

# ELECTRIC FRONT REEL TIE-DOWNS

User Manual

Applicable to products:

EF3CH, EF3CJ, EF3CK, EF3CT, EF3H, EF3J, EF3K, EF3T  
EF4CPH, EF4CPJ, EF4CPK, EF4CPT, EFP4H, EF4JP, EF4PK, EF4PT  
UI12361A

EN Instructions for fitting and use

Thank you for choosing

# Electric front reel tie-downs 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 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 the BraunAbility kits is a continuous process. Applications are added on a regular basis. For more details contact BraunAbility or look on the BraunAbility website.



*These BraunAbility wheelchair tie-down kits are designed to secure a wheelchair when facing **forward** in a vehicle and must be used as instructed. The retractable tie-downs are designed to secure wheelchair weights up to 160kg. The use of an appropriate occupant restraint will be required for all.*



*In addition to the details given in these instructions, users of BraunAbility wheelchair tie-down kits 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 caregivers must make sure that their wheelchair is recommended for use in transport, including any 'add-on' components such as power tilt or recline options.*

Electric front reel tie-downs

Safety information



EF3CH



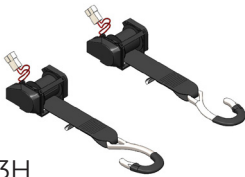
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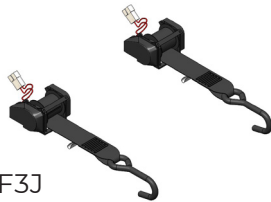
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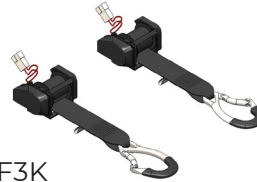
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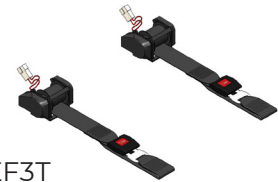
EF3H



EF3J



EF3K



EF3T



EF4CPH



EF4CPJ



EF4CPK



EF4CPT



EFP4H



EFP4J



EFP4K



EFP4T

### 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 surrogate 85kg 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 wheelchair tie-down and occupant restraint system (WTORS) and should be avoided.
- If the installation is to be used with an occupant headrest 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, frayed, or contaminated with polishes, oils or chemicals, particularly battery acid.

- Any restraints that have been subjected to a vehicle crash should be replaced in the interest of safety.
- Do not attempt to modify the equipment. For further advice on the installation and use of this wheelchair 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 wheelchair 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 fiber glass panels, without additional and suitable reinforcement.
- The equipment has been tested in a configuration recommended by BraunAbility and any deviation from the recommendations here is the responsibility of the installer/user.

## Before installing and using the Wheelchair Tie-down 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 traveling 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 minimize the potential for head injuries in an impact, allow a clear space of at least 450mm (18in) behind and 650mm (26in), (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 (39in) to 1550mm (61in) should be made, depending on the size of the passenger. There should also be 200mm (8in) of clear space either side of the wheelchair center line. If these clear space dimensions cannot be provided then any structure protruding into this area 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 (39in) for a 6-year-old child to 1550mm (61in) for a tall adult.*



- Wheelchair users, their caregivers 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 WTORS.
- 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.

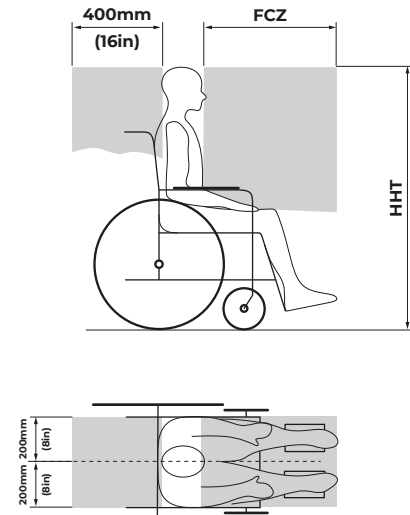


Figure A

## Fit and use

### Fitting the electric front reel tie-downs

- The reels should be secured to a structurally sound area of the vehicle floor.
- Once happy with the planned wheelchair position, lay the reels in their desired locations and check carefully immediately below the floor, that they and/or the hole cutter will not foul brake lines, fuel tanks, chassis members etc.  
If in doubt modify the wheelchair anchorage positions accordingly.
- Note:** Fixings are not supplied with the electric reels but are available separately, recommended grade and minimum size of bolt is ISO grade 10.9, and size M10x60 (as supplied in the Electric Reel Fixing Kits SLR112 & SLR113).
- Mark our the chosen floor fixing positions.
- Drill a 10.5mm diameter hole through the finished floor, ply and steel flooring.
- Clear the debris and install the reels as shown in Fig. 2. Tighten to a torque of 25-30Nm from underneath, using the nut and under floor spreader plate. A larger 100mm diameter under floor spreader plate is available if required, coded as SLR106. See Fig. 2 for a typical installation sequence.
- If you need to modify the spreader plate to clear an obstruction, always leave as much material as possible around the bolt hole. Any modification must be made such that the original load spreading properties are retained. Further reinforcement may be required to meet minimum vehicle strength recommendations. Contact the vehicle manufacturer for further advice.
- Note:** It may be necessary to provide fillers between the vehicle floor convolutions to prevent these from being crushed when tightening up on the nut and bolt.
- It is recommended that some type of body sealant or foam fill is used between the under floor spreader plate and the vehicle underside to prevent ingress of water and subsequent damage and saturation.
- The reels are unlocked electrically by applying a 12V DC supply via a suitable switching device to each reel. The design and installation of the electrical system should be undertaken only by a competent automotive electrical engineer.

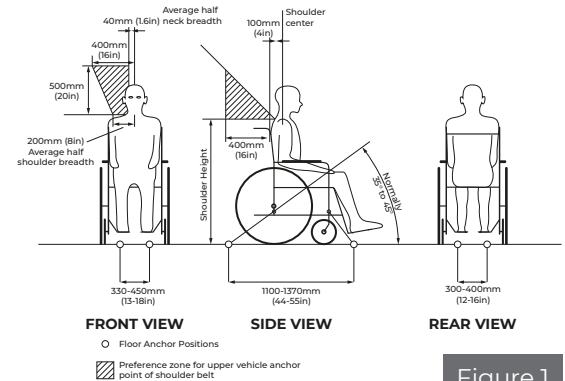
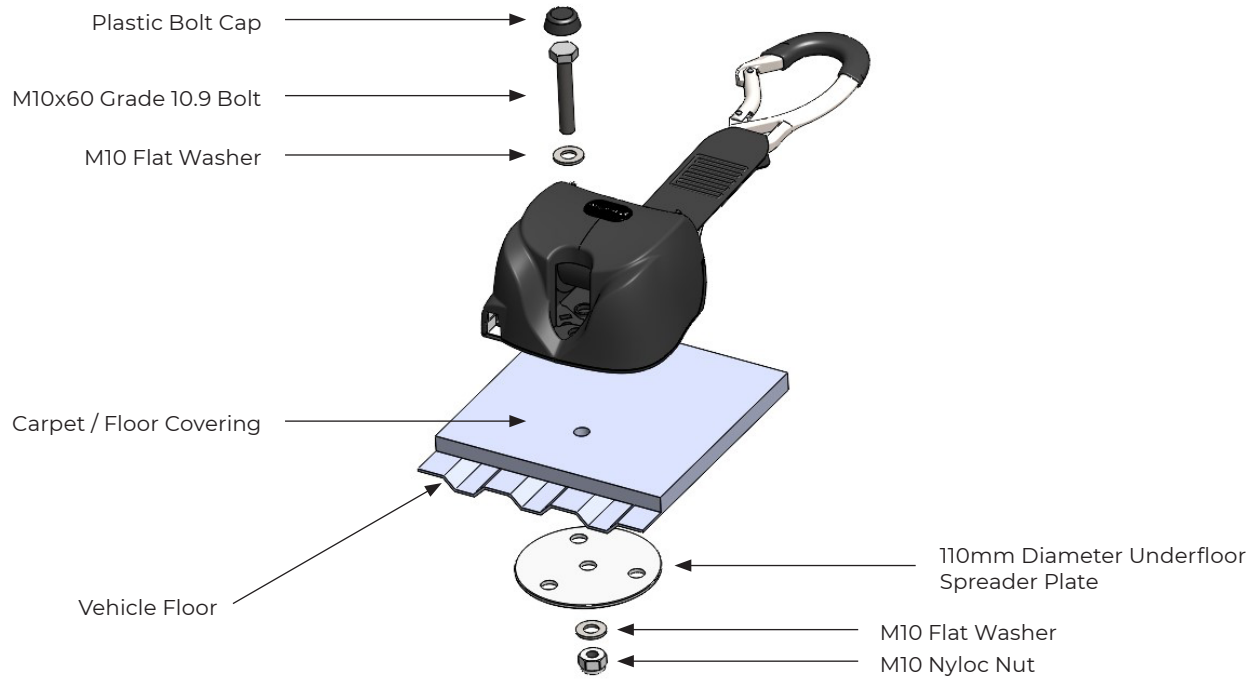


Figure 1



Fit and use

Figure 2

**WARNING:**

The terminals of Electric Reels fitted with LED lighting are polarity specific. Correct function of the reel and lights will only be achieved if wired correctly to that shown below.



Figure 3

## Fit and use

### Using the electric front reel tie-downs

1. Position the wheelchair as required.
2. Extend the webbing by applying the 12V DC supply to each reel to release the reel 'lock' and attach the karabiner, hook or tongue & buckle arrangement of each reel to the front vertical frame of the wheelchair, (some wheelchairs will indicate this tie-down position, Fig. 4). To do this, press the red buckle release button, detach the tongue from the buckle and pass it around the wheelchair frame tie-down point, reconnect the tongue firmly back into the buckle **OR** snap the hook / karabiner onto the tie-down position. If using karabiners, ensure that the gates are fully closed.  
By removing the 12V DC supply (switching off the power), the reels will 'spool' in taking up the webbing slack but will be 'locked off' from spooling out.
3. The webbing should form angles within the regions shown in Fig. 5.
4. To release, slacken the front tie-down first, then once again apply 12V DC supply to each reel allowing the webbing to extend and the karabiner, hook or tongue & buckle to be released from the wheelchair frame. **Note:** If using tongue & buckle, in an emergency release can be achieved immediately and quickly by pressing the red release button on each buckle, without the need to unlock the reels electrically.
5. Allow the webbing to retract back into the reels in a controlled manner.

**Warning: Do not let the webbing 'fly' back into the reels uncontrollably as this may result in damage to the equipment and injury to persons within the vehicle.**



Figure 4

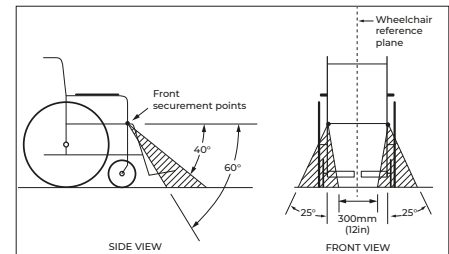


Figure 5

## After care

### Equipment storage and maintenance

- Regularly inspect the wheelchair restraint systems for damage, wear or malfunction. If any problems are identified replace components immediately.
- All webbing and components can be cleaned as necessary, but care should be taken to prevent contamination of the webbing 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 where 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

## Manufacturer /

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## Declares that the products /

3m electric front reel tie-downs:  
EF3CT, EF3CH, EF3CK,  
EF3T, EF3H, EF3K, EF3J, EF3CJ

4m electric front reel tie-downs:  
EF4CPT, EF4CPH, EF4CPK, EF4CPJ,  
EFP4T, EFP4H, EFP4K, EFP4J,  
TDN-13297-A

## Conforms to applicable paragraphs in the 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  
2007/46/EC

BraunAbility, October 2021



Rob Butcher  
General Manager





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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