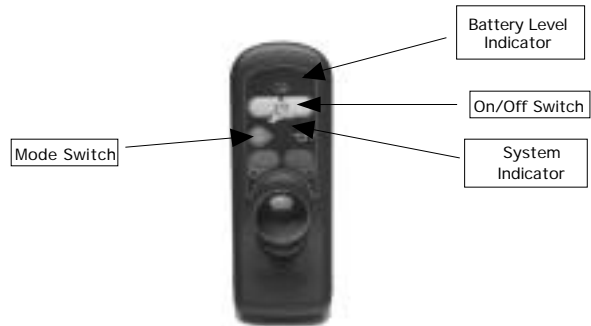


Smart Wheelchair Tutorial

1. To get acquainted with the Smart Wheelchair and what it can do, work through this tutorial. Have the User Handbook to hand, for reference.

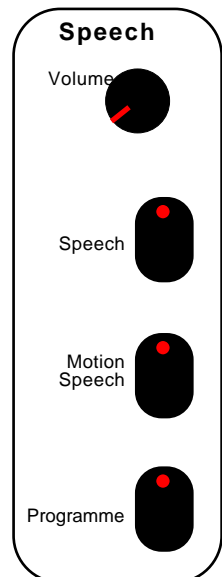
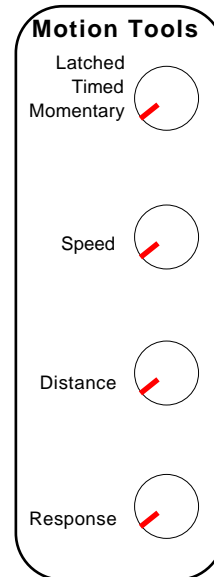
2. Switching on and off

- 2.1. Switch on
- 2.2. Engage the wheels
- 2.3. Drive with Program 2 - joystick mode
- 2.4. Drive with Program 1 - Smart Wheelchair mode



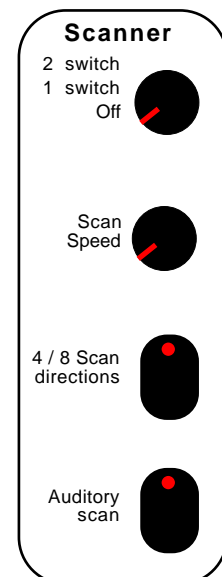
3. Motion and Motion Tools

- 3.1. Set Program 1
- 3.2. Plug switches into Forward, Back, Left and Right
- 3.3. Switch Scanner, Bump and Line Tools **off**
- 3.4. Set **momentary**. Drive in all directions
- 3.5. Turn speed to minimum and then maximum - drive in all directions and note the difference. Turn the speed to the mid-point.
- 3.6. Set **Timed**. Drive in all directions with minimum and maximum **distances** set
- 3.7. Set **latched**. Drive in all directions. Note pressing **any** switch when moving will stop the chair.
- 3.8. Set **momentary**. Plug a switch into **stop**. Make the chair move, then hit stop to halt it. Keep the stop switch held down and press Forward - note you can't move until the Stop switch is released.
- 3.9. Select **Motion Speech** and test it with all 3 motion tools. Turn the volume up and down. Switch the Speech off and on.



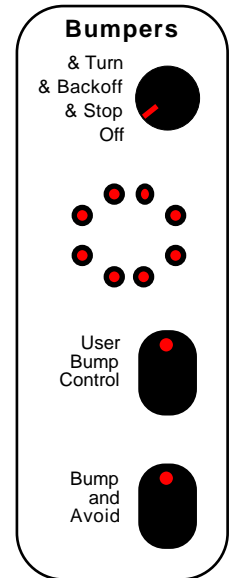
4. Scanner

- 4.1. Connect the Scanner, if it is not already plugged in.
- 4.2. Set **1 switch scan** and set **Scan speed** to the mid-point.
- 4.3. Press the Forward switch. Wait until the direction you want is indicated, and then press the switch to drive in that direction. Drive in all directions.
- 4.4. Try it with the scan speed at maximum and minimum
- 4.5. Set **2 switch scan**. Press the right switch to scan clockwise, Left switch to scan anti-clockwise, and Forward to drive.
- 4.6. Try it with 4 and 8 directions.
- 4.7. Try it with Auditory scan on.
- 4.8. Switch the Scanner off.



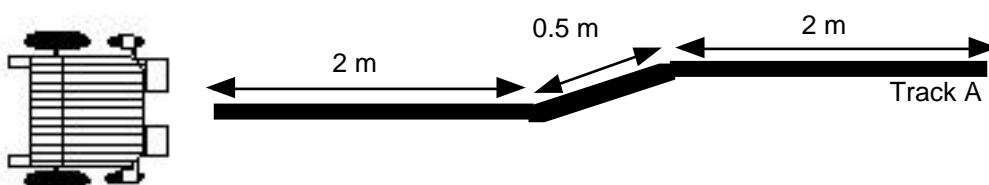
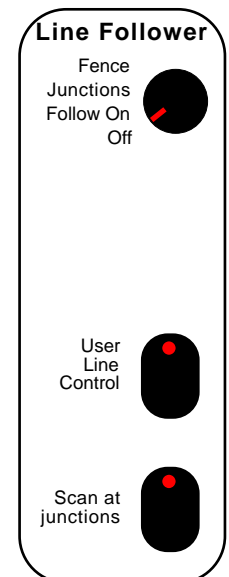
5. Bumpers

- 5.1. Set Bump & Stop
- 5.2. Press the bumpers at the back of the chair and note how the lamps on the Bumper panel light up.
- 5.3. Go Forward into an obstacle. Press Forward again - the chair will not go Forward until you press Back to back off.
- 5.4. Set **Bump and Back Off**. Test it in different directions
- 5.5. Set **Bump and Turn**. Test it in different directions
- 5.6. Turn the Distance to minimum and maximum - note that the distance backed off and turned is altered with the Distance control.
- 5.7. Set **Bump User Control**. Bump, and note that the user switch now controls the distance backed off and then turned.
- 5.8. Switch Bump Tools off



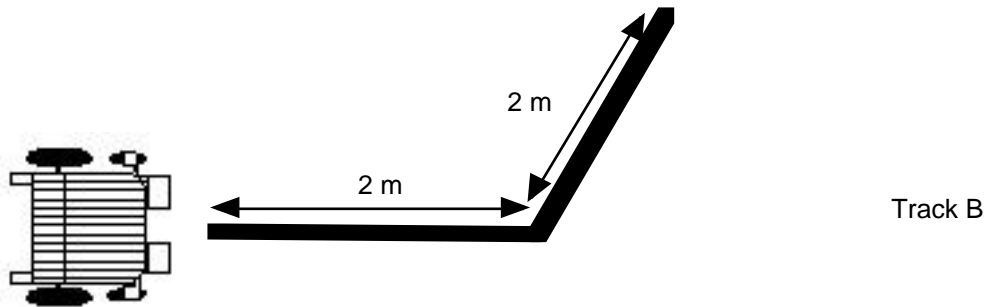
6. Line Follower

- 6.1. Laying track is something of an art, so be prepared to experiment with different layouts. If you have carpet, stick hook velcro to the back of the tape so you can move it around. If you have lino or wooden floor, stick the tape down with blue-tac or sellotape until you are sure the track is in the right place. The track sticks to almost all surfaces, but not concrete or tarmac. If you want to lay tracks outside, first stick the tape to aluminium, wood, or plastic strips, and then bolt the strips to the ground. Smile Rehab offers a track laying service if you need help.
- 6.2. Set Line Follow on.
- 6.3. Lay Track A - a straight piece of track in front of the chair - 2 x 2m with a 50 cm section in between, at a 30 degree angle
- 6.4. Go Forward. When the chair sees the line it will stop and say 'Found Line'
- 6.5. Go F to follow the track. Try pressing L or R - the chair will not turn off because 'Line Control' is set to 'chair'.
- 6.6. Continue to the end of the track - the chair will stop and say 'Lost Line'
- 6.7. Turn Right or Left all the way round to pick up the track again.
- 6.8. If the chair swings about when following the bend, check the speed that it is travelling. It should be going at 22 cm per second (i.e. it will take about 10 seconds to go along track A). If it moves faster than this, use the Programming switch to turn the line following speed down. (See 7 later, and the Manual). **If the line following speed is set too fast, it will not follow the track accurately, and will also not find junctions reliably.**



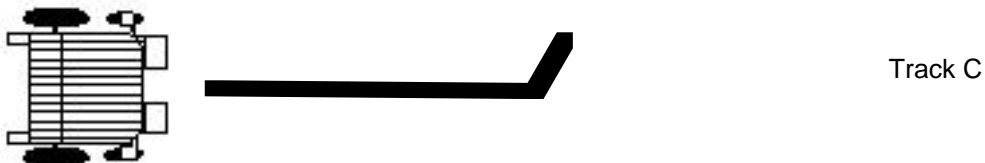
6.9.

6.10. Lay track B. Follow it - note that the angle is too tight for the chair to follow accurately so it swings off the track, but remembers where it last saw it, and finds it again.



6.11.

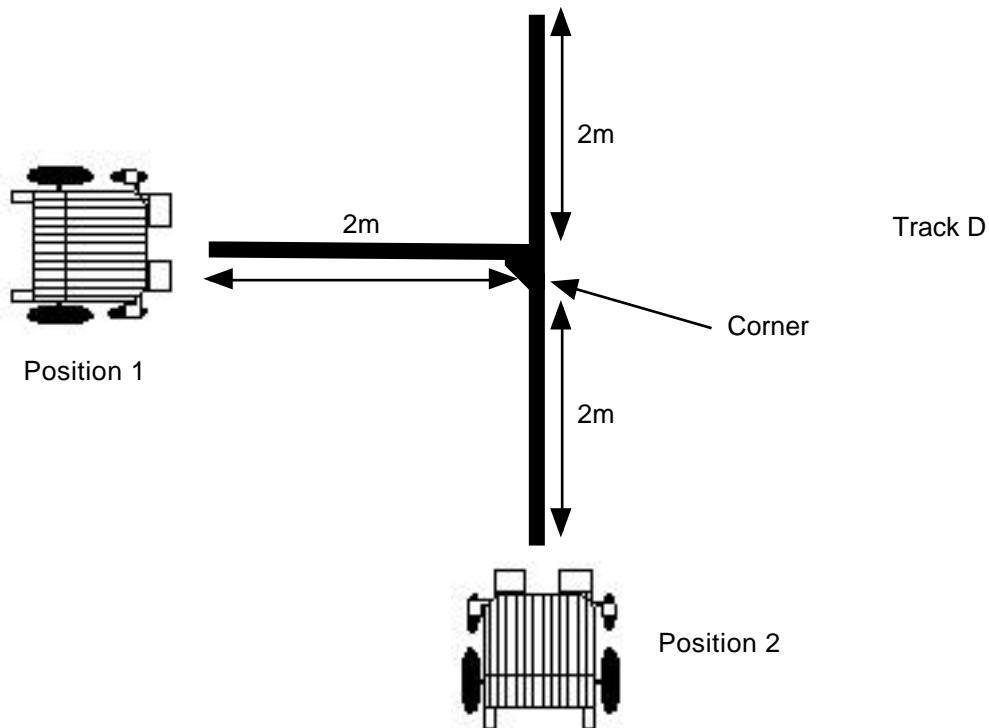
6.1. Track C. Here, the chair will swing back to find the track, but will not pick it up because the corner piece is too small. Since it can't find the track, the chair will give up after turning 120 degrees, and stop.



6.2.

6.3. Set Line User on. Follow the track, stop halfway along and press Left or Right. The chair should turn off slowly and then stop and say 'Lost Line'.

6.4. Track D. Set Line Junctions on. Put the chair in Position 1. Go Forward to the end of the junction. When the chair sees the junction it stops, goes forward a little, and then offers 'Left' or 'Right' using speech and the scanner. Press the Forward switch to choose the direction. The chair will turn to the junction and then stop and say 'Junction found - ready to go again'. Press Forward to go to the end of the track.

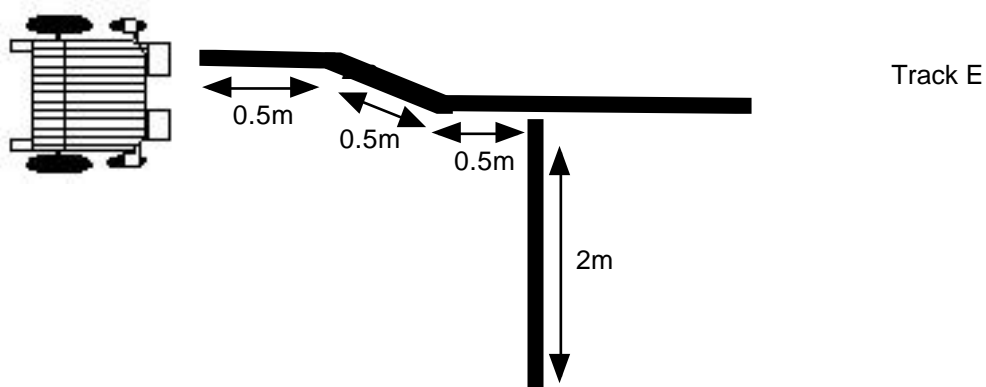


6.5.

6.6. Turn L or R to turn and pick up the track. Press Forward to follow the track to the junction. This time, the chair should stop and offer 'Forward' / 'Right', or 'Forward / Left'. Sometimes the chair may not see the junction - if this happens add a small corner and try again.

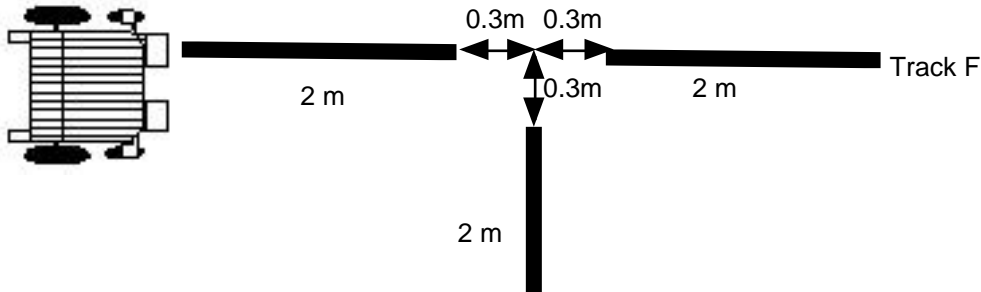
6.7. Put the chair in position 2. Cover the left hand junction track with a piece of paper. Go forward and the chair will not see the junction and drive straight on. You can use paper, card or hardboard to create 'points' to direct the track to particular destinations.

6.8. Track E. This time, the chair will miss the junction because it will still be recovering from the dog-leg bend just before it. To make the chair see a junction, put a 2m straight section before the junction and make sure the chair is following the track accurately.



6.9.

- 6.10. Track F is an alternative way to lay a junction, for pilots who have control over turning. Switch Line Junctions **off**, and lay track F. When the chair comes to the end of the track it will say 'Lost line'. Go forward, or turn, to pick up the track you want. Experiment with the distances between the tracks to find what works best.



6.11.

- 6.12. Use the Programming switch to set line speed to 40 (see 7 below). Now try following track A again - the chair will swing from side to side as it follows. Set line speed to 15 - it will go very slowly.
- 6.13. Switch Line Following off.

7. Programme switch

- 7.1. Set all tools off. Set **Momentary** and **Programme** on.

Turn the speed to maximum and press the Forward switch. The chair will say "Setting forward speed to 100% from x%".

Set Programme Off and press Forward. The chair will go F at full speed. Use the programme switch to set the Forward speed back to 50%.

- 7.2. Set Programme on.

Turn the speed to max and press the Left switch. Chair will say 'Setting veer compensation to 8 from 0'.

Set programme off, turn speed to the middle and press Forward. The chair will veer to the right as it goes forward. Use the Programme switch to set the veer back to 0.

- 7.3. Set **Bump and Back Off** and set **Programme** on. Set **Momentary**.

- 7.4. Turn speed to maximum and press Forward. The chair will say 'Setting bump reverse speed to x from y'. Set Programme off and test it. Then set the Bump speed to be y again.

- 7.5. Set **Bump and Turn, Timed** and **Programme** on. Set **Distance** to maximum and press Forward. The chair will say 'Pressing Bump Reverse Distance to x from y'. Set Programme off, and test it.

- 7.6. Set **Line Follow** on, **momentary**, Scanner and Bump Tools off. Press Forward and the chair will say "Setting Line Follow speed to x% from y%". Adjust the Speed knob again to set the speed back to y%.

8. Setting default values

- 8.1. Set all the settings back to their original values:

8.2. Switch off

8.3. Plug switches into 'Stop' and 'Back' and hold them down

8.4. Switch on

8.5. The chair will say 'Resetting tools and default values'