



Build Instructions: Sock n' Roll

A portable compression stocking donning aid which can be used by wheelchair users.



Developed by: Katherine Harvey, Maddie Shearer-Munn, Chanel Tilley & Holly Dawton



Approximate Cost: \$38.73

Time Required: 3 hours 40 mn

General Warnings and Cautions




-  **Read through entire manual before attempting to build this device.**
-  **Do not attempt a step if you are unsure of what you are doing.** Certain steps in this manual require experience with fabrication tools. <<General Warning>>. For assistance or clarification of any step, contact Insert contact info here.

User Assistance

For any questions regarding the assembly, operation, or specifications of this device, please visit Insert project website URL. You can also contact send an email to Email Address or call Phone number.

Icon Glossary

The following icons may be used throughout this manual—each with its own purpose.

-  **Caution:** The caution icon is used to signify whenever someone attempting the procedure may injure themselves or damage their equipment.
-  **Note:** The note icon is used to signify useful bits of information that complement the instructions.
-  **Reminder:** The reminder icon is used to provide information for after the procedure is completed, such as tips for disassembly.

Purpose of Device:

The intended purpose of this device is to allow a wheelchair user who experiences some mild to moderate overall mobility and upper limb coordination issues to independently don his own compression socks.

Physical Description:

The device comprises three parts:

- (i) The collapsible applicator pole: a telescopic mechanism which sees three PVC pipes of different size collapse into one another. This allows for an otherwise large piece of equipment to be portable and easily used when seated. Attached to the bottom of the widest pole is a piece of strong card which is used as the base and is placed underneath the users feet to ensure stability.
- (ii) Sigvaris Doff N Donner balloon: an existing product in the market, a soft tubular water balloon. The intended purpose is to roll the sock onto the balloon so that it rolls into itself and allows for transition onto the foot.
- (iii) The stopper: a 'H' shaped piece of thick card which is fed over the pole first to rest on knees. The stopper lifts the balloon off the knees to ease loading.

History of Development:

This project was developed by students from Design Factory Melbourne, in collaboration with the Tikkun Olam Makers (TOM) group. Tikkun Olam Makers (TOM) is a global movement dedicated to creating real change for people living with disability, by uniting interdisciplinary Makers and Need-Knowers to develop affordable solutions. This project was developed by a group of four students, who are currently completing their Masters of Occupational Therapy. The project entailed designing a system to enable our Need Knower (Hank) to don compression socks independently, with limited use of his legs and left arm. The project ran for a period of twelve

weeks; however due to unforeseen circumstances the group was not able to meet Hank until week 6 and thus iteration and prototyping began from then onwards. The initial reaction from Hank and his wife (Janine) to the final prototype has been positive. Hank and Janine were very pleased that the design satisfied their needs, and indicated that they would indeed use the device. Janine reports being thrilled to be able to assist Hank to don his own socks for the first time on her own.

Tools Required:

- Grinder



- 100mm Metal Cutting Wheel (for grinder)



- 100 mm grinding wheel



- Drill



- Stanley knife



- Hot glue & hot glue gun



Parts Inventory:

- PVC pipe 50mm



- PVC pipe 40 mm



- PVC pipe 32 mm



- Metal screws 15mm long



- Cardboard box



Subassembly 1: Collapsible Pole



Approximate Cost: \$26.93

Time Required: 3 hours

Step 1

Parts and Tools Used In This Step:

- PVC pipe 50mm
 - Grinder
 - 100mm grinding wheel
 - 100mm cutting wheel
-

Instructions:

- Mark on the 50mm PVC pipe to the length of 420mm
- Using the grinder with the 100mm cutting wheel, cut the 50mm PVC pipe to the length of 420mm.
- Using the grinder with the 100mm grinding wheel, grind the cut edge of the 50mm PVC pipe so that it is smooth.

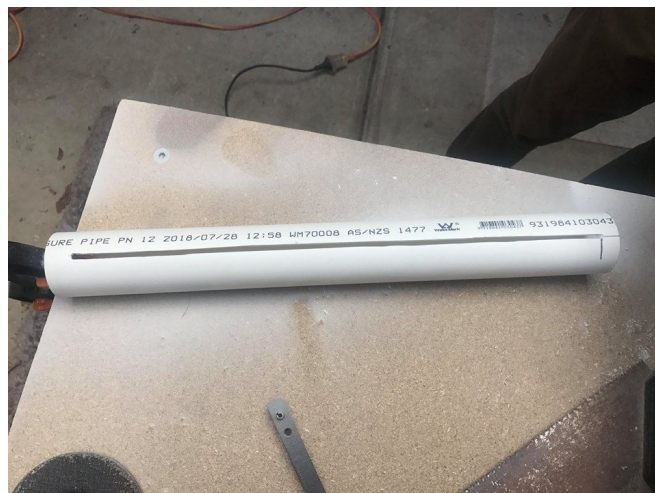
Step 2

Parts and Tools Used In This Step:

- PVC pipe 40mm
 - Grinder
 - 100mm grinding wheel
 - 100mm cutting wheel
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Instructions:

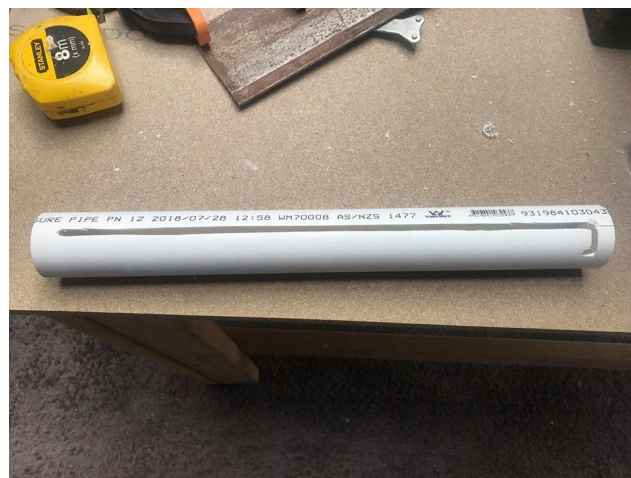
- Mark on the 40mm PVC pipe to the length of 420mm
- Using the grinder with the 100mm cutting wheel, cut the 40mm PVC pipe to the length of 420mm.
- Using the grinder with the 100mm grinding wheel, grind the cut edge of the 40mm PVC pipe so that it is smooth.
- On the newly cut 40mm PVC pipe, draw a straight line along the length of the pipe, ending the line 15mm from each end of the pipe.
- Using the grinder with the 100mm cutting wheel, cut the drawn line out off the pipe, approximately 5mm wide (enough to allow the screw to move freely, but not come out). See image below.



- At the bottom of the cut groove, draw a small perpendicular groove to the left, 15mm in lengths. Draw another small perpendicular line upwards, 5mm in length. The line drawn should now look like a backwards L.
- Using the grinder with the 100mm cutting wheel, cut the drawn line out off the pipe, approximately 5mm wide (enough to allow the screw to move freely, but not come out). See image below.



- See image of final groove below.



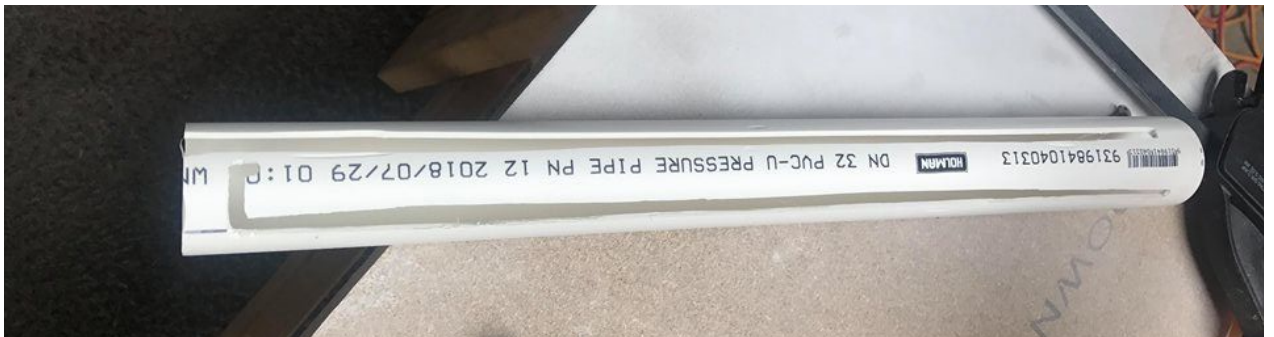
Step 3

Parts and Tools Used In This Step:

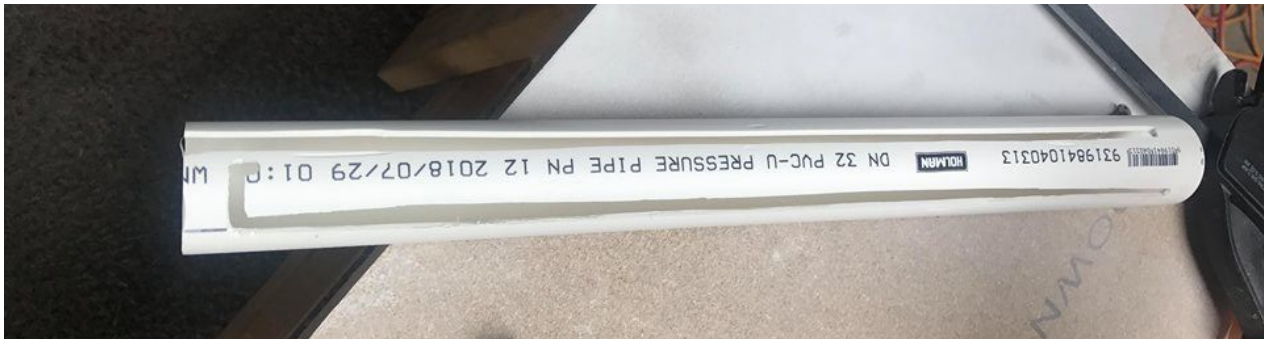
- PVC pipe 32mm
 - Grinder
 - 100mm grinding wheel
 - 100mm cutting wheel
-

Instructions:

- Mark on the 32mm PVC pipe to the length of 420mm
- Using the grinder with the 100mm cutting wheel, cut the 32mm PVC pipe to the length of 420mm.
- Using the grinder with the 100mm grinding wheel, grind the cut edge of the 32mm PVC pipe so that it is smooth.
- On the newly cut 32mm PVC pipe, draw a straight line along the length of the pipe, ending the line 15mm from one end of the pipe, and continuing all the way to the other end of the pipe.
- Using the grinder with the 100mm cutting wheel, cut the drawn line out off the pipe, approximately 5mm wide (enough to allow the screw to move freely, but not come out). See top groove cut out in image below.



- Holding the 32mm PVC pipe so that the freshly cut groove has the end that is cut all the way through to the left, draw a straight line under this newly cut groove along the length of the pipe 20mm away from the previously cut groove. End the line 15mm from each end of the pipe.
- At the end of the line drawn above, draw a small perpendicular groove towards the previously cut groove, 15mm in lengths. Draw another small perpendicular line upwards, 5mm in length. The line drawn should now look like a backwards L.
- Using the grinder with the 100mm cutting wheel, cut the drawn line out off the pipe, approximately 5mm wide (enough to allow the screw to move freely, but not come out). Please see the bottom cut groove in the image below.



Step 4

Parts and Tools Used In This Step:

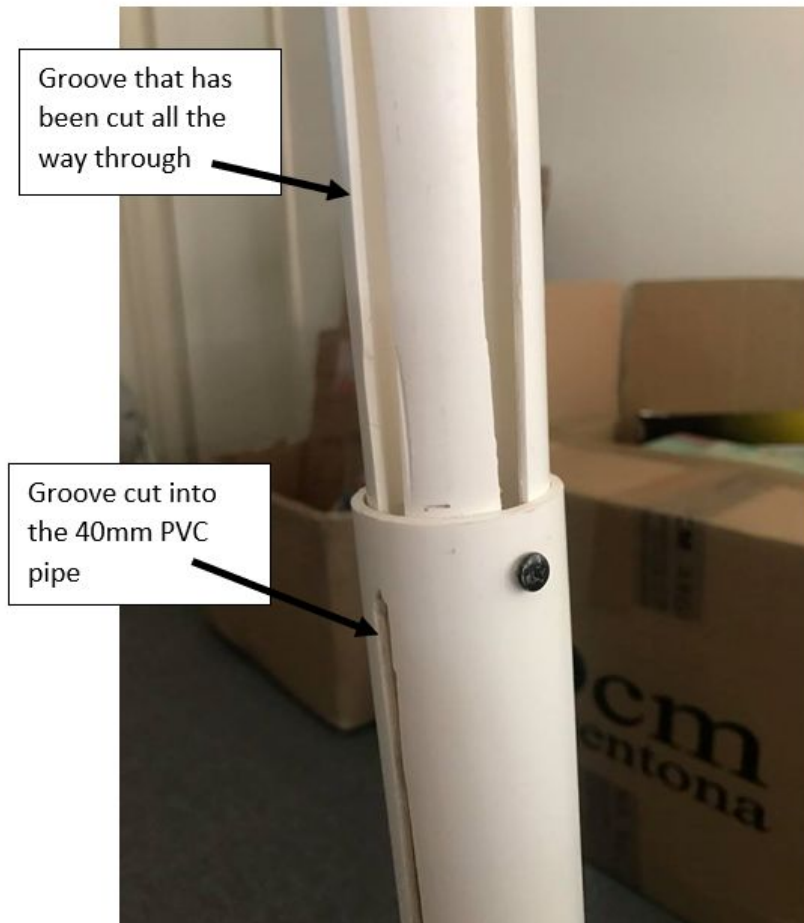
- PVC pipe 32mm
 - PVC pipe 40mm
 - PVC pipe 50mm
 - Metal screws 15mm long
 - Grinder
 - 100mm Grinding wheel
-

Instructions:

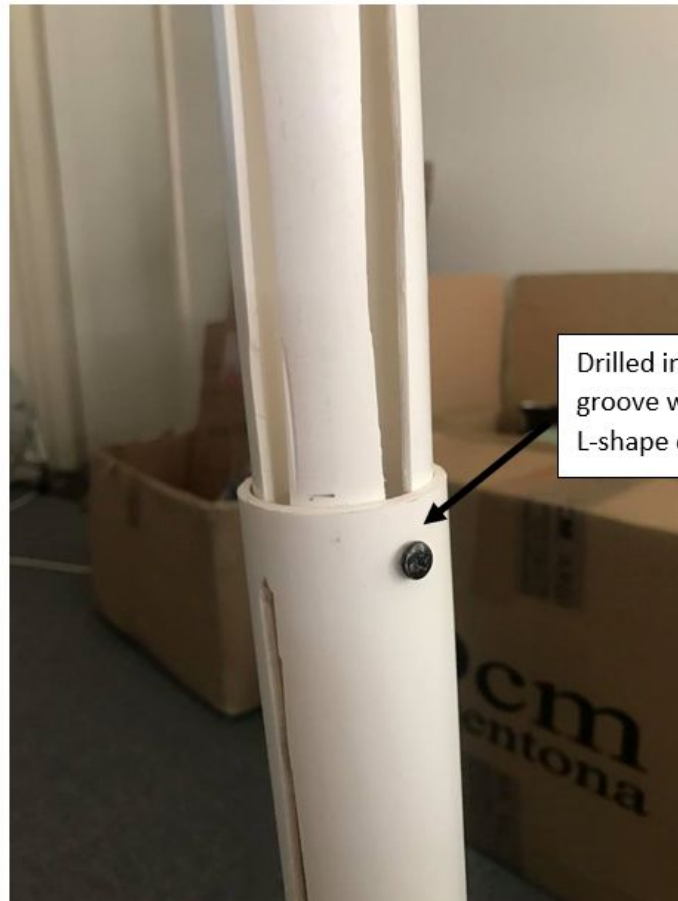
- Place the 40mm PVC pipe in the 50mm PVC pipe.
- Drill a screw into the 50mm PVC pipe 20mm from the end. Line the screw up so that it goes into the groove previously drilled into the 40mm PVC pipe. The 40mm pipe should now be secured to the 50mm pipe. See image below.



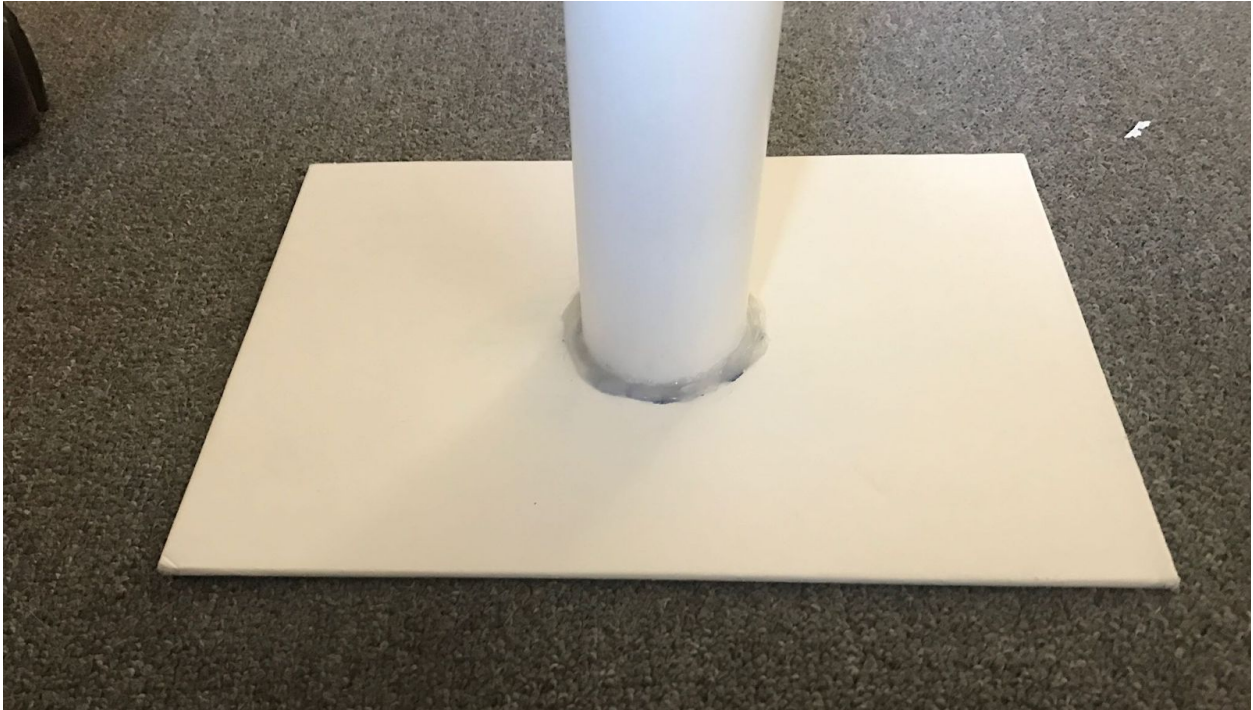
- Place the 32mm PVC pipe in the 40mm PVC pipe. Place the end of the 32mm PVC pipe that has the groove cut all the way through the pipe into the 40mm PVC pipe.
- When placing the 32mm PVC pipe into the 40mm PVC pipe, line the pipes up so that the groove on the 32mm PVC pipe that is cut all the way through lines up with the groove that has been cut on the 40mm PVC pipe. See image below.



- Drill a screw into the 40mm PVC pipe 20mm from the end. Line the screw up so that it goes into the groove previously drilled into the 32mm PVC pipe that ends in an L-shape (not the groove that is cut all the way through the pipe). The 32mm pipe should now be secured to the 40mm pipe. See image below.



Subassembly 2: Base



Approximate Cost: \$5.90

Time Required: 20 minutes

Step 1

Parts and Tools Used In This Step:

- Stanley Knife
 - Thick cardboard
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Instructions:

- Measure the cardboard to be 310mm x 210mm
- Using the stanley knife, cut along the drawn lines

Step 2

Parts and Tools Used In This Step:

- Hot Glue
 - Cut base
 - Assembled collapsible pole
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Instructions:

- Place the collapsible pole into the centre of the cardboard
- Glue the pole onto the cardboard so that it is firmly placed

Subassembly 3: Stopper



Approximate Cost: \$5.90

Time Required: 20 minutes

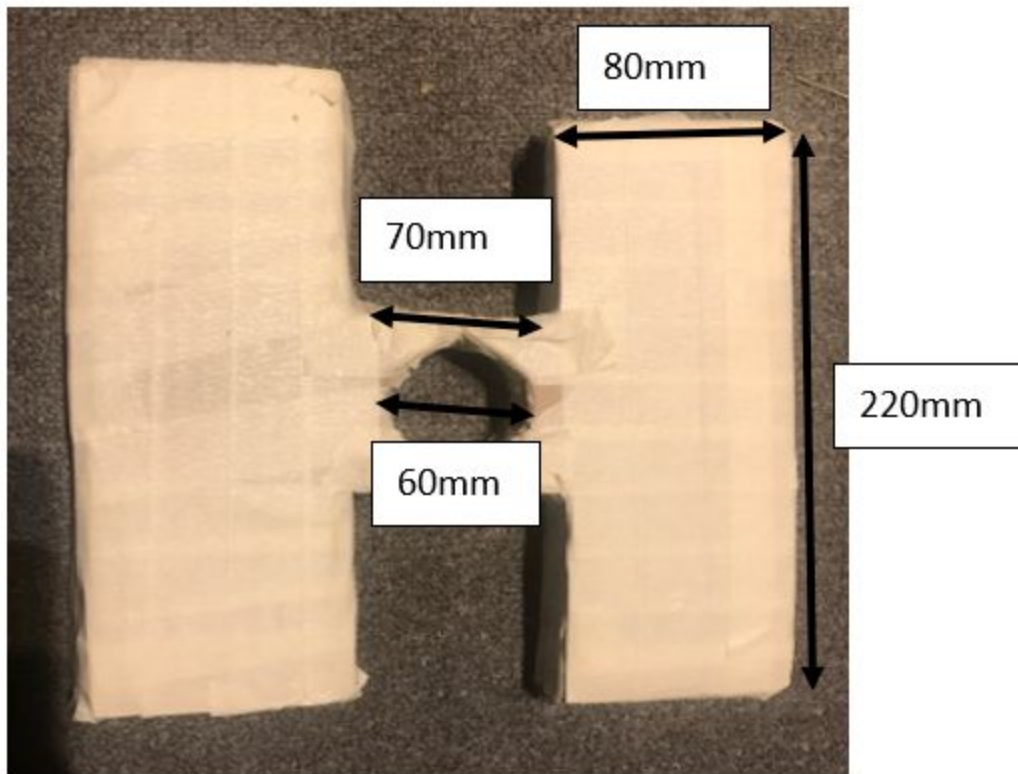
Step 1

Parts and Tools Used In This Step:

- Hot Glue
 - Stanley Knife
 - Cardboard
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Instructions:

- Draw a capital “I” shape on a piece of cardboard, see image below for measurements.



- Cut the shape out of the cardboard using a stanley knife.