



# HERCULES®

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OPERATOR CALIBRATION GUIDE

# ABOUT THE CALIBRATION GUIDE

This document is provided for the use of qualified operator installers. The installer should familiarize themselves with this guide Options **BEFORE** starting Calibration.

## WARNINGS



1. This symbol indicates a potentially hazardous situation, which if not avoided, may result in injury to personnel and/or damage to equipment.
2. Do not disconnect or connect wires or connectors while power is applied to the unit.
3. **VERIFY** that the AC supply voltage and the voltage selection wire in the unit are the same **BEFORE** the power is connected. Failure to do so may cause equipment failure and personal injury.
4. If the operator has both AC and battery back-up powered **BOTH** power sources must be disconnected to fully power down the equipment.
5. Under **NO** circumstances can any field modification be made to the equipment. Failure to observe this may result in personal injury, electrical shock, improper operation and damage to the equipment and **WILL VOID THE WARRANTY**.

# CALIBRATION

## a) 40-day PositionTrak™

Plug the 40-day PositionTrak™ into the 'B' connector on the Controller (see Fig 10 Controller Layout).

### 40-day PositionTrak™ Function

To track the movement of the motor (operator) when AC and/or Battery power (DC) is lost. When the operator has power returned, no re-calibration or setting of "close reference" is required to continue using the operator.

### Setup (use):

Before bringing power to the operator, plug in the 'B' connector with the battery pack connected, and batteries mounted inside the battery pack. For the 40-day PositionTrak™ to work, calibration of the operator must be done with the battery pack connected.

The battery pack must stay connected to power the 40-day PositionTrak™ during loss of AC and/or Battery power (DC).

### Test:

1. Remove power from the operator and wait 20 seconds  
**Note:** Always leave the 40-day PositionTrak™ battery pack connected.
2. Return power to the operator
3. Once the Controller LCD comes on, activate the operator to either **OPEN** or **CLOSE**.  
**Note:** The operator will move towards the selected position without re-calibration or re-referencing.  
**Note:** The battery life of the 40-day PositionTrak™ is estimated at 40 days; once the power (the tracker's batteries are fully drained after AC/DC power has not been present on the operator for 40 days) is lost the operator will require either re-calibration or re-referencing the close position for continued operation.

The 40-day PositionTrak™ batteries are charged automatically once AC/DC is returned to the operator.



### Calibration process for Vertical Doors:

Before applying power to the operator please connect the battery-pack which is wired directly to the 'B' connector.

1. From the main screen press the **DOWN** button until the LCD displays "Calibrate Now".
2. Press the **ENTER** button once.  
The LCD displays "Jog Door Open, press Enter to complete".
3. Hold the UP button for 5 seconds.
  - a. If the door moves toward the open position continue to hold the UP button the full open position is achieved. Once the fully open press the **ENTER** button, and continue to the next point.
  - b. If the door moves toward the close position continue to press the **ENTER** button until the LCD displays "Calibration Error."
    - i. Now change direction (see manage open direction).
    - ii. Repeat the calibration process from the beginning
4. The LCD displays "Jog Door Closed, press Enter to complete"
5. Press and hold the **DOWN** button until the door is at the fully closed position.
6. Press the **ENTER** button. The LCD will display "Door sized stored, cycle to complete"
7. The operator now requires an uninterrupted full open, followed by an uninterrupted full close cycle.

Once complete the LCD will display "Calibration Done"



## Direction of Door Movement

The installer must ensure that when a door operates its direction is consistent with what the controller displays on the LCD.

A quick check to determine whether direction is set correctly can be done as follows:

1. Using the **UP** or **DOWN** buttons scroll until the LCD displays "Calibrate Now".
2. Press the **ENTER** button.
3. Press and hold the **UP** button.
  - a) The system should move toward the open direction
  - b) If the system is moving towards the close direction the installer must change direction (see Manage Open Direction)
  - c) Whether the direction is correct or not the installer should power down the system. Let the LCD go blank and then power it back on.

If the direction was correct continue with calibration, if it was not, direction must be changed.

## Manage Open Direction

1. Press the **UP** or **DOWN** button until display reads "Ent Pswd"
2. Press **ENTER**

Press the following sequence: **ENTER, DOWN, DOWN, ENTER, ESCAPE, ESCAPE, ESCAPE, ESCAPE.**

3. Press the **UP** or **DOWN** button until the display reads "Dir flip".
4. Press **ENTER**.
5. Press the **UP** button to change value from 0 to 1 or the **DOWN** button to change value from 1 to 0.
6. Press **ENTER** to save this value.
7. Power Down the system and begin the Calibration Process.



If the operator you are working with is **NOT UL 325 COMPLIANT** then the next step will be to setup internal obstruction sensing properly.



Any changes to the physical operation of the door or to the Close Profile parameter will require a re-calibration.



To re-calibrate the operator:

1. 1st power down the system.
2. Wait for 15 to 20 seconds.
3. Return power to the system and repeat the calibration process from the beginning.

## b) Obstruction Sensing

### Description

There are two types of obstruction sensing:

1. Force sensitive obstruction sensing which is used during the door close cycle only, and
2. Speed based obstruction sensing which is operative during both the open and close door cycles.



#### Force based obstruction sensing:

NOT applicable in UL325, Rolling Steel and Fabric doors.

During the close cycle, if the door meets an obstruction that causes the closing force to increase beyond the pre-set threshold, the door reverses.

The door will respond to all new obstructions on a closing cycle following an obstruction. The forced based obstruction threshold is adjustable by the user.

**Speed based obstruction sensing:**

Speed based obstruction sensing operates during both opening and closing door cycles. If the door is activated to open and does not move for a fraction of a second, the door stops and an “Open Collision” will have occurred and will be displayed on the LCD.

This acts as if a slide lock (door to rail) on a vertical door is in the locked position. If an OPEN activation is made, the door tries to open but the speed based obstruction sensing will stop the door and can prevent damage to the door and the lock and the door frame.

This powerful protection uses factory pre-set timers and does not require any adjustment.

**Change Obstruction Sensitivity**

Which parameter should be adjusted for obstruction sensing threshold if reversal occurs for no apparent reason?

If obstructions are happening during the closing cycle, causing the door to reverse and move back to the open position, without apparent reasons, it is likely that the obstruction threshold parameters are set too low.



Before adjusting the obstruction sensing threshold it is recommended, especially if the obstructions seem to be occurring in one specific door position, to check to see if there is a mechanical problem with the hardware, railing or other possible source of binding.

**Adjusting Obstruction Sensitivity****a. When too much force is required to stop the door before reversal when the door is closing:**

“COMPANY NAME” is displayed on the LCD (start position).

1. Press the **DOWN** button (6 times) until “Ent pswd” is displayed on the LCD.
2. Press **ENTER**.
3. Press the following buttons: **ENTER, DOWN, DOWN, ENTER, ESCAPE, ESCAPE, ESCAPE, ESCAPE**.
4. Press the **DOWN** button once. “Close over curr%” should be displayed on the LCD. The current value of the parameter is on the second line of the display.
5. Press **ENTER**.
6. Press and hold the **DOWN** button until the desired value is reached.
7. Press **ENTER** to save the new value.
8. Press the **DOWN** button once.  
 „Close decel I%” should be displayed on the LCD. The current value of the parameter is on the second line of the display. This parameter can be lowered from its current setting.
9. Press **ENTER**.
10. Press and hold the **DOWN** button until the value reaches the desired value.
11. Press Enter to save the new value.



Initially lowering the parameter by 20 to 30 units at a time is recommended to get a feel for the effect of the change.



It is imperative that these TWO parameters (“Close over curr%” and “Close decel I%”) be changed to the SAME VALUES.



The obstruction sensing parameter values have been lowered to reduce the amount of force required to respond to an obstruction.

## b. Adjust Obstruction Sensing when too little force is required to stop the door before reversal when the door is closing.

“COMPANY NAME” is displayed on the LCD (start position).

1. Press the **DOWN** button (6 times) until “Ent pswd” is displayed on the LCD.
2. Press **ENTER** once (to be able to enter the password).
3. Press the following buttons; **ENTER, DOWN, DOWN, ENTER, ESCAPE, ESCAPE, ESCAPE, ESCAPE**.
4. Press the **DOWN** button once.  
“Close over curr%” should be displayed on the LCD. The current value of the parameter is on the second line of the display. This parameter can be increased from its current setting.
5. Press **ENTER**.
6. Press and hold the **UP** button until the desired value is reached.
7. Press **ENTER** to save the new value.
8. Press the **DOWN** button once.  
“Close decel l%” should be displayed on the LCD. The current value of the parameter is on the second line of the display. This parameter can be increased from its current setting.
9. Press **ENTER**.
10. Press and hold the **UP** button until value reaches the desired value is reached.
11. Press **ENTER** to save the new value.

 Initially increasing the parameter by 20 to 30 units at a time is recommended to get a feel for the effect of the change

 It is imperative that these TWO parameters (“Close over curr%” and “Close decel l%”) be changed together and have the SAME VALUES.

 The obstruction sensing parameter values have been increased to increase the amount of force required to simulate an obstruction.

## FAQ Obstruction Sensing

### 1. How does force based obstruction work?


Every door installation has some difference in the force required to move it along the tracks. For this reason, during the door calibration cycle, the door operator measures and records the forces needed to close the door at different portions of the door closing cycle.

The obstruction sensing threshold uses these measured values and adds the set threshold level parameter value to give the obstruction force sensing level.

**Note:** There are two calibration cycles.

The 1st sets the door size.

The 2nd measures the force required to close the door.

 This cycle must not be interrupted by any obstruction or an in-advertent door opening, such as from a peripheral (infrared, motion, etc.) sensor.

If this cycle is interrupted before completion, then the calibration process must be repeated.

## 2. When is force based obstruction sensing not useable on the closing cycle?

Doors that compress when encountering an obstruction (such as certain type of rolling steel doors and light fabric or vinyl roll up doors) are not usually suitable for use with the internal force based obstruction sensing on the closing cycle.

On these types of doors, an alternate means for close obstruction sensing may be required (e.g. pressure sensitive edge, infrared, microwave, optical, etc.).

## 3. When should the obstruction sensing threshold be adjusted for the door close cycle?

- Too much force or too little force is required to stop the door before a reversal occurs.
- Obstruction based reversals occur for no apparent reason.


## 4. Which parameters control the obstruction threshold?

If too much force or too little force is required when obstruction reversal occurs, then the following parameters require adjusting.


“Close over curr%”

“Close decel 1%”

**Note:** Initially changing the parameter by 20 to 30 units at a time is recommended to get a feel for the effect of the change.

 These TWO parameters (“Close over curr%” and “Close decel 1%”) should be changed and set to the SAME VALUE.

The obstruction sensing parameter values are lowered to reduce the amount of force required to respond to an obstruction and increased to increase the force required to respond to an obstruction.

 **Any changes to the speeds in the close profile require re-calibration of the operator for obstruction sensing to function properly.**

## c) Setting the Close delay time (timer to close the door)

By factory default the close delay timer is disabled (value of zero). The timer is set in seconds, from 0 to 240. To set the timer:

Scroll using the **UP** or **DOWN** buttons until the LCD displays “ENT PSWD”

Press the **ENTER** button.


Now enter the password: **ENTER, DOWN, DOWN, ENTER, ESCAPE, ESCAPE, ESCAPE, ESCAPE.**

The LCD will now display “CI delay” (close delay) with a value of “0”

Press the **ENTER** button to adjust the timer.

Use the **UP** and **DOWN** buttons to set the desired value.

Press **ENTER** to store the change.

 **Note:** The timer to close should be the last item set, as once the timer is active NO changes may be made to the operator unless it is in the fully closed position (timer not active). If at the full open, powering off the operator and powering back on will temporarily disable the timer (until an activation occurs).



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