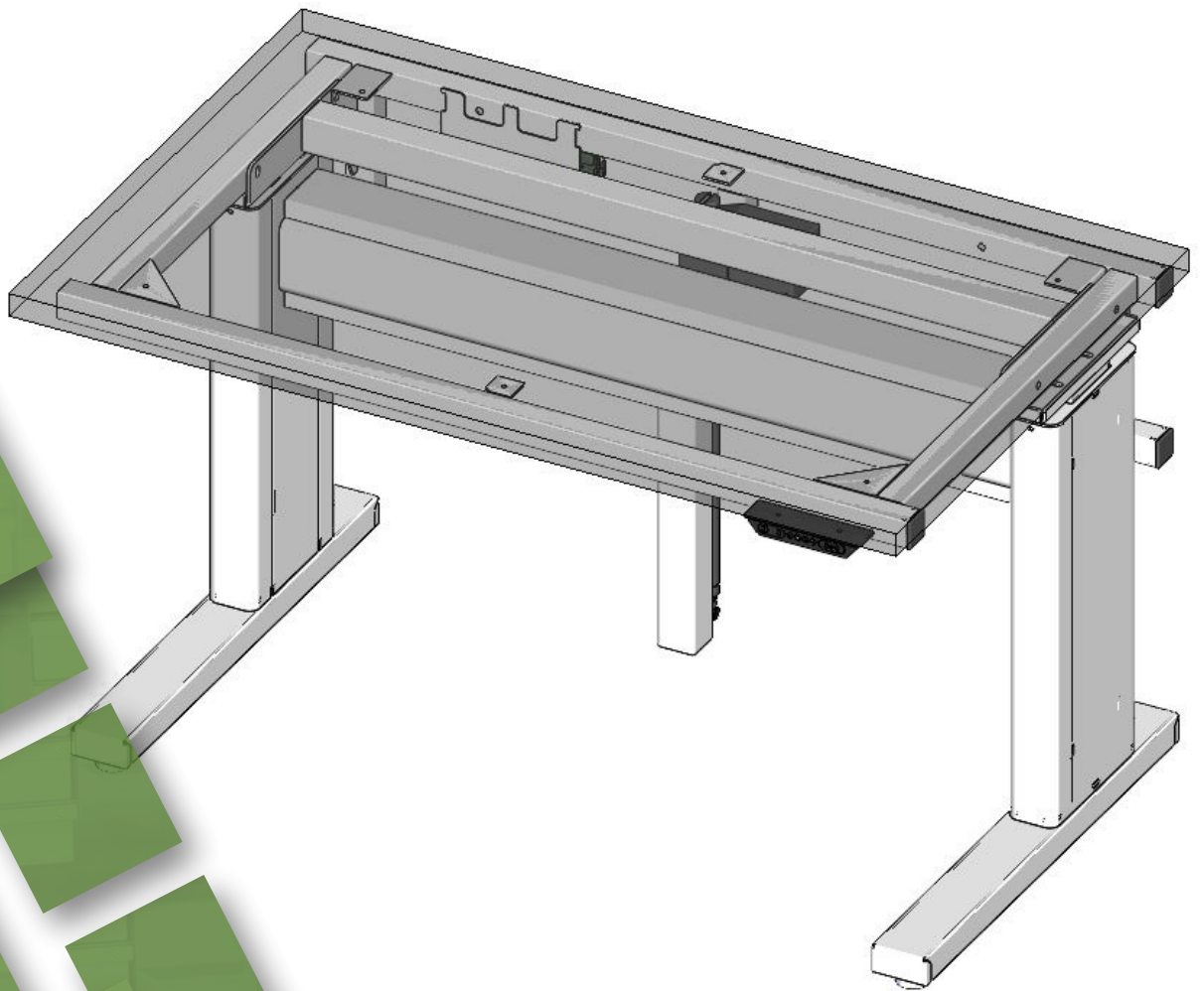


BOSTONtec



Ergonomic Workstations



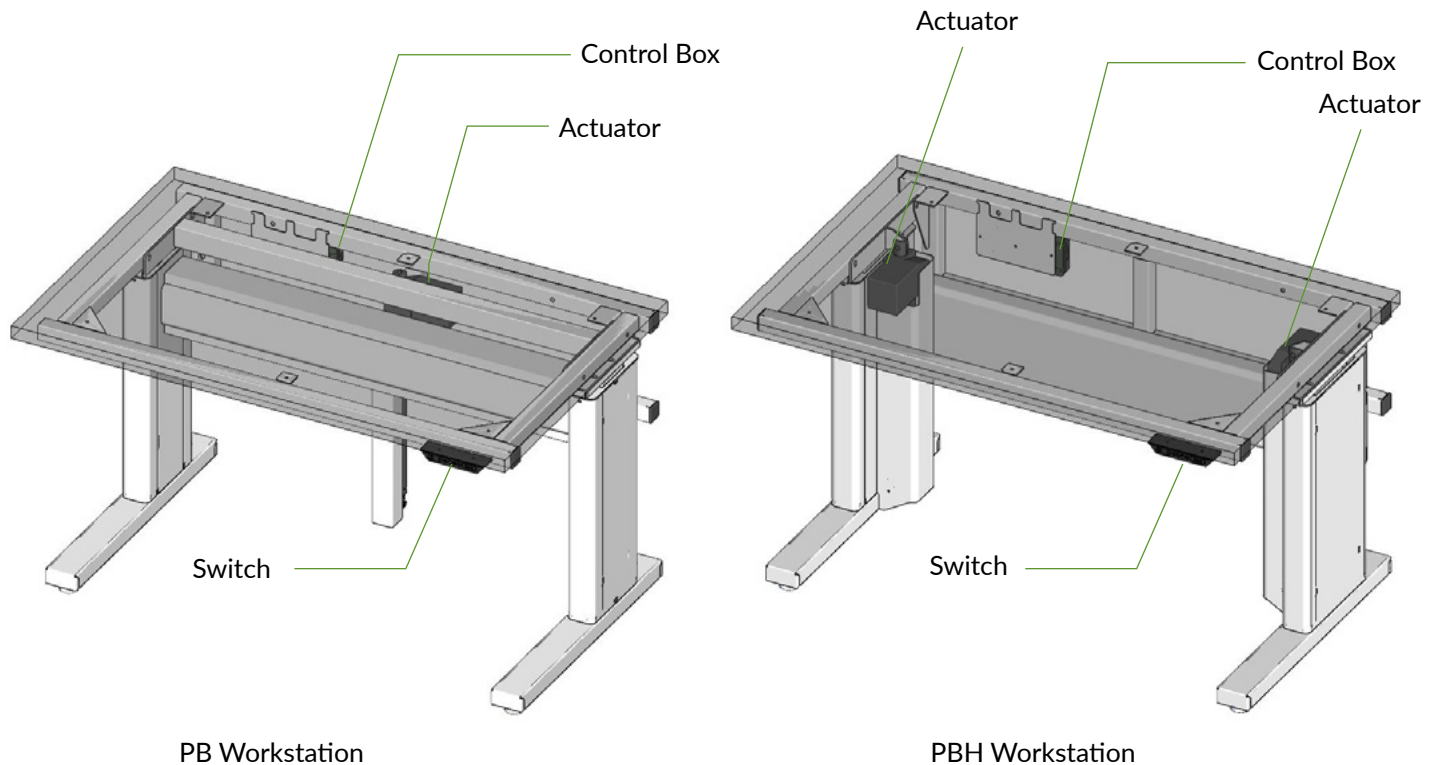
IMPROVING
PRODUCTIVITY
THROUGH
ERGONOMIC
SOLUTIONS

Electric Workstation Troubleshooting Guide

Troubleshooting Guide

Glossary of Common Terms

- Components
 - » Actuator - Columns, responsible for lifting the working load of the application.
 - » Control box - Both the computer and power supply of the system.
 - » Switch - User interface. Used to activate the application, set memory positions, display the height and error codes.
 - » Motor cable - Transmits power from the control box to the actuators.
 - » Power cord - Transmits power to the control box.
- Other
 - » Initialize - Procedures to reset all actuators to the fully retracted position so that the control box recognizes them.



Standard Trouble Shooting Procedures

P1 - Initialize the control box ("reset")

Note: This is commonly the solution when a workstation will move down but not up.

1. Hold down button on switch to ensure the workstation is retracted to its lower limit (whether it's the fully retracted hard stop, or a configured lower limit).
2. Briefly release Down.
3. Press and hold Down for 5 seconds, wait until all workstation movement has stopped, then release.
 - a. If initialization is successful, you should see a slight up/down "handshake" movement of the actuators.
 - b. If you have a switch with display, you should also see E01 during this part of the procedure.

Note: Might need to repeat a few times, or hold for 10 seconds, to fully reset.

P2 - Check all cable connections

1. Power cord, connected to both the control box and power outlet.
2. All motor cables, connected to both the control box and actuator.
 - a. Assuming a standard control box configuration, these must be connected in channels 1 and 2, or channels 1, 2 and 3 for a 3-actuator workstation. They can't be connected in channels 1 and 3 or 2 and 3 unless there is a configuration on the control box specifying this arrangement.
3. Switch cable, connected to the control box in either port A1 or A2 (doesn't matter which).

P3 - Check for obstructions

Check under, above and on the sides of the workstation for any obstructions that could prevent movement in either direction.

P4 - Check for faulty component(s) WITH error codes (digital display on Switch) for a two-actuator system

Notes: Check the error code list in the appendix of this troubleshooting guide for assistance. The code should read E##. Some error codes are channel-specific which can help pinpoint the problem.

Symptom	Procedures
System will move down but not up	1. Initialize (P1)
System unresponsive (no power to display with any button pressed). If any of these steps activates the digital display, initialize the system (P1).	1. Check power cord connection 2. Test power outlet using another device (lamp, phone charger, etc.) 3. Plug in a new switch and test 4. Connect all existing cables to a new control box and test

Symptom	Procedures
System is powered, but will not initialize	<ol style="list-style-type: none"> 1. Try pressing and releasing the down button a few times before pressing and holding for 5 seconds. 2. Also, be aware if the control box has a special configuration: If the workstation is programmed with a lower stroke limit, so as to avoid a collision with something like a file cabinet, it is possible that it also has a custom, longer Forced Initialization Time. This is the time required to hold Down before initialization begins. Sometimes this is 10 seconds or longer. 3. If you have a standard control box without a special configuration, try to initialize each actuator in Channel 1 by itself, with nothing else plugged into the motor channels on the control box. Also, swap the motor cables so that a different motor cable is used to initialize Channel 1 by itself. The problem could be a faulty actuator or a faulty motor cable.
Channel-specific error (Ex: E41 – Channel 1 overload)	<ol style="list-style-type: none"> 1. Swap the motor cable connections at the control box (Motor cable #1 from channel 1 to 2, motor cable #2 from channel 2 to 1). If It remains E41, there could be a problem with the application (load or obstruction on one side) or a bad control box. If the error changes to E42, go to step 2. 2. Swap the motor cable connections at the actuators, so that the actuator that was originally connected to Channel 1 is back in Channel 1, but with the motor cable that was originally connected to Channel 2. If it remains E42, it is most likely a bad motor cable, now connected to Channel 2. If it goes back to E41, it is most likely a bad actuator, now connected to Channel 1.

Symptom**Procedures**

Workstation is uneven

1. Initialize the workstation. If both actuators begin to run down, complete the initialization. If only one actuator moves, stop and move to Step 2.
2. Check motor cable connections. Check to ensure motor cables are not pulled during movement. With a standard, Plug & Play control box, it's possible that only one actuator is connected, and connected to Channel 1. In this case, it will initialize and run Channel 1 only. If there is only one actuator but it's connected to Channel 2, it will not initialize.
3. If a motor cable was disconnected, try initializing again.
4. If unsuccessful, connect the actuator from Channel 2 into Channel 1, with nothing in Channel 2, and initialize.
5. Try initializing the same actuator that's in Channel 1, but with a different motor cable. If it still won't initialize, replace the actuator.

Error Codes

Error Code	Name	Description	Potential Cause	Troubleshooting
E01	Position Lost	The workstation has an unknown position and needs to be initialized	<ul style="list-style-type: none"> Position error New actuator added 	<ul style="list-style-type: none"> Initialize the system (P1)
E02	General Overload Up	Overload in upward direction has occurred	<ul style="list-style-type: none"> Obstruction Bad actuator or motor cable 	<ul style="list-style-type: none"> Check all cable connections, (P2) initialize the system (P1) Troubleshoot components by initializing 1 at a time (only possible with Plug & Play configuration) (P4)
E03	General Overload Down	Overload in downward direction has occurred	<ul style="list-style-type: none"> Obstruction Bad actuator or motor cable 	<ul style="list-style-type: none"> Check all cable connections, (P2) initialize the system (P1) Troubleshoot components by initializing 1 at a time (only possible with Plug & Play configuration) (P4)
E08	Watchdog	Indicate that software failed to kick watchdog	<ul style="list-style-type: none"> Program fault 	<ul style="list-style-type: none"> Unplug power cord for 15 sec Initialize the system (P1) Replace Control Box
E09	LIN collision	Collisions detected on the LIN bus	<ul style="list-style-type: none"> Key pressed on two or more connected handset simultaneously Multiple LINBUS devices activated 	<ul style="list-style-type: none"> Check if another switch is connected and being activated Unplug all but one switch and test system
E10	Power fail	Power fail happened, or power regulator adjusted below 10%	<ul style="list-style-type: none"> Power cord pulled during driving Internal fault Only 1 battery for a 3- or 4-channel system "E10 is a power fail, voltage on power supply drops below a certain limit, power removed" 	<ul style="list-style-type: none"> Check power cord is not caught, and is allowed to freely travel Use strain-relief loop built into control box Use a 2nd battery; charge batteries

Error Code	Name	Description	Potential Cause	Troubleshooting
E11	Channel mismatch	Change in number of actuators since initialization	<ul style="list-style-type: none"> • Disconnection • Actuator added 	<ul style="list-style-type: none"> • Check Motor cable connections and Integrity (P2) • Change Motor cable or actuator • Initialize the system (P1)
E12	Position error	One channel have position different than others	<ul style="list-style-type: none"> • Too much back drive occurred 	<ul style="list-style-type: none"> • Move table to fully retracted position • Initialize system (P1)
E13	Short circuit	Short circuit detected during operation	<ul style="list-style-type: none"> • Squeezed Motor Cable • Short in motor 	<ul style="list-style-type: none"> • Check motor cable connections (P2) • Isolate and replace Motor Cable (P4) • Isolate and replace actuator (P4)
E15	Power limit	System has reached its power limitation	<ul style="list-style-type: none"> • Power cord pulled during driving • Internal fault • Many times will see this alongside E10 • “E15 is when power regulator has adjusted speed down on actuators without any significant current draw, usually caused by power supply dropping.” 	<ul style="list-style-type: none"> • Check power cord is not caught, and is allowed to freely travel • Use strain-relief loop built into control box
E16	Key Error	Illegal keys pressed (handled internally in DP1C).	<ul style="list-style-type: none"> • Hitting multiple buttons simultaneously 	<ul style="list-style-type: none"> • Check switch
E17	Safety missing	LIN bus unit does not support safety feature	<ul style="list-style-type: none"> • DP1C/DPF1C does not have up-to-date software 	<ul style="list-style-type: none"> • Try DP with more recent software version (printed on label)
E18	Missing Initialization plug	A special service tool is required to change number of channels to the system	<p>[BASELIFT Only]</p> <ul style="list-style-type: none"> • Service tool missing from BASELIFT system when initializing 	<ul style="list-style-type: none"> • Add service tool

Error Code	Name	Description	Potential Cause	Troubleshooting
E23	Ch1 missing	Channel 1 is detected missing	<ul style="list-style-type: none"> • Disconnection • Faulty motor cable • Faulty motor in actuator 	<ul style="list-style-type: none"> • Check Motor cable connections and Integrity (P2) • Change Motor cable or actuator • Initialize the system (P1)
E24	Ch2 missing	Channel 2 is detected missing	<ul style="list-style-type: none"> • Disconnection • Faulty motor cable • Faulty motor in acuator 	<ul style="list-style-type: none"> • Check Motor cable connections and Integrity (P2) • Change Motor cable or actuator • Initialize the system (P1)
E25	Ch3 missing	Channel 3 is detected missing	<ul style="list-style-type: none"> • Disconnection • Faulty motor cable • Faulty motor in actuator 	<ul style="list-style-type: none"> • Check Motor cable connections and Integrity (P2) • Change Motor cable or actuator • Initialize the system (P1)
E26	Ch4 missing	Channel 4 is detected missing	<ul style="list-style-type: none"> • Disconnection • Faulty motor cable • Faulty motor in actuator 	<ul style="list-style-type: none"> • Check Motor cable connections and Integrity (P2) • Change Motor cable or actuator • Initialize the system (P1)
E29	Ch1 type	Channel 1 is not same type as when initialized	<ul style="list-style-type: none"> • Change in actuator type • Loose wire inside motor 	<ul style="list-style-type: none"> • Check actuator type • Change actuator • Initialize the system (P1)
E30	Ch2 type	Channel 2 is not same type as when initialized or not same type as channel 1	<ul style="list-style-type: none"> • Change in actuator type • Loose wire inside motor 	<ul style="list-style-type: none"> • Check actuator type • Change actuator • Initialize the system (P1)
E31	Ch3 type	Channel 3 is not same type as when initialized or not same type as channel 1	<ul style="list-style-type: none"> • Change in actuator type • Loose wire inside motor 	<ul style="list-style-type: none"> • Check actuator type • Change actuator • Initialize the system (P1)
E32	Ch4 type	Channel 4 is not same type as when initialized or not same type as channel 1	<ul style="list-style-type: none"> • Change in actuator type • Loose wire inside motor 	<ul style="list-style-type: none"> • Check actuator type • Change actuator • Initialize the system (P1)

Error Code	Name	Description	Potential Cause	Troubleshooting
E35	Ch1 pulse fail	Channel 1 had too many pulse errors	<ul style="list-style-type: none"> Loose/faulty cable Hall sensor PCB 	<ul style="list-style-type: none"> Check motor cable connections and integrity (P2) Change actuator Initialize the system (P1)
E36	Ch2 pulse fail	Channel 2 had too many pulse errors	<ul style="list-style-type: none"> Loose/faulty cable Hall sensor PCB 	<ul style="list-style-type: none"> Check motor cable connections and integrity (P2) Change actuator Initialize the system (P1)
E37	Ch3 pulse fail	Channel 3 had too many pulse errors	<ul style="list-style-type: none"> Loose/faulty cable Hall sensor PCB 	<ul style="list-style-type: none"> Check motor cable connections and integrity (P2) Change actuator Initialize the system (P1)
E38	Ch4 pulse fail	Channel 4 had too many pulse errors	<ul style="list-style-type: none"> Loose/faulty cable Hall sensor PCB 	<ul style="list-style-type: none"> Check motor cable connections and integrity (P2) Change actuator Initialize the system (P1)
E41	Ch1 overload up	Overload up occurred on channel 1	<ul style="list-style-type: none"> Actuator overloaded Hit obstruction Reached end stop (before initialization at upper endstop occurs) 	<ul style="list-style-type: none"> Remove obstruction (P3) Remove load Initialize if necessary (P1)
E42	Ch2 overload up	Overload up occurred on channel 2	<ul style="list-style-type: none"> Actuator overloaded Hit obstruction Reached end stop (before initialization at upper endstop occurs) 	<ul style="list-style-type: none"> Remove obstruction (P3) Remove load Initialize if necessary (P1)
E43	Ch3 overload up	Overload up occurred on channel 3	<ul style="list-style-type: none"> Actuator overloaded Hit obstruction Reached end stop (before initialization at upper endstop occurs) 	<ul style="list-style-type: none"> Remove obstruction (P3) Remove load Initialize if necessary (P1)

Error Code	Name	Description	Potential Cause	Troubleshooting
E44	Ch4 overload up	Overload up occurred on channel 4	<ul style="list-style-type: none"> • Actuator overloaded • Hit obstruction • Reached end stop (before initialization at upper endstop occurs) 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Remove load • Initialize if necessary (P1)
E47	Ch1 overload down	Overload down occurred on channel 1	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E48	Ch2 overload down	Overload down occurred on channel 2	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E49	Ch3 overload down	Overload down occurred on channel 3	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E50	Ch4 overload down	Overload down occurred on channel 4	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E59	Ch1 SLS/PIEZO	Safety limit switch activated on channel 1	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E60	Ch2 SLS/PIEZO	Safety limit switch activated on channel 2	<ul style="list-style-type: none"> • Hit obstruction 	<ul style="list-style-type: none"> • Remove obstruction (P3) • Initialize if necessary (P1)
E65	Ch1 pulse dir	Pulses counted wrong direction in channel 1	<ul style="list-style-type: none"> • Motor poles are crossed • Hall sensor Cables are crossed 	<ul style="list-style-type: none"> • Check motor cable connections and integrity (P2) • Change actuator • Initialize the system (P1)
E66	Ch2 pulse dir	Pulses counted wrong direction in channel 2	<ul style="list-style-type: none"> • Motor poles are crossed • Hall sensor Cables are crossed 	<ul style="list-style-type: none"> • Check motor cable connections and integrity (P2) • Change actuator • Initialize the system (P1)

Error Code	Name	Description	Potential Cause	Troubleshooting
E67	Ch3 pulse dir	Pulses counted wrong direction in channel 3	<ul style="list-style-type: none"> • Motor poles are crossed • Hall sensor Cables are crossed 	<ul style="list-style-type: none"> • Check motor cable connections and integrity (P2) • Initialize the system (P1)
E68	Ch4 pulse dir	Pulses counted wrong direction in channel 4	<ul style="list-style-type: none"> • Motor poles are crossed • Hall sensor Cables are crossed 	<ul style="list-style-type: none"> • Check motor cable connections and integrity (P2) • Initialize the system (P1)