



THE SOLO SYSTEM

These instructions are applicable to all Solo System
with Karabiner Hooks

Patent GB2355437, US6869260, AU775895

USER OPERATING MANUAL



Read instructions fully before use.

It is recommended that training be given on the proper use of this product.

**Retain this manual for future reference.
Include it with the product in the event of transfer to new users.**

Additional copies are available upon request.

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A. WARNINGS

- 1. The Solo Combined wheelchair tie down and occupant restraint system is to be used for the securement of wheelchairs — as recommended by the manufacturer - used as a forward facing seat in a motor vehicle. (See Unwin Wheelchair Guide for full Applications List).**
- 2. In addition to the details given in these Instructions, users of this tie down 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.**
- 3. 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.**

B. LIMITATION OF USE

1. This instructions are valid for all Solo webbing restraints.
2. This product has been designed to restrain wheelchair weighing up to 120kg and includes a passenger restraint for the wheelchair occupant.
3. Some wheelchairs need specific restraints, this is often true of buggy-type wheelchairs. If in doubt please contact us or the wheelchair manufacturer.
4. Some wheelchair frames will not allow the karabiner to close around them, in these cases an alternative restraint system should be used.
5. Unwin products are extensively tested using Unwin Rail and our full warranty applies to Unwin equipment fitted and used in accordance with our instructions. Unwin's have also participated in test programs with other manufacturers and will support warranty on the Unwin products when used in conjunction with such jointly tested systems. For further details on specific applications please contact the Sales Office. In other situations where Unwin has not participated in joint test programs, a limited Unwin warranty will apply.

C. GENERAL GUIDANCE

1. Please read this manual before using the equipment.
2. Regular inspection of all parts is recommended. Only use the equipment if all mechanical parts are functioning smoothly and all components are in good condition.
3. Replace parts where the webbing is contaminated or frayed.

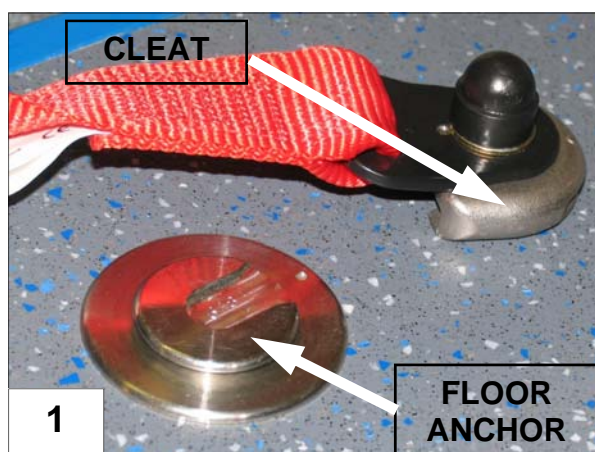
4. Items attached to the wheelchair in front of the occupant, other than footrests should be removed and secured in the vehicle during transport. This reduces the potential for injury.
5. In case of an accident where the equipment was in service replace the system.
6. Do not attempt to modify the equipment, if there is a problem refer to Unwin Safety Systems for technical advice.

D. BEFORE USING THE SOLO SYSTEM

1. Ensure that the wheelchair is appropriate for the tie down being used.
2. Position the wheelchair, facing forward, centrally between the four floor anchors. If the vehicle is positioned on a slope, ensure the wheelchair cannot roll.
3. To minimise the potential for head injuries in an impact, it is recommended to allow a clear space of at least 400 mm behind and 650 mm for 3 point systems or 950mm for 2 point systems in front of the head of the wheelchair user when positioning the chair for transit. A height provision ranging from 1200mm 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 structure protruding into this space should be adequately padded.
4. Electric wheelchairs may require an additional strap to secure the batteries.
5. Check that the restraint is complete. A complete Solo system comprises 2 non adjustable front straps with quick release buckles and 2 rear attachments comprising the adjustable webbing straps and a double inertia reel or stalk. The restraint is fixed to the floor of the vehicle using specially designed floor anchors. If you are using a 3 point inertia passenger restraint you will have purchased the additional third point attachment strap, which attaches to a suitable position on the vehicle wall.

E. FITTING THE SOLO SYSTEM - WHEELCHAIR TIEDOWN

1. Attach the front straps onto the front anchor points by aligning the button within the cleat, to the slot on the floor anchors (Fig 1). Slide the cleat fully home (Fig 2), (this has the effect of raising the floor anchor from its housing). Rotate the assembly through 90° to allow the tongue and buckle fixing to be attached to the wheelchair



2. Connect the front straps around the main frame of the wheelchair (Fig 3).

IMPORTANT: Check both front straps are fully engaged.

3. Pull wheelchair back, to tension front tie down straps and apply the wheelchair brakes.

4. Attach the rear tie down units to the rear floor anchors, using the same method as was used for the front straps. If the 3 point inertia reel is being used, ensure the reel is placed on the side closest to the third fixing point.

5. Remove the webbing from the Velcro and release the over-centre buckle.

6. Attach the karabiner fixings to the wheelchair main frame or if using Snaplock fit the webbing around the wheelchair main frame and fasten, creating an angle of about 45°.

7. Pull the webbing through the over-centre buckle until tight. With free hand begin to close the buckle (Fig 4), once webbing is retained, fully close the buckle using both hands. Re-secure Velcro.

8. A passenger restraint should now be fitted. This can be a separate occupant system or the passenger restraint from a combined system.

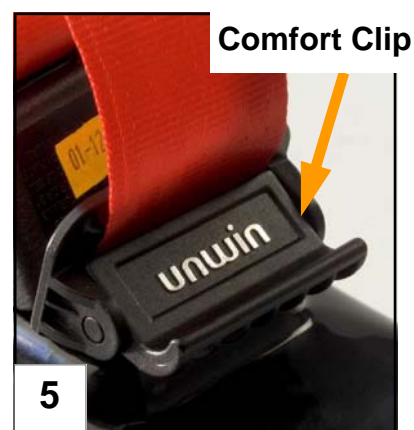


F. FITTING THE SOLO OCCUPANT RESTRAINT (3 POINT)

- **Unwin 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.**
- **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.**

Wheelchairs without armrests or with armrest removed

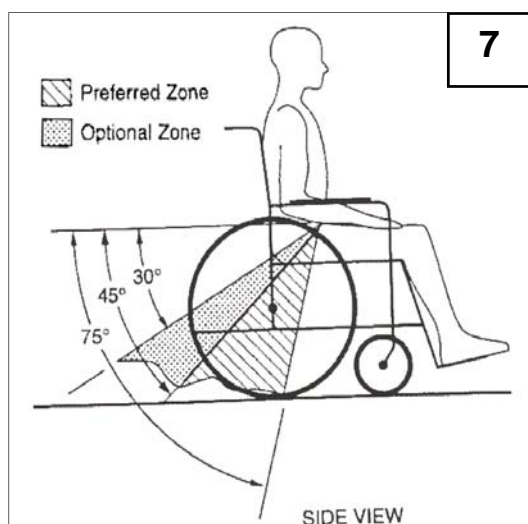
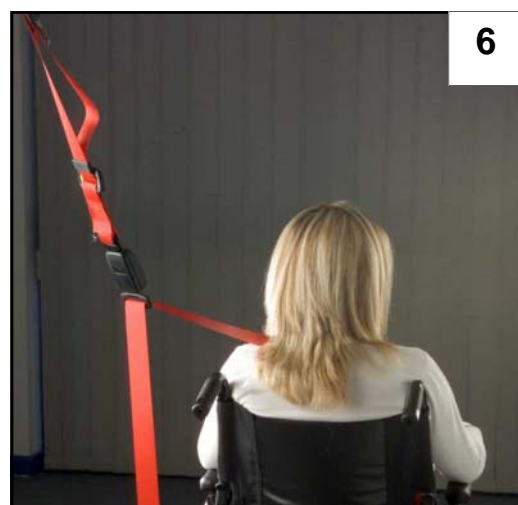
1. Position the third point fixing into the wall rail so that it is vertically above the inertia reel casing fixed onto the floor anchor.
2. Ensure the Comfort Clip (Fig 5) is released and the tongue & buckle separating the lap and shoulder belts is engaged.
3. Release the third point tongue from the buckle.
4. Remove the black plastic cover (if applicable) off the tongue on the double inertia red webbing and pull both tongues upwards to release the webbing from the inertia reel.
5. Insert the first tongue fixed to the red webbing, into the buckle on the third point fixing.



6. Position the webbing across the passenger, with the black webbing forming the lap belt and the red webbing the shoulder belt. Insert the second tongue into the reversible stalk buckle.
7. Adjust the height of the third point buckle so that the belt clears the occupant's shoulder by approximately one inch. Unlock the Comfort Clip to take up the slack, then re-lock the clip so that it rests on the reel cover.

Wheelchairs with Fixed Armrests

1. Release the Comfort Clip (Fig 5) and the buckle to separate the lap and shoulder belts.
2. Undo the third point tongue from the buckle.
3. Position the black webbing around the occupant's pelvic area, threading it through the armrests if necessary.
4. Remove the black plastic cover (if applicable) off the tongue on the red webbing of the double inertia and insert into the buckle on the third point fixing.
5. Position the shoulder belt on the occupant at about mid shoulder point (Fig 6) and adjust the height so that it clears the occupant's shoulder by approximately one inch.
6. Unlock the Comfort Clip to take up the slack, then re-lock the clip so that it rests on the reel cover.
7. It is essential that the lap belt anchor point should be positioned to achieve belt angles of 30° or more to the horizontal and preferably between 45° and 75° to the horizontal, in order to fit low across the pelvis and/or over the upper thighs to reduce the possibility of the seat belt loading the abdomen. (Fig 7).



F. FITTING THE 2 POINT PASSENGER RESTRAINT

- Unwin 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.
- 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.

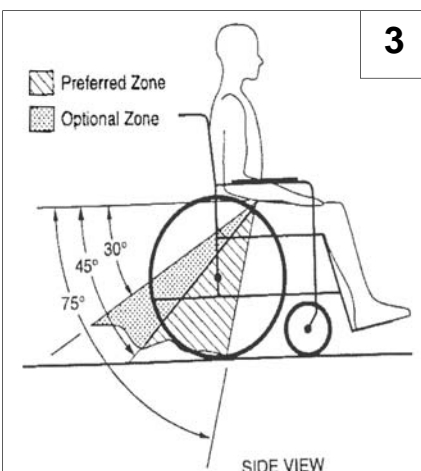
Wheelchairs without armrest or with armrest removed.

1. Ensure the Comfort Clip is released (Fig 1) and the tongue & buckle separating the lap and shoulder belts is engaged.
2. Pull metal tongue on the black webbing upwards to release the webbing from both inertia reels.
3. Position the webbing across the occupant with the black webbing forming the lap belt and the red webbing forming the shoulder belt.
4. Insert the tongue fixed to the black webbing into the reversible stalk buckle. 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.



Wheelchairs with fixed armrests

1. Ensure the Comfort Clip is released (Fig 1) and undo the buckle to separate the lap and shoulder belts.
2. Position the black webbing around the occupant's pelvic area, threading it through the armrests if necessary and fit the metal tongue into the reversible stalk buckle.
3. Pull all of the red webbing out of the inertia reel and secure with the Comfort Clip.
4. Position the shoulder belt on the occupant at about mid shoulder point (Fig 2).



5. 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.
6. It is essential that the lap belt anchor point should be positioned to achieve belt angles of 30° or more to the horizontal and preferably between 45° and 75° to the horizontal, in order to fit low across the pelvis and/or over the upper thighs to reduce the possibility of the seat belt loading the abdomen (Fig 3).

G. REMOVING AND STORING

1. Release the Comfort Clip and disconnect the tongue from the stalk.
2. Remove the passenger restraint, unclipping the lap and shoulder belt as necessary. If applicable disconnect the shoulder belt from the third point fixing and allow the webbing to retract back into the reels evenly.
3. Release the over-centre buckle on the rear straps, loosen the webbing and remove the karabiner or Snaplock from the wheelchair main frame. Close the over-centre buckle and replace webbing to Velcro.
4. Turn the cleat back through 90° to release and slide it off of the floor anchor point. Repeat with opposite fitting.
5. Push the chair forward to loosen the front straps.
6. Release the buckle on the front straps, remove the strap from the wheelchair frame and clip back together. Repeat on opposite strap and remove from floor anchor.
7. On the third point fixing, re-secure the tongue to buckle and remove from the rail.
8. Store the restraint safely off the floor to avoid damage and to stop it becoming a projectile in an accident. This can be achieved by using a stowage box.

H. MAINTENANCE

1. Regularly inspect the single point for damage, wear or malfunction. If any problems are identified replace it immediately.
2. All webbing and components can be cleaned as necessary, care should be taken to prevent contamination of the webbing with polish, oils and chemicals.
3. To clean the single point 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 - do not use products containing bleach.

IMPORTANT: when cleaning or disinfecting do not immerse buckles or anchorage fittings in disinfectant or water.

4. 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 Unwin Safety Systems.

Products covered:

Combined Wheelchair and Occupant Restraint Systems

- S2/A** 4 point Combined Solo with Karabiner, occupant restraint and 4 Anchors
- S2-** 4 point Combined Solo with Karabiner, occupant restraint and no anchors
- ST2** 4 point Combined Solo with Snaplock, occupant restraint and no anchors
- ST2/A** 4 point Combined Solo with Snaplock, occupant restraint and 4 anchors

- S2/RA** 2 point Combined Solo rear tie down with Karabiner, occupant restraint and 2 anchors
- S2/R** 2 point Combined Solo rear tie down with Karabiner, occupant restraint and no anchors

Upper Anchorage Strap: To easily convert the passenger restraint from a 2 point a 3 point option.

- 3PTF** Bolted Upper Anchorage Strap
- 3PTR** Removable Upper Anchorage Strap

Webbing Restraint Systems

- SW/A** 4 point Solo with Karabiner and 4 anchors
- SW** 4 point Solo with Karabiner and no anchors
- STW** 4 point Solo with Snaplock and no anchors
- S/RA** 2 point Solo, rear only with Karabiner and 2 anchors
- S/R** 2 point Solo, rear only with Karabiner and no anchors



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