1.0- Control/Relay Boxes

MOTOR CONTROL/ RELAY BOXES

Motion Concepts offers a variety of motor control boxes to meet the changing needs of your clients. All motor control boxes used by Motion Concept's are manufactured by Perpetual Motion Enterprises (PME). The control box or relay box is the heart of the TRx Power Positioning System. It is responsible for controlling the individual actuator/ motor functions and the drive lockout. The number of motor functions (tilt, recline, elevate etc...) required to operate the seating system will typically dictate which control box is required for a specific power positioning system.

Control boxes can vary considerably in their complexity and programmability. Our single and dual function control boxes are available with either "*Standard"* or "*Enhanced"* electronics. Our standard electronics provide simple but effective hard-wired units with limited features and limited programming/ adjustment capabilities. Our enhanced control boxes contain 'plug-in' ports and offer the end user greater flexibility in terms of programming and adjustment. Our multi-function control boxes (3 or more functions) contain state of the art electronics and provide the ultimate flexibility for programming a power positioning system.

Wherever possible, our Motion Concepts relay boxes are designed to be compatible with Pride, Quickie and Invacare powerbases. Each relay box typically requires some varying degree of programming by means of internal dip switches, program dials and/or jumpers which allows the relay box to be compatible with the powerbase electronics *(i.e.; PG Controllers, Q-Tronix, Dynamic, MKIV and MK5 Controllers)*. This allows for greater continuity in our electronics while minimizing inventory and overhead costs.

This chapter will identify the various motor control boxes, their function, programming and compatibility with different systems.

Motion Concepts

1.0- Control/Relay Boxes

I. Single Channel Control Boxes

M49 Heavy Duty Toggle Box

DISCONTINUED - JANUARY 2004*

The M49 Heavy Duty Toggle Box is a single motor function box with a built in drive lockout (DLO) inhibitor. Two jumper switches (GND/OPEN; NO/NC (normally open/ normally closed)) inside the control box are used to determine the set-up for the drive lockout. The jumper settings can vary depending on the type of power base used.

Jumper Setting Options:

GND = jumper setting remains on GND for all powerbases

NO = single motor function with DLO for Pride systems

NC = single motor function with DLO for Quickie systems or Invacare systems

Typical TRx System Application: Tilt-only or Recline-only systems.

Typical Switches: Heavy Duty Toggle only

External Features:

- heavy duty toggle switch
- DLO indicator light (red LED)
- actuator cable (white a-mode)
- 24 Volt power cable (red/blue/black- a-mode)
- drive lockout cable (molex)

External Features:

- switch input- 'single' (1/8" phono)
- switch input- 'dual' (1/8" phono)
- 'inh' inhibit switch port (molex)
- 24 volt power cable (red/blue/black- triple a-mode)
- actuator cable (white a-mode)

Helix 1.0 Seat Control

(Standard Single Function Control Box)

The Helix 1.0 Control Box is a basic single motor function relay box with drive lock-out available for use on Invacare, Pride and Quickie systems. The Helix 1.0 allows control of single function systems with a mechanical switch[1] that has a 1/8" phono jack. Two phono jacks (single & dual) are provided to allow the switch to be used in *toggle mode* or *direct mode*. An internal jumper switch (J4) can be adjusted to enable/ disable the drive lockout (DLO). The control box also offers built-in overcurrent protection, as well as an adjustable *speed potentiometer (pot)* to set the motor speed (located inside the control box).

Jumper Setting Options:

Enabled: single motor function with DLO (default setting)

Disabled: single motor function without DLO.

Typical TRx System Application: Tilt-only, PES-only systems

Typical Switches: Single Toggle (HD), Single Button, Dual Button, *Joystick*[1]

[1]**Note:** Joystick function available with M12B interface adapter *(Quickie or Pride)* or M70 Interface Adapter *(Invacare electronics)* - *see* ***Section 5.0- Specialty Electronics****)*

1.0- Control/Relay Boxes

Helix 1.1 Seat Control

DISCONTINUED - SEPTEMBER 2004

The Helix 1.1 Control Box provides single function positioning through a Joystick from a P&G or Q-Tronix Controller. The Helix 1.1 contains built-in inhibits for drive lockout and tilt limit and is equipped with a 1/8" phono port for an optional attendant switch. Inside the control box, there is an adjustable *speed pot* to set the motor speed, and an *overcurrent pot* to adjust the current limit from 12 volts to 24 volts. Three internal jumper switches (J5, J6, J7) control the drive lockout (DLO) and must be programmed according to the type of power base used. Four internal dip switches can be adjusted to set or enable the seat mode, the overcurrent mode, the drive lockout, and the tilt limit

Jumper Setting Options:

J5-OFF; J6-ON; J7-OFF: enable DLO for Quickie Systems

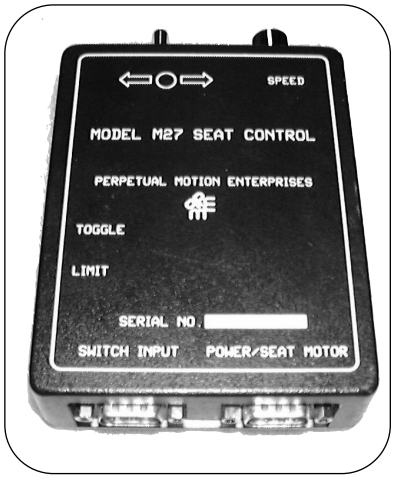
J5-ON; J6-OFF; J7-ON: enable DLO for Pride Systems

Typical TRx System Application: Tilt-only or Recline-only systems (using a Joystick)

Typical Switches: Joystick *(optional attendant switch= Single Toggle, Single Button or Dual Button).*

External Features:

- optional attendant switch (1/8" phono)
- optional inhibit sensor (1/8" phono)
- optional limit sensor (1/8" phono)
- actuator cable (white a-mode)
- redel cable (connects into controller)



External Features:

- motor speed control
- attendant control switch (toggle)
- 'power/ seat motor' port (DB-9 pin)
- TRx 'switch input' port (DB-9 pin)
- tilt-limit switch jack (1/8" phono)
- TRx switch jack (1/8" phono)
- DLO indicator light (red LED)

M17/M27 Relay Box

(Enhanced Single Function Control Box)

The M17/27 Relay Box is an enhanced single motor function relay box with inhibit switches for drive lockout and tilt limit. Two internal dip switches are used to enable the inhibit switches. A jumper inside the control box can convert the box from an M27 to an M17 (the jumper is factory preset to M27).

Jumper Setting Options:

M17 = single motor function for Pride systems using an external TRx switch or through drive controls with M12B Interface Adapter

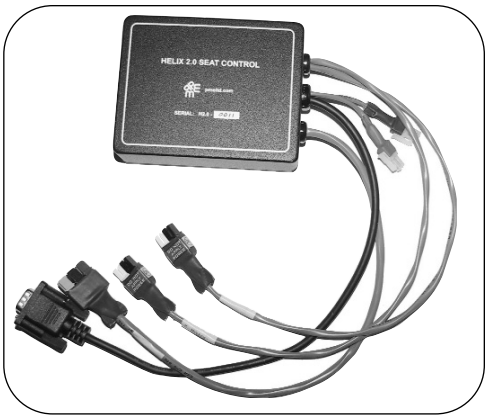
M27 = single motor function for Quickie systems using an external TRx switch or through drive controls with M12B Adapter ***OR*** single motor function for Invacare systems using an external TRx switch or drive controls.

Typical System Application: Tilt-only systems, PES-only systems.

Typical Switches: Single Toggle, Single Button or Dual Button. Joystick function available with M12B interface adapter (*see **Section 5.0- Specialty Boxes/ Cables***)

1.0- Control/Relay Boxes

II. Dual Channel Control Boxes



Helix 2.0 Seat Control

(Standard Dual Function Control Box)

The Helix 2.0 Control Box is a basic dual motor function relay box with limit switches for both drive lock-out (DLO) and tilt-limit*. The Helix 2.0 is designed for use on Invacare, Pride and Quickie systems. The Helix 2.0 allows control of two motor functions via any suitable mechanical switch[1] with a DB-9 pin connection. Two internal dip switches are used to assign the motor functions and toggle settings (direct or toggle mode). The control box also contains two internal *speed potentiometers (pots*) that may be adjusted to set the motor speeds.

***Note** - If the tilt limit is not used, a **C35 shorting plug** must be used; *the C35 connects to the black tilt limit molex connector on the Helix 2.0*).

Important! for safety and well being of the client, the drive lockout inhibit switch should always be connected.

External Features:

- switch input cable- (DB-9 pin)
- Tilt limit (2-pin molex- Black)
- DLO inhibit (2-pin molex- Red)
- 24 volt power cable (red/blue/black- triple a-mode)
- motor 1 cable (white/black a-mode)
- motor 2 cable (white/black a-mode)

Typical TRx System Application: Tilt and Recline Systems, Tilt and Combined Power Legs, Recline and Combined Power Legs

Typical Switches: Dual Button, Dual Toggle, Quad Button, 4-Way Toggle, *Joystick*[1]

[1]**Note:** Joystick function available with M12B interface adapter *(Quickie or Pride)* or M70 Interface Adapter *(Invacare electronics) - see* ***Section 5.0- Specialty Electronics****)*

Helix 2.1 Seat Control

*****DISCONTINUED - SEPTEMBER 2004*****

The Helix 2.1 Control Box provides dual function positioning through a Joystick from a PG Controller or Q-Tronix Controller (for **Pride** and **Quickie** systems respectively). The Helix 2.1 contains built-in inhibits for drive lockout, tilt/recline limit, and a tilt-home limit. Inside the control box, there is an adjustable *speed pot* to set the motor speed, and an *overcurrent pot* to adjust the current limit from 12 volts to 24 volts. Three internal jumper switches (J7, J8, J9) control the drive lockout (DLO) and must be programmed according to the type of power base used. Two sets of six internal dip switches can be adjusted to set or program the motor functions, the enable limit switches.

Jumper Setting Options:

J7-OFF; J8-ON; J9-OFF: enable DLO for Quickie Systems

J7-ON; J8-OFF; J9-ON: enable DLO for Pride Systems

Typical TRx System Application: Tilt and Recline Systems, Tilt and Combined Power Legs, Recline and Combined Power Legs (through a Joystick)

Typical Switches: Joystick

External Features:

- attendant switch port- (1/8" phono)
- Limit 1- tilt home (3-pin molex)
- Limit 2- DLO inhibit (2-pin molex)
- Limit 3- tilt/recline (2-pin molex)
- Redel power cable (Redel connector)
- motor 1 cable (white/black a-mode)
- motor 2 cable (white/black a-mode)
- drive lockout cable (2-pin molex)

1.0- Control/Relay Boxes

M14 Relay Box

(Enhanced Dual Function Control Box)

DISCONTINUED - SEPTEMBER 2004

The M14 Control Box is an enhanced dual function relay box with inhibit switches for both drive lockout (DLO) and tilt limit. Two dip switches inside the relay box must be configured to assign the motor functions and toggle settings. These are set according to the type of seating system, and the clients' set-up preferences (direct or toggle mode). Two external speed controls allow each motor to have its speed set independently.

M14 Relay Box - operates with a '*normally open*' circuit, and is used on Pride powerbases.

Typical TRx System Application: Tilt and Recline Systems, Tilt and Combined Power Legs, Recline and Combined Power Legs

Typical Switches: Dual Button, Dual Toggle, Quad Button, 4-Way Toggle, Joystick function available with M12B interface adapter (*see* ***Section 5.0- Specialty Electronics***)

External Features:

- motor speed control (Speed 1)
- motor speed control (Speed 2)
- attendant control switch (toggle)
- 'power/ motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- DLO indicator light (red LED)

DISCONTINUED

M33 Relay Box[1]

(Enhanced Dual Function Control Box)

DISCONTINUED - SEPTEMBER 2004

The M33 Control Box is an enhanced dual function relay box with inhibit switches for both drive lockout (DLO) and tilt limit. Two dip switches inside the relay box must be configured to assign the motor functions and toggle settings . These are set according to the type of seating system, and the clients' set-up preferences (direct or toggle mode). Two external speed controls allow each motor to have its speed set independently.

M33 Relay Box - operates with a '*normally closed*' circuit and is used on Quickie and Invacare powerbases.

Typical TRx System Application: Tilt and Recline Systems, Tilt and Combined Power Legs, Recline and Combined Power Legs

Typical Switches: Dual Button, Dual Toggle, Quad Button, 4-Way Toggle, Joystick function available with M12B interface adapter (*see* ***Section 5.0- Specialty Electronics***)

External Features:

- motor speed control (Speed 1)
- motor speed control (Speed 2)
- attendant control switch (toggle)
- 'power/ motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- DLO indicator light (red LED)

DISCONTINUED

*[1]**NOTE:** The M33 Relay Box was modified in September, 2004, to combine the M14 and M33 relay boxes. The new **M14/ 33** relay box **(serial # : M33-5000 or higher)** may be used with any dual function seating system. It now uses an internal Jumper Switches to allow the box to be set-up for a Quickie, Invacare or a Pride System. Please see p.8 for more details on the upgraded M14/33 Relay Box*

1.0- Control/Relay Boxes

M14/33 Control Box *(S/N: 5000 and greater)*

(Enhanced Dual Function Control Box)

NEW! SEPTEMBER 2004

The M14/33 Control Box is an enhanced dual function relay box with built-in inhibits for both drive lockout (DLO) and tilt limit. It is designed to control two motor functions through a mechanical switch/ toggle[1] (with DB-9 pin). The M14/33 is an upgraded version of the original M33 Relay Box, and replaces the discontinued M14 Relay Box. A jumper switch inside the relay box (NO/NC (normally open/ normally closed)) is used to set the drive lockout for the system. The jumper is set according to the type of powerbase electronics (see "Jumper Options" below). Two external speed controls allow each motor to have its speed set independently. In addition to the added jumper switch, the M14/33 offers improved power output and contains an internal program dial/ rotary switch to set the motor functions. The various motor functions/ program settings are listed in the configuration guide (provided with the M14/33 box).

***Note** - If a limit switch is not used, a **C35 shorting plug** must be installed; *the C35 connects to the unused molex connector on the Actuator Harness*).

External Features:

- motor speed control (Speed 1)
- motor speed control (Speed 2)
- attendant control switch (toggle)
- 'power/ motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- DLO indicator light (red LED)

Jumper Setting Options:

NO = DLO setting (Default) for Quickie systems or Invacare systems

NC = DLO setting for Pride systems

TRx System Application:

Power positioning systems requiring two motor functions
(eg. - Tilt and Recline Systems, Tilt and Combined Power Legs, Recline and Combined Power Legs)

Typical Switches:

Dual Button, Dual Toggle, Quad Button, 4-Way Toggle, Joystick[1]

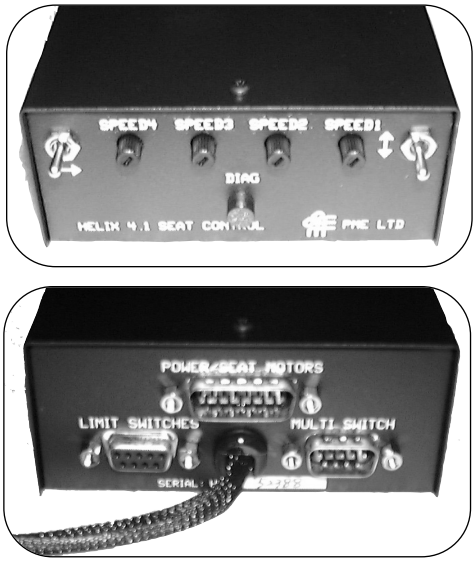
[1]**Note:** Joystick function available with M12B interface adapter *(Quickie or Pride)* or M70 Interface Adapter *(Invacare electronics)* - *see* ***Section 5.0- Specialty Electronics****)*

1.0- Control/Relay Boxes

III. Multi-Channel Control Boxes

Helix 4.1 Relay Box

DISCONTINUED - MAY 2004



The Helix 4.1 (*4.1-5*) is a four channel wheelchair seat control designed for use with external TRx switches only. The Helix 4.1-5 relay box is compatible with Pride, Invacare and Quickie powerbases. It is capable of operating up to four motors individually or in groups as required. An anti-tip actuator* can be operated as a fifth function via an external 'auxiliary motor cable' (molex connector) on the 4.1-5 relay box[1]. An internal speed pot controls the speed for the auxiliary (anti-tip) motor cable. Eight dip switches are used to program the motor functions (***Note:*** *a configuration guide is included with each relay box and provides all the programming options available for the installed system).* An internal jumper switch (J8) is used in combination with Dip Switch #8 to set the drive lockout. Jumper settings vary depending on the power base (*see options below*).

[1]**Note:** The earlier model Helix 4.1-4 is <u>not</u> equipped with the auxiliary anti-tip cable.

External Features:

- motor speed controls:
  (Speed 1, Speed 2, Speed 3 Speed 4)
- attendant control switches (toggle x2)
- drive lockout indicator light
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'limit switches' input port (DB-9 pin)
- 'auxiliary motor cable' for anti-tip (molex)

Jumper Setting Options:

J8- OPEN; Dip Switch 8- OFF: enable drive lockout for Pride Systems

J8- GND; Dip Switch 8- ON: enable drive lockout for Quickie and Invacare Systems

Typical TRx System Applications:

Tilt & Recline & Power Legs (+ Anti-Tip), Power Elevated Seat (PES) with Tilt & Power Legs (+ Anti-Tip), PES with Recline & Power Legs (+ Anti-Tip)

Typical Switches:

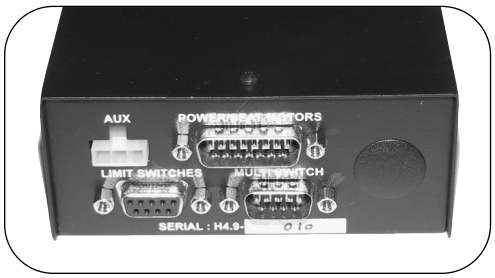
Dual Button, Quad Button, Dual Toggle, 4-Way Toggle

***Note**: Anti-tip actuators are typically found on Quickie S-626/646 and Blast powerbases.*

1.0- Control/Relay Boxes

Helix 4.9 Relay Box

DISCONTINUED OCTOBER 2005



The Helix 4.9 Relay Box is a four channel wheelchair seat control for use with external TRx switches only (*no joystick*). The Helix 4.9 is compatible with Pride, Invacare and Quickie powerbases and was designed to replace the Helix 4.1 series box. It is capable of operating up to four motors individually or in groups as required. The anti-tip function has been 'built-in' on the Helix 4.9 relay box. The anti-tip actuator* can be operated as a fifth function via the auxiliary port on the relay box. A speed pot inside the relay box controls the motor speed for the 'aux' port. An internal jumper switch (J8-top, J8-bottom) is used to set the drive lockout. Jumper settings vary depending on the power base. Eight dip switches are used to program the motor functions *(**Note:** a configuration guide is included with each relay box and provides all the programming options available for the installed system)*

***Note**: Anti-tip actuator motors are typically found on the Quickie S-626/ S-646 and Blast powerbases.*

External Features:

- motor speed controls:
  (Speed 1, Speed 2, Speed 3 Speed 4)
- attendant control switches (toggle x2)
- drive lockout indicator light
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'limit switches' input port (DB-9 pin)
- auxiliary 'AUX' port (molex)

Jumper Setting Options:

J8(top)- QUICKIE / J8(bottom)- JAZZY: -enable drive lockout for Pride Systems

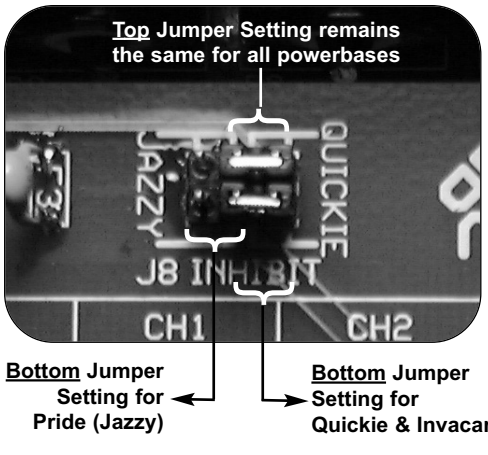
J8(top)- QUICKIE / J8(bottom)- QUICKIE: -enable drive lockout for Quickie and Invacare Systems

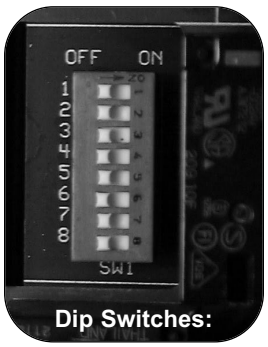
Typical TRx System Applications:

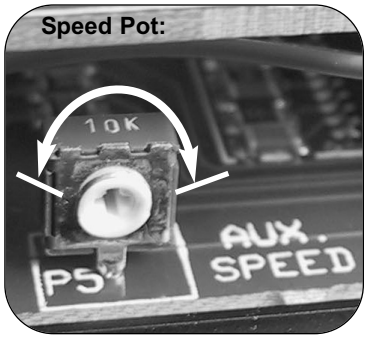
Tilt & Recline & Power Legs (+ Anti-Tip), Power Elevated Seat (PES) with Tilt & Power Legs (+ Anti-Tip), PES with Recline & Power Legs (+ Anti-Tip)

Typical Switches:

Dual Button, Quad Button, Dual Toggle, 4-Way Toggle







1.0- Control/Relay Boxes

Helix 5.0 Relay Box

NEW! October 2005

The Helix 5.0 Relay Box is a multi-function relay box capable of operating up to five motors* via **TRx switches only.** (***note**: an anti-tip actuator[1] can be operated as the fifth motor function via the auxiliary port (*dual a-mode pigtail*) on the relay box). The Helix 5.0 is designed to be compatible with Pride, Invacare and Quickie powerbases and replaces the earlier Helix 4.9 relay box.

Eight dip switches are used to program the relay box (***Note:** a configuration guide is included with each relay box and provides all the programming options available for the installed system).* Two internal jumper switches (X1, X2) are used to enable the drive lockout (DLO). The jumper settings vary depending on the powerbase (see settings below). A speed pot inside the relay box is used to control the auxiliary motor speed (anti-tip).

[1]***Note**: Anti-tip actuator motors are typically found on the Quickie S-626/ S-646 and Blast powerbases.*

External Features:

- motor speed controls: (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way touch switch)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (3-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)

Jumper Setting Options:

X1- PRIDE; X2- PRIDE : settings for Drive Lockout (DLO) on Pride Systems

X1- PRIDE; X2- *Removed* : settings to disable DLO on Pride Systems

X1- QUICKIE; X2- QUICKIE : settings for DLO on Quickie Systems

X1- QUICKIE; X2- QUICKIE : settings for DLO on Invacare Systems

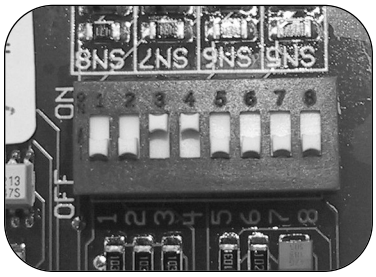
TRx System Applications:

Power positioning systems requiring three or more functions (up to a max of 4 motor functions + anti-tip) *(eg. - PES with Tilt & Recline & Combined Power Legs; Tilt & Recline & Individual Power Legs & Anti-Tip)*

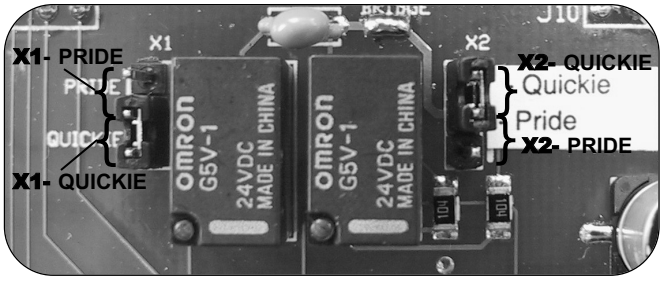
Typical Switches:

Dual Button, Quad Button, Dual Toggle, 4-Way Toggle

Dip Switches:



Jumpers:



Speed Pot:

1.0- Control/Relay Boxes

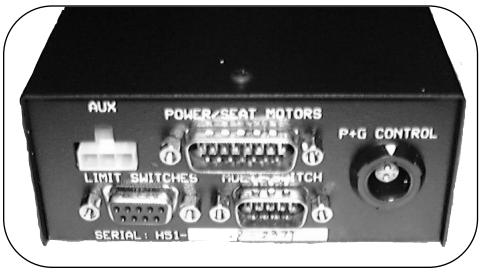
Super Helix 5.1 Relay Box

DISCONTINUED - DECEMBER 2003

The Super Helix 5.1 *(Helix 5.129 or 5.130*)* is a multi-function relay box capable of operating up to five motors via external TRx switches and/or via a Joystick. (**Note:** when a Power Elevated Seat (PES) is installed, the legrests must be combined). The Helix 5.1 is designed for use with Invacare, Pride and Quickie powerbases. A speed pot inside the relay box controls the motor speed for the 'aux' port. Two separate jumper switches (J6, J8-top, J8-bottom) determine the drive lockout set-up. The jumper settings vary depending on the powerbase (*see options below*). Ten dip switches are used to program the relay box *(**Note:** a configuration guide is included with each relay box and provides all the programming options available for the installed system).*

***Note:** The Helix 5.130 is regulated at 13 amps, versus 12 amps for the 5.129 box and was developed mainly for use on Bariatric Systems.

***Please Note:** The Helix 5.128 box was an earlier model that could still be installed on most systems, but it is not preferred for PES systems. The 5.129 and 5.130 relay boxes have revised electronics specifically for a PES system that allow an elevating lockout switch to function through the 'limit switches' port.)*



External Features:

- motor speed controls: (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (toggle x2)
- drive lockout indicator light
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'limit switches' input port (DB-9 pin)
- 'aux' auxiliary port (molex)
- 'P&G control' port (redel cable)

Jumper Setting Options:

J6- QUICKIE: jumper setting remains on Quickie for all powerbases (Pride, Quickie & Invacare)

J8(top)- QUICKIE; J8(bottom)- JAZZY: setting for drive lockout on Pride Systems

J8(top)- QUICKIE; J8(bottom)- QUICKIE: setting for drive lockout on Quickie and Invacare Systems

Typical TRx System Applications:

PES with Tilt & Recline & Combined Power Legs; PES with Tilt & Power Legs & Anti-Tip; Tilt & Recline & Individual Power Legs & Anti-Tip

Typical Switches:

Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle

Important!

If an earlier model Helix 5.128, or a 5.129 box, is replaced with a Helix 5.130 box, the original C45 Actuator Harness must also be replaced with an 18-gauge C45 actuator harness (C45B-18).

1.0- Control/Relay Boxes

Super Helix 5.3 Relay Box

NEW! 2005 Upgrade (released DECEMBER 2003)

The Super Helix 5.3 is a multi-function relay box capable of operating up to five motors via external TRx switches and/or via a Joystick. The fifth motor function (for PES* or Anti-Tip motors) is operated via the auxiliary port (dual a-mode pig-tail) on the relay box. The Helix 5.3 was developed as a direct replacement for the previous Helix 5.1 relay box models (i.e.; 5.128, 5.129 & 5.130), and is designed for use with Invacare, Pride and Quickie powerbases.

Twelve dip switches are used to program the relay box *(each relay box comes with a configuration guide that includes all the available programming options for the installed system).* Two internal jumper switches (X1, X2) are used in combination with Dip Switch #8 to set the drive lockout (DLO). The jumper settings vary depending on the powerbase. A speed pot inside the relay box controls the motor speed for the 'aux' motor port.

***note:** when a Power Elevated Seat (PES) is installed, the legrests must be combined).*

Note: The Helix 5.3 relay box utilizes standard mercury limit switches ('reduced speed drive function is not available with the Helix 5.3).

External Features:

- motor speed controls: (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way touch switch)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (3-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)
- 'P&G control' port (redel)

Jumper Setting Options:

X1- PRIDE; X2- PRIDE and **Dip Switch 8- OFF:** settings for drive lockout (DLO) on Pride Systems

X1- QUICKIE; X2- QUICKIE and **Dip Switch 8- ON:** settings for DLO on Quickie Systems

X1- QUICKIE; X2- QUICKIE and **Dip Switch 8- OFF:** settings DLO on Invacare Systems

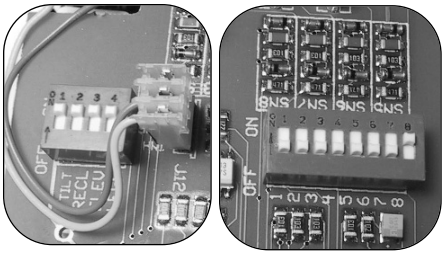
TRx System Applications:

Power positioning systems requiring three or more functions (up to a max of 5 motor functions)
(eg. - PES with Tilt & Recline & Combined Power Legs; Tilt & Recline & Individual Power Legs & Anti-Tip)

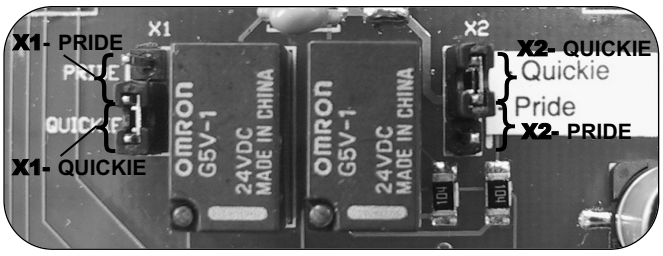
Typical Switches:

Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle

Dip Switches:



Jumpers:



Speed Pot:

1.0- Control/Relay Boxes

Super Helix 5.4 Relay Box

NEW! 2005 Upgrade (released MARCH 2004)

The Helix 5.4 is a multi-function relay box capable of operating up to six motors via external TRx switches and/or via a Joystick. Unlike the Helix 5.3 relay box, the Helix 5.4 box is designed specifically for use with **Invacare Controllers**, and is uniquely programmable to provide specialty program options such as 'reduced drive function', and 'all functions home'. The Helix 5.4 relay box is also capable of operating a seating system via a non-toggling 8-way switch.

Eight dip switches are used to program the relay box *(each relay box comes with a configuration guide that includes all the available programming options for the installed system).* A speed pot inside the relay box controls the motor speed for the 'aux' port. The drive lockout (DLO) settings are factory set.

NOTE: the Helix 5.4 requires the **M11** or **M11-T Tipsy Angle Sensor/ Switch**. *(see p.36-37)*

note: *when a Power Elevated Seat (PES) is installed, the legrests must be combined).*

Note: Please refer to the power cable section to determine the appropriate power cable option for a specific Invacare wheelchair system *(dependent on powerbase electronics)*

External Features:

- motor speed controls:
  (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way touch switch)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (3-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)

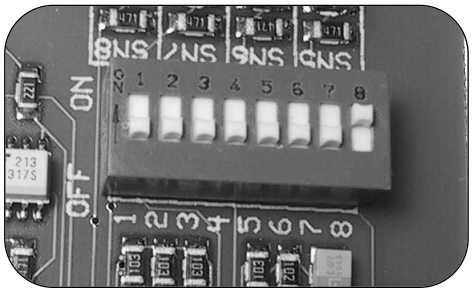
TRx System Applications:

Power positioning systems requiring three or more functions (up to a max of 6 motor functions)
(eg. PES with Tilt & Recline & Combined Power Legs; Tilt & Recline & Individual Power Legs & Power Back)

Typical Switches:

Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle, 8-Way Toggle

Dip Switches:



Speed Pot:

1.0- Control/Relay Boxes

Super Helix 5.5 Relay Box

NEW! 2005 Upgrade (released MARCH 2004)

The Helix 5.5 is a multi-function relay box capable of operating up to six motors via external TRx switches and/or via a Joystick. Unlike the Helix 5.3 relay box, the Helix 5.5 box is designed specifically for use with **Pride** and **Quickie Controllers** *(PG electronics)*, and is uniquely programmable to provide specialty program options such as 'reduced drive function', and 'all functions home'. The Helix 5.5 relay box is also capable of operating a seating system via a non-toggling 8-way switch.

Twelve dip switches are used to program the relay box *(each relay box comes with a configuration guide that includes all the available programming options for the installed system).* Two internal jumper switches (X1, X2) are used in combination with Dip Switch #8 to set the DLO-drive lockout (see settings below). A speed pot inside the relay box controls the motor speed for the 'aux' port.

NOTE: the Helix 5.5 requires the **M11** or **M11-T Tipsy Angle Sensor/ Switch**. *(see p.36-37)*

note: *when a Power Elevated Seat (PES) is installed, the legrests must be combined).*

Note: Please refer to the power cable section to determine the appropriate power cable required for use with each specific Quickie or Pride wheelchair systems.

External Features:

- motor speed controls:
  (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way touch switch)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (2-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)
- 'P&G control' port (redel)

Jumper Setting Options:

X1- PRIDE; X2- PRIDE and **Dip Switch 8- OFF:** settings for DLO on Pride Systems

X1- QUICKIE; X2- QUICKIE and **Dip Switch 8- ON:** settings for DLO on Quickie Systems

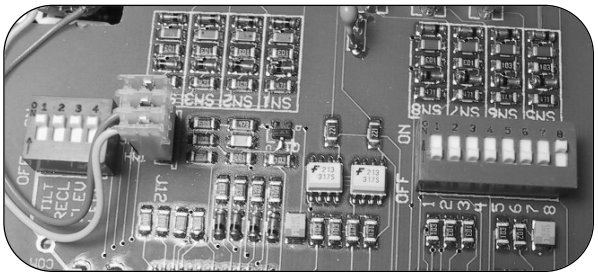
Typical TRx System Applications:

Power positioning systems requiring three or more functions (up to a max of 6 motor functions)
(eg. PES with Tilt & Recline & Power Center Mount; Tilt & Recline & Individual Power Legs & Power Back)

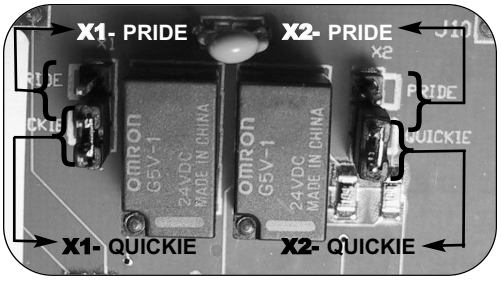
Typical Switches:

Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle, 8-Way Toggle

Dip Switches:



Jumpers:



Speed Pot:

1.0- Control/Relay Boxes

Super Helix 5.9 Relay Box

NEW! - January 2005

The Helix 5.9 is a specially programmed multi-function relay box capable of operating up to six functions via external TRx switches and/or via a Joystick. The Helix 5.9 box is designed for use with P&G Controllers or Q-Tronix Controllers (on **Pride** and **Quickie** systems respectively) when program applications for Anti-Tip Motors are required. The box is programmable to provide specialty program options such as 'reduced drive function', and 'all functions home'. The Helix 5.9 relay box is also capable of operating a seating system via a non-toggling 8-way switch.

Twelve dip switches are used to program the relay box *(each relay box comes with a configuration guide that includes all the available programming options for the installed system).* Two internal jumper switches (X1, X2) are used in combination with Dip Switch #8 to set the DLO-drive lockout (see settings below). A speed pot inside the relay box controls the motor speed for the 'aux' port.

NOTE: the Helix 5.9 requires the **M11** or **M11-T Tipsy Angle Sensor/ Switch.** *(see p.36-37)*

note: *when a Power Elevated Seat (PES) is installed, the legrests must be combined).*

External Features:

- motor speed controls:
  (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way touch switch)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (2-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)
- 'P&G control' port (redel)

Jumper Setting Options:

X1- PRIDE; X2- PRIDE; Dip Switch 8- OFF: settings for drive lockout on Pride Systems

X1- QUICKIE; X2- QUICKIE; Dip Switch 8- ON: settings for drive lockout on Quickie Systems

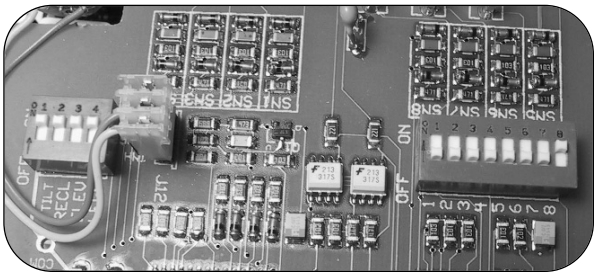
TRx System Applications:

Seating Systems with anti-tip motors requiring 3 or more power positioning functions *(up to a maximum. of 5 functions + anti-tip)*

Typical Switches:

Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle, 8-Way Toggle

Dip Switches:



Jumpers:

Speed Pot:

1.0- Control/Relay Boxes

IV. Specialty Customized Control Boxes

IMPORTANT!

Specially developed power positioning systems may require customized programming to operate the seating system as desired. Our electronics vendor will incorporate custom programming into a Helix 5.4 Relay Box (*for Invacare systems*) or a Helix 5.5 (or 5.9) Relay Box (*for Pride and/or Quickie systems*). Any Helix boxes containing custom programming will be identified by the letter "C" in the serial number on the back of the Helix box. *(eg. - serial #: H54C - xxxxx)*

Super Helix 5.6 Relay Box

DISCONTINUED 2004

The Helix 5.6 is a specially programmed multi-function relay box capable of operating up to five motors via external TRx switches and/or via a Joystick. The Helix 5.6 box is designed specifically for use with Invacare Controllers when specialized programs are required. The program configurations for the Helix 5.6 includes specialized programs for systems such as Lateral Tilt, Anterior Tilt, Attitude Systems (floor level transfer systems), Dump Seat systems, as well as new program applications for Anti-Tip Motors. Twelve dip switches are used to program the relay box *(**Note:** a configuration guide is included with each relay box and provides all the programming options available for the installed system).* Two internal jumper switches (X1, X2) are used in combination with Dip Switch #8 to set the drive lockout. A speed pot inside the relay box controls the motor speed for the 'aux' port.

DISCONTINUED

Note: The Helix 5.6 *must* use the C45B-18 actuator harness *(18 gauge)* together with the appropriate power cable *(determined by the type of Invacare Controller)*

Jumper Setting Options:

X1- QUICKIE; X2- QUICKIE; Dip Switch 8- OFF: settings for drive lockout on Invacare Systems

Typical Switches: Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle, 8-Way Toggle

External Features:

- motor speed controls: (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way mini toggle)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (3-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)

1.0- Control/Relay Boxes

Super Helix 5.7 Relay Box

DISCONTINUED 2004

The Helix 5.7 is a specially programmed multi-function relay box capable of operating up to five motors via external TRx switches and/or via a Joystick. The Helix 5.7 box is designed specifically for use with P&G Controllers or Q-Tronix Controllers (on **Pride** and **Quickie** systems respectively) when specialized programs are required. The program configurations for the Helix 5.7 includes specialized programs for systems such as Lateral Tilt, Anterior Tilt, Attitude Systems (floor level transfer systems), Dump Seat systems, as well as new program applications for Anti-Tip Motors. Twelve dip switches are used to program the relay box *(**Note:** a configuration guide is included with each relay box and provides all the programming options available for the installed system).* Two internal jumper switches (X1, X2) are used in combination with Dip Switch #8 to set the drive lockout. The jumper settings vary depending on the powerbase. A speed pot inside the relay box controls the motor speed for the 'aux' port.

DISCONTINUED

Note:

i) for Pride systems: The Helix 5.7 uses the C66 power cable and the C65 Actuator Harness

ii) for Quickie systems: The Helix 5.7 uses the C14 power cable and the C45B-18 actuator harness *(18 gauge)*

Jumper Setting Options:

X1- PRIDE; X2- PRIDE; Dip Switch 8- OFF: settings for drive lockout on Pride Systems

X1- QUICKIE; X2- QUICKIE; Dip Switch 8- ON: settings for drive lockout on Quickie Systems

Typical Switches: Joystick, Dual Button, Quad Button, Dual Toggle, 4-Way Toggle, 8-Way Toggle

External Features:

- motor speed controls: (Speed 1, Speed 2, Speed 3, Speed 4)
- attendant control switches (4-way mini toggle)
- drive lockout indicator light (Red LED)
- 'home' position indicator light (Green LED)
- 'power/ seat motors' input port (DB-15 pin)
- TRx 'multi switch' input port (DB-9 pin)
- 'LIM1' port (3-pin molex)
- 'LIM2' port (2-pin molex)
- 'LIM3' port (2-pin molex)
- 'LIM4' port (2-pin molex)
- 'MOTOR 5' *pigtail* cable (Dual a-mode)
- 'ECU' port (1/8" phono jack)
- 'P&G control' port (redel)

original release ***APRIL 2004***