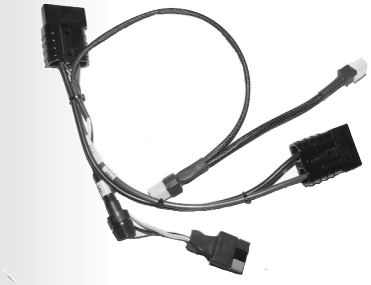
V. Wiring Harnesses

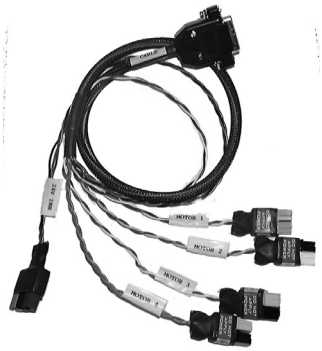
The wiring harnesses used by Motion Concept's are also manufactured by Perpetual Motion Enterprises (PME). A wide variety of wiring harnesses are needed in order to bring a TRx power positioning system to life. The common wiring harnesses used on our seating system would include *power cables, actuator harnesses,* and *limit harnesses*. With some of our more complex power positioning systems there is often a need for additional harnesses and cables to operate the systems safely and effectively.

Due to the often complex wiring configurations, Motion Concepts has created detailed wiring schematic diagrams & instructions for each of our seating systems to assist Technicians. These wiring schematics have been assembled in three separate Wiring Diagram Manuals* for each of the major powerbase manufacturers (Invacare, Quantum and Quickie). Please refer to **Figure 4.0** *(p.31)* for a sample of a wiring diagram from one of our multi-function relay boxes.

**please contact Motion Concepts for a copy of the individual Wiring Manuals.*



Power Cable
eg. C78 (Invacare) power cable



Actuator Harness
eg. C45B-18 (4 motor) harness)

Limit Harness
eg. C44B dual limit harness

Power Cables- draw power from the base (via the batteries or through the controller) in order to operate the power positioning system. The power cable is the first link in the series of wiring harnesses and typically connects into the actuator harness. Power cables vary in style and configuration depending on the power base manufacturer and may also vary for different powerbase models from the same manufacturer.

Actuator Harnesses- link the power cables to the control/relay boxes and distribute the power to the individual motors on the TRx Power Positioning Systems. There are three basic types of actuator harnesses used with our seating systems: *Single Motor, Dual Motor* and *Four Motor.*

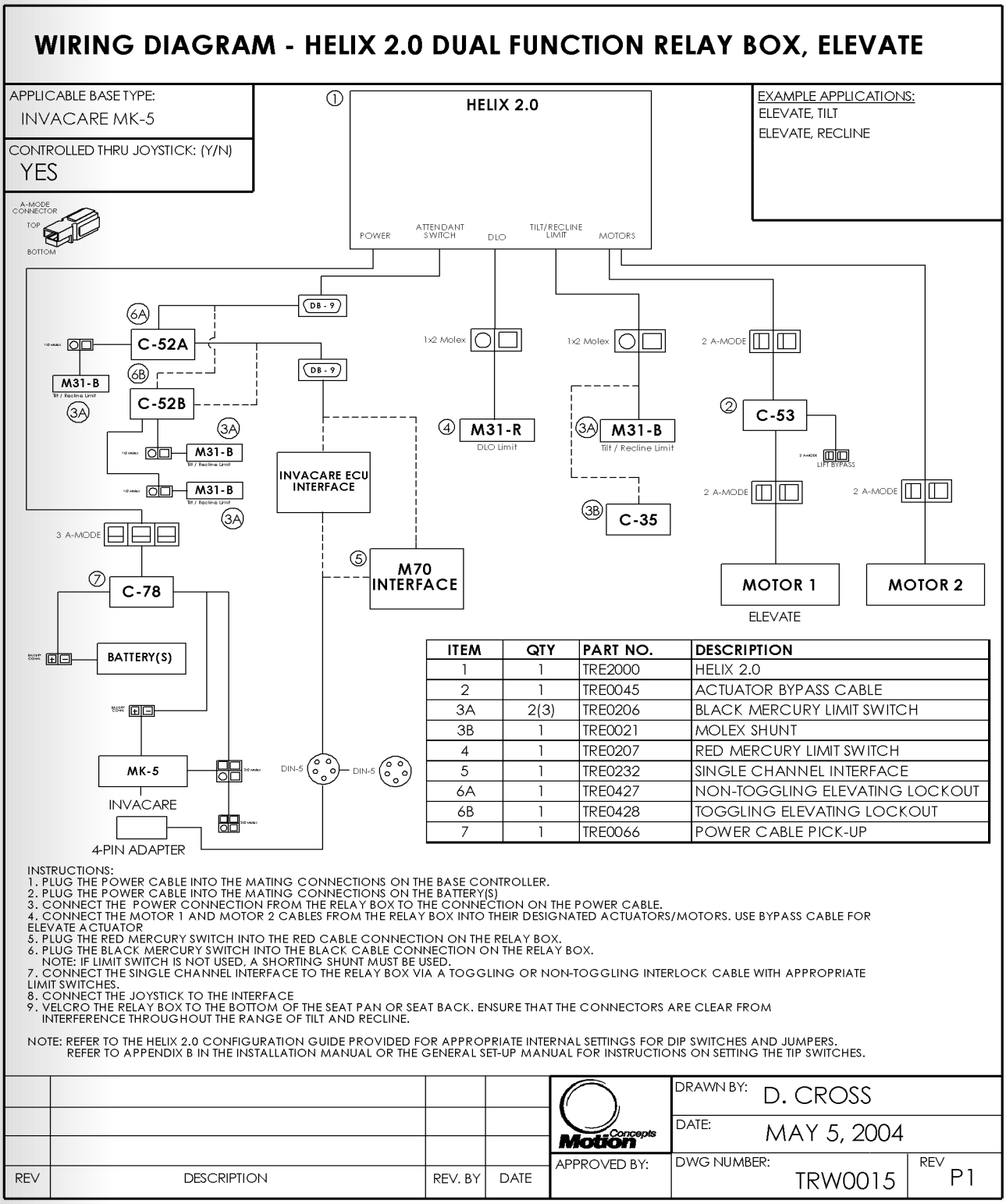
Limit Harnesses- are controlled via the relay box and may be connected to the relay box via an input port, or they may be hard-wired directly to the relay box. Motion Concepts uses two styles of standard "plug-in" limit harnesses: Dual Limit and Four Limit. ***(Note:** These harnesses are connected to the actual limit switches (i.e.; mercury switches/ microswitches/ roller switches)* Please refer to **Section 4.0- part II. Programming & Adjustment** *(p.43)* for detailed information on limit switches.

NOTE: Detailed information on each individual relay/control box can be found in the Motion Concepts Electronics Manual *(provided separately)*

NOTES

V. Wiring Harnesses

Figure 4.0 - Sample Wiring Diagram**



ITEM	QTY	PART NO.	DESCRIPTION
1	1	TRE2000	HELIX 2.0
2	1	TRE0045	ACTUATOR BYPASS CABLE
3A	2(3)	TRE0206	BLACK MERCURY LIMIT SWITCH
3B	1	TRE0021	MOLEX SHUNT
4	1	TRE0207	RED MERCURY LIMIT SWITCH
5	1	TRE0232	SINGLE CHANNEL INTERFACE
6A	1	TRE0427	NON-TOGGLING ELEVATING LOCKOUT
6B	1	TRE0428	TOGGLING ELEVATING LOCKOUT
7	1	TRE0066	POWER CABLE PICK-UP

INSTRUCTIONS:
1. PLUG THE POWER CABLE INTO THE MATING CONNECTIONS ON THE BASE CONTROLLER.
2. PLUG THE POWER CABLE INTO THE MATING CONNECTIONS ON THE BATTERY(S)
3. CONNECT THE POWER CONNECTION FROM THE RELAY BOX TO THE CONNECTION ON THE POWER CABLE.
4. CONNECT THE MOTOR 1 AND MOTOR 2 CABLES FROM THE RELAY BOX INTO THEIR DESIGNATED ACTUATORS/MOTORS. USE BYPASS CABLE FOR ELEVATE ACTUATOR
5. PLUG THE RED MERCURY SWITCH INTO THE RED CABLE CONNECTION ON THE RELAY BOX.
6. PLUG THE BLACK MERCURY SWITCH INTO THE BLACK CABLE CONNECTION ON THE RELAY BOX.
NOTE: IF LIMIT SWITCH IS NOT USED, A SHORTING SHUNT MUST BE USED.
7. CONNECT THE SINGLE CHANNEL INTERFACE TO THE RELAY BOX VIA A TOGGLING OR NON-TOGGLING INTERLOCK CABLE WITH APPROPRIATE LIMIT SWITCHES.
8. CONNECT THE JOYSTICK TO THE INTERFACE
9. VELCRO THE RELAY BOX TO THE BOTTOM OF THE SEAT PAN OR SEAT BACK. ENSURE THAT THE CONNECTORS ARE CLEAR FROM INTERFERENCE THROUGHOUT THE RANGE OF TILT AND RECLINE.

NOTE: REFER TO THE HELIX 2.0 CONFIGURATION GUIDE PROVIDED FOR APPROPRIATE INTERNAL SETTINGS FOR DIP SWITCHES AND JUMPERS. REFER TO APPENDIX B IN THE INSTALLATION MANUAL OR THE GENERAL SET-UP MANUAL FOR INSTRUCTIONS ON SETTING THE TIP SWITCHES.

REV	DESCRIPTION	REV. BY	DATE

Motion Concepts

DRAWN BY: D. CROSS
DATE: MAY 5, 2004
APPROVED BY:
DWG NUMBER: TRW0015
REV P1

**Note: Figure 4.0 above illustrates a valid wiring diagram for our Helix 2.0 Control Box at the time of printing the technical training manual. Wiring Diagrams are created & controlled by Motion Concepts for each of the major powerbase manufacturers (Invacare, Pride and Quickie). Up-to-date wiring diagrams are provided for reference with each specific seating system. Please contact our Technical Service Dept. regarding any wiring issues or concerns.