



ES500 Swing Control Power Assist Instructions

A Power Assist Chip must be installed for this application.

1.0 Power Assist Close Description of Operation

Normal Closing: First, the door closes under spring power until either a stall condition is detected due to stack pressure or other adverse conditions, or it hits the latch check switch. If the door stalls prior to finding the latch check switch, the control proceeds to (a) below. If it hits the latch check switch before stalling out, the control proceeds directly to (b) instead.

a. If conditions are such that the door cannot reach the latch check switch, the door will recycle back open if the **Cr** (**C**lose **r**ecycle) parameter is *on*. If the **Cr** parameter is *off*, it will indicate **nS** (**n**o **S**witch) and will continue attempting to locate the latch check switch. *Power assist is never applied prior to the latch check zone.*

b. If the door is able to reach the latch check switch, a short delay occurs before assist takes place. This delay is set by the **Ad** (**A**ssist **d**elay) parameter. The delay is useful in keeping the door from slamming closed during conditions when power assist is not needed. The factory default for **Ad** is 2 seconds.

c. After the **Ad** (**A**ssist **d**elay) timer expires, power assist is applied at the level determined by the **PA** (**P**ower **A**ssist) parameter for the duration of the **LC** (**L**atch **C**heck) delay, to finish closing the door. The factory default for **PA** is 4.

d. After the **LC** (**L**atch **C**heck) delay times out, if the **HC** (**H**old **C**losed) parameter is zero, closing power is switched off, and only spring power is utilized to keep the door closed. The display will show **Id** (**I**dle). If **HC** is set to some value other than zero, close power is maintained at a low level to help keep the door closed. The display will show **HC** (**H**old **C**losed). *Leaving **HC** at to its factory default of zero is the preferred setting, as it allows manual operation of the door both with and without the push-n-go feature enabled. A setting of zero also prolongs control and motor life. If hold closed must be used, set the **HC** parameter to the smallest value required to keep the door closed.*



In summary, the default sequence of power assist operation is spring close prior to the latch check zone, a 2 second delay after the latch check switch triggers (**Ad**=2), and power assist at a setting of 4 (**PA**=4) for a period of 2 seconds (**LC**=2) to finish closing the door. After the **LC** delay expires, power assist is switched off (**HC**=0). If the door stalls prior to the latch check switch, it recycles open (**Cr**=on).

Also note that a power assist close cycle is initiated automatically upon initial power-up (in case the door was used manually during the power failure) and upon restoration of the rocker switch from the off to the auto position (in case the door was used manually while it was turned off).

1.1 Installation of Power Assist Upgrade Chip

If the power assist close "chip" was supplied separately, turn off all power to the ES500 door control and locate device U3 on the circuit board. It is a large chip with 28 pins. Note the orientation of U3 – one side

of the chip will have a small notch or dot. *It is imperative that the new chip be installed in the U3 socket with the same orientation as the one that was removed.*

Using a small flat bladed screwdriver or a similar tool, carefully insert the blade between the U3 chip and its socket. Take extreme care not to accidentally insert the tool between the socket and the circuit board! Pry up gently and work the screwdriver under the device until it comes out. Set the old device aside.



The replacement part is susceptible to static damage. Keep one hand on the control, door header, or frame at all times while handling the device outside of its static protective packaging.

Remove the new device with power assist close from its packaging and inspect it for any bent pins. If any pins are bent, carefully straighten them. You can also gently “roll” the pins on each side of the device on a flat surface to insure that all pins are straight and point directly down. While touching some part of the control or door header with your other hand, insert the new device in the socket, *making sure that every pin lines up properly and the locator notch or dot is in the same location as the device that was removed.* When you are sure that all pins are lined up, push the device into the socket.

1.2 Adjustment Procedure

After the new device is installed at U3, power up the control. The display should flash the version number. If nothing happens, immediately unplug the control and inspect U3 for bent or broken pins, pins out of their sockets, or incorrect device orientation.

Cycle the door by pressing the DOWN button to actuate it. Use the parameters as described in Section 1.0, Description of Operation, to adjust the door for the desired operation. Refer to the original installation instructions for details on how to adjust parameters and save your changes.

1.3 Additional Display Codes for Power Assist Close

The following additional displays are present when power assist close is installed:

PA Power Assist close applied
HC Hold Closed power applied
nS no Switch error, latch check position not found
Ad Assist delay running

1.4 Additional Parameter List for Power Assist Close

The following list shows all new adjustable parameters when power assist close is in use, along with a brief description of their function and their factory default values.

Ad Assist delay. Sets the length of the delay, in seconds, that will occur from the time the latch check switch trips until power assist close is actually applied. Possible values are 1-99 seconds, and the default is 2 seconds.

PA Power Assist level. Sets the power assist level to be used to finish closing the door after the latch check switch trips. Possible values are 0-16, and default is 4. A value of zero disables the assist.

HC Hold Closed. Sets the power assist level to be used to hold the door closed. Possible values are 0-16. A value of zero disables hold closed. The factory default is 0 (do *not* hold closed).

PS Pre-assist Sensing. Normally, during the assist delay time period, the door is monitored for additional manual pushing in the open direction. If a push is detected, the assist delay is aborted and the control waits for the door to finish moving in the open direction before the power assist close routine begins again. This provides substantial additional safety and user convenience. If, however, the stack pressure is large enough to actually push the door in the open direction during the assist delay (not just stall it), **PS** may be turned off. With **PS** off, the control will ignore pushing in the open direction once the

latch check switch triggers. The factory default for **PS** is *on* (accept pushes during the assist delay). Note that **PS** only determines whether the door will accept pushes to extend the *manual* open condition. If Push-n-Go (**PG**) is turned on and significant stack pressure forces the door in the open direction after the latch check switch triggers, a push-n-go condition *will* be generated and the door *will* be recycled open.

1.5 Operation with Optional Close Monitor Switch

A close monitor switch may be added to prevent the power assist close from operating when stack pressure is not present. A close monitor switch harness, Access Automation part number A600-0008-01, will be required. The switch must be wired to close when the door is in the fully closed position. Plug the harness into CN7 on the ES500 control. If the switch contact closes at any time during the pre-assist delay, power assist close will not be applied. If the switch contact closes during power assist, the assist will be aborted. This connection may also be used for a manual assist disable switch. If the contact is closed when the door begins its close cycle, power assist will not be applied. *Note that parameter **AF** (Auxiliary Function) must be set to its factory default of 1 for the CN7 input to function as a close monitor signal.*

1.6 Operation with Optional Safety Sensor

If an optional safety sensor is in use, the control will continue to monitor the door for possible manual openings even if the safety sensor triggers. This allows the power assist close feature to cycle and close the door if a pedestrian walks up to the closed door from the swing side and uses it manually. For maximum safety, if the safety sensor is triggered prior to the manual open cycle, an automatic Push-n-Go cycle will *not* be generated even if the **PG** parameter is turned on. However, once the door has been opened manually and the pedestrian has entered, a standard closing cycle will begin, complete with safety sensor lockout. During this closing cycle, automatic operation is permitted (as the safety sensor is locked out), and both **Cr** and **PG** will function normally, if enabled.

1.7 Operation with Optional Safety Beam

When an optional safety beam is in use, the beam is monitored during door closing. If the beam is broken during this time, the power assist sequence is aborted to eliminate pinch hazards and a fixed delay of 3 seconds begins. After the 3 second delay expires, the control will again attempt to initiate a closing sequence, complete with power assist, as described in Section 1.0 above. *The header mounted safety device continues to be locked out as in normal door closing (since stack pressure will render it useless until the door finishes closing).* However, the control will “remember” that the beam was broken during door closing, and until the door can either (a) close properly to the jamb or (b) it is recycled open to the open check position, the Seek Speed (SS) setting will be used for door opening. *Note that parameter **AF** (Auxiliary Function) must be set to 3 for the CN7 connector to function as a safety beam input. In this configuration, the close monitor function (Section 1.5) is no longer available.*