



# THE HOPE DEVICE

OPERATIONAL MANUAL

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## The Device

The main parts of the hope device assembly are labeled clearly in the below image.



*Figure 1 Labeled device*

1. Harness
2. Leather belt to wear the harness properly
3. Supporting rod for breaking
4. Underarm leg support
5. Band to tie the legs
6. Foot support
7. Wheels to allow smooth breaking
8. Break bushes
9. Break rods
10. Adjustable bracket to change length of chest support
11. Hand gripper and second leg support

## Operation

This section will explain how to operate the Hope Device.

### 1.1 Wearing Harness

Given are the instructions to wear the harness:

- i. Wear harness like a shirt, with neck extending out from the top.

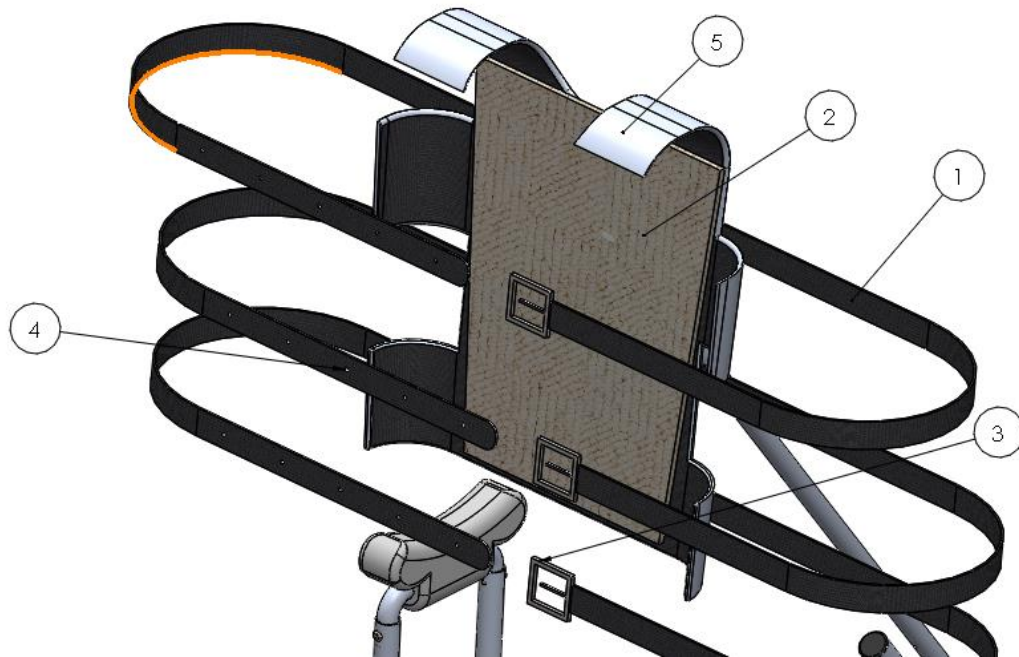


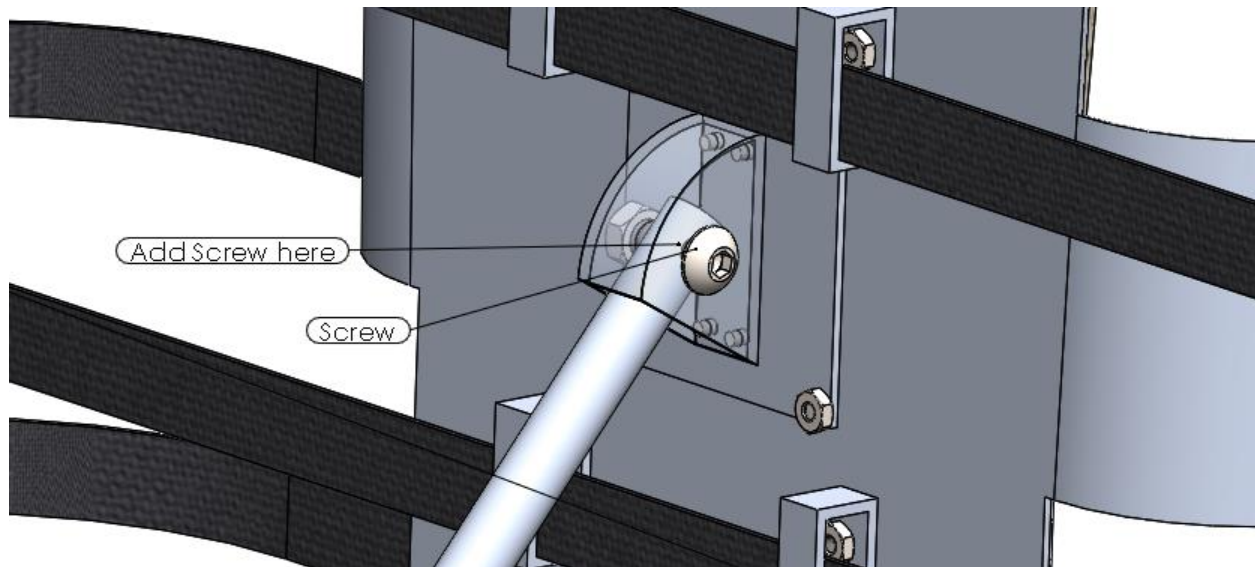
Figure 2: parts of harness

Above is the figure explaining different parts of the harness.

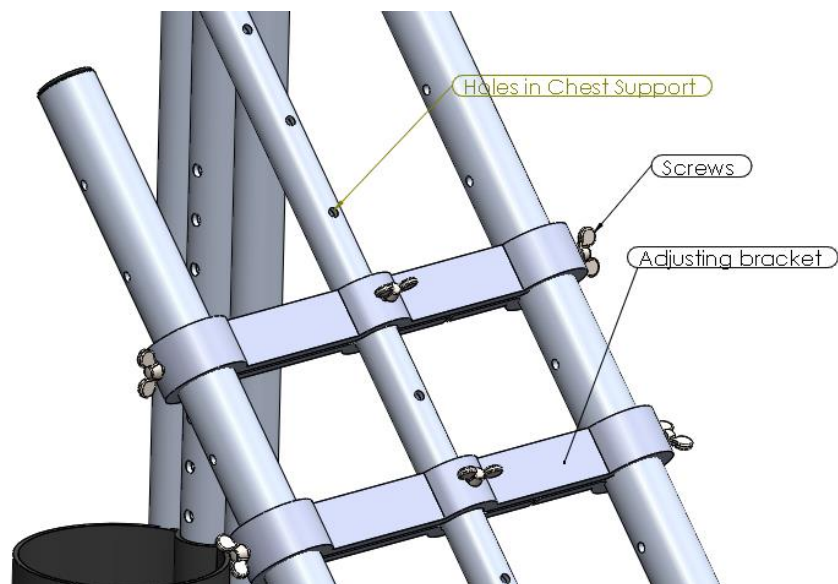
1. Leather belt to wear the harness.
2. Foam is placed inside the harness, it makes the person feel comfortable.
3. The buckle to tie the belt.
4. Holes in the belts at multiple distance to make the belt adjustable.
5. The shoulder part of harness, it fits on the shoulder.

### 1.2 Adjusting Chest Support

- I. Fit the chest supporter rod with the harness by Screw (Image is attached below)



- II. Now attach the chest bracket with harness
- III. Pin the chest supporter stick with the bracket. The supporter stick has thirteen slots in it to adjust the height of the rod. Adjust the rod according to the height of the person.



- IV. After adjusting the rods according to the height, tighten the screws properly.

### 1.3 Long Crutch

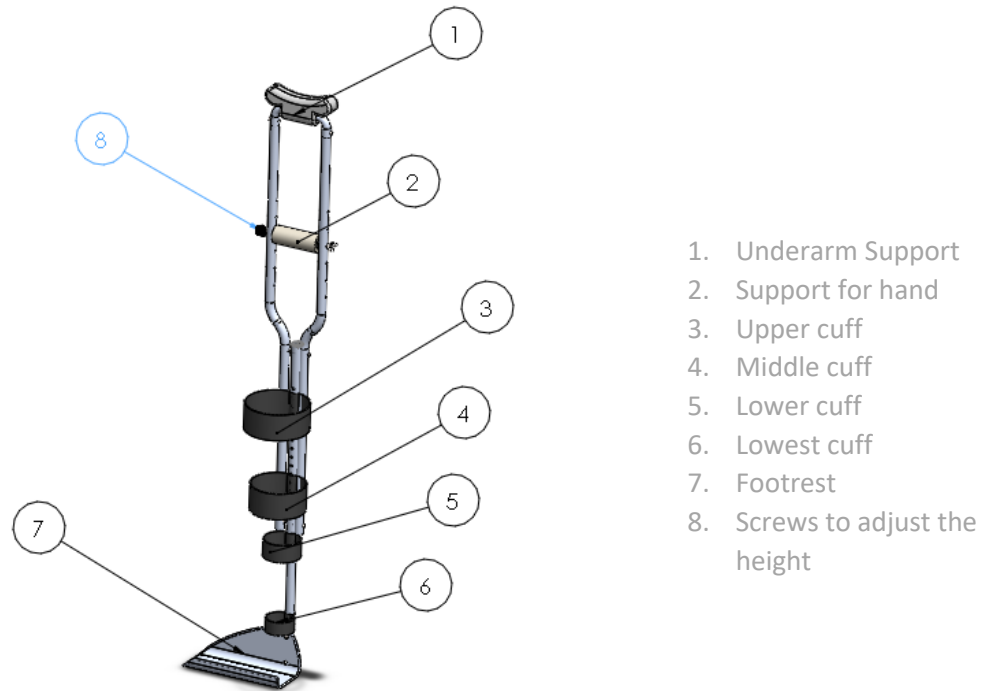


Figure 3: Long crutch

Instructions to operate long crutch are given as:

- i. There are four cuffs on the underarm leg support. Adjust the height of the cuffs according to the user height with slots. Tight the cuffs along the leg.

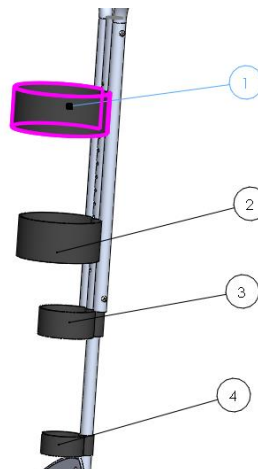


Figure 4: Four cuffs are shown in the figure, adjust accordingly

- ii. Tight the upper or first cuff on thigh, then tight second cough on leg and tight the lowest cuff on the ankle.
- iii. Place your foot on the footrest.



Figure 5: Footrest

- iv. Hold the stick from the underarm.

## 1.4 Short crutch



Figure 6: Short crutch

Instructions for the use of short crutch are given as:

- i. There are two cuffs on the second leg support. Adjust the height of the cuffs and wear the cuffs on lower leg.
- ii. Place your foot on the footrest.
- iii. Hold the stick using your hand.

## 2. Maintenance

This section will explain the general maintenance of the hope device. Time to time maintenance is necessary for the better working of any mechanical device.

### 2.1 Chest Supporter:

Perform general maintenance of the chest supporter by performing following inspections:

- i. Open and check the screws of the the bracket. Make sure that they are not rusted and loosed.
- ii. Check the pin connection of the bracket and chest supporter stick. Make sure the stick easily rotates. Use some grease for smooth action.
- iii. Check the connection between the sticks of the chest supporter. Make sure the lock for height adjustment is working properly. Repair any loose lock.

- iv. Check the breaking pad “rubber”. Change the rubber every 3 months.
- v. Check the roller at the end of the stick. Make sure the tires run freely and are not obstructed. Oil the axle of the tire for smooth tire movement.

## 2.2 Underarm Leg Support

The underarm leg supports maintenance covers the following things:

- i. Check the cuffs of the leg support. Open the cuffs by opening screw at its back. Tight the screw again to fix the cuff.
- ii. Replace any damaged cuff with a new one.
- iii. Check all the locks for the cuff’s height adjustment. Make sure they all are tight.
- iv. Check the rubber on the handle and replace it, to make the stick comfortable.

## 2.3 Second arm Leg Support

Maintenance of both leg supports are similar. Inspect and maintain the second leg support similar to the first one. Follow all the steps mentioned above.

# 3. Assembling

## 3.1 Chest Supporter

Following are the steps to assemble the chest supporter:

- i. Fix the bracket with the harness by tightening all the four screws.
- ii. Pin the supporter stick with the bracket with the pin.

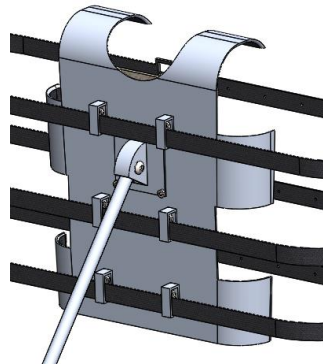


Figure 7: Harness and Bracket

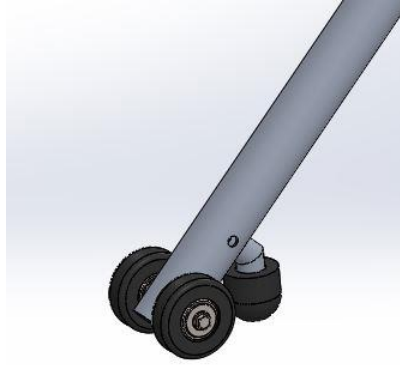
- iii. Lock the second stick with the first one according to the height.



Figure 8: Lock for Sticks



- iv. Fix the roller at the other end with axle and bearing.
- v. Fix the rubber on the breaking pad by simply putting it over the pad and pressing it.

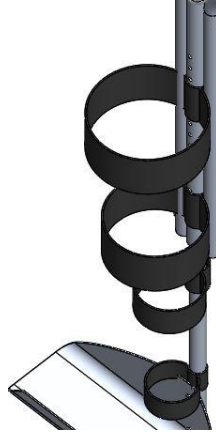


*Figure 9: Break and Tire*

### 3.2 Underarm and Second Leg Support

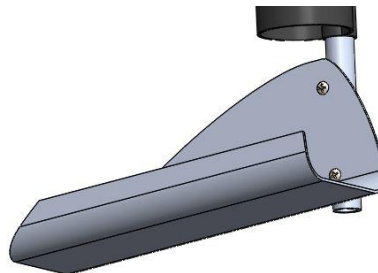
Following are the steps to assemble the underarm leg support:

- i. Adjust the height of the handle of the stick by using locks.



*Figure 10: Cuffs*

- ii. Fix the cuffs on the stick with nut and bolt.
- iii. Tight the footrest with the stick with the bolt.



*Figure 11: Footrest Joint*

## 4. Directions

This section will illustrate what is the safe places to use the device at and what does the user need when he is using the device.

### 4.1 when using the device

The user need an assistance to wear the device so be sure to have someone help you when you are wearing the device. As the user can't move his legs to wear the leg base and the cuffs he has to have someone who can assist him to do so.

### 4.2 where to use the device

The device has limited locations or places are applicable to use such as flat surfaces for most of the indoor places which are disability friendly. On the other hand, the places that don't have flat surfaces will impede the movement of the chest supporter

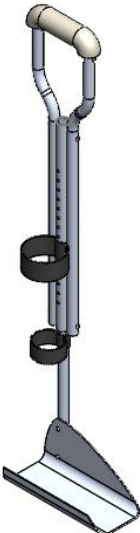
## Appendix A: CAD Model of Chest Supporter



## Appendix B: CAD Model of Underarm Leg Support



Appendix C: CAD Model of Second Leg Support



Appendix D: CAD Model of Complete Device

