# Understanding Proportional Device Selection

# What are my traditional joystick options?

# • QLNES= non-expandable

- Only the joystick provided can be used
- Bluetooth programming with Econ-I and Econ-W
- Can ONLY control two seating actuators (ex: tilt and recline)
- Meant for those with stable conditions who do not require any advanced features or complex seating beyond two power actuators
- Uses LEDs for profile, seat functions and error codes.

# • E/EX= expandable

- Advanced programming for customized driving needs of the client
- Additional input devices can be added to the system: head array, alternative joystick, switches
- Can control any number of seating actuators for power seat functions
- Smart phones and computers can be controlled through the Bluetooth component in the system
- Recommended for any users with progressive conditions, neurological conditions or who need customized programming features
- What additional electronics are needed to use an alternative proportional drive control?
  - Expandable controller/harness
  - A separate display or specialty control input module (SCIM)



QLNES 6 and 10 key





Q-Logic 3e

Q-Logic 3 EX



Enhanced Display



() (f

Specialty Control Input Module (SCIM)



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# Drive Control Options: Proportional

### What is a proportional device?

- Allows 360 degrees of control
  - More efficient
- Provides speed control
  - The farther away from the center the control is deflected, the faster the device will move
- Provides fine control over the power chair
  - Does require a certain level for motor control for graded fine motor movements
  - Small gentle movements move the chair slowly.

#### **Considerations for Proportional Joysticks:** Does the individual have:

- Range of motion necessary to move joystick in full throw?
- Motor control for graded movements?
- Adequate strength to deflect and sustain deflection?
- Adequate endurance to perform movement throughout the day?
- Alternate access locations for controlling a joystick?
- Adequate space for mounting the joystick in that location?

### What options are there for proportional controls? Assessing from steps 1-4:

1. Standard joystick (336 grams of force standard spring; Additional lighter spring is about 203 grams of force)

2. Standard joystick with modifications

Mounting or different toppers



Gatlin Midline Mount



Custom Tray with Cutout



Chin Control Harness



Joystick Handles







# 3. Alternative Joystick Options:



#### Mo-Vis Micro:

- 8.5 grams
  - Lightest option
- 3.33 mm throw





- Good for those with extremely weak muscular power
  - Ex: finger, lip, tongue, cleft of chin
- Common mounting:
  - Chin control harness, swing-away boom, gatlin mount or tray



# Precision Mini Proportional Joystick



- 43 grams of force
- 9.5-14.4 mm throw (depending on topper)
- Most precise, multi-axis controller
- For those with minimal range of motion and strength with fine tuning available through i-Drive programming
- Fully sealed for those with excess oral secretions



# Mo-Vis Multi:

- 49.89 grams of force
- 7.1 mm throw
- Designed for users with limited muscular power such as ALS or MS
- Ideal for use with chin, lip, or finger joystick
- Common mounting:
  - Chin control harness, swing-away boom, gatlin mount



# All Around Lite:

- 120 grams of force
- 7 mm throw
- Typically used as a standard joystick but just has ½ the grams of force required for use
- Common mounting:
  - Gatlin mount, swing-away or flip-down hardware attachment at traditional joystick location











#### Mushroom:

- 227 grams of force
- 19 mm throw
- Designed for users that need to rest their wrist and use a gross grasp or for those using their foot to drive
- Small and large mushroom ball sizes
  - Ball designed to fit contour of the hand
  - Small: width (1.97") height (1")
  - Large: width (2.5") height (1.65")
- Common mounting: gatlin mount, swing-away arm mount, footplate mounted





- 249 grams of force (standard joystick)
- 19.5 mm throw
- Free-style joystick for mounting anywhere
  - Great for those who may get overwhelmed with the traditional joystick display
- Can also be used as an attendant control
- Common mounting: Gatlin mount, swing away or flip down hardware attachment at traditional joystick location



# All Around Heavy Duty:

- 650 grams of force
- 40 mm throw
- Joystick topper can not be changed as it is built into the joystick for maximum strength
- Designed for users with high tone/spasticity or dystonia to be used at the hand or foot
  - Those with exaggerated, forceful movements
- Common mounting: gatlin mount

# **Mo-Vis Road Compensation Feature:**

- Slows the chair down to a predetermined speed when the sensor senses excessive vibrations
  - Ex: going over rough terrain
- Uses a sensor built into all of the Mo-Vis joysticks
- <u>CLICK HERE</u> to watch a demonstration.





# 4. Other alternative proportional devices

- RIM control: uses a proportional joystick mounted at the head with an additional toggle switch
- Other manufacturer devices:
  - Proportional head array: the firmer you press into a pad on the head array, the faster the chair goes
  - Touch pad: the further away from center you swipe, the faster the chair goes

# **MoVis Head Control**

- Fully Proportional
- Allows for Customization of proportional ranges on each pad
  - Minimum of 100 grams of force.
- Has ability to add veer capabilities in the back head pad which is focused on turning.

# **MoVis Foot control**

- Fully Proportional
- Attaches to the footplate
- Has four pegs to assist with ease of control and turns
- Also includes a foot strap to use if desired.
- Standard movements (can be reprogrammed in Wheelchair electronics) to operate are:
  - Plantarflexion forward

- Dorsiflexion reverse
- Ankle rotation for left and right turns









ΑΝΤΙ

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Effective Date: 6/29/2023

# Programming: What are some options for proportional customization?

Not inclusive. Always reach out to your representative for programming assistance.

# Joystick Throw:

- Determines amount of travel that the joystick must be moved before reaching full speed
- Shortening: user only moves joystick a portion of the distance in order to get to max speed
- Requires greater motor control the shorter you make it
- When throw is less than 60-70%, look at alternatives like a joystick with less throw built in

# Center Deadband:

- An imaginary circle around the center of the joystick position
- Joystick must be moved past the dead zone in order for the motors to engage and drive
- Increases the neutral zone of the joystick
  - Starts at size of a dime and increases all the way to about the size of a 50-cent coin
- Prevents unwanted movement through the joystick before the consumer stabilizes on the joystick

# Tremor Suppression/Dampening:

- Increasing this parameter delays the wheelchairs response to a command while the wheelchair is moving forward
- Turned up to ignore tremors and only intentional commands are recognized
- Also works well when someone has upper extremity weakness driving over bumpy areas











# Assign Directions:

- Allows orientation of joystick movements to be set up differently
- Must be inverse of each other but for example: pulling back can be forward and pushing forward can be reverse or forward and reverse can be placed in the traditional R/L command spots

#### **Three-Direction:**

- Allows the joystick to provide full direction control by only moving in three directions
  - Ex: pull back, right, and left
- Great for those getting progressive strength but still have some difficulty controlling all directions
- Can be changed over time to give all four directions when/if appropriate

#### Switch Input Joystick:

- Programming feature that takes the 360 freedom out of the controller where direct movements must be given in each direction for a command
- Works well for users who find the freedom of 360 control to be too sensitive
- Can be adjusted by a representative as a user needs if wanting to return to 360 degrees of freedom or true proportionality









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### **Revisions:**

Rev.	Date	CR/CO	Details of Change
0	5/7/21	0630-21	New education form
0	6/8/23	0749-23	Aged document review: No changes
A		001187-25E	Added the QLNES, Stealth foot drive and Stealth proportional head control to the document and removed the NE and NE+ drive controls.



