



Yes, you can.®

Service Manual

English

Invacare Blade+



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I. General

I.1 INTRODUCTION

This manual provides basic details to enable the Blade Plus Wheelchair to be maintained. It is not intended to be a comprehensive maintenance guide/policy, but is intended for use by competent personnel to enable the chair to be adequately maintained.

I.2 SYMBOLS



Warning
This symbol means warning and is used in the user manual for important information to prevent injuries and material damage



Tools/Service
This symbol identifies service work or tools required



Explosion hazard
This symbol warns you of an explosion hazard



Transportation
This symbol identifies important information relevant to transporting your wheelchair in a motor vehicle.



Caution
This symbol marks instructions that need special caution.

I.3 COPYRIGHT PROTECTION

The information set out in this manual may be modified without prior notice. This manual contains copyright information. All rights are reserved. No part of this document may be photocopied or reproduced without prior written agreement from INVACARE or its appointed representative.

I.4 WARRANTY

Contractual guarantee

This is to certify that your Blade + wheelchair is warranted by Invacare, for a period of 5 years for the frame and crossbars and 24 months for all other parts. This warranty is subject to the following conditions:

1. Only Invacare wheelchairs purchased at full price are warranted against defective workmanship and materials.
2. If a defect or fault is discovered the supplier from whom the appliance was purchased/obtained should be notified immediately.
3. The manufacturer will not accept responsibility for damage caused by misuse or the non-observance of the instructions set out in the Maintenance Manual.
4. During the period of the warranty, any parts that have become defective due to faulty workmanship or materials, will be renewed or repaired free of charge by the Invacare supplier.
5. The warranty will be forfeited should any unauthorised alteration be made to the equipment.
6. The purchaser's statutory rights under the Consumer Protection Act are not affected.

I.5 LIMITATION OF LIABILITY

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

Invacare shall not be liable for:

- natural wear and tear
- inappropriate or incorrect use
- defective assembly or setting-up by the purchaser or third parties
- defective or neglectful treatment
- use of unsuitable spares
- alterations to the wheelchair which occur as a result of incorrectly or improperly executed maintenance or overhaul.
- Repairs to any components other than those shown in this manual are not allowed. Repairs to any metal work is not generally permitted without express permission of Invacare Ltd. All fasteners i.e. bolts, Nyloc nuts and any fastener showing damage must be renewed.

1.6 CUSTOMER SERVICE

For Customer Service enquiries, repairs, servicing and spares, contact INVACARE Ltd at the address below.

**Invacare Limited, Pencoed Technology Park,
Pencoed, Bridgend CF35 5HZ
Switchboard Tel: +44 (0)1656 776200,
Fax: +44 (0)1656 776201
Customer services Tel: +44 (0)1656 776222,
Fax: +44 (0)1656 776220
Technical Services Tel: +44 (0)1656 776333
Fax: +44 (0)1656 776330
UK@invacare.com
www.invacare.co.uk**

Please quote these details:

- Part Number
- Description
- Quantity required of each item
- Serial No.

If the wheelchair has to be transported back to the manufacturer for major repairs you should always use the original packaging for transport. You should include as accurate a fault description as possible

1.7 ACCIDENTS/NEAR ACCIDENTS

Please inform your Invacare office immediately of any accidents or near-accidents that have been caused by this wheelchair and that have led to, or could have led to, personal injury. The relevant authority must also be contacted and reported to.

1.8 INTENDED USE INVACARE BLADE +

Indoor and outdoor configurable wheelchair offered with various options compliant with EN 12184:1999 Section 5 Class B.

The Blade Plus manual wheelchair has been designed to provide mobility and comfort for persons with impaired mobility.

The wheelchair has been designed to be used either/or by a seated user/carer/attendant on both indoor and outdoor environments.

The wheelchair has, in its standard format, been designed to accommodate users who weigh up to a maximum of 90 kg, have all limbs intact and have sufficient upper body strength to maintain a safe position within the wheelchair without the addition of supporting aids.

Adaptions from standard wheelchair format are available to accommodate users who do not meet the above criteria, but these will only be considered after a suitable assessment of the risk has been carried out by a qualified person. For example: A user with either a full or a partial amputation or other condition which affects the centre of gravity will need to have a stability evaluation to minimize the risk of inadvertent tipping.

The wheelchair should only be used in accordance with the safety advice given within this user guide. Failure to follow the recommended advice could lead to personal injury.

No claims are made that the product will medically improve the circumstances or condition of the user.

1.9 SERVICE LIFE INVACARE BLADE +

We assume that our wheelchairs will be in use daily. For this reason the whole equipment is subject to an almost continuous stress and consequently, natural wear and tear. Taking this into consideration and provided that the wheelchair is maintained properly, the lifetime of the Invacare Blade+ is approximately 5 years. If the wheelchair is used less frequently, e.g. if you use it inside your apartment only, and if it is maintained perfectly, the service life may increase accordingly.

2. Safety

2.1 BEFORE ANY INSPECTION OR REPAIR WORK

These safety instructions are intended to prevent accidents at work your suitable workshop environment and it is imperative that they are observed.

Read and observe this maintenance manual and the associated user manual



Prop up the wheelchair with appropriate supports before starting the disassembly or assembly.

Never use standard nuts instead of self-locking nuts.

When using loctite, use goggles and gloves.

2.2 BEFORE OPERATION/ AFTER COMPLETION OF WORK

- Check all fixings for tight fit (Refer to torque settings where applicable)
- All nyloc nuts should be replaced after removal
- Check that the brake assembly locks fully and that the chair is unable to move
- Check that the handgrips are secured and cannot twist or be pulled off
- Check that the folding back plunger locks securely into the lower back post when the push handles are in the upright position
- Check that the seat and back upholstery are in a good condition
- Check that the footrests are fitted correctly
- Check that the hanger assembly is fitted correctly and that it is in working order
- Check that anti-tippers are in good working order, if fitted
- Check that the position belt is securely fitted and in good condition
- Check that brazed parts are in good condition
- Check the tyre pressure
- Check that the transportation tie down labels are in good condition (replace if necessary)
- **As a last check, always carry out a test run**

2.3 DISPOSAL/RECYCLING COMPONENTS

- The equipment wrapping is potentially recyclable
- The metal parts are used for scrap metal recycling
- The plastic parts are used for plastic recycling
- Electric components and printed circuit boards are disposed of as electronic scrap.
- Disposal must be carried out in accordance with the respective national legal provisions
- Ask your city or district council for details of the local waste management companies

2.4 INSPECTION

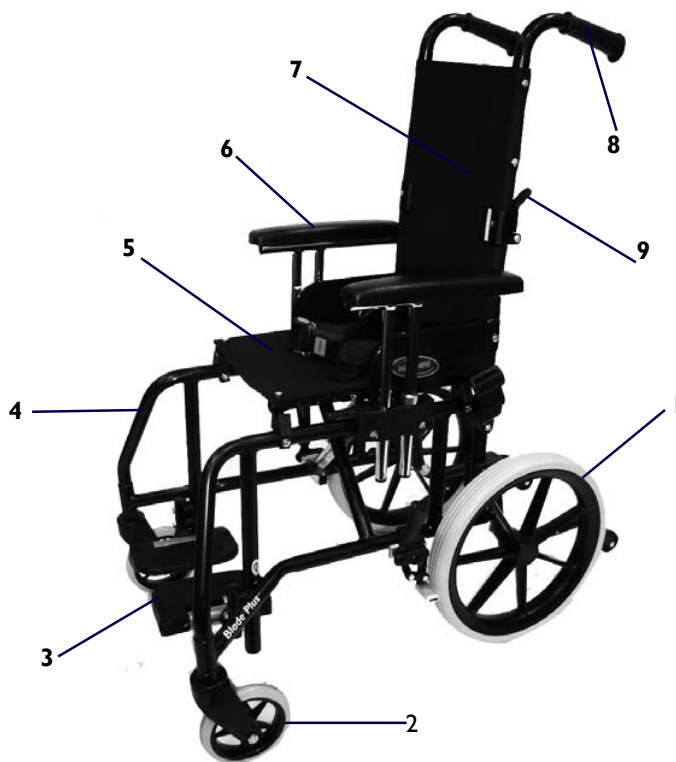
In general, a weekly visual check will meet all the inspection requirements.

Ensure that the following things are checked:

- Fabric is undamaged and has no signs of sagging
- The footrest is correctly fitted
- Both armrests are securely fitted in place.
- Brake mechanism operates freely and when locked, the wheelchair does not move.
- Footplates are undamaged and are correctly fitted.
- Tyres are in good order and the wheels are not damaged.
- If stabilisers are fitted, they are firmly locked in place.

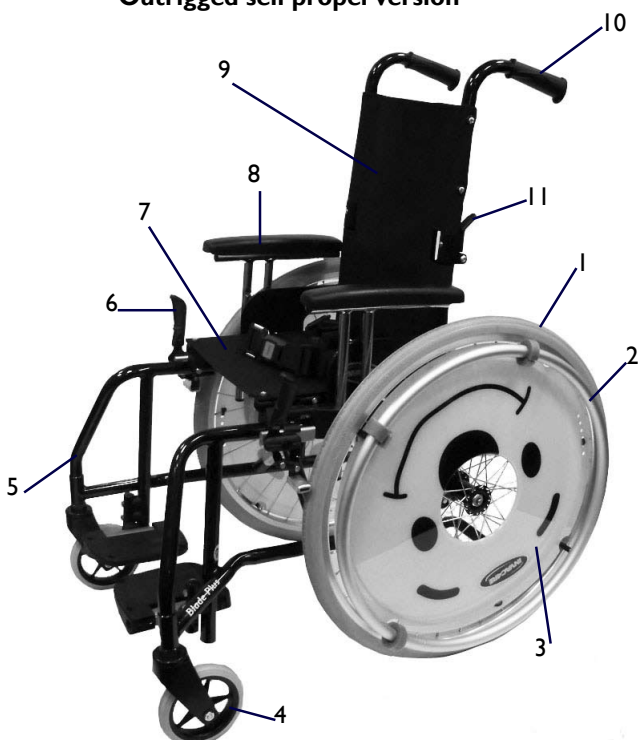
2.5 WHEELCHAIR OVERVIEW

Outrigged transit version



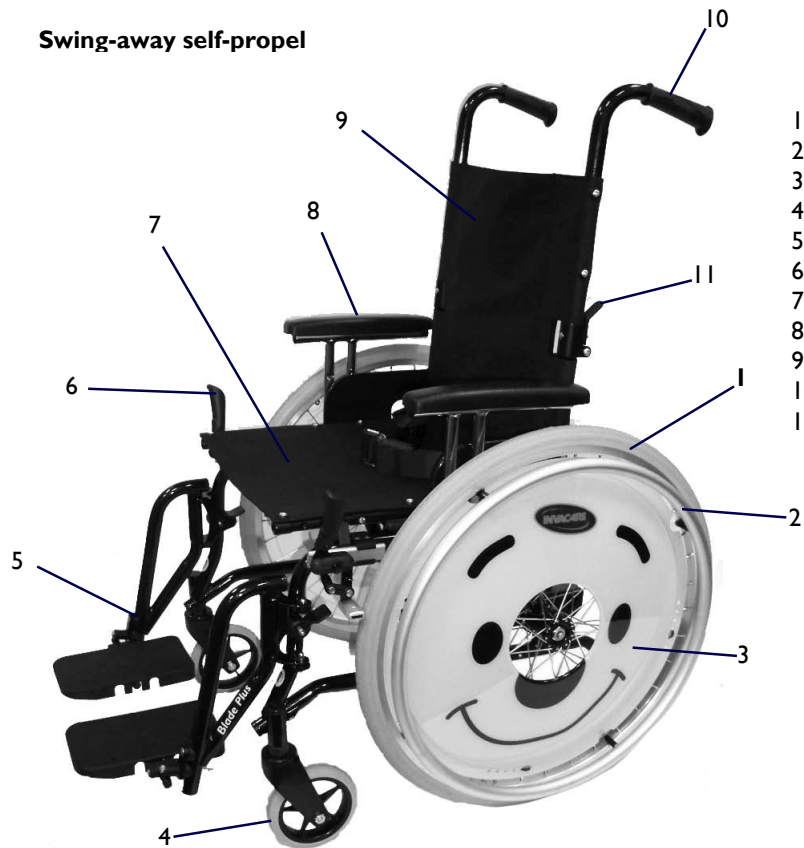
1. Transit wheel
2. Castor
3. Footrest
4. Outrigged frame
5. Seat
6. Armrest
7. Backrest
8. Push handles
9. Backrest folding mechanism

Outrigged self propel version



1. Rear wheel
2. Handrim
3. Spoke guard
4. Castor
5. Outrigged frame
6. Brake
7. Seat
8. Armrest
9. Backrest
10. Push handles
11. Backrest folding mechanism

Swing-away self-propel



1. Rear wheel
2. Handrim
3. Spoke guard
4. Castor
5. Swing-away footrests
6. Brake
7. Seat
8. Armrest
9. Backrest
10. Push handles
11. Backrest folding mechanism

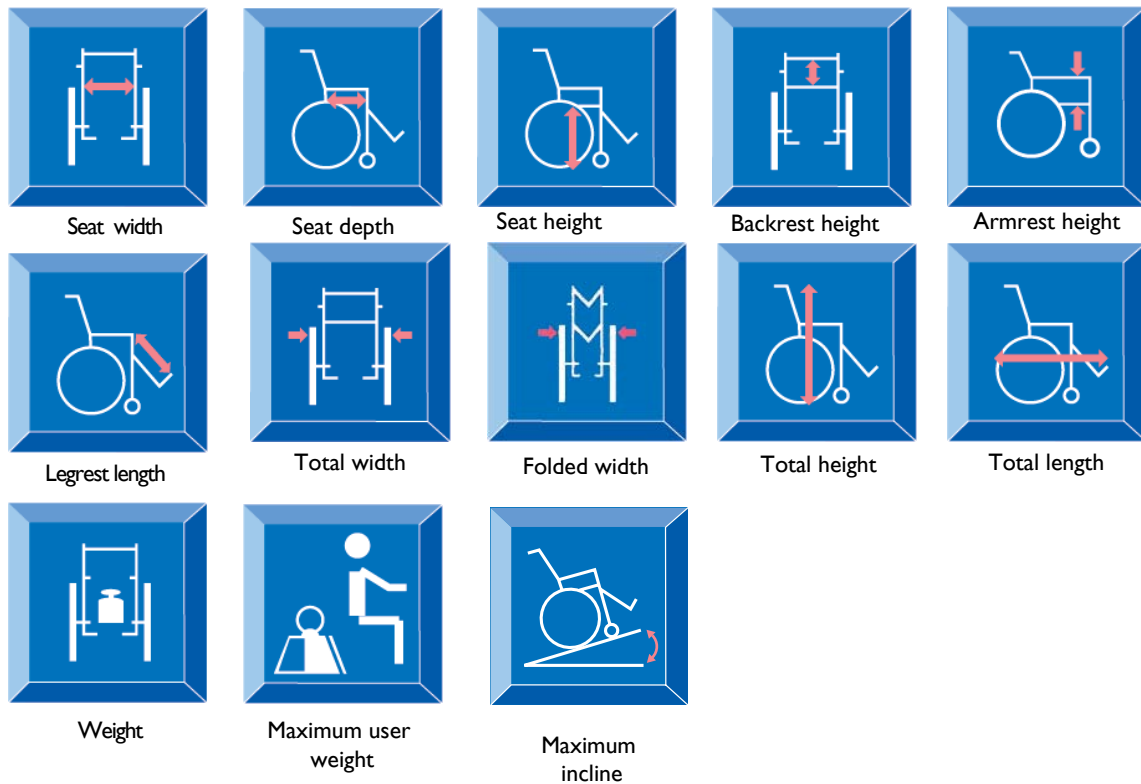
Swing-away transit version



1. Rear wheel
2. Brake
3. Castor
4. Swing-away footrests
5. Seat
6. Armrest
7. Backrest
8. Push handles
9. Backrest folding mechanism

3. Technical data

3.1 DIMENSIONS AND WEIGHT



Seat width inches	10"	11"	12"	13"	14"	15"	
Seat width cm	25.5cm	28cm	30.5cm	33cm	33.5cm	38cm	
Seat depth inches	9"	10"	11"	12"	13"	14"	15"
Seat depth cm	23cm	25.5cm	28cm	30.5cm	33cm	35.5cm	38cm
Seat to Ground height inches	18"						
Seat to Ground height cm	45.7cm						
Backrest height inches	16½"						
Backrest height cm	42cm						
Armrest height Adjustable inches	3½"	4½"	5½"	6½"	7½"	8½"	
Armrest height Adjustable cm	9cm	11.5cm	14cm	16.5cm	19cm	21.5cm	
Legrest length	15 - 28cm						
Total width Swingaway inches	17"	18"	19"	20"	21"	22"	
Total width Swingaway cm	43cm	46cm	48cm	51cm	53cm	56cm	
Total width Outrigged inches	18½"	19½"	20½"	21½"	22½"	23½"	
Total width Outrigged cm	47cm	49.5cm	52cm	54cm	57cm	60cm	
Total height	62 - 94cm						
Total length	89 - 94cm						
Weight	13.5 - 15kg						
Max user. weight	90kg						

3.2 UPHOLSTERY AND FRAME COLOURS

Upholstery type and Backrest cover

Black Canvas

Frame colours

Black, metallic red, metallic blue, metallic purple

3.3 EQUIPMENT AND ACCESSORIES

Invacare offers the Blade Plus wheelchair in various defined optional types. Please refer to the Invacare Ltd prescription forms or contact the Invacare customer service for further information.

Backrest

Folding

Fixed

Vertical back with adjustable push handles

0-30° reclining back

Seat cushions

Standard 5 cm

Flotech lite

Legrests

Swing-away

Outrigged

Height, backward, forward and rotational adjustment footplates

Multi-adjustable Rea Adapt style footplate

Armrests

Detachable with adjustable height

Castors

12,5*2,5 cm solid

12,5*4,5 solid

Rear wheels

12,5, 20, 22" solid or pneumatic

Brake

Push to lock brakes

Extended push to lock brakes

Attendant drumbrake

Others

Spoke guard

Anti-tip device

Table Tray fixation

Pelvic belt

Sideguard

Tipping lever

Capstan handrim

3.4 CONFORMANCE TABLE WIDTH/DEPTH

WIDTH		10"/25,5 cm	11"/28 cm	12"/30,5 cm	13"/33 cm	14"/35,5 cm	15"/38 cm
HEIGHT	9"/23 cm	Y	Y	Y	Y	N	N
	10"/25,5 cm	Y	Y	Y	Y	N	N
	11"/28 cm	Y	Y	Y	Y	N	N
	12"/30,5 cm	Y	Y	Y	Y	Y	Y
	13"/33 cm	N	N	Y	Y	Y	Y
	14"/35,5 cm	N	N	Y	Y	Y	Y
	15"/38 cm	N	N	Y	Y	Y	Y

3.5 TIGHTENING TORQUES

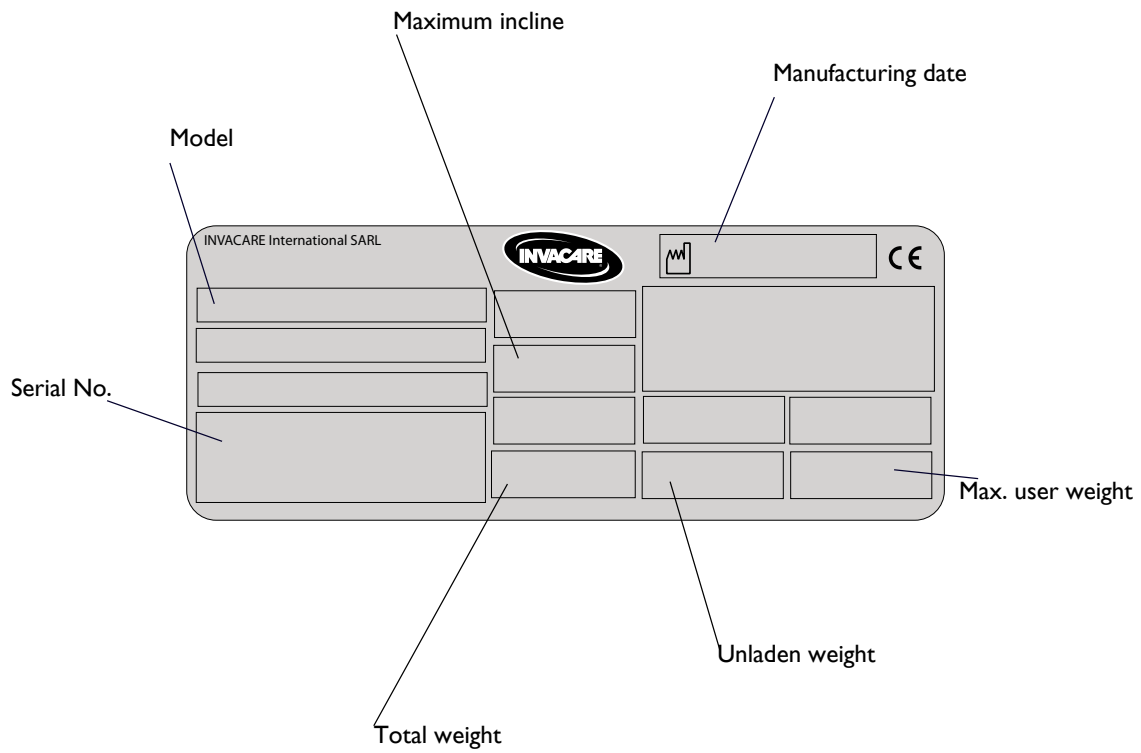
The tightening torques stated in the following list are based on the thread diameter for the nuts and bolts for which no specific values have been determined. All values assume dry and de-greased threads.

Thread	M4	M5	M6	M8	M10	M12	M14	M16
Tightening torque in Nm $\pm 10\%$	3 Nm	6 Nm	10 Nm	25 Nm	49 Nm	80 Nm	120 Nm	180 Nm

Damage can be caused to the wheelchair due to improperly tightened screws, nuts or plastic connections.

- Always tighten screws, nuts etc to the stated tightening torque
- Only tighten screws or nuts which are not listed here finger tight.

3.6 IDENTIFICATION LABEL



Location of the identification/serial label on the wheelchair

4. Maintenance

4.1 TOOLS

The following list details the basic tools required to carry out the maintenance given in the following sub-chapters:

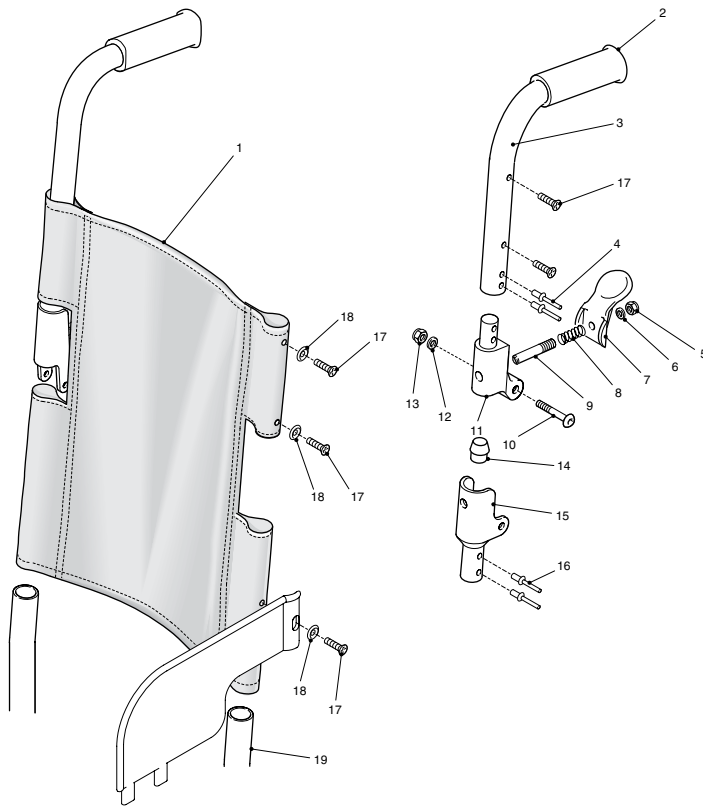
- Pliers
- Spanners 8-26 mm
- Pozidrive screwdriver
- Thin flat bladed screwdriver
- Torque wrench
- Allen keys 4 and 5 mm
- Protected jaw grips
- Nylon mallet
- Pop rivet gun

4.2 CLEANING/DISINFECTING

Ensure that the product is clean and disinfected before carrying out any maintenance. Pay attention to the following points:

- Only use a damp cloth and gentle detergent
- Do not use any abrasive or scouring agents
- Do not use any high-pressure cleaning devices

4.3 FOLDING BACKREST ASSEMBLY



1. Backrest canvas
2. Hand grips
3. Push handle
4. Pop rivet
5. Nyloc nut
6. Washer
7. Backrest lever
8. Spring
9. Backrest pin
10. Button head bolt
11. Top casting
12. Plain washer
13. Nyloc nut
14. Rubber buffer
15. Bottom casting
16. Pop rivet
17. Taptite screw
18. Cup washer
19. Frame

Inspection:

Look for the following:

- No signs of sagging or excessive wear in the canvas (1).
- No evidence of fraying, especially around the fasteners points.
- That taptite (17) screws are not missing
- That cup washers (18) are not missing

Inspect the locking mechanism for the following:

- That rubber buffers (14) are not deformed or damaged.
- That it locks safely when the push handles (3) are in the upright position
- That it is not stiff to operate (action should be smooth and positive).
-

Removal of the backrest canvas and push handle assembly

- A, Release the locking levers (7) and fold the push handle (3) down
- B, Unscrew and remove the four taptite screws (17) and cup washers (18) from the push handles
- C, Unscrew and remove the two button head bolts (10), Nyloc nuts (13) and plain washers (12)
- D, Remove the two taptite screws, cupwasher, Nyloc nut, washer, lever, spring and pin.
- E, Slide the backrest canvas off the lower half of the back frame (19).

Replacing the backrest canvas and push handle assembly

- A, To replace the backrest canvas is the reverse of the removal, however ensure the following:
- B, That new nyloc nuts are fitted
- C, That the securing points are undamaged
- D, That new cup washers are fitted as required
- E, That the backrest canvas is stretched evenly and is taut.

Removal of snap-in bottom casting kit

- A, Ensure that the armrest is removed. Support the wheelchair as stable as possible.
B, Using a 5 mm diameter drill bit, drill out the four rivets (4) and remove casting.



CAUTION

Ensure that when drilling out the rivets (4) the holes in the frame are not damaged.

Replacing snap-in bottom casting kit

- A, Ensure that the casting is located correctly and secure. Use pop rivets supplied.

Removal of hand grip

- A, Remove the push handle assembly. Support the push handle in a soft jawed vice.
B, Carefully cut the hand grip (2) along its length. The hand grip can then be removed.



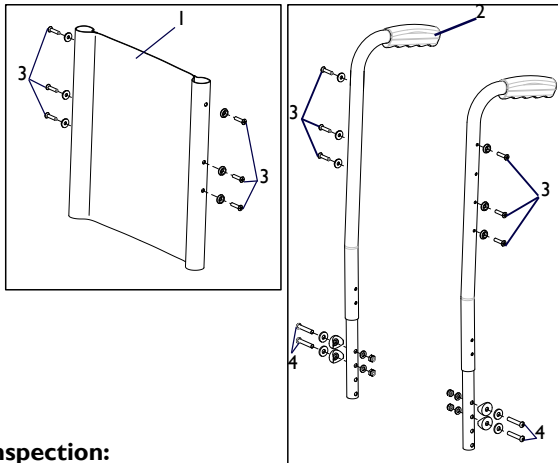
CAUTION

Great care must be taken when using sharp instruments.

Replacement of hand grip

- A, Apply a few drops of instant glue inside of the mouth of the hand grip.
B, Align hand grip onto push handle and fully locate hand grip onto push handle using a nylon mallet.

4.4 FIXED BACKREST ASSEMBLY



1. Backrest canvas
2. Hand grips, push handle
3. Taptite screws and washers
4. Button head bolts, plain washers, cup washers and nyloc nuts

Inspection:

Look for the following:

- No signs of sagging or excessive wear in the canvas (1).
- No evidence of fraying, especially around the fasteners points.
- That taptite (17) screws are not missing
- That cup washers (18) are not missing

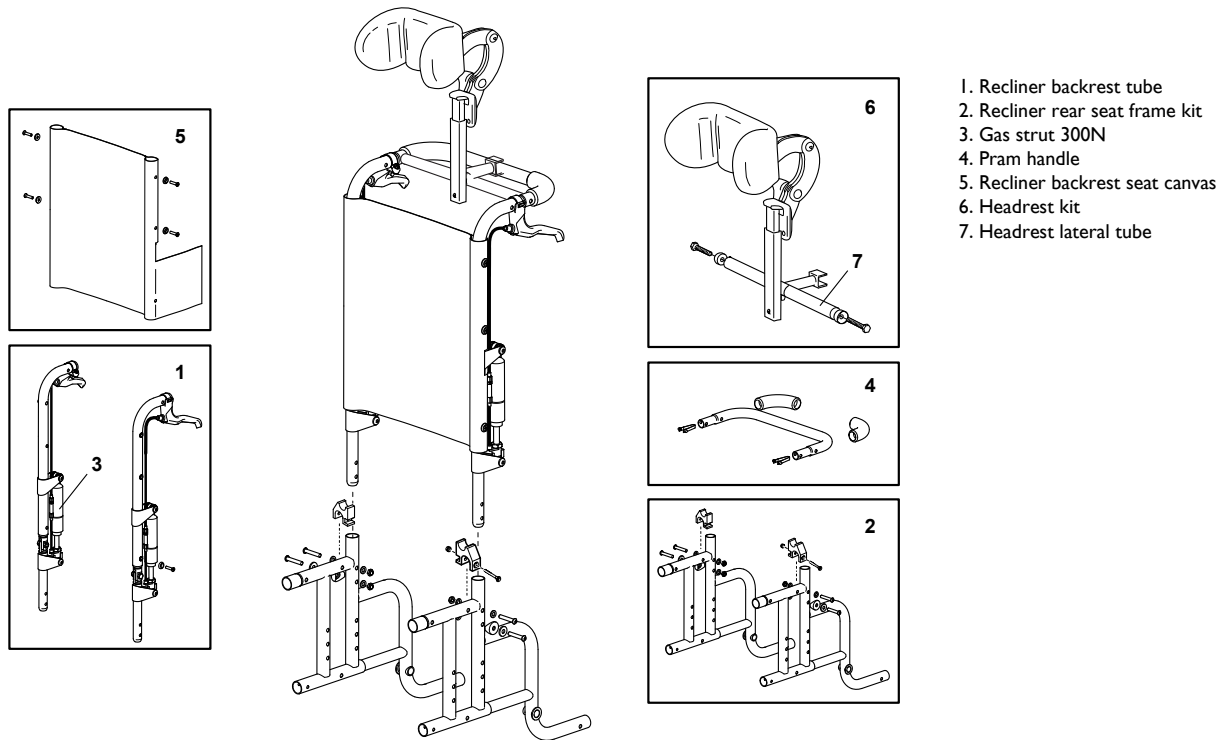
Removal of the backrest canvas and push handle assembly

- A, Unscrew and remove the six taptite screws and washers (3) from the push handles
B, Unscrew and remove the four button head bolts, washers and nyloc nuts (4)
C, Lift the push handles off the frame
D, Slide the backrest canvas off the lower half of the back frame

Replacing the backrest canvas and push handle assembly

- A, To replace the backrest canvas is the reverse of the removal, however ensure the following:
B, That new nyloc nuts are fitted
C, That the securing points are undamaged
D, That new cup washers are fitted as required
E, That the backrest canvas is stretched evenly and is taut.

4.5 RECLINING BACKREST



Inspection.

Look for the following:

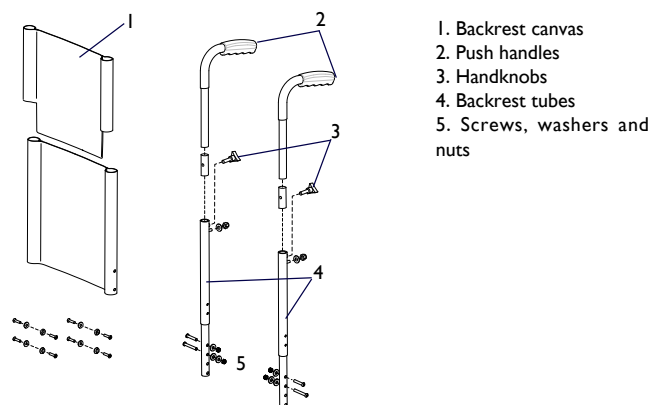
- No sign of sagging or excessive wear in the canvas (5)
- No signs of fraying, especially around the fastener points. (Headrest, Pram handle & Back Canvas)
- No fasteners are missing & are not loose.
- Recliner backrest has a smooth function.
- No sharp edges or burrs.

Removal of the Reclining Back post:

- Release and remove fasteners on headrest lateral tube (7).
- Push in spring pin and lift out headrest kit (6).
- Push in spring pin and slide pram handle (4) out of recliner backrest tubes (1).
- Release and remove fasteners on recliner backrest canvas (5) slide canvas over recliner backrest tubes.
- Release and remove fasteners on recliner rear seat frame kit (2)
- Remove recliner backrest tubes (1)

To assemble is to reverse the above process.

4.6 VERTICAL BACK WITH ADJUSTABLE PUSH HANDLES



Inspection.

Look for the following:

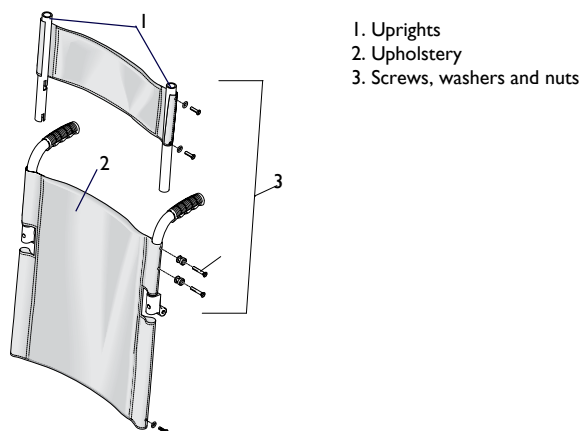
- No sign of sagging or excessive wear in the canvas (1)
- No signs of fraying, especially around the fastener points.
- No fasteners are missing & are not loose.
- No sharp edges or burrs.

Removal of the Vertical back with adjustable push handles:

- Release and remove fasteners (5).
- Release and remove Hand knobs (3).
- Slide canvas (1) over push handles (2)
- Remove backrest tubes (4)

To assemble is to reverse the above process

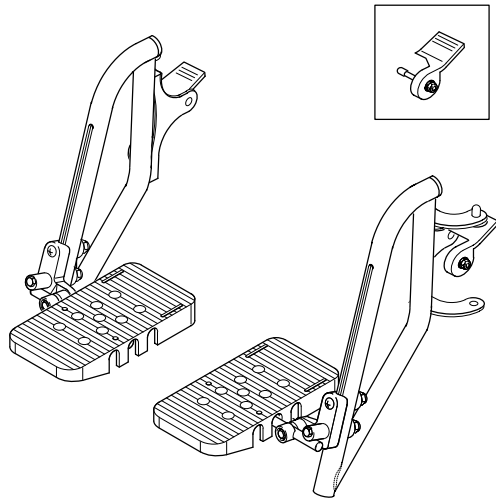
4.7 BACKREST EXTENSION



The backrest extension has two uprights (1) and a backrest extension upholstery (2). The locating pegs should only be fitted to the push handles of the backrest by a qualified technician.

When refitting, make sure that it is firmly fixed onto the locations fitted to the backrest tubes. Raise the head rest assembly to remove it from the tubes of the recliner backrest.

4.8 SWING-AWAY FOOTREST HANGERS



Inspection:

Look for the following:

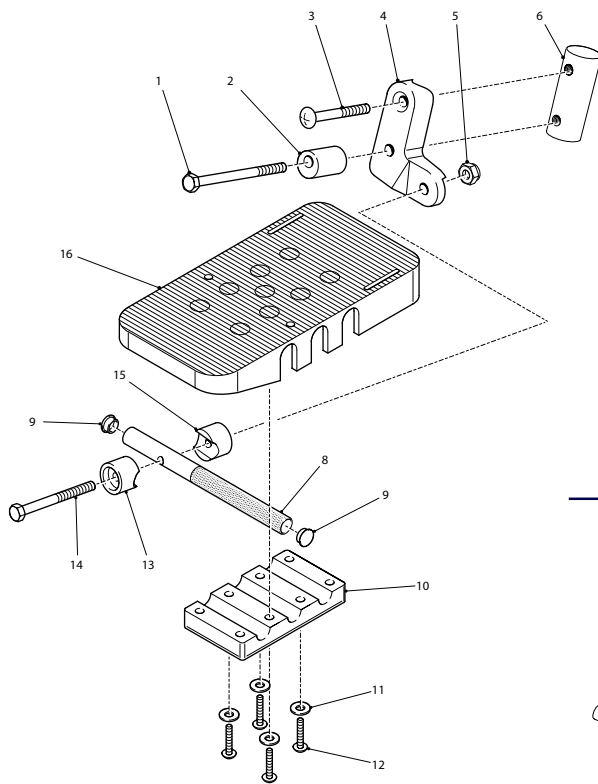
- No sharp edges or burrs
- No fasteners are missing or are not loose
- No damage to footplates

Removal of the Swing-Away Footrest Hangers

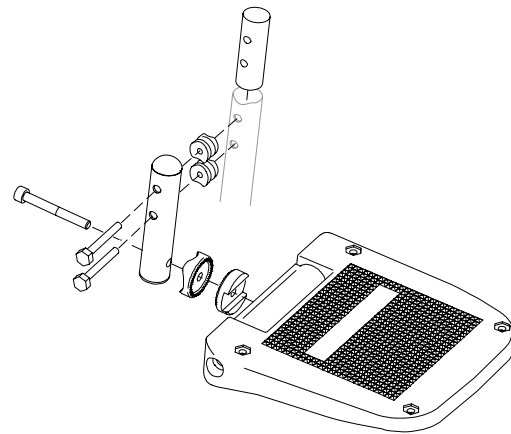
- Release latch bracket to remove hanger assembly from frame

To assemble is to reverse the above process.

4.9 ADJUSTABLE FOOTREST ASSEMBLY



- 1 Bolt
- 2 Cam roller
- 3 Countersunk head screw
- 4 Fixing bracket RH
- 6 Insert
- 5 Nyloc nut
- 7 Footplate spacer 'B'
- 8 Adjustment tube
- 9 Plastic cap
- 10 Clamp plate
- 11 Washer
- 12 Screw
- 13 Footplate spacer 'A'
- 14 Bolt
- 15 Footplate



Removing and replacing an adjustable footrest assembly

Inspection

Check the following:

- That the footplate (16) is undamaged and securely fitted in place
- That the footrest is securely in place
- That the stem assembly is undamaged
- That locating holes and bracket are free from damage

Any defects to the above will require the assembly to be repaired.

Removing an adjustable footrest assembly

A, Unscrew bolt (1) screw (3) and dished washer (6).

B, Withdraw bolts (1) and spacer (2).

Removing a footplate

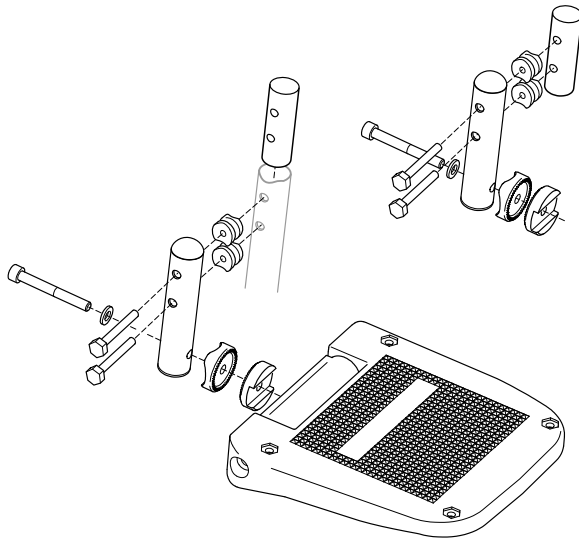
A, Loosen but do not remove screws (12)

B, Slide the footplate (15) free of the pivot assembly (8).

Replacing an adjustable footrest assembly

A, Replacing any component previously mentioned is the reverse of the removal.

4.10 MULTI ADJUSTABLE REA STYLE FOOTPLATE



Inspection

Check the following:

- That the footplate is undamaged and securely fitted in position
- That fasteners are secure and not loose

Removal of Multi Adjustable REA style Footplate

- Release and remove fasteners
- Remove footplate assembly

To assemble is to reverse the above process

4.11 ARMREST ASSEMBLY



- 1, Armrest pad
- 2, Bung
- 3, Taptite screw
- 4, Armrest frame
- 5, Skirt guard
- 6, Cup washer
- 7, Taptite screw
- 8, Armrest block
- 9, Pozidrive head screw
- 10, Dished washer
- 11, Nyloc nut
- 12, Armrest stop

Removing and replacing an armrest assembly

A, Check the armrest (1) and frame (4) for any defects (see Inspection). If any defects are observed see below for instructions on maintenance.

B, The armrest can be renewed as either a complete assembly or the frame, skirt guard and armpad.

Inspection

Inspect on a regular basis for the following:

A, Frame (4) skirt guard (5) and finish are undamaged

B, Armrest pad (1) is undamaged and securely fastened in place

Repairing an armrest assembly

Note: For ease of maintenance the armrest assembly can be replaced as a complete assembly.

To repair the armrest assembly proceed as follows:

A, Support the frame (4) using a soft jawed vice

B, To remove the armrest pad unscrew the two taptite screws (3) and then remove the armrest pad from the frame.

C, To remove the skirt guard unscrew and remove the taptite screw (7) and cup washer (6) and slide the skirt guard from the armrest block (8).

D, To remove the armrest block unscrew and remove the two pozidrive head screws (9), nyloc nut (11) and dished washer (10).

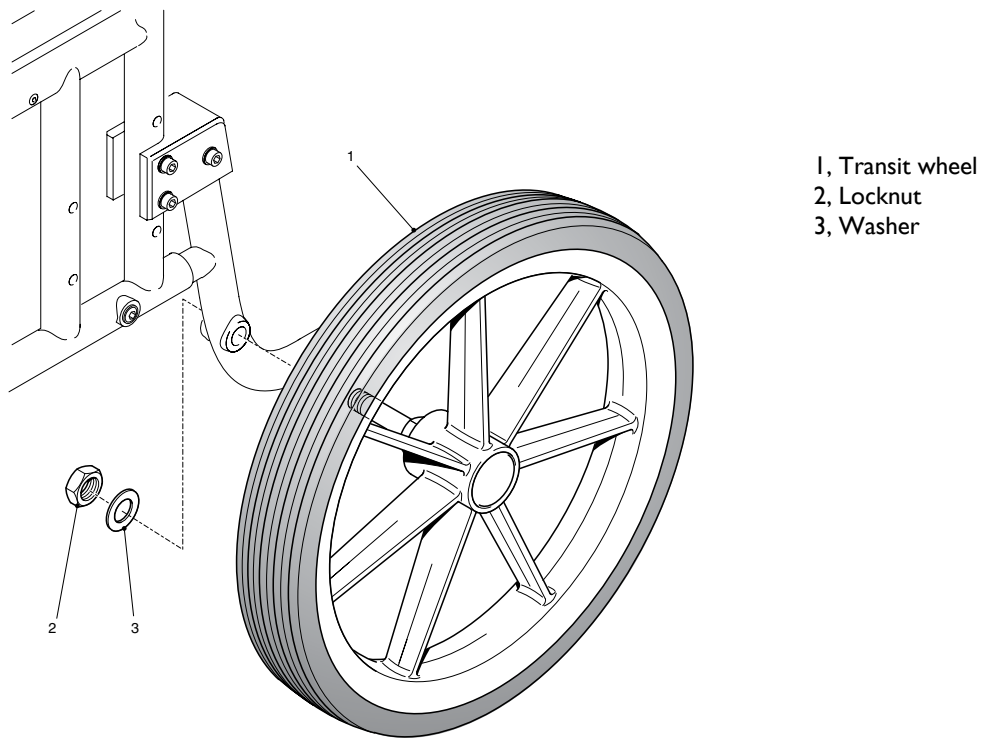
Replacing an armrest assembly

To replace any of the components of the armrest is the reverse of the removal; however ensure the following:

A, The skirt guard is flush fitting to the frame

B, Bungs (2) are undamaged when replaced

4.12 TRANSIT WHEEL ASSEMBLY



Inspection

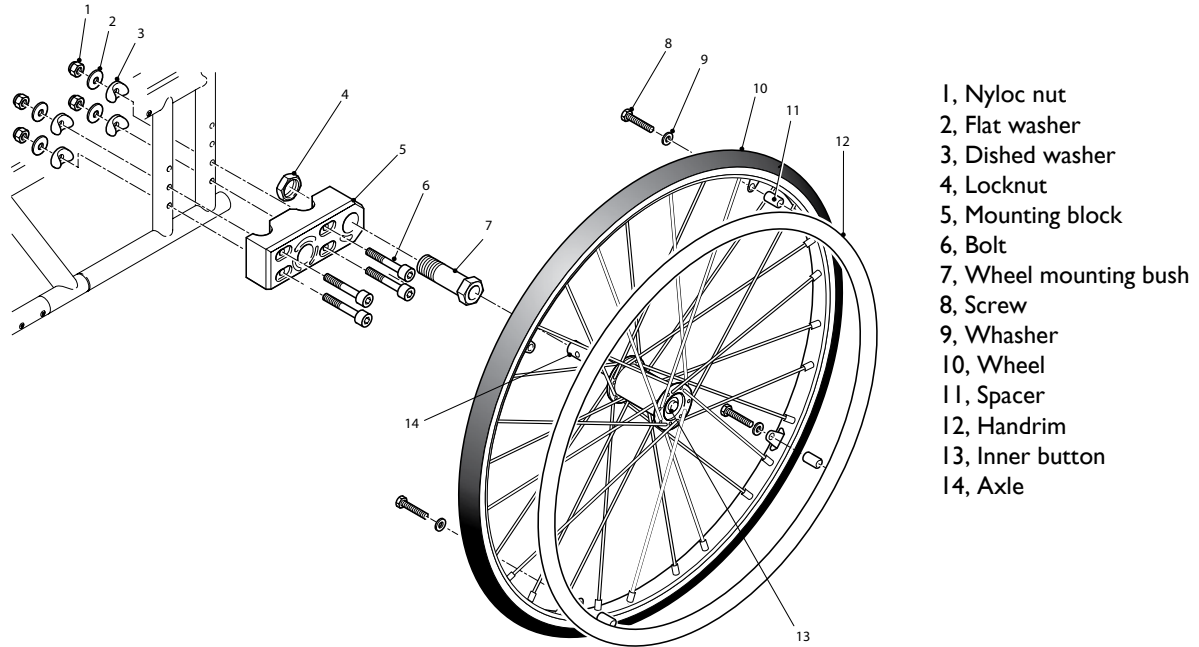
Check the following on a weekly basis:

- Damage and excessive wear to either wheel or tyre
- Spin the wheel and check that no binding, grating noise or unconcentric rotation is present
- That the rim and spokes are undamaged

Removing a transit wheel assembly

- A, Raise and support the wheelchair so the damaged wheel is free of the ground
- B, Using a suitable sized spanner grip the nut located behind the wheel hub
- C, Using a torque wrench, unscrew and remove the locknut (2)
- D, Slide the wheel free from its location on the frame

4.13 QR REAR WHEEL ASSEMBLY



- 1, Nyloc nut
- 2, Flat washer
- 3, Dished washer
- 4, Locknut
- 5, Mounting block
- 6, Bolt
- 7, Wheel mounting bush
- 8, Screw
- 9, Whasher
- 10, Wheel
- 11, Spacer
- 12, Handrim
- 13, Inner button
- 14, Axle

Inspection

1. Check wheel is not buckled or physically damaged. Replace if required.
2. Check by hand that each quick release wheel locates correctly in both quick release axle bushes. Ensuring that the ball bearings protrude fully to secure a locked position.
3. Check that there is no significant sideward movement.
4. Check that fixed axle lock nut is fully secured.
5. Check that handrim is in good condition and secure.
6. Check tyre for wear (and correct inflation when applicable), both wheels should allow the same degree of wear (see side of tyre for pressure rating).
7. Check that spokes for tension and general condition.
8. Check brake alignment is horizontal to tyre.
9. Check brake functionality.

Note: For ease of maintenance the self propel rear wheel assembly can be purchased as a complete assembly.



Caution: Take care while supporting the wheel chair in order to remove the wheel. Handrims are constantly in contact with your hands. Make sure that they are not damaged.



Explosion Hazard: Never exceed the pressure on the side walls of the tyre, otherwise, the tyre may explode and cause injuries!

Removing a rear wheel assembly fitted with a quick release hub

A, Push the inner button (13) and slide the wheel assembly out of the locating block

Replacing a quick release axle

To remove a quick release axle (14) proceed as follows:

- A, Remove the wheel (see above)
- B, Remove the axle (14) from the hub

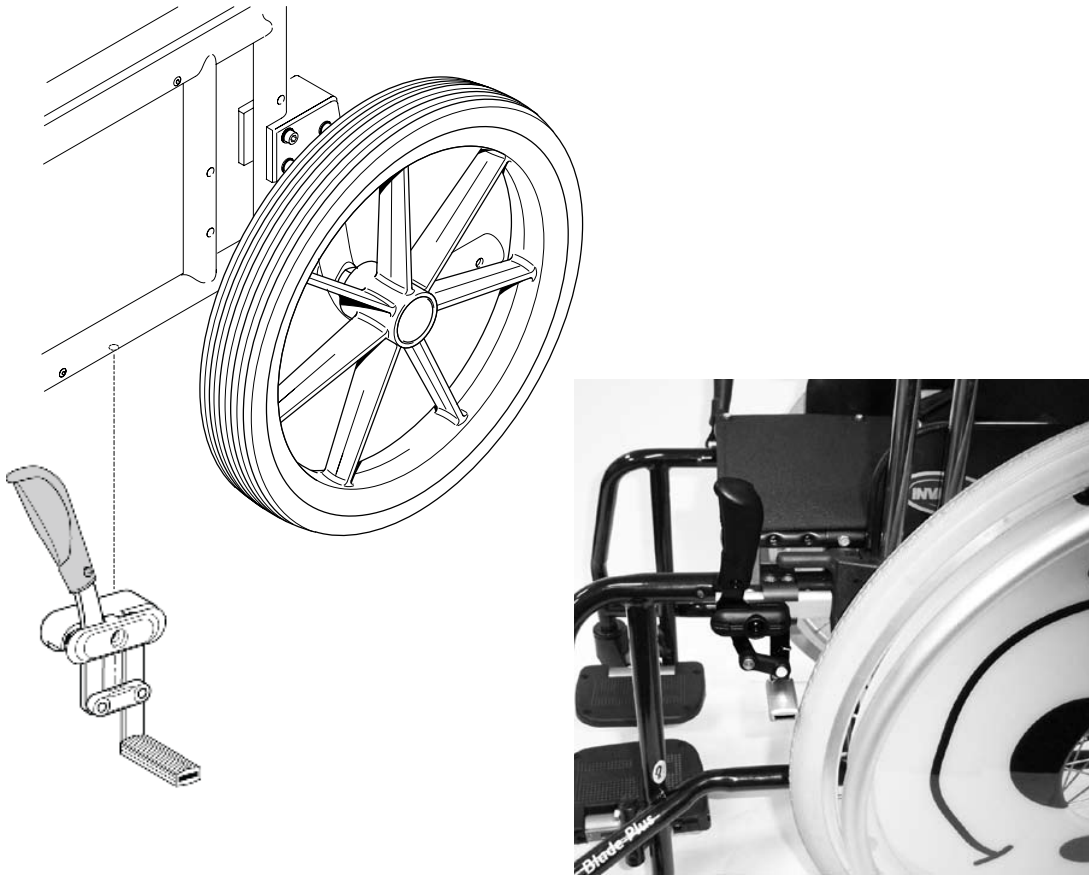
Adjusting a quick release axle

- A, Using a suitable socket on the nut and a suitable spanner on the axle end, adjust to give a secured fit into the axle bushes
- B, Ensure that each quick release wheel locates correctly in both quick release axle bushes

Removing/replacing the handrim

- A, Remove all (8) Screws & (9) Washers.
- B, Remove all (11) Spacers.
- C, Remove (12) Handrim.
- D, Assemble (12) Handrim with (11) Spacers, (9) Washers & (8) Screws.
- E, Ensure all (8) Screws are securely assembled.

4.14 BRAKE ASSEMBLIES



Removing and replacing a brake assembly

Note: The brake assembly is handed, ensure that if both assemblies are removed that the correct assembly is fitted to the correct side.

Inspection

Check the following:

- That the brake assembly locks fully and that the wheelchair does not move
- That the brake action is positive and that it is not stiff
- That the stop bar is abraded.

If brake assembly is required to be adjusted please follow "Replacing a brake assembly" instruction below.

Removing a brake assembly

For ease of maintenance the brake assembly can be removed as a complete assembly

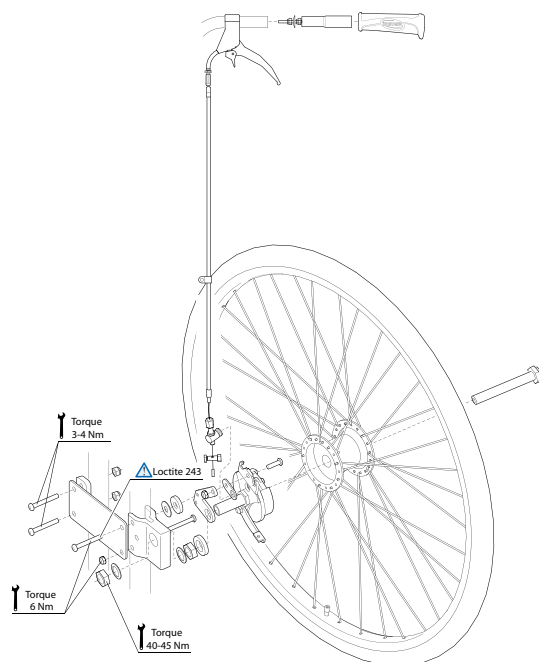
Note the position of the assembly.

- A, Ensure that the brake assembly is in the unlocked position
- B, Support the brake assembly and unscrew the socket head screw
- C, Remove the brake assembly from its location


Replacing a brake assembly


- Position brake assembly into correct position with rear wheel position
- Ensure brake shoe is horizontally positioned with rear wheel tyre
- Brake shoe should only be securely tighten into position when brake locks securely against rear wheel tyre
- Ensure brake assembly is securely fitted.

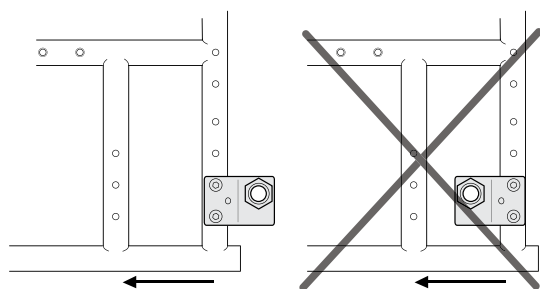
4.15 HUB BRAKE ASSEMBLIES




Besides the functions provided by manual brakes, the optional hub brakes provide slow down (for example, on a slope) and improve safety because they are still efficient when you have a flat tyre!
To slow down gradually pull the lever upwards. To lock the brake in parking position, with the lever tightened, push the lock to engage it in the notches of the brake handle; then pull the lock up to unlock. To adjust braking: turn the screw counterclockwise to increase braking force and turn clockwise to reduce it.

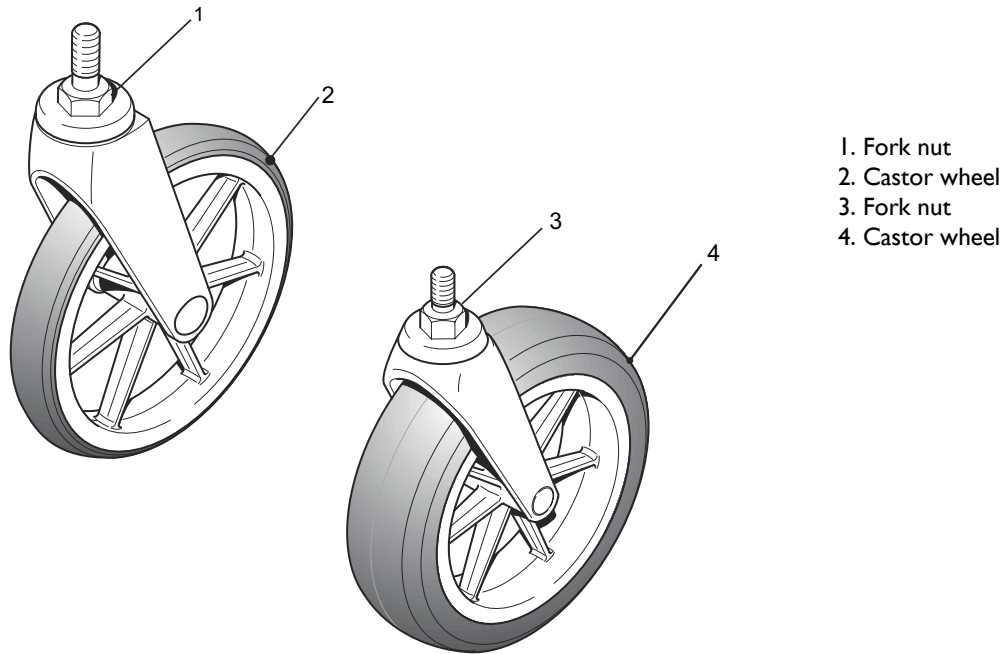
 The specific adjustments of hub brakes must always be performed by your Dealer.

 Always operate the two brakes simultaneously and do not take slopes exceeding 5% to ensure perfect control of the wheelchair steering!



 Always mount the hub brake attachment in the rear backwards position.

4.16 CASTOR ASSEMBLY



Removing and replacing a castor assembly

Check the castor wheel assembly for any defects. If any defects are detected, see below for maintenance information.

Inspection

Check the following:

- That the castor fork is undamaged
- That the tyre is not cracked or excessively worn
- That the castor wheel rotates freely when lifted clear of the ground and spun
- That the tyre is fitted and concentric within the rim

Removing a castor assembly

A, Raise and support the front of the wheelchair

B, Using the fork nut (1,3) unscrew the castor wheel until the castor assembly releases from its location

C, Remove the castor wheel assembly

D, Check that the castor wheel location is undamaged and clean

Replacing a castor wheel assembly



Caution

Apply Loctite 243 to the thread of the castor wheel shaft and ensure that the castor wheel is tightened using the fork nut to a torque of 30 lbf.ft.

A, Replacing the castor wheel assembly is the reverse of the removal; ensure the following:

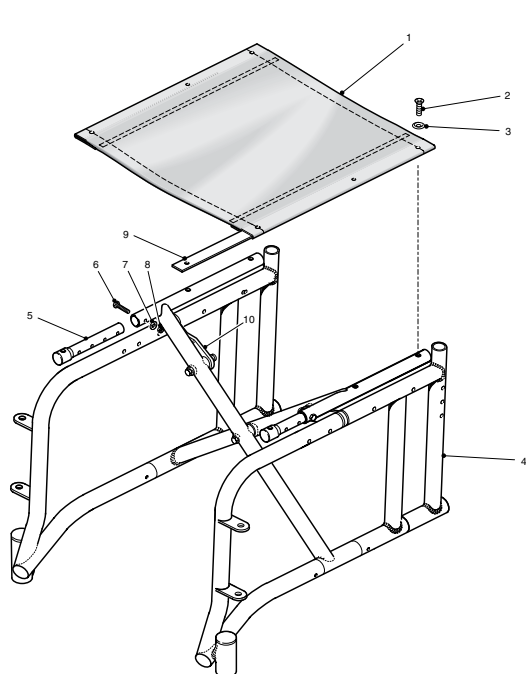
B, That the castor wheel assembly is firmly located and secure

C, That it can rotate freely 360 °

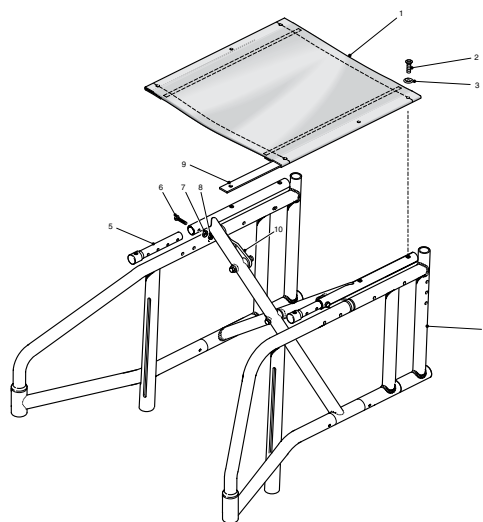
D, That it is undamaged

E, Once correctly fitted, remove the support and allow the wheelchair to sit on all four wheels. Check that it functions correctly.

4.17 SEAT CANVAS ASSEMBLY



- 1 Seat canvas
- 2 Taptite screw
- 3 Cup washer
- 4 Side frame
- 5 Seat adjustment tube
- 6 Hex head bolt
- 7 Washer
- 8 Nut
- 9 Upholstery strip
- 10 Seat stay



Removing and replacing seat canvas

Inspection

- Check for the following
- Damage to seat canvas
- Sagging
- Upholstery strip missing and/or damaged
- Replace and/or tighten any screws or cup washers that are missing/damaged

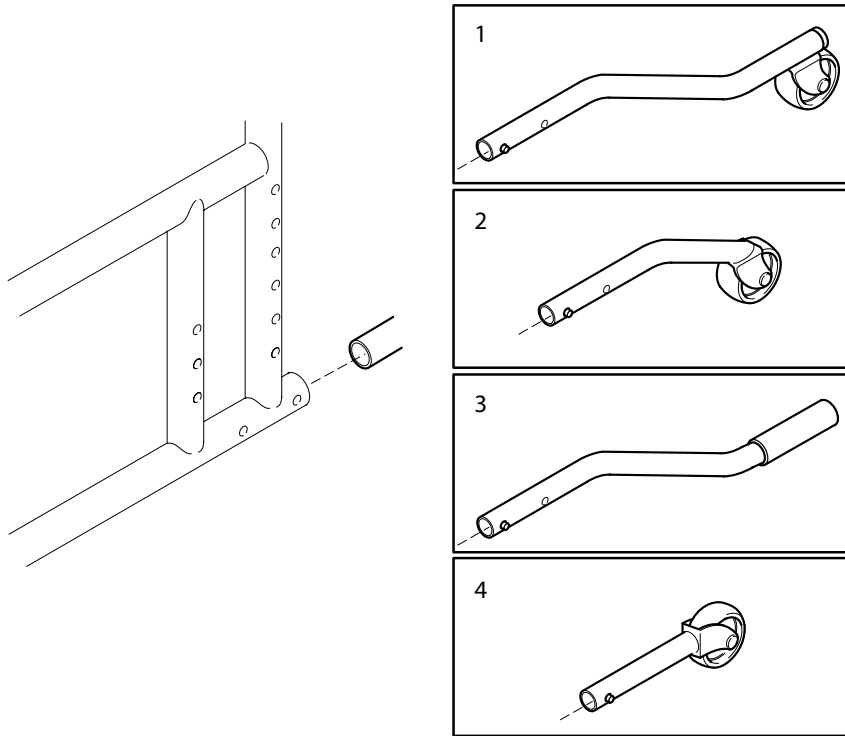
Removing the seat canvas

- A, Unscrew and remove the six taptite screws (2) and cup washers (3).
- B, Remove the two upholstery strips (9) located inside the seat canvas
- C, Remove the seat canvas

Replacing the seat canvas

- A, Replacing the seat canvas is the reverse of the removal
- B; Ensure that the seat canvas is the correct size for the wheelchair being repaired.
- C, If a new size seat canvas is being fitted, check the following:
 - Correct size reinforcing bar is used
 - Seat adjustment tubes (5) have been correctly adjusted
 - The two stays (10) have been correctly adjusted to allow the chassis to take the fitted seat canvas.

4.18 ANTI TIPPERS/STEP TUBE



1. Anti-tipper regular
2. Anti-tipper for transit wheels
3. Step tube
4. Anti-tipper for reclining backrest

Inspection

Check the following:

- That the Anti tipper assembly is securely fitted in correct position
- Check that spring clip locks into position and is secure fit

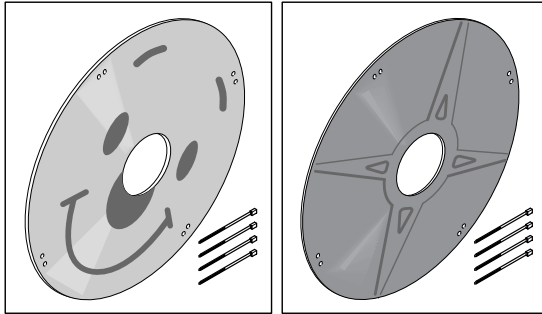
Removal of Anti Tipper/Step Tube

For easy of maintenance the anti tipper assembly can be removed as a complete assembly.

- Push inwards spring clip
- In a pulling motion, remove anti tipper assembly from frame

To assemble, reverse the above process

4.19 SPOKE GUARD



Inspection

Check the following:

- Spoke guards are undamaged.
- Spoke guards are securely in position
- No damage or excessive wear to cable ties

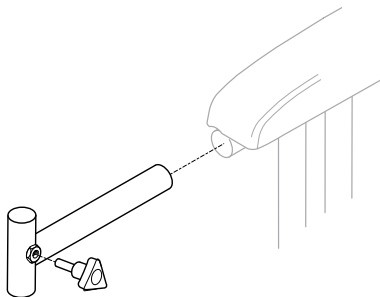
Removal of Spoke Guards

For easy of maintenance the Spoke Guards can be removed as a complete assembly.

- Remove cables ties from rear wheel
- Remove spoke guard from rear wheel

To assemble is to reverse the above process

4.20 TABLE ATTACHMENT



Inspection

Check the following:

- Table tray attachment is undamaged.
- Table tray attachment is securely in position
- No damage or excessive wear to hand knob.

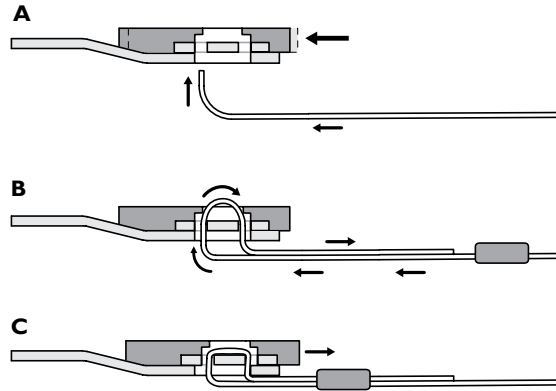
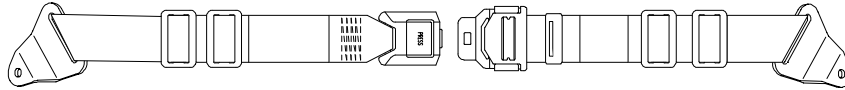
Removal of Table tray attachment

For easy of maintenance the Table tray attachment can be removed as a complete assembly.

- Remove screw from arm pad assembly
- Remove table tray attachment

To assemble is to reverse the above process

4.21 PELVIC BELT



1. The pelvic belt is used to prevent the risk of falling or sliding out of the chair and for providing the user with a good posture.
2. The pelvic belt is mounted on the backrest brackets. Thread the belt through the mounting on the chair and then through the two plastic buckles. It is important that both buckles are used. There is a danger the belt might slip if the belt is threaded through only one.
3. **Adjustment**
Ensure that the user is sitting fully back in the seat and that the pelvis is as upright and symmetrical as possible - not forward on one side or tilted back. Position the lap belt so that the hip bones can be felt above the belt. Adjust the length using the buckles so that there is just sufficient room for your hand to slide between your body and the belt. It is recommended that the clasp is kept in a central position, i.e. make adjustments to each side. These adjustments should be checked and possibly changed each time the belt is used.
4. If the belt has come loose at the metallic clasp it should be threaded according to the pictures a-c. Please make sure that the belt cannot slide.

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