

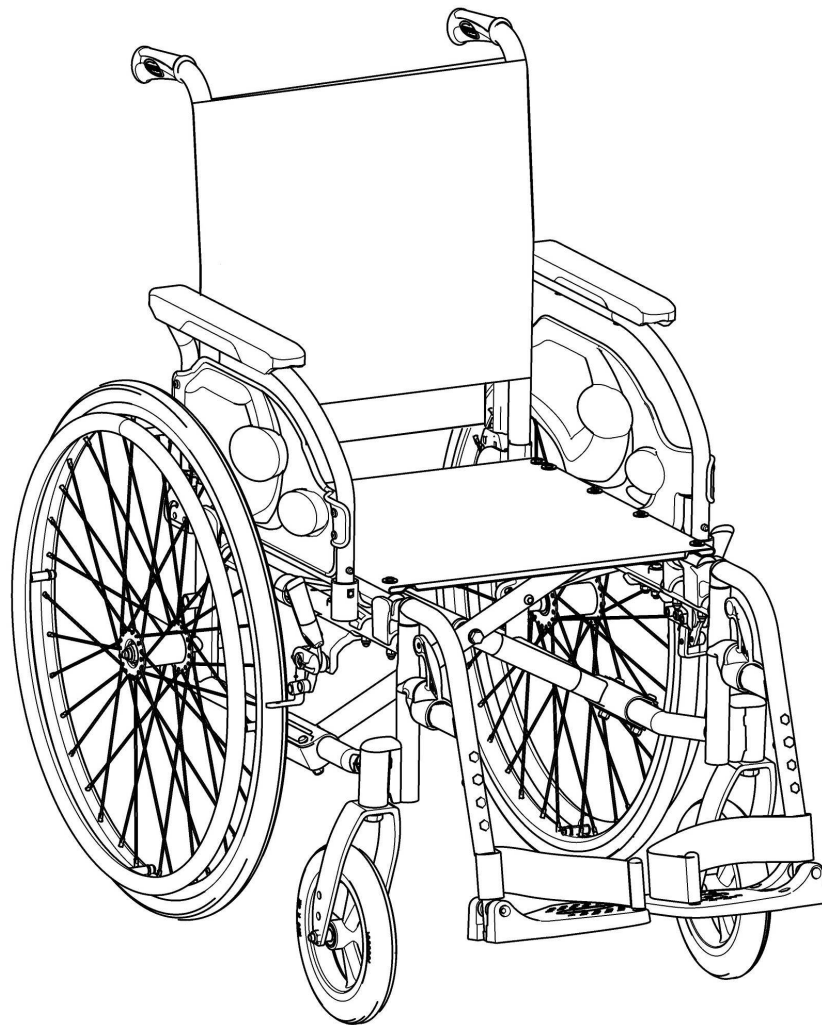
# Invacare® Action® I R

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## SERVICE MANUAL

(MAINTENANCE AND ADJUSTMENT)

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



1638725-A

May 2017



Yes, you can.®

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# 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](http://www.invacare.eu.com) 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 tire pressure on one rear wheel	Correct tire pressure
	One or more spokes broken	Replace faulty spoke(s), → authorized dealer
	Spokes tightened unevenly	Tighten loose spokes, → authorized dealer
	Front wheel bearings are dirty or damaged	Clean or replace the bearings, → authorized 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, → authorized 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, → authorized 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, → authorized dealer
	Front wheel has worn smooth	Change front wheel, → authorized dealer
The front wheel is stiff or stuck	Bearings are dirty or faulty	Clean or replace the bearings, → authorized dealer

**⚠ 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](http://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	3/4 Nm	4/7 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 tire pressure (BAR, KPa or P.S.I.). DO NOT over inflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm. The recommended tire pressure is on the sidewall of the tire.

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

**⚠ CAUTION**

As with any vehicle, the wheels and tires 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 tires 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 the rear wheels. Refer to Replacing Handrims paragraph, in section 5.
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.

## 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.

<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	CASTOR SIZE	CASTOR POSITION	REAR WHEEL SIZE	REAR WHEEL POSITION	USER CONDITION	WHEEL BRAKES	ANTI-TIPPERS
<b>SEAT HEIGHT</b>	•	X	X	X	X	X	X	X	N/A	N/A	N/A
<b>SEAT DEPTH</b>	X	•	X	X	X	X	X	X	N/A	N/A	N/A
<b>BACK ANGLE</b>	X	X	•	X	X	X	X	X	N/A	N/A	N/A
<b>SEATING SYSTEM/UPHOLSTERY</b>	X	X	X	•	X	X	X	X	X	N/A	N/A
<b>CASTOR SIZE</b>	X	N/A	X	N/A	•	X	X	X	N/A	X	X
<b>CASTOR POSITION</b>	X	N/A	X	N/A	X	•	X	X	N/A	X	X
<b>REAR WHEEL SIZE</b>	X	N/A	X	N/A	X	X	•	X	N/A	X	X
<b>REAR WHEEL POSITION</b>	X	N/A	X	N/A	X	X	X	•	N/A	X	X
<b>USER CONDITION</b>	X	X	X	X	X	X	X	X	•	N/A	N/A

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

## 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.

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

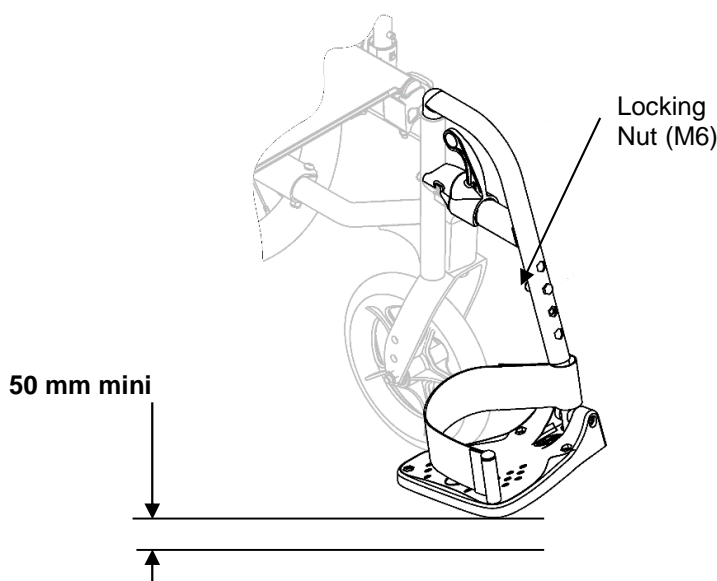
### Adjusting Footrest Height

*NOTE: For this procedure, refer to FIGURE 2.1.*

1. Remove calf strap, if so equipped.
2. Unscrew locking bolt (10 mm Spanner).
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 at all times.*

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



**FIGURE 2.1** Adjusting Footrest Height

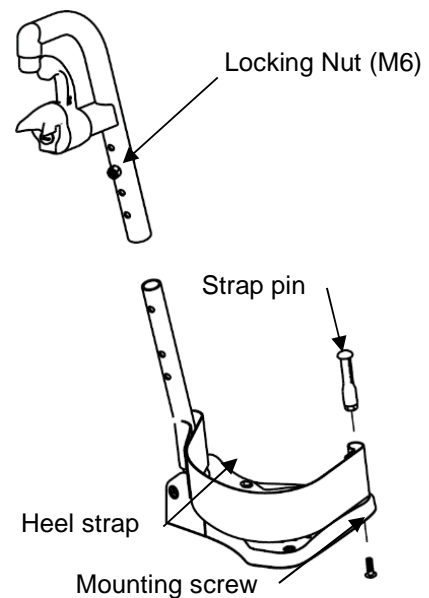
## Replacing Heel Strap

*NOTE: For this procedure, refer to FIGURE 2.2.*

1. Remove the locking nut (10 mm Spanner) 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 nut with 10 mm Spanner, secure the footrest tube to the footrest support.
7. Securely tighten (5Nm).



**FIGURE 2.2** Replacing Heel Strap

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

*NOTE: For this procedure, refer to FIGURE 2.3.*

### Adjusting the Legrest Angle

There are nine pre-set positions available for angle adjustment.

1. Loosening the knob and pull it up with one hand while supporting the leg rest with your other hand.
2. Adjust into one of nine pre-set positions, downwards the knob into the desired position and firmly tighten the knob.
3. If necessary, repeat STEPS 1-2 to adjust remaining elevating legrest angle.

### Adjusting the Footplate Height

1. Unscrew locking bolt A (5 mm Allen key and 10 mm Spanner).
2. Position the footrest assembly to the desired height.

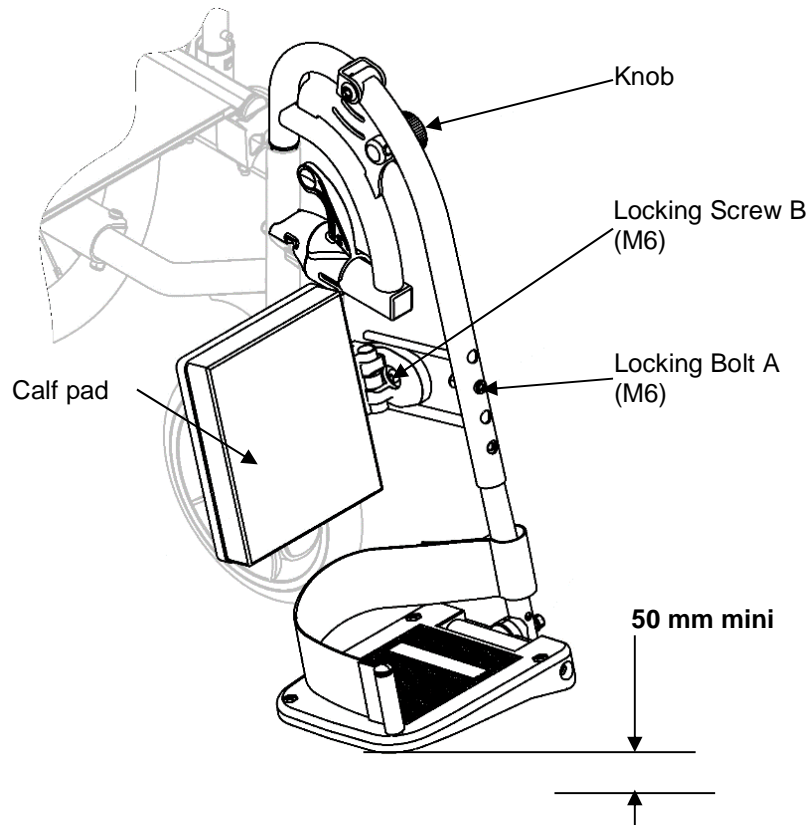


*NOTE: A 50 mm clearance between the bottom of the footplate and the ground/floor MUST be maintained at all times.*

3. If the distance between the bottom of footplate and the ground/floor is not 50 mm minimum, adjust footrest tube accordingly.
4. Using the locking bolt with 5 mm Allen key and 10 mm Spanner, secure the footrest tube to the footrest support. Securely tighten (5 Nm).
5. If necessary, repeat STEPS 2-4 to adjust remaining footrest.

### Adjusting Calf pad Depth

1. Remove the Locking Screw B that secure the calf pad to the calf pad bracket.
2. Insert Locking Screw B through one of three calf pad bracket mounting holes.
3. Using the Locking Screw B secure the calf pad to the calf pad bracket.
4. If necessary, repeat STEPS 1-3 to adjust remaining calf pad assembly.



**FIGURE 2.3** Adjusting Elevating Legrest Height and Calf pad Height/Depth

## SECTION 3—ARMRESTS

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### WARNING

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

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### Removing/Installing Swing Away Armrests

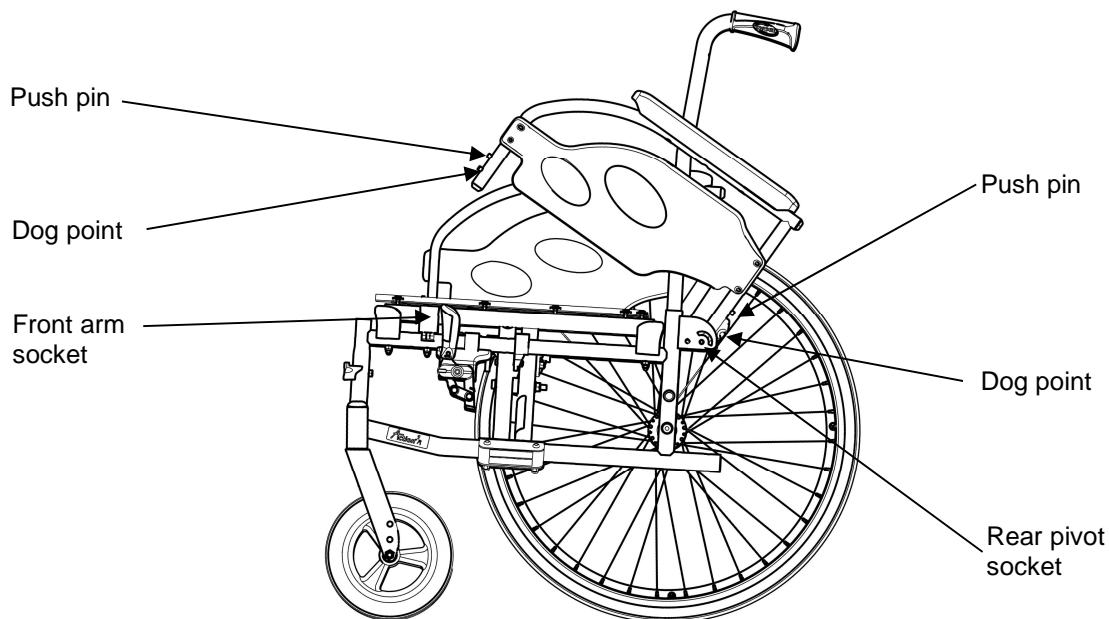
*NOTE: For this procedure, refer to FIGURE 3.1.*

#### Removing Swing Away Armrest

1. Unlock existing armrest assembly by operate the push pin.
2. Swing back on the existing armrest to remove from the front arm socket.
3. Push on the rear locking pin to remove it from the rear pivot socket.
4. Repeat STEPS 1-3 for opposite side of wheelchair, if necessary.

#### Installing Swing Away Armrest

1. If necessary, remove existing armrest assembly as describe above.
2. Install new/existing armrest assembly, first into the rear pivot socket and into the front arm socket.
3. Lock new/existing armrest assembly by operate the push pins.  
Make sure that the dog points are properly engaged in their housings.
4. Repeat STEPS 1-3 for opposite side, if necessary.

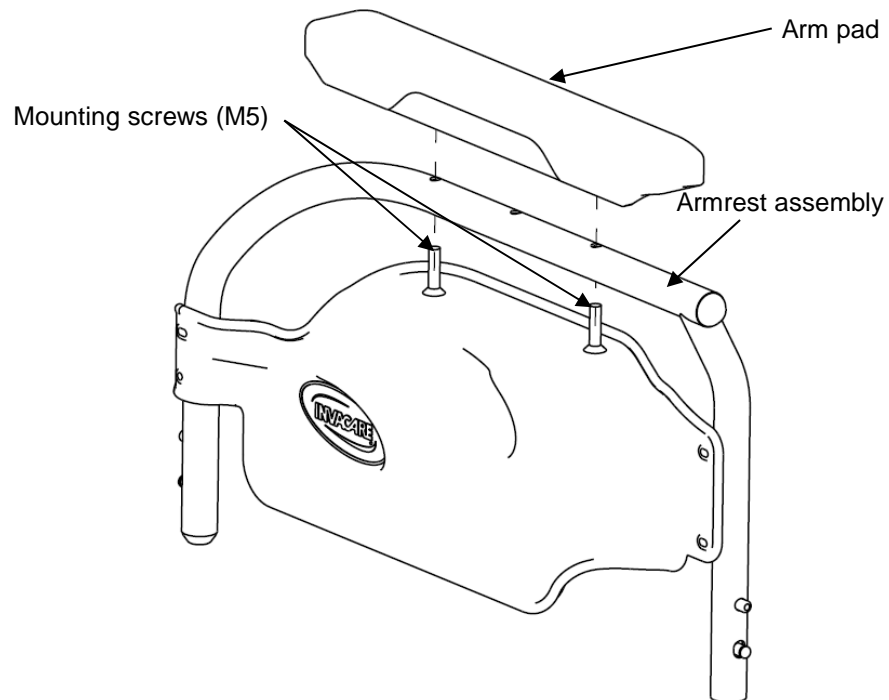


**FIGURE 3.1** Removing/Installing Swing Away Armrest

## Replacing Armrest Arm pad

*NOTE: For this procedure, refer to FIGURE 3.2.*

1. Remove the mounting screws 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 3.2** Replacing Armrest Arm Pad

## SECTION 4—SEAT/BACK

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### WARNING

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

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## Removing/Installing Seat Upholstery

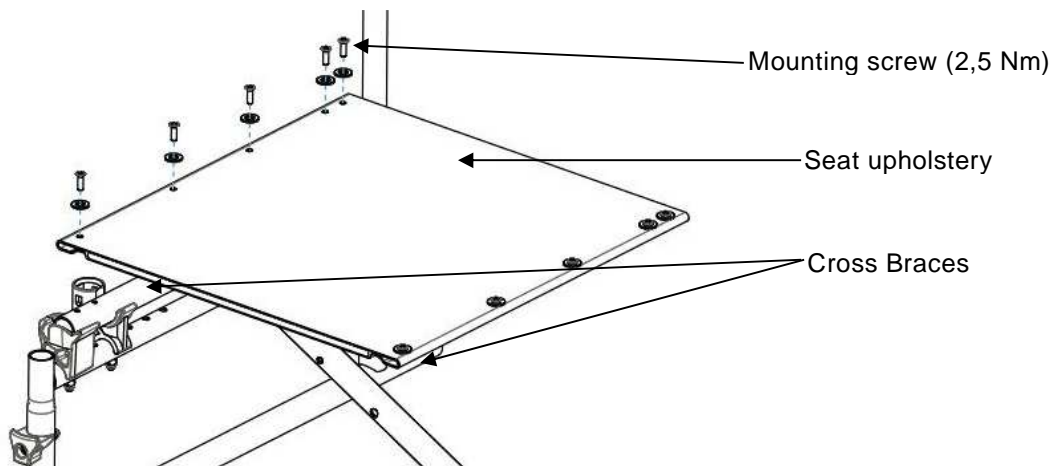
*NOTE: For this procedure, refer to FIGURE 4.1.*

### Removing Seat Upholstery

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

1. Fold the wheelchair.
2. Remove the mounting screws and washers that secure the existing seat upholstery to the cross braces.
3. Remove the existing seat upholstery from the cross braces.
4. Install new seat upholstery by reversing STEPS 1-3.



**FIGURE 4.1** Removing/Installing Seat Upholstery

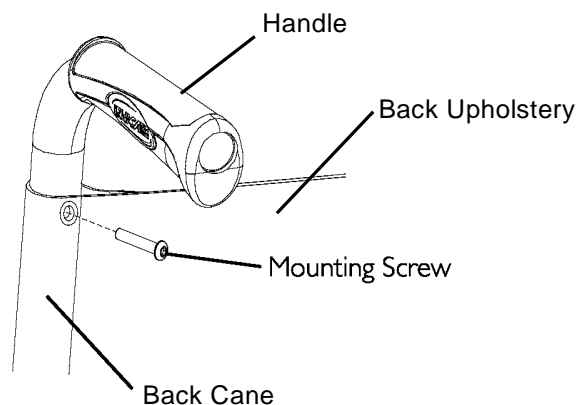
## Removing/Installing Standard Back Upholstery

*NOTE: For this procedure, refer to FIGURE 4.2.*

### Removing Back Upholstery

*NOTE: To Install the Back Upholstery, 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 a sharp tool).
3. Remove the mounting screw that secures the back upholstery to the back canes.
4. Remove the back upholstery from the back canes.
5. Set the new back upholstery with 2 new mounting screws.
6. Install the new handles on the back canes. (Previously dip the handle into a solution of neutral alcohol and settle it immediately on the back cane)



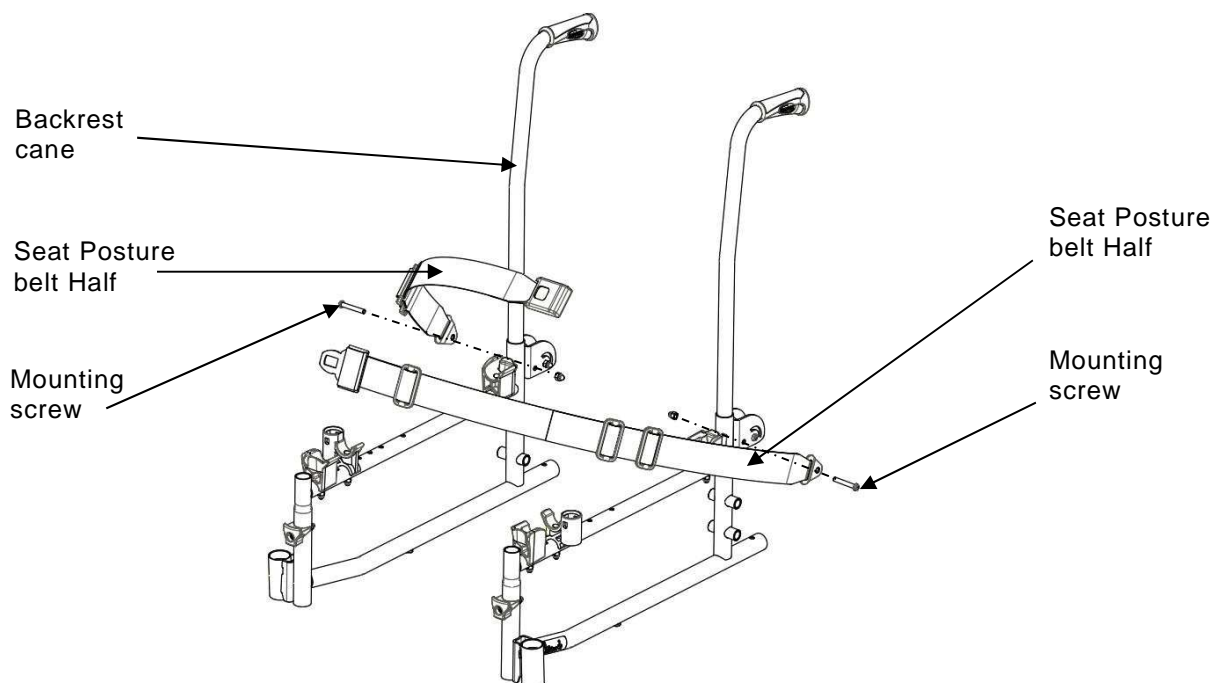
**FIGURE 4.2** Removing/Installing Standard Back Upholstery

## Installing/Removing Seat Posture Belt

*NOTE: For this procedure, refer to FIGURE 4.3.*

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.
3. Repeat STEP 2 for opposite side, if necessary.
4. Engage the two halves of the new seat posture belt.
5. Align the mounting holes on the rear pivot socket hole on the wheelchair frame and one end of the new seat posture belt.
6. Secure the new seat posture belt with one mounting screw and washer. Tighten securely.
7. Repeat STEPS 5 and 6 for the opposite side of the seat posture belt.
8. Reinstall seat cushion onto wheelchair, if necessary.

*NOTE: Seat upholstery removed for clarity on figure 4.3.*



**FIGURE 4.3** Installing/Removing Seat Posture Belt

## Installing/Removing the Back brace

### WARNING

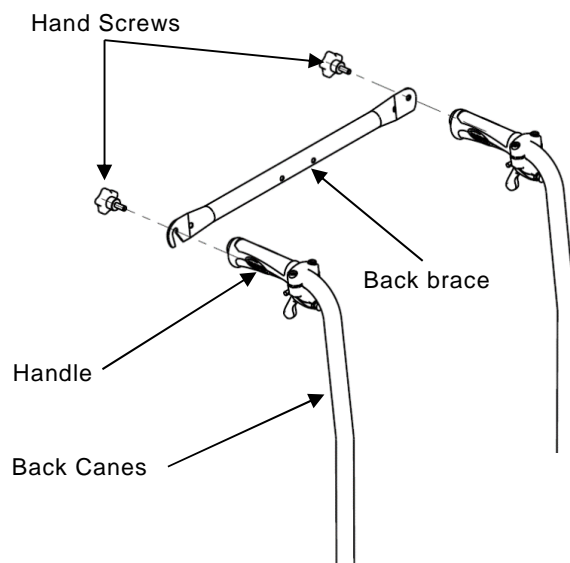
If a back brace is already installed, you don't have to re-install the back cane inserts (for fixed backrest canes only).

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

*NOTE: For this procedure, refer to FIGURE 4.4.*

*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 a sharp tool).
3. Install the inserts into the canes (fixed backrest canes only).
4. Secure the inserts with mounting screws (fixed backrest canes only).
5. Install the handles on the back canes. (Previously dip the handle into a solution of neutral alcohol 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 4.4** Installing/Removing the Back brace

## SECTION 5—REAR WHEELS/FRONT CASTORS

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### WARNING

The seat height, seat depth, back angle, seating system, size/position of the rear wheels, size/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 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 tightened securely - otherwise injury or damage may occur.

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## Removing/Installing Rear Wheels

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### WARNING

If changing the size of the rear wheel or the seat-to-floor height, refer to the table in the next page.

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### Fixed Axles, Transit version

*NOTE: For this procedure, refer to FIGURE 5.1.*

#### Removing rear wheels

1. 12"; remove the fixed axle, washers and locknut that secure rear wheel to the axle bracket. Remove existing rear wheel from the wheelchair.
2. Install new/existing rear wheel onto wheelchair. Refer to [Installing Transit Kit](#) paragraph, see STEPS 3-6 only.
3. 24" rear wheel; remove the complete wheel from the side frame. Refer to [Removing/Installing 24" Rear Wheels](#) paragraph.

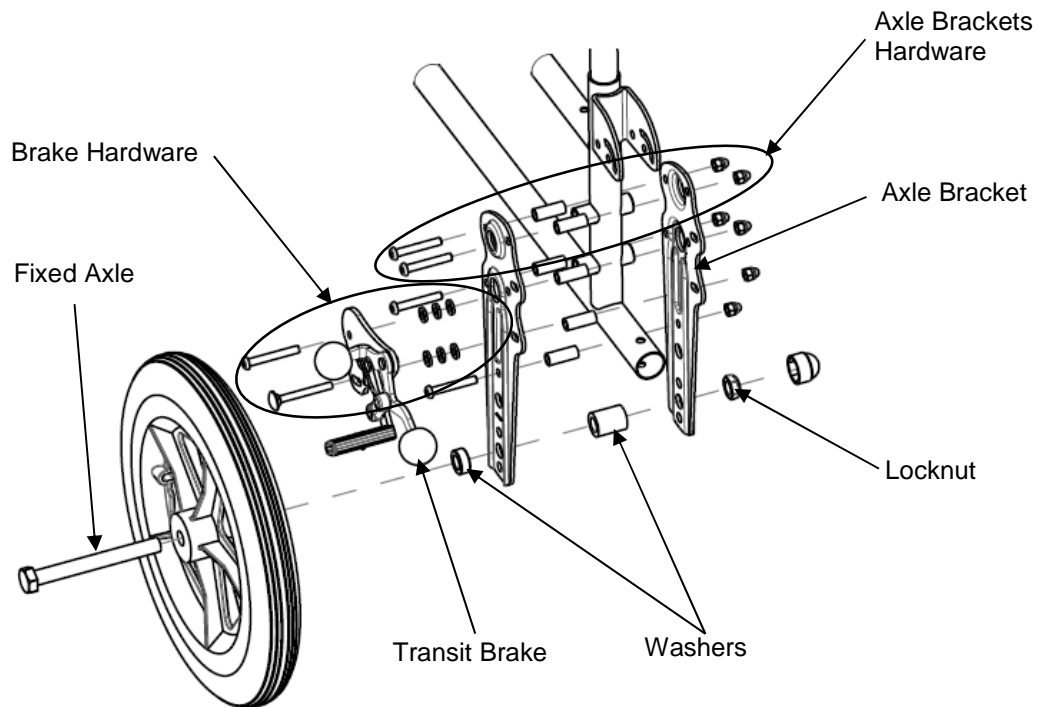
#### Installing Transit Kit

1. Always make sure that the axle plate is in the same position on both sides.
2. Install the axle bracket with the Axle Brackets Hardware
3. Install fixed axle through washer, 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 with its brake hardware, adjust the distance between the brake shoe and the wheel, see [Adjusting Wheel Brake](#) paragraph.
6. If necessary, repeat STEPS 1-5 for opposite rear wheel.

*NOTE: Both Axle brackets should be set at the same position. Head of bottom mounting screws needs to be on the outside position.*

---





**FIGURE 5.1** Removing/Installing Rear Wheels

*NOTE: In order to obtain the desired front seat to floor height (for details, see Seat-to-Floor Height paragraph), it will be necessary to perform both of the following:*

- Changing the mounting position on the fork. Refer to Removing/Installing/Repositioning the Castor Assemblies paragraph.
- Changing the rear height positioning. Refer to Changing Seat-to-Floor Height paragraph, see table and figure 6.1.

## Quick-Release Axles, self-propelling version

*NOTE: For this procedure, refer to FIGURE 5.2.*

### Removing/Installing 24" Rear Wheels

1. Hold the centre of the rear wheel and push in the tip of the quick release axle.
2. Pull the quick release axle and rear wheel out of the axle bracket on the wheelchair frame.
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.

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### 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.**

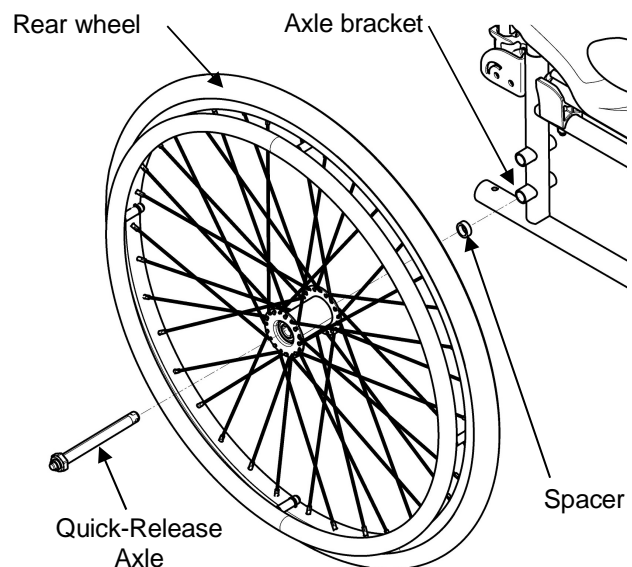
**Keep locking pins clean. Always make sure that the spacer is in place.**

**Invacare recommends inserting quick-release axles with the head end to the inside of the wheelchair to prevent accidental release during contact leisure activities.**

---

### Installing

1. Install the existing quick release axle through the new/existing rear wheel and the spacer.
2. Install the new/existing rear wheel and quick release axle into the axle bracket on the wheelchair frame.
3. Refer to [Adjusting Quick Release Axles](#) paragraph if the locking pins are not protruding past the inside of the axle bushing or there is too much movement of the rear wheel assembly in a back and forth position.



**FIGURE 5.2** Removing/Installing Rear Wheels

*NOTE: In order to obtain the desired front seat to floor height (for details, see [Seat-to Floor Height](#) paragraph)*

## Adjusting Quick-Release Axles

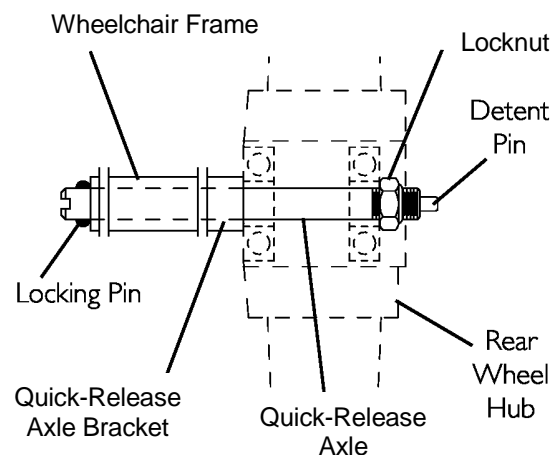
*NOTE: For this procedure, refer to FIGURE 5.3.*

1. Remove rear wheel and quick release axle from the wheelchair. Refer to [Removing/Installing Rear Wheels](#) paragraph.
2. Depress detent pin in the quick release axle and slide the quick release axle through the rear wheel hub.
3. Release detent pin to ensure that the locking pins are fully released.
4. Increase or decrease end play by adjusting the locknut 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 [Removing/Installing Rear Wheels](#) paragraph.
6. Repeat STEPS 4-5 until the quick release axle detent pins are fully released past the wheelchair frame.



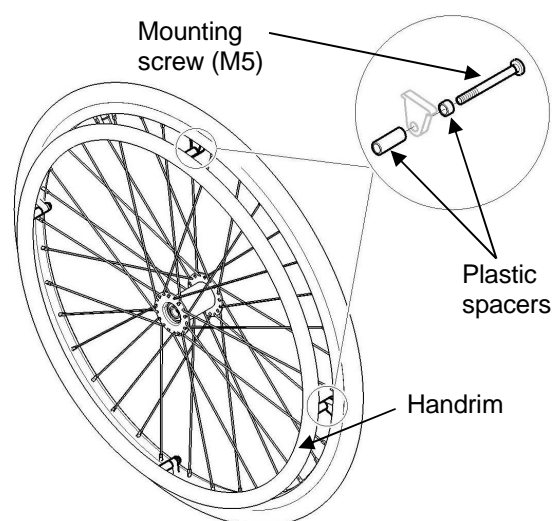
**FIGURE 5.3** Adjusting Quick-Release Axles

## Replacing Handrims

*NOTE: for this procedure, refer to FIGURE 5.4.*

*NOTE: To replace the handrims, use 8 new mounting pre-glued screws (M5).*

1. Remove the rear wheel from the wheelchair. Refer to [Removing/Installing Rear Wheels](#) paragraph.
2. Remove the mounting screws that secure the existing handrim 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.
6. Reinstall the wheel to the wheelchair.



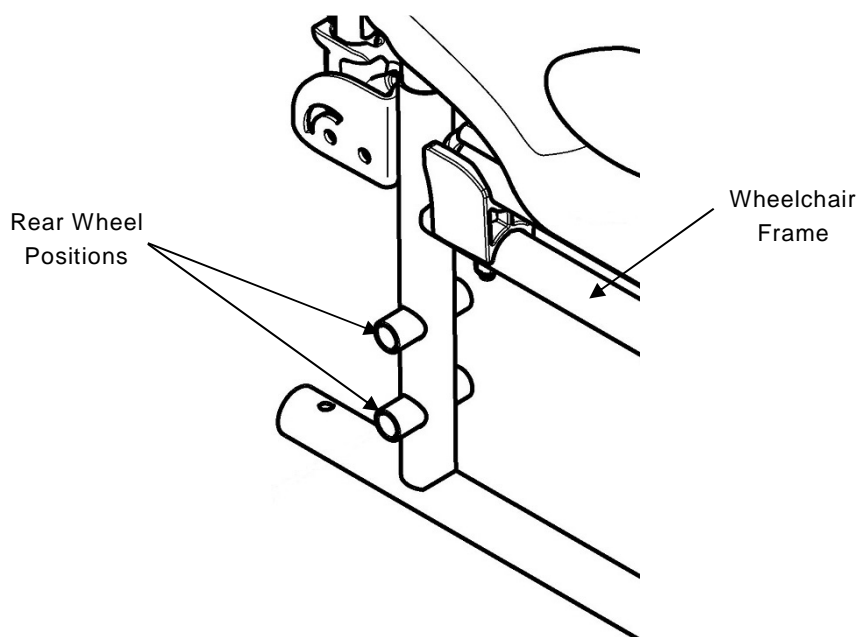
**FIGURE 5.4** Replacing Handrims

## Adjusting 24” Rear Wheel Height

*NOTE: For this procedure, refer to FIGURE 5.5.*

1. Remove the rear wheel. Refer to Removing/Installing Rear Wheels paragraph.
2. Install the rear wheel to the other position Refer to Removing/Installing Rear Wheels paragraph.
3. Repeat STEPS 1 to 2 for the other rear wheel.

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



**FIGURE 5.5** Adjusting Rear Wheel Height

## Replacing/Repairing Rear Wheel & Front Caster Tire/Tube

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 CAUTION

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

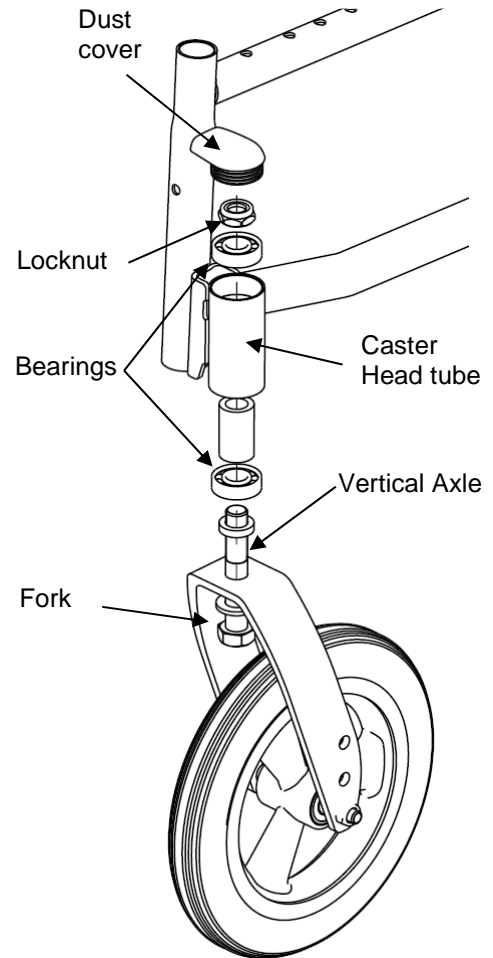
## Adjusting Fork Rotation

### WARNING

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 5.6.*

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.
4. Test wheelchair for manoeuvrability.
5. Snap dust cover into the caster head tube.
6. Perform STEPS 1 to 5 on the other side.



**FIGURE 5.6** Adjusting Fork Rotation

## Removing/Installing the Caster Assemblies

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

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

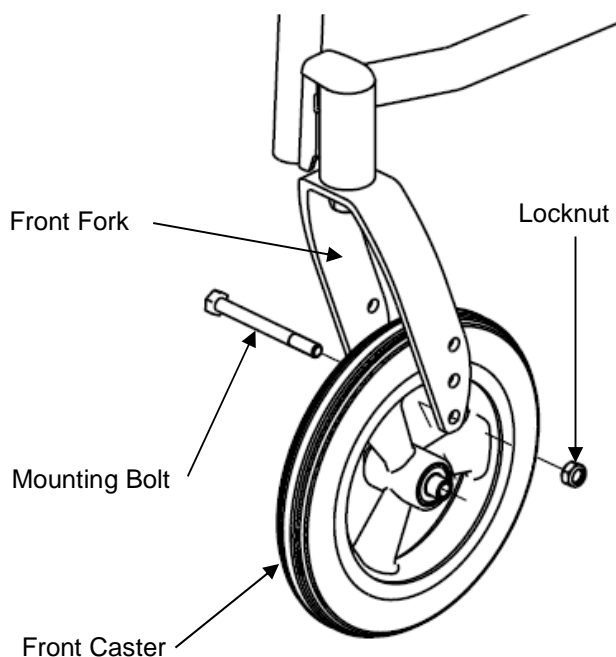
*NOTE: Both front casters MUST be the same size and adjusted to the same height. For this procedure, refer to FIGURE 5.7.*

### Removing Front Caster

1. Remove the mounting bolt and locknut that secure the front caster to the fork.
2. Remove the caster from the fork.

### Installing Front Caster

1. Using the mounting bolt and locknut (5/6 Nm), secure the front caster to the desired caster mounting position.
2. Ensure fork stem is perpendicular to the flat surface and the locknut is on the outside of the wheelchair



**FIGURE 5.7** Removing/Installing the front caster

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## SECTION 6—SEAT-TO-FLOOR HEIGHT

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 WARNING

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

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 WARNING

Because of the parts mechanical tolerances and all adjustments possible (+/- 1°) the seat angle possible is 3° +/-1° depending of the wheelchair assembly. Refer to table “Seat-to-floor heights” paragraph.

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### Changing Seat-to-Floor Height

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 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 table on page 6.

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

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

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*NOTE: In order to obtain the desired front seat to floor height, it will be necessary to perform both of the following:*

- Changing a position on the fork. Refer to Removing/Installing/Repositioning the Castor Assemblies paragraph.
  - Changing the rear height positioning. Refer to Adjusting Rear Wheel Height paragraph.
-

CHANGING SEAT-TO-FLOOR HEIGHT

SEAT ANGLE 3°	REAR WHEEL		FRONT CASTOR	
SEAT HEIGHT				
		12"		8"
500 mm		A		A
450 mm		B		B

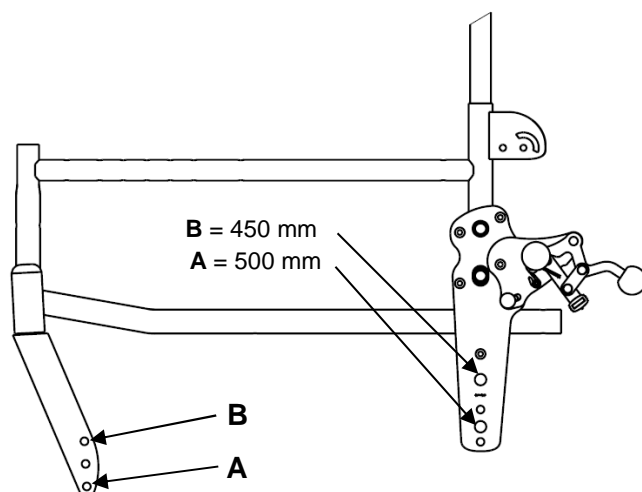


FIGURE 6.1 Seat To Floor Height Transit

SEAT ANGLE 3°	REAR WHEEL		FRONT CASTOR	
SEAT HEIGHT				
		24"		8"
500 mm		A		A
450 mm		B		B

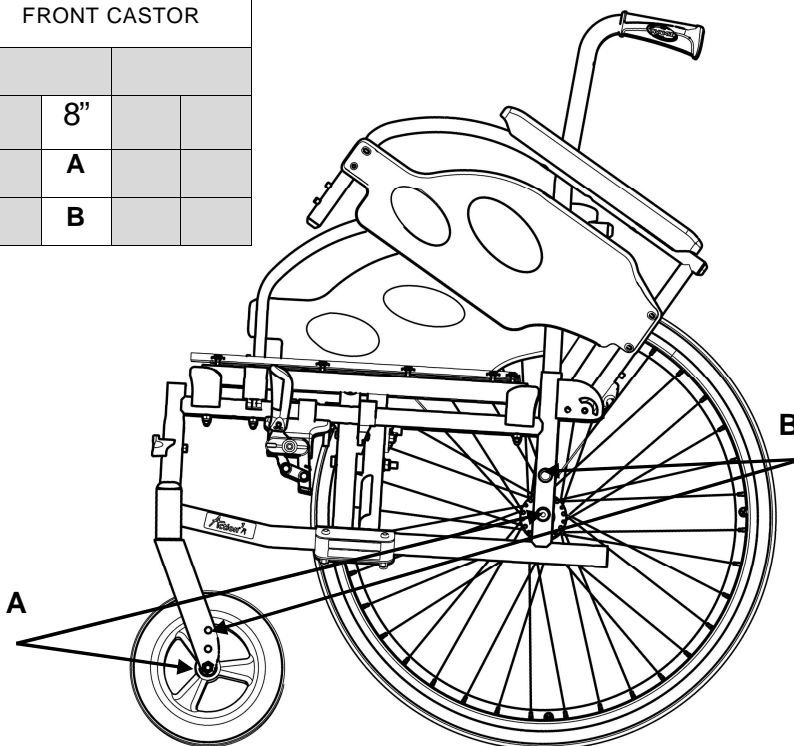


FIGURE 6.2 Seat To Floor Height Self Propulsion



## SECTION 7—WHEEL BRAKES

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### 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.

---

### Adjusting Wheel Brakes

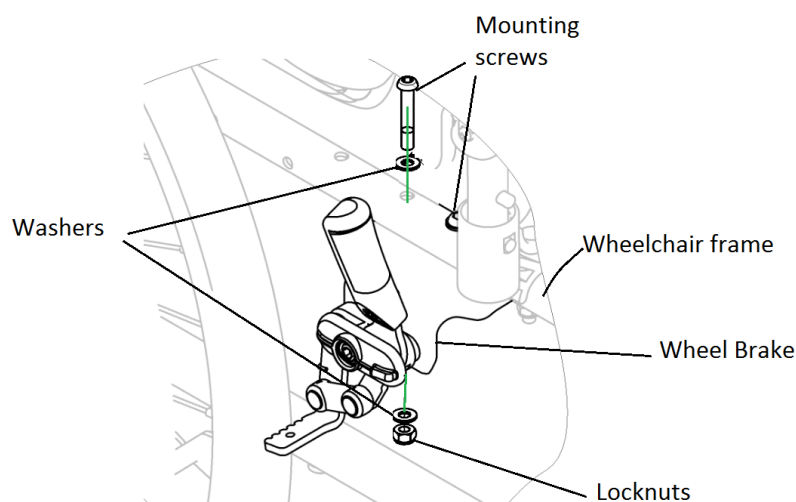
*NOTE: When changing the position of the rear wheels, the wheel brakes MUST be repositioned.*

*NOTE: Before adjusting or replacing the wheel brake assemblies, ensure that the tires are inflated to the recommended BAR, KPa, P.S.I on the side wall of the tire.*

### Adjusting Wheel Brake Position

*NOTE: For this procedure, refer to FIGURE 7.1.*

1. Remove the two mounting screws that secures the wheel brake assembly to the wheelchair frame.
2. Remove the wheel brake assembly from the clamp assembly.
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 with the two mounting screws.
6. Repeat STEPS 1 to 6 for the other wheel brake assembly.

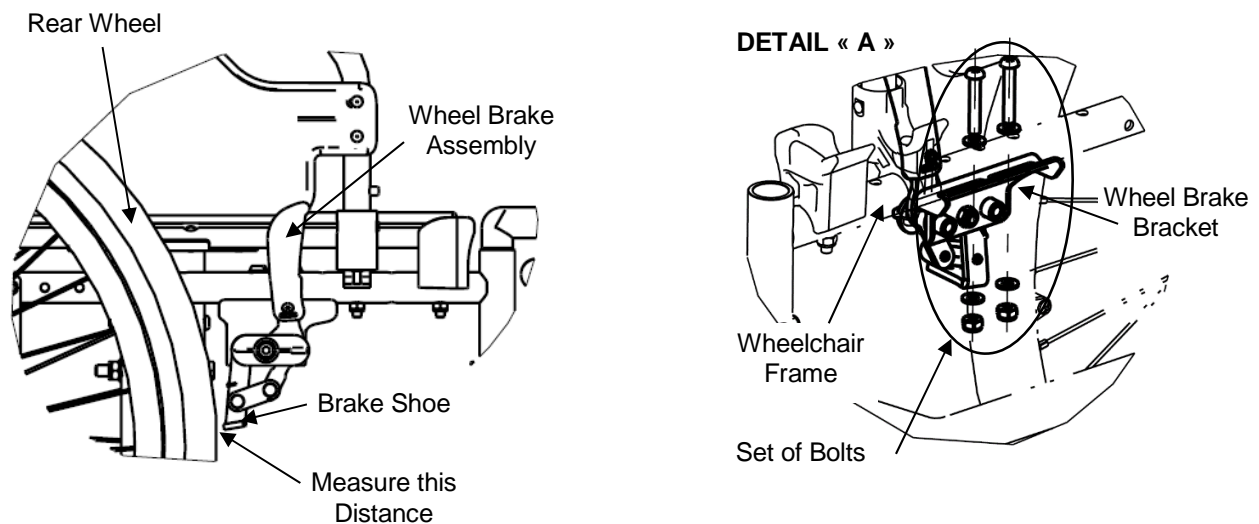


**FIGURE 7.1** Adjusting Wheel Brakes - Adjusting Wheel Brake Position

## Adjusting Wheel Brake Tension

*NOTE: For this procedure, refer to FIGURE 7.2.*

1. Loosen, but DO NOT remove the set of bolts (Detail –A-) that secure the wheel brake assembly to the wheelchair frame.
2. Measure the distance between the wheel brake shoe and the rear wheel.
3. Slide the wheel lock bracket along the wheelchair frame until the measurement is 4 mm for solid tire and for pneumatic.
4. Securely tighten the set of bolts (Detail –A-).
5. Repeat STEPS 1-4 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 1-6 until the wheel brakes engage the rear wheels enough to hold the occupied wheelchair.



**FIGURE 7.2** Adjusting Wheel Brakes- Adjusting Wheel Brake Tension

 **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.

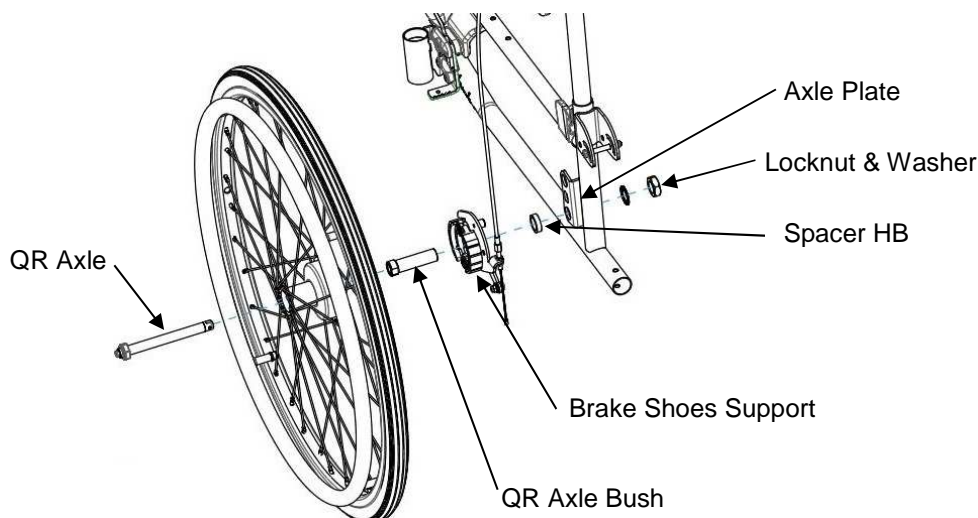
## Installing/Adjusting Hub Brakes

*NOTE: Before adjusting or replacing the hub brake assemblies, ensure that the tires are inflated to the recommended BAR, KPa, P.S.I on the side wall of the tire.*

### Installing Hub Brakes

*NOTE: For this procedure, refer to FIGURE 7.4.*

1. Remove the rear wheel. Refer to [Removing/Installing Rear Wheels](#) paragraph.
2. Remove the locknut and washer that secures the QR axle bush to the axle plate.
3. Thread a brake shoe support on a QR axle bush (30/35 Nm) support then add spacer HB.
4. Present the set in front of the axle plate outside of the chair, by directing the brake shoe support following the plan opposite to the hole of the axle plate.
5. Align the hub brake set with one of the three 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.



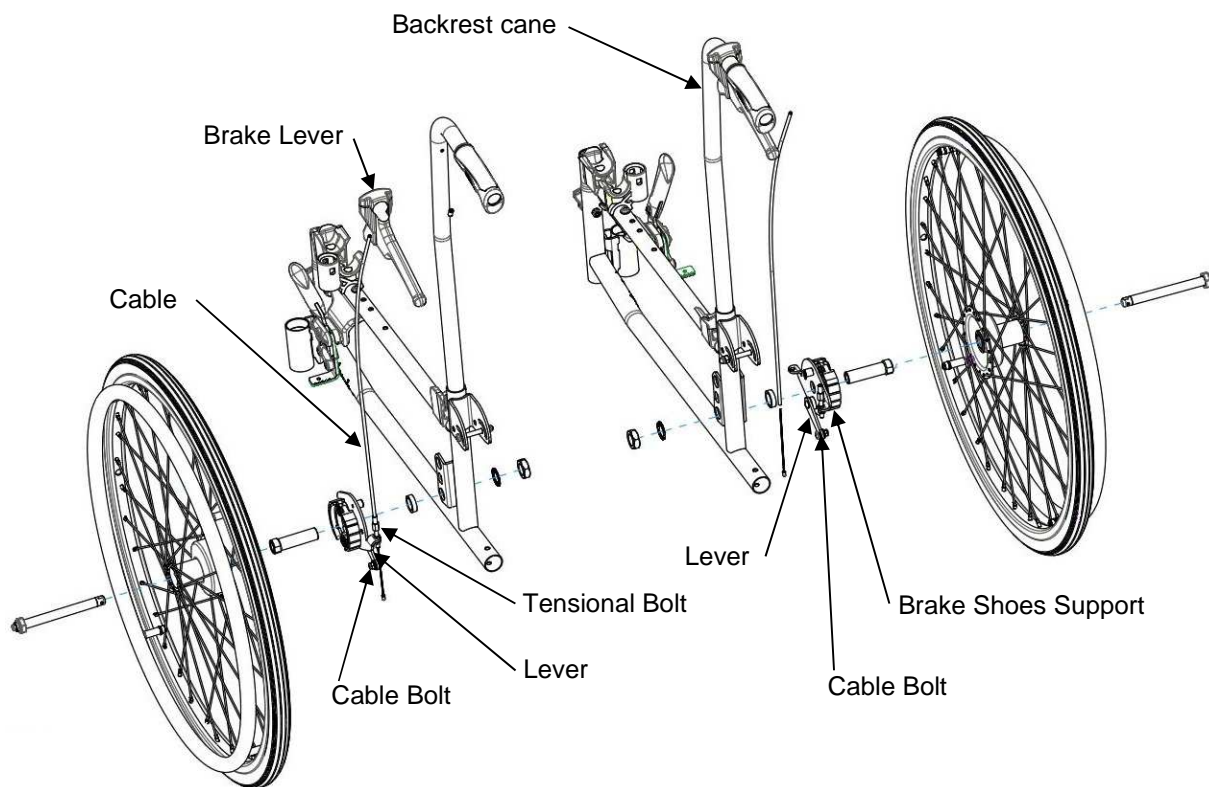
**FIGURE 7.4** Installing Hub Brakes

### Installing/adjusting Hub Brake lever

*NOTE: For this procedure, refer to FIGURE 7.5.*

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

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



**FIGURE 7.5** Installing/Adjusting Hub Brake

## 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 at all times. Inasmuch as the anti-tippers are an option on this wheelchair (you may order it with or without the anti-tippers), Invacare strongly recommends ordering the anti-tippers as an additional safeguard for the wheelchair user.

Anti-tippers MUST be fully engaged and release buttons fully protruding out of adjustment holes.

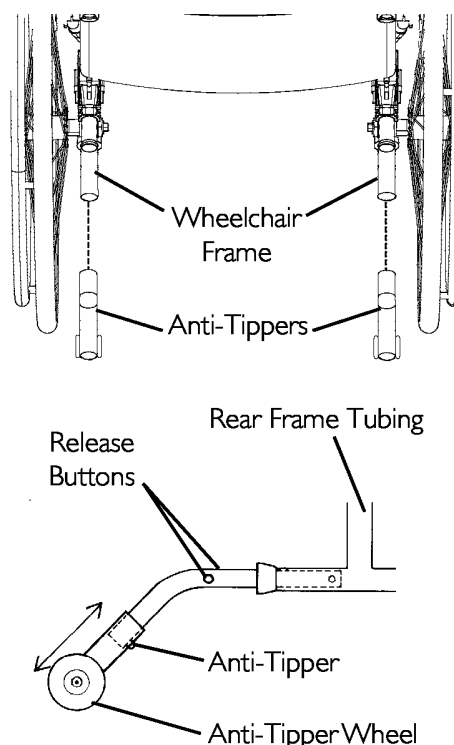
Ensure both anti-tippers are adjusted to the same mounting hole.

## Installing/Adjusting Anti-Tippers

### Installing Anti-Tippers

*NOTE: For this procedure, refer to FIGURE 8.1.*

1. Press release buttons in and insert anti-tippers with the anti-tipper wheels pointing toward ground/floor into the rear frame tubing until bottom release button locks in place.
2. Measure the distance between the bottom of the anti-tipper wheels and the ground/floor.
3. *NOTE: A 40 to 50 mm clearance between the bottom of the anti-tipper wheels and the ground/floor MUST be maintained at all times.*
4. If the distance between the bottom of anti-tipper wheels and the ground/floor is not 40 to 50 mm, adjust anti-tippers.



**FIGURE 8.1** Installing Anti-Tippers

*NOTE: Make sure that the anti-tipper wheel is ALWAYS located outside the rear wheel volume (50 mm Minimum); refer to FIGURE 8.2.*

## Adjusting Anti-Tippers

*NOTE: For this procedure, refer to FIGURE 8.2.*

### WARNING

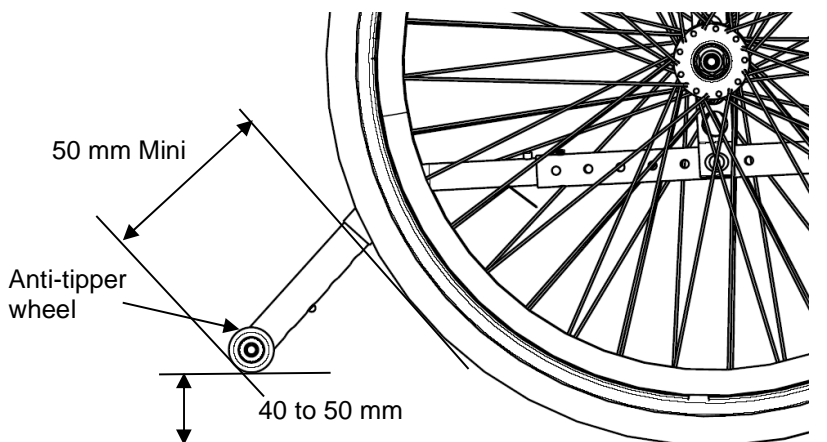
When anti-tippers are used, anti-tippers **MUST** be adjusted to maintain a 40 to 50 mm clearance between the bottom of the anti-tipper wheels and the ground/ floor. This spacing should always be checked whenever adjustments/changes are made to the wheelchair.

Make sure that the anti-tipper wheel is **ALWAYS** located outside the rear wheel volume.

Failure to maintain proper spacing may result in the chair tipping over backward causing serious injury or property damage

1. Press the release buttons on the wheeled portion of the anti-tipper and slide it up or down to achieve the 40 to 50 mm clearance.
2. Check to make sure that the release buttons are fully engaged in adjustment holes.

*NOTE: Make sure that the anti-tipper wheel is ALWAYS located outside the rear wheel volume (50 mm Minimum); refer to FIGURE 8.2.*



**FIGURE 8.2** Adjusting Anti-Tippers

# SECTION 9—PERIODIC MAINTENANCE GUIDELINES

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*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 6).
- All fasteners on clothing guards are secure.
- Arms are secure but easy to release and locking systems engage properly.
- Adjustable height arms operate and lock securely.
- 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.
- No excessive side movement or binding when rear wheels are lifted and spun.
- Quick-release axles lock properly (see page 17).
- Inspect handrims for signs of rough edges or peeling finish.
- Inspect for broken spokes.
- 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 castor/wheel/fork/head tube fasteners are secure (see pages 6 & 20).
- Wheel brakes do not interfere with tires when rolling.
- Wheel brakes pivot point are free of wear and looseness.
- Wheel brakes are easy to engage.
- Inspect tires/castors for flat spots and wear.
- Check pneumatic tires for proper inflation (recommended tire pressure is listed on the side wall of the tire).
- Ensure axles are free from dirt, lint, etc.
- Ensure roller bearings are free from dirt, lint, etc.
- Adjust wheel brakes as tires wear.
- Clean and wax all parts.
- Clean upholstery and armrests.
- Ensure castors are free of debris.

### **Inspect/Adjust Weekly**

- Wheelchair rolls straight (no excessive drag or pull to one side).
- Quick-release axles lock properly (see page 17).
- Inspect for broken spokes. Adjustment/replacement.
- Wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- Inspect tires/castors for flat spots and wear.
- Check pneumatic tires for proper inflation (recommended tire pressure is listed on the side wall of the tire).
- Ensure castors are free of debris.

### **Inspect/Adjust Monthly**

- 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.
- Loosen/tighten locknut if wheel wobbles noticeably or binds to a stop.
- Wheel bearings are clean and free of moisture.
- Wheel brakes do not interfere with tires when rolling.
- Wheel brake pivot point are free of wear and looseness.
- Ensure all castor/wheel/fork/head tube fasteners are secure (see pages 6 & 20).
- Ensure all hardware is tight (see page 6).
- Ensure hand grips are secure to backrest canes.
- Ensure castors are free of debris.

### **Inspect/Adjust every twelve months (1/2)**

- Wheelchair rolls straight (no excessive drag or pull to one side).
- Arms are secure but easy to release and locking systems engage properly.
- Adjustable height arms 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.
- No excessive side movement or binding when rear wheels are lifted and spun.
- Inspect handrims for signs of rough edges or peeling finish.
- Inspect side frame and cross brace for signs of cracks, flaked paint or deformed metal work.
- Inspect tires/castors for flat spots and wear.
- Check pneumatic tires for proper inflation (recommended tire pressure is listed on the side wall of the tire).



**Inspect/Adjust every twelve months (2/2)**

- 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 tires wear.
- Clean and wax all parts.
- Ensure castors are free of debris.

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