SERVICE MANUAL

ENGLISH

SERVICE MANUAL

JOKER JUNIOR 2.0

Rev. 1 - 2021/05

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, 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 modification of the original parameters and set up could seriously compromise the safe operation of the wheelchair causing damage to both the user and the wheelchair itself.

After every adjustment made to the wheelchair, 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 wheelchair before giving the product to user and/or his/her attendant.

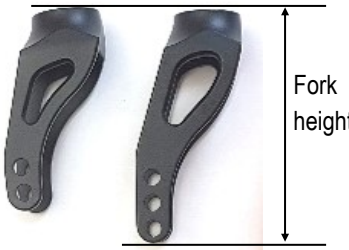
Rehateam s.r.l. disclaims any responsibility for damage to the product, to any object or to people due to any modification that is not properly performed or that, in any case, does not guarantee safety to the user.

JOKER JUNIOR 2.0

SERVICE MANUAL

FRONT HEIGHT

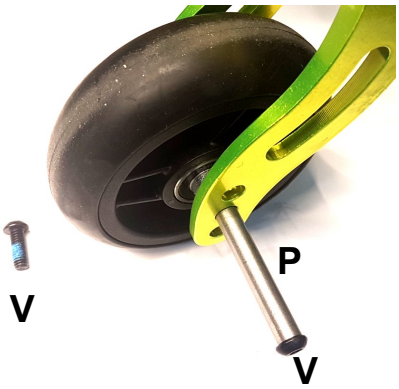
caster on fork



Holes intervals – 12,7 mm

Sport – 2 holes – h. 88

Piccola – 3 holes– h. 112



The entity of the adjustment obviously depends on the caster and fork's sizes.

Screw off the bolt **V** while holding the other.

Remove the axle **P**.

Position the caster to another hole, insert the axle and fix the bolt **V** holding the one on the other side.

Pay attention to the spacers between caster and fork.

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

FRONT HEIGHT

Sliding system

Loosen the two bolts **A** of the fork support **B**.

Slide the support upward or downward to the desired height.

Tighten the two bolts **A**.

Repeat the same operations on the other side making sure the height is the same.

The two front wheels must be touching the ground.

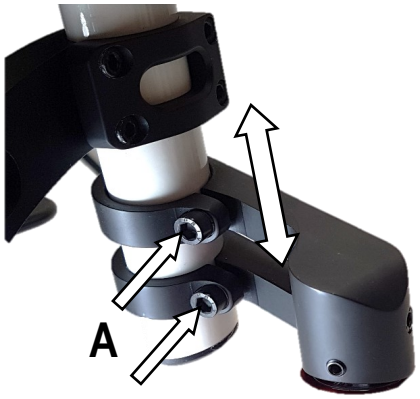
Make sure that, the all around rotation of the fork, the caster does not touch the frame.

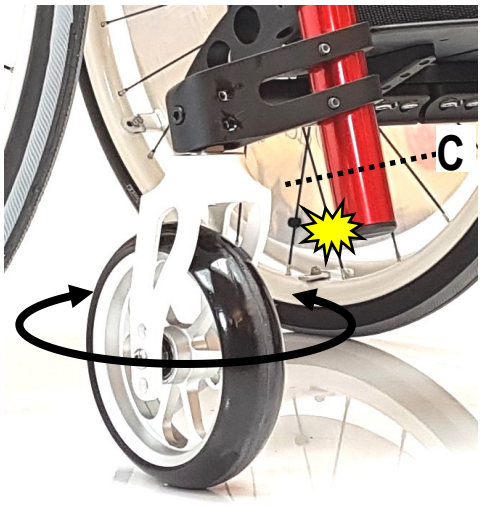
The point of contact caster/frame determines the minimum front height you can reach using the same caster.

If you need to further decrease the front height, you have to cut off the frame just as necessary, for instance, along the line **C**. Then, slide the fork support and/or change the position of the caster with respect to the fork.

Pay attention, though, to the footplate distance, see also adjustment sheet “footplate”.

Remember that the front height adjustment can affect the seat inclination, so it is necessary to check and adjust the fork angle.



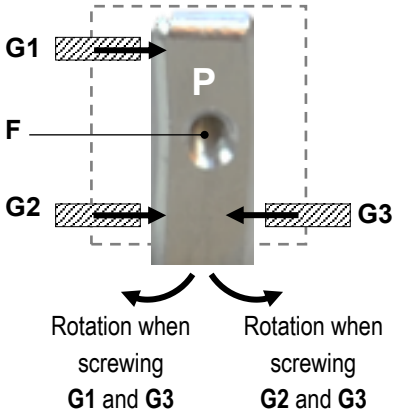


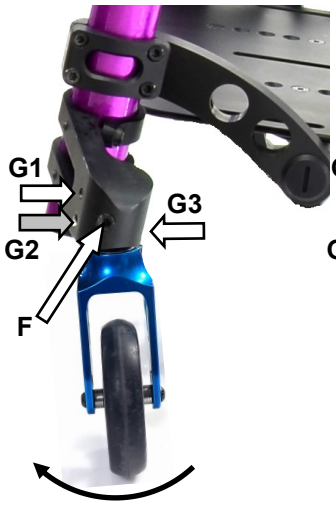
FORK ANGLE

WORK ON A FLAT AND EVEN SURFACE

Whenever the seat height is changed or as periodic maintenance, check the fork angle and, if necessary, adjust it in order to have the fork axis perpendicular to the ground.

The adjustment is possible by means of the four grab screws **G1**, **G2** and **G3** that make the axle **P** turn on the fulcrum **F**.





To turn the fork frontward
Loosen **G2**.
Screw **G1** and **G3**

To turn the fork backward
Loosen **G1** and **G3**
Screw **G2**

Perpendicularity
You can check the perpendicularity with the help of a square (or similar) vertically aligned to the caster turned 90° with respect to the driving direction of the wheelchair

To adjust the fork, once you know the direction (frontward or backward) towards which it is necessary to move the fork's axle, proceed as above-mentioned until reaching the correct angle.

You can also measure the perpendicularity by turning the fork by 360°: during the full turn, the wheel has to touch the surface in all positions.

If a headless bolt results hard to unscrew, DO NOT FORCE IT, but try to loosen the other two first.

If the fork's axle (the axle **P**) results hard to move, slightly loosen the bolt of the fulcrum **F** (remember to screw it after adjustment).

Once you reach the correct angle, screw all three headless bolts all the way down to the axle **P**, but without tightening.

In order to fix the system, tighten first one and then the other less than a quarter of a turn at once, the grab screws **G1** and **G2** (the front ones) checking the perpendicularity; in fact, it may slightly change during this phase.

Should that happen, correct the angle proceeding in the same manner.

When you have tightened both headless bolts **G1** and **G2**, you can tighten the headless bolt **G3**.

Check the perpendicularity again and, if necessary, correct it.

It is advisable to pread a drop of mild lock thread glue on all grab screws **G**.

DIRECTIONALITY

A very important aspect of any wheelchair is its directionality.

To check if the wheelchair goes straight, sit on it, push it and let it go until it stops.

If something is wrong, the slower the wheelchairs moves forward (momentum close to nothing), the more likely it turns right or left. Therefore, if no or irrelevant turn occurs, the wheelchair is properly adjusted.

Cause	Reason	Solution
SURFACE	The surface where the test is being performed is not even and flat	Test the chair on even and flat surface
REAR WHEELS	The rear wheel are not equally inflated	Inflate both tyres at the same pressure
	The tyres of the two rear wheel are different or differently worn out	Change the tyres
	The rear wheels are not adjusted at the same height	Adjust the rear wheel height
	The camber of right and left wheels are different or differently adjusted	Adjust the camber.
	The wheel, when turning, touches the side guard or the brakes	Fix or replace the side guard. Add spacer on the receiver. Adjust the brake.
	The wheels doe not turn smoothly	Clean or change the bearings
FRONT WHEELS	The casters are not adjusted at the same height	Adjust the front wheels at the same height
	The tyres of the two front wheels are different or differently worn out	Change the wheels
	The fixing bolts of the fork/fork support/clamp are loosened	Check and tighten all fixing bolts
	The caster does not turn smoothly	Clean the bearings.
	Either or both forks are not adjusted so as their axis is perpendicular to the ground.	Adjust the fork axis inclination.
FOOTPLATE	The footplate tubes are adjusted at different height.	Adjust the tubes at the same height

If the wheelchairs does not go straight, in most cases the reason is the fork angle adjustment.

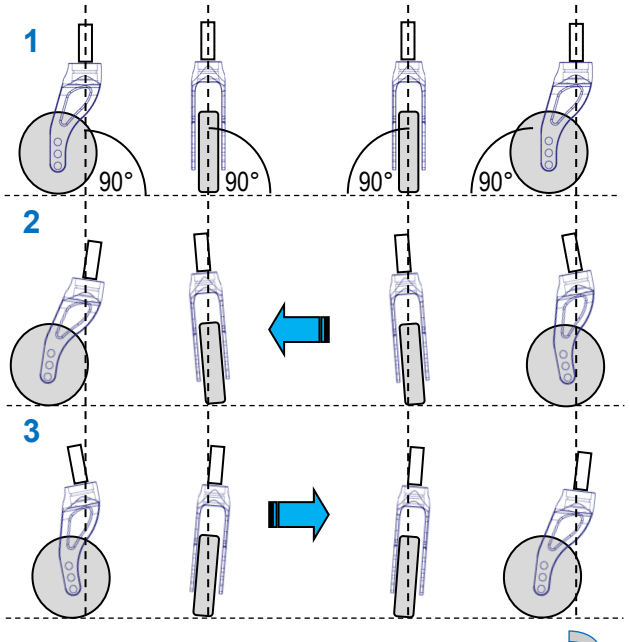
However, before working on the fork angle adjustment, check all the points above mentioned.

First, make the test along a flat even surface to check the directionality.

1 The correct adjustment has both forks perpendicular to the ground, that is, their axis at 90°.

2 If the wheelchair **TURN RIGHT,** the cause is one or more of the following:
The **RIGHT** fork is tilted **inwardly** and/or **backward**
The **LEFT** fork is tilted **outwardly** and/or **frontward**

3 If the wheelchair **TURN LEFTT,** the cause is one or more of the following:
The **LEFT** fork is tilted **inwardly** and/or **backward**
The **RIGHT** fork is tilted **outwardly** and/or **frontward**



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DIRECTIONALITY

ADJUSTING THE DIRECTIONALITY

Check that the two forks are perpendicular to the ground. If they are not, proceed with the adjustment of the fork angle following the instructions on the sheet FORK ANGLE ADJUSTMENT.

If both forks axis are correct but the wheelchair still turns right or left, it means that the latitudinal angle is not perfect.

This may be due to hit, to improper pressure exercised on the fork or its support, or to a tiny imperfection among all parts fixed together due to their manufacturing tolerances.

You can fix the fork axle **P** in three different angles to correct the directionality.

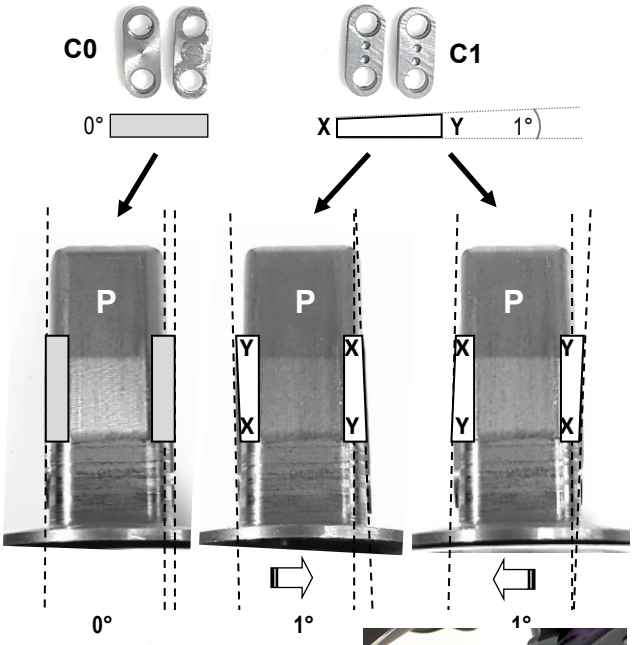
Loosen all four grab screws **G**, remove the bolt **F** and slide off the fork complete with the axle **P**.

The axle has two side hollows **B** where you have to cast the flat inserts **C0** or the 1° titled inserts **C1** that are recognizable thanks to two dots.

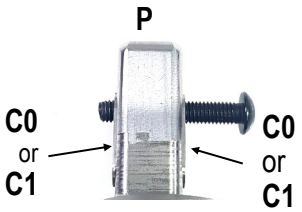
With the flat inserts **C0**, the axle keep its original inclination.

With the tilted inserts **C1**, the axle tilts by 1° right or left according to how to cast them in the hollows—see images.

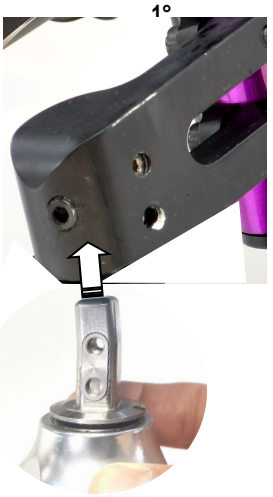
Note: you can cast the inserts only as indicated in these images.



Once you have casted the inserts **C0** or **C2**, it is advisable to try to screw the bolt **F** to check there is no difficulty. Sometimes, in fact, the holes of the inserts may have working burr that make the bolt hard to go through.



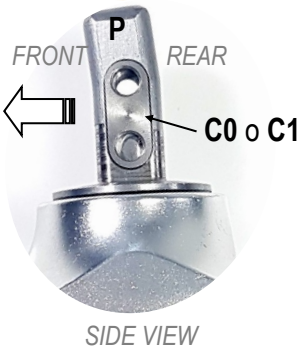
To mount the fork unit. Insert the axle **P** in the fork support paying attention to the orientation of the same axle. In fact, the axle is not straight, but it shows a bend. Such bend must be facing to the rear of the wheelchair.



Insert and screw the bolt **F** without tightening it much (it is enough to screw it up to stop).

Adjust the fork angle — see sheet “fork angle”.

Note. This type of adjustment can take place even at original assembly, therefore, you may find the inserts **C0** on one axle and **C1** on the other, for instance.
The wheelchair is not supplied with supplementary inserts, therefore, it will be necessary to order them when needed.



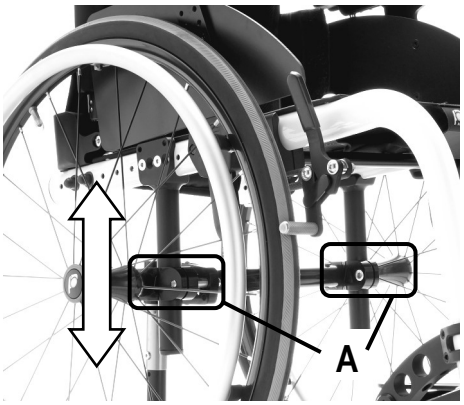
SIDE VIEW

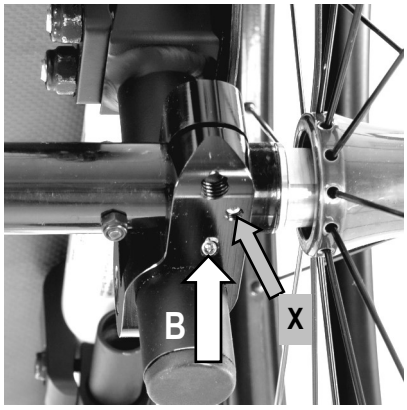
Axles without inserts

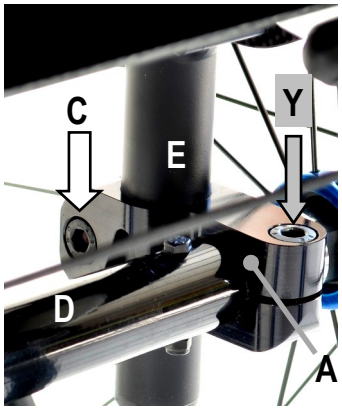
Until 2019 the axles had no inserts **C0** or **C1.** There were 0°, 1°rh and 1°lh axles. To adjust the directionality, it is necessary to change the axle.

REAR HEIGHT

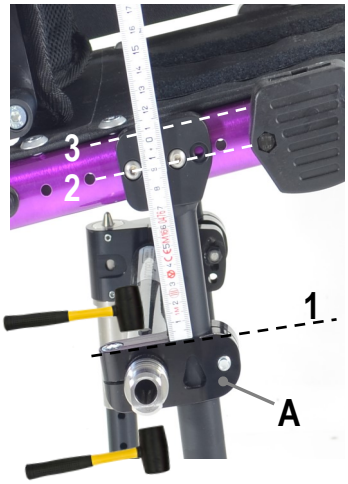
STANDARD REAR UNIT







When decreasing the rear height it is necessary to remove the mudguard or the armrest first, fact, the tyre will touch it and it will impede the adjustment.
If the side guard is straight, leave it where it is.

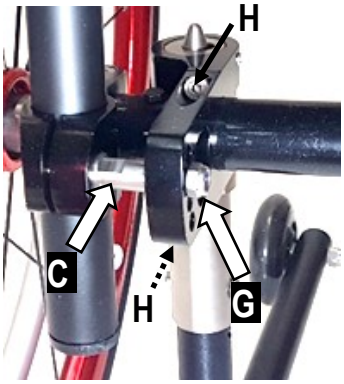


Loosen the grab screw **B** on the rear lower side of both clamps **A.**
Loosen the bolt **C** of both clamps **A**.
Now you can slide the two clamps **A** along the posts **E**.
Should the clamps be hard to slide, loosen the bolts B and C and/or, with care, hit them with a mallet to the necessary direction. Such operation may result particularly useful for the final adjustment when the necessary movement is very little.

The rear axle **D** always remains fixed to the clamps **A.**
The grab screw **X** and the bolt **Y** are not involved is this adjustment.

Slide the system to the necessary height.
Fix the clamp **A** of either side, tightening the bolt **C** hard and then tighten the grab screw **B**.
Before fixing the other side, check the height is the same.

To make sure that right and left side are at the same height, take measure from two "fix points", for instance: the straight line from the upper side **1** of the clamp **A** to the line **2** of the holes of post's plate that fixes the frame or to the line **3** of the upper side of the same plate.



When changing the rear height it is necessary to modify the mudguard. However, if the side-guard is straight you may leave it as it is, its upper edge will be lower or higher with respect to the tyre.
To remove and adapt the side guards, follow instruction of sheet "*side guard adjustment*".

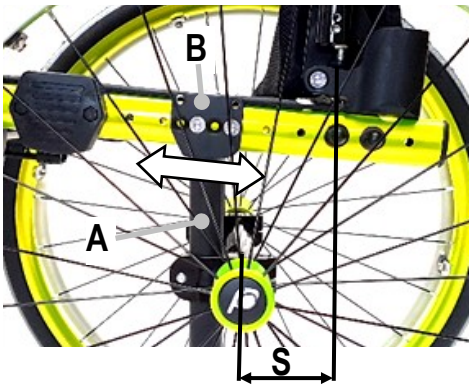
In presence of anti-tipper support, the bolt **C** is different; in fact, it is involved in the support's assembly. To proceed with the height adjustment, remove the nut **G**, loosen the two bolts **H** and move the support away from the bolt **C**.
Now you can loosen the bolt **C** and continue the adjustment as above explained.

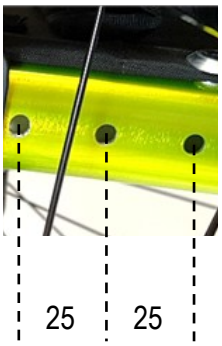
To re-assemble the support, slide it in along the bolt **C** choosing the one of the 4 holes and check which one give you the best inclination of the anti-tipper. Then fix it with the nut **G** and finally tighten the two bolts **H**.

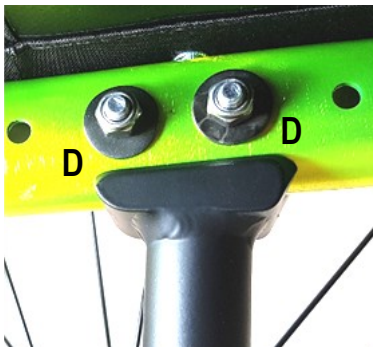
Remember that the rear height adjustment can affect the seat inclination, thus, it is necessary to check and adjust the fork angle.

It is advisable to spread a drop of mild lock thread glue on the on the grab screws **B**.

SETTING (point of balance)







You can adjust the setting **S** by moving the posts **A** (to which the rear axle is fixed) along the frame. The frame has pre-drilled holes every 25 mm.

The post fixing plate **B** has 4 holes, 12.5 mm from one another. Such holes allows for intermediate adjustment.

To change setting, remove both nuts/washers **D** that fix the bolt **C**. screw off the bolts i **C** (the holes of the plate **B** are threaded).

Repeat the same operation on both sides of the wheelchair.

WARNING: if you remove only one nut and then try to unscrew the corresponding bolt, this bolt may result particularly hard to unscrew because the second one, still tightened with the nut, can create a pressure on the first.

If you wish to make the setting 12.5 mm **MORE ACTIVE**, starting from the position as shown in the picture RIF. (bolts **C** fixed through holes **2** and **4**), move the post **A** forward along the frame until aligning the hole **1** with the closest hole of the frame, in this case **X**.
The hole **3** will consquently be aligned.

If you move the post forward by another 12.5 mm, the hole **2** will align to the frame hole **X**. The hole **4** will consquently be aligned.

If you wish to make the setting 12.5 mm **MORE PRUDENTIAL**, starting again from the position as shown in the picture RIF. (bolts **C** fixed through holes **2** and **4**), move the post **A** backward along the frame until aligning the hole **3** to the frame hole where the hole **4** was aligned. The hole **4** will consequently be aligned.

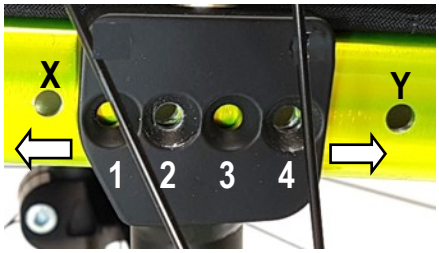
If you move the post backward by another 12.5 mm, the hole **4** will align to the frame hole **Y.** The hole **2** will consequently be aligned.

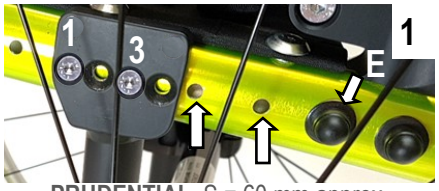
Once you have determined the new setting, screw the bolts **C** on the plate **B** all the way down. Then, insert washers and nuts **D** and fix them while holding the corresponding bolts.
<u>While you tighten the nut **D**, hold the bolt **C** otherwise the bolt will loosen.</u>

Following the instructions above, you can obtain other more active or prudential settings.

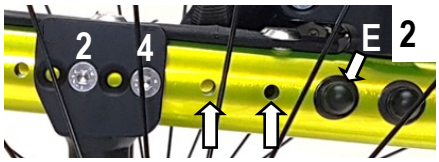
The pictures 1, 2 and 3 show the combinations to get the three pre-determined settings.

Check and adjust the for angle.
Adjust the brakes.
Modify the mudguards.





PRUDENTIAL, S = 60 mm approx.
Plate fixed through holes **1** and **3** leaving in sight two frame holes between the plate and the nut **E** that fix the backrest support.

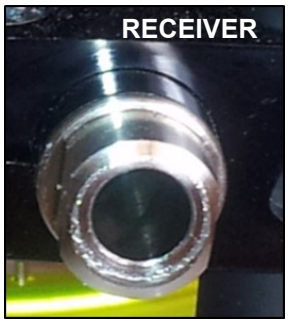


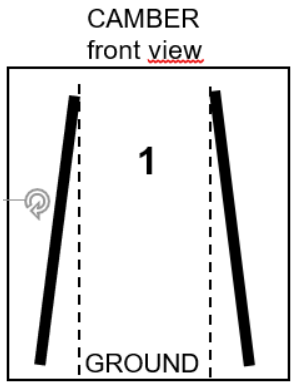
STANDARD, S = 72.5 mm approx.
Plate fixed through holes **2** and **4** leaving in sight two frame holes between the plate and the nut **E** that fix the backrest support.

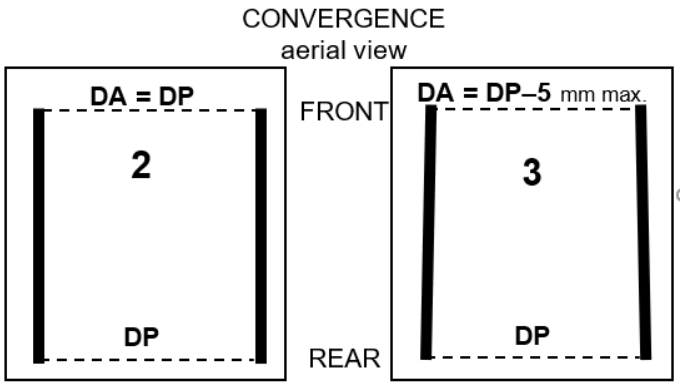
ACTIVE, S = 85 mm approx.
Plate fixed through holes **1** and **3** leaving in sight three frame holes between the plate and the nut **E** that fix the backrest support.

CAMBER AND CONVERGENCY

WORK ON A FLAT AND EVEN SURFACE







The wheel receiver gives the rear wheel camber (cambered receiver).

The two wheel receivers are fixed to the rear axle, thus, to adjust the convergence, it is necessary to turn the axle.

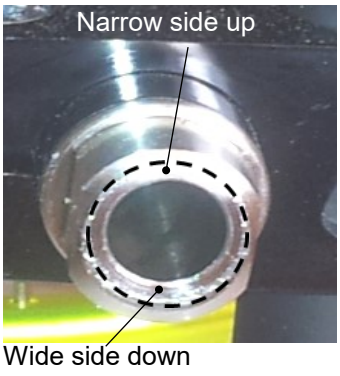
The drawing **1** shows same inclination (camber) of both rear wheels.

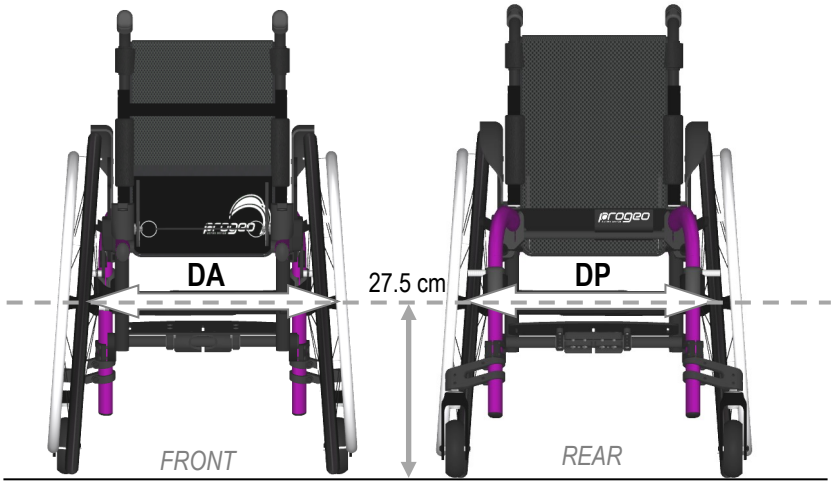
With cambered wheels, it is necessary to check/adjust the convergence, the distance between the two wheels in front and at rear.

The drawing **2** shows the aerial view of the wheels and the front distance **DA** is equal to the rear distance **DP**, while the drawing **3**, **DA** is narrower than **DP** by maximum 5 mm.

We can say that a good convergence has the **front distance DA** equal to or slightly narrower than the **rear distance DP.**

DA must not be wider than **DP**. In such case, the fluency of wheelchair will not be good.





The hole of the cambered receiver, since it is inclined, is not centered.

Therefore, check the wheel receiver its narrow edge looking upward and its wider edge down. If opposite, the convergence is opposite, too (the wheels are opening apart at top!).

At 27.5 cm from the floor with 22" wheel or 30 cm with 24" wheels, take the measure centre-to-centre between the two tyres in front and at rear.

If the two measures are equal or the front one is slightly narrower (max. 5 mm), you have a good convergence as drawing 2 or 3.

If different, you have to adjust the convergence.

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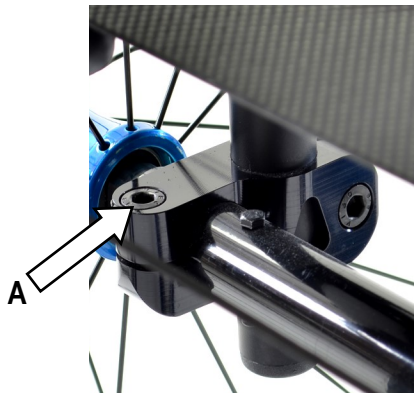
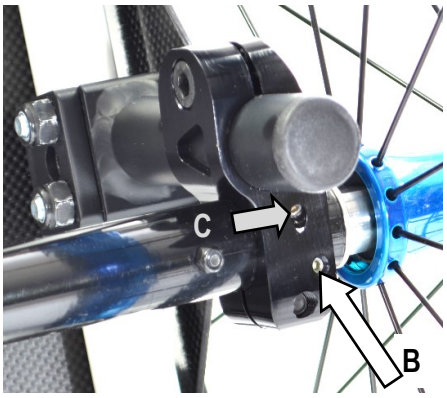
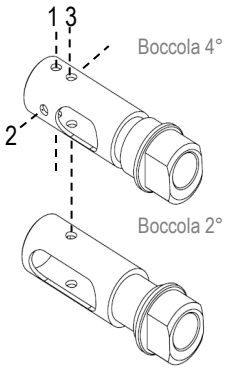
CAMBER AND CONVERGENCY





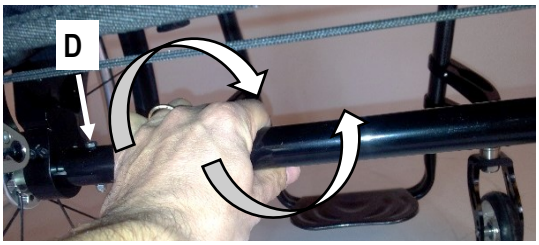


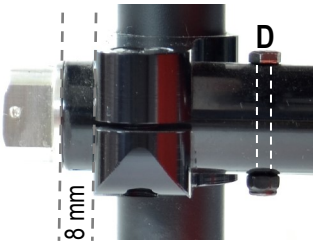
Loosen the bolt **A** and then the grab screw **B.** The grab screw **C** is not involved in this adjustment.

Loosen the above mentioned screws just enough to let you turn the rear axle with your hand but without the clamp sliding along the axle. If that occurs, you can continue with the adjustment. You will fix that later.

Turn the rear axle (clockwise or anticlockwise) and observe how and to what extent the wheels move.

A good reference is the bolt **D**, in fact its axis, should be perpendicular to the ground, except for the 4° receiver fixed in the centre position (2) which is rotated by 90° with respect to the other two positions (1 and 3); in such case, the bolt **D** should be parallel to the ground.





Take the measures again and if necessary, repeat the same operation until you reach the correct convergence, se previous page.

If the clamp moved when you loosened the fixing bolts, position the axle's end (not the receiver) at 8 mm from the clamp for the standard rear unit, or 5 mm if Full Carbon plate and fix one side, first.

Tighten the bolt **A** and then the grab screw **B**.

Before fixing the other side, check the front wheels (considered already adjusted at the same height) are both touching the ground. If one do not touch, turn the frame on axle on its loosened side to the necessary extent.

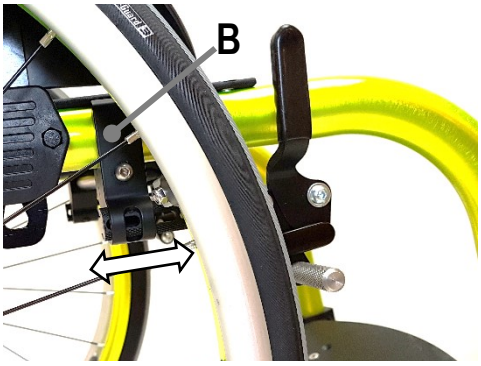
If the quick release axle of the rear wheel hardly or do not pass through the receiver, loosen **A**, **B** and remove it. Then, tighten all parts again, but first pass the hole with a ½" reamer to remove any possible tiny deformation (see also adjustment sheet "*quick release axle*").

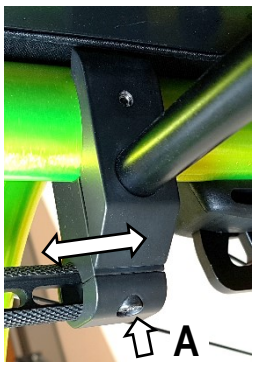
It may be a little harder to position and fix the other side due to the pressure given by the seat canvas, but you have to respect the same distance.

Check the measure from a fix point of the frame to the centre of the tyre on each side. Should there be a difference greater than 2-3 mm, check the distance between clamp and axle as above mentioned.
If necessary, correct the adjustment.

BRAKE

WHEN ADJUSTING THE BRAKES, THE TURES MUST BE INFLATED TO THE CORRECT PRESSURE (except solid tyre)
The position of the brake depends on the position of the rear wheel.





Loosen the bolt **A** that you find on the lower side of the support **B**.

Position the brake-knurled rod **P** at a distance **D** of a few millimetres and parallel to the ground.

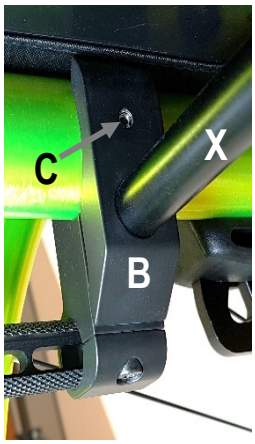
Temporarily tighten the bolt **A** and try the brake out to check if the adjustment is good.

If necessary, repeat the same operation to reach the good adjustment. A good adjustment has the brake not too hard to engage but braking, so you will have to find the suitable compromise.

Once reached the correct position, tighten the bolt **A**.

Proceed in the same way for the other side.

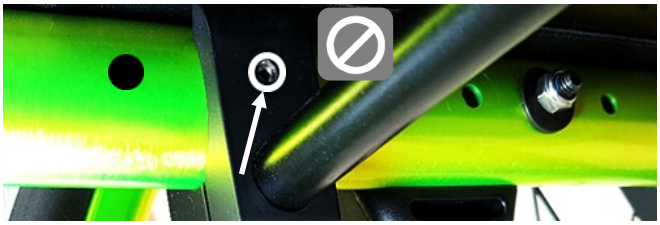
In some cases, it may be necessary to move the support **B** to reach the correct adjustment.



To move the support **B**, loosen the grab screw bolt **G** that you find on the inner side of the support.

Then, loosen the bolt **E** that you find on the outer side of the support. This bolt screws into the front axle **X**. Now, move both supports with the axle frontward or backward until necessary.

Make sure the two supports are at the same distance along the frame.

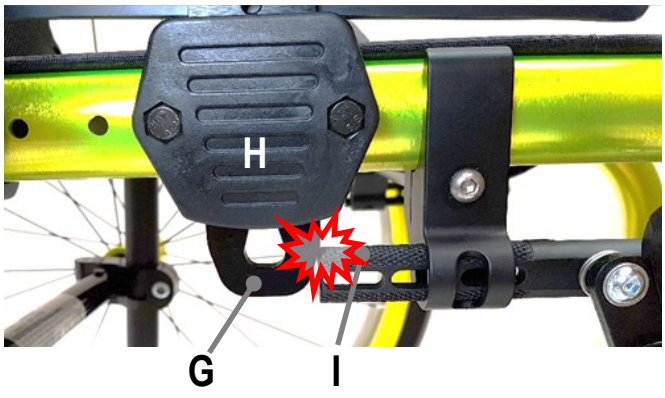


*Grab screw **G** in line with a hole of the frame – move the support*

Tighten the bolt **B** first and then the grab screw **G** on both supports.

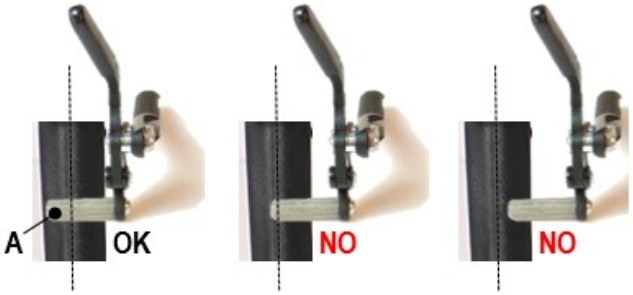
The grab screw **C** becomes useless if it is in line with a hole on the frame. Yo uwill realize that because, when you screw it, it will not touch the frame and it will not make any pressure. In that case, loosen the grab screw, loosen the bolt **E** and move the support a few millimetres. Finally tighten the bolt and the grab screw.

In other cases, the blade **G** of the removable sideguard or armrest may interfere with the brake rod **I** impeding the brake adjustment. Should that happen, you can either move the sideguard/armrest support **H** to a different position – see also adjustment sheet "*removable sideguard*" or "*removable armrest*" - or cut off a part of the brake rod.



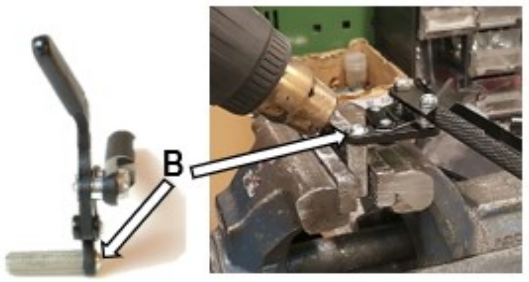
BRAKE SPACING

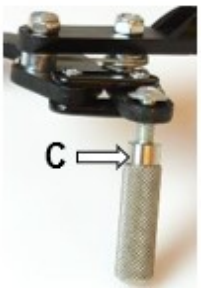
In several cases, the distance between the tyre and the frame can be such as to make need moving the knurled rod **P** more external.
When originally assembling the wheelchair, such possible modification is already taken into account.
In case of a post-sale modification that results in the rear wheels being more external (from 0° to 2° or 4° camber; seat width enlargement; a different wheel), the brake may not work efficiently anymore, therefore, you will have to move the knurled rod. The brake is efficient if the knurled rod **P** is at least 5 mm beyond the tyre's mid-line.

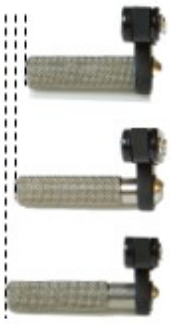


In all cases, check the brake efficiency.

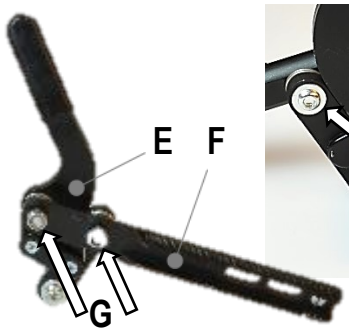
Remove the bolt **B**. In order to remove it, put the knurled rod in a vice and heat it with a hot air blower because the bolt is locked with strong lock thread glue. DO NOT FORCE WHEN UNSCREWING IT, you may damage the bolt's head irremediably.
Once you have removed the bolt, the knurled rod comes off, too. Replace the bolt **B** according to the spacer **C** (7 or 11 mm) you will add.
Put some strong lock thread glue on the bolt **B** and assemble the spacer **C** and the knurled rod **A**.
Put the knurled rod in a vice and tighten the bolt **B** hard.

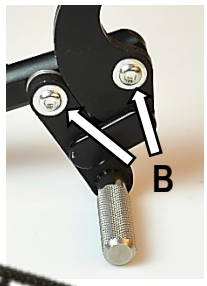






Spread some strong thread lock glue on the bolt **B**.

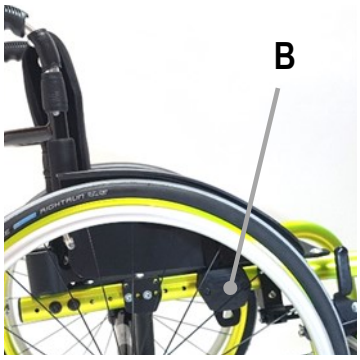


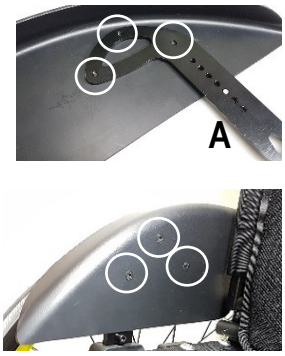


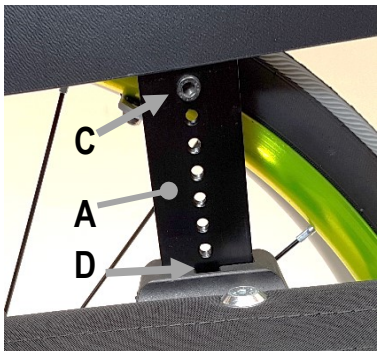
It is also possible to move the brake structure **E** from the adjustment rod **F**.
Remove the two nuts **G** and then the two bolts **B**.
Remove the spacers **H** around which the spring is assembles.
Observe how the spring is assembled because you will have to assemble it back later in the same way (you can always have a look at the other brake that is symmetric).
Insert the spacers **H** (H_1 = original; H_2 = 7 mm longer).
Position the spring and assemble the structure to the adjustment rod.
Start screwing the two bolts **B** all the way down and then the two nuts **G**.
Should the brake movement be hard, slightly loosen the bolts **B**.

REMOVABLE SIDE GUARD

After every adjustment of the rear wheel, you have to adjust the position of the side guard. You have to adjust the side guard at approximately 5 mm from the tyre.
The side guard is fixed to three points on the blade **A** that slides in the support **B** fixed to the frame.

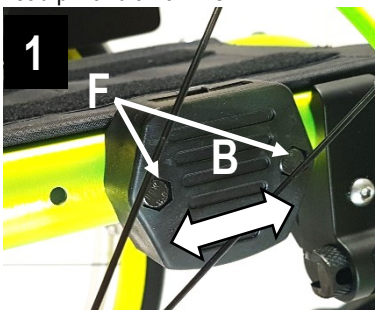


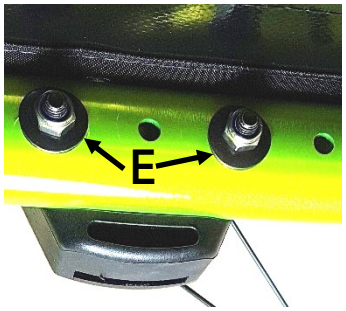


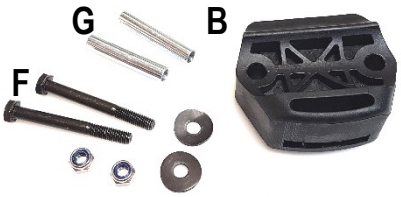


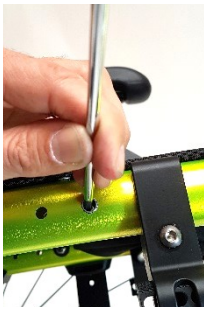
HEIGHT ADJUSTMENT
The blade **A** shows, in its vertical side, a series of holes to fix the bolt **C** that inserts in the hollow **D** of the support **B**. Therefore, to change the height, just remove the bolt **C** and screw it in another hole.
Warning: do not tighten the bolt **C** excessively: it may damage the threaded hole until making it unusable.

HORIZONTAL ADJUSTMENT
You can fix the support **B** in different positions along the frame.
Screw off the two nuts and washers **E**.
Remove the support **B** with its bolts **F** by pulling it off. The spacers **G** may remain stuck to the support or to the frame.
Should they remain stuck to the frame, it is necessary to remove them. If such operation results difficult, you can help yourself with a flat-head pin and a hammer.









You will notice that the holes for the support fixing are 8 mm wide, whereas, the others are 6 mm wide.
Position the support without the spacers **G** more frontward or backward and temporarily fix it with one bolt **F** plus washer and nut **E**. Check the position of the side guard. If it is not satisfactory, try another position of the support following the same method.
Once you reach the best position, remove the support **B**.
Enlarge the support fixing holes to 8 mm. Insert the spacers **G** in the support **B**.
Mount the support **B** on the frame, insert the bolts **F** and fix it all with washers and nuts **E**.

In picture **2**, compared to picture **1**, the support has been moved backward by one position.

WARNING: do not fix the support **B** without the spacers **G**: the system will results less stable.

At each adjustment, spread some mild

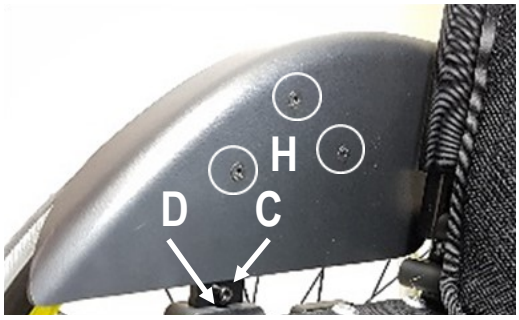
Follows next page

REMOVABLE SIDE GUARD

SIDE GUARD MODIFICATION

If one, the other or the combination of both adjustment above mentioned are not satisfactory, you can modify the side guard. Every side guard is shaped to measure according to the configuration of the wheelchair when originally assembled. The shape of the side guard always allow for a reasonable good range of adaptation. Note: if the side guard is straight, you can decide to modify it or not.

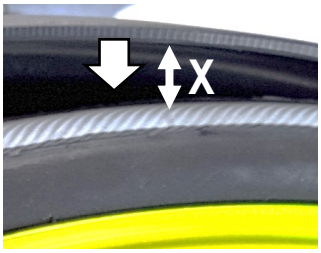
A **When you decrease the rear height**, you have to move the side guard up.

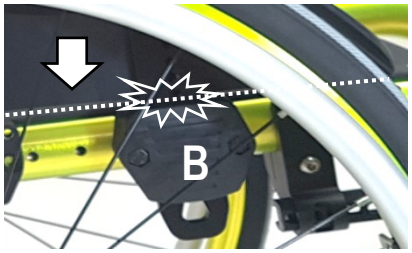


1. Remove the three bolts **H** to take the side guard off the blade.
2. Position the side guard at approximately 5 mm from the tyre, always leant on the blade **A**. The bolt **C** on the blade must be inserted in the hollow **D** of the support.
3. While holding this position, mark the point where it is necessary to drill the first new hole (1 or 2; 3 is usually not accessible with the rear wheel on).
4. To do so, use a point and let it through the accessible hole. If the rear height adjustment is remarkable, you may need a new sideguard.
5. Drill a 5 mm on the sideguard where you have marked it.
6. Countersink the hole.
7. Insert and screw the bolt **H**.
8. To drill the second hole on the side guard, follow instruction from 3 to 7.
9. To drill the third hole, remove the side guard, mark the point where to drill and follow instruction from 5 to 7.

Advice for drilling. While drilling a hole, such hole may result slightly moved with respect to the precise point you marked. For the first hole, that move does not cause any trouble. On the other hand, for the second and third hole, it may cause a non-alignment between hole on the side guard and hole on the blade. A good method to be more precise, once you reach point 5, is to use a 4 mm drill pin (in order to avoid damaging the thread of the hole on the blade) and drill the side guard. Then, use and let a M5 tap through the threaded hole of the blade and out of the side guard.

B **When you increase the rear height**, you have to move the side guard down.





If the lower side of the side guard is in contact with the support, it is necessary to cut it.
Measure the distance **X** from side guard and tyre and subtract 5 mm (es: 18-5 = 13 mm to cut).
Remove the three bolts **H** to take the side guard off the blade.
Draw the cut line according to the result you got.
Saw the side guard along the drawn line and round off the edges with a scissors blade or thin sand paper.
Continue with instruction .

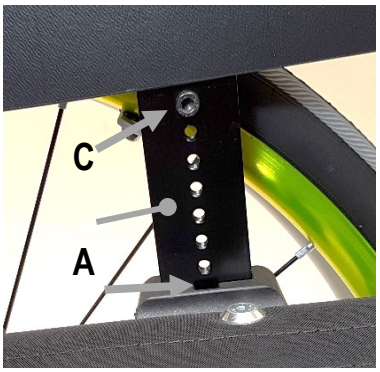
C **When you change the setting**, you have to move the side guard frontward or backward according to the new position of the rear wheel, but the height of the side guard remains the same.
Proceed with instruction **A**.

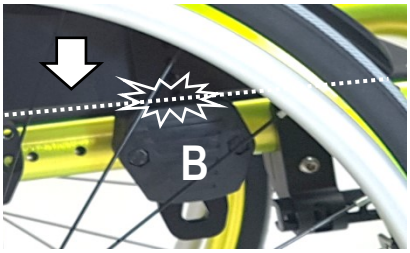
D **When you change both the rear height and the setting**, you have to move the side guard up or down **and** forward or backward.
Continue with instruction **A** and, if necessary, instruction **B**, too

At each adjustment, spread some mild lock thread glue on the bolts **C** and **H**.

REMOVABLE ARMREST

You can adjust this armrest in height and depth





HEIGHT ADJUSTMENT

The blade **A** has, in its vertical part, a series of holes where to screw the bolt **C**. This bolt engages into the hollow **D** of the support **B**. Therefore, to change the height, just remove the bolt **C** and screw it in another hole.

If you need to lower the armrest, the side guard could touch the support **B** and thus impede the adjustment. In such case, it is necessary to cut the lower side of the side guard. Remove the two bolts **V** and draw a line where to cut the side guard where necessary or just above. Saw the side guard along the line and round off the edge with a scissor's blade or with fine sand paper. Assemble the side guard.

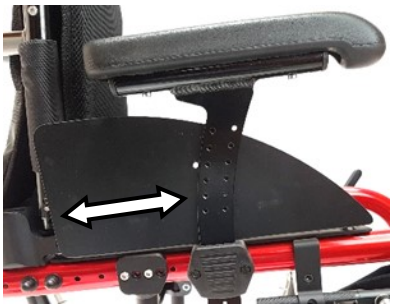
WARNING: do not tighten the bolt **C** and **V** excessively: it may damage the threaded hole until making it unusable.

HORIZONTAL ADJUSTMENT

Follow the instructions of the adjustment sheet "*removable side guard*".

SIDE GUARD MODIFICATION: should you want or need to change position of the side guard, remove the two bolts **V**.

1. to move it frontward or backward, position it where you wish and, using one of the holes on the blade, mark the point where to drill the first hole. If one of the two existing holes on the side guard is usable, skip point 2 and 3.
2. Drill a 5 mm hole where you have marked.
3. Countersink it.
4. Insert and screw the bolt **V**.
5. Check the position of the side guard and mark the point where to drill the second hole.
6. Remove the side guard.
7. Drill the hole and then countersink it.
8. Assemble the side guard with the two bolts **V**.
9. If you need to move the side guard up or down, follow the same instructions, or, in some cases, you may use the same holes of the side guard and fix it to other holes on the blade.



At each adjustment, spread some mild lock thread glue on the bolts **C** and **H**.

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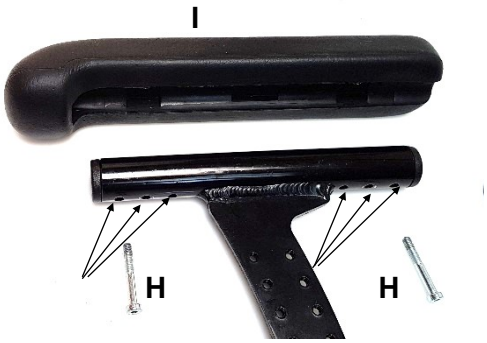
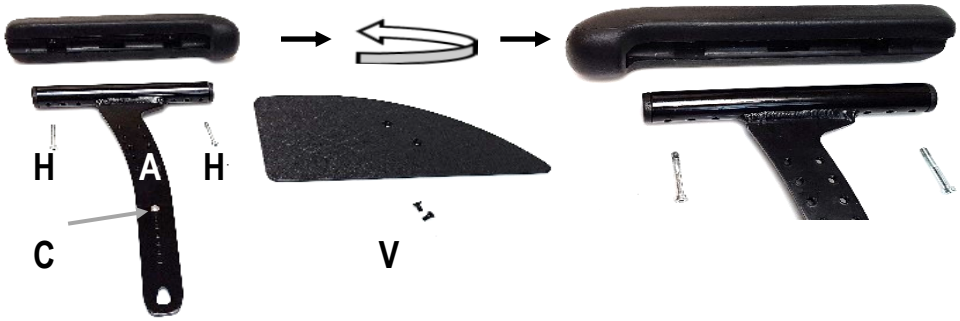
REMOVABLE ARMREST

Advice for drilling. While drilling a hole, such hole may result slightly moved with respect to the precise point you marked. For the first hole, that move does not cause any trouble. On the other hand, for the second and third hole, it may cause a non-alignment between hole on the side guard and hole on the blade. A good method to be more precise, once you reach point 5, is to use a 4 mm drill pin (in order to avoid damaging the thread of the hole on the blade) and drill the side guard. Then, use and let a M5 tap through the threaded hole of the blade and out of the side guard.

PAD POSITIONING: you can fix the pad **I** of the armrest in three different positions with respect to the tube of the blade. Such tube has, in fact, three pairs of holes.
Just remove the two bolts **H**, move the pad to either one of the other two position and fix it again with the two bolts.



BLADE ORIENTATION: you can assemble the armrest with blade **A** facing frontward or backward.
the difference between the two positions is approx. 3 cm.
To change the orientation of the blade, remove the armrest.
Screw off the two bolts **V** and remove the side guard.
Screw off the two bolts **H** and remove the pad **I**.
Reverse the pad and fix it to the tube with the two bolts.
Insert the armrest into the opposite support; right side become left.
No need to work on the bolt **C**.
Position the side guard and, through one of its two existing holes fix it to the blade **A** with one bolt (the second hole is hardly useable).
Mark and then drill the second hole on the side guard following the same instructions for the side guard modification.
Repeat the same operation for the other armrest.



At each adjustment, spread some mild lock thread glue on the bolts **H** and **V**.

FOOTPLATE

You can adjust this type of footplate in height, angle and depth.

HEIGHT ADJUSTMENT

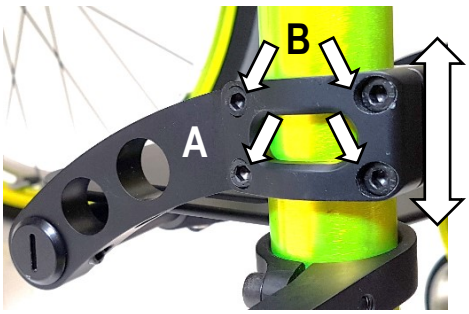
1) Sliding the system

Loosen the four bolts **B** of both supports **A**.

Slide the footplate upward or downward to the necessary height.

Fix one of the two supports **A** tightening the four bolts **B** evenly.

Check the two supports are at the same height and tighten the second support.



2) supports orientation

You can orientate the supports **A** facing upward or downward.

Therefore, reversing their orientation, you can reach other footplate distances.

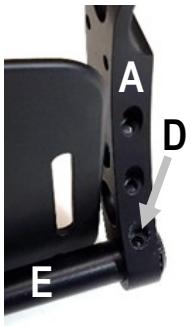
To reverse the orientation, you need to detach the whole footplate unit from the frame.

To do so, remove the four bolts **B** of both supports **A** and detach the fixing plate **C**.

Now, remove the footplate unit.

(In this case, we start with the footplate with the supports facing downward).

Footplate with supports facing downward.



Screw off the bolt **D** and pull off the support **A** from the tube **E** . The cap **F** comes off, too.

If the support is hard to come off, you can gently use a mallet.

Repeat the same operation for the other side.

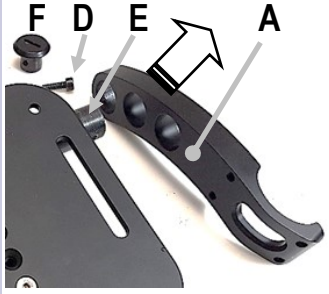
Now, reverse the assembly of the supports. You will notice their changed orientation.

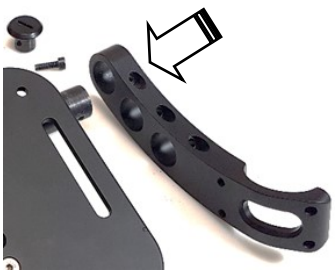
To mount the footplate unit, insert the support **A** on the tube **E**. then, insert the cap **F** into the tube **E**.

Now, align the support's hole to the threaded hole of the cap. To align the holes, you can help yourself with a screw driver.

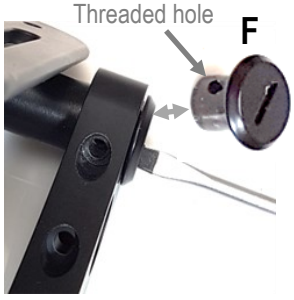
Carefully insert the bolt **D** and tighten it.

Repeat the same operation for the other side.





Threaded hole



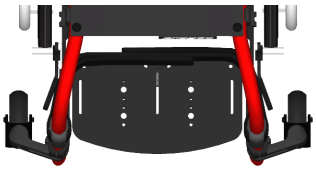
Footplate with supports facing upward.

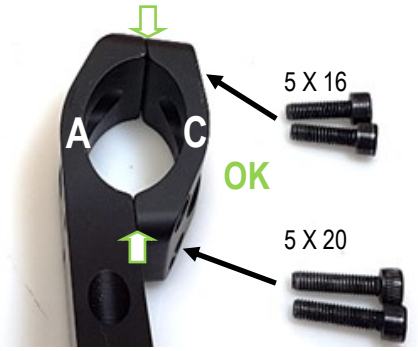
Follows next page

FOOTPLATE

ASSEMBLY WITH ABDUCTED FRAME

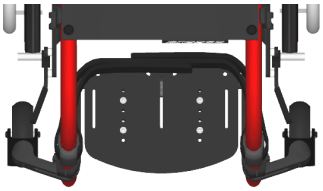
The two faces of the plate **A** must match those of the support **A**.
The wrong assembly has "V-shape openings", see arrows.

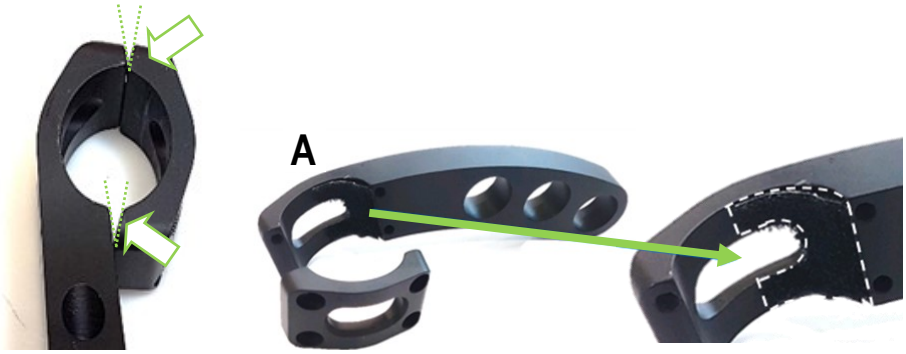




ASSEMBLY WITH PARALLEL FRAMES

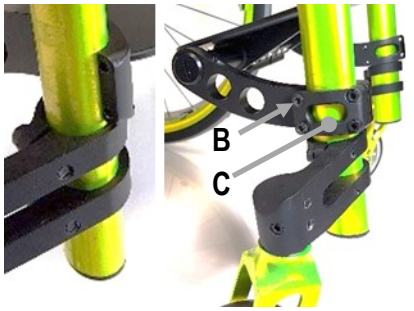
You have to mount the plate **C** opposite, thus, you will see the "V-shape openings".
Over the inner rear side of the support **A** there must always be present a compensation shaped adhesive Velcro (or similar).





ASSEMBLY OF THE FOOTPLATE UNIT

Once you have assembled the footplate unit with the supports, you can assemble the complete unit to the frame.
Position the complete unit on the frame, either above or below the fork supports.
It results easier, initially, to tilt the unit on one side because you will need to widen the two frames apart a little bit.
Fix the supports with the plates **C** and their bolts **B**.
Pay particular attention when fitting the bolts in order to prevent damaging the threaded holes of the support **A**.
Now you can adjust the footplate distance following the instruction "*HEIGHT ADJUSTMENT, 1) sliding the system*" on the previous page.



Montaggio con supporti orientati verso l'alto.

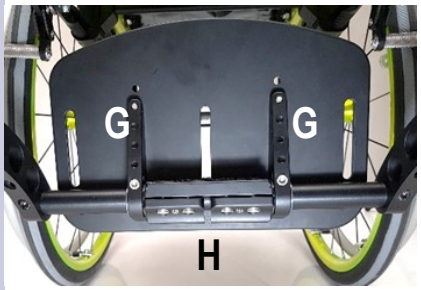
Montaggio con supporti orientati verso il basso.

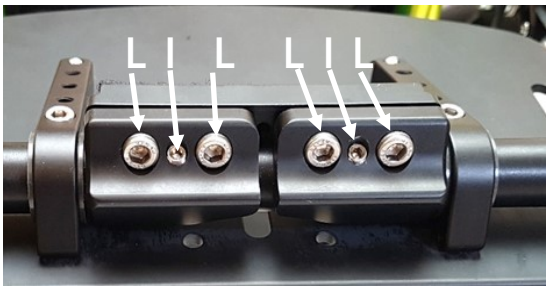
Follows next page

FOOTPLATE

ANGLE ADJUSTMENT

Raise the plate backward
The arms **G** allow for raising the plate, but they are not involved in the angle adjustment.
The clamp **H** is the component that allows for angle adjustment.
Loosen the two headless bolts **I** and the four bolts **L**.
With one or two hands, turn the clamp to the desired inclination.
Swing the plate down and let it rest on the clamp to check its inclination.
If you need more inclination, repeat the steps you made so far.
If you need less inclination, you can now simply push the plate down until the desired inclination.
Finally, tighten the bolts **L** first and then the headless bolts **I**.

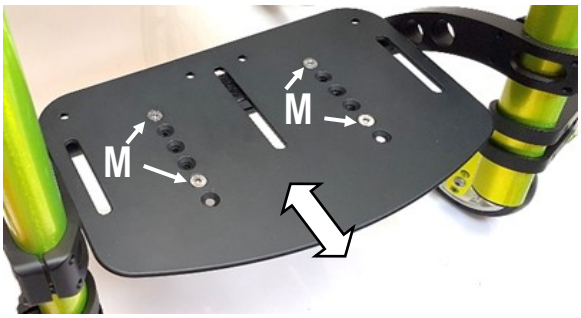




DEPTH ADJUSTMENT

1) Arms positioning

The plate is fixed to the rotation arms **G** with four bolts **M**.
The plate has six pre-drilled holes, whereas, the arms have five pre-drilled holes.
To change the position of the plate, remove the four bolts **M**.
Move the plate frontward or backward to the new position.
Insert and fix the four bolts **M** positioning them, as long as it is possible, far from one another.



The provided foremost position of the plate is given when you fix it through its holes 1 and 4 and those of the arm **G** 2 and 5.
Do not position the plate more forward than the provided foremost position: the plate will not lean over the clamp below.

To obtain the provided foremost position of the plate, you have to fix the plate through its holes 1 and 4 and the arm's **G** 2 and 5.
Do not position the plate more backward than the provided foremost position: the points of the arms **G** will lean out of the plate.

Note: between the foremost and the rearmost positions, there are 6 cm.

Follows next page

FOOTPLATE

2) Positioning the plate on the supports

You can assemble the plate on any of the three position **1 2 3** on the supports **S**.

To carry out this adjustment, follow the instruction of the "HEIGHT ADJUSTMENT, 2) supports orientation" on the first page of this chapter, but without reversing the orientation of the supports.

Remove the footplate unit and re-assemble it on either of the other two holes of the supports.

Note: the adjustment between one position and the next one is approximately 2 cm in depth and in height.

RAISING THE PLATE

The arms **g** allow for raising the plate and you can adjust them in order to make the movement more or less fluent.

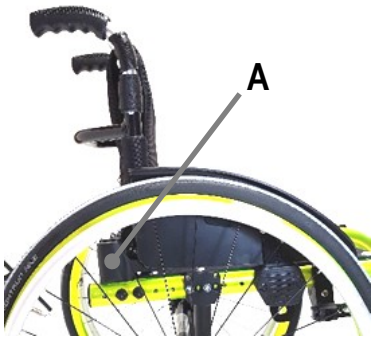
You can adjust the movement by screwing (harder movement) or unscrewing (lighter movement) the two bolts **n**.

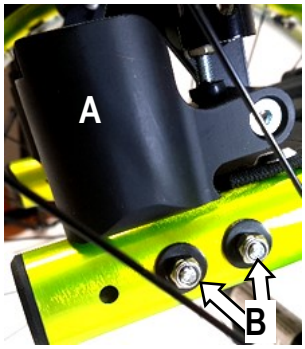
If you tighten the two bolts hard, the plate will results nearly fixed.

After each adjustment, check that There is no interference between footplate and casters.

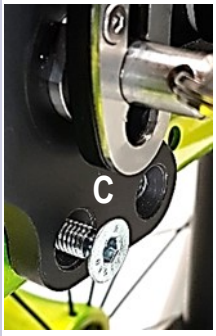
SEAT DEPTH

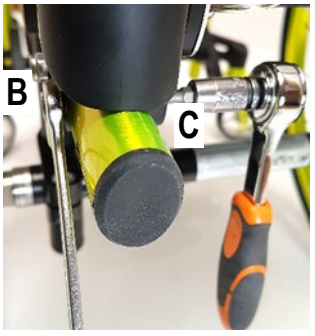
The seat depth adjustment is possible by moving the backrest support **A**; such support integrates the armrest support.





To change the position of the support **A**, remove both nuts and washers **B** that are fixed to the bolts **C**.
Swing the backrest down to get access to both bolts **C**, then screw them off (the holes of the supports **A** are threaded holes).
Warning: if you remove only one nut and then try to unscrew the corresponding bolt, this bolt may result particularly hard to unscrew because the second one, still tightened with the nut, can create a pressure on the first.
Repeat the same operation on the other side of the wheelchair. The backrest remains fixed to the supports **A**.
Move the support and align its holes with those on the frame. The holes interval is 25 mm.





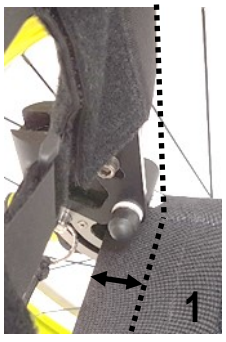
Insert one bolt and screw it until its head comes off the opposite side a little bit.
If the point of the bolt is not aligned with the exit hole, do not force screwing, but gently move the support until you reach the alignment.
Insert the other bolt and screw it all the way down.
Now, screw the first bolt, too, all the way down.
Finally, insert washers and nuts **B** and screw them while holding the bolts **C**.

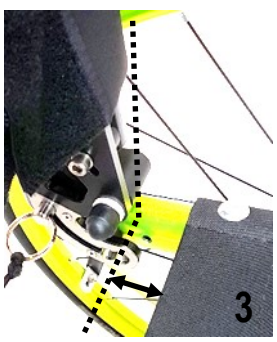
As standard, the wheelchair is provided with a seat canvas one size longer (2.5 cm) than the seat depth PS requested on the order form.
For instance: requested PS = 32.5 cm; real PS = 32.5 cm; seat canvas = 35 cm.

Picture 1, standard assembly: you can see that the line of the backrest is more 2.5 cm forward than the rear side of the seat canvas.

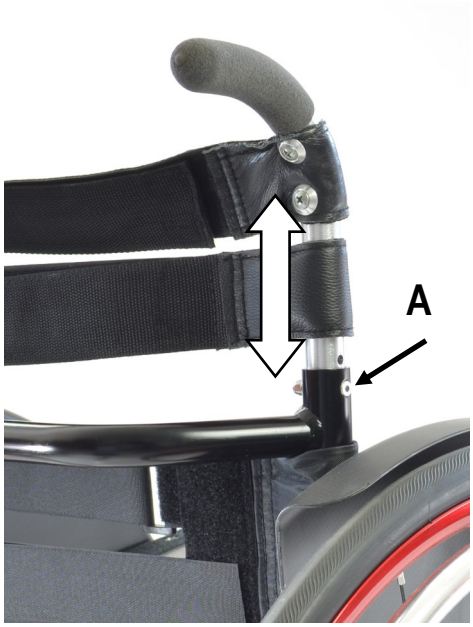
Picture 2, the supports have been moved back by one position (2.5 cm): the line of the backrest is at the same level of the rear side of the canvas.

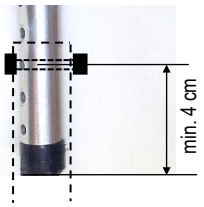
Picture 3 the supports have been moved back by another position (2.5 + 2.5 cm): the line of the backrest is 2.5 cm behind the rear side of the canvas.





BACKREST HEIGHT





Remove the backrest upholstery and slide up the protecting sleeves of the backrest bands along the tube until the fixing screws are visible.

If the bolt is not accessible, remove the mudguard if it is removable or tilt the backrest backward by means of its adjustment system (see backrest angle adjustment sheet).

Remove bolt and nut **A** and raise or lower the backrest tubes to the desired height.

If the minimum height you can reach is not enough, it is necessary to cut the lower side of the.

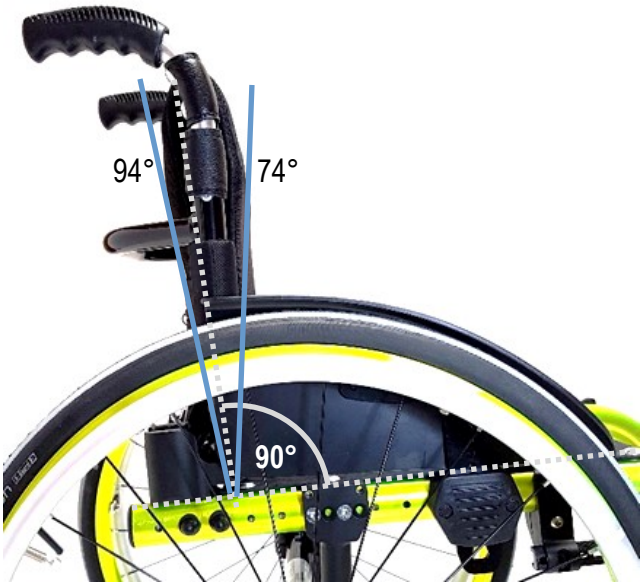
If the maximum height you can reach is not enough, it is necessary to change the tube.

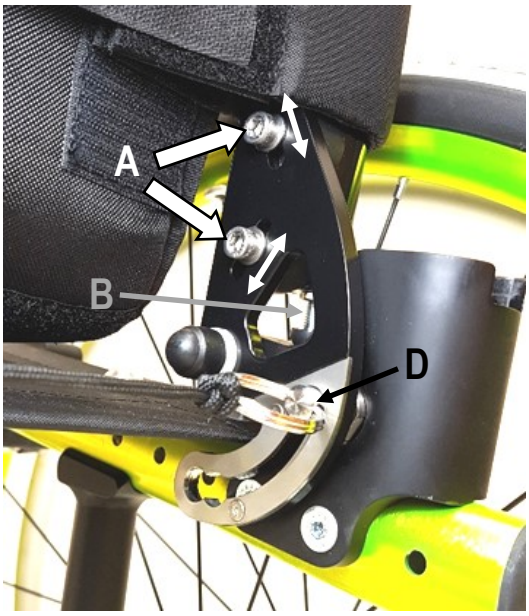
Warning: to guarantee a good stability, between the fixing hole and the lower side of the tube, there should be at least 4 cm. If the tube is cut, the lower hole will be only a few millimetres front the end of the tube; therefore, you should not use that hole, the next and, sometimes even the third to fix the backrest height.

Replace the screws and tighten.

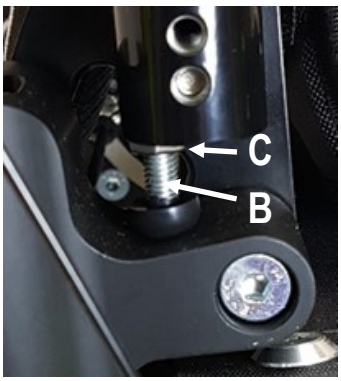
To reduce possible play and possible noise, you can put some sticky tape around the inner tube at its bottom and at its fixing point (or just under it).

BACKREST ANGLE





Adjustment from 16° close, tilted frontward (74°) to 4° open, tilted backward (94°) with respect to 90° to the seat.



If you need to open (tilt backward) the angle, before proceeding, with the adjustment, fold the backrest, loosen the nut **C** and screw the bolt **B** that determine the end run, that it the point where it will lean on the frame. Such operations are not necessary when you need to close (tilt forward) the angle.

The adjustment can be performed thanks to the two bolts **A** sliding along the slots through which they pass and fix the backrest tube.

Therefore, loosen the two bolts **A** on both backrest plates, tilt the backrest to the desired inclination and securely tighten the bolts.

Now check the locking system.

If the locking pin **D** does not lock, or there is too much play, it is necessary to adjust the end run bolt **B**.

Loose the nut **C**, fold the backrest and screw or unscrew the bolt **B**.

Open the backrest and check if it locks and its play.

To check the play, with the locked backrest, gently pull back it and forth.

If the play is still a lot, loosen the bolt **B**, whereas, if the backrest does not lock, screw the bolt **B**.

The correct adjustment is when the pin locks and the play is minimum. Then screw the nut **C** towards the tube.

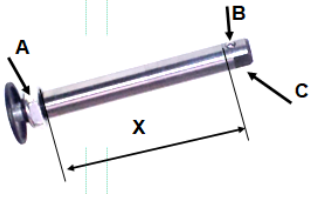
Not only does the end run bolt **B** reduce the backrest play, but also it is very important as point of support of the backrest.
In fact if it is badly adjusted (a lot of play) the lock pin **D** will support all the backrest stress and it may be damaged or even brake.

Remember that the backrest angle can affect the point of balance of the wheelchair.
In fact, with tilted backward backrest (open angle), the wheelchair becomes less stable.

At each adjustment, it is advisable to spread a drop of mild lock thread glue on the bolts **A**.

QUICK RELEASE AXLE

(rear wheel)



Adjust the quick release axle so that the rear wheel is safely fixed with no risk that it comes off accidentally.

At the same time, there should be no or very little play.

To check if the rear wheel is safely fixed, take hold of the hub without pressing the release button, and try to pull the wheel in and out.

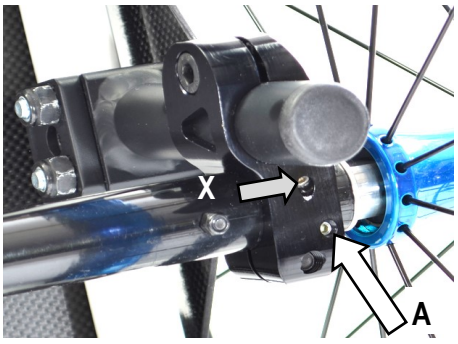
As regular maintenance, it is advisable to clean the quick release axle and spread a little of grease on it.

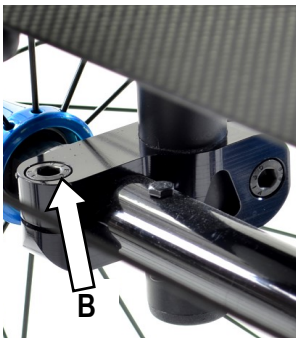
If the wheel comes off, the distance **X** between the nut **A** and the balls **B** is too short, therefore, it is necessary to unscrew the nut **A** while holding the point **C** of the axle. **If there is play,** the distance **X** between the nut **A** and the balls **B** is too long, therefore, it is necessary to screw the nut **A** while holding the point **C** of the axle

In both cases, make a few tries until the correct adjustment. There is no need to remove the axle from the wheel.

It may happen that you adjust the axle so that the wheel only seems properly fixed, but it is not safe.
In fact, to check the adjustment, you have also to try to press the button just a little bit (as guidance, ¼ of its run) and pull the wheel. If it comes off, it means that it may come off while driving! Therefore, this is a very important **safety check**.
If the wheels comes off, unscrew the nut a little bit until you have the proper adjustment.

If the wheel (the axle) gets stuck in the receiver, you can proceed in two ways:
Press the quick release button, pull the rear wheel and, at the same time, with a mallet, gently hit (a little harder if necessary) the hub or spokes of the wheel and try to remove it.
Loosen the grab screw **A** and try to remove the wheel .
Loosen the bolt **B** *(*the grab screw **X** on is not involved*)* and try to remove the wheel.
If you have loosened both the grab screw **A** and the bolt **B** , fix the bolt **B** first, then the grab screw **A** and finally the bolt/nut **C** (see also sheet "*camber and convergency*).





The reasons why the wheel can get stuck can be two.

- the receiver is slightly damaged; in this case, with a ½ reamer, re-pass the receiver's hole.
- when pushing the axle's button, the balls do not fall inside the axle's shaft; first, clean the axle, then try to push the button a few times a see if you have solved the problem; if not, press the button, hold the axle's pin with a wrench and unscrew the button half of a turn. Check and if necessary do the same with another half turn. Do not unscrew the button too much: the pin will come off and, consequently, the balls will fall to the ground.