

HANDLEBAR / STEM



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General notes on mounting and compatibility

Before you start mounting make sure the stem you have chosen has a clamping diameter matching the AX-Lightness and engage handlebars. The same applies to both the stem and the steerer tube.

Our AX-Lightness road racing handlebars have a clamp diameter of 26.0 mm.

The clamp diameter of our AX-Lightness mountain bike handlebars is 25.4 mm **[a]**.

The clamp diameter of all engage handlebars is 31.8 mm **[b]**.

Most steerer tubes measure 1 1/8", which corresponds to 28.6 mm. The AX-Lightness and engage stems are designed for these clamp diameters.

Only use brake levers and shifters with symmetrical clamps **[c]**.

The same applies to bar ends on handlebars designed to be fitted with bar ends. Bar ends must have a symmetrical clamp, as well. Be sure to mount bar ends only on handlebars approved for bar ends. Observe the product descriptions and type labels on the handlebars.

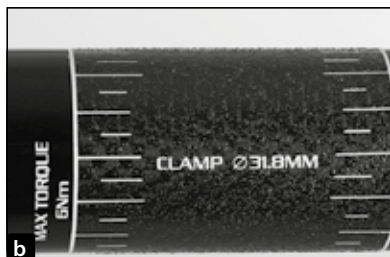
Do not mount aero handlebars, also referred to as clip-ons, on standard AX-Lightness and engage handlebars. If you need aero handlebars, get in touch with us. You will obtain from us custom-made handlebars with special reinforcements.



Asymmetrical clamps or handlebar grips fastened with a single bolt etc. can damage AX-Lightness and engage handlebars.



Make it a rule to use AX-Lightness carbon assembly paste to achieve maximum clamping with minimum torque values.



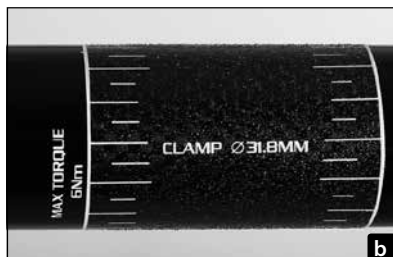
If you mount new AX-Lightness and engage handlebars to an existing stem, check the old handlebars carefully for scratches, abrasion marks and notches after removal. Damage in the clamping area indicates insufficient processing or defective design of the stem in these areas.



Mounting AX-Lightness and engage Aheadset®-stems

Many AX-Lightness **[a]** and engage stems can be mounted in either vertical orientation. These flip-flop models allow handlebars to be positioned at two different heights by simply inverting the stem.

Make sure the AX-Lightness and engage stem and fork steerer tube always have matching or compatible clamp diameters **[b]**!



If you fit a new AX-Lightness and engage stem on a fork with carbon steerer tube, check the clamping area of the fork for notches or abrasion marks. In case damage is visible, ask your AX-Lightness and engage dealer whether the fork must be replaced.

Make sure the clamping areas are absolutely free of grease, especially when the clamping surfaces are made of carbon. Use AX-Lightness carbon assembly paste **[c]** on the clamping areas to optimize the fixing.



Grease the threads and the connecting surfaces/heads of the steerer clamp bolts **[d]**. Keep lubricants away from clamping surfaces.

Slide the AX-Lightness and engage stem on the fork steerer tube **[e]**. It must fit snugly on the fork. Do not fit stems which have play on the steerer tube.



Depending on the steerer tube length and the desired stem position, insert spacers **[f]** on the fork steerer above the upper cover of the headset, and/or above the stem. You can stack them up to a maximum height of 30 mm.

Spacers are available in different heights. You have installed the correct number of spacers, when the steerer tube ends 2 mm below the top edge of the stem.

Make sure the stem provides sufficient support for the steerer tube and the steerer tube ends 2 mm at the most below the top edge of the AX-Lightness and engage stem. This ensures a reliably clamping when tightening the clamping bolts of the steerer tube clamp to the prescribed torque value.

If the preferred height of your AX-Lightness and engage stem results in a deeper position of the stem on the steerer tube, the steerer tube projects from the stem. To check whether you have found the proper position, slide spacers on the steerer by making sure that the steerer tube ends 2 mm below the top edge of the stem. After the test ride the steerer tube of a carbon fork must be shortened.

For proper load distribution during clamping the clamp bolts of AX-Lightness and engage stems are designed to be screwed in in a determined direction **[g]**. Be sure not to change the screw-in direction.

Tighten the stem bolts only a little, if you intend to mount the handlebar right afterwards. The headset has to be adjusted afterwards **[h]** (see chapter “**Adjusting the Aheadset®-headset**”).



AX-Lightness and engage stems are flip-flop models, i.e. they allow an upward or downward oriented mounting.



The space between the top of the steerer tube and the upper edge of the AX-Lightness and engage stem should not exceed a maximum of 2 mm. The space between the top of the steerer tube and the upper edge of the AX-Lightness and engage stem should not exceed a maximum of 2 mm.



Observe the maximum spacer height of 30 mm and do not insert permanently more than 5 mm of spacers above the stem, if your fork steerer tube is made of carbon.





Mounting AX-Lightness and engage handlebars

Apply AX-Lightness carbon assembly paste in the area of the clamping **(a+b)** on the AX-Lightness and engage handlebars as well as on the stem.

Position the stem clamp in the middle of your new AX-Lightness and engage handlebars **(c)** so that the handlebars extend the same distance from the stem on each side. If the handlebars do not slide easily into the stem clamp or if there is play between the two components, ask your AX-Lightness and engage dealer whether both components are compatible.

Mountain bike handlebars are normally mounted with the sweep supporting a natural ergonomic hand position, i.e. bent slightly rearward. The handlebar position is correct when your wrists are relaxed and your elbows not flared out too much.

In the case of road racing bicycles the straight piece of the drops should be in parallel to the ground or point with the ends slightly downwards.

Tighten the greased bolts of the stem faceplate with your fingers by a few turns **(d)**. Do not apply grease on the clamping surfaces. Tighten the bolts of the AX-Lightness handlebars with a 3 mm Allen key and the bolts of the engage handlebars with a 4 mm Allen key until the clamping slots are identical in width on all sides.

If you have a four-bolt stem, the upper and lower clamping slots must be identical in width and parallel in addition **(e)**.

Finish by checking the position of the handlebars. Tighten the fixing bolts evenly in a cross pattern, i.e. alternately and in small increments to the minimum limit of the recommended torque values by using a high-quality torque wrench with a 3 mm hexagon bit socket in the case of AX-Lightness handlebars **(f)** and a 4 mm hexagon bit socket in the case of engage handlebars **(g)**. If you have a four-bolt stem, tighten the bolts in a cross pattern.

The recommended maximum torque value for the AX-Lightness Zeus stem is 3-4 Nm. Always use a high-quality torque wrench and observe the torque value indicated on the component in case of doubt.

Check the brake lever/shifter or the brake grips for burrs and sharp edges **(h)**. Do not use shifters or brake levers with burrs or sharp edges to prevent your AX-Lightness and engage handlebars from damage or notches.

Components that are affected by burrs or sharp edges should be checked by your AX-Lightness and engage dealer. They will see, whether this is a problem that can be solved or whether the component has to be replaced.

Loosen clamping bolts completely to ensure clamps are open all the way before sliding the shifters and brake levers onto the handlebars. In the case of some mountain bike brake grips a part of the clamp can be folded upwards or removed.

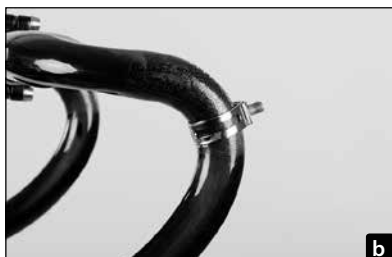




In the case of road racing bicycle brake lever/shifter units (Dual Control, Ergopower or DoubleTap) dismount the clamp completely from the unit **[a]**.

Carefully slide the clamp on the handlebars **[b]** and subsequently re-mount the unit to the clamp.

Start tightening the clamping bolts slightly, so that the unit can still rotate freely. Bring the brake lever/shifter units to the desired position.



As soon as the unit is in the desired position, apply some AX-Lightness carbon assembly paste in the area of the clamping.

Tighten the bolts just enough to secure the brake lever/shifter units **[c+d]**. Be sure not to exceed the prescribed torque value, as the brake levers will otherwise damage the AX-Lightness and engage handlebars.



Never rotate the units on the handlebars after you have tightened the clamping bolts. Otherwise you will scratch the surface and mar the finish. In addition you run the risk of damaging the material.



Never shorten AX-Lightness and engage mountain bike handlebars by cutting off the ends, as the handlebars are generally reinforced in the clamping areas of the shift/brake lever units. In addition, you would cut off the bar end reinforcements. These reinforcements are designed to withstand the forces occurring in these areas.



Read through the user manuals of all components of the other manufacturers before you follow the above instructions.



Do not shorten AX-Lightness and engage handlebars, as this would damage the handlebars and result in a severe accident during use. Any modification to an AX-Lightness and engage carbon component will void the warranty.



Adjusting the Aheadset®-headset

Adjusting the headset is a job for a skilled bicycle mechanic. Have this work solely done by an authorized AX-Lightness and engage dealer. If you intend to do the adjustment on your own, read the chapter **"Fork – Headset"** or the user manual of the headset manufacturer first and note that you need special tools, e.g. a high-quality torque wrench.

Release the clamping bolts on the side of the AX-Lightness and engage stem by two to three turns **(e)** without unscrewing them entirely.

The Allen bolt located in the top cap is intended to re-adjust the bearing play **(f)**. Turning the bolt clockwise removes play, as the stem is pressed downward on the bearing; turning the bolt anticlockwise increases the play. In case there is bearing play, tighten the adjusting bolt by another quarter or half a turn.

Check the headset for play **(g)** as described in the general user manual of your bicycle. Do not over-tighten the headset; otherwise there is the risk of headset failure.

Do not overtighten the top Allen bolt. It is intended for adjustment! Tighten the bolt carefully in quarter-turns and check the play regularly.

Once the play is properly adjusted, align the AX-Lightness and engage stem in the direction of motion. Check the alignment of frame and stem with the front wheel from the top **(h)**. The AX-Lightness and engage handlebars should be at right angle to the direction of motion.





With carbon steerer tubes, make sure the inside of the tube is supported by a suitable expander-cone mechanism for adjusting the headset. AX-Lightness and engage recommend the gumgum from Tune for AX-Lightness forks.

Be sure to observe the chapter **“Fork – Headset”** or the instructions given in the user manual of the fork manufacturer before tightening the stem.

Start by tightening both clamping bolts alternately and then by using a high-quality torque wrench **(a)**. Start with a standard torque wrench and a minimum torque value of 3 Nm.

Check the secure clamping of the AX-Lightness and engage stem by holding the front wheel between your knees and trying to turn the handlebars relative to the front wheel **(b)**.

In case the stem clamping is not tight enough, increase the torque value to 4 Nm.

In case the AX-Lightness and engage stem is still not tight enough, dismount the stem and once again apply some AX-Lightness carbon assembly paste **(c)** on the fork steerer tube and the inside of the stem.

If the AX-Lightness and engage stem cannot be tightened on the fork steerer tube to a tightening torque of 4 Nm, in spite of the AX-Lightness carbon assembly paste on the clamping surfaces, stem and fork are incompatible.

Replace the AX-Lightness and engage stem by a matching model or ask your AX-Lightness and engage dealer for advice.



After adjusting the headset check the tight clamping of the stem by holding the front wheel between your knees and trying to turn the handlebars relative to the front wheel. A loose stem can lead to an accident!



AX-Lightness forks in combination with AX-Lightness stems can also be used without expander. Dismount in this case the expander after having adjusted the headset. The maximum torque value of the stem bolts is 4 Nm.

Road racing bicycle – Adjusting the handlebars

In the case of road racing bicycles the straight piece of the drops should be in parallel to the ground or point with the ends slightly downwards **(d)**. If it is not, release the handlebar clamping bolts by two to three turns and re-position the AX-Lightness and engage handlebars.

Re-tighten the clamping bolts with a 3 mm Allen key until the clamping slots of the stem faceplate are identical in width on all sides **(e)**.

If you have a four-bolt stem the upper and lower clamping slots must be identical in width and parallel in addition.

Finish by checking the position of the AX-Lightness and engage handlebars. Tighten the fixing bolts evenly in a cross pattern, i.e. alternately and in small increments to the minimum limit of the recommended torque values by using a high-quality torque wrench **(f)** with a 3 mm hexagon bit socket (AX-Lightness) handlebars and a 4 mm hexagon bit socket (engage) handlebars.

If you have a four-bolt stem, tighten the bolts in a cross pattern.

The recommended maximum torque value for the AX-Lightness Zeus stem is 3-4 Nm. Always use a high-quality torque wrench and observe the torque value indicated on the component in case of doubt.

Check the tight fit of the AX-Lightness and engage handlebars in the stem by trying to turn them downwards **(g)**. You should not be able to rotate the handlebars. Never exceed the torque value recommended by the manufacturer.





In case the handlebars are not tight, check that each bolt was tightened to the recommended torque value (4 Nm for AX-Lightness stem clamping bolts) **[a]**. If each bolt was tightened to a torque value of 4 Nm and the clamping force is still insufficient, release the bolts, remove the handlebars from the stem and apply another coat of AX-Lightness carbon assembly paste to the clamping areas **[b]**.



Retighten each bolt individually **[c]** to a torque value of 4 Nm. If the AX-Lightness and engage handlebars are still not tight in the stem, ask your AX-Lightness and engage dealer for advice.

Check the adjustment of the brake lever/shifter units, if necessary, as described in chapter **“Mounting AX-Lightness or engage handlebars”**.



Mountain bike – Adjusting brake lever/shifter units

Release the bolt(s) of the clamps by two to three turns without unscrewing them entirely. Turn the loosened units on the AX-Lightness and engage handlebars so that they show slightly downward. Sit in the saddle and place your fingers on the brake levers **[d]**.

The back of your hands should form a straight line with your forearms. Make sure the brake lever is within easy reach of your index and middle fingers **[e]**. The first phalanx of both fingers should be able to reach around the lever without pulling it. It may be necessary that you position the brake lever and the shifter a little away from the handlebar grip **[f]**.

With your hands in the correct position adjust the shifters accordingly and tighten the clamping bolts of the brake levers and shifters to the recommended torque values.

Mounting bar ends

Bar ends **[g]** add more hand positions to your handlebar configuration. They are usually set to a position that provides more leverage and more comfort when you pedal out of the saddle.

Keep in mind that not all AX-Lightness and engage handlebars can be fitted with bar ends. Be sure to mount bar ends only on handlebars approved for bar ends. Observe the product descriptions and type labels on the handlebars. If you are in doubt, ask your AX-Lightness and engage dealer for advice.





Mounting bar ends to AX-Lightness and engage handlebars **(a)** that are not approved for bar ends can lead to handlebar failure and result in an accident.

Check that the clamping areas of the bar ends are free of burrs and sharp edges. Do not use bar ends with burrs or sharp edges. Burrs are sharp and can cut into other components. If there are any burrs or sharp edges, contact your AX-Lightness and engage dealer. Replace the bar ends by models that are free of burrs.



Release the clamping bolts of the brake lever/shifter units **(b)** and slide them together with the handlebar grips **(c)** towards the centre of the handlebars until there is enough space to mount the bar ends. If the grips have end caps, cut them off before you move the grips.

Do not use any liquids or grease to loosen the grips; if necessary, use compressed air to loosen them.



Loosen the bar end bolts which are in most of the cases on the bottom side of the bar ends by two to three complete turns. Apply some AX-Lightness carbon assembly paste on the handlebars' clamping area and inside the bar ends.

Slide the bar ends on the respective side of the handlebars. Angle the bar ends according to your personal preference and make sure they are both at the same angle. Observe possible right/left references on the bar ends.

Retighten the bolts with a high-quality torque wrench to 3 Nm **[d]**. If the bar ends are still not tight, increase the torque value to a maximum of 4 Nm. Do not exceed the maximum torque value of 4 Nm for the clamping bolts of bar ends mounted to AX-Lightness and engage handlebars.

Always observe the maximum torque values indicated on the components. The bottom value is the maximum torque value.

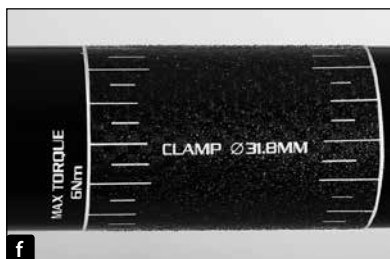
If a tight fit of the bar ends on the handlebars cannot be achieved in spite of using AX-Lightness carbon assembly paste on the contact surfaces, the bars ends and the handlebars are not compatible. In this case replace the bar ends by appropriate models.



The interfacing clamping areas of stems, handlebars **[e]**, bar ends, brake levers and shifters must be tightened to the prescribed torque values **[f]**.



Mounting unsuitable bar ends to AX-Lightness and engage handlebars can lead to handlebar failure and result in an accident. Not all AX-Lightness and engage handlebars are designed to be fitted with bar ends. Ask your AX-Lightness and engage dealer for advice.





Adjusting the handlebar height

Both the handlebar height and the stem length determine how much your upper body will be inclined forward. Lowering the AX-Lightness and engage handlebars gives the rider a streamlined position and brings more weight to bear on the front wheel. An excessively low handlebar position may prove uncomfortable and can strain wrists, arms, upper body and neck. Seek the assistance of a qualified AX-Lightness and engage dealer, especially if you experience pain or discomfort after set up and use.

Aheadset®-stems

Readjusting the Aheadset® by using spacers

On bicycles using a threadless headset system, also referred to as Aheadset®-system, the stem is an integral part of the headset **[a]**. To modify the seating position the stem can be dismantled and re-mounted **[b]**. Subsequently, the headset must be readjusted. Observe the chapters **“Mounting AX-Lightness and engage Aheadset®-stems”** and **“Adjusting the Aheadset®-headset”**.

The vertical position of the handlebar position is determined by the arrangement of the spacers **[c]**. In the case of flip-flop models it is also possible to reverse the stem.

Unscrew the bolt at the top of the fork steerer tube which serves to adjust the bearing preload and remove the Ahead cap. Release the bolts on either side of the stem by two to three turns **[d]** and remove the stem from the fork **[e]**. Now you can remove the spacers. Reposition the spacers on the steerer tube above and below the stem in order to position the AX-Lightness and engage handlebars at the desired height or remove the handlebars and bring the stem in reverse position.



If you want to reduce the number of spacers **[f]**, you have to shorten the steerer tube. This shortening is irreversible. Shortening the steerer tube is a job for the AX-Lightness and engage dealer. Have this work performed only after you have found the ideal position. Instead of shortening the steerer tube you have also the option to modify the arrangement of the spacers. For a test ride place the equal number of spacers you have removed from below the stem above the stem and vice versa.



Mount the AX-Lightness and engage components, as described in the chapters **"Mounting AX-Lightness and engage Aheadset®-stems"**, **"Mounting AX-Lightness or engage handlebars"** and **"Adjusting the Aheadset®-headset"** and check finally the secure seat of the components **[g]**.



Keep in mind not to position more than 30 mm spacers below the AX-Lightness and engage stem.



Have the fork steerer tube shortened immediately, if the stacking height of the spacers above the stem exceeds 5 mm.





Grips and bar tape

Grips **(a)** and bar tapes **(b)** not only provide comfort, but also have a very important secondary function: they ensure that your hands' movements communicate clearly with the steering components.

Make sure the grips and the bar tape are in good, functional condition. Replace worn through or extremely dirty grips and bar tapes immediately. At least once a year it is time for them to be checked or replaced.



Mounting the grips

For a reliable fit without play grips must be mounted only on AX-Lightness and engage handlebars that are free of oil and grease.



In the case of **locking grips (c)** check that clamping is realised by a clamp and not by a bolt acting on the handlebars. Grips with bolt locking can be slid easily on the handlebars. Keep in mind that the clamping mechanism is at the end of the handlebars, if there is only a single one. Slide the grip into the correct position on the handlebars and tighten the bolts just enough to ensure a tight fit of the grip. Never exceed the maximum torque value of **3 Nm**.

All other grips adhere to AX-Lightness and engage handlebars due to internal stress and friction between bars and grip. The easiest way to mount the grips is with compressed air. Inflate the grips with air and slide them onto the handlebars. If you don't have compressed air, please contact your AX-Lightness and engage dealer to do the mounting.



We strongly advise not to use slip agents, such as hairspray etc., as they can cause the grips to loosen during use.

All types of grips that are designed with open ends should be fitted with the enclosed plugs **(d)** (into the ends of the handlebars). This will avoid or at least reduce potential damage to the handlebars and injuries in the case of an accident.



Make sure during the mounting that the AX-Lightness and engage handlebars are free of lubricants and do not use any liquids or chemical fluids for mounting.



Do not ride your bicycle, when the handlebar grips are not tight. If necessary, replace them by suitable, i.e. tight, models.

Wrapping the bar tape

Clean the AX-Lightness and engage handlebars of any dirt, adhesive residues or grease.

Start wrapping the bar at the bottom **(e)**, i.e. at the open end of the drop. The first wrap around the bar should be positioned that half of the tape is overlapping the end of the bar.

Proceed inward/upward with the tape diagonal and partly overlapping the previous wrap, and so on **(f)**. Hold the tape under tension during the complete wrapping process and remove the paper backing from the adhesive as you go.

Position a short piece of bar tape on the rear side of the brake lever and over its clamp around the AX-Lightness and engage handlebars so you will not have an “unwrapped area” as you wrap past the lever **(g)**. Continue wrapping the tape until you reach the bulge/clamp area. Finish by taping the final wrap of the bar tape with insulating tape.

Tuck the overlapping bar tape you left at the beginning into the open end of the bar and insert a plug **(h)**. Repeat the entire process on the other side.



Inform yourself at your AX-Lightness and engage dealer about the different types of bar tapes and grips.



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