



Sample Medical Justification MKIV TrueTrack Driving System

Author: Byron Guisbert, Manager of Education, ASL

Alternative Access & MKIV TrueTrack Technology

Although the Gearless Brushless motor technology has many advantages with all methods of access to powered mobility, the most significant is found with methods other than a joystick.

Joystick users have direct control of speed, and constantly use that capability throughout the course of the day. Most of the individuals who use digital technology or switch access for various reasons (e.g. limited mobility experience or control) move at a much slower pace. With switch driving, they also have a fixed speed and acceleration associated with a set number of distinct directions.

The constant slow speed driving requires higher levels of torque to maintain movement. The chair requires enough power to overcome the friction between the wheel and surface (i.e. carpeting) combined with the power to overcome the internal friction of a motor & gearbox. This power requirement can be significant even with lightweight individuals during indoor maneuvering. The constant high loads have been known to contribute to motor issues such as worn/burnt brushes and current rollback.

The functionality for the user driving under this situation is reduced due to the impact of the high torque value to their overall driving. Some users might require so high a value to turn slowly indoors that their general driving “feels” jerky. This type of high load driving is also very draining to the batteries. These users typically find that they need large Group 24 batteries to get through a full day.

The motor technology of the TrueTrack system, the Gearless Brushless (GB) motors eliminates many of these issues due to the nature of the motor itself. This drive has no brushes to wear, nor a gearbox to add to the internal friction. Due to the reduced internal friction, it requires much lower power values to achieve the slow, indoor driving that these individuals need.

A side benefit of the GB technology is that the user will have longer battery life. An individual using low speed, torque and almost no acceleration draws a lower level of energy from the batteries, making the charge last much longer. They will have plenty of power for other functions such as powered seating functions, communication and computer access.

The most critical feature for individuals using digital or switches to operate their mobility system is TRACKING. With a direct and constant communication, the controller can maintain the directional command of the system with very little environmental effect. Translated, the chair will roll straight, without veering, even on sloped terrain such as a sidewalk, eliminating the need for the individual to constantly correct.

This feature, called MKIV TrueTrack, will greatly impact individuals who have no previous mobility experience as well as significantly reduce the effort required for those already driving where endurance and energy consumption are issues. The MKIV TrueTrack is a MUST for individuals who use a method of single switch scanning to access their driving system.

In our opinion, this provides maintenance free power even at slow speeds, prolonged battery life, no unintentional veering. The MKIV TrueTrack is a technological advancement that will directly impact individuals who use switches to operate their systems.

Sample Letter:

Johnny is a young man who has a diagnosis of Cerebral Palsy. He is not able to functionally propel a manual wheelchair and requires a power chair for independent mobility. He cannot perform functions which require fine motor skills. Therefore gaining access to a power chair through the standard joystick would not be possible. We have evaluated him using a system, which will allow him to access the chair and all of its functions through a series of switches placed at his head. When he puts his head in the headrest against the switch, he will go forward in the desired direction. When he turns his head to the left, touching the left pad, he will turn in that direction – and the same is true for the opposite side.

He has never been able to move on this own prior to this equipment, so we will be working with him while he gains experience and confidence being independent on various terrain and different environments.

The head switch driver control system, the ASL Head Array will install on the Invacare 3G Arrow power base. This base has been clinically proven to be both durable for prolonged use, and easily modified for changing medical requirements.

The importance of selecting this system is the electronic capabilities. The “brain” of the system, the controller, will provide easy access to selecting speeds and responses for Johnny. As he gains experience in moving, it will enable us to adjust them to maximize his independence. With programming, we have the capability to turn one switch on at a time, allowing Johnny to gain experience and confidence using a piece of medical equipment.

This chair comes with the MKIV TrueTrack driving system, which will play a major role in the durability, and minimizing maintenance and “down” time, while enhancing the responses of the system in various environments. With this system, the controller and motors have a constant communication. When Johnny activates the switch telling the system to go forward, the chair will maintain that path even on sloped environments. It will prevent the system from veering or drifting from side to side, thereby requiring less movement and energy from Johnny. We have tried him with chairs without this technology and found that he is not achieving functional driving. With the Invacare Arrow and MKIV TrueTrack, he will not need to constantly make correction, thus eliminating excess movement, decreasing fatigue and maximizing endurance – allowing Johnny to be as independent as possible.