carbonblack system

making you feel good

Carbon Black User Manual

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1 General

1.1 Introduction

Thank you for purchasing a Carbon Black wheelchair.
You have purchased a top quality product in Carbon Black. In order to take full advantage and to maintain safety in usage, please read the safety and operating instructions included in this manual.

Format for visually impaired people

For those with a visual impairment, this User Manual is available with enlarged text.

1.2 Symbols used

WARNING! Indicates a potentially hazardous situation/condition. Failure to follow designated procedures can cause either personal injury, component damage or malfunction.

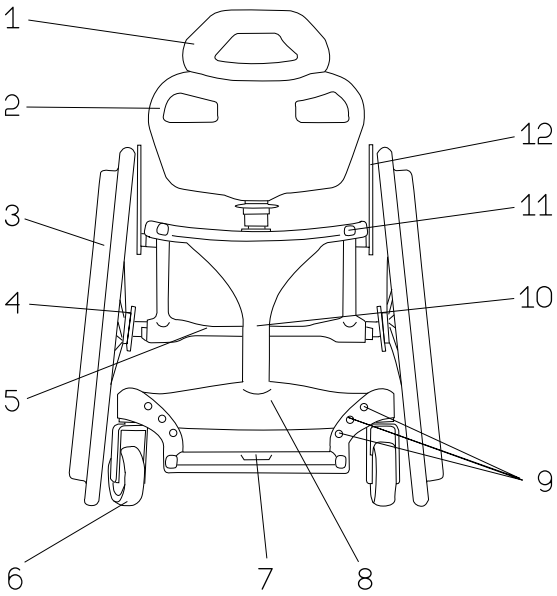
Hint. Read and follow the information in the user manual and all supplemental information provided with the wheelchair prior to use.

1.3 Description of the wheelchair

The standard Carbon Black wheelchair consists of a rigid monocoque (frame and seat) onto which the removable backrest is attached. Both the left and right wheel posts and axle tube are incorporated into the monocoque. The rear wheels are mounted to the frame with rear wheel fixings. Front caster wheel assemblies are attached to the footrest using quick release mechanisms. Integrated hub-locking brakes with control lever and concealed cables are also included on the standard wheelchair.

1.4 Main components

1 Backrest top support



2 Removable backrest main support
3 *Full carbon wheel
4 *Disc lock
5 Camber tube
6 Caster wheel
7 *Foot Angle Adjuster
8 Foot-rest
9 *LEDs
10 Monocoque Mono-stem
11 Transfer Handle
12 *Clothes protector

* - Optional feature

Optional extras are available for Carbon Black.
These include:
Clothes Protectors
Forward illuminating LEDs
Centre of Gravity adjustment bracket
Foot-angle Adjuster
Push-rim Profiles
Small, Medium and Large top supports for the backrest
Under-seat Pouches
Hub-locking Brakes
Carbon Fibre Wheels

1.5 Use as per specifications

The wheelchair is driven manually and is used for independent or guided locomotion of gait-impaired persons (e.g. hemiplegia, paraplegia, tetraplegia/quadriplegia, multiple sclerosis, traumatic brain injury etc.). The wheelchair may only be used without a guide by persons who are physically competent to handle the wheelchair (e.g. driving, steering and braking). The wheelchair is designed for in and outdoor use on level ground and pathed terrain or on slopes up to 7° in gradient. Avoid lateral (sideways) cambers. The wheelchair is designed to carry a maximum of 120kg/264lbs. The Wheelchair should only be used between -20° and 40°C.

WARNING! Carbon fibre can become hot in direct sunlight. This does not compromise the performance of the chair

Overall Dimensions

Since Carbon Black wheelchairs are bespoke, the overall dimensions of each Carbon Black wheelchair will depend on the sizing that is appropriate to the user and any width limits that the user specifies E.g. minimum door widths etc.

The sizing range is as follows:

Dimension	Min.	Max.
Overall length with legrest	787mm 31”	940mm 37”
Overall width	617mm 24.3”	711 28”
Overall height	787mm 31”	940mm 37”

Type of tyres that can be used on the wheelchair

Carbon Black wheels support only tubular tyres of the size appropriate to your wheels size (26 or 28” [700c]). These tyres are stocked by Carbon Black system and are both 21mm width with recommended pressure 8-15bar (115 – 220psi / 800 – 1500kPa). See page 60 for tyre replacement method.

2 Adjustment and options

It is recommended that adjustment is carried out by someone who is competent at mechanical adjustment.

WARNING! If adjusted to make the wheelchair more tippy, this adjustment will make the wheelchair less stable. Danger of serious injury!

WARNING! Ensure that when making any adjustments between the rear wheel and the clothing guard that there is sufficient room to avoid finger traps. May cause injury!

2.1 Adjusting the rear wheel position - Optional

- Loosen two Allen (Hex) screws on each side of the wheelchair (Fig 2, A)

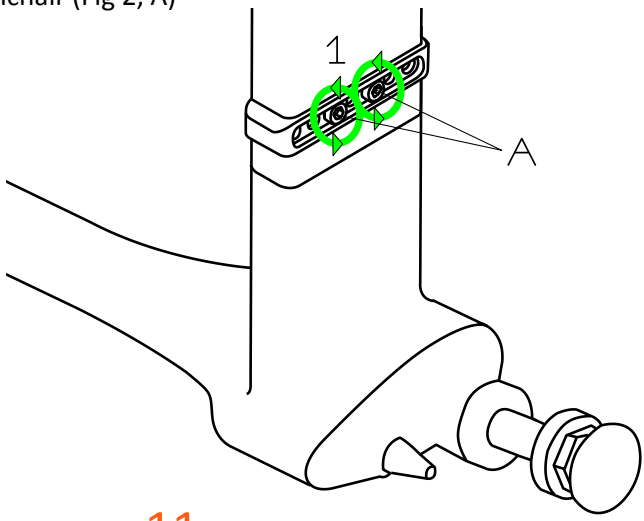


Figure 2

- Slide the lower/upper section back or forward on its track (Fig 2.1, 1)
- Align so that the two bolt holes line up and place the bolts through the holes

Moving the main wheels back will shift the Centre of Gravity forward, making the wheelchair more stable, but less responsive to steering. Moving the main wheels forward will make the wheelchair more tippy and more responsive.

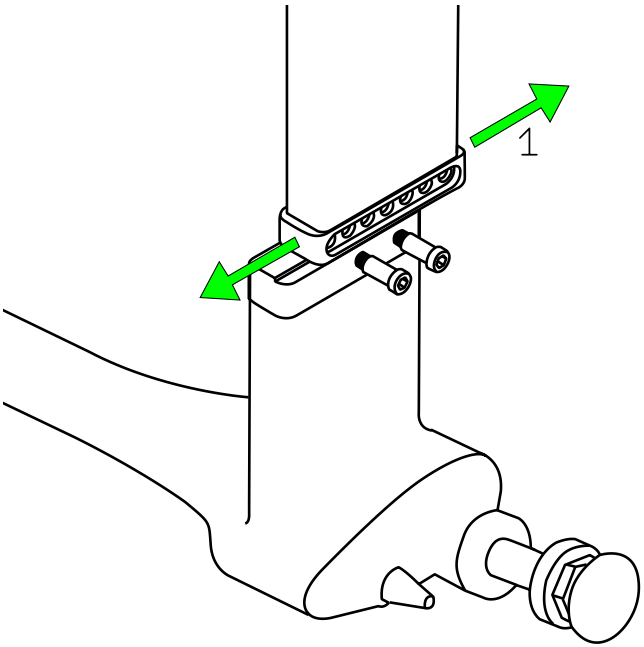


Figure 2.1

- Re-tighten the two Allen (Hex) screws on both sides of the wheelchair once the adjustment has been made (Fig 2.2, A)

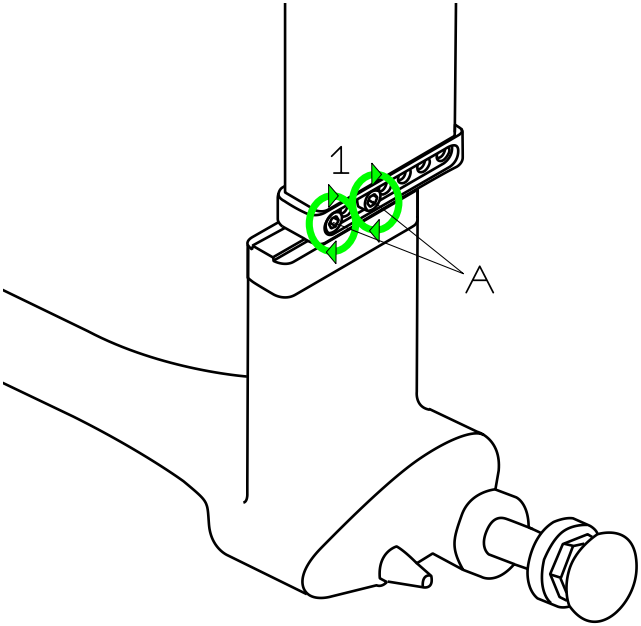


Figure 2.2

WARNING! Ensure that all bolts are tightened firmly. Danger of injury!

WARNING! Ensure that two bolts are used to secure the bracket. NEVER use only 1 bolt. Danger of serious injury!

DANGER! Changing the Centre of Gravity of your wheelchair will make it perform differently and can make it more tippy. This should only be performed if advised by a healthcare professional. Danger of serious injury!

WARNING! Do not completely detach the two parts of the adjustment bracket. This may cause serious damage to the brakes.

2.2 Adjusting the backrest height

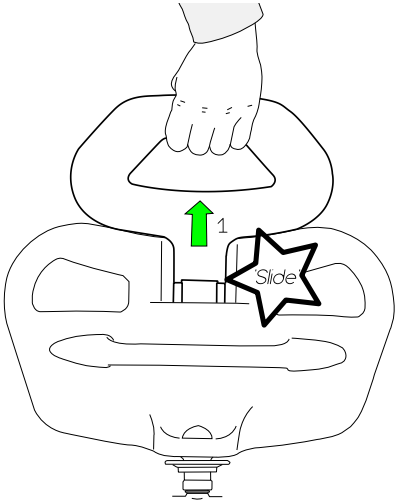


Figure 2.7

Slide the top support of the backrest up or down in its slot (Fig 2.7, 1).
Motion is stopped at the upper and lower extents
Pulling up beyond the stop point will remove the top support

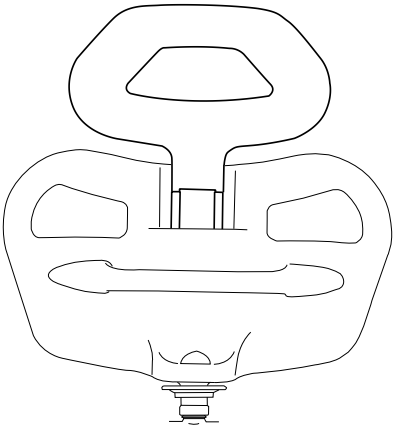


Figure 2.8

Backrest will remain as set until re-positioned manually

WARNING! Never lift the wheelchair using the backrest top support. Might cause damage to the wheelchair! May cause injury!

WARNING! Raising the top backrest support beyond its safe range may cause injury. The backrest should NEVER be leant upon if the top support is raised beyond its stop point.

2.3 Adjusting footrest angle - Optional

The footrest height is fixed as specified in your order and cannot be adjusted. The foot angle can be adjusted if the foot-angle adjuster option is fitted.

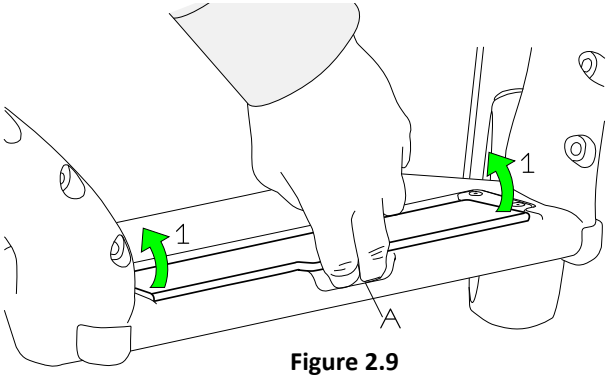


Figure 2.9

To increase the foot angle beyond the horizontal (raising toes) [Fig. 2.9]:

- Move the wheelchair backwards slightly to point caster forks forwards
- Using the lip under the foot angle adjuster (Fig 2.9, A), prise the flap up into desired position (Fig 2.9, 1).
- Flap will remain in position until manually adjusted

To lower the foot angle (lowering toes):

- Press the foot-angle adjuster down and into the desired position

WARNING! Be careful not to trap fingers, toes or skin in the foot angle adjuster. May cause injury!

2.4 Postural Support Belt – If fitted

The installation of a postural support belt is an option on Carbon Black.

The belt helps to stop you sliding forward in your seat.
The belt should be installed by Carbon Black personnel only.

The belt 'A' is located on a fixing 'B' as shown (Fig 2.10):

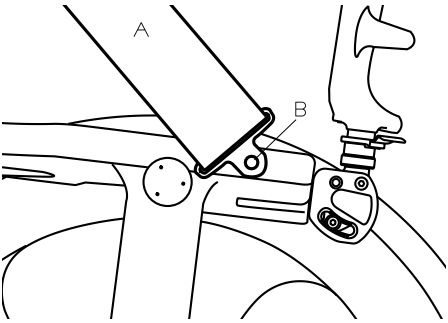


Figure 2.10

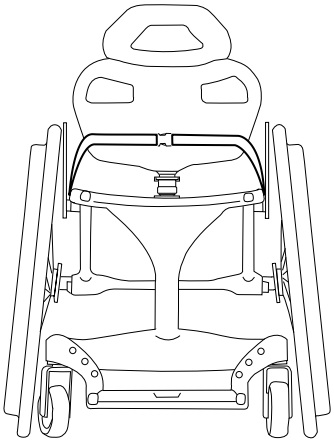


Figure 2.11

- To open the belt, squeeze both protruding buttons at the same time.
  The belt will open. (Fig 2.12)

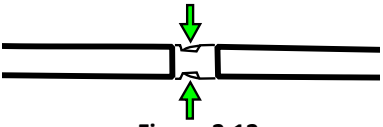


Figure 2.12

- To close the belt, push the catch into the buckle.
  The belt will close.
  (Fig 2.13)

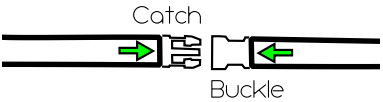


Figure 2.13

3 Transporting the wheelchair

ATTENTION! Your wheelchair is not suitable for use in vehicles. Do not sit on the wheelchair during transport. Use a properly secured seat in the vehicle.

WARNING! Be careful when removing the wheels and backrest not to pull the parts over abrasive surfaces such as concrete or tarmac. This could damage these load bearing parts.

3.1 Removing and installing the backrest

The wheelchair has a rigid monocoque, but the backrest can be removed using a quick release mechanism.

Removing the backrest

Remove the seat cushion (not provided), if present

See over page

Brace hand ‘1’ against the seat of the wheelchair (Fig 3.1, 1)

Compress the outer collar of the quick release connector (Fig 3.1, A) upward toward the base of the backrest (Fig 3.1, 2)

Lift hand ‘2’ upwards (Fig 3.1, 3)

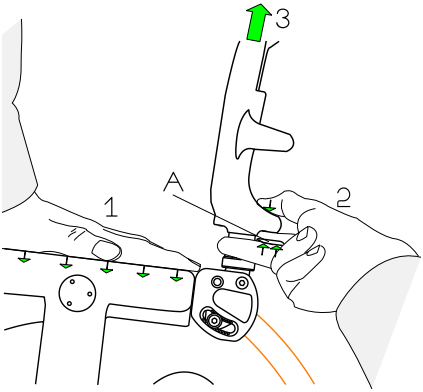


Figure 3.1

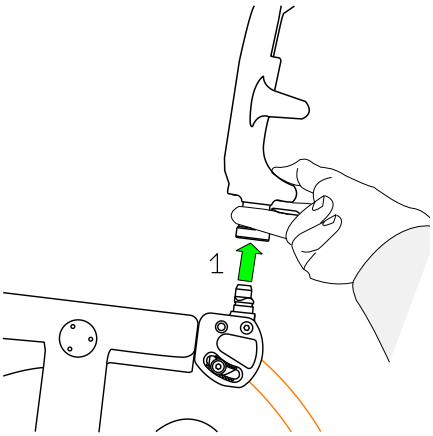


Figure 3.2

Proceed to lift backrest upward while holding collar in a compressed position and lift backrest away (Fig 3.2, 1)

Installing the backrest

- Compress the outer collar of the quick release connector upward toward the base of the backrest
- Locate the backrest shaft onto the spigot and lower it onto the spigot
- Release the outer collar and the collar will 'Click' into position
- Reposition the seat cushion

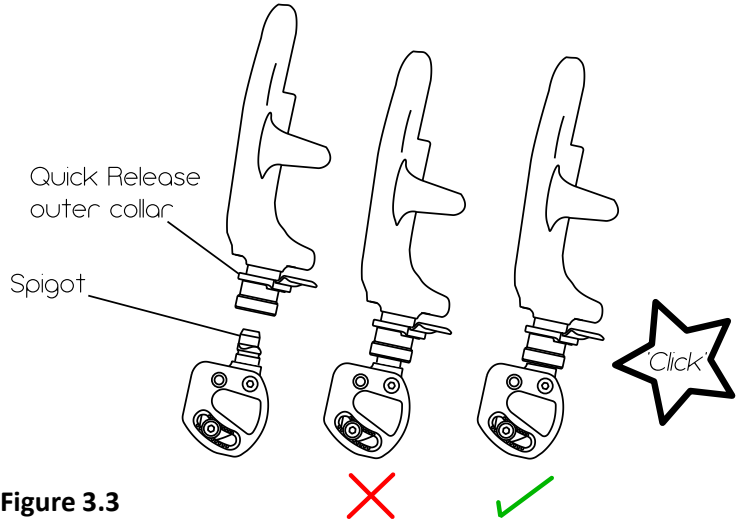


Figure 3.3

WARNING! When properly located, it is not possible to remove the backrest without compressing the quick release collar and the red ring will not be visible (Fig. 3.3). May cause serious injury!

3.2 Removing and installing the rear wheels

To reduce the size of your wheelchair in transit you can remove the rear wheels.

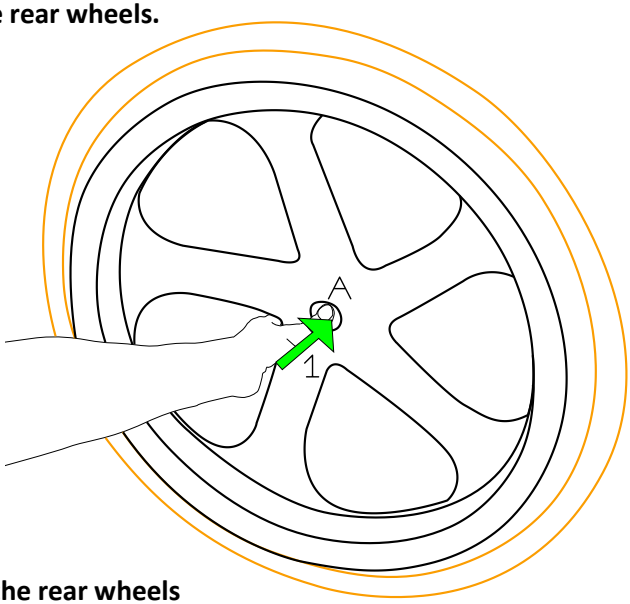


Figure 3.4

Removing the rear wheels

- With one hand, hold the wheelchair in an upright position.
- With the other hand, hold the wheel at the spokes around the wheel hub (see figure above).
- Press the axle release button (Fig 3.4, A) with your thumb and pull the wheel out of the adapter sleeve (Fig 3.4, 1)

Installing the rear wheels

- Release the parking brakes (Ch 4.6)
- With one hand, hold the wheelchair in an upright position.
- With the other hand, hold the wheel at the spokes around the wheel hub (see Fig 3.4)
- Press the axle release button (Fig 3.4, A) with your thumb and keep it pressed.
- Insert the axle into the adapter sleeve of the axle tube until it reaches a stop
- Release the button. The wheel now fits tightly

WARNING! After fitting the wheels, always make sure that the removable axles are engaged completely. The button must be extended completely. Check by pulling the wheels outwards without pressing the button.

3.3 Mass of the heaviest part of the chair

The mass of the heaviest part of a Carbon Black wheelchair depends on the configuration. The heaviest part of each chair will be the monocoque and should weigh around 4kg depending on sizing and included features.

3.4 Effects on performance of chair caused by removal of components

Excepting parts of the chair which can be removed using a quick-release mechanism, no other parts should be removed from the Carbon Black wheelchair. All quick-release parts should be attached when the wheelchair is in use.

3.5 Transporting the wheelchair when unoccupied

The wheelchair should be dismantled; rear wheels, caster wheels and backrest removed, in transit. All parts should be secured and not free to move around. It is advised that loose parts are stowed inside a bag.

User Information

Unique Identification Number

The Unique Identification Number for each Carbon Black wheelchair is placed under the seat.

Intended Operator

Occupant only (owner). It is understood that all owners will be adults.

Pre-use adjustments

Since Carbon Black wheelchairs are bespoke, they are set-up to fit the user. There are no adjustments that must be actioned before the wheelchair is usable.

4 Using the wheelchair

CAUTION! Always adjust the clothes you wear and your driving behaviour to the conditions (weather, road conditions, individual skills etc.). Please note that the risk of sliding is greater if the ground is wet, on gravel roads and rough ground.

4.1 Transferring

DANGER! When getting in or out of the wheelchair, do not stand on the footrest. Danger of tipping!
You should only independently transfer to/from the wheelchair if you are physically competent. Please consult your doctor or therapist. Do not sit on the clothes guards when getting on / off the wheelchair as they might bend or break.
Danger of injury!

The method you use to transfer in and out of your wheelchair will depend on your capabilities. Generally, the procedure for Carbon Black is as overleaf:

- Align the wheelchair to be facing the target seat and engage the parking brake
- Position forks facing forward
- Hold onto the transfer horn on the wheelchair seat and hold onto a nearby stable object to aid in transfer. (Fig 4.1)

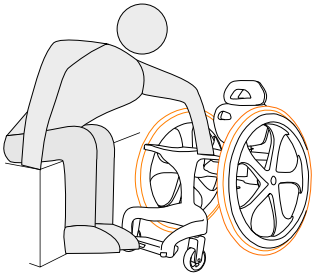


Figure 4.1

- Transfer to the edge of the wheelchair seat, or completely to the back of the wheelchair seat if capable. (Fig 4.2)

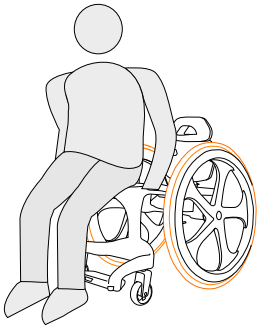


Figure 4.2

- Shuffle backwards into seat. (Fig 4.3)

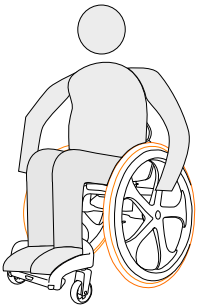


Figure 4.3

DANGER! Transferring is a difficult manoeuvre and should be practiced in a safe location with advice from an occupational/physiotherapist. Transferring will be slightly different in your new wheelchair, so you need to ensure that you are comfortable with your routine.

The method of transfer into Carbon Black will vary depending on wheel size and seat height.

Carbon Black can be positioned closer to beds, chair and toilets than a conventional wheelchair due to its mono-stem design. This decreases the distance of each transfer.

The wheelchair should be positioned as close to the user as possible whilst not trapping the user's legs. Brakes should be applied to steady the chair. Clothes guards should be removed or lowered if attached.

The best transferring technique for you should then be determined by yourself and an occupational/physiotherapist.

4.2 Driving and steering the wheelchair

Carbon Black is designed with active independent users in mind. To this effect it is not intended that the user should require an assistant to perform normal movements in the wheelchair. Normal movements being forward and backward motion on flat, uphill (< 7°) and downhill (<7°) slopes. When crossing roads where a kerb is present, users are strongly advised to use lowered portions of the kerb to join and leave the pavement.

WARNING! Do not attempt to perform a "wheelie" in your wheelchair. Danger of injury!

Carbon Black System recognizes that sometimes users need to "wheelie" to overcome bumps or kerbs. If you decide that this is the case, you should seek advice from an Occupational or Physio Therapist where possible to learn how to perform a "wheelie". Performing a "wheelie" is never completely safe and Carbon Black System assumes no responsibility for any injury you may sustain as a result of doing a "wheelie".

Carbon fibre is a very strong material, but care must be taken not to impose large impacts or loads on the carbon fibre. Damage caused by impact or overload is not covered by the warranty.

4.3 Mounting/dismounting a kerb/single step

Although Carbon Black is not designed for assistants to push the wheelchair, there is a handle on the lower part of the backrest (Fig 4.4, A) which can be used to help prevent the user from losing control when they are mounting/dismounting a kerb or single step as in Figures 4.4 and 4.5.

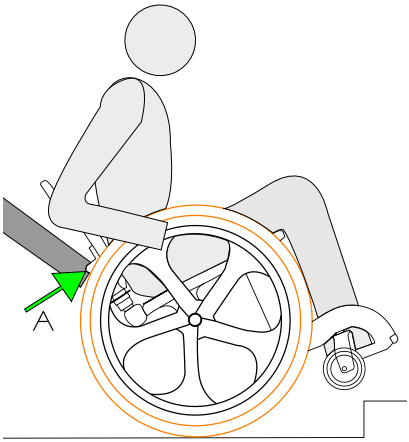


Figure 4.4

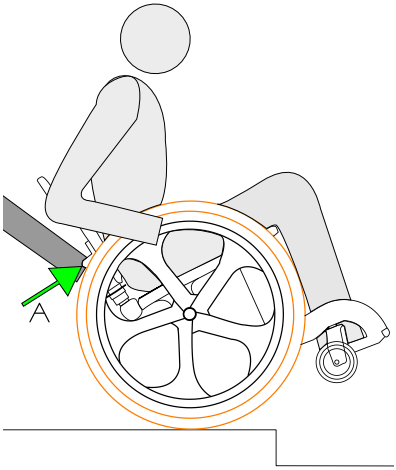


Figure 4.5

4.4 Driving on ramps and slopes

CAUTION! Only drive on long slopes if an assistant is behind the wheelchair.
WARNING! Do not drive on steep (7%) or lateral slopes. Danger of tipping!
WARNING! Avoid abrupt changes of direction when driving on slopes. Danger of tipping!
WARNING! Never pull the parking brake when the wheelchair is in motion. Danger of tipping!

Driving uphill

To drive uphill you must set the wheelchair in motion and maintain this in order to be able to control the direction.

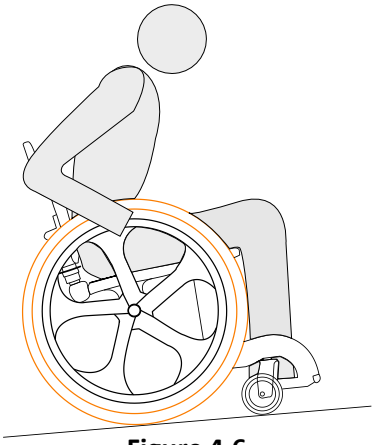


Figure 4.6

Lean forwards and drive the wheelchair by pushing the push-rims quickly and powerfully.

Downhill

When driving downhill, direction and, above all, speed must be controlled.

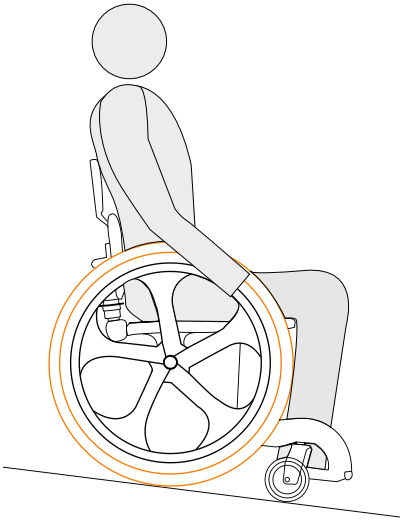


Figure 4.7

- Lean back and let the push-rims slip through your hands carefully. You should be able to stop the wheelchair at any time by holding the push-rims.

Please note that the push-rims can heat if you brake for longer periods of time by hand.

4.5 Stability and balance when sitting in the chair

Leaning Forward

For many every-day life activities you will have to bend out of the wheelchair forwards, to the side or backwards. This has a great influence on the stability of the wheelchair. In order to keep your balance at any time, please observe the following:

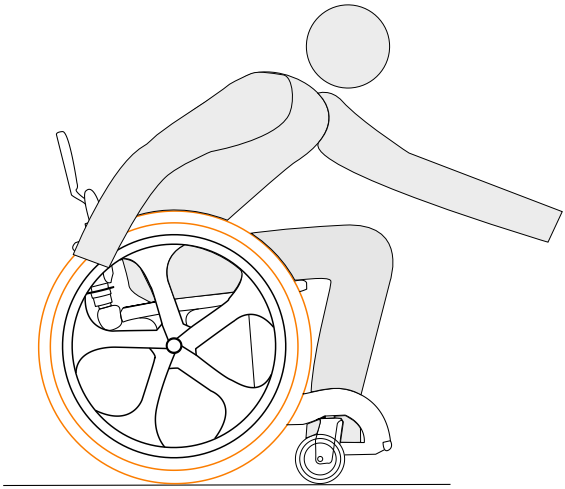


Figure 4.8

- Align the front forks forward. (To do this, move the wheelchair slightly forward and then back again.)
- Engage the parking brakes
- When leaning forward, make sure that your backside remains against the backrest

Do not lean forward too much. You might fall out of the wheelchair! Do not try to bend your abdomen forward between your legs in order to pick something up from the floor. May cause injury!

Leaning Backward

WARNING! Do not slide forward in your seat to reach for objects. You might fall out of your wheelchair!

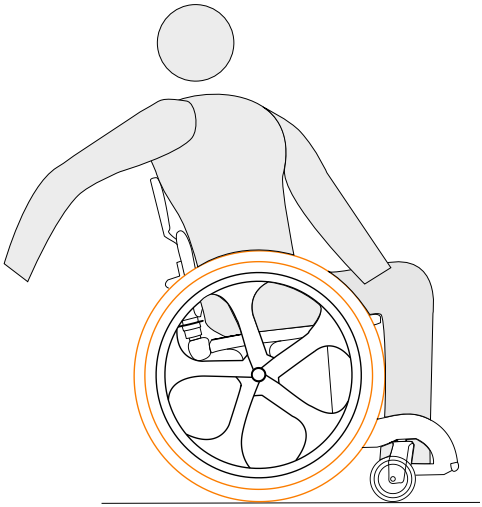


Figure 4.9

- Align the front wheels to the front. (To do this, move the wheelchair slightly forward and then back again.)
- Do not engage the parking brakes
- Reach out only as much as is possible without leaving your sitting position.

WARNING! Do not lean over the backrest. You might tip backward!

WARNING! Setting the backrest to its lowest setting or removing the backrest top support (Fig 4.10, 1) will allow the user to lean beyond the point of balance (Fig 4.11, 1). Danger of serious injury!

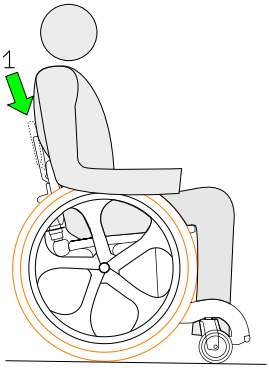


Figure 4.10

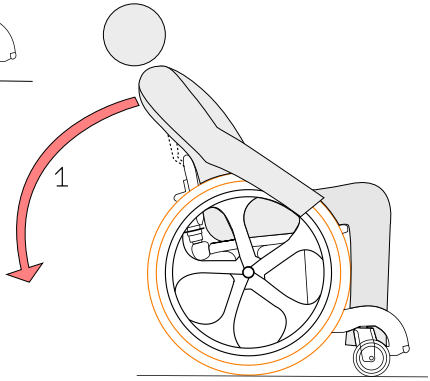


Figure 4.11

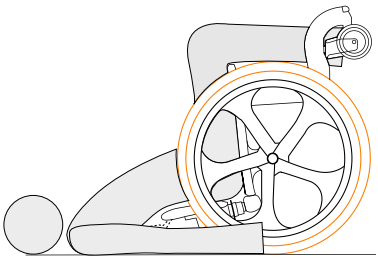


Figure 4.12

4.6 Parking brakes - Optional

Deceleration is effected manually by applying force to the push-rims of the rear wheels. The parking brakes are used for keeping the wheelchair in place when stationary and to prevent it from rolling away.

WARNING! Never apply the parking brakes when the wheelchair is in motion. Danger of serious injury!

Hub locking brakes

Applying the brake

- Carefully push the brake lever (Fig 4.13, A), located on the edge of your seat, downwards (Fig 4.14, 1)

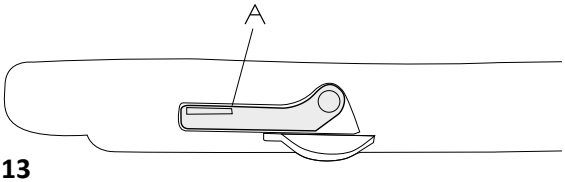


Figure 4.13

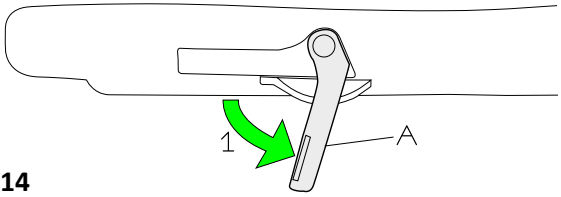


Figure 4.14

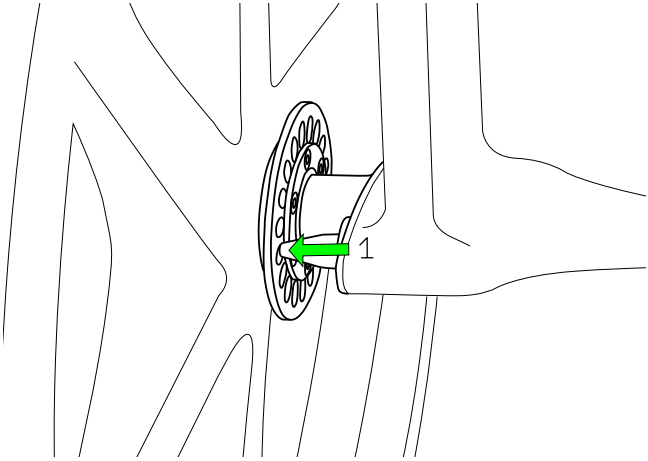


Figure 4.15

- This will cause the locking pin(s) at the hub locks to move toward the disc(s), engaging the brake (Fig 4.15, 1)
- Ensure that the pin(s) have located correctly into a hole on the disc(s)
- If the pin(s) do not lock into a hole initially, move the rear wheels back or forward slightly until the pins lock in
- To release the brakes, reverse this action

Brake lever should be depressed to its full extent and pins engaged with the discs to engage the brake.

4.7 Tyre Maintenance

Carbon Black wheels support only tubular tyres of the size appropriate to your wheels size (26 or 28" [700c]). These tyres are stocked by Carbon Black system and are both 21mm width with recommended pressure 8-15bar (115 – 220psi / 800 – 1500kPa).

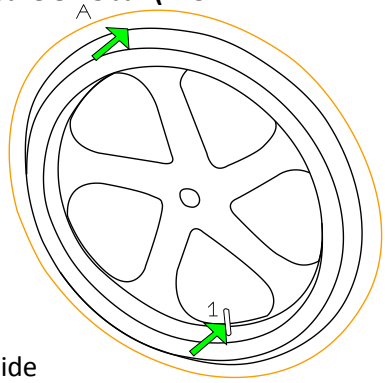


Figure 4.16

Method:

- Take off the wheel (see Chapter 3.2).
- Deflate the tyre by pressing on the valve.
- Locate the valve and the side opposite it (Fig 4.16, A).
- Begin rocking the tyre side-to-side to break the old adhesive (Fig 4.17, 1)
- Once the first part is loose, continue around the wheel.
- Peel the tyre from the rim (Fig 4.18, 1).
- Unscrew the valve extender (Fig 4.19, C) from the tyre (see over page).

Figure 4.17

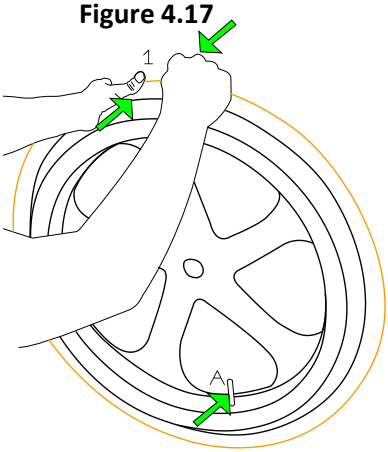
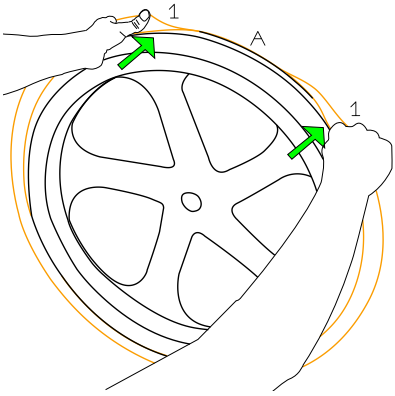


Figure 4.18



Valve Extenders can be transferred from one tyre to another. The nature of our valve extenders is such that they can be fitted with the valve 'core' from the tyre, which can also be transferred to the new tyre if un-damaged.
The valve core (Fig 4.19 B) comes with the tyre and can be screwed into either the tyre (Fig 4.19 A) or the valve extender (Fig 4.19 C). Spare cores should be kept safe as they can be fragile and very useful.

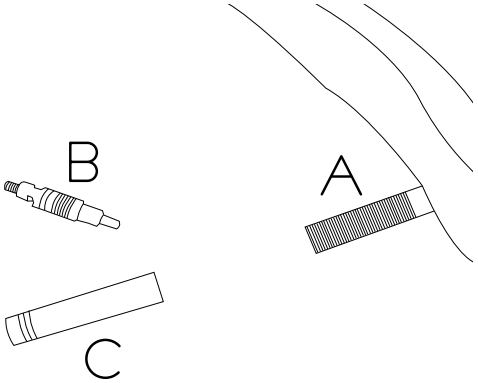


Figure 4.19

Use a plastic or other non-metal tyre lever. Do not use sharp tools such as screwdrivers as they may damage the wheel and tyre.
Tubular tyres must be fitted to the wheel rim with dedicated tyre glue or adhesive tape. Please follow product manufacturer's instructions.
Not fixing with adhesive may cause tyres to detach, resulting in damage and/or injury.

Fitting tubular tyres

Tubular road tyres are lighter than clincher tyres and don't suffer from pinch punctures. Rolling resistance is also reduced.

- Clean loose debris off the wheel rim (Fig 4.20 B) with acetone. It is not necessary to remove all residual glue, but the surface should be smooth
- Stretch new tyre (Fig 4.20, A) in small sections at a time
- Apply a thin bead of tyre glue or apply tubular tape to the deepest part of the wheel rim channel (Fig 4.20 C), ensuring an even spread inside the rim channel
- Wait for the glue to become tacky (see glue instructions)

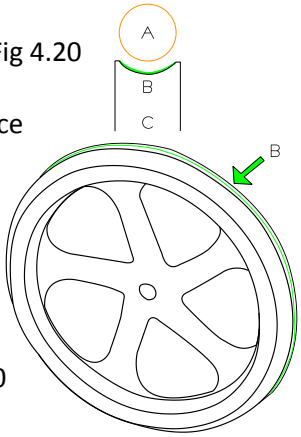


Figure 4.20

- Fit tyre valve with existing valve extender (Fig 6.3, C) and core (Fig 6.3, B).
- Place valve through valve hole in wheel rim and begin to work tyre around wheel using both hands

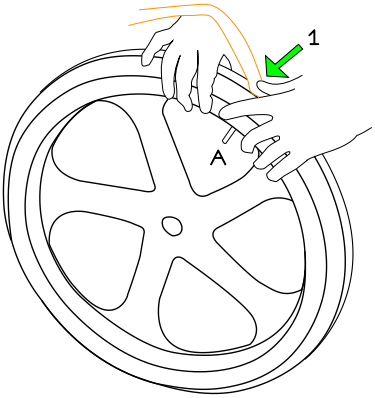


Figure 4.21

- Continue to work the tyre onto the rim. (Fig 4.22, 1)
- Once the tyre is in place, make sure that the coloured rubber is an equal distance from the rim all round

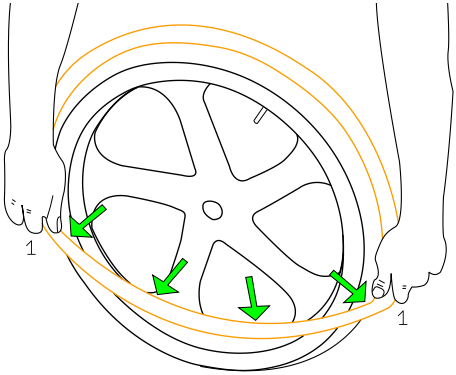


Figure 4.22

- Leave to dry before use (see adhesive instructions).
- Test by using the wheelchair normally in a location near to home or somewhere that support is nearby.

Punctures can often be repaired without removing the tyre by using sealant injected into the tyre valve. Sealant is available from most cycle stores. It is recommended that users wear plastic gloves when handling tyre adhesive. Carbon Black full carbon speed wheels use 26" or 28" (700c) tubular tyres.

WARNING! The surface of your Carbon Black wheelchair may become very hot when exposed to external sources of heat (e.g. sunlight)

WARNING! Although Carbon Black has been designed to enhance safety, there is the chance that you may trap your fingers when removing/attaching components (e.g. main/caster wheels and backrest)

4.8 Fire Retardancy

The upholstery used on Carbon Black has passed testing to ISO 7176-16, which is the standard for fire retardancy of wheelchair upholstery.

4.9 Masses of components expected to be handled during dismantling

Since each Carbon Black wheelchair is bespoke, component weights vary from chair to chair.

However, the average component weights for the main components are:

Monocoque	-	3.5 – 4kg
Backrest	-	1.5kg
Wheel(s)	-	1.3kg (2.6kg)

4.10 Positions of points where components are safe to be gripped for safe moving

WARNING! Do not pick your Carbon Black wheelchair up be any moving components E.g. wheels, backrest, casters etc.

Carbon Black is designed to be picked up or handled using the points illustrated below:

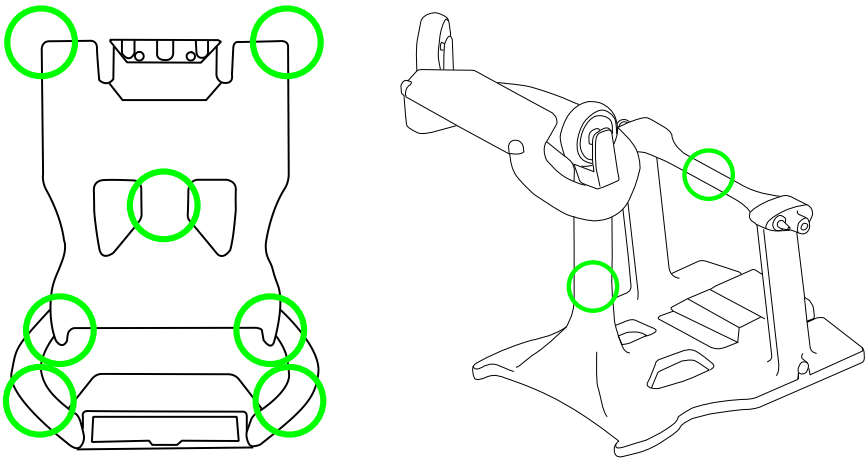


Figure 4.23

4.11 Recycling

To arrange for the recycling of your Carbon Black wheelchair either contact Carbon Black System or your local recycling centre.

4.12 Expected service life of the Wheelchair

It should be expected that the life span of each Carbon Black wheelchair will vary based on the frequency and intensity of its usage. E.g. a wheelchair used sparingly indoors will last much longer than one which is constantly used outdoors in an aggressive manner.

Service Information

5 Adjustment and options

It is recommended that adjustment is carried out by someone who is competent at mechanical adjustment. Such as a bicycle mechanic.

WARNING! If adjusted to make the wheelchair more tippy, this adjustment will make the wheelchair less stable. Danger of serious injury!

WARNING! Ensure that when making any adjustments between the rear wheel and the clothing guard that there is sufficient room to avoid finger traps. May cause injury!

5.1 Adjusting the rear wheel position - Optional

- Loosen two Allen (Hex) screws on each side of the wheelchair (Fig 5, A)

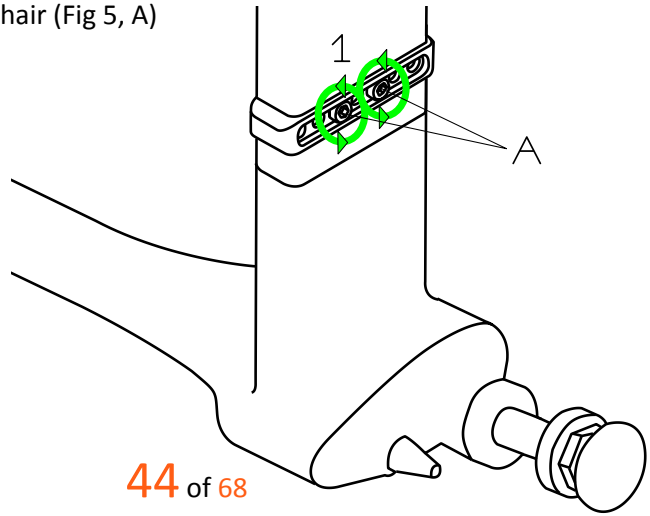


Figure 5

- Slide the lower/upper section back or forward on its track (Fig 5.1, 1)
- Align so that the two bolt holes line up and place the bolts through the holes

Moving the main wheels back will shift the Centre of Gravity forward, making the wheelchair more stable, but less responsive to steering. Moving the main wheels forward will make the wheelchair more tippy and more responsive.

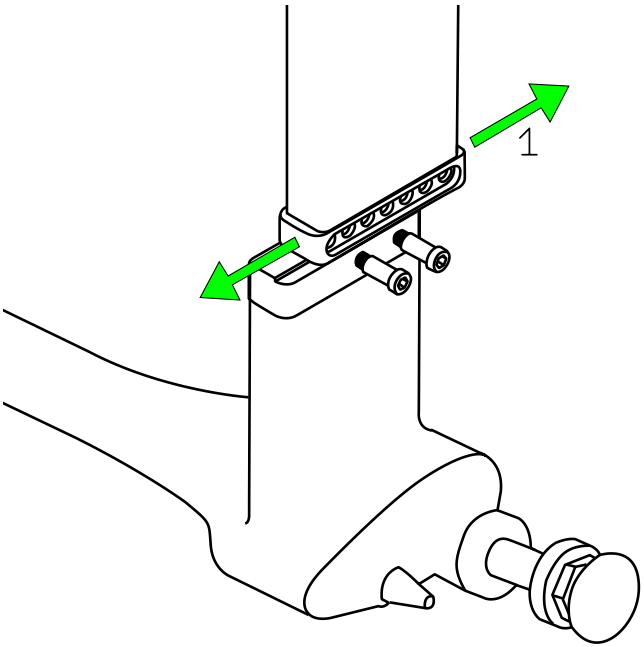


Figure 5.1

- Re-tighten the two Allen (Hex) screws on both sides of the wheelchair once the adjustment has been made (Fig 5.2, A)

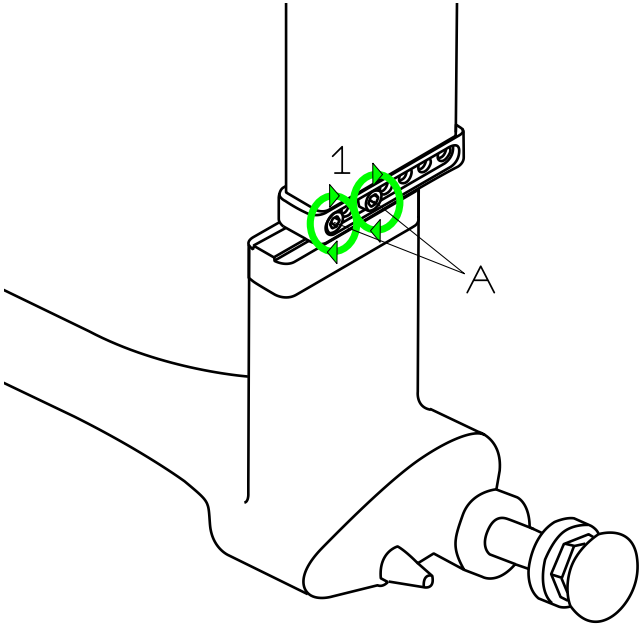


Figure 5.2

WARNING! Ensure that all bolts are tightened firmly. Danger of injury!

WARNING! Ensure that two bolts are used to secure the bracket. NEVER use only 1 bolt. Danger of serious injury!

DANGER! Changing the Centre of Gravity of your wheelchair will make it perform differently and can make it more tippy.
Danger of serious injury!

WARNING! Do not completely detach the two parts of the adjustment bracket. This may cause serious damage to the brakes.

5.2 Adjusting the backrest height

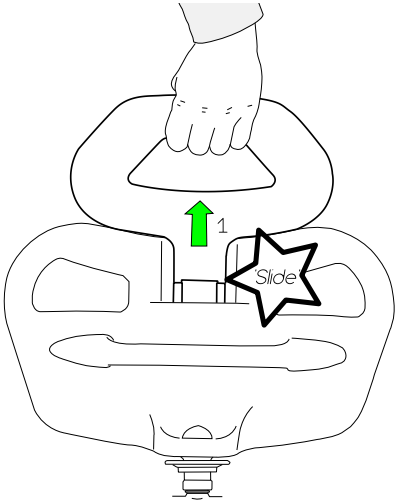


Figure 5.7

Slide the top support of the backrest up or down in its slot (Fig 5.7, 1).
Motion is stopped at the upper and lower extents
Pulling up beyond the stop point will remove the top support

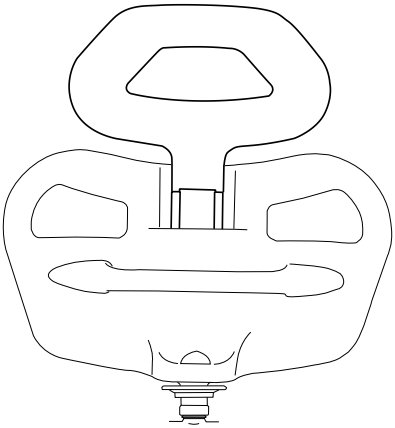


Figure 5.8

Backrest will remain as set until re-positioned manually

WARNING! Never lift the wheelchair using the backrest top support. Might cause damage to the wheelchair! May cause injury!

WARNING! Raising the top backrest support beyond its safe range may cause injury. The backrest should NEVER be leant upon if the top support is raised beyond its stop point.

5.3 Adjusting footrest angle - Optional

The footrest height is fixed as specified in your order and cannot be adjusted. The foot angle can be adjusted if the foot-angle adjuster option is fitted.

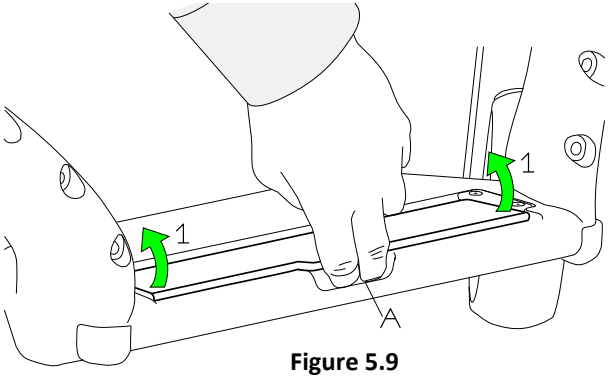


Figure 5.9

To increase the foot angle beyond the horizontal (raising toes) [Fig. 5.9]:

- Move the wheelchair backwards slightly to point caster forks forwards
- Using the lip under the foot angle adjuster (Fig 5.9, A), prise the flap up into desired position (Fig 5.9, 1).
- Flap will remain in position until manually adjusted

To lower the foot angle (lowering toes):

- Press the foot-angle adjuster down and into the desired position

WARNING! Be careful not to trap fingers, toes or skin in the foot angle adjuster. May cause injury!

5.4 Postural Support Belt – If fitted

The installation of a postural support belt is an option on Carbon Black.

The belt helps to stop you sliding forward in your seat.
The belt should be installed by Carbon Black personnel only.

The belt 'A' is located on a fixing 'B' as shown (Fig 5.10):

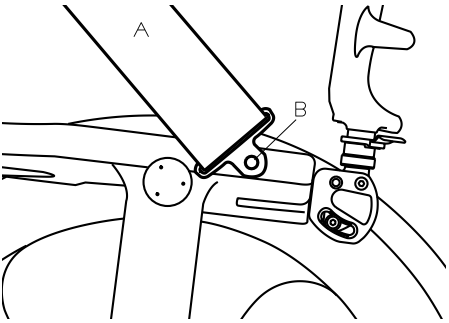


Figure 5.10

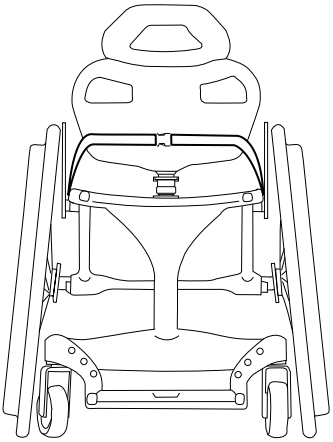


Figure 5.11

- To open the belt, squeeze both protruding buttons at the same time.
  The belt will open. (Fig 5.12)

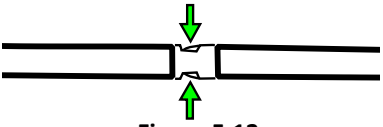


Figure 5.12

- To close the belt, push the catch into the buckle.
  The belt will close.
  (Fig 5.13)

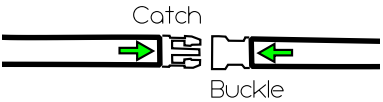


Figure 5.13

6 Maintenance

Although it is not a requirement of your warranty, we strongly advise that you have your wheelchair thoroughly serviced once per year as a minimum. For instructions on service and repair see Ch. 6.4. This is in addition to the general maintenance procedures outlined below.
In order to make sure your wheelchair will give you the necessary safety and reliability over its whole serviced life, you should carry out the following work regularly:
If you are not sure about the tyres on your wheelchair, contact Carbon Black System.

Maintenance plan

Weekly	Check air pressure in tyres Check main axle shafts are clean and free of oil or debris. Buff with a soft cloth Check backrest quick release mechanism and lubricate collar if necessary
Monthly	Check bolted connections are tight Check axles and axle sleeves are clean and free from debris
Yearly	General full service by authorised dealer (Recommended)*

**This is not a warranty requirement*

Maintaining air pressure

To ensure the driving performance is maintained it is important to check tyre pressures are correct.

Our standard tyres have a recommended pressure of 8 – 15 bar, 115 – 220psi or 800 – 1500kPa. Always check tyre pressure on side of tyre before inflation. Danger of injury and damage to wheelchair.

Maintaining removable axles

The axle shafts of Carbon Black's main wheels should not be lubricated. Removable axles should be buffed with a soft cloth.

The same principals apply to the Quick Release caster pins. Casters can be removed by pulling them out of their sockets.

CAUTION! When using wheels from other manufacturers, please refer to specific manufacturer's instructions.
Carbon Black hub locking brakes will not work with 3rd party wheels

Checking the bolted connections

Bolted connections may loosen if the wheelchair is used frequently.

Check the bolts monthly for a tight fit, re-tighten if necessary.

Many fixings on your Carbon Black wheelchair have thread glue applied and should not be loosened or tightened.

6.1 Tyre Maintenance

Carbon Black wheels support only tubular tyres of the size appropriate to your wheels size (26 or 28" [700c]). These tyres are stocked by Carbon Black system and are both 21mm width with recommended pressure 8-15bar (115 – 220psi / 800 – 1500kPa).

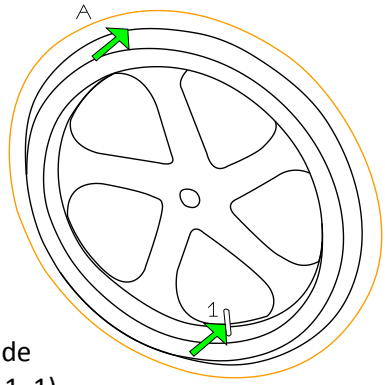


Figure 6

Method:

- Take off the wheel (see Chapter 3.2).
- Deflate the tyre by pressing on the valve.
- Locate the valve and the side opposite it (Fig 6, A).
- Begin rocking the tyre side-to-side to break the old adhesive (Fig 6.1, 1).
- Once the first part is loose, continue around the wheel.
- Peel the tyre from the rim (Figure 6.2, 1).
- Unscrew the valve extender (Fig 6.3, C) from the tyre (see over page).

Figure 6.1

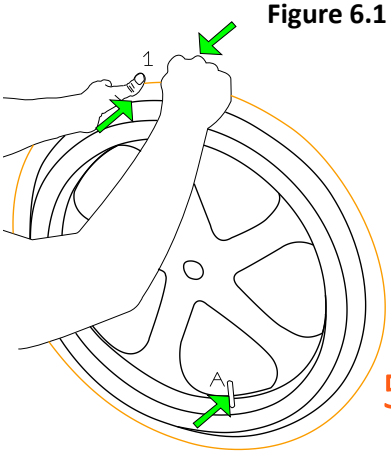
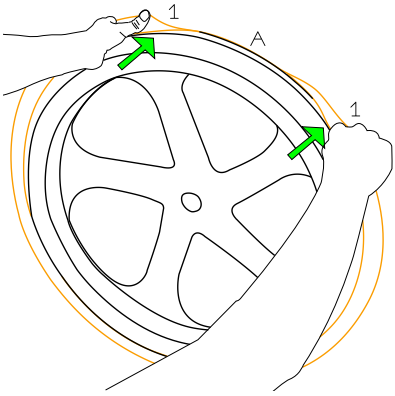


Figure 6.2



Valve Extenders can be transferred from one tyre to another. The nature of our valve extenders is such that they can be fitted with the valve 'core' from the tyre, which can also be transferred to the new tyre if un-damaged. The valve core (Fig 6.3, B) comes with the tyre and can be screwed into either the tyre (Fig 6.3, A) or the valve extender (Fig 6.3, C). Spare cores should be kept safe as they can be fragile and very useful.

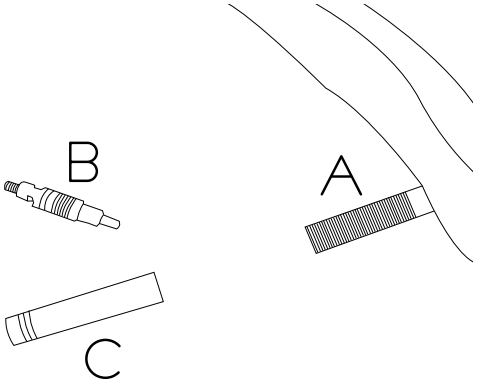


Figure 6.3

Use a plastic or other non-metal tyre lever. Do not use sharp tools such as screwdrivers as they may damage the wheel and tyre.

Tubular tyres must be fitted to the wheel rim with dedicated tyre glue or adhesive tape. Please follow product manufacturer's instructions.

Not fixing with adhesive may cause tyres to detach, resulting in damage and/or injury.

Fitting tubular tyres

Tubular road tyres are lighter than clincher tyres and don't suffer from pinch punctures. Rolling resistance is also reduced.

- Clean loose debris off the wheel rim with acetone. It is not necessary to remove all residual glue, but the surface should be smooth.
- Stretch new tyre (Fig 6.4, A) in small sections at a time.
- Apply a thin bead of tyre glue or apply tubular tape to the deepest part of the wheel rim channel, ensuring an even spread inside the rim channel.
- Wait for the adhesive to become tacky (see adhesive instructions).

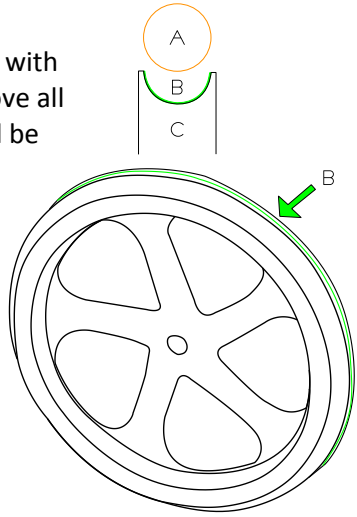


Figure 6.4

- Fit tyre valve with existing valve extender (Fig 6.3, C) and core (Fig 6.3, B).
- Place valve through valve hole in wheel rim and begin to work tyre around wheel using both hands.

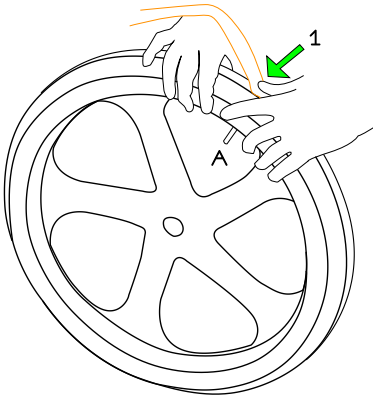


Figure 6.5

- Continue to work the tyre onto the rim. (Fig 4.22, 1)
- Once the tyre is in place, make sure that the coloured rubber is an equal distance from the rim all round
- Leave to dry before use (see adhesive instructions).
- Test by using the wheelchair normally in a location near to home or somewhere that support is nearby.

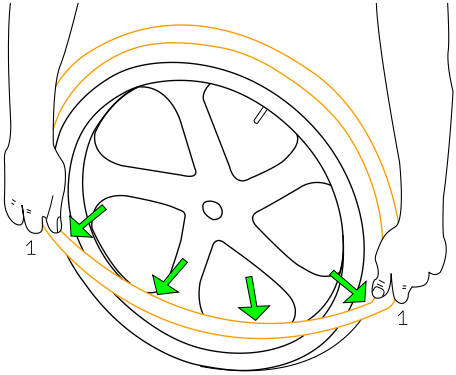


Figure 6.6

Punctures can often be repaired without removing the tyre by using sealant injected into the tyre valve. Sealant is available from most cycle stores. It is recommended that users wear plastic gloves when handling tyre adhesive. Carbon Black full carbon speed wheels use 26" or 28" (700c) tubular tyres.

6.2 Replacing LED batteries - Optional

- Remove backrest and wheels (Ch. 3.1, 3.2)

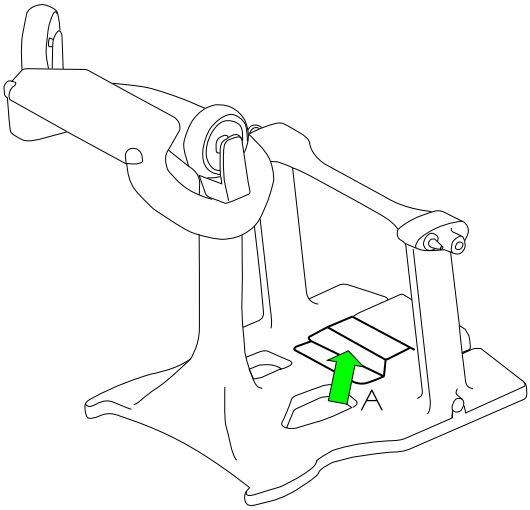


Figure 6.7

- Invert frame and sit it on a non-abrasive surface Identify the battery compartment on the under-side of the seat (Fig 6.7, A)
- Unscrew and remove the Allen/Hex screws and lift off the cover
- Unclip and remove the AA battery pack, maintaining the wire connection to the battery compartment

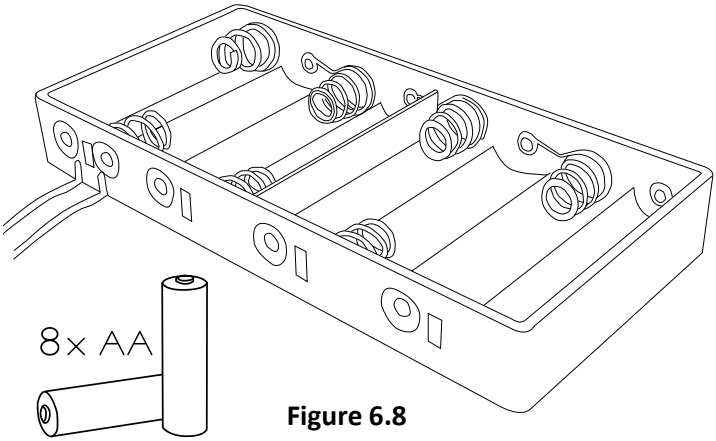


Figure 6.8

- Remove and replace ALL 8 of the batteries
- Replace the battery pack and maintenance cover, re-attach backrest and wheels
- Test the LEDs by switching them ON – they should light up

6.3 Troubleshooting problems

The daily use of the wheelchair, new adjustments or changed requirements may result in problems which can be easily rectified. We recommend that the adjustments should be carried out by a qualified mechanical technician E.G. a bicycle technician. Carbon Black is designed to allow for all regular maintenance to be carried out with minimal difficulty. If you have any questions regarding the maintenance of your chair, then please contact Carbon Black System at

info@carbonblacksystem.com.

Any problems with the carbon fibre should be communicated to Carbon Black System immediately and should not be worked on by the user or anyone other than Carbon Black System.

Problem	Possible cause	Remedy
Wheelchair does not roll straight	Incorrect air pressure in one of the rear tyres	Correct air pressure (Chapter 5.1)
	Front wheel bearings/pins dirty or damaged	Clean or replace bearing
Wheelchair tips too easily	Backrest angle too large	Reduce backrest angle
Rolling resistance is very high	Wrong air pressure in the rear tyres	Correct air pressure (Chapter 5.1)
Front wheels vibrate when driving fast	Tension at front wheel bearing block too low	Tighten nut at bearing block axle slightly
LEDs do not function	Battery pack discharged	Replace batteries

6.4 Service and Repair

If your Carbon Black wheelchair develops a fault that cannot be remedied by cleaning or by following the maintenance or troubleshooting scenarios outlined in this chapter, you must contact Carbon Black System using the contact details at the end of this manual.

Circumstances under which Carbon Black System should be notified and under which Carbon Black System may have to undertake repair operations:

Any damage to carbon fibre beyond general scuffs, scratches and wear-and-tear. E.g. cracks, holes, unusual flexing or behaviour.

Any damage to metal parts beyond general scuffs, scratches and wear-and-tear

Failure of Quick Release mechanisms to function

Ordering Replaceable parts

E.g. Tyres, wheels, axles, caster components, backrest components

Please contact Carbon Black System should you need to replace any parts of your Carbon Black wheelchair using the contact details at the end of this manual.

6.5 Technical Data

As Carbon Black is a bespoke product, therefore dimensions vary from wheelchair to wheelchair. The following dimensions apply to this Carbon Black wheelchair only:

 Overall width (D):	 Overall length (B):
 Seat depth (E):	 Seat width (F):
 Backrest height:	 Backrest angle:
 Seat height rear (A):	 Seat height front (C):
 Lower leg length:	 Maximum user weight:
 Overall weight:	 Transfer weight:

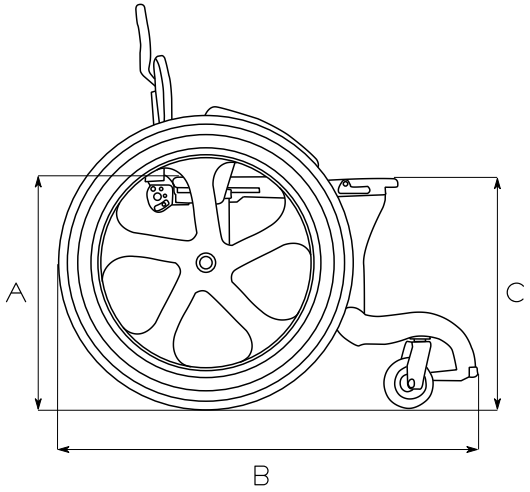


Figure 6.9

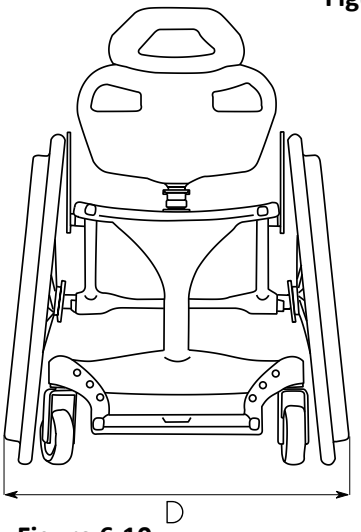


Figure 6.10

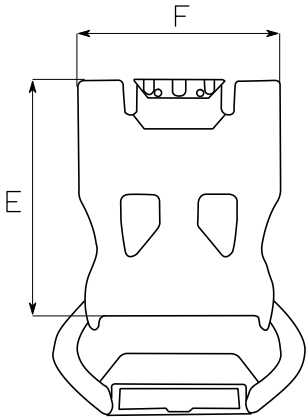


Figure 6.11

6.6 Warranty

Carbon Black System's full Terms and Conditions are available upon request.

Standard terms
This is to certify that your wheelchair is warranted by Carbon Black System Ltd for a period of 5 years for all parts except wear parts.

The warranty is subject to the following conditions:

1. Only Carbon Black System wheelchairs purchased at full price are warranted against defective workmanship and materials.
2. If a defect or fault is discovered Carbon Black System should be notified immediately.
3. The manufacturer will not accept responsibility for damage caused by wear and tear, misuse or the non-observance of the instructions set out in this manual.
4. During the period of warranty, any parts that become defective due to faulty workmanship or materials will be renewed or repaired free of charge by the Carbon Black System dealer.
5. The warranty will be forfeited should any unauthorised alteration be made to the equipment.
6. The purchaser's statutory rights under the Consumer Protection Act are not affected.
7. If the purchaser mounts additional adaptions to their Carbon Black System wheelchair, they must obtain a written authorisation from Carbon Black System. Otherwise any possible liability claims cannot be asserted.

See over page for limitations

Limitations of liability

This warranty does not extend to consequential costs resulting from fault clearance, in particular freight and travel costs, loss of earnings, expenses etc.

Carbon Black System shall not be liable for:

- Normal wear and tear
- Inappropriate and incorrect use
- Defective assembly or setting up by the purchaser or third parties
- Defective or neglectful treatment
- Use of unsuitable spares

6.7 Identification Label

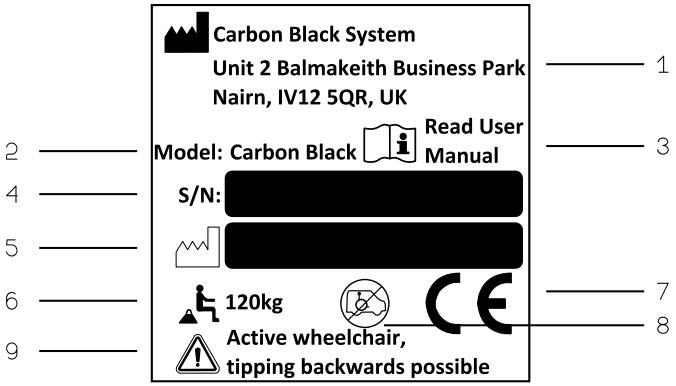


Figure 5.5

1 Manufacturer's address
2 Model
3 Instruction to read User Manual
4 Serial Number
5 Manufacture date
6 Maximum user mass
7 CE Mark
8 Not to be used as a seat in a motor vehicle
9 Notification that this is an active wheelchair and can tip backwards causing injury

6.8 Company details

Contact:

Phone: +44 (0) 1667 454 089
Email: info@carbonblacksystem.com
Web: www.carbonblacksystem.com
Facebook: Carbon Black Wheelchair
Twitter: @_carbonblack

Manufactured by:

Carbon Black System
Unit 2 Balmakeith Business Park
Nairn
IV12 5QR
UK

This user manual (and any update or addition) is for the guidance of Carbon Black Wheel Chair owners. It does not form a part of any contract between Carbon Black System and the owner of the Wheel Chair or anyone else. Please refer to Carbon Black System's Terms and Conditions of Business which can be found at:
http://www.carbonblacksystem.com/terms-and-conditions

Carbon Black System Limited is registered in Scotland
No. SC274301
Registered office at Calum I Duncan Corporate Lawyers Ltd,
3 Attadale Road, Inverness, IV3 5QH
VAT Registration No. GB139088979