SERVICE MANUAL

ENGLISH

SERVICE MANUAL

MOTOTRONIK

Rev. 0 - 2021/12

progeo ACTIVE DESIGN

GENERAL WARNINGS

ANY ADJUSTMENT CAN BE CARRIED OUT EXCLUSIVELY BY QUALIFIED AND AUTHORIZED BY REHATEAM S.R.L. PERSONNEL.

It is forbidden to carry out any modifications to the Mototronik, even when possible, to the original design.

Any adjustments and/or any modification that is carried out by non-authorized personnel will immediately void the warranty on the product and it relieves Rehateam s.r.l. from any responsibility on any malfunctioning and/or damage due to such adjustments/modifications.

Always contact Rehateam s.r.l. and its technicians for any non-standard requirements or modifications to allow them to evaluate such modifications and verify that they will not compromise the normal and safe use of the wheelchair.

Any adjustment of the Mototronik could seriously compromise the safe use of the combination with the wheelchair causing damage to both the user and the wheelchair itself.

After every adjustment made to the Mototronik, check carefully that all parts are correctly fixed. Check that all screws and nuts are tightened and that all moving parts are functioning correctly.

After any adjustment, always test the Mototroink combined to with wheelchair before giving the product to the user.

Rehateam s.r.l. disclaims any responsibility for damage to the product, to any object or to people due to any modification that is not properly performed or that, in any case, does not guarantee safety to the user.

The Mototronik device is compatible with most of the manual wheelchairs in the market, nevertheless, it is always advisable to consult Rehateam s.r.l. and/or the wheelchair's manufacturer to know about the actual compatibility or possible directions to be followed.

SERVICE MANUAL

MOTOTRONIK

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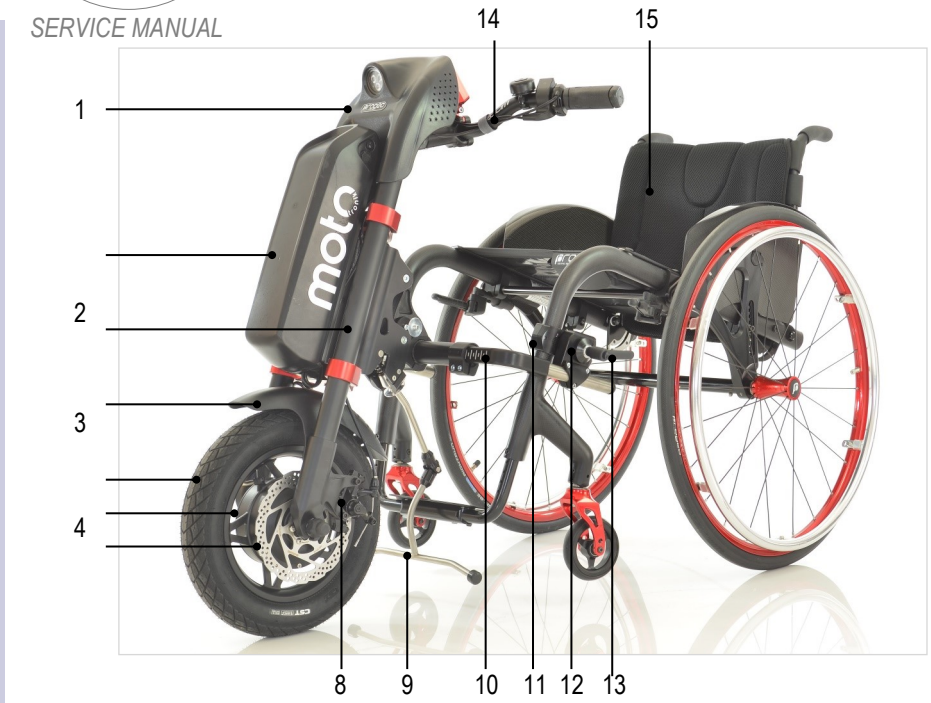
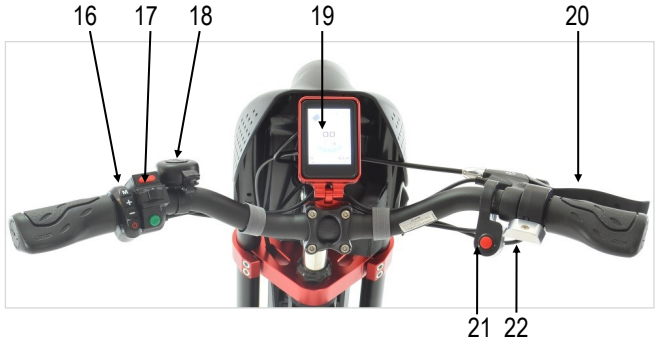
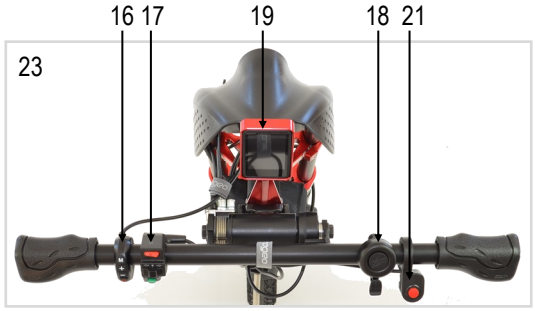
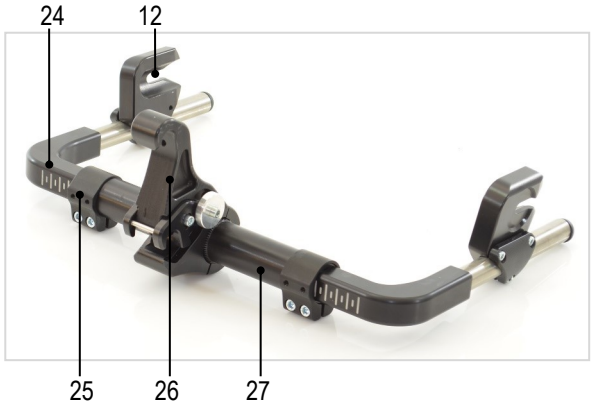
DESCRIPTION OF PARTS









1. Spoiler
2. Battery
3. Two cane frame
4. Fender
5. Steering wheel
6. Motor unit
7. Brake disk
8. Disk brake caliper
9. Stand
10. Connection frame
11. Clamps (fixed to the wheelchair's frame)
12. Coupling fork
13. Lock lever
14. Handlebar
15. Manual wheelchair
16. On/off and settings switch
17. Driving direction and cruise control switch
18. Bell
19. Display
20. Brake lever
21. Electronic brake button
22. Acceleration lever
23. Handlebar "Tetra"
24. Arm (ambidextrous)
25. Arm's fixing clamp
26. Coupling support
27. Connection frame's central tube
28. 12" motorised wheel
29. 14" motorised wheel

GENERAL INFORMATION

The assembly of the clamps is always base on the same principle, that is, they must be mounted to a fixed part thus, not to the removable footplate frame, for instance) of the folding or rigid wheelchair's frame.

The positioning the clamp along such fixed part is variable and it depends on the model of the wheelchair that, according to its frame tube's section, also determines the type of the clamp and the suitable assembly - See also last chapter of this manual, sheet "CLAMPS *TYPE AND ASSEMBLY PER MODEL OF WHEELCHAIR*"

The assembly procedure of the MOTOTRONIK system is always the same, but, according to the wheelchair, it is necessary the proper adaptation and adjustment.

The instructions for the proper installation take as reference what we may call "standard" installation.

Nelle istruzioni di montaggio appariranno delle note con utili informazioni.

In the standard assembly instructions, you will see notes with useful information.

RIGID FRAME WHEELCHAIR

FOLDING WHEELCHAIR WITH FIX FRONT FRAME

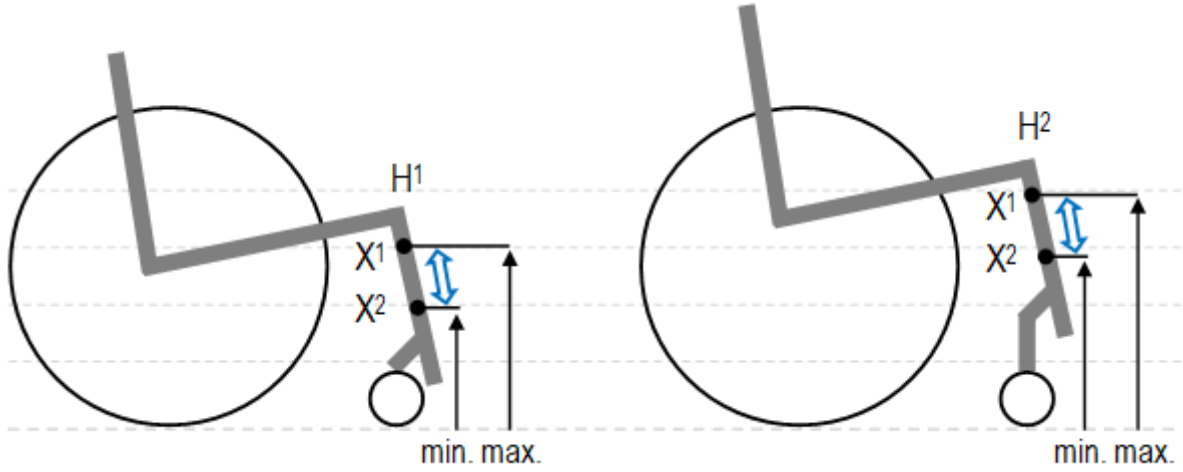
FOLDING WHEELCHAIR WITH SWING-AWAY, REMOVABLE FRONT FRAME

GENERAL INFORMATION

The clamp positioning in height depends on the wheelchair model and on its configuration: the front seat height, in particular, determines, according to the usable stretch of frame where you can fix the clamps, the lowest and highest fixing point.

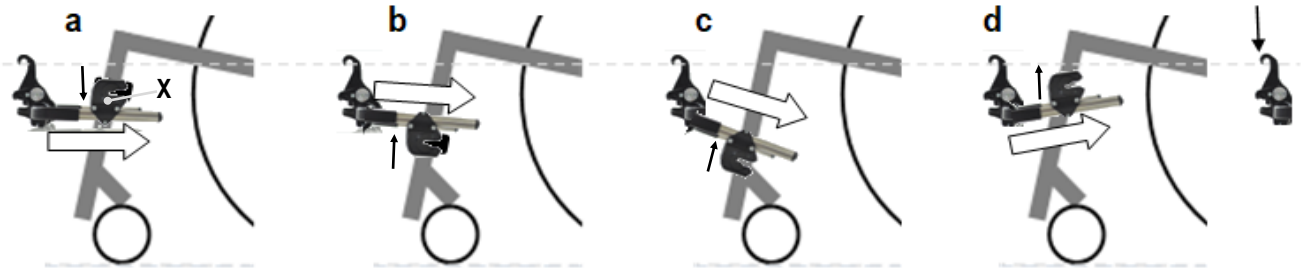
The longer the usable stretch, the greater the vertical adjustment.
If the clamp fixing point is one only point (fix point), there will be no vertical adjustment.

In this drawing, **X¹** and **X²** show the points within which you can fix the clamps; **H¹** and **H²** are two different front heights, whereas **min. max.** indicate the clamp positioning heights.



The range between **X¹** and **X²** can help to adjust the connection frame to a more convenient angle.
If **X¹** (or **X²**) is a fix point, the connection frame inclination will depend on the final assembly of the device.

You can insert the connecting frame horizontally (fig. **a** and **b**), "downhill" (fig. **c**) and also "uphill" (fig. **d**).
That depends on the height positioning of the clamps and on the coupling forks **X** orientation: facing down ↓ or facing up ↑.
In any case, the system works in the same manner.



The connection frame inclination will be the result of the combination of all parts involved in the installation.

NECESSARY TOOLS

MOTOR UNIT ASSEMBLY

WITH STANDARD HANDLEBAR

UNPACKAGING

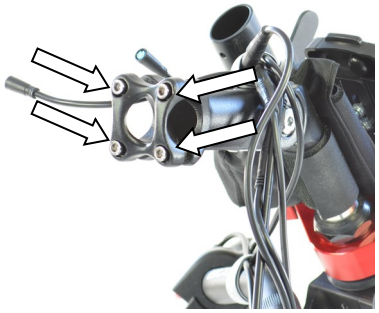
Remove all packaging elements as carefully as to avoid damaging any part of the product.
If you use scissors or a cutter, pay attention not to cut any cables or scratch any part.

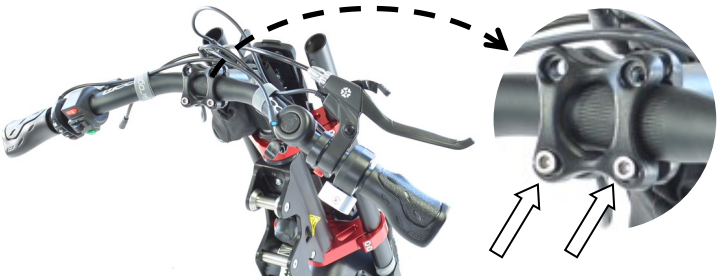
STAND

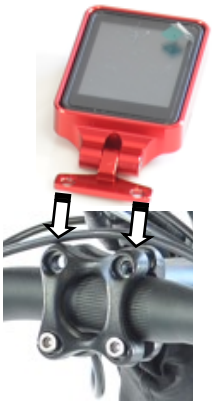
Insert the stand - see also the user's manual - and remove the spoiler to make the following steps easier.

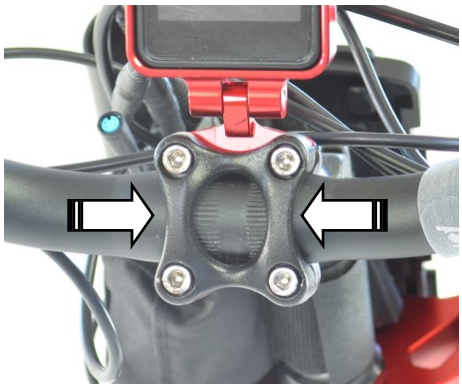
ASSEMBLY OF HANDLEBAR AND DISPLAY

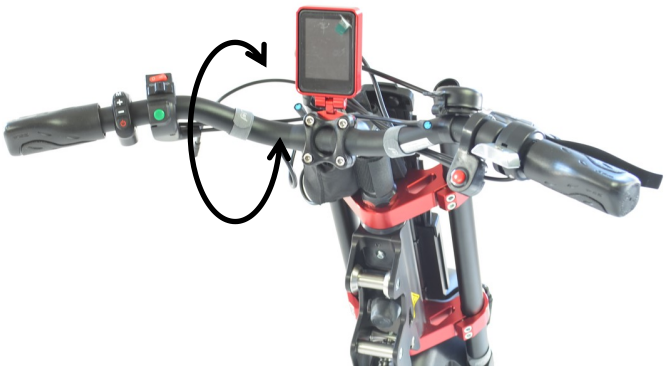
Remove the four bolts of the stem's head and remove the head.
Lean the central part of the handlebar onto the stem paying attention not to twist the cables.
Lean the stem's head and fit the two bolts on the lower side.
Make sure the assembly side is correct, that is, with the brake lever facing forward.
Align the display support's holes with those of the stem and screw the two bolts all the way down.
Center the handlebar by taking the marks as reference - if necessary, loosen the two bolts that also fix the display.
Turn the handlebar to the position you may consider initial.
Tighten the two bolts that also fix the display and then the other two..











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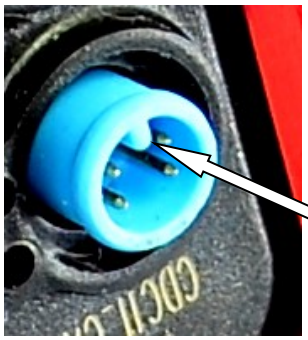
MOTOR UNIT ASSEMBLY

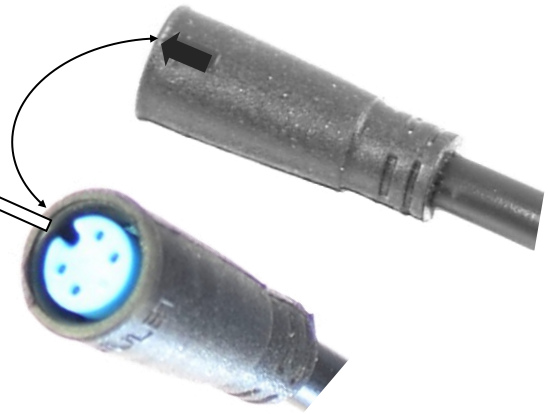
WITH STANDARD HANDLEBAR

CABLES CONNECTION

The rear side of the display shows four different coloured sockets that should match with the same coloured plug to connect.
Be careful when fitting the plugs, in fact, there is one only position that allows the connection: the groove on the plug, that is externally indicated by the arrow on the rubber cover, should fit along the tooth of the socket.

Light blue: accelerator cable; **Black**: power cable; **Green**: headlight
It is advisable to cover the unused sockets with the rubber cap.



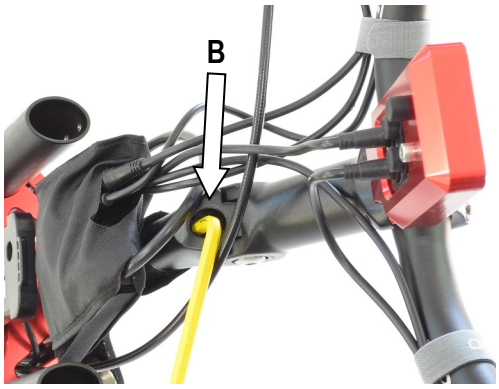


Within the cables holder bag (or sticking out of it) you will find two other plugs: one light blue and one red; these are not used and, as long as it is possible, you should stow them within the bag.

BATTERY
Insert the battery - see also user's manual.

SWITCH-ON TEST
Switch the battery on.
Switch the display on.
Lift the driving wheel and try to accelerate and brake.
Switch off the display and then the battery.
See also user's manual.

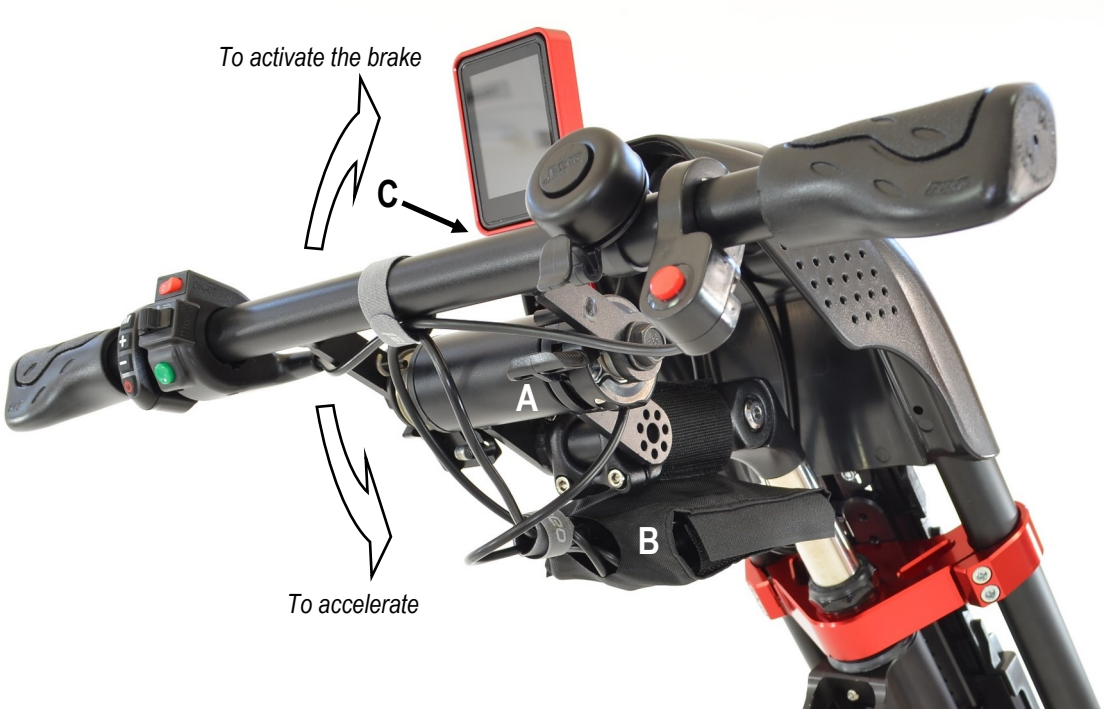
Before using the device, you need to centre the handlebar (with respect to the driving wheel) and make sure the bolt **B** is hard tightened—see sheet "*STANDARD HANDLEBAR ADJUSTMENT — 1 post height*"

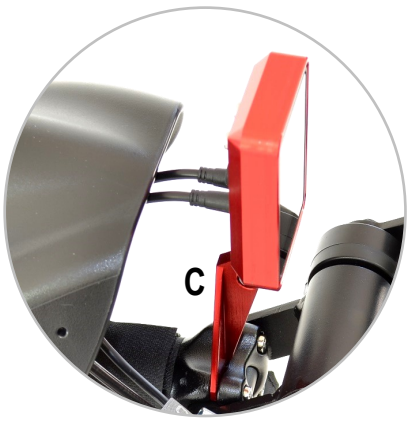


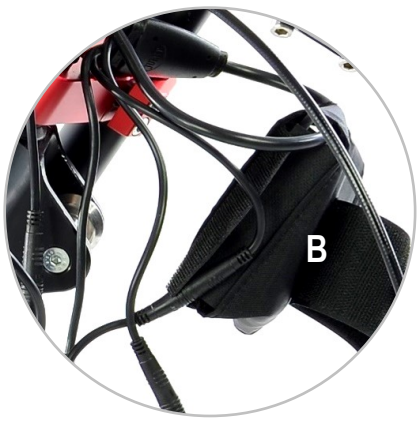
MOTOR UNIT ASSEMBLY

WITH “TETRA” HANDLEBAR

Follow the instruction of the sheet “*MOTOR UNIT ASSEMBLY - with standard handlebar*” and the following directions.
Make sure the assembly side is correct, that is, with the accelerator lever **A** on the right hand side; this way, by turning the handlebar downward, you accelerate, whereas, by turning it upward, you will activate the brake.
Pay particular attention to the route of the cables that should be as rational as possible and without squeezing them; furthermore, the brake cable, should not form tight curves.
Stow the cables in the cable holder bag **B** in such a way to leave out just the necessary. This operation may require a little of patience and , if needed, fit one cable at time detaching the plug and then plug it back after routing it rationally, that is, avoiding entanglement, squeezing and stretching. Plugs and sockets should always be matched according to colour and their fitting is guided by the arrow on the plug’s rubber cover — see also sheet “*DISPLAY*”.
The support **C** for the display has a longer fixing plate.







CLAMP ASSEMBLY

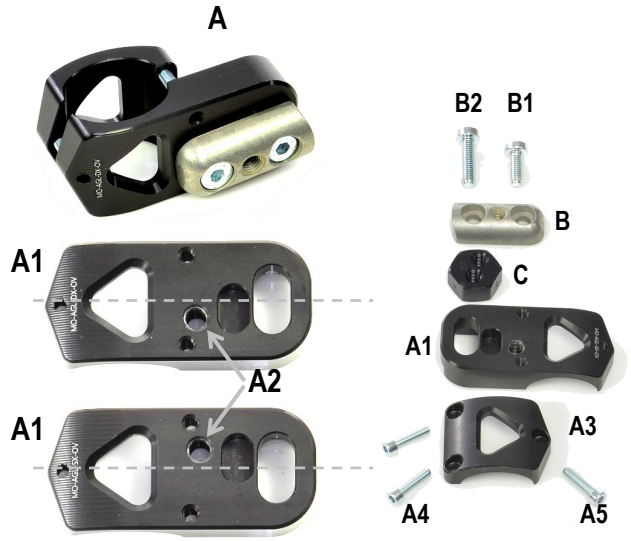
The clamps **A**, are symmetrical to one another and, except for specific cases, they can be mounted both on the right and on the left side of the wheelchair.

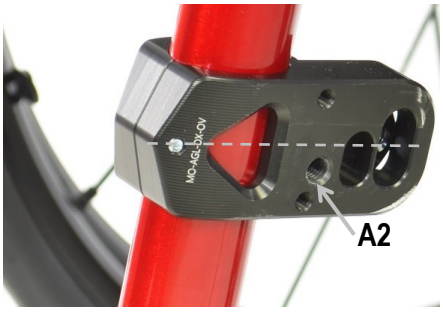
The external face **A1** has an off-set threaded hole **A2** which, according to the assembly, will result to be above or below the clamp's mid-line.

In most cases, the clamp is mounted with the hole **A2** below the mid-line as shown hereafter.

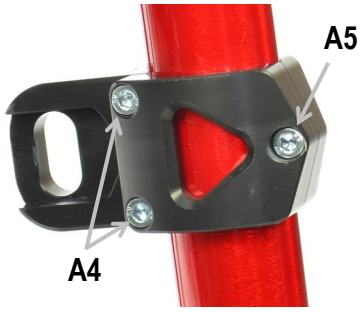
Position the clamp on the frame so that its externa face is facing backward and parallel to the driving line of the wheelchair (to be checked, especially, when fixing on round tubes), with the threaded hole **A2** below the mid-line.

Now mount the plate **A3** and fit the bolts **A4 A5** on the clamp.





OUTER SIDE OF THE WHEELCHAIR



INNER SIDE OF THE WHEELCHAIR

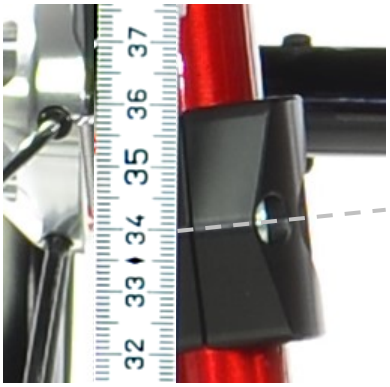
AERIAL VIEW

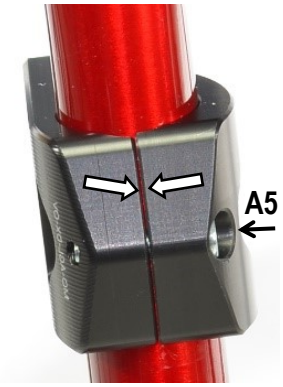
Mount the two clamps so that its mid-line in front is approximately between 32 and 35 cm form the ground and check they are at the same height (it is advisable to use a rod and spirit level).

Should be impossible to fix the clamps at that height, just position them where possible according to what the wheelchair and its configuration allow for.

Screw up the bolt **A5** until the two parts touches and unscrew it by half of a turn to keep them sligtly apart.

Then, tighten the two bolts **A4**.





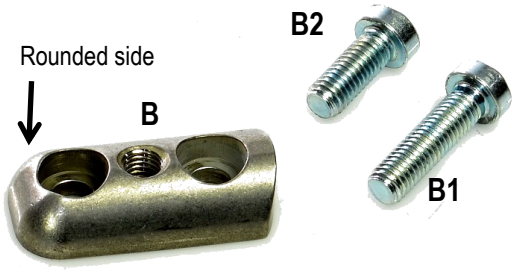
On some models, the assembly has the clamps facing frontward (therefore, opposite to the standard assembly). The assembly instruction is very much the same, but the hole **A2** may be above the mid-line. See also last chapter of this manual, sheet "CLAMPS *TYPE AND ASSEMBLY PER MODEL OF WHEELCHAIR*"

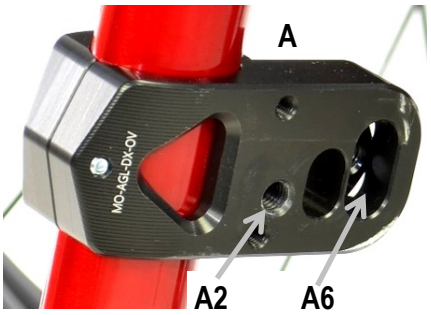
Follow next page

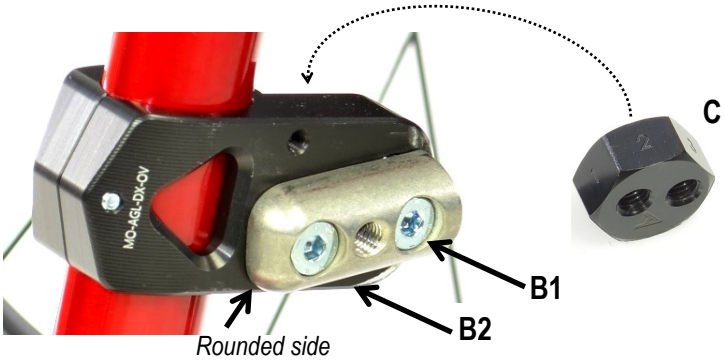
COUPLING PAD

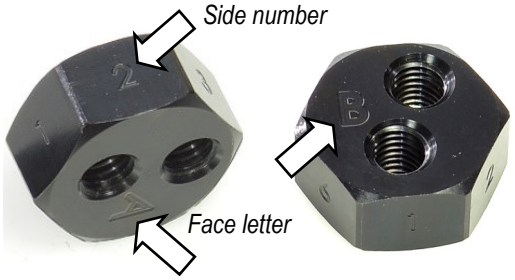
ASSEMBLY AND ADJUSTMENT

The coupling pad **B** is fixed to the clamp **A** with the bolts **B1** (M8 x 20 mm) and **B2** (M8 x 30 mm)
The pad's rounded side should be facing frontward.
The bolt **B1** screws into the clamp's threaded hole **A2**, whereas the bolt **B2** goes through the slot **A6** and screws into the one of the two holes of the hexagon **C**.
Screw the bolt **B1** all the way down without tightening; this way, you will be able to swing the pad with no effort and, consequently, to easily fix the bolt **B2** to the hexagon.









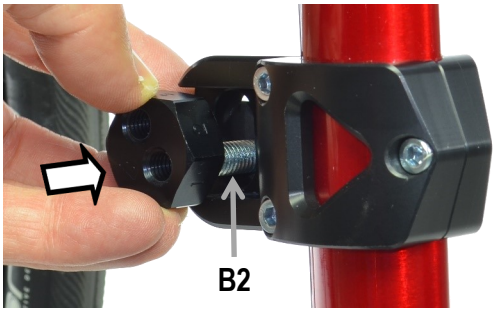
The six sides of the hexagon are marked with the numbers from 1 to 6, while the two faces, marked with the letters A and B, have the two threaded holes (for fixing the bolt **B2**). In total, 12 possible fixing position.

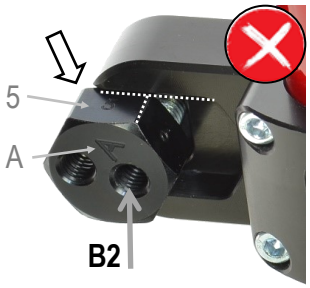
12

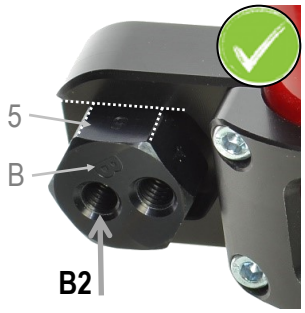
For the inner side of the clamp, fit the hexagon into the housing and screw the bolt **B2** into either of the two holes.

Before fully screwing the bolt, make sure the upper and the lower sides of the hexagon are completely leaning on the housing's walls.

If not, you can either change hole or, as in the example below, if you need to keep the same coupling pad inclination, reverse the hexagon horizontally (from face A to B, or vice-versa) and keep the same side and the same hole.







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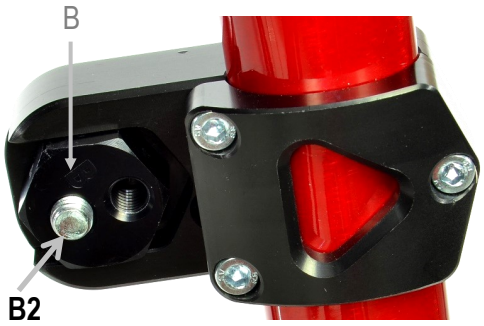
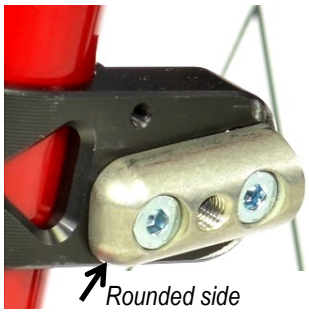
COUPLING PAD

ASSEMBLY AND ADJUSTMENT

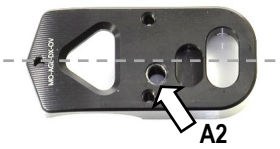
To fix the second pad, replicate the fixing of the first pad symmetrically, that is, using the same side (1, 2 , 3, 4, 5 or 6) and the same hole, but the opposite face (A or B).
Accordingly, if letter A on the hexagon is visible on the right clamp, then the letter B should be visible on the left clamp.
This way, the two pads will be fixed at the same inclination that can be taken as initial. You will probably need to adjust it later.
It is advisable to start with a mid way inclination as in the pictures, just ensure right and left side are equally adjusted.
Tighten the bolts that fix the two pads..





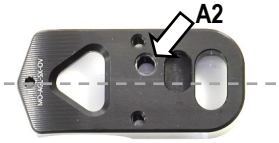
Minimum inclination

Maximum inclination



Minimum inclination

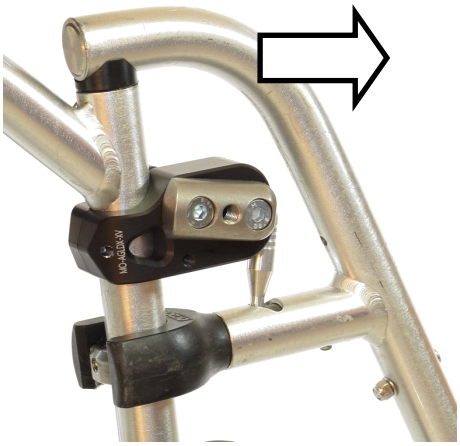
Maximum inclination



As initial position, it is advisable to adjust the coupling pads at an intermediate inclination between minimum and maximum, in fact, il will be useful during the next installation steps; you will make the final adjustment afterward.

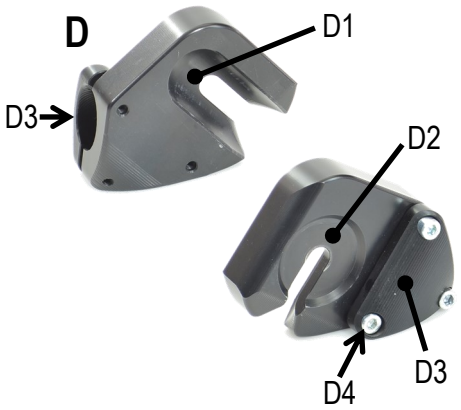
If the clamp is mounted facing to the front of the wheelchair, the assembly is the same, but make sure the rounded side of the pad is facing frontward.

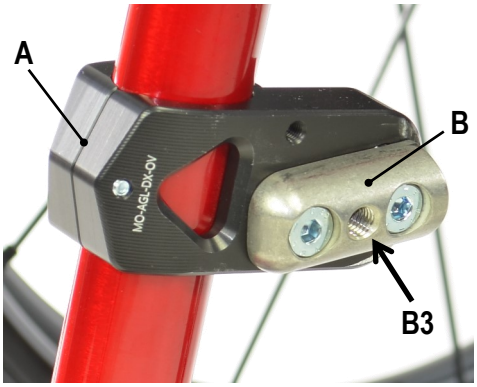
Front of wheelchair



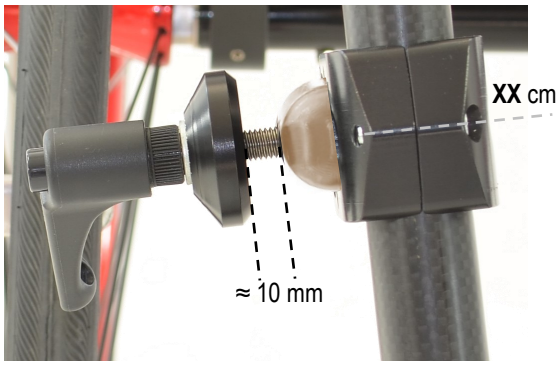
COUPLING FORK ASSEMBLY

The coupling forks **D** show, on one side, a half-moon housing **D1** that couples the shape of the pad **B**, while, on the opposite side, a round housing **D2** for the washer **E1** of the lock lever **E**; on this last side the plate **D3** and related bolts **D4** are meant to fix the connection frame's tubes.
The two forks are not ambidextrous, but you can mount them both on the right and on the left hand side, thus, the connection frame's tube can either be above or below the clamp **A**.



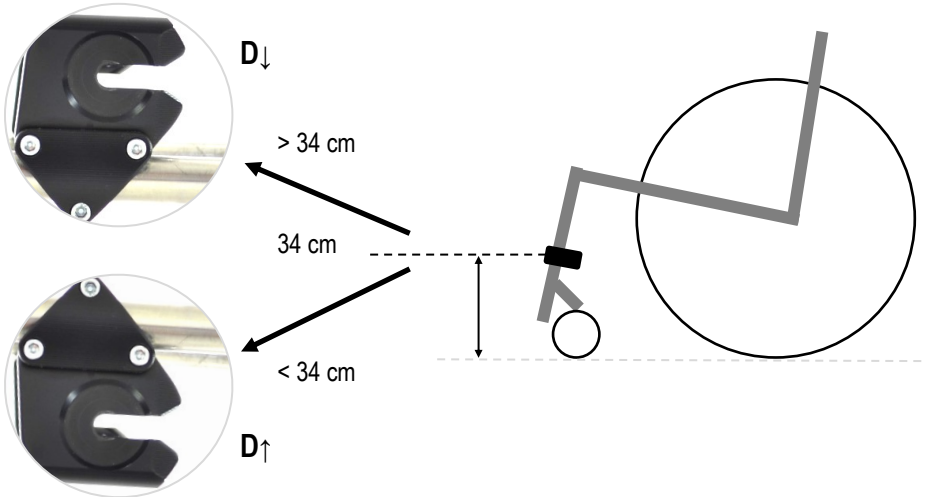


Insert and screw the lever **E** into the hole **B3** leaving approximately a 10 mm gap to allow sliding the fork in.
Slide the fork in and lock it with the lever.



The lever's washer must couple with the round housing of the fork.

If the positioning in height of the clamps is lower than 34 cm, mount the forks with the tube low fixing (**D↓**);
If the positioning in height of the clamps is higher than 34 cm, mount the forks with the tube high fixing (**D↑**);



Due to the several variants that affect the final adjustment of the complete system, you may need to reverse the fork assembly regardless the instruction here reported.

CHECKING
THE CONNECTION FRAME'S ARMS

Loosen the three bolts **D4** of the plate and slide in the tube **F1** of the arm **F**.

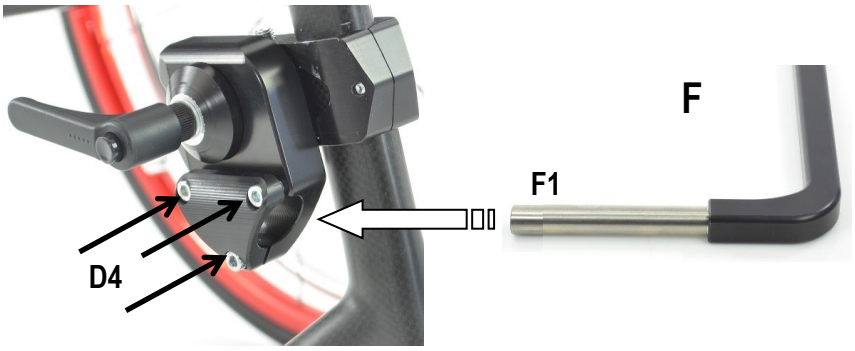
Screw the bolts just enough to eliminate the play but without preventing the tube from being moved.

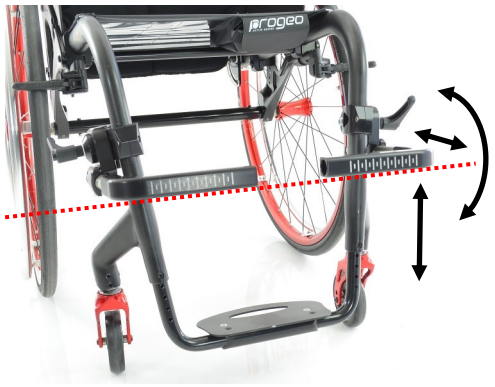
Repeat the same operation on the other side.

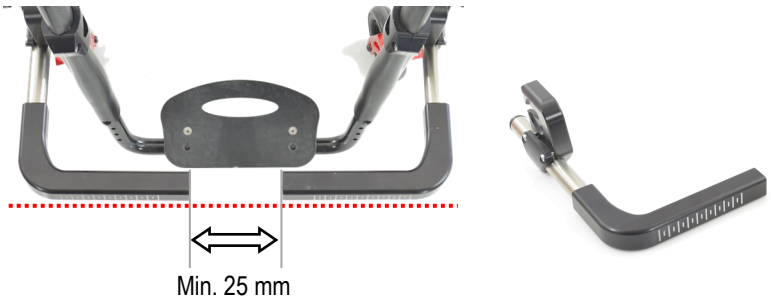
Now position the two arms so as to be able to check whether, at the same height, inclination and depth, they are horizontally aligned.

Also check that the distance between the two arms is at least 25 mm, but not more than 190 mm.

Finally, unscrew the lever and remove the unit arm/coupling fork.



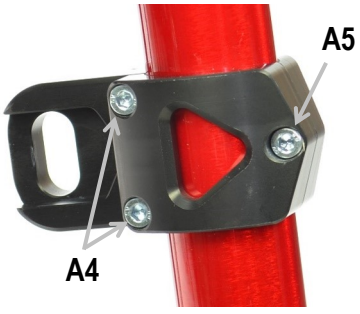




IF THE TWO ARMS ARE NOT ALIGNED,

check that the two coupling forks are well fixed with the locking levers and that the three bolts **D4** of the clamps that fix the tubes do not allow any play to the tubes themselves. If this is not enough, it is necessary to fix the clamps fixed to the frame.

If the tube on which the clamp is fixed is round, slightly loosen the clamp bolts **A4** and **A5** and leverage the arm until alignment. This may be necessary for one or both sides.
Once alignment is achieved, tighten the clamps tightly.



If the tube on which the clamp is fixed is NOT round, you need to give the external side of the clamp a compensation move by working on the three fixing bolts.
Loosen the bolt **A5** hall a turn, tighten the two bolts **A4** and check the alignment of the arms.
If that is not enough, repeat the same operation by another half of a turn of the bolt **A5**.
If the result is opposite to what expected, repeat the same operation, but start with loosening the bolts **A4** and then tightening the bolt **A5**.
This operation may be needed for one or both sides and it may not lead to a perfect alignment, however, a few millimetres tolerance is acceptable.
Finally, tighten the clamps.

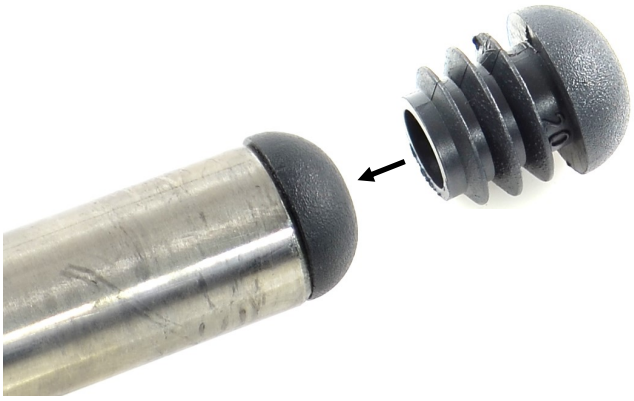
If the arms are too wide, you can cut off the exceeding part; on the other hand, if they are too narrow, you need to replace them with wider ones.
We will check the length of the tubes later on.
See chapter "*FRAME CONNECTION'S ARMS*" for further information on sizes of the arms.

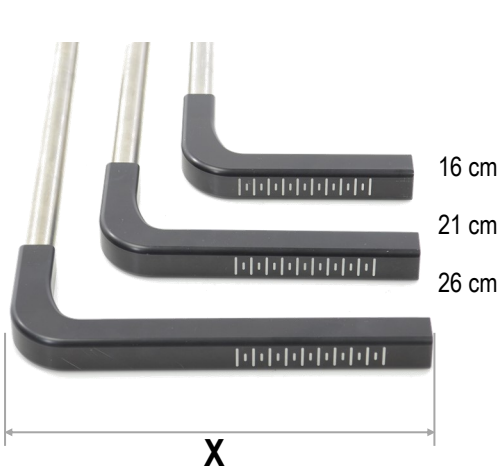
CONNECTION FRAME'S ARMS

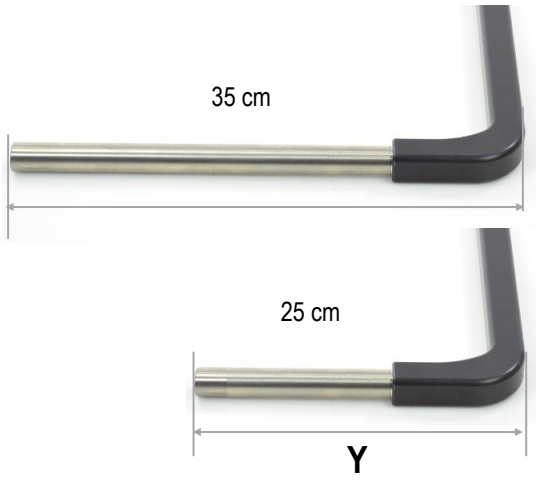
SIZES AVAILABLE

The connection frame's arms are available in three widths and two lengths.
f necessary, you can cut both the steel round tube and the aluminium sqaure tube.
Always put the cap into the steel tube end to avoid scratching the surface you will lean the device on.

	X		Y
NARROW	**16**	SHORT	**25**
		LONG	**35**
MEDIUM	**21**	SHORT	**25**
		LONG	**35**
WIDE	**26**	SHORT	**25**
		LONG	**35**





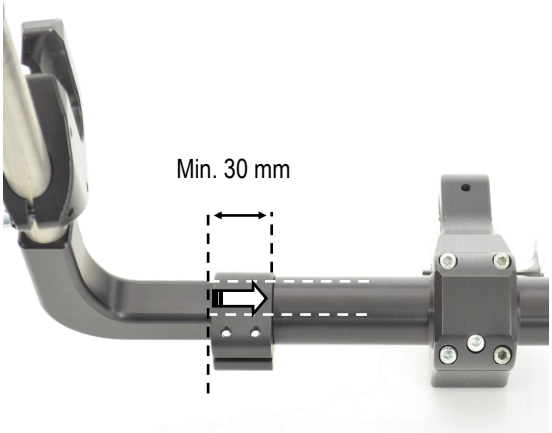


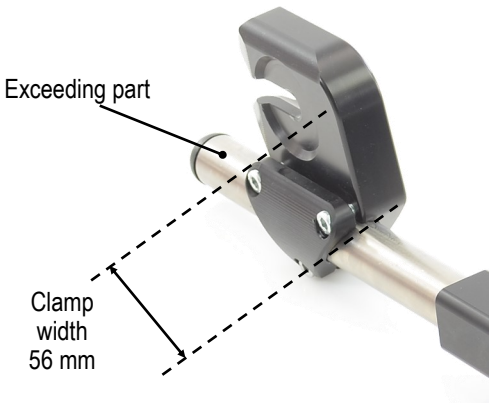
The size Y includes the L-shaped tube.

The length of the straight tube is 310 or 210 mm

If you need to cut the tubes:

- When using the Mototronik, the square tube must be inserted (and tightened) into connection frame's central tube for at least 30 mm, otherwise the stability of the system is not guaranteed.
- The steel round tube must always be embraced along the entire width of the clamp; the exceeding part may be cut off until reaching the line of the rearmost side of the clamp.

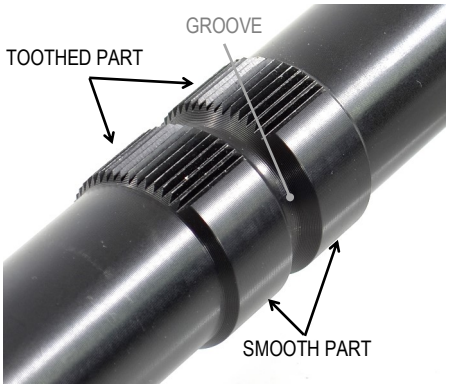




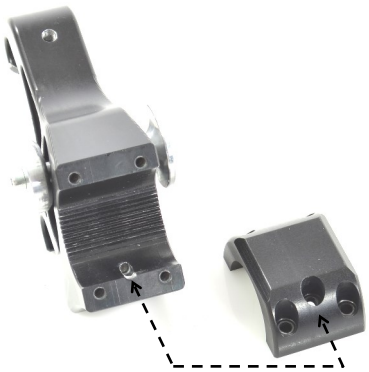
CONNECTION FRAME ASSEMBLY

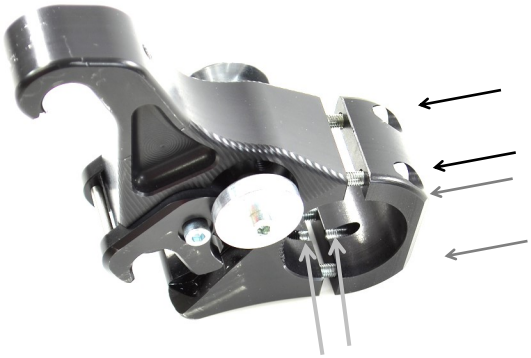
COUPLING UNIT

The coupling support **G** is fixed to the frame connection's central tube **H** by means of the plate **G1** and the bolts **G2**.
The central tube shows two sectors with a wider diameter separated by a groove that determines the centre of the tube itself
Half of such sectors is smooth, whereas the other is toothed and it is designed to adjust and fix the coupling unit that, on its turn, has a coupling toothed section.

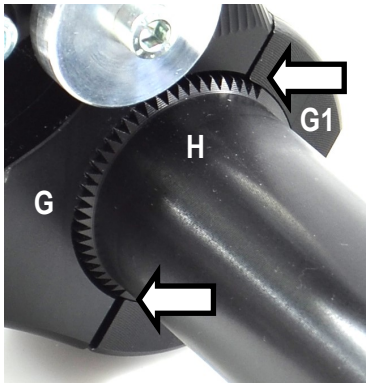


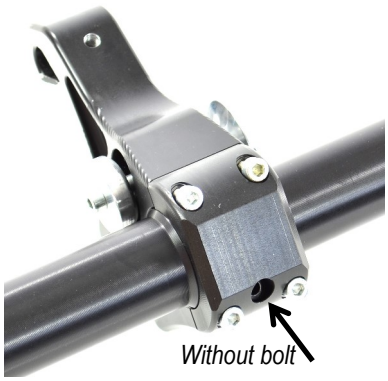
Mount the plate on the coupling support by just fitting the bolts on the 4 corners and making sure the hole in the middle is aligned with that on the coupling support. Position the coupling support so as to be able to fit the remaining bolt that can pass only through





Now, making sure the toothed side of the central tube fit to that of the coupling support, turn the unit coupling support/plate until positioning their joining parts where the smooth and toothed sectors of the tube begins/ends.
Screw the bolts until fixing the parts, no need to tighten hard now.
Do not put the central bolt, you will fix it after final adjustment of the entire system.
Consider this position as initial reference because you will probably need to change it in a following step of the installation.





This unit may be supplied assembled.

Follow next page

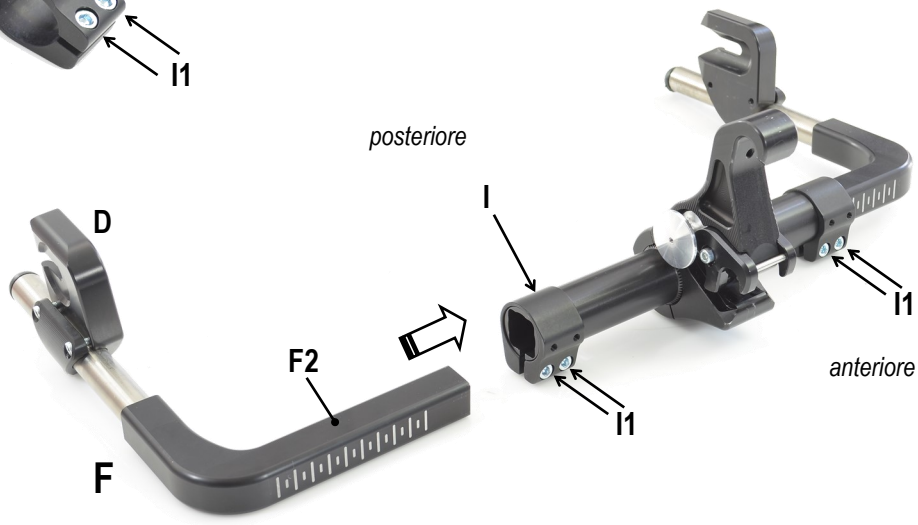
CONNECTION FRAME ASSEMBLY

ASSEMBLY OF ARMS ON COUPLING UNIT

Insert the two clamps **I** that fix the arms so as the bolts **I1** are, for convenience, facing down front and insert the two arms facing backward and in such a way that the coupling unit is approximately perpendicular to the connection frame (the other three positions given by the square section clearly results wrong).

Now the two clamps and the arms are free to move and they are ready for the next step of installation.

Even the coupling forks, in this phase, be them facing down (as in the pictures here below) or up, are not securely fixed.



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CONNECTION FRAME ASSEMBLY

ASSEMBLY OF CONNECTION FRAME TO WHEELCHAIR

You can now fit the connection frame to the wheelchair.

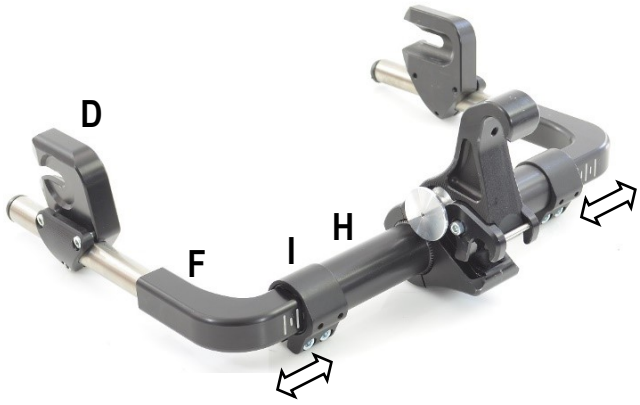
It is necessary that the two coupling pads **A** are always tilted at the same inclination; you can do that in two ways:

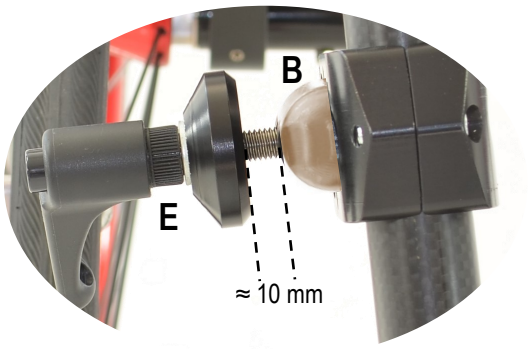
1) adjust and fix the pad at the same inclination — see chapter "*assembly and adjustment of the coupling pads*";

2) for each pad, unscrew the bolt **A2** and remove the hexagon **C** (do not remove the bolt); loosen the bolt **A1** and swing the pad to its maximum upward inclination and tighten the bolt; this way, the pad is free to swing once you insert the connection frame.

It is suggested the second method because you will need to adjust the pad inclination in the next step of installation.

Slide the two arms in or out of the central tube to make the connection frame wider or narrower until being able to fit the coupling forks to the pads. Make sure the lock lever **F** is enough unscrewed to allow the





CONNECTION FRAME ASSEMBLY

WIDTH ADJUSTMENT

For each side of the system, loosen the bolts **D4** and then tighten the lock lever to secure the coupling fork.

This way the forks will match the inclination of the clamps **A**.

Position the clamps **I** over their housing on the central tube and, making use of the reference marks on the arms, centre the central tube and temporarily tighten the bolts **I1**.

Now, unscrew the lock levers and remove the connection frame.

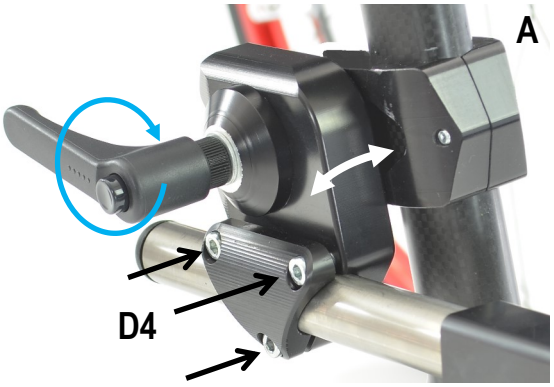
You will notice that it is a bit hard because you have just adjusted the system with the coupling fork pressed against the clamps.

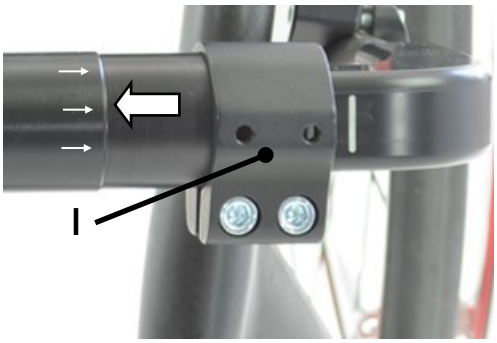
You then need to adjust the width of the connection frame in such a way to allow for an easy fitting and removal.

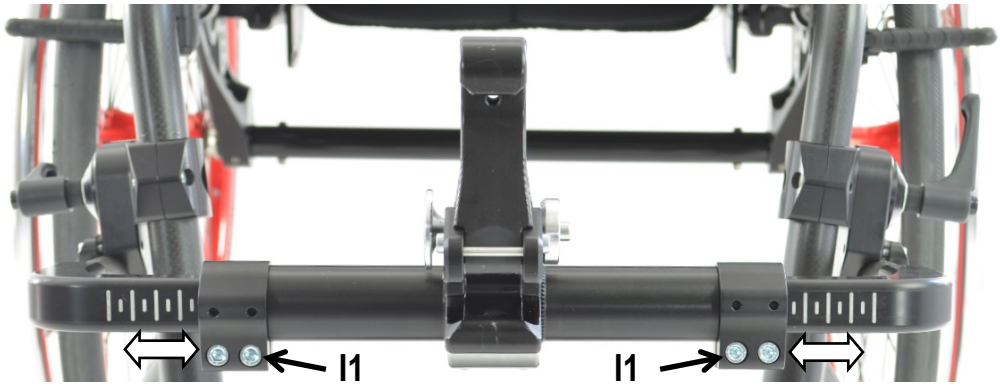
Loosen the bolts **I1** and move the arms sideward until reaching a 0.5~1 mm gap between fork and clamp.

Check the central tube is centred.

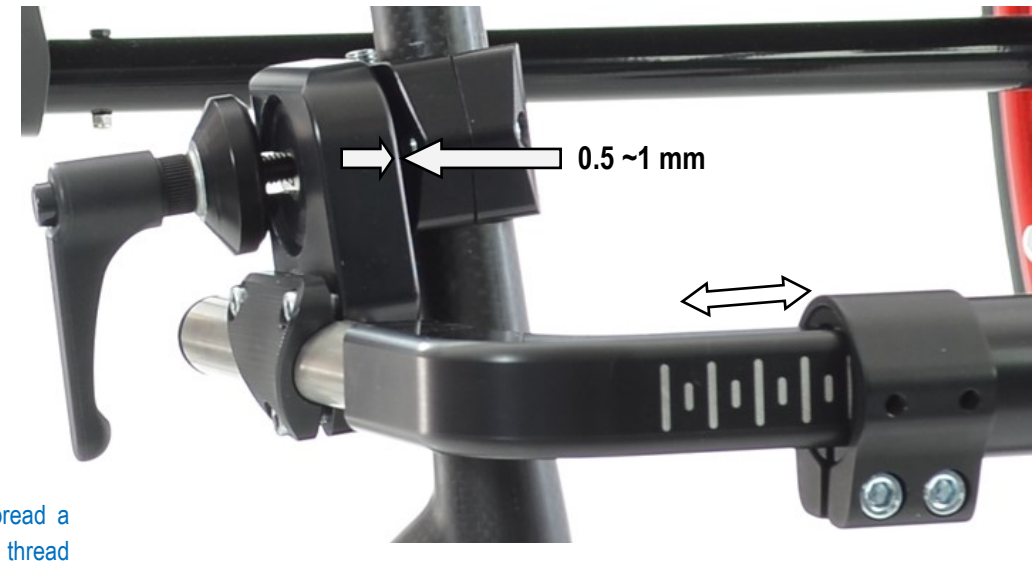
Tighten the bolts and check the connection frame is easy to insert and remove.







DO NOT move the arm out excessively (more than 2 mm) because, when you screw up the lock lever, the tubes flex to reach the proper coupling position, therefore, the wider the connection frame, the more flexion the tubes require, and the system will results more difficult to fix.



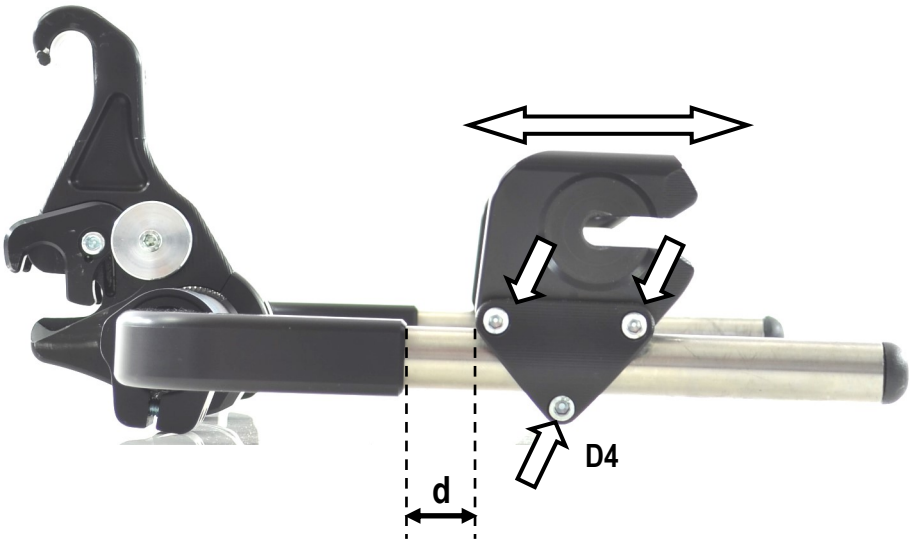
It is advisable to spread a drop of mild lock thread glue on the bolts **D4**.

Follow next page

CONNECTION FRAME ASSEMBLY

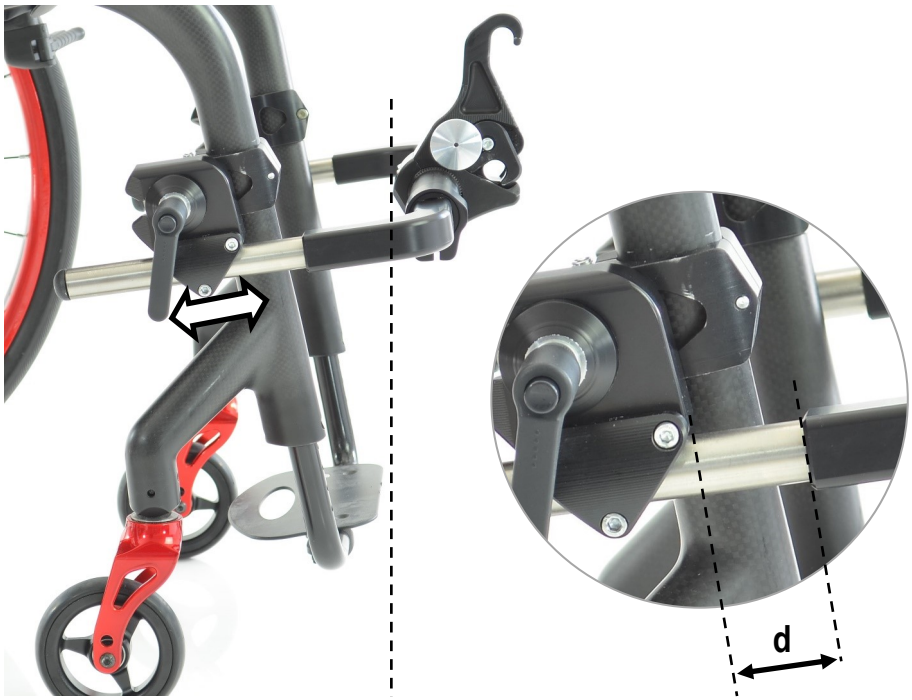
DEPTH ADJUSTMENT

Loosen the bolts **D4** and slide the tubes to the desired distance.
Check the distance **d** in the same at right and left and tighten the bolts evenly.



Connection frame off the wheelchair
The operation can result easier, but, before tightening the bolts, you need to mount the connection frame on the wheelchair and tighten the lock lever of each fork; this way, in fact, the two forks will match the correct inclination with respect to the clamps - see also "*CONNECTION FRAME ASSEMBLY - width adjustment*".

Connection frame on the wheelchair
With the forks secured to the clamps (lock lever well tightened), sliding the tubes may result less easy due to the pressure given by the flexion of the tubes in using position, but you do not need to check the forks inclination.
If loosening the lock levers, you reduce or eliminate the pressure given by the tubes and the adjustment will be as if the connection frame were off the wheelchair, however, beware of the forks inclination.



Initial positioning
Adjust the depth so as the horizontal side of the connection frame is approximately in the same line of the outer side of footplate.

It is advisable to spread a drop of mild lock thread glue on the bolts **E4**.

COUPLING SUPPORT ADJUSTMENT

You can angle adjust the coupling support **G** with respect to the connection frame by rotating it on the central tube **H**.

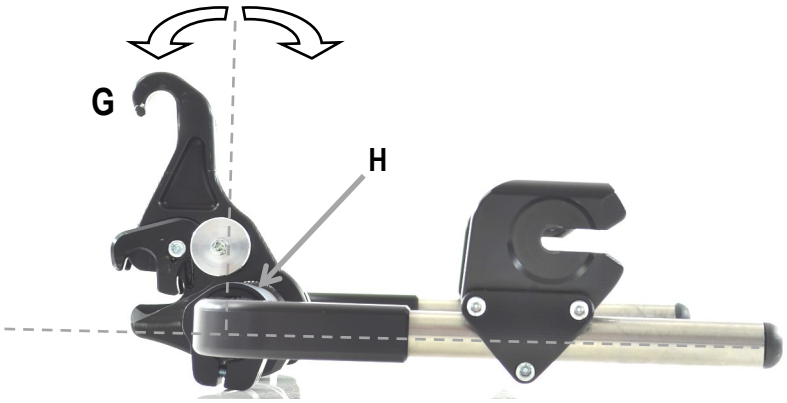
This adjustment will likely be required to reach the correct angle to fit the device according to the inclination, length and height of the connection frame.

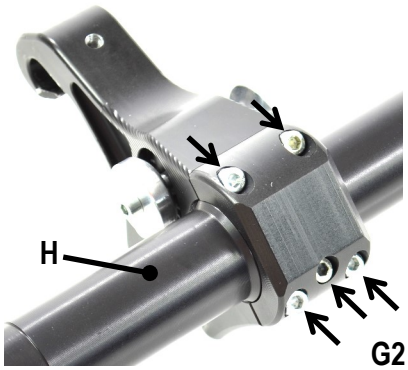
Loosen the 5 bolts **G2** until being able to turn the coupling support and fit the teeth to the new position.

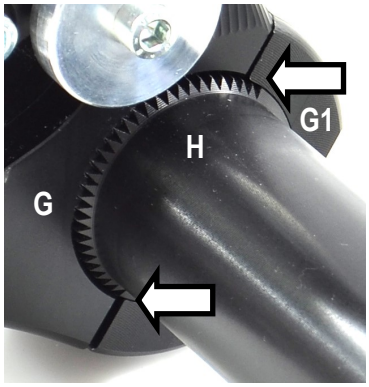
It results useful to take as reference the two joining points between the coupling support **G** and the plate **G1**.

Once you have found the new position, tighten the bolt at the four corner and then the central one.

See also chapter "*CONNECTION FRAME ASSEMBLY — coupling unit*".







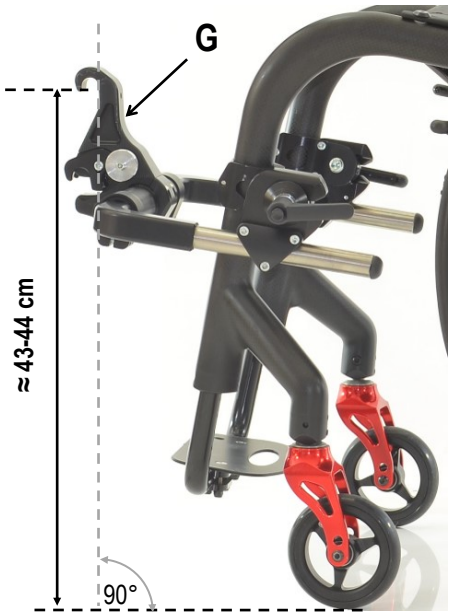
It is advisable to spread a drop of mild lock thread glue on the bolts **G2**.

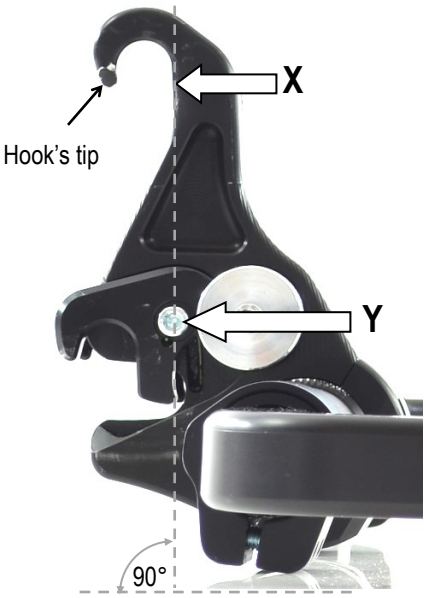
FINAL ADJUSTMENT

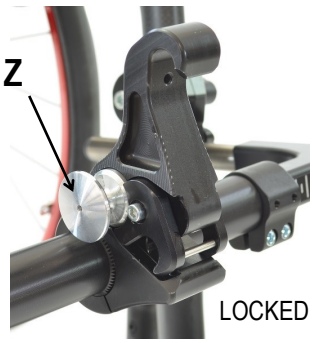
The final adjustment, in addition to the easy fitting to and removal from the wheelchair - see sheet "*CONECTION FRAME ASSEMBLY*" - should result, once the power device is mounted, in the caster lifted by 3-5 cm from the ground and in no interference between driving wheel and user's feet or any part of the wheelchair.
You can achieve such result when the coupling support is adjusted at a certain height, at a certain inclination and at a certain distance from the frame of wheelchair.
Regardless the positioning in height of the clamps and the orientation of the coupling forks, the hook's tip of the coupling support **G** should be about 43-44 cm from the ground and about perpendicular to the ground considering as a reference line the flat part **X** and the center of the screw **Y**.

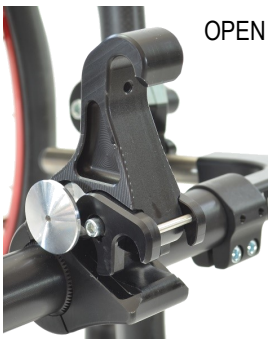
To achieve this result you need the right combination of:
1 the inclination of the connection frame given by the coupling pads— see sheet " *COUPLING PADS - assembly and adjustment*";
2 the inclination of the coupling support — see sheet "COUPLING SUPPORT ADJUSTMENT*";*
3 the position in depth of the connection frame — see sheet "MOUNTING HEADBAND - depth *adjustment*".

Note: the height of 43-44 cm is to be considered as an initial reference and it is therefore possible to change this value.









Make sure the coupling system is open. If locked, press the button **Z**.
Approach the device to the coupling system and observe the height of the hook's tip and of the coupling rod **M**.
The height to the ground of the rod **M** is given by the stand **N** (not adjustable) which holds the device and helps for mounting.

Follow next page

FINAL ADJUSTMENT

The ideal position is when the hook's tip is in line with the axis of the rod **M**; this condition, in fact, makes the fitting of the device very easy.

However, the casters may not lift enough (less than 3 cm).

If the hook's tip is above the rod, even by a few centimetres, the fitting will again result easy.

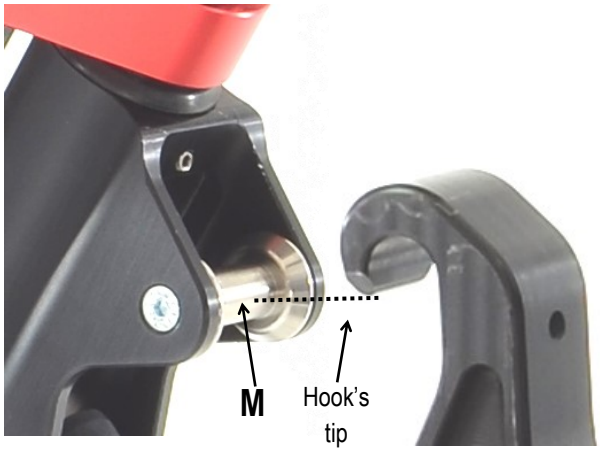
On the other hand, if the hook's tip is below the rod, the fitting will result more difficult because you have to swing the handlebar down.

This way, the handlebar may even touch the user's legs before reaching the coupling position.

Once the device is mounted with the casters sufficiently lifted from the ground, check there is no interference between the driving wheel and the user's feet or any part of the wheelchair.

Also check the handlebar position and, if necessary, adjust it.

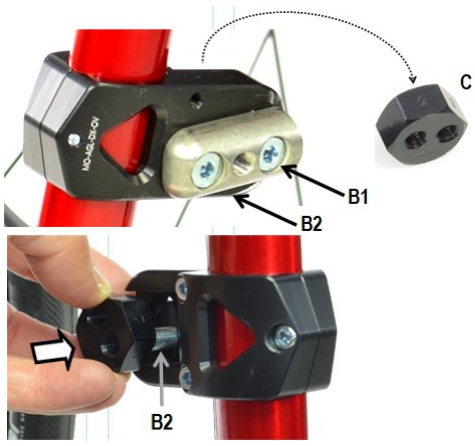
See all sheets referring to the handlebar.



A good method to perform the final adjustment is to put 4-5 cm thick plinths under the casters so that the connection frame inclination comes accordingly. To do so, remove the levers, remove the nut **C** (on both sides) by unscrewing the bolt **B1** but without removing i. insert and lock the connection frame with the levers.

Now, the connection frame will pivot on the bolt **B2** and it will determine the position of the bolt **B1** through which you should fit the nut **C** in the housing and memorize the combination "hole/side/face".

Remove the levers and the connection frame, fit the nut **C** in the housing in the position you earlier determined and hard tighten the bolts **B1** and **B2**.

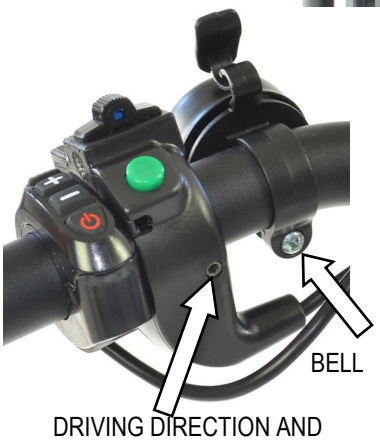


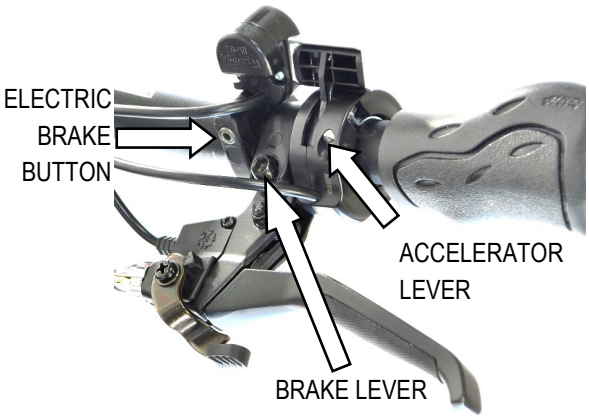
Follow the same instruction for the handlebar "Tetra".

CONTROL TOOLS

STANDARD HANDLEBAR

You can adjust the position of
each of the control tools on the handlebar for a more convenient use.
Some of these tools may be moved from right to left and vice-versa.
Each control tool is fixed to the handlebar with a screw that tighten the clamp of the same tool.





The **accelerator lever**, the **ON/OFF and setting switch**, the **electric brake button** and the **bell** can be mounted both on the right and the left side of the handlebar.

To proceed with such modification you need to remove the grips (it is likely you blow them off with compressed air between grip and tube) and, after loosening the fixing bolt of the control tool, slide it off and fix it to the other side of the handlebar.

In the pictures here after, for instance, on the left side of the handlebar the ON/OFF and setting switch was removed (and mounted to the other side) and the accelerator lever was mounted instead. Finally, mount the grip and fit the cables with the Velcro

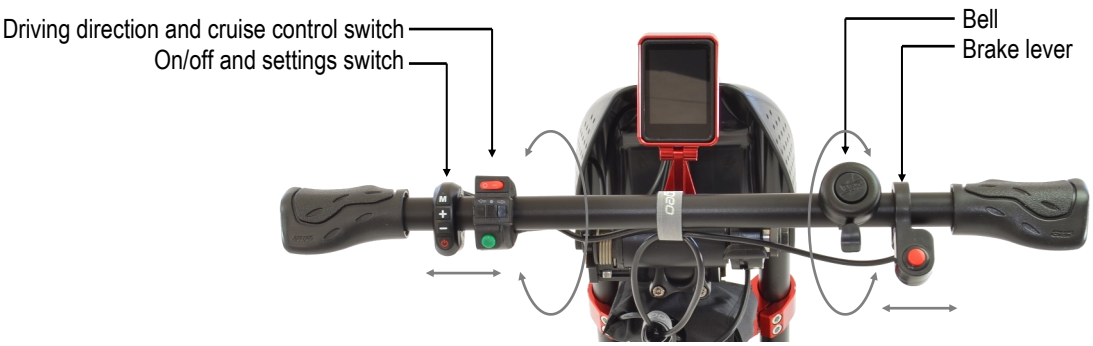
The **driving direction and cruise control switch** can only be mounted on the left side of the handlebar due to its rigid curved cable guide that must be facing to the centre of the handlebar to avoid squeezing the cable.

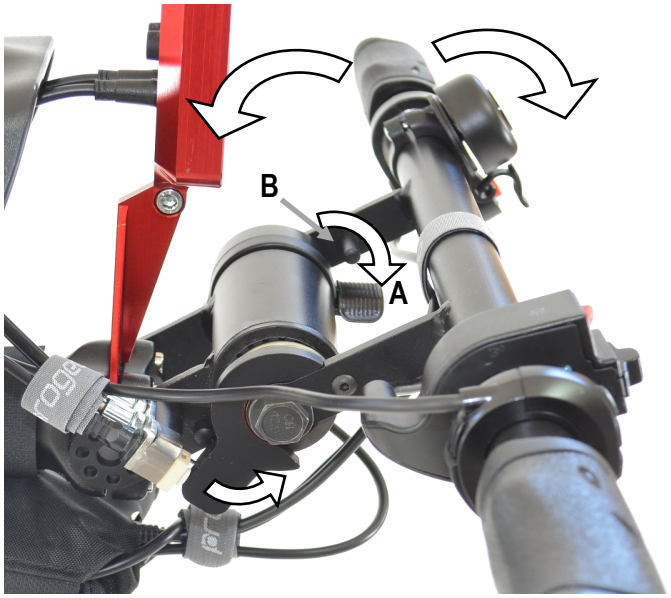
When moving the control tools from one side to the other, beware of the cable.
Tighten the tool control screw just enough to prevent rotation.
DO NOT tighten the control tool screws much to avoid damaging the clamps.

CONTROL TOOLS

"TETRA" HANDLEBAR

Similar procedure as for the standard handlebar, see sheet "*CONTROL TOOLS - standard handlebar*",.



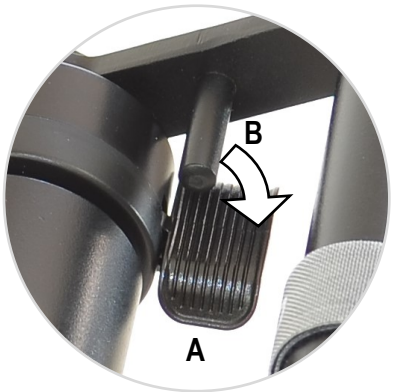


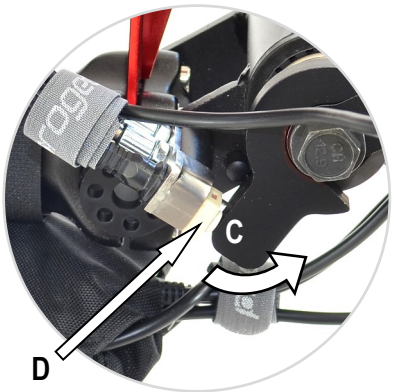
The accelerator lever **A** lays on the right hand side of the central support on which the handlebar rotate.

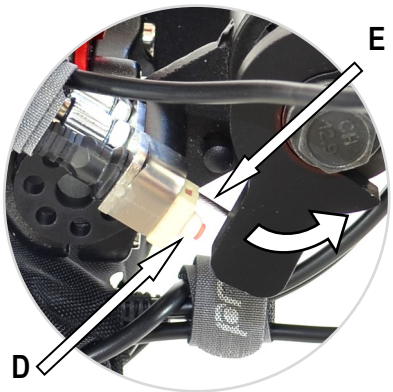
When rotating down, the pin **B** presses the accelerator lever.

The first stretch of the rotation does not activate the accelerator.

When rotating the handlebar up, the lever **C** detached from the button **D** and, this way, it activates the electronic brake.
Coby continuing the rotation, you will activate the disk brake that is controlled by the cable **E**.







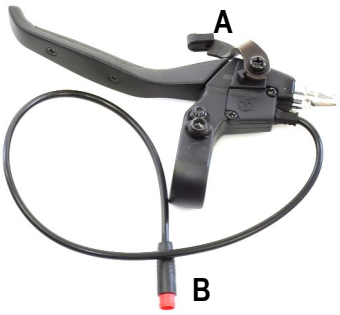
BRAKE LEVER

STANDARD HANDLEBAR

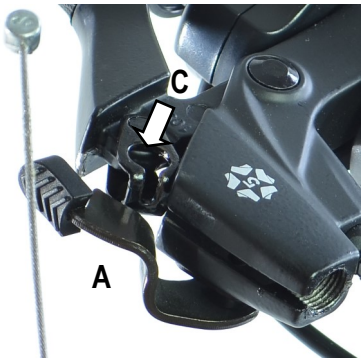
The brake lever is right or left and it should be mounted accordingly.

The side of the lever is given by the le little lock brake lever **A** which should be at the bottom on brake lever unit; furthermore, the support **C** for the head of the steel cable should be facing upward.

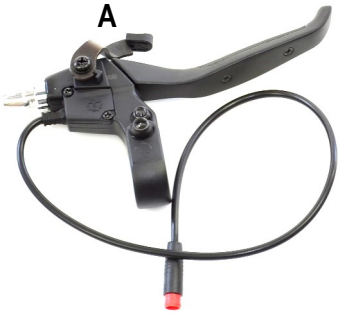
Right lever, lower side



Right lever, upper side



Left lever, lower side

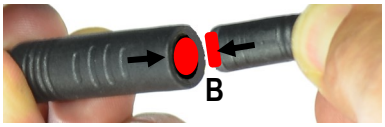


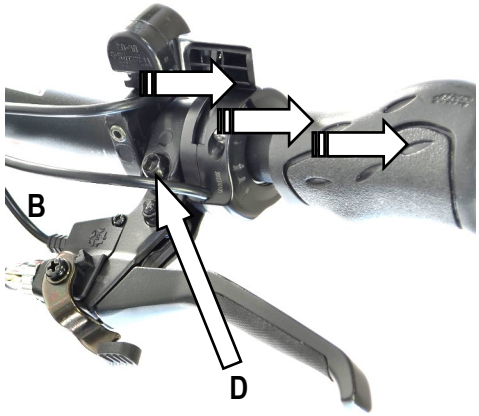
REMOVING THE LEVER

Unplug the connector **B** of the cable .

Loosen the bolt **F** that fixes the cable to the brake caliper and remove the head **E** of the brake cable from the support **C** of brake lever

After removing the grip and the control tool that are mounted before the brake lever (if any) and loosen the bolt **D** and slide the lever off.





MOUNTING THE LEVER

After removing the grip, insert the lever and then the grip.

Mount and adjust the brake cable.

Plug in the connector **B**.

Finally, adjust the brake lever inclination and tighten the bolt **D**.

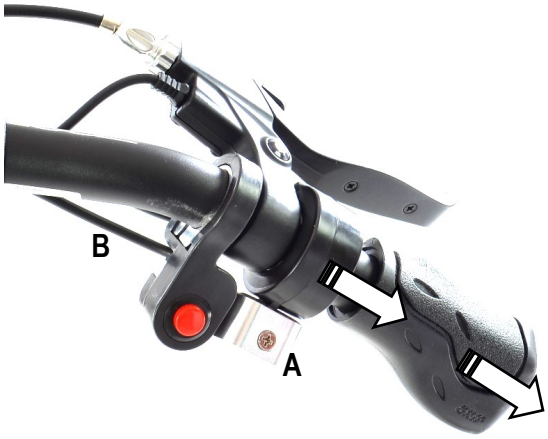
According to the control tools present, you may need to move them to allow room for the grip.

See also sheets "*CONTROL TOOLS*", "*STEM EXTENSION*" and "*BRAKE DISK CABLE ADJUSTMENT*".

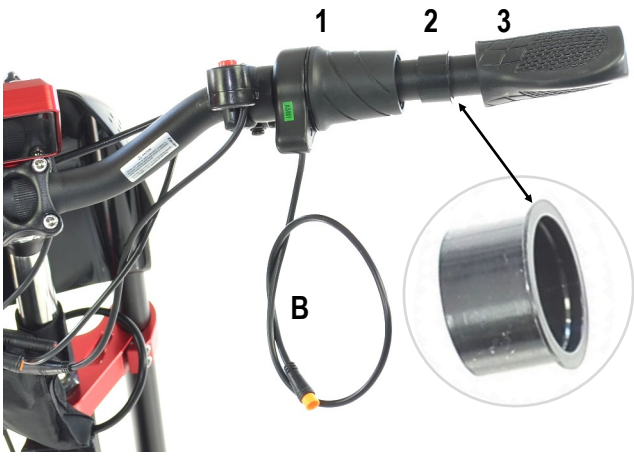
ACCELERATOR GRIP

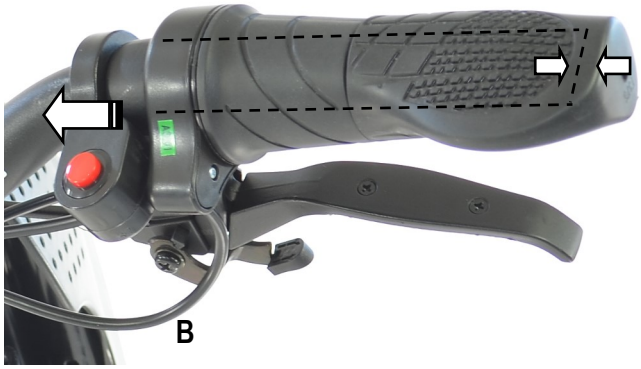
STANDARD HANDLEBAR

The accelerator grip is right or left and it should be mounted accordingly. It is made of the support with accelerator and cable **1**, the bush with collar **2** and the short grip **3**; the long grip **4** is meant for the other side of the handlebar.
Following the instruction of the sheet "*CONTROL TOOLS*", remove the accelerator lever **A** and the related plug.



Slide in the accelerator support, then the bush with the collar in the support and then the short grip.
Check the short grip goes all the way in to the tube; if it does not reach that point, move the control tools just enough.
Finally, plug in the connector **B**.





Similarly, mount the grip **4** on the other side.
Adjust the inclination on each control tool and rationally fit all cables using the Velcro straps.

In these pictures, the assembly refers to the right hand side accelerator grip.

The instruction to follow for the **left hand side** are the same, however, if the brake lever is on the same side, you will need (for lack of room) to move the ON/OFF and setting switch to the right hand side.

DISPLAY

INCLINATION

You can adjust the display in inclinatin to improve visibility.

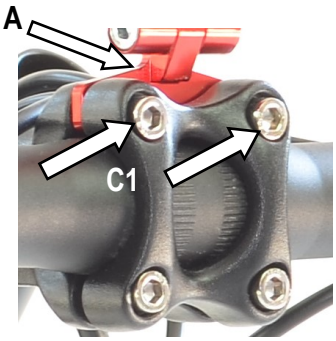
Such adjustment may be necessary even when the handlebar position is such as to create interference between the cable and/or the connectors of the display wit hthe spoiler - see sheet "*SPOILER—positioning*".

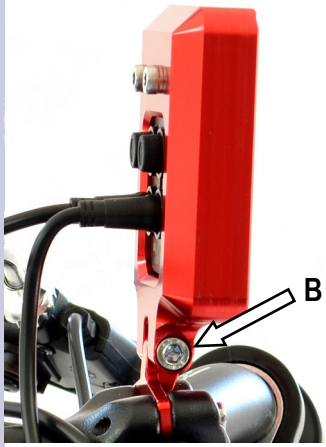
Check the support **A** is stable; if not, tighten the two bolts **C1** - see sheet "*HANDLEBAR ADJUSTMENT- 3 handlebar rotation*".

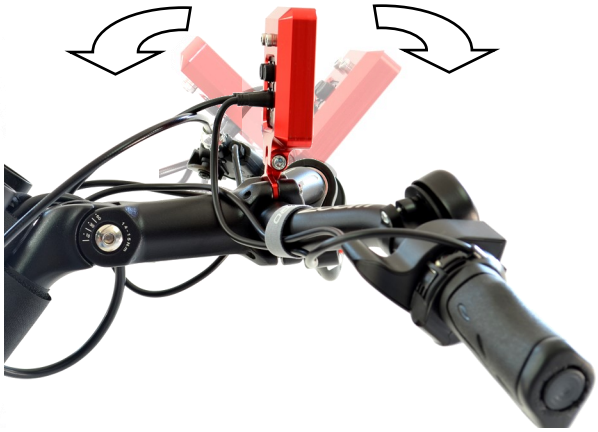
Hold the display loosen the bolt **B** and swing the display.

Hold the display and tighten the bolt **B**.

Check the display does not move, if necessary, hold the display and tighten the bolt **B** a little more.







CONNECTING THE CABLES

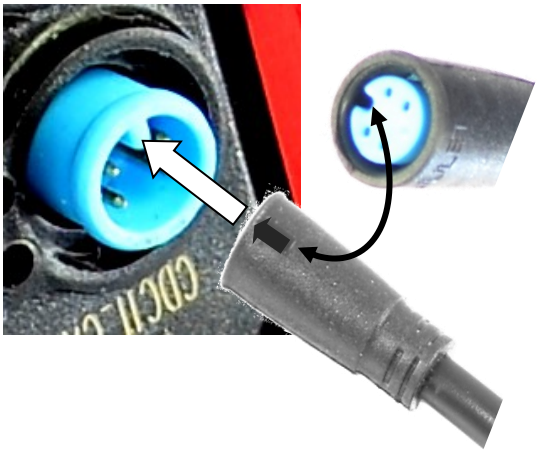
The rear side of the display has four coloured sockets; each colour should match with the colour of the plugs to fit in.

Pay attention when fitting the plus in, in fact, there one only position allowing for it: the groove of the plug, whose position is indicated by the arrow on the rubber cover, should fit into the tooth of the socket.

Light blue: accelerator cable; **Black**: power cable; **Green**: headlight (if present)

It is advisable to cover the unused sockets with the rubber caps.

With the "Tetra" handlebar, the only difference stands on the length of the display's support plate.



SPOILER

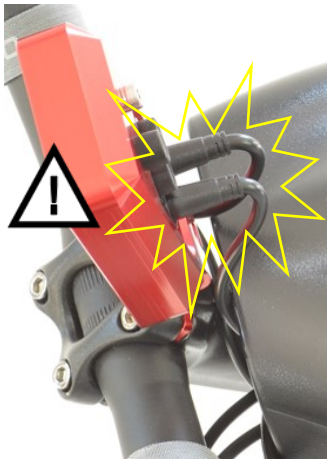
REMOVAL - FITTING

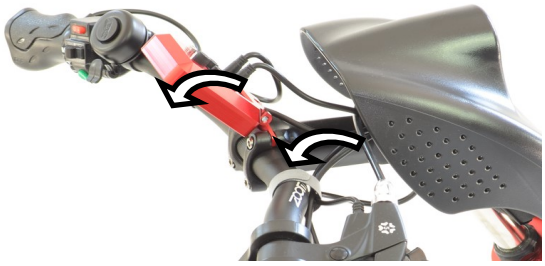
You can remove the spoiler to facilitate to perform some adjustment of the handlebar or to stow the cables in the bag..

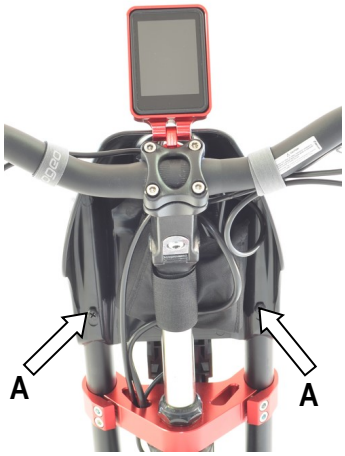
BEOFRE removing the spoiler, pay great attention to the possible interference with the display connectors that, due to the impact, may get damaged or break. In case such interference occurs, adjust the display or the handlebar (see sheets "*HANDLEBAR*" and "*DISPLAY*") until freeing the way for the spoiler.

Remove the two screws **A** and pull the spoiler off.

If the spoiler is hard to remove, take hold of it with both hands, make pressure with your thumbs on the battery support and pull. You may also gently use a mallet by hitting the spoiler on its lower extremities.







If the head light is present, pay attention to the cable and unplug it from the display.

To fit the spoiler, slide it to one of the two possible positions - see sheet "*SPOILER, positioning*" - and fix it with the two screws.

BEFORE fitting the spoiler, always pay attention to the cables and the connectors plugged to the display.

Check and possible sort out the cables bag.

If necessary, adjust the handlebar and the display.

If present, plug the head light connector to the display - see also sheet "*DISPLAY*".

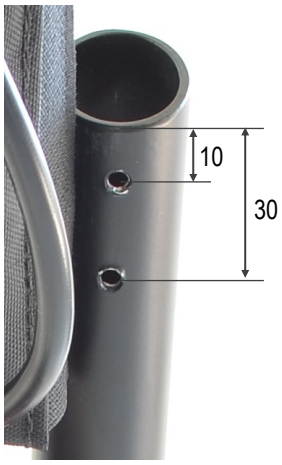
SPOILER

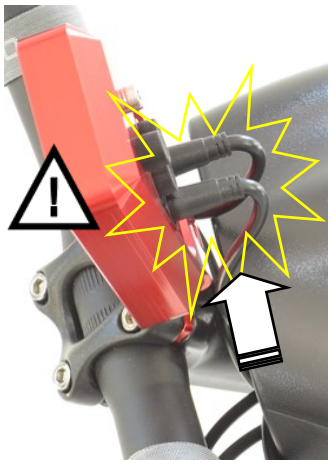
POSITIONING

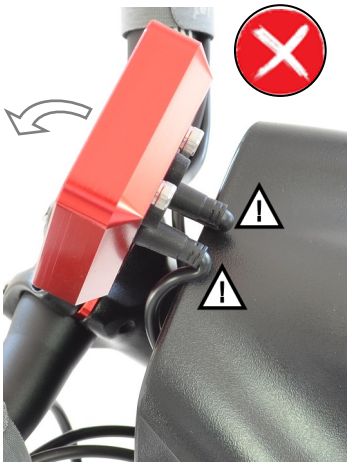
You can fix the spoiler in two pre-set positions given by the holes on the top of the fork's tubes at 10 mm and 30 mm from their edge.
Changing position may be useful to prevent possible interference between the spoiler and the display, the display's cables and/or the stem.

BEFORE removing the spoiler, pay great attention to the possible interference with the display connectors that, due to the impact, may get damaged or break

In case such interference occurs, adjust the display or the handlebar (see sheets "*HANDLEBAR*" and "*DISPLAY*") until freeing the way for the spoiler.
After removing the two screws **A**, push the spoiler down or pull it up to the other position.
If the spoiler is hard to slide upward, follow the instruction of sheet "*SPOILER, removal—fitting*".
Check and, if necessary, sort out the cables bag.







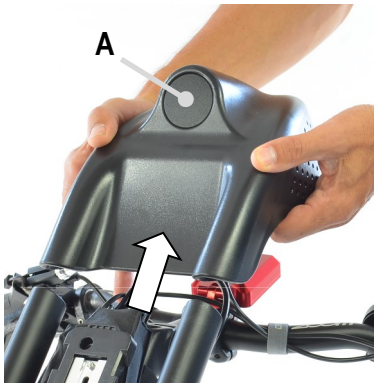
According to the position of the handlebar, the display may be above or below the spoiler and very close to it.
In any case, the position of the display should be such as to avoid squeezing, pinching or forcing the cables and the connectors.

Avoid the curve of the cables to be very tight because they may pinch the inner wires and impede the device to work properly.
Avoid creating pressure on the connectors to prevent damage.

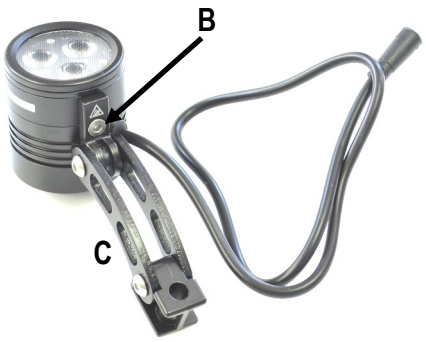
You may need to adjust the position of the handlebar and/or of the display - see sheets "*HANDLEBAR*" and "*DISPLAY*".

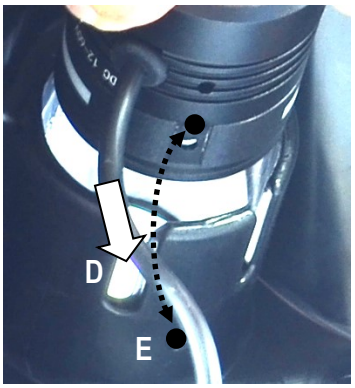
LED HEAD LIGHT

Remove the spoiler - see sheet "*SPOILER, removal—fitting*".
Remove the cap **A** by pushing it off from the inner side of the spoiler.



Remove the bolt **B** and detach the support **C** (that will not be used).
Insert the head light while letting the cable go along the slot **D** until aligning the fixing hole of the light alignw with the hole **E** of the spoiler.





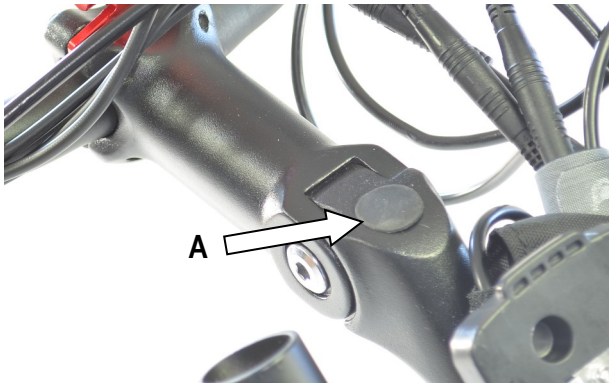
Screw the bolt **B**.
Connect the green plug to the display - see sheet "*DISPLAY*".
Fit the spoiler - see sheet "*SPOILER, removal - fitting*".

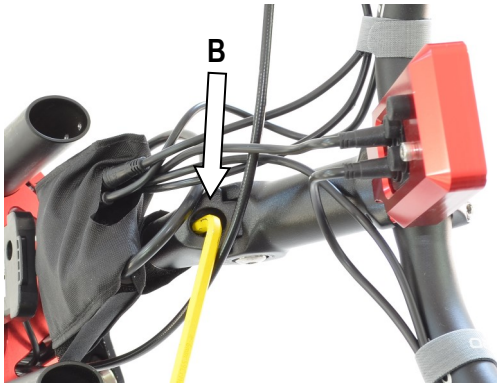
STANDARD HANDLEBAR ADJUSTMENT

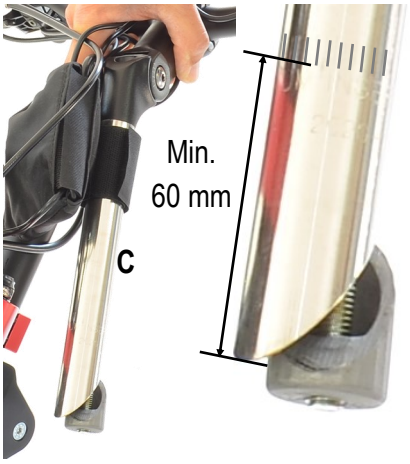
You can adjust the handlebar in height and depth by working on different points that interact to one another.
After adjustment, check the position of the handlebar does not create interference with the cables and connector of the display (see sheet "*SPOILER, positioning*") and that allows for a good control of the device (acceleration, braking and driving) as well as an easy device fit and removal operation.

1 POST HEIGHT (vertical tube)

Remove the spoiler - see sheet "*SPOILER, removal - fitting"*.
Remove the rubber cap **A**.
Loosen the bolt **B** until being able to slide the post **C** up or down (it results easier if you turn the handlebar right and left while sliding it).
Once you have determined the height, centre the handlebar with respect to the driving wheel and securely tighten the bolt.
Finally, put the rubber cap and the spoiler - see sheet "*SPOILER, removal - fitting"*.







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STANDARD HANDLEBAR ADJUSTMENT

2 STEM INCLINATION

The stem inclination changes the height and the distance of the handlebar with respect to the post.

Loosen the bolt **A.**

Now, turn the stem to a new inclination (if it results difficult to turn, slightly loosen the two bolts **B**).

Tighten the bolt **A** hard.

Finally, make sure the two bolts **B** are securely tightened.

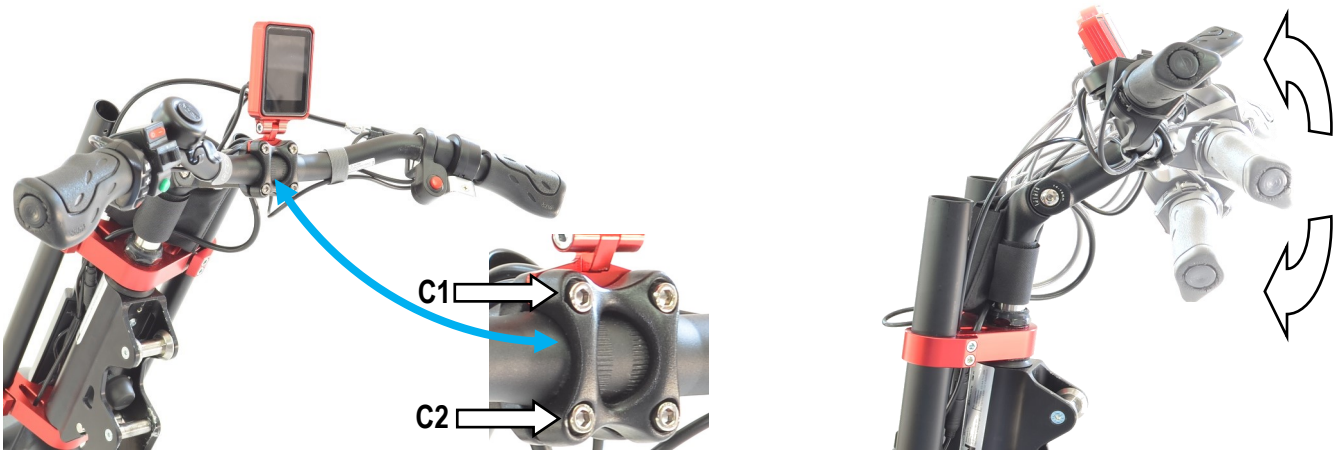
3 HANDLEBAR ROTATION

The rotation of the double bend handlebar changes the height and the distance of the handlebar with respect to the stem.

Loosen the bolts **C1 C2** on the stem's head just enough to turn the handlebar.

Once you reach the new position, tighten the bolts **C1** all the way down (fixing the display) and then the **C2**.

With the new position, you may need to adjust the inclination of the control tools (see sheet "*CONTROL TOOLS*").



"TETRA" HANDLEBAR ADJUSTMENT

1 POST HEIGHT (vertical tube)

As for standard handlebar - see sheet "*STANDARD HANDLEBAR ADJUSTMENT*".

2 STEM INCLINATION

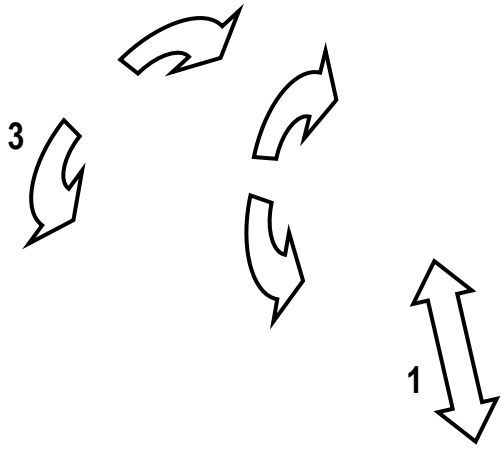
As for standard handlebar - see sheet "*STANDARD HANDLEBAR ADJUSTMENT*".

3 HANDLEBAR ROTATION

As for standard handlebar - see sheet "*STANDARD HANDLEBAR ADJUSTMENT*".

This adjustment should take into consideration the user's convenience when pushing and pulling the handlebar to brake and accelerate.

Also check that the handlebar, at its maximum upward extension, does not touch the display.



Also check that the handlebar, at its maximum downward extension, does not touch the user's legs.

STEM EXTENSION

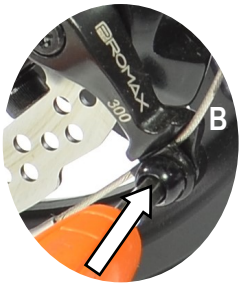
STANDARD HANDLEBAR

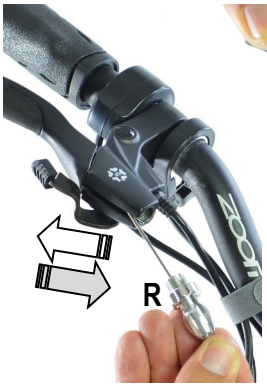
The stem extension allows for a further and significant adjustment in height and, particularly, in distance with respect to the post. With this accessory you can get the handlebar much closer to the user.

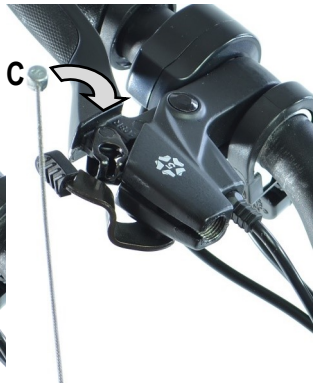
Remove the spoiler - see sheet "*SPOILER—removal—fitting*".

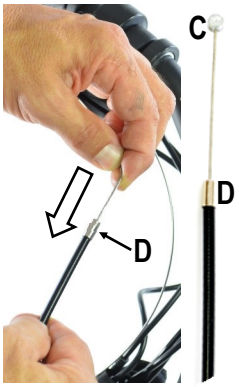
1 REPLACING THE BRAKE CABLE

You need to replace the brake cable-and-sheath with longer one that is provided along with the stem extension).
Loosen the bolt **A** on the brake caliper and remove the steel cable **B**.
Screw off the adjuster **R**.
Move the cable out of the slot on brake support.
Press the brake lever and pull the cable up to let the cable's head **C** off the support and remove cable and sheath.
Put the ferrule **D** on the longer sheath and slide the longer brake cable until leaving just a few centimetres to mount the head **C** on the brake lever and follow the instructions in reverse.
You will fix the cable to the caliper later on - see point 8.



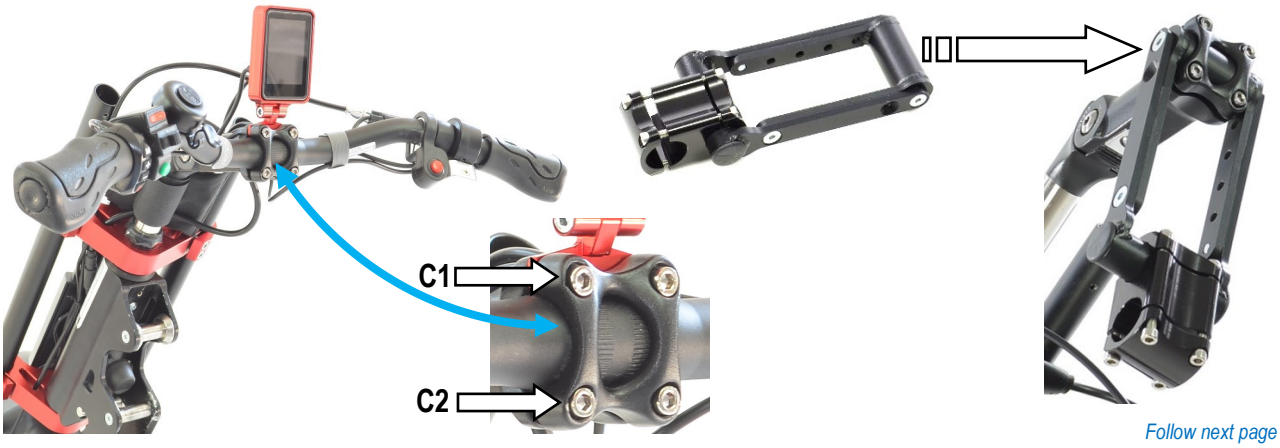






2 MOUNTING THE STEM EXTENSION

Screw off the bolts **C1** and **C2** to detach the stem's head, the display and the handlebar.
In this phase, guide the display and the handlebar to a resting position.
Mount the stem extension and temporarily fix it to the stem so as to make it turn, at the same time, and to make it hold in place.



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STEM EXTENSION

STANDARD HANDLEBAR

3 MOUNTING THE HANDLEBAR

Before mounting the handlebar on the stem extension, you need to sort all the cables out according to the new position of the handlebar you will decide to reach.

Remove the cables bag and open it. The bag is attached and closed via Velcro straps.

Now, remove the cables from the bag and loosen them as much as possible to allow for positioning the handlebar on the stem extension.

The cables and connectors within the bag may be quite entangled; for such reason it is advisable, with a little patience, to work one cable at a time by unplugging the connector and then plug it back after rationally sorting it out, that is, avoiding entanglement or pinching. Plugs and sockets must always be combined according to colour (red with red and so on) and, while connecting them, mind the guiding arrow on the rubber cover — see sheet "*DISPLAY*"

One light blue socket and a red one are not used.

For the time being, just leave the cables and the bag where they are; you will sort them out after adjusting the handlebar for good.

Screw the four bolts **B** of the stem extension's head so as to make it turn, at the same time, and to make it hold in place.

Screw off the four bolts **C** to remove the stem extension's head.

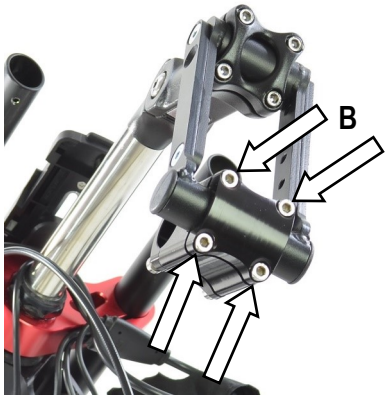
Position the handlebar, lean the stem extension's head and fit the two bolts **C2** ot the bottom.

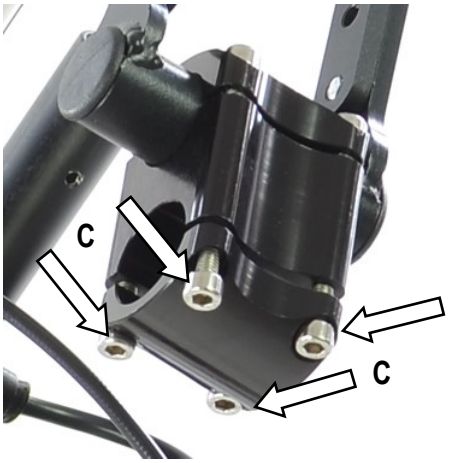
Lean the display support's holes with those of the stem and screw the bolts **C1** all the way down.

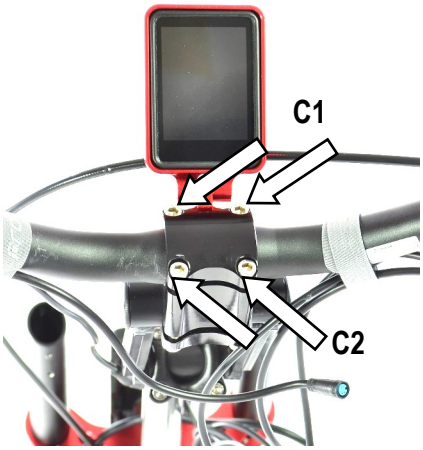
Rotate the handlebar to a position that may be considered as initial.

Tighten the two bolts **C1** that fix the display, too.

Tighten the two bolts **C2**.







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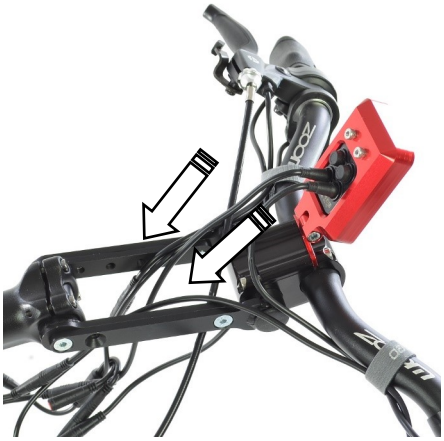
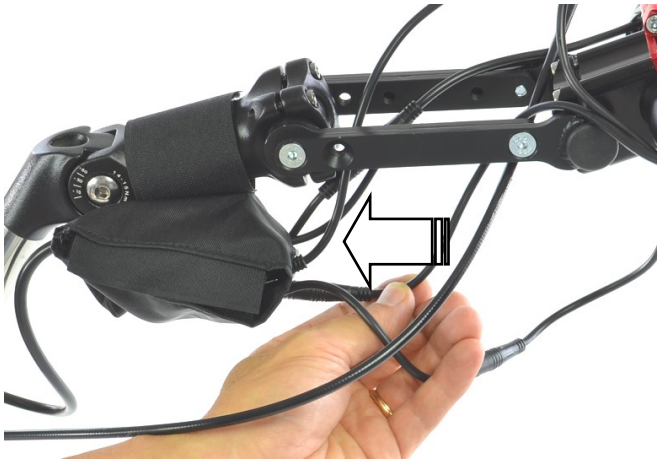
STEM EXTENSION

STANDARD HANDLEBAR

Route the cables and, as long as it is possible, follow the same course, for instance, letting them through within the stem extension.
Even in this phase, sort out one cable at a time by unplugging and plugging back the connector, if necessary.
Fix the bag to the stem and stow the cables in so as to have a rational and compact wiring.
It is useful to join the cables with straps.
Close both Velcro strap sides on the bag.
Through one of these sides you may route the brake cable's sheath.





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STEM EXTENSION

STANDARD HANDLEBAR

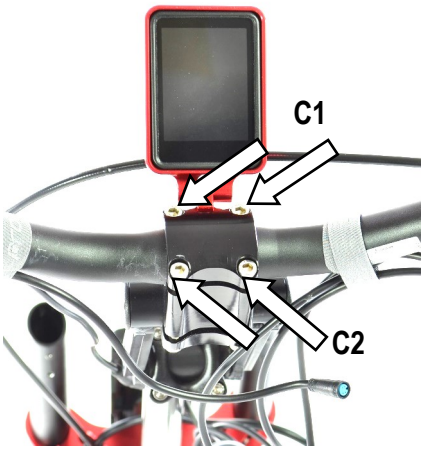
4 HANDLEBAR ROTATION

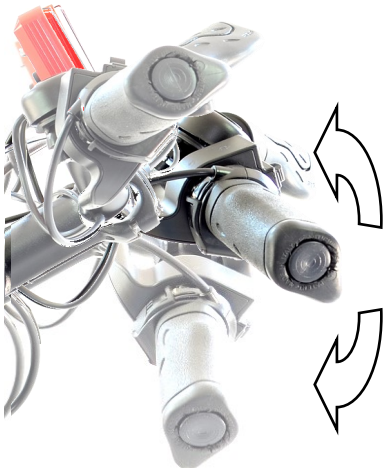
The rotation of the double bend handlebar changes the height and the distance of the handlebar with respect to the stem.

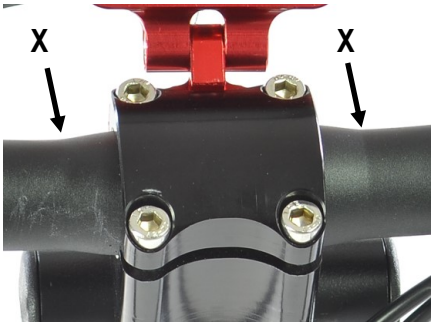
Loosen the bolts **C1 C2** on the stem's head just enough to turn the handlebar.

Once you reach the new position, centre the handlebar taking as reference the swelling starting points **X**, tighten the bolts **C1** all the way down (fixing the display) and then the **C2**.

With the new position, you may need to adjust the inclination of the control tools (see sheets "*DISPLAY*" and "*CONTROL TOOLS*").







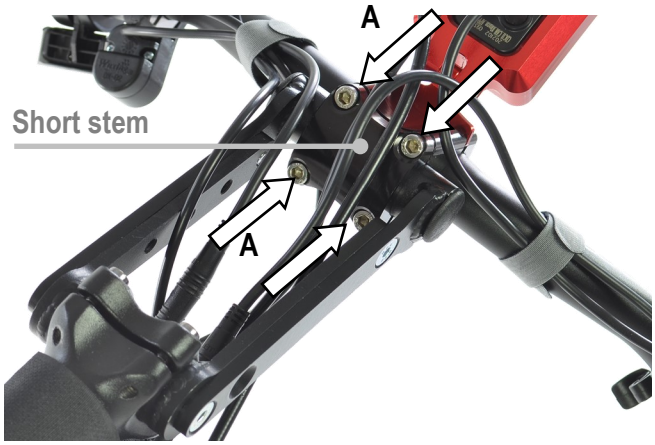
5 EXTENSION SHORT STEM INCLINATION

The inclination of the short stem of the stem extension changes the height and the distance of the handlebar with respect to the extension .

Loosen the bolt **A** just enough to turn the stem.

Now, turn the stem to a new inclination and tighten the four bolts **A**.

With the new position, you may need to adjust the inclination of the control tools (see sheets "*DISPLAY*" and "*CONTROL TOOLS*").



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STEM EXTENSION

STANDARD HANDLEBAR

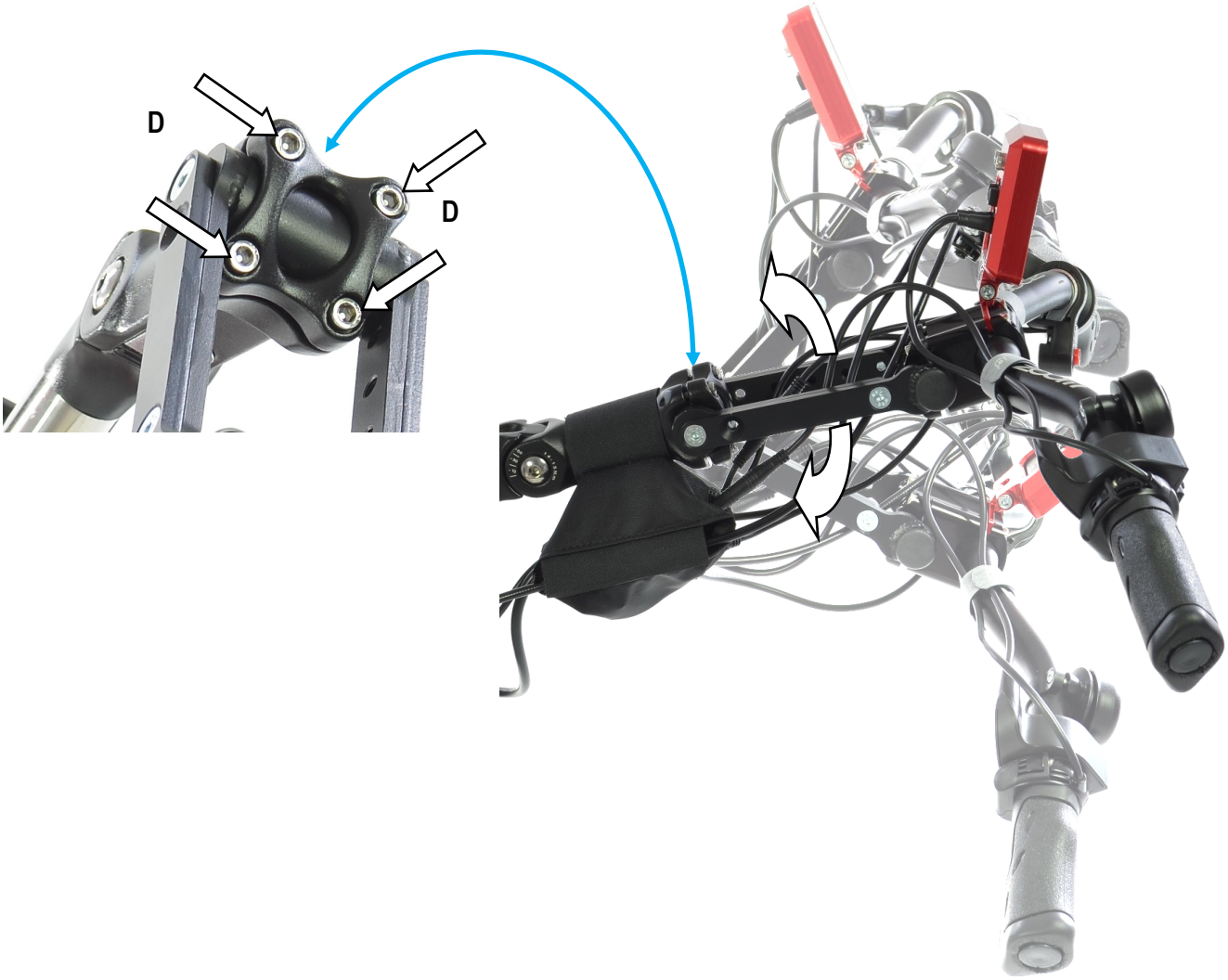
6 EXTENSION STEM INCLINATION

This adjustment changes the height and the distance of the handlebar with respect to the stem.

Loosen the bolts **D** just enough to allow the extension to turn.

Now, swing the extension to the new position, ensure it is centred with respect to he stem and securely tighten the bolts **D**.

With the new position, you may need to adjust the inclination of the control tools (see sheets "*DISPLAY*" and "*CONTROL TOOLS*").



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STEM EXTENSION

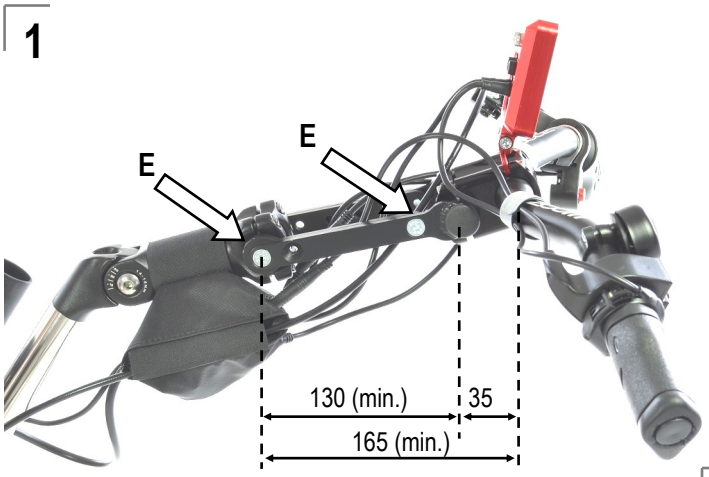
STANDARD HANDLEBAR

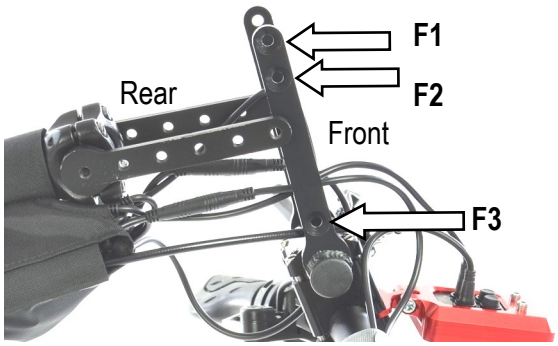
7 EXTENSION LENGTH

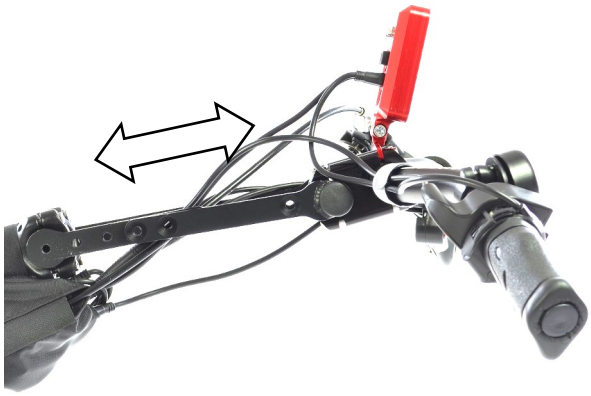
It allows to make the extension longer.
Remove the bolts **E** (two each side) to detach the front side from the rear side of the extension.
The flat rods at rear show 6 threaded holes that give 5 positions every 20 mm.
The flat rods at rear show 3 through holes **F1 F2** and **F3**.
Slide the front side along the rear one to the new position.
Align the holes of the two parts and securely tighten the 4 bolts **E**.
In picture **1**, (minimum length) the bolts **E** should be fixed through the holes **F1** and **F3**.
In any of the other 4 positions, as in picture 2 (maximum length) the bolts should be fixed through the holes **F1** and **F2**.

ALWAYS fix the rod with 4 bolts.

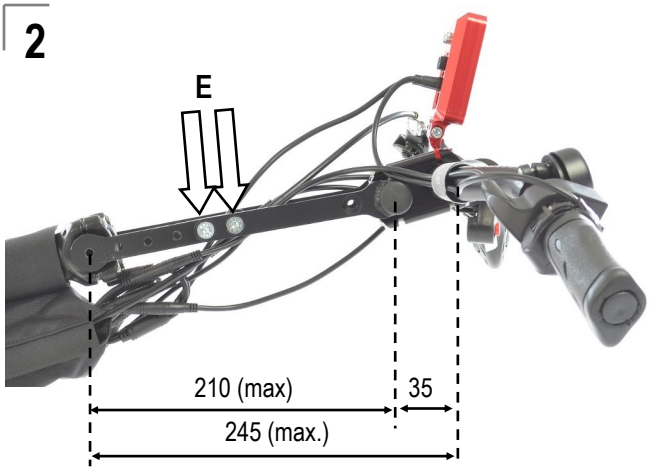
1







2



It is advisable to spread a drop of mild lock thread glue on the bolts **E**.

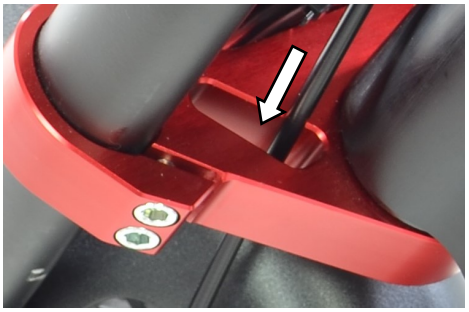
Follow next page

STEM EXTENSION

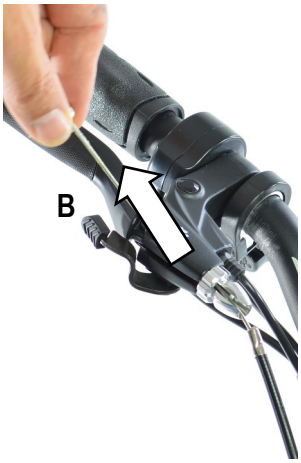
STANDARD HANDLEBAR

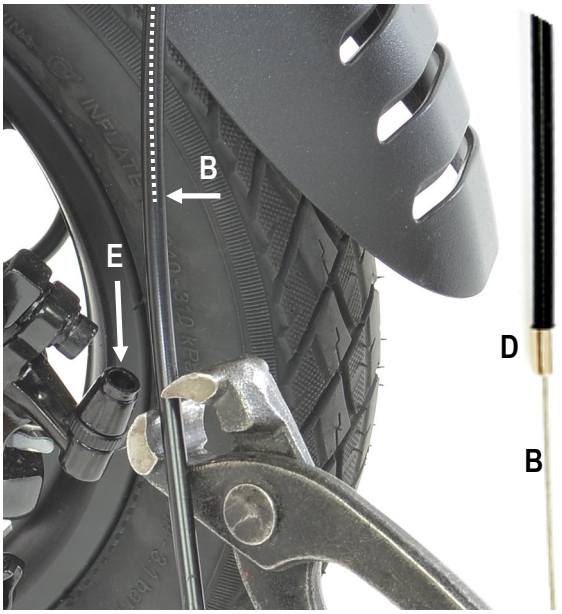
8 BRAKE CABLE ASSEMBLY

After replacing the cable as explained at point 1 "*replacing the brake cable*", let it through the opening of the two fork supports.



Take the measure where to cut the sheath so as it will neither result too long nor too tight.
Starting from the brake lever, slide off the steel cable **B** as much as it will be away from the point where you will cut the sheath that will then fit on the adjuster **E**.
Cut the sheath, insert the ferrule **D** and slide the steel cable until it comes out.





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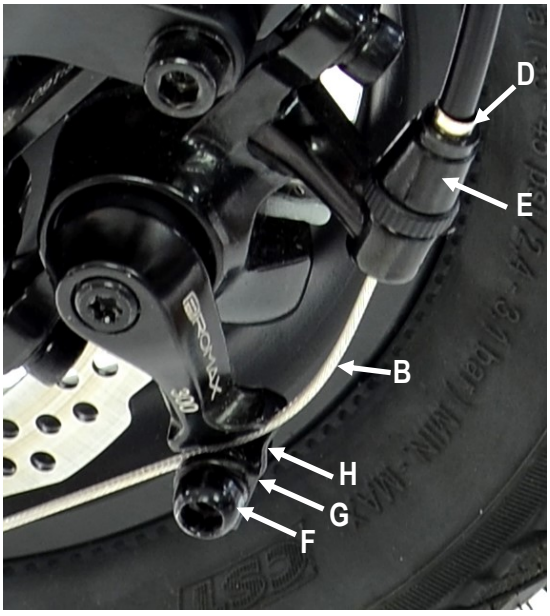
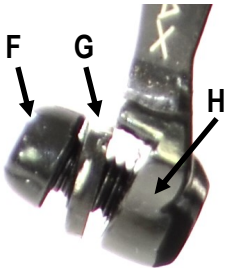
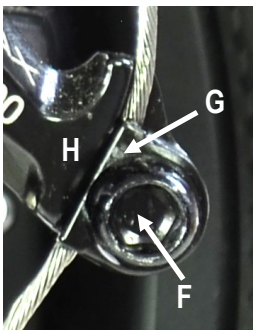
STEM EXTENSION

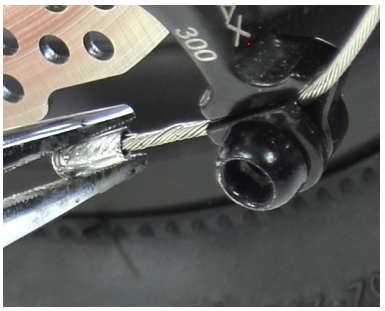
STANDARD HANDLEBAR

Let the steel cable through the adjuster **E** and fit the ferrule **D** to the same adjuster.
Make sure the cable and the sheath are properly positioned in the brake lever - see also point 1 "*replacing the brake cable*".
Loosen the bolt **F** and let the steel cable through the littel plate **G** and the lever **H**.
With a plier, pull the cable and slightly swing the lever toward the adjuster to give extra tension when fixing the bolt **F**.
Hole the cable with the plier leant against the lever and tighten the bolt.
Cut the steel cable just a few centimetres away from the little plate, put the end cap on the cable and gently squeeze it with a plier to hold it in place.
Check the brake adjustment - see sheet "*DISK BRAKE CABLE ADJUSTMENT*"









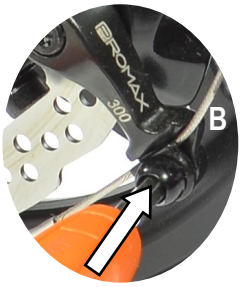
STEM EXTENSION

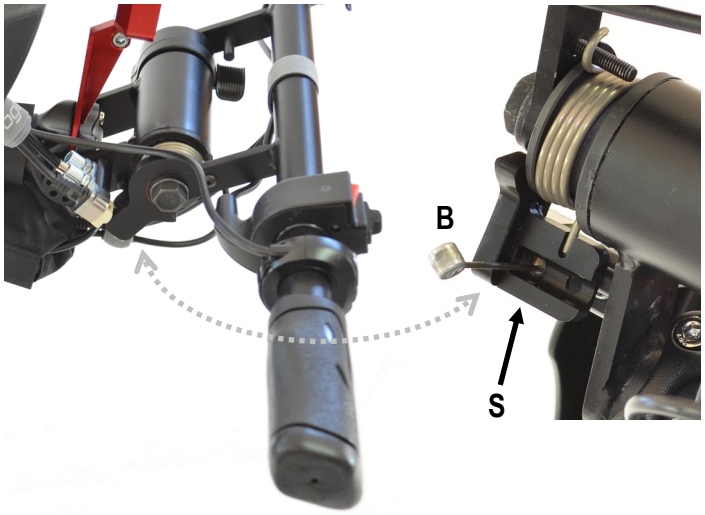
"TETRA" HANDLEBAR

The assembly procedure is quite similar to that explained for the standard handlebar.
The adjustments are the same that are reported for the standard handlebar.
See sheet "*STEM EXTENSION—standard handlebar*" .
In this sheet, only the significant differences are reported.

1 REPLACING THE BRAKE CABLE

After loosening the bolt **A** and removing the cable **B** from the brake caliper, slide the same cable out of the support **S**.
Then, remove the sheath and mount the longer sheath and cable.





2 MOUNTING THE STEM EXTENSION

No significant difference.
However, pay particular attention to cable positioning and fitting.

3 MONTAGGIO MANUBRIO

No significant difference.
However, pay particular attention to cable positioning and fitting.

4 HANDLEBAR ROTATION

No significant difference.
However, pay particular attention that when rotating the handlebar, there is no interference with the user's legs (when accelerating) and/or the display (when braking).

5 EXTENSION SHORT STEM INCLINATION

No significant difference.
Same warning of point 4.

6 EXTENSION STEM INCLINATION

No significant difference.

7 EXTENSION LENGTH

No significant difference.

8 BRAKE CABLE ASSEMBLY

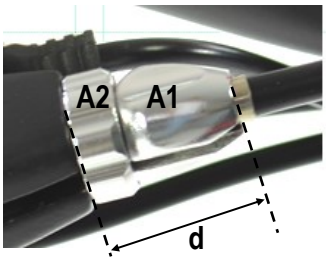
No significant difference.

DISK BRAKE CABLE ADJUSTMENT

STANDARD HANDLEBAR

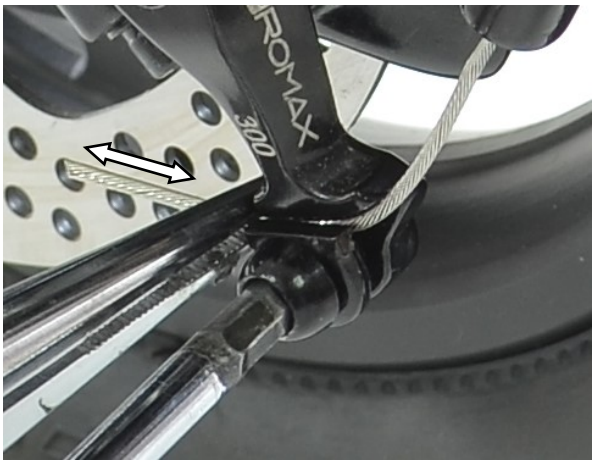
You should adjust the brake in such a way to allow for free rotation of the wheel when the lever is at rest and to block the wheel when the lever is approximately half way pressed. That depends on the cable tensioning.
You can adjust the cable tensioning in three different points.

Adjuster A on brake lever made of the bolt **A1** and the ring-nut **A2**.
To tension the cable, loosen the bolt to make the distance **d** longer.
To loosen the cable, screw up the bolt to reduce the distance **d**.
After adjustment, screw the ring-nut to the body of the brake lever.



Adjuster B on brake unit made of the bolt **B1** and the ring-nut **B2**.
Proceed as for the adjuster **A**.

Cable fixing on brake unit.
With a plier, hold the cable, loosen the bolt **C** and swing the lever towards the adjuster to tension the cable or to the opposite direction to loosen the cable. After adjustment, tighten the bolt **C**.



DISK, CALIPER and BRAKE PADS

POSIZIONING AND ADJUSTMENT

The brake caliper should be positioned in such a way that the disk lays between the two pads, but without touching them.
If, when spinning the wheel, you hear the disk rubbing, there may be different causes.

The wheel is off-centre
Check the presence and positioning of the provided spacers - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

The cable is too tensioned
Adjust the cable tensioning - see sheet "*DISK BRAKE CABLE ADJUSTEMNT*".

The brake caliper is off-centre with respect to the disk.
Adjust the position of the caliper - see sheet "*BRAKE CALIPER*".

The brake pads are to close to each other
Increase the distance between the two pads - see sheet "*BRAKE PADS*".

Uneven (wavy) disk
While spinning the wheel you should hear the disk rubbing against one or both pads in one or more points; if rubbing occurs throughout the whole rotation, follow the instruction referred to the other causes - see sheet "*BRAKE DISK*".

BRAKE CALIPER

POSITIONING AND ADJUSTMENT

Centring the caliper with respect to the disk.

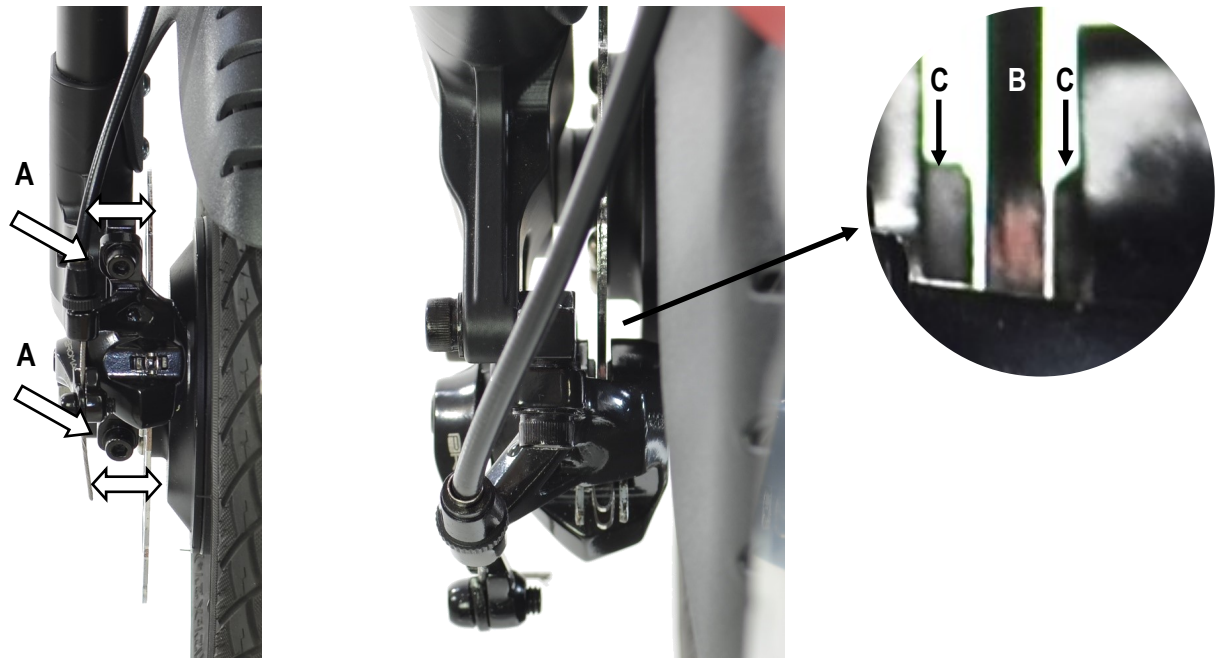
The quickest system if the following:

- loosen the two bolts **A**;
- firmly press the brake lever.
- while holding the lever, tighten the two bolts.
- release the lever and check, while turning the wheel round, that the disk **B** does not rub against the pads **C**.

This method, even though it is very quick, may not lead to a proper adjustment.

Alternatively, without pressing the brake lever and after loosening the two bolts, set the caliper is such a way to leave the disk centred between the two pads. Finally, tighten the two bolts.

In this case, too, check there is no contact between disk and pads while turning the wheel round.



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BRAKE CALIPER

POSITIONING AND ADJUSTMENT

Brake pads too close to each other

If the centring of the caliper does not prevent the disk from rubbing, you will need to work on the distance between the two pads.

With 14" wheel

Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

Loosen the grab screw **D**;

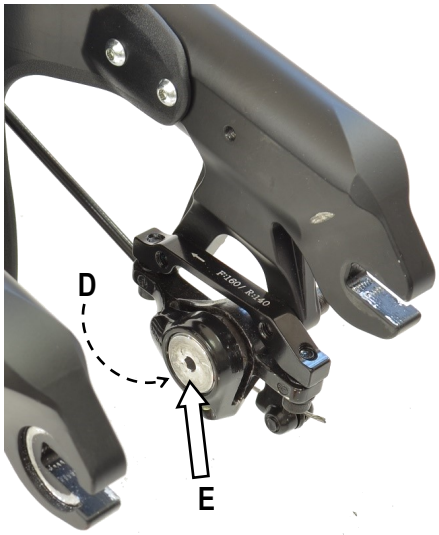
Unscrew the threaded cap **E** by a quarter of a turn to increase the gap between the two pads **C** (you move the pad on the cap's side only).

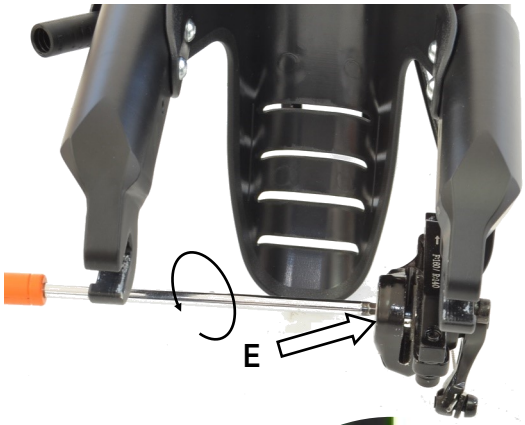
If needed, unscrew the cap by another quarter of a turn at time.

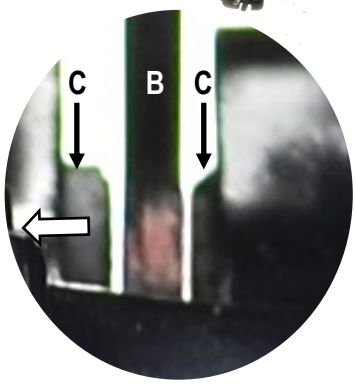
Dafter mounting the wheel, check the disk **B** does not rub.

Note: if you screw the cap, the gap between the two pads becomes narrow.

Finally, screw up the grab screw.







With 12" wheel

The operation results easier and quicker because you do not need to remove the wheel.

The cap **E**, in fact, is accessible letting the key through the wheel's spokes.

BRAKE DISK

REPLACING AND CENTERING

Replacement

Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

Screw off the bolts **A** and remove the disk.

Mount the new disk ensuring that the sense of rotation is correct, see arrows printed on the disk.

Do not mount the disk in the opposite direction, always pay attention to the sense of rotation indicated by the arrows on the disk.

Spread a drop of mild lock thread glue on each bolt **A**.

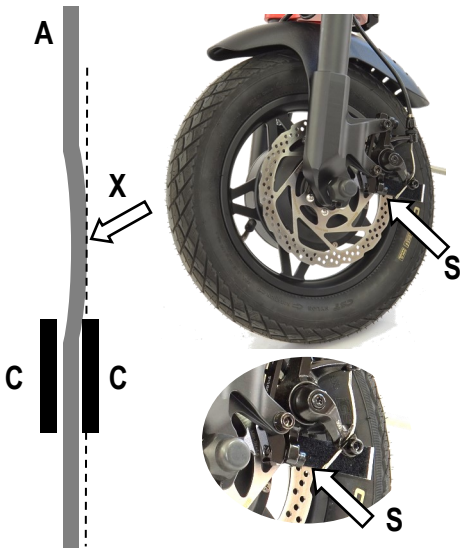
Disk centring

If the disk **A** is uneven (wavy), when spinning the wheel, you will hear the disk rubbing on one or both brake pads **C** on one or more points **X** of the disk (if the rubbing is continuous you need to perform other adjustments - see sheet "*DISK, CALIPER AND BRAKE PADS*").

- Turn the wheel round with your hand and stop it where you spot the rubbing and observe which of the two pads the disk is in contact with. Check it by turning the wheel frontward and reaward for a short stretch.
- Once you spot the point, put a mark **S** on the disk (you may use a piece of sticky tape, for instance).
- Now turn the wheel until getting access to the point to straighten.
- Use a long nose plier or better a disk straightening fork and, with care, pull the disk to the needed direction.

Repeat this operation until straightening the disk as much as to prevent it from rubbing against the pads.

You can perform a more precise job, if necessary, if you remove the disk and from the wheel and work on a flat surface as reference; making pressure with one finger on any part of the disk, the disk itself should not lift.



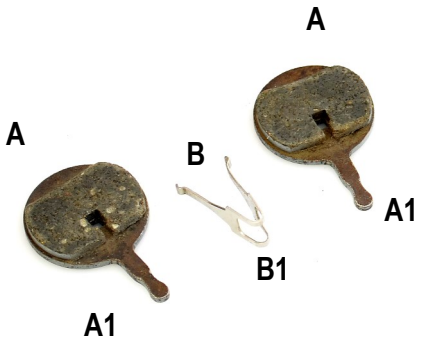
BRAKE PADS

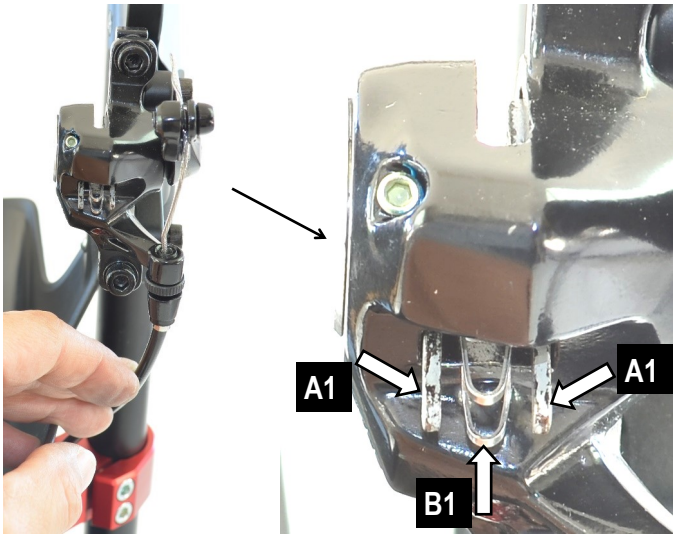
REPLACEMENT

Removing

Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

From the rear side of the caliper you can see the pad's point **A1** of both pads **A** sticking out and the "U" bend **B1** of the spring **B**.

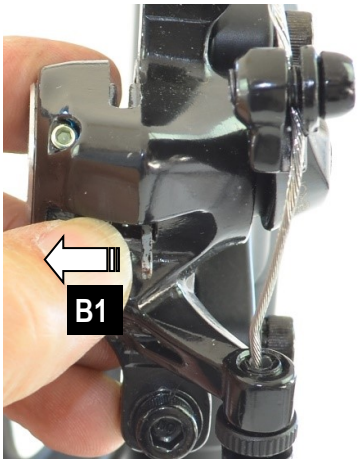




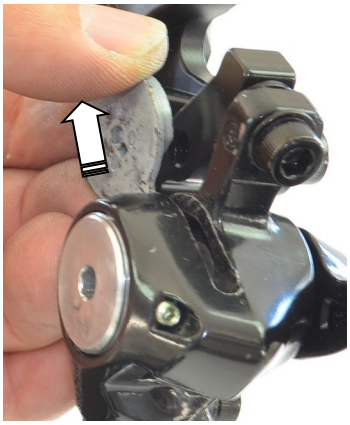
Push the "U" curve **B1** on the side and pull the spring down to remove it.

Push up the point **A1** of the pad on the brake cable side until bringing it to the centre of the caliper and then push it off.

Similarly, but easier now, remove the other pad (cap **C** side).



Pad on the brake cable side



Pad on cap **C** side

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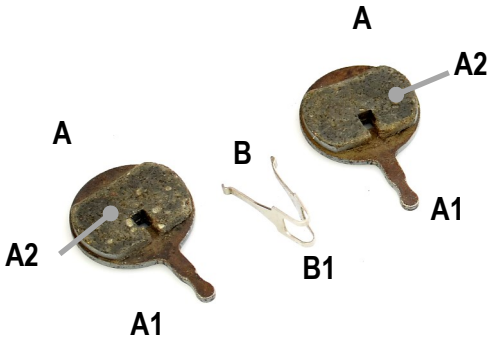
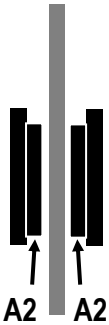
BRAKE PADS

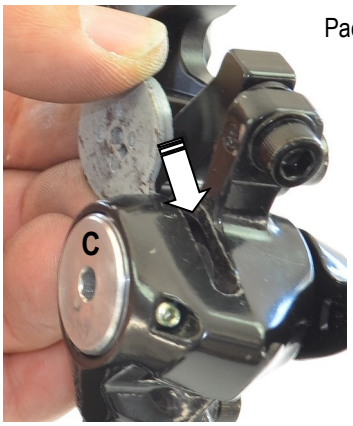
REPLACEMENT

Mounting

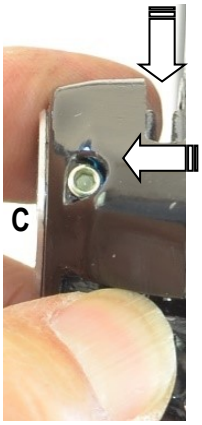
A proper mounting of the pads **A** has the embossed part **A2** of both pads face each other.
Insert the pad on the cap **C** side so that the embossed part **A2** is facing to the brake disk.
After letting it through, move the pad into the housing that also hosts the cap to make room for inserting the second pad.



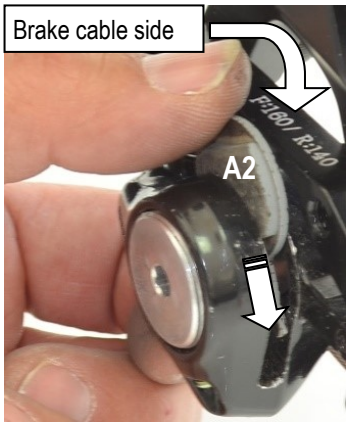


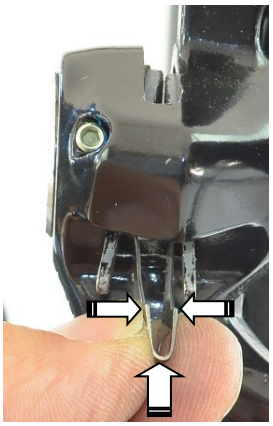


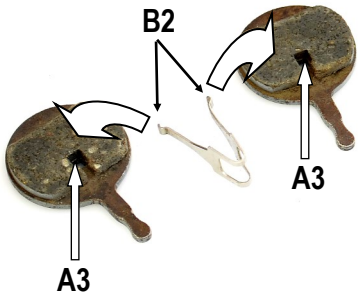
Pad on cap
C side

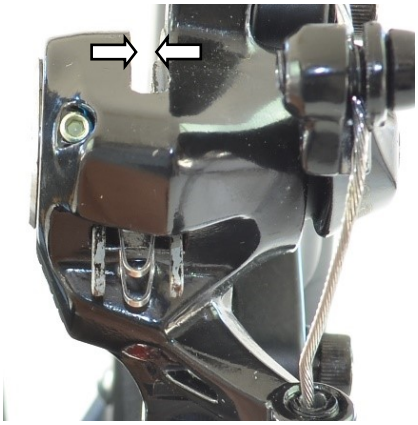


Insert the pad on the brake cable side ensuring that the two embossed parts **A2** face each other.
Fit the two pad together by moving them from the points **A1** and put the spring **B** in between the two pads.
Now, carefully move the spring and the pads until the springs' points **B2** fit in the pads' hollow **A3**.
When the two points are properly inserted, the two pads will move apart from each other and make room for the disk.









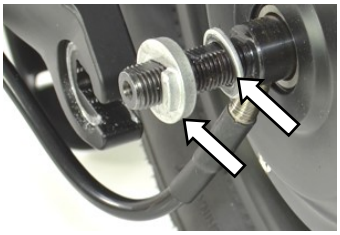
REMOVING/ MOUNTING THE WHEEL

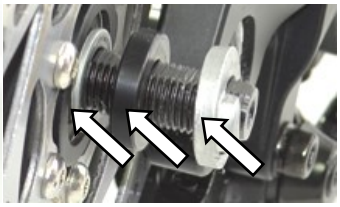
REMOVING

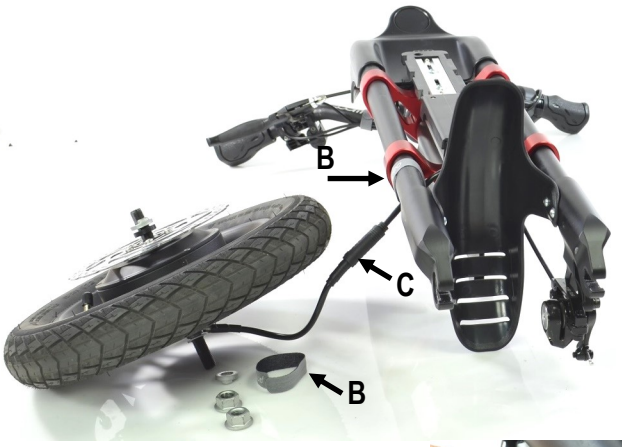
Screw off the two nuts **A**.

Slide the wheel off paying attention to all spacers on both sides and their positioning.

If needed, remove the straps **B** and unplug the connector **C**.







MOUNTING

Mount the provided spacers ensuring that the tooth of both washers **D** is positioned in the same way to fit into the fork.

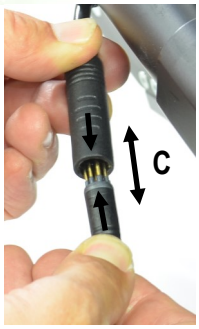
The shape of the axle has two flatted side that guide the positioning of washer that, on its turn, follows the same shape.

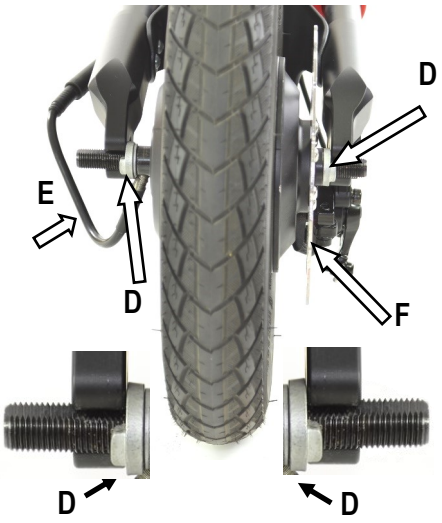
Make sure the cable **E** does not twist; it should follow a rational route.

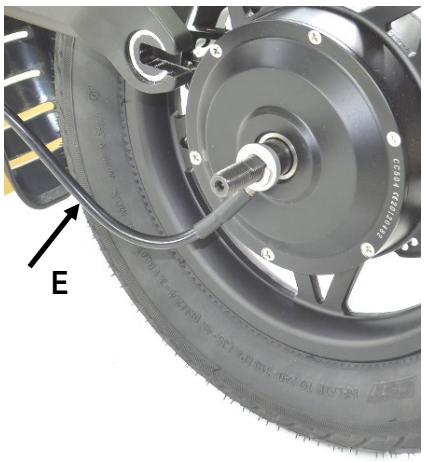
While fitting the wheel, the brake disk should fit within the two pads; proceed with attention and care.

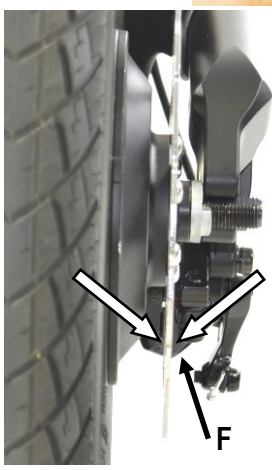
Insert and tighten the two nuts **A** hard; finally put the nut caps.

Plug the connector (aligning the arrows you can see on both rubber covers) and fasten the cable with the straps.









NOTE FOR 14" WHEEL

The procedure is the same, but the spacers are different and the washers **D** are mounted externally.

TYRE AND TUBE

REPLACEMENT

REMOVING with 12" wheel

Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

- Deflate the wheel.
- Insert two tyre levers (better if in metal) between the inner edge of the tyre and the wheel's rim paying attention not to pinch the inner tube.
- First with one and then with the other, swing a first part of tyre out of the rim.
- Then remove one lever and, while holding the other in place, swing another part of the tyre out of the rim.
- Now, with one lever only, swing the entire edge of the trye out of the rim.
- To remove the tyre, from the opposite side, push the tyre with your hands until it comes off .
- Remove the inner tube.

REMOVING with 12" wheel

- Completely insert one edge of the tyre into the rim ensuring the sense of rotation is correct. The sense of rotation is indicated on the same tyre: even the point of the pattern of the tyre tread indicated the sense of rotation.
- Use a lever to insert the last part of the tyre edge.
- Slightly inflate the inner tube and insert the valve **V** through the hole in the rim.
- Insert the inner tube within the tyre and evenly spread it and push it towards toward the tyre tread.
- Fit the second edge of tyre as much as possible with your hands and thumbs; only if necessary, use a tyre lever carefully to prevent pinching the inner tube.

NOTE: you can remove and mount the tyre starting from either side of the wheel.

Follow next page

TYRE AND TUBE

REPLACEMENT

REMOVING with 14" wheel

The procedure is the same explained for the 12" wheel, but the operation will result harder.

Use metal tyre levers.

REMOVING with 14" wheel

The procedure is the same explained for the 12" wheel, but the operation will result harder.

Use a metal tyre lever to complete the fitting of the first edge of the tyre in the rim.

The last part of the second edge will be quite hard to fit in the rim and you will again need a metal tyre lever.

To make this last operation easier, press the tyre in more points around the part opposite to the one you are fitting in so as to bring the tyre's edge into the middle of the groove of the rim's section. Now, with the lever close to a part of the tyre already fitted in, swing the edge in.

Repeat the same operation until fully fitting the tyre.

Always pay great attention not to pinch the inner tube.

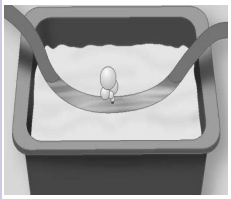
REPLACING THE INNER TUBE

Following the instruction for removing the tyre, after bringing out the first edge of the tyre, you can remove the inner tube and replace it with a new or repaired one.

Repairing an inner tube

After removing the ineer tube, inflate it an dip it into a basin of water to spot the puncture where the air will come out from.

Fully dry the spot, finely sand paper it to remove any impurity, spread some specific glue for rubber around the area over which, after waiting for the suggested time indicated on the glue bottle label, attach and hold the patch pressed for at least 10 seconds.



REMOVING / MOUNTING THE MUD GUARD

REMOVING

Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".

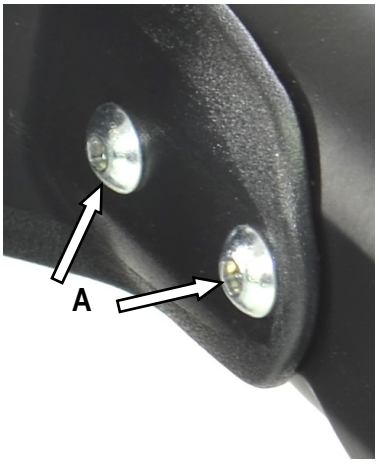
Screw off the bolts **A** (two each side).

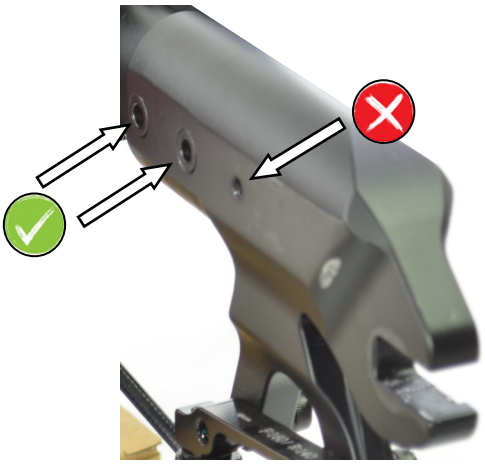
MOUNTING

Position the mud guard with the slots facing the rear side of the device.

Align the mud guard holes to those on the fork and fix it with the four bolts.

Warning: to fix the mud guard, do not use the lowest of the three holes on the fork.





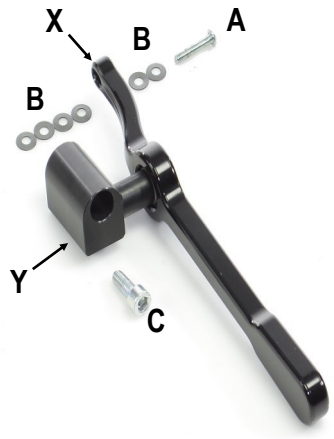
EASY RELEASE LEVER

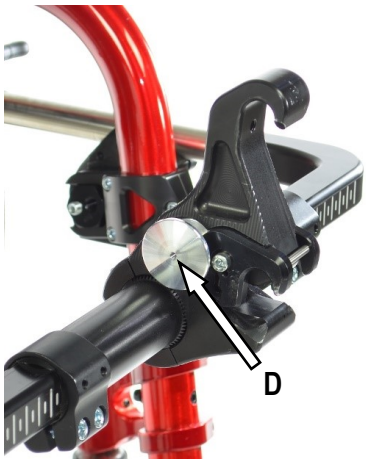
MOUNTING

Start with mounting the side **X** of the lever to the button **D**.

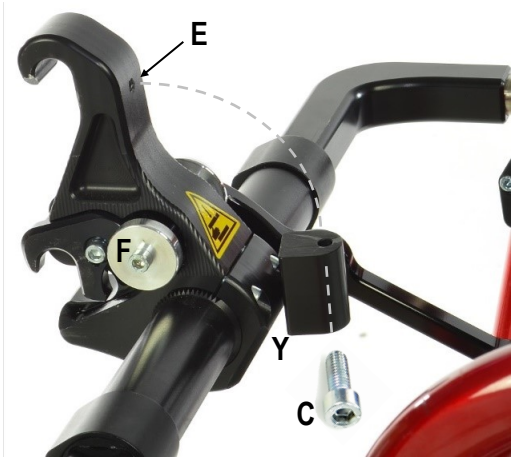
Insert the bolt **A** and the washers **B** as shown in the picture and tighten the bolt; if the button **D** turns while screwing the bolt **A**, hold the bolt on the cap **F**.

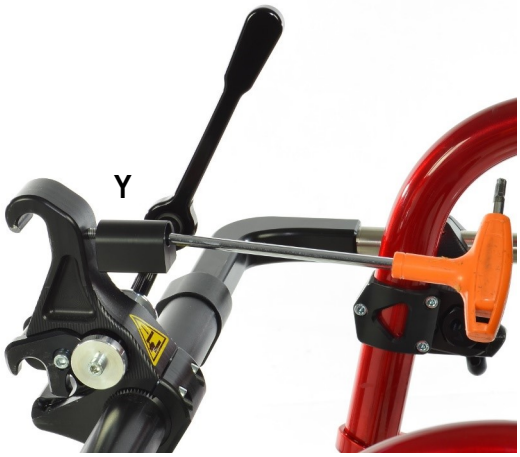
Get the support **Y** close to the threaded hole **E** of the coupling block, insert, screw and tighten the bolt **C**.





A 2B X 4B D



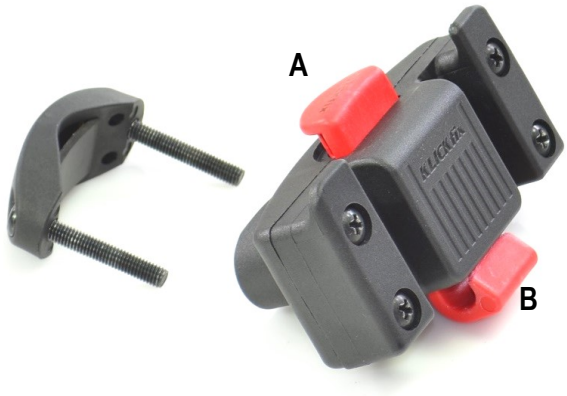


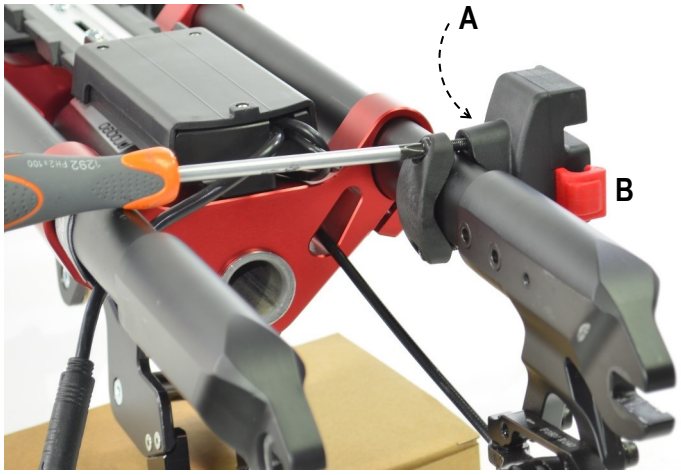
It is advisable to spread a drop of mild lock thread glue on the bolts **A** and **C**.

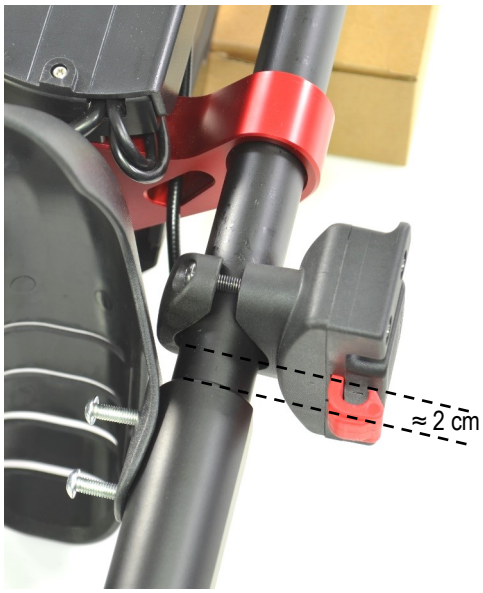
BALLASTS

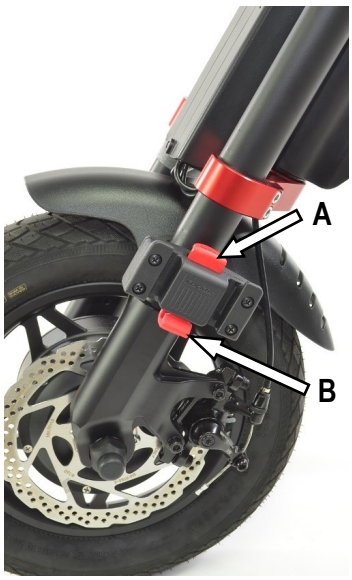
MOUNTING

The ballasts are removable and thus, they are provided with a support fixed to the frame.
Remove the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".
Remove the mud guard - see sheet "*REMOVING/MOUNTING THE MUD GUARD".*
The ballast's support should be mounted with the button **A** facing upward and the hook **B** facing downward.
Position the support on the outer side of the fork tube and fix the clamp at approximately 2 cm from the wider fitting unit so that you can mount the support as low as possible but without it interfering with the mud guard. You may temporarily mount the mud guard to ensure there is no such interference).
Fix the support with the two screws.
Repeat the same operation to mount the second support on the other fork tube.
Mount the mud guard - see sheet "*REMOVING/MOUNTING THE MUD GUARD".*
Mount the wheel - see sheet "*REMOVING/MOUNTINGTHE WHEEL*".









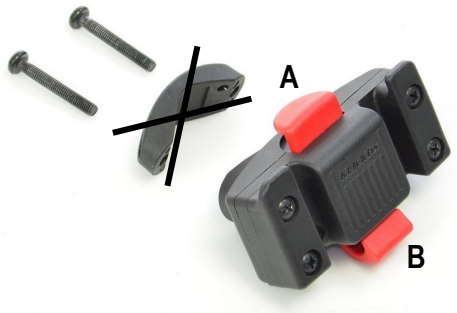
REMOVING

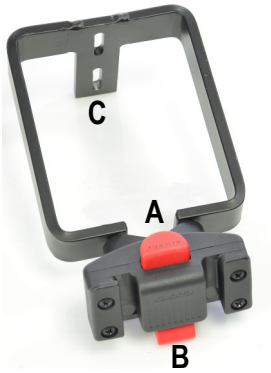
Proceed similarly and remove the two supports.

BASKET

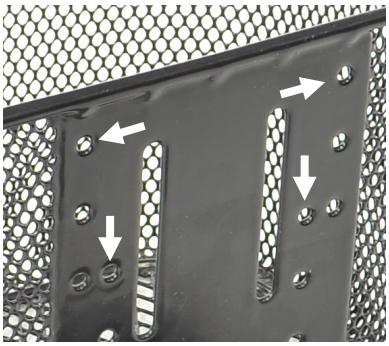
MOUNTING

The removable basket is provided with a locking support and a bracket.
The locking support should be mounted with the button **A** facing upward and the hook **B** facing downward (the fixing plate is not used).
The bracket should be mounted with the vertical plate **C** facing downward.
Mount the locking support on the bracket through the two holes and fix it with the two bolts.





The basket is also provided with a fixing plate made of the internal plate **X** and the external plate with rectangular hollow **Y**.
Mount the two parts with the four bolts through the holes that are indicated with the arrows.
The internal plate has housing for the nuts.
The rectangular hollow of the external plate should be at the top.

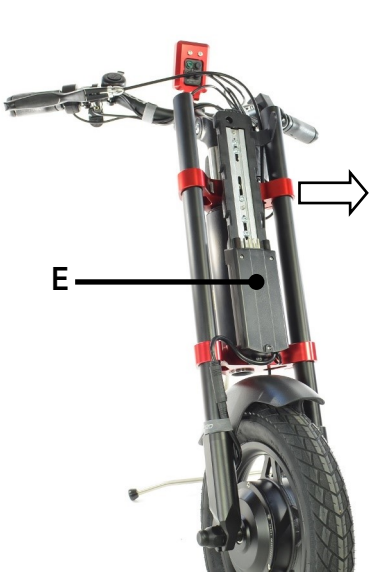


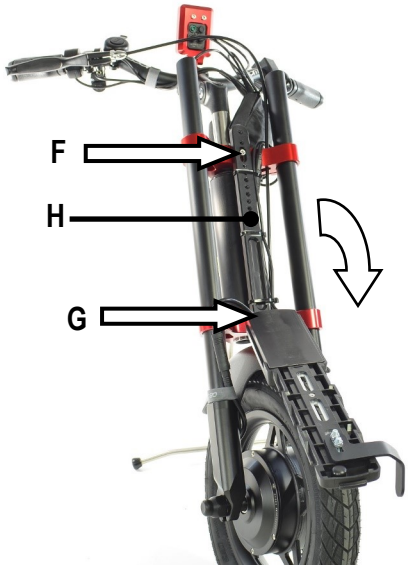
Now you have to mount the unit bracket / locking support on the device's frame.

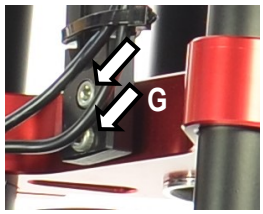
Follow next page

BASKET

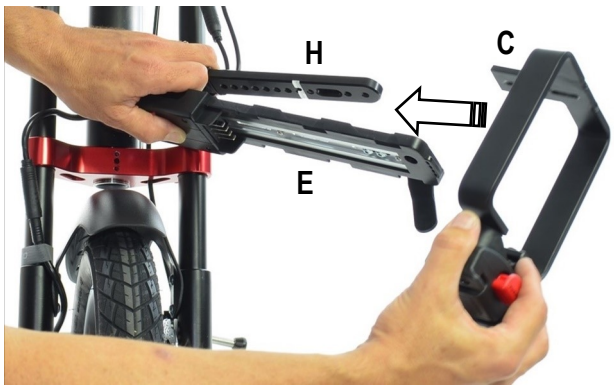
Screw off the three bolts **D** and guide the electronic unit **E** down.
Screw off the bolt **F** at the top and the two bolts **G** at the bottom to remove the support plate **H** from the frame .
Cut the plastic cable tie you find close to the bolt **F** paying attention not to damage the cable.

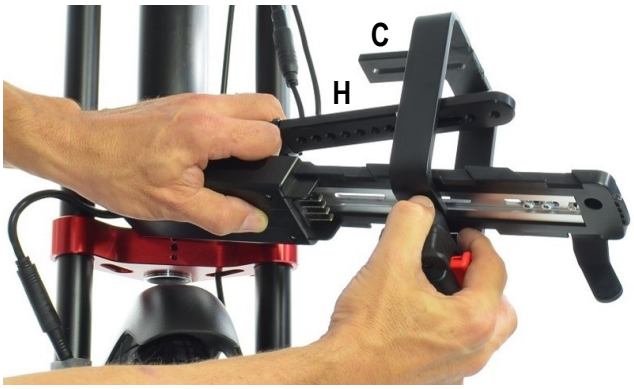


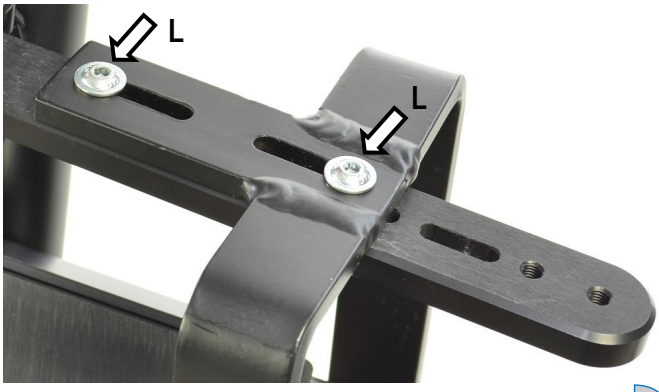




With one hand, take hold of the support plate **H** and of the electronic unit **E** and keep them close to one another.
With the other hand, take hold of the bracket so that the vertical plate **C** results, once you drive it over the other two components, facing downward and behind the support plate **H**.
Through the upper slot of the vertical plate, fit one bolt **L** to the hole **I** of the support plate **H**. Slide the bracket down along the slot, fit and tighten the other bolt **L** through the extremity of the other slot. Finally, tighten the first bolt, too.



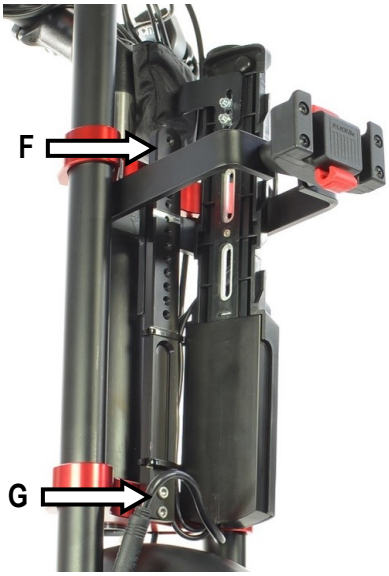


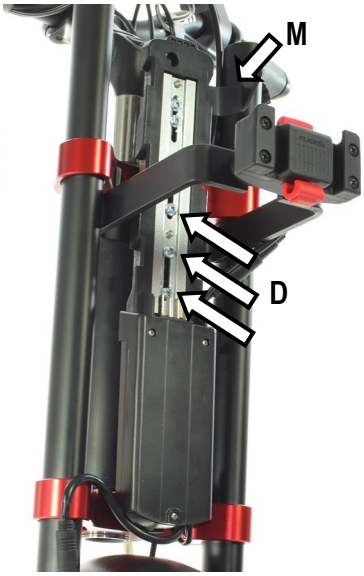


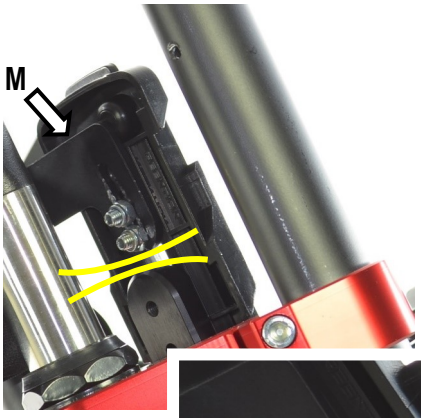
Follow next page

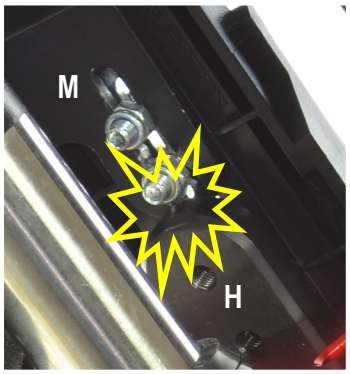
BASKET

Fix the support plate **H** to the frame with the bolt **F** and the two bolts **G**.
Fix the electronic unit **E** with the three bolts **D**. Pay attention when fitting the bolts and ensure the inner side of the tab **M** does not interfere with the point of the support plate **H** otherwise the support plate will not lean on the frame. Should that happen, loosen the fixing bolts/nuts of the tab and slide it out of the interference.

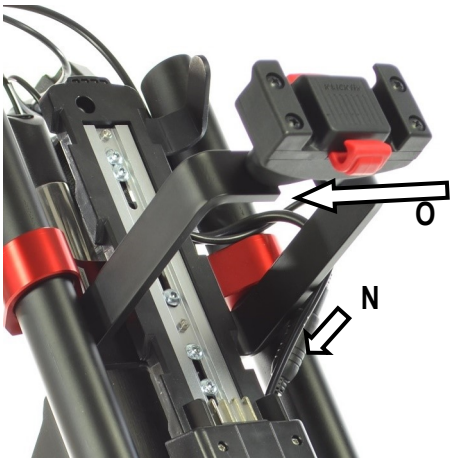


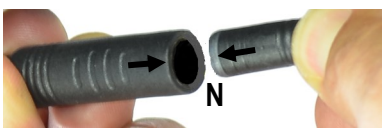


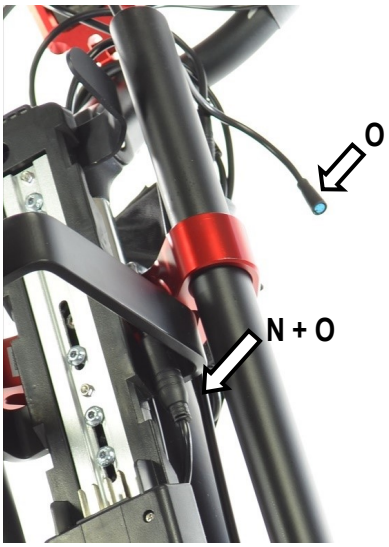




Insert the battery to check it fits properly and that the tab **M** covers the charging socket (this is a safety feature that prevent the battery from being charged when mounted on the device - **the tab MUST NOT be removed**.
Now, unplug the connector **N** and plug it back after positioning the cable within the bracket and on the side of the electronic unit. You should also fit the cable **O** (unused cable with light blue socket) after taking it out of the cable bag. Route the cables rationally and, if needed, use a plastic cable tie.







Mount the basket as explained in the user's manual.

REMOVING/MOUNTING THE ELECTRONIC UNIT

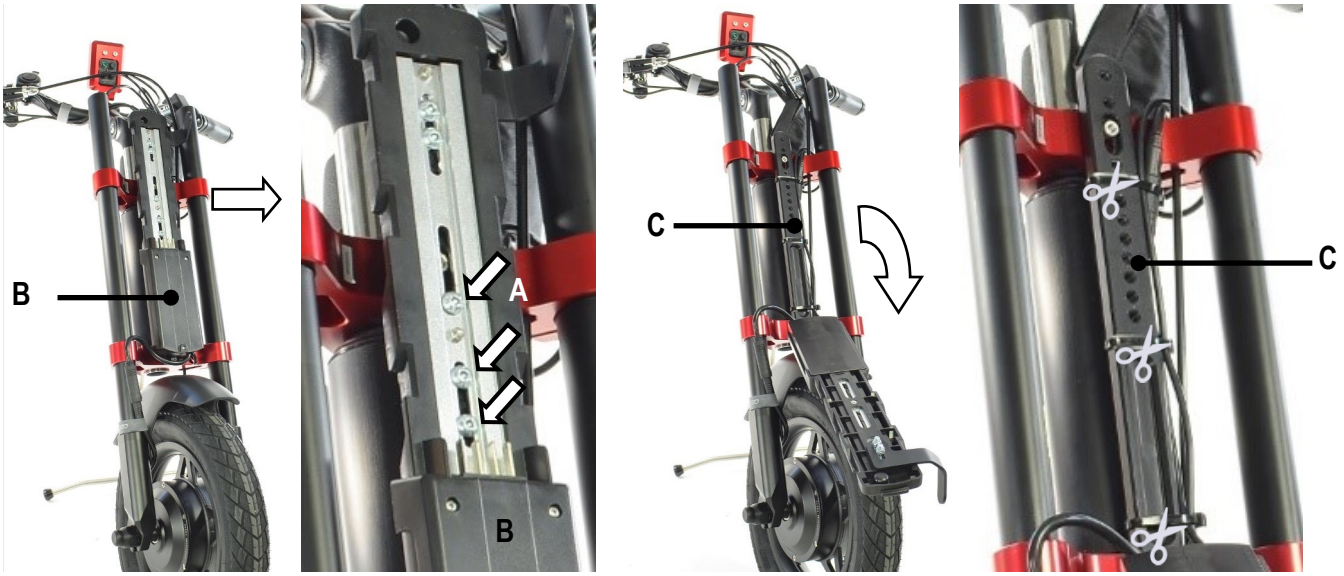
REMOVING

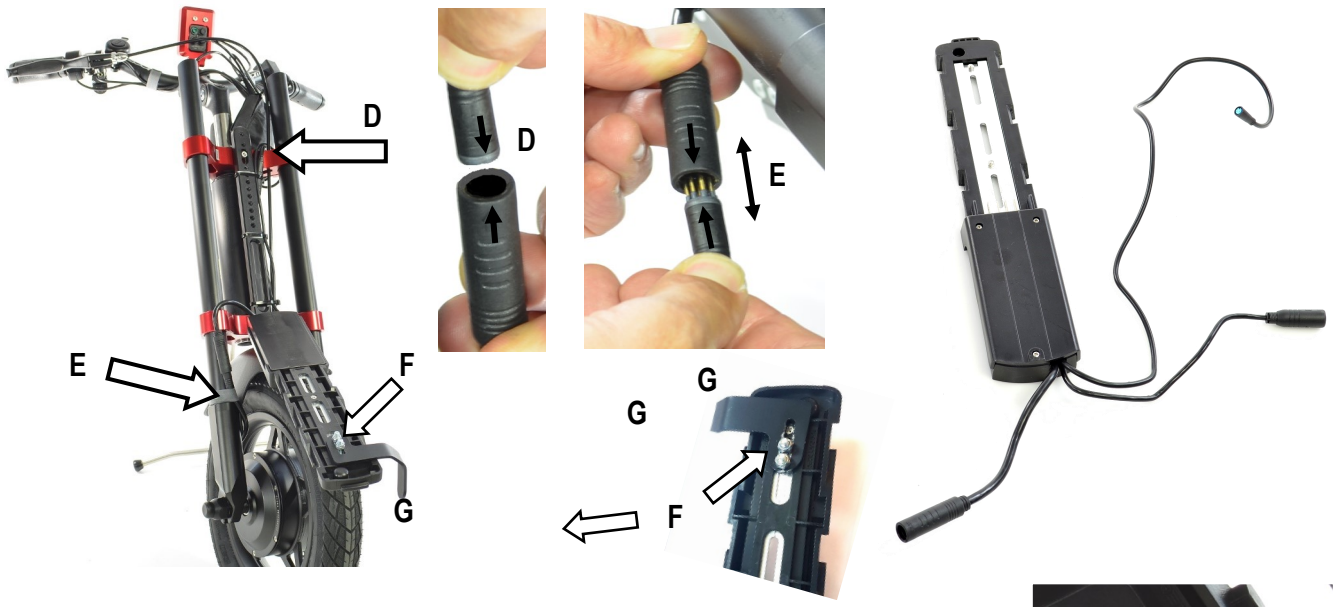
Remove the three bolts **A** and drive the electronic unit **B** down.

Cut the plastic cable ties that fasten the cables to the support plate **C** being careful not to damage the same cables.

Unplug the connectors **D** (controls) and **E** (motor) and remove the electronic unit paying attention to the route of the cables (to replicate when mounting the new unit) including the one with light blue socket (unused) that may arrive within the cable bag.

Screw off the bolts/nuts **F** to remove the tab **G**.





MOUNTING

Proceed the other way round.

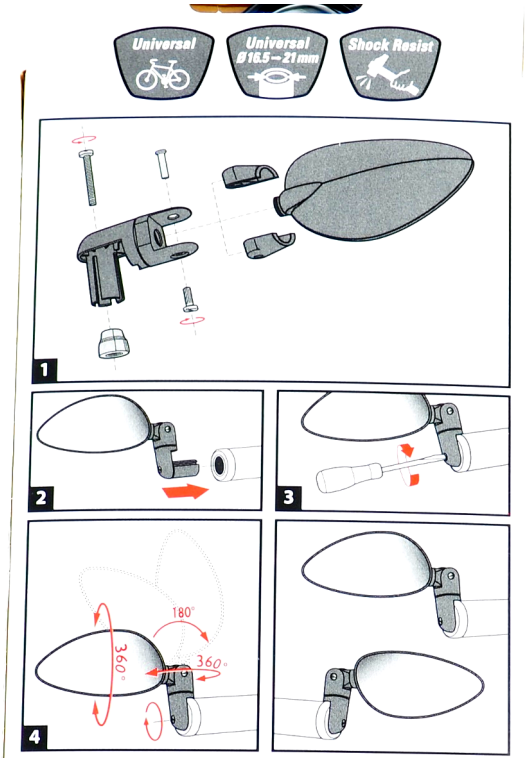
Be careful when routing the cables and when fastening them with the cable ties.

It is advisable to mount the tab **F** last to avoid a possible interference with the support plate **C**.

If you replace the electronic unit, make sue it is programmed for the motor it will be connected to.

REAR VIEW MIRROR

To mount the rear view mirror you need to cut (with a cutter or an electrician scissor) the grip so as to make a hole that replicates the one of the tube underneath.
You can mount it on the right or left side.
Follow the instructions on the packaging.
The rotation friction of the different joints depends on how you tighten the related bolts.
Do not over tighten the bolts because the parts are in plastic.



SETTINGS

DRIVE CONTROLS

You can change some operative parameters of the MOTOTRONIK and of the display by working on the display itself. All shown parameters are written in English.

To access to the setting of the parameters:

Press and hold the button "**M**" for at least 3 seconds to enter the setting menu.

Once you are in the menu, you can scroll and select the options by using the buttons "**+**" or "**-**".

The selected option is highlighted.

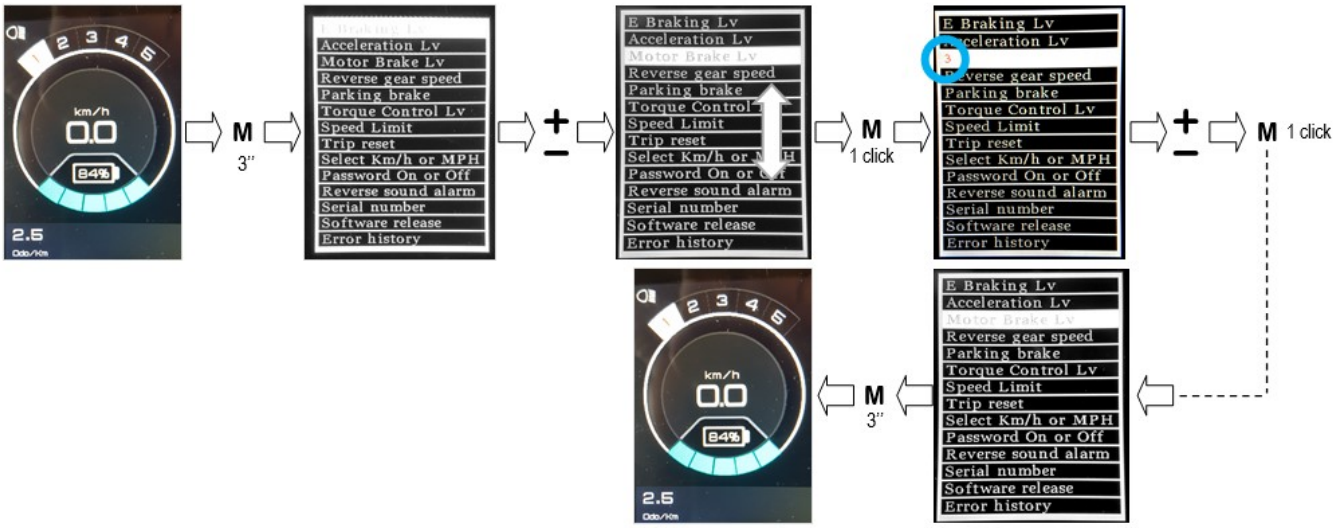
To access the selected option, press once the button "**M**".

You can modify the value of the option by using the buttons "**+**" or "**-**".

The value of some parameters, even if not confirmed, can be tested without exit from the menu; the speed to make the test, where applicable, will be the speed level selected before entering in the menu (it is not possible to change the speed level in this stage – you need to go back to the initial screen).

To confirm your choice, press the button "**M**" once; the display will show the setting menu again.

To exit from the menu, press and hold the button "**M**" for at least 3 seconds.



Follow next page

SETTINGS

DRIVE CONTROLS

E Braking Lv
The electronic brake EBS is a brake that work directly on the device's motor and you should not mistake it with the motor brake.
When you press the red button, or you press the disk brake lever (or you push the "tetra" handlebar) for a first short stretch, the EBS comes into operation and the device brakes with a certain intensity, and it can be both the main and complementary braking (in combination with the disc brake and/or the engine brake).
The braking entity varies from 0 to 10 where 10 corresponds to the maximum and 0 to the minimum (with a value of 0 the braking is void).

Acceleration Lv
Adjusts the rate of change of velocity and varies from 0 to 10 where 0 corresponds to the fastest response.

Motor Brake Lv
The motor brake acts when the acceleration is released. The extent of the braking action can be adjusted.
The braking entity varies from 0 to 10 where 10 corresponds to the maximum and 0 to the minimum (with a value of 0 the braking is void).

Reverse gear speed
You can adjust the speed of the reversing gear.
The speed level varies 0 to 10 where 10 corresponds to the maximum and 0 to the minimum. The reversing gear speed is much lower than the forward gear.
Continuing to press the "**+**" and "**-**" buttons, values above 10 (15, 25 ect.; if you press "-" after 0, the value 5000 appears) do not increase the speed of reversing gear.

Parking Brake (NOT ACTIVE)
Even if enter this setting, the ON and OFF values have no effect.

Torque Control (NOT ACTIVE)
Even if enter this setting, the ON and OFF values have no effect.

Speed Limit
You can adjust the speed limit with reference to level 5. The other levels (1, 2, 3, and 4) will be automatically calculated according to the maximum speed value you set.
Selectable values are expressed in km/h and vary from 0 up. Note: although you can select a speed of 70 km/h, for example, the device will still not exceed the speed set by the manufacturer (according to law).
Therefore, compared to the maximum possible speed set by the manufacturer, you can only decrease the value.

Trip reset
You can reset the distance value in km or miles. YES = reset; NO = do not reset

Select km/or MPH
To change the speed and distance unit of measurement. Select KM/H (kilometres per hour) or MPH (miles per hour).

Password On or Off (NOT ACTIVE)
Even if enter this setting, the ON and OFF values have no effect.

Reverse sound alarm (NOT ACTIVE)
Even if enter this setting, the ON and OFF values have no effect.

Serial number
Viewing only. Shows the serial number of the MOTOTRONIK control unit.

Software release
Viewing only. Shows the display software edition.

Error History
Viewing only. This section is intended for the MOTOTRONIK dealer/distributor and cannot be changed.

CLAMPS AVAILABLE

FOR ROUND TUBES Ø 25 mm

To be fixed on a stretch of frame with same section for at least 40 mm.

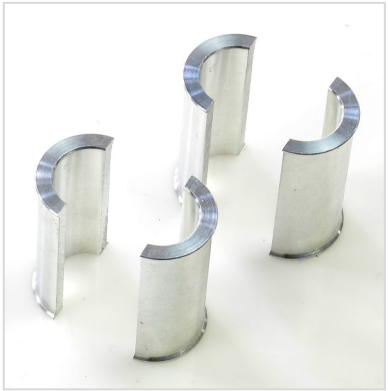
MO-AGLDX-25 (CMP11102)

FOR ROUND TUBES Ø 32 mm

To be fixed on a stretch of frame with same section for at least 40 mm.

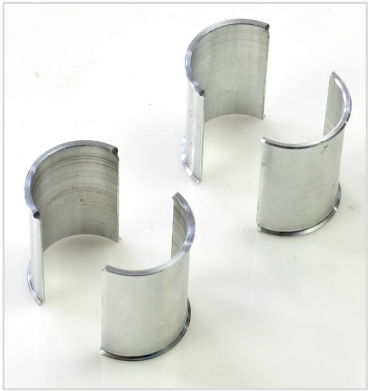
MO-AGLDX-32 (CMP11100)

ADAPTORS



25 ⇒ 18-18.4 (CMP10992)

25 ⇒ 20-20.4 (CMP10991)



32 ⇒ 28-28.4 (CMP10989)

32 ⇒ 30-30.4 (CMP10988)

Follow next page

CLAMPS AVAILABLE

VARIO

To be fixed on a fixed point of the frame of the models Exelle Vario and Vario Carbon.

MO-AGLDX-XV (CMP11125)

BASIC

To be fixed on a fixed point of the frame of the model Basic Light.

MO-AGLDX-BASIC (CMP11108)

ELLITTICO 35X25 mm

To be fixed on a stretch of frame with same section for at least 40 mm.

MO-AGLDX-OV (CMP11104)

DUKE

To be fixed on a fixed point of the frame of the model Duke.

MO-AGLDX-DUKE (CMP10963)

Follow next page

CLAMPS AVAILABLE

NOIR

To be fixed on a fixed point of the frame of the model Noir 2.0.

MO-AGLDX-NOIR (CMP11136)

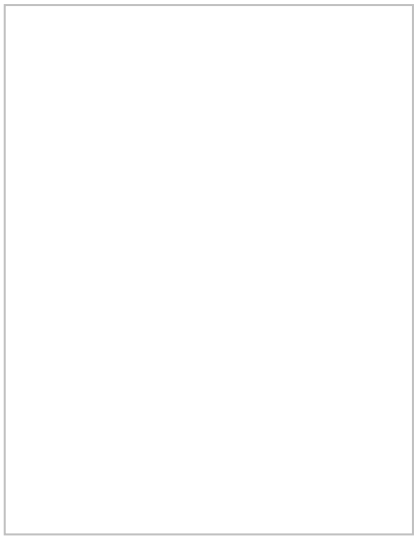
CARBOMAX

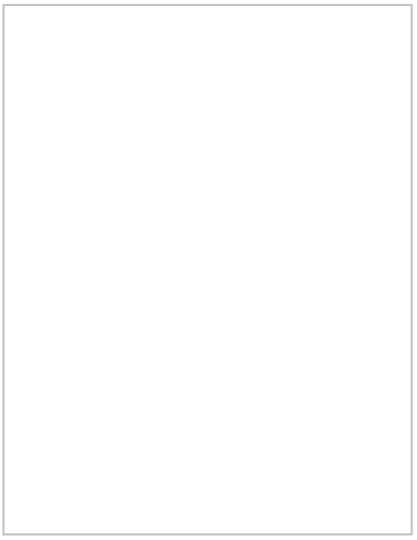
To be fixed on a stretch of frame with same section for at least 40 mm of modello Carbomax.

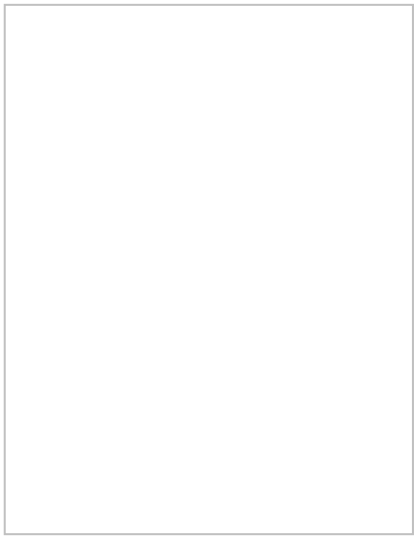
MO-AGLDX-CARBOMAX (CMP11106)

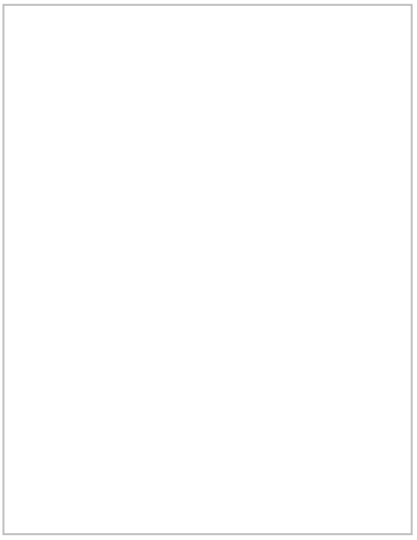
Follow next page

CLAMPS AVAILABLE









TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

Models of wheelchairs PROGEO

Pag. 69 EXELLE
Pag. 70 EXELLE VARIO, VARIO CARBON
Pag. 71 BASIC LIGHT
Pag. 72 YOGA, TEKNA ADVANCE, EGO, EGO CUSTOM, JOKER, JOKER ENERGY
Pag. 73 JOKER R2, CARBOMAX
Pag. 74 EGO CARBON, JOKER CARBON
Pag. 75 DUKE
Pag. 76 NOIR 2.0

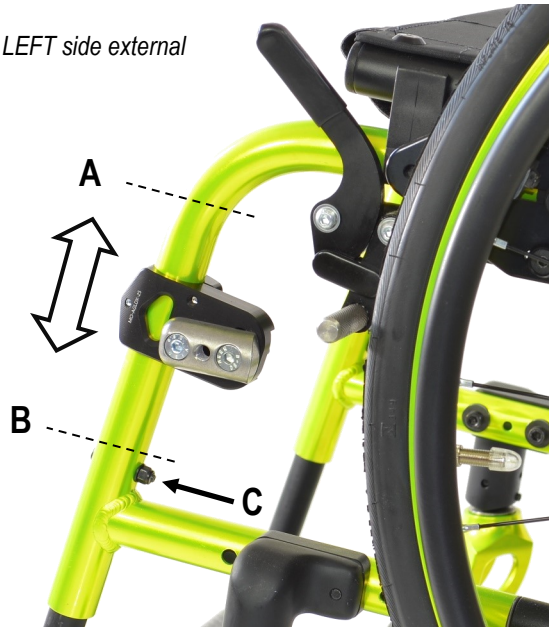
EXELLE

FOR ROUND TUBES Ø 25 mm

MO-AGLDX-25 (CMP11102) + MO-AGLSX-25 (CMP11103)

The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".

LEFT side external



LEFT side internal

You can position the clamp between the point **A** , just below the curve, and the point **B** which is delimited by the bolt/nut **C** fixing the foot-plate tube.

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

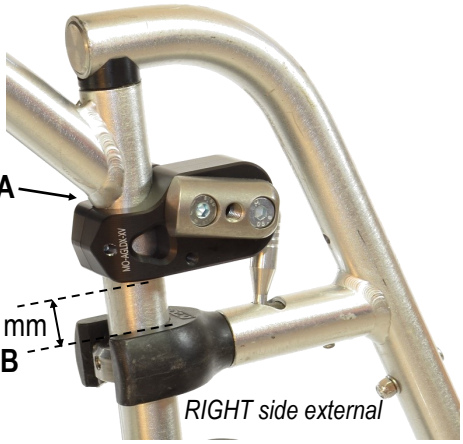
EXELLE

VARIO

VARIO

MO-AGLDX-XV (CMP11125) + MO-AGLSX-XV (CMP11126)

The clamp are right and left and they CANNOT be mounted on the not corresponding side.



RIGHT side external

RIGHT side internal

RIGHT side external

FIX POINT — Mount the clamp as high as possible until the welding **A** so that the lower side of the same clamp results approximately 23 mm from the footplate coupling fork **B** to allow for inserting and removing the footplate frame.
Check in and out rotation, removal and inserting of the footplate frame.

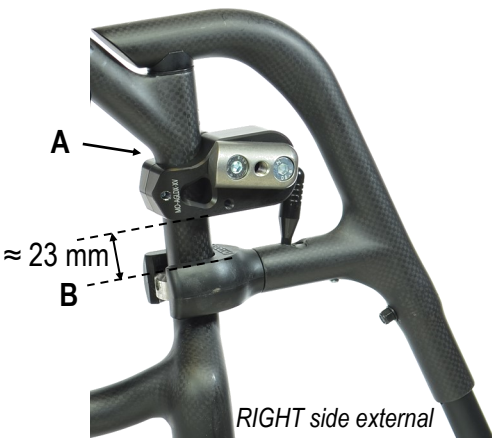
VARIO

CARBON

VARIO

MO-AGLDX-XV (CMP11125) + MO-AGLSX-XV (CMP11126)

The clamp are right and left and they CANNOT be mounted on the not corresponding side.



RIGHT side external

RIGHT side internal

RIGHT side external

FIX POINT — Mount the clamp as high as possible until the welding **A** so that the lower side of the same clamp results approximately 23 mm from the footplate coupling fork **B** to allow for inserting and removing the footplate frame.
Check in and out rotation, removal and inserting of the footplate frame.

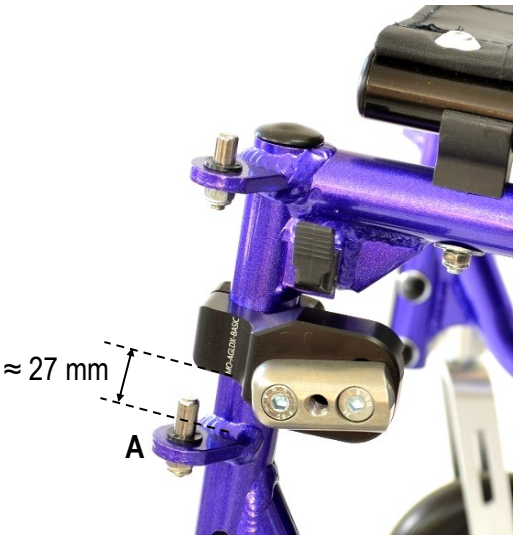
TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

BASIC
LIGHT

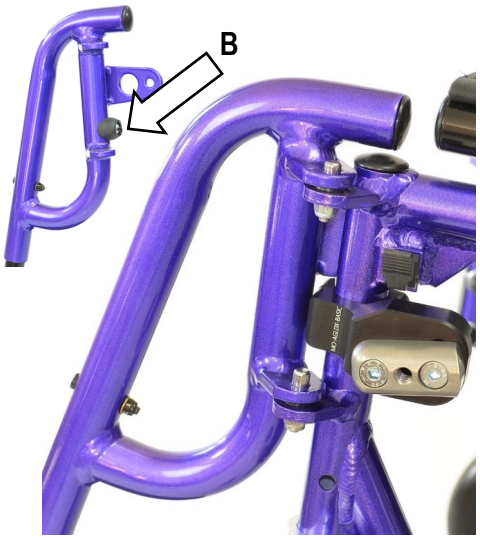
BASIC

MO-AGLDX-BASIC (CMP11108) + MO-AGLSX-BASIC (CMP11109)

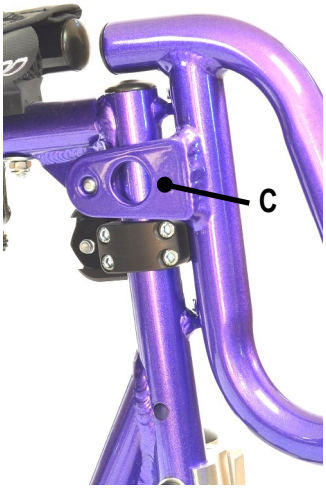
The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".



LEFT side external



LEFT side external



LEFT side internal

The lower side of the clamp should be mounted at approximately 27 mm from the tab **A** to allow for inserting and removing the footplate frame.

From the footplate frame, remove the rubber bumper **B**.

Check outward rotation , removal and inserting of the footplate frame (there should not be interference with the inner fixing plate **C**).

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

YOGA

TEKNA

ADVANCE

EGO

EGO

CUSTOM

JOKER

JOKER

ENERGY

JOKER

MO-AGLDX-OV (CMP11104) + MO-AGLSX-OV (CMP11105)

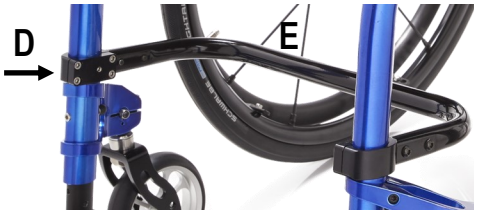
The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".

LEFT side external

LEFT side internal

You can position the clamp between the point **A** , just below the curve, and the point **B** which is delimited by the fork support **C**.

The fork support **C**, according to the model of the wheelchair, may be of a different type rather than welded and it may be at different heights; therefore, the stretch **AB** is variable.



In the version "ZERO" of the model Joker, the point **B** can be delimited by the support **D** of the rigidizer **E**.

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

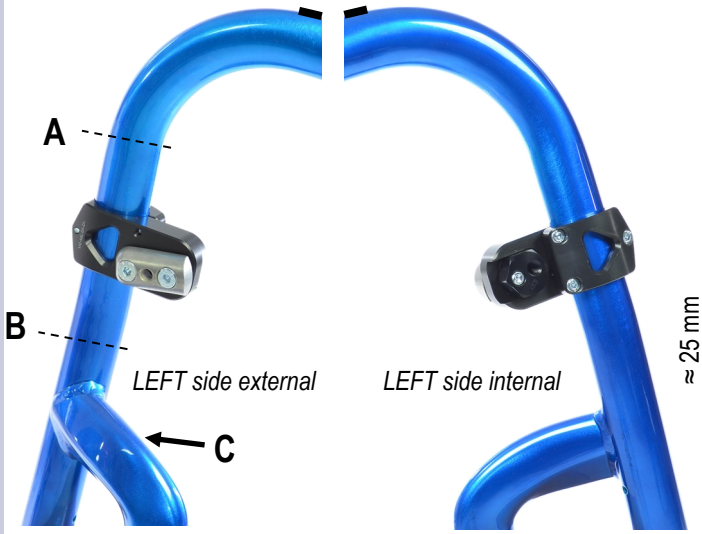
JOKER

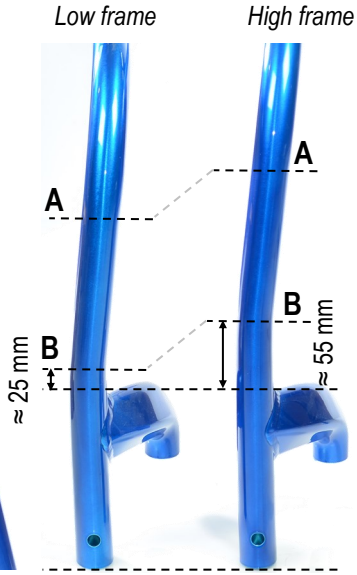
R2

JOKER

MO-AGLDX-OV (CMP11104) + MO-AGLSX-OV (CMP11105)

The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".





You can position the clamp between the point **A** , just below the curve, and the bend point **B**.

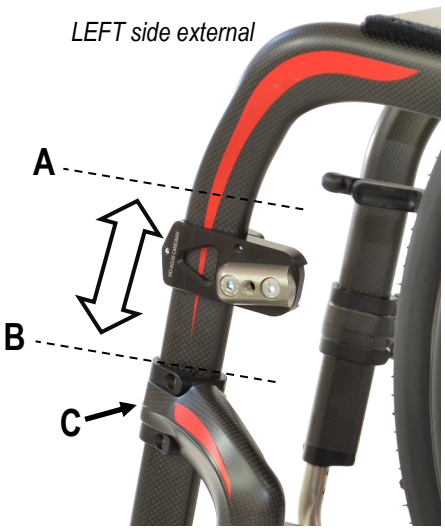
The bend point **B** can be at approx. 25 mm, for the low frame, or at approx. 55 mm, for the high frame, above the fork support **C**.

CARBOMAX

CARBOMAX

MO-AGLDX-CARBOMAX (CMP11106) +
MO-AGLSX-CARBOMAX (CMP11107)

The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".



You can position the clamp between the point **A** , just below the second curve, and the point **B** which is delimited by the fork support **C**.

The fork support **C** may be at different heights; therefore, the stretch **AB** is variable.

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

EGO

CARBON

JOKER

MO-AGLDX-OV (CMP11104) + MO-AGLSX-OV (CMP11105)

The clamps, even if right and left, can be mounted on the opposite side to change the range of angle adjustment of the coupling pads, see sheet " *COUPLING PADS - assembly and adjustment*".

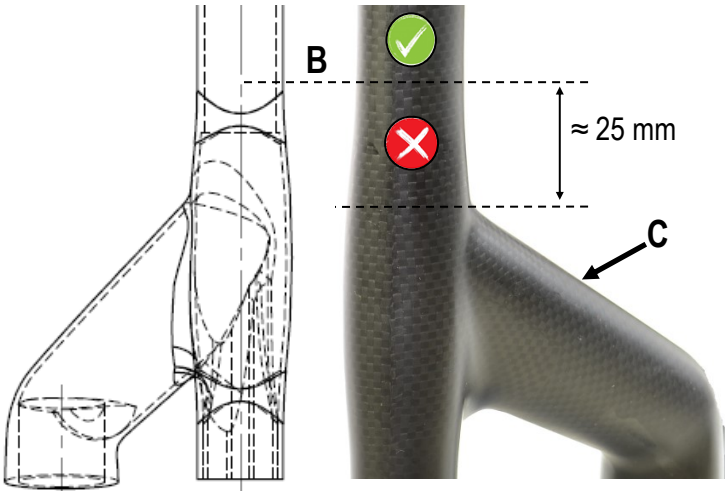
JOKER

CARBON

LEFT side external

LEFT side internal

You can position the clamp between the point **A** , just below the curve, and the beginning of the swelling **B** at approx. 25 mm above the fork support **C**.



The point where the swelling **B** begins is always approx. 25 mm above the fork support **C**, however, the stretch **AB** is variable and it depends on the frame height (30 mm difference between high and low frame).

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

DUKE

DUKE

MO-AGLDX-DUKE (CMP10963) + MO-AGLSX-DUKE (CMP10964)

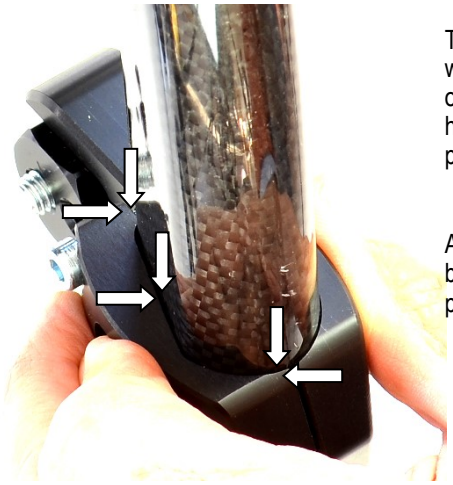
The clamp are right and left and they CANNOT be mounted on the not corresponding side.

LEFT side external

LEFT side internal

FIX POINT

You should mount the clamp on the only point of the frame just below the curve where the clamp's faces perfectly match with those of the frame.



To spot this point, fit the bolts without tightening them, take hold of and press the clamp with one hand and slide it to the matching point.

After that, when tightening the bolts, ensure to keep the correct position.

TYPE OF CLAMPS AND ASSEMBLY FOR MODEL OF WHEELCHAIR

progeo ACTIVE DESIGN

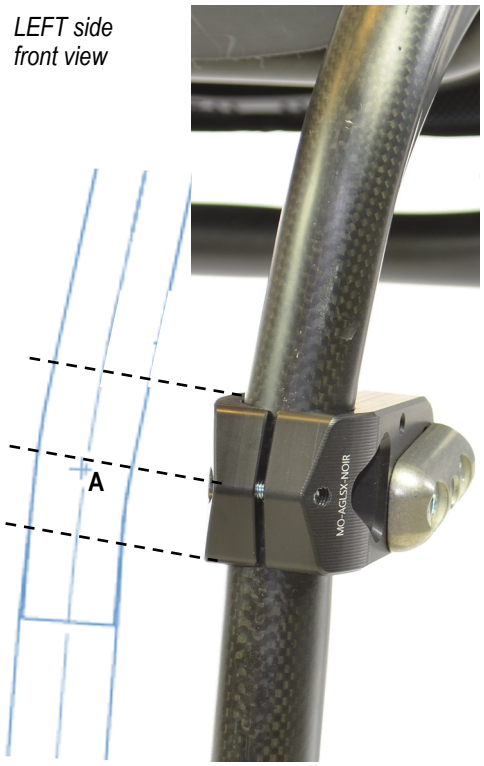
NOIR 2.0

NOIR

MO-AGLDX-NOIR (CMP11136) + MO-AGLSX-NOIR (CMP11137)

The clamp are right and left and they CANNOT be mounted on the not corresponding side.

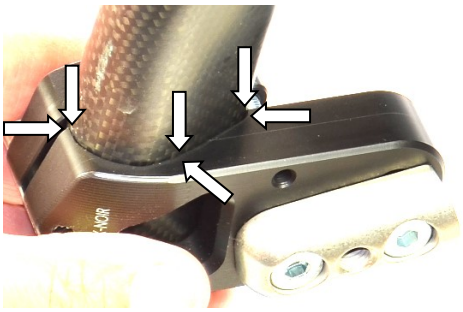
LEFT side front view

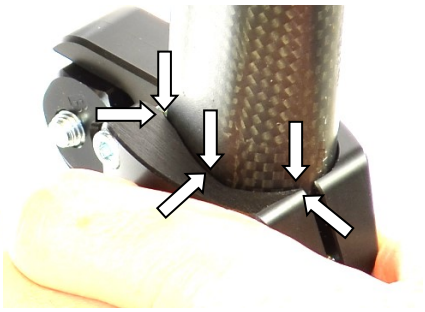


LEFT side external

LEFT side internal

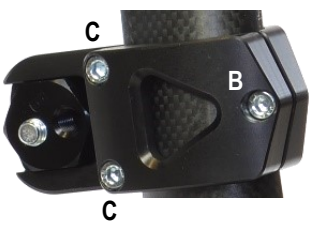
FIX POINT
You should mount the clamp on the only point of the frame just below the curve and at the turn of the bend **A** where the clamp's faces perfectly match with those of the frame.
To spot this point, fit the bolts without tightening them, take hold of and press the clamp with one hand and slide it to the matching point.
After that, when tightening the bolts, ensure to keep the correct position.



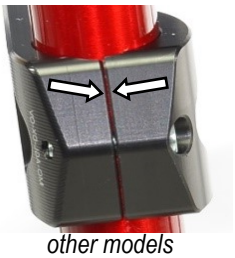


The gap between the two parts of the clamp when properly fixed, may be a little wider than what results on other models.

Tighten the bolt B until you feel it starts clinging on the frame and then tighten the two bolts C.
DO NOT overtighten the bolt B.
DO NOT tighten the two bolts C first and then the bolt B.



NOIR 2.0



other models