

Combined retractable tie-down and occupant restraints



User Manual

EN Instructions for fitting and use

Thank you for choosing

Combined retractable tie-down & occupant restraints 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 restraints is a continuous process. Applications are added on a regular basis. For more details contact BraunAbility or look on the BraunAbility website.



These BraunAbility combined restraints are designed to secure the rear of a wheelchair when facing forward in a vehicle and must be used as instructed. The red webbing tie-downs are designed to secure wheelchair weights up to 120kg whilst the black webbing tie-downs are designed to secure a wheelchair weight up to 100kg. The use of an appropriate front tie-down will be required for all restraint.



In addition to the details given in these instructions, users of BraunAbility restraints 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.



BraunAbility recommends the use of a 3 point occupant restraint system to provide greater protection in case of an impact. However, we also recognise that some vehicle layout/designs or specific postural or medical conditions do not allow that style of seatbelts to be used easily.

This system is not ISO 10542 compliant if used in 2 point configuration.



In accordance with international regulations, 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.

the combined retractable tie-down and occupant restraints



OR12



OR14



OR15



ORS03

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 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 installing and using the combined retractable tie-down and occupant restraints

- 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 400mm behind and 650mm, (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 200mm of clear space either side of the wheelchair centre line. If these clear space dimensions cannot be provided then any structure protruding into this space 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 these restraints 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.

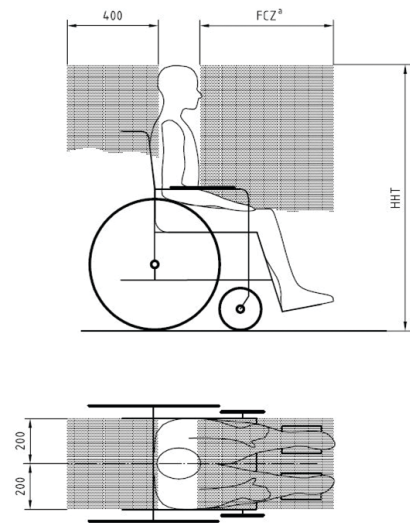


Figure A

Fit and use

Fitting and using the combined retractable tie-down and occupant restraints



Retractable tie-down and occupant restraint - Wheelchair tie-down

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. Attach the front wheelchair tie-down (not supplied as part of this product) in accordance with its own instruction.
3. Place the combined rear retractable restraint into the rail behind the wheelchair. It is acceptable to use the restraint either for left hand or right hand use. The double inertia reel (Fig 1) should be fitted to the rail adjacent to the 3rd point anchorage. When possible, the rear retractable tie-down should be positioned with the karabiner gates facing outboard from the wheelchair, (Fig 2). If using tongue & buckle, the buckle may be positioned facing inboard or outboard.
4. Lift the double locating plunger (Fig 1) and slide into the rail, by pushing the bar slightly forward or backward until the plunger drops and locks into place. Repeat with other bar. **IMPORTANT: Check that both bars are positioned exactly opposite each other, they are secured and the plungers are fully dropped.**
5. Press the yellow Quattro release button(s), (Fig 3A) to extend the webbing and attach the karabiner(s) or tongue and buckle arrangement(s) around the wheelchair main frame. Some wheelchairs will indicate this rear frame tie-down position, (Fig 5).
6. Press each Quattro release button once again to take up the slack in the webbing and create an angle of around 30 to 45° and within the rear view zone, (Fig 4).
7. Final tensioning is achieved by turning each tensioning handle, (Fig 3B), until the webbing is equally taut on each side.
8. The occupant restraint must now be fitted.

Removing the wheelchair tie-down

1. Release the tension in the rears by pressing the yellow button (Fig 3) and extend the webbing to allow the karabiner(s) or tongue & buckles(s) to be removed from the wheelchair frame. If the webbing is particularly tight, it may be necessary to slightly 'tension' with the hand wheel (Fig 3B) whilst pressing the yellow button, in order to remove the webbing lock on the Quattro.
2. Lift the yellow plunger fully, slide back away from the wheelchair, lift away from the rail and store securely.



Figure 1



Figure 2

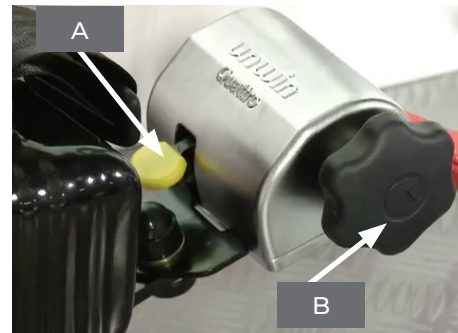


Figure 3

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Fit and use

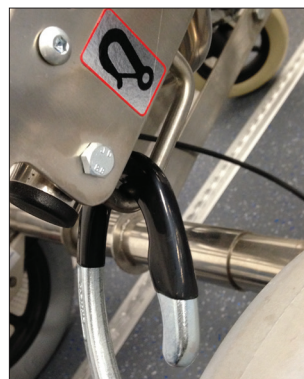


Figure 5

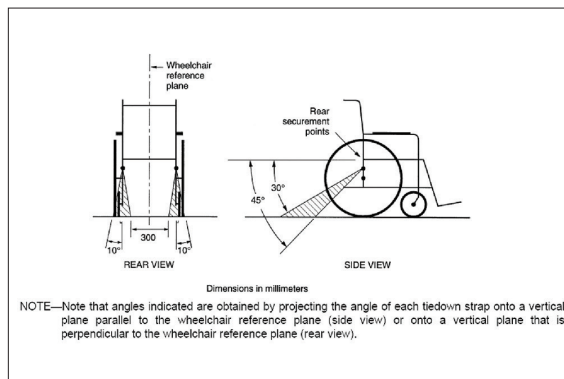


Figure 4



Fit and use

Fitting and using the combined retractable tie-down and occupant restraints

Retractable tie-down and occupant restraints - 3 point passenger system

1. Position the 3rd point fixing into the cant rail, (Fig 6), so that it is vertically above the inertia reel casing fixed onto the floor fixing. Unfasten the tongue and buckle.
2. Moving to the inertia reel, 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 8).
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. Remove the black plastic cover on the red shoulder belt tongue, if necessary, and fit into the 3rd point fixing.
6. Position the red webbing to form the shoulder belt and insert the buckle into the tongue.
7. Adjust the height of the shoulder belt to clear the occupant's shoulder by approximately 25mm or 1 inch (Fig 9).
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 7). 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 red shoulder belt from the lap belt section, then from the 3rd 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 its 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 8



Figure 9



Figure 6

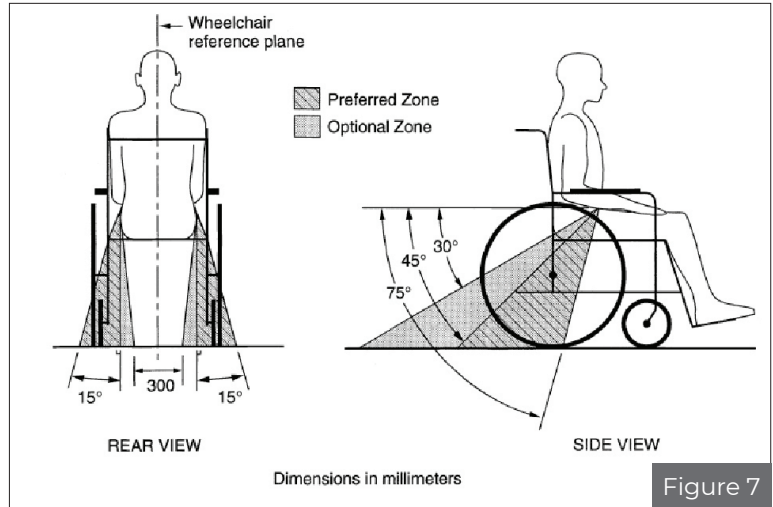


Figure 7

Fit and use

Fitting and using combined retractable tie-down and occupant restraints

Retractable tie-down with occupant restraints - 2 point pasenger system

1. Ensure the Comfort Clip is released (Fig 10) and unfasten the tongue from the red webbing buckle.
2. Pull the metal tongue on the black webbing upwards to release the webbing from both inertia reels. Position the webbing across the occupant with the black webbing forming the lap belt and the red webbing forming the shoulder belt (Fig 12).
3. Insert the tongue fixed to the black webbing into the stalk buckle (Fig 11A)
4. Adjust for comfort by raising the webbing on the shoulder by two finger widths, unlock the Comfort Clip to take up the slack, then re-lock the clip so that it rests on the reel cover.
5. 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 7). 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 Comfort Clip.
2. Release the red shoulder belt from the lap belt section, and carefully allow the shoulder belt to return to the retractor.
3. 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.
4. Connect the shoulder belt buckle to the lap belt tongue above the opening of the retractor box.

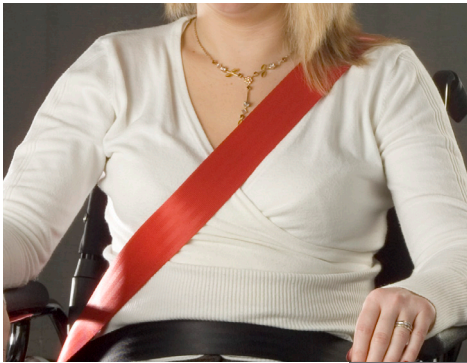
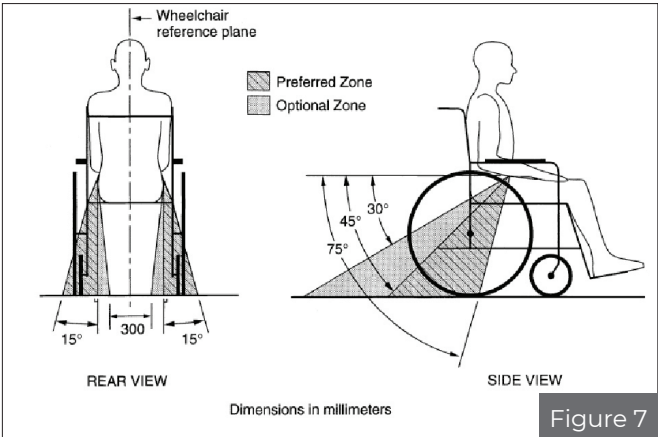


Figure 12

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Fit and use

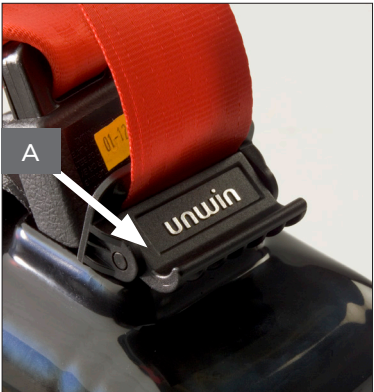


Figure 10



Figure 11



Fit and use

Fitting and using combined retractable tie-down and occupant restraints

Self-tensioning tie-down and occupant restraints - Wheelchair tie-down

1. The rail will have been installed in the vehicle in accordance with their own and the vehicle converter's instruction. Position wheelchair within vehicle as required.
2. Attach the front wheelchair tie-down (not supplied as part of this product) in accordance with its own instruction.
3. Place the combined rear retractable restraint into the rail behind the wheelchair. It is acceptable to use the restraint either for left hand or right hand use. The double inertia reel (Fig 13) should be fitted to the rail adjacent to the 3rd point anchorage. When possible, the rear retractable tie-down should be positioned with the karabiner gates facing outboard from the wheelchair (Fig 14). If using tongue & buckle, the buckle may be positioned facing inboard or outboard (Fig 15).
4. Lift the double locating plunger (Fig 13) and slide into the rail, by pushing the bar slightly forward or backward until the plunger drops and locks into place. Repeat with other bar. **IMPORTANT: Check that both bars are positioned exactly opposite each other, are secured and the plungers are fully dropped.**
5. Pull the webbing and attach the karabiner or tongue & buckle arrangement(s) around the wheelchair main frame. Some wheelchairs will indicate this rear frame tie-down position, (Fig 5). **Note: It is not necessary to press yellow button. Webbing can be extended from the reel without pressing the yellow button. The yellow locking label, (Fig 17) must be visible.**
6. Slack in the webbing will be taken in automatically by the reel to create an angle of around 30 to 45° and within the rear view zone, (Fig 4).
7. Final tensioning is achieved by turning each tensioning handle (Fig 16B) until the webbing is equally taut on each side. The webbing will retract automatically into the reel. **IMPORTANT: The yellow locking label must be fully visible, to ensure that the reel is locked off, (Fig 17).**
8. Ensure that each rear Quattro Express webbing is approximately of the same length.
9. The occupant restraint must now be fitted - refer to pages 12-15.

Removing wheelchair tie-down

1. Release the tension in the rears by pressing the yellow button, (Fig 16A), and extend the webbing to allow the karabiner(s) or tongue & buckle(s) to be removed from the wheelchair frame. If the webbing is particularly tight, it may be necessary to slightly 'tension' with the hand wheel, (Fig 16B), whilst pressing the yellow button, in order to remove the webbing lock on the Quattro Express.
2. Remove each Quattro Express from the rail by simultaneously lifting the yellow plunger and sliding the fitting back until the feet align with cut outs in the rail.
3. Lift the Quattro Express away from the rail and store securely.



Figure 13



Figure 14



Figure 15

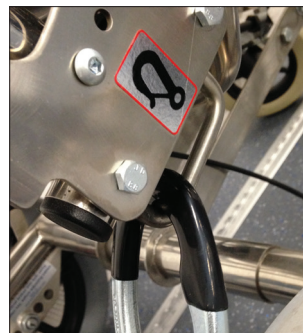


Figure 5



Figure 17

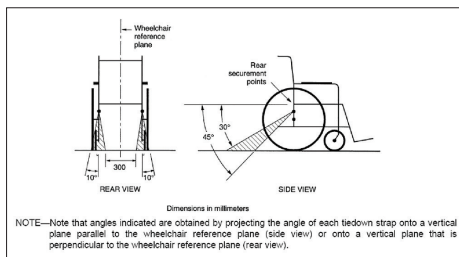


Figure 4

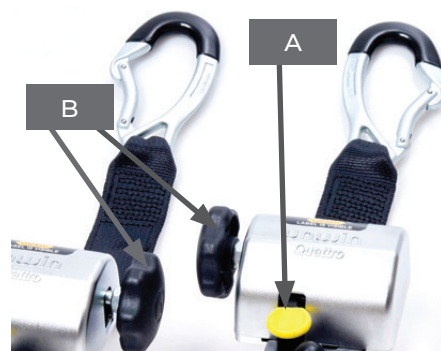


Figure 16

Fit and use

Fitting and using combined retractable tie-down and occupant restraints

Retractable tie-down and occupant restraints - Wheelchair tie-down

1. The floor anchors will have been installed in the vehicle in accordance with our own and the vehicle converters instruction.
2. Attach the front wheelchair tie-down (not supplied as part of this product) in accordance with its own instruction.
3. Place the combined rear retractable restraint next to the floor anchor behind the wheelchair. It is acceptable to use the restraint either for left hand or right hand use. The double inertia reel should be fitted adjacent to the 3rd point anchorage (Fig 18). When possible, the rear retractable tie-down should be positioned with the karabiner gates facing outboard from the wheelchair, (Fig 2). If using tongue & buckle, the buckle may be positioned facing inboard or outboard.
4. Install the restraint(s) onto the floor anchors by aligning the protrusion within each cleat to the slot on the floor anchors (Fig 19).
5. Slide the cleat fully home, (Fig 20) and rotate the assemblies through 90°. to allow the karabiners or tongue & buckles to be attached to the wheelchair frame.
6. Press the yellow Quattro release button(s), (Fig 3A), to extend the webbing and attach the karabiner(s) or tongue & buckle around the wheelchair main frame. Some wheelchairs will indicate this rear frame tie-down position (Fig 5).
7. Press each Quattro release button once again to take up the slack in the webbing and create an angle of around 30 to 45° and within the rear view zone (Fig 4).
8. Final tensioning is achieved by turning each tensioning handle, (Fig 3B), until the webbing is equally taut on each side.
9. The occupant restraint must now be fitted - refer to pages 12-15.

Removing the wheelchair tie-down

1. Release the tension in the rears by pressing the yellow button (Fig 3A) and extend the webbing to allow the karabiner or tongue & buckles to be removed from the wheelchair frame. If the webbing is particularly tight, it may be necessary to slightly 'tension' with the hand wheel (Fig 3B), whilst pressing the yellow button, in order to remove the webbing lock on the Quattro.
2. Remove each Quattro Solo from the anchor by rotating the tie-down through 90° so that the raised protusion on the cleat is aligned with the indent on the floor anchors, (Fig 19). Slide off.
Note: protrusion and indent are only applicable with spring loaded anchors, not with static anchors S10.
3. Pull the restraint away from the floor anchor and store safely.



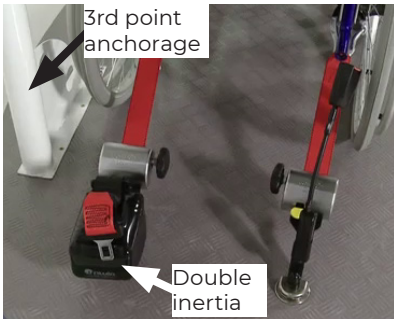


Figure 18



Figure 5



Figure 2

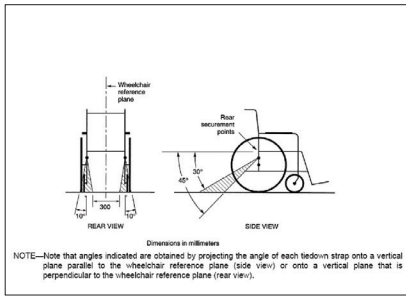


Figure 4

EN

Fit and use



Figure 19



Figure 20

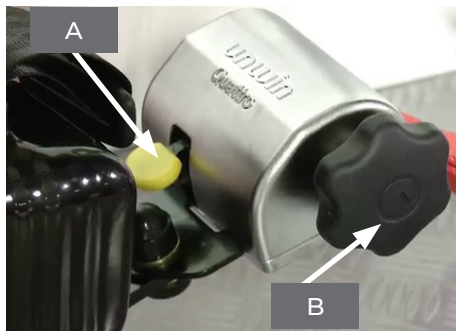


Figure 3

Fit and use

Fitting and using combined retractable tie-down and occupant restraints

Self-tensioning tie-downs and occupant restraint - Wheelchair tie-down

1. The Solo anchors will have been installed in the vehicle in accordance with our own and the vehicle converters instruction.
2. Attach the front wheelchair tie-down (not supplied as part of this product) in accordance with its own instruction.
3. Place the combined rear self-retracting restraint next to the floor anchor behind the wheelchair. It is acceptable to use the restraint either for left hand or right hand use. The double inertia reel (Fig 21) should be fitted next to the 3rd point anchorage. When possible, the rear self-retracting tie-down should be positioned with the karabiner gates facing outboard from the wheelchair, (Fig 14).
4. Install the restraint(s) onto the floor anchors by aligning the protrusion within each cleat to the slot on the floor anchors (Fig 19). Slide the cleat fully home, (Fig 22), rotate the assemblies through 90° to allow the karabiners to be attached to the wheelchair frame.
5. Pull the webbing and attach the karabiner arrangement(s) around the wheelchair main frame. Some wheelchairs will indicate this rear frame tie-down position (Fig 5). **Note: It is not necessary to press yellow button. Webbing can be extended from the reel without pressing the yellow button. The yellow locking label, (Fig 17) must be visible.**
6. Slack in the webbing will be taken in automatically by the reel to create an angle of around 30 to 45° and within the rear view zone (Fig 4).
7. Final tensioning is achieved by turning each tensioning handle (Fig. 16B) until the webbing is equally taut on each side. The webbing will retract automatically into the reel. **IMPORTANT: The yellow locking label must be fully visible, to ensure that the reel is locked off (Fig 17). Ensure that each rear Quattro Express Solo webbing is approximately of the same length.**
8. The occupant restraint must now be fitted - refer to pages 12-15



Removing occupant restraint

1. Release the tension in the rears by pressing the yellow button (Fig 16A) and extend the webbing to allow the karabiner(s) to be removed from the wheelchair frame. If the webbing is particularly tight, it may be necessary to slightly 'tension' with the hand wheel whilst pressing the yellow button, in order to remove the webbing lock on the Quattro Express.
2. Remove each Quattro Express Solo from the anchor by rotating the tie-down through 90° so that the raised protrusion on the cleat is aligned with the indent on the floor anchors, (Fig 19). Slide off. **Note: protrusion and indent are only applicable with spring loaded anchors, not with static anchors S10.**
3. Pull the restraint away from the floor anchor and store safely.

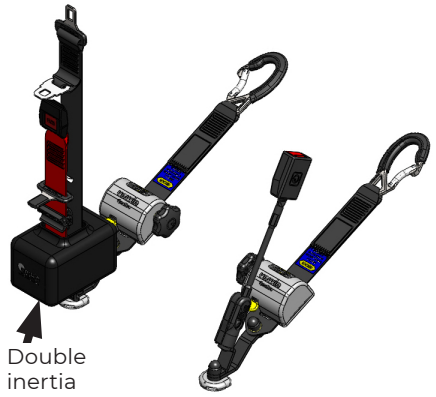


Figure 21



Figure 14



Figure 5



Figure 17

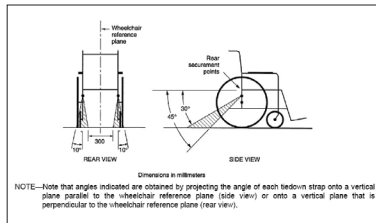


Figure 4



Figure 19



Figure 22

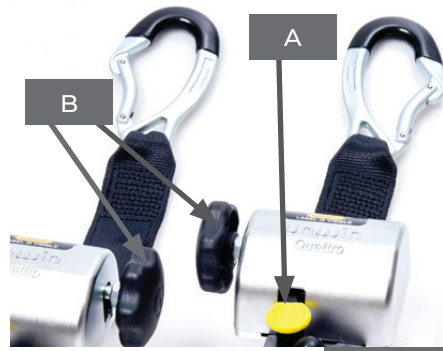


Figure 16

After care

Equipment storage and maintenance

- Store the restraint safely off the floor to avoid damage and ensure that it cannot become a projectile in an accident. This can be achieved by using a 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 webbings 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, karabiner 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.

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.

Declaration of conformity

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Declares that the products /

OR12, OR13, OR14, OR15, OR16
ORS03, ORS04

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
R.107.06
2007/46/EC

BraunAbility, Martock, 20th June 2019



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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