

Invacare® Action 3 Junior

en **Manual Wheelchair
Service Manual**



PROVIDER: Keep this manual.
The procedures in this manual **MUST** be performed by a qualified technician.



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1 General

1.1 Introduction

This user manual contains important information about the handling of the product. To ensure safety when using the product, read the user manual carefully and follow the safety instructions.

Only use this product if you have read and understood this manual. Seek additional advice from a healthcare professional who is familiar with your medical condition and clarify any questions regarding the correct use and necessary adjustment with the healthcare professional.

Note that there may be sections in this document, which are not relevant to your product, since this document applies to all available models (on the date of printing). If not otherwise stated, each section in this document refers to all models of the product.

The models and configurations available in your country can be found in the country-specific sales documents. Invacare reserves the right to alter product specifications without further notice.

Before reading this document, make sure you have the latest version. You find the latest version as a PDF on the Invacare website.

If you find that the font size in the printed document is difficult to read, you can download the PDF version from the website. The PDF can then be scaled on screen to a font size that is more comfortable for you.

For more information about the product, for example product safety notices and product recalls, contact your Invacare distributor. See addresses at the end of this document.

In case of a serious incident with the product, you should inform the manufacturer and the competent authority in your country.

1.2 Delivery check

Any transport damage must be reported immediately to the transport company. Remember to keep the packaging until the transport company has checked the goods and a settlement has been reached.

1.3 Symbols in this Manual

Symbols and signal words are used in this document and apply to hazards or unsafe practices which could result in personal injury or property damage.

This document is printed in greyscale. For your information, the safety messages have the following colour coding according to ANSI Z535.6: Danger (Red), Warning (Orange), Caution (Yellow) and Notice (Blue).

See the information below for definitions of the signal words.



CAUTION!

Indicates a hazardous situation that could result in minor or slight injury if it is not avoided.



NOTICE!

Indicates a hazardous situation that could result in damage to property if it is not avoided.



Tips and Recommendations

Gives useful tips, recommendations, and information for efficient, trouble-free use.



Tools

Gives useful tips, recommendations, and information for efficient, trouble-free use.

1.4 Limitation of Liability

Invacare accepts no liability for damage arising from:

- Non-compliance with the user manual.
- Incorrect use.
- Natural wear and tear.
- Incorrect assembly or set-up by the purchaser or a third party.
- Unauthorised modifications, combinations and/or use of unsuitable spare parts.

2 Safety

2.1 General Safety Information



WARNING!

Risk of injury or property damage

- The information contained in this manual must be performed by a qualified technician. Invacare expects that the qualified technician is familiar with the product, with good technical knowledge to understand and follow the steps of the described instructions in this manual, and equipped with proper tools.
- Installation or repairs made by unqualified persons can result in hazardous situations to the users.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.



NOTICE!

Refer to the user manual of this product for information on:

- Technical data
- Product components
- Labels
- Additional safety instructions

The information contained in this document is subject to change without notice.



WARNING!

Indicates a hazardous situation that could result in serious injury or death if it is not avoided.

! NOTICE!

- Medical Devices must be identified at all times to ensure their traceability.
- If the component where the product label with the serial number is located is replaced, or if the product label is no longer readable, a new product label must be requested from Invacare.
 - If you have any doubts regarding labeling, please contact Invacare.



WARNING!
Risk of contamination

- Clean and disinfect the product before servicing.

! NOTICE!

- Assembly of accessories might not be described in this service manual. Refer to the manual, delivered with the accessory.
- Additional manuals can be ordered from Invacare. See addresses at the end of this document.
 - Due to regional differences, refer to your local Invacare catalog or website for available accessories or contact your local Invacare representative. See addresses at the end of this document.

! NOTICE!

- Some replacement parts are only available as a kit. Always use the complete new kit when replacing a part.
- Spare parts can be ordered from Invacare. Refer to your local Invacare website to access the electronic spare parts catalogue (ESPC).



CAUTION! Indicates a hazardous situation that could result in minor or slight injury if it is not avoided.



WARNING! Indicates a hazardous situation that could result in serious injury or death if it is not avoided.

2.2 Personal Safety Information

These safety instructions are intended to help avoid accidents during work and must be observed under all circumstances. All employees coming into contact with contaminated products must regularly consult a company doctor.

Work clothing and personal protective equipment must be available in necessary quantities and be in proper condition. Reliable hand and surface disinfection must be ensured.



WARNING!
Risk of contamination

- Clean and disinfect the product before carrying out repairs.



Technicians should work in an environment (light, space, access to the wheelchair, ...) that allows them to work safely.

2.3 General Repair Information

! NOTICE!

- Some replacement parts are only available as a kit. Always use the complete new kit when replacing a part.
- Use only original spare parts.
 - Spare parts can be ordered from Invacare. Refer to your local Invacare website to access the electronic spare parts catalogue (ESPC).

Tightening torques

The tightening torques in the following table are dependent on the thread diameters. All values apply to dry and grease-free threads.

Thread	M4	M5	M6	M8	M10/12
Tightening torque in Nm	1.5/3	3/6	7/12	10/20	20/30
(mini/ max)	Nm	Nm	Nm	Nm	Nm



CAUTION! All other nuts not noted here must be tightened fingertight!

3 Assembly

3.1 Front hangers

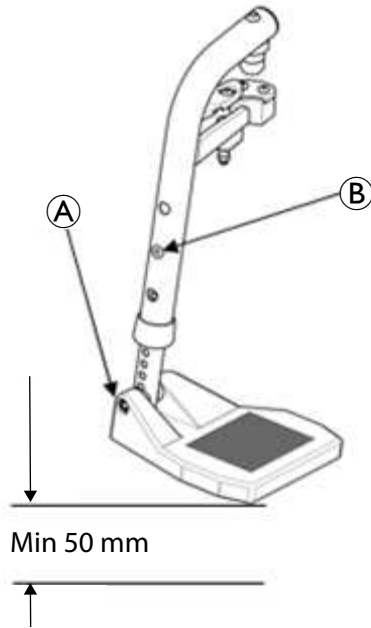


WARNING!

Risk of injury

After ANY adjustments, repair, or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur. A 50mm clearance between the bottom of the footplate and the ground/floor MUST always be maintained.

3.1.1 Adjusting footrest height



Ⓐ	Locking screw (M6)
Ⓑ	Locking Bolt (M6)

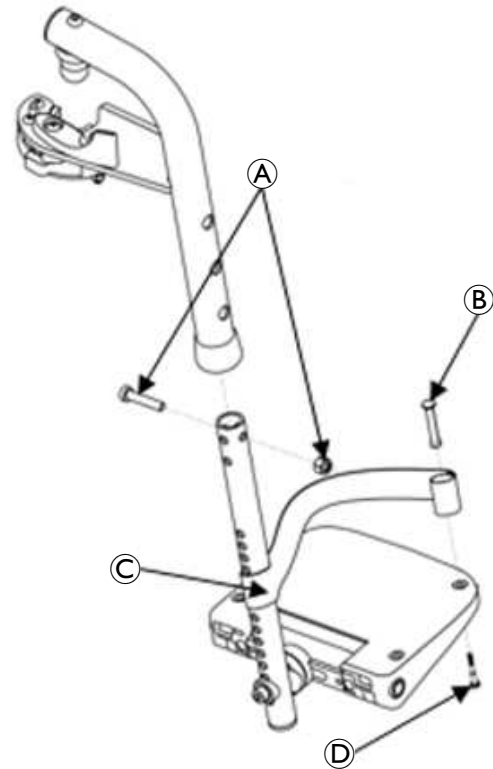
1. Remove calf strap, if so equipped.
2. Unscrew locking screw and/or locking bolt.
3. Position the footrest assembly to the desired height.

NOTICE!

A 50 mm clearance between the bottom of the footplate and the ground/floor MUST always be maintained.

4. If the distance between the bottom of footplate and the ground/floor is not 50 mm minimum, adjust footrest tube accordingly.
5. Using the locking bolt with a 5 mm Allen key and 10 mm wrench, secure the footrest tube to the footrest support.
6. Securely tighten.
7. If necessary, repeat STEPS 2 to 5 to adjust remaining footrest.
8. Reinstall the calf strap, if so equipped.

3.1.2 Replacing heel strap



Ⓐ	Locking bolt (M6)
Ⓑ	Strap pin
Ⓒ	Heel strap
Ⓓ	Mounting screw

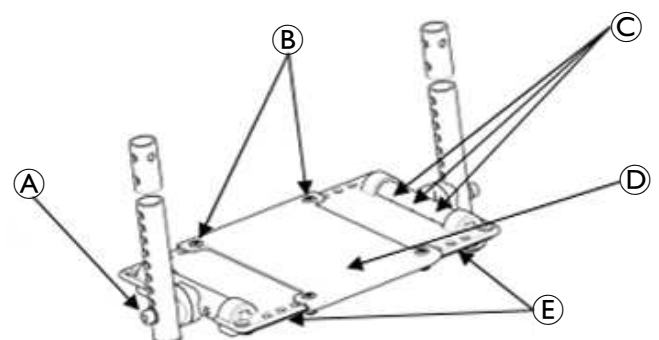
1. Remove the locking nut (5 mm Allen key and 10 mm wrench) that secures the footrest tube to the footrest support.
2. Remove the lower footrest assembly.
3. Remove the mounting screw, strap pin that secure the heel strap to the footplate.
4. Slide heel strap over footrest tube.

NOTICE!

When securing the heel strap to the footrest assembly tighten the mounting screw and strap pin until they are secure.

5. Using the mounting screw, strap pin, secure the heel strap to the footplate.
6. Using the locking nut with a 5 mm Allen key and 10 mm wrench, secure the footrest tube to the footrest support.
7. Securely tighten (5 Nm).

3.1.3 One piece footboard adjustments (depth and width)

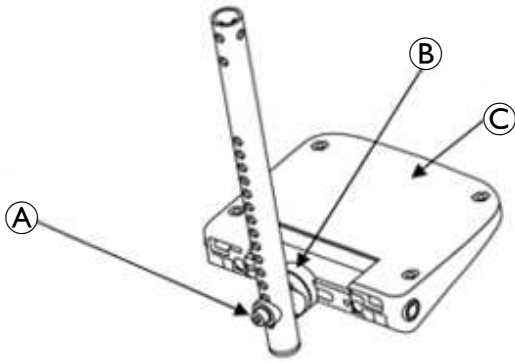


Ⓐ	Mounting screw (M6)
Ⓑ	Locking bolt (M5)
Ⓒ	3 depth positions
Ⓓ	Footboard central part
Ⓔ	Pre-set width position

1. Loosen mounting screw (M6) securing the depth position.
2. Adjust to desired depth (three positions), firmly tighten mounting screw.
3. Loosen four locking bolts (M5) securing the footboard central part.
4. Slide outside parts to the desired width using the pre-set width position.
5. Firmly tighten four locking bolts (M5).

! NOTICE!
For angle adjustment, refer to 3.1.4 *Installing angle adjustable footplate*, page 6.

3.1.4 Installing angle adjustable footplate



Ⓐ	Mounting Screw (M6)
Ⓑ	Tooth Plates
Ⓒ	Angle Adjustable Footplate

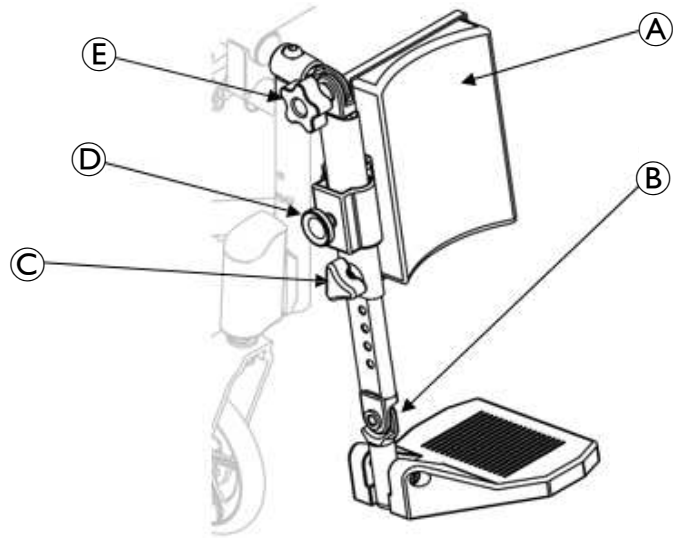
! NOTICE!
This procedure is for Angle Adjustable Footrests only.

1. Position the angle adjustable footplate on the footrest support tube at the desired height.
2. Using the locking screw, loosely secure the adjustable footplate to the footrest support tube.

! NOTICE!
Refer to 3.1.1 *Adjusting footrest height*, page 5.

3. Using the mounting screw, adjust to the desired angle (Tooth Plates) by rotating the footplate into the tooth plates support.
4. Slide outside parts to the desired width using the pre-set width position. Slide outside parts to the desired width using the pre-set width position.
5. If necessary, repeat STEPS 1 to 4 to adjust remaining Angle Adjustable Footplate.

3.1.5 Adjusting elevating legrest angle, height and calf pad height and depth



Adjusting the legrest angle

1. Loosen locking knob Ⓔ securing the rotating axle of the elevating legrest.
2. Adjust to desired angle, firmly tighten locking knob.
3. If necessary, repeat STEPS 1 to 2 to adjust remaining elevating legrest angle.

Adjusting the footplate height

1. Loosen Ⓒ securing the slide tube to the elevating legrest.
2. Adjust into one of preset positions and firmly tighten the knob (5 Nm).
3. If necessary, repeat STEPS 1 to 2 to adjust remaining footplate height.

Adjusting the footplate angle

1. Using the mounting screw (M6) Ⓑ, adjust to the desired angle (Tooth Plates) by rotating the footplate.
2. Securely tighten mounting screw (M6).
3. If necessary, repeat STEPS 1 to 2 to adjust remaining footplate angle.

Adjusting calf pad height

1. Loosen the fixing Ⓓ that secures the calf pad bracket to the elevating legrest assembly.
2. Slide the calf pad Ⓐ or down until the desired calf pad height is obtained.
3. Firmly tighten the fixing screw Ⓓ securing the calf pad Ⓒ to the elevating legrest assembly.
4. If necessary, repeat STEPS 1 to 3 to adjust remaining calf pad bracket.

Adjusting the hanger abduction angle (2 positions 0° or 30°)

1. Loosen fixing screw Ⓓ securing the locking mechanism of the hanger on the vertical tube of the frame.
2. Adjust to desired angle (0° or 30°), firmly tighten fixing screw.
3. If necessary, repeat STEPS 1 to 2 to adjust remaining hanger angle.

3.2 Armrests and mudguards



WARNING!

After ANY adjustments, repair, or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

3.2.1 Removing / installing / adjusting removable armrests

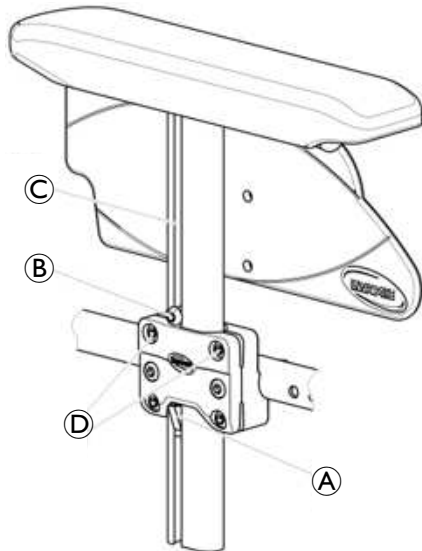


NOTICE!

To remove the removable armrest, reverse this procedure.

1. Previously press on the locking mechanism (A) located at the bottom of the armrest vertical bracket.
2. Pull/push the armrest by the arm cushion out of the holder.
3. To adjust how easy or difficult it is to pull/push the armrest out of the holder, change the degree to which the four screws (D) (M6) are tightened.

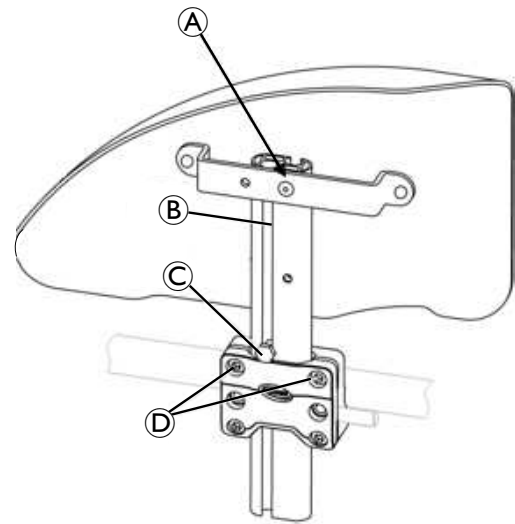
Adjusting removable armrest height



(A)	Locking mechanism
(B)	Armrest groove screw
(C)	Armrest groove tube
(D)	Four tightening screws

1. Remove the removable armrest. Refer to 3.2.1 *Removing / installing / adjusting removable armrests*, page 7.
2. Loosen the screw (B) (M6) in the armrest tube groove (C).
3. Move the armrest upwards or downwards until you reach the desired height, while keeping screw (B) (M6) in place (at the top edge of the holder).
4. Tighten firmly the screw (B) (M6).
5. Perform the setting on both sides.
6. Reinstall the removable armrest. Refer to 3.2.1 *Removing / installing / adjusting removable armrests*, page 7.

3.2.2 Removing / installing / adjusting mudguards



(B)	5mm Rivet
(B)	Armrest groove screw
(C)	Armrest groove tube
(D)	Four tightening screws

Removing installing removable mudguards



NOTICE!

To remove the removable mudguard, reverse this procedure.

1. Previously press on the locking mechanism A located at the bottom of the mudguard vertical bracket.
2. Pull / push the mudguard by the arm cushion out of the holder.
3. To adjust how easy or difficult it is to pull/push the mudguard out of the holder, change the degree to which the four screws (D) (M6) are tightened.

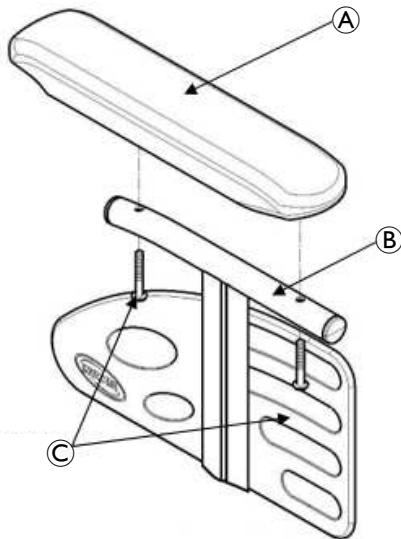
Adjusting mudguard height

1. Loosen the screw (B) (M6) in the groove C of the armrest tube.
2. Move the mudguard upwards or downwards until you reach the desired height, while keeping screw (B) (M6) in place (at the top edge of the holder).
3. Tighten firmly the screw (B) (M6).
4. Perform the setting on both sides.

Adjusting mudguard depth

1. Previously suppress the expandable rivet (5 mm).
2. Adjust in the other depth position.
3. Reinstall a new expandable rivet (5 mm).
4. Perform the setting on both sides

3.2.3 Replacing armrest arm pad



1. Remove the mounting © that secure the arm pad to the armrest ®.
2. Replace armpad ˆ and securely tighten with the existing mounting screws (M5).
3. Repeat STEPS 1 to 2 for the opposite side if necessary.

3.3 Seat and back

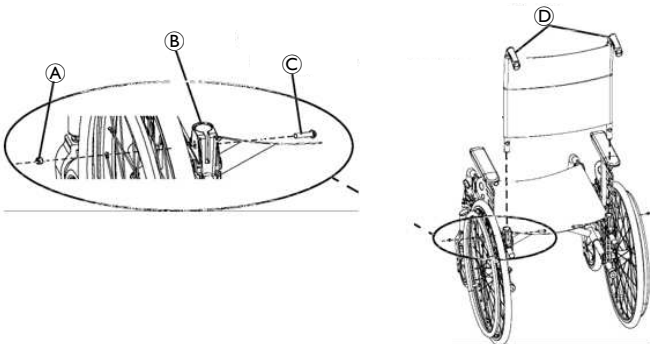


WARNING!

The seat height, seat depth, back angle, seating system, size/position of the rear wheels, size/position of the front castors, seating options (e.g., headrest, back bag, ...) as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the nine may cause the wheelchair to decrease in stability. Refer to the table 4.3 *Stability warning*, page 24.

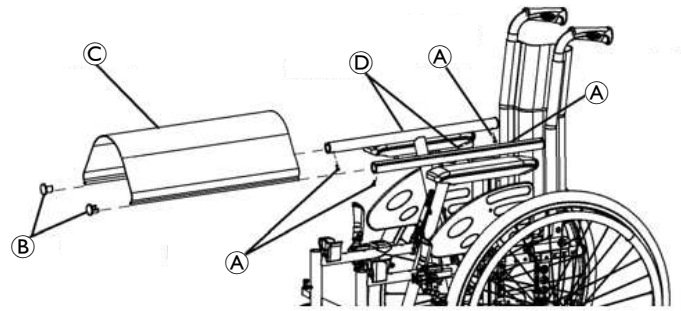
After ANY adjustments, repair, or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

3.3.1 Removing back-canes



1. Remove the mounting © and locknut (M6) ˆ that secures the back-cane ˆ to the back-cane bracket ®.
2. Repeat STEP 1 for the other back-cane
3. Remove the back-canes out of the back-cane brackets.

3.3.2 Removing/installing seat upholstery



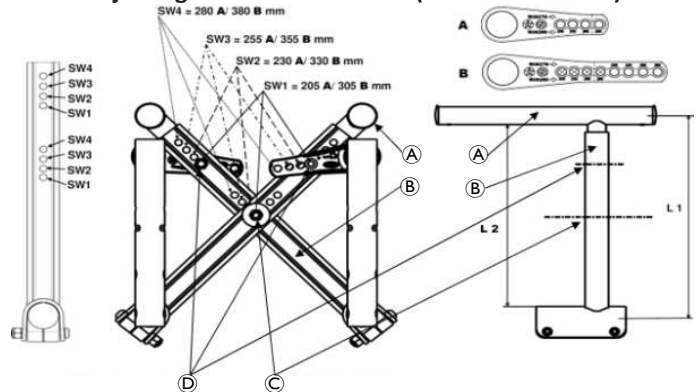
1. Fold the wheelchair.
2. Remove the mounting screws (Torx) ˆ that secure the upholstery © to the front and back rails.
3. Remove the end caps ® from the front of the seat rails ˆ.
4. Slide the seat upholstery out of the seat rails.



NOTICE!

To install the seat upholstery, reverse this procedure.

Adjusting Cross-braced width (Evolutive version)

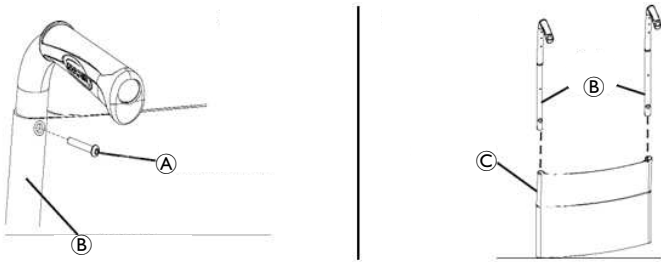


	A				B			
mm	205	230	255	280	305	330	355	380
L1	272,4	289,7	308,2	327,5	348,5	369,1	390,3	411,9
L2	243	260,3	278,8	298,1	319,1	339,7	360,9	382,5
	SW1	SW2	SW3	SW4	SW1	SW2	SW3	SW4

1. Remove the seat upholstery. Refer to above procedure.
2. Remove two mounting screws (M6) ˆ that secure the upper part of the cross brace ® and the central mounting bolt (M8) ©.
3. Slide the upper parts (cross brace and internal parts ˆ), on both sides, to the desired width using the predefined holes (SW1, SW2, SW3, SW4), adjust the central bolt to its new position. (refer to the Width Table above, follow the L1 or L2 values according to the selected width).
4. Securely tighten with the existing mounting screw (M6) and the central mounting bolt (M6).
5. Repeat STEPS 1 to 4 for the opposite side.
6. Install the appropriate seat upholstery, if necessary. Refer to 3.3.2 *Removing/installing seat upholstery*, page 8.
7. Installing the appropriate backrest upholstery, if necessary. Refer to 3.3.2 *Removing/installing seat upholstery*, page 8.
8. Installing the appropriate footplate, if necessary. Refer to 3.1.4 *Installing angle adjustable footplate*, page 6.

3.3.3 Removing / installing standard back upholstery

Removing back upholstery



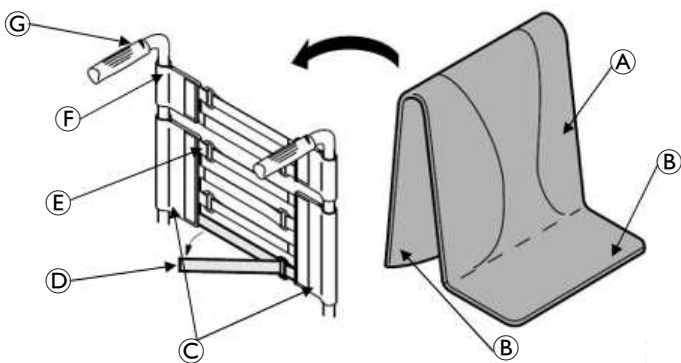
1. Remove the back-canes. Refer to 3.3.1 *Removing back-canes*, page 8.
2. Remove the mounting screw (A) that secures the back upholstery (C) to the back-canes (B). See diagram above left.
3. Remove the back upholstery from the back-canes. See diagram above right.
4. To install the back upholstery, reverse this procedure.

3.3.4 Contour (adjustable) back upholstery

Contour (adjustable) tension strips

The adjuster strips can be adjusted at various levels of tension to accommodate individual end users. In a typical scenario, the bottom two strips can be adjusted tightly to support and/or assist the extensor muscles.

Installing/replacing adjustable back upholstery



Installing back upholstery

1. Remove the existing back upholstery (A) from the wheelchair. Refer to 3.3.3 *Removing / installing standard back upholstery*, page 9.
2. Slide each section (anchor loop (E) /adjuster strap (D)) of the adjustable back upholstery (C) with the grommet hole facing the rear of the wheelchair.
3. Secure the adjustable back upholstery to the back-canes (G) with the two mounting screws (F).



WARNING!

Ensure that the wheelchair is fully opened, the back brace is fitted, and the seat rails properly located. The fastening straps (B) MUST be securely fastened before applying the back-upholstery cover. The Contour (adjustable) back should be checked whenever entering the wheelchair to ensure that the fastening strips are securely fastened.

4. Slip adjuster straps through corresponding anchor loops and adjust the back upholstery. Secure with the fastening strips.
5. Secure the back-upholstery cover (fastening strap) to the back of the adjustable back upholstery (fastening strap).
6. Flip the back-upholstery cover over the adjustable back upholstery and secure the fastening strips to the front of the adjustable back upholstery.
7. Lay the front portion of the back-upholstery cover on the seat upholstery.
8. Adjust the slack in the back-upholstery cover and then secure to the seat upholstery.

Replacing back upholstery

1. Lift the existing back upholstery cover and remove the cover from the wheelchair.
2. Remove the two mounting screws and washers that secure the existing adjustable back upholstery to the back-canes.
3. Slide each section (anchor loop/adjuster strap) of the existing adjustable back upholstery off the back-canes.
4. Slide each section (anchor loop/adjuster strap) of the new adjustable back upholstery with the grommet hole facing the rear of the wheelchair.
5. Secure new adjustable back upholstery to the back-canes with the two mounting screws and washers.

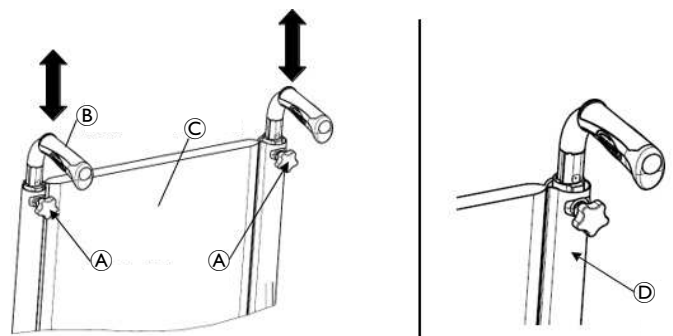


WARNING!

Ensure that the wheelchair is fully opened, the back brace is fitted, and the seat rails properly located. The fastening strips MUST be securely fastened before applying the back-upholstery cover. The Contour (adjustable) back should be checked whenever entering the wheelchair to ensure that the fastening strips are securely fastened.

6. Slip adjuster strips through corresponding anchor loops and adjust the back upholstery. Secure with the fastening strips.
7. Secure the new back upholstery cover (fastening strap) to the back of the new adjustable back upholstery (fastening strap).
8. Flip the new back upholstery cover over the new adjustable back upholstery and secure the fastening strips to the front of the new adjustable back upholstery.
9. Lay the front portion of the new back upholstery cover on the seat upholstery.
10. Adjust the slack in the new back upholstery cover and then secure to the seat upholstery.

3.3.5 Adjusting the height adjustable back



1. Loosen, but DO NOT remove, the height adjustment knobs (A).
2. Reposition the back canes (B) to the desired height

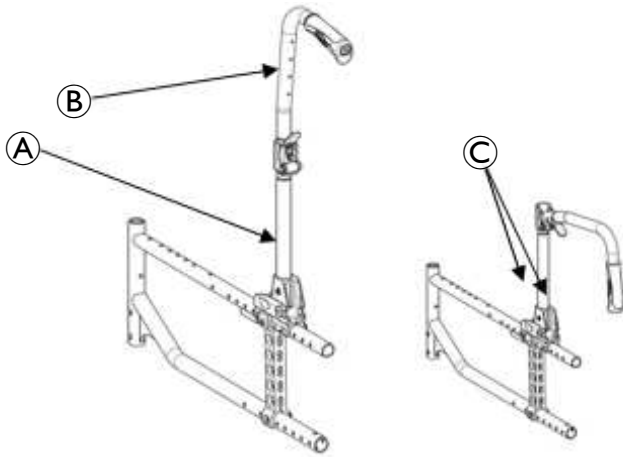
! NOTICE!
Both back canes should be adjusted to the same height.

! NOTICE!
DO NOT raise push handles to maximum height when tilting the chair.

- Slip adjuster straps through corresponding anchor loops and adjust the back upholstery ©. Secure with the fastening strips.

! NOTICE!
To prevent accidental removal of a back-cane, the spring button lock will engage at the full extension of the back-cane. To disengage the button, press the button ㉔ located below the height adjustment, under the upholstery, on the back-cane (detail in the illustration above right).

3.3.6 Removing / installing different types of backrests



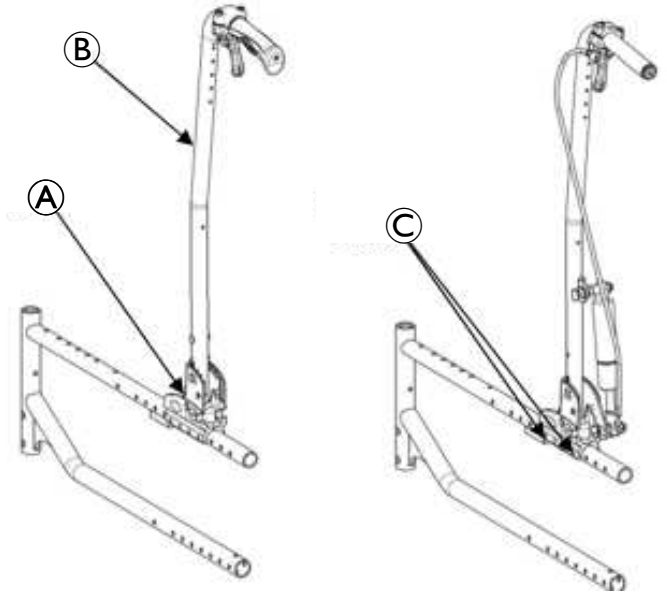
On a folding backrest

- Remove the back-cane bracket ㉔. Refer to 3.3.7 *Removing / adjusting / installing back-cane bracket*, page 10.
- Pull up on the seat upholstery.
- Remove the two mounting screws © and locknuts (M6) that secure the back-cane bracket to wheelchair frame.
- Install the new set including the appropriate backrest upholstery.

! NOTICE!
To install the fixed/folding backrest, reverse this procedure from STEP 3 to 1.

! NOTICE!
Both back canes ㉔ should be set to the same adjustment hole.

On a recliner backrest (Mechanical and Gas strut versions)

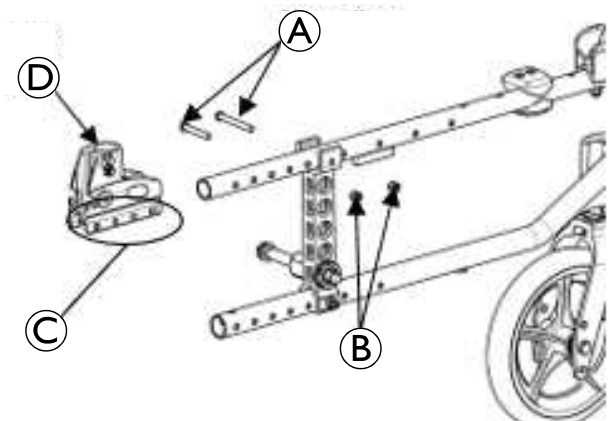


- Remove the back-cane bracket ㉔. Refer to 1.1 *Removing / Adjusting / Installing Back-Cane Bracket*, page 1.
- Pull up on the seat upholstery.
- Remove the two mounting screws © and locknuts that secure the back-cane bracket to the wheelchair frame.
- Install the new set including the appropriate backrest upholstery.

To install the backrest, reverse procedure from STEP 3 to 1.

! NOTICE!
Both back canes ㉔ should be set to the same adjustment hole.

3.3.7 Removing / adjusting / installing back-cane bracket



Folding backrest

- Remove the back-caness. Refer to 3.3.1 *Removing back-caness*, page 8.
- Pull up on the seat upholstery.
- Remove the two mounting screws ㉔ and locknuts ㉔ that secure the back-cane bracket ㉔ to the wheelchair frame.

4. Do one of the following:
 - **To Remove:** slide the back-cane bracket off the back of the wheelchair frame.
 - **To Adjust:** slide the back-cane bracket into one of the four adjustment holes © on the bracket.
 - *To Install the back-cane bracket, reverse this procedure.*

! **NOTICE!**
Both back canes should be set to the same adjustment hole.

Recliner backrest (Mechanical and Gas strut versions)

1. Loosen, but DO NOT remove, the height adjustment knobs.
2. Reposition the back canes to the desired height.

! **NOTICE!**
Adjust both back canes to the same height.

! **NOTICE!**
DO NOT raise push handles to maximum height when tilting the chair.

3. Slip adjuster straps through corresponding anchor loops and adjust the back upholstery. Secure with the fastening strips.

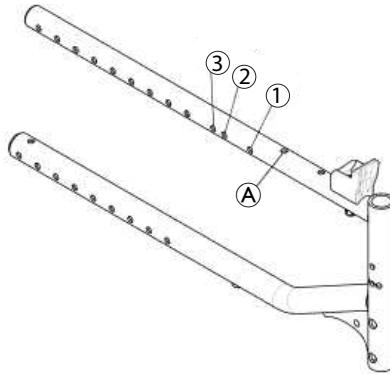
! **NOTICE!**
To prevent accidental removal of a back-cane, the spring button lock will engage at the full extension of the back-cane. To disengage the button, press the button located below the height adjustment, under the upholstery, on the back-cane.

3.3.8 Installing / removing seat posture belt

1. Remove seat cushion from wheelchair, if any.
2. Remove the existing seat posture belt from the wheelchair, if any.

! NOTICE!
If the belt screw also secures the back-cane to the frame, don't forget to tighten it again after the removal of the belt.

3. Attach the two halves of the new seat posture belt.

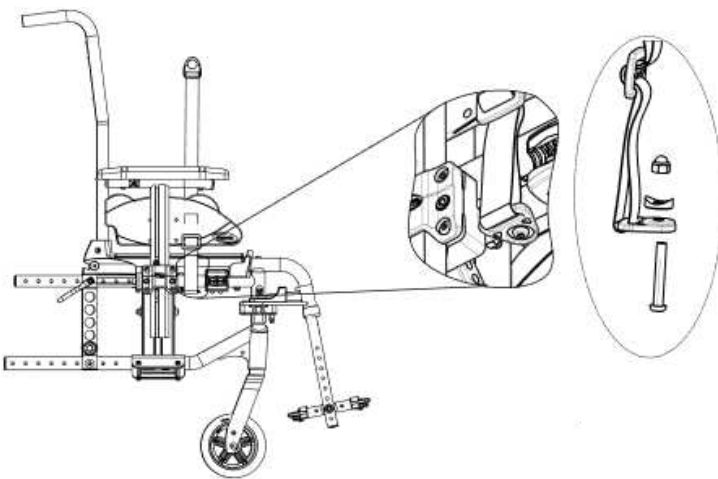


Action 3 Junior frame with the fixation position hole schema for the different cross-brace depth wheelchair

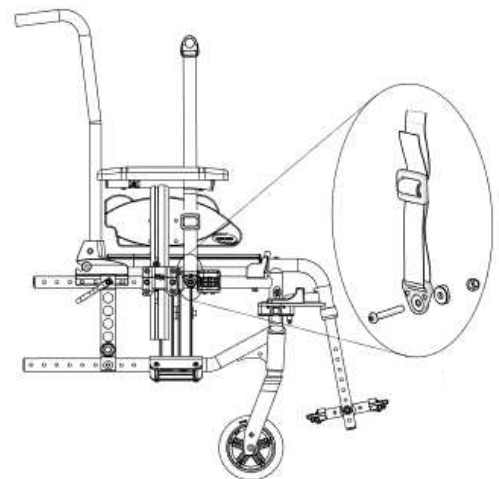
4. Choose the most appropriate position of the belt for the user – see above figure for recommended positions.

! NOTICE!
The position may vary depending on user morphology. Contact a healthcare professional if required.

5. Align the mounting holes on the frame and one end of the new seat posture belt (see figures below).
6. Secure the new seat posture belt to the wheelchair frame with one mounting screw, washer, and nut. Tighten securely.
7. Repeat STEPS 5 and 6 for the opposite side of the seat posture belt.
8. Reinstall the seat cushion onto wheelchair, if any.
9. Adjust and secure the length of the belt as described in the instructions of use of the belt manufacturer.



Installing/Removing Seat Posture Belt with cross-brace depth of 250. Torque 0.5-1 Nm.



Installing/Removing Seat Posture Belt for all other cross-brace depth wheelchairs. Torque 0.5-1 Nm.

Tools required
Allen key 4 mm and wrench of 10 mm.

Cross-brace depth (mm):		250	300	325	350	375
Belt Compatibility:	NB275S-B5-ASM-50 Bodypoint belt L1070 Width 25	OK	OK	OK	OK	OK
	NB285M-B5-ASM-50 Bodypoint belt L1320 Width 38	OK	NC	OK	OK	OK
Recommended Fixation Position Hole:	See <i>Action 3 Junior frame with the fixation position hole schema for the different cross-brace depth wheelchair, page 12</i>	A	1	1	3	2

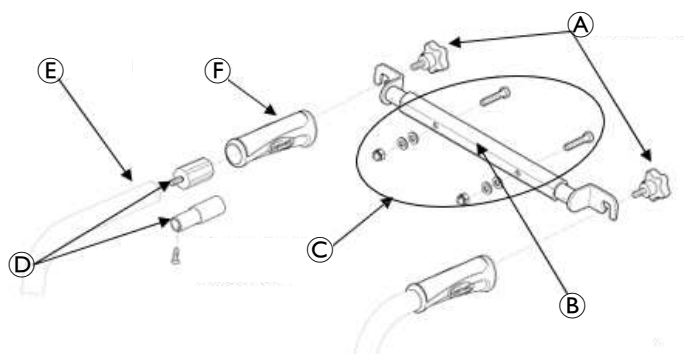
3.3.9 Installing / removing / adjusting the back brace



WARNING!

If a back brace is already installed, you don't have to re-install the back-cane inserts (for fixed backrest canes only).

After ANY adjustments, repair, or service and before use, make sure all attaching hardware is fitted and tightened securely - otherwise injury or damage may occur.



Removing / installing back brace (Evolutive version)

1. Remove the end caps from the back-canes (E).
2. Remove the handles from the back-canes. Cut the handle (F) lengthwise using a sharp tool.
3. Install the inserts into the canes (fixed /recliner backrest canes only).
4. Secure the inserts (D) with mounting screws (fixed backrest canes only).
5. Install the handles on the back-canes. Previously, a solution of neutral alcohol inside the handle and settle it immediately on the back-cane.
6. Align the back brace ends with the handles of the back-canes.
7. Secure the back brace to the back-canes with the mounting bolts (A).

Adjusting back brace width

1. Loosen back brace hardware (M6) (C) securing the back brace central part (B).
2. Slide outside parts equally on both side to the desired width using the pre-set width positions.
3. Firmly tighten back brace hardware (M6).

3.4 Rear wheels / front castors



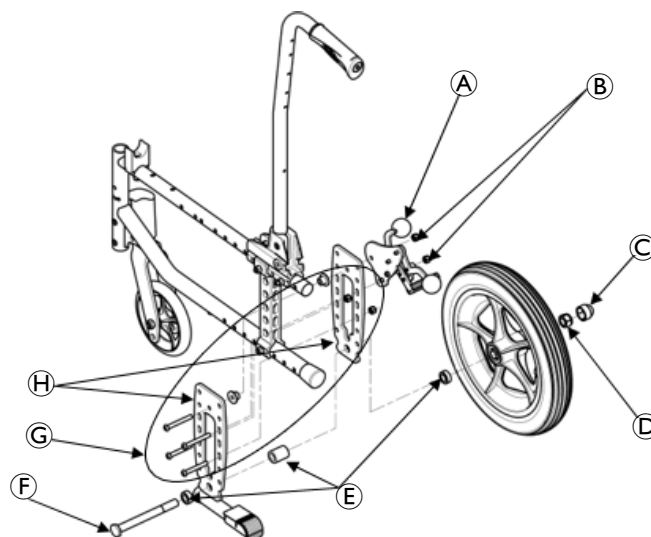
WARNING!

The seat height, seat depth, back angle, seating system, size/position of the rear wheels, size/position of the front castors, seating options (e.g., headrest, back bag,...) as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the nine may cause the wheelchair to decrease in stability.

After ANY adjustments, repair, or service and before use, make sure all attaching hardware is fitted and tightened securely - otherwise injury or damage may occur.

3.4.1 Removing / installing rear wheels

Fixed axles, transit version



Removing rear wheels

1. 12"; remove the fixed axle (F), washers, dust cap (C) and locknut (D) that secure rear wheel to the axle brackets (H). Remove existing rear wheel from the wheelchair.
2. Install new/existing rear wheel onto wheelchair. Refer to the [Installing Transit Kit](#) paragraph below. See STEPS 3 to 6 only.
3. 22" or 20"; remove the complete wheel and the axle bracket from the axle plate.

Installing transit kit

1. Always make sure that the axle plate is in the passive position on both sides, refer to [3.4.3 Adjusting quick-release axles, page 14](#).
2. Install the axle bracket and anti-tip device bracket with the axle brackets hardware (G).
3. Install fixed axle through washers (E), new/existing rear wheel, and axle bracket.
4. Securely tighten with the existing fixed axle locknut. Torque to 25 Nm.
5. Fixed and adjust the transit brake (A) with its brake hardware (B), adjust the distance between the brake shoe and the wheel, see [3.6.1 Adjusting wheel brakes, page 21](#).
6. If necessary, repeat STEPS 1 to 5 for opposite rear wheel.



NOTICE!

Both axle brackets should be set at the same position. The head of bottom mounting screws needs to be on the outside position.



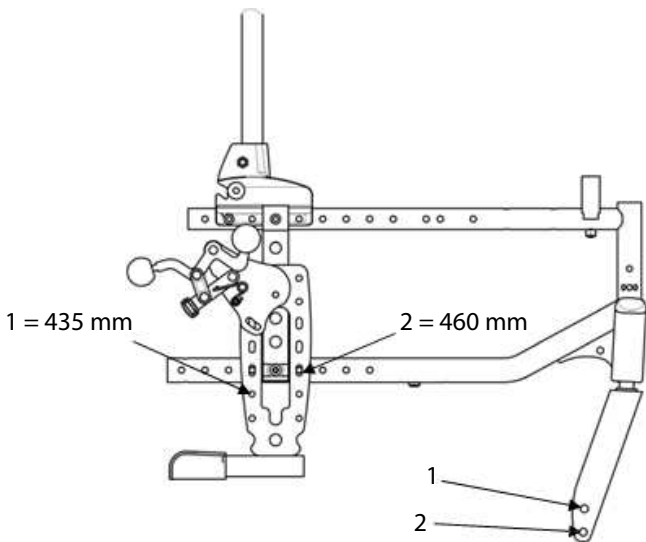
NOTICE!

To obtain the desired front seat to floor height (for details, see [3.5.3 Changing seat-to-floor height, page 20](#)).

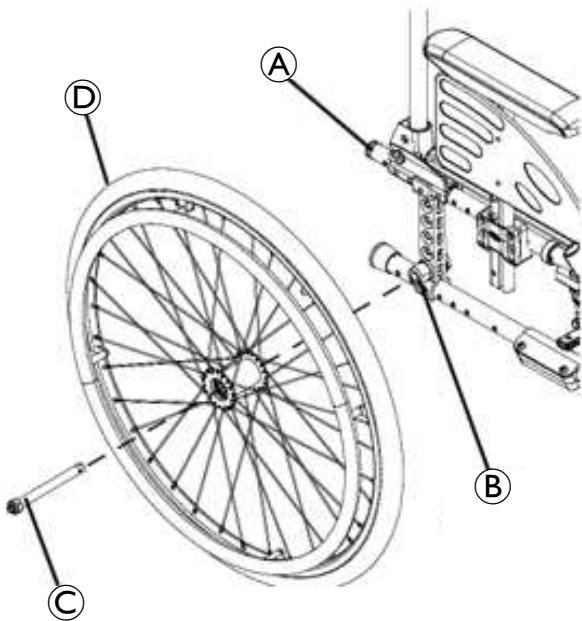
You will need to perform one or all of the following:

- Change the mounting position on the fork. Refer to [3.4.10 Removing / installing / repositioning the castor assemblies, page 17](#).
- Change the fork size or adding/removing height adjustment spacers. Refer to [3.4.9 Adjusting fork rotation, page 17](#).

- Change the rear height positioning of the rear wheel and the front wheel.



3.4.2 Quick-release axles



Removing

1. Hold the center of the rear wheel **D** and push in the tip of the quick release axle **C**.
2. Pull the quick release axle and rear wheel out of the axle bracket **B** on the wheelchair frame **A**.
3. Push in the tip of the quick release axle again and pull the quick release axle out of the existing rear wheel.
4. Install new/existing rear wheel onto wheelchair. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.

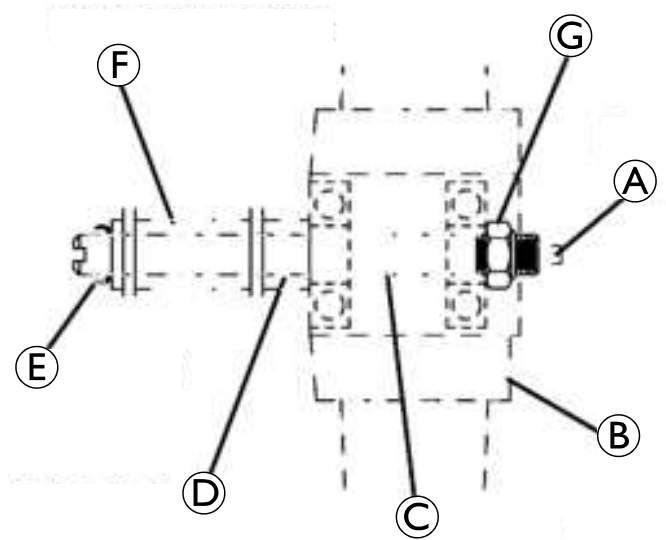


WARNING!

Make sure the detent pin and locking pins of the quick-release axle are fully released before operating the wheelchair.

- The locking pins **MUST** be protruding past the inside of rear wheel hub for a positive lock.
- Keep locking pins clean.
- Invacare recommends inserting Quick-Release axles with the head end to the inside of the wheelchair to prevent accidental release during contact leisure activities

3.4.3 Adjusting quick-release axles



1. Remove rear wheel and quick release axle **C** from the wheelchair frame **F**. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
2. Depress detent pin **A** in the quick release axle and slide the quick release axle through the quick release axle bracket **D** and rear wheel hub **B**.
3. Release detent pin to ensure that the locking pins **E** are fully released.
4. Increase or decrease end play by adjusting the locknut **G** on the end of the quick release axle.



WARNING!

Make sure the detent pin of the quick release axle is fully released **BEFORE** operating the wheelchair.

- Keep locking pins clean.

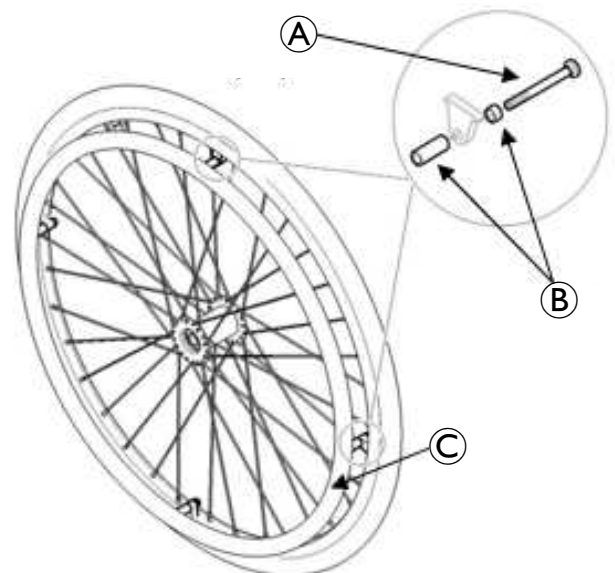
5. Reinstall rear wheel onto the wheelchair. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
6. Repeat STEPS 4 to 5 until the quick release axle detent pins are fully released past the wheelchair frame.

3.4.4 Replacing handrims



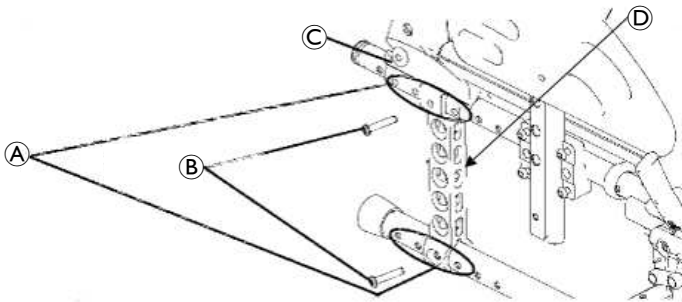
NOTICE!

To replace the handrim, use new mounting pre-glued screws (M5).



1. Remove the rear wheel from the wheelchair. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
2. Remove the mounting screws (A) that secure the existing handrim (C) to the rear wheel.
3. Remove the existing handrim.
4. Install the new handrim and secure to the rear wheel with the new mounting pre-glued screws (M5).
5. The space between the rim and handrim can be adjusted thanks to the different length of the plastic spacers (B).
6. Reinstall the rear wheel to the wheelchair. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
7. Repeat STEPS 1 to 6 for opposite wheel, if necessary.

3.4.5 Adjusting the wheelbase length



1. Remove the wheel. See 3.4.1 *Removing / installing rear wheels, page 13*.
2. Remove the two mounting screws (B) that secure the top and bottom of the axle plate (D) to the wheelchair frame.



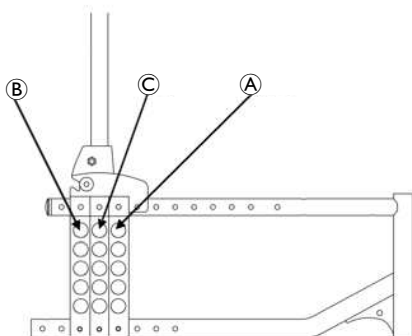
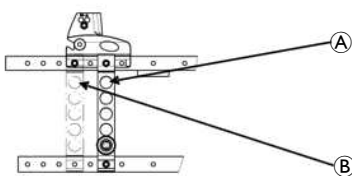
CAUTION!

The top of the axle plate must remain on the plastic seat bracket (C). Otherwise, scratching and slight frame damage may occur.

3. Align the axle plate with one of four adjustment holes (A).

There are 3 positions possible:

- Factory setting for Fixed backrest is Standard position (A),
- for Recliner backrests, use Passive position (B),
- position (C) for other configurations.



WARNING!

The two mounting screws need to be two adjustment holes apart to maintain frame integrity. Respect factory settings related to backrest type (A for Fixed, B for Recliner). Medium position (C) of the axle plates directly relates to the stability of the wheelchair. Only change to one or any combination of the three positions may cause the wheelchair to increase or decrease in stability. Anti-tip devices can be fitted to secure the stability if required. Refer to 3.8.1 *Installing / adjusting simple anti-tip devices, page 23*.



NOTICE!

When using the last adjustment position, the existing mounting screw needs to be switched to the front of the back-cane bracket.

4. Repeat STEPS 1 to 3 for the other axle plate.



NOTICE!

Both axle plates should be set at the same position. The head of bottom mounting screws needs to be on the outside.

3.4.6 Rear wheel camber



WARNING!

Risk of tipping

Changing the camber of your wheelchair can reduce stability and increase the risk of tipping. Modified camber can also:

- Affect stability and maneuverability of the wheelchair.
- Cause the wheels to touch or rub on the armrests (or their supports).



NOTICE!

The weight of the user increases the positive camber of the wheels. The heavier the user the greater the camber increase. For a user with the maximum authorised weight, camber can increase by up to 2° and this can:

- Affect stability and maneuverability of the wheelchair.
- Cause the wheels to touch or rub on the armrests (or their supports).

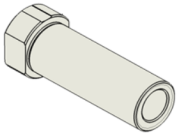
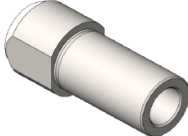
The wheelchair has three possible camber options allowing users to benefit from ideal stability and maneuverability settings according to needs.



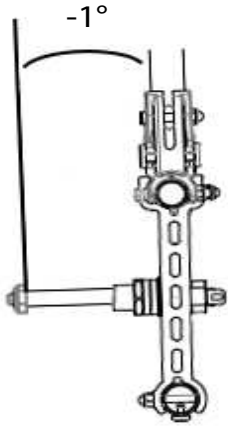
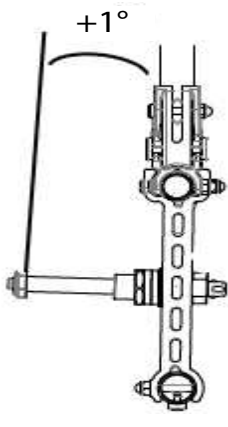
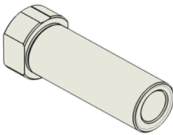
Camber options are only available with wheelchairs equipped with standard or reinforced wheels.

Rear wheel camber components

The wheelchair has one of the following wheel axle bearings:

Wheel axle bearings	
	
Option to adjust rear wheel cambers	No option to adjust rear wheel cambers
Note the flattened surface on the upper tip of this axle bearing nut	The axle bearing nut has no flattened tip

Flattened upper-tip wheel axle bearing positions are as follows for negative and positive camber adjustments:

Wheel axle bearing positions		
		
Possible camber adjustment	-1°	+1°
Wheel axle bearing		
Wheel axle bearing flat tip position	Flat tip on axle bearing faces down	Flat tip on axle bearing faces up

Increasing or decreasing rear wheel camber

1. Remove the wheel. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
2. Loosen the locknut and washer that secures the axle bearing to the axle plate.
 - To increase the camber, rotate the axle bearing nut so that the flat edge faces upwards.
 - To decrease the camber, rotate the axle bearing nut so that the flat edge faces downwards.
3. Re-tighten the locknut to secure the axle bearing to the axle plate.
4. Repeat STEPS 1 to 3 for the other rear wheel.



WARNING!

Risk of injury and/or wheelchair damage

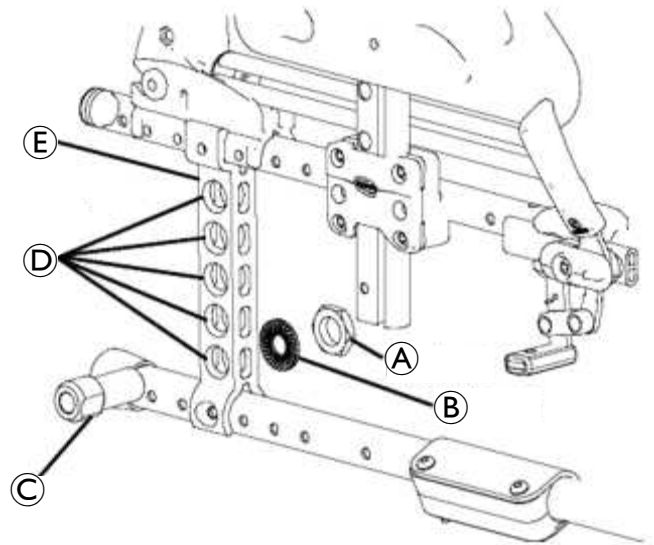
After ANY adjustments, before use, make sure all attaching hardware is tightened securely.



NOTICE!

Both axle bearings should be set at the same camber position.

3.4.7 Adjusting rear wheel height



1. Remove the rear wheel. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
2. Remove the locknut **A** and washer **B** that secure the axle bracket **C** to the axle plate **E**.
3. Align the axle bracket with one of the five adjustment holes **D** on the axle plate.
4. Secure the axle bracket to the axle plate, at the desired height, with the locknut and washer.
5. Install the rear wheel. Refer to 3.4.1 *Removing / installing rear wheels, page 13*.
6. Repeat STEPS 1 to 5 for the other rear wheel.



NOTICE!

Both rear wheels should be set at the same position.

3.4.8 Replacing / repairing rear wheel & front castor tyre and inner tube



CAUTION!

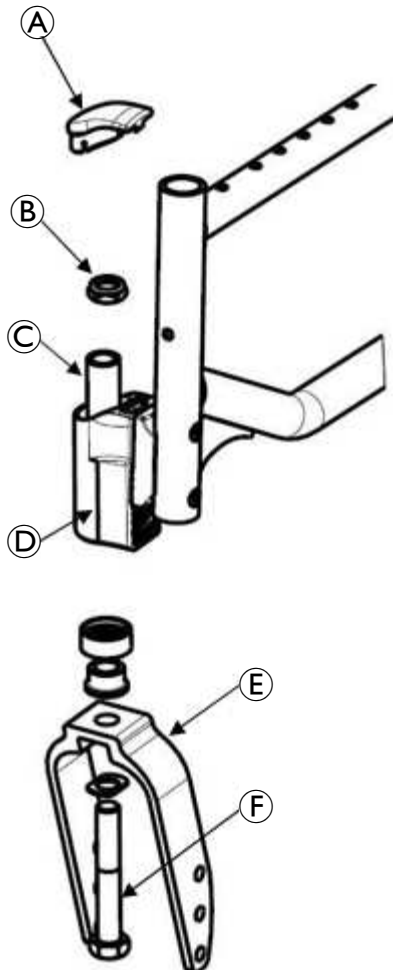
As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear, and should be replaced when necessary.

3.4.9 Adjusting fork rotation



WARNING!

Castor angle vertical axis ⑥ MUST be at 90° +/- 1° from the ground, if not a flattering risk may occur. Both castor assemblies should be at the same angle. After ANY adjustments, before use, make sure all attaching hardware is fitted and tightened securely - otherwise injury or damage may occur.



1. Remove the dust cover ① from the castor housing ②.
2. To properly tighten castor journal system and guard against wheel flutter, perform the following check:
 - a. Tip back the wheelchair to floor.
 - b. Pivot castor fork assemblies ⑤ to the rear position.
 - c. Push castor to initiate clockwise movement.
 - d. Let castor fork assembly rotate freely, if not change the upper specific bearing ③.
3. Adjust locknuts to appropriate torque (15-20 Nm) with a 19 mm socket wrench; do not over tighten the locknut ④, you may risk damaging the bearings.
4. Test wheelchair for maneuverability.
5. Snap dust cover into the castor housing.
6. Perform STEPS 1 to 5 on the other side.

3.4.10 Removing / installing / repositioning the castor assemblies



NOTICE!

Fixing screws may only be used once. Always use the dedicated spare parts kit (SP1644391) for castor housing standard. Alternatively, the screws can be cleaned (remove old thread locking adhesive) and reinstalled with new medium-strength thread locking adhesive (e.g.: LOCTITE® 243™ or 270™).



NOTICE!

Always refer to the liquid thread locking adhesive supplier's recommendations before applying on the screw.



NOTICE!

If replacing a front castor, please note the mounting position of the existing front castor for installation of the new front castor.



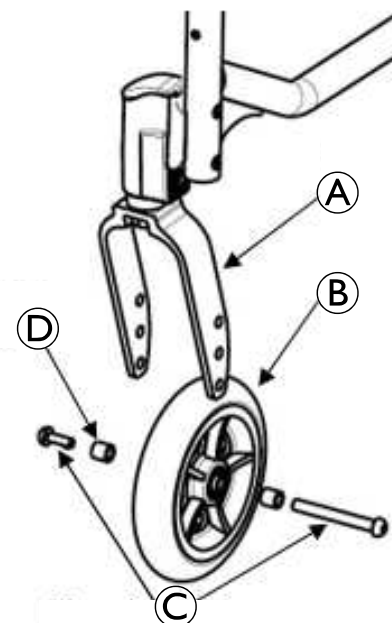
NOTICE!

If repositioning front castors or replacing the existing front castor with a castor of a different size, refer to Changing Front Seat-to-Floor Height paragraph to determine the front castor position needed for the required front seat-to-floor height.



NOTICE!

Both front castors MUST be the same size and adjusted to the same height.



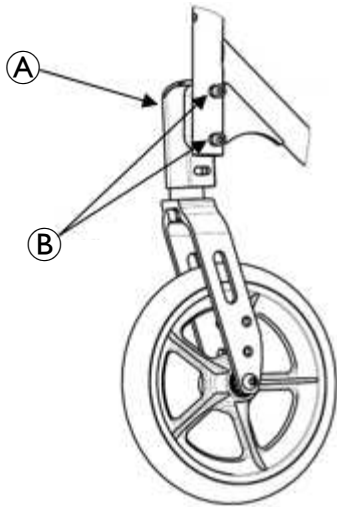
Removing front wheel

1. Remove the mounting bolt (5 mm Allen key) ③, axle spacers ④ (if present) that secure the front wheel ② to the fork ①.
2. Remove the wheel from the fork.

Installing front wheel

1. Using the mounting bolt (5 mm Allen key), axle spacers (if present), secure the wheel to the desired wheel mounting position.
2. Ensure fork stem is perpendicular to the flat surface. Refer to the following procedure.

Adjusting castor angle



1. Remove the two mounting screws (5 mm Allen key) (B) that secure the castor housing assembly (A) to the wheelchair frame and the attachment plate.



NOTICE!

To adjust the castor angle on both sides, use the spare parts kit (SP1644391) consisted of four mounting pre-glued screws (M6 x 37mm) and two attachment plates.

2. Fit but not tighten the new attachment plate and the two mounting screws.
3. Rotate the castor assembly to the desired angle.



NOTICE!

Both front castors **MUST** be the same size and adjusted to the same height.

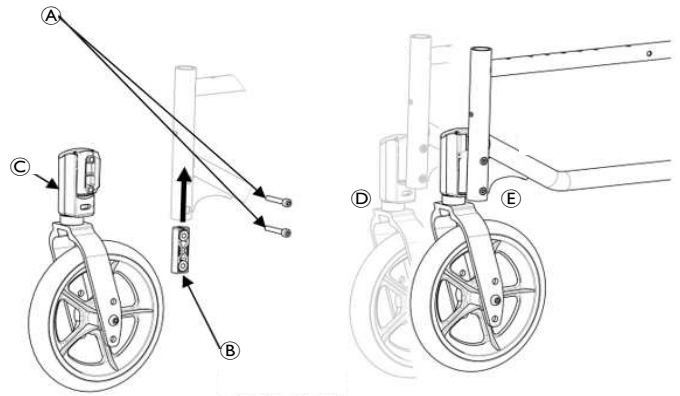
4. Tighten in 3 steps (lower-upper-lower) progressively the two mounting pre-glued screws (13/14 Nm) that secure the castor housing assembly to the wheelchair frame.
5. Repeat STEPS 1 to 4 for the other castor housing assembly.



NOTICE!

You **MUST** wait 24 hours before using the wheelchair (polymerization time required for a safe assembly).

Adjusting castor height position



1. Remove the two mounting screws (A) that secure the castor assembly (C) to wheelchair frame and the attachment plate.



NOTICE!

To adjust the castor angle on both sides, use the spare parts kit (SP1657713) consisting of four mounting pre-glued screws (M6x37mm) and two attachment plates.

2. Move the castor housing assembly to one of two positions (D or E) of the above figure. Always check that the plastic insert (B) is present before tightening the mounting screws.



NOTICE!

Both castor housing assemblies must be set at the same position.

3. To finalize the assembly, refer to section above, Adjusting castor angle and repeat STEPS 4 to 6.

3.5 Seat to floor height



WARNING!

After ANY adjustments, repair, or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

3.5.1 Seat angle



NOTICE!

Refer to 3.5.2 *Measuring seat-to-floor height*, page 19 for measuring instructions.



NOTICE!

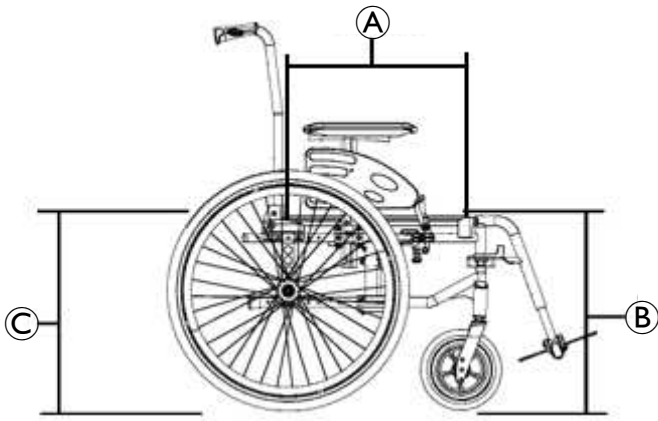
We recommend that the rear seat-to-floor height be **AT LEAST 25 mm** shorter than the front seat-to-floor height. Otherwise, a forward seat angle can occur.

Subtract the rear seat-to-floor height measurement from the front seat-to-floor height measurement to determine the amount of seat angle as shown in the example below.

Measuring rear seat-to-floor height

- ! NOTICE!**
The rear seat-to-floor heights are based on pneumatic tyres and pneumatic tyres with flat free inserts. If wheelchair is equipped with urethane tyres, subtract 6.5 mm from the measurement.

Rear seat-to-floor height: Measure distance between the rear of the seat upholstery and the ground/floor ©.



Component	Description
Ⓐ	Rear seat-to-floor height
Ⓑ	Seat depth = 350 mm
Ⓒ	Front seat-to-floor height

Example:

460 mm	Seat-to-floor height
- 415 mm	Minus rear seat-to-floor
Height (5° +/-1°)	Equals seat angle

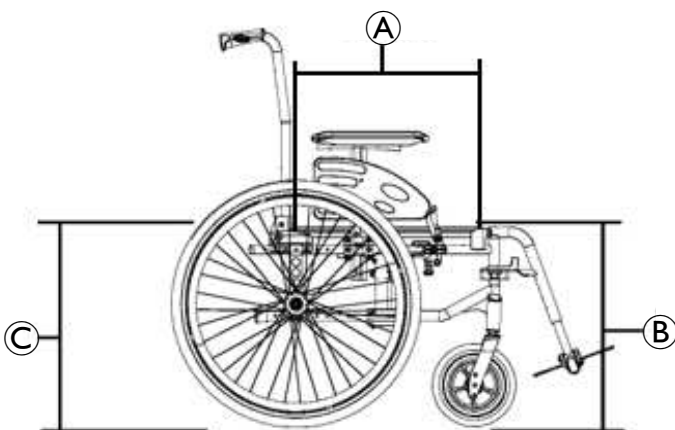


WARNING!

Because of the parts mechanical tolerances and all adjustments possible (+/- 1°) the seat angles possible are 1,5° +/-1° or 5° +/-1° or 8,5° +/-1° depending of the wheelchair assembly. Refer to table Seat-to-floor heights.

3.5.2 Measuring seat-to-floor height

- ! NOTICE!**
The front and rear seat-to-floor heights are approximate to 6.5 mm due to tyre wear and air pressure.



Measuring front seat-to-floor height

Front seat-to-floor height: Measure the distance between the front of the seat upholstery Ⓐ and the ground/floor Ⓑ.

3.5.3 Changing seat-to-floor height



WARNING!

The seat height, seat depth, back angle, seating system, size/position of the rear wheels, size/position of the front castors, seating options (e.g. headrest, back bag, ...) as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the nine may cause the wheelchair to decrease in stability. Refer to 5.2 *Identifying and repairing faults*, page 31.

Always check castor and rear wheel vertical axis is to 90° +/-1° from the ground.



NOTICE!

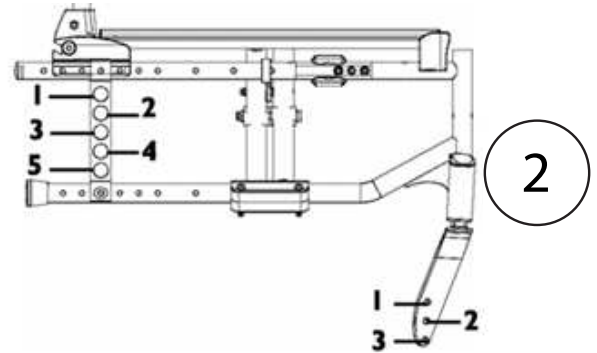
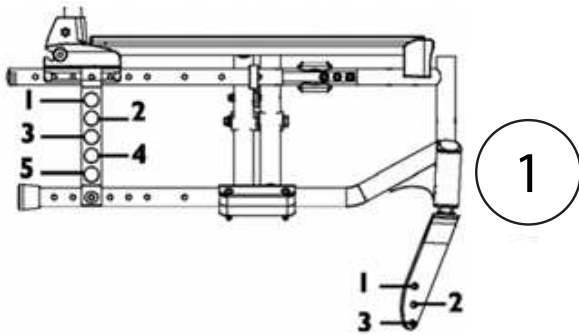
For this procedure, refer to the table to determine adjustment(s) necessary to achieve desired front seat to floor height.



NOTICE!

To obtain the desired front seat to floor height, you must perform one or all of the following:

- Changing the castor size and/or mounting position on the fork, and/or seat angle. Refer to 3.4.10 *Removing / installing / repositioning the castor assemblies*, page 17.
- Changing the fork size or adding/removing height adjustment spacers. Refer to 3.4.9 *Adjusting fork rotation*, page 17.
- Changing the rear wheel size. Refer to 3.4.1 *Removing / installing rear wheels*, page 13.
- Changing the rear height positioning. Refer to 3.4.3 *Adjusting quick-release axles*, page 14.



Front Seat Height	Front castor					
	5" x 1"			5" x 1" 3/4		
	Castor Position	Fork Type	Wheel Fixation	Castor Position	Fork Type	Wheel Fixation
460 mm	P2	40 mm (2 holes)	2	P2	60 mm (2 holes)	2
435 mm	P1/P2		2/1	P1/P2		2/1
410 mm	P1		1	P1		1

Front Seat Height	Rear wheel / Seat angle					
	20"			22"		
	1.5°	5°	8.5°	1.5°	5°	8.5°
460 mm	N/A	5	4	5	4	3
435 mm	5	4	3	4	3	2
410 mm	4	3	2	3	2	1

3.6 Wheel brakes



WARNING!

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur. Ensure that the clamp assembly is well positioned in its frame located position.

3.6.1 Adjusting wheel brakes



NOTICE!

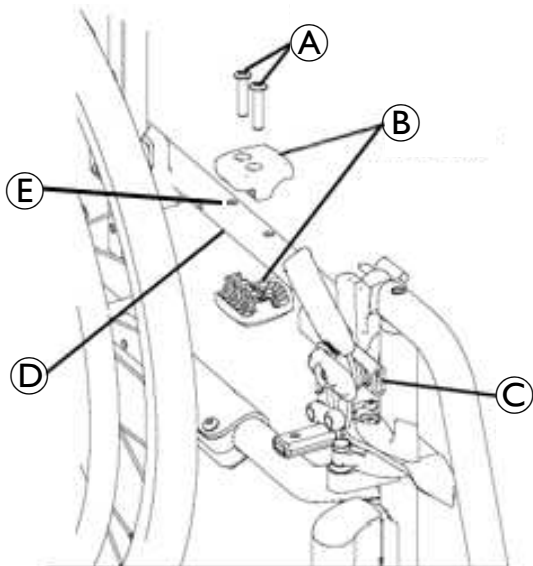
Refer to 3.5.2 *Measuring seat-to-floor height*, page 19 for measuring instructions.



NOTICE!

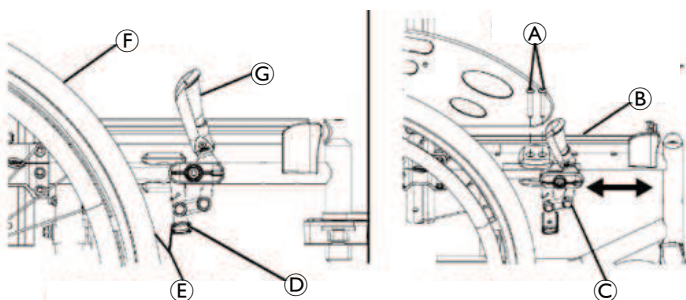
Before adjusting or replacing the wheel brake assemblies, ensure that the tyres are inflated to the recommended BAR, KPa, P.S.I. on the side wall of the tyre.

Adjusting wheel brake position



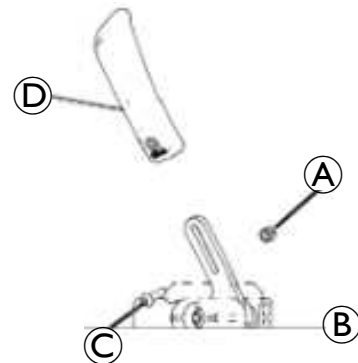
1. Remove the two mounting screws (A) that secures the wheel brake (C) assembly to the wheelchair frame (D).
2. Remove wheel brake assembly from the clamp assembly (B).
3. Move the clamp assembly (if necessary) to the other wheel brake position on the wheelchair frame.
4. Install the wheel brake assembly into the clamp assembly.
5. Secure the wheel brake assembly to the wheelchair frame (E) with the two mounting screws.
6. Repeat STEPS 1 to 6 for the other wheel brake assembly.

Adjusting wheel brake tension



1. Loosen, but DO NOT remove the two set screws (A) that secure the wheel brake assembly (C) to the wheelchair frame (B).
2. Measure the distance between the wheel brake shoe (D) and the rear wheel (F).
3. Slide the wheel lock (G) along the wheelchair frame until the measurement is 4 mm for solid tyre and for pneumatic (E).
4. Securely tighten the two set screws (A).
5. Repeat STEPS 1 to 4 for the opposite wheel brake.
6. Engage the wheel brakes and push against the wheelchair to determine if the wheel brakes engage the rear wheels enough to hold the occupied wheelchair.
7. Repeat STEPS 1 to 6 until the wheel brakes engage the rear wheels enough to hold the occupied wheelchair.

3.6.2 Replacing wheel brake handle



1. Remove the mounting screw (C) and locknut (A) that secures the wheel brake handle (D) to the wheel brake assembly (B).
2. Remove the wheel brake handle and discard.
3. Align the new wheel brake handle with the wheel brake assembly.
4. Secure the new wheel brake handle with the mounting screw and locknut.
5. If necessary, repeat STEPS 1 to 4 for the other wheel brake.

3.6.3 Installing / adjusting hub brakes



WARNING!

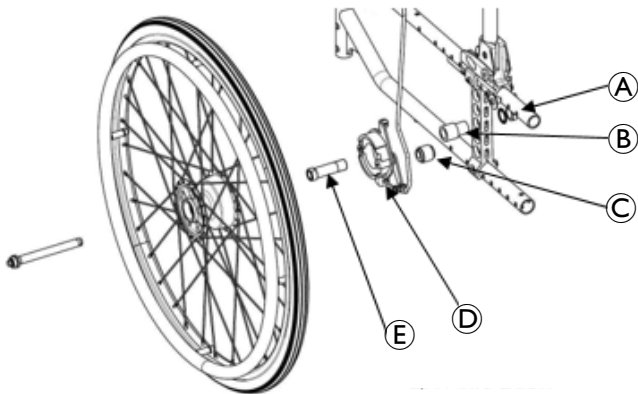
After ANY adjustments, repair, or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

Always operate the two brakes simultaneously and do not take slopes exceeding 5° to ensure perfect control of the wheelchair steering. Hub brakes are running brakes only, always use the manual brakes to secure the wheelchair during short or long stops. Ensure both hub brakes are adjusted to the same mounting hole.

Installing / adjusting hub brakes

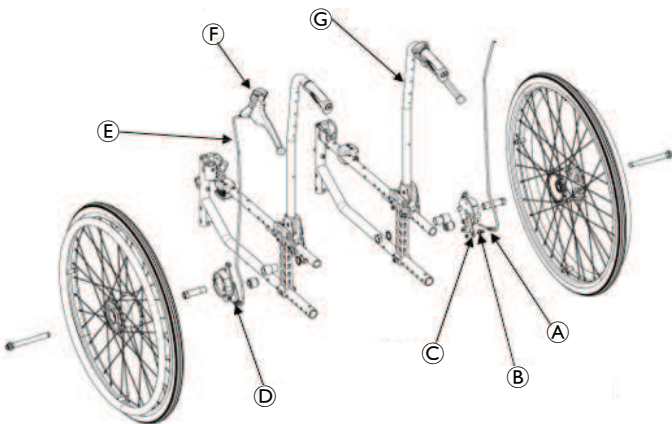
! NOTICE!

After adjusting or replacing the hub brake assemblies, ensure that the tyres are inflated to the recommended BAR, KPa, P.S.I. on the side wall of the tyre.



1. Remove the rear wheel. Refer to 3.4.1 Removing / installing rear wheels, page 13.
2. Remove the locknut and washer **A** that secure the axle bracket to the axle plate.
3. Thread a brake shoe support **D** on a QR axle bush **E** support then add spacer HB **B**.
4. Present the mounting set-in front of the axle plate outside of the chair, by directing the brake shoe support following the plan opposite then insert the anti-rotating spacer **C** between the pin of the brake shoes support and the hole of the axle support.
5. Align the hub brake set with one of the five adjustment holes on the axle plate.
6. Secure the hub brake set to the axle plate at the desired height, with the locknut and washer.
7. Repeat STEPS 1 to 6 for the other rear wheel.

Adjusting hub brakes



1. Install the hub brake lever **F** with the cable **E** on the backrest canes **G**.
2. Secure the cable to the lever **C** of the brake shoes support **D** by tightening the cable bolt **B**.
3. Adjust the cable tension to desire brake effort by screw/unscrew the tensional bolt **A** situated on the brake shoes support.
4. Repeat STEPS 1 to 3 for the other side.

! NOTICE!

The cable adjustment **MUST** have the same brake effect on both sides.

3.7 Options

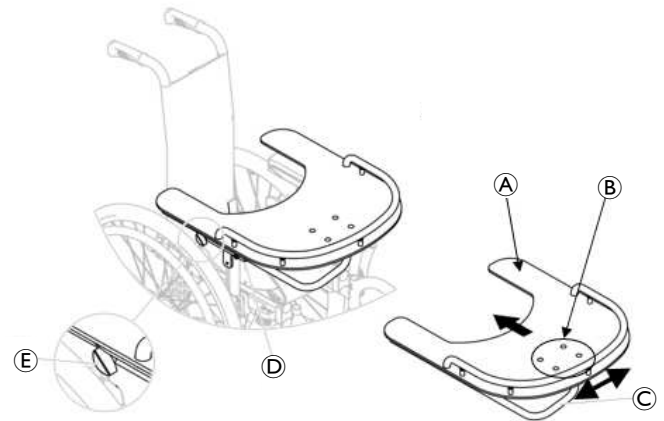
3.7.1 Installing / adjusting swing away tray



WARNING!

After ANY adjustments, repair, or service and BEFORE use, make sure all attaching hardware is fitted and tightened securely - otherwise injury or damage may occur.
When adjusting the depth of the Swing Away Tray, make sure not to squeeze the stomach of the user.

Installing swing away tray



1. Install the "T" support tray on the vertical tube of the armrest with the two bolts (M5).
2. Insert the tube **C** of the swing away tray into its support **D** below the arm pad.
3. Slide the swing away tray **A** forwards or backwards to adjust to the required depth.
4. Firmly tighten the knob **E**.
5. Adjust the swing away tray sideways using the four mounting screws **B**.

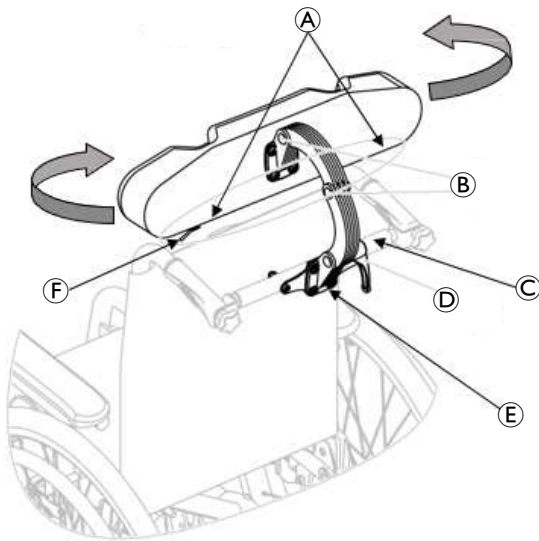
3.7.2 Installing / adjusting headrest



WARNING!

After ANY adjustments, repair, or service and before use, make sure all attaching hardware is fitted and tightened securely to avoid injury or damage.

Installing headrest



1. Install the back brace ©. Refer to 3.3.9 *Installing / removing / adjusting the back brace, page 13*.
2. Set the headrest bracket ⑤ (mounting bolts and headrest bracket) in the fixing holes on the back-brace tube.
3. Loosen the handle ④ and the two screws ⑥.
4. Adjust the height; depth and angle of the headrest by moving the scissor brackets to the desired position.
5. Re-tighten the handle and the screws (5–6 Nm).
6. Adjust the angle of the “wings” by unzipping the headrest zip ① and loosening the adjusting screws ②.
7. Set the required angle and close the headrest zip.

3.8 Anti-tip devices

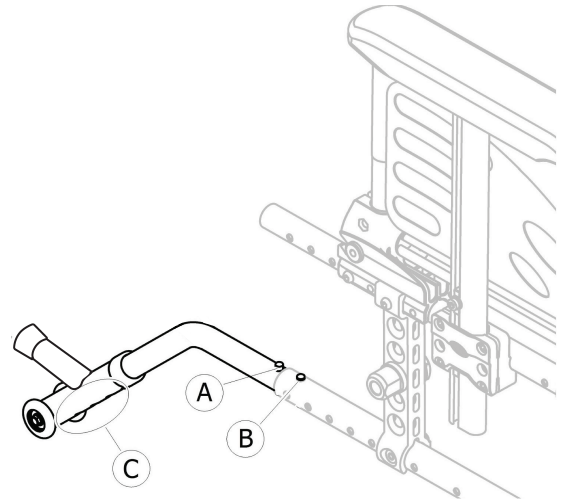


WARNING!

After ANY adjustments, repair or service and BEFORE use, ensure all attaching hardware is tightened securely. Injury or damage may occur. Anti-tip device MUST be attached always. The anti-tip device is optional on this wheelchair (you may order it with or without the anti-tip device). We strongly recommend ordering the anti-tip device as an added safeguard for wheelchair users. Anti-tip devices MUST be fully engaged and release buttons fully protruding out of adjustment holes. Ensure both anti-tip devices are adjusted to the same mounting hole.

3.8.1 Installing / adjusting simple anti-tip devices

Installing anti-tip devices



1. Press the release button ① and, with the wheels © pointing towards the ground, insert the anti-tip device into the rear frame tubing until the front release button ② snaps into the frame hole.
2. The closer the anti-tip device is to the ground, the more effective it is. Whenever possible, position the anti-tip device as close to the ground as possible.



NOTICE!

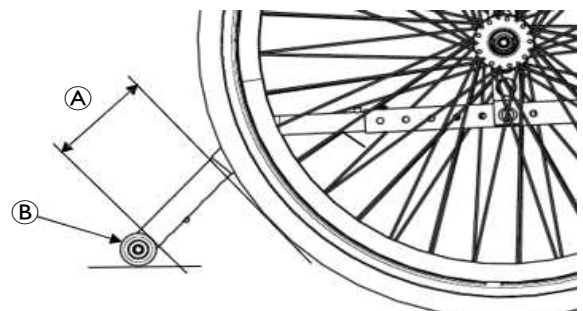
Make sure that the anti-tip device wheel is ALWAYS located outside the rear wheel volume (50 mm minimum). Refer to the image in the section below [Adjusting anti-tip devices](#).

Adjusting anti-tip devices



WARNING!

Make sure that the anti-tip device wheel is ALWAYS located outside the rear wheel volume. An anti-tip device that is too far from the ground may result in the chair tipping over backward causing serious injury or property damage.



1. Press the release buttons on the wheeled part of the anti-tip device and slide it up or down to adjust clearance.
2. Check to make sure that the release buttons are fully engaged in adjustment holes.



NOTICE!

Make sure that the anti-tip wheel ② is ALWAYS located outside the rear wheel volume (50 mm minimum). See above image ①.

4 Maintenance

4.1 Safety information


WARNING!

Some materials deteriorate naturally over time. This could result in damage to wheelchair components.

- Your wheelchair should be checked by a specialist dealer at least once a year or if it has not been used for a long period.



Your Invacare® specialist dealer can provide help in carrying out regular maintenance. To find an authorised specialist dealer near you, contact the Invacare® distributor for your country (end of this document).

4.2 Suggested maintenance procedures

1. Before using your wheelchair, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
2. Keep quick release axles free of dirt and lint to ensure positive locking and proper operation. Refer to 3.4.3 *Adjusting quick-release axles*, page 14.


WARNING!
Risk of damage to wheelchair.

DO NOT use WD-40, 3-in-1 oil, or other penetrating lubricants on Quick-Release axles.

- Otherwise, binding and/or damage to the wheelchair may occur.

3. Clean quick release axles once a week with a Teflon lubricant. Dry the wheelchair carefully with a cloth after using it in the rain.


WARNING!

DO NOT use your wheelchair unless it has the proper tyre pressure (BAR, KPa or P.S.I.).

DO NOT over inflate the tyres. Failure to follow these suggestions may cause the tyre to explode and cause bodily harm. The recommended tyre pressure is on the sidewall of the tyre.

4. Recommended tyre pressure is listed on the sidewall of the tyre (BAR, KPa or P.S.I.).


CAUTION!

As with any vehicle, the wheels and tyres should be checked periodically for cracks and wear and should be replaced if damaged.

5. The wheels, castors and tyres should be checked periodically for cracks and wear, and should be replaced when necessary.
6. Regularly check for loose spokes in the rear wheels. If loose, have them adjusted.
7. Periodically check handrims to ensure they are secured to rear wheels. Refer to 3.4.3 *Adjusting quick-release axles*, page 14.
8. Periodically check castor wheel bearings to make sure they are clean and free from moisture. Use a Teflon® lubricant if necessary.
9. Check upholstery for sagging, rips, or tears.
10. Clean upholstery with mild soap and water.

4.3 Stability warning

The seat height, seat depth, back angle, seating system / upholstery, size / position of the rear wheels, size / position of the front castors, seating options (e.g. headrest, back bag, ...) as well as the user condition directly relate to the stability of the wheelchair. Any change to one or any combination of the nine may cause the wheelchair to increase/ decrease in stability.

Castor Position	Seat Height	Seat Depth	Back Angle	Seating System/ Upholstery	Castor Size	Castor Position	Rear Wheel Size	Rear Wheel Position	User Condition	Wheel brakes	Anti-tip devices
When changes to the left hand column occur, follow across the chart and refer to the X procedure to maintain the proper stability, safety and handling of the wheelchair.											
Seat Height	-	x	x	x	x	x	x	x	NA	NA	NA
Seat Depth	x	-	x	x	x	x	x	x	NA	NA	NA
Back Angle	x	x	-	x	x	x	x	x	NA	NA	NA

Castor Position	Seat Height	Seat Depth	Back Angle	Seating System/ Upholstery	Castor Size	Castor Position	Rear Wheel Size	Rear Wheel Position	User Condition	Wheel brakes	Anti-tip devices
Seating System/ Upholstery	x	x	x	-	x	x	x	x	X	NA	NA
Castor Size	x	NA	x	NA	-	x	x	x	NA	x	x
Castor Position	x	NA	x	NA	x	-	x	x	NA	x	x
Rear Wheel Size	x	NA	x	NA	x	x	-	x	NA	x	x
Rear Wheel Position	x	NA	x	NA	x	x	x	-	NA	x	x
User Condition	x	x	x	x	x	x	x	x	-	NA	NA

Seat-to-floor heights have specific positions depending on rear wheel size, rear wheel position, front castor size/position and seat-to-floor angle.


4.4 Cleaning

Your wheelchair will serve you well for many years if you clean it regularly.

! NOTICE!
Sand and seawater can damage the bearings and steel parts can rust if the surface is damaged. Only expose the wheelchair to sand and seawater for short periods and clean it after every trip to the beach

! NOTICE!
— Do not use coarse abrasives, aggressive cleaning products or high-pressure cleaners. Never use acids, alkalines or solvents such as acetone or cellulose thinner.
— Always use ordinary household cleaning agents.

1. Clean the cushions and metal parts with a soft, damp cloth.
2. Dry the wheelchair carefully with a cloth after using it in the rain.
3. If the wheelchair is dirty, wipe off the dirt as soon as possible with a damp cloth and dry it carefully.

 Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. For upholstery that is severely stained or surface finish that is badly damaged, contact Invacare for further information.

Cleaning upholstery

For cleaning upholstery refer to the instructions on the label on the seat, cushion and backrest cover:

- **Cleaning metal surfaces**

Hot water and mild detergent on soft cloth should be use to cleaning metal surfaces.

1. Wipe down with damp cloth.
2. Dry surface by wiping down with dry cloth. Car polish and soft wax can be used to remove abrasions and restore gloss.


- **Cleaning plastic surfaces**

Plastic surfaces must be cleaned with soft cloth, mild detergent and hot water.

! NOTICE!
— Do not use solvents or kitchen cleaners to clean plastic surfaces.

1. Rinse surface with clean water.
2. Dry surface by wiping down with dry cloth.

4.5 Flat tyre

 In case of a tyre puncture consult a suitable workshop (e.g. bike repair shop, bicycle dealer, or other) to have the tube replaced by a skilled person.

4.6 Disinfection

The wheelchair may be disinfected by spraying or wiping with tested, approved disinfectants.



The Robert Koch Institute has a list of currently approved disinfectants at www.rki.de.

4.7 Maintenance schedule



Always clean the wheelchair before any inspection/adjustment. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of the wheelchair.

Initial Inspection: Initial adjustments should be made to suit the personal body structure needs and preferences of the user:

Inspect/ Adjust Initially	Weekly	Monthly	Annually	Check
x				Wheelchair rolls straight (no excessive drag or pull to side).
x				Ensure all hardware is tight
x				All fasteners on clothing guards are secure.
x				Arms are secure but easy to release and locking systems engage properly.
x				Adjustable height arms operate and lock securely.
x				Armrest armpad sits flush against arm tube.
x				Seat and/or back upholstery have no rips.
x				Ensure hand grips are secure to backrest canes.
x				Sealed bearings and axle nut tension are correct.
x				No excessive side movement or binding when rear wheels are lifted and spun.
x				Quick-Release axles lock properly (see 3.4.2 Quick-release axles, page 14).
x				Inspect handrims for signs of rough edges or peeling finish.
x				Inspect for broken spokes. Wheel/fork assembly has proper tension when castor is spun.
x				Castor should come to a gradual stop.
x				Wheel bearings are clean and free of moisture.
x				Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
x				Ensure all castor/wheel/fork/head tube fasteners are secure (see 3.4.10 Removing / installing / repositioning the castor assemblies, page 17).
x				Wheel brakes do not interfere with tyres when rolling.
x				Wheel brakes pivot point are free of wear and looseness.
x				Wheel brakes are easy to engage.
x				Inspect tyres/castors for flat spots and wear.
x				Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
x				Ensure axles are free from dirt, lint, etc.
x				Ensure roller bearings are free from dirt, lint, etc.
x				Adjust wheel brakes as tyres wear.
x				Clean and wax all parts
x				Clean upholstery and armrests. Ensure castors are debris free.
	x			Wheelchair rolls straight (no excessive drag or pull to one side).
	x			Quick-Release axles lock properly (see 3.4.2 Quick-release axles, page 14).
	x			Inspect for broken spokes. Adjust or replace as necessary.

Inspect/ Adjust Initially	Weekly	Monthly	Annually	Check
	x			Wheel/fork assembly has proper tension when castor is spun. Castor should come to a gradual stop.
	x			Inspect tyres/castors for flat spots and wear.
	x			Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
	x			Inspect tyres/castors for flat spots and wear. Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
	x			Ensure castors are free of debris.
		x		Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
		x		Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
		x		Wheel bearings are clean and free of moisture.
		x		Wheel brakes do not interfere with tyres when rolling.
		x		Wheel brake pivot point are free of wear and looseness.
		x		Check the tension and appearance of the brake cable.
		x		Ensure all castor/wheel/fork/head tube fasteners are secure (see <i>3.4.10 Removing / installing / repositioning the castor assemblies, page 17</i>).
		x		Ensure all hardware is tight.
		x		Ensure hand grips are secure to backrest canes.
		x		Ensure castors are free of debris.
			x	Wheelchair rolls straight (no excessive drag or pull to one side).
			x	Arms are secure but easy to release and locking systems engage properly.
			x	Adjustable height arms operate and lock securely.
			x	Armrest armpad sits flush against arm tube.
			x	All fasteners on clothing guards are secure.
			x	Seat and/or back upholstery have no rips.
			x	Inspect the backrest attaching hardware and mechanisms are securely tightened.
			x	No excessive side movement or binding when rear wheels are lifted and spun.
			x	Inspect handrims for signs of rough edges or peeling finish.
			x	Inspect side frame and cross brace for signs of cracks, flaked paint or deformed metal work.
			x	Inspect tyres/castors for flat spots and wear.
			x	Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
			x	Wheel brake pivot point are free of wear and looseness.
			x	Clean upholstery and armrests.
			x	Sealed bearings and axle nut tension are correct.
			x	Wheel/fork assembly has proper tension when castor is spun. Castor should come to a gradual stop.
			x	Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
			x	Wheel bearings are clean and free of moisture.
			x	Wheel brakes are easy to engage.
			x	Change brake cable and readjust the brake tension cable.
			x	Clean Quick-Release axles with a Teflon lubricant.

Inspect/ Adjust Initially	Weekly	Monthly	Annually	Check
			x	Ensure axles are free from dirt, lint, etc.
			x	Ensure roller bearings are free from dirt, lint, etc.
			x	Adjust wheel brakes as tyres wear.
			x	Clean and wax all parts.
			x	Ensure castors are free of debris.

**CAUTION!****Risk of injury**

- Do not use a defective wheelchair.






If you discover damages, contact your Dealer, Technical Service Centre or Invacare service department immediately for technical service. Technical service, is to be carried out by an authorised wheelchair technician or by an Invacare service department.




Only use original parts or those with equal quality fulfilling manufacturer's specifications.

4.8 Reconditioning

Main parts of the wheelchair	
	Lubricate all removable parts with a dry Teflon® based spray, e.g. "Viso 900-B5".
Chassis	All parts must be checked for cracks or other damages. Pay special attention to areas close to welds. If damages are discovered, the chassis must be discarded.
Backrest angle	Check that the angle is easy to adjust, it should be easy to fold and the locking mechanism must function properly.
Push handles / Push bar	Check that the push handles / push bar works properly. They should be firm and the screws must be tightened properly.
Back- and seat covers	<ul style="list-style-type: none"> • Check that the self-gripping strips are intact and can be fixed properly. • Check that the covers are intact and clean, if not see section: "Washing" and "Disinfection" • If the fabric is torn, replace the cover.
Seat angle	<p>Check the function by changing the angle from the lower to the upper position.</p> <div style="background-color: #f0f0f0; padding: 5px;">  <p>CAUTION! Risk of damage</p> <p>— The gas piston must not be opened, it contains oil and gas under high pressure.</p> </div>
Carer-operated brakes	<p>Check that the brake function is good, if not:</p> <ol style="list-style-type: none"> 1. Check that the wire is intact, if not, it must be replaced. 2. Check that the wire cover is intact, if not, the wire must be replaced. 3. Adjust the wire at the handle and/or at the wheel hub. 4. Tighten the wire until the optimal brake function is achieved.
Armrests / side rests	Check that the armrests / side rests are intact, they should be easy to detach / attach.
Leg rests	<p>Check that the leg rests are:</p> <ul style="list-style-type: none"> • Easy to detach. • Easy to attach. • Easy to adjust in height and angle.
Anti-tip device	<ul style="list-style-type: none"> • Check that the anti-tip device is easy to adjust and fold. • Check that the screws are tight, if not, re-tighten.
Rear wheels	<ul style="list-style-type: none"> • Change the tyres if the pattern is worn. • Replace missing spokes and tighten loose spokes. • Fasten the hand rim if it is loose. • Check that the hand rim is smooth and that there are no cracks or sharp edges. If so, replace the hand rim. • Check the rear wheel axle, it should be completely inserted into the axle housing. Check that the rear wheel axle locks properly. Pull on the rear wheel to check that the removable axle does not come off. • Check the air pressure — recommended max air pressure is written on the tyres.

Main parts of the wheelchair	
Rear wheel attachment	<p>Check:</p> <ul style="list-style-type: none"> • That the screws on the rear wheel attachment are tight. • That the axle housing is correctly placed. <p>The standard axle housing should be tightened with a manual and dynamometer wrench calibrated to 40 +/- 5 Nm, the One Arm Drive axle housing to 45 0/+5 Nm.</p>
Brakes	<ul style="list-style-type: none"> • Check that the hub brakes work properly on both tyres. • Check the positioning of the user brakes. • Check that the brake pin is not worn down. If so, replace it. • Check that the screws are tightened. • Test the brake function. When braking, the brake pin should press the tyre down 5 mm. <p> Ensure you have the correct air pressure in the tyres to attain the optimal brake effect.</p>
Castors	<ul style="list-style-type: none"> • Detach the castors and clean the castor forks. • Remove any dirt or hair from the castors. • Attach the castors again and check that the castors turn freely. • If the castors are air filled, check therecommended max air pressure written on the tyre. • If the castors are solid, check the tyres for cracks. If the tyres are dry and filled with cracks, they need to be replaced.
All fasteners for wear and tightness	<p>Bolts and other fasteners can come loose due to constant use:</p> <ol style="list-style-type: none"> 1. Check that the fasteners are tight on the castor forks, footrest, seat, side rests, backrest, handles etc. 2. Tighten any loose bolts or screws.

Options	
	Note: Lubricate all removable parts with a dry Teflon® based spray, e.g. “Viso 900–B5”.
All fasteners for wear and tightness	<p>Bolts and other fasteners can come loose due to constant use:</p> <ol style="list-style-type: none"> 1. Check that the fasteners are tight on the castor forks, footrest, seat, side rests, backrest, handles etc. 2. Tighten any loose bolts or screws.
Headrest	<ul style="list-style-type: none"> • Check that the side-angle adjustment for the “wings” works properly. • Check that the angle adjustment works and that there is a memory function.
Neckrest	<ul style="list-style-type: none"> • Check that the angle adjustment works and that there is a memory function.
Trunk support “Multi functional”	<ul style="list-style-type: none"> • Check that the angle adjustment works properly and that there is a memory function.
Abduction cushion	<ul style="list-style-type: none"> • Check that the depth adjustment works.
Table tray	<ul style="list-style-type: none"> • When re-mounting the table tray, try to find the thread manually before fastening the screws with tools. This spare the threading.

4.8.1 Checklist for reconditioning

	OK	NOTE	SIGN
WASHING			
RECONDITIONING:			
Chassis			
Backrest angle			
Push handles / Push bar			
Backrest cover			
Seat cover			
Seat angle			
Carer-operated brake			
Armrests / Side rests			
Legrests			
Footrests			
Anti-tip device			
Rear wheels			
Rear wheel attachment			
Brakes			
Castors			
Fasteners for wear and tightness			
Headrest			
Neckrest			
Trunk support			
Abduction cushion			
Table tray			
TEST:			
Chair rolls in straight line			
Easy to propel			
DELIVERY CHECK:			
Include a user manual			

5 Troubleshooting

5.1 Safety information

Faults may arise as a result of daily use, adjustments or changing demands on the wheelchair. The table below shows how to identify and repair faults.


CAUTION!

- Contact your specialist dealer immediately if you notice a fault with your wheelchair, e.g. a significant change in handling.


CAUTION!

- Some of the actions listed must be carried out by an authorised specialist dealer. These are indicated. We recommend that all adjustments are carried out by a specialist dealer.

5.2 Identifying and repairing faults

Fault	Possible cause	Action
The wheelchair does not travel in a straight line	Incorrect tire pressure on one rear wheel	Correct tire pressure.
	One or more spokes broken	Replace faulty spoke(s), → authorised dealer
	Spokes tightened unevenly	Tighten loose spokes, → authorised dealer
	Front wheel bearings are dirty or damaged	Clean or replace the bearings, → authorised dealer
The wheelchair tips backwards too easily	Rear wheels are mounted too far forwards	Mount the rear wheels further back, → authorised dealer
	Back angle too large	Reduce the backrest angle, → authorised dealer
	Seat angle too large	Mount the front wheel upper on the front fork, → authorised dealer
The brakes are gripping poorly or asymmetrically	Incorrect tire pressure in one or both rear tires	Correct tire pressure
	Brake setting incorrect	Correct the brake setting, → authorised dealer
Rolling resistance is very high	Tire pressure in rear tires is too low	Correct tire pressure
	Rear wheels not parallel	Ensure the rear wheels are parallel, → authorised dealer
The front wheels wobble when moving fast	Too little tension in front wheel bearing block	Tighten the nut on the bearing block axle slightly → authorised dealer
	Front wheel has worn smooth	Change front wheel → authorised dealer
The front wheel is stiff or stuck	Bearings are dirty or faulty	Clean or replace the bearings → authorised dealer
The wheelchair is very difficult to unfold	Backrest cover is too tight	Loosen the Velcro bands of the backrest cover a little



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Yes, you can.