Multi Joystick

Stealth's mo-Vis Series Multifunctional

Proportional Wheelchair Joystick

mo·vis
move with vision

Stealth Products strives for 100% customer satisfaction. Your complete satisfaction is important. Please contact us with feedback or suggested changes that will help improve the quality and usability of our products. You may reach us at:

> Stealth Products, LLC
> 104 John Kelly Drive, Burnet, TX 78611
> Phone: (512) 715-9995   Toll Free: 1(800) 965-9229
> Fax: (512) 715-9954   Toll Free: 1(800) 806-1225
> info@stealthproducts.com   www.stealthproducts.com

| EC | REP |

MDSS GmbH
Schiffgraben 41
30175 Hannover, Germany

CE

General

The Stealth mo-Vis Series Multi Joystick, with its SUB D9 pin connector, is compatible with R-Net™ and Q-Logic™ connections.

Read and understand all instructions prior to the use of the product. Failure to adhere to instructions and warnings in this document may result in property damage, injury, or death. Product misuse due to failure of the following instructions will void the warranty.

Immediately discontinue use if any function is compromised, parts are missing, loose, or shows signs of excessive wear. Consult with your supplier for repair, adjustment, or replacement.

The Multi Joystick integrated cabling and included interface is considered a non-serviceable part.

If this document contains information you do not understand, or there are concerns about safety or operation, contact your supplier.

- Multi Joystick is compatible with all chairs except Invacare.

i

Important Information!

All persons responsible for fitting, adjustment, and daily use of the devices discussed in these instructions must be familiar with and understand all safety aspects of the devices mentioned. In order for our products to be used successfully, you must:

- Read and understand all instructions and warnings.
- Maintain our products according to our instructions on care and maintenance.
- Devices should be installed and adjusted by a trained technician.

Supplier Reference

Supplier: _____

Telephone: _____

Address: _____

                     _____

Purchase Date: _____

Model: _____

Before you install or begin using this product, it is important that you read and understand the content of these installation and operating instructions.

The installation instructions will guide you through the options and possibilities with the product. Stealth's mo-Vis Series Multi Joystick should be adjusted with the mo-Vis Configurator Software.

Instructions are written with the expressed intent of use with standard configurations. They also contain important safety and maintenance Information, as well as describe possible problems that can arise during use. For further assistance, or more advanced applications, please contact your supplier or Stealth Products at (512) 715-9995 or toll free at 1-800-965-9229.

Always keep the operating instructions in a safe place so they may be referenced as necessary.

All information, pictures, illustrations, and specifications are based on the product information that was available at the time of printing. Pictures and illustrations shown in these instructions are representative examples and are not intended to be exact depictions of the various parts of the product.

Ordering Documentation

You can download additional copies of this user manual on the Stealth website:

http://www.stealthproducts.com/gui/docs/?type=usr

Or search:

mo-Vis Multi Joystick User Manual in the search bar at the top of the page.

Our products are designed, manufactured, and produced to the highest of standards. If any defect in material or workmanship is found, Stealth Products will repair or replace the product at our discretion. Any implied warranty, including the implied warranties of merchantability and fitness for a particular purpose, shall not extend beyond the duration of this warranty. Stealth Products, LLC does not warrant damage due to, but not limited to:

- Misuse, abuse, or misapplication of products.
- Modification or product without written approval from Stealth Products, LLC.
- Any alteration or lack of serial number, where applicable, will automatically void this warranty.
- Stealth Products, LLC is liable for replacement parts only.
- Stealth Products, LLC is not liable for any incurred labor costs.

No person is authorized to alter, extend, or waive the warranties of Stealth Products, LLC.

Stealth Products warrants against failure due to defective materials or workmanship:

Covers: 180 days

Hardware: 5 years

Electronics: 3 years

In Case of Product Failure

In the event of product failure covered by our warranty, please follow the procedures outlined below:

1. Call Stealth at +1 (512) 715-9995 or toll free +1-800-965-9229.
2. Request the Returns Department or obtain an RA from the Returns Department and follow department or documentation instructions.

Warning Labels   6.1

Warnings are included for the safety of the user, client, operator and property. Please read and understand what the signal words **SAFETY, NOTICE, CAUTION, WARNING** and **DANGER** mean, how they could affect the user, those around the user, and property.

⚠ DANGER	Identifies an **imminent** situation which (if not avoided) will result in **severe injury**, **death**, and **property damage**.
⚠WARNING	Identifies a **potential** situation which (if not avoided) will result in **severe injury**, **death**, and **property damage**.
⚠CAUTION	Identifies a **potential** situation which (if not avoided) will result in **minor** to **moderate injury**, and **property damage**.
NOTICE	Identifies important information not related to injury, but possible **property damage**.
SAFETY	Indicates steps or instructions for safe practices, reminders of safe procedures, or important safety equipment that may be necessary.

Limited Liability   6.2

Stealth Products, LLC accepts no liability for personal injury or damage to property that may arise from the failure of the user or other persons to follow the recommendations, warnings, and instructions in this manual.

Testing   6.3

Initial setup and driving should be done in an open area free of obstacles until the user is fully capable of driving safely.

The Multi Joystick should always be tested without any person sitting in the wheelchair until every alteration of the physical installation or adjustment of the joystick is complete.

Purpose   7.1

The Multi Joystick is a multifunctional operable joystick that requires reduced force, designed for people with limited muscular force or neuro-muscular diseases such as ALS and MS. Thanks to its flexibility, the joystick can easily be controlled by any body part including finger, chin, and lip.

Features   7.2

The Multi Joystick is:

- Fully proportional, with reduced throw and force (49.89g, .11lbf).
- Built in a compact and discrete housing, with two 1/8" (3.5mm) jacks for switch input.
- Linkable with one or two switches (on/off and mode switch), with any 1/8" (3.5mm) jack.
- Fully adjustable to individual possibilities and needs with well-thought electronics.
- Easily configurable with the free mo-Vis Configuration Software for positioning of the joystick. For other parameters, the wheelchair software settings are used.
- R-Net™ and Q-Logic™ compatible.

Mounting   7.3

The Multi Joystick can be mounted on any location on the wheelchair:

- By attaching the Power Chin Boom to the chair, the Multi Joystick can be used as a chin joystick.
- Compatible with Stealth's joystick mounts[1] including:

    -The SM600-661M mount for the SM661M

    -The Gatlin GAT461M mount for the Gatlin 400 Series

    -The ARMS260 Series

1.   No tray option is currently available for the Multi Joystick.

Multi Joystick Package   8.1

A Multi Joystick package consists of the following parts:

Product Description	Part Number
Multi Joystick set, with integrated cabling and interface	IDM-MULTI-9

- The Multi Joystick comes with an accessory pack that includes the following items:

Product Description	Part Number
Multi Joystick Accessory	IDM-40
Multi Joystick Mounting Plate with 4 screws	
Quick to Mount Half Clamp with bolt[1] 14mm	
Quick to Mount Rod[2] D6 50mm	

- The Multi Joystick Ball can be ordered separately if needed.

Product Description	Part Number
Multi Joystick Ball	IDM-07

1. The Quick-to-Mount Half Clamp with Bolt is only compatible with mo-Vis hardware.
2. The Quick-to-Mount Rod is only compatible with mo-Vis hardware.

2

Multi Joystick Unit Detail   8.2

The connections of the Multi Joystick unit have protective covers to avoid the intrusion of dust or moisture during usage.

NOTICE	Before inserting a connector, remove the protective cover.

⚠ CAUTION

Always put or keep the protective cover in case the connections are not used.

NOTICE

Not all of the items that come with the Multi Joystick will be used for mounting onto a Stealth Product. All of these items are compatible with the mo-Vis Power Chin Boom.

Custom Configurations   8.3

Stealth has the ability to create custom configurations for our mounting hardware in order to create the best possible fit for the client.

The movements of the joystick are translated into according movements of the wheelchair, driving, or menu navigation.

Common practice to navigate the wheelchair with the Multi Joystick is as follows:

- **Direction**: Point the joystick into the direction you want the wheelchair to move. The wheelchair then moves in that direction.
- **Speed**: The further you move the joystick from the default (center) position, the faster the wheelchair moves.
- **Stop**: Whenever you release the joystick, the joystick moves back to the default (center) position and the wheelchair stops.

Joystick Safety 9.1

- **Do not use** if the joystick handle is damaged, missing, or cracked.
- **Do not use** if the joystick does not return to neutral position independently.
- **Do not use** if the joystick does not move to and from neutral position smoothly.

Safe Driving 9.2

It is mandatory to have a wheelchair power on/off switch, which immediately shuts down the wheelchair power and electronics, and is within easy reach of the user while driving. This allows the wheelchair to instantly stop in case of problems or an emergency.

⚠ WARNING	The on/off switch must be available to the user at all times.

In case the wheelchair responds in an unexpected way, the user must immediately release the joystick or use the power switch.

You can connect one or two switches[1] to either the Multi Joystick or the interface. One connection is to control the power on and off (pwr) and one connection is to control a mode (in).

The interface has a cable with a SUB D9 connector and a 1/8" (3.5mm) jack connection. The SUB D9 connecter and the 1/8" (3.5mm) jack connector can be directly plugged into the electronics of the wheelchair. The joystick then controls the wheelchair and all of its functions (driving, electric gears, lights, etc.).

The jack connector can be used to directly route the signal of an attached switch to a wheelchair 1/8" (3.5mm) jack input.

<div align="center">

Jack on/off (pwr) = red

Jack mode (in) = yellow

</div>

1. Any switch with a 1/8" (3.5mm) jack connector may be used with the interface.

5

Preparations   11.1

Only a qualified service technician may install the Multi Joystick.

⚠ **WARNING**

An incorrect programming of the wheelchair electronics may cause damage to the devices or injury to the user.

Tools   11.2

Use an 4mm Allen wrench to install the Quick-to-Mount Rod, Clamp, and Multi Joystick.

⚠ **CAUTION**

Use the proper tools to install and adjust the Multi Joystick. The use of improper tools may cause damage to the device.

Installation Plan   11.3

Set up an installation plan before starting the installation. This plan should take into account:

- Where the Multi Joystick should be placed.
- How the Multi Joystick will be operated: hand, chin, or lip.
- The position of the joystick. Do not place the joystick where it may be obstructed from moving in any direction.

⚠ **CAUTION**

Any connection must always be secured with all delivered screws. Only use the screws provided in the package.

Serial Number Sticker   11.4

The additional serial number sticker, which can be found in the package, should be adhered to the back of this manual.

Installation[1]

- Define the position of the joystick. When the jack connections are at the right hand side, a forward movement of the joystick will result in an according forward movement of the wheelchair.

- If needed, you can change this positioning in steps of 90° with the mo-Vis Configurator Software.

- Determine which of the 3 slots you will use to guide the cable.

- Secure the Mounting Plate with the 4 screws to the base of the joystick housing with a Phillips Head screwdriver.

⚠**CAUTION**

Tighten the screws firmly, but not excessively. Excessive force may damage the unit.

- Place the Quick-to-Mount (Q2M) Half Clamp at the bottom of the unit[1].

- Use an Allen Wrench to mount the 14 mm bolt.

- Slide the unit over a Q2M Rod or any other 6mm rod to position the Multi Joystick on the wheelchair.

- A Q2M Rod D6 50mm is within your package.

- Place and secure the Interface Unit and all cabling on the wheelchair.

---

1. These installation instructions are for mounting the Multi Joystick to the Power Chin Boom. Please refer to the correct installation manual for instructions on mounting the Multi Joystick to a Stealth Product.

> ### ⚠ WARNING
>
> Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.

- If required, place a power on/off (pwr) and/or mode (in) switch, secure their cabling and insert their connections.
- You can either use the connections on the Joystick unit or on the Interface unit.
- Connect the cabling to the wheelchair electronics.

> ### ⚠ CAUTION
>
> Do not use the connections on the joystick and interface unit at the same time.

> ### ⚠ CAUTION
>
> Before inserting a connector, remove the protective cover. Keep the protective cover in case connections are not used.

> ⚠ **WARNING** All wheelchair electronics must be switched off.

- The inputs facing out on the right hand side indicate the joystick is in the default position.

If the Multi Joystick is not mounted with the jack connections at the right hand side, you can adjust the joystick direction in steps of 90° with the mo-Vis Configurator Software.

- This software must be installed and ready to use on a pc.
- Depending on your profile (User, Attendant, Dealer, OEM), you will be able to change a number of parameter settings.
- To define the movements during the installation procedure, we advise having at least a dealer profile.

Defining Parameter Settings   13.1

To define the parameter settings, proceed as follows:

- Connect the Multi Joystick Unit to a pc. Use a standard mini-USB cable.
- Configure the parameters with the software.
- Upload the configuration.
- Test the configuration and adjust if necessary.

Parameter Settings   13.2

Please see "Settings" for a list of all parameter settings. (Section 19.0)

- The mo-Vis Configurator Software is optional to download. The joystick and its settings can be configured through the chair's display.

9

Q-Logic™ Programmer Setup

Bookmark Buttons

Select *Options* in the main menu. Button actions are displayed on screen above corresponding buttons. In other menus hold button to bookmark settings, and press button to quickly go to bookmark.

Navigation

Arrows navigate the main menu. *Up & Down to* navigate the menus, *Right* to open a menu item and *Left* to return to previous menu.

Plus & Minus

Toggle settings or changes values of the highlighted parameter.
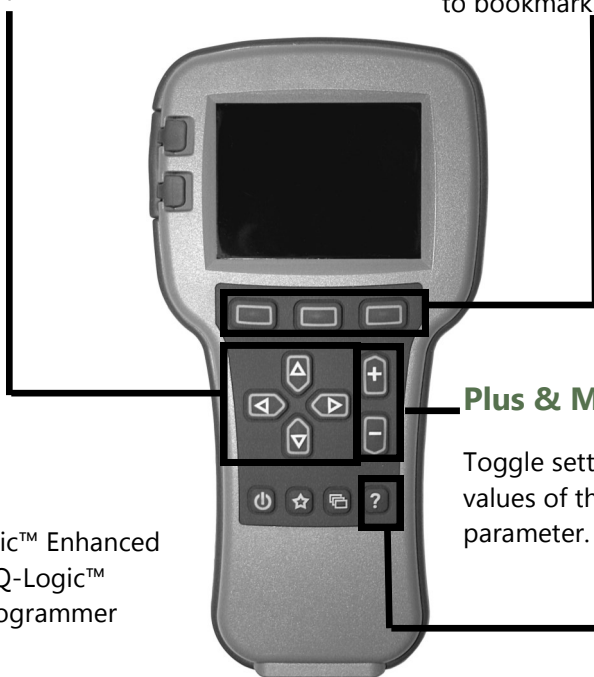
NOTE: Q-Logic™ Enhanced Display and Q-Logic™ Handheld Programmer required.

Help Button

Displays information about options selected on screen.

NOTICE

For new chairs that have never been programmed, a power cycle will need to be completed after the joystick has been calibrated and before the joystick throw can be adjusted.

---

1. Plug in the Q-Logic™ Handheld Programmer (Previous Page) to the Q-Logic™ ED (Enhanced Display) or to the standalone Joystick if SCIM (Specialty Control Input Module - Figure 3) is in use.
2. On the Q-Logic™ Programmer, navigate to *Program Adjustments* Σ *Specialty Control* Σ *Active Device*.
3. Toggle *Active Device* to *Proportional* with the *Plus & Minus* ± buttons.
4. Unplug the Q-Logic™ Handheld Programmer and *Turn Off* the system. The chair should now be programmed to recognize the All-Round Joystick. Be sure to re-engage the motors before operation.

NOTICE

If using Q-Logic™ Specialty Control Input Module (SCIM Figure 3), you will need any type of mechanical switch to plug into the power port of the standalone joystick to power ON/OFF the chair and ensure the SCIM as master control. Q-Logic™ programmer required.
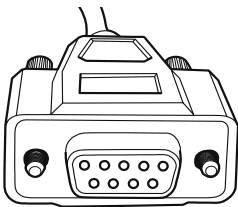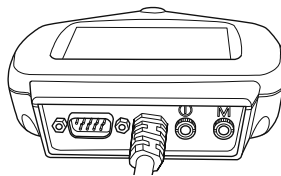

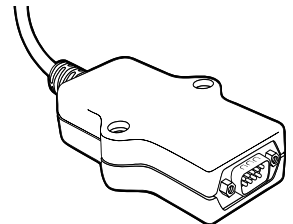**9-Pin Connector**   **Q-Logic™ Drive Control System**   **Q-Logic™ SCIM**

Figure 1   Figure 2   Figure 3

Q-Logic™ Proportional Joystick Setup   15.1

1. Plug in the Q-Logic™ Handheld Programmer to the Q-Logic™ ED (Enhanced Display) or to the standalone joystick if SCIM (Specialty Control Input Module - Figure 1) is in use.

2. On the Q-Logic™ Programmer, navigate to *Program Adjustments* ⅀ *Specialty Control* ⅀ *Proportional* ⅀ *Joystick Set Ups* ⅀ *Proportional*. Here you can fine tune joystick performance and functionalities such as:

   - *Center and Axis Deadband*

   - *Tremor Suppression*

   - *Assign Direction*

   - *Joystick Calibration and Throw*

   - *Switch Operation*

Center Deadband   15.2

The Center Deadband parameter defines how far the joystick must be moved from neutral position to engage moving the power chair. The value corresponds to the diameter of a circle around the joystick center position. No drive or menu instruction will be executed unless the joystick is moved out of this circle.

- Select *m: Center Deadband* option with the navigation's *Up & Down* buttons, ↕ then press the *Right* button. ⅀

- Use the *Plus & Minus* ± buttons to adjust the *Center Deadband*. Adjustment ranges from 5 to 50%. Press *Left* navigation button to save.

Axis Deadband   15.3

The Axis Deadband parameter defines how far the joystick has to move to be recognized. This can be helpful, if a toggle command has to be made.

- Select *m: Axis Deadband* option with the navigation's *Up & Down* buttons, ↕ then press the *Right* button. ⅀

- Use the *Plus & Minus* ± buttons to adjust the Axis Deadband. Adjustment ranges from 5 to 50%. Press *Left* navigation button ↶ to save.

Tremor Suppression   15.4

The tremor suppression sets a neutral range that suppresses possible tremors (trembling of hand or drive surface conditions) on the joystick. Setting from 0% to 100%.

1. Follow *Section 15.1* Steps 1 and 2.

2. Select *m: Tremor Suppression* option with navigation's *Up & Down* buttons, ↕ then press the *Right* button. ⅀

3.   Using the *Plus & Minus* ± buttons to adjust tremor suppression. To turn back off, adjust to 0%

4.   When done, press *Left* navigation button Ⅽ to return to menu and save.

NOTICE

When short command is used to operate the power chair, the Tremor Suppression should not be set over 90%, otherwise any short throw will be ignored.

Assign Direction Function   15.5

The Assign Direction Function allows you to set the axis direction. For example, if you want to change *Forward* (X axis 0 to 100) to *Reverse* (X axis 0 to −100) or *Left* (Y axis 0 to −100) to *Right* (Y axis 0 to 100). If you switch *Forward* to *Reverse*, the system will automatically change *Reverse* to *Forward*. Same with *Left* and *Right*. Parameters are measured by percent (%).

1.   Follow *Section 15.1* Steps 1 and 2.

2.   Select *Assign Direction* option with navigation's *Up & Down* buttons, ↕ then press the *Right* button. Ⅾ Then follow screen instructions.

3.   When done, press OK to save.

Switch Operations   15.6

The Switch Operations parameter sets the joystick to operate like a switch input making it not proportional. When the joystick is moved out of neutral, more than 50% of the operating range, it will activate full throttle (100%) corresponding to the desired direction. Switch Operations can be set *ON* or *OFF*.

1.   Follow *Section 15.1* steps 1 and 2.

2.   Select *m: Switch Operations* option with navigation's *Up & Down* buttons, ↕ then press the *Right* button. Ⅾ Then follow screen instructions.

3.   Use the *Plus & Minus* buttons ± to toggle ON/OFF.

4.   When done, press *Left* navigation button Ⅽ to return to menu and save.

Joystick Calibration   15.7

      Calibrating your joystick will set the range of motion for the axes or re-center it to improve operation.

> ### ⚠ CAUTION
>
> Calibration MUST be done for the joystick. This is a new safety feature update included in the Q-Logic™ Programmers.

1. Follow *Section 15.1* steps 1 and 2
2. Select *Calibrate* option with navigation's *Up & Down* buttons, ⇕ then press the *Right* button. Σ
3. Programmer will prompt for a calibration of the joystick. Follow directions and spin the joystick twice.
4. Calibration will be complete. Press *OK* to save. Exit screen.
5. Power cycle chair.

Joystick Throw   15.8

      The throw is the place where the joystick is stopped in a particular direction. Throw distance is the maximum distance/angle the shaft can be moved in a particular direction. The throw should be set to the maximum distance/force the individual utilizing it is capable of.

1. Once power cycle from *Section 15.*7 is complete, follow *Section 15.1* steps 1 and 2.
2. Select *Throw* option with navigation's *Up & Down* buttons, ⇕ then press the *Right* button. Σ
3. This setting will turn power chair's system to *IDLE MODE*, press *OK* if prompted. Then follow screen instructions.
4. Angle shaft with individual's maximum force. Adjust the parameters by pressing the *Plus* or *Minus* buttons. ±
5. When it is all done you will be prompted to save the new configuration. Press *Yes* to save.

R-Net™ Omni Setup   16.1

Navigation

Up & Down button to navigate the menus, *Right* button to open a menu item and *Left* button to return to previous menu.

Mode

Switch mode to drive, power seating, or OBP (onboard programming).

Profile
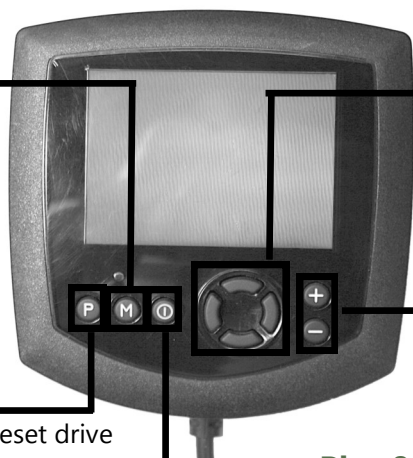
Switch between preset drive profiles and activate device as control.

Plus & Minus

Toggle settings or changes value of the highlighted parameter.

Power

Turns chair *ON/OFF*.

R-Net™ Programming Dongle

1. Plug in the R-Net™ Programming Dongle (Previous Page) in line with the Omni display (Previous Page) and chair's electronics, and then power *ON* the chair.
2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
3. With the navigation buttons, navigate to *Omni* Ͻ *Global* Ͻ *Sleep 12V*, and toggle *Sleep 12V* to *On* with the *Plus & Minus* ± buttons.
4. Navigate back ↰ to the *Omni* menu, then navigate to *Omni* Ͻ *Port 1* (or *Port 2* if the All-Round is in Port 2).
5. In the *Port* menu, toggle *SID* to *Prp* with the *Plus & Minus* ± buttons.
6. In the *Port* menu, navigate ± to *Switches*.
7. In the *Switch* menu, toggle *Switch Detect* to *Off* with the *Plus & Minus* ± buttons.
8. In the *Switch* menu, toggle *9 Way Detet* to *Off* with the *Plus & Minus* ± buttons.
9. Navigate back ↰ to the *Omni* menu, and then navigate to *Profiled*.
10. In the *Profiled* menu, configure a profile to use the port for the All-Round Joystick.
11. Power off the chair, remove the R-Net™ Programming Dongle, reconnect the Omni Display, and power on the chair.
* The chair should now be programmed to recognize the All-Round Joystick. Be sure to re-engage the motors before operation.

Joystick Calibration   16.2

1. Plug in the R-Net™ Programming Dongle in line with the Omni Display and chair's electronics, then power on the chair.
2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
3. With the navigation buttons, navigate to *System* Ͻ *Joystick Calibration*.
4. The system will ask to set each direction independently by pressing towards that specific direction. For example *Forward* (0 to 100), *Left* (0 to –100), *Reverse* (0 to –100) and *Right* (0 to 100). Figures are measured by percentage (%).
5. Calibration will be successful when the axis to the referred direction reaches its maximum and its counterpart axis is close to 0. For example, *Forward* will look like:
   ⟹ forward/reverse 90% > left/right 3%
   Left will look something like:
   ⟹ forward/reverse 5% > left/right –87%
6. When all four axes are calibrated, you will see a green checkmark on screen.
7. Power off the chair, remove the R-Net™ Programming Dongle, reconnect the Omni Display, and power on the chair.

R-Net™ Proportional Joystick Setup   16.3

1. Plug in the R-Net™ Programming Dongle in line with the Omni display and chair's electronics, then power on the chair.
2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
3. With the navigation buttons, navigate to *Controls* ⅀ *Joystick*. Here you can fine tune joystick performance and functionalities such as:
   - *Active Throw Details*
   - *Active Orientation and Orientation Details*
   - *Deadband*

Throw   16.4

The throw is the place where the joystick is stopped in a particular direction. Throw distance is the maximum distance/angle the shaft can be moved in a particular direction. The throw should be set to the maximum distance/force the individual utilizing it is capable of.

Active Throw

- Follow first 3 steps in *Section 16.3*
- Use the navigation's *Up & Down* buttons, ↕ select *Active Throw* from list and press *Right* button. Select Port with *Up* & *Down* button ↕ then *Right* ⅀ again to set up.
- System will guide you through the setup, following the on screen instructions move Joystick towards the defined direction with the maximum force possible. Press the *Plus* button + to save and proceed to the next step. Values range from 25% to 100%.

Throw Details

Throw Details will allow you to see all Active Throw setups for all profiles. To select profiles, move navigation buttons (*Left* or *Right*) � ⅀ and to select axis (*Up* or *Down*). ↕ The selected axis/profile can be adjusted by increments of 1 or in increments of 10 using the *Plus & Minus* buttons ±. For increments of 10, keep *Plus* or *Minus* button ± pressed. Values range from 25% to 100%.

Axis Orientation   16.5

The Axis Orientation allows you to switch the axis behavior. For example, the X-axis (*Forward/Reverse*) can be switched making *Forward* direction *Reverse*.

Active Orientation

- Follow first 3 steps in *Section 16.3*
- Using the navigation's *Up & Down* buttons, ⬍ select *Active Direction* from list and press *Right* button. ⅀ Then press *Plus* + for Port 1 or *Minus* - for Port 2 to select port to set up.
- System will prompt you to set the *Forward* (X-axis) by angling shaft. Automatically, *Reverse* will be set to opposite value. Values available: N (*North/Forward*), W (*West/Left*), S (*South/Reverse*) or E (*East/Right*)
- Next you will be prompted to set the *Left* (Y-axis) by angling shaft. Automatically, *Right* will be set to opposite value. Values same as step 3. Power cycle chair.

Orientation Details

Orientation Details is similar to Throw Details, but it sets the direction of proportional controllers listed in each profile. Values are set as *Yes/No* to Invert *Forward/Reverse* (InvFR) or *Left/Right* (InvLR). To swap axis, change value on *SWAP* row either *Yes/No*. Power cycle chair.

Center Deadband   16.6

The Center Deadband parameter defines how far the joystick must be moved from neutral position to engage motors on the power chair. The value corresponds to the diameter of a circle around the joystick center position. No drive or menu instruction will be executed unless the joystick is moved out of this circle.

- Follow first 3 steps in *Section 16.3*.
- Use the navigation's *Up & Down* buttons, ⬍ select *Deadband* from list and press *Right* button.
- To select port, use navigation buttons *Left/Right*. ⊲ ⅀ When in desired position, press *Plus* or *Minus* ± buttons to increase or decrease value. Values range from 10 to 50%.

## Software Capabilities   17.1

- The mo-Vis Configurator Software is compatible with Windows 7, Windows 8, and Windows 10 systems.

- The mo-Vis Configurator Software is NOT compatible with Android or IOS systems.

- The software is an optional feature that will allow minimal adjustments. All adjustments of the joystick including deadband, calibration, throw, etc. can be completed through the chair's display.

The Multi Joystick positioning is adjustable with the mo-Vis Configurator Software.

## Software Download Instructions   17.2

1. You can download the software on Stealth's website: www.stealthproducts.com
2. Connect the mo-Vis Joystick to the pc using a mini USB cable.
3. Open the mo-Vis Configurator Software. Your computer will choose a COM port and recognize the product that is linked to the pc, but will still show the status "Disconnected".
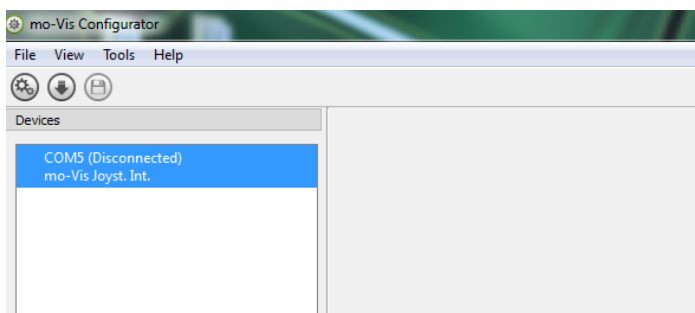

4. 4. Click on the *Connect* icon to make the connection between the Configurator Software and the Multi Joystick, or choose in the menu bar, *File-Connect*. To disconnect the device, click on the same icon to disconnect, or click on *File* and then click *Disconnect.*
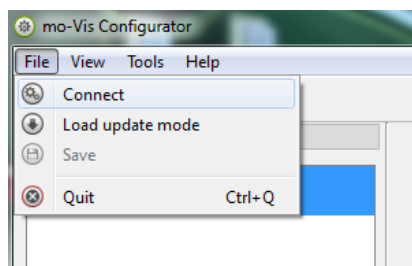
5. When the device is in sleep mode or not powered on, you will get this message:
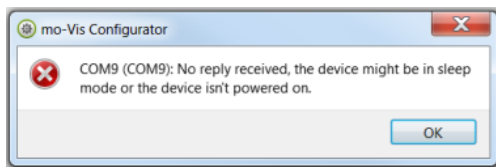

6. Once the connection is made, the software will receive all the details and information from the device and will display them on the right hand side of the window.
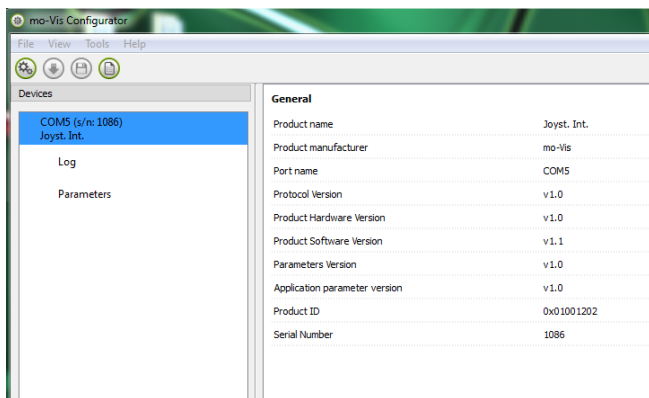
7. The software program always starts at the lowest Access Level. In order to receive more information, or see and change more parameters, you can upgrade your Access Level from *User* to *Attendant* or *Dealer.*
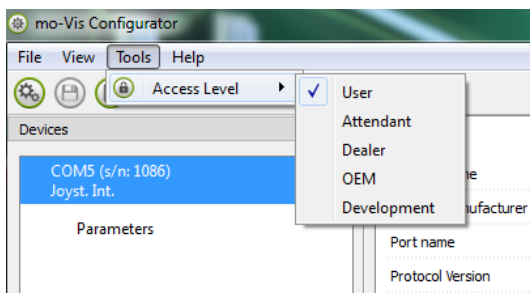
- Click on the *Tools* tab in the menu bar and change the Access Level from *User* to *Attendant* or *Dealer.*

- You will be asked to enter your password. Type the correct password. This password will need to be requested.
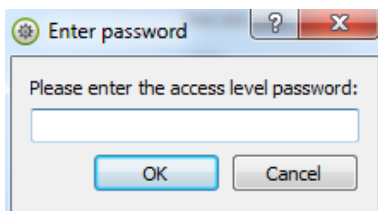
Attention: These passwords are case sensitive!

8. After the password has been correctly entered, you will be asked to restart the application. **Any unsaved changes will be lost. If you did make changes and want to save them, choose NO and first save your changes.** If it is okay to restart the application, click **Yes.** The device will now be disconnected.

- Repeat Step 4 to connect the device back to the computer.

- Depending on the Access Level, you will see *General Information, Parameters, Log,* and *Diagnostics.*

9. When *Parameters* is selected, a list of parameters will be shown, depending on the device that is connected to the pc.

- By selecting the specific parameter you wish to adjust, the view on the right will display the stored *Default, Minimum* and *Maximum Values* of the specific parameter.

- This parameter can now be changed by entering a new value in the textbox, or by clicking the arrows next to the text box, or by selecting a new value from the drop down box.

- Values that are being changed will be shown in green.

21
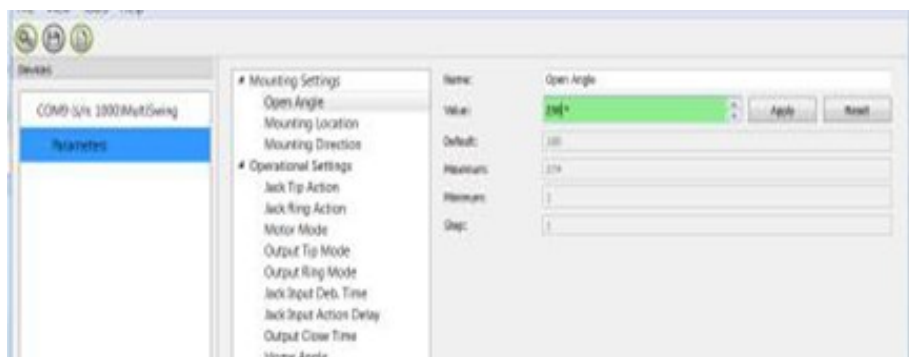
- Click *Apply* to write the temporary value in the device. You can immediately test it, but the new value is not stored yet.

- If you lose connection, any changes you made will be lost. If you would like to store the parameter values into the device, click on the *Save* icon or click in the menu bar, *File-Save.* The new parameter values will now be stored permanently in the device.

Attention: When a parameter is changed without clicking the Apply button, the new values are not remembered. Once another parameter setting is selected, the previous parameter will go back to the original setting.
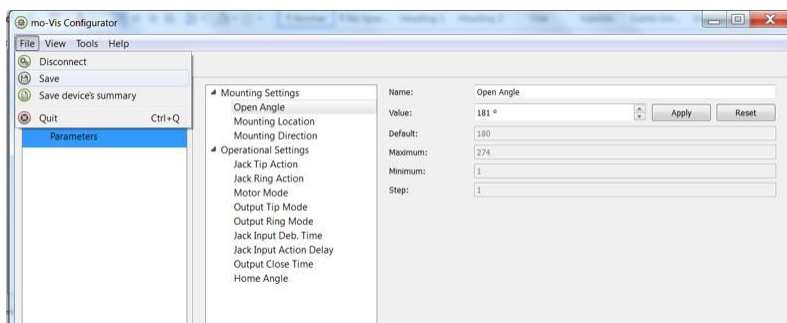
Clicking on the Reset Button will set the parameter value back to the default value. Click Apply to store locally and Save to make the change to the device.
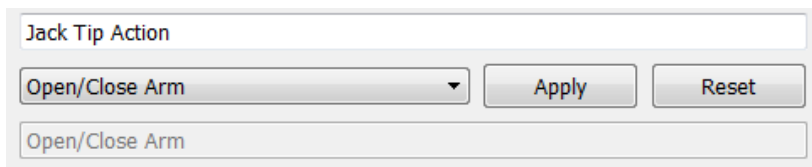
10. When your Access Level is set to *Dealer Level* the categories *Log* and *Diagnostics* will be displayed as well.

• When *Log* is selected, an overview of all occurred errors and/or actions will be displayed with a number of times that they occurred, and a *Reset* button to set the counter back to zero.
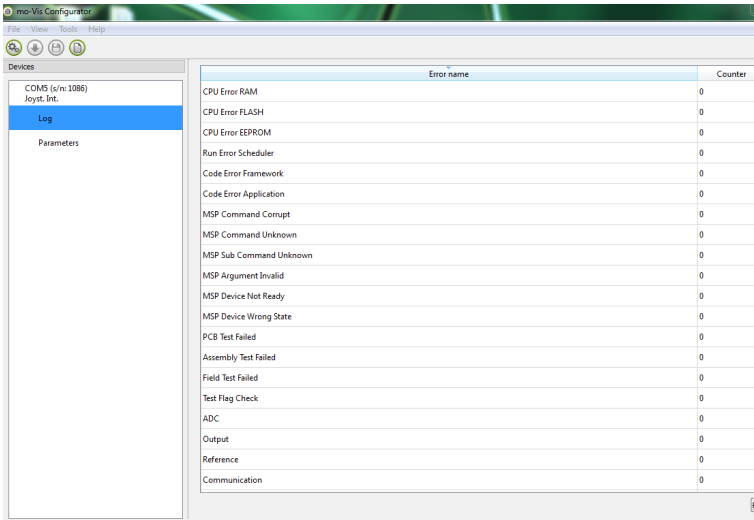
• When *Diagnostics* is selected, you will be able to run a Field Diagnostic Test. Click on *Field Diagnostic Test* and then *Run Test* to start the Field Test.

• **This option is only available with the All-Round Joystick. The Micro and Multi Joysticks are calibrated at the time of production.**

23
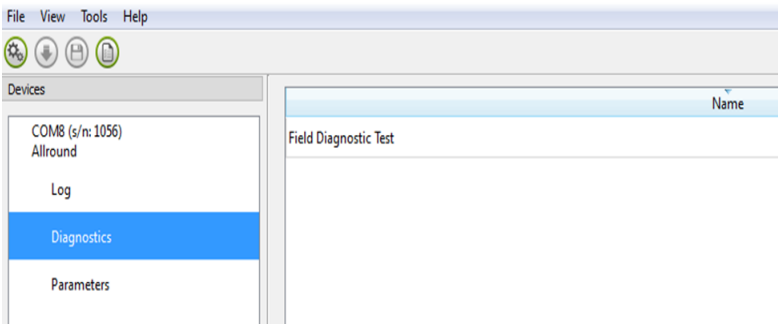
11. To change the language of the Configurator Software, click *File-View* on the menu bar and select the language you prefer.
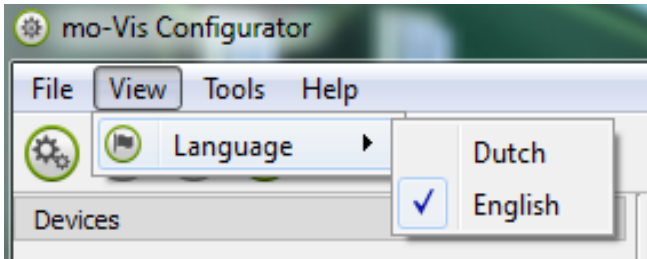
12. Save the device summary. You can save all general product information and values of the different parameters in any folder on your computer.

- Make sure the device is connected to the USB port of the pc.

- If the device is recognized it will appear in the *Device View.*

- Select the correct device in *Device View.*

- Click on the menu bar on *File-Save Device's Summary* or click directly on the *Save Device Summary* icon. Choose a location to save the file.

13. To close the Configurator Software, choose *File-Quit (Ctrl + Q)* in the menu bar, or click on the X of the window.

Attention: You will lose all unsaved values if you quit the software without first clicking on Apply and Save. If you use the menu bar to quit, your values will be saved automatically once you clicked Apply.

If you use the small cross on the right corner of the window, the software will automatically ask if you would like to save your changes before closing.
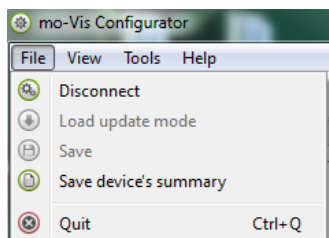
Intended Use   17.3

The Multi Joystick is a joystick module which can be connected directly to the wheelchair electronics with the Omni display or Q-Logic™ display.

The Multi Joystick is a small, proportional joystick which requires significantly less power and movement compared to a normal joystick (49.89g, .11lbf).

⚠ WARNING
The joystick operates with high sensitivity. Protect the joystick against bumps. Good movement coordination and force control is required.

⚠WARNING
Do not use on surfaces that you are unsure of. Always follow instructions provided by the wheelchair manufacturer about driving on safe surfaces, angle or ascent, and angle of descent.

⚠WARNING
Do not use the joystick as only support for your hand or limbs. Movements and shocks may disrupt controls.

After installation of the Multi Joystick, execute the following tests before the wheelchair is delivered or put into service, in according order:

- Check the Multi Joystick for intactness
- Operational test
- Test drive
- Stop test

Check The Multi Joystick   18.1

- Is not bent or damaged.
- Housing, cabling and all connectors are not damaged.
- The joystick returns to its default position when moving and releasing the joystick forward, backward, left and right.

Operational Test   18.2

⚠ WARNING
Execute this test only on a level surface, in an open area free of obstacles.

1. Activate the wheelchair operating system.
2. Check for any error message.
3. Move the joystick slowly forward until you hear the parking breaks switch off.
4. Immediately release the joystick. You should hear the parking break react within a few seconds.
5. Repeat steps 3 and 4 three times, while slowly moving the joystick towards you, to the left and to the right.
6. Check whether the power on/off and mode switch function properly.

⚠ CAUTION	The wheelchair may start moving.

Test Drive   18.3

- Perform a test drive with the wheelchair.
- Check whether the wheelchair and all of its operations are fully functioning in all positions the user may use the Multi Joystick and switches.
- Check that no cabling or parts may get damaged or hindered in any possible position of the wheelchair.

Stop Test   18.4

- Drive full speed ahead and shut down the wheelchair with the power on/off switch.
- The wheelchair may not suddenly stop, but must slow down to a gradual stop.

Dealer Assistance   19.1

During first time use by the user it is advised that the dealer or service technician assists and explains the different drive configurations to the customer (the user and/or his attendant). If needed, the dealer can make final adjustments.

User Testing   19.2

It is important that the customer is fully aware of the installation, how to use it, and what can be adjusted in order to gain as much mobility as possible.
As a dealer, proceed as follows:

- Explain and show the customer how you have executed the installation, and explain the function of every (new) button.

Have the user test all positions of the Multi Joystick:

- Are the Multi Joystick and switches within easy reach?
- Can the user safely operate the wheelchair with the least effort?
- Is the placement of the joystick and buttons in all available positions optimal for the user?

If needed, adjust the Multi Joystick.

Explain to the customer possible problems and how to address them.

Conditions Of Use   19.3

The Multi Joystick is intended for use as installed by the dealer, in accordance to the installation instructions in this manual.

- The foreseen conditions of use are communicated by the dealer or service technician to the user and/or attendant during the first time use.
- If the conditions of use change significantly, please contact your dealer or a qualified service technician to avoid excessive wear and tear or unintended damage.

Fault	Reason	Required Action
CPU Error RAM	CPU consistency check failed.	Replace PCB
CPU Error FLASH	CPU consistency check failed.	Replace PCB
CPU Error EEPROM	CPU consistency check failed.	Replace PCB
Run Error Scheduler	Firmware consistency check failed.	Update Software or Replace PCB
Code Error Framework	Firmware consistency check failed.	Update Software or Replace PCB
Code Error Application	Firmware consistency check failed.	Update Software or Replace PCB
MSP Command Corrupt	Corrupt command was received.	Connection with the PC (Configurator program) went wrong, try again.
MSP Command Unknown	Unknown command was received.	Connection with the PC (Configurator program) went wrong. Update Firmware or update Configurator Software. Try again.
MSP Sub Command Unknown	Unknown Sub Command was received.	Connection with the PC (Configurator program) went wrong. Update Firmware or update Configurator Software. Try again.
MSP Argument Invalid	Invalid argument received.	Connection with the PC (Configurator program) went wrong. Update Firmware or update Configurator Software. Try again.
MSP Device Not Ready	Device as not ready to receive an MSP command.	Connection with the PC (Configurator program) went wrong. Update Firmware or update Configurator Software. Try again.
MSP Device Wrong State	The device is not able to receive a command in the current device state.	Connection with the PC (Configurator program) went wrong. Update Firmware or update Configurator Software. Try again.

Error Codes		20.0
PCB Test Failed	Factory test failed.	A fault occurred during factory testing.
Assembly Test Failed	Factory test failed.	A fault occurred during factory testing.
Field Test Failed	Field test failed (Calibration).	A fault occurred during field testing (Calibration).
Test Flag Check	One or more test flags not set.	Redo tests and/or replace PCB.
ADC	ADC Conversion error.	Check Cable, replace PCB interface.
Output	The interface outputs are out of spec.	Check Cable, replace PCB interface.
Reference	The interface reference is out of spec.	Check Cable, replace PCB interface.
Communication	Communication with the sensor (joystick failed)	Check cable to sensor (joystick) and/or replace sensor (joystick)
Joystick (Sensor)	The Sensor (Joystick) faulty	Check cable to sensor (joystick) and/or replace sensor (joystick)
Accelerometer	The Accelerometer fails	Replace PCB interface

Joystick Data   20.1

Operational Force	49.89g, .11lbf		Interface Cord Length	1800mm (180cm)
Angle Center to End	15°		Joystick Cord Length	1400mm (140cm)
Length of Stick from Mechanical Pivot	30mm		Operating Temp.	-13°F to 122°F (-25°C to 50°C)
Travel from Center	8mm		Storage Temp.	40°F to 149°F (-40°C to 65°C)
Max. Vertical Load	10197 grams		Immunity Level ISO7176-21	20V/m 26Mhz to 2.5Ghz
Max. Horizontal Load	5098 grams		Emission Level ISO7176-21	CISPR11 Class B
Expected Life	2,800,000		ESD ISO7176-21	8kV Air 4kV Contact
Mass	250g			

Cleaning   21.1

- Clean all parts of the Multi Joystick on a regular basis (monthly) or when needed.
- Gently remove dust and dirt with a damp cloth.
- Use only non-aggressive household cleaning agents.

> ### ⚠ WARNING
>
> Do not immerse in water or use excessive amounts of liquid. Do not apply additional lubricants to the moving parts.

Joystick Ball   21.2

- The ball on top of the joystick can be removed without tools.
- You may shortly immerse the ball in warm water with a gentle cleaning agent.
- Let the ball dry before putting it back on.
- If the ball is damaged, worn out or remains dirty, replace the ball. Contact Stealth Products for ordering spare parts.

Monthly Check   21.3

Monthly or when needed, check whether:

- All bolts and screws are still firmly tightened.
- There is no damage to any wiring.
- There is no excessive wear to any of the parts.

Maintenance Free   21.4

The Multi Joystick is maintenance free. Under regular use circumstances the joystick, interface unit, and different parts do not require additional maintenance.

Parameter Settings   22.1

With the mo-Vis Configurator Software you can change the parameters of the Multi Joystick. Depending on your profile (User, Attendant, Dealer, OEM) you will be able to change a number of parameters.

Mounting Settings (User Level)   22.2

Setting	Description	Parameters
Mounting Direction	Mounting Direction of the Multi Joystick	Default 0°
Min.	0°	
Max.	270°	
Steps	90°	

Product Description & Code   23.1

- Multi Joystick (IDM-MULTI-9)
- Multi Joystick Accessory Pack (IDM-40)
  - Multi Joystick Mounting Plate with Screws
  - Quick-to-Mount Clamp with Bolt
  - Quick-to-Mount Rod
- Multi Joystick Ball (IDM-07)

Interface Connectors   23.2

- 1/8" (3.5mm) mono jack on/off (pwr)
- 1/8" (3.5mm) mono jack mode (in)
- Mini USB
- SUB D9 connector with cable

Joystick Connectors   23.3

- 1/8" (3.5mm) mono jack on/off
- 1/8" (3.5mm) mono jack mode

Dimensions   23.4

- Joystick 2.64in x 1.31in (67mm x 33mm) (H x D)
- Ball 1.03in x 1.19in (26mm x 30mm) (H x D)

Required Force   23.5

- Required force: 49.89g, .11lbf

EMC Requirements   23.6

The electronics of a power wheelchair and its options can be affected by external electromagnetic fields (for example from mobile telephones). Similarly, the electronics of the wheelchair or options themselves can also emit electromagnetic fields that can affect the immediate surroundings (for example certain alarm systems in businesses).

The limit values for Electromagnetic Compatibility (EMC) with respect to power wheelchairs are set in the harmonized standards for the EU in the Medical Devices Directive, No. 93/42/EEC.
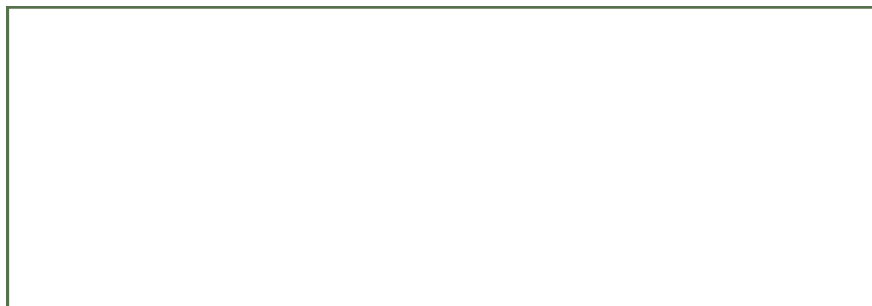
Multi Joystick complies with these limit values.

Installation Date:. . . . /. . / . . . .

Dealer:. . . . .

Dealer Stamp:

Serial Number Sticker: