

# System 4



User Manual

EN Instructions for fitting and use

Thank you for choosing

# SYSTEM 4 from BraunAbility!

The following manual is an important part of the product, providing you with information on how to achieve maximum performance and safe operation. Keep the manual in a safe place so that you can refer to it when necessary.

If you have any questions about your equipment, please contact us.

Once again, thank you for placing your confidence in our products!



Safe vehicle adaptation solutions

*For your safety BraunAbility products are designed and tested according to current directives and standards.*

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# Safety information

## Limitation of use

The development of BraunAbility kits is a continuous process. Applications are added on a regular basis. For more details contact BraunAbility or look on the BraunAbility website.



*This BraunAbility wheelchair & occupant restraint system is designed to secure a wheelchair when facing **forward** in a vehicle and must be used as instructed. The wheelchair tie-downs are designed to secure wheelchair weights up to 120kg.*



*In addition to the details given in these instructions, users of BraunAbility wheelchair & occupant restraint system must refer to the wheelchair manufacturer's 'Instructions for Use in Transport' for full details of tie-down attachment points on the wheelchair, plus any other specific instructions relating to use in transport.*



*Wheelchair users and their carers must make sure that their wheelchair is recommended for use in transport, including any 'add-on' components such as power tilt or recline options.*

SYS04



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Safety information

## General guidance

- Wheelchair Accessories that have not been approved by the Wheelchair Manufacturer must be removed from the wheelchair and secured in the vehicle during transport to reduce the potential for injury. Refer to 'Instructions For Use in Transport' provided with the wheelchair or contact wheelchair manufacturer for further guidance.
- These wheelchair tie-downs comply with all applicable requirements of ISO 10542, including a 48km/h, 20g frontal impact test using a forward facing 85kg surrogate wheelchair and an ATD (test dummy) with a mass of 76.3kg. The test dummy was restrained by both a pelvic and upper-torso restraint. Use of a pelvic only belt may compromise the performance of the WTORS system and should be avoided.
- If the installation is to be used with an occupant head rest anchored to the vehicle, then a vehicle-anchored back rest must be provided to minimise rearward deflection of the wheelchair seatback, preventing neck injury.
- Regular inspection of all parts is recommended and the equipment should be used only if all components are in good condition.
- **Warning:** protect webbing from contacting sharp edges and corners. Replace equipment if the webbing does becomes cut, contaminated or frayed.

- Any restraints which have been subjected to a crash situation from which the vehicle must be towed, should, in the interest of safety, be replaced.
- Do not attempt to modify the equipment. For further advice on the installation and use of this tie-down, please contact BraunAbility. Please read this manual fully before use.
- Avoid contact with corrosive liquids. Care should be taken to prevent contamination of the webbing with polishes, oils and chemicals.
- The tie-down anchorages should be installed by an experienced technician/vehicle converter. Anchorages should not be installed into unsound materials such as corroded metal, wood, plastic and fibre glass panels, without additional and suitable reinforcement.
- The equipment has been tested in a configuration similar to that recommended by BraunAbility, and any deviation from the recommendations here is the responsibility of the installer/user.

## Before using System 4

- Ensure that the wheelchair is correctly maintained and that the settings of any adjustable parts are made according to 'Instructions for Use in Transport'.
- Whenever possible remove any items of luggage etc that may be attached to the wheelchair and secure or store separately during transport in order to reduce the potential for injury to other passengers travelling in the vehicle.
- Extra care must be exercised when using vehicle boarding aids such as passenger lifts or ramps during the loading process. Refer to 'Instructions For Use' for information on safe slopes.
- Position the wheelchair facing forward - centrally in the designated region of the vehicle.  
**Ensure the wheelchair brakes are applied.**
- To minimise the potential for head injuries in an impact, allow a clear space of at least 400 mm behind and 650 mm, (FCZ, front clear zone), in front of the head of the wheelchair user, (Fig A). The shoulder belt anchorage must be roof or side-wall anchored at a height level such that the belt webbing passes over the midpoint of the occupant shoulder and at a height that is at or just above the level of the occupants shoulders so as not to impose downward loads on the spine.
- A height provision (HHT) ranging from 1000mm to 1550mm should be made, depending on the size of the passenger. There should also be 200 mm of clear space either side of the wheelchair centre line. If these clear space dimensions cannot be provided then any should be adequately padded and comply with impact performance requirements of ECE Regulation 21 'FMVSS 201'. All vehicle padding should comply with the flammability requirements of ECE Regulation 118 'FMVSS 302'.

*Note: seated head height (HHT) ranges from as low as 1000mm for a 6-year-old child to 1550mm for a tall adult.*



- Wheelchair users, their carers and family are advised to check vehicle specifications to ensure that sufficient floor space is available to accommodate the wheelchair and tie-down system. These distances are based upon the desire to maintain clear zones for potential head excursions of occupants provided with both upper and lower torso restraints.
- Users of heavy powered wheelchairs are also advised to check vehicle carrying capacity. If in doubt consult the vehicle supplier for further details.
- Any airbag, as fitted to the vehicle, shall be used only as a supplementary occupant restraint if designed to be used in combination with the wheelchair tie-down.
- Installers of this tie-down should take note of any vehicle airbag position when planning the installation. Airbags can cause serious injury if a wheelchair-seated occupant is seated too close to an airbag position. If in doubt contact the vehicle manufacturer or your National Automotive Regulatory Body for advice.

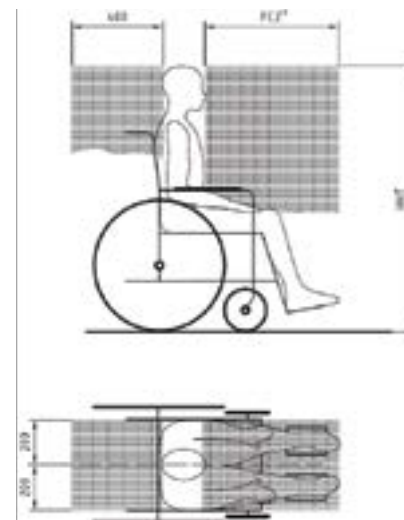


Figure A

# Fit and use

## Fitting & Using System 4

### Front tie-downs

1. The rail will have been installed in the vehicle in accordance with our own and the vehicle converter's instruction. Position the wheelchair within the vehicle as required.
2. Install the front tie-down ATF (aluminium track fitting) into the front rail by aligning the ATF feet with the cut-out sections of the rail, and locate into the rail, (Fig 1).
3. Press down on the ribbed part of the ATF, (Fig 1A), and push firmly towards the wheelchair until the yellow plunger drops and locks into the rail.
4. Install the second front tie-down ATF in the same way, ensuring that each fitting is opposite each other, if using rail lengths which have adjustability in ATF positioning.
5. Press the red buckle button(s) to release the webbed tongue, extend and pass around each of the front wheelchair frame tie-down points, (Fig 2), (some wheelchairs will indicate these tie-down positions, Fig 3). Reconnect the tongue back into the buckle, creating an angle of around 40 to 60° within the front view zone, (Fig 4).
6. Release the wheelchair brakes and pull back to tension the front tie-downs. Re-apply the brakes.



### Removing the rear tie-down

**IMPORTANT: First remove the rear tie-downs, as instructed on pages 12 and 13.**

1. Once the rear tie-downs have been removed, press the red buckle release button to release the webbed tongue. Pass back through the front wheelchair frame tie-down points and return the tongue to the buckle.
2. Lift the ATF yellow plunger fully and slide back away from the wheelchair to align the ATF feet with the rail cut-outs, lift away from the rail.

**Note:** in an emergency, the front tie-downs can be released from the wheelchair without the need to slacken the rears by simply pressing the red buckle release button.

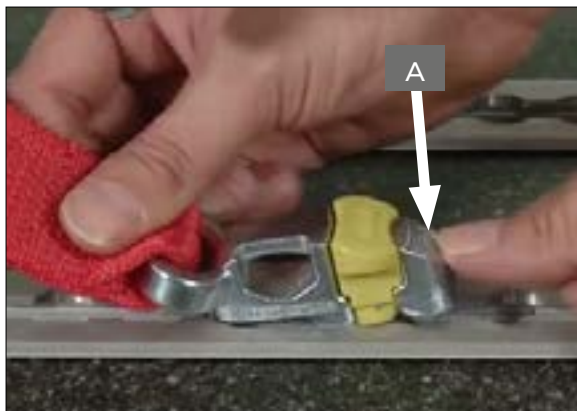


Figure 1



Figure 2



Figure 3

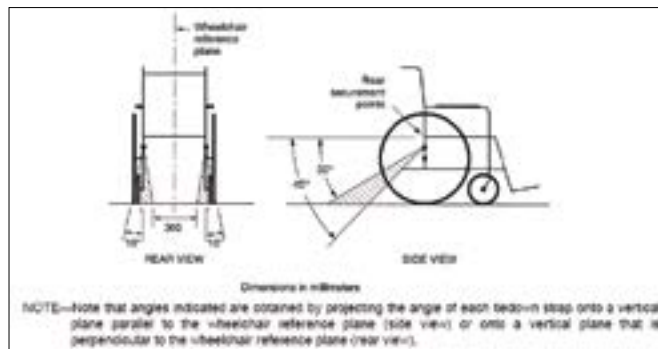


Figure 4

# Fit and use

## Fitting & Using System 4

### Rear Tie-downs

1. Place the combined rear webbing restraint into the rail behind the wheelchair. It is acceptable to use the restraint for either left-hand or right-hand use. The double inertia reel should be fitted to the rail adjacent to the 3rd point anchorage.
2. Select the combined wheelchair and occupant restraint so that the karabiner gates face outboard from the wheelchair, (Fig 5).
3. Lift the double locating plunger (Fig 6) and slide into the rail, by pushing the bar slightly forward or backward until the plunger drops and locks into place. Repeat operation with other bar. **IMPORTANT: Check that both bars are positioned exactly opposite each other, are secured and the plungers are fully dropped.**
4. Remove the webbing from the Velcro patch and release the over-centre buckle.
5. Attach the karabiner fixing to the wheelchair main frame to create an angle of about 30 to 45° within the rear view zone, (Fig 8). (Some chairs will indicate this tie-down position, Fig 7).
6. Pull the webbing through the over-centre buckle until it is tight. With the free hand, begin to close the buckle. Once the webbing is retained, fully close the buckle using both hands, (Fig 9). Re-secure the Velcro to prevent the loose end from becoming a tripping hazard.
7. The occupant restraint must now be fitted.

### Removing the rear tie-down

**IMPORTANT: First remove occupant restraint, as instructed on pages 14 and 15.**

1. Release the webbing tension in each rear side by pressing the silver release on the over-centre buckles and detach the karabiner(s) arrangement from the wheelchair frame.
2. Lift the yellow plunger fully and slide back away from the wheelchair to align the ATF feet with the rail cut-outs, lift away from the rail.
3. Now move to the front of the wheelchair and release the tie-downs as instructed on pages 10 and 11.





Figure 5

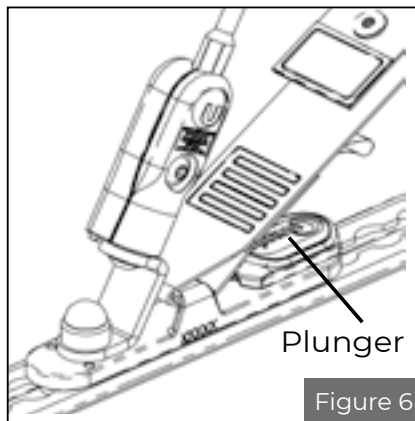


Figure 6



Figure 7

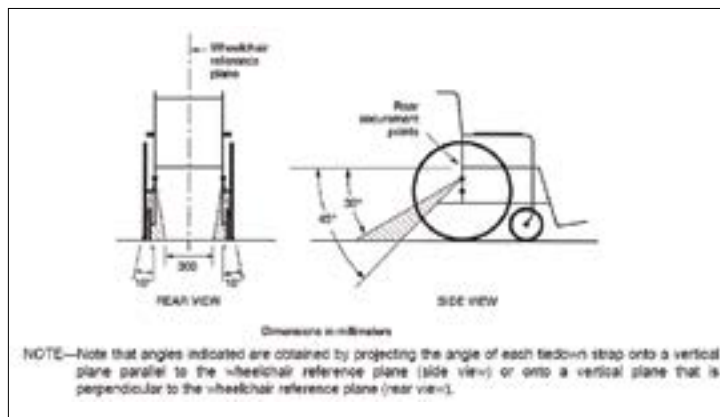


Figure 8



Figure 9

# Fit and use

## Fitting & Using System 4

### Occupant restraints

Before fitting the occupant restraint, ensure that the reversible stalk orange button is facing outside in relation to the wheelchair. If the reversible stalk orange button faces inside, turn the stalk 180° to sit in the right position.

In accordance with International regulations, standard our occupant restraints are designed to be used for passengers weighing 22kg or above. If the passenger weighs less than 22kg, we recommend that a suitable, and appropriately tested child restraint seat is used. This may involve a secondary seat belt restraint as recommended by the original seat manufacturer.

1. Where applicable, position the third point fixing into the cant rail, (Fig 10), so that it is vertically above the inertia reel casing fixed onto the floor fixing. Unfasten the tongue and buckle.
2. Pull the black webbing upwards and unfasten the tongue from the red webbing buckle.
3. Position the black webbing to form the lap belt and insert the tongue into the buckle stalk, (Fig 11).
4. Ensure that the lap belt lays low on the pelvis of the occupant, running as close as possible over the hips on both sides.
5. Where applicable, remove the black plastic cover on the red shoulder belt tongue and fit into the third point fixing (Fig 10).
6. Position the red webbing to form the shoulder belt and insert the buckle into the black lap belt tongue.
7. Adjust the height of the shoulder belt to clear the occupant's shoulder by approximately 25mm - 1 inch, (Fig 12).
8. The lap belt anchor points should be positioned to achieve belt angles of 30° or more to the horizontal and preferably between 45° and 75° in order to fit low across the pelvis reducing the possibility of the belt loading the abdomen, (Fig 13). The pelvic restraint is designed to bear upon the bony structure of the body and should be worn low across the front of the pelvis with any junctions between the pelvic and shoulder restraints located near the wearers hips.



### Removing the occupant restraint

1. Release the grey shoulder belt from the lap belt section, then from the third point fixing and carefully allow the shoulder belt to return to the retractor.
2. Disconnect the black lap belt from the buckle stalk on the aisle side and carefully allow the lap belt webbing to return onto it's retractor.
3. Connect the shoulder belt buckle to the lap belt tongue above the opening of the retractor box.
4. The wheelchair tie-down should now be removed.



Figure 11



Figure 12



Figure 10

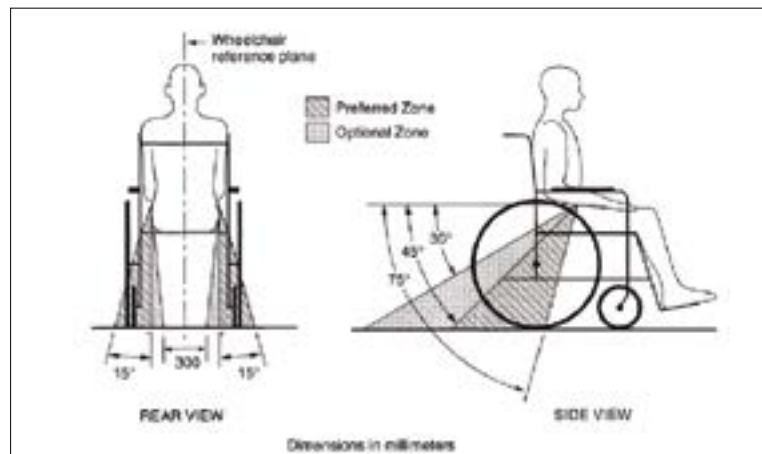


Figure 13

# After care

## Equipment storage and maintenance

- Store the system safely off the floor to avoid damage and ensure that it cannot become a projectile in an accident. This can be achieved by using wall mounted storage bag such as SLR111.
- Regularly inspect the wheelchair restraint systems for damage, wear or malfunction. If any problems are identified replace it immediately.
- When not in use, keep loose occupant webbing ends connected to their corresponding buckle sleeves, etc, to prevent them from becoming tripping hazards and from flailing around when the vehicle is in motion.
- All webbing and components can be cleaned as necessary, but care should be taken to prevent contamination of the webbings with polishes, oils and chemicals, particularly battery acid.
- To clean the straps use warm soapy water and a clean soft cloth. Rinse with clear water and allow to air dry. To disinfect, use a mild spray disinfectant and do not use products containing bleach. **Important: when cleaning or disinfecting, do not immerse or flood buckles, karabiners fittings or floor anchors in the disinfectant or water.**
- If the vehicle is involved in an accident when any restraints are deployed, remove them from service and replace immediately. If in doubt please contact BraunAbility.



## After care

### Warranty

BraunAbility products are extensively tested using BraunAbility anchorage systems, and our full warranty normally only applies to BraunAbility equipment when used with BraunAbility branded anchorages or as instructed.

BraunAbility have also participated in test programs with other manufacturers anchorage products and will support warranty on the BraunAbility products when used in conjunction with such jointly tested systems.

For further details on specific applications please contact the Sales Office. In other situations, using BraunAbility products, for which BraunAbility has not participated in a joint test program, a limited BraunAbility warranty will apply.

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# Declaration of conformity

## Manufacturer /

BraunAbility UK Ltd.  
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## Declares that the product/

SYS04

## Conforms to following directives standards and regulations /

214/2014/EU Paragraphs 2.3.1 and 2.3.2  
ISO 10542:2012  
RESNA WC-4 2012 Section 18  
2001/85/EC  
R.107.06  
2007/46/EC

BraunAbility, Martock, 3<sup>rd</sup> June 2019

A handwritten signature in black ink, appearing to read 'Rob Butcher', is written over a light grey rectangular background.

Rob Butcher  
Director of Engineering



Accredited by URS as testing laboratory in accordance with ISO/IEC 17025:2005  
Quality system certified in accordance with ISO 9001:2008

Illustrations, descriptions and specifications in the user manual are based on current product information. BraunAbility UK Ltd reserves the right to make alterations without previous notice.

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