

INDEPENDENT DRIVING

Jennifer was recently involved in a motor vehicle accident and because of this is now paraplegic. She is 21 years old and has had a successful recovery since the accident. She is looking at her options to be able to drive independently and has sought guidance from an Occupational Therapist.

They are working together to determine what options would be most suitable for her strengths and capabilities. Jennifer came to our showroom with her Occupational Therapist to trial and view the various options available for driving the vehicle with hand controls.

Jennifer still has good upper body strength and uses a manual collapsible self-propelled wheelchair, so we demonstrated a range of mechanical hand control options. Our assessor identified that while Jennifer came to our centre seeking options for driving the vehicle, she will also need a way of transferring in and out of the vehicle and storing her wheelchair.

The following are the options we presented to Jennifer to provide a total solution for her to drive independently.

HAND CONTROL OPTIONS

OPTION 1: CAROSPEED

The **CAROSPEED** will give Jennifer a natural driving feeling as a first-time hand control user. The **CAROSPEED** controls acceleration and braking through a lever on the left-hand side of the driver's compartment next to the transmission tunnel. To use these, she will push the lever forward towards the dash of the vehicle to engage the brake and pull it back towards herself to engage the accelerator.

The **CAROSPEED** has the option to include a toggle on the hand grip which can be used to activate auxiliary functions such as indicators, wipers and headlights. This hand control setup will allow Jennifer to retain all the vehicle's safety features including the knee airbags.

Knee airbags are an additional safety feature of newer vehicles, and will soon become standard on all vehicles, as it improves occupant protection while driving the vehicle.

Some hand control options require the knee airbag to be disabled for installation, taking away a vital safety feature for the driver.



OPTION 2: CONVENTIONAL PUSH PAT / PULL

Traditionally there are *two* types of **CONVENTIONAL HAND CONTROLS** that are used in vehicles to operate the accelerator and brake of the vehicle.

These are: **PUSH/PULL** and **PUSH/PAT**; which involve a *push* towards the dash to engage the brake and a *pull* or *pat* (downwards push) for acceleration.

These options are the more popular for people who have been using this style of hand control throughout their lives. They are used to a certain type of driving style and it is quite difficult to change these habits later in life.



This hand control is on the right-hand side of the steering wheel and is supported through the steering column. Through our research this option does have a few limitations, as once installed you cannot adjust the driver's steering wheel position and it will impede on the vehicle's knee air bag safety system, *if* the vehicle is equipped with one.

USE OF VEHICLE AUXILIARY FUNCTIONS

When looking at hand control options the client also needs to consider the use of the vehicle’s auxiliary functions such as indicators, headlights, wipers and horn as well as the use of the steering wheel. Auxiliary functions need to be taken into consideration because one of the driver’s hands will be on the steering wheel and the other on the hand control, this limits their ability to control these functions. Typically, there are two ways to achieve this and the choice of the most suitable option would be determined through a driving assessment with an occupational therapist.

OPTION 1: INBUILT INTO HAND CONTROL

This option may be a toggle on the end of the hand control that allows the user to activate auxiliary functions through. This means that the user’s hand does not leave the hand control to activate auxiliary functions.

OPTION 2: INBUILT INTO STEERING DEVICE

This option would include a steering device such as a spinner knob with a key pad for auxiliary functions. This means that the user’s hand does not leave the steering device (on the steering wheel) to activate auxiliary functions.



TRANSFER OPTIONS

OPTION 1: TIP-UP PLATE

The **TIP UP PLATE** will allow Jennifer to bridge the gap between the driver’s seat and her wheelchair by acting as a fixed transfer platform. The transfer platform is easily removed or folded back when not in use.

The **TIP UP PLATE** requires minimal modification to the vehicle, and does not require any special exemptions from the road authority’s in each state.

This option would allow Jennifer to transfer using the strength she has, while still aiding in making the transfer easier by bridging the gap.



OPTION 2: TURNY SEAT



A programmable **TURNY SEAT** will allow Jennifer to easily slide from her wheelchair to the driver’s seat of the vehicle by bringing the driver’s seat all the way out of the vehicle and to the same height as Jennifer’s wheelchair with the push of a button.

This option would enhance Jennifer’s transfer from her wheelchair to the driver’s seat to create an effortless transition.

This transfer option is suited to someone who is losing strength and looking to prolong their vehicle independence.

STORAGE OPTIONS

OPTION 1: WHEELCHAIR ROOF HOIST

A **ROOF MOUNTED HOIST** is designed to lift a folded manual wheelchair from the ground, adjacent upwards and onto a rack on the roof or into a weatherproof casing.

It is operated by a switch installed on the dashboard or a hand-held control unit.

A roof mounted hoist will allow a wheelchair to be loaded and unloaded independently by Jennifer.



OPTION 2: AUTOMATIC DOOR OPENER AND PILLAR HOIST / LOADING ARM

This solution automatically opens the rear door of the vehicle and a pillar hoist/loading arm will swing out from inside to load and unload the wheelchair into the vehicle.

This option would allow Jennifer to load and unload her wheelchair from the comfort of the driver's seat.



CUSTOMER'S CHOICE

After reviewing and trialling available options, Jennifer chose the following:

HAND CONTROLS:

OPTION 1 - CAROSPEED

This solution will provide Jennifer with a comfortable transition to hand controls and after trialling both units this option was most suitable for her driving style. The **CAROSPEED** gives Jennifer a natural driving feeling with the lever on the left-hand side and by combining the use of required auxiliary controls in an easily accessible way.

This option also allows her to use the strength she has, to transition in and out of the vehicle with no obstructions or impositions in the driver's compartment.

TRANSFER OPTIONS: OPTION 1 - TIP-UP PLATE

The **TIP-UP PLATE** provided Jennifer with the bridge she required between the vehicle's seat and her wheelchair.

Jennifer preferred this option over the **TURNY** as it is not a major modification to the vehicle and she can retain her original automotive seat.

STORAGE OPTIONS:

OPTION 2 - AUTOMATIC DOOR OPENER AND PILLAR / LOADING HOIST

Jennifer chose the **AUTOMATIC DOOR OPENER AND PILLAR HOIST/LOADING** arm as this allowed her to store her wheelchair inside her vehicle without having to manually load the wheelchair herself.

COMPLETE SOLUTION

Jennifer has now completed her independent driving solution through **Mobility Engineering**.

Her vehicle has been fitted with:

-  **TIP-UP PLATE** to assist transfer
-  **AUTOMATIC DOOR OPENER AND PILLAR HOIST/LOADING** arm to assist loading and storing her wheelchair
-  **CAROSPEED** hand control with auxiliary functions and quick release spinner knob to easily steer the vehicle with her right hand.

