are not permissible.** > **Trailers are only permissible if a trailer load is entered under no. 2.1.7 of the certificate of conformity and a coupling device under no. 7.2.8. Note: The maximum permissible trailer load is 50 % of the tractor vehicle's empty weight (without batteries). There are only 50mm ball coupling devices possible.** > **Transporting children in a trailer is forbidden in general!** > **Front baskets are to be considered critical due to the undefined load distribution. Permissible after approval by the vehicle manufacturer only.** > **Removable pannier bags and top cases are permissible. The permissible total weight, maximum loading of the luggage carrier and a correct load distribution have to be observed.** > **Bar ends are not permissible.**

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www.zedler.de
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This is the translation of the original guidelines issued by ZIV, VSF, BIV (German umbrella organisation for the German cycle industry guilds), velotech.de and the German Association for Technical Inspection (TÜV Rheinland) in cooperation with Zedler-Institut, updated in 2023. In the event of any misunderstandings, the original German version (Leitfaden für den Bauteiletausch bei S-Pedelecs mit Typ- oder Einzelgenehmigung mit einer Tretunterstützung bis 45 km/h) shall be applicable.

Experts of the following associations/companies were involved in drawing up the present guidelines (in alphabetic order):

Zweiradmechaniker-Handwerk (Bundesinnungsverband) | TÜVRheinland® Genau. Richtig. | velotech.de | VSF | zedler-Institut Technology and Passion for Bicycles | ZIV

Risks related to the tuning of e-bikes 25 (15.5) / EPACs/EAPCs

E-bikes 25 (15.5)/EPACs/EAPCs are limited to a continuous rated power of 250 watts and a maximum design speed through electrical pedal assistance of 25 kmh (15.5 mph).
In this case only they are equivalent to bicycles in terms of road traffic law (section 63a (2) of the German road traffic licensing regulations (inform yourself about the legislation in your country).

Raising the output and/or the maximum design speed beyond this limit will result in the fact that the bicycle becomes a motor vehicle.

The consequences are as follows*:

> Subject to compulsory type approval
> Subject to compulsory driving licence (class depends on maximum speed)
> Subject to compulsory insurance (insurance tag)
> Helmet compulsory
> Using cycle lanes not permissible
> Proof of fatigue strength for all safety-relevant components must be submitted

Possible legal consequences in case of tuning for users*:

> Administrative offence and penalty
> Criminal offence (section 21 of StVG (German Road Traffic Act): "Riding without driving licence": section 6 of PflVG (Law on compulsory insurance for motor vehicle holders); "Driving without insurance protection")
> **Caution: in the event of repetition, possibly entry in your criminal record certificate (previously convicted!)**
> Loss of insurance cover (private liability)
> Loss of materials defect liability and warranty claims
> Loss of driving licence
> Regularly, partial responsibility in case of accident

Possible legal consequences in case of tuning for retailers*:

> Aiding and abetting of an offence, participating in an administrative offence
> Retailer liable for personal and material damage
> Loss of business liability insurance cover

* for example in Germany, inform yourself about the legislation in your country

Translation and layout: Zedler-Institut
www.zedler.de
As of: 05/2023

This is the translation of the original guidelines issued by ZIV, VSF and BIV (German umbrella organisation for the German cycle industry guilds) in cooperation with velotech.de and Zedler-Institut, updated in 2023. In the event of any misunderstandings, the original German version (Risiken beim Tuning von E-Bikes 25/Pedelecs) shall be applicable.

Experts of the following associations/companies were involved in drawing up the present guidelines (in alphabetic order):

Zweiradmechaniker-Handwerk Bundesinnungsverband | velotech.de | VSF | zedler-Institut Technology and Passion for Bicycles | ZIV

LEGAL REQUIREMENTS FOR RIDING ON PUBLIC ROADS

In **Great Britain** (as of January 2024)

According to the **Highway Code** in Great Britain your bicycle/EPAC/EAPC/e-MTB must be equipped as follows:

1. **Lighting, rear lights, reflectors:**
   At night your bicycle must have:
   - a white front light (e)
   - a red rear light (f)
   - a red rear reflector
   - four amber pedal reflectors (if manufactured after October 1, 1985)

   In addition, it should be equipped with:
   - a white front reflector
   - spoke reflectors
   - flashing lights are permitted, a steady front lamp is however recommended.

   (Law RVLR regs 13, 18 & 24)

   It is not required that the prescribed lighting is mounted upon sale of the bicycle. If it is, however, it must comply with these regulations. Bicycles that are only used with good daylight visibility, such as e.g. road racing bicycles, are exempt from the lighting regulations.

e

f

2. **Brakes**
   Every bicycle must be equipped with at least one braking system. **(Laws PCUR regs 6 & 10)**

3. **Signalling devices**
   It is recommended that a bell be equipped.

4. **Cycle helmets**
   Wearing a cycle helmet which conforms to current regulations in the correct size and securely fastened is recommended.

5. **Child transport**
   There are no rules as to the transport of children with bicycles.

6. **Bike trailer lighting**
   Cycle trailers must be equipped with a red rear light as well as a triangular rear reflector with an ECE mark III or IIIA.

7. **Hand held mobile phones**
   Cycling with a hand held mobile phone is not illegal as such. You could, however, commit an offence of "careless riding" or "riding without due care and consideration". For safety reasons, you are strongly advised against using a mobile phone during cycling.

8. **Other issues**
   Using cycle lanes is not compulsory, but can make your journey safer. You must not cycle on a pavement.
   (Laws HA 1835 sect 72 & R(S)A 1984, sect 129)

SAFETY INSTRUCTIONS

For more important information on cycling, see chapter "General Safety Instructions".

For further information see:
www.direct.gov.uk www.dft.gov.uk www.ctc.org.uk

WARRANTY AND GUARANTEE

Your CROSS EPAC/EAPC/e-MTB was manufactured with care. Normally it is delivered to you by your CROSS dealer fully assembled.

As direct purchaser you have full warranty rights within the first two years after purchase. Contact your CROSS dealer in the event of defects.

To ensure a smooth handling of your complaint, it is necessary to present your receipt, your e-MTB card, the handover report and the service reports. Therefore, keep these documents in a safe place.

To ensure a long service life and good durability of your CROSS EPAC/EAPC, use it only for its intended purpose (see the chapters **"Before Your First Ride"** and **"Intended Use"**). Observe the permissible weight specifications on the type plate on the CROSS EPAC/EAPC/e-MTB or in the e-MTB card in these operating instructions. If you have any questions, contact your CROSS dealer. In addition, be sure to follow the manufacturers' mounting instructions (above all, the torque values of the bolts) as well as the prescribed maintenance schedule.

Observe the checks and routines listed in this translation of the original CROSS operating instructions, in the system instructions of the drive system manufacturer and in any other possibly enclosed manuals to be consulted (see the chapter **"Service and Maintenance Schedule"**) as well as the possibly necessary replacement of safety-relevant components, such as handlebar, brakes, etc.

SAFETY INSTRUCTIONS

This warranty law is only valid in the countries that have implemented the EU Directive into national law. Inform yourself about the regulations in your country. In the United Kingdom, see the respective regulations in the Consumer Rights Act 2015 (CRA 2015).

A Note on Wear

Some components of your CROSS EPAC/EAPC/e-MTB are subject to wear due to their function. The rate of wear will depend on care and maintenance and the way you use your CROSS EPAC/EAPC/e-MTB (mileage, riding in the rain, dirt, salt, additional cargo, etc.). CROSS EPACs/EAPCs/e-MTBs that are often left standing in the open may also be subject to increased wear through weathering.

The components below require regular care and maintenance. Regular care and maintenance increase the service life. Nevertheless, the parts listed below must be replaced when they have reached their wear limit.

This concerns:

- Rechargeable battery
- Drive chain
- Brake pads
- Brake fluid (DOT)
- Brake discs/rotors
- Brake cables/cable housings
- Seals of suspension elements and height-adjustable seat posts/dropper posts
- Rubber grips
- Cables/connectors
- Chainrings
- Illuminants
- Tyres and inner tubes
- Sprockets
- Saddle covering
- Bowden cables/cable housings
- Pulleys
- Lubricants and oil

SAFETY INSTRUCTIONS

Ask your CROSS dealer about any additional guarantee given by the manufacturer of your CROSS EPAC/EAPC/e-MTB and insist on having it as printed version.

SERVICE SCHEDULE – STAMP FIELDS

1st service

Category 3: After 75–225 kilometres (45–140 miles) or 5–15 hours of use or after three months from date of purchase at the latest

Category 4: After 5–15 hours of use or after three months as of date of purchase at the latest

Category 5: After 4–12 hours of use or after three months as of date of purchase at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

Stamp and signature of the CROSS dealer:

2nd service

Category 3: After 1,500 kilometres (900 miles) or 100 hours of use or after one year at the latest

Category 4: After 75 hours of use or after one year at the latest

Category 5: After 50 hours of use or after one year at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

Stamp and signature of the CROSS dealer:

3rd service

Category 3: After 3,000 kilometres (1,800 miles) or 200 hours of use or after two years at the latest

Category 4: After 150 hours of use or after two years at the latest

Category 5: After 100 hours of use or after two years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

4th service

Category 3: After 4,500 kilometres (2,700 miles) or 300 hours of use or after three years at the latest

Category 4: After 225 hours of use or after three years at the latest

Category 5: After 150 hours of use or after three years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

5th service

Category 3: After 6,000 kilometres (3,600 miles) or 400 hours of use or after four years at the latest

Category 4: After 300 hours of use or after four years at the latest

Category 5: After 200 hours of use or after four years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

6th service

Category 3: After 7,500 kilometres (4,500 miles) or 500 hours of use or after five years at the latest

Category 4: After 375 hours of use or after five years at the latest

Category 5: After 250 hours of use or after five years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

7th service

Category 3: After 9,000 kilometres (5,400 miles) or 600 hours of use or after six years at the latest

Category 4: After 450 hours of use or after six years at the latest

Category 5: After 300 hours of use or after six years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

8th service

Category 3: After 10,500 kilometres (6,300 miles) or 700 hours of use or after seven years at the latest

Category 4: After 525 hours of use or after seven years at the latest

Category 5: After 350 hours of use or after seven years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

9th service

Category 3: After 12,000 kilometres (7,200 miles) or 800 hours of use or after eight years at the latest

Category 4: After 600 hours of use or after eight years at the latest

Category 5: After 400 hours of use or after eight years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

10th service

Category 3: After 13,500 kilometres (8,100 miles) or 900 hours of use or after nine years at the latest

Category 4: After 675 hours of use or after nine years at the latest

Category 5: After 450 hours of use or after nine years at the latest

Order no.: _____

Date: _____ Mileage: _____

☐ All necessary maintenance work carried out (see service and maintenance schedule); replaced or repaired parts:

_____

_____

_____

_____

_____

Stamp and signature of the CROSS dealer:

E-MTB CARD

Manufacturer CROSS LTD

Model _____

Frame no. _____

Drive system _____

☐ Mid-mounted motor ☐ Rear wheel motor

Battery model _____

Key no. _____

Voltage (Volt) _____

Ampere-hour (AH) _____

Capacity (watt hours) _____

Suspension fork (manufacturer/model) _____

– serial no. _____

Rear shock (manufacturer/model) _____

Frame type _____

Frame size _____

Size of wheels and tyres _____

Colour _____

Special features _____

Intended Use

Use in accordance with

☐ category 3 ☐ category 4 ☐ category 5

The CROSS EPAC/EAPC/e-MTB is not approved for use in competitions and bike parks.

Empty weight CROSS EPAC/EAPC/e-MTB (incl. battery) _____ kg

Maximum permissible overall weight CROSS EPAC/EAPC/e-MTB, rider, luggage and trailer, if available _____ kg

Pannier rack permitted ☐ yes ☐ no

Permissible load _____ kg

Child seat permitted ☐ yes ☐ no

Trailer permitted ☐ yes ☐ no

Permissible trailer load _____ kg

Brake levers – Brake assignment

Right lever: ☐ front wheel brake ☐ rear wheel brake

Left lever: ☐ front wheel brake ☐ rear wheel brake

⚠ WARNING

Read at least the chapters "Before Your First Ride", "Intended Use" and "Before Every Ride" in this translation of the original CROSS operating instructions.

_____

Stamp and signature of the CROSS dealer

(Hint to the CROSS dealer: Copy the e-MTB card and the handover report and keep one copy in your customer file. Send another copy to the bike manufacturer, if necessary. Make sure the customer confirms by his signature on the handover report that his personal data are made available to the manufacturer.)

HANDOVER REPORT

The above-described CROSS EPAC/EAPC/e-MTB was delivered to the customer ready for use, i.e. after its final assembly, inspection and functional check as described below (additionally required routines in parentheses).

☐ Battery partially charged ☐ Lighting ☐ Brakes front and rear
☐ Suspension elements (adjusted to suit customer)
☐ Wheels (trueness/spoke tension/tyre pressure)
☐ Handlebar/stem (position/bolts with torque wrench)
☐ Pedals (adjustment of release force, if necessary)
☐ Saddle/seat post (saddle height and position adjusted to suit customer, bolts with torque wrench)
☐ Gears (limit stops!)
☐ Bolted connections of add-on parts (with torque wrench)
☐ Drive unit/display
☐ Other routines performed _____

_____

☐ Test ride carried out

Name
CROSS dealer _____

Street _____

ZIP code/city _____

Phone/Fax _____

E-mail _____

Delivery date, stamp, signature of CROSS dealer _____

The customer confirms with his signature that he received the CROSS EPAC/EAPC/e-MTB in proper condition along with the accompanying documents specified below and that he was instructed on the proper use of the CROSS bicycle.

Additional instructions

☐ Brake system ☐ Drive unit ☐ Battery
☐ Suspension fork ☐ Pedal system ☐ Seat post, stem
☐ Gear system ☐ Rear shock ☐ Others
☐ System instructions of the drive system manufacturer

Name customer _____

Street _____

ZIP code/city _____

Phone/Fax _____

E-mail _____

City, date _____

Signature of customer _____

☐ I hereby expressly consent that my above-mentioned data are stored by the CROSS dealer and made available to the manufacturer so that I can be contacted directly e.g. in the event of a recall. The data will not be transmitted to third parties or used otherwise.

Signature of customer _____

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