



# **User Manual**

**Carbon handle bars  
made by LAMBDA-Tuning GmbH**





***„I don't care if it's raining, if the sun is shining, or whatever:  
as long as I'm cycling, I'm the happiest person on earth.”  
– Mark Cavendish***

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## 1. Cross-Wing carbon handlebar



From our point of view, the "cockpit" – the handlebar – on a road bike and especially on an aero and gravel bike is (next to the tires) most important for the feeling and comfort.

You have the handlebar "in your hand" every time you ride and use it to control the bike, steering

and balance. Additionally, the handlebar can improve the aerodynamics massively.

The handlebar should be pleasant to the touch, absorb shocks, allow multiple ergonomic and aerodynamic positions, have low drag and look good.

In addition, the handlebar should be light, not too expensive, have space for attachments, support the Di2 wiring and be easily replaceable.

In order to reduce resistance as much as possible, we offer aero handlebars optimized to reduce air resistance. According to a resistance measurement of the TOUR and AEROCOACH, the measured gain for an aero handlebar is up to 20 watts.

The calculated reduction in drag due to an aerodynamic top link alone is 13 watts at 45 km/h. Even if in reality it is only 10 watts reduction in the end, this is a considerable gain.

Due to the flattened top part, the hands have a wide support, which is very pleasant and prevents many customers from getting numb hands. In addition, the handlebar has more flex, which noticeably increases the damping on rough roads and on natural paths.

It is important to us that the handlebar has a noble and modern design that also fits our frames and wheels.

The Cross-Wing handlebars are compact (low drop and reach) and have a variable radius, which guarantees an ergonomic lower link position and thus less tension in the forearms and neck.

We offer a special GARMIN/WAHOO/SIGMA bike computer mount for the handlebar to be mounted directly on the stem. With the 40cm and 43cm size the space next to the stem clamp is too small to be able to mount the original clamp brackets there.

Below is an overview of the specifications of our Cross-Wing handlebar. In addition, we also offer time trial handlebars and sprint handlebars for the cycling track.

The same hazard and installation instructions apply to all our handlebars.

### Specification Cross-Wing handlebar

Application	Drop	Reach	Difference between the width of the brake lever and the end of the handlebar
Road + Gravel + Track	105mm	72mm	70mm

## Development

We have tested various popular aero handlebars over several years and unfortunately, we haven't found a handlebar that combines the features that are important to us in one handlebar. In the end, we developed our own "perfect" handlebar.



The Cross-Wing aero handlebar, which is suitable for paved roads as well as for natural paths (gravel).

Especially if you ride alone a lot, the new position (grip on the brake grip humps and placing the forearms on the upper part) is an advantage.

Here's what was important to us for the new aero bar:

- Flat top tube for a comfortable grip and for aerodynamics
- Low drop (105mm) for a not too deep grip in the lower position
- Short reach (72mm) for a comfortable lower position

- Reduced width of the brake levers (33cm, 35cm and 36cm)
- Handlebar ends that are not too wide (40cm, 42cm and 43cm)
- Wide cable duct for a quick handlebar swap
- Parallel handlebar end
- Vibration dampening
- Installation of aero handlebar attachments or other accessories (42cm version)
- Sprinting on the lower handlebars with enough room for the wrists
- Di2 compatible for the Di2 control box in the handlebar end (EW-RS910)

You can find more information about the handlebars, tips and recommendations on our website.



## 2. General information

This manual is an integral part of the handlebar. The manual must be read and understood by the user and installer before use.

LAMBDA-Tuning GmbH is constantly working to improve the products. For this reason, we reserve the right to make changes to the illustrations and descriptions in this manual. Technical information, dimensions and weights include tolerances.

Meaning of the symbols:

### Danger

Indicates a hazard with danger to life or serious bodily injury

### Attention

Risk of injury or damage to property

If you have any further questions after reading or during assembly, please send us an email ([info@Lambda-Tuning.de](mailto:info@Lambda-Tuning.de)).

## 3. Special features of carbon

Proper assembly of all carbon components is critical to safety and functionality. If you are not familiar with certain assembly work, have it carried out by your mechanic or dealer.

Like all carbon parts, the service life is limited, depending on the stress and material fatigue. If you ride particularly hard, a lot or mainly on bad/rough/natural/gravel roads, the carbon components (handlebars, saddle, seat post) will have to be replaced more frequently than if the load is less.

The following factors have an influence on the service life: Duration of driving, driver's weight and strength, stress caused by tensile and compressive forces, underground,

falls, maintenance and environmental conditions (humidity, salt content, temperature, etc.). Due to the various influences, no exact time for an exchange can be given. A generally valid recommendation for frequent drivers and strong athletes is 5 years for safety-relevant parts (e.g. handlebars and stem).

For safety reasons, it is advisable to replace the carbon handlebars in the event of special events (crash, overload, exposure to heat). If you are unsure whether a replacement is necessary, consult a professional. Please remember that even the best product can fail if mishandled.

With a crash, a potential break is more likely to occur near the brake levers than in the stem area where the handlebars are reinforced.



## Danger

Compliance with the following instructions is a prerequisite for accident-free use and perfect functioning:

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- Incorrect handling, incorrect installation, incorrect use and incorrect maintenance can lead to accidents with serious injuries or even death.
- The handlebars must be compatible with all parts of the bicycle. Stem, brake levers and aero extensions must not be changed or modified. If in doubt, consult a specialist.
- Damaged carbon parts can break suddenly. Damage caused by excessive clamping forces, bending, impact, falls or heat may not be visible on carbon components.
- The handlebars must not be used if there is any damage or signs of damage (e.g. tiny cracks or crunches). After a fall or an accident, the handlebars must be checked carefully in daylight, cleaned and checked without the handlebar tape. If in doubt, contact a specialist.
- Loose or over-tightened screws can lead to an accident. Carbon components are particularly sensitive to crushing due to excessive clamping force.
- The maximum permissible screw torque for the stem, aero attachment and brake lever clamp is **5 Nm or 45 lbs in**. In addition, the maximum specified torque of the stem must be observed.
- In any case, observe the instructions for use and the information on **using your torque wrench**. Errors over several Nm can quickly be made here. The setting range of the torque wrench must not be greater than 25 Nm / 200 lbs in, otherwise it will be too rough and imprecise.
- It must be ensured that the contact surfaces with the stem and the brake levers are free from dirt, chain oil, grease, silicone, wax or Teflon.
- The maximum rider weight (rider plus clothing and backpack) must not exceed **120 kg or 260 lbs**.
- Carbon components have a limited service life. Please replace the handlebars and other important carbon components prophylactically at regular intervals (recommendation every 5 years) depending on use (especially when participating in competitions), even if they were not involved in a fall or possible overload.
- The brake handles must be checked for tightness from time to time. If the mechanical brake levers slip, the shifting will be misaligned and the brakes can start to grind.
- Carbon components must not be exposed to temperatures below **-15°C/5°F** and **above 60°C/140°F** during (car) transport or storage. This is particularly important in summer when transporting by car.
- The following driving styles cause premature material fatigue, which can lead to fractures and an increased risk of injury:
  - Jumps
  - Driving in extreme terrain
  - Downhill riding
  - Sprints
  - Any abnormal use of the bike

### Attention

- Assembling mismatched parts may result in clamp failure and a fall.
- Aero extensions must be screwed next to the stem and not in the flattened area of the carbon handlebar (42cm version).
- Carbon paste must be used on all clamps.
- The handlebars are only to be used for the intended purpose. Otherwise, the guarantee expires.
- Only handlebar tapes and not universal adhesive tapes have to be used.
- Do not use a high-pressure cleaner or aggressive or solvent-based cleaning agents (e.g. paint thinner, nitro, acetone) for cleaning.
- The bicycle must not be attached to the handlebars for transport. When transporting in, on or by the car, care must be taken not to overload the handlebars.
- Never continue riding with the carbon handlebar immediately after a fall/crash. Check the handlebars for damage after every hard impact and every time the bike falls over.
- Observe the maximum torque and always use high-quality carbon assembly paste. This protects the material.
- The tightening torque of all screws must be checked after **100 km / 60 miles** at the latest. Check the tightening torque and the assembly condition every further 50 driving hours or **1000 km / 600 miles** and at least once a year.

#### 4. How to install the handlebar

The following instructions explain how to fit carbon handlebars to a carbon or aluminum stem.

Only stems or aero attachments with a **31.8 mm clamp** are permitted. Use carbon paste for safe assembly. This increases adhesion, reduces clamping force and corrosion and prevents possible cracking.





## 4.1. Preparation

Tools and materials needed:

- Torque wrench (2-10 Nm / 10-100 lbs in) with suitable allen key for stem and brake levers (usually 4mm or 5mm)
- Carbon paste (e.g. Dynamic, Ritchey or Tacx)
- Grease-free rag
- Grease for the screws of the stem
- New handlebar tape
- Scissors
- End tape (insulating tape)
- Handlebar plugs
- Cable tie (to fix the cables to the handlebars)
- Spirit level or mobile phone with the appropriate app

Matte black insulating tape from the hardware store has proven to be the best ending tape on the top link. This sticks very well, wraps well and is very stretchy.

When installing the Cross-Wing handlebar, the cables are often too long. Shortening the hydraulic lines usually does not have to be bled if no oil is running out the brake lever or hose.

If necessary, clean the carbon handlebar of old handlebar tape. Clean the screws and apply a little new grease to the thread.

Make sure that the contact surfaces of the handlebar and stem are free of dirt, old carbon paste and lubricating substances (grease, oil, silicone, Teflon, wax or similar). Degrease them if necessary. Isopropanol, spirit or cleaning benzine may be used carefully. However, avoid vigorous rubbing and long exposure times.



#### 4.2. Installation to the stem

The handlebar height determines the elevation and is adjusted by spacers, stem length and stem angle.

Inspect the stem and brake levers for sharp edges or burrs. When replacing the handlebar, examine the previously installed handlebar for scratches, abrasions or nicks.

Apply a thin coat of carbon paste to the contact surfaces of the handlebars and stem.

Mount the carbon handlebar so that it is centered in the clamping area. The straight section of the lower link should be horizontal or slightly sloping (red line in the previous picture and the next page).

Slightly turn the handlebar clamp screws, which have been greased on the thread, into the stem so that the clamping slot between the stem cover and the stem is equally narrow at the top and bottom. Note that some stems are closed at the top and only have a slot at the bottom.

Our assembled stems are special versions for carbon handlebars. With these, the screws are tightened in such a way that the upper gap is closed.

Then tighten all the screws one after the other evenly in several steps with a torque wrench with 3 Nm / 25 lbs in.

In a second step, the torque can be increased to **5 Nm / 45 lbs in.**

Check whether the handlebars can still be turned by pushing the handlebar ends forward or pulling them up. This is especially important after the first rides and every 1000 km / 600 miles.

#### Danger

When installing the computer holder on the stem, the handlebar clamp screws must be **tightened after the first ride and every 1000 km / 600 miles.** Otherwise the handlebar could be turned downwards in the event of an impact (e.g. pothole). This creates a bang similar to a spoke breaking.



### 4.3. Installation of the brake handles

With the brake lever clamp fully open, slide the brake levers onto the handlebar. The handlebar should be scratched as little as possible.

Tighten the screws of the clamp only slightly. The brake lever must still move.

The brake handles should be in a comfortable position, possibly slightly tilted inwards.



The upper edge of the handles in front of the hump is approximately horizontal (upper red line). In addition, the end of the handlebar should be almost horizontal or pointing slightly downwards (lower red line).

You can use a mobile phone app to align the two brake handles at the same height.

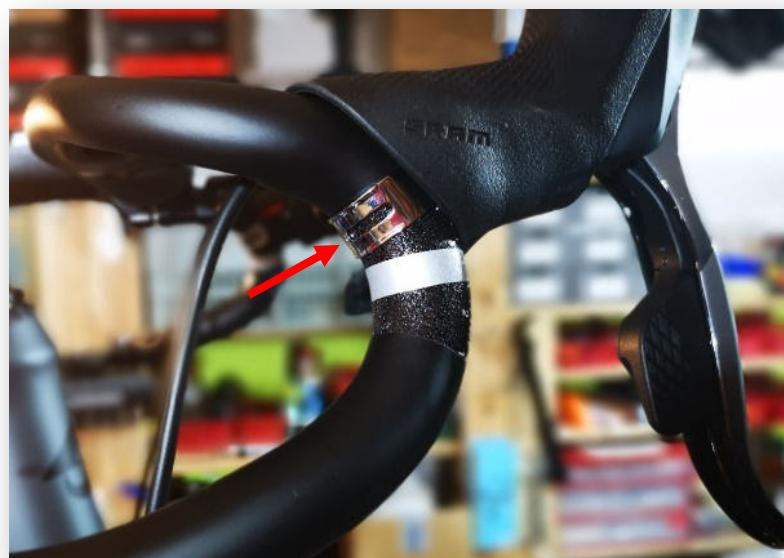
On the Cross-Wing, the **brake lever clamp** is slightly above the silver stripe (see picture below).

Tighten the screw of the clamp with a torque of 6-8 Nm / 55-70 lbs in to guarantee a firm hold

Never twist the brake lever after you have tightened the screw. This can scratch the surface and pre-damage the handlebar. The same applies after a fall in which the brake handle has twisted.

For the assembly of the brake and shift levers, please use additionally the corresponding assembly instructions of the manufacturer. There are too many variations to give you specific instructions here. It is essential to observe the corresponding torque specifications of the brake levers.

The brake handles must be checked for tightness from time to time.



#### 4.4. Installation of the brake and shift cables

With the Cross-Wing handlebar, the cables are placed in the lower guide groove and fixed with tape or cable ties.

This means that the handlebar can be easily replaced without having to reroute the cables. After a change, check whether the brake and shift cables are long enough and do not affect the steering.

We recommend the complete assembly of the brake levers without cutting the hoses/cables in order to find the right position for the brake/shift levers when riding.

Once the final position of the brake/shift levers has been found, the handlebar tape can be wrapped. See the corresponding chapter.

To fix the cables/hoses you can either use tape or (better) use cable ties. Here you can fix the cables to the computer mount or you use the holes at the end of the canal.

You need two 20cm/7inch cable ties. From each side you stick one cable tie into the hole and exit it on the other side. On each side there is one beginning and one end of the cable tie. With that you can close the cable ties over the brake hose. That keeps the hose inside the canal. See next picture.



If your frame has integrated cable going through the stem you use the holes at the end of the canal to route the hoses into the inside of the handlebar and exit them into the stem.



If your frame supports the cable routing underneath the stem it should look like the next picture:



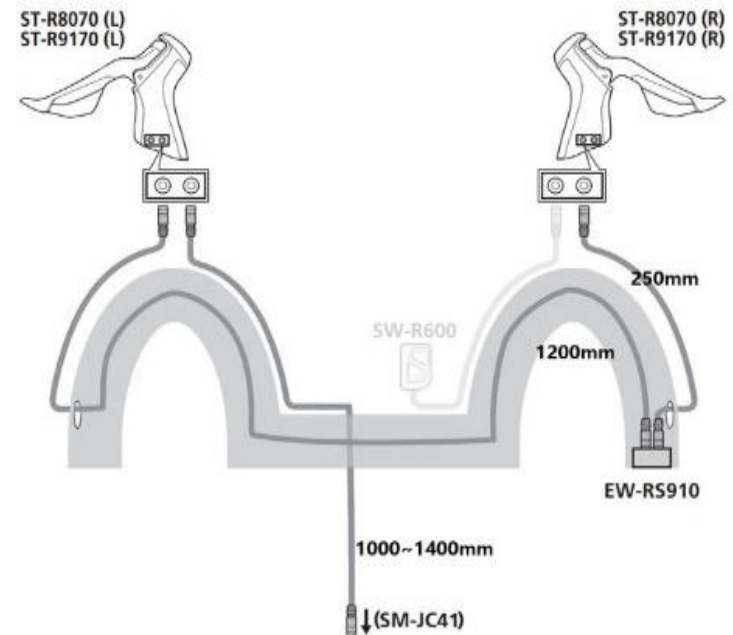
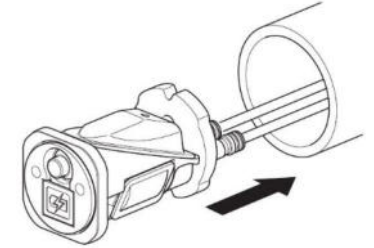
The handlebars also have openings for the shift and brake cables to guide them into the handlebar. This is required to use frames and stems where the cables are routed through the stem into the frame. For example Deda Vinci DCR (Deda internal cable routing) or FSA ACR (Aero Cable Routing).



#### 4.5. Installation of the Di2 control box

With the Cross-Wing handlebar you can mount the EW-RS910 control box on the end of the handlebars and route the Di2 cables through the handlebars.

The handlebar has several openings for this purpose. Here is a sketch of how the cable routing is possible.



#### 4.6. Installation aero extensions

With the Cross-Wing 42cm version handlebar aero attachment can be mounted directly next to the stem. However, the stem clamp cover must not be too wide to allow clamping in the reinforced area.

The clamping torque is max **5 Nm / 45 lbs in**. Carbon paste is a must for this so that the extensions cannot twist.

Here is our **recommendation**: DEDA Parabolica Uno handlebar attachment with our 3D printed aero armrests.



## 5. Wrap a handlebar tape

The handlebar tape is not only for comfort, but is also important for a good grip on the handlebars and thus for driving safety.

The brake and shift cables routed to the handlebars are fixed with the insulating tape. Then turn the rubber grip of the brake lever inside out.

The handlebar tape usually comes with a piece of handlebar tape that is a few centimeters long. A small piece of pipe always remains bare on the brake lever and is covered with it.

Start wrapping the tape at the end of the handlebars towards the stem. The winding direction is such that you wind on the side facing the wheel upwards. So on the right side clockwise and on the left side counterclockwise looking in the direction of travel.

Wrap the bar tape diagonally so that the tape overlaps about half of the tape width. The adhesive strip on the back can be on the handlebar and/or on the tape. Keep the tape under tension throughout the wrap.

The handlebar tape is wrapped to the end, then cut off and fixed with the adhesive tape.

The supplied adhesive tapes are usually not suitable for fixing the handlebar tape at the end. These have too little adhesive effect and are not elastic enough. Self-vulcanizing (insulating) adhesive tape is most suitable.

You can easily lose plugs on the handlebar end that are too thin, so you can use the adhesive tape here to increase the diameter of the plug.



## 6. Cleaning and care

### Attention

Improper cleaning, care, incorrect assembly or incorrect add-on parts can result in unforeseeable malfunctions.

**The tightening torque of all screws must be checked after 100 km / 60 miles at the latest. Check the tightening torque and the assembly condition every further 50 driving hours or 1000 km / 600 miles and at least once a year.**

Check the handlebar for damage, surface changes and scratches/cracks.

The handlebars are cleaned with warm water, a soft sponge and a suitable cleaning agent (e.g. washing-up liquid or soap without abrasive particles).

No aggressive cleaning agents or surfactants may be used. Isopropanol, spirit or petrol may be used with caution. However, avoid vigorous rubbing and long exposure times.

If you ride with rings on your fingers, you have to wear cycling gloves to protect the handlebars or wrap the handlebars with handlebar tape up to the stem.

## 7. Warranty

We grant the statutory material defect liability (warranty) for material and processing on all products.

The **liability period of two years** begins with the initial purchase of the corresponding product. Warranty claims can only be asserted with proof of purchase and only by the consumer.

There is no warranty claim in the following cases:

- Normal wear and tear from use of the handlebar
- Improper assembly, too high or too low clamping forces and modification of the handlebar
- Use of unsuitable attachments
- Improper use, overload (maximum torque) or abuse (e.g. jumps, downhill)
- Rental, commercial use, races not on streets or the track and business purposes
- Damage caused by accidents or external influences (e.g. crash, falling over, etc.)
- Customary permissible or technically unavoidable fluctuations in quality and appearance

Bike races on road and track are not an exclusion of the warranty. Nevertheless, the warranty expires if the instructions given are disregarded.

We are not liable for indirect or consequential damages.

Place of jurisdiction and place of fulfillment is Siegburg (Germany). German law applies.

Technical details, text and images are subject to change.

## 8. Crash-Replacement

In the event of irreparable damage to the functionality (e.g. due to an accident or a fall), we grant the original buyer a discount of 25% on the current sales price within two years of purchase. This only applies to carbon products from our sales range (e.g. handlebars, saddles, wheels, frames or



aero handlebar systems). You will receive the same or comparable carbon product from our current range.

If this regulation is used, the irreparable carbon product (e.g. handlebars) remains in our possession after our assessment. Shipping is at your own expense.



## 9. Torques

Torque overview	Min	Max	Remark / addition
<b>Aero extensions</b> (grease screws)	5 Nm 45 lbs in	5 Nm 45 lbs in	screws with grease Carbon paste on clamp
Brake/shift lever clamp on the handlebar	6 Nm 55 lbs in	8 Nm 70 lbs in	
<b>Speedometer</b> bracket on the stem (grease screws)	6 Nm 55 lbs in	6 Nm 55 lbs in	Retighten after 50-100 km. Then every 1000 km.
Plastic insert for speedometer bracket on the stem	0,8 Nm 7 lbs in	1 Nm 9 lbs in	screw lock
<b>Stem to fork</b> (Observe the manufacturer's instructions)	4 Nm 35 lbs in	5 Nm 45 lbs in	screws with grease Carbon paste on clamp
<b>Stem to handlebar</b> (observe manufacturer's instructions)	5 Nm 45 lbs in	6 Nm 55 lbs in	screws with grease Carbon paste on clamp

**The following is a list of what customers often disregard and what can cause damage:**

- Too much torque used
- Do not tighten the handlebar clamp screws after the first time you ride out
- No torque wrench used or incorrect torque used
- No screw lock or grease used
- Screw turned "round"
- Water in the handlebars (washing from the inverted bike) -> drill a hole in the end cap
- Ridden with a ring and no gloves and scratched the handlebars
- Wrong diameter stem used
- Not read this manual 😊

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We wish you lots of fun, success in your competitions and unforgettable experiences with your new carbon handlebar from LAMBDA-Tuning GmbH.

Tina

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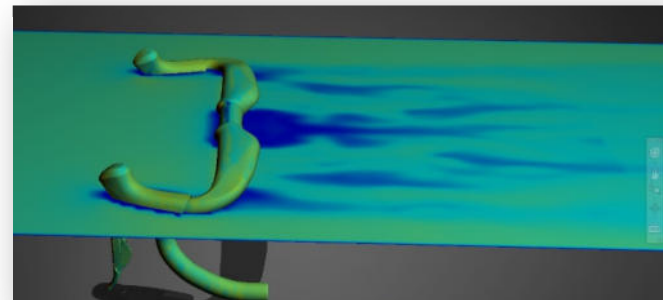
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We wish you a great season as well as a lot of fun and joy with the new handlebar.

