

WHEELCHAIR SPOTTER STRAP

The Problems

- Wheelchairs frequently tip over backwards, injuring their users.
- Wheelchairs descending inclines often “run away” on their users, leading to injuries due to collisions and tips.
- Wheelchair users commonly need assistance to ascend curbs and inclines.

The Solution

- A simple webbing strap that can be attached to the wheelchair at one end and held by a spotter at the other.

Potential Users

- Potentially useful for any person who uses a manual wheelchair, particularly when learning new skills or when using the wheelchair in challenging environments.

Benefits

- Reduces the likelihood of injury due to rear-tipping accidents.
- Reduces the likelihood of injury due to the wheelchair “running away” on downhill grades.
- Provides confidence when learning new skills (e.g., wheelies) or attempting to use the wheelchair in risky environments.
- Allows a spotter to stand farther away from the wheelchair than would be appropriate without the spotter strap.
- Eliminates the need for the spotter to bend forward to catch a tipping wheelchair.
- Allows effective spotting even for wheelchairs without push handles.

Warnings

- The spotter strap should only be used if the user has been trained in its safe use.
- Before using, check for signs of wear.
- Do not use alone for wheelchair users who weigh over 250 pounds.
- After attaching the strap to the wheelchair, the spotter should pull firmly on the strap to ensure that the attachment is snug.
- When spotting heavy wheelchair users, the spotter should catch the tipping wheelchair as early in the tip as possible, to minimise the force needed to return the wheelchair to the upright position.
- When the tipped wheelchair requires too much force for a single spotter alone to return it to the upright position, the spotter should lower the user gently to the floor.

Attaching the Spotter Strap

- The spotter strap should be attached near the midline of the wheelchair to avoid inducing any lateral instability during the tip:
 - For a wheelchair with an X-shaped cross-brace that permits the wheelchair to be folded, this is not a problem.
 - For a rigid-frame wheelchair with a horizontal frame member to which the spotter strap is attached, the strap should be tight so that friction will keep the strap centered. If it tends to slide to the side, some tape or high friction material may be helpful.
- Loop the larger loop of the spotter strap behind and under the cross-brace and then pass the smaller loop of the strap through the loop of the smaller handle at the midline (the “X” of a folding wheelchair).

Using the Spotter Strap

For instructions on the use of the spotter strap please refer to the Wheelchair Skills Program Manual.

References

1. Kirby RL, Lugar JA. Spotter strap for the prevention of wheelchair tipping. Arch Phys Med Rehabil. 1999;80:1354-6.
2. Wheelchair Skills Program Manual: <http://www.wheelchairskillsprogram.ca/eng/manual.php>
3. RL Kirby. Wheelchair Skills Assessment and Training. CRC Press, Taylor and Francis, Florida, 2016. Hard cover ISBN #9781498738811. E-Book ISBN #9781498738828.

Specifications

The materials and instructions below are for the assembly of one adjustable nylon wheelchair spotter strap. Top and side view photographs of the completed strap are shown following the Spotter Strap Pattern and an illustration corresponding to the steps described below.

Instructions for Assembly

Materials

- Nylon webbing (approx. 2” wide) 2m in length
- Tri-glide (slide) buckles 2
- Thread (industrial strength) 1 spool

These materials can be sourced from a textile outfitter or strap manufacturer.

Equipment

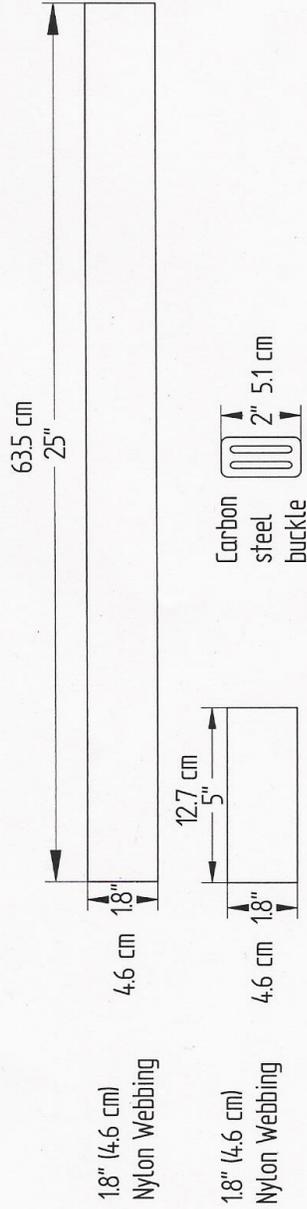
- Measuring Tape
- Scissors
- Sewing Machine

Instructions

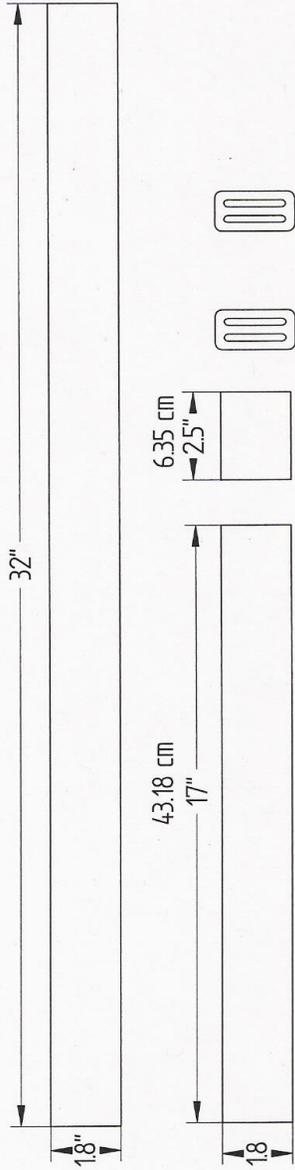
1. Cut five lengths of webbing (2.5, 5, 17, 25 & 32 inches in length) as shown on the Spotter Strap Pattern.
2. Separate the lengths into the pieces used for Part A (25 and 5 inch lengths) and Part B (32, 17 and 2.5 inch lengths).
3. Fold the 25 inch segment in half lengthwise and sew it closed to form the handle for Part A.
4. Insert the 5 inch segment into one of the slots of the buckles and fold it back on itself, sewing one line near the buckle. Insert the ends of the handle between the two pieces of material in this segment and stitch it with a square and an “X” as seen in the Spotter Strap Pattern.
5. Thread one slot of the remaining buckle onto the 32 inch segment of Part B. Fold the webbing back over the buckle at the 2.5 inch mark and secure it with a stitched square and an “X” as seen in the Spotter Strap Pattern.
6. Feed the free end of the 32 inch piece of webbing through the unused slot of the buckle attached to Part A and then feed it back through the unused slot of the buckle attached to Part B.
7. Construct the handle for Part B by folding the 17 inch length of webbing in half lengthwise and sewing it closed.
8. Bring the two ends of the handle together and sew the 2.5 inch segment onto one side. Overlap the handle onto the free end of the 32 inch strap. To complete the strap, stitch through all thicknesses with a square and an “X”.

Spotter strap pattern

Part A

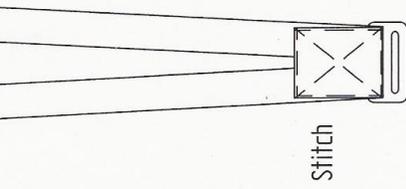
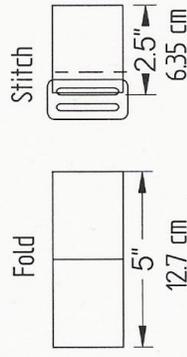


Part B



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Part A: Handle



Part B: Strap & Handle

