

Invacare® Esprit Action®

SERVICE MANUAL

(MAINTENANCE AND ADJUSTMENT)

The procedures in this manual MUST be performed by a qualified technician.

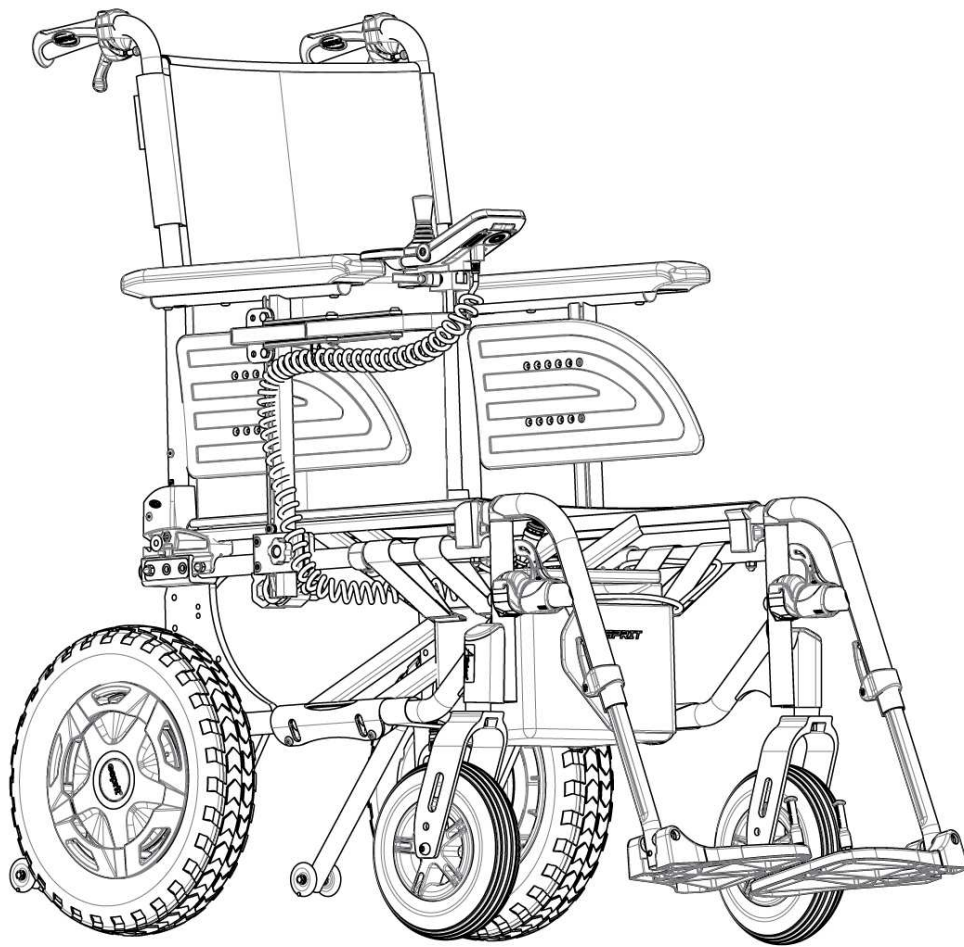


TABLE OF CONTENTS

SECTION 1—TROUBLESHOOTING AND MAINTENANCE	4
General information	4
Troubleshooting	4
Maintenance Guidelines	5
Tightened Torques	6
Suggested Maintenance Procedures	6
Stability Warning	6
SECTION 2—FRONT HANGERS	7
Adjusting Footrest Height	7
Replacing Heel Strap	8
Installing Angle Adjustable Footplate	9
Adjusting the Legrest Angle	9
Adjusting the Footplate Height	10
Adjusting Calf Pad Depth	10
SECTION 3—ARMRESTS	11
Removing/Installing/Adjusting Removable and Multi-adjustable Armrest	11
Replacing Armrest Arm Pad	13
SECTION 4—SEAT/BACK	14
Removing Back-canes	14
Removing/Installing Seat Upholstery	14
Removing/Installing Standard Back Upholstery	15
Contour (adjustable) Back-upholstery.....	16
Adjusting the Height Adjustable Back	18
Adjusting the Angle Adjustable Backrest	18
Removing/Installing different type of backrests	19
Removing/Installing/Adjusting the Back-cane Bracket	22
Installing/Removing Seat Posture Belt	23
Installing/Removing the Back-brace	24
SECTION 5—REAR WHEELS/FRONT CASTERS	25
Removing/Fitting the Powered Rear Wheel	25
Adjusting Rear Wheel Height	26
Replacing/Repairing Rear Wheel & Front Caster Tyre/Tube	26
Adjusting Fork Rotation	27
Removing/Installing/Repositioning the Caster Assemblies	28

SECTION 6—SEAT-TO-FLOOR HEIGHT..... 29
 Measuring Seat-to-Floor Height 29
 Changing Seat-to-Floor Height 30
SECTION 7—OPTIONS 31
 Installing/Adjusting Headrest 31
SECTION 8—ANTI-TIPPERS 32
 Installing/Adjusting Anti-Tippers 32
SECTION 9—PERIODIC MAINTENANCE GUIDELINES 33
 Initially 33
 Weekly/Monthly/Annually 34

SECTION 1—TROUBLESHOOTING AND MAINTENANCE GUIDELINES

General Information

User manual and pre-sales information:

For pre-sales information and user manual related to this wheelchair, please consult the www.invacare.eu.com website.

Esprit Action Junior specific options:

Refer to Action³ Junior Service Manual for specific options (adjustable cross brace, back-brace, headrest, ...) dedicated to the Junior version.

Please consult the www.invacare.eu.com website.

Electrical and Electronical equipment; maintenance and adjustment:

Refer to ALBER **Esprit E34z** Service Manual for electrical and electronical maintenance and adjustment. Please consult the www.alber.de website.

NOTE: Please recommend the user to follow the rules mentioned in the User Manual about Maintenance Schedule, Cleaning and Troubleshooting sections.

Troubleshooting:

Fault	Possible cause	Action
The wheelchair does not travel in a straight line	Incorrect tyre pressure on one rear wheel	Correct tyre pressure
	Front wheel bearings are dirty or damaged	Clean the bearings or replace the front wheel, → qualified technician
The wheelchair tips backwards too easily	Back angle too large	Reduce the backrest angle, → qualified technician
Rolling resistance is very high	Tyre pressure in rear tyres is too low	Correct tyre pressure
	Rear wheels not parallel	Ensure the rear wheels are parallel, → qualified technician
The front wheels wobble when moving fast	Too little tension in front wheel bearing block	Tighten the nut on the bearing block axle to the appropriate torque, → qualified technician
	Front wheel has worn smooth	Change front wheel, → qualified technician
The front wheel is stiff or stuck	Bearings are dirty or faulty	Clean the bearings or replace the front wheel, → qualified technician

⚠ CAUTION

It is compulsory to use original Invacare spare parts which you can obtain from any Invacare subsidiaries. A list of spare parts is available at www.invacare.eu.com

⚠ WARNING

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

⚠ CAUTION

DO NOT over tighten hardware attaching to the frame. This could cause damage to could cause damage to the frame tubing.

Tightening torques

The tightening torques stated in the following table are dependent on the thread diameters for the nuts and bolts for which no special values are determined. All values apply to dry and grease-free threads.

Thread	M4	M5	M6	M8	M10/12
Tightening torque in Nm mini/max	1,5/3 Nm	3/6 Nm	7/12 Nm	10/20 Nm	20/30 Nm

Caution: All other nuts not noted here must be tightened FINGERTIGHT!

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 [Adjusting Quick Release Axles](#), in section 5.

⚠ WARNING

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.

⚠ 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.

SECTION 1— MAINTENANCE GUIDELINES & STABILITY WARNING

5. The wheels, castors and tyres should be checked periodically for cracks and wear; and should be replaced when necessary.
6. Periodically check castor wheel bearings to make sure they are clean and free from moisture. Use a Teflon® lubricant if necessary.
7. Check upholstery for sagging, rips or tears.
8. Clean upholstery with mild soap and water.

Stability Warning

The seat height, seat depth, back angle, seating system/upholstery, position of the rear wheels, position of the front casters, 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 these factors changes the centre of gravity and may cause the wheelchair to increase/decrease in stability.

<i>NOTE: 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.</i>	SEAT HEIGHT	SEAT DEPTH	BACK ANGLE	SEATING SYSTEM/ UPHOLSTERY	CASTER POSITION	REAR WHEEL POSITION	USER CONDITION	WHEEL BRAKES	ANTI-TIPPERS
SEAT HEIGHT	--	X	X	X	X	X	N/A	N/A	N/A
SEAT DEPTH	X	--	X	X	X	X	N/A	N/A	N/A
BACK ANGLE	X	X	--	X	X	X	N/A	N/A	N/A
SEATING SYSTEM/ UPHOLSTERY	X	X	X	--	X	X	X	N/A	N/A
CASTER POSITION	X	N/A	X	N/A	--	X	N/A	X	X
REAR WHEEL POSITION	X	N/A	X	N/A	X	--	N/A	X	X
USER CONDITION	X	X	X	X	X	X	--	N/A	N/A

Seat-to-floor heights have specific positions depending on rear wheel position and front caster position.

SECTION 2—FRONT HANGERS

WARNING

After ANY adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur. To adjust the leg rest, refer to dedicated paragraphs in user manual. A 50 mm clearance between the bottom of the footplate and the ground/floor **MUST** be maintained always.

Adjusting Footrest Height

NOTE: For this procedure, refer to FIGURE 2.1.

1. Remove calf strap, if so equipped.
2. Unscrew locking screw (5 mm Allen Key).
3. Position the footrest assembly to the desired height.

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

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 screw (M6) with a 5 mm Allen Key, secure the footrest tube to the footrest support.
6. Securely tighten (5 Nm).
7. If necessary, repeat STEPS 2-5 to adjust remaining footrest.
8. Reinstall the calf strap, if so equipped.

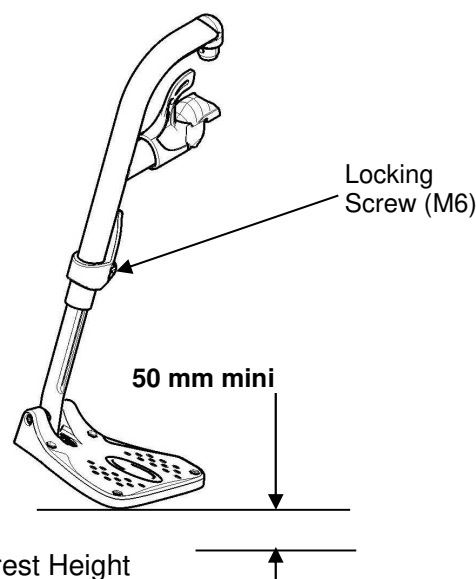


FIGURE 2.1 Adjusting Footrest Height

Replacing Heel Strap

NOTE: For this procedure, refer to FIGURE 2.2.

1. Remove the locking screw that secure 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.

NOTE: 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 screw (M6), secure the footrest tube to the footrest support.

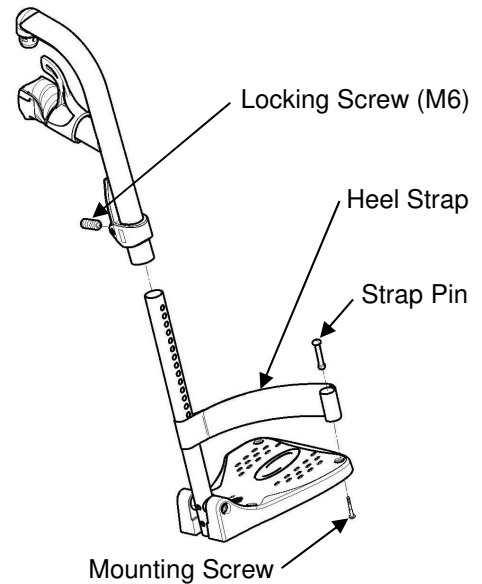


FIGURE 2.2 Replacing Heel Strap

Installing Angle Adjustable Footplate

NOTE: For this procedure, refer to FIGURE 2.4.

NOTE: This procedure is for individual Angle and Depth Adjustable Footrests standard version (1) and new version (2) only.

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

NOTE: Refer to Adjusting Footrest Height paragraph on page 9.

3. Using the mounting screw, adjust to the desired angle by rotating the footplate and depth by sliding the footplate into the tooth plates support.
4. Using the mounting screw Ⓒ version (1) or Ⓓ version (2), secure the Angle Adjustable Footplate to the footrest tube. Securely tighten.
5. If necessary, repeat STEPS 1-4 to adjust remaining Angle Adjustable Footplate.

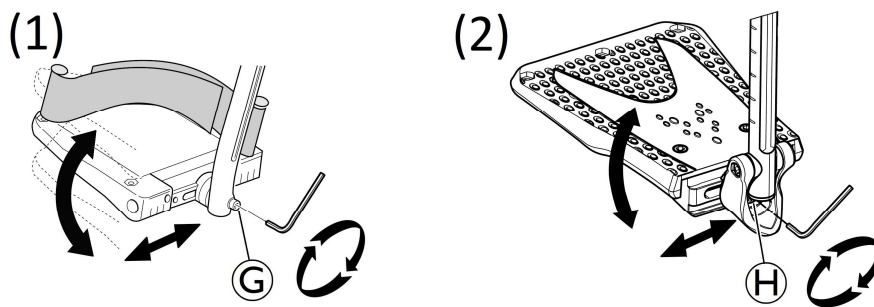


FIGURE 2.4 Installing Angle Adjustable Footplate

Adjusting Elevating Legrest Angle, Height and Calf pad Height/Depth

NOTE: For this procedure, refer to FIGURE 2.5.

Adjusting the Legrest Angle

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

Adjusting the Footplate Height

1. Loosen locking screw Ⓑ securing the slide tube to the elevating legrest.

2. Reposition footplate to desired height, securely tighten locking screw (B).
3. If necessary, repeat STEPS 1-2 to adjust remaining footplate height.

Adjusting Calf pad Height

1. Loosen the locking button (C) that secure the calf pad bracket to the elevating legrest assembly.
2. Slide the calf pad bracket up or down until the desired calf pad height is obtained.
3. Tighten the locking button (C) securing the calf pad bracket to the elevating legrest assembly.
4. If necessary, repeat STEPS 1-3 to adjust remaining calf pad bracket.

Adjusting Calf pad Depth

1. Remove the mounting screw (F) that secure the calf pad (E) to the calf pad bracket.
2. Insert mounting screw (F) through one of four calf pad bracket mounting holes.
3. Using the mounting screw (F), secure the calf pad to the calf pad bracket.
4. If necessary, repeat STEPS 1-3 to adjust remaining calf pad assembly.

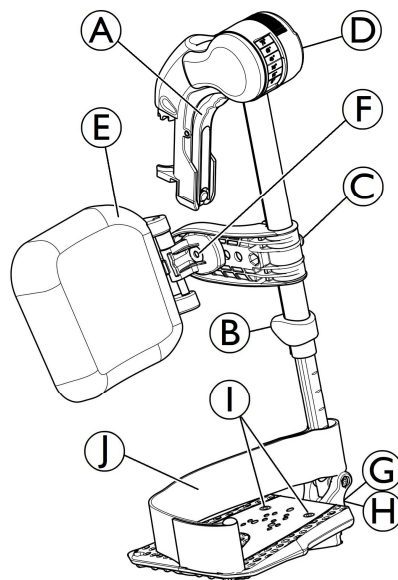


FIGURE 2.5 Adjusting Elevating Legrest Height and Calf pad Height/Depth

SECTION 3—ARMRESTS

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur. To adjust the armrest, refer to dedicated paragraphs in user manual.

Removing/Installing/Adjusting, Removable and Multi-adjustable Armrest

NOTE: For this procedure, refer to FIGURE 3.1.

NOTE: To remove the multi-adjustable armrest, reverse this procedure.

1. Pull or Push the armrest by the arm cushion out of the armrest holder © or ④.
2. To adjust how easy or difficult it is to pull/push the armrest out of the holder, change the degree to which the handle ② is tightened.

Adjusting removable armrest width

1. Loosen the screw ⑥ (M6) with 5 mm Allen key at bottom of the armrest bracket.
2. Move the armrest sideward until you reach the desired width, while keeping screw ⑥ in place.
3. Tighten firmly (8-9 Nm) the screw ⑥ (M6) with 5 mm Allen key.
4. Perform the setting on both sides, if necessary.

Adjusting the armrest height

1. Loosen the screw ① (M6) with 5 mm Allen key at bottom of the armrest bracket.
2. Move the armrest upwards or downwards until you reach the desired height, while keeping screw ① in place.
3. Tighten firmly (5-6 Nm) the screw ① (M6) with 5 mm Allen key.
4. Perform the setting on both sides, if necessary.

Adjusting the armrest depth (2 positions)

1. Loosen the screw ③ with 5 mm Allen key of the armrest bracket.
2. Move the armrest holder until in the desired position, frontwards ⑤ or backwards ⑥ (move screw ③ if necessary).
3. Tighten firmly (8-9 Nm) the screw ③ with 5 mm Allen key.
4. Perform the setting on both sides, if necessary.

Adjusting the side protection height

1. Loosen the 2 screws (inside location) of the side protection with 4 mm Allen key or Pozidriv screwdriver.

2. Move the side protection upwards or downwards until you reach the desired height.
3. Tighten the 2 screws of the side protect (0,7–1,2 Nm) with 4 mm Allen key or Pozidriv screwdriver.
4. Perform the setting on both sides.

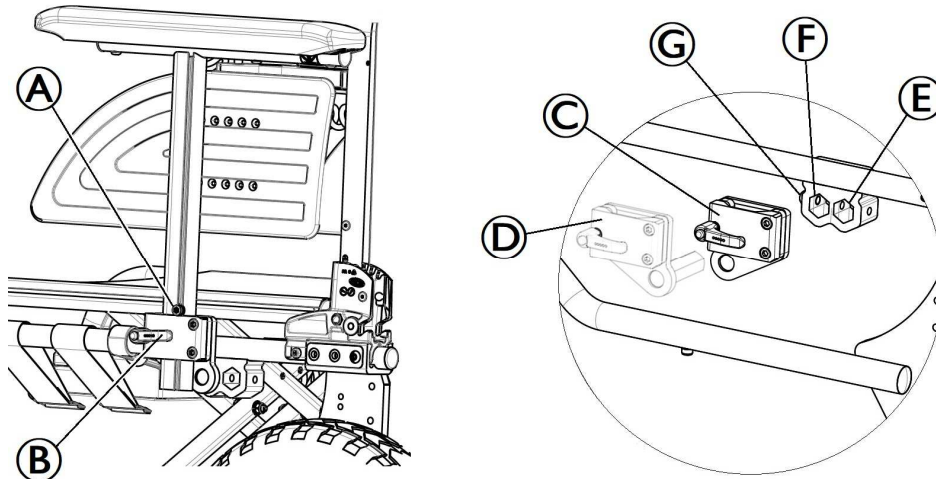


FIGURE 3.1 Removable and Multi-adjustable Armrest

Adjusting the Depth and Height of the Control Unit

NOTE: For this procedure, refer to FIGURE 3.2.

1. Loosen lever (A) and shift the control unit forwards or backwards to the desired depth.
2. Retighten the lever (A).
3. Loosen the two screws (B) with a 10 mm spanner of the armrest bracket.
4. Move the control unit holder in the desired depth (+ 20 mm) frontwards.
5. Tighten firmly (8-9 Nm) the 2 screws (B) with 10 mm spanner.
6. The height of the armrest can be adjusted thanks to screw (C). Refer to Adjusting the armrest height previous paragraph.

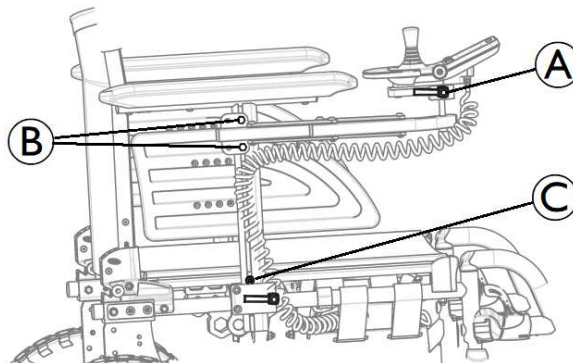


FIGURE 3.2 Adjusting the Depth and Height of the Control Unit

Replacing Armrest Arm pad

NOTE: For this procedure, refer to FIGURE 3.3.

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

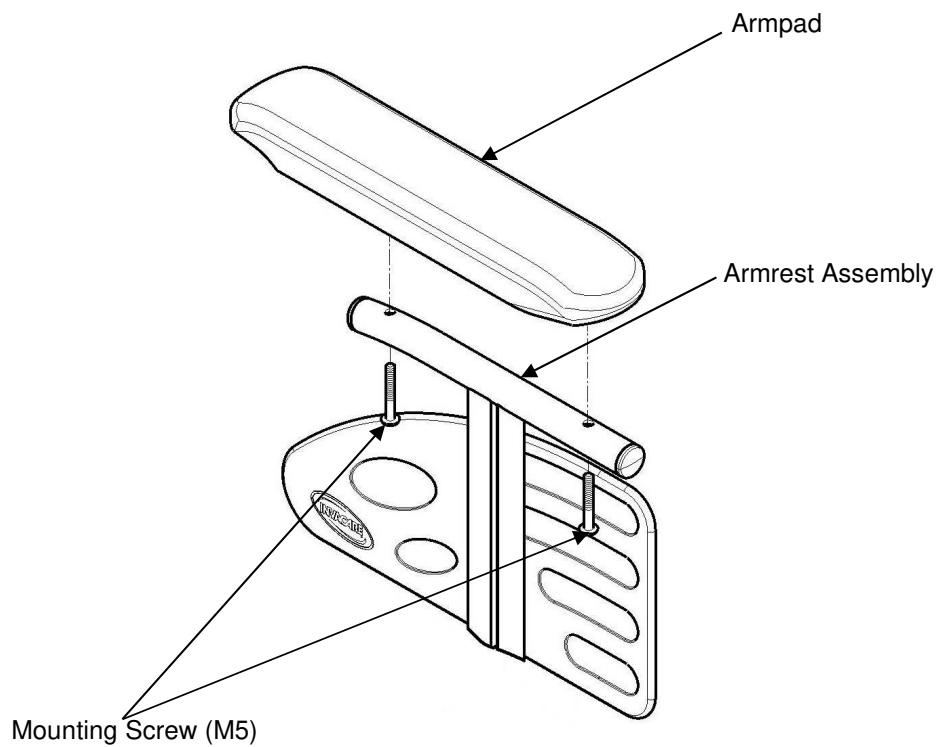


FIGURE 3.3 Replacing Armrest Arm Pad

SECTION 4—SEAT/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 table in paragraph Stability Warning, page 6.

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

Removing Back-canes

NOTE: For this procedure, refer to FIGURE 4.1.

1. Remove the mounting screw and locknut (M6) that secures the back cane 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.

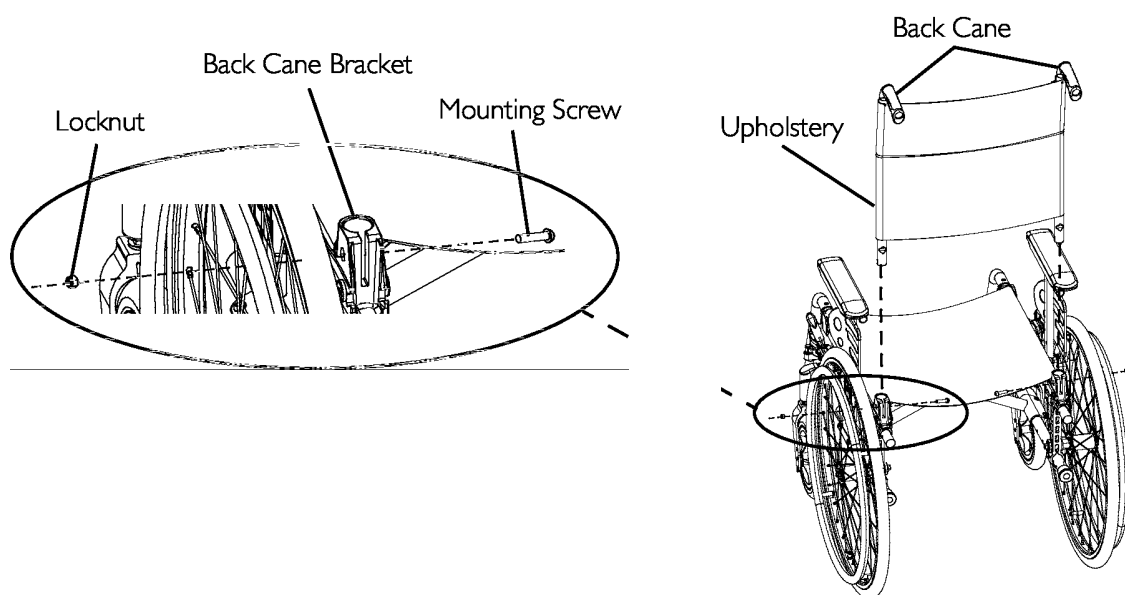


FIGURE 4.1 Removing Back-canes

Removing/Installing Seat Upholstery

NOTE: For this procedure, refer to FIGURE 4.2, next page.

Removing Seat Upholstery

NOTE: To install the seat upholstery, reverse this procedure.

1. Fold the wheelchair.
2. Remove the mounting screw (Torx) that secures the seat upholstery to the front and back seat rails.
3. Remove the end caps from the front of the seat rails.
4. Slide the seat upholstery out of the seat rails.

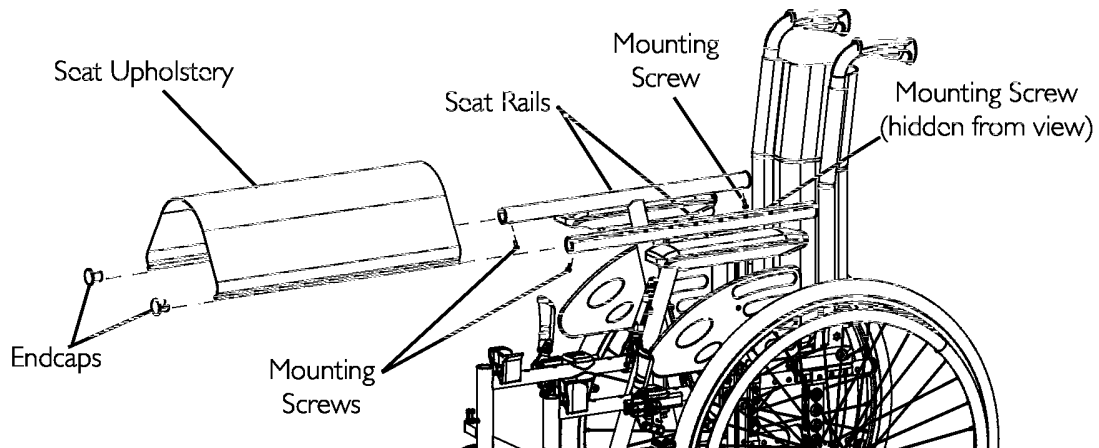


FIGURE 4.2 Removing/Installing Seat Upholstery

Removing/Installing Standard Back Upholstery

NOTE: For this procedure, refer to FIGURE 4.3.

Removing Back Upholstery

NOTE: To Install the Back Upholstery, reverse this procedure.

1. Remove the back-canes. Refer to [Removing Back Canes](#) paragraph.
2. Remove the mounting screw that secures the back upholstery to the back-canes. Refer to Detail "A".
3. Remove the back upholstery from the back-canes. Refer to Detail "B".

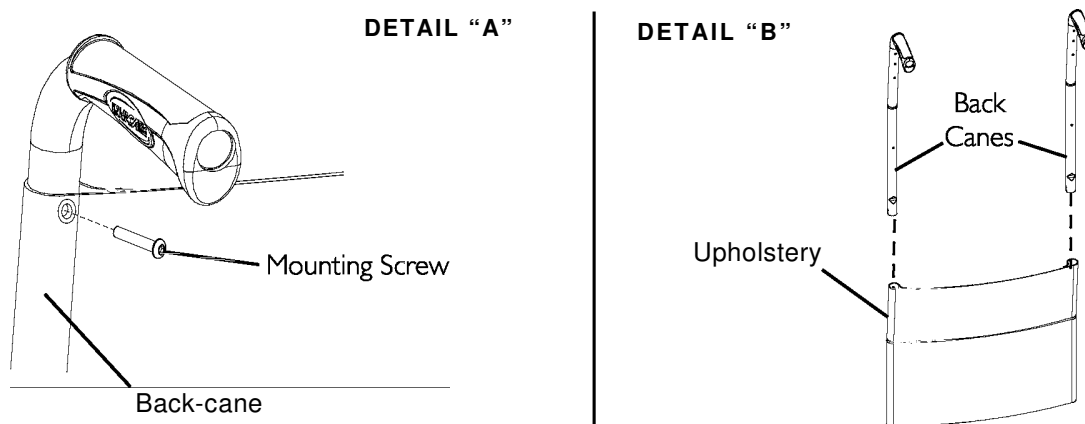


FIGURE 4.3 Removing/Installing Standard Back Upholstery

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

NOTE: For this procedure, refer to FIGURE 4.4, next page.

Installing

1. Remove the existing back-upholstery from the wheelchair. Refer to Removing/Installing Standard Back-Upholstery paragraph.
2. Slide each section (anchor loop/adjuster strap) of the adjustable back-upholstery with the grommet hole facing the rear of the wheelchair.
3. Secure the adjustable back-upholstery to the back-canes with the two mounting screws.

NOTE: Clean the upholstery with warm water and mild detergent to remove superficial soil.

WARNING

Ensure that the wheelchair is fully opened, the back brace is fitted, and the seat rails properly located. The fastening straps 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

1. Lift up on 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 from 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.

1. Slip adjuster strips **(B)** through corresponding anchor loops and adjust the back-upholstery. Secure with the fastening strips.
2. Secure the new back-upholstery cover (fastening strap) to the back of the new adjustable back-upholstery (fastening strap).
3. 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.
4. Reinstall the backrest cover **(A)** as shown for high backrest (height = 510 mm)
5. Reinstall the backrest cover **(A)** as shown for low backrest (height = 430 mm).

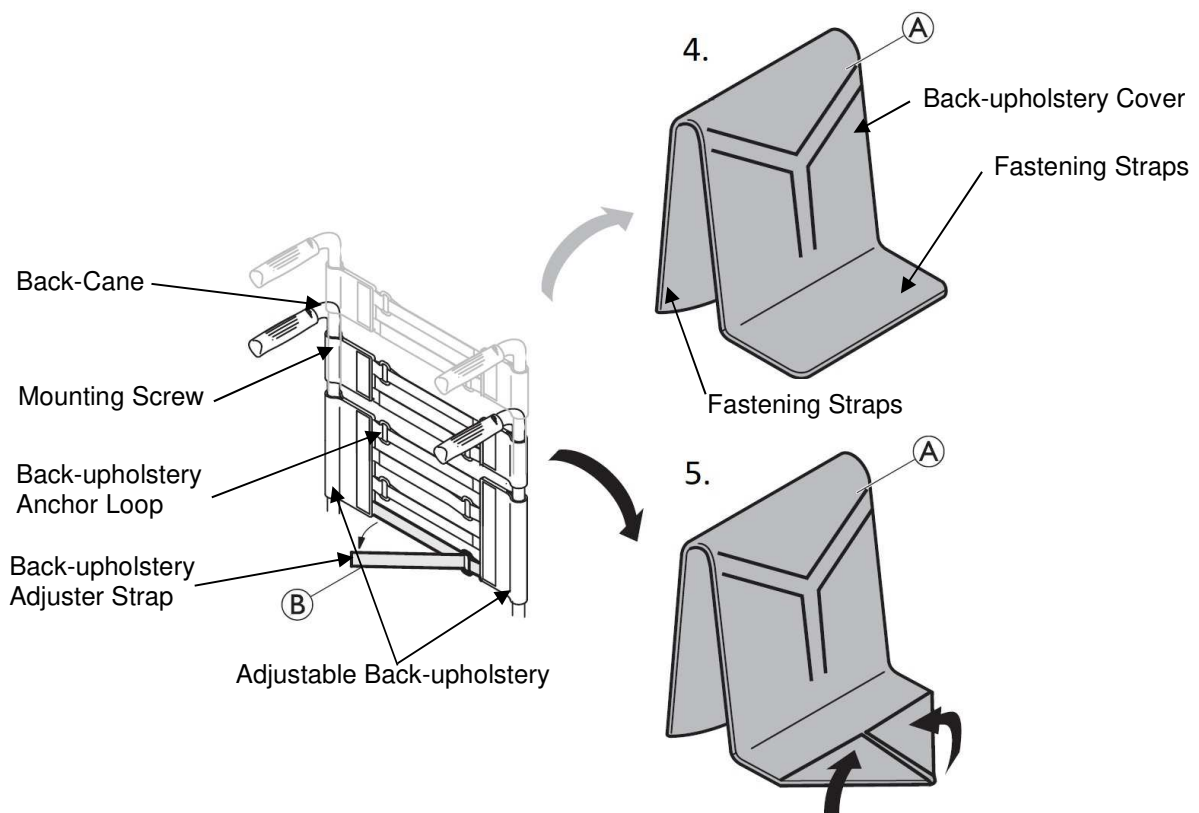


FIGURE 4.4 Installing/Replacing Contour (adjustable) Back Upholstery

Adjusting the Height Adjustable Back

NOTE: For this procedure, refer to FIGURE 4.5.

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

NOTE: Both back canes should be adjusted to the same height.

NOTE: DO NOT raise push handles to maximum height when tilting the chair.

3. Tighten the height adjustment knobs.

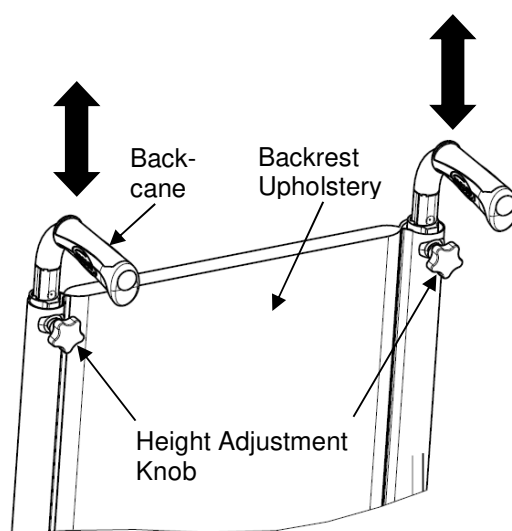


FIGURE 4.5 Adjusting the Height Adjustable Backrest cane

Adjusting the Angle Adjustable Backrest

NOTE: For this procedure, refer to FIGURE 4.6, next page.

NOTE: This procedure applies to adjustable angle backs only (refer to detail “A”).

NOTE: The backrest angle adjusts from -15° to $+15^{\circ}$ (step less).

1. Adjust the back angle thanks to the adjustable screw (A).
2. Turn Allen key (5 mm) clockwise to obtain a negative angle.
3. Alternatively, turn Allen key (5 mm) under clockwise to obtain a positive angle.
4. Ensure both adjustment to the desired angle are equal on each side of the Back Cane Bracket. Refer to Detail “B” of FIGURE 4.6

NOTE: Both backrest angle should be set to the same position.

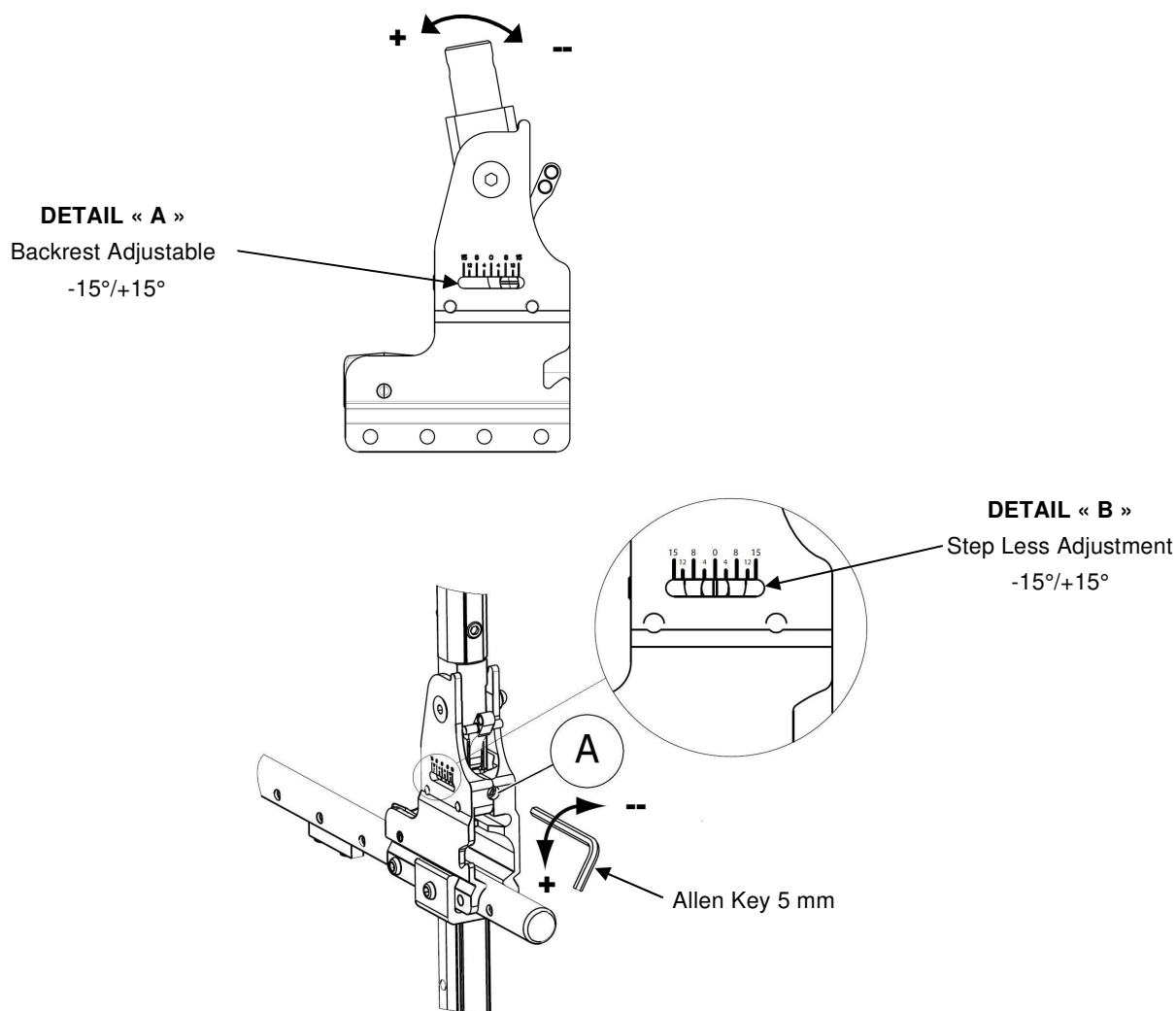


FIGURE 4.6 Adjusting the Angle Adjustable Backrest

Removing/Installing different type of Backrests

NOTE: For this procedure, refer to FIGURE 4.7, next page

Folding backrest

NOTE: To Install the Fixed/Folding backrest, reverse this procedure from STEP 3 to 1.

1. Remove the back-cane bracket. Refer to Removing Back-cane Bracket paragraph.
2. Pull up on the seat upholstery.
3. Remove the two mounting screws and locknuts (M6) that secure the back-cane bracket to the wheelchair frame.
4. Install the new set including the appropriate backrest upholstery

NOTE: Both back-cane brackets should be set to the same adjustment holes.

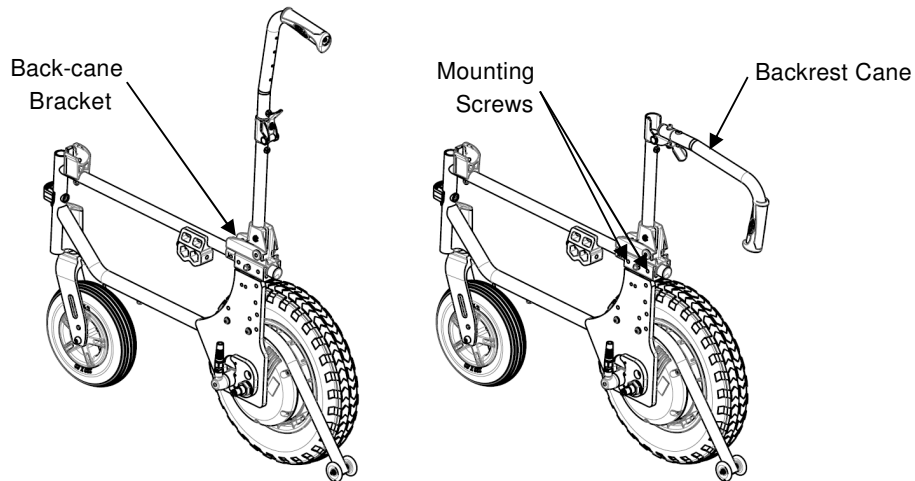


FIGURE 4.7 Fixed/Folding Backrests

Removing/Installing different type of Backrests

Recliner backrest (Mechanical and Gas strut versions)

NOTE: For this procedure, refer to FIGURE 4.8.

To Install the Recliner backrest; reverse this procedure from STEP 1 to 3.

1. Remove the back-cane bracket. Refer to Removing Back-cane Bracket paragraph.
2. Pull up on the seat upholstery.
3. Remove the two mounting screws and locknuts that secure the back-cane bracket to the wheelchair frame.
4. Install the new set including the appropriate backrest upholstery

NOTE: Both back-cane brackets should be set to the same adjustment holes.

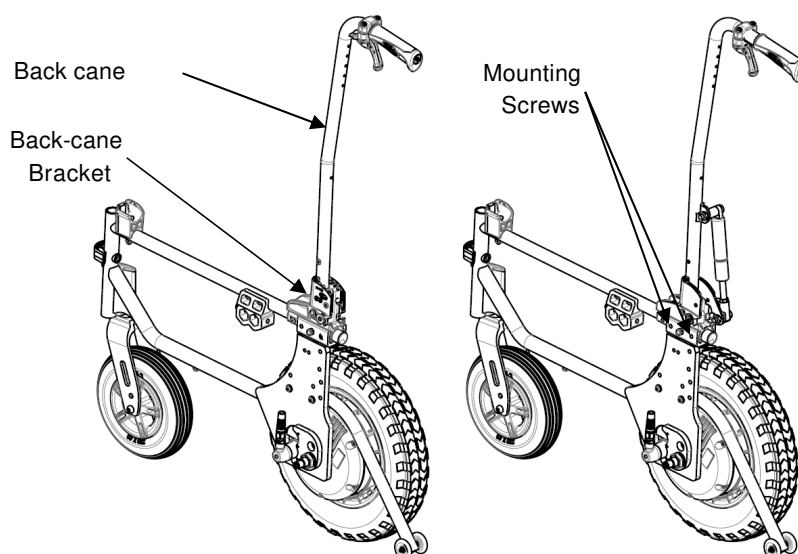


FIGURE 4.8 Recliner Backrests

Removing/Installing different type of Backrests

Comfort backrest (Mechanical and Gas strut versions)

NOTE: For this procedure, refer to FIGURE 4.9.

To Install the Comfort backrest; reverse this procedure from STEP 1 to 3.

1. Remove the back-cane bracket. Refer to Removing Back-cane Bracket paragraph.
2. Pull up on the seat upholstery.
3. Remove the two mounting screws and locknuts that secure the back-cane bracket to the wheelchair frame.
4. Install the new set including the appropriate backrest upholstery and shell
(Refer to user guide to lock and unlock the complete backrest upholstery)

NOTE: Both back-cane brackets should be set to the same adjustment holes.

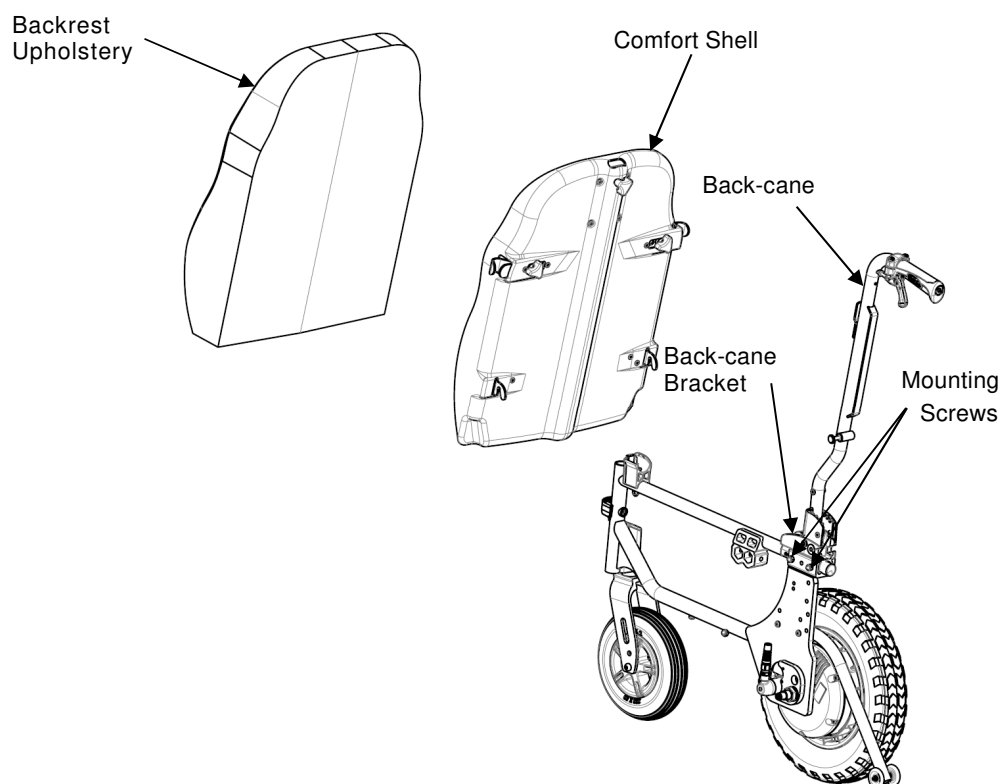


FIGURE 4.9 Comfort Backrests

Removing/Installing the Back-cane Bracket

NOTE: For this procedure, refer to FIGURE 4.10.

NOTE: To install the back-cane bracket, reverse this procedure.

1. Remove the back canes. Refer to Removing Back-canes paragraph.
2. Pull up on the seat upholstery.
3. Remove the two mounting screws and locknuts that secure the back-cane bracket to the wheelchair frame.
4. Remove the back-cane bracket by sliding it off the back of the wheelchair frame.
5. Install the new back-cane bracket by sliding it to the same adjustment holes on the bracket.

NOTE: Both back-canes brackets should be set to the same adjustment holes.

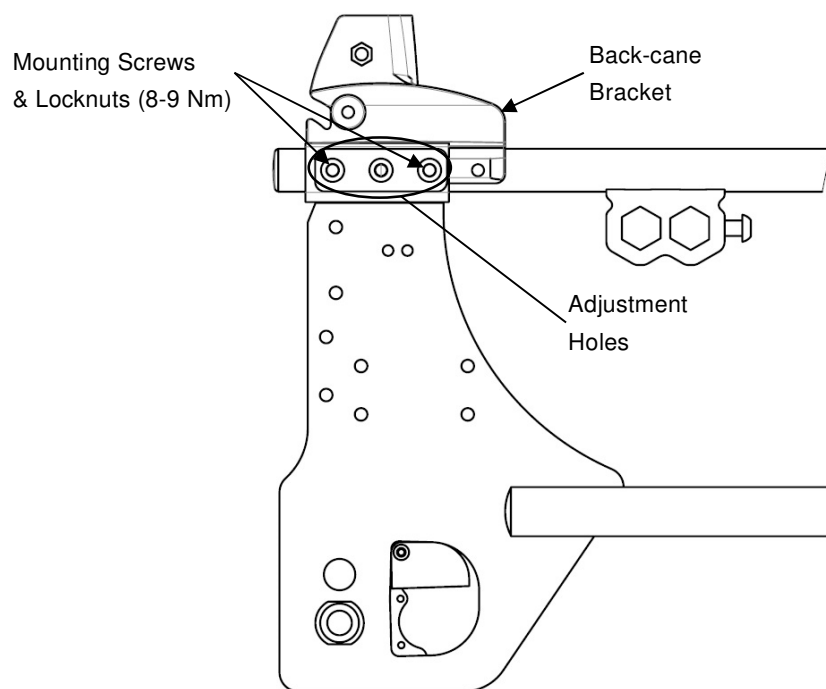


FIGURE 4.10 Removing/Installing the Back-cane Bracket

Installing/Removing Seat Posture Belt

NOTE: For this procedure, refer to FIGURE 4.11.

1. Remove seat cushion from wheelchair, if necessary.
2. Remove the mounting screw and locknut that secures the seat posture belt half to the back-cane bracket.
3. Repeat STEP 2 for opposite side, if necessary.
4. Do one of the following:
 - To install the seat posture belt, proceed to STEP 6.
 - Remove the existing seat posture belt from the wheelchair.
5. Engage the two halves of the new seat posture belt.
6. Align the mounting holes on the back-cane bracket and one end of the new seat posture belt.
7. Secure the new seat posture belt to the wheelchair frame with one mounting screw and washer. Tighten securely with Allen Key 4 mm (4-5 Nm).
8. Repeat STEPS 6 and 7 for the opposite side of the seat posture belt.
9. Reinstall seat cushion onto wheelchair, if necessary.

NOTE: Wheels, armrests and seat upholstery removed for clarity.

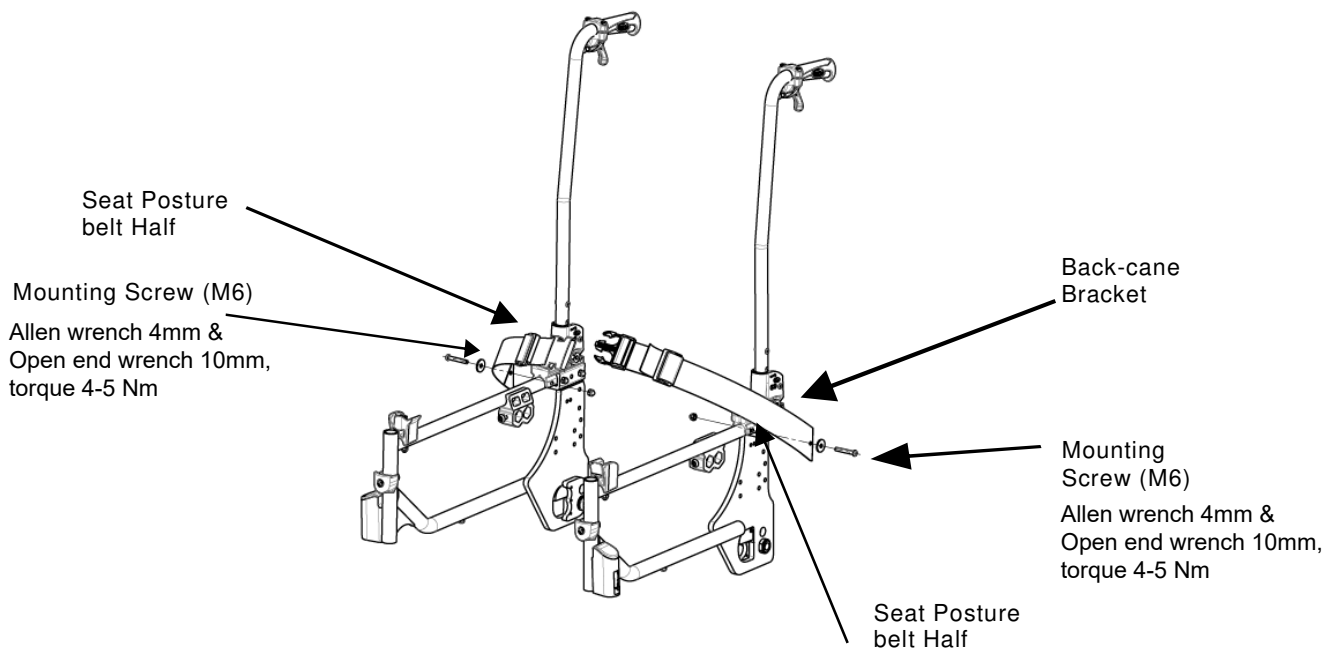


FIGURE 4.11 Installing/Removing Seat Posture Belt

Installing/Removing the Back-brace

 **WARNING**

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

NOTE: For this procedure, refer to FIGURE 4.12.

NOTE: To remove the back-brace, reverse this procedure.

1. Remove the end caps from the back-canes.
2. Remove the handles from the back-canes (Cut the handle lengthwise thanks to an appropriate sharp tool).
3. Install the inserts into the canes (fixed back-canes only).
4. Secure the inserts with mounting screws (fixed back-canes only).
5. Install the handles on the back-canes (Previously, spray 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 hand screws.

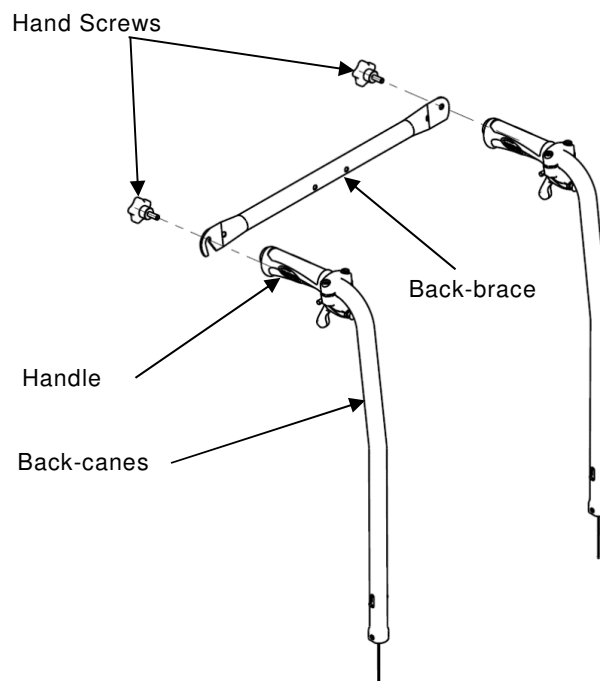


FIGURE 4.12 Installing/Removing the Back-brace

SECTION 5—REAR WHEELS/FRONT CASTERS

WARNING

The seat height, seat depth, back angle, seating system, position of the rear wheels, position of the front casters, seating options (e.g. headrest, back bag, ...) as well as the user condition directly relate to the stability of the wheelchair. Refer to table in paragraph Stability Warning, page 6.

Removing/Fitting the Powered Rear Wheels

WARNING

If changing the seat-to-floor height, refer to the table in the next page. To Removing and fitting the powered rear wheel, refer to dedicated paragraphs in user manual.

Removing the powered rear wheels

NOTE: For this procedure, refer to FIGURE 5.1.

1. Release cover © is pressed beyond the coupling ring.
 2. Simultaneously rotate coupling ring Ⓐ counterclockwise as far as an “green strip” is displayed in the window Ⓑ. The powered drive wheel is now disengaged. The wheel can be removed, refer to dedicated paragraphs in user manual.
 3. Perform step 1 to 2 on both sides. rear wheels.
 4. Reverse this procedure to fit the existing rear wheel onto the wheelchair.
-

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.

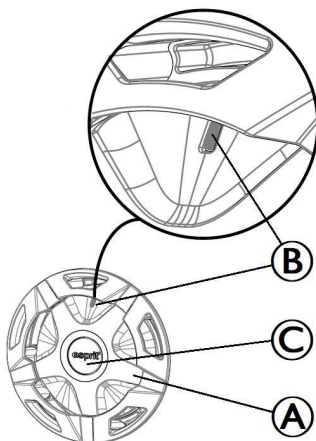


FIGURE 5.1 Removing/Fitting Rear Wheel

Adjusting Rear Wheel Height

NOTE: For this procedure, refer to FIGURE 5.2.

1. Remove the rear wheel. Refer to Removing/Fitting Rear Wheels paragraph.
2. Remove the locknut and washer that secures the axle bracket to the axle plate and the connector bracket (3 screws M4).
3. Align the axle bracket with one of the two adjustment holes on the axle plate.
4. Secure the axle bracket to the axle plate (25-30Nm), at the desired height, with the locknut / washer and the connector bracket (3 screws M4 to 1,2 Nm).
5. Install the rear wheel. Refer to Removing/Fitting Rear Wheels paragraph.
6. Repeat STEPS 1 to 5 for the other rear wheel.

NOTE: Both rear wheels should be set at the same position.

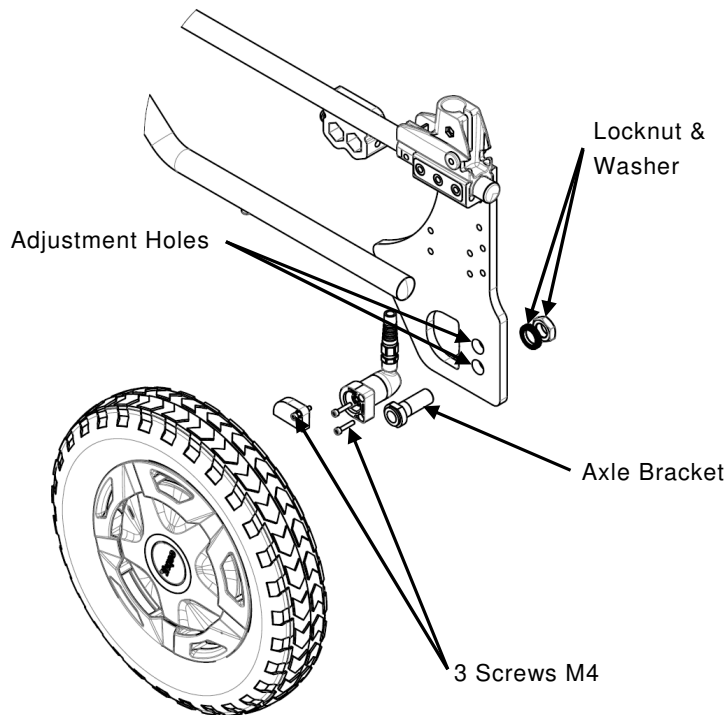


FIGURE 5.2 Adjusting Rear Wheel Height

Replacing/Repairing Rear Wheel & Front Caster Tyre/Tube

 **CAUTION**

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

Adjusting Fork Rotation

WARNING

Caster angle vertical axis **MUST** be at $90^{\circ} \pm 1^{\circ}$ from the ground, if not a flatter risk may occur. Both caster assemblies should be at the same angle.

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

NOTE: For this procedure, refer to FIGURE 5.3.

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

NOTE: When a solid caster is fitted, an additional washer is present inside the caster tube between the bearing and the long spacer.

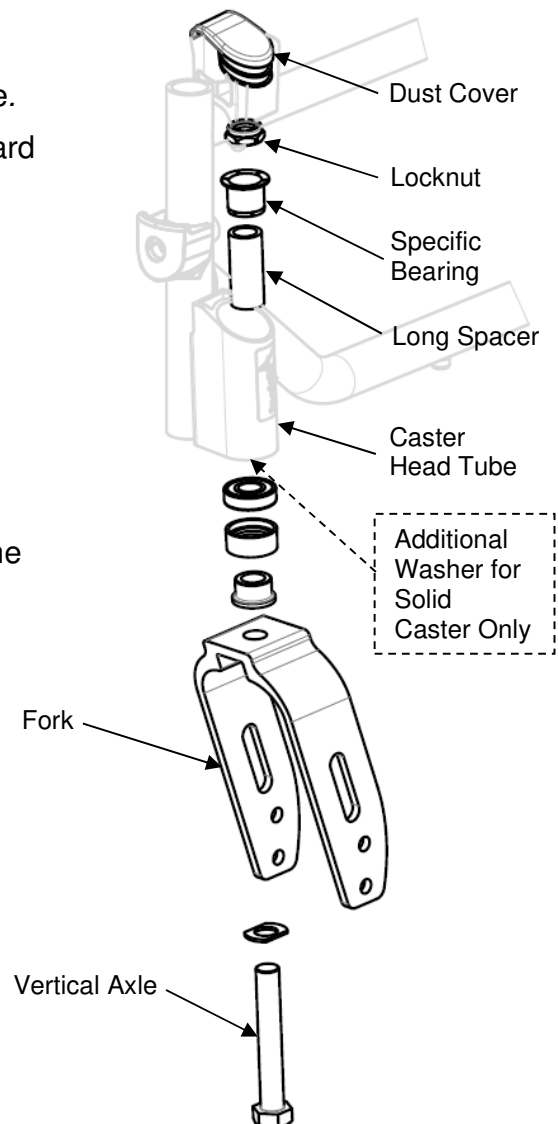


FIGURE 5.3 Adjusting Fork Rotation

Removing/Installing/Repositioning the Caster Assemblies

NOTE: If replacing a front caster note the mounting position of the existing front caster for installation of the new front caster.

NOTE: If repositioning front casters, refer to Changing Front Seat-to-Floor Height paragraph to determine the front caster position needed for the required front seat-to-floor height.

NOTE: Both front casters MUST be the same size and adjusted to the same height. For this procedure, refer to FIGURE 5.4.

Removing Front Wheel

1. Remove the mounting bolt (5 mm Allen key) that secure the front wheel to the fork.
2. Remove the wheel from the fork.

Installing Front Wheel

1. Using the mounting bolt (5 mm Allen key), secure the wheel (5-6 Nm) to the desired wheel mounting position.
2. Ensure fork stem is perpendicular to the flat surface.

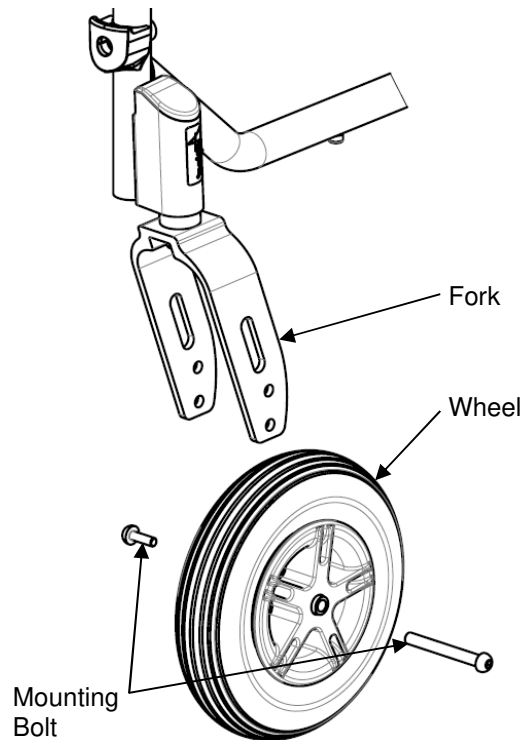


FIGURE 5.4 Removing/Installing/Repositioning the front wheel

SECTION 6—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.

Measuring Seat-to-Floor Height

NOTE: For this procedure, refer to FIGURE 6.1.

NOTE: All measurements are in millimetres. 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.

Measuring Rear Seat-to-Floor Height

NOTE: The rear seat-to-floor heights are based on pneumatic tyres and pneumatic tyres with flat free inserts

Rear Seat-to-Floor Height: Measure distance between the rear of the seat upholstery and the ground/floor.

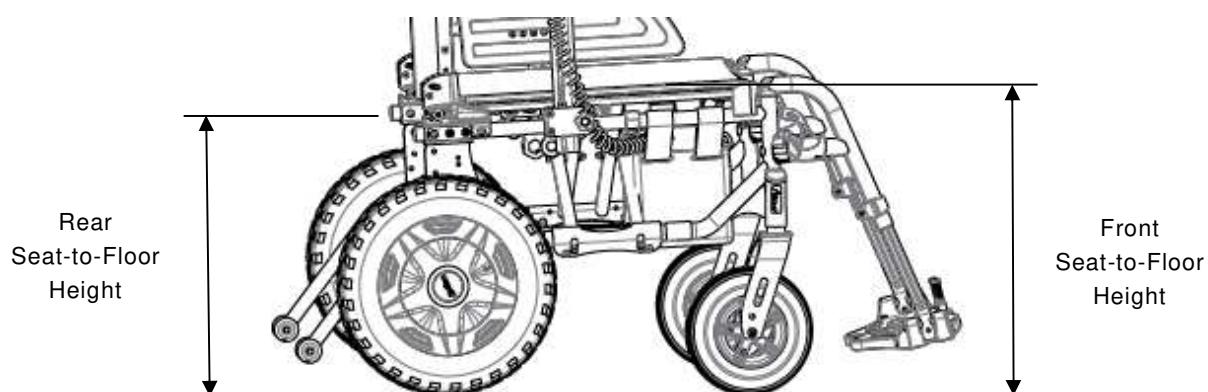


FIGURE 6.1 Seat-to-Floor Height

Changing Seat-to-Floor Height



WARNING

The seat height, seat depth, back angle, seating system, position of the rear wheels, position of the front casters, 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 these factors changes the centre of gravity and may cause the wheelchair to increase/decrease in stability. Refer table on page 6. Always check caster vertical axis is to 90° +/-1° from the ground.

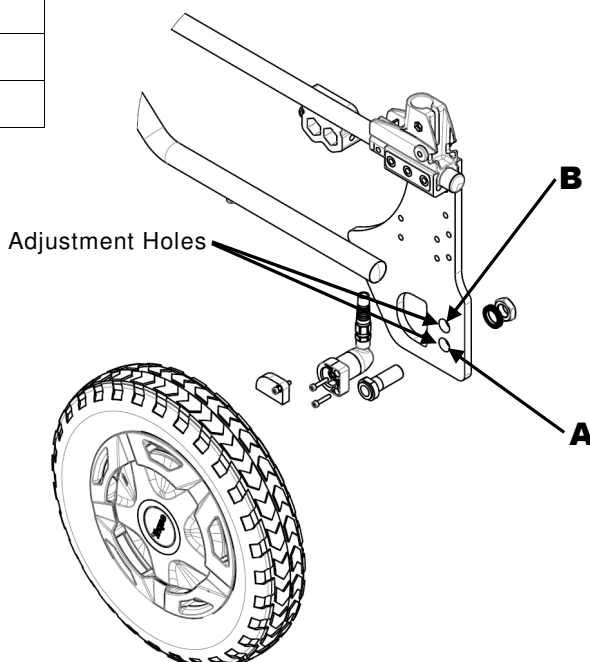
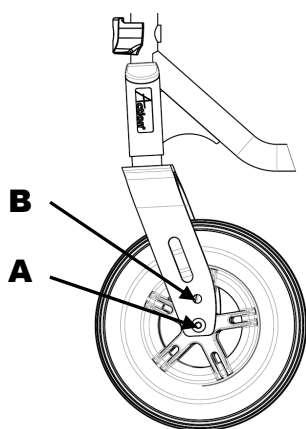
NOTE: For this procedure, refer to the table to determine adjustment(s) necessary to achieve desired front seat to floor height.

NOTE: To obtain the desired front seat to floor height, it will be necessary to perform one or both following:

- Changing the castor mounting position on the fork, Refer to Removing/Installing/Repositioning the Caster Assemblies paragraph.
- Changing the rear height positioning. Refer to Adjusting Rear Wheel Height paragraph.

CHANGING SEAT-TO-FLOOR HEIGHT

SEAT ANGLE 3°	FRONT CASTER	REAR WHEEL
FRONT SEAT HEIGHT		
	8"	14"
485 mm	A	A
460 mm	B	B



SECTION 7—OPTIONS

Installing/Adjusting Headrest

WARNING

After ANY adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur. To adjust the headrest, refer to dedicated paragraph in user manual.

Installing/Adjusting Headrest

NOTE: For this procedure, refer to FIGURE 7.1.

1. Install the back brace. Refer to Installing removing the back-brace paragraph.
2. Set the Headrest bracket (mounting bolts, headrest bracket and the hand wheel (A)) in the fixing holes on the back-brace tube.
3. Introduce the vertical tube (B) that support the headrest cushion into the headrest bracket.
4. Adjust to the appropriate height position with the user sat into the chair, tighten the hand wheel (A).
5. Adjust the headrest cushion (depth and angle position) and tighten securely the screws (C) and the handle (D).

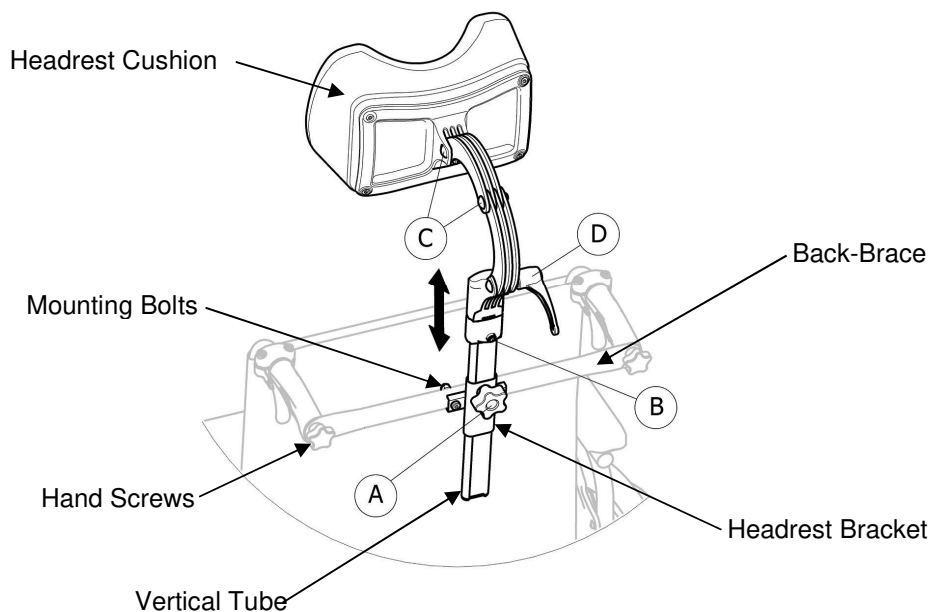


FIGURE 7.1 Installing/Adjusting Headrest

SECTION 8—ANTI-TIPPERS

WARNING

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

Anti-tippers **MUST** be attached always. Invacare strongly recommends checking the fixation of the anti-tippers as they are an additional safeguard for the wheelchair user.

Ensure both anti-tippers are adjusted to the same mounting holes on both sides.

Installing/Adjusting Anti-Tippers

Installing/Adjusting Anti-Tippers

NOTE: For this procedure, refer to FIGURE 8.1.

1. Remove the axle bracket. Refer to Adjusting Rear Wheel Height paragraph.
2. Remove the anti-tippers by dismounting the fixing set (screw, washer and locking nut) to the wheelchair frame.
3. Install the anti-tippers and the axle bracket to the new seat height, position **A** or **B**.
4. Secure the anti-tippers with the fixing set (8-9 Nm) to the wheelchair frame and the axle bracket to the axle plate. Refer to Adjusting Rear Wheel Height paragraph.
5. Perform STEPS 1 to 4 on the other side.

NOTE: Both anti-tippers MUST be adjusted to the same seat height.

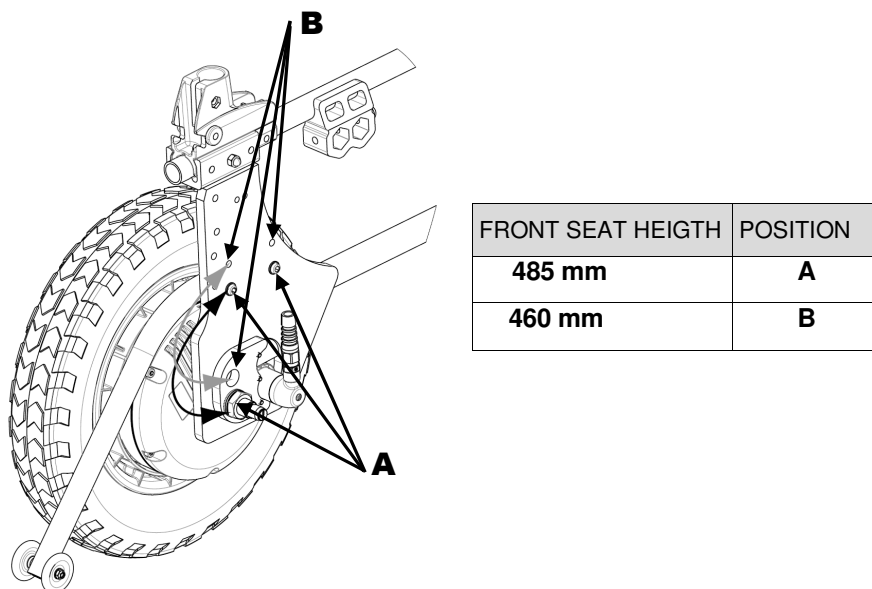


FIGURE 8.1 Installing Anti-Tippers

SECTION 9—PERIODIC MAINTENANCE GUIDELINES

NOTE: 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

- Wheelchair rolls straight (no excessive drag or pull to one side).
- Ensure all hardware is tight (see page 5).
- All fasteners on clothing guards are secure.
- Armrests are secure but easy to release.
- Adjustable height armrests operate and lock securely.
- Check and control the perfect fitting of the control unit on its armpad and armrest bracket and its absence of visual damage.
- Armrest armpad sits flush against arm tube.
- Seat and/or back upholstery have no rips.
- Inspect adjustable angle back attaching hardware is securely tightened.
- Ensure hand grips are secure to backrest canes.
- Sealed bearings and axle nut tension are correct.
- Quick-release axles lock properly (see page 25).
- Wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- Wheel bearings are clean and free of moisture.
- Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- Ensure all caster/wheel/fork/head tube fasteners are secure (see pages 5 & 27).
- Inspect tyres/casters for flat spots and wear.
- Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
- Ensure axles are free from dirt, lint, etc.
- Ensure roller bearings are free from dirt, lint, etc.
- Clean and wax all parts.
- Clean upholstery and armrests.
- Ensure casters are free of debris.

Inspect/Adjust Weekly

- Wheelchair rolls straight (no excessive drag or pull to one side).
- Check and control the perfect fitting of the control unit on its armpad and armrest bracket and its absence of visual damage.
- Quick-release axles lock properly (see page 25).
- Wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- Inspect tyres/casters for flat spots and wear.
- Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).
- Ensure casters are free of debris.

Inspect/Adjust Monthly

- Inspect seat posture strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- Wheel bearings are clean and free of moisture.
- Ensure all caster/wheel/fork/head tube fasteners are secure (see pages 5 & 27).
- Ensure all hardware is tight (see page 5).
- Ensure hand grips are secure to backrest canes.
- Ensure casters are free of debris.

Inspect/Adjust every twelve months (1)

- Wheelchair rolls straight (no excessive drag or pull to one side).
- Armrests are secure but easy to release.
- Adjustable height armrests operate and lock securely.
- Armrest armpad sits flush against arm tube.
- All fasteners on clothing guards are secure.
- Seat and/or back upholstery have no rips.
- Inspect the backrest attaching hardware and mechanisms are securely tightened.
- Inspect side frame and cross brace for signs of cracks, flaked paint or deformed metal work.
- Inspect tyres/casters for flat spots and wear.
- Check pneumatic tyres for proper inflation (recommended tyre pressure is listed on the side wall of the tyre).

Inspect/Adjust every twelve months (2)

- Wheel brake pivot point are free of wear and looseness.
- Clean upholstery and armrests.
- Sealed bearings and axle nut tension are correct.
- Wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- Wheel bearings are clean and free of moisture.
- Wheel brakes are easy to engage.
- Clean quick-release axles with a Teflon lubricant.
- Ensure axles are free from dirt, lint, etc.
- Ensure roller bearings are free from dirt, lint, etc.
- Adjust wheel brakes as tyres wear.
- Clean and wax all parts.
- Ensure castors are free of debris.



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